INTERIM ACTION AND MONITORING PLAN

1920 Port of Tacoma Road Remediation

Tacoma, Washington

Final: February 2015

Prepared For:

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I. INTRODUCTION

This Interim Action and Monitoring Plan was prepared to guide remediation of soil and groundwater beneath the Port of Tacoma Road in the vicinity of the U.S. Oil & Refining Co.'s (USOR) refinery to dock buried petroleum pipelines (Figures 1 and 2). The plan was prepared by Dalton, Olmsted & Fuglevand, Inc. (DOF) using data and analyses completed to fulfill the requirements of Agreed Order No. DE 8914 (AO) between the Washington State Department of Ecology (Ecology) and USOR. The Agreed Order was for completion of a Remedial Investigation (RI) and Feasibility Study (FS) as further described below as part of Project Background.

The interim remedial action is being conducted in coordination with a major road repaving project being completed by the City of Tacoma (City). The primary goal of the interim action is to remove soils containing petroleum hydrocarbons so that roadway paving can be replaced and future repairs of subsurface utilities (storm and sanitary sewers, high pressure gas line and water line), if needed, would not be hampered by the presence of contaminated soil. It is anticipated that the interim action would be a major component of the final remedy for the site.

II. PROJECT BACKGROUND

Releases of petroleum hydrocarbons were first discovered beneath the Port of Tacoma Road in 1995 during a road excavation by the Tacoma utilities department. The City reported "*very contaminated soil*" was encountered approximately 30 feet south of the former USOR pipeline easement in the northbound driving land of the Port of Tacoma Road. USOR worked with the City to assess the possible extent of the release by sampling near-by monitoring wells, completing soil sampling and reviewing pipeline hydro-test records. A review of analytical chromatograms indicated that the predominant hydrocarbon present beneath the roadway was likely gasoline or weathered gasoline.

In January 1997, eleven push-probes and six test pits (P-1 to P-11[1] and TP-1 to TP-6 – Figure 3) were sampled by DOF for USOR along the sides of the roadway where petroleum constituents were detected in the vicinity of the former pipeline crossing. The 1997 soil analytical data are summarized in Table 1 (adapted from Table 3 in DOF 1997a). The testing was completed as part of a City waterline repair project (DOF 1997a, 1997b, 1998a). In June 1997 CeCon (for the City) dug a series of bell holes to repair the waterline. Contaminated soil was reported to be present in two excavations in the vicinity of the pipeline easement (adjacent to push-probe P3). Contaminated soil was not observed in two additional excavations located to the southeast of the former pipeline alignment in the roadway (Figure 3). A small cleanup of soil containing diesel-range hydrocarbons was also completed in March 1998 in the area shown on Figure 3 (DOF 1998b).

In June 1998, USOR completed a re-location of the refinery-to-dock pipelines that were re-routed to accommodate a Port of Tacoma terminal development project. The lines beneath the roadway

[1] The 1997 push-probes are designated with an "E" or "W" depending on which side of the road the probes were drilled.

to the USOR marine terminal entrance were flushed, filled with grout and abandoned in-place. Any contaminated soil encountered during the relocation was removed from the excavations. The location of the former and existing pipeline alignments, pipeline diameters, products handled and pipeline bottom elevations are shown on Figures 2a, 2b and 2c.

In 2007, a new 24-inch pipeline was installed from the refinery to the USOR marine terminal. In addition, two existing 8-inch (gasoline) and one existing 10-inch (jet/diesel) pipelines from the refinery were abandoned in-place and replaced with two new 8-inch (gasoline) and one new 10-inch (jet/diesel) pipelines. This project also included the removal of an 8-inch fuel oil line between the refinery and USOR marine terminal. During the 2007 work, DOF observed the pipeline excavations. No evidence of petroleum hydrocarbons were detected in the excavation along the Port of Tacoma Road. The field observations were confirmed by analysis of soil samples (RDS-20, -22 to -25 shown on Figure 3) collected from the excavation. The 2007 soil analytical data proximal to the project area are summarized in Table 2.

On December 17, 2010 Dave Cooper with DOF visited the site after flashes had been detected during asphalt grinding by the City. The top 6-inches of asphalt had been removed. The subgrade consisted of crushed rock and soft asphalt that had a very strong gasoline odor. A sample was collected of the subgrade materials and submitted to Analytical Resources Inc. (ARI) for analysis of petroleum hydrocarbons using methods NWTPH-HCID and TPHG/BTEX. The results of the analysis (DOF 2013a) are listed below.

Results of 2010 Subgrade Solids Sample Analysis

Analyte	Concentration (mg/kg)
Benzene	5.3
Toluene	96
Ethylbenzene	40
m,p-Xylene	310
o-Xylene	120
Gasoline Range Hydrocarbons	5,200
Type	Mixture of gasoline/weathered gasoline and other gasoline range hydrocarbon organics that do not match a gasoline pattern

After the flashes were observed, the City ceased the grinding operation and placed a concrete patch in the area where the asphalt grinding occurred. The location of the concrete patch (recently removed as part of a temporary pavement improvement project) is shown on Figures 2a and 3. To further assess the possible source of petroleum hydrocarbons beneath the roadway, shallow aquifer monitoring well MW-5S[2] was sampled. The results were compared to the results available for this well since 1993 that indicated no significant recent changes to groundwater concentrations had occurred.

[2] Also designated MW-USO-5S. In the early 1990s a crude oil release occurred from a ruptured pipeline in the area of a former log-sort yard located on the northwest side of E. 19th St. Well MW-5S was installed in October 1993 to monitor petroleum constituent migration from the release area and the effects of cleanup.

In November 2011 at the request of Ecology, DOF (2011) prepared a "*Site Investigation Work Plan*" (Work Plan) for USOR to assess the presence of gasoline range hydrocarbons beneath a portion of the Port of Tacoma Road located generally between Lincoln and Maxwell Avenues (1920 Port of Tacoma Road). Ecology and USOR negotiated Agreed Order No. DE8914 to prepare a draft RI/FS that reports the findings of the investigation and presents options for remediation of the release, including cleanup of contaminated soils and groundwater. The Work Plan was approved and included as Exhibit C of the Agreed Order.

The results of the site investigation field sampling (primarily push-probes P1 to P14) completed in May 2012 were documented in a "*Site Characterization Report*" prepared by DOF (2013a). The report presents the results of soil testing completed through the end of 2012 and identified a preliminary remedial area. A focused Feasibility Study (FS) was prepared based on the preliminary remedial area (DOF 2013b). The FS identified and evaluated a number of remedial alternatives. The proposed remedy was excavation of contaminated soil with off-site disposal.

While the Site Characterization Report provided sufficient information for completion of a focused FS, additional design-level data was required to complete the remedial plan. Recommendations for additional testing and soil cleanup (DOF 2014) were submitted to Ecology in January 2014 and field sampling was completed in July and October 2014 (push-probes P15 to P23, installation of monitoring wells MW-R1 and MW-R2, assessment of groundwater flow directions and groundwater sampling and analysis). The results of this testing are documented in this Interim Action Plan.

Throughout the site evaluation and remedy selection process it was recognized that remediation of the contaminated soil would need to be coordinated with the planned repaving of the heavily used Port of Tacoma roadway. The roadway provides access to a number of large container terminals that front on the Blair and Sitcum Waterways and traffic control is a major consideration that needs to be addressed as part of the remediation and repaving projects as well as maintaining access to the Washington United Terminal (WUT) during operating hours.

In November 2014, the City acquired the balance of their funding to complete the re-paving project. A meeting was held on December 11, 2014 to continue coordination of the project and begin to integrate the two designs. Representatives of the City, Ecology and USOR attended the meeting. The City is planning on putting the project out to bid in the first quarter of 2015. Tentative project planning has the soil remediation scheduled for July/August 2015.

III. SITE LAYOUT

The project area, for remedial purposes, lies beneath approximately 320 feet (140 to 180 feet on either side of the former pipeline alignment of the heavily used Port of Tacoma Road (Figure 2a). The paved roadway is approximately 60 feet wide, composed of four traffic lanes and a central turn lane. The entrance to the Washington United Terminal (WUT) is present on the northeast side of the roadway. Container trucks are staged in a paved area on the west side of the roadway (former Cascade No. 2 log sort yard). Truck traffic across the roadway to the terminal entrance is controlled by a traffic light.

The roadway surface consists of asphalt. A concrete patch was formerly located in the northbound traffic lane (Figure 2a) but was removed in the fall of 2014 as part of a temporary roadway repair project.

Four utility lines lie beneath the roadway at the locations shown on Figure 3. The lines include a water line, a 12-inch diameter sanitary sewer line, and a 30" diameter stormwater sewer line beneath the north traffic lanes and a 6-inch high pressure gas line that lies beneath the southbound lanes.

Five abandoned USOR pipelines lie beneath the roadway at approximate Sta. 79+40 to +45 (Figures 2a, 2b and 3). Information on existing and abandoned pipelines is presented on Figure 2c. Pipe diameters and bottom elevations for the abandoned pipelines are summarized below and on Figure 2c.

Abandoned Pipeline Information

Project Type	Pipeline Diameter (inches)	Outer Casing Diameter (inches)	Outer Casing Bottom Elevation (feet)(a)
Jet Fuel	10	14	19.18 (lowest casing)
Fuel Oil	8	12	19.8 (est.)
Gasoline	8	12	19.8 (est.)
Gasoline	8	12	19.9 (est.)
Crude Oil	16	20	21.52 (highest casing)

Note: (a) – USOR temporary bench mark datum – see Figure 2b.

IV. HYDROGEOLOGY

A. GEOLOGY

The locations of push-probes, monitoring wells and other sample locations are shown on Figure 3. Horizontal coordinates for probes (completed in 2012 and 2014) and wells are presented in Appendix A. The logs of push-probes (Appendix B) and monitoring wells (Appendix C) completed in and adjacent to the project area indicate the following geologic sequence. The subsurface conditions are illustrated on section profiles presented as Figures 7a to 7d and Figures 8a to 8d. Section profile trends are shown on Figure 4b.

- **Road Surface Materials**. Six to eight inches of asphalt concrete overlies six to eighteen inches of crushed rock. At most locations the crushed rock is approximately six to twelve inches thick and the combined pavement section thickness ranges from twelve to eighteen inches. Somewhat thicker pavement sections were encountered at push-probe locations P8 and P19 (2-feet thick).

- **Fine to Medium Sand**. Lies immediately below the road pavement section to approximate depths of eight to nine feet below ground surface (bgs). The unit is approximately seven feet thick and is generally described as moist to wet, gray, fine to medium sand with a trace of gravel. A gravelly sand was encountered in the upper portion of the unit at location P17. The

unit appears to be composed predominately of dredge fill material placed over the original tidal flat deposits. The water saturated portions of this unit is generally referred to as the Upper Aquifer.

- **Silt**. A fine grained silt layer underlies the fine to medium sand layer and forms the bottom of the Upper Aquifer at most locations. The unit is composed of wet, gray to brown, clayey silt to organic silt with fibrous organics and marsh grass in places. The unit was encountered at depths of approximately eight to ten feet bgs and is at least two feet thick at most locations. The unit appears thinner (0.3 feet at P17) or absent at locations P8 and P18.

B. GROUNDWATER LEVELS AND FLOW DIRECTIONS

Water levels fluctuate with seasonal precipitation. Typically water levels are highest during the end of the wetter season (March/April) and deepest towards the end of the drier season (September/October). Relatively recent water level measurements made in existing project area monitoring wells are summarized in the following table. Depths to the water table measured below the flush-to-ground monument rims ranged between approximately 5.1 and 6.7 feet.

Depth to Water Table (feet below ground surface – monument rim)

Well Designation	12-20-10 (a)	4-23-11(a)	11-1-14
MW-USO-3S	na	na	5.1
MW-USO-5S	4.8	4.2	5.3
MW-USO-6S	na	na	5.6
MW-USO-R1	na	na	6.7
MW-USO-R2	na	na	6.3

Notes: (a) – DOF 2011a; na – not available

Water level measurements made on November 1, 2014 were converted to elevations to estimate Upper Aquifer groundwater flow directions. Water level elevations are summarized in the following table:

Water Table Elevations – November 1, 2014

Well Designation	Depth to Water (ft. TOC)	TOC Elevation (ft. NGVD88)	Water Level Elevation (ft. NGVD88)
MW-USO-3S	4.96	13.92	8.96
MW-USO-5S	4.85	13.23	8.38
MW-USO-6S	5.30	13.90	8.60
MW-USO-R1	6.37	13.97	7.60
MW-USO-R2	5.91	14.07	8.16

The water table elevations were plotted and contoured to estimate the groundwater flow direction beneath the project area as shown on Figure 9. The data indicate that groundwater flows in an

easterly direction within the Upper Aquifer generally towards the Blair Waterway. The interpreted flow direction is consistent with the project location being located on the western flank of the waterway (Figure 1) and earlier interpretations made in the 1990s (DOF 2000).

V. SUMMARY OF SOIL AND GROUNDWATER ANALYTICAL DATA

Soil analytical data (discussed below) indicates that the vast majority of contaminated soils are present beneath the roadway in the "*Remedial Core Area*" as illustrated on Figures 4a and 4b. Soils containing the highest concentrations of gasoline constituents lie within an approximate depth of six to seven feet of existing grade.

A. GASOLINE CONSTITUENTS IN SOIL

Soil analytical data collected in 2012 and 2014 are summarized in Table 3. Gasoline-range hydrocarbons (TPH-G) and benzene concentrations were used to define the remedial area. Their respective concentrations are plotted by depth below ground surface on Figures 5a to 5e (TPH-G) and Figures 6a to 6e (benzene). Concentration profiles are presented in Figures 7a to 7d (TPH-G) and Figures 8a to 8d (benzene). Profile trends are shown on Figure 4b. Laboratory data sheets are included in Appendix D.

The concentration ranges by depth within the remedial core area are summarized in the following table.

Range of TPH-G and Benzene Concentrations in Remedial Core Area (a)

Depth Range (feet bgs)	Range of TPH-G Concentrations (mg/kg)	Range of Benzene Concentrations (ug/kg)
1 to 2	<5.3 to 6,000	<34 to 4,100
3 to 4	<14 to 12,000	<26 to 21,000
5 to 6	51 to 12,000	<17 to 14,000
7 to 8	16 to 33	800 to 1,500
9 to 10	<11 to 44	<28 to 16,000

Note: (a) - The lower end of the range is on the outside edges and bottom of the remedial core – typically beneath the road way.

The bulk of the gasoline constituents are located within a depth of six to seven feet of ground surface within the identified remedial core area. Gasoline-range constituent concentrations decline dramatically below this depth as shown on Figures 5d and 5e. Similarly, most of the benzene is also present in soil above a depth of six to seven feet, however, relatively high concentrations of benzene were detected in soil samples collected between depths of approximately seven and 9.5 feet in a smaller area as shown on Figures 6d and 6e. A benzene concentration of 16,000 ug/kg was detected within the top six-inches of the silt aquitard. The sample collected immediately below this depth interval had a benzene concentration of only 460 ug/kg.

TPH-G concentrations within the upper portion of the silt aquitard are very low (less than 50 mg/kg) when compared to the associated benzene concentrations. The data suggest the higher

benzene concentrations were likely caused by dissolved phase migration into the top of the aquitard.

The concentration ranges by depth outside of the remedial core area are summarized in the following table.

Range of TPH-G and Benzene Concentrations Outside of Remedial Core Area

Depth Range (feet bgs)	Range of TPH-G Concentrations (mg/kg)	Range of Benzene Concentrations (ug/kg)
1 to 2	<5.3 to 96	<17 to 17
3 to 4	<14 to 50	<15 to 360 (97 data)
5 to 6	<17 to 1910 (97 data)	<17 to 260 (97 data)
7 to 8	<5.1 to 260	<17 to 680
9 to 10 (top silt)	<11 to 42	<28 to 970

B. GASOLINE CONSTITUENTS IN GROUNDWATER

Groundwater samples were collected from two push-probes (July 2014) and from four monitoring wells (November 2014). The groundwater analytical data are summarized in Table 4 and presented on Figure 9. Laboratory data sheets are presented in Appendix D.

1. PUSH-PROBE TEST RESULTS

On July 12, 2014, two push-probe groundwater grab samples were obtained from beneath the roadway on the north and south ends of the remedial core area. Upper Aquifer groundwater was collected from locations P15 and P17 (Figure 9). Temporary screens were set between eight to twelve feet bgs and samples were pumped directly into sample containers using a peristaltic pump. Field measurements were made for pH, electrical conductivity and temperature. Sample handling was documented using standard chain-of-custody procedures.

The samples were delivered to Analytical Resources Inc. (ARI) for analysis of gasoline-range hydrocarbons and BTEX. The results are summarized in Table 4 and on Figure 9. Gasoline-range hydrocarbons (RL[3]=0.25 mg/l) and toluene (RL=0.5 ug/l) were not detected in either push-probe sample. Only benzene (1.5 ug/l) was detected in the sample from P17 located at the north end of the remedial core area. Benzene (20 ug/l), ethylbenzene (1.6 ug/l) and total xylenes (2.6 ug/l) were detected in the sample from P15 located near the south end of the remedial core area.

2. MONITORING WELL TEST RESULTS

On November 1, 2014 four groundwater samples were obtained from monitoring wells MW-5S, MW-6S, MW-R1 and MW-R2 (Figure 9). Monitoring wells MW-5S and MW-6S are generally located on the upgradient of the release area while wells MW-R1 and MW-R2 are located on the downgradient side. The wells are screened in the Upper Aquifer.

[3] RL – Reporting Limit

Groundwater samples were obtained using a peristaltic pump. Approximately three casing volumes were removed from the wells prior to sampling. Field measurements were made for pH, electrical conductivity, temperature, dissolved oxygen, oxidation-reduction potential, ferrous iron (Hach kit), and turbidity. Sample handling was documented using standard chain-of-custody procedures.

The samples were analyzed by ARI for analysis of gasoline-range hydrocarbons and BTEX. The results are summarized in Table 4 and on Figure 9. Gasoline-range hydrocarbons (RL=0.25 mg/l), toluene (RL=0.5 ug/l), ethylbenzene (RL=0.5 ug/l) and xylenes (RL=1.0 ug/l) were not detected in samples from wells MW-6S or MW-R1. Gasoline range hydrocarbons were detected in the sample from MW-5S at a concentration of 0.6 mg/l along with relatively low concentrations of C8-C10 (54 ug/l) and C10-C12 (150 ug/l) aromatic hydrocarbons and C6-C8 (64 ug/l) aliphatic hydrocarbons, while BTEX were not detected.

The highest concentrations were detected in the sample from MW-R2 that lies downgradient of soil containing relatively high concentrations of gasoline range hydrocarbons. Gasoline-range hydrocarbons (3.0 mg/l), benzene (980 ug/l), toluene (16 ug/l), ethylbenzene (28 ug/l) and total xylenes (40.3 ug/l) were detected. C6-C8 aliphatic hydrocarbons were detected at a concentration of 1,700 ug/l. Available data indicate that dissolved gasoline constituents are migrating from the remedial core area in groundwater.

3. LONG TERM MONITORING DATA FROM MW-5S

Long term (since 1993) groundwater monitoring data are available for well MW-5S that was installed to monitor cleanup of the crude oil spill that occurred on the adjacent log sort yard in the early 1990s. The remedy was similar to that being proposed for soil beneath the Port of Tacoma roadway; soil removal (source control) with MNA. MW-5S is located approximately 100 feet downgradient of the crude oil release area.

Concentrations of gasoline- and diesel-range hydrocarbons and BTEX are plotted on Figure 10. As illustrated on Figure 10, initially groundwater concentrations were relatively high and well above the Model Toxics Control Act (MTCA) Method A cleanup levels (CULs – Table 720-1 in WAC 173-340-900). After the source materials were remediated (fall 1993) in the release area, groundwater concentrations substantially declined within a period of three to five years to below CULs. The overall decline in groundwater concentrations are summarized below.

Comparisons of MW-5S Groundwater Concentrations

Constituent	Highest Post-Remedy Concentration (4/97)	Concentrations on Nov. 1, 2014
Gasoline Range Hydrocarbons	13.8 mg/l	0.6 mg/l
Diesel Range Hydrocarbons	4.4 mg/l (12/95)(a)	0.29 mg/l (4/11)(a)
Benzene	4,000 ug/l	<0.5 ug/l
Toluene	150 ug/l	<0.5 ug/l
Ethylbenzene	1,300 ug/l	<0.5 ug/l
Total Xylenes	1,000 ug/l	<0.5 ug/l

Notes: (a) – Not analyzed in November 2014

VI. CLEANUP AND REMEDIATION LEVELS

A. CLEANUP LEVELS

Cleanup levels were developed for the following receptors and exposure pathways:

- Site workers via the soil contact pathway (e.g. repair of buried utilities),
- Surface water receptors via the groundwater to surface water discharge pathway,
- Vapor issues associated with migration into adjacent occupied structures. Addressing this issue will also substantially mitigate vapor issues associated with road and buried utility repairs.

Possible CULs were obtained from Ecology's Cleanup Levels and Risk Calculation (CLARC) database available on Ecology's web site and vapor intrusion guidance (Table B-1 in Ecology 2009). Proposed CULs by media are listed below and are further discussed in DOF (2014).

Proposed Cleanup Levels

Constituent	Soil (mg/kg)(a)	Groundwater (ug/l)	Basis of Groundwater CUL
TPH-G	na	See Note b	Vapor intrusion
Benzene	18.2	23	Surface water via groundwater discharge
Toluene	6400	15000	Surface water via groundwater discharge
Ethylbenzene	8000	2100	Surface water via groundwater discharge
Total Xylenes	16000	670	Vapor intrusion

Notes: (a) Based on Method B soil contact CULs for unrestricted site uses.
(b) VPH (EC5-6 aliphatics + EC6-8 aliphatics fraction) = 310 ug/l
VPH (EC8-10 aliphatics + EC10-12 aliphatics fraction) = 6.4 ug/l
VPH (EC8-10 aromatics + EC10-12 arom0atics fraction) = 2,800 ug/l

B. REMEDIATION LEVEL

A Remediation Level (REL) is a concentration (or other method of identification) of a hazardous substance in soil, water, air or sediment above which a particular cleanup action component will be required as part of a cleanup action component (WAC 173-340-200). A REL of 1,000 mg/kg TPH-G is proposed for soil excavation to supplement the soil contact CULs. The REL is based on the MTCA residual saturation screening level for weathered gasoline in Table 747-5 (WAC 173-340-900). As discussed in DOF (2014), using a REL to guide soil remediation will substantially reduce gasoline constituent concentrations in soil and increase the effectiveness of MNA as discussed below.

VII. DESCRIPTION OF PROPOSED INTERIM ACTION

The overall proposed interim action consists of excavation with off-site disposal of the most contaminated soil followed by monitored natural attenuation (MNA) (DOF 2014). Post interim action weathered-residuals would be addressed by MNA. Performance monitoring would be completed in monitoring wells located on the downgradient side of the interim action area after soil removal is completed.

A. INTERIM ACTION OBJECTIVES

The objectives of the interim action are as follows:

- Remove contaminated soil from subsurface utility corridors to below MTCA industrial soil contact CULs prior to repaving of the roadway.
- Reduce the mass of gasoline constituents in soil to reduce leaching into groundwater and increase the effectiveness of MNA.
- Complete performance groundwater monitoring to assess the effectiveness of the interim action in meeting the stated objectives and to assess whether additional remedial actions are necessary as part of final cleanup.

B. SOIL EXCAVATION, DISPOSAL AND BACKFILLING

Soil would be removed from depths of three to 9.5 feet in the remedial core area illustrated on Figure 4a. Some additional soil would be removed from the remedial transition area necessary to maintain side slopes as shown on the concentration profiles (Figures 7a to 8d). Soil would be disposed at a Subtitle D landfill. Compacted sand and gravel, as specified by the City of Tacoma would be used to backfill the excavation and provide a sub-base to allow roadway repaving and replacement of subsurface utilities (waterline and electrical wiring), sidewalks and other facilities. It is estimated that approximately 5,500 to 6,000 cubic yards would be excavated and disposed off-site as summarized below. This volume weighs between 8,800 and 9,600 tons assuming a conversion factor of 1.6 tons per cubic yard.

Estimated Remedial Quantities

Area (by excavation depth in feet)	Estimated Volume (cubic yards)	Estimated Weight (tons)
0 to 3 feet	100	160
0 to 5 feet	200	320
0 to 7 feet	4,000	6,400
7 to 8 feet	150	240
8 to 9.5 feet	100	160
Transition Area	1,000	1,600
Total	**5,550**	**8,880**

C. IMPLEMENTATION OF INTERIM ACTION

It is anticipated that the interim action will be completed during the drier portion of the year (July/August) during 2015. The interim action will involve preparing engineered plans and specifications as required by the City of Tacoma and necessary for the selection of a remedial contractor, and include the following tasks:

- **Coordination with City of Tacoma Road Project.** USOR will continue to coordinate the remedial work with the City road repaving project. A major portion of this coordination will be with regard to traffic control. It is anticipated the remedial work would be accomplished using a similar traffic control plan as that developed by the City. USOR and the City are working on an agreement to guide the interim action with regard to replacement of facilities such as sidewalks etc.

- **Coordination with Adjacent Property Owners.** Close coordination will also be necessary with the adjacent property owners including the Wattles Company (owner of the property on the west side of the road) and the Port of Tacoma (owner of the properties on the north and west sides of the road). Of particular concern is access to the WUT container terminal. It is likely remedial work adjacent to the WUT entrance will need to be done during a weekend and post-remedial access (prior to repaving) will require temporary paving be placed.

- **Contractor Selection and Design**. USOR will select a contractor to complete the work. Once a contractor is selected, additional design work will be necessary especially with regard to the means and methods to protect the buried utilities and adjacent facilities. A civil/geotechnical engineer will be retained to work with the remedial design team.

- **Utilities.** Sanitary and storm sewers, a waterline, a high pressure natural gas line, and electrical lines (serving the traffic light and light poles) underlie the interim action area.
    - The sanitary and storm sewer trunk lines lie below the depth of remedial excavation. However, there are two manholes that will need to be protected and a number of catch basins with piping that will likely need to be repaired/replaced after the remedial work is completed.
    - A waterline runs beneath the north traffic lane. USOR understands that the City is intending on replacing the line. Preliminary discussions indicate that the line will be capped on either end of the interim action area and will be removed during excavation. After the interim action is completed and before repaving, the City will install the new line.
    - A high pressure gas line underlies the south bound traffic lane. Coordination with Puget Sound Energy (PSE) has begun. It is likely they will have representatives on site during the interim action to ensure the line is protected.
    - Overhead electrical transmission lines parallel to and on the western side of the remedial area. Stabilizing support poles and shielding of the overhead power lines may be necessary.

- **Permitting and Approvals**. Approval of this Interim Action and Monitoring Plan will be required from Ecology. Municipal and state permits are not required because the interim

action is being done under an Ecology agreed order. However, the substantive requirements of such permits need to be met. Three municipal permits/approved plans are generally required including:

- Excavation and Grading Plan (City of Tacoma)
- Stormwater Pollution Prevention Plan (City of Tacoma)
- Traffic Control Plan (City of Tacoma)

Close coordination between the remedial and roadway design teams will ensure the City requirements are met.

The project will likely be designated a no-discharge site so a formal storm water construction permit will likely not be required. In any case, a Temporary Erosion and Sediment Control (TESC) plan will be prepared to ensure any stormwater does not leave the project area.

As noted above, soil will be disposed at a Subtitle D disposal facility. Facility disposal authorization will be required. If disposal is at the LRI Landfill located in Pierce County, Washington, a disposal authorization will need to be obtained from the Tacoma-Pierce County Health Department.

- **Health and Safety Plan.** The existing DOF health and safety plan will be modified for work completed by DOF staff. Prior to the start of remedial excavation, the selected contractor will be required to prepare a health and safety plan. Contractor field staff will have the appropriate training (40 hours with annual refreshers) to complete the remedial portion of the project.

- **Utility Locates**. Utility checks will be completed in accordance with local ordnance. The City and PSE will be notified of the remedial schedule to coordinate protection of the buried utilities.

- **Project Mobilization and Staging Area**. A staging area will be set-up in the project area to accommodate contractor parking and equipment, materials, sanitary facilities, import material stockpiles, and bulk storage tanks, as needed. As part of the site preparations, erosion control measures outlined in the TESC plan will be installed. Preliminary planning indicates that excavated soils will be staged in the paved USOR oily soil containment cell where permitted stormwater controls are already in place.

- **Mark and Document Excavation Areas**. The remedial excavation area will be marked in accordance with the plans and specifications. As excavation proceeds, the conditions encountered within the excavation will be described, the final excavation depth will be recorded, and the outline of each excavation area will be documented with a GPS by DOF.

- **Complete Facilities Demolition**. Surface facilities will be removed as needed. Asphalt paving will be recycled as possible. Paving containing gasoline constituents will be disposed of with contaminated soil.

- **Soil Excavation and Dewatering**. Soil will be excavated to the target depths. Some dewatering may be required to maintain side slopes and allow placement of compacted fill. Any pumped groundwater will be containerized in bulk storage tanks and/or tanker trucks and be hauled to USORs facilities for treatment.

- **Excavation Backfilling**. The remedial excavations will be backfilled with clean imported structural fill as required by the City (typically pit run sand and gravel). Before importing backfill to the site, the contractor will identify the source of the backfill and provide a representative sample to USOR for possible chemical testing. Backfill will be compacted to provide a stable surface for placement of the roadway pavement section. USOR will work with the City to identify final grades and compaction requirements. Soil amendments will be added along with the backfill to enhance aerobic biodegradation and natural attenuation of weathered gasoline residues.

- **Off-Site Disposal of Construction Materials**. Materials designated for off-site disposal include the following:

    - Demolition debris and paving (disposal in Subtitle D facility)
    - Uncontaminated asphalt (recycling facility – to be determined)
    - Targeted contaminated soils (disposal in Subtitle D facility)
    - Excavation water (treated in USOR system)
    - Used Personal Protective Equipment (PPE) (disposal in Subtitle D facility), and
    - Decontamination water (treated in USOR system).

  USOR will notify Ecology of the specific facilities where material will be transported for treatment, recycling and/or disposal. The contactor will provide USOR with trip tickets, manifests and/or disposal certificates to document disposal locations and quantities.

- **Equipment Decontamination**. Equipment that comes in contact with contaminated material will be decontaminated when switching between handling contaminated and uncontaminated material and prior to leaving the site. Decontamination water will be collected, placed in appropriate containers and be disposed off-site.

- **Interim Action Report**. After the soil remediation work is completed, an interim action construction report will be prepared. The report will include the following:

    - Narrative description of the remedial work.
    - Geo-referenced figure showing the extent and depth of remedial excavation. Horizontal coordinates of the corners of the excavated areas will be included.
    - Summary of the results of field observations and information soil sample results (described below), locations and depths.
    - Laboratory data sheets and chain-of-custody documentation.
    - Photo-documentation of the removal activity and backfill placement.
    - Off-site disposal volumes and documentation from disposal facilities.

  A report draft will be submitted to Ecology for review and comment. Once any issues are resolved, the report will be finalized. Two hard-copies and one electronic file (pdf format) copy will be submitted to Ecology.

D. SUBMITTALS TO ECOLOGY

Prior to the start of construction the following information will be submitted to Ecology:

- Project team who will complete the work (contractor, analytical laboratory, etc.)
- Health and Safety Plans
- Permit documentation
- Disposal facilities
- Backfill sources
- Construction schedule.

After construction is complete.

- Interim Action Construction Report
- Confirmation that post-remediation soil sampling data representative of remaining soils has been uploaded to Ecology's EIM data base.

VIII. INTERIM ACTION SOIL SAMPLING/ANALYSIS

Consistent with discussions with Ecology, confirmational monitoring will not be conducted in the excavation bottom and north/south ends of the interim action area. Previous data indicates that most of the soil contamination lies beneath the roadway and has not migrated laterally along the sides of the roadway. The extent of lateral migration will be assessed during the interim action by visual observation, measuring VOC vapor concentrations using a PID, and analyzing selected transition area sidewall soil samples (herein termed "*information samples*") for gasoline constituents. Specific samples to analyze will be based on the field observations to support the field observations and measurements. It is anticipated that soil samples would be analyzed on approximately 50 feet intervals on each side of the roadway; twelve to fifteen samples would be analyzed.

IX. POST INTERIM ACTION PERFORMANCE MONITORING

A. REDUCTIONS IN GASOLINE CONSTITUENT CONCENTRATIONS IN SOIL

Based on available data, implementation of the interim action will remove the bulk (over 90%) of gasoline range hydrocarbon concentrations from soil in the project area. Maximum soil concentrations are estimated to decline between 94 and 99 percent and soil concentrations will be below industrial soil contact CULs as summarized in the following table. Estimated average soil concentrations in the project area should decline an estimated 94 to 99 percent (see table below).

Interim Action Reduction in Maximum Soil Concentrations

Constituent	Pre-IA Maximum Conc.	Post-IA Maximum Conc. – Project Area	Percent Reduction	Unrestricted Site Use Soil Contact Cleanup Level (Method B)
TPH-G (mg/kg)	12000	760	93.7	na
Benzene (ug/kg)	21000	970	95.4	18200
Toluene (ug/kg)	230000	240	99.9	6400000
Ethlybenzene (ug/kg)	98000	1200	98.8	8000000
Total Xylenes (ug/kg)	740000	3670	99.5	16000000

Interim Action Reduction in Average Soil Concentrations

Constituent	Pre-IA Average Conc.	Post-IA Average Conc. – Project Area	Percent Reduction
TPH-G (mg/kg)	892	45	95.0
Benzene (ug/kg)	1074	70	93.5
Toluene (ug/kg)	5316	42	99.2
Ethlybenzene (ug/kg)	6324	83	98.7
Total Xylenes (ug/kg)	28245	146	99.5

B. POST-INTERIM ACTION GROUNDWATER MONITORING PLAN

As noted above and on Figure 9, gasoline range hydrocarbons appear to be leaching from soil and migrating in groundwater based on data from monitoring well MW-R2 located downgradient of the remedial core. TPH-G and benzene concentrations currently exceed surface water CULs.

Based on data from MW-5S and our experience, removing over 90% of the source of groundwater constituents should have a beneficial and substantial effect on groundwater quality downgradient of the remedial core area. The magnitude of the removal should also increase the effectiveness of MNA to the point where groundwater CULs are achieved beneath and downgradient of the source area.

To assess the effects of the interim action on groundwater concentrations, the following monitoring plan will be implemented:

- One additional Upper Aquifer monitoring well will be installed downgradient of the remedial core area. The well will be installed near the location of push-probe P9E. The

final location will need to be coordinated with the Port of Tacoma. The well would be installed in a similar manner as MW-R1 and MW-R2.

- Monitoring will be conducted over a three to five year period. Quarterly monitoring will be conducted for the first two years. Depending on the results, the monitoring schedule may be revised after two years. Revisions to the monitoring schedule would need Ecology approval.

- During each monitoring event, water levels would be measured in six wells to assess changes in groundwater flow directions. The wells would include MW-3S, MW-5S, MW-6S, MW-R1, MW-R2 and the newly installed well. A groundwater contour map similar to Figure 9 would be prepared.

- Groundwater samples would be collected from four wells including MW-5S, MW-R1, MW-R2 and the newly installed well. Samples would be collected using low flow sampling procedures and field measurements for pH, electrical conductivity, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), ferrous iron and turbidity would be made. Laboratory analyses would be conducted for the following constituents using the indicated methods:

    - TPH-G (GC-MS – SW8260C)
    - Benzene, toluene, ethylbenzene, total xylenes (GC-MS – SW8260C)

- The results of the monitoring would be reported to Ecology on an annual basis. The report would include:
    - Site plan showing well locations in relation to the interim action area.
    - Narrative of the sampling procedures.
    - QA/QC review.
    - Summary of the field and laboratory data.
    - Laboratory data sheets.
    - Concentration plots and analysis of trends.

X. SCHEDULE FOR INTERIM ACTION

A schedule for the interim action is currently being developed in coordination with the City of Tacoma roadway project. Currently it is anticipated that the interim action would be completed in July and August of 2015. An updated schedule will be submitted to Ecology as the project design develops and is finalized.

XI. FINAL CLEANUP

Data collected as part of the performance groundwater monitoring program will be used to assess the need for any additional soil cleanup as part of the final remedial action. Groundwater data will

be compared to CULs consistent with the MTCA "*empirical demonstration*" method [WAC 173-340-747(3)(f)] to assess soil concentrations for protection of groundwater.

XII. REFERENCES

DOF (Dalton, Olmsted & Fuglevand, Inc.), 1997a, Preliminary Characterization of Soil Quality Conditions Adjacent to U.S. Oil & Refinery Pipelines, Port of Tacoma Road, prepared for U.S. Oil & Refining Co., March 18, 1997.

DOF, 1997b, Observations of Roadway Excavations by City of Tacoma to Repair Waterline Leaks in Vicinity of U.S. Oil & Refining Pipelines, Port of Tacoma Road, prepared for U.S. Oil & Refining Co., June 20, 1997.

DOF, 1998a, Independent Remedial Action Report, Cleanup of Impacted Soils Associated with Refinery to Dock Pipeline Corridor Improvements, U.S. Oil & Refining Co., Tacoma, Washington, prepared for U.S. Oil & Refining Co., April 17, 1998.

DOF, 1998b, Excavation and Confirmation Sampling on Port of Tacoma Property Adjacent to U.S. Oil & Refining Pipelines and Port of Tacoma Road Right of Way, June 29, 1998.

DOF, 2000, Post-Remediation Ground-Water Sampling Results, November 1993 to April 2000, N.W. Portion of Cascade Timber Log Sort Yard No. 3, Port of Tacoma, Washington, prepared for U.S. Oil & Refining Co., May 2000.

DOF, 2011a, Groundwater Quality Trends, Monitoring Well USO-05S, Technical Memorandum to Ty Gaub (U.S. Oil & Refining Co.), May 3, 2011

DOF, 2011b, Site Investigation Work Plan, 1920 Port of Tacoma Road, Tacoma, Washington, prepared for U.S. Oil & Refining Co., Agency Draft: November 16, 2011 (Exhibit C to Agreed Order DE 8914).

DOF, 2013a, Site Characterization Report, 1920 Port of Tacoma Road, Tacoma, Washington, prepared for U.S. Oil & Refining Co., March 2013.

DOF, 2013b, Focused FS, 1920 Port of Tacoma Road, Tacoma, Washington, Facility Site ID #30005 prepared for U.S. Oil & Refining Co., Agency Review Draft: April 1, 2013.

DOF, 2014, Soil Cleanup and Recommendations for Additional Testing, 1920 Port of Tacoma Road, Tacoma, Washington, prepared for U.S. Oil & Refining Co., Agency Review Draft: January 22, 2014.

XIII. CLOSING

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely

for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Dalton, Olmsted & Fuglevand, Inc.

Matthew G. Dalton
Sr. Consulting Hydrogeologist.

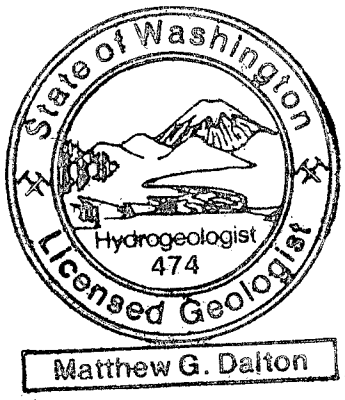


TABLE 1 - Soil Analytical Data - January 1997

TABLE 3. SUMMARY OF PROBE AND TEST PIT SOIL SAMPLES AND ANALYTICAL RESULTS

U. S. Oil
Port of Tacoma Road, Tacoma, Washington

PROBE/ TEST PIT NO.	Spl.No.	Spl Depth (Ft.) From - To	Date Time	SOIL TYPE	Observed Odor - Sheen	Gasoline-Range Hydrocarbons and BTEX (WTPH-G & EPA 8020A) (mg/kg)					Diesel and Heavy Oil RangeHydrocarbons (WTPH-DX) (mg/kg)	
						Gasoline(C-7-C12)	Benzene	Toluene	Ethylbenzene	Xylenes	Diesel (C-12-24)	Heavy Oil (C24-C40)
P1W	-	0-2	1/23/97 093	SAND	None - None	-	-	-	-	-	-	-
	P-1W(2-4)	2-4	1020	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
	P-1W(4-6)	4-6	1025	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
P2W	-	0-2	0910	SAND	None - None	-	-	-	-	-	-	-
	-	2-4	0920	SAND	None - None	-	-	-	-	-	-	-
	P-2W(4-6)	4-6	0925	SAND	Slight - None	**8.3**	<0.05	<0.05	<0.05	<0.10	**21**	<25
	P-2W(6-8)	6-8	0930	SAND	Slight - None	<5.0	<0.05	<0.05	**0.78**	**0.19**	<10	<25
P3W	-	0-2	0845	SAND	None - None	-	-	-	-	-	-	-
	P-3W(2-4)	2-4	0846	SAND	Yes - Yes	**1,640**	**4.1**	**2.6**	**12**	**40**	**119**	**101**
	P-3W(4-6)	4-6	0850	SAND	Yes - Yes	**1,870**	**5.9**	**3.2**	**16**	**21**	**260**	**157**
	P-3W(6-8)	6-8	0852	SAND	Slight - None	**8.1**	**0.09**	<0.05	**0.06**	<0.1	<10	<25
P4W	-	0-2	1000	SAND	None - None	-	-	-	-	-	-	-
	P-4W(2-4)	2-4	1002	SAND	Yes - None	**39**	**0.36**	<0.05	**0.46**	**0.64**	**45**	**29**
	P-4W(4-6)	4-6	1005	SAND	Yes - Yes	**497**	**0.26**	**0.26**	**0.73**	**2.0**	**53**	<25
	P-4W(6-8)	6-8	1010	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
P5W	-	0-2	1015	SAND	None - None	-	-	-	-	-	-	-
	-	2-4	1020	SAND	None - None	-	-	-	-	-	-	-
	P-5W(4-6)	4-6	1025	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	**25**	<25
	-	6-8	1027	SAND\	None - None	-	-	-	-	-	-	-
P6W	-	0-2	1050	SAND	None - None	-	-	-	-	-	-	-
	P-6W(4-6)	2-4	1052	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
	-	4-6	1055	SAND	None - None	-	-	-	-	-	-	-
P7E	-	0-2	1110	SAND	None - None	-	-	-	-	-	-	-
	-	2-4	1115	SAND	None - None	-	-	-	-	-	-	-
	P-7E(4-6)	4-6	1120	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
P8E	-	0-2	1110	SAND	None - None	-	-	-	-	-	-	-
	-	2-4	1115	SAND	None - None	-	-	-	-	-	-	-
	P-8E(4-6)	4-6	1120	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
P9E	-	0-2	1250	SAND	None - None	-	-	-	-	-	-	-
	P-9E(2-4)	2-4	1252	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	**57**	<25
	P-9E(4-6)	4-6	1320	SAND	Yes - Yes	**1,910**	<0.05	<0.05	**11**	**109**	**1,060**	**194**
	P-9E(6-8)	6-8	1325	SAND	Slight - Slight	**15**	<0.05	<0.05	**0.07**	**0.74**	**11**	<25
P10E	-	0-2	1310	SAND	None - None	-	-	-	-	-	-	-
		2-4	1315	SAND	None - None	-	-	-	-	-	-	-
	P-10E(4-6)	4-6	1320	SAND	Yes - Yes	**7.9**	<0.05	<0.05	<0.05	<0.10	**80**	**40**
	P-10E(6-8)	6-8	1325	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	**27**	<25
P11E	-	0-2	1350	SAND	None - None	-	-	-	-	-	-	-
	P-11E(2-4)	2-4	1355	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
	P-11E(4-6)	4-6	1400	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
		6-8	1405	SAND	None - None	-	-	-	-	-	-	-

TABLE 3. SUMMARY OF PROBE AND TEST PIT SOIL SAMPLES AND ANALYTICAL RESULTS

U. S. Oil
Port of Tacoma Road, Tacoma, Washington

PROBE/ TEST PIT NO.	Spl.No.	Spl Depth (Ft.) From - To	Date Time	SOIL TYPE	Observed Odor - Sheen	Gasoline-Range Hydrocarbons and BTEX (WTPH-G & EPA 8020A) (mg/kg)					Diesel and Heavy Oil RangeHydrocarbons (WTPH-DX) (mg/kg)	
						Gasoline(C-7-C12)	Benzene	Toluene	Ethylbenzene	Xylenes	Diesel (C-12-24)	Heavy Oil (C24-C40)
TP-1	TP-1(0-4')	0-4	7/10/97 082	SAND	Mod - None	<5.0	<0.05	<0.05	<0.05	<0.10	**1050**	**578**
	TP-1(4-5')	4-5	0825	SAND	Mod-Light	<5.0	<0.05	<0.05	<0.05	<0.10	**47**	**45**
TP-2	TP-2(0-4')	0-4	0840	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	**37**	**39**
TP-3	TP-3(0-4')	0-4	0900	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	**112**	**93**
TP-4	TP-4(0-4')	0-4	0915	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
TP-5	TP-5(0-4')	0-4	0930	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
TP-6	TP-6(0-3.5')	0-3.5	0945	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25

TABLE 2 - Summary of New Pipeline Trench Data - November 2007

Port of Tacoma Road
Tacoma, Washington

Sample No.	Sample Date	Sample Depth (ft)	Observations		Material Type	TPH-G (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	m,p-Xylene (ug/kg)	o-Xylene (ug/kg)	Total Xylenes (ug/kg)
			Odor	Sheen								
Confirmation Samples Obtained in Pipeline Excavation												
RDS-20	11/4/07	(1)	None	None	Sand	<5.1	<13	<13	<13	<26	<13	<26
RDS-22	11/13/07	(1)	None	None	Sand	<5.0	<13	<13	<13	<26	<13	<26
RDS-23	11/28/07	(1)	None	None	Sand	<4.5	<11	<11	<11	<22	<11	<22
RDS-24	11/28/07	(1)	None	None	Sand	**6.4**	<11	<11	<11	<22	<11	<22
RDS-25	11/28/07	(1)	None	None	Sand	<4.8	<12	<12	<12	<24	<12	<24

Note: (1) - Sample obtained near bottom or edge of excavation
Source: DOF 2008

TABLE 3 - Summary of Push-Probe Soil Analytical Data

Port of Tacoma Road
Tacoma, Washington

Sample No.	Sample Date	Sample Depth (ft)	Material Type	PID (ppm)	ARI Group	Sheen	TPH-G (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	m,p-Xylene (ug/kg)	o-Xylene (ug/kg)	Total Xylenes (ug/kg)
P1-A	5/19/12	1-2	Sand	272	UV10	No	**2200**	**71**	**1100**	**9000**	**21000**	**1400**	**22400**
P1-B	5/19/12	3-4	Sand	381	UV10	No	**1500**	**26**	**730**	**7200**	**4600**	**1100**	**5700**
P1-C	5/19/12	5-6	Sand	177	UV10	No	**1100**	<15	**62**	**3700**	**1600**	**740**	**2340**
P1-D	5/19/12	7-8	Sand	107	UV10	No	<5.6	**27**	**14**	<14	<28	<14	<28
P1-E	5/19/12	9-10	Silt	2.1	UV10	No	**39**	**150**	**38**	**140**	**130**	<38	**130**
P2-A	5/19/12	1-2	Sand	3800	UV10	No	**1800**	**1300**	**200**	**13000**	**59000**	**1200**	**60200**
P2-B	5/19/12	3-4	Sand	>5000	UV10	No	**2000**	**810**	<270	**14000**	**77000**	**4200**	**81200**
P2-C	5/19/12	5-6	Sand	>5000	UV10	No	**3600**	**440**	**220**	**31000**	**160000**	**4800**	**164800**
P2-D	5/19/12	7-8	Sand	2760	UV10	No	**150**	**380**	**29**	**970**	**3400**	**270**	**3670**
P2-E	5/19/12	9-10	Silt	35	UV10	No	<24	<61	<61	<61	**220**	<61	**220**
P3-A	5/19/12	1-2	Sand	>5000	UV10	Yes	**6000**	**2400**	**860**	**37000**	**21000**	**2500**	**23500**
P3-B	5/19/12	3-4	Sand	3380	UV10	Yes	**4700**	**3100**	**800**	**33000**	**13000**	<70	**13000**
P3-C	5/19/12	5-6	Sand	4320	UV10	Yes	**2100**	**2800**	**290**	**15000**	<110	<53	<110
P3-D	5/19/12	7-8	Sand	15	UV10	Yes	**16**	**800**	**62**	**130**	**140**	**28**	**168**
P3-E	5/19/12	9-10	Silt	2	UV10	No	<20	<50	<50	<50	<99	<50	<99
P3A-A	10/11/14	1-2	Sand	200	ZE74	No	**96**	<31	<31	<31	<62	<31	<62
P3A-B	10/11/14	3-4	Sand	38	ZE74	No	**24**	<34	<34	<34	<67	<34	<67
P3A-C	10/11/14	5-6	Sand	7	ZE74	No	**18**	<35	<35	<35	<71	<35	<71
P3A-D	10/11/14	7-8	Sand	1	ZE74	No	<18	<35	<35	<35	<70	<35	<70
P3A-E	10/11/14	9-10	Silt	0.1	ZE74	-----	<43	<86	<86	<86	<170	<86	<170
P4-A	5/19/12	1-2	Sand	305	UV10	Yes	**5900**	**7900**	**83000**	**40000**	**290000**	**97000**	**387000**
P4-B	5/19/12	3-4	Sand	2430	UV10	Yes	**5800**	**3800**	**45000**	**35000**	**270000**	**88000**	**358000**
P4-C	5/19/12	5-6	Sand	336	UV10	Yes	**5100**	**11000**	**1000**	**40000**	**280000**	**52000**	**332000**
P4-D	5/19/12	7-8	Sand	222	UV10	Yes	**260**	<15	<15	**630**	<29	<15	<29
P4-E	5/19/12	9-10	Silt	51	UV10	No	**42**	<60	<60	<60	**180**	<60	**180**
P5-A	5/19/12	1-2	Sand	315	UV11	No	**1200**	<140	**990**	**3400**	**22000**	**5600**	**27600**
P5-B	5/19/12	3-4	Sand	2987	UV11	Yes	**2100**	**350**	**5800**	**10000**	**63000**	**18000**	**81000**
P5-C	5/19/12	5-6	Sand	183	UV11	Yes	**4200**	**4500**	**45000**	**32000**	**190000**	**64000**	**254000**
P5-D	5/19/12	7-8	Sand	27	UV11	No	**33**	**1500**	**48**	**150**	**180**	**27**	**207**
P5-E	5/19/12	9-10	Silt	9	UV11	No	<11	<28	**31**	<28	<55	<28	<55

TABLE 3 - Summary of Push-Probe Soil Analytical Data

Port of Tacoma Road
Tacoma, Washington

Sample No.	Sample Date	Sample Depth (ft)	Material Type	PID (ppm)	ARI Group	Sheen	TPH-G (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	m,p-Xylene (ug/kg)	o-Xylene (ug/kg)	Total Xylenes (ug/kg)
P6-A	5/19/12	1-2	Sand	1589	UV11	Yes	**4200**	**4100**	**63000**	**28000**	**180000**	**68000**	**248000**
P6-B	5/19/12	3-4	Sand	1073	UV11	Yes	**12000**	**21000**	**230000**	**98000**	**530000**	**200000**	**730000**
P6-C	5/19/12	5-6	Sand	1171	UV11	Yes	**12000**	**14000**	**200000**	**93000**	**540000**	**200000**	**740000**
P6-D	5/19/12	7-8	Sand	785	UV11	Yes	**23**	**1100**	**1500**	**290**	**1600**	**610**	**2210**
P6-E	5/19/12	9-10	Silt	47	UV11	No	**44**	**4900**	**100**	**450**	**310**	**27**	**337**
P6A-F	7/12/14	9-9.5	Silt	60	YR59	No	**270**	**16000**	**570**	**11000**	**1100**	<74	**1100**
P6A-G	7/12/14	9.5-10	Sand	31	YR59	No	<19	**460**	<37	<37	<74	<37	<74
P7-A	5/19/12	1.5-2	Sand	8	UV11	No	**20**	**17**	**38**	**37**	**150**	**23**	**173**
P7-B	5/19/12	3-4	Sand	20	UV11	No	**25**	**31**	**91**	**55**	**210**	**29**	**239**
P7-C	5/19/12	5-6	Sand	8	UV11	No	**38**	**79**	**28**	**100**	**210**	<16	**210**
P7-D	5/19/12	7-8	Sand	12	UV11	No	**14**	**680**	**38**	**84**	**190**	<17	**190**
P7-E	5/19/12	9-10	Silt	0	UV11	No	<13	<32	**36**	<32	<64	<32	<64
P8-A	5/19/12	2-3	Sand	26	UV11	No	**50**	**69**	**160**	**120**	**470**	**220**	**690**
P8-B	5/19/12	4-5	Sand	9	UV11	No	**38**	**40**	**78**	**22**	**120**	**70**	**190**
P8-C	5/19/12	6-7	Sand	5	UV11	No	<5.9	**180**	**24**	<15	<30	<15	<30
P8-D	5/19/12	7-8	Sand	140	UV11	No	**20**	**73**	**19**	**19**	<32	<16	<32
P9-A	5/20/12	1-2	Sand	0	UV12	No	<5.3	<13	**15**	<13	<27	<13	<27
P9-B	5/20/12	3-4	Sand	0	UV12	No	<6.1	<15	**17**	<15	<31	<15	<31
P9-C	5/20/12	5-6	Sand	0	UV12	No	<7.4	<19	<19	<19	<37	<19	<37
P9-D	5/20/12	7-8	Sand	0	UV12	No	<6.9	<17	<17	<17	<34	<17	<34
P9-E	5/20/12	9-10	Silt	0	UV12	No	<11	<27	**35**	<27	<54	<27	<54
P9E-A	10/11/14	1-2	Sand	0.1	ZE74	No	<17	<34	**44**	<34	<69	<34	<69
P9E-B	10/11/14	3-4	Sand	0.3	ZE74	No	<18	<35	<35	<35	<70	<35	<70
P9E-C	10/11/14	5-6	Sand	0.4	ZE74	No	<17	<34	<34	<34	<67	<34	<67
P9E-D	10/11/14	7-8	Sand/Si	15.1	ZE74	No	**20**	**380**	<37	**75**	**130**	<37	**130**
P9E-E	10/11/14	9-10	Silt	0.2	ZE74	No	<41	<83	<83	<83	<170	<83	<170
P10-A	5/20/12	1.2-2	Sand	4090	UV12	Yes	**800**	**130**	**350**	**4100**	**4400**	**940**	**5340**
P10-B	5/20/12	3-4	Sand	>5000	UV12	Yes	**3600**	**750**	**1600**	**19000**	**18000**	**2500**	**20500**
P10-C	5/20/12	5-6	Sand	1826	UV12	Yes	**2500**	**920**	**2900**	**21000**	**600 J**	**1900**	**2500 J**
P10-D	5/20/12	7-8	Sand	17	UV12	Yes	<7.2	<18	**19**	**47**	**44**	<18	**44**
P10-E	5/20/12	9-10	Silt	5	UV12	No	<22	<55	<55	<55	<110	<55	<110
P11-A	5/20/12	1.3-2	Sand	4111	UV12	Yes	**4400**	**4900**	**3000**	**31000**	**62000**	**5700**	**67700**
P11-B	5/20/12	3-4	Sand	2220	UV12	Yes	**4000**	**3600**	**2400**	**26000**	**31000**	**2500**	**33500**
P11-C	5/20/12	5-6	Sand	351	UV12	Yes	**10000**	**14000**	**7000**	**82000**	**40000**	**6800**	**46800**
P11-D	5/20/12	7-8	Sand	29	UV12	Yes	<7.8	<19	**23**	<19	<39	<19	<39
P11-E	5/20/12	9-10	Silt	5	UV12	No	<13	<32	**39**	<32	<65	<32	<65

TABLE 3 - Summary of Push-Probe Soil Analytical Data

Port of Tacoma Road
Tacoma, Washington

Sample No.	Sample Date	Sample Depth (ft)	Material Type	PID (ppm)	ARI Group	Sheen	TPH-G (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	m,p-Xylene (ug/kg)	o-Xylene (ug/kg)	Total Xylenes (ug/kg)
P12-A	5/20/12	1-2	Sand	387	UV12	Yes	**2200**	**560**	**1400**	**20000**	**13000**	**1900**	**14900**
P12-B	5/20/12	3-4	Sand	390	UV12	Yes	**1600**	**1100**	**1000**	**12000**	**5300**	**960**	**6260**
P12-C	5/20/12	5-6	Sand	384	UV12	Yes	**4900**	**4600**	**2500**	**43000**	**3000**	**2600**	**5600**
P12-D	5/20/12	7-8	Sand	8	UV12	Yes	<6.7	<17	**19**	<17	**43**	<17	**43**
P12-E	5/20/12	9-10	Silt	31	UV12	No	<13	<34	<34	<34	<67	<34	<67
P13-A	5/20/12	1-2	Sand	145	UV13	No	**270**	**62**	**64**	**800**	**130**	**360**	**490**
P13-B	5/20/12	3-4	Sand	181	UV13	No	**150**	**270**	**62**	**1200**	**220**	**130**	**350**
P13-C	5/20/12	5-6	Sand	184	UV13	Yes	**670**	<17	**240**	**420**	**240**	**1100**	**1340**
P13-D	5/20/12	7-8	Sand	2	UV13	No	<5.1	<13	<13	<13	<26	<13	<26
P13-E	5/20/12	9-10	Silt	3	UV13	No	<23	<58	**69**	<58	<120	<58	<120
P14-A	5/20/12	1-2	Sand	1	UV13	No	<5.3	<13	**14**	<13	<26	<13	<26
P14-B	5/20/12	3-4	Sand	0	UV13	No	<7.3	<18	**22**	<18	<36	<18	<36
P14-C	5/20/12	5-6	Sand	1	UV13	No	<7.0	<17	**21**	**61**	**83**	<17	**83**
P14-D	5/20/12	7-8	Sand	1	UV13	No	<6.6	<17	<17	<17	<33	<17	<33
P14-E	5/20/12	9-10	Silt	0	UV13	No	<11	<28	**30**	<28	<57	<28	<57
P15-A	7/12/14	1-2	C Rock	1.3	YR57	No	<16	<32	<32	<32	<63	<32	<63
P15-B	7/12/14	3-4	Sand	0.5	YR57	No	<20	<40	<40	<40	<80	<40	<80
P15-C	7/12/14	5-6	Sand	0.4	YR57	No	<18	<36	<36	<36	<73	<36	<73
P15-D	7/12/14	7-8	Sand	0.9	YR57	No	<20	<39	<39	<39	<78	<39	<78
P15-E	7/12/14	9-10	Sand/Silt	1.2	YR57	No	<19	<37	<37	<37	<74	<37	<74
P16-A	7/12/14	1-2	C Rock	2.5	YR57	No	<18	<36	<36	<36	<71	<36	<71
P16-B	7/12/14	3-4	Sand	275	YR57	No	**760**	<33	<33	<33	**120**	<33	**120**
P16-C	7/12/14	5-6	Sand	17	YR57	No	**35**	<34	<34	<34	<69	<34	<69
P16-D	7/12/14	7-8	Sand	3	YR57	No	<17	<34	<34	<34	<68	<34	<68
P16-E	7/12/14	9.5-10	Silt	1.3	YR57	No	<29	<59	<59	<59	<120	<59	<120
P17-A	7/12/14	1-2	C Rock	2.2	YR57	No	<14	<28	<28	<28	<56	<28	<56
P17-B	7/12/14	3-4	Sand	2.3	YR57	No	<14	<27	<27	<27	<55	<27	<55
P17-C	7/12/14	5-6	Sand	1.3	YR57	No	<17	<34	<34	<34	<69	<34	<69
P17-D	7/12/14	7-8	Sand	1.3	YR57	No	<17	<34	<34	<34	<68	<34	<68
P17-E	7/12/14	9.3-10	Sand	1	YR57	No	<18	<37	<37	<37	<74	<37	<74
P17-F	7/12/14	11-12	Sand	1.3	YR57	No	<13	<25	<25	<25	<50	<25	<50

TABLE 3 - Summary of Push-Probe Soil Analytical Data

Port of Tacoma Road
Tacoma, Washington

Sample No.	Sample Date	Sample Depth (ft)	Material Type	PID (ppm)	ARI Group	Sheen	TPH-G (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	m,p-Xylene (ug/kg)	o-Xylene (ug/kg)	Total Xylenes (ug/kg)
P18-A	7/12/14	1-2	C Rock	18.2	YR57	No	<17	<34	<34	**50**	**72**	<34	**72**
P18-B	7/12/14	3-4	Sand	344	YR57	No	**1100**	**300**	<31	**3500**	**1600**	**36**	**1636**
P18-C	7/12/14	5-6	Sand	24	YR57	No	**51**	**91**	<35	**69**	<69	<35	<69
P18-D	7/12/14	7-8	Sand	11	YR57	No	<15	<30	<30	<30	<60	<30	<60
P18-E	7/12/14	9-10	Sand	1.6	YR58	No	<17	<34	<34	<34	<68	<34	<68
P18-F	7/12/14	11-12	Sand	2.3	YR58	No	<18	<36	<36	<36	**72**	<36	**72**
P19-A	7/13/14	1-2	C Rock	20.4	YR58	No	<14	<27	<27	**66**	<54	<27	<54
P19-B	7/13/14	3-4	Sand	24.7	YR58	No	<14	<28	<28	<28	<57	<28	<57
P19-C	7/13/14	5-6	Sand	12.1	YR58	No	<18	<36	<36	<36	<73	<36	<73
P19-D	7/13/14	7-8	Sand	0.8	YR58	No	<19	<38	<38	<38	<75	<38	<75
P19-E	7/13/14	9-10	Silt	2.1	YR58	No	<38	**970**	**130**	**280**	**300**	<76	**300**
P20-A	7/13/14	1-2	C Rock	6.7	YR58	No	<13	<27	<27	<27	<54	<27	<54
P20-B	7/13/14	3-4	Sand	5.7	YR58	No	<13	<26	<26	<26	<52	<26	<52
P20-C	7/13/14	5-6	Sand	8	YR58	No	<15	<30	<30	<30	<59	<30	<59
P20-D	7/13/14	7-8	Sand	1.6	YR58	No	<20	<40	<40	**76**	<80	<40	<80
P20-E	7/13/14	9-10	Sand/Silt	0.8	YR58	No	<29	<59	<59	<59	<120	<59	<120
P21-A	7/13/14	1-2	C Rock	0.8	YR58	No	<14	<27	<27	<27	<54	<27	<54
P21-B	7/13/14	3-4	Sand	1.4	YR58	No	<14	<28	<28	<28	<56	<28	<56
P21-C	7/13/14	5-6	Silt	1.6	YR58	No	<22	<43	<43	<43	<86	<43	<86
P21-D	7/13/14	7-8	Sand	1.1	YR58	No	<18	<35	<35	**60**	<71	<35	<71
P21-E	7/13/14	9.5-10	Silt	1.4	YR58	No	<41	<81	<81	<81	<160	<81	<160
P22-A	7/13/14	1-2	C rock	1.8	YR58	No	<15	<29	<29	<29	<59	<29	<59
P22-B	7/13/14	3-4	Sand	2.5	YR58	No	<14	<29	<29	<29	<58	<29	<58
P22-C	7/13/14	5-6	Sand	1.1	YR58	No	<14	<29	<29	<29	<57	<29	<57
P22-D	7/13/14	7-8	Sand	0.8	YR59	No	<20	<40	<40	<40	<80	<40	<80
P22-E	7/13/14	9.5-10	Silt	0.8	YR59	No	<30	<61	<61	<61	<120	<61	<120
P23-A	7/13/14	1-2	C rock	385	YR59	No	**1300**	**3000**	**74**	**17000**	**2500**	**110**	**2610**
P23-B	7/13/14	3-4	Sand	15.2	YR59	No	**140**	**48**	<27	**77**	<54	<27	<54
P23-C	7/13/14	5-6	Sand	107	YR59	No	**130**	<30	<30	**48**	<60	<30	<60
P23-D	7/13/14	7-8	Sand	1.1	YR59	No	**40**	<39	<39	<39	<78	<39	<78
P23-E	7/13/14	9.5-10	Silt	2.2	YR59	No	<23	<46	<46	<46	<91	<46	<91

TABLE 3 - Summary of Push-Probe Soil Analytical Data

Port of Tacoma Road
Tacoma, Washington

Sample No.	Sample Date	Sample Depth (ft)	Material Type	PID (ppm)	ARI Group	Sheen	TPH-G (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	m,p-Xylene (ug/kg)	o-Xylene (ug/kg)	Total Xylenes (ug/kg)
MWR1-A	10/11/14	1-2	Sand	0.1	ZE74	No	<16	<31	<31	<31	<62	<31	<62
MWR1-B	10/11/14	3-4	Sand	0.5	ZE74	No	<17	<35	<35	<35	<69	<35	<69
MWR1-C	10/11/14	5-6	Sand	0.3	ZE74	No	<18	<37	<37	<37	<74	<37	<74
MWR1-D	10/11/14	7-8	Sand	0.6	ZE74	No	<20	<41	<41	<41	<81	<41	<81
MWR1-E	10/11/14	9-10	Silt	0.3	ZE74	No	<53	<110	<110	<110	<210	<110	<210

Notes: C Rock - Crushed rock
Si - Silt
< - Not detected at indicated reporting limit. Equilivant to "U" flag.
Bold value - Detected constituent
- Soil to be remediated

TABLE 4 - Groundwater Analytical Data - 2014

1920 Port of Tacoma Rd.
Tacoma, Washington

Constituent / Location / Date / Type	Units	USO-W-P15 7/12/2014 Push-Probe	USO-W-P17 7/12/2014 Push-Probe	MW-USO-3S 11/1/2014 Mon. Well	MW-USO-5S 11/1/2014 Mon. Well	MW-USO-6S 11/1/2014 Mon. Well	MW-USO-R1 11/1/2014 Mon. Well	MW-USO-R2 11/1/2014 Mon. Well
ARI Delivery Group		**YR60**	**YR60**	**ZI84**	**ZI84**	**ZI84**	**ZI84**	**ZI84**
TOC Elevation	**feet(b)**	**-----**	**-----**	**13.92**	**13.23**	**13.90**	**13.97**	**14.07**
Field Parameters								
Water Level	feet(a)	-----	-----	4.96	4.85	5.30	6.37	5.91
Water Level Elevation	feet(b)	-----	-----	8.96	8.38	8.60	7.60	8.16
pH	std. units	7.0	7.2	-----	6.4	6.4	6.1	6.2
Electrical Conductivity	uS/cm	822	494	-----	1085	3509	782	749
Temperature	C	20.9	22.1	-----	18.6	16.4	19.5	19.8
Dissolved Oxygen	mg/l	-----	-----	-----	0.5	0.3	0.2	0.1
Oxidation-Reduction Potential (ORP)	mV	-----	-----	-----	-63.2	-59.2	-47.8	-87.1
Ferrous Iron	mg/l	-----	-----	-----	3.8	2.6	5.4	3.6
Turbidity	NTU	-----	-----	-----	3	9.2	11	5.8
Method SW8260C								
Gasoline Range Hydrocarbons	mg/l	<0.25	<0.25	-----	**0.60**	<0.25	<0.25	**3.0**
Benzene	ug/l	**20**	**1.5**	-----	<0.5	<0.5	<0.5	**980**
Toluene	ug/l	<0.5	<0.5	-----	<0.5	<0.5	<0.5	**16**
Ethylbenzene	ug/l	**1.6**	<0.5	-----	<0.5	<0.5	<0.5	**28**
m,p-Xylene	ug/l	**1.9**	<1.0	-----	<1.0	<1.0	<1.0	**36**
o-Xylene	ug/l	**0.7**	<0.5	-----	<0.5	<0.5	<0.5	**4.3**
Method WA VPH								
Benzene	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	**1400**
Toluene	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
Ethylbenzene	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
m,p-Xylene	ug/l	-----	-----	-----	<10	<10	<10	<200
o-Xylene	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
Methyl tert-Butyl Ether	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
n-Pentane	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
n-Hexane	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
n-Octane	ug/l	-----	-----	-----	**6.5**	<5.0	<5.0	<100
n-Decane	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
n-Dodecane	ug/l	-----	-----	-----	<5.0	<5.0	<5.0	<100
C8-C10 Aromatics	ug/l	-----	-----	-----	**54**	<50	<50	<1000
C10-C12 Aromatics	ug/l	-----	-----	-----	**150**	<50	<50	<1000
C12-C13 Aromatics	ug/l	-----	-----	-----	<50	<50	<50	<1000
C5-C6 Aliphatics	ug/l	-----	-----	-----	<50	<50	<50	<1000
C6-C8 Aliphatics	ug/l	-----	-----	-----	**64**	<50	<50	**1700**
C8-C10 Aliphatics	ug/l	-----	-----	-----	<50	<50	<50	<1000

TABLE 4 - Groundwater Analytical Data - 2014

1920 Port of Tacoma Rd.
Tacoma, Washington

Constituent / Location / Date / Type	Units	USO-W-P15 7/12/2014 Push-Probe	USO-W-P17 7/12/2014 Push-Probe	MW-USO-3S 11/1/2014 Mon. Well	MW-USO-5S 11/1/2014 Mon. Well	MW-USO-6S 11/1/2014 Mon. Well	MW-USO-R1 11/1/2014 Mon. Well	MW-USO-R2 11/1/2014 Mon. Well
C10-C12 Aliphatics	ug/l	-----	-----	-----	<50	<50	<50	<1000
EC5-6 aliphatics+EC6-8 aliphatics	ug/l	-----	-----	-----	**64**	<50	<50	**1700**
EC8-10 aliphatics+EC10-12 aliphatics	ug/l	-----	-----	-----	<50	<50	<50	<1000
EC8-10 aromatics+EC10-12 aromatics	ug/l	-----	-----	-----	**204**	<50	<50	<1000

Notes: < Not detected at indicated reporting limit. Equilivant to the "U" flag.
----- - Not analyzed
Bold value - Constituent detected
(a) - Depth below top of casing (TOC)
(b) - feet - NAVD88



Air Photo Date: May 4, 2013



1920 Port of Tacoma Road
Tacoma, Washington

Vicinity Location

POT-001-00 **FIGURE 1** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.

Ref: Vicinity Map 12-2014.cdr



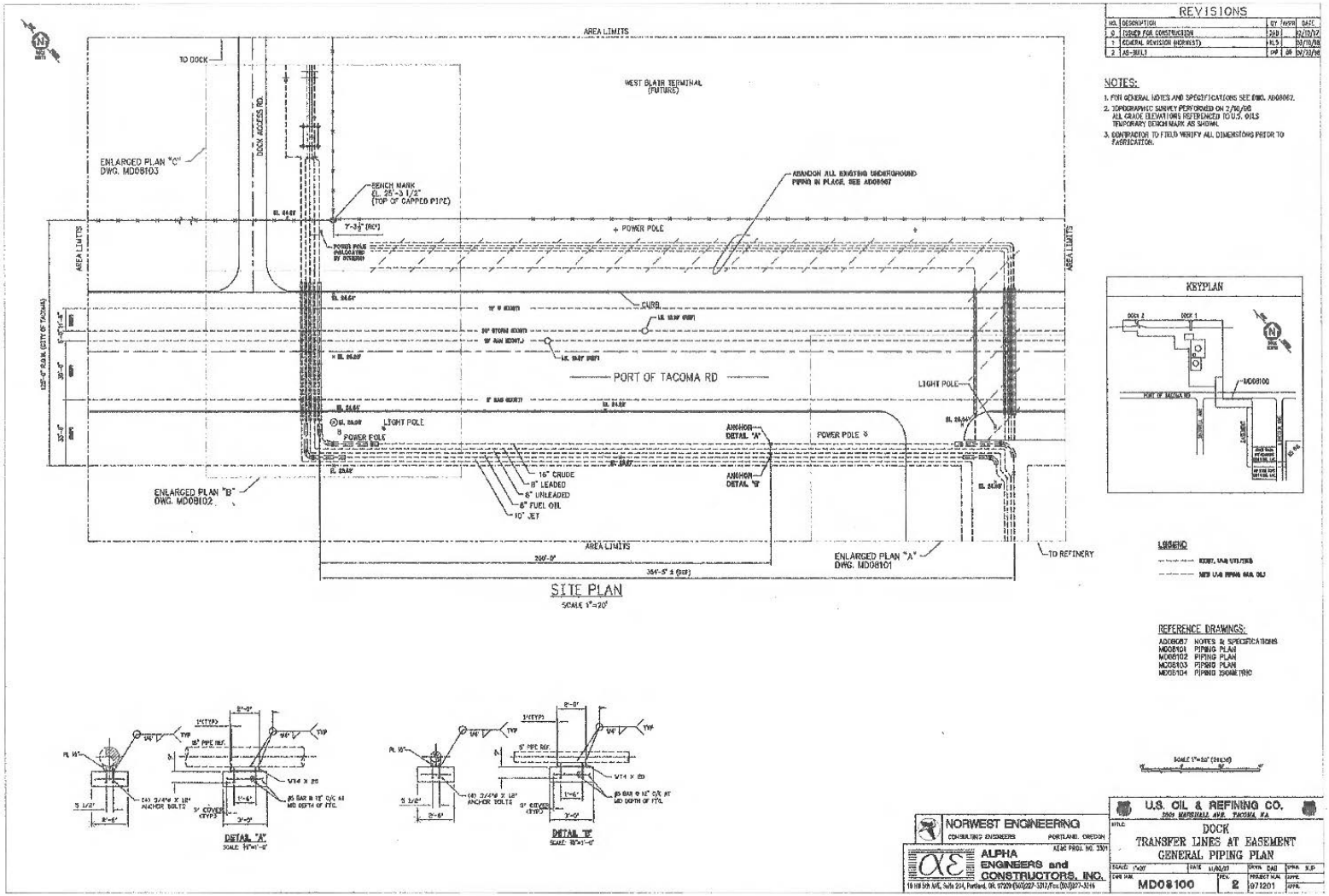
Ref: Layout ar1.cdr

1920 Port of Tacoma Road
Tacoma, Washington

Project Area Layout

USO-023-00 **FIGURE 2a** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.



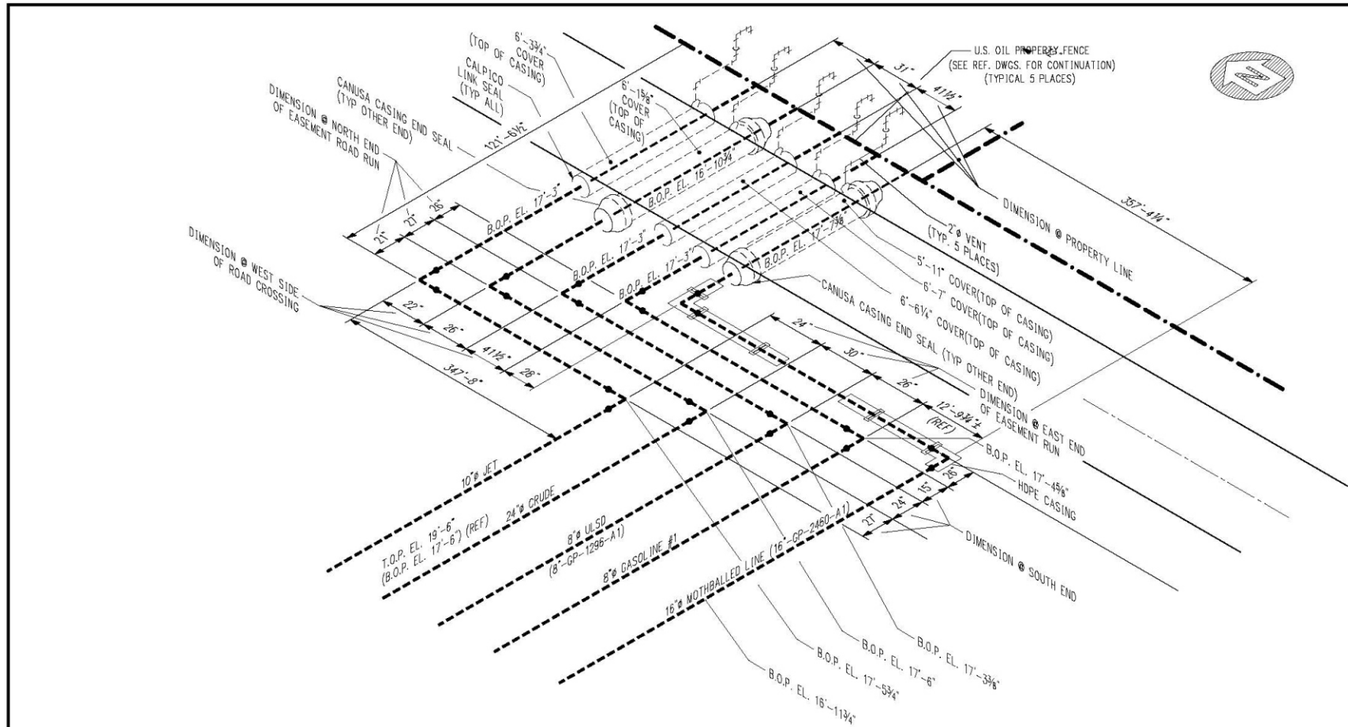
1920 Port of Tacoma Rd.
Tacoma, Washington

USOR Pipelines In Vicinity of Remedial Area

USO-023-00 **FIGURE 2b** Jan. 2015

Dalton, Olmsted & Fuglevand, Inc.

Ref: Abandoned Pipelines 1.cdr



U.S. Oil & Refining Company
Tacoma, WA

1920 Port of Tacoma Rd.

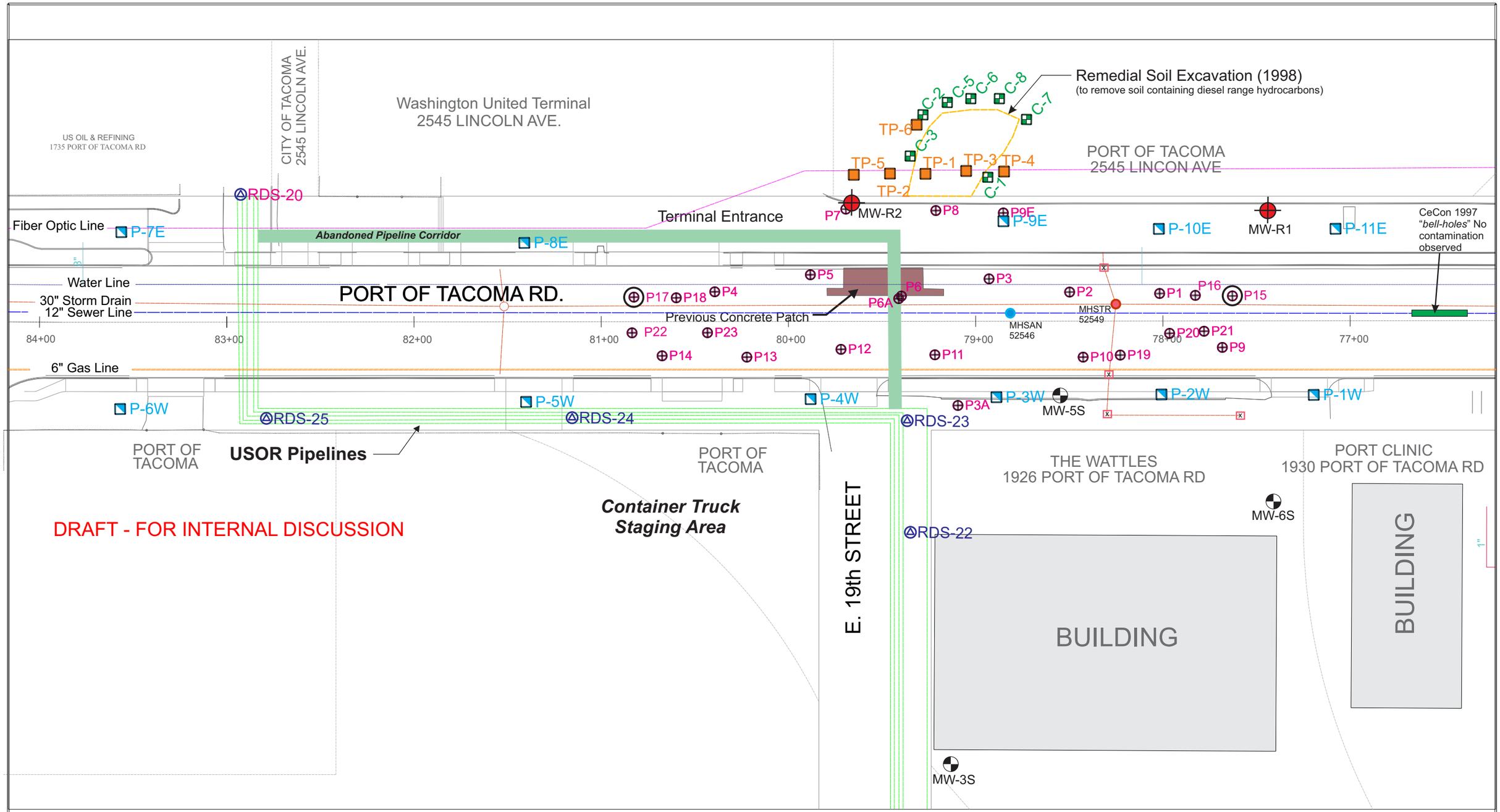
Current and Abandoned Pipeline Elevations

DALTON OLMSTED FUGLEVAND

FIGURE
2c

January 2015

Abandoned Pipelines 2.cdr



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)

MW-3S Monitoring Well (Installed in 1992)
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)

Manholes
Catch Basins

0 50
Scale in Feet

2014-15-12 USOil PTRd Spl Loc Map.cdr

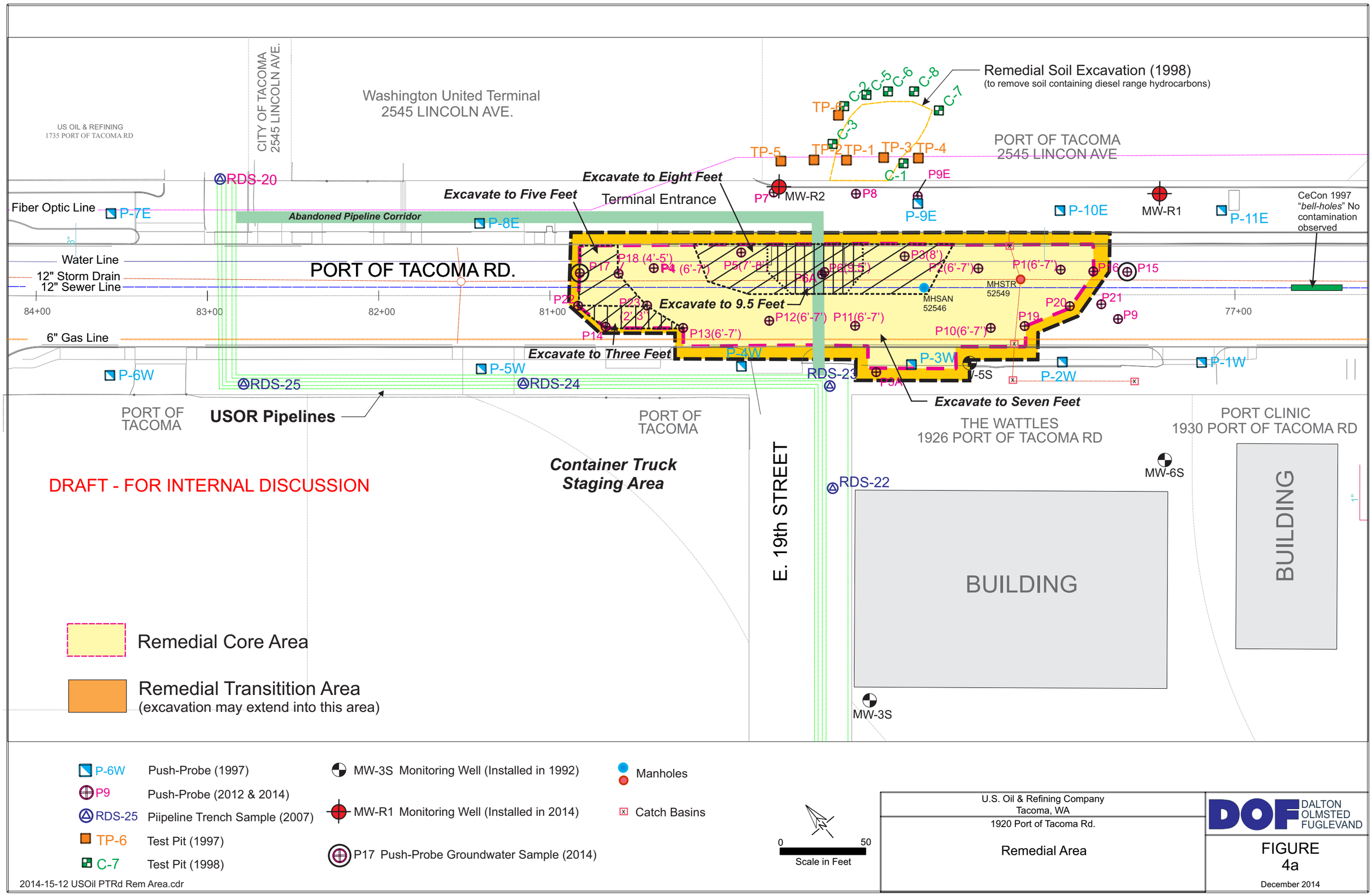
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

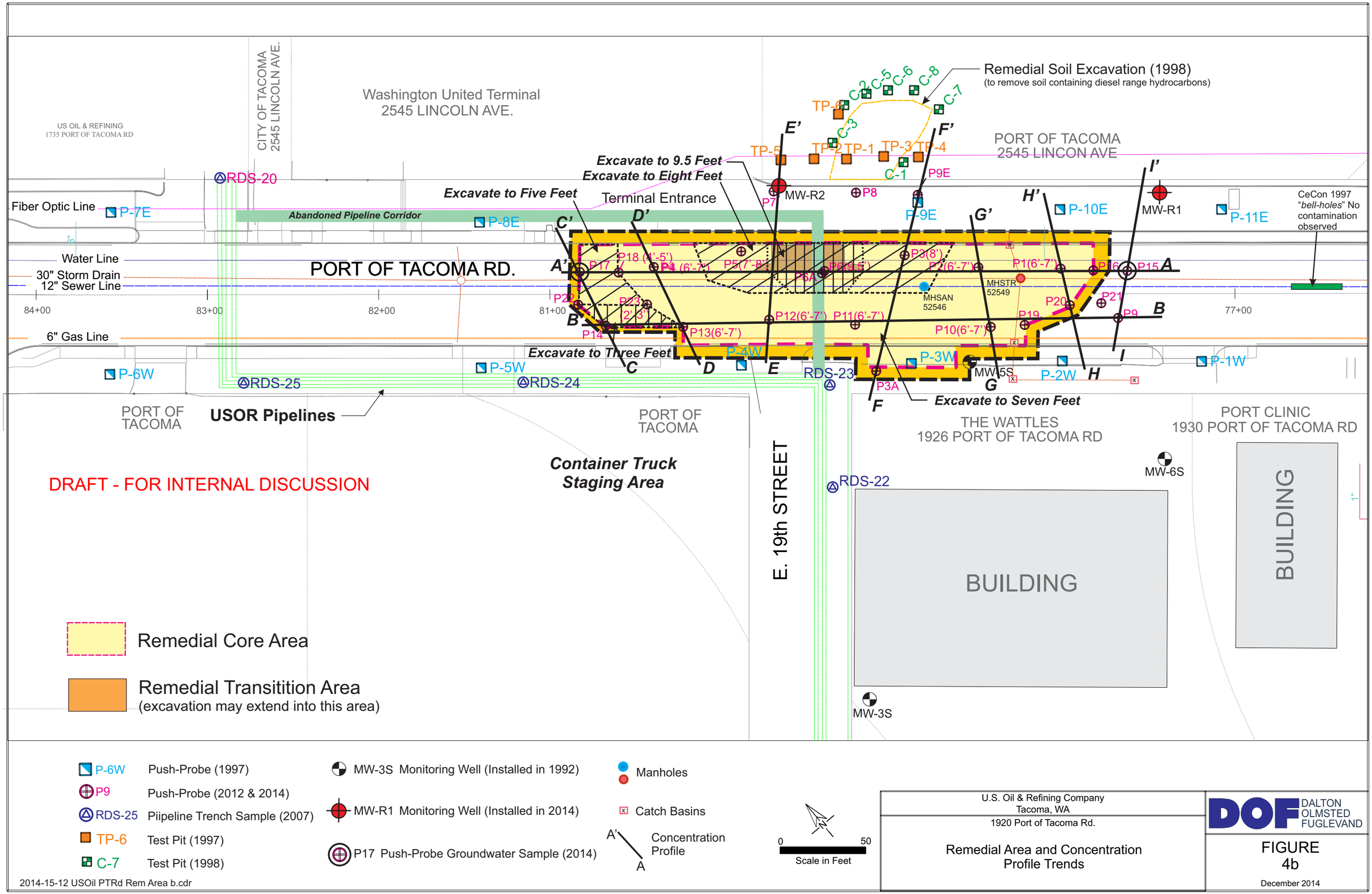
Sample Location Map

DALTON OLMSTED FUGLEVAND

FIGURE
3

December 2014


US OIL & REFINING
1735 PORT OF TACOMA RD
CITY OF TACOMA
2545 LINCOLN AVE.
Washington United Terminal
2545 LINCOLN AVE.
PORT OF TACOMA
2545 LINCON AVE
Remedial Soil Excavation (1998)
(to remove soil containing diesel range hydrocarbons)
C-2
C-5
C-6
C-8
C-7
TP-6
C-3
TP-5
TP-2
TP-1
TP-3
TP-4
C-1
P9E
P7
MW-R2
P8
P-9E
P-10E
MW-R1
P-11E
CeCon 1997
"bell-holes" No
contamination
observed
RDS-20
Fiber Optic Line
P-7E
Abandoned Pipeline Corridor
P-8E
Excavate to Five Feet
Excavate to Eight Feet
Terminal Entrance
Water Line
12" Storm Drain
12" Sewer Line
PORT OF TACOMA RD.
P18 (4'-5')
P4 (6'-7')
P5(7'-8')
P6A
P6(9.5')
P3(8')
P2(6'-7')
P1(6'-7')
P16
P15
MHSTR
52549
MHSAN
52546
P17
P22
P23
2' 3"
Excavate to 9.5 Feet
P12(6'-7')
P11(6'-7')
P20
P21
P19
P9
P10(6'-7')
P14
P13(6'-7')
Excavate to Three Feet
84+00
83+00
82+00
81+00
77+00
6" Gas Line
P-6W
P-5W
P-4W
P-3W
P-2W
P-1W
RDS-25
RDS-24
RDS-23
P3A
V-5S
Excavate to Seven Feet
PORT OF
TACOMA
USOR Pipelines
PORT OF
TACOMA
THE WATTLES
1926 PORT OF TACOMA RD
PORT CLINIC
1930 PORT OF TACOMA RD
Container Truck
Staging Area
E. 19th STREET
RDS-22
MW-6S
BUILDING
BUILDING
MW-3S
DRAFT - FOR INTERNAL DISCUSSION
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)
P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
Manholes
Catch Basins
0
50
Scale in Feet
2014-15-12 USOil PTRd Rem Area.cdr
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.
Remedial Area
DOF DALTON OLMSTED FUGLEVAND
FIGURE
4a
December 2014



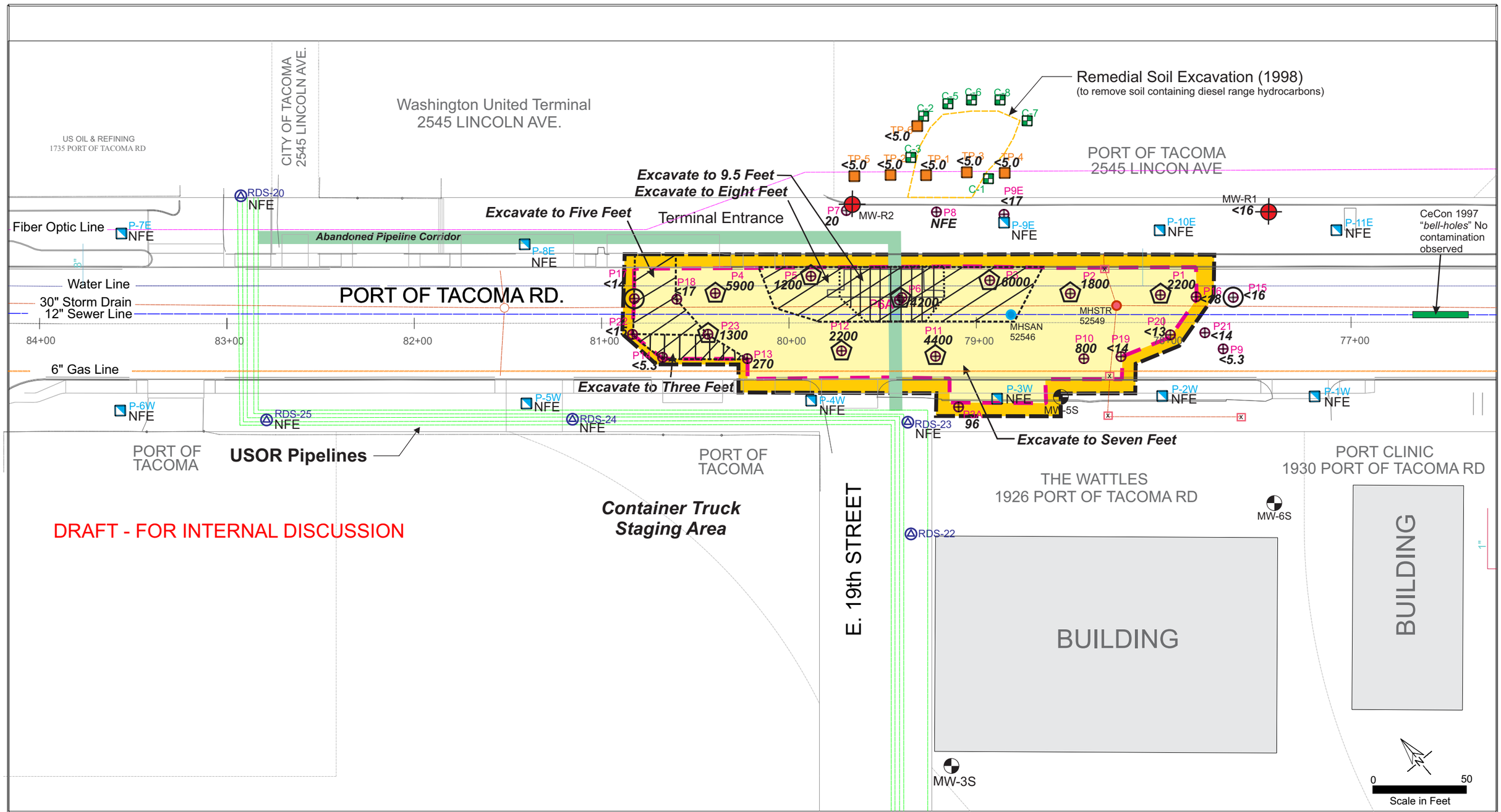
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

Remedial Area and Concentration Profile Trends

DALTON OLMSTED FUGLEVAND

FIGURE
4b

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in mg/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd TPH-G Soil.cdr

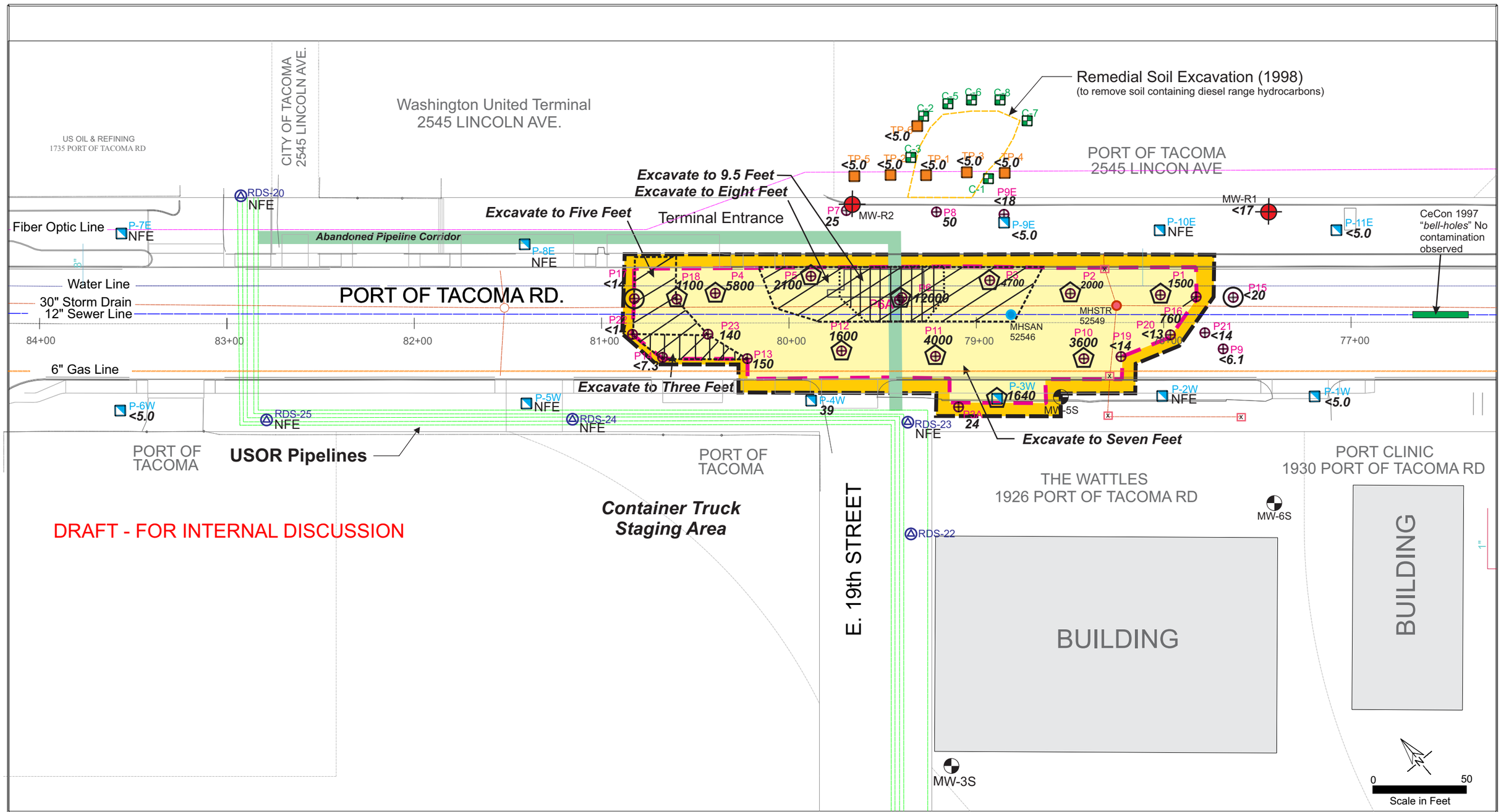
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

TPH-G Concentrations in Soil
in 1' to 2' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
5a

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in mg/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd TPH-G Soil.cdr

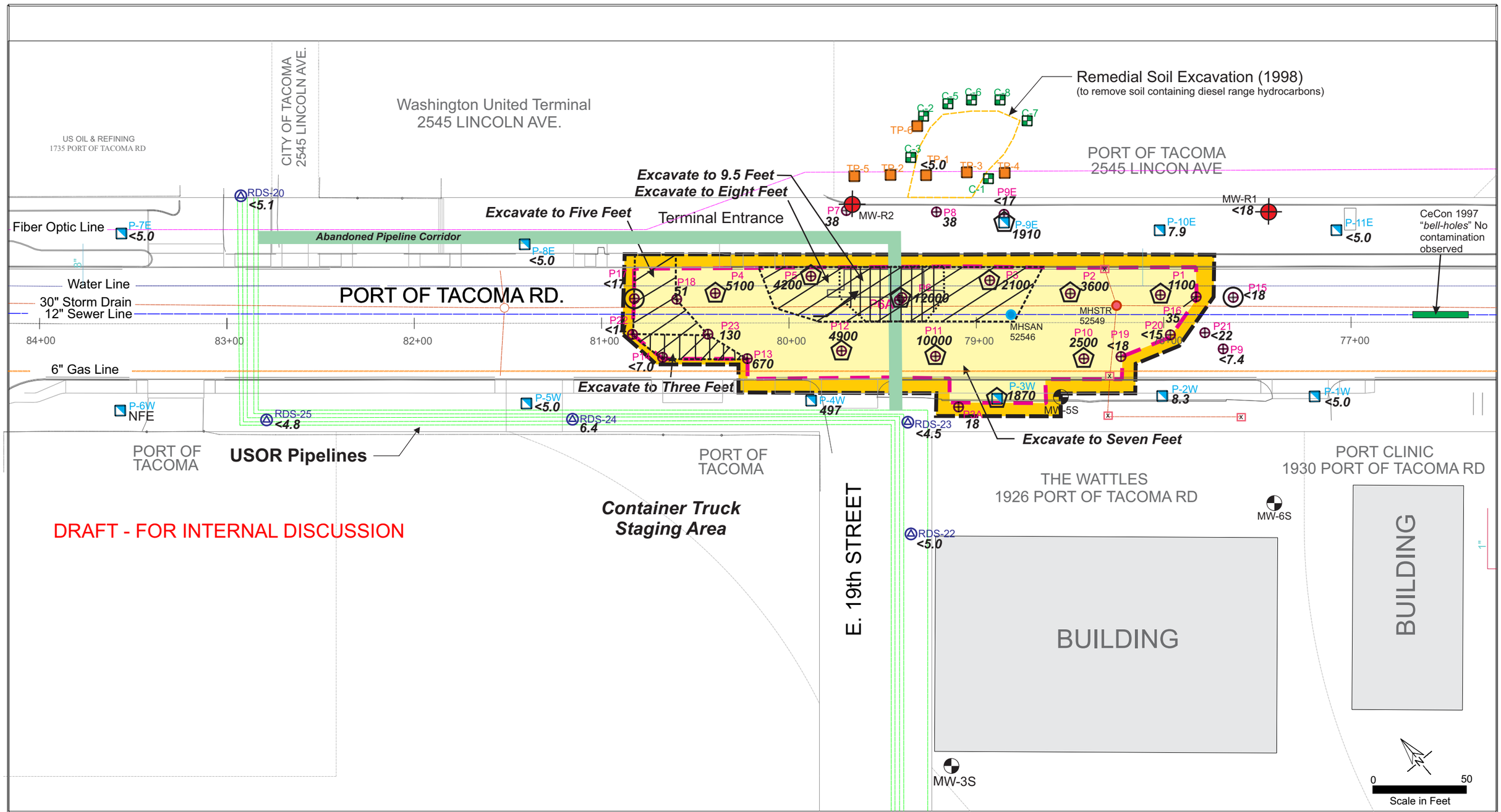
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

TPH-G Concentrations in Soil
in 3' to 4' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
5b

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in mg/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd TPH-G Soil.cdr

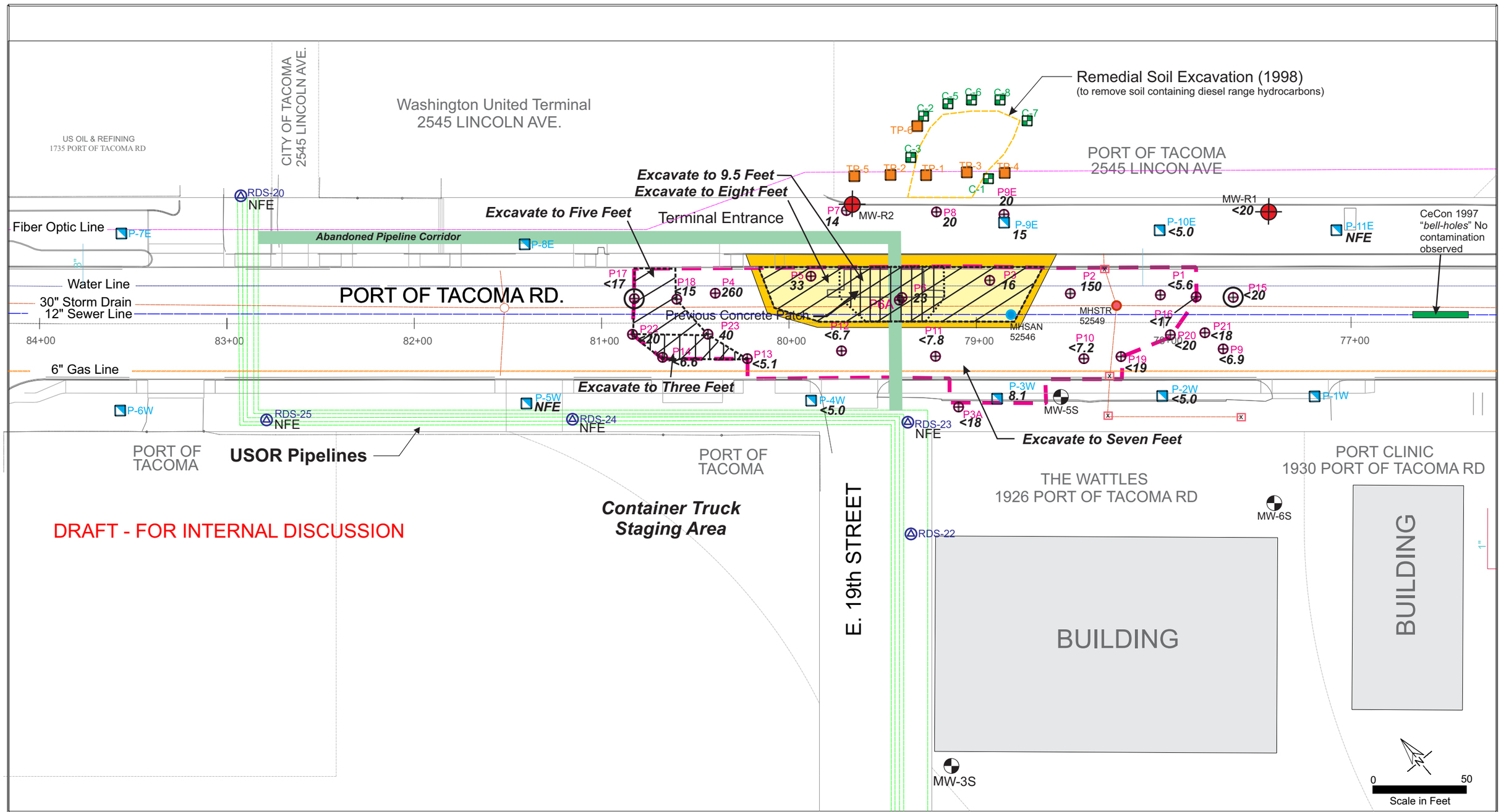
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

TPH-G Concentrations in Soil
in 5' to 6' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
5c

December 2014



DRAFT - FOR INTERNAL DISCUSSION

P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in mg/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd TPH-G Soil.cdr

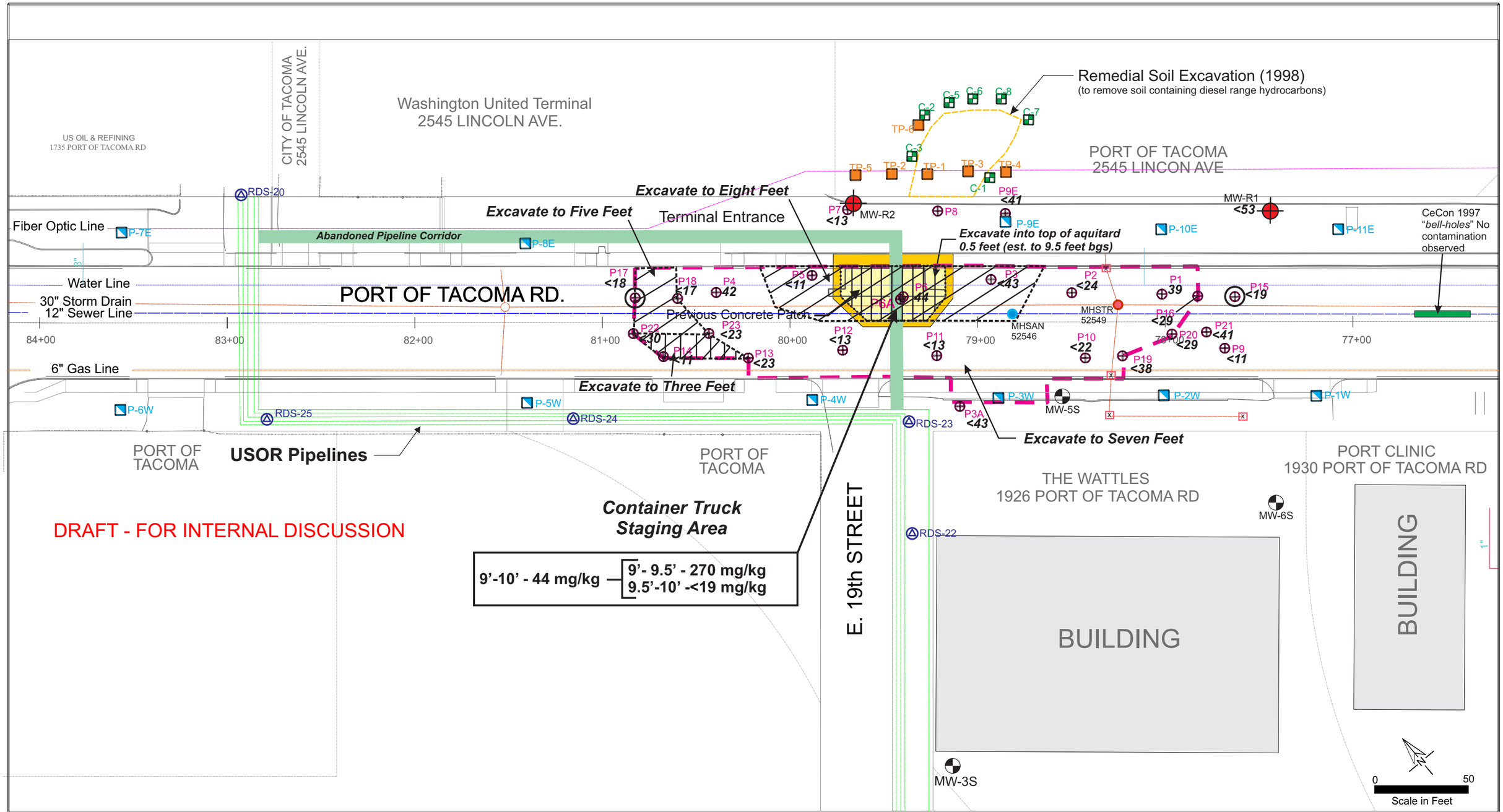
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

TPH-G Concentrations in Soil
in 7' to 8' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
5d

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in mg/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd TPH-G Soil.cdr

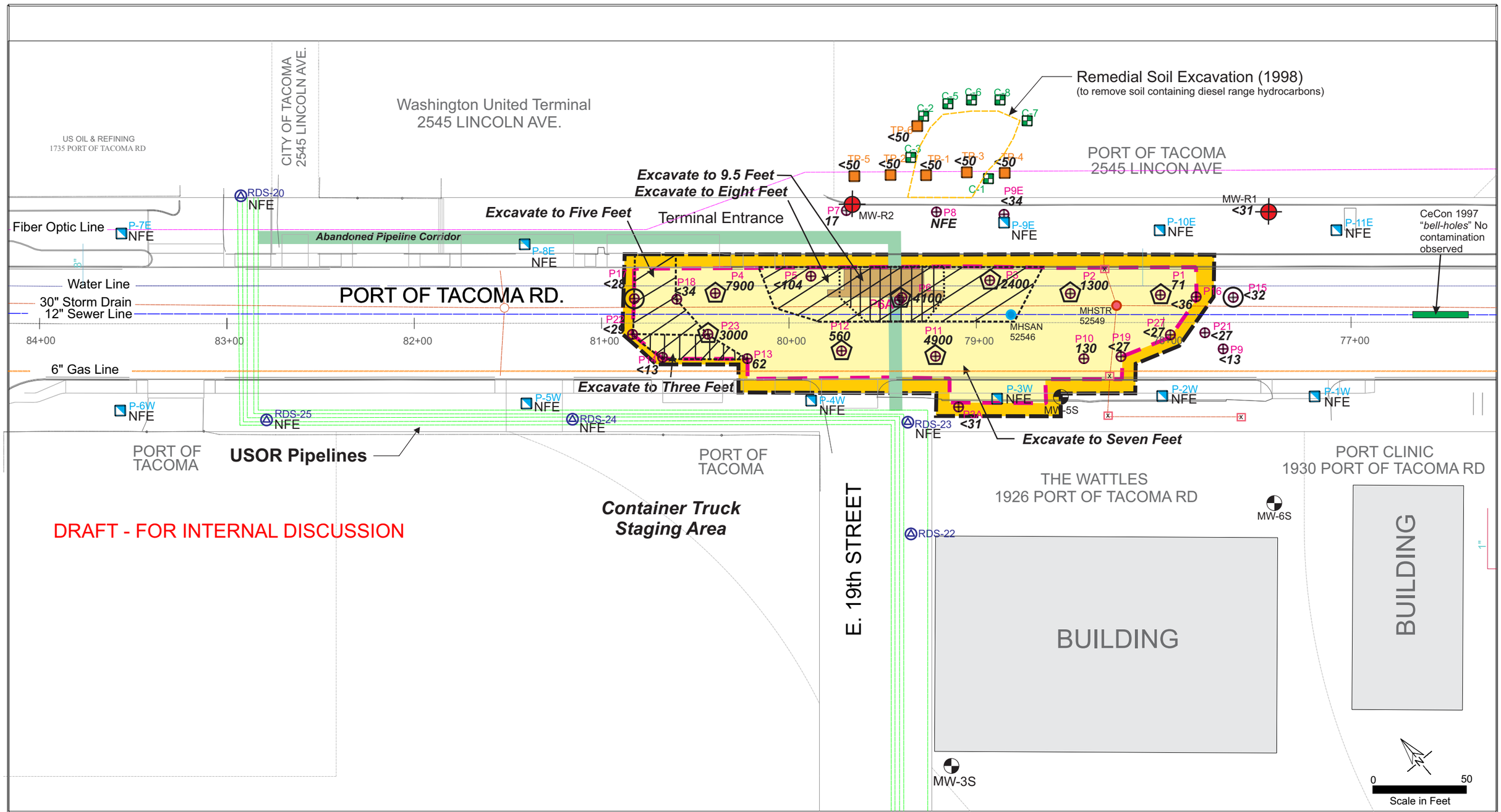
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

TPH-G Concentrations in Soil
in 9' to 10' Depth Interval (Top of Silt)

DALTON OLMSTED FUGLEVAND

FIGURE
5e

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in ug/kg

Exceeds 2,400 ug/kg Benzene in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd Benzene Soil.cdr

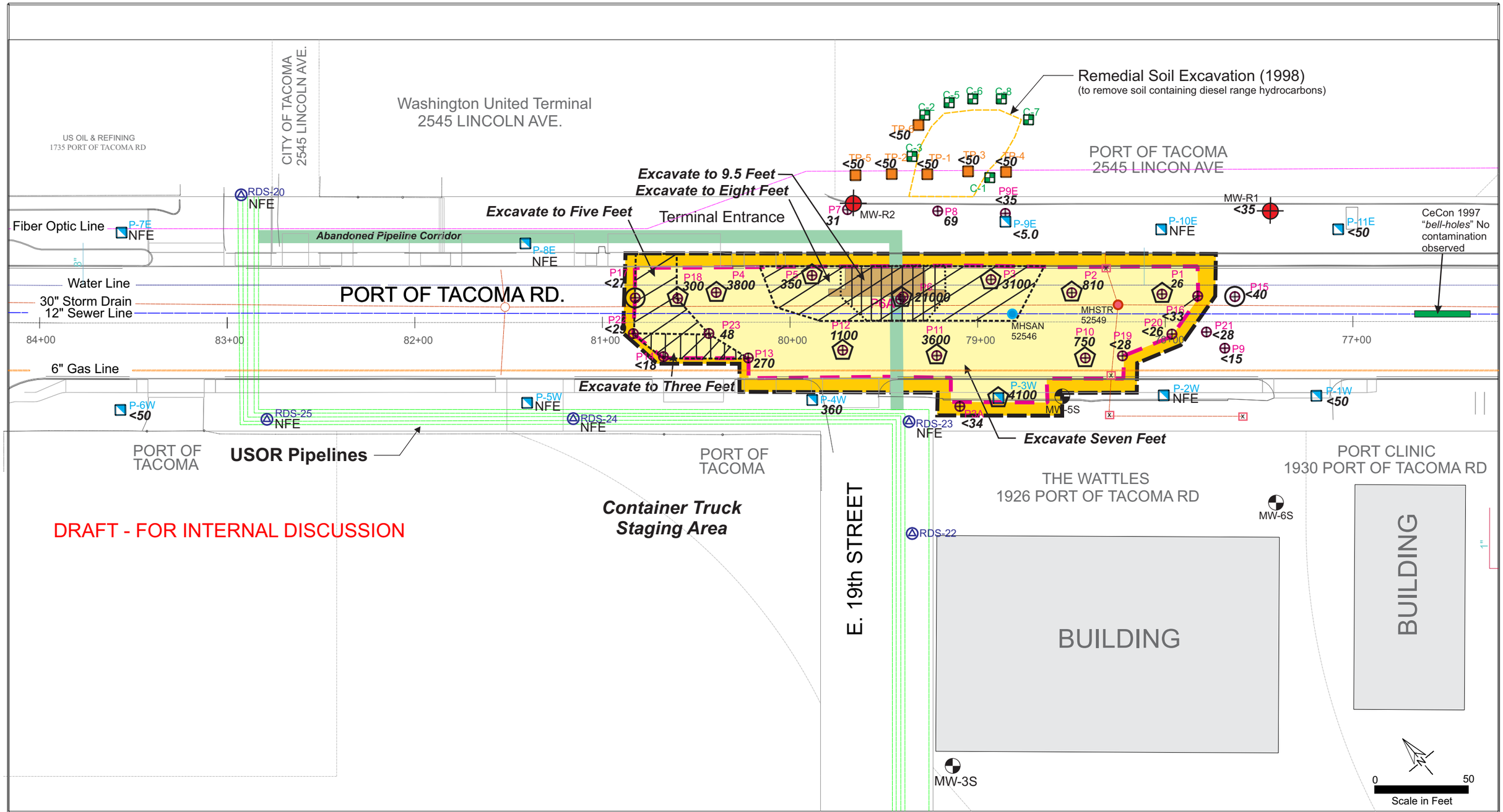
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

Benzene Concentrations in Soil
in 1' to 2' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
6a

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in ug/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd Benzene Soil.cdr

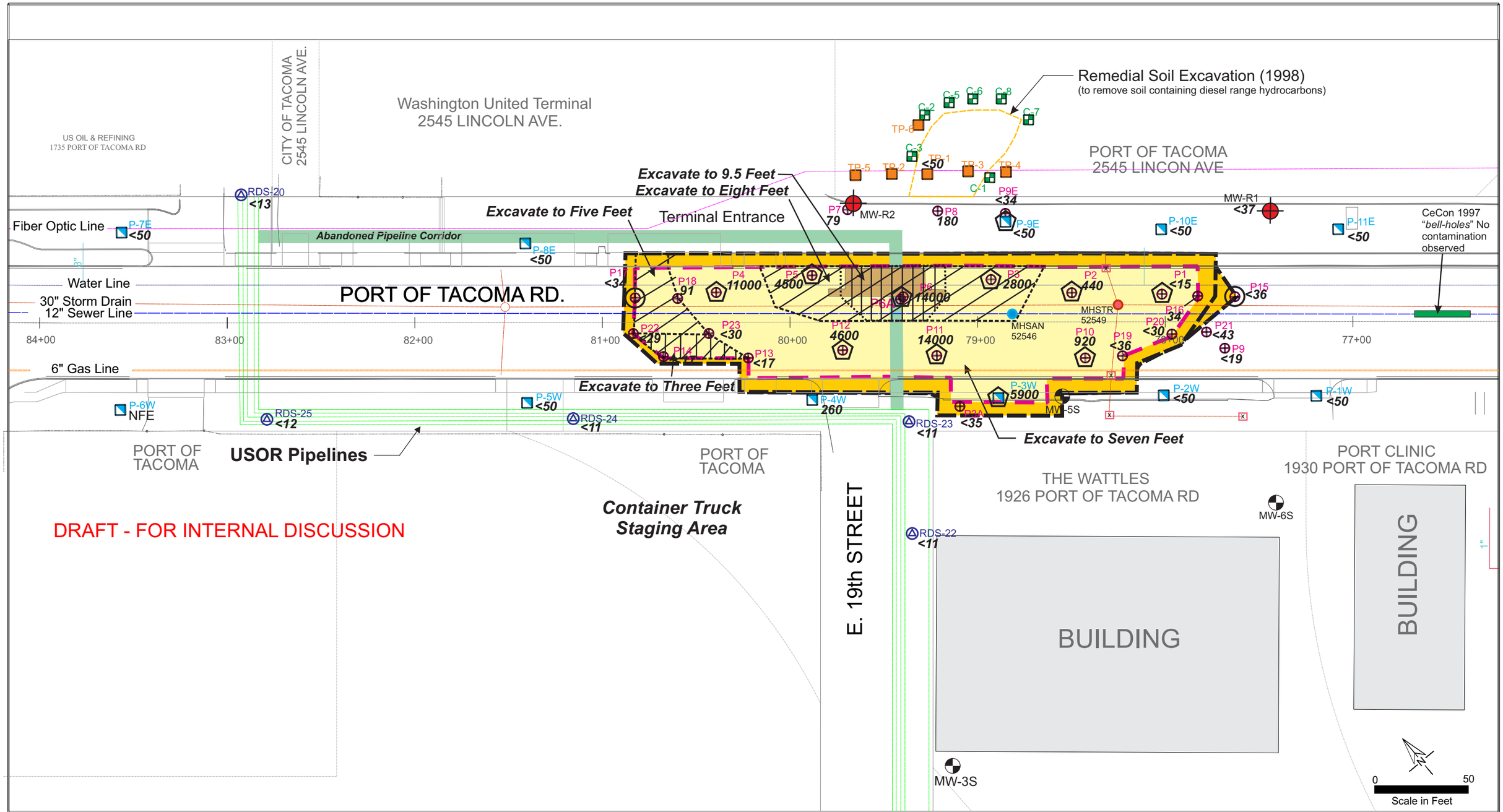
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

Benzene Concentrations in Soil
in 3' to 4' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
6b

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in ug/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd Benzene Soil.cdr

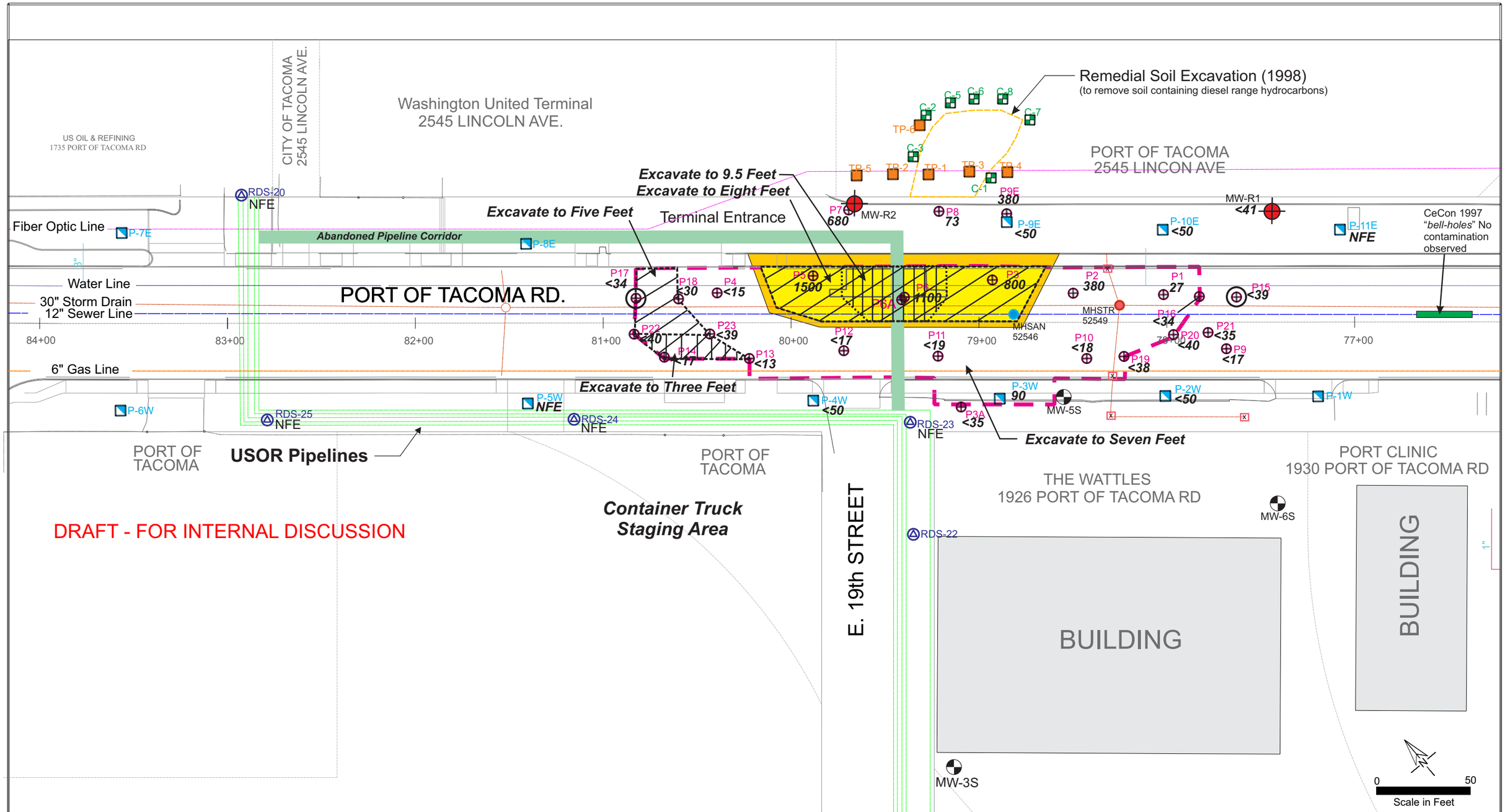
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

Benzene Concentrations in Soil
in 5' to 6' Depth Interval

DALTON OLMSTED FUGLEVAND

FIGURE
6c

December 2014



P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in ug/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd Benzene Soil.cdr

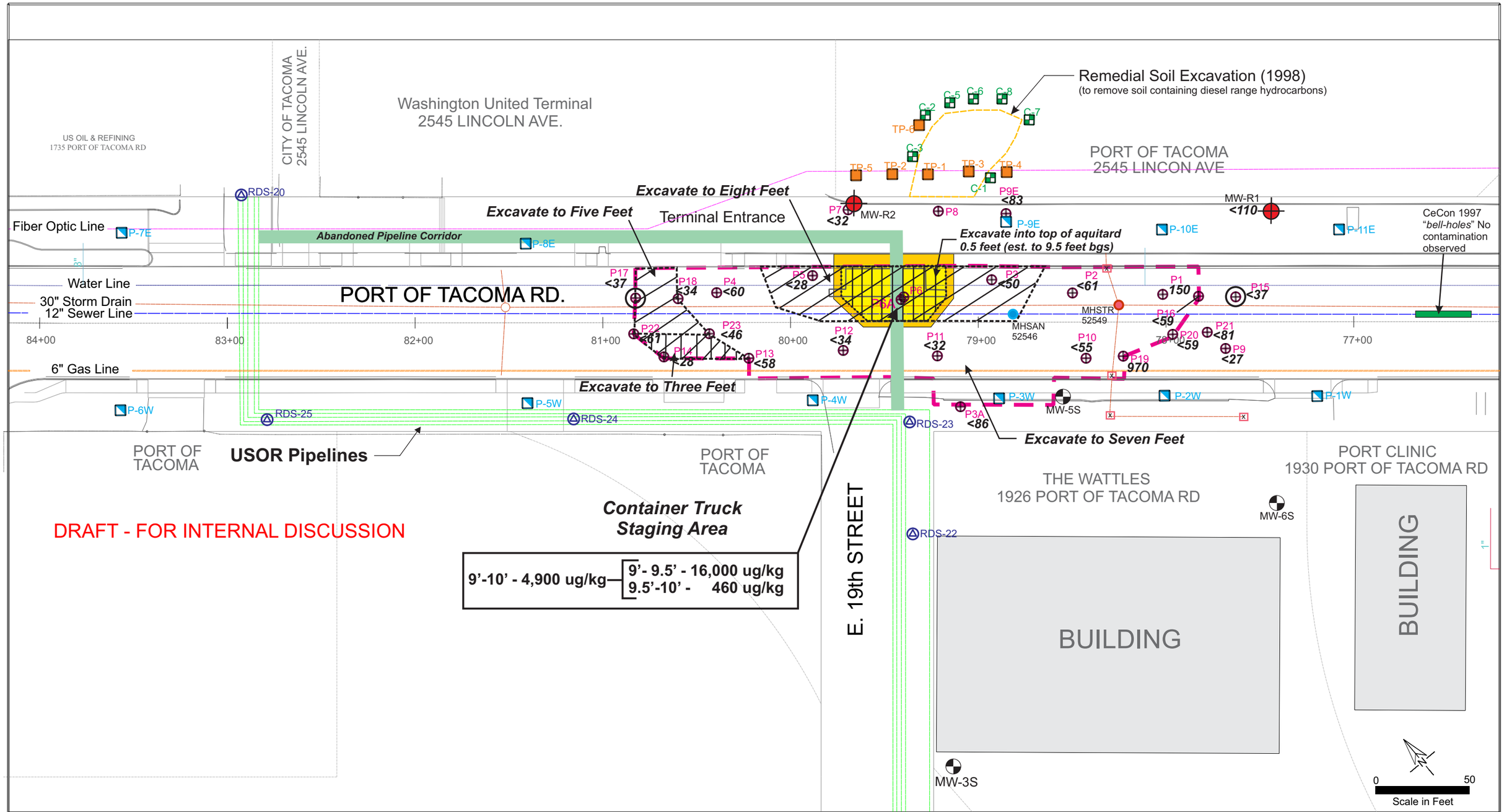
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

Benzene Concentrations in Soil
in 7' to 8' Depth Interval (Bottom of Upper Sand)

DALTON OLMSTED FUGLEVAND

FIGURE
6d

December 2014



DRAFT - FOR INTERNAL DISCUSSION

P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)
MW-3S Monitoring Well (Installed in 1992)

Manholes
Catch Basins
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
5900 Concentration in ug/kg

Exceeds 1,000 mg/kg TPH-G in Soil
NFE No Field Evidence of Soil Contamination
Remedial Core Area
Remedial Transitition Area
(excavation may extend into this area)

2014-15-12 USOil PTRd Benzene Soil.cdr

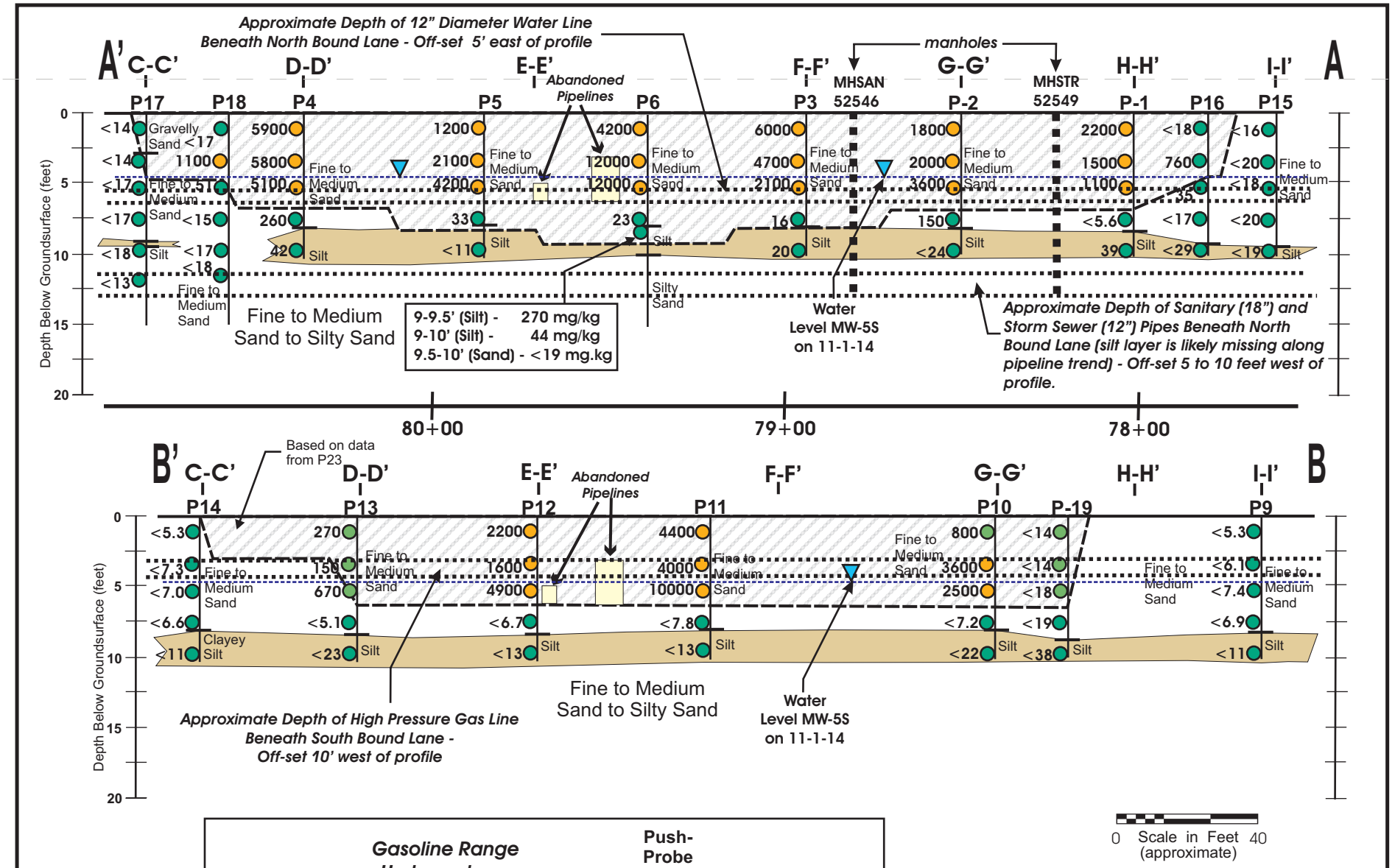
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

Benzene Concentrations in Soil
in 9' to 10' Depth Interval (Top of Silt)

DALTON OLMSTED FUGLEVAND

FIGURE
6e

December 2014



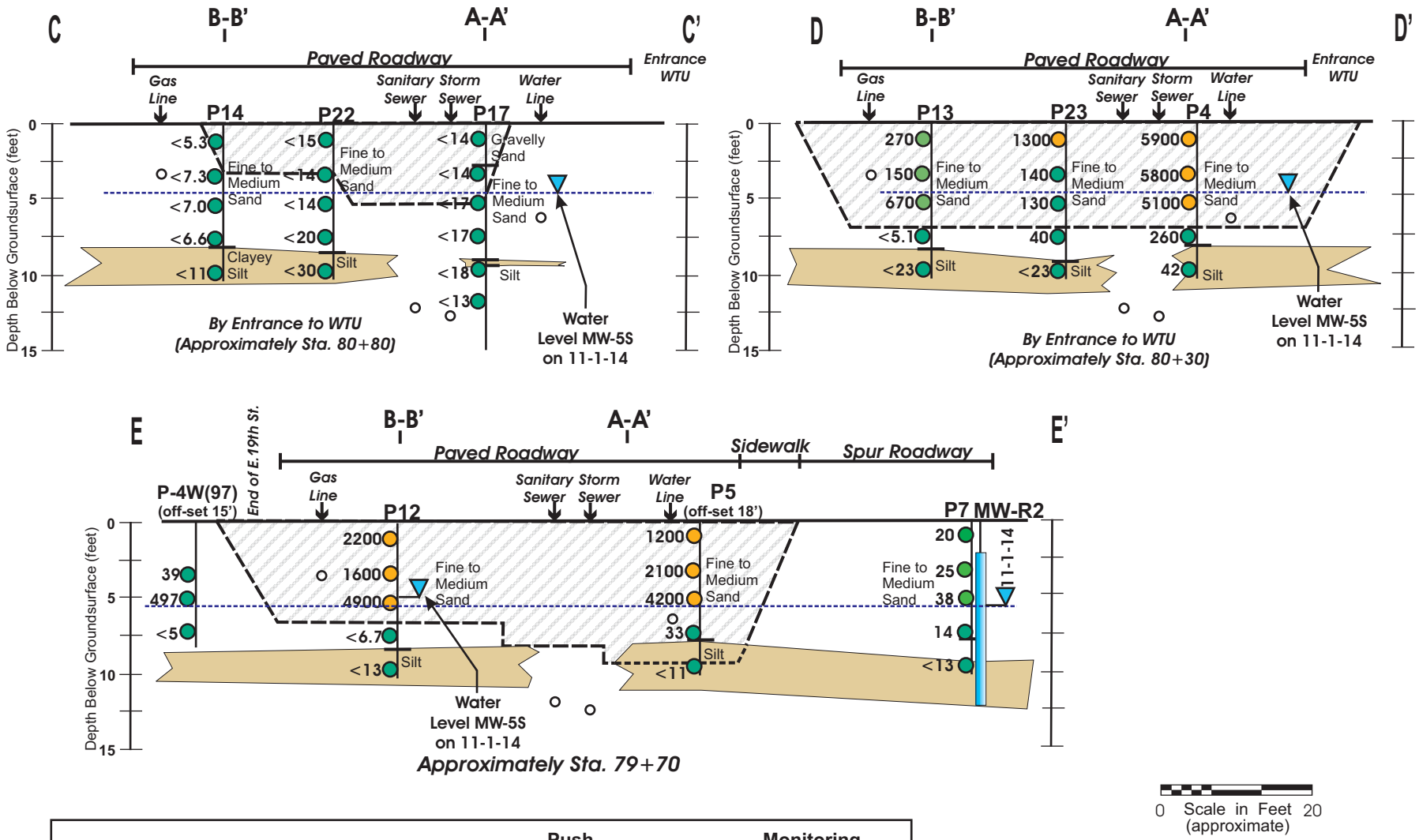
1920 Port of Tacoma Rd.
Tacoma, Washington

TPH-G Soil Concentration Profiles A-A' and B-B'

USO-023-00 **FIGURE 7a** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.

Ref: TPH Section A-A' B-B'.cdr



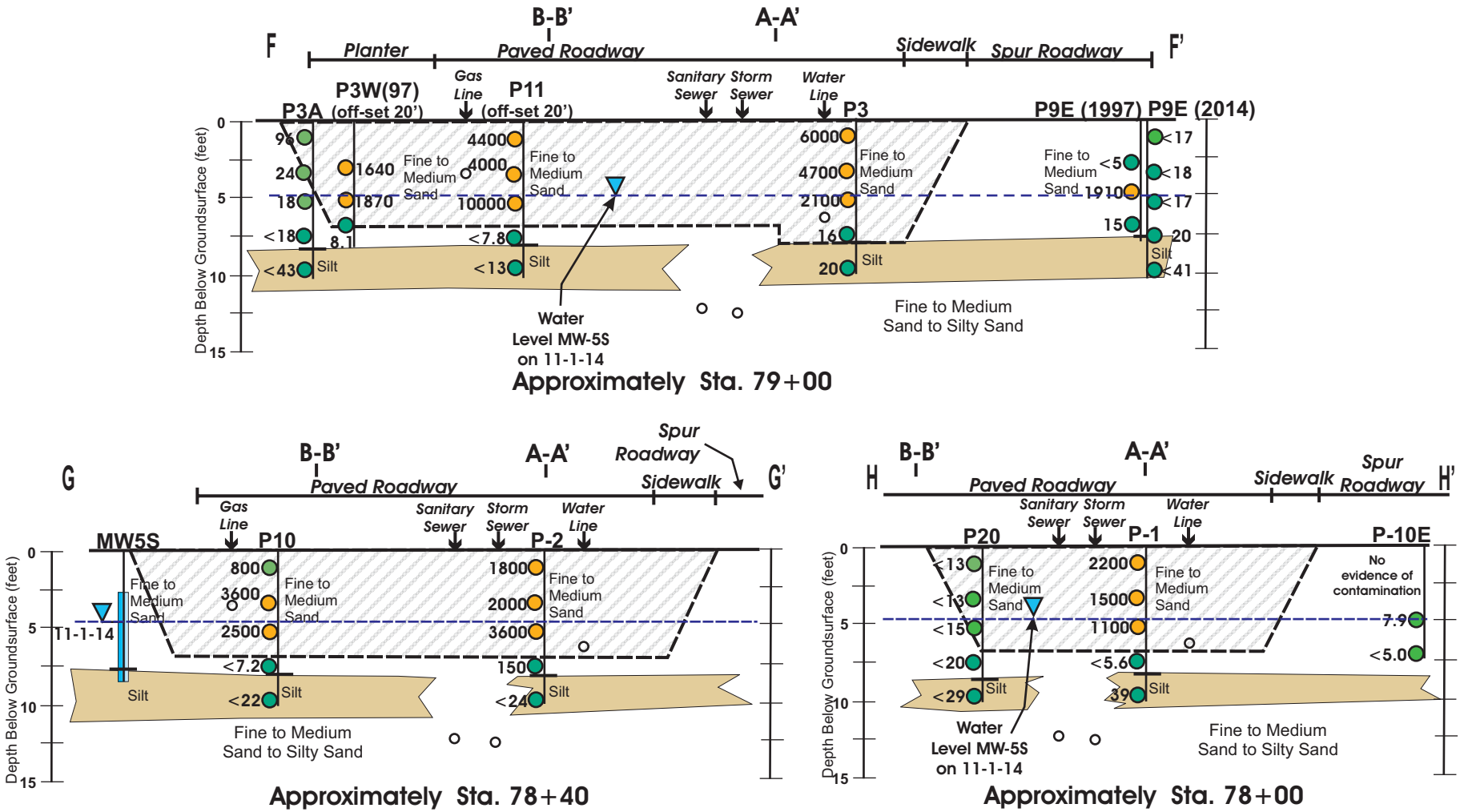
Ref: TPH Section C-C' E-E'.cdr

1920 Port of Tacoma Rd.
Tacoma, Washington

TPH-G Soil Concentration Profiles C-C' to E-E'

USO-023-00 **FIGURE 7b** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.



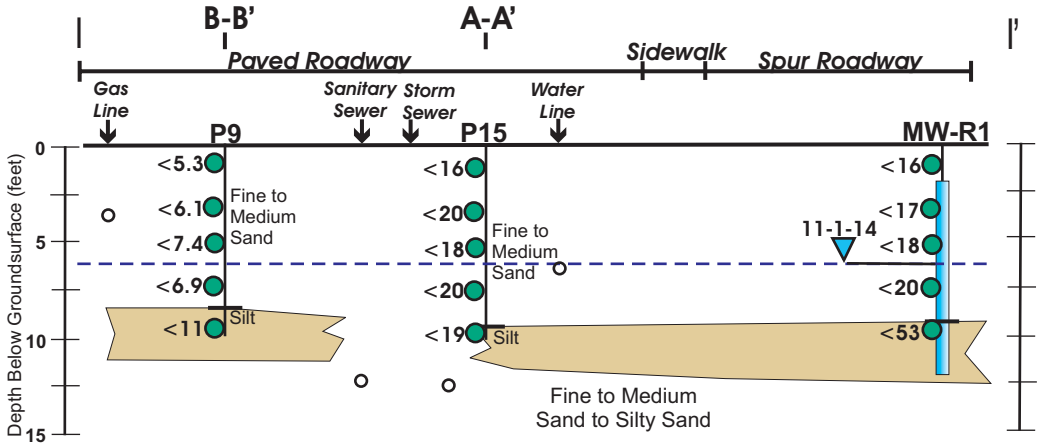
Ref: TPH Section F-F'H-H'.cdr

1920 Port of Tacoma Rd.
Tacoma, Washington

TPH-G Soil Concentration Profiles F-F' to H-H'

USO-023-00 **FIGURE 7c** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.



Approximately Sta. 77+65

Target Soil

Transition Area

Gasoline Range Hydrocarbons in Soil

≤1,000 mg/kg

>1,000 mg/kg

Push-Probe

Geologic Contact

14 Mid-Point Soil Sample and Concentration in mg/kg

0 Scale in Feet 20 (approximate)

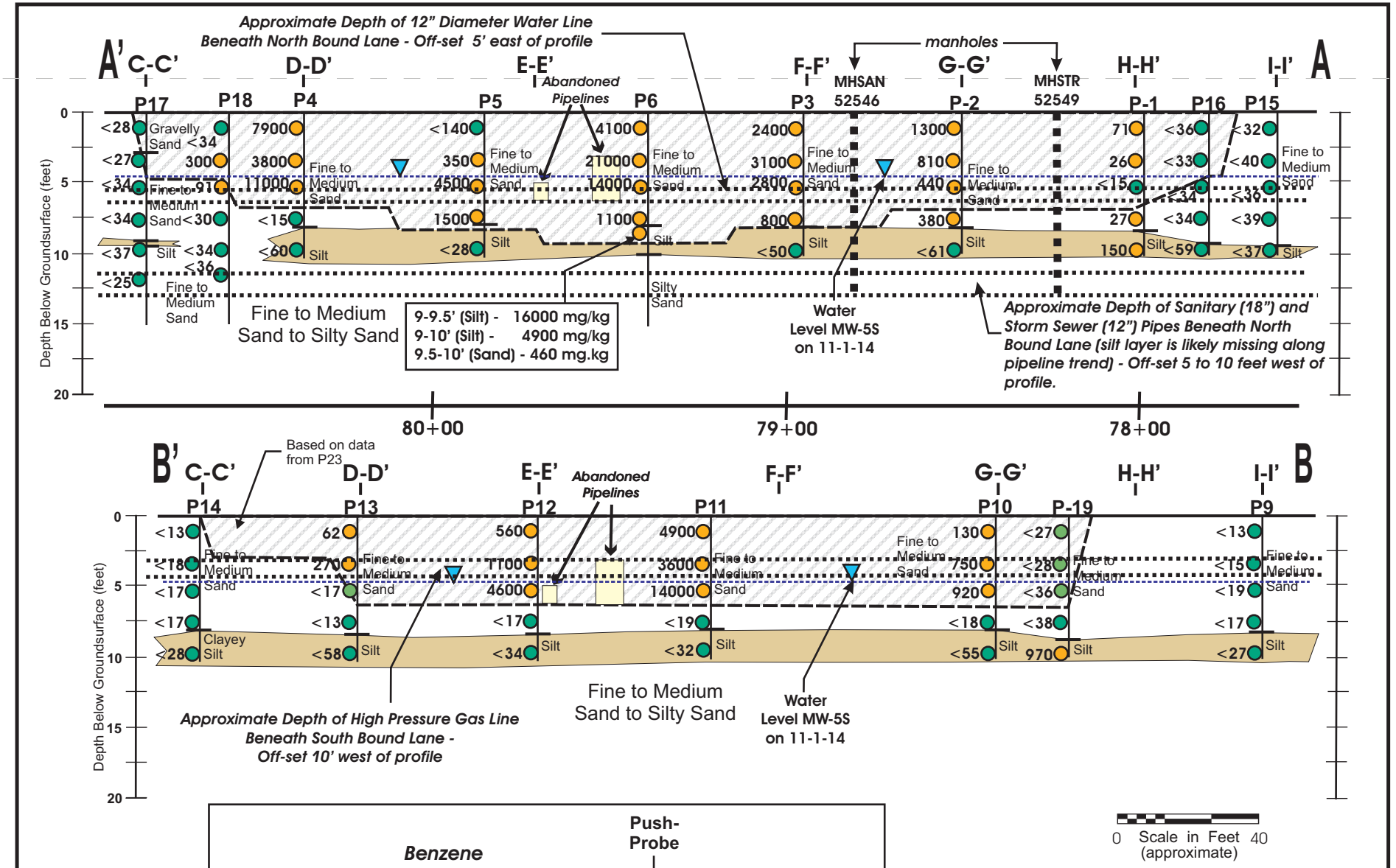
1920 Port of Tacoma Rd.
Tacoma, Washington

TPH-G Soil Concentration Profile I-I'

USO-023-00 **FIGURE 7d** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.

Ref: TPH Section I-I'.cdr



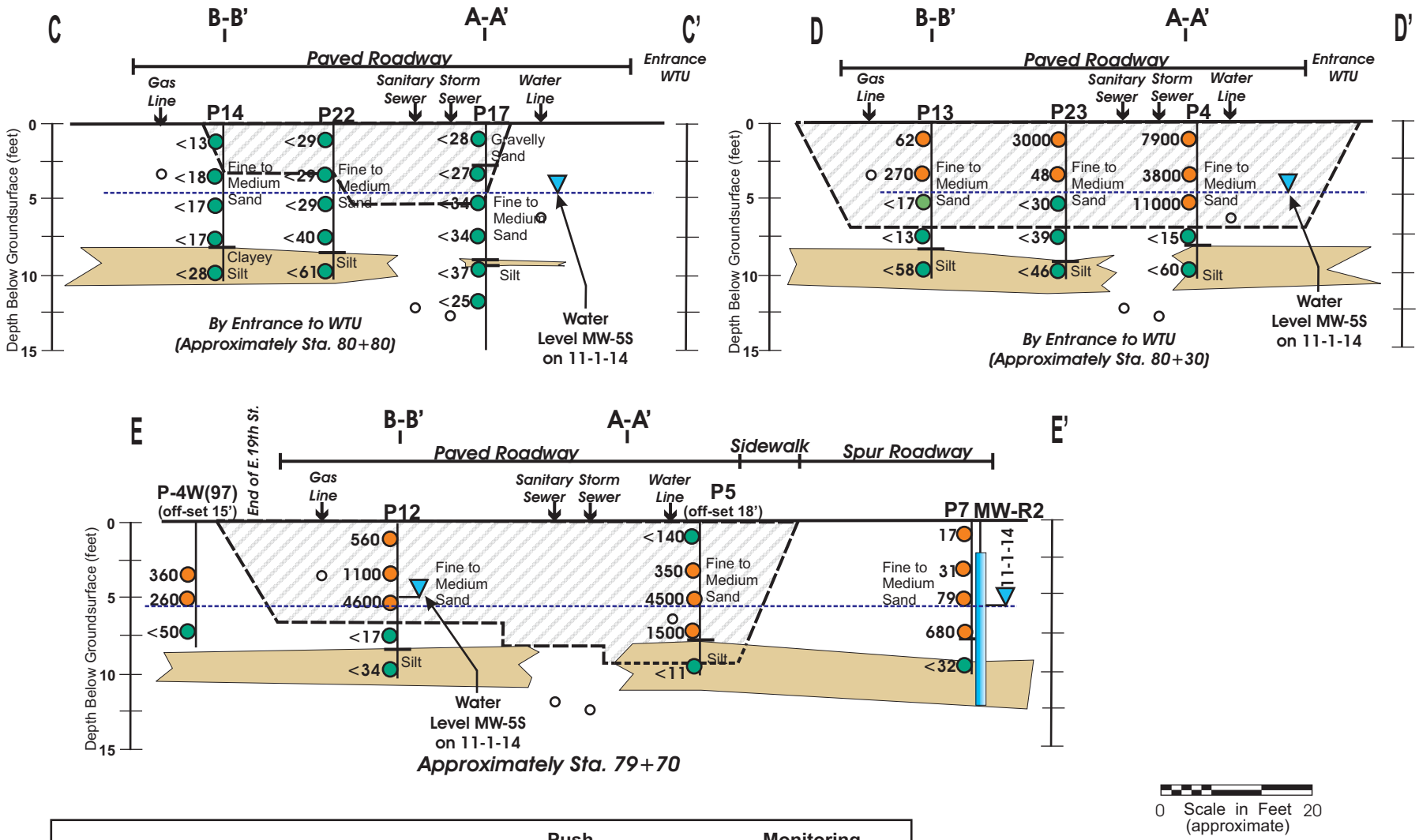
1920 Port of Tacoma Rd.
Tacoma, Washington

Benzene Soil Concentration Profiles A-A' and B-B'

USO-023-00 **FIGURE 8a** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.

Ref:Benzene Section A-A' B-B'.cdr



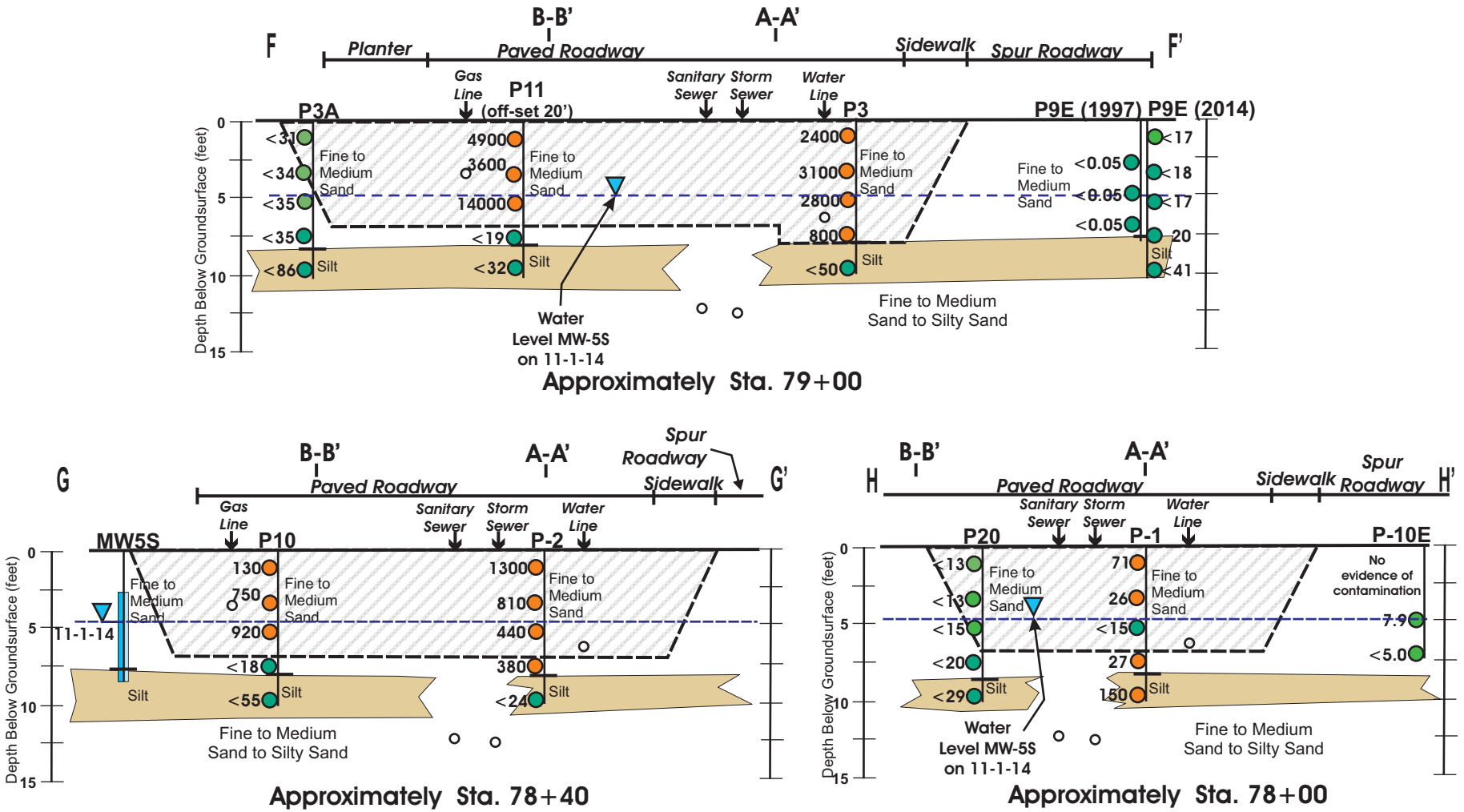
Ref: Benzene Section C-C' E-E'.cdr

1920 Port of Tacoma Rd.
Tacoma, Washington

Benzene Soil Concentration Profiles C-C' to E-E'

USO-023-00 **FIGURE 8b** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.



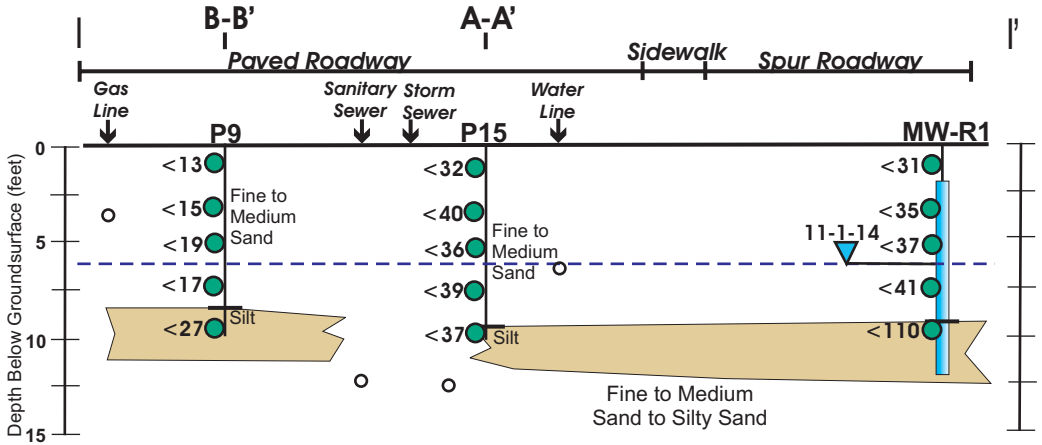
Ref: Benzene Section F-F'H-H'.cdr

1920 Port of Tacoma Rd.
Tacoma, Washington

Benzene Soil Concentration Profiles F-F' to H-H'

USO-023-00 **FIGURE 8c** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.



Approximately Sta. 77+65

Target Soil

Transition Area

Benzene in Soil

Not detected

Detected

Push-Probe

Geologic Contact

14 Mid-Point Soil Sample and Concentration in ug/kg

0 Scale in Feet 20 (approximate)

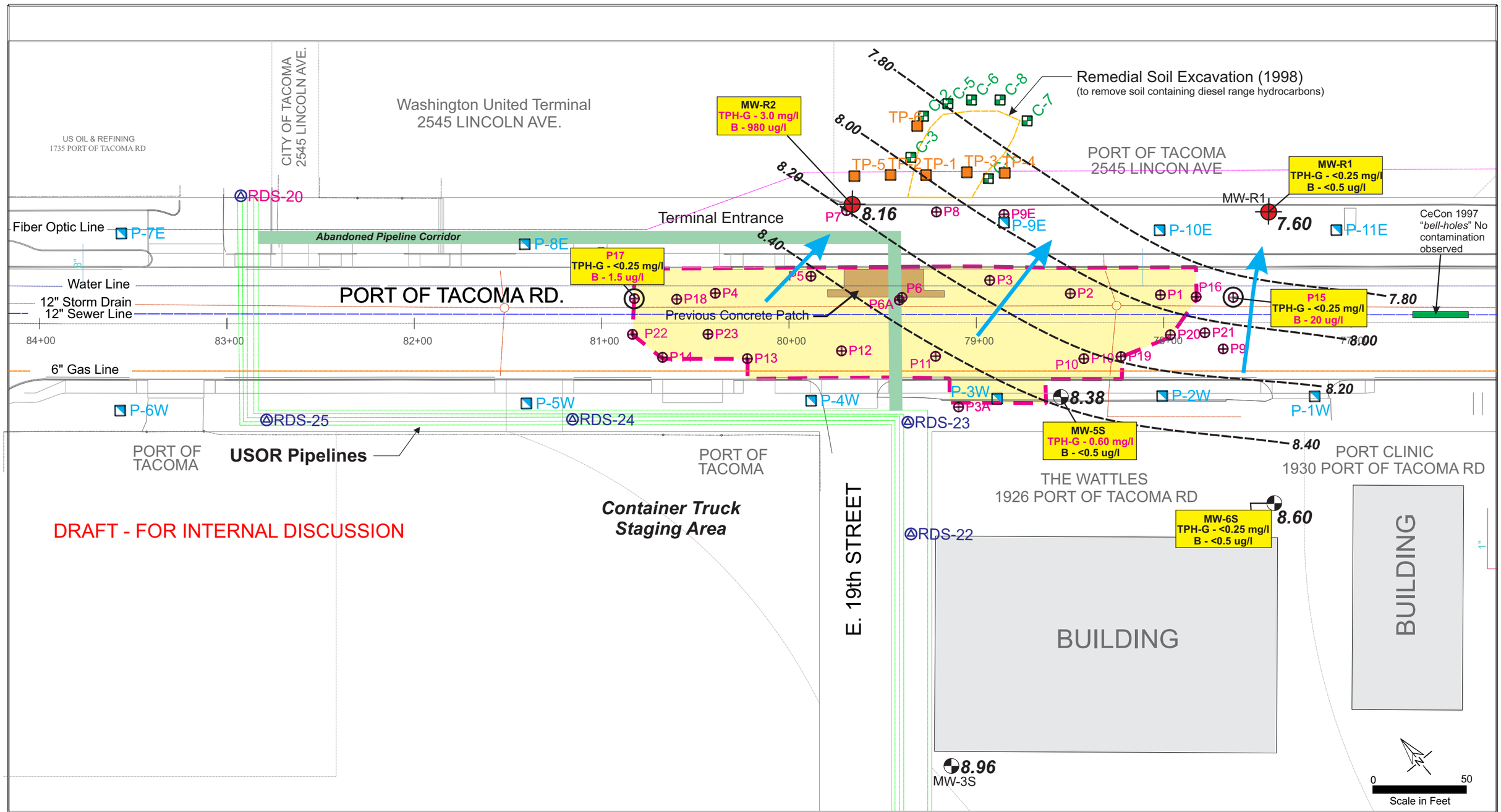
1920 Port of Tacoma Rd.
Tacoma, Washington

Benzene Soil Concentration Profile I-I'

USO-023-00 **FIGURE 8d** Dec. 2014

Dalton, Olmsted & Fuglevand, Inc.

Ref: Benzene Section I-I'.cdr



DRAFT - FOR INTERNAL DISCUSSION

P-6W Push-Probe (1997)
P9 Push-Probe (2012 & 2014)
RDS-25 Piipeline Trench Sample (2007)
TP-6 Test Pit (1997)
C-7 Test Pit (1998)

MW-3S Monitoring Well (Installed in 1992)
MW-R1 Monitoring Well (Installed in 2014)
P17 Push-Probe Groundwater Sample (2014)
8.16 Water Level Elevation (feet NAVD88)
Groundwater Contour

Estimated Groundwater Flow Direction
TPH-G - Gasoline Range Hydrocarbons
B - Benzene
Remedial Core Area

2014-15-12 USOil PTRd GW Flow.cdr

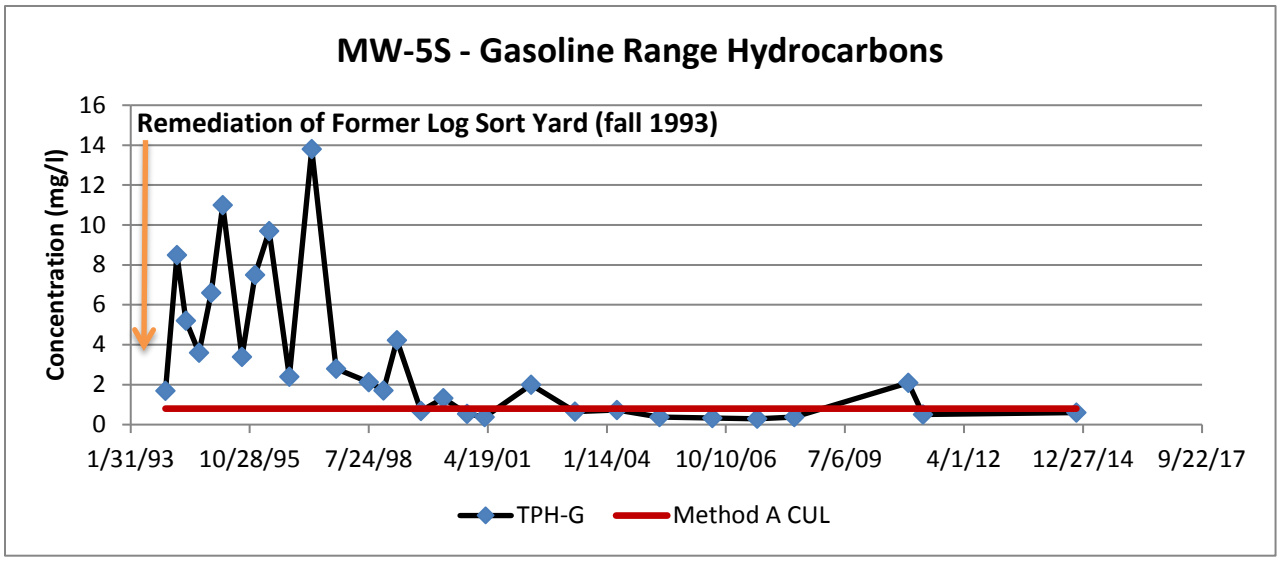
U.S. Oil & Refining Company
Tacoma, WA
1920 Port of Tacoma Rd.

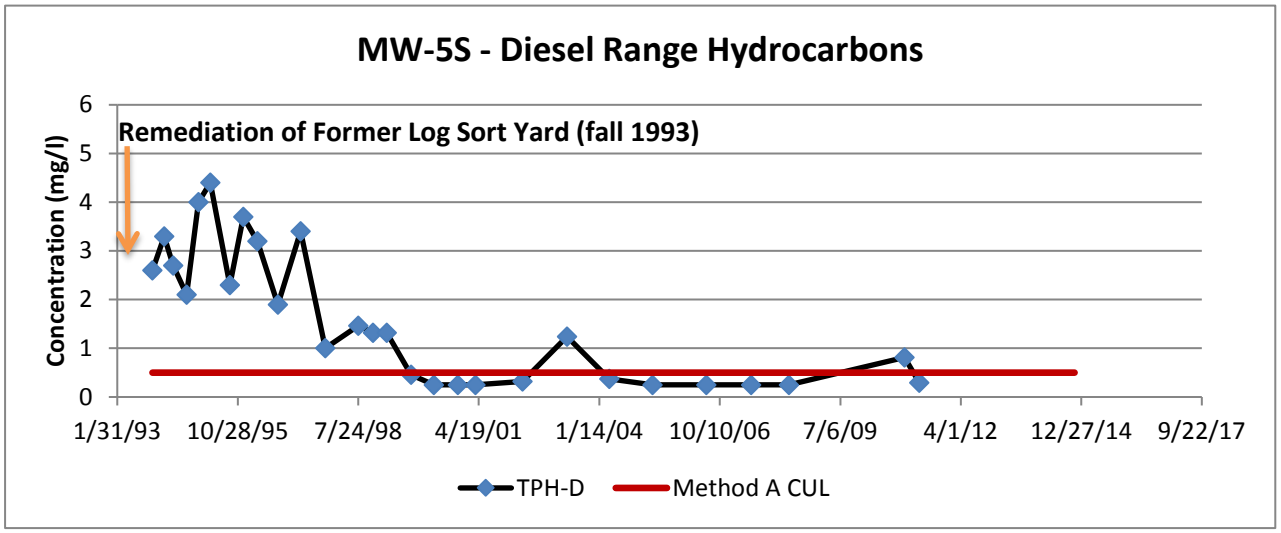
Estimated Groundwater Flow Directions and
TPH-G/Benzene Concentrations in Groundwater
November 1, 2014

DALTON OLMSTED FUGLEVAND

FIGURE
9

December 2014





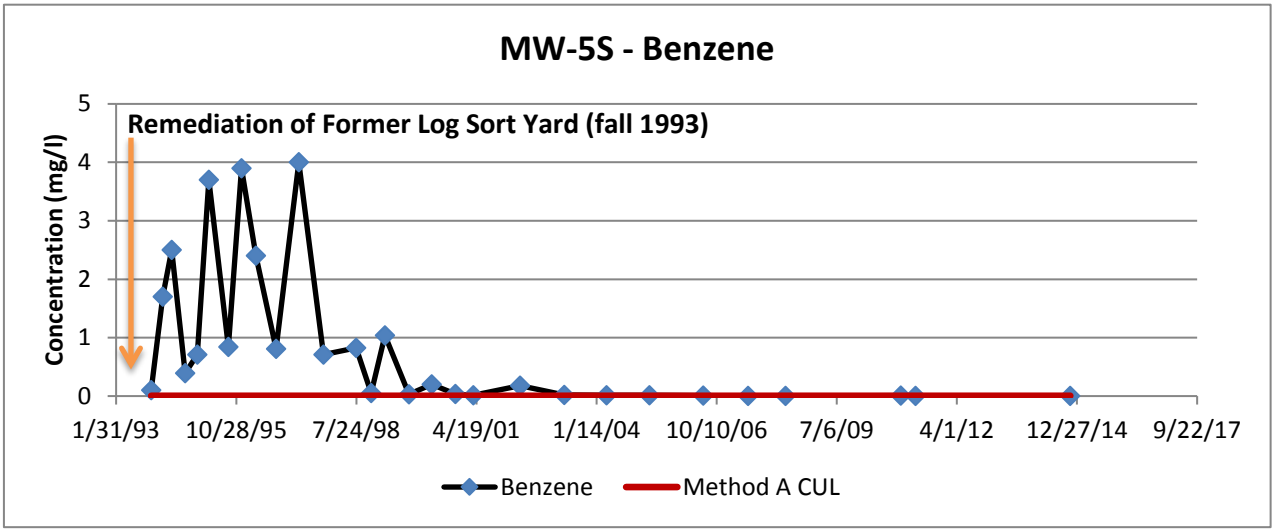
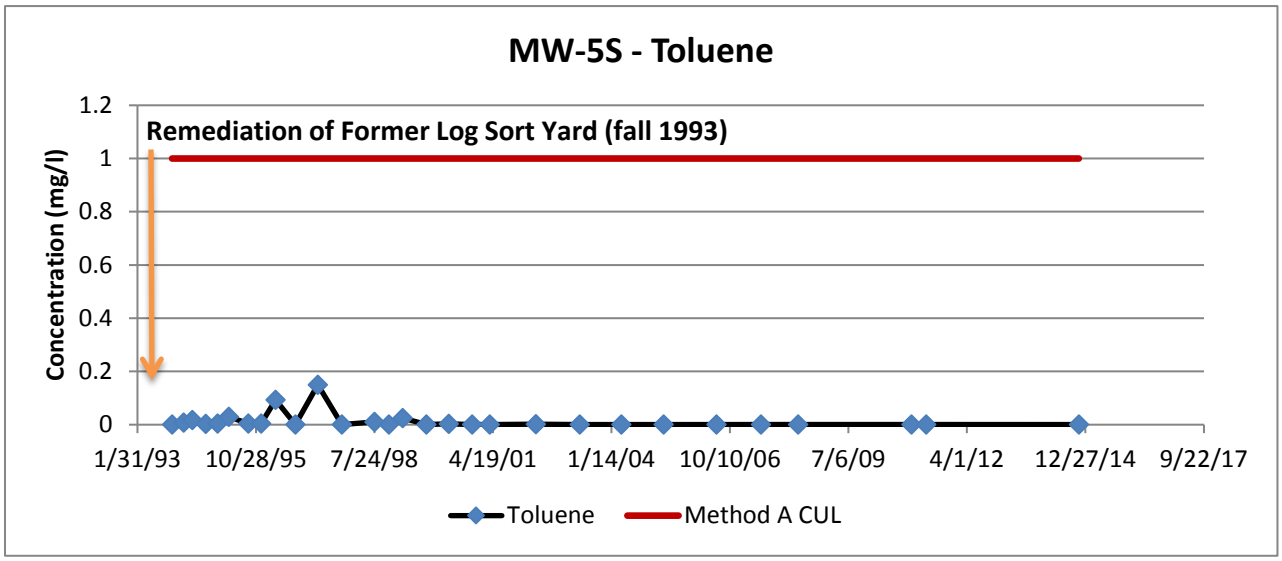
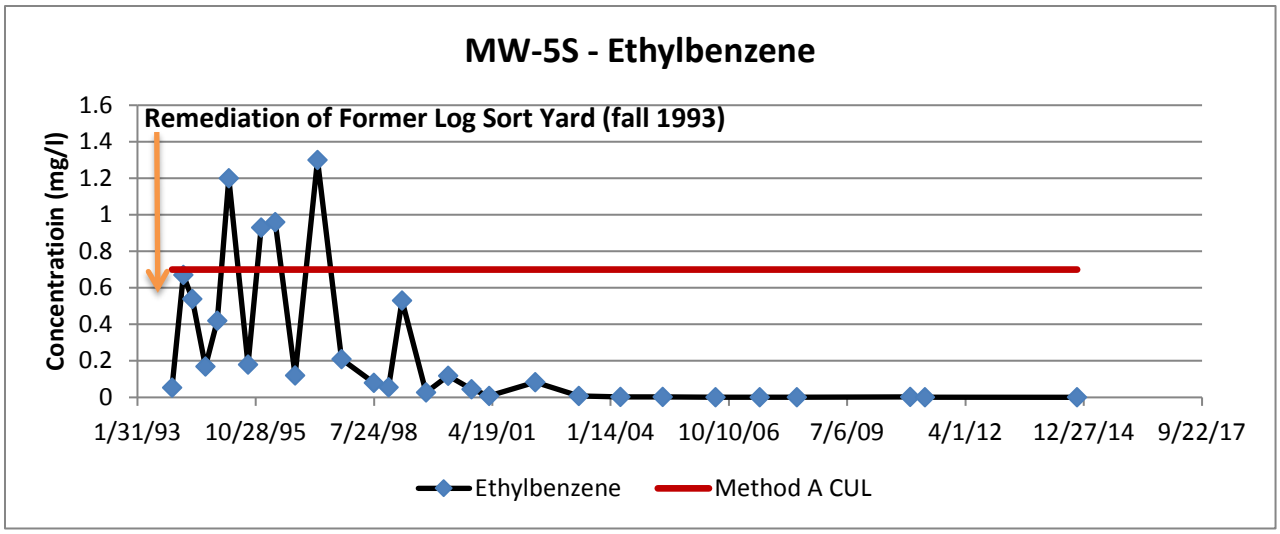


FIGURE 10 - Concentration Plots - MW-5S





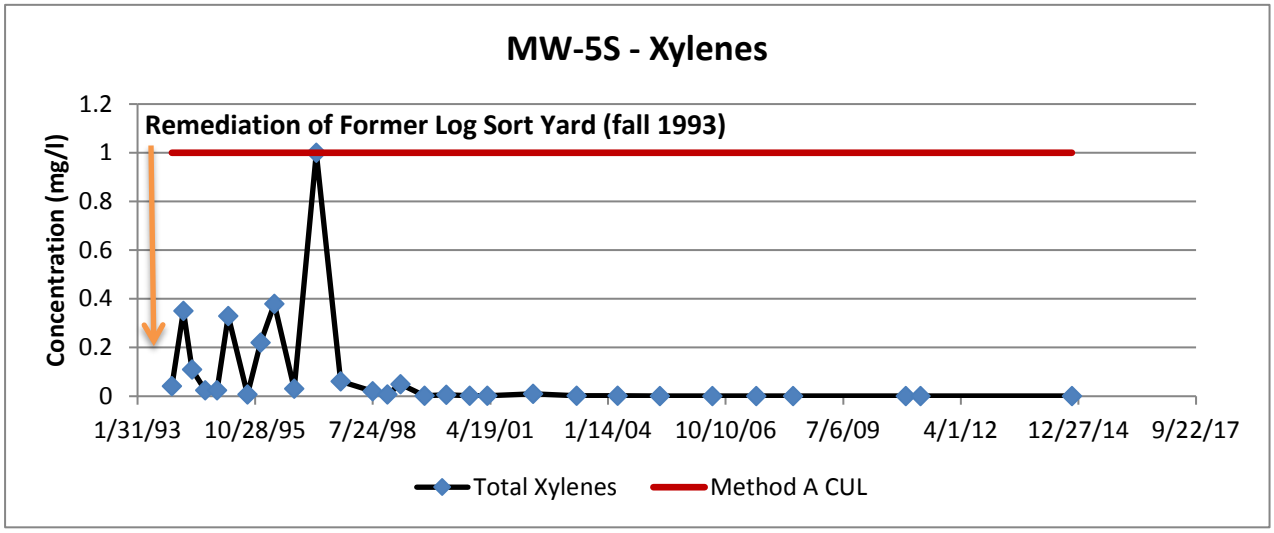


FIGURE 10 - Concentration Plots - MW-5S

APPENDIX A

SAMPLE LOCATION COORDINATES AND MONITORING WELL ELEVATIONS

INTERIM ACTION AND MONITORING PLAN
1920 PORT OF TACOMA RD.
TACOMA, WASHINGTON

TABLE A1 - Sample Location Coordinates

Location	Northing	Easting
Push-Probes		
P1	709319	1169351
P2	709353	1169317
P3	709388	1169291
P3A	709351	1169232
P4	709485	1169181
P5	709456	1169224
P6	709414	1169251
P6A	709414	1169249
P7	709468	1169262
P8	709434	1169296
P9	709275	1169355
P9E	709408	1169321
P10	709323	1169298
P11	709379	1169242
P12	709416	1169208
P13	709448	1169169
P14	709480	1169137
P15	709291	1169378
P16	709305	1169364
P17	709513	1169148
P18	709497	1169164
P19	709310	1169313
P20	709300	1169340
P21	709288	1169354
P22	709500	1169134
P23	709472	1169163
Monitoring Wells		
MW-3S	709217	1169096
MW-5S	709316	1169274
MW-6S	709197	1169318
MW-R1	709316	1169415
MW-R2	709468	1169263

NAD83/96 Conus CORS96

TOUMA ENGINEERS,PLLC	PROJECT:	1926 PORT OF TACOMA ROAD BUILDING
255 SW 41st Street	JOB NO. :	525-317-014
RENTON, WASHINGTON 98057	GRADES FOR:	MONITORING WELL ELEVATIONS
OFFICE NO. (425) 251-0665	CALC: DT	DATE 12/15/2014
FAX NO. (425) 251-0625	FILE:	

STATION		RIM EL	TOP PLUG EL	DESCRIPTION
		Elevations in NGVD 1929 vertical Datum		
MON #1		10.65	10.40	MONITORING WELL NORTH RIM
MON #2		10.76	10.47	MONITORING WELL NORTH RIM
MON #3		10.14	9.73	MONITORING WELL NORTH RIM
MON #4		11.01	10.59	MONITORING WELL NORTH RIM
MON #5		10.62	10.42	MONITORING WELL NORTH RIM
MON #6		10.55		MONITORING WELL NORTH RIM
	City of Tacoma Benchmark # 3391: Found 2" brass disk at the intersection of lincoln Ave and Port of Tacoma Road Elevaion = 10.909 (NGVD 1929)			
	Conversion from NGVD 1929 to NAVD 88 Elevtions is +1.067 meters (+3.50 feet)			
		Elevations in NAVD 88 vertical Datum		
MON #1	BS	14.15	13.90	MONITORING WELL NORTH RIM
MON #2	RW-1	14.26	13.97	MONITORING WELL NORTH RIM
MON #3	SS	13.67	13.23	MONITORING WELL NORTH RIM
MON #4	RW-2	14.51	14.07	MONITORING WELL NORTH RIM
MON #5	3S	14.02	13.92	MONITORING WELL NORTH RIM
MON #6	3M	14.05		MONITORING WELL NORTH RIM

APPENDIX B

PUSH-PROBE LOGS – 2012 TO 2014

INTERIM ACTION AND MONITORING PLAN
1920 PORT OF TACOMA RD.
TACOMA, WASHINGTON

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

1920 Port of Tacoma Road

BORING - DESCRIPTION OF SAMPLES & DATA

P1

Field Rep: DG Cooper	Location: N709319 E1169351	
Drilling Co.: Cascade	Elevation (Ft.):	Ground Surface: Asphalt Pavement
Driller: Josh Marks	Date Completed: 05/19/12	
Drill Type: Geoprobe 6600	Weather: Clear 60F	
Size/Type Casing: 2" Rod	Hammer Type: Direct push	Sampler Type: 2" Macro w/ acrylic liner

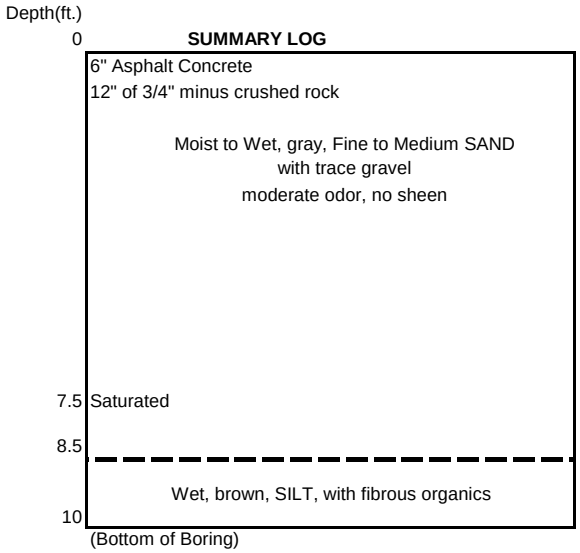
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	48		0-0.5 Asphalt concrete
A	Grab 1-2'	272			0905	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	381			0910	1.5-5 Moist, gry, F-M SAND, w/trace gravel, odor, ns
			5-10	50		5-8.5 Wet to sat, gry, F-M SAND, w/trace gravel, odor, no sheen
C	Grab 5-6'	177			0915	Saturated below 7.5'
D	Grab 7-8'	107			0920	8.5-10 Wet, bwn, silt, w/fibrous organics, no, ns
E	Grab 9-10'	2.1			0925	

LABORATORY SAMPLES:

Soil:
USO-P1-A
USO-P1-B
USO-P1-C
USO-P1-D
USO-P1-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P2

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709353 E1169317
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 60F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	3,800			1005	0.5-1.0 3/4" minus crushed rock
B	Grab 3-4'	>5,000			1010	1.0-5 Moist, gry, F-M SAND, w/trace gravel, odor, ns
			5-10	60		5-8.0 Wet to sat, gry, F-M SAND, w/trace gravel, odor, no sheen
C	Grab 5-6'	>5000			1015	Saturated below 7.5'
D	Grab 7-8'	2,760			1020	8.0-10 Wet, bwn, silt, w/fibrous organics, no, ns
E	Grab 9-10'	35			1025	

LABORATORY SAMPLES:

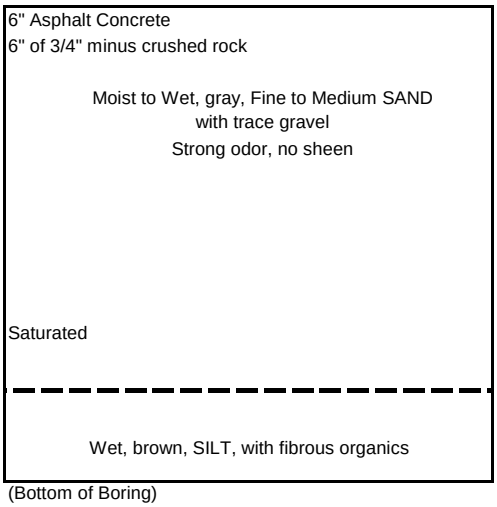
Soil:
USO-P2-A
USO-P2-B
USO-P2-C
USO-P2-D
USO-P2-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated

Depth(ft.)

0 **SUMMARY LOG**



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P3

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709388 E1169291
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 60F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

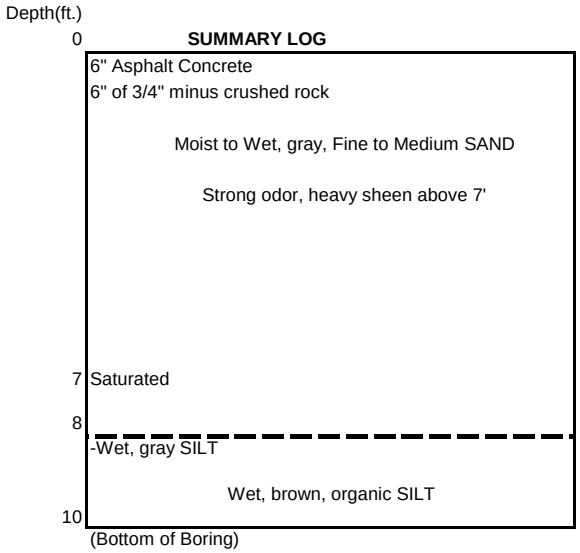
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	>5,000			1045	0.5-1.0 3/4" minus crushed rock
B	Grab 3-4'	3,380			1050	1.0-5 Moist, gry, F-M SAND, odor, sheen
			5-10	50		5-8.0 Wet to sat, gry, F-M SAND, odor, sheen
C	Grab 5-6'	4,320			1055	Saturated below 7'
D	Grab 7-8'	15			1100	8.0-8.2 Wet, gry, SILT
E	Grab 9-10'	2			1105	8.2-10 Wet, bwn, organic, SILT, no, ns

LABORATORY SAMPLES:

Soil:
USO-P3-A
USO-P3-B
USO-P3-C
USO-P3-D
USO-P3-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P3A

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Brad Hanratty
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709351 E1169232 NAD83/96
Elevation (Ft.):
Date Completed: 10/11/14
Weather: Cloudy 65F
Hammer Type: Direct push

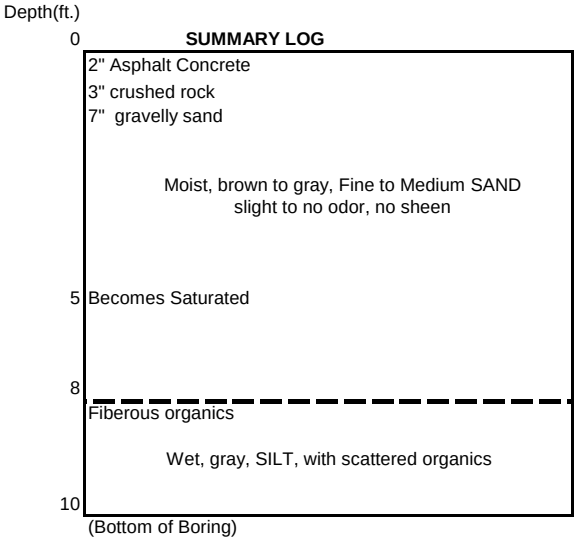
Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete/crushed rock
A	Grab 1-2'	200			0905	0.5-1 gravelly sand
B	Grab 3-4'	38			0910	1-5 Moist, gry, F-M SAND, slight odor, no sheen
			5-10	60		5-8 As above, saturated, no odor, no sheen
C	Grab 5-6'	7			0915	8-8.3 Wet, bwn, fibrous organics
D	Grab 7-8'	1			0920	8.3-10 Wet, gry, SILT, w/scattered organics
E	Grab 9-10'	0.1			0925	
			10-15	20		Poor recovery - Sat, gry, F sandy, SILT

LABORATORY SAMPLES:

Soil:
USO-P3A-A
USO-P3A-B
USO-P3A-C
USO-P3A-D
USO-P3A-E

Notes: Completed boring backfilled with bentonite grout



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P4

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709485 E1169181
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

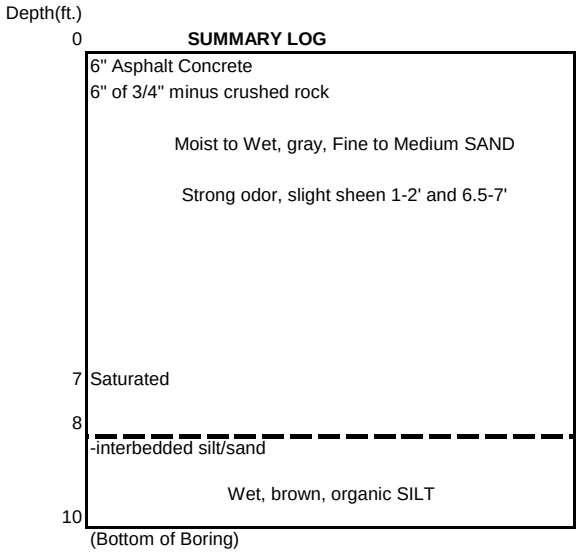
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	305			1125	0.5-1.0 3/4" minus crushed rock
B	Grab 3-4'	2,430			1130	1.0-5 Moist, gry, F-M SAND, odor, sheen
						Brown staining 1-2'
			5-10	55		5-8.0 Wet to sat, gry, F-M SAND, odor, sheen 6.5-7'
C	Grab 5-6'	336			1135	Saturated below 7'
D	Grab 7-8'	222			1140	8.0-8.5 interbedded SILT/SAND, no, ns
E	Grab 9-10'	51			1145	8.5-10 Wet, bwn, organic, SILT, no, ns

LABORATORY SAMPLES:

Soil:
USO-P4-A
USO-P4-B
USO-P4-C
USO-P4-D
USO-P4-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P5

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709456 E1169224
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

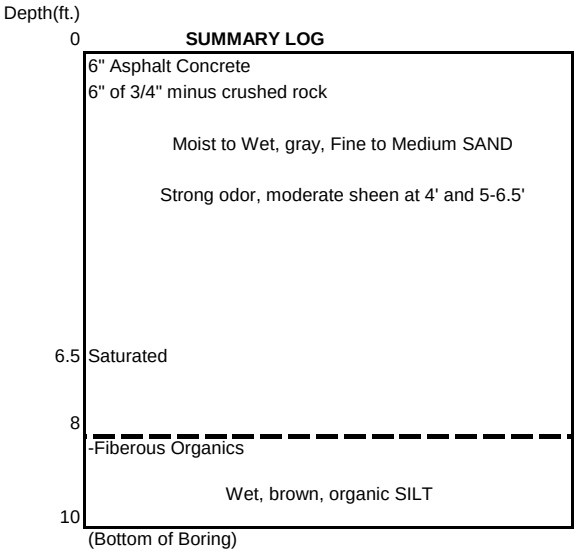
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	315			1205	0.5-1.0 3/4" minus crushed rock
B	Grab 3-4'	2,987			1210	1.0-5 Moist, gry, F-M SAND, odor, sheen @ 4'
			5-10	50		5-8.0 Wet to sat, gry, F-M SAND, odor, sheen 5-6.5'
C	Grab 5-6'	183			1215	Saturated below 6.5'
D	Grab 7-8'	27			1220	8.0-8.3 Wet, bwn, silty, Fibrous Organics
E	Grab 9-10'	9			1225	8.3-10 Wet, bwn, organic, SILT, no, ns

LABORATORY SAMPLES:

Soil:
USO-P5-A
USO-P5-B
USO-P5-C
USO-P5-D
USO-P5-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P6

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709414 E1169251
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

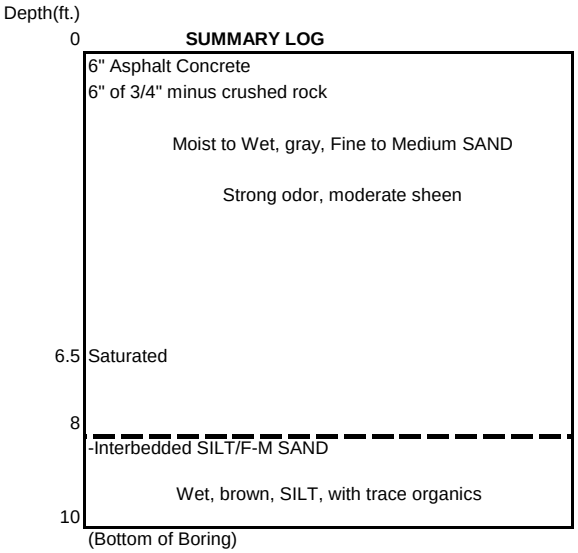
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	1,589			1335	0.5-1.0 3/4" minus crushed rock
B	Grab 3-4'	1,073			1340	1.0-5 Moist, gry, F-M SAND, odor, sheen
			5-10	55		5-8.0 Wet to sat, gry, F-M SAND, odor, sheen
C	Grab 5-6'	1,171			1345	Saturated below 7'
D	Grab 7-8'	785			1350	8.0-9.0 Interbedded Silt & F-M Sand, no, ns
E	Grab 9-10'	47			1400	9-10 Wet, bwn, SILT, w/trace organics, no, ns

LABORATORY SAMPLES:

Soil:
USO-P6-A
USO-P6-B
USO-P6-C
USO-P6-D
USO-P6-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P6A

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

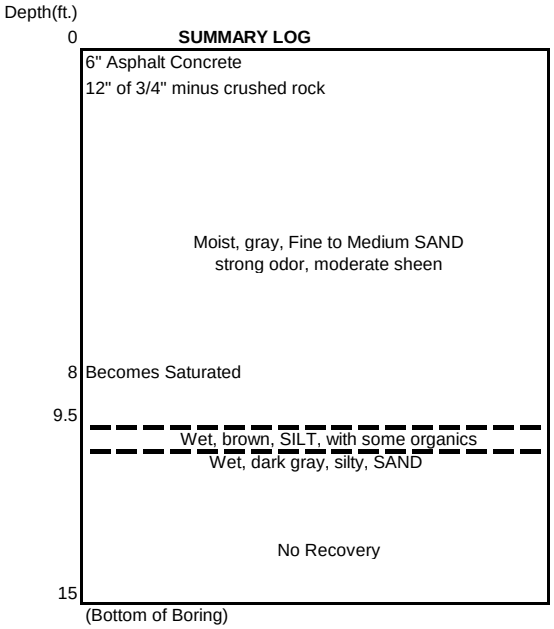
Location: N709414 E1169249 NAD83/96, Between USOR pipelines
Elevation (Ft.):
Date Completed: 07/12/14
Weather: Clear 85F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
						0.5-1 3/4" minus crushed rock
						1-5 Wet, gry, F-M SAND, strong odor, moderate sheen
			5-10	50		5-9 As above, strong odor, sheen throughout
F	Grab 9-9.5'	60			1110	Saturated below 8'
G	Grab 9.5-10'	31			1115	9-9.5 Wet, bwn, SILT, w/some organics, no, ns
						9.5-10 Wet, dk gry, silty, SAND, with silt interbeds
			10-15	0		No recovery, three attempts with different samplers

LABORATORY SAMPLES: **Soil:**
USO-P6A-F
USO-P6A-G

Notes: Completed boring backfilled with bentonite grout



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P7

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709468 E1169262
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

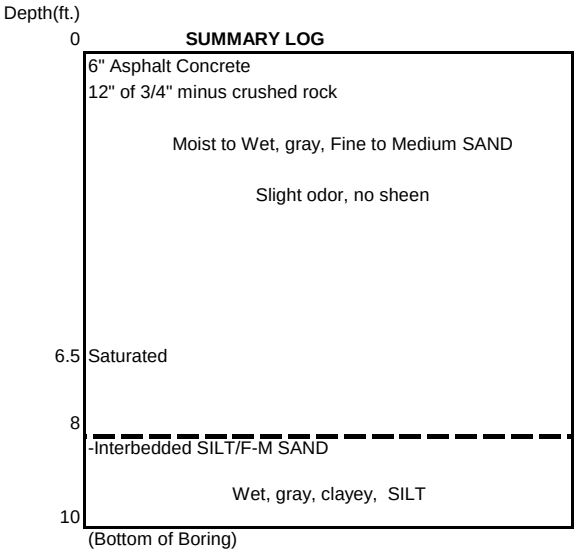
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1.5-2'	8			1420	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	20			1425	1.5-5 Moist, gry, F-M SAND, silt clast @ 4.5', odor, ns
			5-10	55		5-8.5 Wet to sat, gry, F-M SAND, no, ns
C	Grab 5-6'	8			1430	Saturated below 7'
D	Grab 7-8'	12			1435	8.5-9.0 Interbedded Silt & F-M Sand, no, ns
E	Grab 9-10'	0			1440	9-10 Wet, gry, clayey, SILT, plastic, no, ns

LABORATORY SAMPLES:

Soil:
USO-P7-A
USO-P7-B
USO-P7-C
USO-P7-D
USO-P7-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P8

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709434 E1169296
Elevation (Ft.):
Date Completed: 05/19/12
Weather: Clear 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	48		0-0.7 Asphalt concrete
A	Grab 2-3'	26			1505	0.7-2.0 3/4" minus crushed rock
B	Grab 4-5'	9			1510	2.0-5 Moist, gry, F-M SAND, w/some gravel, no, ns
			5-10	40		5-6 Wet to sat, gry, F-M SAND, w/some gravel, no, ns
C	Grab 6-7'	5		poor recovery	1515	6-7 Sat, gry, M-C SAND, no, ns
D	Grab 7-8'	140			1520	7-8 Sat, gry, F-M SAND, no, ns

LABORATORY SAMPLES:

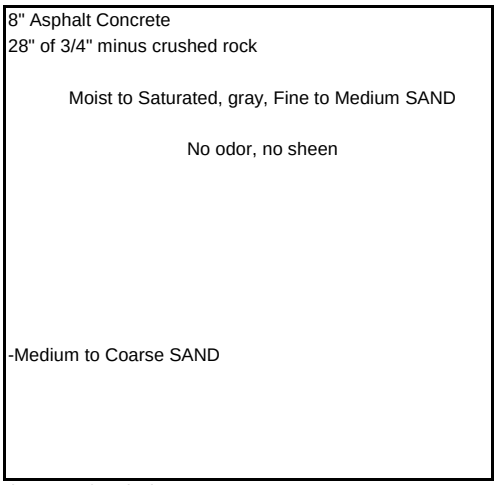
Soil:
USO-P8-A
USO-P8-B
USO-P8-C
USO-P8-D

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated

Depth(ft.)

SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P9

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709275 E1169355
Elevation (Ft.):
Date Completed: 05/20/12
Weather: showers 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	60		0-0.5 Asphalt concrete
A	Grab 1-2'	0			0905	0.5-1.1 3/4" minus crushed rock
B	Grab 3-4'	0			0910	1.1-5 Moist, gry, F-M SAND, no, ns
			5-10	55		5-8.5 Wet to sat, gry, F-M SAND, no, ns
C	Grab 5-6'	0			0915	Saturated below 7'
D	Grab 7-8'	0			0920	8.5-10.0 Wet, gry, clayey, SILT, w/trace organics, no, ns
E	Grab 9-10'	0			0925	

LABORATORY SAMPLES:

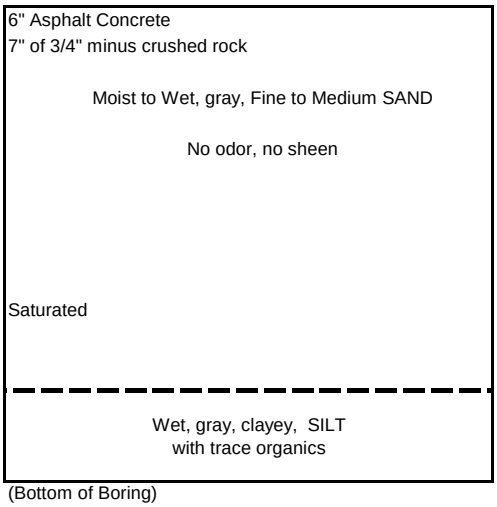
Soil:
USO-P9-A
USO-P9-B
USO-P9-C
USO-P9-D
USO-P9-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated

Depth(ft.)

SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P9E

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Brad Hanratty
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709408 E1169321 NAD83/96
Elevation (Ft.):
Date Completed: 10/11/14
Weather: Cloudy 60F
Hammer Type: Direct push

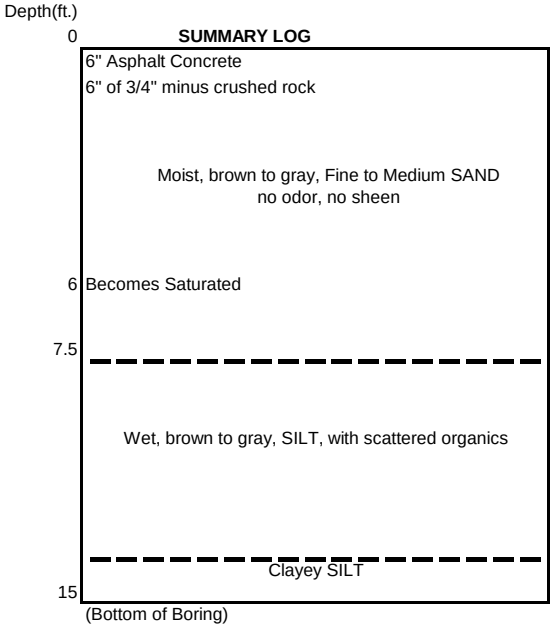
Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	0.1			1135	0.5-1 3/4" minus crushed rock
B	Grab 3-4'	0.3			1140	1-5 Moist, bwn, F-M SAND, no odor, no sheen
			5-10	60		5-6 As above, becoming wet, no odor, no sheen
C	Grab 5-6'	0.4			1145	6-7.5 Sat, gry, F-M SAND
D	Grab 7-8'	15.1			1150	7.5-10 Wet, gry-bwn, SILT, w/scattered organics
E	Grab 9-10'	0.2			1155	
			10-15	55		10-14 Wet, gry, SILT, w/organics, marsh grass
						14-15 Wet, gry, clayey SILT, with thin sand interbed @ 14'

LABORATORY SAMPLES:

Soil:
USO-P9E-A
USO-P9E-B
USO-P9E-C
USO-P9E-D
USO-P9E-E

Notes: Completed boring backfilled with bentonite grout



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P10

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709323 E1169298
Elevation (Ft.):
Date Completed: 05/20/12
Weather: showers 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

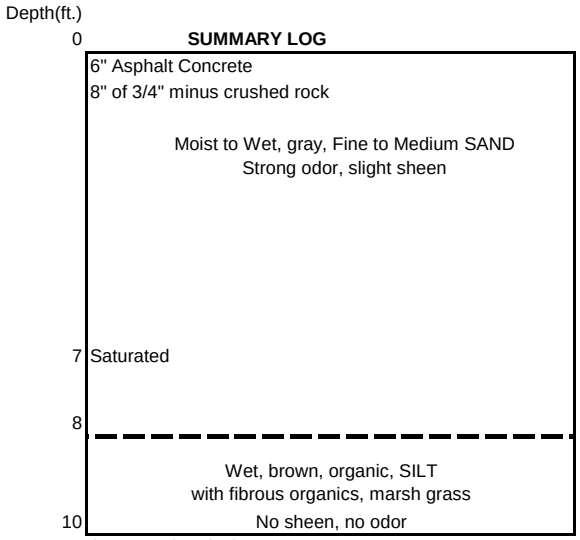
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1.2-2'	4,090			0935	0.5-1.2 3/4" minus crushed rock
B	Grab 3-4'	>5,000			0940	1.2-5 Moist, gry, F-M SAND, odor, sheen
			5-10	55		5-8 Wet to sat, gry, F-M SAND, odor, sheen
C	Grab 5-6'	1,826			0945	Saturated below 7'
D	Grab 7-8'	17			0950	8-10 Wet, bwn, organic, SILT, w/fibrous organics, no, ns
E	Grab 9-10'	5			0955	

LABORATORY SAMPLES:

Soil:
USO-P10-A
USO-P10-B
USO-P10-C
USO-P10-D
USO-P10-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P11

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709379 E1169242
Elevation (Ft.):
Date Completed: 05/20/12
Weather: showers 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

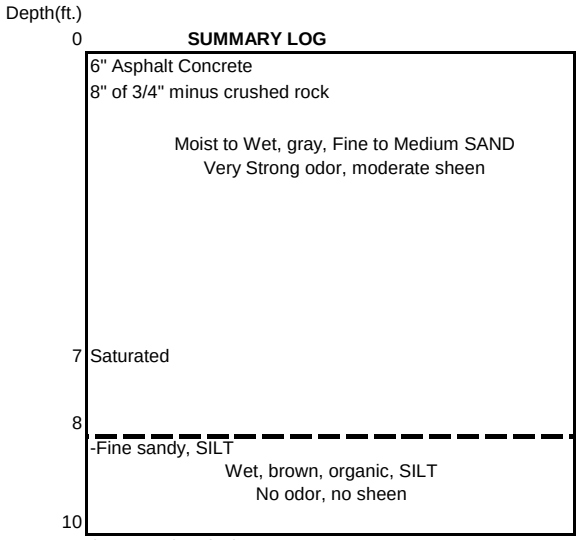
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1.3-2'	4,111			1005	0.5-1.3 3/4" minus crushed rock
B	Grab 3-4'	2,220			1010	1.3-5 Moist, gry, F-M SAND, odor, sheen
			5-10	55		5-8.2 Wet to sat, gry, F-M SAND, odor, sheen
C	Grab 5-6'	351			1015	Saturated below 7'
D	Grab 7-8'	29			1020	8.2-8.5 Sat, gry, F sandy, SILT, odor, ns
E	Grab 9-10'	5			1030	8.5-10 Wet, bwn, organic, SILT, no, ns

LABORATORY SAMPLES:

Soil:
USO-P11-A
USO-P11-B
USO-P11-C
USO-P11-D
USO-P11-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P12

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709416 E1169208
Elevation (Ft.):
Date Completed: 05/20/12
Weather: showers 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

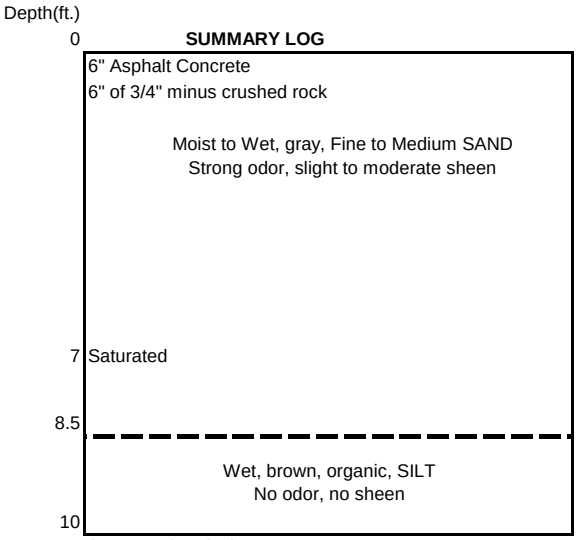
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	387			1050	0.5-1 3/4" minus crushed rock
B	Grab 3-4'	390			1055	1-5 Moist, gry, F-M SAND, odor, sheen
			5-10	50		5-8.5 Wet to sat, gry, F-M SAND, odor, sheen
C	Grab 5-6'	384			1100	Saturated below 7'
D	Grab 7-8'	8			1105	8.5-10 Wet, bwn, Organic, SLT, no, ns
E	Grab 9-10'	31			1110	

LABORATORY SAMPLES:

Soil:
USO-P12-A
USO-P12-B
USO-P12-C
USO-P12-D
USO-P12-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P13

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709448 E1169169
Elevation (Ft.):
Date Completed: 05/20/12
Weather: showers 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement

Sampler Type: 2" Macro w/ acrylic liner

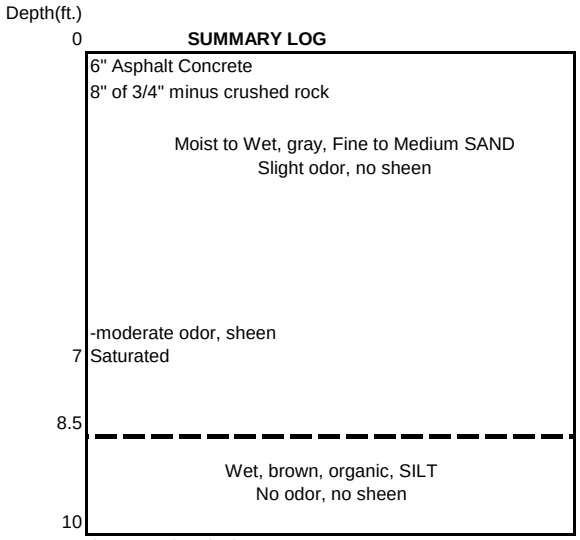
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	145			1125	0.5-1.3 3/4" minus crushed rock
B	Grab 3-4'	181			1130	1.3-5 Moist, gry, F-M SAND, odor, ns
			5-10	50		5-8.5 Wet to sat, gry, F-M SAND, odor, sheen 6.5-7'
C	Grab 5-6'	184			1135	Saturated below 7'
D	Grab 7-8'	2			1140	8.5-10 Wet, bwn, Organic, SLT, w/marsh grass, no, ns
E	Grab 9-10'	3			1145	

LABORATORY SAMPLES:

Soil:
USO-P12-A
USO-P12-B
USO-P12-C
USO-P12-D
USO-P12-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P14

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Josh Marks
Drill Type: Geoprobe 6600
Size/Type Casing: 2" Rod

Location: N709480 E1169137
Elevation (Ft.):
Date Completed: 05/20/12
Weather: showers 65F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	60		0-0.5 Asphalt concrete
A	Grab 1-2'	1			1220	0.5-1.3 3/4" minus crushed rock
B	Grab 3-4'	0			1225	1.3-5 Moist, gry, F-M SAND, no, ns
			5-10	55		5-8.2 Wet to sat, gry, F-M SAND, no, ns
C	Grab 5-6'	1			1230	Saturated below 7'
D	Grab 7-8'	1			1235	8.2-8.5 Wet, gry, organic, SAND, fibrous organics, no, ns
E	Grab 9-10'	0			1240	8.5-10 Wet, gry, clayey, SILT, w/trace organics, no, ns

LABORATORY SAMPLES:

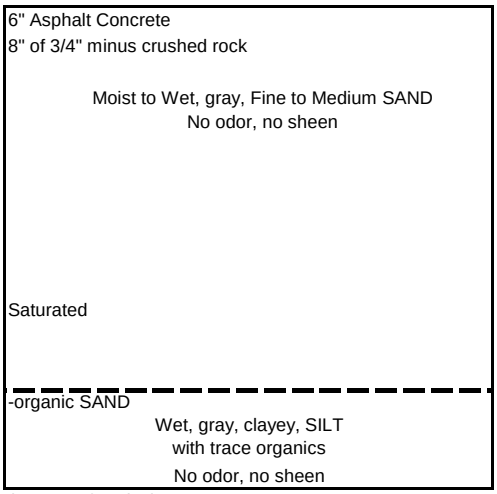
Soil:
USO-P12-A
USO-P12-B
USO-P12-C
USO-P12-D
USO-P12-E

Notes: Completed boring backfilled with bentonite grout

ns - no sheen
no - no odor
F - fine
M - medium
Sat. - saturated

Depth(ft.)

SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P15

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709291 E1169378 NAD83/96
Elevation (Ft.):
Date Completed: 07/12/14
Weather: Clear 75F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	1.3			0905	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	0.5			0910	1.5-5 Moist, bwn, F-M SAND, w/trace gravel, no odor, no sheen
			5-10	50		5-9.5 As above, no odor, no sheen
C	Grab 5-6'	0.4			0915	Saturated below 8.5'
D	Grab 7-8'	0.9			0920	9.5-10 Wet, bwn-gry, SILT, w/some sand, trace organics, no, ns
E	Grab 9-10'	1.2			0925	

LABORATORY SAMPLES:

Soil:
USO-P15-A
USO-P15-B
USO-P15-C
USO-P15-D
USO-P15-E

Notes: Set temporary SS Screen from 8-12' below ground surface
Temperature 20.9C
pH 7.0
Conductivity 822 uS/cm
Water sample USO-W-P15 @ 0945

Completed boring backfilled with bentonite grout

Depth(ft.)

0 **SUMMARY LOG**

6" Asphalt Concrete
12" of 3/4" minus crushed rock

Moist to Wet, gray, Fine to Medium SAND
with trace gravel
no odor, no sheen

8.5 Becomes Saturated

9.5

Wet, brown, SILT, with some sand, trace organics

10 (Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P16

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709305 E1169364 NAD83/96
Elevation (Ft.):
Date Completed: 07/12/14
Weather: Clear 75F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

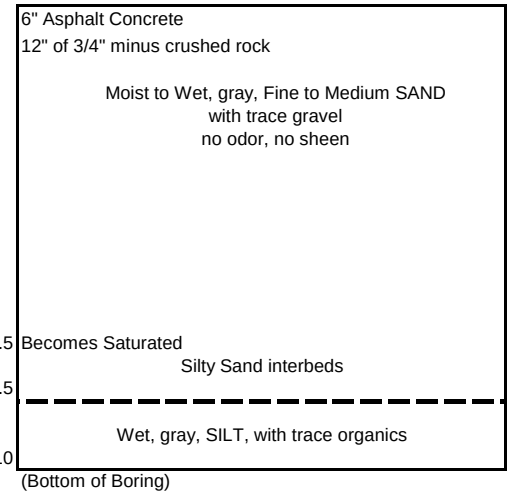
Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	2.5			1005	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	275			1010	1.5-5 Moist to wet, gry, F-M SAND, moderate odor, no sheen
			5-10	55		5-7.5 As above, no odor, no sheen
C	Grab 5-6'	17			1015	7.5-9.5 wet-sat, gry, F-M SAND, w/silty sand interbeds
D	Grab 7-8'	3			1020	Saturated below 8.5'
E	Grab 9.5-10'	1.3			1025	9.5-10 Wet, gry, SILT, w/trace organics, no, ns

LABORATORY SAMPLES: **Soil:**
USO-P16-A
USO-P16-B
USO-P16-C
USO-P16-D
USO-P16-E

Notes: Completed boring backfilled with bentonite grout

Depth(ft.)

SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P17

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709513 E1169148 NAD83/96
Elevation (Ft.):
Date Completed: 07/12/14
Weather: Clear 85F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	45		0-0.5 Asphalt concrete
A	Grab 1-2'	2.2			1250	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	2.3			1255	1.5-3 Moist, gry, gravelly, SAND, no odor, no sheen
						3-5 Moist, gry, F-M SAND, no odor, no sheen
			5-10	50		5-9 As above, no odor, no sheen
C	Grab 5-6'	1.3			1300	Saturated below 8'
D	Grab 7-8'	1.3			1305	9-9.3 Wet, bwn, SILT, w/some organics, no, ns
E	Grab 9.3-10'	1			1310	9.3-10 Sat, gry, F-M SAND
			10-15	55		10-14 As Above, w/gravelly zone @ 12'
F	Grab 11-12'	1.3			1315	14-15 2" thick Silty Sand interbeds

LABORATORY SAMPLES:

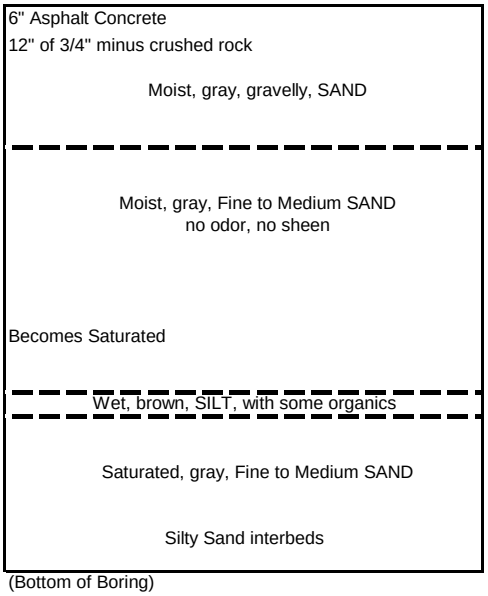
Soil:
USO-P17-A
USO-P17-B
USO-P17-C
USO-P17-D
USO-P17-E
USO-P17-F

Notes: Set temporary SS Screen from 8-12' below ground surface
Temperature 22.1C
pH 7.2
Conductivity 494 uS/cm
Water sample USO-W-P17 @ 1330

Completed boring backfilled with bentonite grout

Depth(ft.)

SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P18

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709497 E1169164 NAD83/96
Elevation (Ft.):
Date Completed: 07/12/14
Weather: Clear 85F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	45		0-0.5 Asphalt concrete
A	Grab 1-2'	18.2			1350	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	344			1355	1.5-5 Moist, gry, F-M SAND, moderate odor, no sheen
			5-10	50		5-10 As above, slight odor, no sheen
C	Grab 5-6'	24			1400	Saturated below 8'
D	Grab 7-8'	11			1405	
E	Grab 9-10'	1.6			1410	
			10-15	24		10-12 As Above
F	Grab 11-12'	2.3			1415	bottom 3' dropped out of sampler, no silt

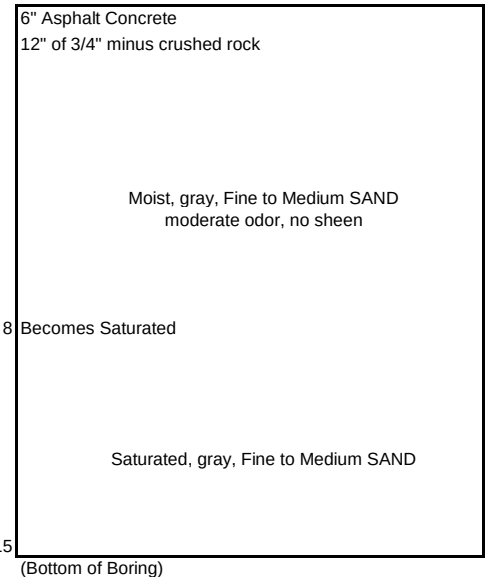
LABORATORY SAMPLES:

Soil:
USO-P18-A
USO-P18-B
USO-P18-C
USO-P18-D
USO-P18-E
USO-P18-F

Notes: Completed boring backfilled with bentonite grout

Depth(ft.)

SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P19

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

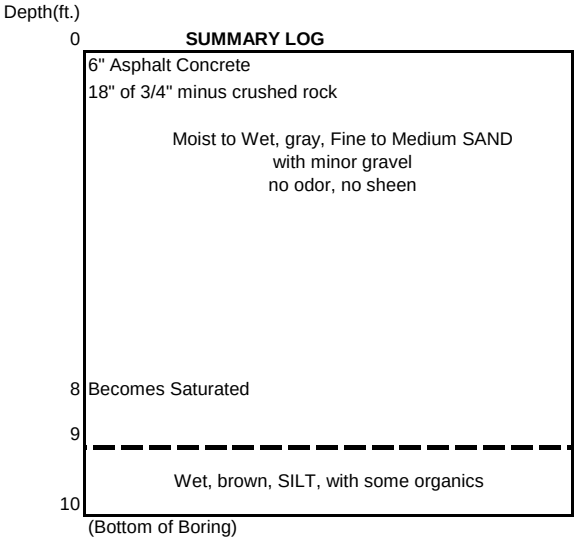
Location: N709310 E1169313 NAD83/96
Elevation (Ft.):
Date Completed: 07/13/14
Weather: Clear 75F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	20.4			0815	0.5-2.0 3/4" minus crushed rock
B	Grab 3-4'	24.7			0820	2-5 Moist, gry, F-M SAND, w/minor gravel, no odor, no sheen
			5-10	40		5-9 Wet-sat, gry, F-M SAND, no odor, no sheen
C	Grab 5-6'	12.1			0825	Saturated below 8'
D	Grab 7-8'	0.8			0830	9-10 Wet, bwn, SILT, w/some organics
E	Grab 9-10'	2.1			0835	

LABORATORY SAMPLES: **Soil:**
USO-P19-A
USO-P19-B
USO-P19-C
USO-P19-D
USO-P19-E

Notes: Completed boring backfilled with bentonite grout



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P20

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

Location: N709300 E1169340 NAD83/96
Elevation (Ft.):
Date Completed: 07/13/14
Weather: Clear 75F
Hammer Type: Direct push

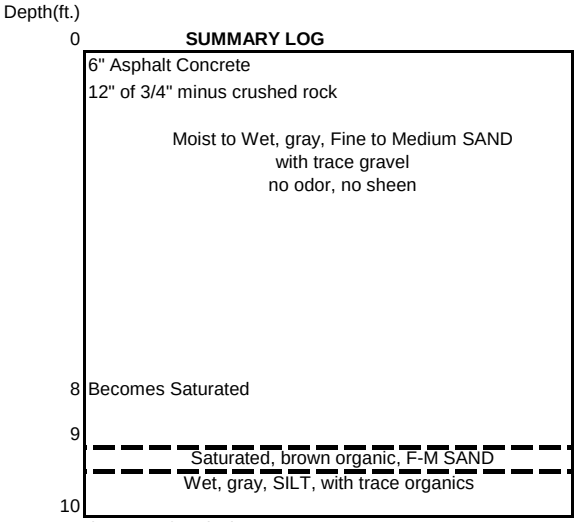
Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	6.7			0855	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	5.7			0900	1.5-5 Moist, gry, F-M SAND, w/trace gravel, no odor, no sheen
			5-10	60		5-9 Wet-sat, gry, F-M SAND, no odor, no sheen
C	Grab 5-6'	8			0905	Saturated below 8'
D	Grab 7-8'	1.6			0910	9-9.5 Sat, bwn, organic, F-M SAND
E	Grab 9-10'	0.8			0915	9.5-10 Wet, gry, SILT, w/trace organics, soft

LABORATORY SAMPLES:

Soil:
USO-P20-A
USO-P20-B
USO-P20-C
USO-P20-D
USO-P20-E

Notes: Completed boring backfilled with bentonite grout



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P21

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

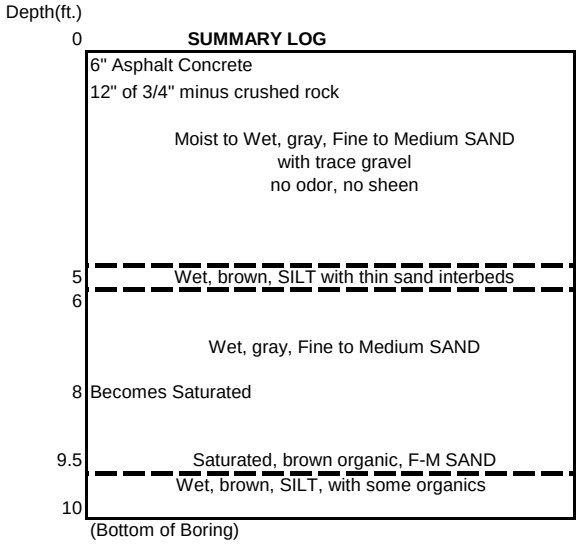
Location: N709288 E1169354 NAD83/96
Elevation (Ft.):
Date Completed: 07/13/14
Weather: Clear 75F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	0.8			0935	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	1.4			0940	1.5-5 Moist, gry, F-M SAND, w/minor gravel, no odor, no sheen
			5-10	60		5-6 Wet bwn, SILT, w/thin sand interbeds
C	Grab 5-6'	1.6			0945	6-9.5 Wet-sat, gry, F-M SAND, no odor, no sheen
D	Grab 7-8'	1.1			0950	Saturated below 8'
E	Grab 9.5-10'	1.4			0955	9.5-10 Wet, bwn, SILT, w/some organics

LABORATORY SAMPLES: **Soil:**
USO-P21-A
USO-P21-B
USO-P21-C
USO-P21-D
USO-P21-E

Notes: Completed boring backfilled with bentonite grout



(Bottom of Boring)
NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P22

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

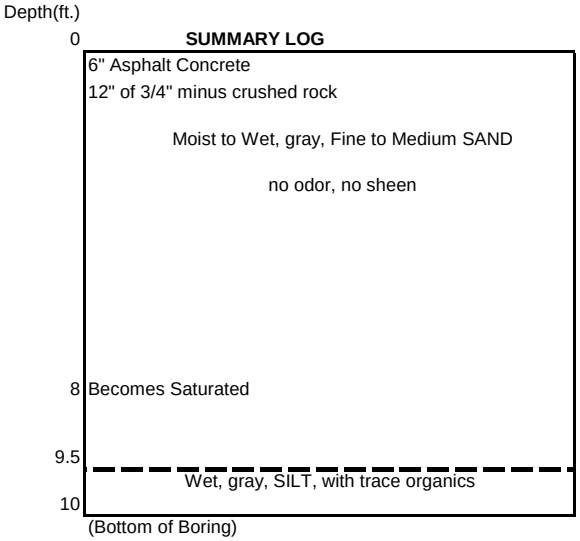
Location: N709500 E1169134 NAD83/96
Elevation (Ft.):
Date Completed: 07/13/14
Weather: Clear 80F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-0.5 Asphalt concrete
A	Grab 1-2'	1.8			1025	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	2.5			1030	1.5-5 Moist, gry, F-M SAND, no odor, no sheen
			5-10	60		5-9.5 As Above
C	Grab 5-6'	1.1			1035	Saturated below 8'
D	Grab 7-8'	0.8			1040	9.5-10 Wet, gry, SILT, w/trace organics, soft
E	Grab 9.5-10'	0.8			1045	

LABORATORY SAMPLES: **Soil:**
USO-P22-A
USO-P22-B
USO-P22-C
USO-P22-D
USO-P22-E

Notes: Completed boring backfilled with bentonite grout



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

BORING - DESCRIPTION OF SAMPLES & DATA

P23

Field Rep: DG Cooper
Drilling Co.: Cascade
Driller: Frank Scott
Drill Type: Powerprobe 9630
Size/Type Casing: 2" Rod

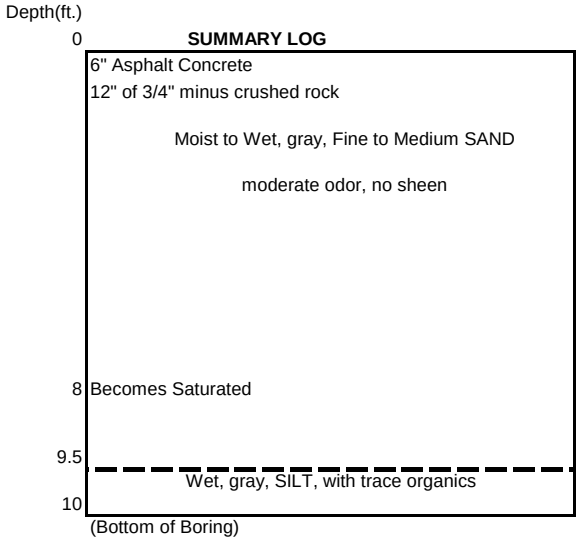
Location: N709472 E1169163 NAD83/96
Elevation (Ft.):
Date Completed: 07/13/14
Weather: Clear 80F
Hammer Type: Direct push

Ground Surface: Asphalt Pavement
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	55		0-0.5 Asphalt concrete
A	Grab 1-2'	385			1115	0.5-1.5 3/4" minus crushed rock
B	Grab 3-4'	15.2			1120	1.5-5 Moist, gry, F-M SAND, moderate odor, no sheen
			5-10	60		5-9.5 As Above, slight odor, no sheen
C	Grab 5-6'	107			1125	Saturated below 8'
D	Grab 7-8'	1.1			1130	9.5-10 Wet, gry, SILT, w/trace organics, soft
E	Grab 9.5-10'	2.2			1135	

LABORATORY SAMPLES: **Soil:**
USO-P23-A
USO-P23-B
USO-P23-C
USO-P23-D
USO-P23-E

Notes: Completed boring backfilled with bentonite grout



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

APPENDIX C

MONITORING WELL LOGS
INTERIM ACTION AND MONITORING PLAN
1920 PORT OF TACOMA RD.
TACOMA, WASHINGTON

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

1920 Port of Tacoma Road

BORING - DESCRIPTION OF SAMPLES & DATA

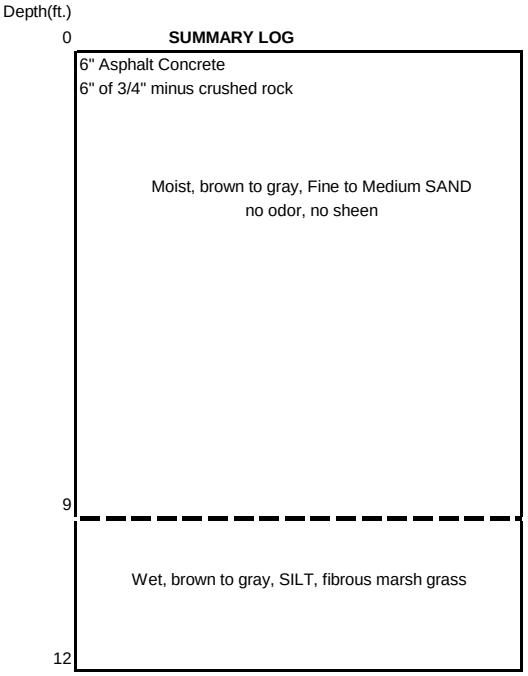
MW-R1

Field Rep: DG Cooper
Location: N709316 E1169415 NAD83/96
Drilling Co.: Cascade
Elevation (Ft.):
Ground Surface: Asphalt Pavement
Driller: Brad Hanratty
Date Completed: 10/11/14
Drill Type: Powerprobe 9630
Weather: Cloudy 60F
Size/Type Casing: 2" Rod
Hammer Type: Direct push
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Type sample saved	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	50		0-1 Asphalt concrete/crushed rock
A	Grab 1-2'	0.1			0945	1-5 Moist, bwn, F-M SAND, w/some gravel, no odor, no sheen
B	Grab 3-4'	0.5			0950	
			5-10	60		5-6 As above, no odor, no sheen
C	Grab 5-6'	0.3			0955	6-9 Sat, gry, F-M SAND
D	Grab 7-8'	0.6			1000	9-10 Wet, gry, SILT, w/some organics
E	Grab 9-10'	0.3			1005	
			10-12	24		10-12 Wet, gry-bwn, SILT, w/fibrous marsh grass

LABORATORY SAMPLES: **Soil:**
USO-MWR1-A
USO-MWR1-B
USO-MWR1-C
USO-MWR1-D
USO-MWR1-E

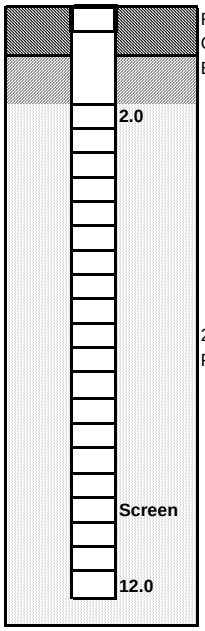
SUMMARY LOG



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

MONITORING WELL DIAGRAM



MONITORING WELL INFORMATION

TOC Elevation:
Riser: 2" dia.SCH 40 PVC
Length: 2.0'
Screen: 2" dia. SCH 40 PVC
Slot size: 0.010"
Length: 10'
(top/bot) 2.0/12.0
0.3' end cap
Sandpack: Pre-Pac 2/12 colorado sand
10-20 backfill (top/bot) 2/12
Seal: Bentonite chip
(top/bot) 1/2
Monument: 10" dia. Flush Mount (Morris)
-0.3' to top of PVC/TOC
Ecology ID# BID765

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

1920 Port of Tacoma Road

BORING - DESCRIPTION OF SAMPLES & DATA

MW-R2

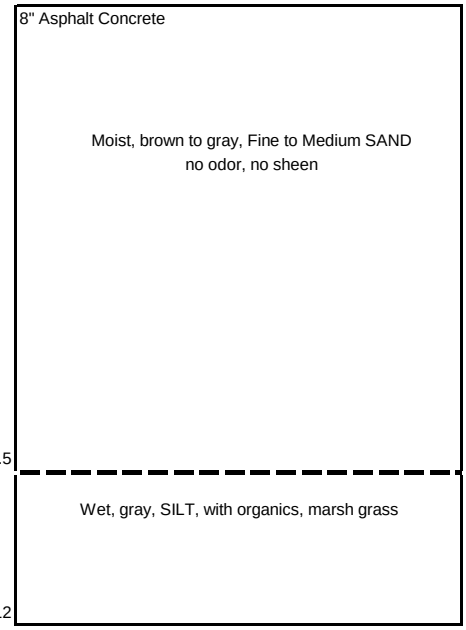
Field Rep: DG Cooper
Location: N709468 E1169263 NAD83/96
Drilling Co.: Cascade
Elevation (Ft.):
Ground Surface: Asphalt Pavement
Driller: Brad Hanratty
Date Completed: 10/11/14
Drill Type: Powerprobe 9630
Weather: Cloudy 60F
Size/Type Casing: 2" Rod
Hammer Type: Direct push
Sampler Type: 2" Macro w/ acrylic liner

Spl.No.	Sample interval	PID (ppm)	Spl Depth (Ft.) From - To	Spl length inches	Time	Sample Description
			0-5	60		0-1 Asphalt concrete/crushed rock
	1-2'	0.1				1-2 Moist, mottled gry, gravelly, SAND, no odor, no sheen
	3-4'	21				2-5 Moist, gry, F-M SAND
			5-10	60		5-9.5 As above, no odor, no sheen
	5-6'	7.1				9.5-10 Wet, gry, SILT
	7-8'	24				
	9-10'	0				
			10-12	24		10-12 Wet, gry, SILT, w/fibrous marsh grass

LABORATORY SAMPLES: **Soil:**

Depth(ft.)

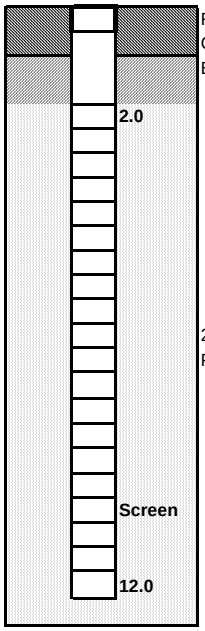
0 **SUMMARY LOG**



(Bottom of Boring)

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

MONITORING WELL DIAGRAM



MONITORING WELL INFORMATION

TOC Elevation:
Riser: 2" dia.SCH 40 PVC
Length: 2.0'
Screen: 2" dia. SCH 40 PVC
Slot size: 0.010"
Length: 10'
(top/bot) 2.0/12.0
0.3' end cap
Sandpack: Pre-Pac 2/12 colorado sand
10-20 backfill (top/bot) 2/12
Seal: Bentonite chip
(top/bot) 1/2
Monument: 10" dia. Flush Mount (Morris)
-0.3' to top of PVC/TOC
Ecology ID# BID764

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

MONITORING WELL NO. MW-USO-3s - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted	Location:
Drilling Co.: Holt	Elevation: 17.53 P.O.T. Datum
Driller: Clyde Moore	Date Completed: 7/15/92
Drill Type: Mobile B61	Weather: clear & warm
Size/Type Casing: 4" I.D. Hollow-Stem Auger	
No samples - drill to 9 feet and install monitoring well	

Depth(ft.) **SUMMARY LOG (Based on MW-USO-3m)**

0

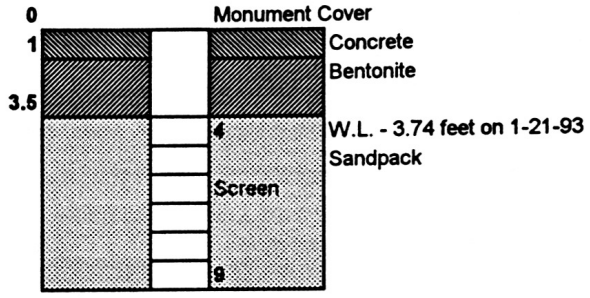
2 3" Asphalt Pavement
Gray-brown, SAND & GRAVEL (FILL)

Dark gray, silty, fine SAND

9

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

MONITORING WELL DIAGRAM



MONITORING WELL INFORMATION (Ft.)

Riser Length: 4	Seal: Bentonite/Concrete (top/bot) 0/3.5
Sandpack: 10-20 Sand (top/bot)3.5/9	Monument: Cast Iron - flush
Screen: PVC/0.010" length 5 (top/bot) 4/9	

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

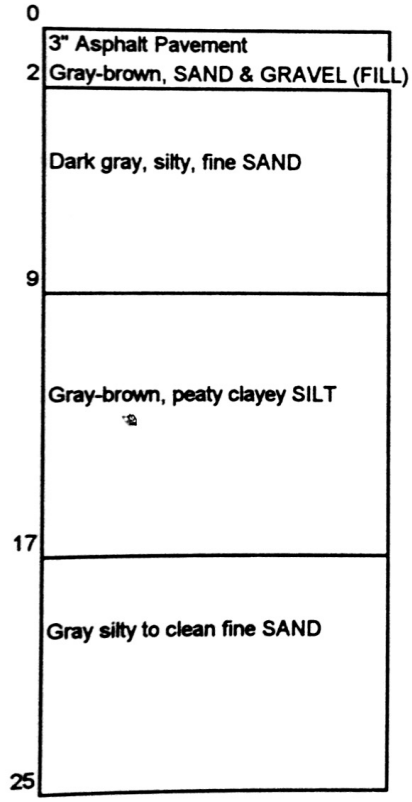
MONITORING WELL NO. MW-USO-3m - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted
Drilling Co.: Holt
Driller: Clyde Moore
Drill Type: Mobile B61
Size/Type Casing: 4" I.D. Hollow-Stem Auger

Location:
Elevation: 17.47 P.O.T. Datum
Date Completed: 7/15/92
Weather: clear & warm

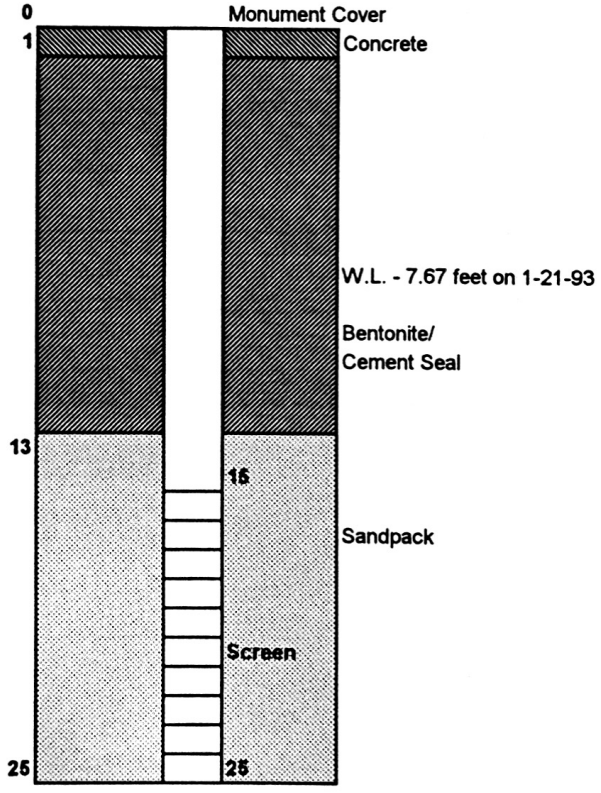
Spl.No.	Type	Drill Action	Spl Depth (Ft.) From - To	Blows/ 6 inches	Spl length/ PID reading	SheenTest/ Time	Sample Description
1	1.5"Drive	rough to 2'	2.5 - 4	50/6	n/r	7:15	on rock - no sample - Water at 4 ft.
2	1.5"Drive	smooth	5 - 6.5	0/5/7	18"/201	n.s/0720	dark gray silty fine sand - wet
3	1.5"Drive	smooth	7.5 - 9	4/3/01	18"/623	n.s/0730	same with peat layer (1")
4	1.5"Drive	smooth	10 - 12.5	1/18"	18"/221	n.t./0735	gray-brown, peaty, clayey silt
5	1.5"Drive	smooth	12.5 - 15	0/18"	2"(n.r)	n.t./0745	Same based on blows: silty f. sd in tip
6	1.5"Drive	smooth	15 - 16.5	1/12 - 1/6	18"/68	n.s./0750	gray, fine sandy clayey silt
7	1.5"Drive	smooth	17.5 - 19	2/10/11	18"/40	n.s./0755	gray silty to clean fine sand
8	1.5"Drive	smooth	20 - 21.5	4/9/18	18"/35	n.s./0800	same
		smooth	No Sample - to prevent sand heave did not sample in order to allow well installation Drilled to 25 ft.				

Depth(ft.) **SUMMARY LOG**



NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

MONITORING WELL DIAGRAM



MONITORING WELL INFORMATION

Riser: Length: 15	Seal: Bentonite/Concrete
Sandpack: 10-20 Sand	(top/bot) 0/13
(top/bot)13/25	Monument: Cast Iron - flush
Screen: PVC/0.010"	
length 10	
(top/bot) 15/25	

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

MONITORING WELL NO. MW-USO-5s - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted
Drilling Co.: Holt
Driller: Clyde Moore
Drill Type: Mobile B57
Size/Type Casing: 4" I.D. Hollow-Stem Auger

Location: N. 11885.70 E. 20345.2466
Elevation: 16.82 POT Datum
Date Completed: 10/30/93
Weather: cloudy & cool

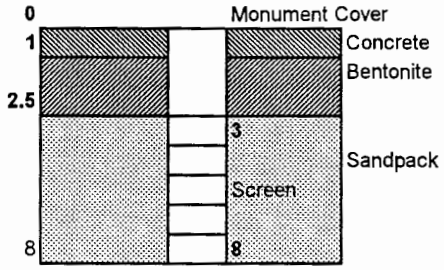
Spl.No.	Type	Drill Action	Spl Depth (Ft.) From - To	Blows/ 6 inches	Spl length	Time/Sheen Test	Sample Description
1	SPT	Smooth	2.5 - 4	8-10-11	18"	0830/heavy sheen	Dark gray, fine to medium SAND
2	SPT	Smooth	5 - 6.5	6-8-1	18"	0840/light sheen	Dark gray, fine to medium SAND - wet
3	SPT	Smooth	7.5 - 9	1-1-1	18"	0845/no sheen	Brown, peaty, clayey SILT

Depth(ft.) **SUMMARY LOG**

0
2" Asphalt Pavement
1 Gray-brown, SAND & GRAVEL (FILL)
Dark gray, fine SAND - wet below 4 feet
7
Brown, peaty, clayey SILT
9

NOTE: The summary log is an interpretation based on samples, drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated.

MONITORING WELL DIAGRAM



MONITORING WELL INFORMATION

Riser Length: 3 feet	Seal: Bentonite/Concrete (top/bot) 0/2.5
Sandpack: 10-20 Sand (top/bot)2.5/8	Monument: Cast Iron - flush
Screen: PVC/0.010" length: 5 feet (top/bot) 3/8	

Dalton, Olmsted & Fuglevand, Inc.
Environmental Consultants

MONITORING WELL NO. MW-USO-6s - DESCRIPTION OF SAMPLES, TESTS, AND INSTALLATION

Field Rep: T. Olmsted — Location: N. 11771.51 E. 20393.9986
Drilling Co.: Holt — Elevation: 17.59 POT Datum
Driller: Clyde Moore — Date Completed: 10/30/93
Drill Type: Mobile B57 — Weather: cloudy & cool
Size/Type Casing: 4" I.D. Hollow-Stem Auger

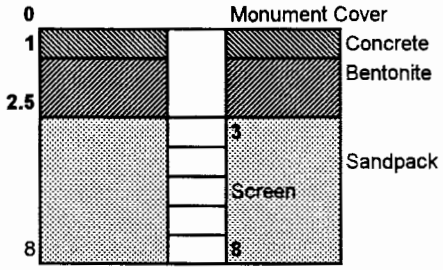
Spl.No.	Type	Drill Action	Spl Depth (Ft.) From - To	Blows/ 6 inches	Spl length	Time/Sheen Test	Sample Description
1	SPT	Smooth	2.5 - 4	7-5-3	18"	1005/no sheen	Brown, fine to medium SAND with some gravel (Fill)
2	SPT	Smooth	5 - 6.5	1-1-1	18"	1010/no sheen	Dark gray, fine SAND - wet
3	SPT	Smooth	7.5 - 9	0-1-0	18"	1015/no sheen	Brown, peaty, clayey SILT

Depth(ft.) **SUMMARY LOG**

0
2" Asphalt Pavement
1 Gray-brown GRAVEL FILL
Brown, fine to medium SAND wet
4 some gravel (Fill
Dark gray, fine SAND - wet
7
Brown, peaty clayey SILT
9

NOTE: The summary log is an interpretation based on samples drill action, and interpolation. Variations between what is shown and actual conditions should be anticipated

MONITORING WELL DIAGRAM



MONITORING WELL INFORMATION

Riser Length: 3 feet	Seal: Bentonite/Concrete
Sandpack: 10-20 Sand	(top/bot) 0/2.5
(top/bot)2.5/8	Monument: Cast Iron - flush
Screen: PVC/0.010"	
length: 5 feet	
(top/bot) 3/8	

APPENDIX D
LABORATORY DATA SHEETS
2012 AND 2014 SOIL AND GROUNDWATER DATA
INTERIM ACTION AND MONITORING PLAN
1920 PORT OF TACOMA RD.
TACOMA, WASHINGTON

LABORATORY DATA SHEETS
2012 and 2014 SOIL DATA
INTERIM ACTION AND MONITORING PLAN
1920 PORT OF TACOMA RD.
TACOMA, WASHINGTON

Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 14, 2012

Matt Dalton
Dalton, Olmsted, & Fuglevand
10827 NE 68th, Suite B
Kirkland, WA 98033

RE: 1920 Port of Tacoma Rd, USO-022
ARI Job No.: UV10

Dear Matt:

Please find enclosed the original Chain-of-Custody (COC) records, sample receipt documentation, and the final analytical results for samples from the project referenced above. Analytical Resources, Inc. (ARI) twenty soil samples on May 21, 2012 under ARI job UV10. For details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BETX, as requested on the COCs.

Due to matrix interferences, BETX results could not be confirmed and were possibly false positives for several samples. Two soil samples were selected at random and analyzed on a GC/MS instrument by method SW8260C to confirm results. Results were confirmed and all BETX data have been reported as is. No further corrective action was taken.

The NWTPH-Gx surrogate percent recoveries of Bromofluorobenzene were outside the control limits for samples **USO-P1-A**, **USO-P1-B**, **USO-P1-C**, **USO-P2-A**, **USO-P2-B**, **USO-P3-A**, and **USO-P4-C**. The samples were re-analyzed at dilutions and all percent recoveries were within control limits. No further corrective action was taken.

The BETX surrogate percent recovery of Bromofluorobenzene was outside the control limits low for sample **USO-P4-C**. The sample was re-analyzed at a dilution and the surrogate percent recovery was within control limits. No further corrective action was taken.

An electronic copy of this report and all associated raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan Dunnihoo
Director, Client Services
sue@arilabs.com
206-695-6207

cc: eFile UV10

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: UV10	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 1 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1.2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX (8021B MOD)	Notes/Comments
USO-P1-A	5/19/12	0905	Soil	3	X	
USO-P1-B	5/19/12	0910	Soil	3	X	
USO-P1-C	5/19/13	0915	Soil	3	X	
USO-P1-D	5/19/14	0920	Soil	3	X	
USO-P1-E	5/19/15	0925	Soil	3	X	
USO-P2-A	5/19/16	1005	Soil	3	X	
USO-P2-B	5/19/17	1010	Soil	3	X	
USO-P2-C	5/19/18	1015	Soil	3	X	
USO-P2-D	5/19/19	1020	Soil	3	X	
USO-P2-E	5/19/20	1025	Soil	3	X	

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: Taylor Streeter	Printed Name:	Printed Name
	Company: DOF	Company: ARI	Company	Company
	Date & Time: 5/21/12 1245	Date & Time: 5-21-12 1215	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: UV10	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 2 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1, 2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX	Notes/Comments
USO-P3-A	5/19/12	1045	Soil	3	X	
USO-P3-B	5/19/12	1050	Soil	3	X	
USO-P3-C	5/19/13	1055	Soil	3	X	
USO-P3-D	5/19/14	1100	Soil	3	X	
USO-P3-E	5/19/15	1105	Soil	3	X	
USO-P4-A	5/19/16	1125	Soil	3	X	
USO-P4-B	5/19/17	1130	Soil	3	X	
USO-P4-C	5/19/18	1135	Soil	3	X	
USO-P4-D	5/19/19	1140	Soil	3	X	
USO-P4-E	5/19/20	1145	Soil	3	X	

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by: (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: Taylor Streetar	Printed Name:	Printed Name:
	Company: DOF	Company: ART	Company:	Company:
	Date & Time: 5/21/12 1215	Date & Time: 5-21-12 1215	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client DOF

Project Name 1920 Port of Tacoma RD

COC No(s) _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No. UV10

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc.) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6 0 °C for chemistry) 1.2 2.0

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90947519

Cooler Accepted by: TS Date: 5-21-12 Time: _____

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? (YES) JM NO

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs). (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI. (NA) _____

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date 5/21/12 Time: 1254

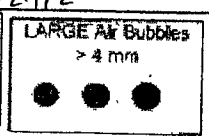
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

All samples collected in may of 2012 per container labels. Date mistake on COC on select samples. Wrong year.

By: JM Date 5/21/12

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
		

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: UV10
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-022
Project Name: 1920 Port of Tacoma Rd

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P1-A	UV10A	12-9171	Soil	05/19/12 09:05	05/21/12 12:15
2.	USO-P1-B	UV10B	12-9172	Soil	05/19/12 09:10	05/21/12 12:15
3.	USO-P1-C	UV10C	12-9173	Soil	05/19/12 09:15	05/21/12 12:15
4.	USO-P1-D	UV10D	12-9174	Soil	05/19/12 09:20	05/21/12 12:15
5.	USO-P1-E	UV10E	12-9175	Soil	05/19/12 09:25	05/21/12 12:15
6.	USO-P2-A	UV10F	12-9176	Soil	05/19/12 10:05	05/21/12 12:15
7.	USO-P2-B	UV10G	12-9177	Soil	05/19/12 10:10	05/21/12 12:15
8.	USO-P2-C	UV10H	12-9178	Soil	05/19/12 10:15	05/21/12 12:15
9.	USO-P2-D	UV10I	12-9179	Soil	05/19/12 10:20	05/21/12 12:15
10.	USO-P2-E	UV10J	12-9180	Soil	05/19/12 10:25	05/21/12 12:15
11.	USO-P3-A	UV10K	12-9181	Soil	05/19/12 10:45	05/21/12 12:15
12.	USO-P3-B	UV10L	12-9182	Soil	05/19/12 10:50	05/21/12 12:15
13.	USO-P3-C	UV10M	12-9183	Soil	05/19/12 10:55	05/21/12 12:15
14.	USO-P3-D	UV10N	12-9184	Soil	05/19/12 11:00	05/21/12 12:15
15.	USO-P3-E	UV10O	12-9185	Soil	05/19/12 11:05	05/21/12 12:15
16.	USO-P4-A	UV10P	12-9186	Soil	05/19/12 11:25	05/21/12 12:15
17.	USO-P4-B	UV10Q	12-9187	Soil	05/19/12 11:30	05/21/12 12:15
18.	USO-P4-C	UV10R	12-9188	Soil	05/19/12 11:35	05/21/12 12:15
19.	USO-P4-D	UV10S	12-9189	Soil	05/19/12 11:40	05/21/12 12:15
20.	USO-P4-E	UV10T	12-9190	Soil	05/19/12 11:45	05/21/12 12:15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-A**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10A
LIMS ID: 12-9171
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 12:51
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 85 mg-dry-wt
Percent Moisture: 5.6%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**15**	**71**	
108-88-3	**Toluene**	**15**	**140**	**M**
100-41-4	**Ethylbenzene**	**15**	**13,000**	**E**
179601-23-1	**m,p-Xylene**	**29**	**22,000**	
95-47-6	o-Xylene	15	< 15	U
				GAS ID
	Gasoline Range Hydrocarbons	**5.9**	**2,000**	**ES** **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	109%
Bromobenzene	131%

Gasoline Surrogate Recovery

Trifluorotoluene	111%
Bromobenzene	186%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a008.d ARI ID: UV10A
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a008.d Client ID: USO-P1-A
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 12:51
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.876	0.001	3323	48821	110.9	TFT(Surr)
15.407	0.001	3590	28646	185.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	11848424	34.727 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	13163730	19.407 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	10685624	19.850
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	12567620	34.956 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.002	4045	109.1	TFT(Surr)
15.417	0.004	10704	131.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.005	302	1.21	Benzene
9.923	0.012	510	2.34N	Toluene
12.814	0.009	44350	229.23	Ethylbenzene
12.982	0.016	81437	379.25	M/P-Xylene
ND	---	---	---	O-Xylene
4.563	-0.002	90	1.07N	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a008.d

Page 1

Date : 22-MAY-2012 12:51

Client ID: USO-P1-A

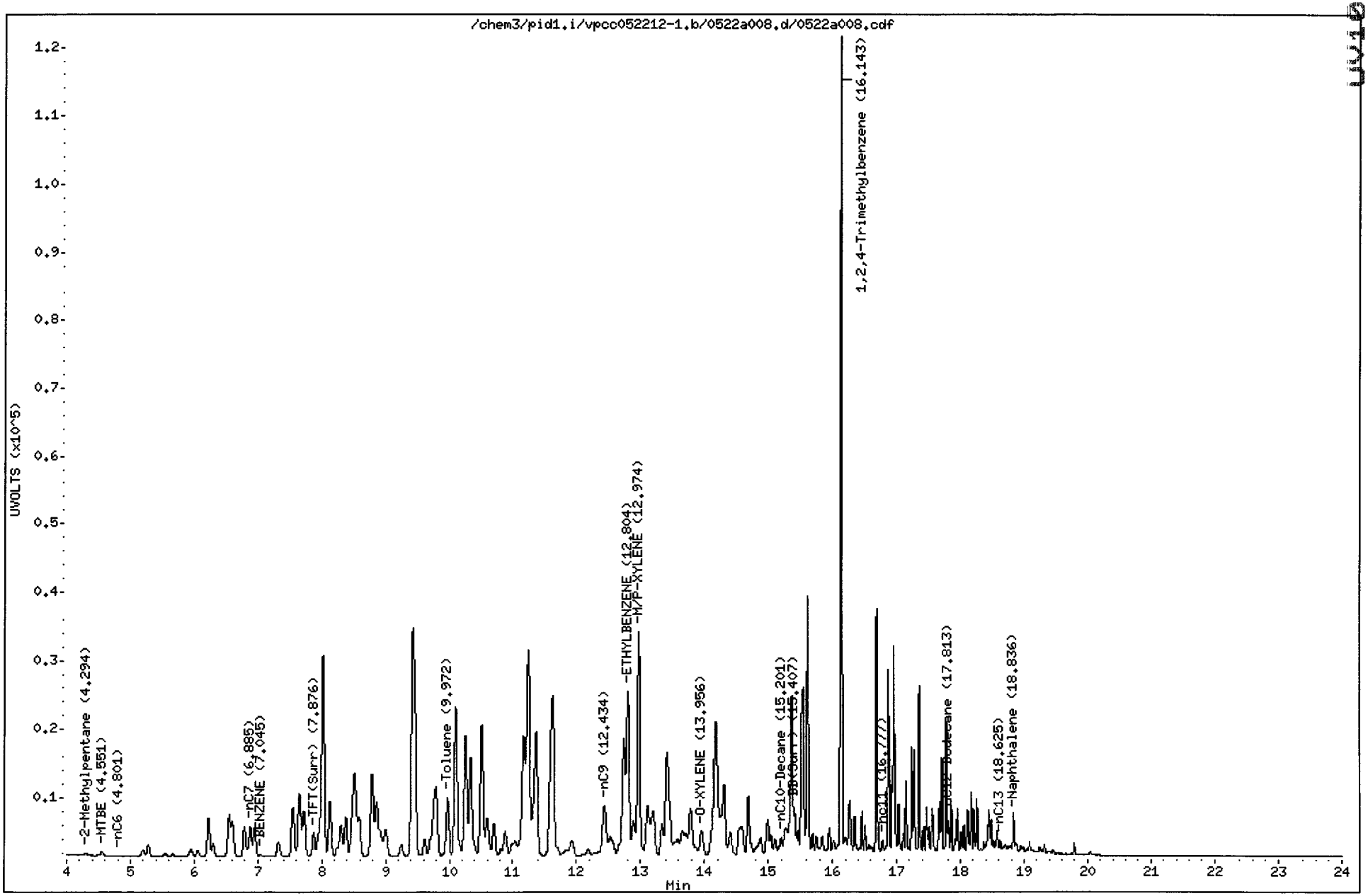
Instrument: pid1.i

Sample Info: UV10A

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a008.d

Date : 22-MAY-2012 12:51

Client ID: USO-P1-A

Sample Info: UV10A

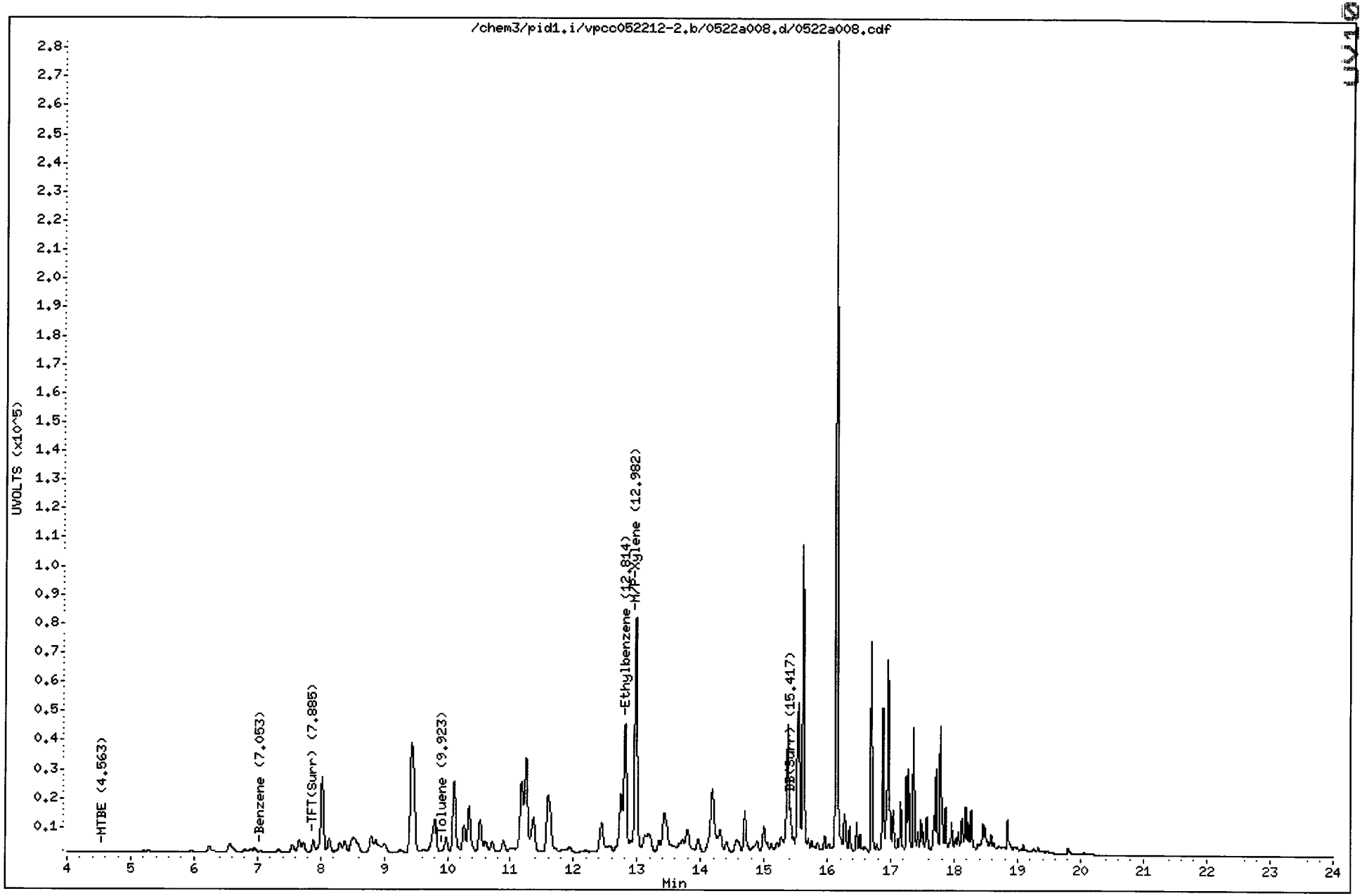
Column phase: RTX 502-2 PID

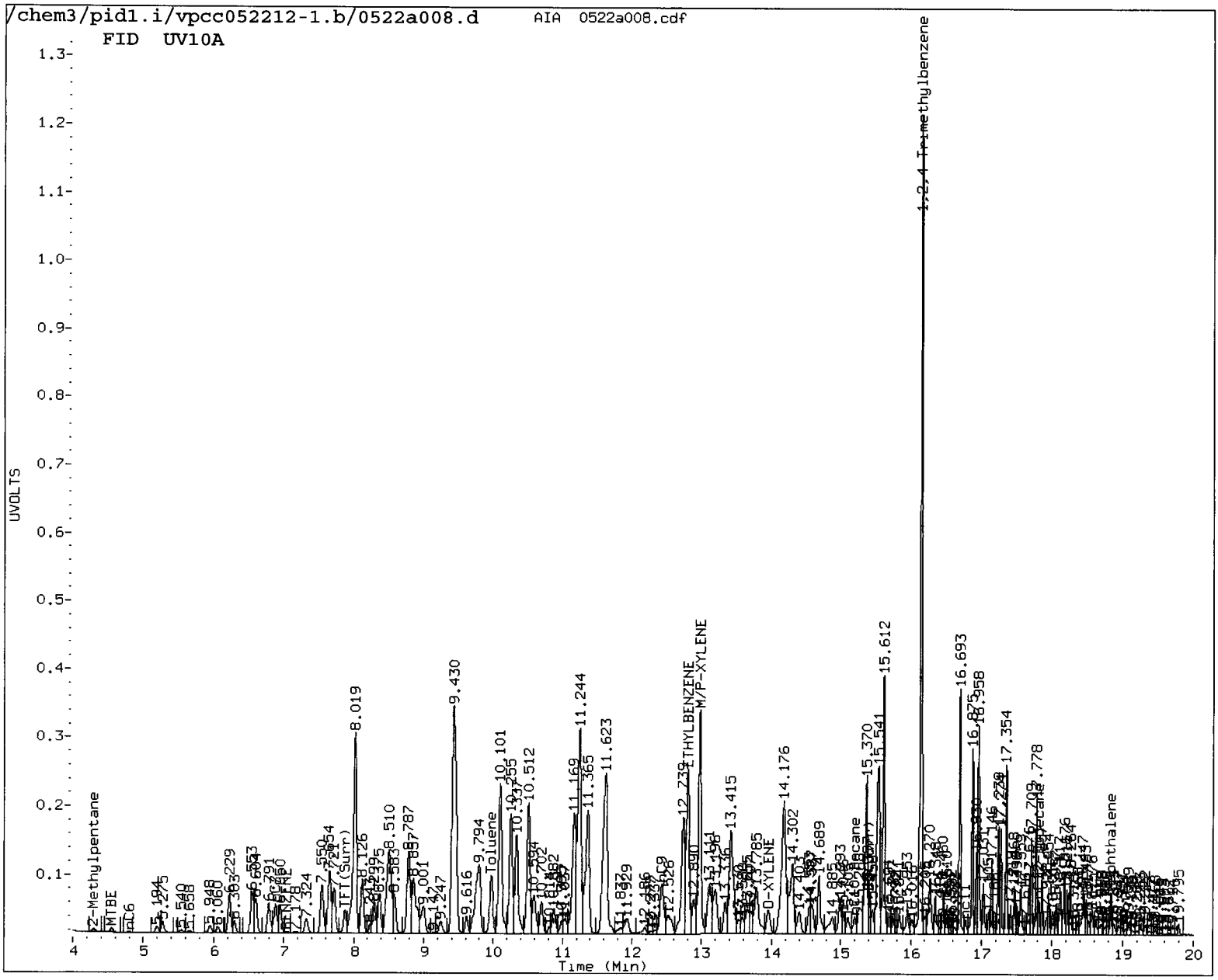
Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 : 00005





MANUAL INTEGRATION

☒ 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-A**
TPHG by Method NWTPHG **DILUTION**

Lab Sample ID: UV10A
LIMS ID: 12-9171
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 06/01/12 14:56
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 8.5 mg-dry-wt
Percent Moisture: 5.6%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	540	< 540	Y
108-88-3	**Toluene**	**150**	**1,100**	
100-41-4	**Ethylbenzene**	**150**	**9,000**	
179601-23-1	**m,p-Xylene**	**290**	**21,000**	
95-47-6	**o-Xylene**	**150**	**1,400**	
	Gasoline Range Hydrocarbons	**59**	**2,200**	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.6%
Bromobenzene	98.3%

Gasoline Surrogate Recovery

Trifluorotoluene	93.5%
Bromobenzene	123%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a017.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a017.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV10A
Client ID:
Injection Date: 01-JUN-2012 14:56
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	0.003	2777	39176	93.5	TFT(Surr)
14.796	-0.059	2071	64524	122.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1137115	3.562 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	1226412	1.811 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	1009198	1.852 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1224324	3.702 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.272	0.002	11349	91.6	TFT(Surr)
14.873	0.000	17548	98.3	BB(Surr)

JW 6/2/12

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.472	0.001	810	0.93	Benzene
9.254	0.016	1010	1.83	Toluene
12.084	0.000	7420	15.42	Ethylbenzene
12.243	0.000	16587	35.60	M/P-Xylene
13.140	-0.011	894	2.36	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a017.d

Date : 01-JUN-2012 14:56

Client ID:

Sample Info: UV10A

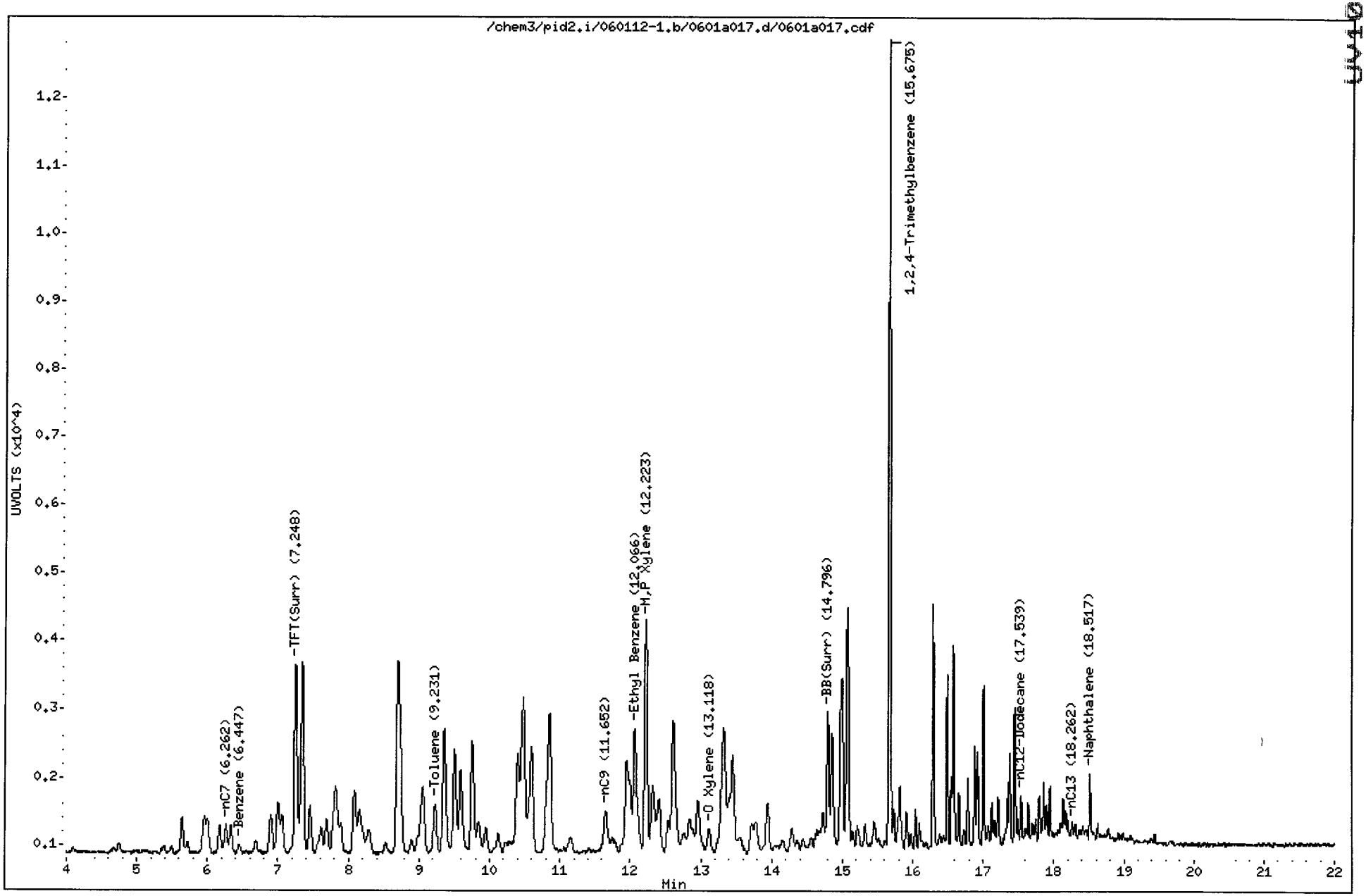
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV10 : 000113



Data File: /chem3/pid2.i/060112-2.b/0601a017.d

Date : 01-JUN-2012 14:56

Client ID:

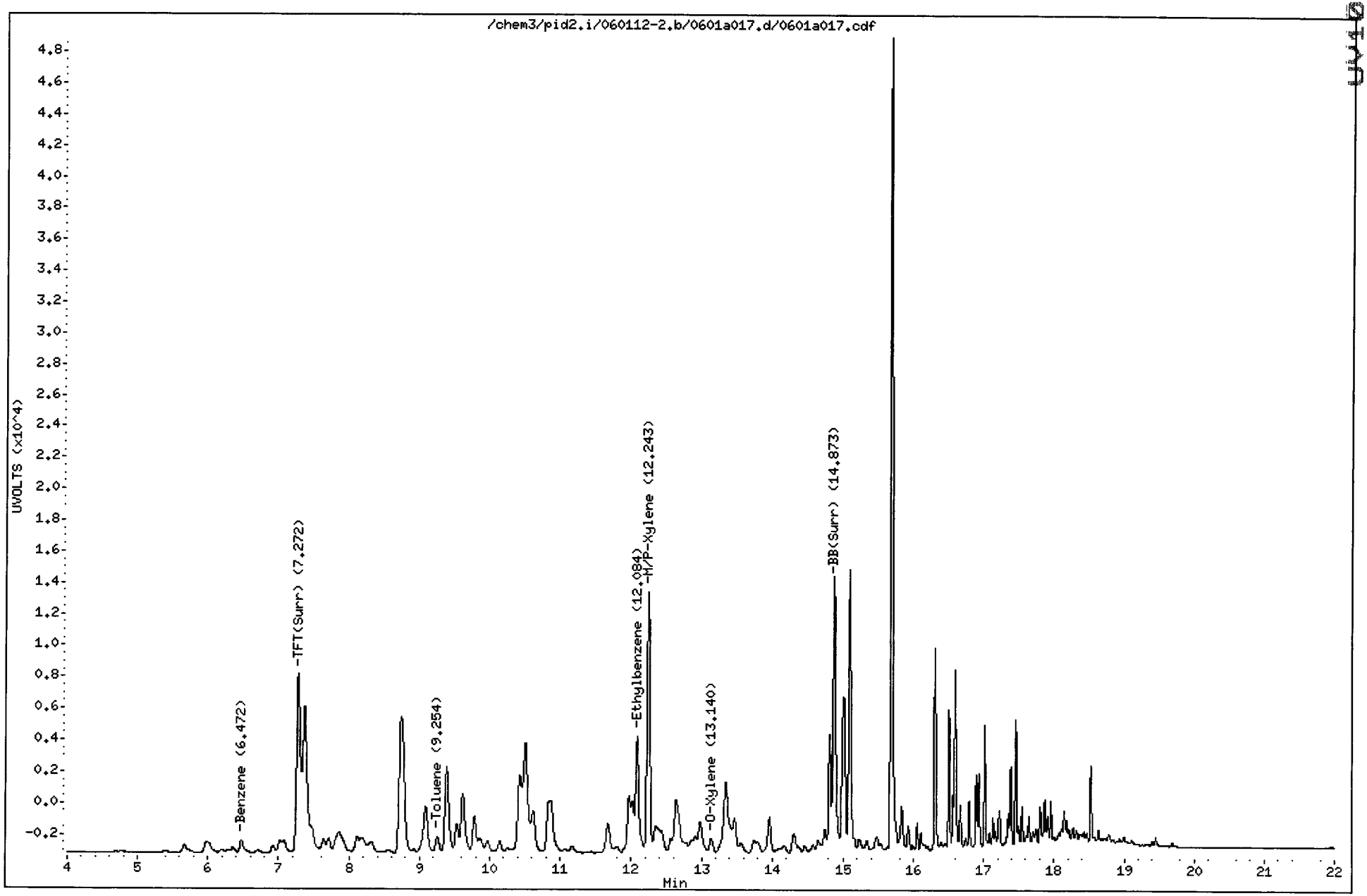
Sample Info: UV10A

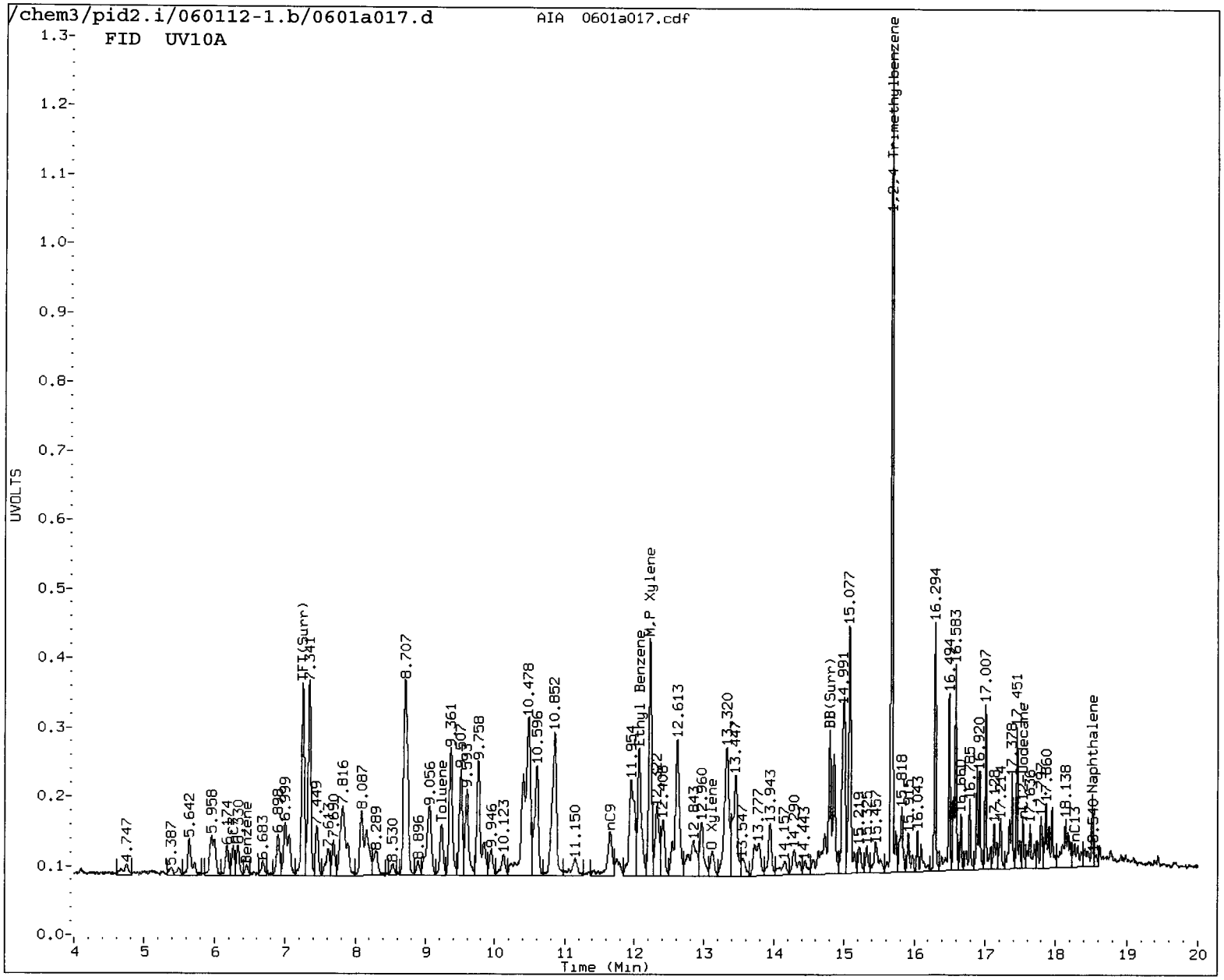
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-B**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10B
LIMS ID: 12-9172
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 13:20
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 79 mg-dry-wt
Percent Moisture: 6.5%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**16**	**26**	
108-88-3	**Toluene**	**16**	**90**	**M**
100-41-4	**Ethylbenzene**	**16**	**7,200**	
179601-23-1	**m,p-Xylene**	**32**	**5,000**	
95-47-6	o-Xylene	16	< 16	U
	Gasoline Range Hydrocarbons	**6.3**	**1,400**	**E**

GAS ID
GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	117%

Gasoline Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	161%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH
5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a009.d
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a009.d
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m
Instrument: pid1.i
Gas Ical Date: 15-MAY-2012
BETX Ical Date: 15-MAY-2012

ARI ID: UV10B
Client ID: USO-P1-B
Injection Date: 22-MAY-2012 13:20
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.876	0.001	3153	44821	105.3	TFT(Surr)
15.403	-0.003	3117	22978	161.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	7648825	22.418 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	8234044	12.139 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	6953175	12.917
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	8222573	22.870 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.886	0.002	3885	104.8	TFT(Surr)
15.413	0.000	9572	117.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	0.002	102	0.41N	Benzene
9.917	0.005	313	1.43N	Toluene
12.804	-0.001	21984	113.63	Ethylbenzene
12.972	0.006	17031	79.31	M/P-Xylene
ND	---	---	---	O-Xylene
4.560	-0.006	40	0.48N	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a009.d

Page 1

Date : 22-MAY-2012 13:20

Client ID: USO-P1-B

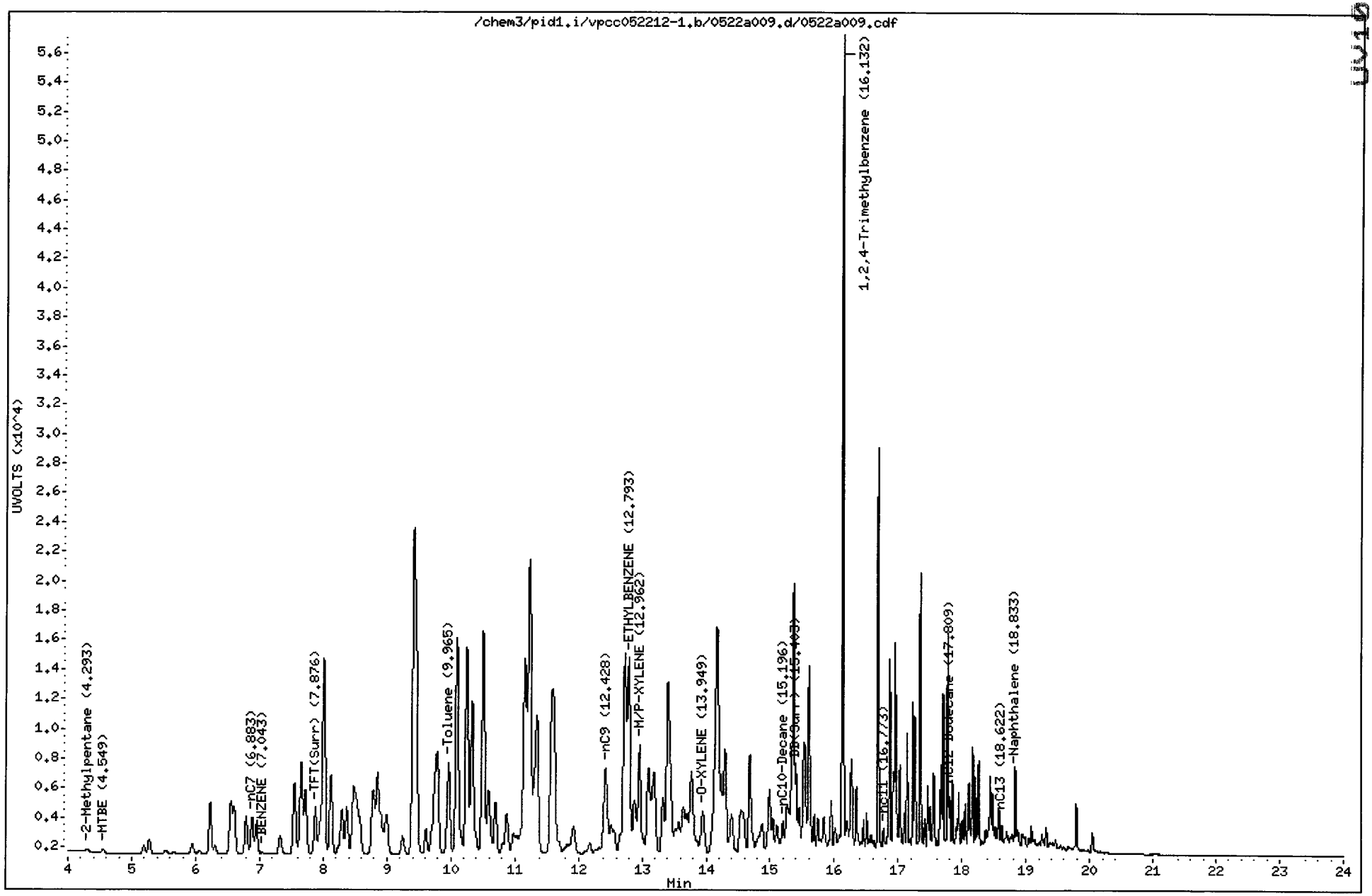
Instrument: pid1.i

Sample Info: UV10B

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a009.d

Page 1

Date : 22-MAY-2012 13:20

Client ID: USO-P1-B

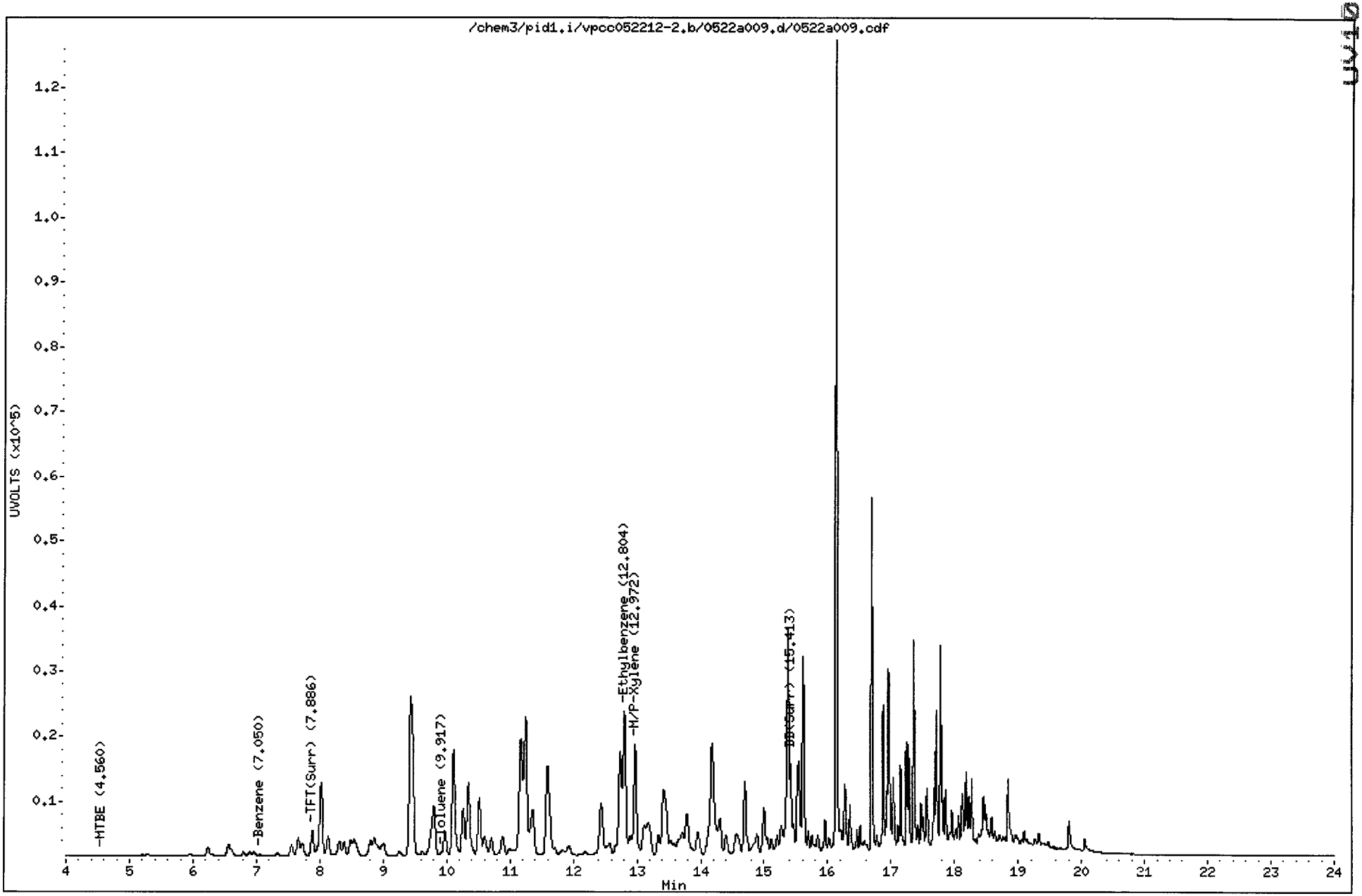
Instrument: pid1.i

Sample Info: UV10B

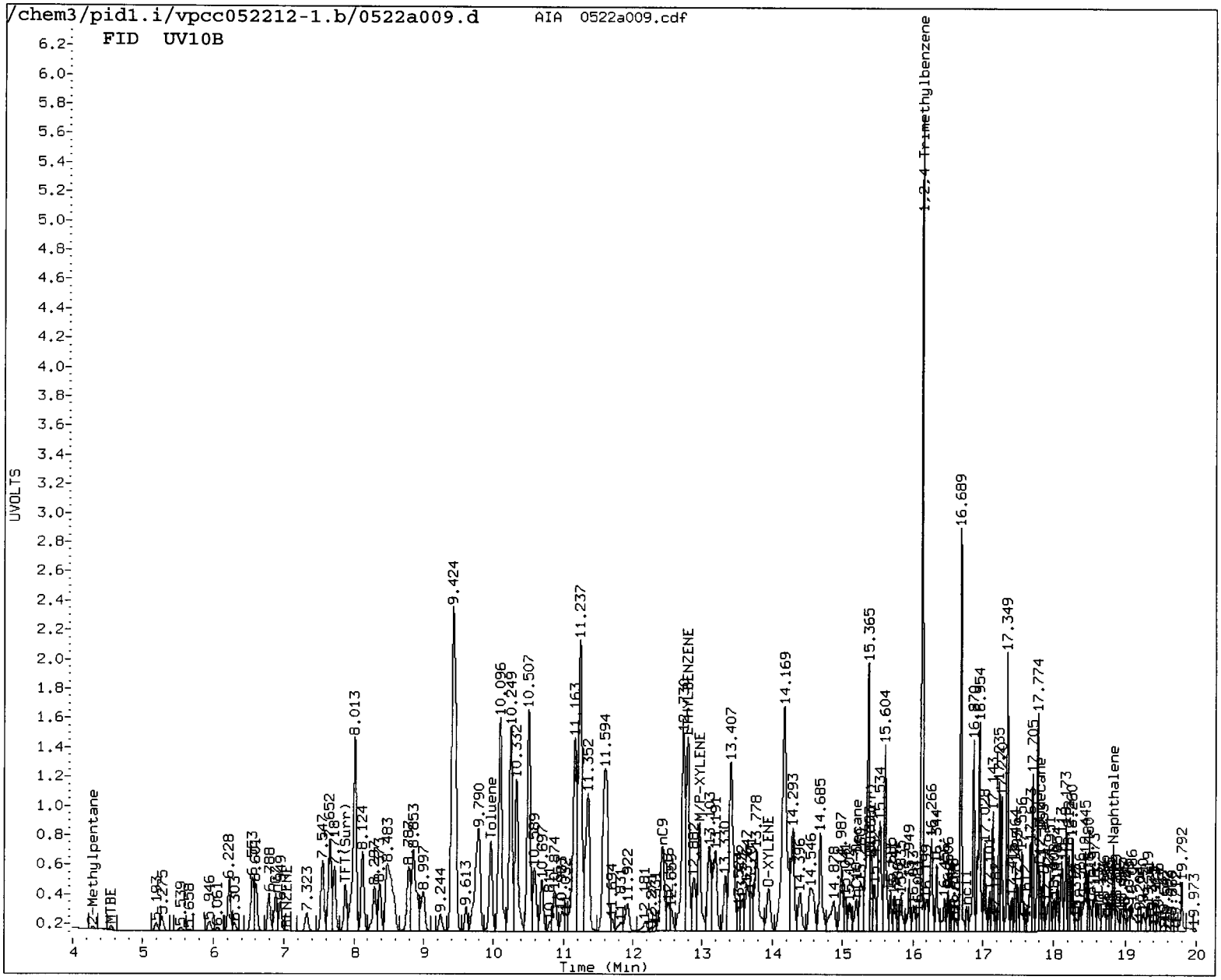
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18



UV10B 000019



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-B**
TPHG by Method NWTPHG **DILUTION**

Lab Sample ID: UV10B
LIMS ID: 12-9172
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 06/01/12 15:24
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 7.9 mg-dry-wt
Percent Moisture: 6.5%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	160	< 160 U	
108-88-3	**Toluene**	**160**	**730**	
100-41-4	**Ethylbenzene**	**160**	**3,900**	
179601-23-1	**m,p-Xylene**	**320**	**4,600**	
95-47-6	**o-Xylene**	**160**	**1,100**	
				GAS ID
	Gasoline Range Hydrocarbons	**63**	**1,500**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	93.2%
Bromobenzene	99.6%

Gasoline Surrogate Recovery

Trifluorotoluene	95.1%
Bromobenzene	104%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a018.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a018.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV10B
Client ID:
Injection Date: 01-JUN-2012 15:24
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.246	0.001	2823	38876	95.1	TFT(Surr)
14.855	0.000	1749	21697	103.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	737934	2.311 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	765239	1.130 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	622888	1.143 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	803822	2.431 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.271	0.000	11549	93.2	TFT(Surr)
14.873	0.000	17788	99.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.472	0.001	205	0.24	Benzene N,Z
9.253	0.015	634	1.15	Toluene
12.083	-0.002	2949	6.13	Ethylbenzene
12.242	-0.002	3421	7.34	M/P-Xylene
13.139	-0.012	670	1.77	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a018.d

Date : 01-JUN-2012 15:24

Client ID:

Sample Info: UV10B

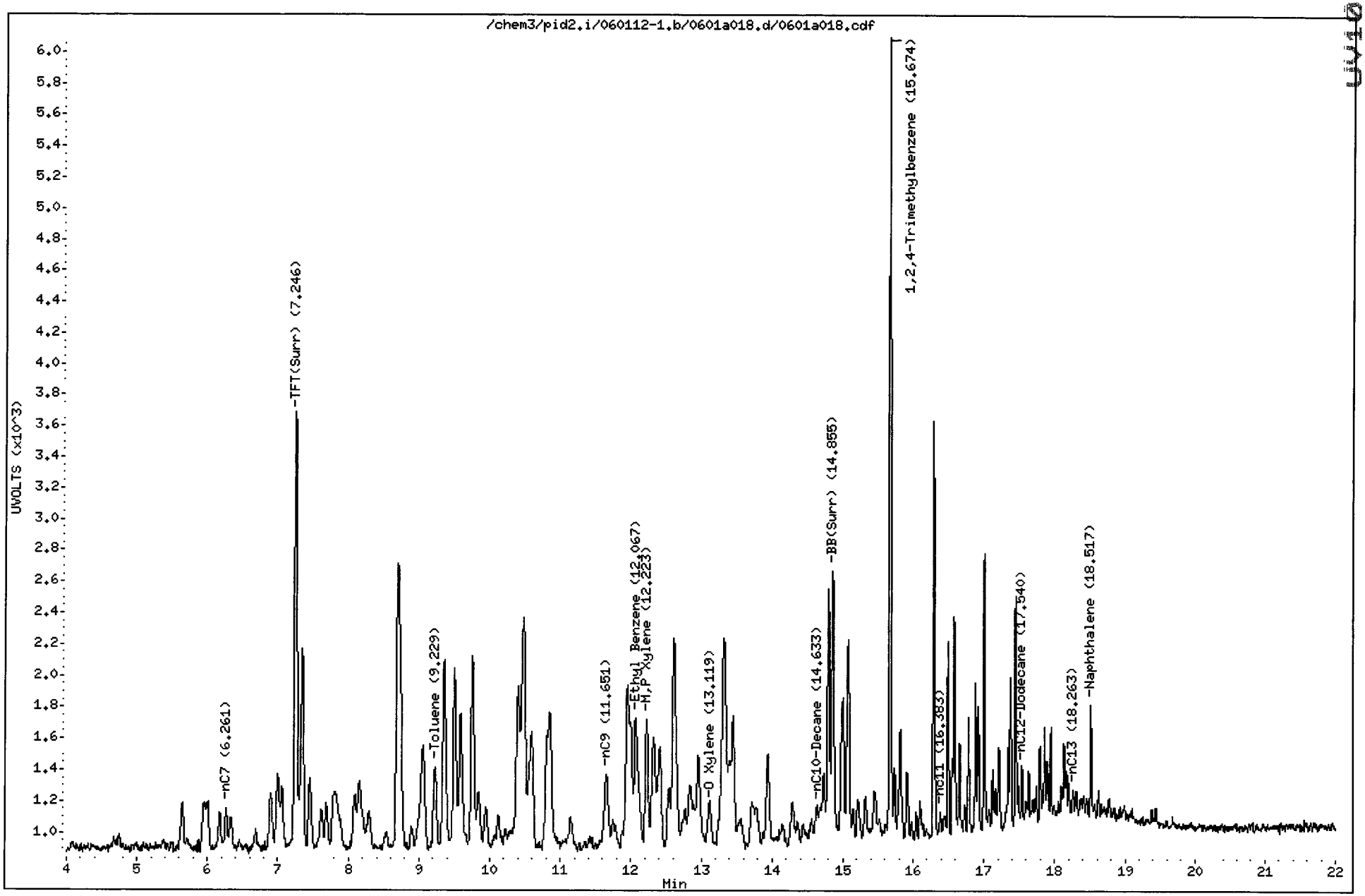
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV10 : 60023



Data File: /chem3/pid2.i/060112-2.b/0601a018.d

Date : 01-JUN-2012 15:24

Client ID:

Sample Info: UV10B

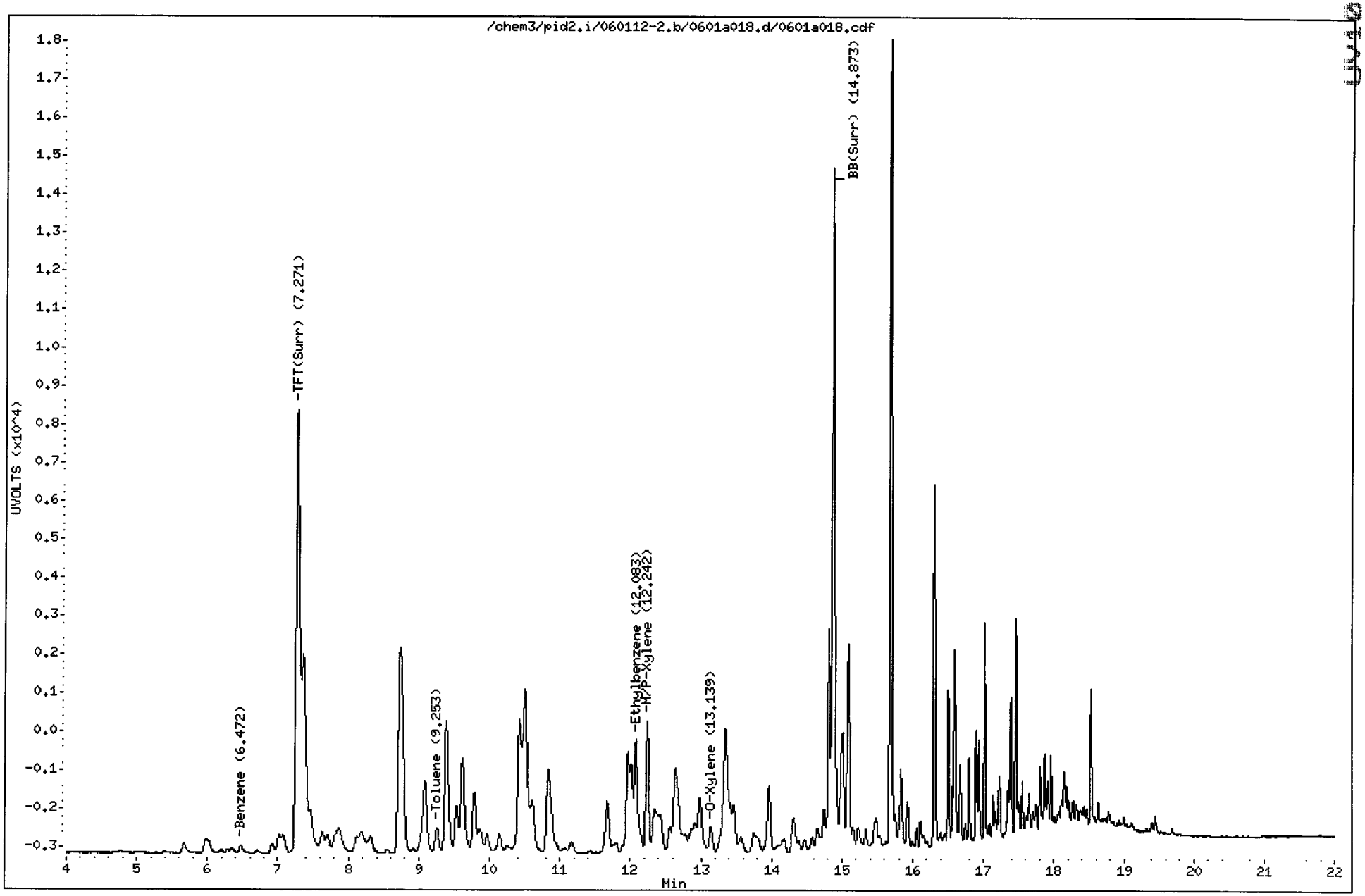
Column phase: RTX 502-2 PID

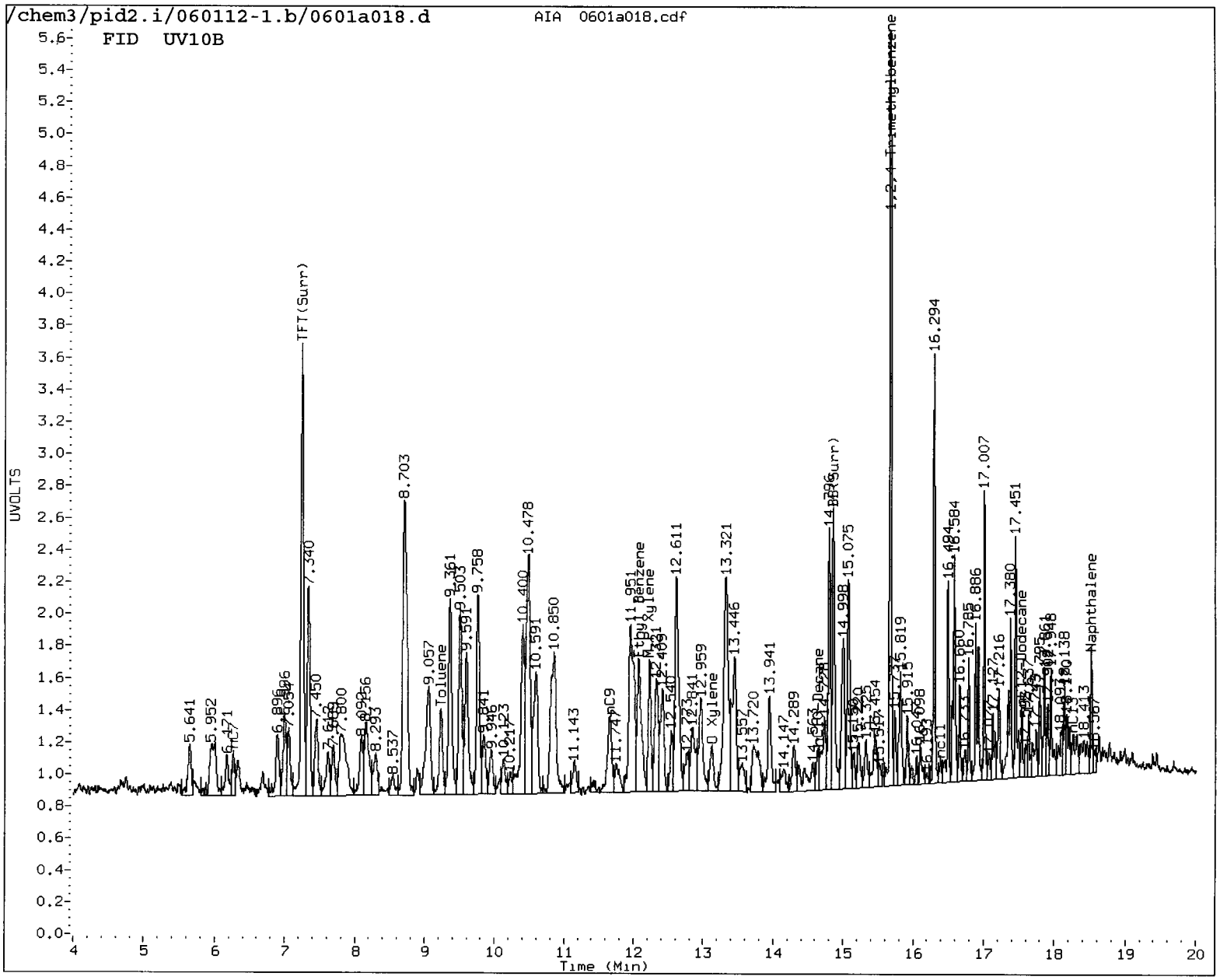
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV10 000214





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P1-C
SAMPLE

Lab Sample ID: UV10C
LIMS ID: 12-9173
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 13:49
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 84 mg-dry-wt
Percent Moisture: 6.1%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	15	< 15 U	
108-88-3	**Toluene**	**15**	**62**	
100-41-4	**Ethylbenzene**	**15**	**3,700**	
179601-23-1	**m,p-Xylene**	**30**	**1,800**	
95-47-6	o-Xylene	15	< 15 U	
	Gasoline Range Hydrocarbons	**6.0**	**990 E**	**GAS/GRO**

GAS ID

BETX Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	111%

Gasoline Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	154%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a010.d ARI ID: UV10C
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a010.d Client ID: USO-P1-C
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 13:49
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.003	3132	42161	104.6	TFT(Surr)
15.403	-0.003	2979	23782	153.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	5368367	15.734 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	4898817	7.222 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	3955780	7.348
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	5960976	16.580 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.003	3920	105.7	TFT(Surr)
15.413	0.000	9069	111.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.006	35	0.14N	Benzene
9.923	0.012	227	1.04N	Toluene
12.799	-0.006	11820	61.09	Ethylbenzene
12.970	0.004	6312	29.39	M/P-Xylene
ND	---	---	---	O-Xylene
4.567	0.001	18	0.21N	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a010.d

Date : 22-MAY-2012 13:49

Client ID: USO-P1-C

Sample Info: UV10C

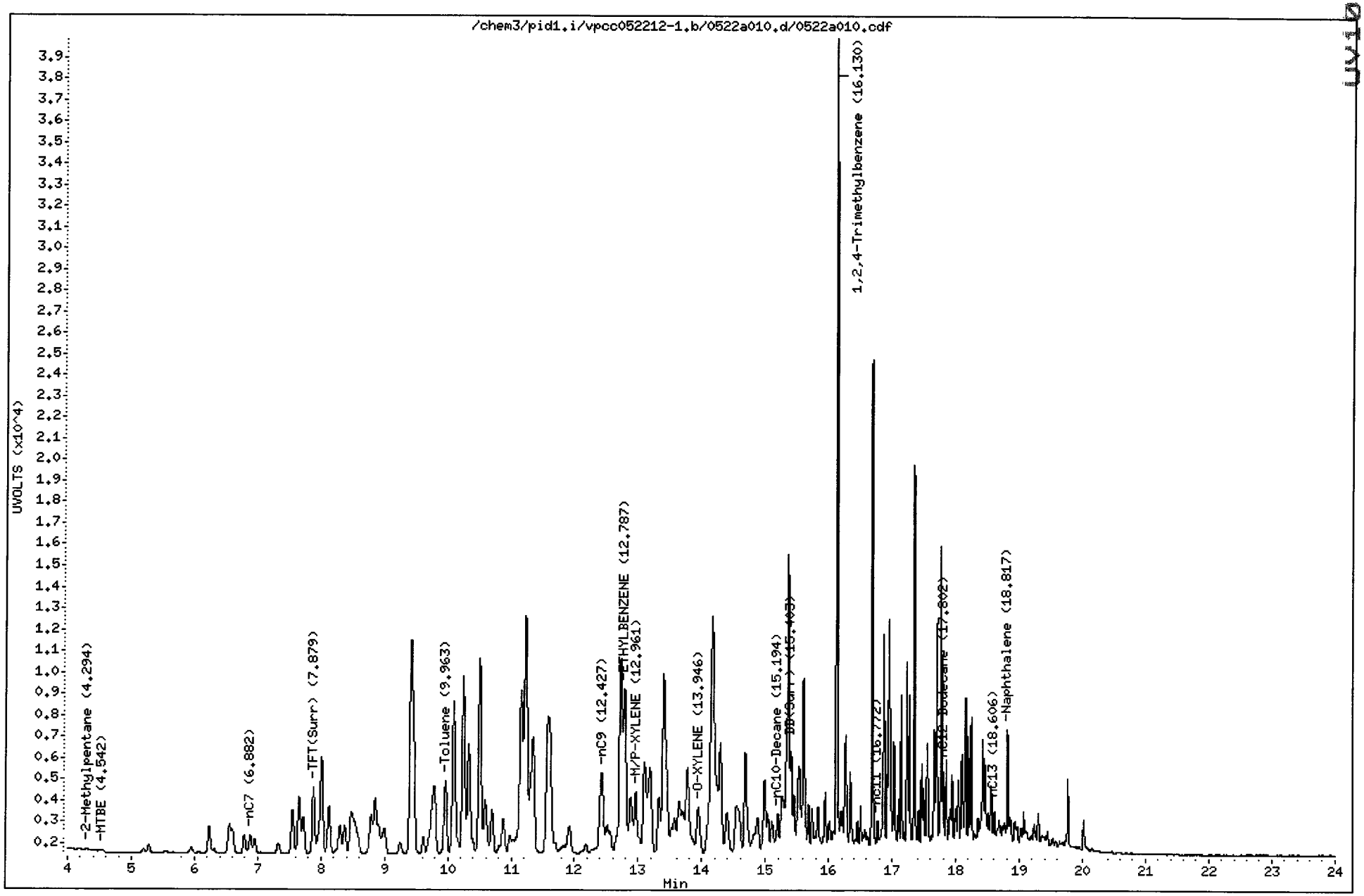
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 : 00028



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a010.d

Date : 22-MAY-2012 13:49

Client ID: USO-P1-C

Sample Info: UV10C

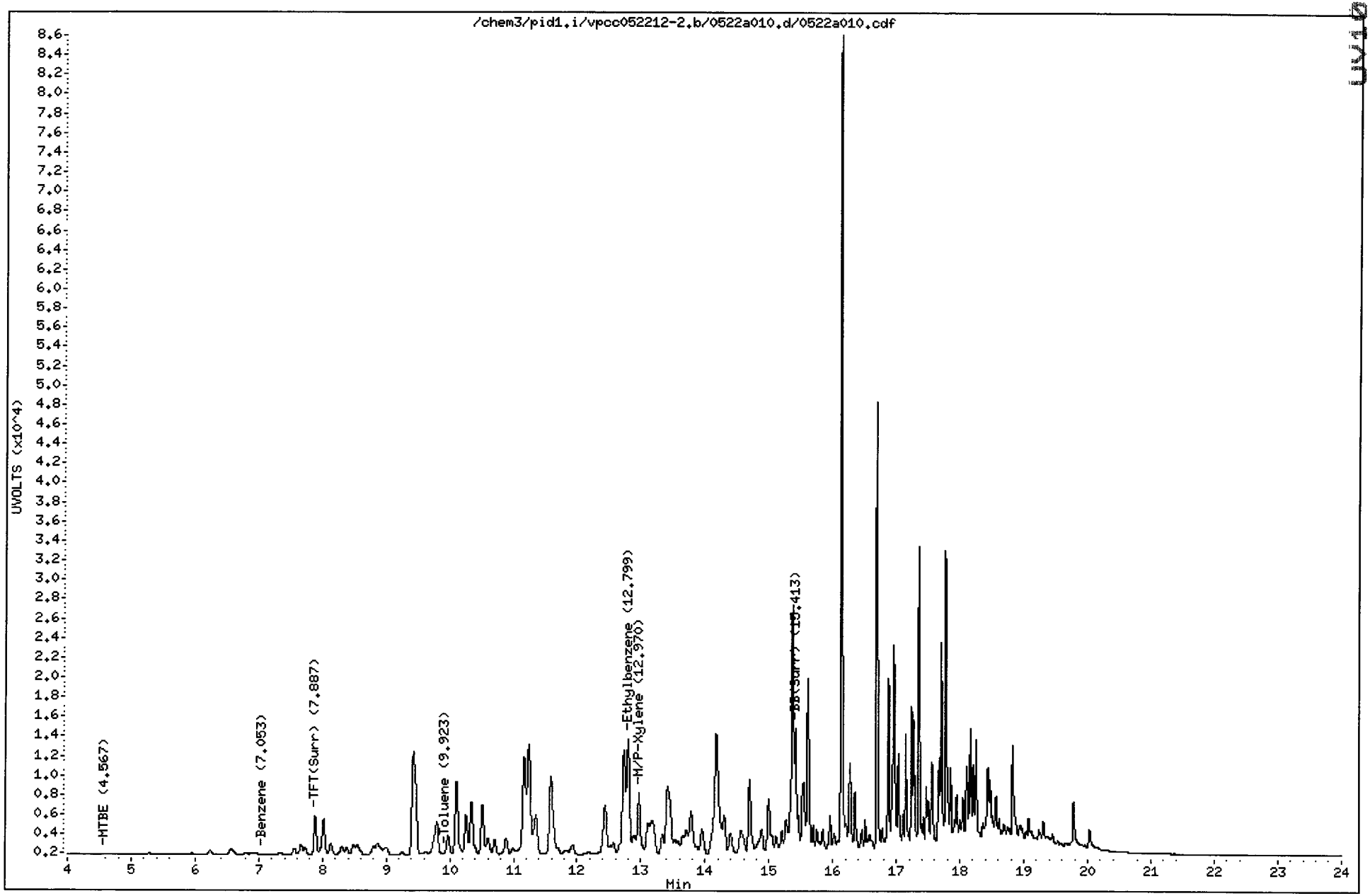
Column phase: RTX 502-2 PID

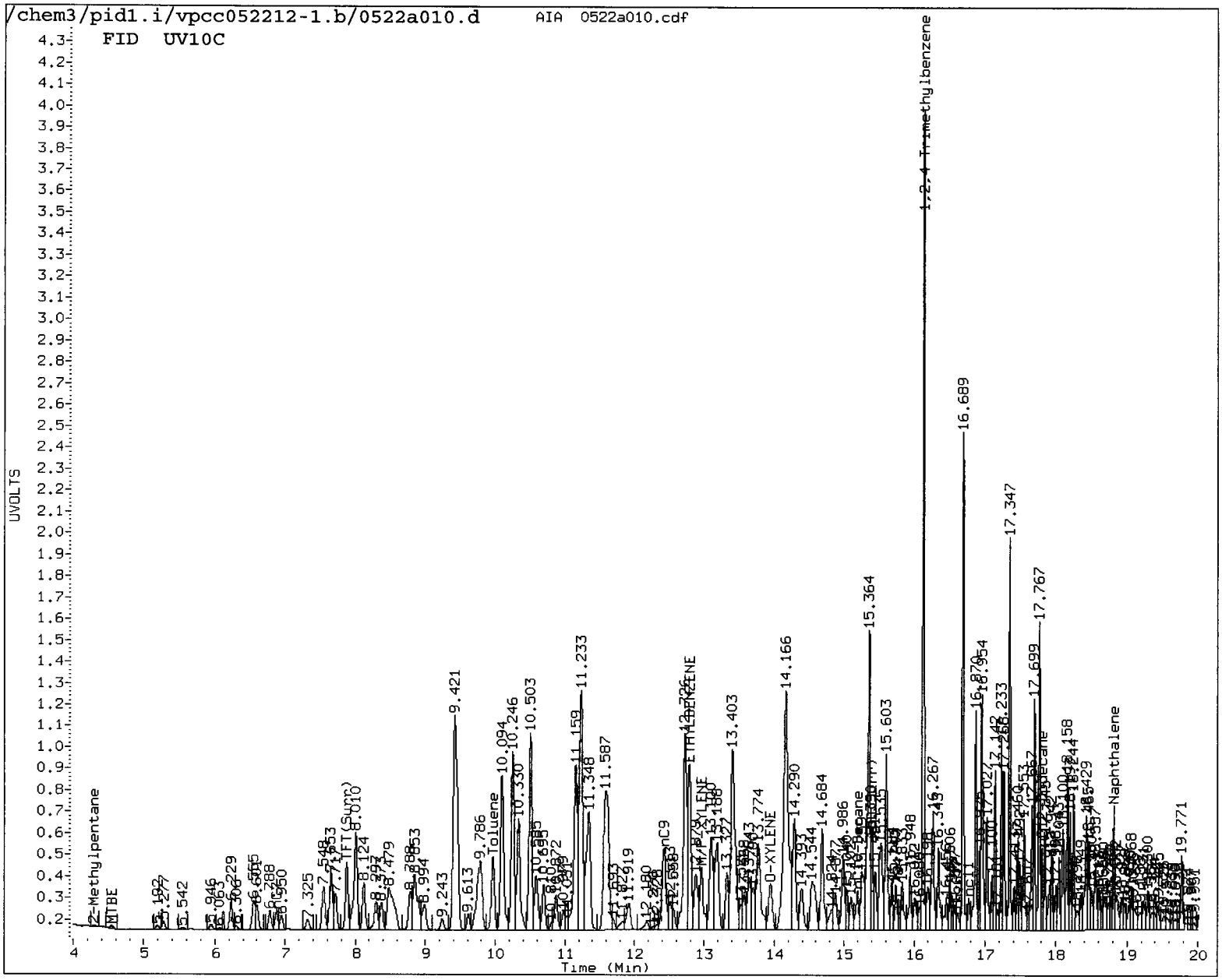
Instrument: pid1.i

Operator: JW

Column diameter: 0.18

S2009 9110





MANUAL INTEGRATION

- [x] 1. Baseline correction
- [ ] 2. Poor chromatography
- [ ] 3. Peak not found
- [ ] 4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-C**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV10C
LIMS ID: 12-9173
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 06/01/12 15:52
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 8.4 mg-dry-wt
Percent Moisture: 6.1%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	150	< 150 U	
108-88-3	**Toluene**	**150**	**350**	
100-41-4	**Ethylbenzene**	**150**	**1,700**	
179601-23-1	**m,p-Xylene**	**300**	**1,600**	
95-47-6	**o-Xylene**	**150**	**740**	
				GAS ID
	Gasoline Range Hydrocarbons	**60**	**1,100**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.7%
Bromobenzene	95.9%

Gasoline Surrogate Recovery

Trifluorotoluene	93.1%
Bromobenzene	101%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a019.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a019.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV10C
Client ID:
Injection Date: 01-JUN-2012 15:52
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.246	0.001	2763	36324	93.1	TFT(Surr)
14.854	-0.001	1694	21008	100.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	522061	1.635 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	469760	0.694 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	369326	0.678 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	591616	1.789 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.271	0.001	11354	91.7	TFT(Surr)
14.872	-0.001	17119	95.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.467	-0.004	89	0.10N	Benzene
9.251	0.013	326	0.59	Toluene
12.083	-0.001	1337	2.78	Ethylbenzene
12.243	-0.001	1277	2.74	M/P-Xylene
13.139	-0.013	470	1.24	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a019.d

Date : 01-JUN-2012 15:52

Client ID:

Sample Info: UV10C

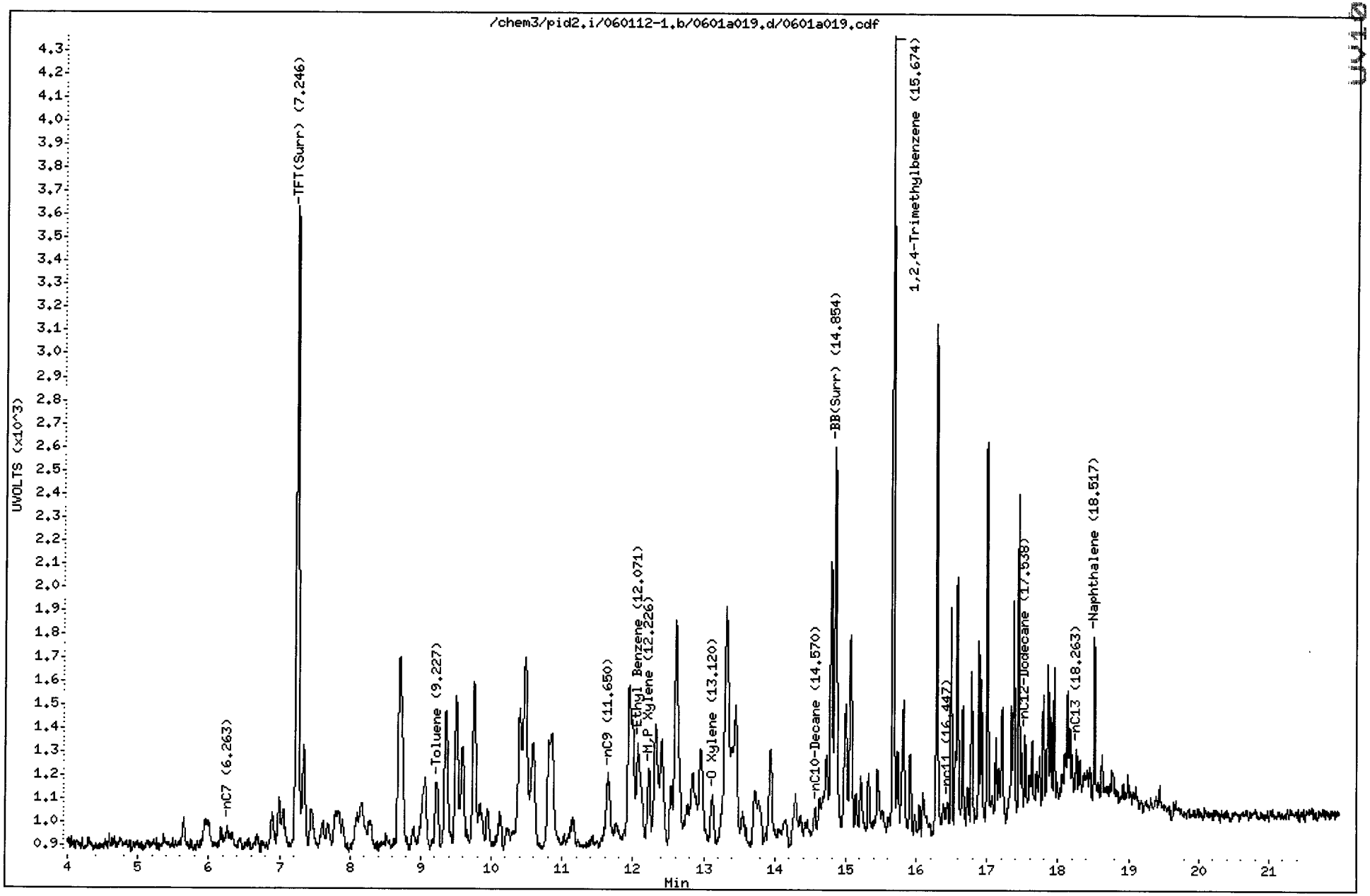
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV10 : 60033



Data File: /chem3/pid2.i/060112-2.b/0601a019.d

Date : 01-JUN-2012 15:52

Client ID:

Sample Info: UV10C

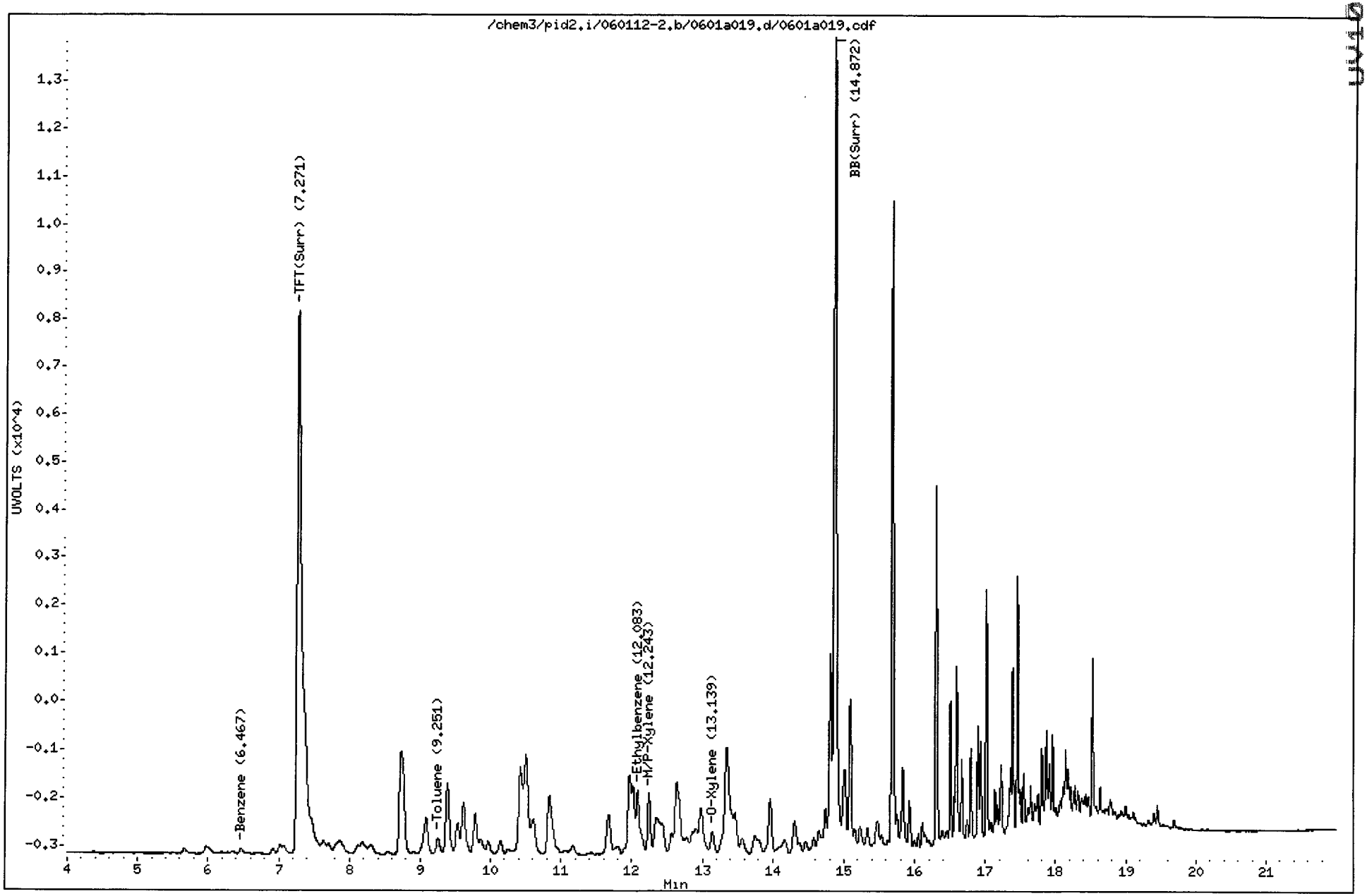
Column phase: RTX 502-2 PID

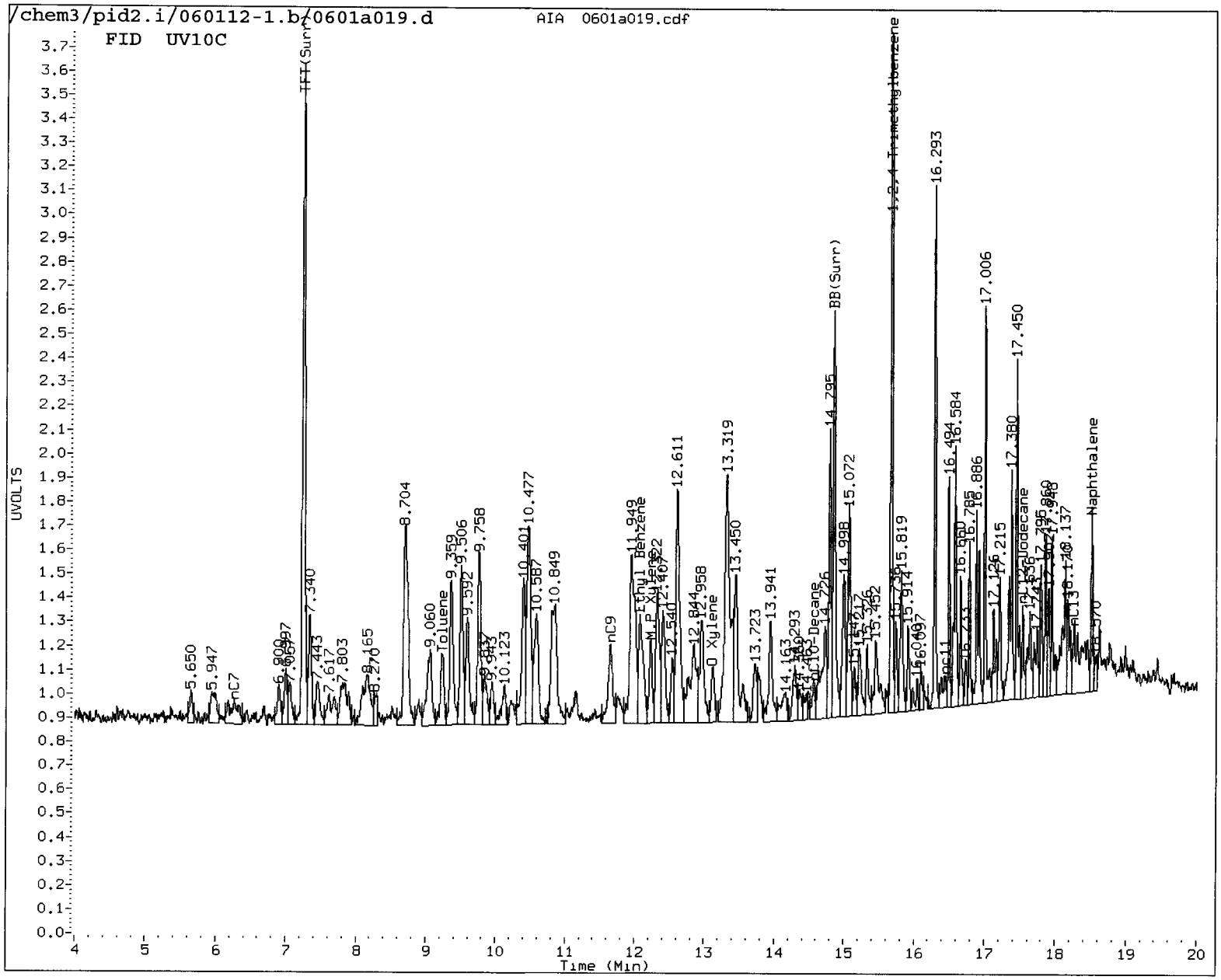
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV10 : 00034





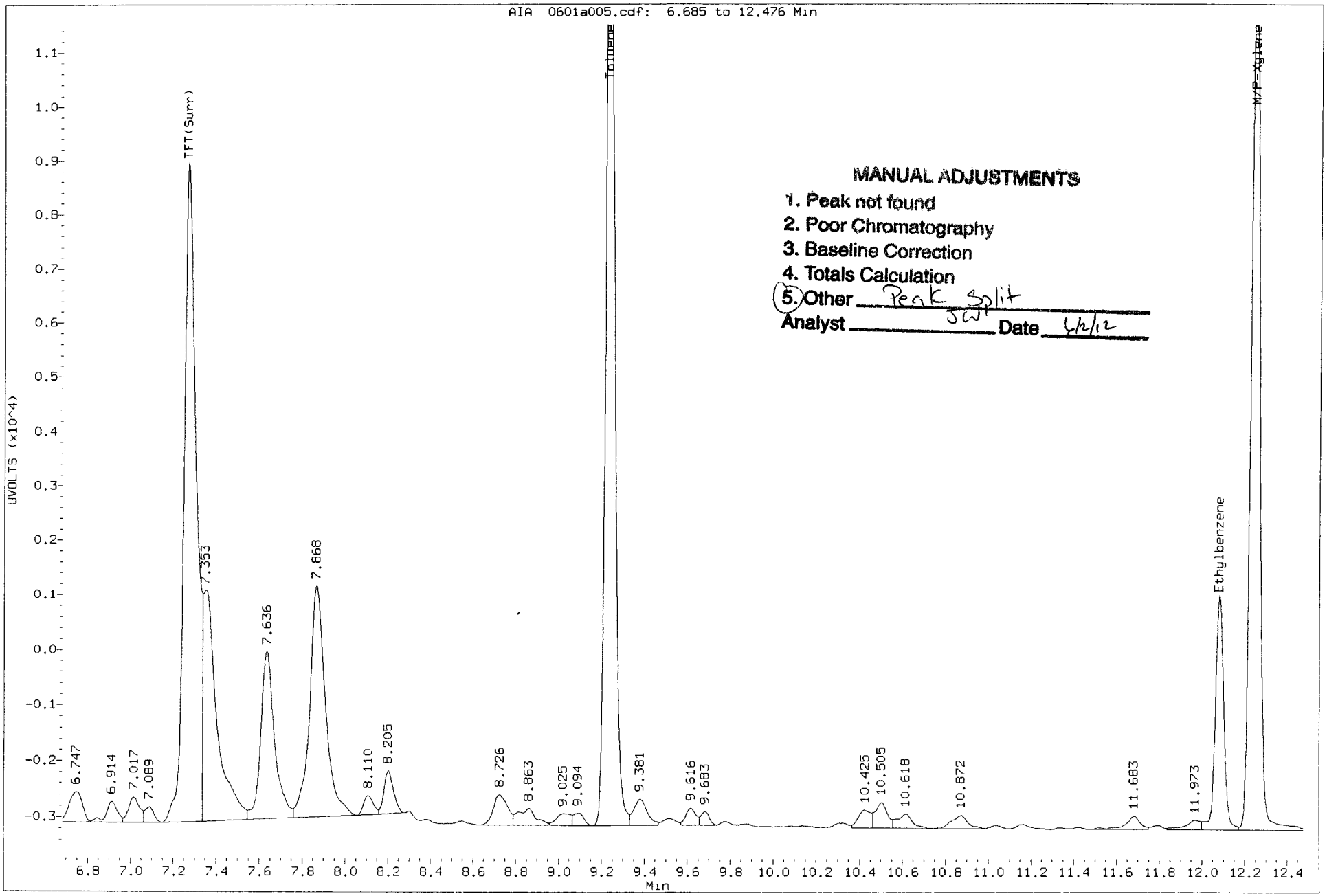
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/060112-2.b/0601a005.d/0601a005.cdf
Injection Date: 01-JUN-2012 08:33
Instrument: pid2.i
Client Sample ID:



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other Peak Split

Analyst _____ Date 6/2/12

SEQ00 0174

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10D
LIMS ID: 12-9174
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 16:52
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 90 mg-dry-wt
Percent Moisture: 13.6%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**14**	**27**	
108-88-3	**Toluene**	**14**	**14**	
100-41-4	Ethylbenzene	14	< 14 U	
179601-23-1	m,p-Xylene	28	< 28 U	
95-47-6	o-Xylene	14	< 14 U	
	Gasoline Range Hydrocarbons	5.6	< 5.6 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	98.4%
Bromobenzene	95.5%

Gasoline Surrogate Recovery

Trifluorotoluene	97.8%
Bromobenzene	96.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a022.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a022.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV10D
Client ID: USO-P1-D
Injection Date: 31-MAY-2012 16:52
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.244	-0.008	2902	35547	97.8	TFT(Surr)
14.851	-0.012	1625	18106	96.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	2	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.269	-0.008	12194	98.4	TFT(Surr)
14.869	-0.012	17062	95.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.469	-0.007	431	0.49	Benzene
9.233	-0.013	141	0.26N	Toluene
12.080	-0.014	35	0.07N	Ethylbenzene
12.237	-0.015	110	0.24N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a022.d

Date : 31-MAY-2012 16:52

Client ID: USO-P1-D

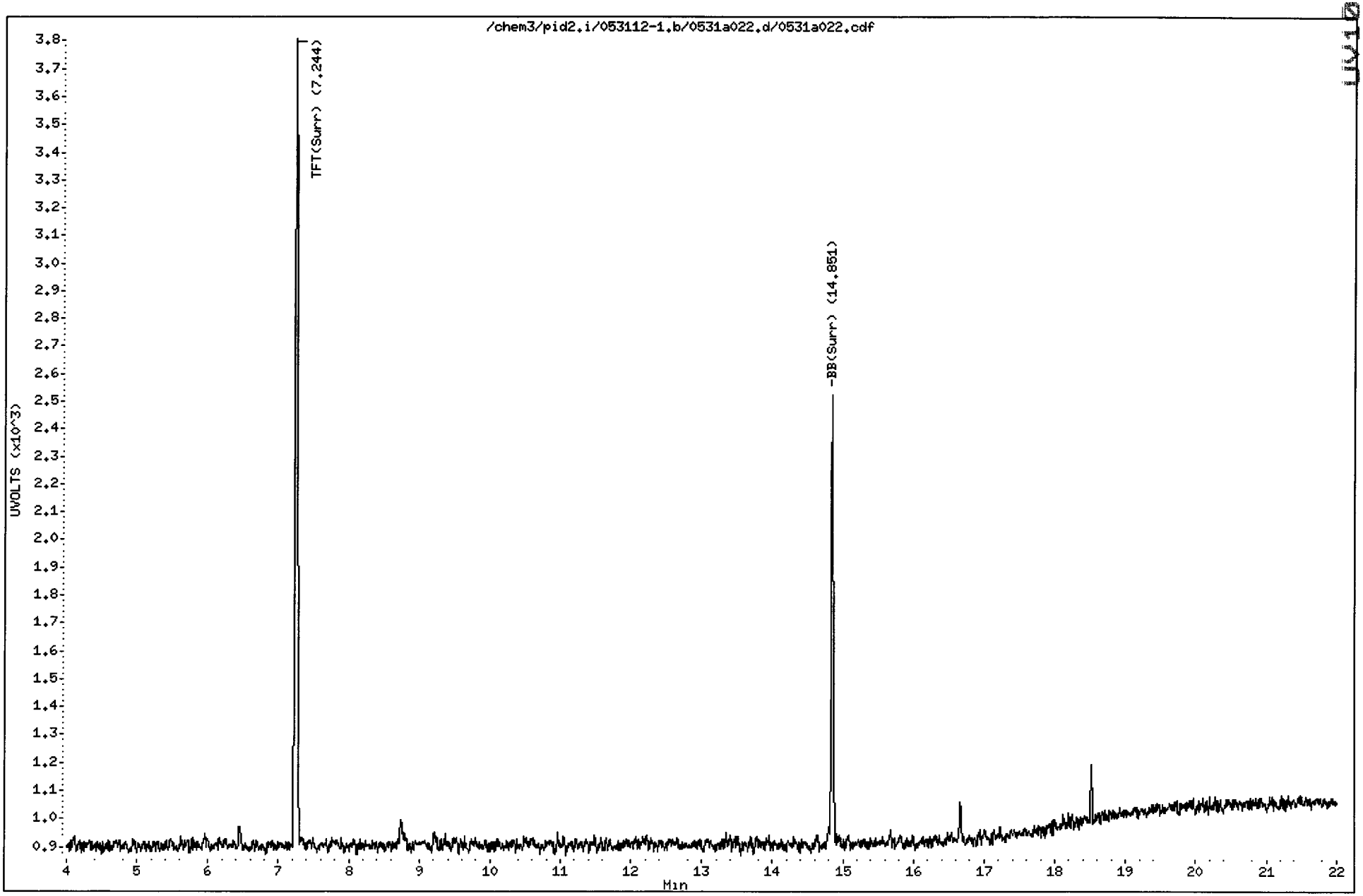
Instrument: pid2.i

Sample Info: UV10D

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a022.d

Date : 31-MAY-2012 16:52

Client ID: USO-P1-D

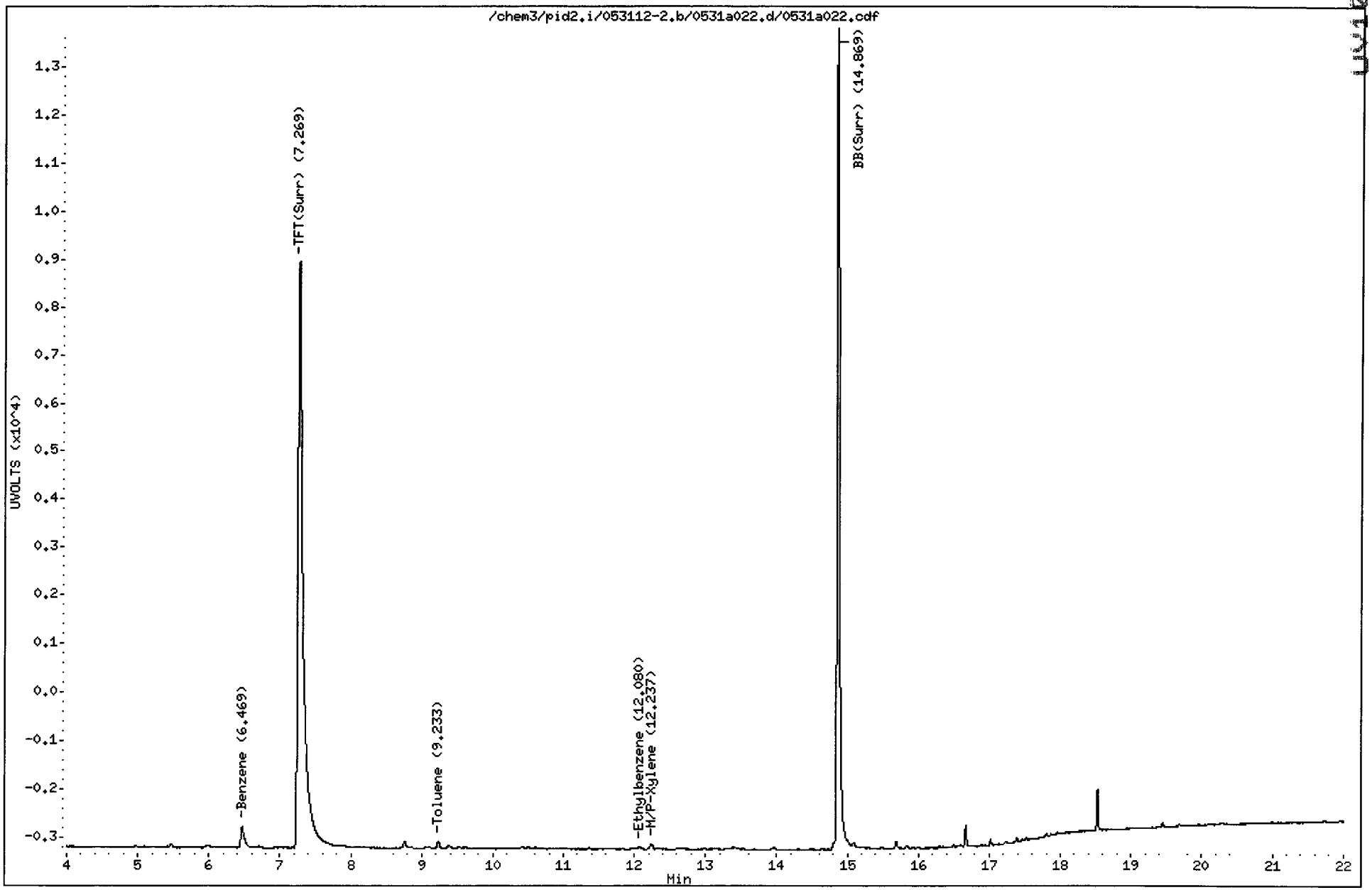
Sample Info: UV10D

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P1-E**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10E
LIMS ID: 12-9175
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 15:26
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 33 mg-dry-wt
Percent Moisture: 45.9%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**38**	**150**	
108-88-3	**Toluene**	**38**	**38**	**M**
100-41-4	**Ethylbenzene**	**38**	**140**	
179601-23-1	**m,p-Xylene**	**76**	**130**	
95-47-6	o-Xylene	38	< 38	U
	Gasoline Range Hydrocarbons	**15**	**39**	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	98.9%
Bromobenzene	96.6%

Gasoline Surrogate Recovery

Trifluorotoluene	95.4%
Bromobenzene	96.1%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH
5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a012.d ARI ID: UV10E
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a012.d Client ID: USO-P1-E
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 15:26
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.004	2858	35844	95.4	TFT(Surr)
15.407	0.001	1860	17074	96.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	68774	0.202 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	57846	0.085 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	39675	0.074 M
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	92287	0.257 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.003	3667	98.9	TFT(Surr)
15.417	0.004	7875	96.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.051	0.003	247	0.99	Benzene
9.913	0.002	55	0.25N	Toluene
12.807	0.002	175	0.90N	Ethylbenzene
12.971	0.005	189	0.88	M/P-Xylene
13.933	0.016	25	0.15N	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a012.d

Date : 22-MAY-2012 15:26

Client ID: USO-P1-E

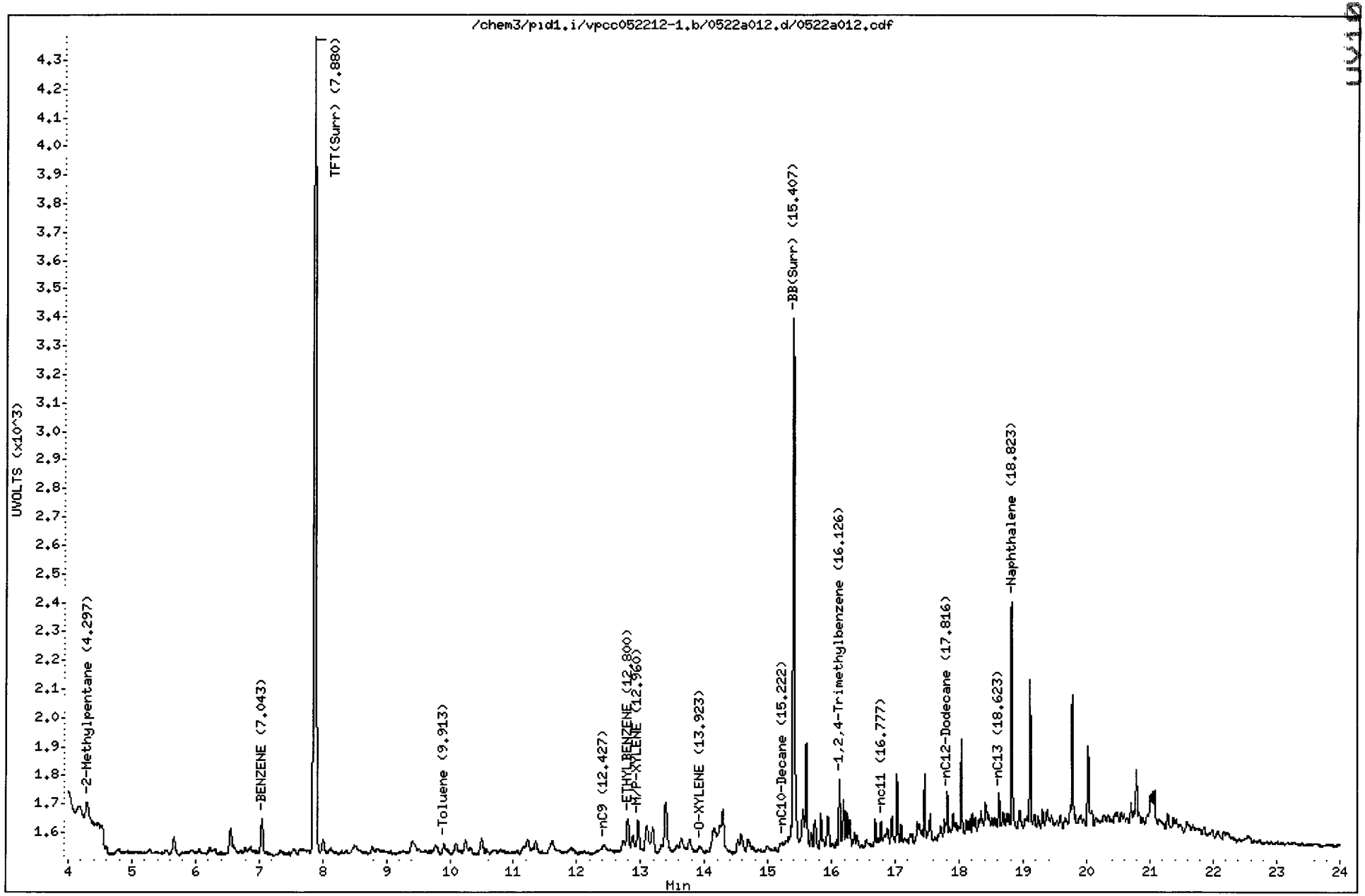
Sample Info: UV10E

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a012.d

Page 1

Date : 22-MAY-2012 15:26

Client ID: USO-P1-E

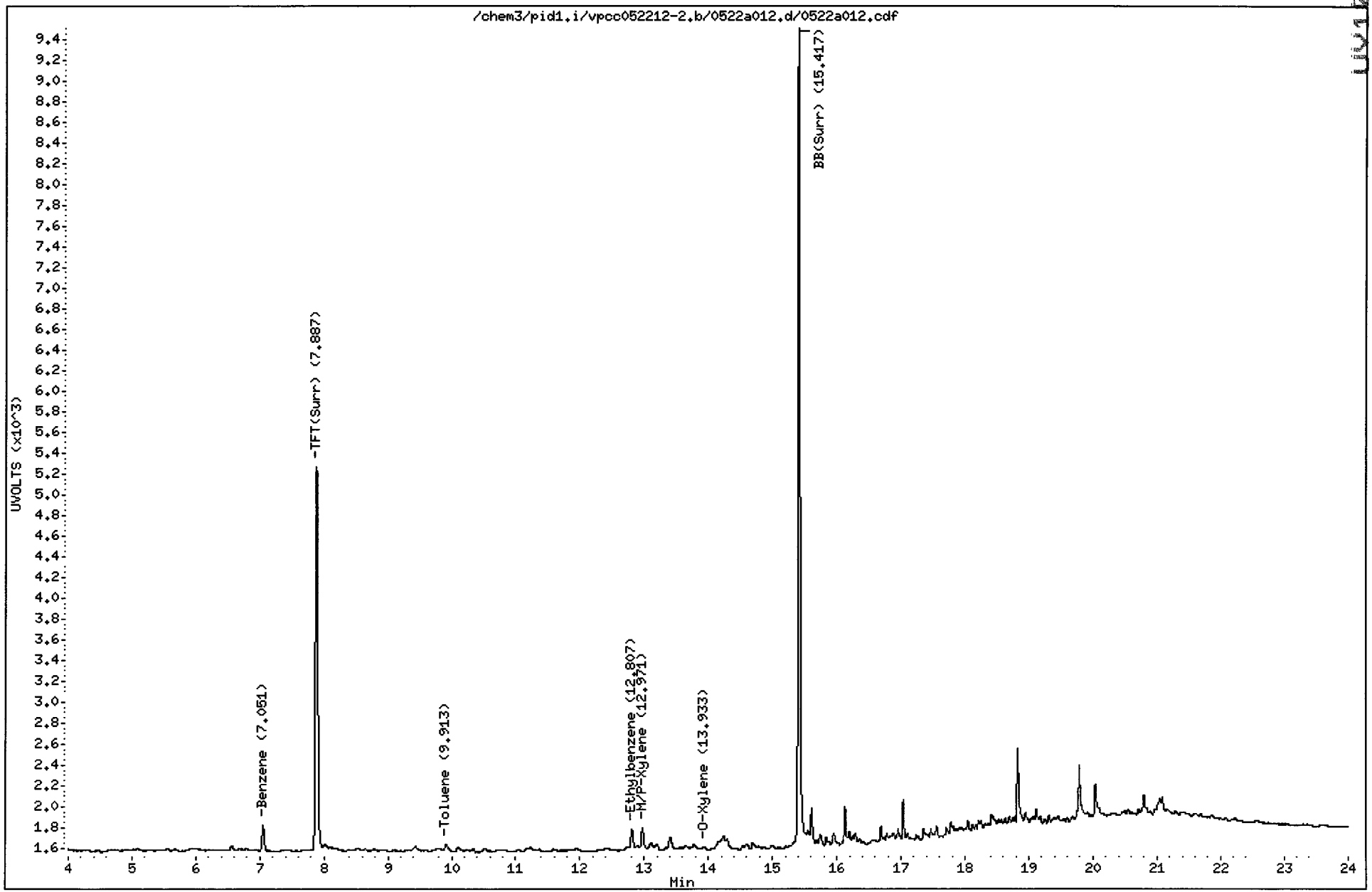
Instrument: pid1.i

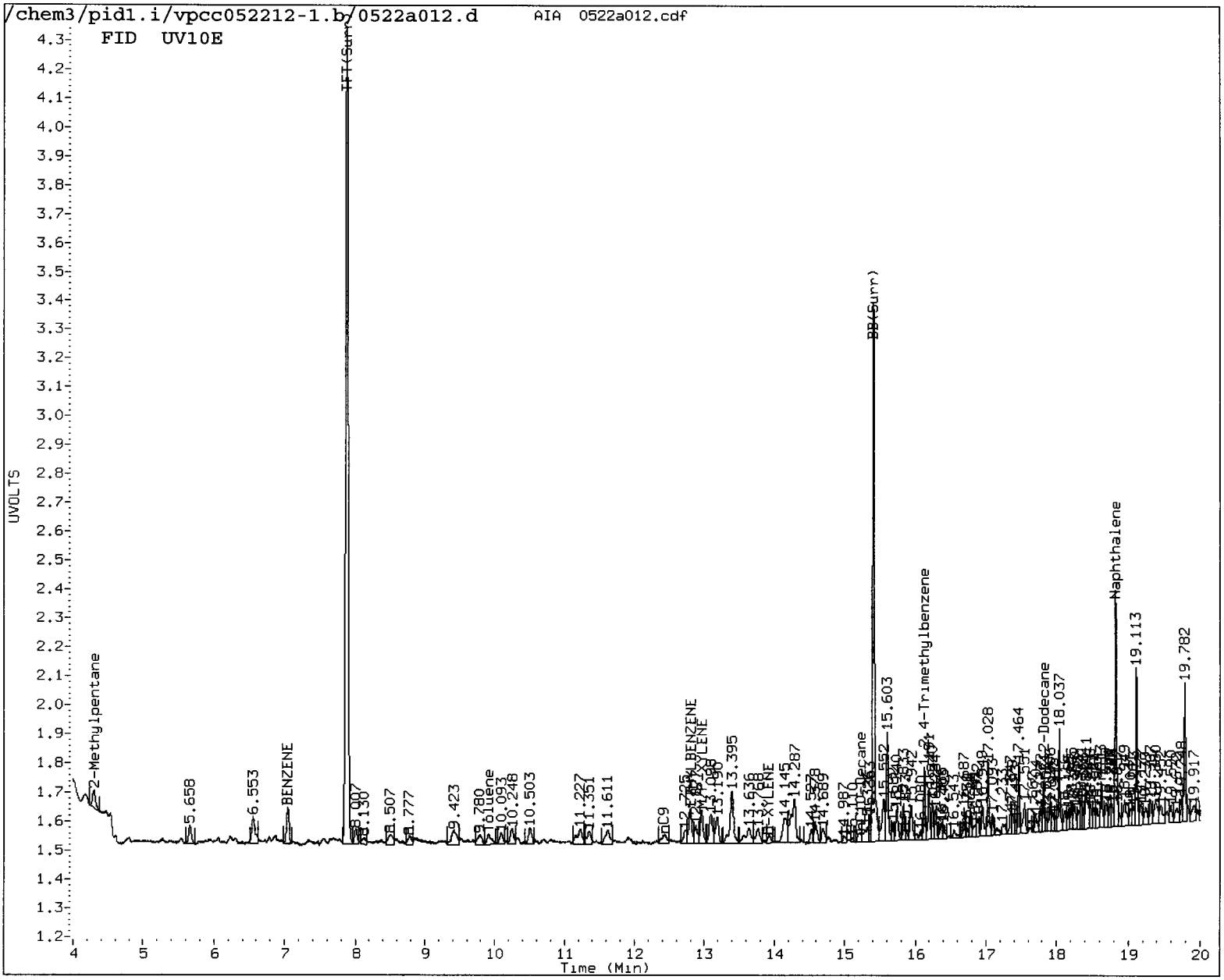
Sample Info: UV10E

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P2-A
SAMPLE

Lab Sample ID: UV10F
LIMS ID: 12-9176
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 16:53
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 85 mg-dry-wt
Percent Moisture: 4.7%

CAS Number	Analyte	RL	Result		GAS ID
71-43-2	Benzene	15	1,300		
108-88-3	Toluene	15	230	M	
100-41-4	Ethylbenzene	15	13,000	E	
179601-23-1	m,p-Xylene	30	52,000	E	
95-47-6	o-Xylene	15	1,400		
	Gasoline Range Hydrocarbons	5.9	1,600	E	GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	117%

Gasoline Surrogate Recovery

Trifluorotoluene	108%
Bromobenzene	145%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a015.d ARI ID: UV10F
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a015.d Client ID: USO-P2-A
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 16:53
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.004	3240	47394	108.2	TFT(Surr)
15.410	0.004	2810	21535	145.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	9395152	27.536 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	14064959	20.735 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	11950742	22.200
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	9915024	27.578 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.004	3896	105.1	TFT(Surr)
15.417	0.004	9555	117.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.006	5344	21.43	Benzene
9.933	0.022	845	3.87N	Toluene
12.818	0.013	42222	218.23	Ethylbenzene
12.996	0.030	190604	887.63	M/P-Xylene
13.937	0.019	3907	23.25	O-Xylene
4.563	-0.003	645	7.67	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a015.d

Date : 22-MAY-2012 16:53

Client ID: USO-P2-A

Sample Info: UV10F

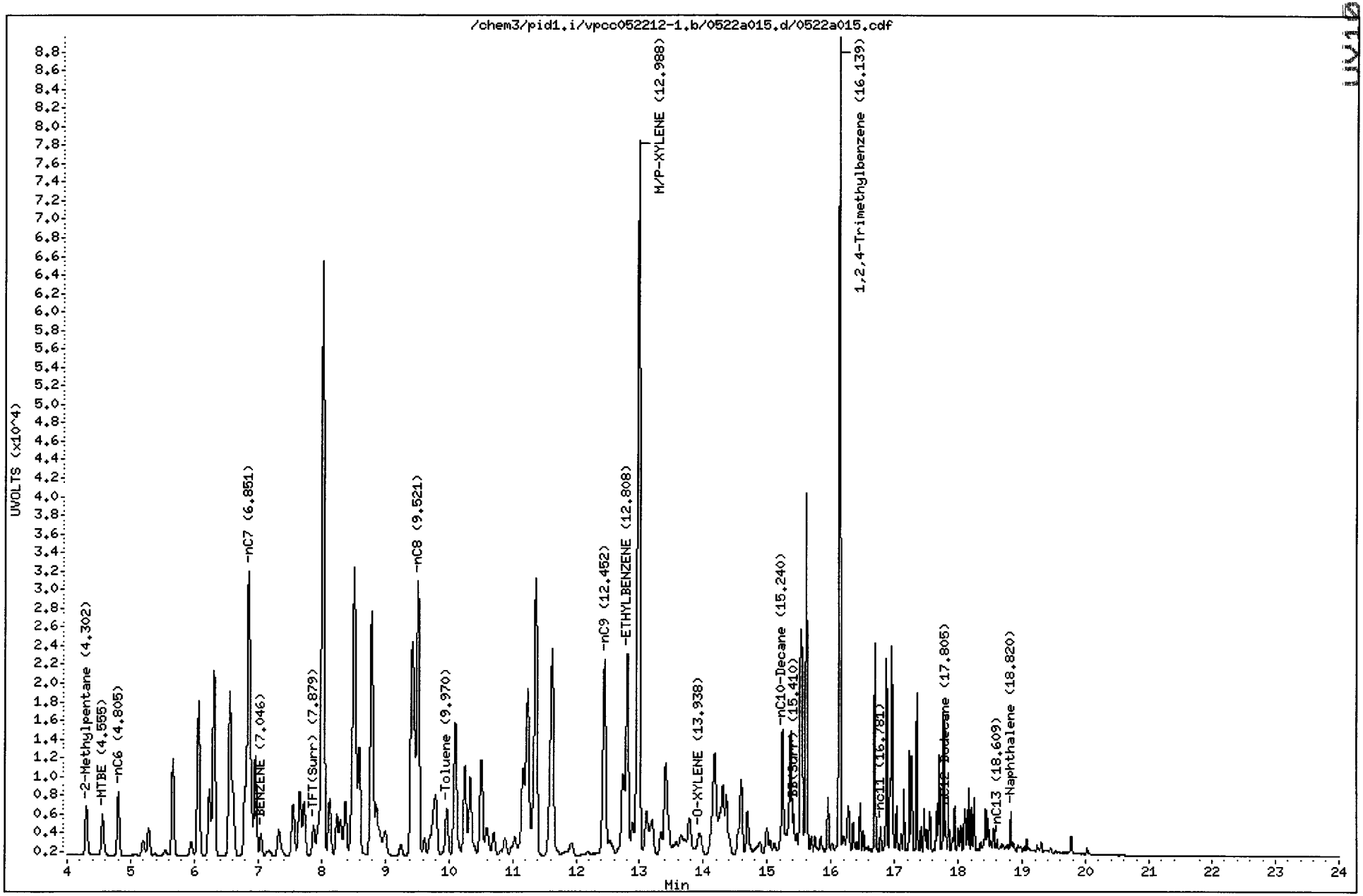
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 : 00013



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a015.d

Date : 22-MAY-2012 16:53

Client ID: USO-P2-A

Sample Info: UV10F

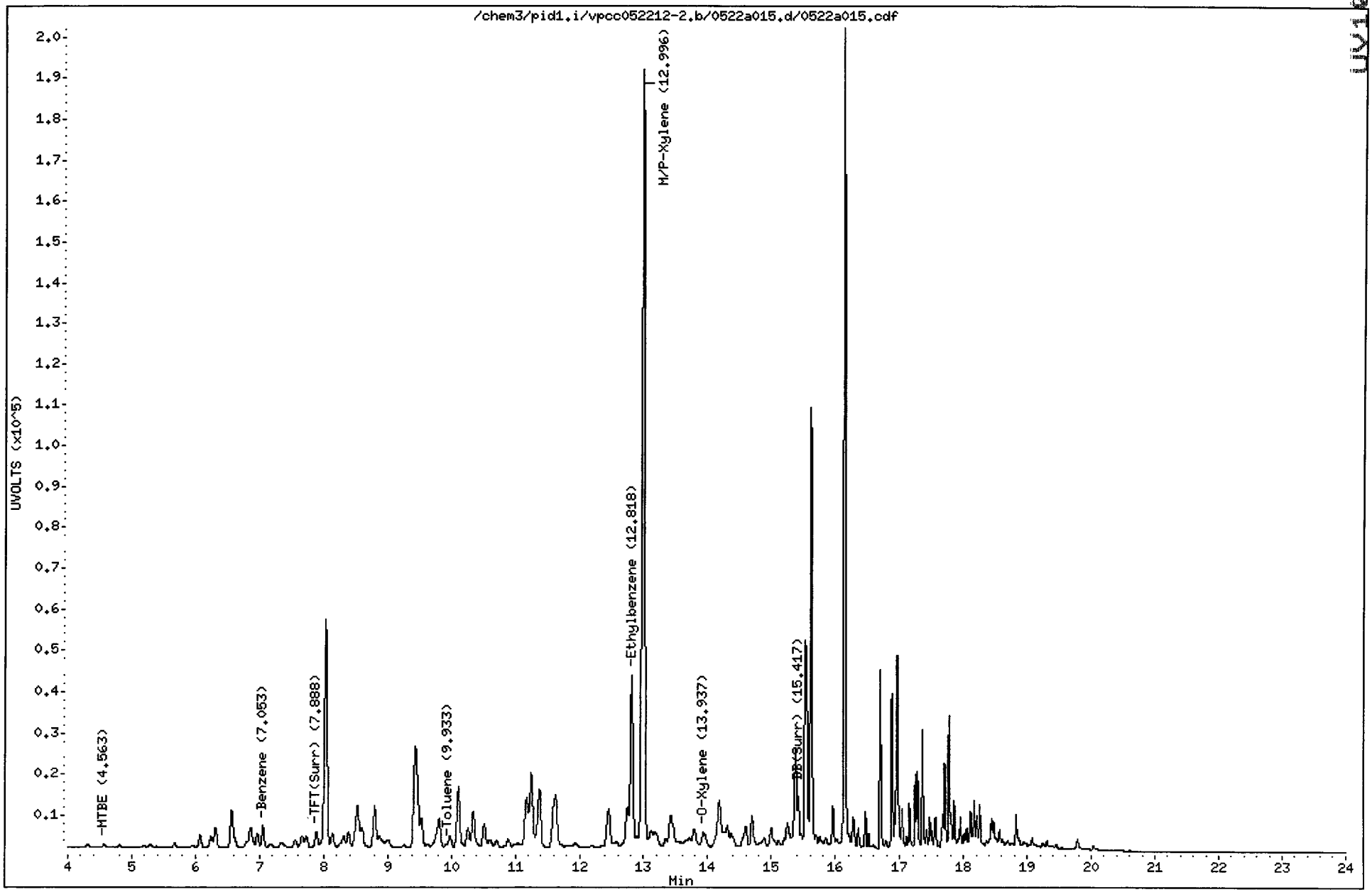
Column phase: RTX 502-2 PID

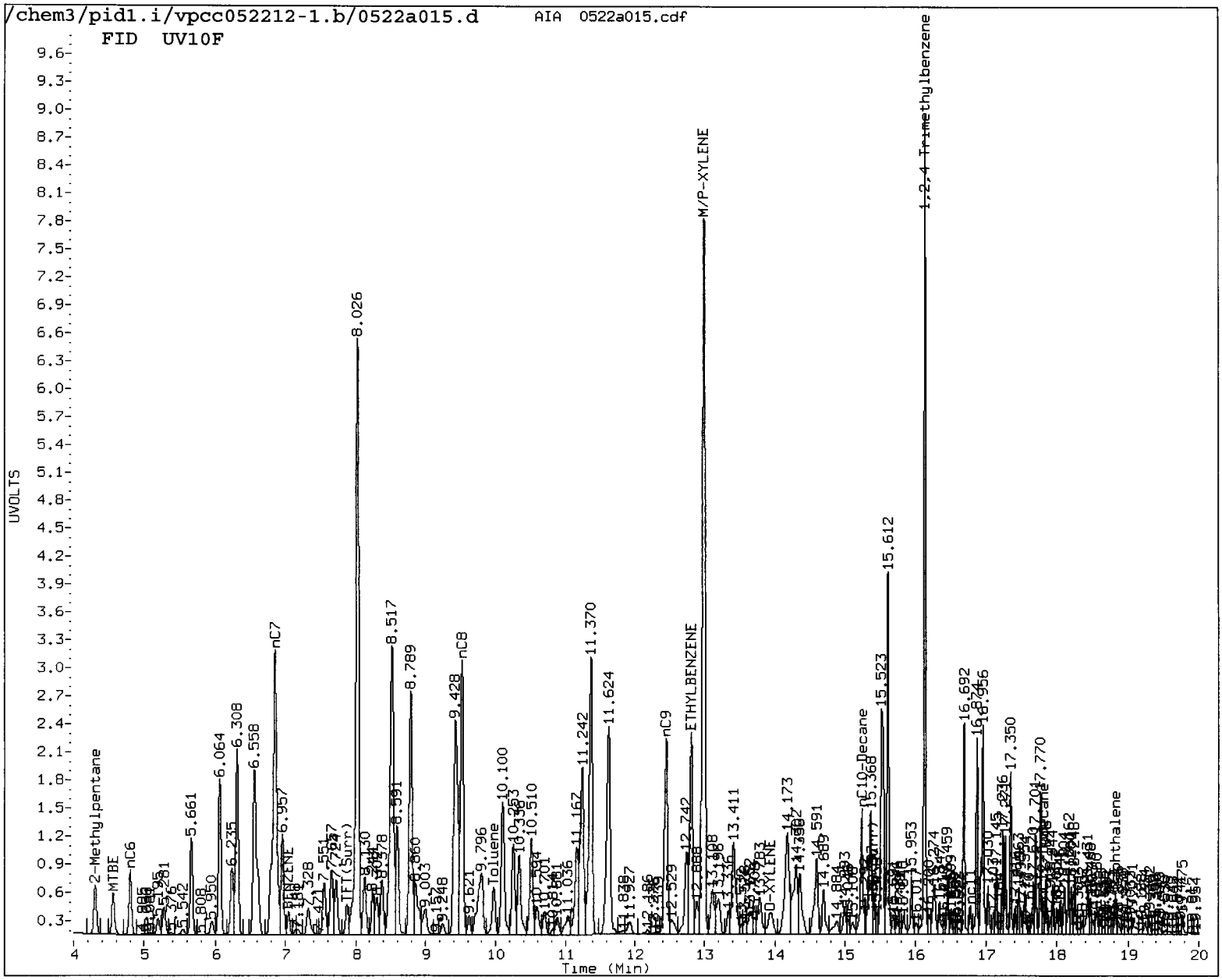
Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 05052012





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-A**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV10F
LIMS ID: 12-9176
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 11:39
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 8.5 mg-dry-wt
Percent Moisture: 4.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**150**	**1,300**	
108-88-3	**Toluene**	**150**	**200**	
100-41-4	**Ethylbenzene**	**150**	**13,000**	
179601-23-1	**m,p-Xylene**	**300**	**59,000**	
95-47-6	**o-Xylene**	**150**	**1,200**	
				GAS ID
	Gasoline Range Hydrocarbons	**59**	**1,800**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	99.8%
Bromobenzene	103%

Gasoline Surrogate Recovery

Trifluorotoluene	98.6%
Bromobenzene	107%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a011.d ARI ID: UV10F
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a011.d Client ID: USO-P2-A
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 11:39
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.001	2954	38838	98.6	TFT(Surr)
15.404	0.000	2067	18802	106.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	995290	2.917
8015C 2MP-TMB	(4.20 to 16.22)	678311	1407878	2.076
AK101 nC6-nC10	(4.70 to 15.12)	538315	1167592	2.169
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	1061411	2.952

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.886	0.002	3702	99.8	TFT(Surr)
15.413	0.000	8419	103.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.049	0.001	541	2.17	Benzene
9.923	0.011	75	0.34N	Toluene
12.804	-0.001	4203	21.72	Ethylbenzene
12.969	0.003	21545	100.33	M/P-Xylene
13.926	0.009	335	1.99	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a011.d

Date : 23-MAY-2012 11:39

Client ID: USO-P2-A

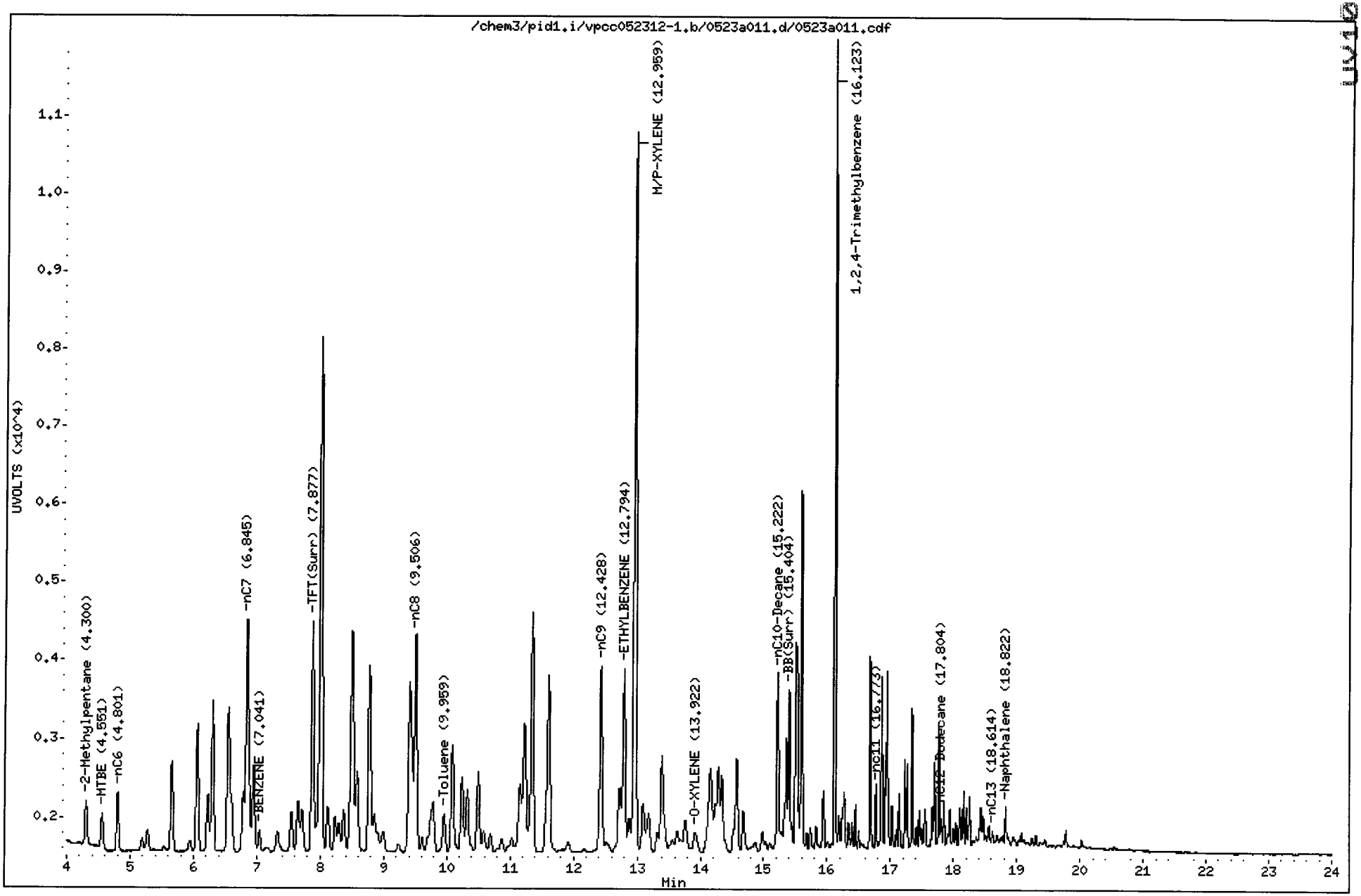
Sample Info: UV10F

Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a011.d

Date : 23-MAY-2012 11:39

Client ID: USO-P2-A

Sample Info: UV10F

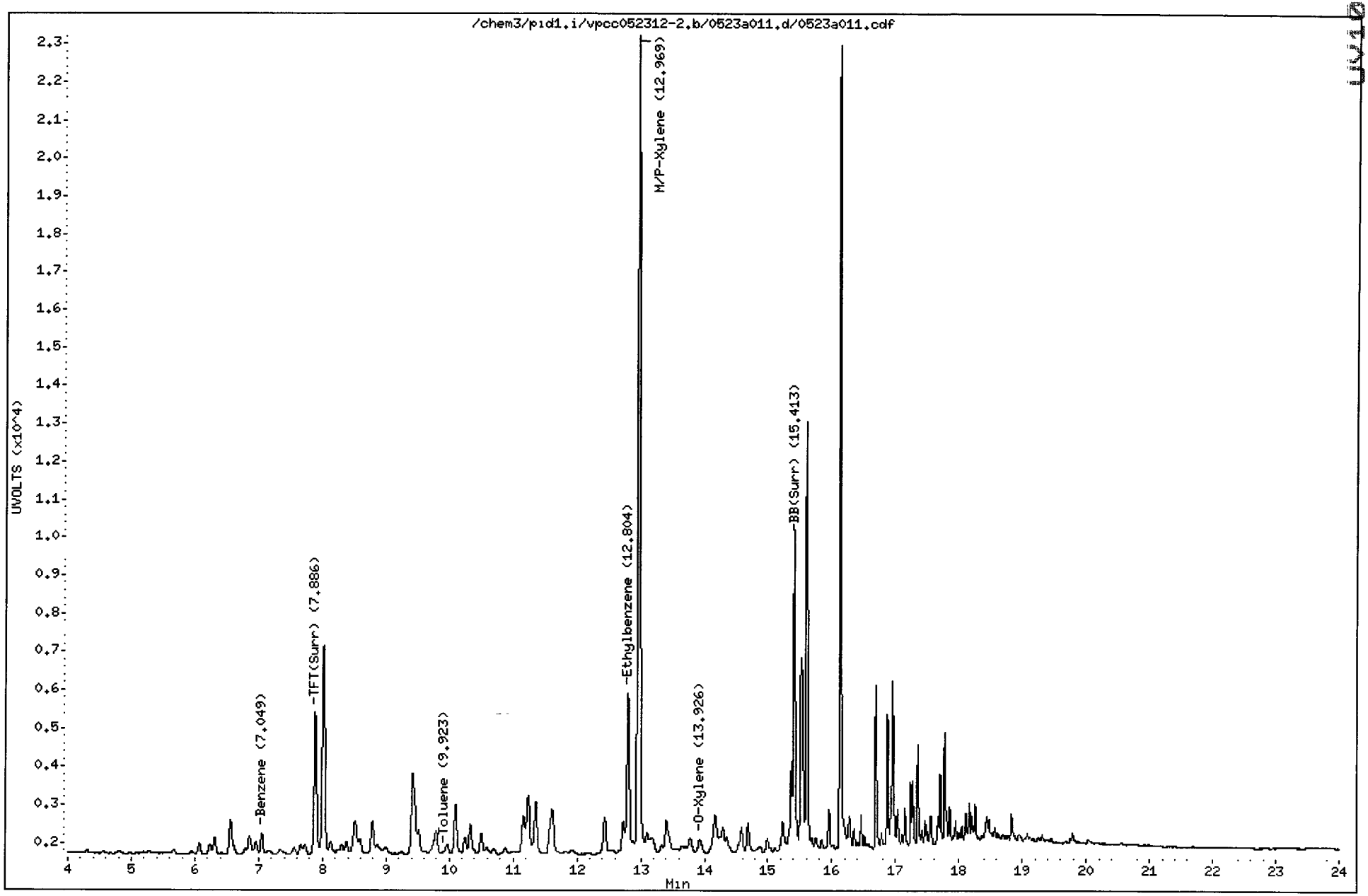
Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV10 : 60054



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-B**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10G
LIMS ID: 12-9177
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 17:22
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 93 mg-dry-wt
Percent Moisture: 5.6%

CAS Number	Analyte	RL	Result		GAS ID
71-43-2	**Benzene**	**13**	**810**		
108-88-3	**Toluene**	**13**	**260**	**M**	
100-41-4	**Ethylbenzene**	**13**	**14,000**	**E**	
179601-23-1	**m,p-Xylene**	**27**	**65,000**	**E**	
95-47-6	**o-Xylene**	**13**	**4,000**		
	Gasoline Range Hydrocarbons	**5.4**	**1,900**	**E**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	99.8%
Bromobenzene	110%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	140%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a016.d
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a016.d
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m
Instrument: pid1.i
Gas Ical Date: 15-MAY-2012
BETX Ical Date: 15-MAY-2012

ARI ID: UV10G
Client ID: USO-P2-B
Injection Date: 22-MAY-2012 17:22
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.003	3004	43823	100.3	TFT(Surr)
15.410	0.004	2709	20806	140.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	12194935	35.742 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	16396957	24.173 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	13544130	25.160
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	12798933	35.599 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.004	3701	99.8	TFT(Surr)
15.417	0.004	8968	110.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.005	3758	15.07	Benzene
9.933	0.022	1060	4.86N	Toluene
12.820	0.015	50641	261.74	Ethylbenzene
13.006	0.040	262536	1222.62	M/P-Xylene
13.933	0.015	12647	75.27	O-Xylene
4.563	-0.003	531	6.31	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a016.d

Date : 22-MAY-2012 17:22

Client ID: USO-P2-B

Sample Info: UV10G

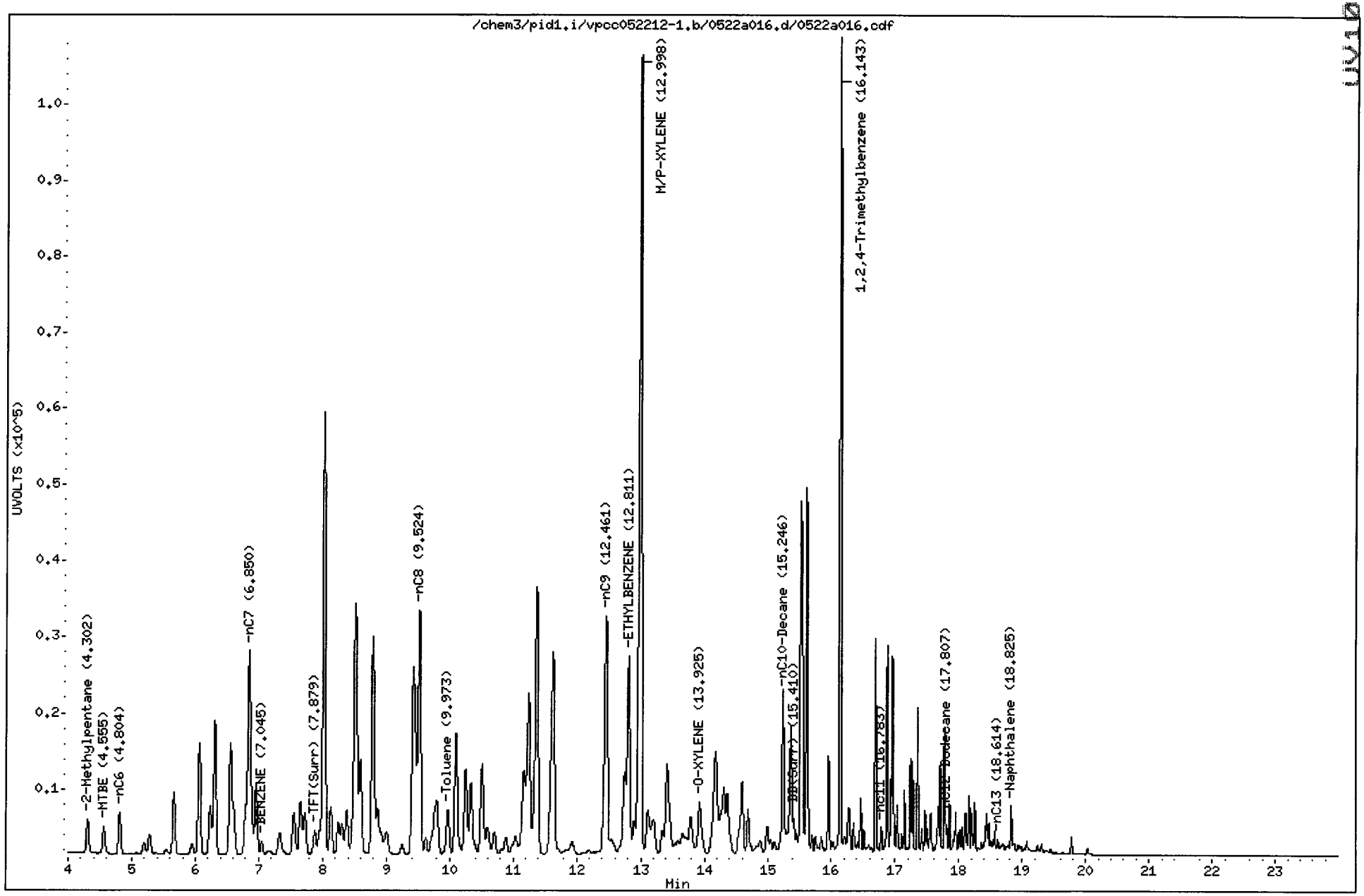
Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV10 : 00057



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a016.d

Page 1

Date : 22-MAY-2012 17:22

Client ID: USO-P2-B

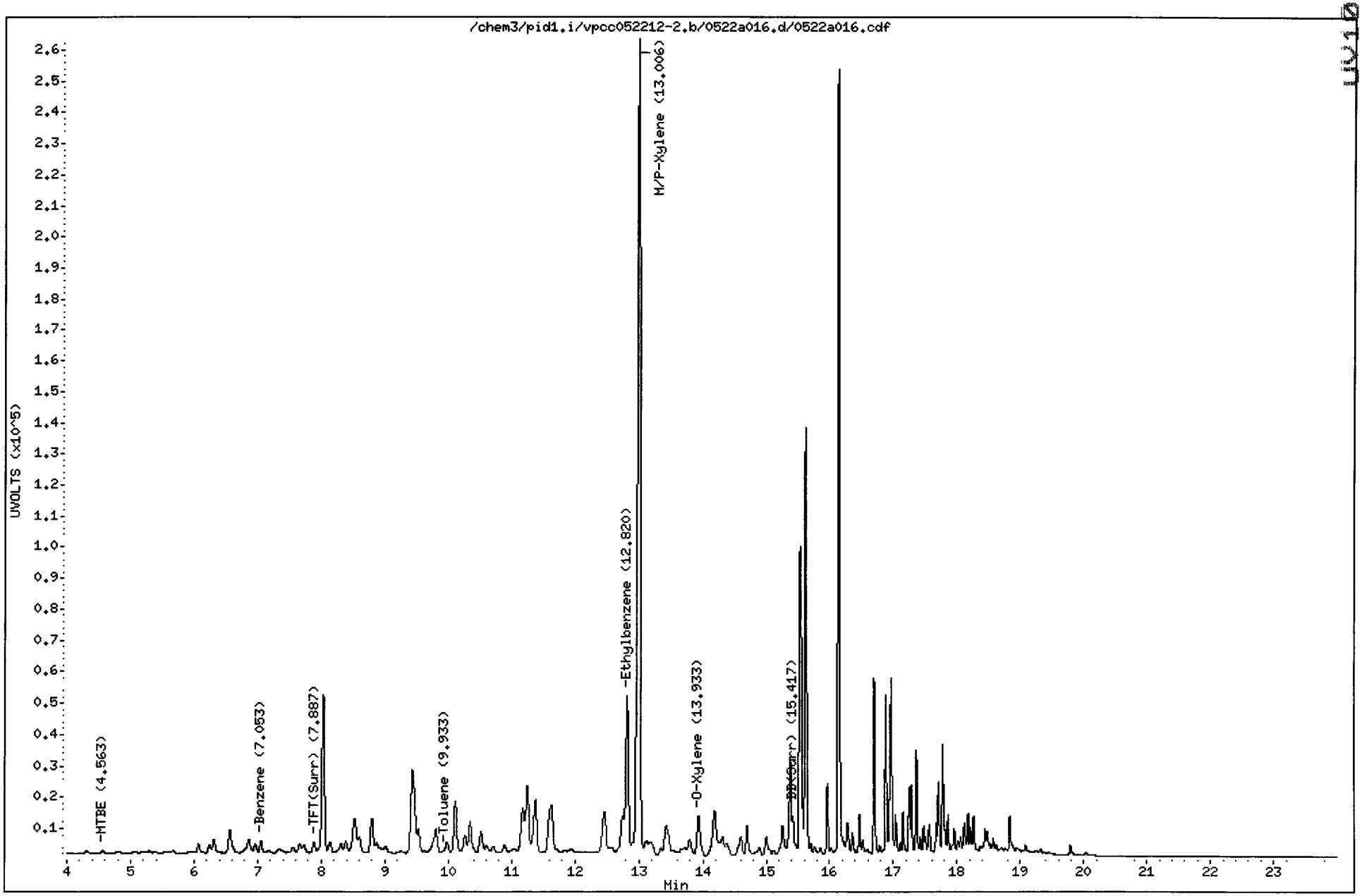
Instrument: pid1.i

Sample Info: UV10G

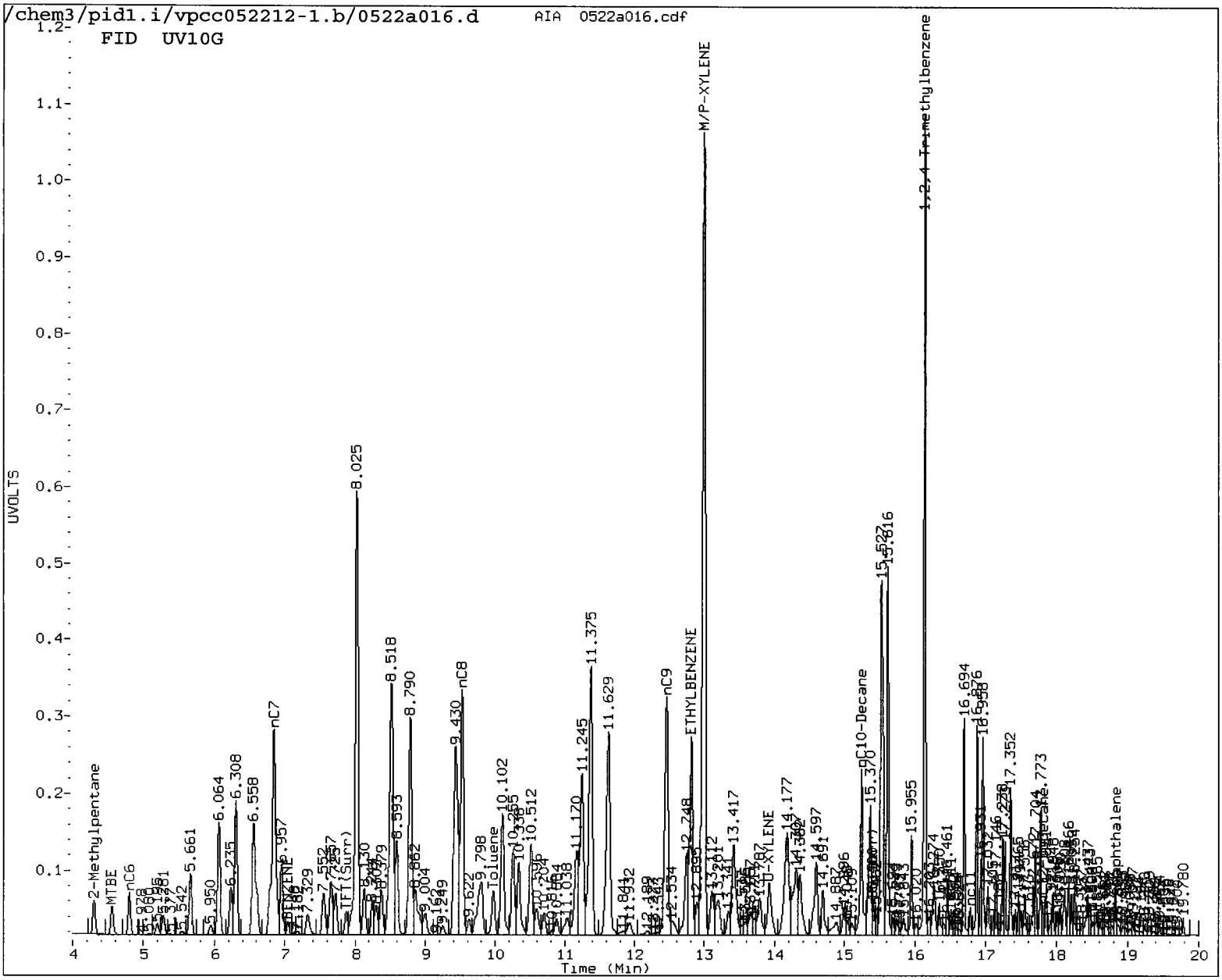
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18



UV10 : 00058



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-B**
TPHG by Method NWTPHG **DILUTION**

Lab Sample ID: UV10G
LIMS ID: 12-9177
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 12:08
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 4.7 mg-dry-wt
Percent Moisture: 5.6%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**270**	**820**	
108-88-3	Toluene	270	< 270 U	
100-41-4	**Ethylbenzene**	**270**	**14,000**	
179601-23-1	**m,p-Xylene**	**540**	**77,000**	
95-47-6	**o-Xylene**	**270**	**4,200**	
				GAS ID
	Gasoline Range Hydrocarbons	**110**	**2,000**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.8%
Bromobenzene	98.5%

Gasoline Surrogate Recovery

Trifluorotoluene	93.8%
Bromobenzene	99.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a012.d ARI ID: UV10G
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a012.d Client ID: USO-P2-B
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 12:08
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.002	2810	36290	93.8	TFT(Surr)
15.406	0.001	1925	18741	99.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	635785	1.863
8015C 2MP-TMB	(4.20 to 16.22)	678311	803042	1.184
AK101 nC6-nC10	(4.70 to 15.12)	538315	641960	1.193
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	673499	1.873

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	3516	94.8	TFT(Surr)
15.413	0.000	8029	98.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.049	0.000	191	0.77	Benzene
9.923	0.011	27	0.12N	Toluene
12.804	-0.001	2455	12.69	Ethylbenzene
12.970	0.004	15490	72.14	M/P-Xylene
13.920	0.003	653	3.89	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a012.d

Date : 23-MAY-2012 12:08

Client ID: USO-P2-B

Sample Info: UV10G

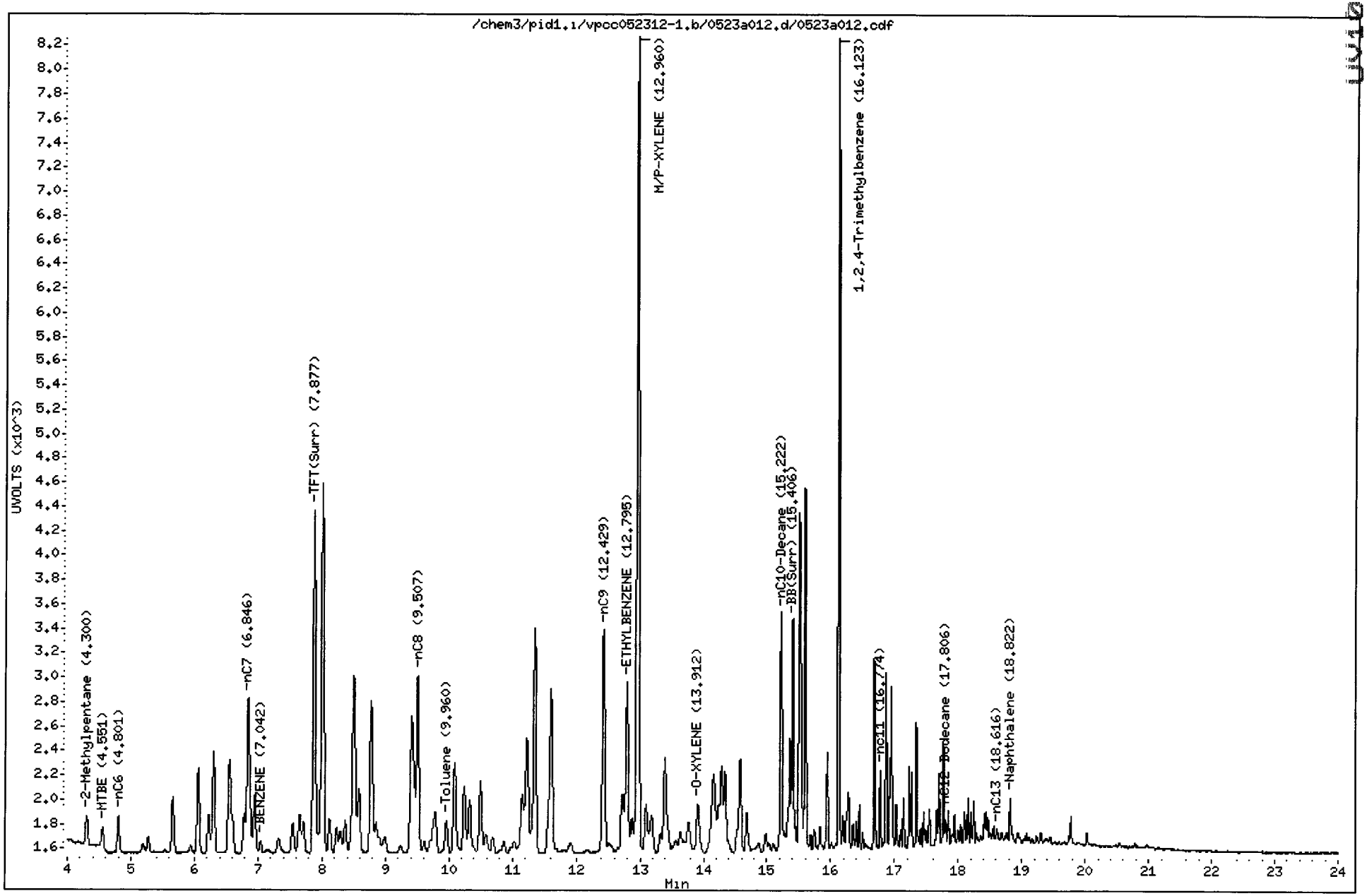
Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV10 : 00062



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a012.d

Date : 23-MAY-2012 12:08

Client ID: USO-P2-B

Instrument: pid1.i

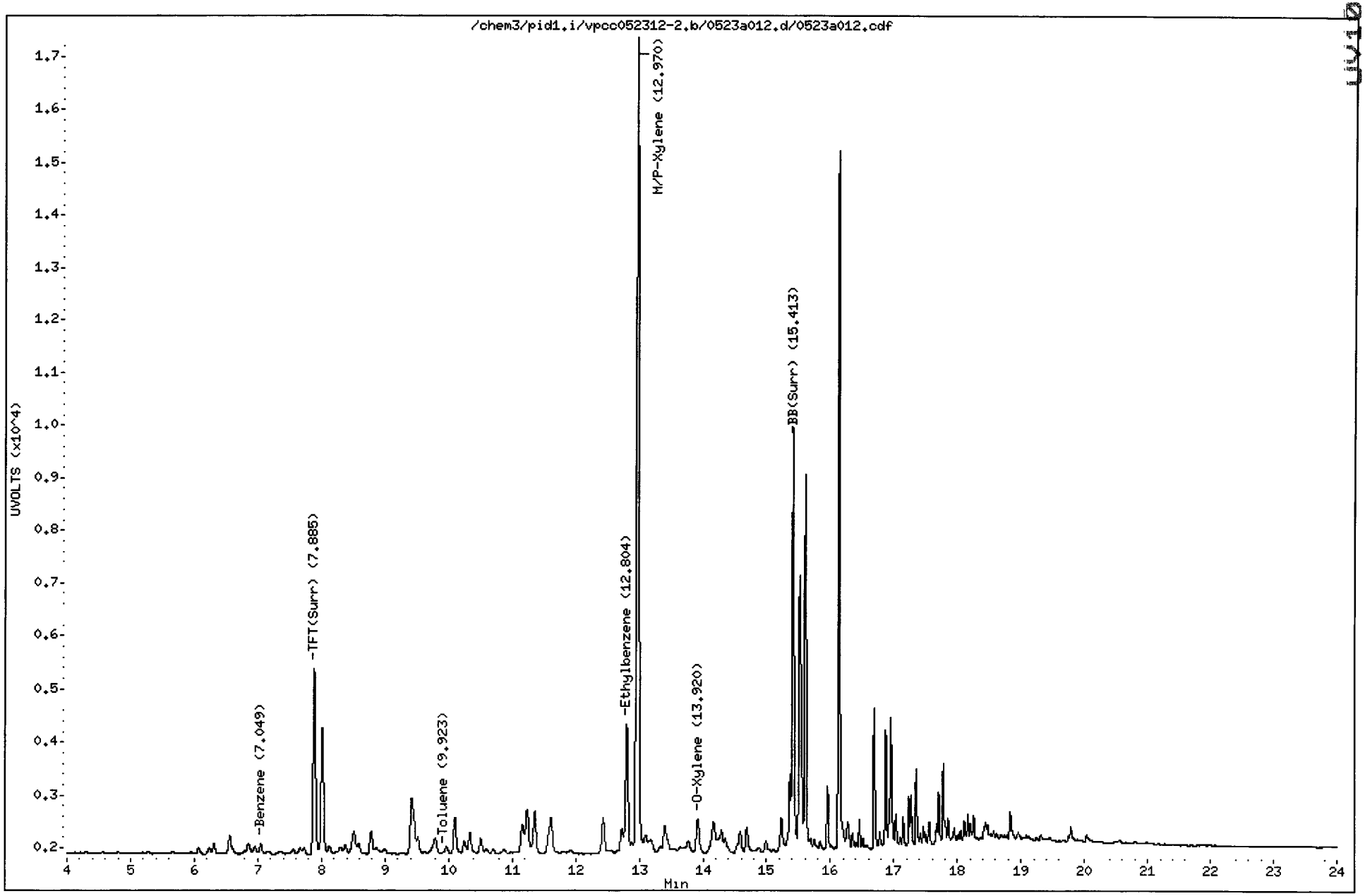
Sample Info: UV10G

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV10 : 00053



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-C**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10H
LIMS ID: 12-9178
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 17:51
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 26 mg-dry-wt
Percent Moisture: 6.5%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**49**	**440**	
108-88-3	**Toluene**	**49**	**220**	**M**
100-41-4	**Ethylbenzene**	**49**	**31,000**	
179601-23-1	**m,p-Xylene**	**98**	**150,000**	**E**
95-47-6	**o-Xylene**	**49**	**5,300**	
	Gasoline Range Hydrocarbons	**20**	**3,600**	**E**

GAS ID
GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	103%

Gasoline Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	117%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a017.d ARI ID: UV10H
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a017.d Client ID: USO-P2-C
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 17:51
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.003	3032	41733	101.2	TFT(Surr)
15.407	0.001	2260	17219	116.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	6279742	18.405 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	7695730	11.345 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	6233478	11.580
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	6631817	18.446 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.003	3734	100.7	TFT(Surr)
15.413	0.000	8414	103.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.051	0.004	555	2.23	Benzene
9.923	0.012	243	1.11N	Toluene
12.812	0.007	30346	156.85	Ethylbenzene
12.991	0.024	169013	787.09	M/P-Xylene
13.927	0.010	4585	27.29	O-Xylene
4.561	-0.005	217	2.58	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a017.d

Date : 22-MAY-2012 17:51

Client ID: USO-P2-C

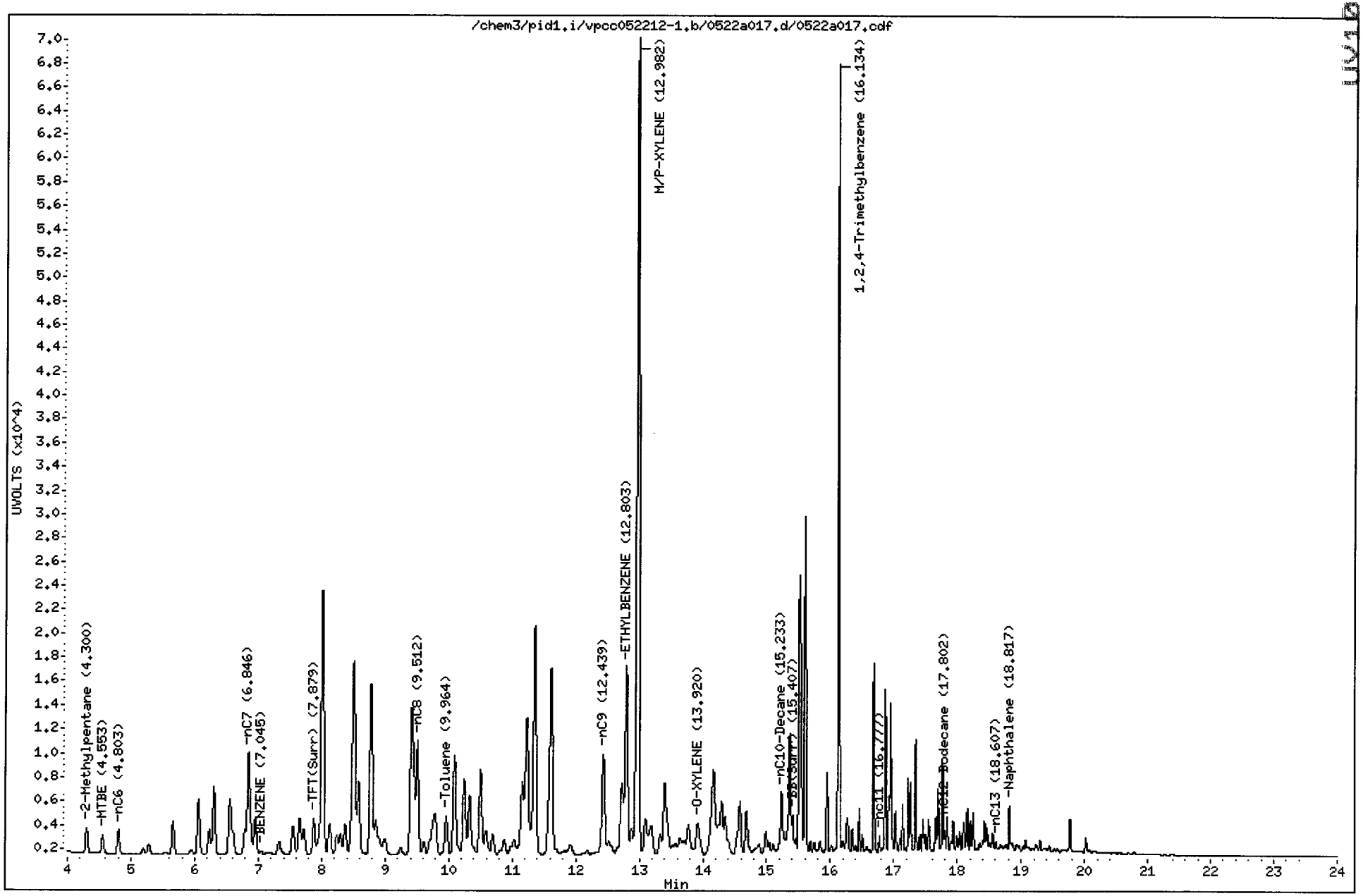
Sample Info: UV10H

Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a017.d

Page 1

Date : 22-MAY-2012 17:51

Client ID: USO-P2-C

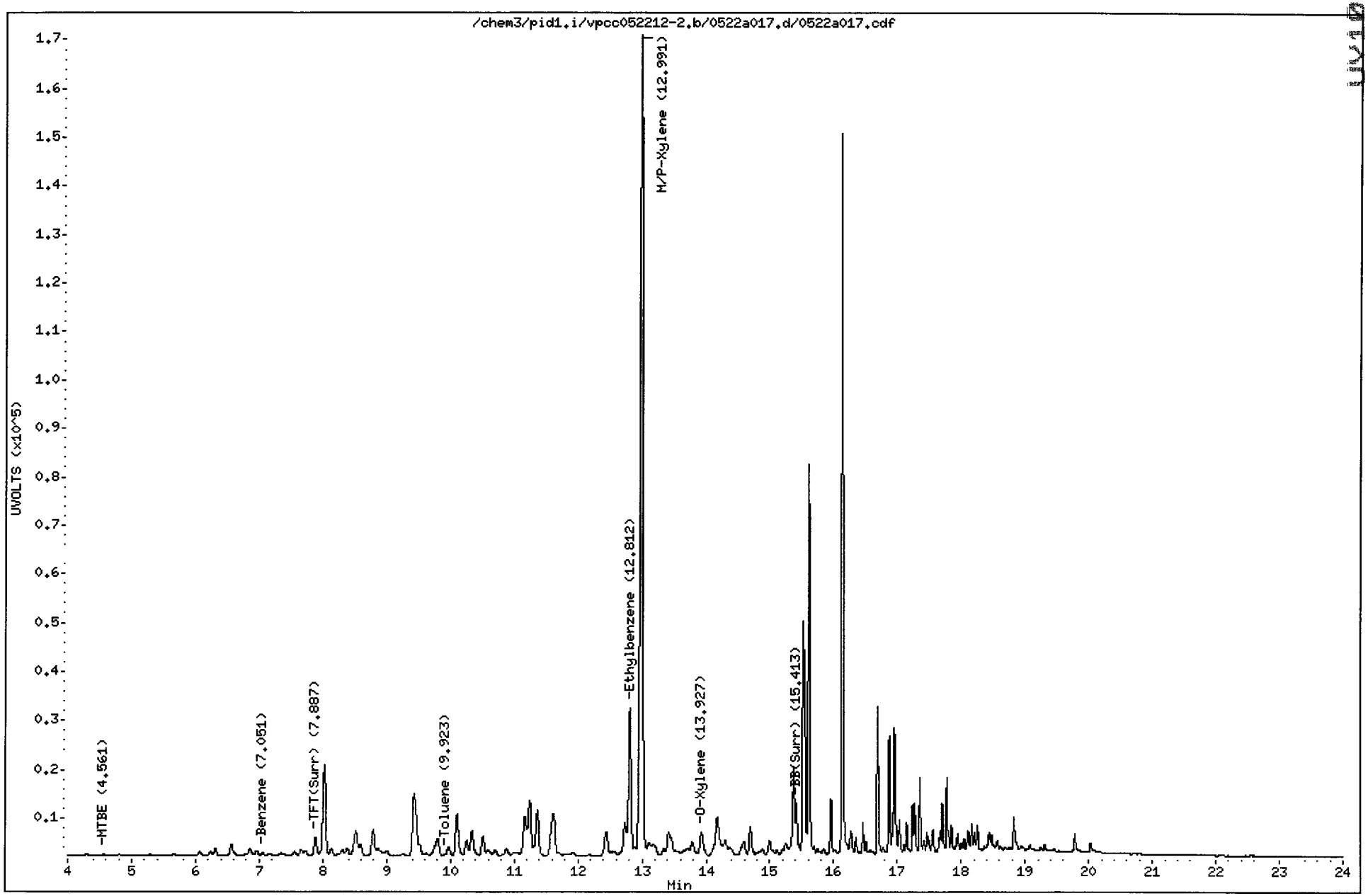
Instrument: pid1.i

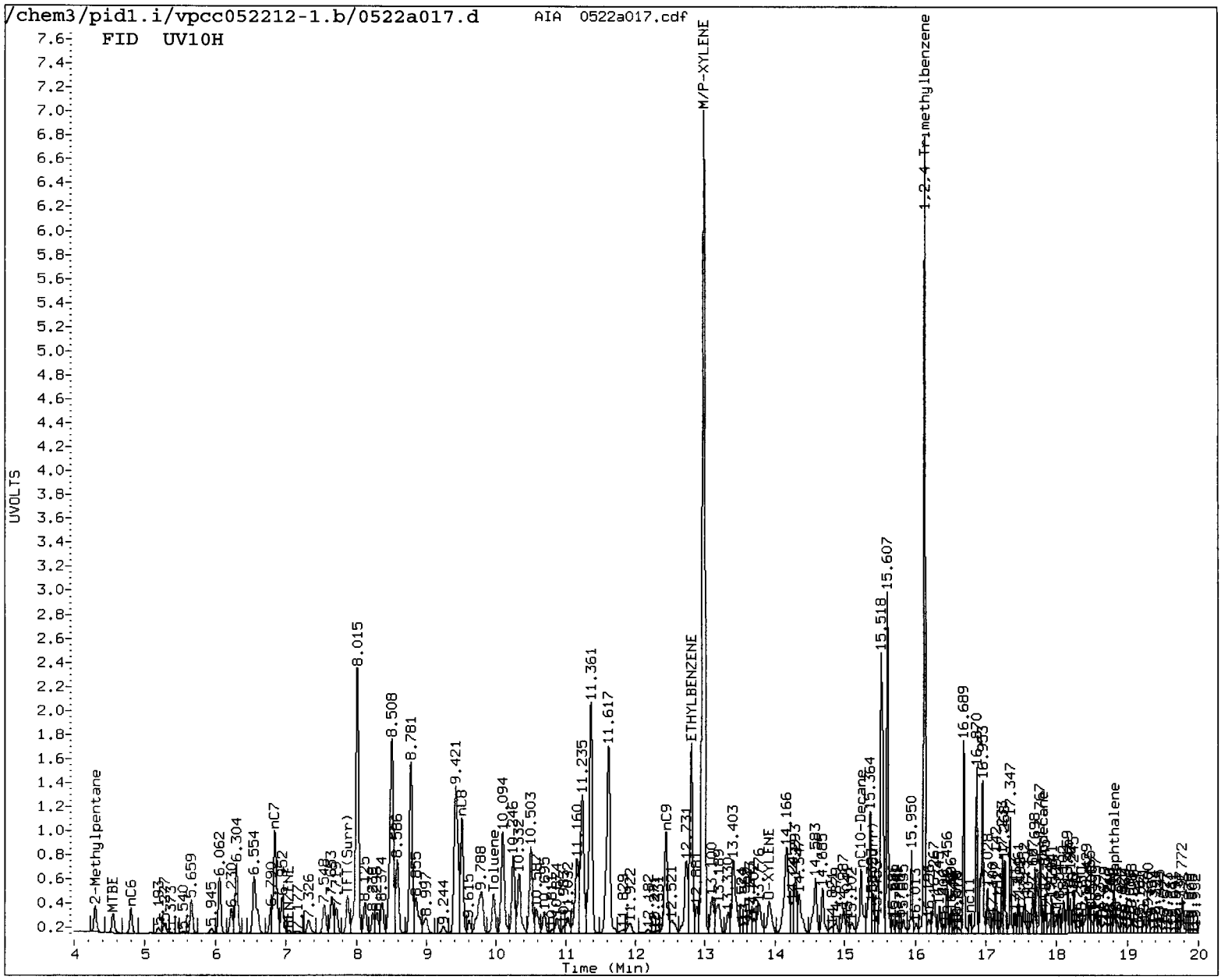
Sample Info: UV10H

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-C**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV10H
LIMS ID: 12-9178
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 12:37
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 2.6 mg-dry-wt
Percent Moisture: 6.5%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	490	< 490 U	
108-88-3	Toluene	490	< 490 U	
100-41-4	**Ethylbenzene**	**490**	**30,000**	
179601-23-1	**m,p-Xylene**	**980**	**160,000**	
95-47-6	**o-Xylene**	**490**	**4,800**	
				GAS ID
	Gasoline Range Hydrocarbons	**200**	**3,600**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	98.1%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	96.6%
Bromobenzene	101%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a013.d ARI ID: UV10H
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a013.d Client ID: USO-P2-C
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 12:37
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.001	2893	36913	96.6	TFT(Surr)
15.405	0.000	1963	18720	101.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	635650	1.863
8015C 2MP-TMB	(4.20 to 16.22)	678311	748292	1.103
AK101 nC6-nC10	(4.70 to 15.12)	538315	594450	1.104
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	672243	1.870

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	3636	98.1	TFT(Surr)
15.412	0.000	8241	101.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
12.804	-0.001	2930	15.14	Ethylbenzene
12.969	0.003	17926	83.48	M/P-Xylene
13.920	0.003	412	2.45	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a013.d

Page 1

Date : 23-MAY-2012 12:37

Client ID: USO-P2-C

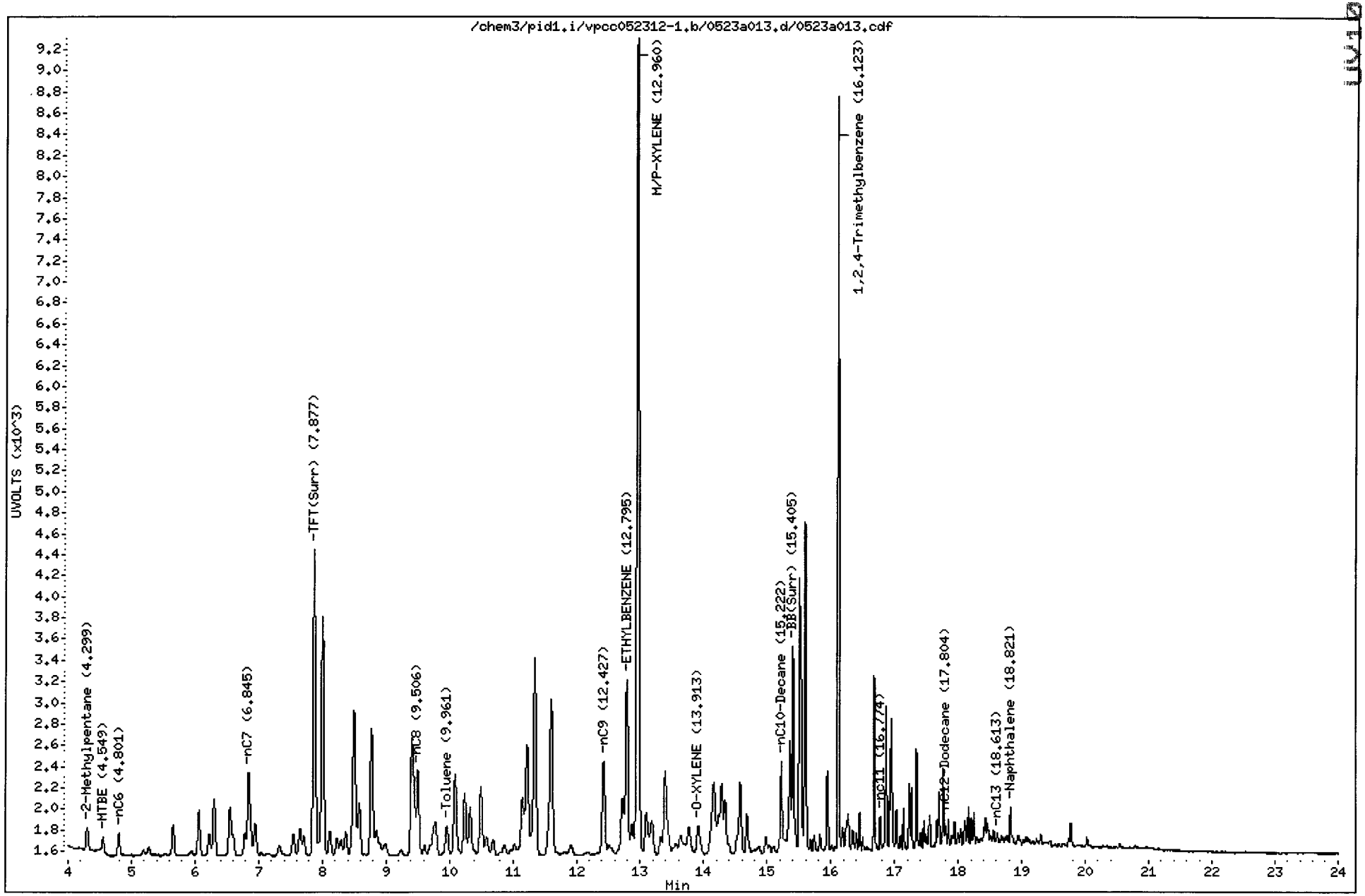
Instrument: pid1.i

Sample Info: UV10H

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a013.d

Date : 23-MAY-2012 12:37

Client ID: USO-P2-C

Sample Info: UV10H

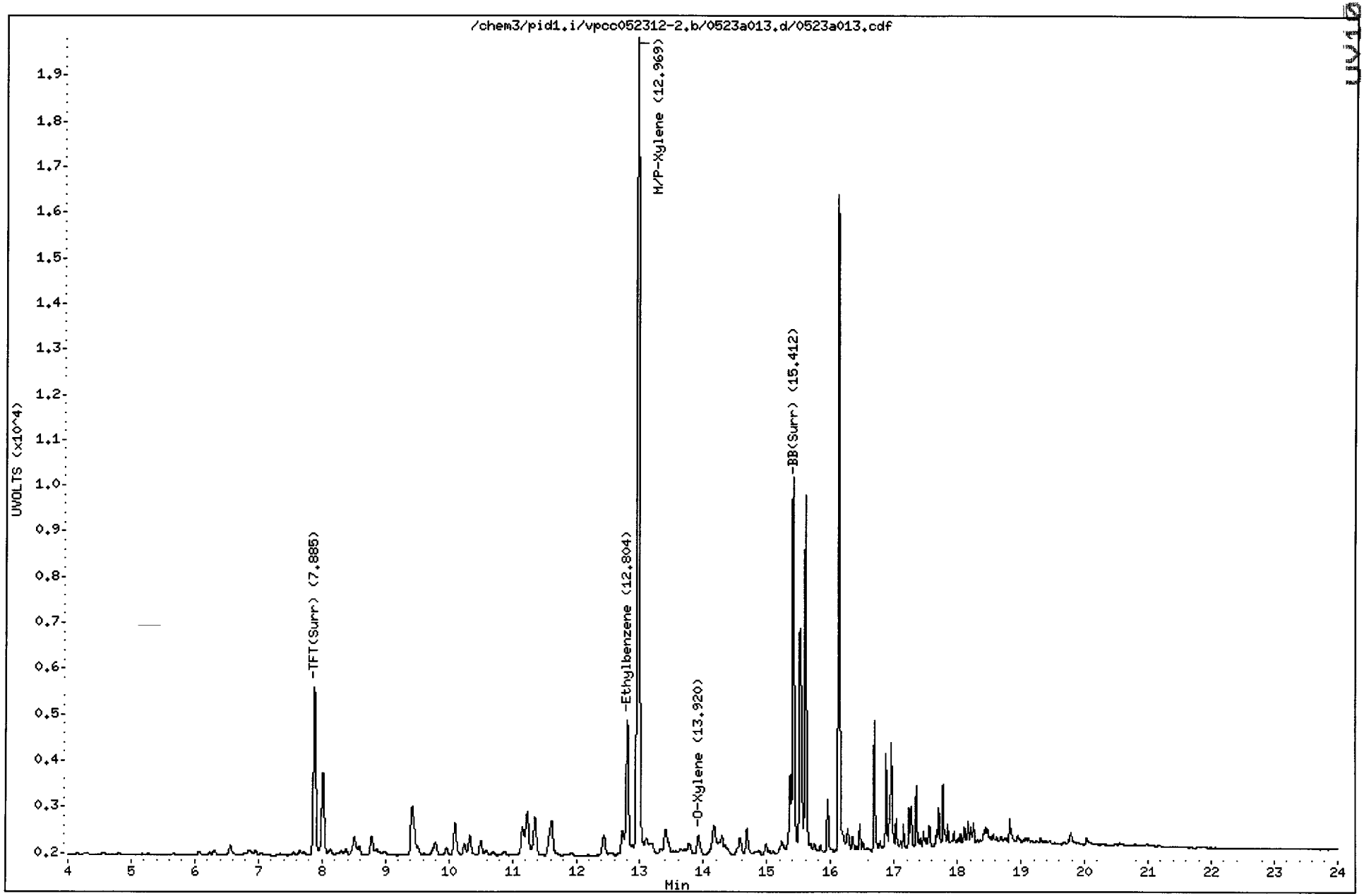
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV10 : 60072



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-D**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10I
LIMS ID: 12-9179
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 14:04
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 80 mg-dry-wt
Percent Moisture: 15.7%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	16	380	
108-88-3	Toluene	16	29	
100-41-4	Ethylbenzene	16	970	
179601-23-1	m,p-Xylene	31	3,400	
95-47-6	o-Xylene	16	270	
	Gasoline Range Hydrocarbons	6.2	150	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.2%
Bromobenzene	99.4%

Gasoline Surrogate Recovery

Trifluorotoluene	92.8%
Bromobenzene	102%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a016.d ARI ID: UV10I
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a016.d Client ID: USO-P2-D
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 14:04
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.003	2780	36982	92.8	TFT(Surr)
15.405	0.000	1974	17610	102.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	784249	2.299
8015C 2MP-TMB	(4.20 to 16.22)	678311	1383928	2.040
AK101 nC6-nC10	(4.70 to 15.12)	538315	1191961	2.214
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	872405	2.427

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.004	3493	94.2	TFT(Surr)
15.414	0.001	8103	99.4	BB(Surr)

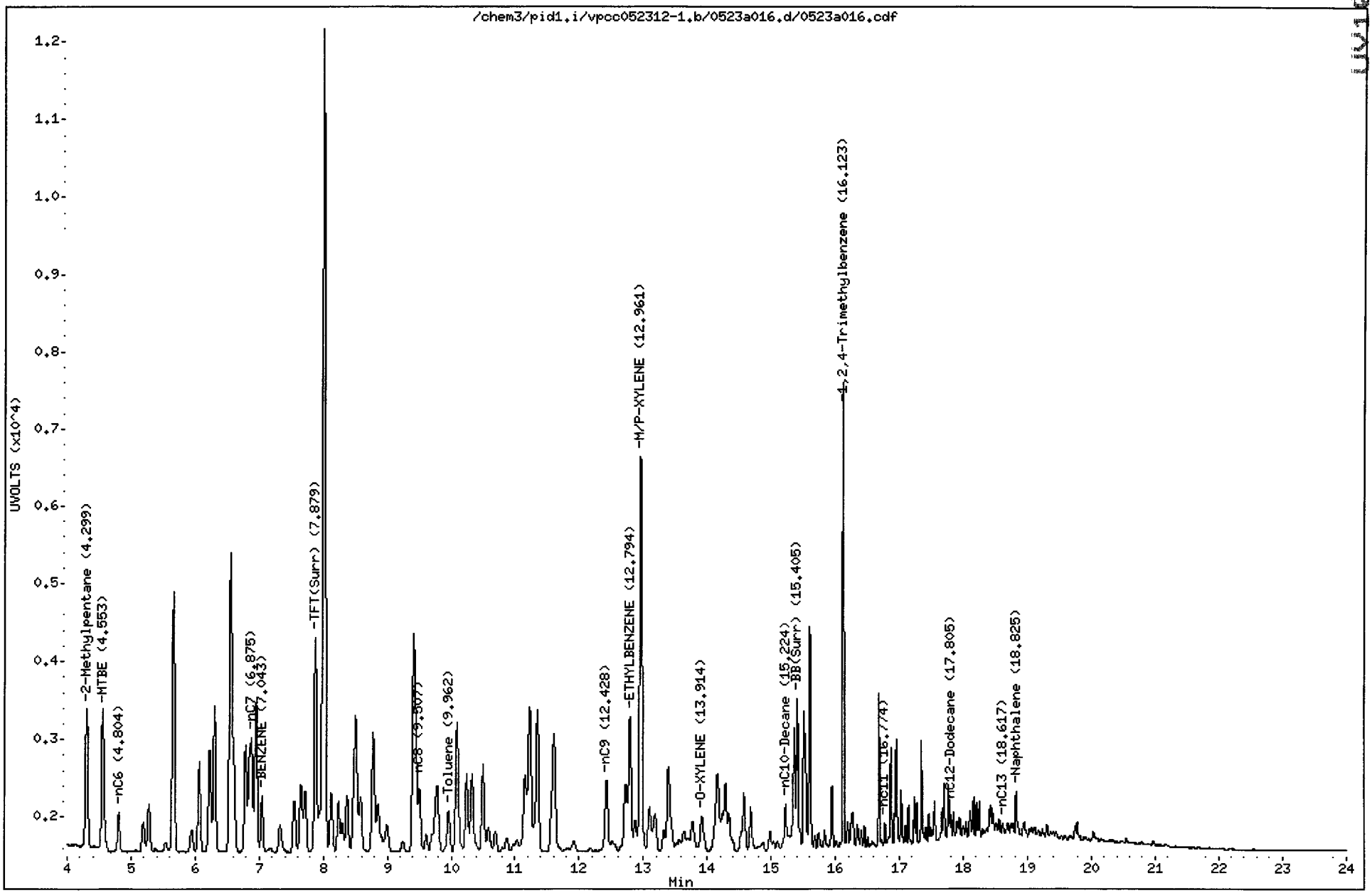
SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.051	0.002	1529	6.13	Benzene
9.917	0.004	101	0.46N	Toluene
12.804	-0.001	3008	15.55	Ethylbenzene
12.971	0.005	11690	54.44	M/P-Xylene
13.922	0.005	723	4.30	O-Xylene
4.562	-0.007	270	3.21	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a016.d
Date : 23-MAY-2012 14:04
Client ID: USO-P2-D
Sample Info: UV10I

Instrument: pid1.i
Operator: MH
Column phase: RTX 502-2 FID
Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a016.d

Date : 23-MAY-2012 14:04

Client ID: USO-P2-D

Sample Info: UV10I

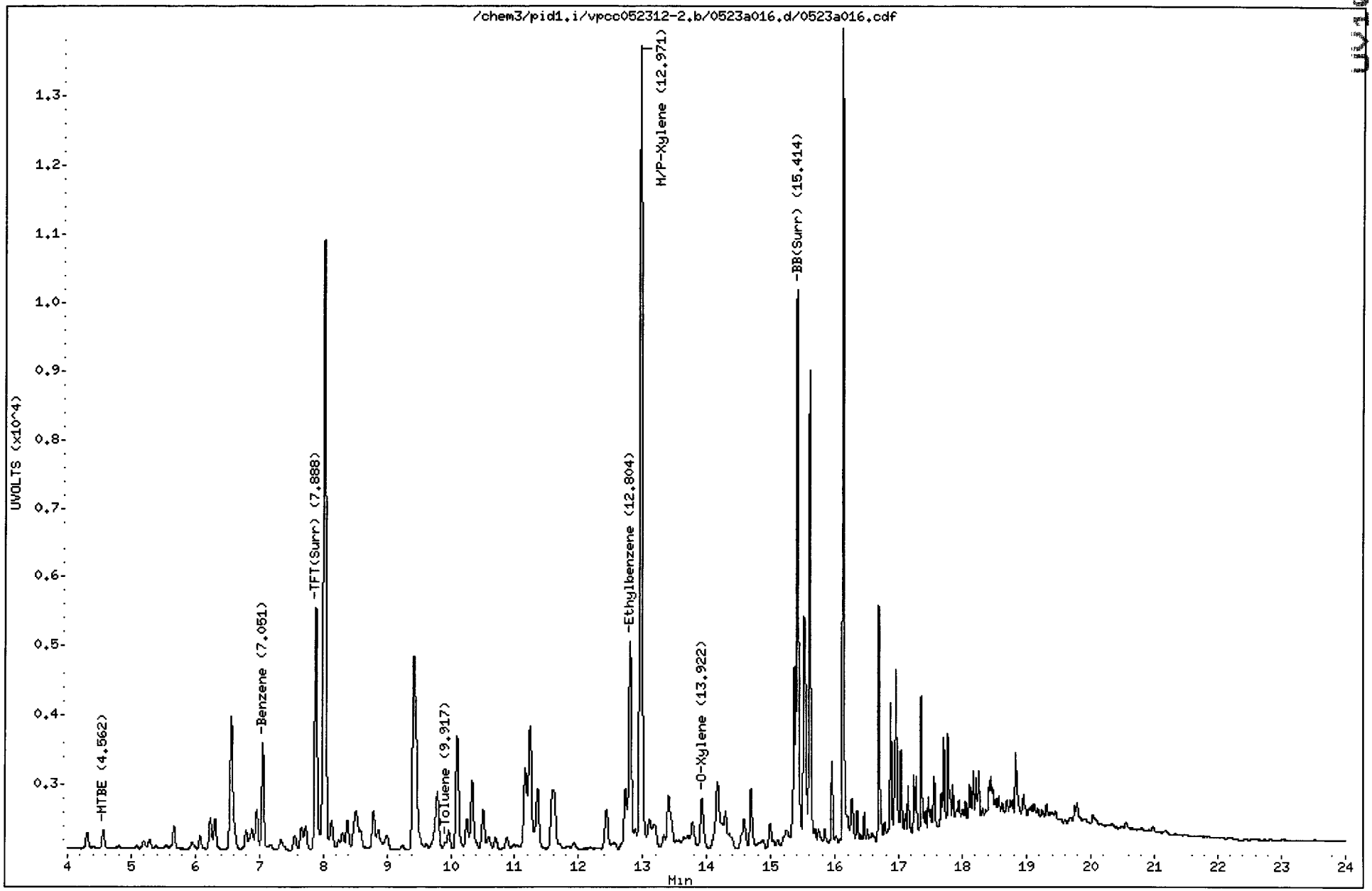
Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV10 : 00076



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P2-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10J
LIMS ID: 12-9180
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 14:34
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 20 mg-dry-wt
Percent Moisture: 51.1%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	61	< 61 U
108-88-3	Toluene	61	< 61 U
100-41-4	Ethylbenzene	61	< 61 U
179601-23-1	**m,p-Xylene**	**120**	**220**
95-47-6	o-Xylene	61	< 61 U

			GAS ID
	Gasoline Range Hydrocarbons	24	< 24 U ---

BETX Surrogate Recovery

Trifluorotoluene	93.2%
Bromobenzene	96.2%

Gasoline Surrogate Recovery

Trifluorotoluene	92.2%
Bromobenzene	94.1%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a017.d ARI ID: UV10J
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a017.d Client ID: USO-P2-E
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 14:34
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.002	2762	34459	92.2	TFT(Surr)
15.405	0.000	1821	15212	94.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	9764	0.029
8015C 2MP-TMB	(4.20 to 16.22)	678311	12626	0.019
AK101 nC6-nC10	(4.70 to 15.12)	538315	10795	0.020
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	11736	0.033

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	3455	93.2	TFT(Surr)
15.412	0.000	7844	96.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.910	-0.002	49	0.22N	Toluene
ND	---	---	---	Ethylbenzene
12.969	0.003	188	0.88	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a017.d

Date : 23-MAY-2012 14:34

Client ID: USO-P2-E

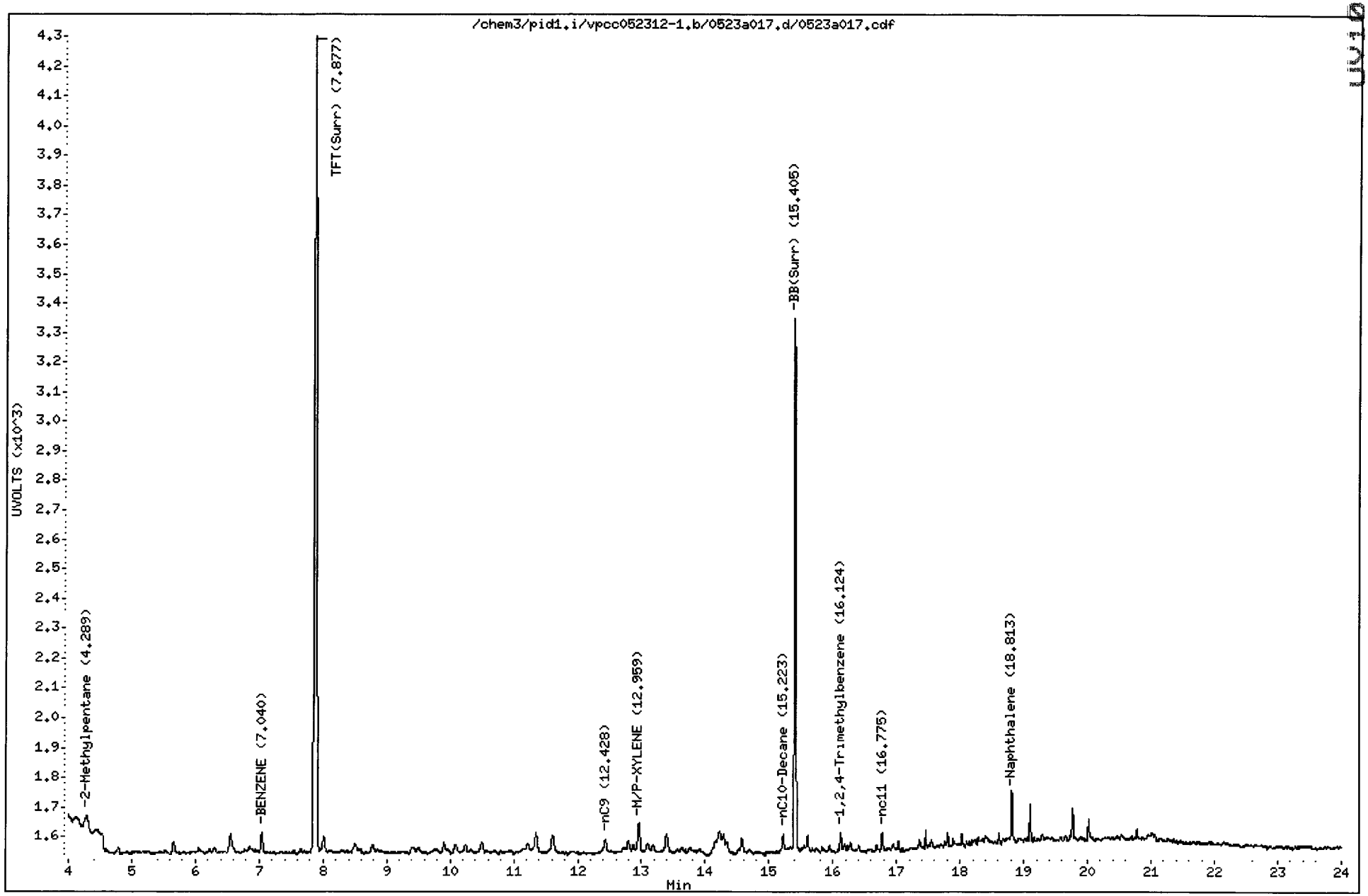
Sample Info: UV10J

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a017.d

Page 1

Date : 23-MAY-2012 14:34

Client ID: USO-P2-E

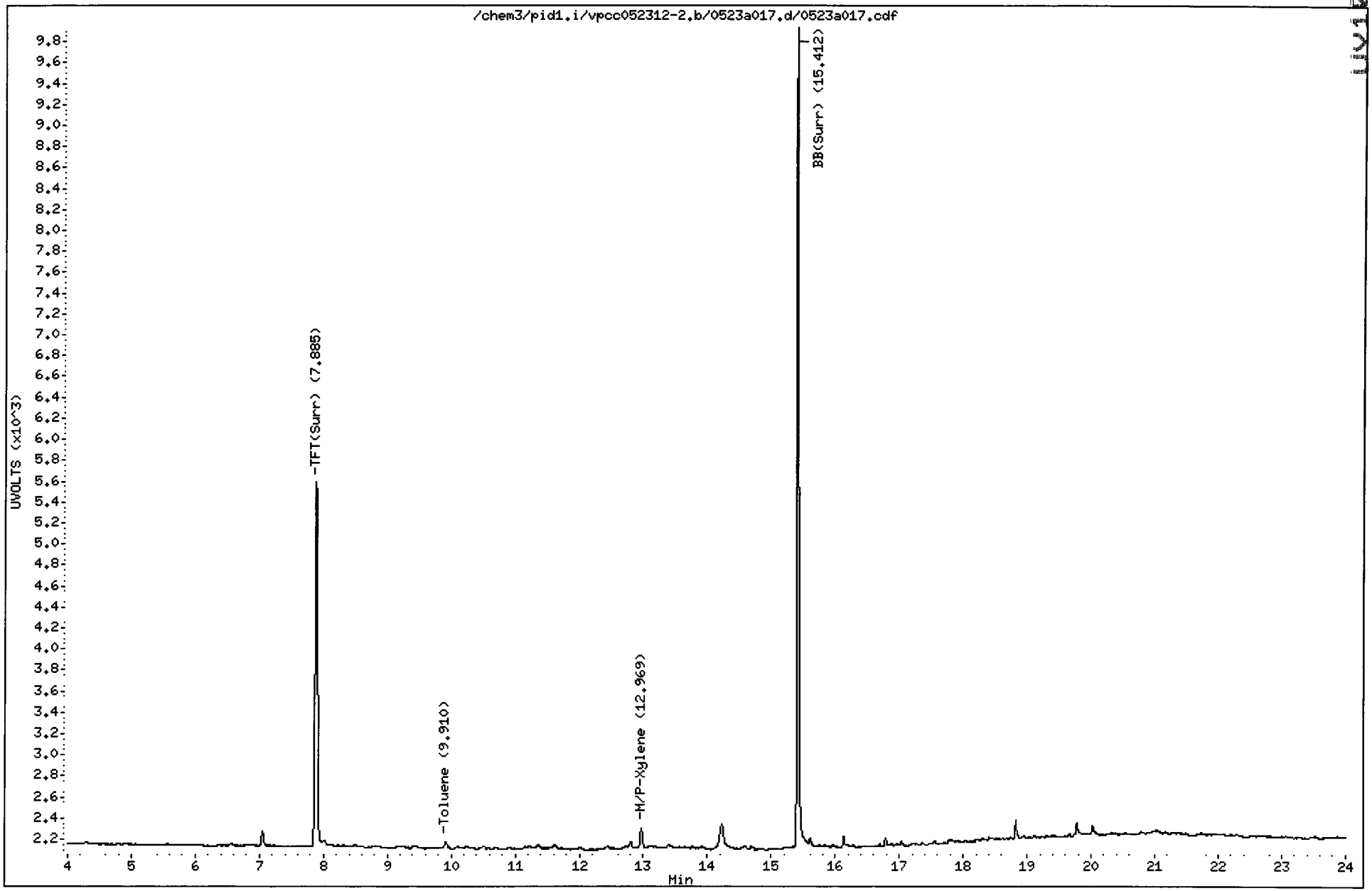
Instrument: pid1.i

Sample Info: UV10J

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-A**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10K
LIMS ID: 12-9181
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 19:18
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 18 mg-dry-wt
Percent Moisture: 5.9%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**68**	**2,400**	
108-88-3	**Toluene**	**68**	**860**	**M**
100-41-4	**Ethylbenzene**	**68**	**37,000**	
179601-23-1	**m,p-Xylene**	**140**	**22,000**	
95-47-6	o-Xylene	68	< 68	U
	Gasoline Range Hydrocarbons	**27**	**5,500**	**E**

GAS ID
GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	105%

Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	137%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a020.d ARI ID: UV10K
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a020.d Client ID: USO-P3-A
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 19:18
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.004	3078	44499	102.8	TFT(Surr)
15.407	0.001	2659	20670	137.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	6658140	19.514 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	8266917	12.188 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	6591355	12.244
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	7260851	20.195 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.004	3721	100.4	TFT(Surr)
15.413	0.000	8575	105.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.052	0.005	2156	8.65	Benzene
9.930	0.018	696	3.19N	Toluene
12.811	0.006	26455	136.73	Ethylbenzene
12.968	0.002	17150	79.87	M/P-Xylene
ND	---	---	---	O-Xylene
4.562	-0.004	335	3.98	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a020.d

Date : 22-MAY-2012 19:18

Client ID: USO-P3-A

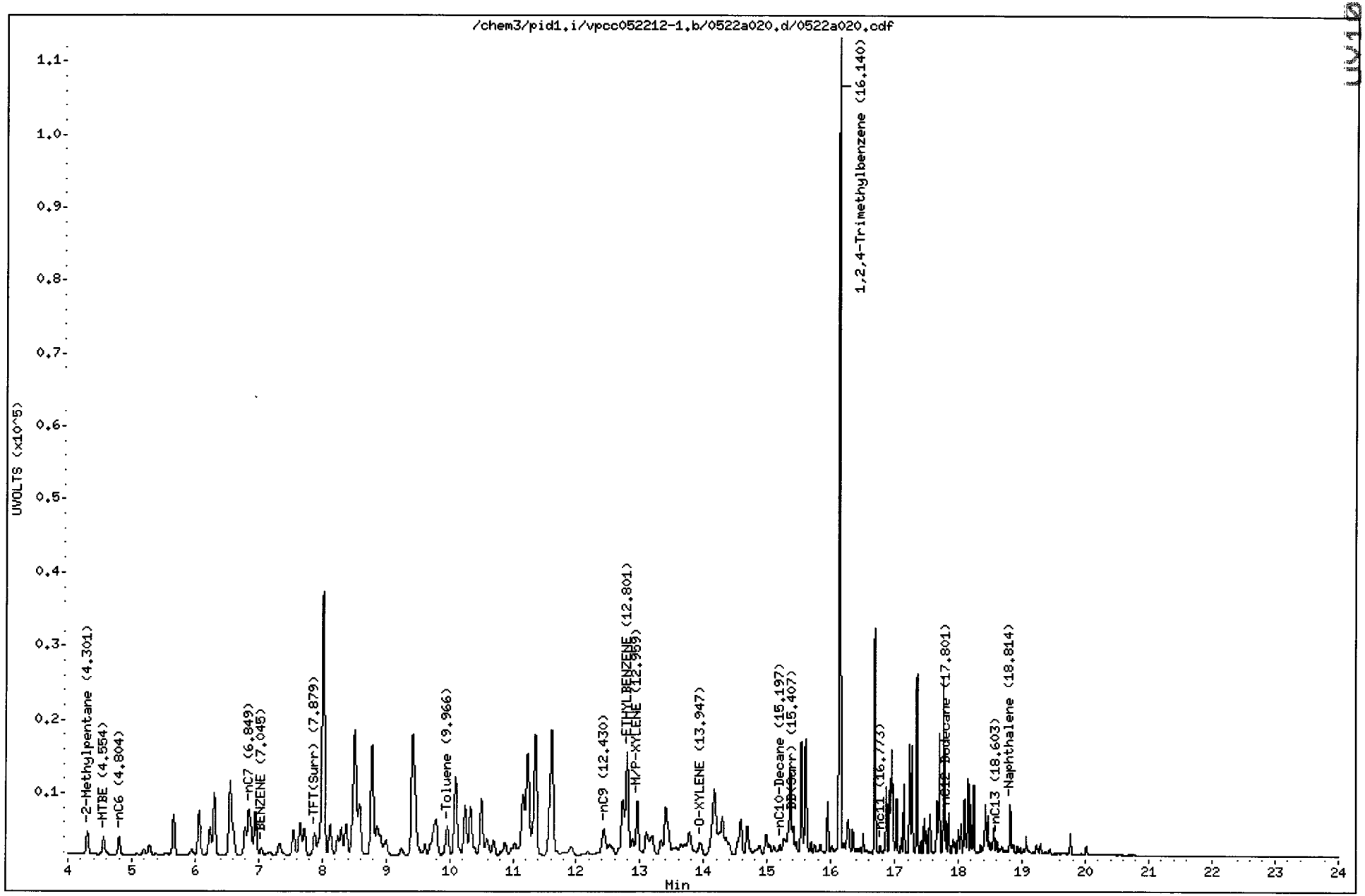
Sample Info: UV10K

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a020.d

Date : 22-MAY-2012 19:18

Client ID: USO-P3-A

Sample Info: UV10K

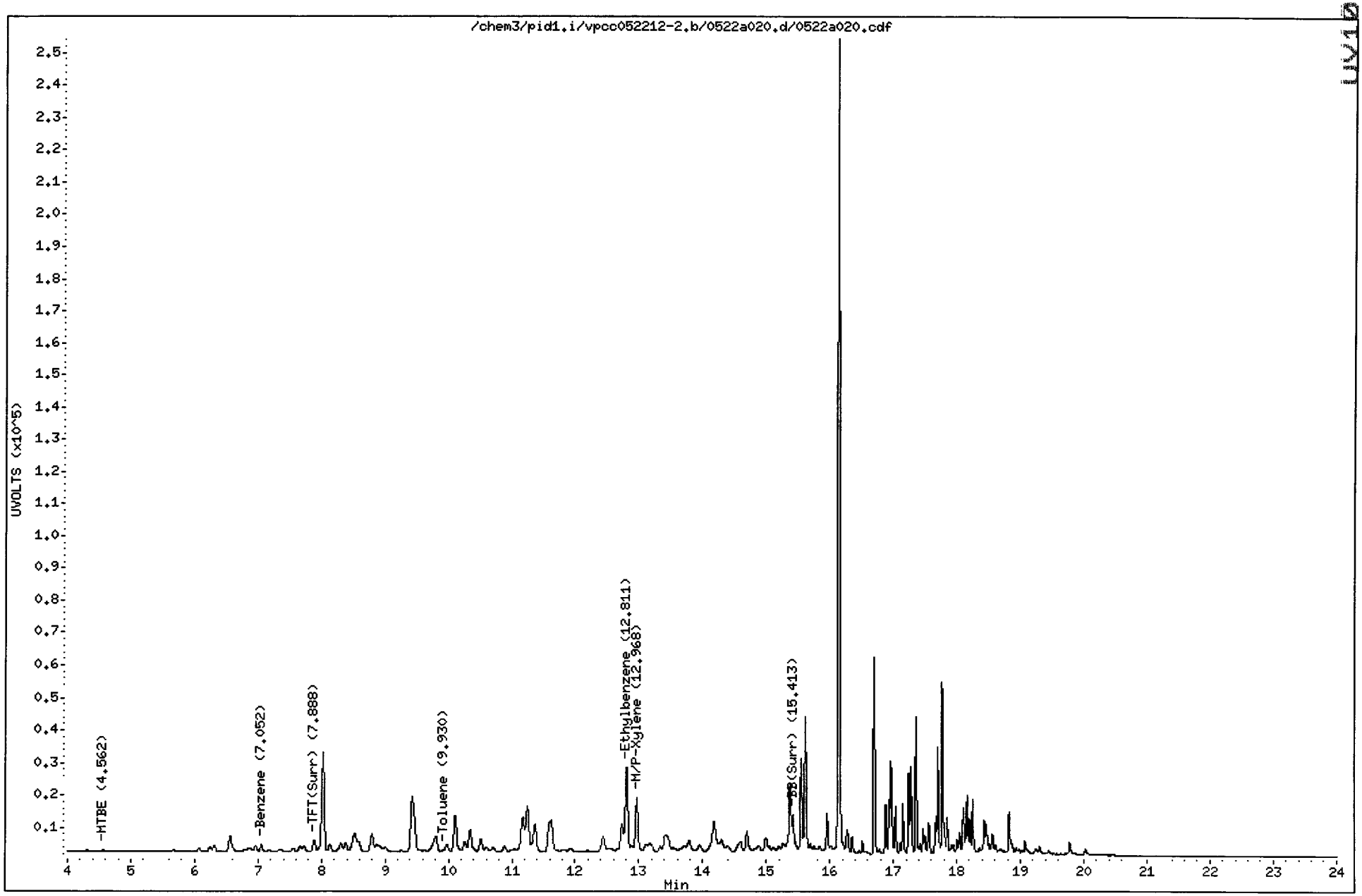
Column phase: RTX 502-2 PID

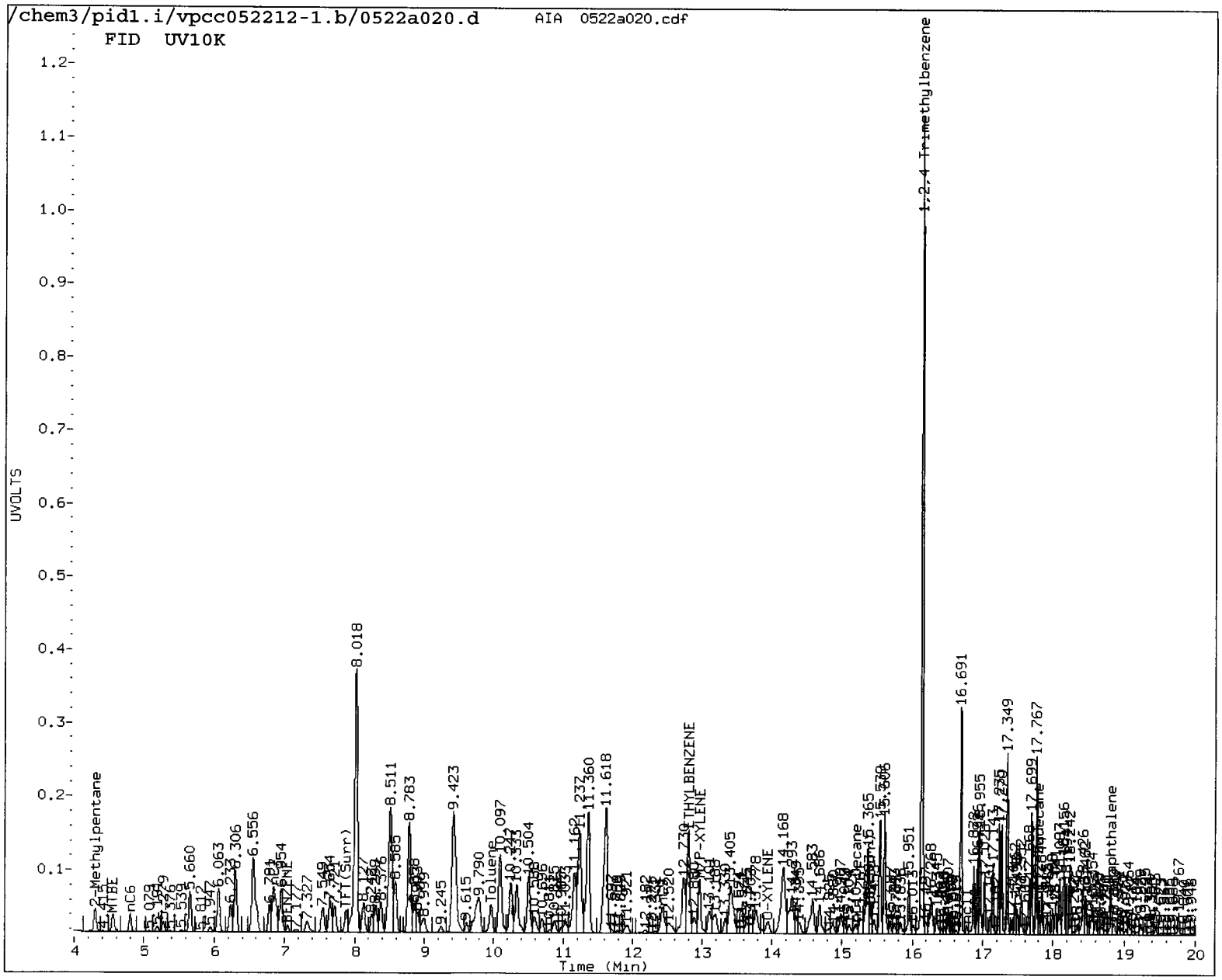
Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 - 00031





MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-A**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV10K
LIMS ID: 12-9181
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 15:02
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 1.8 mg-dry-wt
Percent Moisture: 5.9%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**680**	**2,300**	
108-88-3	Toluene	680	< 680 U	
100-41-4	**Ethylbenzene**	**680**	**35,000**	
179601-23-1	**m,p-Xylene**	**1,400**	**21,000**	
95-47-6	**o-Xylene**	**680**	**2,500**	
				GAS ID
	Gasoline Range Hydrocarbons	**270**	**6,000**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.3%
Bromobenzene	100%

Gasoline Surrogate Recovery

Trifluorotoluene	92.8%
Bromobenzene	104%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a018.d ARI ID: UV10K
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a018.d Client ID: USO-P3-A
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 15:02
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.003	2781	36133	92.8	TFT(Surr)
15.406	0.001	2021	18238	104.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	729188	2.137
8015C 2MP-TMB	(4.20 to 16.22)	678311	828407	1.221
AK101 nC6-nC10	(4.70 to 15.12)	538315	632904	1.176
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	796387	2.215

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.002	3496	94.3	TFT(Surr)
15.413	0.000	8197	100.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	0.002	210	0.84	Benzene
9.917	0.004	53	0.24N	Toluene
12.804	-0.001	2477	12.80	Ethylbenzene
12.963	-0.003	1691	7.87	M/P-Xylene
13.947	0.029	154	0.92N	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a018.d

Date : 23-MAY-2012 15:02

Client ID: USO-P3-A

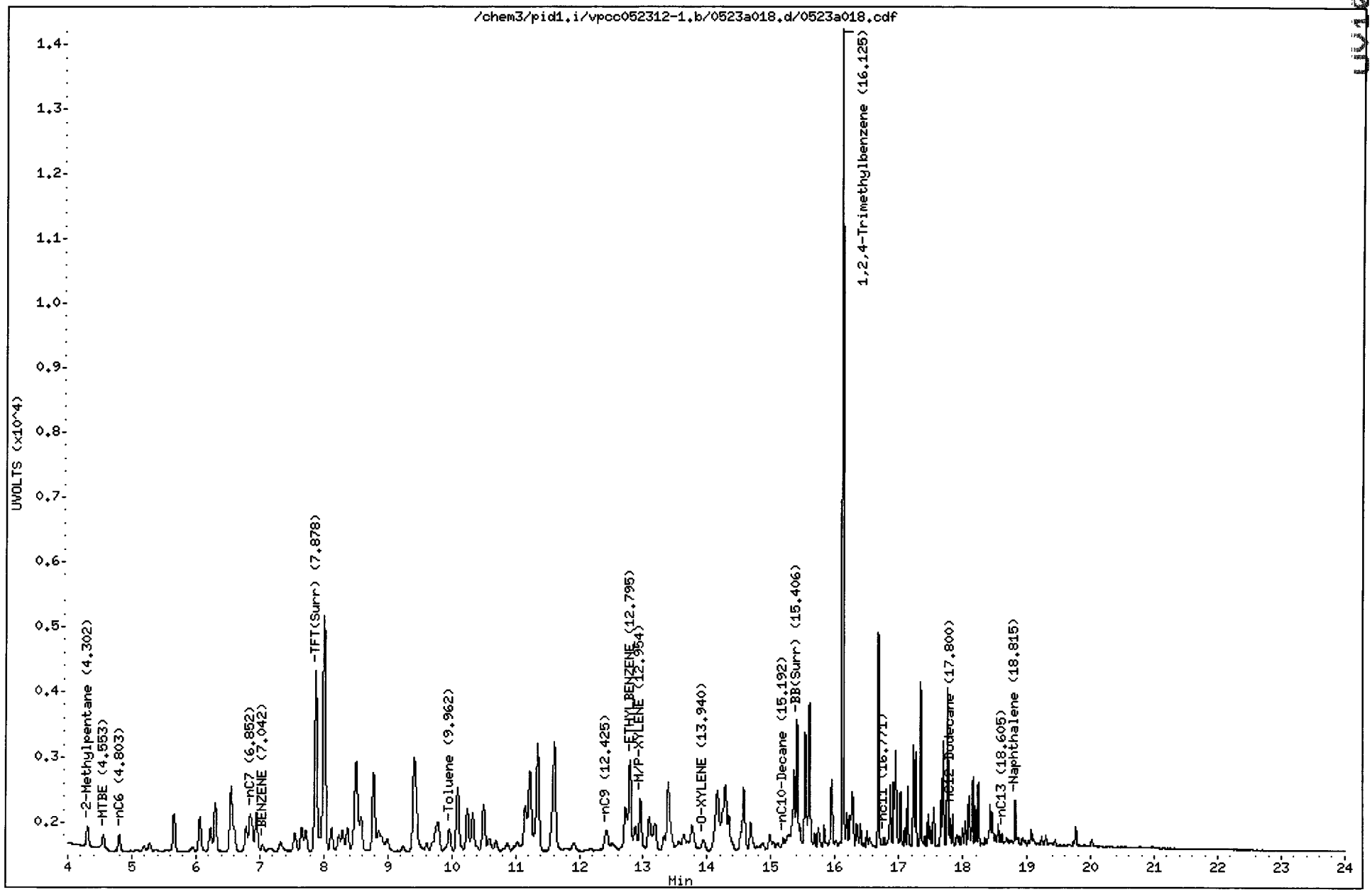
Sample Info: UV10K

Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a018.d

Date : 23-MAY-2012 15:02

Client ID: USO-P3-A

Sample Info: UV10K

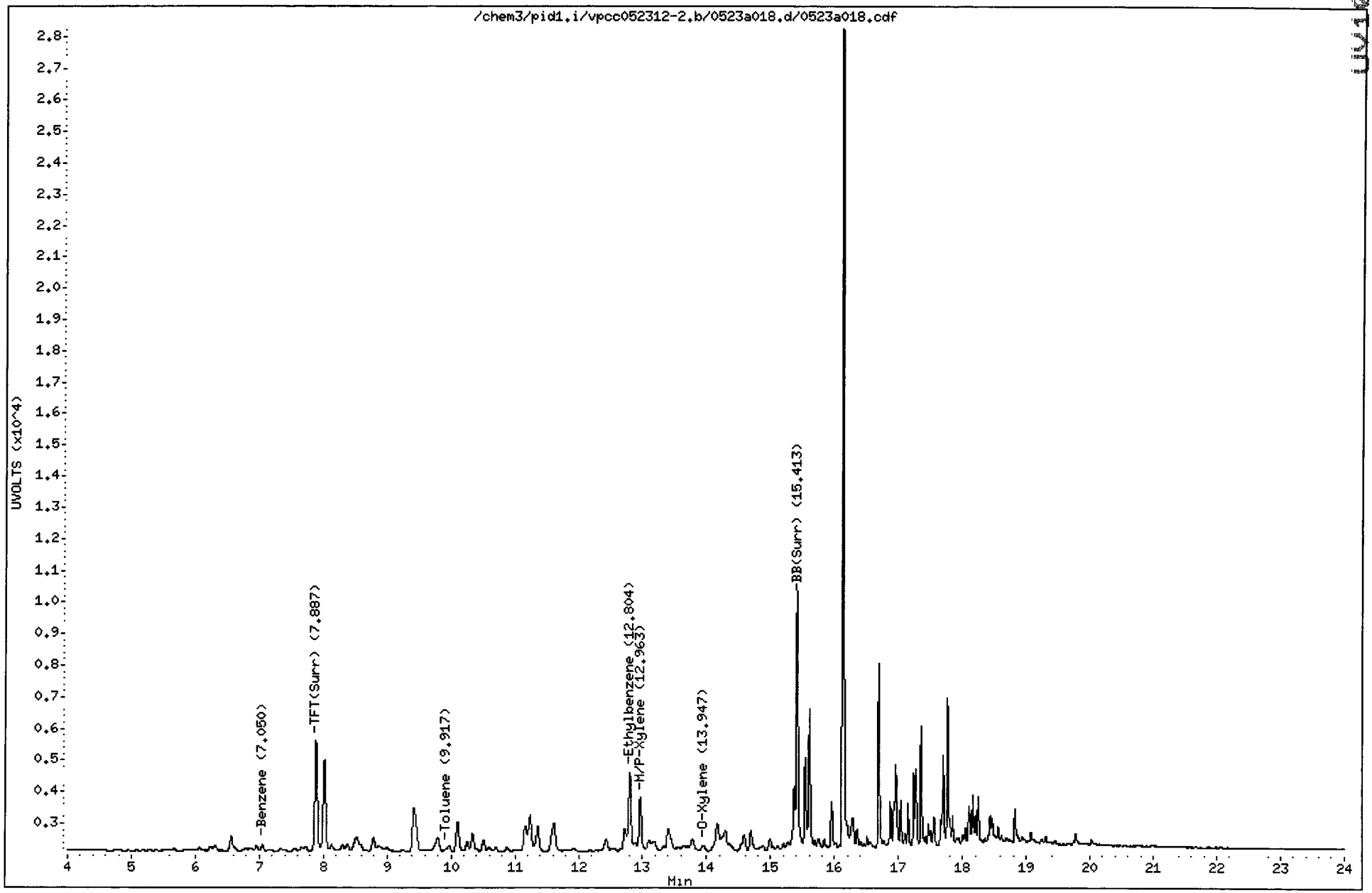
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV10 000085



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-B**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10L
LIMS ID: 12-9182
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 19:48
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 18 mg-dry-wt
Percent Moisture: 7.2%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**70**	**3,100**	
108-88-3	**Toluene**	**70**	**800**	**M**
100-41-4	**Ethylbenzene**	**70**	**33,000**	
179601-23-1	**m,p-Xylene**	**140**	**13,000**	
95-47-6	o-Xylene	70	< 70	U
	Gasoline Range Hydrocarbons	**28**	**4,700**	**E**

GAS ID
GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	103%

Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	124%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a021.d ARI ID: UV10L
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a021.d Client ID: USO-P3-B
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 19:48
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.005	3081	44270	102.9	TFT(Surr)
15.407	0.001	2397	19138	123.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	5588182	16.378 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	7732239	11.399 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	6342314	11.782
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	6032500	16.779 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.889	0.005	3749	101.1	TFT(Surr)
15.413	0.000	8412	103.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.005	2791	11.19	Benzene
9.923	0.012	627	2.87N	Toluene
12.809	0.004	22831	118.00	Ethylbenzene
12.966	0.000	9776	45.53	M/P-Xylene
ND	---	---	---	O-Xylene
4.563	-0.002	579	6.88	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a021.d

Page 1

Date : 22-MAY-2012 19:48

Client ID: USO-P3-B

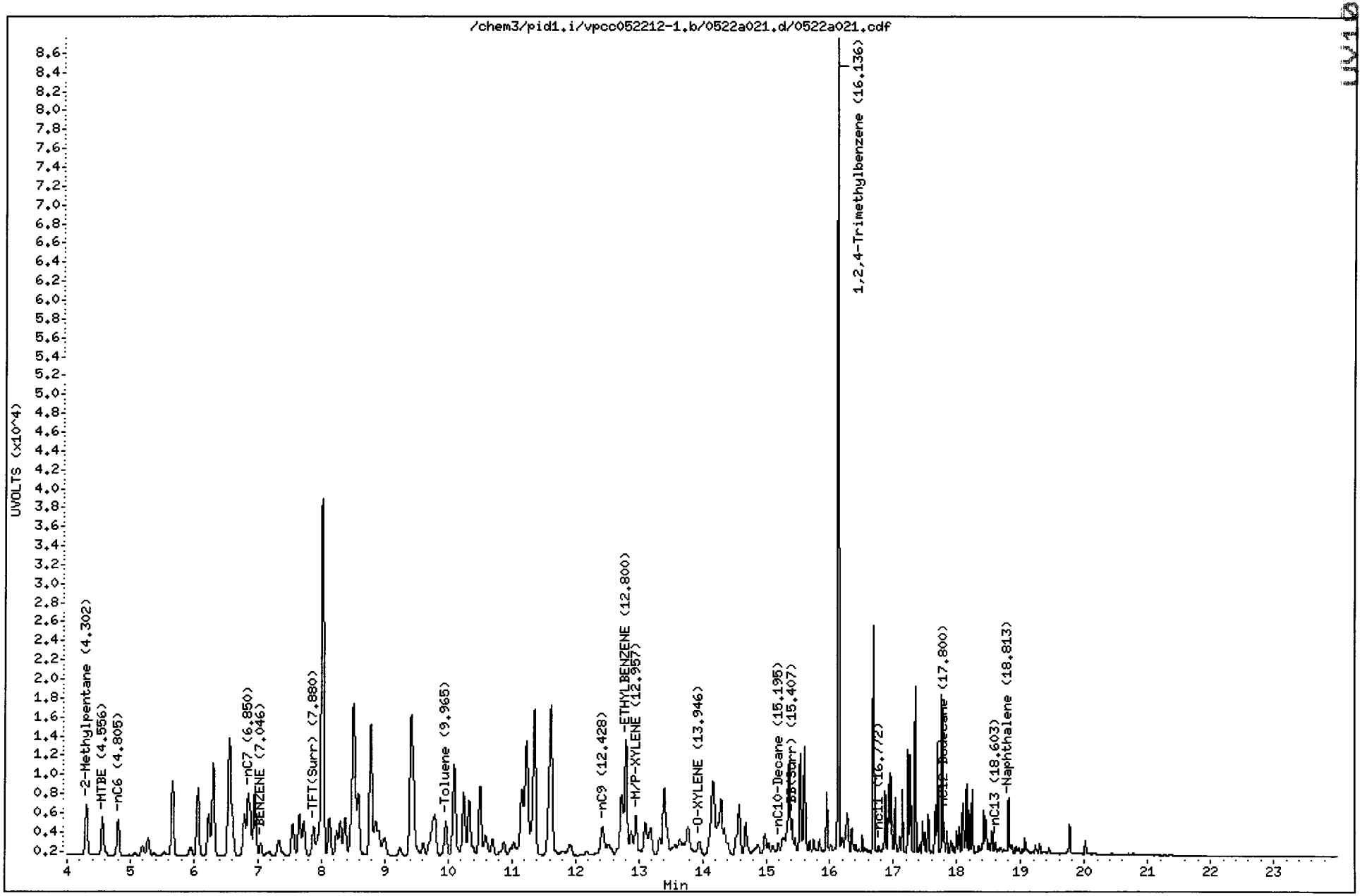
Instrument: pid1.i

Sample Info: UV10L

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a021.d

Page 1

Date : 22-MAY-2012 19:48

Client ID: USO-P3-B

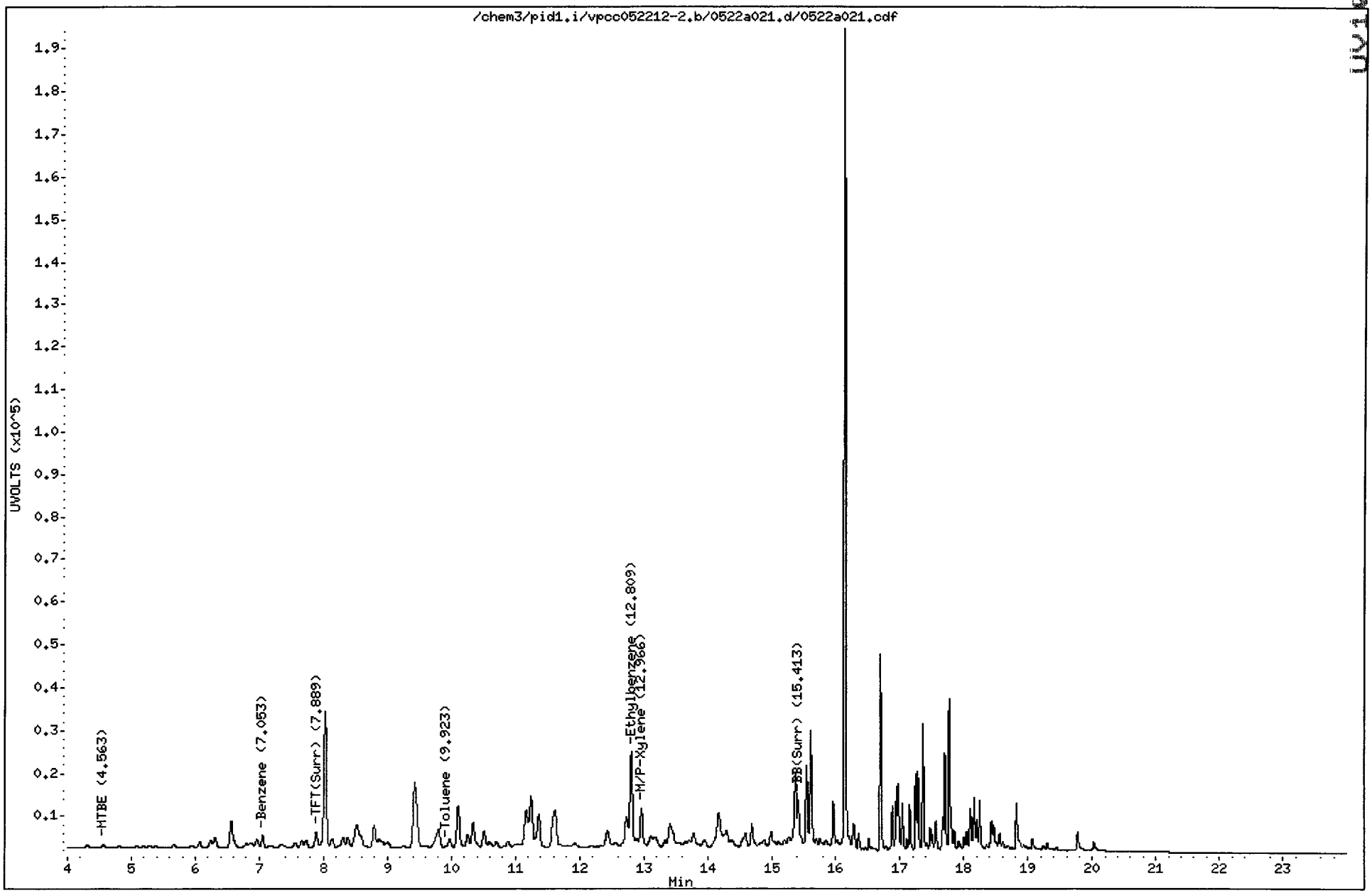
Instrument: pid1.i

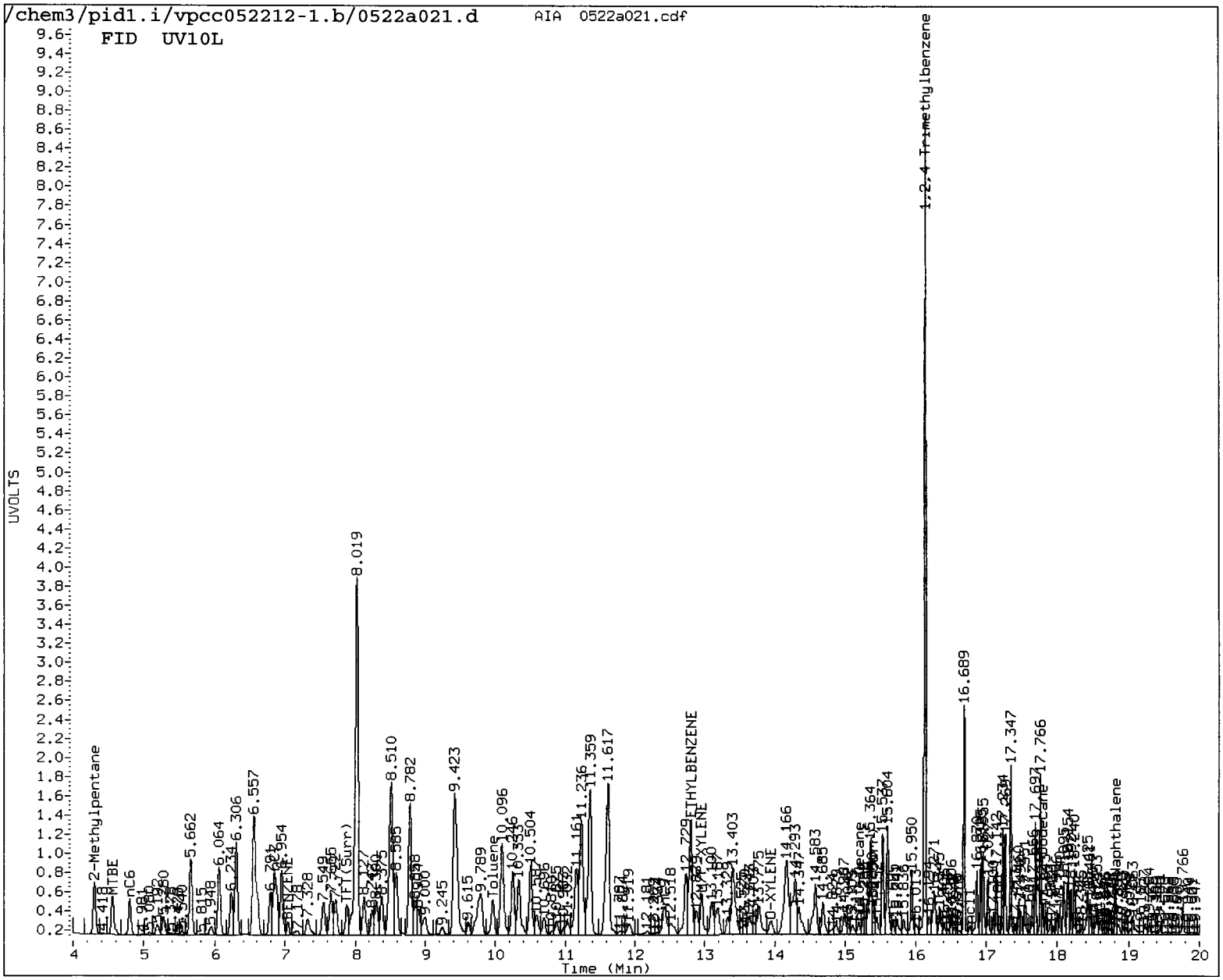
Sample Info: UV10L

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-B**
TPHG by Method NWTPHG **DILUTION**

Lab Sample ID: UV10L
LIMS ID: 12-9182
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 15:31
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 1.8 mg-dry-wt
Percent Moisture: 7.2%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**700**	**3,000**	
108-88-3	Toluene	700	< 700 U	
100-41-4	**Ethylbenzene**	**700**	**30,000**	
179601-23-1	**m,p-Xylene**	**1,400**	**12,000**	
95-47-6	o-Xylene	700	< 700 U	
				GAS ID
	Gasoline Range Hydrocarbons	**280**	**4,700**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.6%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	93.8%
Bromobenzene	103%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a019.d ARI ID: UV10L
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a019.d Client ID: USO-P3-B
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 15:31
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.003	2810	37621	93.8	TFT(Surr)
15.406	0.001	2000	17782	103.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	556293	1.630
8015C 2MP-TMB	(4.20 to 16.22)	678311	724177	1.068
AK101 nC6-nC10	(4.70 to 15.12)	538315	570797	1.060
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	602711	1.676

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.886	0.002	3506	94.6	TFT(Surr)
15.414	0.001	8206	100.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	0.001	268	1.07	Benzene
9.913	0.001	30	0.14N	Toluene
12.805	0.000	2062	10.66	Ethylbenzene
12.963	-0.003	906	4.22	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a019.d

Date : 23-MAY-2012 15:31

Client ID: USO-P3-B

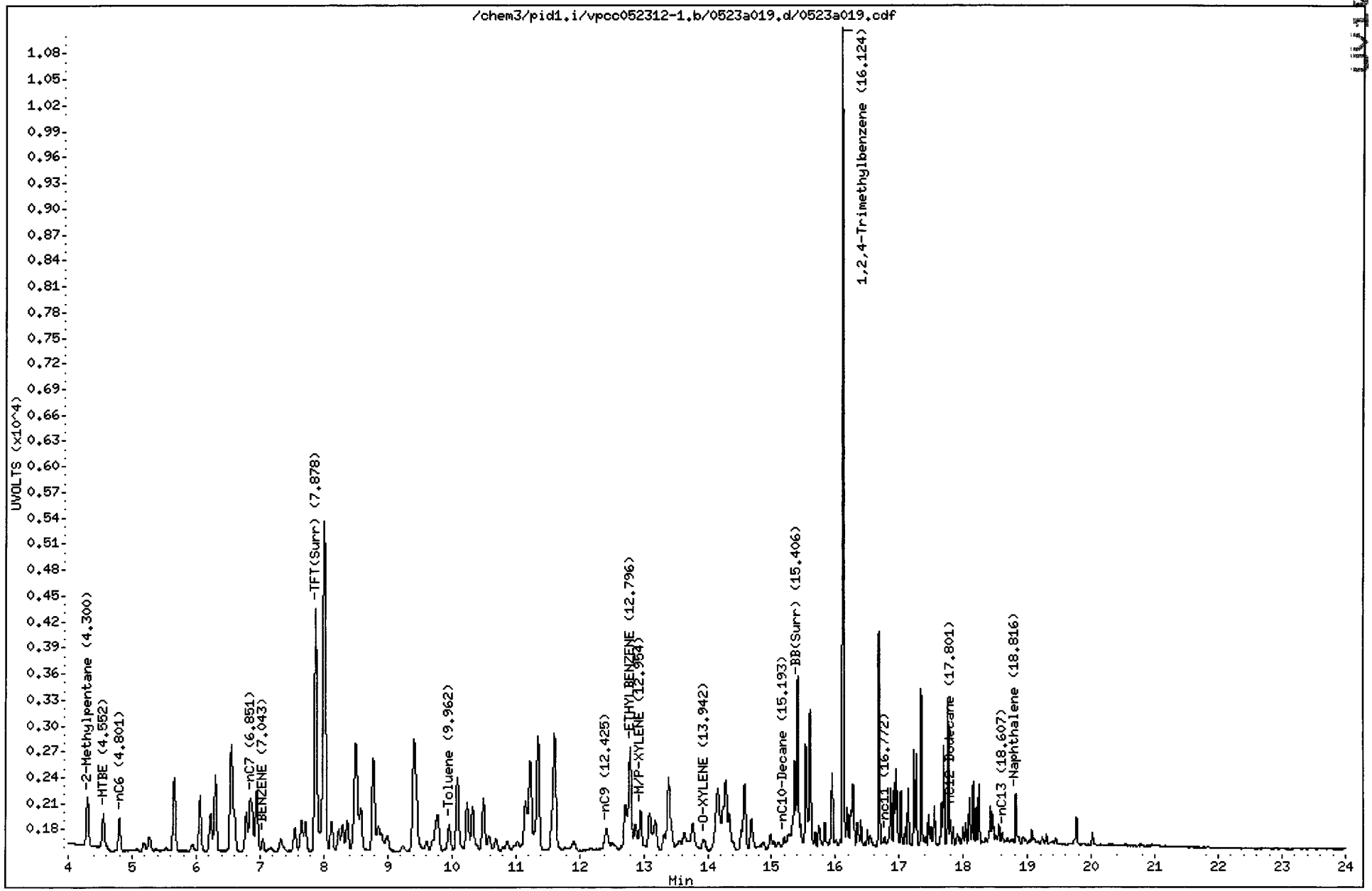
Sample Info: UV10L

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a019.d

Page 1

Date : 23-MAY-2012 15:31

Client ID: USO-P3-B

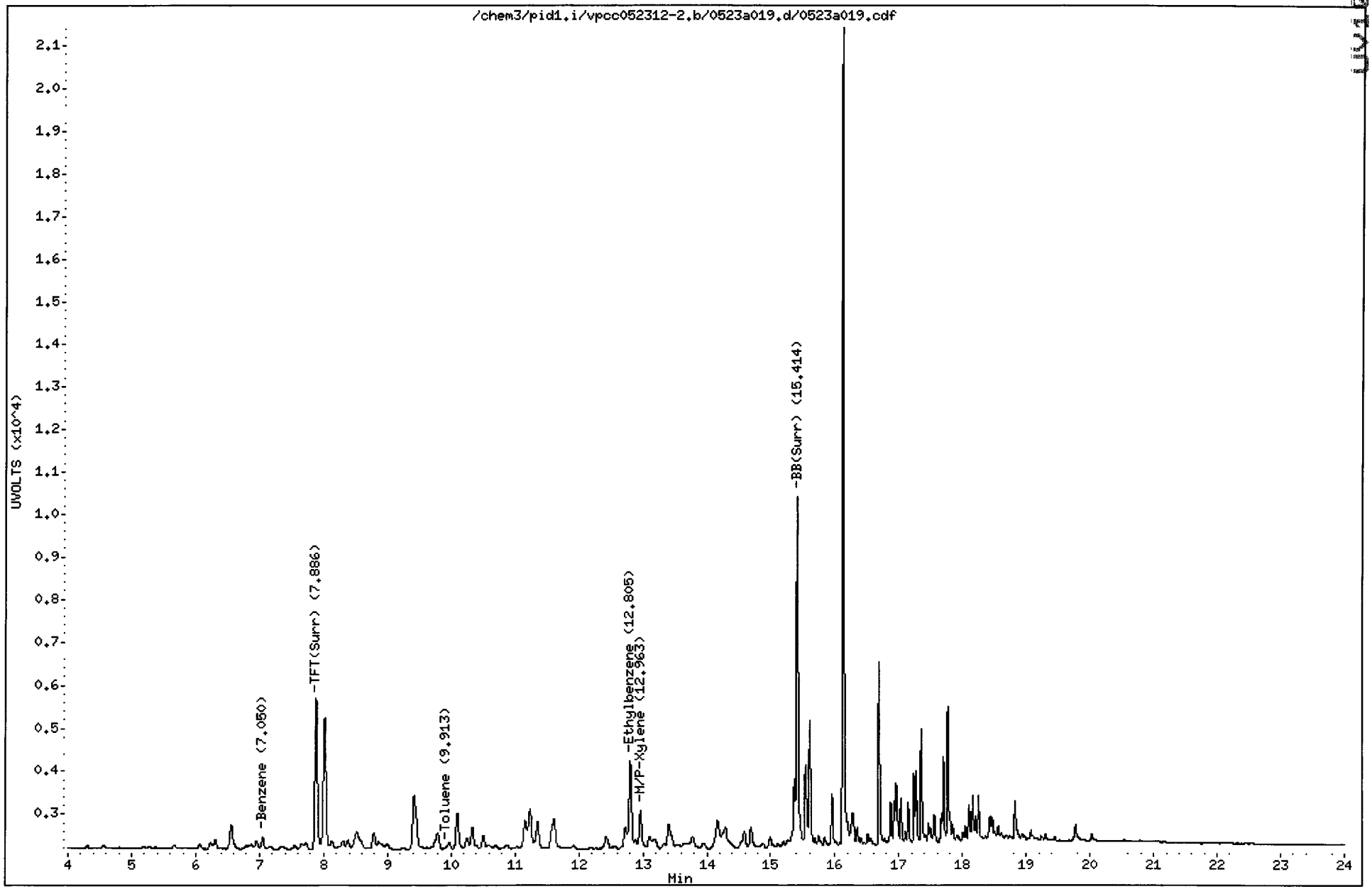
Instrument: pid1.i

Sample Info: UV10L

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P3-C
SAMPLE

Lab Sample ID: UV10M
LIMS ID: 12-9183
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 20:17
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 24 mg-dry-wt
Percent Moisture: 16.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**53**	**2,800**	
108-88-3	**Toluene**	**53**	**290**	**M**
100-41-4	**Ethylbenzene**	**53**	**15,000**	
179601-23-1	m,p-Xylene	110	< 110	U
95-47-6	o-Xylene	53	< 53	U
	Gasoline Range Hydrocarbons	**21**	**2,100**	**GAS/GRO**

GAS ID

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	110%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a022.d ARI ID: UV10M
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a022.d Client ID: USO-P3-C
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 20:17
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.005	3076	43391	102.7	TFT(Surr)
15.403	-0.003	2139	16422	110.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	3325801	9.748 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	4967579	7.323 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	4441975	8.252 M
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	3549642	9.873 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.006	3772	101.7	TFT(Surr)
15.413	0.000	8265	101.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.054	0.006	3345	13.41	Benzene
9.927	0.015	302	1.38N	Toluene
12.808	0.003	13541	69.99	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
4.564	-0.002	482	5.73	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a022.d

Date : 22-MAY-2012 20:17

Client ID: USO-P3-C

Sample Info: UV10M

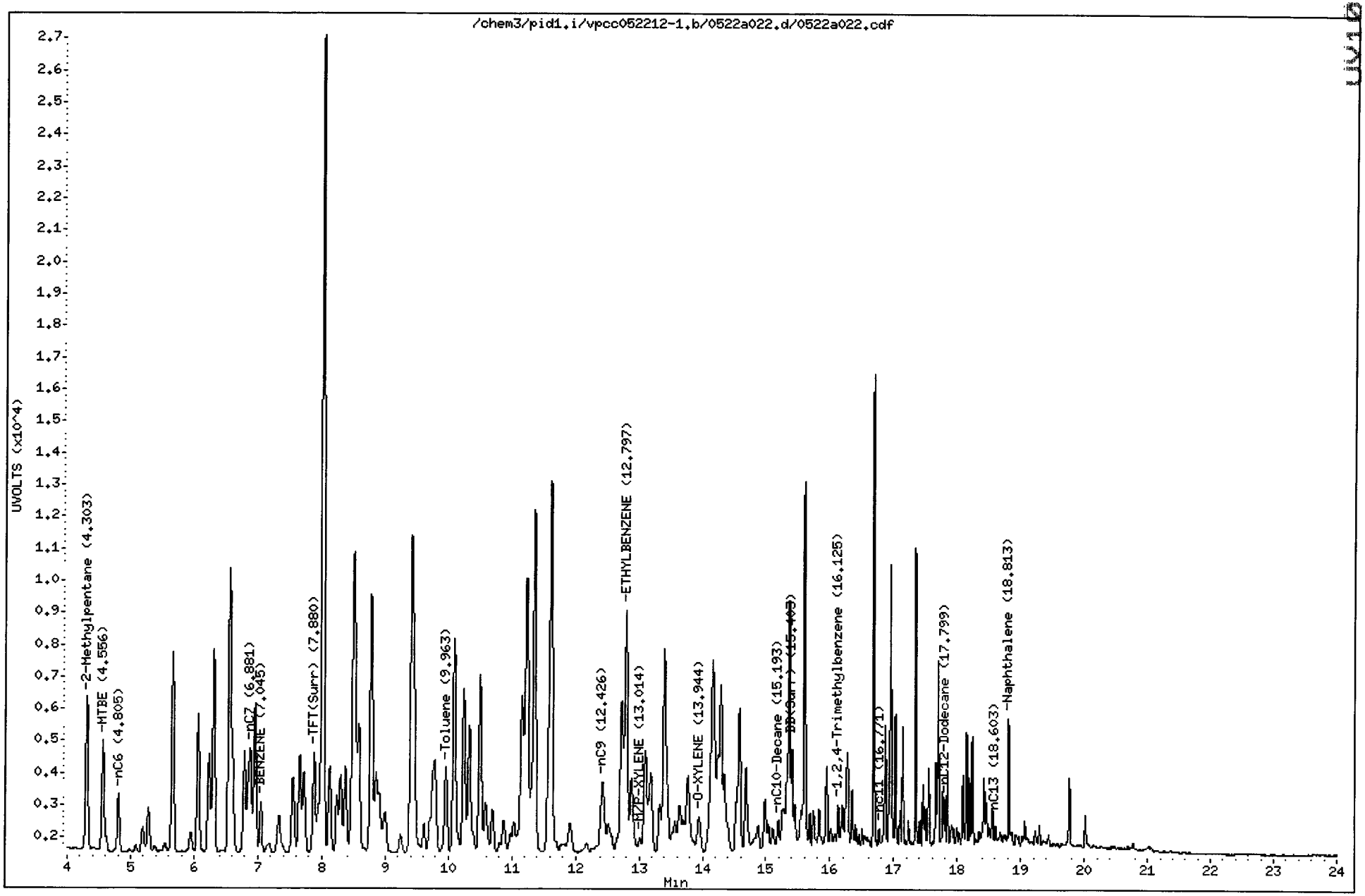
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10.00101



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a022.d

Date : 22-MAY-2012 20:17

Client ID: USO-P3-C

Sample Info: UV10M

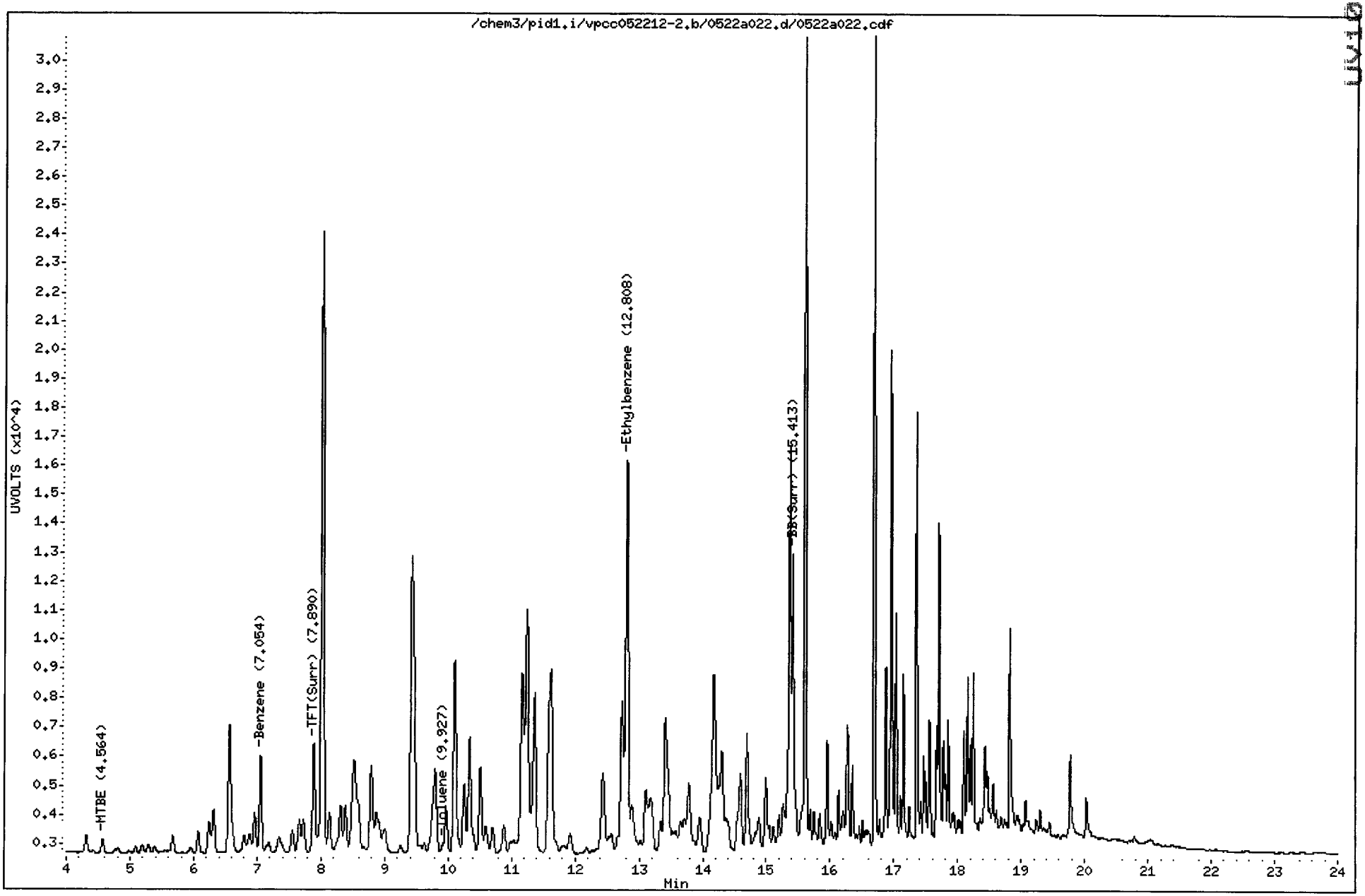
Column phase: RTX 502-2 PID

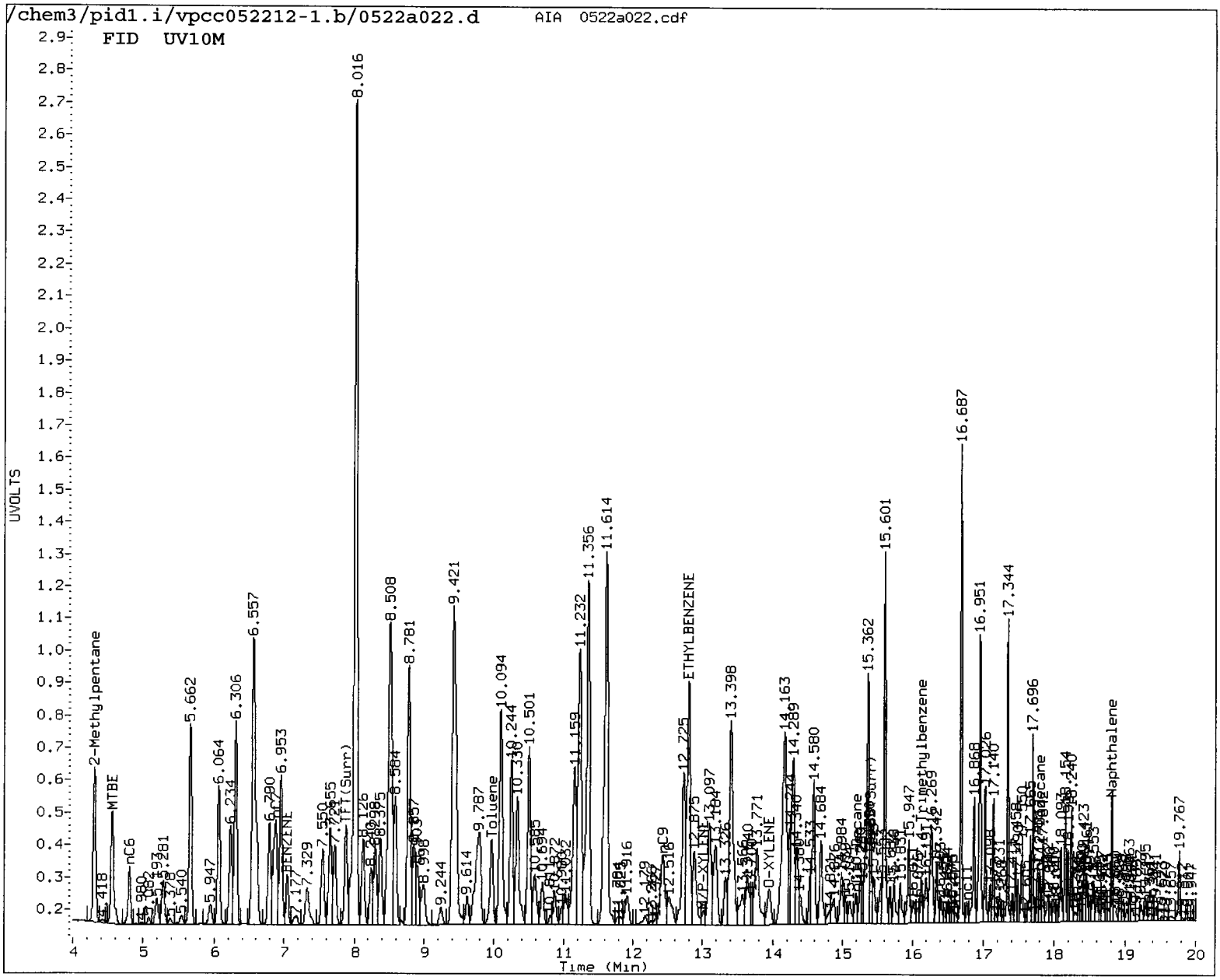
Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 : 00102





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-C**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV10M
LIMS ID: 12-9183
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 16:01
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 2.4 mg-dry-wt
Percent Moisture: 16.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**530**	**2,800**	
108-88-3	Toluene	530	< 530 U	
100-41-4	**Ethylbenzene**	**530**	**12,000**	
179601-23-1	m,p-Xylene	1,100	< 1,100 U	
95-47-6	o-Xylene	530	< 530 U	
				GAS ID
	Gasoline Range Hydrocarbons	**210**	**1,800**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	95.1%
Bromobenzene	97.2%

Gasoline Surrogate Recovery

Trifluorotoluene	92.4%
Bromobenzene	97.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a020.d ARI ID: UV10M
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a020.d Client ID: USO-P3-C
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 16:01
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.003	2769	36495	92.4	TFT(Surr)
15.406	0.001	1895	18450	97.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	293135	0.859
8015C 2MP-TMB	(4.20 to 16.22)	678311	431807	0.637
AK101 nC6-nC10	(4.70 to 15.12)	538315	381493	0.709
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	312844	0.870

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.003	3525	95.1	TFT(Surr)
15.413	0.000	7927	97.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.051	0.002	323	1.30	Benzene
ND	---	---	---	Toluene
12.804	-0.001	1138	5.88	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a020.d

Date : 23-MAY-2012 16:01

Client ID: USO-P3-C

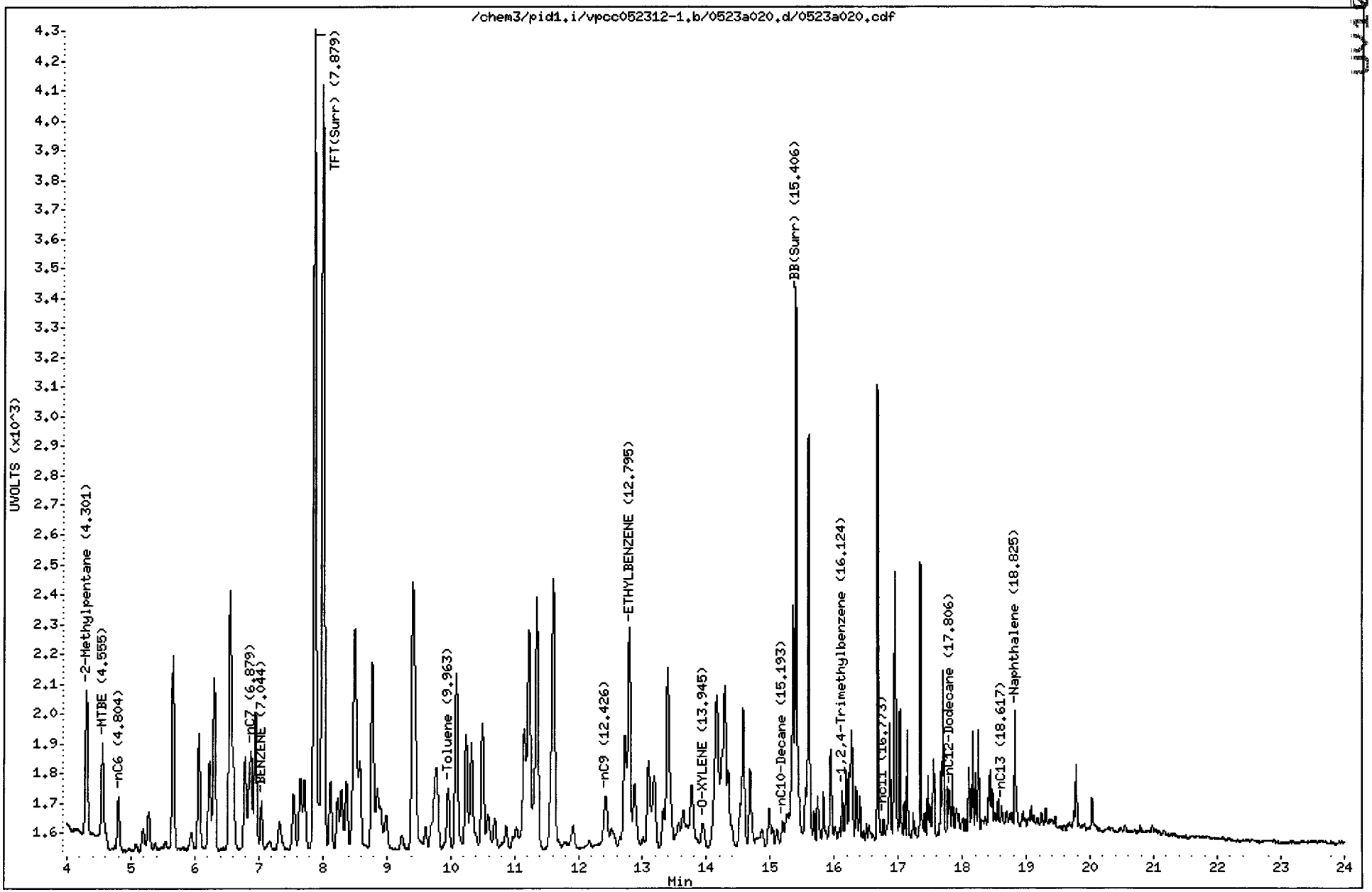
Sample Info: UV10M

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a020.d

Date : 23-MAY-2012 16:01

Client ID: USO-P3-C

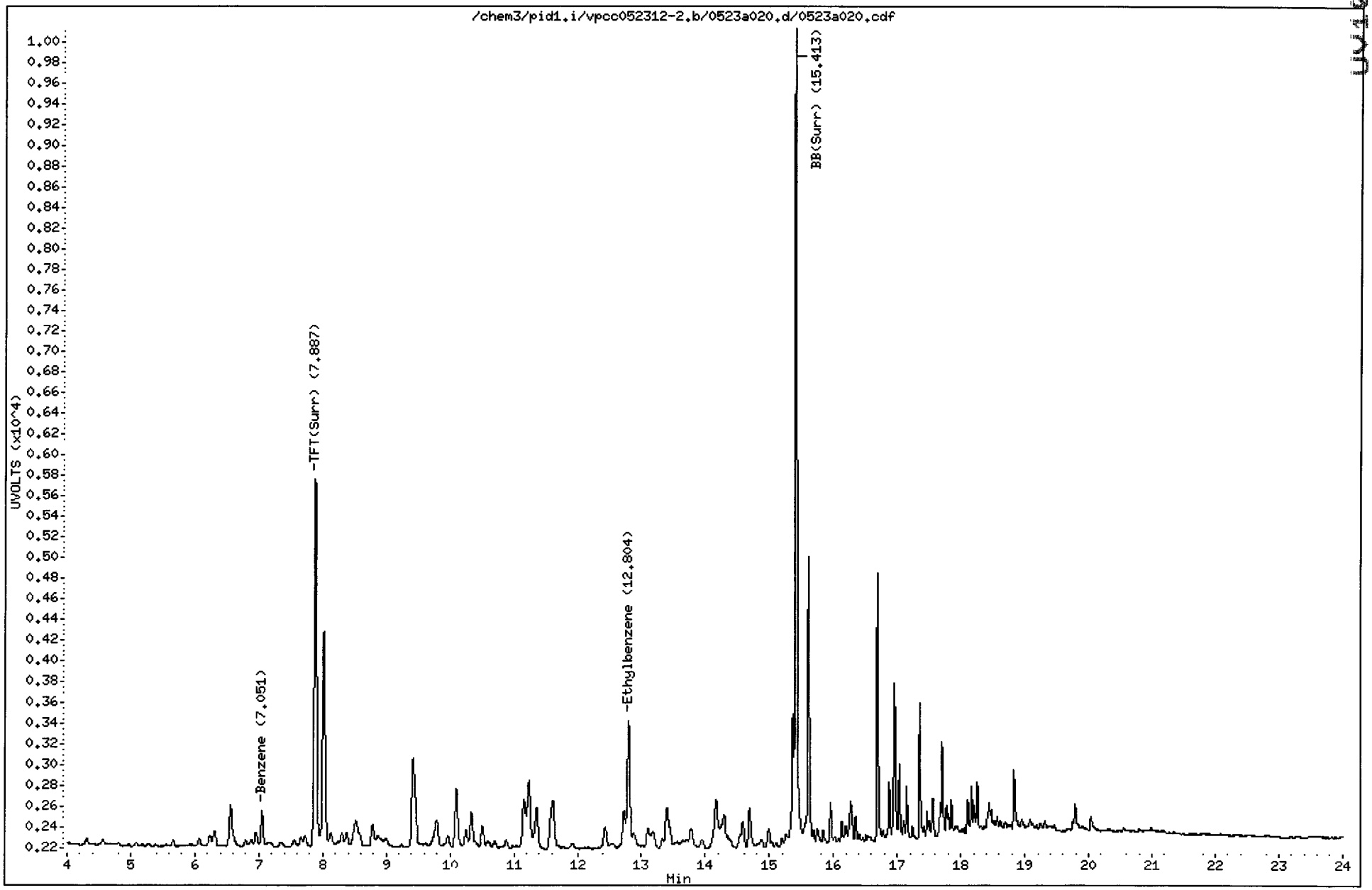
Sample Info: UV10M

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10N
LIMS ID: 12-9184
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 21:44
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 70 mg-dry-wt
Percent Moisture: 20.9%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	18	800	
108-88-3	**Toluene**	18	62	
100-41-4	**Ethylbenzene**	18	130	
179601-23-1	**m,p-Xylene**	36	140	
95-47-6	**o-Xylene**	18	28	
				GAS ID
	Gasoline Range Hydrocarbons	7.2	16	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.3%
Bromobenzene	98.9%

Gasoline Surrogate Recovery

Trifluorotoluene	94.1%
Bromobenzene	96.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH
5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a025.d ARI ID: UV10N
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a025.d Client ID: USO-P3-D
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 21:44
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.881	0.005	2818	35655	94.1	TFT(Surr)
15.407	0.002	1866	16292	96.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	58310	0.171 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	97904	0.144
AK101 nC6-nC10	(4.70 to 15.12)	538315	82845	0.154
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	81698	0.227 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.005	3495	94.3	TFT(Surr)
15.415	0.002	8066	98.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.006	2772	11.12N	Benzene
9.917	0.005	191	0.87	Toluene
12.808	0.003	362	1.87	Ethylbenzene
12.970	0.004	425	1.98	M/P-Xylene
13.923	0.006	65	0.39N	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a025.d

Date : 22-MAY-2012 21:44

Client ID: USO-P3-D

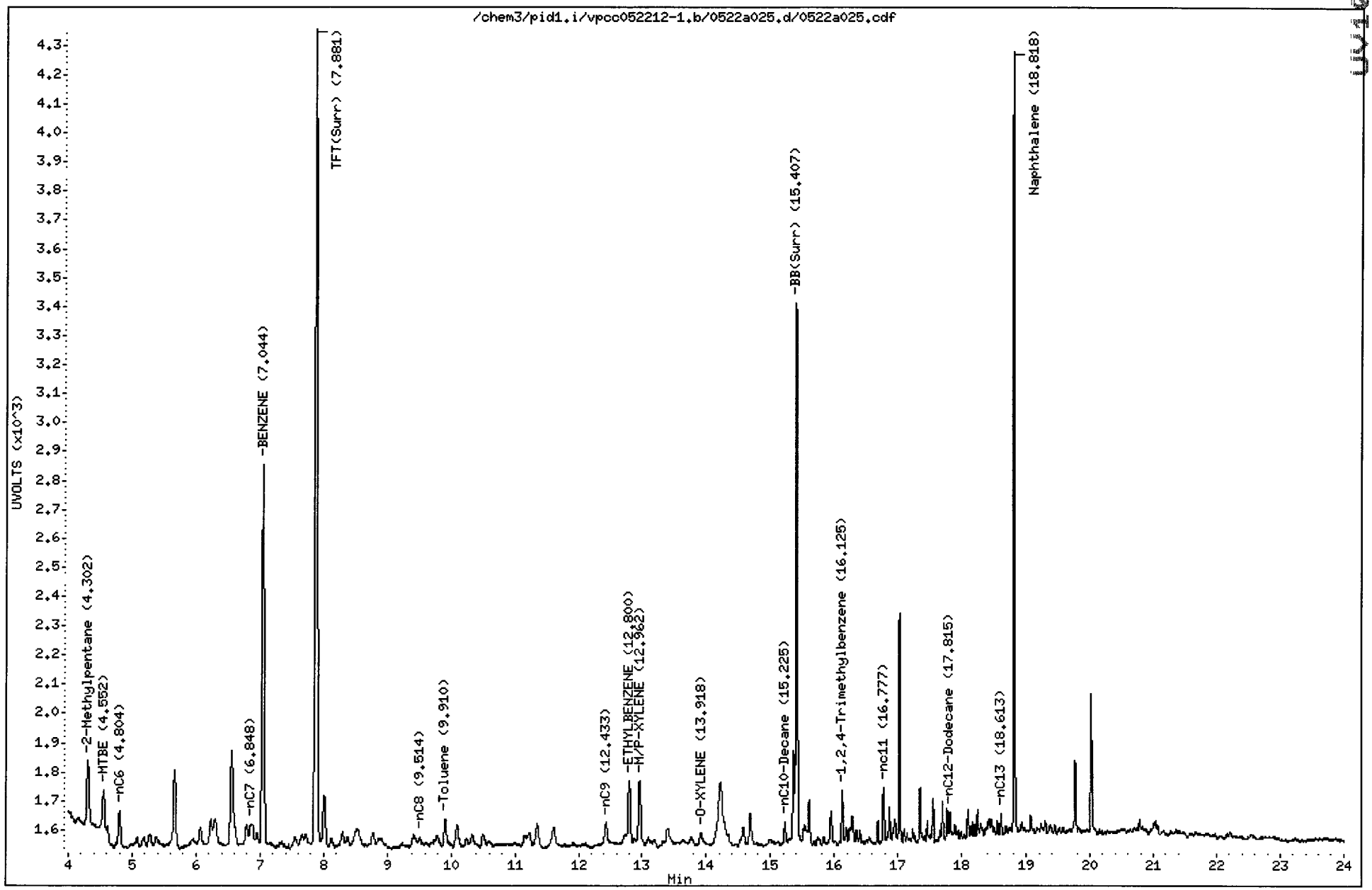
Sample Info: UV10N

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a025.d

Page 1

Date : 22-MAY-2012 21:44

Client ID: USO-P3-D

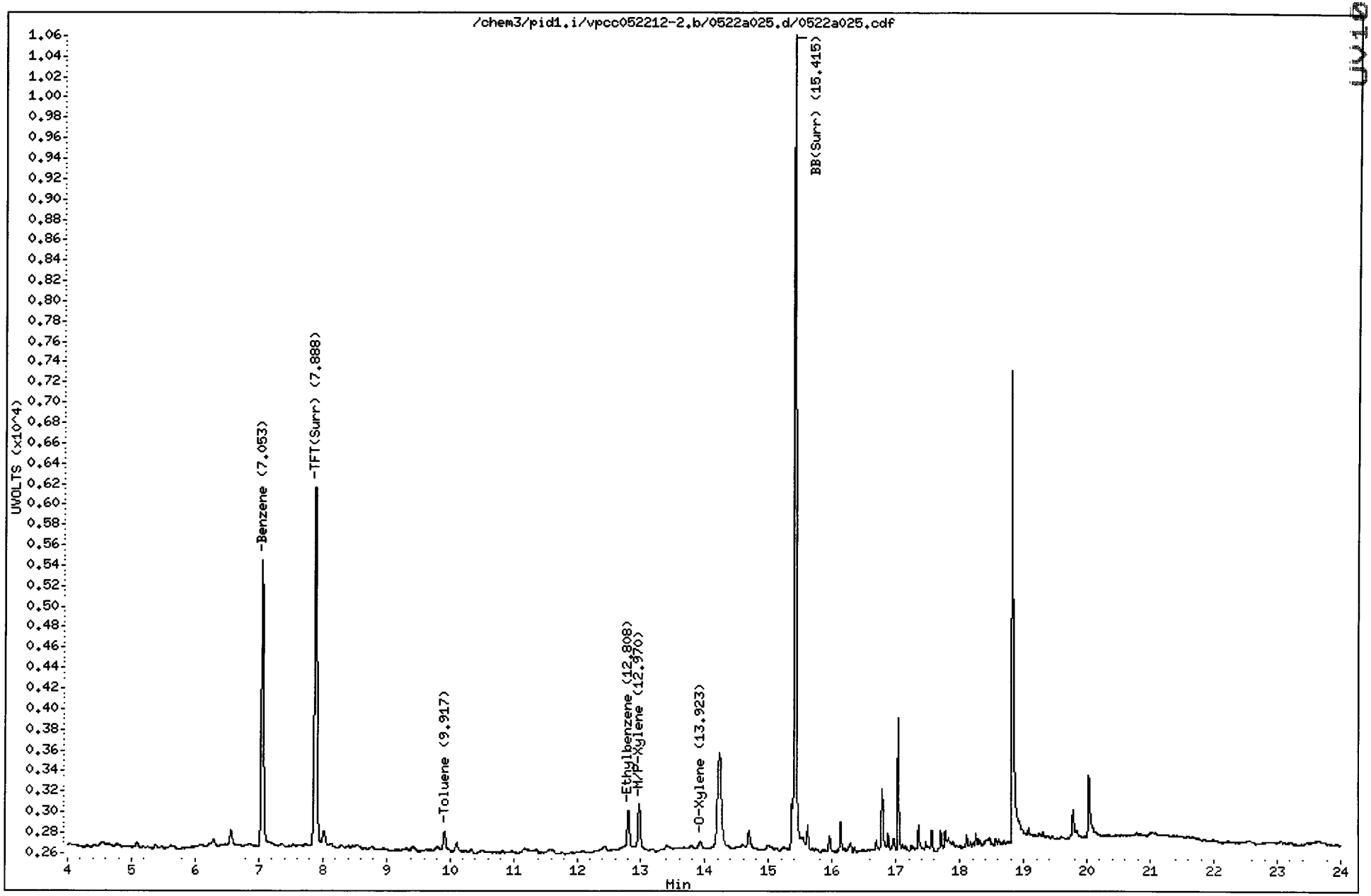
Instrument: pid1.i

Sample Info: UV10N

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P3-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV100
LIMS ID: 12-9185
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 22:13
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 25 mg-dry-wt
Percent Moisture: 45.6%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	50	< 50 U	
108-88-3	Toluene	50	< 50 U	
100-41-4	Ethylbenzene	50	< 50 U	
179601-23-1	m,p-Xylene	99	< 99 U	
95-47-6	o-Xylene	50	< 50 U	
	Gasoline Range Hydrocarbons	20	< 20 U	---

BETX Surrogate Recovery

Trifluorotoluene	97.9%
Bromobenzene	98.4%

Gasoline Surrogate Recovery

Trifluorotoluene	95.9%
Bromobenzene	98.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

7.4
5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a026.d ARI ID: UV10O
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a026.d Client ID: USO-P3-E
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 22:13
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.004	2874	36018	95.9	TFT(Surr)
15.407	0.001	1897	16329	98.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	8874	0.026 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	7418	0.011 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	4116	0.008 M
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	12104	0.034 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.004	3628	97.9	TFT(Surr)
15.413	0.000	8023	98.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.920	0.008	44	0.20N	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a026.d

Page 1

Date : 22-MAY-2012 22:13

Client ID: USO-P3-E

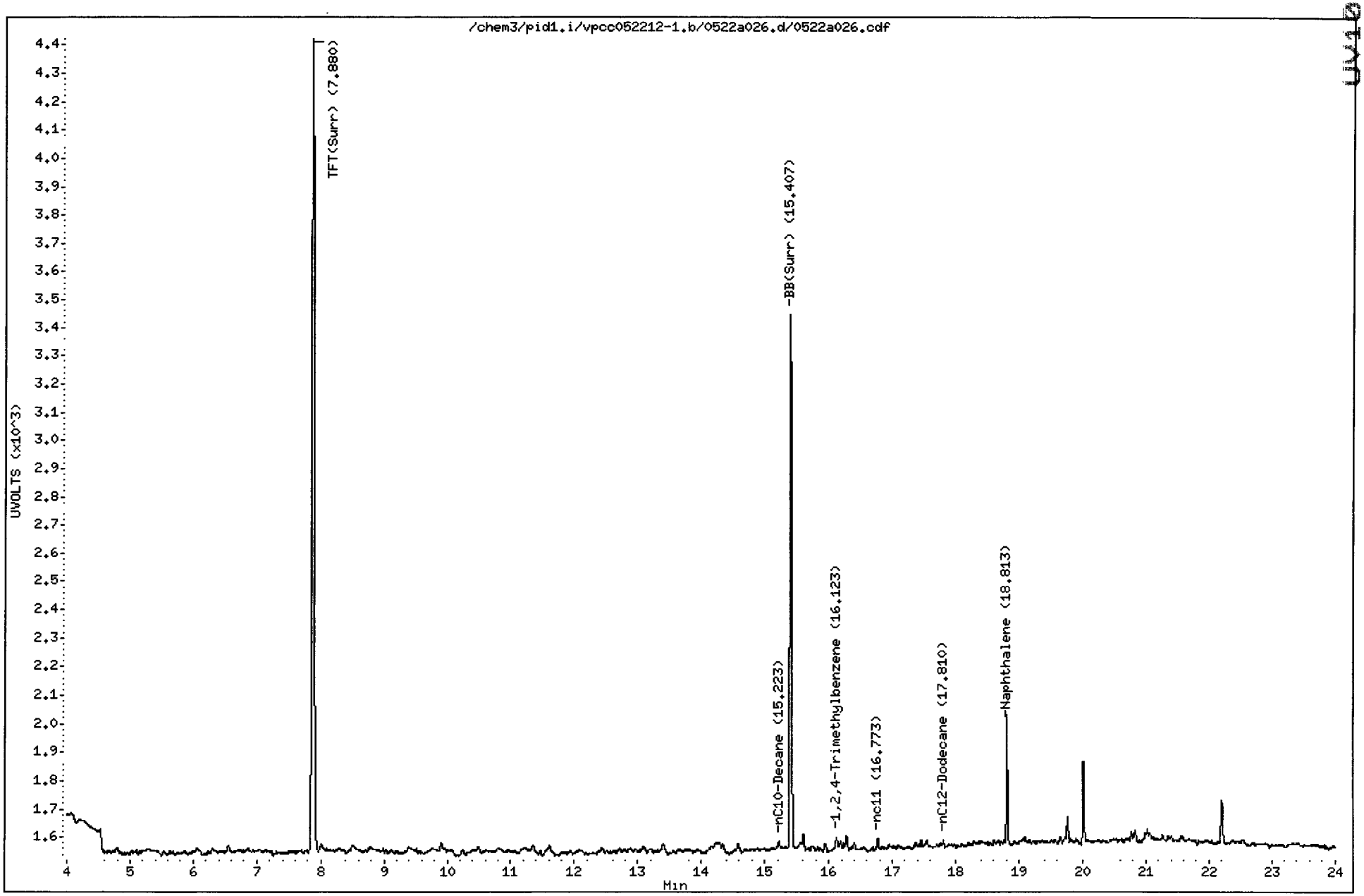
Instrument: pid1.i

Sample Info: UV100

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a026.d

Date : 22-MAY-2012 22:13

Client ID: USO-P3-E

Sample Info: UV100

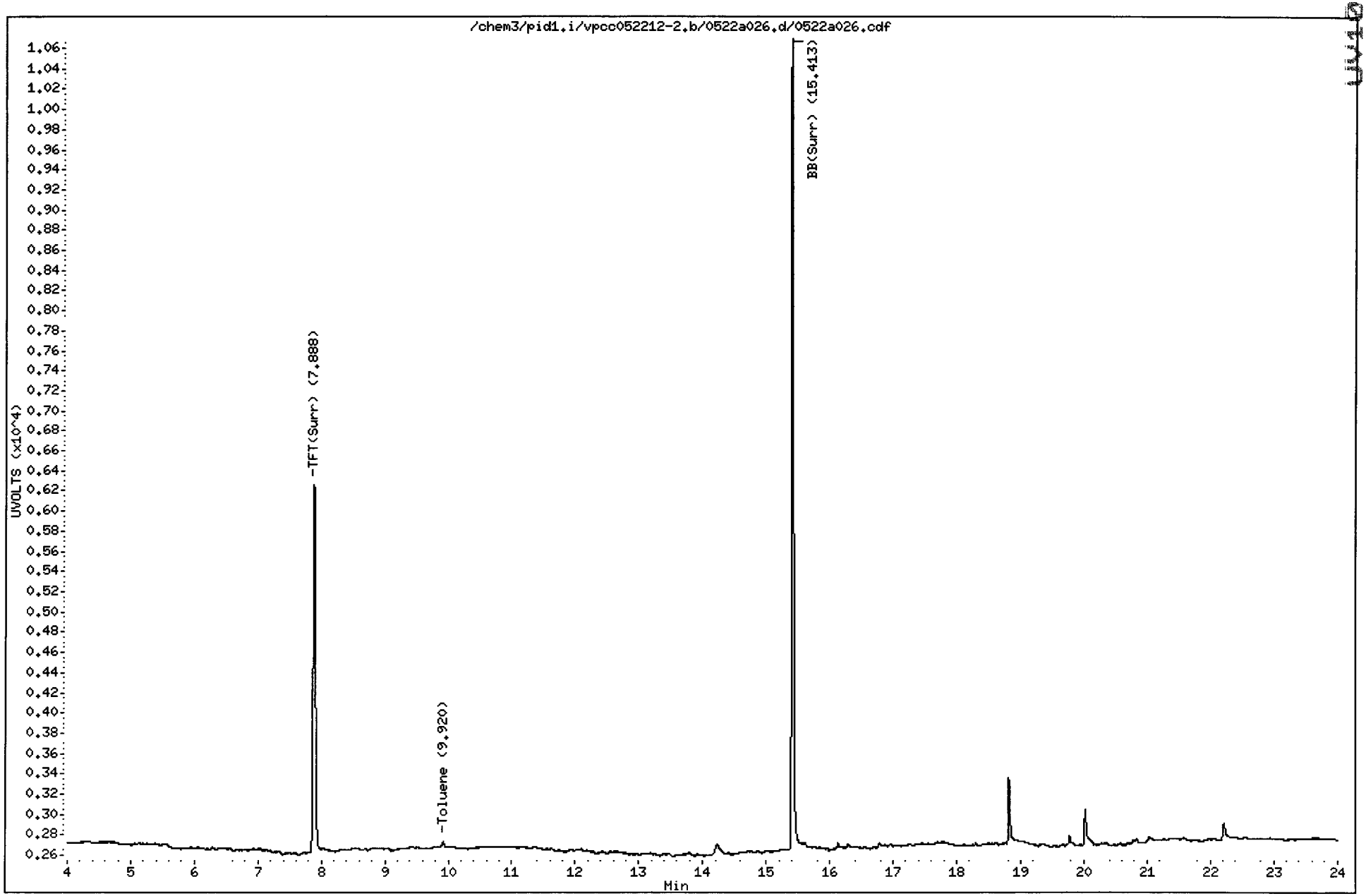
Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV10-0015



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P4-A**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10P
LIMS ID: 12-9186
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 16:30
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 1.7 mg-dry-wt
Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	720	7,900	
108-88-3	**Toluene**	720	83,000	
100-41-4	**Ethylbenzene**	720	40,000	
179601-23-1	**m,p-Xylene**	1,400	290,000	
95-47-6	**o-Xylene**	720	97,000	
	Gasoline Range Hydrocarbons	290	5,900	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.0%
Bromobenzene	98.1%

Gasoline Surrogate Recovery

Trifluorotoluene	93.1%
Bromobenzene	99.1%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a021.d ARI ID: UV10P
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a021.d Client ID: USO-P4-A
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 16:30
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.003	2790	36259	93.1	TFT(Surr)
15.406	0.001	1918	18220	99.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	721239	2.114
8015C 2MP-TMB	(4.20 to 16.22)	678311	1038455	1.531
AK101 nC6-nC10	(4.70 to 15.12)	538315	861354	1.600
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	740297	2.059

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.886	0.002	3484	94.0	TFT(Surr)
15.413	0.001	8004	98.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	0.001	686	2.75	Benzene
9.914	0.002	6324	28.97	Toluene
12.806	0.000	2701	13.96	Ethylbenzene
12.971	0.005	21901	101.99	M/P-Xylene
13.919	0.002	5666	33.72	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a021.d

Date : 23-MAY-2012 16:30

Client ID: USO-P4-A

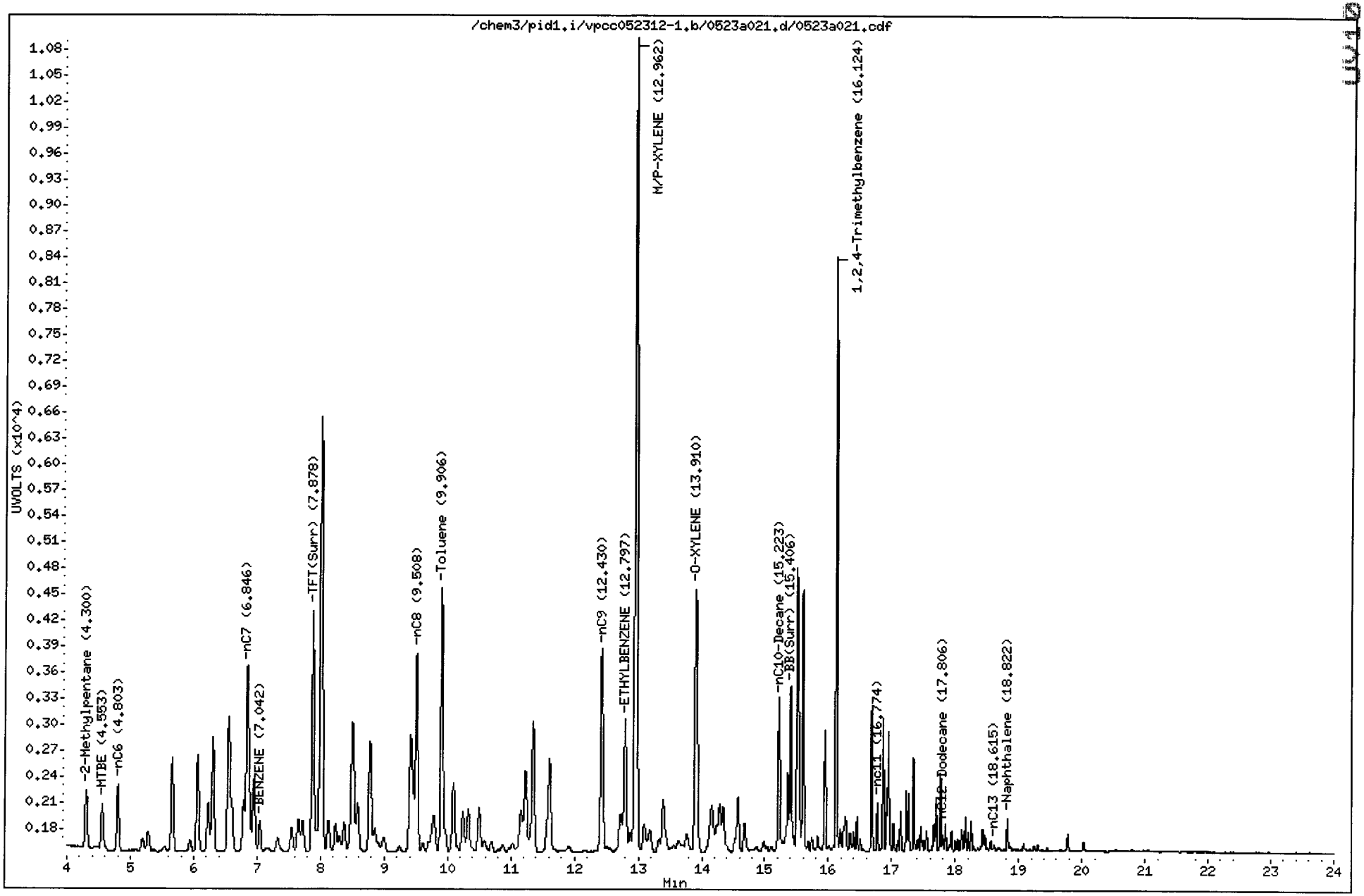
Sample Info: UV10P

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a021.d

Date : 23-MAY-2012 16:30

Client ID: USO-P4-A

Sample Info: UV10P

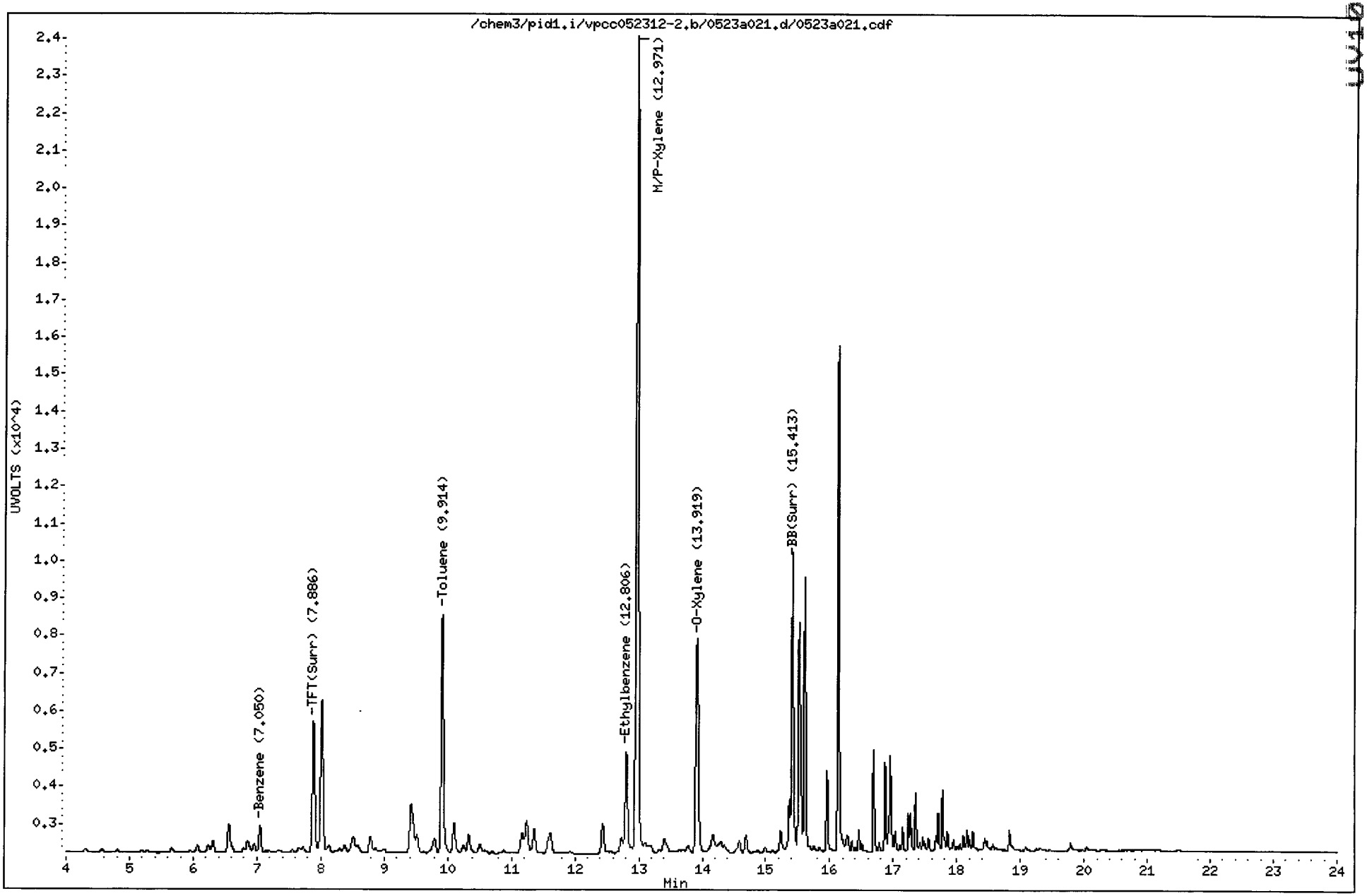
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV10:00119



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P4-B**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV10Q
LIMS ID: 12-9187
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 16:59
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 1.2 mg-dry-wt
Percent Moisture: 3.4%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**1,000**	**3,800**	
108-88-3	**Toluene**	**1,000**	**45,000**	
100-41-4	**Ethylbenzene**	**1,000**	**35,000**	
179601-23-1	**m,p-Xylene**	**2,000**	**270,000**	
95-47-6	**o-Xylene**	**1,000**	**88,000**	
				GAS ID
	Gasoline Range Hydrocarbons	**400**	**5,800**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.2%
Bromobenzene	97.1%

Gasoline Surrogate Recovery

Trifluorotoluene	91.1%
Bromobenzene	97.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a022.d ARI ID: UV10Q
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a022.d Client ID: USO-P4-B
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 16:59
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.002	2728	35354	91.1	TFT(Surr)
15.406	0.001	1886	17411	97.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	508046	1.489
8015C 2MP-TMB	(4.20 to 16.22)	678311	644659	0.950
AK101 nC6-nC10	(4.70 to 15.12)	538315	513922	0.955
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	521535	1.451

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.886	0.002	3383	91.2	TFT(Surr)
15.413	0.001	7920	97.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	0.001	237	0.95	Benzene
9.914	0.001	2441	11.18	Toluene
12.805	0.000	1692	8.75	Ethylbenzene
12.970	0.005	14228	66.26	M/P-Xylene
13.919	0.001	3711	22.09	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a022.d

Date : 23-MAY-2012 16:59

Client ID: USO-P4-B

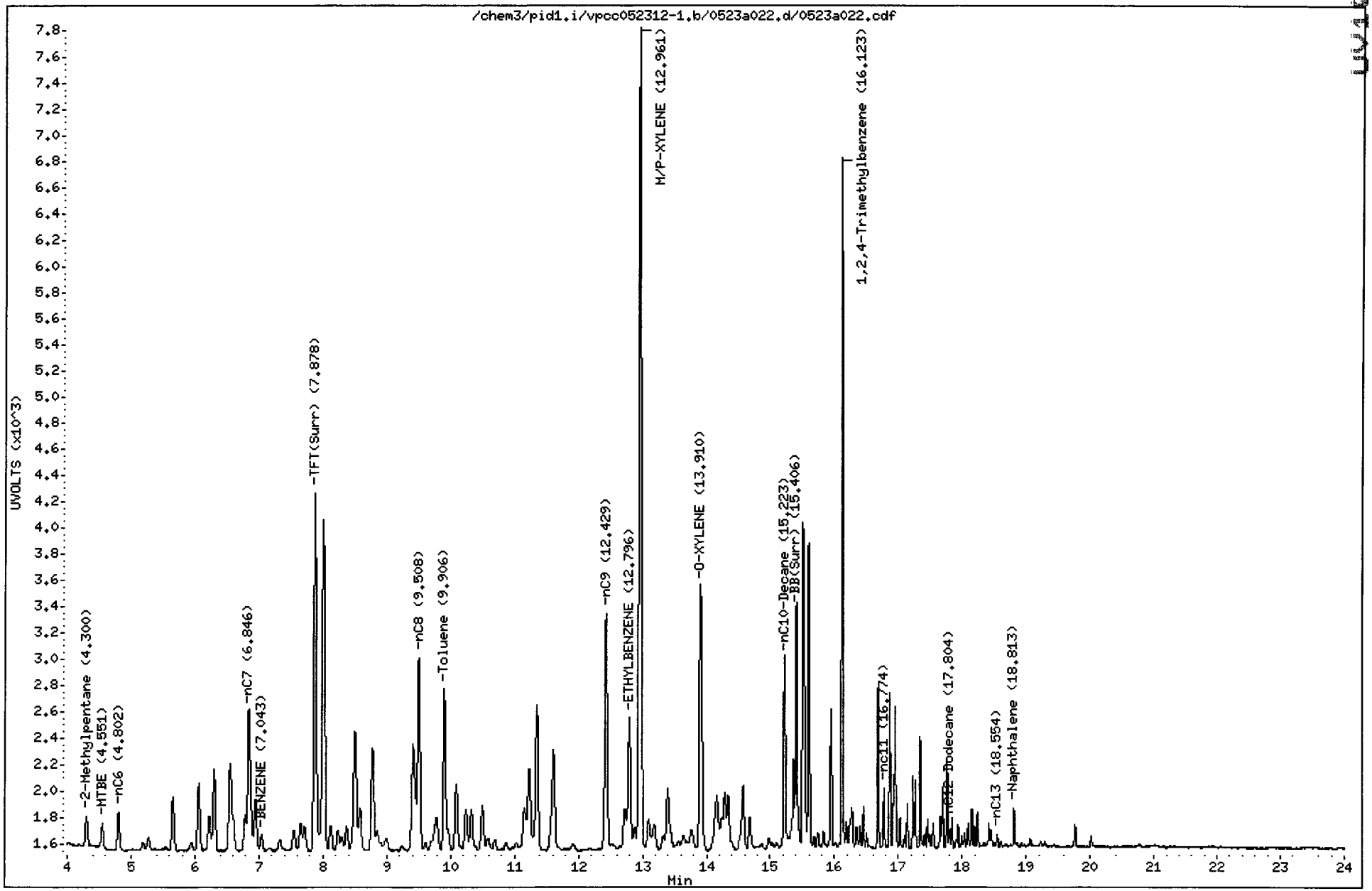
Sample Info: UV10Q

Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a022.d

Date : 23-MAY-2012 16:59

Client ID: USO-P4-B

Sample Info: UV10Q

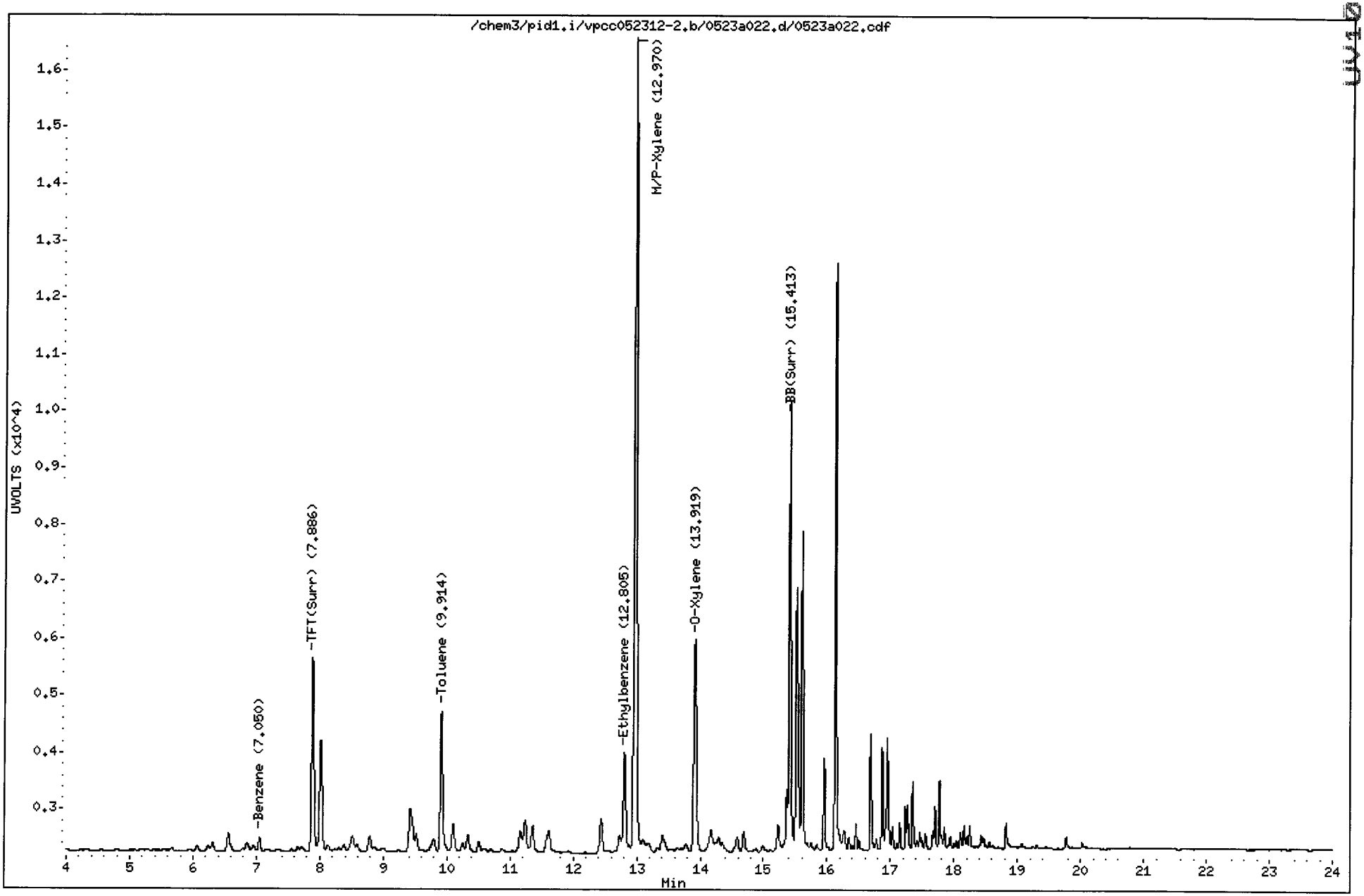
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV10 00123



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P4-C
SAMPLE

Lab Sample ID: UV10R
LIMS ID: 12-9188
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/22/12 23:41
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 86 mg-dry-wt
Percent Moisture: 12.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**14**	**11,000**	
108-88-3	**Toluene**	**14**	**1,000**	
100-41-4	**Ethylbenzene**	**14**	**33,000**	**E**
179601-23-1	**m,p-Xylene**	**29**	**160,000**	**E**
95-47-6	**o-Xylene**	**14**	**43,000**	**E**
	Gasoline Range Hydrocarbons	**5.8**	**5,100**	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	120%
Bromobenzene	0.0%

Gasoline Surrogate Recovery

Trifluorotoluene	111%
Bromobenzene	0.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a029.d ARI ID: UV10R
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a029.d Client ID: USO-P4-C
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 23:41
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.883	0.008	3320	51780	110.8	TFT(Surr)
ND	---	---	---		BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	31346029	91.872
8015C 2MP-TMB	(4.20 to 16.22)	678311	62083800	91.527 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	53879812	100.090 M
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	31398174	87.331

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.892	0.008	4442	119.8	TFT(Surr)
ND	---	---	---	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.067	0.020	47186	189.22	Benzene
9.940	0.028	3931	18.01	Toluene
12.859	0.054	108385	560.20N	Ethylbenzene
13.077	0.111	604074	2813.15N	M/P-Xylene
13.983	0.066	123781	736.74N	O-Xylene
4.580	0.014	8285	98.51	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a029.d

Date : 22-MAY-2012 23:41

Client ID: USO-P4-C

Sample Info: UV10R

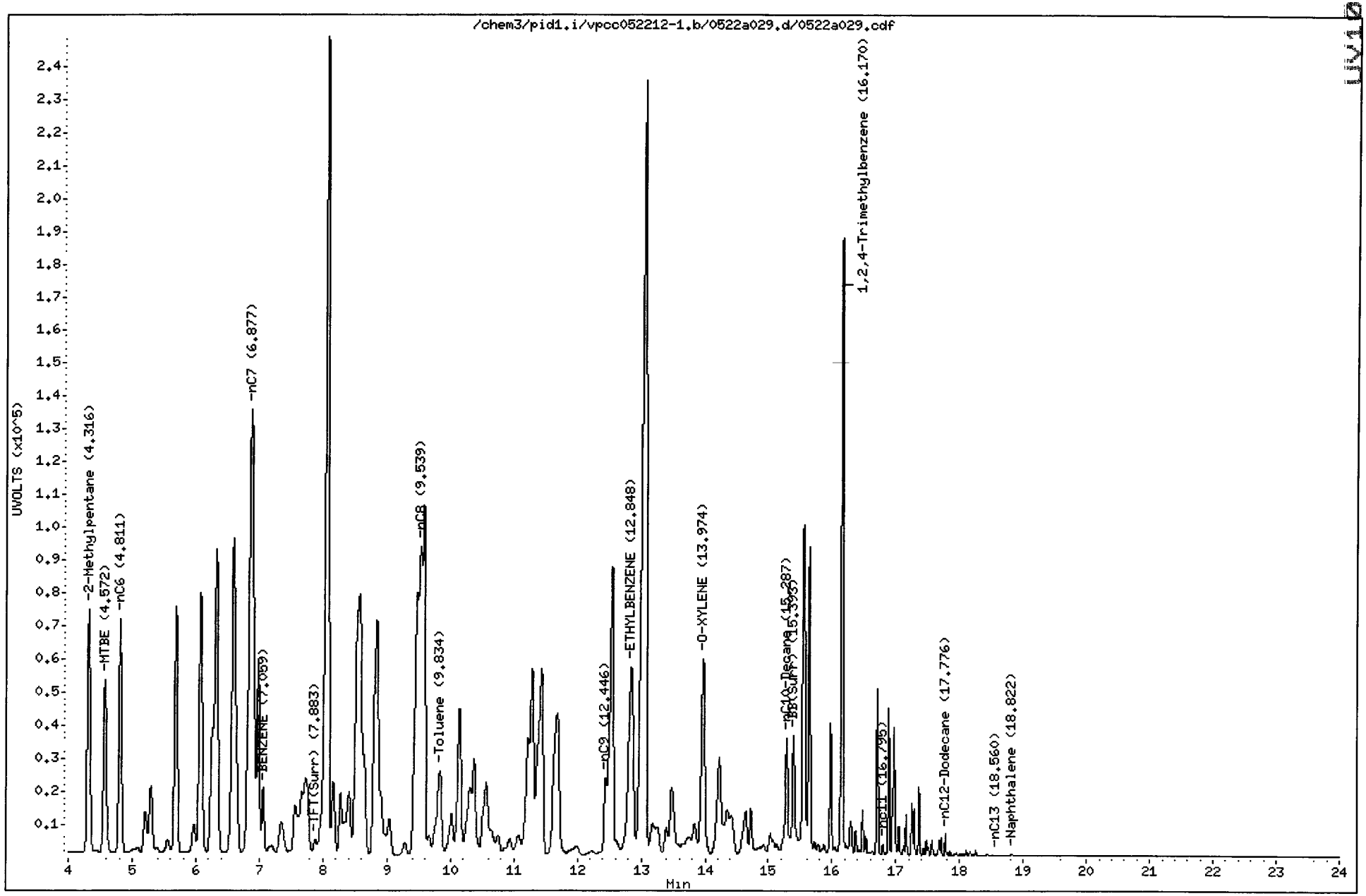
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV10 : 00126



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a029.d

Page 1

Date : 22-MAY-2012 23:41

Client ID: USO-P4-C

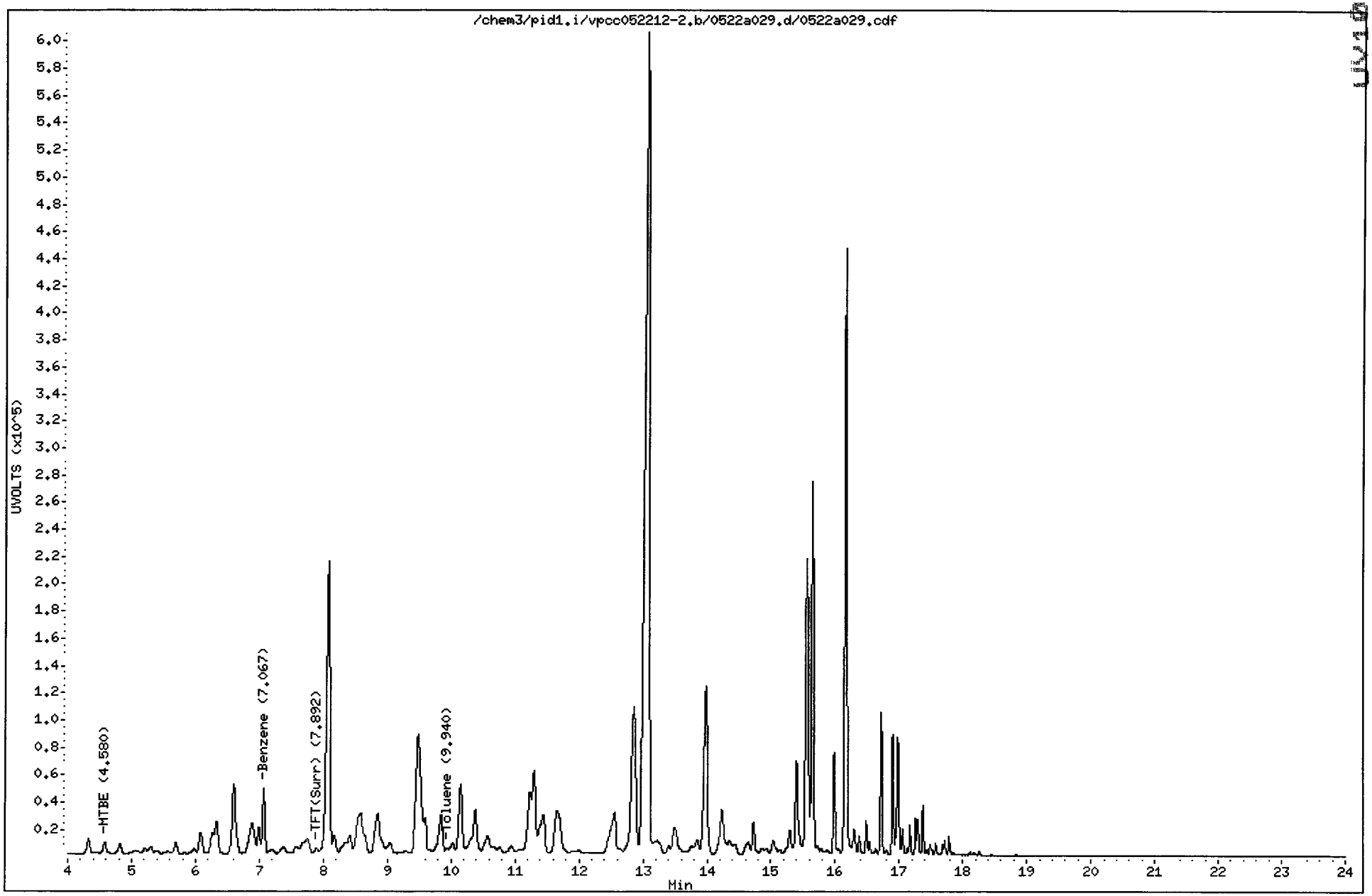
Instrument: pid1.i

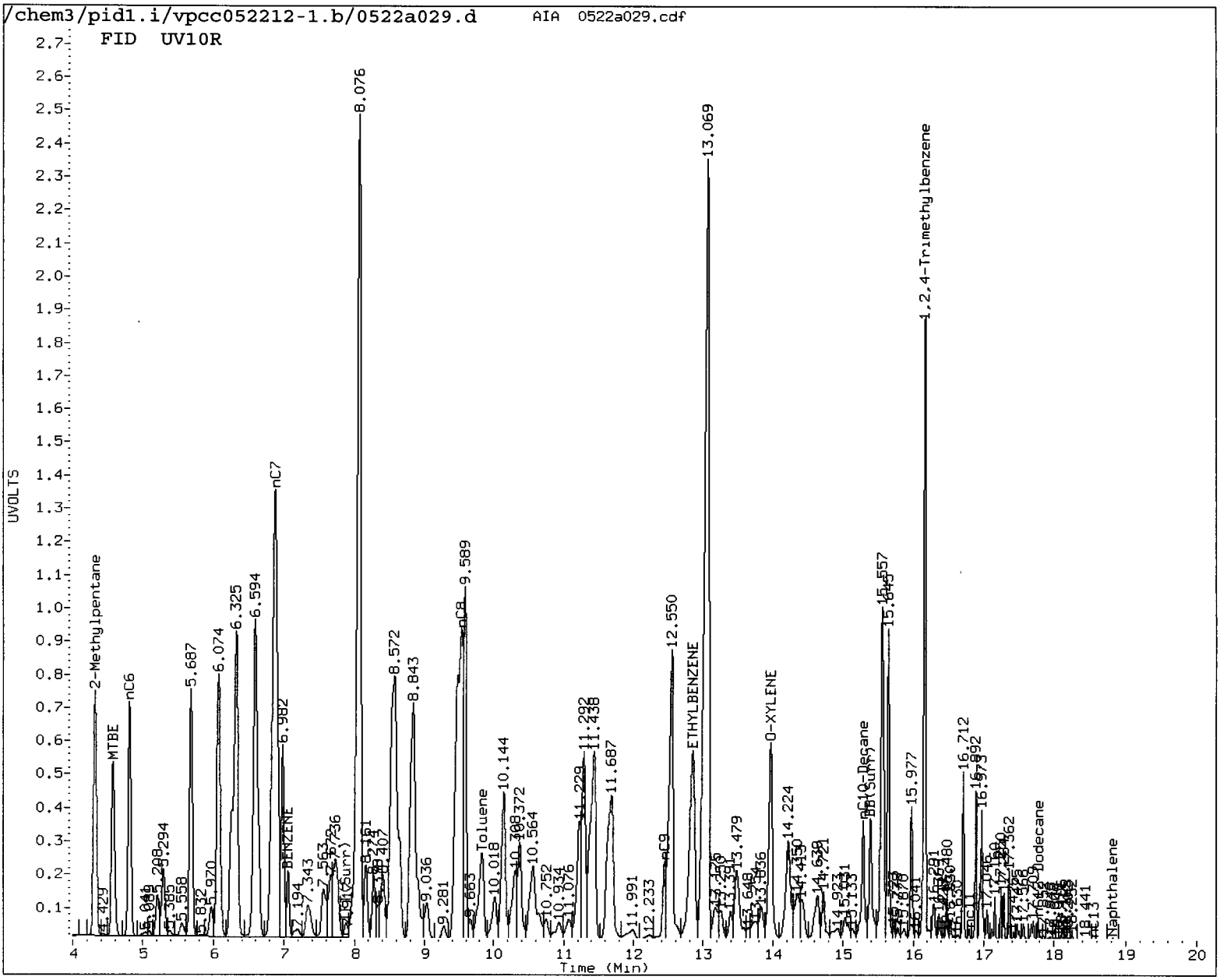
Sample Info: UV10R

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 5/31/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P4-C**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV10R
LIMS ID: 12-9188
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 17:28
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 0.86 mg-dry-wt
Percent Moisture: 12.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**1,400**	**11,000**	
108-88-3	Toluene	1,400	< 1,400 U	
100-41-4	**Ethylbenzene**	**1,400**	**40,000**	
179601-23-1	**m,p-Xylene**	**2,900**	**280,000**	
95-47-6	**o-Xylene**	**1,400**	**52,000**	
				GAS ID
	Gasoline Range Hydrocarbons	**580**	**5,000**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.5%
Bromobenzene	99.1%

Gasoline Surrogate Recovery

Trifluorotoluene	93.9%
Bromobenzene	98.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a023.d
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a023.d
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m
Instrument: pid1.i
Gas Ical Date: 15-MAY-2012
BETX Ical Date: 15-MAY-2012

ARI ID: UV10R
Client ID: USO-P4-C
Injection Date: 23-MAY-2012 17:28
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.004	2814	36738	93.9	TFT(Surr)
15.406	0.001	1897	16749	98.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	305347	0.895
8015C 2MP-TMB	(4.20 to 16.22)	678311	557732	0.822
AK101 nC6-nC10	(4.70 to 15.12)	538315	468254	0.870
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	309962	0.862

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.003	3502	94.5	TFT(Surr)
15.414	0.001	8080	99.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.051	0.002	477	1.91	Benzene
9.913	0.001	29	0.13N	Toluene
12.806	0.001	1345	6.95	Ethylbenzene
12.971	0.005	10242	47.70	M/P-Xylene
13.920	0.002	1510	8.99	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a023.d

Date : 23-MAY-2012 17:28

Client ID: USO-P4-C

Sample Info: UV10R

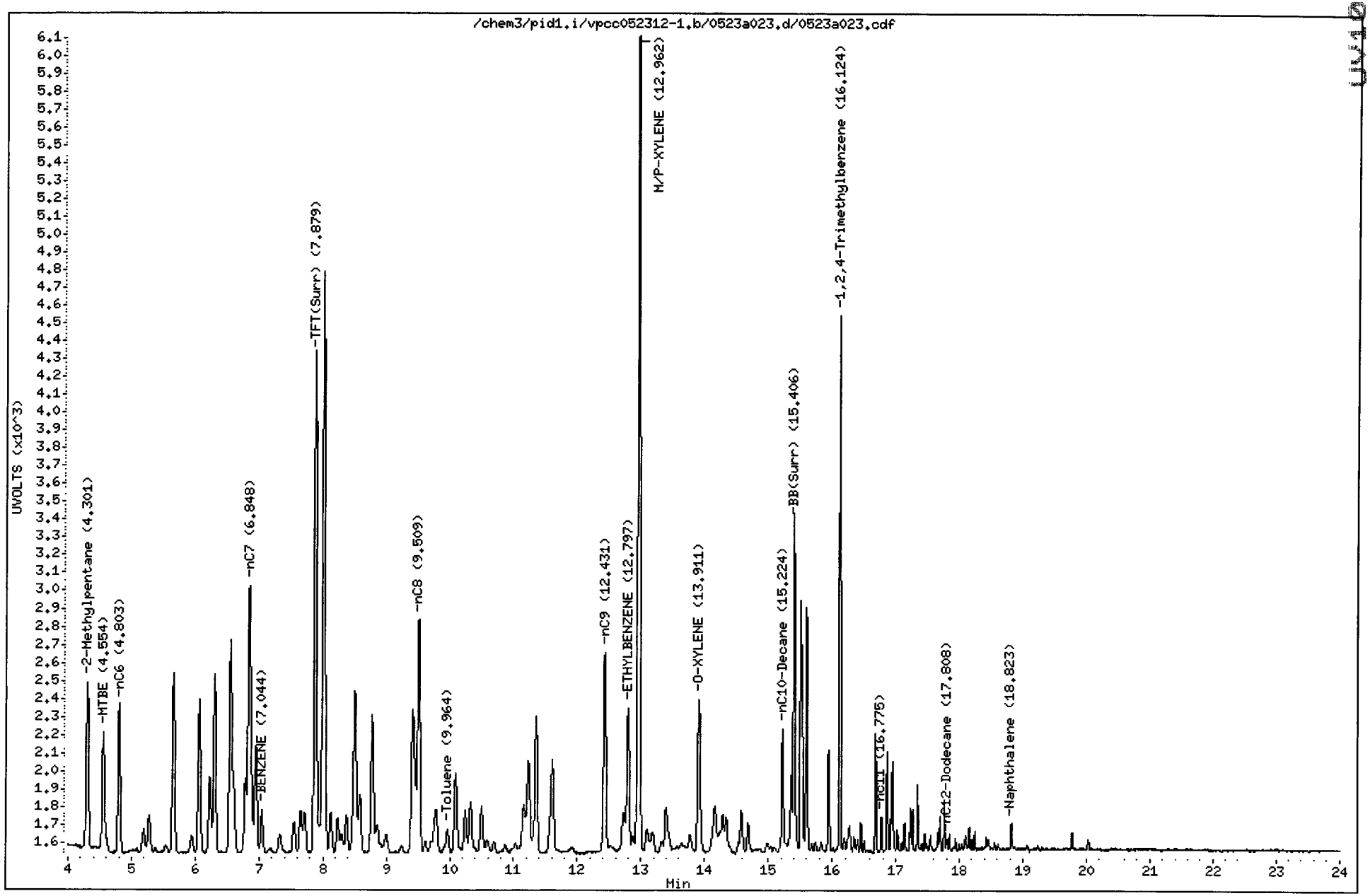
Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV10 : 00131



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a023.d

Date : 23-MAY-2012 17:28

Client ID: USO-P4-C

Sample Info: UV10R

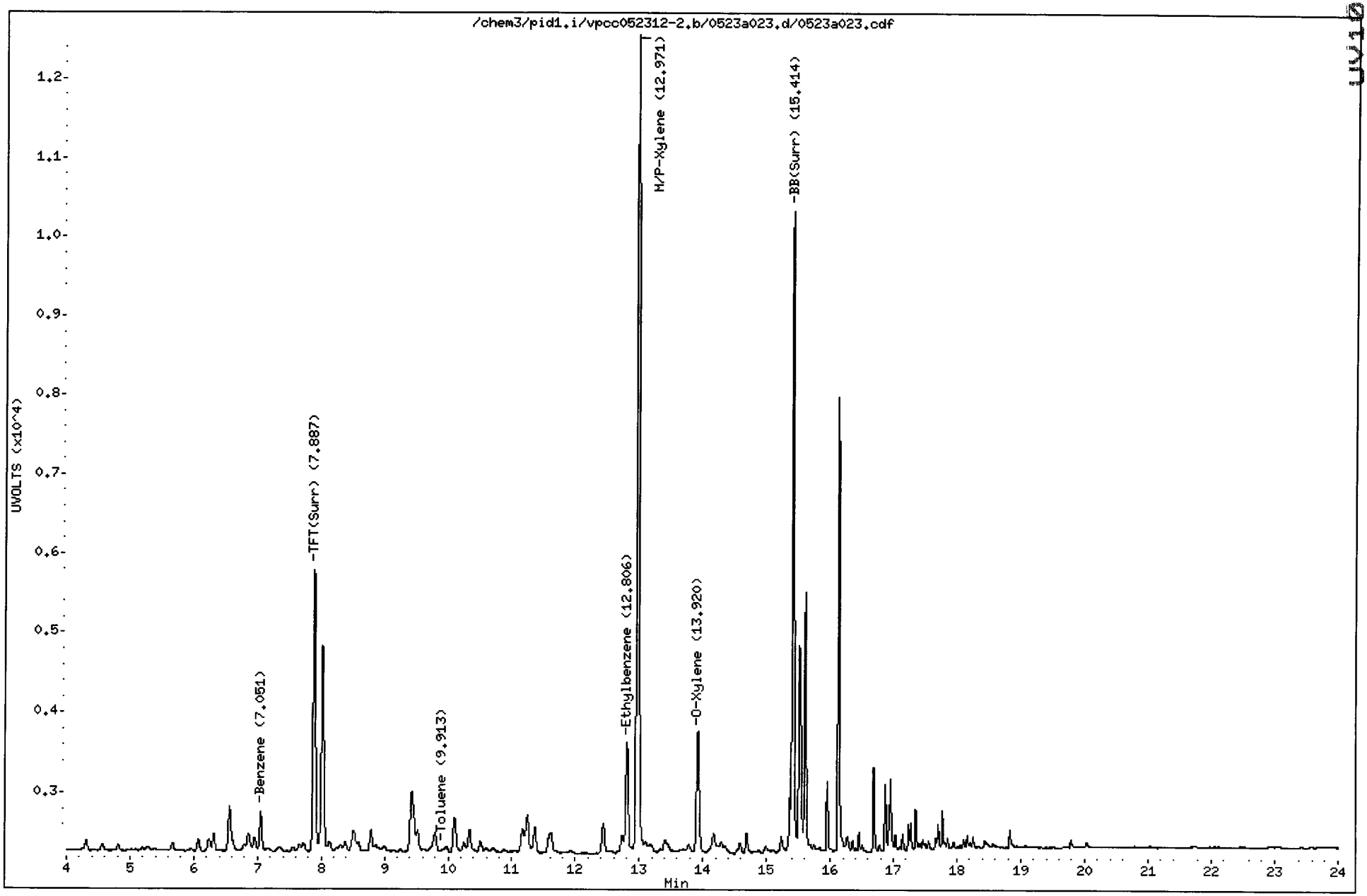
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV10 : 00132



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P4-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10S
LIMS ID: 12-9189
Matrix: Soil
Data Release Authorized: hmw
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 17:57
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 86 mg-dry-wt
Percent Moisture: 17.5%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	15	< 15 U	
108-88-3	Toluene	15	< 15 U	
100-41-4	**Ethylbenzene**	**15**	**630**	
179601-23-1	m,p-Xylene	29	< 29 U	
95-47-6	o-Xylene	15	< 15 U	
	Gasoline Range Hydrocarbons	**5.8**	**260**	GAS ID **GRO**

BETX Surrogate Recovery

Trifluorotoluene	94.2%
Bromobenzene	111%

Gasoline Surrogate Recovery

Trifluorotoluene	93.7%
Bromobenzene	93.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a024.d ARI ID: UV10S
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a024.d Client ID: USO-P4-D
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 17:57
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.003	2806	36333	93.7	TFT(Surr)
15.403	-0.001	1809	13316	93.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	1580259	4.632 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	1762494	2.598 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	1512520	2.810
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	1591955	4.428 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.003	3494	94.2	TFT(Surr)
15.413	0.000	9043	110.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
12.783	-0.022	2083	10.77	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a024.d

Date : 23-MAY-2012 17:57

Client ID: USO-P4-D

Instrument: pid1.i

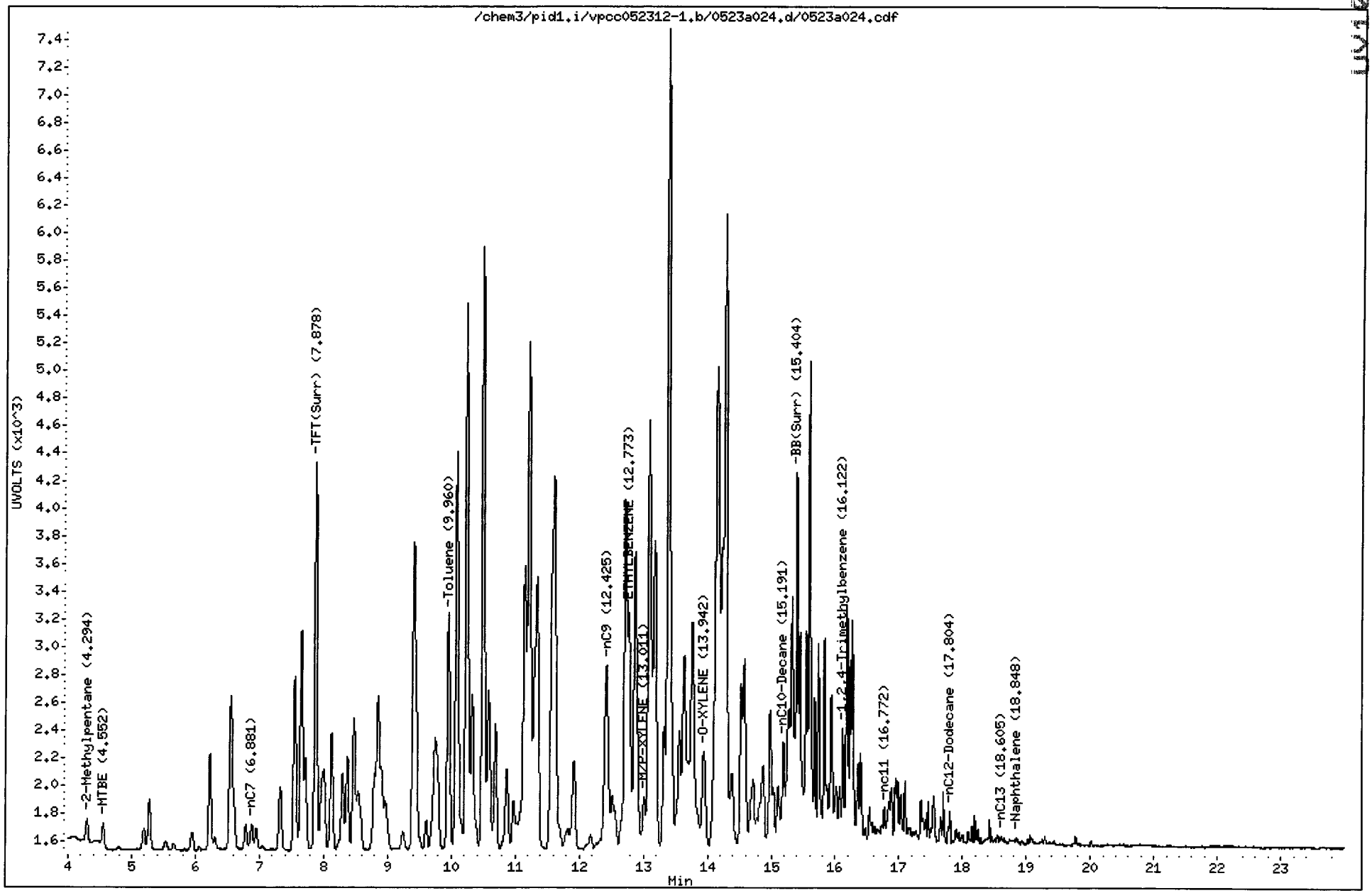
Sample Info: UV10S

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV10:00135



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a024.d

Page 1

Date : 23-MAY-2012 17:57

Client ID: USO-P4-D

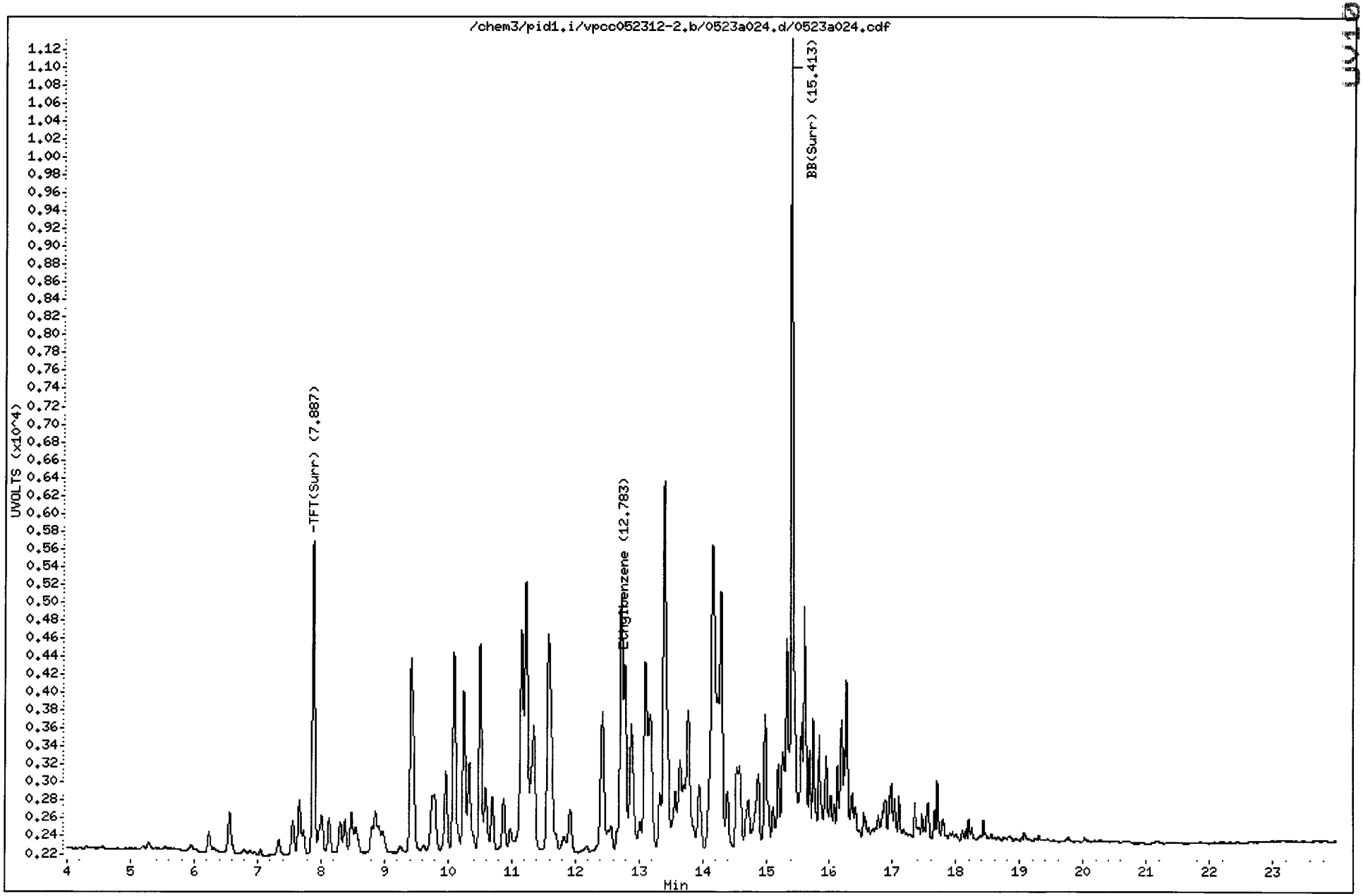
Instrument: pid1.i

Sample Info: UV10S

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P4-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV10T
LIMS ID: 12-9190
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/23/12 18:26
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 21 mg-dry-wt
Percent Moisture: 59.1%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	60	< 60 U	
108-88-3	Toluene	60	< 60 U	
100-41-4	Ethylbenzene	60	< 60 U	
179601-23-1	**m,p-Xylene**	**120**	**180**	
95-47-6	o-Xylene	60	< 60 U	
				GAS ID
	Gasoline Range Hydrocarbons	**24**	**42**	**GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.1%
Bromobenzene	94.4%

Gasoline Surrogate Recovery

Trifluorotoluene	91.6%
Bromobenzene	94.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a025.d ARI ID: UV10T
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a025.d Client ID: USO-P4-E
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 18:26
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.004	2743	34330	91.6	TFT(Surr)
15.406	0.002	1833	16507	94.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	61565	0.180
8015C 2MP-TMB	(4.20 to 16.22)	678311	62523	0.092
AK101 nC6-nC10	(4.70 to 15.12)	538315	51580	0.096
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	62603	0.174

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.004	3378	91.1	TFT(Surr)
15.414	0.001	7701	94.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
12.970	0.005	160	0.75	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a025.d

Date : 23-MAY-2012 18:26

Client ID: USO-P4-E

Sample Info: UV10T

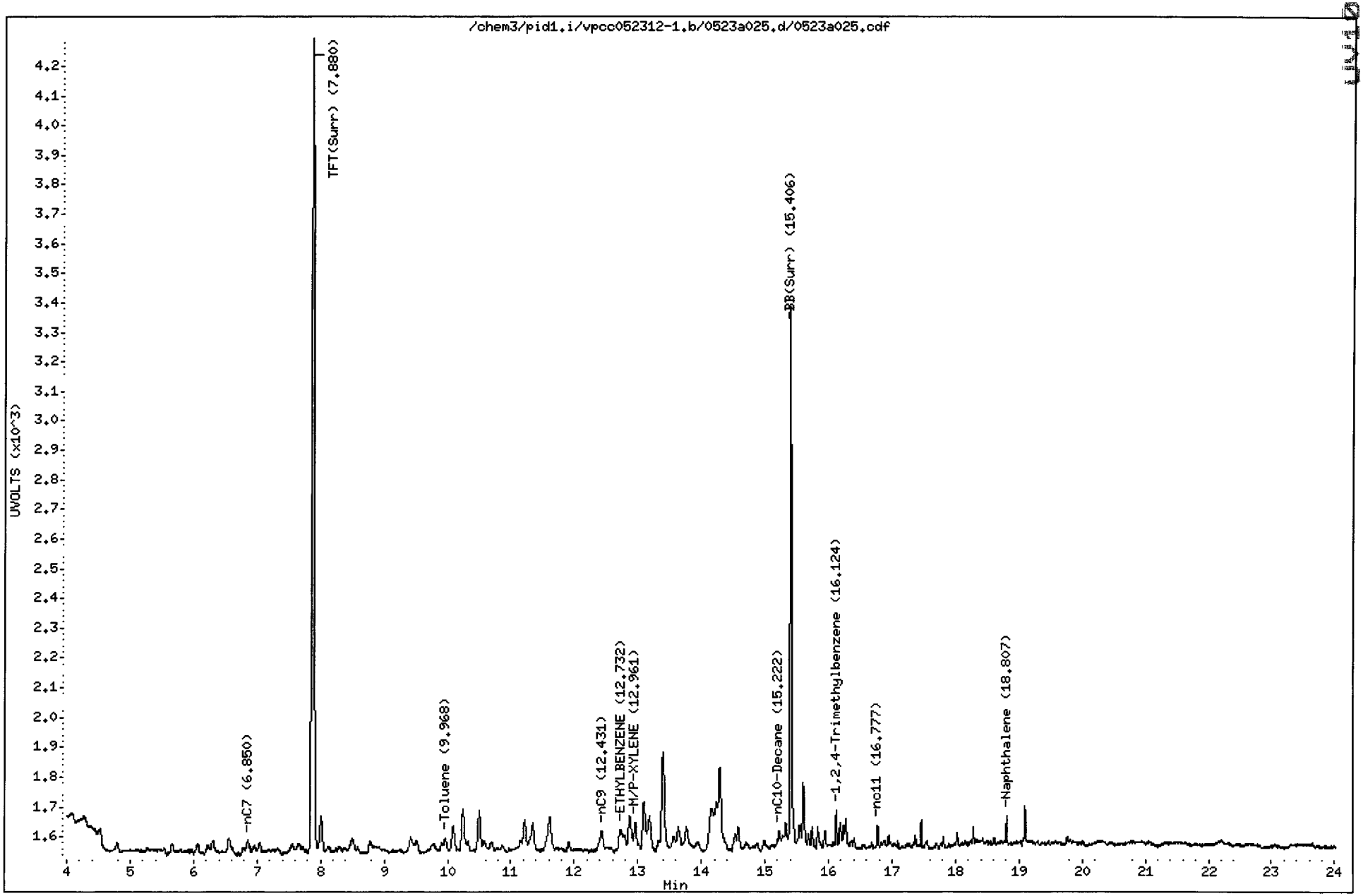
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV10 : 00135



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a025.d

Date : 23-MAY-2012 18:26

Client ID: USO-P4-E

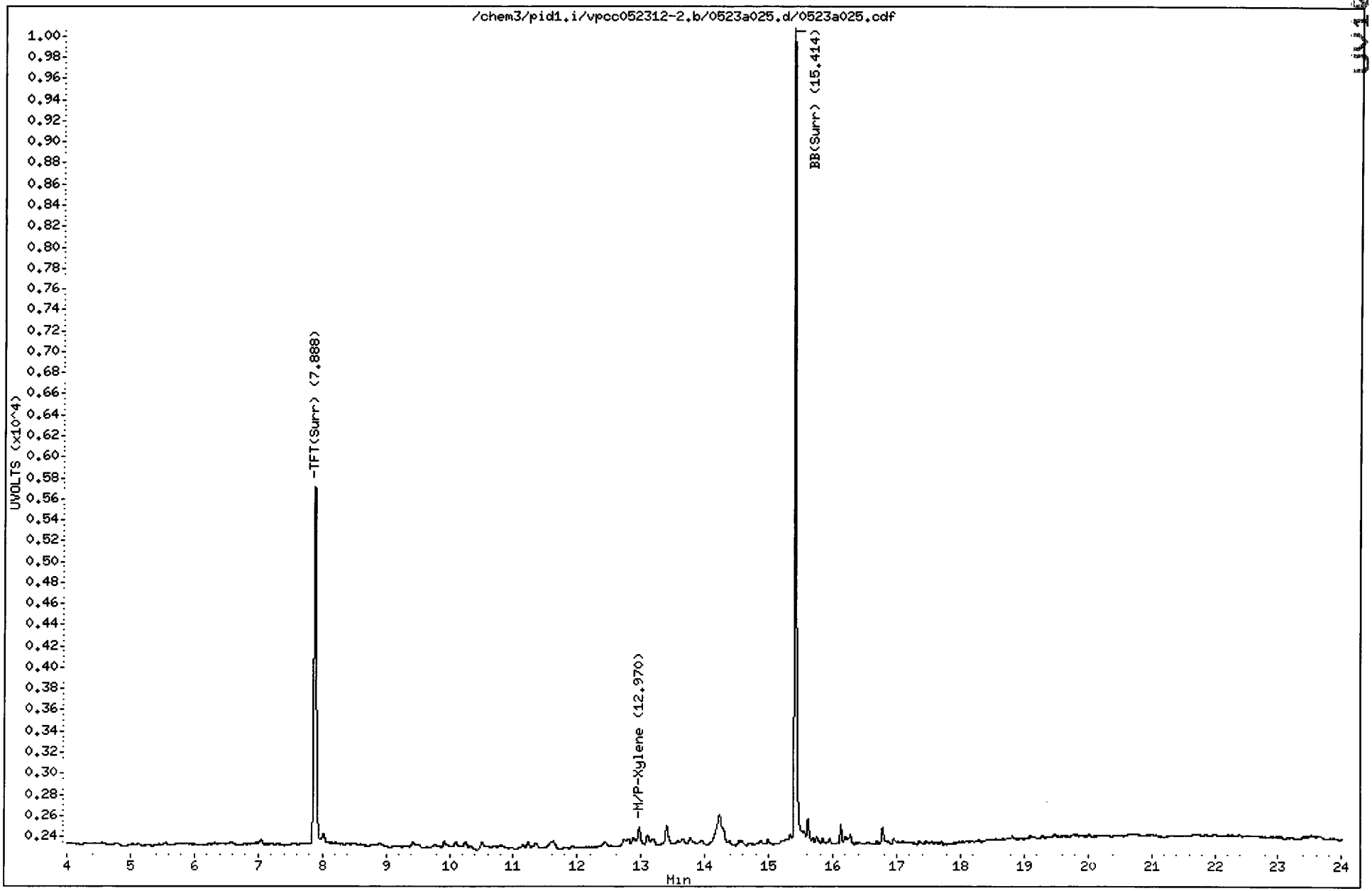
Instrument: pid1.i

Sample Info: UV10T

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV10
Matrix: Soil

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022

Client ID	BFB	TFT	BBZ	TOT OUT
MB-052212	NA	98.7%	95.8%	0
LCS-052212	NA	92.5%	89.6%	0
LCSD-052212	NA	96.8%	93.8%	0
USO-P1-A	NA	111%	186%*	1
USO-P1-A DL	NA	93.5%	123%	0
MB-052312	NA	92.6%	91.0%	0
LCS-052312	NA	89.5%	89.0%	0
LCSD-052312	NA	101%	96.0%	0
USO-P1-B	NA	105%	161%*	1
USO-P1-B DL	NA	95.1%	104%	0
MB-060112	NA	89.2%	90.9%	0
LCS-060112	NA	97.0%	93.7%	0
LCSD-060112	NA	96.9%	94.6%	0
USO-P1-C	NA	105%	154%*	1
USO-P1-C DL	NA	93.1%	101%	0
MB-053112	NA	94.6%	92.8%	0
LCS-053112	NA	99.1%	96.1%	0
LCSD-053112	NA	105%	99.4%	0
USO-P1-D	NA	97.8%	96.5%	0
USO-P1-E	NA	95.4%	96.1%	0
USO-P2-A	NA	108%	145%*	1
USO-P2-A DL	NA	98.6%	107%	0
USO-P2-B	NA	100%	140%*	1
USO-P2-B DL	NA	93.8%	99.5%	0
USO-P2-C	NA	101%	117%	0
USO-P2-C DL	NA	96.6%	101%	0
USO-P2-D	NA	92.8%	102%	0
USO-P2-E	NA	92.2%	94.1%	0
USO-P3-A	NA	103%	137%*	1
USO-P3-A DL	NA	92.8%	104%	0
USO-P3-B	NA	103%	124%	0
USO-P3-B DL	NA	93.8%	103%	0
USO-P3-C	NA	103%	110%	0
USO-P3-C DL	NA	92.4%	97.9%	0
USO-P3-D	NA	94.1%	96.4%	0
USO-P3-E	NA	95.9%	98.0%	0
USO-P4-A	NA	93.1%	99.1%	0
USO-P4-B	NA	91.1%	97.4%	0
USO-P4-C	NA	111%	0.0%*	1
USO-P4-C DL	NA	93.9%	98.0%	0
USO-P4-D	NA	93.7%	93.5%	0
USO-P4-E	NA	91.6%	94.7%	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(66-123)
(BBZ) = Bromobenzene	(80-120)	(62-130)

Log Number Range: 12-9171 to 12-9190

FORM II TPHG

UV10:00141

ANALYTICAL RESOURCES INCORPORATED

BETX SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV10
Matrix: Soil

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022

Client ID	TFT	BBZ	TOT OUT
MB-052212	99.4%	96.2%	0
LCS-052212	91.8%	89.0%	0
LCSD-052212	96.3%	93.9%	0
USO-P1-A	109%	131%	0
USO-P1-A DL	91.6%	98.3%	0
MB-052312	93.9%	92.5%	0
LCS-052312	92.8%	94.3%	0
LCSD-052312	102%	97.5%	0
USO-P1-B	105%	117%	0
USO-P1-B DL	93.2%	99.6%	0
MB-060112	90.4%	87.9%	0
LCS-060112	97.3%	93.0%	0
LCSD-060112	97.3%	92.9%	0
USO-P1-C	106%	111%	0
USO-P1-C DL	91.7%	95.9%	0
MB-053112	94.8%	93.2%	0
LCS-053112	99.3%	95.9%	0
LCSD-053112	105%	100%	0
USO-P1-D	98.4%	95.5%	0
USO-P1-E	98.9%	96.6%	0
USO-P2-A	105%	117%	0
USO-P2-A DL	99.8%	103%	0
USO-P2-B	99.8%	110%	0
USO-P2-B DL	94.8%	98.5%	0
USO-P2-C	101%	103%	0
USO-P2-C DL	98.1%	101%	0
USO-P2-D	94.2%	99.4%	0
USO-P2-E	93.2%	96.2%	0
USO-P3-A	100%	105%	0
USO-P3-A DL	94.3%	100%	0
USO-P3-B	101%	103%	0
USO-P3-B DL	94.6%	101%	0
USO-P3-C	102%	101%	0
USO-P3-C DL	95.1%	97.2%	0
USO-P3-D	94.3%	98.9%	0
USO-P3-E	97.9%	98.4%	0
USO-P4-A	94.0%	98.1%	0
USO-P4-B	91.2%	97.1%	0
USO-P4-C	120%	0.0%*	1
USO-P4-C DL	94.5%	99.1%	0
USO-P4-D	94.2%	111%	0
USO-P4-E	91.1%	94.4%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(68-124)
(BBZ) = Bromobenzene	(77-120)	(62-134)

Log Number Range: 12-9171 to 12-9190

FORM II BETX

UV10:00142

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-052212
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052212
LIMS ID: 12-9171
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/22/12 10:57
LCSD: 05/22/12 11:55
Instrument/Analyst LCS: PID1/MH
LCSD: PID1/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	44.4	50.0	88.8%	46.4	50.0	92.8%	4.4%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	92.5%	96.8%
Bromobenzene	89.6%	93.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-052212
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052212
LIMS ID: 12-9171
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/22/12 10:57
LCSD: 05/22/12 11:55
Instrument/Analyst LCS: PID1/MH
LCSD: PID1/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	172	185	93.0%	172	185	93.0%	0.0%
Toluene	1870	1980	94.4%	1920	1980	97.0%	2.6%
Ethylbenzene	536	580	92.4%	548	580	94.5%	2.2%
m,p-Xylene	1940	2120	91.5%	2010	2120	94.8%	3.5%
o-Xylene	887	960	92.4%	913	960	95.1%	2.9%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	91.8%	96.3%
Bromobenzene	89.0%	93.9%

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a007.d ARI ID: LCS0522
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a007.d Client ID:
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 11:55
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.876	0.000	2901	41092	96.8	TFT(Surr)
15.405	0.000	1816	15516	93.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	319465	0.936
8015C 2MP-TMB	(4.20 to 16.22)	678311	684283	1.009
AK101 nC6-nC10	(4.70 to 15.12)	538315	550908	1.023
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	333471	0.928

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	3569	96.3	TFT(Surr)
15.414	0.001	7657	93.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.049	0.001	857	3.44	Benzene
9.913	0.002	8385	38.41	Toluene
12.806	0.001	2120	10.96	Ethylbenzene
12.970	0.003	8630	40.19	M/P-Xylene
13.919	0.001	3068	18.26	O-Xylene
4.560	-0.006	191	2.27	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a007.d

Page 1

Date : 22-MAY-2012 11:55

Client ID:

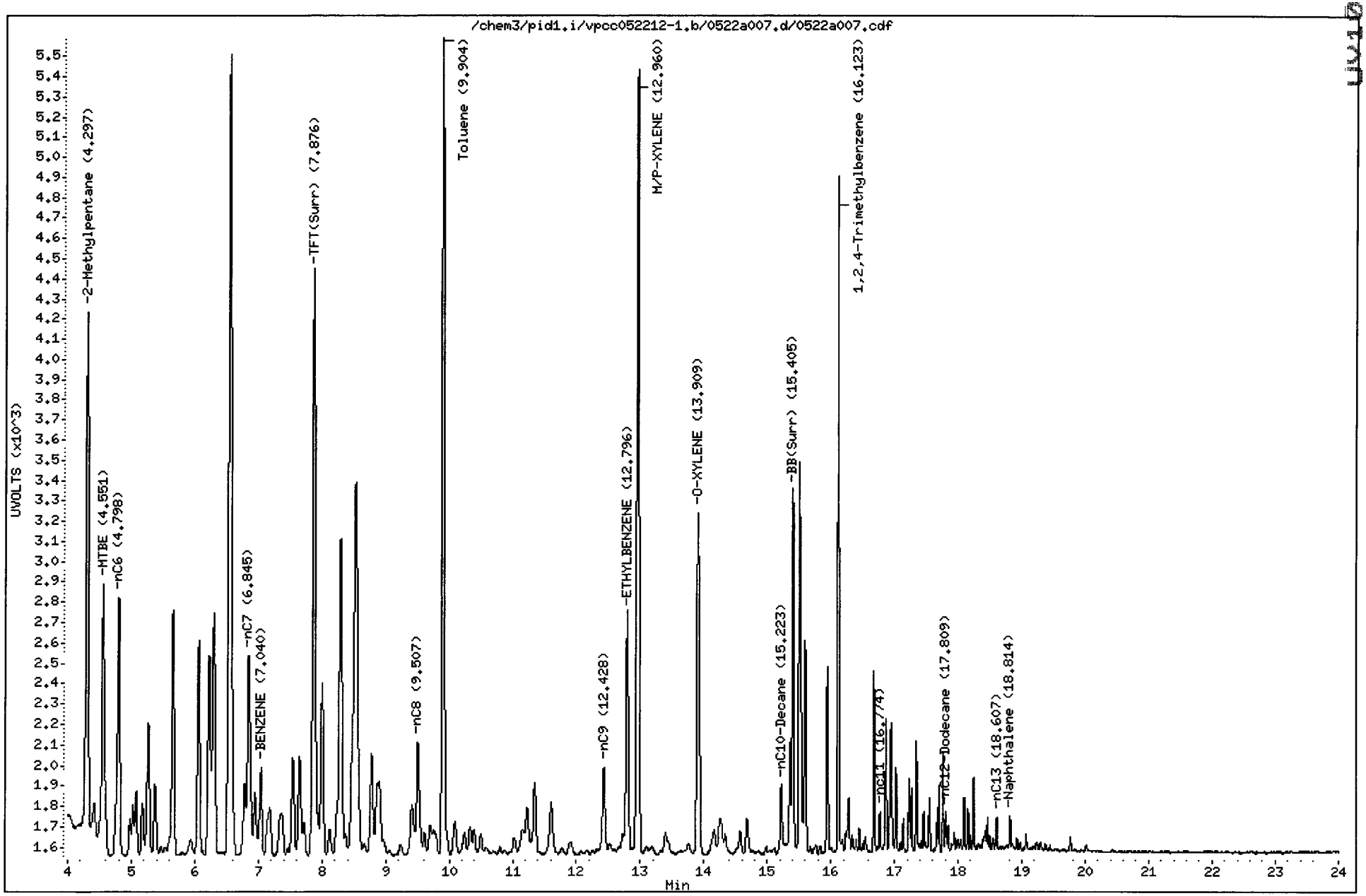
Instrument: pid1.i

Sample Info: LCS0522

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a007.d

Page 1

Date : 22-MAY-2012 11:55

Client ID:

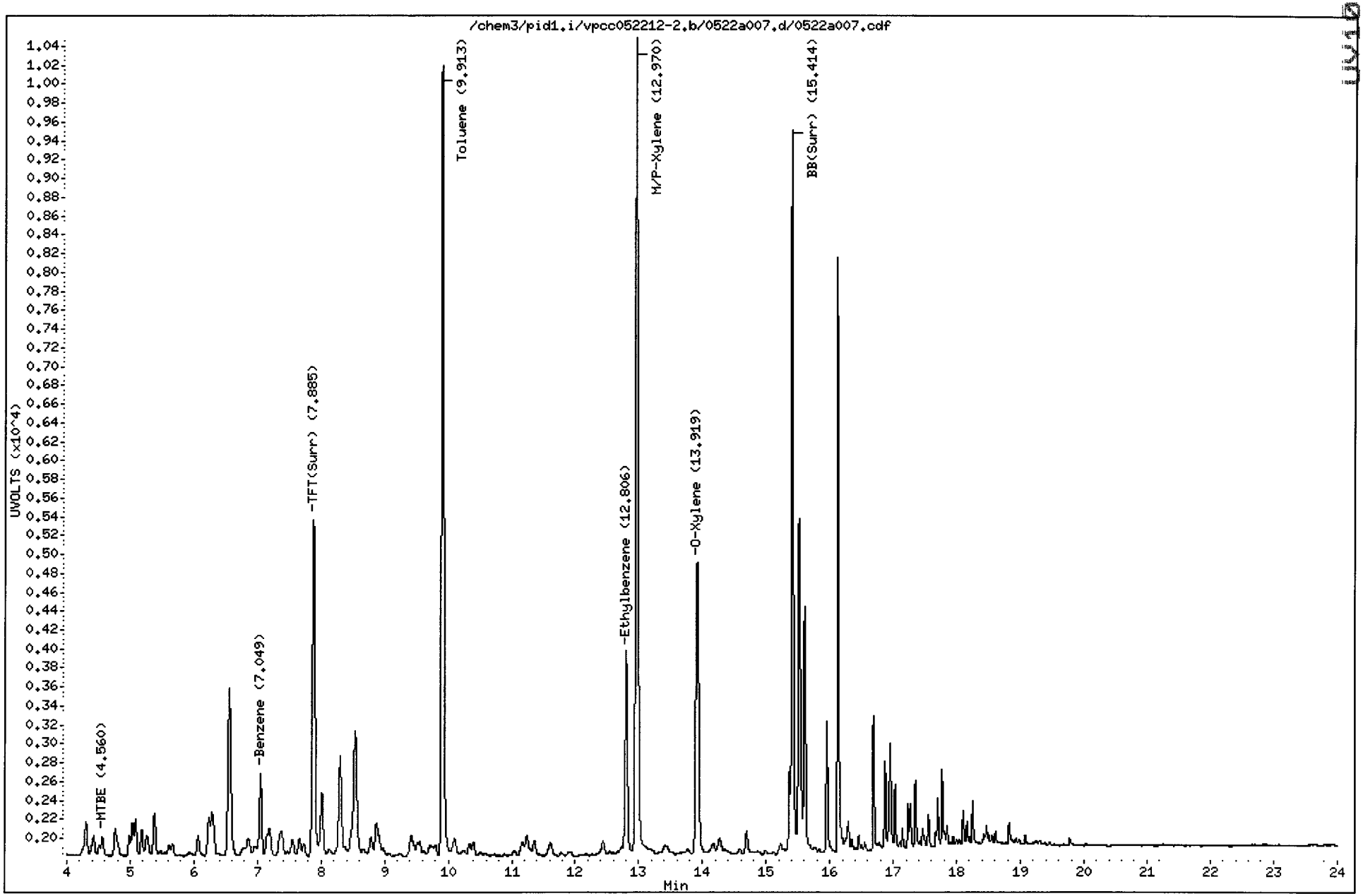
Instrument: pid1.i

Sample Info: LCS0522

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18



MH
5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a005.d ARI ID: LCSD0522
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a005.d Client ID:
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 10:57
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.001	2772	39214	92.5	TFT(Surr)
15.405	0.000	1734	14834	89.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	307259	0.901
8015C 2MP-TMB	(4.20 to 16.22)	678311	643936	0.949
AK101 nC6-nC10	(4.70 to 15.12)	538315	516980	0.960
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	319025	0.887

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.002	3404	91.8	TFT(Surr)
15.413	0.000	7261	89.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.048	0.001	861	3.45	Benzene
9.913	0.002	8173	37.44	Toluene
12.806	0.001	2072	10.71	Ethylbenzene
12.969	0.003	8339	38.83	M/P-Xylene
13.919	0.001	2980	17.74	O-Xylene
4.560	-0.006	180	2.14	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a005.d

Date : 22-MAY-2012 10:57

Client ID:

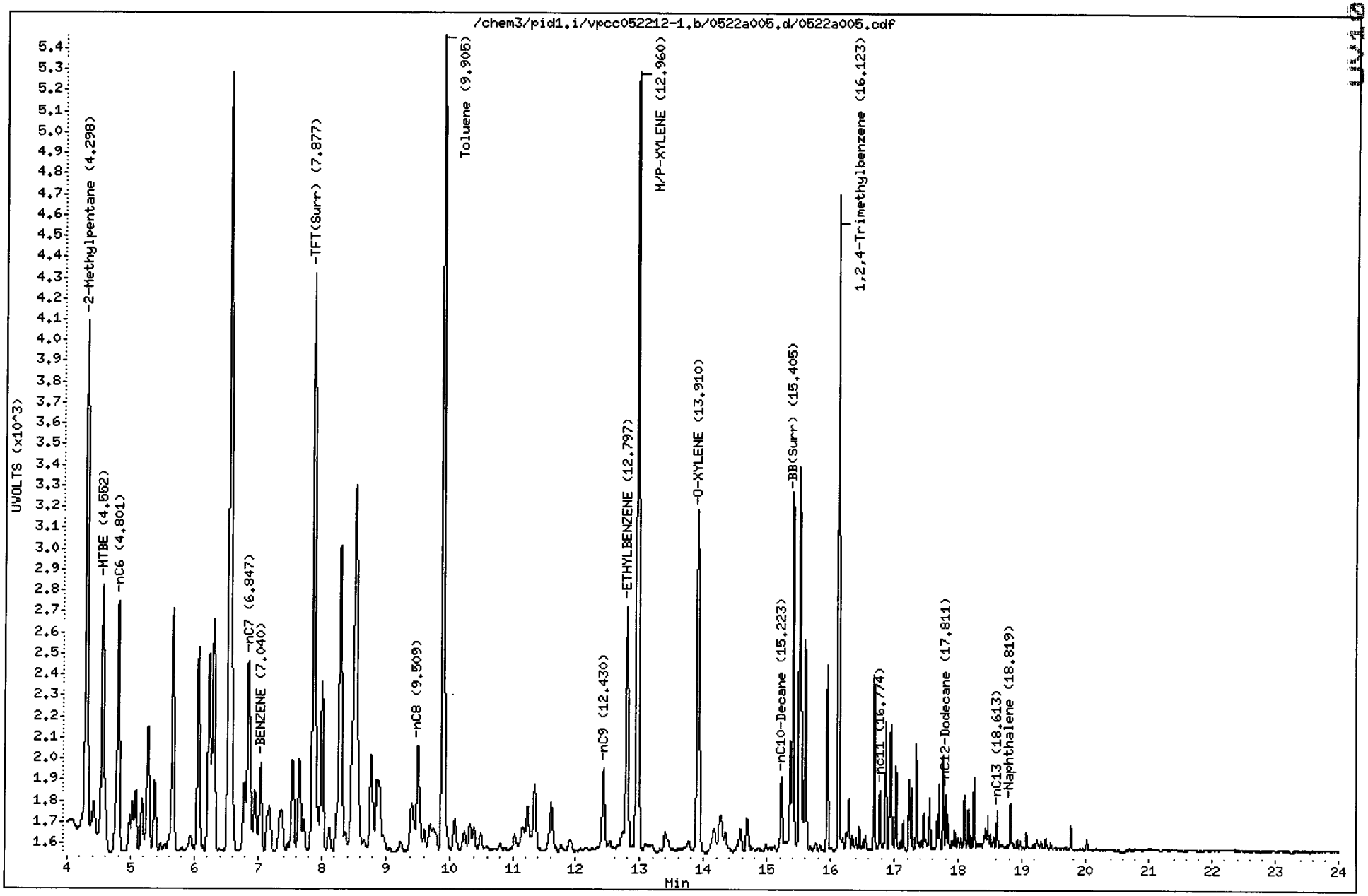
Sample Info: LCSD0522

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052212-2.b/0522a005.d

Page 1

Date : 22-MAY-2012 10:57

Client ID:

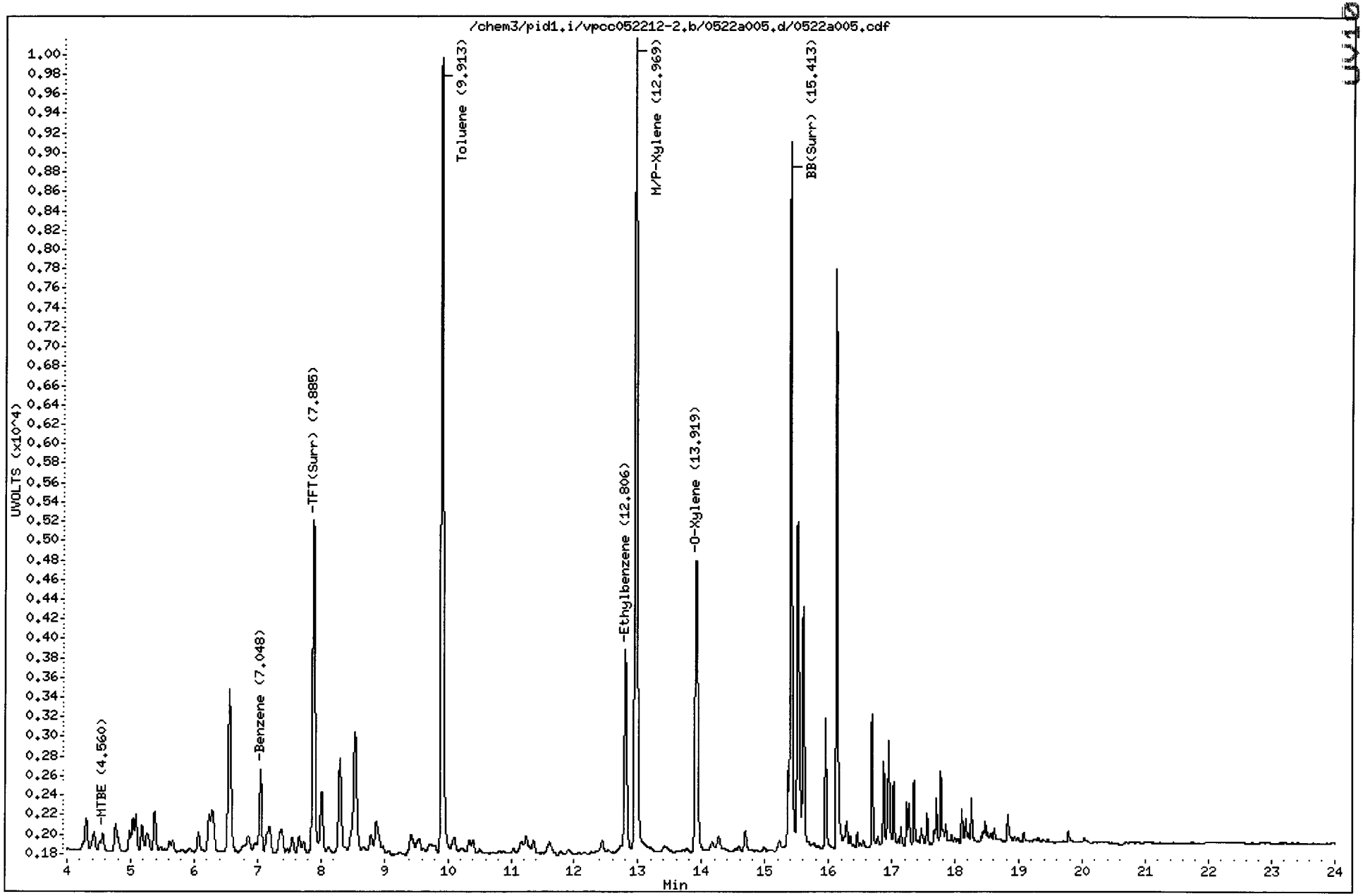
Instrument: pid1.i

Sample Info: LCSD0522

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18



UU10 : 001150

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-052312
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052312
LIMS ID: 12-9172
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/23/12 08:01
LCSD: 05/23/12 09:43
Instrument/Analyst LCS: PID1/MH
LCSD: PID1/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	47.6	50.0	95.2%	47.2	50.0	94.4%	0.8%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	89.5%	101%
Bromobenzene	89.0%	96.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-052312
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052312
LIMS ID: 12-9172
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/23/12 08:01
LCSD: 05/23/12 09:43
Instrument/Analyst LCS: PID1/MH
LCSD: PID1/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	174	185	94.1%	180	185	97.3%	3.4%
Toluene	1890	1980	95.5%	1990	1980	101%	5.2%
Ethylbenzene	539	580	92.9%	562	580	96.9%	4.2%
m,p-Xylene	1960	2120	92.5%	2050	2120	96.7%	4.5%
o-Xylene	910	960	94.8%	944	960	98.3%	3.7%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	92.8%	102%
Bromobenzene	94.3%	97.5%

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a004.d ARI ID: LCS0523
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a004.d Client ID:
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 08:01
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.002	5361	71701	~~179.0~~ 89.5	TFT(Surr)
15.405	0.000	3447	29241	~~178.1~~ 89.0	BB(Surr)

doble surr MH 5/31/12
"

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	325477	0.954
8015C 2MP-TMB	(4.20 to 16.22)	678311	672567	0.992
AK101 nC6-nC10	(4.70 to 15.12)	538315	541117	1.005
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	342781	0.953

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	6884	~~185.7~~ 92.8	TFT(Surr)
15.412	0.000	15380	~~188.6~~ 94.3	BB(Surr)

doble surr
"

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.049	0.000	870	3.49	Benzene
9.913	0.000	8273	37.89	Toluene
12.805	0.000	2086	10.78	Ethylbenzene
12.969	0.003	8408	39.16	M/P-Xylene
13.918	0.000	3056	18.19	O-Xylene
4.560	-0.009	190	2.26	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a004.d

Date : 23-MAY-2012 08:01

Client ID:

Sample Info: LCS0523

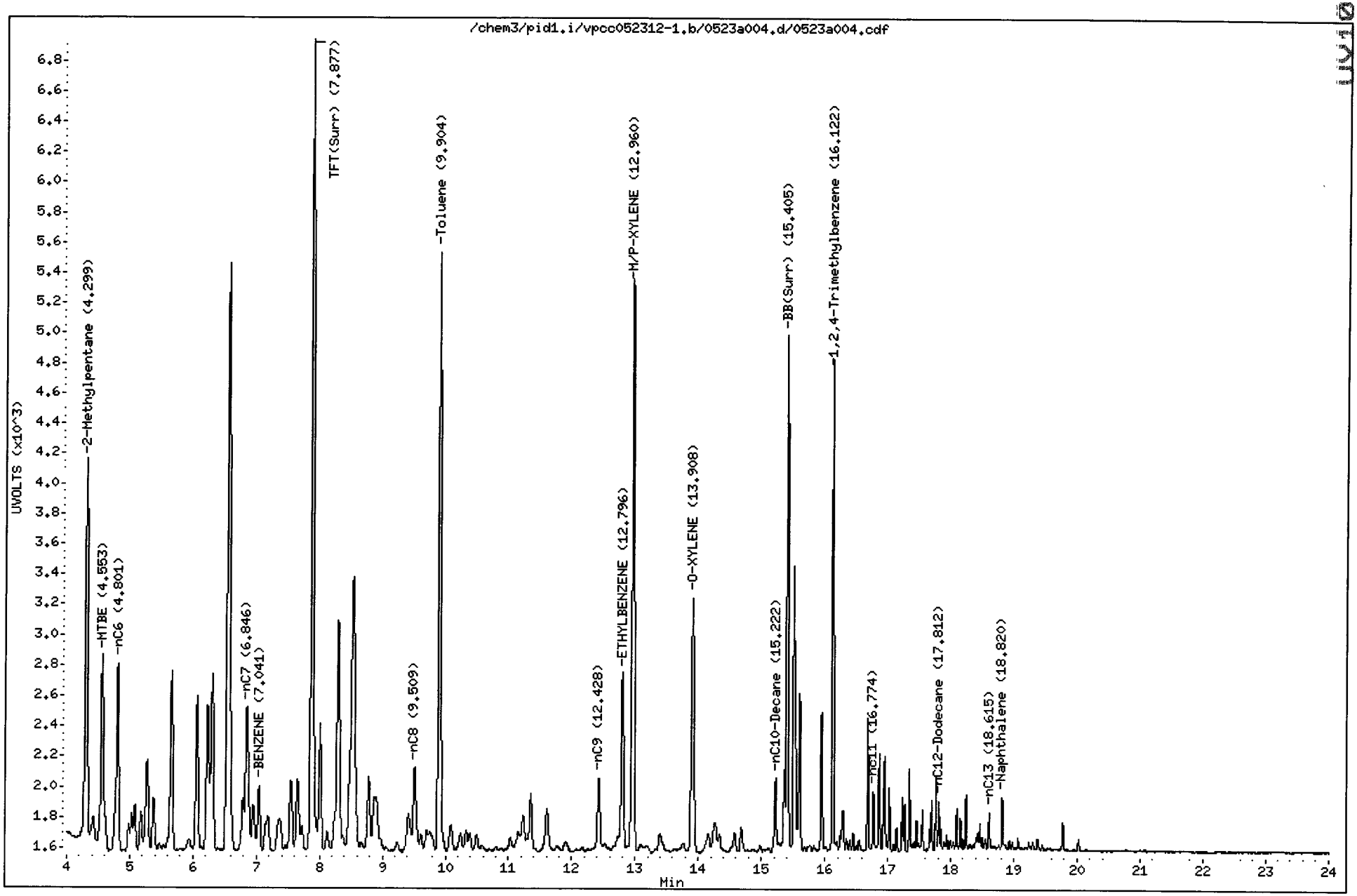
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

LV10:00154



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a004.d

Date : 23-MAY-2012 08:01

Client ID:

Sample Info: LCS0523

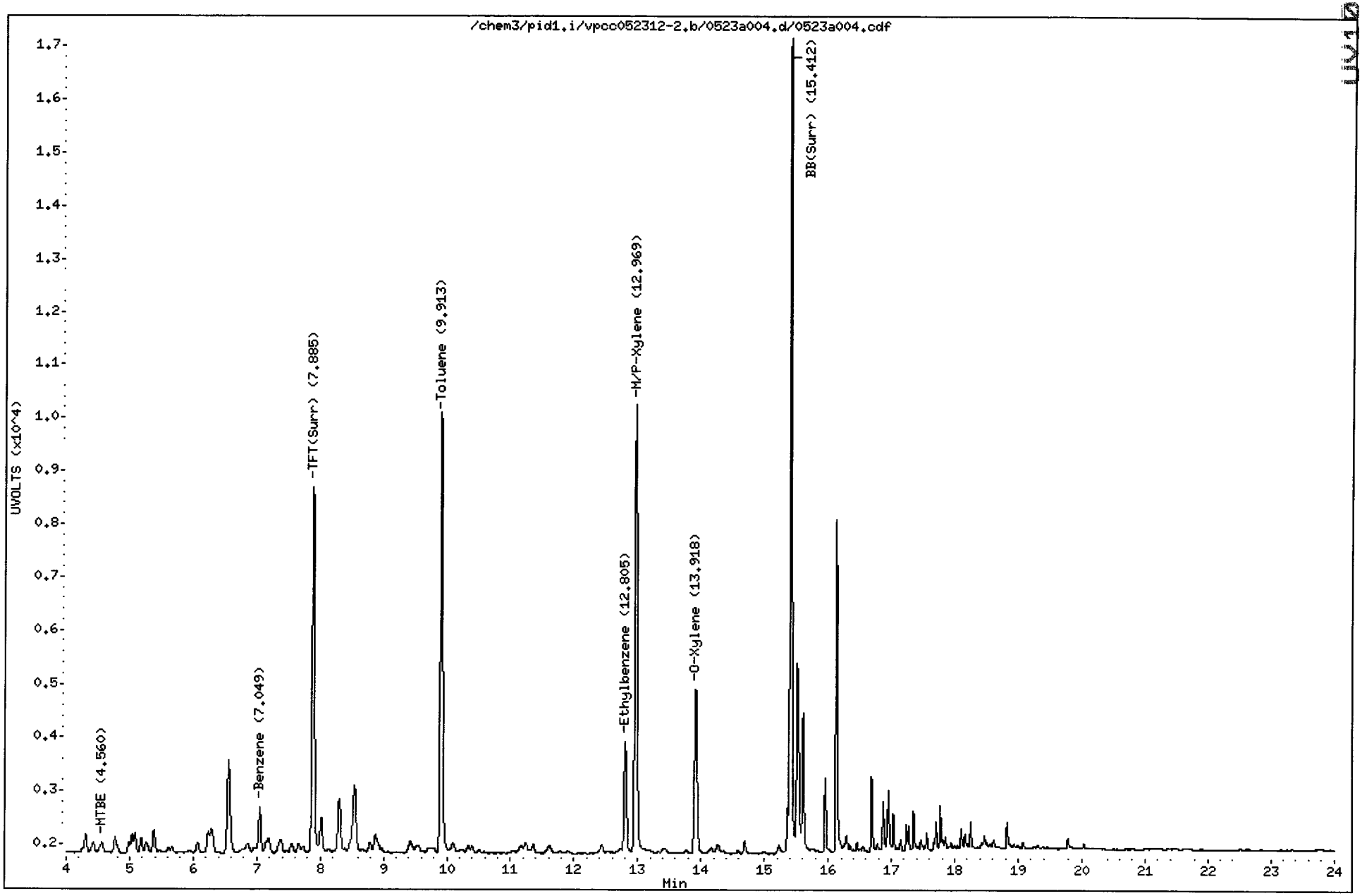
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

LV150155



MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a007.d ARI ID: LCSD0523
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a007.d Client ID:
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 09:43
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.876	0.001	3028	42342	101.1	TFT(Surr)
15.405	0.000	1858	15990	96.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	324288	0.950
8015C 2MP-TMB	(4.20 to 16.22)	678311	691846	1.020
AK101 nC6-nC10	(4.70 to 15.12)	538315	558972	1.038
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	339260	0.944

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	3782	102.0	TFT(Surr)
15.414	0.001	7951	97.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	0.002	897	3.60	Benzene
9.914	0.002	8686	39.78	Toluene
12.807	0.002	2175	11.24	Ethylbenzene
12.970	0.004	8810	41.03	M/P-Xylene
13.919	0.001	3170	18.87	O-Xylene
4.562	-0.007	217	2.58	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a007.d

Date : 23-MAY-2012 09:43

Client ID:

Sample Info: LCSD0523

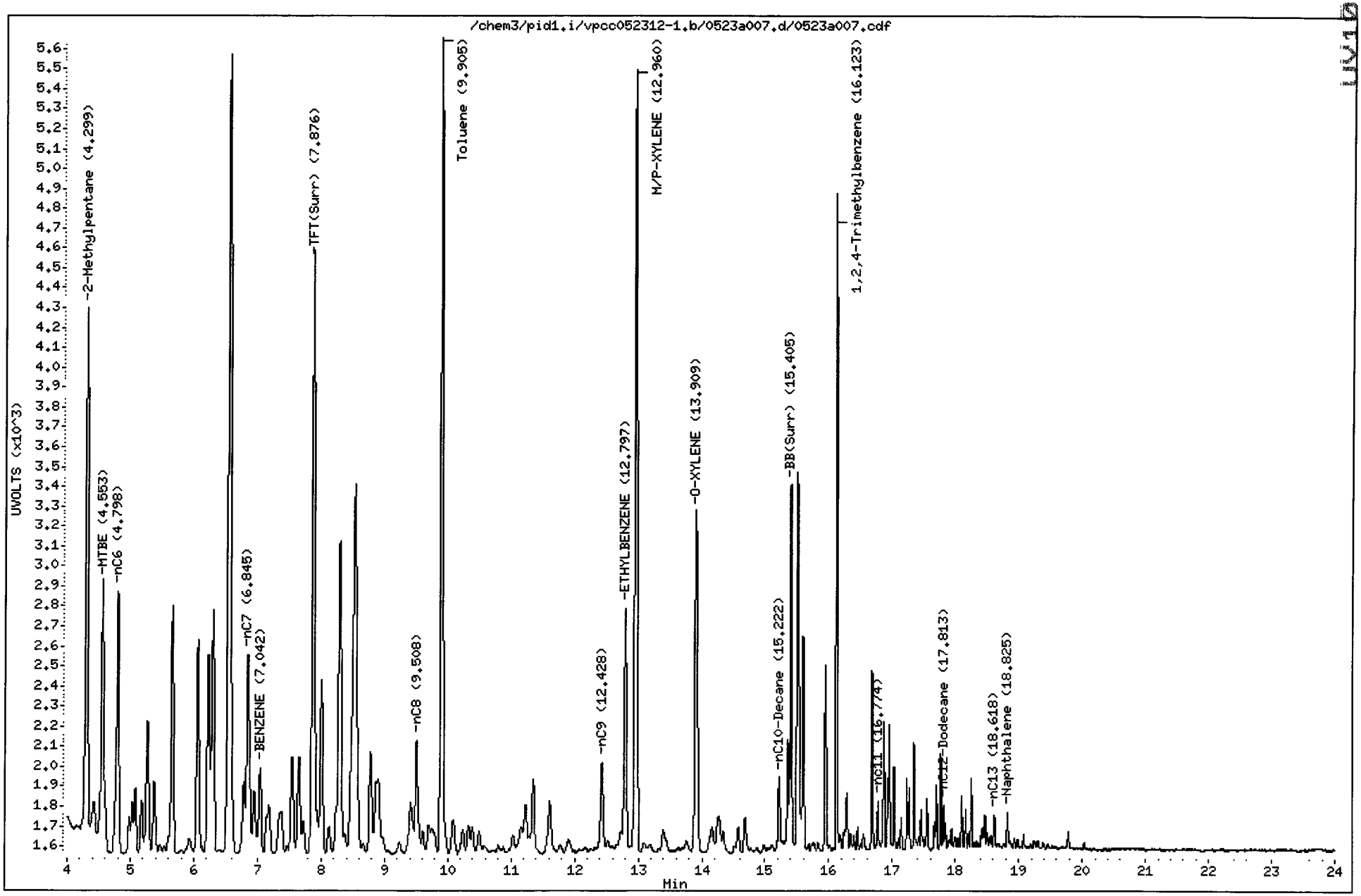
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

LV1 0 00157



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a007.d

Date : 23-MAY-2012 09:43

Client ID:

Sample Info: LCSD0523

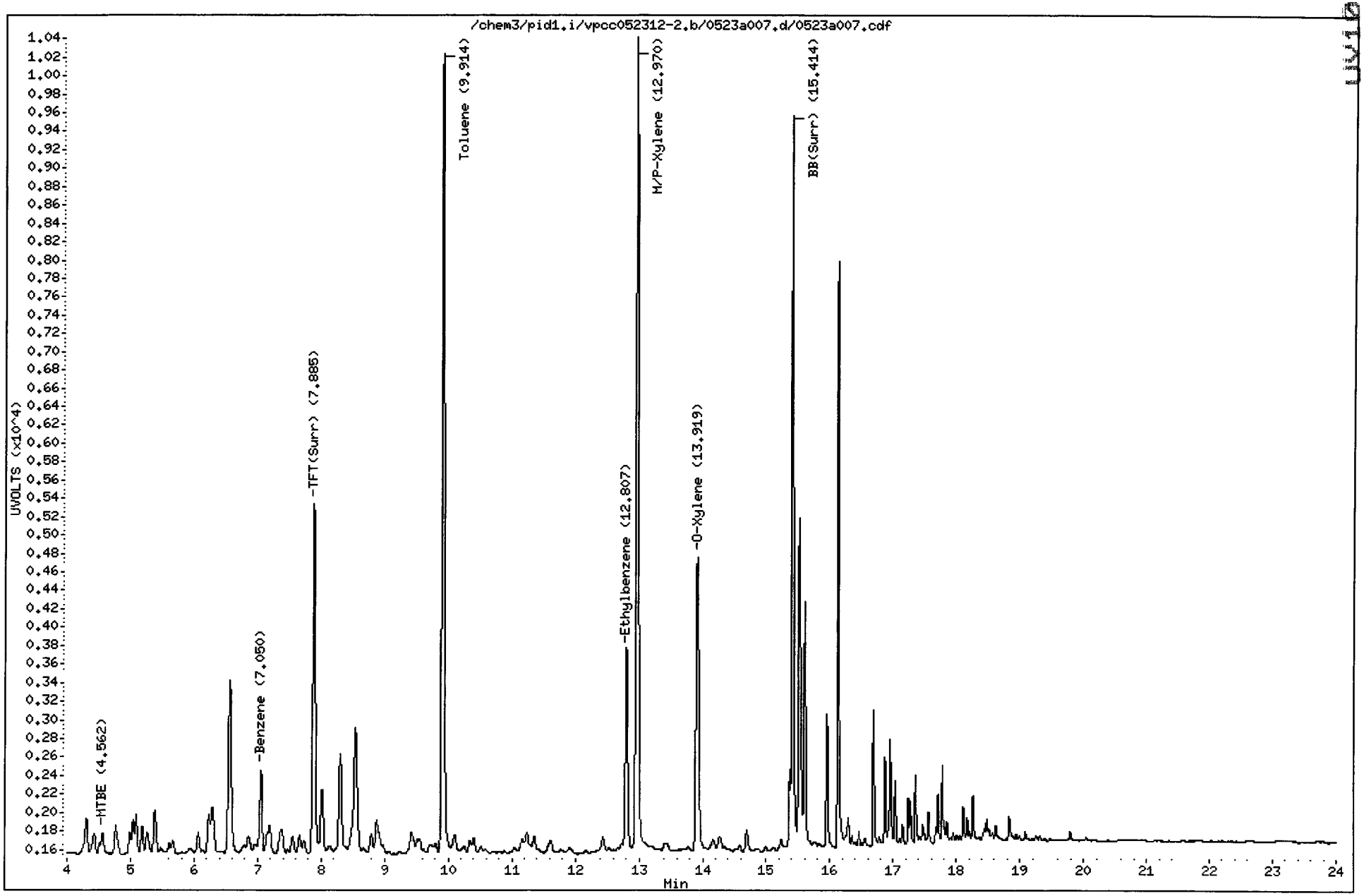
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

LVL10-001158



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9174
Matrix: Soil
Data Release Authorized:
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/MH
LCSD: PID2/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	45.2	50.0	90.4%	43.0	50.0	86.0%	5.0%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.1%	105%
Bromobenzene	96.1%	99.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9174
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/MH
LCSD: PID2/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	189	185	102%	190	185	103%	0.5%
Toluene	2030	1980	103%	2030	1980	103%	0.0%
Ethylbenzene	502	580	86.6%	500	580	86.2%	0.4%
m,p-Xylene	2070	2120	97.6%	2030	2120	95.8%	2.0%
o-Xylene	964	960	100%	940	960	97.9%	2.5%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.3%	105%
Bromobenzene	95.9%	100%

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a004.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a004.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0531
Client ID:
Injection Date: 31-MAY-2012 07:44
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.003	2941	42534	99.1	TFT(Surr)
14.863	0.000	1618	16617	96.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	292567	0.916
8015C 2MP-TMB	(3.76 to 15.78)	677374	661207	0.976
AK101 nC6-nC10	(4.21 to 14.52)	544975	525247	0.964
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	298883	0.904

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	12303	99.3	TFT(Surr)
14.881	0.000	17123	95.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.472	-0.003	3297	3.78	Benzene
9.244	-0.002	22366	40.63	Toluene
12.093	-0.001	4830	10.03	Ethylbenzene
12.254	0.002	19251	41.32	M/P-Xylene
13.159	-0.001	7309	19.27	O-Xylene
4.103	-0.030	825	2.58	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a004.d

Date : 31-MAY-2012 07:44

Client ID:

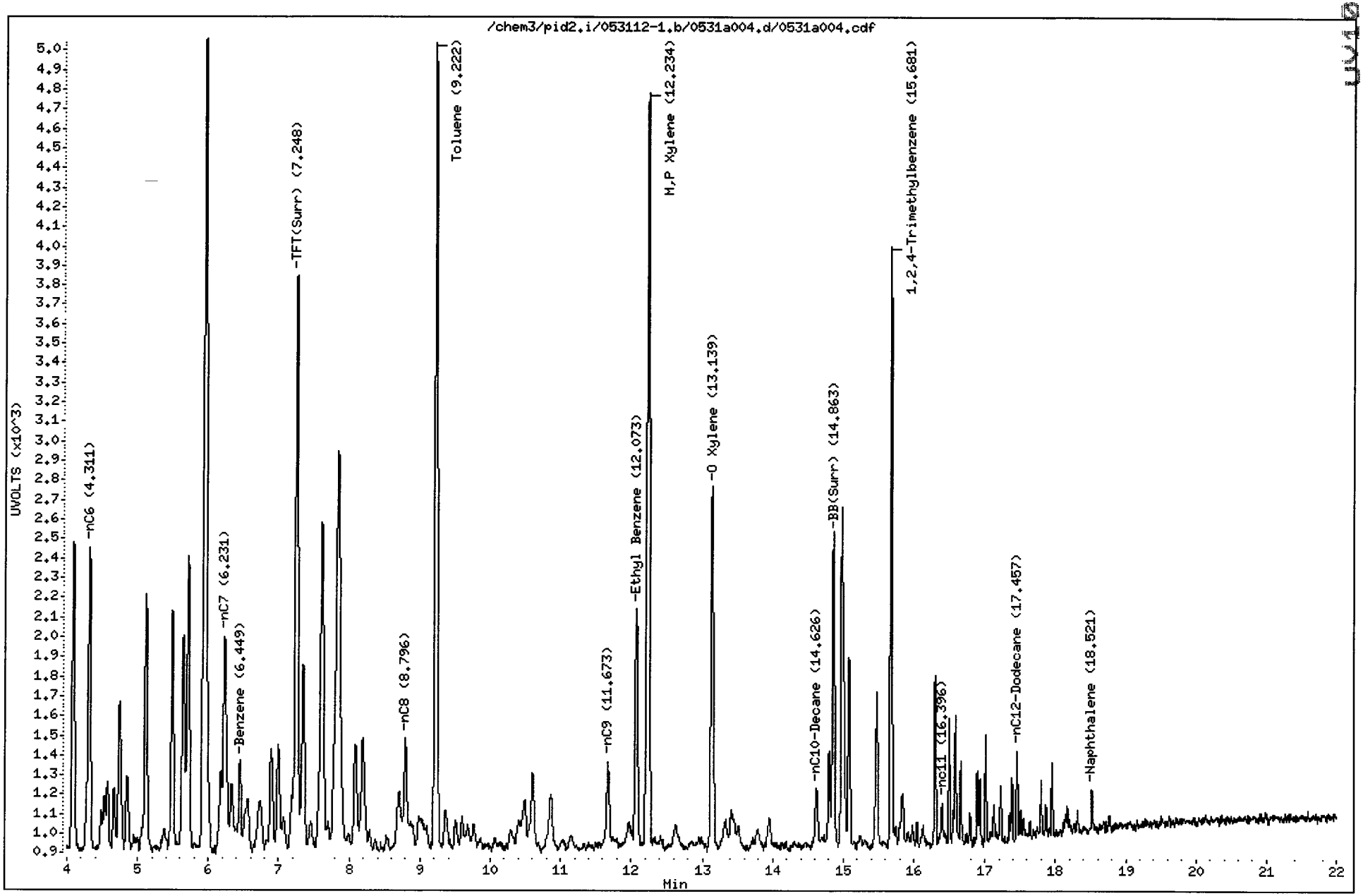
Sample Info: LCS0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a004.d

Date : 31-MAY-2012 07:44

Client ID:

Sample Info: LCS0531

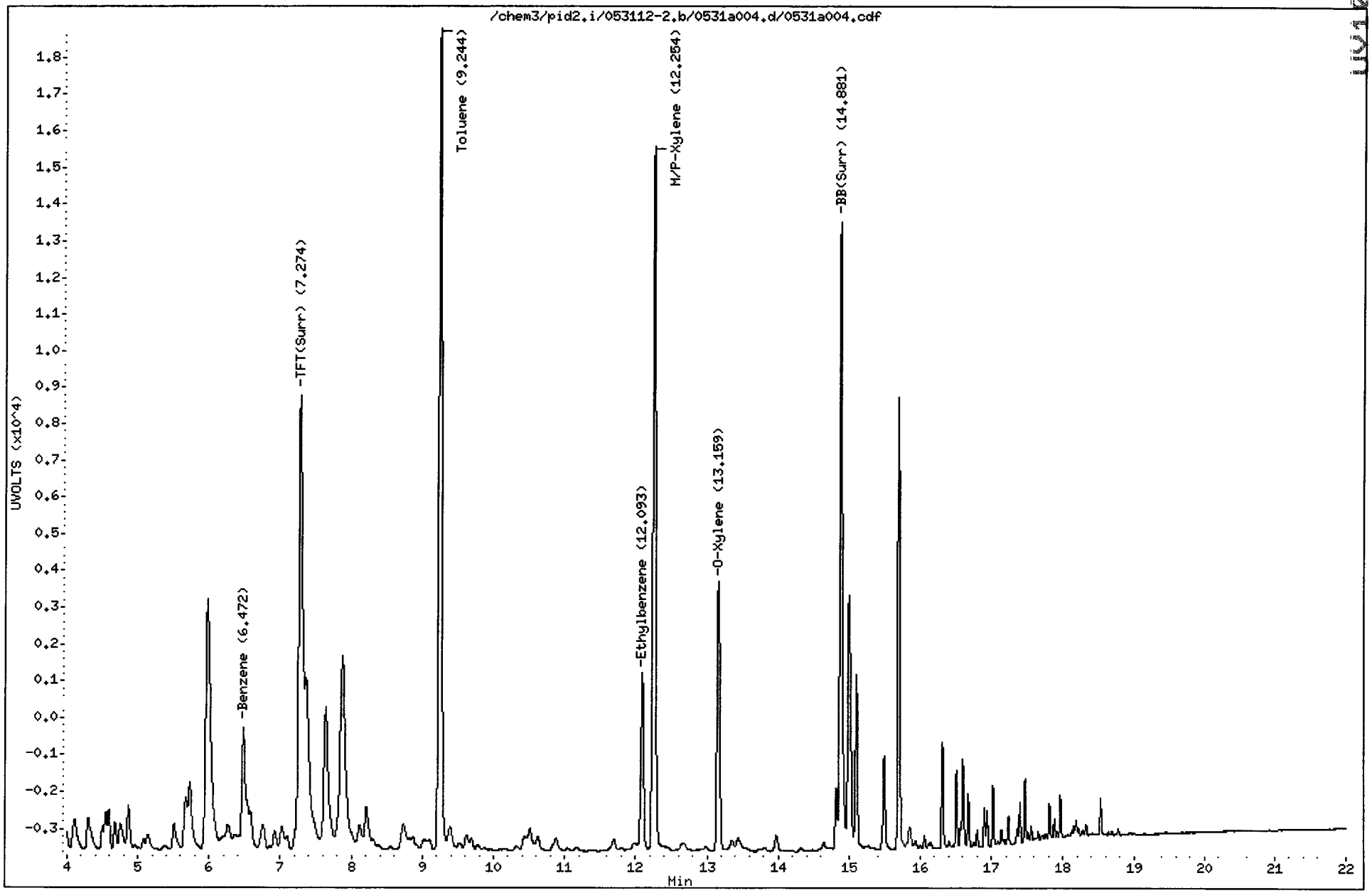
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

LV160163



MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a005.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a005.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0531
Client ID:
Injection Date: 31-MAY-2012 08:12
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.253	0.002	3112	45221	104.8	TFT(Surr)
14.863	0.000	1675	17104	99.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	278614	0.873
8015C 2MP-TMB	(3.76 to 15.78)	677374	676197	0.998
AK101 nC6-nC10	(4.21 to 14.52)	544975	541818	0.994
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	284518	0.860

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.279	0.002	12987	104.8	TFT(Surr)
14.882	0.000	17861	100.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.476	0.000	3322	3.81	Benzene
9.248	0.002	22340	40.59	Toluene
12.094	0.000	4809	9.99	Ethylbenzene
12.256	0.004	18910	40.58	M/P-Xylene
13.161	0.001	7131	18.80	O-Xylene
4.107	-0.026	800	2.50	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

Sample Info: LCSD0531

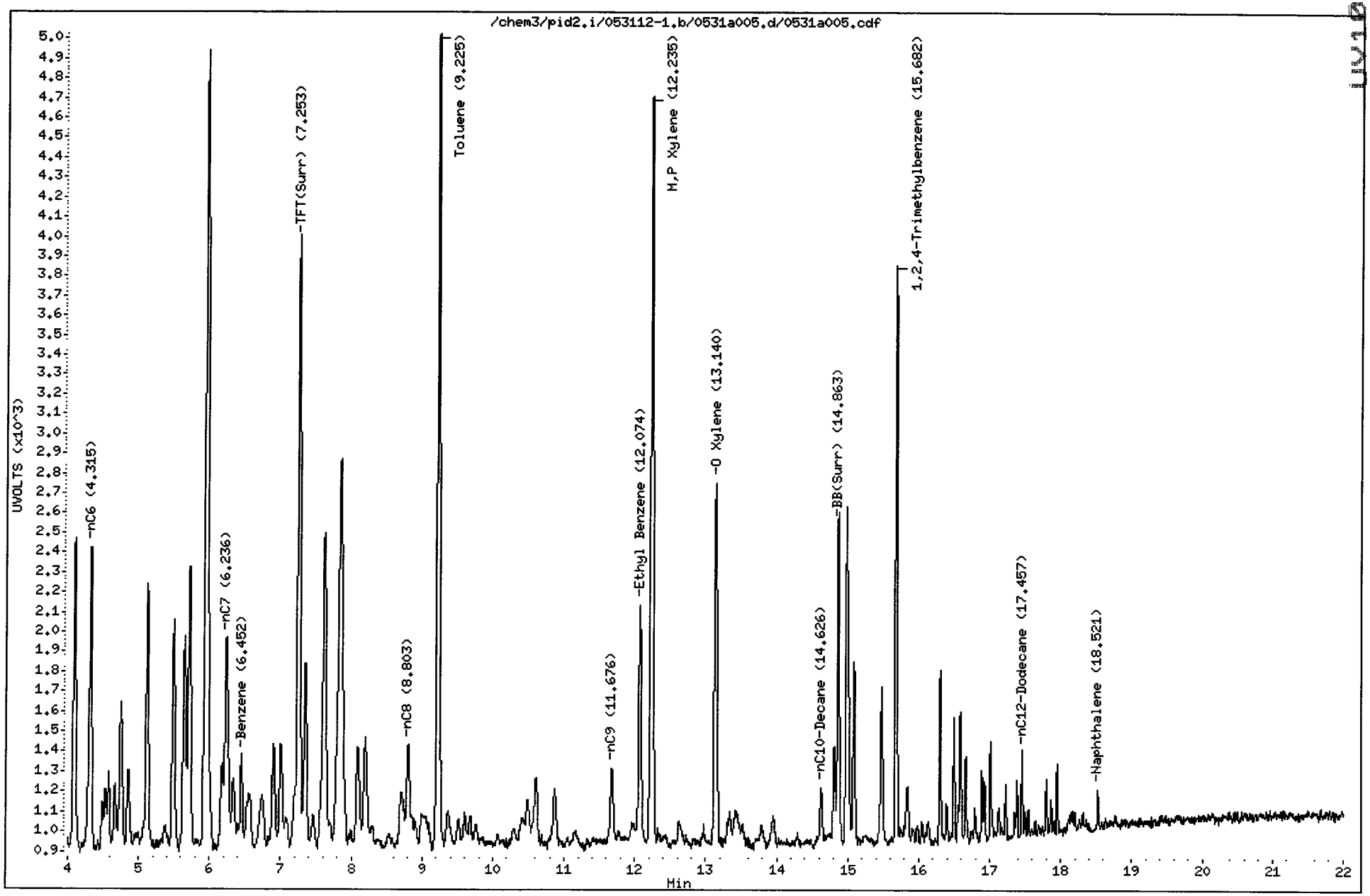
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

LV10 00165



Data File: /chem3/pid2.i/053112-2.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

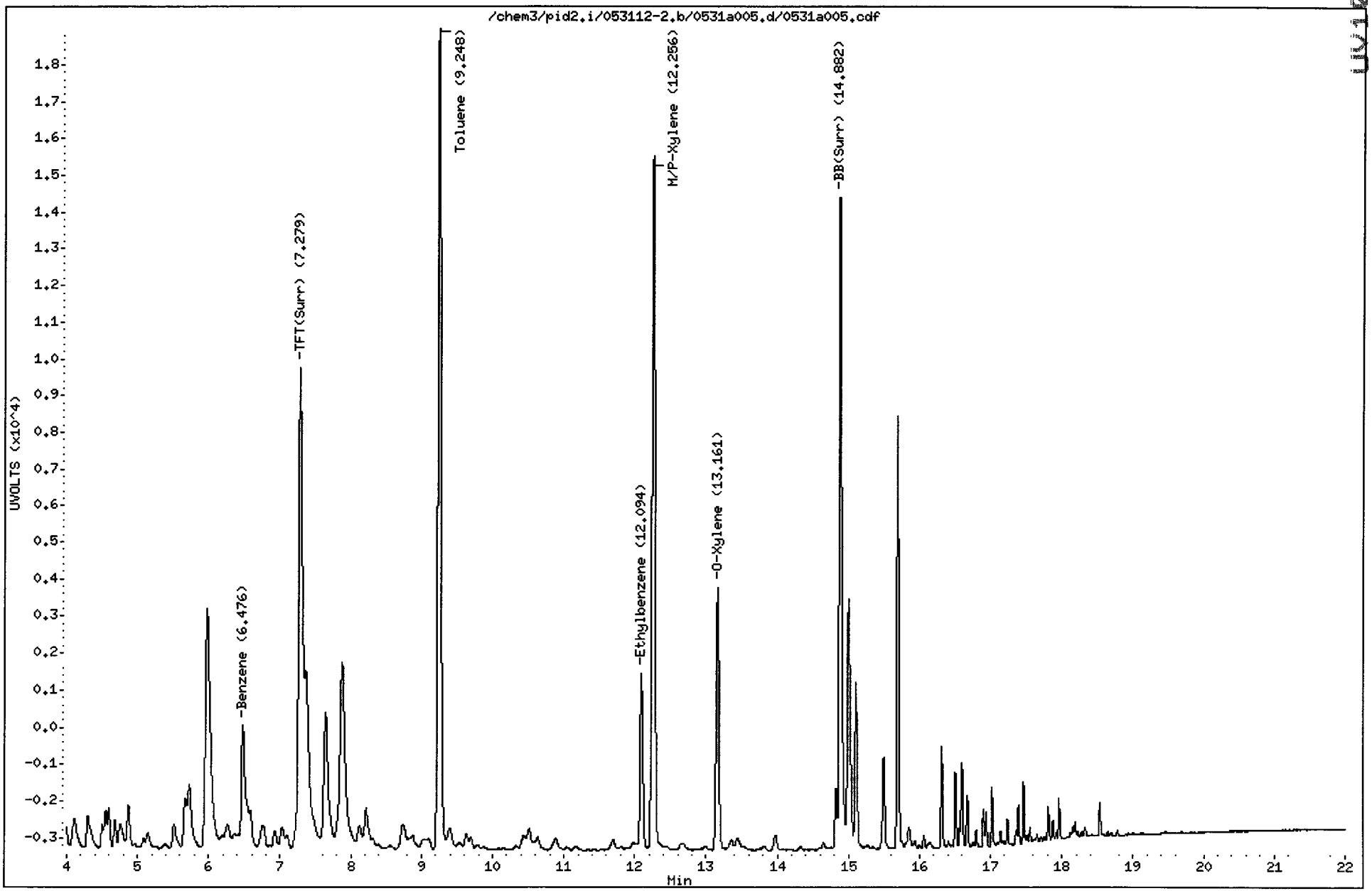
Sample Info: LCSD0531

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-060112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-060112
LIMS ID: 12-9173
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 06/01/12 08:04
LCSD: 06/01/12 08:33
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	50.0	50.0	100%	47.8	50.0	95.6%	4.5%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.0%	96.9%
Bromobenzene	93.7%	94.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-060112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-060112
LIMS ID: 12-9173
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 06/01/12 08:04
LCSD: 06/01/12 08:33
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	172	185	93.0%	170	185	91.9%	1.2%
Toluene	1810	1980	91.4%	1790	1980	90.4%	1.1%
Ethylbenzene	446	580	76.9%	440	580	75.9%	1.4%
m,p-Xylene	1820	2120	85.8%	1780	2120	84.0%	2.2%
o-Xylene	842	960	87.7%	830	960	86.5%	1.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.3%	97.3%
Bromobenzene	93.0%	92.9%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a004.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a004.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0601
Client ID:
Injection Date: 01-JUN-2012 08:04
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.245	0.000	2879	42309	97.0	TFT(Surr)
14.854	-0.001	1578	16740	93.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	316112	0.990 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	680498	1.005 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	548924	1.007 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	330242	0.999 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.270	0.000	12054	97.3	TFT(Surr)
14.872	-0.001	16606	93.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.470	-0.001	2993	3.44	Benzene
9.238	0.000	19889	36.13	Toluene
12.083	-0.001	4291	8.91	Ethylbenzene
12.245	0.002	16953	36.38	M/P-Xylene
13.150	-0.001	6382	16.83	O-Xylene
ND	---	---	---	MTBE

JW 6/12/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.1/060112-1.b/0601a004.d

Date : 01-JUN-2012 08:04

Client ID:

Sample Info: LCS0601

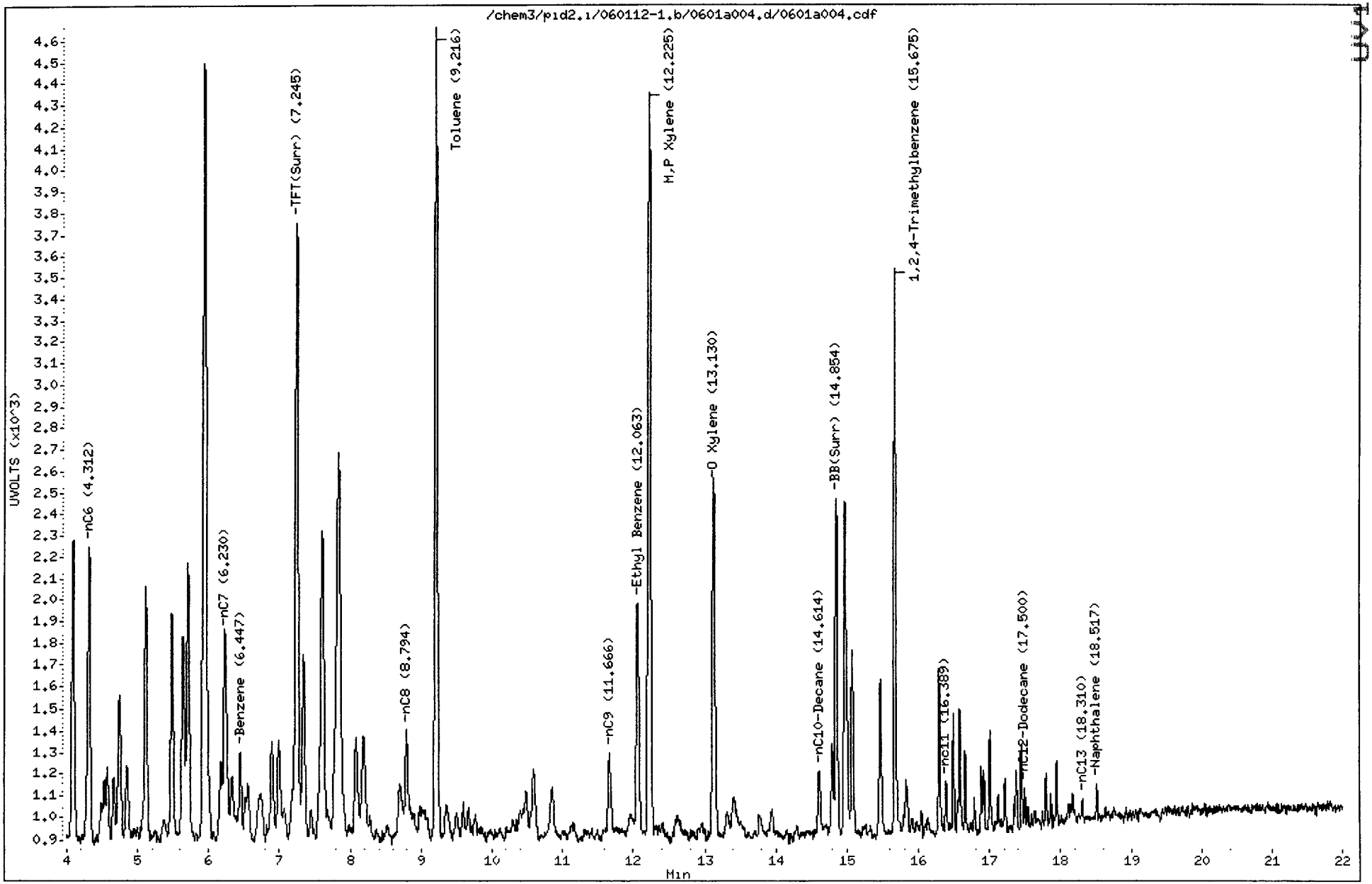
Column phase: RTX 502-2 FID

Instrument: pid2.1

Operator: MH

Column diameter: 0.18

UV10:001170



Data File: /chem3/pid2.i/060112-2.b/0601a004.d

Date : 01-JUN-2012 08:04

Client ID:

Sample Info: LCS0601

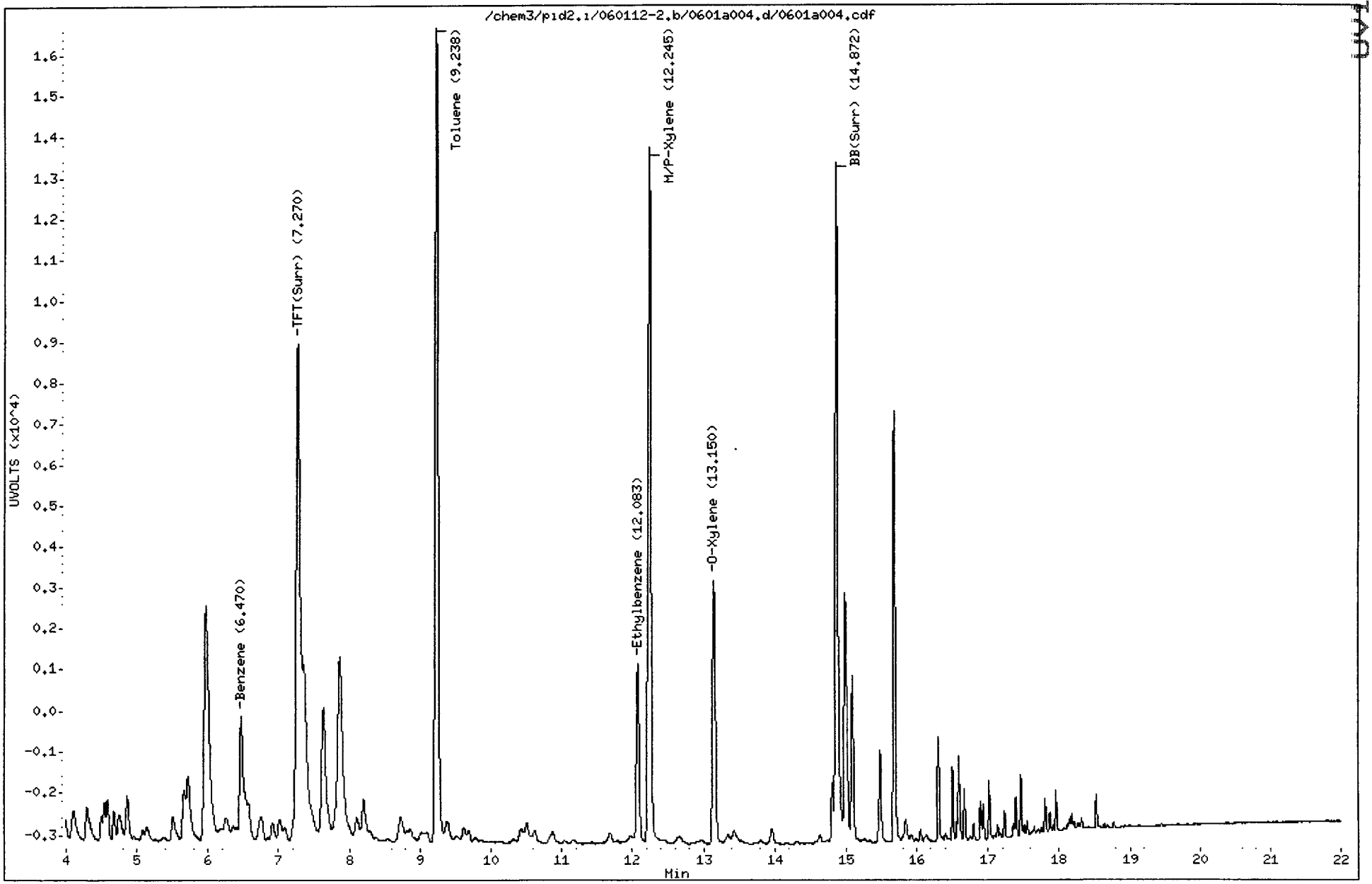
Column phase: RTX 502-2 PID

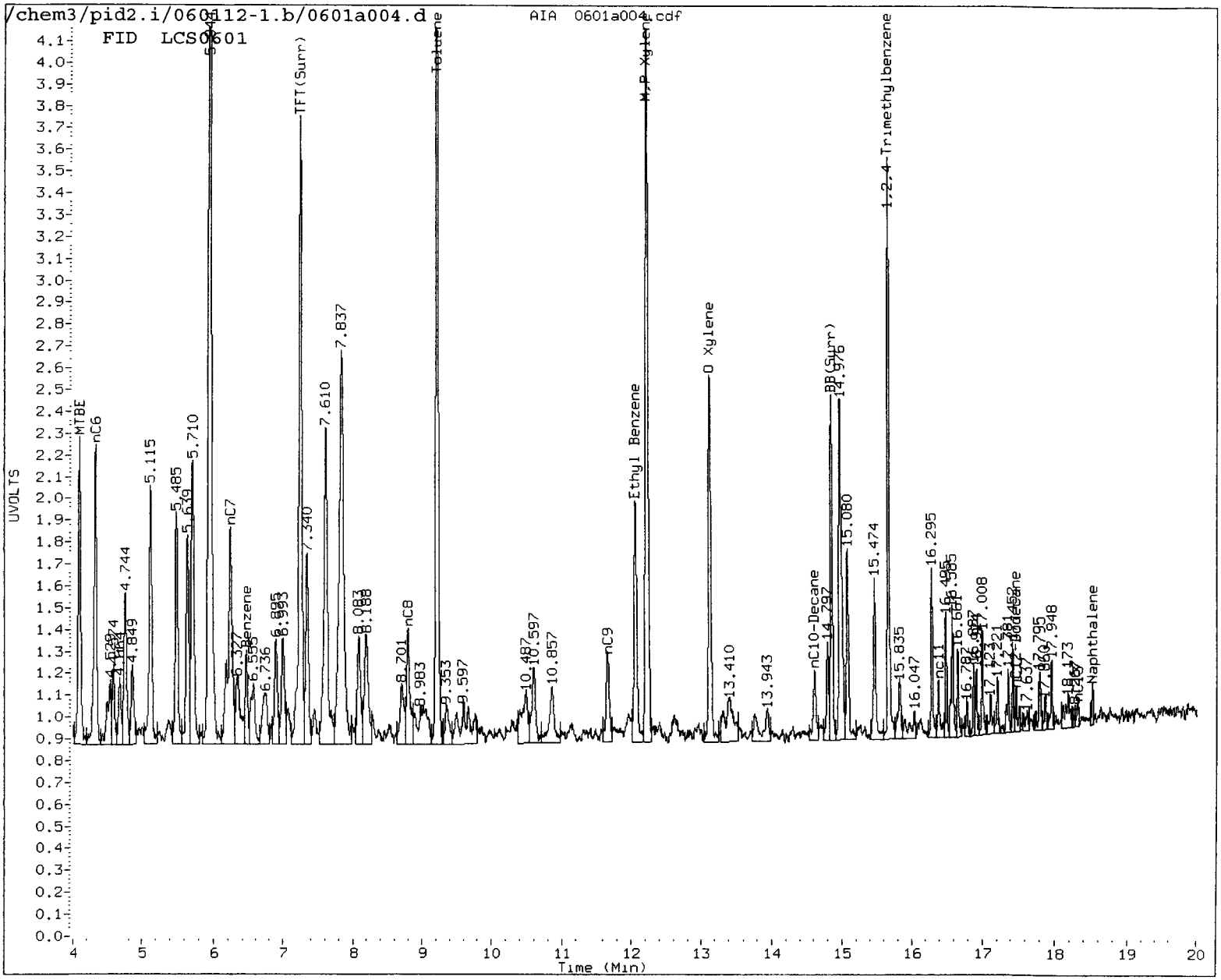
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

L1009 07/17/12





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a005.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a005.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0601
Client ID:
Injection Date: 01-JUN-2012 08:33
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.245	-0.001	2876	41860	96.9	TFT(Surr)
14.854	-0.001	1594	16915	94.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	305699	0.958 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	649165	0.958 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	518002	0.951 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	316056	0.956 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.270	-0.001	12049	97.3	TFT(Surr)
14.872	-0.001	16590	92.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.469	-0.001	2968	3.41	Benzene
9.238	0.000	19726	35.84	Toluene
12.083	-0.001	4233	8.79N	Ethylbenzene
12.245	0.001	16569	35.56	M/P-Xylene
13.150	-0.002	6293	16.59	O-Xylene
ND	---	---	---	MTBE

JW 6/12/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a005.d

Date : 01-JUN-2012 08:33

Client ID:

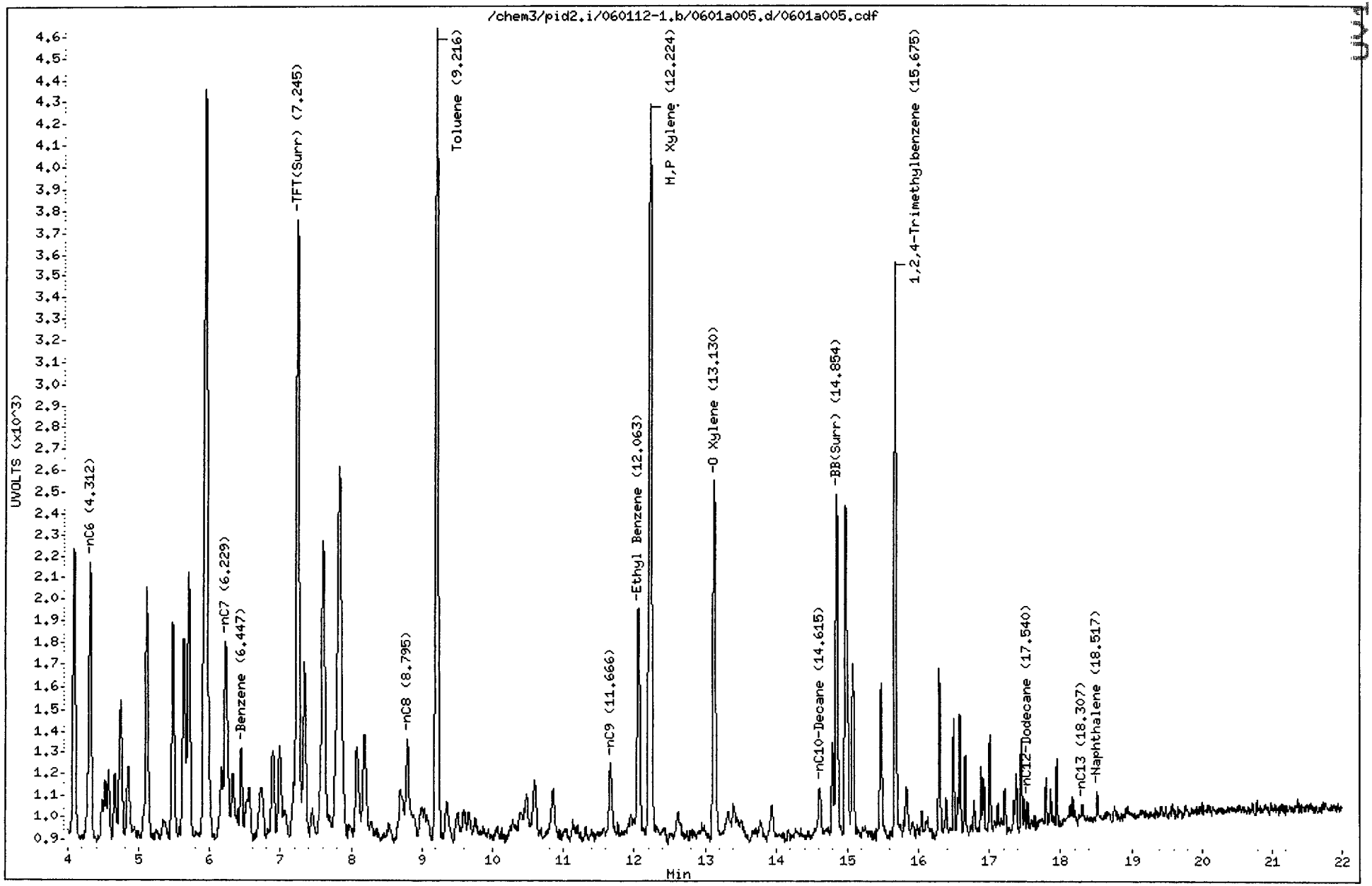
Sample Info: LCSD0601

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/060112-2.b/0601a005.d

Date : 01-JUN-2012 08:33

Client ID:

Sample Info: LCSD0601

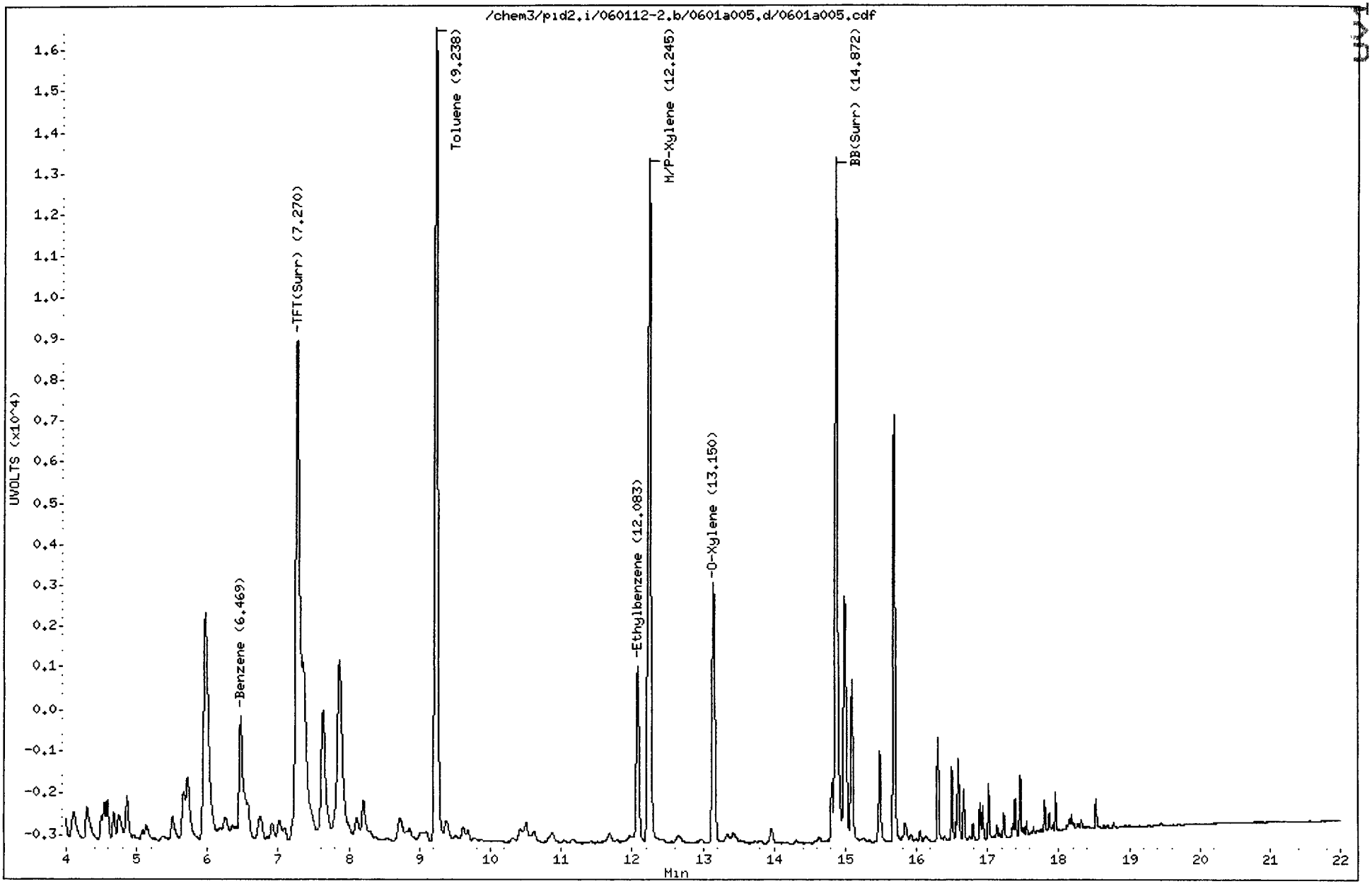
Column phase: RTX 502-2 PID

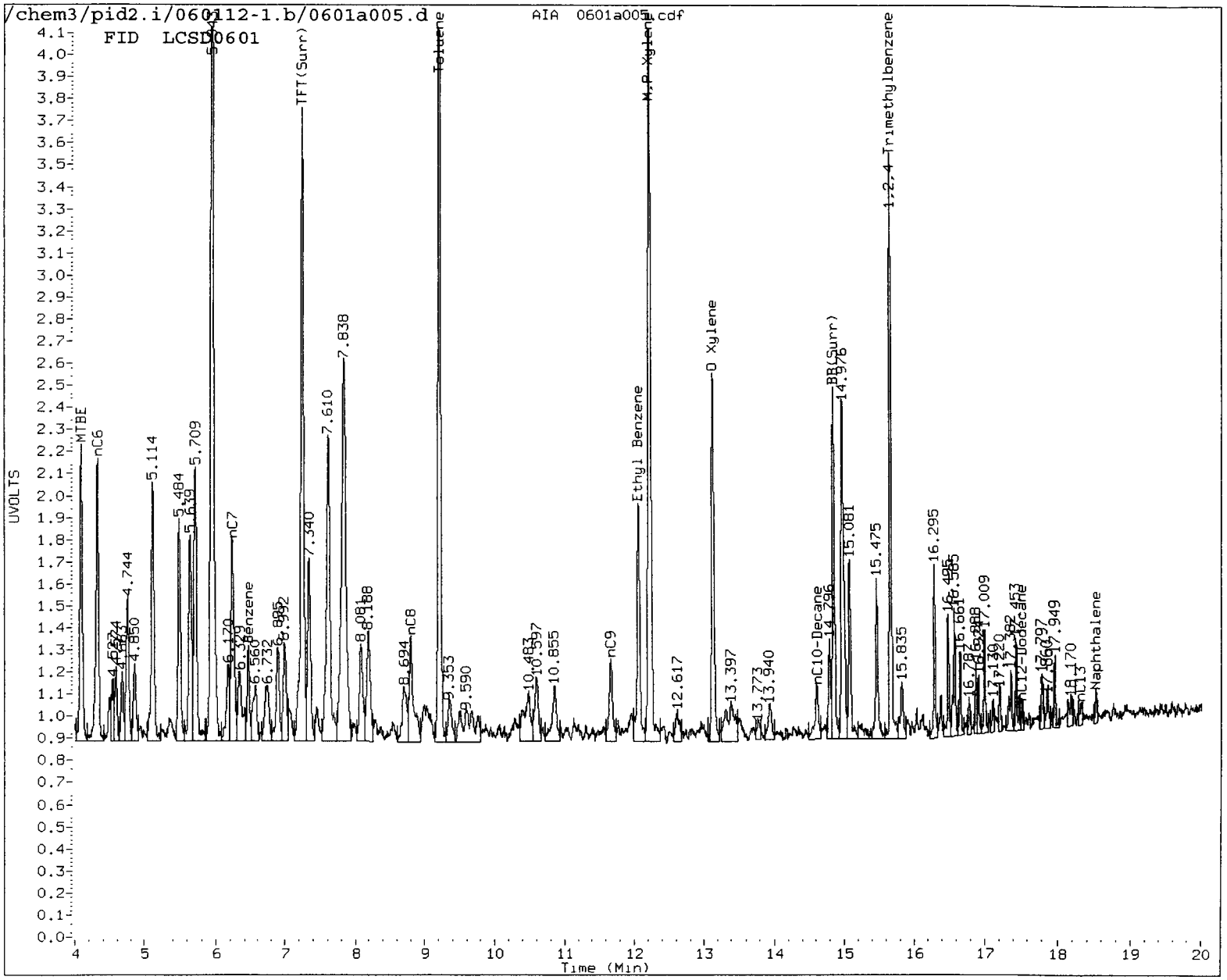
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV1 0:00175





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/6/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-052212**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-052212
LIMS ID: 12-9171
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/22/12 11:26
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	99.4%
Bromobenzene	96.2%

Gasoline Surrogate Recovery

Trifluorotoluene	98.7%
Bromobenzene	95.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052212-1.b/0522a006.d ARI ID: MB0522
Data file 2: /chem3/pid1.i/vpcc052212-2.b/0522a006.d Client ID:
Method: /chem3/pid1.i/vpcc052212-2.b/PIDB.m Injection Date: 22-MAY-2012 11:26
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.002	2955	36967	98.7	TFT(Surr)
15.406	0.000	1855	15642	95.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	2062	0.006
8015C 2MP-TMB	(4.20 to 16.22)	678311	1063	0.002
AK101 nC6-nC10	(4.70 to 15.12)	538315	621	0.001
NWTPHG Tol-Nap	(9.80 to 18.91)	359529	2062	0.006

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.886	0.002	3686	99.4	TFT(Surr)
15.414	0.001	7848	96.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052212-1.b/0522a006.d

Page 1

Date : 22-MAY-2012 11:26

Client ID:

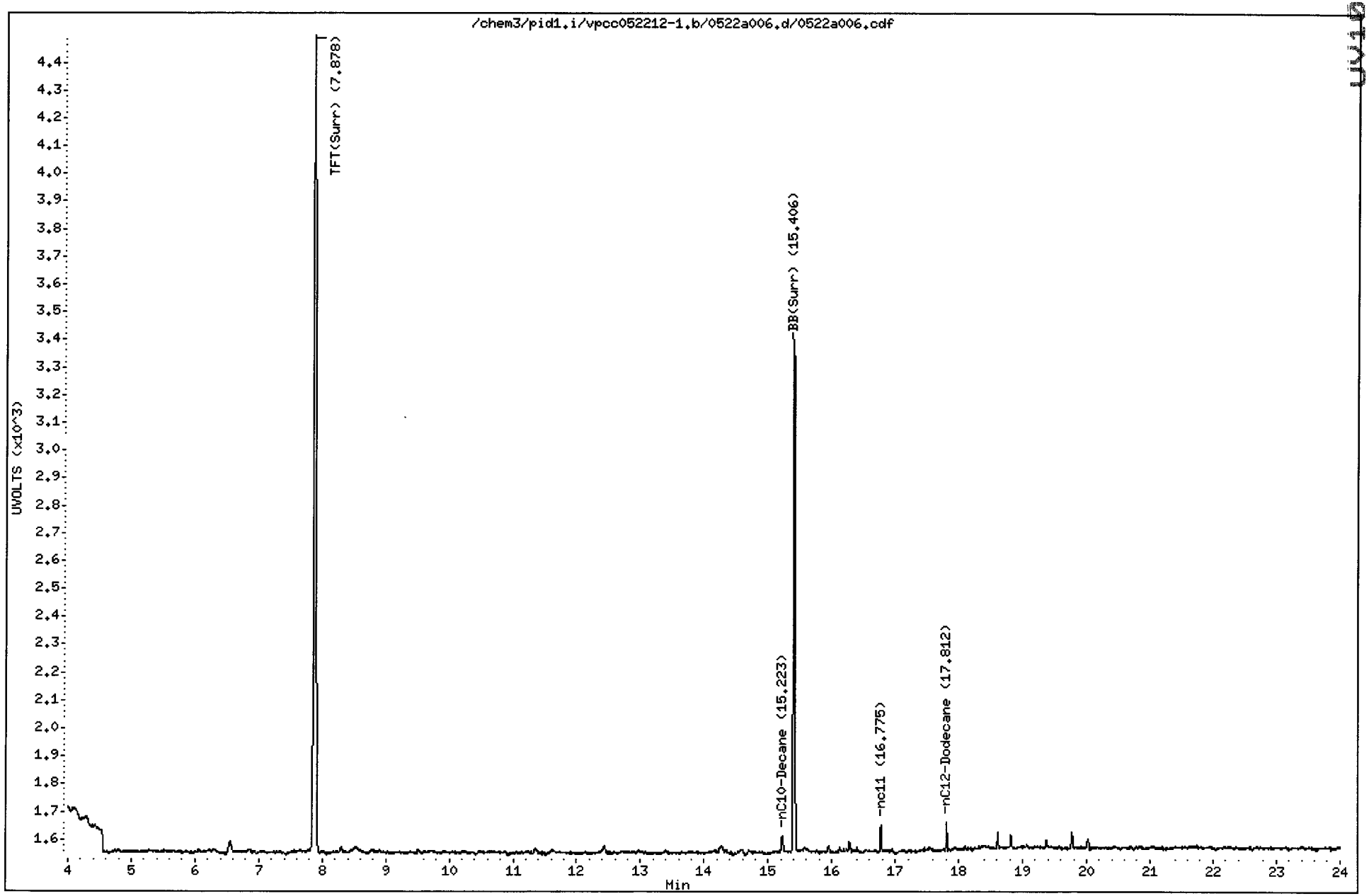
Instrument: pid1.i

Sample Info: MB0522

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



UV1 00179

Data File: /chem3/pid1.i/vpcc052212-2.b/0522a006.d

Date : 22-MAY-2012 11:26

Client ID:

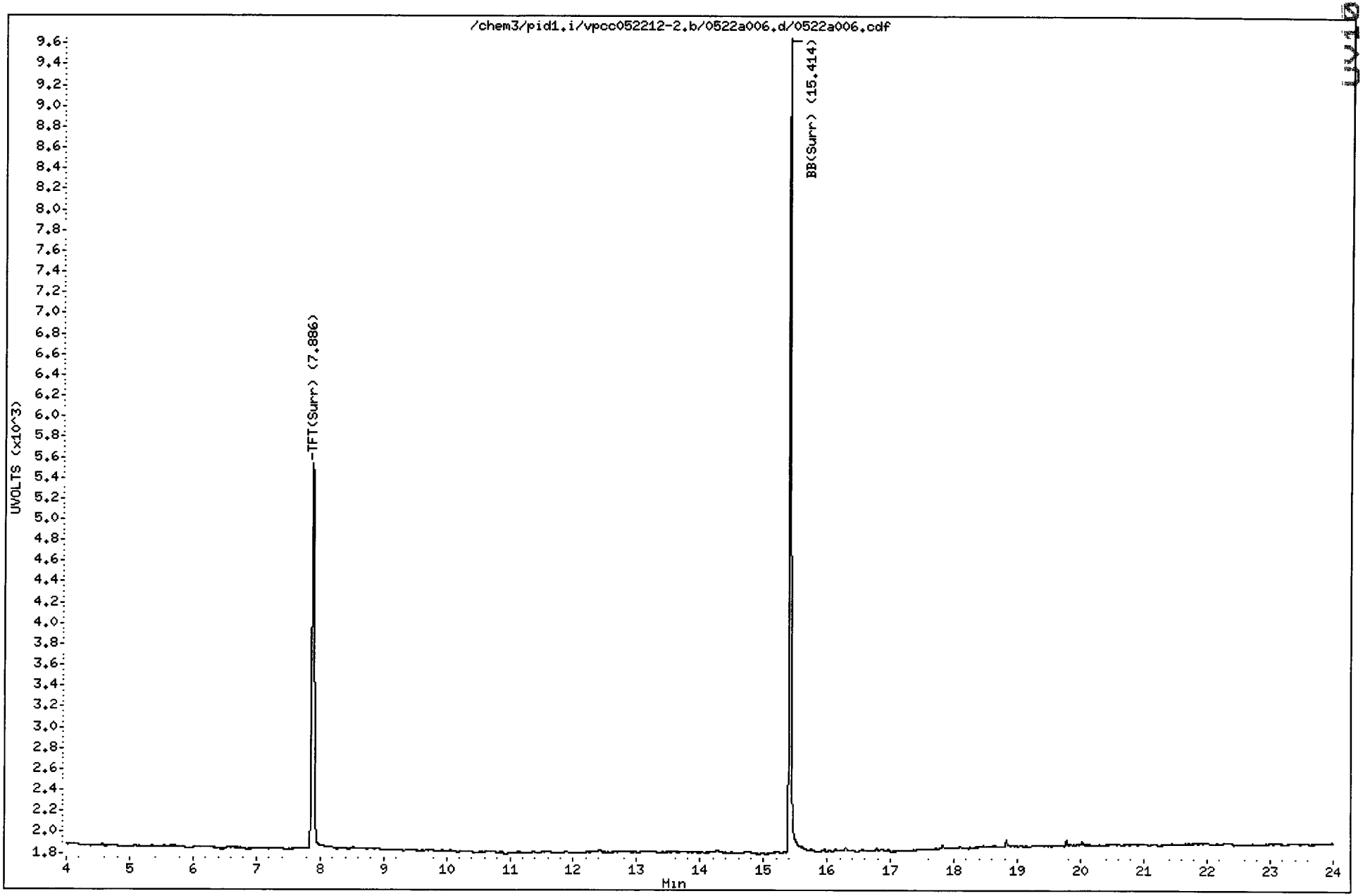
Sample Info: MB0522

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-052312**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-052312
LIMS ID: 12-9172
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/23/12 08:59
Instrument/Analyst: PID1/MH

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	93.9%
Bromobenzene	92.5%

Gasoline Surrogate Recovery

Trifluorotoluene	92.6%
Bromobenzene	91.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

MH 5/31/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052312-1.b/0523a006.d ARI ID: MB0523
Data file 2: /chem3/pid1.i/vpcc052312-2.b/0523a006.d Client ID:
Method: /chem3/pid1.i/vpcc052312-2.b/PIDB.m Injection Date: 23-MAY-2012 08:59
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.877	0.002	2774	34706	92.6	TFT(Surr)
15.405	0.000	1762	14667	91.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.91)	341191	3611	0.011
8015C 2MP-TMB	(4.20 to 16.22)	678311	2508	0.004
AK101 nC6-nC10	(4.70 to 15.12)	538315	1754	0.003
NWTPHG Tol-Nap	(9.80 to 18.92)	359529	3611	0.010

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.885	0.001	3483	93.9	TFT(Surr)
15.412	0.000	7545	92.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052312-1.b/0523a006.d

Date : 23-MAY-2012 08:59

Client ID:

Sample Info: MB0523

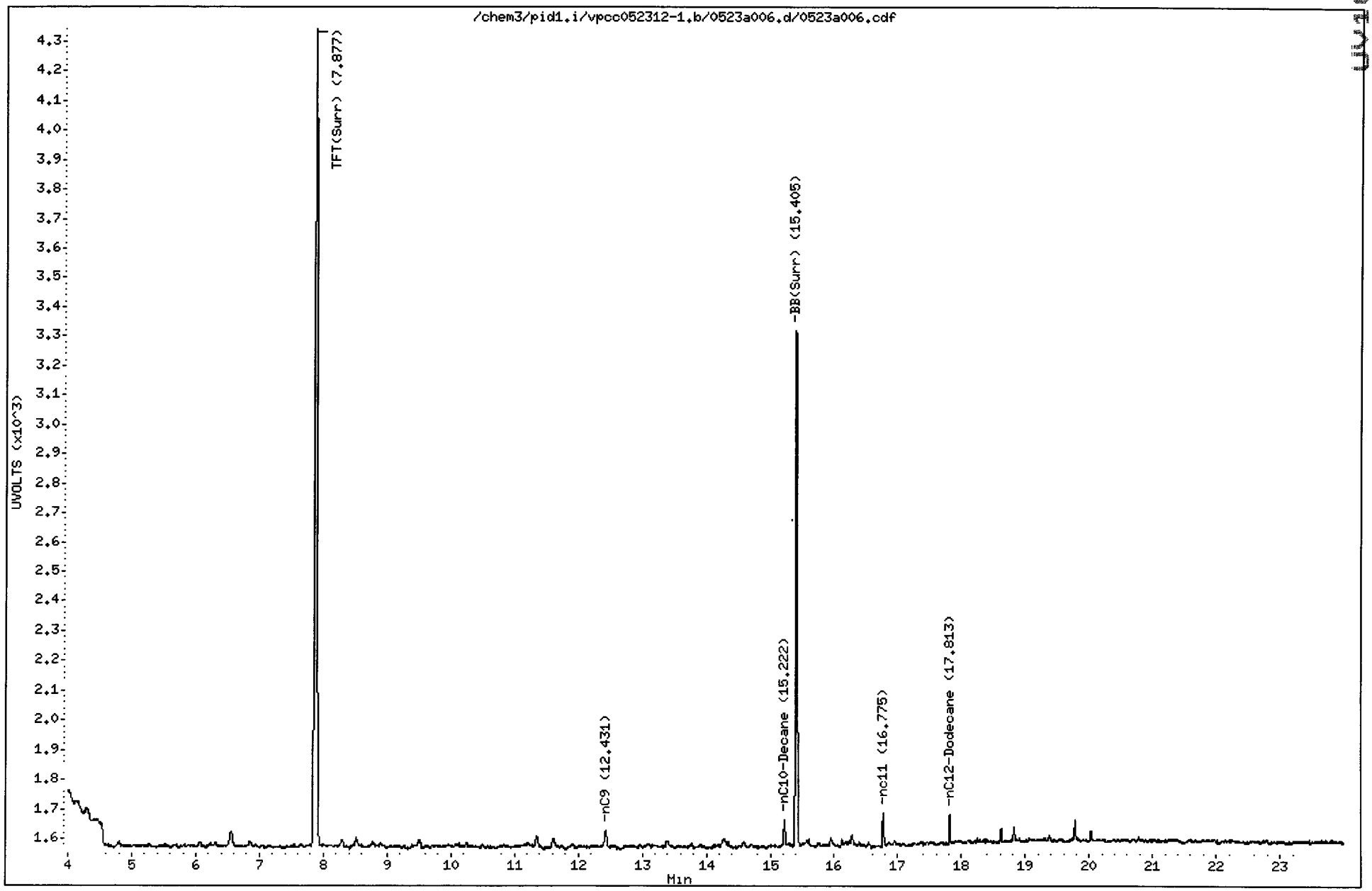
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

JUL10 00183



Data File: /chem3/pid1.i/vpcc052312-2.b/0523a006.d

Date : 23-MAY-2012 08:59

Client ID:

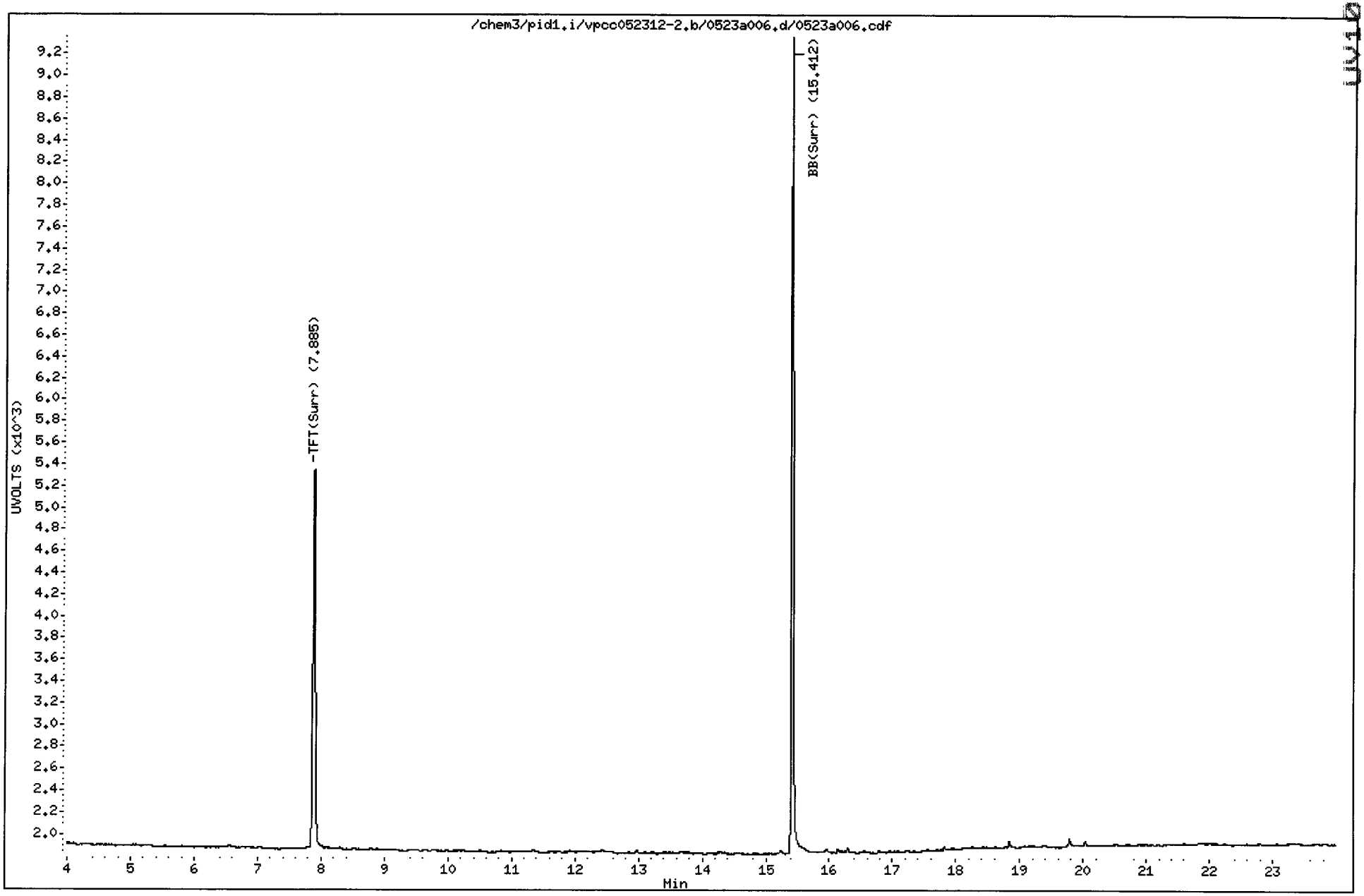
Sample Info: MB0523

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-053112**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-053112
LIMS ID: 12-9174
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/31/12 08:40
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.8%
Bromobenzene	93.2%

Gasoline Surrogate Recovery

Trifluorotoluene	94.6%
Bromobenzene	92.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a006.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a006.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0531
Client ID:
Injection Date: 31-MAY-2012 08:40
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.003	2808	35447	94.6	TFT(Surr)
14.861	-0.002	1563	15598	92.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	0	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	0	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	11742	94.8	TFT(Surr)
14.879	-0.002	16651	93.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a006.d

Date : 31-MAY-2012 08:40

Client ID:

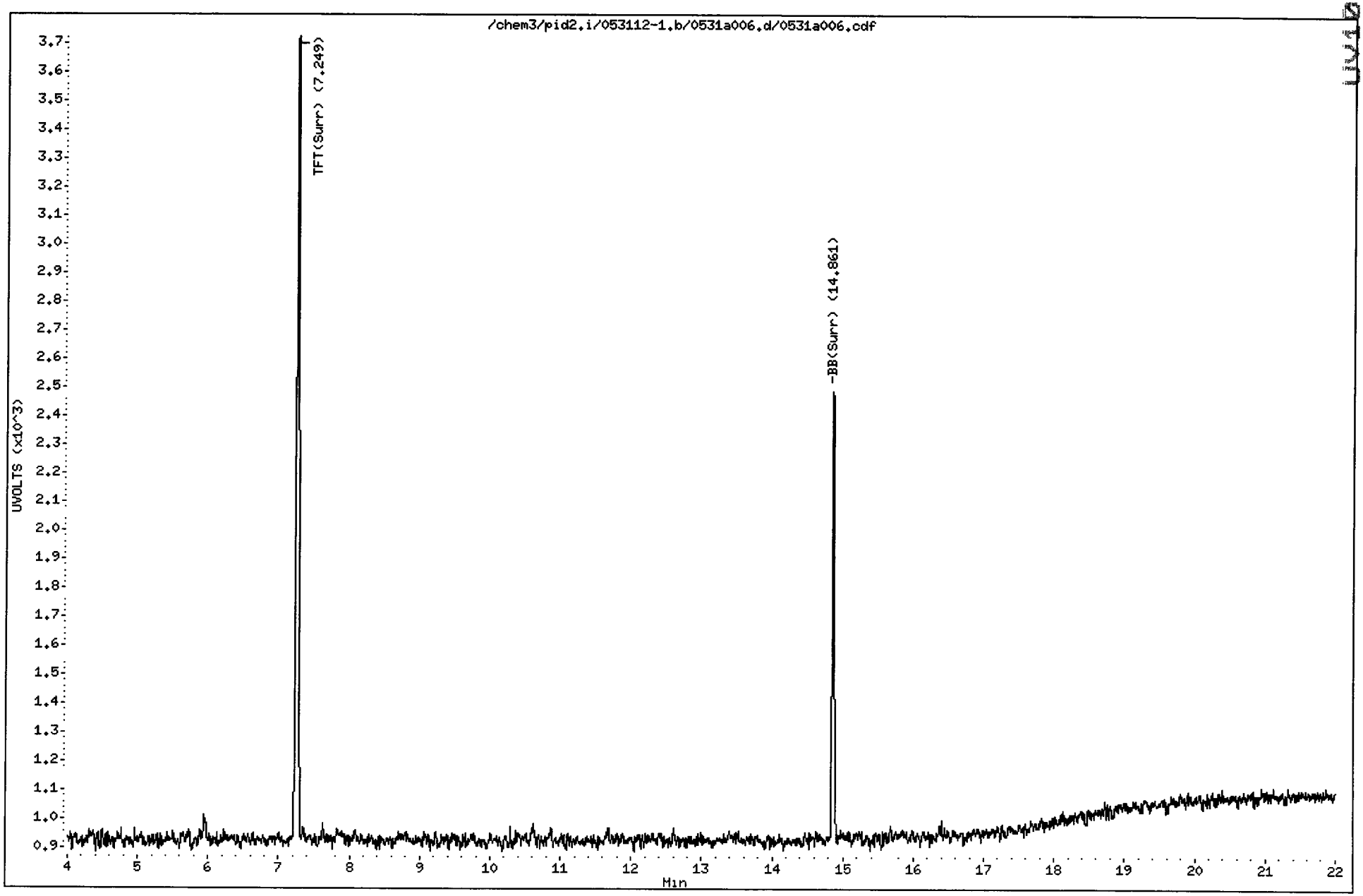
Sample Info: MB0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a006.d

Date : 31-MAY-2012 08:40

Client ID:

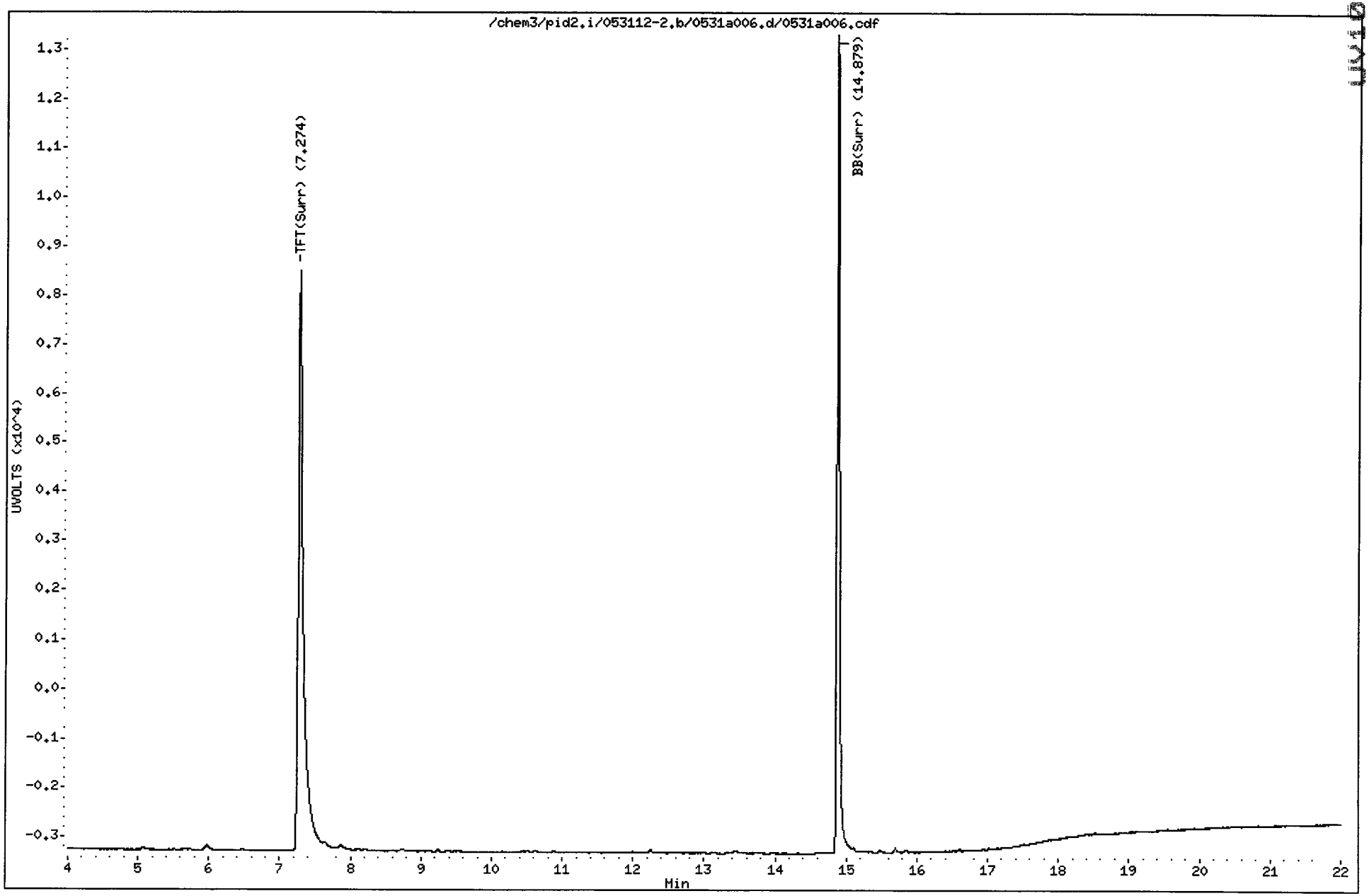
Sample Info: MB0531

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-060112**
TPHG by Method NWTPHG **METHOD BLANK**
Page 1 of 1

Lab Sample ID: MB-060112
LIMS ID: 12-9173
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV10-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 06/01/12 09:01
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	90.4%
Bromobenzene	87.9%

Gasoline Surrogate Recovery

Trifluorotoluene	89.2%
Bromobenzene	90.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a006.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a006.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0601
Client ID:
Injection Date: 01-JUN-2012 09:01
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.246	0.001	2649	33773	89.2	TFT(Surr)
14.854	-0.001	1531	15363	90.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.51)	544975	0	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.271	0.001	11203	90.4	TFT(Surr)
14.871	-0.001	15700	87.9	BB(Surr)

JW 6/2/12

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a006.d

Date : 01-JUN-2012 09:01

Client ID:

Sample Info: MB0601

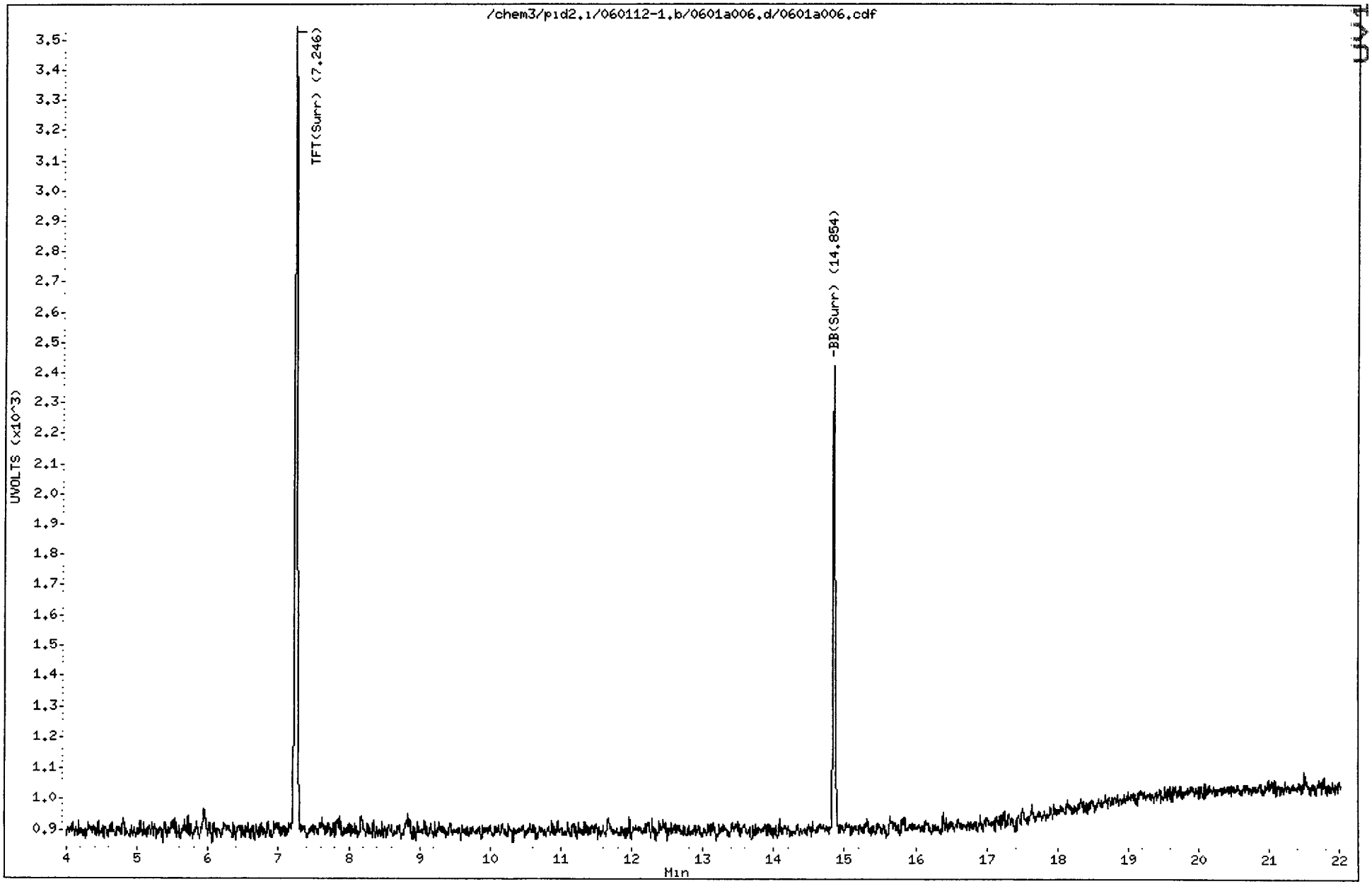
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

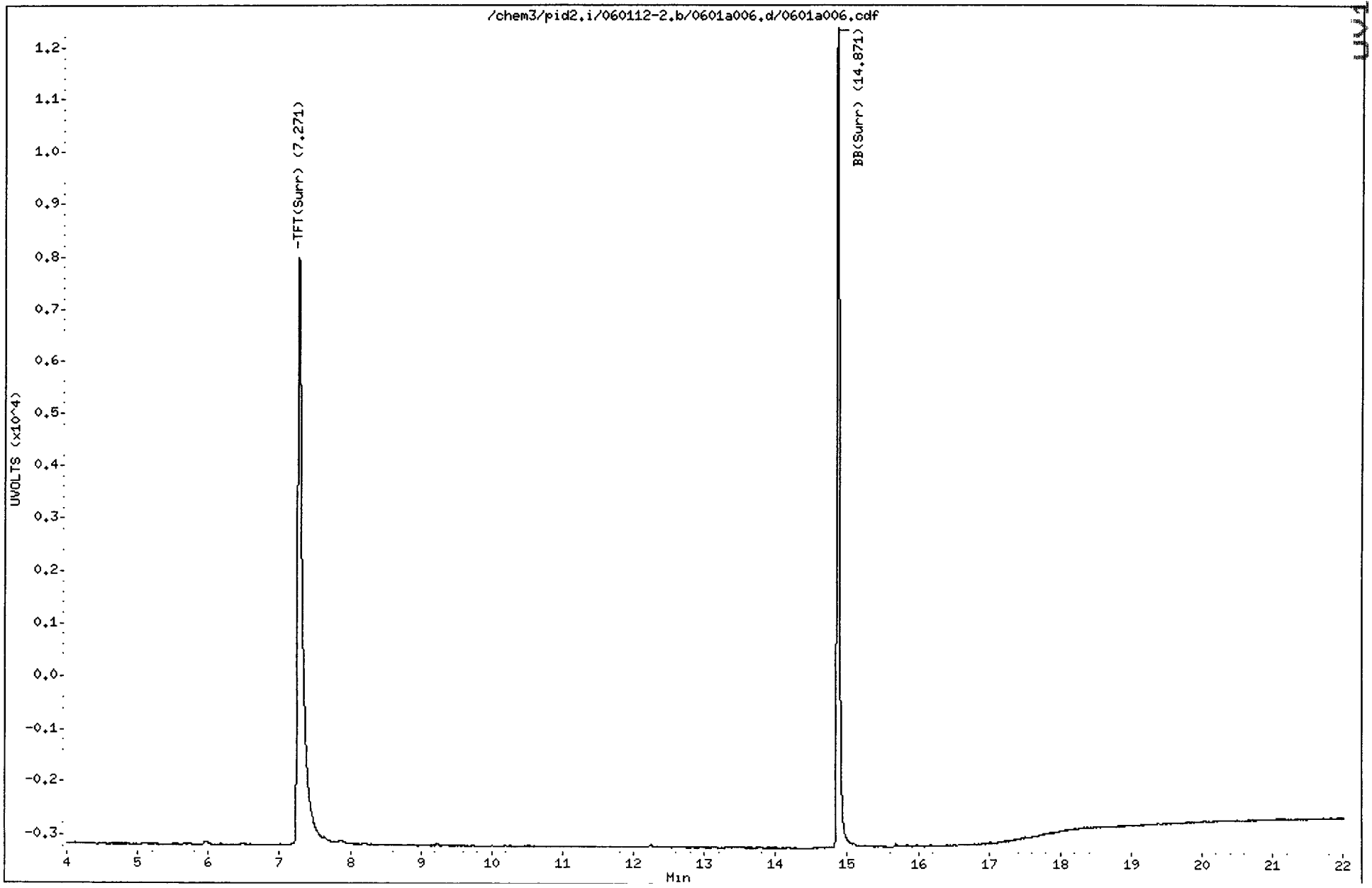
UV1 060131



Data File: /chem3/pid2.i/060112-2.b/0601a006.d
Date : 01-JUN-2012 09:01
Client ID:
Sample Info: MB0601

Instrument: pid2.i

Operator: MH
Column phase: RTX 502-2 PID
Column diameter: 0.18



Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 14, 2012

Matt Dalton
Dalton, Olmsted, & Fuglevand
10827 NE 68th, Suite B
Kirkland, WA 98033

RE: 1920 Port of Tacoma Rd, USO-022
ARI Job No.: UV11

Dear Matt:

Please find enclosed the original Chain-of-Custody (COC) records, sample receipt documentation, and the final analytical results for samples from the project referenced above. Analytical Resources, Inc. (ARI) nineteen soil samples on May 21, 2012 under ARI job UV11. For details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BETX, as requested on the COCs.

Due to matrix interferences, BETX results could not be confirmed and were possibly false positives for several samples. Two soil samples were selected at random and analyzed on a GC/MS instrument by method SW8260C to confirm results. Results were confirmed and all BETX data have been reported as is. No further corrective action was taken.

The NWTPH-Gx surrogate percent recoveries of Bromofluorobenzene were outside the control limits for samples **USO-P6-B** and **USO-P6-C**. All other surrogate percent recoveries were within control limits. No corrective action was taken.

An electronic copy of this report and all associated raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan Dunnihoo
Director, Client Services
sue@arilabs.com
206-695-6207

cc: eFile UV11

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: UVII	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 3 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1.2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX								Notes/Comments
USO-P5-A	5/19/12	1205	Soil	3	X								
USO-P5-B	5/19/12	1210	Soil	3	X								
USO-P5-C	5/19/13	1215	Soil	3	X								
USO-P5-D	5/19/14	1220	Soil	3	X								
USO-P5-E	5/19/15	1225	Soil	3	X								
USO-P6-A	5/19/16	1335	Soil	3	X								
USO-P6-B	5/19/17	1340	Soil	3	X								
USO-P6-C	5/19/18	1345	Soil	3	X								
USO-P6-D	5/19/19	1350	Soil	3	X								
USO-P6-E	5/19/20	1400	Soil	3	X								

Comments/Special Instructions	Relinquished by (Signature)	Received by. (Signature)	Relinquished by. (Signature)	Received by. (Signature)
	Printed Name. DG Cooper	Printed Name: Taylor Streeter	Printed Name	Printed Name.
	Company: DOF	Company ARI	Company	Company.
	Date & Time: 5/21/12 1215	Date & Time. 5-21-12 1215	Date & Time.	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: UV11	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 4 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1.2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX								Notes/Comments
USO-P7-A	5/19/12	1420	Soil	3	X								
USO-P7-B	5/19/12	1425	Soil	3	X								
USO-P7-C	5/19/13	1430	Soil	3	X								
USO-P7-D	5/19/14	1440	Soil	3	X								
USO-P7-E	5/19/15	1445	Soil	3	X								
USO-P8-A	5/19/16	1505	Soil	3	X								
USO-P8-B	5/19/17	1510	Soil	3	X								
USO-P8-C	5/19/18	1515	Soil	3	X								
USO-P8-D	5/19/19	1520	Soil	3	X								

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: Tyler Streeter	Printed Name	Printed Name
	Company: DOF	Company: ART	Company	Company
	Date & Time: 5/21/12 1215	Date & Time: 5-21-12 1215	Date & Time:	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client DOF

Project Name 1920 Port of Tacoma RD

COC No(s) _____ (NA)

Delivered by Fed-Ex UPS Courier Hand Delivered Other _____

Assigned ARI Job No UV11

Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6 0 °C for chemistry)	1.2 2.0	

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID# 90947819

Cooler Accepted by: TS Date 5-21-12 Time: _____

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES) SM	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI.	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by JM Date 5/21/12 Time: 1340

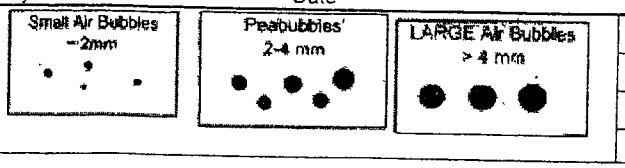
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

All sample collected in May of 2012 per container labels, Date mistake on COC, on select samples, wrong year.

By Date



Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: UV11
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-022
Project Name: 1920 Port of Tacoma Rd

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P5-A	UV11A	12-9191	Soil	05/19/12 12:05	05/21/12 12:15
2.	USO-P5-B	UV11B	12-9192	Soil	05/19/12 12:10	05/21/12 12:15
3.	USO-P5-C	UV11C	12-9193	Soil	05/19/12 12:15	05/21/12 12:15
4.	USO-P5-D	UV11D	12-9194	Soil	05/19/12 12:20	05/21/12 12:15
5.	USO-P5-E	UV11E	12-9195	Soil	05/19/12 12:25	05/21/12 12:15
6.	USO-P6-A	UV11F	12-9196	Soil	05/19/12 13:35	05/21/12 12:15
7.	USO-P6-B	UV11G	12-9197	Soil	05/19/12 13:40	05/21/12 12:15
8.	USO-P6-C	UV11H	12-9198	Soil	05/19/12 13:45	05/21/12 12:15
9.	USO-P6-D	UV11I	12-9199	Soil	05/19/12 13:50	05/21/12 12:15
10.	USO-P6-E	UV11J	12-9200	Soil	05/19/12 14:00	05/21/12 12:15
11.	USO-P7-A	UV11K	12-9201	Soil	05/19/12 14:20	05/21/12 12:15
12.	USO-P7-B	UV11L	12-9202	Soil	05/19/12 14:25	05/21/12 12:15
13.	USO-P7-C	UV11M	12-9203	Soil	05/19/12 14:30	05/21/12 12:15
14.	USO-P7-D	UV11N	12-9204	Soil	05/19/12 14:40	05/21/12 12:15
15.	USO-P7-E	UV11O	12-9205	Soil	05/19/12 14:45	05/21/12 12:15
16.	USO-P8-A	UV11P	12-9206	Soil	05/19/12 15:05	05/21/12 12:15
17.	USO-P8-B	UV11Q	12-9207	Soil	05/19/12 15:10	05/21/12 12:15
18.	USO-P8-C	UV11R	12-9208	Soil	05/19/12 15:15	05/21/12 12:15
19.	USO-P8-D	UV11S	12-9209	Soil	05/19/12 15:20	05/21/12 12:15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P5-A**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11A
LIMS ID: 12-9191
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 12:43
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 8.8 mg-dry-wt
Percent Moisture: 4.2%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	140	< 140 U	
108-88-3	**Toluene**	**140**	**990**	
100-41-4	**Ethylbenzene**	**140**	**3,400**	
179601-23-1	**m,p-Xylene**	**280**	**22,000**	
95-47-6	**o-Xylene**	**140**	**5,600**	
				GAS ID
	Gasoline Range Hydrocarbons	**57**	**1,200**	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	105%

Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	104%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a008.d ARI ID: UV11A
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a008.d Client ID: USO-P5-A
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 12:43
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.002	3096	39161	103.4	TFT(Surr)
15.408	0.001	2009	18013	103.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	708519	2.077
8015C 2MP-TMB	(4.20 to 16.22)	678311	516086	0.761 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	282298	0.524 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	788916	2.194

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.001	3865	104.2	TFT(Surr)
15.415	0.001	8538	104.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	-0.001	37	0.15N	Benzene
9.917	0.003	383	1.75N	Toluene
12.808	0.001	1166	6.03	Ethylbenzene
12.972	0.003	8275	38.54	M/P-Xylene
13.922	0.002	1645	9.79	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a008.d

Date : 24-MAY-2012 12:43

Client ID: USO-P5-A

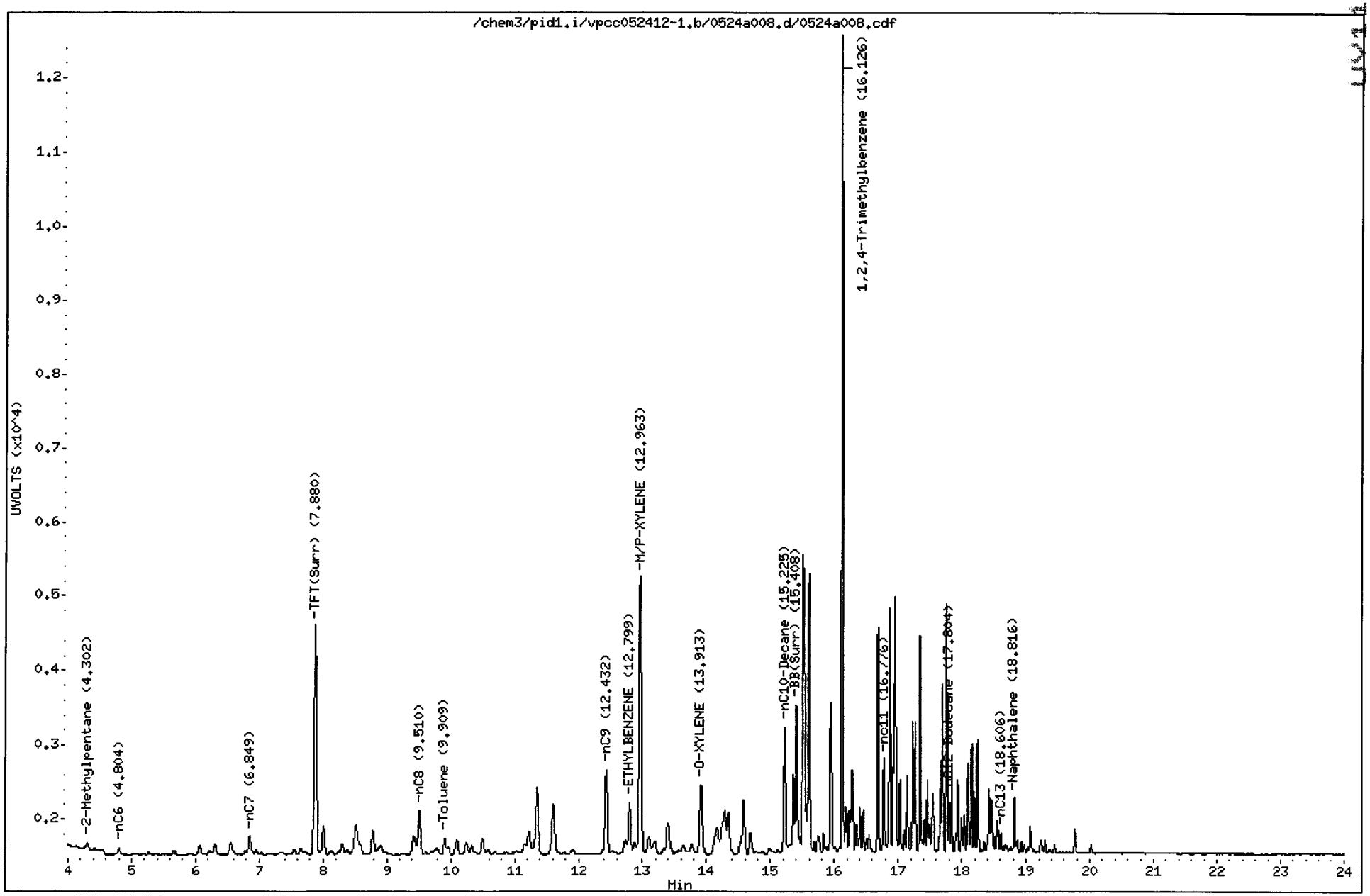
Sample Info: UV11A

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a008.d

Date : 24-MAY-2012 12:43

Client ID: USO-P5-A

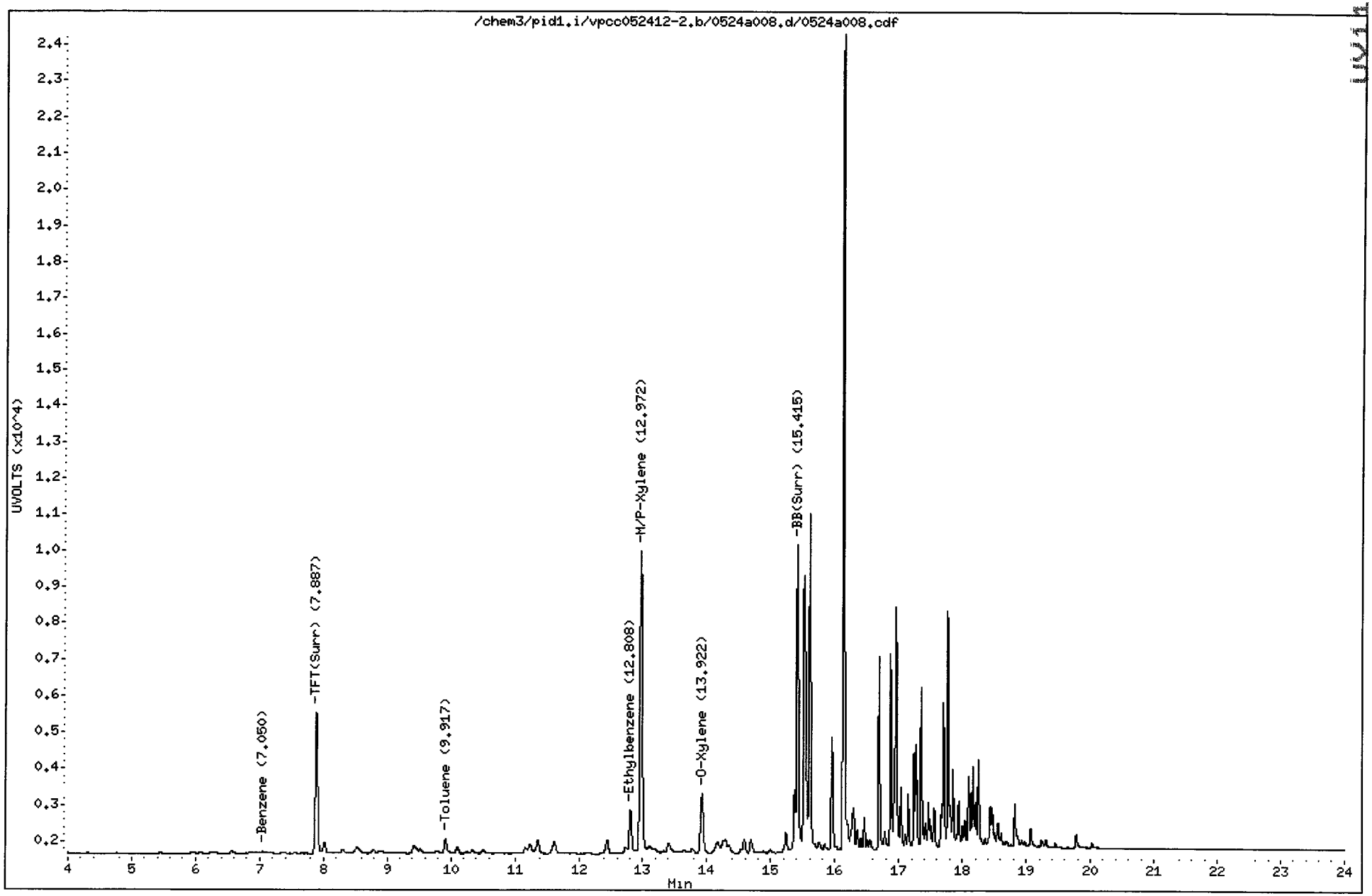
Sample Info: UV11A

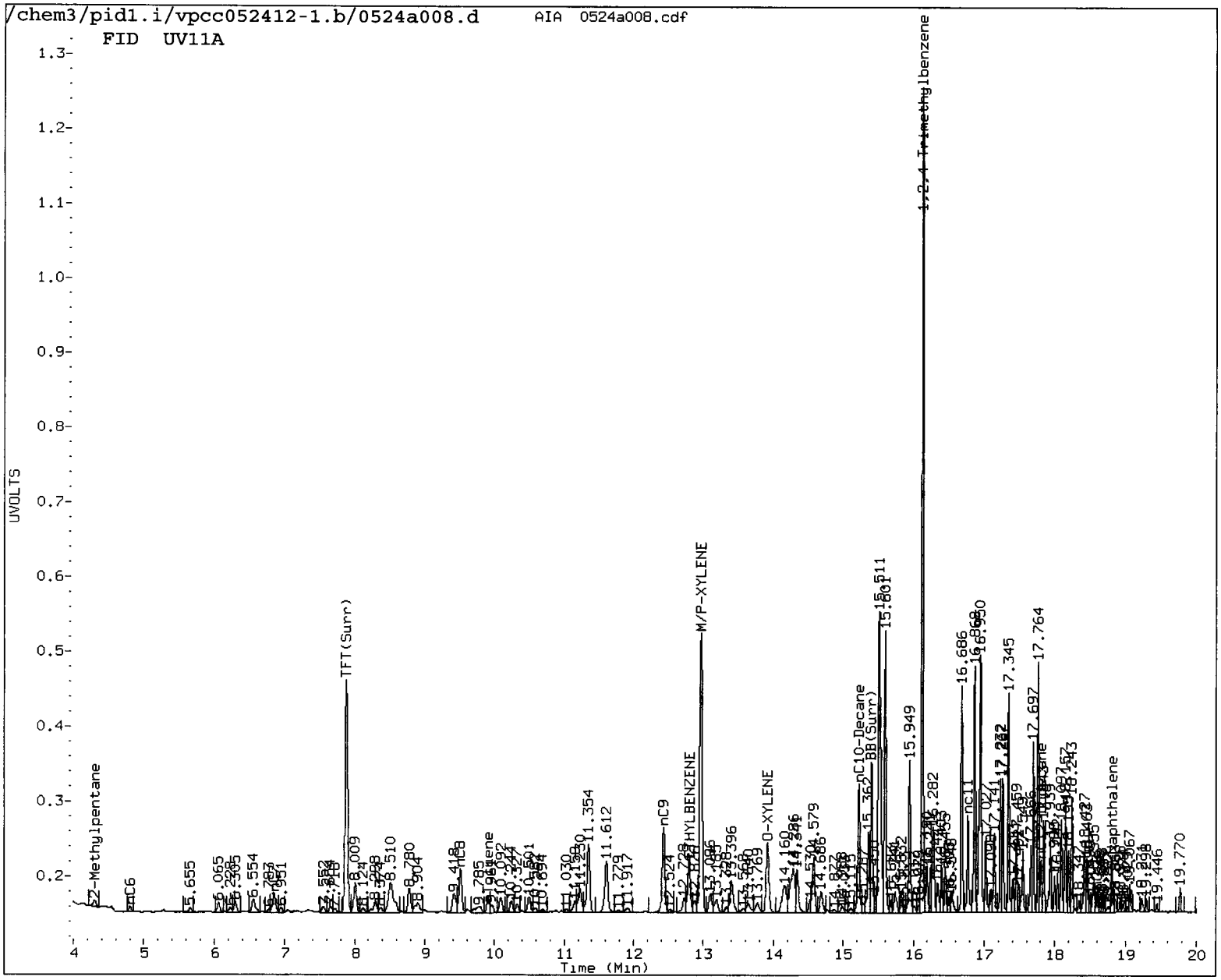
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18





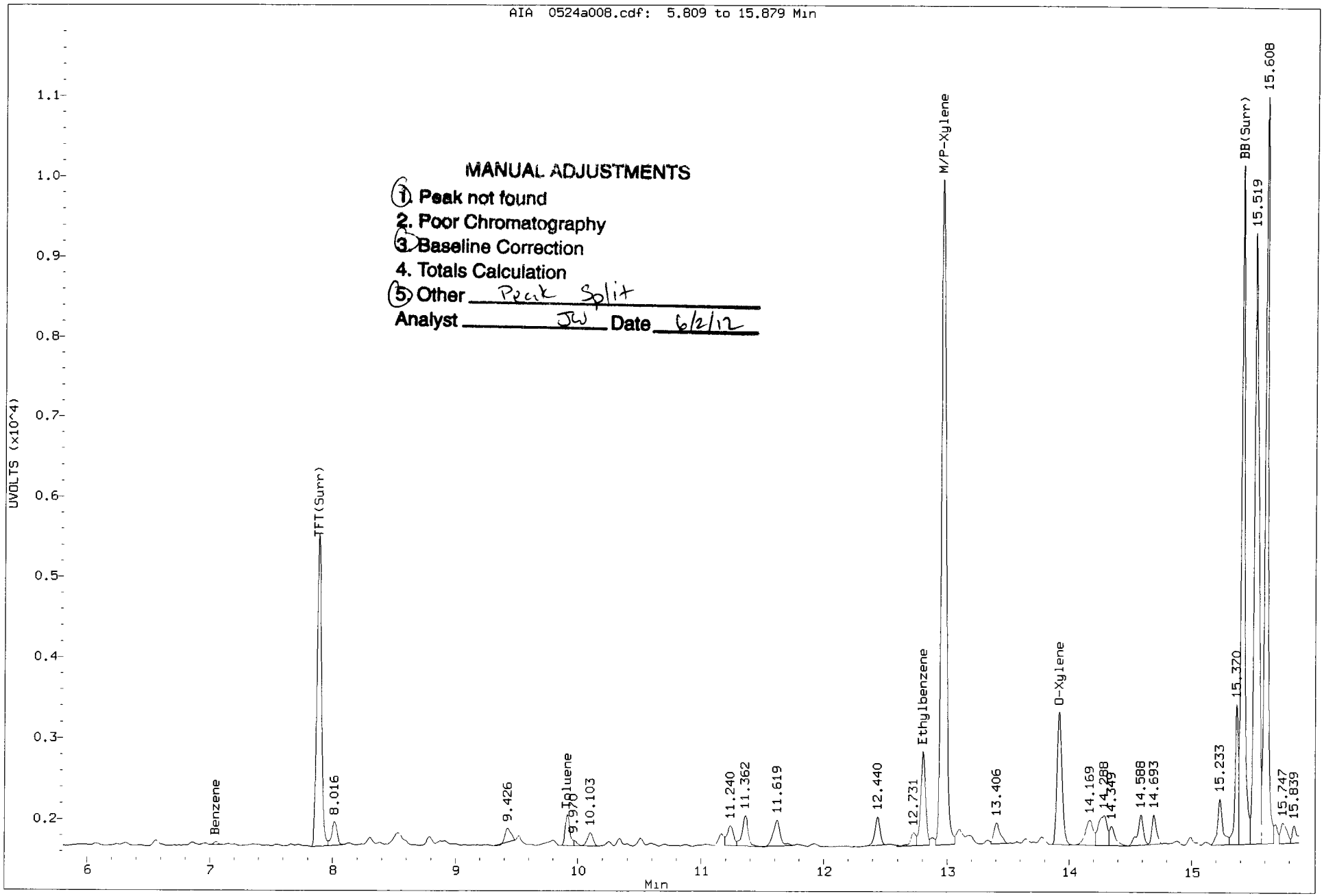
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a008.d/0524a008.cdf
Injection Date: 24-MAY-2012 12:43
Instrument: pid1.i
Client Sample ID: USO-P5-A



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P5-B**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11B
LIMS ID: 12-9192
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 13:12
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 9.3 mg-dry-wt
Percent Moisture: 4.7%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	**Benzene**	140	350	
108-88-3	**Toluene**	140	5,800	
100-41-4	**Ethylbenzene**	140	10,000	
179601-23-1	**m,p-Xylene**	270	63,000	
95-47-6	**o-Xylene**	140	18,000	
	Gasoline Range Hydrocarbons	54	2,100	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	105%

Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	106%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a009.d ARI ID: UV11B
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a009.d Client ID: USO-P5-B
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 13:12
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.881	0.003	3078	41116	102.8	TFT(Surr)
15.408	0.002	2042	18672	105.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	1296812	3.801
8015C 2MP-TMB	(4.20 to 16.22)	678311	1309854	1.931
AK101 nC6-nC10	(4.70 to 15.12)	538315	920192	1.709
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	1377890	3.832

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.889	0.003	3847	103.8	TFT(Surr)
15.415	0.002	8598	105.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	-0.001	163	0.65	Benzene
9.917	0.003	2369	10.85	Toluene
12.809	0.001	3665	18.94	Ethylbenzene
12.974	0.006	25118	116.97	M/P-Xylene
13.922	0.003	5708	33.97	O-Xylene
4.563	-0.007	25	0.30N	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a009.d

Page 1

Date : 24-MAY-2012 13:12

Client ID: USO-P5-B

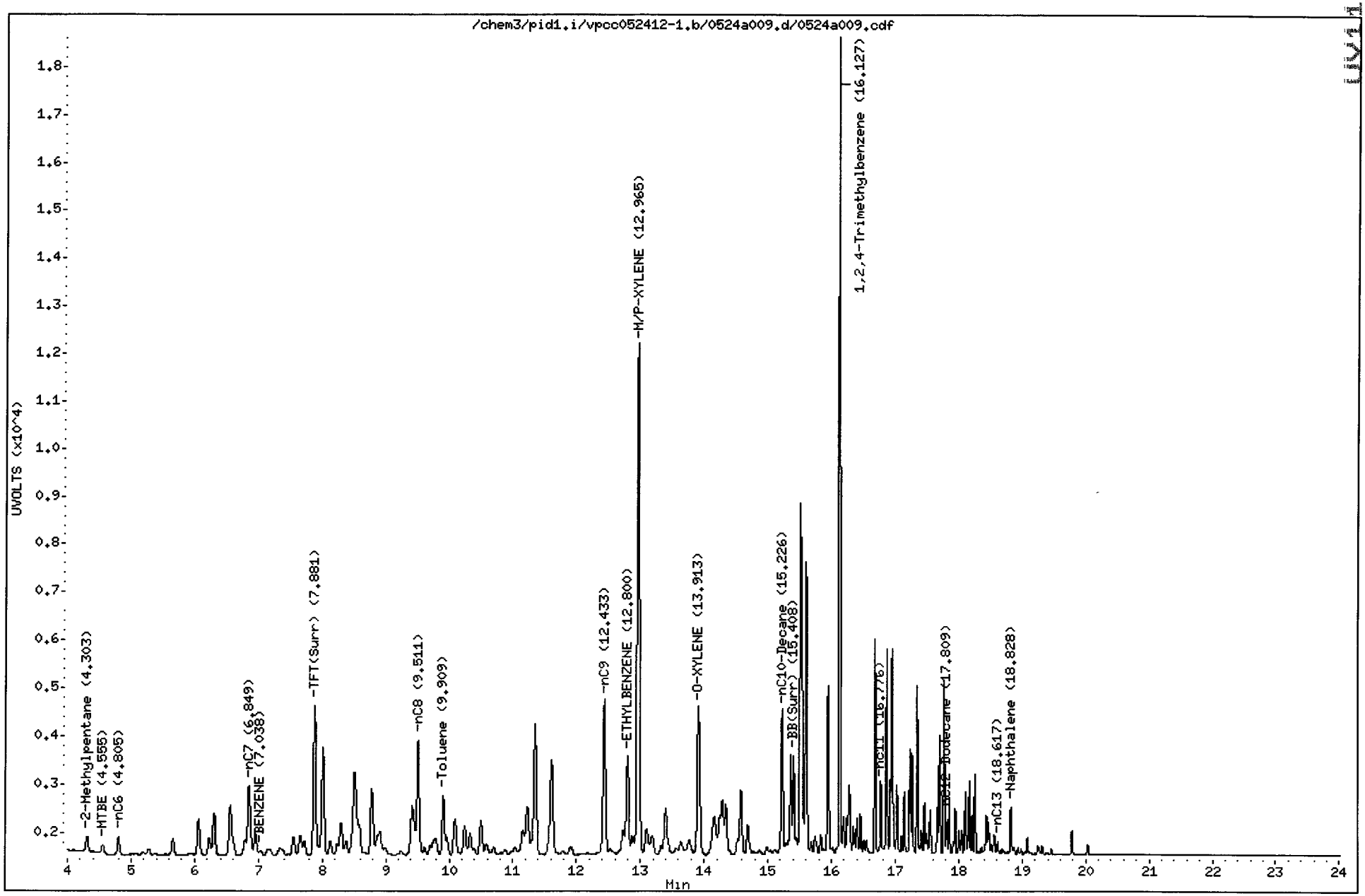
Instrument: pid1.i

Sample Info: UV11B

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



UV11 - 00014

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a009.d

Date : 24-MAY-2012 13:12

Client ID: USO-P5-B

Sample Info: UV11B

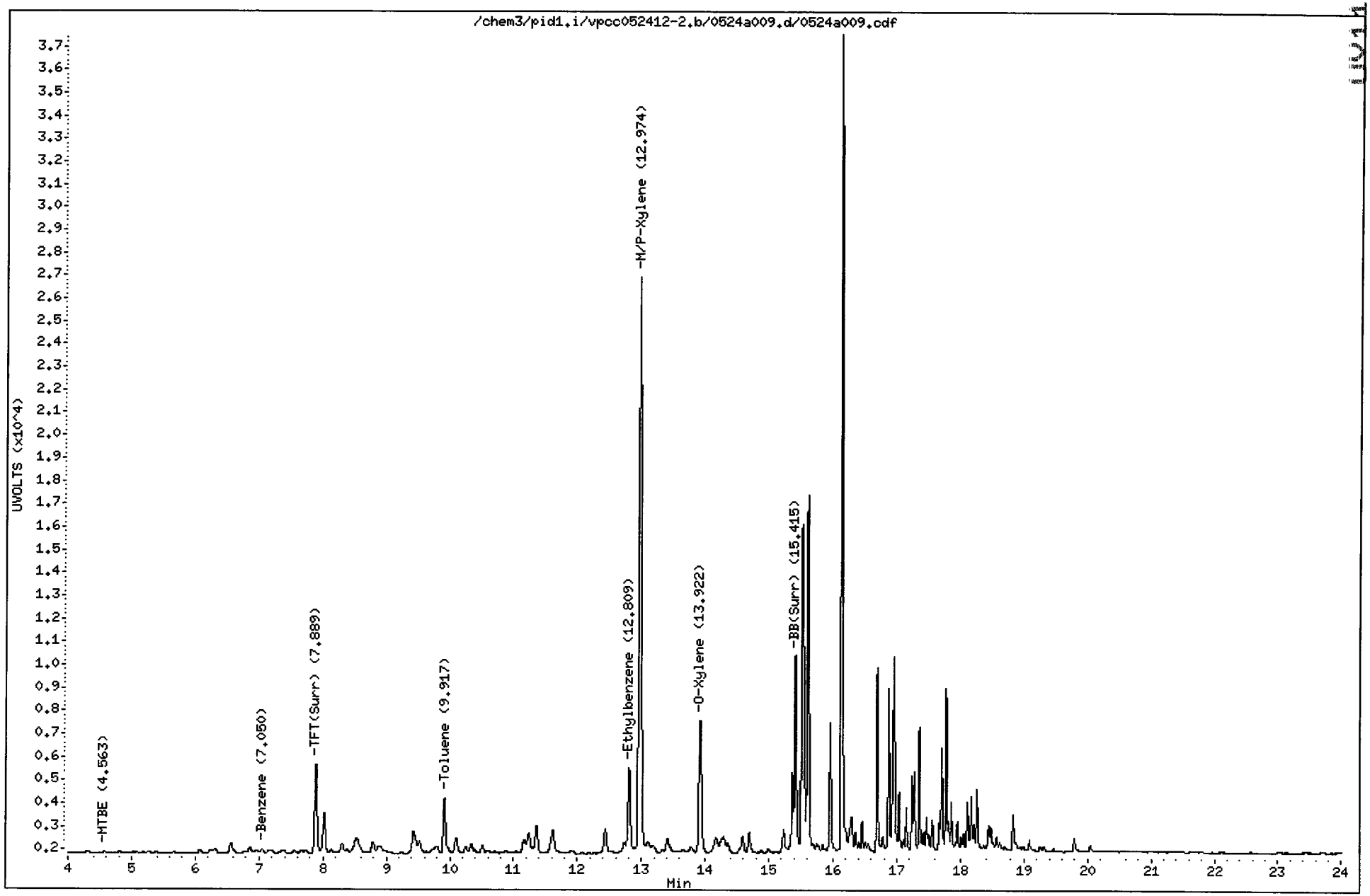
Instrument: pid1.i

Operator: MH

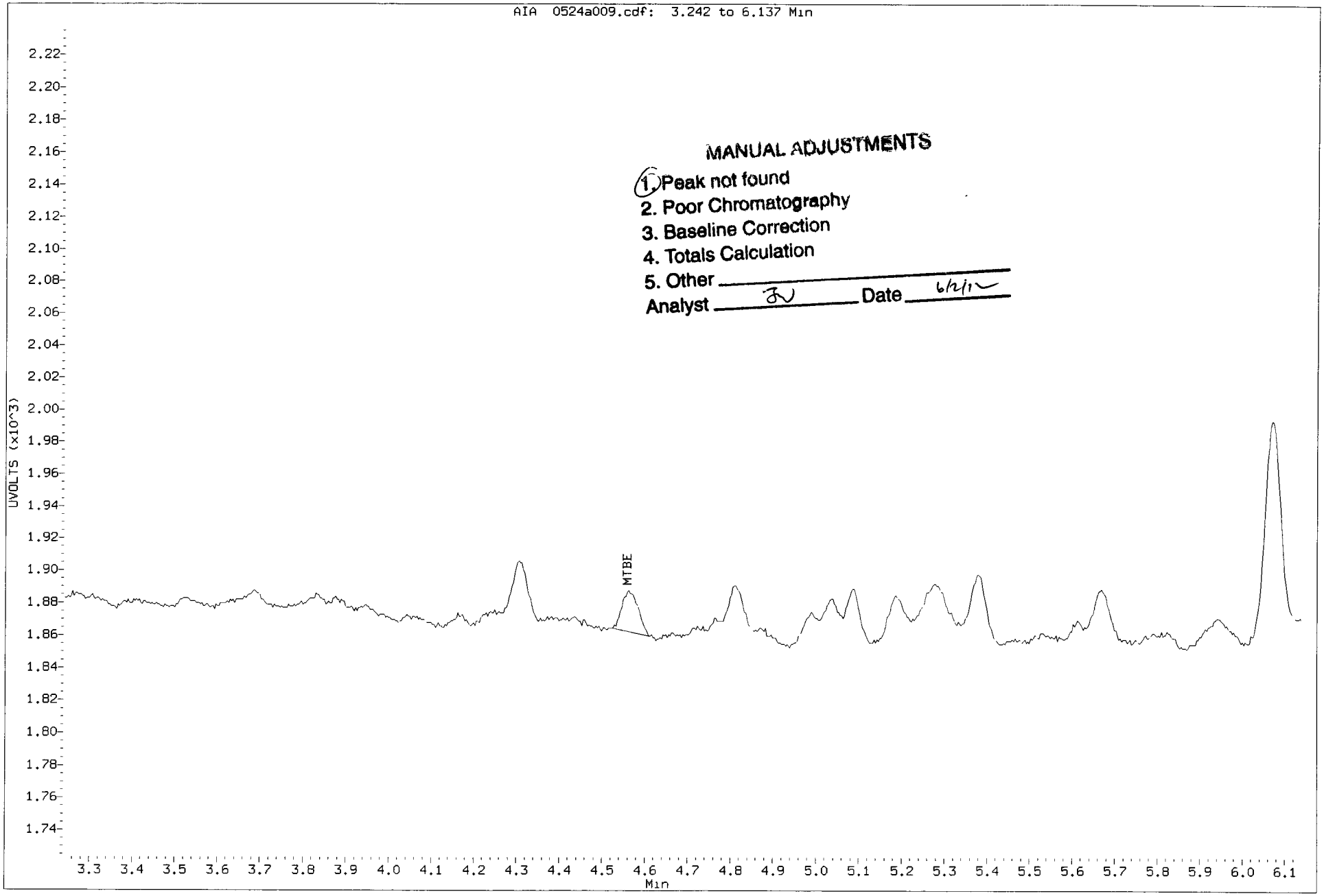
Column phase: RTX 502-2 PID

Column diameter: 0.18

UV11 : 50015



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a009.d/0524a009.cdf
Injection Date: 24-MAY-2012 13:12
Instrument: pid1.i
Client Sample ID: USO-P5-B



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JV Date 6/2/12

UV1 00015

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P5-C
SAMPLE

Lab Sample ID: UV11C
LIMS ID: 12-9193
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 13:41
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 7.8 mg-dry-wt
Percent Moisture: 10.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	160	4,500	
108-88-3	**Toluene**	160	45,000	
100-41-4	**Ethylbenzene**	160	32,000	
179601-23-1	**m,p-Xylene**	320	190,000	
95-47-6	**o-Xylene**	160	64,000	
	Gasoline Range Hydrocarbons	64	4,200	GAS ID **GAS**

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	106%

Gasoline Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	112%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a010.d ARI ID: UV11C
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a010.d Client ID: USO-P5-C
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 13:41
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.881	0.003	3109	43158	103.8	TFT(Surr)
15.408	0.001	2159	19464	111.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	2277447	6.675
8015C 2MP-TMB	(4.20 to 16.22)	678311	3695883	5.449
AK101 nC6-nC10	(4.70 to 15.12)	538315	2979819	5.535
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	2341105	6.512

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.889	0.003	3802	102.5	TFT(Surr)
15.416	0.002	8679	106.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.052	0.001	1753	7.03	Benzene
9.918	0.004	15333	70.23	Toluene
12.810	0.003	9541	49.31N	Ethylbenzene
12.979	0.010	63875	297.46	M/P-Xylene
13.924	0.005	16750	99.70	O-Xylene
4.565	-0.006	582	6.92	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a010.d

Date : 24-MAY-2012 13:41

Client ID: USO-P5-C

Sample Info: UV11C

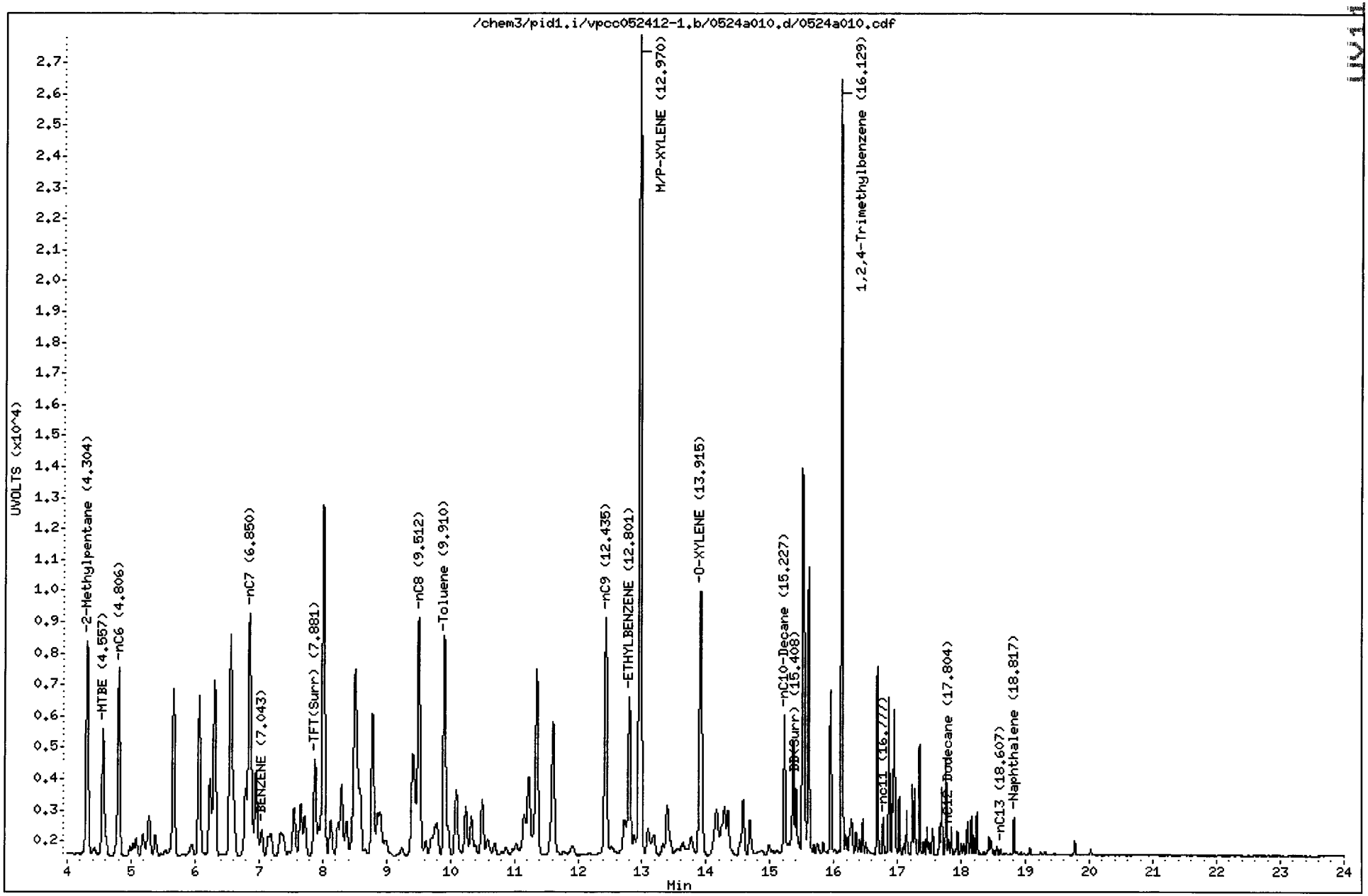
Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV11 : 00013



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a010.d

Page 1

Date : 24-MAY-2012 13:41

Client ID: USO-P5-C

Instrument: pid1.i

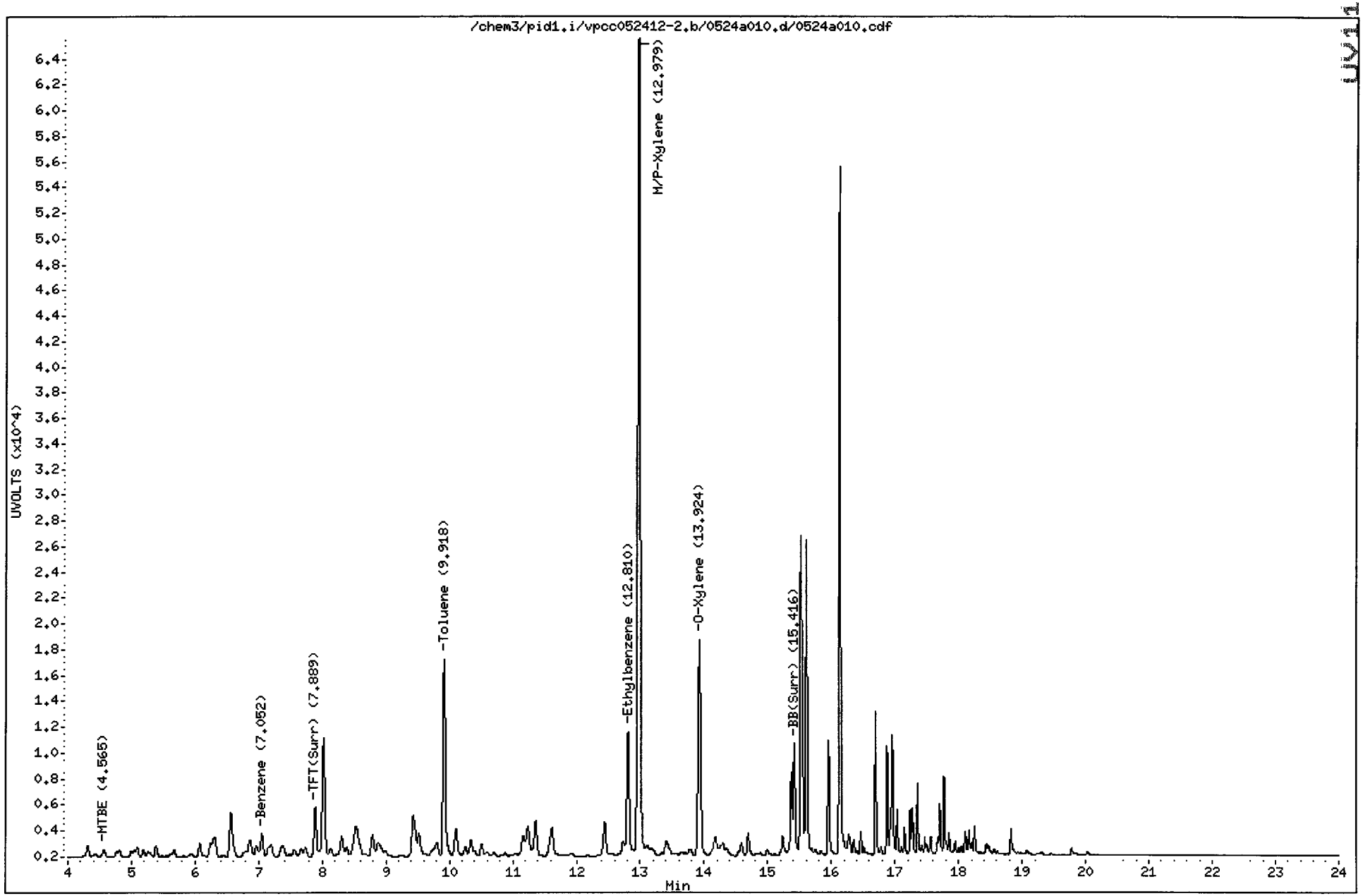
Sample Info: UV11C

Operator: MH

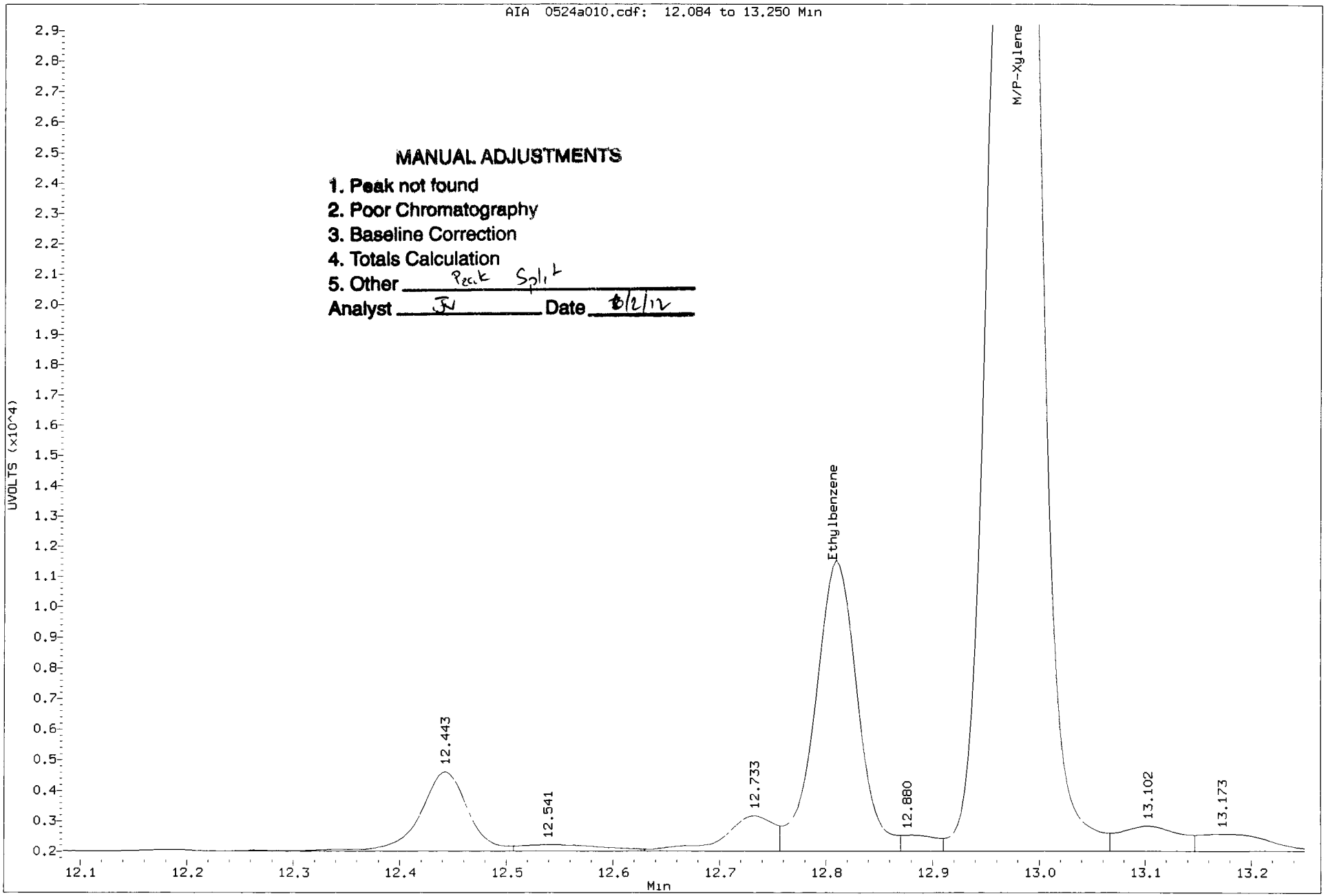
Column phase: RTX 502-2 PID

Column diameter: 0.18

UV11 : 00020



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a010.d/0524a010.cdf
Injection Date: 24-MAY-2012 13:41
Instrument: pid1.i
Client Sample ID: USO-P5-C



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P5-D**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV11D
LIMS ID: 12-9194
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 17:20
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 72 mg-dry-wt
Percent Moisture: 19.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	18	1,500	
108-88-3	**Toluene**	18	48	
100-41-4	**Ethylbenzene**	18	150	
179601-23-1	**m,p-Xylene**	35	180	
95-47-6	**o-Xylene**	18	27	
				GAS ID
	Gasoline Range Hydrocarbons	7.0	33	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	98.2%
Bromobenzene	95.5%

Gasoline Surrogate Recovery

Trifluorotoluene	97.8%
Bromobenzene	95.3%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a023.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a023.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV11D
Client ID: USO-P5-D
Injection Date: 31-MAY-2012 17:20
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.240	-0.012	2902	39169	97.8	TFT(Surr)
14.849	-0.014	1605	17042	95.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	140634	0.441 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	394616	0.583 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	341922	0.627 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	156088	0.472 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.265	-0.012	12159	98.2	TFT(Surr)
14.868	-0.014	17063	95.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.465	-0.011	18161	20.85	Benzene
9.232	-0.014	379	0.69	Toluene
12.077	-0.017	1034	2.15	Ethylbenzene
12.238	-0.014	1212	2.60	M/P-Xylene
13.137	-0.023	145	0.38N	O-Xylene
4.104	-0.029	339	1.06	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a023.d

Date : 31-MAY-2012 17:20

Client ID: USO-P5-D

Sample Info: UV11D

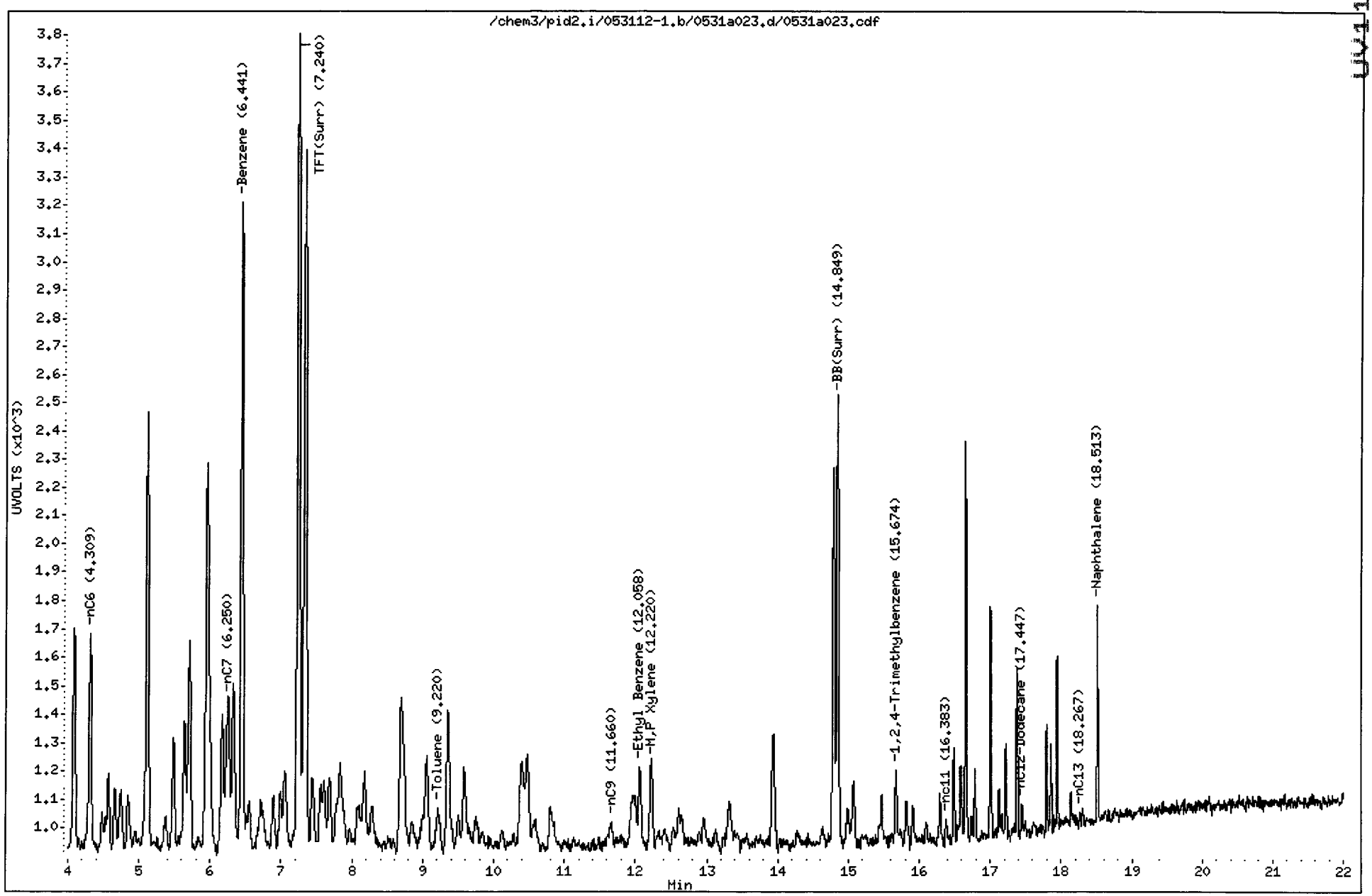
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV11 00024



Data File: /chem3/pid2.i/053112-2.b/0531a023.d

Date : 31-MAY-2012 17:20

Client ID: USO-P5-D

Sample Info: UV11D

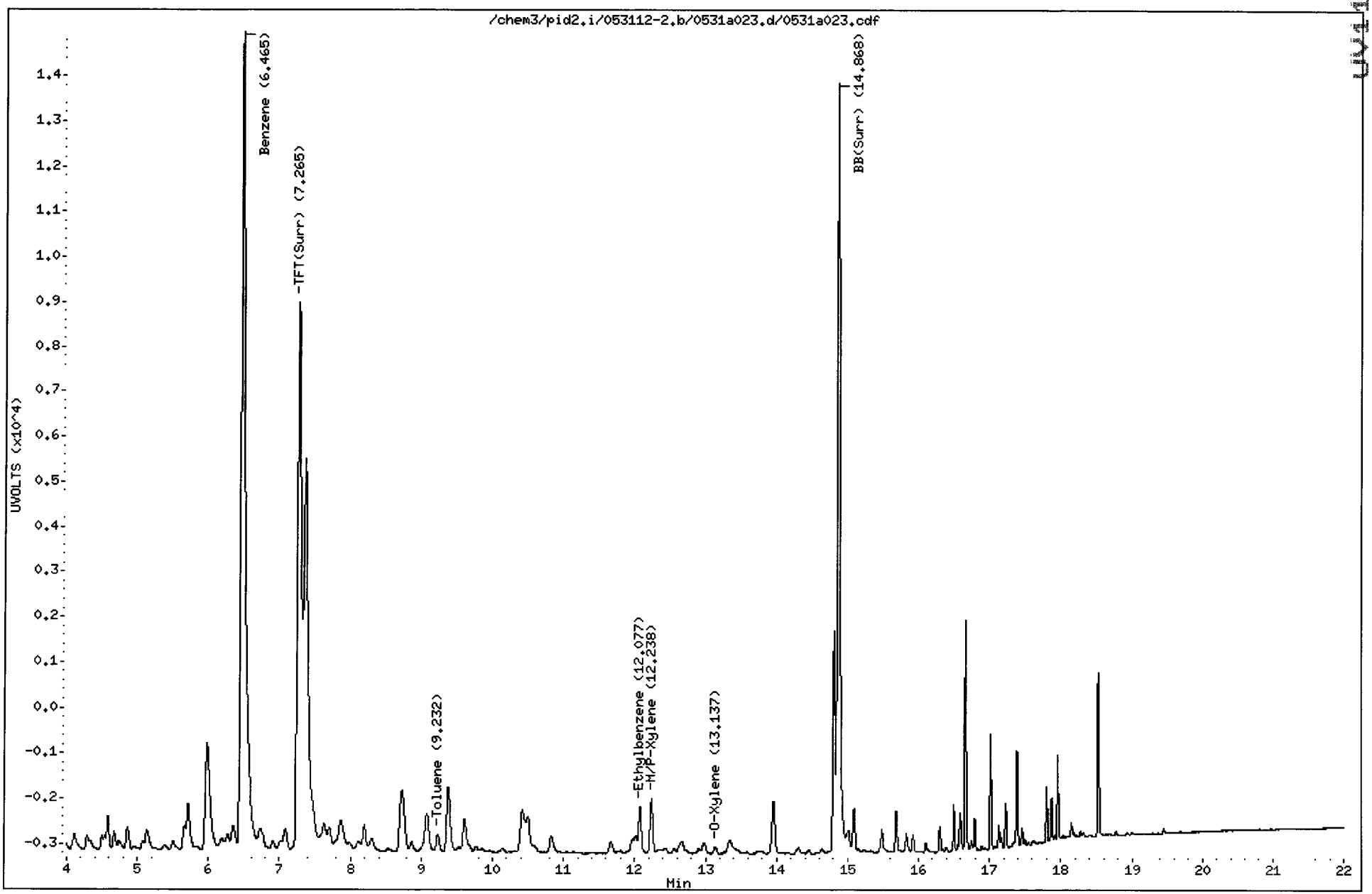
Column phase: RTX 502-2 PID

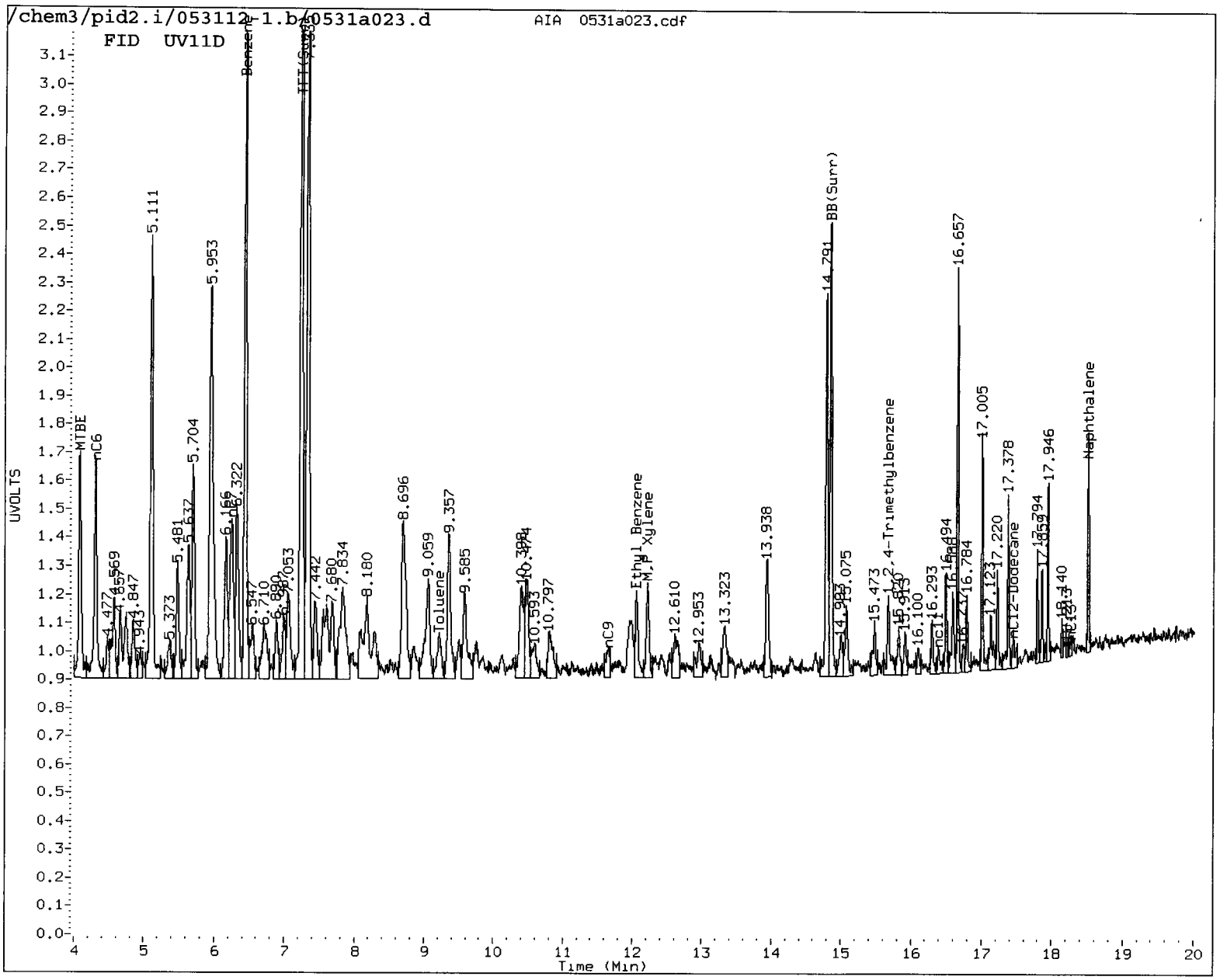
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV11 : 00025





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: ~~6/2/12~~ 6/2/12

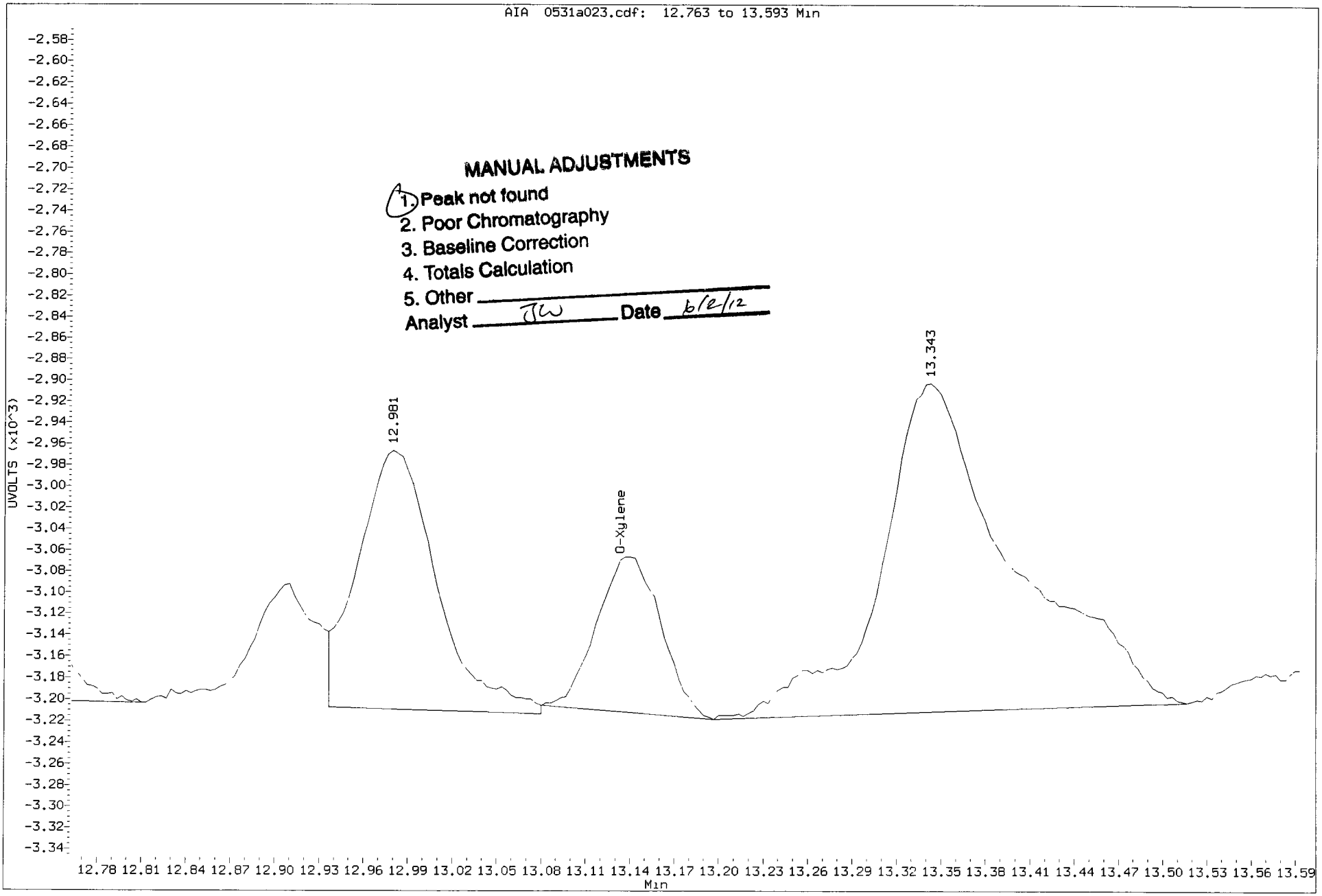
Data File: /chem3/pid2.i/053112-2.b/0531a023.d/0531a023.cdf
Injection Date: 31-MAY-2012 17:20
Instrument: pid2.i
Client Sample ID: USO-P5-D

AIA 0531a023.cdf: 12.763 to 13.593 Min

MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other

Analyst JW Date 6/2/12



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P5-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11E
LIMS ID: 12-9195
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 14:39
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 45 mg-dry-wt
Percent Moisture: 39.2%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	28	< 28 U	
108-88-3	**Toluene**	**28**	**31**	
100-41-4	Ethylbenzene	28	< 28 U	
179601-23-1	m,p-Xylene	55	< 55 U	
95-47-6	o-Xylene	28	< 28 U	
	Gasoline Range Hydrocarbons	11	< 11 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	96.9%
Bromobenzene	97.7%

Gasoline Surrogate Recovery

Trifluorotoluene	96.1%
Bromobenzene	98.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a012.d
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a012.d
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m
Instrument: pid1.i
Gas Ical Date: 15-MAY-2012
BETX Ical Date: 15-MAY-2012

ARI ID: UV11E
Client ID: USO-P5-E
Injection Date: 24-MAY-2012 14:39
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.002	2879	36219	96.1	TFT(Surr)
15.407	0.000	1896	15992	98.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	11756	0.034 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	11846	0.017 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	7341	0.014 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	13618	0.038 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3591	96.9	TFT(Surr)
15.417	0.003	7971	97.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.043	-0.007	14	0.06N	Benzene
9.913	-0.001	61	0.28N	Toluene
12.803	-0.004	10	0.05N	Ethylbenzene
12.973	0.005	45	0.21N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a012.d

Date : 24-MAY-2012 14:39

Client ID: USO-P5-E

Sample Info: UV11E

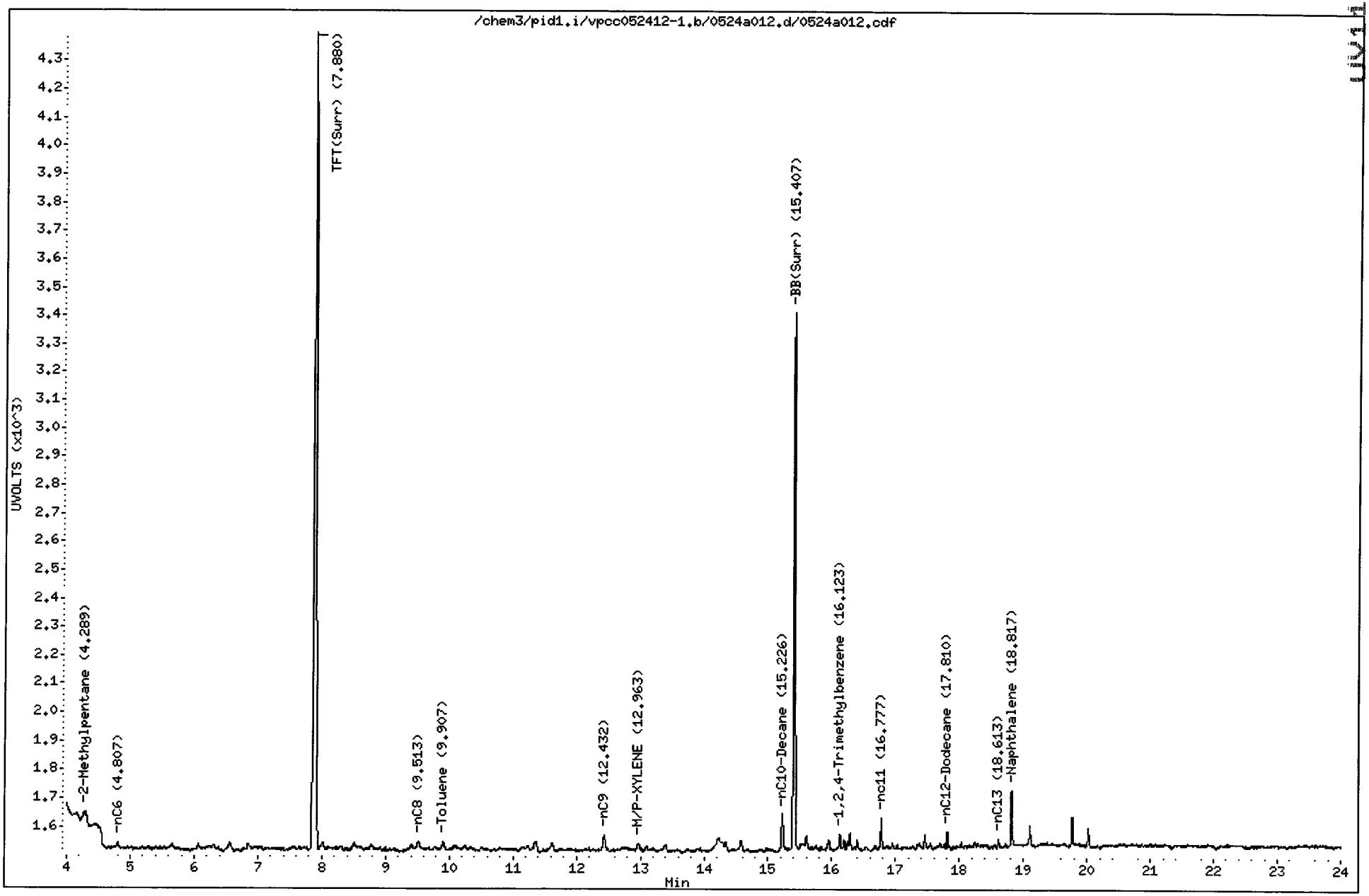
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV11 00030



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a012.d

Date : 24-MAY-2012 14:39

Client ID: USO-P5-E

Sample Info: UV11E

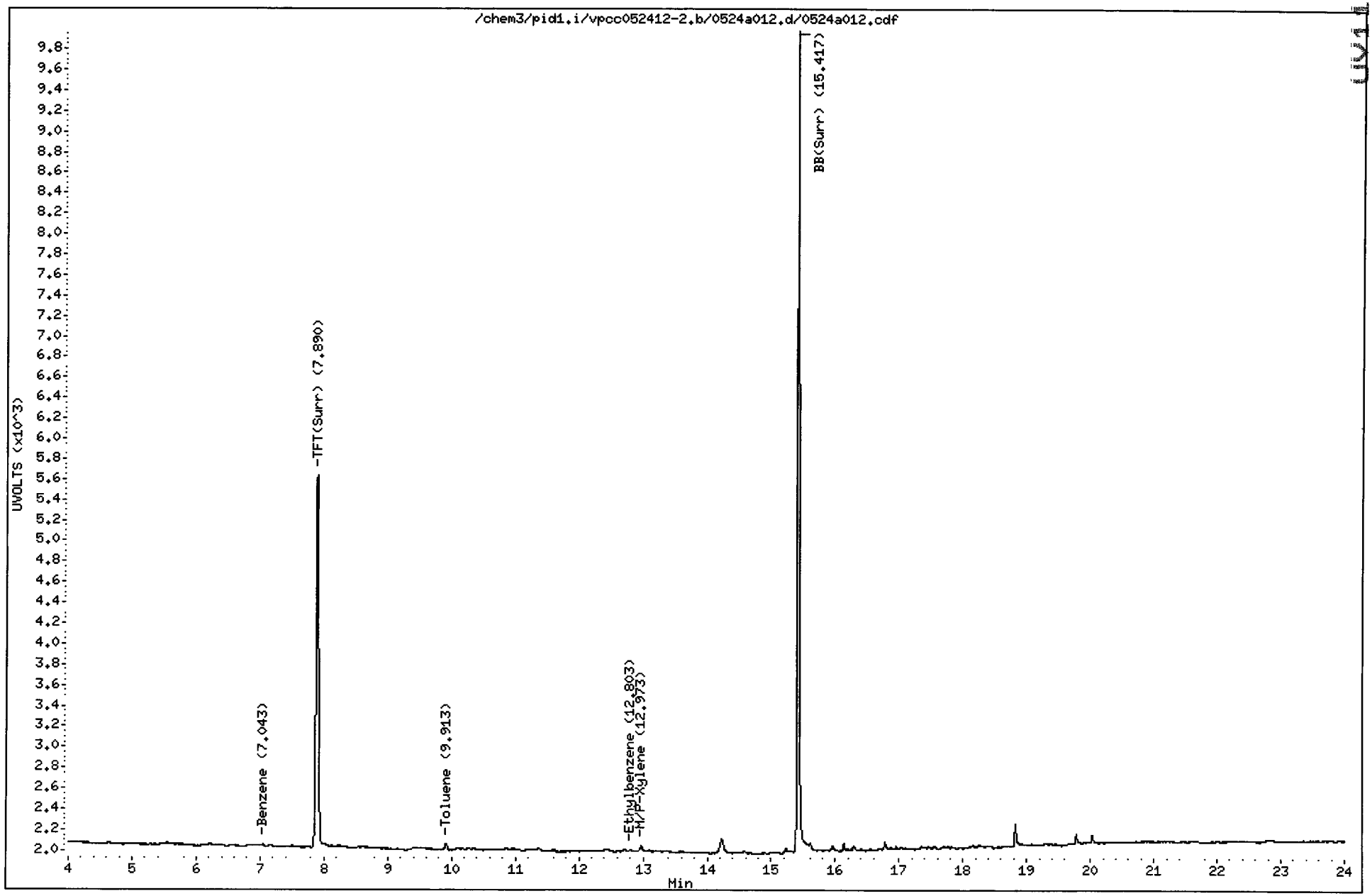
Column phase: RTX 502-2 PID

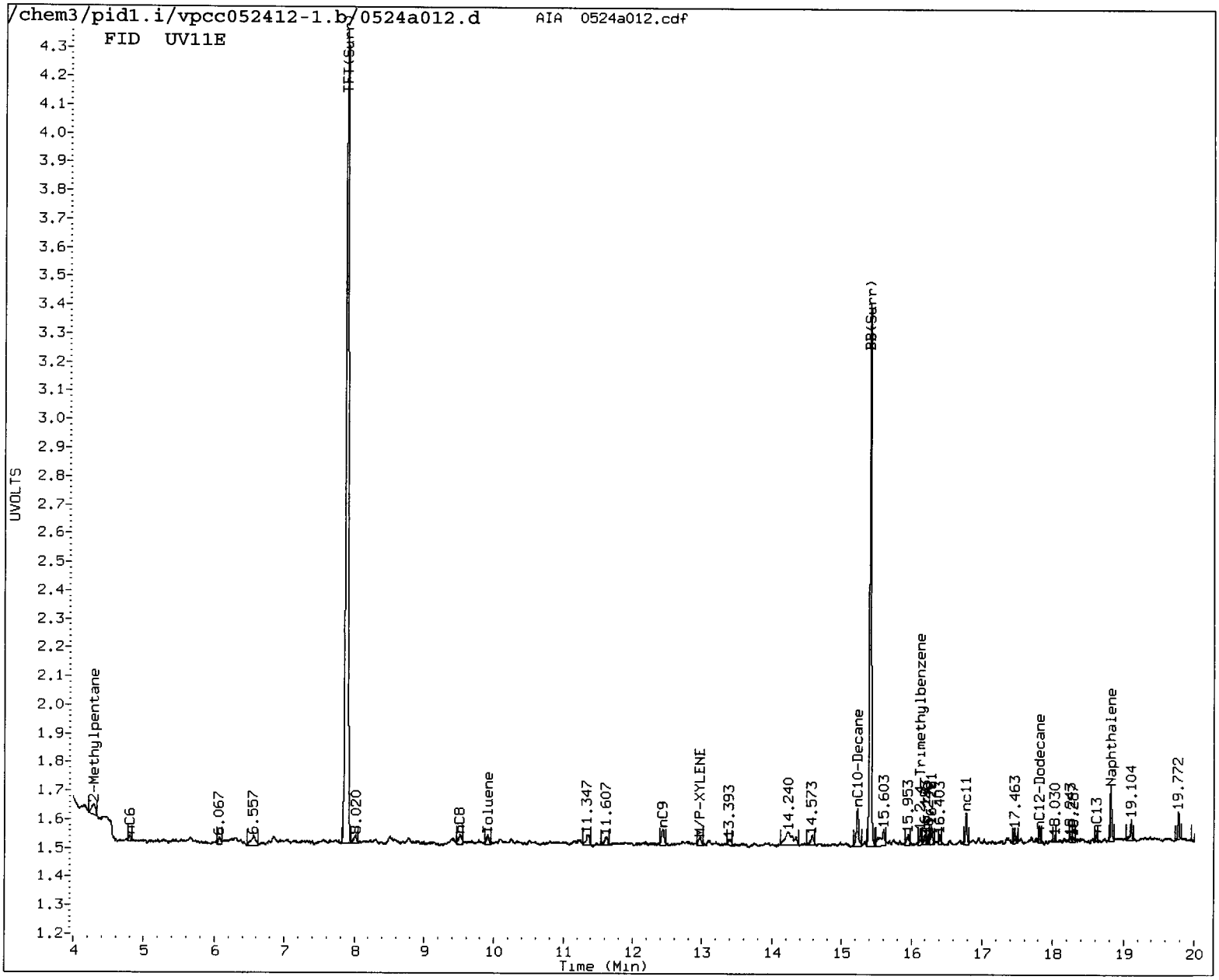
Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV11 00031





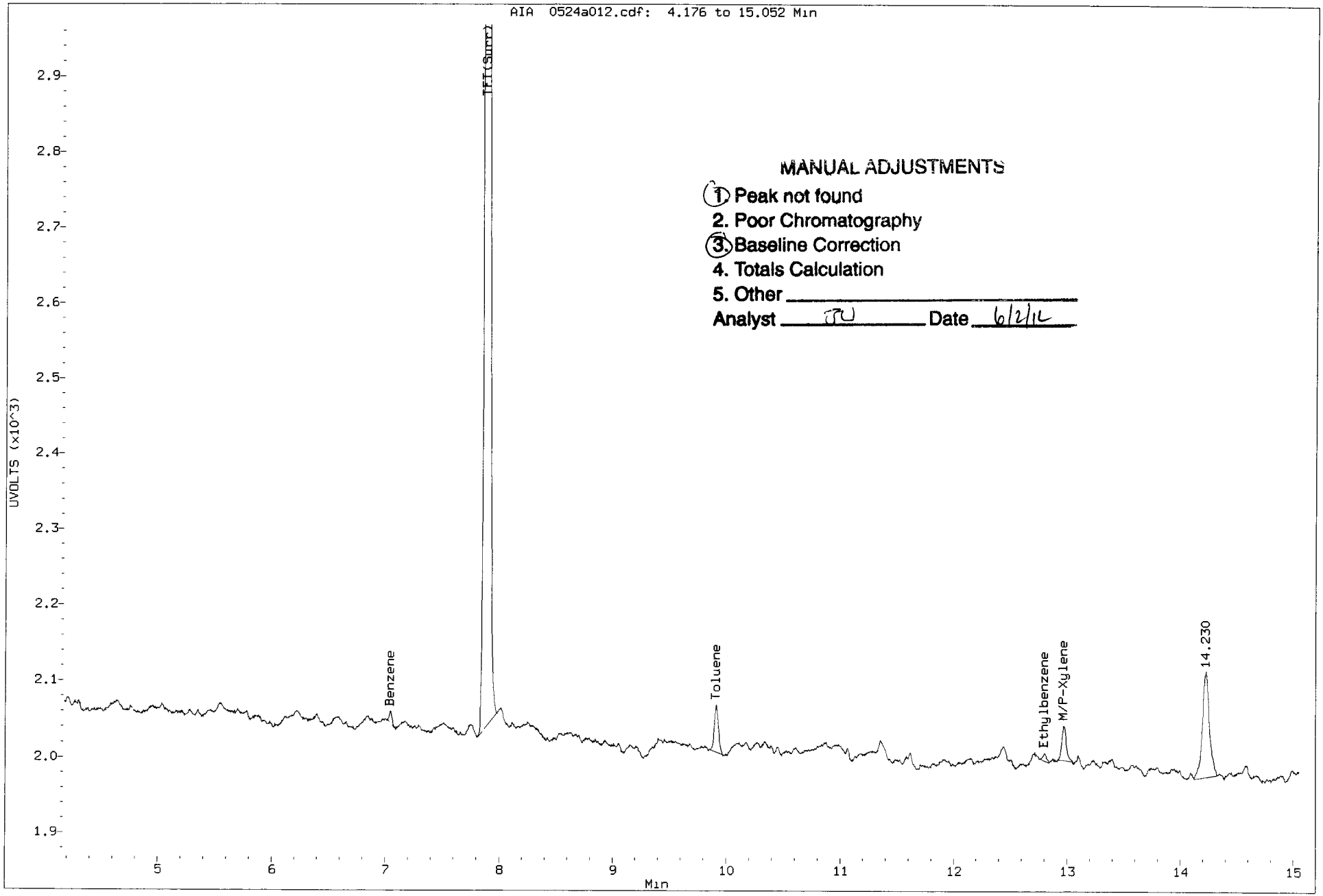
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a012.d/0524a012.cdf
Injection Date: 24-MAY-2012 14:39
Instrument: pid1.i
Client Sample ID: USO-P5-E



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JU Date 6/2/12

UV1 : 00033

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P6-A**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11F
LIMS ID: 12-9196
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 16:36
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 9.4 mg-dry-wt
Percent Moisture: 4.6%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**130**	**4,100**	
108-88-3	**Toluene**	**130**	**63,000**	
100-41-4	**Ethylbenzene**	**130**	**28,000**	
179601-23-1	**m,p-Xylene**	**270**	**180,000**	
95-47-6	**o-Xylene**	**130**	**68,000**	
				GAS ID
	Gasoline Range Hydrocarbons	**53**	**4,200**	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	95.1%
Bromobenzene	99.7%

Gasoline Surrogate Recovery

Trifluorotoluene	95.8%
Bromobenzene	103%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a016.d ARI ID: UV11F
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a016.d Client ID: USO-P6-A
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 16:36
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.882	0.004	2869	39801	95.8	TFT(Surr)
15.409	0.002	1998	18478	103.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	2670056	7.826
8015C 2MP-TMB	(4.20 to 16.22)	678311	3330236	4.910
AK101 nC6-nC10	(4.70 to 15.12)	538315	2580844	4.794
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	2804632	7.801

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3527	95.1	TFT(Surr)
15.416	0.002	8133	99.7	BB(Surr)

JW 5/31/12

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.002	1910	7.66	Benzene
9.919	0.005	25860	118.45	Toluene
12.810	0.003	10144	52.43N	Ethylbenzene
12.980	0.012	70993	330.61	M/P-Xylene
13.926	0.006	21499	127.96	O-Xylene
4.565	-0.005	197	2.34	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a016.d

Date : 24-MAY-2012 16:36

Client ID: USO-P6-A

Sample Info: UV11F

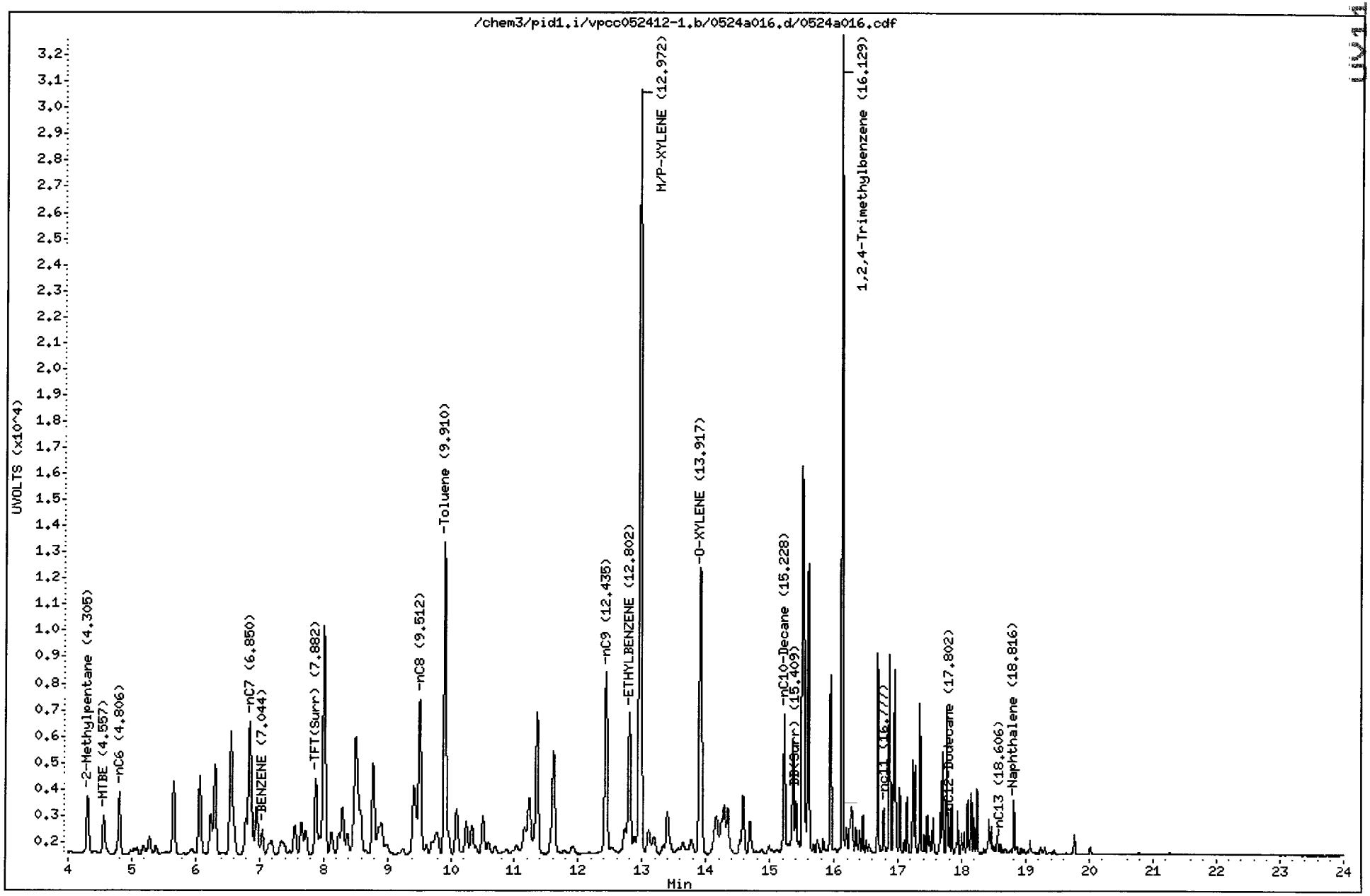
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV11 : 00036



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a016.d

Date : 24-MAY-2012 16:36

Client ID: USO-P6-A

Sample Info: UW11F

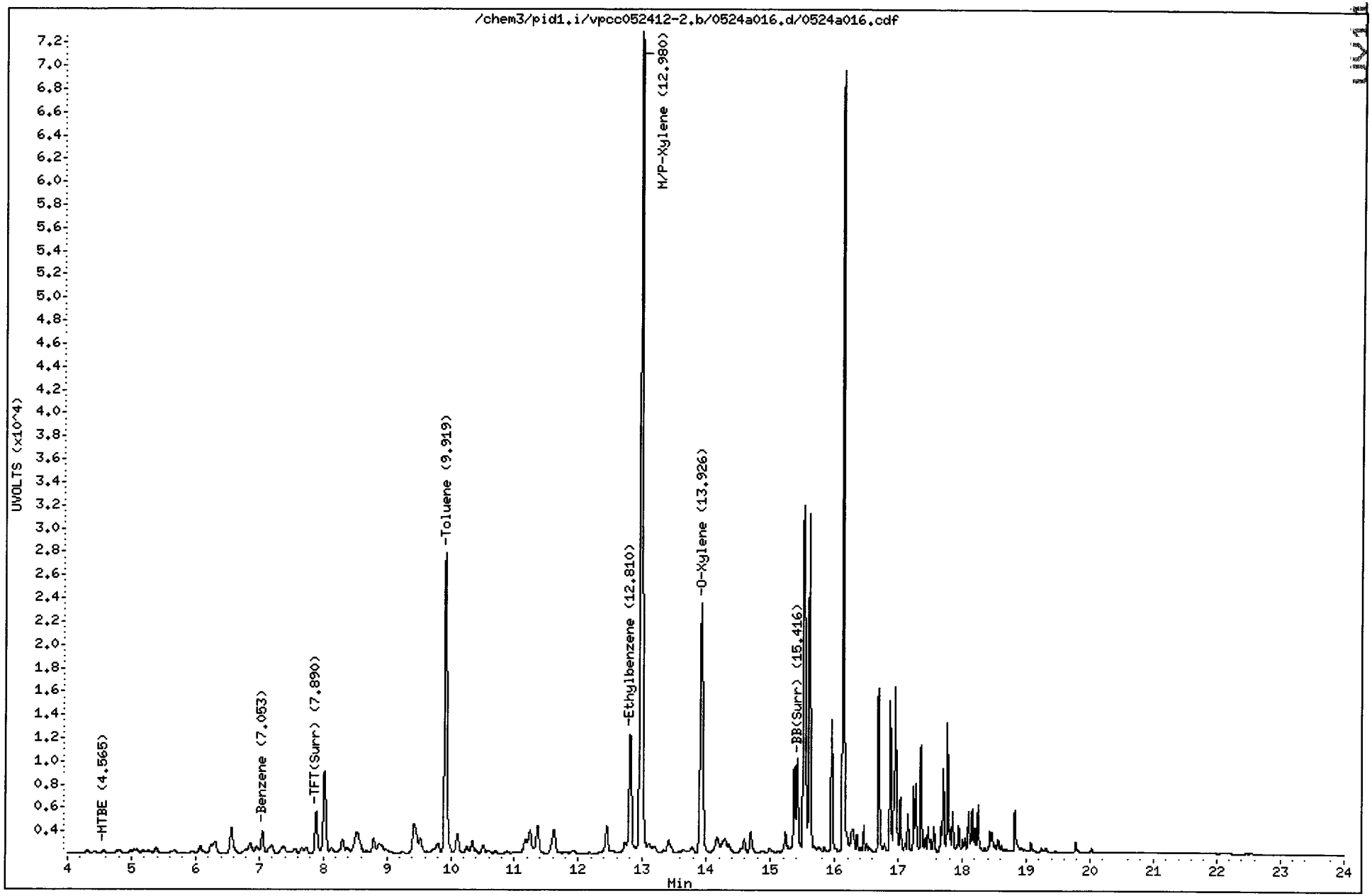
Column phase: RTX 502-2 PID

Instrument: pid1.i

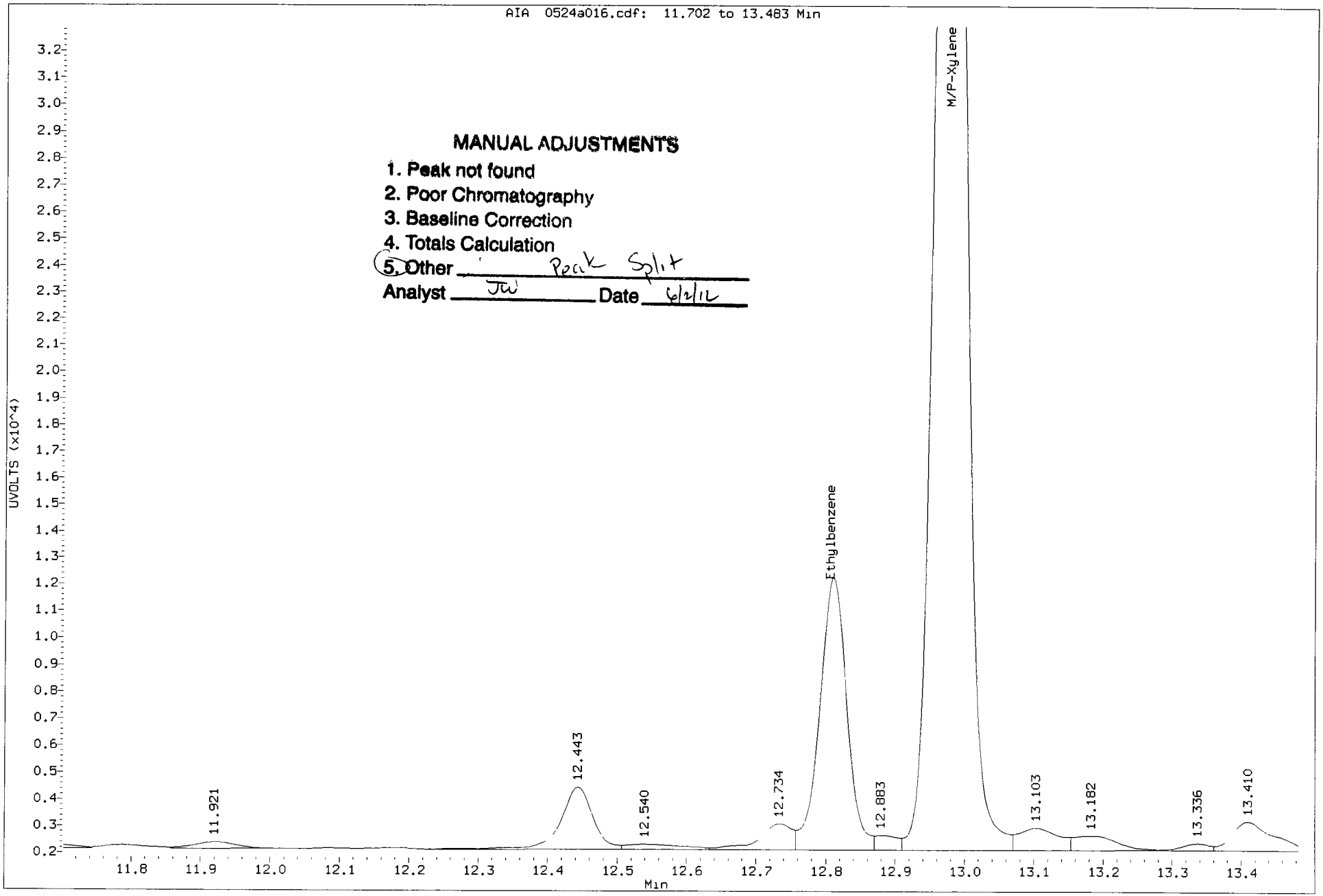
Operator: MH

Column diameter: 0.18

UW11 : 00037



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a016.d/0524a016.cdf
Injection Date: 24-MAY-2012 16:36
Instrument: pid1.i
Client Sample ID: USO-P6-A



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P6-B**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11G
LIMS ID: 12-9197
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 17:05
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 9.4 mg-dry-wt
Percent Moisture: 6.1%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	130	21,000	
108-88-3	Toluene	130	250,000	E
100-41-4	Ethylbenzene	130	98,000	
179601-23-1	m,p-Xylene	270	530,000	E
95-47-6	o-Xylene	130	210,000	E
	Gasoline Range Hydrocarbons	53	13,000	E

GAS ID
GAS

BETX Surrogate Recovery

Trifluorotoluene	111%
Bromobenzene	132%

Gasoline Surrogate Recovery

Trifluorotoluene	116%
Bromobenzene	143%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a017.d ARI ID: UV11G
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a017.d Client ID: USO-P6-B
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 17:05
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.881	0.003	3479	52596	116.1	TFT(Surr)
15.411	0.004	2775	23894	143.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	8270630	24.240
8015C 2MP-TMB	(4.20 to 16.22)	678311	12373741	18.242
AK101 nC6-nC10	(4.70 to 15.12)	538315	10077721	18.721
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	8609658	23.947 E

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	4117	111.0	TFT(Surr)
15.417	0.003	10787	132.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.056	0.005	9816	39.36	Benzene
9.926	0.012	100440	460.05	Toluene E
12.820	0.013	35698	184.51N	Ethylbenzene
12.999	0.031	211837	986.52	M/P-Xylene E
13.937	0.018	67326	400.72	O-Xylene E
4.568	-0.002	1376	16.36	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a017.d

Date : 24-MAY-2012 17:05

Client ID: USO-P6-B

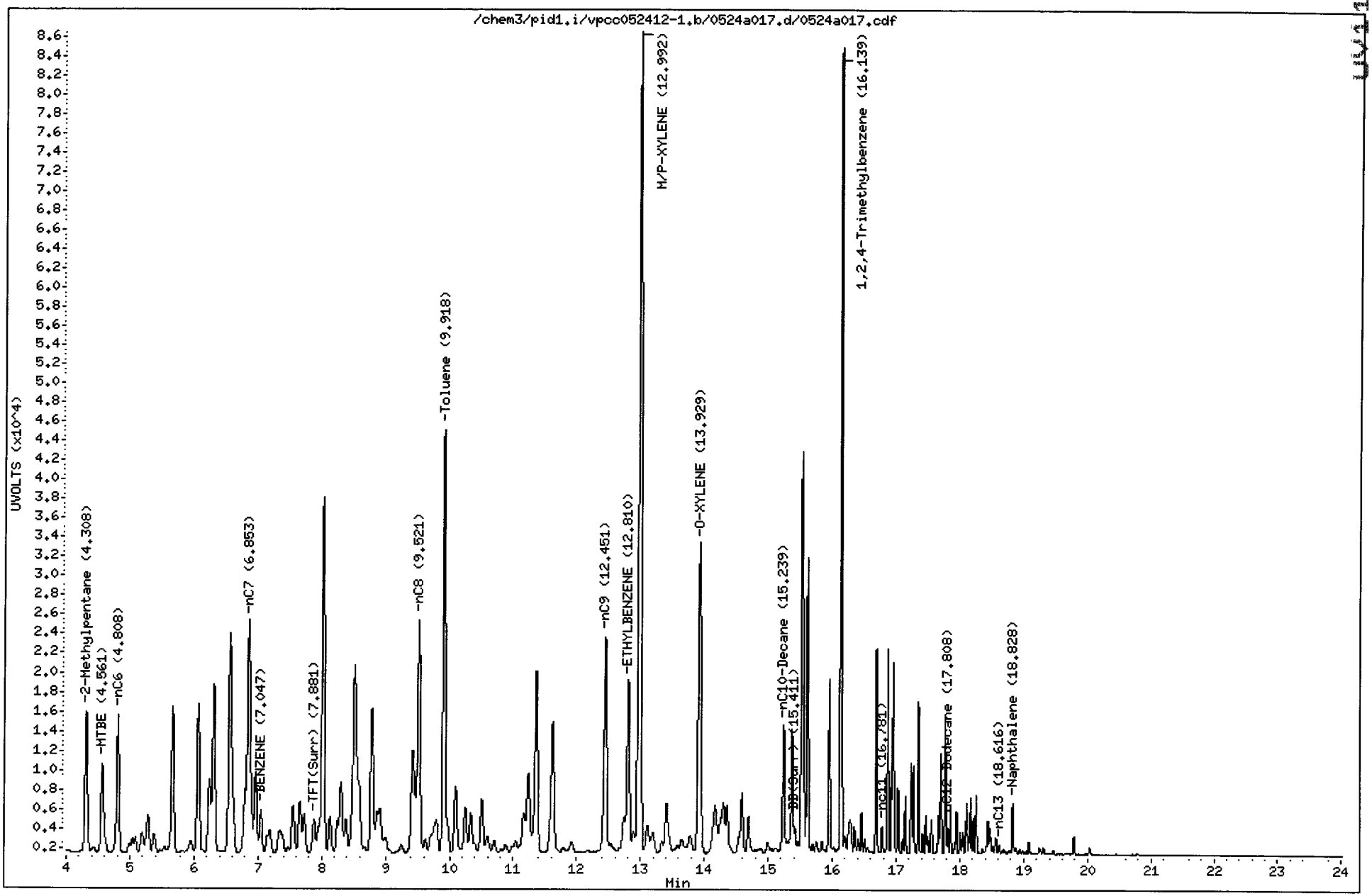
Sample Info: UV11G

Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a017.d

Date : 24-MAY-2012 17:05

Client ID: USO-P6-B

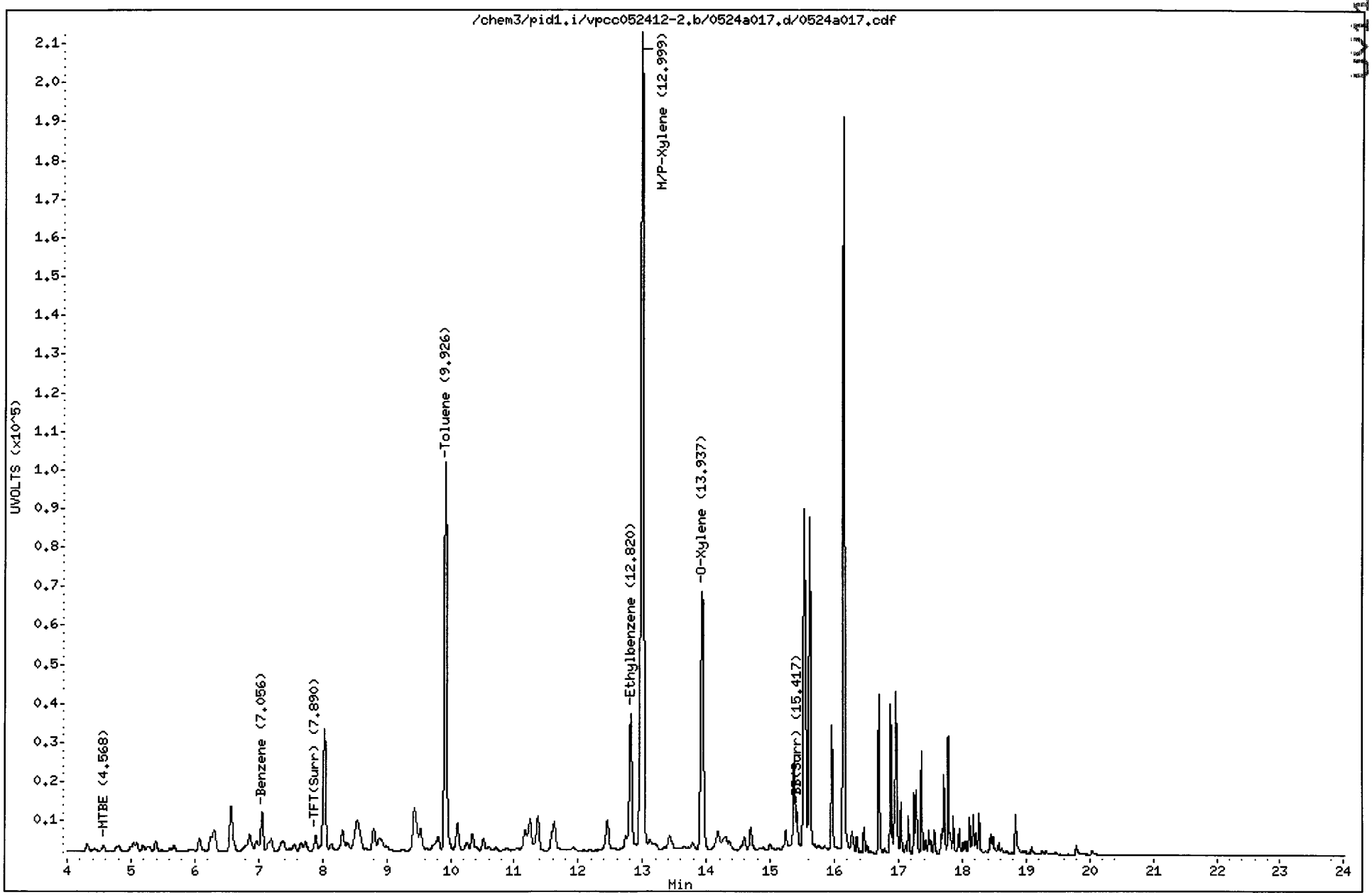
Sample Info: UV11G

Column phase: RTX 502-2 PID

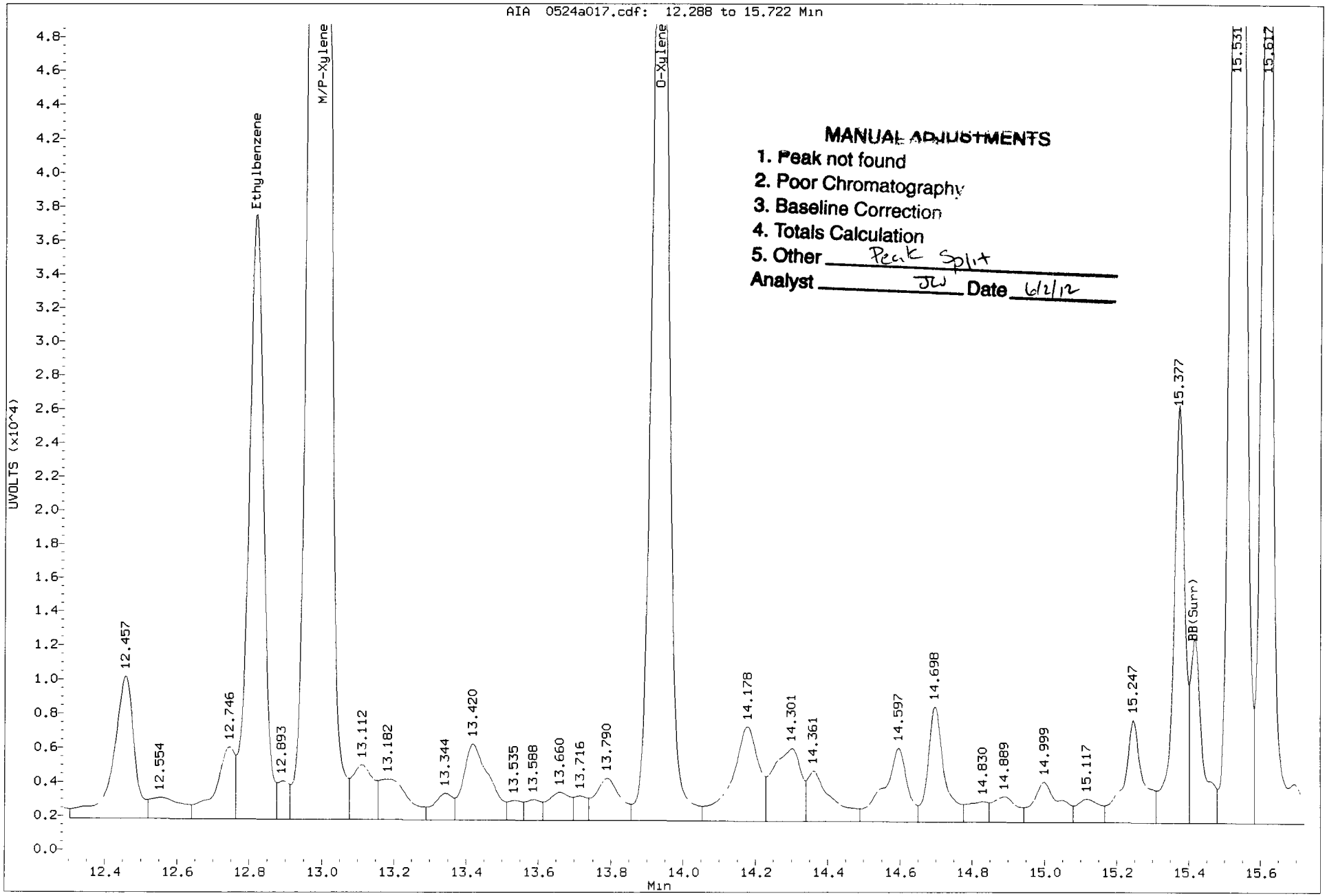
Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a017.d/0524a017.cdf
Injection Date: 24-MAY-2012 17:05
Instrument: pid1.i
Client Sample ID: USO-P6-B



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other Peak Split

Analyst JW Date 6/2/12

UV11 : 00043

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P6-B**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV11G
LIMS ID: 12-9197
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 20:13
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 0.94 mg-dry-wt
Percent Moisture: 6.1%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**1,300**	**20,000**	
108-88-3	**Toluene**	**1,300**	**230,000**	
100-41-4	**Ethylbenzene**	**1,300**	**90,000**	
179601-23-1	**m,p-Xylene**	**2,700**	**530,000**	
95-47-6	**o-Xylene**	**1,300**	**200,000**	
				GAS ID
	Gasoline Range Hydrocarbons	**530**	**12,000**	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	89.7%
Bromobenzene	94.1%

Gasoline Surrogate Recovery

Trifluorotoluene	90.7%
Bromobenzene	93.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a018.d ARI ID: UV11G
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a018.d Client ID: USO-P6-B
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 20:13
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.886	0.008	2716	38160	90.7	TFT(Surr)
15.407	0.004	1801	16902	93.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	756664	2.218
8015C 2MP-TMB	(4.21 to 16.22)	678311	1078168	1.589
AK101 nC6-nC10	(4.71 to 15.12)	538315	854954	1.588
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	789685	2.196 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.894	0.008	3324	89.7	TFT(Surr)
15.413	0.003	7675	94.1	BB(Surr)

JW 5/31/12

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.056	0.006	934	3.75	Benzene
9.920	0.008	9422	43.16	Toluene
12.810	0.007	3271	16.91N	Ethylbenzene
12.974	0.010	21374	99.54	M/P-Xylene
13.922	0.008	6225	37.05	O-Xylene
4.573	-0.016	109	1.30N	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a018.d

Date : 30-MAY-2012 20:13

Client ID: USO-P6-B

Sample Info: UV11G

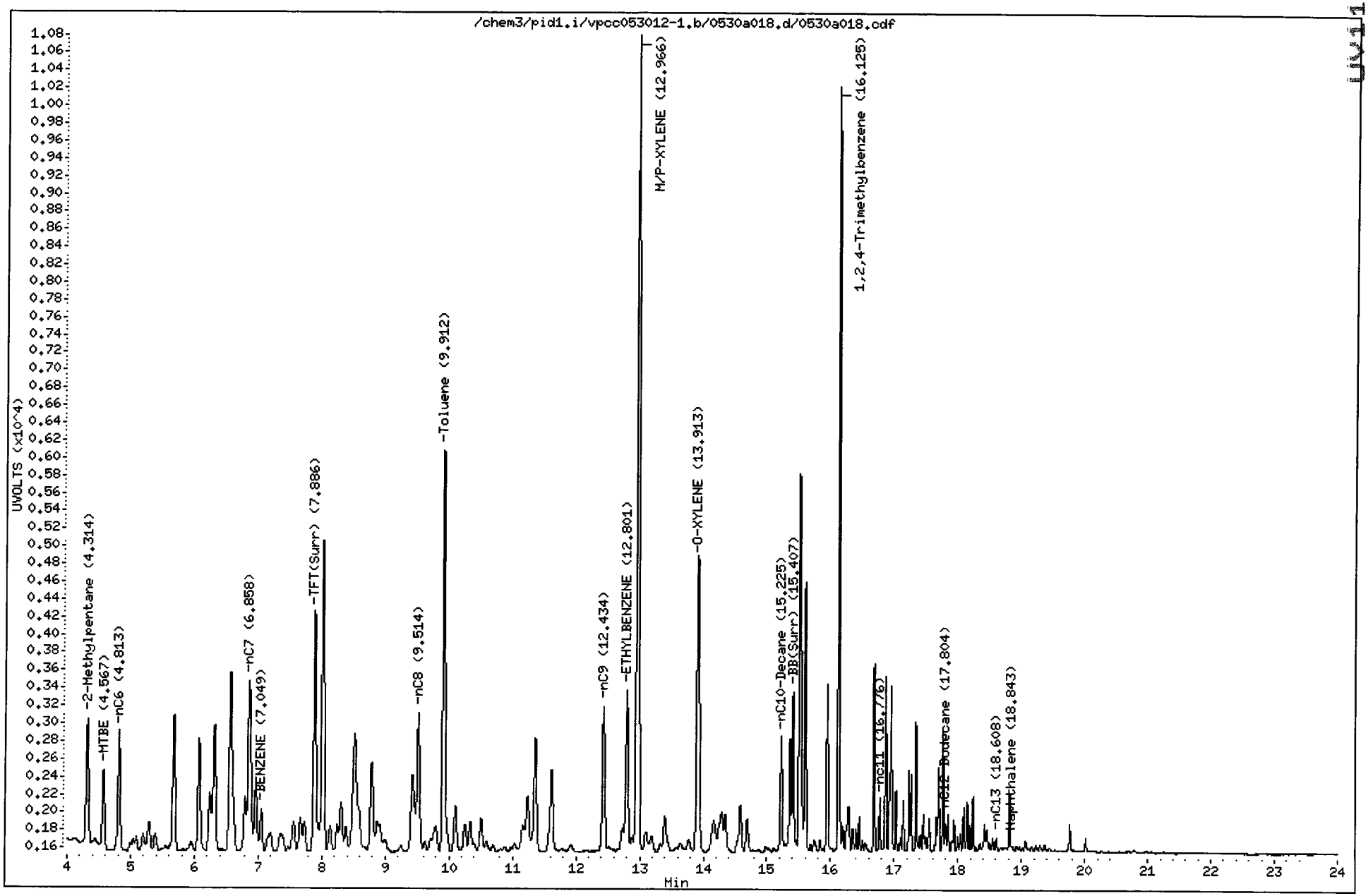
Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV11 : 00046



Data File: /chem3/pid1.i/vpcc053012-2.b/0530a018.d

Date : 30-MAY-2012 20:13

Client ID: USO-P6-B

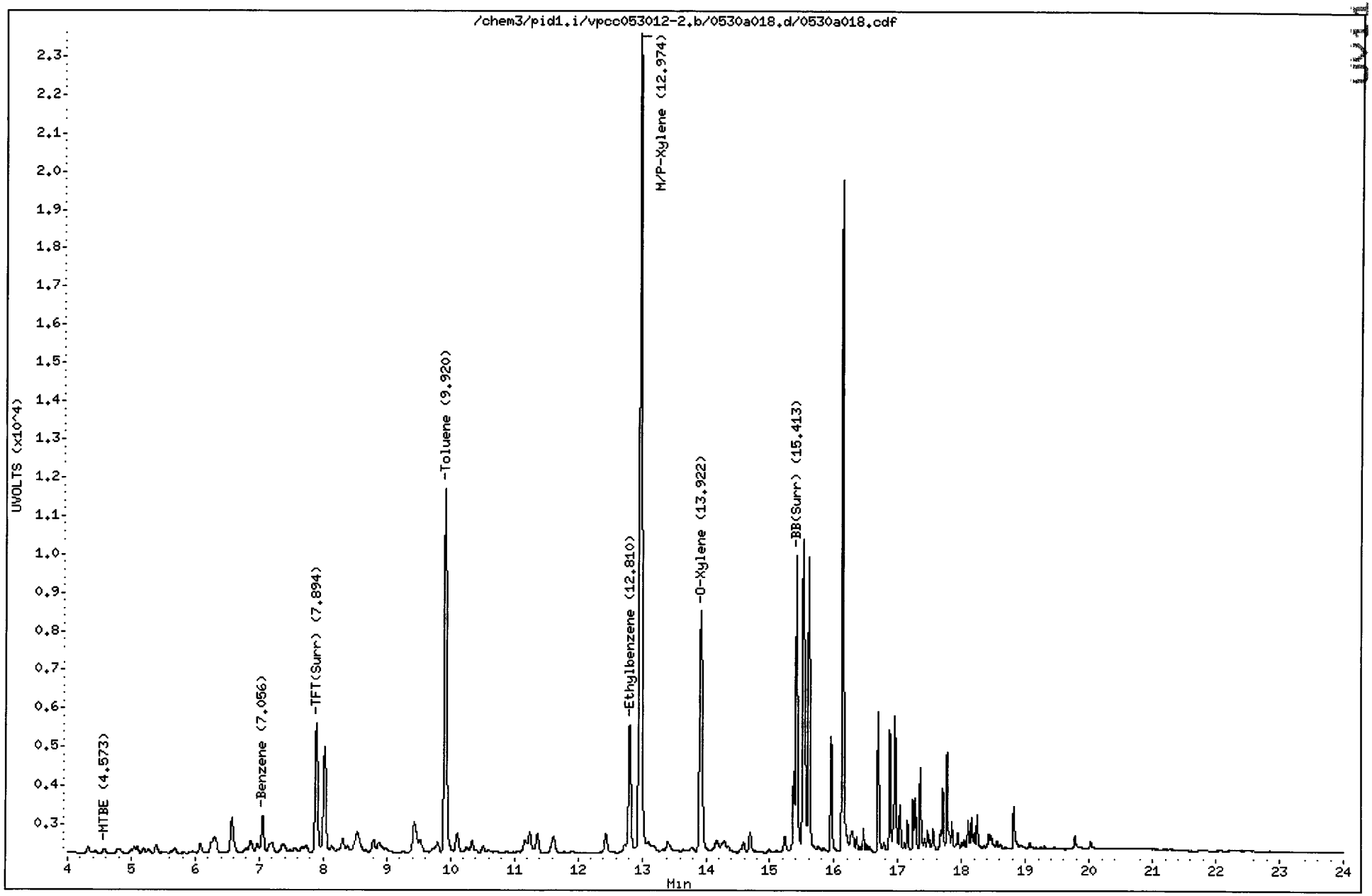
Sample Info: UV11G

Column phase: RTX 502-2 PID

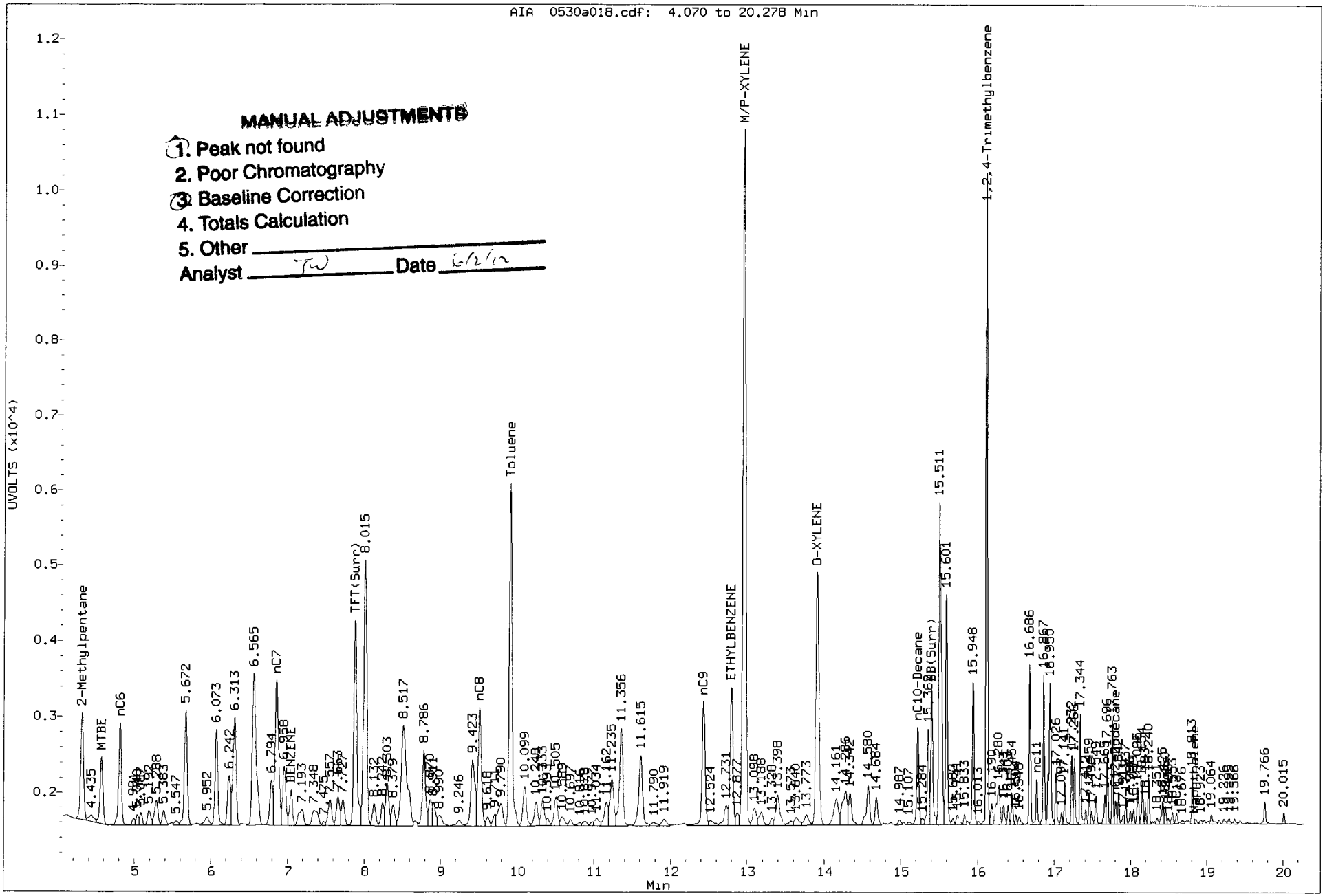
Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc053012-1.b/0530a018.d/0530a018.cdf
Injection Date: 30-MAY-2012 20:13
Instrument: pid1.i
Client Sample ID: USO-P6-B



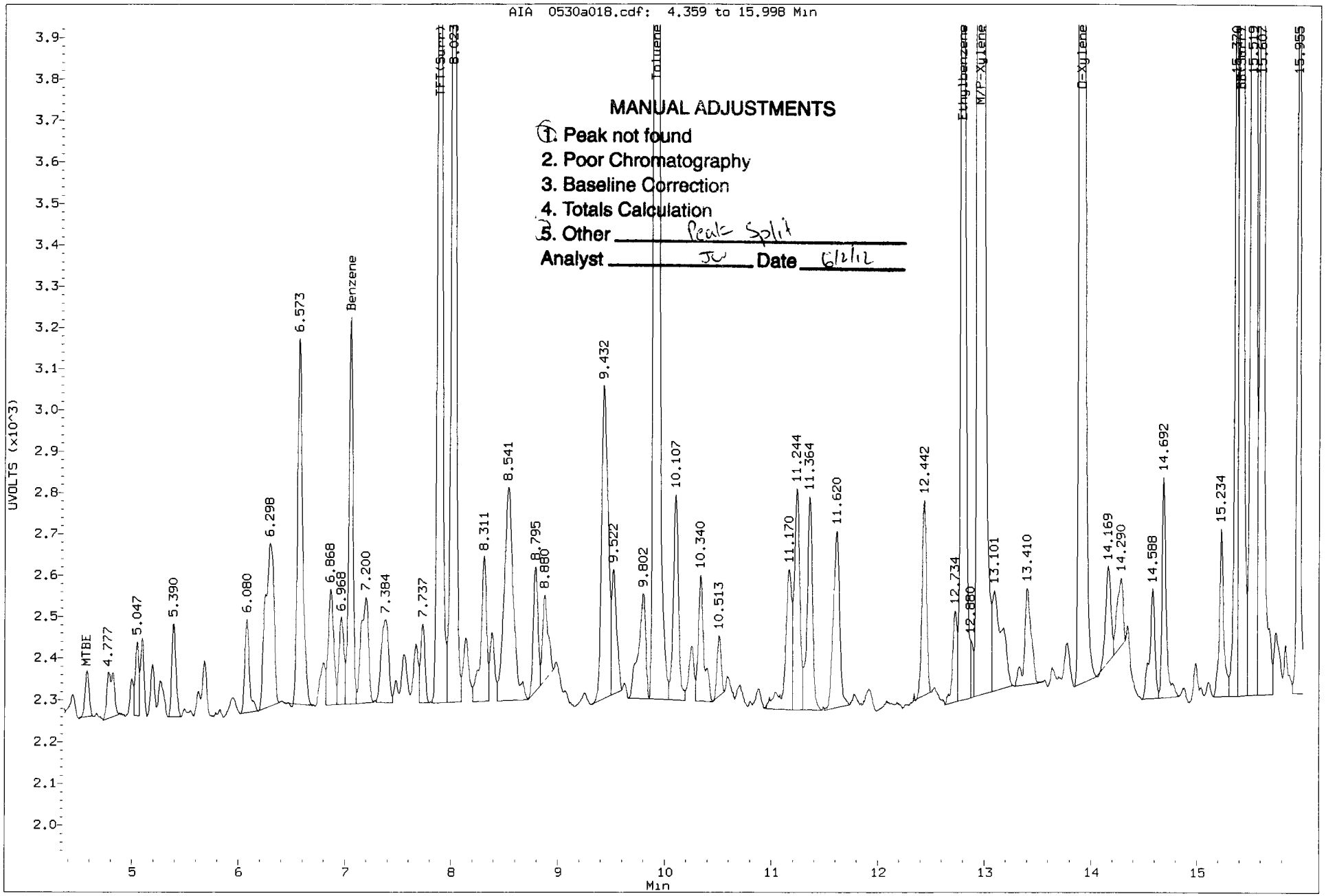
MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst TW Date 6/2/12

UV11 : 00018

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a018.d/0530a018.cdf
Injection Date: 30-MAY-2012 20:13
Instrument: pid1.i
Client Sample ID: USO-P6-B



UV11 : 00049

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P6-C
SAMPLE

Lab Sample ID: UV11H
LIMS ID: 12-9198
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 17:34
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 8.2 mg-dry-wt
Percent Moisture: 5.1%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**150**	**14,000**	
108-88-3	**Toluene**	**150**	**200,000**	**E**
100-41-4	**Ethylbenzene**	**150**	**93,000**	
179601-23-1	**m,p-Xylene**	**310**	**500,000**	**E**
95-47-6	**o-Xylene**	**150**	**200,000**	**E**
	Gasoline Range Hydrocarbons	**61**	**12,000**	**E** GAS ID **GAS**

BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	120%

Gasoline Surrogate Recovery

Trifluorotoluene	109%
Bromobenzene	142%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a018.d ARI ID: UV11H
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a018.d Client ID: USO-P6-C
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 17:34
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.003	3260	47746	108.8	TFT(Surr)
15.409	0.003	2755	24397	142.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	6837949	20.041
8015C 2MP-TMB	(4.20 to 16.22)	678311	9690380	14.286
AK101 nC6-nC10	(4.70 to 15.12)	538315	7907816	14.690
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	7075299	19.679 E

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.889	0.003	3862	104.2	TFT(Surr)
15.417	0.003	9755	119.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	5642	22.63	Benzene
9.922	0.008	71285	326.51	Toluene E
12.817	0.010	29257	151.22N	Ethylbenzene
12.994	0.026	175386	816.77	M/P-Xylene E
13.933	0.013	53667	319.42	O-Xylene E
4.566	-0.005	798	9.49	MTBE

JW 6/21/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a018.d

Date : 24-MAY-2012 17:34

Client ID: USO-P6-C

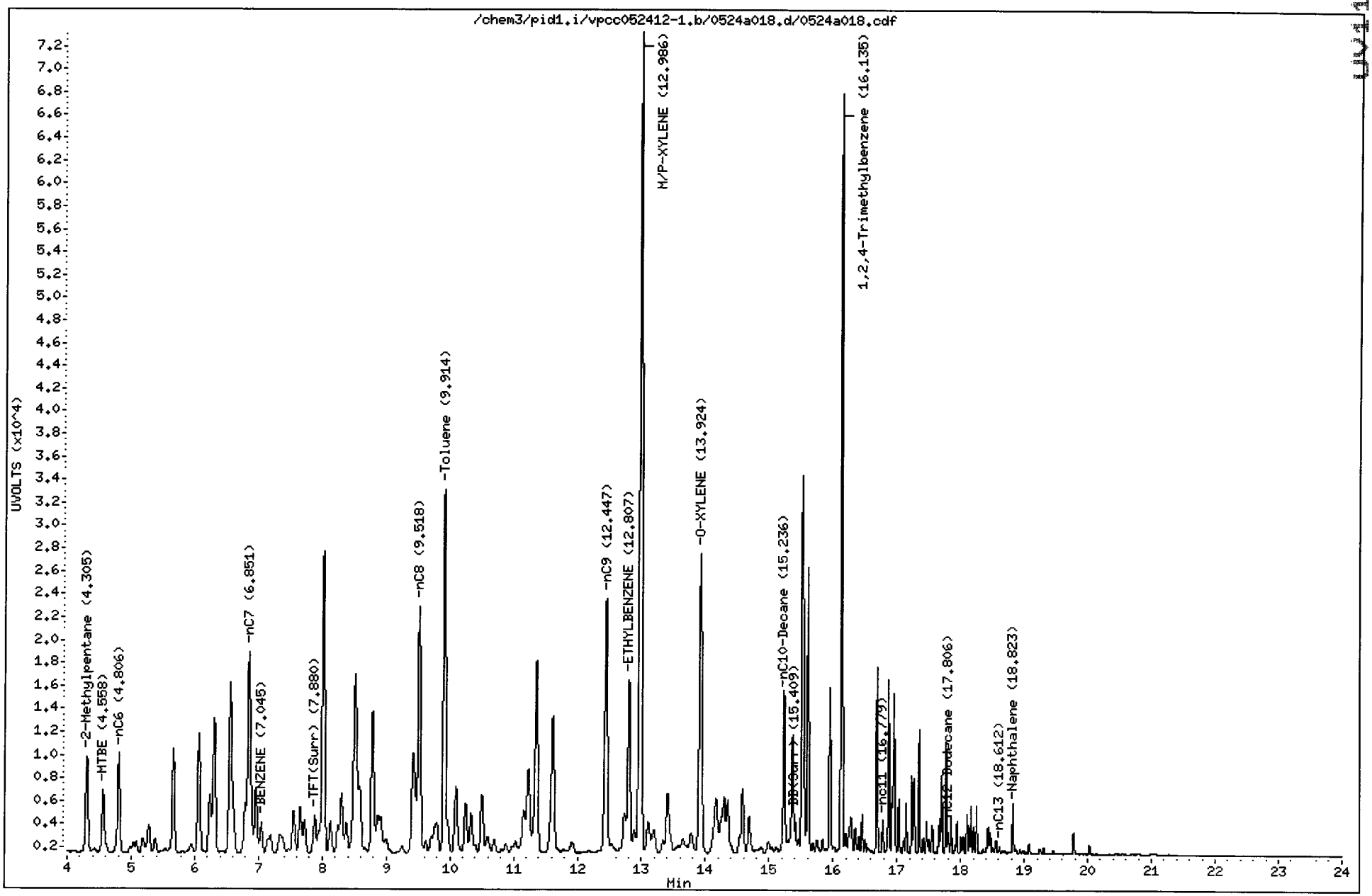
Sample Info: UV11H

Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a018.d

Date : 24-MAY-2012 17:34

Client ID: USO-P6-C

Sample Info: UV11H

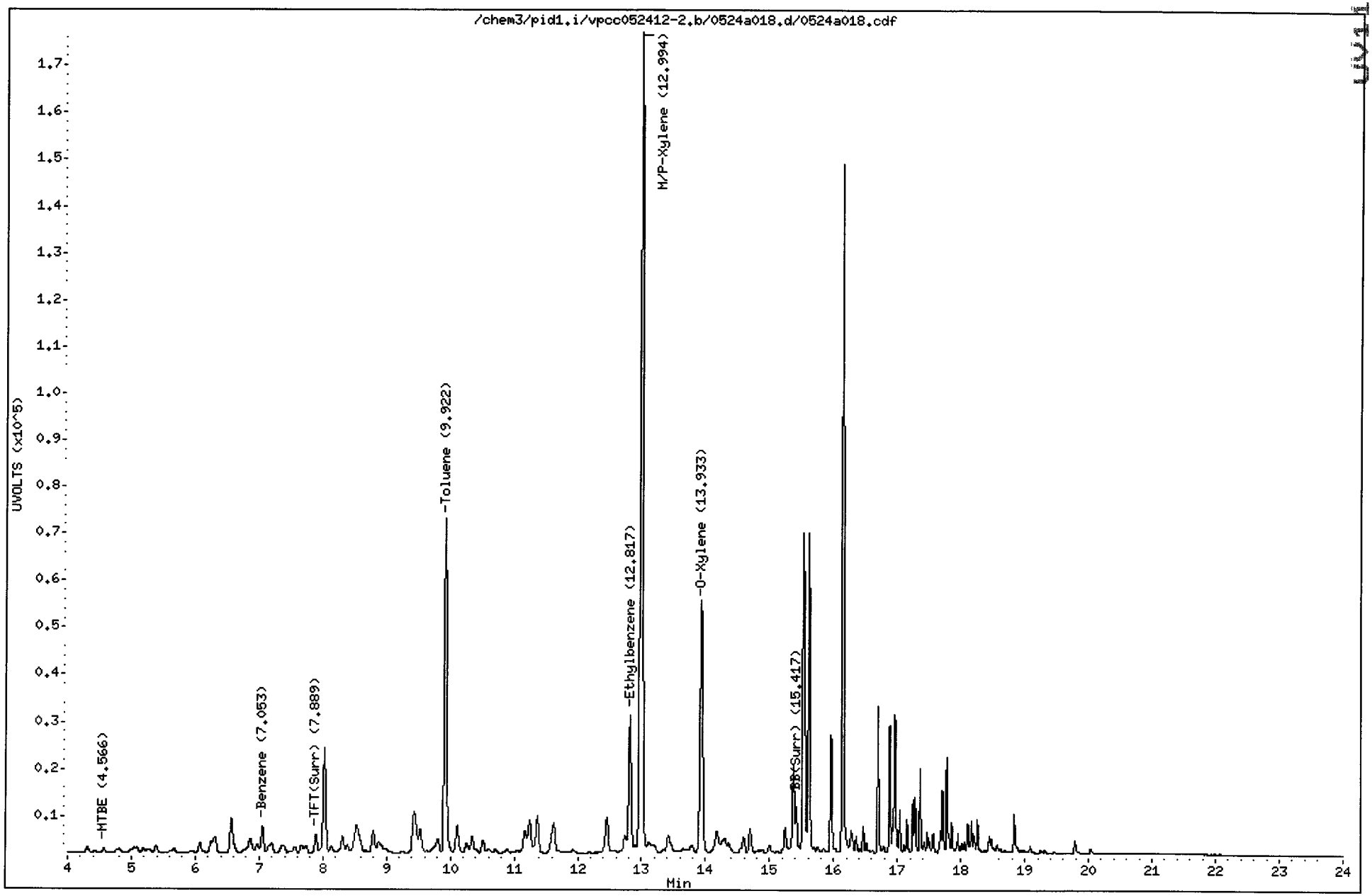
Column phase: RTX 502-2 PID

Instrument: pid1.i

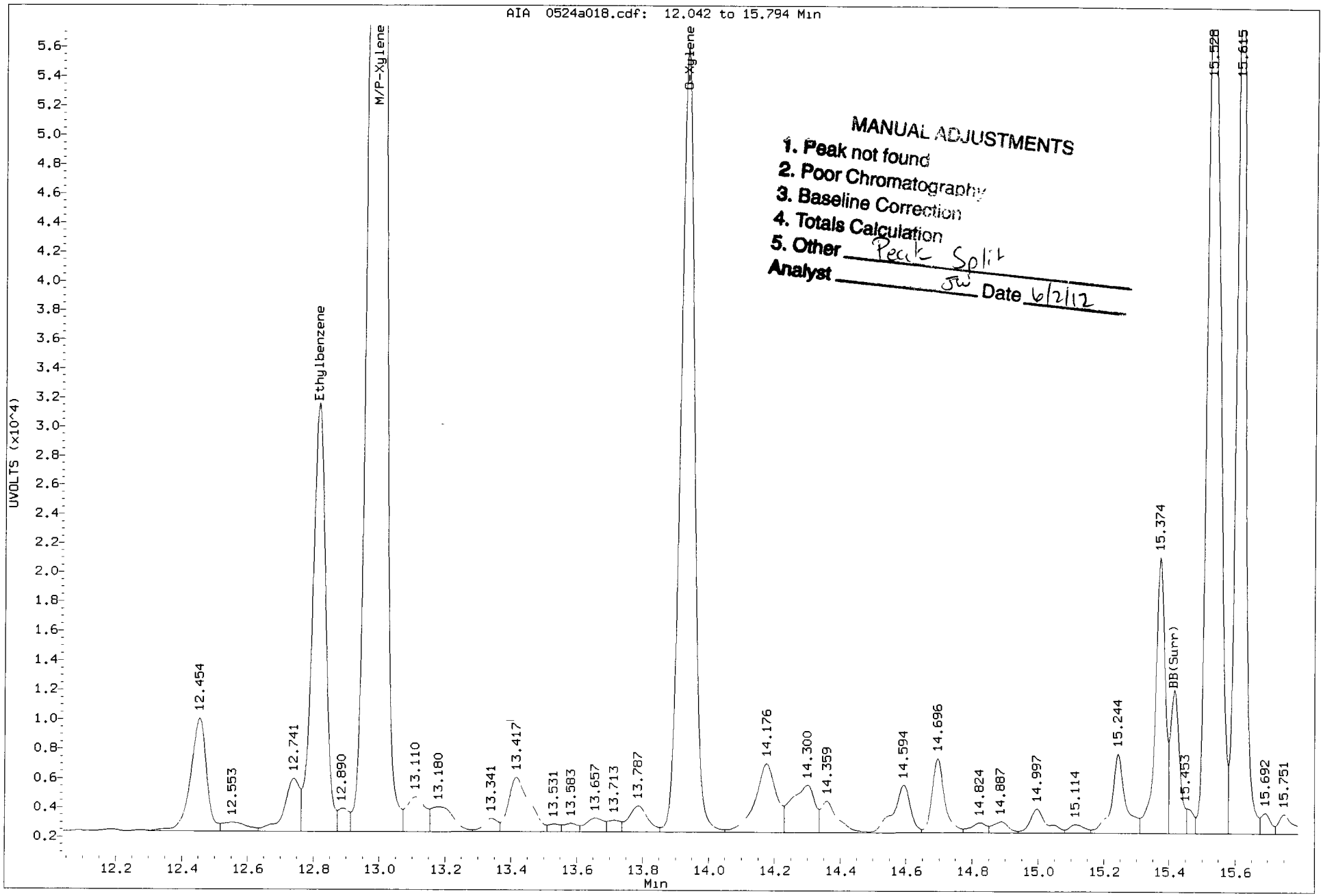
Operator: MH

Column diameter: 0.18

UV11 00053



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a018.d/0524a018.cdf
Injection Date: 24-MAY-2012 17:34
Instrument: pid1.i
Client Sample ID: USO-P6-C



UV11 : 00054

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P6-C**
TPHG by Method NWTPHG **DILUTION**

Lab Sample ID: UV11H
LIMS ID: 12-9198
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 20:43
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 0.82 mg-dry-wt
Percent Moisture: 5.1%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	1,500	14,000	
108-88-3	Toluene	1,500	200,000	
100-41-4	Ethylbenzene	1,500	91,000	
179601-23-1	m,p-Xylene	3,100	540,000	
95-47-6	o-Xylene	1,500	200,000	
	Gasoline Range Hydrocarbons	610	12,000	GAS

BETX Surrogate Recovery

Trifluorotoluene	95.6%
Bromobenzene	98.9%

Gasoline Surrogate Recovery

Trifluorotoluene	96.0%
Bromobenzene	98.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a019.d ARI ID: UV11H
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a019.d Client ID: USO-P6-C
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 20:43
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.885	0.008	2875	39284	96.0	TFT(Surr)
15.407	0.004	1912	17805	98.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	663154	1.944
8015C 2MP-TMB	(4.21 to 16.22)	678311	909183	1.340 M
AK101 nC6-nC10	(4.71 to 15.12)	538315	725927	1.349 M
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	688289	1.914

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.893	0.007	3544	95.6	TFT(Surr)
15.414	0.004	8065	98.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.055	0.005	559	2.24	Benzene
9.919	0.007	7171	32.85	Toluene
12.810	0.007	2876	14.86N	Ethylbenzene
12.973	0.009	19070	88.81N	M/P-Xylene
13.922	0.007	5393	32.10	O-Xylene
4.570	-0.019	67	0.80N	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a019.d

Date : 30-MAY-2012 20:43

Client ID: USO-P6-C

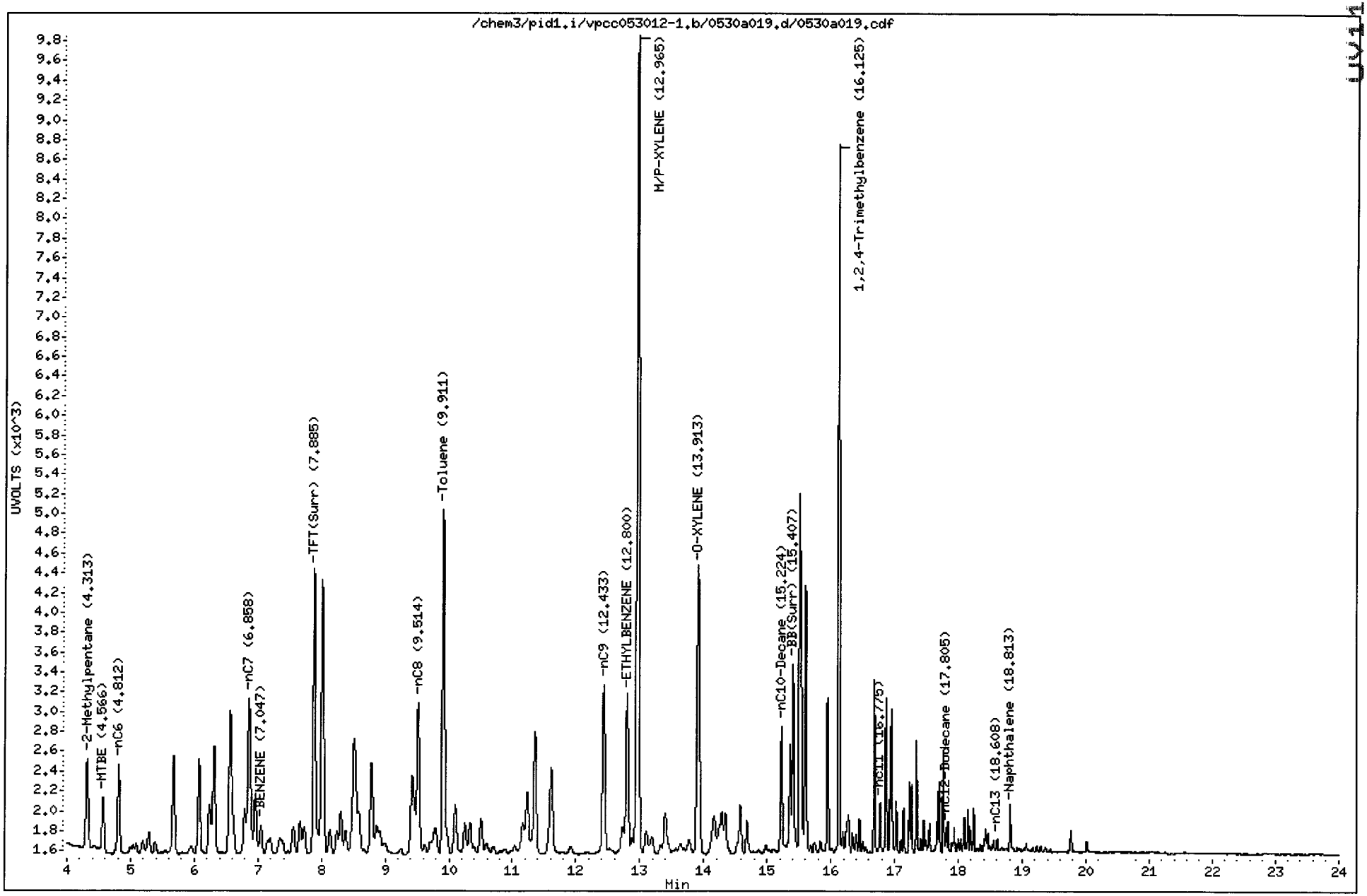
Sample Info: UV11H

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc053012-2.b/0530a019.d

Date : 30-MAY-2012 20:43

Client ID: USO-P6-C

Sample Info: UV11H

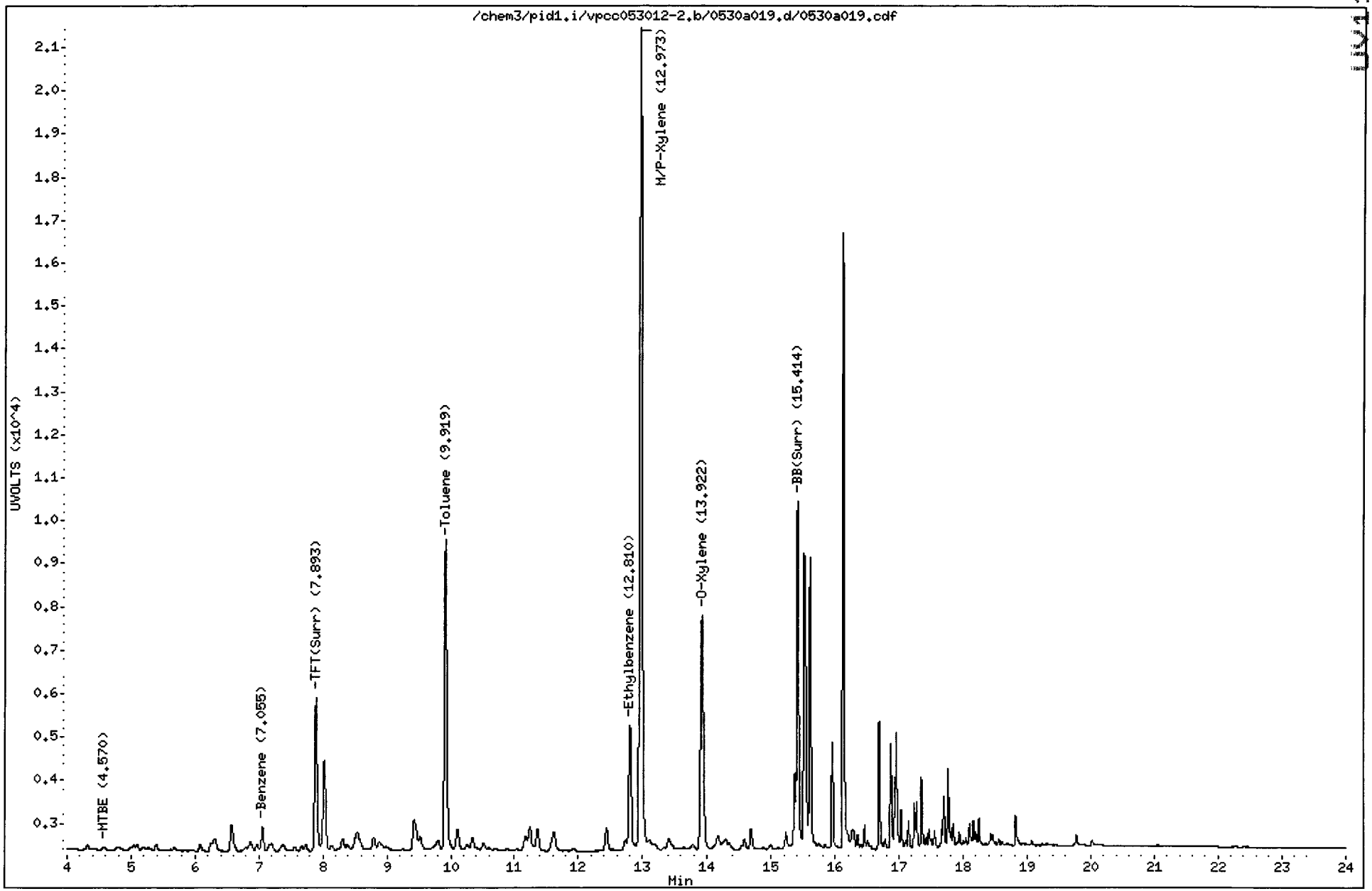
Column phase: RTX 502-2 PID

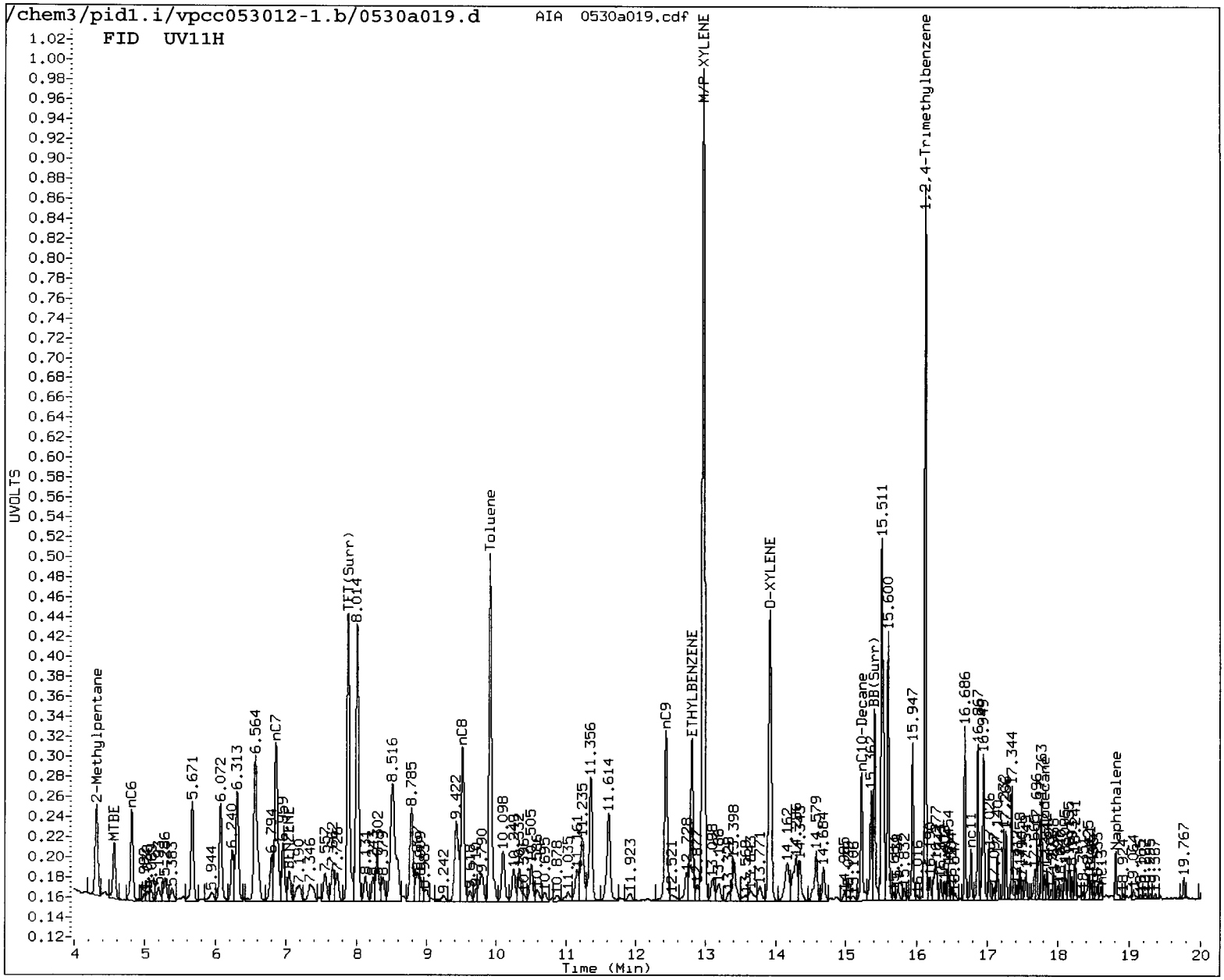
Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV11 : 69858





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/7/12

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a019.d/0530a019.cdf
Injection Date: 30-MAY-2012 20:43
Instrument: pid1.i
Client Sample ID: USO-P6-C

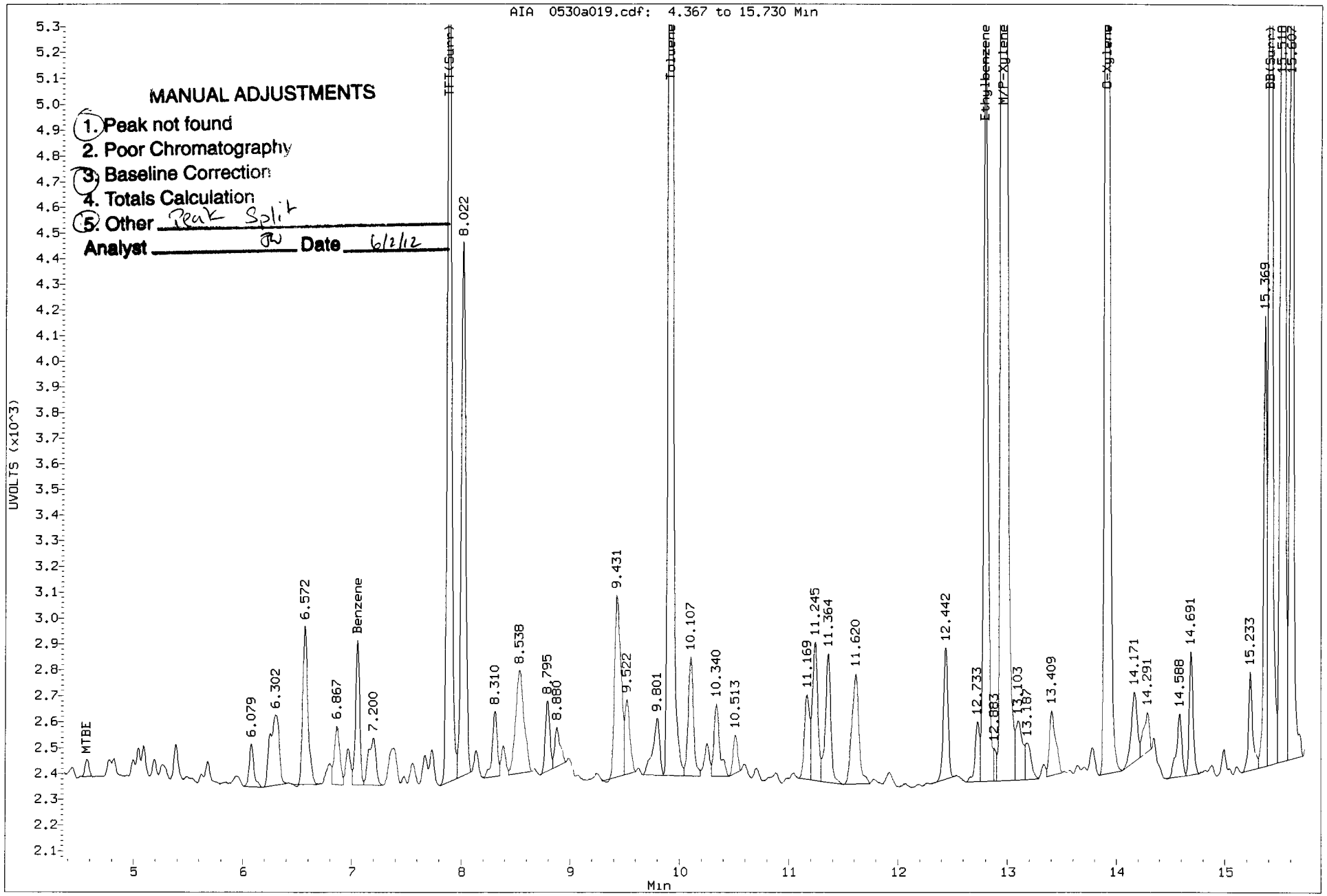


EXHIBIT 00060

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P6-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11I
LIMS ID: 12-9199
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 19:15
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 90 mg-dry-wt
Percent Moisture: 16.3%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	**Benzene**	14	1,100	
108-88-3	**Toluene**	14	1,500	
100-41-4	**Ethylbenzene**	14	290	
179601-23-1	**m,p-Xylene**	28	1,600	
95-47-6	**o-Xylene**	14	610	
	Gasoline Range Hydrocarbons	5.5	23	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	95.1%
Bromobenzene	96.6%

Gasoline Surrogate Recovery

Trifluorotoluene	95.7%
Bromobenzene	96.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a016.d ARI ID: UV11I
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a016.d Client ID: USO-P6-D
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 19:15
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.884	0.006	2866	36462	95.7	TFT(Surr)
15.406	0.003	1876	15958	96.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	139644	0.409 M
8015C 2MP-TMB	(4.21 to 16.22)	678311	214991	0.317 M
AK101 nC6-nC10	(4.71 to 15.12)	538315	183886	0.342 M
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	147908	0.411 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.893	0.007	3525	95.1	TFT(Surr)
15.413	0.003	7878	96.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	4763	19.10N	Benzene
9.917	0.005	5777	26.46N	Toluene
12.807	0.004	1023	5.29N	Ethylbenzene
12.971	0.007	6319	29.43	M/P-Xylene
13.920	0.005	1848	11.00N	O-Xylene
4.567	-0.023	27	0.32N	MTBE

5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a016.d

Date : 30-MAY-2012 19:15

Client ID: USO-P6-D

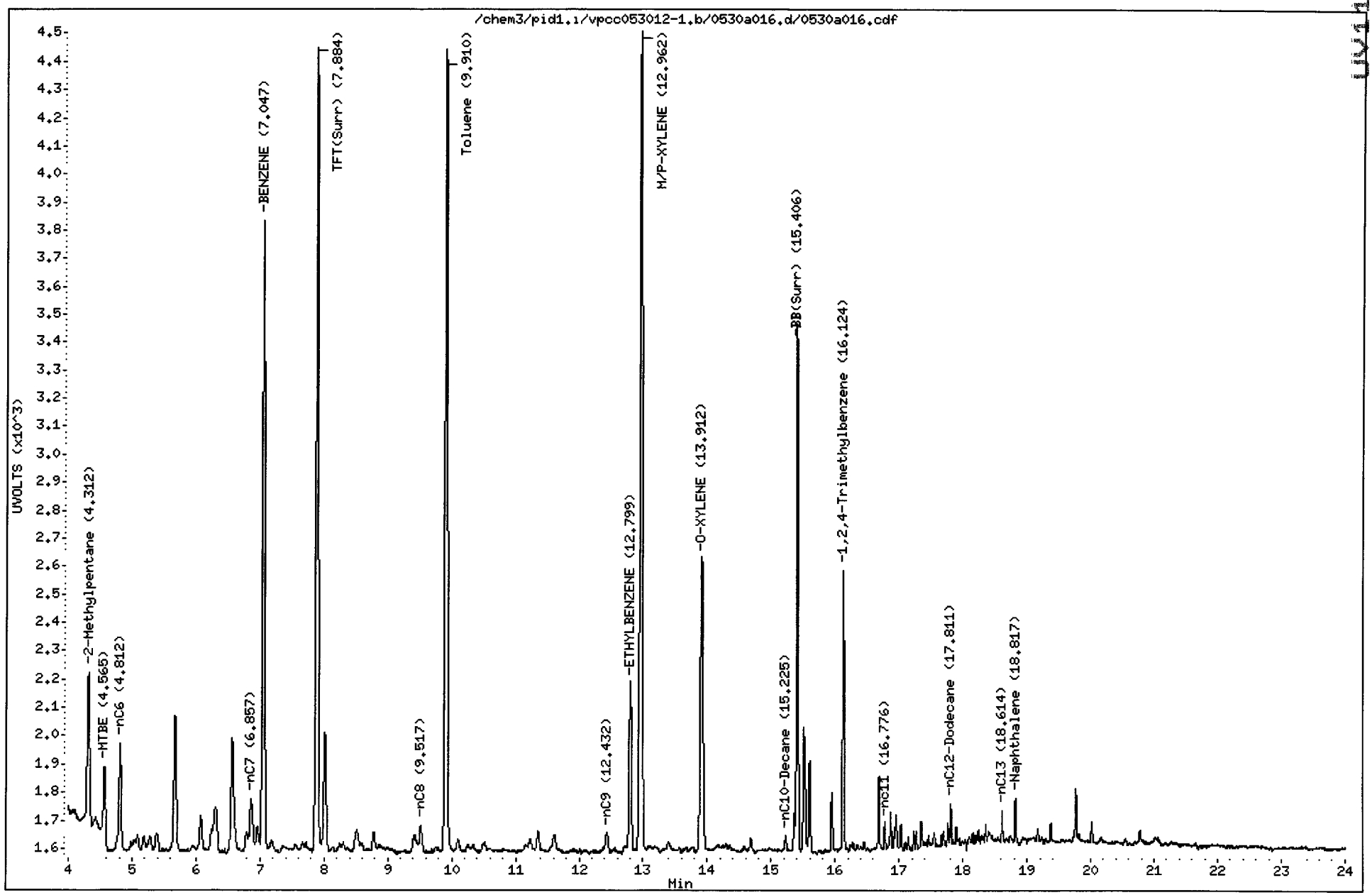
Sample Info: UV11I

Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc053012-2.b/0530a016.d

Date : 30-MAY-2012 19:15

Client ID: USO-P6-D

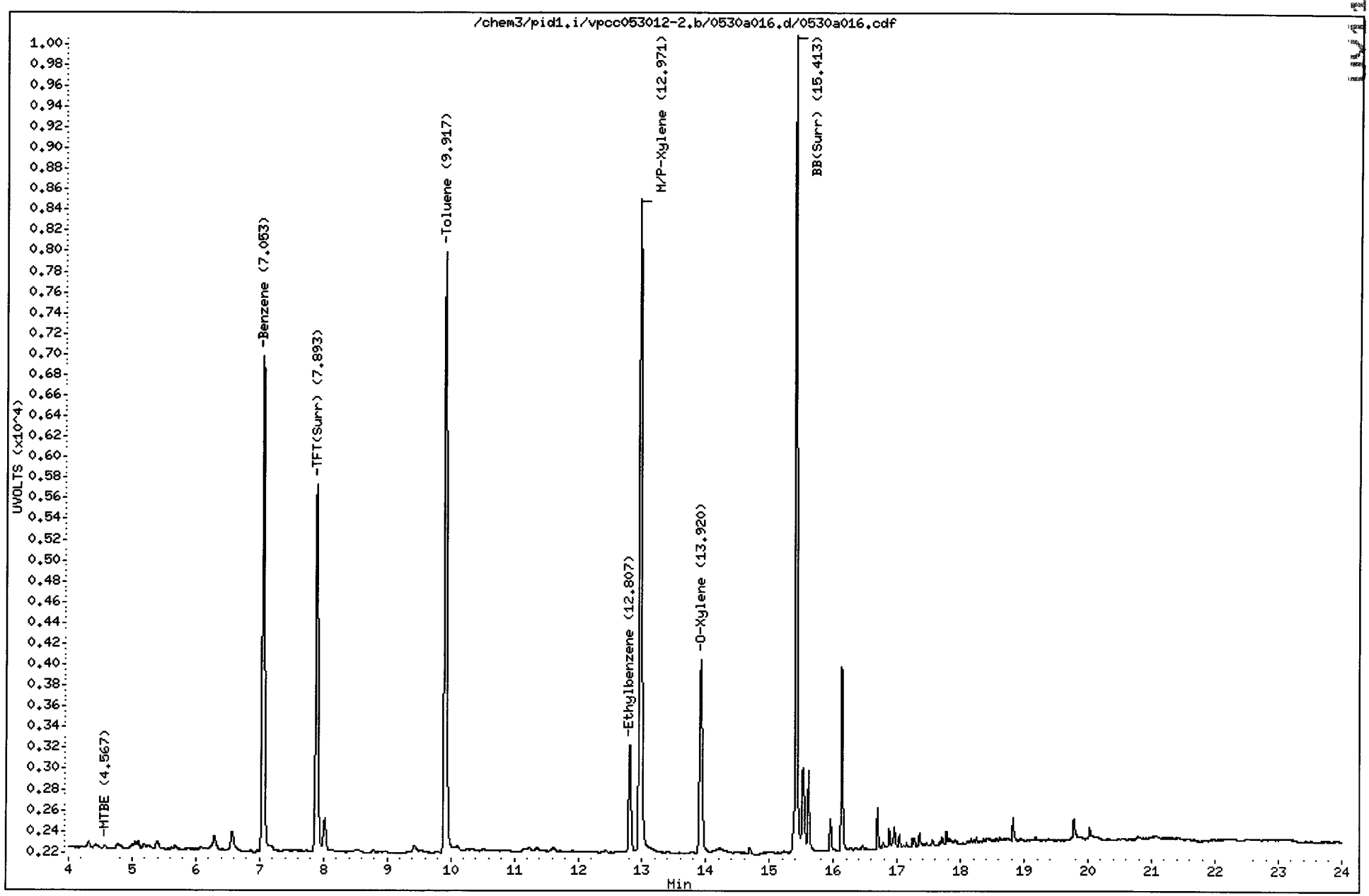
Sample Info: UV11I

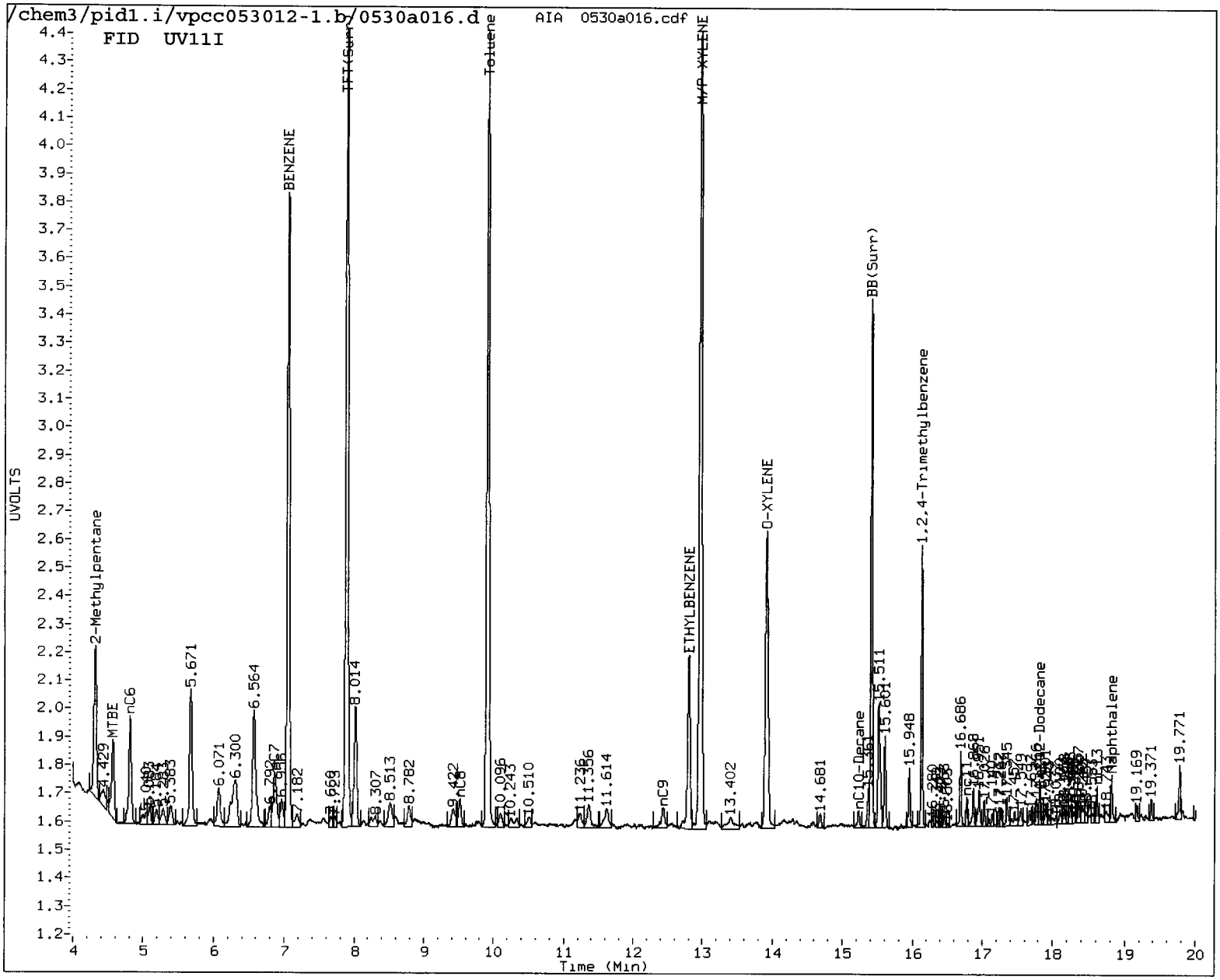
Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





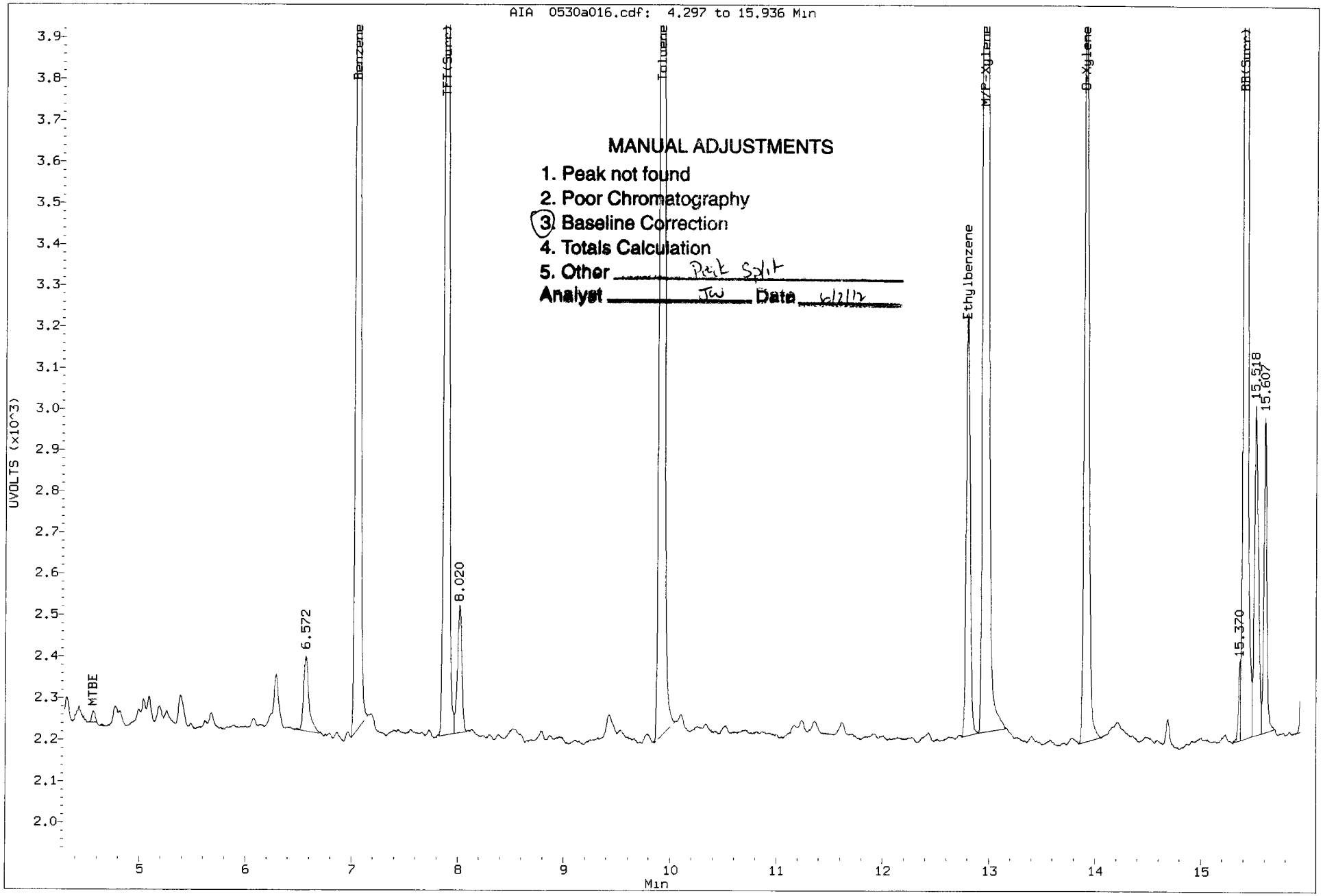
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a016.d/0530a016.cdf
Injection Date: 30-MAY-2012 19:15
Instrument: pid1.i
Client Sample ID: USO-P6-D



UV11 : 00065

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P6-E
SAMPLE

Lab Sample ID: UV11J
LIMS ID: 12-9200
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 19:44
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 51 mg-dry-wt
Percent Moisture: 29.9%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**24**	**4,900**	
108-88-3	**Toluene**	**24**	**100**	
100-41-4	**Ethylbenzene**	**24**	**450**	
179601-23-1	**m,p-Xylene**	**49**	**310**	
95-47-6	**o-Xylene**	**24**	**27**	
	Gasoline Range Hydrocarbons	**9.8**	**44**	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.5%
Bromobenzene	93.8%

Gasoline Surrogate Recovery

Trifluorotoluene	92.5%
Bromobenzene	92.6%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a017.d ARI ID: UV11J
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a017.d Client ID: USO-P6-E
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 19:44
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.885	0.007	2771	37282	92.5	TFT(Surr)
15.407	0.004	1793	15350	92.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	139628	0.409 M
8015C 2MP-TMB	(4.21 to 16.22)	678311	412705	0.608 M
AK101 nC6-nC10	(4.71 to 15.12)	538315	340946	0.633 M
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	162806	0.453 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.893	0.007	3393	91.5	TFT(Surr)
15.413	0.003	7653	93.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.056	0.005	12424	49.82	Benzene
9.920	0.008	227	1.04N	Toluene
12.810	0.007	897	4.64N	Ethylbenzene
12.971	0.007	684	3.19	M/P-Xylene
13.920	0.005	47	0.28N	O-Xylene
4.573	-0.016	126	1.50N	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a017.d

Date : 30-MAY-2012 19:44

Client ID: USO-P6-E

Sample Info: UV11J

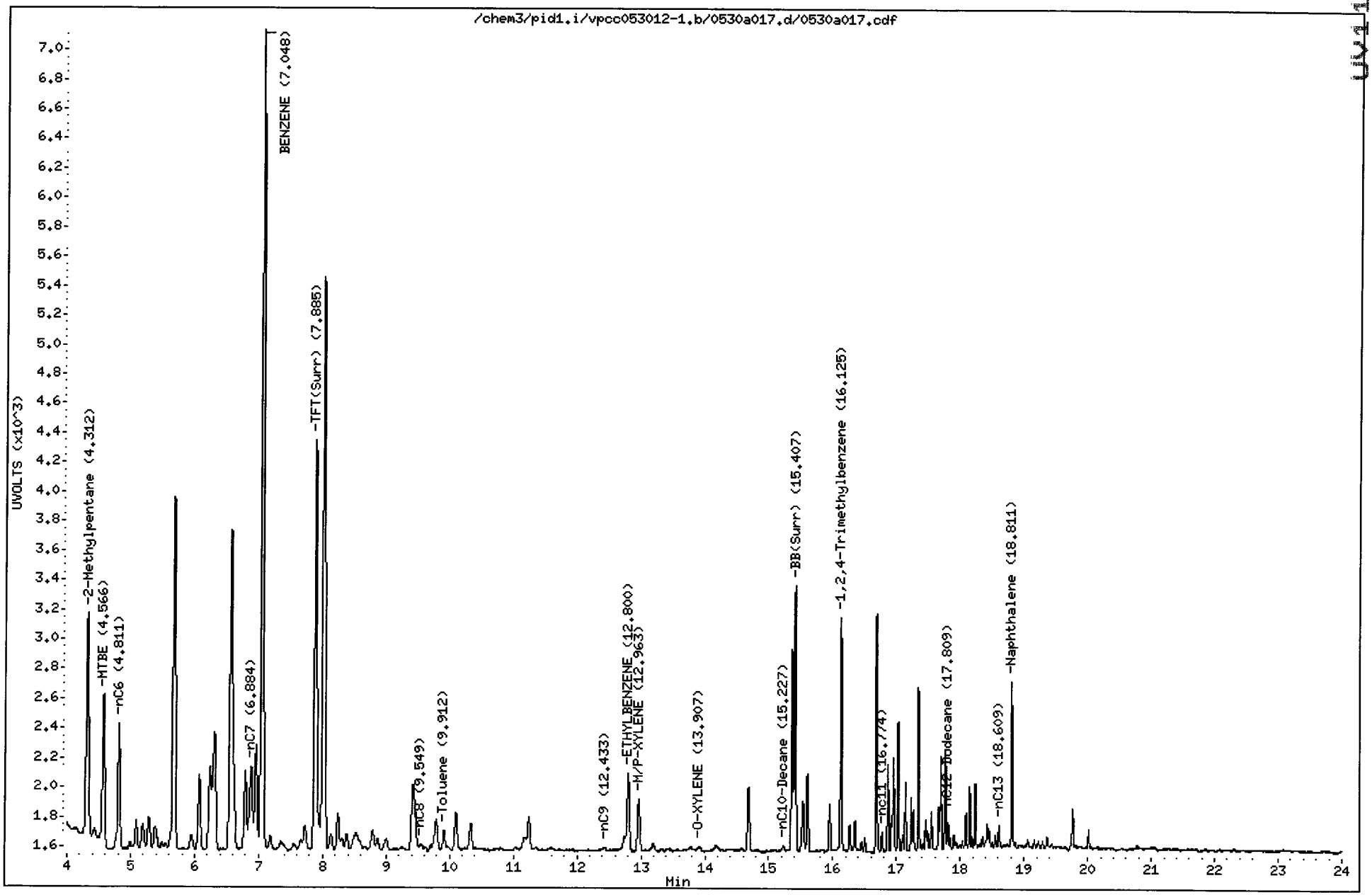
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV11 00069



Data File: /chem3/pid1.i/vpcc053012-2.b/0530a017.d

Date : 30-MAY-2012 19:44

Client ID: USO-P6-E

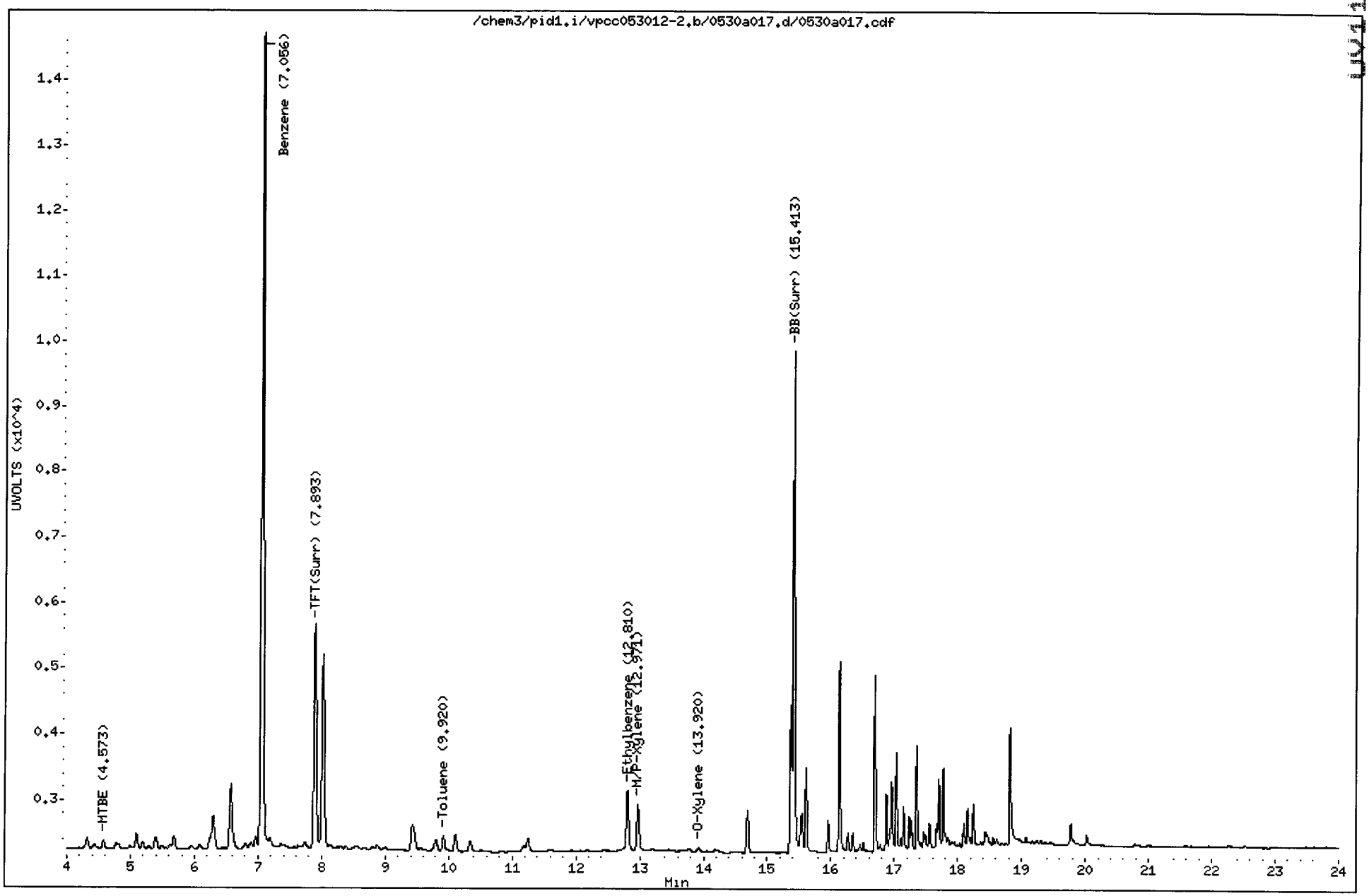
Sample Info: UV11J

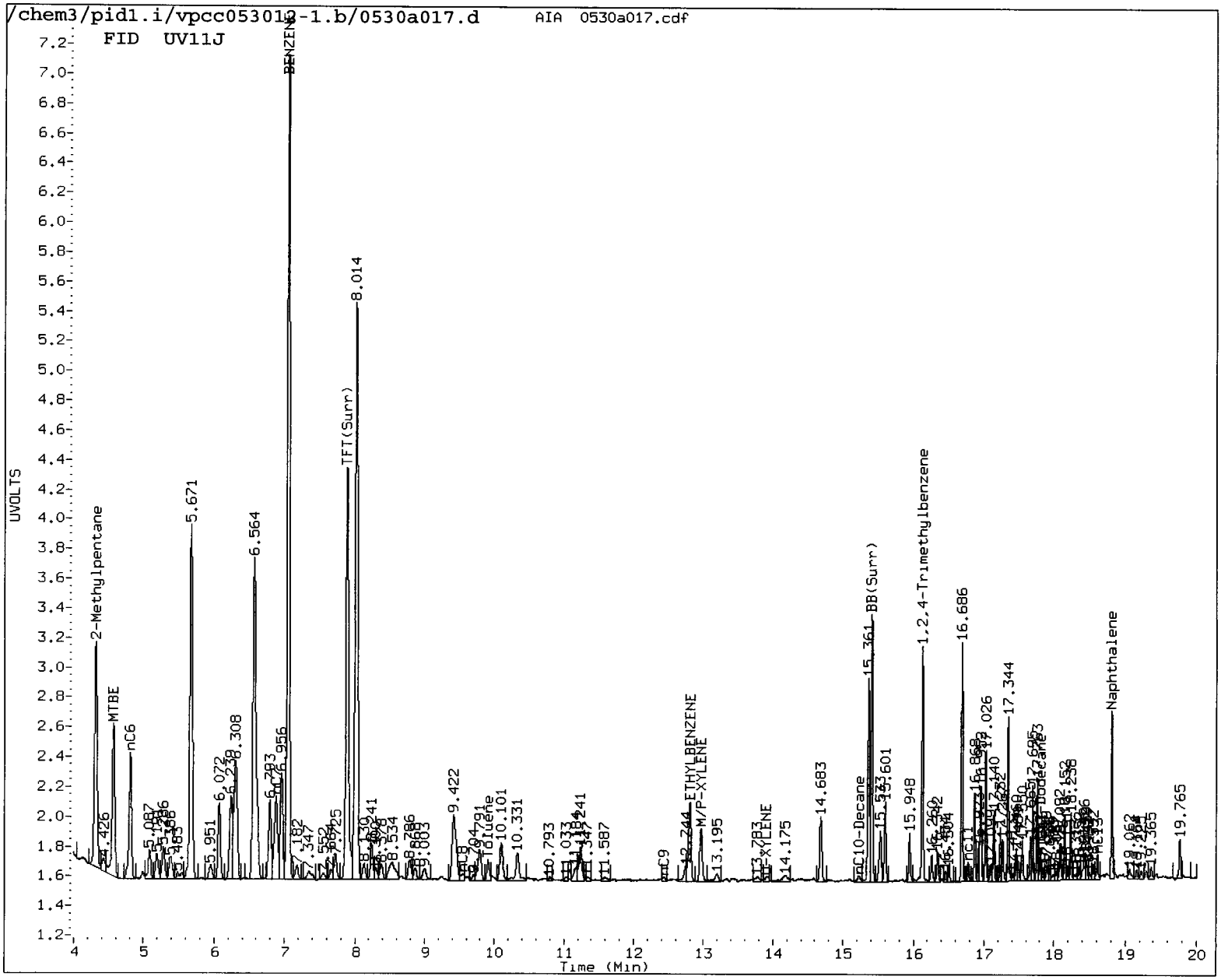
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18





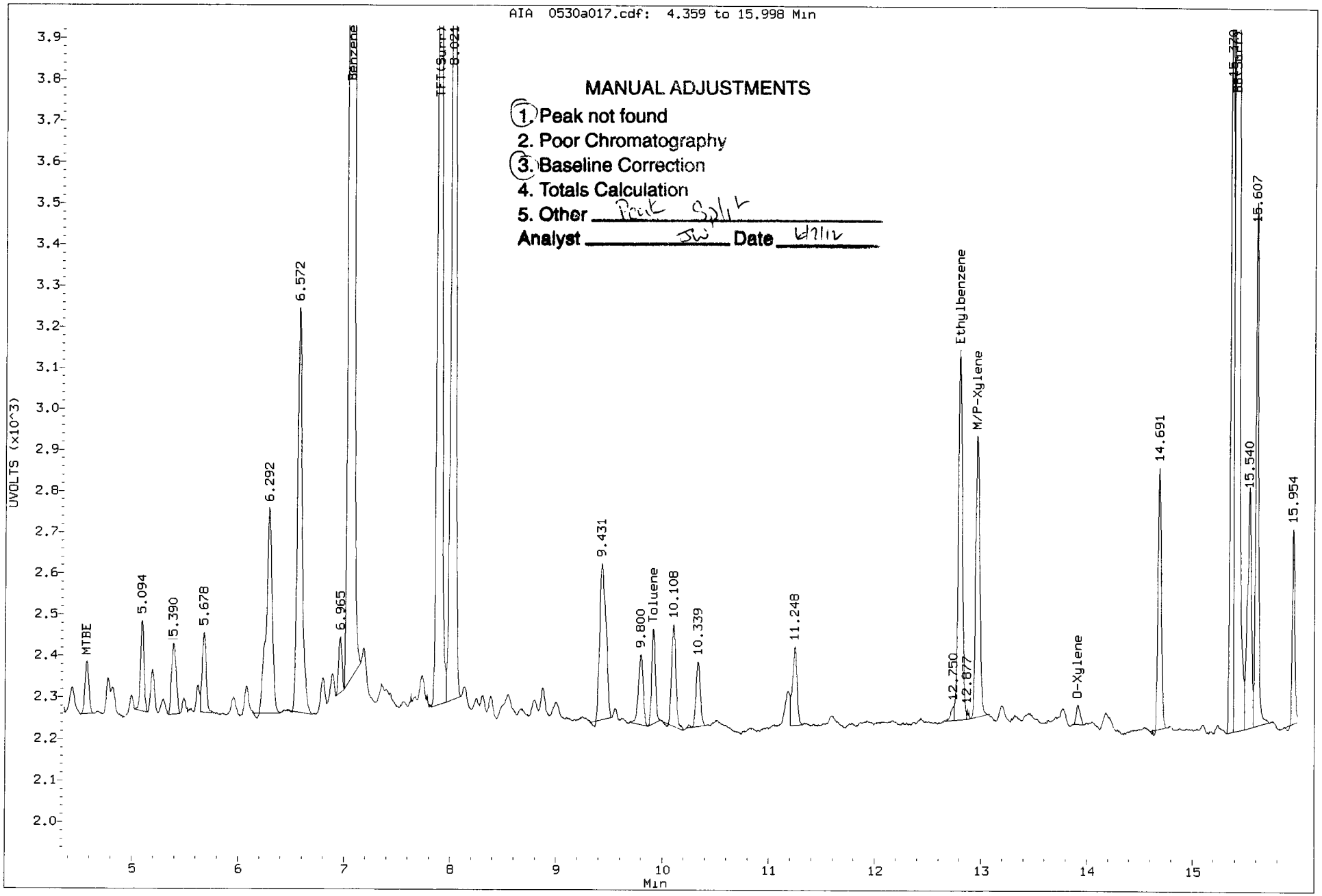
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a017.d/0530a017.cdf
Injection Date: 30-MAY-2012 19:44
Instrument: pid1.i
Client Sample ID: USO-P6-E



UVI 1 : 00072

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P7-A
SAMPLE

Lab Sample ID: UV11K
LIMS ID: 12-9201
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 19:01
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 94 mg-dry-wt
Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**13**	**17**	
108-88-3	**Toluene**	**13**	**38**	
100-41-4	**Ethylbenzene**	**13**	**37**	
179601-23-1	**m,p-Xylene**	**27**	**150**	
95-47-6	**o-Xylene**	**13**	**23**	
				GAS ID
	Gasoline Range Hydrocarbons	**5.3**	**20**	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	94.7%
Bromobenzene	96.9%

Gasoline Surrogate Recovery

Trifluorotoluene	96.6%
Bromobenzene	98.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a021.d ARI ID: UV11K
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a021.d Client ID: USO-P7-A
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 19:01
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.882	0.005	2893	36418	96.6	TFT(Surr)
15.409	0.003	1906	17031	98.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	126811	0.372 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	100206	0.148 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	53970	0.100 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	137476	0.382 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3511	94.7	TFT(Surr)
15.417	0.003	7901	96.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	79	0.32N	Benzene
9.920	0.006	155	0.71N	Toluene
12.807	0.000	134	0.69N	Ethylbenzene
12.970	0.002	590	2.75N	M/P-Xylene
13.923	0.004	74	0.44N	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a021.d

Date : 24-MAY-2012 19:01

Client ID: USO-P7-A

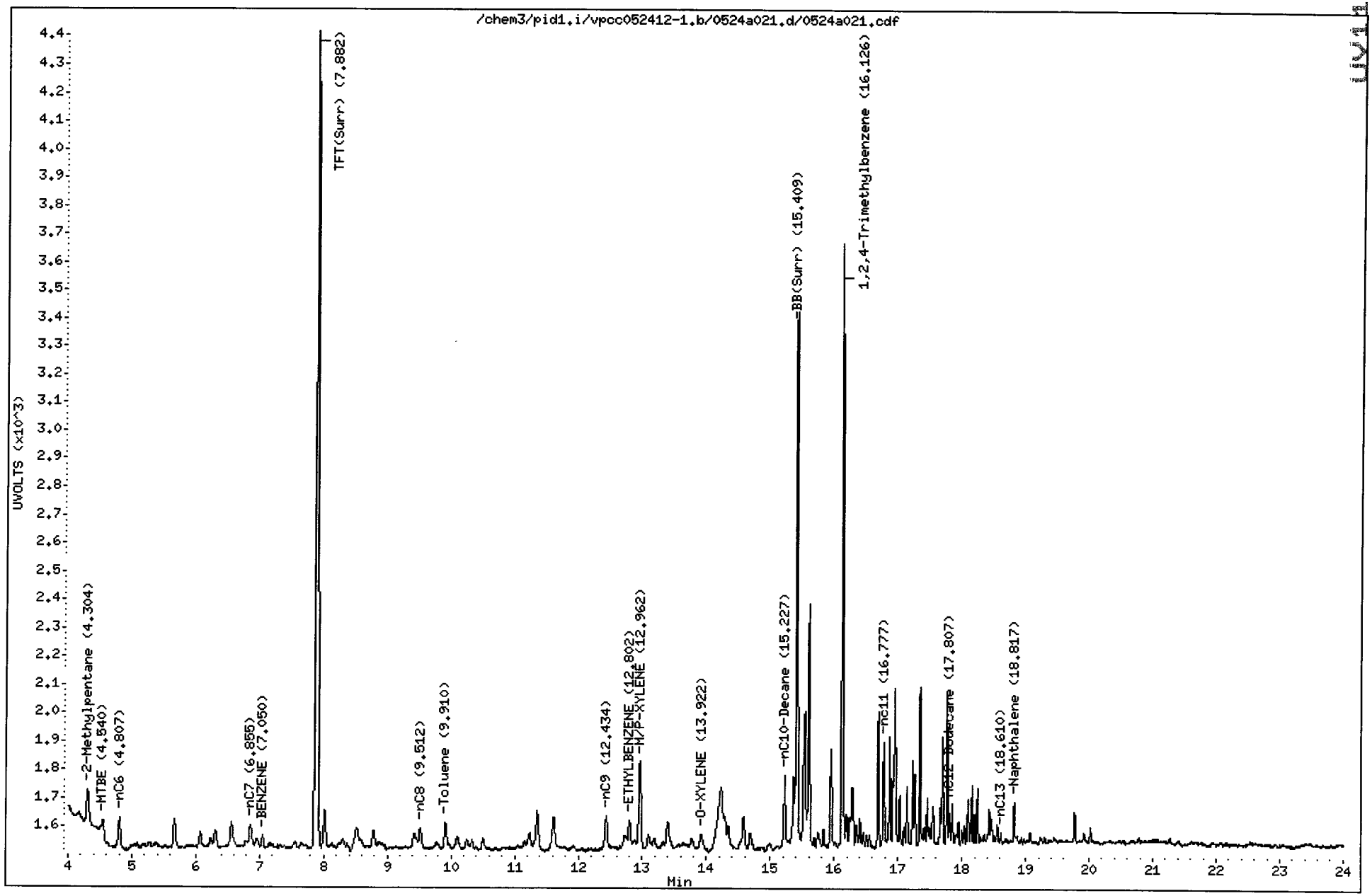
Sample Info: UV11K

Instrument: pid1.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a021.d

Date : 24-MAY-2012 19:01

Client ID: USO-P7-A

Sample Info: UV11K

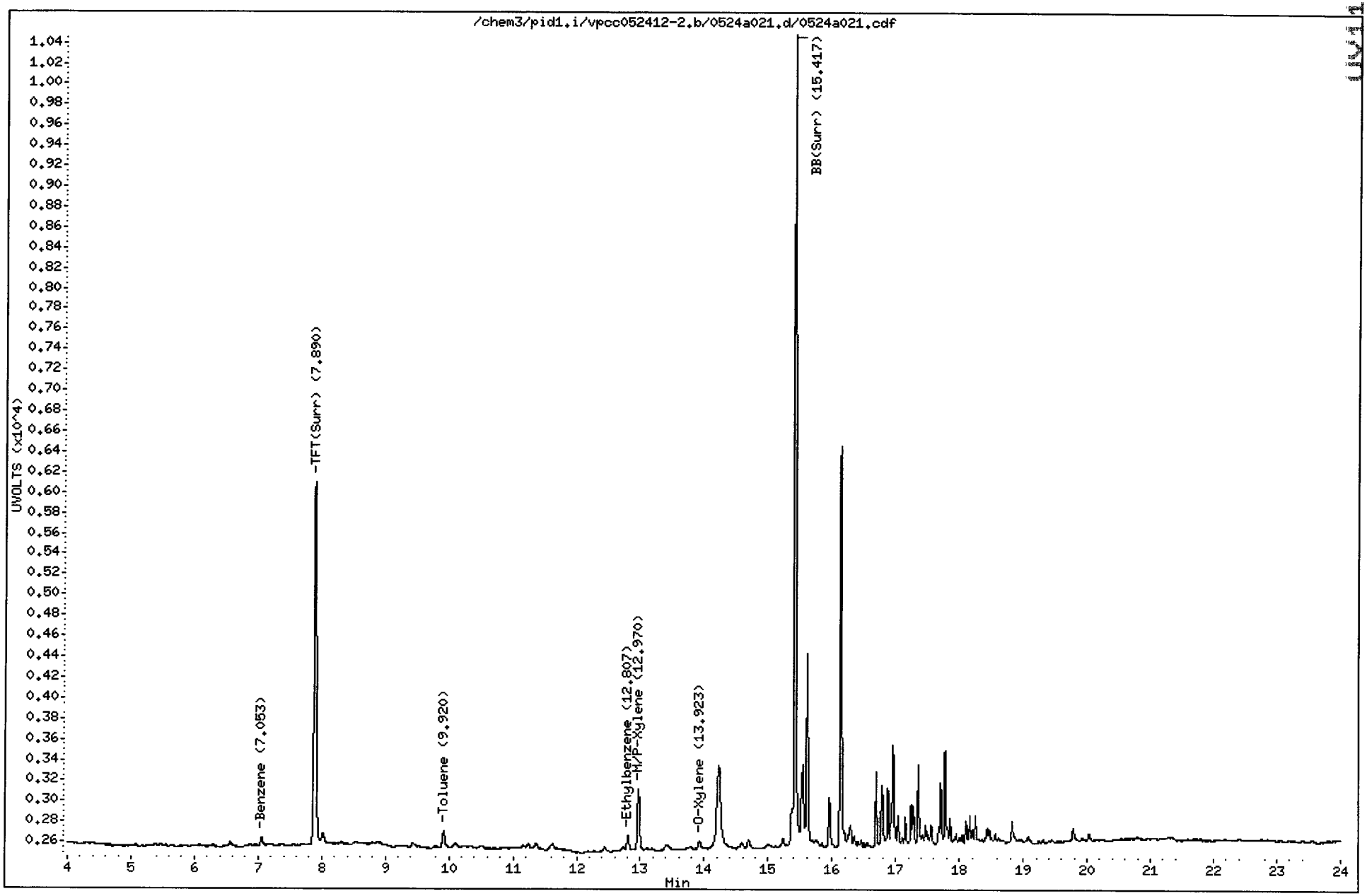
Column phase: RTX 502-2 PID

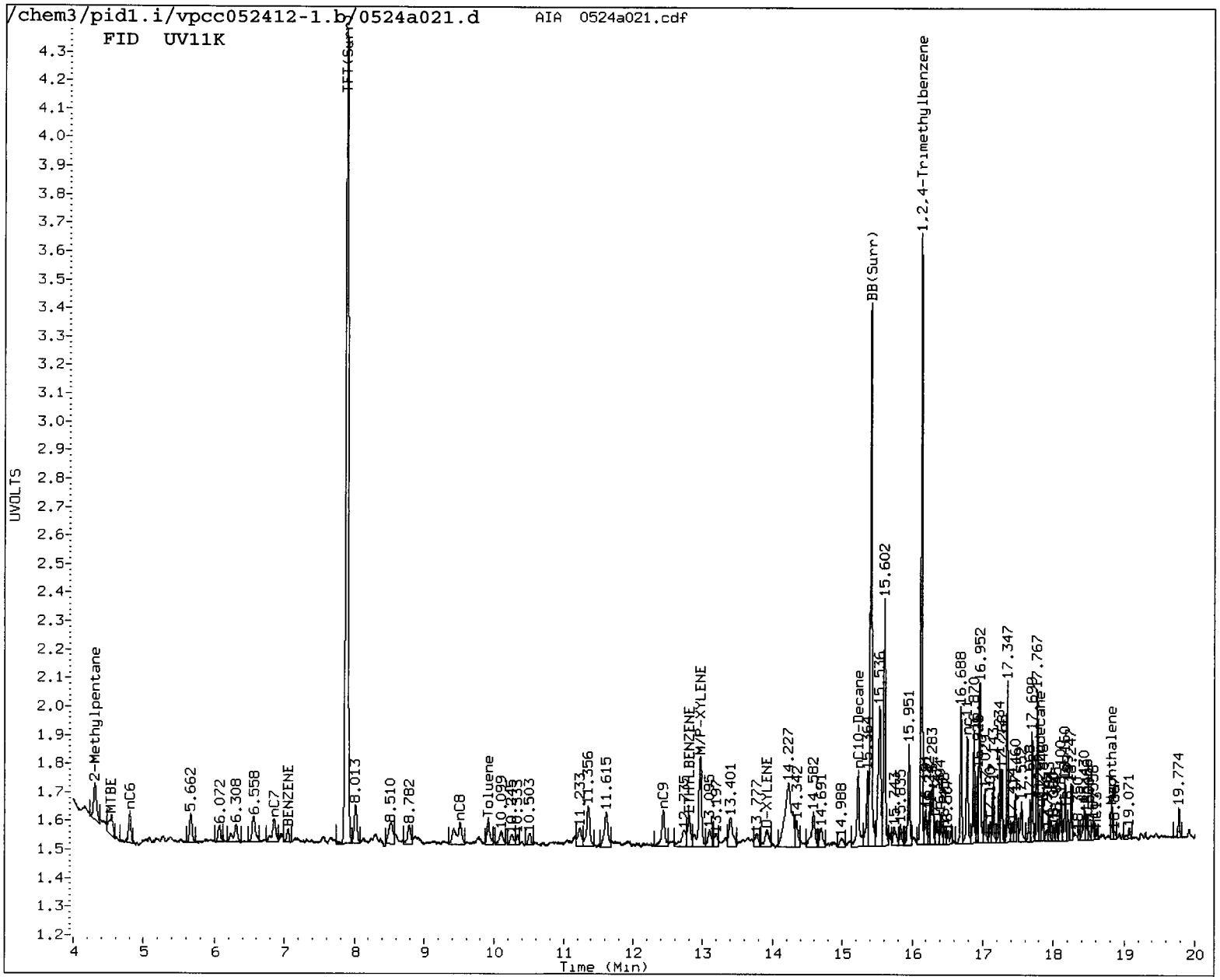
Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV11 00076



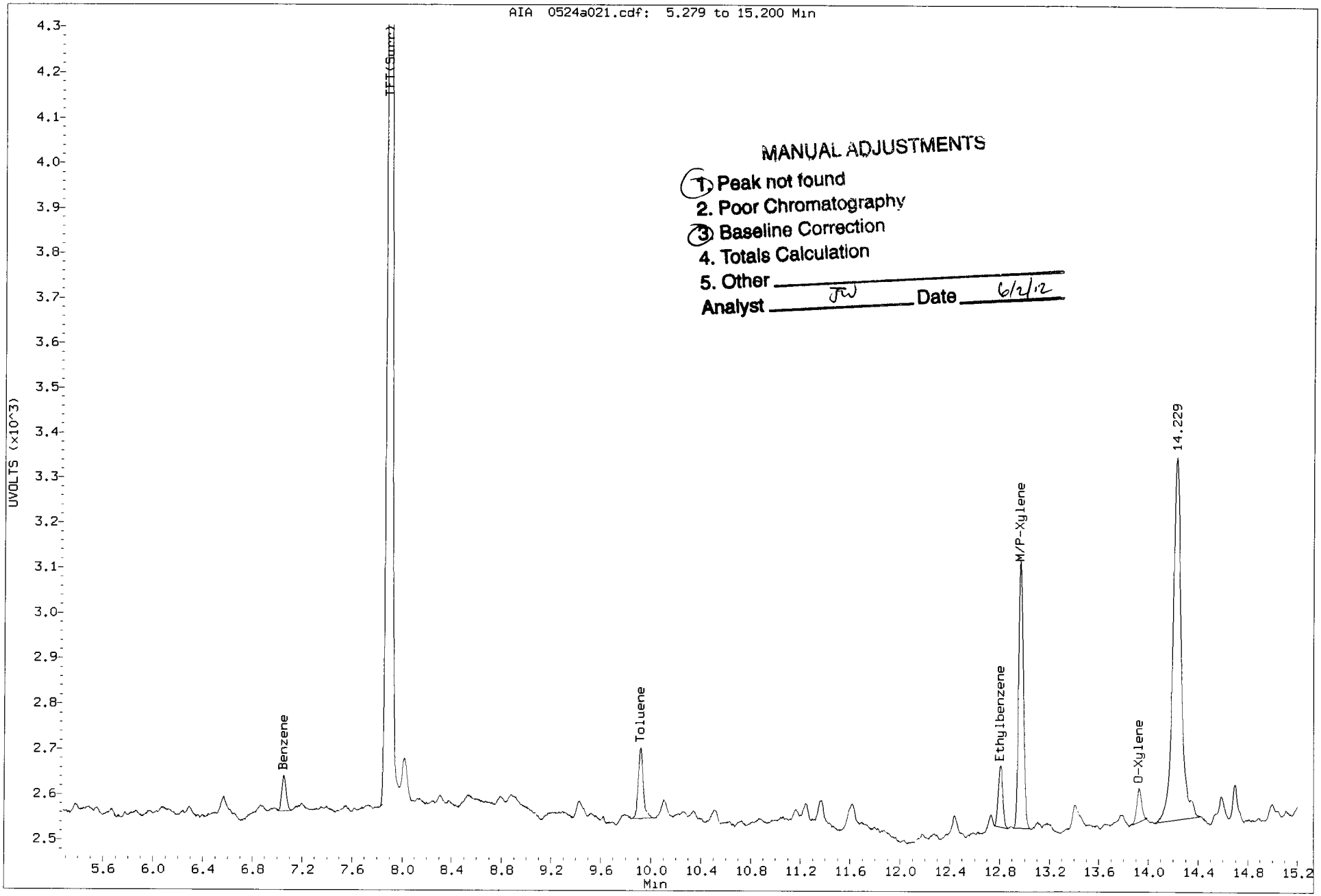


MANUAL INTEGRATION

(1). Baseline correction
2. Poor chromatography
(3). Peak not found
4. Totals calculation
(5) Other Peak Split

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a021.d/0524a021.cdf
Injection Date: 24-MAY-2012 19:01
Instrument: pid1.i
Client Sample ID: USO-P7-A



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JW Date 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P7-B
SAMPLE

Lab Sample ID: UV11L
LIMS ID: 12-9202
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 19:31
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 78 mg-dry-wt
Percent Moisture: 4.3%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	**Benzene**	**16**	**31**	
108-88-3	**Toluene**	**16**	**91**	
100-41-4	**Ethylbenzene**	**16**	**55**	
179601-23-1	**m,p-Xylene**	**32**	**210**	
95-47-6	**o-Xylene**	**16**	**29**	
	Gasoline Range Hydrocarbons	**6.4**	**25**	**GAS**

BETX Surrogate Recovery

Trifluorotoluene	96.5%
Bromobenzene	96.9%

Gasoline Surrogate Recovery

Trifluorotoluene	98.4%
Bromobenzene	97.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a022.d ARI ID: UV11L
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a022.d Client ID: USO-P7-B
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 19:31
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.883	0.005	2946	37253	98.4	TFT(Surr)
15.409	0.002	1894	17167	97.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	129551	0.380 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	99117	0.146 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	55273	0.103 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	140963	0.392 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3579	96.5	TFT(Surr)
15.417	0.003	7905	96.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	119	0.48N	Benzene
9.920	0.006	309	1.42N	Toluene
12.809	0.002	166	0.86	Ethylbenzene
12.970	0.002	701	3.26	M/P-Xylene
13.927	0.007	78	0.46N	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a022.d

Date : 24-MAY-2012 19:31

Client ID: USO-P7-B

Sample Info: UV11L

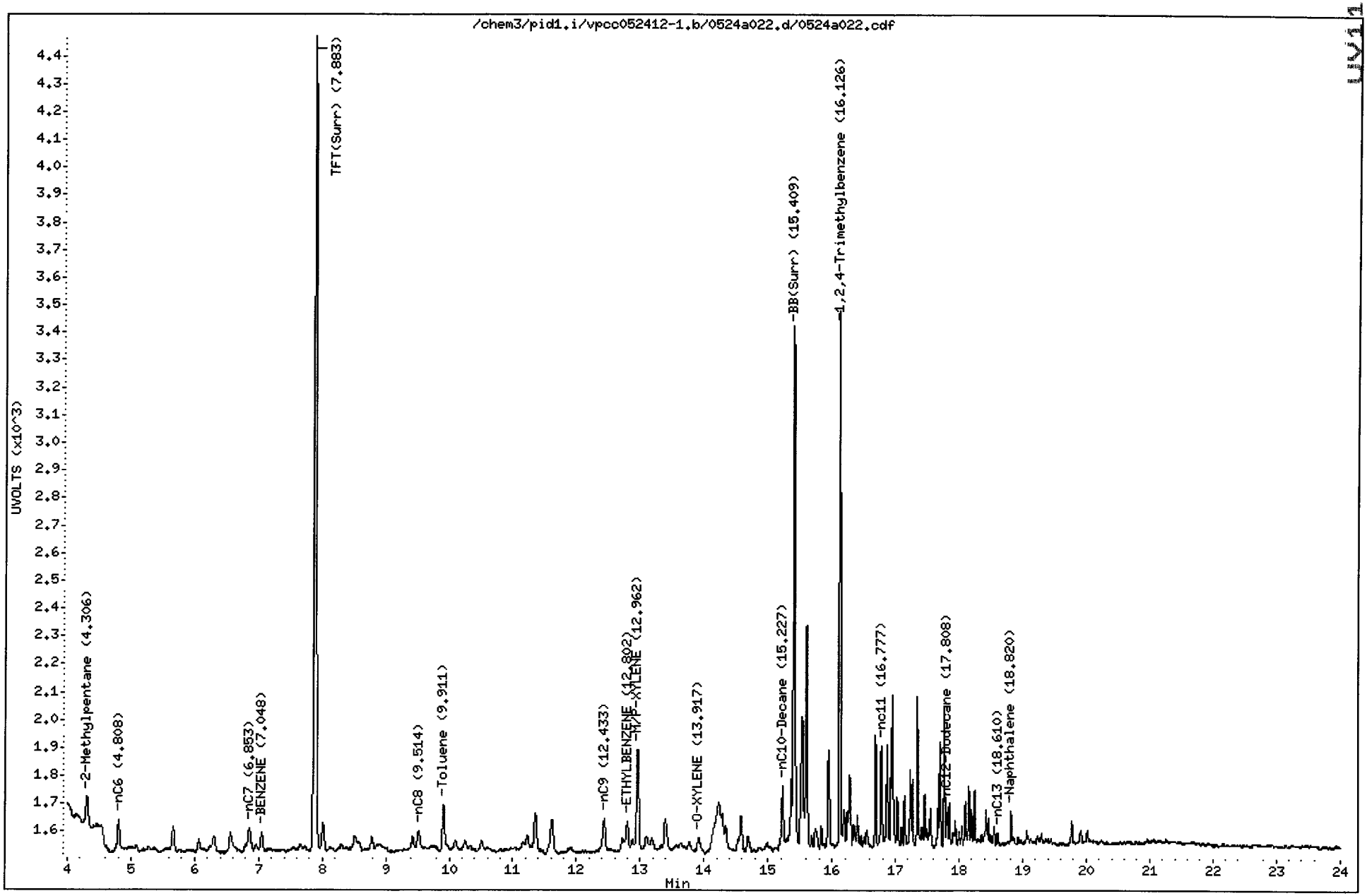
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV11 : 00081



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a022.d

Date : 24-MAY-2012 19:31

Client ID: USO-P7-B

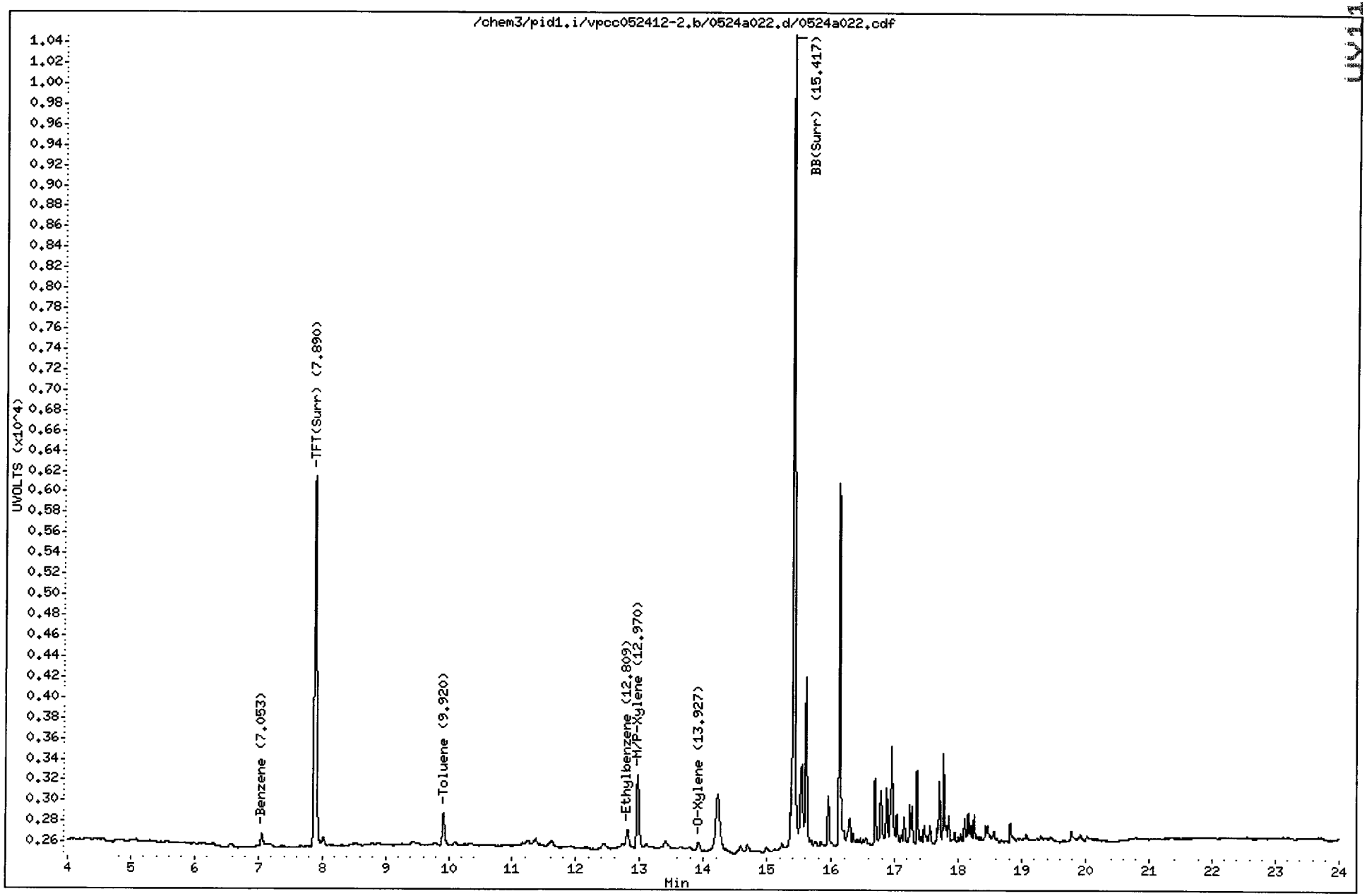
Sample Info: UV11L

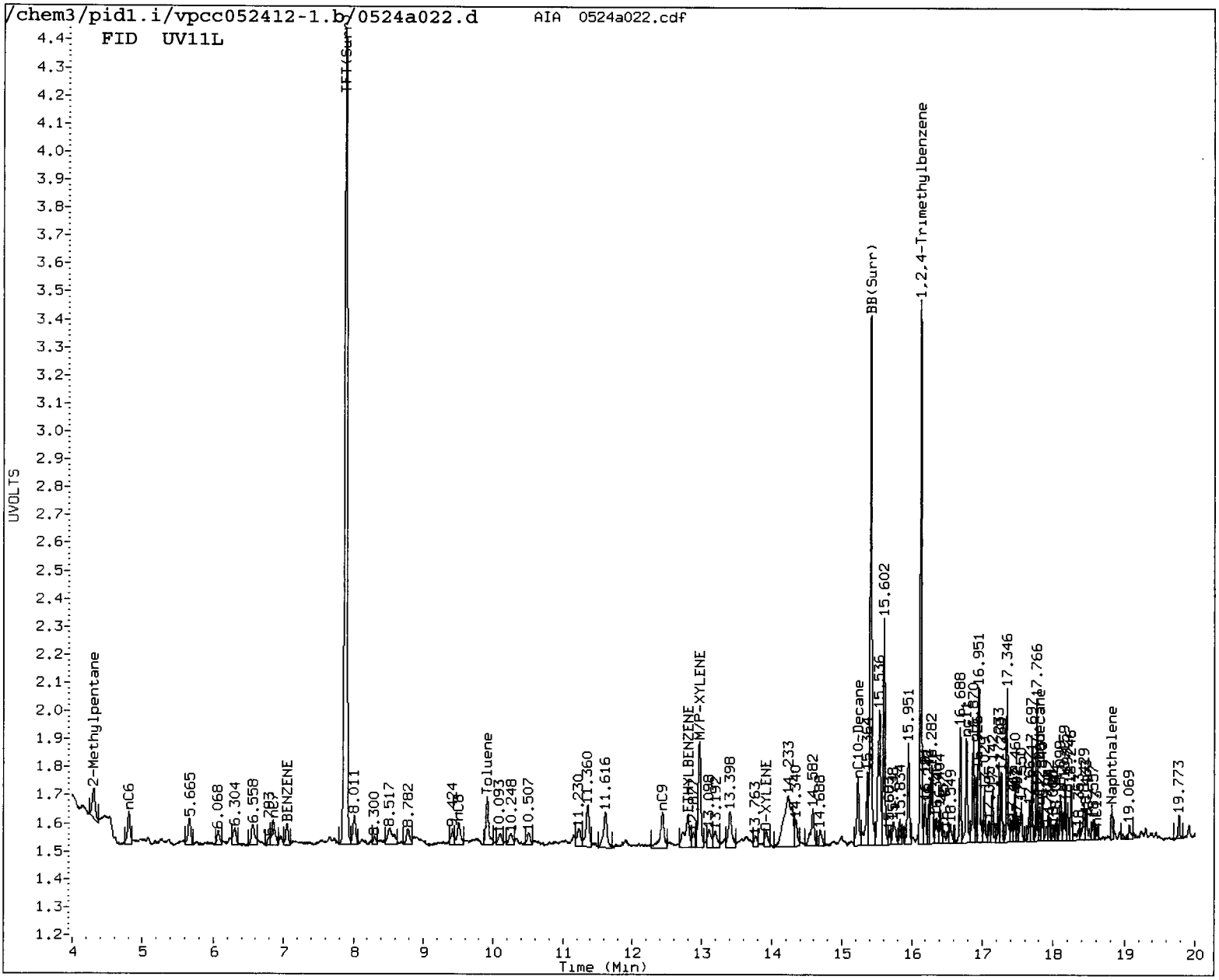
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



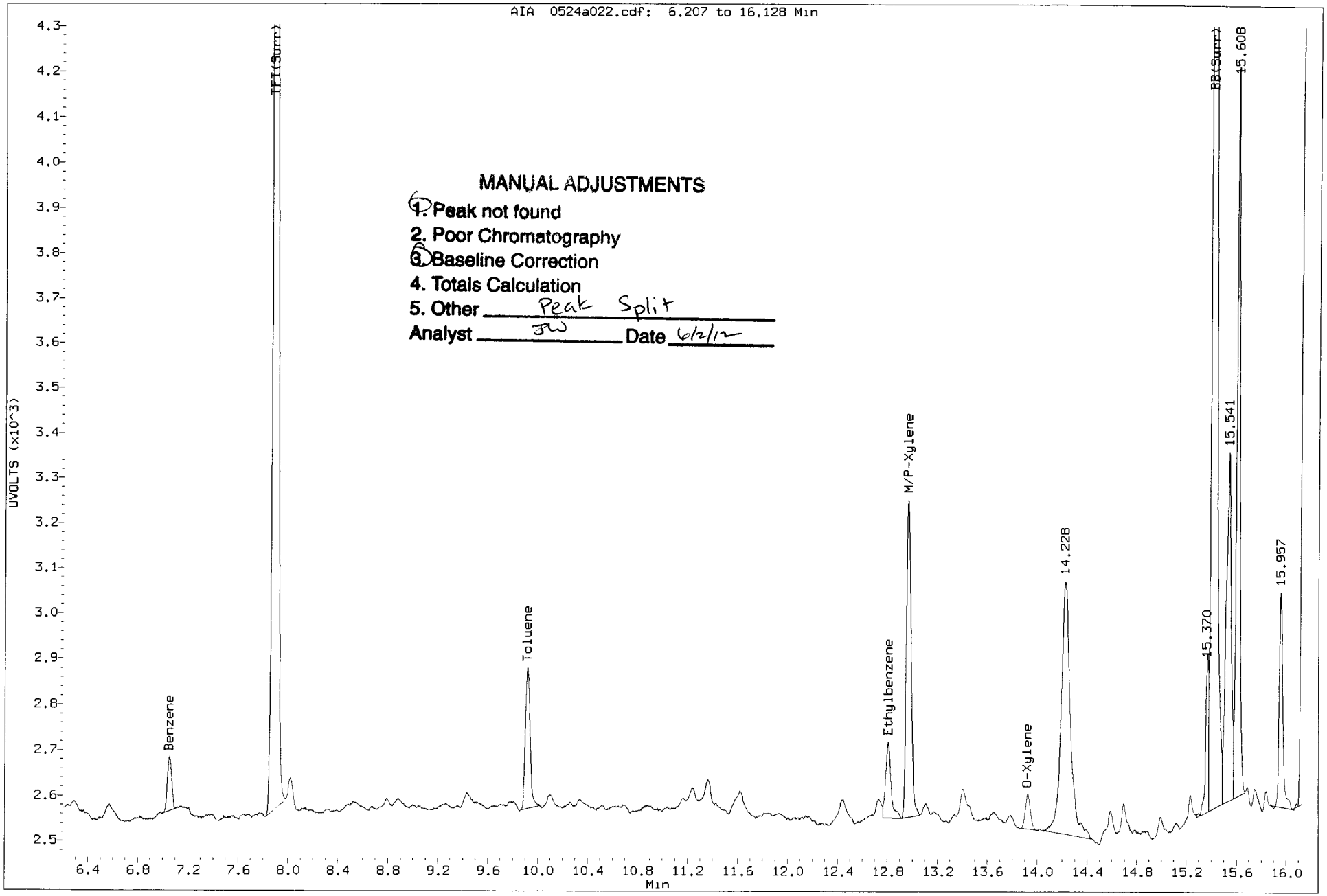


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Other Peak Split

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a022.d/0524a022.cdf
Injection Date: 24-MAY-2012 19:31
Instrument: pid1.i
Client Sample ID: USO-P7-B



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other Peak Split

Analyst JW Date 6/2/12

UV11 00081

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P7-C**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11M
LIMS ID: 12-9203
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 20:00
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 79 mg-dry-wt
Percent Moisture: 16.0%

CAS Number	Analyte	RL	Result
71-43-2	**Benzene**	**16**	**79**
108-88-3	**Toluene**	**16**	**28**
100-41-4	**Ethylbenzene**	**16**	**100**
179601-23-1	**m,p-Xylene**	**32**	**210**
95-47-6	o-Xylene	16	< 16 U
			GAS ID
	Gasoline Range Hydrocarbons	**6.3**	**38** **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.4%
Bromobenzene	94.5%

Gasoline Surrogate Recovery

Trifluorotoluene	92.9%
Bromobenzene	95.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a023.d
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a023.d
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m
Instrument: pid1.i
Gas Ical Date: 15-MAY-2012
BETX Ical Date: 15-MAY-2012

ARI ID: UV11M
Client ID: USO-P7-C
Injection Date: 24-MAY-2012 20:00
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.883	0.006	2784	35860	92.9	TFT(Surr)
15.409	0.003	1848	16777	95.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	194280	0.569 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	182636	0.269 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	111152	0.206 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	217208	0.604 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3388	91.4	TFT(Surr)
15.417	0.003	7703	94.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.057	0.006	311	1.25N	Benzene
9.920	0.006	98	0.45N	Toluene
12.809	0.002	307	1.59	Ethylbenzene
12.970	0.002	702	3.27N	M/P-Xylene
13.943	0.024	32	0.19N	O-Xylene
4.557	-0.014	19	0.23N	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a023.d

Date : 24-MAY-2012 20:00

Client ID: USO-P7-C

Sample Info: UV11M

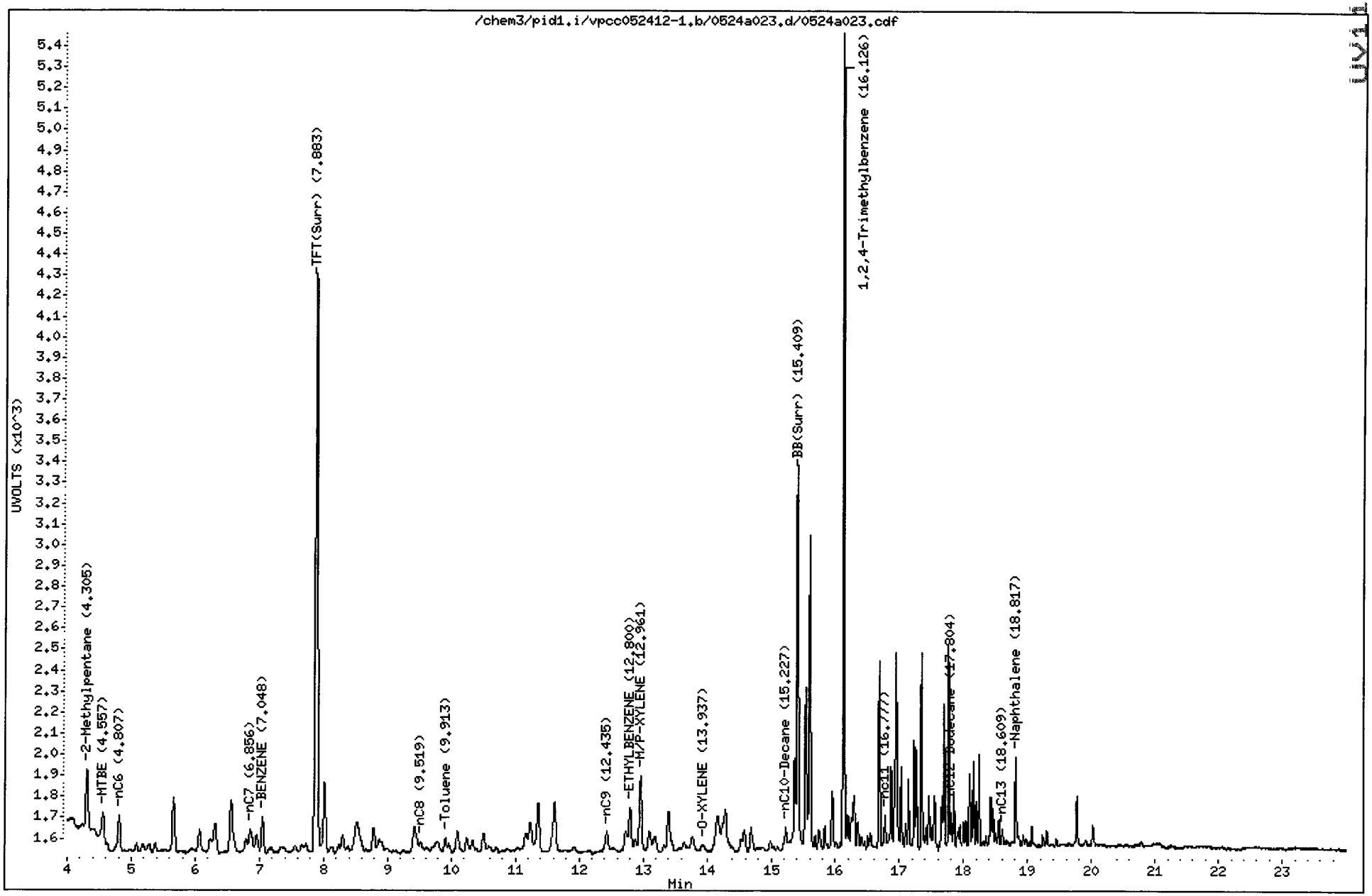
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18

UV11 : 60037



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a023.d

Date : 24-MAY-2012 20:00

Client ID: USO-P7-C

Instrument: pid1.i

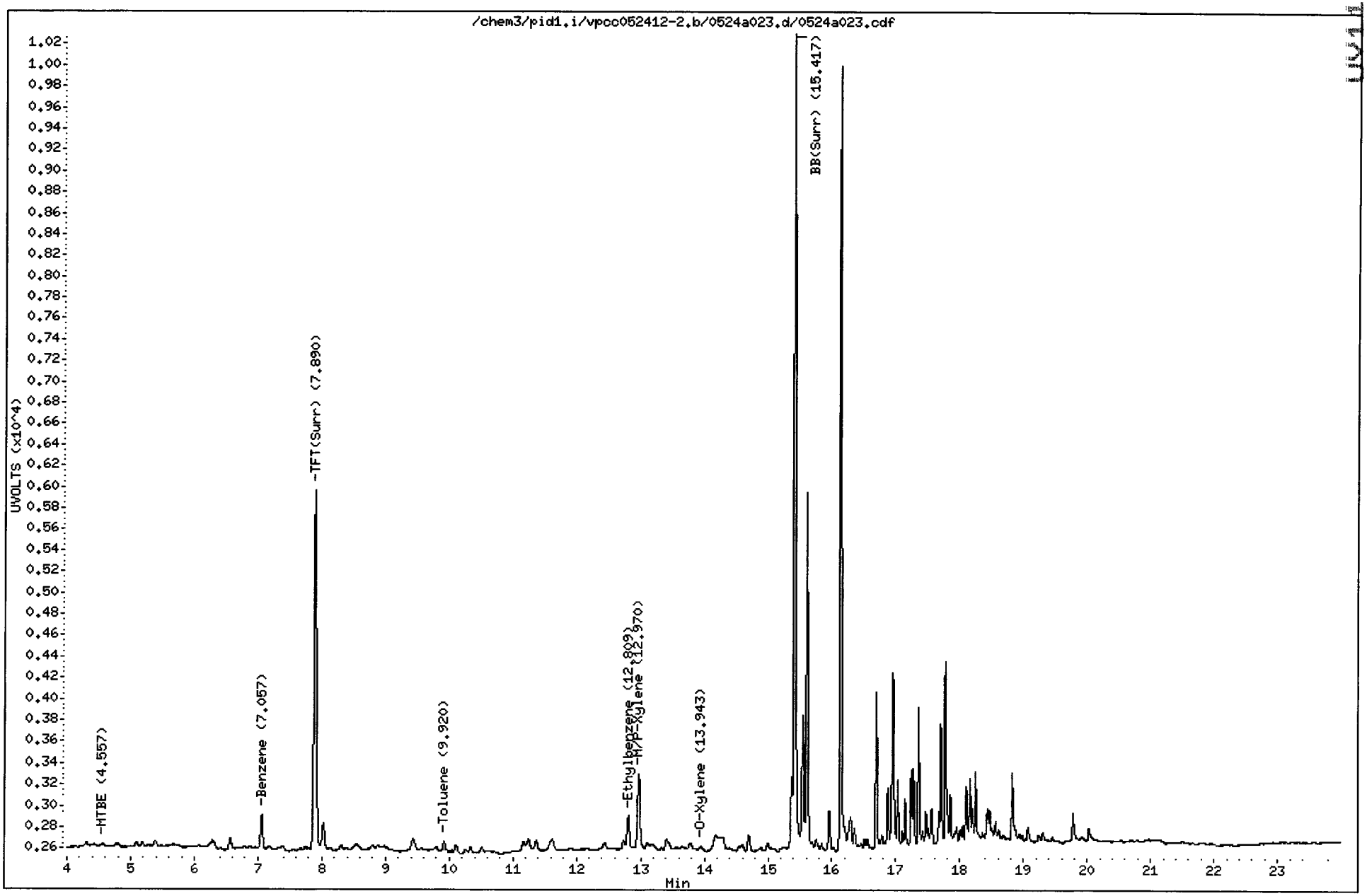
Sample Info: UV11M

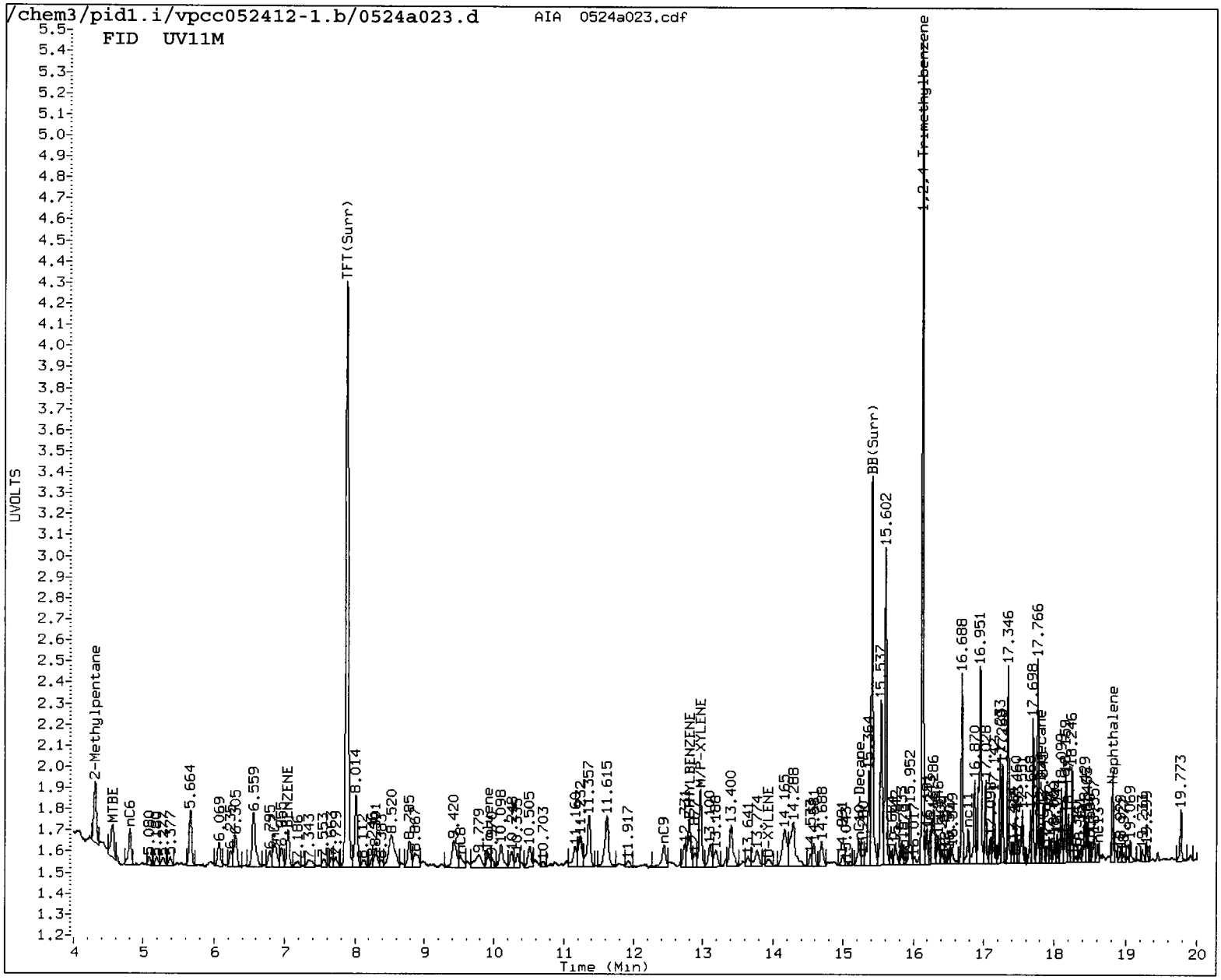
Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV11 00033





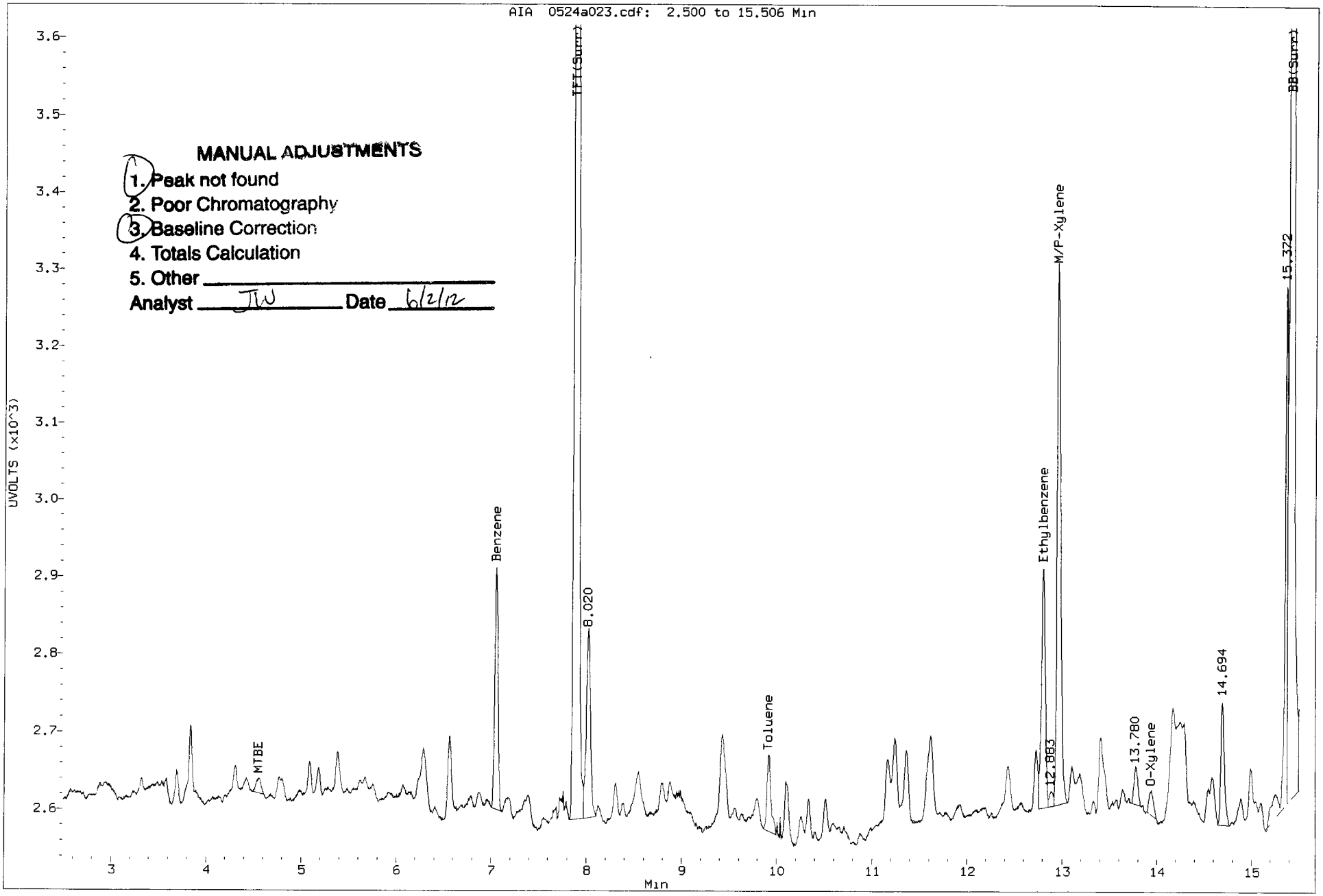
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other Peak Split

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a023.d/0524a023.cdf
Injection Date: 24-MAY-2012 20:00
Instrument: pid1.i
Client Sample ID: USO-P7-C



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P7-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11N
LIMS ID: 12-9204
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 20:29
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 74 mg-dry-wt
Percent Moisture: 20.1%

CAS Number	Analyte	RL	Result
71-43-2	**Benzene**	**17**	**680**
108-88-3	**Toluene**	**17**	**38**
100-41-4	**Ethylbenzene**	**17**	**84**
179601-23-1	**m,p-Xylene**	**34**	**190**
95-47-6	o-Xylene	17	< 17 U

			GAS ID
Gasoline Range Hydrocarbons	**6.7**	**14**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	95.6%
Bromobenzene	99.2%

Gasoline Surrogate Recovery

Trifluorotoluene	95.9%
Bromobenzene	99.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a024.d ARI ID: UV11N
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a024.d Client ID: USO-P7-D
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 20:29
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.884	0.006	2874	36453	95.9	TFT(Surr)
15.410	0.004	1924	16653	99.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	64914	0.190 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	83440	0.123 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	51444	0.096 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	75145	0.209 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.892	0.006	3543	95.6	TFT(Surr)
15.417	0.004	8088	99.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.057	0.006	2530	10.15N	Benzene
9.920	0.006	122	0.56N	Toluene
12.813	0.006	241	1.25N	Ethylbenzene
12.972	0.004	613	2.85	M/P-Xylene
13.923	0.004	38	0.23N	O-Xylene
4.550	-0.021	16	0.19N	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a024.d

Date : 24-MAY-2012 20:29

Client ID: USO-P7-D

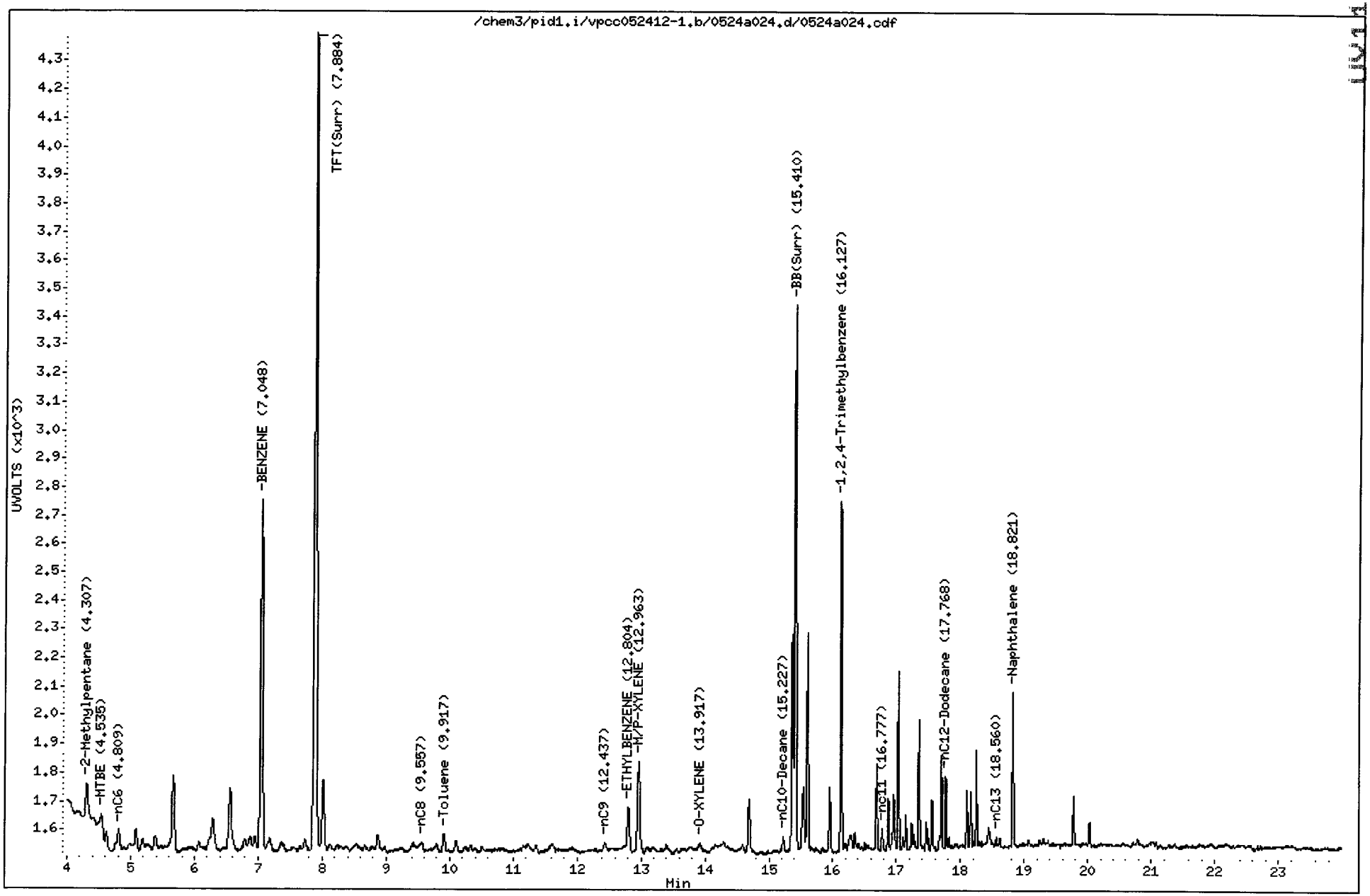
Sample Info: UV11N

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a024.d

Date : 24-MAY-2012 20:29

Client ID: USO-P7-D

Sample Info: UV11N

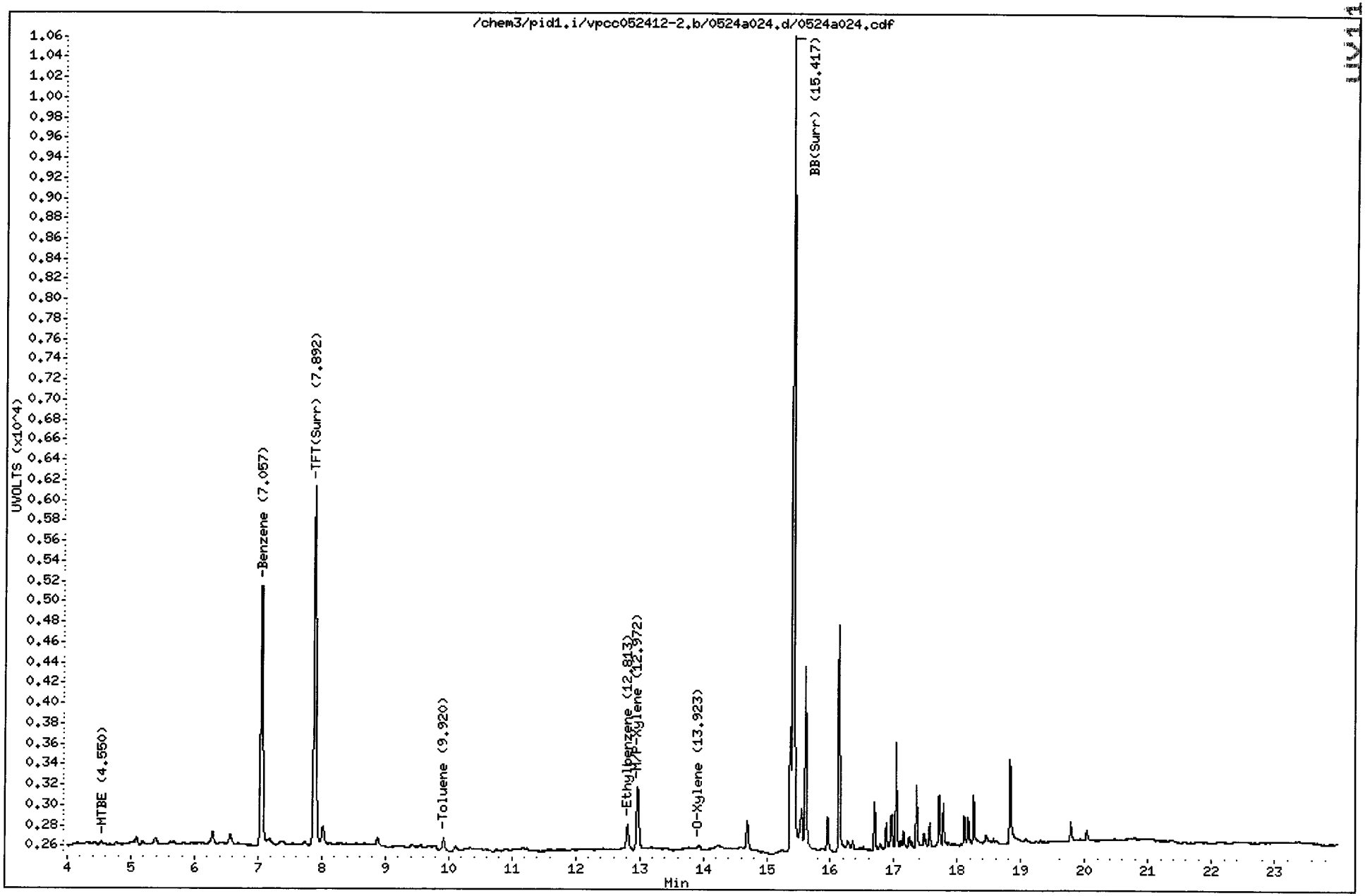
Column phase: RTX 502-2 PID

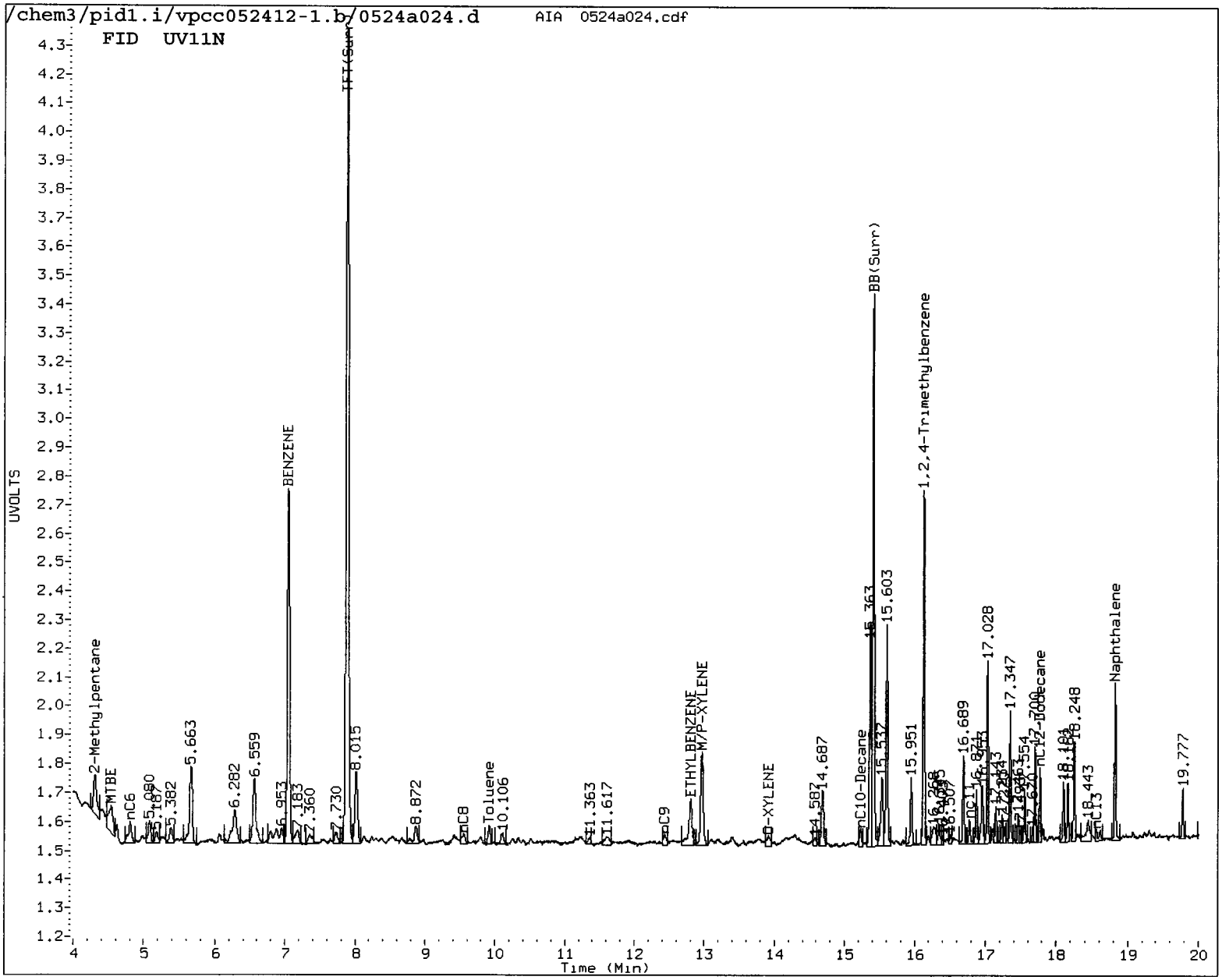
Instrument: pid1.i

Operator: MH

Column diameter: 0.18

16000 : UV11





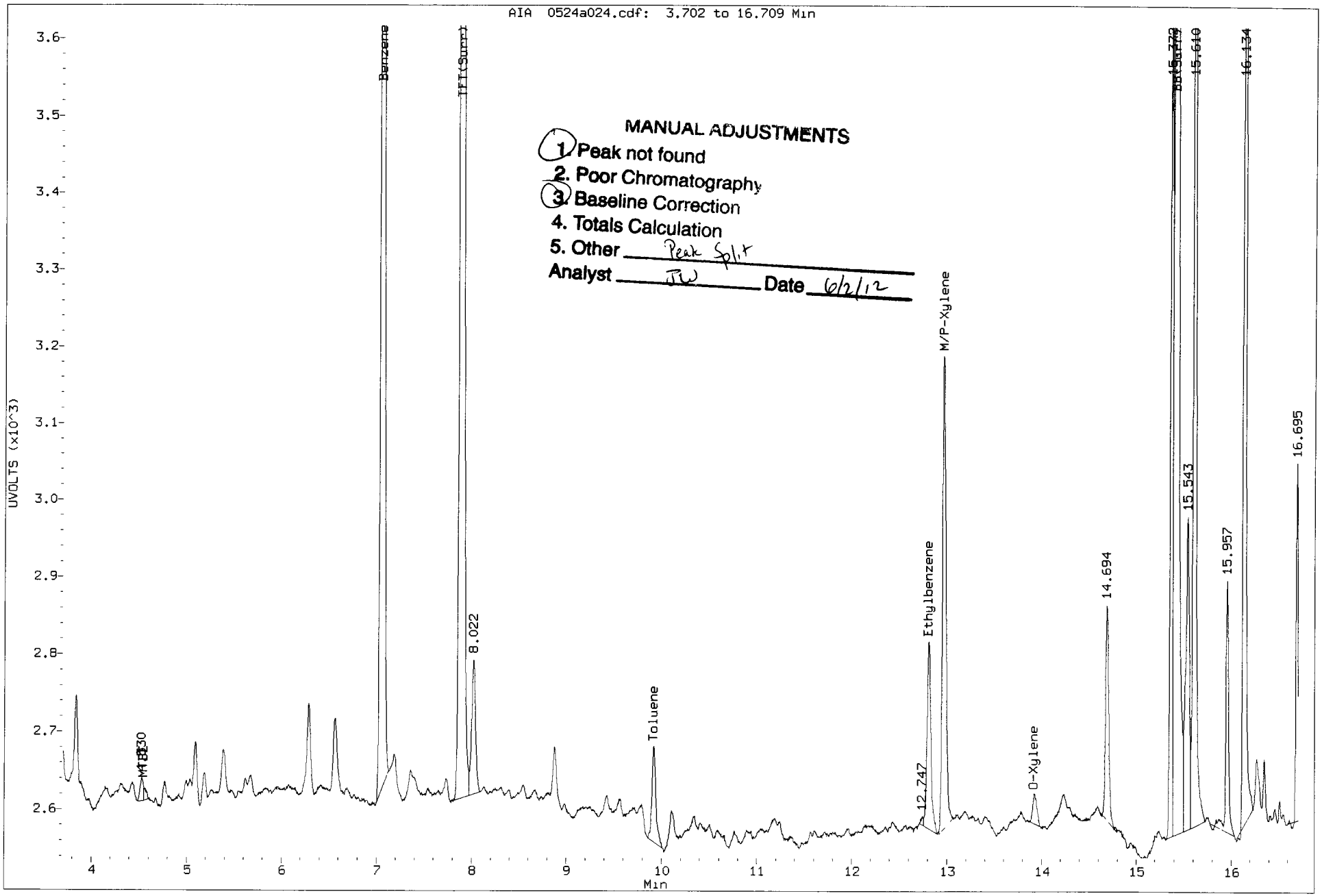
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a024.d/0524a024.cdf
Injection Date: 24-MAY-2012 20:29
Instrument: pid1.i
Client Sample ID: USO-P7-D



UVA1 : 00096

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P7-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11O
LIMS ID: 12-9205
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 21:57
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 39 mg-dry-wt
Percent Moisture: 37.1%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	32	< 32 U	
108-88-3	**Toluene**	**32**	**36**	
100-41-4	Ethylbenzene	32	< 32 U	
179601-23-1	m,p-Xylene	64	< 64 U	
95-47-6	o-Xylene	32	< 32 U	
				GAS ID
	Gasoline Range Hydrocarbons	13	< 13 U	---

BETX Surrogate Recovery

Trifluorotoluene	87.9%
Bromobenzene	88.1%

Gasoline Surrogate Recovery

Trifluorotoluene	89.1%
Bromobenzene	89.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a027.d ARI ID: UV11O
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a027.d Client ID: USO-P7-E
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 21:57
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.883	0.006	2668	33623	89.1	TFT(Surr)
15.409	0.003	1731	15000	89.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	11772	0.035 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	16037	0.024 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	12764	0.024 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	12864	0.036 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3258	87.9	TFT(Surr)
15.417	0.003	7188	88.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	-0.001	23	0.09N	Benzene
9.913	-0.001	61	0.28N	Toluene
12.797	-0.010	9	0.05N	Ethylbenzene
12.967	-0.001	35	0.16N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a027.d

Date : 24-MAY-2012 21:57

Client ID: USO-P7-E

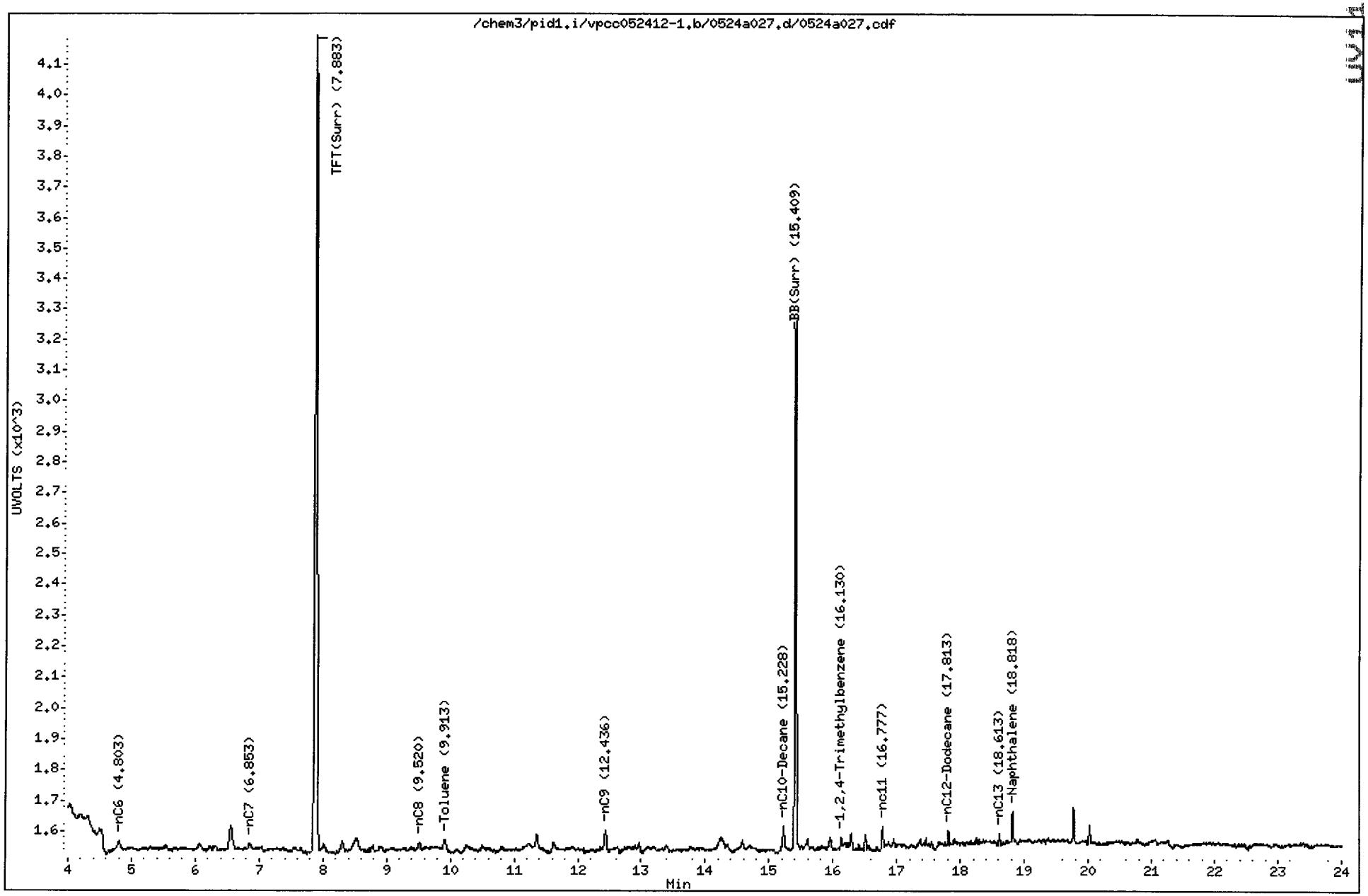
Instrument: pid1.i

Sample Info: UV110

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a027.d

Page 1

Date : 24-MAY-2012 21:57

Client ID: USO-P7-E

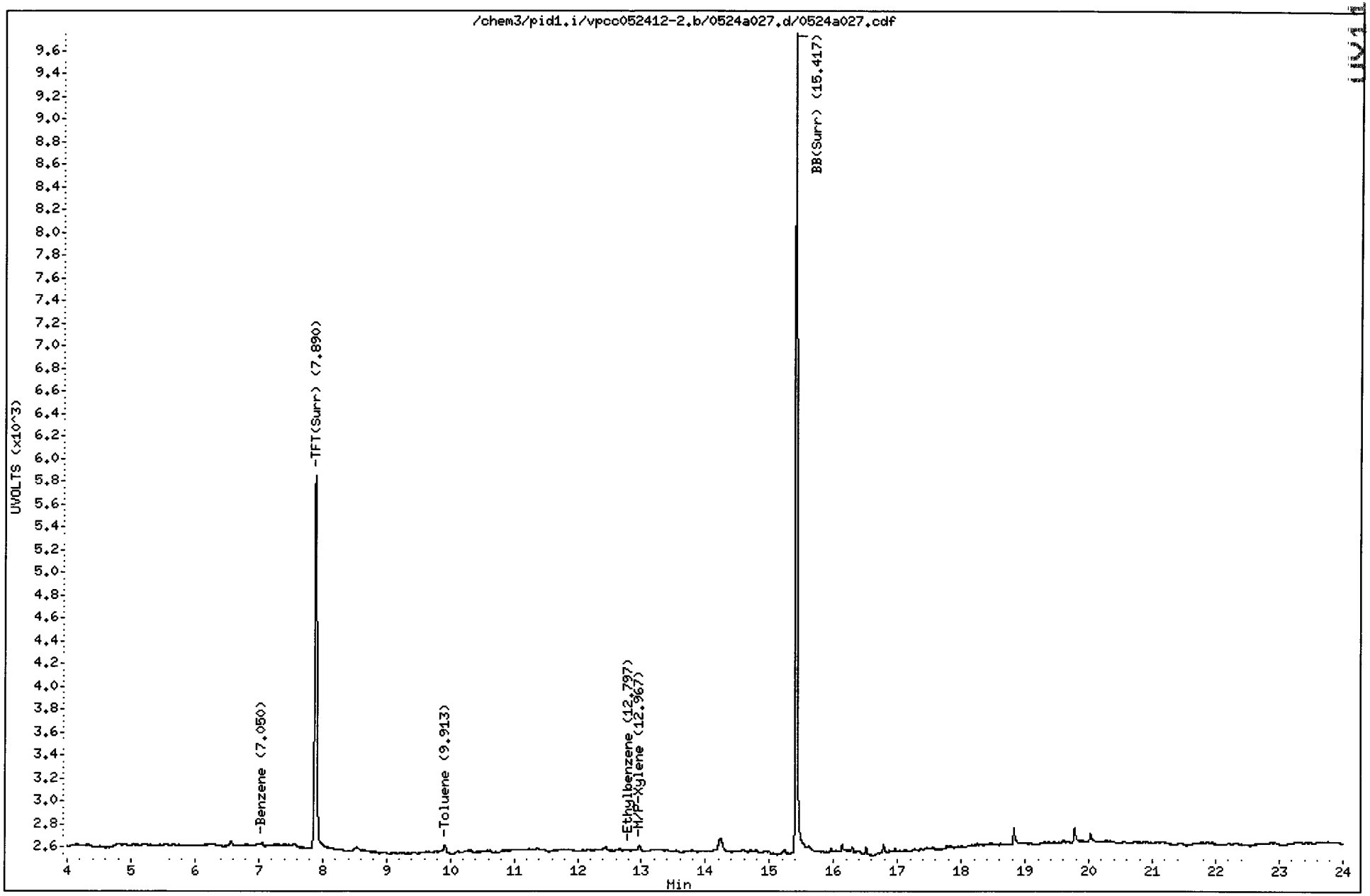
Instrument: pid1.i

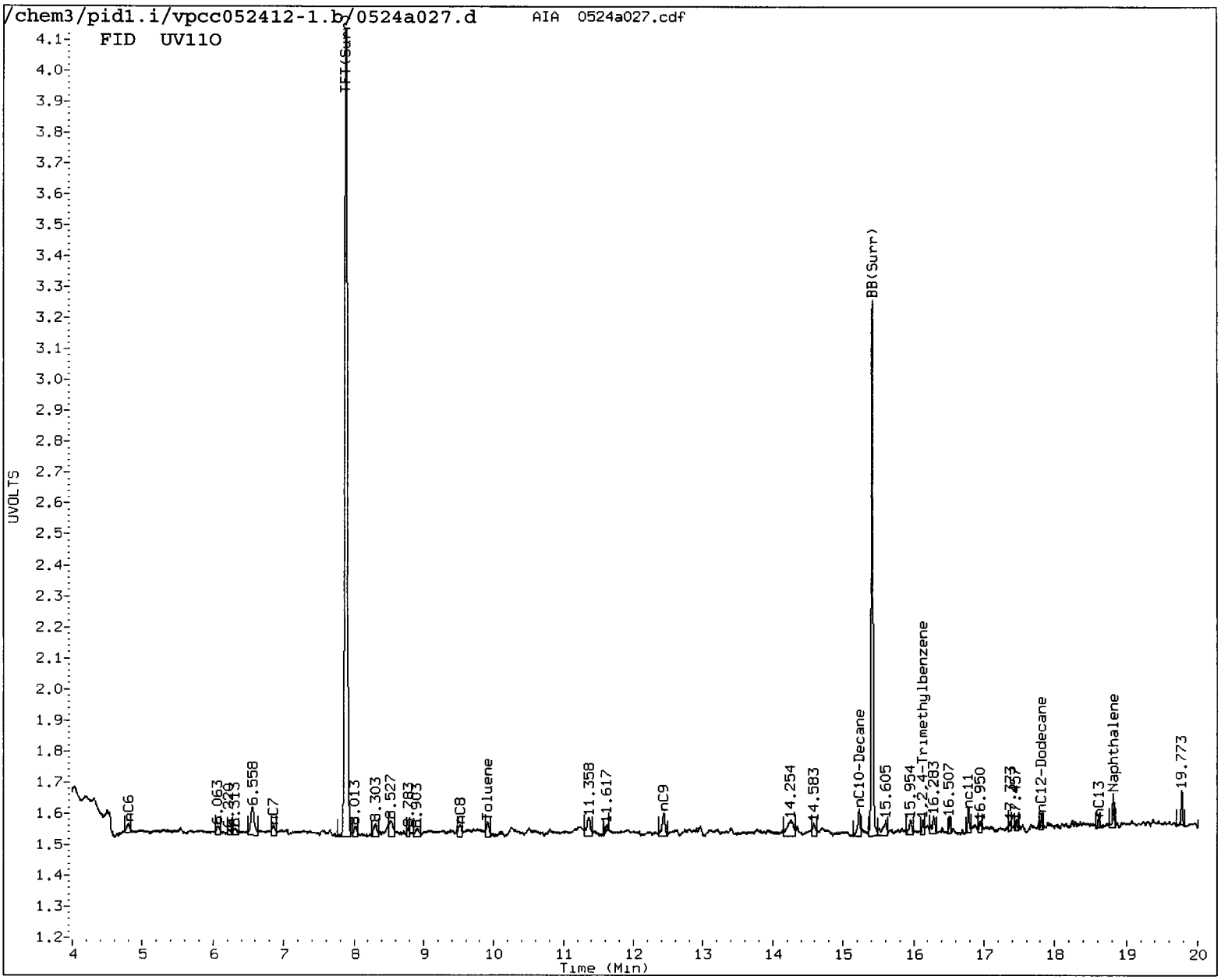
Sample Info: UV110

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

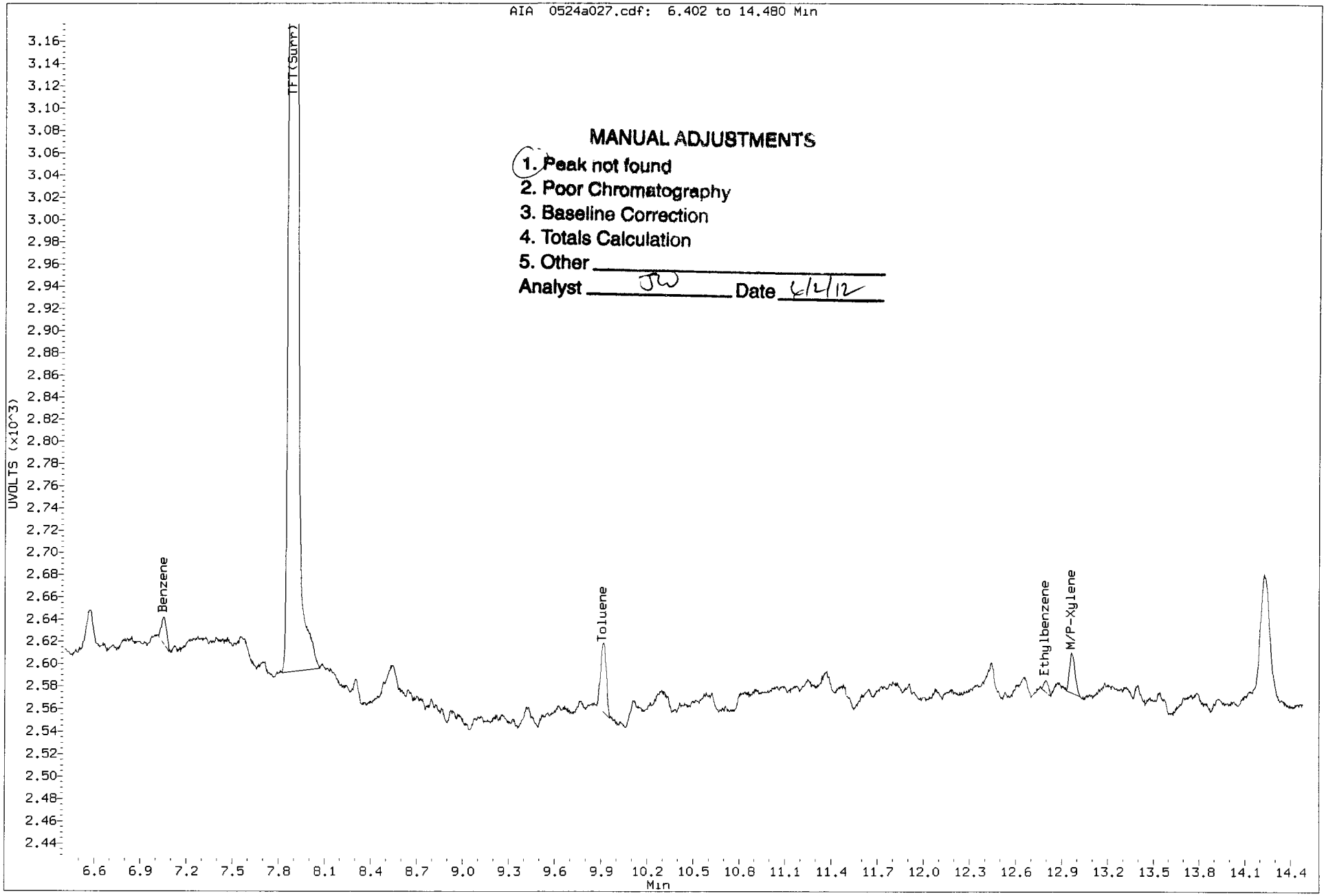
5. Other _____

Analyst: SU Date: 4/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a027.d/0524a027.cdf
Injection Date: 24-MAY-2012 21:57
Instrument: pid1.i
Client Sample ID: USO-P7-E

UV11 001102

AIA 0524a027.cdf: 6.402 to 14.480 Min



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JW Date 6/4/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P8-A
SAMPLE

Lab Sample ID: UV11P
LIMS ID: 12-9206
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 18:45
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 78 mg-dry-wt
Percent Moisture: 5.6%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**16**	**69**	
108-88-3	**Toluene**	**16**	**160**	
100-41-4	**Ethylbenzene**	**16**	**120**	
179601-23-1	**m,p-Xylene**	**32**	**470**	
95-47-6	**o-Xylene**	**16**	**220**	
				GAS ID
	Gasoline Range Hydrocarbons	**6.4**	**50**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.2%
Bromobenzene	93.0%

Gasoline Surrogate Recovery

Trifluorotoluene	92.9%
Bromobenzene	94.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a015.d ARI ID: UV11P
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a015.d Client ID: USO-P8-A
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 18:45
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.884	0.006	2784	37440	92.9	TFT(Surr)
15.406	0.003	1830	16632	94.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	259535	0.761 M
8015C 2MP-TMB	(4.21 to 16.22)	678311	435358	0.642 M
AK101 nC6-nC10	(4.71 to 15.12)	538315	383552	0.713 M
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	281816	0.784 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.892	0.006	3381	91.2	TFT(Surr)
15.413	0.003	7588	93.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.056	0.005	273	1.09	Benzene
9.917	0.005	556	2.55N	Toluene
12.796	-0.007	365	1.89	Ethylbenzene
12.970	0.006	1588	7.40N	M/P-Xylene
13.923	0.008	571	3.40	O-Xylene
4.570	-0.019	58	0.69N	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a015.d

Date : 30-MAY-2012 18:45

Client ID: USO-P8-A

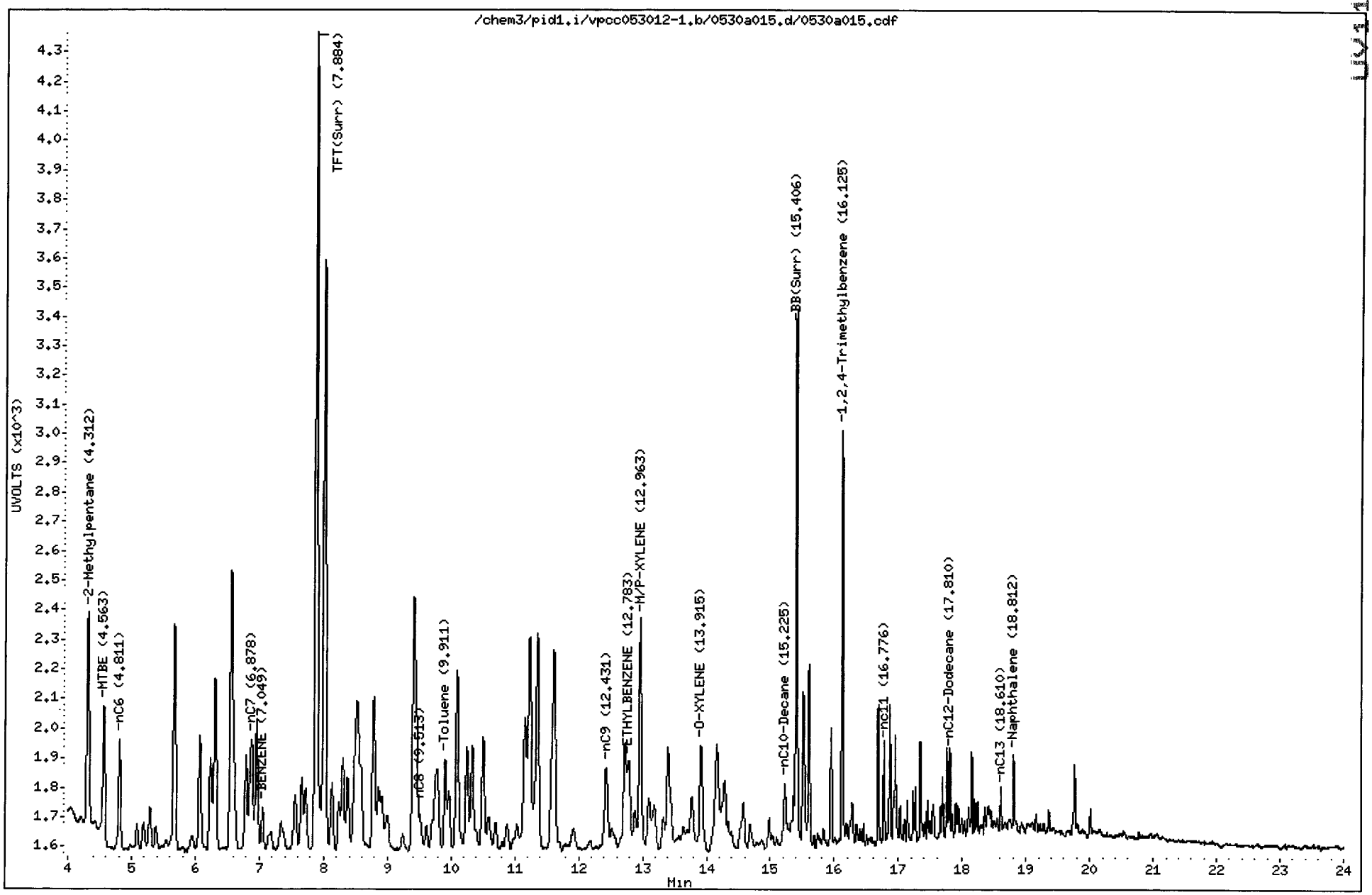
Sample Info: UV11P

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc053012-2.b/0530a015.d

Page 1

Date : 30-MAY-2012 18:45

Client ID: USO-P8-A

Instrument: pid1.i

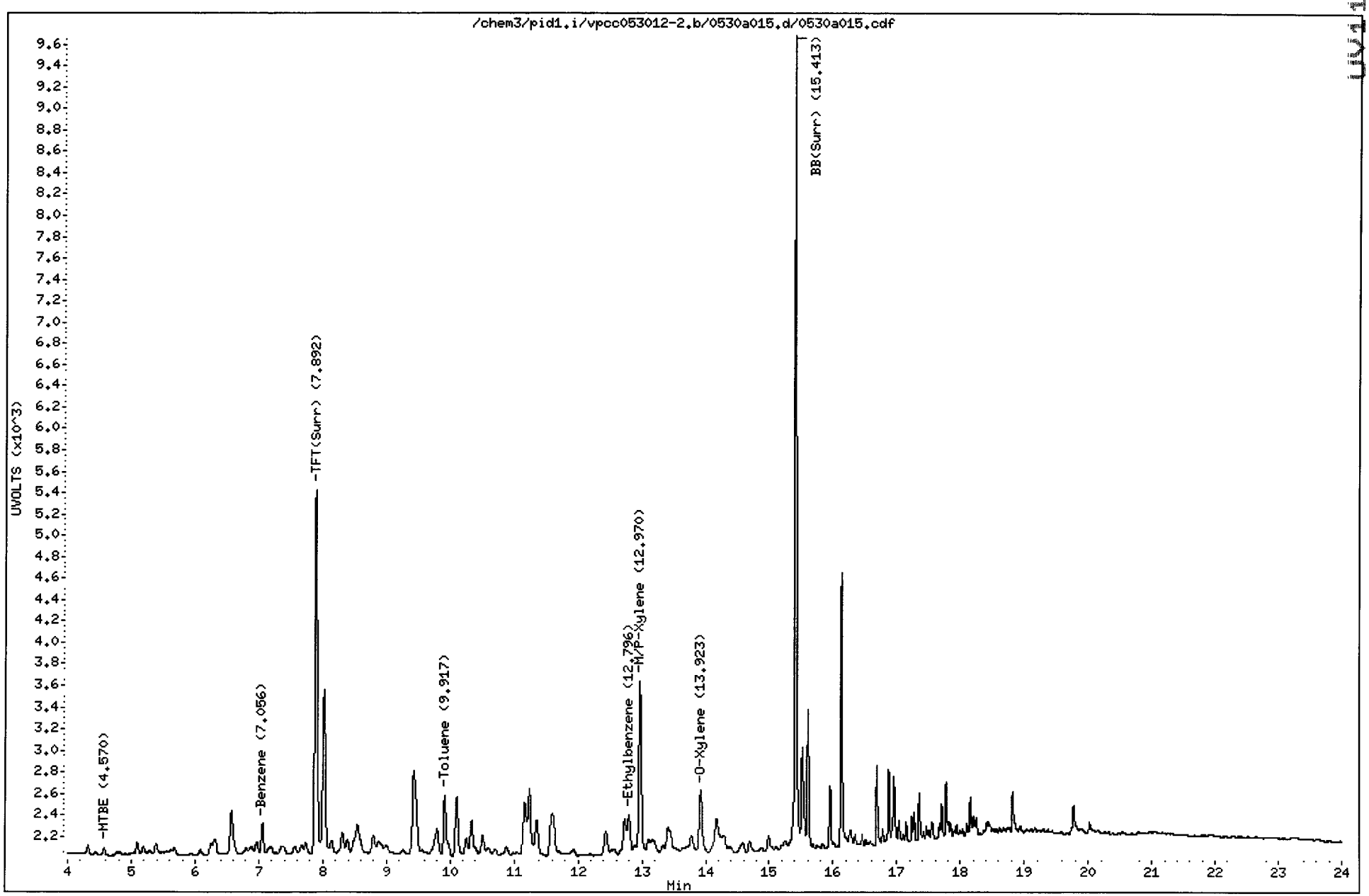
Sample Info: UV11P

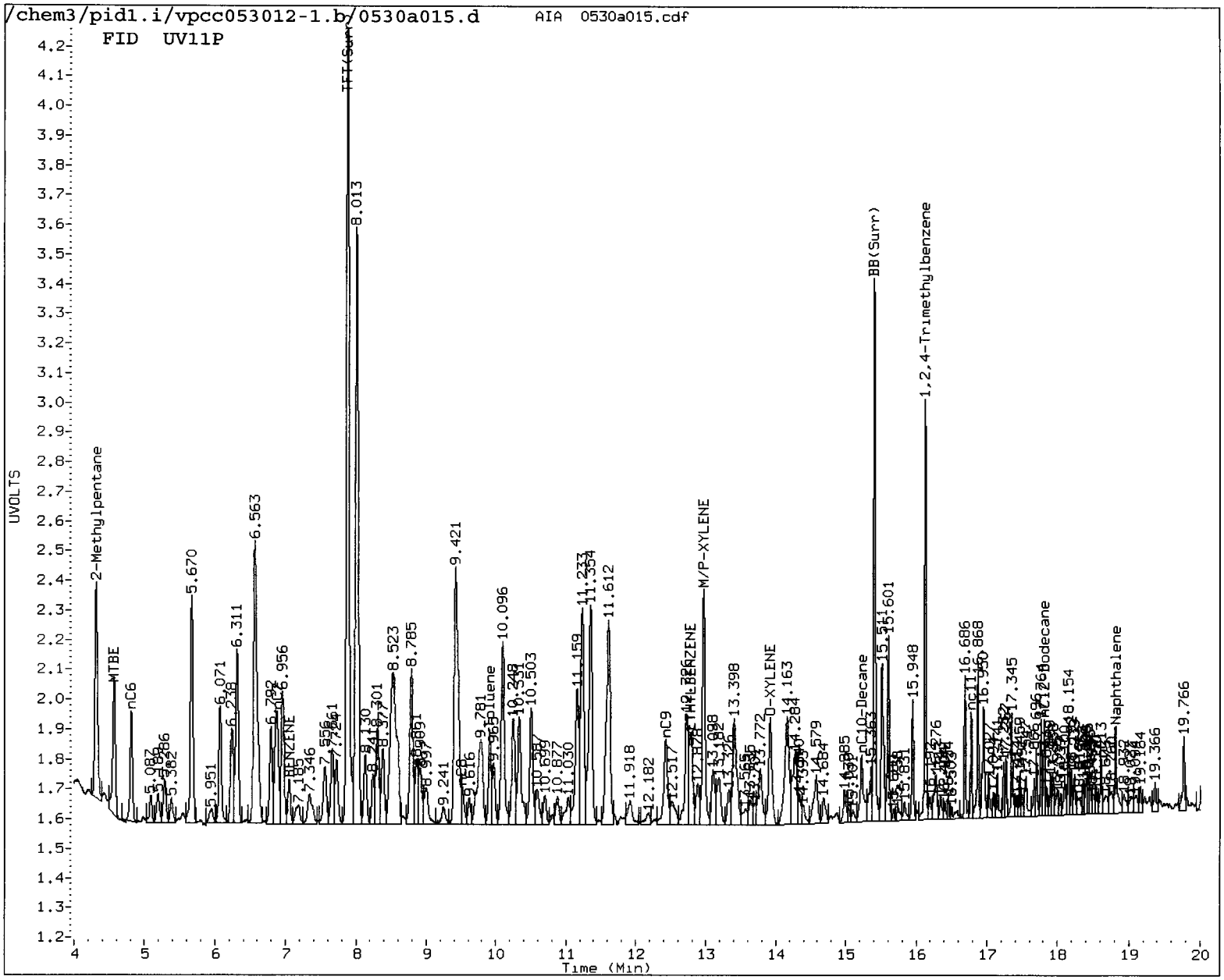
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV11 : 0015.05





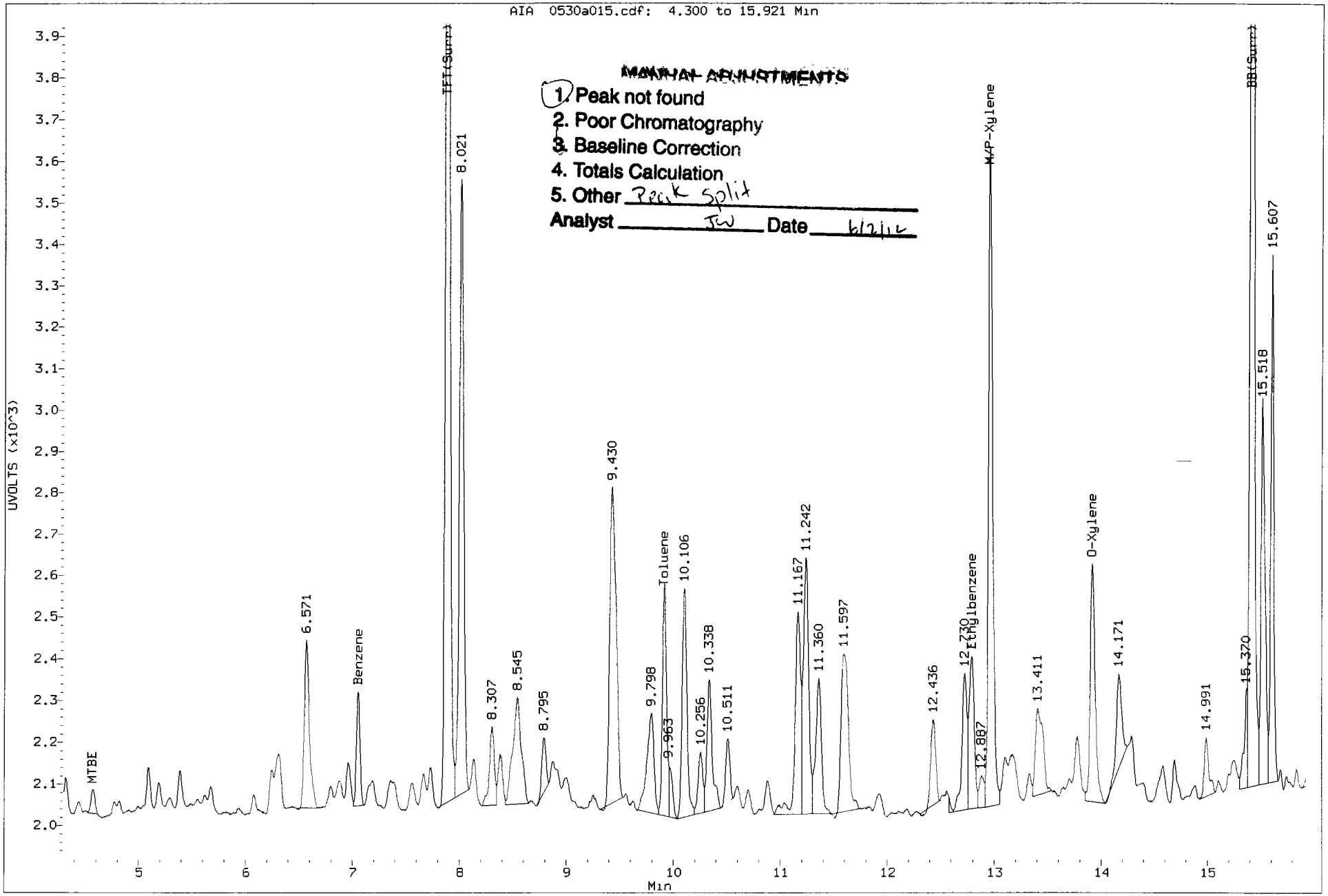
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JV Date: 6/2/12

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a015.d/0530a015.cdf
Injection Date: 30-MAY-2012 18:45
Instrument: pid1.i
Client Sample ID: USO-P8-A



UV11-001103

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P8-B**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11Q
LIMS ID: 12-9207
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 06/01/12 16:20
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 72 mg-dry-wt
Percent Moisture: 6.0%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	17	40	
108-88-3	**Toluene**	17	78	
100-41-4	**Ethylbenzene**	17	22	
179601-23-1	**m,p-Xylene**	34	120	
95-47-6	**o-Xylene**	17	70	
				GAS ID
	Gasoline Range Hydrocarbons	6.9	38	**GRO**

BETX Surrogate Recovery

Trifluorotoluene	93.1%
Bromobenzene	91.3%

Gasoline Surrogate Recovery

Trifluorotoluene	93.8%
Bromobenzene	94.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a020.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a020.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV11Q
Client ID:
Injection Date: 01-JUN-2012 16:20
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.246	0.001	2785	37631	93.8	TFT(Surr)
14.854	-0.001	1596	17568	94.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	177898	0.557 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	351196	0.518 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	328131	0.602 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	183138	0.554 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.271	0.001	11531	93.1	TFT(Surr)
14.870	-0.003	16298	91.3	BB(Surr)

SW8021 (PID)

JW 6/2/12

RT	Shift	Response	Amount	Compound
6.471	0.000	509	0.58	Benzene
9.240	0.002	624	1.13	Toluene
12.087	0.002	154	0.32N	Ethylbenzene
12.244	0.000	776	1.67	M/P-Xylene
13.147	-0.004	384	1.01	O-Xylene
4.110	-0.022	118	0.37N	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a020.d

Date : 01-JUN-2012 16:20

Client ID:

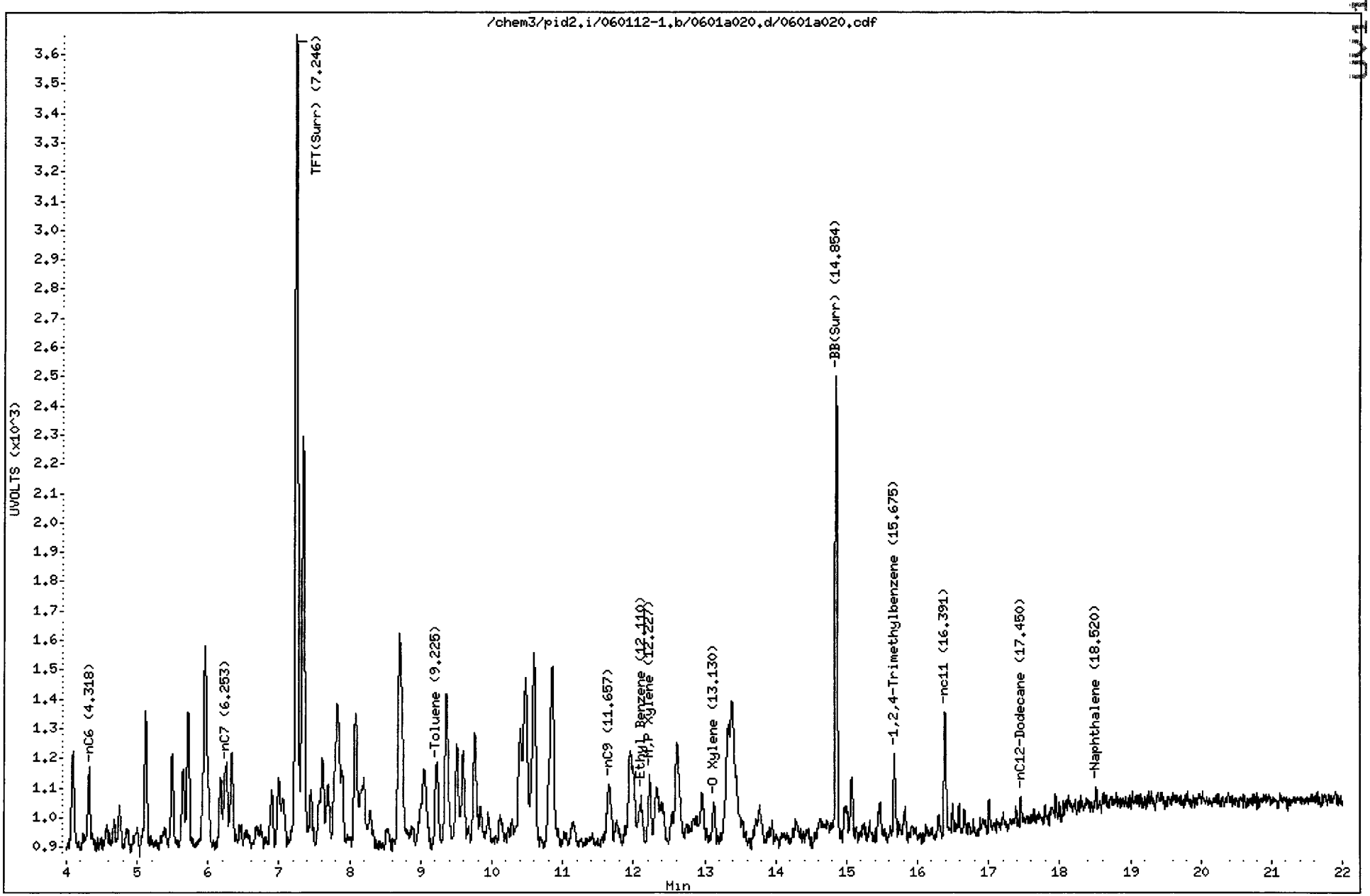
Sample Info: UV11Q

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/060112-2.b/0601a020.d

Date : 01-JUN-2012 16:20

Client ID:

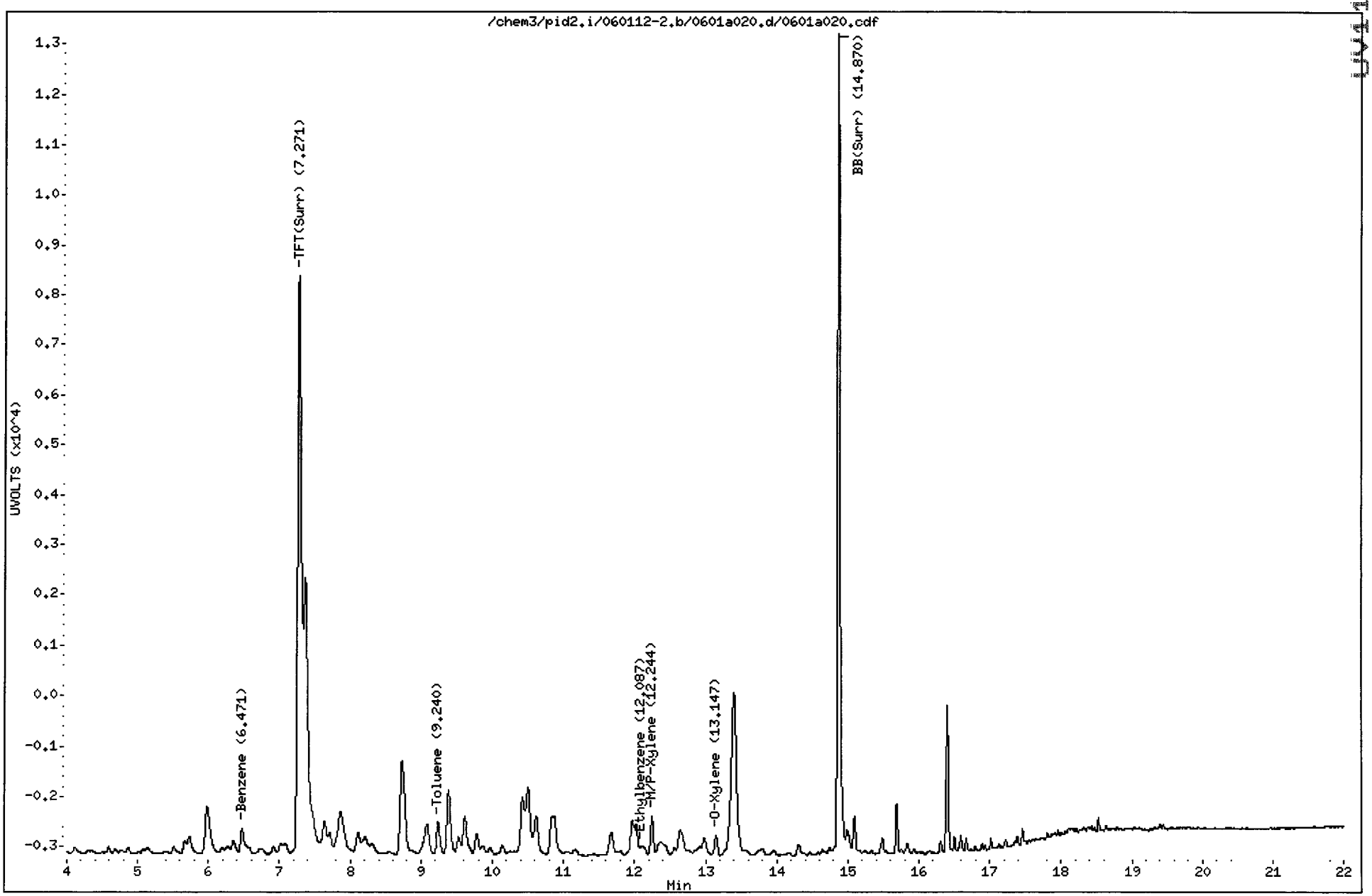
Sample Info: UV11Q

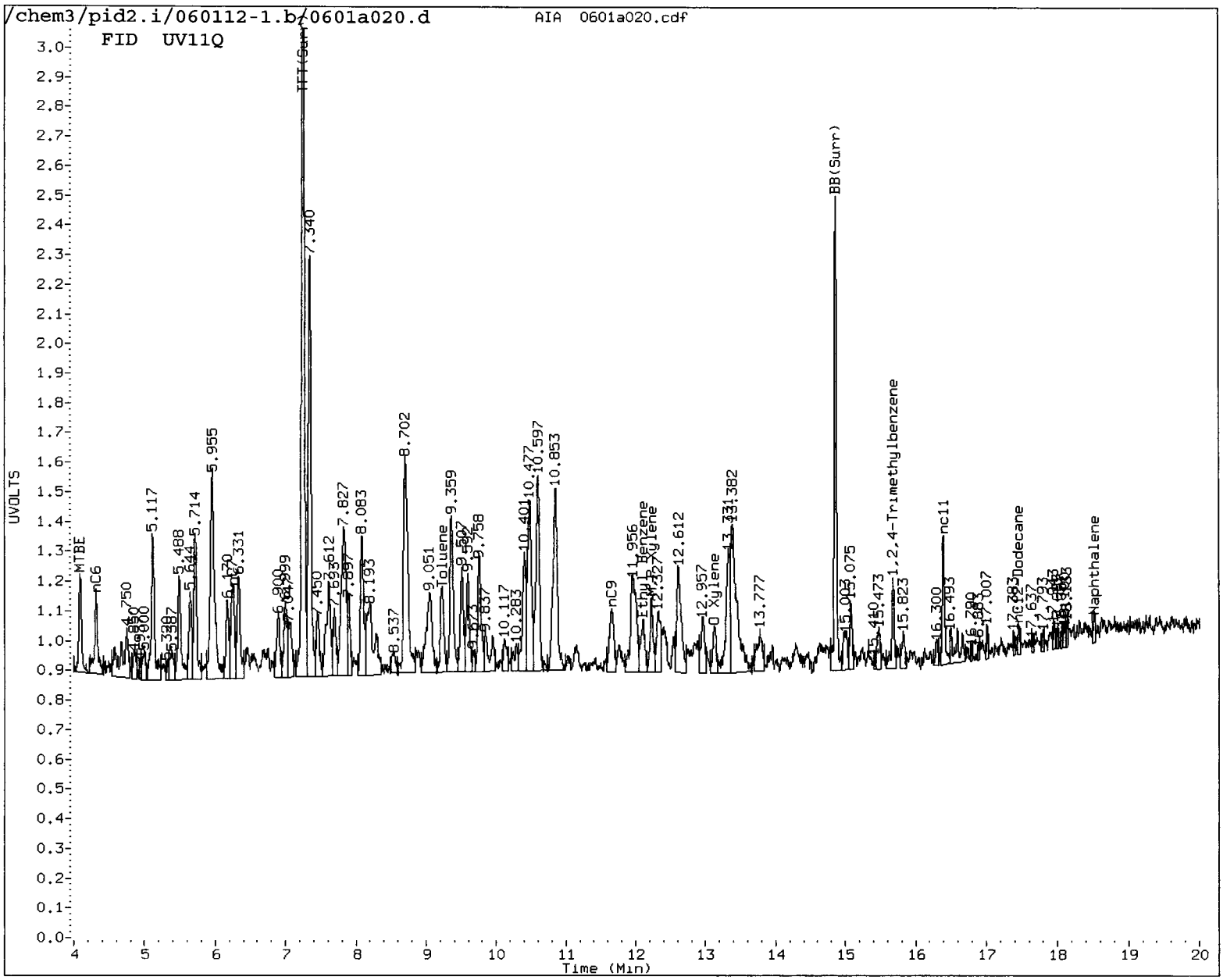
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





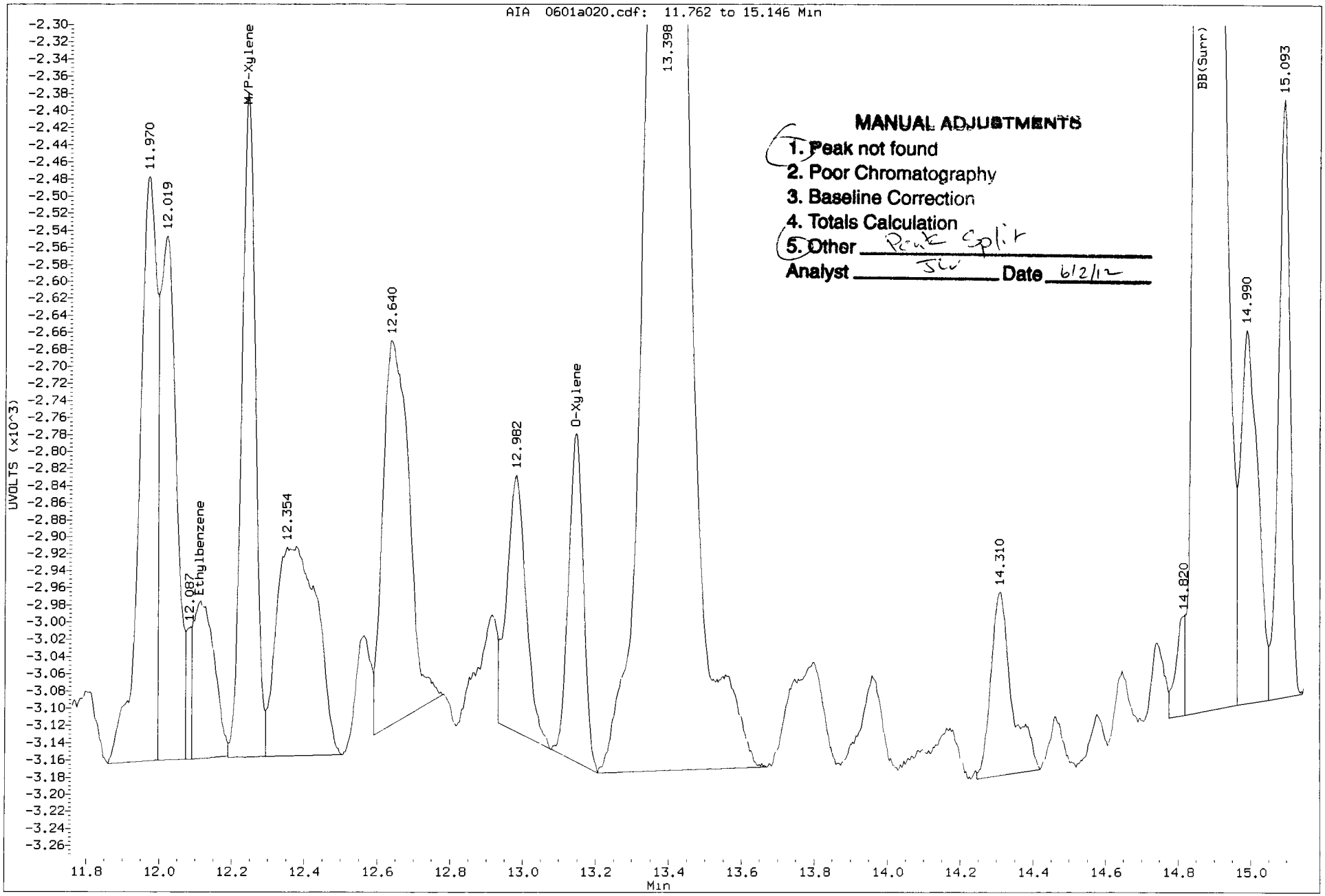
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/060112-2.b/0601a020.d/0601a020.cdf
Injection Date: 01-JUN-2012 16:20
Instrument: pid2.i
Client Sample ID:



UV11-00114

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P8-C**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV11R
LIMS ID: 12-9208
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 23:25
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 84 mg-dry-wt
Percent Moisture: 12.0%

CAS Number	Analyte	RL	Result
71-43-2	**Benzene**	**15**	**180**
108-88-3	**Toluene**	**15**	**24**
100-41-4	Ethylbenzene	15	< 15 U
179601-23-1	m,p-Xylene	30	< 30 U
95-47-6	o-Xylene	15	< 15 U

			GAS ID
Gasoline Range Hydrocarbons	5.9	< 5.9 U	---

BETX Surrogate Recovery

Trifluorotoluene	91.5%
Bromobenzene	96.5%

Gasoline Surrogate Recovery

Trifluorotoluene	93.5%
Bromobenzene	96.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a030.d ARI ID: UV11R
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a030.d Client ID: USO-P8-C
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 23:25
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.882	0.005	2802	35156	93.5	TFT(Surr)
15.408	0.001	1872	16203	96.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	7753	0.023 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	17289	0.025 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	15041	0.028 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	9483	0.026 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3393	91.5	TFT(Surr)
15.417	0.003	7871	96.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	738	2.96N	Benzene
9.920	0.006	87	0.40N	Toluene
12.810	0.003	24	0.12N	Ethylbenzene
12.973	0.005	54	0.25N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a030.d

Page 1

Date : 24-MAY-2012 23:25

Client ID: USO-P8-C

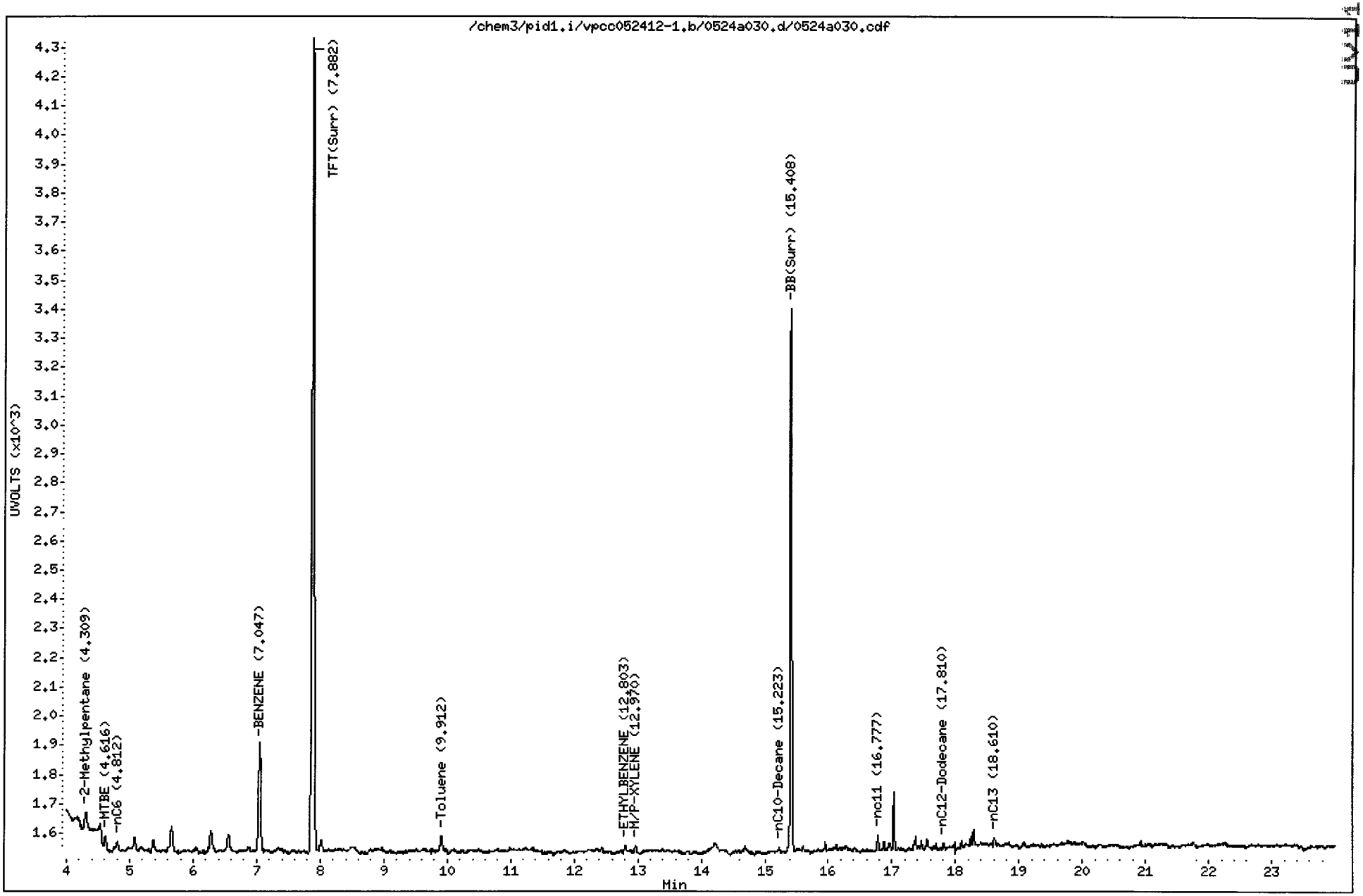
Instrument: pid1.i

Sample Info: UV11R

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a030.d

Page 1

Date : 24-MAY-2012 23:25

Client ID: USO-P8-C

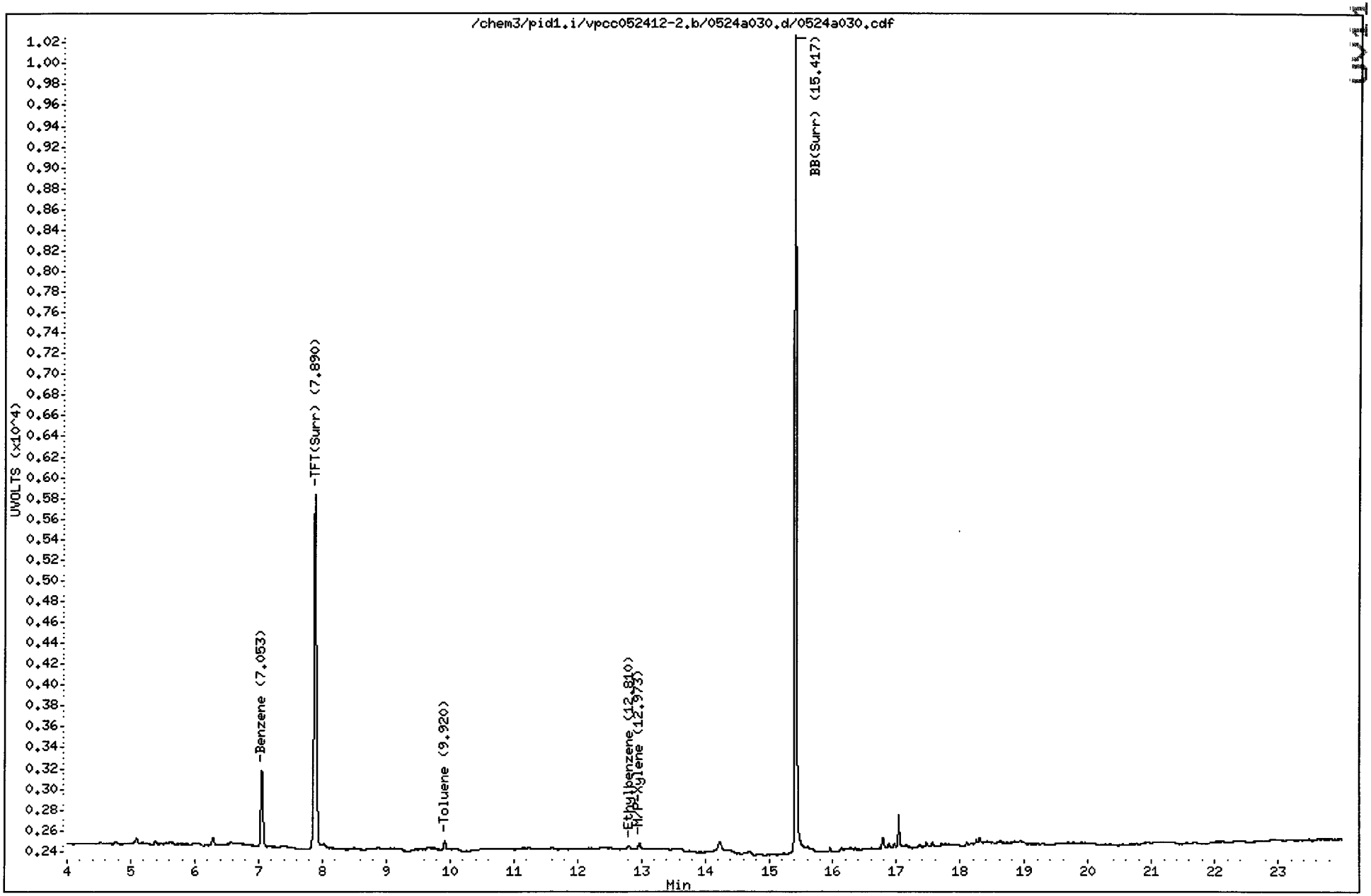
Instrument: pid1.i

Sample Info: UV11R

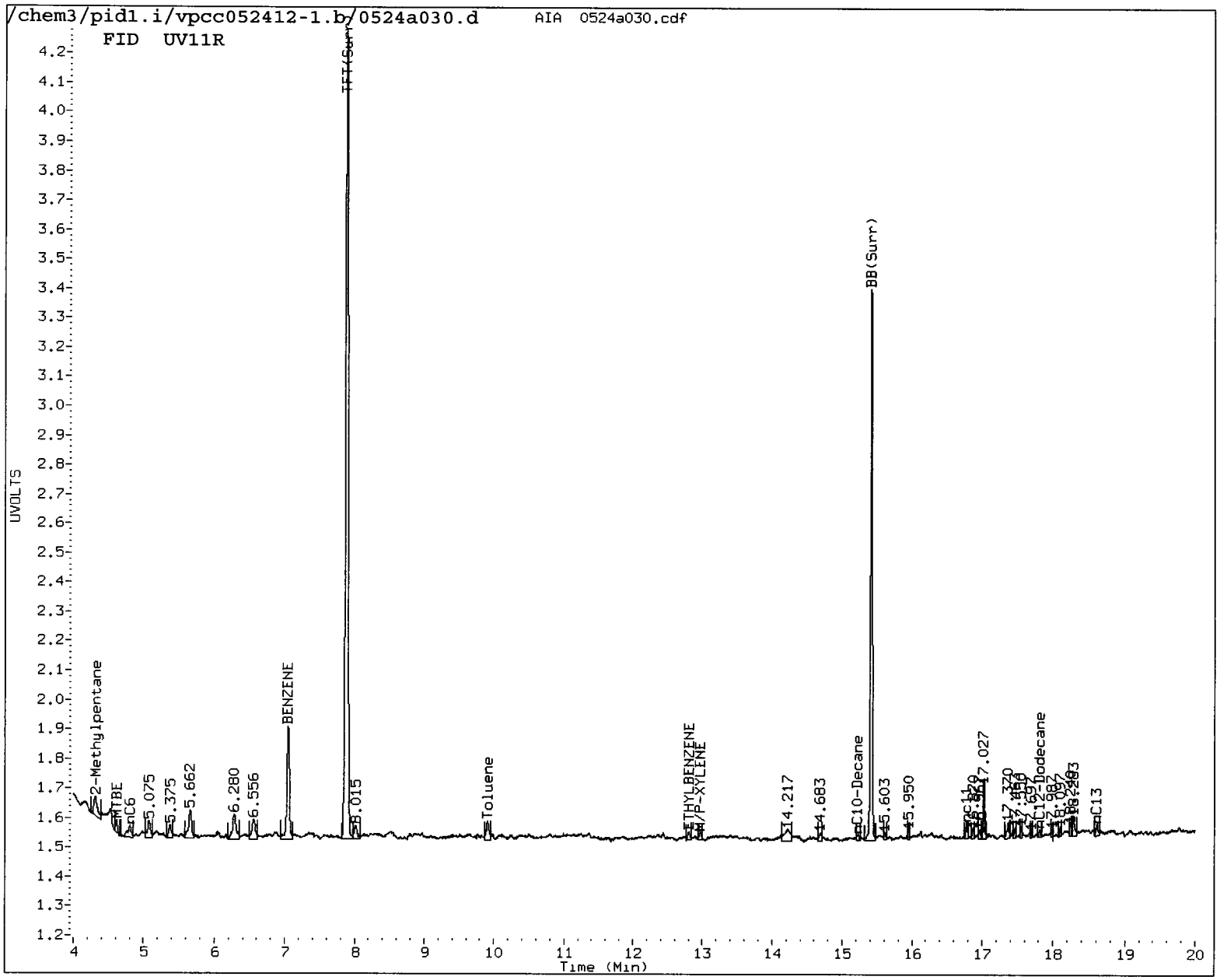
Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18



UV11 - 00118



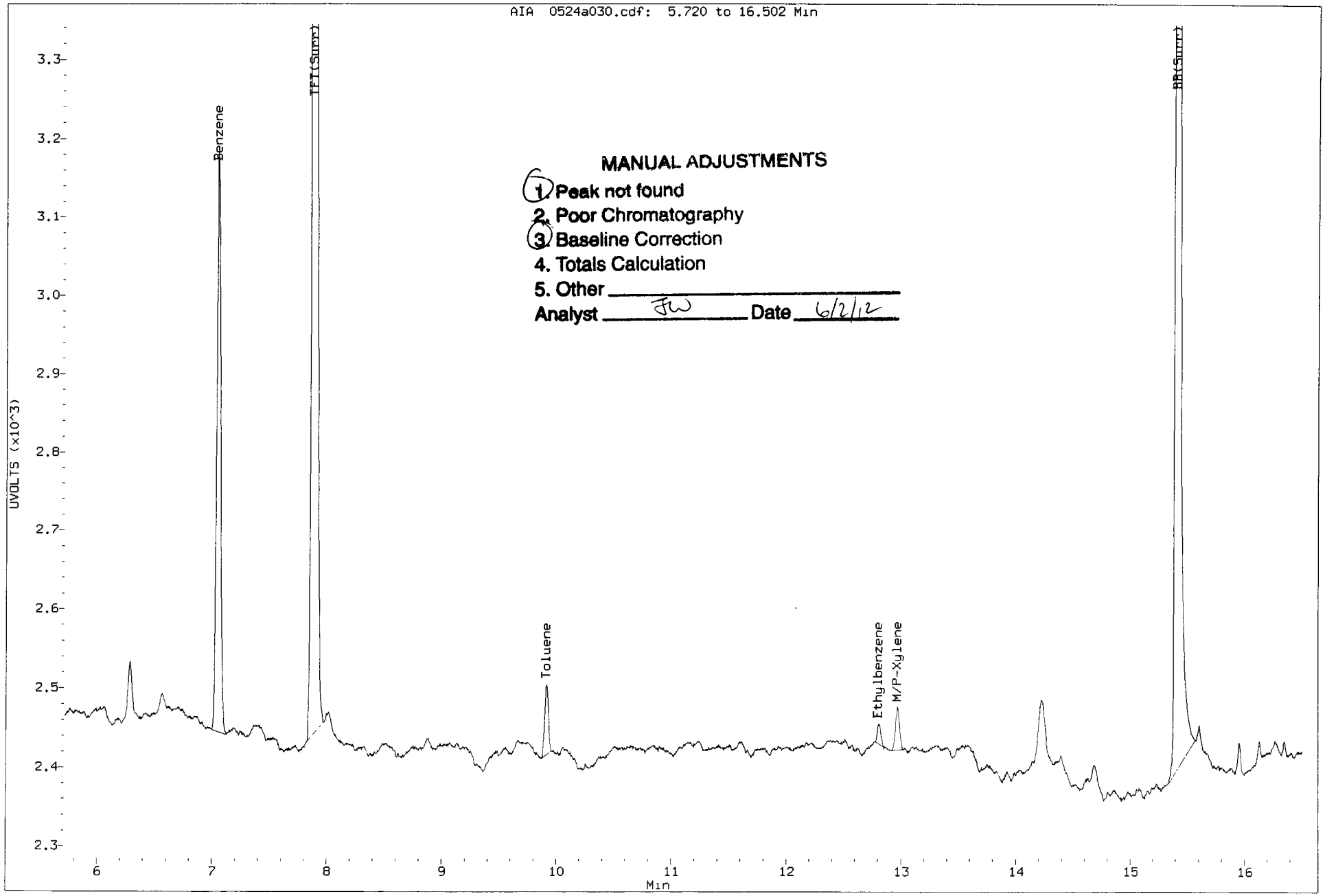
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a030.d/0524a030.cdf
Injection Date: 24-MAY-2012 23:25
Instrument: pid1.i
Client Sample ID: USO-P8-C



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JW Date 6/2/12

UV11 : 001126

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P8-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV11S
LIMS ID: 12-9209
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/19/12
Date Received: 05/21/12

Date Analyzed: 05/24/12 23:54
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 78 mg-dry-wt
Percent Moisture: 15.6%

CAS Number	Analyte	RL	Result
71-43-2	**Benzene**	**16**	**73**
108-88-3	**Toluene**	**16**	**19**
100-41-4	**Ethylbenzene**	**16**	**19**
179601-23-1	m,p-Xylene	32	< 32 U
95-47-6	o-Xylene	16	< 16 U

			GAS ID
Gasoline Range Hydrocarbons	**6.4**	**20**	**GRO**

BETX Surrogate Recovery

Trifluorotoluene	93.9%
Bromobenzene	98.8%

Gasoline Surrogate Recovery

Trifluorotoluene	95.2%
Bromobenzene	100%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a031.d ARI ID: UV11S
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a031.d Client ID: USO-P8-D
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 23:54
Instrument: pid1.i Matrix: SOIL
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.883	0.005	2851	36221	95.2	TFT(Surr)
15.408	0.002	1941	17913	100.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	90292	0.265 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	91068	0.134 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	74004	0.137 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	114113	0.317 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.890	0.004	3483	93.9	TFT(Surr)
15.417	0.003	8061	98.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	283	1.13N	Benzene
9.920	0.006	64	0.29N	Toluene
12.790	-0.017	57	0.29N	Ethylbenzene
12.970	0.002	60	0.28N	M/P-Xylene
13.933	0.014	30	0.18N	O-Xylene
ND	---	---	---	MTBE

JW 5/31/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a031.d

Date : 24-MAY-2012 23:54

Client ID: USO-P8-D

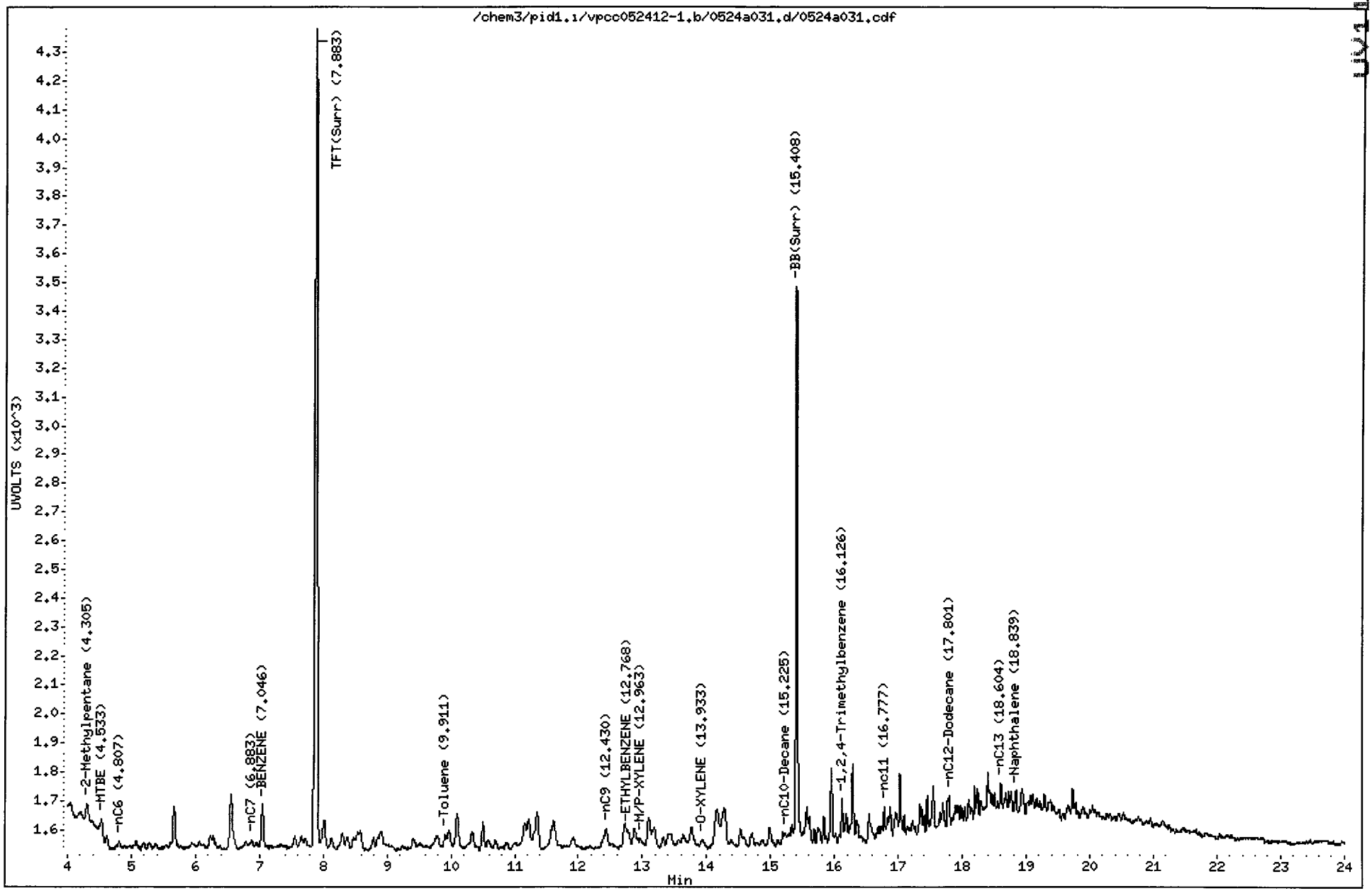
Sample Info: UV11S

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a031.d

Page 1

Date : 24-MAY-2012 23:54

Client ID: USO-P8-D

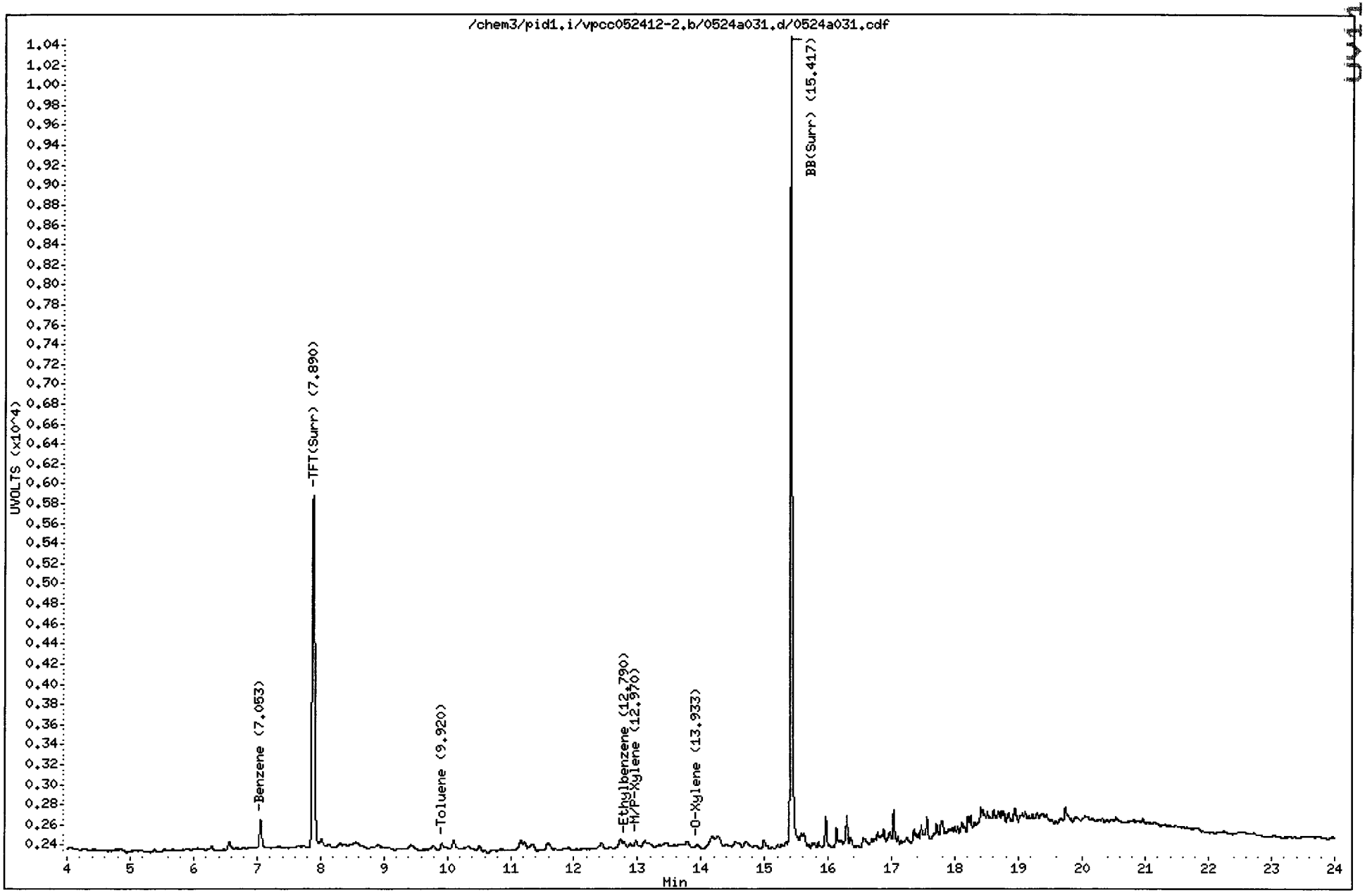
Instrument: pid1.i

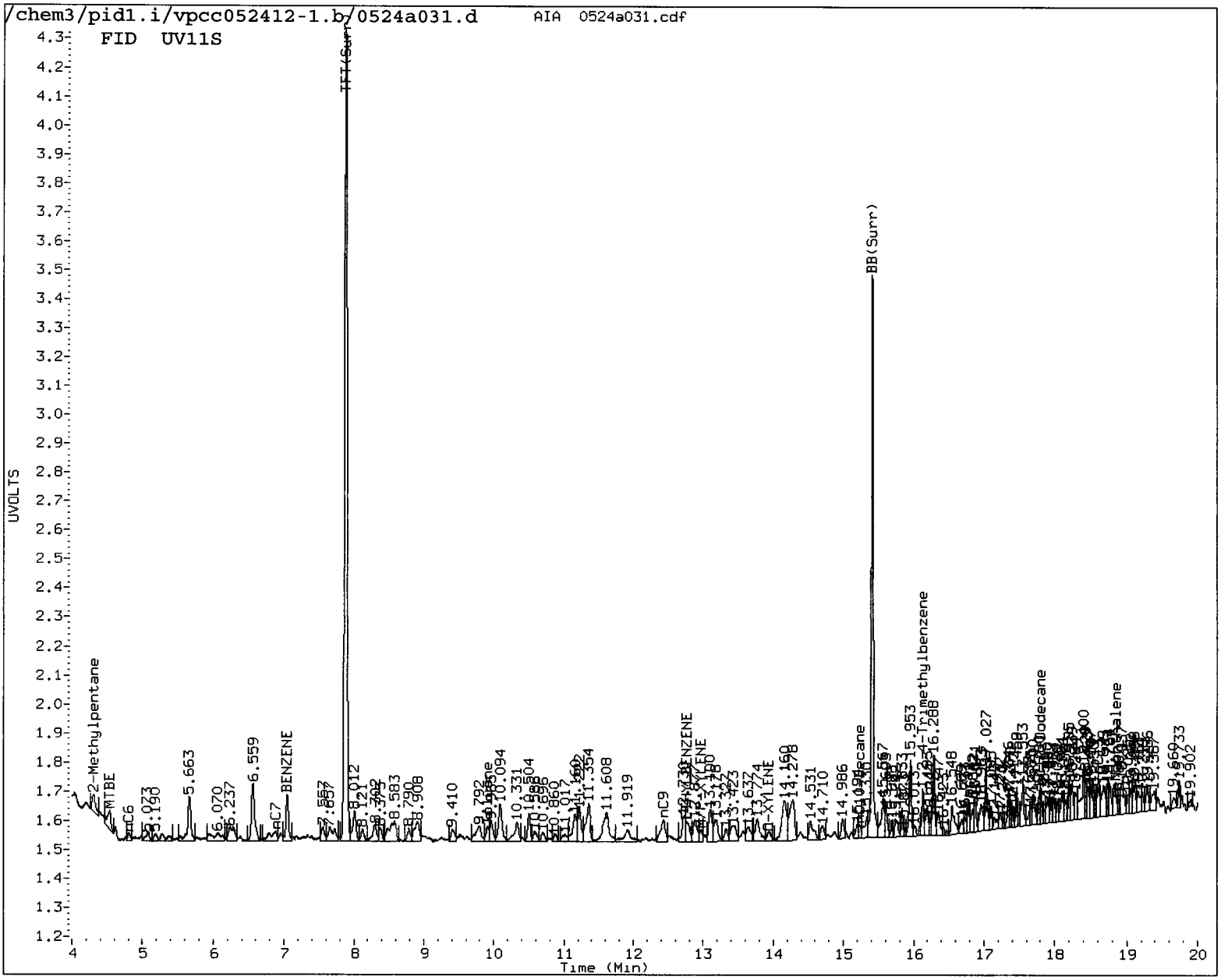
Sample Info: UV11S

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18





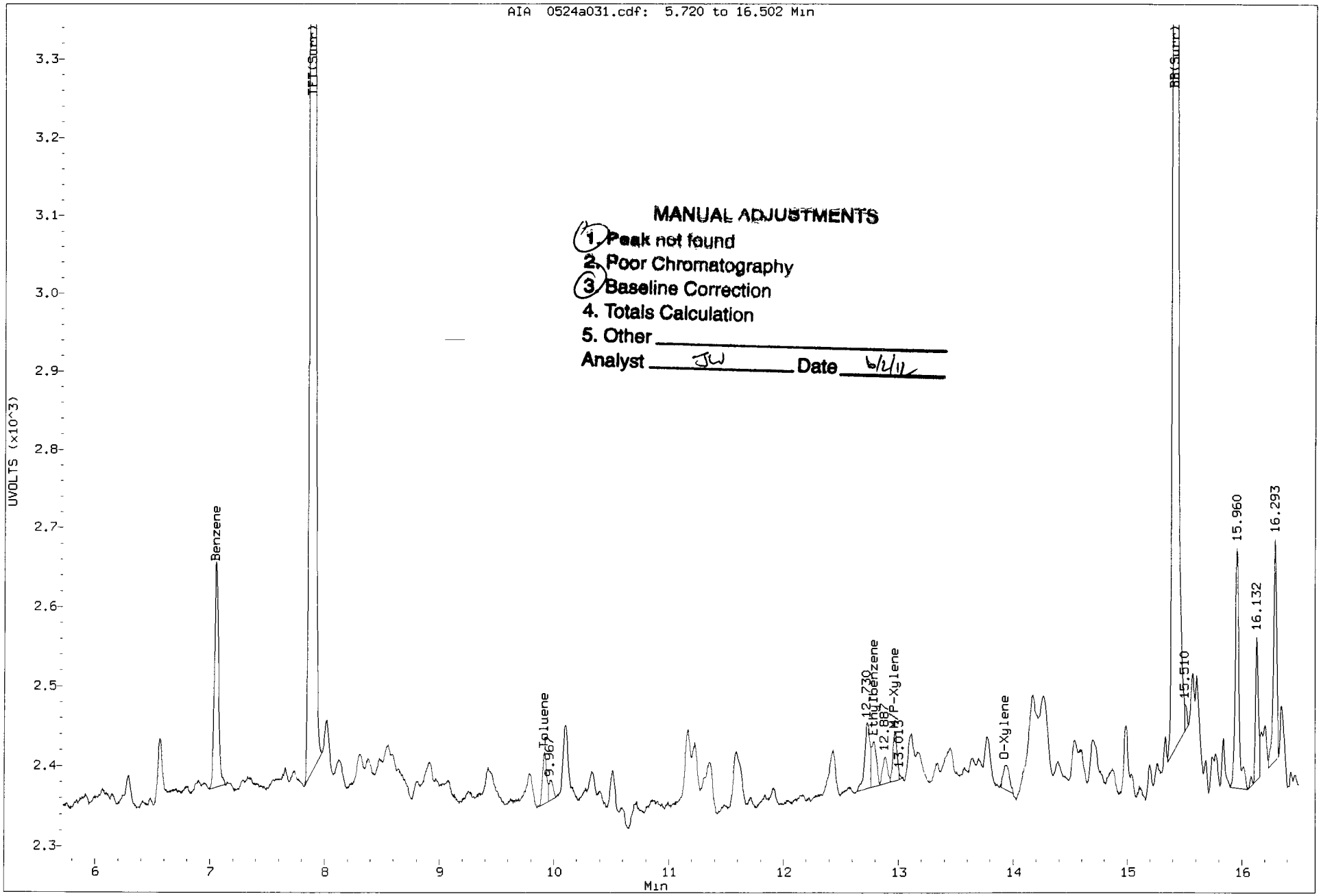
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a031.d/0524a031.cdf
Injection Date: 24-MAY-2012 23:54
Instrument: pid1.i
Client Sample ID: USO-P8-D



92108 : TAVI

ANALYTICAL RESOURCES INCORPORATED

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV11
Matrix: Soil

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022

Client ID	BFB	TFT	BBZ	TOT OUT
MB-052412	NA	96.7%	95.6%	0
LCS-052412	NA	102%	99.2%	0
LCSD-052412	NA	104%	101%	0
USO-P5-A	NA	103%	104%	0
USO-P5-B	NA	103%	106%	0
USO-P5-C	NA	104%	112%	0
MB-053112	NA	94.6%	92.8%	0
LCS-053112	NA	99.2%	96.0%	0
LCSD-053112	NA	105%	100%	0
USO-P5-D	NA	97.8%	95.3%	0
USO-P5-E	NA	96.1%	98.0%	0
USO-P6-A	NA	95.8%	103%	0
MB-053012	NA	85.6%	87.6%	0
LCS-053012	NA	95.3%	91.2%	0
LCSD-053012	NA	96.7%	92.2%	0
USO-P6-B	NA	116%	143%*	1
USO-P6-C	NA	109%	142%*	1
USO-P6-D	NA	95.7%	96.9%	0
USO-P6-E	NA	92.5%	92.6%	0
USO-P7-A	NA	96.6%	98.5%	0
USO-P7-B	NA	98.4%	97.9%	0
USO-P7-C	NA	92.9%	95.5%	0
USO-P7-D	NA	95.9%	99.4%	0
USO-P7-E	NA	89.1%	89.4%	0
USO-P8-A	NA	92.9%	94.5%	0
MB-060112	NA	89.2%	90.9%	0
LCS-060112	NA	97.0%	93.7%	0
LCSD-060112	NA	96.9%	94.6%	0
USO-P8-B	NA	93.8%	94.7%	0
USO-P8-C	NA	93.5%	96.7%	0
USO-P8-D	NA	95.2%	100%	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(66-123)
(BBZ) = Bromobenzene	(80-120)	(62-130)

Log Number Range: 12-9191 to 12-9209

ANALYTICAL RESOURCES INCORPORATED

BETX SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV11
Matrix: Soil

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022

Client ID	TFT	BBZ	TOT OUT
MB-052412	99.7%	97.4%	0
LCS-052412	103%	99.9%	0
LCSD-052412	105%	102%	0
USO-P5-A	104%	105%	0
USO-P5-B	104%	105%	0
USO-P5-C	102%	106%	0
MB-053112	94.9%	92.8%	0
LCS-053112	99.3%	95.9%	0
LCSD-053112	105%	100%	0
USO-P5-D	98.2%	95.5%	0
USO-P5-E	96.9%	97.7%	0
USO-P6-A	95.1%	99.7%	0
MB-053012	87.3%	88.7%	0
LCS-053012	98.8%	93.5%	0
LCSD-053012	99.7%	95.1%	0
USO-P6-B	111%	132%	0
USO-P6-C	104%	120%	0
USO-P6-D	95.1%	96.6%	0
USO-P6-E	91.5%	93.8%	0
USO-P7-A	94.7%	96.9%	0
USO-P7-B	96.5%	96.9%	0
USO-P7-C	91.4%	94.5%	0
USO-P7-D	95.6%	99.2%	0
USO-P7-E	87.9%	88.1%	0
USO-P8-A	91.2%	93.0%	0
MB-060112	90.4%	87.9%	0
LCS-060112	97.3%	93.0%	0
LCSD-060112	97.3%	92.9%	0
USO-P8-B	93.1%	91.3%	0
USO-P8-C	91.5%	96.5%	0
USO-P8-D	93.9%	98.8%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(68-124)
(BBZ) = Bromobenzene	(77-120)	(62-134)

Log Number Range: 12-9191 to 12-9209

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-052412
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052412
LIMS ID: 12-9191
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/24/12 10:26
LCSD: 05/24/12 10:55
Instrument/Analyst LCS: PID1/JLW
LCSD: PID1/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	51.2	50.0	102%	51.3	50.0	103%	0.2%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	102%	104%
Bromobenzene	99.2%	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod

Sample ID: LCS-052412
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052412
LIMS ID: 12-9191
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/24/12 10:26
LCSD: 05/24/12 10:55
Instrument/Analyst LCS: PID1/JLW
LCSD: PID1/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	175	185	94.6%	179	185	96.8%	2.3%
Toluene	1960	1980	99.0%	2010	1980	102%	2.5%
Ethylbenzene	558	580	96.2%	562	580	96.9%	0.7%
m,p-Xylene	2030	2120	95.8%	2050	2120	96.7%	1.0%
o-Xylene	923	960	96.1%	941	960	98.0%	1.9%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	103%	105%
Bromobenzene	99.9%	102%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a004.d ARI ID: LCS0524
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a004.d Client ID:
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 10:26
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.001	3047	43561	101.7	TFT(Surr)
15.406	0.000	1921	16756	99.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	349515	1.024 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	712579	1.051 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	576948	1.072 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	368641	1.025 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.001	3807	102.7	TFT(Surr)
15.414	0.000	8148	99.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	-0.001	873	3.50N	Benzene
9.915	0.001	8543	39.13	Toluene
12.807	0.000	2159	11.16N	Ethylbenzene
12.970	0.002	8703	40.53	M/P-Xylene
13.920	0.000	3101	18.46N	O-Xylene
ND	---	---	---	MTBE

JW 6/7/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a004.d

Date : 24-MAY-2012 10:26

Client ID:

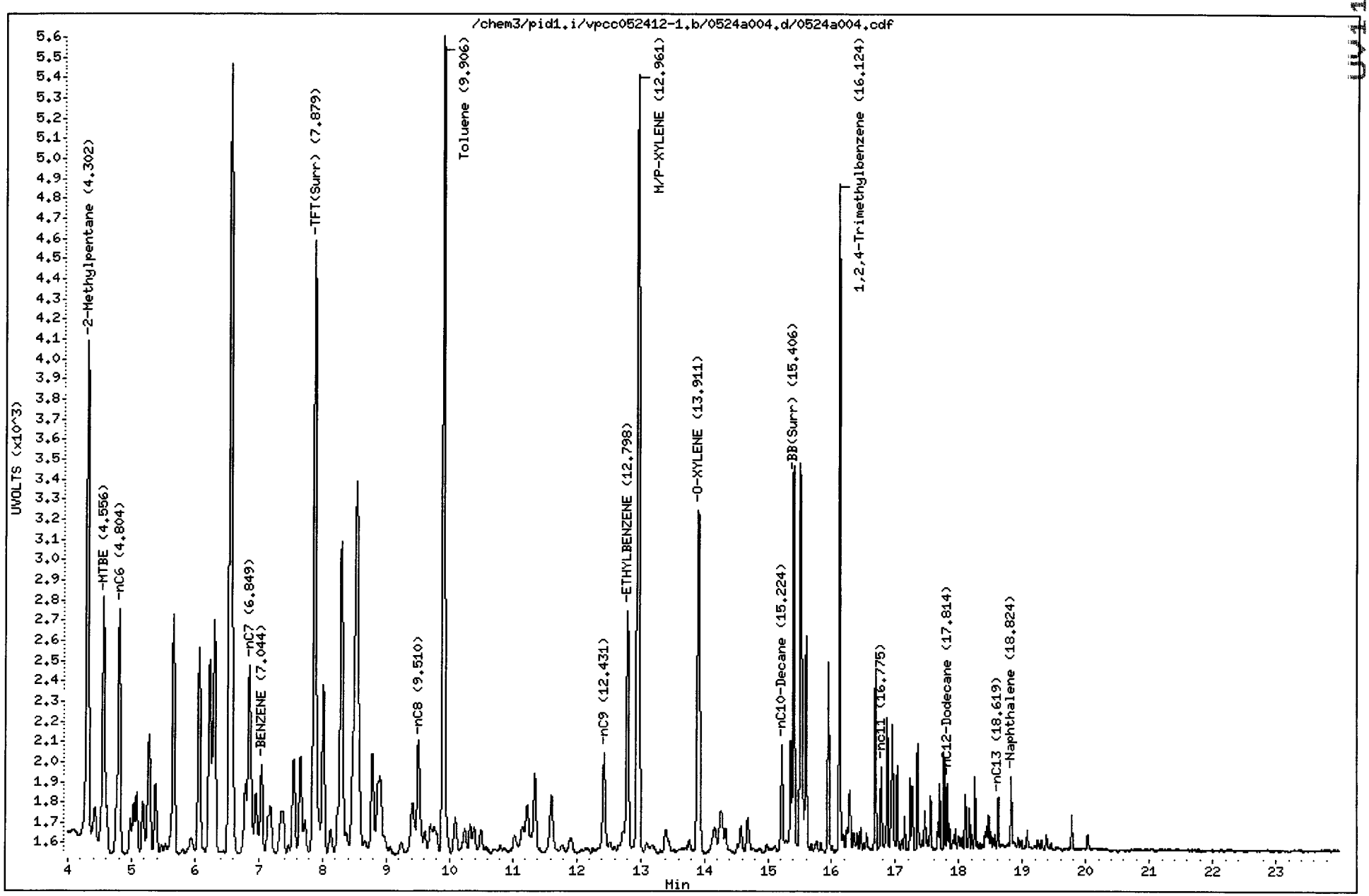
Sample Info: LCS0524

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



UVI 1 : 00132

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a004.d

Page 1

Date : 24-MAY-2012 10:26

Client ID:

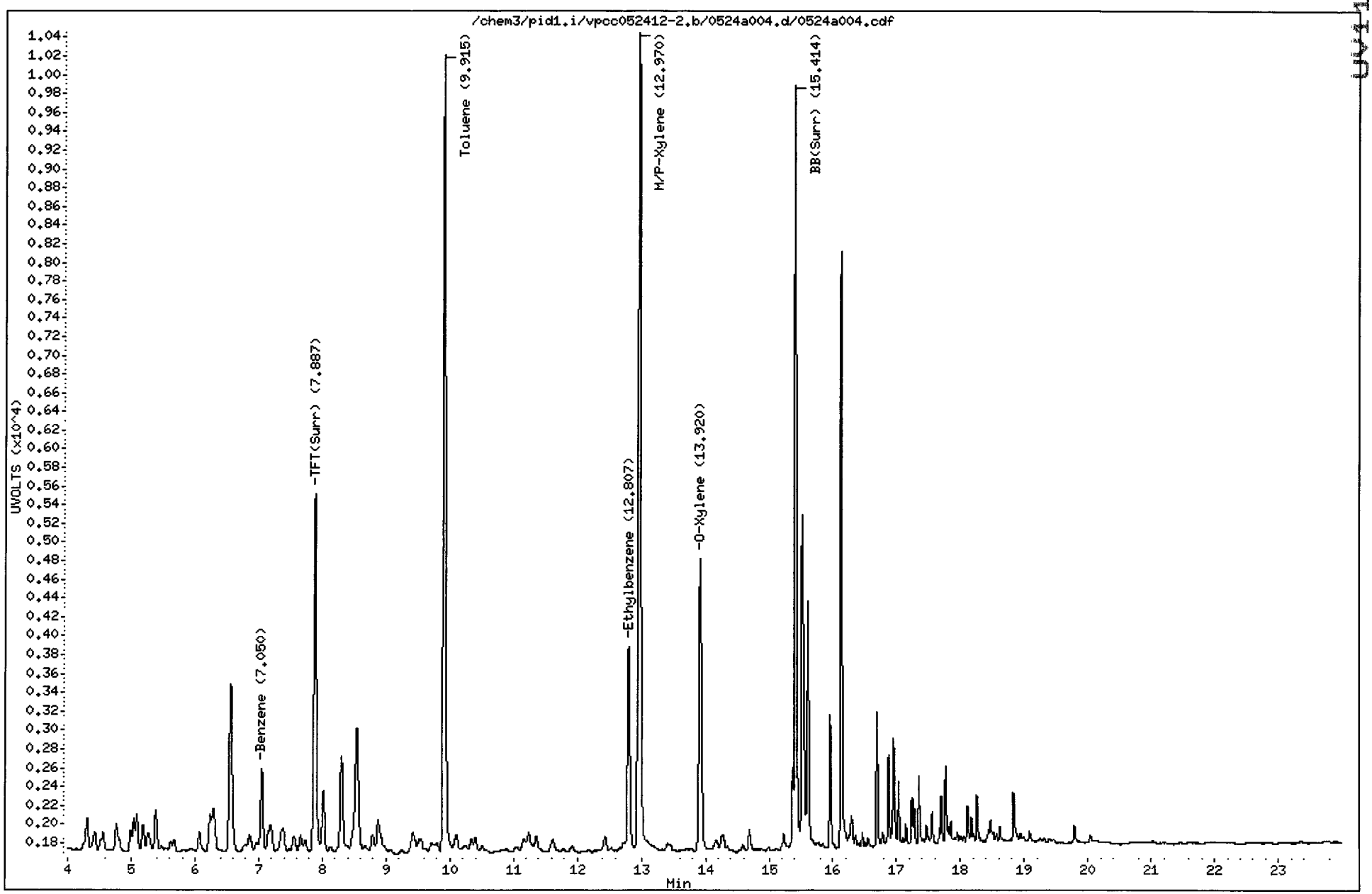
Instrument: pid1.i

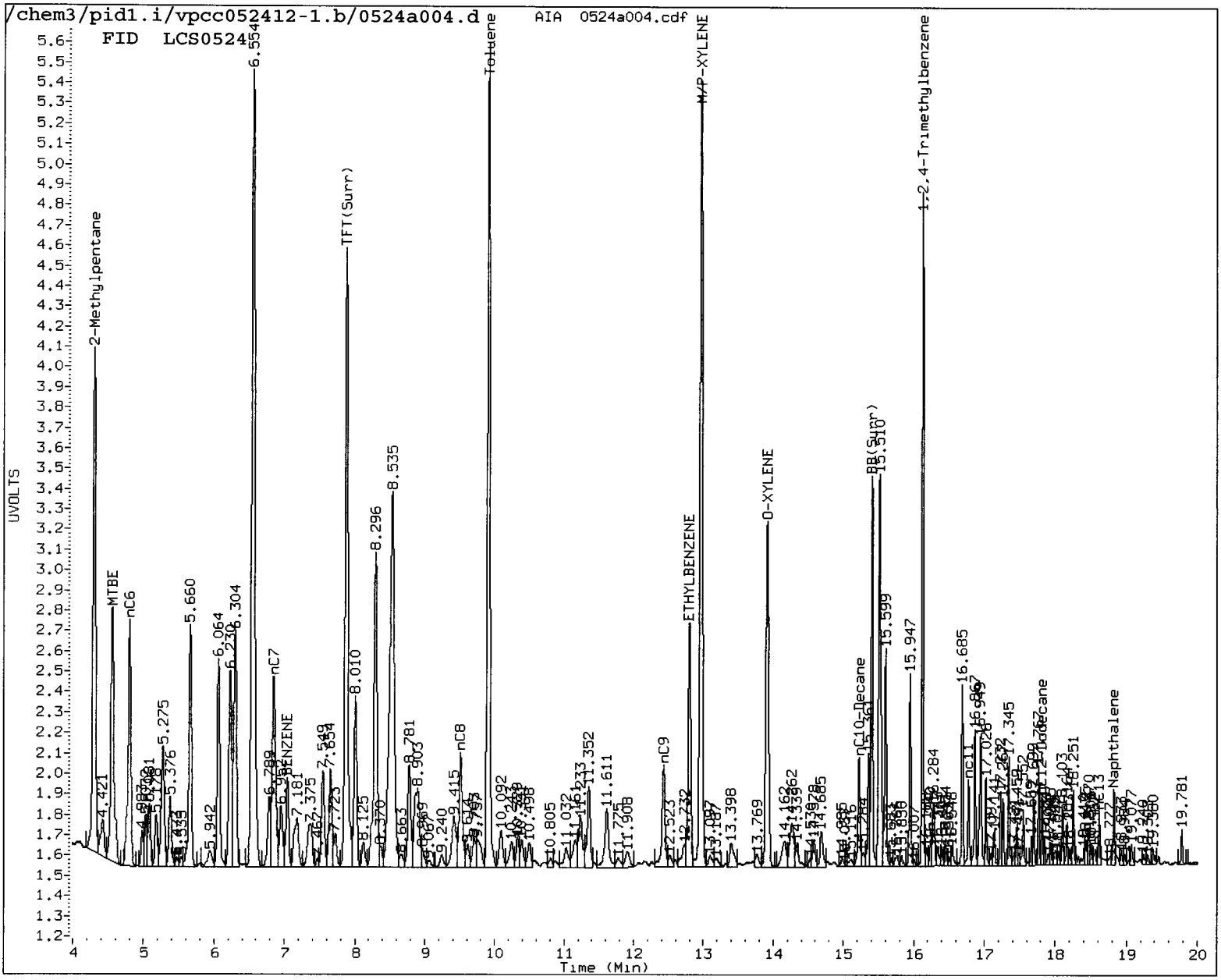
Sample Info: LCS0524

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18





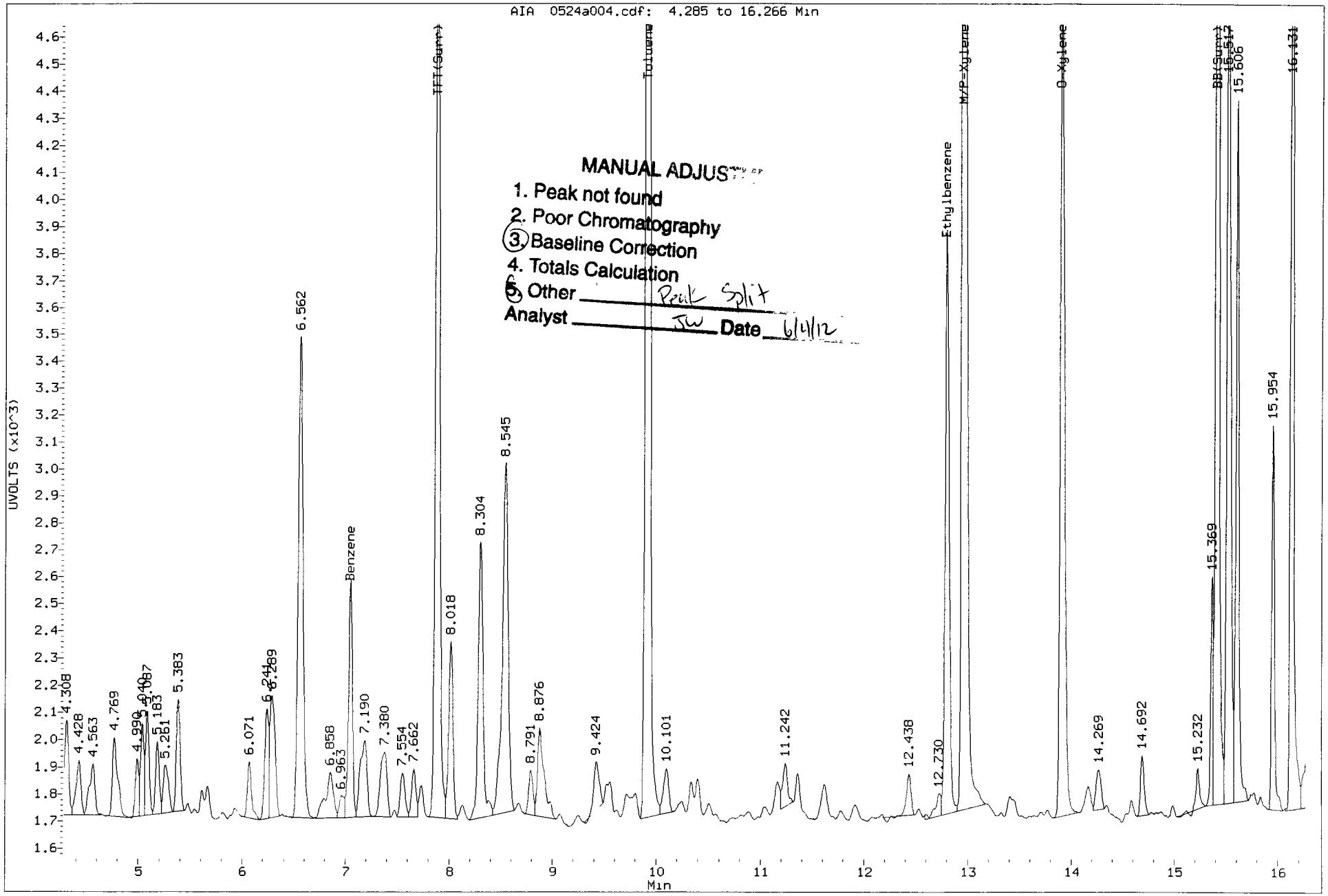
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/4/12

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a004.d/0524a004.cdf
Injection Date: 24-MAY-2012 10:26
Instrument: pid1.i
Client Sample ID:



UV11 : 00135

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a005.d ARI ID: LCSD0524
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a005.d Client ID:
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 10:55
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.001	3117	44238	104.1	TFT(Surr)
15.406	0.000	1957	17134	101.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	350505	1.027 M
8015C 2MP-TMB	(4.20 to 16.22)	678311	719909	1.061 M
AK101 nC6-nC10	(4.70 to 15.12)	538315	583070	1.083 M
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	368928	1.026 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.001	3906	105.4	TFT(Surr)
15.413	0.000	8305	101.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	-0.001	892	3.58N	Benzene
9.915	0.001	8797	40.29	Toluene
12.807	0.000	2176	11.25N	Ethylbenzene
12.970	0.002	8786	40.92	M/P-Xylene
13.920	0.000	3162	18.82	O-Xylene
ND	---	---	---	MTBE

JW 6/4/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a005.d

Page 1

Date : 24-MAY-2012 10:55

Client ID:

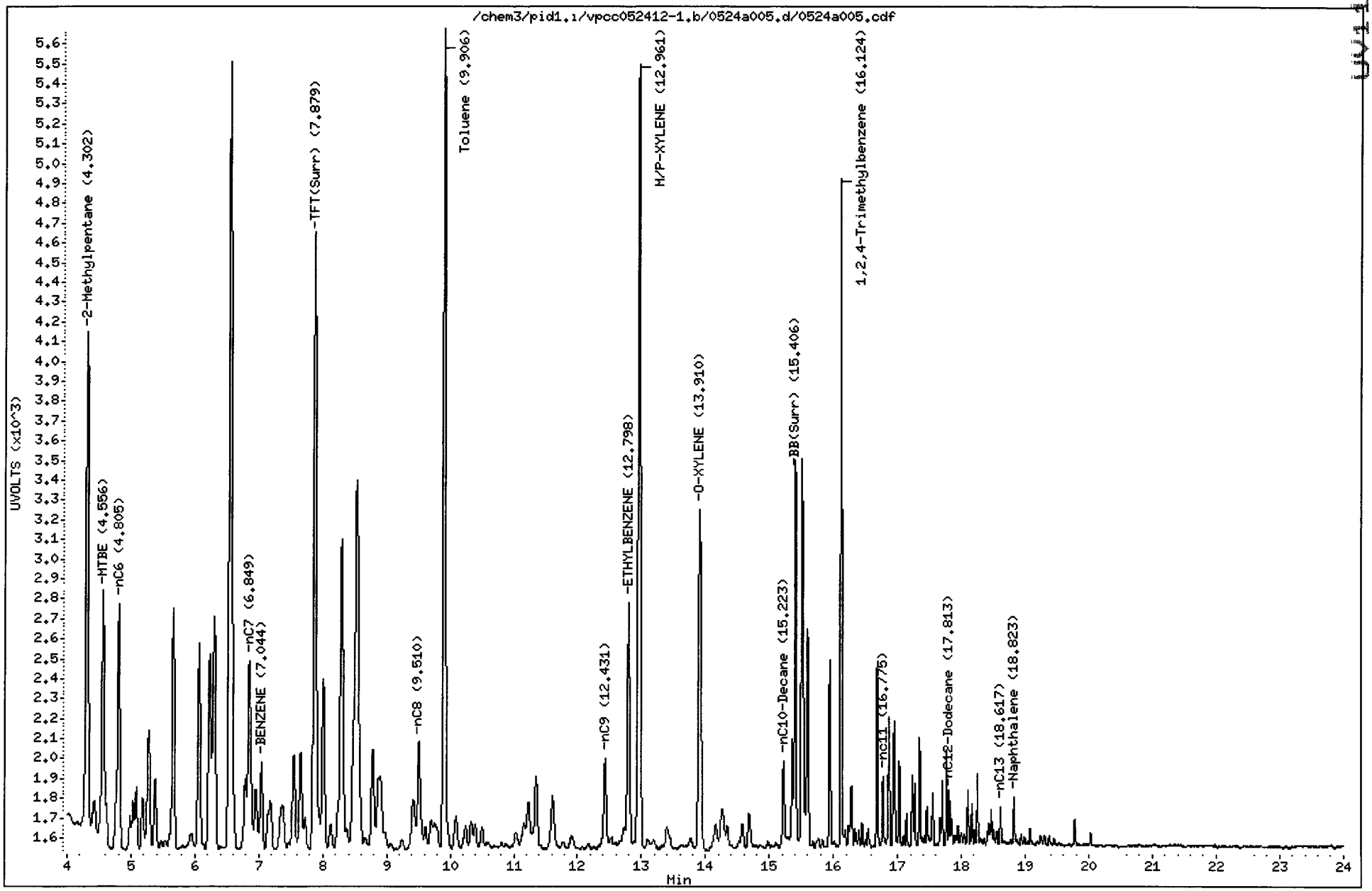
Instrument: pid1.i

Sample Info: LCSD0524

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



UV1 - 00137

Data File: /chem3/pid1.i/vpcc052412-2.b/0524a005.d

Page 1

Date : 24-MAY-2012 10:55

Client ID:

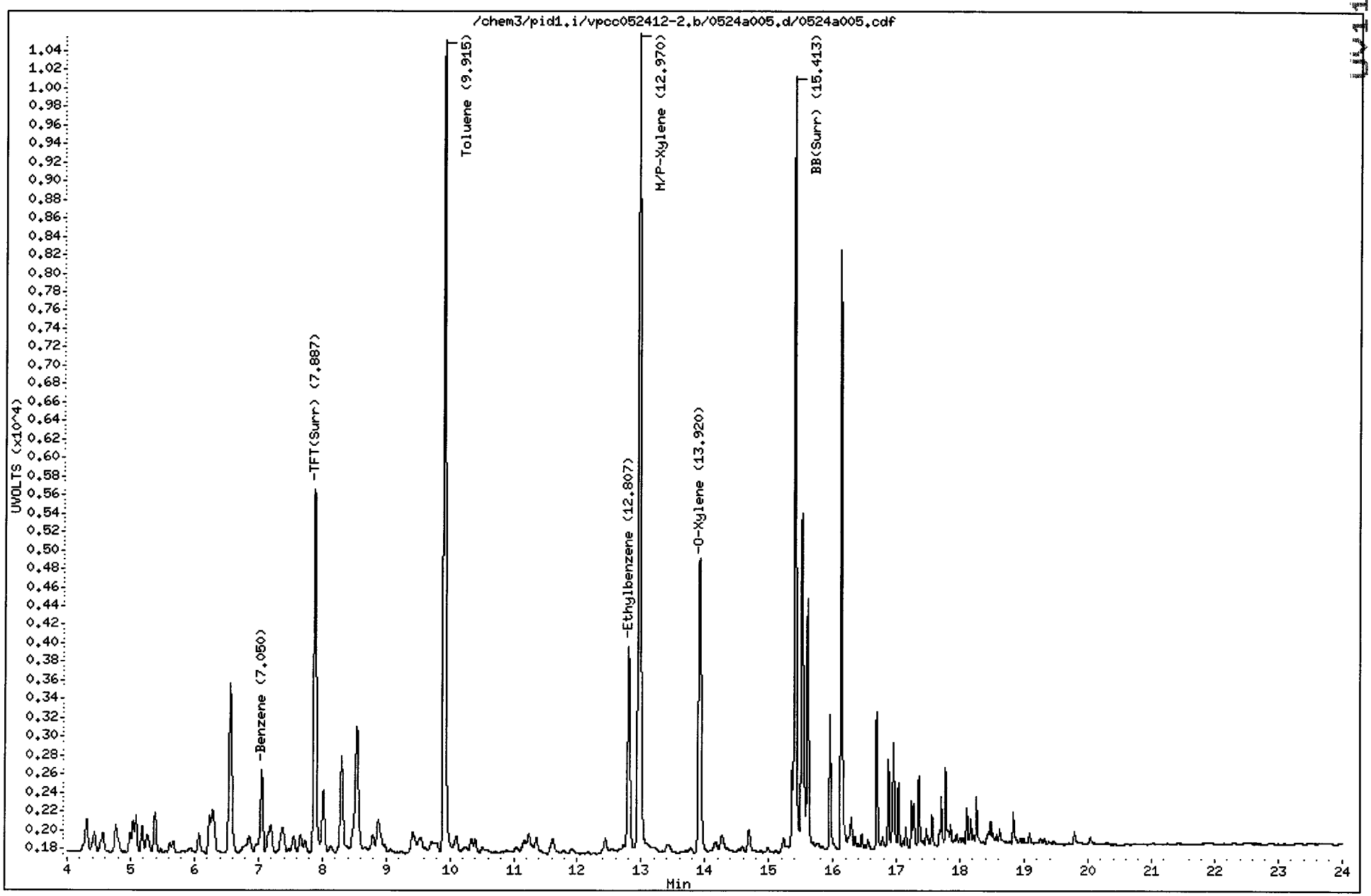
Instrument: pid1.i

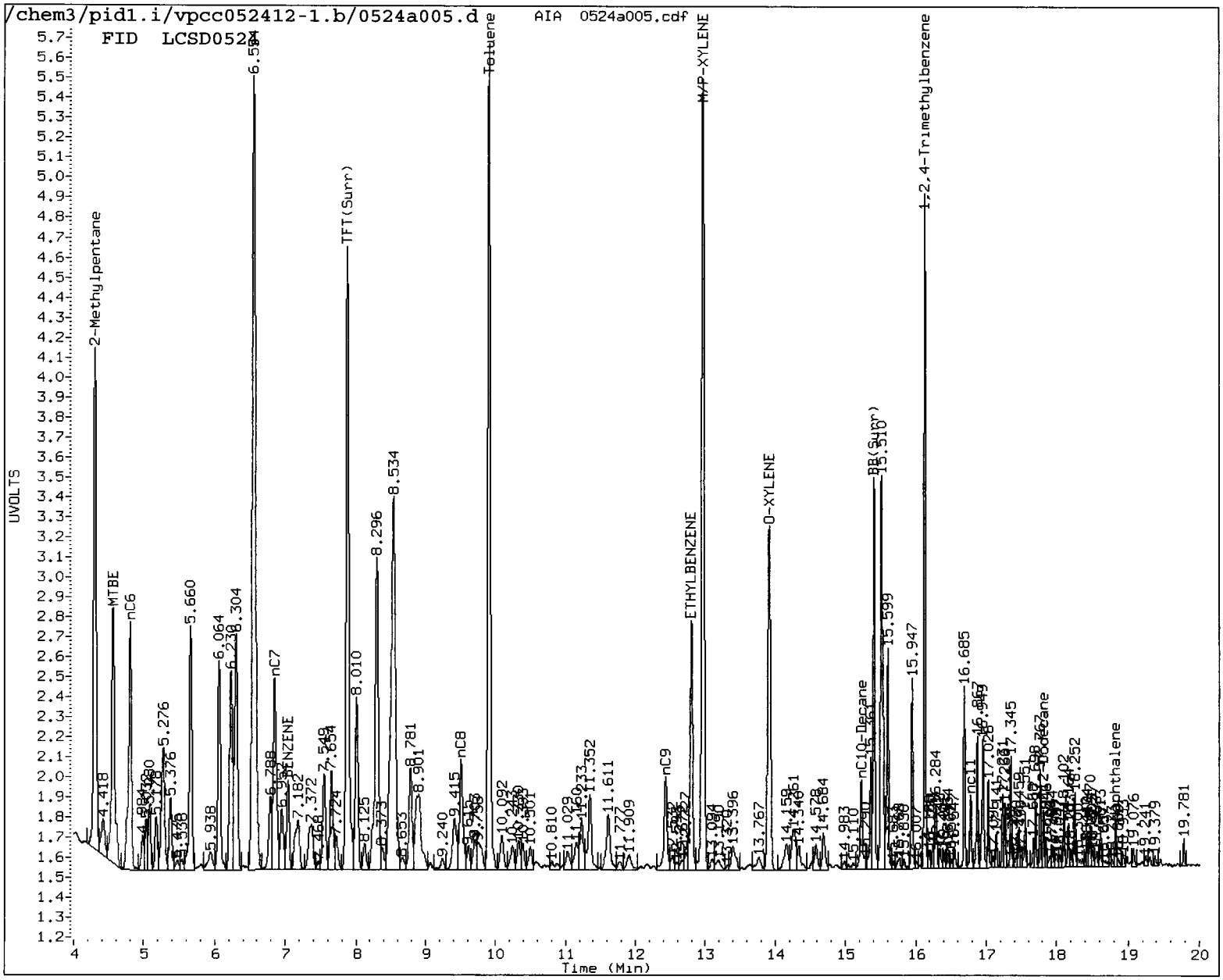
Sample Info: LCSD0524

Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18



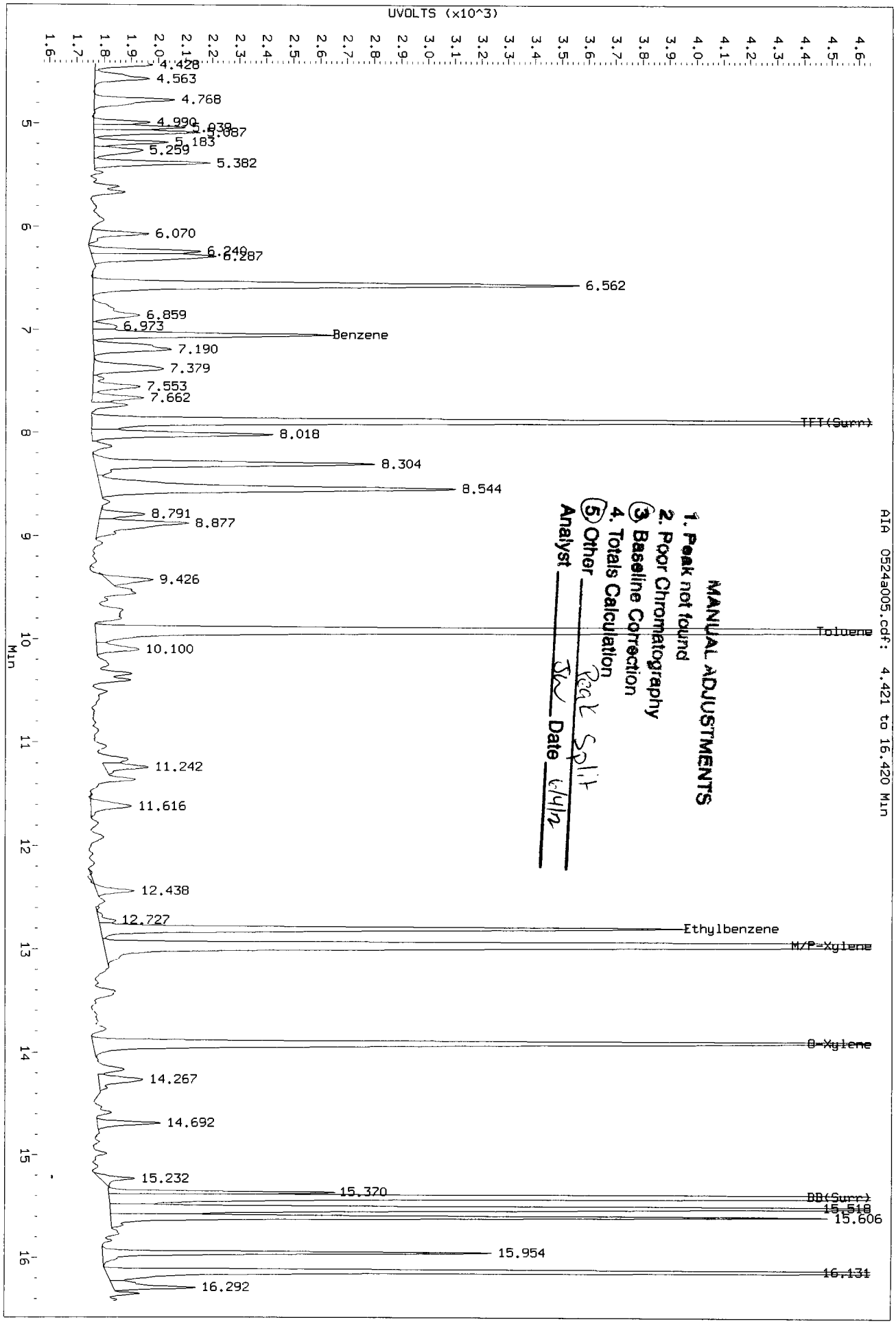


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/4/12


Data File: /chem3/pid1.i/vpcc052412-2.b/0524a005.d/0524a005.cdf
Injection Date: 24-MAY-2012 10:55
Instrument: pid1.i
Client Sample ID:
UVOLTS (x10^3)
AIA 0524a005.cdf: 4.421 to 16.420 Min
Min
4.428
4.563
4.768
4.990
5.038
5.087
5.183
5.259
5.382
6.070
6.249
6.287
6.562
6.859
6.973
Benzene
7.190
7.379
7.553
7.662
TFT(Surr)
8.018
8.304
8.544
8.791
8.877
9.426
Toluene
10.100
11.242
11.616
12.438
12.727
Ethylbenzene
M/P-Xylene
O-Xylene
14.267
14.692
15.232
15.370
BB(Surr)
15.518
15.606
15.954
16.131
16.292
MANUAL ADJUSTMENTS
1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other Peak Split
Analyst JKW Date 6/4/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-053012
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053012
LIMS ID: 12-9197
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/30/12 14:25
LCSD: 05/30/12 14:54
Instrument/Analyst LCS: PID1/JLW
LCSD: PID1/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	51.6	50.0	103%	50.6	50.0	101%	2.0%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	95.3%	96.7%
Bromobenzene	91.2%	92.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-053012
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053012
LIMS ID: 12-9197
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/30/12 14:25
LCSD: 05/30/12 14:54
Instrument/Analyst LCS: PID1/JLW
LCSD: PID1/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	190	185	103%	188	185	102%	1.1%
Toluene	2040	1980	103%	2020	1980	102%	1.0%
Ethylbenzene	576	580	99.3%	570	580	98.3%	1.0%
m,p-Xylene	2100	2120	99.1%	2050	2120	96.7%	2.4%
o-Xylene	958	960	99.8%	962	960	100%	0.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	98.8%	99.7%
Bromobenzene	93.5%	95.1%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a007.d ARI ID: LCS0530-2
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a007.d Client ID:
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 14:25
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.879	0.001	2854	40978	95.3	TFT(Surr)
15.405	0.002	1765	15386	91.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	347048	1.017 M
8015C 2MP-TMB	(4.21 to 16.22)	678311	722551	1.065 M
AK101 nC6-nC10	(4.71 to 15.12)	538315	584807	1.086 M
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	370936	1.032 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

JW 6/1/12

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.002	3663	98.8	TFT(Surr)
15.413	0.003	7626	93.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.053	0.003	950	3.81N	Benzene
9.915	0.002	8893	40.73	Toluene
12.807	0.004	2227	11.51N	Ethylbenzene
12.970	0.005	9005	41.94	M/P-Xylene
13.918	0.004	3219	19.16	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a007.d

Date : 30-MAY-2012 14:25

Client ID:

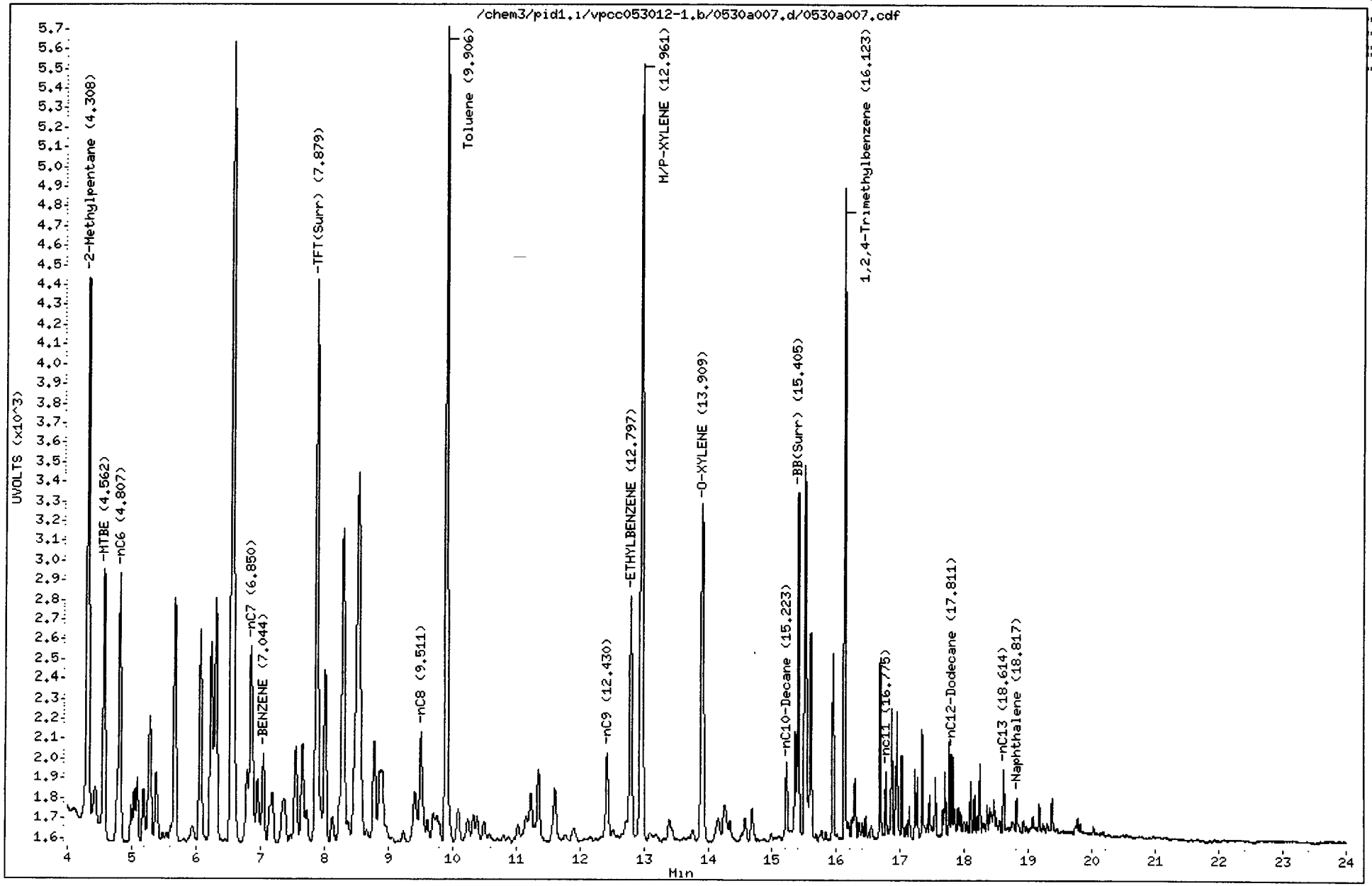
Sample Info: LCS0530-2

Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



UV1 : 001.ch

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a007.d

Page 1

Date : 30-MAY-2012 14:25

Client ID:

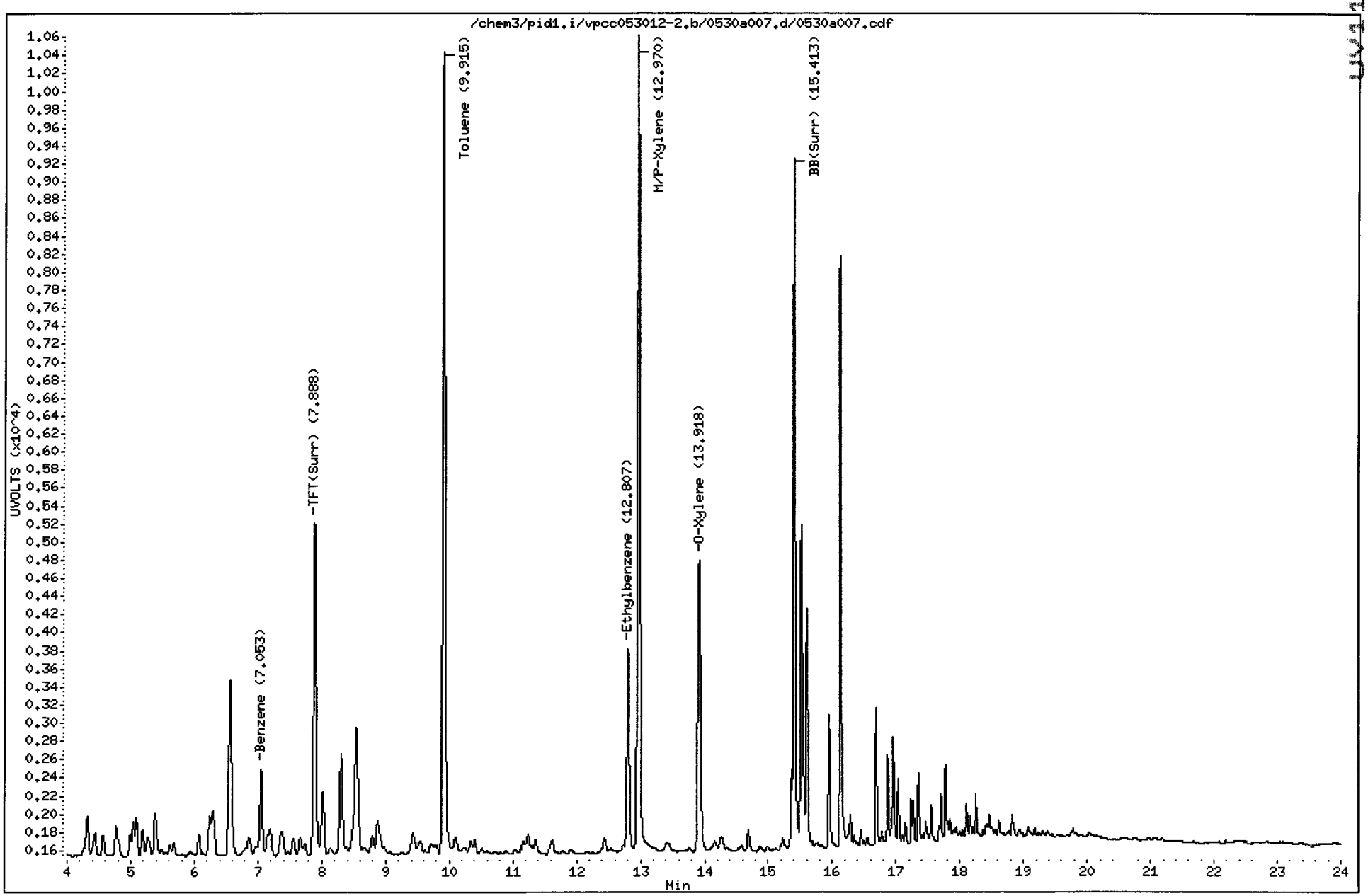
Instrument: pid1.i

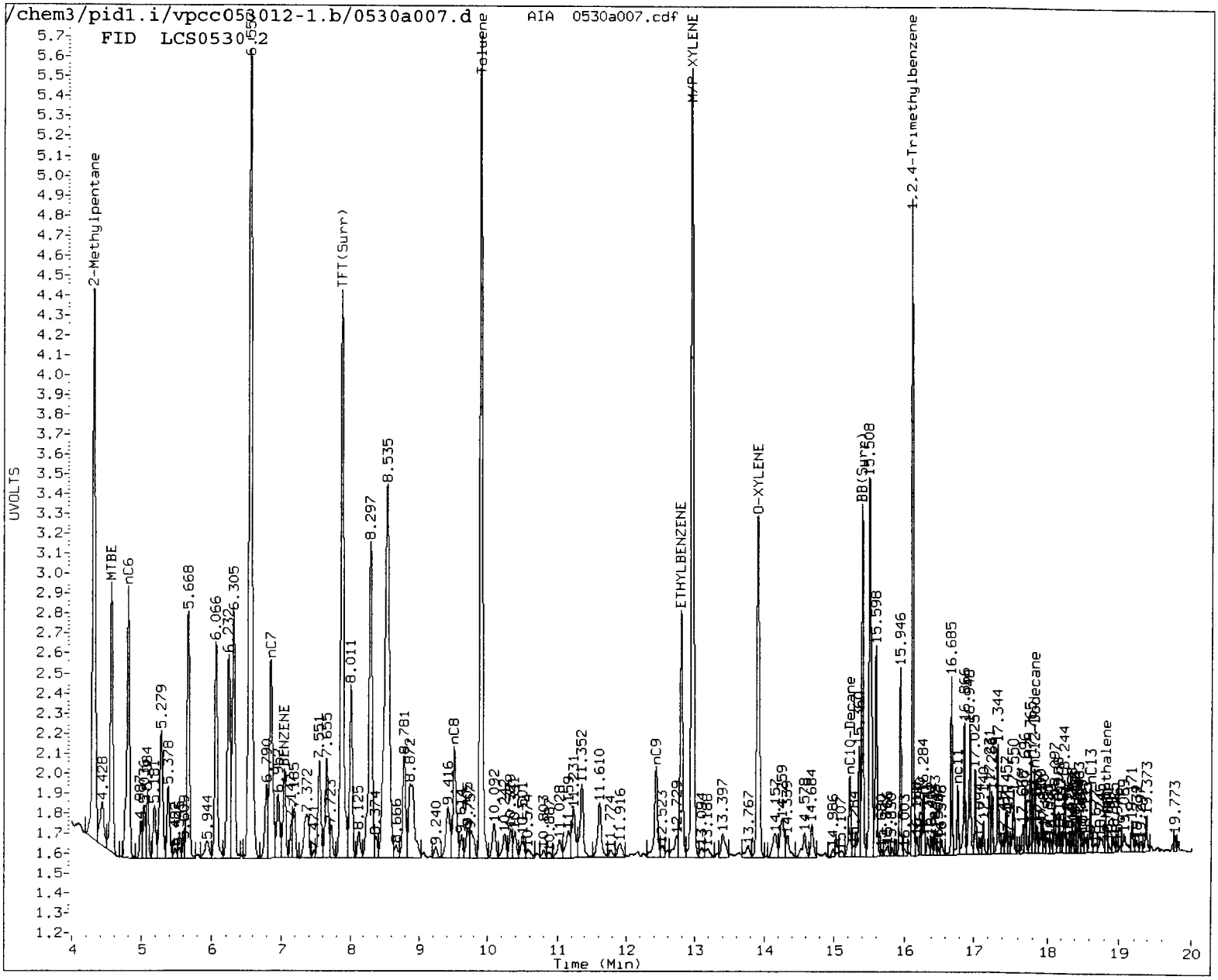
Sample Info: LCS0530-2

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a008.d ARI ID: LCSD0530-2
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a008.d Client ID:
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 14:54
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.878	0.000	2896	41265	96.7	TFT(Surr)
15.403	-0.001	1784	15768	92.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	342942	1.005 M
8015C 2MP-TMB	(4.21 to 16.22)	678311	710246	1.047 M
AK101 nC6-nC10	(4.71 to 15.12)	538315	575233	1.069 M
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	363950	1.012 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

JW 6/1/12

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.887	0.001	3695	99.7	TFT(Surr)
15.410	0.000	7753	95.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.050	-0.001	936	3.75N	Benzene
9.913	0.001	8804	40.33	Toluene
12.803	0.000	2207	11.41N	Ethylbenzene
12.968	0.003	8811	41.03	M/P-Xylene
13.916	0.001	3232	19.24	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a008.d

Date : 30-MAY-2012 14:54

Client ID:

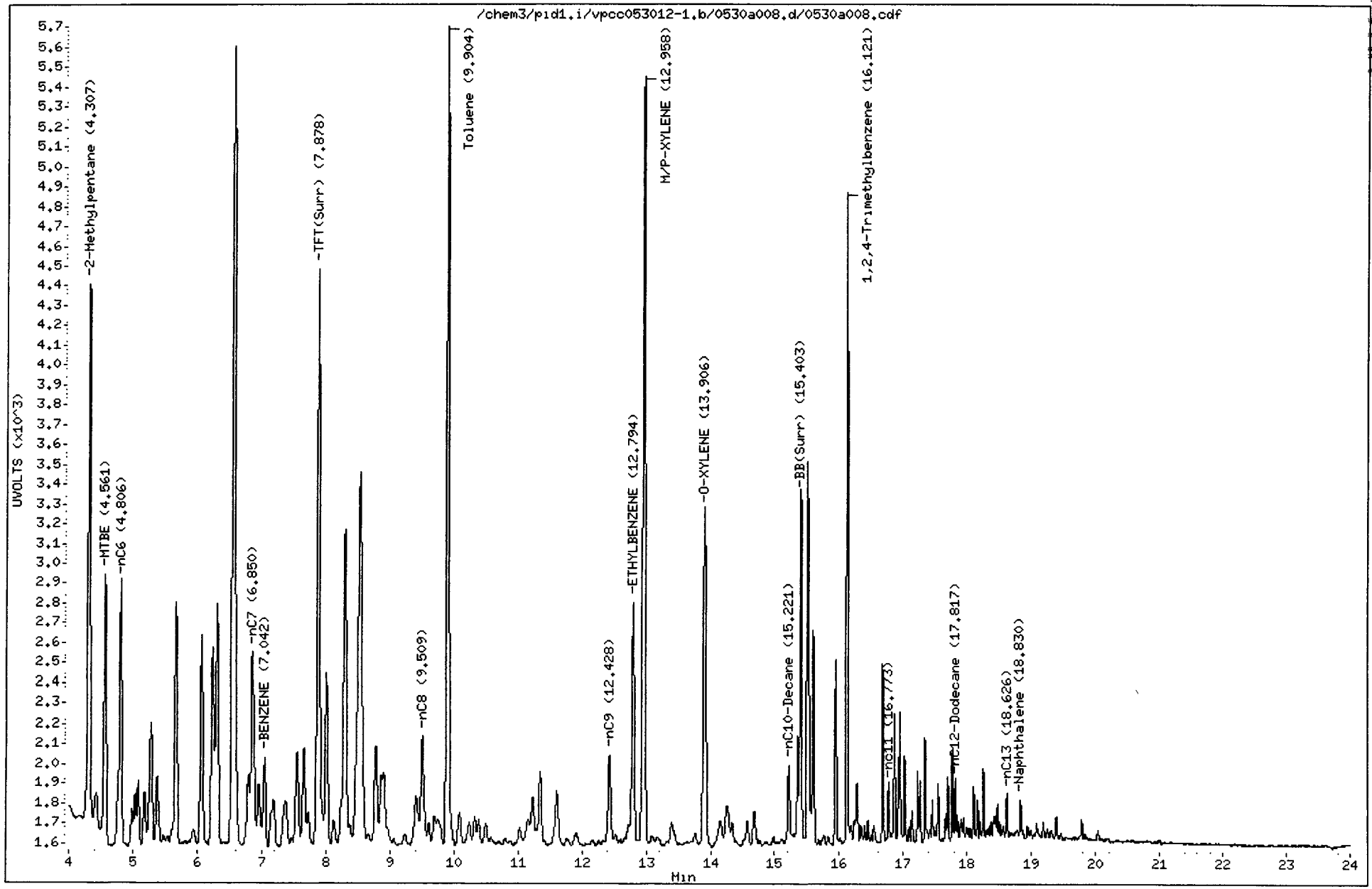
Sample Info: LCSD0530-2

Instrument: pid1.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



UV1 : 00148

Data File: /chem3/pid1.i/vpcc053012-2.b/0530a008.d

Date : 30-MAY-2012 14:54

Client ID:

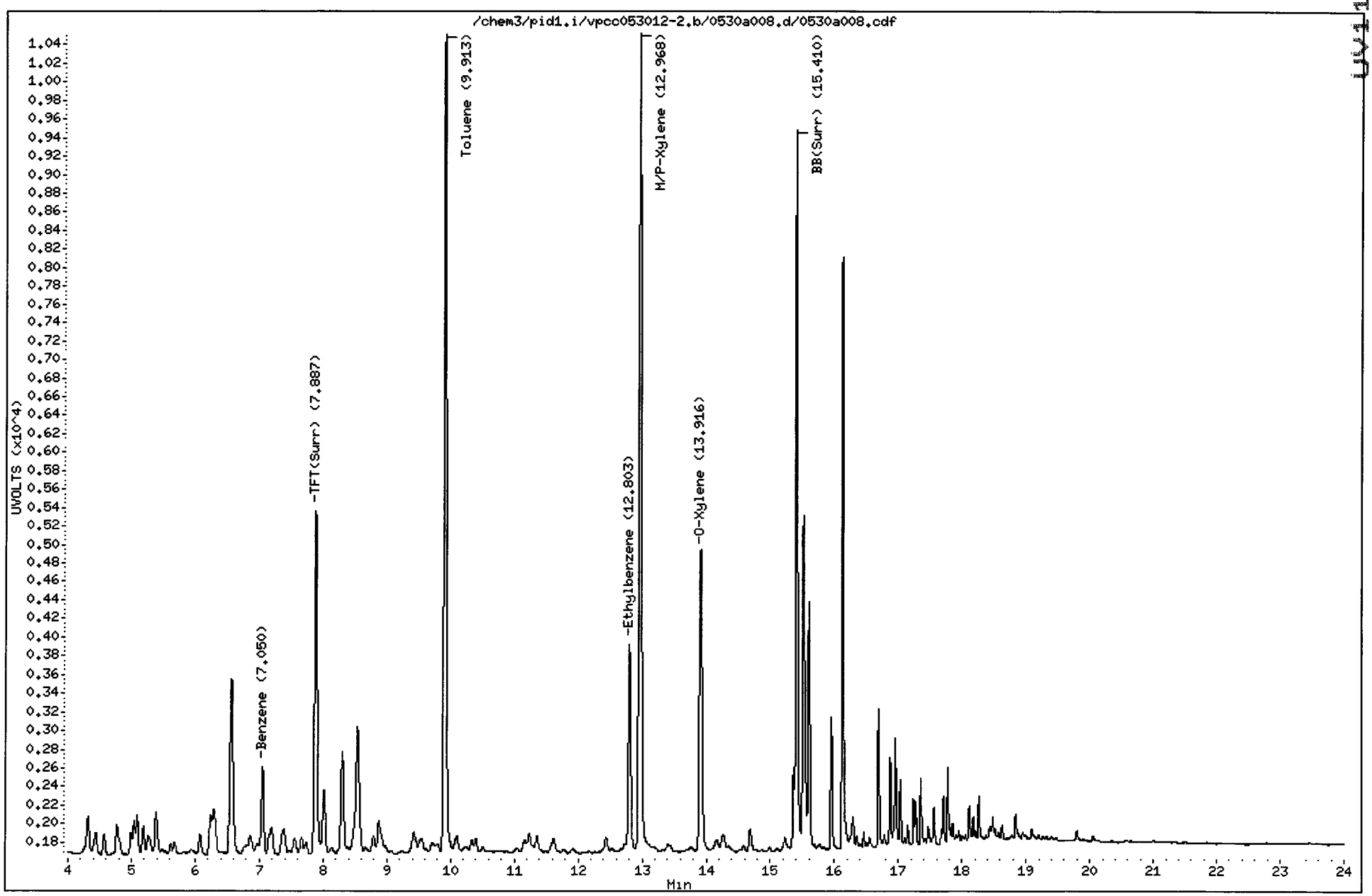
Sample Info: LCSD0530-2

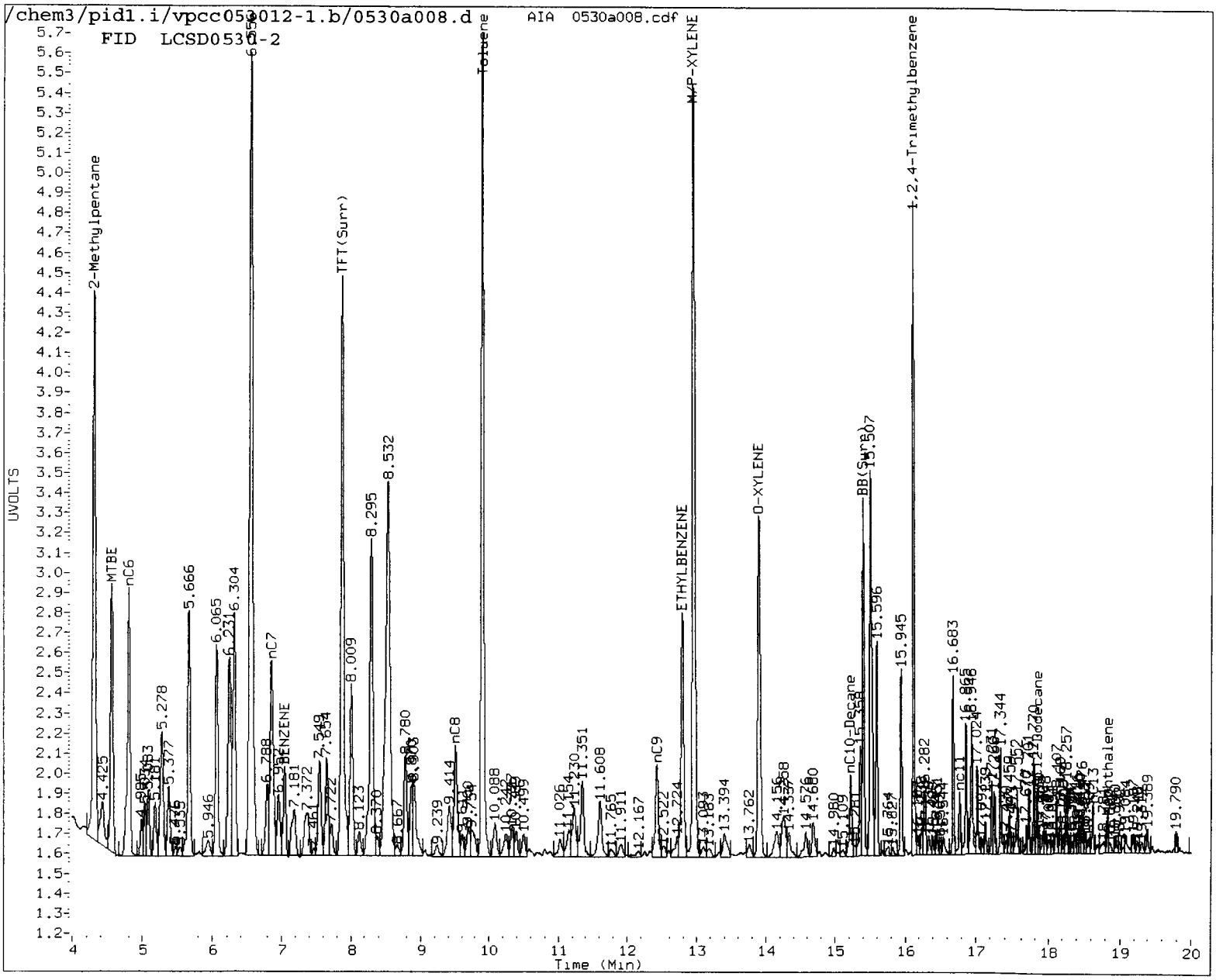
Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9194
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	56.2	50.0	112%	56.5	50.0	113%	0.5%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.2%	105%
Bromobenzene	96.0%	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9194
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	189	185	102%	190	185	103%	0.5%
Toluene	2030	1980	103%	2030	1980	103%	0.0%
Ethylbenzene	502	580	86.6%	500	580	86.2%	0.4%
m,p-Xylene	2070	2120	97.6%	2030	2120	95.8%	2.0%
o-Xylene	964	960	100%	940	960	97.9%	2.5%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.3%	105%
Bromobenzene	95.9%	100%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a004.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a004.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0531
Client ID:
Injection Date: 31-MAY-2012 07:44
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.003	2945	43629	99.2	TFT(Surr)
14.863	0.000	1617	16717	96.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	356658	1.117 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	763838	1.128 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	616752	1.132 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	371560	1.124 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	12303	99.3	TFT(Surr)
14.881	0.000	17123	95.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.472	-0.003	3297	3.78	Benzene
9.244	-0.002	22366	40.63	Toluene
12.093	-0.001	4830	10.03	Ethylbenzene
12.254	0.002	19251	41.32	M/P-Xylene
13.159	-0.001	7309	19.27	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

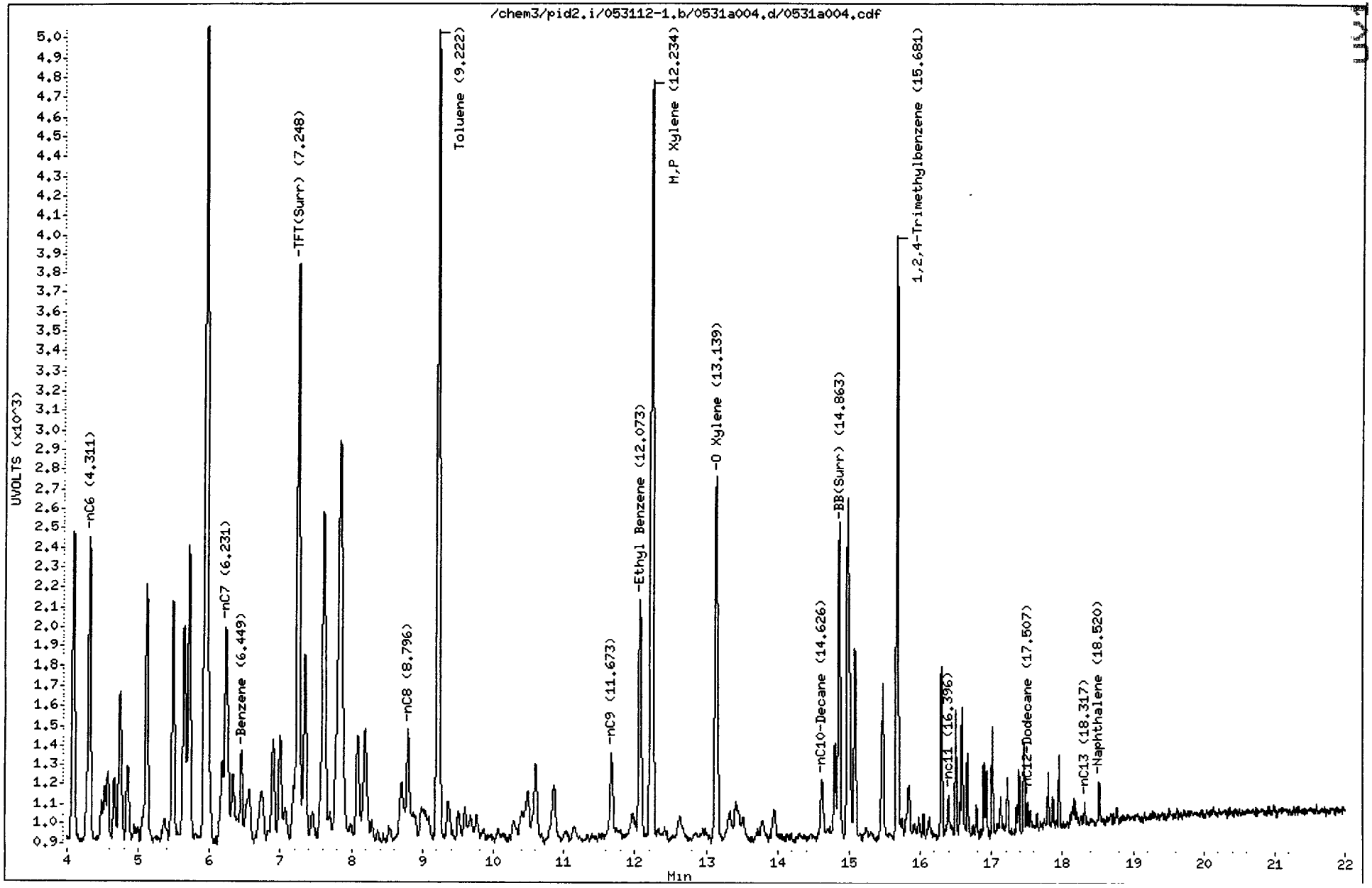
A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a004.d
Date : 31-MAY-2012 07:44
Client ID:
Sample Info: LCS0531

Instrument: pid2.i

Operator: MH
Column diameter: 0.18

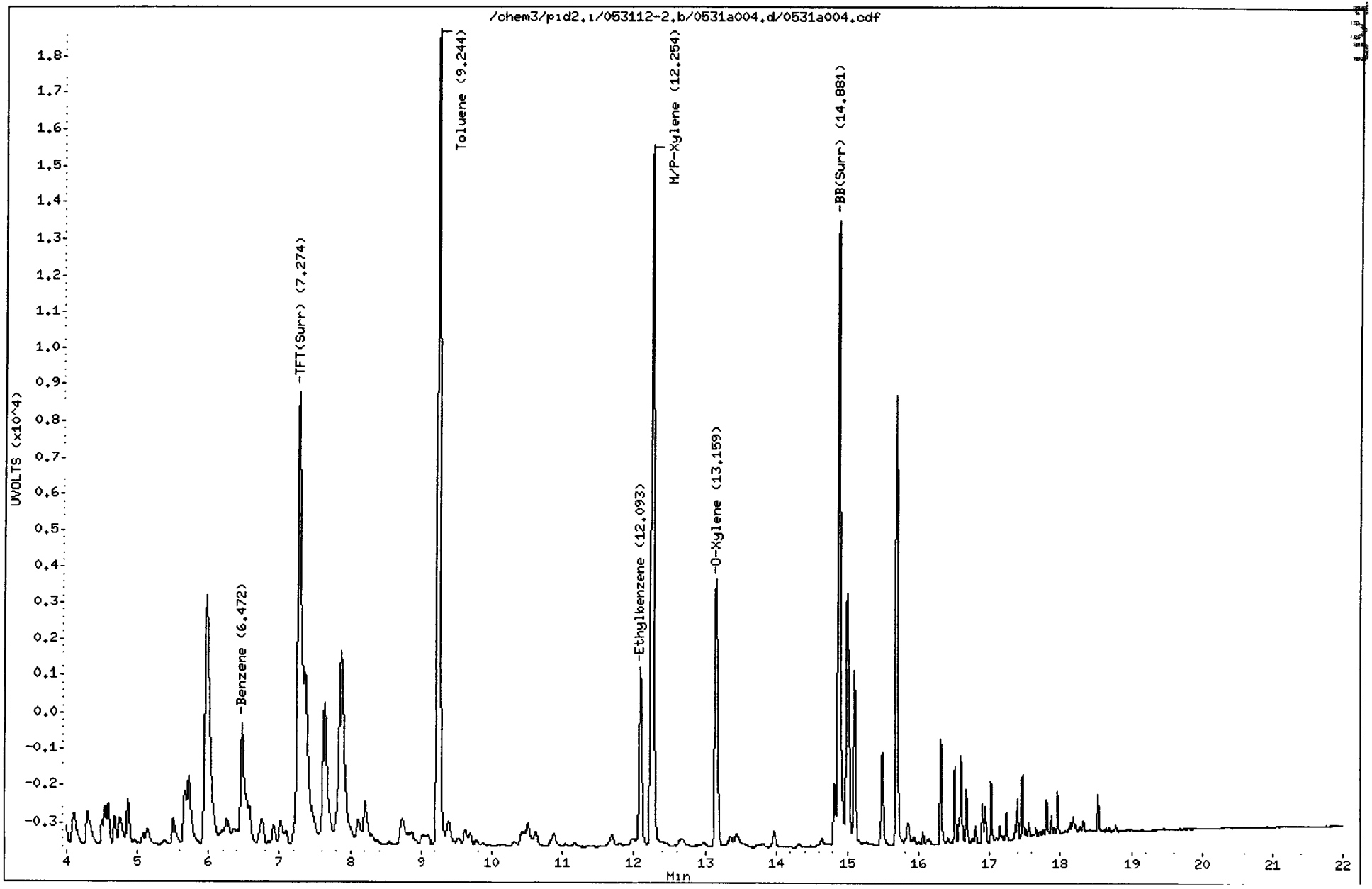
Column phase: RTX 502-2 FID

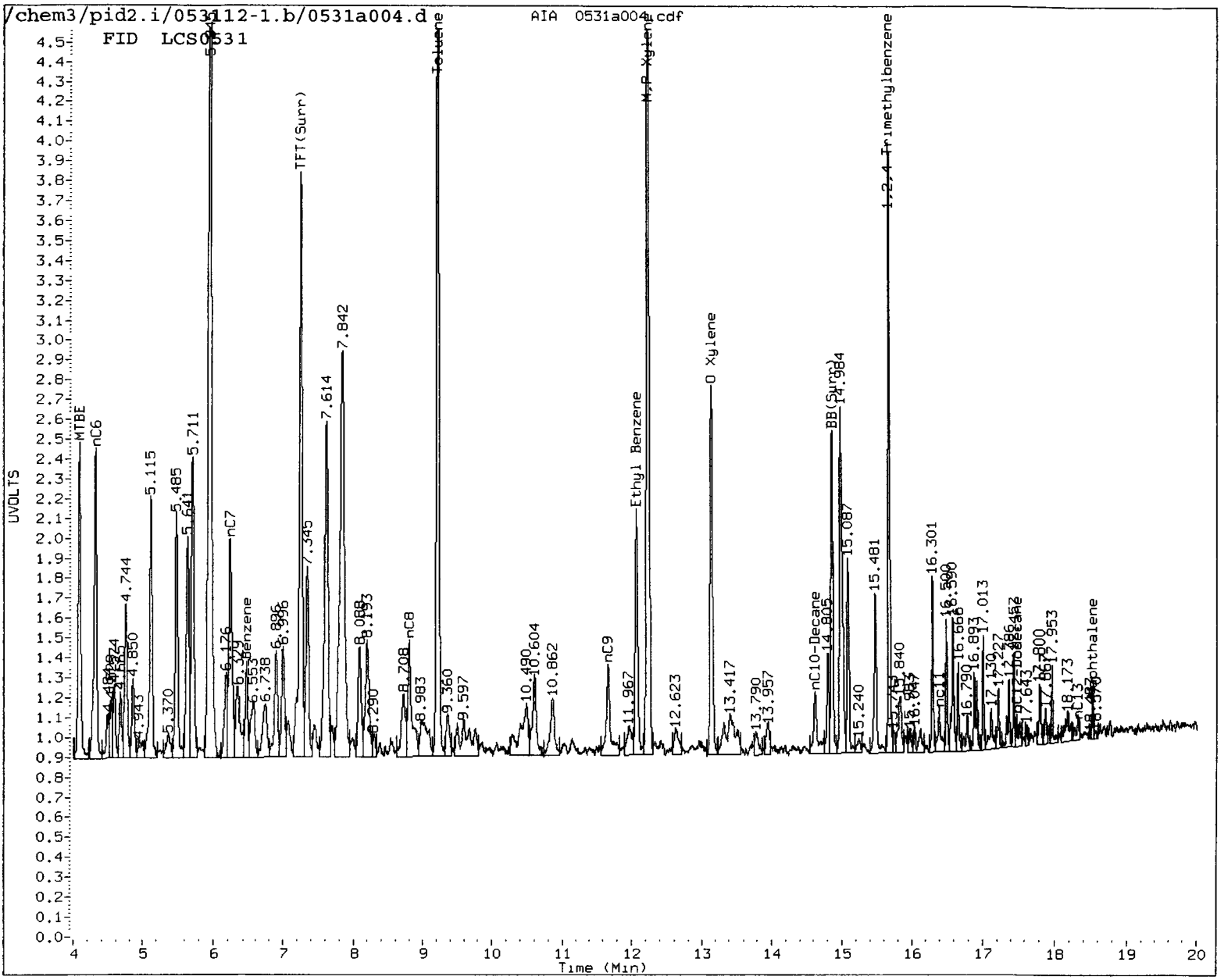


Data File: /chem3/pid2.i/053112-2.b/0531a004.d
Date : 31-MAY-2012 07:44
Client ID:
Sample Info: LCS0531

Instrument: pid2.i

Operator: MH
Column phase: RTX 502-2 PID
Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a005.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a005.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0531
Client ID:
Injection Date: 31-MAY-2012 08:12
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.253	0.002	3113	45625	104.9	TFT(Surr)
14.863	0.000	1690	17559	100.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	357926	1.121 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	773002	1.141 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	627180	1.151 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	373796	1.130 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.277	0.000	13008	105.0	TFT(Surr)
14.882	0.000	17861	100.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.476	0.000	3322	3.81	Benzene
9.248	0.002	22340	40.59	Toluene
12.094	0.000	4809	9.99	Ethylbenzene
12.256	0.004	18910	40.58	M/P-Xylene
13.161	0.001	7131	18.80	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

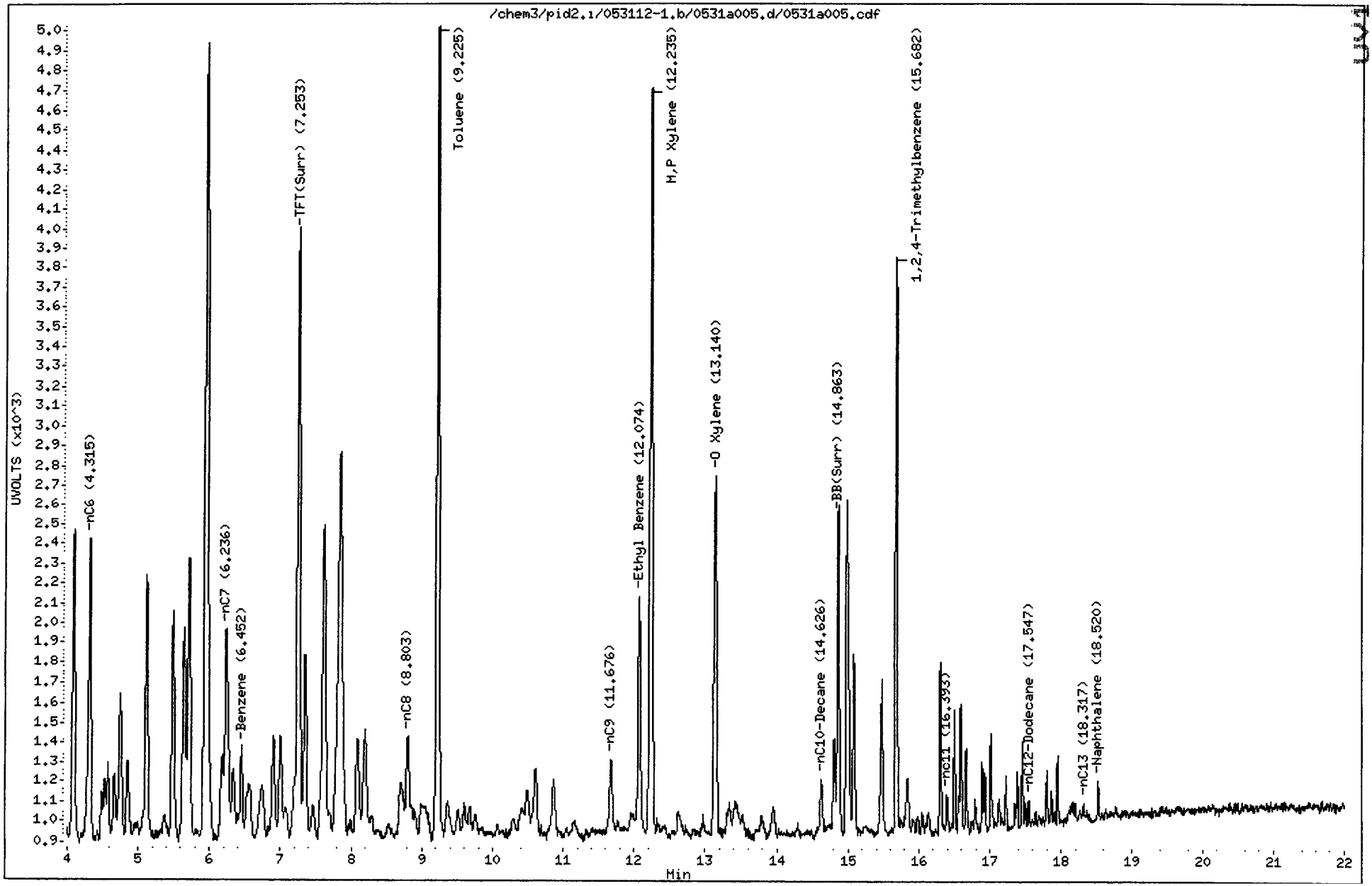
A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a005.d
Date : 31-MAY-2012 08:12
Client ID:
Sample Info: LCSD0531

Instrument: pid2.i

Operator: MH
Column diameter: 0.18

Column phase: RTX 502-2 FID



Data File: /chem3/pid2.i/053112-2.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

Sample Info: LCSD0531

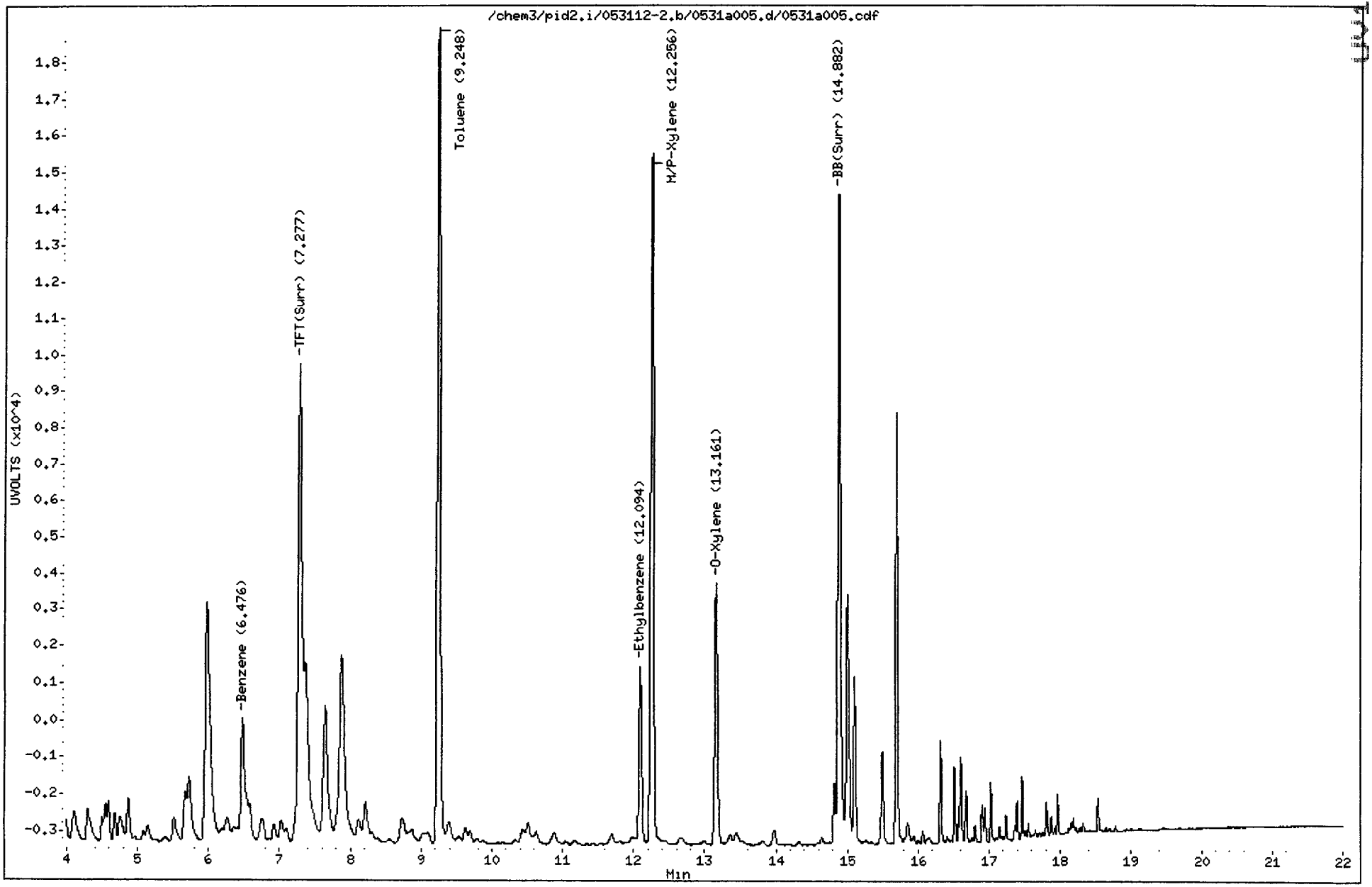
Column phase: RTX 502-2 PID

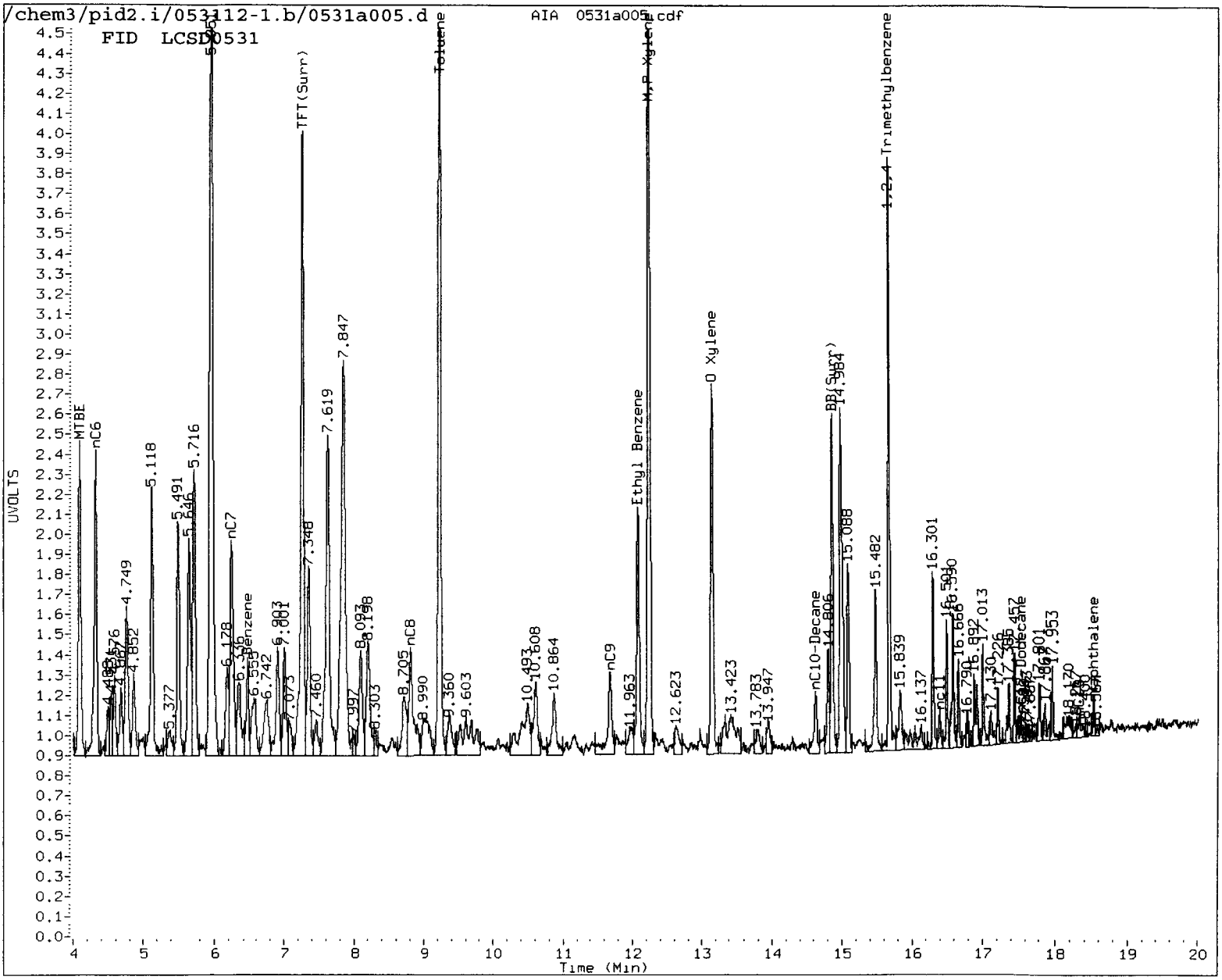
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UA1 00159





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-060112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-060112
LIMS ID: 12-9207
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 06/01/12 08:04
LCSD: 06/01/12 08:33
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	50.0	50.0	100%	47.8	50.0	95.6%	4.5%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.0%	96.9%
Bromobenzene	93.7%	94.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-060112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-060112
LIMS ID: 12-9207
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 06/01/12 08:04
LCSD: 06/01/12 08:33
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	172	185	93.0%	170	185	91.9%	1.2%
Toluene	1810	1980	91.4%	1790	1980	90.4%	1.1%
Ethylbenzene	446	580	76.9%	440	580	75.9%	1.4%
m,p-Xylene	1820	2120	85.8%	1780	2120	84.0%	2.2%
o-Xylene	842	960	87.7%	830	960	86.5%	1.4%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.3%	97.3%
Bromobenzene	93.0%	92.9%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a004.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a004.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0601
Client ID:
Injection Date: 01-JUN-2012 08:04
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.245	0.000	2879	42309	97.0	TFT(Surr)
14.854	-0.001	1578	16740	93.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	316112	0.990 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	680498	1.005 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	548924	1.007 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	330242	0.999 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.270	0.000	12054	97.3	TFT(Surr)
14.872	-0.001	16606	93.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.470	-0.001	2993	3.44	Benzene
9.238	0.000	19889	36.13	Toluene
12.083	-0.001	4291	8.91	Ethylbenzene
12.245	0.002	16953	36.38	M/P-Xylene
13.150	-0.001	6382	16.83	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/060112-1.b/0601a004.d

Date : 01-JUN-2012 08:04

Client ID:

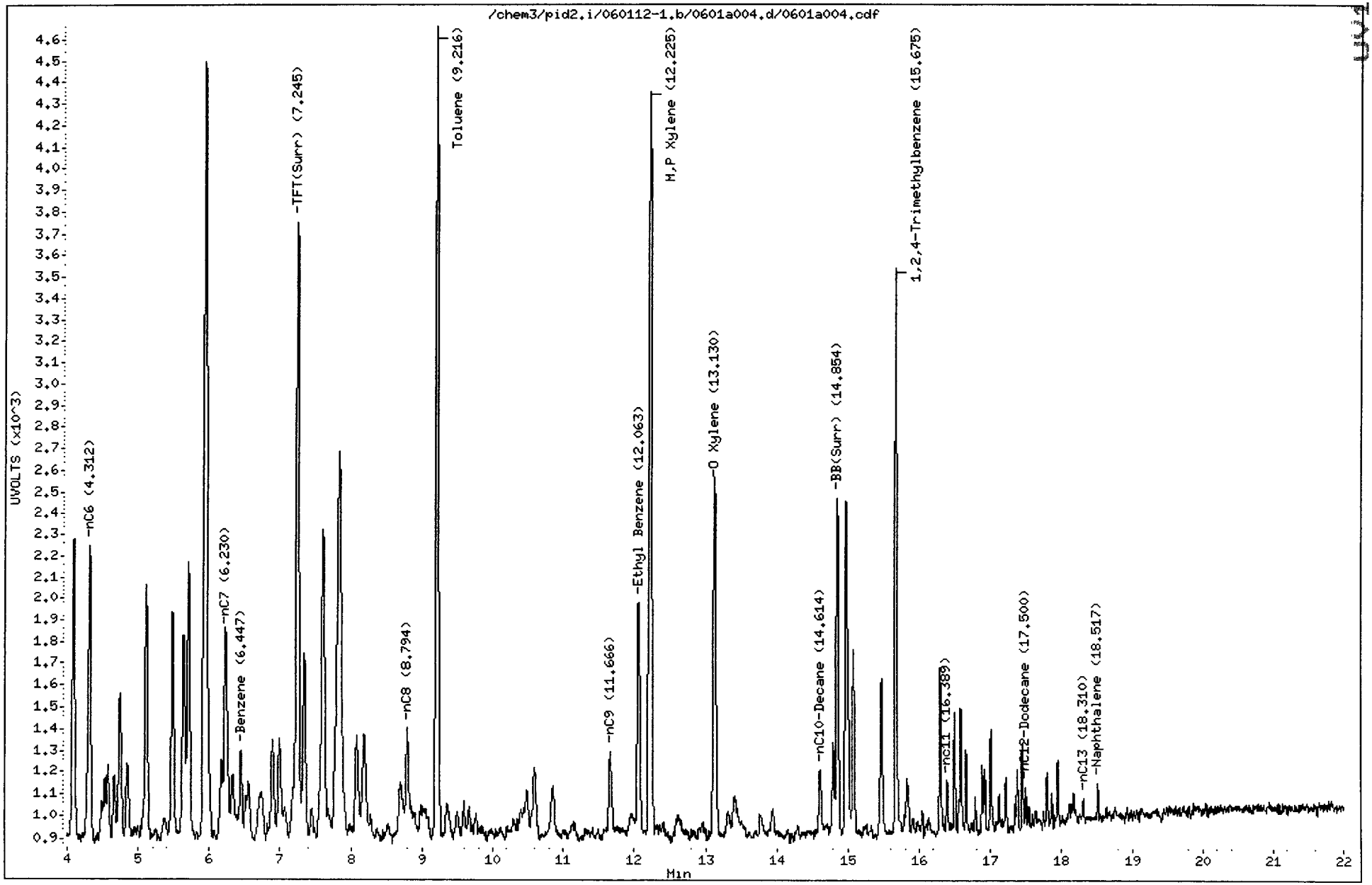
Sample Info: LCS0601

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



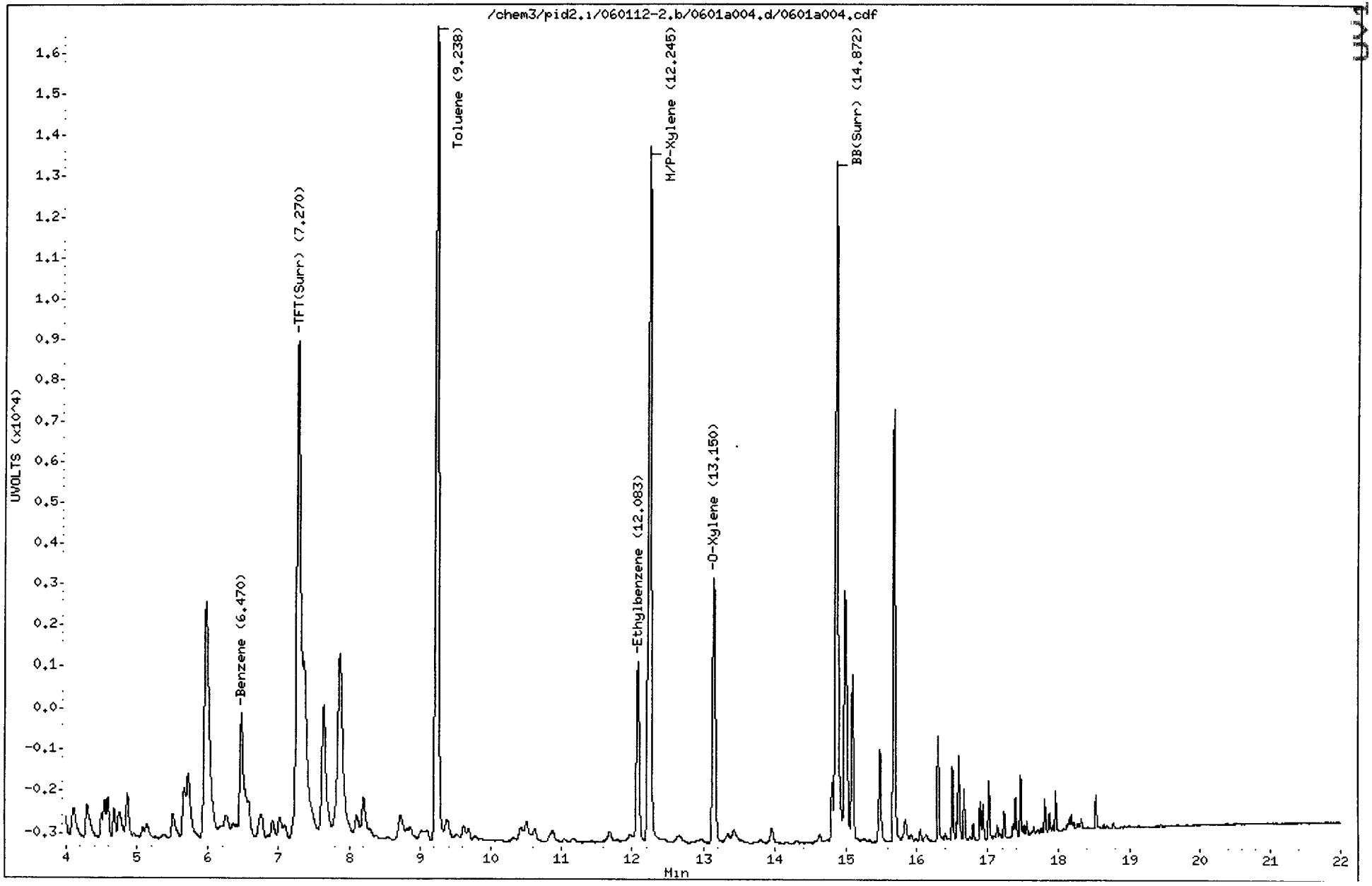
UV1 : 0601.61

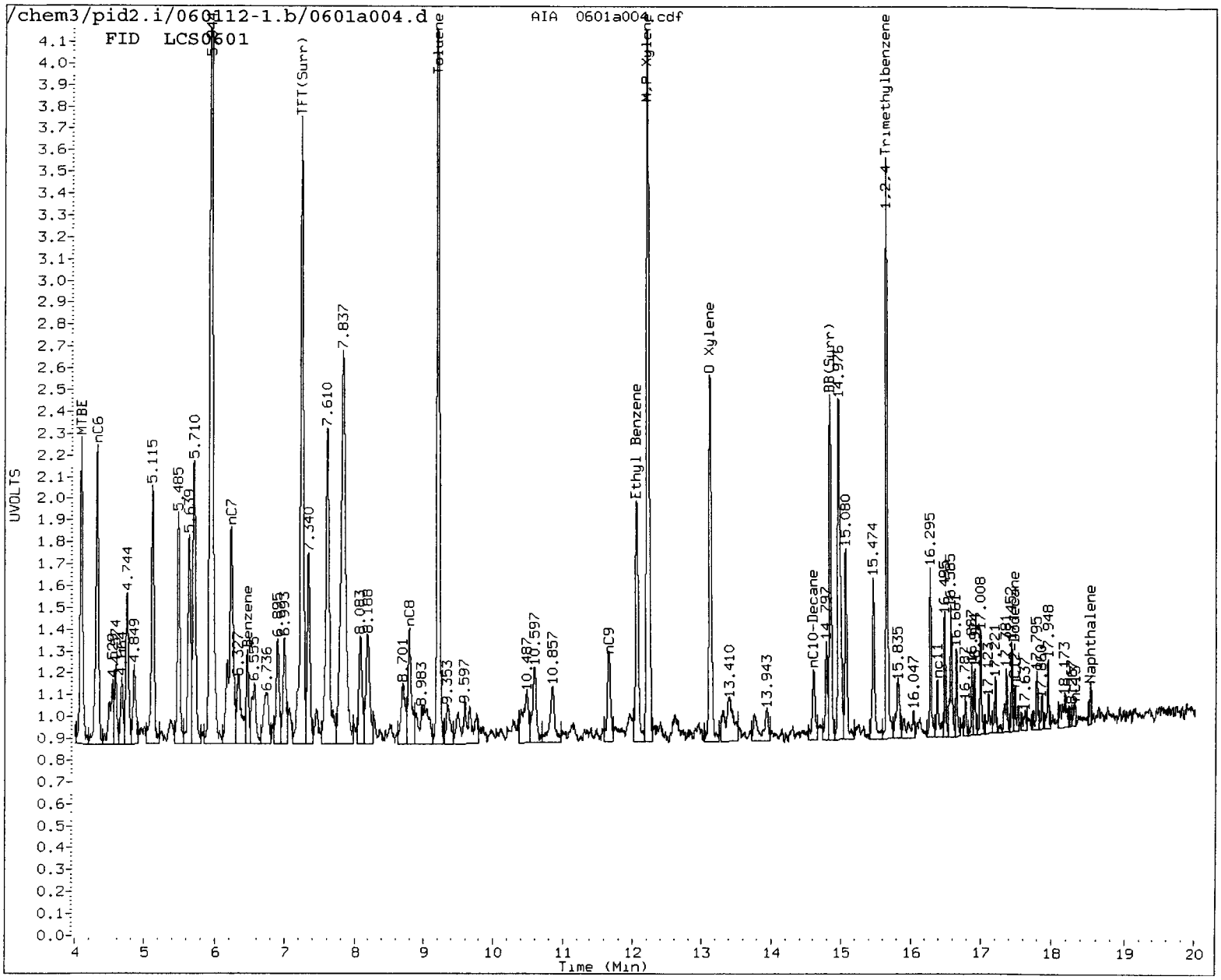
Data File: /chem3/pid2.i/060112-2.b/0601a004.d
Date : 01-JUN-2012 08:04
Client ID:
Sample Info: LCS0601

Instrument: pid2.i

Operator: MH
Column phase: RTX 502-2 PID
Column diameter: 0.18

UV1 : 00165





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a005.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a005.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0601
Client ID:
Injection Date: 01-JUN-2012 08:33
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.245	-0.001	2876	41860	96.9	TFT(Surr)
14.854	-0.001	1594	16915	94.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	305699	0.958 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	649165	0.958 M
AK101 nC6-nC10	(4.21 to 14.51)	544975	518002	0.951 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	316056	0.956 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.270	-0.001	12049	97.3	TFT(Surr)
14.872	-0.001	16590	92.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.469	-0.001	2968	3.41	Benzene
9.238	0.000	19726	35.84	Toluene
12.083	-0.001	4233	8.79N	Ethylbenzene
12.245	0.001	16569	35.56	M/P-Xylene
13.150	-0.002	6293	16.59	O-Xylene
ND	---	---	---	MTBE

JW 6/12/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

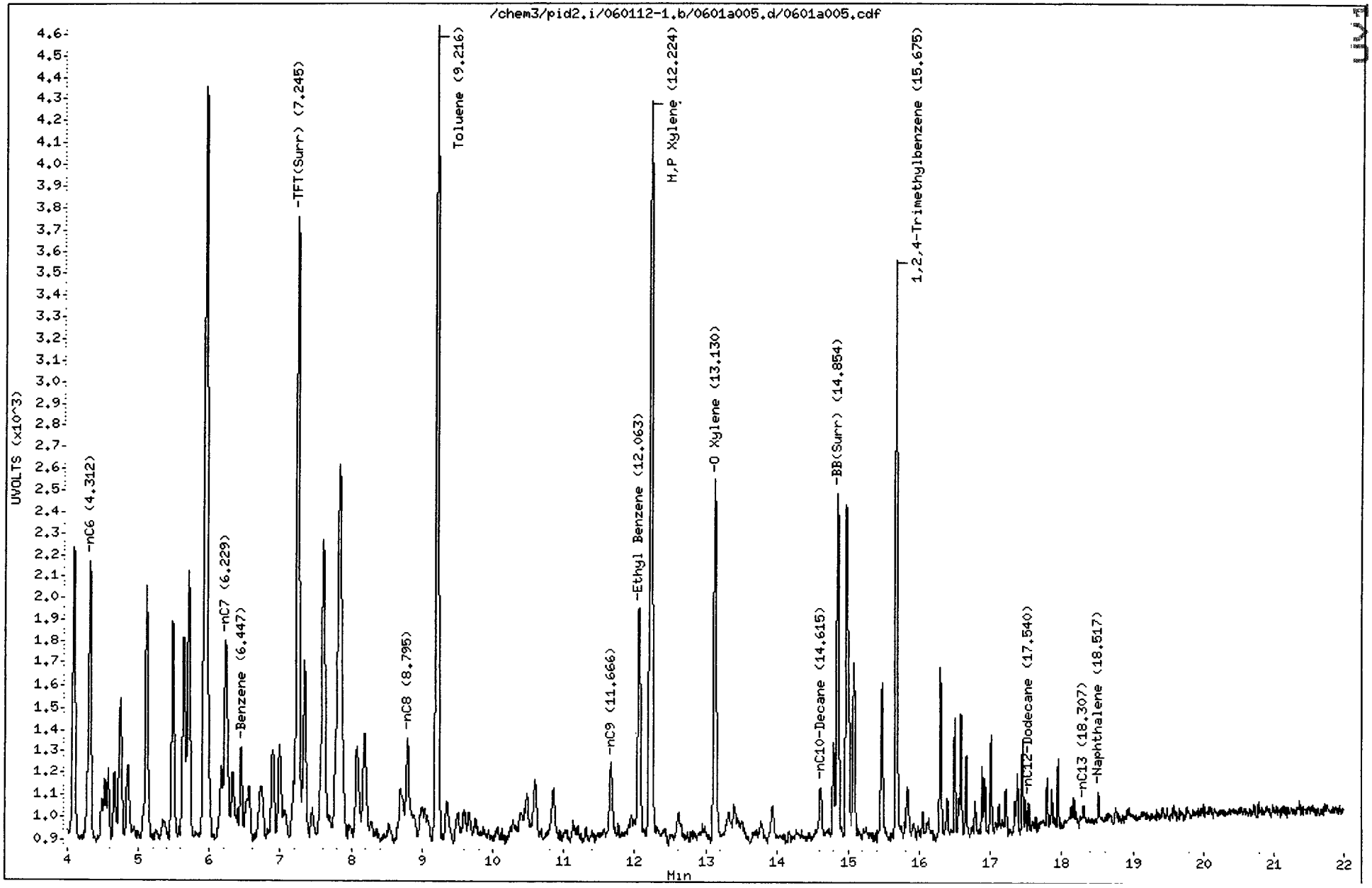
Data File: /chem3/pid2.i/060112-1.b/0601a005.d
Date : 01-JUN-2012 08:33
Client ID:
Sample Info: LCSD0601

Instrument: pid2.i

Operator: MH
Column diameter: 0.18

Column phase: RTX 502-2 FID

UV1 : 00168



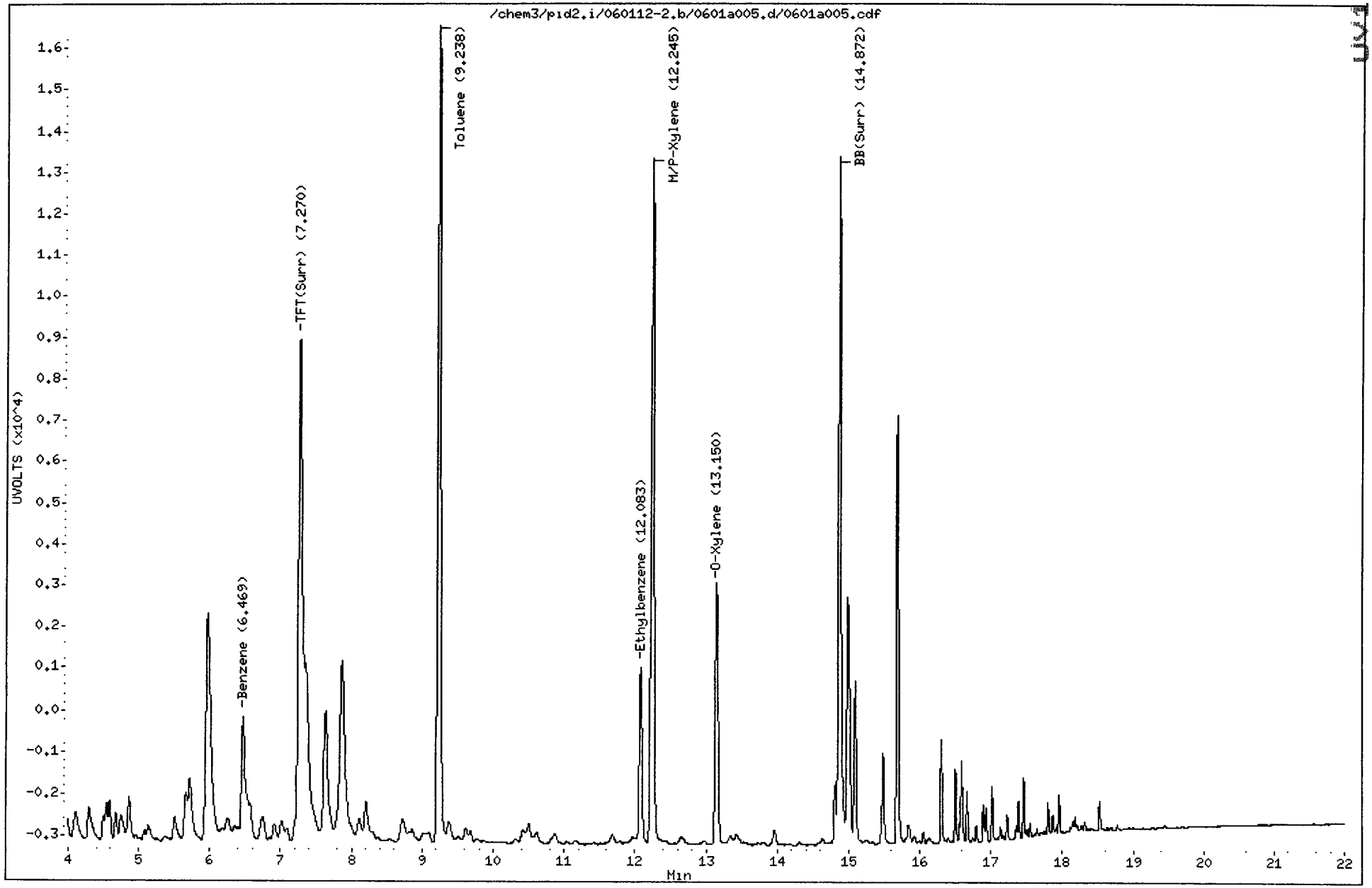
Data File: /chem3/pid2.i/060112-2.b/0601a005.d
Date : 01-JUN-2012 08:33
Client ID:
Sample Info: LCSD0601

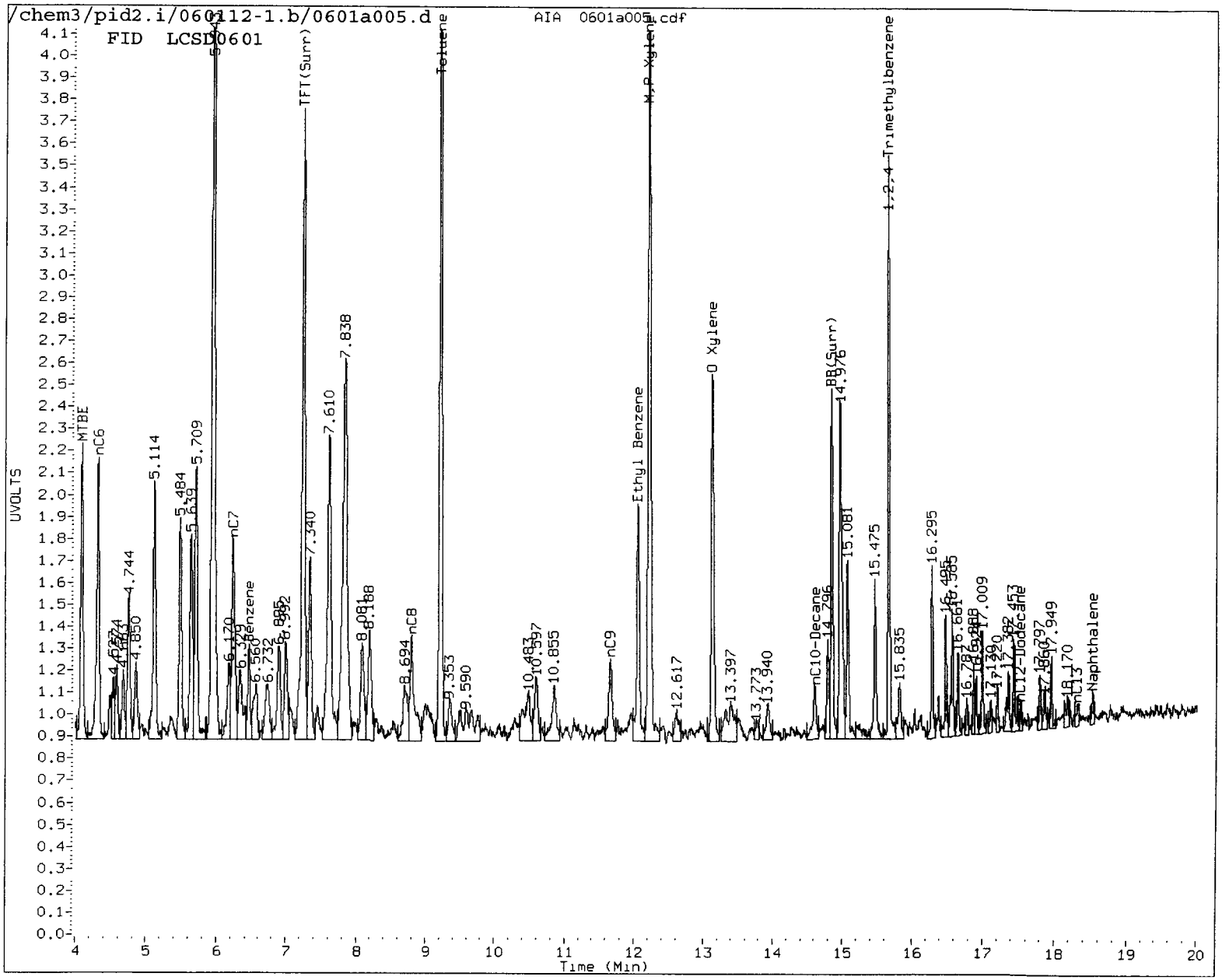
Instrument: pid2.i

Operator: MH
Column diameter: 0.18

Column phase: RTX 502-2 PID

UV1 00169





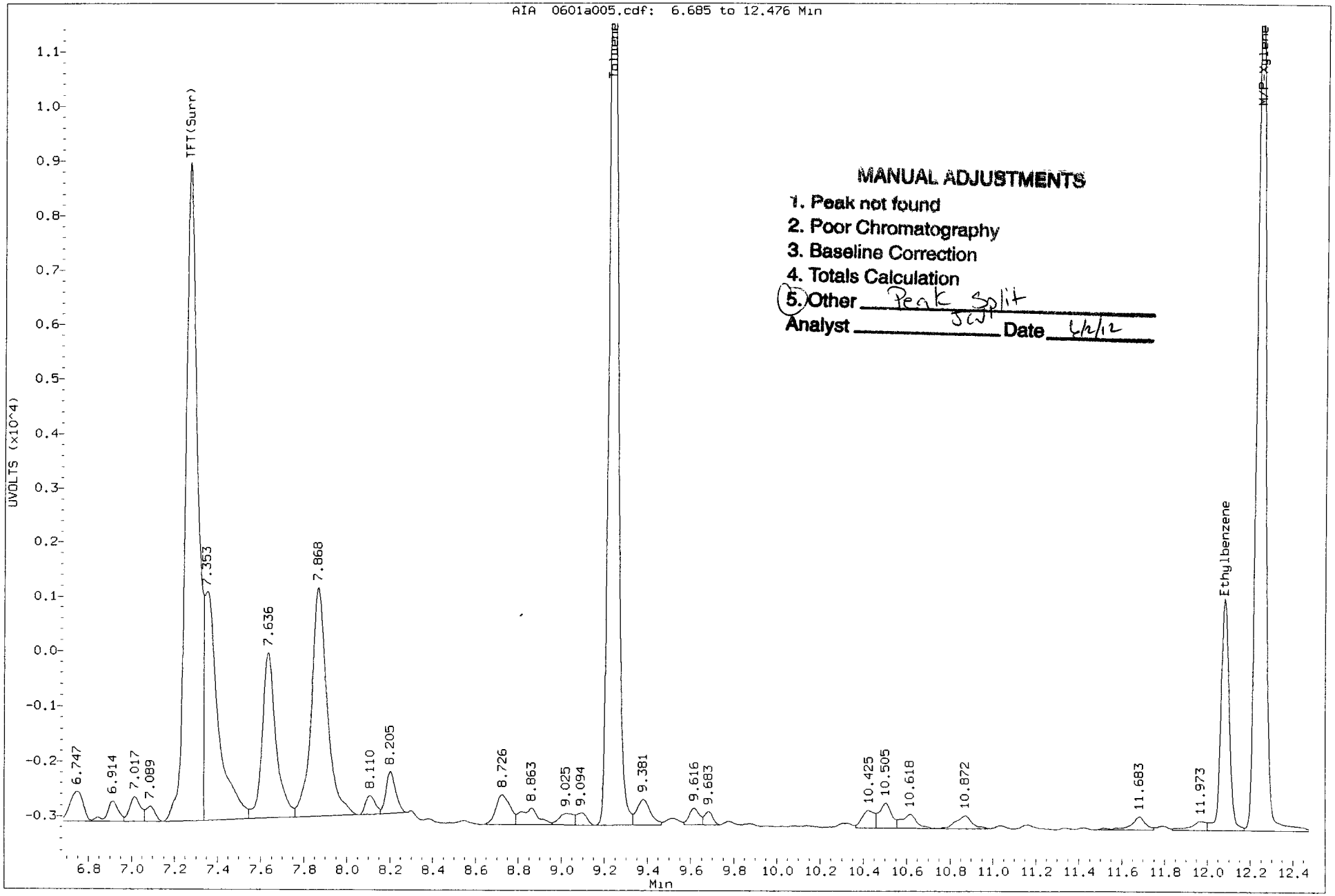
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/060112-2.b/0601a005.d/0601a005.cdf
Injection Date: 01-JUN-2012 08:33
Instrument: pid2.i
Client Sample ID:



UV11 001 71

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-052412**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-052412
LIMS ID: 12-9191
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/24/12 11:24
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	99.7%
Bromobenzene	97.4%

Gasoline Surrogate Recovery

Trifluorotoluene	96.7%
Bromobenzene	95.6%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc052412-1.b/0524a006.d ARI ID: MB0524
Data file 2: /chem3/pid1.i/vpcc052412-2.b/0524a006.d Client ID:
Method: /chem3/pid1.i/vpcc052412-2.b/PIDB.m Injection Date: 24-MAY-2012 11:24
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.880	0.002	2898	36576	96.7	TFT(Surr)
15.406	0.000	1851	15579	95.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.81 to 17.91)	341191	3205	0.009
8015C 2MP-TMB	(4.20 to 16.22)	678311	1810	0.003
AK101 nC6-nC10	(4.70 to 15.12)	538315	1085	0.002
NWTPHG Tol-Nap	(9.81 to 18.92)	359529	3205	0.009

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.888	0.002	3698	99.7	TFT(Surr)
15.414	0.000	7941	97.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 6/4/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc052412-1.b/0524a006.d

Date : 24-MAY-2012 11:24

Client ID:

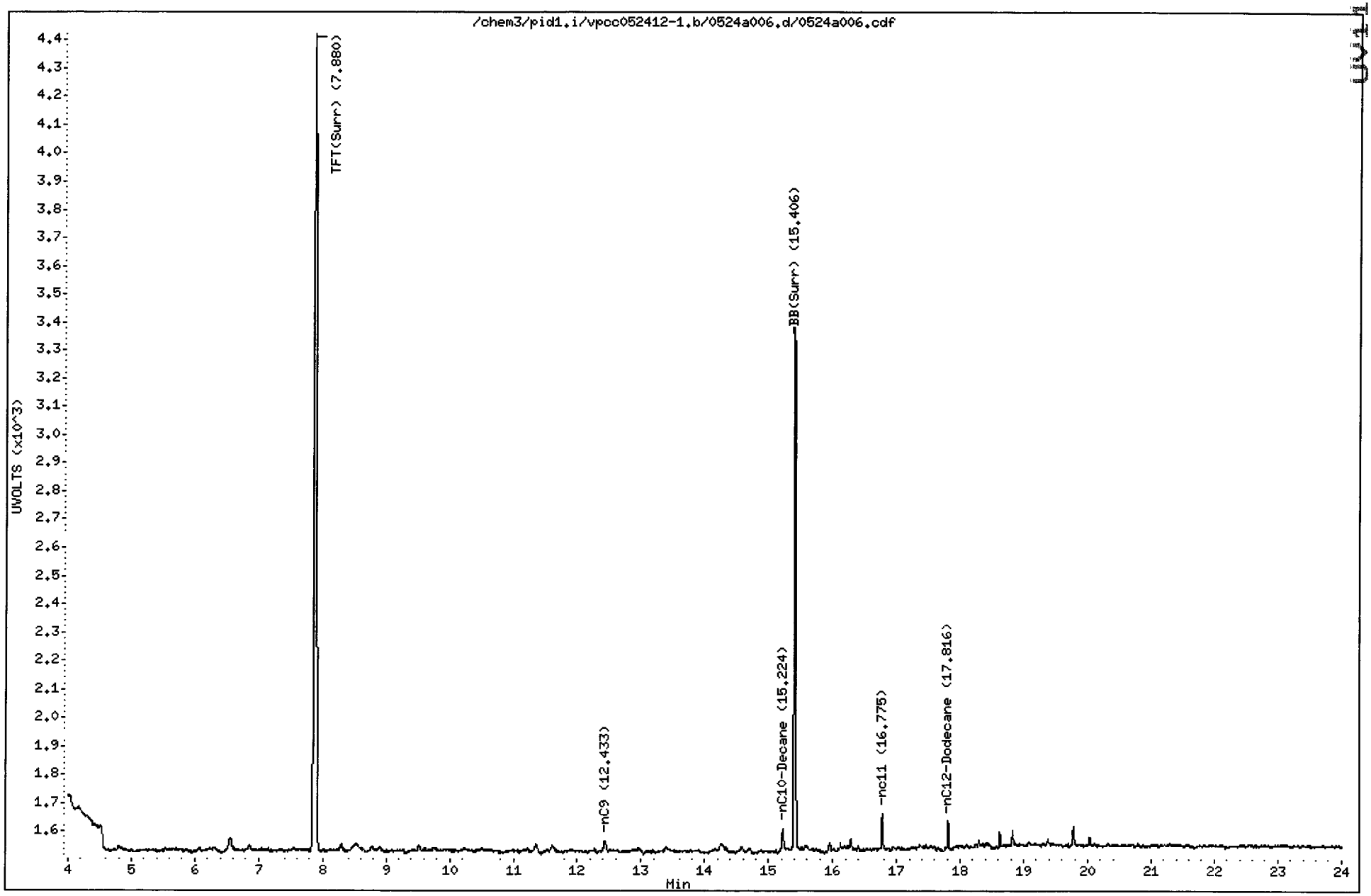
Sample Info: MB0524

Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid1.i/vpcc052412-2.b/0524a006.d

Date : 24-MAY-2012 11:24

Client ID:

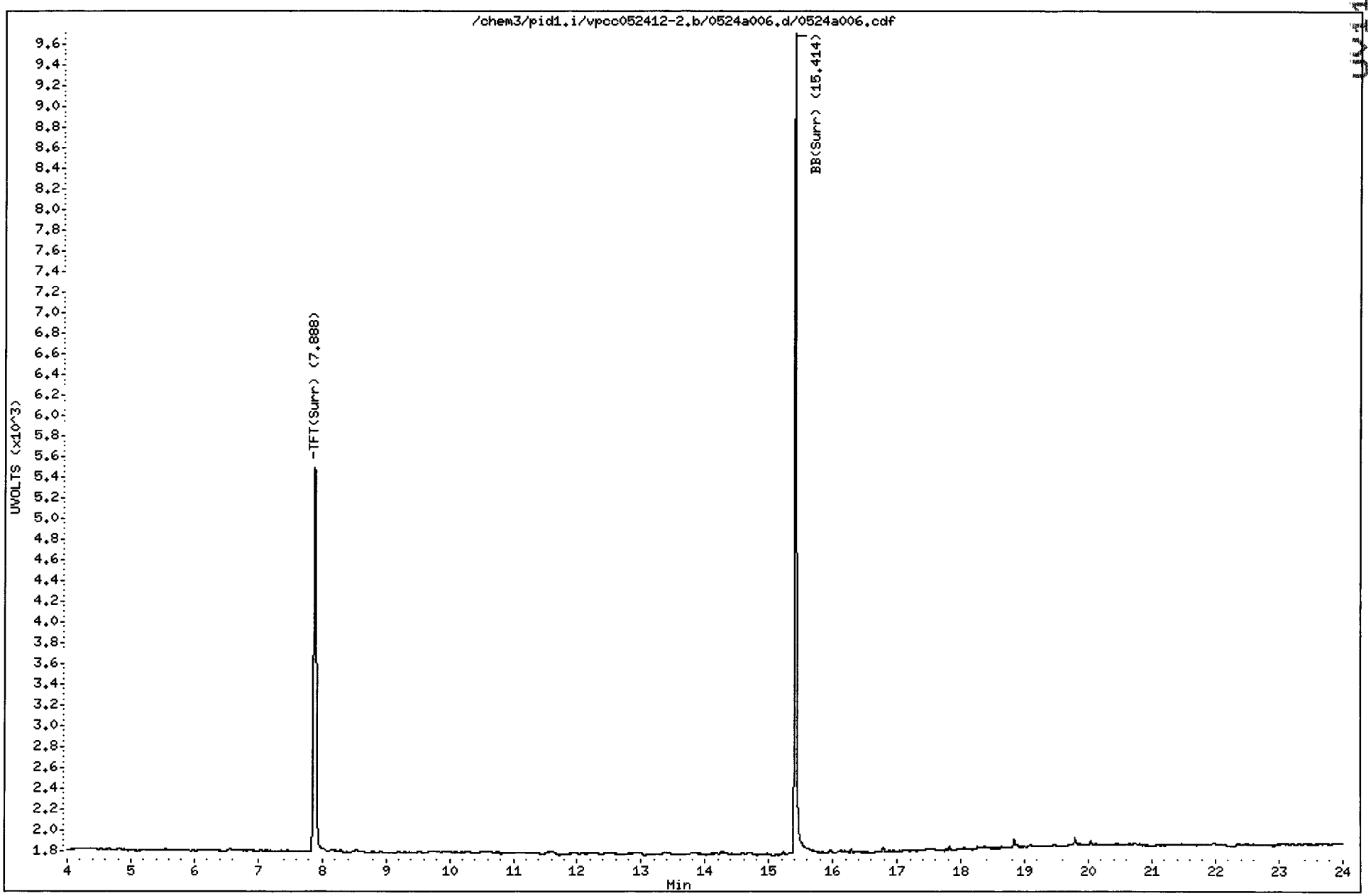
Sample Info: MB0524

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: MH

Column diameter: 0.18



UJ1 001175

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-053012**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-053012
LIMS ID: 12-9197
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/30/12 13:26
Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	87.3%
Bromobenzene	88.7%

Gasoline Surrogate Recovery

Trifluorotoluene	85.6%
Bromobenzene	87.6%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/vpcc053012-1.b/0530a006.d ARI ID: MB0530
Data file 2: /chem3/pid1.i/vpcc053012-2.b/0530a006.d Client ID:
Method: /chem3/pid1.i/vpcc053012-2.b/PIDB.m Injection Date: 30-MAY-2012 13:26
Instrument: pid1.i Matrix: WATER
Gas Ical Date: 15-MAY-2012 Dilution Factor: 1.000
BETX Ical Date: 15-MAY-2012

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.881	0.003	2563	32149	85.6	TFT(Surr)
15.404	0.001	1696	14012	87.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.80 to 17.92)	341191	4268	0.013
8015C 2MP-TMB	(4.21 to 16.22)	678311	2125	0.003
AK101 nC6-nC10	(4.71 to 15.12)	538315	1275	0.002
NWTPHG Tol-Nap	(9.80 to 18.93)	359529	5685	0.016

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

JW 6/1/12

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.889	0.003	3235	87.3	TFT(Surr)
15.411	0.001	7235	88.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/vpcc053012-1.b/0530a006.d

Date : 30-MAY-2012 13:26

Client ID:

Sample Info: MB0530

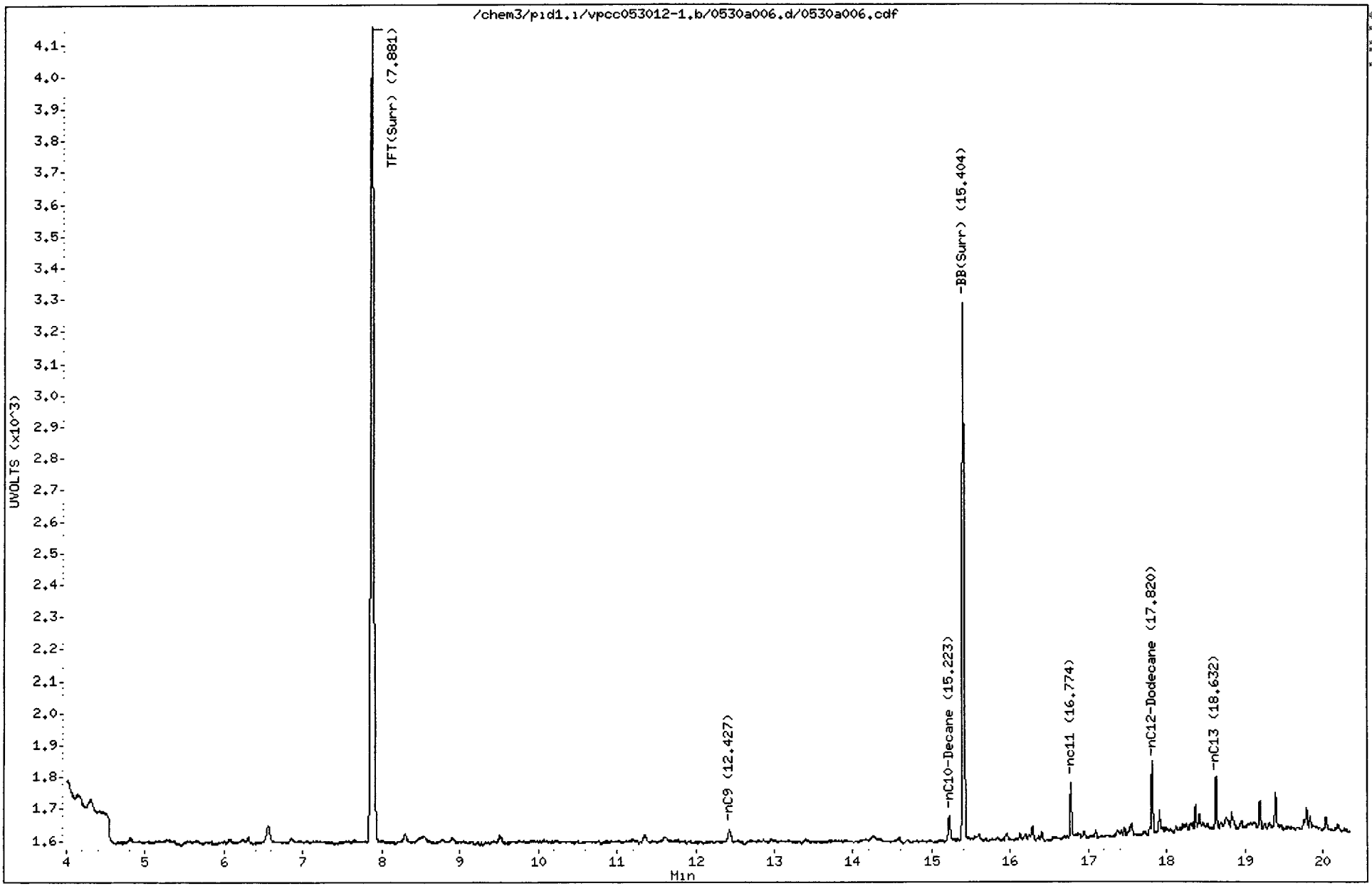
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: JW

Column diameter: 0.18

UV1 : 00178



Data File: /chem3/pid1.i/vpcc053012-2.b/0530a006.d

Page 1

Date : 30-MAY-2012 13:26

Client ID:

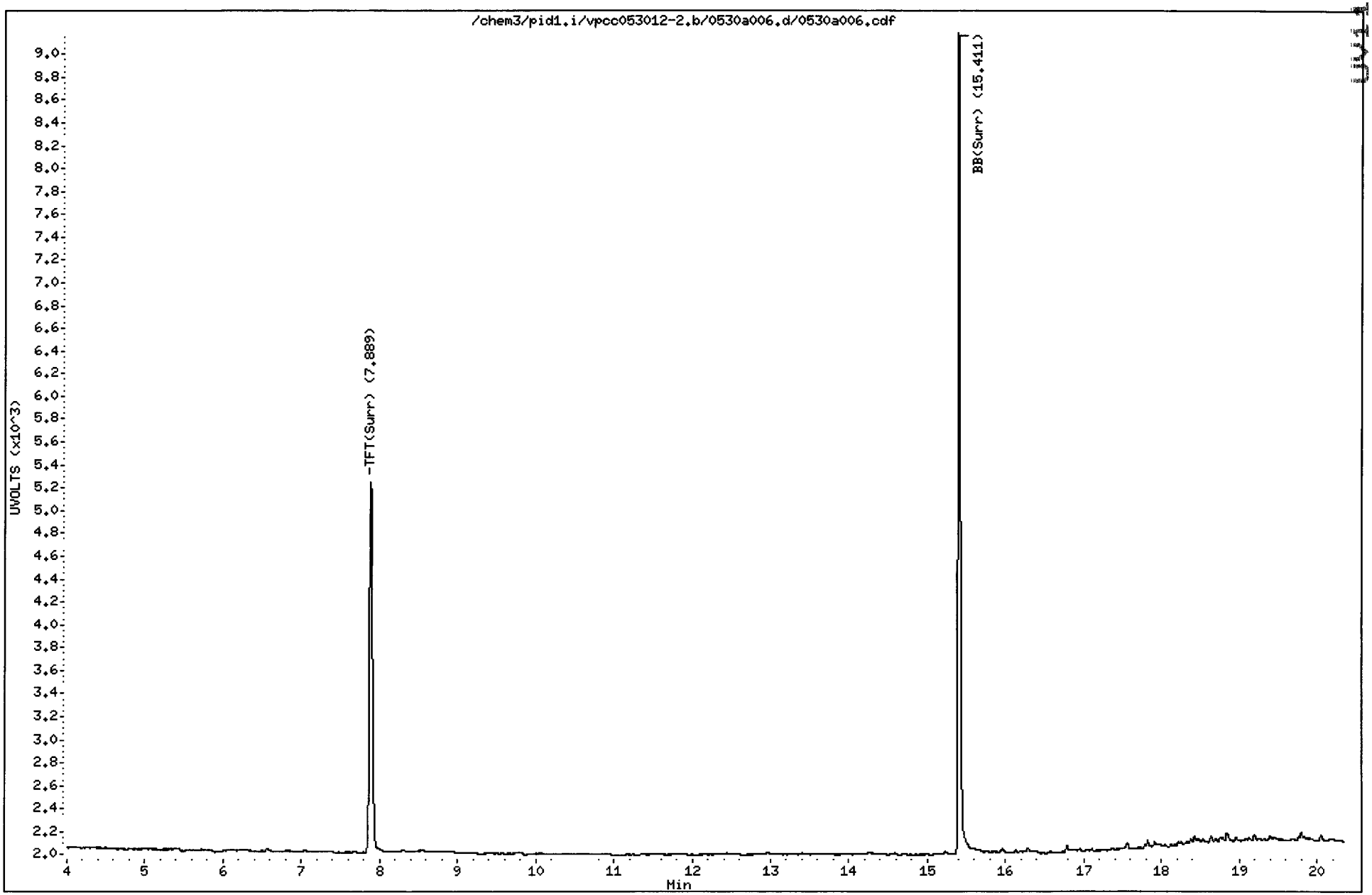
Instrument: pid1.i

Sample Info: MB0530

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-053112**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-053112
LIMS ID: 12-9194
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/31/12 08:40
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.9%
Bromobenzene	92.8%

Gasoline Surrogate Recovery

Trifluorotoluene	94.6%
Bromobenzene	92.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a006.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a006.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0531
Client ID:
Injection Date: 31-MAY-2012 08:40
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.003	2808	35447	94.6	TFT(Surr)
14.861	-0.002	1563	15598	92.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	0	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	0	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.273	-0.004	11756	94.9	TFT(Surr)
14.880	-0.001	16577	92.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.247	0.001	41	0.07N	Toluene
ND	---	---	---	Ethylbenzene
12.253	0.001	58	0.12N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

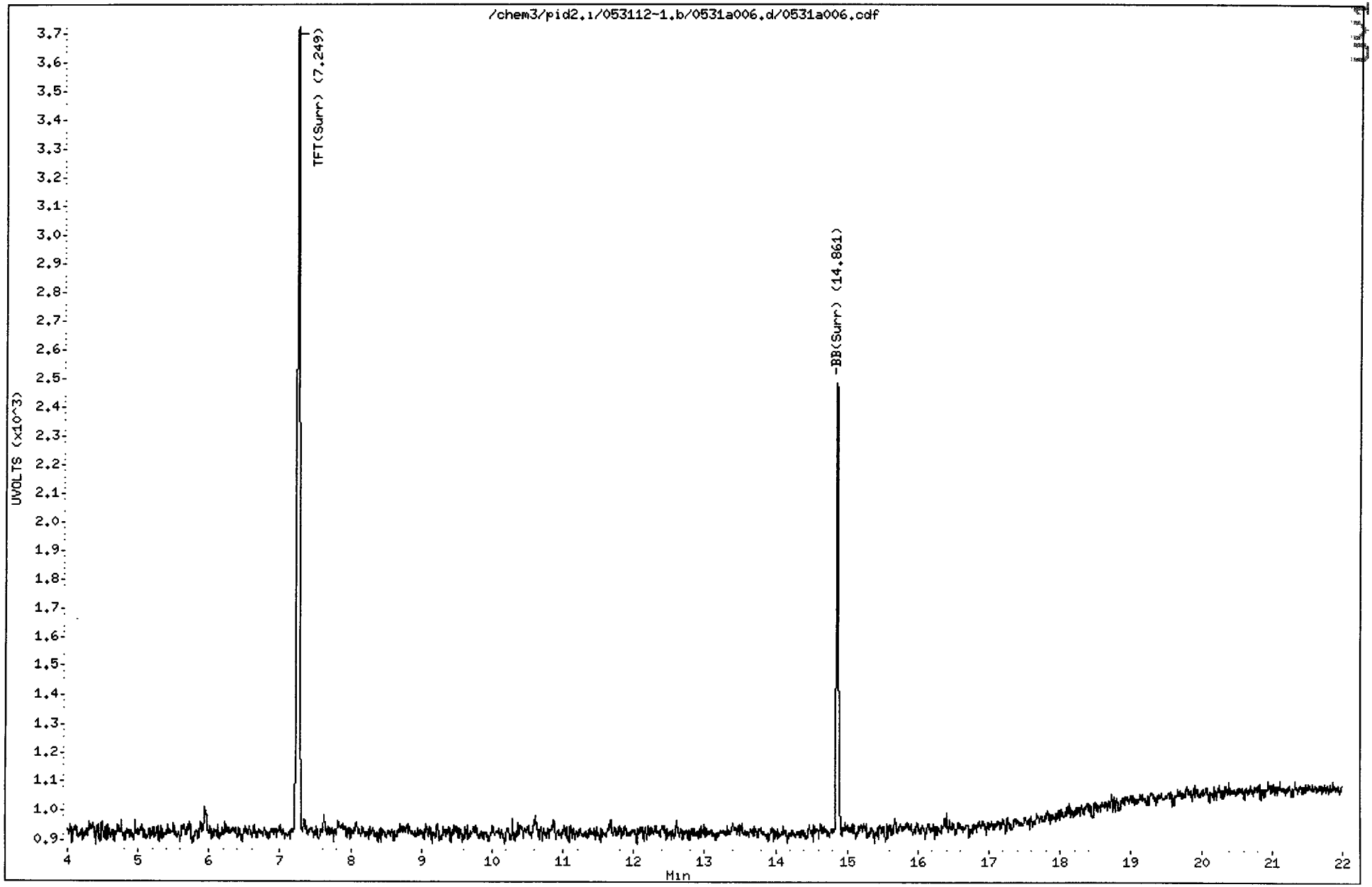
A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a006.d
Date : 31-MAY-2012 08:40
Client ID:
Sample Info: MB0531

Instrument: pid2.i

Operator: MH
Column phase: RTX 502-2 FID
Column diameter: 0.18

UV1 00182

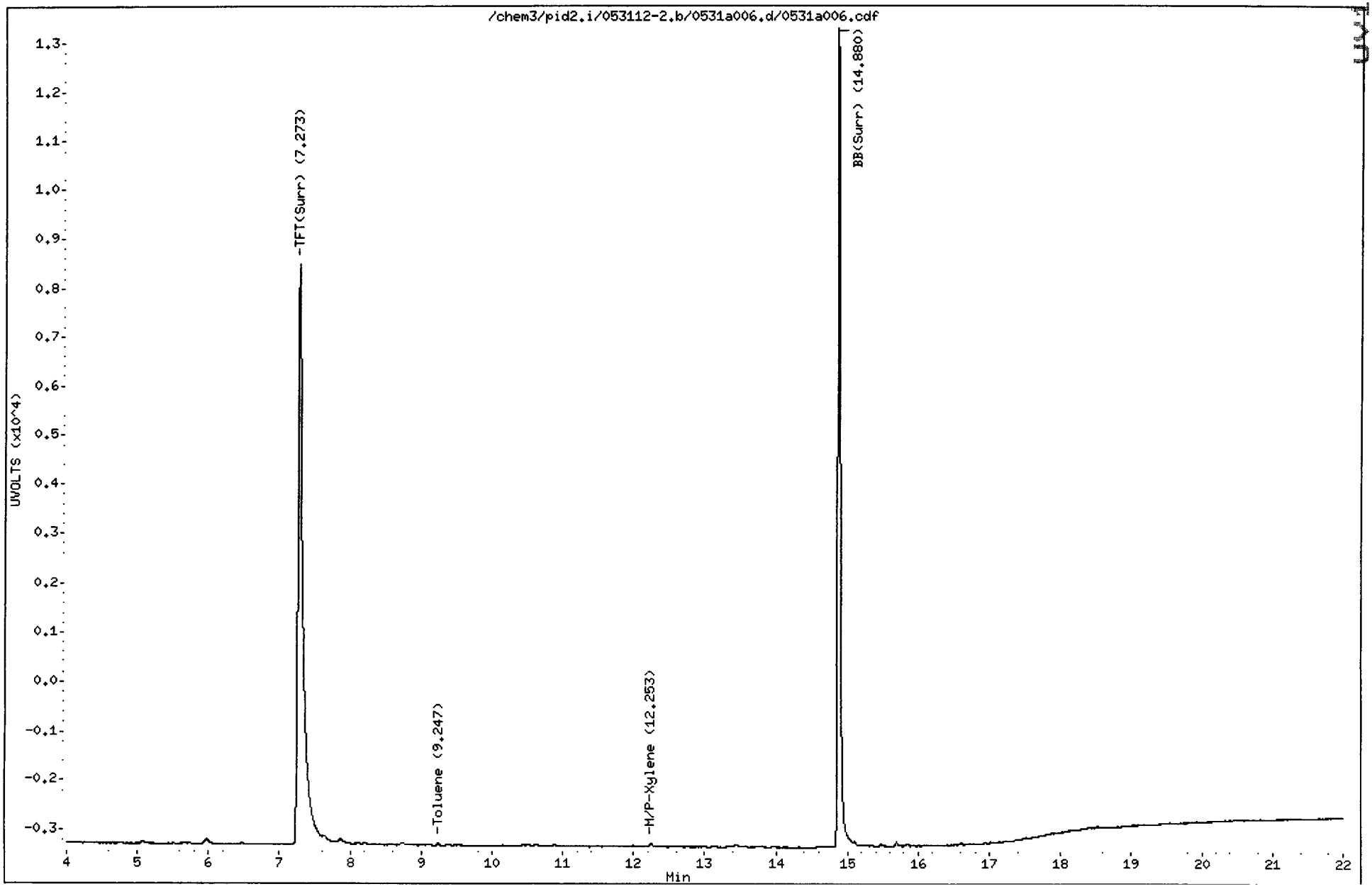


Data File: /chem3/pid2.i/053112-2.b/0531a006.d
Date : 31-MAY-2012 08:40
Client ID:
Sample Info: MB0531

Instrument: pid2.i

Operator: MH
Column diameter: 0.18

Column phase: RTX 502-2 PID



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-060112**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-060112
LIMS ID: 12-9207
Matrix: Soil
Data Release Authorized: MW
Reported: 06/04/12

QC Report No: UV11-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 06/01/12 09:01
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	90.4%
Bromobenzene	87.9%

Gasoline Surrogate Recovery

Trifluorotoluene	89.2%
Bromobenzene	90.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/060112-1.b/0601a006.d
Data file 2: /chem3/pid2.i/060112-2.b/0601a006.d
Method: /chem3/pid2.i/060112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0601
Client ID:
Injection Date: 01-JUN-2012 09:01
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.246	0.001	2649	33773	89.2	TFT(Surr)
14.854	-0.001	1531	15363	90.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.51)	544975	0	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.271	0.001	11203	90.4	TFT(Surr)
14.871	-0.001	15700	87.9	BB(Surr)

JW 6/2/12

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

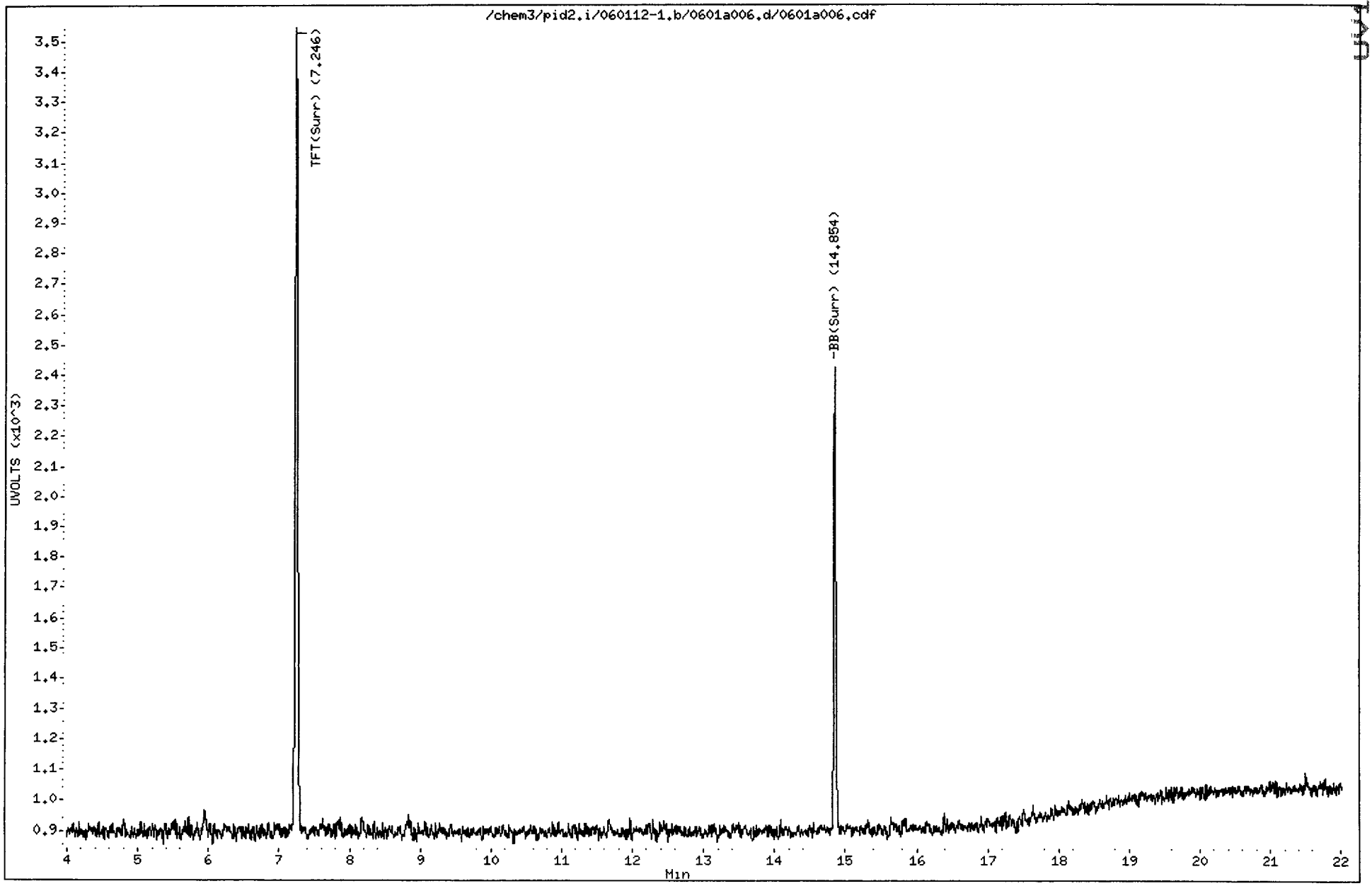
Data File: /chem3/pid2.i/060112-1.b/0601a006.d
Date : 01-JUN-2012 09:01
Client ID:
Sample Info: MB0601

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH
Column diameter: 0.18

UV1 : 00185

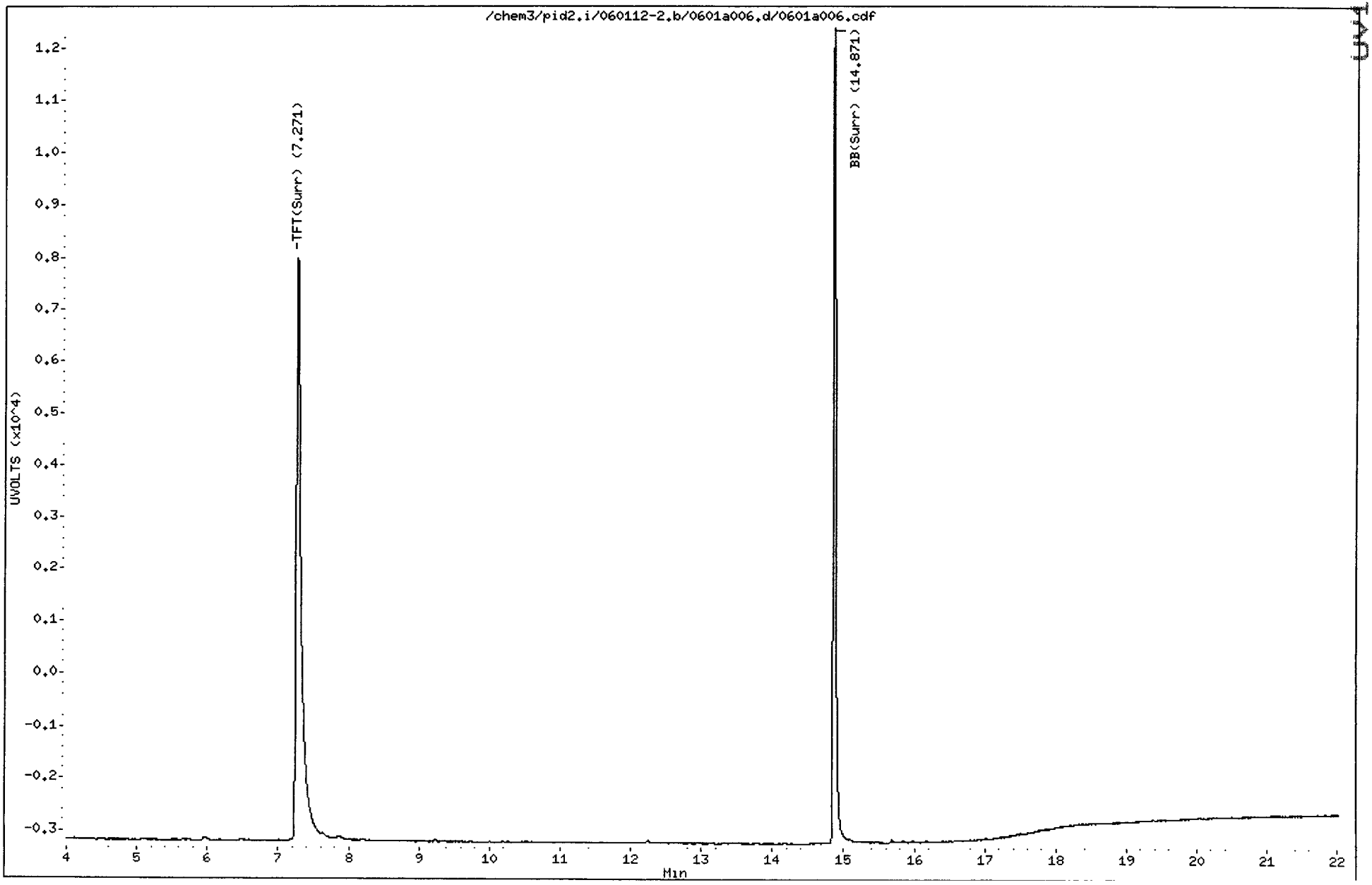


Data File: /chem3/pid2.i/060112-2.b/0601a006.d
Date : 01-JUN-2012 09:01
Client ID:
Sample Info: MB0601

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH
Column diameter: 0.18



01 JUN 2012 09:01:87

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 13, 2012

Matt Dalton
Dalton, Olmsted, & Fuglevand
10827 NE 68th, Suite B
Kirkland, WA 98033

RE: 1920 Port of Tacoma Rd, USO-022
ARI Job No.: UV12

Dear Matt:

Please find enclosed the original Chain-of-Custody (COC) records, sample receipt documentation, and the final analytical results for samples from the project referenced above. Analytical Resources, Inc. (ARI) twenty soil samples on May 21, 2012 under ARI job UV12. For details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BETX, as requested on the COCs.

Due to matrix interferences, BETX results could not be confirmed and were possibly false positives for several samples. Two soil samples were selected at random and analyzed on a GC/MS instrument by method SW8260C to confirm results. Results were confirmed and all BETX data have been reported as is. No further corrective action was taken.

The NWTPH-Gx surrogate percent recoveries of Bromofluorobenzene were outside the control limits for samples **USO-P10-A** and **USO-P10-C**. The samples were re-analyzed at dilutions and all surrogate percent recoveries were within control limits. No further corre All other surrogate percent recoveries were within control limits. No corrective action was taken.

The BETX surrogate percent recovery of Bromofluorobenzene and Trifluorotoluene were outside the control limits for sample **USO-P10-C**. The sample was re-analyzed at a dilution and all surrogate percent recoveries were within control limits. No further corrective action was taken.

An electronic copy of this report and all associated raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan Dunnihoo
Director, Client Services
sue@arilabs.com
206-695-6207

cc: eFile UV12

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 1112	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 5 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1.2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX								Notes/Comments
USO-P9-A	5/20/12	0905	Soil	3	X								
USO-P9-B	5/20/12	0910	Soil	3	X								
USO-P9-C	5/20/13	0915	Soil	3	X								
USO-P9-D	5/20/14	0920	Soil	3	X								
USO-P9-E	5/20/15	0925	Soil	3	X								
USO-P10-A	5/20/16	0935	Soil	3	X								
USO-P10-B	5/20/17	940	Soil	3	X								
USO-P10-C	5/20/18	0945	Soil	3	X								
USO-P10-D	5/20/19	0950	Soil	3	X								
USO-P10-E	5/20/20	0955	Soil	3	X								

Comments/Special Instructions	Relinquished by (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: Taylor Streeter	Printed Name:	Printed Name:
	Company: DOF	Company: ART	Company	Company:
	Date & Time: 5/21/12 1215	Date & Time: 5-21-12 1215	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: UV12	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 6 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 1	Cooler Temps: 1.2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX	Notes/Comments
USO-P11-A	5/20/12	1005	Soil	3	X	
USO-P11-B	5/20/12	1010	Soil	3	X	
USO-P11-C	5/20/13	1015	Soil	3	X	
USO-P11-D	5/20/14	1020	Soil	3	X	
USO-P11-E	5/20/15	1030	Soil	3	X	
USO-P12-A	5/20/16	1050	Soil	3	X	
USO-P12-B	5/20/17	1055	Soil	3	X	
USO-P12-C	5/20/18	11100	Soil	3	X	
USO-P12-D	5/20/19	1105	Soil	3	X	
USO-P12-E	5/20/20	1110	Soil	3	X	

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: Tayler Streeter	Printed Name:	Printed Name
	Company: DOF	Company: ARI	Company:	Company
	Date & Time: 5/21/12 1215	Date & Time: 5-21-12 1215	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF
Project Name: 1920 Port of Tacoma RD
COC No(s): (NA)
Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other:
Assigned ARI Job No: UV12
Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)	1.2 2.0	
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#:	90947819

Cooler Accepted by: JS Date: 5-21-12 Time: 1215

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES) JM	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI.	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: Equipment: Split by:

Samples Logged by: JM Date: 5/21/12 Time: 1403

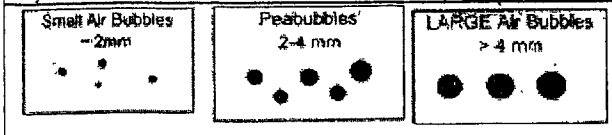
***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

On COC Sample USO-P12-C the collection time is 11100, logged as sampled at 1110. All samples collected in May of 2012. Date mistake on COC on select samples, wrong year.

By: JM Date: 5/21/12



Small → "sm"	
Peabubbles → "pb"	
Large → "lg"	
Headspace → "hs"	

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: UV12
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-022
Project Name: 1920 Port of Tacoma Rd

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P9-A	UV12A	12-9210	Soil	05/20/12 09:05	05/21/12 12:15
2.	USO-P9-B	UV12B	12-9211	Soil	05/20/12 09:10	05/21/12 12:15
3.	USO-P9-C	UV12C	12-9212	Soil	05/20/12 09:15	05/21/12 12:15
4.	USO-P9-D	UV12D	12-9213	Soil	05/20/12 09:20	05/21/12 12:15
5.	USO-P9-E	UV12E	12-9214	Soil	05/20/12 09:25	05/21/12 12:15
6.	USO-P10-A	UV12F	12-9215	Soil	05/20/12 09:35	05/21/12 12:15
7.	USO-P10-B	UV12G	12-9216	Soil	05/20/12 09:40	05/21/12 12:15
8.	USO-P10-C	UV12H	12-9217	Soil	05/20/12 09:45	05/21/12 12:15
9.	USO-P10-D	UV12I	12-9218	Soil	05/20/12 09:50	05/21/12 12:15
10.	USO-P10-E	UV12J	12-9219	Soil	05/20/12 09:55	05/21/12 12:15
11.	USO-P11-A	UV12K	12-9220	Soil	05/20/12 10:05	05/21/12 12:15
12.	USO-P11-B	UV12L	12-9221	Soil	05/20/12 10:10	05/21/12 12:15
13.	USO-P11-C	UV12M	12-9222	Soil	05/20/12 10:15	05/21/12 12:15
14.	USO-P11-D	UV12N	12-9223	Soil	05/20/12 10:20	05/21/12 12:15
15.	USO-P11-E	UV12O	12-9224	Soil	05/20/12 10:30	05/21/12 12:15
16.	USO-P12-A	UV12P	12-9225	Soil	05/20/12 10:50	05/21/12 12:15
17.	USO-P12-B	UV12Q	12-9226	Soil	05/20/12 10:55	05/21/12 12:15
18.	USO-P12-C	UV12R	12-9227	Soil	05/20/12 11:00	05/21/12 12:15
19.	USO-P12-D	UV12S	12-9228	Soil	05/20/12 11:05	05/21/12 12:15
20.	USO-P12-E	UV12T	12-9229	Soil	05/20/12 11:10	05/21/12 12:15

UV12:00005

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P9-A**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12A
LIMS ID: 12-9210
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 14:51
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 94 mg-dry-wt
Percent Moisture: 3.5%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	13	< 13 U
108-88-3	**Toluene**	**13**	**15**
100-41-4	Ethylbenzene	13	< 13 U
179601-23-1	m,p-Xylene	27	< 27 U
95-47-6	o-Xylene	13	< 13 U

			GAS ID
Gasoline Range Hydrocarbons	5.3	< 5.3 U	---

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	97.6%

Gasoline Surrogate Recovery

Trifluorotoluene	99.7%
Bromobenzene	96.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a007.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a007.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12A
Client ID: USO-P9-A
Injection Date: 30-MAY-2012 14:51
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.247	-0.002	2959	37572	99.7	TFT(Surr)
14.861	0.000	1633	16540	96.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.75 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.272	-0.003	12608	101.8	TFT(Surr)
14.879	0.000	17426	97.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.243	-0.001	153	0.28	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a007.d

Date : 30-MAY-2012 14:51

Client ID: USO-P9-A

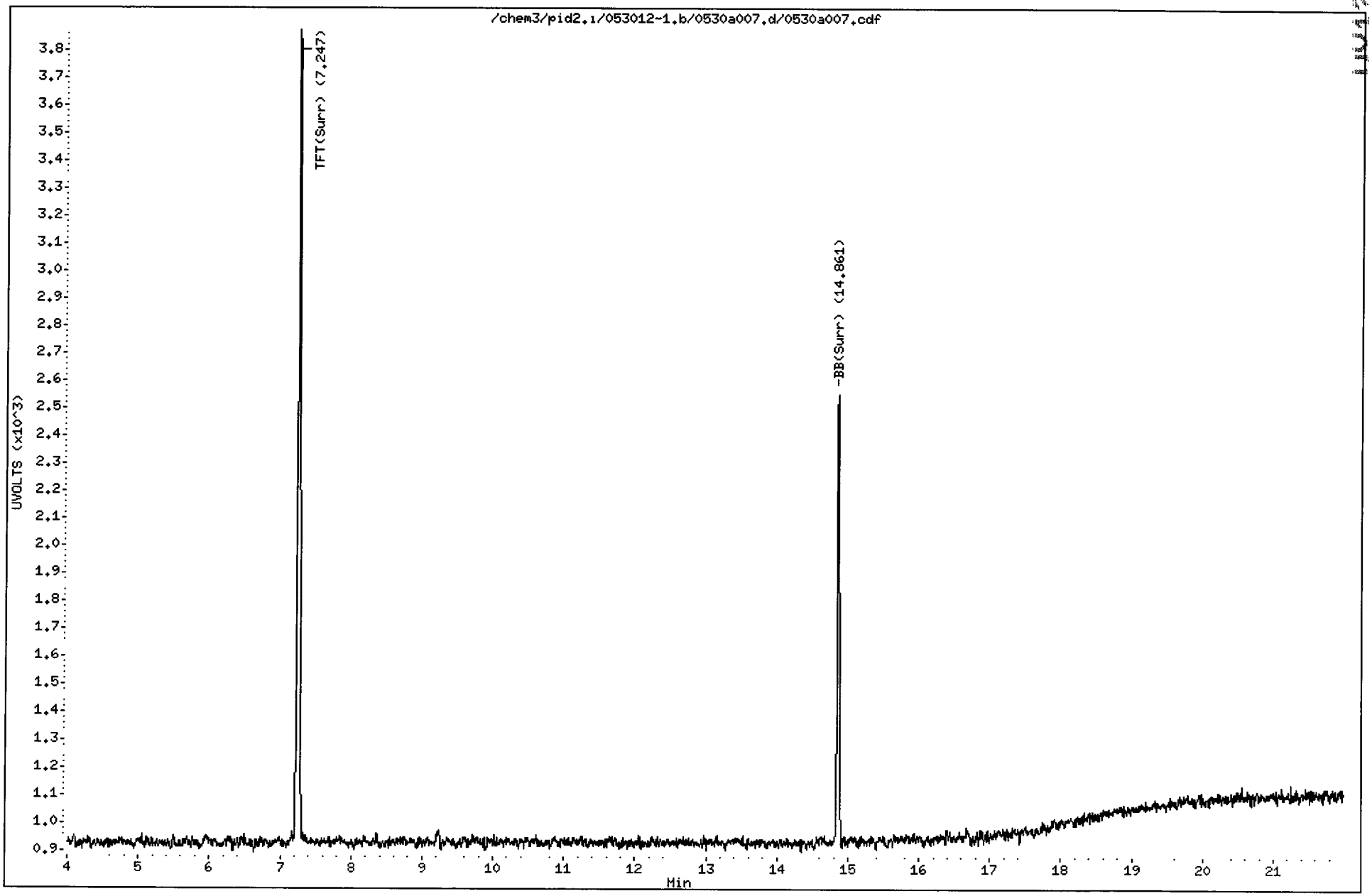
Sample Info: UV12A

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a007.d

Date : 30-MAY-2012 14:51

Client ID: USO-P9-A

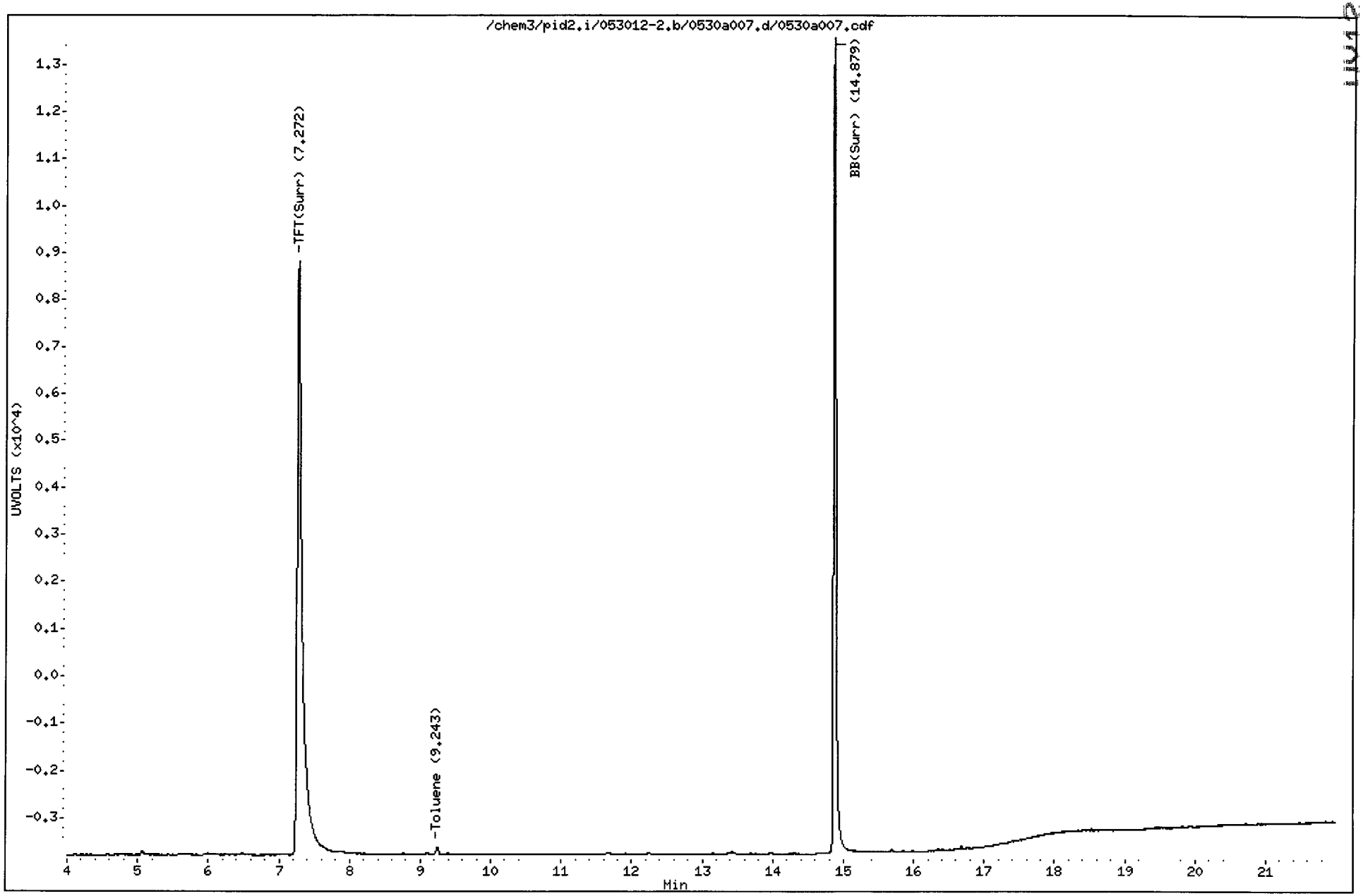
Sample Info: UV12A

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P9-B
SAMPLE

Lab Sample ID: UV12B
LIMS ID: 12-9211
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 15:19
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 81 mg-dry-wt
Percent Moisture: 4.0%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	15	< 15 U
108-88-3	**Toluene**	**15**	**17**
100-41-4	Ethylbenzene	15	< 15 U
179601-23-1	m,p-Xylene	31	< 31 U
95-47-6	o-Xylene	15	< 15 U

			GAS ID
Gasoline Range Hydrocarbons	6.1	< 6.1 U	---

BETX Surrogate Recovery

Trifluorotoluene	98.8%
Bromobenzene	93.7%

Gasoline Surrogate Recovery

Trifluorotoluene	98.1%
Bromobenzene	93.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a008.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a008.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12B
Client ID: USO-P9-B
Injection Date: 30-MAY-2012 15:19
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.247	-0.002	2912	37881	98.1	TFT(Surr)
14.860	-0.001	1582	15907	93.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.75 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	0	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.272	-0.002	12241	98.8	TFT(Surr)
14.878	-0.001	16743	93.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.241	-0.002	152	0.28	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a008.d

Page 1

Date : 30-MAY-2012 15:19

Client ID: USO-P9-B

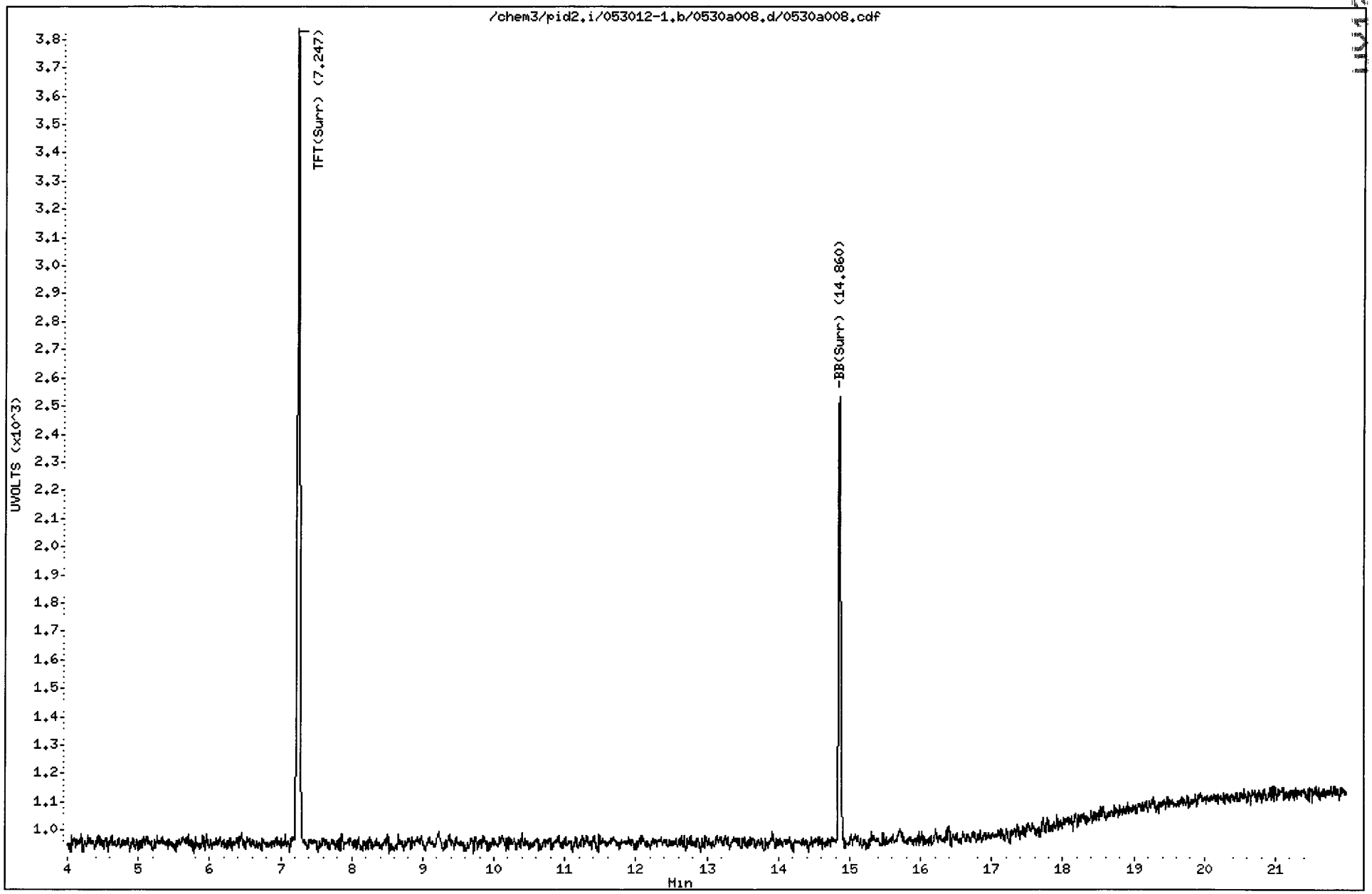
Instrument: pid2.i

Sample Info: UV12B

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a008.d

Date : 30-MAY-2012 15:19

Client ID: USO-P9-B

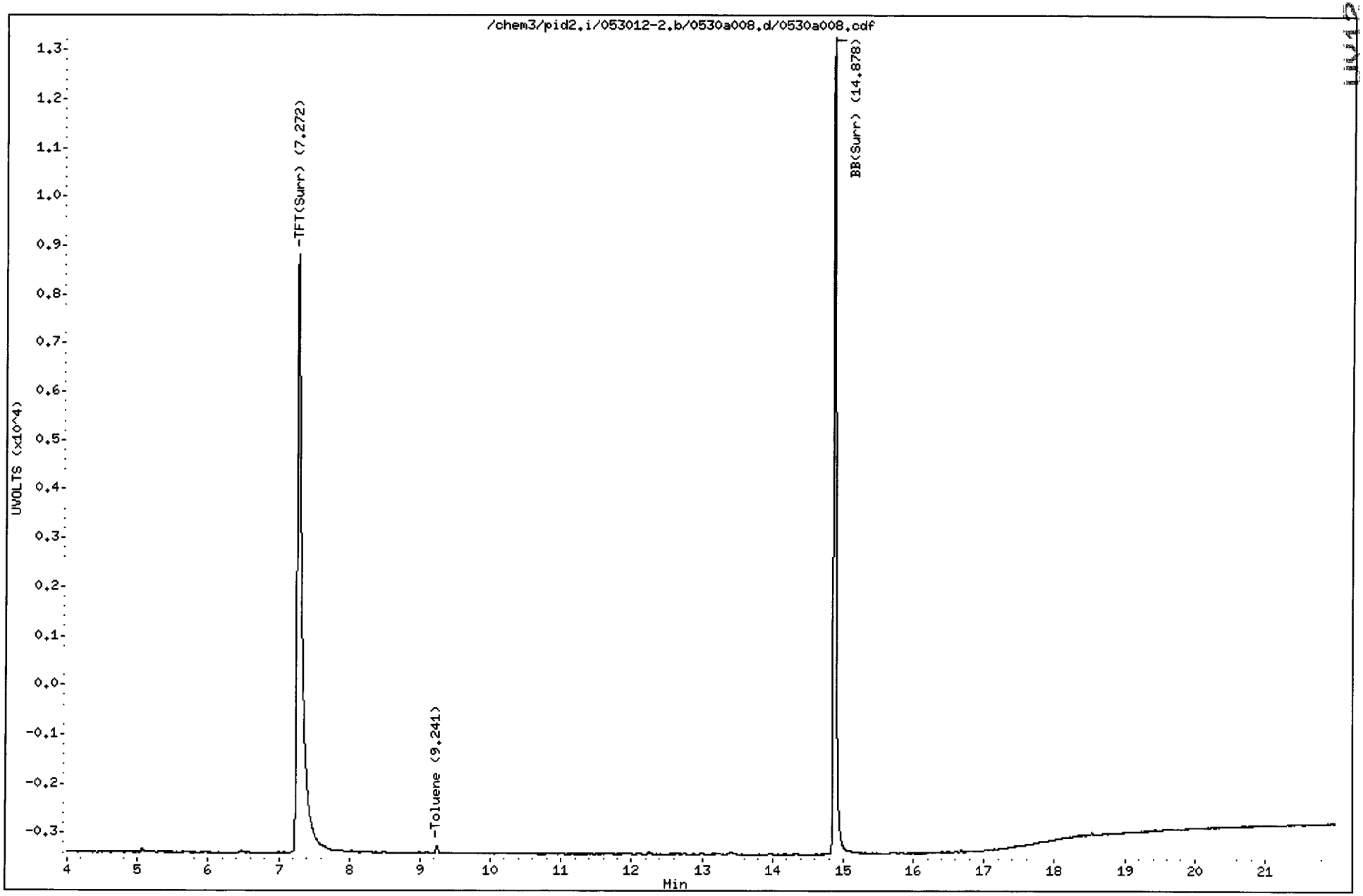
Sample Info: UV12B

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P9-C
SAMPLE

Lab Sample ID: UV12C
LIMS ID: 12-9212
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 15:47
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 67 mg-dry-wt
Percent Moisture: 14.9%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	19	< 19 U
108-88-3	Toluene	19	< 19 U
100-41-4	Ethylbenzene	19	< 19 U
179601-23-1	m,p-Xylene	37	< 37 U
95-47-6	o-Xylene	19	< 19 U

			GAS ID
Gasoline Range Hydrocarbons	7.4	< 7.4 U	---

BETX Surrogate Recovery

Trifluorotoluene	99.6%
Bromobenzene	96.7%

Gasoline Surrogate Recovery

Trifluorotoluene	99.3%
Bromobenzene	97.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P9-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12D
LIMS ID: 12-9213
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 16:15
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 73 mg-dry-wt
Percent Moisture: 22.0%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	17	< 17 U
108-88-3	Toluene	17	< 17 U
100-41-4	Ethylbenzene	17	< 17 U
179601-23-1	m,p-Xylene	34	< 34 U
95-47-6	o-Xylene	17	< 17 U

			GAS ID
Gasoline Range Hydrocarbons	6.9	< 6.9 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.0%
Bromobenzene	89.7%

Gasoline Surrogate Recovery

Trifluorotoluene	93.8%
Bromobenzene	90.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P9-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12E
LIMS ID: 12-9214
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 17:38
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 47 mg-dry-wt
Percent Moisture: 32.5%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	27	< 27 U
108-88-3	**Toluene**	**27**	**35**
100-41-4	Ethylbenzene	27	< 27 U
179601-23-1	m,p-Xylene	54	< 54 U
95-47-6	o-Xylene	27	< 27 U

			GAS ID
	Gasoline Range Hydrocarbons	11	< 11 U ---

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	97.7%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	96.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a013.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a013.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12E
Client ID: USO-P9-E
Injection Date: 30-MAY-2012 17:38
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.001	2970	38661	100.1	TFT(Surr)
14.860	-0.001	1623	16603	96.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.75 to 15.78)	677374	2	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.001	12578	101.5	TFT(Surr)
14.878	-0.001	17446	97.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.243	0.000	181	0.33	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a013.d

Page 1

Date : 30-MAY-2012 17:38

Client ID: USO-P9-E

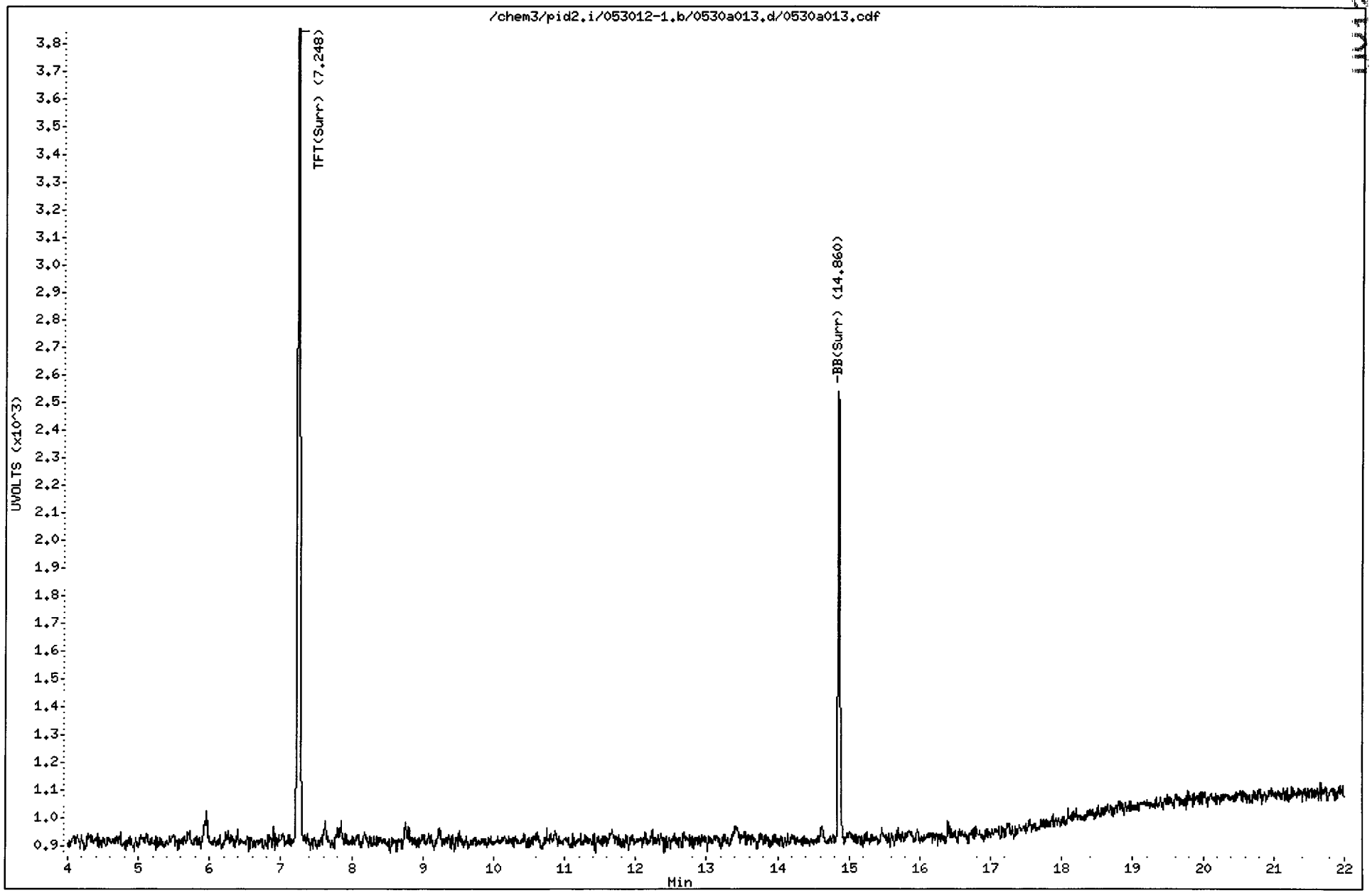
Instrument: pid2.i

Sample Info: UV12E

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a013.d

Date : 30-MAY-2012 17:38

Client ID: USO-P9-E

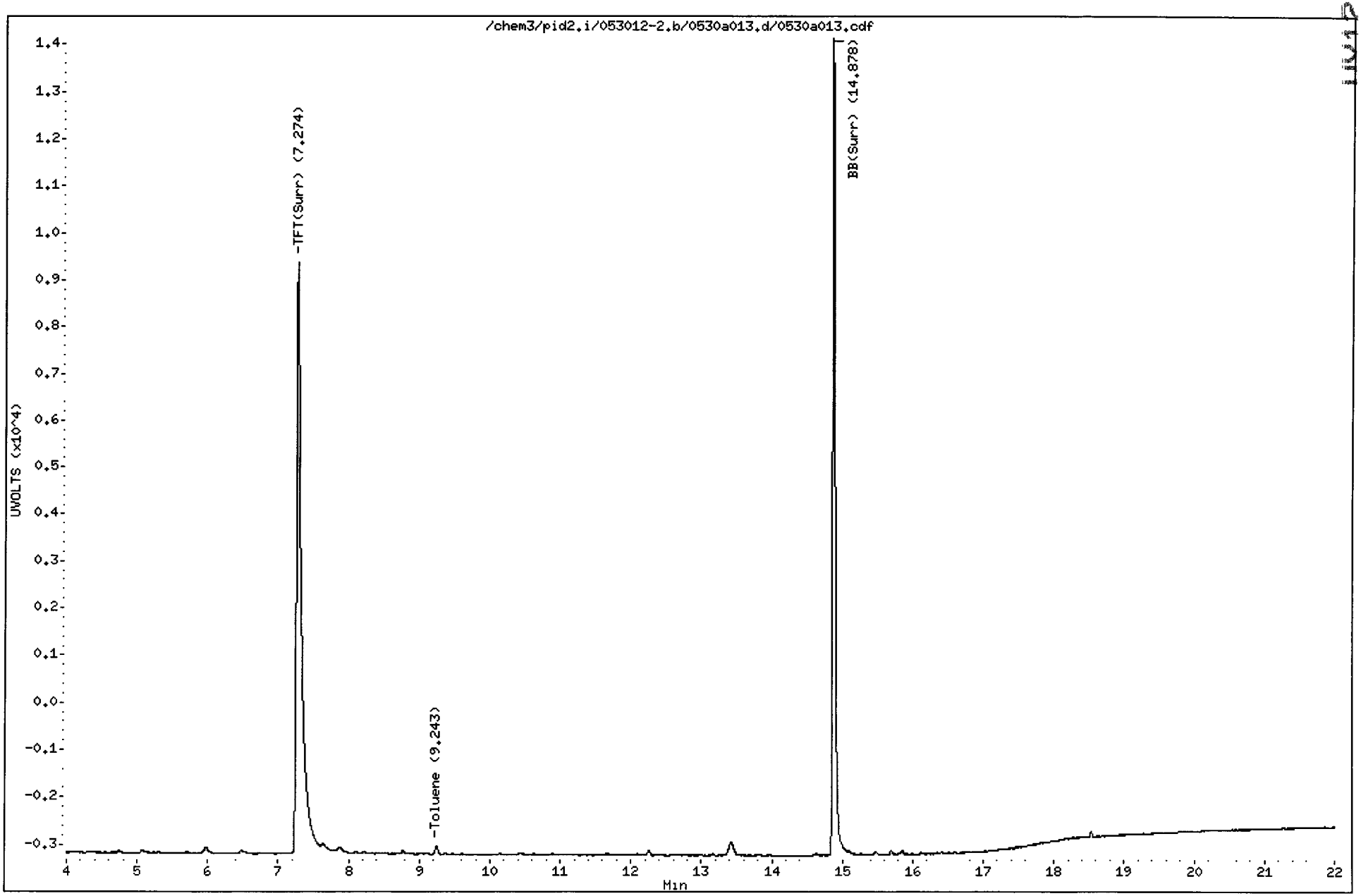
Sample Info: UV12E

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P10-A**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12F
LIMS ID: 12-9215
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 18:06
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 83 mg-dry-wt
Percent Moisture: 2.3%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**15**	**130**	
108-88-3	**Toluene**	**15**	**350**	
100-41-4	**Ethylbenzene**	**15**	**4,100**	
179601-23-1	**m,p-Xylene**	**30**	**4,400**	
95-47-6	**o-Xylene**	**15**	**940**	
				GAS ID
	Gasoline Range Hydrocarbons	**6.0**	**800 E**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	104%
Bromobenzene	122%

Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	151%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

UV12 : 00020

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a014.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a014.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12F
Client ID: USO-P10-A
Injection Date: 30-MAY-2012 18:06
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.001	3140	46682	105.8	TFT(Surr)
14.861	0.000	2538	44566	150.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	4229284	13.248 M
8015C 2MP-TMB	(3.75 to 15.78)	677374	4269638	6.303 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	3173450	5.823 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	4390411	13.277 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.273	-0.002	12897	104.1	TFT(Surr)
14.877	-0.002	21834	122.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.470	-0.003	1923	2.21	Benzene
9.255	0.012	3208	5.83	Toluene
12.089	-0.002	33033	68.63	Ethylbenzene
12.248	-0.002	34058	73.09	M/P-Xylene
13.151	-0.007	5935	15.65	O-Xylene
4.108	-0.022	291	0.91	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a014.d

Date : 30-MAY-2012 18:06

Client ID: USO-P10-A

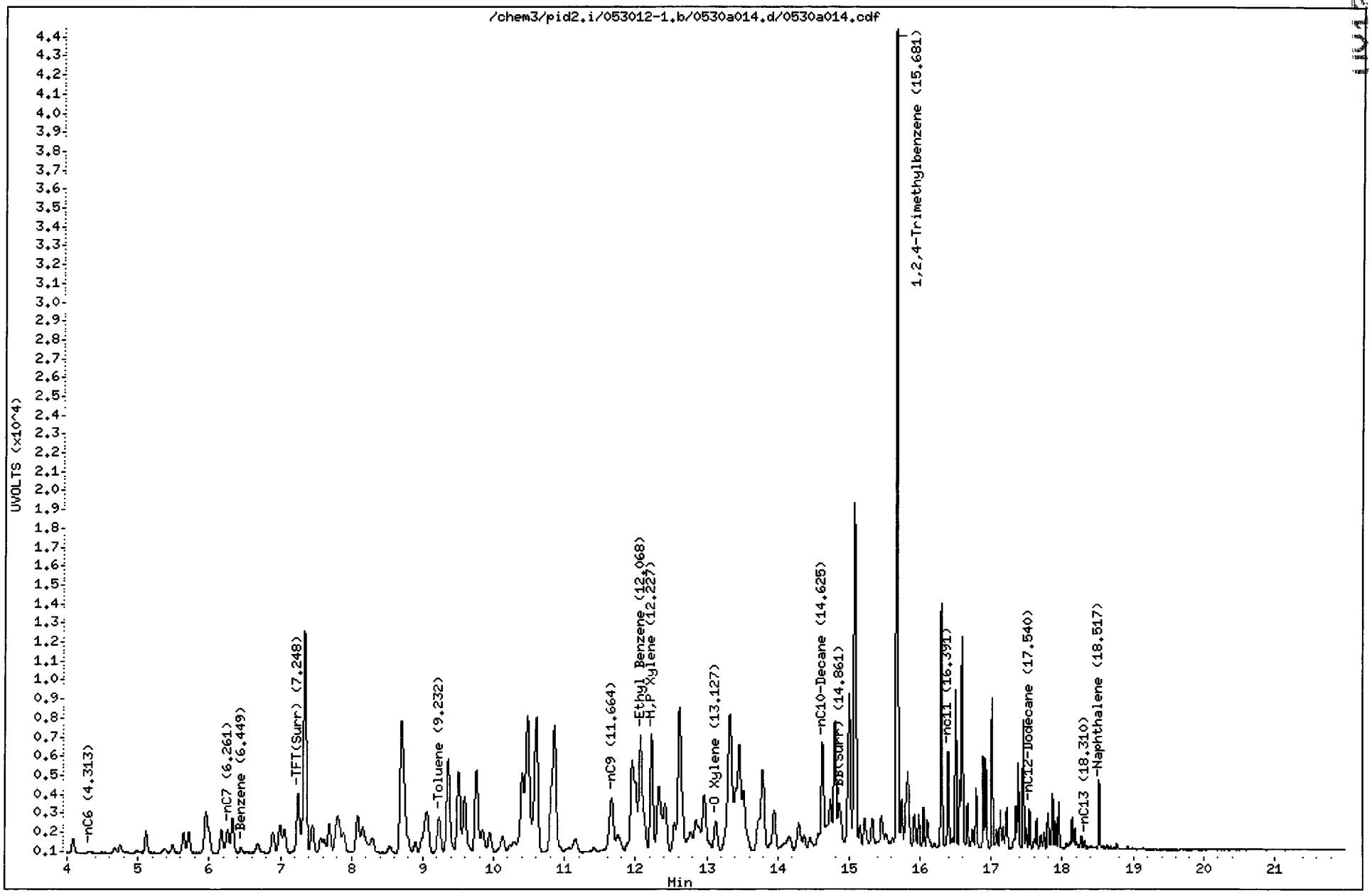
Sample Info: UV12F

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a014.d

Date : 30-MAY-2012 18:06

Client ID: USO-P10-A

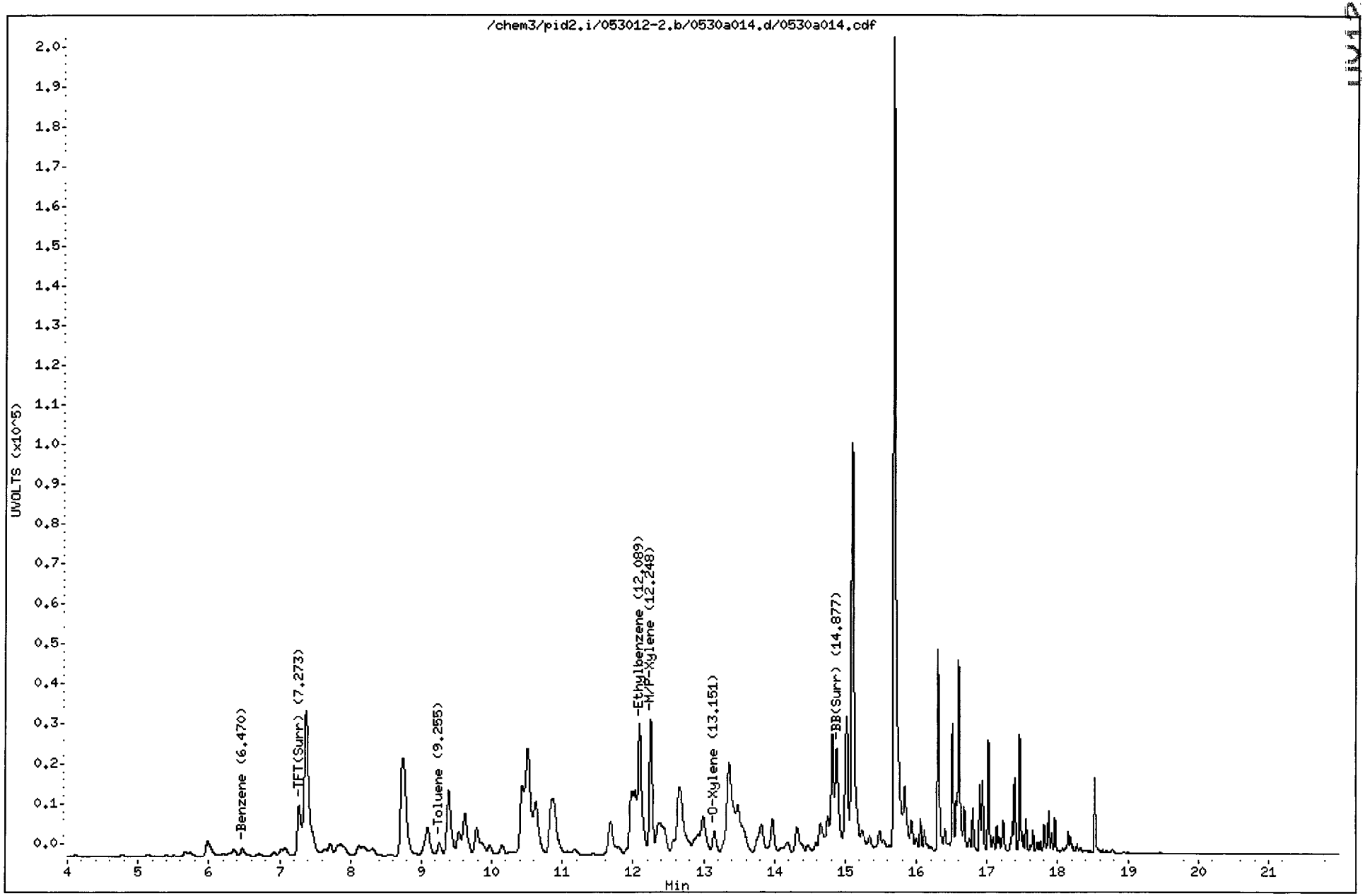
Sample Info: UV12F

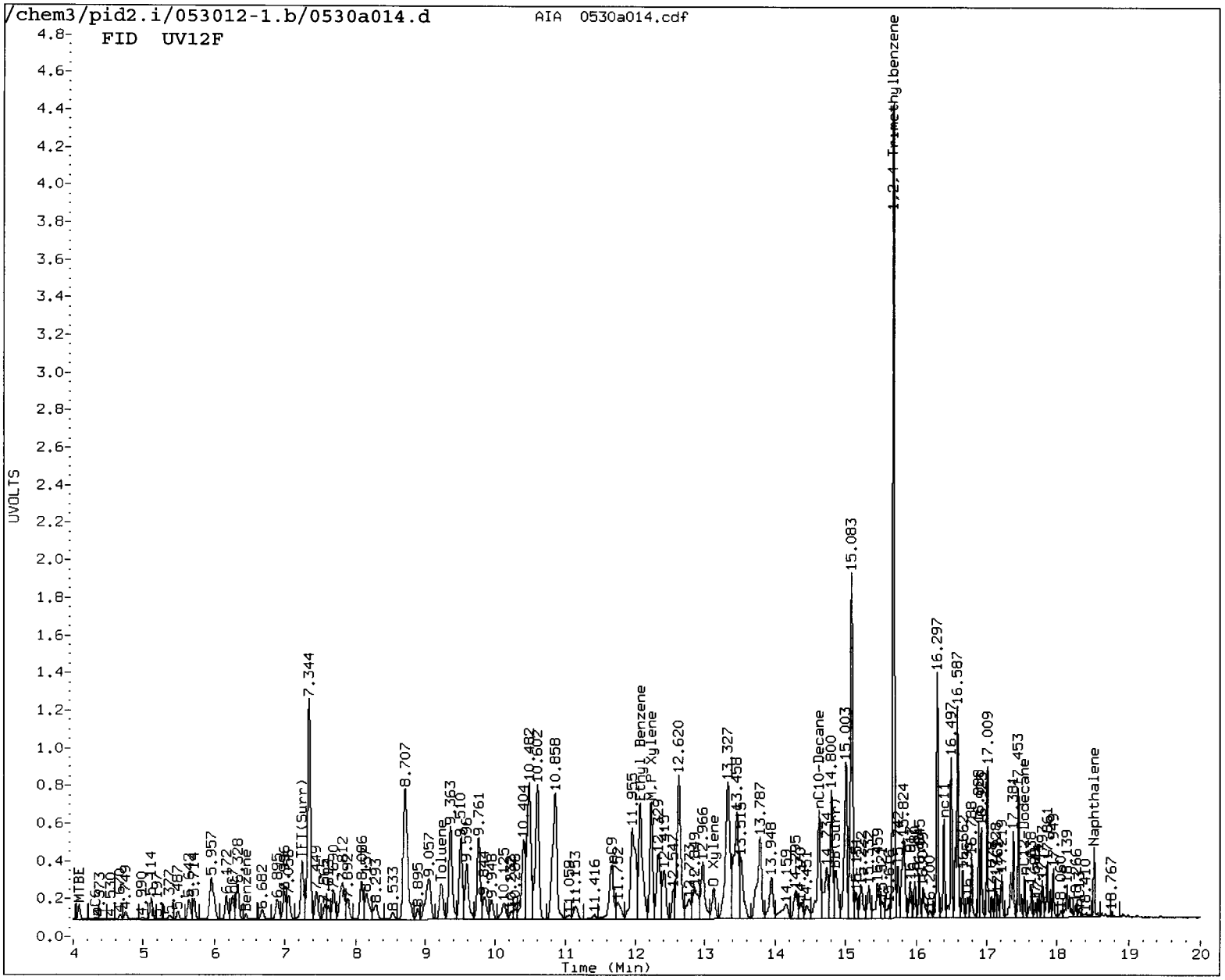
Instrument: pid2.i

Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18





MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

UV12 : 08024

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P10-A**
TPHG by Method NWTPHG **DILUTION**
Page 1 of 1

Lab Sample ID: UV12F
LIMS ID: 12-9215
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 09:30
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 8.3 mg-dry-wt
Percent Moisture: 2.3%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	150	< 150 U	
108-88-3	**Toluene**	**150**	**260**	
100-41-4	**Ethylbenzene**	**150**	**3,300**	
179601-23-1	**m,p-Xylene**	**300**	**4,000**	
95-47-6	**o-Xylene**	**150**	**660**	
				GAS ID
	Gasoline Range Hydrocarbons	**60**	**800**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	105%

Gasoline Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	106%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a007.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a007.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12F
Client ID: USO-P10-A
Injection Date: 31-MAY-2012 09:30
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.247	-0.004	3125	40085	105.3	TFT(Surr)
14.861	-0.002	1792	20115	106.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	430068	1.347 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	436764	0.645 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	325115	0.597 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	441671	1.336 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.272	-0.005	13013	105.0	TFT(Surr)
14.879	-0.002	18680	104.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.471	-0.004	174	0.20	Benzene
9.252	0.006	236	0.43	Toluene
12.090	-0.004	2626	5.46	Ethylbenzene
12.247	-0.005	3089	6.63	M/P-Xylene
13.151	-0.009	415	1.09	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a007.d

Date : 31-MAY-2012 09:30

Client ID: USO-P10-A

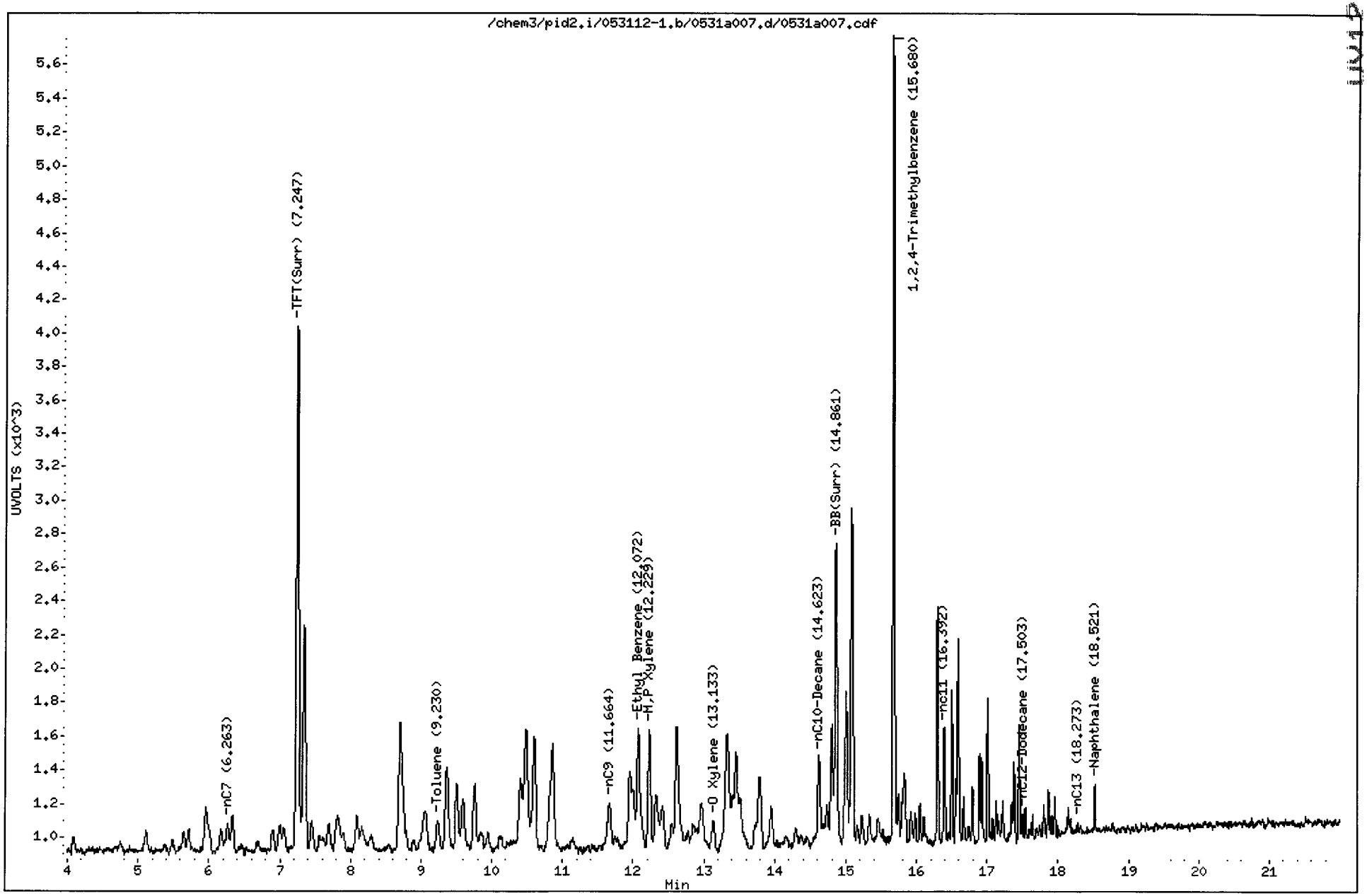
Sample Info: UV12F

Instrument: pid2.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a007.d

Date : 31-MAY-2012 09:30

Client ID: USO-P10-A

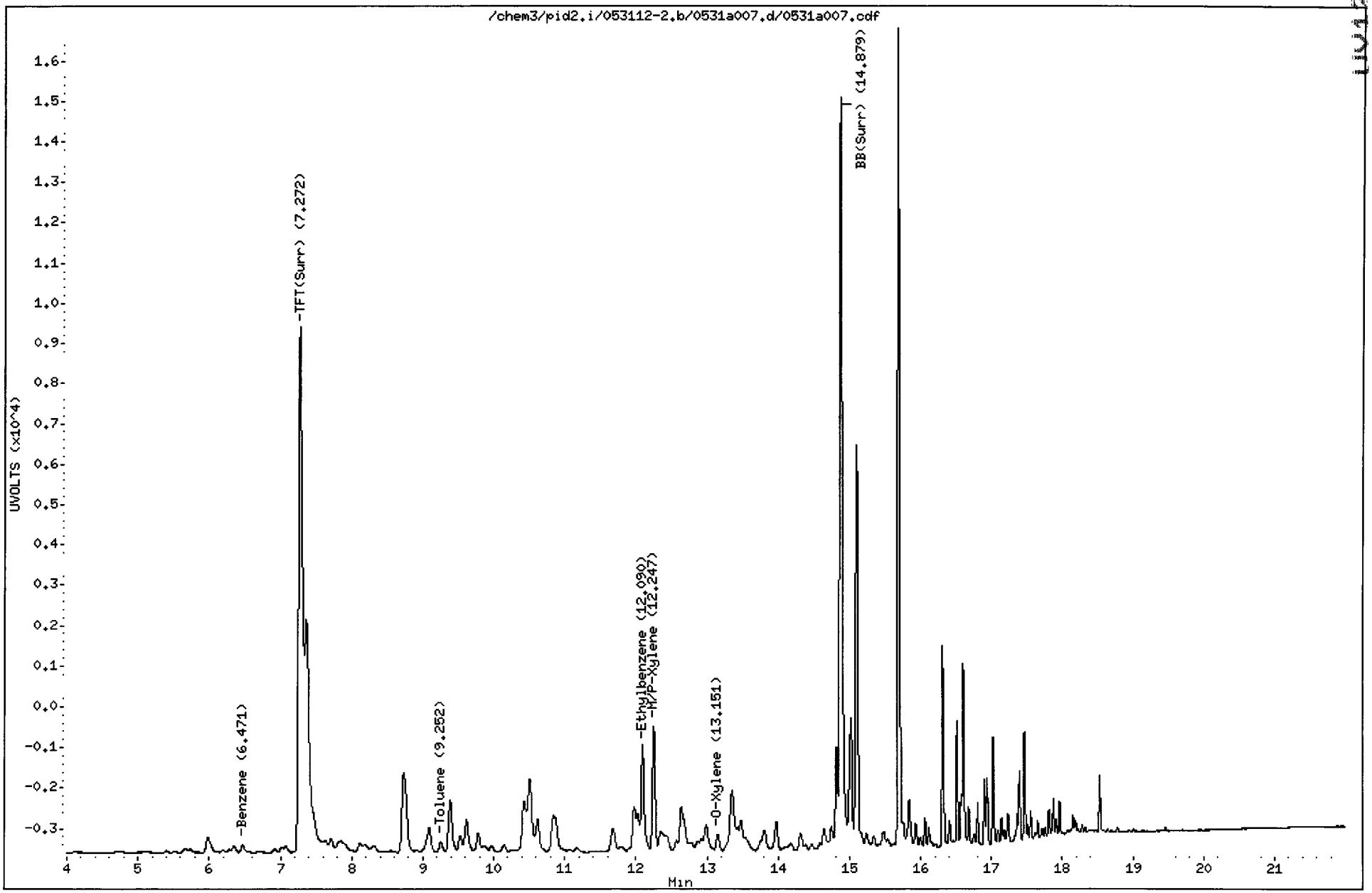
Sample Info: UV12F

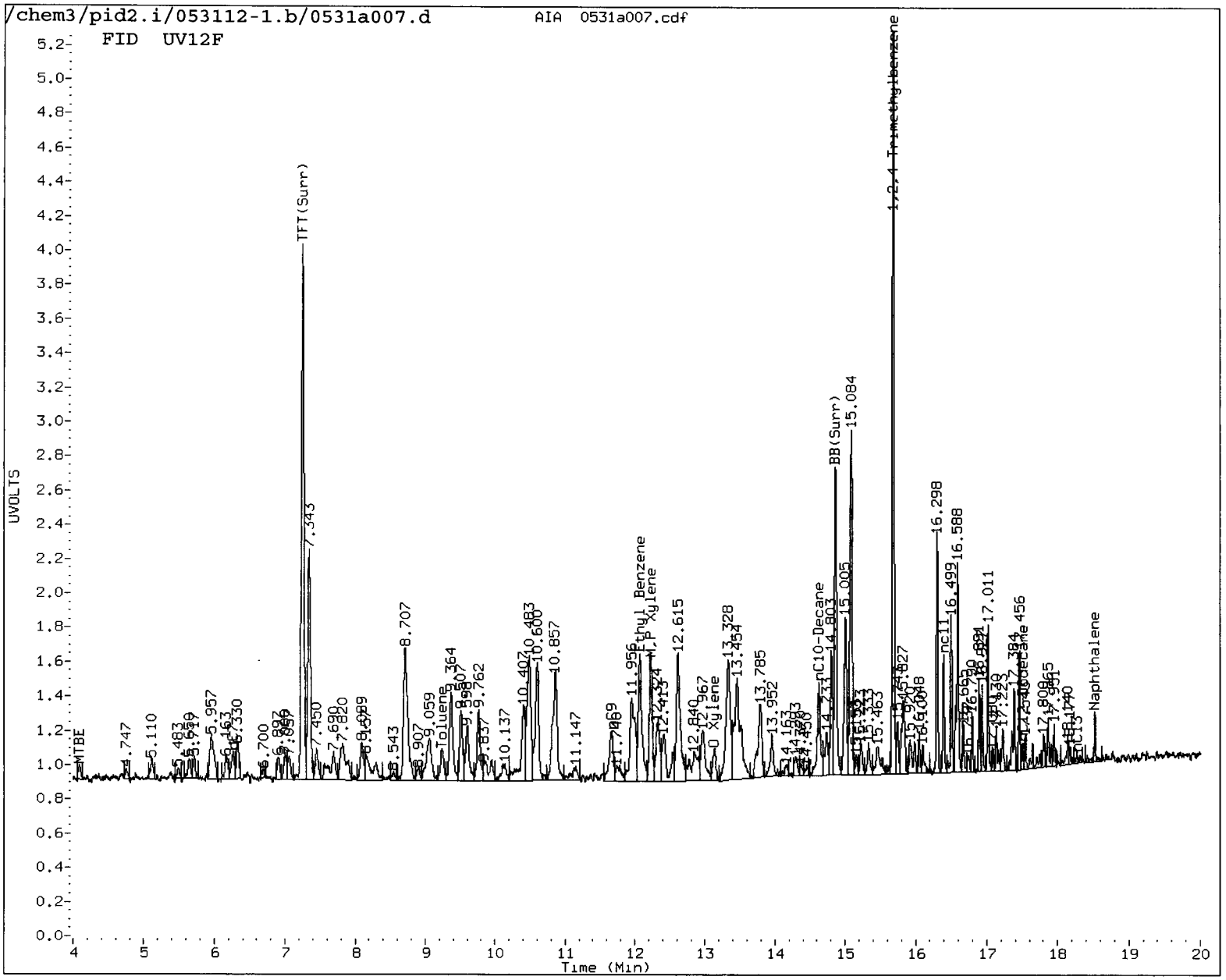
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P10-B
SAMPLE

Lab Sample ID: UV12G
LIMS ID: 12-9216
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 09:58
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 1.7 mg-dry-wt
Percent Moisture: 3.3%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	720	750	
108-88-3	Toluene	720	1,600	
100-41-4	Ethylbenzene	720	19,000	
179601-23-1	m,p-Xylene	1,400	18,000	
95-47-6	o-Xylene	720	2,500	
	Gasoline Range Hydrocarbons	290	3,600	GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	100%

Gasoline Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	102%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a008.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a008.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12G
Client ID: USO-P10-B
Injection Date: 31-MAY-2012 09:58
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.251	-0.001	3017	39404	101.6	TFT(Surr)
14.862	-0.001	1714	19094	101.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	400141	1.253 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	509725	0.753 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	417950	0.767 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	410316	1.241 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.276	-0.001	12549	101.3	TFT(Surr)
14.880	-0.001	17937	100.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.475	-0.001	226	0.26	Benzene
9.259	0.012	315	0.57	Toluene
12.093	-0.002	3094	6.43	Ethylbenzene
12.250	-0.002	2945	6.32	M/P-Xylene
13.152	-0.008	331	0.87	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a008.d

Date : 31-MAY-2012 09:58

Client ID: USO-P10-B

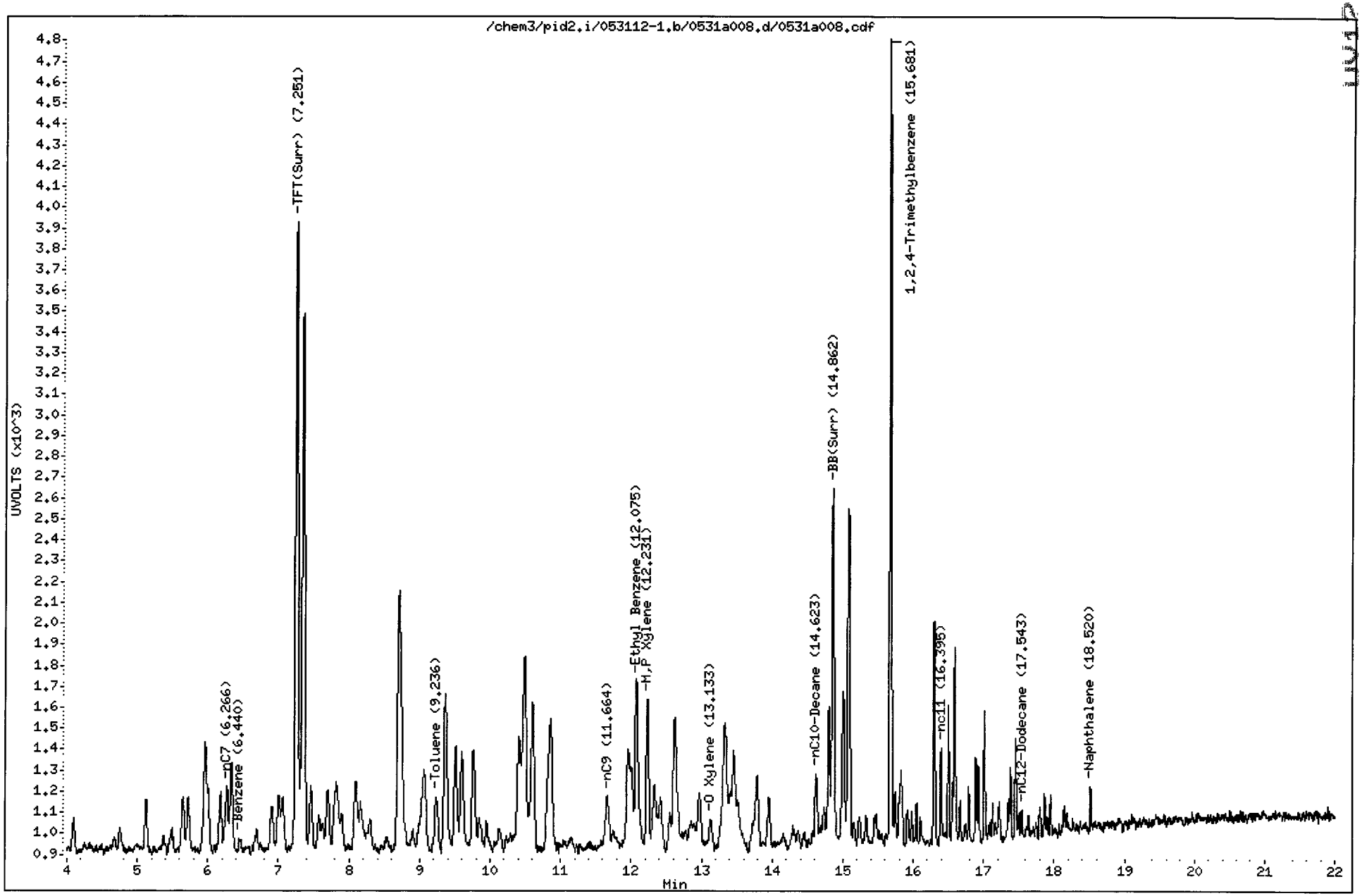
Sample Info: UV12G

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a008.d

Date : 31-MAY-2012 09:58

Client ID: USO-P10-B

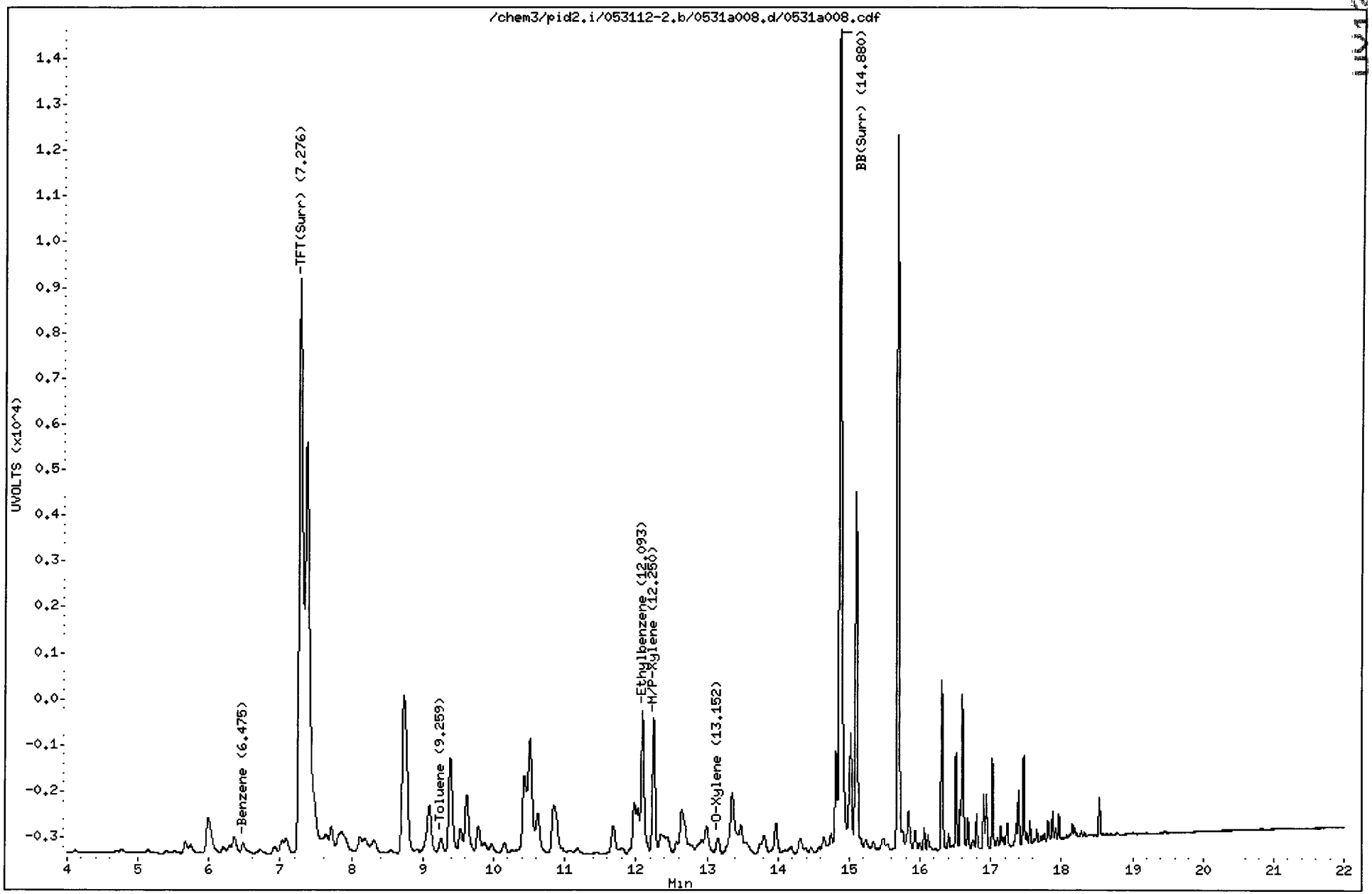
Sample Info: UV12G

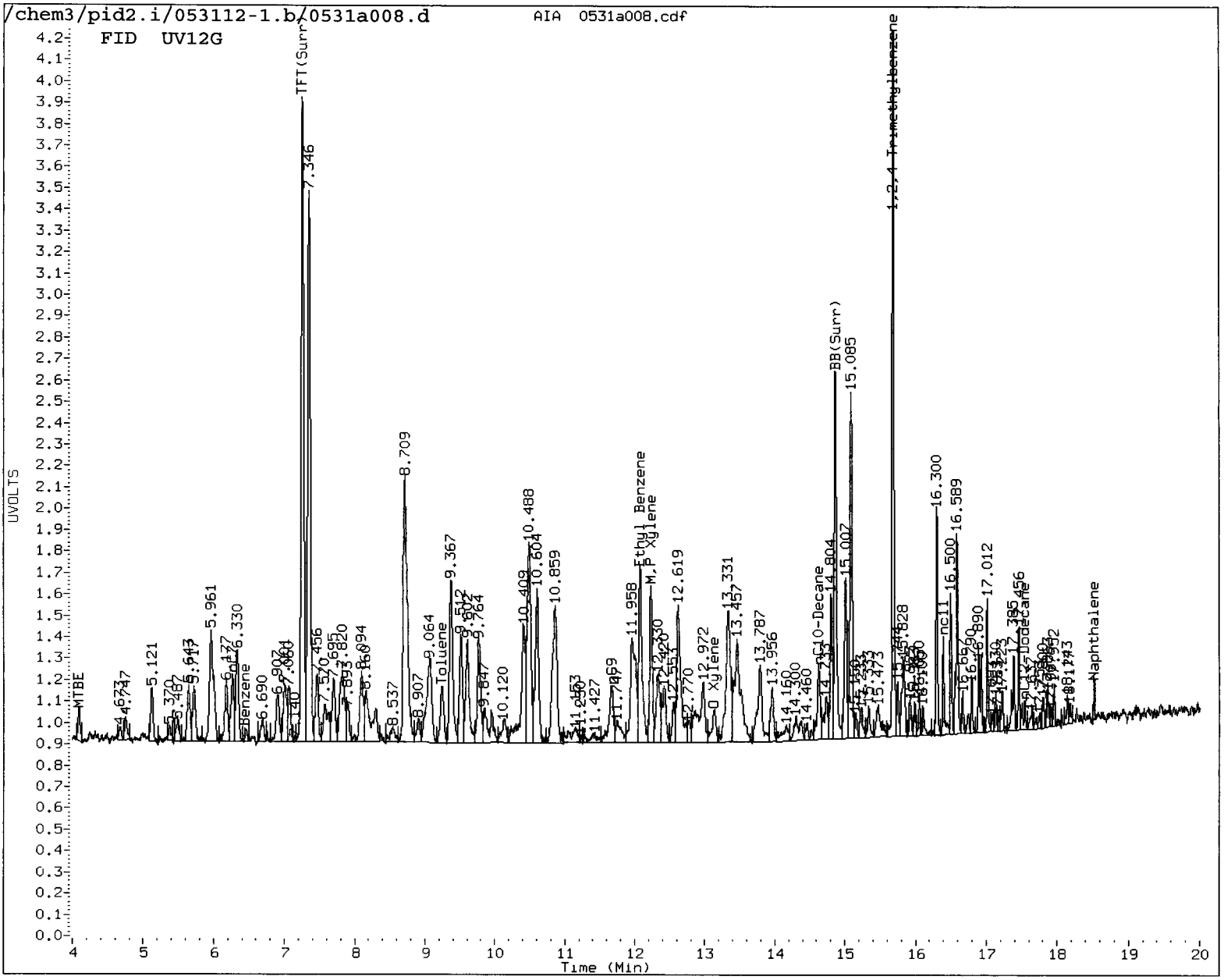
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





MANUAL INTEGRATION

~~1~~ Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P10-C**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV12H
LIMS ID: 12-9217
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 19:02
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 71 mg-dry-wt
Percent Moisture: 16.0%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**18**	**920**	
108-88-3	**Toluene**	**18**	**2,900**	
100-41-4	**Ethylbenzene**	**18**	**21,000**	
179601-23-1	m,p-Xylene	3,000	< 3,000	Y
95-47-6	**o-Xylene**	**18**	**4,900**	
				GAS ID
	Gasoline Range Hydrocarbons	**7.0**	**2,900**	**E** **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	131%
Bromobenzene	0.0%

Gasoline Surrogate Recovery

Trifluorotoluene	243%
Bromobenzene	221%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a016.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a016.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12H
Client ID: USO-P10-C
Injection Date: 30-MAY-2012 19:02
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.280	0.031	7209	44875	242.9	TFT(Surr)
14.893	0.032	3720	49505	220.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	13481852	42.230 M
8015C 2MP-TMB	(3.75 to 15.78)	677374	19278919	28.461 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	16951225	31.105 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	13550957	40.978 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.271	-0.003	16205	130.8	TFT(Surr)
ND	---	---	---	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.463	-0.010	11361	13.04	Benzene
9.269	0.025	22851	41.52	Toluene
12.083	-0.008	144028	299.23N	Ethylbenzene
12.210	-0.040	19843	42.59N	M/P-Xylene
13.160	0.002	26270	69.27	O-Xylene
4.105	-0.025	4788	14.95	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a016.d

Date : 30-MAY-2012 19:02

Client ID: USO-P10-C

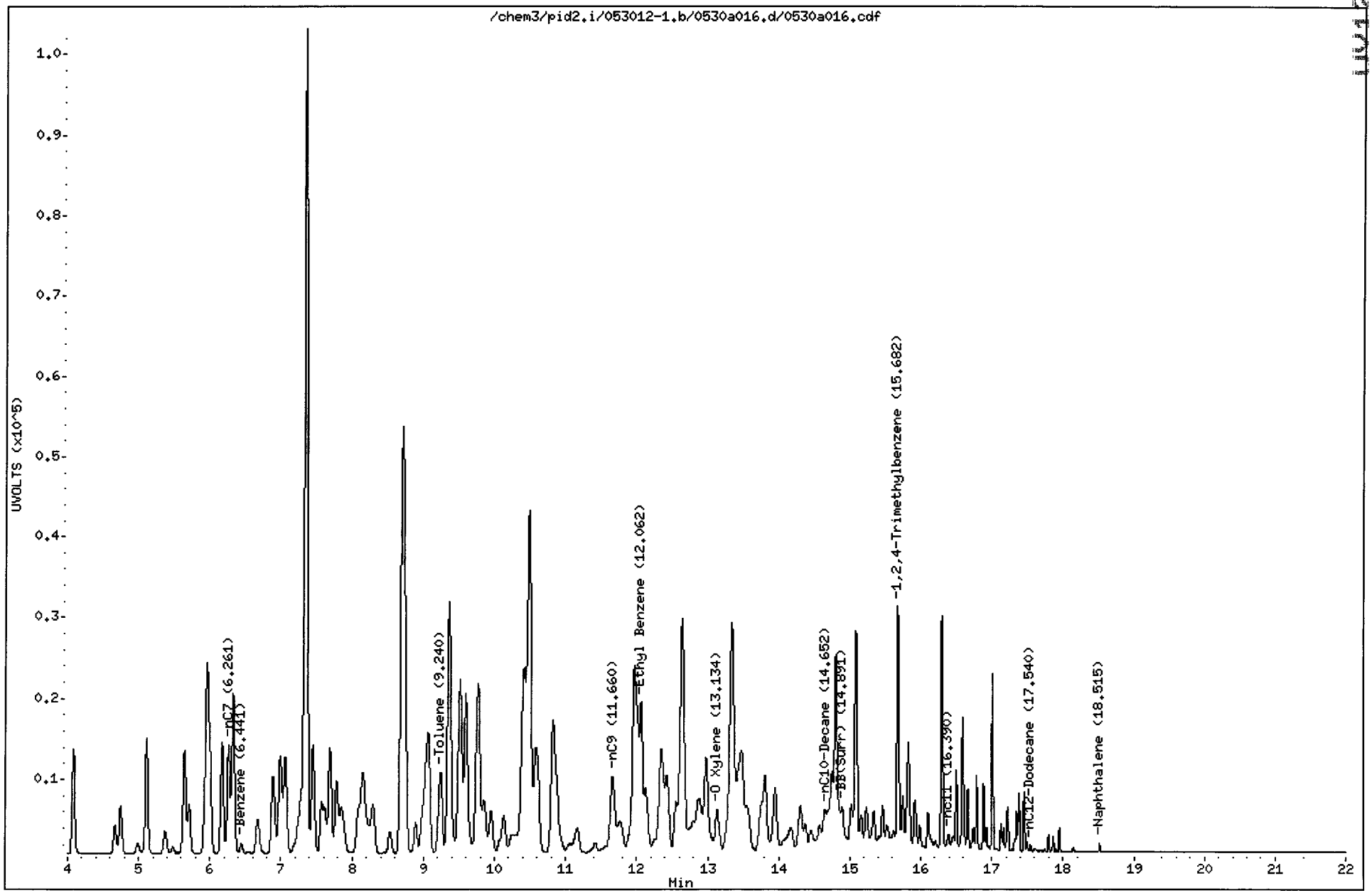
Sample Info: UV12H

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a016.d

Date : 30-MAY-2012 19:02

Client ID: USO-P10-C

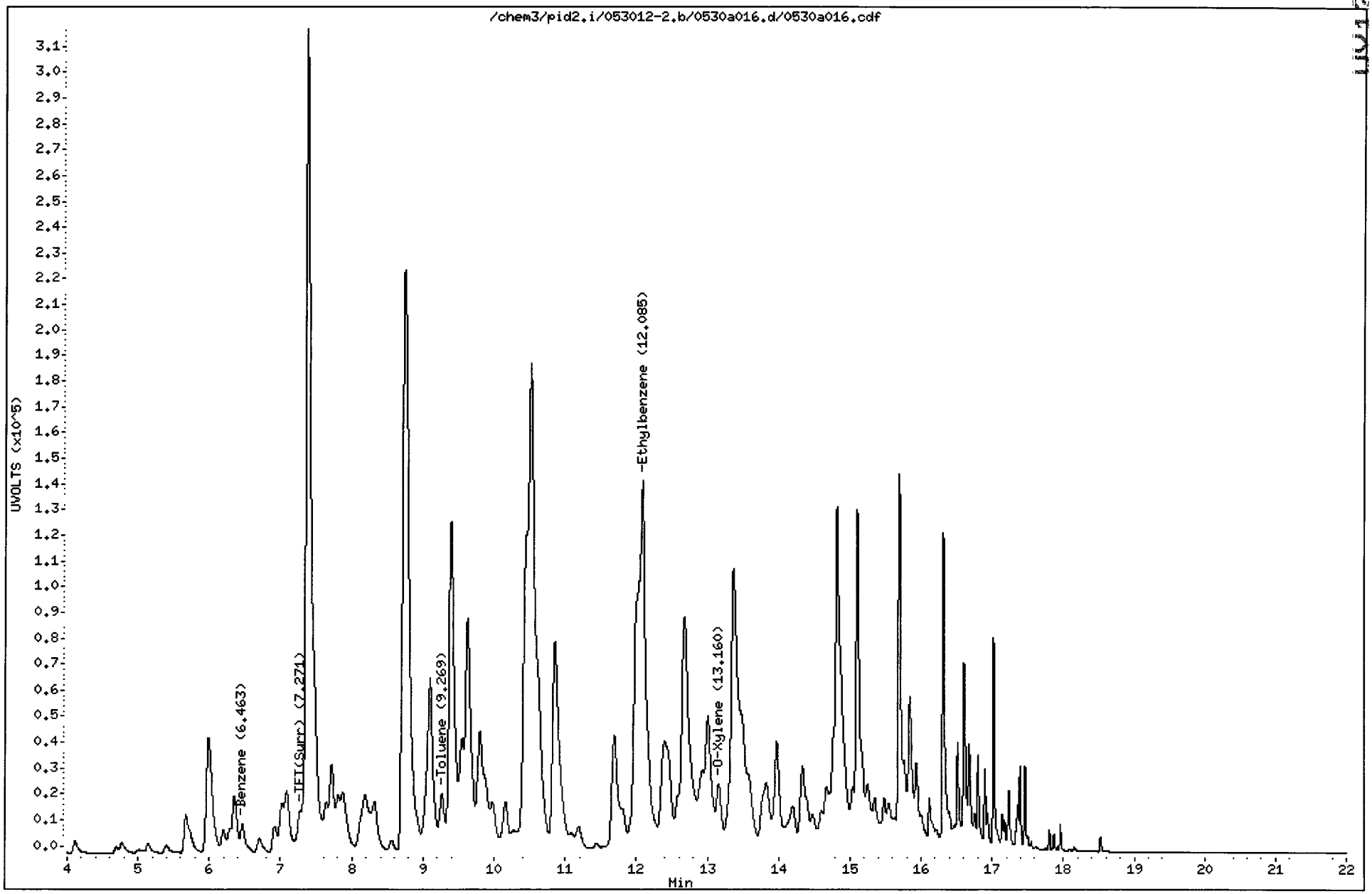
Sample Info: UV12H

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P10-C**
TPHG by Method NWTPHG **DILUTION**

Lab Sample ID: UV12H
LIMS ID: 12-9217
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 10:26
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 1.4 mg-dry-wt
Percent Moisture: 16.0%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	880	< 880	U
108-88-3	**Toluene**	**880**	**1,500**	
100-41-4	**Ethylbenzene**	**880**	**12,000**	
179601-23-1	**m,p-Xylene**	**1,800**	**600**	**J**
95-47-6	**o-Xylene**	**880**	**1,900**	
				GAS ID
	Gasoline Range Hydrocarbons	**350**	**2,500**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	101%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a009.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a009.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12H
Client ID: USO-P10-C
Injection Date: 31-MAY-2012 10:26
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.250	-0.002	3023	39781	101.8	TFT(Surr)
14.862	-0.002	1708	18606	101.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	225940	0.708 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	352317	0.520 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	310646	0.570 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	231699	0.701 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.275	-0.002	12578	101.5	TFT(Surr)
14.879	-0.002	17984	100.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.474	-0.002	173	0.20	Benzene
9.258	0.012	235	0.43	Toluene
12.091	-0.003	1571	3.26	Ethylbenzene
12.257	0.005	80	0.17N	M/P-Xylene J
13.147	-0.013	203	0.54	O-Xylene
ND	---	---	---	MTBE

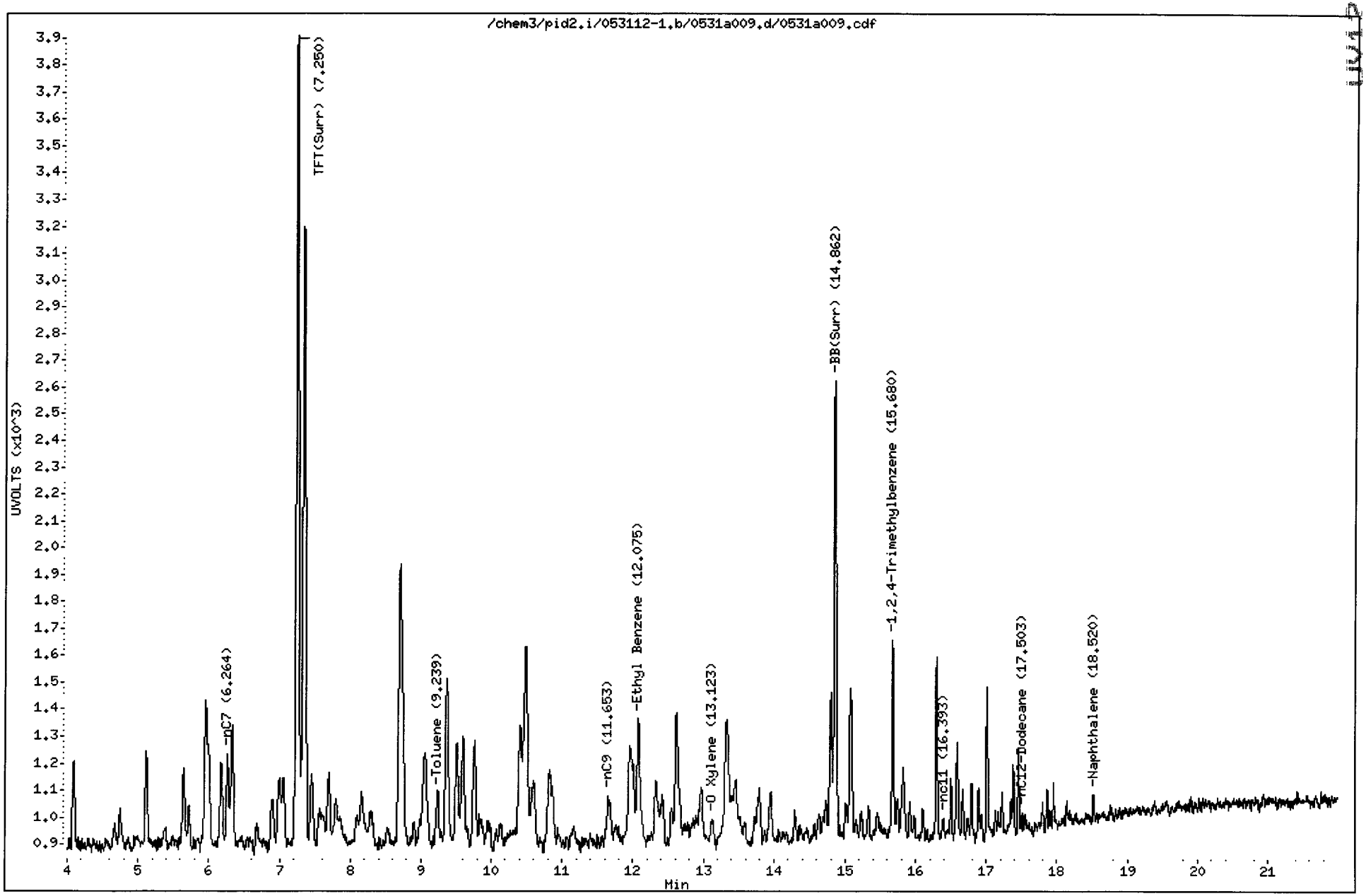
A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a009.d
Date : 31-MAY-2012 10:26
Client ID: USO-P10-C
Sample Info: UV12H

Instrument: pid2.i

Operator: MH
Column diameter: 0.18

Column phase: RTX 502-2 FID



Data File: /chem3/pid2.i/053112-2.b/0531a009.d

Date : 31-MAY-2012 10:26

Client ID: USO-P10-C

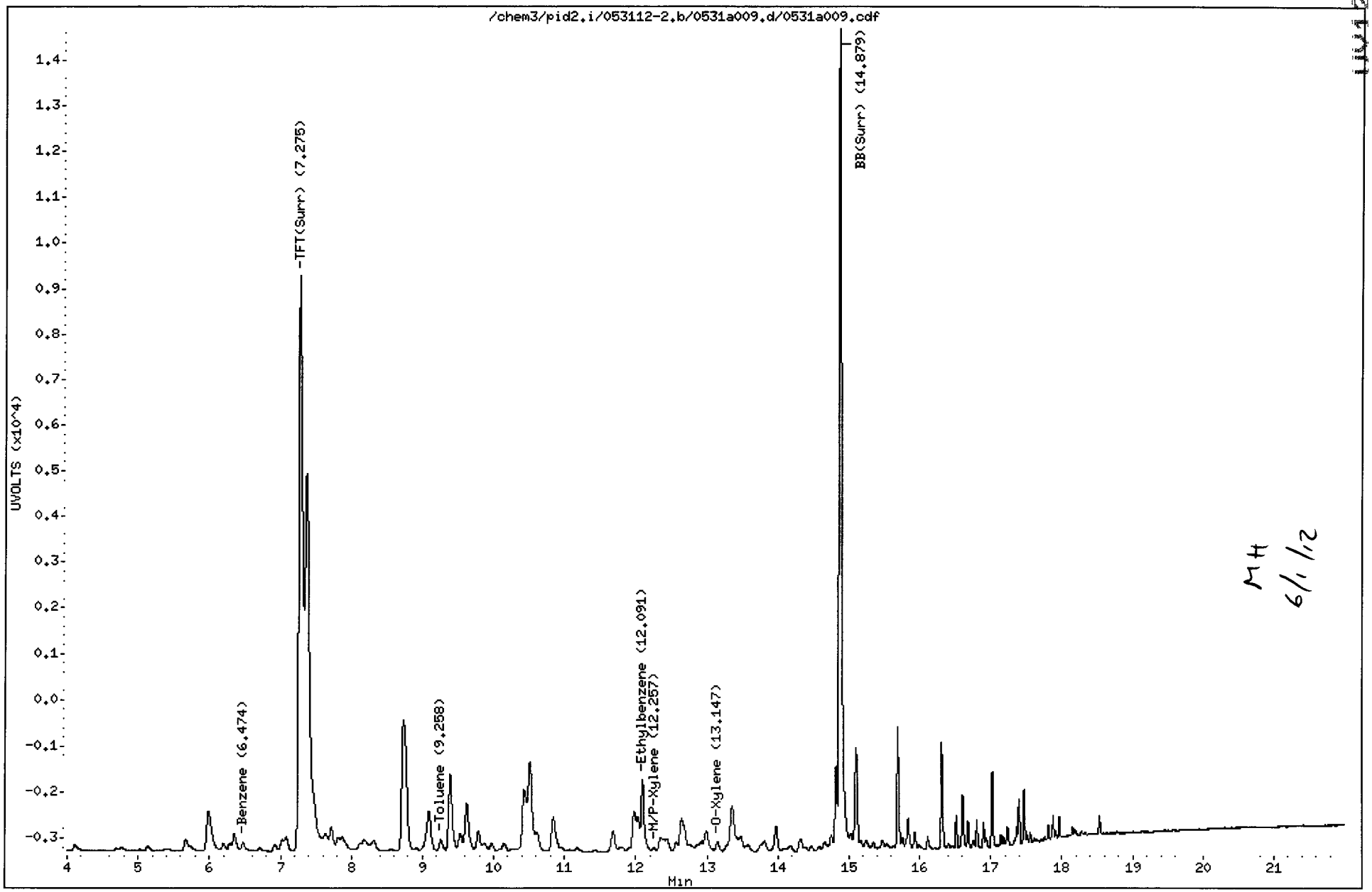
Sample Info: UV12H

Column phase: RTX 502-2 PID

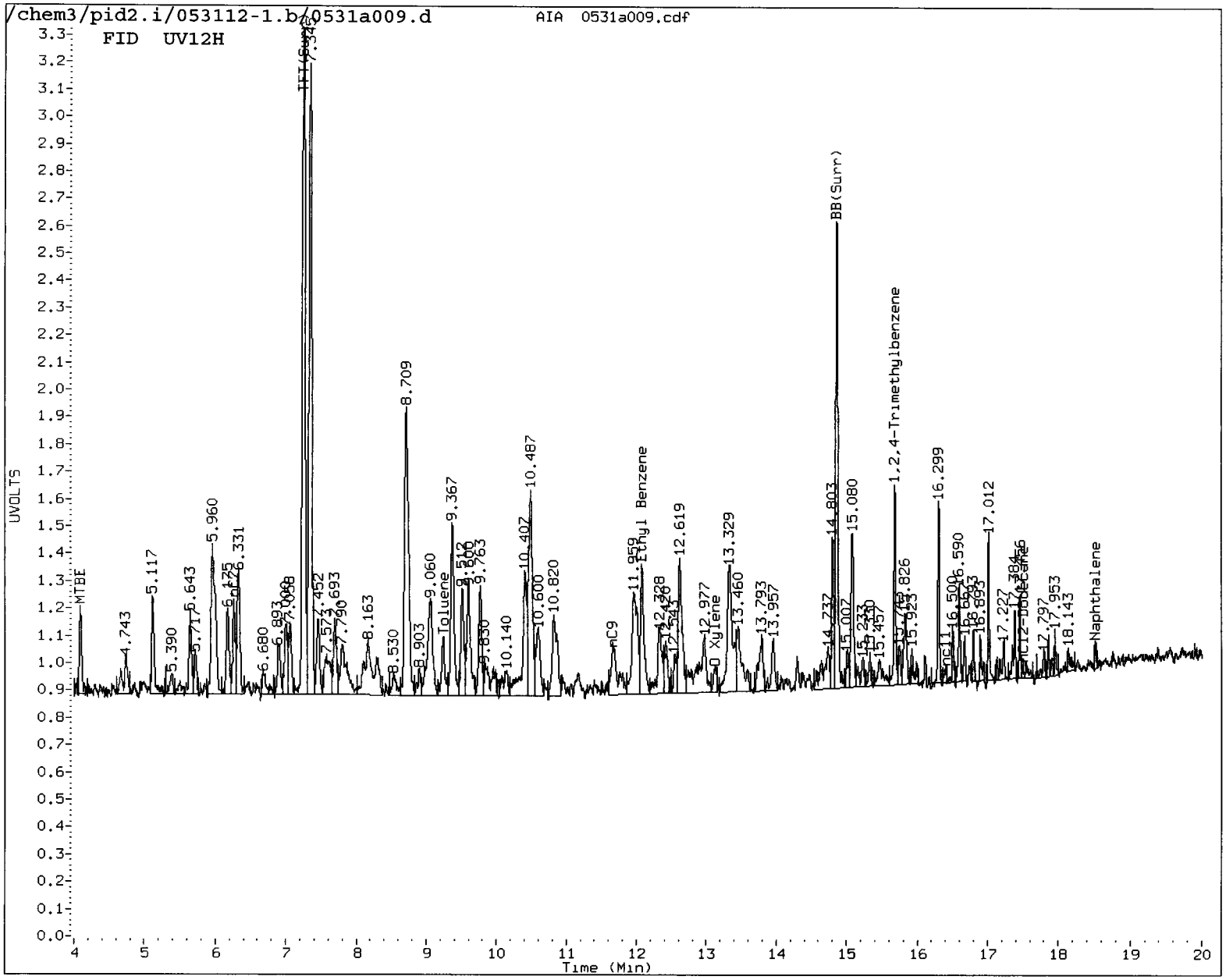
Instrument: pid2.i

Operator: MH

Column diameter: 0.18



MH 6/1/12



MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P10-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12I
LIMS ID: 12-9218
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 10:53
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 69 mg-dry-wt
Percent Moisture: 19.7%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	18	< 18 U	
108-88-3	**Toluene**	**18**	**19**	
100-41-4	**Ethylbenzene**	**18**	**47**	
179601-23-1	**m,p-Xylene**	**36**	**44**	
95-47-6	o-Xylene	18	< 18 U	
	Gasoline Range Hydrocarbons	7.2	< 7.2 U	---

BETX Surrogate Recovery

Trifluorotoluene	96.3%
Bromobenzene	94.1%

Gasoline Surrogate Recovery

Trifluorotoluene	95.5%
Bromobenzene	94.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a010.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a010.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12I
Client ID: USO-P10-D
Injection Date: 31-MAY-2012 10:53
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.004	2836	34977	95.5	TFT(Surr)
14.860	-0.003	1596	16634	94.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	4240	0.013
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	6751	0.020

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.004	11935	96.3	TFT(Surr)
14.878	-0.003	16799	94.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.473	-0.003	145	0.17	Benzene
9.240	-0.006	143	0.26N	Toluene
12.090	-0.004	315	0.65N	Ethylbenzene
12.249	-0.003	286	0.61	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a010.d

Date : 31-MAY-2012 10:53

Client ID: USO-P10-D

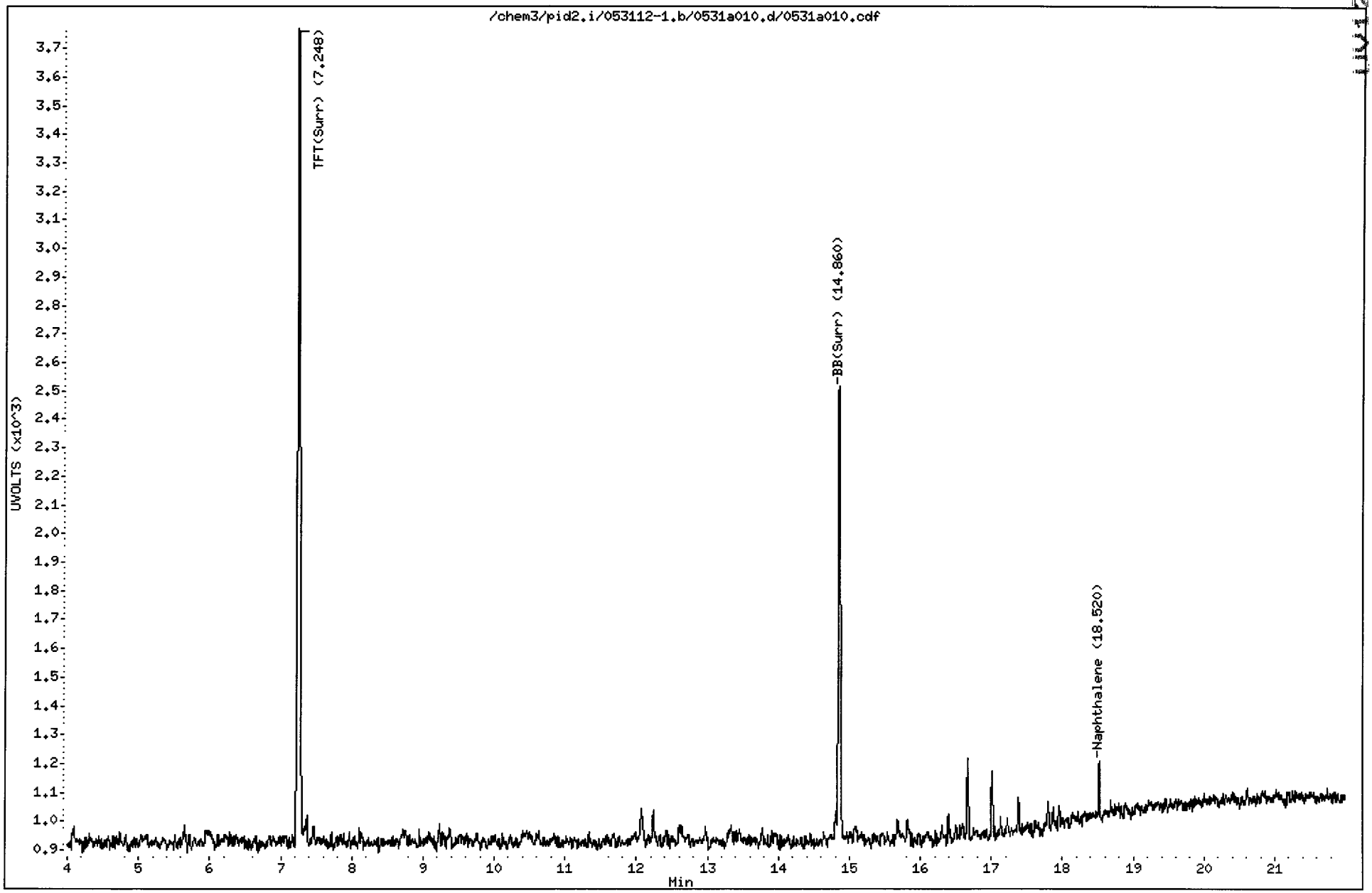
Sample Info: UV12I

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a010.d

Date : 31-MAY-2012 10:53

Client ID: USO-P10-D

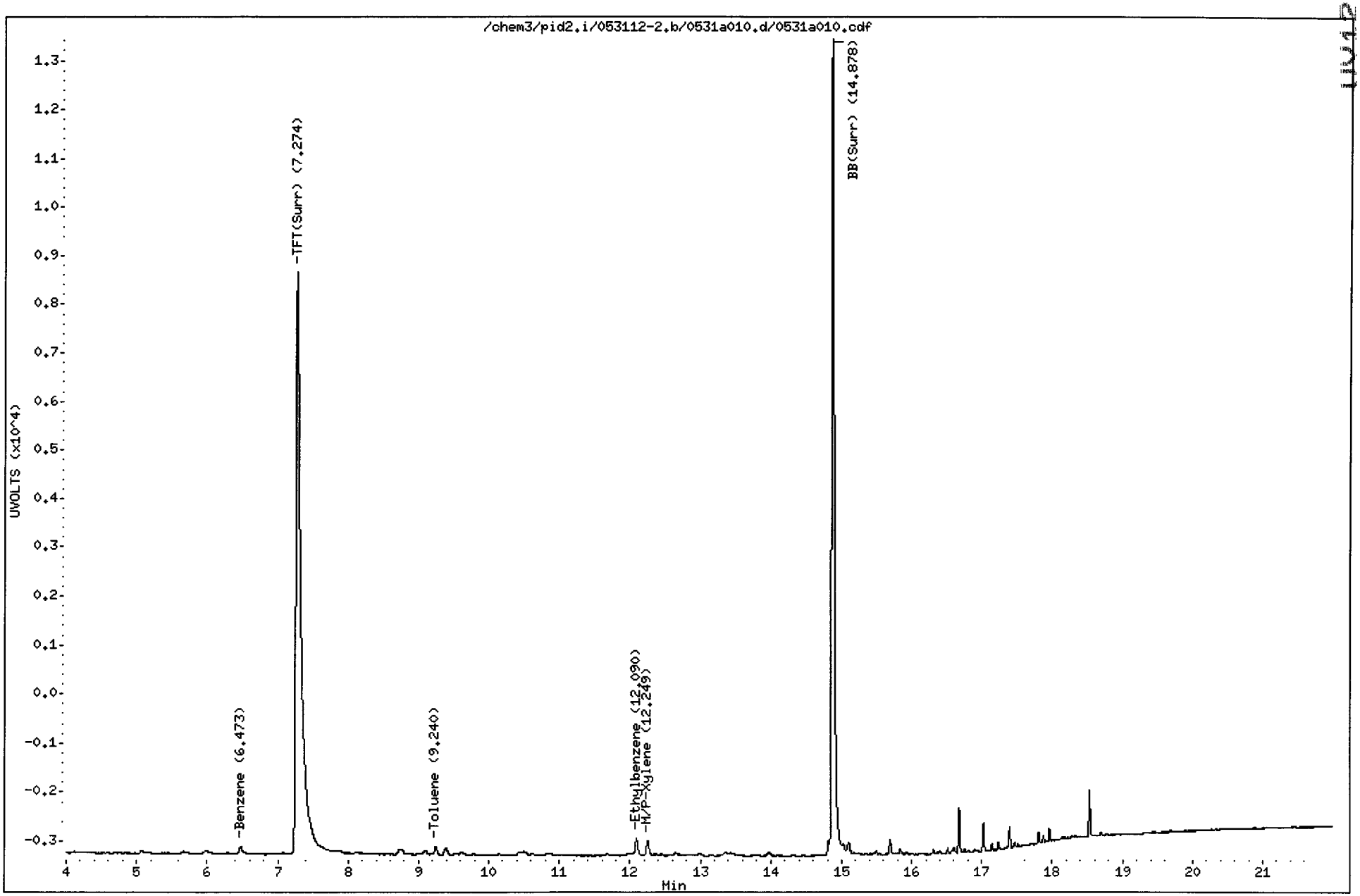
Sample Info: UV12I

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P10-E
SAMPLE

Lab Sample ID: UV12J
LIMS ID: 12-9219
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 19:59
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 23 mg-dry-wt
Percent Moisture: 53.8%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	55	< 55 U	
108-88-3	Toluene	55	< 55 U	
100-41-4	Ethylbenzene	55	< 55 U	
179601-23-1	m,p-Xylene	110	< 110 U	
95-47-6	o-Xylene	55	< 55 U	
	Gasoline Range Hydrocarbons	22	< 22 U	---

BETX Surrogate Recovery

Trifluorotoluene	90.3%
Bromobenzene	94.6%

Gasoline Surrogate Recovery

Trifluorotoluene	94.4%
Bromobenzene	97.0%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P11-A
SAMPLE

Lab Sample ID: UV12K
LIMS ID: 12-9220
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 11:21
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 1.5 mg-dry-wt
Percent Moisture: 3.7%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**830**	**4,900**	
108-88-3	**Toluene**	**830**	**3,000**	
100-41-4	**Ethylbenzene**	**830**	**31,000**	
179601-23-1	**m,p-Xylene**	**1,700**	**62,000**	
95-47-6	**o-Xylene**	**830**	**5,700**	
				GAS ID
	Gasoline Range Hydrocarbons	**330**	**4,400**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	99.7%
Bromobenzene	98.6%

Gasoline Surrogate Recovery

Trifluorotoluene	99.3%
Bromobenzene	99.2%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a011.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a011.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12K
Client ID: USO-P11-A
Injection Date: 31-MAY-2012 11:21
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.002	2947	39857	99.3	TFT(Surr)
14.860	-0.003	1671	18343	99.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	432285	1.354 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	685889	1.013 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	565146	1.037 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	442398	1.338 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.275	-0.003	12346	99.7	TFT(Surr)
14.878	-0.003	17617	98.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.473	-0.003	1297	1.49	Benzene
9.247	0.001	490	0.89	Toluene
12.090	-0.004	4549	9.45	Ethylbenzene
12.250	-0.002	8781	18.85	M/P-Xylene
13.155	-0.005	654	1.72	O-Xylene
4.109	-0.024	147	0.46	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a011.d

Date : 31-MAY-2012 11:21

Client ID: USO-P11-A

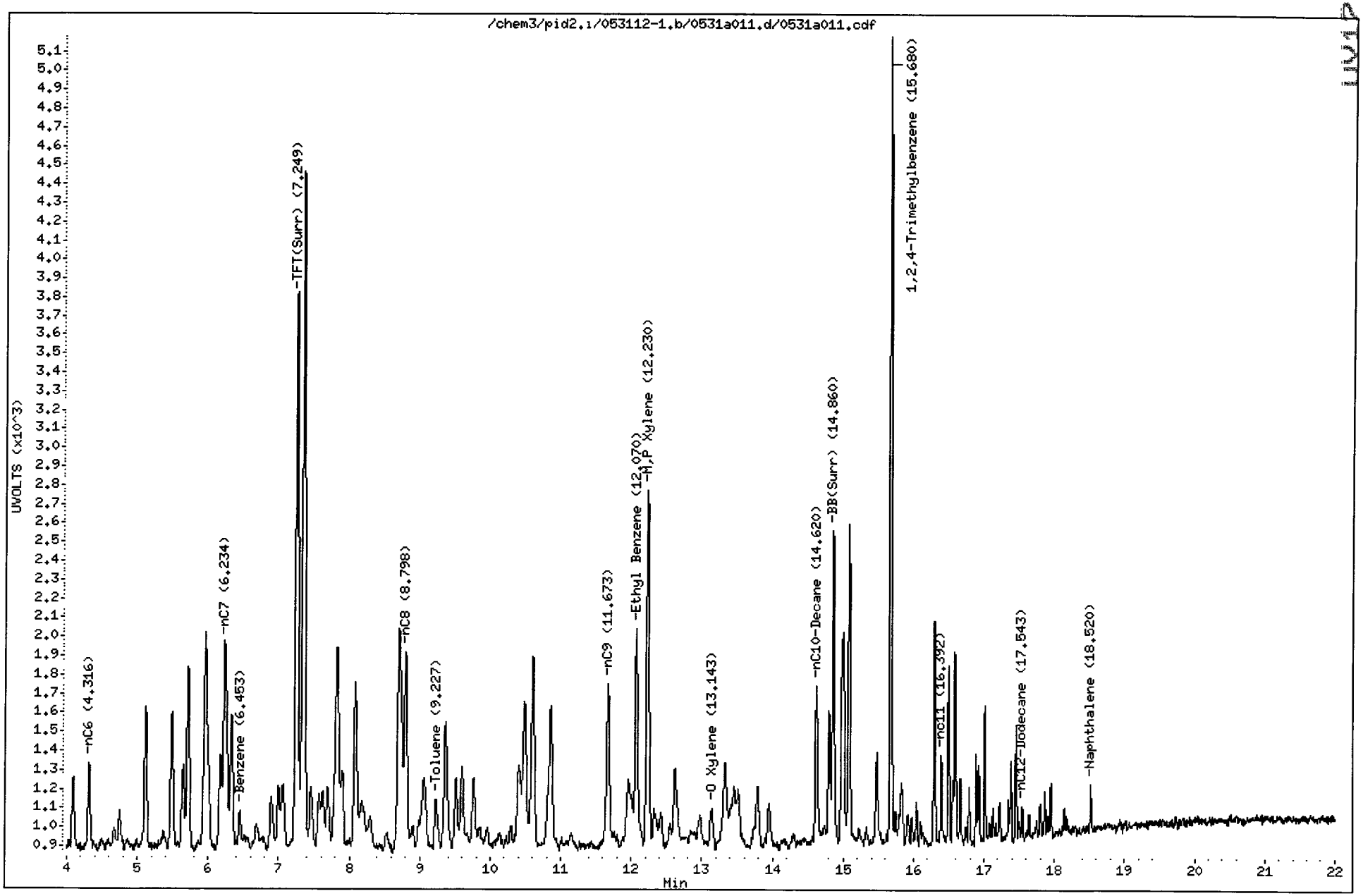
Sample Info: UV12K

Instrument: pid2.i

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a011.d

Date : 31-MAY-2012 11:21

Client ID: USO-P11-A

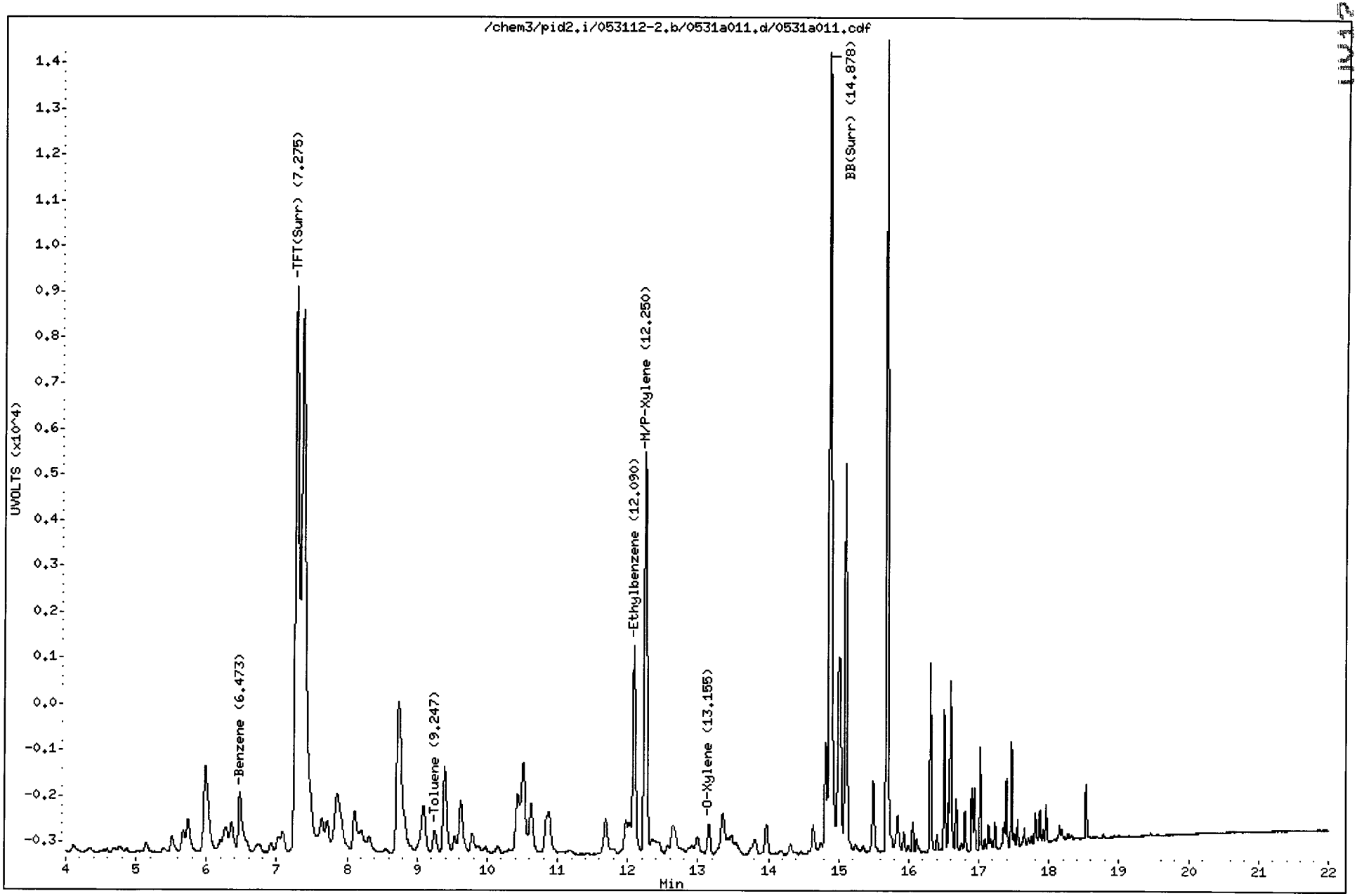
Sample Info: UV12K

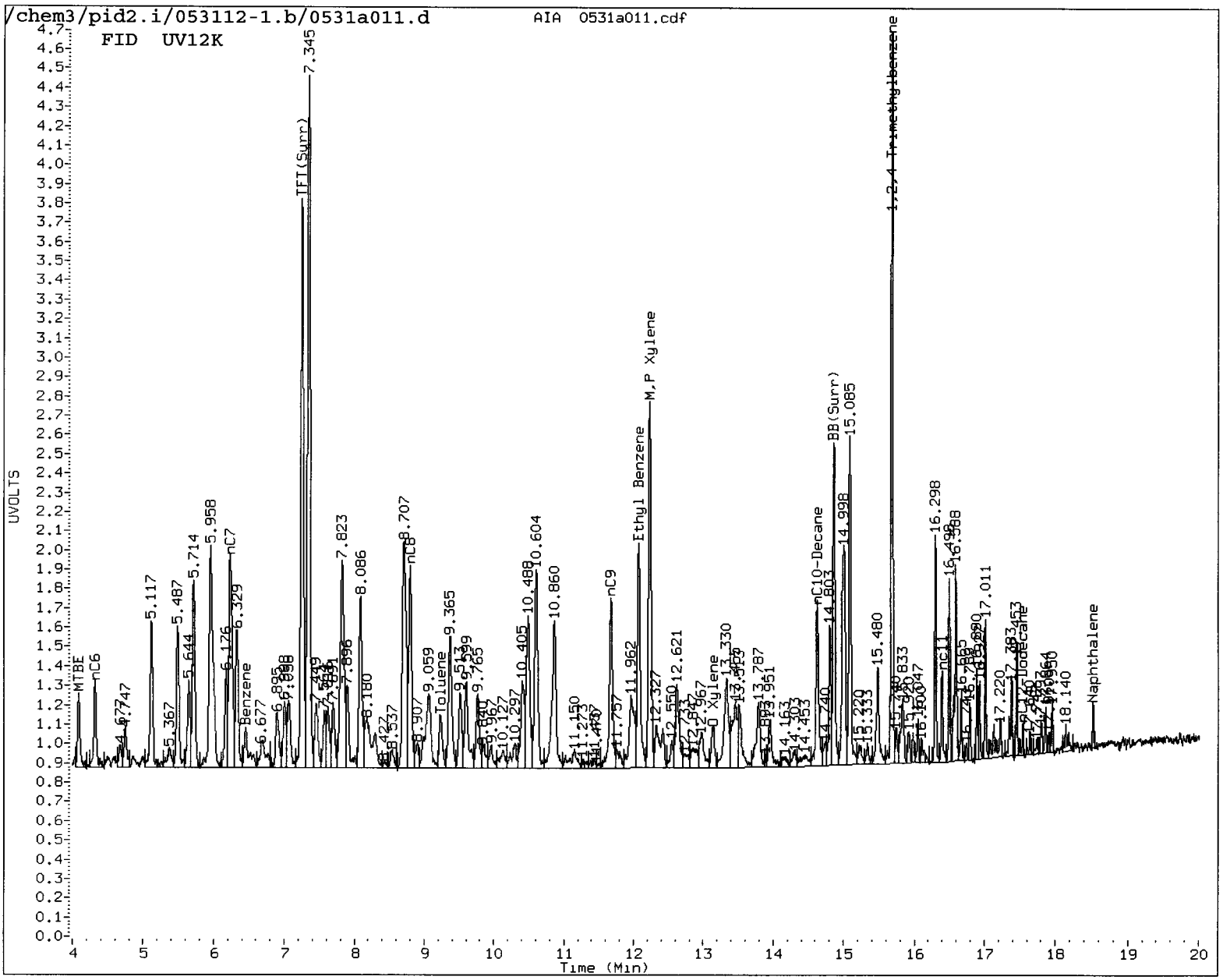
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P11-B
SAMPLE

Lab Sample ID: UV12L
LIMS ID: 12-9221
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 11:49
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 1.6 mg-dry-wt
Percent Moisture: 4.8%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	770	3,600	
108-88-3	Toluene	770	2,400	
100-41-4	Ethylbenzene	770	26,000	
179601-23-1	m,p-Xylene	1,600	31,000	
95-47-6	o-Xylene	770	2,500	
	Gasoline Range Hydrocarbons	310	4,000	GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	106%

Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	107%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a012.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a012.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12L
Client ID: USO-P11-B
Injection Date: 31-MAY-2012 11:49
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.002	3145	42553	105.9	TFT(Surr)
14.861	-0.002	1795	19583	106.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	411274	1.288 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	661912	0.977 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	558716	1.025 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	424188	1.283 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.275	-0.003	13173	106.3	TFT(Surr)
14.879	-0.002	18889	105.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.473	-0.003	1016	1.17	Benzene
9.250	0.004	423	0.77	Toluene
12.091	-0.004	4055	8.42	Ethylbenzene
12.249	-0.003	4616	9.91	M/P-Xylene
13.153	-0.007	302	0.80	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a012.d

Date : 31-MAY-2012 11:49

Client ID: USO-P11-B

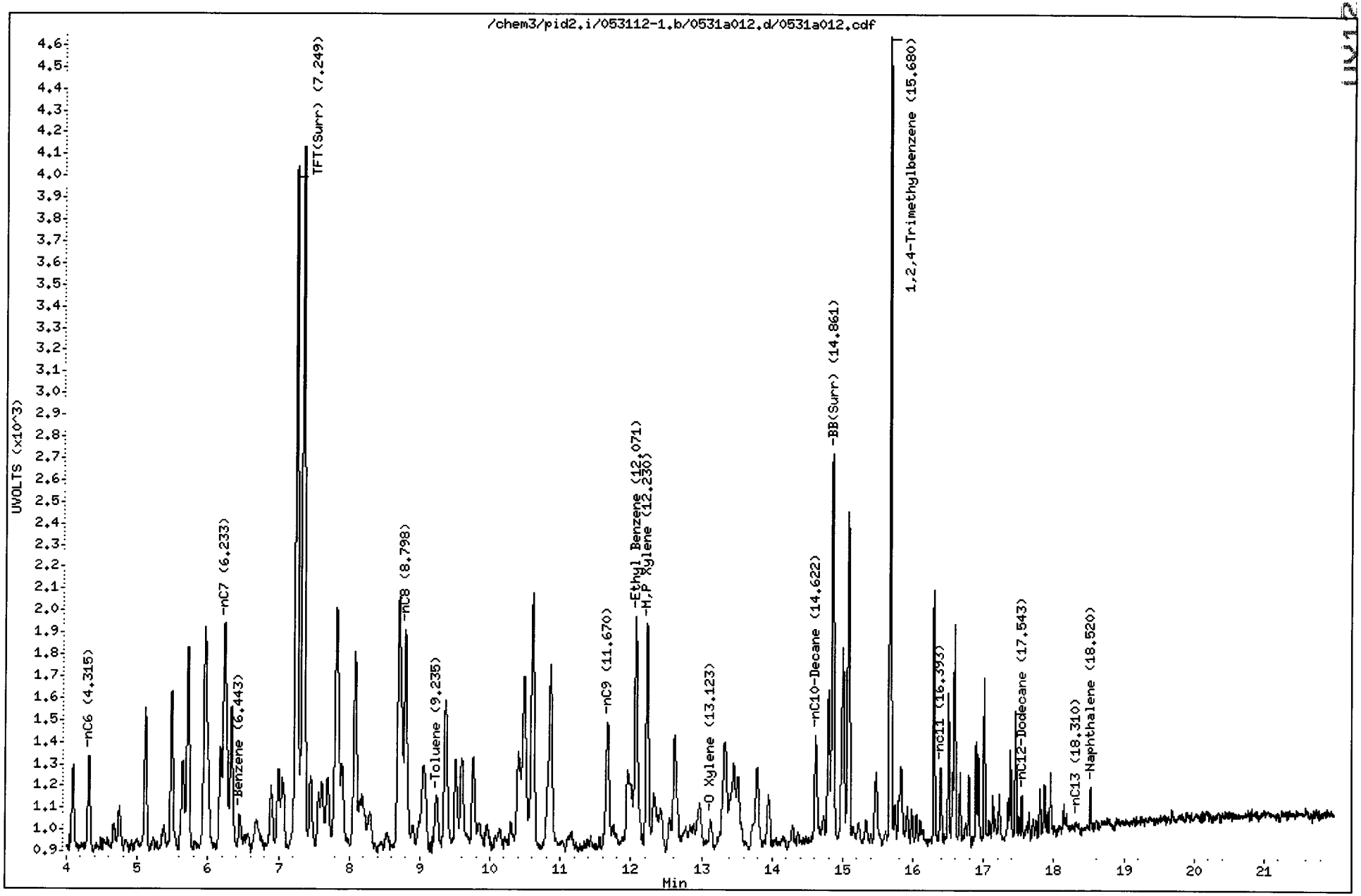
Sample Info: UV12L

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a012.d

Date : 31-MAY-2012 11:49

Client ID: USO-P11-B

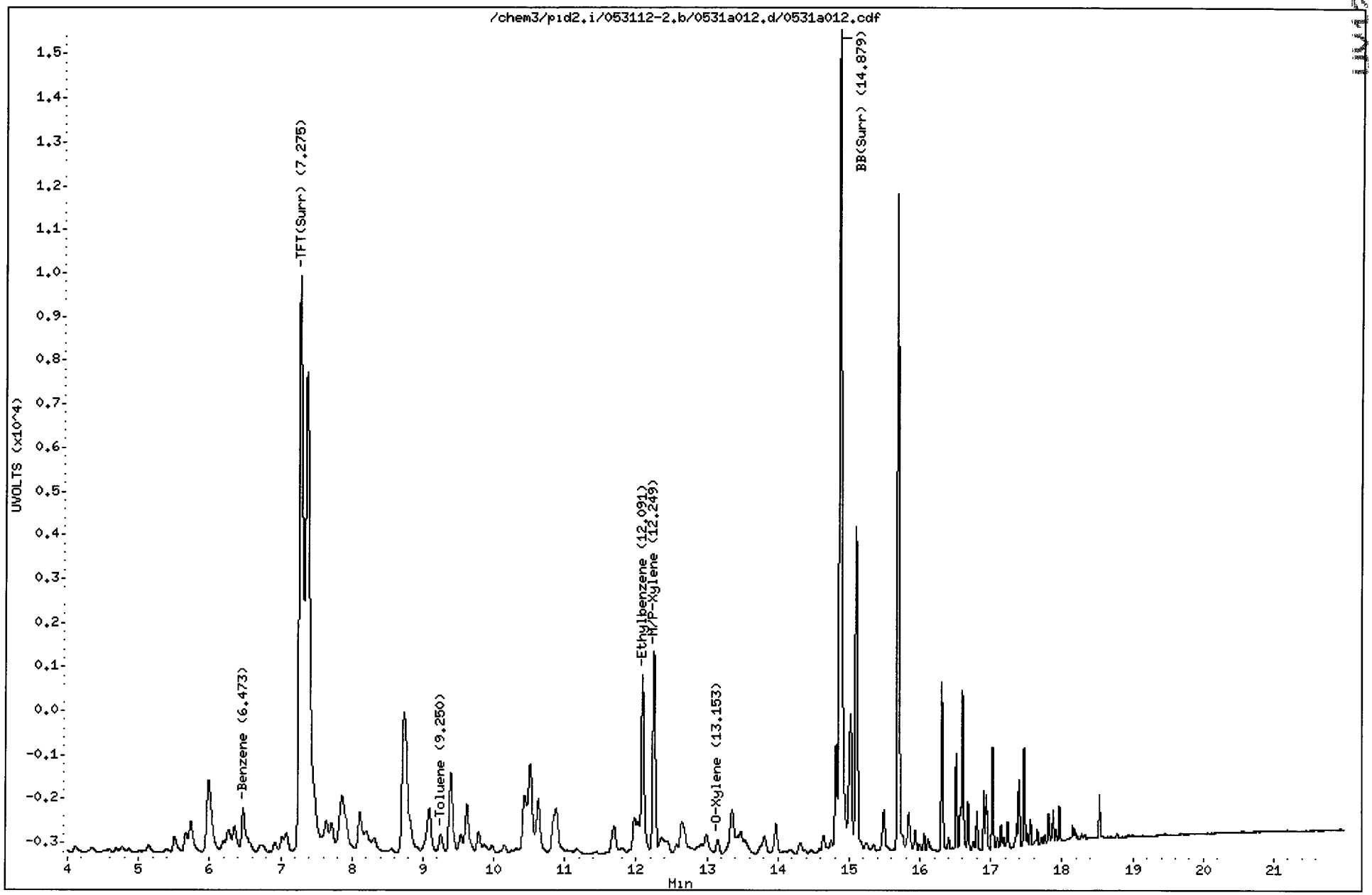
Sample Info: UV12L

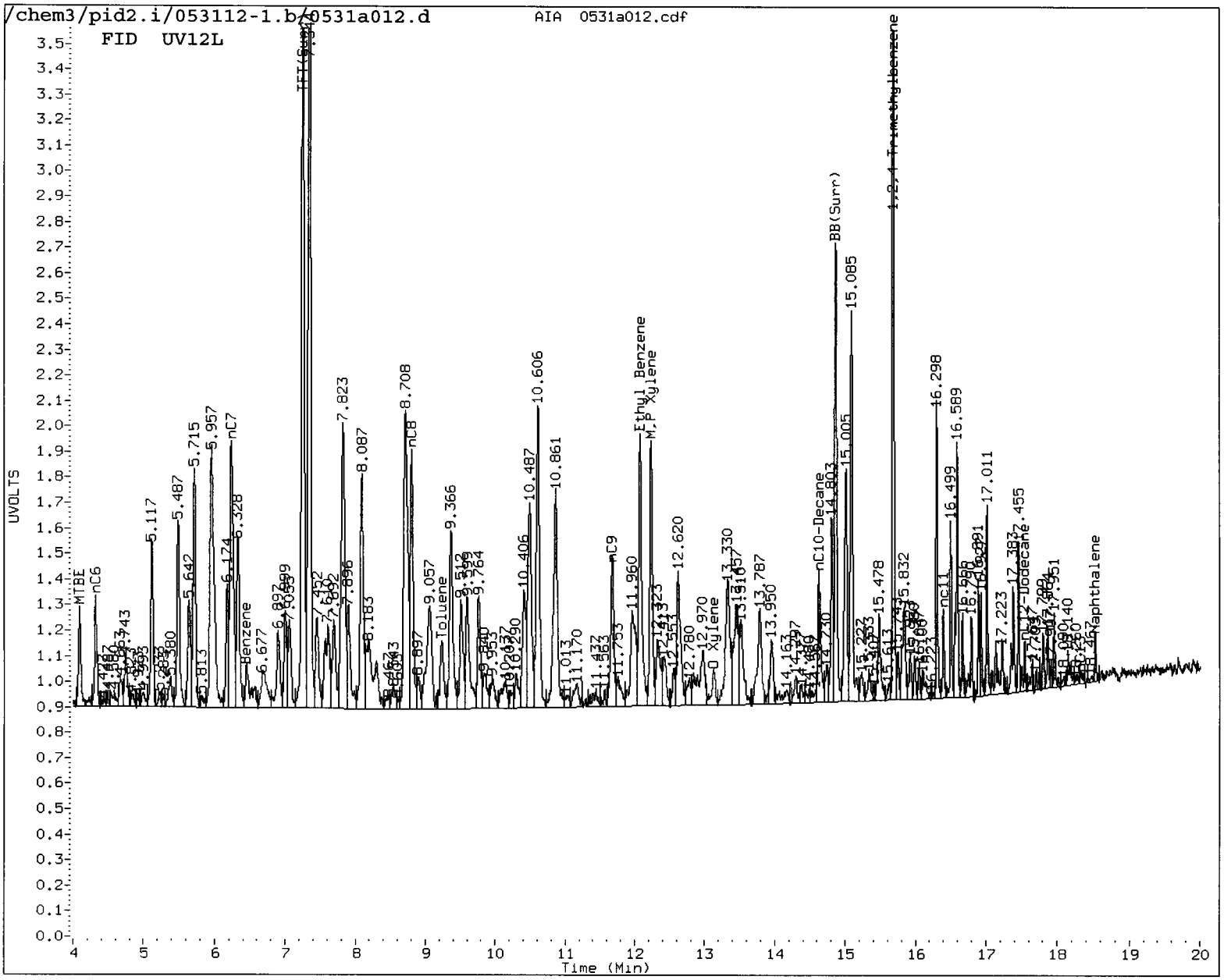
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P11-C**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12M
LIMS ID: 12-9222
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 13:36
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 1.6 mg-dry-wt
Percent Moisture: 16.8%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	780	14,000	
108-88-3	**Toluene**	780	7,000	
100-41-4	**Ethylbenzene**	780	82,000	
179601-23-1	**m,p-Xylene**	1,600	40,000	
95-47-6	**o-Xylene**	780	6,800	
				GAS ID
	Gasoline Range Hydrocarbons	310	10,000	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	105%

Gasoline Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	108%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a015.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a015.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12M
Client ID: USO-P11-C
Injection Date: 31-MAY-2012 13:36
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.252	0.000	3015	44770	101.6	TFT(Surr)
14.863	0.000	1814	23461	107.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1072693	3.360
8015C 2MP-TMB	(3.76 to 15.78)	677374	1773513	2.618
AK101 nC6-nC10	(4.21 to 14.52)	544975	1510596	2.772
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1106107	3.345

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.277	0.000	12679	102.3	TFT(Surr)
14.881	0.000	18727	104.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.475	-0.001	3960	4.55	Benzene
9.255	0.009	1229	2.23	Toluene
12.093	-0.001	12709	26.40	Ethylbenzene
12.249	-0.003	6018	12.92	M/P-Xylene
13.152	-0.008	829	2.19	O-Xylene
4.112	-0.021	874	2.73	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a015.d

Date : 31-MAY-2012 13:36

Client ID: USO-P11-C

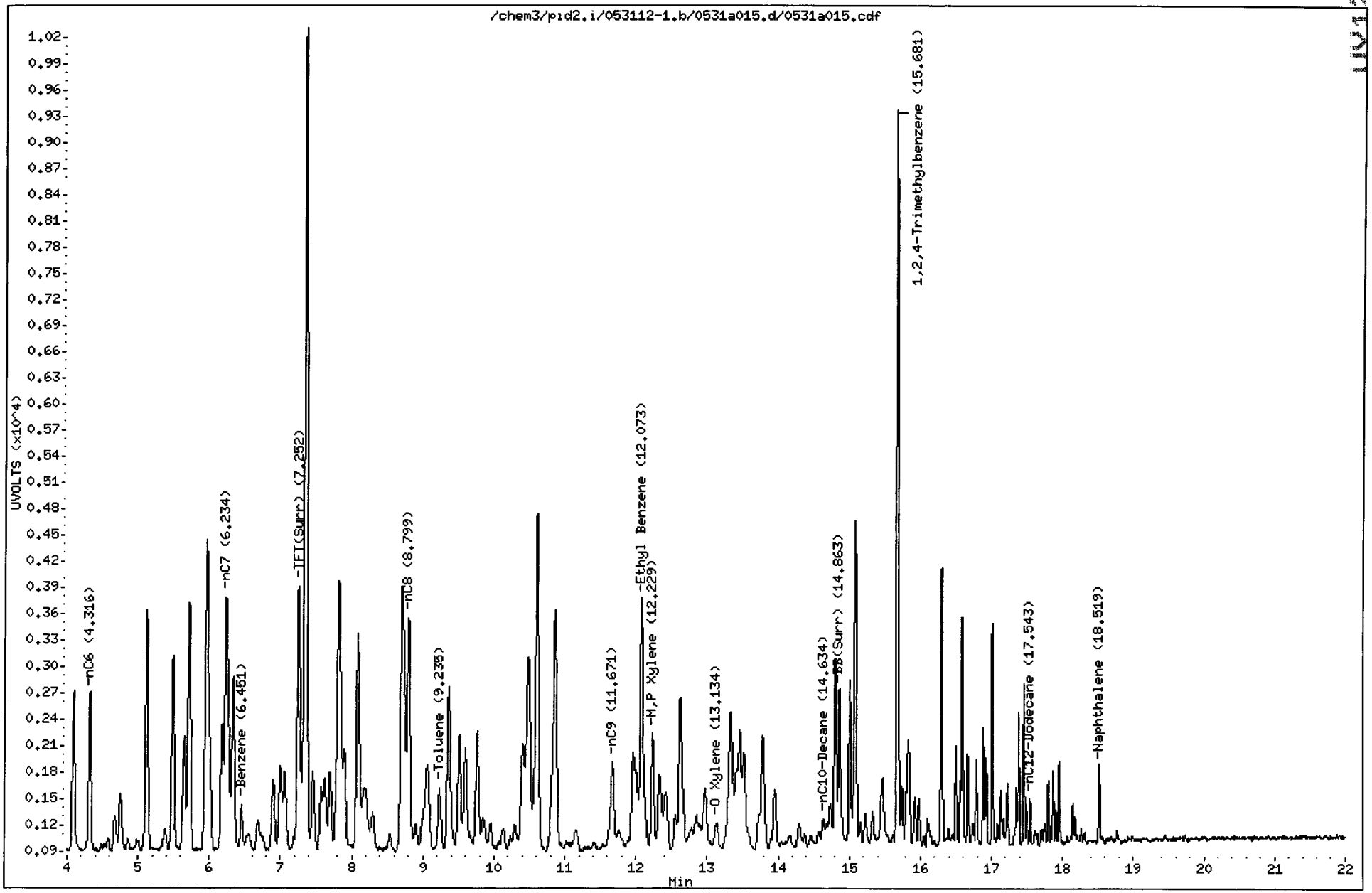
Sample Info: UV12M

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a015.d

Date : 31-MAY-2012 13:36

Client ID: USO-P11-C

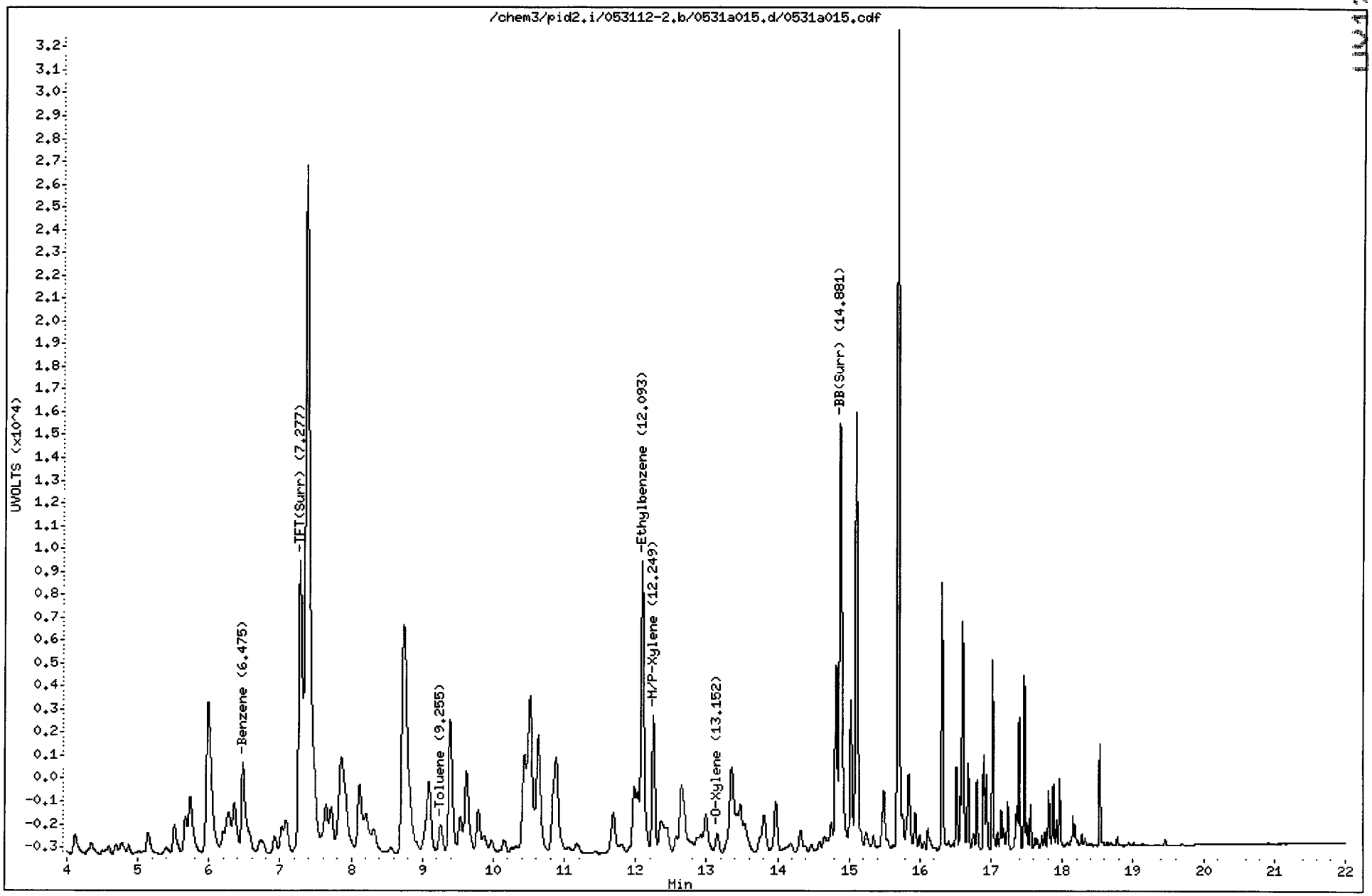
Sample Info: UV12M

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P11-D**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV12N
LIMS ID: 12-9223
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 14:04
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 64 mg-dry-wt
Percent Moisture: 21.1%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	19	< 19 U
108-88-3	**Toluene**	**19**	**23**
100-41-4	Ethylbenzene	19	< 19 U
179601-23-1	m,p-Xylene	39	< 39 U
95-47-6	o-Xylene	19	< 19 U

			GAS ID
Gasoline Range Hydrocarbons	7.8	< 7.8 U	---

BETX Surrogate Recovery

Trifluorotoluene	99.5%
Bromobenzene	97.1%

Gasoline Surrogate Recovery

Trifluorotoluene	96.9%
Bromobenzene	99.9%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a016.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a016.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12N
Client ID: USO-P11-D
Injection Date: 31-MAY-2012 14:04
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.002	2877	35723	96.9	TFT(Surr)
14.861	-0.002	1682	18154	99.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	0	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.275	-0.002	12322	99.5	TFT(Surr)
14.879	-0.003	17346	97.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.245	-0.002	163	0.30	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a016.d

Date : 31-MAY-2012 14:04

Client ID: USO-P11-D

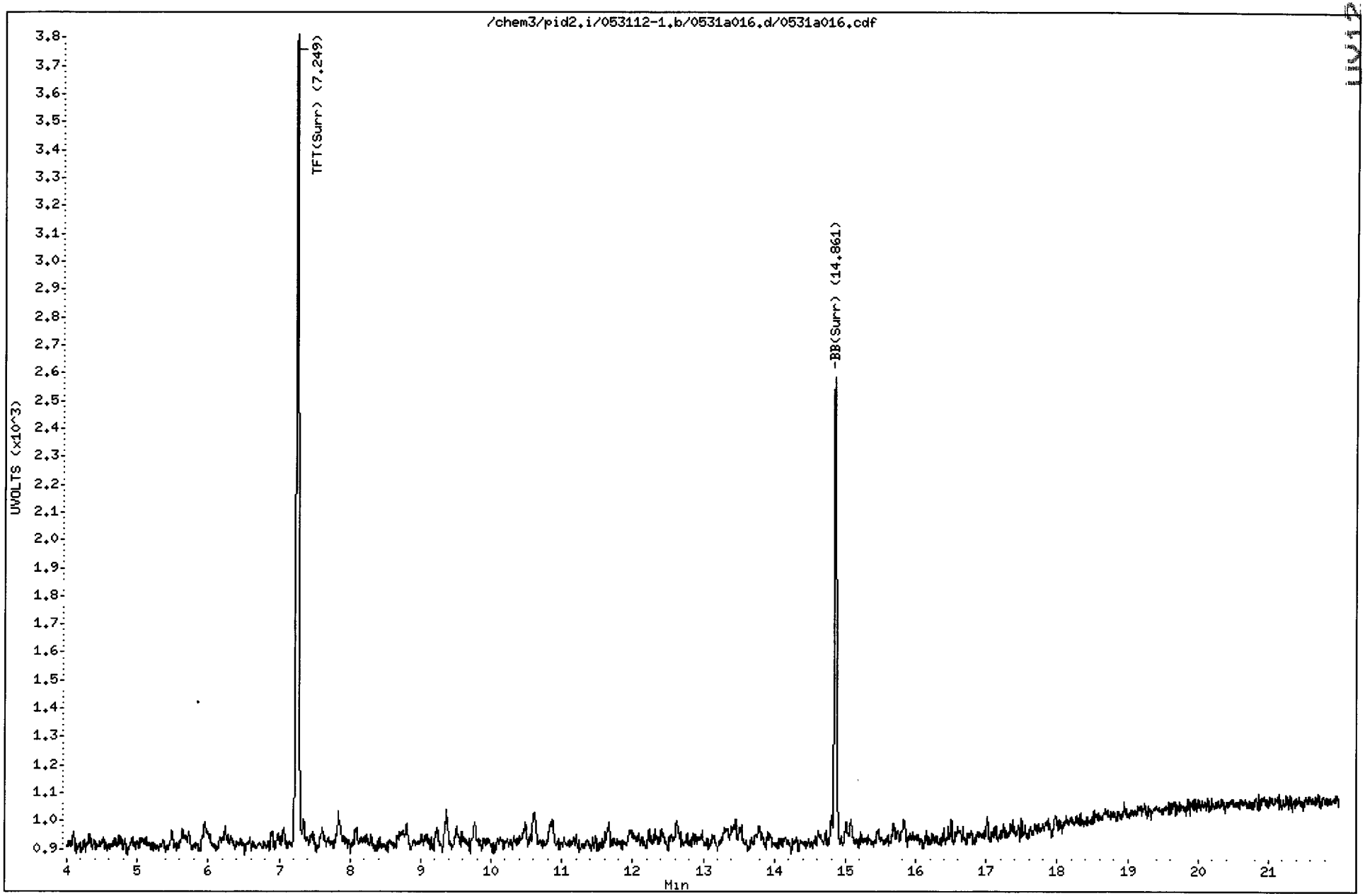
Sample Info: UV12N

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a016.d

Date : 31-MAY-2012 14:04

Client ID: USO-P11-D

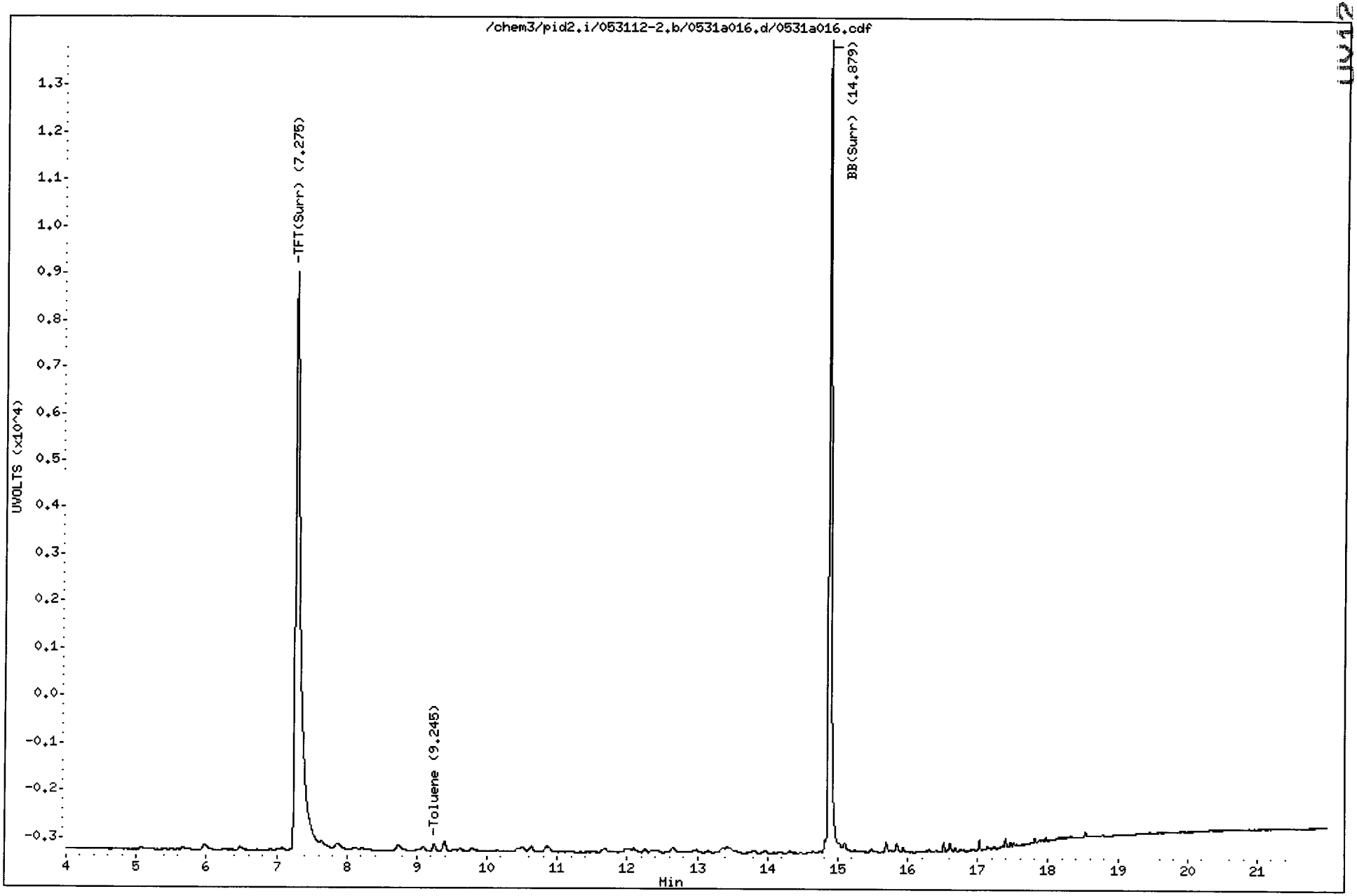
Sample Info: UV12N

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P11-E
SAMPLE

Lab Sample ID: UV120
LIMS ID: 12-9224
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 23:17
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 39 mg-dry-wt
Percent Moisture: 44.0%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	32	< 32 U	
108-88-3	**Toluene**	**32**	**39**	
100-41-4	Ethylbenzene	32	< 32 U	
179601-23-1	m,p-Xylene	65	< 65 U	
95-47-6	o-Xylene	32	< 32 U	
	Gasoline Range Hydrocarbons	13	< 13 U	---

BETX Surrogate Recovery

Trifluorotoluene	87.2%
Bromobenzene	94.8%

Gasoline Surrogate Recovery

Trifluorotoluene	92.4%
Bromobenzene	96.1%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a025.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a025.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV120
Client ID: USO-P11-E
Injection Date: 30-MAY-2012 23:17
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.237	-0.012	2742	33605	92.4	TFT(Surr)
14.846	-0.015	1619	17337	96.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.75 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	0	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.262	-0.012	10801	87.2	TFT(Surr)
14.865	-0.014	16932	94.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.230	-0.013	164	0.30	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a025.d

Date : 30-MAY-2012 23:17

Client ID: USO-P11-E

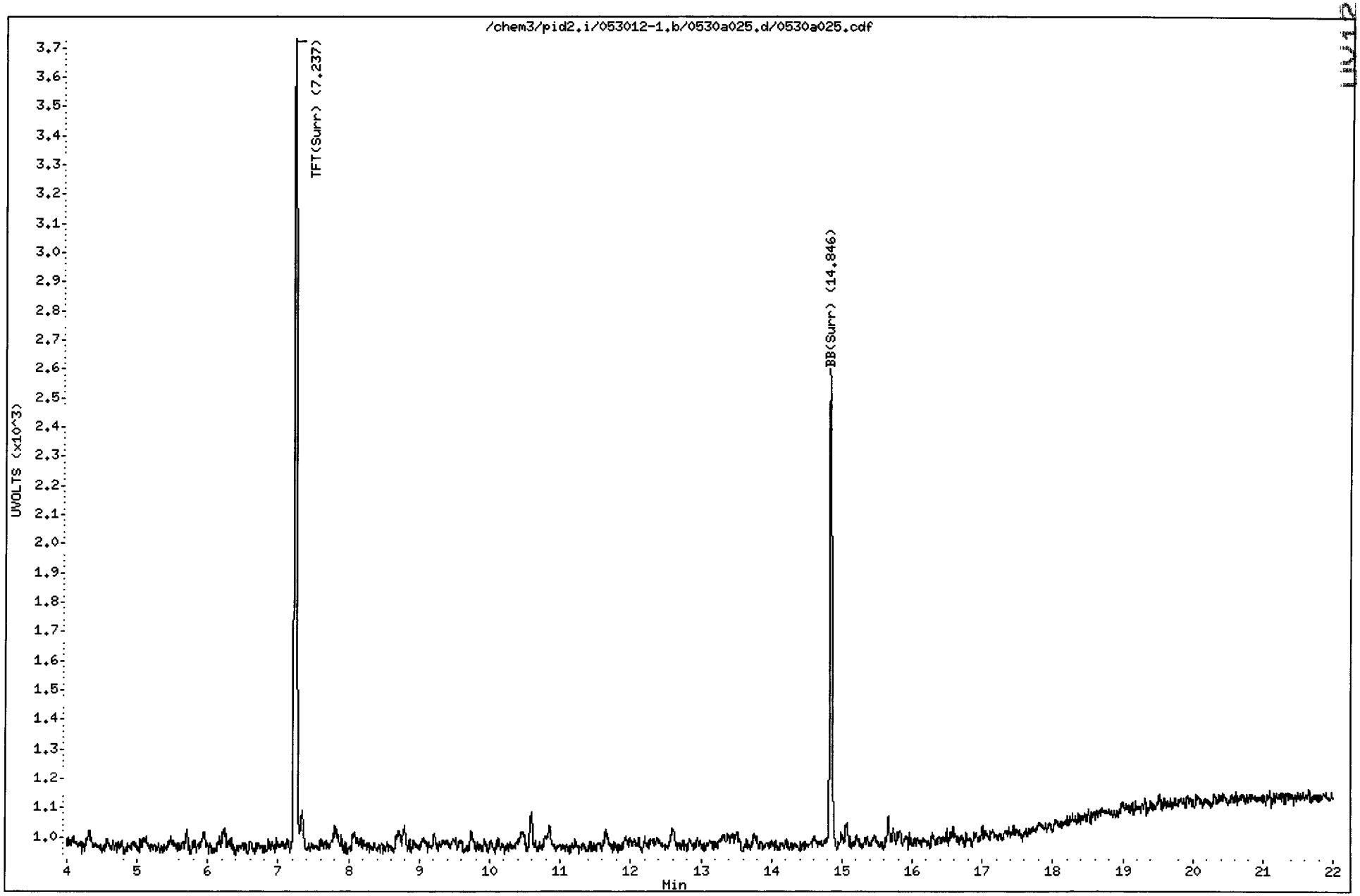
Sample Info: UV120

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a025.d

Date : 30-MAY-2012 23:17

Client ID: USO-P11-E

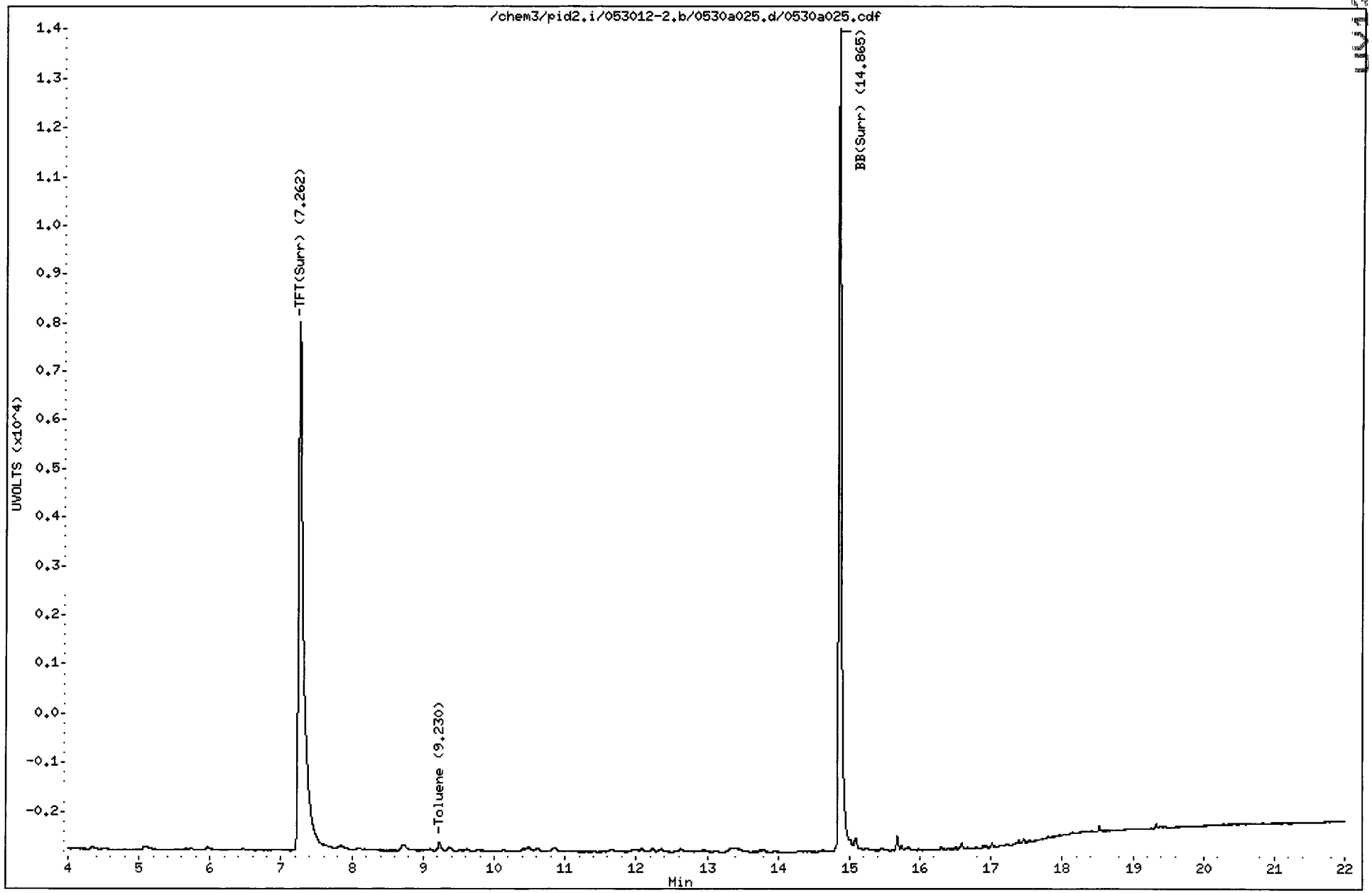
Sample Info: UV120

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P12-A
SAMPLE

Lab Sample ID: UV12P
LIMS ID: 12-9225
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 23:45
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 16 mg-dry-wt
Percent Moisture: 2.2%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**78**	**560**	
108-88-3	**Toluene**	**78**	**1,400**	
100-41-4	**Ethylbenzene**	**78**	**20,000**	
179601-23-1	**m,p-Xylene**	**160**	**13,000**	
95-47-6	**o-Xylene**	**78**	**1,900**	
				GAS ID
	Gasoline Range Hydrocarbons	**31**	**2,200**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	91.6%
Bromobenzene	114%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	117%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a026.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a026.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12P
Client ID: USO-P12-A
Injection Date: 30-MAY-2012 23:45
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.238	-0.011	2969	44878	100.0	TFT(Surr)
14.848	-0.013	1974	28868	117.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	2231890	6.991
8015C 2MP-TMB	(3.75 to 15.78)	677374	2801512	4.136
AK101 nC6-nC10	(4.21 to 14.52)	544975	2250889	4.130
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	2296768	6.945

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.262	-0.012	11345	91.6	TFT(Surr)
14.865	-0.013	20339	113.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.461	-0.013	1577	1.81	Benzene
9.235	-0.008	2560	4.65	Toluene
12.077	-0.014	30534	63.44	Ethylbenzene
12.231	-0.020	19373	41.58	M/P-Xylene
13.135	-0.023	2262	5.96	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a026.d

Date : 30-MAY-2012 23:45

Client ID: USO-P12-A

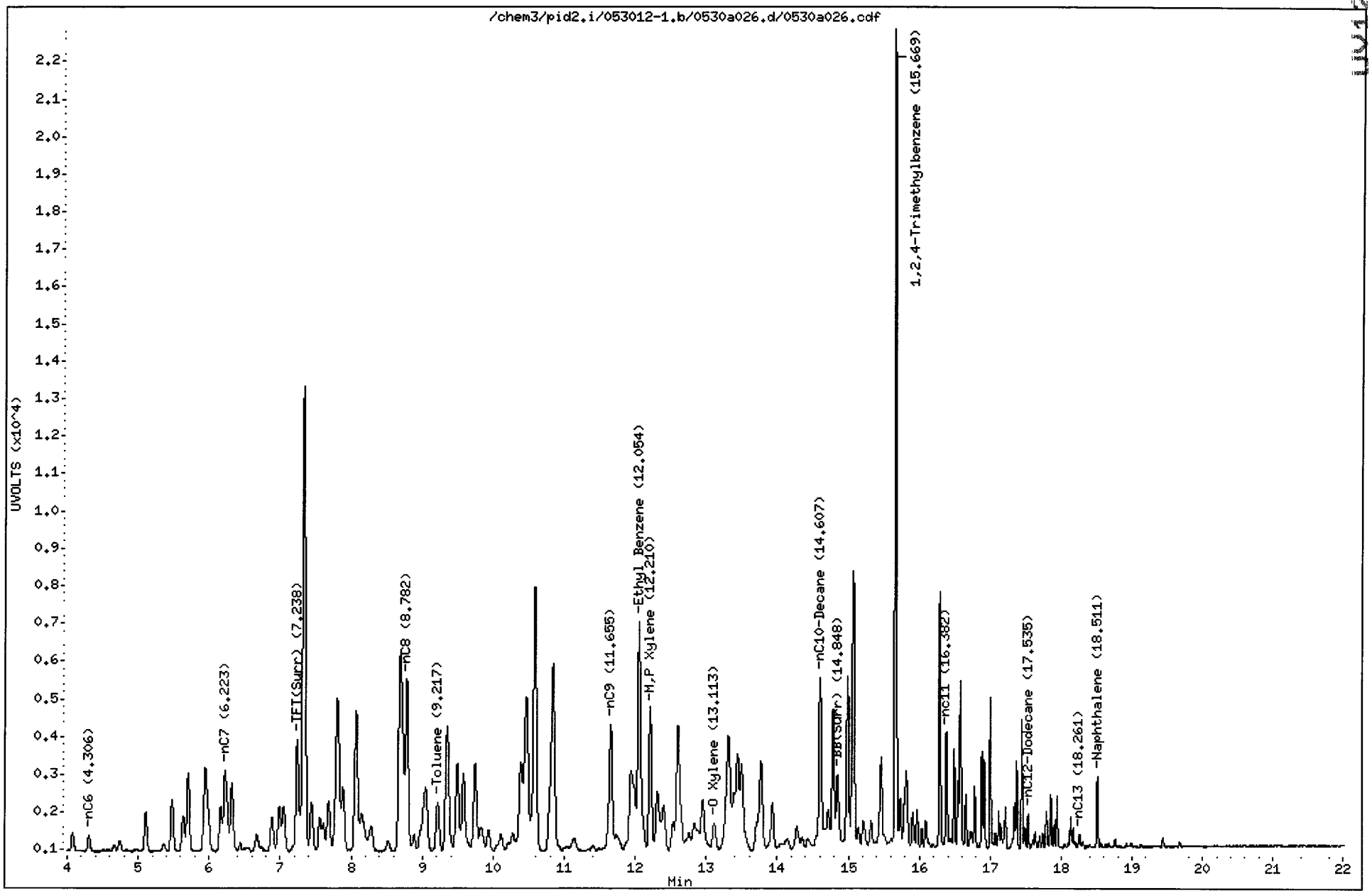
Sample Info: UV12P

Instrument: pid2.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a026.d

Date : 30-MAY-2012 23:45

Client ID: USO-P12-A

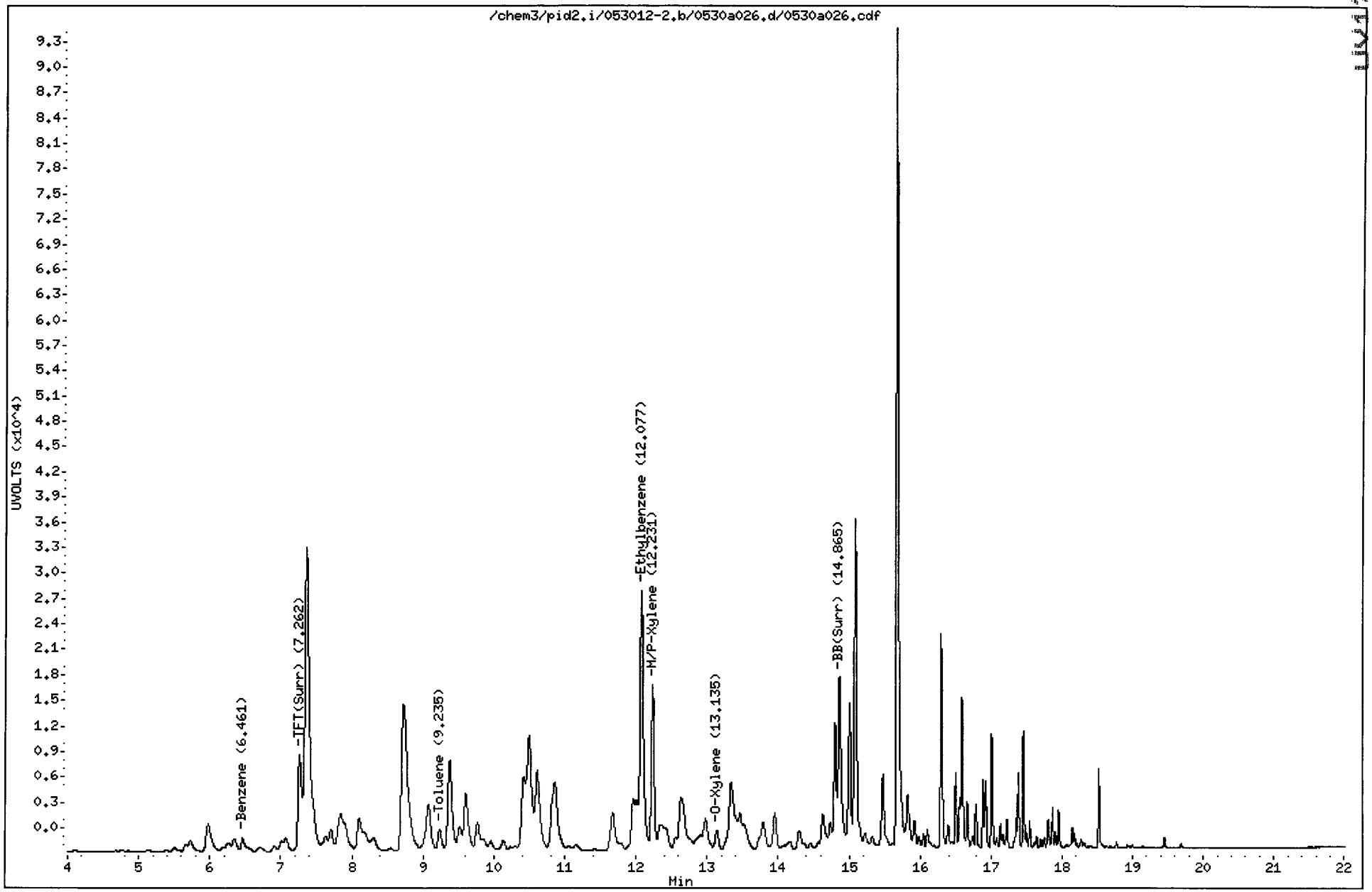
Sample Info: UV12P

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P12-B
SAMPLE

Lab Sample ID: UV12Q
LIMS ID: 12-9226
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 14:32
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 8.9 mg-dry-wt
Percent Moisture: 3.8%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**140**	**1,100**	
108-88-3	**Toluene**	**140**	**1,000**	
100-41-4	**Ethylbenzene**	**140**	**12,000**	
179601-23-1	**m,p-Xylene**	**280**	**5,300**	
95-47-6	**o-Xylene**	**140**	**960**	
	Gasoline Range Hydrocarbons	**56**	**1,600**	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	96.9%
Bromobenzene	101%

Gasoline Surrogate Recovery

Trifluorotoluene	97.9%
Bromobenzene	104%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a017.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a017.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12Q
Client ID: USO-P12-B
Injection Date: 31-MAY-2012 14:32
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.002	2905	39896	97.9	TFT(Surr)
14.860	-0.003	1747	22403	103.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	877509	2.749 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	1098558	1.622 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	886586	1.627 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	909908	2.752 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	12004	96.9	TFT(Surr)
14.878	-0.003	18048	101.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.473	-0.003	1663	1.91	Benzene
9.248	0.001	998	1.81	Toluene
12.090	-0.004	10288	21.37	Ethylbenzene
12.245	-0.007	4357	9.35	M/P-Xylene
13.148	-0.012	647	1.71	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a017.d

Date : 31-MAY-2012 14:32

Client ID: USO-P12-B

Instrument: pid2.i

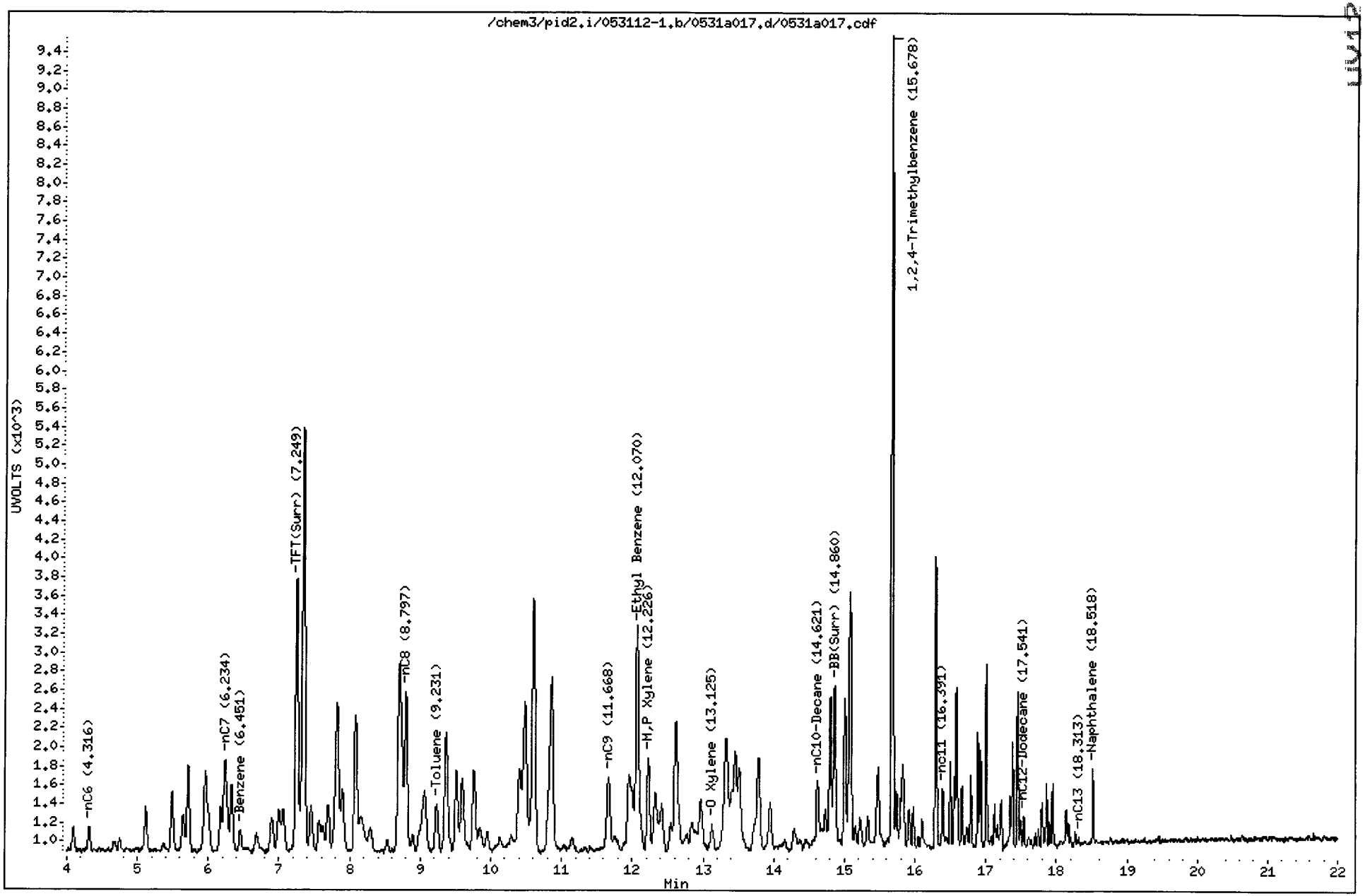
Sample Info: UV12Q

Operator: MH

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV1P 00077



Data File: /chem3/pid2.i/053112-2.b/0531a017.d

Date : 31-MAY-2012 14:32

Client ID: USO-P12-B

Instrument: pid2.i

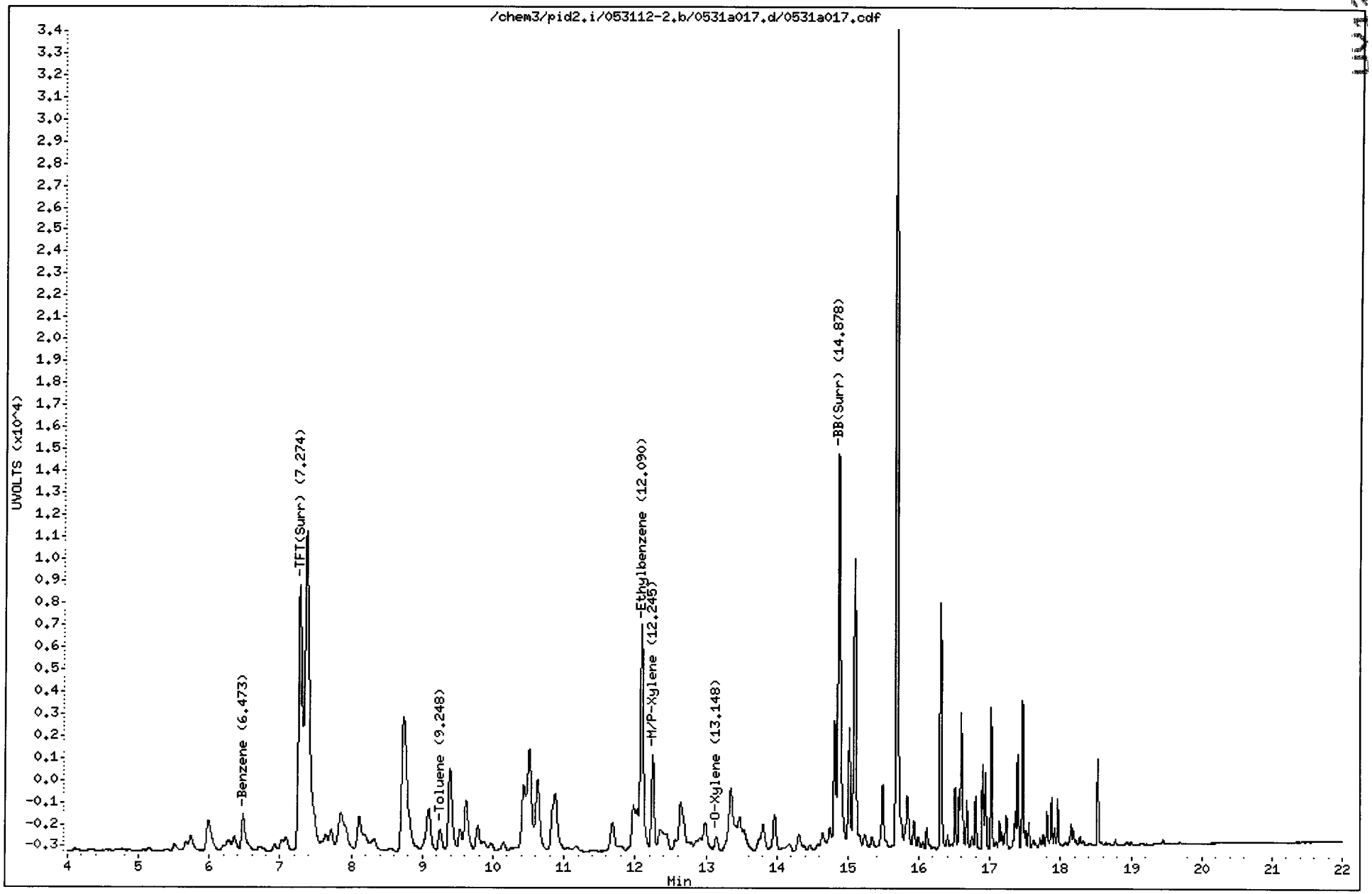
Sample Info: UV12Q

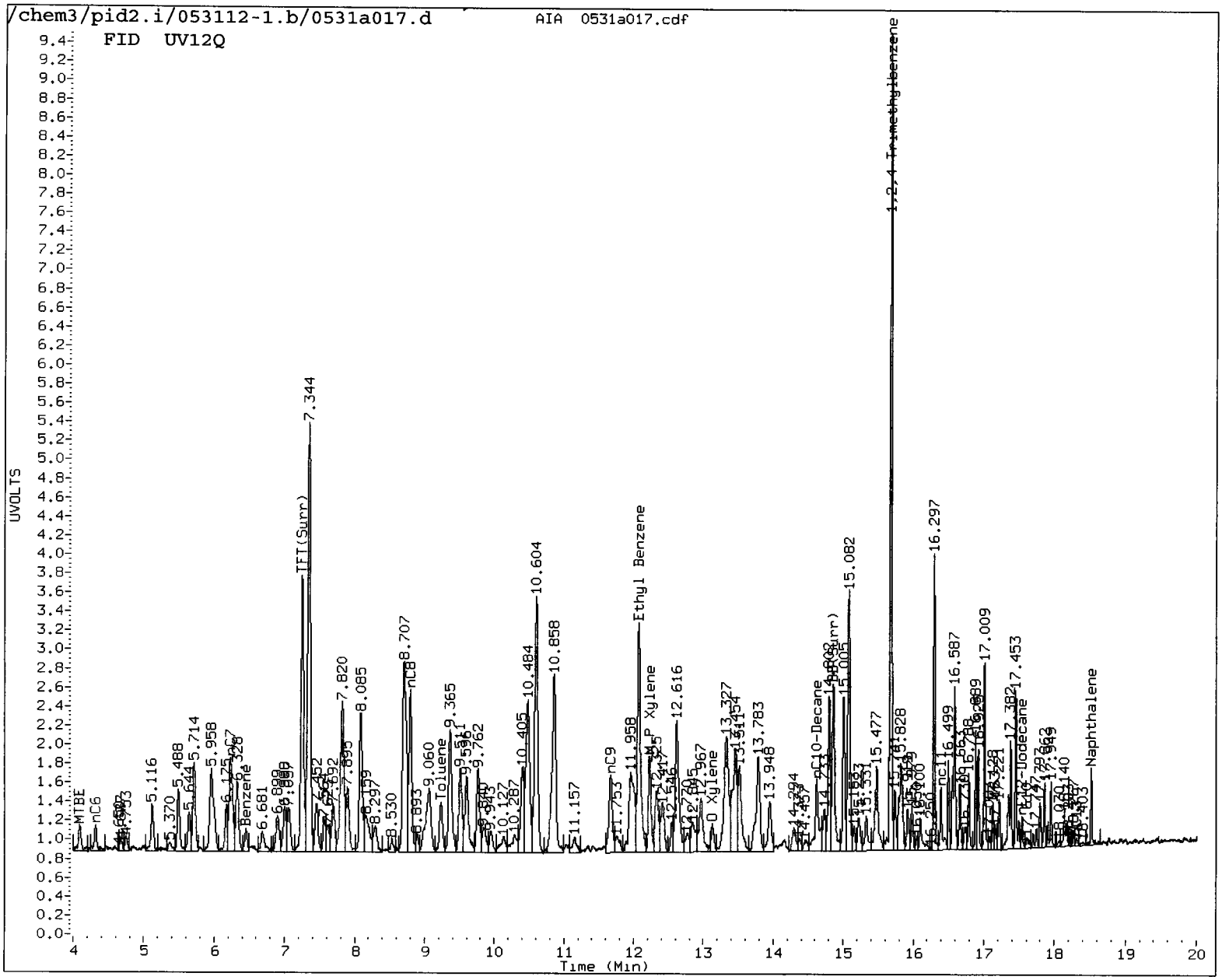
Operator: MH

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV12 00078





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P12-C**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12R
LIMS ID: 12-9227
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 15:00
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 1.6 mg-dry-wt
Percent Moisture: 15.9%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	790	4,600	
108-88-3	Toluene	790	2,500	
100-41-4	Ethylbenzene	790	43,000	
179601-23-1	m,p-Xylene	1,600	3,000	
95-47-6	o-Xylene	790	2,600	
				GAS ID
	Gasoline Range Hydrocarbons	320	4,900	GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	97.4%
Bromobenzene	97.3%

Gasoline Surrogate Recovery

Trifluorotoluene	98.5%
Bromobenzene	99.5%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a018.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a018.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12R
Client ID: USO-P12-C
Injection Date: 31-MAY-2012 15:00
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.247	-0.005	2924	40209	98.5	TFT(Surr)
14.857	-0.006	1676	19409	99.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	494458	1.549 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	874053	1.290 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	739422	1.357 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	509644	1.541 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.272	-0.005	12065	97.4	TFT(Surr)
14.875	-0.006	17374	97.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.471	-0.005	1256	1.44	Benzene
9.250	0.004	435	0.79	Toluene
12.086	-0.008	6480	13.46	Ethylbenzene
12.249	-0.003	446	0.96	M/P-Xylene
13.143	-0.017	314	0.83	O-Xylene
4.108	-0.025	513	1.60	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a018.d

Date : 31-MAY-2012 15:00

Client ID: USO-P12-C

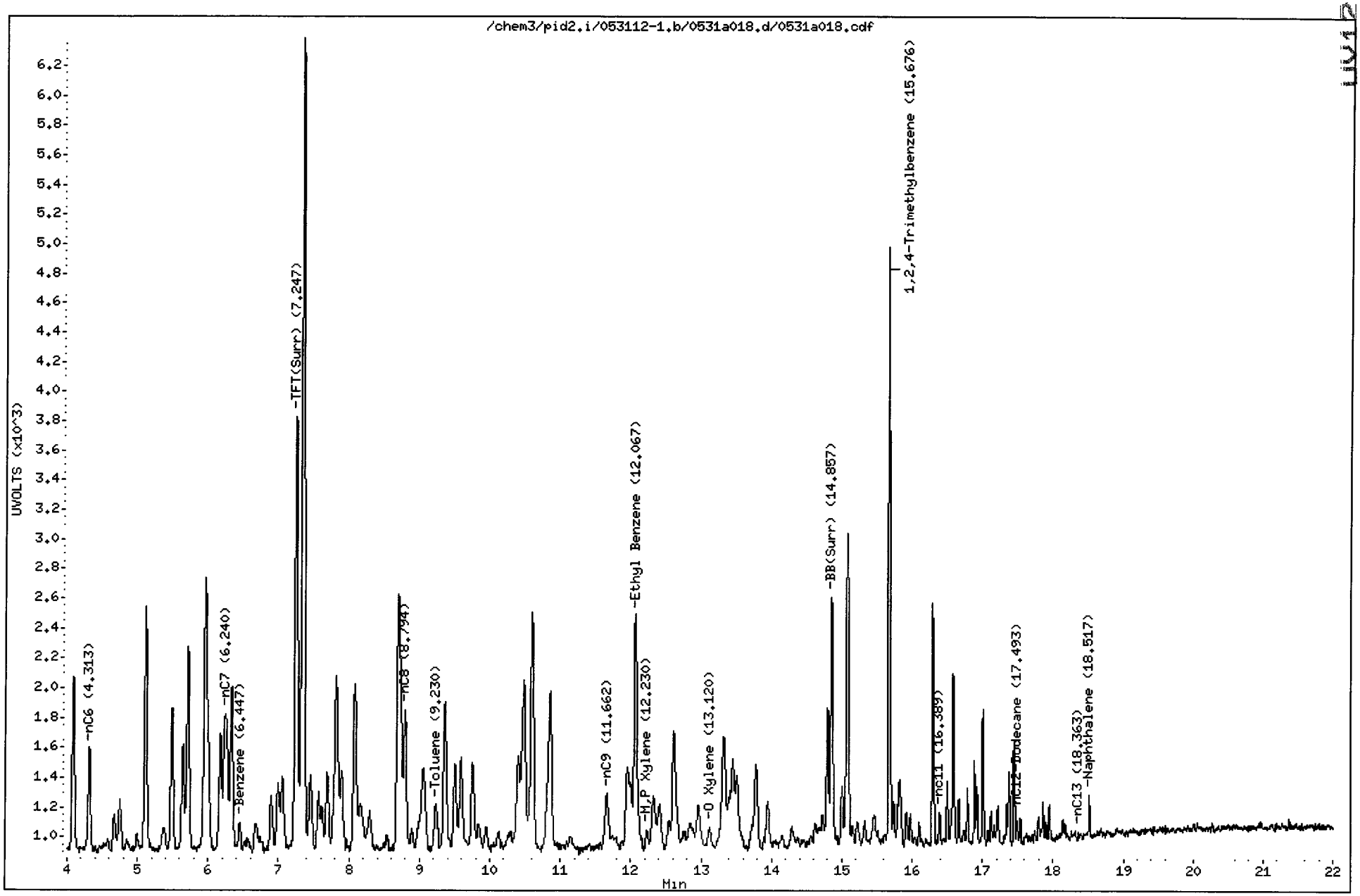
Sample Info: UV12R

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a018.d

Date : 31-MAY-2012 15:00

Client ID: USO-P12-C

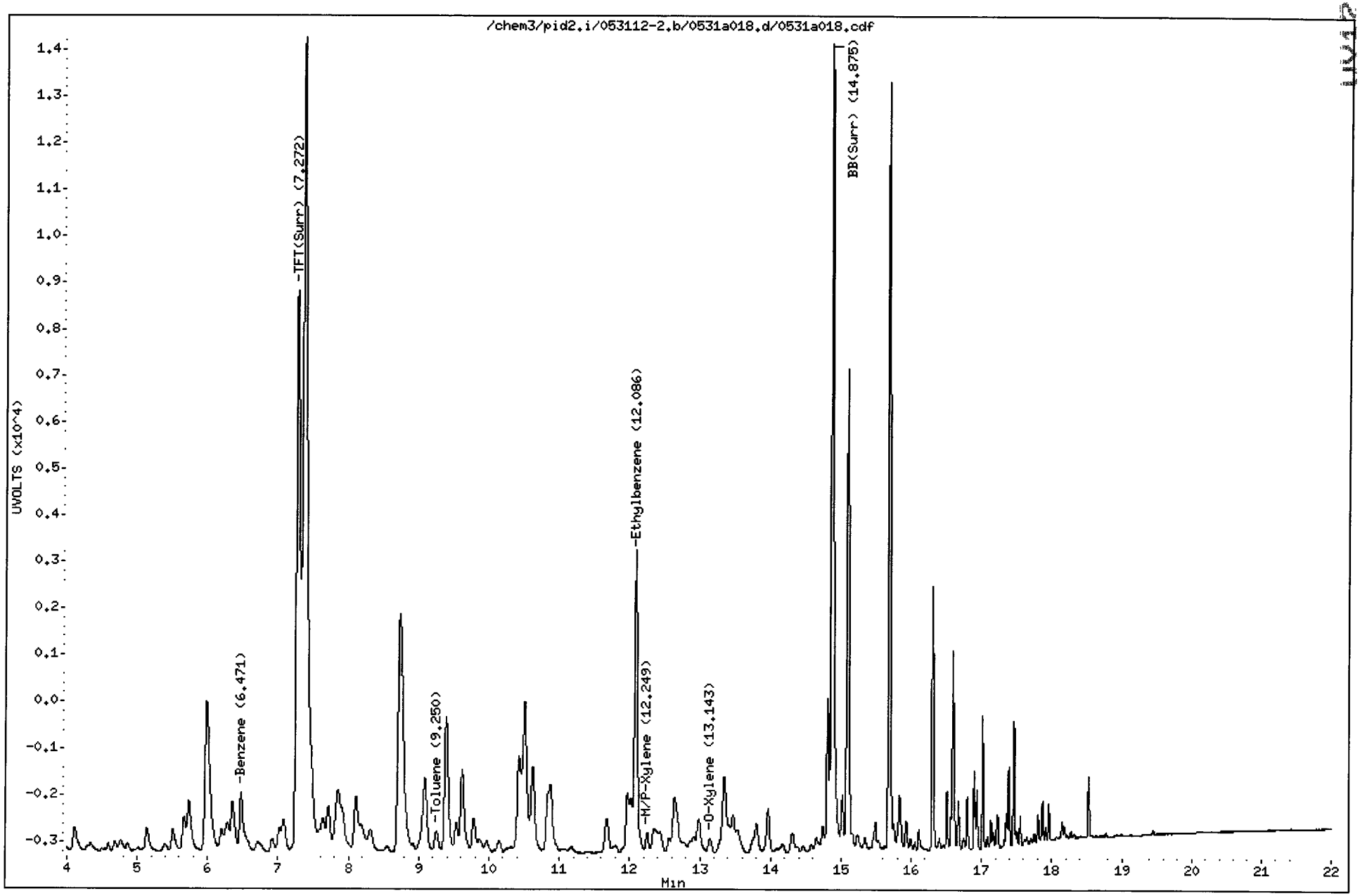
Sample Info: UV12R

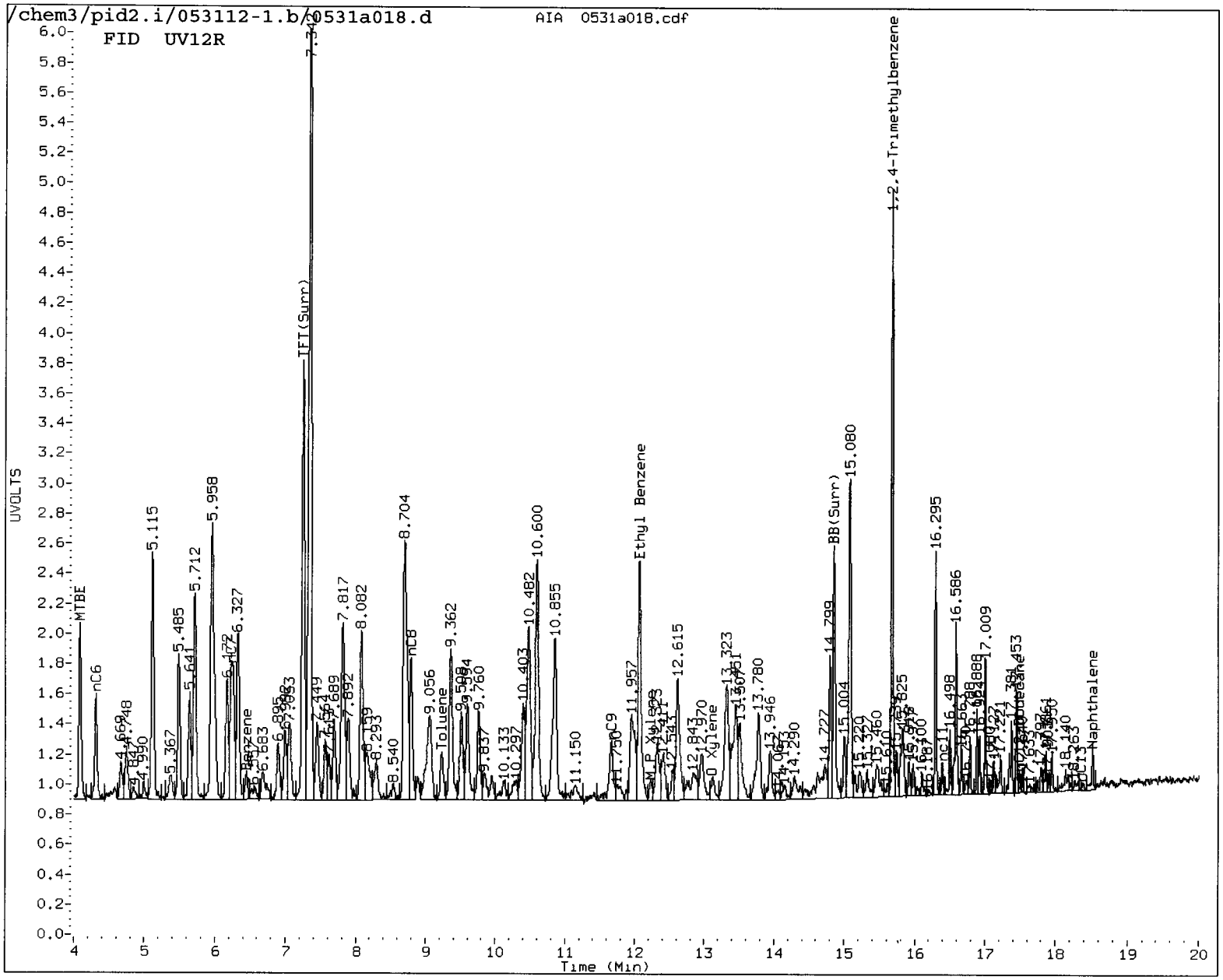
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 6/1/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P12-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV12S
LIMS ID: 12-9228
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 15:28
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 75 mg-dry-wt
Percent Moisture: 22.3%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	17	< 17 U
108-88-3	**Toluene**	**17**	**19**
100-41-4	Ethylbenzene	17	< 17 U
179601-23-1	**m,p-Xylene**	**33**	**43**
95-47-6	o-Xylene	17	< 17 U

			GAS ID
Gasoline Range Hydrocarbons	6.7	< 6.7 U	---

BETX Surrogate Recovery

Trifluorotoluene	93.3%
Bromobenzene	91.7%

Gasoline Surrogate Recovery

Trifluorotoluene	92.5%
Bromobenzene	92.6%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a019.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a019.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV12S
Client ID: USO-P12-D
Injection Date: 31-MAY-2012 15:28
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.242	-0.010	2747	33659	92.5	TFT(Surr)
14.854	-0.009	1560	16219	92.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	2	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.268	-0.010	11555	93.3	TFT(Surr)
14.871	-0.010	16378	91.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.234	-0.013	159	0.29	Toluene
ND	---	---	---	Ethylbenzene
12.243	-0.009	297	0.64	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a019.d

Date : 31-MAY-2012 15:28

Client ID: USO-P12-D

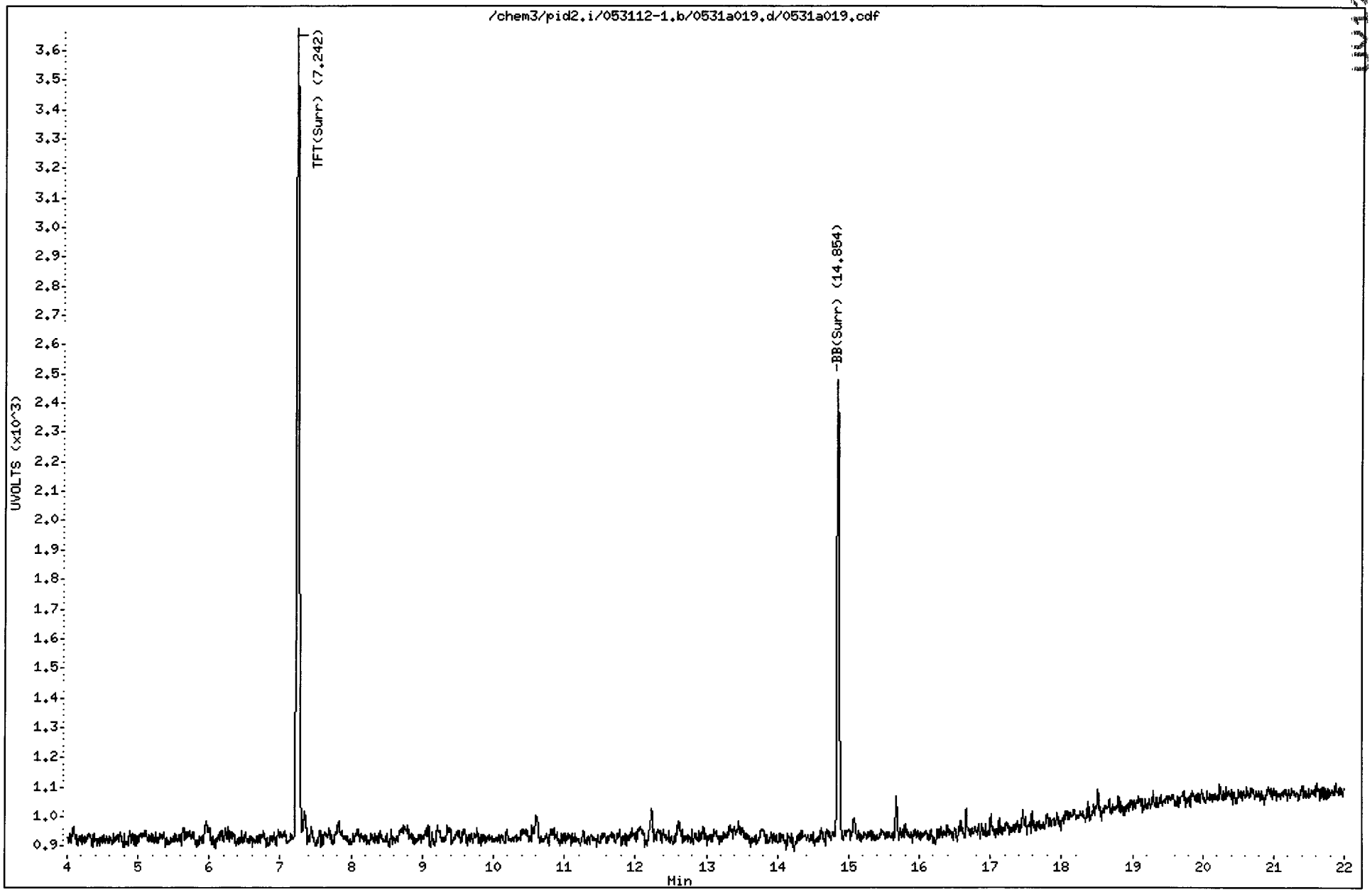
Sample Info: UV12S

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a019.d

Date : 31-MAY-2012 15:28

Client ID: USO-P12-D

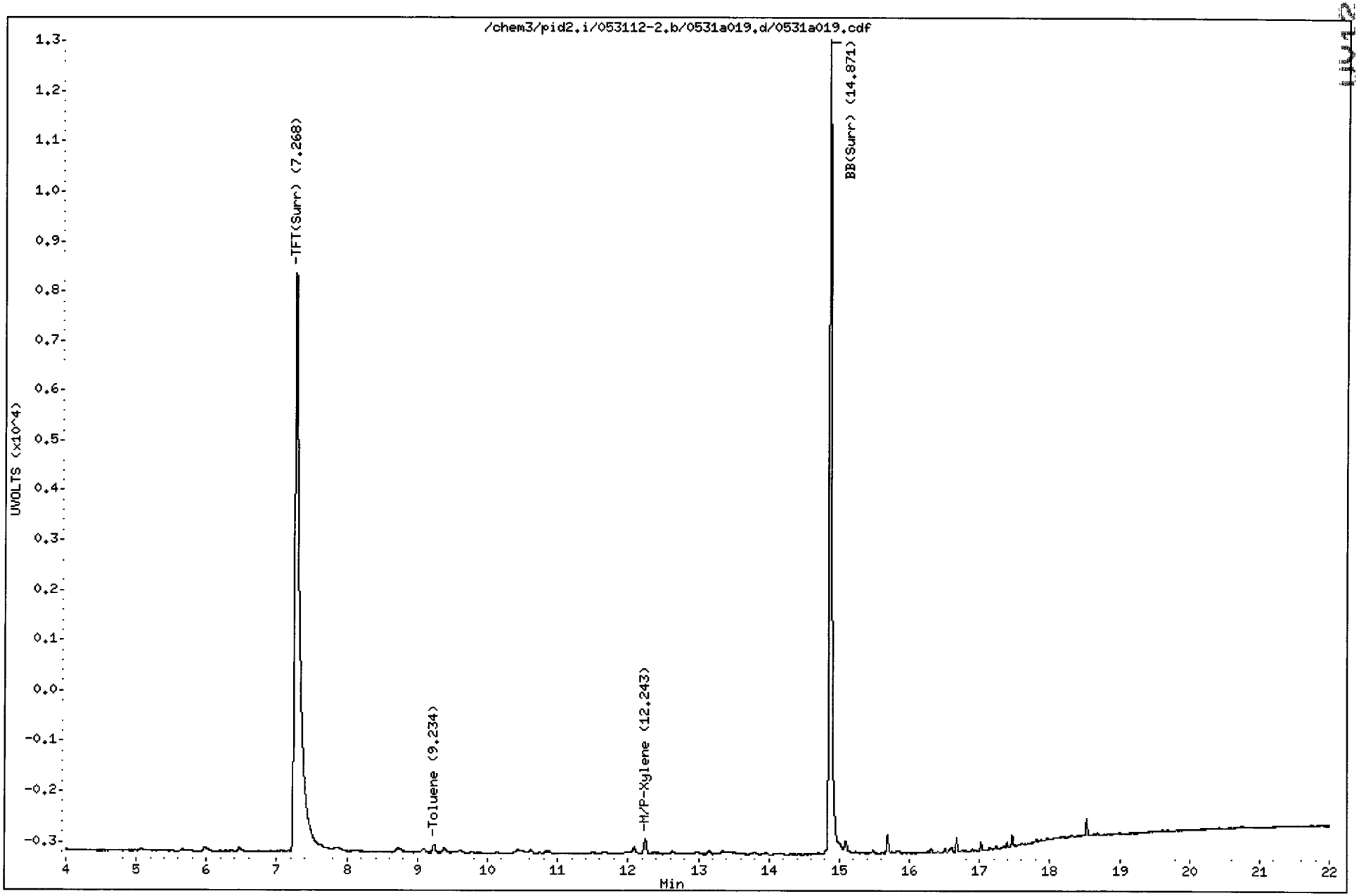
Sample Info: UV12S

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P12-E**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV12T
LIMS ID: 12-9229
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 15:56
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 37 mg-dry-wt
Percent Moisture: 37.1%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	34	< 34 U
108-88-3	Toluene	34	< 34 U
100-41-4	Ethylbenzene	34	< 34 U
179601-23-1	m,p-Xylene	67	< 67 U
95-47-6	o-Xylene	34	< 34 U

				GAS ID
	Gasoline Range Hydrocarbons	13	< 13 U	---

BETX Surrogate Recovery

Trifluorotoluene	87.9%
Bromobenzene	85.9%

Gasoline Surrogate Recovery

Trifluorotoluene	87.8%
Bromobenzene	88.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV12
Matrix: Soil

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022

Client ID	BFB	TFT	BBZ	TOT OUT
MB-053012	NA	93.5%	94.4%	0
LCS-053012	NA	94.3%	91.3%	0
LCSD-053012	NA	87.4%	86.4%	0
USO-P9-A	NA	99.7%	96.9%	0
MB-053112	NA	94.6%	92.8%	0
LCS-053112	NA	99.1%	96.1%	0
LCSD-053112	NA	105%	99.4%	0
USO-P9-B	NA	98.1%	93.9%	0
USO-P9-C	NA	99.3%	97.5%	0
USO-P9-D	NA	93.8%	90.7%	0
USO-P9-E	NA	100%	96.4%	0
USO-P10-A	NA	106%	151%*	1
USO-P10-A DL	NA	105%	106%	0
USO-P10-B	NA	102%	102%	0
USO-P10-C	NA	243%*	221%*	2
USO-P10-C DL	NA	102%	101%	0
USO-P10-D	NA	95.5%	94.7%	0
USO-P10-E	NA	94.4%	97.0%	0
USO-P11-A	NA	99.3%	99.2%	0
USO-P11-B	NA	106%	107%	0
USO-P11-C	NA	102%	108%	0
USO-P11-D	NA	96.9%	99.9%	0
USO-P11-E	NA	92.4%	96.1%	0
USO-P12-A	NA	100%	117%	0
USO-P12-B	NA	97.9%	104%	0
USO-P12-C	NA	98.5%	99.5%	0
USO-P12-D	NA	92.5%	92.6%	0
USO-P12-E	NA	87.8%	88.4%	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(66-123)
(BBZ) = Bromobenzene	(80-120)	(62-130)

Log Number Range: 12-9210 to 12-9229

FORM II TPHG

UV12 : 00090

ANALYTICAL RESOURCES INCORPORATED

BETX SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV12
Matrix: Soil

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022

Client ID	TFT	BBZ	TOT OUT
MB-053012	95.4%	94.4%	0
LCS-053012	96.1%	93.7%	0
LCSD-053012	88.8%	88.3%	0
USO-P9-A	102%	97.6%	0
MB-053112	94.8%	93.2%	0
LCS-053112	99.3%	95.9%	0
LCSD-053112	105%	100%	0
USO-P9-B	98.8%	93.7%	0
USO-P9-C	99.6%	96.7%	0
USO-P9-D	94.0%	89.7%	0
USO-P9-E	102%	97.7%	0
USO-P10-A	104%	122%	0
USO-P10-A DL	105%	105%	0
USO-P10-B	101%	100%	0
USO-P10-C	131%*	0.0%*	2
USO-P10-C DL	102%	101%	0
USO-P10-D	96.3%	94.1%	0
USO-P10-E	90.3%	94.6%	0
USO-P11-A	99.7%	98.6%	0
USO-P11-B	106%	106%	0
USO-P11-C	102%	105%	0
USO-P11-D	99.5%	97.1%	0
USO-P11-E	87.2%	94.8%	0
USO-P12-A	91.6%	114%	0
USO-P12-B	96.9%	101%	0
USO-P12-C	97.4%	97.3%	0
USO-P12-D	93.3%	91.7%	0
USO-P12-E	87.9%	85.9%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(68-124)
(BBZ) = Bromobenzene	(77-120)	(62-134)

Log Number Range: 12-9210 to 12-9229

FORM II BETX

UV12:00091

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-053012
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053012
LIMS ID: 12-9210
Matrix: Soil
Data Release Authorized: hw
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/30/12 12:26
LCSD: 05/30/12 12:53
Instrument/Analyst LCS: PID2/MH
LCSD: PID2/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	43.2	50.0	86.4%	42.6	50.0	85.2%	1.4%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	94.3%	87.4%
Bromobenzene	91.3%	86.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-053012
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053012
LIMS ID: 12-9210
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/30/12 12:26
LCSD: 05/30/12 12:53
Instrument/Analyst LCS: PID2/MH
LCSD: PID2/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	187	185	101%	188	185	102%	0.5%
Toluene	1970	1980	99.5%	1980	1980	100%	0.5%
Ethylbenzene	489	580	84.3%	489	580	84.3%	0.0%
m,p-Xylene	1980	2120	93.4%	1970	2120	92.9%	0.5%
o-Xylene	936	960	97.5%	928	960	96.7%	0.9%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	96.1%	88.8%
Bromobenzene	93.7%	88.3%

MH
6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a004.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a004.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0530
Client ID:
Injection Date: 30-MAY-2012 12:26
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.247	-0.002	2800	41232	94.3	TFT(Surr)
14.859	-0.002	1538	16140	91.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	281960	0.883
8015C 2MP-TMB	(3.75 to 15.78)	677374	683600	1.009
AK101 nC6-nC10	(4.21 to 14.52)	544975	547435	1.005
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	286074	0.865

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.273	-0.002	11905	96.1	TFT(Surr)
14.877	-0.002	16731	93.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.471	-0.002	3261	3.74	Benzene
9.242	-0.001	21716	39.45	Toluene
12.088	-0.003	4708	9.78	Ethylbenzene
12.251	0.000	18462	39.62	M/P-Xylene
13.155	-0.003	7104	18.73	O-Xylene
4.102	-0.028	795	2.48	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a004.d

Date : 30-MAY-2012 12:26

Client ID:

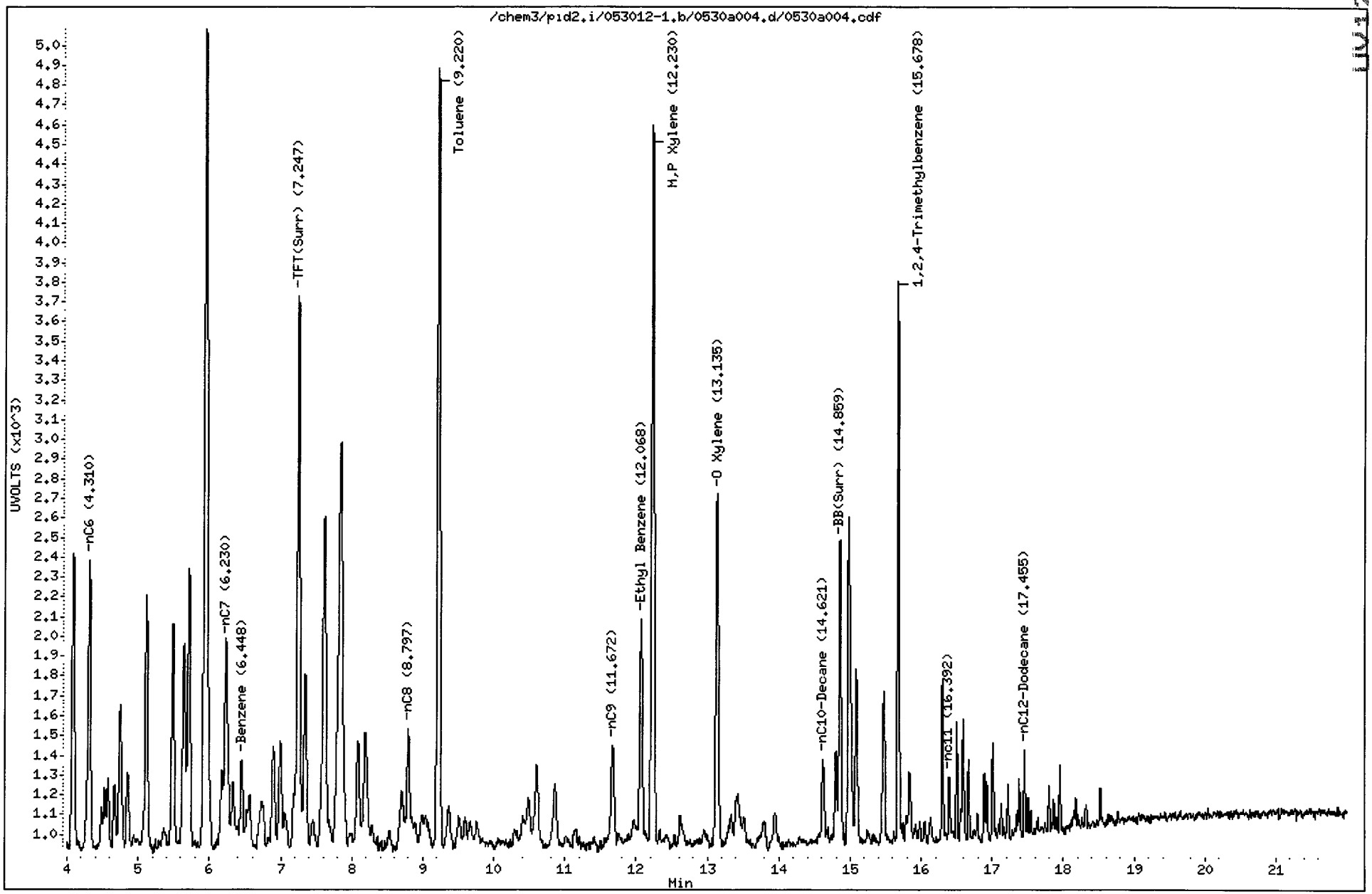
Sample Info: LCS0530

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a004.d

Date : 30-MAY-2012 12:26

Client ID:

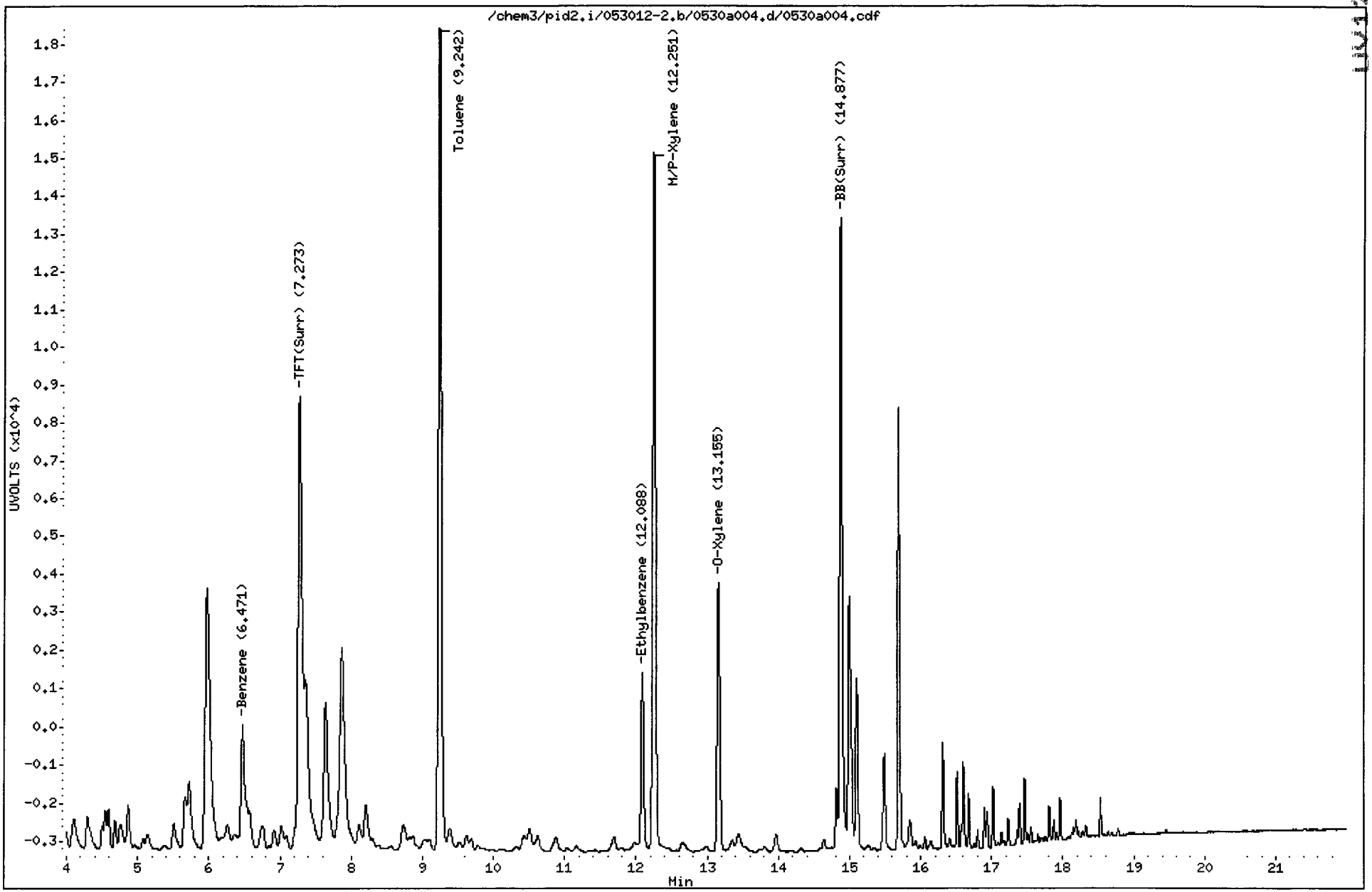
Sample Info: LCS0530

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a005.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a005.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0530
Client ID:
Injection Date: 30-MAY-2012 12:53
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.246	-0.002	2595	38675	87.4	TFT(Surr)
14.858	-0.003	1456	15324	86.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	279645	0.876
8015C 2MP-TMB	(3.75 to 15.78)	677374	648705	0.958
AK101 nC6-nC10	(4.21 to 14.52)	544975	516778	0.948
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	281788	0.852

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.272	-0.002	11004	88.8	TFT(Surr)
14.876	-0.003	15770	88.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.470	-0.003	3268	3.75	Benzene
9.241	-0.002	21742	39.50	Toluene
12.087	-0.004	4705	9.78	Ethylbenzene
12.249	-0.001	18355	39.39	M/P-Xylene
13.154	-0.004	7036	18.55	O-Xylene
4.102	-0.027	767	2.39	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a005.d

Date : 30-MAY-2012 12:53

Client ID:

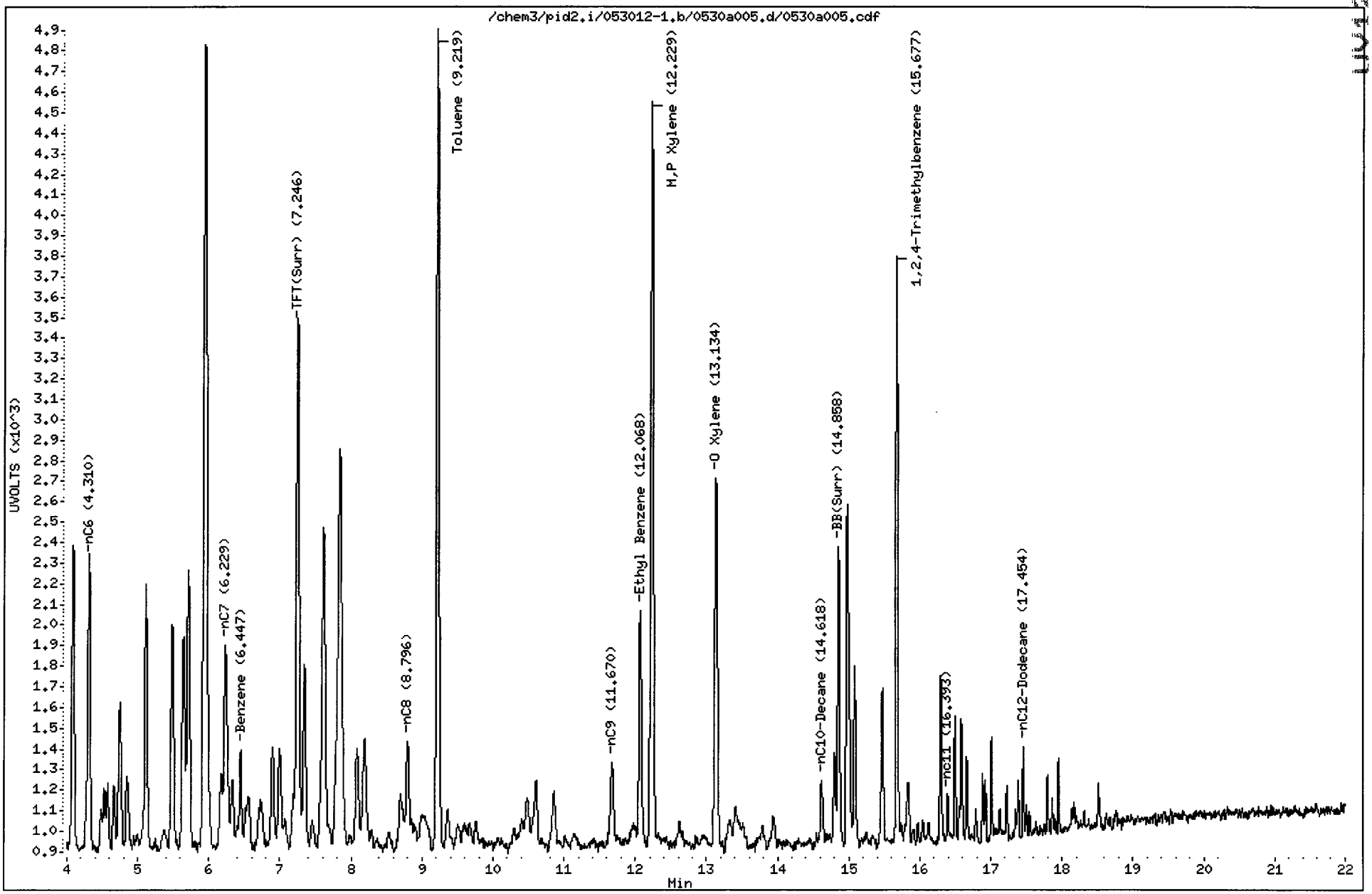
Sample Info: LCSD0530

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a005.d

Date : 30-MAY-2012 12:53

Client ID:

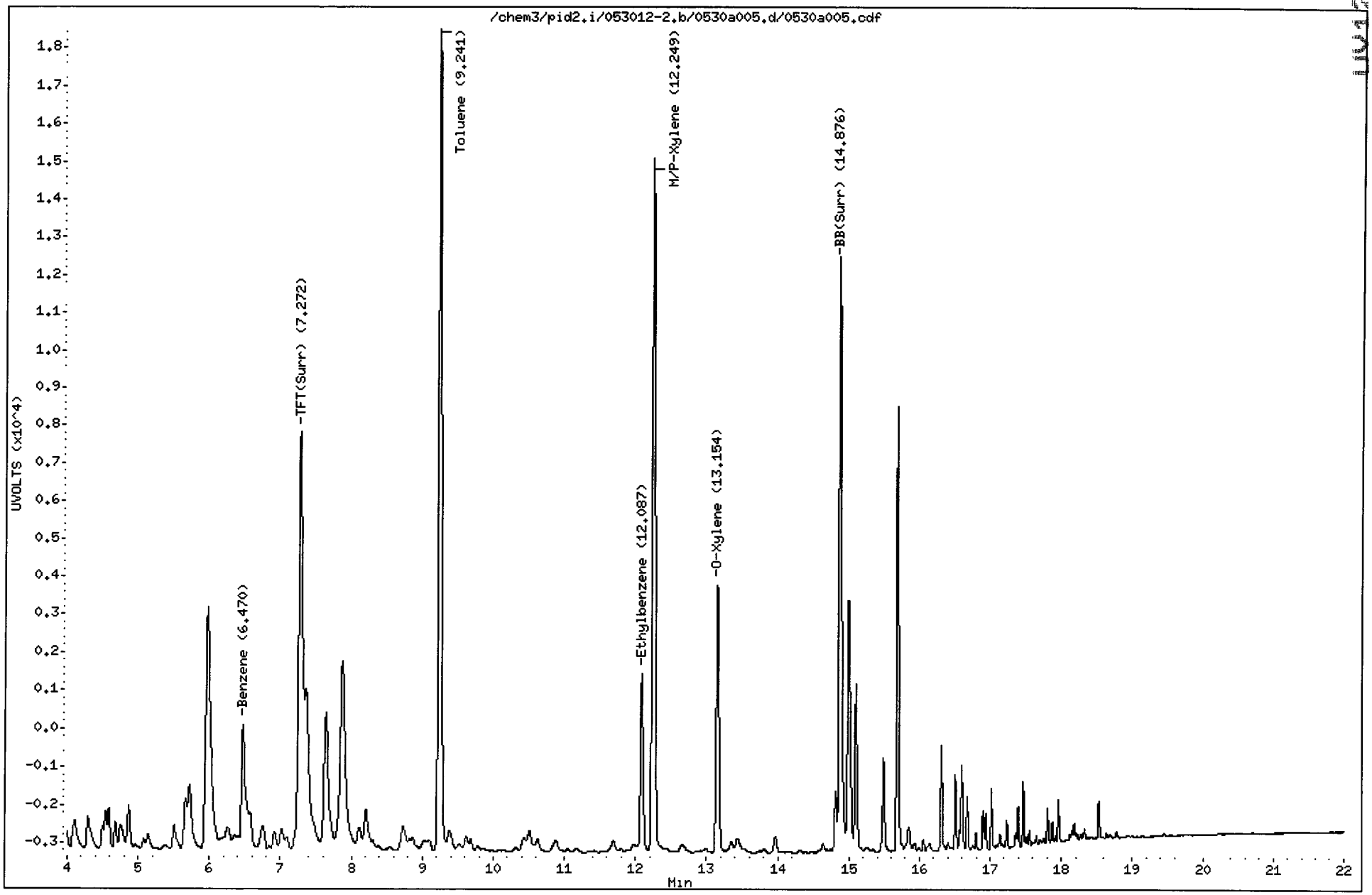
Sample Info: LCSD0530

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9211
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/MH
LCSD: PID2/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	45.2	50.0	90.4%	43.0	50.0	86.0%	5.0%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.1%	105%
Bromobenzene	96.1%	99.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9211
Matrix: Soil
Data Release Authorized: hmw
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/MH
LCSD: PID2/MH

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	189	185	102%	190	185	103%	0.5%
Toluene	2030	1980	103%	2030	1980	103%	0.0%
Ethylbenzene	502	580	86.6%	500	580	86.2%	0.4%
m,p-Xylene	2070	2120	97.6%	2030	2120	95.8%	2.0%
o-Xylene	964	960	100%	940	960	97.9%	2.5%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.3%	105%
Bromobenzene	95.9%	100%

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a004.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a004.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0531
Client ID:
Injection Date: 31-MAY-2012 07:44
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.003	2941	42534	99.1	TFT(Surr)
14.863	0.000	1618	16617	96.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	292567	0.916
8015C 2MP-TMB	(3.76 to 15.78)	677374	661207	0.976
AK101 nC6-nC10	(4.21 to 14.52)	544975	525247	0.964
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	298883	0.904

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	12303	99.3	TFT(Surr)
14.881	0.000	17123	95.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.472	-0.003	3297	3.78	Benzene
9.244	-0.002	22366	40.63	Toluene
12.093	-0.001	4830	10.03	Ethylbenzene
12.254	0.002	19251	41.32	M/P-Xylene
13.159	-0.001	7309	19.27	O-Xylene
4.103	-0.030	825	2.58	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a004.d

Date : 31-MAY-2012 07:44

Client ID:

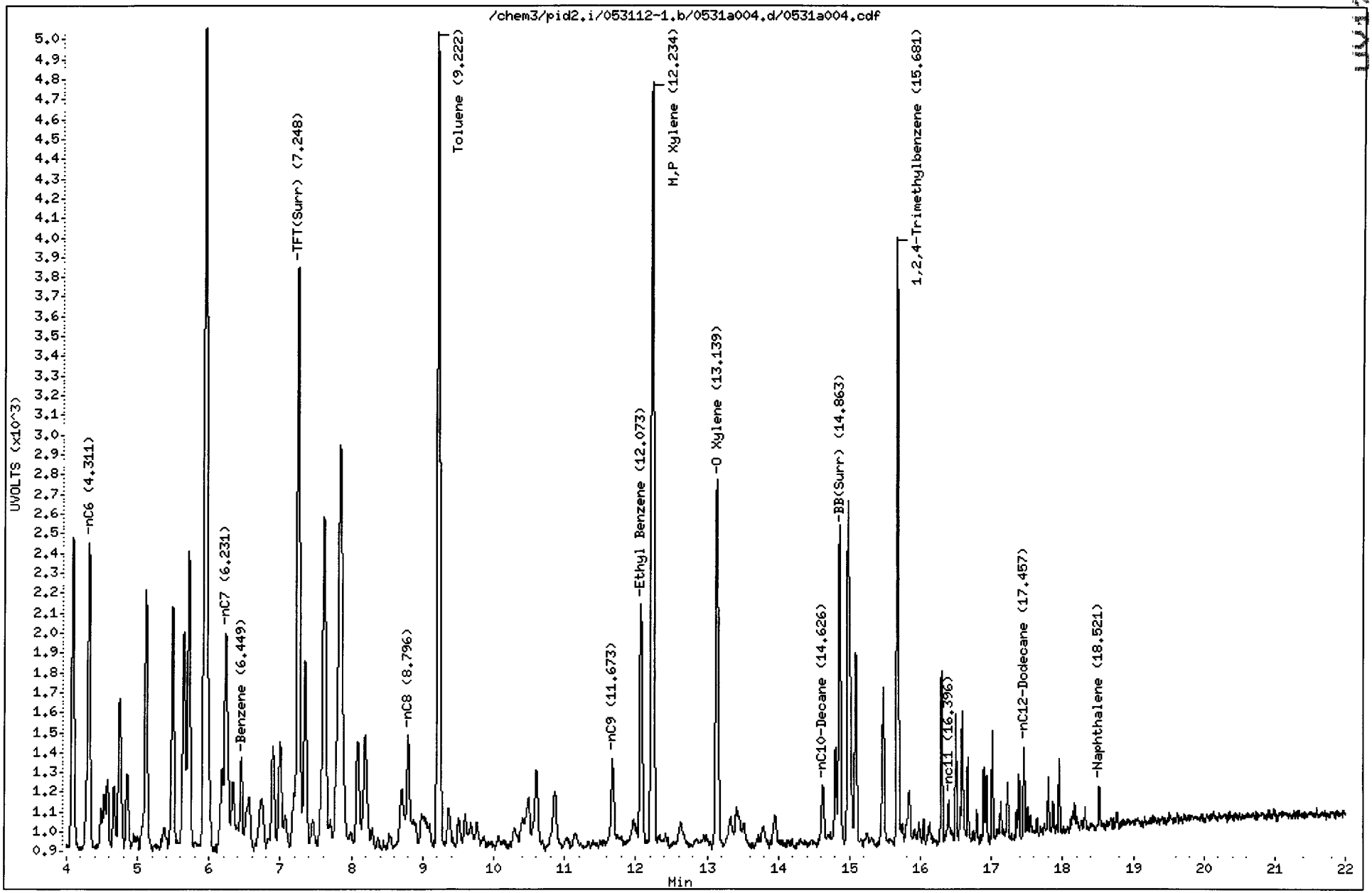
Sample Info: LCS0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a004.d

Date : 31-MAY-2012 07:44

Client ID:

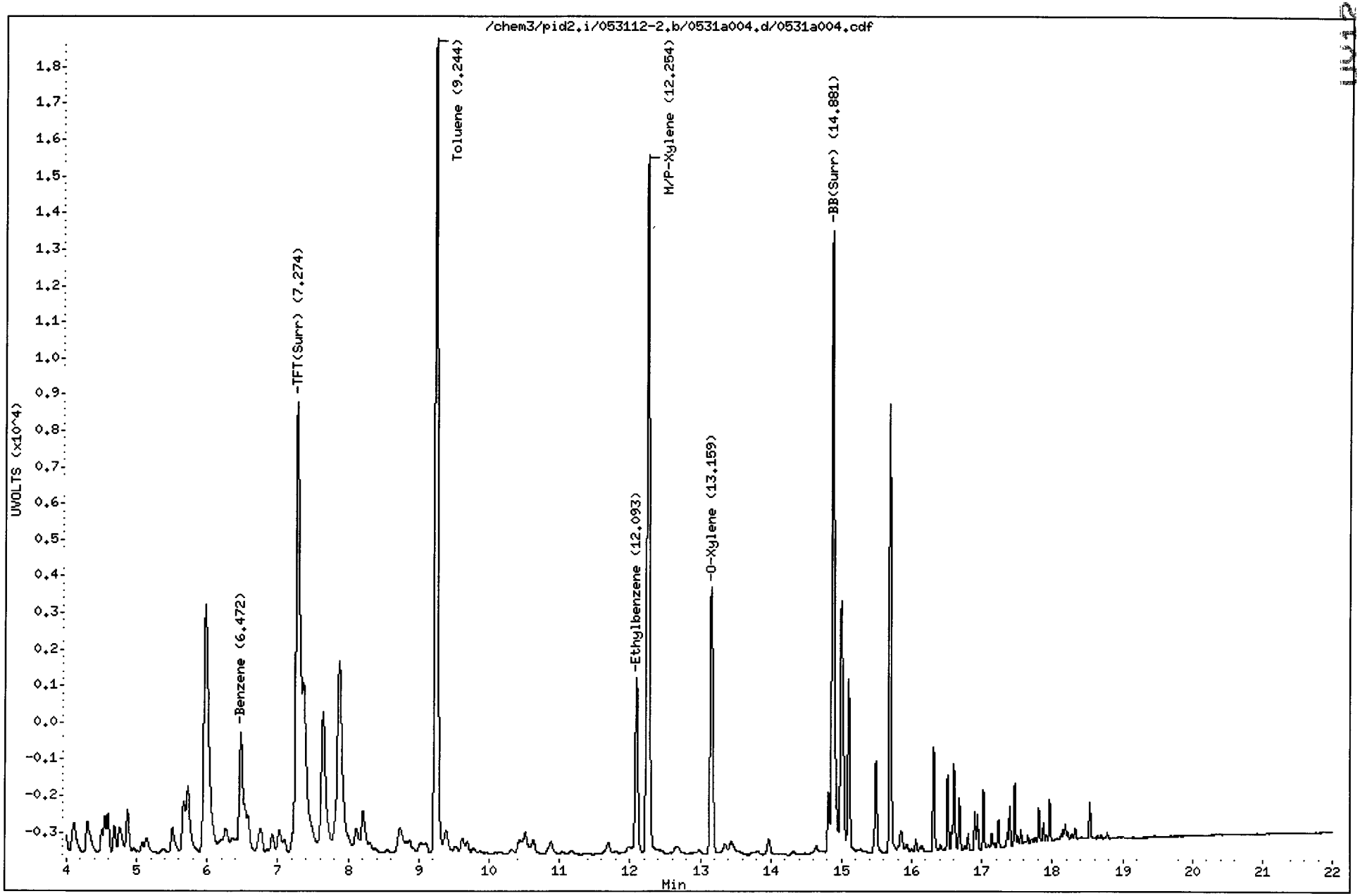
Sample Info: LCS0531

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a005.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a005.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0531
Client ID:
Injection Date: 31-MAY-2012 08:12
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.253	0.002	3112	45221	104.8	TFT(Surr)
14.863	0.000	1675	17104	99.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	278614	0.873
8015C 2MP-TMB	(3.76 to 15.78)	677374	676197	0.998
AK101 nC6-nC10	(4.21 to 14.52)	544975	541818	0.994
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	284518	0.860

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.279	0.002	12987	104.8	TFT(Surr)
14.882	0.000	17861	100.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.476	0.000	3322	3.81	Benzene
9.248	0.002	22340	40.59	Toluene
12.094	0.000	4809	9.99	Ethylbenzene
12.256	0.004	18910	40.58	M/P-Xylene
13.161	0.001	7131	18.80	O-Xylene
4.107	-0.026	800	2.50	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

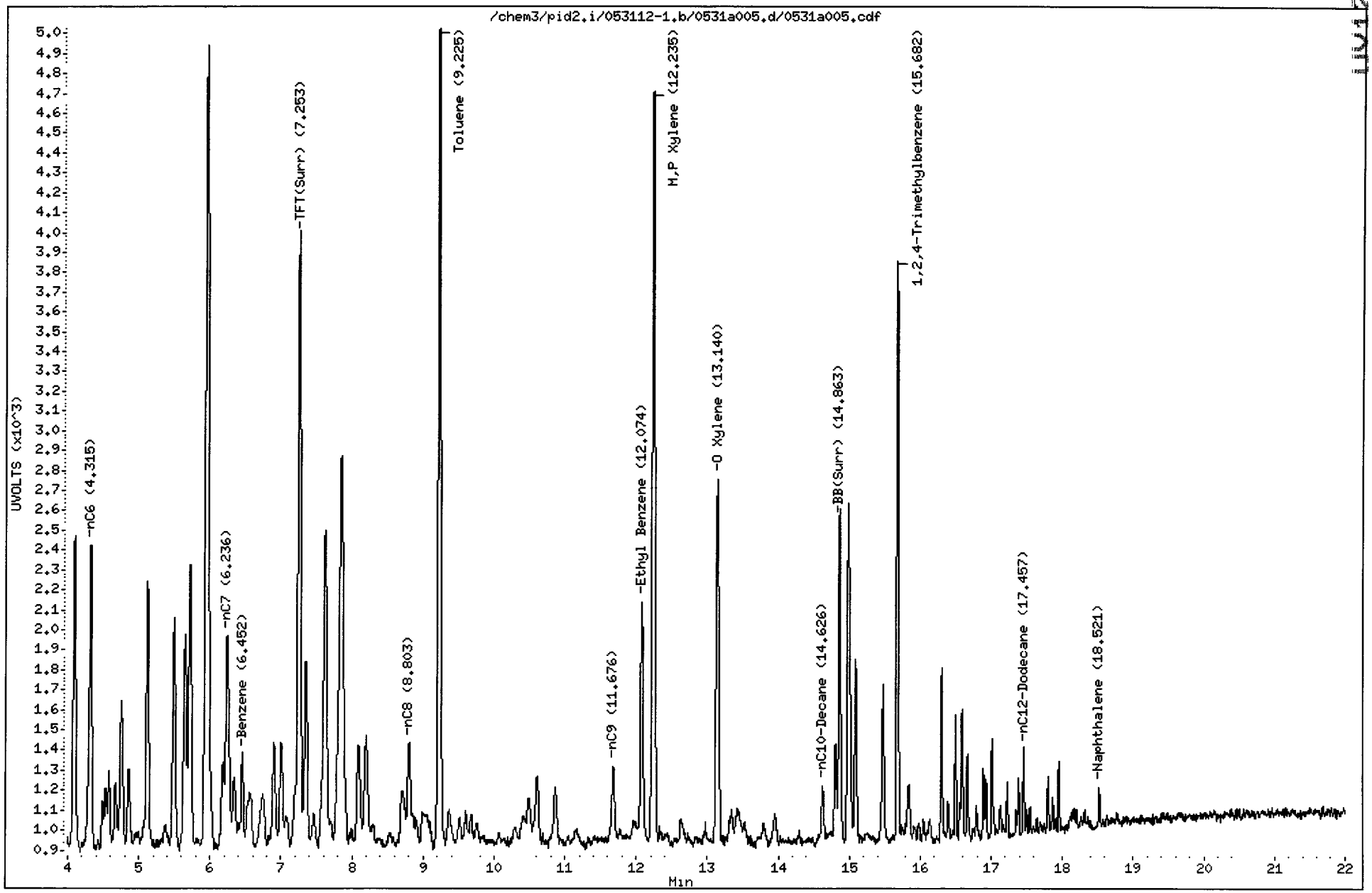
Sample Info: LCSD0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

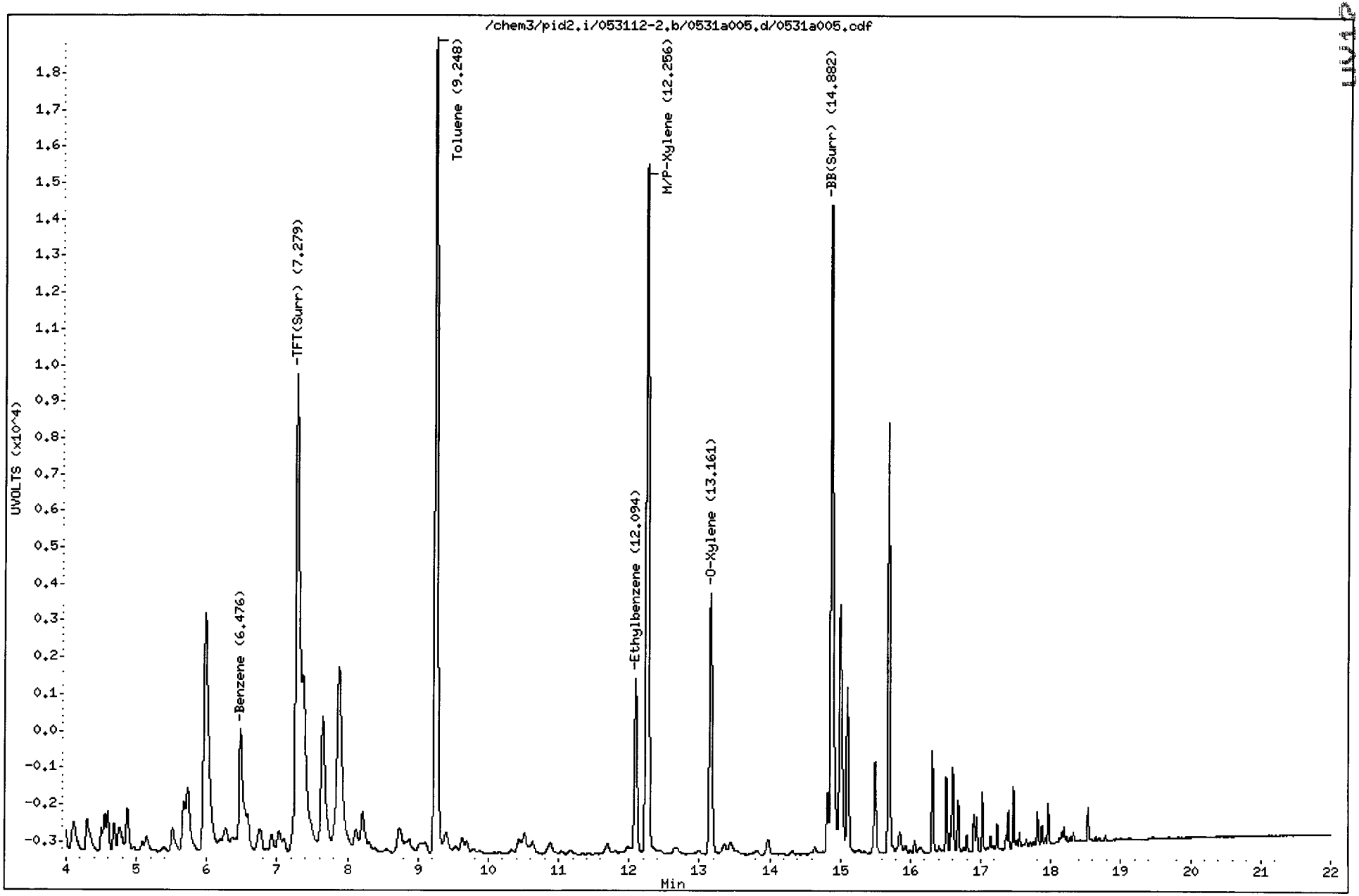
Sample Info: LCSD0531

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-053012**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-053012
LIMS ID: 12-9210
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/30/12 13:21
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	95.4%
Bromobenzene	94.4%

Gasoline Surrogate Recovery

Trifluorotoluene	93.5%
Bromobenzene	94.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

MH 6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053012-1.b/0530a006.d
Data file 2: /chem3/pid2.i/053012-2.b/0530a006.d
Method: /chem3/pid2.i/053012-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0530
Client ID:
Injection Date: 30-MAY-2012 13:21
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.244	-0.004	2777	35625	93.5	TFT(Surr)
14.857	-0.004	1590	16436	94.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.75 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	0	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.270	-0.004	11817	95.4	TFT(Surr)
14.875	-0.004	16865	94.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053012-1.b/0530a006.d

Page 1

Date : 30-MAY-2012 13:21

Client ID:

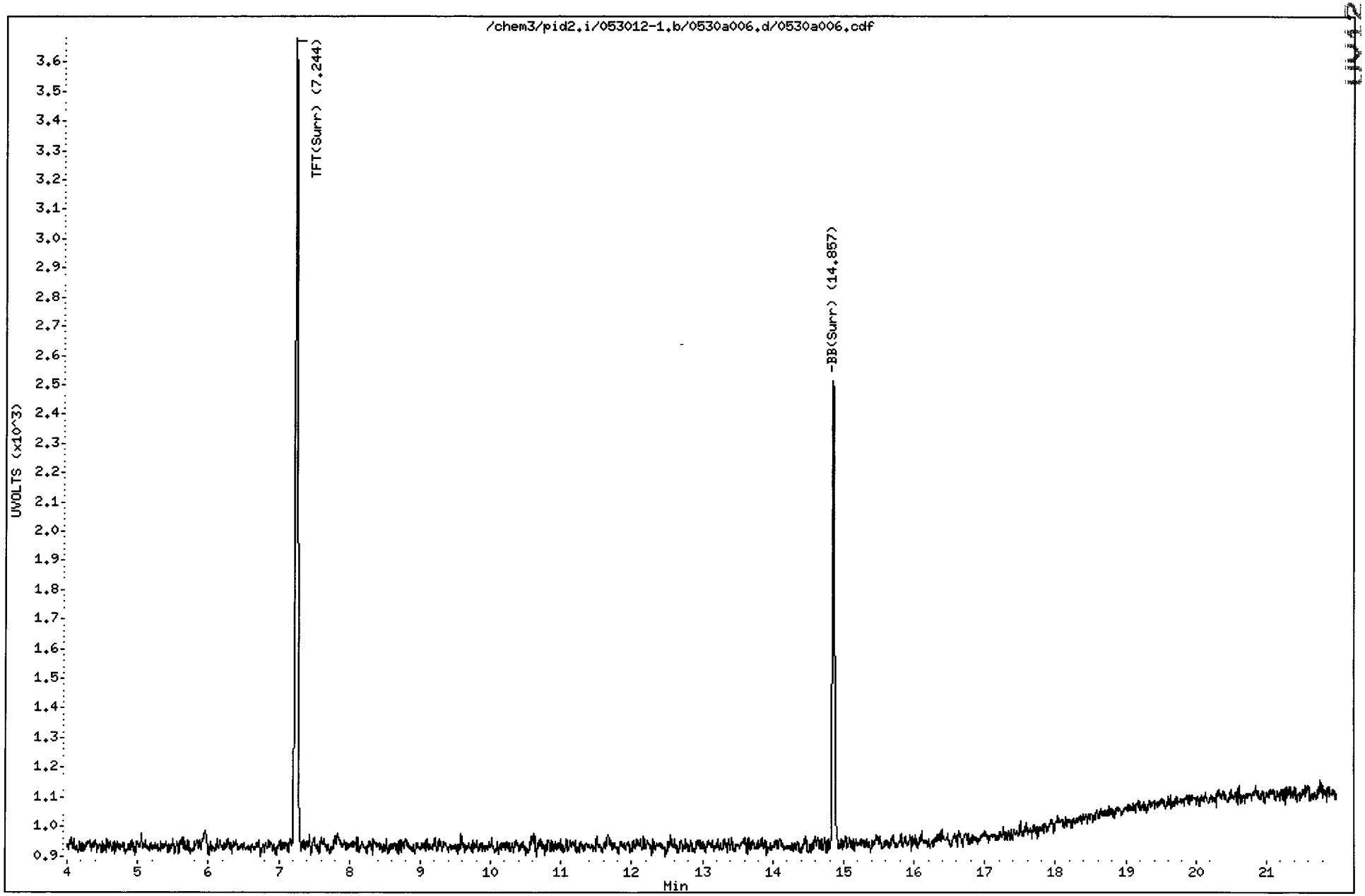
Instrument: pid2.i

Sample Info: MB0530

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/053012-2.b/0530a006.d

Date : 30-MAY-2012 13:21

Client ID:

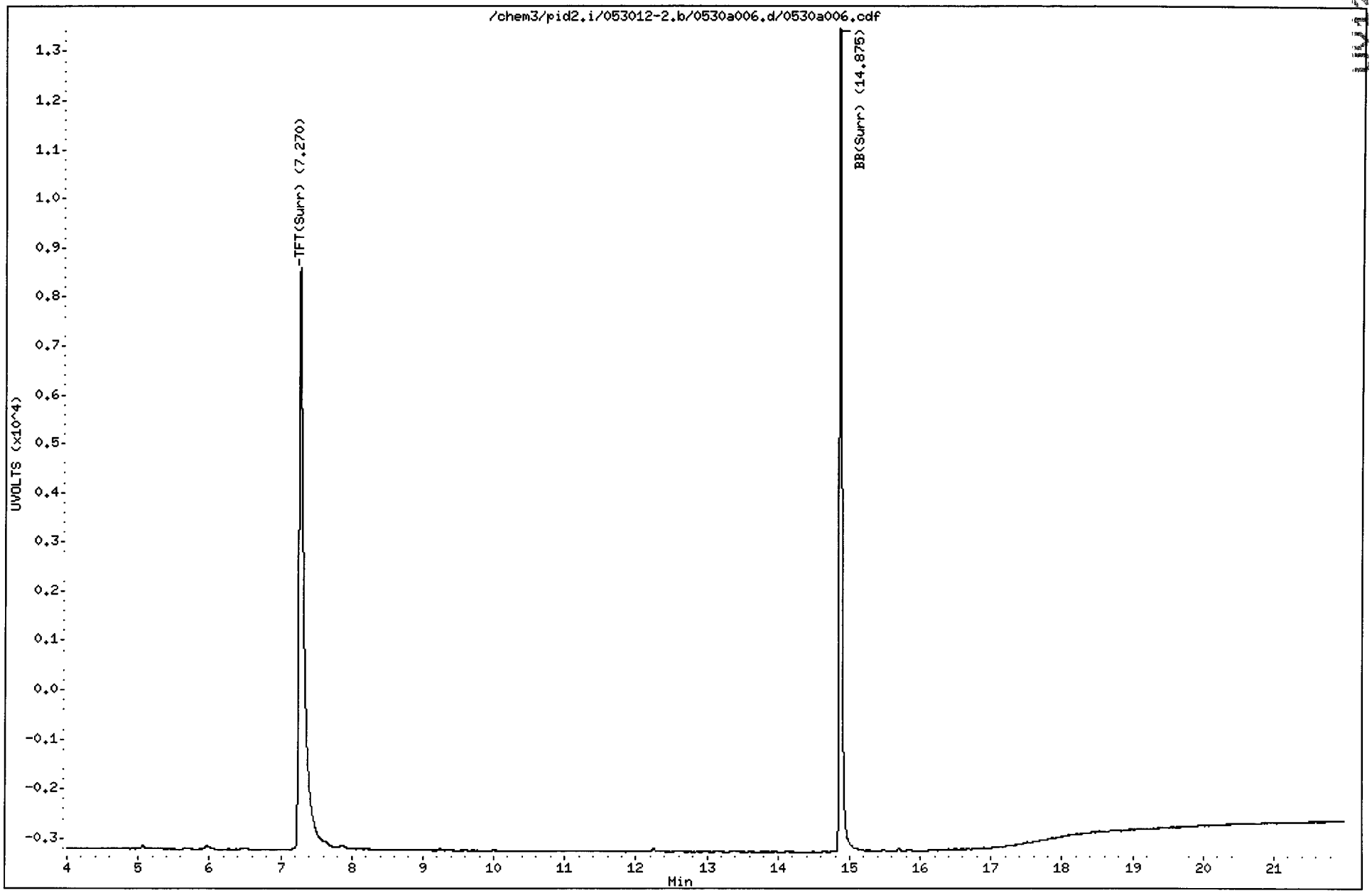
Sample Info: MB0530

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-053112**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-053112
LIMS ID: 12-9211
Matrix: Soil
Data Release Authorized: MW
Reported: 06/01/12

QC Report No: UV12-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/31/12 08:40
Instrument/Analyst: PID2/MH

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.8%
Bromobenzene	93.2%

Gasoline Surrogate Recovery

Trifluorotoluene	94.6%
Bromobenzene	92.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

MH
6/1/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a006.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a006.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0531
Client ID:
Injection Date: 31-MAY-2012 08:40
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.003	2808	35447	94.6	TFT(Surr)
14.861	-0.002	1563	15598	92.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	0	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	0	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	11742	94.8	TFT(Surr)
14.879	-0.002	16651	93.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a006.d

Date : 31-MAY-2012 08:40

Client ID:

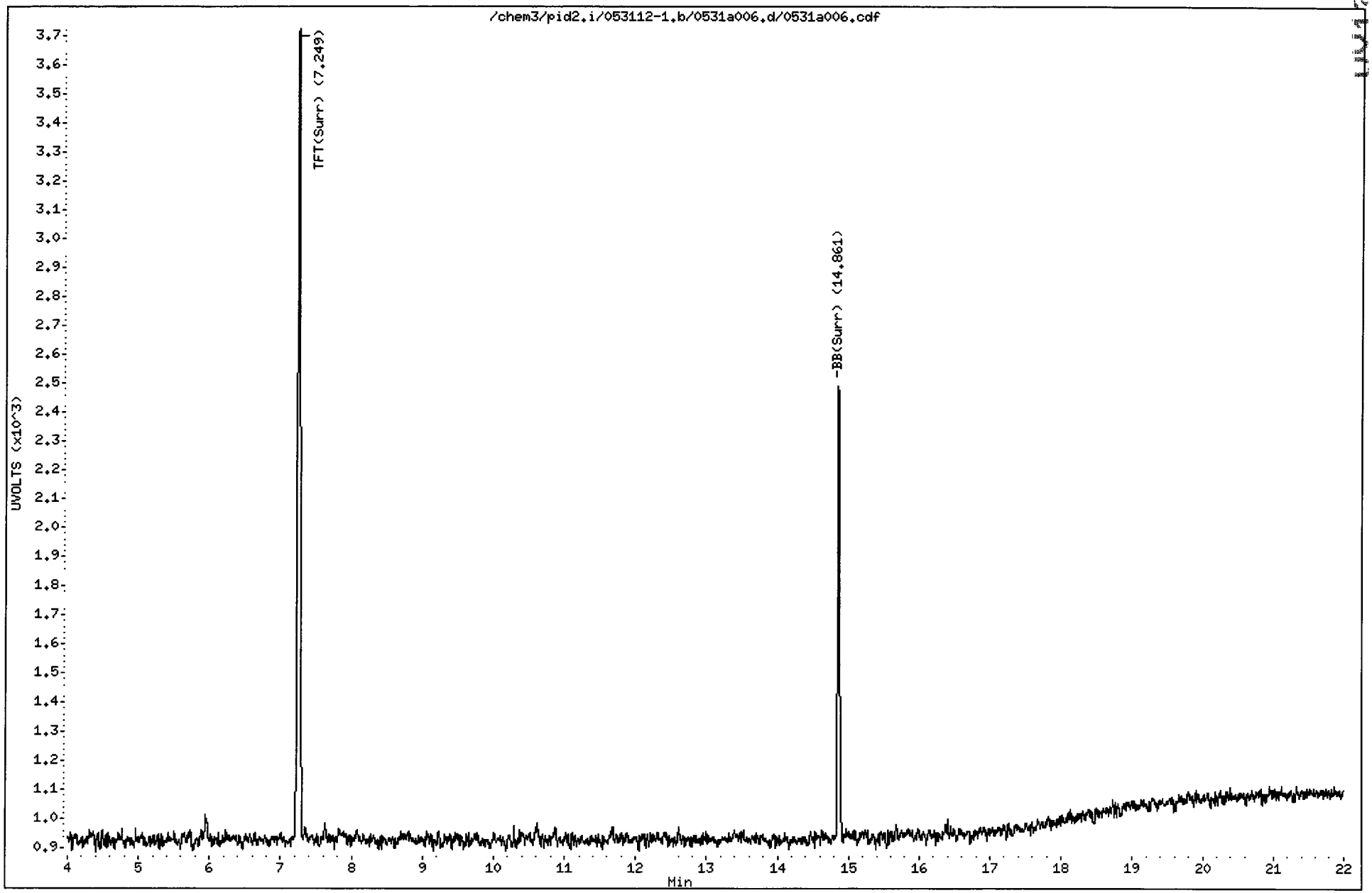
Sample Info: MB0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a006.d

Date : 31-MAY-2012 08:40

Client ID:

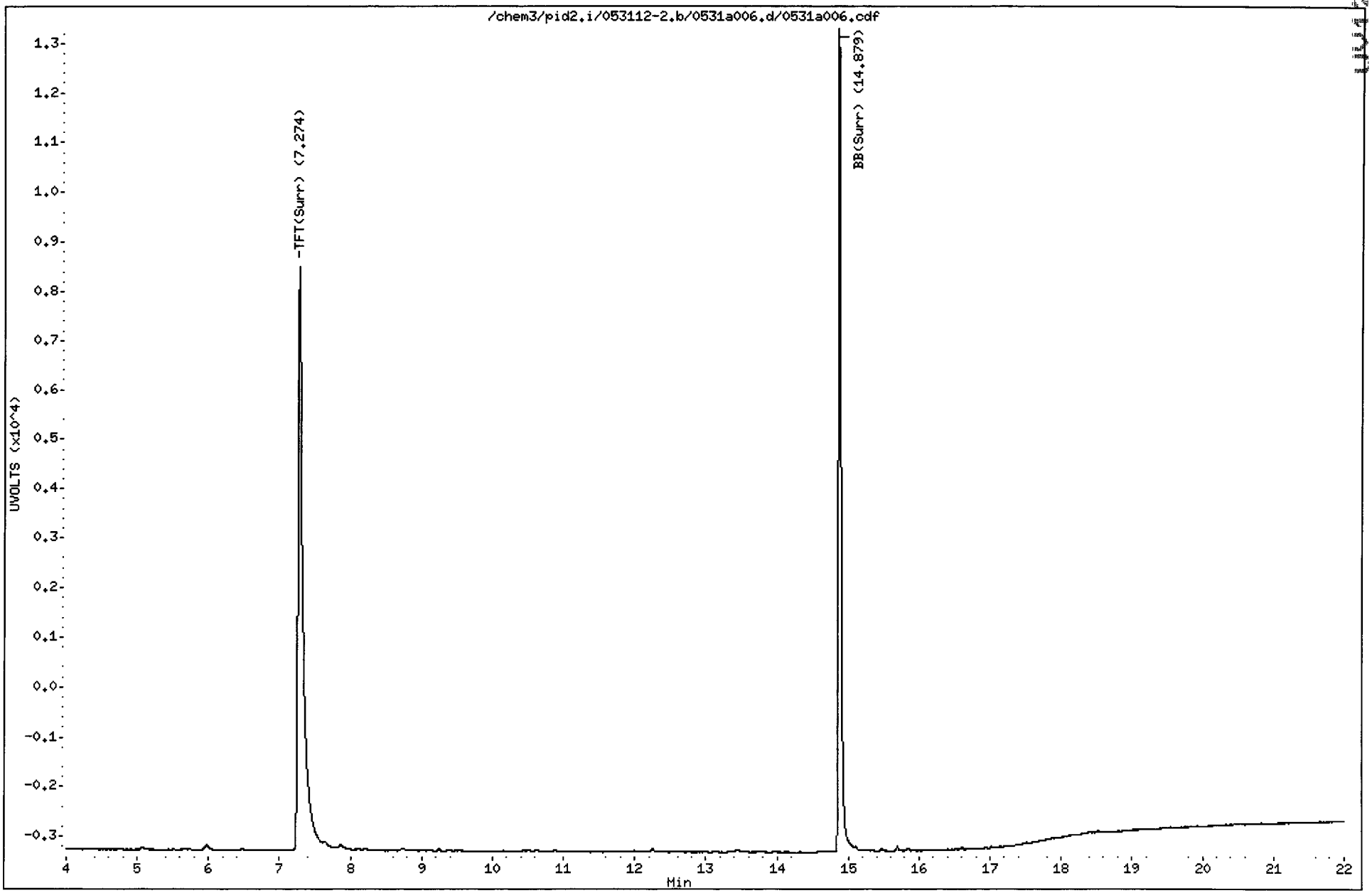
Sample Info: MB0531

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 14, 2012

Matt Dalton
Dalton, Olmsted, & Fuglevand
10827 NE 68th, Suite B
Kirkland, WA 98033

RE: 1920 Port of Tacoma Rd, USO-022
ARI Job No.: UV13

Dear Matt:

Please find enclosed the original Chain-of-Custody (COC) records, sample receipt documentation, and the final analytical results for samples from the project referenced above. Analytical Resources, Inc. (ARI) twenty soil samples on May 21, 2012 under ARI job UV12. For details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BETX, as requested on the COCs.

Due to matrix interferences, BETX results could not be confirmed and were possibly false positives for several samples. Two soil samples were selected at random and analyzed on a GC/MS instrument by method SW8260C to confirm results. Results were confirmed and all BETX data have been reported as is. No further corrective action was taken.

The NWTPH-Gx surrogate percent recovery of Bromofluorobenzene was outside the control limits high for sample **USO-P13-C**. All other surrogate percent recoveries were within control limits. No corrective action was taken.

An electronic copy of this report and all associated raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan Dunnihoo
Director, Client Services
sue@arilabs.com
206-695-6207

cc: eFile UV13

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 4113	Turn-around Requested: Normal	Date: 5/21/12	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 7 of 7	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1.2, 2.0
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-022	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX								Notes/Comments
USO-P13-A	5/20/12	1125	Soil	3	X								
USO-P13-B	5/20/12	1130	Soil	3	X								
USO-P13-C	5/20/13	1135	Soil	3	X								
USO-P13-D	5/20/14	1140	Soil	3	X								
USO-P13-E	5/20/15	1145	Soil	3	X								
USO-P14-A	5/20/16	1220	Soil	3	X								
USO-P14-B	5/20/17	1225	Soil	3	X								
USO-P14-C	5/20/18	1230	Soil	3	X								
USO-P14-D	5/20/19	1235	Soil	3	X								
USO-P14-E	5/20/20	1240	Soil	3	X								

Comments/Special Instructions	Relinquished by (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: Taylor Streeter	Printed Name	Printed Name
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 5/21/12 1215	Date & Time: 5-21-12 1215	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF

Project Name: 1920 Port of Tacoma RD

COC No(s): (NA)

Delivered by: Fed-Ex UPS Courier (Hand Delivered) Other:

Assigned ARI Job No.: UV13

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6 0 °C for chemistry) 1.2 2.0

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90947519

Cooler Accepted by: TS Date: 5-21-12 Time: 1215

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? (YES) (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI. (NA)

Was Sample Split by ARI: (NA) YES Date/Time: Equipment: Split by:

Samples Logged by: JM Date: 5/21/12 Time: 1451

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

2 oz jar for USO-P13-D was received empty. All samples collected in May of 2012, per container labels. Date mistake on COC on select samples, wrong year,

By JM Date 5/21/12

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• •	• • •	• • •

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: UV13
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-022
Project Name: 1920 Port of Tacoma

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P13-A	UV13A	12-9240	Soil	05/20/12 11:25	05/21/12 12:15
2.	USO-P13-B	UV13B	12-9241	Soil	05/20/12 11:30	05/21/12 12:15
3.	USO-P13-C	UV13C	12-9242	Soil	05/20/12 11:35	05/21/12 12:15
4.	USO-P13-D	UV13D	12-9243	Soil	05/20/12 11:40	05/21/12 12:15
5.	USO-P13-E	UV13E	12-9244	Soil	05/20/12 11:45	05/21/12 12:15
6.	USO-P14-A	UV13F	12-9245	Soil	05/20/12 12:20	05/21/12 12:15
7.	USO-P14-B	UV13G	12-9246	Soil	05/20/12 12:25	05/21/12 12:15
8.	USO-P14-C	UV13H	12-9247	Soil	05/20/12 12:30	05/21/12 12:15
9.	USO-P14-D	UV13I	12-9248	Soil	05/20/12 12:35	05/21/12 12:15
10.	USO-P14-E	UV13J	12-9249	Soil	05/20/12 12:40	05/21/12 12:15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P13-A
SAMPLE

Lab Sample ID: UV13A
LIMS ID: 12-9240
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 02:05
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 92 mg-dry-wt
Percent Moisture: 2.3%

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	14	62	
108-88-3	Toluene	14	64	
100-41-4	Ethylbenzene	14	800	
179601-23-1	m,p-Xylene	27	130	
95-47-6	o-Xylene	14	360	
	Gasoline Range Hydrocarbons	5.4	270	GAS/GRO

BETX Surrogate Recovery

Trifluorotoluene	74.7%
Bromobenzene	113%

Gasoline Surrogate Recovery

Trifluorotoluene	80.1%
Bromobenzene	106%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a035.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a035.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13A
Client ID: USO-P13-A
Injection Date: 30-MAY-2012 02:05
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.235	-0.001	2379	31936	80.1	TFT(Surr)
14.853	0.004	1793	26033	106.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	1489698	4.666 M
8015C 2MP-TMB	(3.74 to 15.77)	677374	1814202	2.678 M
AK101 nC6-nC10	(4.20 to 14.51)	544975	872800	1.602 M
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	1653758	5.001 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.261	-0.011	9255	74.7	TFT(Surr)
14.869	-0.010	20175	113.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.460	-0.010	995	1.14	Benzene
9.238	-0.009	649	1.18	Toluene
12.076	-0.020	7117	14.79	Ethylbenzene
12.240	-0.019	1145	2.46	M/P-Xylene
13.135	-0.028	2542	6.70	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a035.d

Date : 30-MAY-2012 02:05

Client ID: USO-P13-A

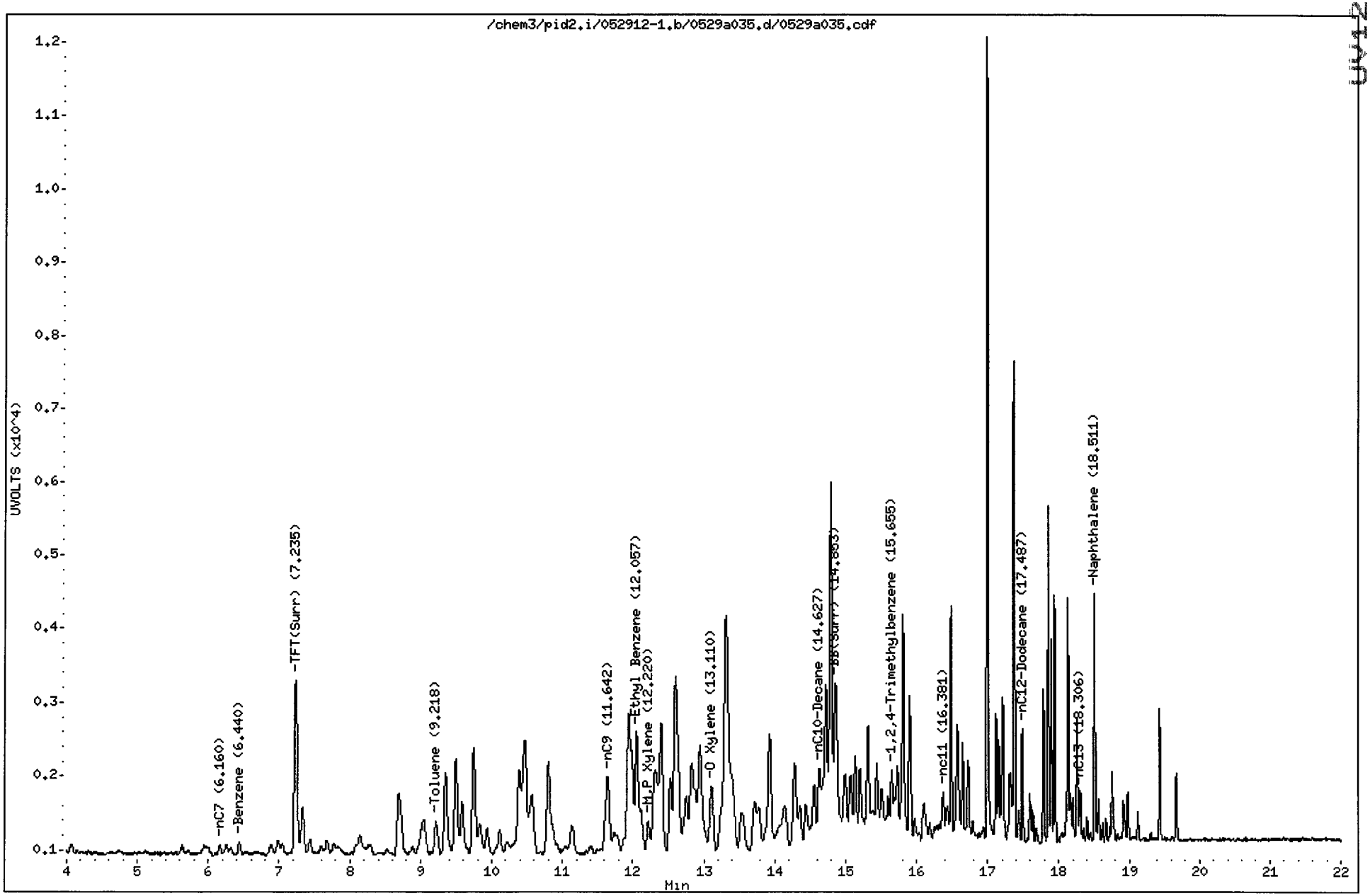
Sample Info: UV13A

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/052912-2.b/0529a035.d

Date : 30-MAY-2012 02:05

Client ID: USO-P13-A

Sample Info: UV13A

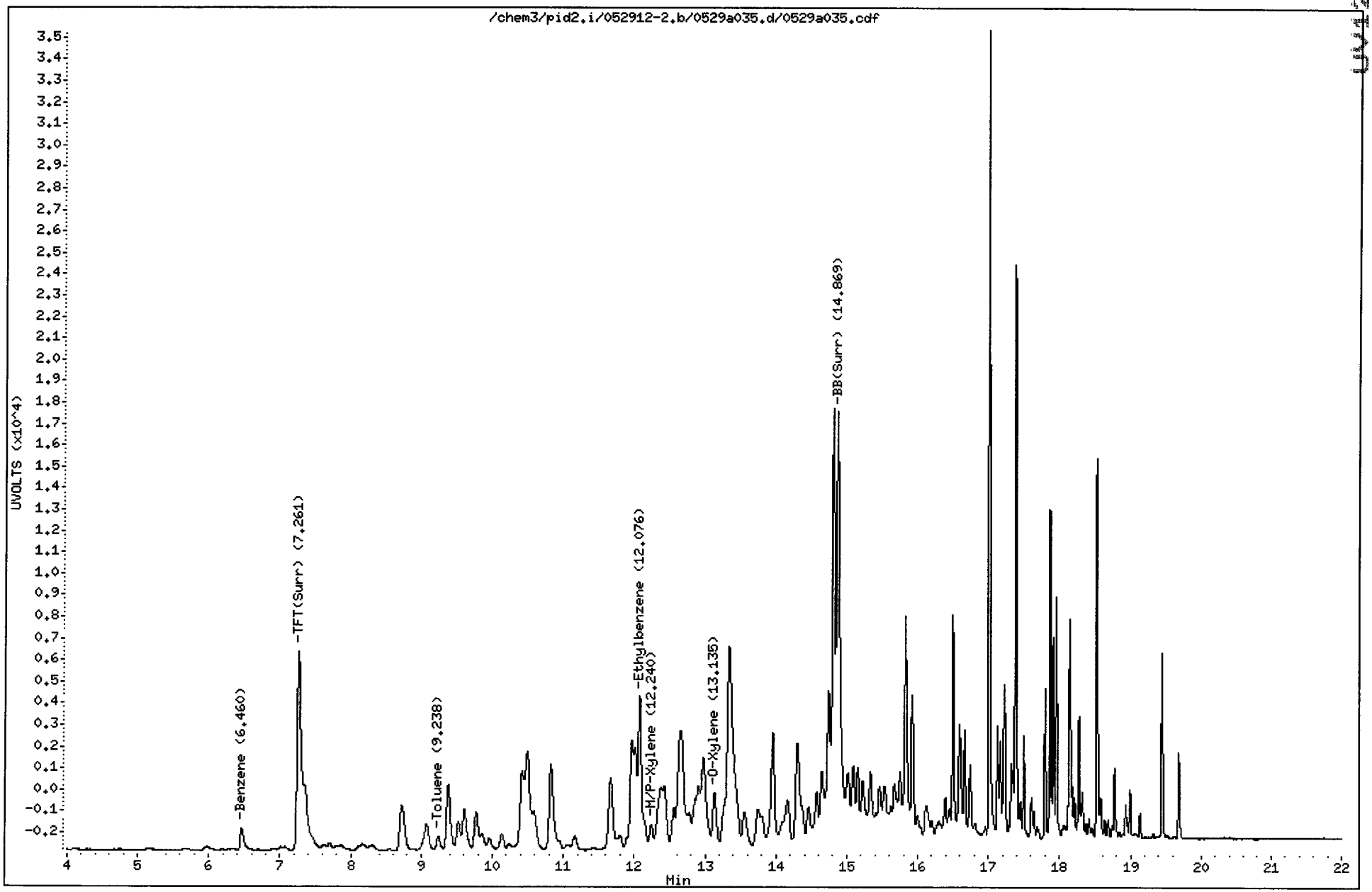
Column phase: RTX 502-2 PID

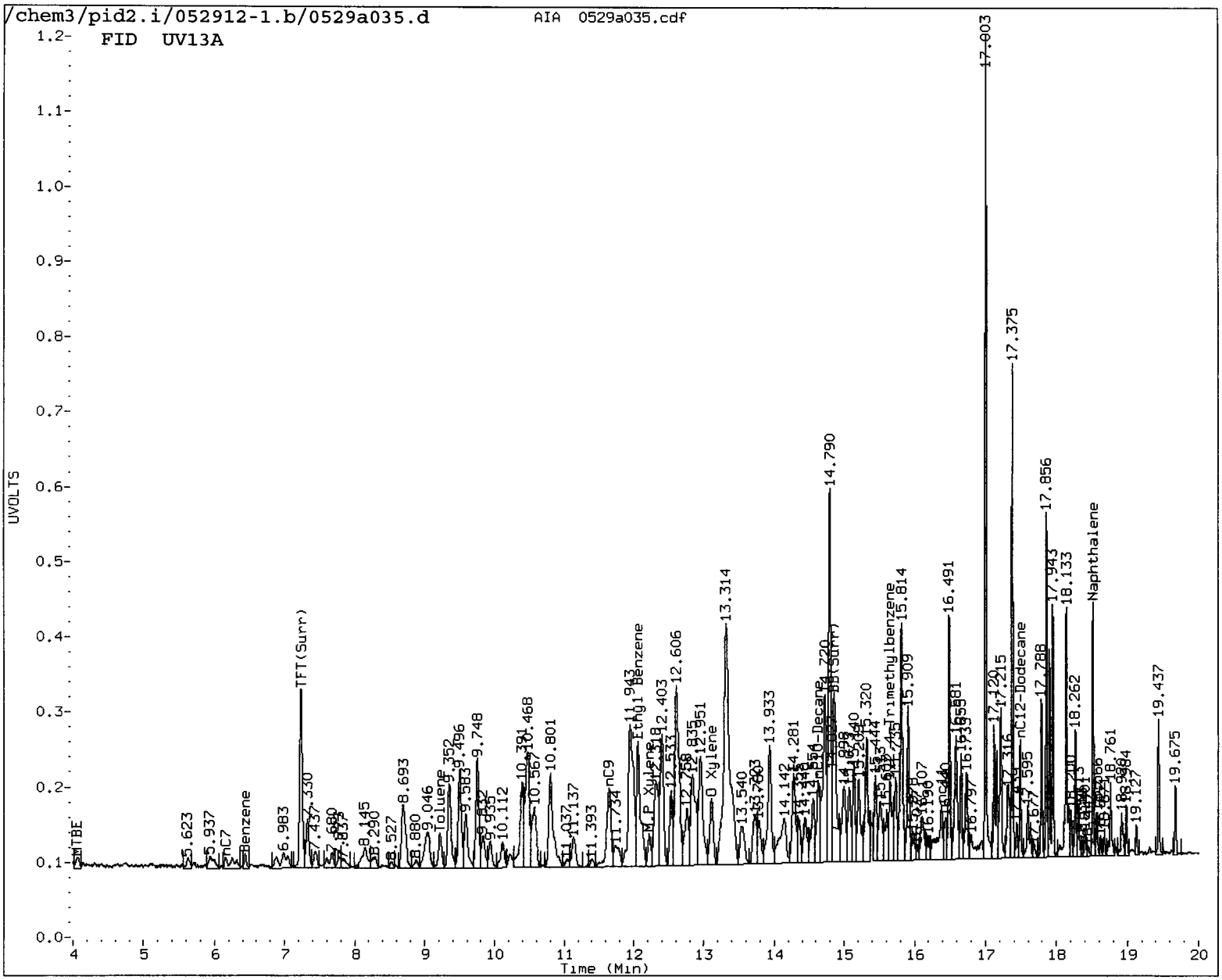
Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV12:00008





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P13-B**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV13B
LIMS ID: 12-9241
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 02:34
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 77 mg-dry-wt
Percent Moisture: 5.2%

CAS Number	Analyte	RL	Result	
71-43-2	**Benzene**	**16**	**270**	
108-88-3	**Toluene**	**16**	**62**	
100-41-4	**Ethylbenzene**	**16**	**1,200**	
179601-23-1	**m,p-Xylene**	**32**	**220**	
95-47-6	**o-Xylene**	**16**	**130**	
				GAS ID
	Gasoline Range Hydrocarbons	**6.5**	**150**	**GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	78.3%
Bromobenzene	99.8%

Gasoline Surrogate Recovery

Trifluorotoluene	85.0%
Bromobenzene	101%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a036.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a036.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13B
Client ID: USO-P13-B
Injection Date: 30-MAY-2012 02:34
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.236	0.000	2522	34031	85.0	TFT(Surr)
14.850	0.001	1707	23453	101.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	633584	1.985 M
8015C 2MP-TMB	(3.74 to 15.77)	677374	1678535	2.478 M
AK101 nC6-nC10	(4.20 to 14.51)	544975	464452	0.852 M
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	754780	2.282 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.260	-0.012	9695	78.3	TFT(Surr)
14.867	-0.012	17831	99.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.459	-0.011	3669	4.21	Benzene
9.231	-0.016	526	0.96	Toluene
12.076	-0.020	8597	17.86	Ethylbenzene
12.236	-0.022	1562	3.35	M/P-Xylene
13.134	-0.029	776	2.05	O-Xylene
4.097	-0.027	95	0.30N	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a036.d

Date : 30-MAY-2012 02:34

Client ID: USO-P13-B

Sample Info: UV13B

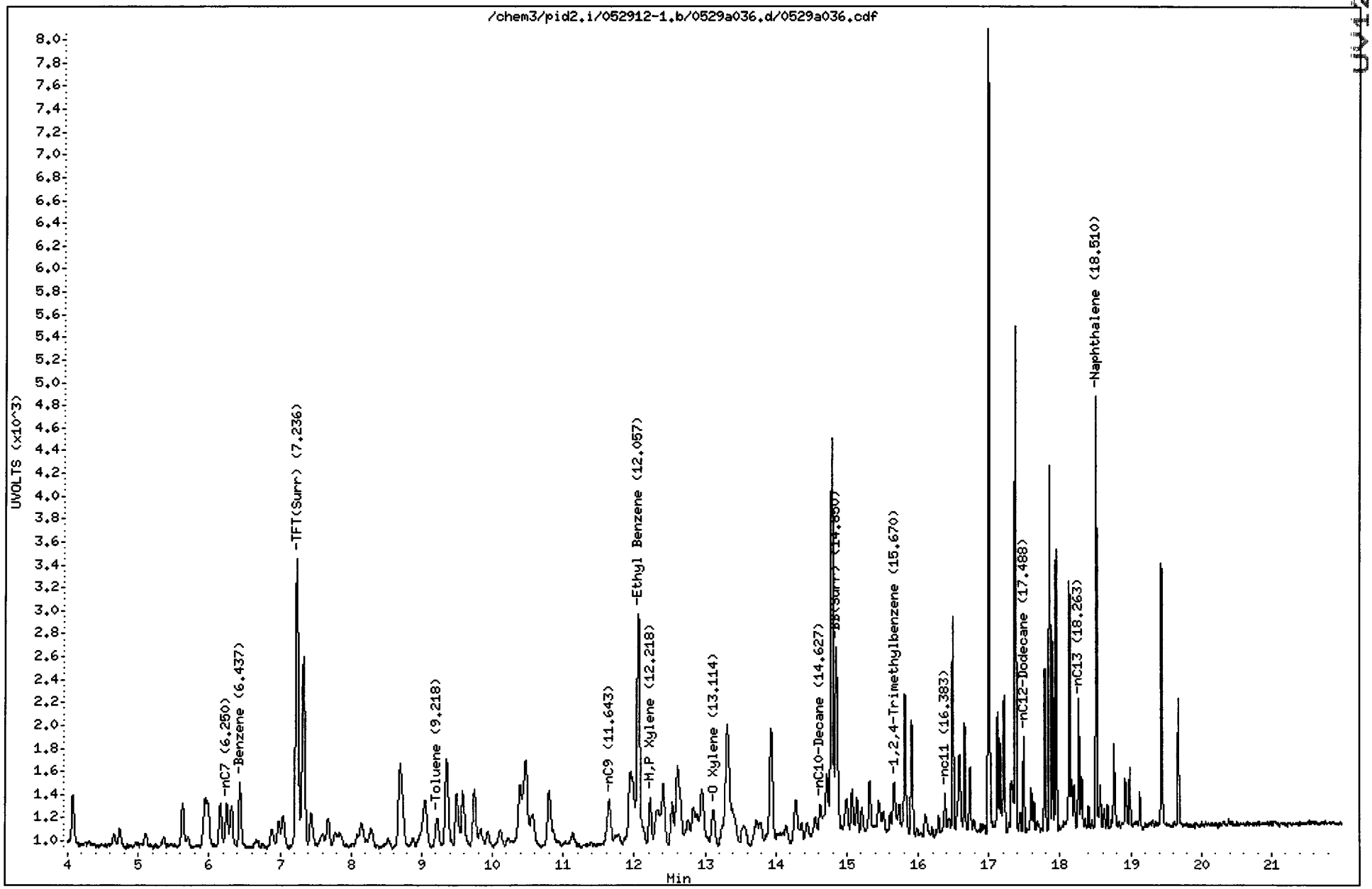
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV012912



Data File: /chem3/pid2.i/052912-2.b/0529a036.d

Date : 30-MAY-2012 02:34

Client ID: USO-P13-B

Sample Info: UV13B

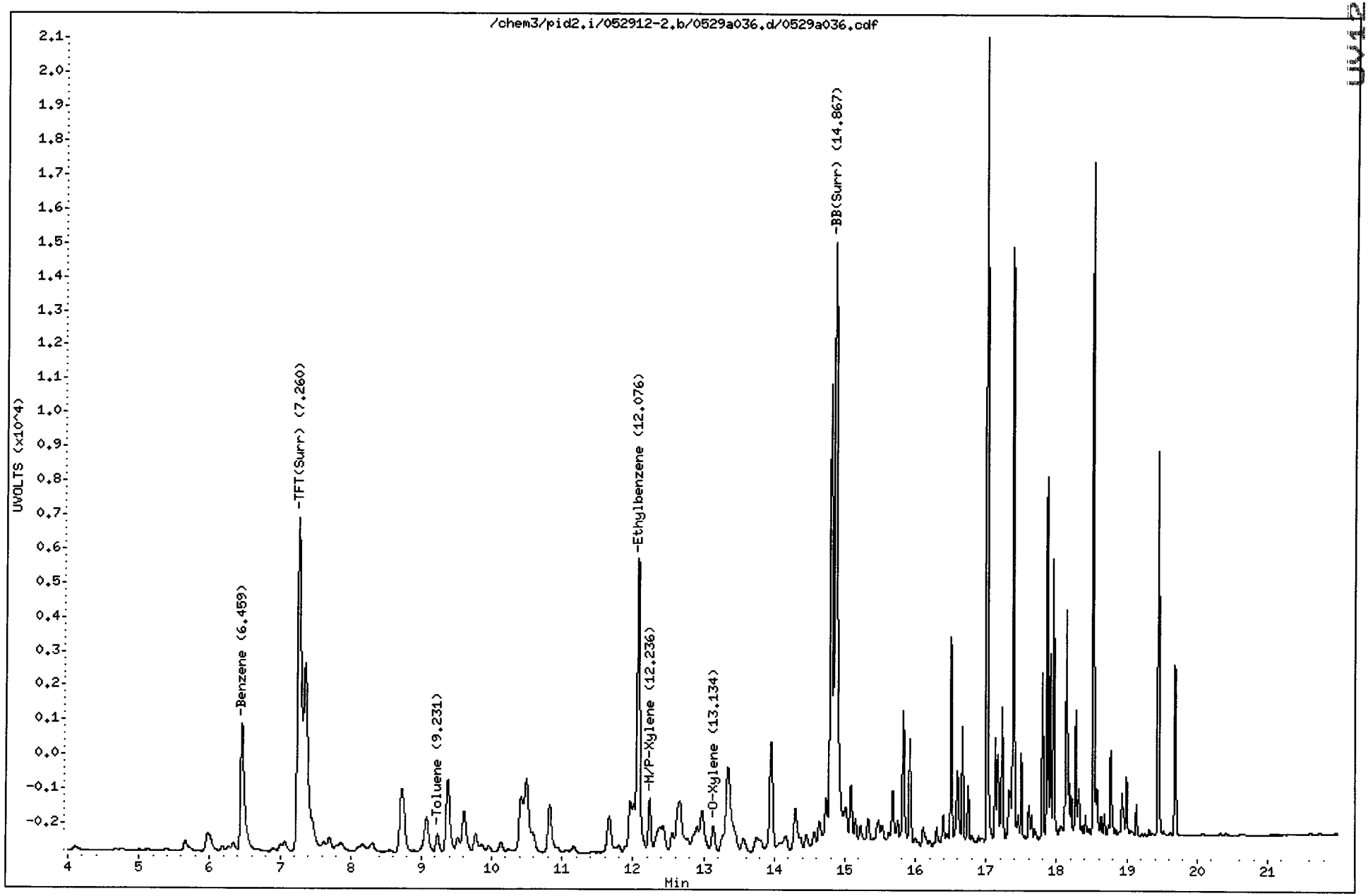
Instrument: pid2.i

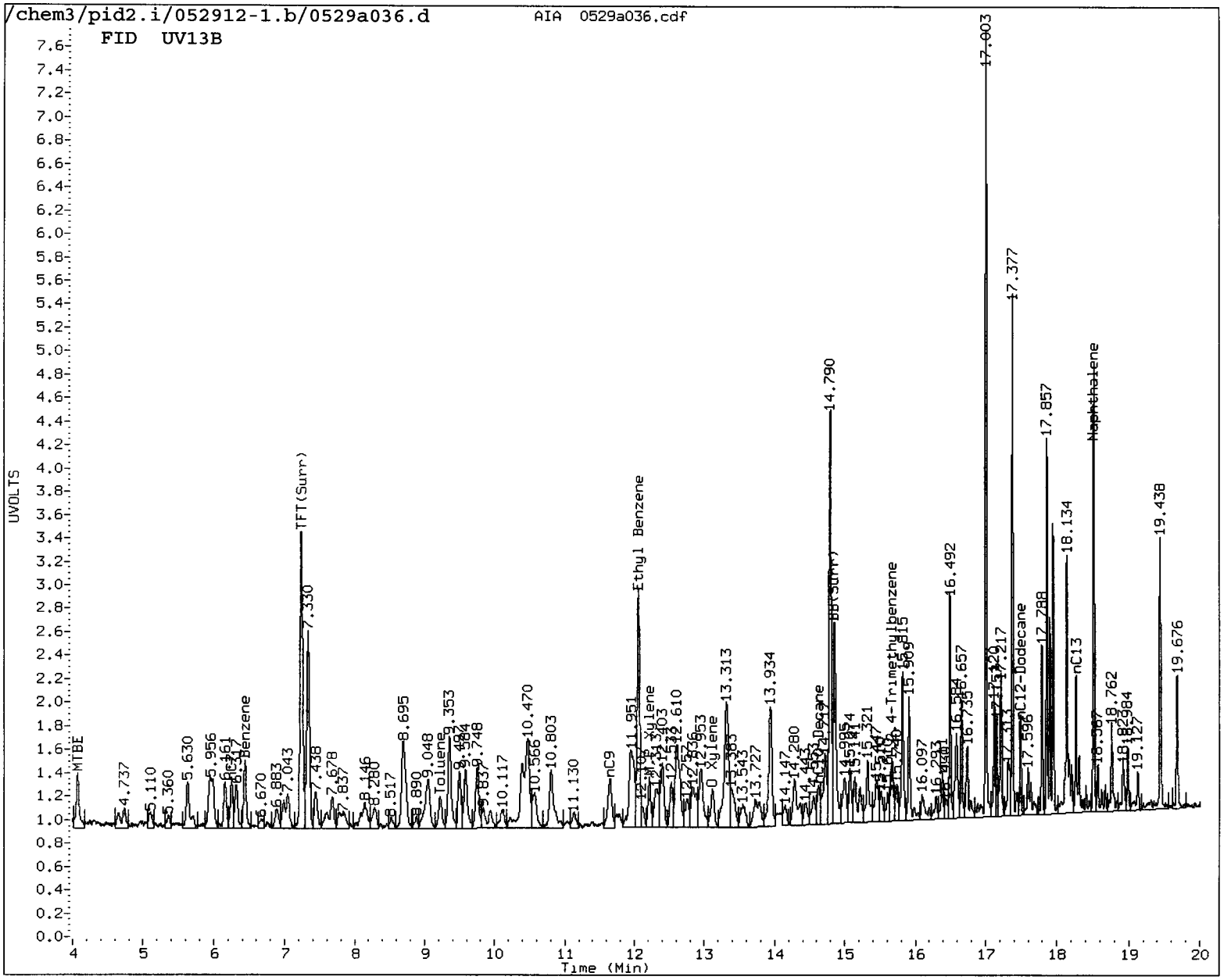
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV13 00013





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JCJ Date: 6/2/12

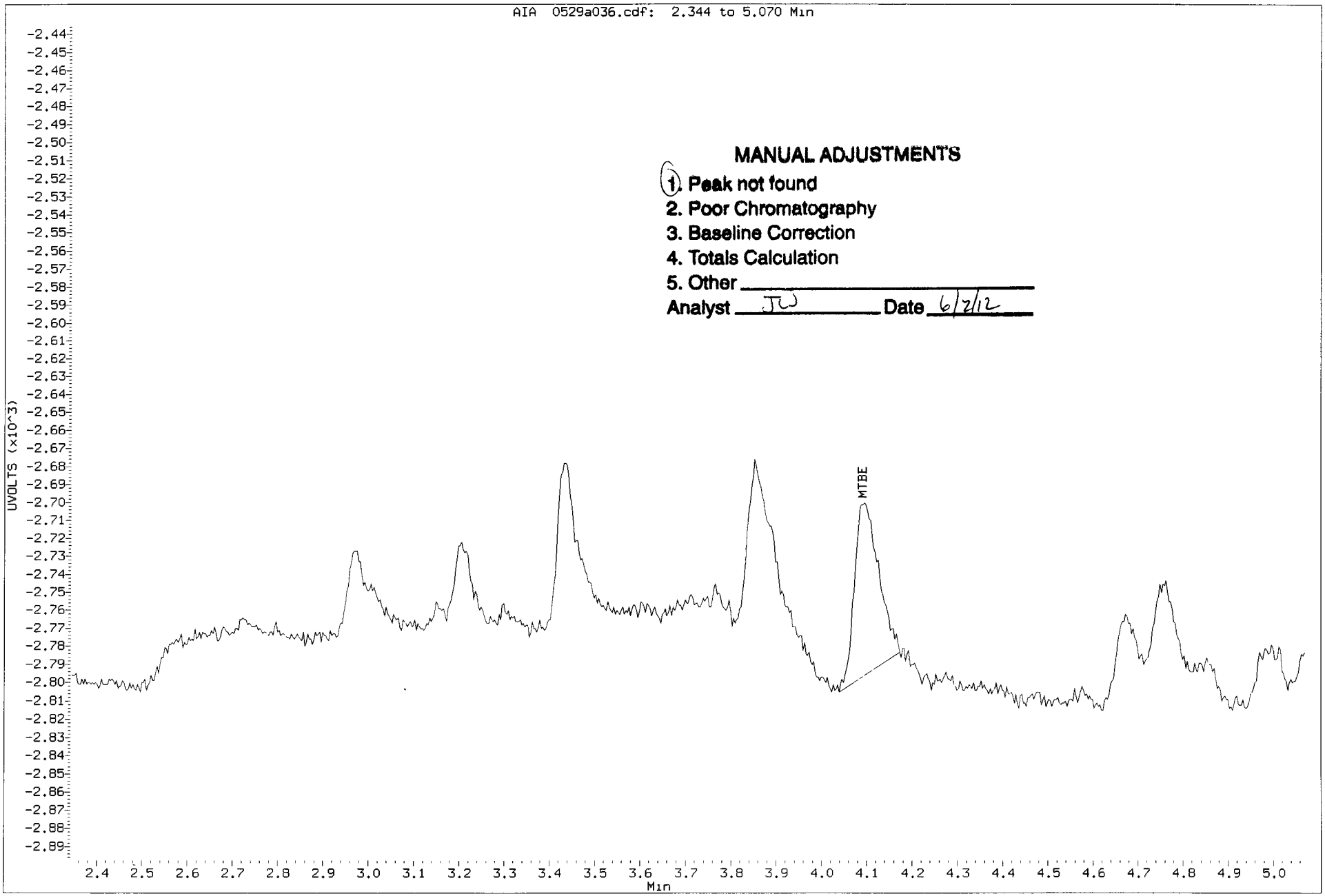
Data File: /chem3/pid2.i/052912-2.b/0529a036.d/0529a036.cdf
Injection Date: 30-MAY-2012 02:34
Instrument: pid2.i
Client Sample ID: USO-P13-B

AIA 0529a036.cdf: 2.344 to 5.070 Min

MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JCJ Date 6/2/12



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P13-C
SAMPLE

Lab Sample ID: UV13C
LIMS ID: 12-9242
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 03:02
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 74 mg-dry-wt
Percent Moisture: 16.9%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	17	< 17 U	
108-88-3	**Toluene**	**17**	**240**	
100-41-4	**Ethylbenzene**	**17**	**420**	
179601-23-1	**m,p-Xylene**	**34**	**240**	
95-47-6	**o-Xylene**	**17**	**1,100**	
	Gasoline Range Hydrocarbons	**6.8**	**670**	GAS ID **GAS/GRO**

BETX Surrogate Recovery

Trifluorotoluene	80.6%
Bromobenzene	126%

Gasoline Surrogate Recovery

Trifluorotoluene	86.1%
Bromobenzene	144%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a037.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a037.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13C
Client ID: USO-P13-C
Injection Date: 30-MAY-2012 03:02
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.236	0.000	2557	46359	86.1	TFT(Surr)
14.867	0.017	2417	37627	143.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	3000824	9.400 M
8015C 2MP-TMB	(3.74 to 15.77)	677374	2682268	3.960 M
AK101 nC6-nC10	(4.20 to 14.51)	544975	2042232	3.747 M
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	3274278	9.901 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.260	-0.012	9986	80.6	TFT(Surr)
14.870	-0.010	22573	126.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.463	-0.007	143	0.16N	Benzene
9.245	-0.002	1953	3.55	Toluene
12.143	0.047	3016	6.27	Ethylbenzene
12.247	-0.011	1640	3.52	M/P-Xylene
13.137	-0.026	5940	15.66	O-Xylene
4.093	-0.030	77	0.24N	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a037.d

Date : 30-MAY-2012 03:02

Client ID: USO-P13-C

Sample Info: UV13C

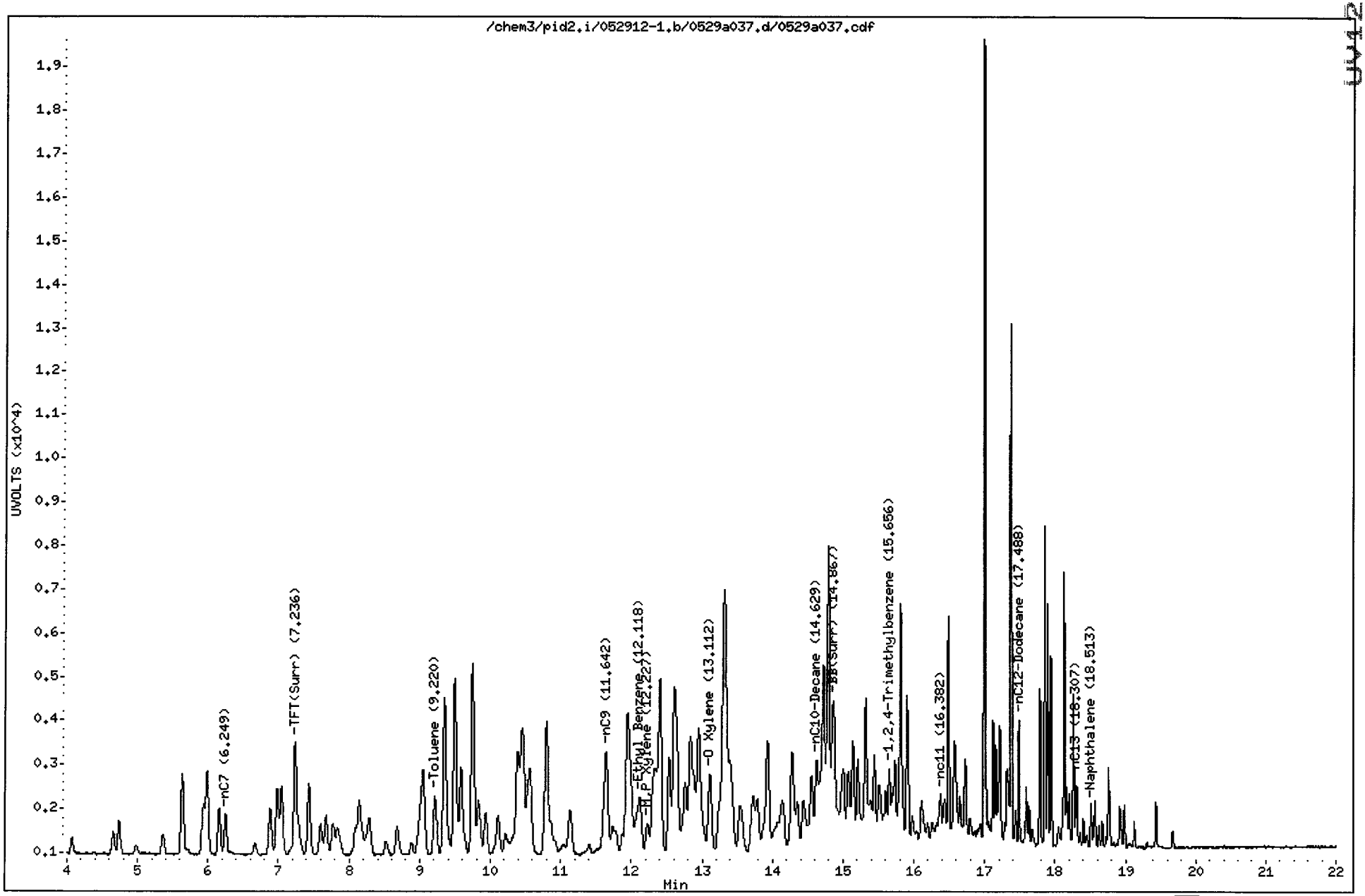
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV4 2 00018



Data File: /chem3/pid2.i/052912-2.b/0529a037.d

Date : 30-MAY-2012 03:02

Client ID: USO-P13-C

Sample Info: UV13C

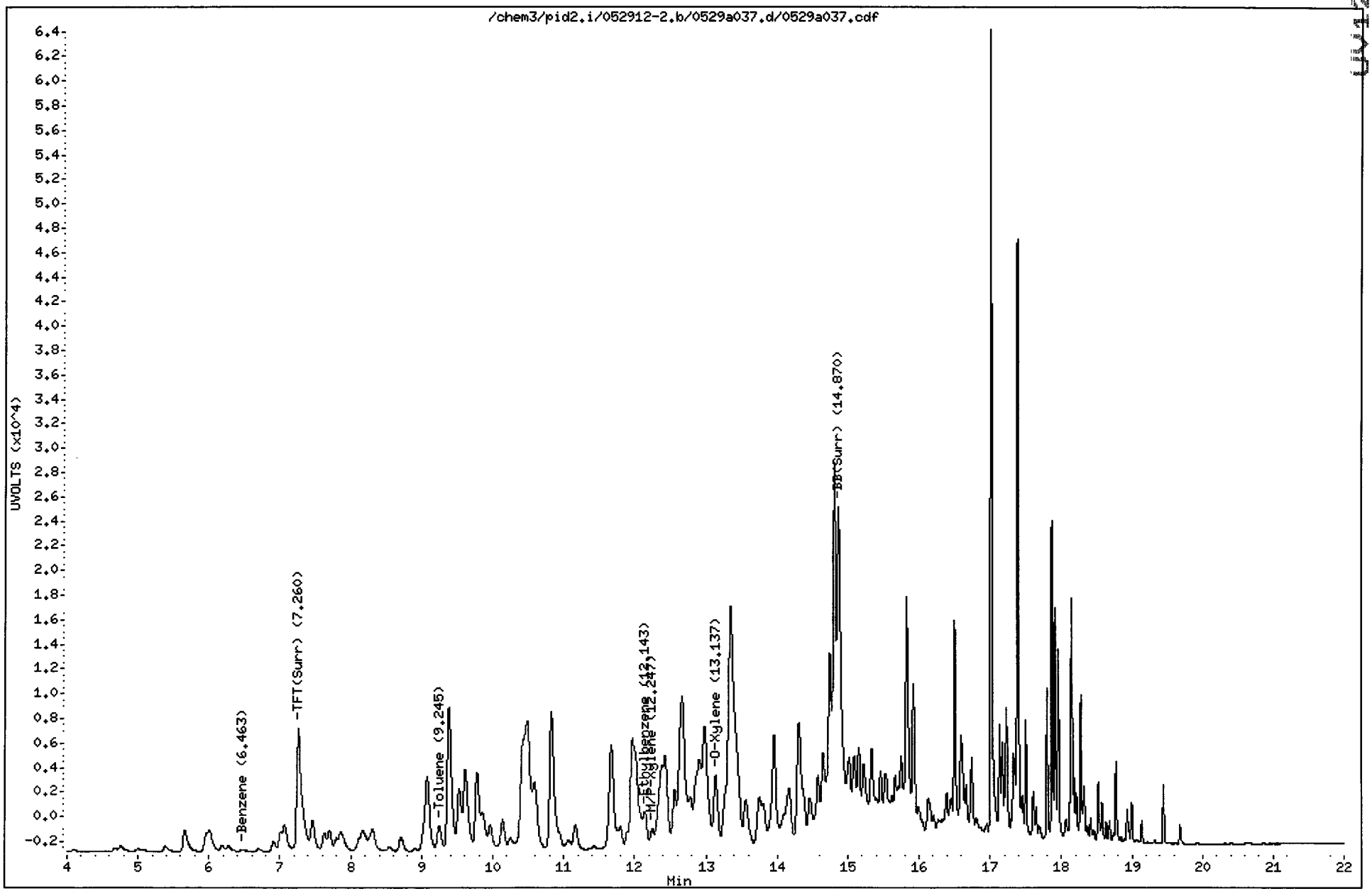
Column phase: RTX 502-2 PID

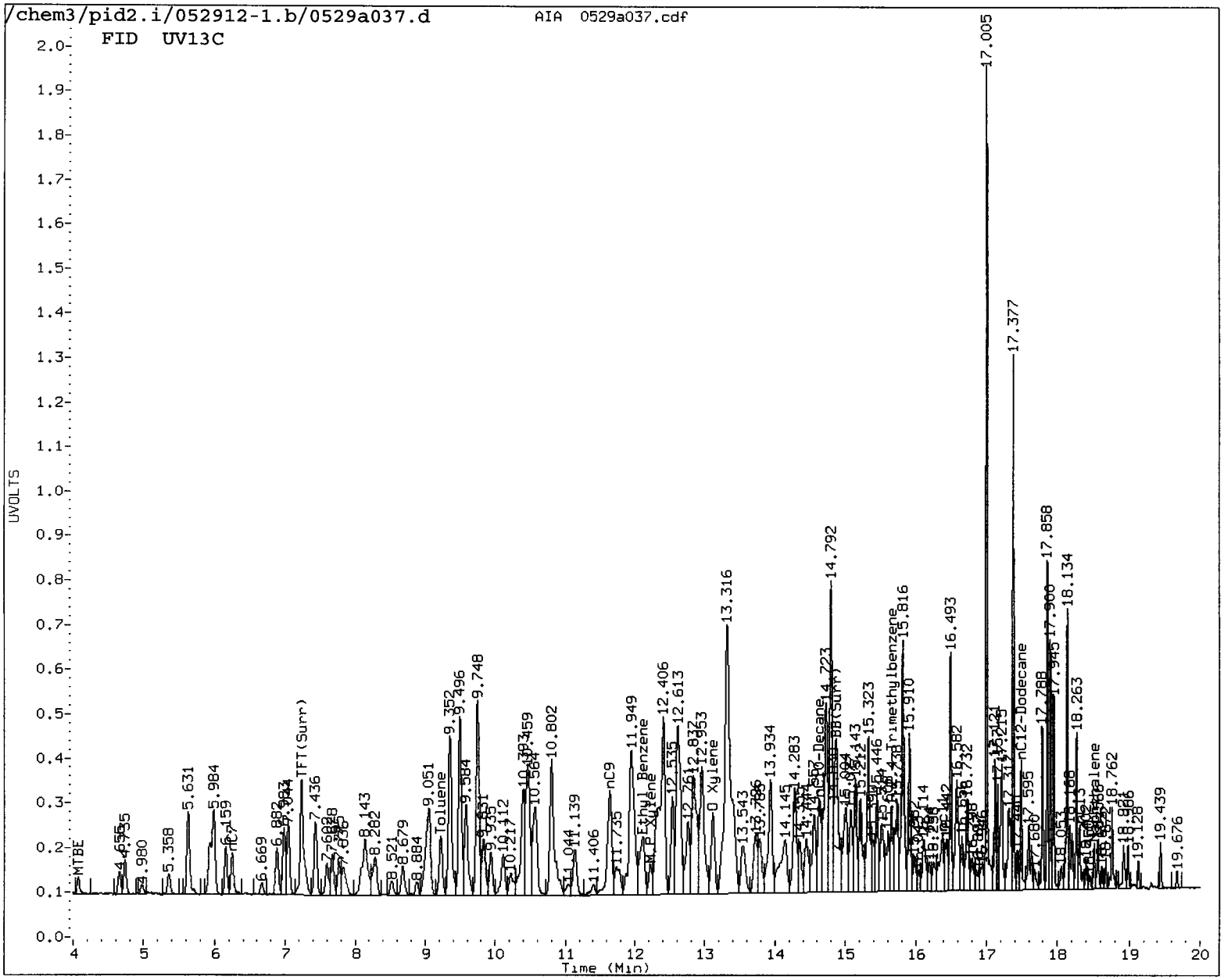
Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV12.00019





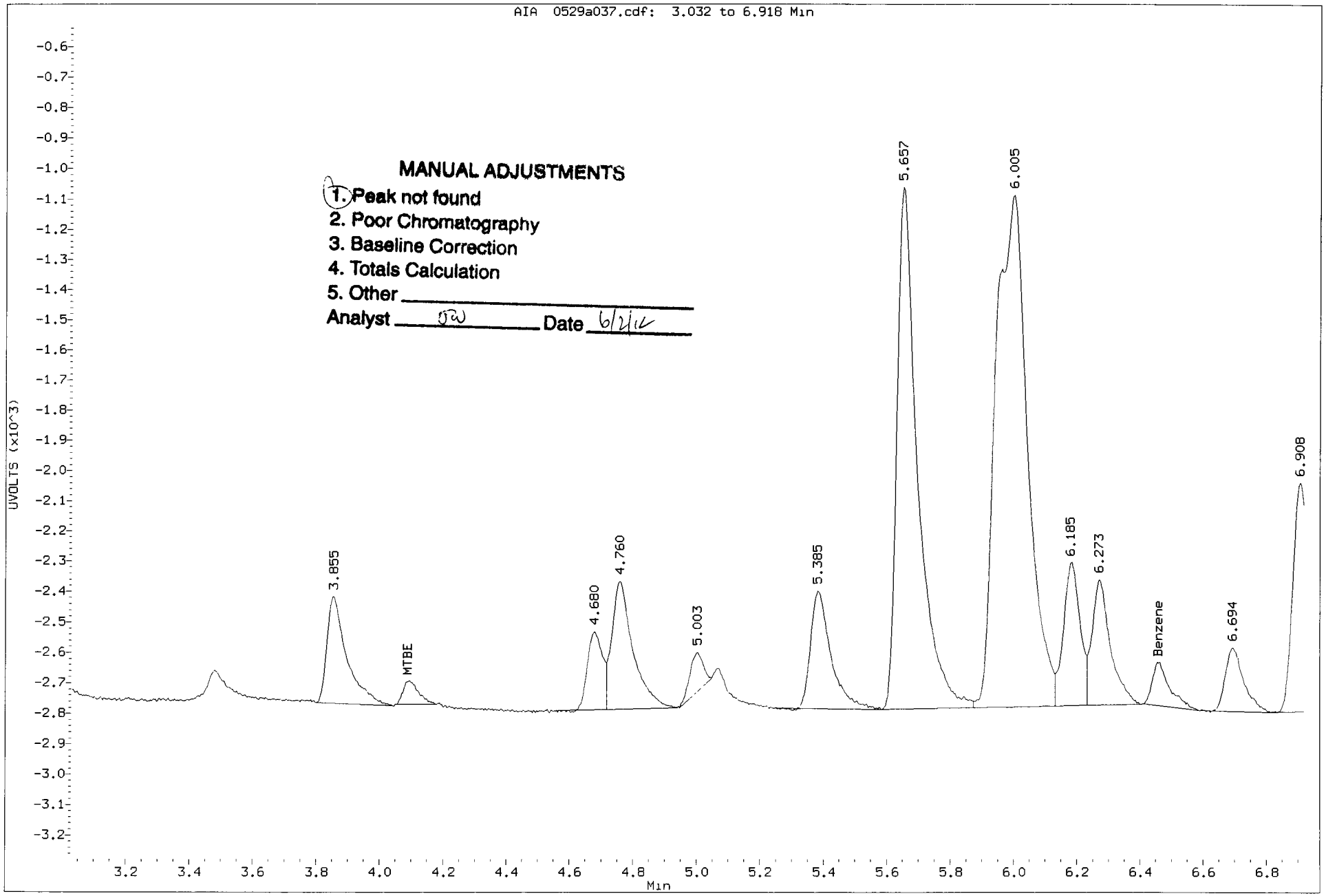
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/052912-2.b/0529a037.d/0529a037.cdf
Injection Date: 30-MAY-2012 03:02
Instrument: pid2.i
Client Sample ID: USO-P13-C



UV12-00021

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG

Sample ID: USO-P13-D
SAMPLE

Lab Sample ID: UV13D
LIMS ID: 12-9243
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/31/12 16:24
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 98 mg-as-rec

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	13	< 13 U	
108-88-3	Toluene	13	< 13 U	
100-41-4	Ethylbenzene	13	< 13 U	
179601-23-1	m,p-Xylene	26	< 26 U	
95-47-6	o-Xylene	13	< 13 U	
	Gasoline Range Hydrocarbons	5.1	< 5.1 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	90.4%
Bromobenzene	86.1%

Gasoline Surrogate Recovery

Trifluorotoluene	90.9%
Bromobenzene	86.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P13-E**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV13E
LIMS ID: 12-9244
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 04:54
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 22 mg-dry-wt
Percent Moisture: 55.2%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	58	< 58 U	
108-88-3	**Toluene**	**58**	**69**	
100-41-4	Ethylbenzene	58	< 58 U	
179601-23-1	m,p-Xylene	120	< 120 U	
95-47-6	o-Xylene	58	< 58 U	
	Gasoline Range Hydrocarbons	23	< 23 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	83.3%
Bromobenzene	94.9%

Gasoline Surrogate Recovery

Trifluorotoluene	88.4%
Bromobenzene	95.6%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a041.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a041.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13E
Client ID: USO-P13-E
Injection Date: 30-MAY-2012 04:54
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.237	0.000	2625	33018	88.4	TFT(Surr)
14.849	-0.001	1610	16576	95.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	1848	0.006 M
8015C 2MP-TMB	(3.74 to 15.77)	677374	4601	0.007 M
AK101 nC6-nC10	(4.20 to 14.51)	544975	4600	0.008 M
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	2526	0.008 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.263	-0.009	10323	83.3	TFT(Surr)
14.867	-0.013	16951	94.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.227	-0.020	163	0.30N	Toluene
12.073	-0.023	21	0.04N	Ethylbenzene
12.240	-0.018	75	0.16N	M/P-Xylene
13.143	-0.020	32	0.08N	O-Xylene
ND	---	---	---	MTBE

JW 6/12/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a041.d

Date : 30-MAY-2012 04:54

Client ID: USO-P13-E

Sample Info: UV13E

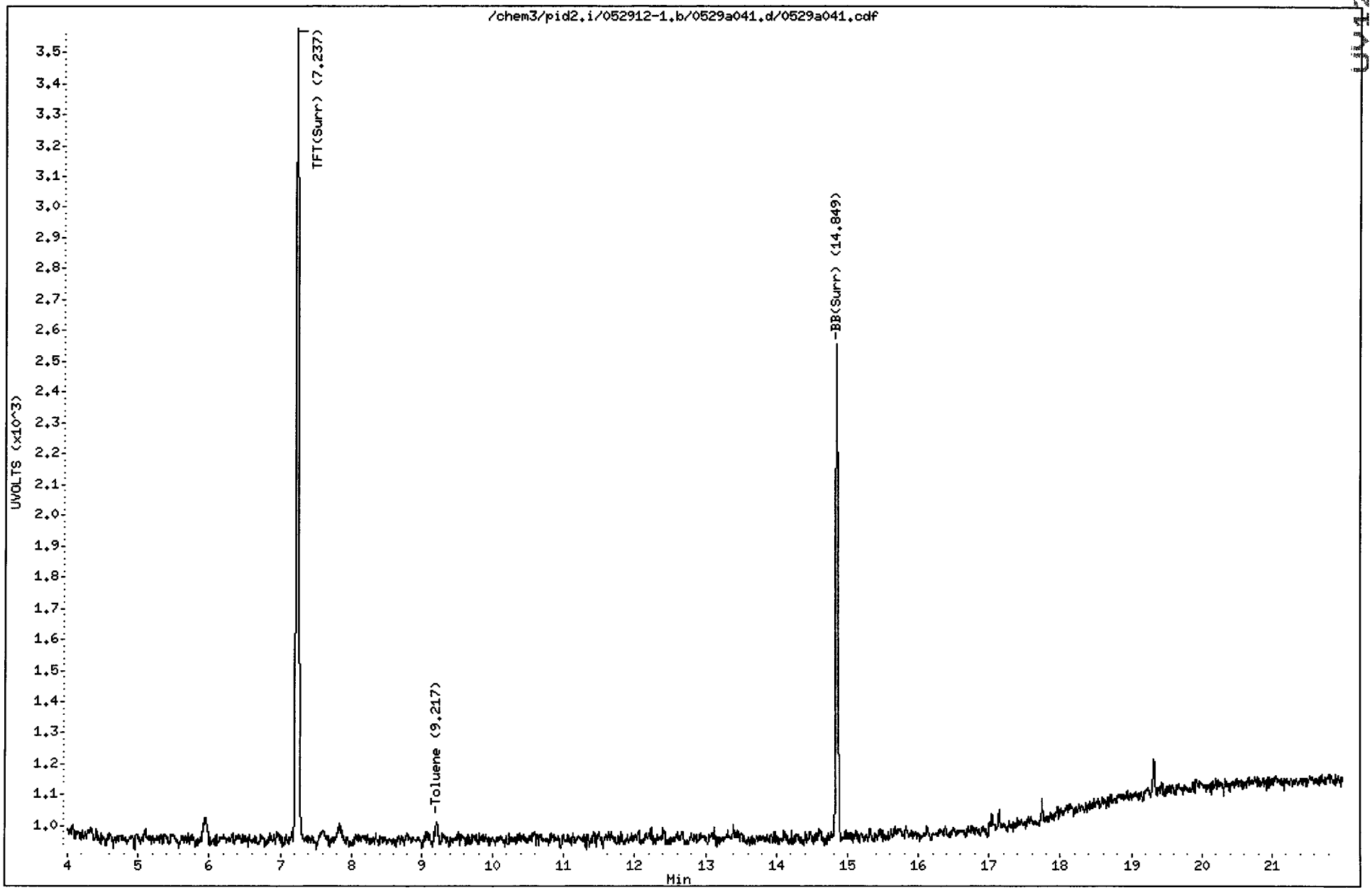
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

Jul 2 09:25



Data File: /chem3/pid2.i/052912-2.b/0529a041.d

Date : 30-MAY-2012 04:54

Client ID: USO-P13-E

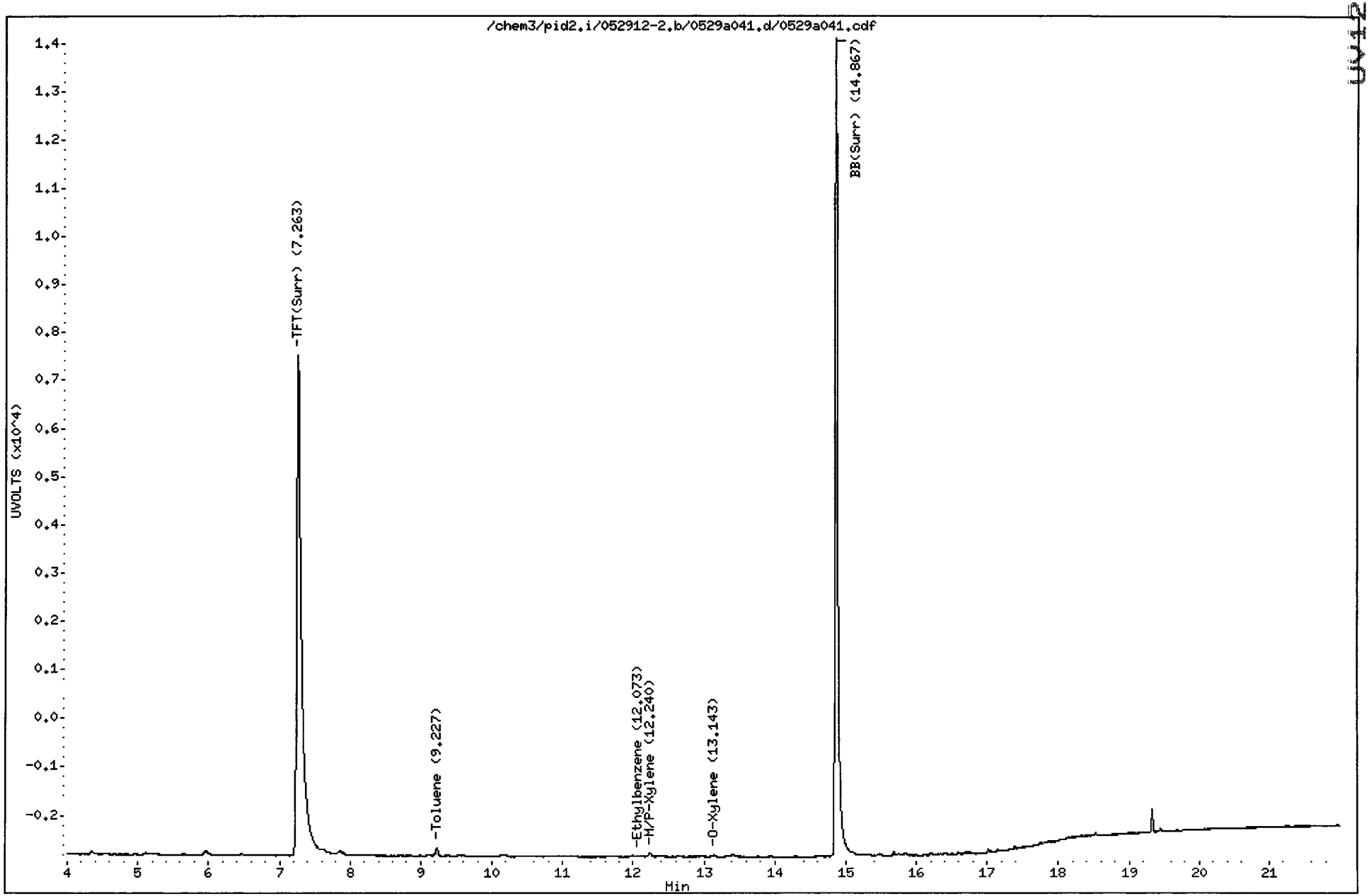
Sample Info: UV13E

Column phase: RTX 502-2 PID

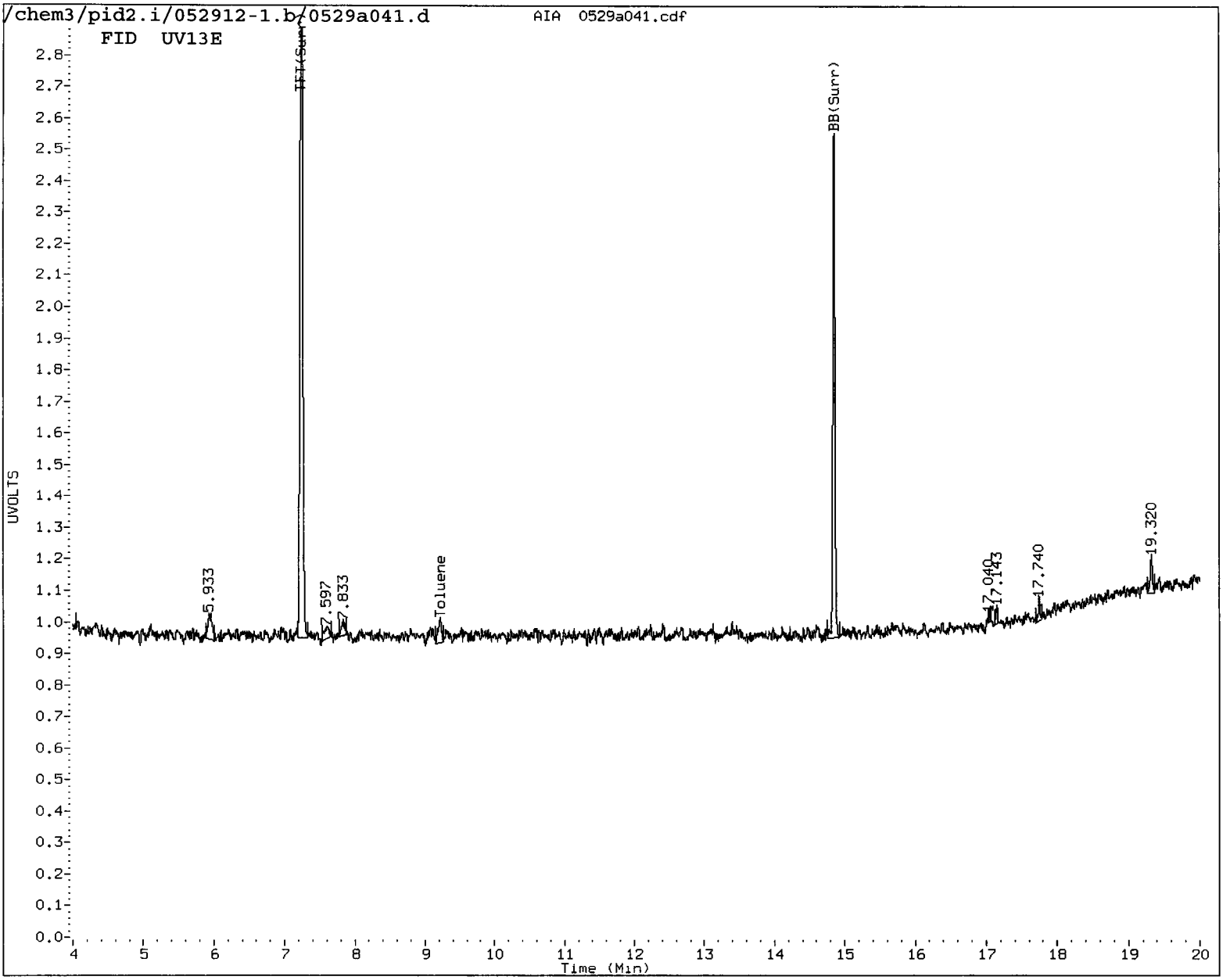
Instrument: pid2.i

Operator: JW

Column diameter: 0.18



UV13 : 00025



MANUAL INTEGRATION

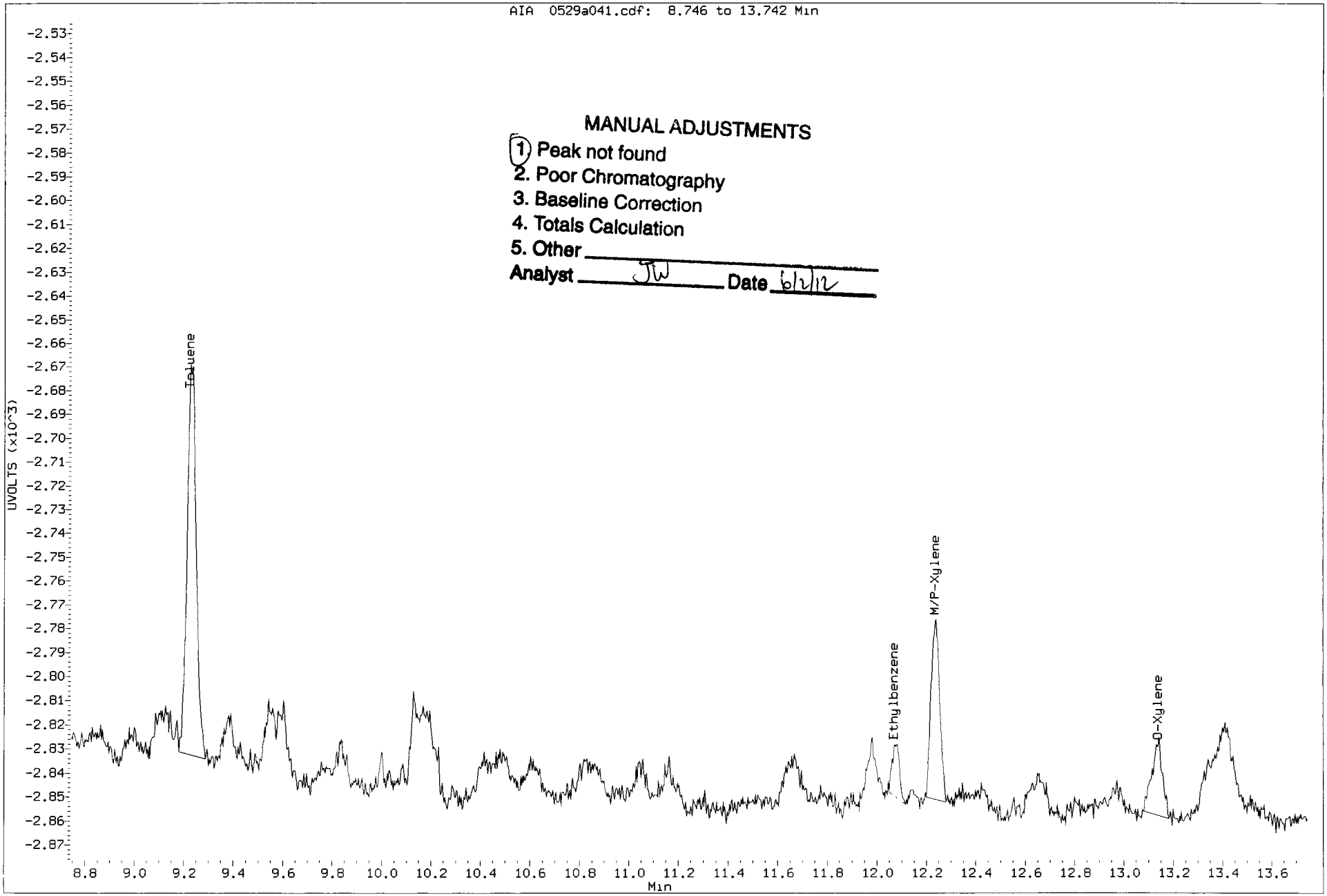
1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/052912-2.b/0529a041.d/0529a041.cdf
Injection Date: 30-MAY-2012 04:54
Instrument: pid2.i
Client Sample ID: USO-P13-E

UV12 : 00028



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JW Date 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P14-A**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV13F
LIMS ID: 12-9245
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 05:22
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 95 mg-dry-wt
Percent Moisture: 4.2%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	13	< 13 U	
108-88-3	**Toluene**	**13**	**14**	
100-41-4	Ethylbenzene	13	< 13 U	
179601-23-1	m,p-Xylene	26	< 26 U	
95-47-6	o-Xylene	13	< 13 U	
	Gasoline Range Hydrocarbons	5.3	< 5.3 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	85.0%
Bromobenzene	92.3%

Gasoline Surrogate Recovery

Trifluorotoluene	90.6%
Bromobenzene	94.4%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a042.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a042.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13F
Client ID: USO-P14-A
Injection Date: 30-MAY-2012 05:22
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.235	-0.001	2690	33794	90.6	TFT(Surr)
14.848	-0.002	1590	15778	94.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.74 to 15.77)	677374	1	0.000
AK101 nC6-nC10	(4.20 to 14.51)	544975	0	0.000
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.260	-0.012	10526	85.0	TFT(Surr)
14.867	-0.013	16488	92.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.227	-0.020	144	0.26N	Toluene
ND	---	---	---	Ethylbenzene
12.237	-0.022	38	0.08N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a042.d

Date : 30-MAY-2012 05:22

Client ID: USO-P14-A

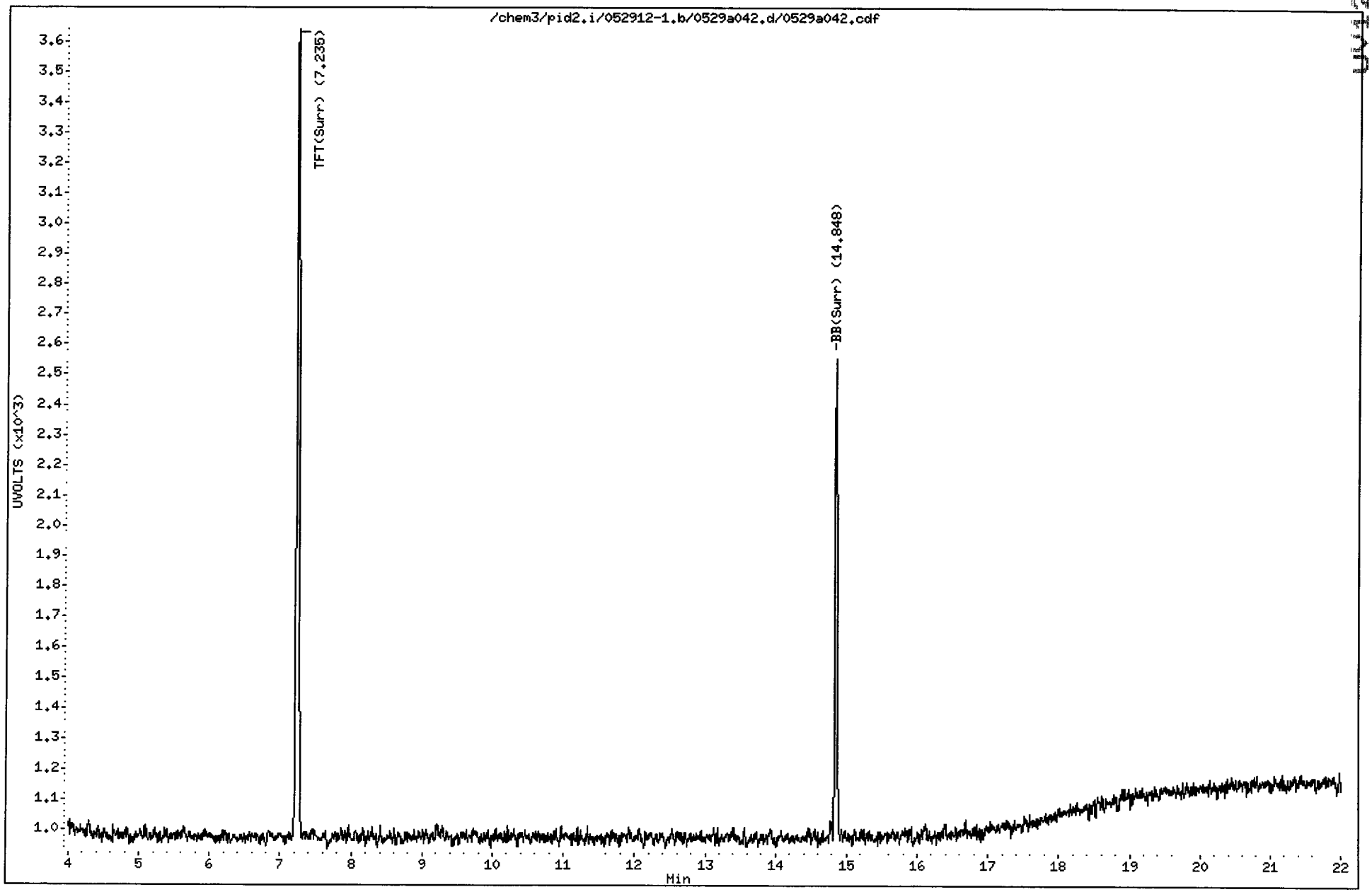
Sample Info: UV13F

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/052912-2.b/0529a042.d

Date : 30-MAY-2012 05:22

Client ID: USO-P14-A

Sample Info: UV13F

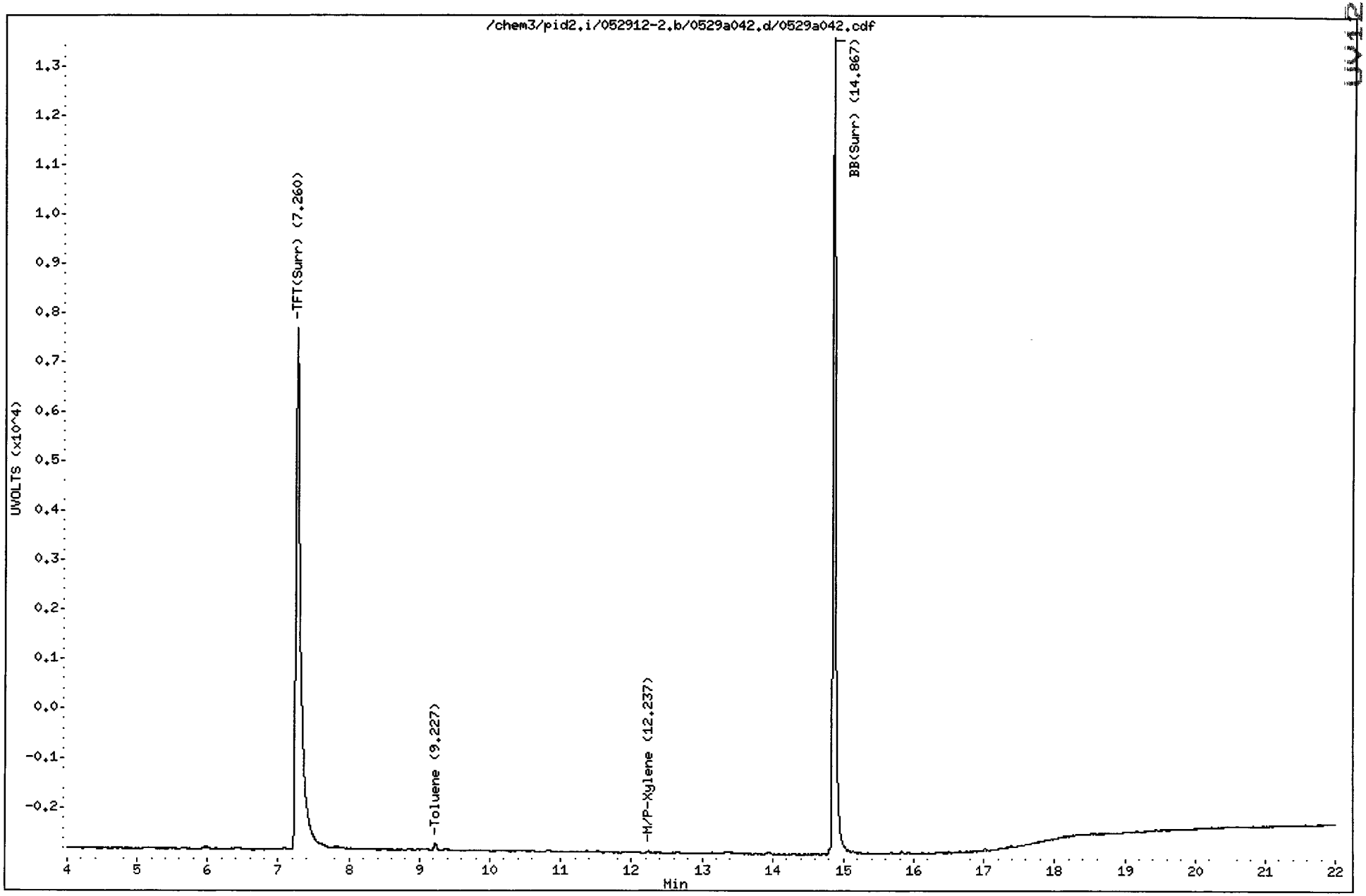
Column phase: RTX 502-2 PID

Instrument: pid2.i

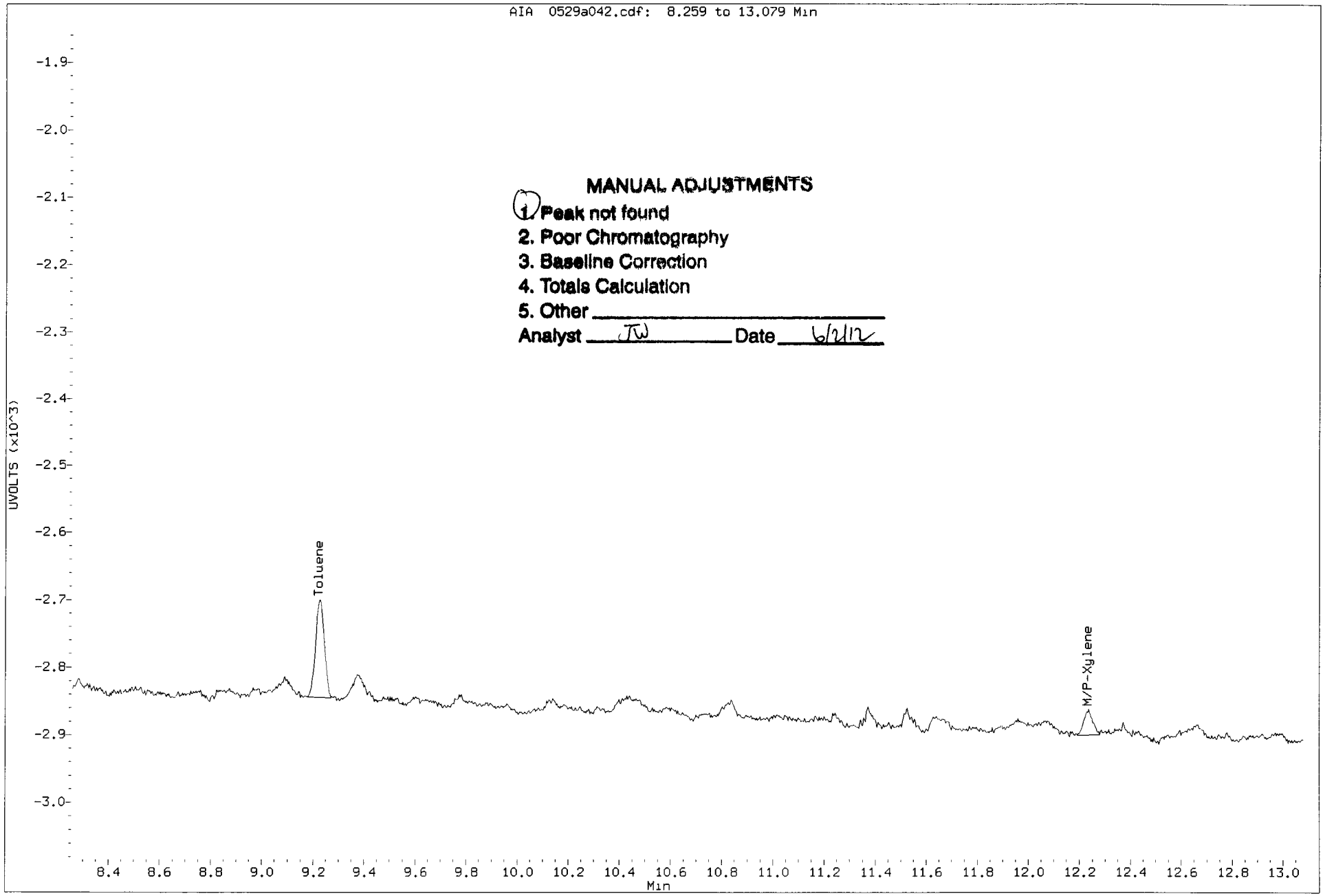
Operator: JW

Column diameter: 0.18

UV12.00032



Data File: /chem3/pid2.i/052912-2.b/0529a042.d/0529a042.cdf
Injection Date: 30-MAY-2012 05:22
Instrument: pid2.i
Client Sample ID: USO-P14-A



MANUAL ADJUSTMENTS

1. **Peak not found**
2. **Poor Chromatography**
3. **Baseline Correction**
4. **Totals Calculation**
5. **Other** _____

Analyst JW **Date** 6/2/12

C5900 : 2141

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P14-B**
TPHG by Method NWTPHG **SAMPLE**
Page 1 of 1

Lab Sample ID: UV13G
LIMS ID: 12-9246
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 05:50
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 69 mg-dry-wt
Percent Moisture: 9.2%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	18	< 18 U	
108-88-3	**Toluene**	**18**	**22**	
100-41-4	Ethylbenzene	18	< 18 U	
179601-23-1	m,p-Xylene	36	< 36 U	
95-47-6	o-Xylene	18	< 18 U	
	Gasoline Range Hydrocarbons	7.3	< 7.3 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	85.9%
Bromobenzene	92.6%

Gasoline Surrogate Recovery

Trifluorotoluene	86.3%
Bromobenzene	92.1%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a043.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a043.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13G
Client ID: USO-P14-B
Injection Date: 30-MAY-2012 05:50
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.241	0.005	2561	32207	86.3	TFT(Surr)
14.853	0.004	1551	16024	92.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	1662	0.005 M
8015C 2MP-TMB	(3.74 to 15.77)	677374	1662	0.002 M
AK101 nC6-nC10	(4.20 to 14.51)	544975	1	0.000
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	1662	0.005 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.267	-0.006	10644	85.9	TFT(Surr)
14.873	-0.006	16531	92.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.235	-0.012	167	0.30	Toluene
ND	---	---	---	Ethylbenzene
12.250	-0.008	35	0.08N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a043.d

Date : 30-MAY-2012 05:50

Client ID: USO-P14-B

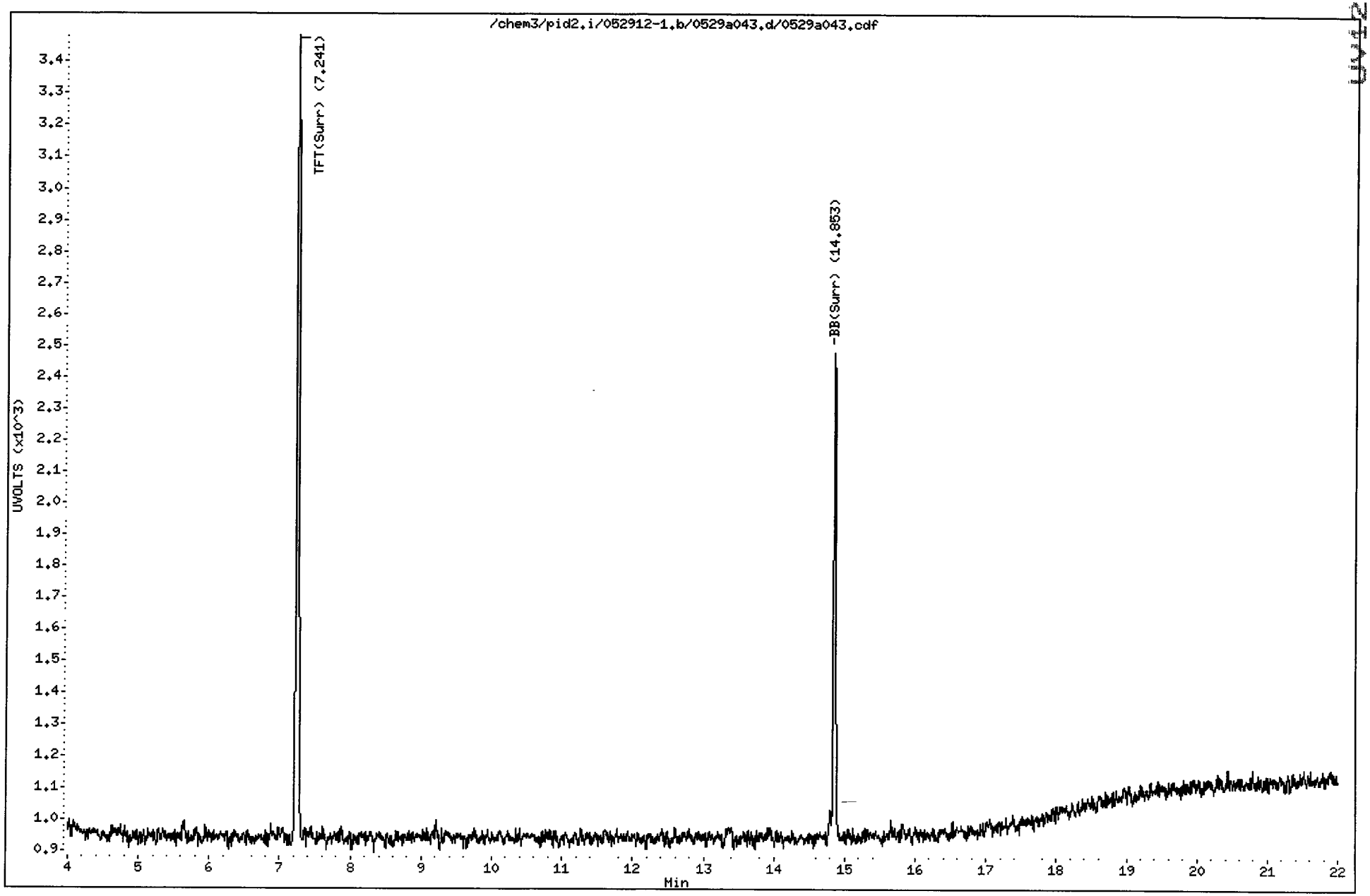
Sample Info: UV13G

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/052912-2.b/0529a043.d

Date : 30-MAY-2012 05:50

Client ID: USO-P14-B

Sample Info: UV13G

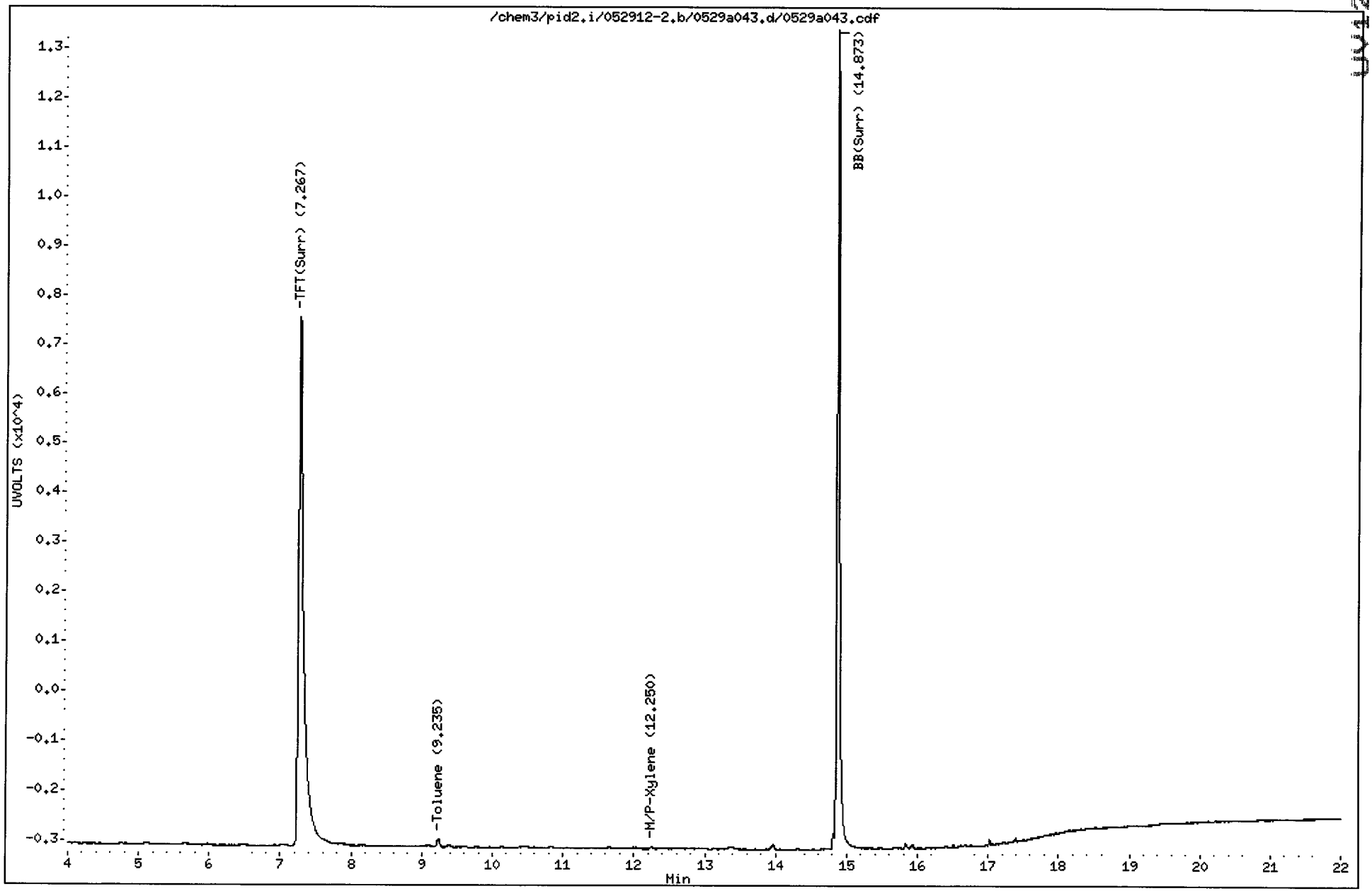
Instrument: pid2.i

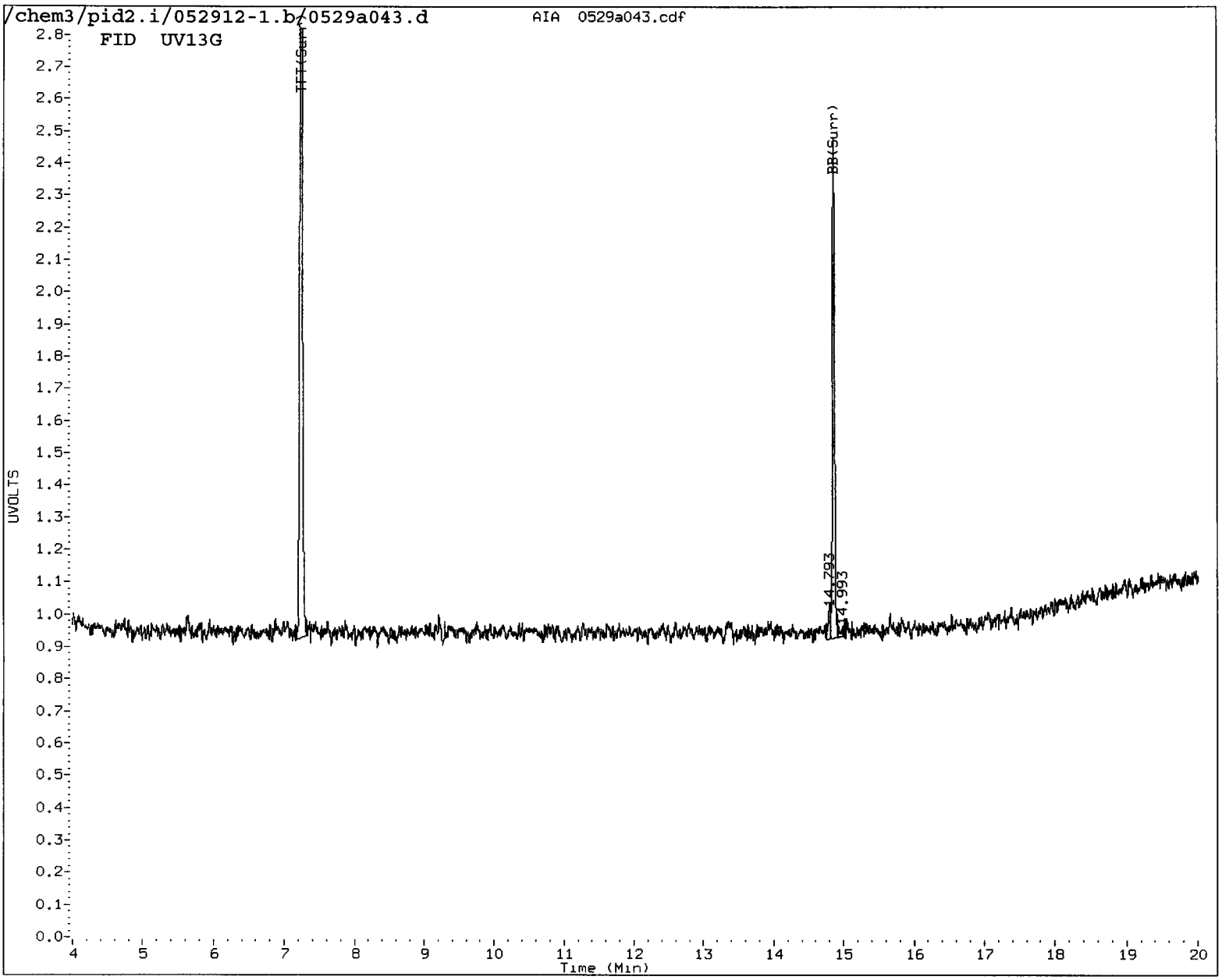
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV12-00037



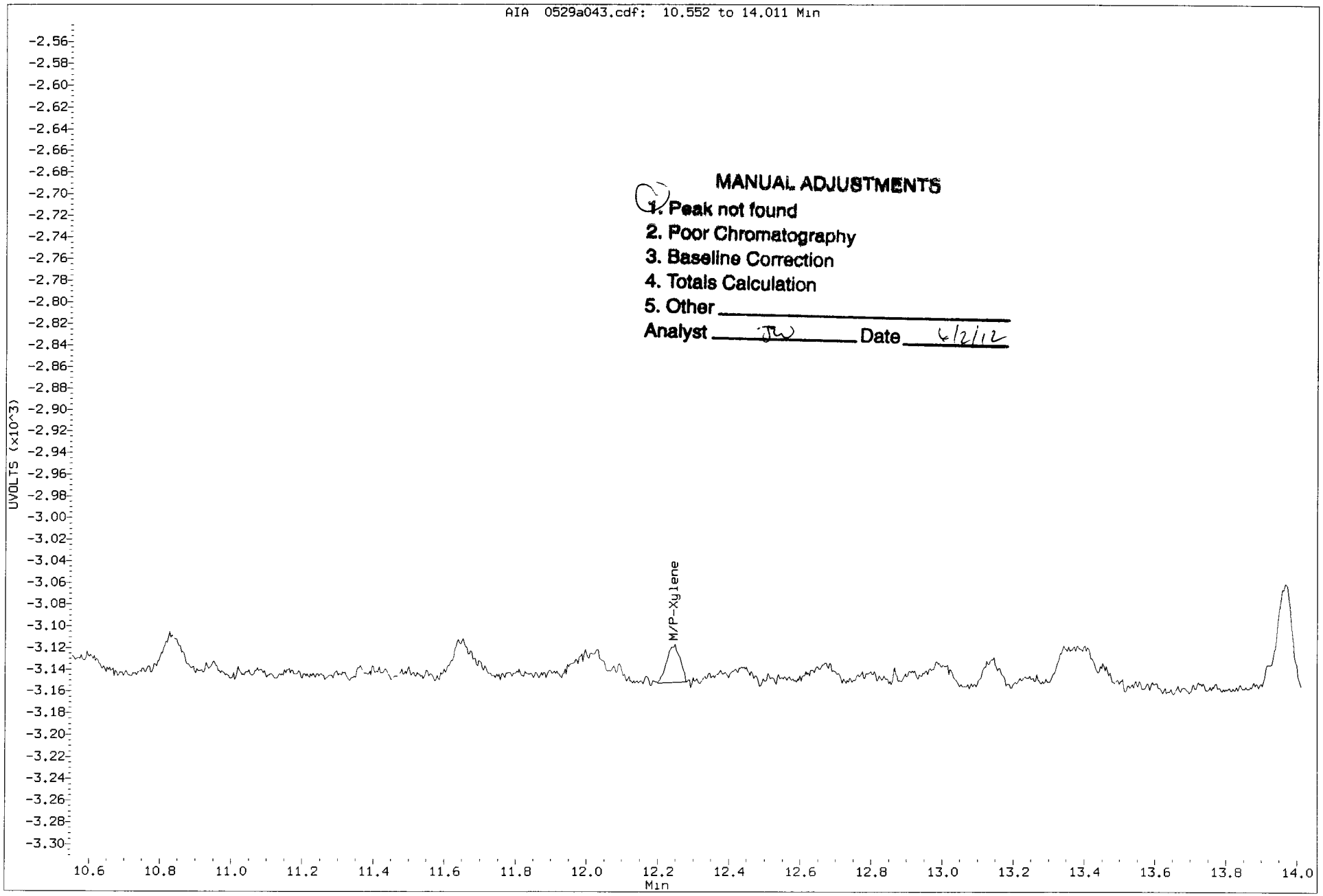


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Other Peak split?

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/052912-2.b/0529a043.d/0529a043.cdf
Injection Date: 30-MAY-2012 05:50
Instrument: pid2.i
Client Sample ID: USO-P14-B



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other _____

Analyst JW Date 6/2/12

UV12:00039

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: USO-P14-C
SAMPLE

Lab Sample ID: UV13H
LIMS ID: 12-9247
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 06:18
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 72 mg-dry-wt
Percent Moisture: 19.3%

CAS Number	Analyte	RL	Result	
71-43-2	Benzene	17	< 17 U	
108-88-3	**Toluene**	**17**	**21**	
100-41-4	**Ethylbenzene**	**17**	**61**	
179601-23-1	**m,p-Xylene**	**35**	**83**	
95-47-6	o-Xylene	17	< 17 U	
	Gasoline Range Hydrocarbons	7.0	< 7.0 U	GAS ID ---

BETX Surrogate Recovery

Trifluorotoluene	92.5%
Bromobenzene	95.6%

Gasoline Surrogate Recovery

Trifluorotoluene	91.3%
Bromobenzene	97.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a044.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a044.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13H
Client ID: USO-P14-C
Injection Date: 30-MAY-2012 06:18
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.245	0.009	2711	35392	91.3	TFT(Surr)
14.860	0.010	1646	16928	97.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	19551	0.061 M
8015C 2MP-TMB	(3.74 to 15.77)	677374	12996	0.019 M
AK101 nC6-nC10	(4.20 to 14.51)	544975	9040	0.017 M
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	20504	0.062 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.270	-0.002	11461	92.5	TFT(Surr)
14.877	-0.003	17071	95.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.473	0.003	29	0.03N	Benzene
9.237	-0.010	165	0.30N	Toluene
12.090	-0.006	421	0.87N	Ethylbenzene
12.247	-0.012	554	1.19N	M/P-Xylene
13.157	-0.006	65	0.17N	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a044.d

Page 1

Date : 30-MAY-2012 06:18

Client ID: USO-P14-C

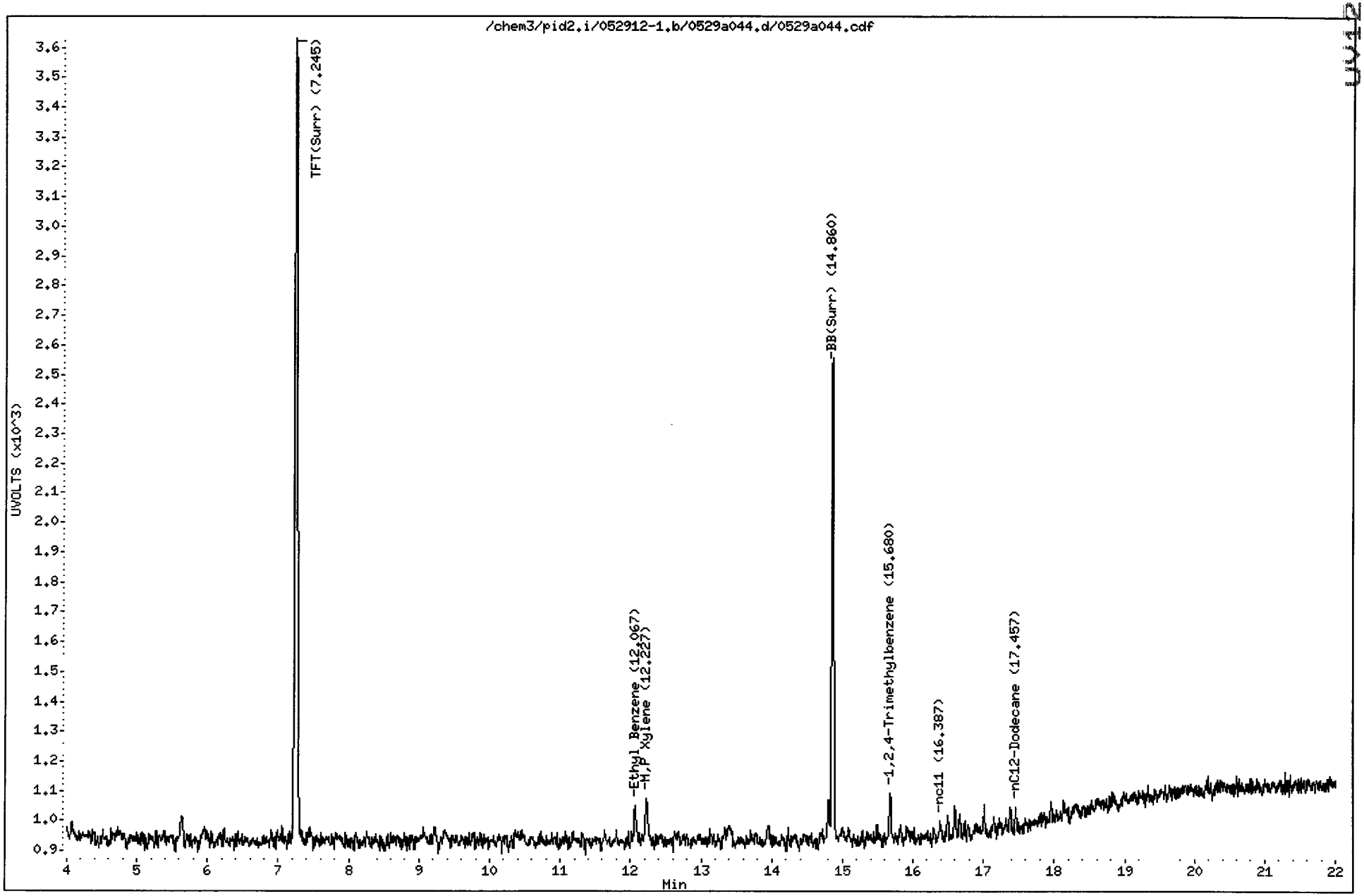
Instrument: pid2.i

Sample Info: UV13H

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18



Data File: /chem3/pid2.i/052912-2.b/0529a044.d

Date : 30-MAY-2012 06:18

Client ID: USO-P14-C

Sample Info: UV13H

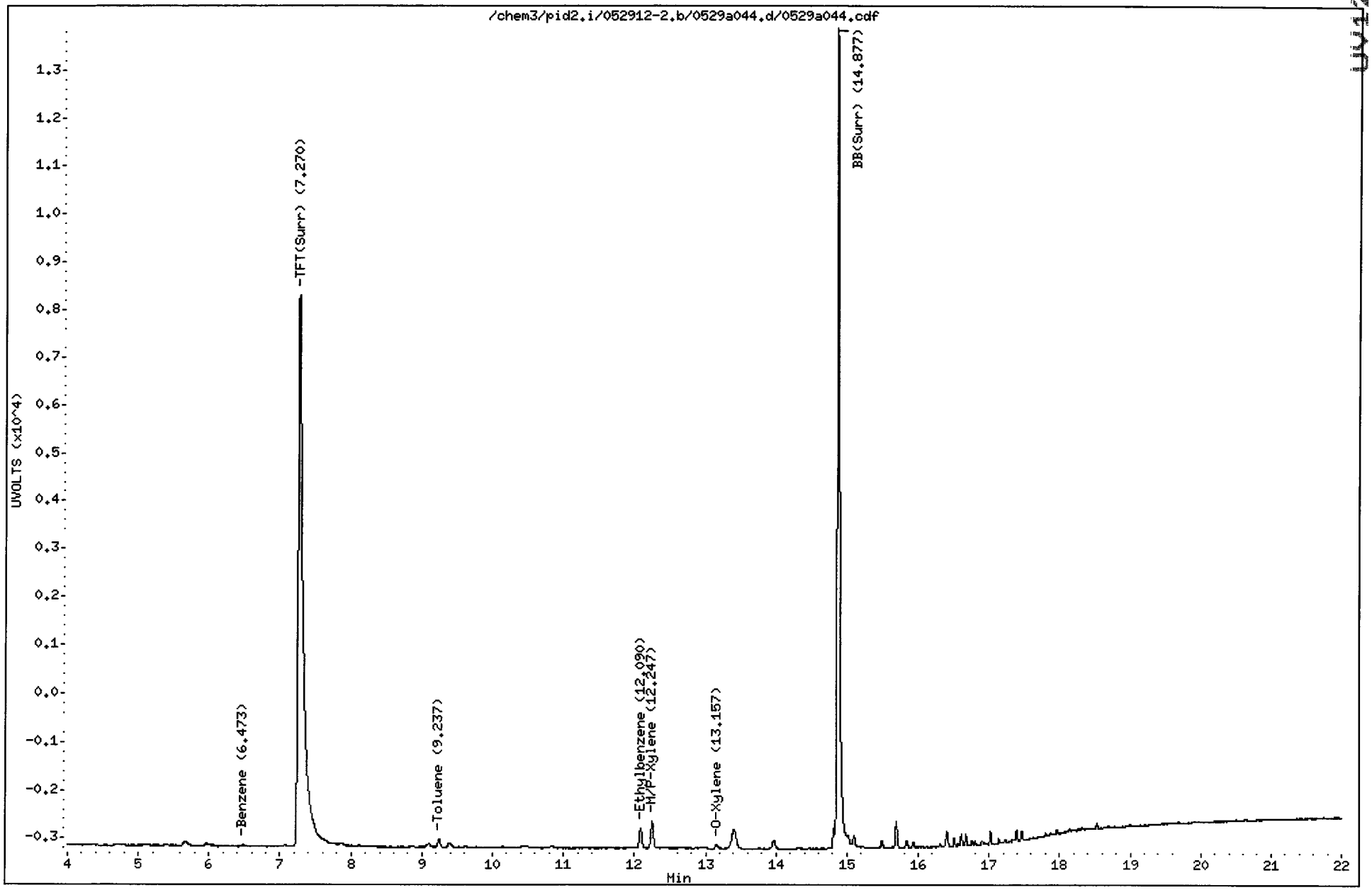
Instrument: pid2.i

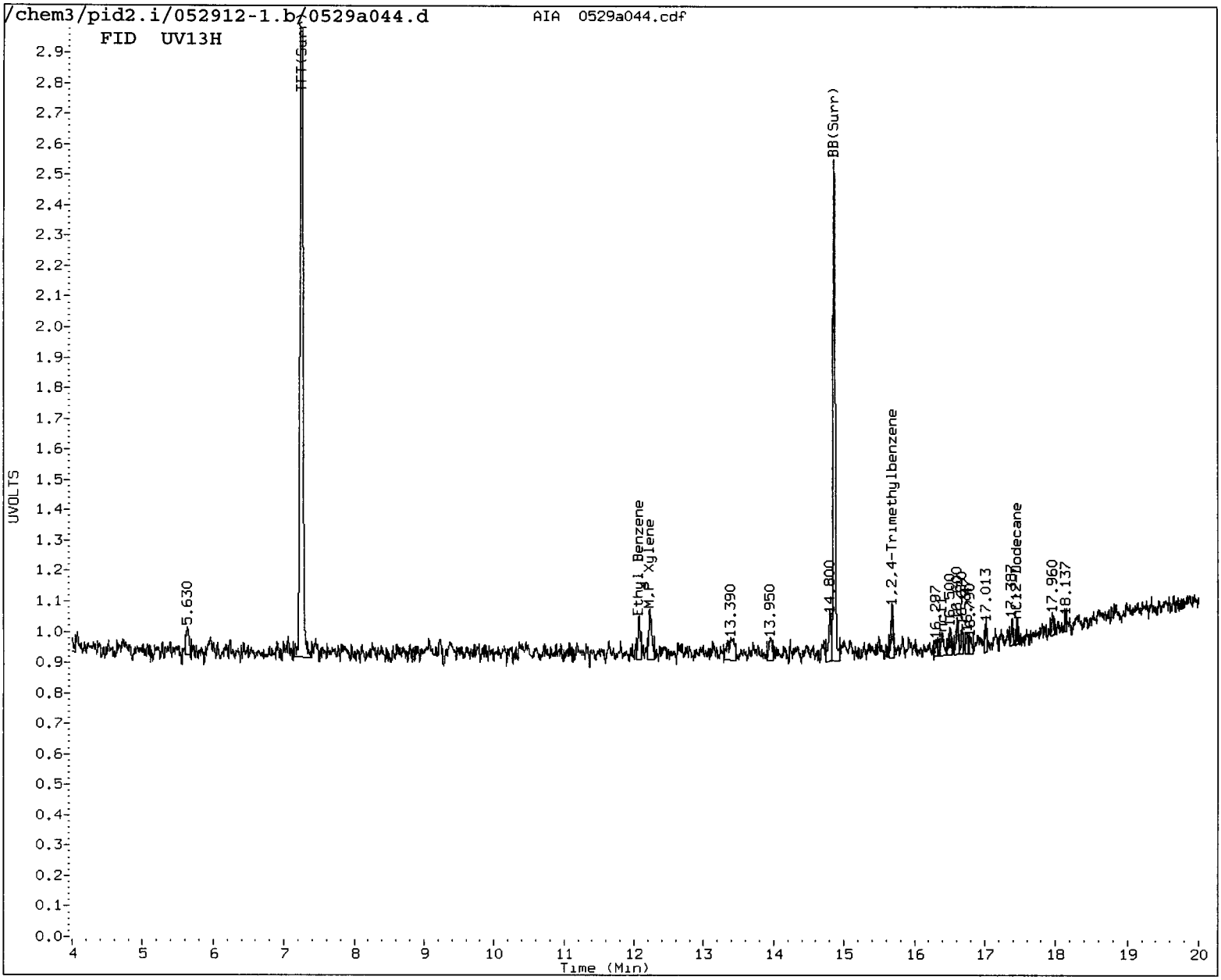
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV13 : 0529a044





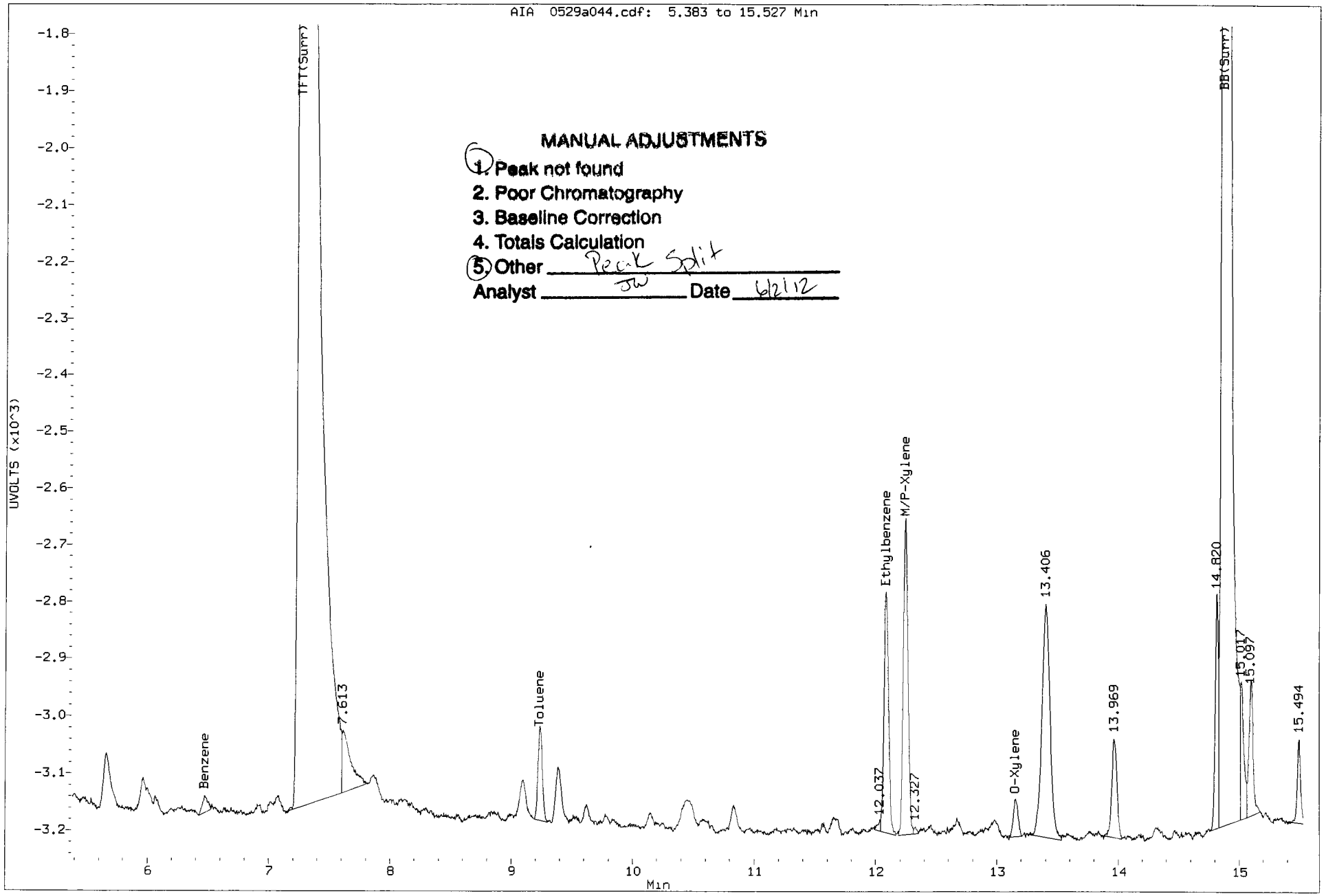
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Data File: /chem3/pid2.i/052912-2.b/0529a044.d/0529a044.cdf
Injection Date: 30-MAY-2012 06:18
Instrument: pid2.i
Client Sample ID: USO-P14-C



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other Peak Split

Analyst JW Date 6/2/12

UV12:000145

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P14-D**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV13I
LIMS ID: 12-9248
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 06:46
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 75 mg-dry-wt
Percent Moisture: 21.1%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	17	< 17 U
108-88-3	Toluene	17	< 17 U
100-41-4	Ethylbenzene	17	< 17 U
179601-23-1	m,p-Xylene	33	< 33 U
95-47-6	o-Xylene	17	< 17 U

			GAS ID
Gasoline Range Hydrocarbons	6.6	< 6.6 U	---

BETX Surrogate Recovery

Trifluorotoluene	91.0%
Bromobenzene	96.3%

Gasoline Surrogate Recovery

Trifluorotoluene	90.6%
Bromobenzene	98.3%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: USO-P14-E**
TPHG by Method NWTPHG **SAMPLE**

Lab Sample ID: UV13J
LIMS ID: 12-9249
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: 05/20/12
Date Received: 05/21/12

Date Analyzed: 05/30/12 07:14
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 44 mg-dry-wt
Percent Moisture: 35.4%

CAS Number	Analyte	RL	Result
71-43-2	Benzene	28	< 28 U
108-88-3	**Toluene**	**28**	**30**
100-41-4	Ethylbenzene	28	< 28 U
179601-23-1	m,p-Xylene	57	< 57 U
95-47-6	o-Xylene	28	< 28 U

			GAS ID
Gasoline Range Hydrocarbons	11	< 11 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.4%
Bromobenzene	98.5%

Gasoline Surrogate Recovery

Trifluorotoluene	95.0%
Bromobenzene	99.7%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a046.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a046.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: UV13J
Client ID: USO-P14-E
Injection Date: 30-MAY-2012 07:14
Matrix: SOIL
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	0.013	2819	37777	95.0	TFT(Surr)
14.861	0.011	1680	17344	99.7	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.11 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.74 to 15.77)	677374	1	0.000
AK101 nC6-nC10	(4.20 to 14.51)	544975	0	0.000
NWTPHG Tol-Nap	(9.11 to 18.61)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.273	0.001	11692	94.4	TFT(Surr)
14.880	0.001	17596	98.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.473	0.003	41	0.05N	Benzene
9.243	-0.004	141	0.26N	Toluene
ND	---	---	---	Ethylbenzene
12.247	-0.012	21	0.05N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a046.d

Date : 30-MAY-2012 07:14

Client ID: USO-P14-E

Sample Info: UV13J

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV1 2 00019

/chem3/pid2.i/052912-1.b/0529a046.d/0529a046.cdf

TFT(Surr) (7.249)

BB(Surr) (14.861)

UVOLTS (x10^3)

Min

Data File: /chem3/pid2.i/052912-2.b/0529a046.d

Date : 30-MAY-2012 07:14

Client ID: USO-P14-E

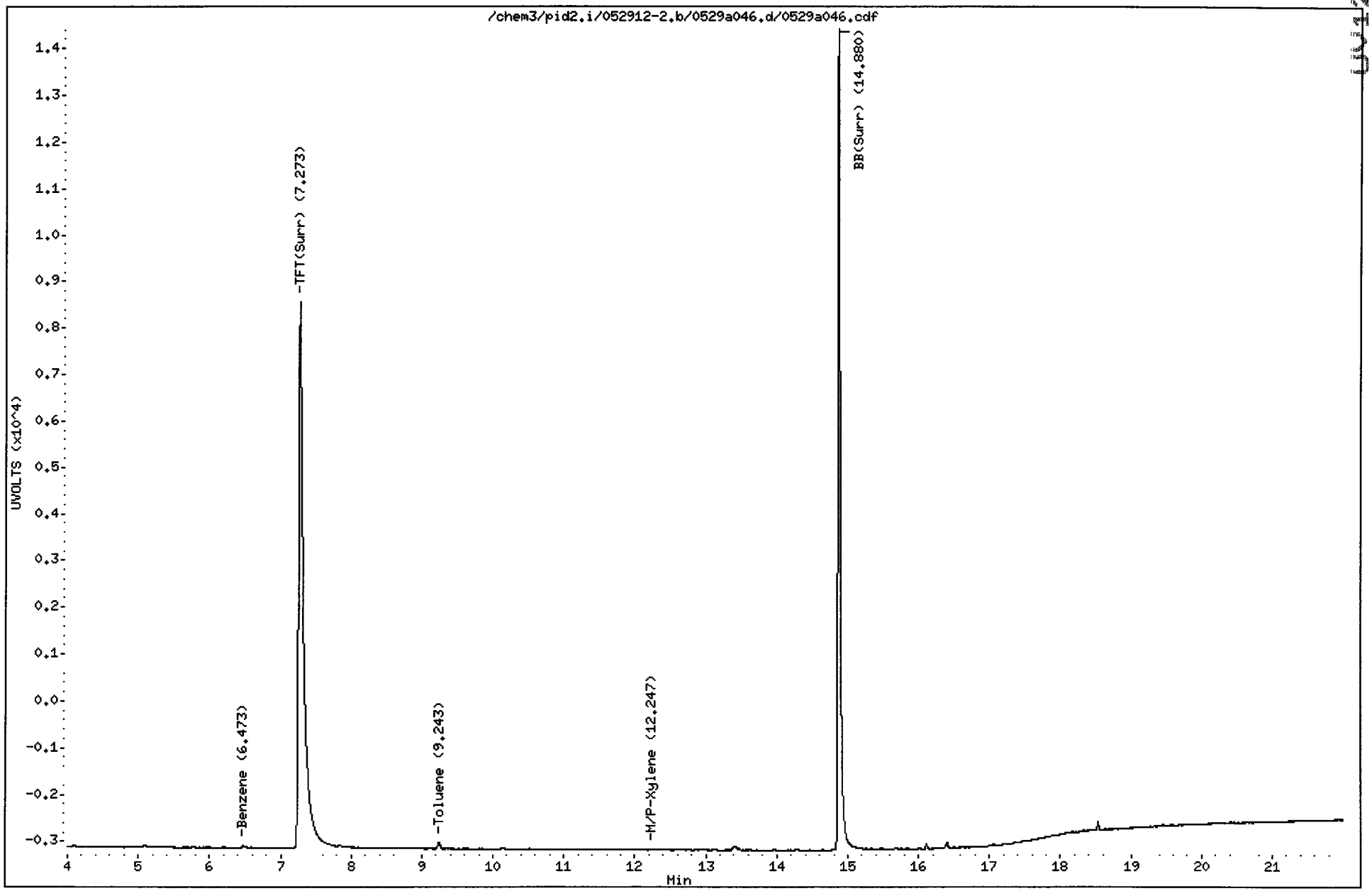
Sample Info: UV13J

Column phase: RTX 502-2 PID

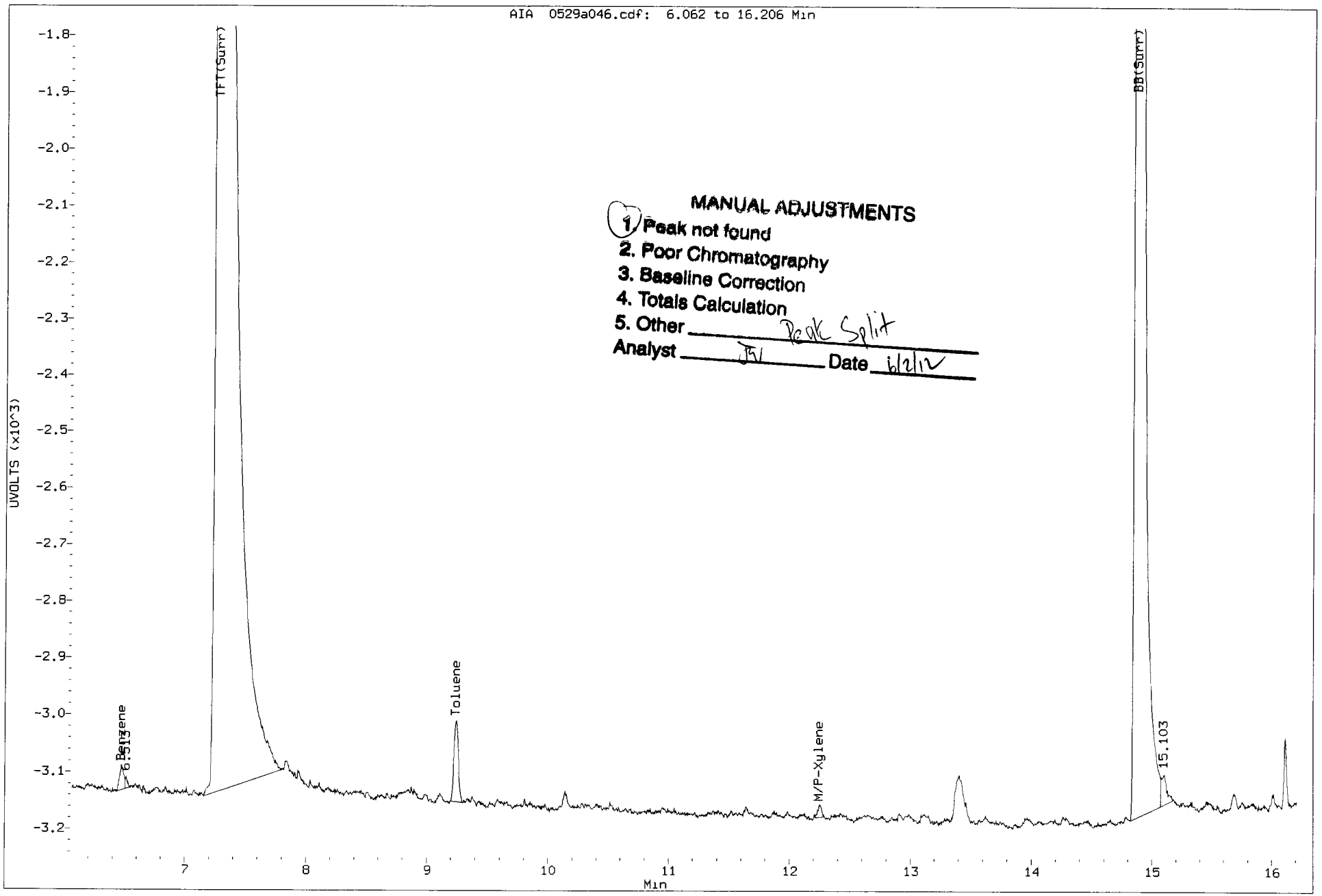
Instrument: pid2.i

Operator: JW

Column diameter: 0.18



Data File: /chem3/pid2.i/052912-2.b/0529a046.d/0529a046.cdf
Injection Date: 30-MAY-2012 07:14
Instrument: pid2.i
Client Sample ID: USO-P14-E



MANUAL ADJUSTMENTS

1. Peak not found
2. Poor Chromatography
3. Baseline Correction
4. Totals Calculation
5. Other Peak Split

Analyst JV Date 6/2/12

UV12 : 00051

ANALYTICAL RESOURCES INCORPORATED

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV13
Matrix: Soil

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022

Client ID	BFB	TFT	BBZ	TOT OUT
MB-052912	NA	100%	99.2%	0
LCS-052912	NA	97.6%	96.8%	0
LCSD-052912	NA	102%	97.0%	0
USO-P13-A	NA	80.1%	106%	0
USO-P13-B	NA	85.0%	101%	0
USO-P13-C	NA	86.1%	144%*	1
MB-053112	NA	94.6%	92.8%	0
LCS-053112	NA	99.2%	96.0%	0
LCSD-053112	NA	105%	100%	0
USO-P13-D	NA	90.9%	86.8%	0
USO-P13-E	NA	88.4%	95.6%	0
USO-P14-A	NA	90.6%	94.4%	0
USO-P14-B	NA	86.3%	92.1%	0
USO-P14-C	NA	91.3%	97.7%	0
USO-P14-D	NA	90.6%	98.3%	0
USO-P14-E	NA	95.0%	99.7%	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(66-123)
(BBZ) = Bromobenzene	(80-120)	(62-130)

Log Number Range: 12-9240 to 12-9249

FORM II TPHG

UV12:00052

ANALYTICAL RESOURCES INCORPORATED

BETX SOIL SURROGATE RECOVERY SUMMARY

ARI Job: UV13
Matrix: Soil

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022

Client ID	TFT	BBZ	TOT OUT
MB-052912	94.9%	97.3%	0
LCS-052912	93.1%	95.5%	0
LCSD-052912	96.0%	97.3%	0
USO-P13-A	74.7%	113%	0
USO-P13-B	78.3%	99.8%	0
USO-P13-C	80.6%	126%	0
MB-053112	94.9%	92.8%	0
LCS-053112	99.3%	95.9%	0
LCSD-053112	105%	100%	0
USO-P13-D	90.4%	86.1%	0
USO-P13-E	83.3%	94.9%	0
USO-P14-A	85.0%	92.3%	0
USO-P14-B	85.9%	92.6%	0
USO-P14-C	92.5%	95.6%	0
USO-P14-D	91.0%	96.3%	0
USO-P14-E	94.4%	98.5%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(68-124)
(BBZ) = Bromobenzene	(77-120)	(62-134)

Log Number Range: 12-9240 to 12-9249

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG **Sample ID: LCS-052912**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-052912 QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
LIMS ID: 12-9240 Project: 1920 Port of Tacoma
Matrix: Soil Event: USO-022
Data Release Authorized: Date Sampled: NA
Reported: 06/04/12 Date Received: NA

Date Analyzed LCS: 05/29/12 19:32 Purge Volume: 5.0 mL
LCSD: 05/29/12 20:00
Instrument/Analyst LCS: PID2/JLW Sample Amount LCS: 100 mg-dry-wt
LCSD: PID2/JLW LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	50.6	50.0	101%	55.8	50.0	112%	9.8%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.6%	102%
Bromobenzene	96.8%	97.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-052912
LAB CONTROL SAMPLE

Lab Sample ID: LCS-052912
LIMS ID: 12-9240
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/29/12 19:32
LCSD: 05/29/12 20:00
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	161	185	87.0%	184	185	99.5%	13.3%
Toluene	1830	1980	92.4%	2130	1980	108%	15.2%
Ethylbenzene	438	580	75.5%	506	580	87.2%	14.4%
m,p-Xylene	1810	2120	85.4%	2090	2120	98.6%	14.4%
o-Xylene	828	960	86.2%	952	960	99.2%	13.9%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	93.1%	96.0%
Bromobenzene	95.5%	97.3%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a021.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a021.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0529
Client ID:
Injection Date: 29-MAY-2012 19:32
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.236	-0.010	2896	42214	97.6	TFT(Surr)
14.848	-0.012	1631	16939	96.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	320808	1.005 M
8015C 2MP-TMB	(3.75 to 15.78)	677374	658937	0.973 M
AK101 nC6-nC10	(4.21 to 14.67)	544975	540980	0.993 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	335082	1.013 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.260	-0.012	11528	93.1	TFT(Surr)
14.866	-0.013	17057	95.5	BB(Surr)

SW8021 (PID)

JW 6/1/12

RT	Shift	Response	Amount	Compound
6.460	-0.010	2806	3.22	Benzene
9.231	-0.016	20113	36.54	Toluene
12.077	-0.019	4210	8.75N	Ethylbenzene
12.238	-0.021	16827	36.11	M/P-Xylene
13.142	-0.021	6280	16.56	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a021.d

Date : 29-MAY-2012 19:32

Client ID:

Sample Info: LCS0529

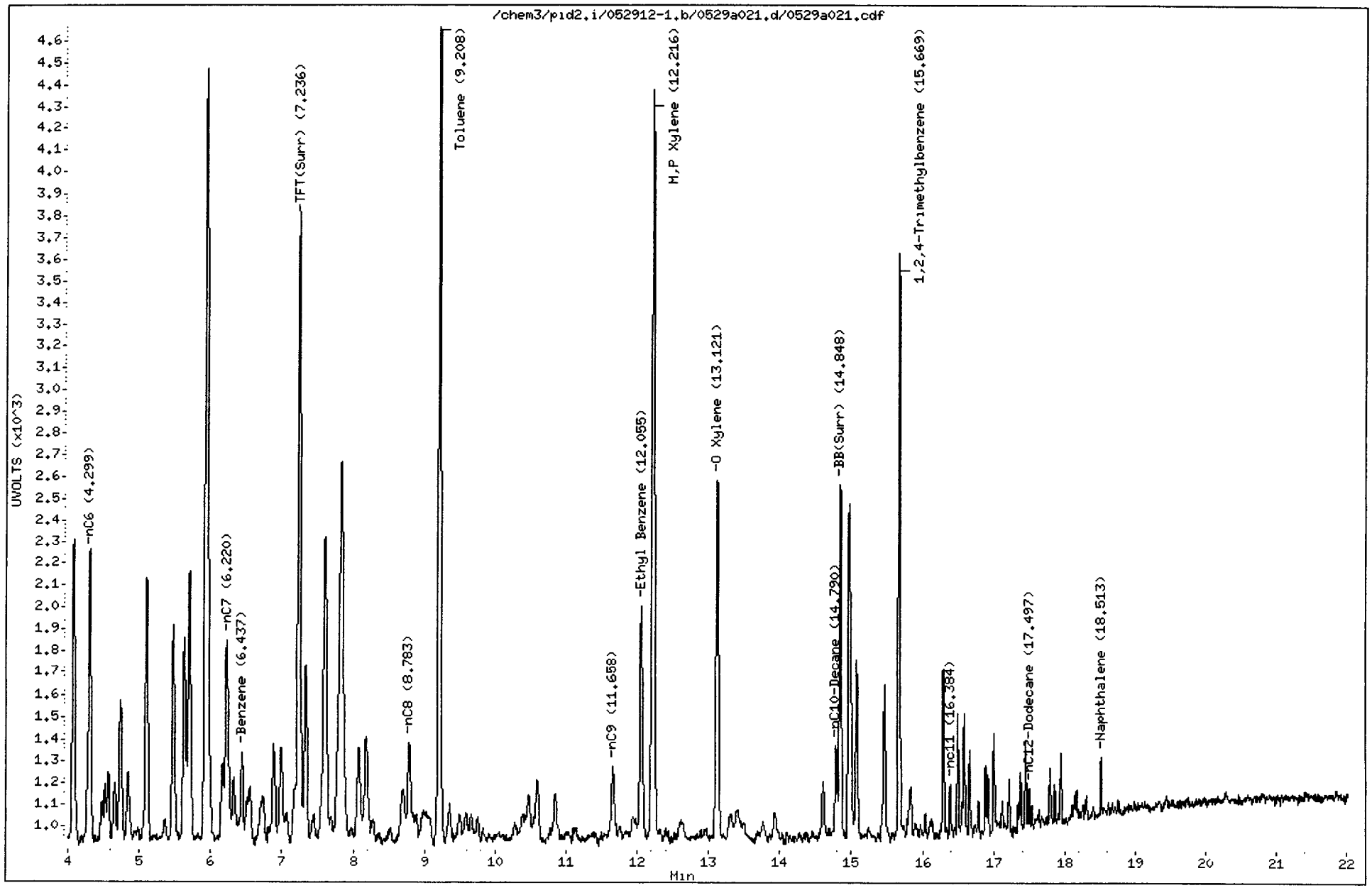
Instrument: pid2.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV12:00057



Data File: /chem3/pid2.i/052912-2.b/0529a021.d

Date : 29-MAY-2012 19:32

Client ID:

Sample Info: LCS0529

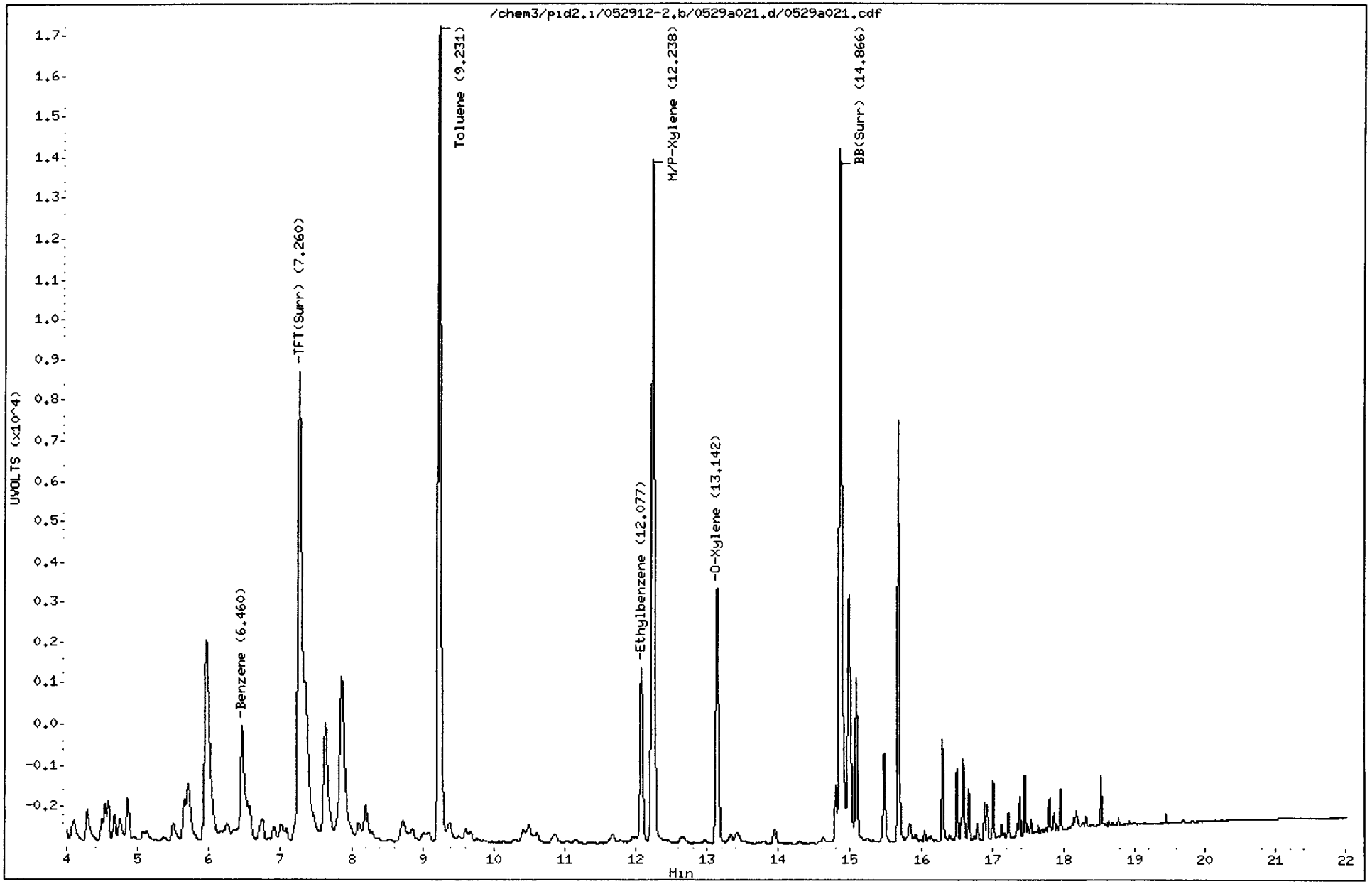
Column phase: RTX 502-2 PID

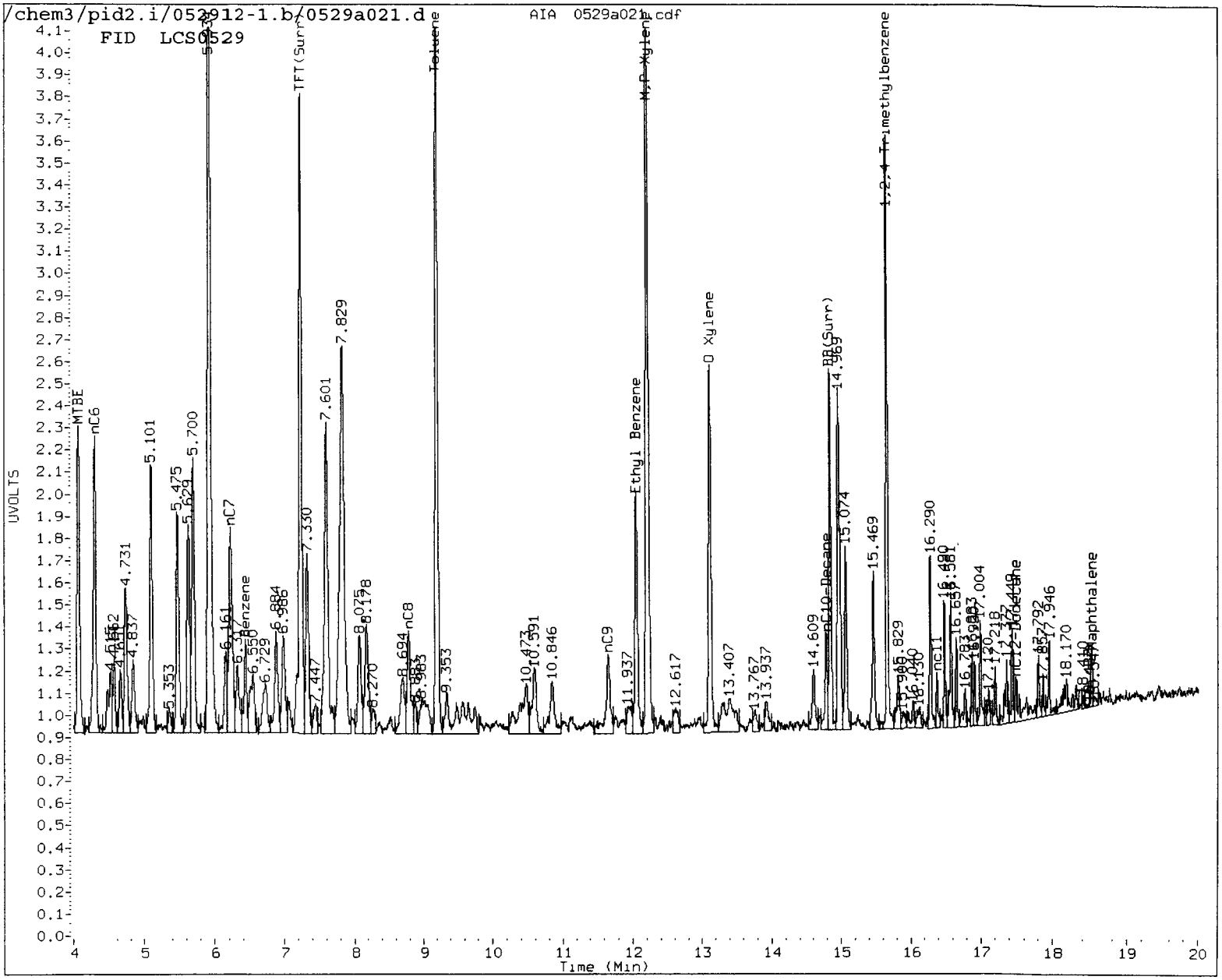
Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV12:00053





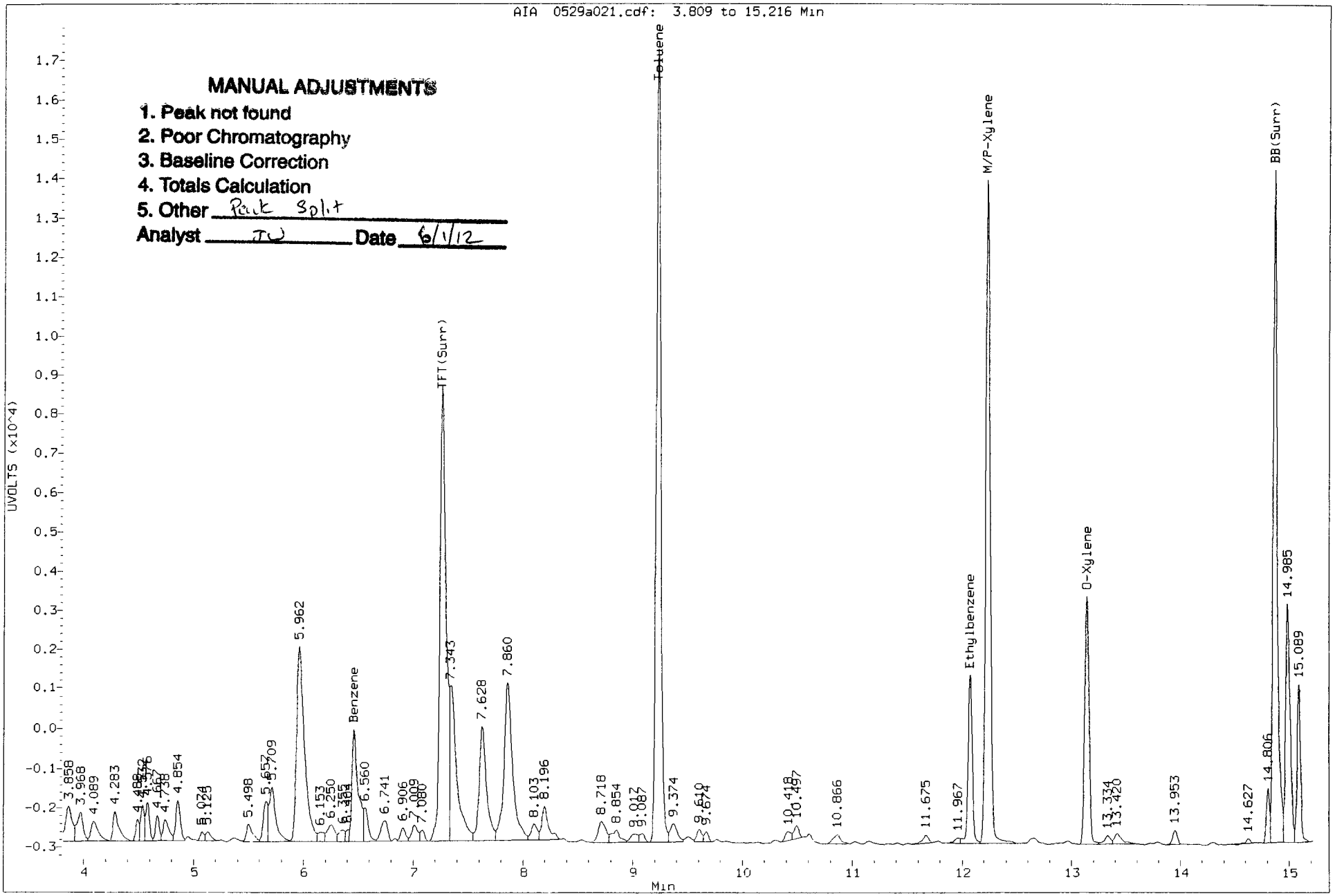
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/1/12

Data File: /chem3/pid2.i/052912-2.b/0529a021.d/0529a021.cdf
Injection Date: 29-MAY-2012 19:32
Instrument: pid2.i
Client Sample ID:



UV12:00060

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a022.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a022.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0529
Client ID:
Injection Date: 29-MAY-2012 20:00
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.234	-0.013	3023	44431	101.8	TFT(Surr)
14.847	-0.013	1634	17125	97.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	354198	1.109 M
8015C 2MP-TMB	(3.75 to 15.78)	677374	744472	1.099 M
AK101 nC6-nC10	(4.21 to 14.67)	544975	608893	1.117 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	368888	1.116 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.257	-0.016	11894	96.0	TFT(Surr)
14.865	-0.014	17383	97.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.457	-0.013	3211	3.69	Benzene
9.229	-0.018	23412	42.54	Toluene
12.073	-0.023	4870	10.12N	Ethylbenzene
12.236	-0.022	19497	41.84	M/P-Xylene
13.140	-0.023	7226	19.05	O-Xylene
ND	---	---	---	MTBE

JW 6/1/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a022.d

Date : 29-MAY-2012 20:00

Client ID:

Sample Info: LCSD0529

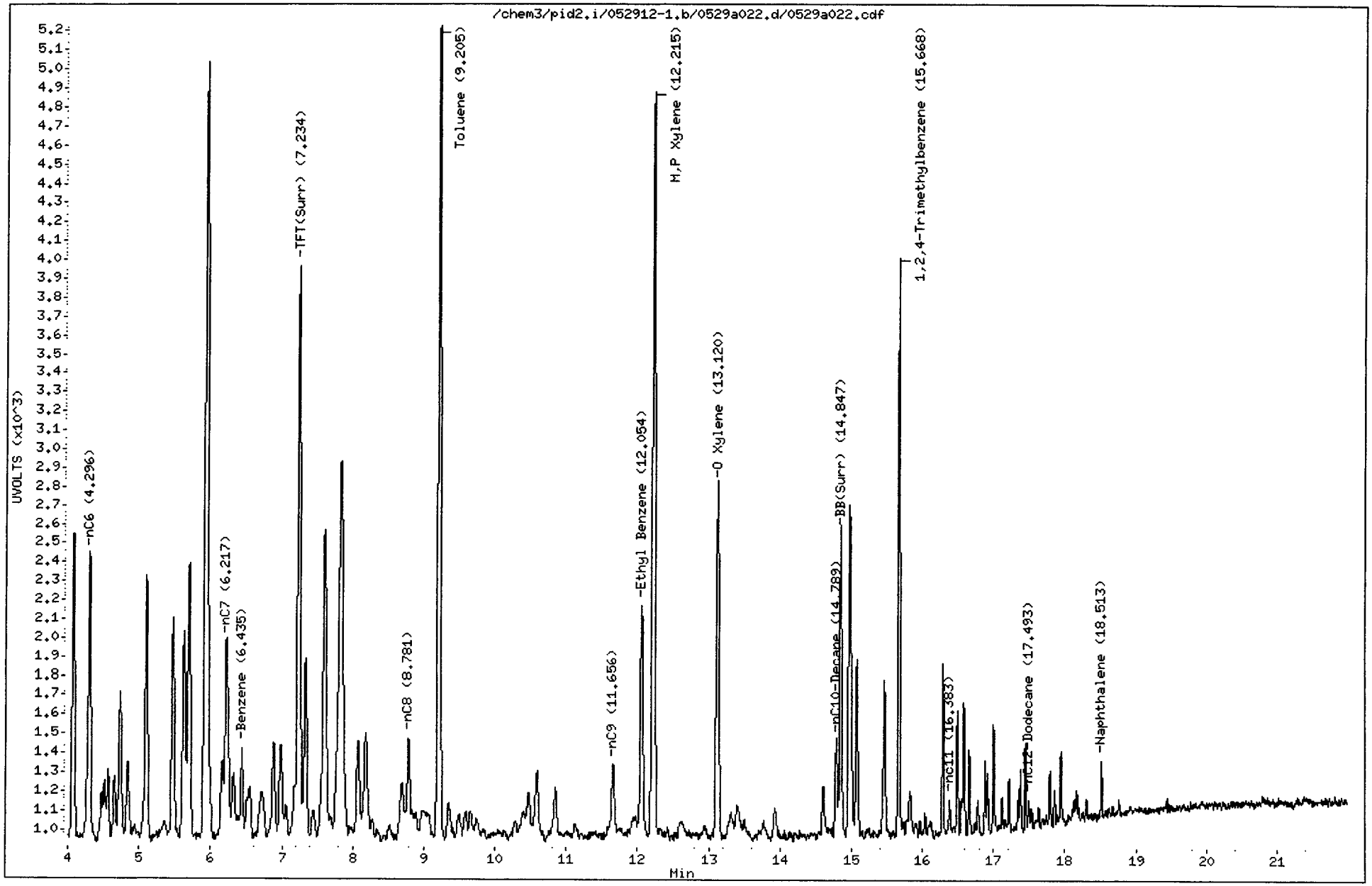
Instrument: pid2.i

Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18

UV12:00052



Data File: /chem3/pid2.i/052912-2.b/0529a022.d

Date : 29-MAY-2012 20:00

Client ID:

Sample Info: LCSD0529

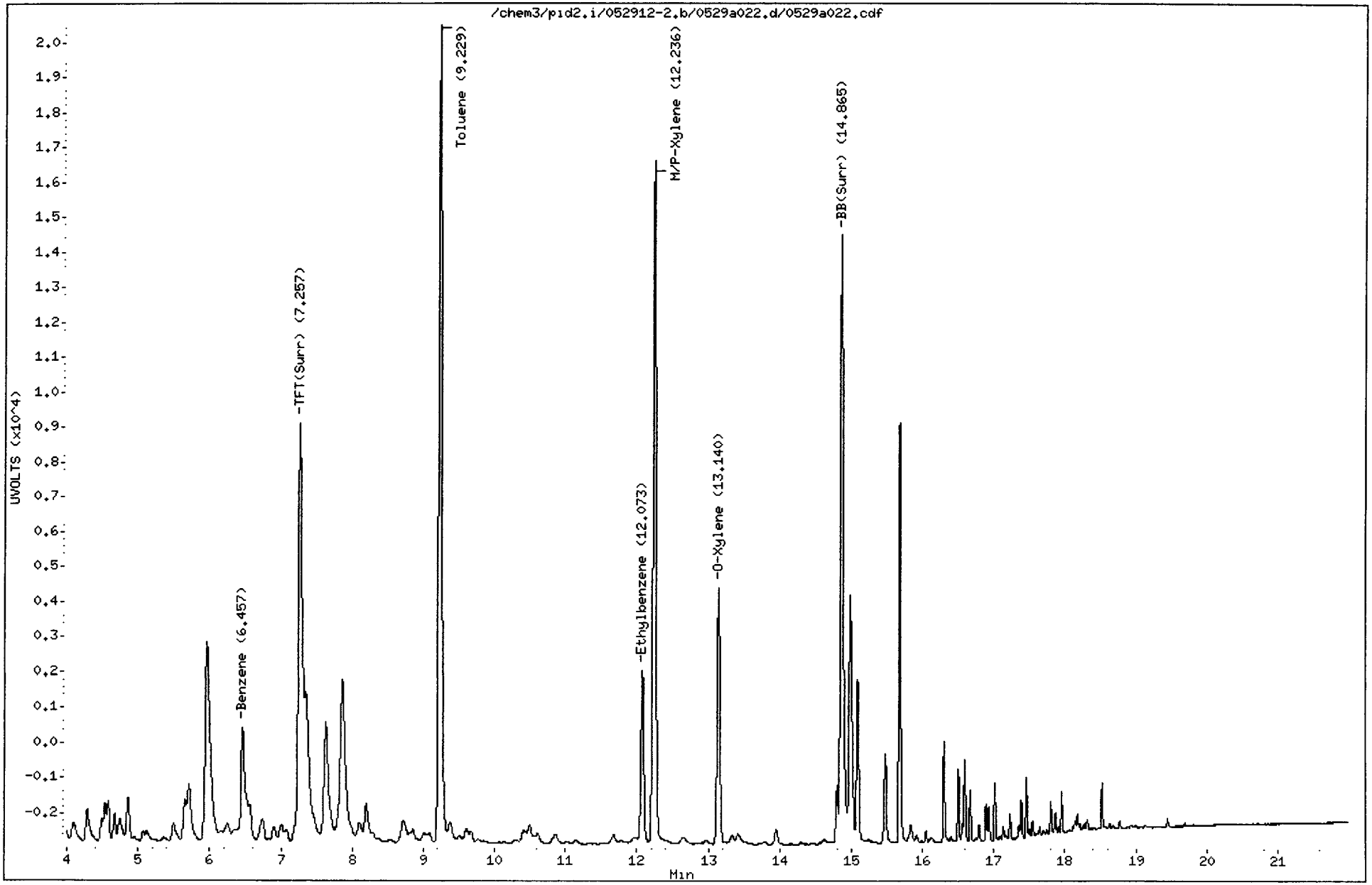
Instrument: pid2.i

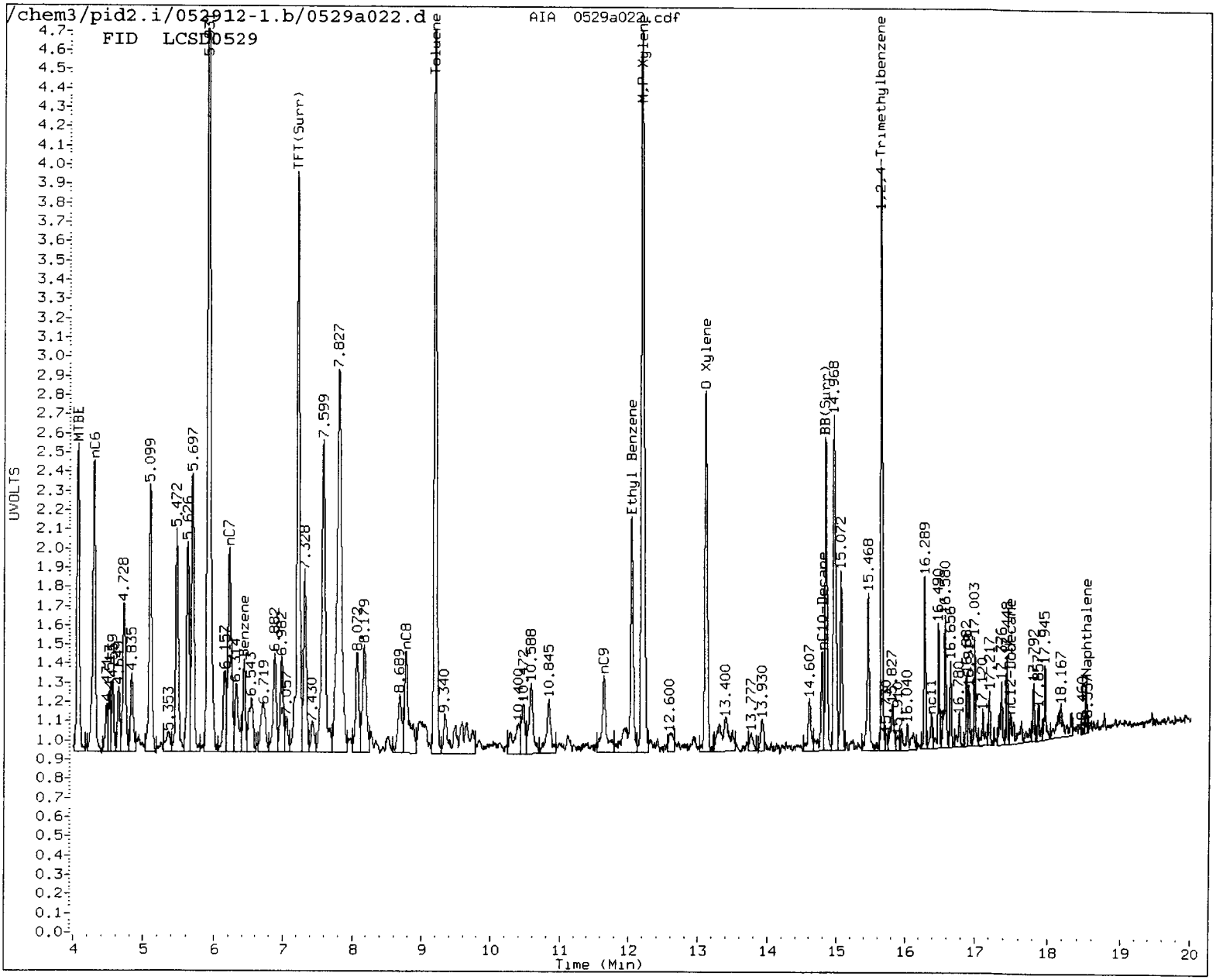
Operator: JW

Column phase: RTX 502-2 PID

Column diameter: 0.18

UV12 : 6063





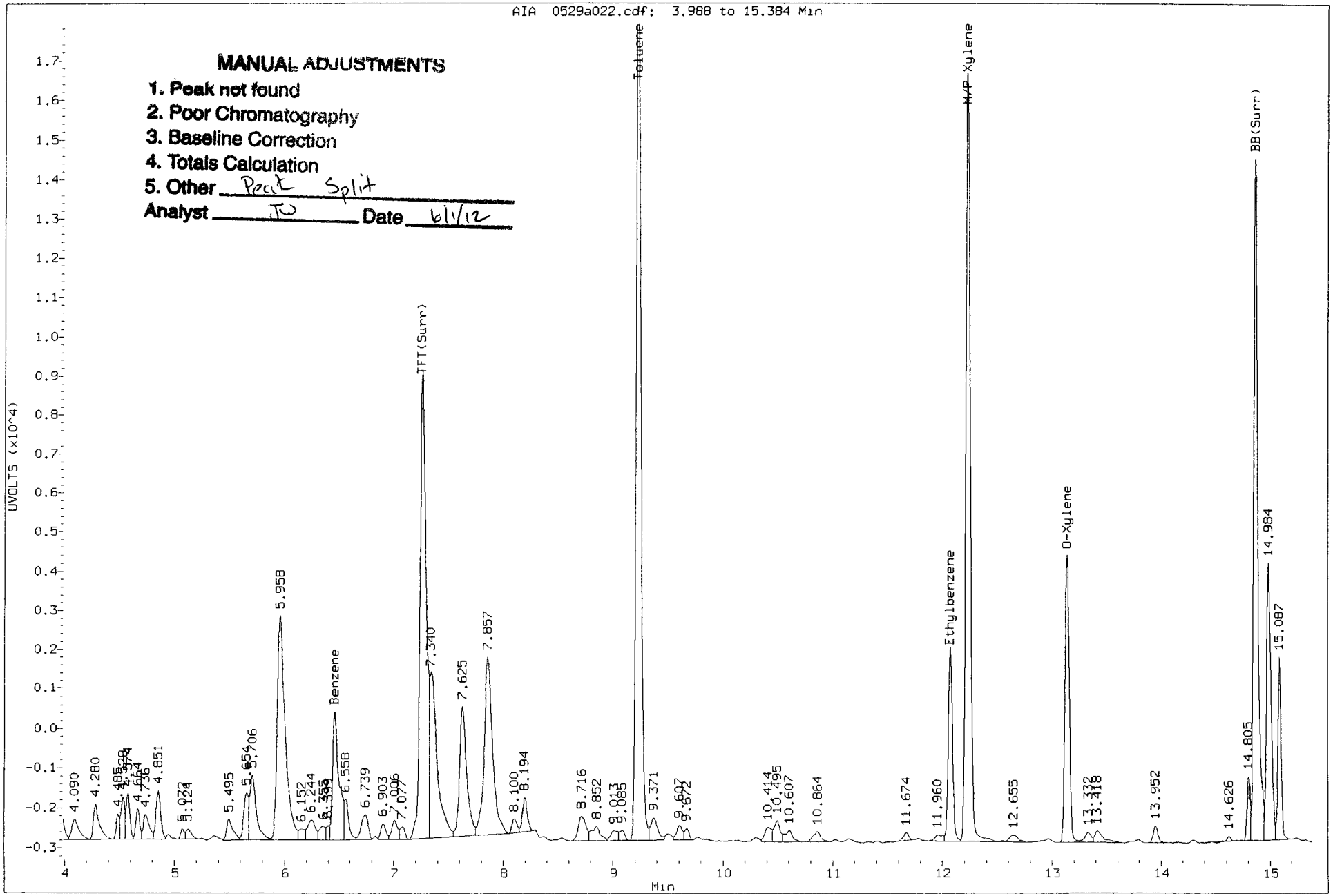
MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/1/12

Data File: /chem3/pid2.i/052912-2.b/0529a022.d/0529a022.cdf
Injection Date: 29-MAY-2012 20:00
Instrument: pid2.i
Client Sample ID:



UV12:00065

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9243
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-as-rec
LCSD: 100 mg-as-rec

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	56.2	50.0	112%	56.5	50.0	113%	0.5%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.2%	105%
Bromobenzene	96.0%	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod
Page 1 of 1

Sample ID: LCS-053112
LAB CONTROL SAMPLE

Lab Sample ID: LCS-053112
LIMS ID: 12-9243
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 05/31/12 07:44
LCSD: 05/31/12 08:12
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-as-rec
LCSD: 100 mg-as-rec

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	189	185	102%	190	185	103%	0.5%
Toluene	2030	1980	103%	2030	1980	103%	0.0%
Ethylbenzene	502	580	86.6%	500	580	86.2%	0.4%
m,p-Xylene	2070	2120	97.6%	2030	2120	95.8%	2.0%
o-Xylene	964	960	100%	940	960	97.9%	2.5%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	99.3%	105%
Bromobenzene	95.9%	100%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a004.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a004.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCS0531
Client ID:
Injection Date: 31-MAY-2012 07:44
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.248	-0.003	2945	43629	99.2	TFT(Surr)
14.863	0.000	1617	16717	96.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	356658	1.117 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	763838	1.128 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	616752	1.132 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	371560	1.124 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.274	-0.003	12303	99.3	TFT(Surr)
14.881	0.000	17123	95.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.472	-0.003	3297	3.78	Benzene
9.244	-0.002	22366	40.63	Toluene
12.093	-0.001	4830	10.03	Ethylbenzene
12.254	0.002	19251	41.32	M/P-Xylene
13.159	-0.001	7309	19.27	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a004.d

Date : 31-MAY-2012 07:44

Client ID:

Sample Info: LCS0531

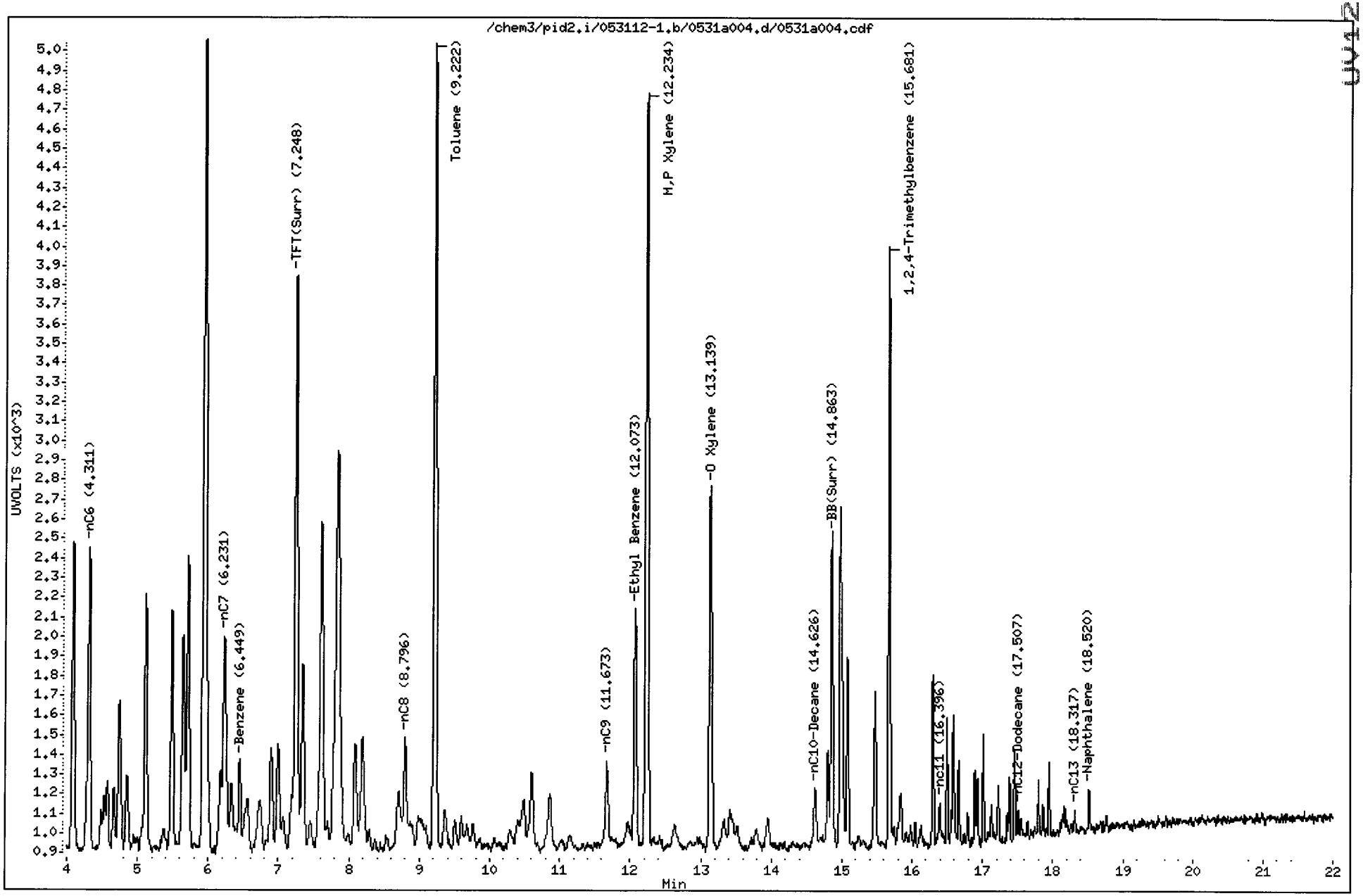
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV12 : 00069



Data File: /chem3/pid2.i/053112-2.b/0531a004.d

Date : 31-MAY-2012 07:44

Client ID:

Sample Info: LCS0531

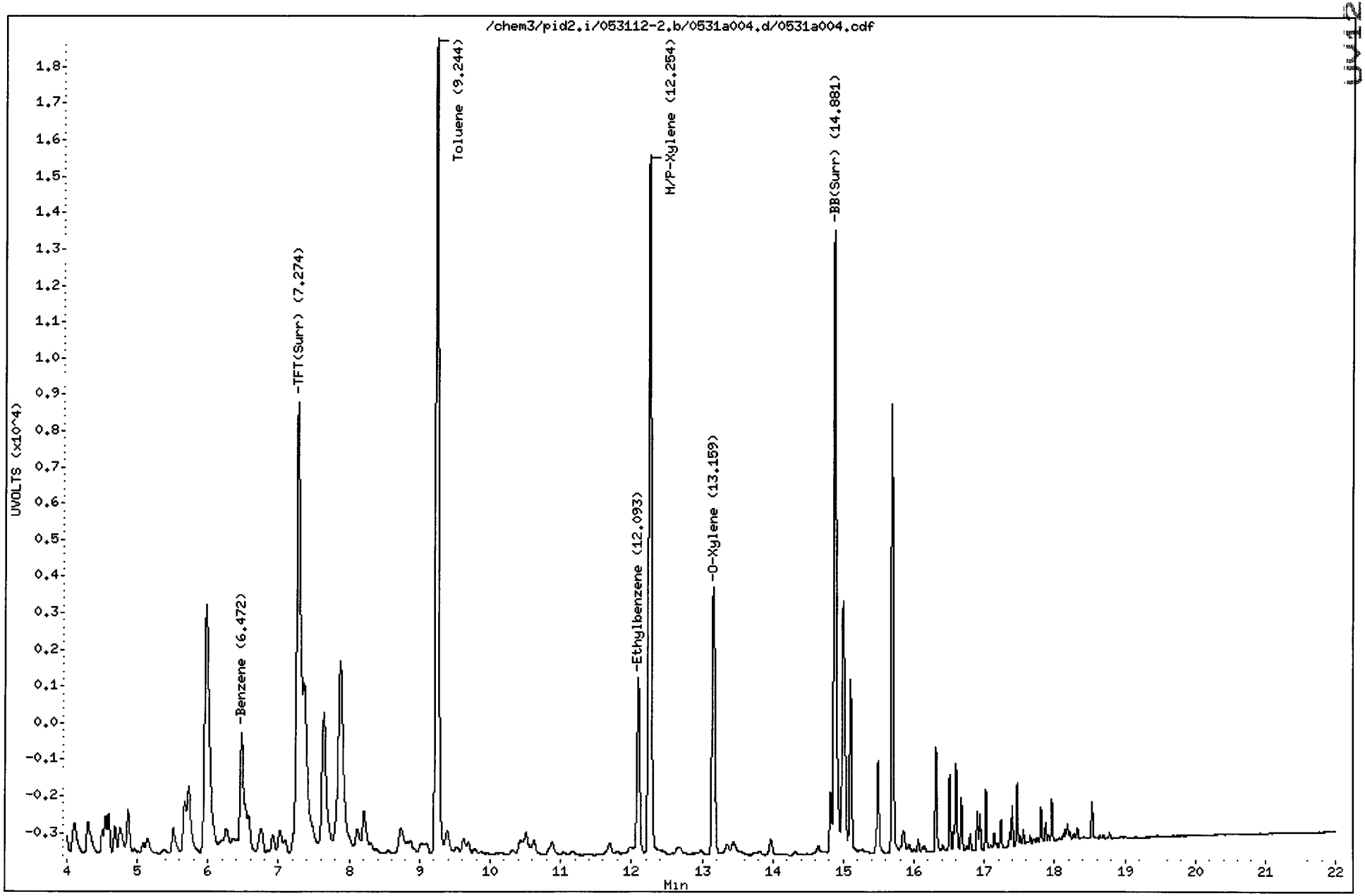
Column phase: RTX 502-2 PID

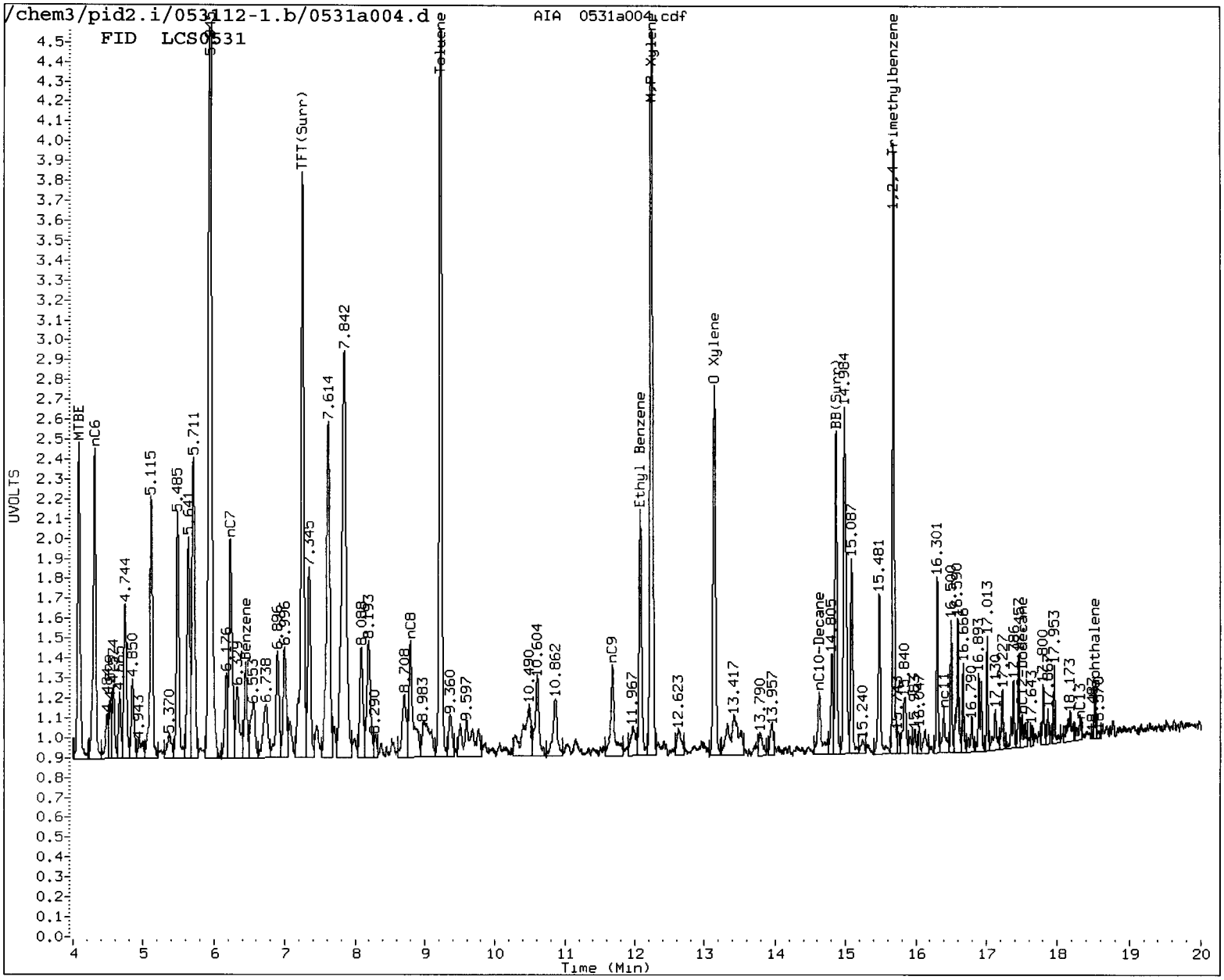
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UV12 000070





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a005.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a005.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: LCSD0531
Client ID:
Injection Date: 31-MAY-2012 08:12
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.253	0.002	3113	45625	104.9	TFT(Surr)
14.863	0.000	1690	17559	100.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	357926	1.121 M
8015C 2MP-TMB	(3.76 to 15.78)	677374	773002	1.141 M
AK101 nC6-nC10	(4.21 to 14.52)	544975	627180	1.151 M
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	373796	1.130 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.277	0.000	13008	105.0	TFT(Surr)
14.882	0.000	17861	100.0	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
6.476	0.000	3322	3.81	Benzene
9.248	0.002	22340	40.59	Toluene
12.094	0.000	4809	9.99	Ethylbenzene
12.256	0.004	18910	40.58	M/P-Xylene
13.161	0.001	7131	18.80	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

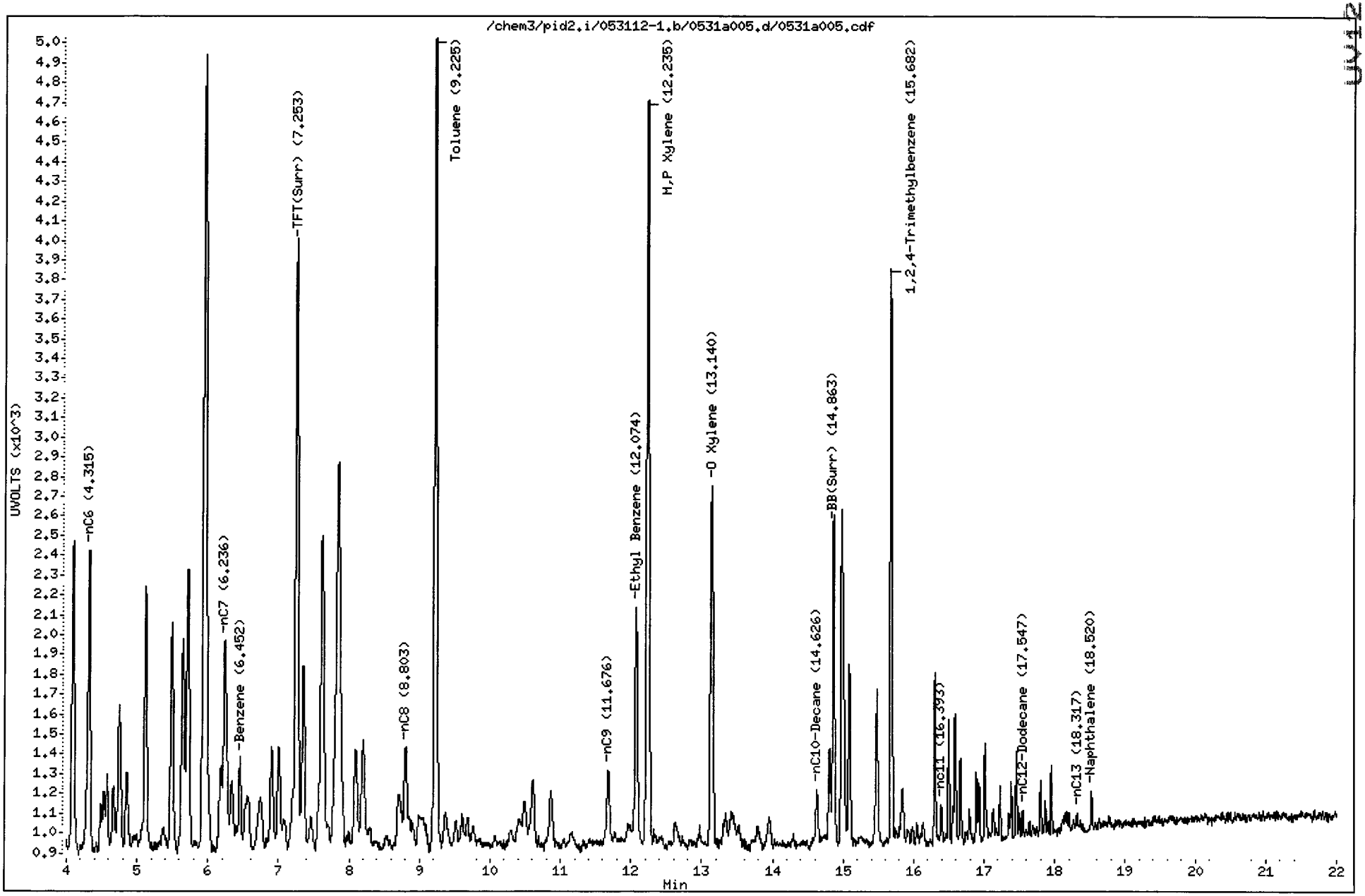
Sample Info: LCSD0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a005.d

Date : 31-MAY-2012 08:12

Client ID:

Sample Info: LCSD0531

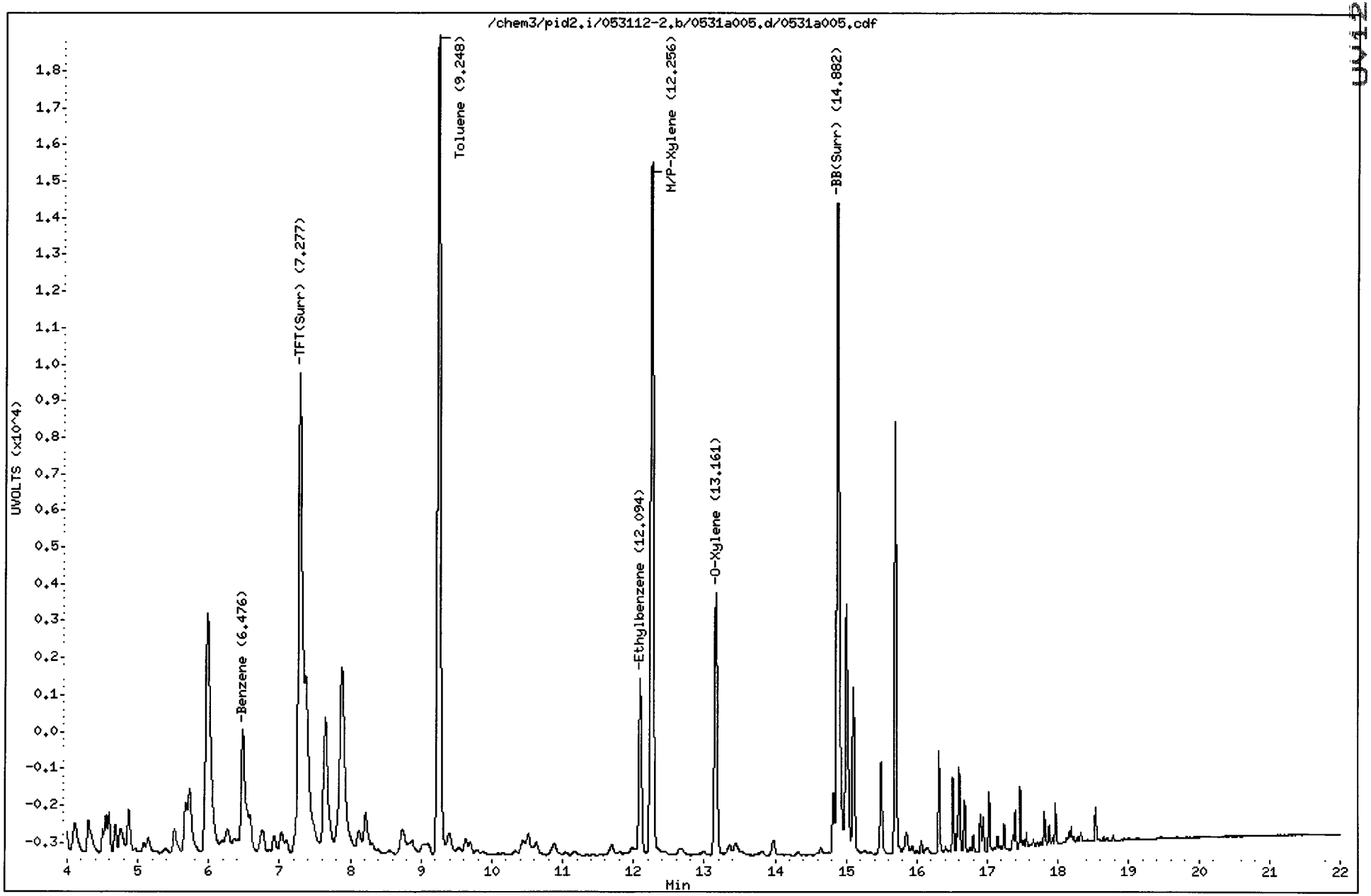
Column phase: RTX 502-2 PID

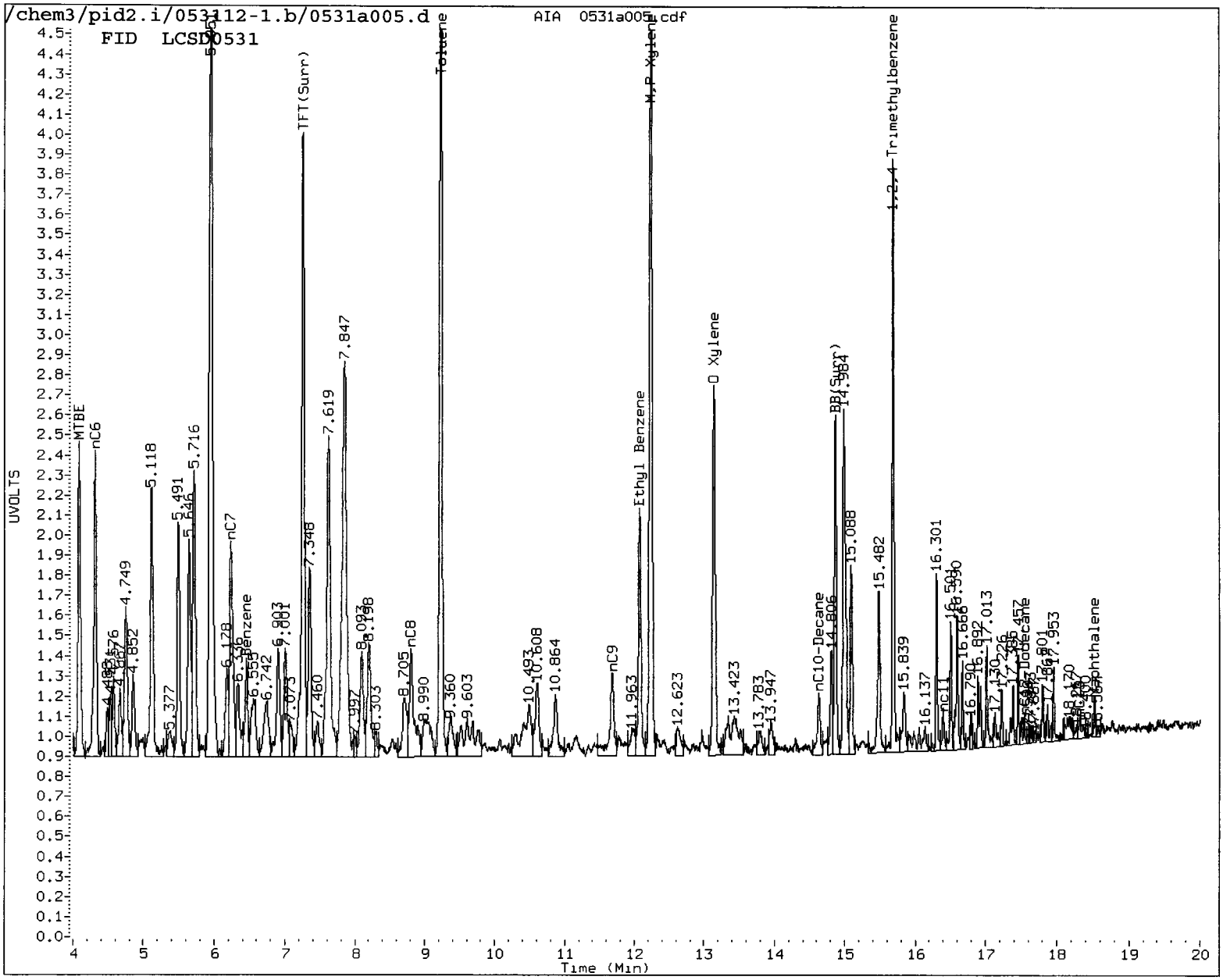
Instrument: pid2.i

Operator: MH

Column diameter: 0.18

UW12-000071





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 6/2/12

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-052912**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-052912
LIMS ID: 12-9240
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/29/12 20:28
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-dry-wt

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.9%
Bromobenzene	97.3%

Gasoline Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	99.2%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/052912-1.b/0529a023.d
Data file 2: /chem3/pid2.i/052912-2.b/0529a023.d
Method: /chem3/pid2.i/052912-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0529
Client ID:
Injection Date: 29-MAY-2012 20:28
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.237	-0.010	2968	37388	100.0	TFT(Surr)
14.847	-0.013	1671	16899	99.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	1	0.000
8015C 2MP-TMB	(3.75 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.67)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	1	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.262	-0.010	11753	94.9	TFT(Surr)
14.866	-0.014	17376	97.3	BB(Surr)

SW8021 (PID)

JW 6/1/12

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/052912-1.b/0529a023.d

Date : 29-MAY-2012 20:28

Client ID:

Sample Info: MB0529

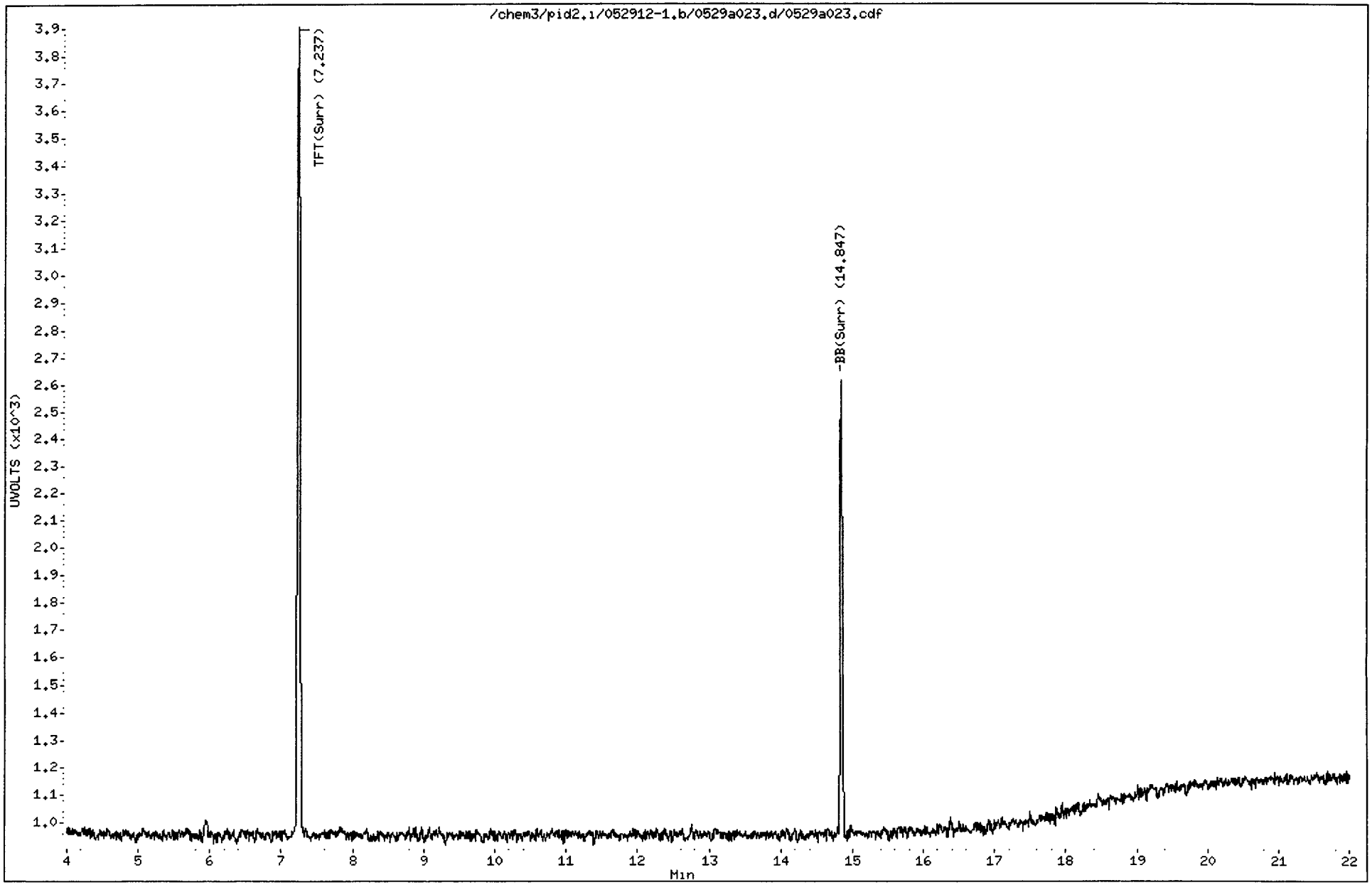
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV12.00078



Data File: /chem3/pid2.i/052912-2.b/0529a023.d

Date : 29-MAY-2012 20:28

Client ID:

Sample Info: MB0529

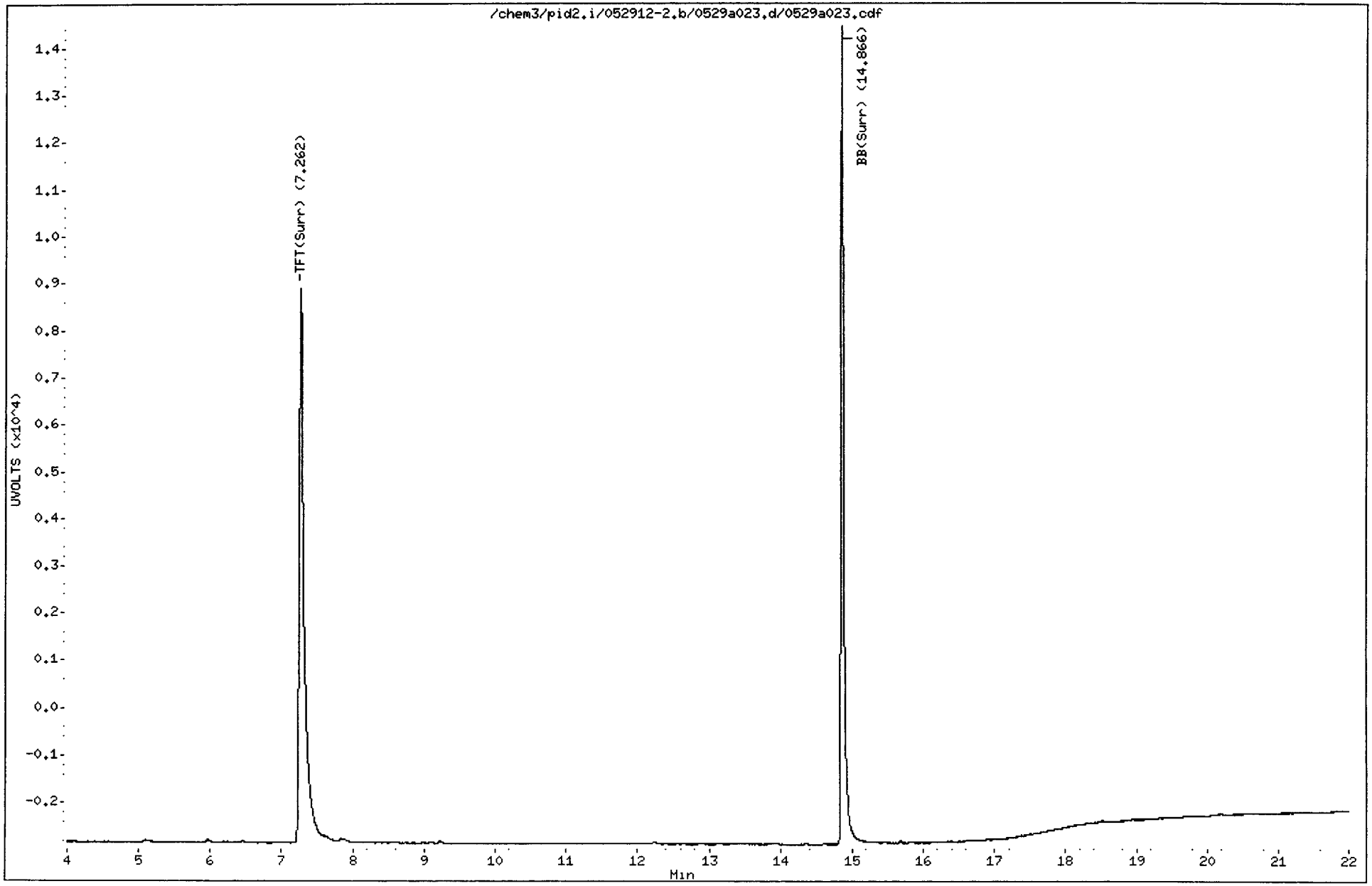
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

UV12:00079



ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
BETX by Method SW8021BMod **Sample ID: MB-053112**
TPHG by Method NWTPHG **METHOD BLANK**

Lab Sample ID: MB-053112
LIMS ID: 12-9243
Matrix: Soil
Data Release Authorized:
Reported: 06/04/12

QC Report No: UV13-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma
Event: USO-022
Date Sampled: NA
Date Received: NA

Date Analyzed: 05/31/12 08:40
Instrument/Analyst: PID2/JLW

Purge Volume: 5.0 mL
Sample Amount: 100 mg-as-rec

CAS Number	Analyte	RL	Result
71-43-2	Benzene	12	< 12 U
108-88-3	Toluene	12	< 12 U
100-41-4	Ethylbenzene	12	< 12 U
179601-23-1	m,p-Xylene	25	< 25 U
95-47-6	o-Xylene	12	< 12 U

			GAS ID
Gasoline Range Hydrocarbons	5.0	< 5.0 U	---

BETX Surrogate Recovery

Trifluorotoluene	94.9%
Bromobenzene	92.8%

Gasoline Surrogate Recovery

Trifluorotoluene	94.6%
Bromobenzene	92.8%

BETX values reported in µg/kg (ppb)
Gasoline values reported in mg/kg (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/053112-1.b/0531a006.d
Data file 2: /chem3/pid2.i/053112-2.b/0531a006.d
Method: /chem3/pid2.i/053112-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 29-MAY-2012
BETX Ical Date: 29-MAY-2012

ARI ID: MB0531
Client ID:
Injection Date: 31-MAY-2012 08:40
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.249	-0.003	2808	35447	94.6	TFT(Surr)
14.861	-0.002	1563	15598	92.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.12 to 17.60)	319251	0	0.000
8015C 2MP-TMB	(3.76 to 15.78)	677374	1	0.000
AK101 nC6-nC10	(4.21 to 14.52)	544975	1	0.000
NWTPHG Tol-Nap	(9.12 to 18.62)	330688	0	0.000

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.273	-0.004	11756	94.9	TFT(Surr)
14.880	-0.001	16577	92.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
9.247	0.001	41	0.07N	Toluene
ND	---	---	---	Ethylbenzene
12.253	0.001	58	0.12N	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 6/2/12

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/053112-1.b/0531a006.d

Date : 31-MAY-2012 08:40

Client ID:

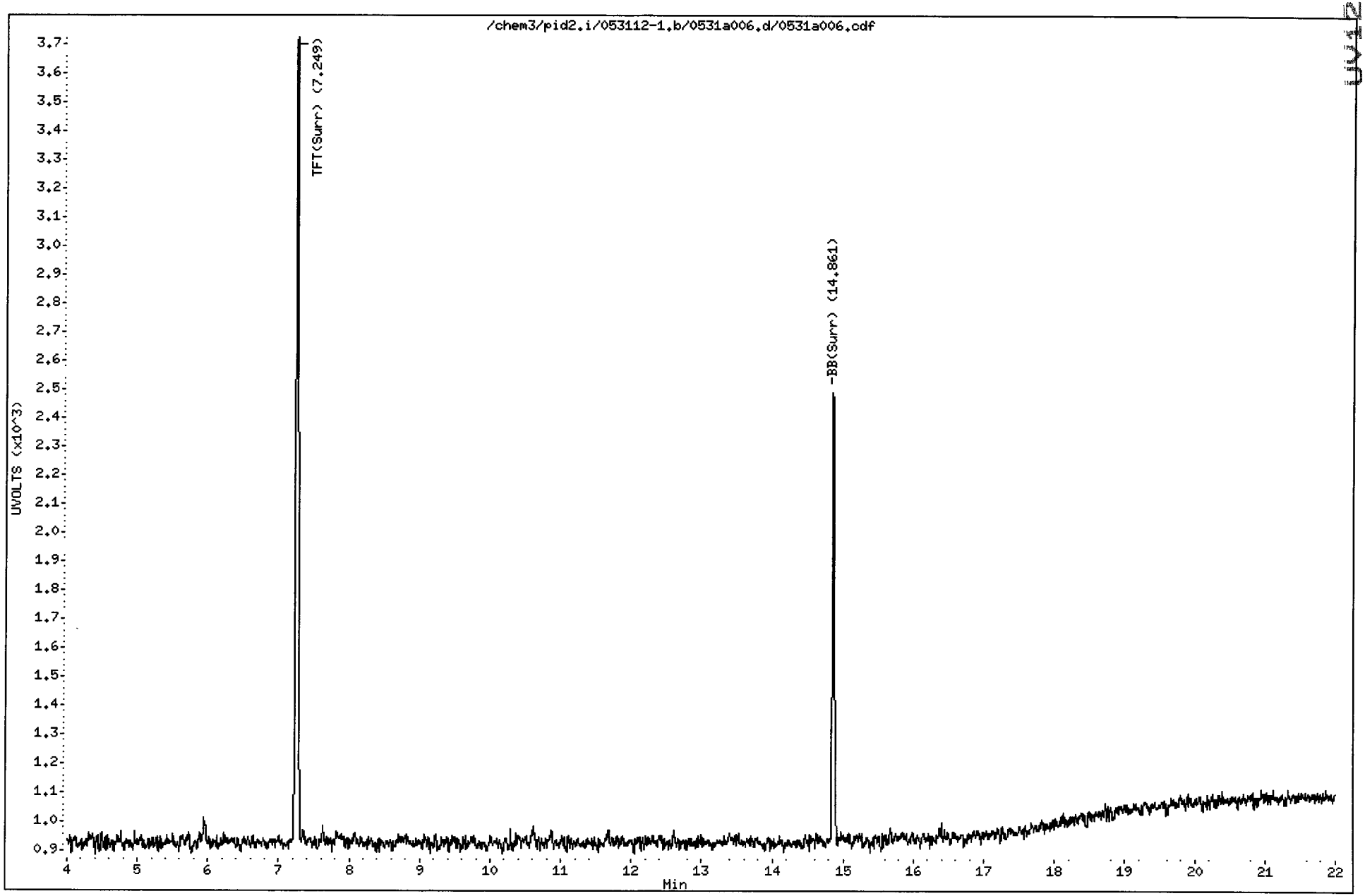
Sample Info: MB0531

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Data File: /chem3/pid2.i/053112-2.b/0531a006.d

Date : 31-MAY-2012 08:40

Client ID:

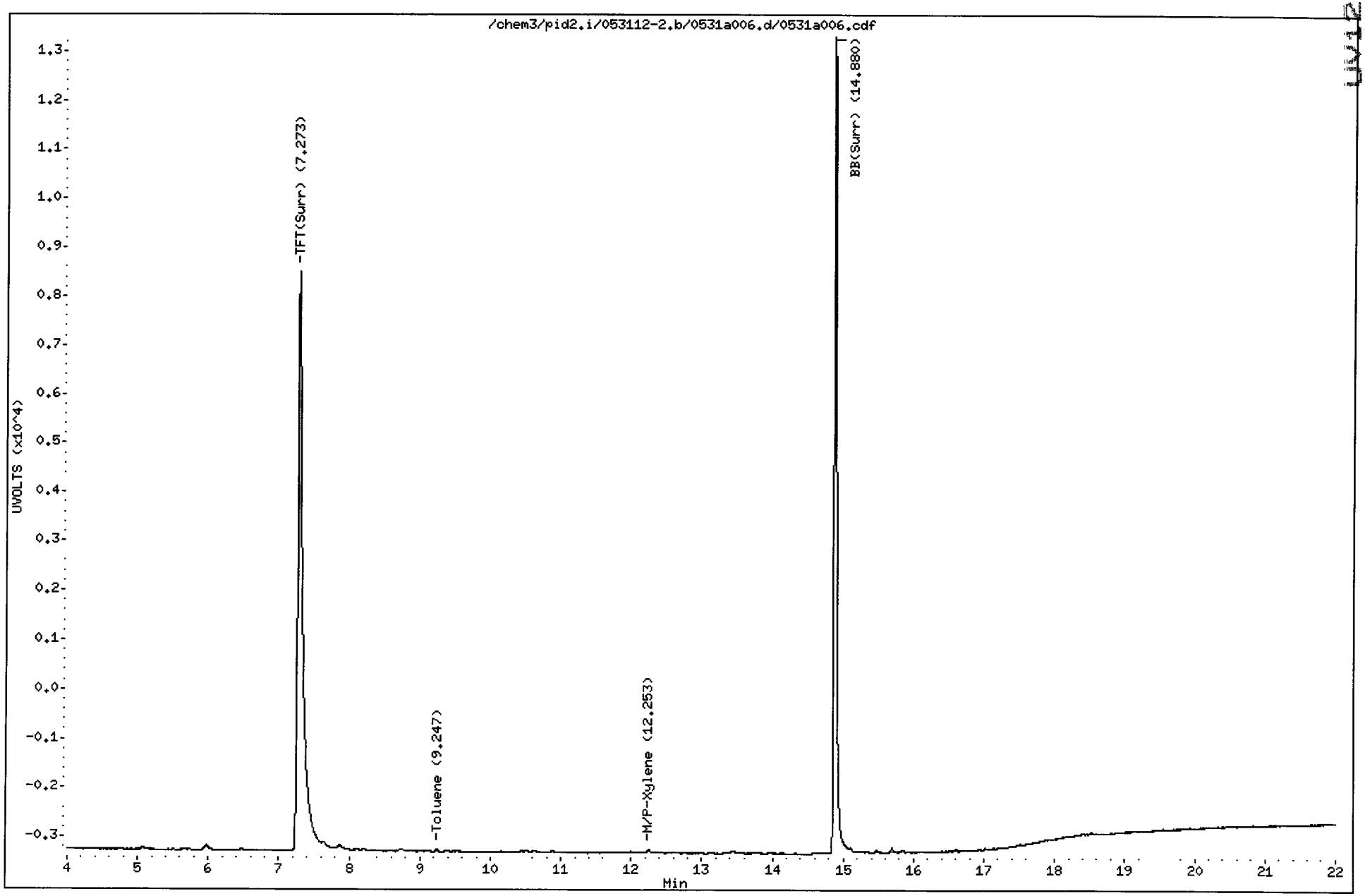
Sample Info: MB0531

Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: MH

Column diameter: 0.18



Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 6, 2014

Matt Dalton
Dalton, Olmsted & Fuglevand, Inc.
6034 N Star Road
Ferndale, WA 98248

RE: Project: 1920 Port of Tacoma Rd, USO-023
ARI Job Nos: YR57, YR58, & YR59

Dear Matt:

Please find enclosed the original Chain-of-Custody records (COCs), sample receipt documentation, and the final analytical results for samples from the referenced project. Analytical Resources, Inc. (ARI) accepted forty-nine soil samples and one water sample on July 14, 2014. The cooler temperatures measured by IR thermometer were 1.3 and 2.7°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BTEX, as requested on the COCs.

The surrogate percent recoveries of d4-1,2-Dichloroethane fell outside the control limits for samples **USO-P16-A** and **USO-P16-C**. All other surrogate percent recoveries were within control limits. No corrective action was taken.

The surrogate percent recoveries of d4-1,2-Dichloroethane were outside control limits for samples **USO-P16-B** and **USO-P18-B**. The samples were re-analyzed and all surrogate percent recoveries were within control limits. No further corrective action was taken.

The surrogate percent recoveries of d8-Toluene and Bromofluorobenzene were outside control limits for sample **USO-P23-A**. The sample was re-analyzed and all surrogate percent recoveries were within control limits. No further corrective action was taken.

An electronic copy of this report and all associated raw data will be kept on file with ARI. Should you have any questions, please feel free to contact me at any time.

Sincerely,
ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile YR57_YR58_YR59

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 1257	Turn-around Requested: Normal	Date: 7/14/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 1 of 5	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers: 2	Cooler Temps: 1.3, 2.7
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-G / BTEX (8260)	Notes/Comments
USO-P15-A	7/12/14	0905	Soil	3	X	
USO-P15-B	7/12/14	0910	Soil	3	X	
USO-P15-C	7/12/14	0915	Soil	3	X	
USO-P15-D	7/12/14	0920	Soil	3	X	
USO-P15-E	7/12/14	0925	Soil	3	X	
USO-P16-A	7/12/14	1005	Soil	3	X	
USO-P16-B	7/12/14	1010	Soil	3	X	
USO-P16-C	7/12/14	1015	Soil	3	X	
USO-P16-D	7/12/14	1020	Soil	3	X	
USO-P16-E	7/12/14	1025	Soil	3	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgardsen	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 7/14/14 1545	Date & Time: 7/14/14 1545	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: Y857	Turn-around Requested: Normal	Date: 7/14/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 2 of 5	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers:	Cooler Temps:
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-G / BTEX (8260)	Notes/Comments
USO-P17-A	7/12/14	1250	Soil	3	X	
USO-P17-B	7/12/14	1255	Soil	3	X	
USO-P17-C	7/12/14	1300	Soil	3	X	
USO-P17-D	7/12/14	1305	Soil	3	X	
USO-P17-E	7/12/14	1310	Soil	3	X	
USO-P17-F	7/12/14	1315	Soil	3	X	
USO-P18-A	7/12/14	1350	Soil	3	X	
USO-P18-B	7/12/14	1400	Soil	3	X	
USO-P18-C	7/12/14	1405	Soil	3	X	
USO-P18-D	7/12/14	1410	Soil	3	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgardsen	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 7/14/14 1545	Date & Time: 7/14/14 1545	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF

Project Name: 1920 Port of Tacoma Rd

COC No(s): ~~NA~~

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: YR57

Tracking No: _____ ~~NA~~

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	~~NO~~
Were custody papers included with the cooler?	~~YES~~	NO
Were custody papers properly filled out (ink, signed, etc.)	~~YES~~	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)
Time: 1545 — 1.3 2.7 ___ ___ ___ ___

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90877958

Cooler Accepted by: AV Date: 7/14/14 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	~~NO~~
What kind of packing material was used? ... Bubble Wrap ~~Wet Ice~~ Gel Packs ~~Baggies~~ Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	~~YES~~	NO
Were all bottles sealed in individual plastic bags?		~~YES~~	NO
Did all bottles arrive in good condition (unbroken)?		~~YES~~	NO
Were all bottle labels complete and legible?		~~YES~~	NO
Did the number of containers listed on COC match with the number of containers received?		~~YES~~	NO
Did all bottle labels and tags agree with custody papers?		~~YES~~	NO
Were all bottles used correct for the requested analyses?		~~YES~~	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	~~NA~~	YES	NO
Were all VOC vials free of air bubbles?	~~NA~~	YES	NO
Was sufficient amount of sample sent in each bottle?		~~YES~~	NO
Date VOC Trip Blank was made at ARI...	~~NA~~		

Was Sample Split by ARI : ~~NA~~ YES Date/Time: _____ Equipment: _____ Split by: _____

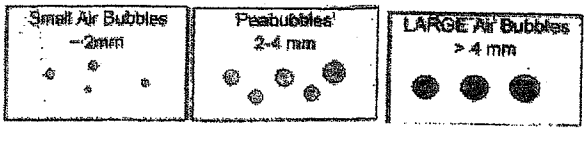
Samples Logged by: [illegible] Date: 7.15.14 Time: 830

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

YR57 : 0004U

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 4258	Turn-around Requested: Normal	Date: 7/14/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 3 of 5	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers:	Cooler Temps:
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-G / BTEX (8260)	Notes/Comments
USO-P18-E	7/12/14	1415	Soil	3	X	
USO-P18-F	7/12/14	1420	Soil	3	X	
USO-P19-A	7/13/14	0815	Soil	3	X	
USO-P19-B	7/13/14	0820	Soil	3	X	
USO-P19-C	7/13/14	0825	Soil	3	X	
USO-P19-D	7/13/14	0830	Soil	3	X	
USO-P19-E	7/13/14	0835	Soil	3	X	
USO-P20-A	7/13/14	0855	Soil	3	X	
USO-P20-B	7/13/14	0900	Soil	3	X	
USO-P20-C	7/13/14	0905	Soil	3	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgarden	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 7/14/14 1545	Date & Time: 7/14/14 1545	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 4258	Turn-around Requested: Normal	Date: 7/14/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 4 of 5	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers:	Cooler Temps:
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-G / BTEX (8260)								Notes/Comments
USO-P20-D	7/13/14	0910	Soil	3	X								
USO-P20-E	7/13/14	0915	Soil	3	X								
USO-P21-A	7/13/14	0935	Soil	3	X								
USO-P21-B	7/13/14	0940	Soil	3	X								
USO-P21-C	7/13/14	0945	Soil	3	X								
USO-P21-D	7/13/14	0950	Soil	3	X								
USO-P21-E	7/13/14	0955	Soil	3	X								
USO-P22-A	7/13/14	1025	Soil	3	X								
USO-P22-B	7/13/14	1030	Soil	3	X								
USO-P22-C	7/13/14	1035	Soil	3	X								

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: A. Valgaardsen	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 7/14/14 1345	Date & Time: 7/14/14 1545	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOE

Project Name: 1420 East of Tacoma Road

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: YR58

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)
Time: 1545 — 1.3 2.7

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90877952

Cooler Accepted by: AV Date: 7/14/14 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:			
Was sufficient ice used (if appropriate)?	NA	YES	NO
Were all bottles sealed in individual plastic bags?		YES	NO
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI...	NA		

Was Sample Split by ARI : NA YES Date/Time: Equipment: Split by:

Samples Logged by: TS Date: 7-15-14 Time: 841

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 7259	Turn-around Requested: Normal	Date: 7/14/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 5 of 5	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers:	Cooler Temps:
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: NWTPH-G / BTEX (8260)	Notes/Comments
USO-P22-D	7/13/14	1040	Soil	3	X	
USO-P22-E	7/13/14	1045	Soil	3	X	
USO-P23-A	7/13/14	1115	Soil	3	X	
USO-P23-B	7/13/14	1120	Soil	3	X	
USO-P23-C	7/13/14	1125	Soil	3	X	
USO-P23-D	7/13/14	1130	Soil	3	X	
USO-P23-E	7/13/14	1135	Soil	3	X	
USO-P6A-F	7/13/14	1110	Soil	3	X	
USO-P6A-G	7/13/14	1115	Soil	3	X	
Travel Blank	7/13/14	-	methanol	3	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgardsen	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 7/14/14 1545	Date & Time: 7/14/14 1545	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF

Project Name: 1920 2nd of Two Rig Road

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: YR59

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 1.3 2.7

Time: 1545

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: AV Date: 7/14/14 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI... NA 7-10-14

Was Sample Split by ARI : NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JB Date: 7.15.14 Time: 841

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:



Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: YR57
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-023
Project Name: 1920 Port of Tacoma Road

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P15-A	YR57A	14-13801	Soil	07/12/14 09:05	07/14/14 15:45
2.	USO-P15-B	YR57B	14-13802	Soil	07/12/14 09:10	07/14/14 15:45
3.	USO-P15-C	YR57C	14-13803	Soil	07/12/14 09:15	07/14/14 15:45
4.	USO-P15-D	YR57D	14-13804	Soil	07/12/14 09:20	07/14/14 15:45
5.	USO-P15-E	YR57E	14-13805	Soil	07/12/14 09:25	07/14/14 15:45
6.	USO-P16-A	YR57F	14-13806	Soil	07/12/14 10:05	07/14/14 15:45
7.	USO-P16-B	YR57G	14-13807	Soil	07/12/14 10:10	07/14/14 15:45
8.	USO-P16-C	YR57H	14-13808	Soil	07/12/14 10:15	07/14/14 15:45
9.	USO-P16-D	YR57I	14-13809	Soil	07/12/14 10:20	07/14/14 15:45
10.	USO-P16-E	YR57J	14-13810	Soil	07/12/14 10:25	07/14/14 15:45
11.	USO-P17-A	YR57K	14-13811	Soil	07/12/14 12:50	07/14/14 15:45
12.	USO-P17-B	YR57L	14-13812	Soil	07/12/14 12:55	07/14/14 15:45
13.	USO-P17-C	YR57M	14-13813	Soil	07/12/14 13:00	07/14/14 15:45
14.	USO-P17-D	YR57N	14-13814	Soil	07/12/14 13:05	07/14/14 15:45
15.	USO-P17-E	YR57O	14-13815	Soil	07/12/14 13:10	07/14/14 15:45
16.	USO-P17-F	YR57P	14-13816	Soil	07/12/14 13:15	07/14/14 15:45
17.	USO-P18-A	YR57Q	14-13817	Soil	07/12/14 13:50	07/14/14 15:45
18.	USO-P18-B	YR57R	14-13818	Soil	07/12/14 14:00	07/14/14 15:45
19.	USO-P18-C	YR57S	14-13819	Soil	07/12/14 14:05	07/14/14 15:45
20.	USO-P18-D	YR57T	14-13820	Soil	07/12/14 14:10	07/14/14 15:45

YR57:0001a

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: YR58
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-023
Project Name: 1920 Port of Tacoma Road

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P18-E	YR58A	14-13821	Soil	07/12/14 14:15	07/14/14 15:45
2.	USO-P18-F	YR58B	14-13822	Soil	07/12/14 14:20	07/14/14 15:45
3.	USO-P19-A	YR58C	14-13823	Soil	07/13/14 08:15	07/14/14 15:45
4.	USO-P19-B	YR58D	14-13824	Soil	07/13/14 08:20	07/14/14 15:45
5.	USO-P19-C	YR58E	14-13825	Soil	07/13/14 08:25	07/14/14 15:45
6.	USO-P19-D	YR58F	14-13826	Soil	07/13/14 08:30	07/14/14 15:45
7.	USO-P19-E	YR58G	14-13827	Soil	07/13/14 08:35	07/14/14 15:45
8.	USO-P20-A	YR58H	14-13828	Soil	07/13/14 08:55	07/14/14 15:45
9.	USO-P20-B	YR58I	14-13829	Soil	07/13/14 09:00	07/14/14 15:45
10.	USO-P20-C	YR58J	14-13830	Soil	07/13/14 09:05	07/14/14 15:45
11.	USO-P20-D	YR58K	14-13831	Soil	07/13/14 09:10	07/14/14 15:45
12.	USO-P20-E	YR58L	14-13832	Soil	07/13/14 09:15	07/14/14 15:45
13.	USO-P21-A	YR58M	14-13833	Soil	07/13/14 09:35	07/14/14 15:45
14.	USO-P21-B	YR58N	14-13834	Soil	07/13/14 09:40	07/14/14 15:45
15.	USO-P21-C	YR58O	14-13835	Soil	07/13/14 09:45	07/14/14 15:45
16.	USO-P21-D	YR58P	14-13836	Soil	07/13/14 09:50	07/14/14 15:45
17.	USO-P21-E	YR58Q	14-13837	Soil	07/13/14 09:55	07/14/14 15:45
18.	USO-P22-A	YR58R	14-13838	Soil	07/13/14 10:25	07/14/14 15:45
19.	USO-P22-B	YR58S	14-13839	Soil	07/13/14 10:30	07/14/14 15:45
20.	USO-P22-C	YR58T	14-13840	Soil	07/13/14 10:35	07/14/14 15:45

YR57:00011

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: YR59
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-023
Project Name: 1920 Port of Tacoma Road

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P22-D	YR59A	14-13841	Soil	07/13/14 10:40	07/14/14 15:45
2.	USO-P22-E	YR59B	14-13842	Soil	07/13/14 10:45	07/14/14 15:45
3.	USO-P23-A	YR59C	14-13843	Soil	07/13/14 11:15	07/14/14 15:45
4.	USO-P23-B	YR59D	14-13844	Soil	07/13/14 11:20	07/14/14 15:45
5.	USO-P23-C	YR59E	14-13845	Soil	07/13/14 11:25	07/14/14 15:45
6.	USO-P23-D	YR59F	14-13846	Soil	07/13/14 11:30	07/14/14 15:45
7.	USO-P23-E	YR59G	14-13847	Soil	07/13/14 11:35	07/14/14 15:45
8.	USO-P6A-F	YR59H	14-13848	Soil	07/13/14 11:10	07/14/14 15:45
9.	USO-P6A-G	YR59I	14-13849	Soil	07/13/14 11:15	07/14/14 15:45
10.	Travel Blank	YR59J	14-13850	Soil	07/13/14	07/14/14 15:45

YR57:00012

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P15-A
SAMPLE

Lab Sample ID: YR57A
LIMS ID: 14-13801
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/16/14 23:50

Sample Amount: 79.8 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 4.3%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	32	< 32	U
108-88-3	Toluene	32	< 32	U
100-41-4	Ethylbenzene	32	< 32	U
179601-23-1	m,p-Xylene	63	< 63	U
95-47-6	o-Xylene	32	< 32	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	16	< 16	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.2%
d8-Toluene	99.3%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	99.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P15-B
SAMPLE

Lab Sample ID: YR57B
LIMS ID: 14-13802
Matrix: Soil
Data Release Authorized: BLB
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 00:20

Sample Amount: 62.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 6.9%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	40	< 40	U
108-88-3	Toluene	40	< 40	U
100-41-4	Ethylbenzene	40	< 40	U
179601-23-1	m,p-Xylene	80	< 80	U
95-47-6	o-Xylene	40	< 40	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	20	< 20	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.9%
d8-Toluene	96.2%
Bromofluorobenzene	98.8%
d4-1,2-Dichlorobenzene	97.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P15-C
SAMPLE

Lab Sample ID: YR57C
LIMS ID: 14-13803
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 00:49

Sample Amount: 68.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 7.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	36	< 36	U
108-88-3	Toluene	36	< 36	U
100-41-4	Ethylbenzene	36	< 36	U
179601-23-1	m,p-Xylene	73	< 73	U
95-47-6	o-Xylene	36	< 36	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.3%
d8-Toluene	99.2%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	97.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P15-D
SAMPLE

Lab Sample ID: YR57D
LIMS ID: 14-13804
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 01:18

Sample Amount: 63.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 14.5%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	39	< 39	U
108-88-3	Toluene	39	< 39	U
100-41-4	Ethylbenzene	39	< 39	U
179601-23-1	m,p-Xylene	78	< 78	U
95-47-6	o-Xylene	39	< 39	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	20	< 20	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.4%
d8-Toluene	98.4%
Bromofluorobenzene	98.4%
d4-1,2-Dichlorobenzene	97.6%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P15-E
SAMPLE

Lab Sample ID: YR57E
LIMS ID: 14-13805
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 01:48

Sample Amount: 67.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 16.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	37	< 37	U
108-88-3	Toluene	37	< 37	U
100-41-4	Ethylbenzene	37	< 37	U
179601-23-1	m,p-Xylene	74	< 74	U
95-47-6	o-Xylene	37	< 37	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	19	< 19	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.5%
d8-Toluene	97.1%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	99.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P16-A
SAMPLE

Lab Sample ID: YR57F
LIMS ID: 14-13806
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 16:11

Sample Amount: 70.2 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 2.9%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	36	< 36	U
108-88-3	Toluene	36	< 36	U
100-41-4	Ethylbenzene	36	< 36	U
179601-23-1	m,p-Xylene	71	< 71	U
95-47-6	o-Xylene	36	< 36	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	79.6%
d8-Toluene	100%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	96.3%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P16-B
SAMPLE

Lab Sample ID: YR57G
LIMS ID: 14-13807
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 16:40

Sample Amount: 76.8 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.1%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	33	< 33	U
108-88-3	Toluene	33	< 33	U
100-41-4	Ethylbenzene	33	< 33	U
179601-23-1	**m,p-Xylene**	**65**	**120**	
95-47-6	o-Xylene	33	< 33	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**16**	**550**	**E**

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	78.1%
d8-Toluene	106%
Bromofluorobenzene	199%
d4-1,2-Dichlorobenzene	96.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P16-B
REANALYSIS

Lab Sample ID: YR57G
LIMS ID: 14-13807
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 12:52

Sample Amount: 25.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.1%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	97	< 97	U
108-88-3	Toluene	97	< 97	U
100-41-4	Ethylbenzene	97	< 97	U
179601-23-1	**m,p-Xylene**	**200**	**230**	
95-47-6	o-Xylene	97	< 97	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**49**	**760**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.0%
d8-Toluene	98.2%
Bromofluorobenzene	117%
d4-1,2-Dichlorobenzene	98.9%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P16-C
SAMPLE

Lab Sample ID: YR57H
LIMS ID: 14-13808
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 17:10

Sample Amount: 72.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 8.8%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	69	< 69	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**17**	**35**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	78.2%
d8-Toluene	101%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	99.4%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P16-D
SAMPLE

Lab Sample ID: YR57I
LIMS ID: 14-13809
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 17:40

Sample Amount: 73.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 15.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	68	< 68	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.8%
d8-Toluene	98.8%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	101%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P16-E
SAMPLE

Lab Sample ID: YR57J
LIMS ID: 14-13810
Matrix: Soil
Data Release Authorized: JB
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 18:09

Sample Amount: 42.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 30.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	59	< 59	U
108-88-3	Toluene	59	< 59	U
100-41-4	Ethylbenzene	59	< 59	U
179601-23-1	m,p-Xylene	120	< 120	U
95-47-6	o-Xylene	59	< 59	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	29	< 29	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.4%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	97.5%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P17-A
SAMPLE

Lab Sample ID: YR57K
LIMS ID: 14-13811
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 18:48

Sample Amount: 89.0 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 3.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	28	< 28	U
108-88-3	Toluene	28	< 28	U
100-41-4	Ethylbenzene	28	< 28	U
179601-23-1	m,p-Xylene	56	< 56	U
95-47-6	o-Xylene	28	< 28	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	83.7%
d8-Toluene	97.2%
Bromofluorobenzene	96.1%
d4-1,2-Dichlorobenzene	95.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P17-B
SAMPLE

Lab Sample ID: YR57L
LIMS ID: 14-13812
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 19:18

Sample Amount: 91.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 7.2%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	27	< 27	U
108-88-3	Toluene	27	< 27	U
100-41-4	Ethylbenzene	27	< 27	U
179601-23-1	m,p-Xylene	55	< 55	U
95-47-6	o-Xylene	27	< 27	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.0%
d8-Toluene	99.4%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	97.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P17-C
SAMPLE

Lab Sample ID: YR57M
LIMS ID: 14-13813
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 19:47

Sample Amount: 73.0 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 14.2%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	69	< 69	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.7%
d8-Toluene	100%
Bromofluorobenzene	99.9%
d4-1,2-Dichlorobenzene	97.9%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: USO-P17-D
SAMPLE

Lab Sample ID: YR57N
LIMS ID: 14-13814
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 20:17

Sample Amount: 74.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 13.7%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	68	< 68	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.7%
d8-Toluene	99.2%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	99.4%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P17-E
SAMPLE

Lab Sample ID: YR57O
LIMS ID: 14-13815
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 20:46

Sample Amount: 67.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 16.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	37	< 37	U
108-88-3	Toluene	37	< 37	U
100-41-4	Ethylbenzene	37	< 37	U
179601-23-1	m,p-Xylene	74	< 74	U
95-47-6	o-Xylene	37	< 37	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	82.2%
d8-Toluene	96.8%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	96.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P17-F
SAMPLE

Lab Sample ID: YR57P
LIMS ID: 14-13816
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 21:15

Sample Amount: 99.2 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 16.8%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	25	< 25	U
108-88-3	Toluene	25	< 25	U
100-41-4	Ethylbenzene	25	< 25	U
179601-23-1	m,p-Xylene	50	< 50	U
95-47-6	o-Xylene	25	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	13	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.7%
d8-Toluene	97.6%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	97.6%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P18-A
SAMPLE

Lab Sample ID: YR57Q
LIMS ID: 14-13817
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 21:45

Sample Amount: 72.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 2.9%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	**Ethylbenzene**	**34**	**50**	
179601-23-1	**m,p-Xylene**	**69**	**72**	
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.6%
d8-Toluene	99.2%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	94.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P18-B
SAMPLE

Lab Sample ID: YR57R
LIMS ID: 14-13818
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 22:14

Sample Amount: 81.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.7%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**31**	**300**	
108-88-3	Toluene	31	< 31	U
100-41-4	**Ethylbenzene**	**31**	**3,500**	
179601-23-1	**m,p-Xylene**	**61**	**1,600**	
95-47-6	**o-Xylene**	**31**	**36**	

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**15**	**640**	**E**

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	79.8%
d8-Toluene	106%
Bromofluorobenzene	156%
d4-1,2-Dichlorobenzene	97.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P18-B
REANALYSIS

Lab Sample ID: YR57R
LIMS ID: 14-13818
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/21/14 19:13

Sample Amount: 8.93 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.7%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**280**	**400**	
108-88-3	Toluene	280	< 280	U
100-41-4	**Ethylbenzene**	**280**	**5,300**	
179601-23-1	**m,p-Xylene**	**560**	**2,500**	
95-47-6	o-Xylene	280	< 280	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**140**	**1,100**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.7%
d8-Toluene	100%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	101%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P18-C
SAMPLE

Lab Sample ID: YR57S
LIMS ID: 14-13819
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 22:43

Sample Amount: 72.2 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 12.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**35**	**91**	
108-88-3	Toluene	35	< 35	U
100-41-4	**Ethylbenzene**	**35**	**69**	
179601-23-1	m,p-Xylene	69	< 69	U
95-47-6	o-Xylene	35	< 35	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**17**	**51**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.6%
d8-Toluene	99.0%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	97.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P18-D
SAMPLE

Lab Sample ID: YR57T
LIMS ID: 14-13820
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 23:13

Sample Amount: 83.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 14.1%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	30	< 30	U
108-88-3	Toluene	30	< 30	U
100-41-4	Ethylbenzene	30	< 30	U
179601-23-1	m,p-Xylene	60	< 60	U
95-47-6	o-Xylene	30	< 30	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	15	< 15	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	81.6%
d8-Toluene	100%
Bromofluorobenzene	99.3%
d4-1,2-Dichlorobenzene	97.4%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-071614A	Method Blank	Med	100%	101%	101%	96.2%	0
LCS-071614A	Lab Control	Med	107%	97.4%	101%	98.6%	0
LCSD-071614A	Lab Control Dup	Med	99.4%	98.2%	98.4%	98.1%	0
YR57A	USO-P15-A	Med	91.2%	99.3%	99.0%	99.2%	0
YR57B	USO-P15-B	Med	98.9%	96.2%	98.8%	97.2%	0
YR57C	USO-P15-C	Med	86.3%	99.2%	99.0%	97.8%	0
YR57D	USO-P15-D	Med	92.4%	98.4%	98.4%	97.6%	0
YR57E	USO-P15-E	Med	89.5%	97.1%	101%	99.0%	0
MB-071714A	Method Blank	Med	88.8%	101%	94.8%	101%	0
LCS-071714A	Lab Control	Med	94.2%	98.4%	101%	101%	0
LCSD-071714A	Lab Control Dup	Med	95.6%	99.8%	100%	97.0%	0
YR57F	USO-P16-A	Med	79.6%*	100%	101%	96.3%	1
MB-071714A	Method Blank	Med	93.7%	99.1%	99.9%	95.8%	0
LCS-071714A	Lab Control	Med	87.4%	99.0%	99.2%	99.4%	0
LCSD-071714A	Lab Control Dup	Med	91.2%	99.6%	97.3%	98.5%	0
YR57G	USO-P16-B	Med	78.1%*	106%	199%*	96.2%	2
YR57GRE	USO-P16-B	Med	98.0%	98.2%	117%	98.9%	0
YR57H	USO-P16-C	Med	78.2%*	101%	102%	99.4%	1
YR57I	USO-P16-D	Med	84.8%	98.8%	100%	101%	0
YR57J	USO-P16-E	Med	87.4%	101%	101%	97.5%	0
YR57K	USO-P17-A	Med	83.7%	97.2%	96.1%	95.2%	0
YR57L	USO-P17-B	Med	84.0%	99.4%	102%	97.2%	0
YR57M	USO-P17-C	Med	91.7%	100%	99.9%	97.9%	0
YR57N	USO-P17-D	Med	87.7%	99.2%	100%	99.4%	0
YR57O	USO-P17-E	Med	82.2%	96.8%	101%	96.2%	0
YR57P	USO-P17-F	Med	89.7%	97.6%	103%	97.6%	0
YR57Q	USO-P18-A	Med	89.6%	99.2%	102%	94.8%	0
MB-072114A	Method Blank	Med	88.4%	97.8%	98.4%	99.4%	0
LCS-072114A	Lab Control	Med	89.8%	99.0%	99.8%	100%	0
LCSD-072114A	Lab Control Dup	Med	92.6%	98.5%	101%	97.8%	0
YR57R	USO-P18-B	Med	79.8%*	106%	156%*	97.8%	2
YR57RRE	USO-P18-B	Med	86.7%	100%	106%	101%	0
YR57S	USO-P18-C	Med	88.6%	99.0%	104%	97.0%	0
YR57T	USO-P18-D	Med	81.6%	100%	99.3%	97.4%	0

SW8260C	LCS/MB LIMITS Low	LCS/MB LIMITS Med	QC LIMITS Low	QC LIMITS Med
(DCE) = d4-1,2-Dichloroethane	80-149	80-124	80-149	80-124
(TOL) = d8-Toluene	77-120	80-120	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	80-120	80-120

Log Number Range: 14-13801 to 14-13820

YR57 : 00035

ANALYTICAL RESOURCES INCORPORATED

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Volatiles by Purge & Trap GC/MS
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Sample ID: LCS-071614A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071614A
LIMS ID: 14-13801
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/16/14 20:54
LCSD: 07/16/14 21:23

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	999	1000	99.9%	1030	1000	103%	3.1%
Toluene	990	1000	99.0%	1010	1000	101%	2.0%
Ethylbenzene	972	1000	97.2%	990	1000	99.0%	1.8%
m,p-Xylene	2020	2000	101%	2050	2000	102%	1.5%
o-Xylene	1030	1000	103%	1050	1000	105%	1.9%
		Reported in µg/kg (ppb)					
Gasoline Range Hydrocarbons	97.2	100	97.2%	87.5	100	87.5%	10.5%
		Reported in mg/kg (ppm)					

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	107%	99.4%
d8-Toluene	97.4%	98.2%
Bromofluorobenzene	101%	98.4%
d4-1,2-Dichlorobenzene	98.6%	98.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: LCS-071714A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071714A
LIMS ID: 14-13806
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/17/14 13:13
LCSD: 07/17/14 13:43

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	963	1000	96.3%	945	1000	94.5%	1.9%
Toluene	936	1000	93.6%	909	1000	90.9%	2.9%
Ethylbenzene	990	1000	99.0%	918	1000	91.8%	7.5%
m,p-Xylene	2010	2000	100%	1920	2000	96.0%	4.6%
o-Xylene	1010	1000	101%	972	1000	97.2%	3.8%
		Reported in µg/kg (ppb)					
Gasoline Range Hydrocarbons	93.6	100	93.6%	90.0	100	90.0%	3.9%
		Reported in mg/kg (ppm)					

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	94.2%	95.6%
d8-Toluene	98.4%	99.8%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	101%	97.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Sample ID: LCS-071714A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071714A
LIMS ID: 14-13807
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/18/14 04:02
LCSD: 07/18/14 04:31

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	1030	1000	103%	1020	1000	102%	1.0%
Toluene	999	1000	99.9%	990	1000	99.0%	0.9%
Ethylbenzene	1010	1000	101%	972	1000	97.2%	3.8%
m,p-Xylene	2050	2000	102%	2000	2000	100%	2.5%
o-Xylene	1070	1000	107%	1040	1000	104%	2.8%
Reported in µg/kg (ppb)							
Gasoline Range Hydrocarbons	93.6	100	93.6%	99.0	100	99.0%	5.6%
Reported in mg/kg (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	87.4%	91.2%
d8-Toluene	99.0%	99.6%
Bromofluorobenzene	99.2%	97.3%
d4-1,2-Dichlorobenzene	99.4%	98.5%

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: LCS-072114A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-072114A
LIMS ID: 14-13818
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/21/14 16:26
LCSD: 07/21/14 16:55

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	1030	1000	103%	1100	1000	110%	6.6%
Toluene	990	1000	99.0%	1080	1000	108%	8.7%
Ethylbenzene	972	1000	97.2%	1090	1000	109%	11.4%
m,p-Xylene	2050	2000	102%	2250	2000	112%	9.3%
o-Xylene	1050	1000	105%	1140	1000	114%	8.2%
Reported in µg/kg (ppb)							
Gasoline Range Hydrocarbons	106	100	106%	102	100	102%	3.8%
Reported in mg/kg (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	89.8%	92.6%
d8-Toluene	99.0%	98.5%
Bromofluorobenzene	99.8%	101%
d4-1,2-Dichlorobenzene	100%	97.8%

ANALYTICAL RESOURCES INCORPORATED

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Sample ID: MB-071614A
METHOD BLANK

Lab Sample ID: MB-071614A
LIMS ID: 14-13801
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/16/14 23:21

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	25	< 25	U
108-88-3	Toluene	25	< 25	U
100-41-4	Ethylbenzene	25	< 25	U
179601-23-1	m,p-Xylene	50	< 50	U
95-47-6	o-Xylene	25	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	13	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	96.2%

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Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: MB-071714A
METHOD BLANK

Lab Sample ID: MB-071714A
LIMS ID: 14-13806
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/17/14 15:41

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.8%
d8-Toluene	101%
Bromofluorobenzene	94.8%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: MB-071714A
METHOD BLANK

Lab Sample ID: MB-071714A
LIMS ID: 14-13807
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 05:00

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.7%
d8-Toluene	99.1%
Bromofluorobenzene	99.9%
d4-1,2-Dichlorobenzene	95.8%

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Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: MB-072114A
METHOD BLANK

Lab Sample ID: MB-072114A
LIMS ID: 14-13818
Matrix: Soil
Data Release Authorized: BS
Reported: 08/04/14

QC Report No: YR57-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/21/14 17:25

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.4%
d8-Toluene	97.8%
Bromofluorobenzene	98.4%
d4-1,2-Dichlorobenzene	99.4%

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Sample ID: USO-P18-E
SAMPLE

Lab Sample ID: YR58A
LIMS ID: 14-13821
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 10:24

Sample Amount: 73.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 15.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	68	< 68	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.7%
d8-Toluene	97.4%
Bromofluorobenzene	98.4%
d4-1,2-Dichlorobenzene	99.1%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P18-F
SAMPLE

Lab Sample ID: YR58B
LIMS ID: 14-13822
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 10:53

Sample Amount: 69.4 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 18.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	36	< 36	U
108-88-3	Toluene	36	< 36	U
100-41-4	Ethylbenzene	36	< 36	U
179601-23-1	m,p-Xylene	72	< 72	U
95-47-6	o-Xylene	36	< 36	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.8%
d8-Toluene	100%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	98.3%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P19-A
SAMPLE

Lab Sample ID: YR58C
LIMS ID: 14-13823
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 05:30

Sample Amount: 92.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 3.9%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	27	< 27	U
108-88-3	Toluene	27	< 27	U
100-41-4	**Ethylbenzene**	**27**	**66**	
179601-23-1	m,p-Xylene	54	< 54	U
95-47-6	o-Xylene	27	< 27	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.0%
d8-Toluene	98.0%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	98.1%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P19-B
SAMPLE

Lab Sample ID: YR58D
LIMS ID: 14-13824
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 05:59

Sample Amount: 88.0 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 6.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	28	< 28	U
108-88-3	Toluene	28	< 28	U
100-41-4	Ethylbenzene	28	< 28	U
179601-23-1	m,p-Xylene	57	< 57	U
95-47-6	o-Xylene	28	< 28	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.4%
d8-Toluene	99.0%
Bromofluorobenzene	98.7%
d4-1,2-Dichlorobenzene	99.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P19-C
SAMPLE

Lab Sample ID: YR58E
LIMS ID: 14-13825
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 06:28

Sample Amount: 68.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 18.6%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	36	< 36	U
108-88-3	Toluene	36	< 36	U
100-41-4	Ethylbenzene	36	< 36	U
179601-23-1	m,p-Xylene	73	< 73	U
95-47-6	o-Xylene	36	< 36	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.2%
d8-Toluene	96.6%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	99.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P19-D
SAMPLE

Lab Sample ID: YR58F
LIMS ID: 14-13826
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 06:57

Sample Amount: 66.4 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 20.2%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	38	< 38	U
108-88-3	Toluene	38	< 38	U
100-41-4	Ethylbenzene	38	< 38	U
179601-23-1	m,p-Xylene	75	< 75	U
95-47-6	o-Xylene	38	< 38	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	19	< 19	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.4%
d8-Toluene	97.6%
Bromofluorobenzene	98.0%
d4-1,2-Dichlorobenzene	94.4%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P19-E
SAMPLE

Lab Sample ID: YR58G
LIMS ID: 14-13827
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 07:27

Sample Amount: 32.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 50.7%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**76**	**970**	
108-88-3	**Toluene**	**76**	**130**	
100-41-4	**Ethylbenzene**	**76**	**280**	
179601-23-1	**m,p-Xylene**	**150**	**300**	
95-47-6	o-Xylene	76	< 76	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	38	< 38	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.8%
d8-Toluene	102%
Bromofluorobenzene	96.6%
d4-1,2-Dichlorobenzene	99.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P20-A
SAMPLE

Lab Sample ID: YR58H
LIMS ID: 14-13828
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 07:56

Sample Amount: 93.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 3.6%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	27	< 27	U
108-88-3	Toluene	27	< 27	U
100-41-4	Ethylbenzene	27	< 27	U
179601-23-1	m,p-Xylene	54	< 54	U
95-47-6	o-Xylene	27	< 27	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	13	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.4%
d8-Toluene	99.9%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	96.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

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Sample ID: USO-P20-B
SAMPLE

Lab Sample ID: YR58I
LIMS ID: 14-13829
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 08:26

Sample Amount: 95.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 2.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	26	< 26	U
108-88-3	Toluene	26	< 26	U
100-41-4	Ethylbenzene	26	< 26	U
179601-23-1	m,p-Xylene	52	< 52	U
95-47-6	o-Xylene	26	< 26	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	13	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.4%
d8-Toluene	98.0%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	97.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P20-C
SAMPLE

Lab Sample ID: YR58J
LIMS ID: 14-13830
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 08:55

Sample Amount: 84.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 8.5%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	30	< 30	U
108-88-3	Toluene	30	< 30	U
100-41-4	Ethylbenzene	30	< 30	U
179601-23-1	m,p-Xylene	59	< 59	U
95-47-6	o-Xylene	30	< 30	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	15	< 15	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	99.4%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P20-D
SAMPLE

Lab Sample ID: YR58K
LIMS ID: 14-13831
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 09:24

Sample Amount: 62.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 23.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	40	< 40	U
108-88-3	Toluene	40	< 40	U
100-41-4	**Ethylbenzene**	**40**	**76**	
179601-23-1	m,p-Xylene	80	< 80	U
95-47-6	o-Xylene	40	< 40	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	20	< 20	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.3%
d8-Toluene	101%
Bromofluorobenzene	98.6%
d4-1,2-Dichlorobenzene	99.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P20-E
SAMPLE

Lab Sample ID: YR58L
LIMS ID: 14-13832
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 11:23

Sample Amount: 42.4 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 40.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	59	< 59	U
108-88-3	Toluene	59	< 59	U
100-41-4	Ethylbenzene	59	< 59	U
179601-23-1	m,p-Xylene	120	< 120	U
95-47-6	o-Xylene	59	< 59	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	29	< 29	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.2%
d8-Toluene	100%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P21-A
SAMPLE

Lab Sample ID: YR58M
LIMS ID: 14-13833
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 11:53

Sample Amount: 91.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 4.2%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	27	< 27	U
108-88-3	Toluene	27	< 27	U
100-41-4	Ethylbenzene	27	< 27	U
179601-23-1	m,p-Xylene	54	< 54	U
95-47-6	o-Xylene	27	< 27	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.0%
d8-Toluene	97.4%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	96.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P21-B
SAMPLE

Lab Sample ID: YR58N
LIMS ID: 14-13834
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 12:22

Sample Amount: 89.8 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	28	< 28	U
108-88-3	Toluene	28	< 28	U
100-41-4	Ethylbenzene	28	< 28	U
179601-23-1	m,p-Xylene	56	< 56	U
95-47-6	o-Xylene	28	< 28	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.4%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	98.1%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P21-C
SAMPLE

Lab Sample ID: YR58O
LIMS ID: 14-13835
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 21:08

Sample Amount: 57.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 29.2%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	43	< 43	U
108-88-3	Toluene	43	< 43	U
100-41-4	Ethylbenzene	43	< 43	U
179601-23-1	m,p-Xylene	86	< 86	U
95-47-6	o-Xylene	43	< 43	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	22	< 22	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	85.8%
d8-Toluene	101%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	96.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P21-D
SAMPLE

Lab Sample ID: YR58P
LIMS ID: 14-13836
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 21:37

Sample Amount: 70.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 18.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	35	< 35	U
108-88-3	Toluene	35	< 35	U
100-41-4	**Ethylbenzene**	**35**	**60**	
179601-23-1	m,p-Xylene	71	< 71	U
95-47-6	o-Xylene	35	< 35	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.2%
d8-Toluene	96.6%
Bromofluorobenzene	99.3%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P21-E
SAMPLE

Lab Sample ID: YR58Q
LIMS ID: 14-13837
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 22:07

Sample Amount: 30.8 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 45.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	81	< 81	U
108-88-3	Toluene	81	< 81	U
100-41-4	Ethylbenzene	81	< 81	U
179601-23-1	m,p-Xylene	160	< 160	U
95-47-6	o-Xylene	81	< 81	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	41	< 41	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.0%
d8-Toluene	97.2%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	97.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P22-A
SAMPLE

Lab Sample ID: YR58R
LIMS ID: 14-13838
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 22:36

Sample Amount: 85.0 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 6.5%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	29	< 29	U
108-88-3	Toluene	29	< 29	U
100-41-4	Ethylbenzene	29	< 29	U
179601-23-1	m,p-Xylene	59	< 59	U
95-47-6	o-Xylene	29	< 29	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	15	< 15	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.2%
d8-Toluene	96.8%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	99.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P22-B
SAMPLE

Lab Sample ID: YR58S
LIMS ID: 14-13839
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 09:54

Sample Amount: 86.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 7.0%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	29	< 29	U
108-88-3	Toluene	29	< 29	U
100-41-4	Ethylbenzene	29	< 29	U
179601-23-1	m,p-Xylene	58	< 58	U
95-47-6	o-Xylene	29	< 29	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.2%
d8-Toluene	99.4%
Bromofluorobenzene	98.6%
d4-1,2-Dichlorobenzene	96.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P22-C
SAMPLE

Lab Sample ID: YR58T
LIMS ID: 14-13840
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 23:06

Sample Amount: 87.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 11.8%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	29	< 29	U
108-88-3	Toluene	29	< 29	U
100-41-4	Ethylbenzene	29	< 29	U
179601-23-1	m,p-Xylene	57	< 57	U
95-47-6	o-Xylene	29	< 29	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	14	< 14	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.8%
d8-Toluene	100%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-071714A	Method Blank	Med	93.7%	99.1%	99.9%	95.8%	0
LCS-071714A	Lab Control	Med	87.4%	99.0%	99.2%	99.4%	0
LCSD-071714A	Lab Control Dup	Med	91.2%	99.6%	97.3%	98.5%	0
YR58A	USO-P18-E	Med	88.7%	97.4%	98.4%	99.1%	0
YR58B	USO-P18-F	Med	89.8%	100%	101%	98.3%	0
YR58C	USO-P19-A	Med	88.0%	98.0%	102%	98.1%	0
YR58D	USO-P19-B	Med	91.4%	99.0%	98.7%	99.0%	0
YR58E	USO-P19-C	Med	92.2%	96.6%	103%	99.0%	0
YR58F	USO-P19-D	Med	89.4%	97.6%	98.0%	94.4%	0
YR58G	USO-P19-E	Med	93.8%	102%	96.6%	99.8%	0
YR58H	USO-P20-A	Med	92.4%	99.9%	103%	96.0%	0
YR58I	USO-P20-B	Med	87.4%	98.0%	105%	97.8%	0
YR58J	USO-P20-C	Med	92.8%	99.4%	101%	100%	0
YR58K	USO-P20-D	Med	87.3%	101%	98.6%	99.0%	0
YR58L	USO-P20-E	Med	91.2%	100%	97.8%	100%	0
YR58M	USO-P21-A	Med	90.0%	97.4%	100%	96.2%	0
YR58N	USO-P21-B	Med	91.4%	101%	101%	98.1%	0
MB-071814A	Method Blank	Med	93.0%	101%	96.4%	99.6%	0
LCS-071814A	Lab Control	Med	92.3%	95.6%	101%	98.5%	0
LCSD-071814A	Lab Control Dup	Med	95.2%	99.0%	100%	98.0%	0
YR58O	USO-P21-C	Med	85.8%	101%	100%	96.2%	0
YR58P	USO-P21-D	Med	84.2%	96.6%	99.3%	100%	0
YR58Q	USO-P21-E	Med	86.0%	97.2%	103%	97.8%	0
YR58R	USO-P22-A	Med	91.2%	96.8%	102%	99.0%	0
YR58S	USO-P22-B	Med	93.2%	99.4%	98.6%	96.0%	0
YR58T	USO-P22-C	Med	87.8%	100%	97.0%	100%	0

SW8260C	LCS/MB LIMITS Low	LCS/MB LIMITS Med	QC LIMITS Low	QC LIMITS Med
(DCE) = d4-1,2-Dichloroethane	80-149	80-124	80-149	80-124
(TOL) = d8-Toluene	77-120	80-120	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	80-120	80-120

Log Number Range: 14-13821 to 14-13840

YR57:00064

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: LCS-071714A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071714A
LIMS ID: 14-13821
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/18/14 04:02
LCSD: 07/18/14 04:31

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	1030	1000	103%	1020	1000	102%	1.0%
Toluene	999	1000	99.9%	990	1000	99.0%	0.9%
Ethylbenzene	1010	1000	101%	972	1000	97.2%	3.8%
m,p-Xylene	2050	2000	102%	2000	2000	100%	2.5%
o-Xylene	1070	1000	107%	1040	1000	104%	2.8%
	Reported in µg/kg (ppb)						
Gasoline Range Hydrocarbons	93.6	100	93.6%	99.0	100	99.0%	5.6%
	Reported in mg/kg (ppm)						

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	87.4%	91.2%
d8-Toluene	99.0%	99.6%
Bromofluorobenzene	99.2%	97.3%
d4-1,2-Dichlorobenzene	99.4%	98.5%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: LCS-071814A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071814A
LIMS ID: 14-13835
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/18/14 17:41
LCSD: 07/18/14 18:11

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	918	1000	91.8%	1110	1000	111%	18.9%
Toluene	936	1000	93.6%	1120	1000	112%	17.9%
Ethylbenzene	981	1000	98.1%	1140	1000	114%	15.0%
m,p-Xylene	1990	2000	99.5%	2330	2000	116%	15.7%
o-Xylene	1010	1000	101%	1190	1000	119%	16.4%
		Reported in µg/kg (ppb)					
Gasoline Range Hydrocarbons	102	100	102%	101	100	101%	1.0%
		Reported in mg/kg (ppm)					

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.3%	95.2%
d8-Toluene	95.6%	99.0%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	98.5%	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: MB-071714A
METHOD BLANK

Lab Sample ID: MB-071714A
LIMS ID: 14-13821
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 05:00

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.7%
d8-Toluene	99.1%
Bromofluorobenzene	99.9%
d4-1,2-Dichlorobenzene	95.8%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: MB-071814A
METHOD BLANK

Lab Sample ID: MB-071814A
LIMS ID: 14-13835
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR58-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 18:40

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.0%
d8-Toluene	101%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	99.6%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P22-D
SAMPLE

Lab Sample ID: YR59A
LIMS ID: 14-13841
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 23:35

Sample Amount: 62.2 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 20.3%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	40	< 40	U
108-88-3	Toluene	40	< 40	U
100-41-4	Ethylbenzene	40	< 40	U
179601-23-1	m,p-Xylene	80	< 80	U
95-47-6	o-Xylene	40	< 40	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	20	< 20	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	82.2%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	95.9%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P22-E
SAMPLE

Lab Sample ID: YR59B
LIMS ID: 14-13842
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 00:05

Sample Amount: 41.2 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 34.9%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	61	< 61	U
108-88-3	Toluene	61	< 61	U
100-41-4	Ethylbenzene	61	< 61	U
179601-23-1	m,p-Xylene	120	< 120	U
95-47-6	o-Xylene	61	< 61	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	30	< 30	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.9%
d8-Toluene	100%
Bromofluorobenzene	99.4%
d4-1,2-Dichlorobenzene	94.6%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P23-A
SAMPLE

Lab Sample ID: YR59C
LIMS ID: 14-13843
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 00:34

Sample Amount: 81.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.1%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**31**	**3,000**	
108-88-3	**Toluene**	**31**	**74**	
100-41-4	**Ethylbenzene**	**31**	**18,000**	**ES**
179601-23-1	**m,p-Xylene**	**61**	**2,500**	
95-47-6	**o-Xylene**	**31**	**110**	

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**15**	**1,300**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.0%
d8-Toluene	190%
Bromofluorobenzene	464%
d4-1,2-Dichlorobenzene	92.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: USO-P23-A
REANALYSIS

Lab Sample ID: YR59C
LIMS ID: 14-13843
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/21/14 19:43

Sample Amount: 3.01 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.1%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**830**	**2,800**	
108-88-3	Toluene	830	< 830	U
100-41-4	**Ethylbenzene**	**830**	**17,000**	
179601-23-1	**m,p-Xylene**	**1,700**	**2,600**	
95-47-6	o-Xylene	830	< 830	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**410**	**3,200**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.7%
d8-Toluene	101%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	102%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P23-B
SAMPLE

Lab Sample ID: YR59D
LIMS ID: 14-13844
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 01:04

Sample Amount: 92.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 6.5%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**27**	**48**	
108-88-3	Toluene	27	< 27	U
100-41-4	**Ethylbenzene**	**27**	**77**	
179601-23-1	m,p-Xylene	54	< 54	U
95-47-6	o-Xylene	27	< 27	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**14**	**140**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.0%
d8-Toluene	97.8%
Bromofluorobenzene	115%
d4-1,2-Dichlorobenzene	94.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P23-C
SAMPLE

Lab Sample ID: YR59E
LIMS ID: 14-13845
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 01:33

Sample Amount: 83.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 10.6%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	30	< 30	U
108-88-3	Toluene	30	< 30	U
100-41-4	**Ethylbenzene**	**30**	**48**	
179601-23-1	m,p-Xylene	60	< 60	U
95-47-6	o-Xylene	30	< 30	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**15**	**130**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	85.4%
d8-Toluene	101%
Bromofluorobenzene	112%
d4-1,2-Dichlorobenzene	93.4%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

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Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P23-D
SAMPLE

Lab Sample ID: YR59F
LIMS ID: 14-13846
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 02:03

Sample Amount: 63.8 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 19.8%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	39	< 39	U
108-88-3	Toluene	39	< 39	U
100-41-4	Ethylbenzene	39	< 39	U
179601-23-1	m,p-Xylene	78	< 78	U
95-47-6	o-Xylene	39	< 39	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**20**	**40**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.6%
d8-Toluene	100%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	96.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P23-E
SAMPLE

Lab Sample ID: YR59G
LIMS ID: 14-13847
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 02:32

Sample Amount: 54.8 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 26.3%

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	46	< 46	U
108-88-3	Toluene	46	< 46	U
100-41-4	Ethylbenzene	46	< 46	U
179601-23-1	m,p-Xylene	91	< 91	U
95-47-6	o-Xylene	46	< 46	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	23	< 23	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	85.3%
d8-Toluene	99.3%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	98.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P6A-F
SAMPLE

Lab Sample ID: YR59H
LIMS ID: 14-13848
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/19/14 03:02

Sample Amount: 33.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 42.7%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**74**	**18,000**	**ES**
108-88-3	**Toluene**	**74**	**570**	
100-41-4	**Ethylbenzene**	**74**	**11,000**	
179601-23-1	**m,p-Xylene**	**150**	**1,100**	
95-47-6	o-Xylene	74	< 74	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**37**	**270**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.9%
d8-Toluene	101%
Bromofluorobenzene	99.5%
d4-1,2-Dichlorobenzene	95.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P6A-F
REANALYSIS

Lab Sample ID: YR59H
LIMS ID: 14-13848
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/21/14 20:12

Sample Amount: 4.01 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 42.7%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**620**	**16,000**	
108-88-3	**Toluene**	**620**	**660**	
100-41-4	**Ethylbenzene**	**620**	**10,000**	
179601-23-1	m,p-Xylene	1,200	< 1,200	U
95-47-6	o-Xylene	620	< 620	U

Reported in µg/kg (ppb)

86290-81-5	**Gasoline Range Hydrocarbons**	**310**	**370**	

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.9%
d8-Toluene	98.6%
Bromofluorobenzene	98.2%
d4-1,2-Dichlorobenzene	101%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

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ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: USO-P6A-G
SAMPLE

Lab Sample ID: YR59I
LIMS ID: 14-13849
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/21/14 18:44

Sample Amount: 67.4 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 19.4%

CAS Number	Analyte	RL	Result	Q
71-43-2	**Benzene**	**37**	**460**	
108-88-3	Toluene	37	< 37	U
100-41-4	Ethylbenzene	37	< 37	U
179601-23-1	m,p-Xylene	74	< 74	U
95-47-6	o-Xylene	37	< 37	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	19	< 19	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.0%
d8-Toluene	97.1%
Bromofluorobenzene	96.8%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-071814A	Method Blank	Med	93.0%	101%	96.4%	99.6%	0
LCS-071814A	Lab Control	Med	92.3%	95.6%	101%	98.5%	0
LCSD-071814A	Lab Control Dup	Med	95.2%	99.0%	100%	98.0%	0
YR59A	USO-P22-D	Med	82.2%	101%	101%	95.9%	0
YR59B	USO-P22-E	Med	84.9%	100%	99.4%	94.6%	0
YR59C	USO-P23-A	Med	86.0%	190%*	464%*	92.8%	2
YR59CRE	USO-P23-A	Med	92.7%	101%	104%	102%	0
YR59D	USO-P23-B	Med	89.0%	97.8%	115%	94.8%	0
YR59E	USO-P23-C	Med	85.4%	101%	112%	93.4%	0
YR59F	USO-P23-D	Med	87.6%	100%	105%	96.8%	0
YR59G	USO-P23-E	Med	85.3%	99.3%	101%	98.0%	0
YR59H	USO-P6A-F	Med	89.9%	101%	99.5%	95.2%	0
YR59HRE	USO-P6A-F	Med	88.9%	98.6%	98.2%	101%	0
MB-072114A	Method Blank	Med	88.4%	97.8%	98.4%	99.4%	0
LCS-072114A	Lab Control	Med	89.8%	99.0%	99.8%	100%	0
LCSD-072114A	Lab Control Dup	Med	92.6%	98.5%	101%	97.8%	0
YR59I	USO-P6A-G	Med	92.0%	97.1%	96.8%	100%	0

	LCS/MB LIMITS		QC LIMITS	
SW8260C	Low	Med	Low	Med
(DCE) = d4-1,2-Dichloroethane	80-149	80-124	80-149	80-124
(TOL) = d8-Toluene	77-120	80-120	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	80-120	80-120

Log Number Range: 14-13841 to 14-13849

YR57:00000

ANALYTICAL RESOURCES INCORPORATED

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Volatiles by Purge & Trap GC/MS
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Sample ID: LCS-071814A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071814A
LIMS ID: 14-13841
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/18/14 17:41
LCSD: 07/18/14 18:11

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	918	1000	91.8%	1110	1000	111%	18.9%
Toluene	936	1000	93.6%	1120	1000	112%	17.9%
Ethylbenzene	981	1000	98.1%	1140	1000	114%	15.0%
m,p-Xylene	1990	2000	99.5%	2330	2000	116%	15.7%
o-Xylene	1010	1000	101%	1190	1000	119%	16.4%
Reported in µg/kg (ppb)							
Gasoline Range Hydrocarbons	102	100	102%	101	100	101%	1.0%
Reported in mg/kg (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.3%	95.2%
d8-Toluene	95.6%	99.0%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	98.5%	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: LCS-072114A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-072114A
LIMS ID: 14-13849
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/21/14 16:26
LCSD: 07/21/14 16:55

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	1030	1000	103%	1100	1000	110%	6.6%
Toluene	990	1000	99.0%	1080	1000	108%	8.7%
Ethylbenzene	972	1000	97.2%	1090	1000	109%	11.4%
m,p-Xylene	2050	2000	102%	2250	2000	112%	9.3%
o-Xylene	1050	1000	105%	1140	1000	114%	8.2%
Reported in µg/kg (ppb)							
Gasoline Range Hydrocarbons	106	100	106%	102	100	102%	3.8%
Reported in mg/kg (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	89.8%	92.6%
d8-Toluene	99.0%	98.5%
Bromofluorobenzene	99.8%	101%
d4-1,2-Dichlorobenzene	100%	97.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: MB-071814A
METHOD BLANK

Lab Sample ID: MB-071814A
LIMS ID: 14-13841
Matrix: Soil
Data Release Authorized:
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 18:40

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.0%
d8-Toluene	101%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	99.6%

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: MB-072114A
METHOD BLANK

Lab Sample ID: MB-072114A
LIMS ID: 14-13849
Matrix: Soil
Data Release Authorized: [signature]
Reported: 08/04/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/21/14 17:25

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
71-43-2	Benzene	2.8	< 25	U
108-88-3	Toluene	2.8	< 25	U
100-41-4	Ethylbenzene	2.8	< 25	U
179601-23-1	m,p-Xylene	5.6	< 50	U
95-47-6	o-Xylene	2.8	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	1.4	< 13	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.4%
d8-Toluene	97.8%
Bromofluorobenzene	98.4%
d4-1,2-Dichlorobenzene	99.4%

ANALYTICAL RESOURCES INCORPORATED

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Volatiles by Purge & Trap GC/MS
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Sample ID: Travel Blank
SAMPLE

Lab Sample ID: YR59J
LIMS ID: 14-13850
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: 07/13/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 19:10

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.6%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	98.2%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: YR59-Dalton, Olmsted & Fuglevand, I
Project: 1920 Port of Tacoma Road
USO-023

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-071814A	Method Blank	5	93.0%	101%	96.4%	99.6%	0
LCS-071814A	Lab Control	5	92.3%	95.6%	101%	98.5%	0
LCSD-071814A	Lab Control Dup	5	95.2%	99.0%	100%	98.0%	0
YR59J	Travel Blank	5	93.6%	101%	101%	98.2%	0

	LCS/MB LIMITS	QC LIMITS
SW8260C		
(DCE) = d4-1,2-Dichloroethane	80-149	80-125
(TOL) = d8-Toluene	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 14-13850 to 14-13850

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: LCS-071814A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071814A
LIMS ID: 14-13850
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/18/14 17:41
LCSD: 07/18/14 18:11

Sample Amount LCS: 5.00 mL
LCSD: 5.00 mL
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	18.3	20.0	91.5%	22.2	20.0	111%	19.3%
Toluene	18.8	20.0	94.0%	22.5	20.0	112%	17.9%
Ethylbenzene	19.6	20.0	98.0%	22.8	20.0	114%	15.1%
m,p-Xylene	39.7	40.0	99.2%	46.5	40.0	116%	15.8%
o-Xylene	20.2	20.0	101%	23.8	20.0	119%	16.4%
Reported in µg/L (ppb)							
Gasoline Range Hydrocarbons	2.04	2.00	102%	2.01	2.00	100%	1.5%
Reported in mg/L (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.3%	95.2%
d8-Toluene	95.6%	99.0%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	98.5%	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
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Sample ID: MB-071814A
METHOD BLANK

Lab Sample ID: MB-071814A
LIMS ID: 14-13850
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR59-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Road
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 18:40

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.0%
d8-Toluene	101%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	99.6%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 24, 2014

Matt Dalton
Dalton, Olmsted & Fuglevand, Inc.
6034 N Star Road
Ferndale, WA 98248

0RE: Project: 1920 Port of Tacoma Rd, USO-023
ARI Job No: ZE74

Dear Matt:

Please find enclosed the original Chain-of-Custody records (COCs), sample receipt documentation, and the final analytical results for samples from the referenced project. Analytical Resources, Inc. (ARI) accepted fifteen soil samples and a trip blank on October 13, 2014. The cooler temperatures measured by IR thermometer were 0.9 and 3.6°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BTEX, as requested on the COCs.

There were no anomalies associated with the analysis of these samples.

An electronic copy of this report and all associated raw data will be kept on file with ARI. Should you have any questions, please feel free to contact me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile ZE74

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	Turn-around Requested:	Date:
2674	Normal	10/13/14
ARI Client Company:	Phone:	Page: 1 of 2
Dalton Olmsted & Fuglevand	206-660-3466	
Client Contact:		No. of Coolers: 2 Cooler Temps: 0.9, 3.6
Matt Dalton / Dave Cooper		
Client Project Name:		
1920 Port of Tacoma Rd		
Client Project #:	Samplers:	
USO-023	DG Cooper	

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX (8260)								Notes/Comments
USO-P3A-A	10/11/14	0905	Soil	3	X								
USO-P3A-B	10/11/14	0910	Soil	3	X								
USO-P3A-C	10/11/14	0915	Soil	3	X								
USO-P3A-D	10/11/14	0920	Soil	3	X								
USO-P3A-E	10/11/14	0925	Soil	3	X								
USO-P9E-A	10/11/14	1135	Soil	3	X								
USO-P9E-B	10/11/14	1140	Soil	3	X								
USO-P9E-C	10/11/14	1145	Soil	3	X								
USO-P9E-D	10/11/14	1150	Soil	3	X								
USO-P9E-E	10/11/14	1155	Soil	3	X								

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgardsen	Printed Name	Printed Name
	Company: DOF	Company: ARI	Company	Company
	Date & Time: 10/12/14 1130	Date & Time: 10/13/14 1130	Date & Time	Date & Time

2674 10/13/14

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 7274	Turn-around Requested: Normal	Date: 10/13/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 2 of 2	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers:	Cooler Temps:
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX (8260)								Notes/Comments
USO-MWR1-A	10/11/14	0945	Soil	3	X								
USO-MWR1-B	10/11/14	0950	Soil	3	X								
USO-MWR1-C	10/11/14	0955	Soil	3	X								
USO-MWR1-D	10/11/14	1000	Soil	3	X								
USO-MWR1-E	10/11/14	1005	Soil	3	X								
TRAVEL BLANK	10/13/14	-	METHANOL	4	X								

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name	Printed Name	Printed Name
	Company: DOF	Company	Company	Company
	Date & Time: 10/13/14 1630	Date & Time	Date & Time	Date & Time

COC 1 of 1

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF — Project Name: 1926 Port of Tacoma Rd

COC No(s): (NA) — Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: ZE74 — Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 0.9 3.6 ___ ___ ___ ___

Time: 1130

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90877952

Cooler Accepted by: AV — Date: 10/13/14 — Time: 1130

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs (Baggies) (Foam Block) Paper Other:			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?	TB	(YES)	~~NO~~
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)..	(NA)	YES	NO
Were all VOC vials free of air bubbles?	~~NA~~ TB	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	10.10.14	

Was Sample Split by ARI: ~~NA~~ YES Date/Time: ___ Equipment: ___ Split by: ___

Samples Logged by: TS — Date: 10-13-14 — Time: 1534

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
		

Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZE74
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-023
Project Name: 1920 Port of Tacoma Rd

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-P3A-A	ZE74A	14-21541	Soil	10/11/14 09:05	10/13/14 11:30
2.	USO-P3A-B	ZE74B	14-21542	Soil	10/11/14 09:10	10/13/14 11:30
3.	USO-P3A-C	ZE74C	14-21543	Soil	10/11/14 09:15	10/13/14 11:30
4.	USO-P3A-D	ZE74D	14-21544	Soil	10/11/14 09:20	10/13/14 11:30
5.	USO-P3A-E	ZE74E	14-21545	Soil	10/11/14 09:25	10/13/14 11:30
6.	USO-P9E-A	ZE74F	14-21546	Soil	10/11/14 11:35	10/13/14 11:30
7.	USO-P9E-B	ZE74G	14-21547	Soil	10/11/14 11:40	10/13/14 11:30
8.	USO-P9E-C	ZE74H	14-21548	Soil	10/11/14 11:45	10/13/14 11:30
9.	USO-P9E-D	ZE74I	14-21549	Soil	10/11/14 11:50	10/13/14 11:30
10.	USO-P9E-E	ZE74J	14-21550	Soil	10/11/14 11:55	10/13/14 11:30
11.	USO-MWR1-A	ZE74K	14-21551	Soil	10/11/14 09:45	10/13/14 11:30
12.	USO-MWR1-B	ZE74L	14-21552	Soil	10/11/14 09:50	10/13/14 11:30
13.	USO-MWR1-C	ZE74M	14-21553	Soil	10/11/14 09:55	10/13/14 11:30
14.	USO-MWR1-D	ZE74N	14-21554	Soil	10/11/14 10:00	10/13/14 11:30
15.	USO-MWR1-E	ZE74O	14-21555	Soil	10/11/14 10:05	10/13/14 11:30
16.	Trip Blanks	ZE74P	14-21556	Water	10/11/14	10/13/14 11:30

Data Reporting Qualifiers

Effective 12/31/13

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

ZE74 : 00006

Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
S	Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
NA	The flagged analyte was not analyzed for
NR	Spiked compound recovery is not reported due to chromatographic interference
NS	The flagged analyte was not spiked into the sample
M	Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
Y	The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
EMPC	Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
C	The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
P	The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference
X	Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
Z	Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

ZE74 : 00007

Geotechnical Data

A — The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F — Samples were frozen prior to particle size determination

SM — Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS — Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W — Weight of sample in some pipette aliquots was below the level required for accurate weighting

ZE74 : 00008

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P3A-A
SAMPLE

Lab Sample ID: ZE74A
LIMS ID: 14-21541
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 18:52

Sample Amount: 80.6 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 3.6%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	31	< 31	U
108-88-3	Toluene	31	< 31	U
100-41-4	Ethylbenzene	31	< 31	U
179601-23-1	m,p-Xylene	62	< 62	U
95-47-6	o-Xylene	31	< 31	U

Reported in µg/kg (ppb)

				TPHG ID
86290-81-5	**Gasoline Range Hydrocarbons**	**16**	**96**	**GRO**

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	89.1%
d8-Toluene	100%
Bromofluorobenzene	120%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P3A-B
SAMPLE

Lab Sample ID: ZE74B
LIMS ID: 14-21542
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 19:22

Sample Amount: 74.4 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.8%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	67	< 67	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

				TPHG ID
86290-81-5	**Gasoline Range Hydrocarbons**	**17**	**24**	**GRO**

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.8%
d8-Toluene	97.2%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	102%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P3A-C
SAMPLE

Lab Sample ID: ZE74C
LIMS ID: 14-21543
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 19:52

Sample Amount: 70.5 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 4.7%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	35	< 35	U
108-88-3	Toluene	35	< 35	U
100-41-4	Ethylbenzene	35	< 35	U
179601-23-1	m,p-Xylene	71	< 71	U
95-47-6	o-Xylene	35	< 35	U

Reported in µg/kg (ppb)

				TPHG ID
86290-81-5	**Gasoline Range Hydrocarbons**	**18**	**18**	**GRO**

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.8%
d8-Toluene	98.2%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	97.3%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P3A-D
SAMPLE

Lab Sample ID: ZE74D
LIMS ID: 14-21544
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 20:21

Sample Amount: 71.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 19.7%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	35	< 35	U
108-88-3	Toluene	35	< 35	U
100-41-4	Ethylbenzene	35	< 35	U
179601-23-1	m,p-Xylene	70	< 70	U
95-47-6	o-Xylene	35	< 35	U

Reported in µg/kg (ppb)

					TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.2%
d8-Toluene	99.8%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P3A-E
SAMPLE

Lab Sample ID: ZE74E
LIMS ID: 14-21545
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 20:51

Sample Amount: 29.2 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 40.8%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	86	< 86	U
108-88-3	Toluene	86	< 86	U
100-41-4	Ethylbenzene	86	< 86	U
179601-23-1	m,p-Xylene	170	< 170	U
95-47-6	o-Xylene	86	< 86	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	43	< 43	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	82.0%
d8-Toluene	98.2%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	99.9%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P9E-A
SAMPLE

Lab Sample ID: ZE74F
LIMS ID: 14-21546
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 21:21

Sample Amount: 72.5 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 7.0%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	**Toluene**	**34**	**44**	
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	69	< 69	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

					TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	86.6%
d8-Toluene	97.0%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	97.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P9E-B
SAMPLE

Lab Sample ID: ZE74G
LIMS ID: 14-21547
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 21:50

Sample Amount: 71.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.3%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	35	< 35	U
108-88-3	Toluene	35	< 35	U
100-41-4	Ethylbenzene	35	< 35	U
179601-23-1	m,p-Xylene	70	< 70	U
95-47-6	o-Xylene	35	< 35	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	87.9%
d8-Toluene	98.3%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	99.7%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: USO-P9E-C
SAMPLE

Lab Sample ID: ZE74H
LIMS ID: 14-21548
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 22:20

Sample Amount: 74.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 5.8%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	34	< 34	U
108-88-3	Toluene	34	< 34	U
100-41-4	Ethylbenzene	34	< 34	U
179601-23-1	m,p-Xylene	67	< 67	U
95-47-6	o-Xylene	34	< 34	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	80.0%
d8-Toluene	98.6%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	99.2%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: USO-P9E-D
SAMPLE

Lab Sample ID: ZE74I
LIMS ID: 14-21549
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 22:50

Sample Amount: 68.0 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 17.0%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	**Benzene**	**37**	**380**	
108-88-3	Toluene	37	< 37	U
100-41-4	**Ethylbenzene**	**37**	**75**	
179601-23-1	**m,p-Xylene**	**74**	**130**	
95-47-6	o-Xylene	37	< 37	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	TPHG ID
86290-81-5	**Gasoline Range Hydrocarbons**	**18**	**20**	**GRO**

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.1%
d8-Toluene	99.4%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	104%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-P9E-E
SAMPLE

Lab Sample ID: ZE74J
LIMS ID: 14-21550
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 23:19

Sample Amount: 30.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 44.9%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	83	< 83	U
108-88-3	Toluene	83	< 83	U
100-41-4	Ethylbenzene	83	< 83	U
179601-23-1	m,p-Xylene	170	< 170	U
95-47-6	o-Xylene	83	< 83	U

Reported in µg/kg (ppb)

					TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	41	< 41	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.4%
d8-Toluene	98.7%
Bromofluorobenzene	99.8%
d4-1,2-Dichlorobenzene	101%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-MWR1-A
SAMPLE

Lab Sample ID: ZE74K
LIMS ID: 14-21551
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 23:49

Sample Amount: 80.3 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 4.8%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	31	< 31	U
108-88-3	Toluene	31	< 31	U
100-41-4	Ethylbenzene	31	< 31	U
179601-23-1	m,p-Xylene	62	< 62	U
95-47-6	o-Xylene	31	< 31	U

Reported in µg/kg (ppb)

					TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	16	< 16	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.8%
d8-Toluene	99.0%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-MWR1-B
SAMPLE

Lab Sample ID: ZE74L
LIMS ID: 14-21552
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/17/14 00:19

Sample Amount: 72.1 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 10.4%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	35	< 35	U
108-88-3	Toluene	35	< 35	U
100-41-4	Ethylbenzene	35	< 35	U
179601-23-1	m,p-Xylene	69	< 69	U
95-47-6	o-Xylene	35	< 35	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	17	< 17	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	80.0%
d8-Toluene	98.2%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	99.8%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-MWR1-C
SAMPLE

Lab Sample ID: ZE74M
LIMS ID: 14-21553
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/17/14 00:48

Sample Amount: 67.9 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 6.8%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	37	< 37	U
108-88-3	Toluene	37	< 37	U
100-41-4	Ethylbenzene	37	< 37	U
179601-23-1	m,p-Xylene	74	< 74	U
95-47-6	o-Xylene	37	< 37	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	18	< 18	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	85.6%
d8-Toluene	97.2%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	97.9%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-MWR1-D
SAMPLE

Lab Sample ID: ZE74N
LIMS ID: 14-21554
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/17/14 01:18

Sample Amount: 61.7 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 23.0%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	41	< 41	U
108-88-3	Toluene	41	< 41	U
100-41-4	Ethylbenzene	41	< 41	U
179601-23-1	m,p-Xylene	81	< 81	U
95-47-6	o-Xylene	41	< 41	U

Reported in µg/kg (ppb)

					TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	20	< 20	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.0%
d8-Toluene	98.0%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: USO-MWR1-E
SAMPLE

Lab Sample ID: ZE740
LIMS ID: 14-21555
Matrix: Soil
Data Release Authorized: B
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/17/14 01:48

Sample Amount: 23.5 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: 51.7%

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	110	< 110	U
108-88-3	Toluene	110	< 110	U
100-41-4	Ethylbenzene	110	< 110	U
179601-23-1	m,p-Xylene	210	< 210	U
95-47-6	o-Xylene	110	< 110	U

Reported in µg/kg (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	53	< 53	U	---

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.0%
d8-Toluene	98.1%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	100%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: Trip Blanks
SAMPLE

Lab Sample ID: ZE74P
LIMS ID: 14-21556
Matrix: Water
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 18:23

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

					TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U	---

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.9%
d8-Toluene	99.9%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS

Sample ID: MB-101614A
METHOD BLANK

Lab Sample ID: MB-101614A
LIMS ID: 14-21541
Matrix: Soil
Data Release Authorized:
Reported: 10/24/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 17:53

Sample Amount: 100 mg-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	25	< 25	U
108-88-3	Toluene	25	< 25	U
100-41-4	Ethylbenzene	25	< 25	U
179601-23-1	m,p-Xylene	50	< 50	U
95-47-6	o-Xylene	25	< 25	U

Reported in µg/kg (ppb)

86290-81-5	Gasoline Range Hydrocarbons	12	< 12	U

Reported in mg/kg (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.6%
d8-Toluene	99.8%
Bromofluorobenzene	98.1%
d4-1,2-Dichlorobenzene	99.2%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-101614A	Method Blank	Med	92.6%	99.8%	98.1%	99.2%	0
LCS-101614A	Lab Control	Med	98.2%	99.2%	98.6%	104%	0
LCSD-101614A	Lab Control Dup	Med	88.7%	101%	99.4%	101%	0
ZE74A	USO-P3A-A	Low	89.1%	100%	120%	100%	0
ZE74B	USO-P3A-B	Low	93.8%	97.2%	100%	102%	0
ZE74C	USO-P3A-C	Low	86.8%	98.2%	100%	97.3%	0
ZE74D	USO-P3A-D	Low	86.2%	99.8%	102%	100%	0
ZE74E	USO-P3A-E	Low	82.0%	98.2%	104%	99.9%	0
ZE74F	USO-P9E-A	Low	86.6%	97.0%	103%	97.2%	0
ZE74G	USO-P9E-B	Low	87.9%	98.3%	101%	99.7%	0
ZE74H	USO-P9E-C	Low	80.0%	98.6%	102%	99.2%	0
ZE74I	USO-P9E-D	Low	91.1%	99.4%	102%	104%	0
ZE74J	USO-P9E-E	Low	92.4%	98.7%	99.8%	101%	0
ZE74K	USO-MWR1-A	Low	84.8%	99.0%	102%	100%	0
ZE74L	USO-MWR1-B	Low	80.0%	98.2%	101%	99.8%	0
ZE74M	USO-MWR1-C	Low	85.6%	97.2%	101%	97.9%	0
ZE74N	USO-MWR1-D	Low	90.0%	98.0%	101%	100%	0
ZE74O	USO-MWR1-E	Low	92.0%	98.1%	100%	100%	0

SW8260C	LCS/MB LIMITS Low	LCS/MB LIMITS Med	QC LIMITS Low	QC LIMITS Med
(DCE) = d4-1,2-Dichloroethane	80-149	80-124	80-149	80-124
(TOL) = d8-Toluene	77-120	80-120	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	80-120	80-120

Log Number Range: 14-21541 to 14-21555

ZE74 : 060625

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blanks**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ZE74P
LIMS ID: 14-21556
Matrix: Water
Data Release Authorized:
Reported: 10/22/14

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-023
Date Sampled: 10/11/14
Date Received: 10/13/14

Instrument/Analyst: NT3/LH
Date Analyzed: 10/16/14 18:23

Sample Amount: ***
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.9%
d8-Toluene	99.9%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZE74-Dalton, Olmsted & Fuglevand, In
Project: 1920 Port of Tacoma Rd
USO-023

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
ZE74P	Trip Blanks	5	92.9%	99.9%	97.8%	100%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	80-149	80-125
(TOL) = d8-Toluene	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 14-21556 to 14-21556

LABORATORY DATA SHEETS
2014 GROUNDWATER DATA
INTERIM ACTION AND MONITORING PLAN
1920 PORT OF TACOMA RD.
TACOMA, WASHINGTON

Analytical Resources, Incorporated
Analytical Chemists and Consultants

July 31, 2014

Matt Dalton
Dalton, Olmsted & Fuglevand, Inc.
6034 N Star Road
Ferndale, WA 98248

0RE: Project: 1920 Port of Tacoma Rd, USO-023
ARI Job No: YR60

Dear Matt:

Please find enclosed the original Chain-of-Custody records (COCs), sample receipt documentation, and the final analytical results for samples from the referenced project. Analytical Resources, Inc. (ARI) accepted two water samples and a trip blank on July 14, 2014. The cooler temperatures measured by IR thermometer were 1.3 and 2.7°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BTEX, as requested on the COCs.

There were no anomalies associated with the analysis of these samples.

An electronic copy of this report and all associated raw data will be kept on file with ARI. Should you have any questions, please feel free to contact me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile YR60

Enclosures

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: YAGD	Turn-around Requested: Normal	Date: 7/14/14	
ARI Client Company: Dalton Olmsted & Fuglevand	Phone: 206-660-3466	Page: 1 of 1	
Client Contact: Matt Dalton / Dave Cooper		No. of Coolers:	Cooler Temps:
Client Project Name: 1920 Port of Tacoma Rd			
Client Project #: USO-023	Samplers: DG Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G / BTEX (8260)								Notes/Comments
USO-W-P15	7/12/14	0945	water	3	X								
USO-W-P17	7/12/14	1330	water	3	X								
Trip Blank	7/14/14	-	water	9	X								

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgardsen	Printed Name	Printed Name
	Company: DOF	Company: ARI	Company	Company
	Date & Time: 7/14/K 1545	Date & Time: 7/14/14 1545	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client DOE

Project Name 1920 Port of Tacoma Rd

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: YP60

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6 0 °C for chemistry) 13 2.7

Time: 1545

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: AV Date: 7/14/14 Time: 1545

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other		
Was sufficient ice used (if appropriate)?	NA	YES	NO
Were all bottles sealed in individual plastic bags?		YES	NO
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI.	NA	7-10-14	

Was Sample Split by ARI: NA YES Date/Time: Equipment: Split by:

Samples Logged by: TB Date: 7-15-14 Time: 754

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm

Small → "sm"	**(< 2 mm)**
Peabubbles → "pb"	**(2 to < 4 mm)**
Large → "lg"	**(4 to < 6 mm)**
Headspace → "hs"	**(> 6 mm)**

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: YR60
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-23
Project Name: 1920 Port of Tacoma Rd

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	USO-W-P15	YR60A	14-13851	Water	07/12/14 09:45	07/14/14 15:45
2.	USO-W-P17	YR60B	14-13852	Water	07/12/14 13:30	07/14/14 15:45
3.	Trip Blank	YR60C	14-13853	Water	07/12/14	07/14/14 15:45

YR60 00004

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: USO-W-P15
SAMPLE

Lab Sample ID: YR60A
LIMS ID: 14-13851
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR60-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-23
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 20:09

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	**Benzene**	**0.5**	**20**	
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	**Ethylbenzene**	**0.5**	**1.6**	
179601-23-1	**m,p-Xylene**	**1.0**	**1.9**	
95-47-6	**o-Xylene**	**0.5**	**0.7**	

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.8%
d8-Toluene	97.2%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: USO-W-P17
SAMPLE

Lab Sample ID: YR60B
LIMS ID: 14-13852
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR60-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-23
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 20:38

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	**Benzene**	**0.5**	**1.5**	
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.8%
d8-Toluene	99.4%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	99.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: Trip Blank
SAMPLE

Lab Sample ID: YR60C
LIMS ID: 14-13853
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR60-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-23
Date Sampled: 07/12/14
Date Received: 07/14/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 19:39

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.6%
d8-Toluene	99.8%
Bromofluorobenzene	98.4%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: YR60-Dalton, Olmsted & Fuglevand, In
Project: 1920 Port of Tacoma Rd
USO-23

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-071814A	Method Blank	5	93.0%	101%	96.4%	99.6%	0
LCS-071814A	Lab Control	5	92.3%	95.6%	101%	98.5%	0
LCSD-071814A	Lab Control Dup	5	95.2%	99.0%	100%	98.0%	0
YR60A	USO-W-P15	5	90.8%	97.2%	102%	100%	0
YR60B	USO-W-P17	5	93.8%	99.4%	97.4%	99.0%	0
YR60C	Trip Blank	5	90.6%	99.8%	98.4%	100%	0

	LCS/MB LIMITS	QC LIMITS
SW8260C		
(DCE) = d4-1,2-Dichloroethane	80-149	80-125
(TOL) = d8-Toluene	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 14-13851 to 14-13853

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: LCS-071814A
LAB CONTROL SAMPLE

Lab Sample ID: LCS-071814A
LIMS ID: 14-13851
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR60-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-23
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 07/18/14 17:41
LCSD: 07/18/14 18:11

Sample Amount LCS: 5.00 mL
LCSD: 5.00 mL
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	18.3	20.0	91.5%	22.2	20.0	111%	19.3%
Toluene	18.8	20.0	94.0%	22.5	20.0	112%	17.9%
Ethylbenzene	19.6	20.0	98.0%	22.8	20.0	114%	15.1%
m,p-Xylene	39.7	40.0	99.2%	46.5	40.0	116%	15.8%
o-Xylene	20.2	20.0	101%	23.8	20.0	119%	16.4%
Reported in µg/L (ppb)							
Gasoline Range Hydrocarbons	2.04	2.00	102%	2.01	2.00	100%	1.5%
Reported in mg/L (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.3%	95.2%
d8-Toluene	95.6%	99.0%
Bromofluorobenzene	101%	100%
d4-1,2-Dichlorobenzene	98.5%	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS
Page 1 of 1

Sample ID: MB-071814A
METHOD BLANK

Lab Sample ID: MB-071814A
LIMS ID: 14-13851
Matrix: Water
Data Release Authorized:
Reported: 07/29/14

QC Report No: YR60-Dalton, Olmsted & Fuglevand, Inc
Project: 1920 Port of Tacoma Rd
USO-23
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 07/18/14 18:40

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.0%
d8-Toluene	101%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	99.6%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

November 21, 2014

Matt Dalton
Dalton, Olmsted & Fuglevand, Inc.
6034 N Star Road
Ferndale, WA 98248

0RE: Project: Port of Tacoma Rd, USO-023
ARI Job No: ZI84

Dear Matt:

Please find enclosed the original Chain-of-Custody records (COCs), sample receipt documentation, and the final analytical results for samples from the referenced project. Analytical Resources, Inc. (ARI) accepted four water samples and a trip blank on November 3, 2014. The cooler temperature measured by IR thermometer was 0.1°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx/BTEX and VPH, as requested on the COCs.

The LCSD percent recoveries of Benzene and Toluene fell outside the control limits low for **LCS-111514A**. All other percent recoveries were within control limits. No corrective action was taken.

There were no anomalies associated with the analysis of these samples.

An electronic copy of this report and all associated raw data will be kept on file with ARI. Should you have any questions, please feel free to contact me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
(206) 695-6214
cheronneo@arilabs.com
www.arilabs.com

cc: eFile ZI84

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: ZI84	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOE	Phone: 206-660-3466	Date: 11/3/14	Ice Present? Y
Client Contact: MATT WATSON / DAVE COOPER		No. of Coolers: 1	Cooler Temps: 0.1
Client Project Name: POT. RD.			
Client Project #: USD-023	Samplers: D Cooper		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-G BTEX	Analysis Requested: VPH	Notes/Comments
MW-USD-5S-110114	11/1/14	1300	WATER	4	X	X	
MW-USD-6S-110114		1400			X	X	
MW-USD-R1-110114		1500			X	X	
MW-USD-R2-110114		1600			X	X	
MIP BLANK		—					

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: DG Cooper	Printed Name: A. Volgardsin	Printed Name.	Printed Name:
	Company: DOE	Company: ARI	Company.	Company
	Date & Time: 11/3/14 1435	Date & Time: 11/3/14 1435	Date & Time	Date & Time

ZI84:00002

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF Project Name: POT Road

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: ZI84 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry): 0.1

Time: 1435

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90077952

Cooler Accepted by: AV Date: 11/3/14 Time: 1435

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	(NA)	YES	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	10/30/14	

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AV Date: 11/3/14 Time: 1500

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Small Air Bubbles ~ 2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	• • •

Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZI84
Client: Dalton, Olmsted & Fuglevand, Inc
Project Event: USO-023
Project Name: P.O.T. RD.

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-USO-5S-110114	ZI84A	14-24001	Water	11/01/14 13:00	11/03/14 14:35
2.	MW-USO-6S-110114	ZI84B	14-24002	Water	11/01/14 14:00	11/03/14 14:35
3.	MW-USO-R1-110114	ZI84C	14-24003	Water	11/01/14 15:00	11/03/14 14:35
4.	MW-USO-R2-110114	ZI84D	14-24004	Water	11/01/14 16:00	11/03/14 14:35
5.	TRIP BLANK	ZI84E	14-24005	Water	11/01/14	11/03/14 14:35
6.	MW-USO-5S-110114	ZI84F	14-24006	Water	11/01/14 13:00	11/03/14 14:35
7.	MW-USO-6S-110114	ZI84G	14-24007	Water	11/01/14 14:00	11/03/14 14:35
8.	MW-USO-R1-110114	ZI84H	14-24008	Water	11/01/14 15:00	11/03/14 14:35
9.	MW-USO-R2-110114	ZI84I	14-24009	Water	11/01/14 16:00	11/03/14 14:35
10.	TRIP BLANK	ZI84J	14-24010	Water	11/01/14	11/03/14 14:35

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-USO-5S-110114**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ZI84A
LIMS ID: 14-24001
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/15/14 01:28

Sample Amount: ***
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

				TPHG ID
86290-81-5	**Gasoline Range Hydrocarbons**	**0.25**	**0.60**	**GAS**

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.9%
d8-Toluene	102%
Bromofluorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-USO-6S-110114**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ZI84B
LIMS ID: 14-24002
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/15/14 00:59

Sample Amount: ***
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U	---

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.8%
d8-Toluene	101%
Bromofluorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-USO-R1-110114**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ZI84C
LIMS ID: 14-24003
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/15/14 15:43

Sample Amount: ***
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U	---

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.5%
d8-Toluene	99.6%
Bromofluorobenzene	99.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-USO-R2-110114**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ZI84D
LIMS ID: 14-24004
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/15/14 00:00

Sample Amount: ***
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	**Benzene**	**0.5**	**770**	**ES**
108-88-3	**Toluene**	**0.5**	**16**	
100-41-4	**Ethylbenzene**	**0.5**	**28**	
179601-23-1	**m,p-Xylene**	**1.0**	**36**	
95-47-6	**o-Xylene**	**0.5**	**4.3**	

Reported in µg/L (ppb)

CAS Number	Analyte	LOQ	Result	TPHG ID
86290-81-5	**Gasoline Range Hydrocarbons**	**0.25**	**3.0**	**GAS**

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.0%
d8-Toluene	100%
Bromofluorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-USO-R2-110114**
Page 1 of 1 **REANALYSIS**

Lab Sample ID: ZI84D
LIMS ID: 14-24004
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/15/14 01:58

Sample Amount: 0.200 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	**Benzene**	**12**	**980**	
108-88-3	**Toluene**	**12**	**14**	
100-41-4	**Ethylbenzene**	**12**	**24**	
179601-23-1	**m,p-Xylene**	**25**	**30**	
95-47-6	o-Xylene	12	< 12	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	6.2	< 6.2	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.8%
d8-Toluene	100%
Bromofluorobenzene	99.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ZI84E
LIMS ID: 14-24005
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/14/14 20:32

Sample Amount: ***
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

CAS Number	Analyte	LOQ	Result	Q	TPHG ID
86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U	---

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.0%
d8-Toluene	100%
Bromofluorobenzene	99.7%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, In
Project: P.O.T. RD.
USO-023

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-111414A	Method Blank	5	101%	101%	100%	NA	0
LCS-111414A	Lab Control	5	92.4%	102%	101%	NA	0
LCSD-111414A	Lab Control Dup	5	101%	98.4%	101%	NA	0
ZI84A	MW-USO-5S-110114	5	91.9%	102%	103%	NA	0
ZI84B	MW-USO-6S-110114	5	90.8%	101%	100%	NA	0
MB-111514A	Method Blank	5	92.8%	98.7%	98.2%	NA	0
LCS-111514A	Lab Control	5	103%	99.5%	101%	NA	0
LCSD-111514A	Lab Control Dup	5	93.8%	101%	99.0%	NA	0
ZI84C	MW-USO-R1-110114	5	92.5%	99.6%	99.6%	NA	0
ZI84D	MW-USO-R2-110114	5	99.0%	100%	101%	NA	0
ZI84DRE	MW-USO-R2-110114	5	91.8%	100%	99.8%	NA	0
ZI84E	TRIP BLANK	5	95.0%	100%	99.7%	NA	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	80-149	80-125
(TOL) = d8-Toluene	77-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 14-24001 to 14-24005

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-111414A**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-111414A
LIMS ID: 14-24001
Matrix: Water
Data Release Authorized:
Reported: 11/21/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 11/14/14 19:03
LCSD: 11/14/14 19:33

Sample Amount LCS: 5.00 mL
LCSD: 5.00 mL
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	10.0	10.0	100%	9.0	10.0	90.0%	10.5%
Toluene	10.0	10.0	100%	8.9	10.0	89.0%	11.6%
Ethylbenzene	10.5	10.0	105%	9.5	10.0	95.0%	10.0%
m,p-Xylene	21.0	20.0	105%	19.3	20.0	96.5%	8.4%
o-Xylene	10.6	10.0	106%	9.5	10.0	95.0%	10.9%
Reported in µg/L (ppb)							
Gasoline Range Hydrocarbons	1.89	2.00	94.5%	1.99	2.00	99.5%	5.2%
Reported in mg/L (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.4%	101%
d8-Toluene	102%	98.4%
Bromofluorobenzene	101%	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-111514A**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-111514A
LIMS ID: 14-24003
Matrix: Water
Data Release Authorized:
Reported: 11/21/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JZ
LCSD: NT3/JZ
Date Analyzed LCS: 11/15/14 14:15
LCSD: 11/15/14 14:45

Sample Amount LCS: 5.00 mL
LCSD: 5.00 mL
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	9.1	10.0	91.0%	7.8	10.0	78.0%	15.4%
Toluene	9.0	10.0	90.0%	7.8	10.0	78.0%	14.3%
Ethylbenzene	9.5	10.0	95.0%	8.2	10.0	82.0%	14.7%
m,p-Xylene	19.6	20.0	98.0%	16.4	20.0	82.0%	17.8%
o-Xylene	9.7	10.0	97.0%	8.1	10.0	81.0%	18.0%
Reported in µg/L (ppb)							
Gasoline Range Hydrocarbons	2.02	2.00	101%	2.04	2.00	102%	1.0%
Reported in mg/L (ppm)							

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	103%	93.8%
d8-Toluene	99.5%	101%
Bromofluorobenzene	101%	99.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-111414A**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-111414A
LIMS ID: 14-24001
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/14/14 20:03

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	101%
Bromofluorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-111514A**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-111514A
LIMS ID: 14-24003
Matrix: Water
Data Release Authorized:
Reported: 11/19/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JZ
Date Analyzed: 11/15/14 15:14

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	LOQ	Result	Q
71-43-2	Benzene	0.5	< 0.5	U
108-88-3	Toluene	0.5	< 0.5	U
100-41-4	Ethylbenzene	0.5	< 0.5	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	0.5	< 0.5	U

Reported in µg/L (ppb)

86290-81-5	Gasoline Range Hydrocarbons	0.25	< 0.25	U

Reported in mg/L (ppm)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	98.7%
Bromofluorobenzene	98.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH
Page 1 of 1

Sample ID: MW-USO-5S-110114
SAMPLE

Lab Sample ID: ZI84F
LIMS ID: 14-24006
Matrix: Water
Data Release Authorized:
Reported: 11/20/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Date Analyzed: 11/11/14 20:43
Instrument/Analyst: PID1/PKC

Purge Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	5.0	< 5.0 U
108-88-3	Toluene	5.0	< 5.0 U
100-41-4	Ethylbenzene	5.0	< 5.0 U
179601-23-1	m,p-Xylene	10	< 10 U
95-47-6	o-Xylene	5.0	< 5.0 U
1634-04-4	Methyl tert-Butyl Ether	5.0	< 5.0 U
109-66-0	n-Pentane	5.0	< 5.0 U
110-54-3	n-Hexane	5.0	< 5.0 U
111-65-9	**n-Octane**	**5.0**	**6.5**
124-18-5	n-Decane	5.0	< 5.0 U
112-40-3	n-Dodecane	5.0	< 5.0 U

Range	RL	Result
C8-C10 Aromatics	**50**	**54**
C10-C12 Aromatics	**50**	**150**
C12-C13 Aromatics	50	< 50 U
C5-C6 Aliphatics	50	< 50 U
C6-C8 Aliphatics	**50**	**64**
C8-C10 Aliphatics	50	< 50 U
C10-C12 Aliphatics	50	< 50 U

Values reported in µg/L (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	111%
FID: 2,5-Dibromotoluene	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH
Page 1 of 1

Sample ID: MW-USO-6S-110114
SAMPLE

Lab Sample ID: ZI84G
LIMS ID: 14-24007
Matrix: Water
Data Release Authorized:
Reported: 11/20/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Date Analyzed: 11/11/14 21:13
Instrument/Analyst: PID1/PKC

Purge Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	5.0	< 5.0 U
108-88-3	Toluene	5.0	< 5.0 U
100-41-4	Ethylbenzene	5.0	< 5.0 U
179601-23-1	m,p-Xylene	10	< 10 U
95-47-6	o-Xylene	5.0	< 5.0 U
1634-04-4	Methyl tert-Butyl Ether	5.0	< 5.0 U
109-66-0	n-Pentane	5.0	< 5.0 U
110-54-3	n-Hexane	5.0	< 5.0 U
111-65-9	n-Octane	5.0	< 5.0 U
124-18-5	n-Decane	5.0	< 5.0 U
112-40-3	n-Dodecane	5.0	< 5.0 U

Range	RL	Result
C8-C10 Aromatics	50	< 50 U
C10-C12 Aromatics	50	< 50 U
C12-C13 Aromatics	50	< 50 U
C5-C6 Aliphatics	50	< 50 U
C6-C8 Aliphatics	50	< 50 U
C8-C10 Aliphatics	50	< 50 U
C10-C12 Aliphatics	50	< 50 U

Values reported in µg/L (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	120%
FID: 2,5-Dibromotoluene	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH
Page 1 of 1

Sample ID: MW-USO-R1-110114
SAMPLE

Lab Sample ID: ZI84H
LIMS ID: 14-24008
Matrix: Water
Data Release Authorized:
Reported: 11/20/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Date Analyzed: 11/11/14 21:43
Instrument/Analyst: PID1/PKC

Purge Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	5.0	< 5.0 U
108-88-3	Toluene	5.0	< 5.0 U
100-41-4	Ethylbenzene	5.0	< 5.0 U
179601-23-1	m,p-Xylene	10	< 10 U
95-47-6	o-Xylene	5.0	< 5.0 U
1634-04-4	Methyl tert-Butyl Ether	5.0	< 5.0 U
109-66-0	n-Pentane	5.0	< 5.0 U
110-54-3	n-Hexane	5.0	< 5.0 U
111-65-9	n-Octane	5.0	< 5.0 U
124-18-5	n-Decane	5.0	< 5.0 U
112-40-3	n-Dodecane	5.0	< 5.0 U

Range	RL	Result
C8-C10 Aromatics	50	< 50 U
C10-C12 Aromatics	50	< 50 U
C12-C13 Aromatics	50	< 50 U
C5-C6 Aliphatics	50	< 50 U
C6-C8 Aliphatics	50	< 50 U
C8-C10 Aliphatics	50	< 50 U
C10-C12 Aliphatics	50	< 50 U

Values reported in µg/L (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	114%
FID: 2,5-Dibromotoluene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH
Page 1 of 1

Sample ID: MW-USO-R2-110114
SAMPLE

Lab Sample ID: ZI84I
LIMS ID: 14-24009
Matrix: Water
Data Release Authorized:
Reported: 11/20/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Date Analyzed: 11/11/14 22:13
Instrument/Analyst: PID1/PKC

Purge Volume: 10 mL
Dilution Factor: 20.0

CAS Number	Analyte	RL	Result
71-43-2	**Benzene**	**100**	**1,400**
108-88-3	Toluene	100	< 100 U
100-41-4	Ethylbenzene	100	< 100 U
179601-23-1	m,p-Xylene	200	< 200 U
95-47-6	o-Xylene	100	< 100 U
1634-04-4	Methyl tert-Butyl Ether	100	< 100 U
109-66-0	n-Pentane	100	< 100 U
110-54-3	n-Hexane	100	< 100 U
111-65-9	n-Octane	100	< 100 U
124-18-5	n-Decane	100	< 100 U
112-40-3	n-Dodecane	100	< 100 U

Range	RL	Result
C8-C10 Aromatics	1,000	< 1,000 U
C10-C12 Aromatics	1,000	< 1,000 U
C12-C13 Aromatics	1,000	< 1,000 U
C5-C6 Aliphatics	1,000	< 1,000 U
C6-C8 Aliphatics	**1,000**	**1,700**
C8-C10 Aliphatics	1,000	< 1,000 U
C10-C12 Aliphatics	1,000	< 1,000 U

Values reported in µg/L (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	109%
FID: 2,5-Dibromotoluene	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH
Page 1 of 1

Sample ID: TRIP BLANK SAMPLE

Lab Sample ID: ZI84J
LIMS ID: 14-24010
Matrix: Water
Data Release Authorized:
Reported: 11/20/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD. USO-023
Date Sampled: 11/01/14
Date Received: 11/03/14

Date Analyzed: 11/11/14 16:42
Instrument/Analyst: PID1/PKC

Purge Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	5.0	< 5.0 U
108-88-3	Toluene	5.0	< 5.0 U
100-41-4	Ethylbenzene	5.0	< 5.0 U
179601-23-1	m,p-Xylene	10	< 10 U
95-47-6	o-Xylene	5.0	< 5.0 U
1634-04-4	Methyl tert-Butyl Ether	5.0	< 5.0 U
109-66-0	n-Pentane	5.0	< 5.0 U
110-54-3	n-Hexane	5.0	< 5.0 U
111-65-9	n-Octane	5.0	< 5.0 U
124-18-5	n-Decane	5.0	< 5.0 U
112-40-3	n-Dodecane	5.0	< 5.0 U

Range	RL	Result
C8-C10 Aromatics	50	< 50 U
C10-C12 Aromatics	50	< 50 U
C12-C13 Aromatics	50	< 50 U
C5-C6 Aliphatics	50	< 50 U
C6-C8 Aliphatics	50	< 50 U
C8-C10 Aliphatics	50	< 50 U
C10-C12 Aliphatics	50	< 50 U

Values reported in µg/L (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	100%
FID: 2,5-Dibromotoluene	105%

ANALYTICAL RESOURCES INCORPORATED

VPH SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023

ARI ID	Client ID	PDBT	FDBT	TOT OUT
MB-111114	Method Blank	104%	113%	0
LCS-111114	Lab Control	114%	111%	0
LCSD-111114	Lab Control Dup	108%	110%	0
ZI84F	MW-USO-5S-110114	111%	107%	0
ZI84G	MW-USO-6S-110114	120%	116%	0
ZI84H	MW-USO-R1-110114	114%	112%	0
ZI84I	MW-USO-R2-110114	109%	108%	0
ZI84J	TRIP BLANK	100%	105%	0

	LCS/MB LIMITS	QC LIMITS
(PDBT) = 2,5-Dibromotoluene	(60-140)	(60-140)
(FDBT) = 2,5-Dibromotoluene	(60-140)	(60-140)

Prep Method: METHOD
Log Number Range: 14-24006 to 14-24010

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH **Sample ID: LCS-111114**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-111114 QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
LIMS ID: 14-24006 Project: P.O.T. RD.
Matrix: Water USO-023
Data Release Authorized: MW Date Sampled: NA
Reported: 11/20/14 Date Received: NA

Date Analyzed LCS: 11/11/14 15:08 Purge Volume: 10 mL
Date Analyzed LCSD: 11/11/14 15:38 Dilution Factor: 1.00
Instrument/Analyst: PID1/PKC

Analyte/Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	20.6	20.0	103%	19.9	20.0	99.5%	3.5%
Toluene	20.9	20.0	104%	20.2	20.0	101%	3.4%
Ethylbenzene	20.8	20.0	104%	20.6	20.0	103%	1.0%
m,p-Xylene	42.0	40.0	105%	40.7	40.0	102%	3.1%
o-Xylene	21.7	20.0	108%	20.3	20.0	102%	6.7%
Methyl tert-Butyl Ether	18.0	20.0	90.0%	17.5	20.0	87.5%	2.8%
Naphthalene	19.5	20.0	97.5%	19.4	20.0	97.0%	0.5%
1,2,3-Trimethylbenzene	22.9	20.0	114%	20.3	20.0	102%	12.0%
1-Methylnaphthalene	21.8	20.0	109%	21.1	20.0	106%	3.3%
n-Pentane	18.7	20.0	93.5%	18.9	20.0	94.5%	1.1%
n-Hexane	18.8	20.0	94.0%	18.9	20.0	94.5%	0.5%
n-Octane	19.4	20.0	97.0%	19.6	20.0	98.0%	1.0%
n-Decane	18.5	20.0	92.5%	18.4	20.0	92.0%	0.5%
n-Dodecane	24.1	20.0	120%	21.8	20.0	109%	10.0%

Values reported in µg/L (ppb)
RPD calculated using sample concentrations per SW846.

VPH Surrogate Recovery

	LCS	LCSD
PID: 2,5-Dibromotoluene	114%	108%
FID: 2,5-Dibromotoluene	111%	110%

FORM III

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
VPH by Method WA VPH
Page 1 of 1

Sample ID: MB-111114
METHOD BLANK

Lab Sample ID: MB-111114
LIMS ID: 14-24006
Matrix: Water
Data Release Authorized:
Reported: 11/20/14

QC Report No: ZI84-Dalton, Olmsted & Fuglevand, Inc
Project: P.O.T. RD.
USO-023
Date Sampled: NA
Date Received: NA

Date Analyzed: 11/11/14 16:08
Instrument/Analyst: PID1/PKC

Purge Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	5.0	< 5.0 U
108-88-3	Toluene	5.0	< 5.0 U
100-41-4	Ethylbenzene	5.0	< 5.0 U
179601-23-1	m,p-Xylene	10	< 10 U
95-47-6	o-Xylene	5.0	< 5.0 U
1634-04-4	Methyl tert-Butyl Ether	5.0	< 5.0 U
109-66-0	n-Pentane	5.0	< 5.0 U
110-54-3	n-Hexane	5.0	< 5.0 U
111-65-9	n-Octane	5.0	< 5.0 U
124-18-5	n-Decane	5.0	< 5.0 U
112-40-3	n-Dodecane	5.0	< 5.0 U

Range	RL	Result
C8-C10 Aromatics	50	< 50 U
C10-C12 Aromatics	50	< 50 U
C12-C13 Aromatics	50	< 50 U
C5-C6 Aliphatics	50	< 50 U
C6-C8 Aliphatics	50	< 50 U
C8-C10 Aliphatics	50	< 50 U
C10-C12 Aliphatics	50	< 50 U

Values reported in µg/L (ppb)

VPH Surrogate Recovery

PID: 2,5-Dibromotoluene	104%
FID: 2,5-Dibromotoluene	113%