PACIFIC groundwater GROUP

March 30, 2016

Beth Schmoyer, PE
Seattle Public Utilities
700 5th Ave, Suite 4900
Seattle, WA 98124

Re: Groundwater Monitoring Data
First Quarter, 2015 (2015 Q1)
South Park Water Quality Facility,
Facility/Site No. 22726

Dear Beth:

The purpose of this letter report is to document the methods and results of the First Quarter (Q1) 2015 groundwater sampling for the South Park Water Quality Facility (Site No. 22726 and Voluntary Cleanup Program (VCP) No. NW 2183)[1]. The work was performed in accordance with the *South Park Pump Station Well Installation and Groundwater Monitoring Plan* (Pacific Groundwater Group [PGG], 2016)[2].

Our professional services were performed, our findings obtained, and our report prepared in accordance with generally accepted hydrogeologic practices. This warranty is in lieu of all other warranties, express or implied.

INTRODUCTION

On May 1, 2015, PGG collected groundwater samples from monitoring wells MW-1, MW-2, and MW-3 using low-flow methods per the GWMP. Table 1 provides a monitoring well and sampling summary, and well locations are shown on Figure 1. Groundwater samples were delivered to Analytical Resources, Inc. (ARI) of Tukwila, Washington for analysis. The field notes, laboratory report, and quality control/quality assessment review are included in Attachments 1-3, respectively.

The wells were installed on March 29, 2015, as documented in GWMP. As depicted on Figure 1, downgradient monitoring wells MW-1 and MW-2 were completed along the

[1] Seattle Public Utilities withdrew this site from the VCP program in December 2015 after the interim action was complete.
[2] PGG, 2016. South Park Pump Station Well Installation and Groundwater Monitoring Plan. Prepared for Seattle Public Utilities, Pacific Groundwater Group, Seattle, WA.

top of the bank or downgradient. Upgradient monitoring well MW-3 was completed near the S Riverside Drive right-of-way on the SPU property.

SUMMARY OF FINDINGS

2015 Q1 South Park Water Quality Facility monitoring parameters were compared to the Preliminary Screening Levels (SLs) for contaminants of potential concern (COPCs) described in the GWMP. See Table 2 for a description of SLs and Table 3 for analytical results.

The vinyl chloride concentration in MW-2 (2.4 ug/L) exceeded the SL (1.6 ug/L). In MW-2, turbidity exceeded project criteria of 10 NTU, which likely contributed to SL exceedences of benzo(a)anthracene (0.025 ug/L), benzo(a)pyrene (0.043 ug/L), chrysene (0.063 ug/L), indeno(1,2,3-cd)pyrene (0.022 ug/L) for their individual ambient water quality criterion human health screening levels.. Also, the benzo(a)pyrene toxicity equivalent concentration (BaP-TTEC) for carcinogenic polycyclic aromatic hydrocarbons (cPAHs), where non-detects are valued half the reporting limit (0.049T ug/L) and as zeros (0.048T ug/L), were both above the BaP SL (0.01 ug/L).

Filtered lead and polycyclic aromatic hydrocarbons (PAHs) samples will be collected in subsequent monitoring rounds. Additional development may be useful if high turbidity persists in monitoring wells. No other parameters exceeded SLs.

CHEMICAL ANALYSIS

Groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3 in 2015 Q1 were analyzed for COPCs established in the *South Park Pump Station & Water Quality Facility, Interim Action Plan* (PGG, 2010)[3]. Groundwater samples were analyzed for volatile organic compounds (VOCs), dissolved arsenic and total lead, diesel and heavy oil, and unfiltered polycyclic aromatic hydrocarbons (PAHs). Note that VOC and PAH results include analytes that have not been identified as COPCs.

In addition to the COPCs, field parameters (pH, specific conductance, oxidation-reduction potential, turbidity, and temperature) and monitored natural attenuation parameters (alkalinity, ethane, ethene, methane, ferrous iron, nitrate, nitrite, sulfate, sulfide, total organic carbon (TOC)) were collected in the field and analyzed by the laboratory.

[3] PGG, 2010. Interim Action Plan South Park Pump Station & Water Quality Facility Seattle, Washington. Prepared for Seattle Public Utilities, September 2010 by Pacific Groundwater Group, Seattle, WA.

ANALYTICAL RESULTS

Screening levels at the site are the most stringent of relevant groundwater or surface water levels (Table 2).[4] The groundwater analytical results are presented in Table 3.

Regarding the 2015 Q1 analytical results above the screening levels, PGG provides the following observations:

- The vinyl chloride concentration in MW-2 (2.4 ug/L) was above the SL (1.6 ug/L).
- Turbidity at MW-3 (33.9 NTU) was above the project goal (10 NTU). At MW-2, turbidity (10.5 NTU) at the start of sampling was above the project goal (10 NTU) and increased (80 NTU) during low-flow bottle filling. Note that the wells were installed with pre-pack screens and developed on two occasions prior to 2015 Q1 sampling. Additional development may be useful if high turbidity persists in MW-3 and MW-2.
- Benzo(a)anthracene (0.025 ug/L), benzo(a)pyrene (0.043 ug/L), chrysene (0.063 ug/L), indeno(1,2,3-cd)pyrene (0.022 ug/L) concentrations in MW-2 were above the SLs. Also, the BaP-TTEC calculated for cPAHs, where non-detects are valued half the reporting limit (0.049T ug/L) and as zeros (0.048T ug/L), were both above the BaP SL 0.01 ug/L). The unfiltered cPAH results are likely biased high due to turbidity artifacts. The field duplicate results were non-detect or had lower concentrations for these cPAHs, further supporting the conclusion that soil particulates are artificially present in groundwater samples. We recommend that filtered cPAHs be collected in subsequent sampling rounds.
- There were low-level detections of non-carcinogenic PAHs (acenaphthene, anthracene, benzo(g,h,i)perylene, dibenzofuran, fluoranthene, naphthalene, phenanthrene, and pyrene) in MW-2 and (acenaphthene, anthracene, dibenzofuran, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene) in MW-3 that were below SLs or where there are no SLs.

WATER LEVEL DATA

Water levels in all monitoring wells were measured on May 1, 2015 with an electric well sounder during falling-tide and prior to groundwater sampling. Water levels reflect an inland groundwater flow direction at the time of measurement (Figure 1). No contours and flow directions are derived from the water-level measurements, which are sensitive to tidal fluctuations and river stage that are not uniform in space and time. SPU surveyed the location and elevation of each monitoring well in NAD 1983 and NAVD 1988 datums, respectively. The monitoring well elevation on the north side of the monitoring well PVC casing is used as the measuring point for water-level measurements.

[4] The screening levels are the higher of the laboratory Practical Quantitation Limit (PQL) and the most stringent of the non-potable groundwater and marine surface water levels relevant to the site from Department of Ecology's Cleanup Levels and Risk Calculations (CLARC) website, the final June 2015 updates to the EPA's National Recommended Water Quality Criteria, and EPA's National Toxics Rule.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

A quality control/quality assessment (QA/QC) review was conducted on the reported analyses (Attachment 3). The data are considered usable for the intended purpose of the project. All requested analyses were performed and QA/QC assessments indicate that the data are considered usable for the intended purpose of the project. A field duplicate (MW-51) was collected at MW-2. PGG received the final laboratory report on May 15, 2015.

Notable results during the QA/QC review include:

- No samples were analyzed outside of holding times.
- The trip blank had no VOC detections.
- The method blank had no detections.
- All lab duplicates RPDs were less than project criteria of 20%.
- The vinyl chloride detected using method 8260C-SIM at MW-2 (2.7E ug/L) was "E" qualified by the lab to indicate the value is estimated. The result using Method 8260C was not qualified (2.4 ug/L). Note that duplication was also poor as described below.
- A field duplicate (MW-51) was collected at MW-2. The following constituents, grouped by analytical method, had relative percent differences (RPDs) greater than project criteria of 35%:
    - VOC method 8260: PCE and vinyl chloride.
    - SVOC method 8270: naphthalene, acenaphthylene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, and total benzofluoranthenes.
    - Metals method 200.8: total lead.
    - SM3500 Fe: ferrous iron.

    The high RPDs may be related to turbidity. In subsequent sampling rounds this well should be sampled as possible to limit turbidity and water-level decline. Other measures or laboratory quality control for these analytes (e.g. matrix and lab control spike and spike duplicates, and lab duplicates) were within acceptable ranges.
- The total benzofluoranthenes detected at MW-2 (0.088Q ug/L) and acetone detected at MW-3 (5.4Q ug/L) were "Q" qualified by the lab to indicate the laboratory continuing calibration was out of control for those analytes.
- The reporting limits for some non-detect cPAHs at MW-2, MW-3 and MW-51 were 0.011 to 0.012 ug/L, which is slightly above SL values of 0.01 ug/L (PQL).
- Completeness was 100% for COPCs and 99.4% for all analytes. At MW-3, adequate sample volume was not available from the well for ferrous iron and alkalinity.

We are pleased to provide you with these monitoring services. Please call us if you have any questions.

Sincerely,

Pacific Groundwater Group

Janet N. Knox, LG
Principal Environmental Geochemist

Attachments:

Table 1. Monitoring Well and Sampling Summary, South Park Water Quality Facility, 2015 Q1
Table 2. Groundwater/Surface Water Screening Levels, South Park Water Quality Facility
Table 3. Analytical Results, South Park Water Quality Facility, 2015 Q1
Figure 1. Well Locations and Water-Levels, 2015 Q1

1. Field Notes
2. Laboratory Analytical Results
3. QA/QC Report

Table 1- Monitoring Well and Sampling Summary, South Park Water Quality Facility, 2015 Q1

	MW-1	MW-2	MW-3
Monitoring Objective			
Downgradient Monitoring Well	X	X	
Background Monitoring Well			X
Sample Summary			
Sample Date/ Time	5/1/2015 6:40:00 AM	5/1/2015 8:20:00 AM	5/1/2015 9:25:00 AM
Analysis Summary			
Field Parameters	X	X	X
VOCs	X	X	X
PAHs	X	X	X
PAHs- Filtered			
Dissolved Metals	X	X	X
Total Metals	X	X	X
NWTPH-Dx	X	X	X
MNA Parameters	X	X	X
Well Information			
Ecology Unique ID	BIK860	BIK861	BIK862
Install Date	3/19/2015	3/19/2015	3/19/2015
Northing (ft NAD 83 State Plane)[1]	1271864	1271883	1271810
Easting (ft NAD 83 State Plane)[1]	198637	198592	198562
Measuring Point Elevation (ft NAVD88)[1,2]	11.64	11.17	11.54
Well Depth (ft)	11.3	10.6	11.3
Screen Interval (ft)	6.2-11.2	5.5-10.5	6.2-11.2

ft = feet

feet NAD 1983 State Plane, Washington, North, FIPS 4601

feet NAVD 1988 Vertical Datum

1. SPU Survey May, 2015

2. Measuring point is the top of casing on the north side

Table 2. Groundwater/Surface Water Screening Levels, South Park Water Quality Facility[1]

Chemical of Potential Concern	Analytical Method	PQL (ug/L)	Applicable Screening Levels[2] (ug/L)	Screening Level Regulatory Source[3]	Proposed Preliminary Screening Levels[4] (ug/L)
Tetrachloroethene	8260C	0.2	8.85	Surface Water, Human Health, Organisms only, National Toxics Rule	8.85
Trichloroethene	8260C	0.2	7	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	7
1,1-Dichloroethene	8260C	0.2	3.2	Surface Water, Human Health, Organisms only, National Toxics Rule	3.2
cis-1,2-Dichloroethene	8260C	0.2	NV	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	NV
trans-1,2-Dichloroethene	8260C	0.2	4,000	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	4,000
Vinyl Chloride	8260C	0.02	1.6	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	1.6
Benzo(a)anthracene	8270D-SIM	0.01	0.0013	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.01
Benzo(a)pyrene	8270D-SIM	0.01	0.00013	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.01
Benzo(b)fluoranthene	8270D-SIM	0.01	0.0013	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.01
Benzo(k)fluoranthene	8270D-SIM	0.01	0.013	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.01
Chrysene	8270D-SIM	0.01	0.031	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.0310
Dibenz(a,h)anthracene	8270D-SIM	0.01	0.00013	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.01
Indeno(1,2,3-c,d)pyrene	8270D-SIM	0.01	0.0013	Surface Water, Human Health, Organisms only, NRWQC June 2015 Updates	0.01
BaP-TTEC	NA	NA	0.00013	see note 7	0.01
Diesel	NWTPH-Dx^	100	NV	see note 5	100
Motor Oil	NWTPH-Dx^	200	NV	see note 5	200
Lead	200.8	0.1	8.1	Surface Water Aquatic Life -Marine - Chronic, SWQS:RCW 90-48; Ch. 173-201A-240 WAC 173-340-730(2)(b)(i)(A) [6]	8.1
Arsenic	200.8	0.2-0.5	5.0	State-wide natural background concentration per MTCA Method A Groundwater (Table 720-1 in WAC 173-340).	5.0

1. Screening levels are the most stringent of non-potable groundwater or surface water levels relevant to the Site as described in Department of Ecology's opinion letter regarding the proposed independent cleanup (Ecology, 2011)

2. Numeric Criteria from Department of Ecology CLARC database for non-potable groundwater and surface water (accessed 9/29/15), updated per National Recommended Water Quality Criteria 6/2015 Update.

3. Aquatic Life and Human Health criteria listed are based on dissolved concentrations.

4. Preliminary Screening Levels are the higher of PQL and the Applicable Screening Levels.

5. Surface water cleanup levels have not been established for these contaminants. Per Department of Ecology opinion letter regarding the proposed independent cleanup (Ecology, 2011), cleanup levels can be set at natural background or the PQL, which is lower than the MTCA Method A groundwater criteria for these constituents (500 ug/L). Accordingly, the proposed preliminary screening level is set to the PQL.

6. Marine water critieria are applicable in the Lower Duwamish Waterway (LDW) at the Site as described in the LDW Record of Decision (EPA, 2014).

7. BaP-TTEC (benzo(a)pyrene toxicity equivalent concentration) for a mixture of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) screening level is the same as the benzo(a)pyrene screening level as described in Ecology Toxicity Equivalency Factors (TEF) implementation guidance (Pub. No 15-09-049, April 2015), and so is the higher of the PQL or Applicable Screening Levels for BaP.

^ with silica gel cleanup

ug/L = micrograms per Liter

NRWQC = National Recommended Water Quality Criteria

MTCA = Model Toxics Control Act

PQL = Practical Quantitation Limit from Analytical Reources, Inc.

NV = no value

NA = not applicable

Table 3 - Analytical Results, South Park Water Quality Facility 2015 Q1

CONSTITUENT	UNITS	CAS ID	COPC	SLs*	MW-1	MW-2	MW-3	River
Field Parameters								
Depth to Water	feet				5.21	4.7	6.27	
Oxidation-Reduction Potential	mV				115	94	-46.	90
pH, Field	std. units				6.09	6.87	6.27	6.76
Specific Conductance, Field	umhos/cm				5790	5240	551	6470
Temperature	Degrees C				11.6	13.4	13.6	12.6
Turbidity	NTU				4.4	10.5	33.9	5.26
Metals								
Arsenic, Dissolved	ug/L	7440382	X	5	3.0	3.1	1.6	
Metals, Total								
Lead, Total	ug/L	7439921	X	8.1	0.1	3.3	0.4	
MNA								
Alkalinity as CaCO3, Total	mg/L CaCO3	471341			55	123		
Carbon, Total Organic	mg/L	7440440			2.85	3.44	11.1	
Ethane	ug/L	74840			1.2U	1.2U	1.2U	
Ethene	ug/L	74851			1.1U	1.1U	1.1U	
Ferrous Iron	ug/L	15438310			40U	218		
Methane	ug/L	74828			0.7U	0.7U	750	
Nitrate as N	mg/L as N	17778880			0.382	0.01U	0.01U	
Nitrate+Nitrite as N	mg/L as N	17778880			0.382	0.01U	0.01U	
Nitrite as N	mg/L as N	17778880			0.01U	0.01U	0.01U	
Sulfate	mg/L	14808798			285	254	57.8	
Sulfide	mg/L	18496258			0.05U	0.05U	0.05U	
PAHs								
1-Methylnaphthalene	ug/L	90120			0.01U	0.011U	0.024	
2-Methylnaphthalene	ug/L	91576			0.01U	0.011U	0.014	
Acenaphthene	ug/L	83329		90	0.01U	0.037	0.069	

**Screening Levels (SLs) are the higher of the laboratory Practical Quantitation Limit (PQL) and the minimum of Department of Ecology CLARC database for non-potable groundwater and surface water (accessed 9/29/15), updated per National Recommended Water Quality Criteria 6/2015 Update. Marine criteria are applicable at this Site consistent with Lower Duwamish Superfund Site Record of Decision (EPA, 2014). Bold value indicates result is >= SL.*

BaP-TTEC is the Benzo(a)Pyrene (BaP) Total Toxicity Equivalent Concentration for mixtures of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) using BaP as the reference chemical. Non-detect values summed at half the reporting limit (ND-Half) and as zeros (ND-Zero).

COPC = Contaminant of Potential Concern

#U - compound not detected, # is detection limit, B or b - compound detected in blank,J or j - analyte detected between detection limit and reporting limit (limit of quantitation), H- holding time exceeded, r = results rejected, ^- instrument control limit exceeded, = RPD, LCS or LCSD exceeds the control limit, E - Estimated concentration calculated for an analyte response above the valid instrument calibration range, M - Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters, 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). T - Sum of constituents.*

Table 3 - Analytical Results, South Park Water Quality Facility 2015 Q1

CONSTITUENT	UNITS	CAS ID	COPC	SLs*	MW-1	MW-2	MW-3	River
Acenaphthylene	ug/L	208968			0.01U	0.011U	0.012U	
Anthracene	ug/L	120127		400	0.01U	0.012	0.014	
Benzo(g,h,i)perylene	ug/L	191242			0.01U	0.03	0.012U	
Benzo[a]anthracene	ug/L	56553	X	0.01	0.01U	**0.025**	0.012U	
Benzo[a]pyrene	ug/L	50328	X	0.01	0.01U	**0.043**	0.012U	
Chrysene	ug/L	218019	X	0.031	0.01U	**0.063**	0.012U	
Dibenzo(a,h)anthracene	ug/L	53703	X	0.01	0.01U	0.011U	0.012U	
Dibenzofuran	ug/L	132649			0.01U	0.012	0.03	
Fluoranthene	ug/L	206440		20	0.01U	0.058	0.035	
Fluorene	ug/L	86737		70	0.01U	0.011U	0.061	
Indeno[1,2,3-cd]pyrene	ug/L	193395	X	0.01	0.01U	**0.022**	0.012U	
Naphthalene	ug/L	91203			0.01U	0.026	0.049	
Phenanthrene	ug/L	85018			0.01U	0.034	0.13	
Pyrene	ug/L	129000		30	0.01U	0.059	0.021	
Total Benzofluoranthenes	ug/L				0.02U	0.088Q	0.024U	
PAHs BaP-TEQ								
BaP-TTEC_ND-Half	ug/L			0.01	0.0066UT	**0.049T**	0.0079UT	
BaP-TTEC_ND-zero	ug/L			0.01	0.UT	**0.048T**	0.UT	
TPH								
Diesel Range Hydrocarbons	ug/L		X	100	100U	100U	100U	
Motor Oil	ug/L		X	200	200U	200U	200U	
VOC								
1,1,1,2-Tetrachloroethane	ug/L	630206			0.2U	0.2U	0.2U	
1,1,1-Trichloroethane (TCA)	ug/L	71556		200000	0.2U	0.2U	0.2U	
1,1,2,2-Tetrachloroethane	ug/L	79345		3	0.2U	0.2U	0.2U	
1,1,2-Trichloroethane	ug/L	79005		8.9	0.2U	0.2U	0.2U	
1,1,2-Trichlorotrifluoroethane	ug/L	76131			0.2U	2.9	0.2U	
1,1-Dichloroethane	ug/L	75343			0.2U	0.2U	0.2U	

**Screening Levels (SLs) are the higher of the laboratory Practical Quantitation Limit (PQL) and the minimum of Department of Ecology CLARC database for non-potable groundwater and surface water (accessed 9/29/15), updated per National Recommended Water Quality Criteria 6/2015 Update. Marine criteria are applicable at this Site consistent with Lower Duwamish Superfund Site Record of Decision (EPA, 2014). Bold value indicates result is >= SL.*

BaP-TTEC is the Benzo(a)Pyrene (BaP) Total Toxicity Equivalent Concentration for mixtures of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) using BaP as the reference chemical. Non-detect values summed at half the reporting limit (ND-Half) and as zeros (ND-Zero).

COPC = Contaminant of Potential Concern

#U - compound not detected, # is detection limit, B or b - compound detected in blank,J or j - analyte detected between detection limit and reporting limit (limit of quantitation), H- holding time exceeded, r = results rejected, ^- instrument control limit exceeded, = RPD, LCS or LCSD exceeds the control limit, E - Estimated concentration calculated for an analyte response above the valid instrument calibration range, M - Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters, 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). T - Sum of constituents.*

Table 3 - Analytical Results, South Park Water Quality Facility 2015 Q1

CONSTITUENT	UNITS	CAS ID	COPC	SLs*	MW-1	MW-2	MW-3	River
1,1-Dichloroethene	ug/L	75354	X	3.2	0.2U	0.35	0.2U	
1,1-Dichloropropene	ug/L	563586			0.2U	0.2U	0.2U	
1,2,3-Trichlorobenzene	ug/L	87616			0.5U	0.5U	0.5U	
1,2,3-Trichloropropane	ug/L	96184			0.5U	0.5U	0.5U	
1,2,4-Trichlorobenzene	ug/L	120821		0.5	0.5U	0.5U	0.5U	
1,2,4-Trimethylbenzene	ug/L	95636			0.2U	0.2U	0.2U	
1,2-Dibromo-3-chloropropane	ug/L	96128			0.5U	0.5U	0.5U	
1,2-Dichlorobenzene	ug/L	95501		3000	0.2U	0.2U	0.2U	
1,2-Dichloroethane (EDC)	ug/L	107062		99	0.2U	0.2U	0.2U	
1,2-Dichloropropane	ug/L	78875		31	0.2U	0.2U	0.2U	
1,3,5-Trimethylbenzene	ug/L	108678			0.2U	0.2U	0.2U	
1,3-Dichlorobenzene	ug/L	541731		10	0.2U	0.2U	0.2U	
1,3-Dichloropropane	ug/L	142289			0.2U	0.2U	0.2U	
1,4-Dichlorobenzene	ug/L	106467		900	0.2U	0.2U	0.2U	
2,2-Dichloropropane	ug/L	594207			0.2U	0.2U	0.2U	
2-Butanone (MEK)	ug/L	78933			5.0U	5.0U	5.0U	
2-Chloroethyl Vinyl Ether	ug/L	110758			1.0U	1.0U	1.0U	
2-Chlorotoluene	ug/L	95498			0.2U	0.2U	0.2U	
2-Hexanone	ug/L	591786			5.0U	5.0U	5.0U	
4-Chlorotoluene	ug/L	106434			0.2U	0.2U	0.2U	
4-Isopropyltoluene	ug/L	99876			0.2U	0.2U	0.2U	
4-Methyl-2-Pentanone (MIBK)	ug/L	108101			5.0U	5.0U	5.0U	
Acetone	ug/L	67641			5.0U	5.0U	5.4Q	
Acrolein	ug/L	107028		400	5.0U	5.0U	5.0U	
Acrylonitrile	ug/L	107131		1	1.0U	1.0U	1.0U	
Benzene	ug/L	71432		16	0.2U	0.2U	0.2U	
Bromobenzene	ug/L	108861			0.2U	0.2U	0.2U	
Bromochloromethane	ug/L	74975			0.2U	0.2U	0.2U	
Bromodichloromethane	ug/L	75274		22	0.2U	0.2U	0.2U	

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Table 3 - Analytical Results, South Park Water Quality Facility 2015 Q1

CONSTITUENT	UNITS	CAS ID	COPC	SLs*	MW-1	MW-2	MW-3	River
Bromoethane	ug/L	74964			0.2U	0.2U	0.2U	
Bromoform	ug/L	75252		120	0.2U	0.2U	0.2U	
Bromomethane	ug/L	74839		4000	1.0U	1.0U	1.0U	
Carbon Disulfide	ug/L	75150			0.2U	0.2U	0.2U	
Carbon Tetrachloride	ug/L	56235		4.4	0.2U	0.2U	0.2U	
Chlorobenzene	ug/L	108907		800	0.2U	0.2U	0.2U	
Chloroethane	ug/L	75003			0.2U	0.2U	0.2U	
Chloroform	ug/L	67663		470	0.2U	0.2U	0.2U	
Chloromethane	ug/L	74873			0.5U	0.5U	0.5U	
cis-1,2-Dichloroethene	ug/L	156592	X		0.99	20	0.52	
cis-1,3-Dichloropropene	ug/L	10061015			0.2U	0.2U	0.2U	
Dibromochloromethane	ug/L	124481		21	0.2U	0.2U	0.2U	
Dibromomethane	ug/L	74953			0.2U	0.2U	0.2U	
Dichloromethane	ug/L	75092		1000	1.0U	1.0U	1.0U	
Ethylbenzene	ug/L	100414		130	0.2U	0.2U	0.2U	
Ethylene Dibromide	ug/L	106934			0.2U	0.2U	0.2U	
Hexachlorobutadiene	ug/L	87683		0.5	0.5U	0.5U	0.5U	
Isopropylbenzene (Cumene)	ug/L	98828			0.2U	0.2U	0.2U	
m+p-Xylene	ug/L	179601231			0.4U	0.4U	0.4U	
Methyl Iodide	ug/L	74884			1.0U	1.0U	1.0U	
Naphthalene-8260	ug/L	91203			0.5U	0.5U	0.5U	
n-Butylbenzene	ug/L	104518			0.2U	0.2U	0.2U	
n-Propylbenzene	ug/L	103651			0.2U	0.2U	0.2U	
o-Xylene	ug/L	95476			0.2U	0.2U	0.2U	
sec-Butylbenzene	ug/L	135988			0.2U	0.2U	0.2U	
Styrene	ug/L	100425			0.2U	0.2U	0.2U	
tert-Butylbenzene	ug/L	98066			0.2U	0.2U	0.2U	
Tetrachloroethene (PCE)	ug/L	127184	X	8.85	5.7	0.83	0.2U	
Toluene	ug/L	108883		520	0.2U	0.2U	0.2U	

**Screening Levels (SLs) are the higher of the laboratory Practical Quantitation Limit (PQL) and the minimum of Department of Ecology CLARC database for non-potable groundwater and surface water (accessed 9/29/15), updated per National Recommended Water Quality Criteria 6/2015 Update. Marine criteria are applicable at this Site consistent with Lower Duwamish Superfund Site Record of Decision (EPA, 2014). Bold value indicates result is >= SL.*

BaP-TTEC is the Benzo(a)Pyrene (BaP) Total Toxicity Equivalent Concentration for mixtures of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) using BaP as the reference chemical. Non-detect values summed at half the reporting limit (ND-Half) and as zeros (ND-Zero).

COPC = Contaminant of Potential Concern

#U - compound not detected, # is detection limit, B or b - compound detected in blank,J or j - analyte detected between detection limit and reporting limit (limit of quantitation), H- holding time exceeded, r = results rejected, ^- instrument control limit exceeded, = RPD, LCS or LCSD exceeds the control limit, E - Estimated concentration calculated for an analyte response above the valid instrument calibration range, M - Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters, 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). T - Sum of constituents.*

Table 3 - Analytical Results, South Park Water Quality Facility 2015 Q1

CONSTITUENT	UNITS	CAS ID	COPC	SLs*	MW-1	MW-2	MW-3	River
trans-1,2-Dichloroethene	ug/L	156605	X	4000	0.2U	0.59	0.2U	
trans-1,3-Dichloropropene	ug/L	10061026			0.2U	0.2U	0.2U	
trans-1,4-Dichloro-2-butene	ug/L	110576			1.0U	1.0U	1.0U	
Trichloroethene (TCE)	ug/L	79016	X	7	0.81	5.3	0.21	
Trichlorofluoromethane (CFC 11)	ug/L	75694			0.2U	0.2U	0.2U	
Vinyl Acetate	ug/L	108054			0.2U	0.2U	0.2U	
Vinyl Chloride	ug/L	75014	X	1.6	0.2U	**2.4**	0.49	
Vinyl Chloride-SIM	ug/L	75014	X	1.6	0.02U	**2.7E**	0.47	

**Screening Levels (SLs) are the higher of the laboratory Practical Quantitation Limit (PQL) and the minimum of Department of Ecology CLARC database for non-potable groundwater and surface water (accessed 9/29/15), updated per National Recommended Water Quality Criteria 6/2015 Update. Marine criteria are applicable at this Site consistent with Lower Duwamish Superfund Site Record of Decision (EPA, 2014). Bold value indicates result is >= SL.*

BaP-TTEC is the Benzo(a)Pyrene (BaP) Total Toxicity Equivalent Concentration for mixtures of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) using BaP as the reference chemical. Non-detect values summed at half the reporting limit (ND-Half) and as zeros (ND-Zero).

COPC = Contaminant of Potential Concern

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K:\JANET\JK0707SouthParkRiverside\GIS\mxds\MW_Results_2015Q1.mxd 8/21/2015

Monitoring Well Locations

Other Monitoring Well

Facility Parcel

Notes:
1) Samples Collected May 1, 2015
2) Water-Level snapshot collected between 5:25 - 5:30 am during falling tide
3) Water-Level elevations in feet NAVD88

2013 Aerial Photo from King County

Figure 1

Groundwater Elevations, Q1 2015

Seattle Public Utilities
Seattle, WA

PgG

GROUNDWATER SAMPLING FIELD DATA SHEET

Well #: MW-1

Sampling Event: ~~April~~ MAY 2015

Sample #: MW-1

Project Number:	JK0707	Date:	5/1/15
Project Name:	SPU Riverside	Location:	SPU Riverside
Project Address:	7th Ave S & Riverside Dr	Sampled By:	JP
Client Name:	SPU	Purged By:	JP
Laboratory:	ARI	Date Sent to Lab:	5/1/15
Chain-of-Custody (yes/no):	yes	Field CC Sample Number:	—
Shipment Method:	Hand delivered	Sample Split:	—

Depth of Well (feet):	10.30'	Purge Volume Measurement Method:	Cal Bucket
Depth to Water (feet):	5.21 @ 5:30 falling tide	Purge Date/Time:	5/1/15 6:12
WL Measuring Point:	TOC N. SIDE	Purging Equipment:	Geopump
Water Level Probe Used:	WATERLINE	Sampling Equipment:	Dedicated Tubing

Casing Volume Constants (CVC): 2-inch = **0.16** gpf ; 4-inch = **0.656** gpf ; 6-inch = **1.47** gpf CVC=(π r² h) (7.48 gal/ft³)

Purge Volume = ft of water _____ x CVC _____ x Casing Volumes _____ = _____ gallons

Field Parameters

TIME (2400 hr)	CUMULATIVE VOLUME (gal)	pH (units)	EC (~~umhos~~ mS/cm 25 c)	Temp. (C)	TURBIDITY (visual/ NTU)	Water Level (feet)	ORP (mV)
6:12	0	—	—	—	—	5.53	—
6:14	1/8	6.10	5.76	11.5	22.4	6.49	+30
6:17	1/2	6.11	5.77	11.5	20.0	6.72	+61
6:22	3/4	6.09	5.79	11.5	18.9	6.87	+72
6:25	1	6.09	5.79	11.6	11.8	6.88	+83
6:28	1 1/4	6.09	5.78	11.6	12.0	6.90	+89
6:31	1 1/2	6.09	5.79	11.6	10.6	6.91	+93
6:34	1 3/4	6.09	5.79	11.6	5.74	6.93	+100
6:39	2	6.09	5.79	11.6	4.18	6.97	+105
6:47	2 1/2	6.09	5.79	11.6	4.40	7.10	+115
Overwater							
7:02	—	6.16	5.47	12.6	5.26	—	+90

Well Integrity/Notes: GOOD Falling tide 4→11 AM ~9FT highest ~4AM

Bottle Inventory Day/Time Sampled: 5/1/15 6:40

Quantity:	Container:	Preserve:	Filter:	Remarks (turbidity, bubbles, etc):
				See attached list
				100% completeness

* no DO recorded

Signature: _____

(1)

GROUNDWATER SAMPLING FIELD DATA SHEET

Well #: MW-2

Sampling Event: ~~April~~ MAY 2015

Sample #: MW-2

Project Number:	JK0707	Date:	5/1/15
Project Name:	SPU Riverside	Location:	SPU RIVERSIDE
Project Address:	7th Ave S & Riverside Dr	Sampled By:	JP
Client Name:	SPU	Purged By:	JP
Laboratory:	ARI	Date Sent to Lab:	5/1/15
Chain-of-Custody (yes/no):	Yes	Field CC Sample Number:	—
Shipment Method:	Hand Delivered	Sample Split:	—

Depth of Well (feet):	10.6'	Purge Volume Measurement Method:	
Depth to Water (feet):	4.70 @ 5:27	Purge Date/Time:	7:29 5/1/15
WL Measuring Point:	TOC N. Side	Purging Equipment:	Geopump
Water Level Probe Used:	Waterline	Sampling Equipment:	Dedicated tubing

Casing Volume Constants (CVC): 2-inch = **0.16** gpf ; 4-inch = **0.656** gpf ; 6-inch = **1.47** gpf CVC=($\pi r^2 h$) (7.48 gal/ft³)

Purge Volume = ft of water _____ x CVC _____ x Casing Volumes _____ = _____ gallons

Field Parameters

TIME (2400 hr)	CUMULATIVE VOLUME (gal)	pH (units)	~~µmhos~~ mS EC (~~µmhos~~/cm 25 c)	Temp. (C)	TURBIDITY (visual/ NTU)	Water Level (feet)	ORP (mV)	
7:29	0	—	—	—	—	6.09	—	
7:32	1/4	6.83	7.25	13.1	26.0	7.57	+103	382
7:35	1/2	6.84	7.21	13.2	34.7	8.18	+105	
7:38	3/4	6.80	7.20	13.3	49.7	8.50	+103	
7:41	1	6.80	7.20	13.3	40.2	8.76	+102	
7:45	1 1/4	6.80	7.07 ↓	13.2	16.6	8.92	+103	
7:49	1 1/2	6.80	6.82	13.2	21.7	9.02	+103	
7:53	1 3/4	6.81	6.55 ↓	13.2	12.1	9.03	+103	
7:56	2	6.82	6.24	13.2	13.1	9.14	+102	
8:00	2 1/4	6.84	5.92	13.2	9.76	9.16	+101	
8:05	2 1/2	6.85	5.72	13.3	9.87	9.27	+99	
8:10	2 3/4	6.86	5.37	13.4	9.45	9.34	+94	
8:13	3	6.87	5.24	13.4	10.5	9.36	+94	
8:40	~~SAMPLING~~	SAMPLING	MW-51	—	80	10.10 / 10.24	pumping to near dry	~150

Well Integrity/Notes:

GOOD Falling tide ~ 4AM → 11AM ~ 9 ft

Bottle Inventory

Day/Time Sampled: 5/1/15 8:20

Quantity:	Container:	Preserve:	Filter:	Remarks (turbidity, bubbles, etc):
				See attached list - 100% completness
				collect field Duplicate MW-51 @ 840
				(v. little w.c. DTW 10.20 @ ↓ << 300 ml to maintain flow)

* no DO recorded

Signature: _____ 8:40

Page 1 of 1

8:40 DI water turb = 0.02 filtered = 0.36, 0.92 0.42 0.65

(2)

GROUNDWATER SAMPLING FIELD DATA SHEET

Well #: MW-3

Sampling Event: ~~April~~ MAY 2015

Sample #: MW-3

Project Number:	JK0707	Date:	5/1/15
Project Name:	SPU Riverside	Location:	SPU RIVERSIDE
Project Address:	7th Ave S & Riverside Dr	Sampled By:	JP
Client Name:	SPU	Purged By:	JP
Laboratory:	ARI	Date Sent to Lab:	5/1/15
Chain-of-Custody (yes/no):	Yes	Field CC Sample Number:	—
Shipment Method:	Hand Delivered	Sample Split:	

Depth of Well (feet):	11.23'	Purge Volume Measurement Method:	CRL Bucket
Depth to Water (feet):	6.27ft @ 5:25 falling tide	Purge Date/Time:	5/1/15 5:38
WL Measuring Point:	toc N Side	Purging Equipment:	Geopump
Water Level Probe Used:	Waterline	Sampling Equipment:	Ded. tubing

Casing Volume Constants (CVC): 2-inch = **0.16** gpf ; 4-inch = **0.656** gpf ; 6-inch = **1.47** gpf CVC=($\pi r^2 h$) (7.48 gal/ft³)

Purge Volume = ft of water _____ x CVC _____ x Casing Volumes _____ = _____ gallons

Field Parameters

TIME (2400 hr)	CUMULATIVE VOLUME (gal)	pH (units)	EC (umhos/cm 25 c)	Temp. (C)	TURBIDITY (visual/ NTU)	Water Level (feet)	ORP (mV)	
5:38	0				v.sl. hue brown c	6.01		
5:42	1/4	6.06	487	13.4	32.5	8.21	+26	300 pre-purge
5:45	1/2	6.09	485	13.3	30.4	8.99	+25	250
5:49	3/4	6.10	486	13.3	17.19	9.40	+2 ↓	↓
5:55	1	6.29	587	13.7	22.7	10.36	-29	175
5:58	1 1/8	6.27	551	13.6	33.9	11.01	-46	↓ 125
	1 1/4					purged	dry	
	1 1/2	let recover + sample						
916						7.47		
925						7.55		
938	immediately bfore ~~filt~~ T. metals				24	9.95		
945		after D. metals			30	DRY		
957		let recover 12min = 250 ml TOC						
10-11 AM		let recover + purge etc. to fill Sulfide, Fe2, 4 NO3 M2 San bottles						

*1

Well Integrity/Notes: Good, falling tide ~ 4AM → 11AM ~ 9ft

Bottle Inventory

Day/Time Sampled: 5/1/15 925

Quantity:	Container:	Preserve:	Filter:	Remarks (turbidity, bubbles, etc):
				See attached list
*1	VOAs, Mee, 1 LL PAH, 1 Dy, Metals			(COCs collected in 1st purge)
				MNA parameters + ~~2nd LL PAH + Dy~~ no 2nd
				no ALK ☞ collected or 2nd LL PAH + Dy

* No DO recorded

Signature: _____

(3)

Bottle Request

Analytical Resources, Inc.

Needs By Date: 4/2/2015

Project Name:	*South Riverside Drive*
Project Number:	Standard TAT
Client:	PGG
Contact:	Jeff Parker
ARI PM:	Kelly Bottem
Date of Request:	4/1/2015
Request Taken By:	Kelly Bottem
Estimated Date Samples Will Return:	4/1/2014

	Time & Date of Client Pick Up:
X	Time/Date Courier Deliver by: 4/2/2015
	Time/Date Commercial Shipper By:
Completed By: RH	
Date: 4/2/15	# of Coolers Sent: 3

X	Sending in Boxes is OK	X	Include COCs (1 per 10 Samples)	X	Put Labels on Bottles
X	Coolers are Needed		Blue Ice	X	Include Loose Labels
# of Coolers:	as needed	X	Extra Bubble Wrap		Individually Wrap Bottles

# of Trip Blanks: 1 set with HCL (2 per Set)

Total Bottles for All Analyses: 103

# of Samples	# for QC	# for Breakage	Analysis Requested	Sample Matrix	Bottle Size	Bottles Per Sample	Total Bottles	Preservation Lot Number	Bottle Lot Number
4	2	1	VOCs	Water	40 mL Vial	3	21	HCL	5020140
4	2	1	SIM VOCs	Water	40 mL Vial	2	14	NO PRES	4337140
4	2		Dx (cleaned)	Water	500 mL amber	2	12		0006101 5
4	2	1	LL PAHs	Water	500 mL amber	2	14		↓
4			Total metals Lead only	Water	500mL HDPE	1	4	HN03	0006121 0
4			Dissolved metals Arsenic only, Client to filter	Water	500mL HDPE	1	4	HN03	↓
4	2	1	MEE	Water	40 mL Vial	2	14	NO PRES	4337140
4			Sulfide	Water	500 mL HDPE (No headspace)	1	4	Zinc acetate, NaOH	0006121 0
4			Fe2	Water	250 mL amber	1	4	2 mL of HCL per 100 mL of sample	0006101 5
4			TOC	Water	250 mL amber	1	4	H2so4	0006102 5
4			No3, No2, SO4	Water	Small OJ	1	4		500-14-4
4			Alkalinity	Water	Large OJ	1	4		1000-14-9

Comments:

Shipping Address: Jeff Parker
PGG Seattle

Phone:

10

4

PUMPING TEST DATA REPORT

Date 5/1/15 Sheet _____ of _____

Project Spa Ranch

Job. No. Jk207

Well Identification MW-1

Pump Co. / Pump Type _____

Obsever _____ Static Water Level _____ Computer Data? _____

(Date) Time	Elapsed Time (MINUTES)			WATER LEVEL MEASURMENT (FEET)		PUMPING RATE		REMARKS
AM	t	t'	t/t'	Reading	Drawdown	Q	Reading	
5/1/15 5:25	MW-3			6.27				high tide ~4 AM & falling to 11 AM -9 ft
5:27	MW-2			4.70				
5:30	MW-1			5.21				

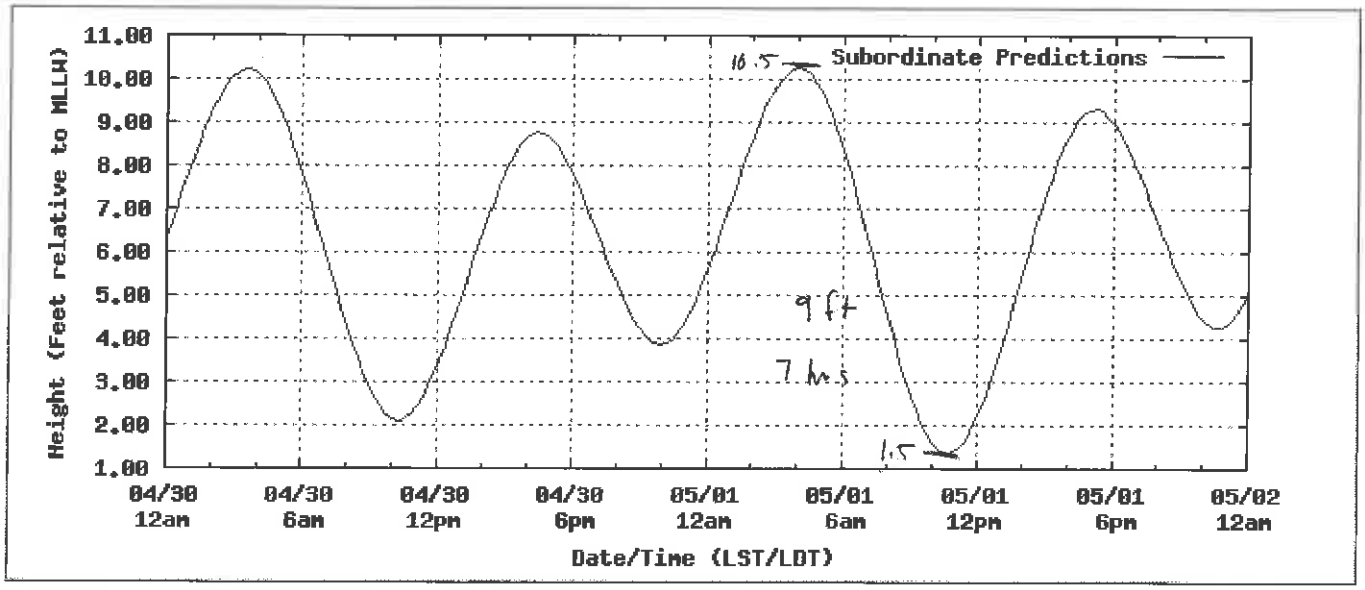
5

Help Print

NOAA/NOS/CO-OPS
Daily Tide Prediction for Duwamish Waterway, Eighth Ave. South,WA

StationId 9447029
From: 2015/04/30 - 2015/05/01
Units: Feet Time Zone: LST/LDT Datum: MLLW

Referenced to Station: SEATTLE (Madison St.), Elliott Bay (9447130)
Time offset in mins (high:10 low: 11) Height offset in feet (high:* 0.97 low: *0.95)



Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

Note: For predictions of Subordinate stations, the solid blue line depicts a curve fit between the high and low values and approximates the segments between.

~ 1 ft / hr 0.2 ft / 10 min

High/Low Tide Predictions

Station Name: Duwamish Waterway, Eighth Ave. South,WA
Source: NOAA/NOS /CO-OPS
Parameter: Daily
Prediction Type: Subordinate
Product: Tide Prediction
Datum: MLLW
Start Date & Time: 2015/04/30 12:00AM
Height Units: Feet
End Date & Time: 2015/05/01 11:59PM
Time Zone: LST/LDT

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2015/04/30	Thu	03:32 AM	10.22 H	10:15 AM	2.1 L	04:26 PM	8.76 H	09:58 PM	3.87 L
2015/05/01	Fri	03:59 AM	10.25 H	10:41 AM	1.35 L	05:09 PM	9.3 H	10:39 PM	4.26 L

6

Chain of Custody Record & Laboratory Analysis Request

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

(7)

ARI Assigned Number:	Turn-around Requested: STD	Page: 1 of 1	
ARI Client Company: PGG	Phone: 206 329 0141	Date: 5/1/15	Ice Present? Y
Client Contact: Jeff Parker		No. of Coolers: 3	Cooler Temps: [illegible] C: 2.6
Client Project Name: SOUTH RIVERSIDE DR. (SPU RIVERSIDE)			
Client Project #: JK0707	Samplers: SP		

Sample ID	Date	Time	Matrix	No. Containers	VOCs + SIM VOCs	Dx Cleaned	LL PAHs	Tot Metal (Pb)	Diss Metal(Pb)	MEE	SULFIDE	FE2	TOC	NO3 NO2 SO4	ALK	Notes/Comments: Diss. Metals field F.F. @ 0.45µm
MW-1	5/1/15	810	W	28	X	X	X	X	X	X	X	X	X	X	X	includes 10 QC bottles
MW-2	5/1/15	820	W	18	X	X	X	X	X	X	X	X	X	X	X	
MW-51	5/1/15	840	W	18	X	X	X	X	X	X	X	X	X	X	X	
MW-3	5/1/15	925	W	14	X	X	X	X	X	X	X	NO	X	X	NO	only 1 bottle for Dx + LL PAH each; no Alkalinity no Fe2

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
no sample specific QC requested. Batch QC ok	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: JEFF PARKER	Printed Name: [illegible]	Printed Name:	Printed Name:
	Company: PGG	Company: ARI	Company:	Company:
	Date & Time: 1110	Date & Time: 5-1-15 1110	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: 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

May 14, 2015

Jeff Parker
Pacific Groundwater Group
2377 Eastlake Avenue E, Suite 200
Seattle, WA 98102

Client Project: South Riverside Drive
ARI Job ID: AFG9

Dear Mr. Parker:

Please find enclosed the original Chain of Custody record (COC) and the final results for samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted four water samples on May 1, 2015. There were no discrepancies between the paperwork and the sample containers' labels.

The samples were analyzed for total and dissolved metals, VOCs, NWTPH-Dx, SIM VOCs, PAHs, MEE and general chemistry parameters referencing EPA and standard methods listed on the reports. Quality control analysis results are included for your review.

The total metals matrix spike is out of control low for lead in association with sample MW-1.

The PAHs CCAL is out of control high for benzo (j) fluoranthene and the CCAL surrogate d14-Dibenzo (a,h) anthracene. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The VOCs CCAL is out of control low for all associated FORM III "Q" flagged analytes with the exception of acetone which is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The VOCs LCS and/or LCSD are out of control high for acetone and out of control low for 1,2,4-Trichlorobenzene, 1,2,3- Trichlorobenzene, 2-chloroethylvinylether and Hexachlorobutadiene.

No other analytical complications were noted for the analyses. Quality control analysis results are included for your review.

A copy of this report and all associated raw data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

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: AEG9	Turn-around Requested: STD	Page: 1 of 1	
ARI Client Company: PGG	Phone: 206 329 0141	Date: 5/1/15	Ice Present? Y
Client Contact: Jeff Parker		No. of Coolers: 3	Cooler Temps: 4.8, 5.3, 2.6
Client Project Name: SOUTH RIVERSIDE DR (SPU RIVERSIDE)			
Client Project #: JK0707	Samplers: SP		

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: VOCs + SM VOCs	Da Cleaned LL PAHs	Tot. Metal (Pb) Diss. Metal (As)	MEE	SULFIDE	FE2 TOC	NO3, NO2, SO4	ALK	Notes/Comments
MW-1	5/1/15	840	AQ	28	X	X X	X X	X	X	X X	X	X	includes 10 QC Bottles
MW-2	5/1/15	820		18	X	X X	X X	X	X	X X	X	X	
MW-51	5/1/15	840		18	X	X X	X X	X	X	X X	X	X	
MW-3	5/1/15	925		14	X	X X	X X	X	X	NO X	X	NO	only 1 bottle for Da + LL PAH each + NO Alkalinity NO Fe2

Notes/Comments: Diss. Metals were F.F. @ 0.45 µm

Comments/Special Instructions: no sample specific QC requested. Batch QC ok

	Relinquished by (Signature)	Printed Name	Company	Date & Time
		JEFF PARKER	PGG	11 10
Received by (Signature)		Taylor Streeter	ART	5-1-15 1110
Relinquished by (Signature)				
Received by (Signature)				

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: AFG9
Client: Pacific Groundwater Group
Project Event: JK0707
Project Name: South Riverside DR (SPU Riverside)

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-1	AFG9A	15-8557	Water	05/01/15 06:40	05/01/15 11:10
2.	MW-2	AFG9B	15-8558	Water	05/01/15 08:20	05/01/15 11:10
3.	MW-51	AFG9C	15-8559	Water	05/01/15 08:40	05/01/15 11:10
4.	MW-3	AFG9D	15-8560	Water	05/01/15 09:25	05/01/15 11:10
5.	MW-1	AFG9E	15-8561	Water	05/01/15 06:40	05/01/15 11:10
6.	MW-2	AFG9F	15-8562	Water	05/01/15 08:20	05/01/15 11:10
7.	MW-51	AFG9G	15-8563	Water	05/01/15 08:40	05/01/15 11:10
8.	MW-3	AFG9H	15-8564	Water	05/01/15 09:25	05/01/15 11:10
9.	Trip Blank	AFG9I	15-8565	Water	05/01/15	05/01/15 11:10

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client PGG
COC No(s) (NA)
Assigned ARI Job No. AFG9

Project Name: South Riverside DR (GPU Riverside)
Delivered by Fed-Ex UPS Courier Hand Delivered Other:
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) 2.6 5.3 4.8
Time 1118
If cooler temperature is out of compliance fill out form 00070F
Temp Gun ID#: 908 17952
Cooler Accepted by TR Date 5-1-15 Time 1110

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 4/2/15
Was Sample Split by ARI (NA) YES Date/Time Equipment Split by

Samples Logged by CA Date 5-1-15 Time 1219

*** 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:

MW-1 1 of 13 vials has sm Air bubble -2mm
MW-2 1 of 7 vials has sm Air bubbles -2mm
MW-51 2 of 7 vials has sm Air bubbles -2mm
1 of 2 Trip blanks has pea bubble 2-4mm

By CA Date 5-1-15

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)

PRESERVATION VERIFICATION 05/01/15
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **AFG9**

PC: Kelly
VTSR: 05/01/15

Inquiry Number: NONE
Analysis Requested: 05/01/15
Contact: Van Hulle, Jill
Client: Pacific Groundwater Group
Logged by: CA
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

Project #: JK0707
Project: South Riverside DR (SPU Riverside)
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
15-8557 **AFG9A**	MW-1						TOT pass					pass	Fail					S2	>9	A17	3 mL	5/1/15 EC
15-8558 **AFG9B**	MW-2						TOT pass					pass	Fail						>9	B12	2	
15-8559 **AFG9C**	MW-51						TOT pass					pass	Fail						>9	C12	2	
15-8560 **AFG9D**	MW-3						TOT pass					pass	Fail						>9	D10	2	
15-8561 **AFG9E**	MW-1						DIS pass									Y						
15-8562 **AFG9F**	MW-2						DIS pass									Y						
15-8563 **AFG9G**	MW-51						DIS pass									Y						
15-8564 **AFG9H**	MW-3						DIS pass									Y						

Checked By CA Date 5-1-15

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-1**
Page 1 of 2 **SAMPLE**

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT3/MMH
Date Analyzed: 05/04/15 13:35

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	**cis-1,2-Dichloroethene**	**0.20**	**0.99**	
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	**Trichloroethene**	**0.20**	**0.81**	
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	**Tetrachloroethene**	**0.20**	**5.7**	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-1**
 SAMPLE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Date Analyzed: 05/04/15 13:35

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	103%
Bromofluorobenzene	94.1%
d4-1,2-Dichlorobenzene	99.7%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-2**
Page 1 of 2 **SAMPLE**

Lab Sample ID: AFG9B
LIMS ID: 15-8558
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT3/MMH
Date Analyzed: 05/04/15 14:01

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	**Vinyl Chloride**	**0.20**	**2.4**	
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	**1,1-Dichloroethene**	**0.20**	**0.35**	
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	**trans-1,2-Dichloroethene**	**0.20**	**0.59**	
156-59-2	**cis-1,2-Dichloroethene**	**0.20**	**20**	
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	**Trichloroethene**	**0.20**	**5.3**	
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	**Tetrachloroethene**	**0.20**	**0.83**	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**0.20**	**2.9**	
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-2**
 SAMPLE

Lab Sample ID: AFG9B
LIMS ID: 15-8558
Matrix: Water
Date Analyzed: 05/04/15 14:01

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	98.2%
Bromofluorobenzene	98.8%
d4-1,2-Dichlorobenzene	99.8%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-51**
 SAMPLE

Lab Sample ID: AFG9C
LIMS ID: 15-8559
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT3/MMH
Date Analyzed: 05/04/15 14:28

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	**Vinyl Chloride**	**0.20**	**3.3**	
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	**1,1-Dichloroethene**	**0.20**	**0.41**	
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	**trans-1,2-Dichloroethene**	**0.20**	**0.69**	
156-59-2	**cis-1,2-Dichloroethene**	**0.20**	**28**	
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	**Trichloroethene**	**0.20**	**6.5**	
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	**Tetrachloroethene**	**0.20**	**1.2**	
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**0.20**	**3.3**	
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-51**
 SAMPLE

Lab Sample ID: AFG9C
LIMS ID: 15-8559
Matrix: Water
Date Analyzed: 05/04/15 14:28

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	102%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	98.8%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3**
Page 1 of 2 **SAMPLE**

Lab Sample ID: AFG9D
LIMS ID: 15-8560
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT3/MMH
Date Analyzed: 05/04/15 14:54

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	**Vinyl Chloride**	**0.20**	**0.49**	
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	**Acetone**	**5.0**	**5.4**	**Q**
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	**cis-1,2-Dichloroethene**	**0.20**	**0.52**	
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	**Trichloroethene**	**0.20**	**0.21**	
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3**
Page 2 of 2 **SAMPLE**

Lab Sample ID: AFG9D
LIMS ID: 15-8560
Matrix: Water
Date Analyzed: 05/04/15 14:54

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	102%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blank**
Page 1 of 2 **SAMPLE**

Lab Sample ID: AFG9I
LIMS ID: 15-8565
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT3/MMH
Date Analyzed: 05/04/15 09:35

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blank**
Page 2 of 2 **SAMPLE**

Lab Sample ID: AFG9I
LIMS ID: 15-8565
Matrix: Water
Date Analyzed: 05/04/15 09:35

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	104%
Bromofluorobenzene	92.9%
d4-1,2-Dichlorobenzene	96.7%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-050415A**
 METHOD BLANK

Lab Sample ID: MB-050415A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/MMH
Date Analyzed: 05/04/15 08:40

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-050415A**
 METHOD BLANK

Lab Sample ID: MB-050415A
LIMS ID: 15-8557
Matrix: Water
Date Analyzed: 05/04/15 08:40

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	1,2-Dibromoethane	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	101%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	99.7%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-050415A	Method Blank	10	104%	101%	102%	99.7%	0
LCS-050415A	Lab Control	10	104%	103%	98.3%	94.8%	0
LCSD-050415A	Lab Control Dup	10	104%	102%	101%	96.4%	0
AFG9A	MW-1	10	108%	103%	94.1%	99.7%	0
AFG9B	MW-2	10	107%	98.2%	98.8%	99.8%	0
AFG9C	MW-51	10	108%	102%	97.2%	98.8%	0
AFG9D	MW-3	10	109%	102%	100%	102%	0
AFG9I	Trip Blank	10	102%	104%	92.9%	96.7%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 15-8557 to 15-8565

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-050415A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-050415A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/05/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/MMH
LCSD: NT3/MMH
Date Analyzed LCS: 05/04/15 07:47
LCSD: 05/04/15 08:14

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS		Spike Added-LCS	LCS Recovery	LCSD		Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.36		10.0	93.6%	10.1		10.0	101%	7.6%
Bromomethane	8.95		10.0	89.5%	9.94		10.0	99.4%	10.5%
Vinyl Chloride	8.79		10.0	87.9%	9.80		10.0	98.0%	10.9%
Chloroethane	8.78		10.0	87.8%	9.52		10.0	95.2%	8.1%
Methylene Chloride	8.91		10.0	89.1%	9.99		10.0	99.9%	11.4%
Acetone	71.5	Q	50.0	143%	72.2	Q	50.0	144%	1.0%
Carbon Disulfide	8.80		10.0	88.0%	9.92		10.0	99.2%	12.0%
1,1-Dichloroethene	8.08		10.0	80.8%	8.88		10.0	88.8%	9.4%
1,1-Dichloroethane	9.18		10.0	91.8%	9.97		10.0	99.7%	8.3%
trans-1,2-Dichloroethene	8.96		10.0	89.6%	9.79		10.0	97.9%	8.9%
cis-1,2-Dichloroethene	8.82		10.0	88.2%	9.73		10.0	97.3%	9.8%
Chloroform	9.12		10.0	91.2%	10.0		10.0	100%	9.2%
1,2-Dichloroethane	9.37		10.0	93.7%	10.4		10.0	104%	10.4%
2-Butanone	51.0		50.0	102%	58.1		50.0	116%	13.0%
1,1,1-Trichloroethane	9.33		10.0	93.3%	10.3		10.0	103%	9.9%
Carbon Tetrachloride	8.95		10.0	89.5%	10.2		10.0	102%	13.1%
Vinyl Acetate	9.51		10.0	95.1%	10.3		10.0	103%	8.0%
Bromodichloromethane	9.10		10.0	91.0%	9.89		10.0	98.9%	8.3%
1,2-Dichloropropane	8.88		10.0	88.8%	9.46		10.0	94.6%	6.3%
cis-1,3-Dichloropropene	9.25		10.0	92.5%	10.2		10.0	102%	9.8%
Trichloroethene	8.89		10.0	88.9%	9.65		10.0	96.5%	8.2%
Dibromochloromethane	8.93		10.0	89.3%	9.93		10.0	99.3%	10.6%
1,1,2-Trichloroethane	9.18		10.0	91.8%	9.62		10.0	96.2%	4.7%
Benzene	8.92		10.0	89.2%	9.78		10.0	97.8%	9.2%
trans-1,3-Dichloropropene	9.46		10.0	94.6%	10.0		10.0	100%	5.5%
2-Chloroethylvinylether	5.63	Q	10.0	56.3%	6.16	Q	10.0	61.6%	9.0%
Bromoform	9.27		10.0	92.7%	10.4		10.0	104%	11.5%
4-Methyl-2-Pentanone (MIBK)	52.4		50.0	105%	59.4		50.0	119%	12.5%
2-Hexanone	49.2		50.0	98.4%	56.1		50.0	112%	13.1%
Tetrachloroethene	8.51		10.0	85.1%	9.07		10.0	90.7%	6.4%
1,1,2,2-Tetrachloroethane	9.09		10.0	90.9%	10.2		10.0	102%	11.5%
Toluene	9.33		10.0	93.3%	9.75		10.0	97.5%	4.4%
Chlorobenzene	8.76		10.0	87.6%	9.66		10.0	96.6%	9.8%
Ethylbenzene	8.59		10.0	85.9%	9.37		10.0	93.7%	8.7%
Styrene	9.17		10.0	91.7%	10.2		10.0	102%	10.6%
Trichlorofluoromethane	9.16		10.0	91.6%	10.4		10.0	104%	12.7%
1,1,2-Trichloro-1,2,2-trifluoroetha	8.89		10.0	88.9%	9.84		10.0	98.4%	10.1%
m,p-Xylene	17.8		20.0	89.0%	19.2		20.0	96.0%	7.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-050415A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-050415A
LIMS ID: 15-8557
Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	8.45	10.0	84.5%	9.02	10.0	90.2%	6.5%
1,2-Dichlorobenzene	8.22	10.0	82.2%	8.96	10.0	89.6%	8.6%
1,3-Dichlorobenzene	8.38	10.0	83.8%	9.20	10.0	92.0%	9.3%
1,4-Dichlorobenzene	8.37	10.0	83.7%	9.23	10.0	92.3%	9.8%
Acrolein	49.7	50.0	99.4%	56.0	50.0	112%	11.9%
Iodomethane	8.54	10.0	85.4%	9.48	10.0	94.8%	10.4%
Bromoethane	8.62	10.0	86.2%	9.36	10.0	93.6%	8.2%
Acrylonitrile	10.0	10.0	100%	11.4	10.0	114%	13.1%
1,1-Dichloropropene	9.05	10.0	90.5%	9.77	10.0	97.7%	7.7%
Dibromomethane	8.97	10.0	89.7%	9.50	10.0	95.0%	5.7%
1,1,1,2-Tetrachloroethane	8.52	10.0	85.2%	9.63	10.0	96.3%	12.2%
1,2-Dibromo-3-chloropropane	8.84	10.0	88.4%	11.0	10.0	110%	21.8%
1,2,3-Trichloropropane	9.42	10.0	94.2%	10.8	10.0	108%	13.6%
trans-1,4-Dichloro-2-butene	9.95	10.0	99.5%	11.3	10.0	113%	12.7%
1,3,5-Trimethylbenzene	9.03	10.0	90.3%	9.62	10.0	96.2%	6.3%
1,2,4-Trimethylbenzene	8.19	10.0	81.9%	8.95	10.0	89.5%	8.9%
Hexachlorobutadiene	5.65	10.0	56.5%	6.17	10.0	61.7%	8.8%
1,2-Dibromoethane	9.36	10.0	93.6%	9.87	10.0	98.7%	5.3%
Bromochloromethane	9.01	10.0	90.1%	9.86	10.0	98.6%	9.0%
2,2-Dichloropropane	9.74	10.0	97.4%	10.7	10.0	107%	9.4%
1,3-Dichloropropane	9.11	10.0	91.1%	9.83	10.0	98.3%	7.6%
Isopropylbenzene	8.98	10.0	89.8%	9.55	10.0	95.5%	6.2%
n-Propylbenzene	8.76	10.0	87.6%	9.34	10.0	93.4%	6.4%
Bromobenzene	8.87	10.0	88.7%	9.54	10.0	95.4%	7.3%
2-Chlorotoluene	9.03	10.0	90.3%	9.84	10.0	98.4%	8.6%
4-Chlorotoluene	9.06	10.0	90.6%	9.81	10.0	98.1%	7.9%
tert-Butylbenzene	8.67	10.0	86.7%	9.38	10.0	93.8%	7.9%
sec-Butylbenzene	8.17	10.0	81.7%	8.76	10.0	87.6%	7.0%
4-Isopropyltoluene	8.14	10.0	81.4%	8.70	10.0	87.0%	6.7%
n-Butylbenzene	8.12	10.0	81.2%	8.57	10.0	85.7%	5.4%
1,2,4-Trichlorobenzene	6.17	10.0	61.7%	6.52	10.0	65.2%	5.5%
Naphthalene	8.53	10.0	85.3%	10.1	10.0	101%	16.9%
1,2,3-Trichlorobenzene	6.02 Q	10.0	60.2%	6.86 Q	10.0	68.6%	13.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	104%	104%
d8-Toluene	103%	102%
Bromofluorobenzene	98.3%	101%
d4-1,2-Dichlorobenzene	94.8%	96.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-1
SAMPLE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 10:41
Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	103%
d10-2-Methylnaphthalene	88.3%
d14-Dibenzo(a,h)anthracene	108% Q

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-1
MATRIX SPIKE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 11:11
Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	Naphthalene	0.010	---
91-57-6	2-Methylnaphthalene	0.010	---
90-12-0	1-Methylnaphthalene	0.010	---
208-96-8	Acenaphthylene	0.010	---
83-32-9	Acenaphthene	0.010	---
86-73-7	Fluorene	0.010	---
85-01-8	Phenanthrene	0.010	---
120-12-7	Anthracene	0.010	---
206-44-0	Fluoranthene	0.010	---
129-00-0	Pyrene	0.010	---
56-55-3	Benzo(a)anthracene	0.010	---
218-01-9	Chrysene	0.010	---
50-32-8	Benzo(a)pyrene	0.010	---
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	---
53-70-3	Dibenz(a,h)anthracene	0.010	---
191-24-2	Benzo(g,h,i)perylene	0.010	---
132-64-9	Dibenzofuran	0.010	---
TOTBFA	Total Benzofluoranthenes	0.020	---

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	104%
d10-2-Methylnaphthalene	92.3%
d14-Dibenzo(a,h)anthracene	114% Q

AFG9 : 000027

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-1
MATRIX SPIKE DUPLICATE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 11:41
Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	Naphthalene	0.010	---
91-57-6	2-Methylnaphthalene	0.010	---
90-12-0	1-Methylnaphthalene	0.010	---
208-96-8	Acenaphthylene	0.010	---
83-32-9	Acenaphthene	0.010	---
86-73-7	Fluorene	0.010	---
85-01-8	Phenanthrene	0.010	---
120-12-7	Anthracene	0.010	---
206-44-0	Fluoranthene	0.010	---
129-00-0	Pyrene	0.010	---
56-55-3	Benzo(a)anthracene	0.010	---
218-01-9	Chrysene	0.010	---
50-32-8	Benzo(a)pyrene	0.010	---
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	---
53-70-3	Dibenz(a,h)anthracene	0.010	---
191-24-2	Benzo(g,h,i)perylene	0.010	---
132-64-9	Dibenzofuran	0.010	---
TOTBFA	Total Benzofluoranthenes	0.020	---

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	105%
d10-2-Methylnaphthalene	92.0%
d14-Dibenzo(a,h)anthracene	114% Q

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-2
SAMPLE

Lab Sample ID: AFG9B
LIMS ID: 15-8558
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 12:11
Instrument/Analyst: NT11/VTS

Sample Amount: 460 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	**Naphthalene**	**0.011**	**0.026**
91-57-6	2-Methylnaphthalene	0.011	< 0.011 U
90-12-0	1-Methylnaphthalene	0.011	< 0.011 U
208-96-8	Acenaphthylene	0.011	< 0.011 U
83-32-9	**Acenaphthene**	**0.011**	**0.037**
86-73-7	Fluorene	0.011	< 0.011 U
85-01-8	**Phenanthrene**	**0.011**	**0.034**
120-12-7	**Anthracene**	**0.011**	**0.012**
206-44-0	**Fluoranthene**	**0.011**	**0.058**
129-00-0	**Pyrene**	**0.011**	**0.059**
56-55-3	**Benzo(a)anthracene**	**0.011**	**0.025**
218-01-9	**Chrysene**	**0.011**	**0.063**
50-32-8	**Benzo(a)pyrene**	**0.011**	**0.043**
193-39-5	**Indeno(1,2,3-cd)pyrene**	**0.011**	**0.022**
53-70-3	Dibenz(a,h)anthracene	0.011	< 0.011 U
191-24-2	**Benzo(g,h,i)perylene**	**0.011**	**0.030**
132-64-9	**Dibenzofuran**	**0.011**	**0.012**
TOTBFA	**Total Benzofluoranthenes**	**0.022**	**0.088 Q**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	108%
d10-2-Methylnaphthalene	88.3%
d14-Dibenzo(a,h)anthracene	107% Q

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-51
SAMPLE

Lab Sample ID: AFG9C
LIMS ID: 15-8559
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 12:41
Instrument/Analyst: NT11/VTS

Sample Amount: 455 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	**Naphthalene**	**0.011**	**0.057**
91-57-6	2-Methylnaphthalene	0.011	< 0.011 U
90-12-0	**1-Methylnaphthalene**	**0.011**	**0.016**
208-96-8	Acenaphthylene	0.011	< 0.011 U
83-32-9	**Acenaphthene**	**0.011**	**0.076**
86-73-7	**Fluorene**	**0.011**	**0.013**
85-01-8	**Phenanthrene**	**0.011**	**0.014**
120-12-7	Anthracene	0.011	< 0.011 U
206-44-0	**Fluoranthene**	**0.011**	**0.025**
129-00-0	**Pyrene**	**0.011**	**0.026**
56-55-3	Benzo(a)anthracene	0.011	< 0.011 U
218-01-9	**Chrysene**	**0.011**	**0.030**
50-32-8	**Benzo(a)pyrene**	**0.011**	**0.016**
193-39-5	Indeno(1,2,3-cd)pyrene	0.011	< 0.011 U
53-70-3	Dibenz(a,h)anthracene	0.011	< 0.011 U
191-24-2	**Benzo(g,h,i)perylene**	**0.011**	**0.011**
132-64-9	**Dibenzofuran**	**0.011**	**0.019**
TOTBFA	**Total Benzofluoranthenes**	**0.022**	**0.034 Q**

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	107%
d10-2-Methylnaphthalene	87.0%
d14-Dibenzo(a,h)anthracene	111% Q

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C
Page 1 of 1

Sample ID: MW-3
SAMPLE

Lab Sample ID: AFG9D
LIMS ID: 15-8560
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 13:11
Instrument/Analyst: NT11/VTS

Sample Amount: 410 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	**Naphthalene**	**0.012**	**0.049**
91-57-6	**2-Methylnaphthalene**	**0.012**	**0.014**
90-12-0	**1-Methylnaphthalene**	**0.012**	**0.024**
208-96-8	Acenaphthylene	0.012	< 0.012 U
83-32-9	**Acenaphthene**	**0.012**	**0.069**
86-73-7	**Fluorene**	**0.012**	**0.061**
85-01-8	**Phenanthrene**	**0.012**	**0.13**
120-12-7	**Anthracene**	**0.012**	**0.014**
206-44-0	**Fluoranthene**	**0.012**	**0.035**
129-00-0	**Pyrene**	**0.012**	**0.021**
56-55-3	Benzo(a)anthracene	0.012	< 0.012 U
218-01-9	Chrysene	0.012	< 0.012 U
50-32-8	Benzo(a)pyrene	0.012	< 0.012 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.012	< 0.012 U
53-70-3	Dibenz(a,h)anthracene	0.012	< 0.012 U
191-24-2	Benzo(g,h,i)perylene	0.012	< 0.012 U
132-64-9	**Dibenzofuran**	**0.012**	**0.030**
TOTBFA	Total Benzofluoranthenes	0.024	< 0.024 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	90.3%
d10-2-Methylnaphthalene	77.0%
d14-Dibenzo(a,h)anthracene	90.3% Q

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Extraction Method: SW3510C

Sample ID: MB-050415
METHOD BLANK

Lab Sample ID: MB-050415
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: NA
Date Received: NA

Date Extracted: 05/04/15
Date Analyzed: 05/09/15 08:40
Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-Fluoranthene	99.7%
d10-2-Methylnaphthalene	89.7%
d14-Dibenzo(a,h)anthracene	105% Q

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

Client ID	FLN	MNP	DBA	TOT OUT
MB-050415	99.7%	89.7%	105%Q	0
LCS-050415	107%	96.7%	118%Q	0
LCSD-050415	109%	96.3%	110%Q	0
MW-1	103%	88.3%	108%Q	0
MW-1 MS	104%	92.3%	114%Q	0
MW-1 MSD	105%	92.0%	114%Q	0
MW-2	108%	88.3%	107%Q	0
MW-51	107%	87.0%	111%Q	0
MW-3	90.3%	77.0%	90.3%Q	0

	LCS/MB LIMITS	QC LIMITS
(FLN) = d10-Fluoranthene	(61-120)	(57-120)
(MNP) = d10-2-Methylnaphthalene	(52-120)	(42-120)
(DBA) = d14-Dibenzo(a,h)anthracene	(48-120)	(29-120)

Prep Method: SW3510C
Log Number Range: 15-8557 to 15-8560

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

Sample ID: LCS-050415
LAB CONTROL SAMPLE

Lab Sample ID: LCS-050415
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 05/04/15

Date Analyzed LCS: 05/09/15 09:10
LCSD: 05/09/15 09:40
Instrument/Analyst LCS: NT11/VTS
LCSD: NT11/VTS

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.269	0.300	89.7%	0.275	0.300	91.7%	2.2
2-Methylnaphthalene	0.268	0.300	89.3%	0.275	0.300	91.7%	2.6%
1-Methylnaphthalene	0.266	0.300	88.7%	0.274	0.300	91.3%	3.0%
Acenaphthylene	0.272	0.300	90.7%	0.282	0.300	94.0%	3.6%
Acenaphthene	0.270	0.300	90.0%	0.281	0.300	93.7%	4.0%
Fluorene	0.287	0.300	95.7%	0.290	0.300	96.7%	1.0%
Phenanthrene	0.286	0.300	95.3%	0.282	0.300	94.0%	1.4%
Anthracene	0.242	0.300	80.7%	0.266	0.300	88.7%	9.4
Fluoranthene	0.302	0.300	101%	0.309	0.300	103%	2.3%
Pyrene	0.299	0.300	99.7%	0.300	0.300	100%	0.3%
Benzo(a)anthracene	0.290	0.300	96.7%	0.294	0.300	98.0%	1.4%
Chrysene	0.300	0.300	100%	0.308	0.300	103%	2.6%
Benzo(a)pyrene	0.196	0.300	65.3%	0.220	0.300	73.3%	11.5%
Indeno(1,2,3-cd)pyrene	0.307	0.300	102%	0.306	0.300	102%	0.3%
Dibenz(a,h)anthracene	0.318	0.300	106%	0.299	0.300	99.7%	6.2%
Benzo(g,h,i)perylene	0.293	0.300	97.7%	0.295	0.300	98.3%	0.7%
Dibenzofuran	0.268	0.300	89.3%	0.275	0.300	91.7%	2.6%
Total Benzofluoranthenes	0.956 Q	0.900	106%	0.973 Q	0.900	108%	1.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-Fluoranthene	107%	109%
d10-2-Methylnaphthalene	96.7%	96.3%
d14-Dibenzo(a,h)anthracene	118% Q	110% Q

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by Low Level SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MW-1
MATRIX SPIKE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted MS/MSD: 05/04/15

Date Analyzed MS: 05/09/15 11:11
MSD: 05/09/15 11:41
Instrument/Analyst MS: NT11/VTS
MSD: NT11/VTS

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 0.50 mL
MSD: 0.50 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	< 0.0100 U	0.281	0.300	93.7%	0.277	0.300	92.3%	1.4%
2-Methylnaphthalene	< 0.0100 U	0.264	0.300	88.0%	0.266	0.300	88.7%	0.8%
1-Methylnaphthalene	< 0.0100 U	0.265	0.300	88.3%	0.264	0.300	88.0%	0.4%
Acenaphthylene	< 0.0100 U	0.273	0.300	91.0%	0.277	0.300	92.3%	1.5%
Acenaphthene	< 0.0100 U	0.271	0.300	90.3%	0.272	0.300	90.7%	0.4%
Fluorene	< 0.0100 U	0.283	0.300	94.3%	0.287	0.300	95.7%	1.4%
Phenanthrene	< 0.0100 U	0.275	0.300	91.7%	0.278	0.300	92.7%	1.1%
Anthracene	< 0.0100 U	0.251	0.300	83.7%	0.266	0.300	88.7%	5.8%
Fluoranthene	< 0.0100 U	0.295	0.300	98.3%	0.299	0.300	99.7%	1.3%
Pyrene	< 0.0100 U	0.290	0.300	96.7%	0.293	0.300	97.7%	1.0%
Benzo(a)anthracene	< 0.0100 U	0.283	0.300	94.3%	0.288	0.300	96.0%	1.8%
Chrysene	< 0.0100 U	0.297	0.300	99.0%	0.300	0.300	100%	1.0%
Benzo(a)pyrene	< 0.0100 U	0.191	0.300	63.7%	0.225	0.300	75.0%	16.3%
Indeno(1,2,3-cd)pyrene	< 0.0100 U	0.308	0.300	103%	0.308	0.300	103%	0.0%
Dibenz(a,h)anthracene	< 0.0100 U	0.320	0.300	107%	0.322	0.300	107%	0.6%
Benzo(g,h,i)perylene	< 0.0100 U	0.292	0.300	97.3%	0.293	0.300	97.7%	0.3%
Dibenzofuran	< 0.0100 U	0.268	0.300	89.3%	0.271	0.300	90.3%	1.1%
Total Benzofluoranthenes	< 0.0200 U	0.950 Q	0.900	106%	0.951 Q	0.900	106%	0.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-1**
Page 1 of 1 **SAMPLE**

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 12:25

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-2**
Page 1 of 1 **SAMPLE**

Lab Sample ID: AFG9B
LIMS ID: 15-8558
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 13:45

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	2.7	E

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-51**
Page 1 of 1 **SAMPLE**

Lab Sample ID: AFG9C
LIMS ID: 15-8559
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 14:12

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	**Vinyl Chloride**	**0.020**	**3.5**	**E**

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-3**
Page 1 of 1 **SAMPLE**

Lab Sample ID: AFG9D
LIMS ID: 15-8560
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 14:39

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	**Vinyl Chloride**	**0.020**	**0.47**	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: MW-1
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst MS: NT7/PKC
MSD: NT7/PKC
Date Analyzed MS: 05/07/15 12:52
MSD: 05/07/15 13:19

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Vinyl Chloride	< 0.020 U	0.959	1.00	95.9%	0.973	1.00	97.3%	1.4%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-1**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 12:52

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MW-1**
Page 1 of 1 **MATRIX SPIKE DUP**

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 13:19

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM **Sample ID: MB-050715**
 METHOD BLANK

Lab Sample ID: MB-050715
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized: KB
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT7/PKC
Date Analyzed: 05/07/15 11:01

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	0.020	< 0.020	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%

ANALYTICAL RESOURCES INCORPORATED

SW8260-SIM SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

Client ID	DCE	TOT OUT
MB-050715	100%	0
LCS-050715	101%	0
LCSD-050715	104%	0
MW-1	101%	0
MW-1-MS	103%	0
MW-1-MSD	104%	0
MW-2	103%	0
MW-51	104%	0
MW-3	103%	0

	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-129)	(80-129)

Prep Method: SW5030
Log Number Range: 15-8557 to 15-8560

FORM-II SW8260-SIM

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C-SIM Sample ID: LCS-050715
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-050715
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT7/PKC
LCSD: NT7/PKC
Date Analyzed LCS: 05/07/15 10:08
LCSD: 05/07/15 10:34

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Vinyl Chloride	0.931	1.00	93.1%	1.00	1.00	100%	7.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	101%	104%

FORM III

AFG9 : 000418

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
METHANE ETHANE ETHENE

Modified RSK 175
Page 1 of 1
Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Received: 05/01/15

Data Release Authorized:
Reported: 05/14/15

ARI ID	Sample ID	Analysis Date	DL	Analyte	RL	Result
AFG9A	MW-1	05/13/15	1.0	Methane	0.7	< 0.7 U
15-8557				Ethane	1.2	< 1.2 U
				Ethene	1.1	< 1.1 U
AFG9B	MW-2	05/13/15	1.0	Methane	0.7	< 0.7 U
15-8558				Ethane	1.2	< 1.2 U
				Ethene	1.1	< 1.1 U
AFG9C	MW-51	05/13/15	1.0	Methane	0.7	< 0.7 U
15-8559				Ethane	1.2	< 1.2 U
				Ethene	1.1	< 1.1 U
AFG9D	MW-3	05/13/15	1.0	**Methane**	**0.7**	**750**
15-8560				Ethane	1.2	< 1.2 U
				Ethene	1.1	< 1.1 U
051315MB	Method Blank	05/13/15	1.0	Methane	0.7	< 0.7 U
051315MB	Method Blank	05/13/15	1.0	Ethane	1.2	< 1.2 U
051315MB	Method Blank	05/13/15	1.0	Ethene	1.1	< 1.1 U

Reported in ug/L (ppb)

ANALYTICAL RESOURCES INCORPORATED

RSK 175 WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

ARI ID	Client ID	PRP	TOT OUT
AFG9A	MW-1	104%	0
AFG9AMS	MW-1	108%	0
AFG9AMSD	MW-1	108%	0
AFG9B	MW-2	109%	0
AFG9C	MW-51	108%	0
AFG9D	MW-3	104%	0
MB-051315	Method Blank	106%	0
LCS-051315	Lab Control	107%	0
LCSD-051315	Lab Control Dup	105%	0

	LCS/MB LIMITS	QC LIMITS
(PRP) = Propane	(72-122)	(72-122)

Log Number Range: 15-8557 to 15-8560

AFG9 20042

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
METHANE ETHANE ETHENE

Modified RSK 175

Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Received: 05/01/15

Data Release Authorized:
Reported: 05/14/15

Analyte	Date	Spike Type	Sample	Spike	Spike Added	Recovery	RPD
ARI ID: AFG9A Client ID: MW-1							
Methane	05/13/15	MS	< 0.7	582	654	88.9%	
	05/13/15	MSD		621		94.9%	6.5%
Ethane	05/13/15	MS	< 1.2	1,140	1,230	92.9%	
	05/13/15	MSD		1,200		97.8%	5.1%
Ethene	05/13/15	MS	< 1.1	1,020	1,150	89.1%	
	05/13/15	MSD		1,070		93.4%	4.8%

Reported in ug/L (ppb)

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
METHANE ETHANE ETHENE

Modified RSK 175
Page 1 of 1
Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Received: 05/01/15

Data Release Authorized:
Reported: 05/14/15

ARI ID	Analysis Date	Analyte	Spike	Result	Recovery	RPD
051315LCS	05/13/15	Methane	654	635	97.0%	9.2%
051315LCSD				579	88.5%	
051315LCS	05/13/15	Ethane	1,230	1,200	97.8%	8.7%
051315LCSD				1,100	89.6%	
051315LCS	05/13/15	Ethene	1,150	1,080	94.3%	8.2%
051315LCSD				995	86.9%	

Reported in ug/L (ppb)

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID-Silica and Acid Cleaned
Extraction Method:

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riversi
JK0707

Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-050415	Method Blank	05/04/15	05/06/15	1.00	Diesel Range	0.10	< 0.10 U
15-8557	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		88.7%
AFG9A	MW-1	05/04/15	05/06/15	1.00	Diesel Range	0.10	< 0.10 U
15-8557	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		85.8%
AFG9B	MW-2	05/04/15	05/06/15	1.00	Diesel Range	0.10	< 0.10 U
15-8558	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		85.6%
AFG9C	MW-51	05/04/15	05/06/15	1.00	Diesel Range	0.10	< 0.10 U
15-8559	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		88.1%
AFG9D	MW-3	05/04/15	05/06/15	1.00	Diesel Range	0.10	< 0.10 U
15-8560	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		83.1%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

CLEANED TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707

Client ID	OTER	TOT OUT
MB-050415	88.7%	0
LCS-050415	96.6%	0
LCSD-050415	87.8%	0
MW-1	85.8%	0
MW-1 MS	85.9%	0
MW-1 MSD	91.6%	0
MW-2	85.6%	0
MW-51	88.1%	0
MW-3	83.1%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 15-8557 to 15-8560

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: MW-1**
Page 1 of 1 **MS/MSD**

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted MS/MSD: 05/04/15

Sample Amount MS: 500 mL
MSD: 500 mL

Date Analyzed MS: 05/06/15 17:29
MSD: 05/06/15 17:52

Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL

Instrument/Analyst MS: FID/ML
MSD: FID/ML

Dilution Factor MS: 1.00
MSD: 1.00

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	< 0.10	2.46	3.00	82.0%	2.72	3.00	90.7%	10.0

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	85.9%	91.6%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

AFG - 0011

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID-Silica and Acid Cleaned **Sample ID: LCS-050415**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-050415
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized: MW
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Date Extracted LCS/LCSD: 05/04/15

Date Analyzed LCS: 05/06/15 16:18
LCSD: 05/06/15 16:42
Instrument/Analyst LCS: FID/ML
LCSD: FID/ML

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.67	3.00	89.0%	2.52	3.00	84.0%	5.8

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	96.6%	87.8%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

FORM III

AFG9 000048

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 05/01/15

ARI Job: AFG9
Project: South Riverside DR (SPU Riverside) JK0707

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
15-8557-050415MB1	Method Blank	500 mL	1.00 mL	05/04/15
15-8557-050415LCS1	Lab Control	500 mL	1.00 mL	05/04/15
15-8557-050415LCSD1	Lab Control Dup	500 mL	1.00 mL	05/04/15
15-8557-AFG9A	MW-1	500 mL	1.00 mL	05/04/15
15-8557-AFG9AMS	MW-1	500 mL	1.00 mL	05/04/15
15-8557-AFG9AMSD	MW-1	500 mL	1.00 mL	05/04/15
15-8558-AFG9B	MW-2	500 mL	1.00 mL	05/04/15
15-8559-AFG9C	MW-51	500 mL	1.00 mL	05/04/15
15-8560-AFG9D	MW-3	500 mL	1.00 mL	05/04/15

Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050606.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9MBW1
Client ID: AFG9MBW1
Injection: 06-MAY-2015 15:55
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.716	-0.011	5545	34870	WATPHG	(Tol-C12)	222648	9.02
C8	0.994	0.001	26987	70884	WATPHD	(C12-C24)	36110	2.18
C10	2.572	0.000	393	1427	WATPHM	(C24-C38)	77931	5.12
C12	3.442	-0.009	71	297	AK102	(C10-C25)	47069	2.39
C14	4.127	0.000	70	113	AK103	(C25-C36)	61008	6.63
C16	4.723	0.012	361	993				
C18	5.280	-0.005	213	286				
C20	5.905	0.004	268	981	JET-A	(C10-C18)	26195	1.43
C22	6.492	-0.037	144	737				
C24	7.102	-0.041	189	1076				
C25	7.425	-0.016	48	68				
C26	7.776	0.048	367	793				
C28	8.289	0.008	435	973				
C32	9.446	-0.029	777	2685				
C34	10.071	-0.040	313	655				
Filter Peak	10.423	0.002	335	655				
C36	10.752	0.003	547	2552				
C38	11.355	-0.027	533	1467				
C40	11.986	-0.015	904	4506				
o-terph	5.433	0.001	932849	920112				
Triacon Surr	8.867	-0.002	538085	808271				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	920112	39.9	88.7
Triacontane	808271	40.3	89.6

vlc
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

Data File: /chem3/fid4a.i/20150506.b/15050606.d

Date : 06-MAY-2015 15:55

Client ID: AFG9MBW1

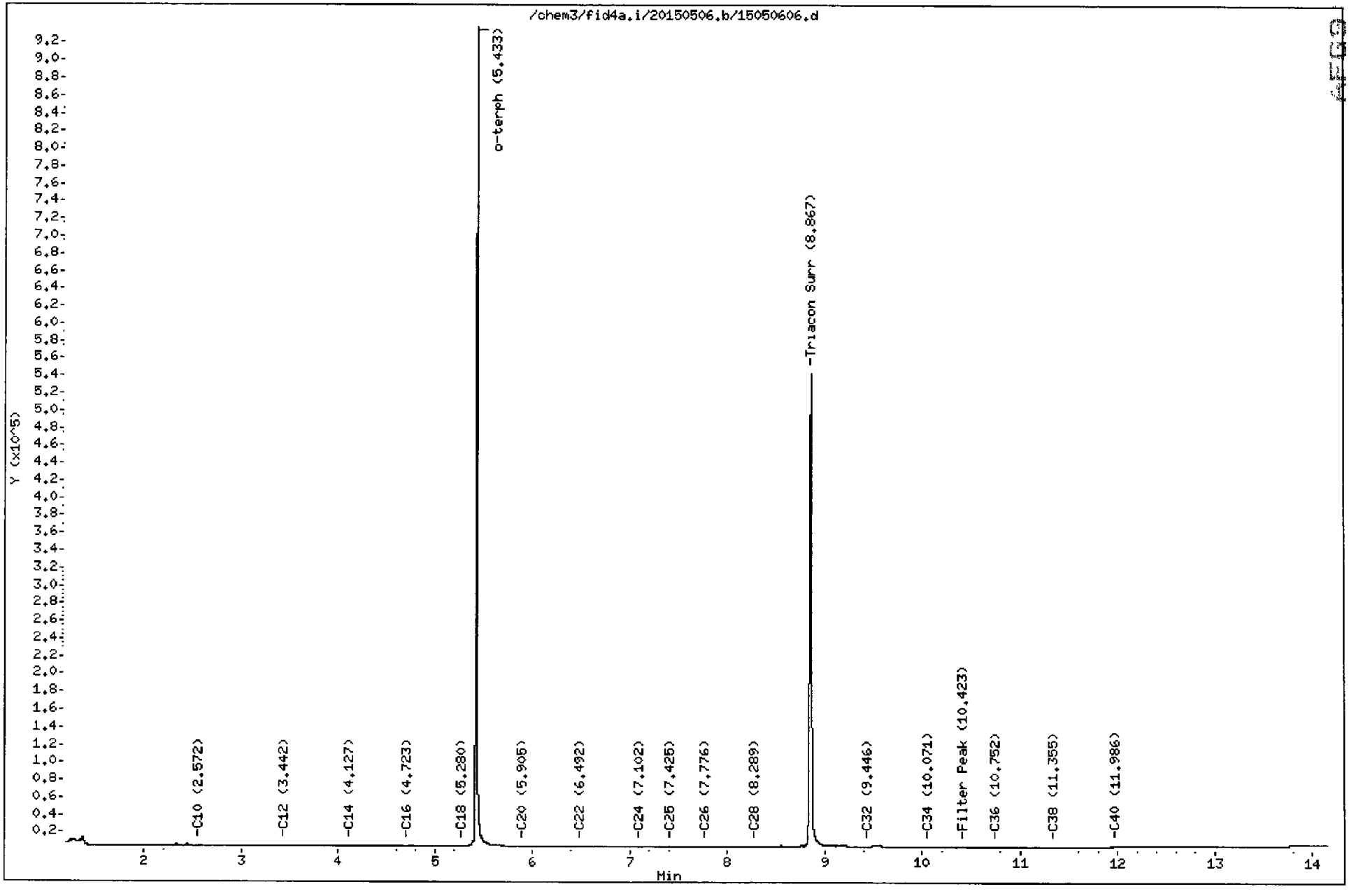
Sample Info: AFG9MBW1

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050607.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9LCSW1
Client ID: AFG9LCSW1
Injection: 06-MAY-2015 16:18
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.719	-0.007	12374	16921	WATPHG	(Tol-C12)	4607901	186.68
C8	0.977	-0.016	11733	21462	WATPHD	(C12-C24)	22078895	1334.80
C10	2.570	-0.002	82724	95058	WATPHM	(C24-C38)	328258	21.56
C12	3.452	0.001	191784	212426	AK102	(C10-C25)	25448849	1294.18
C14	4.130	0.003	337812	695411	AK103	(C25-C36)	248712	27.03
C16	4.718	0.007	486720	1215632				
C18	5.292	0.008	428486	626587				
C20	5.901	0.001	238530	467413	JET-A	(C10-C18)	19707823	1073.05
C22	6.527	-0.002	95840	282081				
C24	7.143	0.000	28191	104601				
C25	7.438	-0.002	13987	55545				
C26	7.730	0.003	6862	27381				
C28	8.289	0.008	1767	6076				
C32	9.505	0.030	1543	8623				
C34	10.076	-0.034	205	701				
Filter Peak	10.411	-0.011	40	94				
C36	10.747	-0.002	962	1824				
C38	11.391	0.008	127	180				
C40	11.981	-0.019	719	2352				
o-terph	5.441	0.008	933783	1001989				
Triacon Surr	8.867	-0.002	569686	806551				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	1001989	43.5	96.6 M
Triacontane	806551	40.2	89.4

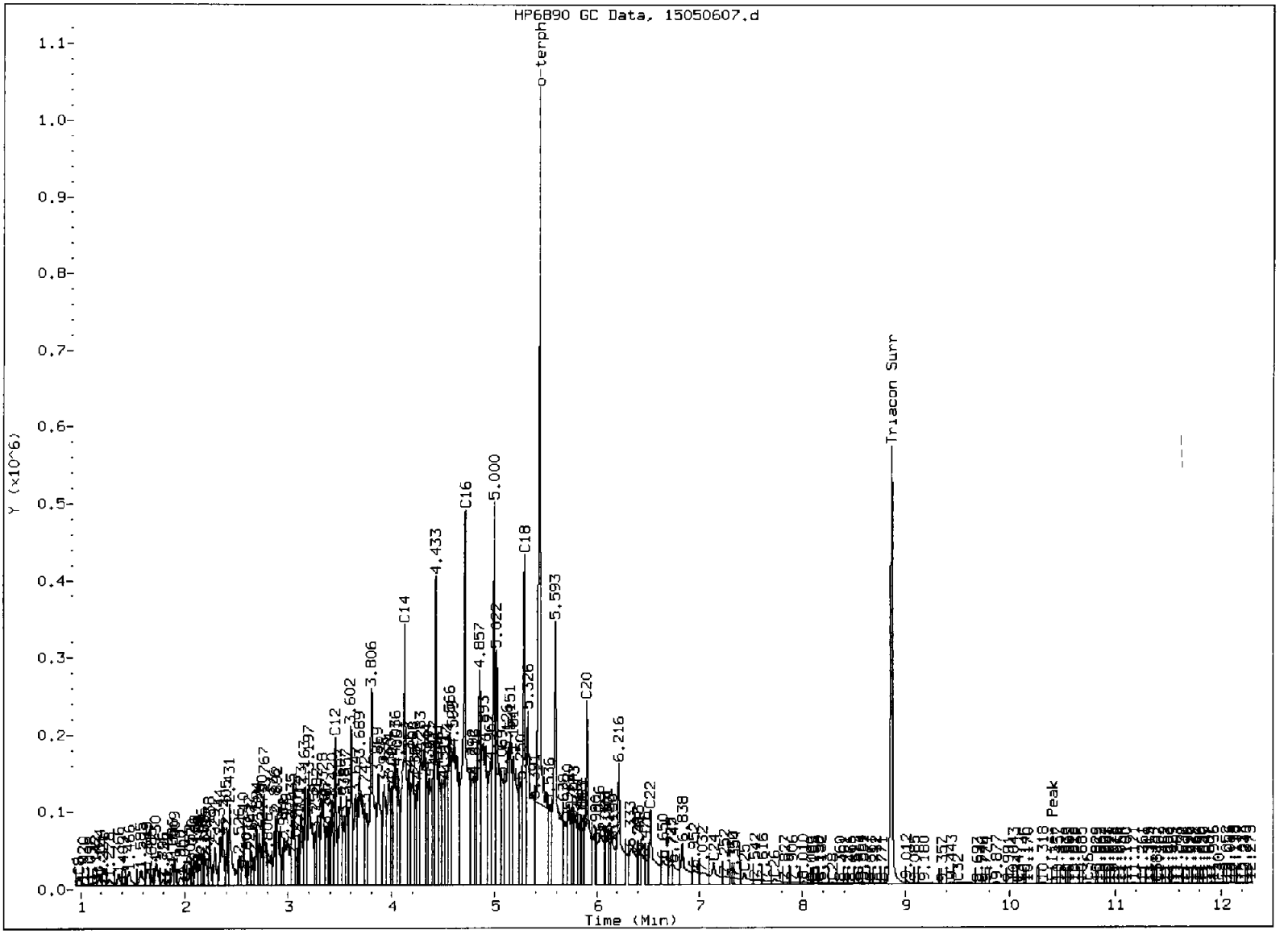
ML
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

AFG9 - 00052

FID:4A-2C/RTX-1 AFG9LCSW1 FID:4A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: MC Date: 5/7/15

AFG9-SDG53

Data File: /chem3/fid4a.i/20150506.b/15050607.d

Date : 06-MAY-2015 16:18

Client ID: AFG9LCSW1

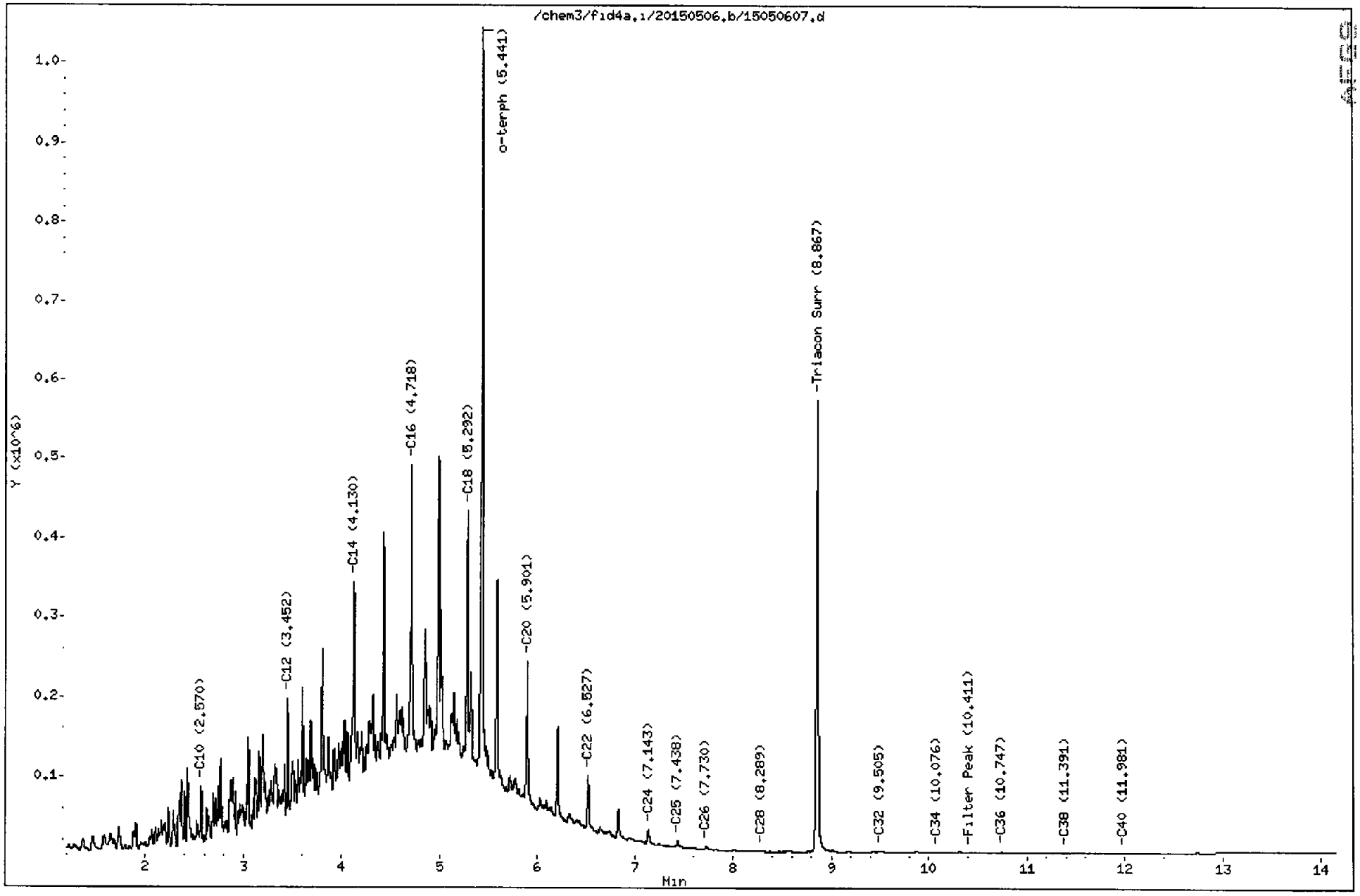
Sample Info: AFG9LCSW1

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050608.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9LCSDW1
Client ID: AFG9LCSDW1
Injection: 06-MAY-2015 16:42
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.724	-0.003	10735	16048	WATPHG	(Tol-C12)	4123141	167.04
C8	0.983	-0.010	11070	19522	WATPHD	(C12-C24)	20848730	1260.43
C10	2.572	0.001	69946	85294	WATPHM	(C24-C38)	302516	19.87
C12	3.453	0.001	169409	197329	AK102	(C10-C25)	23889055	1214.86
C14	4.131	0.004	289544	645845	AK103	(C25-C36)	219542	23.86
C16	4.719	0.007	456831	1119834				
C18	5.292	0.007	433732	694559				
C20	5.903	0.002	225896	615516	JET-A	(C10-C18)	18330814	998.07
C22	6.532	0.002	90659	216727				
C24	7.144	0.001	26917	98796				
C25	7.441	0.001	13135	51631				
C26	7.728	0.001	6217	25255				
C28	8.288	0.006	1584	4734				
C32	9.444	-0.031	2135	3977				
C34	10.122	0.011	23	18				
Filter Peak	10.402	-0.019	16	29				
C36	10.751	0.002	1075	2217				
C38	11.392	0.010	129	135				
C40	11.986	-0.014	721	2905				
o-terph	5.439	0.006	868303	910159				
Triacon Surr	8.865	-0.004	511137	770659				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

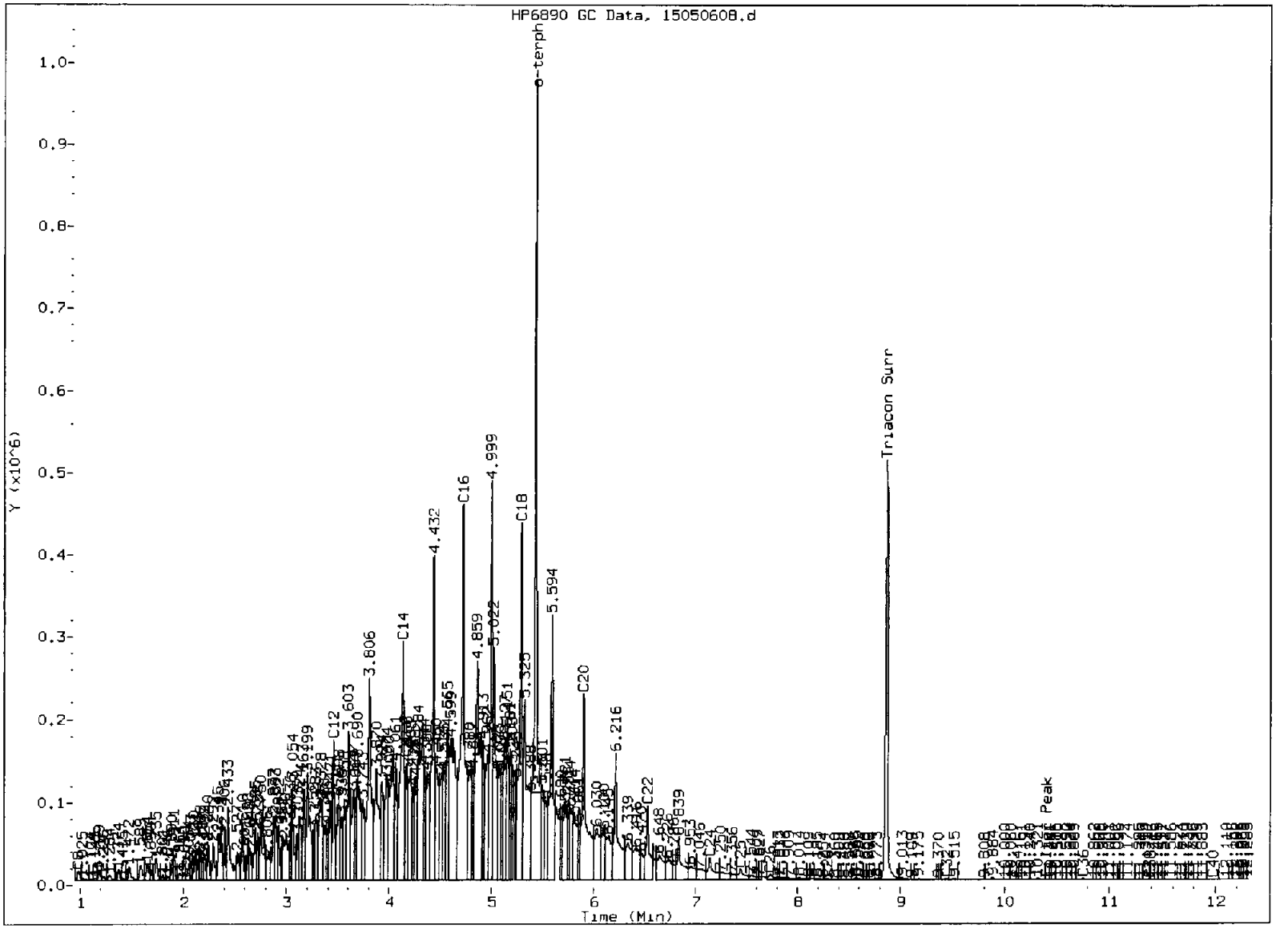
Surrogate	Area	Amount	%Rec
o-Terphenyl	910159	39.5	87.8 M
Triacontane	770659	38.5	85.5

ML
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

FID:4A-2C/RTX-1 AFG9LCSDW1 FID:4A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: ML Date: 5/7/15

AFG9 SDG6

Data File: /chem3/fid4a.i/20150506.b/15050608.d

Date : 06-MAY-2015 16:42

Client ID: AFG9LCSDW1

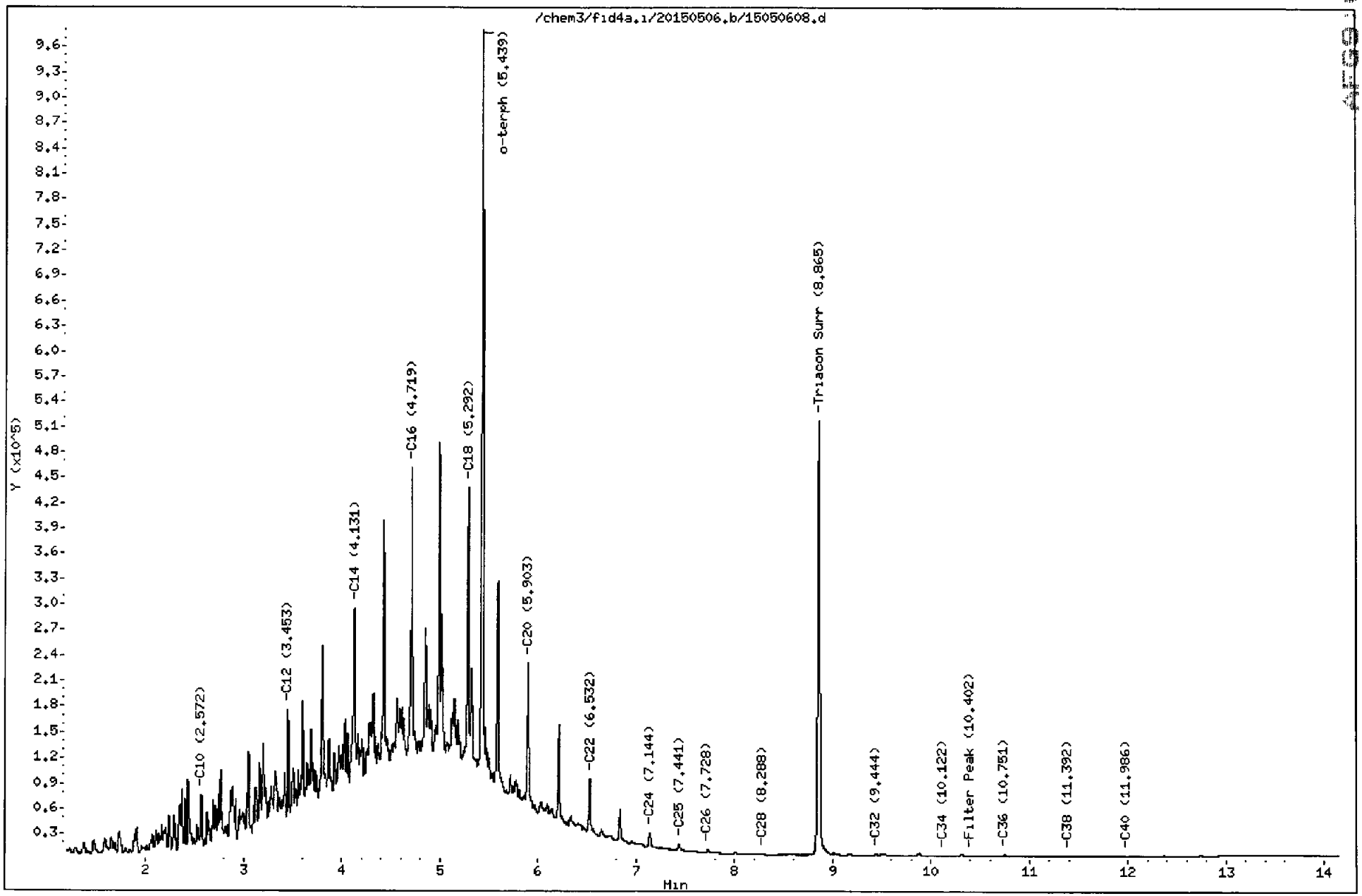
Sample Info: AFG9LCSDW1

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050609.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9A
Client ID: MW-1
Injection: 06-MAY-2015 17:05
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.726	-0.001	6386	37114	WATPHG	(Tol-C12)	250588	10.15
C8	0.995	0.002	32276	30555	WATPHD	(C12-C24)	23014	1.39
C10	2.570	-0.001	422	1644	WATPHM	(C24-C38)	77849	5.11
C12	3.490	0.039	92	258	AK102	(C10-C25)	36026	1.83
C14	4.129	0.002	20	22	AK103	(C25-C36)	62225	6.76
C16	4.723	0.012	98	182				
C18	5.259	-0.026	250	447				
C20	5.866	-0.035	292	900	JET-A	(C10-C18)	19065	1.04
C22	6.496	-0.034	145	740				
C24	7.153	0.009	130	374				
C25	7.433	-0.008	76	77				
C26	7.728	0.000	88	142				
C28	8.288	0.007	442	1158				
C32	9.444	-0.031	794	2336				
C34	10.098	-0.013	285	599				
Filter Peak	10.413	-0.009	310	639				
C36	10.752	0.003	746	3245				
C38	11.404	0.022	490	843				
C40	11.988	-0.013	845	3761				
o-terph	5.434	0.002	893974	889309				
Triacon Surr	8.870	0.001	531307	784703				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	889309	38.6	85.8
Triacontane	784703	39.2	87.0

mc
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

AFG9 . 88858

Data File: /chem3/fid4a.i/20150506.b/15050609.d

Date : 06-MAY-2015 17:05

Client ID: MW-1

Sample Info: AFG9A

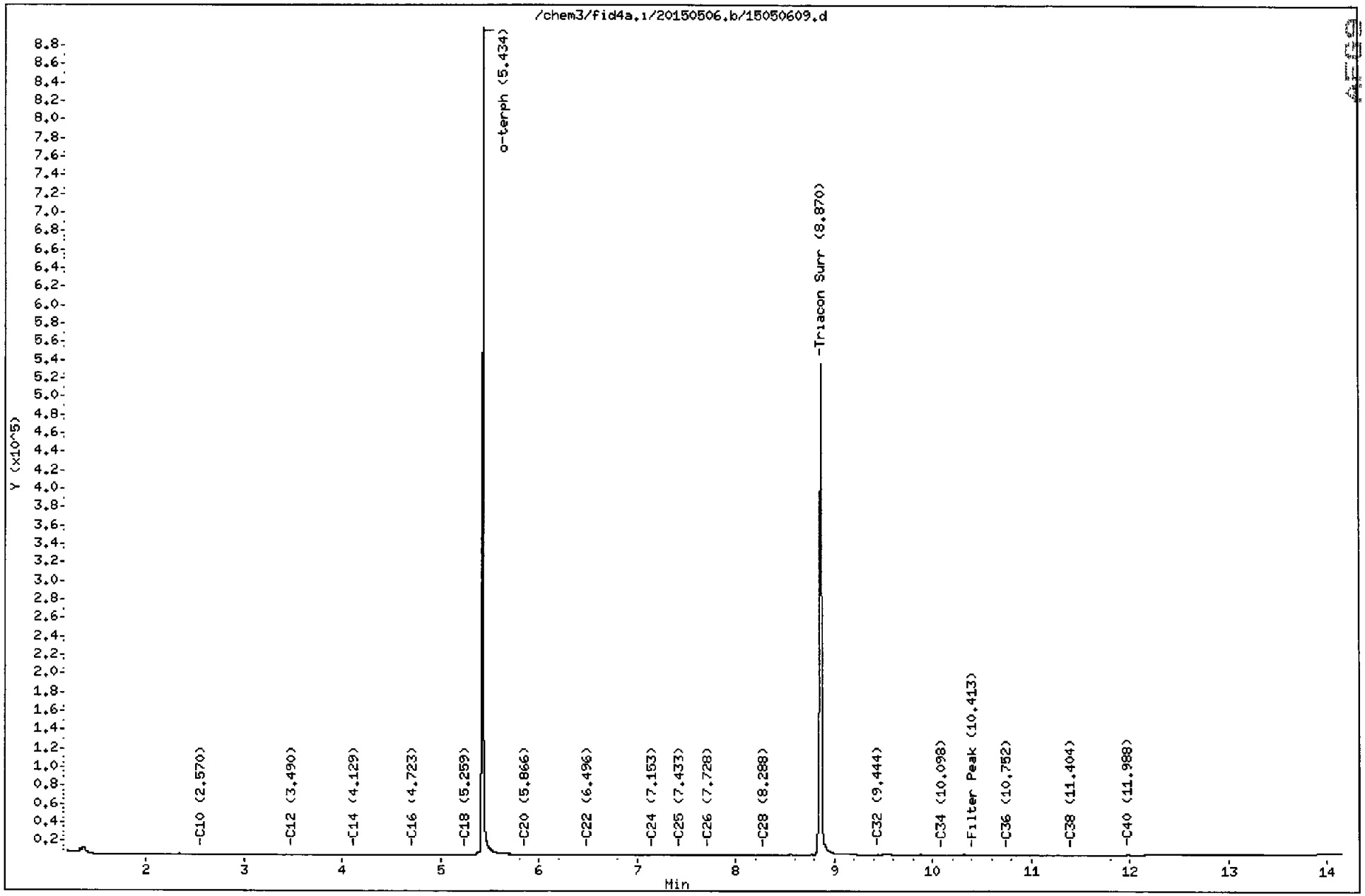
Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25

AFG9A 050515



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050612.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9B
Client ID: MW-2
Injection: 06-MAY-2015 18:16
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.730	0.003	4658	22465	WATPHG	(Tol-C12)	109637	4.44
C8	0.994	0.001	14445	34342	WATPHD	(C12-C24)	31198	1.89
C10	2.597	0.026	303	358	WATPHM	(C24-C38)	100772	6.62
C12	3.455	0.004	89	433	AK102	(C10-C25)	44256	2.25
C14	4.140	0.012	22	19	AK103	(C25-C36)	85903	9.34
C16	4.698	-0.013	98	187				
C18	5.285	0.001	360	398				
C20	5.882	-0.018	310	360	JET-A	(C10-C18)	19723	1.07
C22	6.491	-0.038	220	1061				
C24	7.157	0.014	280	1585				
C25	7.472	0.032	233	951				
C26	----							
C28	8.278	-0.003	2236	5831				
C32	9.447	-0.028	2500	4763				
C34	10.132	0.022	273	396				
Filter Peak	10.418	-0.003	258	330				
C36	10.758	0.009	1771	5754				
C38	11.382	0.000	398	509				
C40	11.986	-0.014	1077	4861				
o-terph	5.435	0.002	918108	887797				
Triacon Surr	8.870	0.001	546483	776105				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	887797	38.5	85.6
Triacontane	776105	38.7	86.1

ML
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

AFG9 : 88858

Data File: /chem3/fid4a.i/20150506.b/15050612.d

Date : 06-MAY-2015 18:16

Client ID: MW-2

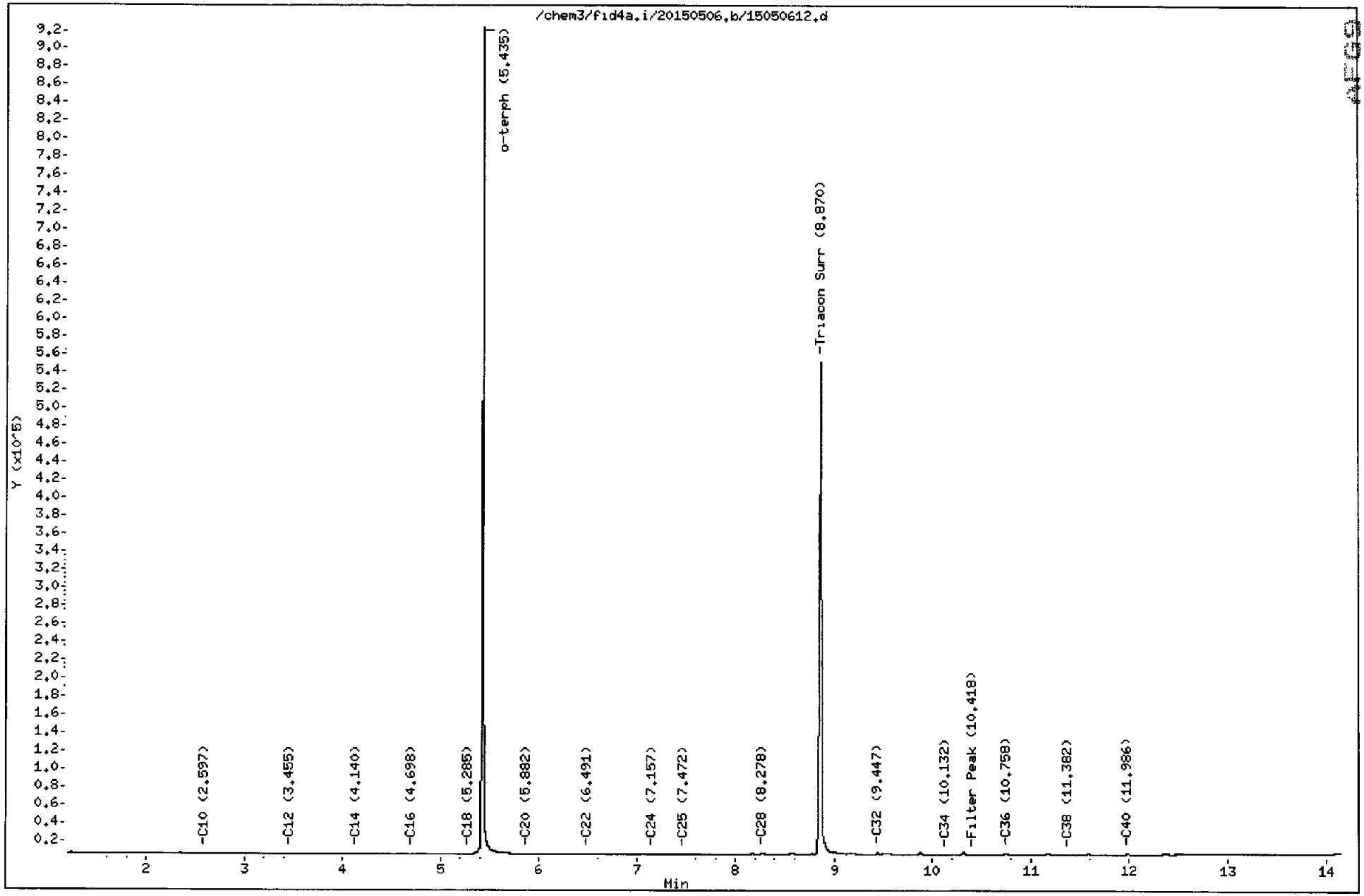
Sample Info: AFG9B

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050613.d ARI ID: AFG9C
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m Client ID: MW-51
Instrument: fid4a.i Injection: 06-MAY-2015 18:40
Operator: ML
Report Date: 05/07/2015 Dilution Factor: 1
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.728	0.002	4738	22071	WATPHG	(Tol-C12)	98343	3.98
C8	0.994	0.001	8472	28382	WATPHD	(C12-C24)	26946	1.63
C10	2.601	0.029	282	414	WATPHM	(C24-C38)	68132	4.48
C12	3.452	0.001	110	335	AK102	(C10-C25)	37832	1.92
C14	4.110	-0.018	20	18	AK103	(C25-C36)	57440	6.24
C16	4.700	-0.012	118	245				
C18	5.286	0.001	455	444				
C20	5.927	0.027	282	1097	JET-A	(C10-C18)	20658	1.12
C22	6.511	-0.019	140	756				
C24	----							
C25	7.467	0.027	184	683				
C26	7.681	-0.047	61	90				
C28	8.276	-0.006	3508	6906				
C32	9.447	-0.028	920	2318				
C34	10.115	0.004	212	648				
Filter Peak	10.439	0.017	204	551				
C36	10.753	0.004	679	2222				
C38	11.376	-0.006	346	543				
C40	11.991	-0.009	752	3901				
o-terph	5.435	0.002	937646	913157				
Triacon Surr	8.870	0.001	555216	824901				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	913157	39.6	88.1
Triacontane	824901	41.2	91.5

MC
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

AFG9 - 20062

Data File: /chem3/fid4a.i/20150506.b/15050613.d

Date : 06-MAY-2015 18:40

Client ID: MW-51

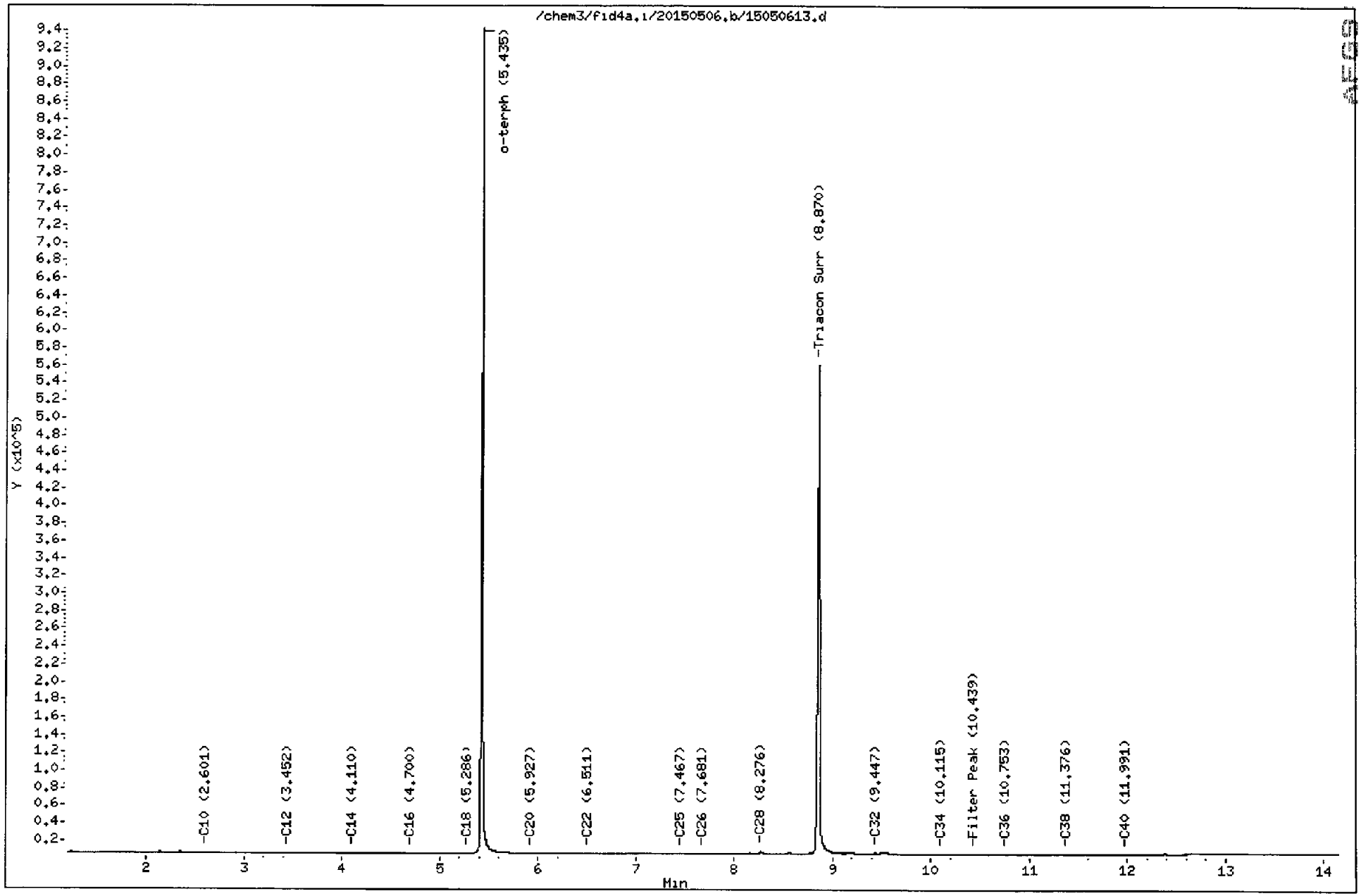
Sample Info: AFG9C

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050614.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9D
Client ID: MW-3
Injection: 06-MAY-2015 19:03

Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.721	-0.006	3846	17439	WATPHG	(Tol-C12)	89104	3.61
C8	0.996	0.002	4711	20537	WATPHD	(C12-C24)	33830	2.05
C10	2.583	0.012	311	437	WATPHM	(C24-C38)	76048	5.00
C12	3.448	-0.003	103	200	AK102	(C10-C25)	46403	2.36
C14	4.109	-0.018	31	23	AK103	(C25-C36)	64361	6.99
C16	4.696	-0.016	121	223				
C18	5.282	-0.003	266	388				
C20	5.896	-0.004	312	557	JET-A	(C10-C18)	22102	1.20
C22	6.543	0.013	189	613				
C24	7.096	-0.047	290	1074				
C25	7.466	0.025	484	2049				
C26	7.748	0.021	297	776				
C28	8.290	0.008	669	1734				
C32	9.447	-0.028	777	2197				
C34	10.122	0.012	293	370				
Filter Peak	10.380	-0.042	294	1054				
C36	10.756	0.007	557	1836				
C38	11.340	-0.043	430	637				
C40	11.988	-0.013	738	2913				
o-terph	5.435	0.002	851373	861860				
Triacon Surr	8.870	0.001	555125	767711				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	861860	37.4	83.1
Triacontane	767711	38.3	85.1

ML
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

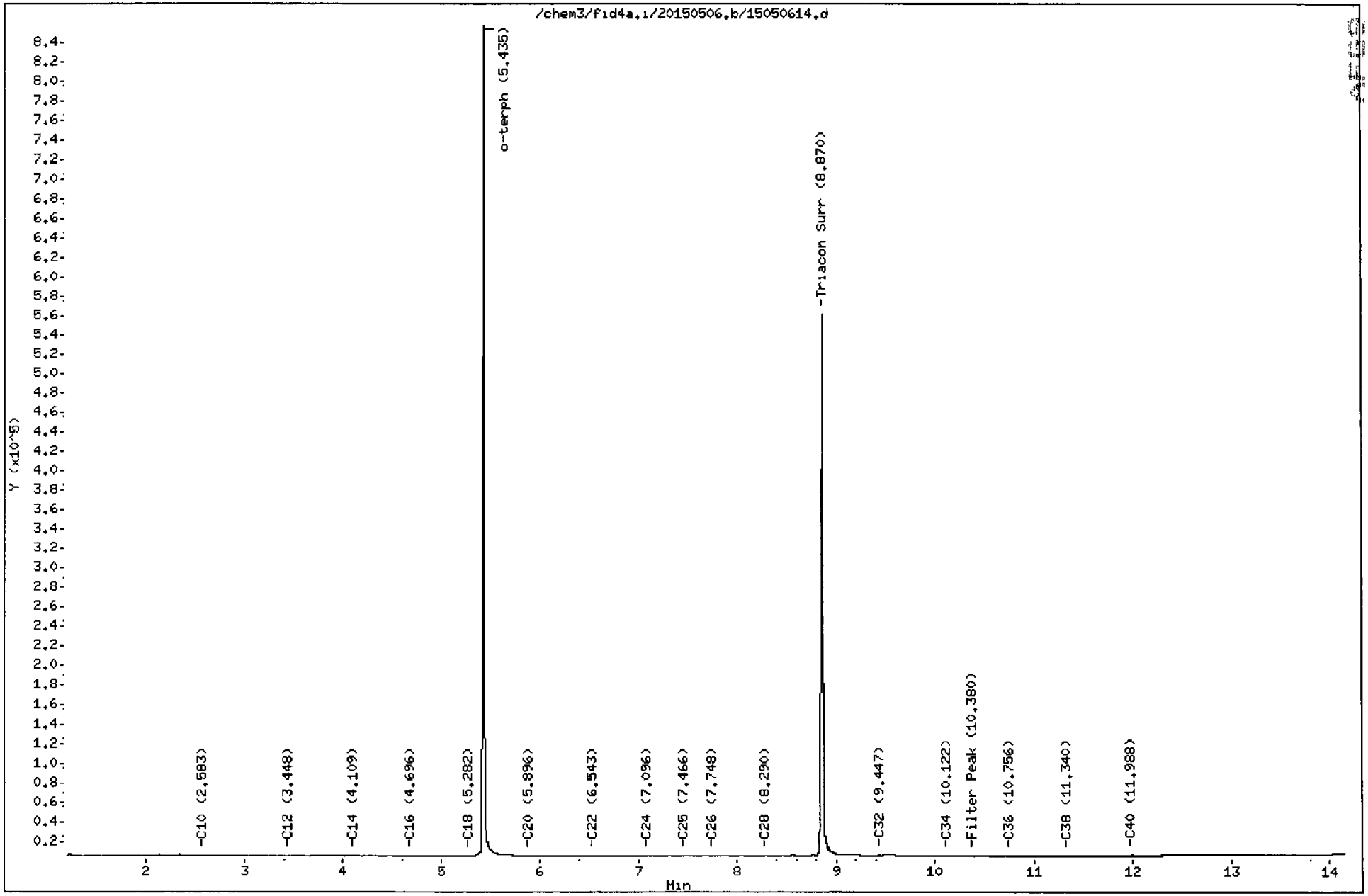
AFG9 - 0205

Data File: /chem3/fid4a.i/20150506.b/15050614.d
Date : 06-MAY-2015 19:03
Client ID: MW-3
Sample Info: AFG9D

Instrument: fid4a.i

Operator: ML
Column diameter: 0.25

Column phase: RTX-1



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050610.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9AMS
Client ID: MW-1 MS
Injection: 06-MAY-2015 17:29
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	0.717	-0.010	12892	16818	WATPHG	(Tol-C12)	4185820	169.58
C8	1.019	0.026	3108	6998	WATPHD	(C12-C24)	20371699	1231.59
C10	2.572	0.001	71346	85574	WATPHM	(C24-C38)	297552	19.55
C12	3.453	0.002	176055	199678	AK102	(C10-C25)	23440976	1192.08
C14	4.131	0.003	304445	641043	AK103	(C25-C36)	214123	23.27
C16	4.717	0.006	461067	1067879				
C18	5.292	0.008	421463	594037				
C20	5.905	0.004	209217	437031	JET-A	(C10-C18)	17715630	964.58
C22	6.532	0.003	84906	249814				
C24	7.144	0.001	26126	89003				
C25	7.442	0.001	12967	49844				
C26	7.733	0.006	6358	16984				
C28	8.290	0.008	1565	6708				
C32	9.448	-0.027	1212	2365				
C34	----							
Filter Peak	10.439	0.018	17	27				
C36	10.752	0.003	489	1067				
C38	11.374	-0.008	133	179				
C40	11.987	-0.013	587	2759				
o-terph	5.438	0.006	805402	890974				
Triacon Surr	8.871	0.002	497284	737104				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	890974	38.7	85.9 M
Triacontane	737104	36.8	81.7

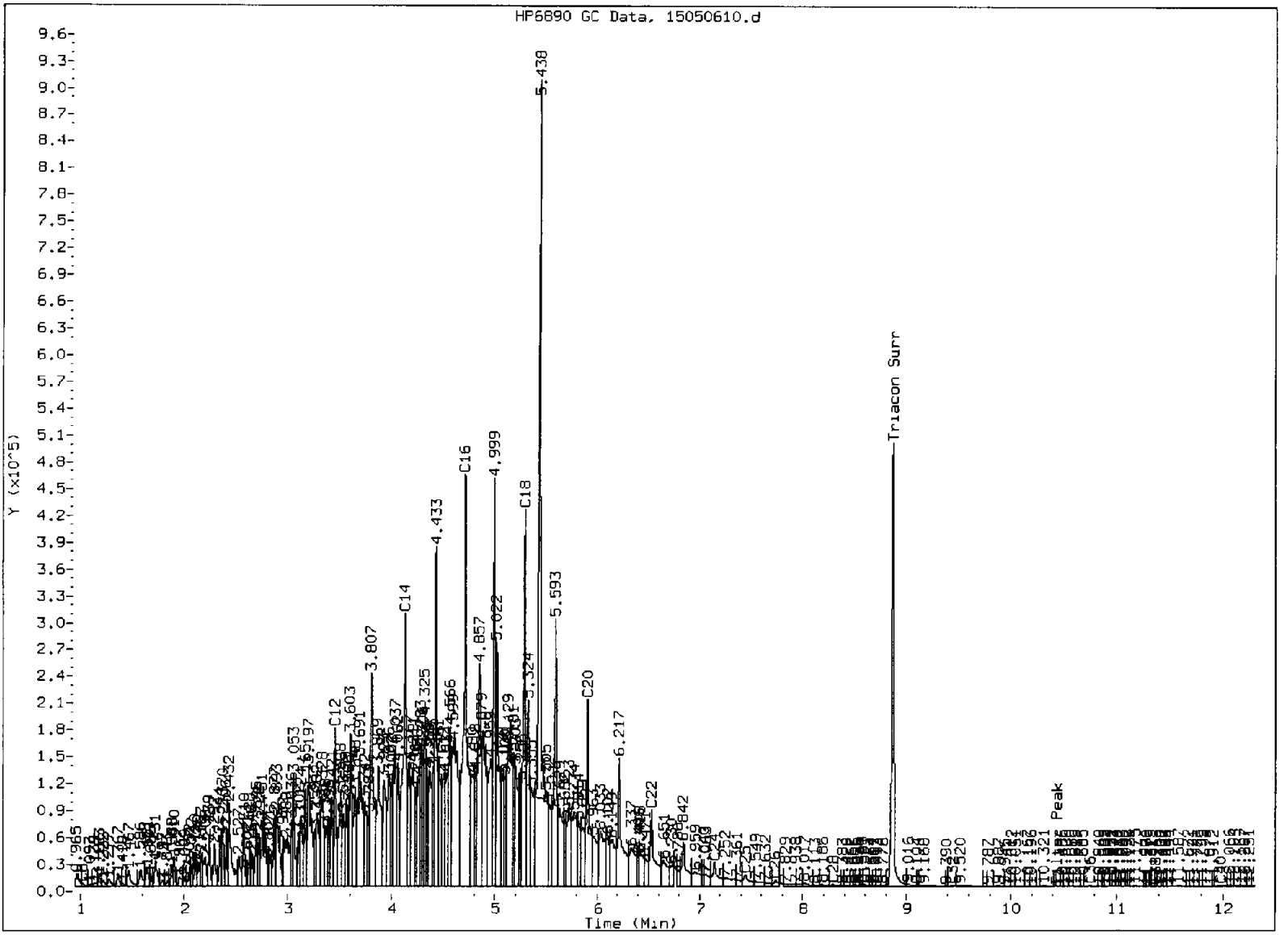
MK
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

AFG9 : 88656

FID:4A-2C/RTX-1 AFG9AMS FID:4A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: ML Date: 5/7/15

Data File: /chem3/fid4a.i/20150506.b/15050610.d

Date : 06-MAY-2015 17:29

Client ID: MW-1 MS

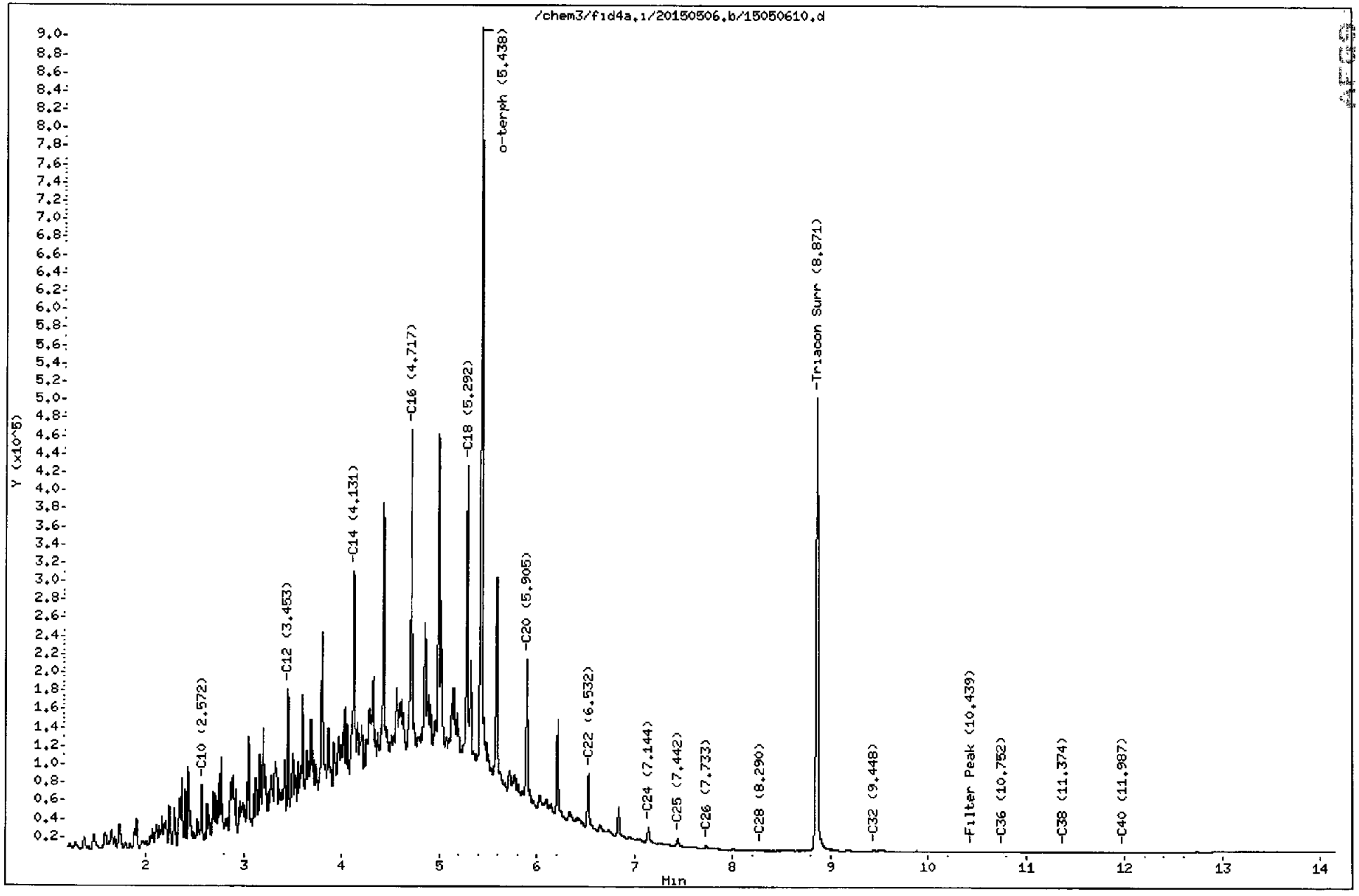
Sample Info: AFG9AMS

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



Analytical Resources Inc.
TPH Quantitation Report

Data file: /chem3/fid4a.i/20150506.b/15050611.d
Method: /chem3/fid4a.i/20150506.b/ftphfid4a.m
Instrument: fid4a.i
Operator: ML
Report Date: 05/07/2015
Macro: 16-MAR-2015
Calibration Dates: Gas:25-FEB-2015 Diesel:16-MAR-2015 M.Oil:16-MAR-2015

ARI ID: AFG9AMSD
Client ID: MW-1 MSD
Injection: 06-MAY-2015 17:52
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	----				WATPHG	(Tol-C12)	4508359	182.64
C8	0.965	-0.028	13492	36187	WATPHD	(C12-C24)	22475191	1358.76
C10	2.571	0.000	78626	92339	WATPHM	(C24-C38)	332256	21.83
C12	3.454	0.002	191263	216718	AK102	(C10-C25)	25797579	1311.92
C14	4.130	0.003	327858	707757	AK103	(C25-C36)	243228	26.43
C16	4.719	0.007	502420	1188638				
C18	5.292	0.007	465616	691604				
C20	5.904	0.003	241916	644639	JET-A	(C10-C18)	19568387	1065.46
C22	6.531	0.002	99889	291188				
C24	7.145	0.002	29706	98284				
C25	7.443	0.002	14542	56496				
C26	7.734	0.007	7042	32412				
C28	8.285	0.003	2000	6444				
C32	9.448	-0.027	950	1999				
C34	10.109	-0.002	106	158				
Filter Peak	10.429	0.007	28	62				
C36	10.752	0.003	532	1071				
C38	11.395	0.012	112	187				
C40	11.995	-0.006	495	1825				
o-terph	5.441	0.009	856321	949764				
Triacon Surr	8.869	0.000	546554	803143				

Range Times: NW Diesel(3.451 - 7.143) AK102(2.57 - 7.44) Jet A(2.57 - 5.28)
NW M.Oil(7.14 - 11.38) AK103(7.44 - 10.75) OR Diesel(2.57 - 8.28)

Surrogate	Area	Amount	%Rec
o-Terphenyl	949764	41.2	91.6 M
Triacontane	803143	40.1	89.1

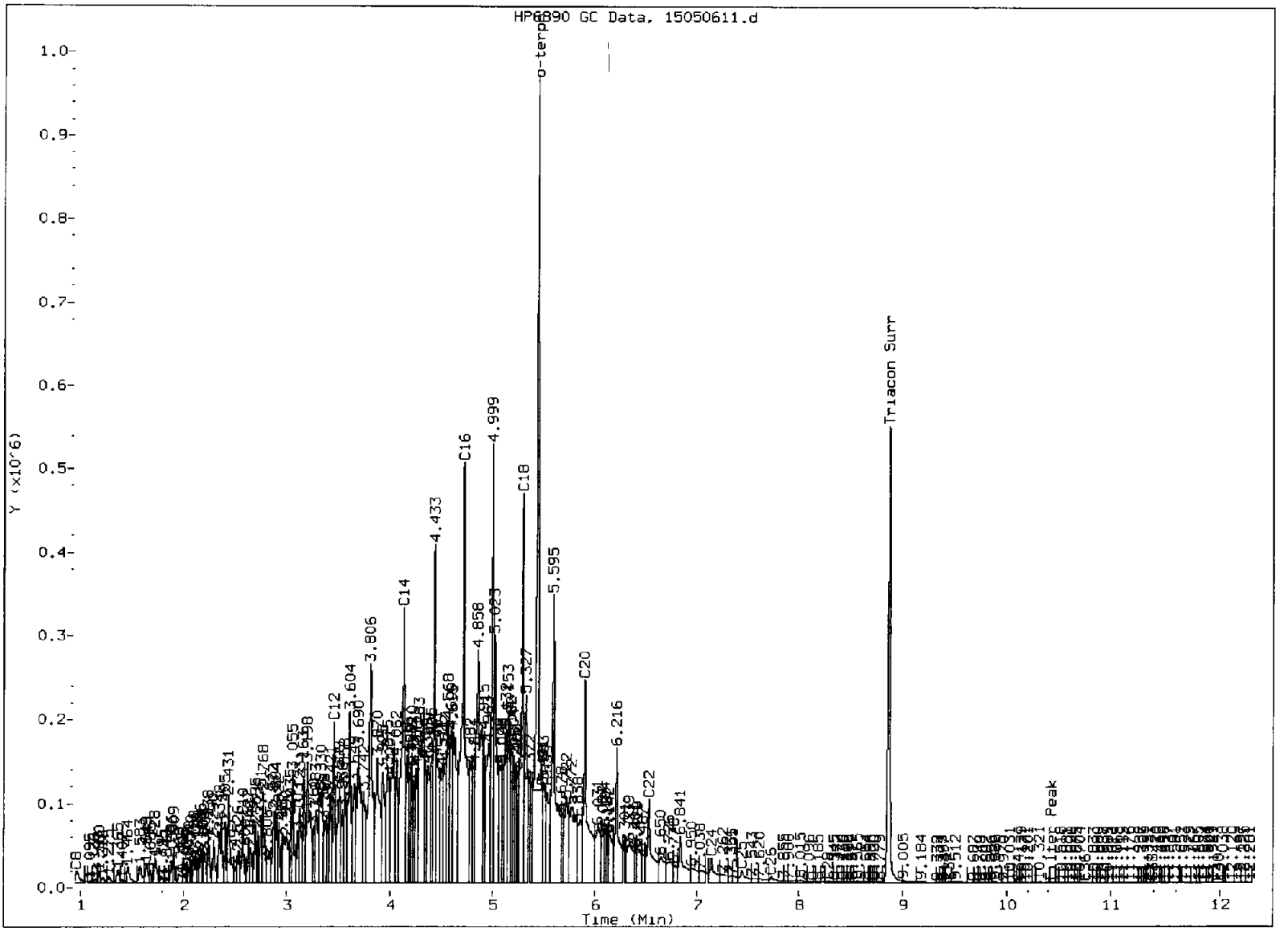
ML
5/7/15

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	23042.5	16-MAR-2015
Triacon Surr	20040.4	16-MAR-2015
Gas	24684.0	25-FEB-2015
Diesel	16541.0	16-MAR-2015
Motor Oil	15222.0	16-MAR-2015
AK102	19664.0	16-MAR-2015
AK103	9202.1	25-SEP-2012
JetA	18366.2	28-APR-2015

AFG9 - 8805

FID:4A-2C/RTX-1 AFG9AMSD FID:4A SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: MC Date: 5/7/15

Data File: /chem3/fid4a.i/20150506.b/15050611.d

Date : 06-MAY-2015 17:52

Client ID: MW-1 MSD

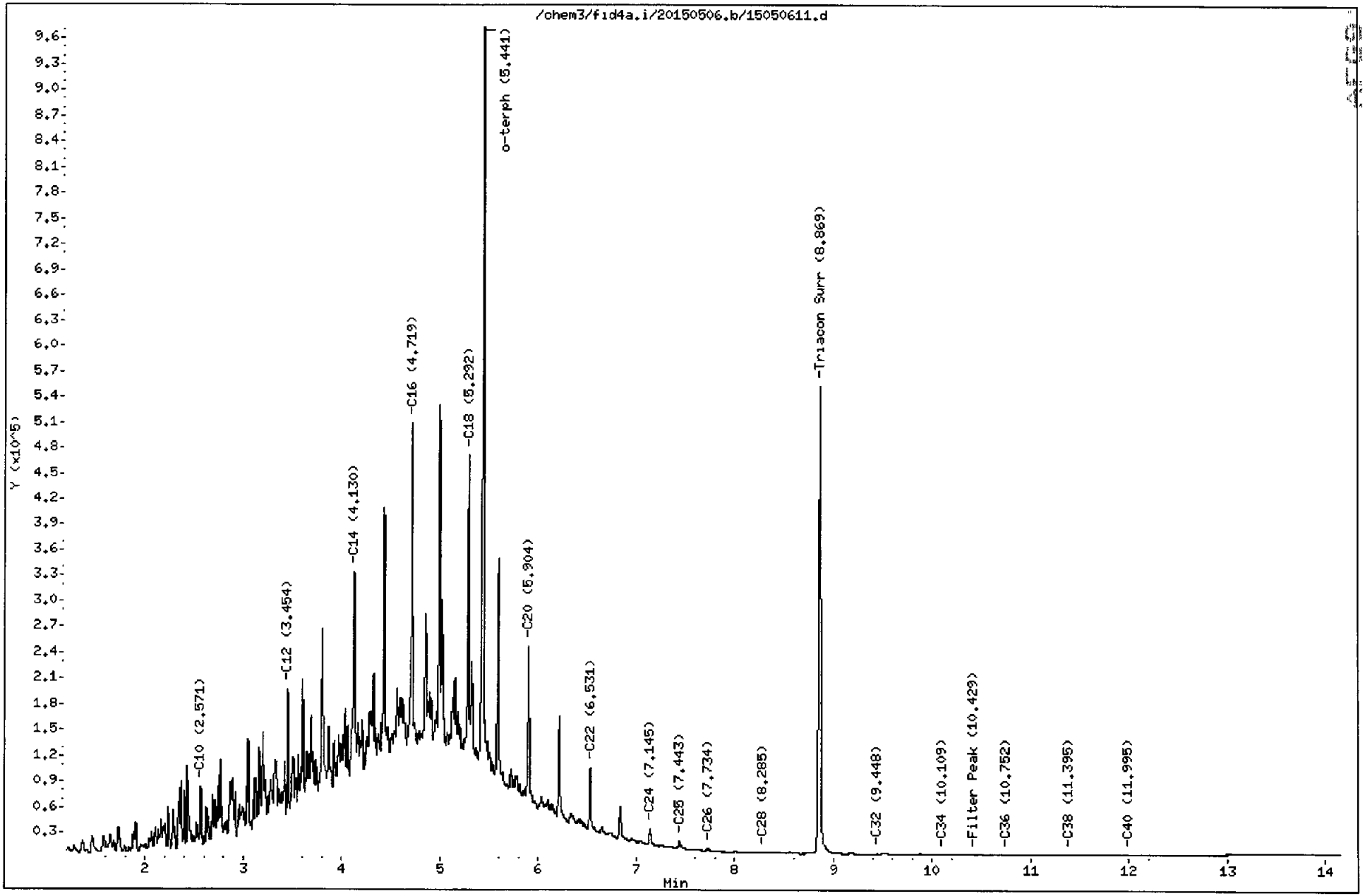
Sample Info: AFG9AMSD

Column phase: RTX-1

Instrument: fid4a.i

Operator: ML

Column diameter: 0.25



SAMPLE RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Client ID: MW-1
ARI ID: 15-8557 AFG9A

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	05/06/15 050615#1	SM 2320	mg/L CaCO3	1.0	55.0
Carbonate	05/06/15	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	05/06/15	SM 2320	mg/L CaCO3	1.0	55.0
Hydroxide	05/06/15	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Ferrous Iron	05/01/15 050115#1	SM3500 FeD	mg/L	0.040	< 0.040 U
N-Nitrate	05/01/15	Calculated	mg-N/L	0.010	0.382
N-Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	0.382
Sulfate	05/04/15 050415#1	EPA 375.2	mg/L	20.0	285
Sulfide	05/07/15 050715#1	SM4500-S2D	mg/L	0.050	< 0.050 U
Total Organic Carbon	05/11/15 051115#1	EPA 9060	mg/L	1.50	2.85

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Client ID: MW-2
ARI ID: 15-8558 AFG9B

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	05/06/15 050615#1	SM 2320	mg/L CaCO3	1.0	123
Carbonate	05/06/15	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	05/06/15	SM 2320	mg/L CaCO3	1.0	123
Hydroxide	05/06/15	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Ferrous Iron	05/01/15 050115#1	SM3500 FeD	mg/L	0.040	0.218
N-Nitrate	05/01/15	Calculated	mg-N/L	0.010	< 0.010 U
N-Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Sulfate	05/04/15 050415#1	EPA 375.2	mg/L	20.0	254
Sulfide	05/07/15 050715#1	SM4500-S2D	mg/L	0.050	< 0.050 U
Total Organic Carbon	05/11/15 051115#1	EPA 9060	mg/L	1.50	3.44

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Client ID: MW-51
ARI ID: 15-8559 AFG9C

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	05/06/15 050615#1	SM 2320	mg/L CaCO3	1.0	134
Carbonate	05/06/15	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	05/06/15	SM 2320	mg/L CaCO3	1.0	134
Hydroxide	05/06/15	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Ferrous Iron	05/01/15 050115#1	SM3500 FeD	mg/L	0.040	0.080
N-Nitrate	05/01/15	Calculated	mg-N/L	0.010	0.012
N-Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	0.012
Sulfate	05/04/15 050415#1	EPA 375.2	mg/L	20.0	236
Sulfide	05/07/15 050715#1	SM4500-S2D	mg/L	0.050	< 0.050 U
Total Organic Carbon	05/11/15 051115#1	EPA 9060	mg/L	1.50	3.42

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Client ID: MW-3
ARI ID: 15-8560 AFG9D

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	05/01/15	Calculated	mg-N/L	0.010	< 0.010 U
N-Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Nitrate + Nitrite	05/01/15 050115#1	EPA 353.2	mg-N/L	0.010	< 0.010 U
Sulfate	05/04/15 050415#1	EPA 375.2	mg/L	20.0	57.8
Sulfide	05/07/15 050715#1	SM4500-S2D	mg/L	0.050	< 0.050 U
Total Organic Carbon	05/11/15 051115#1	EPA 9060	mg/L	1.50	11.1

RL Analytical reporting limit
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Ferrous Iron	SM3500 FeD	05/01/15	mg/L	< 0.040 U	
N-Nitrite	EPA 353.2	05/01/15	mg-N/L	< 0.010 U	FB
Nitrate + Nitrite	EPA 353.2	05/01/15	mg-N/L	< 0.010 U	FB
Sulfate	EPA 375.2	05/04/15	mg/L	< 2.0 U	FB
Sulfide	SM4500-S2D	05/07/15	mg/L	< 0.050 U	
Total Organic Carbon	EPA 9060	05/11/15	mg/L	< 1.50 U	

FB Filtration Blank

LAB CONTROL RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Ferrous Iron SM3500 FeD	ICVL	05/01/15	mg/L	0.497	0.500	99.4%
Sulfide SM4500-S2D	ICVL	05/07/15	mg/L	0.487	0.503	96.8%

STANDARD REFERENCE RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Alkalinity ERA #P224-506	SM 2320	05/06/15	mg/L CaCO3	61.2	61.7	99.2%
N-Nitrite ERA #141113	EPA 353.2	05/01/15	mg-N/L	0.500	0.500	100.0%
Nitrate + Nitrite ERA #320614	EPA 353.2	05/01/15	mg-N/L	0.486	0.500	97.2%
Sulfate ERA 131013	EPA 375.2	05/04/15	mg/L	15.5	15.0	103.3%
Total Organic Carbon ERA #0408-13-02	EPA 9060	05/11/15	mg/L	19.2	20.0	96.0%

REPLICATE RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: AFG9A Client ID: MW-1						
Alkalinity	SM 2320	05/06/15	mg/L CaCO3	55.0	55.4	0.7%
Carbonate	SM 2320	05/06/15	mg/L CaCO3	< 1.0	< 1.0	NA
Bicarbonate	SM 2320	05/06/15	mg/L CaCO3	55.0	55.4	0.7%
Hydroxide	SM 2320	05/06/15	mg/L CaCO3	< 1.0	< 1.0	NA
Ferrous Iron	SM3500 FeD	05/01/15	mg/L	< 0.040	< 0.040	NA
N-Nitrite	EPA 353.2	05/01/15	mg-N/L	< 0.010	< 0.010	NA
Nitrate + Nitrite	EPA 353.2	05/01/15	mg-N/L	0.382	0.377	1.3%
Sulfate	EPA 375.2	05/04/15	mg/L	285	289	1.4%
Sulfide	SM4500-S2D	05/07/15	mg/L	< 0.050	< 0.050	NA
Total Organic Carbon	EPA 9060	05/11/15	mg/L	2.85	2.78	2.5%

MS/MSD RESULTS-CONVENTIONALS
AFG9-Pacific Groundwater Group

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 05/13/15

Project: South Riverside DR (SPU Rive
Event: JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: AFG9A Client ID: MW-1							
Ferrous Iron	SM3500 FeD	05/01/15	mg/L	< 0.040	0.425	0.400	106.2%
N-Nitrite	EPA 353.2	05/01/15	mg-N/L	< 0.010	0.488	0.500	97.6%
Nitrate + Nitrite	EPA 353.2	05/01/15	mg-N/L	0.382	0.851	0.500	93.8%
Sulfate	EPA 375.2	05/04/15	mg/L	285	607	300	107.3%
Sulfide	SM4500-S2D	05/07/15	mg/L	< 0.050	0.441	0.500	88.2%
Total Organic Carbon	EPA 9060	05/11/15	mg/L	2.85	22.0	20.0	95.8%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-1
SAMPLE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	**7439-92-1**	**Lead**	0.1	**0.1**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: MW-1
DUPLICATE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Lead	200.8	0.1	0.1	0.0%	+/- 0.1	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-1
MATRIX SPIKE

Lab Sample ID: AFG9A
LIMS ID: 15-8557
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Lead	200.8	0.1	18.4	25.0	73.2%	N

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-2
SAMPLE

Lab Sample ID: AFG9B
LIMS ID: 15-8558
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	**7439-92-1**	**Lead**	0.1	**3.3**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-51
SAMPLE

Lab Sample ID: AFG9C
LIMS ID: 15-8559
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	**7439-92-1**	**Lead**	0.1	**0.2**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-3
SAMPLE

Lab Sample ID: AFG9D
LIMS ID: 15-8560
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	**7439-92-1**	**Lead**	0.1	**0.4**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-1
SAMPLE

Lab Sample ID: AFG9E
LIMS ID: 15-8561
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/08/15	**7440-38-2**	**Arsenic**	1	**3**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

AFG9 · 000AT

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-2
SAMPLE

Lab Sample ID: AFG9F
LIMS ID: 15-8562
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/08/15	**7440-38-2**	**Arsenic**	0.5	**3.1**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-51
SAMPLE

Lab Sample ID: AFG9G
LIMS ID: 15-8563
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/08/15	**7440-38-2**	**Arsenic**	0.5	**3.0**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-3
SAMPLE

Lab Sample ID: AFG9H
LIMS ID: 15-8564
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside)
JK0707
Date Sampled: 05/01/15
Date Received: 05/01/15

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	**7440-38-2**	**Arsenic**	0.2	**1.6**	

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: AFG9MB
LIMS ID: 15-8560
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: AFG9LCS
LIMS ID: 15-8560
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Lead	200.8	23.5	25.0	94.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: AFG9MB
LIMS ID: 15-8564
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	05/05/15	200.8	05/07/15	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given LOQ
LOQ-Limit of Quantitation

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: LAB CONTROL

Lab Sample ID: AFG9LCS
LIMS ID: 15-8564
Matrix: Water
Data Release Authorized:
Reported: 05/11/15

QC Report No: AFG9-Pacific Groundwater Group
Project: South Riverside DR (SPU Riverside) JK0707
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	24.9	25.0	99.6%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

PGG **Sampling Event: 2015 Q1**

Data Quality Assessment Report

Sample Summary

Date Range of Sample Collection

01-May-15 to 01-May-15

Lab Batches Included:

Batch	***Lab***	***Nominal Date***	***Samples***
afg9	ARI	01-May-15	
			MW-1
			MW-2
			MW-3
			MW-51
			River
			Trip Blank

Trip Blanks:

Blank Detects:

Associated Detects Less Than Max Threshold: 1

Field Blanks:

Blank Detects:

Field Blank- Associated Detects Less Than Max Threshold: 1

Method Blanks:

Blank Detects:

Method Blank- Associated Data Less Than Max Threshold: 1

Field Duplicates:

Duplicate Detects:

Batch	Constituent	Limit	Result	Qualifier	Dup Result	Dup Qual	Units
afg9	1,1,2-Trichlorotrifluoroethane	0.2	2.9		3.3		ug/L
afg9	1,1-Dichloroethene	0.2	0.35		0.41		ug/L

afg9	1-Methylnaphthalene	0.011		U	0.016		ug/L
afg9	Acenaphthene	0.011	0.037		0.076		ug/L
afg9	Alkalinity as CaCO3, Total	1	123		134		mg/L CaCO3
afg9	Alkalinity, Bicarb as CaCO3	1	123		134		mg/L CaCO3
afg9	Anthracene	0.011	0.012			U	ug/L
afg9	Arsenic, Dissolved	0.5	3.1		3		ug/L
afg9	Benzo(g,h,i)perylene	0.011	0.03		0.011		ug/L
afg9	Benzo[a]anthracene	0.011	0.025			U	ug/L
afg9	Benzo[a]pyrene	0.011	0.043		0.016		ug/L
afg9	Carbon, Total Organic	1.5	3.44		3.42		mg/L
afg9	Chrysene	0.011	0.063		0.03		ug/L
afg9	cis-1,2-Dichloroethene	0.2	20		28		ug/L
afg9	Dibenzofuran	0.011	0.012		0.019		ug/L
afg9	Ferrous Iron	0.04	0.218		0.08		ug/L
afg9	Fluoranthene	0.011	0.058		0.025		ug/L
afg9	Fluorene	0.011		U	0.013		ug/L
afg9	Indeno[1,2,3-cd]pyrene	0.011	0.022			U	ug/L
afg9	Lead, Total	0.1	3.3		0.2		ug/L
afg9	Naphthalene	0.011	0.026		0.057		ug/L
afg9	Nitrate as N	0.01		U	0.012		mg/L as N
afg9	Nitrate+Nitrite as N	0.01		U	0.012		mg/L as N
afg9	Phenanthrene	0.011	0.034		0.014		ug/L
afg9	Pyrene	0.011	0.059		0.026		ug/L
afg9	Sulfate	20	254		236		mg/L
afg9	Tetrachloroethene (PCE)	0.2	0.83		1.2		ug/L
afg9	Total Benzofluoranthenes	0.022	0.088	Q	0.034	Q	ug/L
afg9	trans-1,2-Dichloroethene	0.2	0.59		0.69		ug/L
afg9	Trichloroethene (TCE)	0.2	5.3		6.5		ug/L
afg9	Vinyl Chloride	0.2	2.4		3.3		ug/L
afg9	Vinyl Chloride	0.2	2.4		3.5	E	ug/L

Field Duplicate- Associated Data Outside of QA/QC Criteria: [2]

Batch	***Analysis***	***Constituent***	***Sample***	***Dil'n***	***Result***	***Units***	***Qual***	***RPD***
afg9	SW8260C	Vinyl Chloride	MW-2	1	2.4	ug/L		37.3
		Field duplicate	MW-51	1	3.5	ug/L	E	

afg9	SW8260C	Tetrachloroethene (PCE)	MW-2	1	0.83	ug/L	36.5
		Field duplicate	MW-51	1	1.2	ug/L	
afg9	LL SW8270	Naphthalene	MW-2	1	0.026	ug/L	74.7
		Field duplicate	MW-51	1	0.057	ug/L	
afg9	LL SW8270	Acenaphthene	MW-2	1	0.037	ug/L	69
		Field duplicate	MW-51	1	0.076	ug/L	
afg9	LL SW8270	Phenanthrene	MW-2	1	0.034	ug/L	83.3
		Field duplicate	MW-51	1	0.014	ug/L	
afg9	LL SW8270	Fluoranthene	MW-2	1	0.058	ug/L	79.5
		Field duplicate	MW-51	1	0.025	ug/L	

afg9	LL SW8270	Pyrene		MW-2	1	0.059	ug/L		77.6
			Field duplicate	MW-51	1	0.026	ug/L		
afg9	LL SW8270	Benzo[a]anthracene		MW-2	1	0.025	ug/L		
			Field duplicate	MW-51	1		ug/L	U	
afg9	LL SW8270	Chrysene		MW-2	1	0.063	ug/L		71
			Field duplicate	MW-51	1	0.03	ug/L		
afg9	LL SW8270	Benzo[a]pyrene		MW-2	1	0.043	ug/L		91.5
			Field duplicate	MW-51	1	0.016	ug/L		
afg9	LL SW8270	Indeno[1,2,3-cd]pyrene		MW-2	1	0.022	ug/L		
			Field duplicate	MW-51	1		ug/L	U	

afg9	LL SW8270	Benzo(g,h,i)perylene	MW-2	1	0.03	ug/L		92.7
		Field duplicate	MW-51	1	0.011	ug/L		
afg9	LL SW8270	Total Benzofluoranthenes	MW-2	1	0.088	ug/L	Q	88.5
		Field duplicate	MW-51	1	0.034	ug/L	Q	
afg9	E200.8	Lead, Total	MW-2	2	3.3	ug/L		177.1
		Field duplicate	MW-51	2	0.2	ug/L		
afg9	SM3500 Fe	Ferrous Iron	MW-2	1	0.218	ug/L		92.6
		Field duplicate	MW-51	1	0.08	ug/L		

Lab Duplicates:

Duplicate Detects:

Batch	***Constituent***	***Sample***	***Limit***	***Result***	***Dup Result***	***Units***
afg9	Alkalinity as CaCO3, Total	MW-1	1	55	55.4	mg/L CaCO3
afg9	Alkalinity, Bicarb as CaCO3	MW-1	1	55	55.4	mg/L CaCO3
afg9	Carbon, Total Organic	MW-1	1.5	2.85	2.78	mg/L

afg9	Lead, Total	MW-1	0.1	0.1	0.1	ug/L
afg9	Nitrate+Nitrite as N	MW-1	0.01	0.382	0.377	mg/L as N
afg9	Sulfate	MW-1	20	285	289	mg/L

Lab Duplicate- Associated Data Outside of QA/QC Criteria: [2]

Reporting Limit Exceedances for non-detects: [3]

Batch	Constituent	Sample	SL	Result	Units
afg9	Benzo[a]anthracene	MW-3	0.01	0.012 U	ug/L
afg9	Benzo[a]anthracene	MW-51	0.01	0.011 U	ug/L
afg9	Benzo[a]pyrene	MW-3	0.01	0.012 U	ug/L
afg9	Chrysene	MW-3	0.01	0.012 U	ug/L
afg9	Dibenzo(a,h)anthracene	MW-2	0.01	0.011 U	ug/L
afg9	Dibenzo(a,h)anthracene	MW-3	0.01	0.012 U	ug/L
afg9	Dibenzo(a,h)anthracene	MW-51	0.01	0.011 U	ug/L
afg9	Indeno[1,2,3-cd]pyrene	MW-3	0.01	0.012 U	ug/L
afg9	Indeno[1,2,3-cd]pyrene	MW-51	0.01	0.011 U	ug/L
afg9	Vinyl Chloride	MW-1	0.18	0.2 U	ug/L
afg9	Vinyl Chloride	Trip Blank	0.18	0.2 U	ug/L

Holding Times Exceedances: [4]

Spike Recoveries Outside of QC Range: [5]

Batch	Constituent	Sample	Spike Type	% Recovery	Min%	Max%
afg9	1-Methylnaphthalene	MW-1	MD	88	120	120
afg9	1-Methylnaphthalene	MW-1	MS	88	120	120
afg9	2-Methylnaphthalene	MW-1	MD	89	120	120
afg9	2-Methylnaphthalene	MW-1	MS	88	120	120
afg9	Acenaphthene	MW-1	MD	91	120	120
afg9	Acenaphthene	MW-1	MS	90	120	120
afg9	Acenaphthylene	MW-1	MD	92	120	120
afg9	Acenaphthylene	MW-1	MS	91	120	120
afg9	Anthracene	MW-1	MD	89	120	120
afg9	Anthracene	MW-1	MS	84	120	120
afg9	Benzo(g,h,i)perylene	MW-1	MD	98	120	120
afg9	Benzo(g,h,i)perylene	MW-1	MS	97	120	120
afg9	Benzo[a]anthracene	MW-1	MD	96	120	120
afg9	Benzo[a]anthracene	MW-1	MS	94	120	120
afg9	Benzo[a]pyrene	MW-1	MD	75	120	120

afg9	Benzo[a]pyrene	MW-1	MS	64	120	120
afg9	Chrysene	MW-1	MD	100	120	120
afg9	Chrysene	MW-1	MS	99	120	120
afg9	Dibenzo(a,h)anthracene	MW-1	MD	107	120	120
afg9	Dibenzo(a,h)anthracene	MW-1	MS	107	120	120
afg9	Dibenzofuran	MW-1	MD	90	120	120
afg9	Dibenzofuran	MW-1	MS	89	120	120
afg9	Fluoranthene	MW-1	MD	100	120	120
afg9	Fluoranthene	MW-1	MS	98	120	120
afg9	Fluorene	MW-1	MD	96	120	120
afg9	Fluorene	MW-1	MS	94	120	120
afg9	Indeno[1,2,3-cd]pyrene	MW-1	MD	103	120	120
afg9	Indeno[1,2,3-cd]pyrene	MW-1	MS	103	120	120
afg9	Lead, Total	MW-1	MS	73	75	125
afg9	Naphthalene	MW-1	MD	92	120	120
afg9	Naphthalene	MW-1	MS	94	120	120
afg9	Phenanthrene	MW-1	MD	93	120	120
afg9	Phenanthrene	MW-1	MS	92	120	120
afg9	Pyrene	MW-1	MD	98	120	120
afg9	Pyrene	MW-1	MS	97	120	120
afg9	Total Benzofluoranthenes	MW-1	MD	106	120	120
afg9	Total Benzofluoranthenes	MW-1	MS	106	120	120

COC:

Batch	***COC Quality***	***Cooler Temp***	***Bubbles in VOAs***
afg9	Good	Good	No

Notes:
1. BLANKS: identifies reported constituent concentrations associated with a detected blank concentration depending on whether a constituent detected in a blank exceeds 5 times the reporting limit (or 10 times for common lab contaminants).
2. DUPLICATES: identifies reported constituent concentrations associated with a duplicate depending on a comparision with the original sample (relative percent difference > 30% if detect greater than 5 times the reporting limit, else if the absolute difference between the detects exceeds the reporting limit).
3. REPORTING LIMITS: identifies data with reporting limits exceeding project screening levels (SLs).
4. HOLDING TIMES: identifies data tested after the method holding time.
5. SPIKE RECOVERIES: identifies lab spike recoveries outside of lab specified range or default of 70 - 130%