DRAFT

October 6, 2023

Sam Hunn
Washington State Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

Dear Mr. Hunn:

Included are the results from the characterization of the product, product/water, water, and soil samples for your Marcus Whitman project. The samples Public Works 001, Circle K P001, Circle K R001, Chevron R001, Container 106 N 2nd from Sump, 106 N 2nd-Sump, MWCC basement 001, and MWCC basement 002 were collected on September 21, 2023 and received by Apex Forensics on September 21, 2023. It should be noted that the samples were received at 23.4ºC which exceeds the requirements for proper storage at less than 6ºC. The samples were assigned work order number A3I1304 and placed in a refrigerator maintained at 6°C until removed for sample processing.

The focus of this evaluation was to compare the contamination present in the sample Container 106 N 2nd from Sump (the "unknown" sample) to the known potential source samples Public Works 001, Circle K P001, Circle K R001, and Chevron R001. These source samples are representative samples of fuel stored in different USTs containing gasoline in the Study Area. It should be noted that the gasoline present in the sample Chevron R001 is primarily regular grade gasoline but is known to be mixed with a much lesser amount of premium grade gasoline from the same gasoline station. The findings of this evaluation are provided below.

PRODUCT SAMPLE ANALYSES SUMMARY

The sample Container 106 N 2nd from Sump was a biphasic sample consisting of an approximate 3:1 ratio of product to water. A portion of the product phase present was separated for analysis.

The product phase of the sample Container 106 N 2nd from Sump was analyzed using American Society for Testing and Materials (ASTM) Method D2887-14 to evaluate the presence or absence of medium to high boiling products such as kerosene, diesel fuel, hydraulic oil, lubricating oil, and products within a similar boiling range. The ASTM D2887-14 testing did not identify medium or high boiling material but did identify low boiling material. A written summary regarding the identification and characterization of the

material present in the sample is enclosed. The data associated with this testing is included in Appendix A.

As low boiling material was identified in the sample Container 106 N 2nd from Sump, identification and characterization of the material present was completed using ASTM D7096-10. The source samples (Public Works 001, Circle K P001, Circle K R001, and Chevron R001) were also analyzed using ASTM D7096-10. This analysis is primarily used to characterize gasoline and gasoline blending components which boil between 36°C and 280°C.

To prepare the samples for the ASTM D7096-10 analysis, an aliquot of each sample (unknown and source samples) was diluted with carbon disulfide containing a retention time marker. The diluent was then analyzed using an Agilent 6890 Gas Chromatograph with a Flame Ionization Detector (GC/FID) under the conditions specified in the ASTM Method with modifications to increase peak to peak resolution. A written summary regarding the identification and characterization of the material present in each sample is enclosed. The GC/FID traces generated for the ASTM D7096-10 analysis, including those generated for reference materials and quality assurance samples, are enclosed in Appendix B.

In addition, the product samples Public Works 001, Circle K P001, Circle K R001, Chevron R001, and Container 106 N 2nd from Sump were analyzed for Detailed Hydrocarbon Analysis (DHA) following ASTM D6730-11. This analysis differentiates 158 volatile constituents including oxygenates as well as paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO constituents) commonly found in gasoline. This method includes the use of a cryogenically cooled oven which allows for enhanced sensitivity and improved resolution of critical analyte pairs. The samples were also analyzed for filtered lead and manganese using an inductively coupled plasma mass spectrometer (ICP-MS). The sample Container 106 N 2nd from Sump was analyzed for organic lead and manganese speciation using GC/ECD. The results of the DHA, ICP-MS, and GC/ECD testing, including the associated quality assurance, are enclosed in Appendix C.

WATER SAMPLE ANALYSES SUMMARY

The water phase of the biphasic sample Container 106 N 2nd from Sump was analyzed for the oxygenates ethanol, methyl *t*-butyl ether (MTBE), *tert*-butanol (TBA), diisopropyl ether (DIPE), ethyl *tert*-butyl ether (ETBE), and *tert*-amyl methyl ether (TAME), as well as the lead scavengers 1,2-dibromoethane (EDB) and 1,2-dichloroethane (EDC) using GC/MS. A twentyfold dilution was performed on an aliquot of this water sample prior to analysis due to the high level of contamination present. The results of this testing, including the associated quality assurance, are also enclosed in Appendix C.

Per discussions with the client, the sample 106 N 2nd-Sump (which consisted almost entirely of water) as well as the soil samples MWCC basement 001 and MWCC basement 002 were not selected to be included in this evaluation.

DHA EVALUATION SUMMARY

Bar charts generated from the DHA analysis of the samples Public Works 001, Circle K P001, Circle K R001, Chevron R001, and Container 106 N 2nd from Sump are provided in Appendix D. Common diagnostic parameters generated from the DHA results as well as a summary of the PIANO composition of each sample are provided in Tables 1 and 2.

Also provided in Table 1 and 2 are reference values for the low, high, average, and median values for undegraded, regular grade gasolines.[1] Values that fell below the expected reference range in the unknown and/or source samples are highlighted in yellow, while values that exceeded the reference range are highlighted in green. In addition, values that are outlined with a black box indicate the values found in the source samples (Public Works 001, Circle K P001, Circle K R001, and Chevron R001) that most closely match the result for the unknown sample Container 106 N 2nd from Sump. It should be noted that this last comparison was not completed for the highly volatile compounds butane, isopentane and pentane due to weathering considerations.

A corresponding star diagram of the PIANO composition of each sample is also provided as Figure 1. The results used in this diagram have been adjusted for ethanol for the source samples (Public Works 001, Circle K P001, Circle K R001, and Chevron R001) as this analyte is volatile, miscible with water, and typically readily diffuses out of the gasoline following its release into the environment and contact with groundwater.

[1] These undegraded regular grade reference gasolines are unleaded and contain ethanol as the primary oxygenate. These eleven reference gasolines were collected from dispensers in 2022 and were submitted to Apex Forensics for analysis.

Table 1. DHA Diagnostic Parameters

	Public Works 001 A3I1304-01	**Circle K P001** A3I1304-02	**Circle K R001** A3I1304-03	**Chevron R001** A3I1304-04	**Container 106 N 2nd from Sump** A3I1304-05	**Typical Undegraded Regular Gasoline** Low	High	Average	Median
Evaporation									
butane (% m/m)	0.26	0.15	0.19	0.12	0.017	0.11	1.4	0.38	0.27
isopentane (%m/m)	8.2	5.7	7.4	7.7	5.2	3.6	8.6	6.2	6.3
pentane (% m/m)	4.7	1.8	4.9	4.0	3.0	1.4	4.2	3.2	3.3
toluene + 2,3,3-trimethylpentane (% m/m)	7.3	7.0	5.3	8.5	8.8	3.3	14	6.0	5.2
Water Washing									
benzene (% m/m)	0.66	0.73	1.1	0.57	0.53	0.37	1.0	0.65	0.63
(benzene + toluene + 2,3,3-trimethylpentane) / (ethylbenzene + xylenes)	0.97	1.3	0.84	0.92	0.82	0.71	1.8	1.0	1.0
Biodegradation									
3-methylhexane / n-heptane	1.1	1.4	1.2	1.2	1.2	0.84	1.2	1.1	1.1
methylcyclohexane / n-heptane	0.48	0.31	0.56	0.37	0.41	0.25	1.6	0.71	0.71
isoparaffins + naphthenes/paraffins	3.4	10	3.1	3.5	3.8	2.8	4.8	3.5	3.4
total normal alkanes	11	4.3	11	10	10	5.6	11	9.7	10

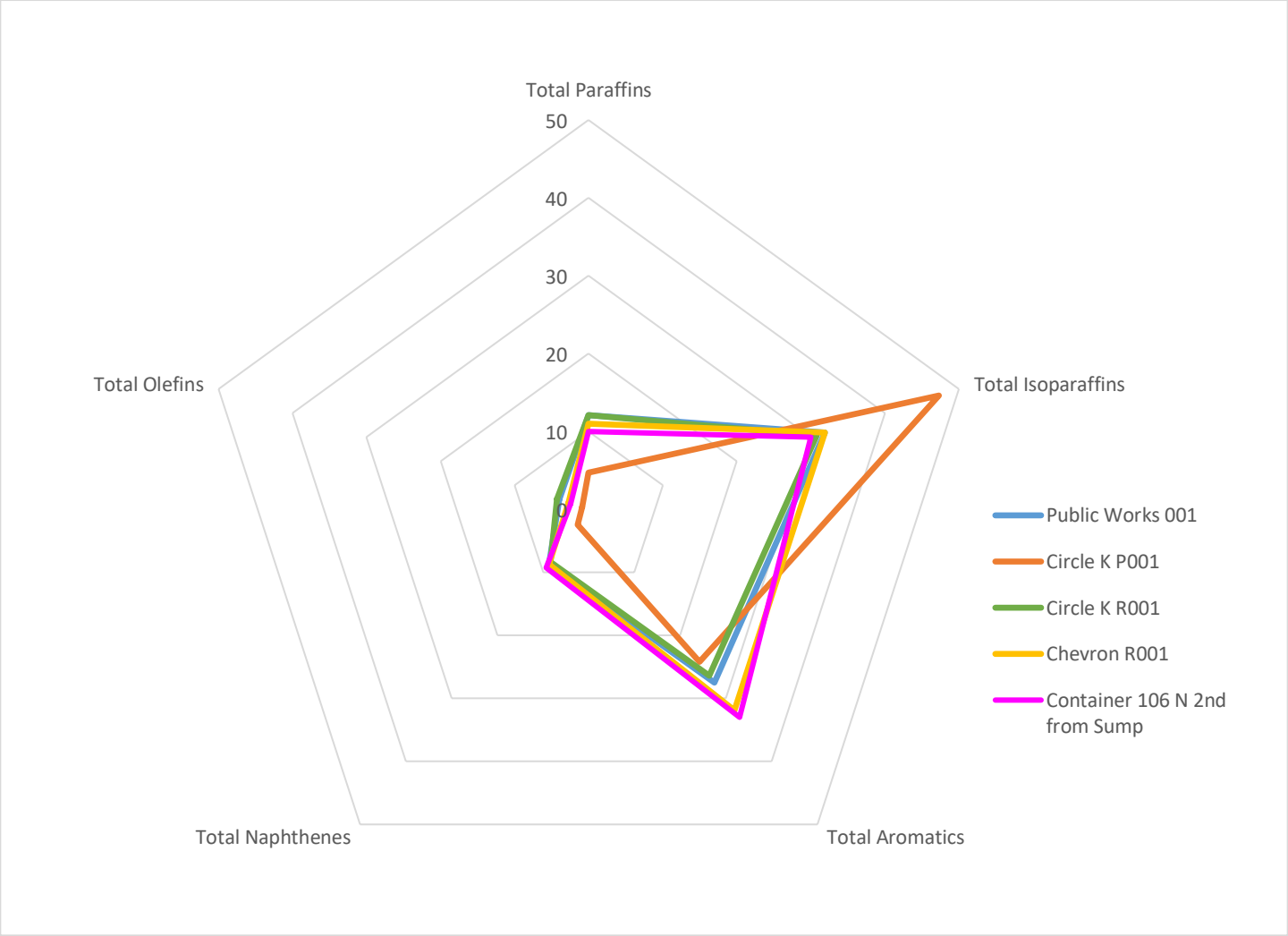
Table 1. DHA Diagnostic Parameters (continued)

	Public Works 001 A3I1304-01	**Circle K P001** A3I1304-02	**Circle K R001** A3I1304-03	**Chevron R001** A3I1304-04	**Container 106 N 2nd from Sump** A3I1304-05	**Typical Undegraded Regular Gasoline** Low	High	Average	Median
General Characterization Parameters									
isooctane (% m/m)	2.0	12	1.7	0.75	1.3	0.60	6.0	3.1	2.9
n-octane (% m/m)	1.0	0.35	0.8	1.0	1.3	0.85	1.4	1.1	1.1
ethanol (% m/m)	11	11	10	10	<0.01	9.6	11	10	10
toluene + 2,3,3-trimethylpentane / methylcyclohexane	7.7	32	6.0	11	8.7	1.6	40	8.5	4.5
aromatics / total paraffins	2.3	5.1	2.1	2.8	3.2	1.6	6.0	2.3	1.9
aromatics / naphthenes	3.1	10	3.2	3.6	3.5	1.2	8.7	3.2	2.5
isooctane / methylcyclohexane	2.2	56	1.9	1.0	1.3	0.46	16	3.9	2.6
naphthalene / dodecane	3.4	11	4.7	4.0	4.0	1.2	5.7	2.9	2.3
isopentane / isopentane + *n*-pentane	0.63	0.77	0.6	0.66	0.64	0.59	0.73	0.66	0.66
(isooctane + toluene + 2,3,3-trimethylpentane) / (*n*-heptane + *n*-octane)	3.1	18	3.0	3.0	2.7	2.1	9.7	3.6	3.1

Table 2. PIANO Composition

Total Paraffins	11	4.3	11	10	10	5.6	11	9.7	10
Total Isoparaffins	29	43	28	29	30	22	29	26	27
Total Aromatics	25	22	24	29	33	14	33	21	20
Total Naphthenes	7.9	2.2	7.6	7.9	9.3	3.9	11	7.6	8.2
Total Olefins	3.6	0.79	3.9	2.5	2.4	1.7	6.4	4.4	4.1

Figure 1. PIANO Star Diagram - Source samples adjusted for ethanol (%m/m)



In addition, a statistical evaluation was completed using the DHA data generated for the source samples Public Works 001, Circle K P001, Circle K R001, and Chevron R001 and the unknown sample Container 106 N 2nd from Sump. This evaluation included linear regression and agglomerative hierarchical clustering (AHC) analysis. It should be noted that due to weathering considerations, only benzene and compounds eluting after benzene were included in this evaluation, and the results were adjusted for ethanol for the source samples.

Linear regression is a statistical evaluation that can be used to quantitatively describe the similarity that exists between two samples. For this evaluation, the data for two samples is plotted in a scatter plot and a single straight line is fitted through the data points in the plot. The correlation (or regression) coefficient (r^2) is then determined in order to provide some measure of the "fit" of the line to the data. If the results of the scatter plot evaluation fall on the line, the correlation coefficient is 1.00, indicating no variation between the data point and

its estimated or calculated location (the line). If the points appear very random, then the data sets do not show any linear correlation and the correlation coefficient approaches zero. The results of the linear regression evaluation are provided in Table 3.

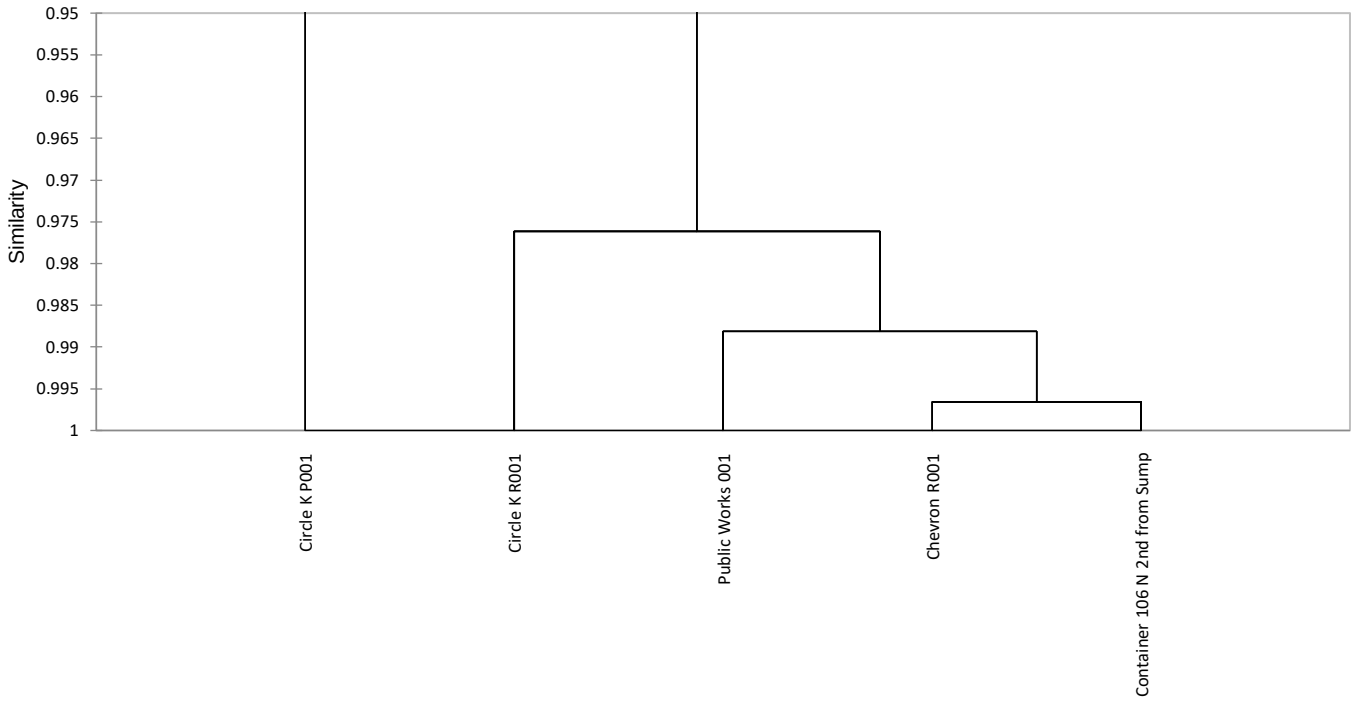
Table 3. Correlation Coefficient Summary

	Public Works 001	Circle K P001	Circle K R001	Chevron R001	Container 106 N 2nd from Sump
Public Works 001		0.614	0.982	0.986	0.990
Circle K P001			0.636	0.499	0.527
Circle K R001				0.967	0.979
Chevron R001					0.997
Container 106 N 2nd from Sump					

AHC is a data analysis technique that groups (or clusters) samples based on similarities or dissimilarities using an iterative calculation process. The similarities/dissimilarities of the samples to each other are determined based on the agglomeration criteria selected. The results of the AHC analysis are graphically represented by a binary tree structure called a dendrogram. The dendrogram represents a hierarchy of groupings between the samples with the most similar samples being connected nearest the x-axis, or towards the highest similarity coefficient. The dendrogram generated from this evaluation is provided as Figure 2.[2]

[2] The AHC analysis used in this evaluation was completed using XLStat Version 2023.1.6 following the unweighted pair-group average method with proximity based on similarity/Pearson correlation coefficients.

Figure 2. AHC Dendrogram



DISCUSSION OF PRODUCT AND WATER RESULTS

Based on review of all the data generated, the following is a summary of key findings regarding comparison of the unknown sample Container 106 N 2nd from Sump to the source samples Public Works 001, Circle K P001, Circle K R001, and Chevron R001:

- The testing completed identified the product present in the unknown sample as automotive gasoline. The testing did not identify the presence of other common fuels, such as diesel fuel, or medium and higher boiling oils.

- The testing completed identified that the gasoline present in the unknown sample has undergone some, although not extensive, evaporative weathering. This can be seen in the reduced level of highly volatile components in the unknown sample compared to the reference and source gasolines.

- The testing completed identified ethanol in the water fraction of the unknown sample. The presence of ethanol indicates that at least a portion, if not all, of the gasoline impact at this location likely contained ethanol prior to its release to the subsurface.

- The testing completed did not identify the presence of other oxygenates (MTBE, TBA, DIPE, ETBE, or TAME) or lead scavengers (EDB and EDC) at the unknown sample location.

- The testing completed did not identify the presence of organometallic additives including TEL, TML, and MMT at the unknown sample location.

- The testing completed identified that the chemical composition of the unknown sample Container 106 N 2nd from Sump showed the highest degree of correlation to the source sample Chevron R001. This includes the statistical evaluation of the DHA data provided above identifying a correlation coefficient, r^2, between these samples of 0.997.

- Comparison of the unknown sample to the remaining source samples identified lower levels of correlation, with the most variability between the Circle K P001 sample and the sample Container 106 N 2nd from Sump. This is likely due to the source sample Circle K P001 being a premium octane grade gasoline while the testing completed indicates that the unknown sample is likely primarily a regular octane grade product.

CONCLUSION

The focus of this evaluation was to compare the contamination present in the sample Container 106 N 2nd from Sump to the known source samples Public Works 001, Circle K P001, Circle K R001, and Chevron R001. The testing indicates that the sample Container 106 N 2nd from Sump is impacted by a regular grade gasoline that has likely undergone some evaporative weathering and water washing. This evaluation also identified that the chemical composition of the sample Container 106 N 2nd from Sump shows the highest degree of correlation to the source sample Chevron R001.

Additional testing of product, soil, and/or water can be used to further characterize this release, if warranted. We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Respectfully,

Kurt Johnson, Senior Chemist
Director of Forensic Services
Apex Laboratories, LLC

Enclosures

Date of Report: 10/06/23
Date Received: 09/21/23
Project: Marcus Whitman
Date Analyzed: 09/21/23

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID) BY ASTM METHOD D2887-14

Sample ID	GC Characterization
Container 106 N 2nd from Sump A3I1304-05	The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The patterns displayed by these peaks are indicative of gasoline. The low boiling compounds appear as a ragged pattern of peaks eluting from *n*-C_5 to *n*-C_{14} showing a maximum near *n*-C_5. This correlates with a temperature range of approximately 36.1°C to 254°C with a maximum near 36.1°C. Within this range, the GC/FID trace showed the presence of peaks, at varying levels, which are indicative of toluene, ethylbenzene, the xylenes, C3-benzenes, and methylnaphthalenes. The large peak seen near 25.2 minutes on the GC trace is pentacosane, added as a retention time marker and quality assurance check for this GC analysis. The peak at 1.6 minutes corresponds to the extraction solvent, carbon disulfide. The peak seen near 32.2 minutes is indicative of laboratory contamination.

Date of Report: 10/06/23
Date Received: 09/21/23
Project: Marcus Whitman
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID) BY ASTM METHOD D7096-10

Sample ID	GC Characterization
Public Works 001 A3I1304-01	The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The material present is characteristic of automotive gasoline. The low boiling compounds appear as a ragged pattern of peaks eluting from *n*-C_5 to *n*-C_{14} showing a maximum near *n*-C_5. This correlates with a temperature range of approximately 36.1°C to 254°C with a maximum near 36.1°C. Within this range, the suite of significant hydrocarbons present includes *n*-hexane, benzene, cyclohexane, *n*-heptane, toluene, *n*-octane, ethylbenzene, *m,p*-xylenes, *n*-nonane, C3-benzenes, *n*-decane, *n*-undecane, *n*-dodecane, and 1-methylnaphthalene. The relative abundance of these compounds compared to a typical undegraded gasoline indicates that little to no degradation has occurred to the fuel. The large peak seen near 35.5 minutes on the GC trace is hexadecane, added as a retention time marker and quality assurance check for this GC analysis. The peak at 1.5 minutes corresponds to the extraction solvent, carbon disulfide.

Date of Report: 10/06/23
Date Received: 09/21/23
Project: Marcus Whitman
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID) BY ASTM METHOD D7096-10

Sample ID	GC Characterization
Circle K P001 A3I1304-02	The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The material present is characteristic of automotive gasoline. The low boiling compounds appear as a ragged pattern of peaks eluting from *n*-C_5 to *n*-C_{14} showing a maximum near *n*-C_5. This correlates with a temperature range of approximately 36.1°C to 254°C with a maximum near 36.1°C. Within this range, the suite of significant hydrocarbons present includes *n*-hexane, benzene, cyclohexane, *n*-heptane, toluene, *n*-octane, ethylbenzene, *m,p*-xylenes, *n*-nonane, C3-benzenes, and 1-methylnaphthalene. The relative abundance of these compounds compared to a typical undegraded gasoline indicates that little to no degradation has occurred to the fuel. The large peak seen near 35.5 minutes on the GC trace is hexadecane, added as a retention time marker and quality assurance check for this GC analysis. The peak at 1.5 minutes corresponds to the extraction solvent, carbon disulfide.

Date of Report: 10/06/23
Date Received: 09/21/23
Project: Marcus Whitman
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID) BY ASTM METHOD D7096-10

Sample ID	GC Characterization
Circle K R001 A3I1304-03	The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The material present is characteristic of automotive gasoline. The low boiling compounds appear as a ragged pattern of peaks eluting from *n*-C_5 to *n*-C_{14} showing a maximum near *n*-C_5. This correlates with a temperature range of approximately 36.1°C to 254°C with a maximum near 36.1°C. Within this range, the suite of significant hydrocarbons present includes *n*-hexane, benzene, cyclohexane, *n*-heptane, toluene, *n*-octane, ethylbenzene, *m,p*-xylenes, *n*-nonane, C3-benzenes, *n*-decane, *n*-undecane, *n*-dodecane, 1-methylnaphthalene, and *n*-tridecane. The relative abundance of these compounds compared to a typical undegraded gasoline indicates that little to no degradation has occurred to the fuel. The large peak seen near 35.5 minutes on the GC trace is hexadecane, added as a retention time marker and quality assurance check for this GC analysis. The peak at 1.5 minutes corresponds to the extraction solvent, carbon disulfide.

Date of Report: 10/06/23
Date Received: 09/21/23
Project: Marcus Whitman
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID) BY ASTM METHOD D7096-10

Sample ID	GC Characterization
Chevron R001 A3I1304-04	The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The material present is characteristic of automotive gasoline. The low boiling compounds appear as a ragged pattern of peaks eluting from *n*-C_5 to *n*-C_{14} showing a maximum near *n*-C_5. This correlates with a temperature range of approximately 36.1°C to 254°C with a maximum near 36.1°C. Within this range, the suite of significant hydrocarbons present includes *n*-hexane, benzene, cyclohexane, *n*-heptane, toluene, *n*-octane, ethylbenzene, *m,p*-xylenes, *n*-nonane, C3-benzenes, *n*-decane, *n*-undecane, *n*-dodecane, 1-methylnaphthalene, and *n*-tridecane. The relative abundance of these compounds compared to a typical undegraded gasoline indicates that little to no degradation has occurred to the fuel. The large peak seen near 35.5 minutes on the GC trace is hexadecane, added as a retention time marker and quality assurance check for this GC analysis. The peak at 1.5 minutes corresponds to the extraction solvent, carbon disulfide.

Date of Report: 10/06/23
Date Received: 09/21/23
Project: Marcus Whitman
Date Analyzed: 09/26/23

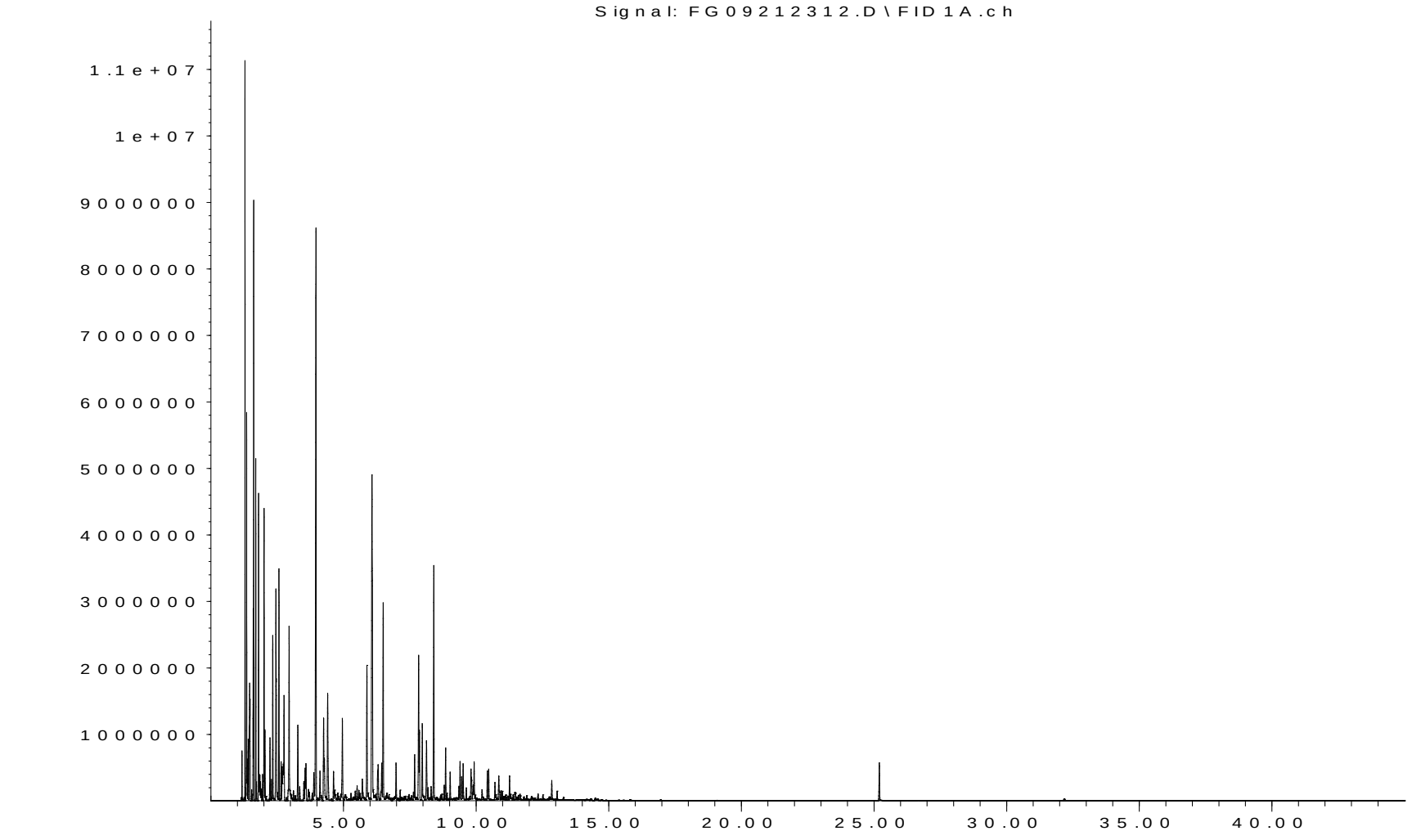
RESULTS FROM THE ANALYSIS OF THE PRODUCT SAMPLE FOR FORENSIC EVALUATION BY CAPILLARY GAS CHROMATOGRAPHY USING A FLAME IONIZATION DETECTOR (FID) BY ASTM METHOD D7096-10

Sample ID	GC Characterization
Container 106 N 2nd from Sump A3I1304-05	The GC trace using the flame ionization detector (FID) showed the presence of low boiling compounds. The material present is characteristic of automotive gasoline. The low boiling compounds appear as a ragged pattern of peaks eluting from *n*-C_5 to *n*-C_{14} showing a maximum near *n*-C_5. This correlates with a temperature range of approximately 36.1°C to 254°C with a maximum near 36.1°C. Within this range, the suite of significant hydrocarbons present includes *n*-hexane, benzene, cyclohexane, *n*-heptane, toluene, *n*-octane, ethylbenzene, *m,p*-xylenes, *n*-nonane, C3-benzenes, *n*-decane, *n*-undecane, *n*-dodecane, 1-methylnaphthalene, and *n*-tridecane. The relative abundance of these compounds compared to a typical undegraded gasoline indicates that some, although not extensive, degradation has occurred to the fuel. The large peak seen near 35.5 minutes on the GC trace is hexadecane, added as a retention time marker and quality assurance check for this GC analysis. The peak at 1.5 minutes corresponds to the extraction solvent, carbon disulfide.

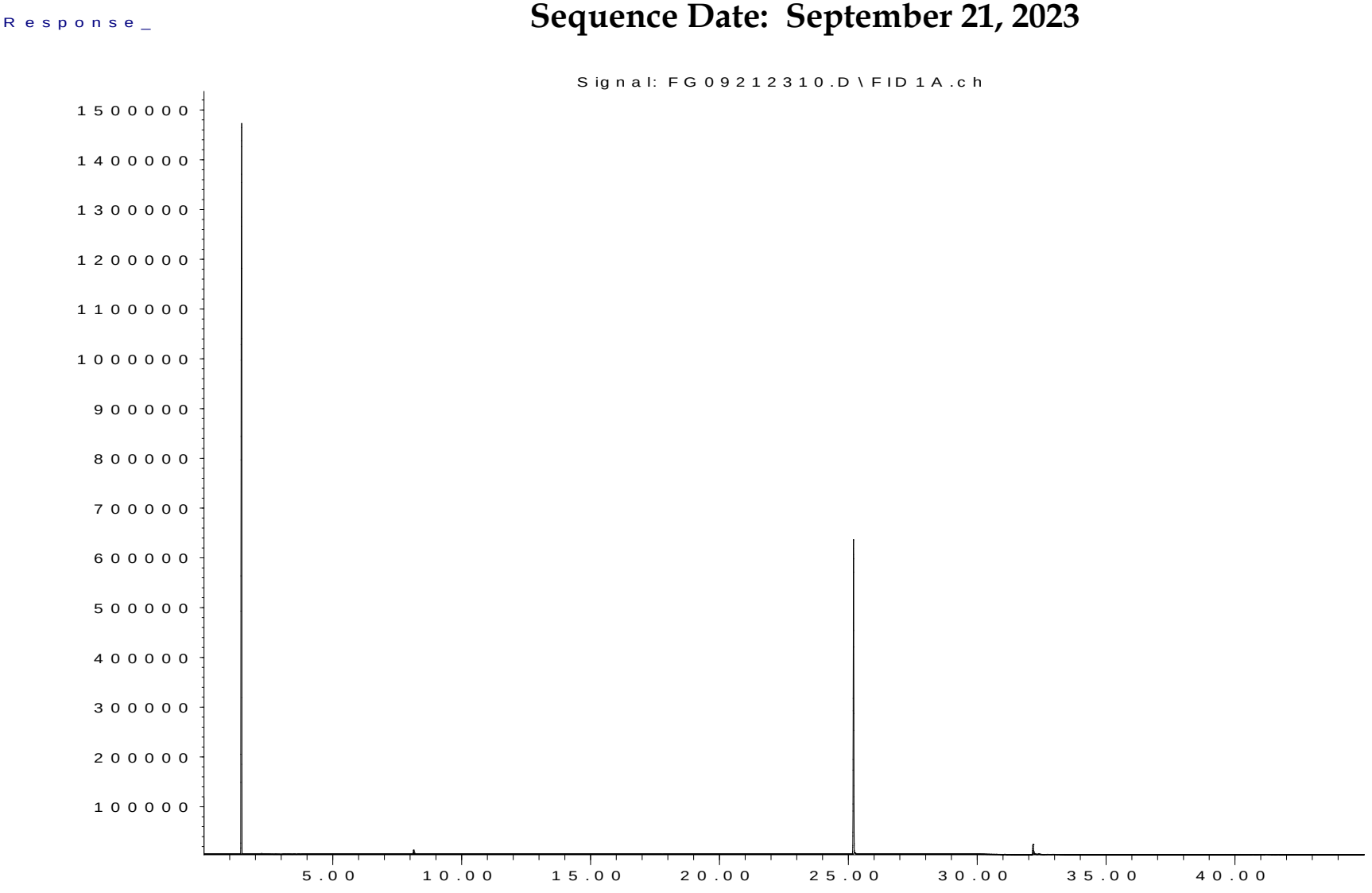
APPENDIX A

ASTM D2887-14 GC/FID

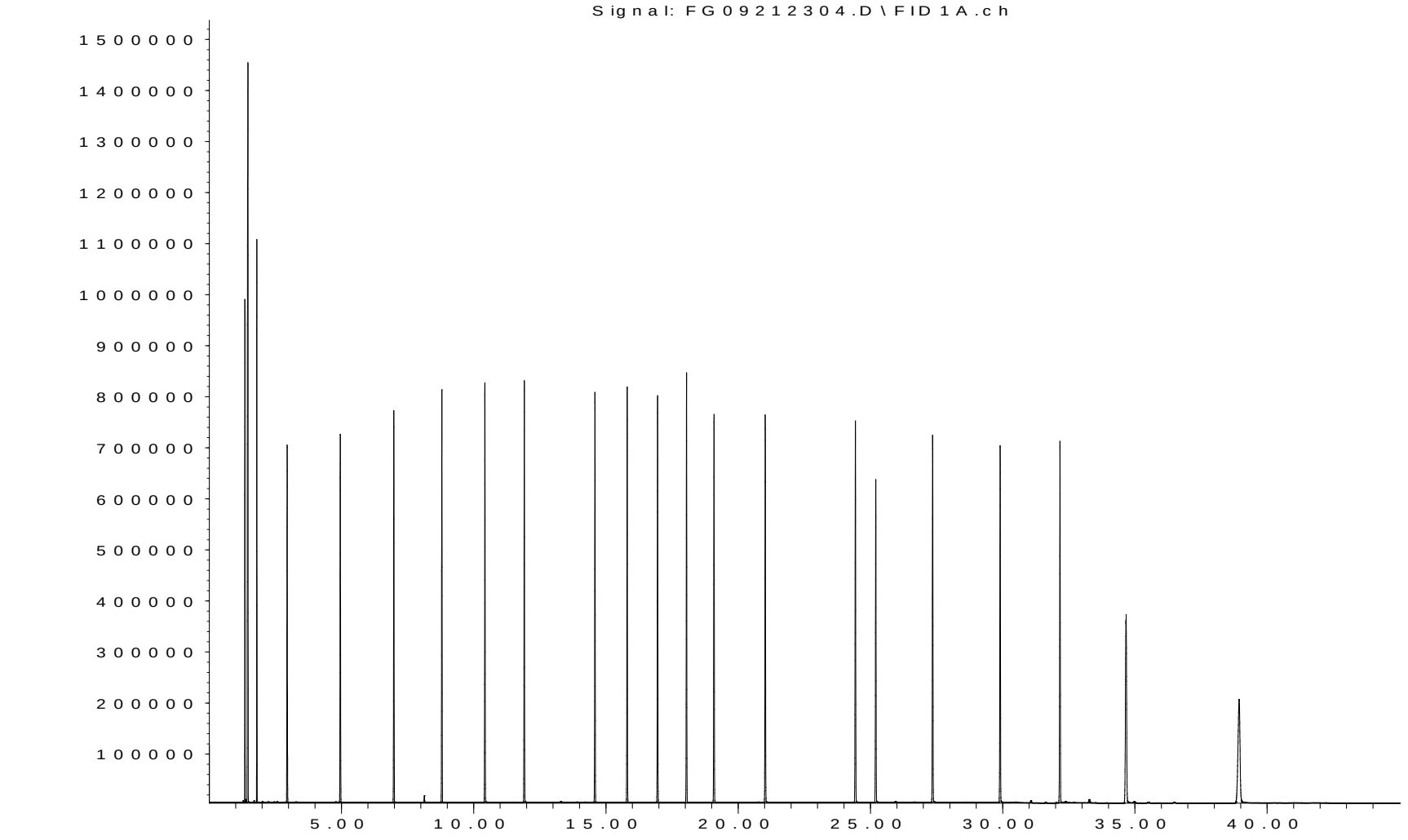
Product Sample: Container 106 N 2nd from Sump (A3I1304-05)
WADOE - Marcus Whitman
Sequence Date: September 21, 2023



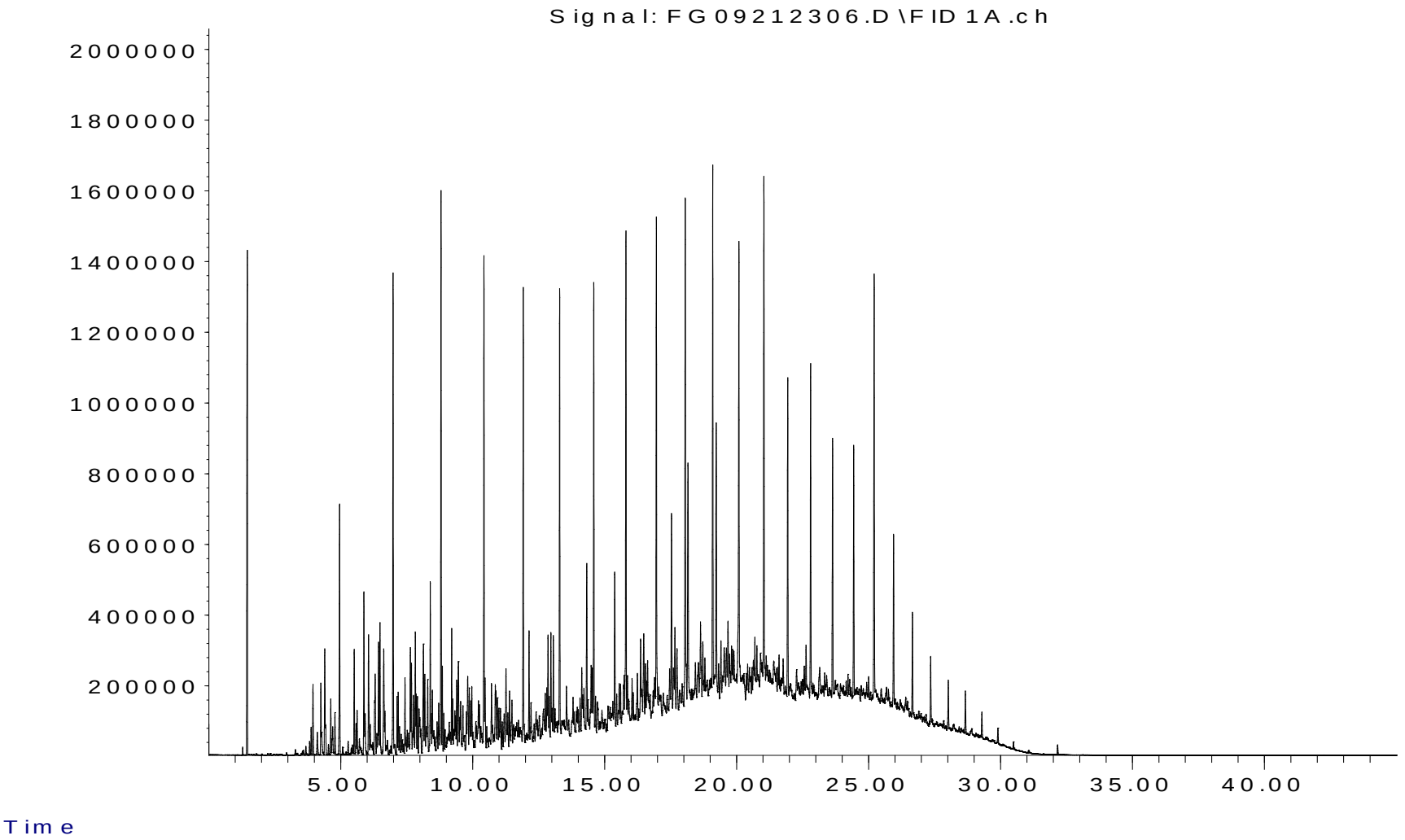
QC Sample: Method Blank
WADOE - Marcus Whitman
Sequence Date: September 21, 2023



ASTM Reference Sample: 2887 Alk A
WADOE - Marcus Whitman
Sequence Date: September 21, 2023

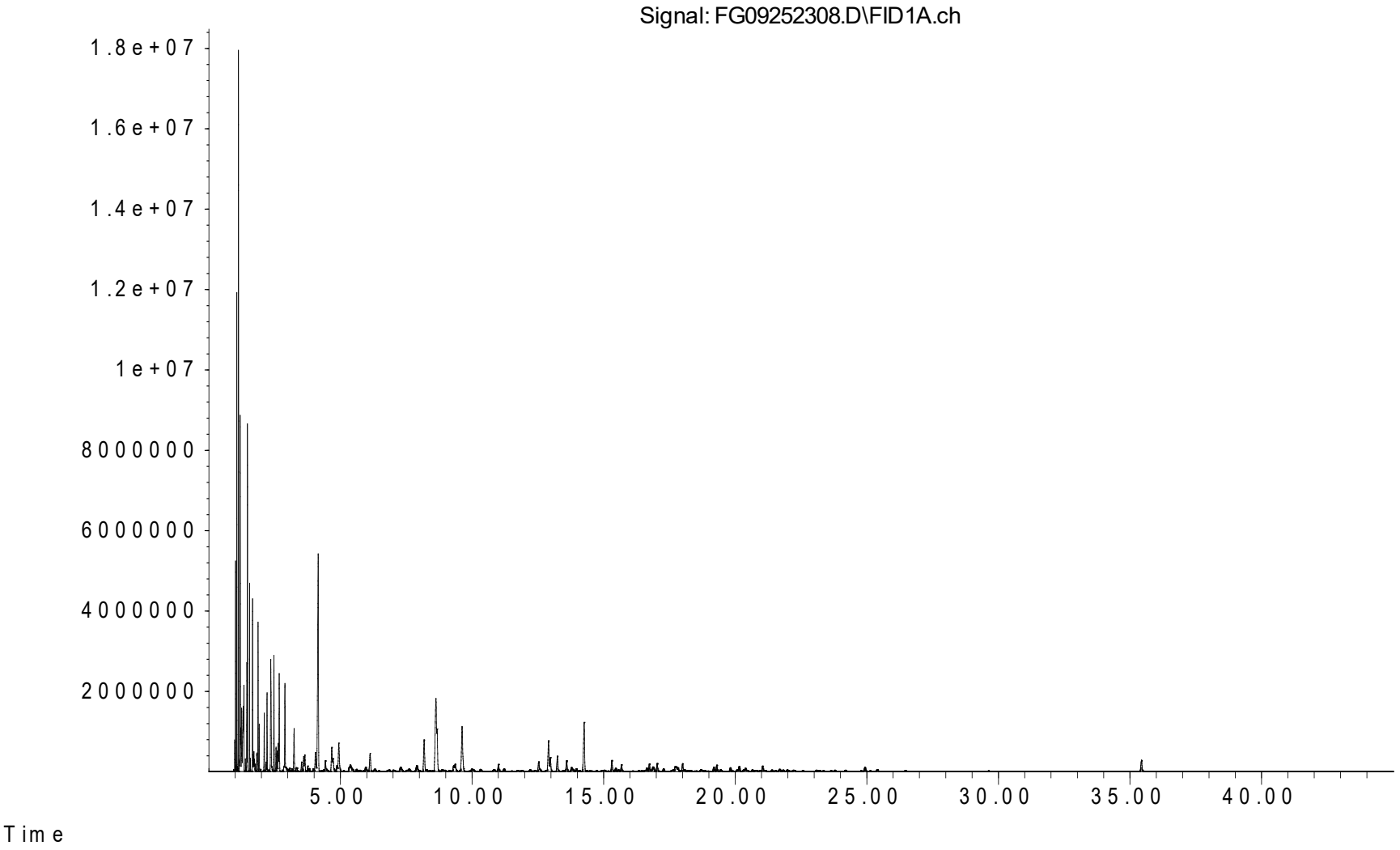


ASTM Reference Sample: 2887 Gas/Oil A
WADOE - Marcus Whitman
Sequence Date: September 21, 2023

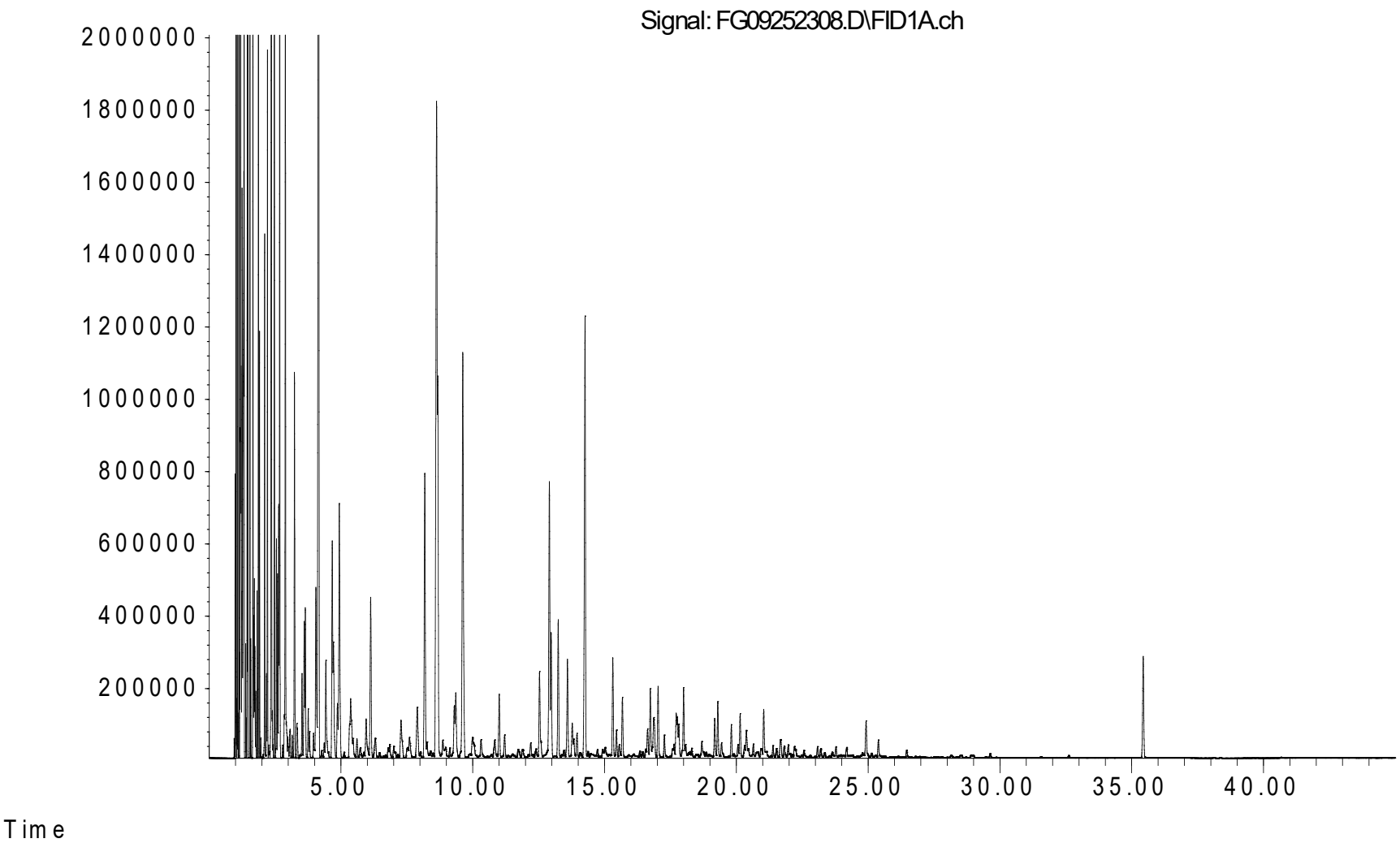


APPENDIX B

Product Sample: Public Works 001 (A3I1304-01)
WADOE - Marcus Whitman
Sequence Date: September 25, 2023

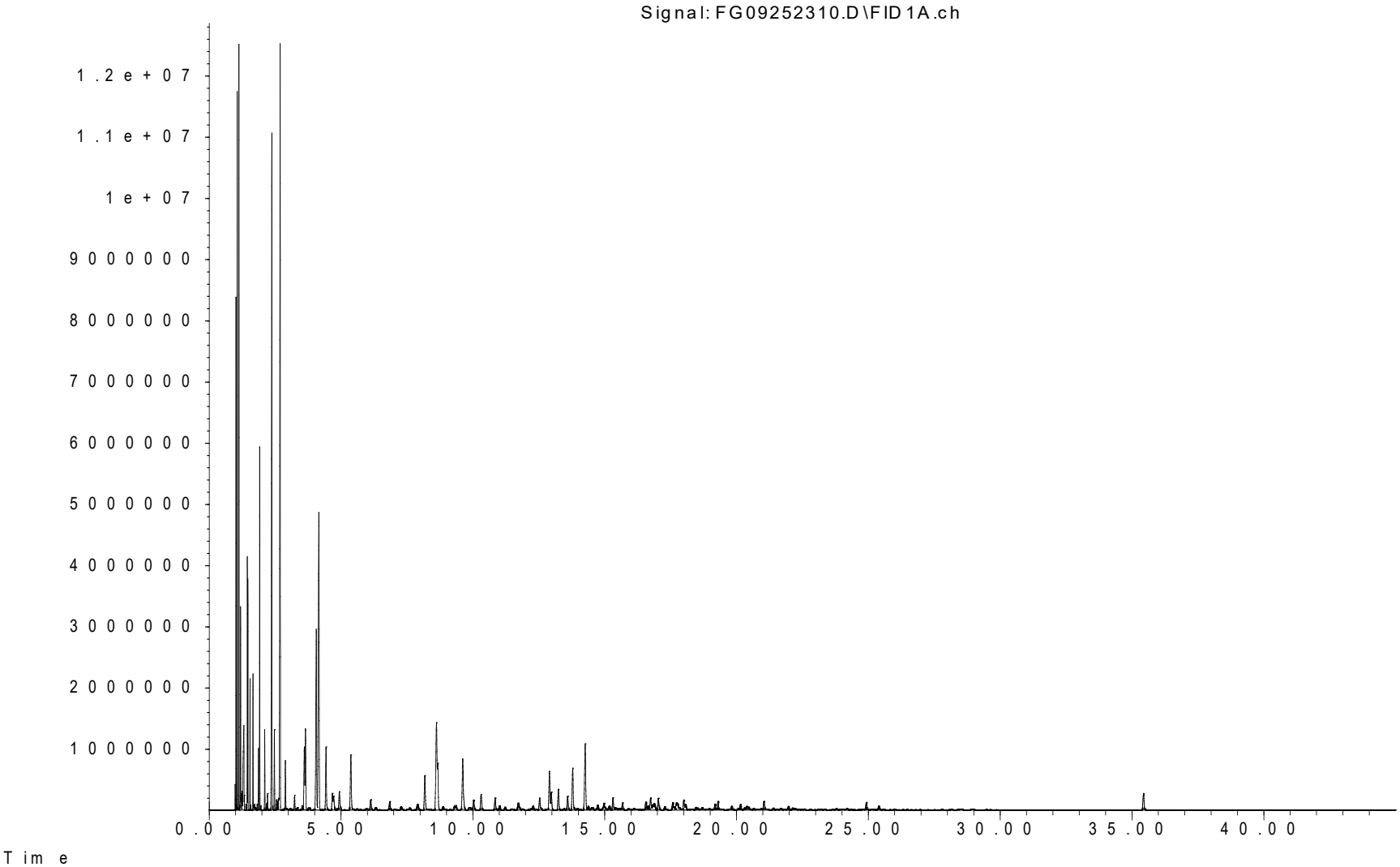


Product Sample: Public Works 001 (A3I1304-01) DETAIL
WADOE - Marcus Whitman
Sequence Date: September 25, 2023

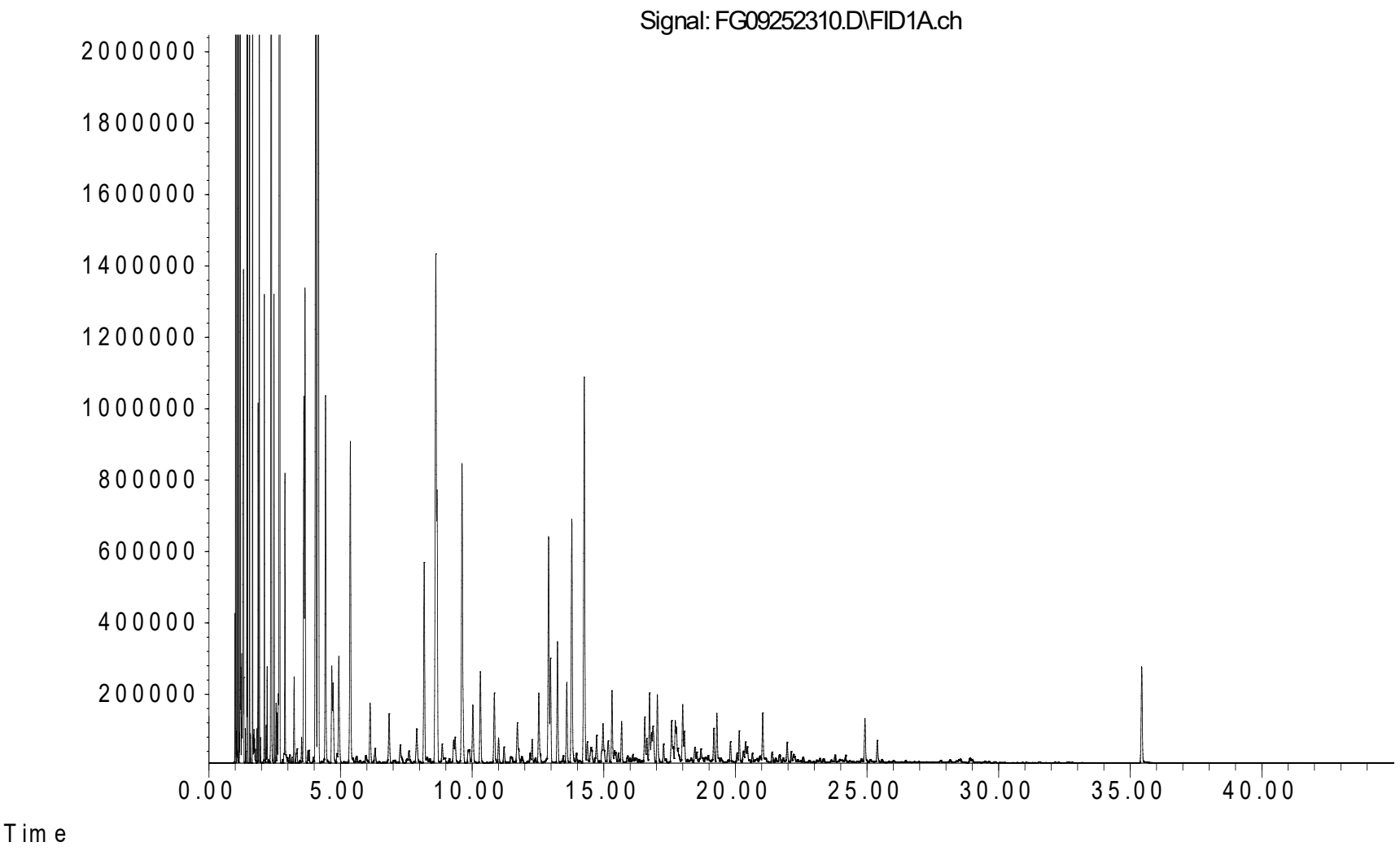


ASTM D7096-10 GC/FID

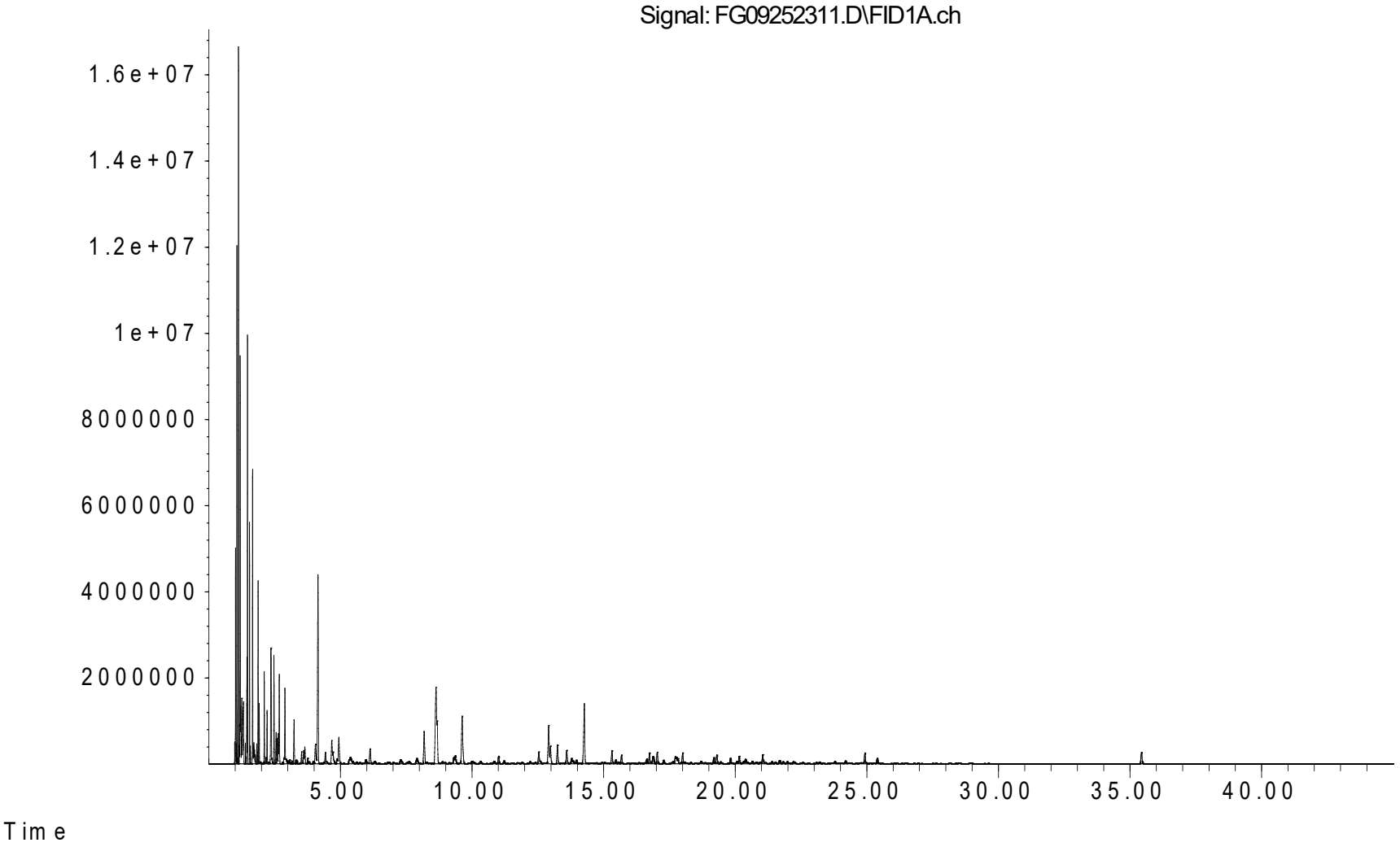
Product Sample: Circle K P001 (A3I1304-02)
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



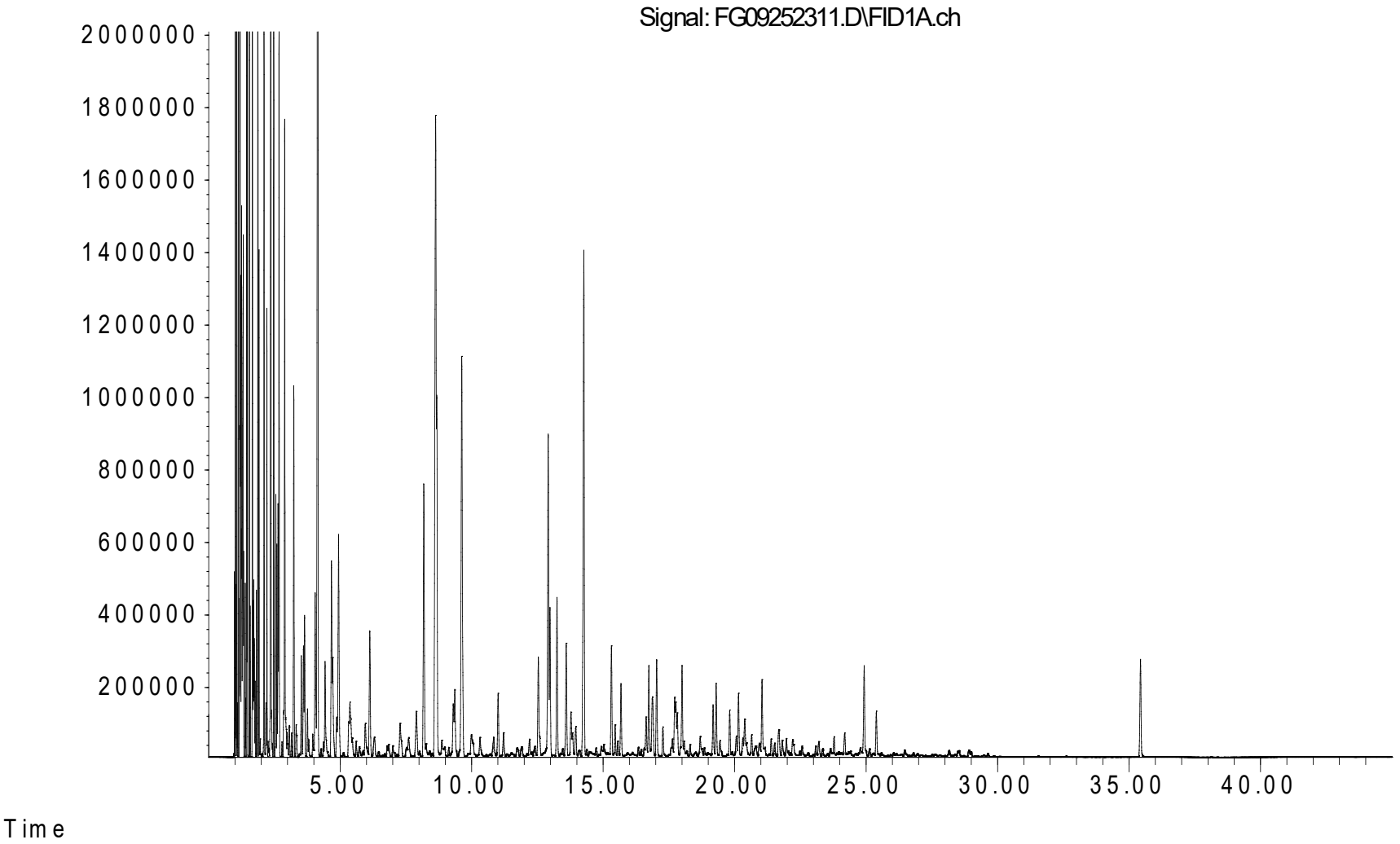
Product Sample: Circle K P001 (A3I1304-02) DETAIL
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



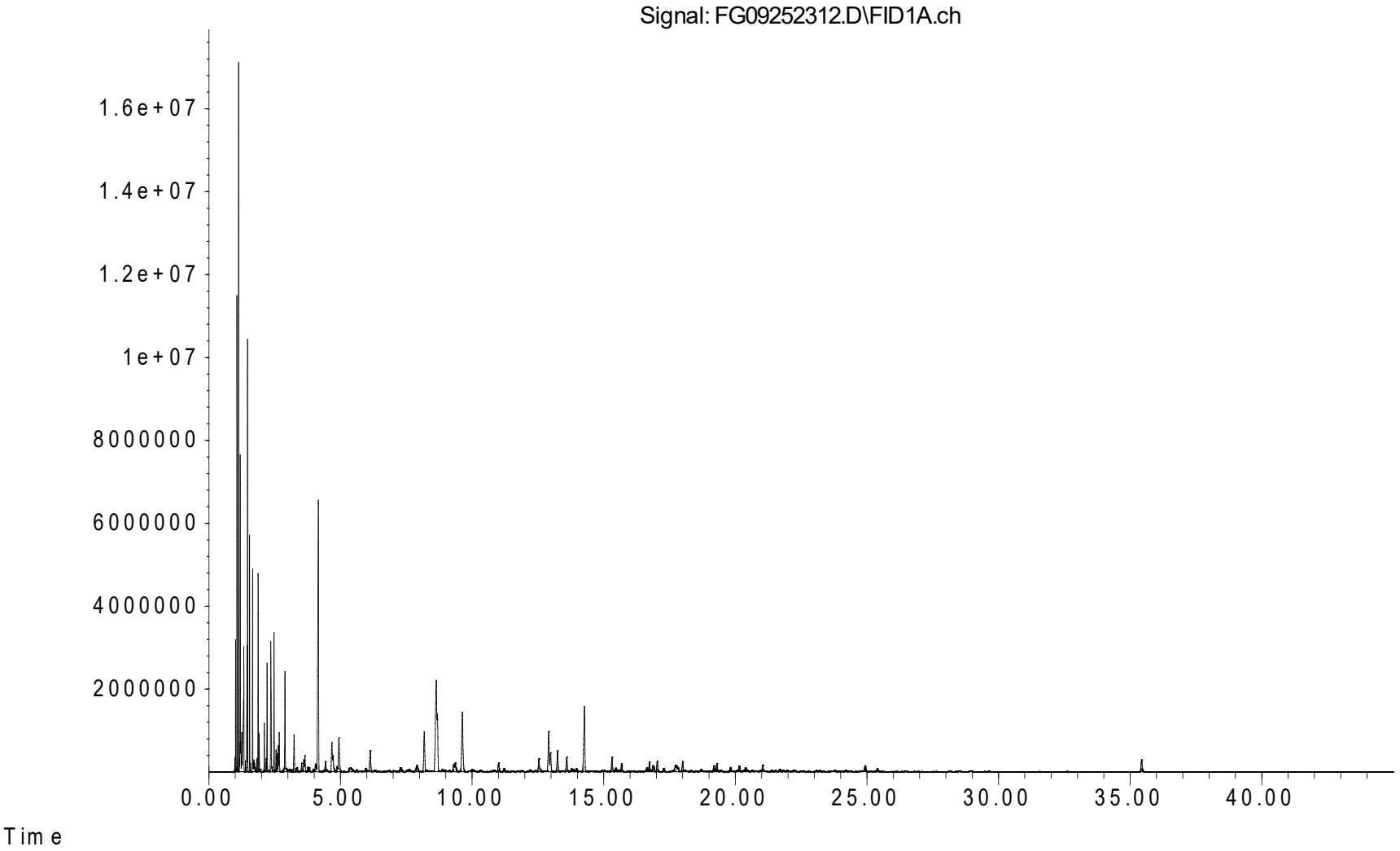
Product Sample: Circle K R001 (A3I1304-03)
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



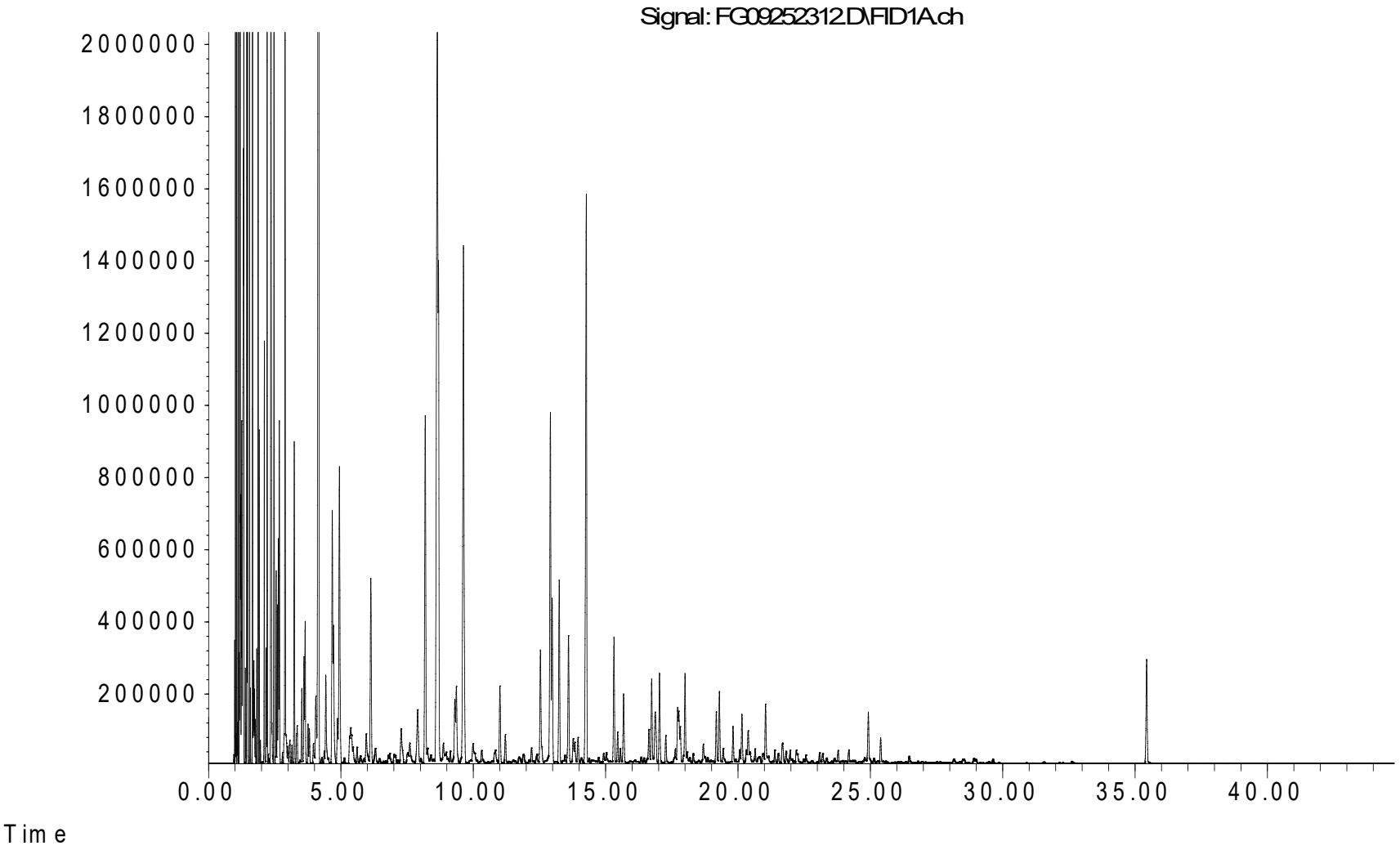
Product Sample: Circle K R001 (A3I1304-03) DETAIL
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



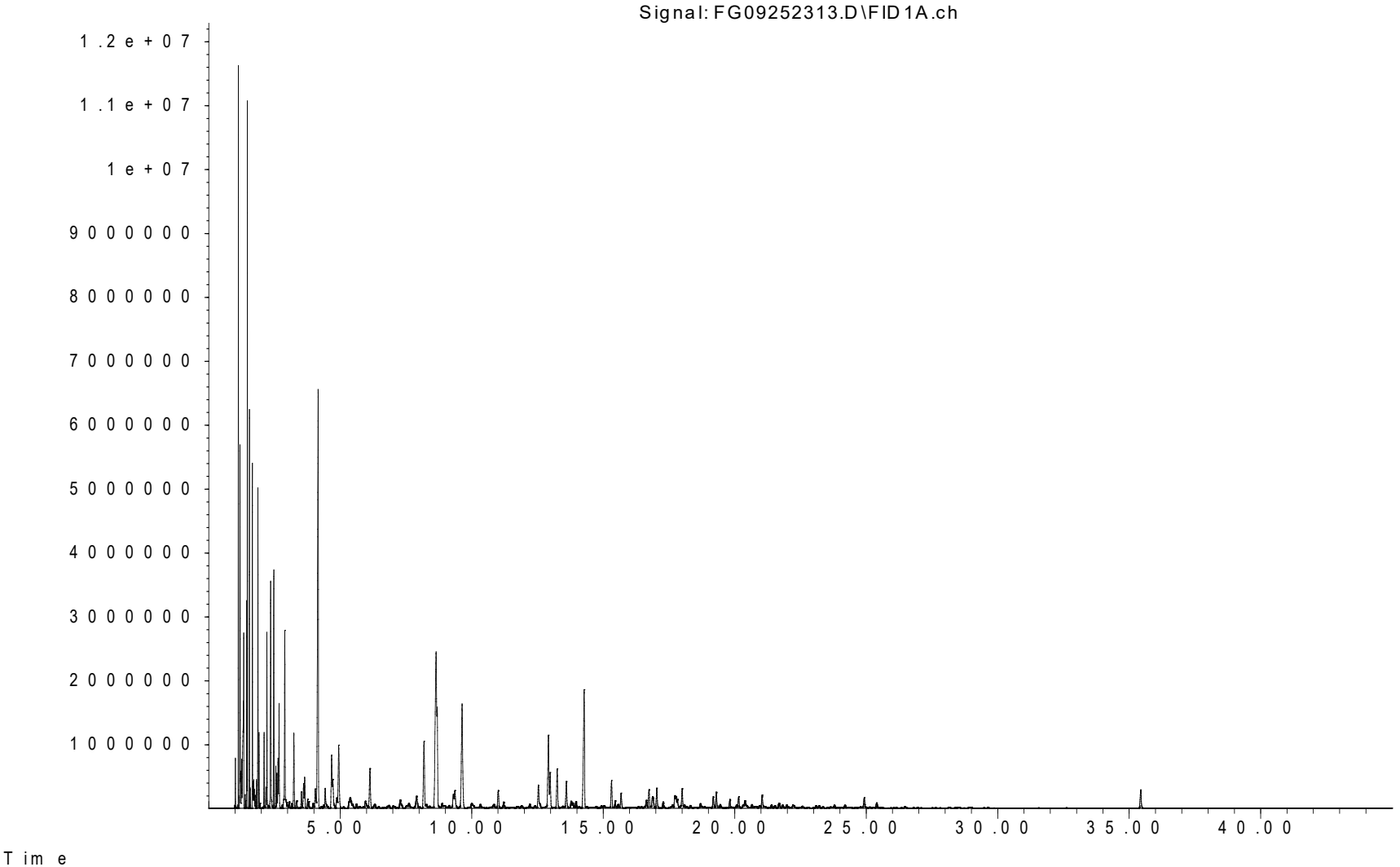
Product Sample: Chevron R001 (A3I1304-04)
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



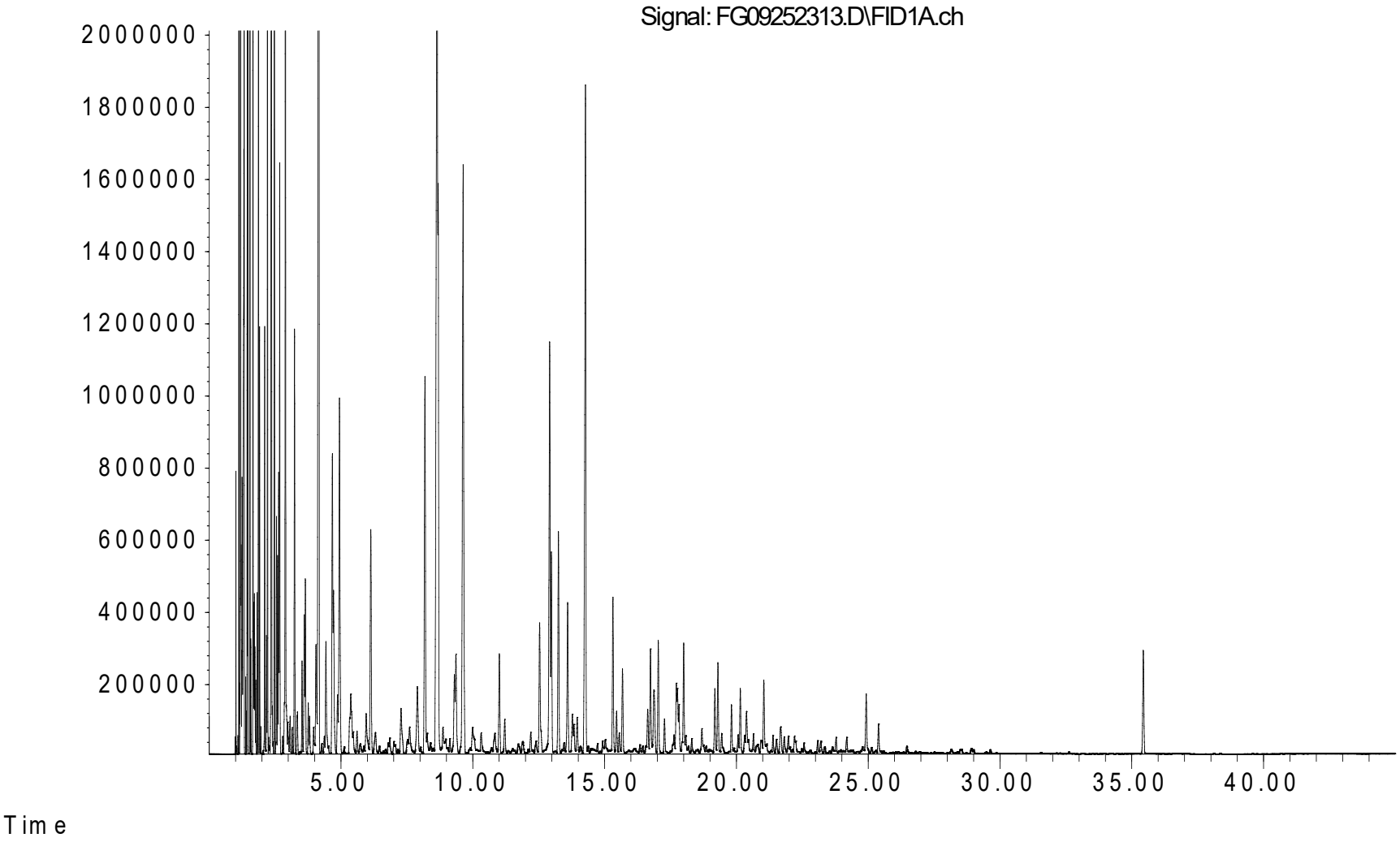
Product Sample: Chevron R001 (A3I1304-04) DETAIL
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



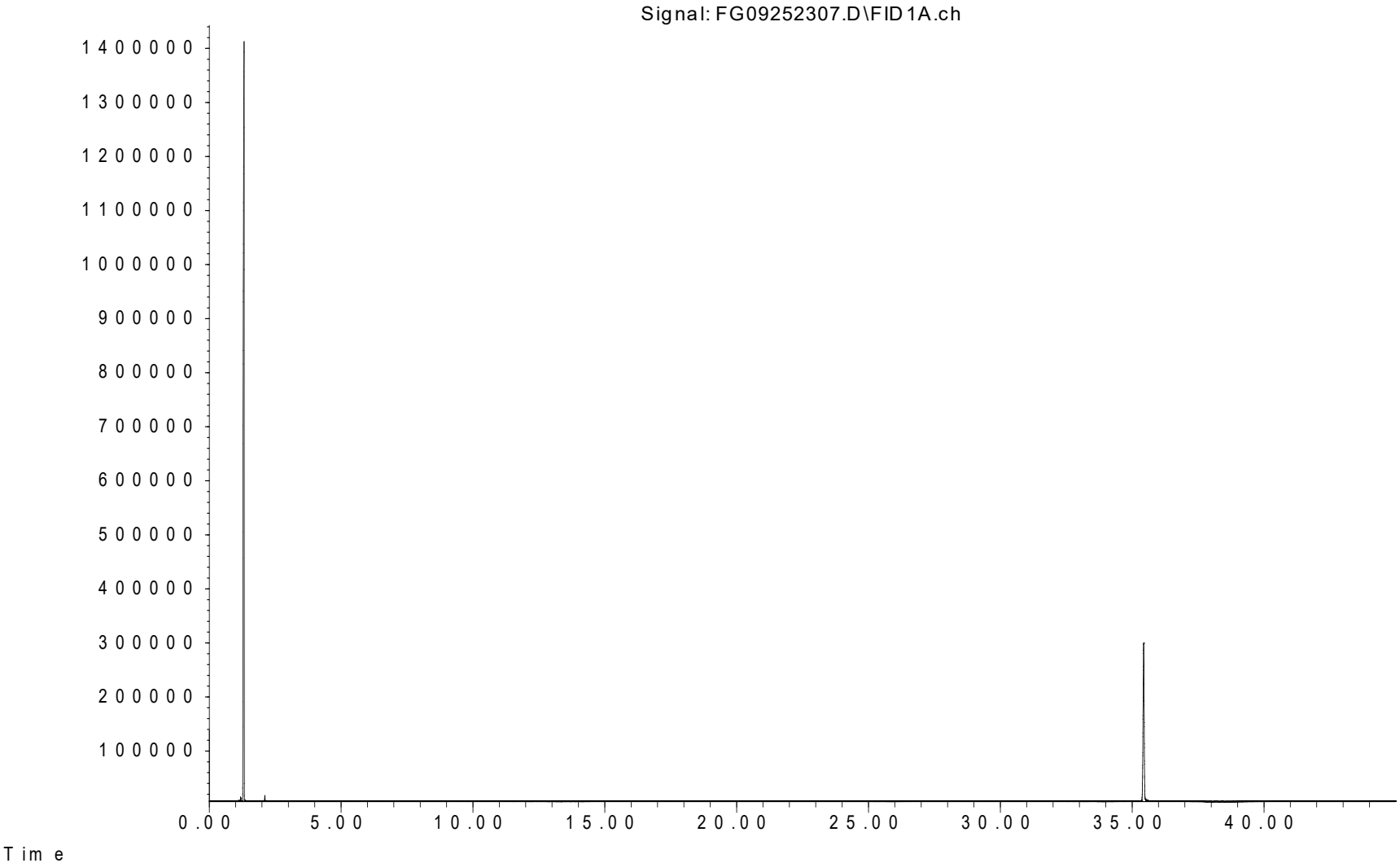
Product Sample: Container 106 N 2nd from Sump (A3I1304-05)
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



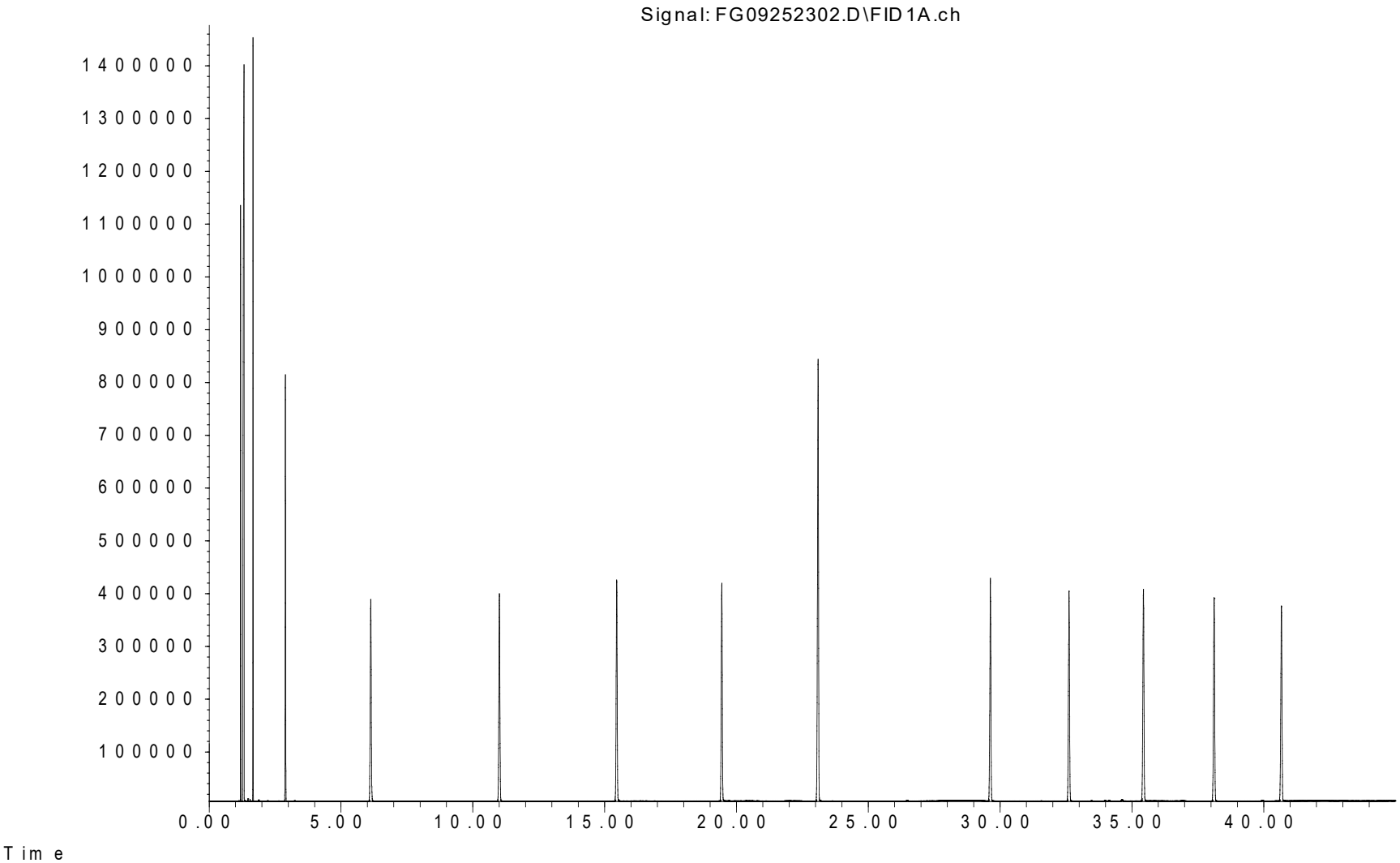
Product Sample: Container 106 N 2nd from Sump (A3I1304-05) DETAIL
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



QC Sample: Method Blank
WADOE - Marcus Whitman
Sequence Date: September 25, 2023

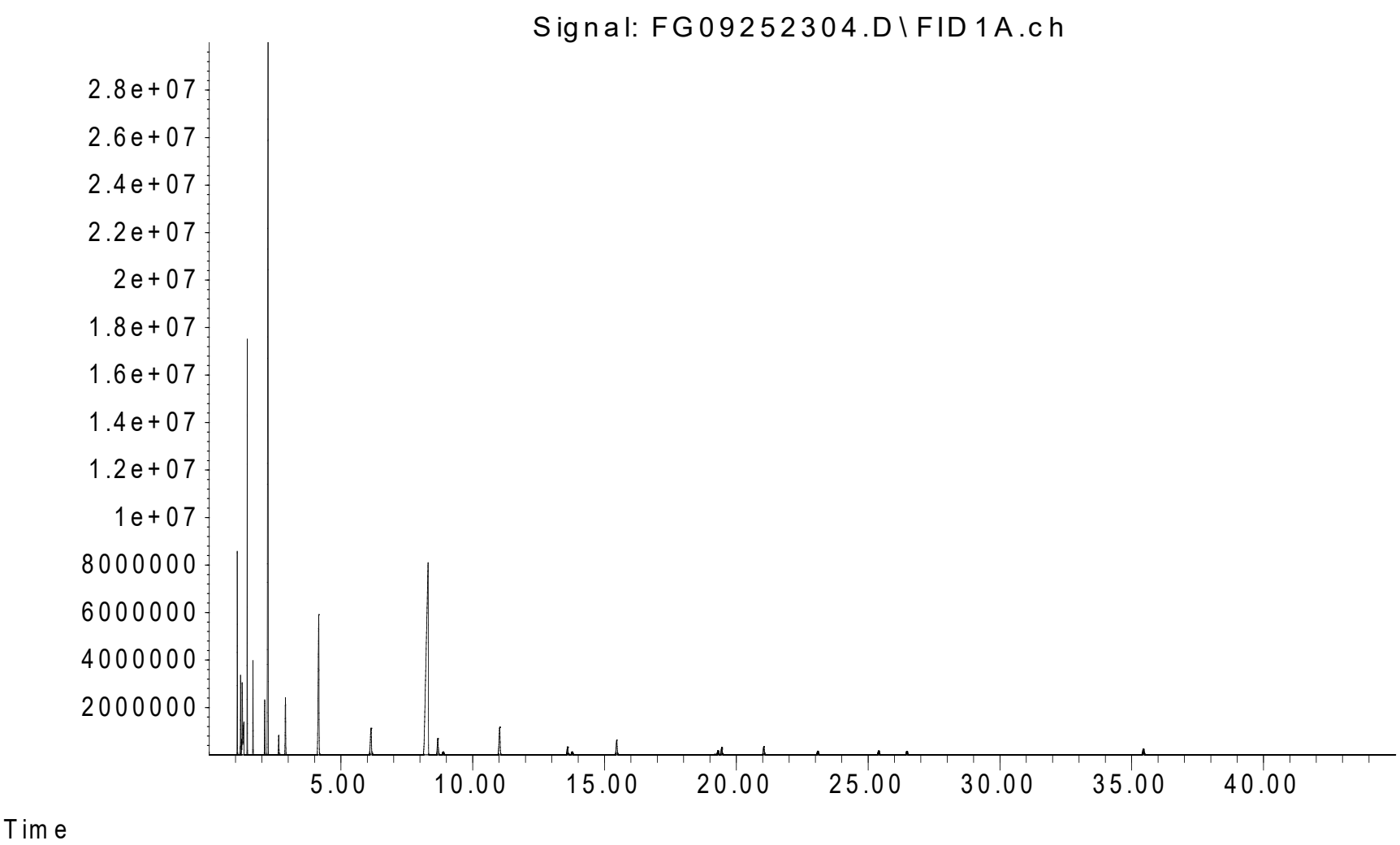


ASTM Reference Sample: 7096 Alk A
WADOE - Marcus Whitman
Sequence Date: September 25, 2023

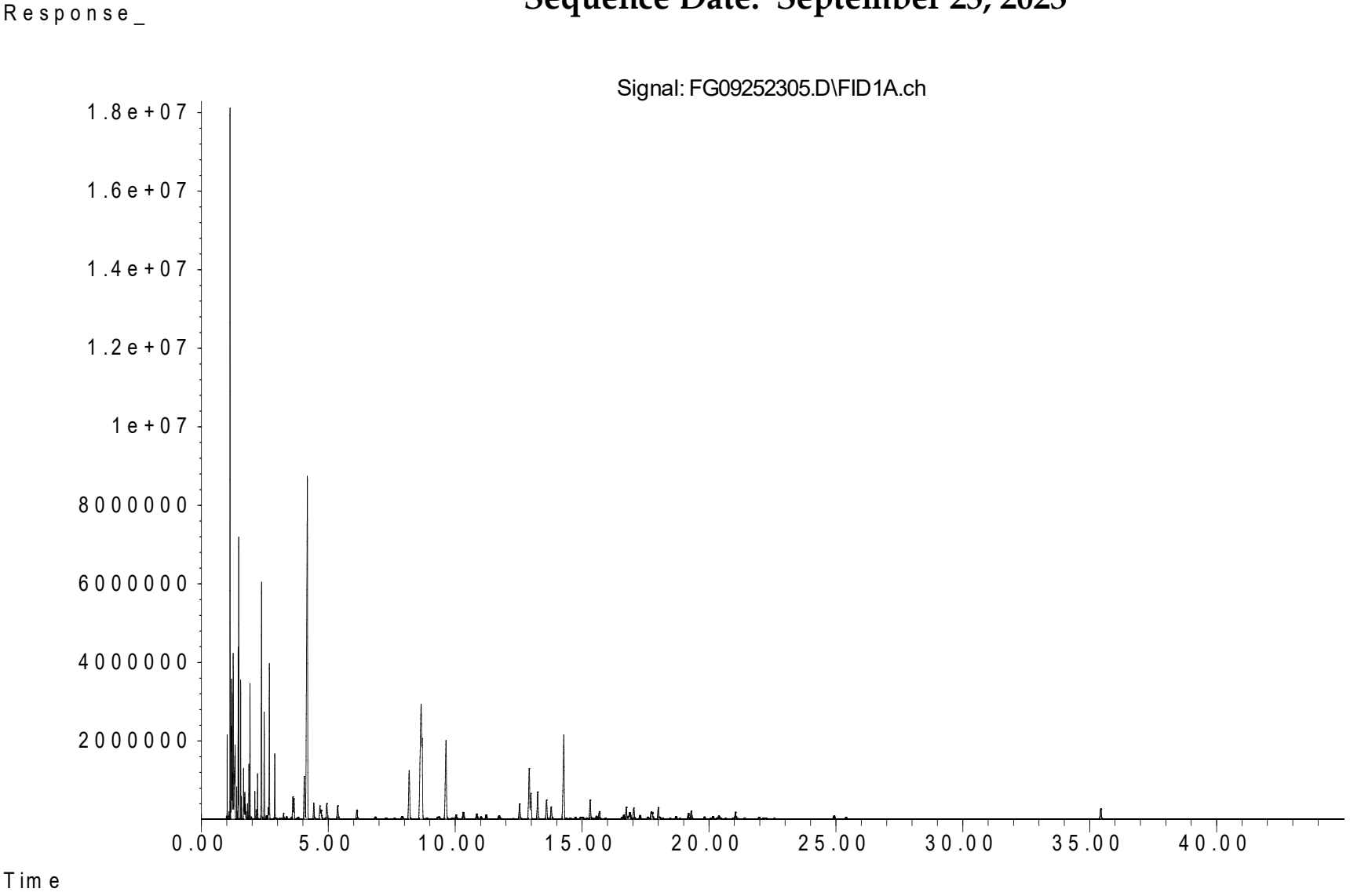


APEX FORENSICS
A DIVISION OF APEX LABORATORIES

ASTM Reference Sample: 7096 Oxy A
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



ASTM Reference Sample: 7096 Gas A
WADOE - Marcus Whitman
Sequence Date: September 25, 2023



APPENDIX C

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Wednesday, October 4, 2023

Sam Hunn
WA State Dept of Ecology
4601 N Monroe
Spokane, WA 99205-1295

RE: A3I1304 - Marcus Whitman - [none]

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3I1304, which was received by the laboratory on 9/21/2023 at 2:50:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: mpoquiz@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 23.4 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

Michele Poquiz For Kurt Johnson, Senior Chemist

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Public Works 001	A3I1304-01	Liquid	09/21/23 10:28	09/21/23 14:50
Circle K P001	A3I1304-02	Liquid	09/21/23 09:52	09/21/23 14:50
Circle K R001	A3I1304-03	Liquid	09/21/23 10:11	09/21/23 14:50
Chevron R001	A3I1304-04	Liquid	09/21/23 10:42	09/21/23 14:50
Container 106 N 2nd from Sump	A3I1304-05	Liquid	09/21/23 10:46	09/21/23 14:50
106 N 2nd-Sump	A3I1304-06	Liquid	09/21/23 10:35	09/21/23 14:50
MWCC basement 001	A3I1304-07	Soil	09/21/23 11:13	09/21/23 14:50
MWCC basement 002	A3I1304-08	Soil	09/21/23 11:13	09/21/23 14:50
Container 106 N 2nd from Sump (WSF)	A3I1304-09	Water	09/21/23 10:46	09/21/23 14:50

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Michele Poquiz For Kurt Johnson, Senior Chemist

Apex Laboratories, LLC
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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
n-Propane	**0.0160**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Butane	**0.264**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Methanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Ethanol	**10.5**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Methyl-1-Butene	**0.0460**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isopentane	**8.17**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Pentene	**0.139**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Propanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methyl-1-Butene	**0.439**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Pentane	**4.70**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methyl-1,3-Butadiene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-2-Pentene	**0.618**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-2-Pentene	**0.283**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
tert-Butanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methyl-2-Butene	**1.09**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Propanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
4-Methyl-1-Pentene	**0.0230**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Cyclopentane	**0.446**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,3-Dimethylbutane	**1.00**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methylpentane	**3.29**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Methylpentane	**2.02**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Hexene	**0.0440**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Hexane	**2.08**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-2-Hexene	**0.187**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methyl-2-Pentene	**0.286**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-2-Hexene	**0.0930**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Butanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,2-Dimethylpentane	**0.126**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,4-Dimethylpentane	**0.690**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,2,3-Trimethylbutane	**0.0380**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Methylcyclopentane	**2.00**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methylcyclopentene	**0.236**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Benzene	**0.658**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3,3-Dimethylpentane	**0.157**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Butanol	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Cyclohexane	**1.30**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methylhexane	**1.89**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,3-Dimethylpentane	**1.22**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,1-Dimethylcyclopentane	**0.102**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Methylhexane	**2.15**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-1,3-Dimethylcyclopentane	**0.460**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-1,3-Dimethylcyclopentane	**0.399**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Ethylpentane	**0.212**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-1,2-Dimethylcyclopentane	**0.438**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Heptene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isooctane	**2.04**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-3-Heptene	**0.127**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Heptane	**1.97**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-3-Heptene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-2-Heptene	**0.0520**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-2-Heptene	**0.0660**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Methylcyclohexane	**0.947**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,2-Dimethylhexane	**0.175**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Ethylcyclopentane	**0.243**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,5-Dimethylhexane	**0.394**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,2,3-Trimethylpentane	**0.0720**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,4-Dimethylhexane	**0.497**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ctc-1,2,3-Trimethylcyclopentane	**0.107**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ctc-1,2,4-Trimethylcyclopentane	**0.158**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Toluene+2,3,3-Trimethylpentane	**7.30**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,3-Dimethylhexane	**0.413**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methylheptane	**0.875**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
4-Methylheptane	**0.370**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ctt-1,2,4-Trimethylcyclopentane	**0.0880**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Methylheptane	**0.931**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Ethylhexane	**0.415**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-1,4-Dimethylcyclohexane	**0.113**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Octene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Ethyl-1-Methylcyclopentane	**0.0150**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-1,2-Dimethylcyclohexane	**0.127**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ccc-1,2,3-Trimethylcyclopentane	**0.0260**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Octane	**1.02**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-2-Octene	**0.0280**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isopropylcyclopentane	**0.0740**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-2-Octene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-1,2-Dimethylcyclohexane	**0.0490**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,5-Dimethylheptane	**0.227**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ccc-1,3,5-Trimethylcyclohexane	**0.195**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,1,4-Trimethylcyclohexane	**0.0210**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,3-Dimethylheptane	**0.108**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Ethylbenzene	**1.35**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ctt-1,2,4-Trimethylcyclohexane	**0.0960**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
m-Xylene	**3.53**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
p-Xylene	**1.49**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3,4-Dimethyheptane (D)	**0.0480**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3,4-Dimethyheptane (L)	**0.0330**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methyloctane	**0.320**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
ctc-1,2,4-Trimethylcyclohexane	**0.0940**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Methyloctane	**0.359**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
o-Xylene	**1.85**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Nonene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isobutylcyclopentane	**0.0290**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-3-Nonene	**0.0280**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	

Apex Laboratories

Michele Poquiz For Kurt Johnson, Senior Chemist

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APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
cis-3-Nonene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Nonane	**0.379**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
trans-2-Nonene	**0.0230**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isopropylbenzene	**0.0930**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
cis-2-Nonene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3,3-Dimethyloctane	**0.0870**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Butylcyclopentane	**0.0260**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2,3-Dimethyloctane	**0.0450**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Propylbenzene	**0.377**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-3-Ethylbenzene	**1.29**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-4-Ethylbenzene	**0.557**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,3,5-Trimethylbenzene	**0.631**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-2-Ethylbenzene	**0.641**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
5-Methylnonane	**0.0490**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Ethyloctane	**0.0270**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methylnonane	**0.122**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
3-Methylnonane	**0.134**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isobutylcyclohexane	**0.0190**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2,4-Trimethylbenzene	**2.08**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Decene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
t-1-Methyl-2-N-Propylcyclohexane	**0.0370**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isobutylbenzene	**0.0570**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
sec-Butylbenzene	**0.0750**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Decane	**0.137**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-3-Isopropylbenzene	**0.0810**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-4-Isopropylbenzene	**0.0250**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-3-n-Propylbenzene	**0.346**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methyl-4-n-Propylbenzene	**0.182**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Butylbenzene	**0.0990**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methyl-2-n-Propylbenzene	**0.294**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2-Diethylbenzene	**0.0260**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,3-Dimethyl-5-Ethylbenzene	**0.126**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,4-Dimethyl-2-Ethylbenzene	**0.201**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2-Dimethyl-4-Ethylbenzene	**0.361**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,3-Dimethyl-2-Ethylbenzene	**0.0270**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2-Dimethyl-3-Ethylbenzene	**0.0860**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Undecane	**0.0750**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
t-1-Methyl-2(4-Methylphenyl)cyclopentane	**0.0350**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2,4,5-Tetramethylbenzene	**0.196**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2,3,5-Tetramethylbenzene	**0.253**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
tert-1-Butyl-2-Methylbenzene	**0.0100**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Pentylbenzene	**0.0220**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthalene	**0.254**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
tert-1-Butyl-4-Ethylbenzene	**0.0300**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Dodecane	**0.0740**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,3,5-Triethylbenzene	**0.0120**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1,2,4-Triethylbenzene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Hexylbenzene	**0.0190**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
1-Methylnaphthalene	**0.0730**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Tridecane	**0.0450**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Tetradecane	**0.0210**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
n-Pentadecane	**0.0140**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (Total)	**10.8**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C3)	**0.0160**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C4)	**0.264**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C5)	**4.70**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C6)	**2.08**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C7)	**1.97**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C8)	**1.02**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	

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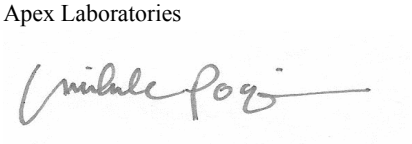

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Michele Poquiz For Kurt Johnson, Senior Chemist

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Paraffins (C9)	**0.379**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C10)	**0.137**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C11)	**0.0750**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C12)	**0.0740**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C13)	**0.0450**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C14)	**0.0210**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Paraffins (C15)	**0.0140**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (Total)	**28.7**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C5)	**8.17**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C6)	**6.31**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C7)	**6.48**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C8)	**6.18**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C9)	**1.10**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C10)	**0.464**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (Total)	**24.7**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C6)	**0.658**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C7)	**7.30**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C8)	**8.22**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C9)	**5.66**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C10)	**2.69**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C11)	**0.106**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C12)	**0.0710**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Aromatics (C13)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (Total)	**7.88**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (C5)	**0.446**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (C6)	**3.54**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (C7)	**2.59**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (C8)	**0.757**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Naphthenes (C9)	**0.460**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (C10)	**0.0910**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (Total)	**3.59**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (C5)	**2.62**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (C6)	**0.633**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (C7)	**0.245**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (C8)	**0.0370**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (C9)	**0.0510**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Olefins (C10)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (Total)	**10.5**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C1)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C2)	**10.5**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C5)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
DHA: Total of Knowns	**86.2**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
DHA: Total of Unknowns	**13.8**	---	0.0100	%m/m	1	09/26/23 01:16	D6730-11m	
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
n-Propane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Butane	**0.151**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Methanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Ethanol	**10.6**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Methyl-1-Butene	**0.0110**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isopentane	**5.74**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Pentene	**0.0400**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Propanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methyl-1-Butene	**0.0880**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Pentane	**1.76**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methyl-1,3-Butadiene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
trans-2-Pentene	**0.152**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-2-Pentene	**0.0760**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
tert-Butanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methyl-2-Butene	**0.212**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Propanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
4-Methyl-1-Pentene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Cyclopentane	**0.123**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,3-Dimethylbutane	**1.66**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methylpentane	**1.52**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Methylpentane	**0.954**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Hexene	**0.0140**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Hexane	**1.08**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-2-Hexene	**0.0390**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methyl-2-Pentene	**0.0590**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-2-Hexene	**0.0200**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Butanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,2-Dimethylpentane	**0.0770**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,4-Dimethylpentane	**3.50**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,2,3-Trimethylbutane	**0.0480**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Methylcyclopentane	**0.564**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methylcyclopentene	**0.0400**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Benzene	**0.732**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3,3-Dimethylpentane	**0.0740**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Butanol	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Cyclohexane	**0.189**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methylhexane	**0.886**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,3-Dimethylpentane	**8.52**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,1-Dimethylcyclopentane	**0.0480**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Methylhexane	**1.00**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-1,3-Dimethylcyclopentane	**0.133**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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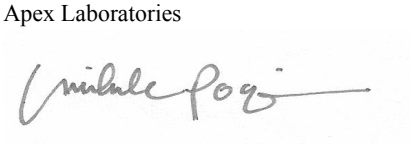

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Michele Poquiz For Kurt Johnson, Senior Chemist

APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
trans-1,3-Dimethylcyclopentane	**0.115**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Ethylpentane	**0.0870**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-1,2-Dimethylcyclopentane	**0.116**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Heptene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isooctane	**12.3**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-3-Heptene	**0.0290**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Heptane	**0.705**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-3-Heptene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-2-Heptene	**0.0120**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-2-Heptene	**0.0180**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Methylcyclohexane	**0.218**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,2-Dimethylhexane	**0.0670**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Ethylcyclopentane	**0.0750**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,5-Dimethylhexane	**1.13**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,2,3-Trimethylpentane	**0.218**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,4-Dimethylhexane	**1.52**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ctc-1,2,3-Trimethylcyclopentane	**0.0240**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ctc-1,2,4-Trimethylcyclopentane	**0.0400**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Toluene+2,3,3-Trimethylpentane	**7.03**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,3-Dimethylhexane	**1.42**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methylheptane	**0.374**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
4-Methylheptane	**0.166**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ctt-1,2,4-Trimethylcyclopentane	**0.0220**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Methylheptane	**0.419**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Ethylhexane	**0.125**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-1,4-Dimethylcyclohexane	**0.0200**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Octene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Ethyl-1-Methylcyclopentane	**0.0200**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-1,2-Dimethylcyclohexane	**0.0250**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ccc-1,2,3-Trimethylcyclopentane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Octane	**0.352**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-2-Octene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Isopropylcyclopentane	**0.0140**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-2-Octene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-1,2-Dimethylcyclohexane	**0.0100**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,5-Dimethylheptane	**0.174**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ccc-1,3,5-Trimethylcyclohexane	**0.0460**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,1,4-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,3-Dimethylheptane	**0.103**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Ethylbenzene	**0.946**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ctt-1,2,4-Trimethylcyclohexane	**0.0440**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
m-Xylene	**2.56**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
p-Xylene	**1.11**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3,4-Dimethyheptane (D)	**0.0250**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3,4-Dimethyheptane (L)	**0.0210**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methyloctane	**0.130**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
ctc-1,2,4-Trimethylcyclohexane	**0.0350**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Methyloctane	**0.148**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
o-Xylene	**1.41**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Nonene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isobutylcyclopentane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-3-Nonene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-3-Nonene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Nonane	**0.139**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
trans-2-Nonene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isopropylbenzene	**0.0700**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
cis-2-Nonene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3,3-Dimethyloctane	**0.0480**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Butylcyclopentane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2,3-Dimethyloctane	**0.0380**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Propylbenzene	**0.308**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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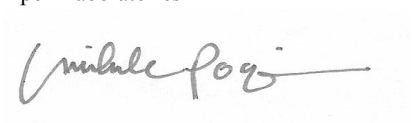

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Michele Poquiz For Kurt Johnson, Senior Chemist

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methyl-3-Ethylbenzene	**1.04**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-4-Ethylbenzene	**0.461**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,3,5-Trimethylbenzene	**0.537**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-2-Ethylbenzene	**1.51**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
5-Methylnonane	**0.0190**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Ethyloctane	**0.0110**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methylnonane	**0.0490**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
3-Methylnonane	**0.0510**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isobutylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,2,4-Trimethylbenzene	**1.64**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Decene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
t-1-Methyl-2-N-Propylcyclohexane	**0.223**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isobutylbenzene	**0.0470**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
sec-Butylbenzene	**0.102**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Decane	**0.0510**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-3-Isopropylbenzene	**0.0680**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-4-Isopropylbenzene	**0.0160**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-3-n-Propylbenzene	**0.377**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-4-n-Propylbenzene	**0.154**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Butylbenzene	**0.124**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methyl-2-n-Propylbenzene	**0.265**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,2-Diethylbenzene	**0.0180**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,3-Dimethyl-5-Ethylbenzene	**0.0890**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,4-Dimethyl-2-Ethylbenzene	**0.162**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,2-Dimethyl-4-Ethylbenzene	**0.281**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,3-Dimethyl-2-Ethylbenzene	**0.0250**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,2-Dimethyl-3-Ethylbenzene	**0.0720**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Undecane	**0.0280**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
t-1-Methyl-2(4-Methylphenyl)cyclopentane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,2,4,5-Tetramethylbenzene	**0.160**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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APEX LABORATORIES

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1,2,3,5-Tetramethylbenzene	**0.209**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
tert-1-Butyl-2-Methylbenzene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Pentylbenzene	**0.0100**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthalene	**0.249**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
tert-1-Butyl-4-Ethylbenzene	**0.0130**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Dodecane	**0.0230**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,3,5-Triethylbenzene	**0.0120**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1,2,4-Triethylbenzene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Hexylbenzene	**0.0110**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
1-Methylnaphthalene	**0.0890**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Tridecane	**0.0110**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Tetradecane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
n-Pentadecane	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (Total)	**4.30**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C3)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C4)	**0.151**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C5)	**1.76**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C6)	**1.08**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C7)	**0.705**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C8)	**0.352**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C9)	**0.139**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C10)	**0.0510**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C11)	**0.0280**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C12)	**0.0230**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C13)	**0.0110**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C14)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Paraffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (Total)	**42.6**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C5)	**5.74**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C6)	**4.12**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Isoparaffins (C7)	**14.2**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C8)	**17.8**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C9)	**0.601**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C10)	**0.216**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (Total)	**21.9**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C6)	**0.732**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C7)	**7.03**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C8)	**6.03**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C9)	**5.57**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C10)	**2.42**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C11)	**0.103**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C12)	**0.0400**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Aromatics (C13)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (Total)	**2.18**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C5)	**0.123**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C6)	**0.793**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C7)	**0.705**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C8)	**0.183**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C9)	**0.143**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C10)	**0.230**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (Total)	**0.794**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (C5)	**0.578**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (C6)	**0.141**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (C7)	**0.0590**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (C8)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (C9)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Olefins (C10)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (Total)	**10.6**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K P001 (A3I1304-02)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Oxygenates (C1)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (C2)	**10.6**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (C5)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
DHA: Total of Knowns	**82.4**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
DHA: Total of Unknowns	**17.6**	---	0.0100	%m/m	1	09/26/23 07:00	D6730-11m	
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
n-Propane	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Butane	**0.185**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Methanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Ethanol	**10.1**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Methyl-1-Butene	**0.0570**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isopentane	**7.41**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Pentene	**0.202**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Propanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methyl-1-Butene	**0.429**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Pentane	**4.89**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methyl-1,3-Butadiene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-2-Pentene	**0.738**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-2-Pentene	**0.376**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
tert-Butanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methyl-2-Butene	**1.02**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Propanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
4-Methyl-1-Pentene	**0.0350**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Cyclopentane	**0.447**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,3-Dimethylbutane	**0.892**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methylpentane	**3.75**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Methylpentane	**2.35**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Hexene	**0.0690**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Hexane	**3.20**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-2-Hexene	**0.200**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methyl-2-Pentene	**0.290**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-2-Hexene	**0.103**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Butanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,2-Dimethylpentane	**0.104**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,4-Dimethylpentane	**0.791**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,2,3-Trimethylbutane	**0.0300**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Methylcyclopentane	**2.22**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methylcyclopentene	**0.219**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Benzene	**1.05**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3,3-Dimethylpentane	**0.0980**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Butanol	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Cyclohexane	**0.818**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methylhexane	**1.72**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,3-Dimethylpentane	**1.64**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,1-Dimethylcyclopentane	**0.0970**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Methylhexane	**1.87**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-1,3-Dimethylcyclopentane	**0.530**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-1,3-Dimethylcyclopentane	**0.447**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Ethylpentane	**0.184**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-1,2-Dimethylcyclopentane	**0.433**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Heptene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isooctane	**1.71**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-3-Heptene	**0.138**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Heptane	**1.57**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-3-Heptene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-2-Heptene	**0.0600**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-2-Heptene	**0.0660**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Methylcyclohexane	**0.882**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,2-Dimethylhexane	**0.141**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Ethylcyclopentane	**0.283**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,5-Dimethylhexane	**0.320**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,2,3-Trimethylpentane	**0.0410**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,4-Dimethylhexane	**0.452**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ctc-1,2,3-Trimethylcyclopentane	**0.0960**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ctc-1,2,4-Trimethylcyclopentane	**0.152**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Toluene+2,3,3-Trimethylpentane	**5.30**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,3-Dimethylhexane	**0.401**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methylheptane	**0.771**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
4-Methylheptane	**0.313**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ctt-1,2,4-Trimethylcyclopentane	**0.0920**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Methylheptane	**0.794**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Ethylhexane	**0.310**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-1,4-Dimethylcyclohexane	**0.0800**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Octene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Ethyl-1-Methylcyclopentane	**0.0120**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-1,2-Dimethylcyclohexane	**0.106**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ccc-1,2,3-Trimethylcyclopentane	**0.0270**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Octane	**0.799**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-2-Octene	**0.0280**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isopropylcyclopentane	**0.0720**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-2-Octene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-1,2-Dimethylcyclohexane	**0.0460**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,5-Dimethylheptane	**0.198**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ccc-1,3,5-Trimethylcyclohexane	**0.178**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,1,4-Trimethylcyclohexane	**0.0140**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,3-Dimethylheptane	**0.100**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Ethylbenzene	**1.22**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ctt-1,2,4-Trimethylcyclohexane	**0.0790**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
m-Xylene	**3.30**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
p-Xylene	**1.35**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3,4-Dimethyheptane (D)	**0.0490**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3,4-Dimethyheptane (L)	**0.0270**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methyloctane	**0.321**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
ctc-1,2,4-Trimethylcyclohexane	**0.0860**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Methyloctane	**0.358**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
o-Xylene	**1.73**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Nonene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isobutylcyclopentane	**0.0310**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-3-Nonene	**0.0210**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-3-Nonene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Nonane	**0.359**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
trans-2-Nonene	**0.0230**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isopropylbenzene	**0.0930**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
cis-2-Nonene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3,3-Dimethyloctane	**0.104**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Butylcyclopentane	**0.0330**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2,3-Dimethyloctane	**0.0470**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Propylbenzene	**0.433**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-3-Ethylbenzene	**1.46**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-4-Ethylbenzene	**0.629**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,3,5-Trimethylbenzene	**0.702**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-2-Ethylbenzene	**0.750**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
5-Methylnonane	**0.0570**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Ethyloctane	**0.0310**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methylnonane	**0.147**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
3-Methylnonane	**0.158**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isobutylcyclohexane	**0.0230**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2,4-Trimethylbenzene	**2.27**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Decene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
t-1-Methyl-2-N-Propylcyclohexane	**0.0440**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isobutylbenzene	**0.0440**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
sec-Butylbenzene	**0.0880**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Decane	**0.151**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-3-Isopropylbenzene	**0.0830**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-4-Isopropylbenzene	**0.0300**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-3-n-Propylbenzene	**0.412**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-4-n-Propylbenzene	**0.242**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Butylbenzene	**0.133**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1-Methyl-2-n-Propylbenzene	**0.385**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2-Diethylbenzene	**0.0350**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,3-Dimethyl-5-Ethylbenzene	**0.151**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,4-Dimethyl-2-Ethylbenzene	**0.256**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2-Dimethyl-4-Ethylbenzene	**0.443**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,3-Dimethyl-2-Ethylbenzene	**0.0300**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2-Dimethyl-3-Ethylbenzene	**0.104**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Undecane	**0.0710**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
t-1-Methyl-2(4-Methylphenyl)cyclopentane	**0.0500**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2,4,5-Tetramethylbenzene	**0.245**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2,3,5-Tetramethylbenzene	**0.317**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
tert-1-Butyl-2-Methylbenzene	**0.0120**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Pentylbenzene	**0.0390**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthalene	**0.381**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
tert-1-Butyl-4-Ethylbenzene	**0.0430**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Dodecane	**0.0810**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,3,5-Triethylbenzene	**0.0210**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
1,2,4-Triethylbenzene	**0.0140**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Hexylbenzene	**0.0340**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methylnaphthalene	**0.171**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Tridecane	**0.0370**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Tetradecane	**0.0150**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
n-Pentadecane	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (Total)	**11.4**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C3)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C4)	**0.185**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C5)	**4.89**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C6)	**3.20**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C7)	**1.57**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C8)	**0.799**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C9)	**0.359**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C10)	**0.151**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C11)	**0.0710**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C12)	**0.0810**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C13)	**0.0370**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C14)	**0.0150**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Paraffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (Total)	**27.7**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C5)	**7.41**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C6)	**6.99**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C7)	**6.43**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C8)	**5.25**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C9)	**1.05**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C10)	**0.544**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (Total)	**24.0**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C6)	**1.05**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C7)	**5.30**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Circle K R001 (A3I1304-03)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Aromatics (C8)	**7.61**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C9)	**6.34**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C10)	**3.38**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C11)	**0.221**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C12)	**0.114**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Aromatics (C13)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (Total)	**7.60**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C5)	**0.447**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C6)	**3.26**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C7)	**2.67**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C8)	**0.683**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C9)	**0.420**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C10)	**0.117**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (Total)	**3.87**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (C5)	**2.82**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (C6)	**0.696**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (C7)	**0.264**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (C8)	**0.0370**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (C9)	**0.0440**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Olefins (C10)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (Total)	**10.1**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C1)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C2)	**10.1**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C5)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
DHA: Total of Knowns	**84.6**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
DHA: Total of Unknowns	**15.4**	---	0.0100	%m/m	1	09/26/23 09:52	D6730-11m	
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
n-Propane	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Butane	**0.121**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Methanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Ethanol	**10.1**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Methyl-1-Butene	**0.0430**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isopentane	**7.74**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Pentene	**0.144**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Propanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methyl-1-Butene	**0.329**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Pentane	**4.03**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methyl-1,3-Butadiene	**0.0110**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-2-Pentene	**0.420**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-2-Pentene	**0.222**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
tert-Butanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methyl-2-Butene	**0.649**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Propanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
4-Methyl-1-Pentene	**0.0220**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Cyclopentane	**0.484**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,3-Dimethylbutane	**1.13**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methylpentane	**3.96**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Methylpentane	**2.43**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Hexene	**0.0320**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Hexane	**2.30**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-2-Hexene	**0.119**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methyl-2-Pentene	**0.162**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-2-Hexene	**0.0600**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Butanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,2-Dimethylpentane	**0.167**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,4-Dimethylpentane	**0.521**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,2,3-Trimethylbutane	**0.0410**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Methylcyclopentane	**2.47**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	

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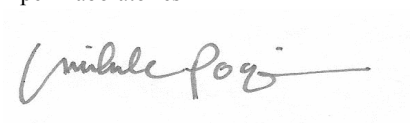

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methylcyclopentene	**0.129**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Benzene	**0.571**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3,3-Dimethylpentane	**0.210**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Butanol	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Cyclohexane	**1.68**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methylhexane	**2.08**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,3-Dimethylpentane	**1.03**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,1-Dimethylcyclopentane	**0.0830**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Methylhexane	**2.41**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-1,3-Dimethylcyclopentane	**0.376**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-1,3-Dimethylcyclopentane	**0.324**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Ethylpentane	**0.233**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-1,2-Dimethylcyclopentane	**0.333**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Heptene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isooctane	**0.752**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-3-Heptene	**0.0840**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Heptane	**2.03**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-3-Heptene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-2-Heptene	**0.0400**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-2-Heptene	**0.0520**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Methylcyclohexane	**0.747**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,2-Dimethylhexane	**0.176**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Ethylcyclopentane	**0.204**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,5-Dimethylhexane	**0.302**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,2,3-Trimethylpentane	**0.0310**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,4-Dimethylhexane	**0.433**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ctc-1,2,3-Trimethylcyclopentane	**0.0790**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ctc-1,2,4-Trimethylcyclopentane	**0.122**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Toluene+2,3,3-Trimethylpentane	**8.48**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,3-Dimethylhexane	**0.342**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methylheptane	**0.946**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
4-Methylheptane	**0.421**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ctt-1,2,4-Trimethylcyclopentane	**0.0700**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Methylheptane	**1.06**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Ethylhexane	**0.395**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-1,4-Dimethylcyclohexane	**0.0850**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Octene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Ethyl-1-Methylcyclopentane	**0.0120**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-1,2-Dimethylcyclohexane	**0.0990**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ccc-1,2,3-Trimethylcyclopentane	**0.0190**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Octane	**1.04**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-2-Octene	**0.0190**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isopropylcyclopentane	**0.0630**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-2-Octene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-1,2-Dimethylcyclohexane	**0.0360**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,5-Dimethylheptane	**0.222**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ccc-1,3,5-Trimethylcyclohexane	**0.155**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,1,4-Trimethylcyclohexane	**0.0270**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,3-Dimethylheptane	**0.110**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Ethylbenzene	**1.53**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ctt-1,2,4-Trimethylcyclohexane	**0.0760**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
m-Xylene	**4.28**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
p-Xylene	**1.82**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3,4-Dimethyheptane (D)	**0.0520**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3,4-Dimethyheptane (L)	**0.0430**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methyloctane	**0.350**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
ctc-1,2,4-Trimethylcyclohexane	**0.0980**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Methyloctane	**0.398**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
o-Xylene	**2.24**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Nonene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isobutylcyclopentane	**0.0260**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-3-Nonene	**0.0290**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
cis-3-Nonene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Nonane	**0.402**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
trans-2-Nonene	**0.0170**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isopropylbenzene	**0.113**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
cis-2-Nonene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3,3-Dimethyloctane	**0.0840**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Butylcyclopentane	**0.0230**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2,3-Dimethyloctane	**0.0430**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Propylbenzene	**0.477**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-3-Ethylbenzene	**1.56**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-4-Ethylbenzene	**0.674**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,3,5-Trimethylbenzene	**0.768**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-2-Ethylbenzene	**0.686**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
5-Methylnonane	**0.0490**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Ethyloctane	**0.0270**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methylnonane	**0.122**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
3-Methylnonane	**0.134**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isobutylcyclohexane	**0.0170**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2,4-Trimethylbenzene	**2.51**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Decene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
t-1-Methyl-2-N-Propylcyclohexane	**0.0230**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isobutylbenzene	**0.0450**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
sec-Butylbenzene	**0.0640**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Decane	**0.139**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-3-Isopropylbenzene	**0.0740**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-4-Isopropylbenzene	**0.0240**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-3-n-Propylbenzene	**0.364**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methyl-4-n-Propylbenzene	**0.209**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Butylbenzene	**0.102**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methyl-2-n-Propylbenzene	**0.345**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2-Diethylbenzene	**0.0260**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,3-Dimethyl-5-Ethylbenzene	**0.134**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,4-Dimethyl-2-Ethylbenzene	**0.227**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2-Dimethyl-4-Ethylbenzene	**0.405**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,3-Dimethyl-2-Ethylbenzene	**0.0270**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2-Dimethyl-3-Ethylbenzene	**0.0900**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Undecane	**0.0650**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
t-1-Methyl-2(4-Methylphenyl)cyclopentane	**0.0340**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2,4,5-Tetramethylbenzene	**0.221**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2,3,5-Tetramethylbenzene	**0.306**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
tert-1-Butyl-2-Methylbenzene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Pentylbenzene	**0.0210**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthalene	**0.281**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
tert-1-Butyl-4-Ethylbenzene	**0.0300**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Dodecane	**0.0710**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,3,5-Triethylbenzene	**0.0130**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1,2,4-Triethylbenzene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Hexylbenzene	**0.0170**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
1-Methylnaphthalene	**0.0960**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Tridecane	**0.0350**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Tetradecane	**0.0180**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
n-Pentadecane	**0.0100**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (Total)	**10.3**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C3)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C4)	**0.121**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C5)	**4.03**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C6)	**2.30**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C7)	**2.03**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C8)	**1.04**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Paraffins (C9)	**0.402**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C10)	**0.139**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C11)	**0.0650**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C12)	**0.0710**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C13)	**0.0350**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C14)	**0.0180**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Paraffins (C15)	**0.0100**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (Total)	**28.5**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C5)	**7.74**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C6)	**7.52**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C7)	**6.70**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C8)	**4.86**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C9)	**1.18**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C10)	**0.460**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (Total)	**28.8**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C6)	**0.571**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C7)	**8.48**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C8)	**9.86**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C9)	**6.79**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C10)	**2.95**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C11)	**0.126**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C12)	**0.0680**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Aromatics (C13)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (Total)	**7.90**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (C5)	**0.484**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (C6)	**4.28**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (C7)	**2.07**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (C8)	**0.584**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Chevron R001 (A3I1304-04)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Naphthenes (C9)	**0.404**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (C10)	**0.0740**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (Total)	**2.46**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (C5)	**1.82**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (C6)	**0.396**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (C7)	**0.176**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (C8)	**0.0260**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (C9)	**0.0460**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Olefins (C10)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (Total)	**10.1**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C1)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C2)	**10.1**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C5)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
DHA: Total of Knowns	**88.0**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
DHA: Total of Unknowns	**12.0**	---	0.0100	%m/m	1	09/26/23 12:44	D6730-11m	
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
n-Propane	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Butane	**0.0170**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Methanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Ethanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Methyl-1-Butene	**0.0210**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isopentane	**5.24**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Pentene	**0.0920**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Propanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methyl-1-Butene	**0.217**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Pentane	**3.01**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methyl-1,3-Butadiene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
trans-2-Pentene	**0.328**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-2-Pentene	**0.175**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
tert-Butanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methyl-2-Butene	**0.528**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Propanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
4-Methyl-1-Pentene	**0.0260**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Cyclopentane	**0.438**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,3-Dimethylbutane	**1.21**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methylpentane	**4.23**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Methylpentane	**2.65**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Hexene	**0.0540**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Hexane	**2.59**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-2-Hexene	**0.198**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methyl-2-Pentene	**0.258**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-2-Hexene	**0.102**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Butanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,2-Dimethylpentane	**0.181**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,4-Dimethylpentane	**0.692**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,2,3-Trimethylbutane	**0.0460**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Methylcyclopentane	**2.67**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methylcyclopentene	**0.198**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Benzene	**0.532**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3,3-Dimethylpentane	**0.222**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Butanol	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Cyclohexane	**1.82**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methylhexane	**2.45**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,3-Dimethylpentane	**1.33**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,1-Dimethylcyclopentane	**0.103**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Methylhexane	**2.81**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-1,3-Dimethylcyclopentane	**0.480**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

APEX LABORATORIES

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
trans-1,3-Dimethylcyclopentane	**0.417**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Ethylpentane	**0.284**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-1,2-Dimethylcyclopentane	**0.437**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Heptene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isooctane	**1.34**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-3-Heptene	**0.150**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Heptane	**2.44**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-3-Heptene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-2-Heptene	**0.0770**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-2-Heptene	**0.0790**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Methylcyclohexane	**1.01**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,2-Dimethylhexane	**0.214**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Ethylcyclopentane	**0.266**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,5-Dimethylhexane	**0.401**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,2,3-Trimethylpentane	**0.0430**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,4-Dimethylhexane	**0.562**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ctc-1,2,3-Trimethylcyclopentane	**0.110**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ctc-1,2,4-Trimethylcyclopentane	**0.163**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Toluene+2,3,3-Trimethylpentane	**8.81**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,3-Dimethylhexane	**0.457**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methylheptane	**1.19**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
4-Methylheptane	**0.515**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ctt-1,2,4-Trimethylcyclopentane	**0.0980**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Methylheptane	**1.30**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Ethylhexane	**0.505**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-1,4-Dimethylcyclohexane	**0.116**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Octene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Ethyl-1-Methylcyclopentane	**0.0160**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-1,2-Dimethylcyclohexane	**0.138**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ccc-1,2,3-Trimethylcyclopentane	**0.0310**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Octane	**1.34**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-2-Octene	**0.0390**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Isopropylcyclopentane	**0.0960**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-2-Octene	**0.0170**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-1,2-Dimethylcyclohexane	**0.0490**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,5-Dimethylheptane	**0.289**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ccc-1,3,5-Trimethylcyclohexane	**0.211**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,1,4-Trimethylcyclohexane	**0.0330**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,3-Dimethylheptane	**0.149**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Ethylbenzene	**1.75**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ctt-1,2,4-Trimethylcyclohexane	**0.114**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
m-Xylene	**5.01**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
p-Xylene	**2.11**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3,4-Dimethyheptane (D)	**0.0670**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3,4-Dimethyheptane (L)	**0.0530**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methyloctane	**0.456**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
ctc-1,2,4-Trimethylcyclohexane	**0.126**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Methyloctane	**0.517**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
o-Xylene	**2.59**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Nonene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isobutylcyclopentane	**0.0350**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-3-Nonene	**0.0380**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-3-Nonene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Nonane	**0.542**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
trans-2-Nonene	**0.0300**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isopropylbenzene	**0.131**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
cis-2-Nonene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3,3-Dimethyloctane	**0.120**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Butylcyclopentane	**0.0310**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2,3-Dimethyloctane	**0.0620**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Propylbenzene	**0.560**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1-Methyl-3-Ethylbenzene	**1.89**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-4-Ethylbenzene	**0.819**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,3,5-Trimethylbenzene	**0.947**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-2-Ethylbenzene	**0.879**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
5-Methylnonane	**0.0720**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Ethyloctane	**0.0360**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methylnonane	**0.175**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
3-Methylnonane	**0.195**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isobutylcyclohexane	**0.0230**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,2,4-Trimethylbenzene	**3.06**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Decene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
t-1-Methyl-2-N-Propylcyclohexane	**0.0420**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isobutylbenzene	**0.0640**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
sec-Butylbenzene	**0.0910**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Decane	**0.193**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-3-Isopropylbenzene	**0.0980**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-4-Isopropylbenzene	**0.0330**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-3-n-Propylbenzene	**0.467**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-4-n-Propylbenzene	**0.263**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Butylbenzene	**0.133**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methyl-2-n-Propylbenzene	**0.439**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,2-Diethylbenzene	**0.0340**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,3-Dimethyl-5-Ethylbenzene	**0.170**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,4-Dimethyl-2-Ethylbenzene	**0.297**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,2-Dimethyl-4-Ethylbenzene	**0.525**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,3-Dimethyl-2-Ethylbenzene	**0.0370**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,2-Dimethyl-3-Ethylbenzene	**0.119**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Undecane	**0.0900**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
t-1-Methyl-2(4-Methylphenyl)cyclopentane	**0.0480**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,2,4,5-Tetramethylbenzene	**0.281**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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Michele Poquiz For Kurt Johnson, Senior Chemist

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
1,2,3,5-Tetramethylbenzene	**0.385**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
tert-1-Butyl-2-Methylbenzene	**0.0130**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Pentylbenzene	**0.0280**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthalene	**0.353**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
tert-1-Butyl-4-Ethylbenzene	**0.0400**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Dodecane	**0.0880**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,3,5-Triethylbenzene	**0.0160**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1,2,4-Triethylbenzene	**0.0120**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Hexylbenzene	**0.0230**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
1-Methylnaphthalene	**0.110**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Tridecane	**0.0360**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Tetradecane	**0.0180**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
n-Pentadecane	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (Total)	**10.4**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C3)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C4)	**0.0170**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C5)	**3.01**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C6)	**2.59**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C7)	**2.44**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C8)	**1.34**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C9)	**0.542**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C10)	**0.193**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C11)	**0.0900**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C12)	**0.0880**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C13)	**0.0360**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C14)	**0.0180**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Paraffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (Total)	**30.1**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C5)	**5.24**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C6)	**8.09**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Isoparaffins (C7)	**8.02**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C8)	**6.53**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C9)	**1.53**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C10)	**0.659**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (Total)	**33.1**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C6)	**0.532**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C7)	**8.81**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C8)	**11.5**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C9)	**8.28**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C10)	**3.80**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C11)	**0.150**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C12)	**0.0910**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Aromatics (C13)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (Total)	**9.33**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C5)	**0.438**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C6)	**4.69**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C7)	**2.72**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C8)	**0.818**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C9)	**0.550**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C10)	**0.113**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (Total)	**2.44**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (C5)	**1.37**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (C6)	**0.638**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (C7)	**0.306**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (C8)	**0.0560**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (C9)	**0.0670**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Olefins (C10)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (Total)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**		**Batch: 23I0799**		**TEMP**
Oxygenates (C1)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (C2)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (C5)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
DHA: Total of Knowns	**85.3**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	
DHA: Total of Unknowns	**14.7**	---	0.0100	%m/m	1	09/26/23 15:36	D6730-11m	

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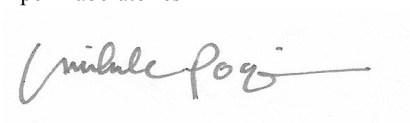

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Water Soluble Oxygenates by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (WSF) (A3I1304-09RE2)				**Matrix: Water**		**Batch: 23I0907**		**TEMP**
Ethanol	**4590**	1250	2500	ug/L	20	09/28/23 14:14	EPA 8260D	
tert-Butanol (TBA)	ND	1000	2000	ug/L	20	09/28/23 14:14	EPA 8260D	
Diisopropyl ether (DIPE)	ND	5.00	10.0	ug/L	20	09/28/23 14:14	EPA 8260D	
Ethyl-tert-butyl ether (ETBE)	ND	5.00	10.0	ug/L	20	09/28/23 14:14	EPA 8260D	
tert-Amyl methyl ether (TAME)	ND	5.00	10.0	ug/L	20	09/28/23 14:14	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	10.0	10.0	ug/L	20	09/28/23 14:14	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	5.00	10.0	ug/L	20	09/28/23 14:14	EPA 8260D	
Methyl tert-butyl ether (MTBE)	ND	10.0	20.0	ug/L	20	09/28/23 14:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*	*1*	*09/28/23 14:14*	*EPA 8260D*	
1,4-Difluorobenzene (Surr)			*101 %*		*80-120 %*	*1*	*09/28/23 14:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*		*80-120 %*	*1*	*09/28/23 14:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*		*80-120 %*	*1*	*09/28/23 14:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*	*1*	*09/28/23 14:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*	*1*	*09/28/23 14:14*	*EPA 8260D*	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Metals by EPA 6020B (ICPMS) in Product (Filtered 0.45micron)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Public Works 001 (A3I1304-01)				**Matrix: Liquid**				
Batch: 23I0786								
Lead	ND	0.195	0.391	mg/kg	5	09/25/23 21:25	EPA 6020B (Diss)	FILT2
Manganese	ND	0.977	1.95	mg/kg	5	09/25/23 21:25	EPA 6020B (Diss)	FILT2
Circle K P001 (A3I1304-02)				**Matrix: Liquid**				
Batch: 23I0786								
Lead	ND	0.195	0.391	mg/kg	5	09/25/23 21:30	EPA 6020B (Diss)	FILT2
Manganese	ND	0.977	1.95	mg/kg	5	09/25/23 21:30	EPA 6020B (Diss)	FILT2
Circle K R001 (A3I1304-03)				**Matrix: Liquid**				
Batch: 23I0786								
Lead	ND	0.176	0.352	mg/kg	5	09/25/23 21:35	EPA 6020B (Diss)	FILT2
Manganese	ND	0.880	1.76	mg/kg	5	09/25/23 21:35	EPA 6020B (Diss)	FILT2
Chevron R001 (A3I1304-04)				**Matrix: Liquid**				
Batch: 23I0786								
Lead	ND	0.181	0.362	mg/kg	5	09/25/23 21:41	EPA 6020B (Diss)	FILT2
Manganese	ND	0.906	1.81	mg/kg	5	09/25/23 21:41	EPA 6020B (Diss)	FILT2
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**				
Batch: 23I0786								
Lead	**0.158**	0.140	0.279	mg/kg	5	09/25/23 21:46	EPA 6020B (Diss)	**J, FILT2**
Manganese	ND	0.698	1.40	mg/kg	5	09/25/23 21:46	EPA 6020B (Diss)	FILT2

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

ANALYTICAL SAMPLE RESULTS

Organic Lead and Manganese Speciation by Gas Chromatography/Electron Capture Detector (GC/ECD)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Container 106 N 2nd from Sump (A3I1304-05)				**Matrix: Liquid**			**Batch: 23I0847**	**TEMP**
TEL (Tetraethyl Lead)	ND	1.60	1.60	mg/kg	20	09/26/23 18:14	GC-ECD	R-02
TML (Tetramethyl Lead)	ND	0.500	1.00	mg/kg	20	09/26/23 18:14	GC-ECD	
MMT (Methylcyclopentadienyl Manganese T	ND	0.500	1.00	mg/kg	20	09/26/23 18:14	GC-ECD	

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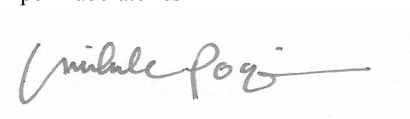

Michele Poquiz For Kurt Johnson, Senior Chemist

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APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA								**Liquid**				
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08 Analyzed: 09/25/23 22:24									
D6730-11m												
n-Propane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Butane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Methanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Ethanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Methyl-1-Butene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Pentene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Propanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methyl-1-Butene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Pentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methyl-1,3-Butadiene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-2-Pentene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-2-Pentene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
tert-Butanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methyl-2-Butene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Propanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
4-Methyl-1-Pentene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Cyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,3-Dimethylbutane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Methylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Hexene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Hexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-2-Hexene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methyl-2-Pentene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-2-Hexene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Butanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,2-Dimethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,4-Dimethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,2,3-Trimethylbutane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Methylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	

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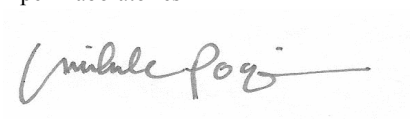

Michele Poquiz For Kurt Johnson, Senior Chemist

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA								**Liquid**				
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08		Analyzed: 09/25/23 22:24							
1-Methylcyclopentene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Benzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3,3-Dimethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Butanol	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Cyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,3-Dimethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,1-Dimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Methylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-1,3-Dimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-1,3-Dimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Ethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-1,2-Dimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Heptene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isooctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-3-Heptene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Heptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-3-Heptene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-2-Heptene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-2-Heptene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Methylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,2-Dimethylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Ethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,5-Dimethylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,2,3-Trimethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,4-Dimethylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
ctc-1,2,3-Trimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
ctc-1,2,4-Trimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Toluene+2,3,3-Trimethylpentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,3-Dimethylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methylheptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
4-Methylheptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	

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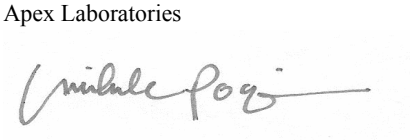

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08		Analyzed: 09/25/23 22:24							
ctt-1,2,4-Trimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Methylheptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Ethylhexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-1,4-Dimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Octene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Ethyl-1-Methylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-1,2-Dimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
ccc-1,2,3-Trimethylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Octane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-2-Octene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isopropylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-2-Octene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-1,2-Dimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,5-Dimethylheptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
ccc-1,3,5-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,1,4-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,3-Dimethylheptane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
ctt-1,2,4-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
m-Xylene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
p-Xylene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3,4-Dimethyheptane (D)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3,4-Dimethyheptane (L)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methyloctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
ctc-1,2,4-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Methyloctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
o-Xylene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Nonene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isobutylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
trans-3-Nonene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-3-Nonene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Nonane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	

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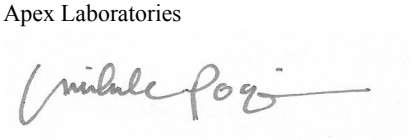

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA								**Liquid**				
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08		Analyzed: 09/25/23 22:24							
trans-2-Nonene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isopropylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
cis-2-Nonene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3,3-Dimethyloctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Butylcyclopentane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2,3-Dimethyloctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Propylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-3-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-4-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-2-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
5-Methylnonane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Ethyloctane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methylnonane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
3-Methylnonane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isobutylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Decene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
t-1-Methyl-2-N-Propylcyclohexane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isobutylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
sec-Butylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Decane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-3-Isopropylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-4-Isopropylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-3-n-Propylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-4-n-Propylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Butylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methyl-2-n-Propylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2-Diethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,3-Dimethyl-5-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08		Analyzed: 09/25/23 22:24							
1,4-Dimethyl-2-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2-Dimethyl-4-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,3-Dimethyl-2-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2-Dimethyl-3-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Undecane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
t-1-Methyl-2(4-Methylphenyl)cyclopentai	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2,4,5-Tetramethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2,3,5-Tetramethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
tert-1-Butyl-2-Methylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Pentylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthalene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
tert-1-Butyl-4-Ethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Dodecane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,3,5-Triethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1,2,4-Triethylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Hexylbenzene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Tridecane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Tetradecane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
n-Pentadecane	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (Total)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C3)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C4)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C5)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C6)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C7)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C8)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C9)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C10)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C11)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C12)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	

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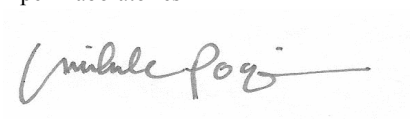

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Michele Poquiz For Kurt Johnson, Senior Chemist

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA								**Liquid**				
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08		Analyzed: 09/25/23 22:24							
Paraffins (C13)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C14)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Paraffins (C15)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (Total)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C5)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C6)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C7)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C8)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C9)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C10)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (Total)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C6)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C7)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C8)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C9)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C10)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C11)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C12)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Aromatics (C13)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (Total)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C5)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C6)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C7)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C8)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C9)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C10)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Olefins (Total)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Olefins (C5)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	

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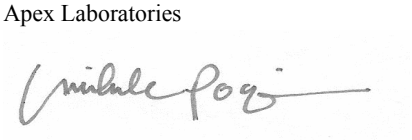

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Blank (23I0799-BLK1)			Prepared: 09/25/23 14:08		Analyzed: 09/25/23 22:24							
Olefins (C6)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Olefins (C7)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Olefins (C8)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Olefins (C9)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Olefins (C10)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (Total)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C1)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C2)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C5)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
DHA: Total of Knowns	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
DHA: Total of Unknowns	ND	---	0.0100	%m/m	1	---	---	---	---	---	---	
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
D6730-11m												
n-Propane	**0.0170**	---	0.0100	%m/m	1	---	0.0160	---	---	6	30%	
n-Butane	**0.270**	---	0.0100	%m/m	1	---	0.264	---	---	2	30%	
Methanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Ethanol	**10.6**	---	0.0100	%m/m	1	---	10.5	---	---	1	30%	
3-Methyl-1-Butene	**0.0470**	---	0.0100	%m/m	1	---	0.0460	---	---	2	30%	
Isopentane	**8.24**	---	0.0100	%m/m	1	---	8.17	---	---	0.9	30%	
1-Pentene	**0.139**	---	0.0100	%m/m	1	---	0.139	---	---	0	30%	
2-Propanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
2-Methyl-1-Butene	**0.442**	---	0.0100	%m/m	1	---	0.439	---	---	0.7	30%	
n-Pentane	**4.73**	---	0.0100	%m/m	1	---	4.70	---	---	0.8	30%	
2-Methyl-1,3-Butadiene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
trans-2-Pentene	**0.623**	---	0.0100	%m/m	1	---	0.618	---	---	0.8	30%	
cis-2-Pentene	**0.287**	---	0.0100	%m/m	1	---	0.283	---	---	1	30%	
tert-Butanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
2-Methyl-2-Butene	**1.10**	---	0.0100	%m/m	1	---	1.09	---	---	1	30%	

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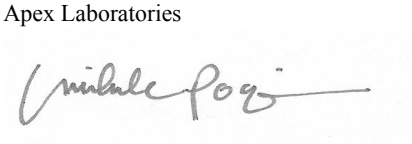

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
n-Propanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
4-Methyl-1-Pentene	**0.0240**	---	0.0100	%m/m	1	---	0.0230	---	---	4	30%	
Cyclopentane	**0.449**	---	0.0100	%m/m	1	---	0.446	---	---	0.7	30%	
2,3-Dimethylbutane	**1.01**	---	0.0100	%m/m	1	---	1.00	---	---	0.6	30%	
Methyl tert-butyl ether (MTBE)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
2-Methylpentane	**3.31**	---	0.0100	%m/m	1	---	3.29	---	---	0.7	30%	
3-Methylpentane	**2.03**	---	0.0100	%m/m	1	---	2.02	---	---	0.5	30%	
1-Hexene	**0.0440**	---	0.0100	%m/m	1	---	0.0440	---	---	0	30%	
2-Methyl-1-propanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
n-Hexane	**2.09**	---	0.0100	%m/m	1	---	2.08	---	---	0.4	30%	
trans-2-Hexene	**0.188**	---	0.0100	%m/m	1	---	0.187	---	---	0.5	30%	
2-Methyl-2-Pentene	**0.287**	---	0.0100	%m/m	1	---	0.286	---	---	0.3	30%	
cis-2-Hexene	**0.0930**	---	0.0100	%m/m	1	---	0.0930	---	---	0	30%	
2-Butanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
2,2-Dimethylpentane	**0.125**	---	0.0100	%m/m	1	---	0.126	---	---	0.8	30%	
2,4-Dimethylpentane	**0.692**	---	0.0100	%m/m	1	---	0.690	---	---	0.3	30%	
2,2,3-Trimethylbutane	**0.0380**	---	0.0100	%m/m	1	---	0.0380	---	---	0	30%	
Methylcyclopentane	**2.01**	---	0.0100	%m/m	1	---	2.00	---	---	0.4	30%	
1-Methylcyclopentene	**0.228**	---	0.0100	%m/m	1	---	0.236	---	---	3	30%	
Benzene	**0.668**	---	0.0100	%m/m	1	---	0.658	---	---	2	30%	
3,3-Dimethylpentane	**0.158**	---	0.0100	%m/m	1	---	0.157	---	---	0.6	30%	
n-Butanol	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Cyclohexane	**1.31**	---	0.0100	%m/m	1	---	1.30	---	---	0.3	30%	
2-Methylhexane	**1.89**	---	0.0100	%m/m	1	---	1.89	---	---	0.1	30%	
2,3-Dimethylpentane	**1.22**	---	0.0100	%m/m	1	---	1.22	---	---	0	30%	
1,1-Dimethylcyclopentane	**0.101**	---	0.0100	%m/m	1	---	0.102	---	---	1	30%	
tert-Amyl methyl ether (TAME)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
3-Methylhexane	**2.15**	---	0.0100	%m/m	1	---	2.15	---	---	0	30%	
cis-1,3-Dimethylcyclopentane	**0.460**	---	0.0100	%m/m	1	---	0.460	---	---	0	30%	
trans-1,3-Dimethylcyclopentane	**0.399**	---	0.0100	%m/m	1	---	0.399	---	---	0	30%	
3-Ethylpentane	**0.212**	---	0.0100	%m/m	1	---	0.212	---	---	0	30%	
trans-1,2-Dimethylcyclopentane	**0.438**	---	0.0100	%m/m	1	---	0.438	---	---	0	30%	
1-Heptene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	

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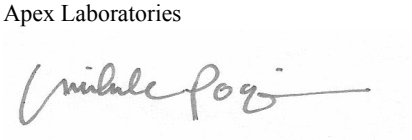

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
Isooctane	**2.02**	---	0.0100	%m/m	1	---	2.04	---	---	1	30%	
trans-3-Heptene	**0.127**	---	0.0100	%m/m	1	---	0.127	---	---	0	30%	
n-Heptane	**1.97**	---	0.0100	%m/m	1	---	1.97	---	---	0.05	30%	
cis-3-Heptene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
trans-2-Heptene	**0.0520**	---	0.0100	%m/m	1	---	0.0520	---	---	0	30%	
cis-2-Heptene	**0.0640**	---	0.0100	%m/m	1	---	0.0660	---	---	3	30%	
Methylcyclohexane	**0.940**	---	0.0100	%m/m	1	---	0.947	---	---	0.7	30%	
tert-Amyl ethyl ether (TAEE)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
2,2-Dimethylhexane	**0.174**	---	0.0100	%m/m	1	---	0.175	---	---	0.6	30%	
Ethylcyclopentane	**0.242**	---	0.0100	%m/m	1	---	0.243	---	---	0.4	30%	
2,5-Dimethylhexane	**0.393**	---	0.0100	%m/m	1	---	0.394	---	---	0.3	30%	
2,2,3-Trimethylpentane	**0.0720**	---	0.0100	%m/m	1	---	0.0720	---	---	0	30%	
2,4-Dimethylhexane	**0.496**	---	0.0100	%m/m	1	---	0.497	---	---	0.2	30%	
ctc-1,2,3-Trimethylcyclopentane	**0.107**	---	0.0100	%m/m	1	---	0.107	---	---	0	30%	
ctc-1,2,4-Trimethylcyclopentane	**0.158**	---	0.0100	%m/m	1	---	0.158	---	---	0	30%	
Toluene+2,3,3-Trimethylpentane	**7.28**	---	0.0100	%m/m	1	---	7.30	---	---	0.2	30%	
2,3-Dimethylhexane	**0.411**	---	0.0100	%m/m	1	---	0.413	---	---	0.5	30%	
2-Methylheptane	**0.872**	---	0.0100	%m/m	1	---	0.875	---	---	0.3	30%	
4-Methylheptane	**0.368**	---	0.0100	%m/m	1	---	0.370	---	---	0.5	30%	
ctt-1,2,4-Trimethylcyclopentane	**0.0880**	---	0.0100	%m/m	1	---	0.0880	---	---	0	30%	
3-Methylheptane	**0.928**	---	0.0100	%m/m	1	---	0.931	---	---	0.3	30%	
3-Ethylhexane	**0.414**	---	0.0100	%m/m	1	---	0.415	---	---	0.2	30%	
trans-1,4-Dimethylcyclohexane	**0.112**	---	0.0100	%m/m	1	---	0.113	---	---	0.9	30%	
1-Octene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
1-Ethyl-1-Methylcyclopentane	**0.0150**	---	0.0100	%m/m	1	---	0.0150	---	---	0	30%	
trans-1,2-Dimethylcyclohexane	**0.126**	---	0.0100	%m/m	1	---	0.127	---	---	0.8	30%	
ccc-1,2,3-Trimethylcyclopentane	**0.0270**	---	0.0100	%m/m	1	---	0.0260	---	---	4	30%	
n-Octane	**1.01**	---	0.0100	%m/m	1	---	1.02	---	---	0.5	30%	
trans-2-Octene	**0.0280**	---	0.0100	%m/m	1	---	0.0280	---	---	0	30%	
Isopropylcyclopentane	**0.0750**	---	0.0100	%m/m	1	---	0.0740	---	---	1	30%	
cis-2-Octene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
cis-1,2-Dimethylcyclohexane	**0.0490**	---	0.0100	%m/m	1	---	0.0490	---	---	0	30%	
2,5-Dimethylheptane	**0.226**	---	0.0100	%m/m	1	---	0.227	---	---	0.4	30%	

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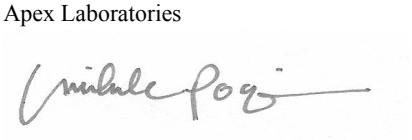

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Michele Poquiz For Kurt Johnson, Senior Chemist

APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
3,3-Dimethylheptane	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
ccc-1,3,5-Trimethylcyclohexane	**0.197**	---	0.0100	%m/m	1	---	0.195	---	---	1	30%	
1,1,4-Trimethylcyclohexane	**0.0210**	---	0.0100	%m/m	1	---	0.0210	---	---	0	30%	
2,3-Dimethylheptane	**0.107**	---	0.0100	%m/m	1	---	0.108	---	---	0.9	30%	
Ethylbenzene	**1.34**	---	0.0100	%m/m	1	---	1.35	---	---	0.5	30%	
ctt-1,2,4-Trimethylcyclohexane	**0.0950**	---	0.0100	%m/m	1	---	0.0960	---	---	1	30%	
m-Xylene	**3.51**	---	0.0100	%m/m	1	---	3.53	---	---	0.7	30%	
p-Xylene	**1.49**	---	0.0100	%m/m	1	---	1.49	---	---	0	30%	
3,4-Dimethyheptane (D)	**0.0490**	---	0.0100	%m/m	1	---	0.0480	---	---	2	30%	
3,4-Dimethyheptane (L)	**0.0320**	---	0.0100	%m/m	1	---	0.0330	---	---	3	30%	
2-Methyloctane	**0.314**	---	0.0100	%m/m	1	---	0.320	---	---	2	30%	
ctc-1,2,4-Trimethylcyclohexane	**0.0920**	---	0.0100	%m/m	1	---	0.0940	---	---	2	30%	
3-Methyloctane	**0.350**	---	0.0100	%m/m	1	---	0.359	---	---	3	30%	
1,1,2-Trimethylcyclohexane	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
o-Xylene	**1.83**	---	0.0100	%m/m	1	---	1.85	---	---	1	30%	
1-Nonene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Isobutylcyclopentane	**0.0290**	---	0.0100	%m/m	1	---	0.0290	---	---	0	30%	
trans-3-Nonene	**0.0250**	---	0.0100	%m/m	1	---	0.0280	---	---	11	30%	
cis-3-Nonene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
n-Nonane	**0.374**	---	0.0100	%m/m	1	---	0.379	---	---	1	30%	
trans-2-Nonene	**0.0220**	---	0.0100	%m/m	1	---	0.0230	---	---	4	30%	
Isopropylbenzene	**0.0930**	---	0.0100	%m/m	1	---	0.0930	---	---	0	30%	
cis-2-Nonene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Isopropylcyclohexane	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
2,2-Dimethyloctane	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
3,3-Dimethyloctane	**0.0870**	---	0.0100	%m/m	1	---	0.0870	---	---	0	30%	
n-Butylcyclopentane	**0.0250**	---	0.0100	%m/m	1	---	0.0260	---	---	4	30%	
2,3-Dimethyloctane	**0.0440**	---	0.0100	%m/m	1	---	0.0450	---	---	2	30%	
n-Propylbenzene	**0.384**	---	0.0100	%m/m	1	---	0.377	---	---	2	30%	
1-Methyl-3-Ethylbenzene	**1.28**	---	0.0100	%m/m	1	---	1.29	---	---	0.5	30%	
1-Methyl-4-Ethylbenzene	**0.550**	---	0.0100	%m/m	1	---	0.557	---	---	1	30%	
1,3,5-Trimethylbenzene	**0.622**	---	0.0100	%m/m	1	---	0.631	---	---	1	30%	
1-Methyl-2-Ethylbenzene	**0.632**	---	0.0100	%m/m	1	---	0.641	---	---	1	30%	

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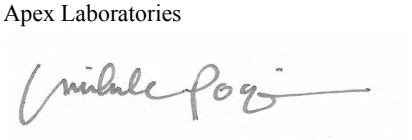

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503-718-2323
ORELAP ID: **OR100062**

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
5-Methylnonane	**0.0480**	---	0.0100	%m/m	1	---	0.0490	---	---	2	30%	
3-Ethyloctane	**0.0270**	---	0.0100	%m/m	1	---	0.0270	---	---	0	30%	
2-Methylnonane	**0.119**	---	0.0100	%m/m	1	---	0.122	---	---	2	30%	
3-Methylnonane	**0.131**	---	0.0100	%m/m	1	---	0.134	---	---	2	30%	
Isobutylcyclohexane	**0.0190**	---	0.0100	%m/m	1	---	0.0190	---	---	0	30%	
tert-Butylbenzene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	**2.04**	---	0.0100	%m/m	1	---	2.08	---	---	2	30%	
1-Decene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
t-1-Methyl-2-N-Propylcyclohexane	**0.0370**	---	0.0100	%m/m	1	---	0.0370	---	---	0	30%	
Isobutylbenzene	**0.0560**	---	0.0100	%m/m	1	---	0.0570	---	---	2	30%	
sec-Butylbenzene	**0.0720**	---	0.0100	%m/m	1	---	0.0750	---	---	4	30%	
n-Decane	**0.134**	---	0.0100	%m/m	1	---	0.137	---	---	2	30%	
1-Methyl-3-Isopropylbenzene	**0.0800**	---	0.0100	%m/m	1	---	0.0810	---	---	1	30%	
1-Methyl-4-Isopropylbenzene	**0.0260**	---	0.0100	%m/m	1	---	0.0250	---	---	4	30%	
1-Methyl-2-Isopropylbenze	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
1-Methyl-3-n-Propylbenzene	**0.341**	---	0.0100	%m/m	1	---	0.346	---	---	1	30%	
1-Methyl-4-n-Propylbenzene	**0.174**	---	0.0100	%m/m	1	---	0.182	---	---	4	30%	
n-Butylbenzene	**0.0950**	---	0.0100	%m/m	1	---	0.0990	---	---	4	30%	
1-Methyl-2-n-Propylbenzene	**0.279**	---	0.0100	%m/m	1	---	0.294	---	---	5	30%	
1,2-Diethylbenzene	**0.0240**	---	0.0100	%m/m	1	---	0.0260	---	---	8	30%	
1,3-Dimethyl-5-Ethylbenzene	**0.125**	---	0.0100	%m/m	1	---	0.126	---	---	0.8	30%	
1,4-Dimethyl-2-Ethylbenzene	**0.199**	---	0.0100	%m/m	1	---	0.201	---	---	1	30%	
1,2-Dimethyl-4-Ethylbenzene	**0.354**	---	0.0100	%m/m	1	---	0.361	---	---	2	30%	
1,3-Dimethyl-2-Ethylbenzene	**0.0260**	---	0.0100	%m/m	1	---	0.0270	---	---	4	30%	
1,2-Dimethyl-3-Ethylbenzene	**0.0830**	---	0.0100	%m/m	1	---	0.0860	---	---	4	30%	
n-Undecane	**0.0810**	---	0.0100	%m/m	1	---	0.0750	---	---	8	30%	
t-1-Methyl-2(4-Methylphenyl)cyclopentar	**0.0360**	---	0.0100	%m/m	1	---	0.0350	---	---	3	30%	
1,2,4,5-Tetramethylbenzene	**0.185**	---	0.0100	%m/m	1	---	0.196	---	---	6	30%	
2-Methylbutylbenzene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
1,2,3,5-Tetramethylbenzene	**0.250**	---	0.0100	%m/m	1	---	0.253	---	---	1	30%	
tert-1-Butyl-2-Methylbenzene	**0.0110**	---	0.0100	%m/m	1	---	0.0100	---	---	10	30%	
n-Pentylbenzene	**0.0220**	---	0.0100	%m/m	1	---	0.0220	---	---	0	30%	
Naphthalene	**0.249**	---	0.0100	%m/m	1	---	0.254	---	---	2	30%	

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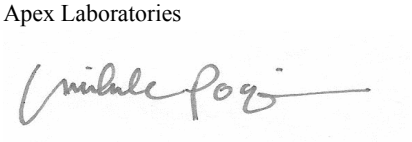

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
t-1-Butyl-3,5-Dimethybenzene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
tert-1-Butyl-4-Ethylbenzene	**0.0290**	---	0.0100	%m/m	1	---	0.0300	---	---	3	30%	
n-Dodecane	**0.0710**	---	0.0100	%m/m	1	---	0.0740	---	---	4	30%	
1,3,5-Triethylbenzene	**0.0120**	---	0.0100	%m/m	1	---	0.0120	---	---	0	30%	
1,2,4-Triethylbenzene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
n-Hexylbenzene	**0.0230**	---	0.0100	%m/m	1	---	0.0190	---	---	19	30%	
2-Methylnaphthalene	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
1-Methylnaphthalene	**0.0710**	---	0.0100	%m/m	1	---	0.0730	---	---	3	30%	
n-Tridecane	**0.0400**	---	0.0100	%m/m	1	---	0.0450	---	---	12	30%	
n-Tetradecane	**0.0200**	---	0.0100	%m/m	1	---	0.0210	---	---	5	30%	
n-Pentadecane	**0.0130**	---	0.0100	%m/m	1	---	0.0140	---	---	7	30%	
Paraffins (Total)	**10.8**	---	0.0100	%m/m	1	---	10.8	---	---	0.3	30%	
Paraffins (C3)	**0.0170**	---	0.0100	%m/m	1	---	0.0160	---	---	6	30%	
Paraffins (C4)	**0.270**	---	0.0100	%m/m	1	---	0.264	---	---	2	30%	
Paraffins (C5)	**4.73**	---	0.0100	%m/m	1	---	4.70	---	---	0.8	30%	
Paraffins (C6)	**2.09**	---	0.0100	%m/m	1	---	2.08	---	---	0.4	30%	
Paraffins (C7)	**1.97**	---	0.0100	%m/m	1	---	1.97	---	---	0.05	30%	
Paraffins (C8)	**1.01**	---	0.0100	%m/m	1	---	1.02	---	---	0.5	30%	
Paraffins (C9)	**0.374**	---	0.0100	%m/m	1	---	0.379	---	---	1	30%	
Paraffins (C10)	**0.134**	---	0.0100	%m/m	1	---	0.137	---	---	2	30%	
Paraffins (C11)	**0.0810**	---	0.0100	%m/m	1	---	0.0750	---	---	8	30%	
Paraffins (C12)	**0.0710**	---	0.0100	%m/m	1	---	0.0740	---	---	4	30%	
Paraffins (C13)	**0.0400**	---	0.0100	%m/m	1	---	0.0450	---	---	12	30%	
Paraffins (C14)	**0.0200**	---	0.0100	%m/m	1	---	0.0210	---	---	5	30%	
Paraffins (C15)	**0.0130**	---	0.0100	%m/m	1	---	0.0140	---	---	7	30%	
Isoparaffins (Total)	**28.7**	---	0.0100	%m/m	1	---	28.7	---	---	0.2	30%	
Isoparaffins (C4)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Isoparaffins (C5)	**8.24**	---	0.0100	%m/m	1	---	8.17	---	---	0.9	30%	
Isoparaffins (C6)	**6.34**	---	0.0100	%m/m	1	---	6.31	---	---	0.6	30%	
Isoparaffins (C7)	**6.48**	---	0.0100	%m/m	1	---	6.48	---	---	0.06	30%	
Isoparaffins (C8)	**6.14**	---	0.0100	%m/m	1	---	6.18	---	---	0.6	30%	
Isoparaffins (C9)	**1.08**	---	0.0100	%m/m	1	---	1.10	---	---	1	30%	
Isoparaffins (C10)	**0.455**	---	0.0100	%m/m	1	---	0.464	---	---	2	30%	

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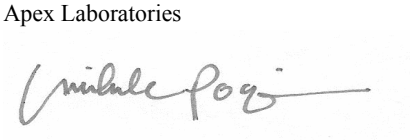

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ORELAP ID: **OR100062**

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
Isoparaffins (C11)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Isoparaffins (C12)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Isoparaffins (C13)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Isoparaffins (C15)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Aromatics (Total)	**24.5**	---	0.0100	%m/m	1	---	24.7	---	---	0.8	30%	
Aromatics (C6)	**0.668**	---	0.0100	%m/m	1	---	0.658	---	---	2	30%	
Aromatics (C7)	**7.28**	---	0.0100	%m/m	1	---	7.30	---	---	0.2	30%	
Aromatics (C8)	**8.17**	---	0.0100	%m/m	1	---	8.22	---	---	0.7	30%	
Aromatics (C9)	**5.61**	---	0.0100	%m/m	1	---	5.66	---	---	1	30%	
Aromatics (C10)	**2.62**	---	0.0100	%m/m	1	---	2.69	---	---	3	30%	
Aromatics (C11)	**0.104**	---	0.0100	%m/m	1	---	0.106	---	---	2	30%	
Aromatics (C12)	**0.0730**	---	0.0100	%m/m	1	---	0.0710	---	---	3	30%	
Aromatics (C13)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Naphthenes (Total)	**7.88**	---	0.0100	%m/m	1	---	7.88	---	---	0.01	30%	
Naphthenes (C5)	**0.449**	---	0.0100	%m/m	1	---	0.446	---	---	0.7	30%	
Naphthenes (C6)	**3.54**	---	0.0100	%m/m	1	---	3.54	---	---	0.1	30%	
Naphthenes (C7)	**2.58**	---	0.0100	%m/m	1	---	2.59	---	---	0.3	30%	
Naphthenes (C8)	**0.757**	---	0.0100	%m/m	1	---	0.757	---	---	0	30%	
Naphthenes (C9)	**0.459**	---	0.0100	%m/m	1	---	0.460	---	---	0.2	30%	
Naphthenes (C10)	**0.0920**	---	0.0100	%m/m	1	---	0.0910	---	---	1	30%	
Naphthenes (C12)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Olefins (Total)	**3.61**	---	0.0100	%m/m	1	---	3.59	---	---	0.6	30%	
Olefins (C5)	**2.64**	---	0.0100	%m/m	1	---	2.62	---	---	0.9	30%	
Olefins (C6)	**0.636**	---	0.0100	%m/m	1	---	0.633	---	---	0.5	30%	
Olefins (C7)	**0.243**	---	0.0100	%m/m	1	---	0.245	---	---	0.8	30%	
Olefins (C8)	**0.0370**	---	0.0100	%m/m	1	---	0.0370	---	---	0	30%	
Olefins (C9)	**0.0480**	---	0.0100	%m/m	1	---	0.0510	---	---	6	30%	
Olefins (C10)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Oxygenates (Total)	**10.6**	---	0.0100	%m/m	1	---	10.5	---	---	1	30%	
Oxygenates (C1)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Oxygenates (C2)	**10.6**	---	0.0100	%m/m	1	---	10.5	---	---	1	30%	
Oxygenates (C3)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Oxygenates (C4)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Detailed Hydrocarbon Analysis per ASTM D6730-11

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0799 - ASTM D6730 DHA							**Liquid**					
Duplicate (23I0799-DUP1)			Prepared: 09/25/23 14:08		Analyzed: 09/26/23 04:08							**TEMP**
QC Source Sample: Public Works 001 (A3I1304-01)												
Oxygenates (C5)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Oxygenates (C6)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
Oxygenates (C7)	ND	---	0.0100	%m/m	1	---	ND	---	---	---	30%	
DHA: Total of Knowns	**86.2**	---	0.0100	%m/m	1	---	86.2	---	---	0.04	30%	
DHA: Total of Unknowns	**13.8**	---	0.0100	%m/m	1	---	13.8	---	---	0.3	30%	

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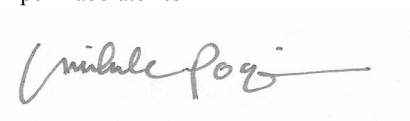

Michele Poquiz For Kurt Johnson, Senior Chemist

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APEX LABORATORIES

Apex Laboratories, LLC
6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Water Soluble Oxygenates by EPA 8260D

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0907 - EPA 5030C									**Water**			
Blank (23I0907-BLK1)			Prepared: 09/27/23 16:11		Analyzed: 09/28/23 04:13							
EPA 8260D												
Ethanol	ND	62.5	125	ug/L	1	---	---	---	---	---	---	
tert-Butanol (TBA)	ND	50.0	100	ug/L	1	---	---	---	---	---	---	
Diisopropyl ether (DIPE)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Ethyl-tert-butyl ether (ETBE)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
tert-Amyl methyl ether (TAME)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 101 %*		*Limits: 80-120 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				
LCS (23I0907-BS1)			Prepared: 09/27/23 16:11		Analyzed: 09/28/23 03:19							
EPA 8260D												
Ethanol	1140	62.5	125	ug/L	1	1250	---	91	80-120%	---	---	
tert-Butanol (TBA)	1240	50.0	100	ug/L	1	1250	---	99	80-120%	---	---	
Diisopropyl ether (DIPE)	5.02	0.250	0.500	ug/L	1	5.00	---	100	80-120%	---	---	
Ethyl-tert-butyl ether (ETBE)	5.23	0.250	0.500	ug/L	1	5.00	---	105	80-120%	---	---	
tert-Amyl methyl ether (TAME)	4.87	0.250	0.500	ug/L	1	5.00	---	97	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.2	0.250	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
1,2-Dichloroethane (EDC)	19.7	0.250	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	21.1	0.500	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 98 %*		*Limits: 80-120 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				
Duplicate (23I0907-DUP1)			Prepared: 09/27/23 16:11		Analyzed: 09/28/23 18:47							**T-02**

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Michele Poquiz For Kurt Johnson, Senior Chemist

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Water Soluble Oxygenates by EPA 8260D

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0907 - EPA 5030C							**Water**					
Duplicate (23I0907-DUP1)			Prepared: 09/27/23 16:11		Analyzed: 09/28/23 18:47							**T-02**
QC Source Sample: Non-SDG (A3I1247-06)												
Ethanol	ND	6250	12500	ug/L	100	---	ND	---	---	---	30%	
tert-Butanol (TBA)	ND	5000	10000	ug/L	100	---	ND	---	---	---	30%	
Diisopropyl ether (DIPE)	ND	25.0	50.0	ug/L	100	---	ND	---	---	---	30%	
Ethyl-tert-butyl ether (ETBE)	ND	25.0	50.0	ug/L	100	---	ND	---	---	---	30%	
tert-Amyl methyl ether (TAME)	ND	25.0	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	25.0	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	25.0	50.0	ug/L	100	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	50.0	100	ug/L	100	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 97 %*		*Limits: 80-120 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*97 %*		*80-120 %*		*"*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*		*"*					
Matrix Spike (23I0907-MS1)			Prepared: 09/27/23 16:11		Analyzed: 09/28/23 17:25							**T-02**
QC Source Sample: Non-SDG (A3I1375-05)												
EPA 8260D												
Ethanol	1250	62.5	125	ug/L	1	1250	ND	100	48-151%	---	---	
tert-Butanol (TBA)	1340	50.0	100	ug/L	1	1250	ND	107	68-129%	---	---	
Diisopropyl ether (DIPE)	5.36	0.250	0.500	ug/L	1	5.00	ND	107	67-128%	---	---	
Ethyl-tert-butyl ether (ETBE)	5.26	0.250	0.500	ug/L	1	5.00	ND	105	70-127%	---	---	
tert-Amyl methyl ether (TAME)	5.02	0.250	0.500	ug/L	1	5.00	ND	100	68-128%	---	---	
1,2-Dibromoethane (EDB)	22.0	0.250	0.500	ug/L	1	20.0	ND	110	77-121%	---	---	
1,2-Dichloroethane (EDC)	20.7	0.250	0.500	ug/L	1	20.0	ND	104	73-128%	---	---	
Methyl tert-butyl ether (MTBE)	22.8	0.500	1.00	ug/L	1	20.0	ND	114	71-124%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*100 %*		*80-120 %*		*"*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
Toluene-d8 (Surr)			*100 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*		*"*					

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Michele Poquiz For Kurt Johnson, Senior Chemist

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ORELAP ID: OR100062

ANALYTICAL REPORT

WA State Dept of Ecology	Project: Marcus Whitman	
4601 N Monroe	Project Number: [none]	Report ID:
Spokane, WA 99205-1295	Project Manager: Sam Hunn	A3I1304 - 10 04 23 1035

QUALITY CONTROL (QC) SAMPLE RESULTS

Water Soluble Oxygenates by EPA 8260D

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0907 - EPA 5030C							**Water**					
Matrix Spike Dup (23I0907-MSD1)			Prepared: 09/27/23 16:11		Analyzed: 09/28/23 17:53							T-02
QC Source Sample: Non-SDG (A3I1375-05)												
Ethanol	1250	62.5	125	ug/L	1	1250	ND	100	48-151%	0.3	30%	
tert-Butanol (TBA)	1370	50.0	100	ug/L	1	1250	ND	110	68-129%	3	30%	
Diisopropyl ether (DIPE)	5.64	0.250	0.500	ug/L	1	5.00	ND	113	67-128%	5	30%	
Ethyl-tert-butyl ether (ETBE)	5.54	0.250	0.500	ug/L	1	5.00	ND	111	70-127%	5	30%	
tert-Amyl methyl ether (TAME)	5.16	0.250	0.500	ug/L	1	5.00	ND	103	68-128%	3	30%	
1,2-Dibromoethane (EDB)	22.4	0.250	0.500	ug/L	1	20.0	ND	112	77-121%	2	30%	
1,2-Dichloroethane (EDC)	21.2	0.250	0.500	ug/L	1	20.0	ND	106	73-128%	2	30%	
Methyl tert-butyl ether (MTBE)	23.3	0.500	1.00	ug/L	1	20.0	ND	116	71-124%	2	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*100 %*		*80-120 %*			*"*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Metals by EPA 6020B (ICPMS) in Product (Filtered 0.45micron)

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0786 - EPA 3051A								**Liquid**				
Blank (23I0786-BLK1)				Prepared: 09/25/23 15:00 Analyzed: 09/25/23 21:05								
EPA 6020B (Diss)												
Lead	ND	0.0500	0.100	mg/kg	5	---	---	---	---	---	---	
Manganese	ND	0.250	0.500	mg/kg	5	---	---	---	---	---	---	
LCS (23I0786-BS1)				Prepared: 09/25/23 15:00 Analyzed: 09/25/23 21:15								
EPA 6020B (Diss)												
Lead	25.6	0.0500	0.100	mg/kg	5	25.0	---	102	80-120%	---	---	
Manganese	26.6	0.250	0.500	mg/kg	5	25.0	---	107	80-120%	---	---	
Duplicate (23I0786-DUP1)				Prepared: 09/25/23 15:00 Analyzed: 09/25/23 21:51								
QC Source Sample: Container 106 N 2nd from Sump (A3I1304-05)												
EPA 6020B (Diss)												
Lead	ND	0.145	0.291	mg/kg	5	---	0.158	---	---	***	**40%**	FILT2
Manganese	ND	0.727	1.45	mg/kg	5	---	ND	---	---	---	40%	FILT2
Matrix Spike (23I0786-MS1)				Prepared: 09/25/23 15:00 Analyzed: 09/25/23 22:06								
QC Source Sample: Container 106 N 2nd from Sump (A3I1304-05)												
EPA 6020B (Diss)												
Lead	77.5	0.156	0.312	mg/kg	5	78.1	0.158	99	75-125%	---	---	FILT2
Manganese	79.6	0.781	1.56	mg/kg	5	78.1	ND	102	75-125%	---	---	FILT2

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALITY CONTROL (QC) SAMPLE RESULTS

Organic Lead and Manganese Speciation by Gas Chromatography/Electron Capture Detector (GC/ECD)

Analyte	Result	Detection L Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23I0847 - ECD Pb/Mn Preparation								Liquid				
Blank (23I0847-BLK1)				Prepared: 09/26/23 13:15 Analyzed: 09/26/23 16:30								
GC-ECD												
TEL (Tetraethyl Lead)	ND	0.500	1.00	mg/kg	20	---	---	---	---	---	---	
TML (Tetramethyl Lead)	ND	0.500	1.00	mg/kg	20	---	---	---	---	---	---	
MMT (Methylcyclopentadienyl Manganes	ND	0.500	1.00	mg/kg	20	---	---	---	---	---	---	
LCS (23I0847-BS1)				Prepared: 09/26/23 13:15 Analyzed: 09/26/23 17:22								
GC-ECD												
TEL (Tetraethyl Lead)	23.5	0.500	1.00	mg/kg	20	20.0	---	117	76-120%	---	---	Q-41
TML (Tetramethyl Lead)	23.6	0.500	1.00	mg/kg	20	20.0	---	118	68-120%	---	---	Q-41
MMT (Methylcyclopentadienyl Manganes	22.9	0.500	1.00	mg/kg	20	20.0	---	115	80-121%	---	---	
Duplicate (23I0847-DUP1)				Prepared: 09/26/23 13:15 Analyzed: 09/26/23 19:06								**TEMP**
QC Source Sample: Container 106 N 2nd from Sump (A3I1304-05)												
GC-ECD												
TEL (Tetraethyl Lead)	ND	1.60	1.60	mg/kg	20	---	ND	---	---	---	30%	R-02
TML (Tetramethyl Lead)	ND	0.500	1.00	mg/kg	20	---	ND	---	---	---	30%	
MMT (Methylcyclopentadienyl Manganes	ND	0.500	1.00	mg/kg	20	---	ND	---	---	---	30%	
Matrix Spike (23I0847-MS1)				Prepared: 09/26/23 13:15 Analyzed: 09/26/23 19:58								**TEMP**
QC Source Sample: Container 106 N 2nd from Sump (A3I1304-05)												
GC-ECD												
TEL (Tetraethyl Lead)	22.6	1.60	1.60	mg/kg	20	20.0	ND	113	76-120%	---	---	Q-41
TML (Tetramethyl Lead)	23.9	0.500	1.00	mg/kg	20	20.0	ND	119	70-130%	---	---	Q-41
MMT (Methylcyclopentadienyl Manganes	23.6	0.500	1.00	mg/kg	20	20.0	ND	118	80-121%	---	---	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

SAMPLE PREPARATION INFORMATION

Detailed Hydrocarbon Analysis per ASTM D6730-11

Prep: ASTM D6730 DHA

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23I0799							
A3I1304-01	Liquid	D6730-11m	09/21/23 10:28	09/25/23 14:08	1mL/1mL	1mL/1mL	NA
A3I1304-02	Liquid	D6730-11m	09/21/23 09:52	09/25/23 14:08	1mL/1mL	1mL/1mL	NA
A3I1304-03	Liquid	D6730-11m	09/21/23 10:11	09/25/23 14:08	1mL/1mL	1mL/1mL	NA
A3I1304-04	Liquid	D6730-11m	09/21/23 10:42	09/25/23 14:08	1mL/1mL	1mL/1mL	NA
A3I1304-05	Liquid	D6730-11m	09/21/23 10:46	09/25/23 14:08	1mL/1mL	1mL/1mL	NA

Water Soluble Oxygenates by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23I0907							
A3I1304-09RE2	Water	EPA 8260D	09/21/23 10:46	09/27/23 16:11	5mL/5mL	5mL/5mL	1.00

Metals by EPA 6020B (ICPMS) in Product (Filtered 0.45micron)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23I0786							
A3I1304-01	Liquid	EPA 6020B (Diss)	09/21/23 10:28	09/25/23 15:00	0.128g/50mL	0.5g/50mL	3.91
A3I1304-02	Liquid	EPA 6020B (Diss)	09/21/23 09:52	09/25/23 15:00	0.128g/50mL	0.5g/50mL	3.91
A3I1304-03	Liquid	EPA 6020B (Diss)	09/21/23 10:11	09/25/23 15:00	0.142g/50mL	0.5g/50mL	3.52
A3I1304-04	Liquid	EPA 6020B (Diss)	09/21/23 10:42	09/25/23 15:00	0.138g/50mL	0.5g/50mL	3.62
A3I1304-05	Liquid	EPA 6020B (Diss)	09/21/23 10:46	09/25/23 15:00	0.179g/50mL	0.5g/50mL	2.79

Organic Lead and Manganese Speciation by Gas Chromatography/Electron Capture Detector (GC/ECD)

Prep: ECD Pb/Mn Preparation

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23I0847							
A3I1304-05	Liquid	GC-ECD	09/21/23 10:46	09/26/23 13:15	1g/1ml	1g/1ml	1.00

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

FILT2	Sample was lab filtered prior to analysis. See sample preparation section of report for date and time of filtration.
J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-41	Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
R-02	The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.
TEMP	Sample was received outside of recommended temperature.

Apex Laboratories

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a “dry weight” basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an “As Received” basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Michele Poquiz For Kurt Johnson, Senior Chemist

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

-Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
Liquid	**D6730-11m**		**1,1,2-Trimethylcyclohexane**	**5168**	
Liquid	**D6730-11m**		**1,1,4-Trimethylcyclohexane**	**5169**	
Liquid	**D6730-11m**		**1,1-Dimethylcyclopentane**	**NA**	
Liquid	**D6730-11m**		**1,2,3,5-Tetramethylbenzene**	**6712**	
Liquid	**D6730-11m**		**1,2,4,5-Tetramethylbenzene**	**6717**	
Liquid	**D6730-11m**		**1,2,4-Triethylbenzene**	**NA**	
Liquid	**D6730-11m**		**1,2,4-Trimethylbenzene**	**5210**	
Liquid	**D6730-11m**		**1,2-Diethylbenzene**	**4656**	
Liquid	**D6730-11m**		**1,2-Dimethyl-3-Ethylbenzene**	**NA**	
Liquid	**D6730-11m**		**1,2-Dimethyl-4-Ethylbenzene**	**4658**	
Liquid	**D6730-11m**		**1,3,5-Triethylbenzene**	**NA**	
Liquid	**D6730-11m**		**1,3,5-Trimethylbenzene**	**5215**	
Liquid	**D6730-11m**		**1,3-Dimethyl-2-Ethylbenzene**	**4677**	
Liquid	**D6730-11m**		**1,3-Dimethyl-5-Ethylbenzene**	**4678**	
Liquid	**D6730-11m**		**1-Decene**	**4828**	
Liquid	**D6730-11m**		**1-Ethyl-1-Methylcyclopentane**	**NA**	
Liquid	**D6730-11m**		**1-Heptene**	**4830**	
Liquid	**D6730-11m**		**1-Hexene**	**4832**	
Liquid	**D6730-11m**		**1-Methyl-2-Ethylbenzene**	**NA**	
Liquid	**D6730-11m**		**1-Methyl-2-Isopropylbenze**	**NA**	
Liquid	**D6730-11m**		**1-Methyl-2-n-Propylbenzene**	**4837**	
Liquid	**D6730-11m**		**1-Methyl-3-Ethylbenzene**	**NA**	
Liquid	**D6730-11m**		**1-Methyl-3-Isopropylbenzene**	**NA**	
Liquid	**D6730-11m**		**1-Methyl-3-n-Propylbenzene**	**NA**	
Liquid	**D6730-11m**		**1-Methyl-4-Ethylbenzene**	**4838**	
Liquid	**D6730-11m**		**1-Methyl-4-Isopropylbenzene**	**NA**	
Liquid	**D6730-11m**		**1-Methyl-4-n-Propylbenzene**	**NA**	
Liquid	**D6730-11m**		**1-Methylcyclopentene**	**NA**	
Liquid	**D6730-11m**		**1-Methylnaphthalene**	**6380**	

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4601 N Monroe	Project Number: **[none]**	**Report ID:**
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Liquid	D6730-11m	1-Nonene	6427
Liquid	D6730-11m	1-Octene	6428
Liquid	D6730-11m	1-Pentene	4833
Liquid	D6730-11m	2,2,3-Trimethylbutane	NA
Liquid	D6730-11m	2,2,3-Trimethylpentane	NA
Liquid	D6730-11m	2,2-Dimethylhexane	4681
Liquid	D6730-11m	2,2-Dimethyloctane	4682
Liquid	D6730-11m	2,2-Dimethylpentane	4683
Liquid	D6730-11m	2,3-Dimethylbutane	4669
Liquid	D6730-11m	2,3-Dimethylheptane	4687
Liquid	D6730-11m	2,3-Dimethylhexane	4688
Liquid	D6730-11m	2,3-Dimethyloctane	NA
Liquid	D6730-11m	2,3-Dimethylpentane	4671
Liquid	D6730-11m	2,4-Dimethylhexane	4692
Liquid	D6730-11m	2,4-Dimethylpentane	4672
Liquid	D6730-11m	2,5-Dimethylheptane	NA
Liquid	D6730-11m	2,5-Dimethylhexane	NA
Liquid	D6730-11m	2-Butanol	NA
Liquid	D6730-11m	2-Methyl-1,3-Butadiene	NA
Liquid	D6730-11m	2-Methyl-1-Butene	NA
Liquid	D6730-11m	2-Methyl-1-propanol	NA
Liquid	D6730-11m	2-Methyl-2-Butene	4934
Liquid	D6730-11m	2-Methyl-2-Pentene	4949
Liquid	D6730-11m	2-Methylbutylbenzene	NA
Liquid	D6730-11m	2-Methylheptane	4939
Liquid	D6730-11m	2-Methylhexane	4946
Liquid	D6730-11m	2-Methylnaphthalene	6385
Liquid	D6730-11m	2-Methylnonane	NA
Liquid	D6730-11m	2-Methyloctane	4952
Liquid	D6730-11m	2-Methylpentane	NA
Liquid	D6730-11m	2-Propanol	4895
Liquid	D6730-11m	3,3-Dimethylheptane	NA
Liquid	D6730-11m	3,3-Dimethyloctane	6122
Liquid	D6730-11m	3,3-Dimethylpentane	NA
Liquid	D6730-11m	3,4-Dimethyheptane (D)	NA
Liquid	D6730-11m	3,4-Dimethyheptane (L)	NA
Liquid	D6730-11m	3-Ethylhexane	NA
Liquid	D6730-11m	3-Ethyloctane	NA
Liquid	D6730-11m	3-Ethylpentane	NA
Liquid	D6730-11m	3-Methyl-1-Butene	4529

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4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

Liquid	D6730-11m	3-Methylheptane	4532
Liquid	D6730-11m	3-Methylhexane	4533
Liquid	D6730-11m	3-Methylnonane	NA
Liquid	D6730-11m	3-Methyloctane	NA
Liquid	D6730-11m	3-Methylpentane	4534
Liquid	D6730-11m	4-Methyl-1-Pentene	4913
Liquid	D6730-11m	4-Methylheptane	NA
Liquid	D6730-11m	5-Methylnonane	NA
Liquid	D6730-11m	Aromatics (C10)	NA
Liquid	D6730-11m	Aromatics (C11)	NA
Liquid	D6730-11m	Aromatics (C12)	NA
Liquid	D6730-11m	Aromatics (C13)	NA
Liquid	D6730-11m	Aromatics (C6)	NA
Liquid	D6730-11m	Aromatics (C7)	NA
Liquid	D6730-11m	Aromatics (C8)	NA
Liquid	D6730-11m	Aromatics (C9)	NA
Liquid	D6730-11m	Aromatics (Total)	NA
Liquid	D6730-11m	Benzene	4375
Liquid	D6730-11m	ccc-1,2,3-Trimethylcyclopentane	NA
Liquid	D6730-11m	ccc-1,3,5-Trimethylcyclohexane	NA
Liquid	D6730-11m	cis-1,2-Dimethylcyclohexane	NA
Liquid	D6730-11m	cis-1,3-Dimethylcyclopentane	NA
Liquid	D6730-11m	cis-2-Heptene	4613
Liquid	D6730-11m	cis-2-Hexene	4604
Liquid	D6730-11m	cis-2-Nonene	4614
Liquid	D6730-11m	cis-2-Octene	4616
Liquid	D6730-11m	cis-2-Pentene	4603
Liquid	D6730-11m	cis-3-Heptene	4617
Liquid	D6730-11m	cis-3-Nonene	4618
Liquid	D6730-11m	ctc-1,2,3-Trimethylcyclopentane	NA
Liquid	D6730-11m	ctc-1,2,4-Trimethylcyclohexane	NA
Liquid	D6730-11m	ctc-1,2,4-Trimethylcyclopentane	NA
Liquid	D6730-11m	ctt-1,2,4-Trimethylcyclohexane	NA
Liquid	D6730-11m	ctt-1,2,4-Trimethylcyclopentane	NA
Liquid	D6730-11m	Cyclohexane	4555
Liquid	D6730-11m	Cyclopentane	4562
Liquid	D6730-11m	DHA: Total of Knowns	NA
Liquid	D6730-11m	DHA: Total of Unknowns	NA
Liquid	D6730-11m	Ethanol	4750
Liquid	D6730-11m	Ethylbenzene	4765

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Liquid	D6730-11m	Ethylcyclopentane	NA
Liquid	D6730-11m	Isobutylbenzene	NA
Liquid	D6730-11m	Isobutylcyclohexane	NA
Liquid	D6730-11m	Isobutylcyclopentane	NA
Liquid	D6730-11m	Isooctane	NA
Liquid	D6730-11m	Isoparaffins (C10)	NA
Liquid	D6730-11m	Isoparaffins (C11)	NA
Liquid	D6730-11m	Isoparaffins (C12)	NA
Liquid	D6730-11m	Isoparaffins (C13)	NA
Liquid	D6730-11m	Isoparaffins (C15)	NA
Liquid	D6730-11m	Isoparaffins (C4)	NA
Liquid	D6730-11m	Isoparaffins (C5)	NA
Liquid	D6730-11m	Isoparaffins (C6)	NA
Liquid	D6730-11m	Isoparaffins (C7)	NA
Liquid	D6730-11m	Isoparaffins (C8)	NA
Liquid	D6730-11m	Isoparaffins (C9)	NA
Liquid	D6730-11m	Isoparaffins (Total)	NA
Liquid	D6730-11m	Isopentane	NA
Liquid	D6730-11m	Isopropylbenzene	4900
Liquid	D6730-11m	Isopropylcyclohexane	9497
Liquid	D6730-11m	Isopropylcyclopentane	9502
Liquid	D6730-11m	Methanol	4930
Liquid	D6730-11m	Methyl tert-butyl ether (MTBE)	5000
Liquid	D6730-11m	Methylcyclohexane	4965
Liquid	D6730-11m	Methylcyclopentane	4966
Liquid	D6730-11m	m-Xylene	5245
Liquid	D6730-11m	Naphthalene	5005
Liquid	D6730-11m	Naphthenes (C10)	NA
Liquid	D6730-11m	Naphthenes (C12)	NA
Liquid	D6730-11m	Naphthenes (C5)	NA
Liquid	D6730-11m	Naphthenes (C6)	NA
Liquid	D6730-11m	Naphthenes (C7)	NA
Liquid	D6730-11m	Naphthenes (C8)	NA
Liquid	D6730-11m	Naphthenes (C9)	NA
Liquid	D6730-11m	Naphthenes (Total)	NA
Liquid	D6730-11m	n-Butane	5007
Liquid	D6730-11m	n-Butanol	NA
Liquid	D6730-11m	n-Butylbenzene	4435
Liquid	D6730-11m	n-Butylcyclopentane	4437
Liquid	D6730-11m	n-Decane	5875

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Liquid	D6730-11m	n-Dodecane	6235
Liquid	D6730-11m	n-Heptane	4825
Liquid	D6730-11m	n-Hexane	4855
Liquid	D6730-11m	n-Hexylbenzene	NA
Liquid	D6730-11m	n-Nonane	5026
Liquid	D6730-11m	n-Octane	5027
Liquid	D6730-11m	n-Pentadecane	9532
Liquid	D6730-11m	n-Pentane	5028
Liquid	D6730-11m	n-Pentylbenzene	9535
Liquid	D6730-11m	n-Propane	NA
Liquid	D6730-11m	n-Propanol	NA
Liquid	D6730-11m	n-Propylbenzene	5090
Liquid	D6730-11m	n-Tetradecane	6745
Liquid	D6730-11m	n-Tridecane	9544
Liquid	D6730-11m	n-Undecane	6747
Liquid	D6730-11m	Olefins (C10)	NA
Liquid	D6730-11m	Olefins (C5)	NA
Liquid	D6730-11m	Olefins (C6)	NA
Liquid	D6730-11m	Olefins (C7)	NA
Liquid	D6730-11m	Olefins (C8)	NA
Liquid	D6730-11m	Olefins (C9)	NA
Liquid	D6730-11m	Olefins (Total)	NA
Liquid	D6730-11m	Oxygenates (C1)	NA
Liquid	D6730-11m	Oxygenates (C2)	NA
Liquid	D6730-11m	Oxygenates (C3)	NA
Liquid	D6730-11m	Oxygenates (C4)	NA
Liquid	D6730-11m	Oxygenates (C5)	NA
Liquid	D6730-11m	Oxygenates (C6)	NA
Liquid	D6730-11m	Oxygenates (C7)	NA
Liquid	D6730-11m	Oxygenates (Total)	NA
Liquid	D6730-11m	o-Xylene	5250
Liquid	D6730-11m	Paraffins (C10)	NA
Liquid	D6730-11m	Paraffins (C11)	NA
Liquid	D6730-11m	Paraffins (C12)	NA
Liquid	D6730-11m	Paraffins (C13)	NA
Liquid	D6730-11m	Paraffins (C14)	NA
Liquid	D6730-11m	Paraffins (C15)	NA
Liquid	D6730-11m	Paraffins (C3)	NA
Liquid	D6730-11m	Paraffins (C4)	NA
Liquid	D6730-11m	Paraffins (C5)	NA

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4601 N Monroe	Project Number: **[none]**	**Report ID:**
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Liquid	D6730-11m	Paraffins (C6)	NA
Liquid	D6730-11m	Paraffins (C7)	NA
Liquid	D6730-11m	Paraffins (C8)	NA
Liquid	D6730-11m	Paraffins (C9)	NA
Liquid	D6730-11m	Paraffins (Total)	NA
Liquid	D6730-11m	p-Xylene	5255
Liquid	D6730-11m	sec-Butylbenzene	4440
Liquid	D6730-11m	t-1-Butyl-3,5-Dimethybenzene	NA
Liquid	D6730-11m	t-1-Methyl-2(4-Methylphenyl)cyclopent	NA
Liquid	D6730-11m	t-1-Methyl-2-N-Propylcyclohexane	NA
Liquid	D6730-11m	tert-1-Butyl-2-Methylbenzene	NA
Liquid	D6730-11m	tert-1-Butyl-4-Ethylbenzene	NA
Liquid	D6730-11m	tert-Amyl ethyl ether (TAEE)	4369
Liquid	D6730-11m	tert-Amyl methyl ether (TAME)	4370
Liquid	D6730-11m	tert-Butanol	NA
Liquid	D6730-11m	tert-Butylbenzene	4445
Liquid	D6730-11m	Toluene+2,3,3-Trimethylpentane	NA
Liquid	D6730-11m	trans-1,2-Dimethylcyclohexane	NA
Liquid	D6730-11m	trans-1,2-Dimethylcyclopentane	NA
Liquid	D6730-11m	trans-1,3-Dimethylcyclopentane	NA
Liquid	D6730-11m	trans-1,4-Dimethylcyclohexane	NA
Liquid	D6730-11m	trans-2-Heptene	9580
Liquid	D6730-11m	trans-2-Hexene	4606
Liquid	D6730-11m	trans-2-Nonene	9581
Liquid	D6730-11m	trans-2-Octene	9583
Liquid	D6730-11m	trans-2-Pentene	4608
Liquid	D6730-11m	trans-3-Heptene	9584
Liquid	D6730-11m	trans-3-Nonene	9586
Liquid	GC-ECD	MMT (Methylcyclopentadienyl Mangar	NA
Liquid	GC-ECD	TEL (Tetraethyl Lead)	1211
Liquid	GC-ECD	TML (Tetramethyl Lead)	1223

All reported analytes are included in Apex Laboratories' current ORELAP scope.

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Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

APEX FORENSICS
A DIVISION OF APEX LABORATORIES

FORENSICS CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 forensics@apex-labs.com Ph: 503-718-2323

Lab # A3I1304 COC ____ of ____

Send Report to: Company: Ecology Spills
Project Mgr: Sam Hunn
Project Name: Marcus Whitman
Project #:
Address: 4601 N. Monroe, Spokane WA
Phone: 510 329 3400
Email: Sahu461@ECY.wa.gov
Send Invoice To: ☐ Same as Above ☐ Other:
PO #

Marcus Whitman
Site Location: 6 West Rose
State: WA
County: Walla Walla

ANALYSES REQUESTED: ASTM D7096-10; ASTM D2887-14; ASTM D2887-14/GC/ECD; ASTM D6730-10 by DHA; BTEXN by DHA; Forensic PAHs & Homologs; Forensic VOCs at a Gasoline Site; Forensic VOCs at a Gasoline Site (WSF); Forensic VOCs for Unidentified or Specialty Contaminants; Forensic SVOCs for Unidentified or Specialty Contaminants + TICs; Organic Pb/Mn Speciation; Filtered Pb/Mn; NWTPH-Gx; NWTPH-Dx; NWTPH-Dx with Silica Gel Column Cleanup; 8015D TPH-D/TPH-MO; 8015D TPH-D/TPH-MO with Silica Gel Column

SAMPLE ID	Lab ID #	DATE	TIME	MATRIX (S=Soil, W=Water, P=Product)	# OF CONTAINERS	NOTES
Public Works 001		9/21/23	1023	P		See Kurt
Circle K Pool		9/21/23	0952	P		See Kurt
Circle K Pool		9/21/23	1011	P		See Kurt
Chevron Pool		9/21/23	1042	P		See Kurt
Container/106 N 2nd from Sump		9/21/23	1040	P		See Kurt
106 N. 2nd - Sump		9/21/23	1035	P		See Kurt
MWCC basement 001		9/21/23	1113	S		See Kurt
MWCC basement 002		9/21/23	1113	S		See Kurt

Sample Storage Requested
☐ Dispose after 30 days (No Charge) ☐ Long Term Evidence Storage (Quarterly Fee)

Turanaround Time Requested ☐ 1 Day ☐ 5 Day ☐ 2 Day ☐ 10 Day (standard) ☐ 3 Day ☐ Other: ____

SPECIAL INSTRUCTIONS: For analysis See Kurt

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 9/21/23	Signature: [signature] Date: 9/21/23	Signature: [signature] Date: 9/21/23	Signature: [signature] Date: 9-21-23
Printed Name: Seth Benge Time: 11:28	Printed Name: Fredrick Hector Time: 1128	Printed Name: Fredrick Hector Time: 1450	Printed Name: Daye Sabor Time: 1450
Company: Ecology	Company: WW FD	Company: WWFD	Company: Apex

Form Y-024 R-00

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Apex Laboratories, LLC
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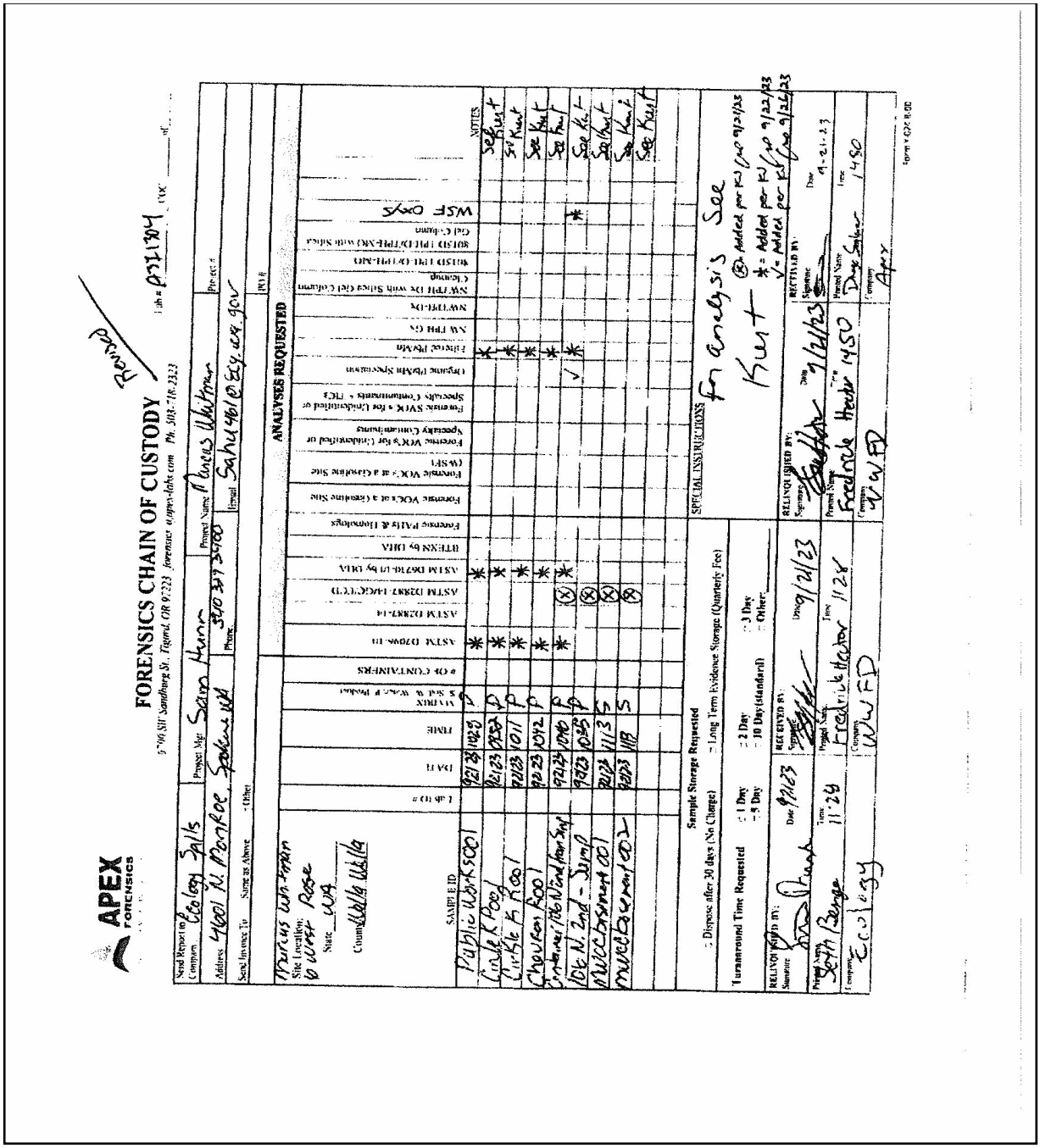
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**



Apex Laboratories

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Michele Poquiz For Kurt Johnson, Senior Chemist

Apex Laboratories, LLC
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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WA State Dept of Ecology	Project: **Marcus Whitman**	
4601 N Monroe	Project Number: **[none]**	**Report ID:**
Spokane, WA 99205-1295	Project Manager: **Sam Hunn**	**A3I1304 - 10 04 23 1035**

APEX LABS COOLER RECEIPT FORM

Client: Ecology Spills Element WO#: A3I1304

Project/Project #: Marcus Whitman

Delivery Info:

Date/time received: 9-21-23 @ 1450 By: DJS

Delivered by: Apex__Client__ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other X WWFD

Cooler Inspection Date/time inspected: 9-21-23 @ 1452 By: DJS

Chain of Custody included? Yes X No ____

Signed/dated by client? Yes X No ____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	23.4						
Custody seals? (Y/N)	N DOS 9.21.23 accepted 9/21/23						
Received on ice? (Y/N)	N						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	None						
Condition (In/Out):	Out						

Cooler out of temp? (Y/N) Possible reason why: No Ice received

Green dots applied to out of temperature samples? Yes/No accepted 9/21/23

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 9-21-23 @ 1614 By: DJS

All samples intact? Yes X No ___ Comments: ____

Bottle labels/COCs agree? Yes X No ___ Comments: ____

COC/container discrepancies form initiated? Yes ___ No X

Containers/volumes received appropriate for analysis? Yes X No ___ Comments: ____

Do VOA vials have visible headspace? Yes ___ No ___ NA X

Comments ____

Water samples: pH checked: Yes___No___NA X pH appropriate? Yes___No___NA X pH ID:____

Comments: ____

Additional information: Sample Containers have Custody Seals

Labeled by: DJS Witness: AAW Cooler Inspected by: DJS

Form Y-003 R-01 -

Apex Laboratories

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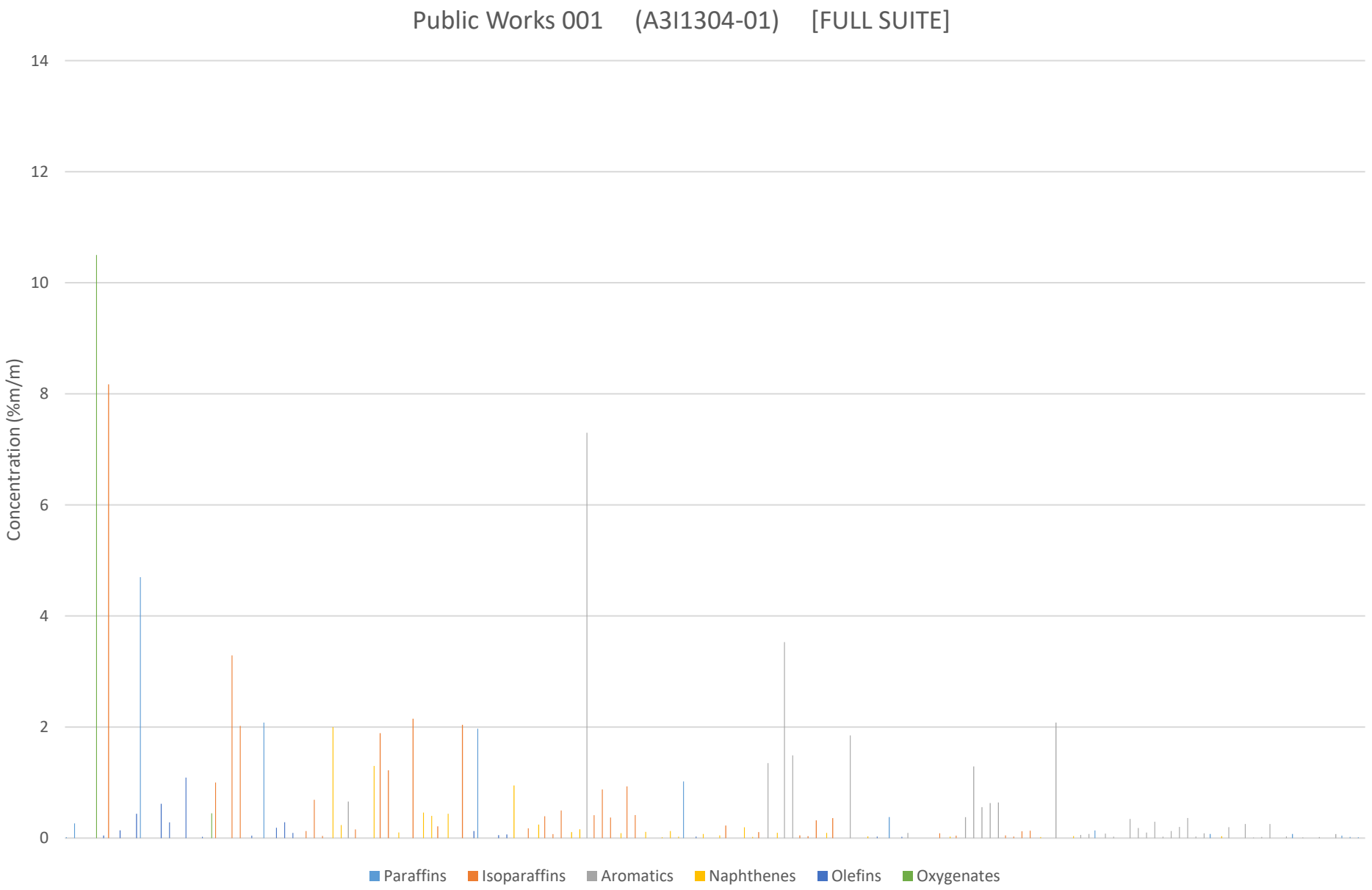
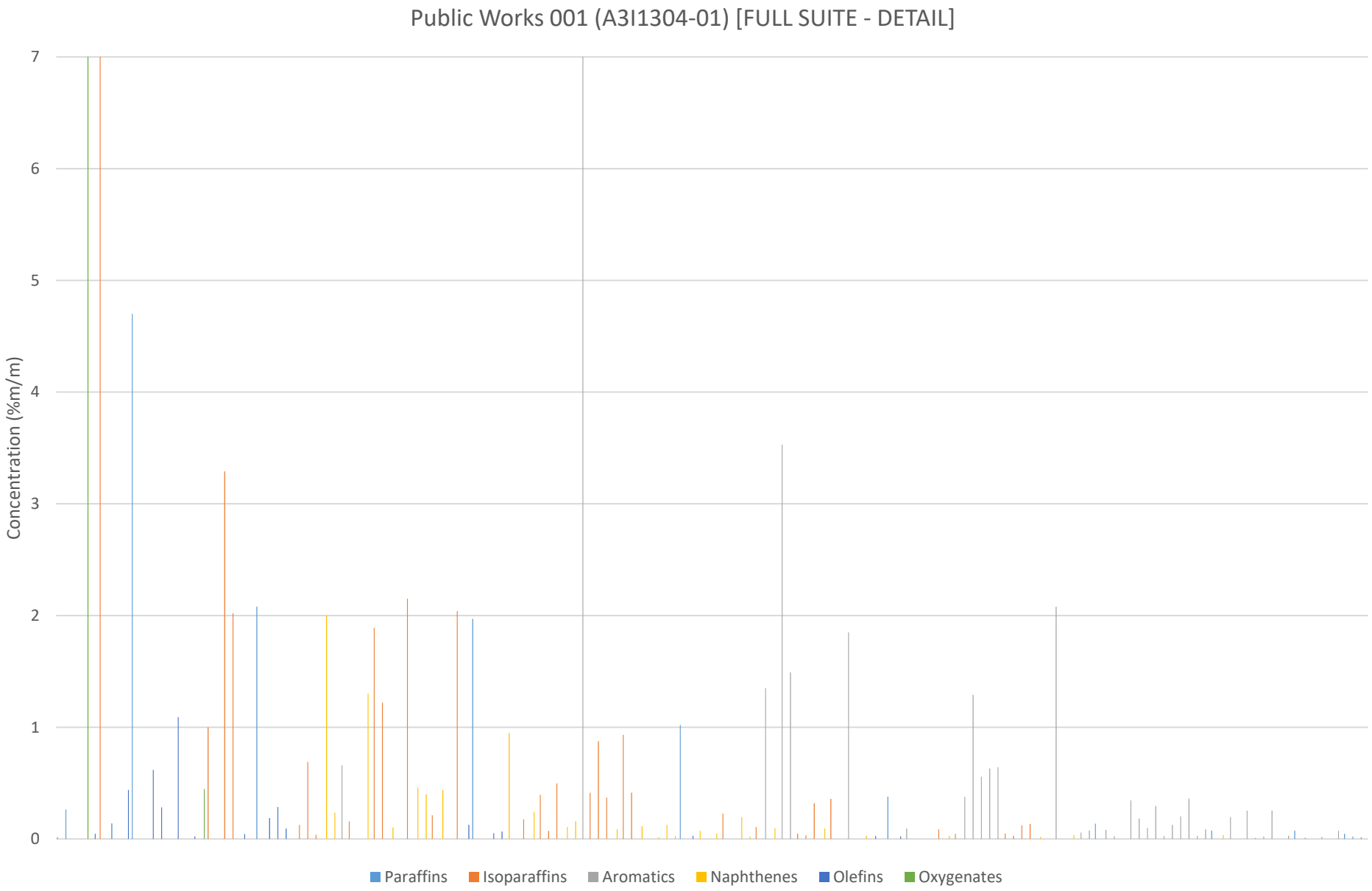
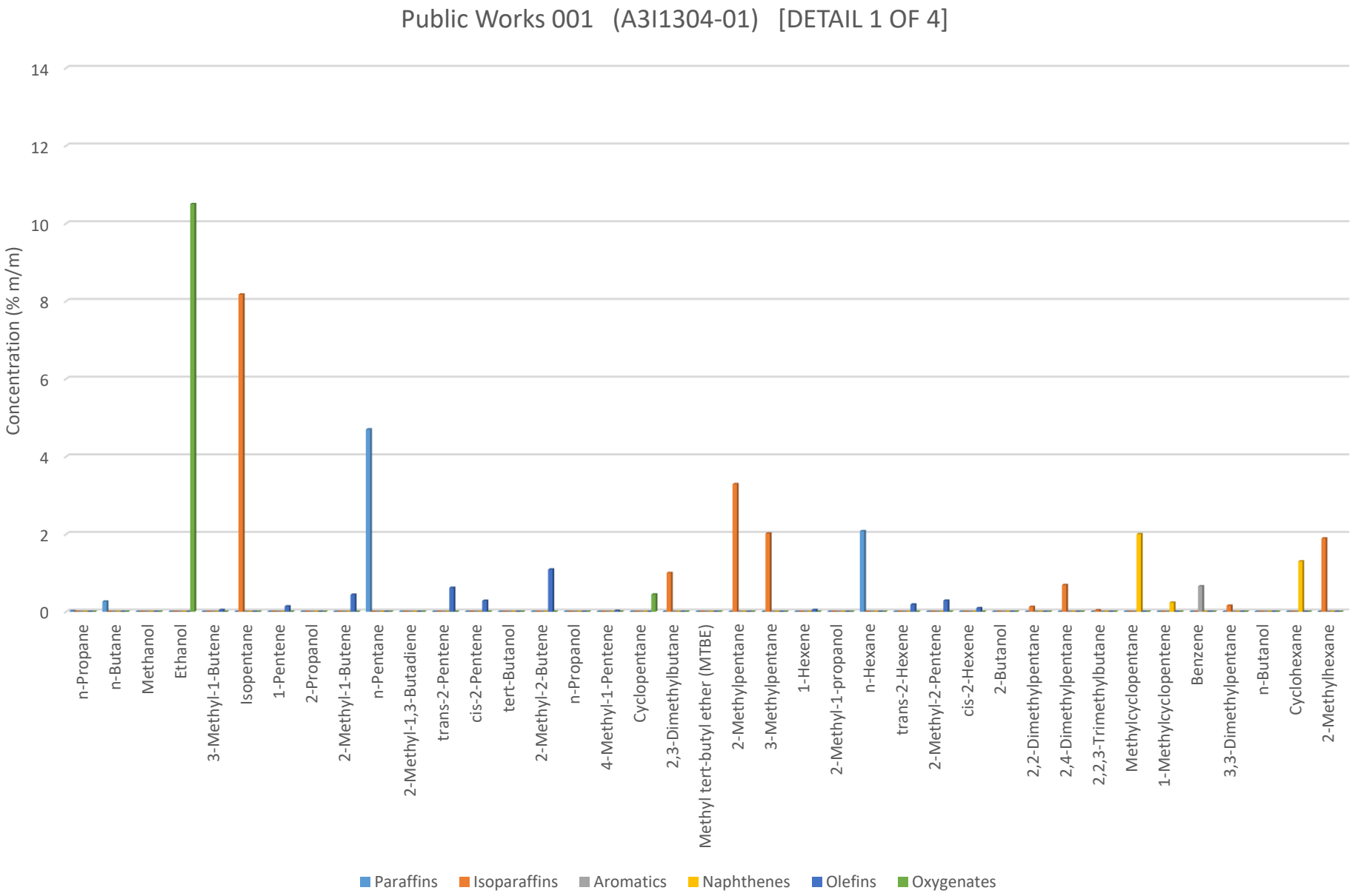
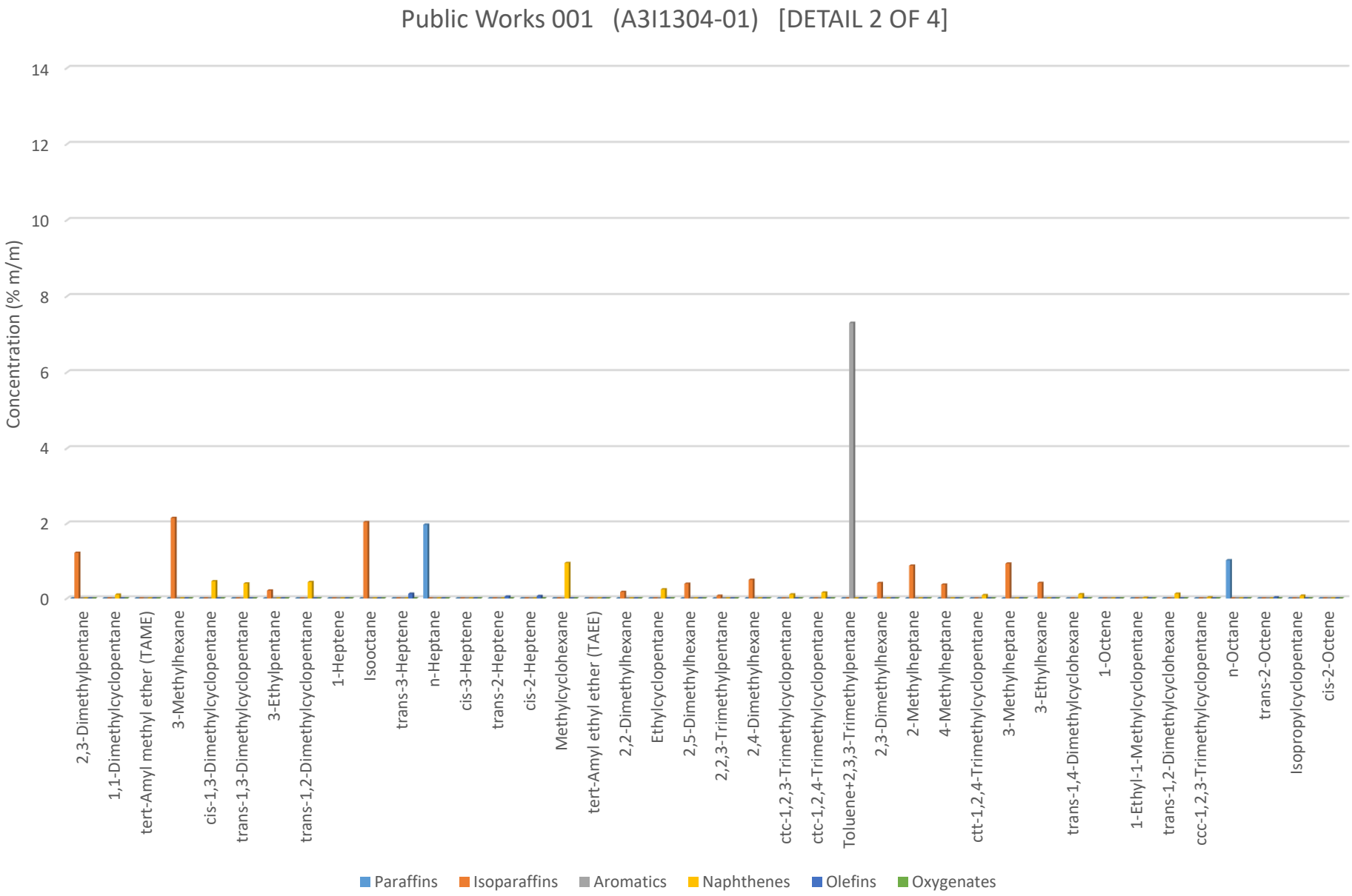
Michele Poquiz For Kurt Johnson, Senior Chemist

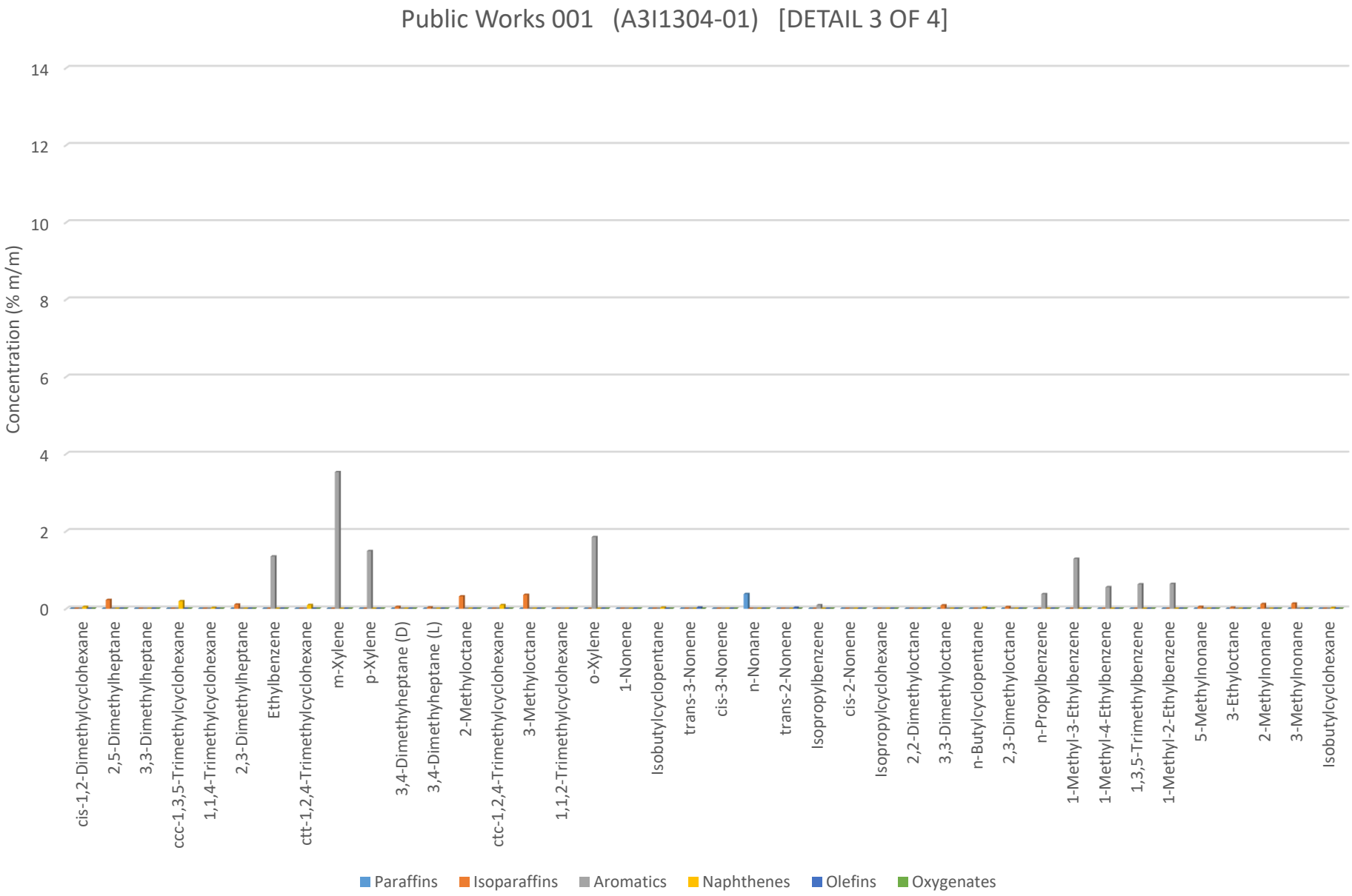
APPENDIX D

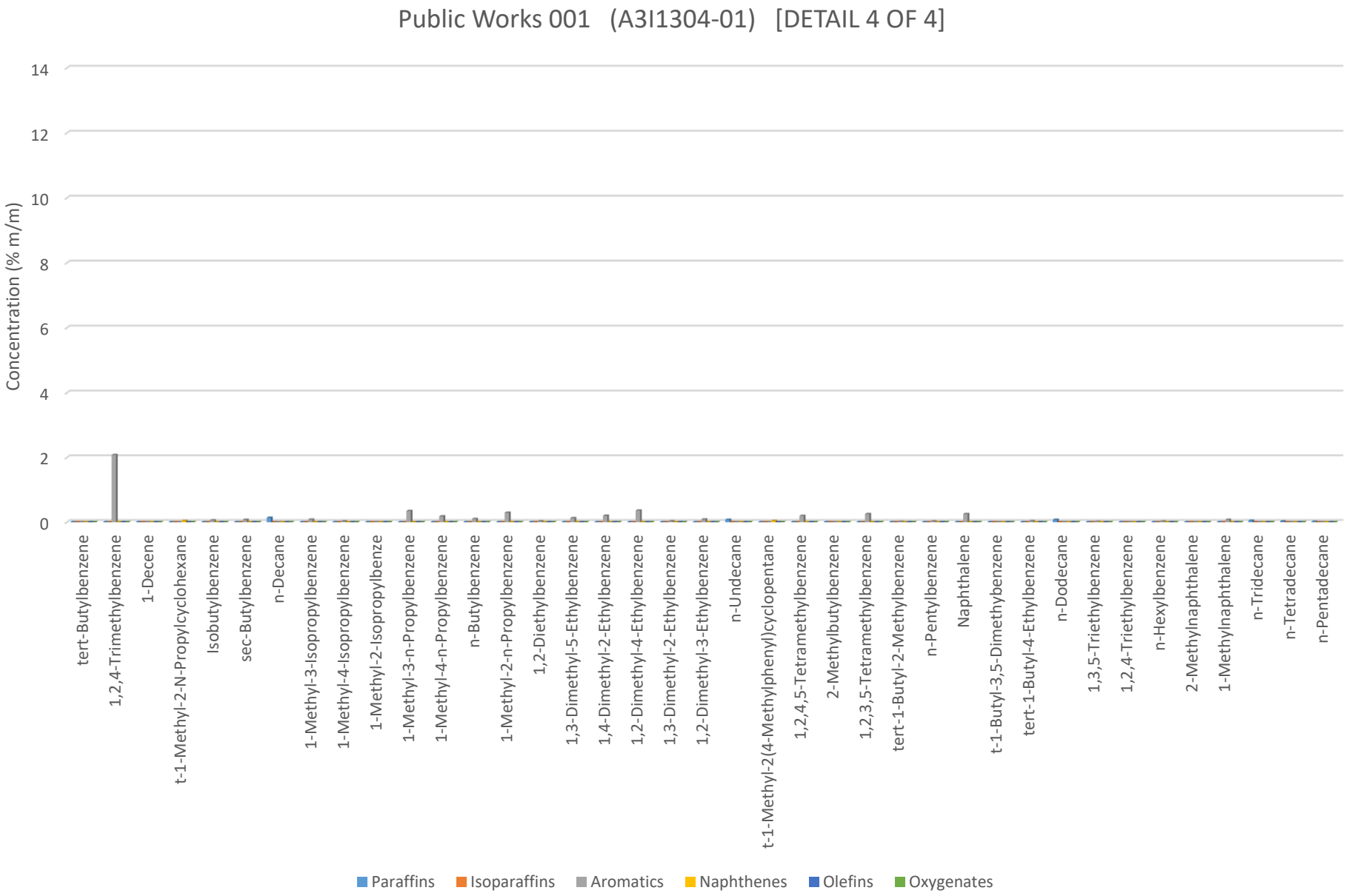

Public Works 001 (A3I1304-01) [FULL SUITE]
Concentration (%m/m)
14
12
10
8
6
4
2
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

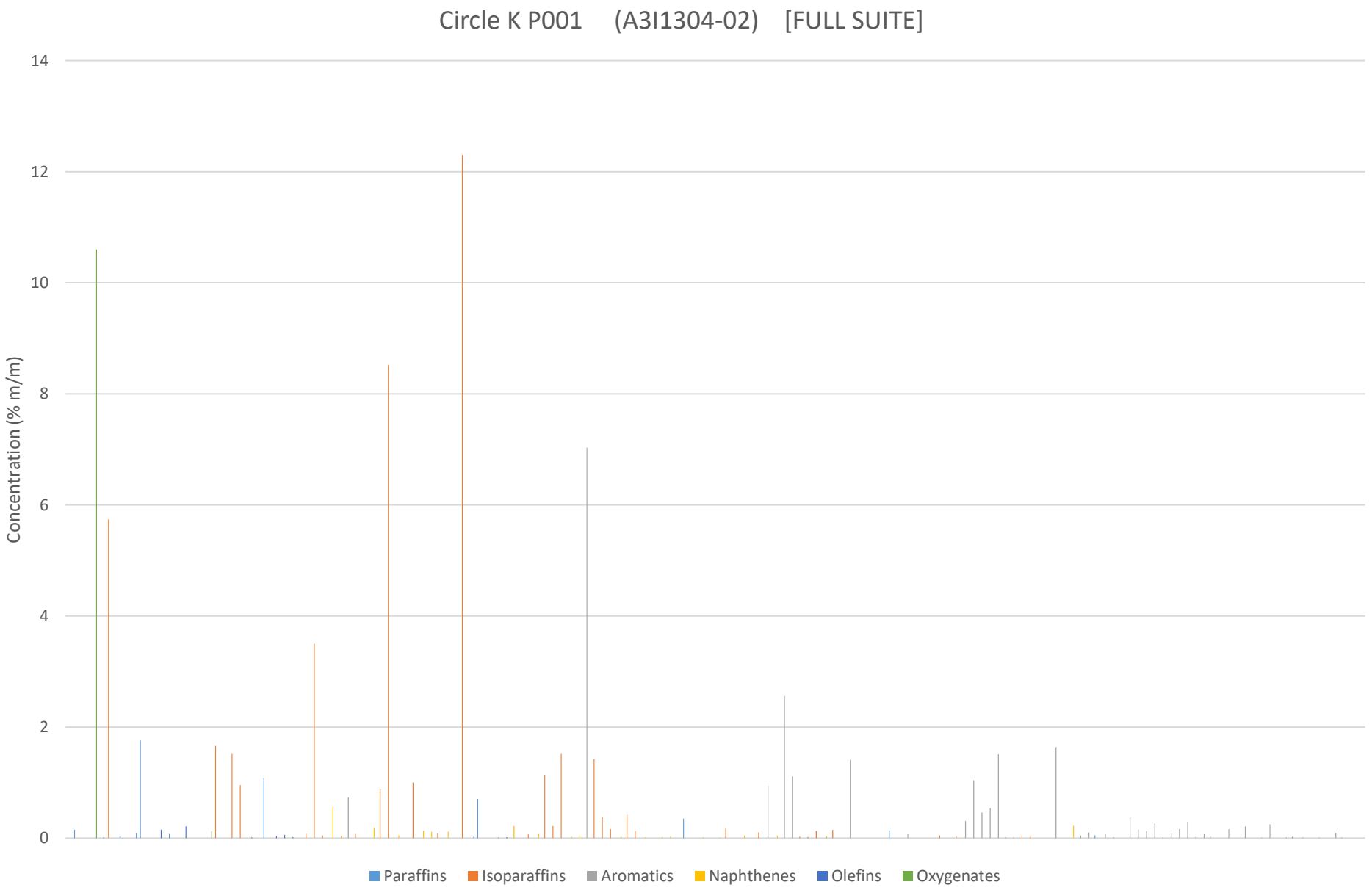

Public Works 001 (A3I1304-01) [FULL SUITE - DETAIL]
Concentration (%m/m)
7
6
5
4
3
2
1
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

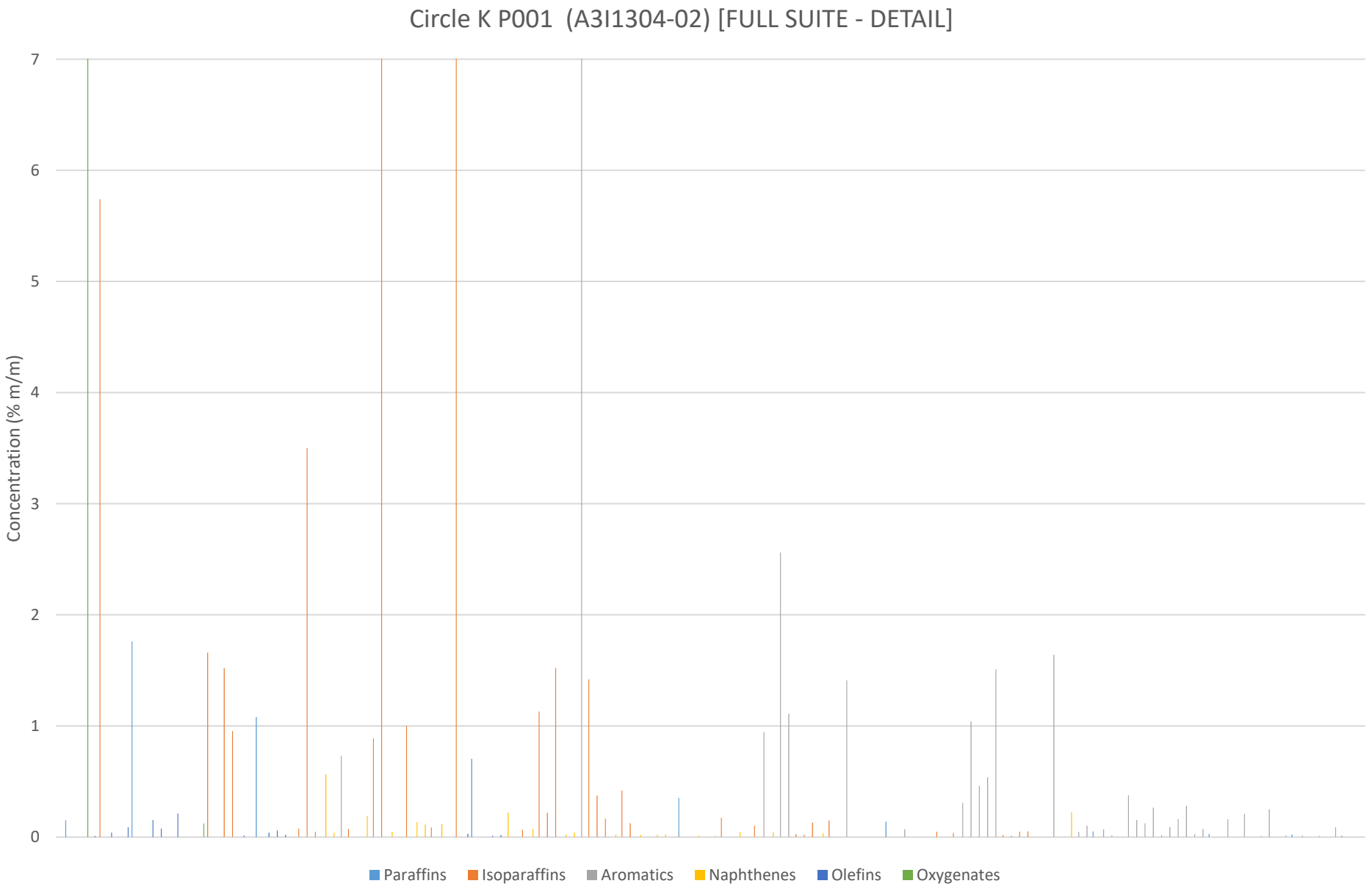

Public Works 001 (A3I1304-01) [DETAIL 1 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
n-Propane
n-Butane
Methanol
Ethanol
3-Methyl-1-Butene
Isopentane
1-Pentene
2-Propanol
2-Methyl-1-Butene
n-Pentane
2-Methyl-1,3-Butadiene
trans-2-Pentene
cis-2-Pentene
tert-Butanol
2-Methyl-2-Butene
n-Propanol
4-Methyl-1-Pentene
Cyclopentane
2,3-Dimethylbutane
Methyl tert-butyl ether (MTBE)
2-Methylpentane
3-Methylpentane
1-Hexene
2-Methyl-1-propanol
n-Hexane
trans-2-Hexene
2-Methyl-2-Pentene
cis-2-Hexene
2-Butanol
2,2-Dimethylpentane
2,4-Dimethylpentane
2,2,3-Trimethylbutane
Methylcyclopentane
1-Methylcyclopentene
Benzene
3,3-Dimethylpentane
n-Butanol
Cyclohexane
2-Methylhexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

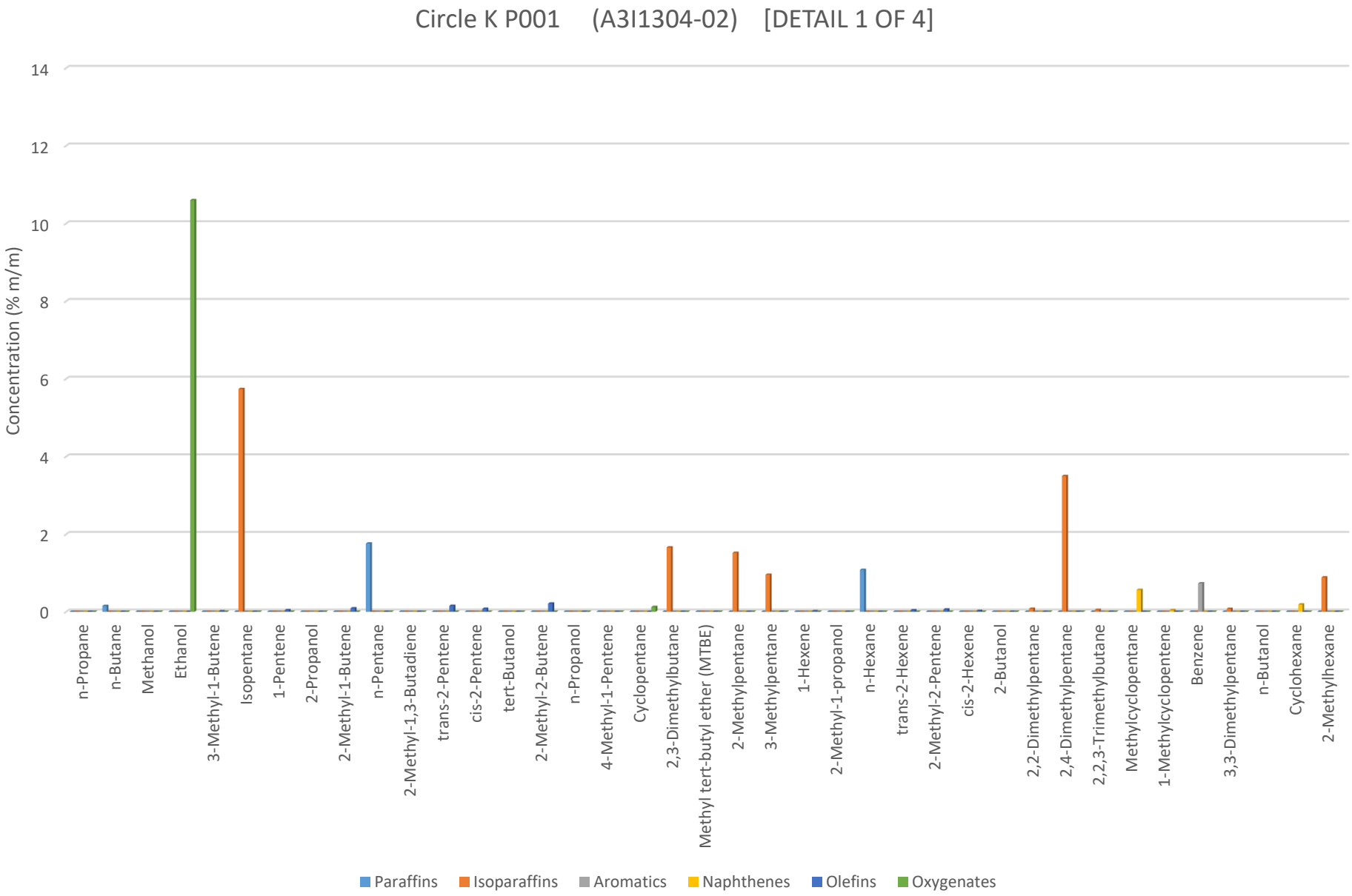

Public Works 001 (A3I1304-01) [DETAIL 2 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
2,3-Dimethylpentane
1,1-Dimethylcyclopentane
tert-Amyl methyl ether (TAME)
3-Methylhexane
cis-1,3-Dimethylcyclopentane
trans-1,3-Dimethylcyclopentane
3-Ethylpentane
trans-1,2-Dimethylcyclopentane
1-Heptene
Isooctane
trans-3-Heptene
n-Heptane
cis-3-Heptene
trans-2-Heptene
cis-2-Heptene
Methylcyclohexane
tert-Amyl ethyl ether (TAEE)
2,2-Dimethylhexane
Ethylcyclopentane
2,5-Dimethylhexane
2,2,3-Trimethylpentane
2,4-Dimethylhexane
ctc-1,2,3-Trimethylcyclopentane
ctc-1,2,4-Trimethylcyclopentane
Toluene+2,3,3-Trimethylpentane
2,3-Dimethylhexane
2-Methylheptane
4-Methylheptane
ctt-1,2,4-Trimethylcyclopentane
3-Methylheptane
3-Ethylhexane
trans-1,4-Dimethylcyclohexane
1-Octene
1-Ethyl-1-Methylcyclopentane
trans-1,2-Dimethylcyclohexane
ccc-1,2,3-Trimethylcyclopentane
n-Octane
trans-2-Octene
Isopropylcyclopentane
cis-2-Octene
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

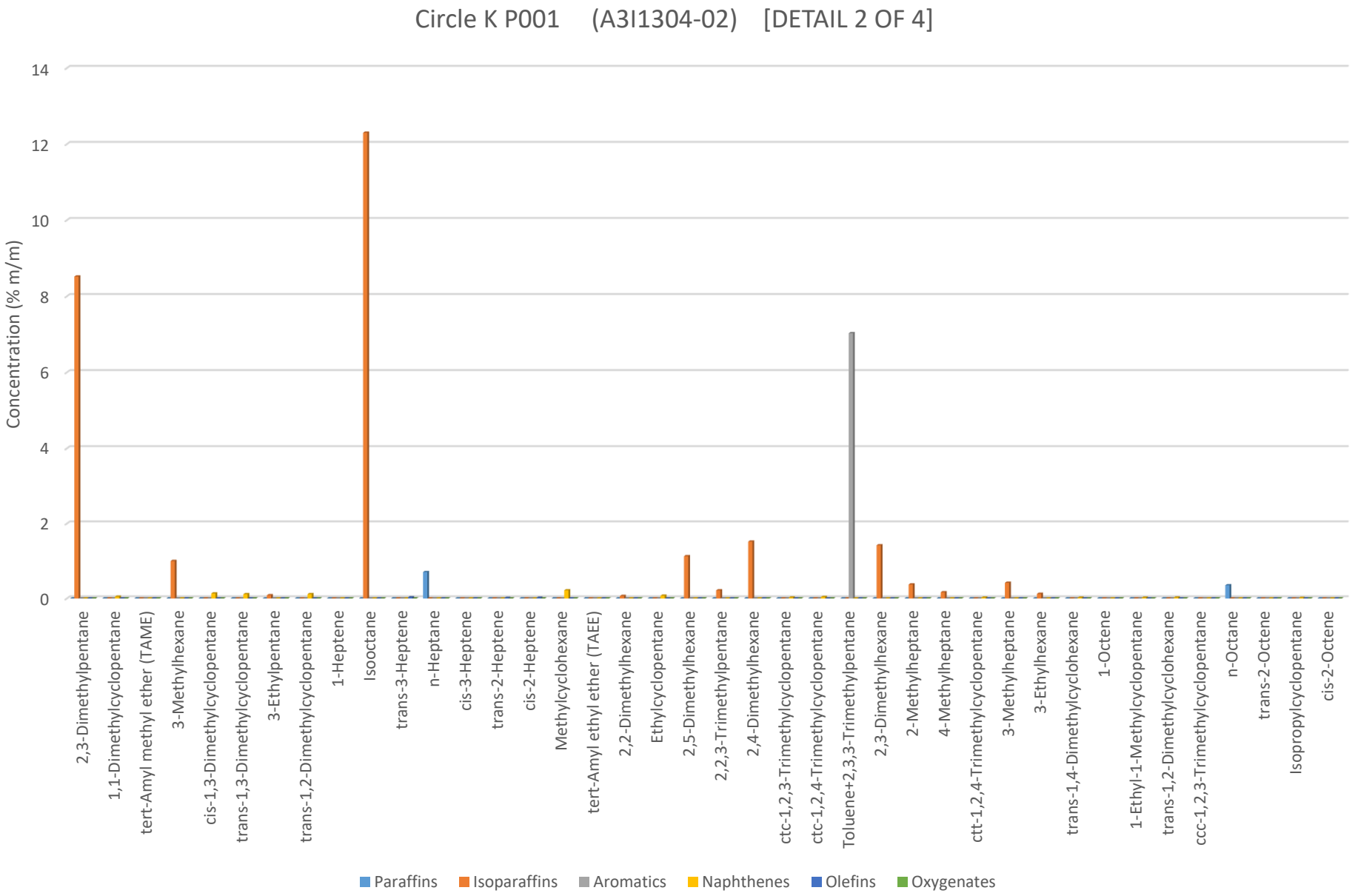

Public Works 001 (A3I1304-01) [DETAIL 3 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
cis-1,2-Dimethylcyclohexane
2,5-Dimethylheptane
3,3-Dimethylheptane
ccc-1,3,5-Trimethylcyclohexane
1,1,4-Trimethylcyclohexane
2,3-Dimethylheptane
Ethylbenzene
ctt-1,2,4-Trimethylcyclohexane
m-Xylene
p-Xylene
3,4-Dimethyheptane (D)
3,4-Dimethyheptane (L)
2-Methyloctane
ctc-1,2,4-Trimethylcyclohexane
3-Methyloctane
1,1,2-Trimethylcyclohexane
o-Xylene
1-Nonene
Isobutylcyclopentane
trans-3-Nonene
cis-3-Nonene
n-Nonane
trans-2-Nonene
Isopropylbenzene
cis-2-Nonene
Isopropylcyclohexane
2,2-Dimethyloctane
3,3-Dimethyloctane
n-Butylcyclopentane
2,3-Dimethyloctane
n-Propylbenzene
1-Methyl-3-Ethylbenzene
1-Methyl-4-Ethylbenzene
1,3,5-Trimethylbenzene
1-Methyl-2-Ethylbenzene
5-Methylnonane
3-Ethyloctane
2-Methylnonane
3-Methylnonane
Isobutylcyclohexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

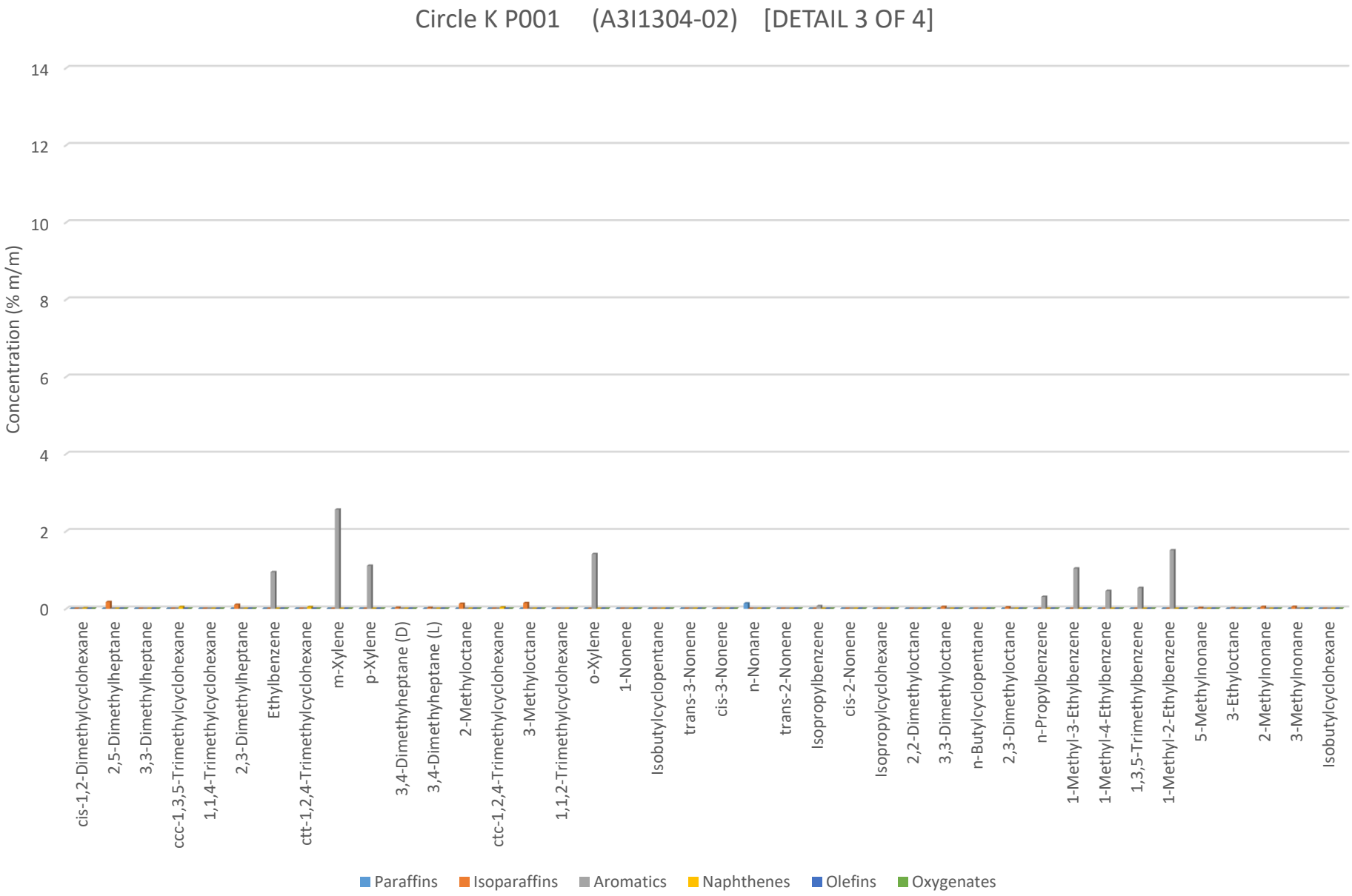

Public Works 001 (A3I1304-01) [DETAIL 4 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
tert-Butylbenzene
1,2,4-Trimethylbenzene
1-Decene
t-1-Methyl-2-N-Propylcyclohexane
Isobutylbenzene
sec-Butylbenzene
n-Decane
1-Methyl-3-Isopropylbenzene
1-Methyl-4-Isopropylbenzene
1-Methyl-2-Isopropylbenze
1-Methyl-3-n-Propylbenzene
1-Methyl-4-n-Propylbenzene
n-Butylbenzene
1-Methyl-2-n-Propylbenzene
1,2-Diethylbenzene
1,3-Dimethyl-5-Ethylbenzene
1,4-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-4-Ethylbenzene
1,3-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-3-Ethylbenzene
n-Undecane
t-1-Methyl-2(4-Methylphenyl)cyclopentane
1,2,4,5-Tetramethylbenzene
2-Methylbutylbenzene
1,2,3,5-Tetramethylbenzene
tert-1-Butyl-2-Methylbenzene
n-Pentylbenzene
Naphthalene
t-1-Butyl-3,5-Dimethybenzene
tert-1-Butyl-4-Ethylbenzene
n-Dodecane
1,3,5-Triethylbenzene
1,2,4-Triethylbenzene
n-Hexylbenzene
2-Methylnaphthalene
1-Methylnaphthalene
n-Tridecane
n-Tetradecane
n-Pentadecane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

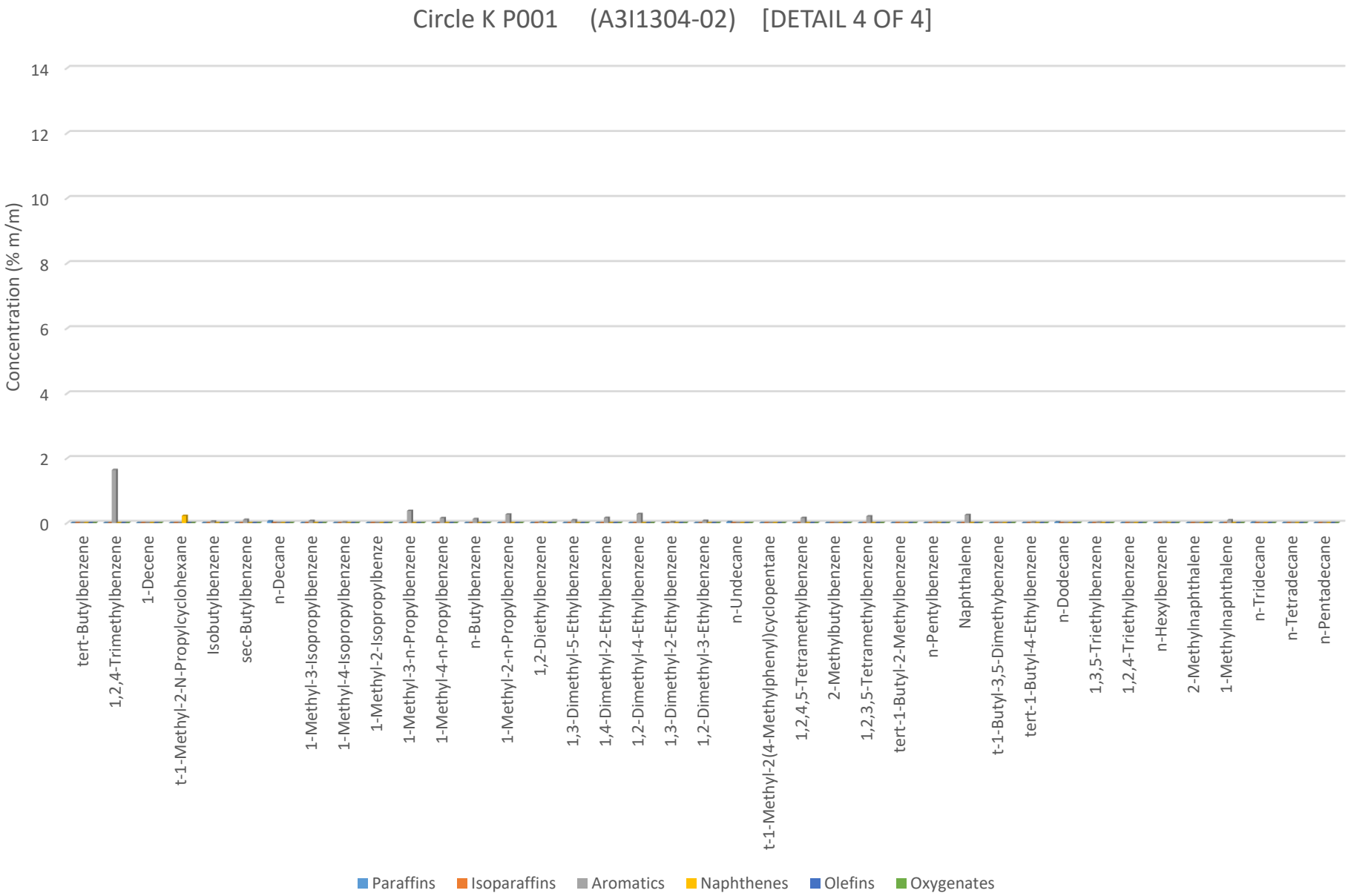

Circle K P001 (A3I1304-02) [FULL SUITE]
14
12
10
8
6
4
2
0
Concentration (% m/m)
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

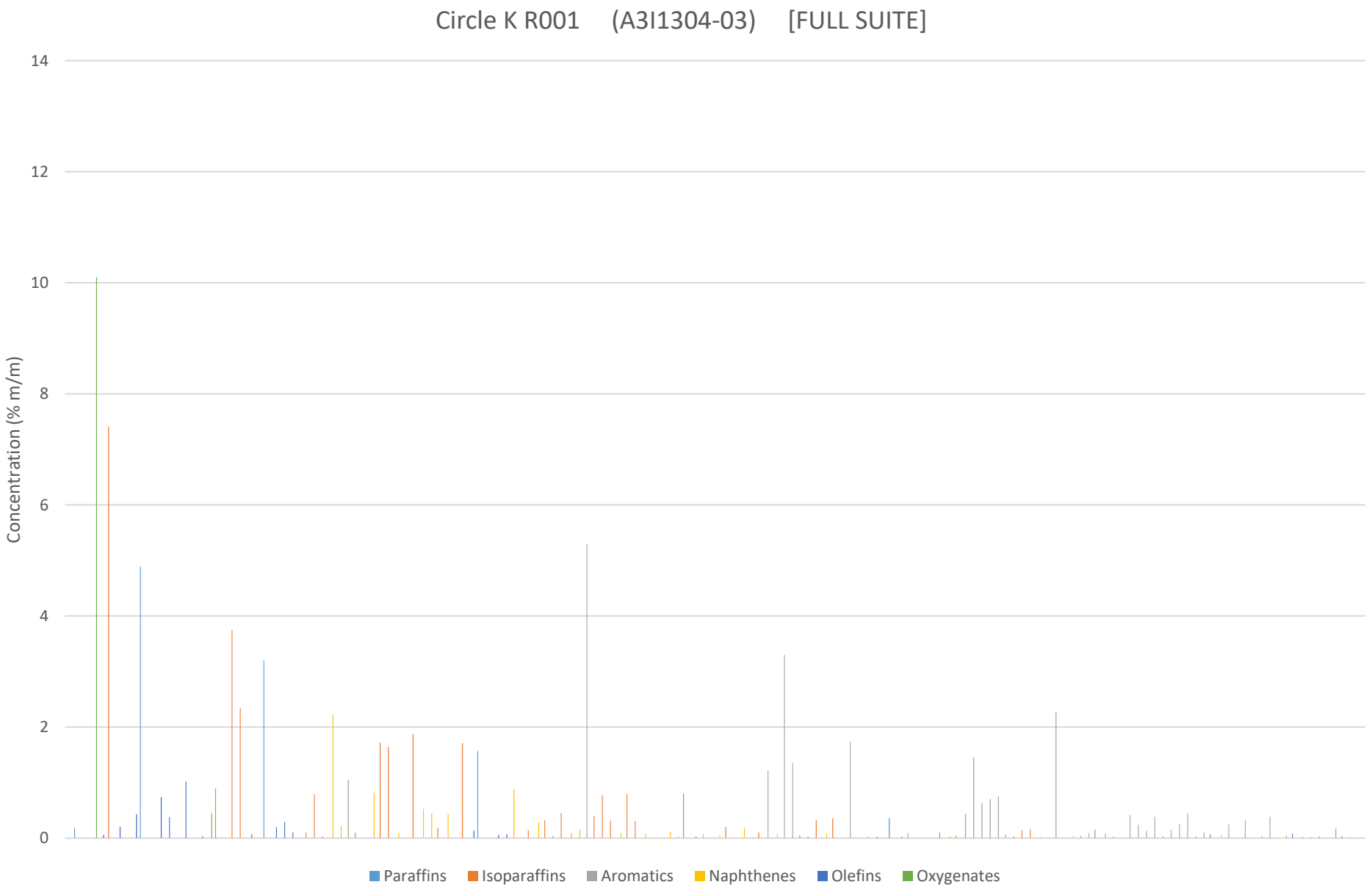

Circle K P001 (A3I1304-02) [FULL SUITE - DETAIL]
Concentration (% m/m)
7
6
5
4
3
2
1
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

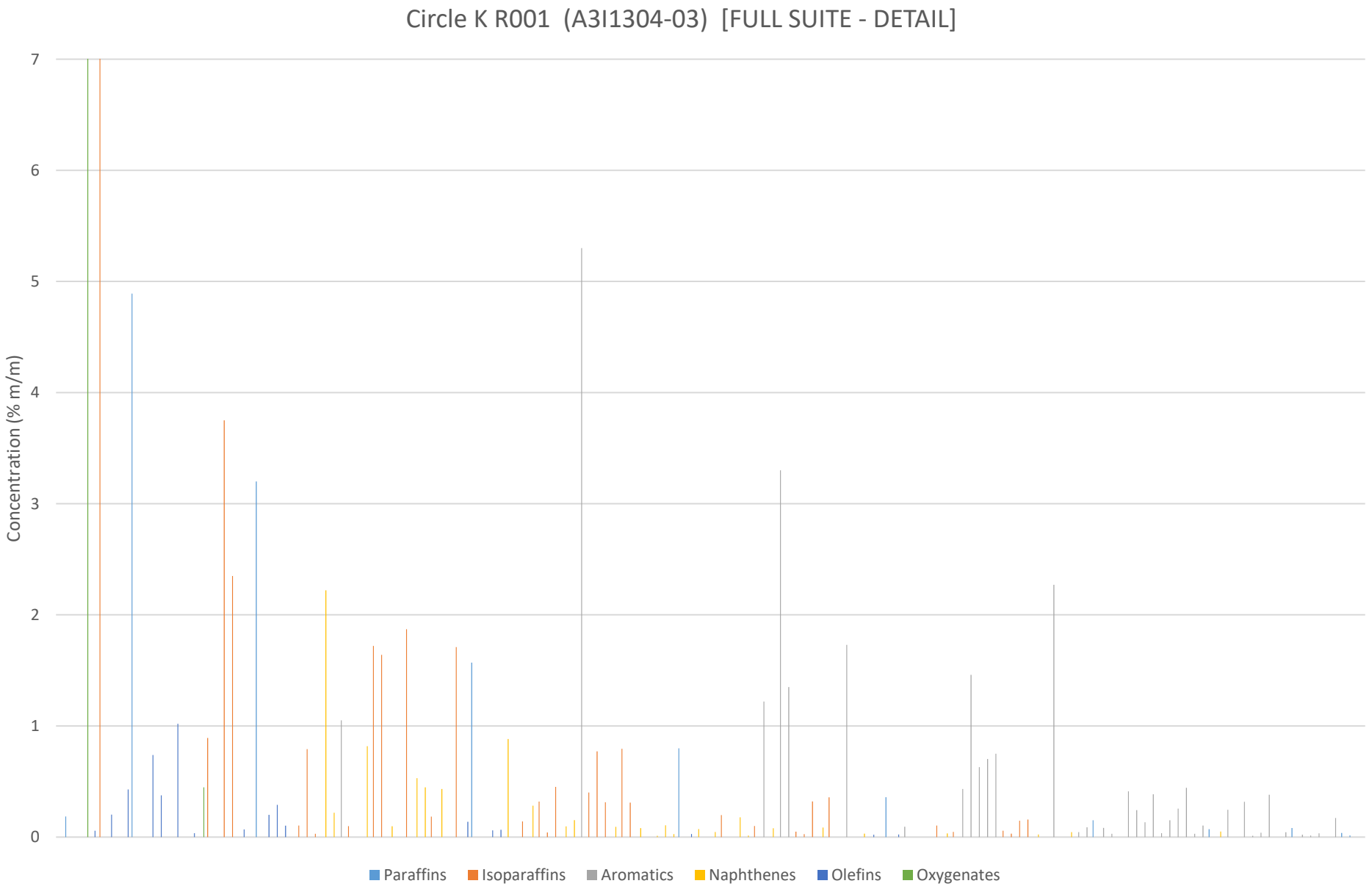

Circle K P001 (A3I1304-02) [DETAIL 1 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
n-Propane
n-Butane
Methanol
Ethanol
3-Methyl-1-Butene
Isopentane
1-Pentene
2-Propanol
2-Methyl-1-Butene
n-Pentane
2-Methyl-1,3-Butadiene
trans-2-Pentene
cis-2-Pentene
tert-Butanol
2-Methyl-2-Butene
n-Propanol
4-Methyl-1-Pentene
Cyclopentane
2,3-Dimethylbutane
Methyl tert-butyl ether (MTBE)
2-Methylpentane
3-Methylpentane
1-Hexene
2-Methyl-1-propanol
n-Hexane
trans-2-Hexene
2-Methyl-2-Pentene
cis-2-Hexene
2-Butanol
2,2-Dimethylpentane
2,4-Dimethylpentane
2,2,3-Trimethylbutane
Methylcyclopentane
1-Methylcyclopentene
Benzene
3,3-Dimethylpentane
n-Butanol
Cyclohexane
2-Methylhexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

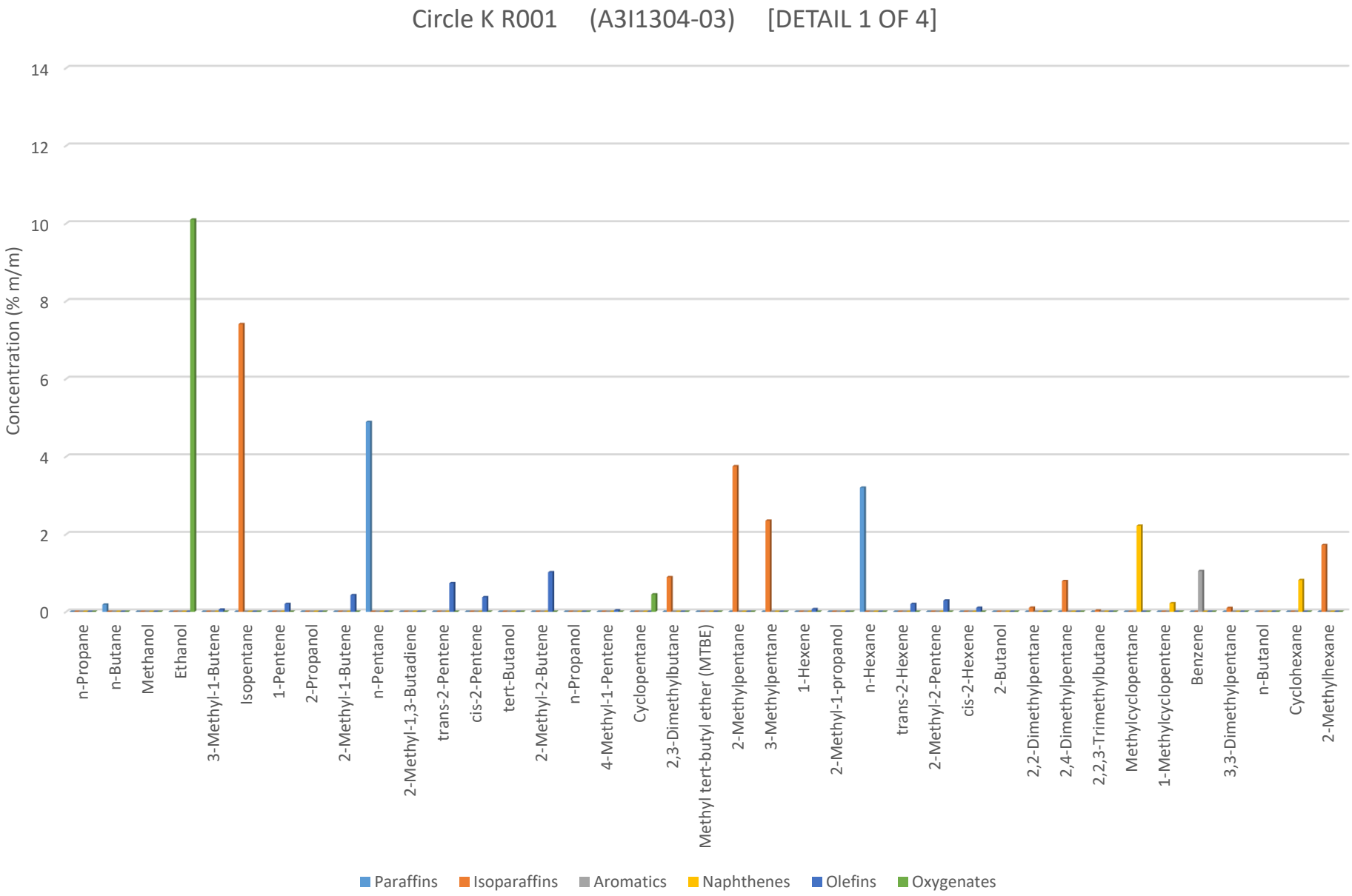

Circle K P001 (A3I1304-02) [DETAIL 2 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
2,3-Dimethylpentane
1,1-Dimethylcyclopentane
tert-Amyl methyl ether (TAME)
3-Methylhexane
cis-1,3-Dimethylcyclopentane
trans-1,3-Dimethylcyclopentane
3-Ethylpentane
trans-1,2-Dimethylcyclopentane
1-Heptene
Isooctane
trans-3-Heptene
n-Heptane
cis-3-Heptene
trans-2-Heptene
cis-2-Heptene
Methylcyclohexane
tert-Amyl ethyl ether (TAEE)
2,2-Dimethylhexane
Ethylcyclopentane
2,5-Dimethylhexane
2,2,3-Trimethylpentane
2,4-Dimethylhexane
ctc-1,2,3-Trimethylcyclopentane
ctc-1,2,4-Trimethylcyclopentane
Toluene+2,3,3-Trimethylpentane
2,3-Dimethylhexane
2-Methylheptane
4-Methylheptane
ctt-1,2,4-Trimethylcyclopentane
3-Methylheptane
3-Ethylhexane
trans-1,4-Dimethylcyclohexane
1-Octene
1-Ethyl-1-Methylcyclopentane
trans-1,2-Dimethylcyclohexane
ccc-1,2,3-Trimethylcyclopentane
n-Octane
trans-2-Octene
Isopropylcyclopentane
cis-2-Octene
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

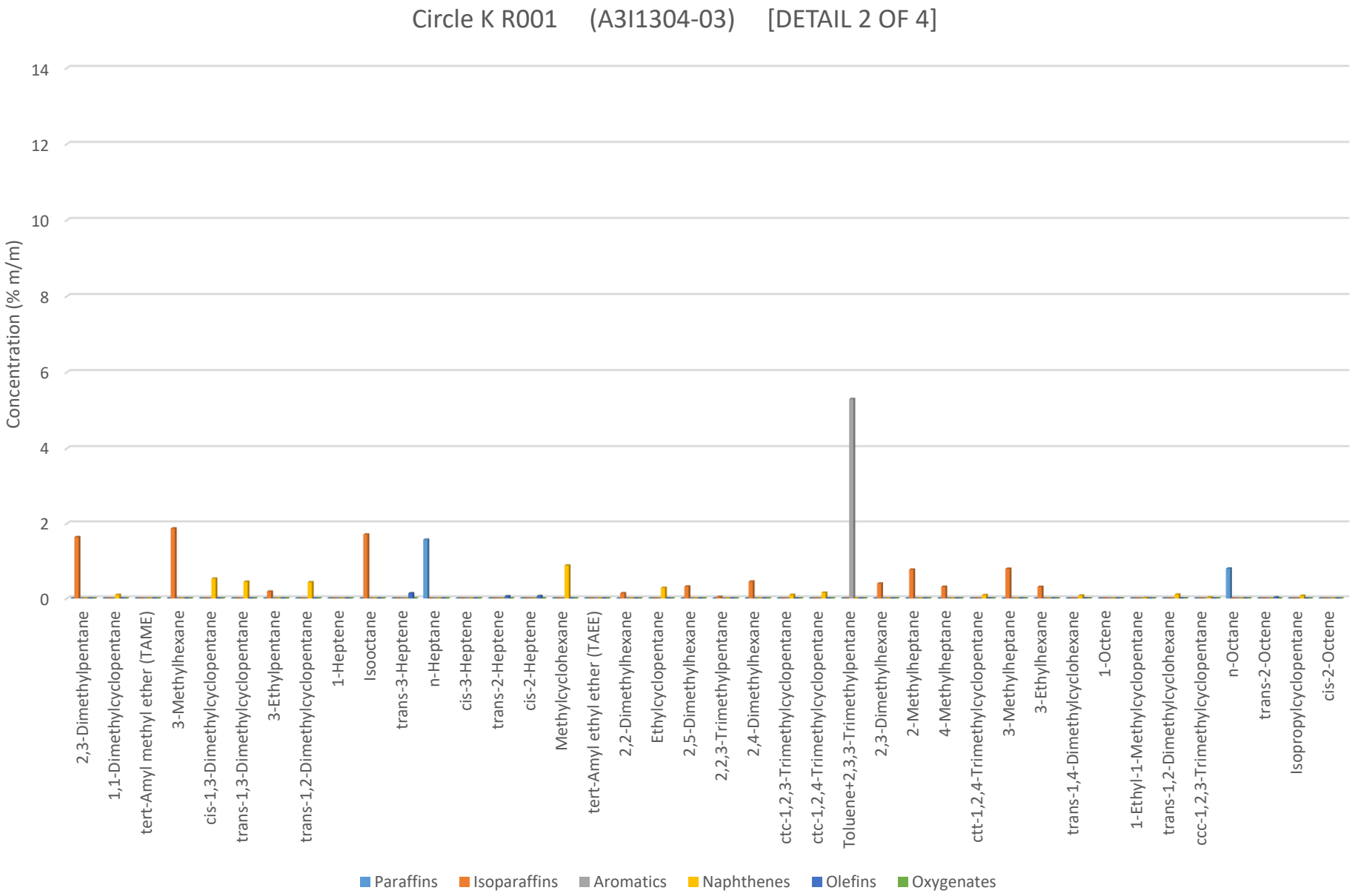

Circle K P001 (A3I1304-02) [DETAIL 3 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
cis-1,2-Dimethylcyclohexane
2,5-Dimethylheptane
3,3-Dimethylheptane
ccc-1,3,5-Trimethylcyclohexane
1,1,4-Trimethylcyclohexane
2,3-Dimethylheptane
Ethylbenzene
ctt-1,2,4-Trimethylcyclohexane
m-Xylene
p-Xylene
3,4-Dimethyheptane (D)
3,4-Dimethyheptane (L)
2-Methyloctane
ctc-1,2,4-Trimethylcyclohexane
3-Methyloctane
1,1,2-Trimethylcyclohexane
o-Xylene
1-Nonene
Isobutylcyclopentane
trans-3-Nonene
cis-3-Nonene
n-Nonane
trans-2-Nonene
Isopropylbenzene
cis-2-Nonene
Isopropylcyclohexane
2,2-Dimethyloctane
3,3-Dimethyloctane
n-Butylcyclopentane
2,3-Dimethyloctane
n-Propylbenzene
1-Methyl-3-Ethylbenzene
1-Methyl-4-Ethylbenzene
1,3,5-Trimethylbenzene
1-Methyl-2-Ethylbenzene
5-Methylnonane
3-Ethyloctane
2-Methylnonane
3-Methylnonane
Isobutylcyclohexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

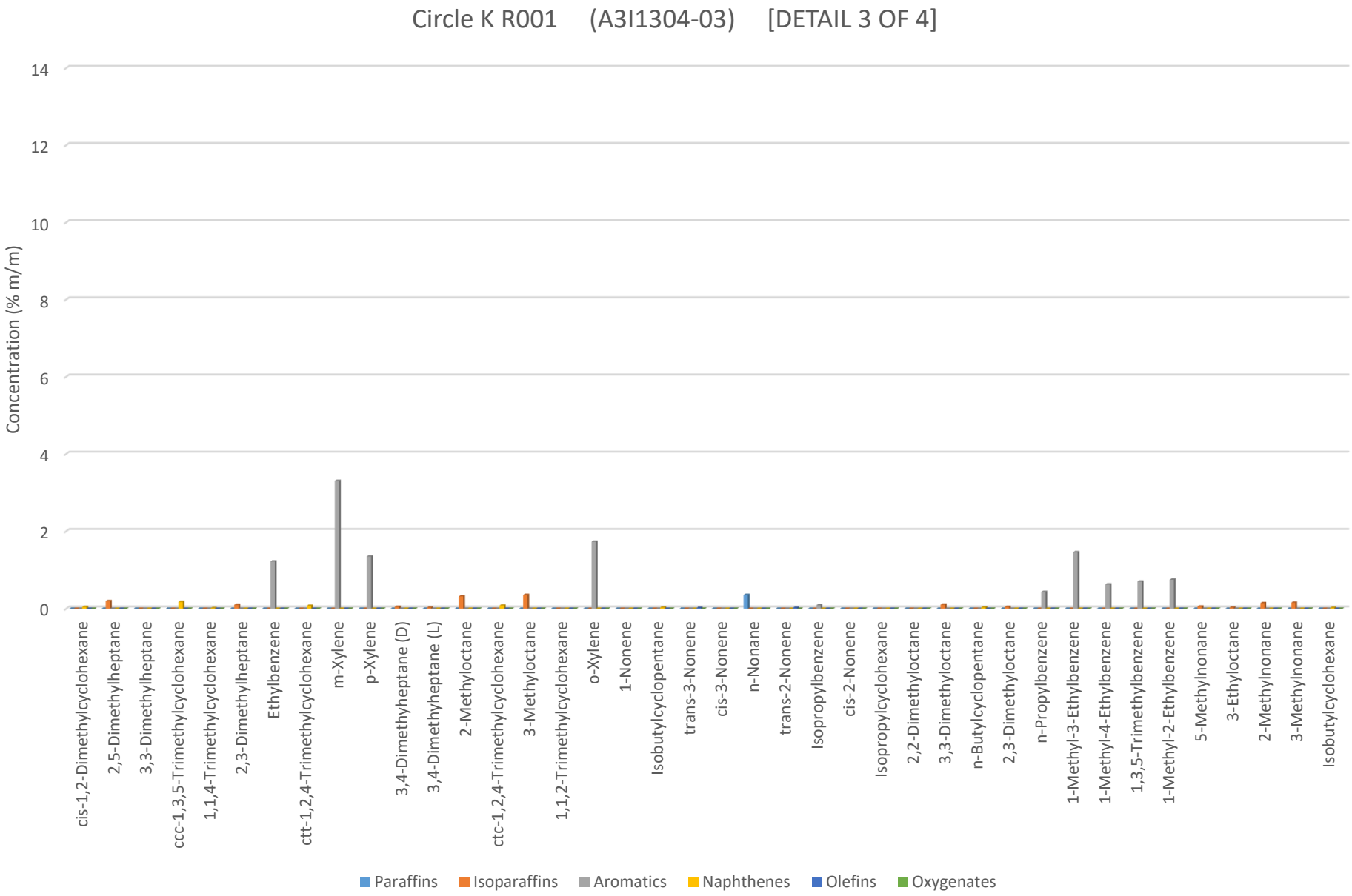

Circle K P001 (A3I1304-02) [DETAIL 4 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
tert-Butylbenzene
1,2,4-Trimethylbenzene
1-Decene
t-1-Methyl-2-N-Propylcyclohexane
Isobutylbenzene
sec-Butylbenzene
n-Decane
1-Methyl-3-Isopropylbenzene
1-Methyl-4-Isopropylbenzene
1-Methyl-2-Isopropylbenze
1-Methyl-3-n-Propylbenzene
1-Methyl-4-n-Propylbenzene
n-Butylbenzene
1-Methyl-2-n-Propylbenzene
1,2-Diethylbenzene
1,3-Dimethyl-5-Ethylbenzene
1,4-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-4-Ethylbenzene
1,3-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-3-Ethylbenzene
n-Undecane
t-1-Methyl-2(4-Methylphenyl)cyclopentane
1,2,4,5-Tetramethylbenzene
2-Methylbutylbenzene
1,2,3,5-Tetramethylbenzene
tert-1-Butyl-2-Methylbenzene
n-Pentylbenzene
Naphthalene
t-1-Butyl-3,5-Dimethybenzene
tert-1-Butyl-4-Ethylbenzene
n-Dodecane
1,3,5-Triethylbenzene
1,2,4-Triethylbenzene
n-Hexylbenzene
2-Methylnaphthalene
1-Methylnaphthalene
n-Tridecane
n-Tetradecane
n-Pentadecane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

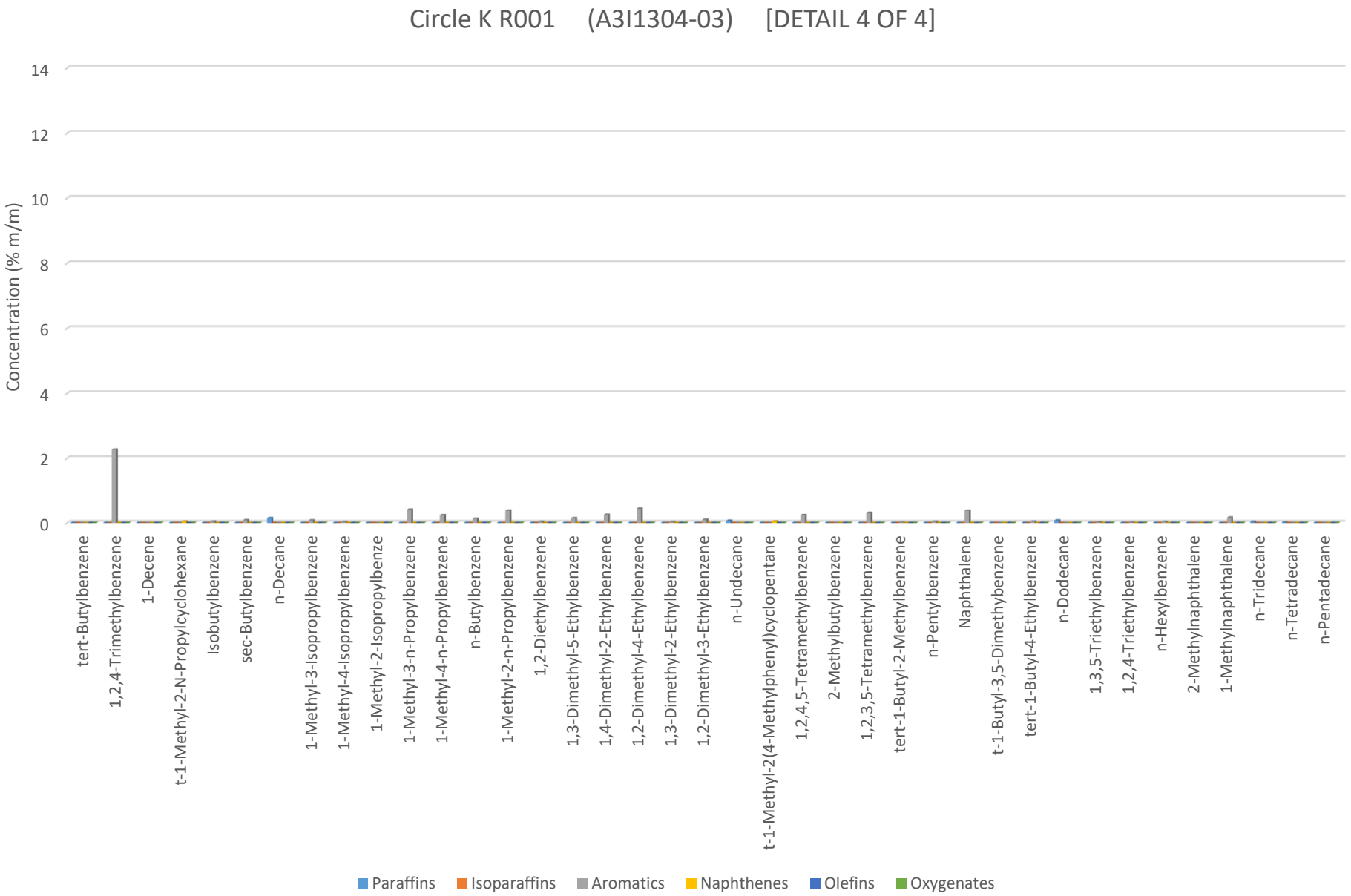

Circle K R001 (A3I1304-03) [FULL SUITE]
14
12
10
8
6
4
2
0
Concentration (% m/m)
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

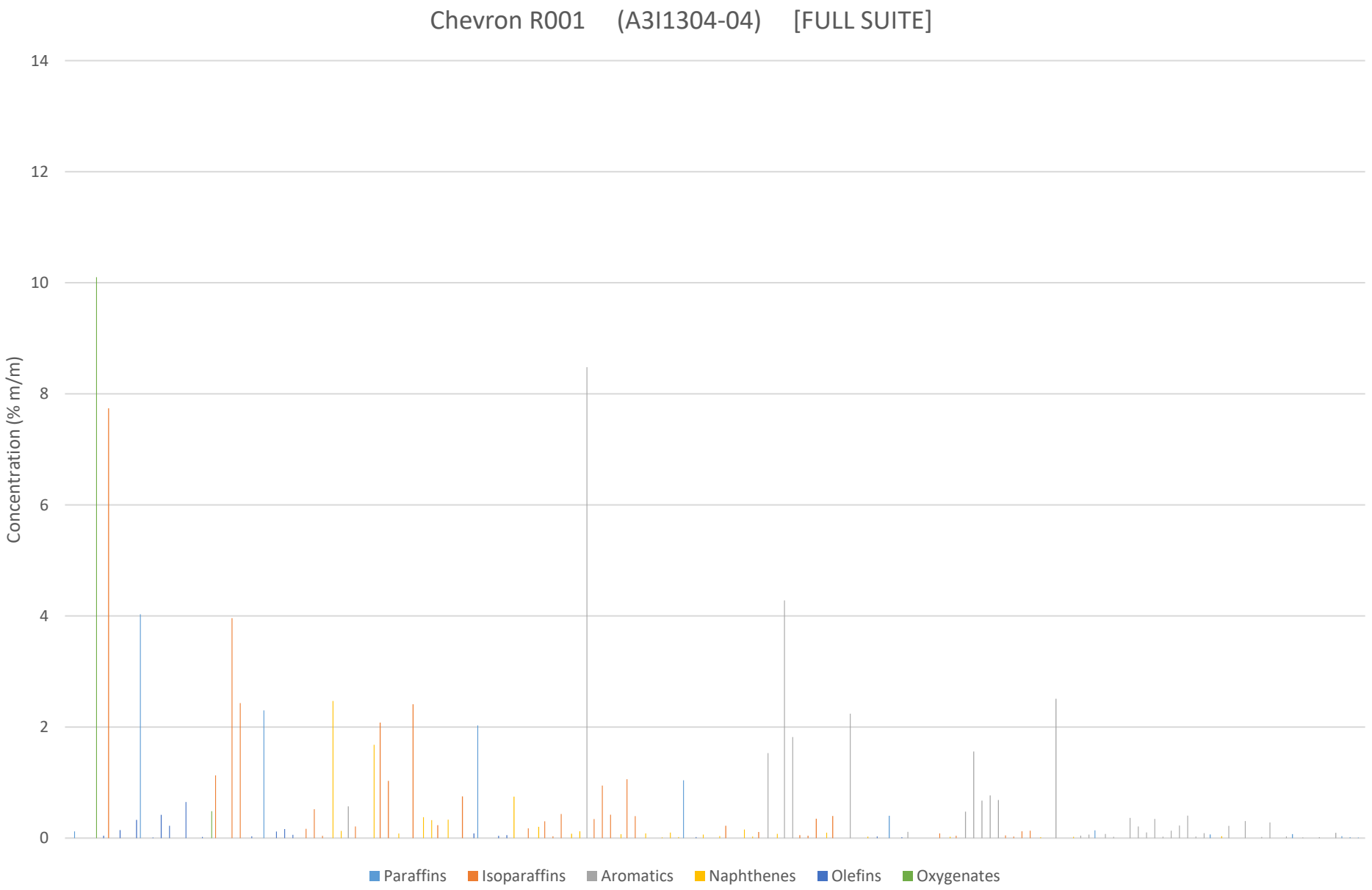

Circle K R001 (A3I1304-03) [FULL SUITE - DETAIL]
Concentration (% m/m)
7
6
5
4
3
2
1
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

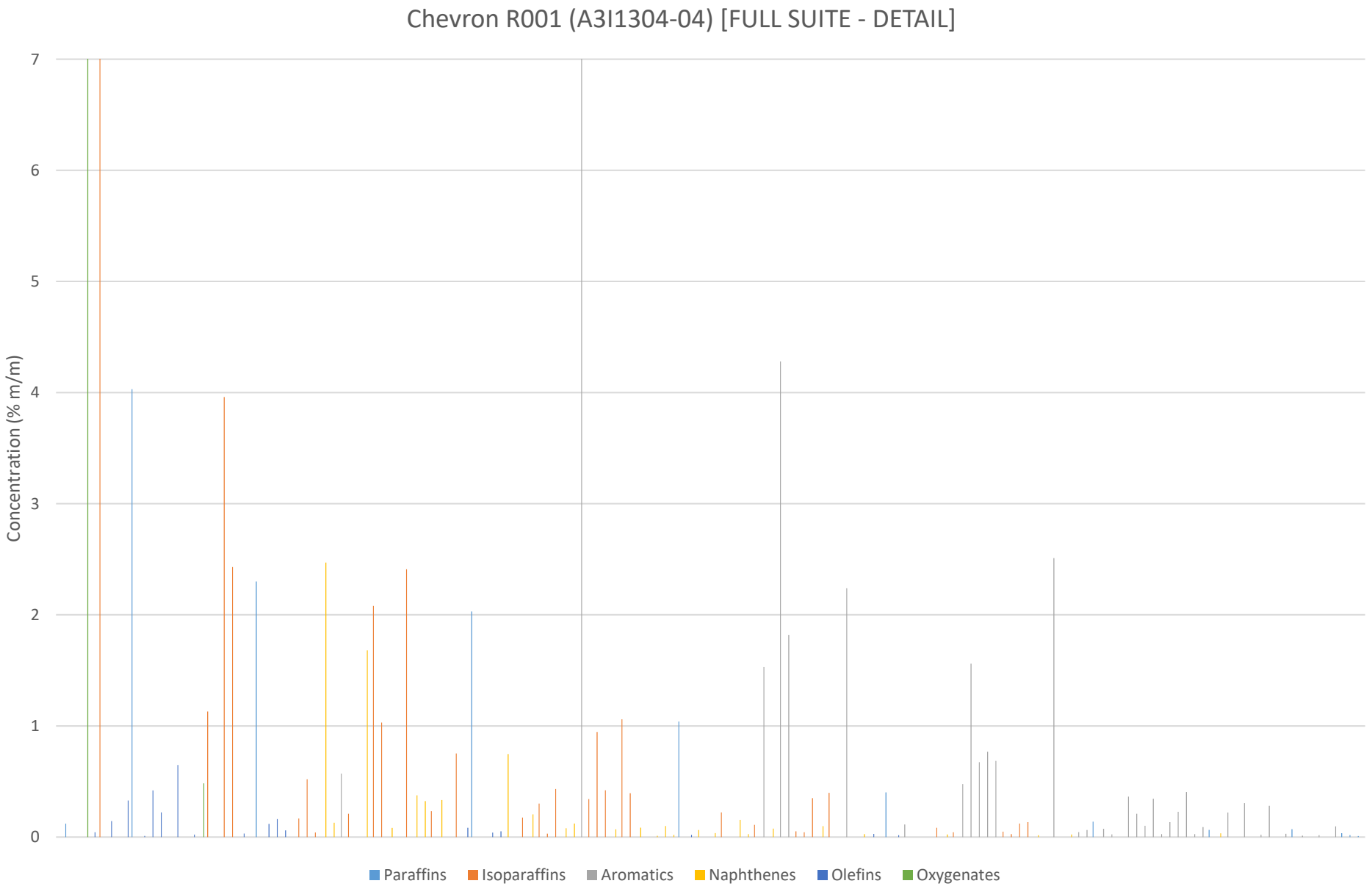

Circle K R001 (A3I1304-03) [DETAIL 1 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
n-Propane
n-Butane
Methanol
Ethanol
3-Methyl-1-Butene
Isopentane
1-Pentene
2-Propanol
2-Methyl-1-Butene
n-Pentane
2-Methyl-1,3-Butadiene
trans-2-Pentene
cis-2-Pentene
tert-Butanol
2-Methyl-2-Butene
n-Propanol
4-Methyl-1-Pentene
Cyclopentane
2,3-Dimethylbutane
Methyl tert-butyl ether (MTBE)
2-Methylpentane
3-Methylpentane
1-Hexene
2-Methyl-1-propanol
n-Hexane
trans-2-Hexene
2-Methyl-2-Pentene
cis-2-Hexene
2-Butanol
2,2-Dimethylpentane
2,4-Dimethylpentane
2,2,3-Trimethylbutane
Methylcyclopentane
1-Methylcyclopentene
Benzene
3,3-Dimethylpentane
n-Butanol
Cyclohexane
2-Methylhexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

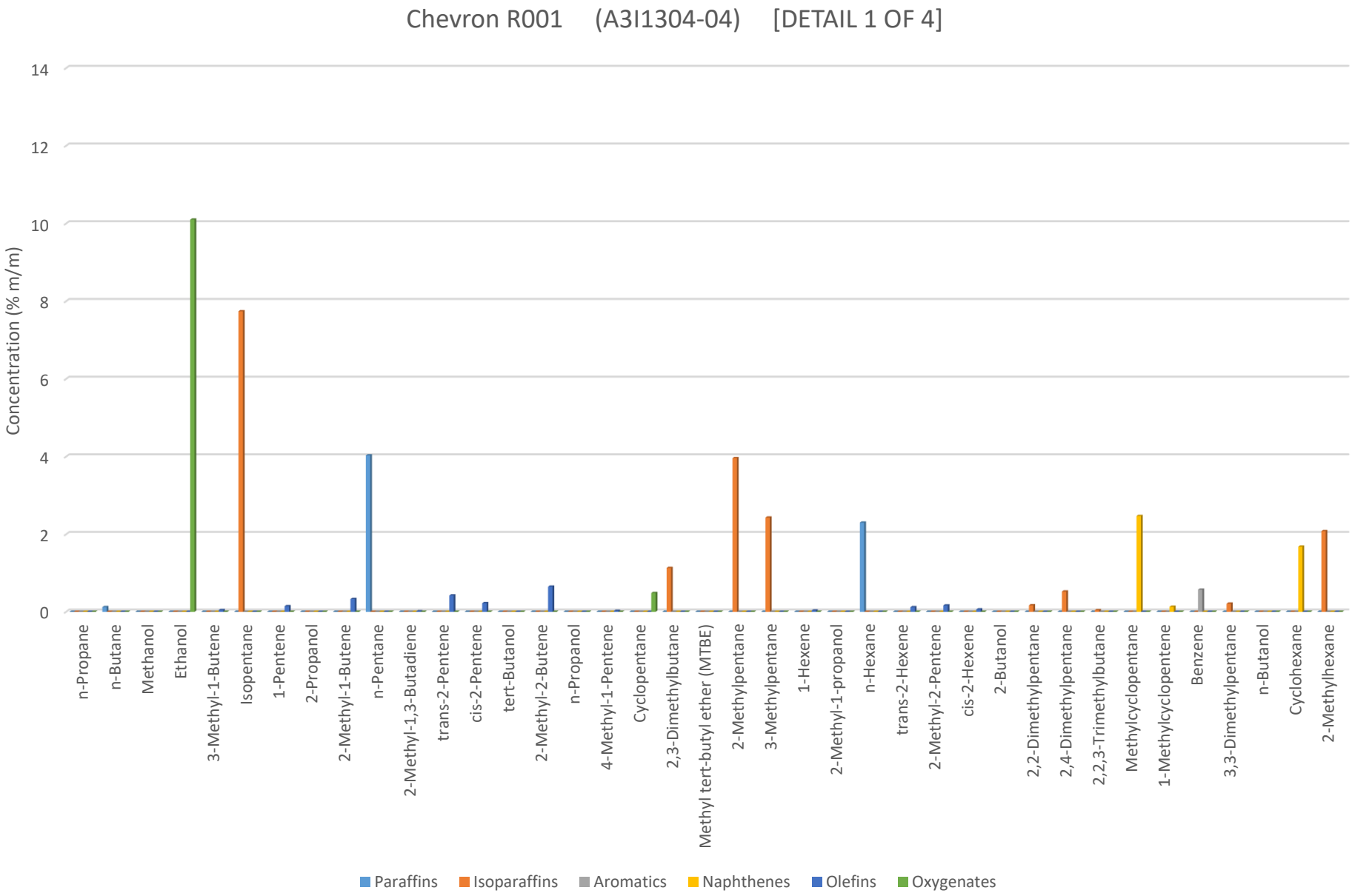

Circle K R001 (A3I1304-03) [DETAIL 2 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
2,3-Dimethylpentane
1,1-Dimethylcyclopentane
tert-Amyl methyl ether (TAME)
3-Methylhexane
cis-1,3-Dimethylcyclopentane
trans-1,3-Dimethylcyclopentane
3-Ethylpentane
trans-1,2-Dimethylcyclopentane
1-Heptene
Isooctane
trans-3-Heptene
n-Heptane
cis-3-Heptene
trans-2-Heptene
cis-2-Heptene
Methylcyclohexane
tert-Amyl ethyl ether (TAEE)
2,2-Dimethylhexane
Ethylcyclopentane
2,5-Dimethylhexane
2,2,3-Trimethylpentane
2,4-Dimethylhexane
ctc-1,2,3-Trimethylcyclopentane
ctc-1,2,4-Trimethylcyclopentane
Toluene+2,3,3-Trimethylpentane
2,3-Dimethylhexane
2-Methylheptane
4-Methylheptane
ctt-1,2,4-Trimethylcyclopentane
3-Methylheptane
3-Ethylhexane
trans-1,4-Dimethylcyclohexane
1-Octene
1-Ethyl-1-Methylcyclopentane
trans-1,2-Dimethylcyclohexane
ccc-1,2,3-Trimethylcyclopentane
n-Octane
trans-2-Octene
Isopropylcyclopentane
cis-2-Octene
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

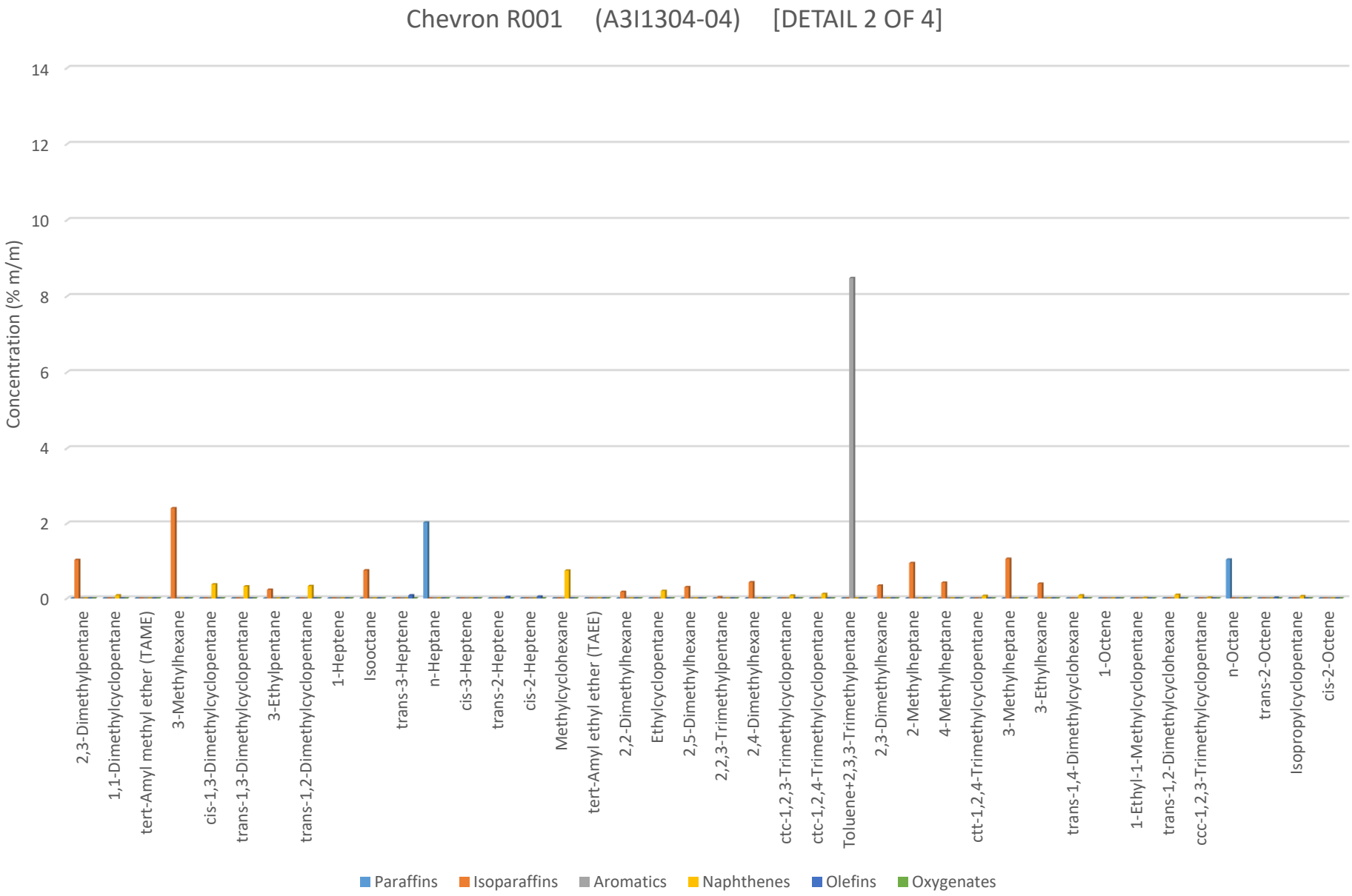

Circle K R001 (A3I1304-03) [DETAIL 3 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
cis-1,2-Dimethylcyclohexane
2,5-Dimethylheptane
3,3-Dimethylheptane
ccc-1,3,5-Trimethylcyclohexane
1,1,4-Trimethylcyclohexane
2,3-Dimethylheptane
Ethylbenzene
ctt-1,2,4-Trimethylcyclohexane
m-Xylene
p-Xylene
3,4-Dimethyheptane (D)
3,4-Dimethyheptane (L)
2-Methyloctane
ctc-1,2,4-Trimethylcyclohexane
3-Methyloctane
1,1,2-Trimethylcyclohexane
o-Xylene
1-Nonene
Isobutylcyclopentane
trans-3-Nonene
cis-3-Nonene
n-Nonane
trans-2-Nonene
Isopropylbenzene
cis-2-Nonene
Isopropylcyclohexane
2,2-Dimethyloctane
3,3-Dimethyloctane
n-Butylcyclopentane
2,3-Dimethyloctane
n-Propylbenzene
1-Methyl-3-Ethylbenzene
1-Methyl-4-Ethylbenzene
1,3,5-Trimethylbenzene
1-Methyl-2-Ethylbenzene
5-Methylnonane
3-Ethyloctane
2-Methylnonane
3-Methylnonane
Isobutylcyclohexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

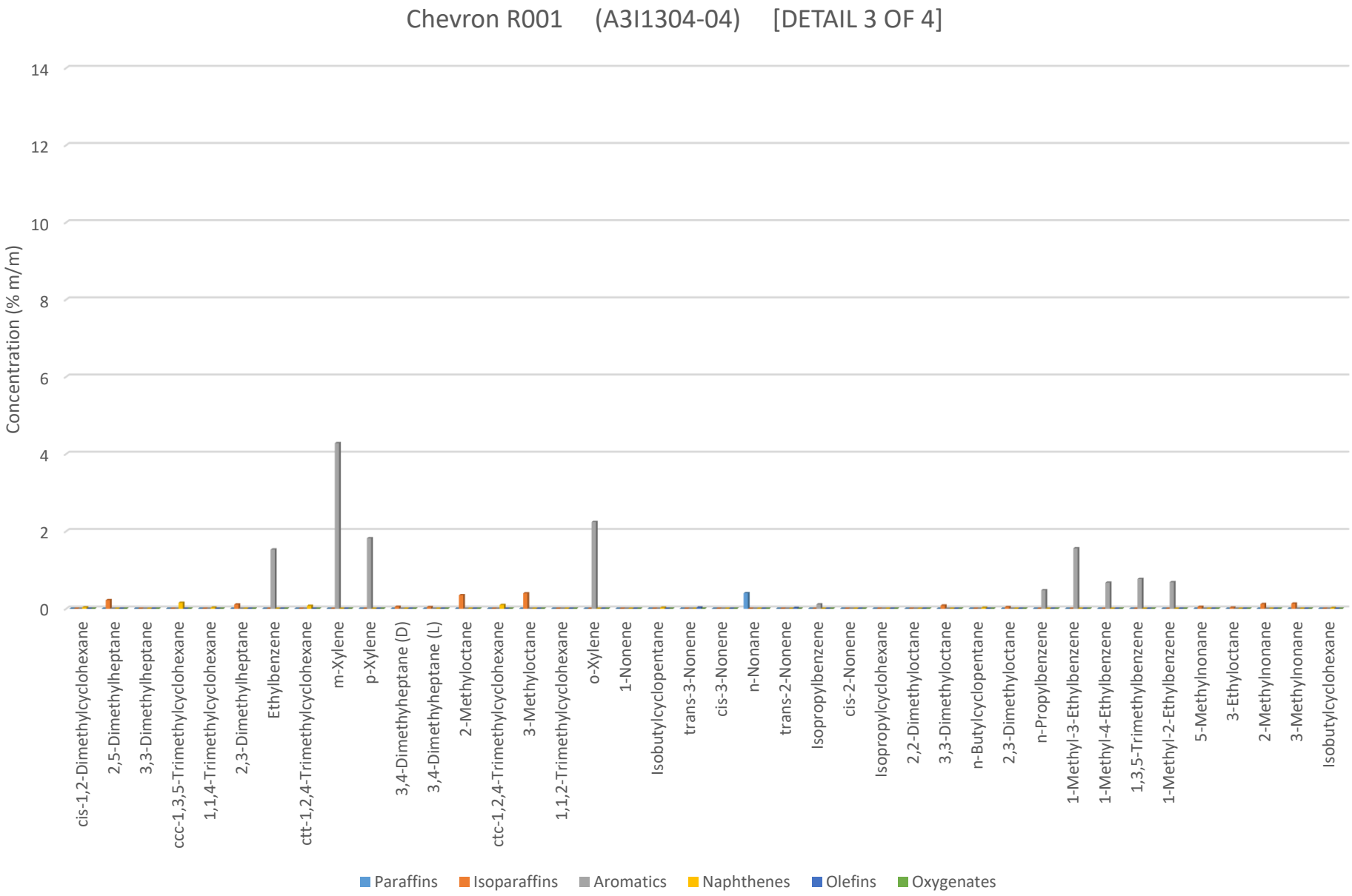

Circle K R001 (A3I1304-03) [DETAIL 4 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
tert-Butylbenzene
1,2,4-Trimethylbenzene
1-Decene
t-1-Methyl-2-N-Propylcyclohexane
Isobutylbenzene
sec-Butylbenzene
n-Decane
1-Methyl-3-Isopropylbenzene
1-Methyl-4-Isopropylbenzene
1-Methyl-2-Isopropylbenze
1-Methyl-3-n-Propylbenzene
1-Methyl-4-n-Propylbenzene
n-Butylbenzene
1-Methyl-2-n-Propylbenzene
1,2-Diethylbenzene
1,3-Dimethyl-5-Ethylbenzene
1,4-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-4-Ethylbenzene
1,3-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-3-Ethylbenzene
n-Undecane
t-1-Methyl-2(4-Methylphenyl)cyclopentane
1,2,4,5-Tetramethylbenzene
2-Methylbutylbenzene
1,2,3,5-Tetramethylbenzene
tert-1-Butyl-2-Methylbenzene
n-Pentylbenzene
Naphthalene
t-1-Butyl-3,5-Dimethybenzene
tert-1-Butyl-4-Ethylbenzene
n-Dodecane
1,3,5-Triethylbenzene
1,2,4-Triethylbenzene
n-Hexylbenzene
2-Methylnaphthalene
1-Methylnaphthalene
n-Tridecane
n-Tetradecane
n-Pentadecane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

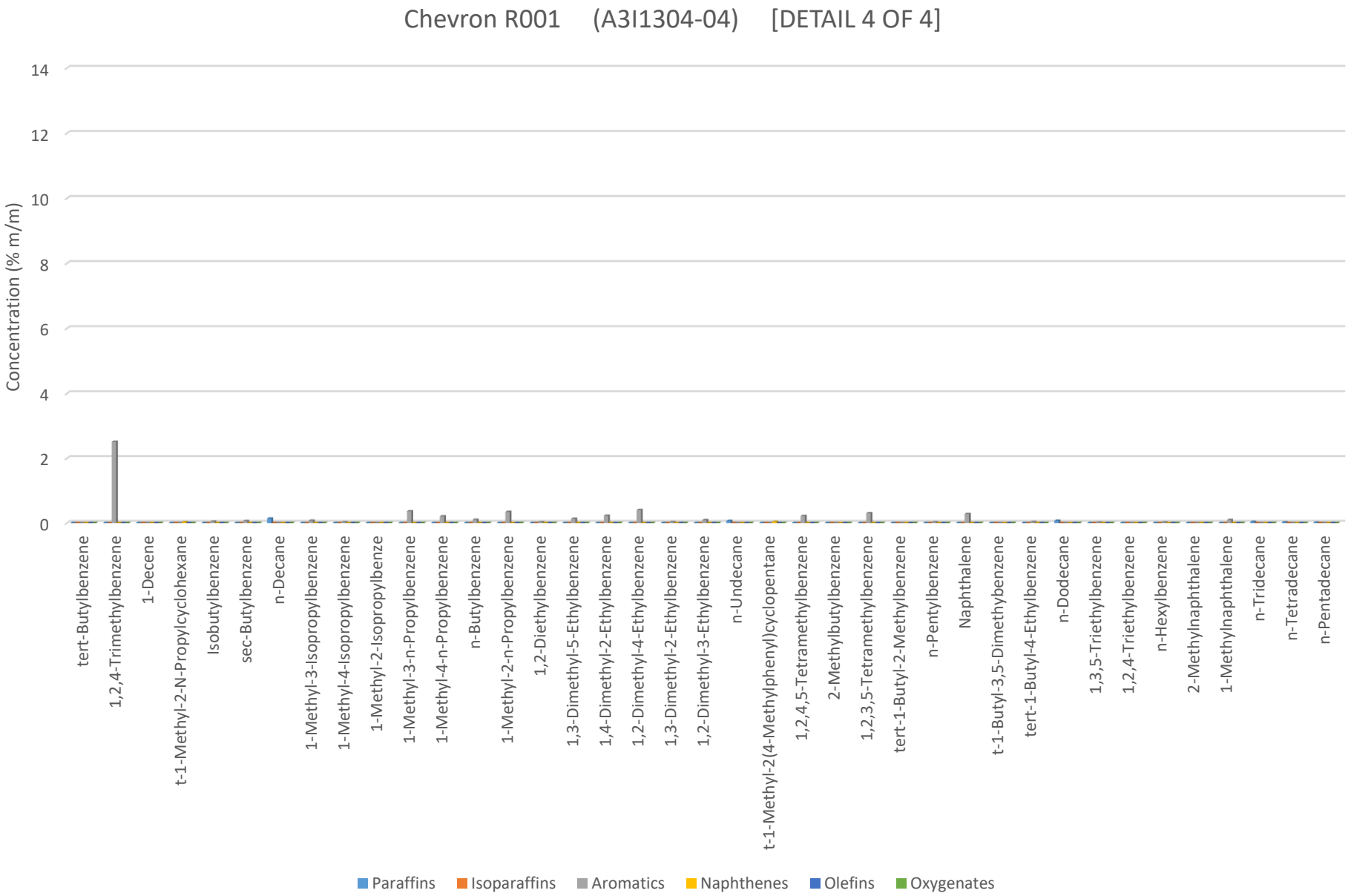

Chevron R001 (A3I1304-04) [FULL SUITE]
14
12
10
8
6
4
2
0
Concentration (% m/m)
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

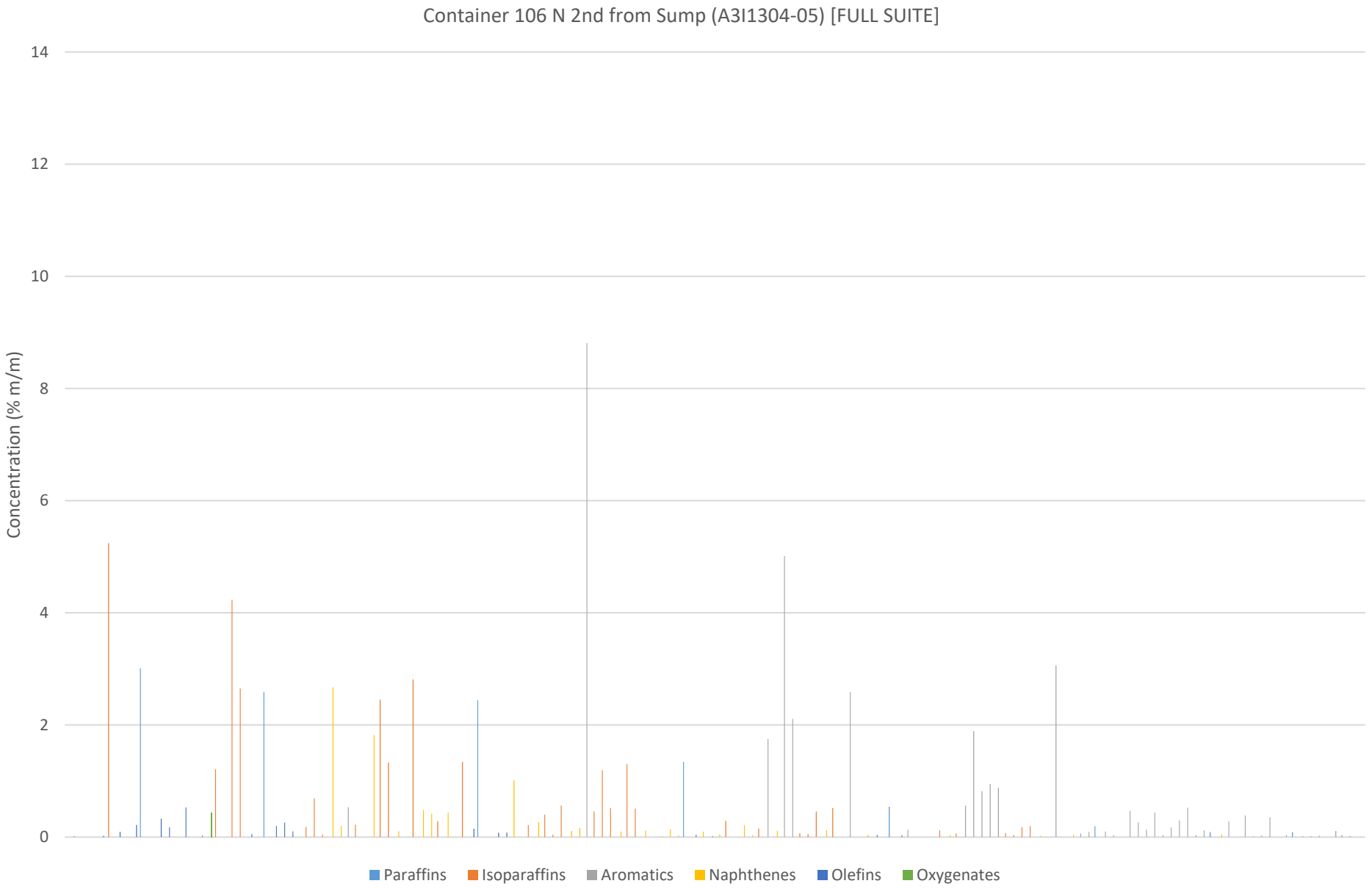

Chevron R001 (A3I1304-04) [FULL SUITE - DETAIL]
Concentration (% m/m)
7
6
5
4
3
2
1
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

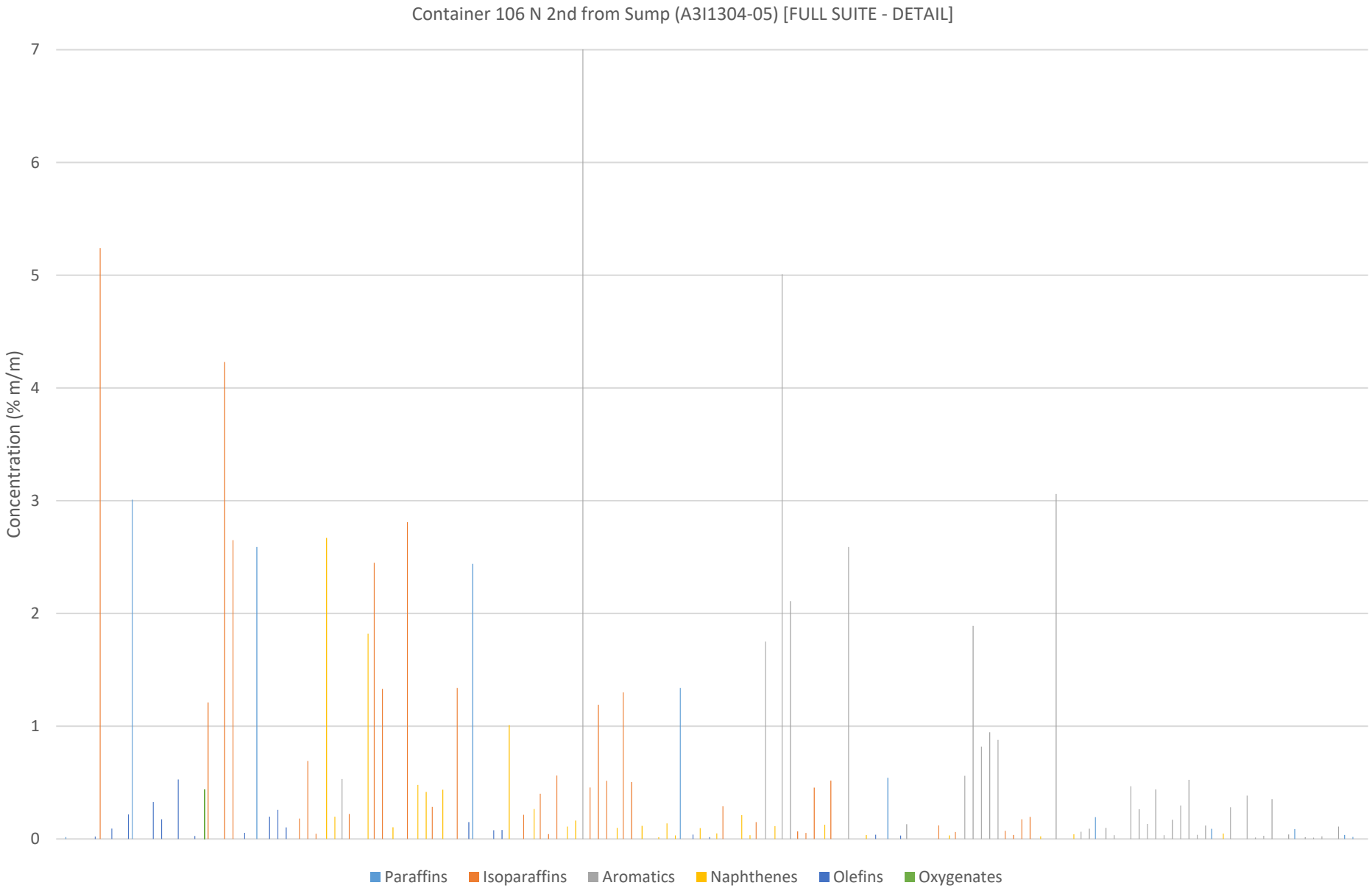

Chevron R001 (A3I1304-04) [DETAIL 1 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
n-Propane
n-Butane
Methanol
Ethanol
3-Methyl-1-Butene
Isopentane
1-Pentene
2-Propanol
2-Methyl-1-Butene
n-Pentane
2-Methyl-1,3-Butadiene
trans-2-Pentene
cis-2-Pentene
tert-Butanol
2-Methyl-2-Butene
n-Propanol
4-Methyl-1-Pentene
Cyclopentane
2,3-Dimethylbutane
Methyl tert-butyl ether (MTBE)
2-Methylpentane
3-Methylpentane
1-Hexene
2-Methyl-1-propanol
n-Hexane
trans-2-Hexene
2-Methyl-2-Pentene
cis-2-Hexene
2-Butanol
2,2-Dimethylpentane
2,4-Dimethylpentane
2,2,3-Trimethylbutane
Methylcyclopentane
1-Methylcyclopentene
Benzene
3,3-Dimethylpentane
n-Butanol
Cyclohexane
2-Methylhexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

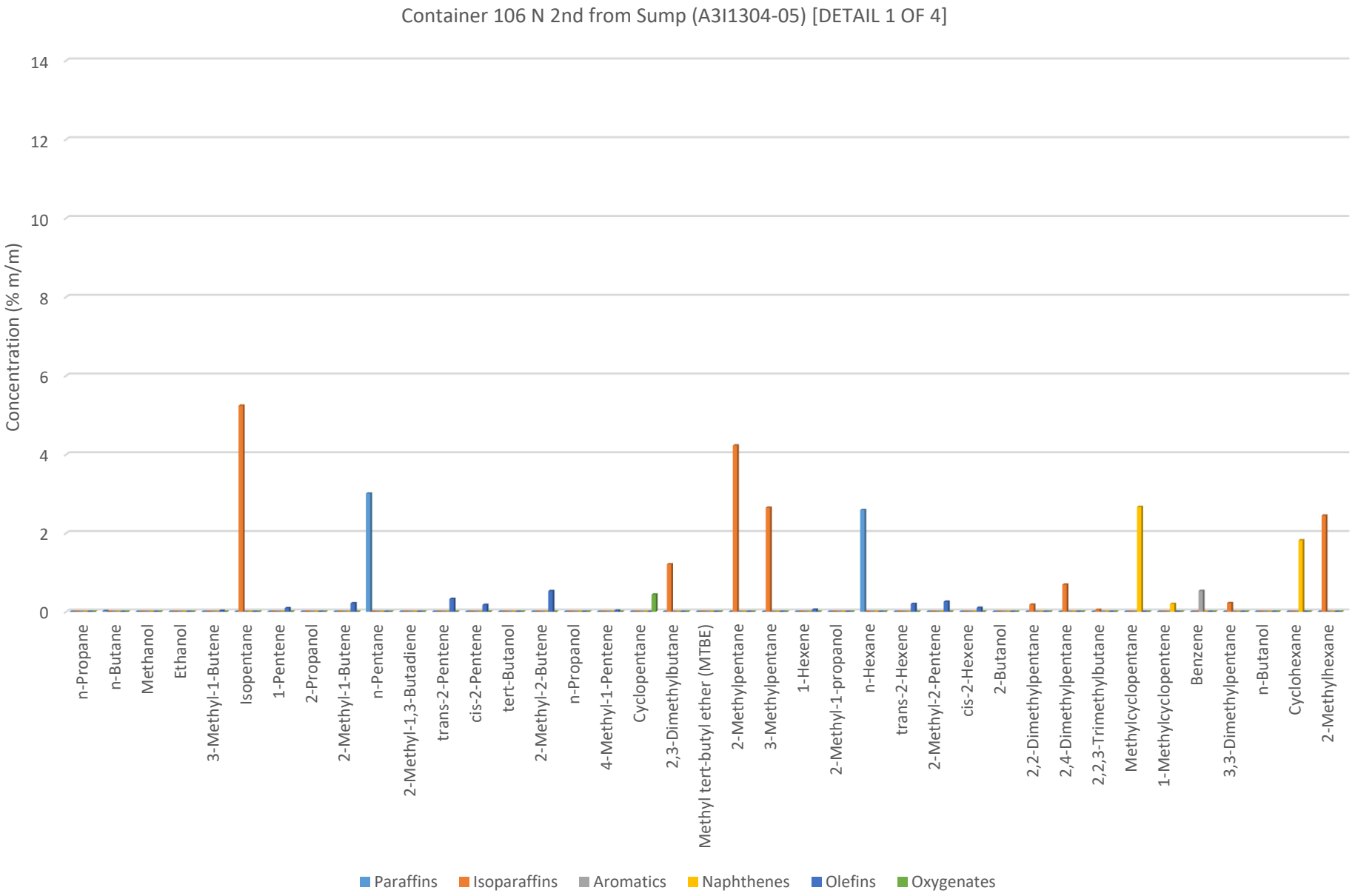

Chevron R001 (A3I1304-04) [DETAIL 2 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
2,3-Dimethylpentane
1,1-Dimethylcyclopentane
tert-Amyl methyl ether (TAME)
3-Methylhexane
cis-1,3-Dimethylcyclopentane
trans-1,3-Dimethylcyclopentane
3-Ethylpentane
trans-1,2-Dimethylcyclopentane
1-Heptene
Isooctane
trans-3-Heptene
n-Heptane
cis-3-Heptene
trans-2-Heptene
cis-2-Heptene
Methylcyclohexane
tert-Amyl ethyl ether (TAEE)
2,2-Dimethylhexane
Ethylcyclopentane
2,5-Dimethylhexane
2,2,3-Trimethylpentane
2,4-Dimethylhexane
ctc-1,2,3-Trimethylcyclopentane
ctc-1,2,4-Trimethylcyclopentane
Toluene+2,3,3-Trimethylpentane
2,3-Dimethylhexane
2-Methylheptane
4-Methylheptane
ctt-1,2,4-Trimethylcyclopentane
3-Methylheptane
3-Ethylhexane
trans-1,4-Dimethylcyclohexane
1-Octene
1-Ethyl-1-Methylcyclopentane
trans-1,2-Dimethylcyclohexane
ccc-1,2,3-Trimethylcyclopentane
n-Octane
trans-2-Octene
Isopropylcyclopentane
cis-2-Octene
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

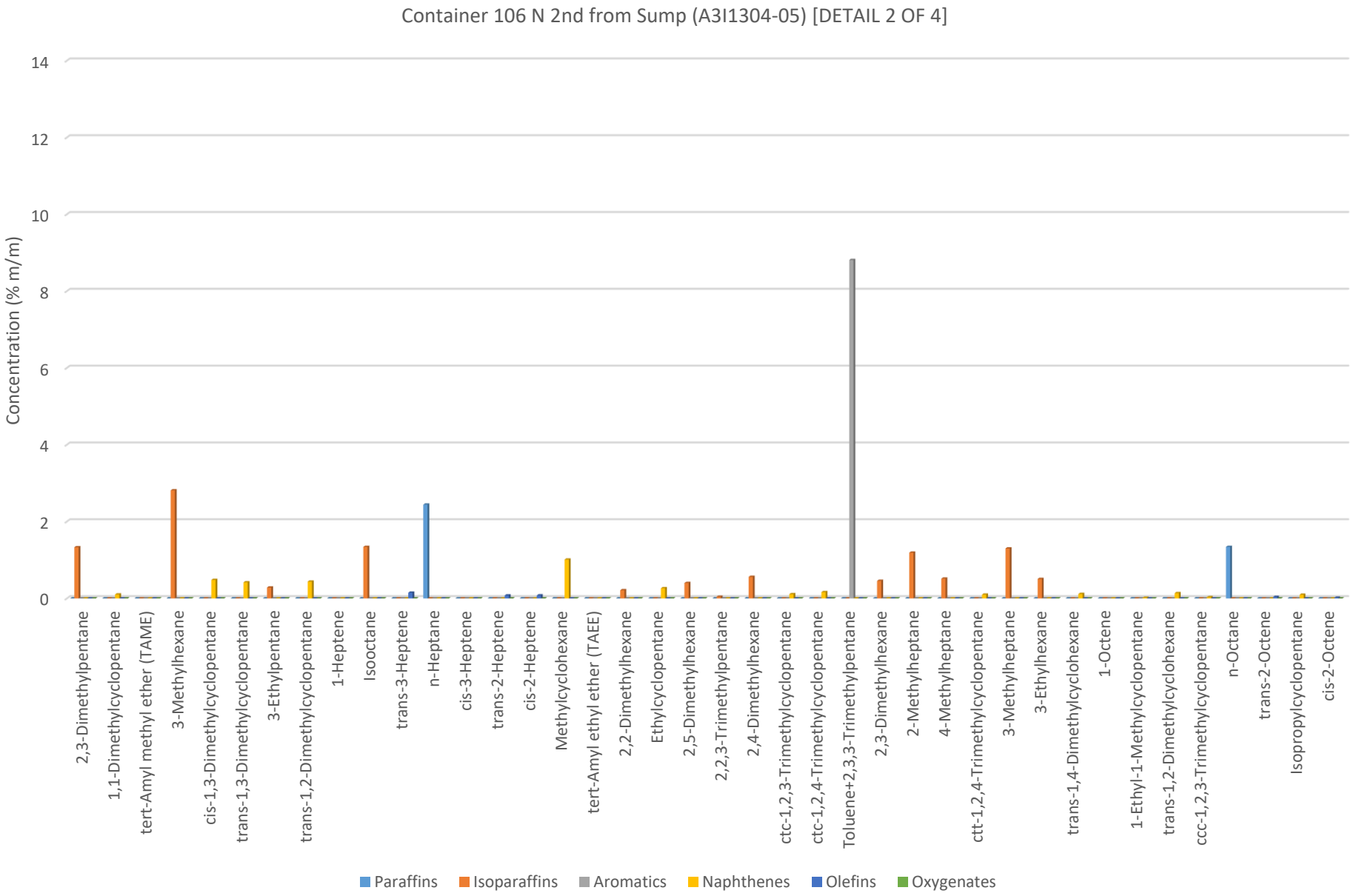

Chevron R001 (A3I1304-04) [DETAIL 3 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
cis-1,2-Dimethylcyclohexane
2,5-Dimethylheptane
3,3-Dimethylheptane
ccc-1,3,5-Trimethylcyclohexane
1,1,4-Trimethylcyclohexane
2,3-Dimethylheptane
Ethylbenzene
ctt-1,2,4-Trimethylcyclohexane
m-Xylene
p-Xylene
3,4-Dimethyheptane (D)
3,4-Dimethyheptane (L)
2-Methyloctane
ctc-1,2,4-Trimethylcyclohexane
3-Methyloctane
1,1,2-Trimethylcyclohexane
o-Xylene
1-Nonene
Isobutylcyclopentane
trans-3-Nonene
cis-3-Nonene
n-Nonane
trans-2-Nonene
Isopropylbenzene
cis-2-Nonene
Isopropylcyclohexane
2,2-Dimethyloctane
3,3-Dimethyloctane
n-Butylcyclopentane
2,3-Dimethyloctane
n-Propylbenzene
1-Methyl-3-Ethylbenzene
1-Methyl-4-Ethylbenzene
1,3,5-Trimethylbenzene
1-Methyl-2-Ethylbenzene
5-Methylnonane
3-Ethyloctane
2-Methylnonane
3-Methylnonane
Isobutylcyclohexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

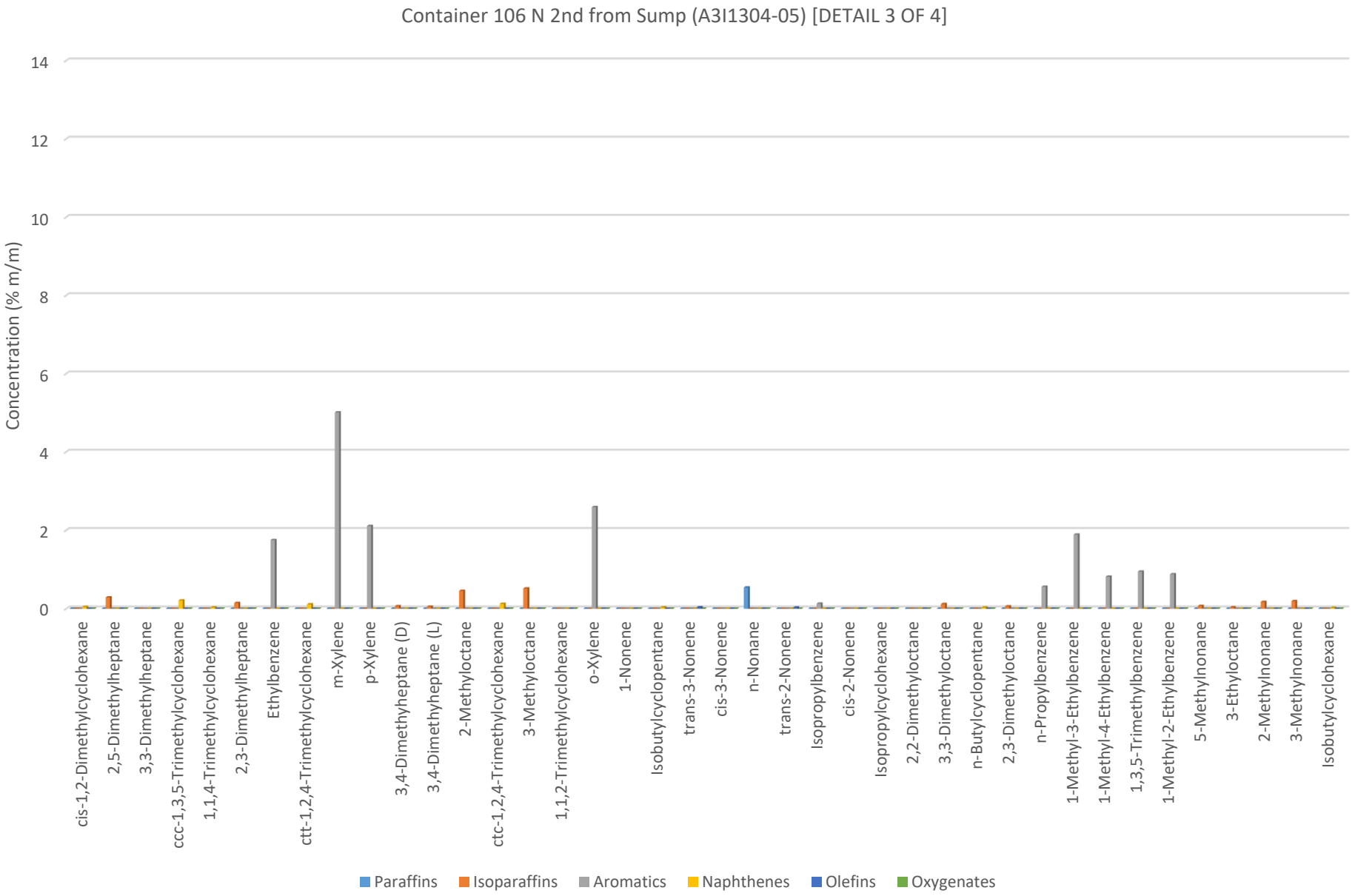

Chevron R001 (A3I1304-04) [DETAIL 4 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
tert-Butylbenzene
1,2,4-Trimethylbenzene
1-Decene
t-1-Methyl-2-N-Propylcyclohexane
Isobutylbenzene
sec-Butylbenzene
n-Decane
1-Methyl-3-Isopropylbenzene
1-Methyl-4-Isopropylbenzene
1-Methyl-2-Isopropylbenze
1-Methyl-3-n-Propylbenzene
1-Methyl-4-n-Propylbenzene
n-Butylbenzene
1-Methyl-2-n-Propylbenzene
1,2-Diethylbenzene
1,3-Dimethyl-5-Ethylbenzene
1,4-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-4-Ethylbenzene
1,3-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-3-Ethylbenzene
n-Undecane
t-1-Methyl-2(4-Methylphenyl)cyclopentane
1,2,4,5-Tetramethylbenzene
2-Methylbutylbenzene
1,2,3,5-Tetramethylbenzene
tert-1-Butyl-2-Methylbenzene
n-Pentylbenzene
Naphthalene
t-1-Butyl-3,5-Dimethybenzene
tert-1-Butyl-4-Ethylbenzene
n-Dodecane
1,3,5-Triethylbenzene
1,2,4-Triethylbenzene
n-Hexylbenzene
2-Methylnaphthalene
1-Methylnaphthalene
n-Tridecane
n-Tetradecane
n-Pentadecane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates

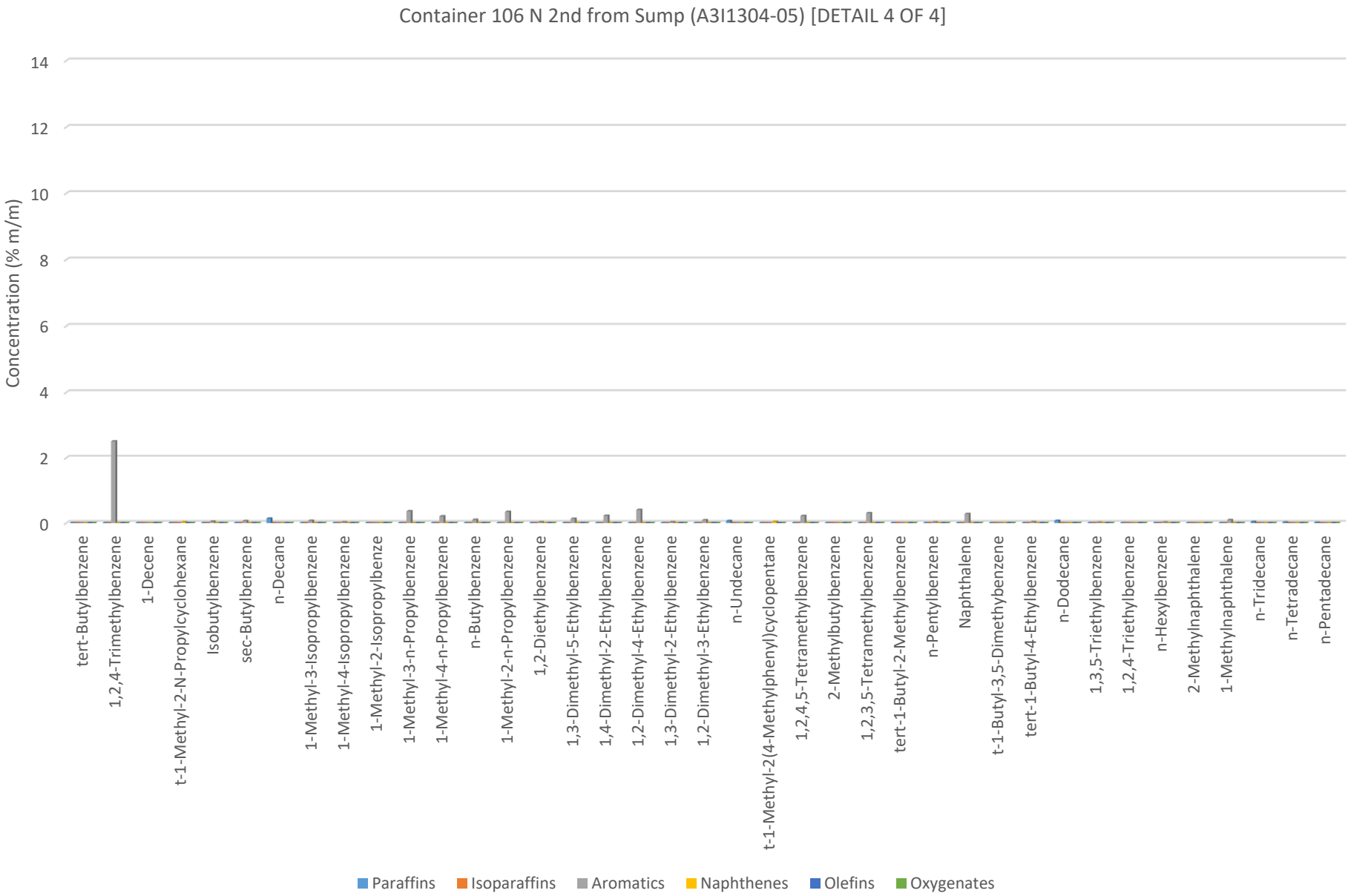

Container 106 N 2nd from Sump (A3I1304-05) [FULL SUITE]
Concentration (% m/m)
14
12
10
8
6
4
2
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates


Container 106 N 2nd from Sump (A3I1304-05) [FULL SUITE - DETAIL]
Concentration (% m/m)
7
6
5
4
3
2
1
0
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates


Container 106 N 2nd from Sump (A3I1304-05) [DETAIL 1 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
n-Propane
n-Butane
Methanol
Ethanol
3-Methyl-1-Butene
Isopentane
1-Pentene
2-Propanol
2-Methyl-1-Butene
n-Pentane
2-Methyl-1,3-Butadiene
trans-2-Pentene
cis-2-Pentene
tert-Butanol
2-Methyl-2-Butene
n-Propanol
4-Methyl-1-Pentene
Cyclopentane
2,3-Dimethylbutane
Methyl tert-butyl ether (MTBE)
2-Methylpentane
3-Methylpentane
1-Hexene
2-Methyl-1-propanol
n-Hexane
trans-2-Hexene
2-Methyl-2-Pentene
cis-2-Hexene
2-Butanol
2,2-Dimethylpentane
2,4-Dimethylpentane
2,2,3-Trimethylbutane
Methylcyclopentane
1-Methylcyclopentene
Benzene
3,3-Dimethylpentane
n-Butanol
Cyclohexane
2-Methylhexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates


Container 106 N 2nd from Sump (A3I1304-05) [DETAIL 2 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
2,3-Dimethylpentane
1,1-Dimethylcyclopentane
tert-Amyl methyl ether (TAME)
3-Methylhexane
cis-1,3-Dimethylcyclopentane
trans-1,3-Dimethylcyclopentane
3-Ethylpentane
trans-1,2-Dimethylcyclopentane
1-Heptene
Isooctane
trans-3-Heptene
n-Heptane
cis-3-Heptene
trans-2-Heptene
cis-2-Heptene
Methylcyclohexane
tert-Amyl ethyl ether (TAEE)
2,2-Dimethylhexane
Ethylcyclopentane
2,5-Dimethylhexane
2,2,3-Trimethylpentane
2,4-Dimethylhexane
ctc-1,2,3-Trimethylcyclopentane
ctc-1,2,4-Trimethylcyclopentane
Toluene+2,3,3-Trimethylpentane
2,3-Dimethylhexane
2-Methylheptane
4-Methylheptane
ctt-1,2,4-Trimethylcyclopentane
3-Methylheptane
3-Ethylhexane
trans-1,4-Dimethylcyclohexane
1-Octene
1-Ethyl-1-Methylcyclopentane
trans-1,2-Dimethylcyclohexane
ccc-1,2,3-Trimethylcyclopentane
n-Octane
trans-2-Octene
Isopropylcyclopentane
cis-2-Octene
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates


Container 106 N 2nd from Sump (A3I1304-05) [DETAIL 3 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
cis-1,2-Dimethylcyclohexane
2,5-Dimethylheptane
3,3-Dimethylheptane
ccc-1,3,5-Trimethylcyclohexane
1,1,4-Trimethylcyclohexane
2,3-Dimethylheptane
Ethylbenzene
ctt-1,2,4-Trimethylcyclohexane
m-Xylene
p-Xylene
3,4-Dimethyheptane (D)
3,4-Dimethyheptane (L)
2-Methyloctane
ctc-1,2,4-Trimethylcyclohexane
3-Methyloctane
1,1,2-Trimethylcyclohexane
o-Xylene
1-Nonene
Isobutylcyclopentane
trans-3-Nonene
cis-3-Nonene
n-Nonane
trans-2-Nonene
Isopropylbenzene
cis-2-Nonene
Isopropylcyclohexane
2,2-Dimethyloctane
3,3-Dimethyloctane
n-Butylcyclopentane
2,3-Dimethyloctane
n-Propylbenzene
1-Methyl-3-Ethylbenzene
1-Methyl-4-Ethylbenzene
1,3,5-Trimethylbenzene
1-Methyl-2-Ethylbenzene
5-Methylnonane
3-Ethyloctane
2-Methylnonane
3-Methylnonane
Isobutylcyclohexane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates


Container 106 N 2nd from Sump (A3I1304-05) [DETAIL 4 OF 4]
Concentration (% m/m)
14
12
10
8
6
4
2
0
tert-Butylbenzene
1,2,4-Trimethylbenzene
1-Decene
t-1-Methyl-2-N-Propylcyclohexane
Isobutylbenzene
sec-Butylbenzene
n-Decane
1-Methyl-3-Isopropylbenzene
1-Methyl-4-Isopropylbenzene
1-Methyl-2-Isopropylbenze
1-Methyl-3-n-Propylbenzene
1-Methyl-4-n-Propylbenzene
n-Butylbenzene
1-Methyl-2-n-Propylbenzene
1,2-Diethylbenzene
1,3-Dimethyl-5-Ethylbenzene
1,4-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-4-Ethylbenzene
1,3-Dimethyl-2-Ethylbenzene
1,2-Dimethyl-3-Ethylbenzene
n-Undecane
t-1-Methyl-2(4-Methylphenyl)cyclopentane
1,2,4,5-Tetramethylbenzene
2-Methylbutylbenzene
1,2,3,5-Tetramethylbenzene
tert-1-Butyl-2-Methylbenzene
n-Pentylbenzene
Naphthalene
t-1-Butyl-3,5-Dimethybenzene
tert-1-Butyl-4-Ethylbenzene
n-Dodecane
1,3,5-Triethylbenzene
1,2,4-Triethylbenzene
n-Hexylbenzene
2-Methylnaphthalene
1-Methylnaphthalene
n-Tridecane
n-Tetradecane
n-Pentadecane
Paraffins
Isoparaffins
Aromatics
Naphthenes
Olefins
Oxygenates