

Village of Cuba Landfill Site

ALLEGANY COUNTY, NEW YORK

Periodic Review Report (2018-2019)

NYSDEC Site Number: 902012

Prepared for

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EXECUTIVE SUMMARY

The Cuba Landfill Site (the “Site”) is a 40-acre former waste disposal facility located on Jackson Hill Road in the Town of Cuba, Allegany County, New York. The Site is owned by the Village of Cuba and was operated by the Village of Cuba from the 1950s to the 1980s. The New York State Department of Environmental Conservation (NYSDEC) and the Village of Cuba entered into an Order on Consent to close the Cuba Landfill. This Order on Consent required the remedial parties, NYSDEC and the Village of Cuba, to investigate and remediate contaminated media at the Site.

During the Remedial Investigation (RI) conducted at the Site in 1999, waste material, soil, groundwater, air, leachate, and sediment samples were collected to characterize the nature and extent of contamination. Results of the Cuba Landfill RI indicated that Site waste included a source of contamination that presented a threat to the environment and that off-Site contaminant migration was occurring. Analytical results showed that the contaminants of concern, identified as volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs), were present in relatively low concentrations and were typical of unlined landfills that received domestic and industrial waste.

The Record of Decision, dated June 2000, authorized the selected remedy of the installation of a low permeability cap with passive gas venting, an up-gradient surface water diversion, a phytoremediation system for control of leachate, and long-term groundwater monitoring. A series of monitoring wells were installed at the Site during the remedial process as part of the long-term groundwater monitoring program. The monitoring of these wells, among other tasks, is summarized in this Periodic Review Report (PRR).

Operation, maintenance, and monitoring activities associated with the remedial action implementation are conducted at the Cuba Landfill as part of ongoing implementation of the Site Management Plan (SMP). These monitoring activities provide data to evaluate remedy performance, effectiveness, and protectiveness. As a component of the SMP, annual Site inspections are conducted in addition to groundwater, surface water, and landfill gas evaluation events.

Remedy performance monitoring data obtained during this reporting period indicate the remedies implemented continue to perform as expected, are effective, protective, and progressing toward the remedial action objectives during this reporting period. Chlorinated VOC (cVOC) exceedances occurred with respect to 6 New York Codes, Rules and Regulations (6 NYCRR) Part 703.5 Class GA Ambient Groundwater Quality Standards (Part 703.5 AWQS) at five (5) wells in May 2018. However, the data indicate that groundwater VOC concentrations have generally decreased since remedy implementation. Inorganic concentrations show reductions in constituent concentrations with minor fluctuation. With the exception of iron, manganese, and

sodium, inorganics do not exceed Part 703.5 AWQS. As indicated by the data, surface water quality does not appear to be impacted by surface water runoff from the Site.

In August 2018, three wells were sampled and analyzed for 1,4-dioxane and per/poly fluoroalkyl substances (PFAs) as requested by the NYSDEC in a letter dated June 5, 2018 (Appendix F); sampling was requested as part of New York State's Emerging Contaminant Program. 1,4-Dioxane was detected in exceedance of Part 703.5 AWQS in one (1) of the analyzed samples. It is noted there are no established guidance values for PFAs at the time of reporting.

1.0 PERIODIC REVIEW REPORT

This PRR was prepared by Lu Engineers, on behalf of the Village of Cuba, in accordance with the requirements set forth in NYSDEC Department of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines set forth by NYSDEC. The first PRR was required 14 months after the final completion of construction in May 2010. The reporting period for this PRR is from January 25, 2018 to January 25, 2019. The following items are included in this PRR:

- Identification, assessment, and certification of each EC/institutional controls (IC) required by the remedy for the Site.
- Results of the Site inspection and sampling events including applicable inspection forms and other records generated for the Site during the reporting period.
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions.
- Data summary tables of groundwater and surface water contaminants of concern. These include a presentation of past VOC data as part of an evaluation of contaminant concentration trends.
- Laboratory analytical results, and the required laboratory data deliverables for each sample collected during the reporting period have been and will continue to be submitted electronically in a NYSDEC-approved EQUIS format.
- A Site evaluation, which includes the following:
 - I. The compliance of the remedy with the requirements of the Site-specific ROD.
 - II. The operation and the effectiveness of each treatment unit, including identification of any needed repairs or modifications.
 - III. Any new conclusions or observations regarding Site contamination based on inspection or lab data generated during the monitoring events.
 - IV. Recommendations regarding any necessary changes to the remedy and/or SMP.
 - V. The overall performance and effectiveness of the remedy to date.

2.0 SITE OVERVIEW

2.1 INTRODUCTION

The Cuba Landfill is a 40-acre former waste disposal facility located in the Town of Cuba,

Allegany County, New York. The landfill Site is owned by the Village of Cuba and was operated by the Village of Cuba from the 1950s to the 1980s. The Site is bordered to the north by Deep Snow Road and a hay field, and to the west, east, and south by undeveloped wooded lands. The topography of the Site slopes steeply to the south. The landfill ground cover consists primarily of mowed grass. Storm water drainage trenches oriented north-south and lined with rip-rap exist on the western portion of the landfill cap. These swales drain to a storm water detention pond at the toe of the slope. An unnamed intermittent tributary of the north branch of Van Campen Creek closely parallels the eastern border. The boundaries of the Site are more fully described in the metes and bounds Site description that is a component of the NYSDEC's Declaration of Covenants and Restrictions. The Site is accessed via Jackson Hill Road and the seasonal Deep Snow Road.

The NYSDEC and the Village of Cuba entered into an Order on Consent (No. B9-461-94-09) to close the Cuba Landfill. This Order on Consent required the remedial parties, NYSDEC and the Village of Cuba, to investigate and remediate contaminated media at the Site. In 2013, the Village of Cuba purchased a 10-acre rectangular parcel of land that adjoins the Site to the immediate south, as illustrated on Figure 1 and Figure 2. This parcel is not considered part of the definition or boundary of the Site. Off-Site monitoring wells MW-7, MW-8, MW-10 and MW-10D are contained within the boundary of this 10-acre parcel.

2.2 BACKGROUND

Starting in the early 1950s, household, commercial, and industrial wastes were disposed of within the Cuba Landfill. The Village of Cuba acquired the Site in 1967 and operated it as an unpermitted municipal landfill. The facility was issued a sanitary landfill permit in 1979 by the NYSDEC and became inactive in approximately 1981. The landfill was inspected on a regular basis by NYSDEC until the Village completed an approved closure plan in 1987.

In 1994, results of Phase II Preliminary Site Assessment (PSA) were completed for the NYSDEC to determine if the Site qualified for the New York State Registry of Inactive Hazardous Waste Disposal Sites (IHWDS). Results of testing at the Site conducted by URS Consultants, Inc. indicated the presence of VOCs in Site groundwater and leachate and confirmed the disposal of hazardous waste including solvents, plating wastes, PCB capacitors, and paint sludges. Based on these findings and the confirmed disposal of hazardous waste including solvents, plating wastes, PCB capacitors, and paint sludges, the Site was reclassified from Class 2a to Class 2 (significant threat to public health or the environment; action required) in 1994.

During the RI conducted at the Site in 1999 and subsequent confirmatory sampling events, waste material/soil, groundwater, air, leachate, and sediment samples were collected to characterize the nature and extent of the contamination. The RI results indicated that the Site was a source of contamination and that there was migration of contaminants off-Site. Analytical testing results showed that contaminants of concern (VOCs and PCBs) were present in relatively low concentrations typical of unlined landfills that receive domestic and industrial waste. The following presents a summary of the RI activities and findings:

- Soil –Twelve (12) surface soil locations were sampled. Phenol, Aroclor 1260, and several metals including arsenic, beryllium, cobalt, copper, iron, nickel, selenium, and zinc were detected at concentrations above applicable standards, criteria, and guidelines (SCGs). Subsurface soil samples from two (2) locations did not contain concentrations of VOCs, semi-volatile organic compounds (SVOCs), pesticides, or PCBs greater than the SCGs.
- Upper Bedrock Groundwater – Predominantly impacted with VOCs in excess of applicable standards. Limited exceedances of SVOCs, pesticides, and metals were detected.
- Surface Water Sediment – No VOCs, pesticides, or PCBs were detected in any of the sediment samples analyzed. One (1) sampling location at the southwest corner of the property contained one (1) SVOC, phenol, and a few metals exceeding the SCGs. Both upgradient and downgradient samples from both tributaries contained similar metals concentrations.
- Groundwater Springs – Groundwater springs located downgradient and at various off-Site locations contained VOCs, endrin, Aroclor 1260, and a few metals were detected at concentrations greater than the SCGs.

In 2008, the NYSDEC issued a work authorization to EA to provide construction, administration, and inspection services at the Cuba Landfill Site. EA was also retained to provide inspection services during construction activities, and to prepare the Final Engineering Report (FER) for these activities. D'Virka and Bartilucci Consulting Engineers was the design engineer of record for the landfill closure. The NYSDEC awarded the landfill closure contract to Modern Environmental Group, Inc. (Modern) for the construction activities. The Site was remediated in accordance with the NYSDEC-approved remedial design dated February 2008. The overall goal of the remedial actions at the Site is protection of human health and the environment, and meeting relevant SCGs. Specific remedial action objectives are as follows:

- Eliminate, to the extent practicable, direct human or animal exposure to waste in the landfill.
- Eliminate, to the extent practicable, the migration of contaminants from the landfill to groundwater.
- Reduce, control, or eliminate, to the extent practicable, the generation of leachate within the landfill mass.
- Eliminate, to the extent practicable, ingestion of groundwater affected by the Site that does not meet 6 NYCRR 703.5 Class GA Ambient Water Quality Criteria.
- Eliminate, to the extent practicable, off-Site migration of groundwater that does not meet 6 NYCRR Part 703.5 Class GA Ambient Water Quality Criteria.

After completion of the remedial work as specified within the February 2008 Contract Documents (Contract D006905), some contamination remained in the subsurface at the Site. Engineering controls (ECs) were incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. In accordance with the New York State Solid Waste Management Facilities Regulations (6NYCRR Part 360-2.15[k][4]) and the Site-specific SMP, environmental monitoring sampling points have been, and continue to be maintained, monitored, and sampled to evaluate surface water and groundwater quality and assess potential residual impacts to the environment immediately surrounding the landfill to support eventual Site closure.

A chronology of the significant actions/events of the remedial program for the Site is presented in the following table.

CUBA LANDFILL PERIODIC REVIEW REPORT REMEDY IMPLEMENTATION CHRONOLOGY	
Significant Action/Event	Date
Phase I –PSA	October 1990
Phase II –PSA	January 1994
RI Report ⁽¹⁾	July 1999
Feasibility Study Report ⁽²⁾	December 1999
Record of Decision ⁽³⁾	June 2000
Remedial Design Work Plan ⁽⁴⁾	June 2001
Pre-Design Investigation Report	October 2003
Remedy Design Completion	February 2008
NYSDEC Design Approval	April 2008
Project Health and Safety Plan	April 2008
Remedy Implementation	September 2008
Substantial Completion	October 2009
NYSDEC Approval of Remedy Construction Completion (Final Completion)	May 2010
Site-Specific Quality Assurance Project Plan Addendum	January 2011
First Quarterly Report ⁽⁵⁾	April 2011
NYSDEC Site Management Plan Approval	August 2011
Second Quarterly Report ⁽⁵⁾	July 2011
Annual Report No. 1, May 2010 – July 2011 ⁽⁵⁾	September 2011
Declaration of Covenants and Restrictions	October 2011
Periodic Review Report ⁽⁵⁾	November 2011
Third Quarterly Report (July/August 2011 event) ⁽⁵⁾	December 2011
Fourth Quarterly Report (November 2011 event) ⁽⁵⁾	April 2012
Fifth Quarterly Report (February 2012 event) ⁽⁵⁾	June 2012

Sixth Inspection/Monitoring Report (July 2014 event, Lu Engineers)	July 2014
Seventh Inspection/Monitoring Report (November 2014 event, Lu Engineers)	November 2014
Eighth Inspection/Monitoring Report (June 2015 event, Lu Engineers)	June 2015
Ninth Inspection/Monitoring Report (October 2016 event, Lu Engineers)	October 2016
Tenth Inspection/Monitoring Report (March 2017 event, Lu Engineers)	March 2017
Eleventh Inspection/Monitoring Report (May 2018 event, Lu Engineers)	May 2018
NYSDEC Emerging Contaminant Sampling Event	August 2018

- (1) Dvirka and Bartilucci Consulting Engineers. 1999. Remedial Investigation Report. Cuba Municipal Waste Disposal Site (Registry No. 9-02-012), Village of Cuba, Alleghany County, New York. July.
- (2) Dvirka and Bartilucci Consulting Engineers. 1999. Feasibility Study Report, Cuba Municipal Waste Disposal Site (Registry No. 9-02-012), Village of Cuba, Alleghany County, New York. December.
- (3) New York State Department of Environmental Conservation. 2000. Record of Decision, Village of Cuba Municipal Waste Disposal Site, Village of Cuba, Alleghany County, Site Number 9-02-012. June.
- (4) Dvirka and Bartilucci Consulting Engineers. 2001. Remedial Design Work Plan, Cuba Municipal Waste Disposal Site (Registry No. 9-02-012), Village of Cuba, Alleghany County, New York. June.
- (5) Prepared by EA Science and Technology, an affiliate of EA Engineering, P.C.

3.0 REMEDY PERFORMANCE, EFFECTIVENESS, AND PROTECTIVENESS EVALUATION

Post-remedial groundwater sampling indicates that low-level residual groundwater contamination persists at the Site since completion of remedial work. Nine (9) post-remediation sampling events were conducted in accordance with and as outlined in the SMP in:

- January 2011
- November 2011
- July 2014
- November 2014
- June 2015
- October 2016
- March 2017
- May/August 2018

The results of the first three (3) quarterly monitoring/sampling/inspection events conducted by EA Science and Technology during preceding reporting periods are summarized in previously submitted quarterly sampling reports.

Table 2 (refer to attachments) illustrates VOC results trend for groundwater analytical results observed in the post-remediation sampling events. Table 3 illustrates inorganic parameter groundwater analytical results trend since July 2014. Figure 3 shows analytical exceedances and the groundwater contour for the sampling event documented in this report. Concentrations in groundwater samples were compared to the applicable 6 NYCRR Part 703.5 Class GA Ambient Groundwater Quality Standards. Analytical reports are provided in Appendix C.

Remedy monitoring data indicate that the Cuba Landfill remedies are functioning as intended. In particular, the monitoring data indicate that the remedies are making progress toward the remedial action objectives which are as follows:

- *Control the potential for leachate within the landfill to migrate to groundwater or surface water, by reducing leachate within the Site.* The remedy appears to be successfully reducing leachate volume and head through implementation of the Site cap and phytoremediation area. The cap is serving to reduce groundwater quality impacts as observed by the reduction in leachate indicator parameters.
- *Control the potential for direct contact with waste materials, leachate, or contaminated groundwater.* Direct contact is being prevented by the engineered landfill cap, land use restrictions, and Site access controls.
- *Provide for attainment of SCGs for groundwater quality, to the extent practicable.* Number of contaminants is fewer and concentrations are generally lower than previously observed data, thus contributing to attainment of SCGs to the degree feasible. Natural attenuation of VOCs is also likely occurring at the Site.
- *Eliminate the potential for future ingestion, inhalation of, or dermal contact with organic contaminants in groundwater.* In May 2018, one (1) down-gradient residential water supply was sampled for VOCs and TAL metals. Test results did not detect any exceedances above NYSDEC Class GA Ambient Water Quality Standards.

In addition, the Site inspections conducted as required by the SMP indicate the following:

- Landfill cap drainage is effective. Ponding generally has not been observed on the landfill cap and structures are in good working condition. It is noted minor ponding has been observed during the rainy season.
- The placement of large tree stumps on either side of the western access road appears to be inhibiting vehicular trespassing.
- Minor erosion has been observed on the eastern and western access roads on the steepest portions. A small area of exposed geotextile was observed on the landfill cap (refer to Appendix B, Site Photographs).
- Approximately 30% (eastern-most) of the willow trees, a component of the phytoremediation effort at the Site, appeared to have died (refer to Appendix B, Site Photographs).

The monitoring program has been and continues to be compliant with the approved SMP for the Cuba Landfill Site. The result of the monitoring program is discussed in Section 7.

The Site remedy does not rely on any mechanical long-term treatment systems, such as sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this PRR.

4.0 INSTITUTIONAL CONTROL/ENGINEERING CONTROL COMPLIANCE

The Cuba Landfill Site remedies involve the use of both ICs and ECs to protect public health and the environment. The IC/EC Plan is one (1) component of the SMP and is subject to revision by NYSDEC. ICs/ECs include the following:

Institutional Controls:

- Land Use Restriction
- Groundwater Use Restriction
- Excavation Work Plan
- Soil Vapor Intrusion Evaluation

Engineering Controls:

- Engineered Landfill Cap
- Passive Gas Vents
- Landfill Surface Drainage
- Leachate Phytoremediation
- Site Entrance Gates
- Access Road.

Each of the above listed controls is described in Table 5. Information in Table 5 includes a description of the objective of the control, how the performance of the control is monitored, and summarizes the current performance and status of each control. Based on the information in Table 5, each of the ICs and ECs at the Cuba Landfill Site remain in place and continue to be effective.

The required IC/EC certification has been completed as a component of this report and is included as Appendix E.

5.0 MONITORING PLAN COMPLIANCE

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, the soil cover system, and all affected Site media identified in the following table:

Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis

Groundwater Monitoring	Annual (rotating quarterly)	Groundwater	EPA Method 8260 VOCs; EPA Method 6010 TAL Metals
Surface Water Monitoring	Annual (rotating quarterly)	Surface Water	EPA Method 8260 VOCs; EPA Method 6010 TAL Metals
Landfill Gas Monitoring	Annual (rotating quarterly)	Organic Vapors	PID Screening
Cover System Monitoring	Annual (rotating quarterly)	Soil/Geotextile Cover System	Visual Inspection, determine applicable maintenance

*The frequency of events will be conducted as specified until otherwise approved by NYSDEC

Monitoring activities completed during this reporting period (2018) included the following:

- Annual groundwater sampling of nine (9) monitoring wells, and one (1) downgradient residential well located at 8345 Jackson Hill Road;
- Annual sampling of three (3) surface water locations (note: SW-2 was dry at the time of the sampling event);
- Sampling of three (3) monitoring wells for emerging contaminants 1,4-dioxane and PFAs;
- Annual landfill gas monitoring;
- Annual inspection of the Site cover system

The monitoring locations, analytical testing requirements and inspection protocols for each monitoring/sampling/inspection event are outlined in the approved SMP. Site wells were sampled on May 8, 2018 using sampling methods and procedures outlined in the SMP. It should be noted that due to seasonally low groundwater levels, the wells were starting to go dry during purging (as noted in the groundwater monitoring logs). Therefore, one well volume was selected to be purged to allow for sampling to occur. Groundwater quality measurements including temperature, turbidity, pH, conductivity and oxidation reduction potential (ORP) were collected during the purging process at each well. Purge water from each well was released to the ground surface near the well. At each well, samples were collected for analysis of VOCs and TAL metals. Samples were submitted to Alpha Analytical, Inc., a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) - certified laboratory located in Rochester, New York.

Three (3) monitoring wells were sampled on August 7, 2018 as part of New York State's emerging contaminant program. The sampled wells were approved by NYSDEC and were analyzed for 1,4-dioxane and PFAs. Samples were collected in accordance with NYSDEC *"Collection of Groundwater Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) for Monitoring Wells Sample Protocol"*. Samples were submitted to TestAmerica Laboratories, Inc., a NYSDOH ELAP certified laboratory located in Buffalo, New York.

Groundwater sampling logs for both sampling events are included as Appendix A of this report.

6.0 MONITORING RESULTS

6.1 GROUNDWATER DATA

The following constituents were detected in exceedance of 6 NYCRR Part 703.5 Class GA Groundwater Standards for the reporting period:

Volatile Organics

- 1,1,1-trichloroethane (1,1,1-TCA)
- 1,1-dichloroethane (1,1-DCA)
- chloroethane
- cis-1,2-dichloroethene (cis-1,2-DCE)
- trichloroethene (TCE)
- 1,4-dioxane

Metals

- Iron
- Manganese
- Sodium

The following provides a comprehensive summary of May 2018 Findings:

- No cVOCs were detected at the upgradient well, MW-1D, consistent with previous sampling events;
- Several cVOC exceedances were detected at MW-4, however, constituent concentrations indicate a declining trend with respect to previous sampling rounds. Site. Previously detected exceedances of TCE were not observed in the May 2018 sampling round;
- At MW-07, cVOC concentrations have slightly declined with respect to TCE and 111-TCE since November 2011, as indicated by Table 2. Reduced concentrations of TCE and the presence of daughter products (below Part 703.5 AWQS) suggest on-going reductive dechlorination;
- cVOC concentrations increased with respect to each parameter detected at MW-08;
- MW-11 indicated elevated concentrations in three (3) cVOC constituents: cis-1,2-DCE, 1,1-DCA, and 1,1,1-TCE, consistent with the March 2017 sampling round;
- Exceedances of cis-1,2-DCE, and tetrachloroethene (PCE) observed in March 2017 at MW-13 were not detected in this round of sampling;
- Upgradient well, MW-9, and downgradient well, MW-3 (dry during the March 2017) were not sampled and no parameters were obtained due to the low volume. MW-1S was also not sampled due to a rusted shut lock; a replacement lock will be installed;
- No cVOCs were detected in exceedance of Part 703.5 AWQS in the furthest down-gradient overburden and bedrock monitoring well, MW-10. Adjacent monitoring

- well, MW-10D, indicated concentrations of TCE below Part 703.5 AWQS;
- No cVOC concentrations were detected in MW-12.

Concentrations of iron, manganese, and/or sodium, were detected in exceedance of Part 703.5 AWQS at MW-4, MW-7, MW-8, MW-10D, MW-11, MW-12, and MW-13 as summarized in Table 3.

Previous Part 703.5 AWQS lead exceedances at MW-12 and MW-1D were not observed in May 2018 sample results. Previous copper and barium exceedances in MW-1D and MW-13 respectively, were also not observed in May 2018.

No Part 703.5 AWQS analytical exceedances occurred in the sample from the residential well located at 8345 Jackson Hill Road. A previous sampling event in October 2016 indicated an elevated concentration of lead at this residential well. However, the October 2016 sample was obtained from the hose bib, which may have accounted for the elevated concentration of lead in the sample.

The following provides a comprehensive summary of August 2018 Findings:

- 1,4-dioxane concentrations were detected in exceedance of 6 NYCRR Part 703.5 at MW-11
- PFAs were detected in all three (3) samples, however, no standard or guidance value exist at the time of reporting.

6.2 SURFACE WATER DATA

SW-4 exhibited an iron exceedance consistent with previous sampling rounds. Previously detected iron exceedances at SW-3 were not observed during the May 2018 sampling round.

6.3 LEACHATE INDICATOR DATA

Leachate indicators, such as total organic carbon (TOC) and biochemical oxygen demand (BOD), help determine the extent and magnitude of total leachate impacts throughout the landfill. Table 3 presents the most recent leachate indicator data, which was collected in July 2014.

Analytical results associated with unfiltered groundwater samples collected as part of the post-remedial sampling events in July/August 2011, November 2011, February 2012 were submitted for NYSDEC Part 360 2.11 (d) routine leachate indicator analysis. There were no exceedances of Part 703.5 AWQS values in samples collected in July/August 2011. Overburden monitoring well MW-3 exceeded the applicable NYSDEC AWQS for phenolics in November 2011. Surface water sample results from sample points SW-03 and SW-04 exceeded the applicable NYSDEC AWQS for phenolics in February 2013.

In July 2014, groundwater and surface water samples were analyzed for NYSDEC Part 360 2.11 (d) baseline leachate indicator analysis. Groundwater and surface water samples collected in

July 2014 did not exceed the NYSDEC AWQS for leachate indicator parameters. Leachate indicators, other than TAL metals, have not been collected since 2014.

6.4 LANDFILL GAS MONITORING DATA

The landfill gas vents were monitored during the May 2018 sampling event for VOCs and explosivity. Refer to Figure 2 for gas vent locations. No elevated readings in the vents were found during the May 2018 sampling event and Site-wide inspection, as documented in Appendix D.

6.5. SITE INSPECTIONS

In May 2018, the landfill cap grades and swales were in good condition. The vegetated cap system appeared to be limiting the amount of surface water infiltration through buried waste and reducing the impact on groundwater quality as determined by water quality parameters. A small patch of exposed green geotextile was observed on the Site cap as indicated in Appendix B, Site Photographs. A copy of the Site-wide inspection form is included as Appendix D of this report.

6.6 RESULTS SUMMARY

In general, the remedy performance monitoring data presented above indicate that the remedies implemented are performing as expected, are effective and protective, and are progressing towards the remedial action objectives. cVOCs are the primary contaminants of concern at the Site. Groundwater cVOC concentrations have generally decreased over time, but have fluctuated since 2011. The landfill cap is serving to reduce groundwater impacts as determined by previous leachate indicator parameter concentrations. The data also indicate that water quality does not appear to have been impacted from surface water runoff from the Site. These findings demonstrate progress towards attaining the remediation goals set forth in the controlling documents and the Record of Decision.

7.0 OVERALL CONCLUSIONS AND RECOMMENDATIONS

7.1 COMPLIANCE WITH SITE MANAGEMENT PLAN

The controlling document for the Site is the approved SMP. The implementation of and compliance with the requirements specified in the SMP have been met during the reporting period of this PRR. The ROD for the Site requires groundwater use restrictions. NYSDEC placed a Declaration of Covenants and Restrictions on file at the Allegany County Clerk's office that restricts groundwater use in the area around the Site.

7.2 PERFORMANCE AND EFFECTIVENESS OF THE REMEDIES

Overall, the remedy performance monitoring data collected during this reporting period indicate that the remedies implemented for both of the operable units are performing as expected, are effective and protective. The landfill cap is serving to reduce groundwater impacts as determined by overall declining leachate indicator parameter concentrations. Landfill gas is typical and not impacting resources. It appears that stream and tributary water quality has not been impacted from surface water discharges from the Site. These factors demonstrate progress towards attaining the remediation goals set forth in the controlling documents and the ROD.

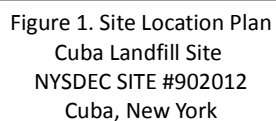
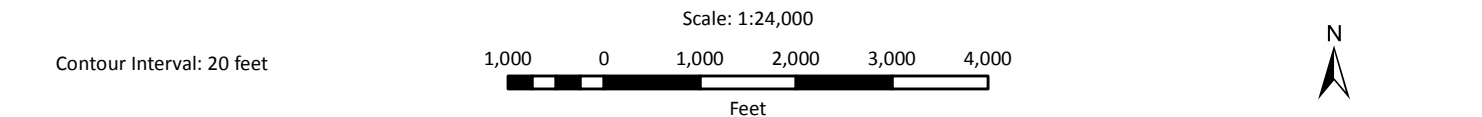
The following repairs are recommended for Site maintenance:

- Remove dead willow trees and re-plant with new willow saplings;
- Repair the monitoring well at MW-1S which has upheaved (refer to Appendix B Site Photographs) and replace rusted lock;
- If determined necessary, repair the exposed green geotextile on the Site cap.

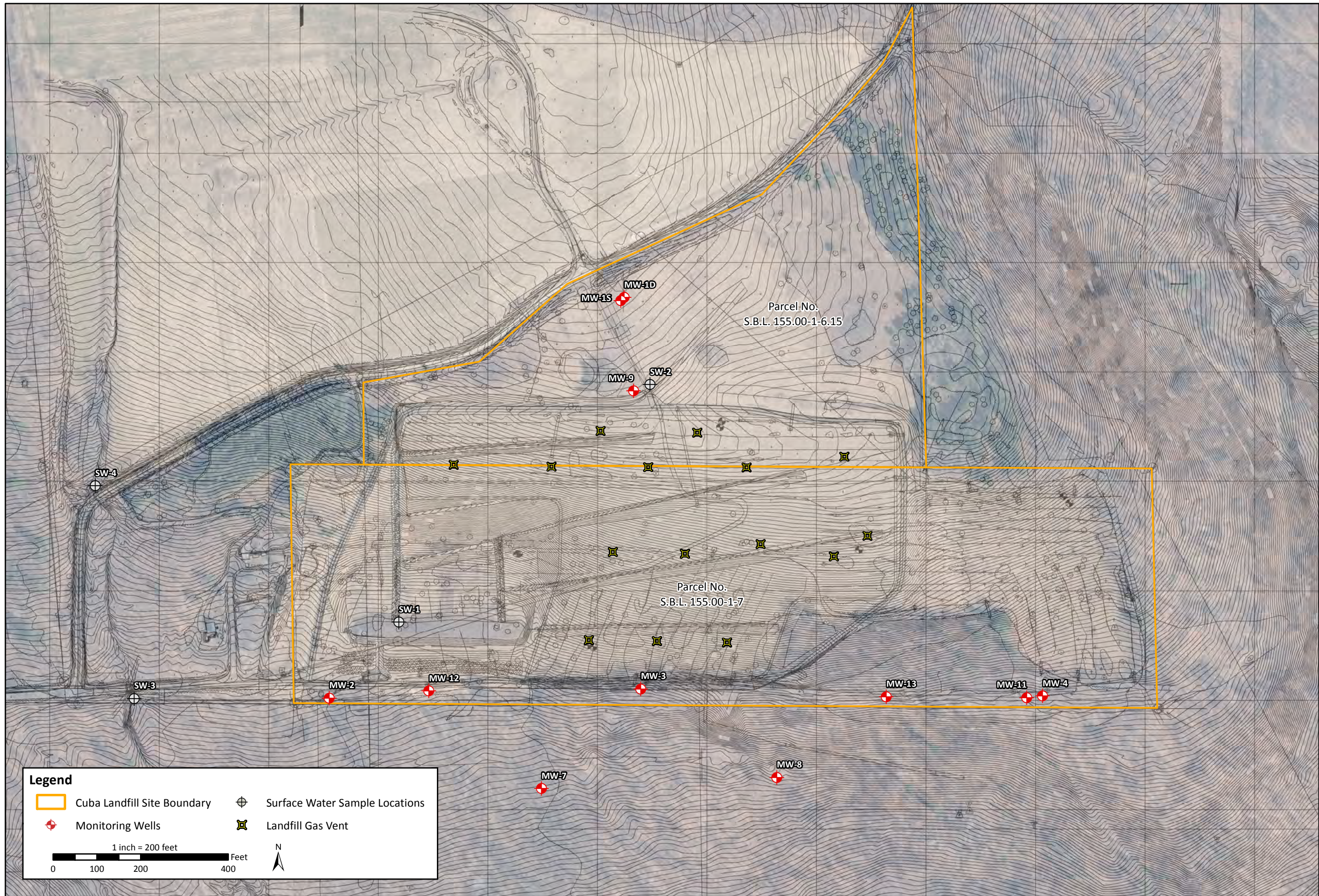
7.3 FUTURE SAMPLING SCHEDULE AND PERIODIC REVIEW REPORT SUBMITTALS

Based on the analytical data generated during this reporting period, it is evident that cVOCs are the primary contaminants of concern at the Site. The trend of VOC concentrations suggest that degradation is occurring. Lu Engineers recommends that the overburden and bedrock monitoring wells, and surface waters included in the SMP monitoring program be sampled annually for VOCs and TAL metals, on a rotating quarterly basis. Lu Engineers will perform the next sampling event during the third quarter of 2019.

It is recommended that the next PRR be submitted approximately one (1) year from submittal of this PRR. A final determination of the submittal schedule for future Site reporting requirements will be determined by the NYSDEC.

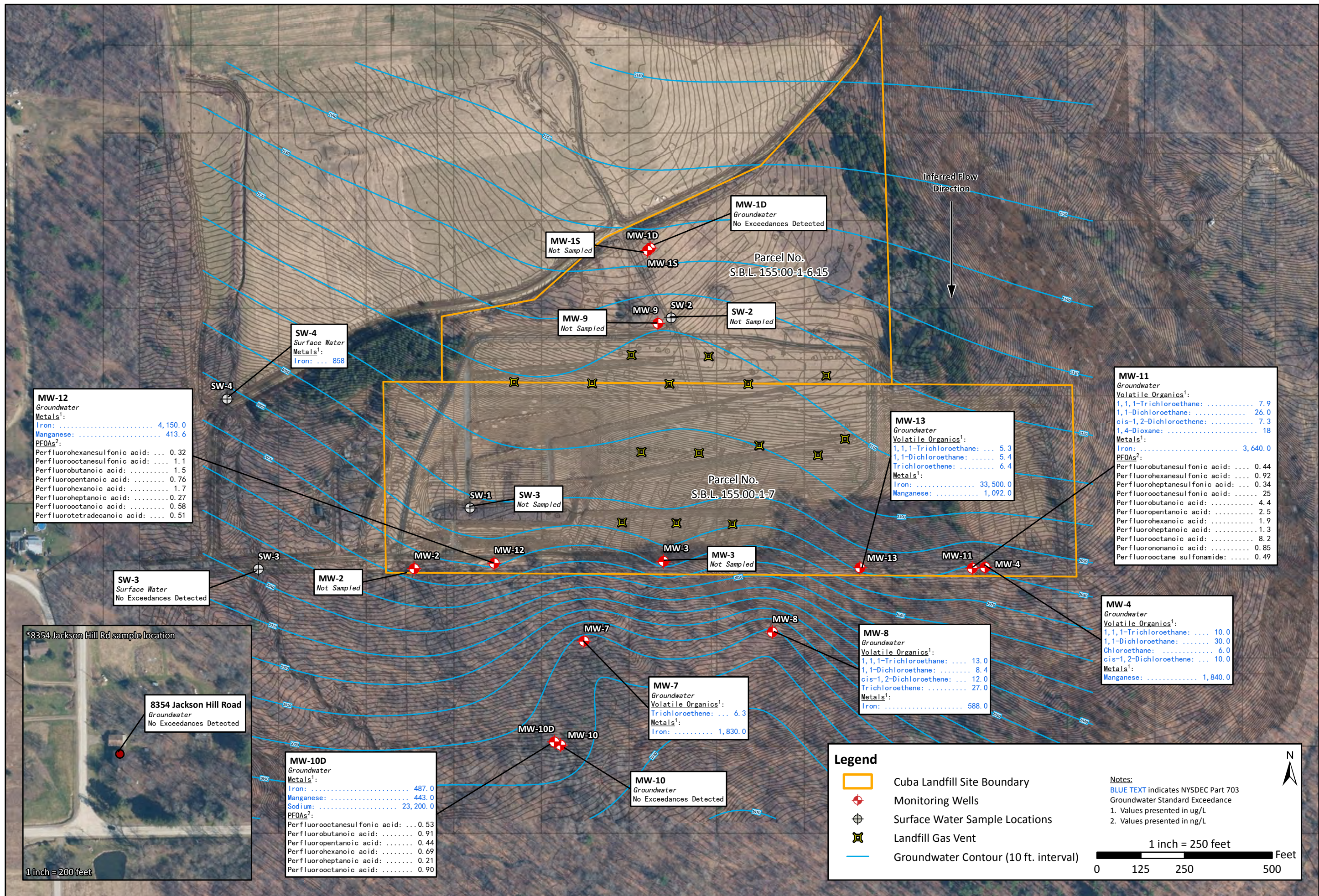


DATE: February 2019
PROJECT #: 50191-01
DRAWN/CHECKED: BGS/GLA
DATA SOURCE: ESRI Online Basemap



DATE: February 2019
Project Number: 50191-01
DRAWN/CHECKED: BGS/GLA
DATA SOURCE:
ESRI Online Basemap; Client Data

Figure 2. Site Layout Plan
Cuba Landfill Site
NYSDEC Site #902012
Cuba, New York



**Village of Cuba Landfill Site
NYSDEC Site #902012
Periodic Review Report (2018/2019)**

Table 1 - Volatile Organic Compounds Detected in Groundwater & Surface Water (May 2018)

Detected Parameter List USEPA Method 8260B	NYSDEC Ambient Water Quality Standard Class GA	Sample ID	8354 Jackson	MW-1S	MW-1D	MW-3	MW-4	MW-7	MW-8	MW-9	MW-10	MW-10D
		Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
		Sample Date	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018
1,1,1-Trichloroethane	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	10	4.4	13.0	NS	< 5.0 U	< 5.0 U
1,1-Dichloroethane	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	30	1.3 J	8.4	NS	< 5.0 U	< 5.0 U
1,1-Dichloroethene	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	3.3	0.62	1.30	NS	< 5.0 U	< 5.0 U
1,2-Dichlorobenzene	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	< 5.0 U	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U
Acetone	50*	µg/L	< 10.0 U	NS	< 10.0 U	NS	< 10.0 U	< 5.0 U	< 10.0 U	NS	< 10.0 U	5.70
Chloroethane	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	6.0	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U
cis-1,2-Dichloroethene	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	10	2.8	12.0	NS	< 5.0 U	< 5.0 U
1,2-Dichloroethane	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	0.17 J	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U
Tetrachloroethene	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	< 5.0 U	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U
Trichloroethene	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	4.3	6.3	27.0	NS	< 5.0 U	0.41 J
Vinyl chloride	5(s)	µg/L	< 5.0 U	NS	< 5.0 U	NS	1.0	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U

Detected Parameter List USEPA Method 8260B	NYSDEC Ambient Water Quality Standard Class GA	Sample ID	MW-11	MW-12	MW-13	SW-01	SW-02	SW-03	SW-04	Field-DUP
		Sample Type	Groundwater	Groundwater	Groundwater	Surfacewater	Surfacewater	Surfacewater	Surfacewater	Groundwater
		Sample Date	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018
1,1,1-Trichloroethane	5(s)	µg/L	7.9	< 5.0 U	5.3	< 5.0 U	NS	< 5.0 U	< 5.0 U	5.3
1,1-Dichloroethane	5(s)	µg/L	26	< 5.0 U	5.4	< 5.0 U	NS	< 5.0 U	< 5.0 U	5.4
1,1-Dichloroethene	5(s)	µg/L	2.1	< 5.0 U	0.43 J	< 5.0 U	NS	< 5.0 U	< 5.0 U	0.41 J
1,2-Dichlorobenzene	5(s)	µg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NS	< 5.0 U	0.92 J	< 5.0 U
Acetone	50*	µg/L	< 10.0 U	< 5.0 U	< 10.0 U	< 10.0 U	NS	< 10.0 U	3.10 J	< 10.0 U
Chloroethane	5(s)	µg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U	< 5.0 U
cis-1,2-Dichloroethene	5(s)	µg/L	7.3	< 5.0 U	4.4	< 5.0 U	NS	< 5.0 U	< 5.0 U	4.6
1,2-Dichloroethane	5(s)	µg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U	< 5.0 U
Tetrachloroethene	5(s)	µg/L	1.4	< 5.0 U	4.5	< 5.0 U	NS	< 5.0 U	< 5.0 U	4.5
Trichloroethene	5(s)	µg/L	4.5	0.28 J	6.4	< 5.0 U	NS	< 5.0 U	< 5.0 U	6.2
Vinyl chloride	5(s)	µg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	NS	< 5.0 U	< 5.0 U	< 5.0 U

USEPA = U.S. Environmental Protection Agency

NYDEC = New York State Department of Environmental Conservation

--- = indicates no applicable standard.

µg/L = micrograms per liter.

U = Not detected at the Practical Quantitation Limit. Sample quantitation limits shown as <_.

NS = No sample collected.

Exceeds 6 NYCRR Part 703.5 Class GA Ambient Groundwater Standard or Guidance Value

Ambient Water Quality Standards and Guidance Values from Division of Water and Technical and Operational Guidance Series (TOGS) 1.1.1, August 1999.

* = NYSDEC Part 703.5 Guidance Value (no standard)

J=Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses.

**Village of Cuba Landfill Site
NYSDEC Site #902012
Periodic Review Report (2018/2019)**

Table 2 - VOC Groundwater Results Trend Analysis

[illegible]

~ parameter detected above NYS Ambient Groundwater Standard or applicable NYSDEC Guidance Value

ND - Not detected above reporting limit

NA - Not Available

1 - Results presentend in ug/L or parts per billion (ppb)

2 - NYS Ambient Groundwater Standards (6 NYCRR Part 703.5)

* - NYSDEC Guidance Value (TOGS 1.1.1)

Table 2 - VOC Groundwater Results Trend Analysis

[illegible]

~ parameter detected above NYS Ambient Groundwater Standard or applicable NYSDEC Guidance Value

ND - Not detected above reporting limit

NS - No sample collected

1 - Results presentend in ug/L or parts per billion (ppb)

2 - NYS Ambient Groundwater Standards (6 NYCRR Part 703.5)

* - NYSDEC Guidance Value (TOGS 1.1.1)

NOTE: Sample results are illustrated for all available data. Not all wells were sampled during each sampling event presented in this table.

Village of Cuba Landfill Site
NYSDEC Site #902012
Periodic Review Report (2018/2019)

Table 3 - Baseline Leachate Indicator & Inorganic Parameters Detected in Groundwater & Surface Water

Baseline Parameter List	USEPA Method	WYSDC Ambient Water Quality Standard Class GA	Sample ID Type Sample Date	MW-15				MW-1D				MW-3				MW-4				MW-7				MW-8				MW-10									
				Water				Water				Water				Water				Water				Water				Water									
				7/14/2014	10/24/2016	3/23/2017	5/9/2018	7/14/2014	10/24/2016	3/23/2017	5/9/2018	7/14/2014	10/24/2016	3/23/2017	5/9/2018	7/15/2014	10/24/2016	3/23/2017	5/9/2018	7/15/2014	10/24/2016	3/23/2017	5/9/2018	7/15/2014	10/24/2016	3/23/2017	5/9/2018	7/14/2014	10/24/2016	3/23/2017	5/9/2018	7/15/2014	10/24/2016	3/23/2017	5/9/2018		
Leachate Indicators																																					
Alkalinity, as CaCO3	SM 2320 B	---	mg/L	70.3	NS	NS	NS	75.7	NS	NS	NS	NS	NS	156	NA	NA	NA	177	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Ammonia (as N)	E350.1	2(s)	mg/L	0.123	NS	NS	NS	<0.050	NS	NS	NS	NS	NS	0.444	NA	NA	NA	<0.050	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Biochemical oxygen demand (BOD5)	SM5210B	---	mg/L	4.5	NS	NS	NS	<2.0	NS	NS	NS	NS	NS	9.2	NA	NA	NA	<2.0	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Bromide	300	2(g)	mg/L	<1.0	NS	NS	NS	<1.0	NS	NS	NS	NS	NS	<1.0	NA	NA	NA	<1.0	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Chemical Oxygen Demand	E410.4	---	mg/L	<5.0	NS	NS	NS	<5.0	NS	NS	NS	NS	NS	22.1	NA	NA	NA	<5.0	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Chloride	300	250(s)	mg/L	<2.0	NS	NS	NS	9.8	NS	NS	NS	NS	NS	2.1	NA	NA	NA	24.5	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Color	SM2120B	---	color units	32	NS	NS	NS	18	NS	NS	NS	NS	NS	13	NA	NA	NA	14	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Hardness, Calcium/Magnesium (as CaCO3)	M2140B	---	mg/L	86.8	NS	NS	NS	86.1	NS	NS	NS	NS	NS	169	NA	NA	NA	241	NA	NA	NA	124	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Kjeldahl Nitrogen - Total (as N)	E351.2	---	mg/L	0.6	NS	NS	NS	0.4	NS	NS	NS	NS	NS	0.67	NA	NA	NA	0.71	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Nitrate (as N)	300	10(s)	mg/L	<1.0	NS	NS	NS	<1.0	NS	NS	NS	NS	NS	<1.0	NA	NA	NA	<1.0	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Organic carbon-Total (TOC)	SM5310B	---	mg/L	1	NS	NS	NS	1.7	NS	NS	NS	NS	NS	7.8	NA	NA	NA	1.2	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Phenolics, Total Recoverable	420.4	0.001(s)	mg/L	<0.0050	NS	NS	NS	<0.0050	NS	NS	NS	NS	NS	<0.0050	NA	NA	NA	<0.0050	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Residue filterable (TDS)	SM2540C	---	mg/L	111	NS	NS	NS	125	NS	NS	NS	NS	NS	168	NA	NA	NA	277	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Sulfate (as SO4)	300	250(s)	mg/L	9.1	NS	NS	NS	10.8	NS	NS	NS	NS	NS	8.3	NA	NA	NA	23	NA	NA	NA	NS	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA
Inorganic Parameters																																					
Aluminum	SW6010C	---	µg/L	14600	NS	13400	NS	5180	NS	28700	1120	NS	NS	NS	709	740	37.7	12.2	32900	NA	4719	1310	6800	17600	17900	288	NS	NS	NS	NS	NS	NS	3080	1500	100		
Antimony	SW6010C	3 (g)	µg/L	<60.0	NS	1.61	NS	<60.0	NS	0.69 J	<60.0	<60.0	<60.0	<60.0	<60.0	<60.0	<60.0	<60.0	0.68 J	57.1	<60.0	<60.0	<60.0	<60.0	<60.0	47.1	NS	NS	NS	NS	NS	NS	<60.0	9.56 J	46.1		
Arsenic	SW6010C	25 (s)	µg/L	<10	NS	7.79	NS	<10	NS	4.25	0.28 J	<10	<10	<10	<10	<10	<10	<10	17.5	NA	3.31	0.85	<10	<10	8.7	30 J	NS	NS	NS	NS	NS	NS	<10	2.7	1.11		
Astrium	SW6010C	1000 (g)	µg/L	159	NS	216.2	NS	30.6	NS	184.8	7.72	NS	NS	NS	20.7	34	12.72	14.57	277	NA	88.04	59.85	51.1	158	311.2	48.49	NS	NS	NS	NS	NS	NS	941	53.01	16.98		
Beryllium	SW6010C	3 (g)	µg/L	<3	NS	0.83	NS	<3	NS	1.6	<3	<3	<3	<3	<3	<3	<3	<3	0.37 J	29.1	<3	<3	<3	1.76	<3	NS	NS	NS	NS	NS	NS	<3	<3	<3	<3		
Boron	SW6010C	1000 (s)	µg/L	<200	NS	NA	NS	<200	NS	NA	NA	NS	NS	NS	<200	<200	NA	NA	<200	NA	NA	<200	<200	NA	NA	NS	NS	NS	NS	NS	NS	<200	<200	NA	NA	NA	
Cadmium	SW6010C	5	µg/L	<5	NS	0.06 J	NS	<5	NS	1.19	<5	<5	0.13 J	<5	<5	<5	<5	<5	1.08	0.56	<5	<5	<5	0.4	<5	<5	NS	NS	NS	NS	NS	NS	<5	0.35	0.2		
Calcium	SW6010C	---	µg/L	22200	NS	27800	NS	18700	NS	26900	<2100	NS	NS	NS	48900	30700	31000	31100	46800	NA	50200	53200	28000	33100	46000	39400	NS	NS	NS	NS	NS	NS	117000	112000	46000		
Chromium	SW6010C	50 (s)	µg/L	19.9	NS	21.47	NS	<10	NS	43.25	0.29 J	NS	NS	NS	<10	<10	<10	.25 J	47.3	NA	13.55	1.78	<10	23	24.73	.65 J	NS	NS	NS	NS	NS	NS	<10	9.61	3.15		
Chromium, Hexavalent	SW6010C	50 (s)	µg/L	<0.010	NS	NA	NS	<0.010	NS	NA	NA	NS	NS	NS	<0.010	<0.010	<0.010	<0.010	<0.010	NA	NA	<0.010	NA	NA	NA	NA	NS	NS	NS	NS	NS	NS	<0.010	NA	NA	NA	
Cobalt	SW6010C	---	µg/L	<50	NS	14.5	NS	<50	NS	27.42	<50	NS	NS	NS	<50	<50	<50	<50	<50	NA	5.36	0.77	<50	<50	31.38	29.1 J	NS	NS	NS	NS	NS	NS	<50	1.44	25.1		
Copper	SW6010C	200 (s)	µg/L	<20.0	NS	24.27	NS	95.5	NS	689.5	<20.0	NS	NS	NS	<20.0	<20.0	0.95 J	1.39	4990	NA	114.8	27.47	<20.0	53	203.8	2.33 J	NS	NS	NS	NS	NS	NS	<20.0	6.89	3.5		
Cyanide, Total	SW6010C	200 (s)	µg/L	<0.010	NS	NA	NS	<0.010	NS	NA	NA	NS	NS	NS	<0.010	NS	NA	<0.010	NA	NA	<0.010	NA	NA	NS	NA	NA	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	
Iron	SW6010C	300 (s)	µg/L	18300	NS	30800	NS	3410	NS	44100	128	NS	NS	NS	1050	1230	67.3	73	40700	NA	10200	1830	5780	20900	34400	388	NS	NS	NS	NS	NS	NS	3920	2730	175		
Lead	SW6010C	25	µg/L	7.4	NS	15.53	NS	6.8	NS	268	2.99	NS	NS	NS	<5	<5	<5	<5	499	NA	21.57	6.84	<5	<5	28.11	.40 J	NS	NS	NS	NS	NS	NS	<5	2.05	1.8		
Magnesium	SW6010C	300 (s)	µg/L	7340	NS	8700	NS	9600	NS	17000	9280	NS	NS	NS	11500	8850	7170	786	30000	NA	13300	24000	13400	14200	20100	12000	NS	NS	NS	NS	NS	NS	3300	37200	14900		
Manganese	SW6010C	300 (s)	µg/L	50.8	NS	98.3	NS	82.9	NS	1095	9.48	NS	NS	NS	1800	1415	1840	66.8	961	NA	345.2	33.3	12.1	8.82	NS	NS	NS	NS	NS	NS	NS	NS	171.9	122	171.9		
Nickel	SW4747A	0.7 (g)	µg/L	<0.200	NS	<0.200	NS	<0.200	NS	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	NA	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	
Nickel	SW6010C	---	µg/L	<40.0	NS	29.68	NS	<40.0	NS	62.44	<40.0	NS	NS	NS	<40.0	<40.0	5.04	3.14	77.3	NA	11.66	1.92 J	<40.0	<40.0	43.56	<7.1 J	NS	NS	NS	NS	NS	NS	<40.0	350	<40.0		
Potassium	SW6010C	100 (s)	µg/L	5970	NS	3140	NS	2780	NS	5470	1160	NS	NS	NS	3800	2500	2250	2280	10600	NA	2940	2240	3390	6500	4520	1470	NS	NS	NS	NS	NS	NS	14800	4130	5570		
Selenium	SW6010C	10 (g)	µg/L	<10.0	NS	1.93 J	NS	<10.0	NS	3.61 J	<10.0	NS	NS	NS	<10.0	<10.0	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	<10.0	5.45	<10.0	NS	NS	NS	NS	NS	NS	<10.0	<10.0	<10.0		
Silver	SW6010C	50 (s)	µg/L	<10.0	NS	<10.0	NS	<10.0	NS	1.51	<10.0	NS	NS	NS	<10.0	<10.0	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NS	NS	NS	NS	NS	NS	<10.0	<10.0	<10.0		
Sodium	SW6010C	20,000(s)	µg/L	2200	NS	1840	NS	3480	3980	NS	NS	NS	NS	NS	4340	4000	2850	3120	6170	NA	5940	6760	4520	5000	4500	5050	NS	NS	NS	NS	NS	NS	28300	17900	16200		
Vanadium	SW6010C	---	µg/L	<50	NS	14.85	NS	<50.0	NS	34.12	<50.0	NS	NS	NS	<50.0	<50.0	<50.0	<50.0	<50.0	NA	6.89	<50.0	<50.0	<50.0	24.61	<50.0	NS	NS	NS	NS	NS	NS	<50.0	4.96	<50.0		
Zinc	SW6010C	2,000 (g)	µg/L	55.3	NS	75.59	NS	37.7	NS	280.7	<20	NS	NS	NS	<20.0	<20.0	8.01 J	6.07 J	584	NA	49.47	14.61	<20.0	51	13.61	<20.0	NS	NS	NS	NS	NS	NS	23	20.48	5.40 J		

Table 3 - Baseline Leachate Indicator & Inorganic Parameters Detected in Groundwater & Surface Water

[illegible]

Village of Cuba Landfill Site
NYSDEC Site #902012
Periodic Review Report (2018/2019)

Table 4: 1,4-Dioxane and Perfluorinated Compounds Detected in Groundwater

Baseline Parameter List	USEPA Method	NYS Groundwater Standard (AWQS) ³	MW-10D	MW-11	MW-12	Field Duplicate	Equip. Blank
			8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018
Volatile Organics¹							
1,4-Dioxane	8270D SIM	5*	0.30	18 E	ND	19 E	ND
Perfluorinated Compounds²							
Perfluorobutanesulfonic acid (PFBS)	EPA 537	--	ND	0.44 J	ND	0.44 J	ND
Perfluorohexanesulfonic acid (PFHxS)	EPA 537	--	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)	EPA 537	--	ND	0.34 J	ND	0.36 J	ND
Perfluorooctanesulfonic acid (PFOS)	EPA 537	--	0.53 J	25	1.1 J	30	ND
Perfluorodecane sulfonic acid	EPA 537	--	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	EPA 537	--	0.91 J	4.4	1.5 J	5.4	ND
Perfluoropentanoic acid (PFPeA)	EPA 537	--	0.44 J	2.5	0.76 J	1.9	ND
Perfluorohexanoic acid (PFHxA)	EPA 537	--	0.69 J	1.9	1.7	2.3	ND
Perfluoroheptanoic acid (PFHpA)	EPA 537	--	0.21 J	1.3 J	0.27 J	1.5 J	ND
Perfluorooctanoic acid (PFOA)	EPA 537	--	0.90 J	8.2	0.89 J	7.7	ND
Perfluorononanoic acid (PFNA)	EPA 537	--	ND	0.85 J	ND	0.81 J	ND
Perfluorodecanoic acid (PFDA)	EPA 537	--	ND	ND	0.58 J	0.37 J	ND
Perfluoroundecanoic acid	EPA 537	--	ND	ND	ND	ND	ND
Perfluorododecanoic acid	EPA 537	--	ND	ND	ND	ND	ND
Perfluorotridecanoic acid	EPA 537	--	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid	EPA 537	--	ND	ND	0.51 J	ND	ND
6:2 Fluorotelomer sulfonate	EPA 537	--	ND	ND	ND	2.6 J	ND
8:2 Fluorotelomer sulfonate	EPA 537	--	ND	ND	ND	ND	ND
Perfluorooctanesulfonate	EPA 537	--	ND	ND	ND	ND	ND
Perfluorooctane sulfonamide	EPA 537	--	ND	0.49 J	ND	0.49 J	ND
N-methyl perfluorooctanesulfonamidoacetic acid	EPA 537	--	ND	ND	ND	ND	ND
N-ethyl perfluorooctanesulfonamidoacetic acid	EPA 537	--	ND	ND	ND	ND	ND

Notes:

- 1- Results shown in micrograms per liter (ug/L)
- 2- Results shown in nanograms per liter (ng/L)
- 3- NYS Class GA Groundwater Standards (6 NYCRR Part 703.5)
- *- NYSDEC Guidance Value

ND = No detection

J = Estimated value. The Target analyte concentration is below the quantitation limit

E = result exceeded calibration range

Exceeds 6 NYCRR Part 703.5 Class GA Ambient Groundwater Standard or Guidance Value

Cuba Landfill Site
NYSDEC Site #902012
Periodic Review Report (2018/2019)

Table 5. Institutional and Engineering Controls Compliance Summary

Control	Description	Objective	Monitoring	Performance/Status
Institutional Controls				
Land Use Restriction	Restricts the use of the landfill property.	Controls potential for direct contact with waste materials, leachate, and contaminated groundwater.	NA	Use of the property has been restricted through the recorded Declaration of Covenants and Restrictions with Allegany County.
Groundwater Use Restriction	Restricts the use of groundwater.	Controls potential for direct contact with contaminated groundwater.	NA	Groundwater use restriction in effect as part of the Declaration of Covenants and Restrictions with Allegany County for the Cuba Landfill Site area groundwater.
Excavation Work Plan	Describes procedures to be used to manage excavated contaminated soil and /or waste from the Site (sampling, analysis, disposal requirements).	To provide for appropriate handling, management, and disposal of contaminated soil and/or waste.	NA	Excavation plan to be implemented in accordance with approved Site management plan. To date, no excavation of contaminated soil or waste has occurred during the reporting period.
Soil Vapor Intrusion Evaluation	Determines the potential for soil vapor intrusion and if mitigation measures, such as creating a vapor barrier or a passive sub-slab depressurization system, are necessary.	Eliminate potential exposure to vapors in the proposed structure.	NA	The potential for vapor intrusion must be evaluated for any buildings to be developed on or around the Site, and any potential impacts that are identified must be monitored or mitigated. Measures to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the soil vapor intrusion evaluation, the NYSDOH guidance, and construction details of the proposed structure.
Engineering Controls				
Engineered Landfill Cap	Comprised of a geocomposite gas venting layer, a 40-mil LLDPE textured geomembrane, geocomposite drainage layer, and an 18-in. soil barrier protection layer. Topsoil and a reinforced vegetated surface are over the barrier protection layer.	Prevent exposure to remaining contamination in soil/fill at the Site by placing cap over the remaining and consolidated waste	Monitoring via Site inspections and leachate indicator monitoring.	Cap is vegetated, stable, and effective. Maintenance operations are limited to repairs to minor localized erosion and control of animal burrows in surficial cover soils. Leachate indicators are analyzed periodically. Leachate generation rates are decreasing, as would be expected following the construction of an engineered cap.
Passive Gas Vents	Polyvinyl chloride pipe gas vents were installed within the landfill cap boundaries.	Collect landfill gas generated under the cap and to convey the gas to the existing landfill gas collection system to control potential for lateral migration.	Monitored via Site inspections and monitoring of landfill gas with portable monitoring equipment.	Gas monitoring results are typical of landfill gas and appropriate operation of the gas control system is in place.
Landfill Surface Drainage	A berm constructed of soil and waste materials below the liner system defined each swale. Following the placement of the geocomposite drainage layer, a strip of the geocomposite was cut out in each swale for the placement of perforated 6-in. corrugated polyethylene pipe topped with pea gravel and wrapped with geotextile that was later heat sealed to the geocomposite on either side.	Four drainage swales were included in the landfill cap design to promote efficient drainage over the cap. Each swale was constructed to allow stormwater to flow in a northeast- southwest direction across the landfill.	Monitored through Site inspections and groundwater/surface water sampling.	A media monitoring program is in place for groundwater. Groundwater and surface water samples are collected on an annual basis, per SMP. Stream and tributary water quality has not been impacted from surface water discharges from the Site. VOC and metal concentrations are generally decreasing or remaining stable in groundwater.
Phytoremediation	168 willow trees were planted south of the retention pond. Two (2) varieties of bare-root willow trees were selected to be planted. The tree varieties include golden curls willow and prairie cascade willow.	Trees were intended to mitigate potential leachate seepage south of the Site. Staining was previously observed in stream water during RI sampling along the southern boundary of the Site.	Monitored through Site inspections.	To date, there has been no evidence of excessive leachate on the access road south of the willow trees planted for phytoremediation. Approx. 30% of the willow trees have died at the east end of the planting area.
Site Security	8-ft chain link fence gates were installed at the entrances of the property on Deep Snow Road, one (1) to the southwest of the Site and one (1) to the north of the Site. Gates have been secured with locks.	Minimize the potential for trespassing and vehicular traffic.	Monitoring via Site inspection.	Security measures in place and effective.
Access Road	A permanent maintenance road was constructed by placing 6 in. of road paving material over a non-woven geotextile.	Provides access controls to the Site, minimizing the potential for human encroachment on the landfill cap surface.	Monitoring via Site inspection.	Access road in place and effective.

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Job # 50191-01

Field Sample ID

Sampling Event #

Sample Time _____

Date 5/8/18

Initial Depth to Water _____	feet	Measurement Point _____	TOR
Final Depth to Water _____	feet	Well Depth _____	feet
Screen Length _____	feet	Pump Intake Depth _____	
Total Volume Purged _____	gallons	PID Well Head _____	

Well Diameter 2"

Well Integrity: ✓

Cap ✓

Casing

Locked ☒

Collar ☒

[purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter]

Volume of Water in casing – 2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth

[illegible]

Purge Observations: _____

Purge Water Containerized: _____

Type of Pump: Bailer
Type of Tubing: 1/4" HDPE
Type of Water Quality Meter: Horiba U-22; LaMotte 2020

Calibrated: yes

<u>Parameter</u>	<u>Volumes</u>	<u>Sample Collected</u>
VOCs	3 x 40 ml	

LOCATION NOTES

well could not be unlocked
rusted. Will get a
replacement lock for
next time.

Signature: _____

Checked By: _____

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Date 5/8/18

Collar ☒

Checked By: _____

Lu Engineers
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Date 5/8/18

Collar ✓

[illegible]

CAUTION NOTES

- Insufficient ^{amount of} water in well to sample

Checked By: _____

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Date 5/8/18

Collar ☒[illegible]

Purge Water Containerized: no

Calibrated: yes

Signature: [Signature]
Checked By: [Signature]

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Date 5/8/18

Collar ☒[illegible]

Purge Water Containerized: NO

Calibrated: YLS

Checked By: _____

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Date 5/8/18

[illegible]

Purge Water Containerized: 0

Calibrated: 1185

Checked By: _____

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Date 5/8/18

Locked ☒
Collar ☒

[illegible]

Purge Water Containerized:

Calibrated: _____

Signature: _____
Checked By: _____

-insufficient amount of water to sample/bail.

Checked By: _____

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Date 5/8/18

Collar ✓

Checked By: _____

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Date 5/8/18

Locked ☒
Collar ☒

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Date 5/8/15

Collar ☒

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Date 05/08/18

Depth Erected
Collar ✓

[illegible]

Purge Water Containerized: NO

Calibrated: yls

Checked By: _____

Lu Engineers
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Date 5/8/18

Collar

[illegible]

Purge Water Containerized: NO

Calibrated: yes

[illegible]

Checked By: _____

 Lu Engineers
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Date 08/07/18

Collar ✓

Groundwater Sampling Field Record



Project Name Cuba Landfill Monitoring/Inspection

Location ID MW-11

Activity Time 11:40

Field Sample ID MW-11

Sample Time 11:55

Job # 50191-01

Sampling Event # --

Date 8/7/18

SAMPLING NOTES

Initial Depth to Water 24.17 feet

Final Depth to Water 30.50 feet

Screen Length feet

Total Volume Purged ~ 3.90 gallons

[purge volume (milliliters per minute) x time duration (minutes) x 0.00026 gal/milliliter]

Volume of Water in casing - 2" diameter = 0.163 gallons per foot of depth, 4" diameter = 0.653 gallons per foot of depth

Measurement Point TOR

Well Depth 32.22 feet

Pump Intake Depth

PID Well Head

Well Diameter 2"

Well Integrity:

Cap ✓

Casing ✓

Locked ✓

Collar ✓

PURGE DATA

Time	Depth to Water (ft)	Purge Rate (ml/min)	Temp. (deg. C)	pH (units)	Dissolved O2 (mg/L)	Turbidity (NTU)	Cond. (mS/cm)	ORP (mV)	Comments
See logs from May									

Purge Observations: Clear, no odors or sheen

Purge Water Containerized: no

EQUIPMENT DOCUMENTATION

Type of Pump: N/A

Type of Tubing: 1/4" HDPE

Type of Water Quality Meter: Horiba U-22; LaMotte 2020

Calibrated:

ANALYTICAL PARAMETERS

Parameter Volumes Sample Collected

1,4-dioxane x 2

PFAS x 2

LOCATION NOTES

- Field duplicate

Signature:

Checked By:

Site Photographs

Cuba Landfill NYSDEC Site 902012



Photo No. 1 MW-1S



Photo No. 2 Site view facing south from MW-1S



Photo No. 3 SW-2



Photo No. 4 Site view facing west from access road near MW-13

Site Photographs

Cuba Landfill NYSDEC Site 902012



Photo No.5 Exposed geotextile



Photo No. 6 Healthy willow trees



Photo No. 7 Dead willow trees



Photo No. 8 Landfill gas vent



ANALYTICAL REPORT

Lab Number:	L1816747
Client:	Lu Engineers 339 East Avenue Suite 200 Rochester, NY 14604
ATTN:	Laura Gregor
Phone:	(585) 385-7417
Project Name:	CUBA LANDFILL
Project Number:	50191-01
Report Date:	05/16/18

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CUBA LANDFILL

Project Number: 50191-01

Lab Number: L1816747

Report Date: 05/16/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1816747-01	MW-7	WATER	CUBA, NY	05/08/18 13:45	05/09/18
L1816747-02	SW-4	WATER	CUBA, NY	05/08/18 15:15	05/09/18
L1816747-03	MW-1D	WATER	CUBA, NY	05/08/18 15:30	05/09/18
L1816747-04	SW-03	WATER	CUBA, NY	05/08/18 12:30	05/09/18
L1816747-05	MW-8	WATER	CUBA, NY	05/08/18 14:15	05/09/18
L1816747-06	8354 JACKSON HILL ROAD	WATER	CUBA, NY	05/08/18 15:40	05/09/18
L1816747-07	FIELD DUPLICATE	WATER	CUBA, NY	05/08/18 00:00	05/09/18
L1816747-08	MW-13	WATER	CUBA, NY	05/08/18 11:00	05/09/18
L1816747-09	SW-01	WATER	CUBA, NY	05/08/18 10:30	05/09/18
L1816747-10	MW-4	WATER	CUBA, NY	05/08/18 10:35	05/09/18
L1816747-11	MW-10	WATER	CUBA, NY	05/08/18 12:15	05/09/18
L1816747-12	MW-10D	WATER	CUBA, NY	05/08/18 12:30	05/09/18
L1816747-13	MW-12	WATER	CUBA, NY	05/08/18 10:45	05/09/18
L1816747-14	MW-11	WATER	CUBA, NY	05/08/18 11:30	05/09/18
L1816747-15	TRIP BLANK	WATER	CUBA, NY	05/08/18 00:00	05/09/18

Project Name: CUBA LANDFILL
Project Number: 50191-01

Lab Number: L1816747
Report Date: 05/16/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CUBA LANDFILL
Project Number: 50191-01

Lab Number: L1816747
Report Date: 05/16/18

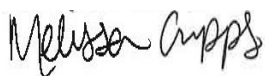
Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Cripps

Title: Technical Director/Representative

Date: 05/16/18

ORGANICS

VOLATILES

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-01

Date Collected: 05/08/18 13:45

Client ID: MW-7

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 09:50

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	1.3	J	ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	4.4		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	0.62		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	6.3		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-01

Date Collected: 05/08/18 13:45

Client ID: MW-7

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	2.8		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-02

Date Collected: 05/08/18 15:15

Client ID: SW-4

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 11:05

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	0.92	J	ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-02

Date Collected: 05/08/18 15:15

Client ID: SW-4

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	3.1	J	ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS**

Lab ID: L1816747-03

Date Collected: 05/08/18 15:30

Client ID: MW-1D

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 11:29

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-03

Date Collected: 05/08/18 15:30

Client ID: MW-1D

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	95		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-04

Date Collected: 05/08/18 12:30

Client ID: SW-03

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 11:54

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-04

Date Collected: 05/08/18 12:30

Client ID: SW-03

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS**

Lab ID: L1816747-05

Date Collected: 05/08/18 14:15

Client ID: MW-8

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 12:19

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	8.4		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	13		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	1.3		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	27		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-05

Date Collected: 05/08/18 14:15

Client ID: MW-8

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	12		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	97		70-130

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS**

Lab ID: L1816747-06
 Client ID: 8354 JACKSON HILL ROAD
 Sample Location: CUBA, NY

Date Collected: 05/08/18 15:40
 Date Received: 05/09/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 05/14/18 12:44
 Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS**

Lab ID: L1816747-06
 Client ID: 8354 JACKSON HILL ROAD
 Sample Location: CUBA, NY

Date Collected: 05/08/18 15:40
 Date Received: 05/09/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS**

Lab ID: L1816747-07
 Client ID: FIELD DUPLICATE
 Sample Location: CUBA, NY

Date Collected: 05/08/18 00:00
 Date Received: 05/09/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 05/14/18 13:09
 Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	5.4		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	4.5		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	5.3		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	0.41	J	ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	6.2		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-07
 Client ID: FIELD DUPLICATE
 Sample Location: CUBA, NY

Date Collected: 05/08/18 00:00
 Date Received: 05/09/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	4.6		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	97		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-08

Date Collected: 05/08/18 11:00

Client ID: MW-13

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 13:34

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	5.4		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	4.5		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	5.3		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	0.43	J	ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	6.4		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS****Lab ID:** L1816747-08**Date Collected:** 05/08/18 11:00**Client ID:** MW-13**Date Received:** 05/09/18**Sample Location:** CUBA, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	4.4		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	97		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-09

Date Collected: 05/08/18 10:30

Client ID: SW-01

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 13:59

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS****Lab ID:** L1816747-09**Date Collected:** 05/08/18 10:30**Client ID:** SW-01**Date Received:** 05/09/18**Sample Location:** CUBA, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-10

Date Collected: 05/08/18 10:35

Client ID: MW-4

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 14:24

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	30		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	0.17	J	ug/l	0.50	0.13	1
1,1,1-Trichloroethane	10		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	1.0		ug/l	1.0	0.07	1
Chloroethane	6.0		ug/l	2.5	0.70	1
1,1-Dichloroethene	3.3		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	4.3		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-10

Date Collected: 05/08/18 10:35

Client ID: MW-4

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	10		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	98		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-11

Date Collected: 05/08/18 12:15

Client ID: MW-10

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 14:49

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS****Lab ID:** L1816747-11**Date Collected:** 05/08/18 12:15**Client ID:** MW-10**Date Received:** 05/09/18**Sample Location:** CUBA, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-12

Date Collected: 05/08/18 12:30

Client ID: MW-10D

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 15:14

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	0.41	J	ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-12

Date Collected: 05/08/18 12:30

Client ID: MW-10D

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	5.7		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-13

Date Collected: 05/08/18 10:45

Client ID: MW-12

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 15:38

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	0.28	J	ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS****Lab ID:** L1816747-13**Date Collected:** 05/08/18 10:45**Client ID:** MW-12**Date Received:** 05/09/18**Sample Location:** CUBA, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-14

Date Collected: 05/08/18 11:30

Client ID: MW-11

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 16:03

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	26		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	1.4		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	7.9		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	2.1		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	4.5		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL**Lab Number:** L1816747**Project Number:** 50191-01**Report Date:** 05/16/18**SAMPLE RESULTS****Lab ID:** L1816747-14**Date Collected:** 05/08/18 11:30**Client ID:** MW-11**Date Received:** 05/09/18**Sample Location:** CUBA, NY**Field Prep:** Not Specified**Sample Depth:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	7.3		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	97		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-15

Date Collected: 05/08/18 00:00

Client ID: TRIP BLANK

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 1,8260C

Analytical Date: 05/14/18 09:00

Analyst: PK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-15

Date Collected: 05/08/18 00:00

Client ID: TRIP BLANK

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1
Iodomethane	ND		ug/l	5.0	0.40	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	95		70-130

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 05/14/18 08:35
 Analyst: KD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-15 Batch: WG1115608-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 05/14/18 08:35
 Analyst: KD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-15 Batch: WG1115608-5					
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70
Iodomethane	ND		ug/l	5.0	0.40

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	95		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: CUBA LANDFILL

Project Number: 50191-01

Lab Number: L1816747

Report Date: 05/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1115608-3 WG1115608-4								
Methylene chloride	93		92		70-130	1		20
1,1-Dichloroethane	95		95		70-130	0		20
Chloroform	94		93		70-130	1		20
Carbon tetrachloride	89		90		63-132	1		20
1,2-Dichloropropane	94		94		70-130	0		20
Dibromochloromethane	83		83		63-130	0		20
1,1,2-Trichloroethane	100		99		70-130	1		20
Tetrachloroethene	96		98		70-130	2		20
Chlorobenzene	94		95		75-130	1		20
Trichlorofluoromethane	110		110		62-150	0		20
1,2-Dichloroethane	98		98		70-130	0		20
1,1,1-Trichloroethane	93		94		67-130	1		20
Bromodichloromethane	89		88		67-130	1		20
trans-1,3-Dichloropropene	84		83		70-130	1		20
cis-1,3-Dichloropropene	86		84		70-130	2		20
Bromoform	77		74		54-136	4		20
1,1,2,2-Tetrachloroethane	94		93		67-130	1		20
Benzene	92		92		70-130	0		20
Toluene	94		95		70-130	1		20
Ethylbenzene	95		95		70-130	0		20
Chloromethane	93		93		64-130	0		20
Bromomethane	100		100		39-139	0		20
Vinyl chloride	98		99		55-140	1		20

Lab Control Sample Analysis **Batch Quality Control**

Project Name: CUBA LANDFILL

Project Number: 50191-01

Lab Number: L1816747

Report Date: 05/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1115608-3 WG1115608-4								
Chloroethane	100		100		55-138	0		20
1,1-Dichloroethene	94		96		61-145	2		20
trans-1,2-Dichloroethene	94		95		70-130	1		20
Trichloroethene	90		90		70-130	0		20
1,2-Dichlorobenzene	94		93		70-130	1		20
1,4-Dichlorobenzene	93		93		70-130	0		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
cis-1,2-Dichloroethene	90		91		70-130	1		20
Dibromomethane	93		92		70-130	1		20
1,2,3-Trichloropropane	98		97		64-130	1		20
Acrylonitrile	100		100		70-130	0		20
Styrene	95		95		70-130	0		20
Acetone	88		82		58-148	7		20
Carbon disulfide	90		91		51-130	1		20
2-Butanone	100		96		63-138	4		20
Vinyl acetate	98		96		70-130	2		20
4-Methyl-2-pentanone	80		80		59-130	0		20
2-Hexanone	82		78		57-130	5		20
Bromochloromethane	92		90		70-130	2		20
1,2-Dibromoethane	92		91		70-130	1		20
1,1,1,2-Tetrachloroethane	87		87		64-130	0		20
1,2-Dibromo-3-chloropropane	78		74		41-144	5		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUBA LANDFILL

Project Number: 50191-01

Lab Number: L1816747

Report Date: 05/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1115608-3 WG1115608-4								
trans-1,4-Dichloro-2-butene	80		77		70-130	4		20
Iodomethane	58	Q	65	Q	70-130	11		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		108		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	100		99		70-130

METALS

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-01

Date Collected: 05/08/18 13:45

Client ID: MW-7

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	1.31		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Antimony, Total	0.00057	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00086		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Barium, Total	0.05985		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Beryllium, Total	0.00029	J	mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Cadmium, Total	0.00056		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Calcium, Total	53.2		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Chromium, Total	0.00178		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00077		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Copper, Total	0.02747		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Iron, Total	1.83		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Lead, Total	0.00684		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Magnesium, Total	24.0		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Manganese, Total	0.06668		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:45	EPA 7470A	1,7470A	MG
Nickel, Total	0.00192	J	mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Potassium, Total	2.24		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Sodium, Total	6.76		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM
Zinc, Total	0.01461		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:20	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-02

Date Collected: 05/08/18 15:15

Client ID: SW-4

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.638		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00151		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Barium, Total	0.01062		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Calcium, Total	4.48		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Chromium, Total	0.00088	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00048	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Copper, Total	0.00199		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Iron, Total	0.858		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Lead, Total	0.00075	J	mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Magnesium, Total	0.871		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Manganese, Total	0.03022		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:47	EPA 7470A	1,7470A	MG
Nickel, Total	0.00167	J	mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Potassium, Total	1.96		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Sodium, Total	5.23		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:25	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-03

Date Collected: 05/08/18 15:30

Client ID: MW-1D

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.122		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Antimony, Total	0.00160	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00028	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Barium, Total	0.00772		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Calcium, Total	23.1		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Chromium, Total	0.00029	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Copper, Total	0.00267		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Iron, Total	0.128		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Lead, Total	0.00299		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Magnesium, Total	9.28		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Manganese, Total	0.00948		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:48	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Potassium, Total	1.16		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Sodium, Total	3.98		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:41	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-04

Date Collected: 05/08/18 12:30

Client ID: SW-03

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0108		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Antimony, Total	0.00064	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00055		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Barium, Total	0.01338		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Cadmium, Total	0.00011	J	mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Calcium, Total	36.5		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Copper, Total	0.00049	J	mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Iron, Total	0.0734		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Magnesium, Total	11.4		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Manganese, Total	0.06831		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:50	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Potassium, Total	1.24		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Sodium, Total	13.6		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:46	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-05

Date Collected: 05/08/18 14:15

Client ID: MW-8

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.288		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Antimony, Total	0.00047	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00030	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Barium, Total	0.04849		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Calcium, Total	39.4		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Chromium, Total	0.00065	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00029	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Copper, Total	0.00233		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Iron, Total	0.588		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Lead, Total	0.00040	J	mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Magnesium, Total	12.8		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Manganese, Total	0.00882		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:52	EPA 7470A	1,7470A	MG
Nickel, Total	0.00077	J	mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Potassium, Total	1.47		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Sodium, Total	5.05		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:50	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-06

Date Collected: 05/08/18 15:40

Client ID: 8354 JACKSON HILL ROAD

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0900		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00020	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Barium, Total	0.03016		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Calcium, Total	14.2		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Chromium, Total	0.00025	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Copper, Total	0.00205		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Iron, Total	0.134		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Lead, Total	0.00306		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Magnesium, Total	3.58		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Manganese, Total	0.01300		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:57	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Potassium, Total	1.62		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Sodium, Total	13.7		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:54	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-07

Date Collected: 05/08/18 00:00

Client ID: FIELD DUPLICATE

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	24.9		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00571		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Barium, Total	0.3550		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Beryllium, Total	0.00133		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Cadmium, Total	0.00010	J	mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Calcium, Total	56.4		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Chromium, Total	0.04343		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Cobalt, Total	0.02521		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Copper, Total	0.03610		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Iron, Total	49.2		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Lead, Total	0.01585		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Magnesium, Total	13.6		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Manganese, Total	1.933		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:59	EPA 7470A	1,7470A	MG
Nickel, Total	0.05270		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Potassium, Total	5.15		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Selenium, Total	0.00320	J	mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Sodium, Total	4.72		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Thallium, Total	0.00021	J	mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Vanadium, Total	0.02832		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM
Zinc, Total	0.1233		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 13:58	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-08

Date Collected: 05/08/18 11:00

Client ID: MW-13

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	17.3		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00468		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Barium, Total	0.2506		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Beryllium, Total	0.00091		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Calcium, Total	57.1		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Chromium, Total	0.02927		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Cobalt, Total	0.01575		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Copper, Total	0.02529		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Iron, Total	33.5		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Lead, Total	0.01051		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Magnesium, Total	11.2		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Manganese, Total	1.092		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:00	EPA 7470A	1,7470A	MG
Nickel, Total	0.03404		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Potassium, Total	4.40		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Selenium, Total	0.00223	J	mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Sodium, Total	4.87		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Thallium, Total	0.00014	J	mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Vanadium, Total	0.01988		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM
Zinc, Total	0.08124		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 14:02	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-09

Date Collected: 05/08/18 10:30

Client ID: SW-01

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0150		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00049	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Barium, Total	0.01375		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Calcium, Total	35.1		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Copper, Total	0.00066	J	mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Iron, Total	0.142		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Magnesium, Total	11.3		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Manganese, Total	0.01162		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:02	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Potassium, Total	1.43		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Sodium, Total	12.7		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 14:06	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-10

Date Collected: 05/08/18 10:35

Client ID: MW-4

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0122		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Barium, Total	0.01457		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Calcium, Total	31.1		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Chromium, Total	0.00025	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Copper, Total	0.00139		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Iron, Total	0.0730		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Magnesium, Total	7.86		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Manganese, Total	1.840		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:04	EPA 7470A	1,7470A	MG
Nickel, Total	0.00314		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Potassium, Total	2.28		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Sodium, Total	3.12		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM
Zinc, Total	0.00607	J	mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 16:54	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-11

Date Collected: 05/08/18 12:15

Client ID: MW-10

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.100		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Antimony, Total	0.00046	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00111		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Barium, Total	0.01698		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Cadmium, Total	0.00020		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Calcium, Total	46.0		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Chromium, Total	0.00315		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00025	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Copper, Total	0.00350		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Iron, Total	0.175		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Lead, Total	0.00180		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Magnesium, Total	14.9		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Manganese, Total	0.01377		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:06	EPA 7470A	1,7470A	MG
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Potassium, Total	5.57		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Sodium, Total	16.2		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM
Zinc, Total	0.00540	J	mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 14:15	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-12

Date Collected: 05/08/18 12:30

Client ID: MW-10D

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.290		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Antimony, Total	0.00126	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00042	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Barium, Total	0.1012		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Cadmium, Total	0.00010	J	mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Calcium, Total	40.8		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Chromium, Total	0.00064	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00112		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Copper, Total	0.00732		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Iron, Total	0.487		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Lead, Total	0.00140		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Magnesium, Total	17.0		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Manganese, Total	0.4430		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:07	EPA 7470A	1,7470A	MG
Nickel, Total	0.00132	J	mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Potassium, Total	7.73		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Sodium, Total	23.2		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM
Zinc, Total	0.01952		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 15:11	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-13

Date Collected: 05/08/18 10:45

Client ID: MW-12

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	2.22		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00162		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Barium, Total	0.07164		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Calcium, Total	80.7		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Chromium, Total	0.00350		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00204		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Copper, Total	0.00379		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Iron, Total	4.15		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Lead, Total	0.00257		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Magnesium, Total	30.5		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Manganese, Total	0.4136		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:09	EPA 7470A	1,7470A	MG
Nickel, Total	0.00429		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Potassium, Total	5.64		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Sodium, Total	19.6		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Vanadium, Total	0.00323	J	mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM
Zinc, Total	0.01140		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 15:07	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

SAMPLE RESULTS

Lab ID: L1816747-14

Date Collected: 05/08/18 11:30

Client ID: MW-11

Date Received: 05/09/18

Sample Location: CUBA, NY

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.225		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Antimony, Total	ND		mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Arsenic, Total	0.00026	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Barium, Total	0.01518		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Cadmium, Total	0.00006	J	mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Calcium, Total	42.7		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Chromium, Total	0.00042	J	mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Cobalt, Total	0.00020	J	mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Copper, Total	0.00085	J	mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Iron, Total	0.364		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Lead, Total	0.00046	J	mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Magnesium, Total	9.56		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Manganese, Total	0.08414		mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 17:11	EPA 7470A	1,7470A	MG
Nickel, Total	0.00062	J	mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Potassium, Total	1.92		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Sodium, Total	3.16		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 16:04	EPA 3005A	1,6020A	AM



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14 Batch: WG1114886-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Antimony, Total	0.00149	J	mg/l	0.00400	0.00042	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Barium, Total	ND		mg/l	0.00050	0.00017	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Calcium, Total	ND		mg/l	0.100	0.0394	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Chromium, Total	ND		mg/l	0.00100	0.00017	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Copper, Total	ND		mg/l	0.00100	0.00038	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Iron, Total	ND		mg/l	0.0500	0.0191	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Lead, Total	ND		mg/l	0.00100	0.00034	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Manganese, Total	0.00076	J	mg/l	0.00100	0.00044	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Nickel, Total	ND		mg/l	0.00200	0.00055	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Potassium, Total	ND		mg/l	0.100	0.0309	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Selenium, Total	ND		mg/l	0.00500	0.00173	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Silver, Total	ND		mg/l	0.00040	0.00016	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Sodium, Total	ND		mg/l	0.100	0.0293	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Thallium, Total	0.00017	J	mg/l	0.00050	0.00014	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM
Zinc, Total	ND		mg/l	0.01000	0.00341	1	05/11/18 10:20	05/14/18 12:51	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14 Batch: WG1114895-1										
Mercury, Total	ND		mg/l	0.00020	0.00006	1	05/11/18 10:07	05/14/18 16:36	1,7470A	MG



Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

Method Blank Analysis Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUBA LANDFILL

Project Number: 50191-01

Lab Number: L1816747

Report Date: 05/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1114886-2								
Aluminum, Total	104		-		80-120	-		
Antimony, Total	110		-		80-120	-		
Arsenic, Total	109		-		80-120	-		
Barium, Total	105		-		80-120	-		
Beryllium, Total	113		-		80-120	-		
Cadmium, Total	117		-		80-120	-		
Calcium, Total	99		-		80-120	-		
Chromium, Total	102		-		80-120	-		
Cobalt, Total	104		-		80-120	-		
Copper, Total	102		-		80-120	-		
Iron, Total	111		-		80-120	-		
Lead, Total	113		-		80-120	-		
Magnesium, Total	103		-		80-120	-		
Manganese, Total	101		-		80-120	-		
Nickel, Total	106		-		80-120	-		
Potassium, Total	105		-		80-120	-		
Selenium, Total	117		-		80-120	-		
Silver, Total	100		-		80-120	-		
Sodium, Total	107		-		80-120	-		
Thallium, Total	120		-		80-120	-		
Vanadium, Total	104		-		80-120	-		

Lab Control Sample Analysis Batch Quality Control

Project Name: CUBA LANDFILL

Project Number: 50191-01

Lab Number: L1816747

Report Date: 05/16/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1114886-2					
Zinc, Total	114	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1114895-2					
Mercury, Total	94	-	80-120	-	

Matrix Spike Analysis **Batch Quality Control**

Project Name: CUBA LANDFILL
Project Number: 50191-01

Lab Number: L1816747
Report Date: 05/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14			QC Batch ID: WG1114886-3			QC Sample: L1817009-01			Client ID: MS Sample			
Aluminum, Total	4.67	2	6.94	114		-	-		75-125	-		20
Antimony, Total	0.0010J	0.5	0.6698	134	Q	-	-		75-125	-		20
Arsenic, Total	0.01020	0.12	0.1395	108		-	-		75-125	-		20
Barium, Total	0.0836	2	2.132	102		-	-		75-125	-		20
Beryllium, Total	0.0004J	0.05	0.05695	114		-	-		75-125	-		20
Cadmium, Total	0.0001J	0.051	0.05890	115		-	-		75-125	-		20
Calcium, Total	44.8	10	52.2	74	Q	-	-		75-125	-		20
Chromium, Total	0.0124	0.2	0.2121	100		-	-		75-125	-		20
Cobalt, Total	0.0161	0.5	0.5259	102		-	-		75-125	-		20
Copper, Total	0.0118	0.25	0.2653	101		-	-		75-125	-		20
Iron, Total	5.65	1	6.50	85		-	-		75-125	-		20
Lead, Total	0.0056	0.51	0.5739	111		-	-		75-125	-		20
Magnesium, Total	9.95	10	19.6	96		-	-		75-125	-		20
Manganese, Total	0.5037	0.5	0.9760	94		-	-		75-125	-		20
Nickel, Total	0.0138	0.5	0.5291	103		-	-		75-125	-		20
Potassium, Total	6.93	10	16.5	96		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.138	115		-	-		75-125	-		20
Silver, Total	ND	0.05	0.05002	100		-	-		75-125	-		20
Sodium, Total	13.2	10	23.2	100		-	-		75-125	-		20
Thallium, Total	0.0002J	0.12	0.1405	117		-	-		75-125	-		20
Vanadium, Total	0.0116	0.5	0.5281	103		-	-		75-125	-		20

Matrix Spike Analysis **Batch Quality Control**

Project Name: CUBA LANDFILL

Lab Number: L1816747

Project Number: 50191-01

Report Date: 05/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14			QC Batch ID: WG1114886-3		QC Sample: L1817009-01		Client ID: MS Sample		
Zinc, Total	0.0146	0.5	0.5643	110	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-14			QC Batch ID: WG1114895-3		QC Sample: L1816676-01		Client ID: MS Sample		
Mercury, Total	ND	0.005	0.00470	94	-	-	75-125	-	20

Project Name: CUBA LANDFILL
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Lab Duplicate Analysis

Batch Quality Control

Lab Number: L1816747
Report Date: 05/16/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1114886-4 QC Sample: L1817009-01 Client ID: DUP Sample						
Arsenic, Total	0.01020	0.01033	mg/l	1		20
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1114895-4 QC Sample: L1816676-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/l	NC		20

Project Name: CUBA LANDFILL
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Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1816747-01A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-01B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-01C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-01D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-02A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-02B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-02C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-02D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-03A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-03B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-03C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)

Project Name: CUBA LANDFILL
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1816747-03D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-04A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-04B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-04C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-04D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-05A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-05B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-05C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-05D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-06A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-06B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-06C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1816747-06D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-07A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-07B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-07C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-07D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-08A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-08B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-08C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-08D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-09A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-09B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-09C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1816747-09D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-10A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-10B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-10C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-10D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-11A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-11B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-11C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-11D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-12A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-12B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-12C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1816747-12D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-13A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-13B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-13C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-13D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-14A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-14B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-14C	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-14D	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CU-6020T(180),NA-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),SB-6020T(180),V-6020T(180),AG-6020T(180),AL-6020T(180),CD-6020T(180),HG-T(28),MG-6020T(180),CO-6020T(180)
L1816747-15A	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)
L1816747-15B	Vial HCl preserved	A	NA		4.6	Y	Absent		NYTCL-8260-R2(14)

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GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: CUBA LANDFILL
Project Number: 50191-01

Lab Number: L1816747
Report Date: 05/16/18

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E,**

SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 ALPHA Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	NEW YORK CHAIN OF CUSTODY Mansfield, MA 02048 320 Forbes Blvd. TEL: 508-822-9300 FAX: 508-822-3298	Service Centers Mahwah, NJ 07430: 35 Whitway Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 108	Page 1 of 2		Date Rec'd in Lab 5/10/18				ALPHA Job # C1810747											
			Project Information Project Name: Cuba Landfill Project Location: Cuba, NY Project # <u>50191-01</u> (Use Project name as Project #) ☐ Deliverables ☐ ASP-A ☒ ASP-B ☒ EQUIS (1 File) ☐ EQUIS (4 File) ☐ Other					Billing Information ☐ Same as Client Info PO #												
Client Information Client: Lu Engineers Address: 339 East Avenue, Suite 200 Rochester, New York 14604 Phone: 585.406.6716 cell Fax: Email: lgregor@luengineers.com		Project Manager: Laura Gregor / <u>Greg Andrews</u> ALPHAQuote #: Turn-Around Time Standard ☒ Due Date: Rush (only if pre approved) ☐ # of Days:		Regulatory Requirement ☒ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge				Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other: NA												
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments:						ANALYSIS NYTCL-6260 Baseline 350 Total TAL Metals				Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below)										
Please specify Metals or TAL.										Sample Specific Comments										
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date Time		Sample Matrix	Sampler's Initials	NYTCL-6260 Baseline 350	Total TAL Metals													
16747 01	• MW-7	5/8/18	13:45	GW	LG	X	X											4		
02	• SW-4	5/8/18	15:15	GW	LG	X	X											4		
03	• MW-1D	5/8/18	15:30	GW	LG	X	X											4		
04	• SW-03	5/8/18	12:30	GW	LG	X	X											4		
05	~~MW-8~~ • MW-8	5/8/18	14:15	GW	LG	X	X											4		
06	• 8354 Jackson Hill Road	5/8/18	15:40	GW	LG	X	X											4		
07	Field Duplicate	5/8/18		GW	LG	X	X											4		
08	• MW-13	5/8/18	11:00	GW	LG	X	X											4		
09	• SW-01	5/8/18	10:30	GW	LG	X	X											4		
10	• MW-4	5/8/18	10:35	GW	LG	X	X											4		
Preservative Code:		Container Code		Westboro: Certification No: MA935		Container Type		Preservative		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS.										
A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ I/E = Zn Ac/NaOH O = Other		P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Mansfield: Certification No: MA015		V		P											B	
				Relinquished By:		Date/Time		Replied By:		Date/Time										
				Laura R. Gregor		5/9/18 10:15		J. R. Andrews		5/9/18 4:58										
				J. R. Andrews		5-9-18 18:13		J. R. Andrews		5/10/18 00:50										

 ALPHA ANALYTICAL	NEW YORK CHAIN OF CUSTODY	Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105	Page <u>12</u> of <u>2</u>	Date Rec'd in Lab <u>5/10/18</u>	ALPHA Job # <u>L1816747</u>	
		Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288			
Client Information Client: Lu Engineers Address: 339 East Avenue, Suite 200 Rochester, New York 14604 Phone: 585.406.6716 <u>cell</u> Fax: Email: lgregor@luengineers.com		Project Information Project Name: Cuba Landfill Project Location: Cuba, NY Project # <u>50191-01</u> (Use Project name as Project #) ☐ Project Manager: Laura Gregor <u>Greg Andrus</u> ALPHAQuote #: Turn-Around Time Standard ☒ Due Date: Rush (only if pre approved) ☐ # of Days:		Deliverables ☐ ASP-A ☒ ASP-B ☒ EQUIS (1 File) ☐ EQUIS (4 File) ☐ Other		
Regulatory Requirement ☒ NY TOGS ☐ NY Part 375 ☐ AWQ Standards ☐ NY CP-51 ☐ NY Restricted Use ☐ Other ☐ NY Unrestricted Use ☐ NYC Sewer Discharge		Billing Information ☐ Same as Client Info PO #		Disposal Site Information Please identify below location of applicable disposal facilities. Disposal Facility: ☐ NJ ☐ NY ☐ Other: NA		
These samples have been previously analyzed by Alpha ☐ Other project specific requirements/comments: Please specify Metals or TAL.		ANALYSIS NYTCL-8260 Baseline 360		Sample Filtration ☐ Done ☐ Lab to do Preservation ☐ Lab to do (Please Specify below)		
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date Time	Sample Matrix	Sampler's Initials	Total TAL Metals NYTCL-8260 Baseline 360	Sample Specific Comments 4 4 4 4 4 4 4 4 4 4
16747-11	MW-10	5/8/18 12:15	GW	LG	X X	
16747-12	MW-10D	5/8/18 12:30	GW	LG	X X	
16747-13	MW-12	5/8/18 10:45	GW	LG	X X	
16747-14	MW-11	5/8/18 11:30	GW	LG	X X	
16747-15	~~MW-11~~ Trip Blank				X X	
					X X	
					X X	
					X X	
					X X	
					X X	
					X X	
					X X	
Preservative Code: A = None B = HCl C = HNO ₃ D = H ₂ SO ₄ E = NaOH F = MeOH G = NaHSO ₄ H = Na ₂ S ₂ O ₃ K/E = Zn Ac/NaOH O = Other	Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle	Westboro: Certification No: MA935 Mansfield: Certification No: MA015	Container Type V P	Preservative B C	Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS.	
Relinquished By: <u>Laura K. Hurdor</u> <u>APL 18:13</u>		Date/Time: <u>5/9/18/10:15</u>	Received By: <u>APL 5-9-18 11:58</u> <u>APL 5/10/18 00:50</u>			

ANALYTICAL REPORT

Job Number: 320-42105-1

Job Description: Cuba Landfill

For:

Joseph C. Lu Eng & Land Surveying PC
339 East Avenue
Suite 200
Rochester, NY 14604
Attention: Mr. Greg Andrus



Approved for release.
Orlette S. Johnson
Senior Project Manager
8/23/2018 9:48 PM

Orlette S Johnson, Senior Project Manager
10 Hazelwood Drive, Amherst, NY, 14228-2298
(484)685-0864
orlette.johnson@testamericainc.com
08/23/2018

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report.

TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NYDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

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Job Narrative
320-42105-1

Receipt

The samples were received on 8/14/2018 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

LCMS

Method(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery for ¹³C₂-PFTeDA for associated with the following sample is below the method recommended limit: MW-12 (320-42105-1). Re-analysis was performed with concurring results. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. All detection limits are below the lower calibration.

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

Organic Prep

Method(s) 3535: The following samples: MW-12 (320-42105-1), MW-12 (320-42105-1[MS]), MW-12 (320-42105-1[MSD]), MW-11 (320-42105-2) and Field Duplicate (320-42105-3) in preparation batch 320-240465 were observed to be a yellow color and contain sediment prior to extraction.

Method Code: 3535-PFC-Water

Method(s) 3535: The following samples: MW-12 (320-42105-1), MW-12 (320-42105-1[MS]), MW-12 (320-42105-1[MSD]), MW-11 (320-42105-2), Field Duplicate (320-42105-3) and MW-10D (320-42105-5) in preparation batch 320-240465 had non-settleable particulate matter which plugged the SPE extraction disk. The amount of sample remaining plus the weight of the bottle are recorded in the "Notes" field of the prep batch. The "Tare Weight" recorded is the weight of the emptied bottle.

Method Code: 3535-PFC-Water

Method(s) 3535: The following samples: MW-12 (320-42105-1), MW-12 (320-42105-1[MS]) and MW-12 (320-42105-1[MSD]) in preparation batch 320-240465 were observed to be slightly foamy prior to extraction.

Method Code: 3535-PFC-Water

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

Sample Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-42105-1	MW-12	Water	08/07/18 11:20	08/14/18 17:37
320-42105-2	MW-11	Water	08/07/18 11:55	08/14/18 17:37
320-42105-3	Field Duplicate	Water	08/07/18 00:00	08/14/18 17:37
320-42105-4	Equipment Blank	Water	08/07/18 12:10	08/14/18 17:37
320-42105-5	MW-10D	Water	08/07/18 12:35	08/14/18 17:37

Detection Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: MW-12

Lab Sample ID: 320-42105-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.5	J	1.6	0.28	ng/L	1			537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.76	J	1.6	0.39	ng/L	1			537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.7		1.6	0.46	ng/L	1			537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.27	J	1.6	0.20	ng/L	1			537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.89	J	1.6	0.68	ng/L	1			537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.58	J	1.6	0.25	ng/L	1			537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.51	J B	1.6	0.23	ng/L	1			537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.6	0.14	ng/L	1			537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.6	0.43	ng/L	1			537 (modified)	Total/NA

Client Sample ID: MW-11

Lab Sample ID: 320-42105-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.4		1.7	0.30	ng/L	1			537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.5		1.7	0.41	ng/L	1			537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.9		1.7	0.49	ng/L	1			537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.7	0.21	ng/L	1			537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.2		1.7	0.72	ng/L	1			537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.85	J	1.7	0.23	ng/L	1			537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.7	0.17	ng/L	1			537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.92	J B	1.7	0.14	ng/L	1			537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.34	J	1.7	0.16	ng/L	1			537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	25		1.7	0.46	ng/L	1			537 (modified)	Total/NA

Client Sample ID: Field Duplicate

Lab Sample ID: 320-42105-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.4		1.8	0.31	ng/L	1			537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.9		1.8	0.43	ng/L	1			537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.3		1.8	0.51	ng/L	1			537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.22	ng/L	1			537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.7		1.8	0.75	ng/L	1			537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.81	J	1.8	0.24	ng/L	1			537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.37	J	1.8	0.27	ng/L	1			537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.8	0.18	ng/L	1			537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.8	0.15	ng/L	1			537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.36	J	1.8	0.17	ng/L	1			537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	30		1.8	0.48	ng/L	1			537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.49	J	1.8	0.31	ng/L	1			537 (modified)	Total/NA
6:2 FTS	2.6	J	18	1.8	ng/L	1			537 (modified)	Total/NA

Client Sample ID: Equipment Blank

Lab Sample ID: 320-42105-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	1.6	0.14	ng/L	1			537 (modified)	Total/NA

Client Sample ID: MW-10D

Lab Sample ID: 320-42105-5

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: MW-10D (Continued)

Lab Sample ID: 320-42105-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.91	J	1.6	0.28	ng/L	1			537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.44	J	1.6	0.40	ng/L	1			537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.69	J	1.6	0.47	ng/L	1			537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.21	J	1.6	0.20	ng/L	1			537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.90	J	1.6	0.69	ng/L	1			537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.6	0.14	ng/L	1			537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.53	J	1.6	0.44	ng/L	1			537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Method Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Client Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: MW-12

Date Collected: 08/07/18 11:20

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.5	J	1.6	0.28	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluoropentanoic acid (PFPeA)	0.76	J	1.6	0.39	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorohexanoic acid (PFHxA)	1.7		1.6	0.46	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluoroheptanoic acid (PFHpA)	0.27	J	1.6	0.20	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorooctanoic acid (PFOA)	0.89	J	1.6	0.68	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorodecanoic acid (PFDA)	0.58	J	1.6	0.25	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.88	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.44	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.6	1.0	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorotetradecanoic acid (PFTeA)	0.51	J B	1.6	0.23	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.6	0.14	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.15	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.6	0.43	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26	ng/L		08/17/18 09:05	08/18/18 08:20	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.28	ng/L		08/17/18 09:05	08/18/18 08:20	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		16	2.5	ng/L		08/17/18 09:05	08/18/18 08:20	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		16	1.5	ng/L		08/17/18 09:05	08/18/18 08:20	1
6:2 FTS	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 08:20	1
8:2 FTS	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 08:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	38		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C5 PFPeA	41		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C2 PFHxA	42		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C4-PFHpA	45		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C4 PFOA	44		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C5 PFNA	40		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C2 PFDA	37		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C2 PFUnA	34		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C2 PFDoA	28		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C2-PFTeDA	23	*	25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C3-PFBS	39		25 - 150	08/17/18 09:05	08/18/18 08:20	1
18O2 PFHxS	37		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C4 PFOS	34		25 - 150	08/17/18 09:05	08/18/18 08:20	1
13C8 FOSA	34		25 - 150	08/17/18 09:05	08/18/18 08:20	1
d3-NMeFOSAA	47		25 - 150	08/17/18 09:05	08/18/18 08:20	1
d5-NEtFOSAA	48		25 - 150	08/17/18 09:05	08/18/18 08:20	1
M2-6:2FTS	119		25 - 150	08/17/18 09:05	08/18/18 08:20	1
M2-8:2FTS	64		25 - 150	08/17/18 09:05	08/18/18 08:20	1

TestAmerica Sacramento

Client Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: MW-11

Date Collected: 08/07/18 11:55

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.4		1.7	0.30	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluoropentanoic acid (PFPeA)	2.5		1.7	0.41	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorohexanoic acid (PFHxA)	1.9		1.7	0.49	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.7	0.21	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorooctanoic acid (PFOA)	8.2		1.7	0.72	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorononanoic acid (PFNA)	0.85	J	1.7	0.23	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.26	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.7	0.17	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorohexanesulfonic acid (PFHxS)	0.92	J B	1.7	0.14	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.34	J	1.7	0.16	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorooctanesulfonic acid (PFOS)	25		1.7	0.46	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27	ng/L		08/17/18 09:05	08/18/18 08:43	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30	ng/L		08/17/18 09:05	08/18/18 08:43	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6	ng/L		08/17/18 09:05	08/18/18 08:43	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6	ng/L		08/17/18 09:05	08/18/18 08:43	1
6:2 FTS	ND		17	1.7	ng/L		08/17/18 09:05	08/18/18 08:43	1
8:2 FTS	ND		17	1.7	ng/L		08/17/18 09:05	08/18/18 08:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	59		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C5 PFPeA	60		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C2 PFHxA	61		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C4-PFHpA	61		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C4 PFOA	59		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C5 PFNA	55		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C2 PFDA	55		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C2 PFUnA	47		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C2 PFDoA	45		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C2-PFTeDA	43		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C3-PFBS	60		25 - 150	08/17/18 09:05	08/18/18 08:43	1
18O2 PFHxS	61		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C4 PFOS	51		25 - 150	08/17/18 09:05	08/18/18 08:43	1
13C8 FOSA	44		25 - 150	08/17/18 09:05	08/18/18 08:43	1
d3-NMeFOSAA	57		25 - 150	08/17/18 09:05	08/18/18 08:43	1
d5-NEtFOSAA	57		25 - 150	08/17/18 09:05	08/18/18 08:43	1
M2-6:2FTS	69		25 - 150	08/17/18 09:05	08/18/18 08:43	1
M2-8:2FTS	68		25 - 150	08/17/18 09:05	08/18/18 08:43	1

Client Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: Field Duplicate

Lab Sample ID: 320-42105-3

Date Collected: 08/07/18 00:00

Matrix: Water

Date Received: 08/14/18 17:37

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.4		1.8	0.31	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluoropentanoic acid (PFPeA)	1.9		1.8	0.43	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorohexanoic acid (PFHxA)	2.3		1.8	0.51	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.22	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorooctanoic acid (PFOA)	7.7		1.8	0.75	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorononanoic acid (PFNA)	0.81	J	1.8	0.24	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorodecanoic acid (PFDA)	0.37	J	1.8	0.27	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.8	1.1	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.8	0.18	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.8	0.15	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.36	J	1.8	0.17	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorooctanesulfonic acid (PFOS)	30		1.8	0.48	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.28	ng/L		08/17/18 09:05	08/18/18 08:50	1
Perfluorooctane Sulfonamide (FOSA)	0.49	J	1.8	0.31	ng/L		08/17/18 09:05	08/18/18 08:50	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		18	2.7	ng/L		08/17/18 09:05	08/18/18 08:50	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		08/17/18 09:05	08/18/18 08:50	1
6:2 FTS	2.6	J	18	1.8	ng/L		08/17/18 09:05	08/18/18 08:50	1
8:2 FTS	ND		18	1.8	ng/L		08/17/18 09:05	08/18/18 08:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	40		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C5 PFPeA	39		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C2 PFHxA	39		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C4-PFHpA	41		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C4 PFOA	41		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C5 PFNA	39		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C2 PFDA	36		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C2 PFUnA	35		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C2 PFDoA	31		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C2-PFTeDA	30		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C3-PFBS	41		25 - 150	08/17/18 09:05	08/18/18 08:50	1
18O2 PFHxS	41		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C4 PFOS	36		25 - 150	08/17/18 09:05	08/18/18 08:50	1
13C8 FOSA	32		25 - 150	08/17/18 09:05	08/18/18 08:50	1
d3-NMeFOSAA	36		25 - 150	08/17/18 09:05	08/18/18 08:50	1
d5-NEtFOSAA	38		25 - 150	08/17/18 09:05	08/18/18 08:50	1
M2-6:2FTS	52		25 - 150	08/17/18 09:05	08/18/18 08:50	1
M2-8:2FTS	46		25 - 150	08/17/18 09:05	08/18/18 08:50	1

TestAmerica Sacramento

Client Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: Equipment Blank

Lab Sample ID: 320-42105-4

Date Collected: 08/07/18 12:10

Matrix: Water

Date Received: 08/14/18 17:37

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.6	0.29	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluoropentanoic acid (PFPeA)	ND		1.6	0.40	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorohexanoic acid (PFHxA)	ND		1.6	0.48	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.21	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorooctanoic acid (PFOA)	ND		1.6	0.70	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.26	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.91	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.6	1.1	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.24	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	1.6	0.14	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.16	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.44	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26	ng/L		08/17/18 09:05	08/18/18 08:58	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.29	ng/L		08/17/18 09:05	08/18/18 08:58	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		16	2.6	ng/L		08/17/18 09:05	08/18/18 08:58	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 08:58	1
6:2 FTS	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 08:58	1
8:2 FTS	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 08:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	95		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C5 PFPeA	99		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C2 PFHxA	92		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C4-PFHpA	99		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C4 PFOA	98		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C5 PFNA	96		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C2 PFDA	95		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C2 PFUnA	93		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C2 PFDoA	97		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C2-PFTeDA	90		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C3-PFBS	96		25 - 150	08/17/18 09:05	08/18/18 08:58	1
18O2 PFHxS	94		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C4 PFOS	92		25 - 150	08/17/18 09:05	08/18/18 08:58	1
13C8 FOSA	89		25 - 150	08/17/18 09:05	08/18/18 08:58	1
d3-NMeFOSAA	111		25 - 150	08/17/18 09:05	08/18/18 08:58	1
d5-NEtFOSAA	113		25 - 150	08/17/18 09:05	08/18/18 08:58	1
M2-6:2FTS	119		25 - 150	08/17/18 09:05	08/18/18 08:58	1
M2-8:2FTS	134		25 - 150	08/17/18 09:05	08/18/18 08:58	1

TestAmerica Sacramento

Client Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: MW-10D

Lab Sample ID: 320-42105-5

Date Collected: 08/07/18 12:35

Matrix: Water

Date Received: 08/14/18 17:37

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.91	J	1.6	0.28	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluoropentanoic acid (PFPeA)	0.44	J	1.6	0.40	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorohexanoic acid (PFHxA)	0.69	J	1.6	0.47	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluoroheptanoic acid (PFHpA)	0.21	J	1.6	0.20	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorooctanoic acid (PFOA)	0.90	J	1.6	0.69	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.22	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.25	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.89	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.6	1.1	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.24	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.6	0.14	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.15	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorooctanesulfonic acid (PFOS)	0.53	J	1.6	0.44	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26	ng/L		08/17/18 09:05	08/18/18 09:05	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.28	ng/L		08/17/18 09:05	08/18/18 09:05	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		16	2.5	ng/L		08/17/18 09:05	08/18/18 09:05	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		16	1.5	ng/L		08/17/18 09:05	08/18/18 09:05	1
6:2 FTS	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 09:05	1
8:2 FTS	ND		16	1.6	ng/L		08/17/18 09:05	08/18/18 09:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	75		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C5 PFPeA	76		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C2 PFHxA	76		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C4-PFHpA	79		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C4 PFOA	76		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C5 PFNA	70		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C2 PFDA	71		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C2 PFUnA	59		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C2 PFDoA	60		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C2-PFTeDA	60		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C3-PFBS	78		25 - 150				08/17/18 09:05	08/18/18 09:05	1
18O2 PFHxS	75		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C4 PFOS	67		25 - 150				08/17/18 09:05	08/18/18 09:05	1
13C8 FOSA	70		25 - 150				08/17/18 09:05	08/18/18 09:05	1
d3-NMeFOSAA	67		25 - 150				08/17/18 09:05	08/18/18 09:05	1
d5-NEtFOSAA	70		25 - 150				08/17/18 09:05	08/18/18 09:05	1
M2-6:2FTS	118		25 - 150				08/17/18 09:05	08/18/18 09:05	1
M2-8:2FTS	76		25 - 150				08/17/18 09:05	08/18/18 09:05	1

TestAmerica Sacramento

Isotope Dilution Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-42105-1	MW-12	38	41	42	45	44	40	37	34
320-42105-1 MS	MW-12	37	38	41	39	36	34	34	32
320-42105-1 MSD	MW-12	56	60	60	63	58	52	49	49
320-42105-2	MW-11	59	60	61	61	59	55	55	47
320-42105-3	Field Duplicate	40	39	39	41	41	39	36	35
320-42105-4	Equipment Blank	95	99	92	99	98	96	95	93
320-42105-5	MW-10D	75	76	76	79	76	70	71	59
LCS 320-240465/2-A	Lab Control Sample	100	101	95	101	98	97	98	97
MB 320-240465/1-A	Method Blank	94	98	95	99	94	95	92	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	3C3-PFB (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS (25-150)	-NEtFOS/ (25-150)
320-42105-1	MW-12	28	23 *	39	37	34	34	47	48
320-42105-1 MS	MW-12	31	26	39	36	32	32	38	42
320-42105-1 MSD	MW-12	43	32	55	57	49	46	55	62
320-42105-2	MW-11	45	43	60	61	51	44	57	57
320-42105-3	Field Duplicate	31	30	41	41	36	32	36	38
320-42105-4	Equipment Blank	97	90	96	94	92	89	111	113
320-42105-5	MW-10D	60	60	78	75	67	70	67	70
LCS 320-240465/2-A	Lab Control Sample	96	111	100	102	99	99	106	113
MB 320-240465/1-A	Method Blank	95	99	97	95	94	95	103	110

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)
320-42105-1	MW-12	119	64
320-42105-1 MS	MW-12	44	36
320-42105-1 MSD	MW-12	77	67
320-42105-2	MW-11	69	68
320-42105-3	Field Duplicate	52	46
320-42105-4	Equipment Blank	119	134
320-42105-5	MW-10D	118	76
LCS 320-240465/2-A	Lab Control Sample	113	122
MB 320-240465/1-A	Method Blank	123	98

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDaA = 13C2 PFDaA
PFTDA = 13C2-PFTeDA
13C3-PFBS = 13C3-PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA

TestAmerica Sacramento

Isotope Dilution Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

d3-NMeFOSAA = d3-NMeFOSAA

d5-NEtFOSAA = d5-NEtFOSAA

M262FTS = M2-6:2FTS

M282FTS = M2-8:2FTS

QC Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-240465/1-A

Matrix: Water

Analysis Batch: 240682

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 240465

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.35	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorotetradecanoic acid (PFTeA)	0.386	J	2.0	0.29	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorohexanesulfonic acid (PFHxS)	0.289	J	2.0	0.17	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		08/17/18 09:05	08/18/18 08:05	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35	ng/L		08/17/18 09:05	08/18/18 08:05	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		08/17/18 09:05	08/18/18 08:05	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		08/17/18 09:05	08/18/18 08:05	1
6:2 FTS	ND		20	2.0	ng/L		08/17/18 09:05	08/18/18 08:05	1
8:2 FTS	ND		20	2.0	ng/L		08/17/18 09:05	08/18/18 08:05	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	94		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C5 PFPeA	98		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C2 PFHxA	95		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C4-PFHpA	99		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C4 PFOA	94		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C5 PFNA	95		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C2 PFDA	92		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C2 PFUnA	90		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C2 PFDoA	95		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C2-PFTeDA	99		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C3-PFBS	97		25 - 150	08/17/18 09:05	08/18/18 08:05	1
18O2 PFHxS	95		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C4 PFOS	94		25 - 150	08/17/18 09:05	08/18/18 08:05	1
13C8 FOSA	95		25 - 150	08/17/18 09:05	08/18/18 08:05	1
d3-NMeFOSAA	103		25 - 150	08/17/18 09:05	08/18/18 08:05	1
d5-NEtFOSAA	110		25 - 150	08/17/18 09:05	08/18/18 08:05	1
M2-6:2FTS	123		25 - 150	08/17/18 09:05	08/18/18 08:05	1
M2-8:2FTS	98		25 - 150	08/17/18 09:05	08/18/18 08:05	1

TestAmerica Sacramento

QC Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-240465/2-A

Matrix: Water

Analysis Batch: 240682

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240465

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.0		ng/L		100	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	38.9		ng/L		97	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	40.3		ng/L		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	39.3		ng/L		98	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	41.1		ng/L		103	64 - 124
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	42.3		ng/L		106	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	42.7		ng/L		107	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	40.7		ng/L		102	71 - 131
Perfluorotridecanoic Acid (PFTriA)	40.0	40.6		ng/L		102	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	40.4		ng/L		101	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	35.7		ng/L		101	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.8		ng/L		90	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.7		ng/L		112	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	37.9		ng/L		102	67 - 127
Perfluorodecanesulfonic acid (PFDS)	38.6	39.6		ng/L		103	68 - 128
Perfluorooctane Sulfonamide (FOSA)	40.0	43.4		ng/L		109	70 - 130
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	40.0	38.1		ng/L		95	67 - 127
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	40.0	37.7		ng/L		94	65 - 125
6:2 FTS	37.9	34.9		ng/L		92	66 - 126
8:2 FTS	38.3	36.1		ng/L		94	67 - 127

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	100		25 - 150
13C5 PFPeA	101		25 - 150
13C2 PFHxA	95		25 - 150
13C4-PFHpA	101		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	97		25 - 150
13C2 PFDoA	96		25 - 150
13C2-PFTeDA	111		25 - 150
13C3-PFBS	100		25 - 150
18O2 PFHxS	102		25 - 150
13C4 PFOS	99		25 - 150
13C8 FOSA	99		25 - 150

TestAmerica Sacramento

QC Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-240465/2-A

Matrix: Water

Analysis Batch: 240682

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 240465

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
d3-NMeFOSAA	106		25 - 150
d5-NEtFOSAA	113		25 - 150
M2-6:2FTS	113		25 - 150
M2-8:2FTS	122		25 - 150

Lab Sample ID: 320-42105-1 MS

Matrix: Water

Analysis Batch: 240682

Client Sample ID: MW-12

Prep Type: Total/NA

Prep Batch: 240465

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
Perfluorobutanoic acid (PFBA)	1.5	J	31.7	32.3		ng/L		97	70 - 130
Perfluoropentanoic acid (PFPeA)	0.76	J	31.7	30.9		ng/L		95	66 - 126
Perfluorohexanoic acid (PFHxA)	1.7		31.7	29.3		ng/L		87	66 - 126
Perfluoroheptanoic acid (PFHpA)	0.27	J	31.7	29.6		ng/L		93	66 - 126
Perfluorooctanoic acid (PFOA)	0.89	J	31.8	32.0		ng/L		98	64 - 124
Perfluorononanoic acid (PFNA)	ND		31.7	33.5		ng/L		106	68 - 128
Perfluorodecanoic acid (PFDA)	0.58	J	31.7	31.6		ng/L		98	69 - 129
Perfluoroundecanoic acid (PFUnA)	ND		31.7	31.5		ng/L		99	60 - 120
Perfluorododecanoic acid (PFDoA)	ND		31.7	28.5		ng/L		90	71 - 131
Perfluorotridecanoic Acid (PFTriA)	ND		31.7	26.2		ng/L		83	72 - 132
Perfluorotetradecanoic acid (PFTeA)	0.51	J B	31.7	26.1		ng/L		81	68 - 128
Perfluorobutanesulfonic acid (PFBS)	ND		28.0	27.2		ng/L		97	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	28.9	29.1		ng/L		100	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	ND		30.2	34.3		ng/L		113	68 - 128
Perfluorooctanesulfonic acid (PFOS)	1.1	J	29.4	29.2		ng/L		96	67 - 127
Perfluorodecanesulfonic acid (PFDS)	ND		30.6	27.2		ng/L		89	68 - 128
Perfluorooctane Sulfonamide (FOSA)	ND		31.7	32.5		ng/L		102	70 - 130
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		31.7	30.5		ng/L		96	67 - 127
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		31.7	27.5		ng/L		87	65 - 125
6:2 FTS	ND		30.1	27.5		ng/L		91	66 - 126
8:2 FTS	ND		30.4	33.3		ng/L		110	67 - 127

<i>Isotope Dilution</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
13C4 PFBA	37		25 - 150
13C5 PFPeA	38		25 - 150
13C2 PFHxA	41		25 - 150
13C4-PFHpA	39		25 - 150
13C4 PFOA	36		25 - 150

TestAmerica Sacramento

QC Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-42105-1 MS

Matrix: Water

Analysis Batch: 240682

Client Sample ID: MW-12

Prep Type: Total/NA

Prep Batch: 240465

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C5 PFNA	34		25 - 150
13C2 PFDA	34		25 - 150
13C2 PFUnA	32		25 - 150
13C2 PFDoA	31		25 - 150
13C2-PFTeDA	26		25 - 150
13C3-PFBS	39		25 - 150
18O2 PFHxS	36		25 - 150
13C4 PFOS	32		25 - 150
13C8 FOSA	32		25 - 150
d3-NMeFOSAA	38		25 - 150
d5-NEtFOSAA	42		25 - 150
M2-6:2FTS	44		25 - 150
M2-8:2FTS	36		25 - 150

Lab Sample ID: 320-42105-1 MSD

Matrix: Water

Analysis Batch: 240682

Client Sample ID: MW-12

Prep Type: Total/NA

Prep Batch: 240465

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	1.5	J	32.6	33.7		ng/L		99	70 - 130	4	30
Perfluoropentanoic acid (PFPeA)	0.76	J	32.6	31.4		ng/L		94	66 - 126	2	30
Perfluorohexanoic acid (PFHxA)	1.7		32.6	32.0		ng/L		93	66 - 126	9	30
Perfluoroheptanoic acid (PFHpA)	0.27	J	32.6	31.6		ng/L		96	66 - 126	6	30
Perfluorooctanoic acid (PFOA)	0.89	J	32.6	32.2		ng/L		96	64 - 124	1	30
Perfluorononanoic acid (PFNA)	ND		32.6	35.8		ng/L		110	68 - 128	6	30
Perfluorodecanoic acid (PFDA)	0.58	J	32.6	34.2		ng/L		103	69 - 129	8	30
Perfluoroundecanoic acid (PFUnA)	ND		32.6	31.9		ng/L		98	60 - 120	1	30
Perfluorododecanoic acid (PFDoA)	ND		32.6	34.4		ng/L		105	71 - 131	19	30
Perfluorotridecanoic Acid (PFTriA)	ND		32.6	29.9		ng/L		92	72 - 132	13	30
Perfluorotetradecanoic acid (PFTeA)	0.51	J B	32.6	31.7		ng/L		96	68 - 128	19	30
Perfluorobutanesulfonic acid (PFBS)	ND		28.8	28.9		ng/L		100	73 - 133	6	30
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	29.7	27.7		ng/L		92	63 - 123	5	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND		31.1	37.5		ng/L		121	68 - 128	9	30
Perfluorooctanesulfonic acid (PFOS)	1.1	J	30.3	31.5		ng/L		100	67 - 127	7	30
Perfluorodecanesulfonic acid (PFDS)	ND		31.4	26.7		ng/L		85	68 - 128	2	30
Perfluorooctane Sulfonamide (FOSA)	ND		32.6	37.6		ng/L		115	70 - 130	15	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		32.6	31.8		ng/L		98	67 - 127	4	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		32.6	31.3		ng/L		96	65 - 125	13	30

TestAmerica Sacramento

QC Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-42105-1 MSD

Matrix: Water

Analysis Batch: 240682

Client Sample ID: MW-12

Prep Type: Total/NA

Prep Batch: 240465

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
6:2 FTS	ND		30.9	32.4		ng/L		105	66 - 126	17	30
8:2 FTS	ND		31.2	29.3		ng/L		94	67 - 127	13	30
MSD MSD											
Isotope Dilution	%Recovery	Qualifier	Limits								
13C4 PFBA	56		25 - 150								
13C5 PFPeA	60		25 - 150								
13C2 PFHxA	60		25 - 150								
13C4-PFHpA	63		25 - 150								
13C4 PFOA	58		25 - 150								
13C5 PFNA	52		25 - 150								
13C2 PFDA	49		25 - 150								
13C2 PFUnA	49		25 - 150								
13C2 PFDoA	43		25 - 150								
13C2-PFTeDA	32		25 - 150								
13C3-PFBS	55		25 - 150								
18O2 PFHxS	57		25 - 150								
13C4 PFOS	49		25 - 150								
13C8 FOSA	46		25 - 150								
d3-NMeFOSAA	55		25 - 150								
d5-NEtFOSAA	62		25 - 150								
M2-6:2FTS	77		25 - 150								
M2-8:2FTS	67		25 - 150								

Definitions/Glossary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Glossary

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

QC Association Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

LCMS

Prep Batch: 240465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42105-1	MW-12	Total/NA	Water	3535	
320-42105-2	MW-11	Total/NA	Water	3535	
320-42105-3	Field Duplicate	Total/NA	Water	3535	
320-42105-4	Equipment Blank	Total/NA	Water	3535	
320-42105-5	MW-10D	Total/NA	Water	3535	
MB 320-240465/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-240465/2-A	Lab Control Sample	Total/NA	Water	3535	
320-42105-1 MS	MW-12	Total/NA	Water	3535	
320-42105-1 MSD	MW-12	Total/NA	Water	3535	

Analysis Batch: 240682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-42105-1	MW-12	Total/NA	Water	537 (modified)	240465
320-42105-2	MW-11	Total/NA	Water	537 (modified)	240465
320-42105-3	Field Duplicate	Total/NA	Water	537 (modified)	240465
320-42105-4	Equipment Blank	Total/NA	Water	537 (modified)	240465
320-42105-5	MW-10D	Total/NA	Water	537 (modified)	240465
MB 320-240465/1-A	Method Blank	Total/NA	Water	537 (modified)	240465
LCS 320-240465/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	240465
320-42105-1 MS	MW-12	Total/NA	Water	537 (modified)	240465
320-42105-1 MSD	MW-12	Total/NA	Water	537 (modified)	240465

Lab Chronicle

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Client Sample ID: MW-12

Date Collected: 08/07/18 11:20

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240465	08/17/18 09:05	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1	240682	08/18/18 08:20	S1M	TAL SAC

Client Sample ID: MW-11

Date Collected: 08/07/18 11:55

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240465	08/17/18 09:05	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1	240682	08/18/18 08:43	S1M	TAL SAC

Client Sample ID: Field Duplicate

Date Collected: 08/07/18 00:00

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240465	08/17/18 09:05	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1	240682	08/18/18 08:50	S1M	TAL SAC

Client Sample ID: Equipment Blank

Date Collected: 08/07/18 12:10

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240465	08/17/18 09:05	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1	240682	08/18/18 08:58	S1M	TAL SAC

Client Sample ID: MW-10D

Date Collected: 08/07/18 12:35

Date Received: 08/14/18 17:37

Lab Sample ID: 320-42105-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240465	08/17/18 09:05	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1	240682	08/18/18 09:05	S1M	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 320-42105-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Laboratory: TestAmerica Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-19

Method PFC IDA

Fluorinated Hydrocarbons by Method
PFAS IDA

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	M262FTS #	PFOA #
MW-12	320-42105-1	38	41	39	42	45	37	119	44
MW-11	320-42105-2	59	60	60	61	61	61	69	59
Field Duplicate	320-42105-3	40	39	41	39	41	41	52	41
Equipment Blank	320-42105-4	95	99	96	92	99	94	119	98
MW-10D	320-42105-5	75	76	78	76	79	75	118	76
	MB 320-240465/1-A	94	98	97	95	99	95	123	94
	LCS 320-240465/2-A	100	101	100	95	101	102	113	98
MW-12 MS	320-42105-1 MS	37	38	39	41	39	36	44	36
MW-12 MSD	320-42105-1 MSD	56	60	55	60	63	57	77	58

QC LIMITS

PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFBS = 13C3-PFBS	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
M262FTS = M2-6:2FTS	25-150
PFOA = 13C4 PFOA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFNA #	PFOS #	M282FTS #	PFDA #	PFOSA #	d3NMFOS #	d5NEFOS #	PFUnA #
MW-12	320-42105-1	40	34	64	37	34	47	48	34
MW-11	320-42105-2	55	51	68	55	44	57	57	47
Field Duplicate	320-42105-3	39	36	46	36	32	36	38	35
Equipment Blank	320-42105-4	96	92	134	95	89	111	113	93
MW-10D	320-42105-5	70	67	76	71	70	67	70	59
	MB 320-240465/1-A	95	94	98	92	95	103	110	90
	LCS 320-240465/2-A	97	99	122	98	99	106	113	97
MW-12 MS	320-42105-1 MS	34	32	36	34	32	38	42	32
MW-12 MSD	320-42105-1 MSD	52	49	67	49	46	55	62	49

QC LIMITS

PFNA = 13C5 PFNA	25-150
PFOS = 13C4 PFOS	25-150
M282FTS = M2-8:2FTS	25-150
PFDA = 13C2 PFDA	25-150
PFOSA = 13C8 FOSA	25-150
d3NMFOS = d3-NMeFOSAA	25-150
d5NEFOS = d5-NEtFOSAA	25-150
PFUnA = 13C2 PFUnA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFD _o A #	PFTDA #
MW-12	320-42105-1	28	23 *
MW-11	320-42105-2	45	43
Field Duplicate	320-42105-3	31	30
Equipment Blank	320-42105-4	97	90
MW-10D	320-42105-5	60	60
	MB 320-240465/1-A	95	99
	LCS 320-240465/2-A	96	111
MW-12 MS	320-42105-1 MS	31	26
MW-12 MSD	320-42105-1 MSD	43	32

PFD_oA = 13C2 PFD_oA
PFTDA = 13C2-PFTeDA

QC LIMITS
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.18LLA_033.d
 Lab ID: LCS 320-240465/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	40.0	100	70-130	
Perfluoropentanoic acid (PFPeA)	40.0	38.9	97	66-126	
Perfluorohexanoic acid (PFHxA)	40.0	40.3	101	66-126	
Perfluoroheptanoic acid (PFHpA)	40.0	39.3	98	66-126	
Perfluorooctanoic acid (PFOA)	40.0	41.1	103	64-124	
Perfluorononanoic acid (PFNA)	40.0	42.2	106	68-128	
Perfluorodecanoic acid (PFDA)	40.0	42.3	106	69-129	
Perfluoroundecanoic acid (PFUnA)	40.0	42.7	107	60-120	
Perfluorododecanoic acid (PFDoA)	40.0	40.7	102	71-131	
Perfluorotridecanoic Acid (PFTriA)	40.0	40.6	102	72-132	
Perfluorotetradecanoic acid (PFTeA)	40.0	40.4	101	68-128	
Perfluorobutanesulfonic acid (PFBS)	35.4	35.7	101	73-133	
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.8	90	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.7	112	68-128	
Perfluorooctanesulfonic acid (PFOS)	37.1	37.9	102	67-127	
Perfluorodecanesulfonic acid (PFDS)	38.6	39.6	103	68-128	
Perfluorooctane Sulfonamide (FOSA)	40.0	43.4	109	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	40.0	38.1	95	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	40.0	37.7	94	65-125	
6:2 FTS	37.9	34.9	92	66-126	
8:2 FTS	38.3	36.1	94	67-127	
13C4 PFBA	100	99.5	100	25-150	
13C5 PFPeA	100	101	101	25-150	
13C2 PFHxA	100	95.3	95	25-150	
13C4-PFHpA	100	101	101	25-150	
13C4 PFOA	100	98.2	98	25-150	
13C5 PFNA	100	96.6	97	25-150	
13C2 PFDA	100	98.0	98	25-150	
13C2 PFUnA	100	96.7	97	25-150	
13C2 PFDoA	100	96.4	96	25-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.18LLA_033.d
 Lab ID: LCS 320-240465/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
13C2-PFTeDA	100	111	111	25-150	
13C3-PFBS	93.0	92.7	100	25-150	
18O2 PFHxS	94.6	96.5	102	25-150	
13C4 PFOS	95.6	94.6	99	25-150	
13C8 FOSA	100	99.1	99	25-150	
d3-NMeFOSAA	100	106	106	25-150	
d5-NEtFOSAA	100	113	113	25-150	
M2-6:2FTS	95.0	107	113	25-150	
M2-8:2FTS	95.8	117	122	25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.18LLA_035.d
 Lab ID: 320-42105-1 MS Client ID: MW-12 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	31.7	1.5 J	32.3	97	70-130	
Perfluoropentanoic acid (PFPeA)	31.7	0.76 J	30.9	95	66-126	
Perfluorohexanoic acid (PFHxA)	31.7	1.7	29.3	87	66-126	
Perfluoroheptanoic acid (PFHpA)	31.7	0.27 J	29.6	93	66-126	
Perfluorooctanoic acid (PFOA)	31.8	0.89 J	32.0	98	64-124	
Perfluorononanoic acid (PFNA)	31.7	ND	33.5	106	68-128	
Perfluorodecanoic acid (PFDA)	31.7	0.58 J	31.6	98	69-129	
Perfluoroundecanoic acid (PFUnA)	31.7	ND	31.5	99	60-120	
Perfluorododecanoic acid (PFDoA)	31.7	ND	28.5	90	71-131	
Perfluorotridecanoic Acid (PFTriA)	31.7	ND	26.2	83	72-132	
Perfluorotetradecanoic acid (PFTeA)	31.7	0.51 J	26.1	81	68-128	
Perfluorobutanesulfonic acid (PFBS)	28.0	ND	27.2	97	73-133	
Perfluorohexanesulfonic acid (PFHxS)	28.9	0.32 J	29.1	100	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	30.2	ND	34.3	113	68-128	
Perfluorooctanesulfonic acid (PFOS)	29.4	1.1 J	29.2	96	67-127	
Perfluorodecanesulfonic acid (PFDS)	30.6	ND	27.2	89	68-128	
Perfluorooctane Sulfonamide (FOSA)	31.7	ND	32.5	102	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	31.7	ND	30.5	96	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	31.7	ND	27.5	87	65-125	
6:2 FTS	30.1	ND	27.5	91	66-126	
8:2 FTS	30.4	ND	33.3	110	67-127	
13C4 PFBA	79.3	30	29.6	37	25-150	
13C5 PFPeA	79.3	33	30.4	38	25-150	
13C2 PFHxA	79.3	34	32.4	41	25-150	
13C4-PFHpA	79.3	36	30.9	39	25-150	
13C4 PFOA	79.3	35	28.8	36	25-150	
13C5 PFNA	79.3	32	27.1	34	25-150	
13C2 PFDA	79.3	30	26.9	34	25-150	
13C2 PFUnA	79.3	27	25.3	32	25-150	
13C2 PFDoA	79.3	22	24.9	31	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.18LLA_035.d
 Lab ID: 320-42105-1 MS Client ID: MW-12 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
13C2-PFTeDA	79.3	18	20.4	26	25-150	
13C3-PFBS	73.8	29	28.5	39	25-150	
18O2 PFHxS	75.0	28	27.3	36	25-150	
13C4 PFOS	75.8	26	24.6	32	25-150	
13C8 FOSA	79.3	27	25.1	32	25-150	
d3-NMeFOSAA	79.3	38	30.2	38	25-150	
d5-NEtFOSAA	79.3	39	32.9	42	25-150	
M2-6:2FTS	75.3	91	33.4	44	25-150	
M2-8:2FTS	76.0	49	27.6	36	25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-42105-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.08.18LLA_036.d

Lab ID: 320-42105-1 MSD

Client ID: MW-12 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	32.6	33.7	99	4	30	70-130	
Perfluoropentanoic acid (PFPeA)	32.6	31.4	94	2	30	66-126	
Perfluorohexanoic acid (PFHxA)	32.6	32.0	93	9	30	66-126	
Perfluoroheptanoic acid (PFHpA)	32.6	31.6	96	6	30	66-126	
Perfluorooctanoic acid (PFOA)	32.6	32.2	96	1	30	64-124	
Perfluorononanoic acid (PFNA)	32.6	35.8	110	6	30	68-128	
Perfluorodecanoic acid (PFDA)	32.6	34.2	103	8	30	69-129	
Perfluoroundecanoic acid (PFUnA)	32.6	31.9	98	1	30	60-120	
Perfluorododecanoic acid (PFDoA)	32.6	34.4	105	19	30	71-131	
Perfluorotridecanoic Acid (PFTriA)	32.6	29.9	92	13	30	72-132	
Perfluorotetradecanoic acid (PFTeA)	32.6	31.7	96	19	30	68-128	
Perfluorobutanesulfonic acid (PFBS)	28.8	28.9	100	6	30	73-133	
Perfluorohexanesulfonic acid (PFHxS)	29.7	27.7	92	5	30	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	31.1	37.5	121	9	30	68-128	
Perfluorooctanesulfonic acid (PFOS)	30.3	31.5	100	7	30	67-127	
Perfluorodecanesulfonic acid (PFDS)	31.4	26.7	85	2	30	68-128	
Perfluorooctane Sulfonamide (FOSA)	32.6	37.6	115	15	30	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	32.6	31.8	98	4	30	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	32.6	31.3	96	13	30	65-125	
6:2 FTS	30.9	32.4	105	17	30	66-126	
8:2 FTS	31.2	29.3	94	13	30	67-127	
13C4 PFBA	81.5	46.0	56			25-150	
13C5 PFPeA	81.5	48.7	60			25-150	
13C2 PFHxA	81.5	48.7	60			25-150	
13C4-PFHpA	81.5	51.1	63			25-150	
13C4 PFOA	81.5	47.1	58			25-150	
13C5 PFNA	81.5	42.8	52			25-150	
13C2 PFDA	81.5	39.9	49			25-150	
13C2 PFUnA	81.5	40.0	49			25-150	
13C2 PFDoA	81.5	35.4	43			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.18LLA_036.d
 Lab ID: 320-42105-1 MSD Client ID: MW-12 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
13C2-PFTeDA	81.5	26.3	32			25-150	
13C3-PFBS	75.8	42.0	55			25-150	
18O2 PFHxS	77.1	44.1	57			25-150	
13C4 PFOS	78.0	38.2	49			25-150	
13C8 FOSA	81.5	37.2	46			25-150	
d3-NMeFOSAA	81.5	44.9	55			25-150	
d5-NEtFOSAA	81.5	50.2	62			25-150	
M2-6:2FTS	77.5	59.8	77			25-150	
M2-8:2FTS	78.1	52.3	67			25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Lab File ID: 2018.08.18LLA_032.d Lab Sample ID: MB 320-240465/1-A
 Matrix: Water Date Extracted: 08/17/2018 09:05
 Instrument ID: A9 Date Analyzed: 08/18/2018 08:05
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-240465/2-A	2018.08.18L LA 033.d	08/18/2018 08:13
MW-12	320-42105-1	2018.08.18L LA 034.d	08/18/2018 08:20
MW-12 MS	320-42105-1 MS	2018.08.18L LA 035.d	08/18/2018 08:28
MW-12 MSD	320-42105-1 MSD	2018.08.18L LA 036.d	08/18/2018 08:35
MW-11	320-42105-2	2018.08.18L LA 037.d	08/18/2018 08:43
Field Duplicate	320-42105-3	2018.08.18L LA 038.d	08/18/2018 08:50
Equipment Blank	320-42105-4	2018.08.18L LA 039.d	08/18/2018 08:58
MW-10D	320-42105-5	2018.08.18L LA 040.d	08/18/2018 09:05

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Sample No.: IC 320-239851/5 Date Analyzed: 08/14/2018 14:55
 Instrument ID: A9 GC Column: Acquity ID: 2.1 (mm)
 Lab File ID (Standard): 2018.08.14LLICAL_00 Heated Purge: (Y/N) N
 Calibration ID: 40619

	13PFOA					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	8880897	2.75				
UPPER LIMIT	13321346	2.95				
LOWER LIMIT	4440449	2.55				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-239851/9		8336600	2.75			
ICV 320-239851/10		8286548	2.75			
CCV 320-240679/3 CCVIS		8099338	2.74			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Sample No.: CCV 320-240679/3 Date Analyzed: 08/18/2018 04:50
 Instrument ID: A9 GC Column: Acquity ID: 2.1 (mm)
 Lab File ID (Standard): 2018.08.18LLA_006.d Heated Purge: (Y/N) N
 Calibration ID: 40619

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		8099338	2.74				
UPPER LIMIT		12149007	2.94				
LOWER LIMIT		4049669	2.54				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-240679/1		8025227	2.75				
CCVL 320-240679/2		8342325	2.75				
CCV 320-240682/1		8229517	2.75				
MB 320-240465/1-A		8959371	2.74				
LCS 320-240465/2-A		8682801	2.74				
320-42105-1	MW-12	9947543	2.74				
320-42105-1 MS	MW-12 MS	9102180	2.74				
320-42105-1 MSD	MW-12 MSD	9279404	2.74				
320-42105-2	MW-11	9029145	2.74				
320-42105-3	Field Duplicate	8855300	2.75				
320-42105-4	Equipment Blank	9160677	2.75				
320-42105-5	MW-10D	9319572	2.75				
CCV 320-240682/11		8342779	2.75				

13PFOA = 13C2-PFOA
 13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-12</u>	Lab Sample ID: <u>320-42105-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_034.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>312.2 (mL)</u>	Date Analyzed: <u>08/18/2018 08:20</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	1.5	J	1.6	0.28
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.76	J	1.6	0.39
307-24-4	Perfluorohexanoic acid (PFHxA)	1.7		1.6	0.46
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.27	J	1.6	0.20
335-67-1	Perfluorooctanoic acid (PFOA)	0.89	J	1.6	0.68
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.6	0.22
335-76-2	Perfluorodecanoic acid (PFDA)	0.58	J	1.6	0.25
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.88
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.6	0.44
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.6	1.0
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.51	J B	1.6	0.23
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.6	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.15
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.1	J	1.6	0.43
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.28
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		16	2.5
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		16	1.5
27619-97-2	6:2 FTS	ND		16	1.6
39108-34-4	8:2 FTS	ND		16	1.6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-12</u>	Lab Sample ID: <u>320-42105-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_034.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>312.2 (mL)</u>	Date Analyzed: <u>08/18/2018 08:20</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	38		25-150
STL01893	13C5 PFPeA	41		25-150
STL00993	13C2 PFHxA	42		25-150
STL01892	13C4-PFHpA	45		25-150
STL00990	13C4 PFOA	44		25-150
STL00995	13C5 PFNA	40		25-150
STL00996	13C2 PFDA	37		25-150
STL00997	13C2 PFUnA	34		25-150
STL00998	13C2 PFDoA	28		25-150
STL02116	13C2-PFTeDA	23	*	25-150
STL02337	13C3-PFBS	39		25-150
STL00994	18O2 PFHxS	37		25-150
STL00991	13C4 PFOS	34		25-150
STL01056	13C8 FOSA	34		25-150
STL02118	d3-NMeFOSAA	47		25-150
STL02117	d5-NEtFOSAA	48		25-150
STL02279	M2-6:2FTS	119		25-150
STL02280	M2-8:2FTS	64		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_034.d
 Lims ID: 320-42105-A-1-A
 Client ID: MW-12
 Sample Type: Client
 Inject. Date: 18-Aug-2018 08:20:51 ALS Bottle#: 23 Worklist Smp#: 4
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:51:07 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:51:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.489	1.500	-0.011	0.544	3609236	0.9476		37.9	5068	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.489	1.505	-0.016	1.000	63070	0.0462			3.7	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.773	-0.008	1.000	33611	0.0238			2.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.774	-0.010	0.645	3448972	1.02		40.6	8383	
D 47 13C3-PFBS										
301.90 > 83.00	1.798	1.807	-0.009	0.657	39649	0.8996		38.7	188	
D 7 13C2 PFHxA										
315.00 > 270.00	2.038	2.050	-0.012	0.745	3795808	1.06		42.4	4741	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.038	2.059	-0.021	1.000	70998	0.0523			11.1	
313.00 > 119.00	2.048	2.059	-0.011	1.005	5489		12.93(6.96-20.87)		15.8	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.141	2.152	-0.011	0.782	461875	0.99		39.7	1261	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.374	2.387	-0.013	1.000	16957	0.008449			2.0	
363.00 > 169.00	2.374	2.387	-0.013	1.000	3773		4.49(2.17-6.52)		1.5	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.374	2.388	-0.014	0.868	4743297	1.12		44.7	15159	
D 11 18O2 PFHxS										
403.00 > 84.00	2.387	2.402	-0.015	0.873	2282140	0.8751		37.0	4768	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.387	2.414	-0.027	1.000	12392	0.0101			8.2	M
399.00 > 99.00	2.387	2.414	-0.027	1.000	3331		3.72(1.90-5.70)		5.7	
D 12 M2-6:2FTS										
429.00 > 81.00	2.704	2.721	-0.017	0.988	1113443	2.83		119	2295	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.704	2.736	-0.032	1.000	49927	0.0478	88.1	
D 73 13C8 PFOA	421.00	> 376.00	2.720	2.737	-0.017		3770	0.001339	0.0	20.8
15 Perfluorooctanoic acid	413.00	> 369.00	2.736	2.751	-0.015	1.000	52194	0.0277	5.1	M
	413.00	> 169.00	2.736	2.751	-0.015	1.000	20772	2.51(1.36-4.08)	38.2	M
* 62 13C2-PFOA	415.00	> 370.00	2.736	2.751	-0.015		9947543	2.50	7815	
D 14 13C4 PFOA	417.00	> 372.00	2.736	2.753	-0.017	1.000	4361763	1.11	44.3	12351
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.101	3.137	-0.036	1.000	32465	0.0328	6.6	M
	499.00	> 99.00	3.101	3.137	-0.036	1.000	5025	6.46(2.04-6.12)	9.9	M
D 19 13C5 PFNA	468.00	> 423.00	3.101	3.138	-0.037	1.133	3672900	1.01	40.2	5827
D 18 13C4 PFOS	503.00	> 80.00	3.101	3.138	-0.037	1.133	2256074	0.8071	33.8	1569
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.452	3.483	-0.031	1.000	5688	0.0103	22.4	
D 26 M2-8:2FTS	529.00	> 81.00	3.452	3.483	-0.031	1.262	86971	1.54	64.1	326
D 21 13C8 FOSA	506.00	> 78.00	3.468	3.483	-0.015	1.268	1266018	0.8405	33.6	4025
24 Perfluorodecanoic acid	513.00	> 469.00	3.468	3.499	-0.031	1.000	28408	0.0181	4.5	M
	513.00	> 169.00	3.468	3.499	-0.031	1.000	2855	9.95(7.12-21.35)	7.8	M
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.483	3.499	-0.016	1.004	12408	0.008350	36.1	
D 23 13C2 PFDA	515.00	> 470.00	3.468	3.499	-0.031	1.268	3668737	0.9264	37.1	5593
D 27 d3-NMeFOSAA	573.00	> 419.00	3.615	3.645	-0.030	1.321	2020658	1.18	47.0	3352
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.615	3.657	-0.042	1.000	5270	0.006563	3.8	M
D 30 13C2 PFUnA	565.00	> 520.00	3.794	3.811	-0.017	1.387	2780054	0.8418	33.7	5359
D 32 d5-NEtFOSAA	589.00	> 419.00	3.794	3.811	-0.017	1.387	1577289	1.21	48.4	1739
31 Perfluoroundecanoic acid	563.00	> 519.00	3.794	3.825	-0.031	1.000	17526	0.0182	4.1	
	563.00	> 169.00	3.810	3.825	-0.015	1.004	2152	8.14(5.24-15.72)	12.9	
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.794	3.825	-0.031	1.000	5840	0.009414	11.1	M
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.962	3.978	-0.016	1.278	3538	0.002643	10.8	
D 36 13C2 PFDaA	615.00	> 570.00	4.092	4.110	-0.018	1.496	2690518	0.7024	28.1	5376

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
74 1H,1H,2H,2H-perfluorododecanesulfo										M
627.00 > 607.00	4.092	4.125	-0.033	1.186	1731	0.004846			8.7	M
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.594	4.611	-0.017	1.000	1838	0.0160			12.0	
713.00 > 219.00	4.575	4.611	-0.036	0.996	1775		1.04(0.70-2.09)		10.2	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.594	4.616	-0.022	1.679	1767151	0.5704		22.8	6427	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.025	-0.017	1.000	18999	0.005490			14.4	
813.00 > 169.00	5.008	5.025	-0.017	1.000	3928		4.84(2.77-8.32)		15.1	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.029	-0.021	1.831	1608325	0.4744		19.0	4225	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_034.d

Injection Date: 18-Aug-2018 08:20:51

Instrument ID: A9

Lims ID: 320-42105-A-1-A

Lab Sample ID: 320-42105-1

Client ID: MW-12

Operator ID: A9\Administrator

ALS Bottle#: 23

Worklist Smp#: 4

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

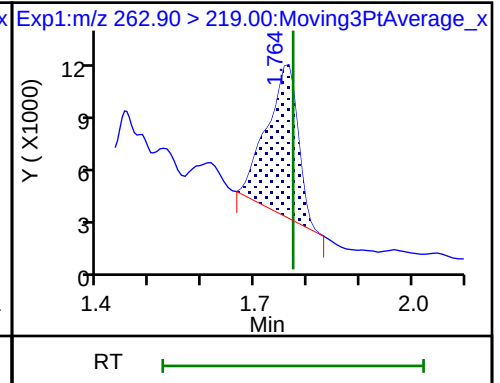
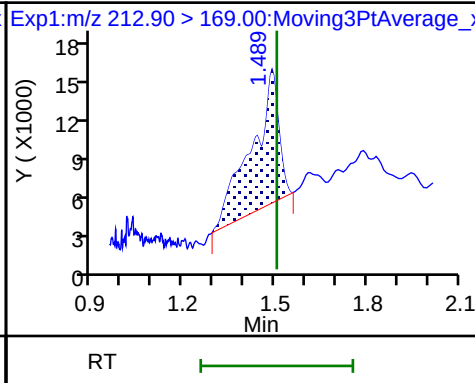
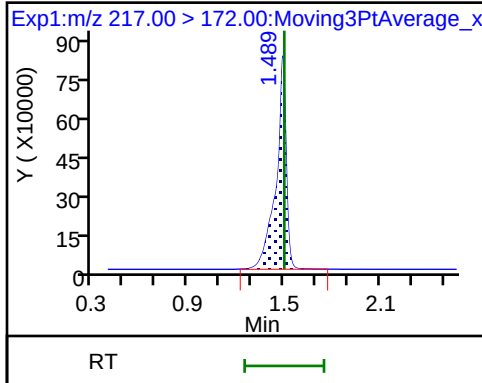
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

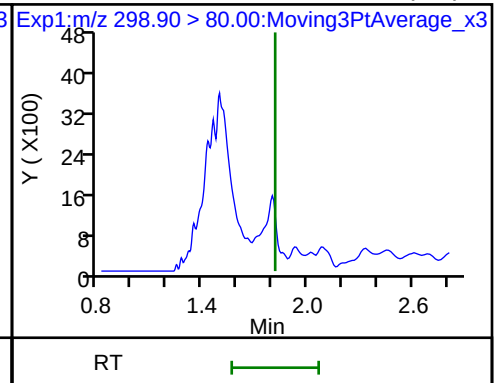
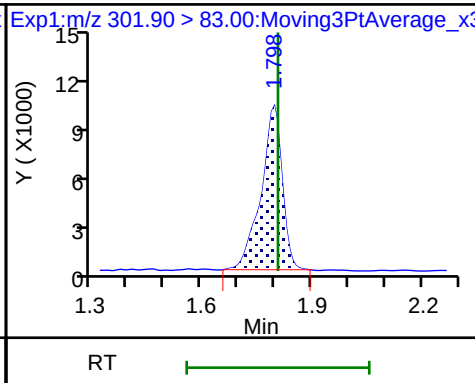
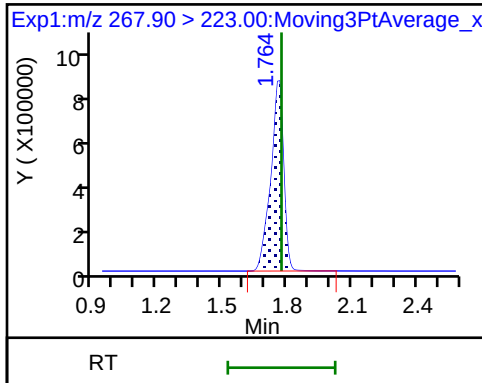
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

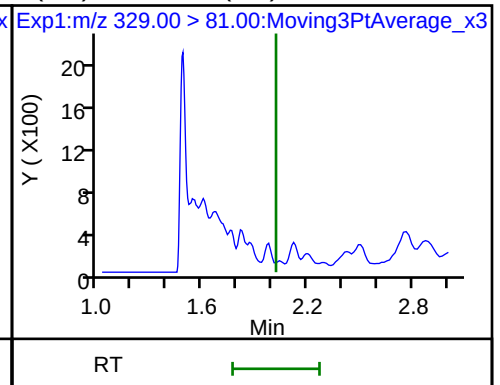
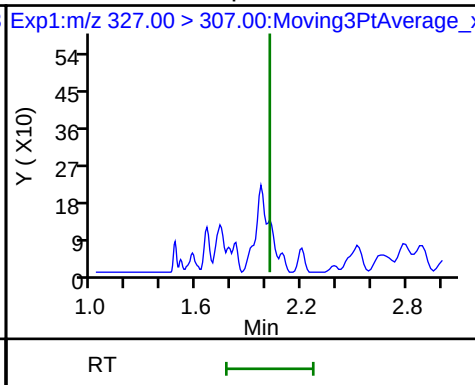
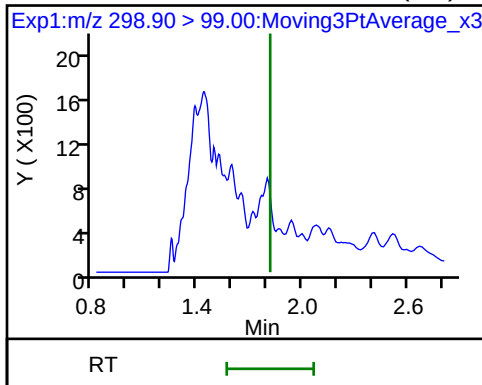
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 1H,1H,2H,2H-perfluorohexanesulfonate (ND)

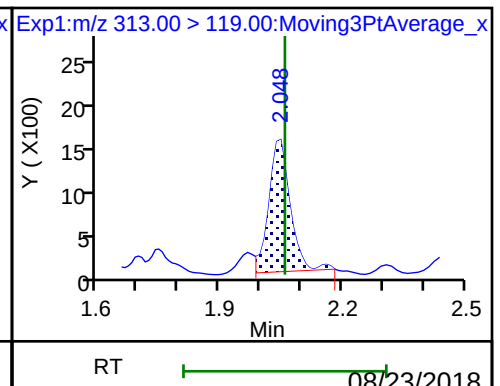
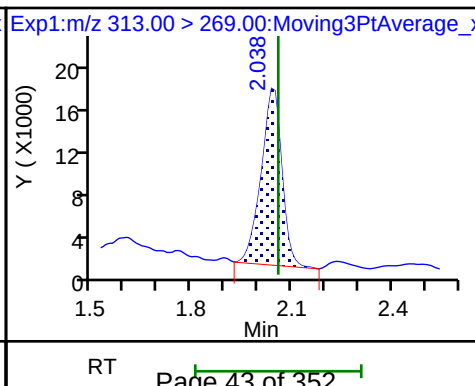
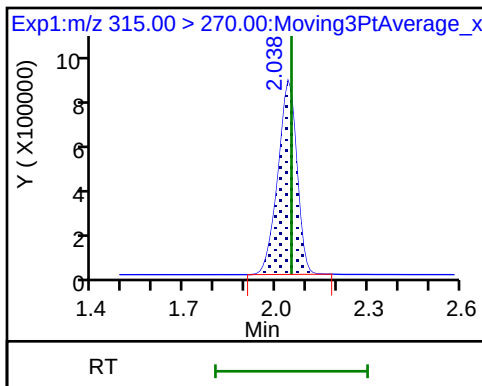
D 50 M2-4:2FTS (ND)



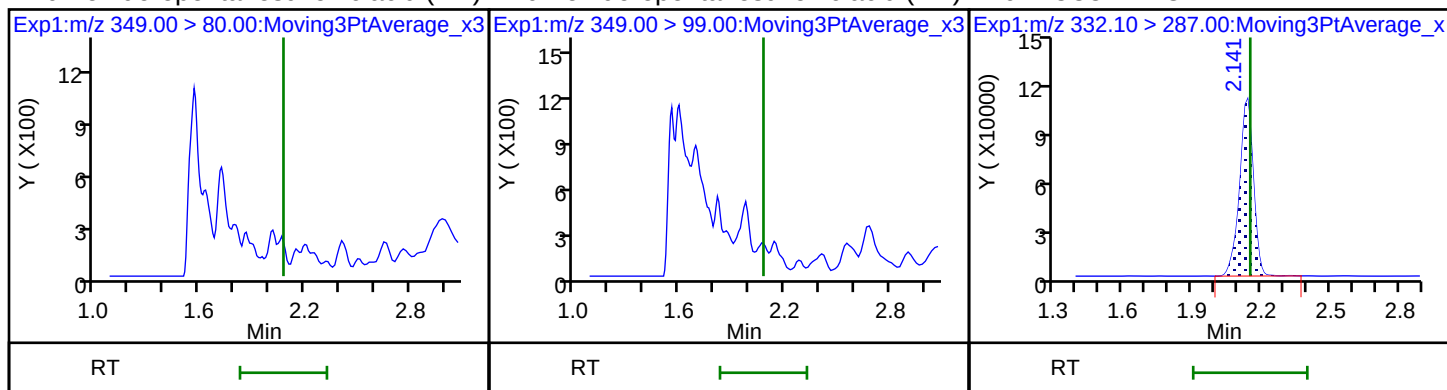
D 7 13C2 PFHxA

6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

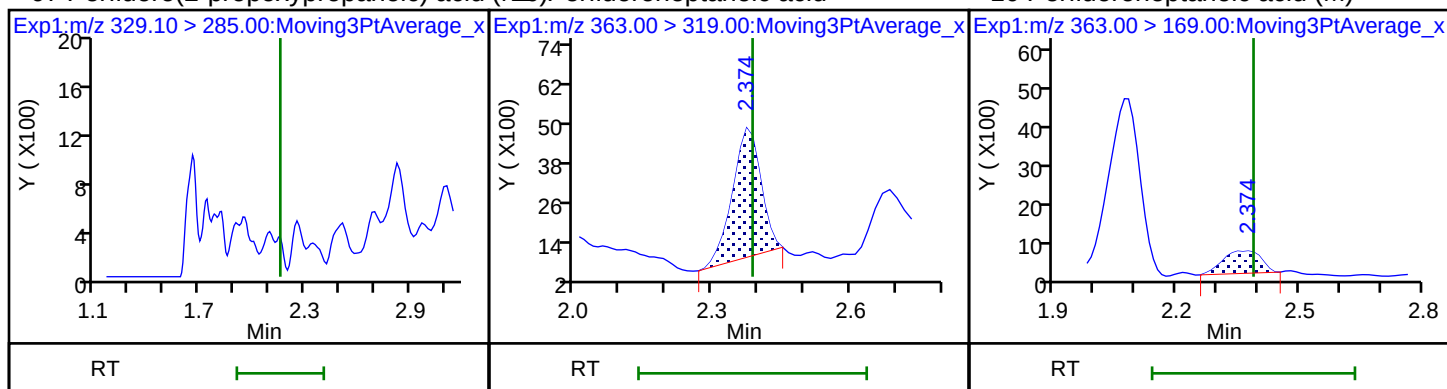


70 Perfluoropentanesulfonic acid (ND) 70 Perfluoropentanesulfonic acid (ND) D 64 13C3 HFPO-DA



67 Perfluoro(2-propoxypropanoic) acid (ND) Perfluoroheptanoic acid

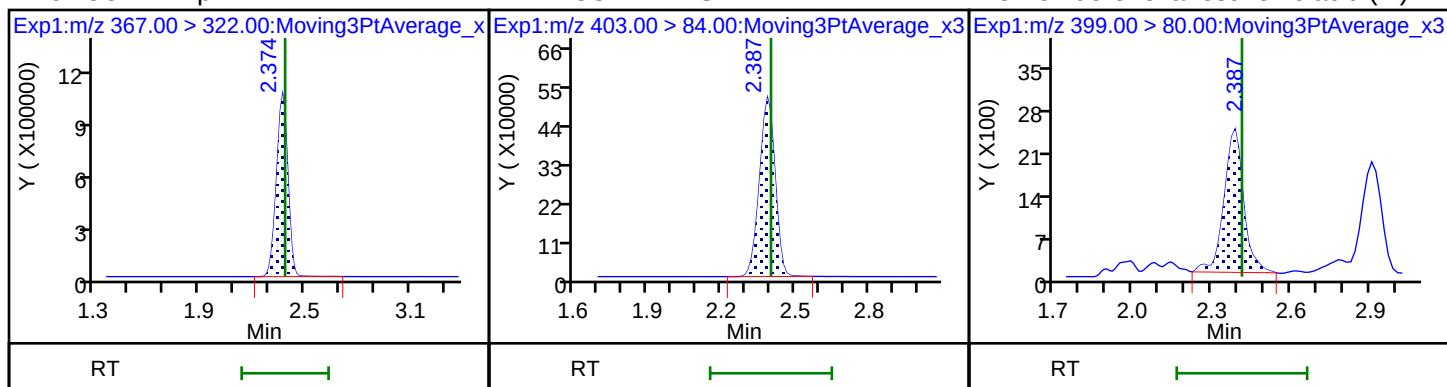
10 Perfluoroheptanoic acid (M)



D 9 13C4-PFHpA

D 11 18O2 PFHxS

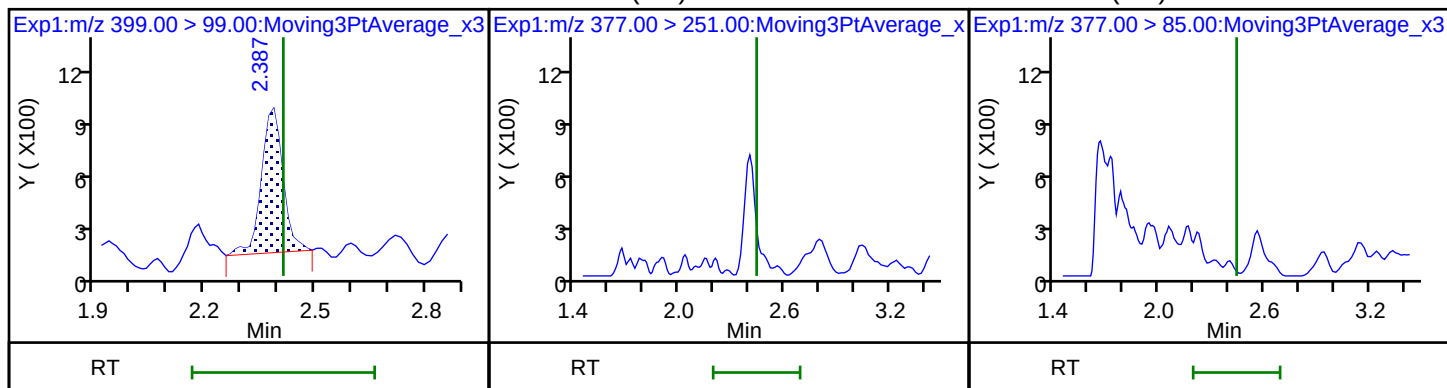
8 Perfluorohexanesulfonic acid (M)



8 Perfluorohexanesulfonic acid

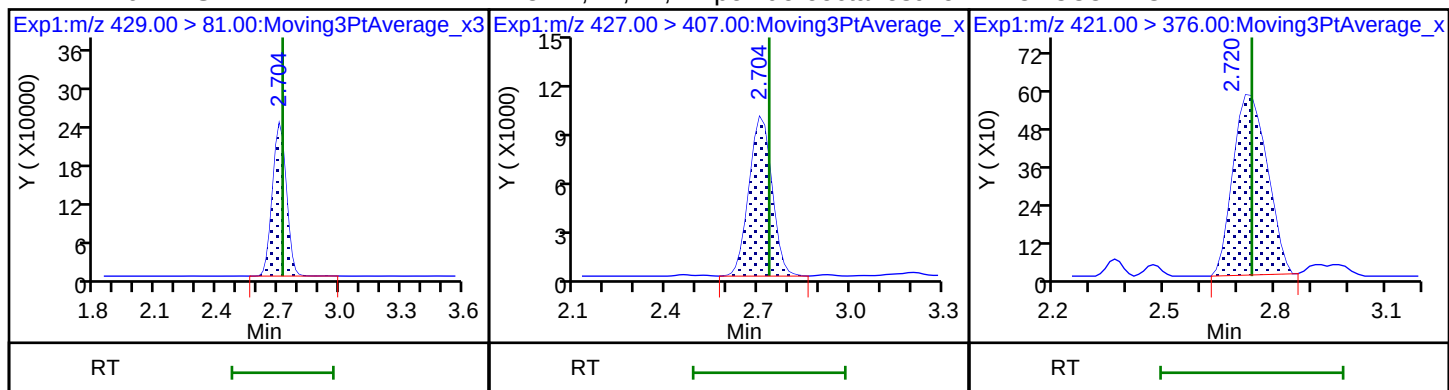
76 DONA (ND)

76 DONA (ND)



D 12 M2-6:2FTS

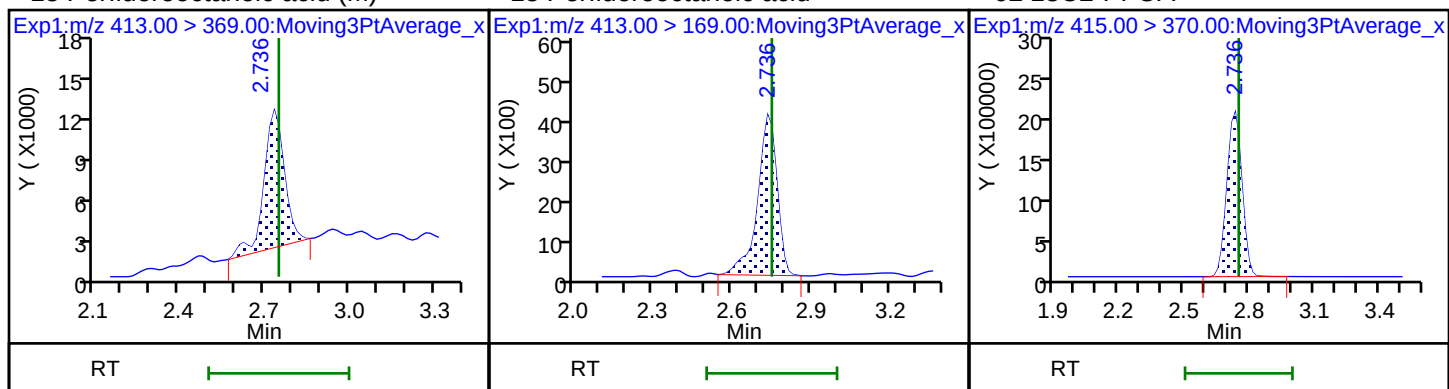
13 1H,1H,2H,2H-perfluorooctanesulfonD 73 13C8 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid

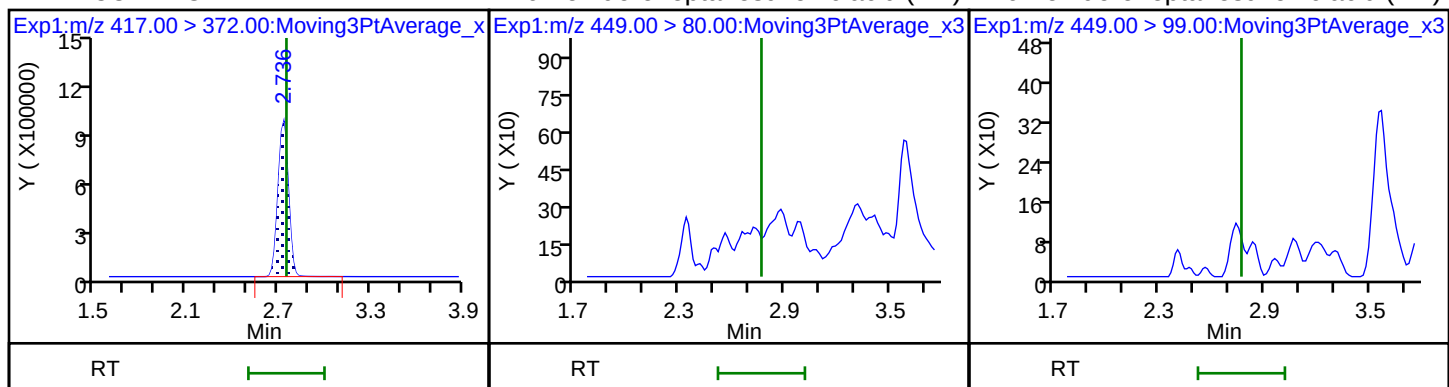
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid (ND)

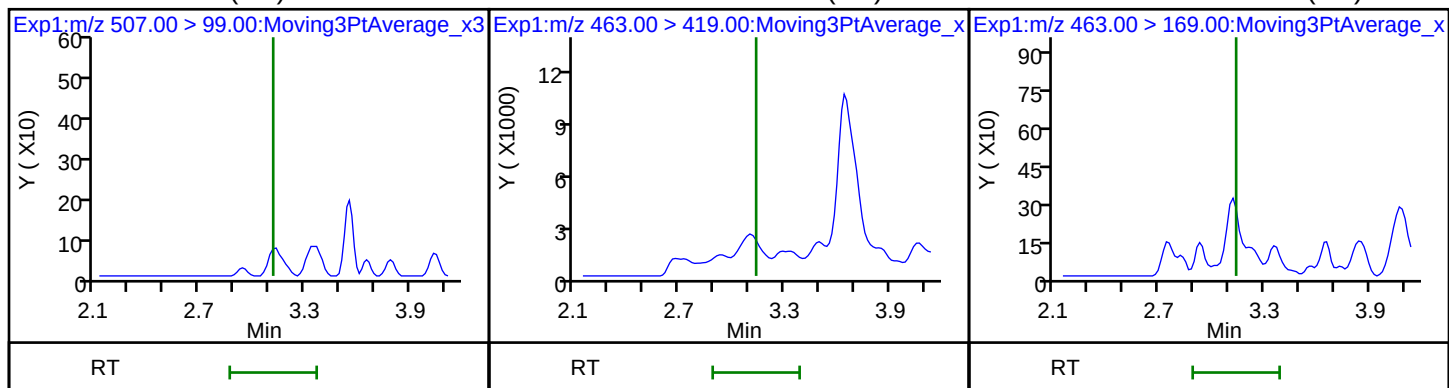
16 Perfluoroheptanesulfonic acid (ND)



D 72 13C8 PFOS (ND)

20 Perfluorononanoic acid (ND)

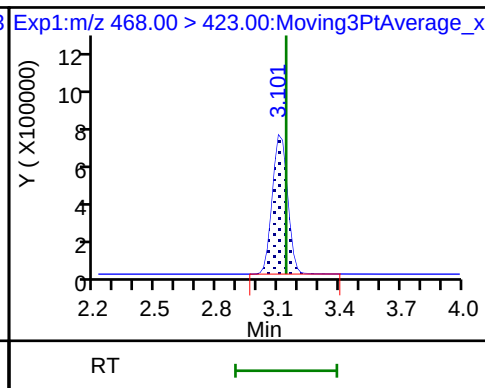
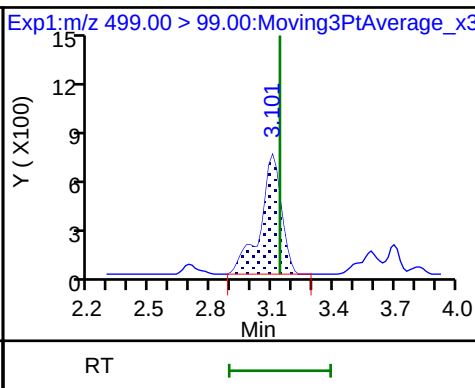
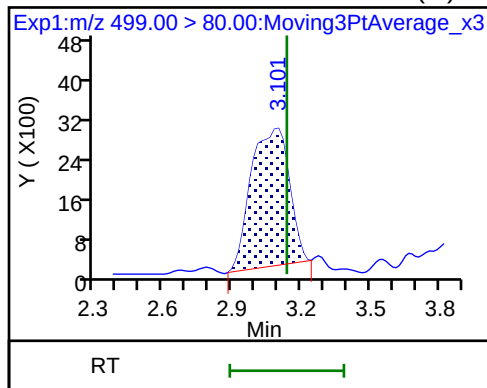
20 Perfluorononanoic acid (ND)



17 Perfluorooctane sulfonic acid (M)

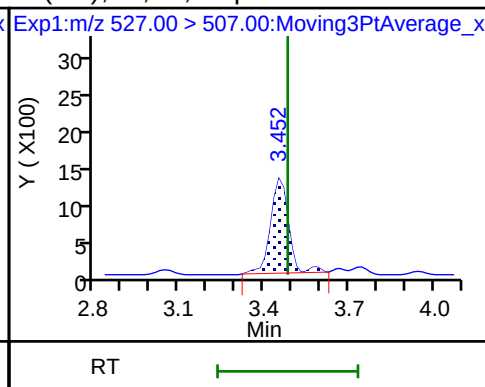
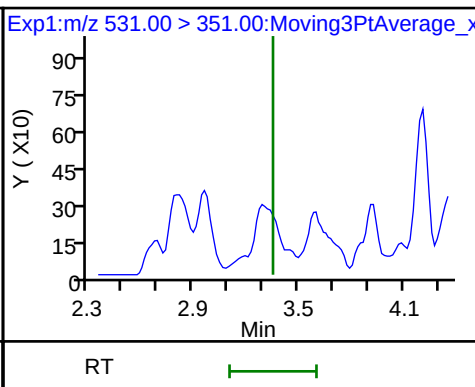
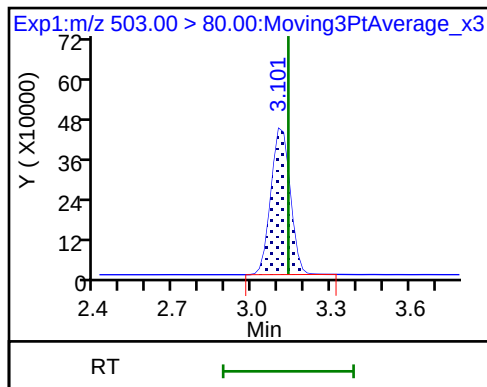
17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



D 18 13C4 PFOS

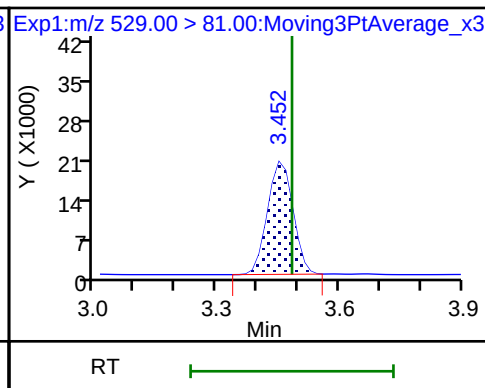
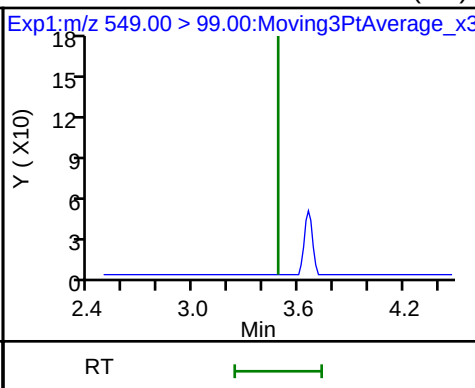
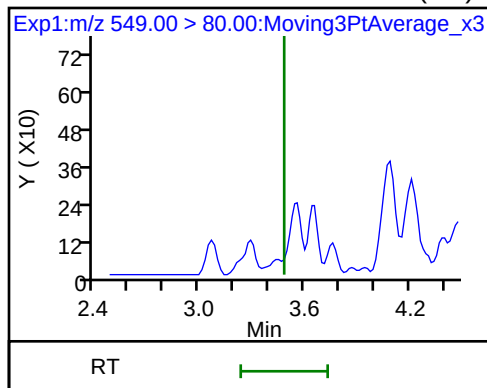
69 9-Chlorohexadecafluoro-3-oxanonan-2(ND),1H,2H-perfluorodecanesulfoni



68 Perfluorononanesulfonic acid (ND)

68 Perfluorononanesulfonic acid (ND)

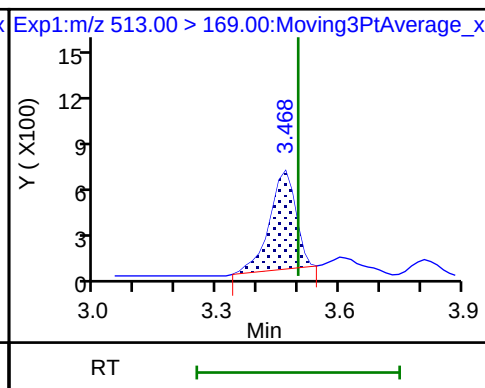
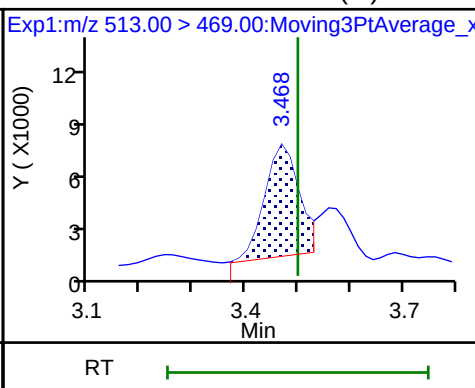
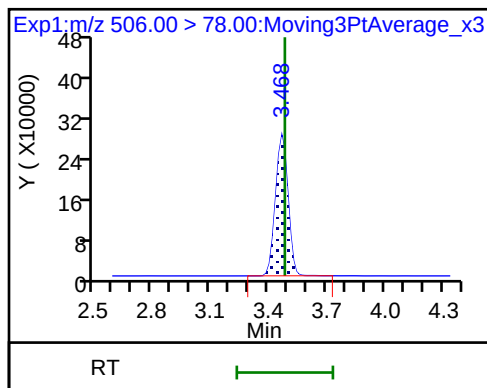
D 26 M2-8:2FTS

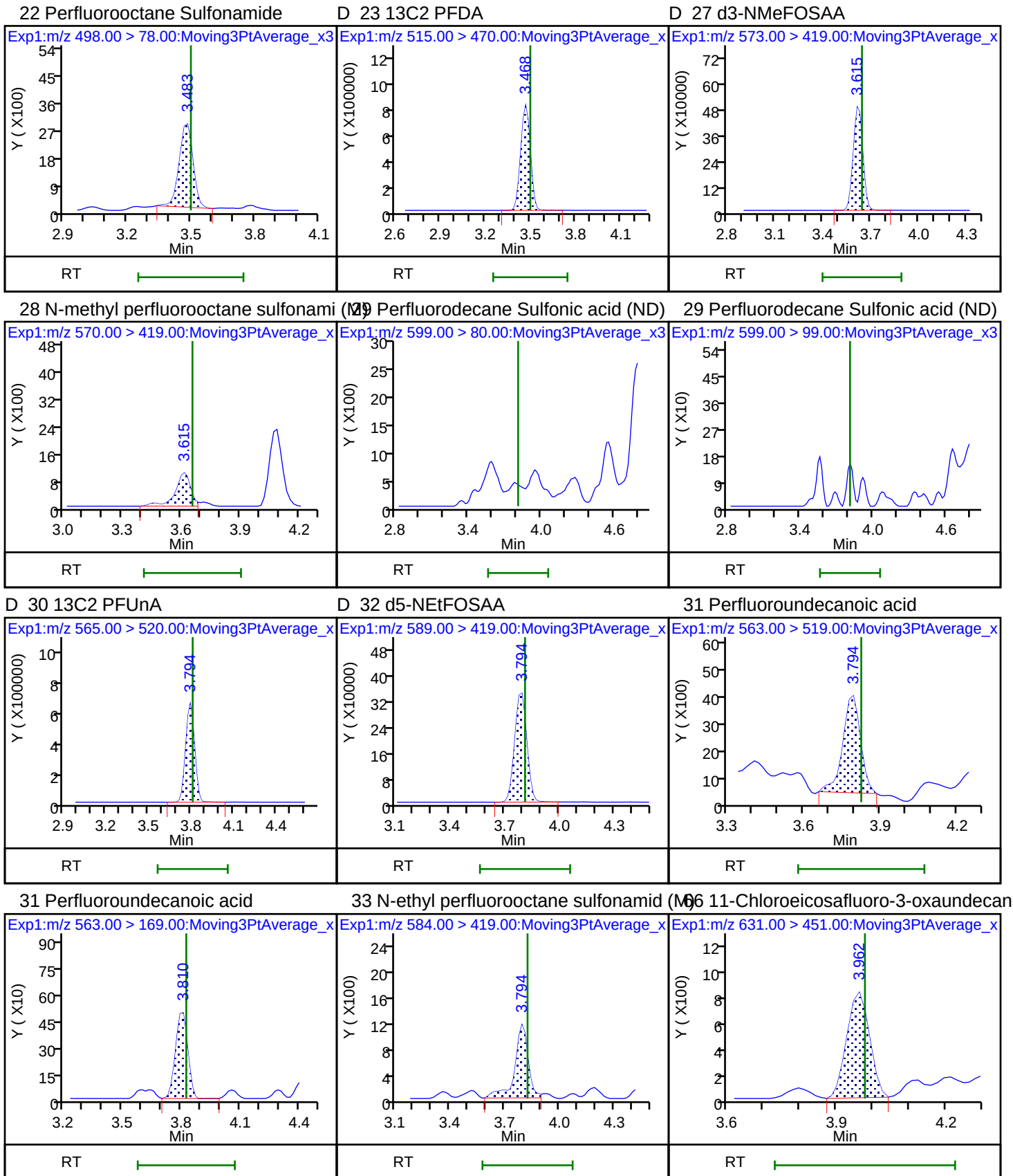


D 21 13C8 FOSA

24 Perfluorodecanoic acid (M)

24 Perfluorodecanoic acid

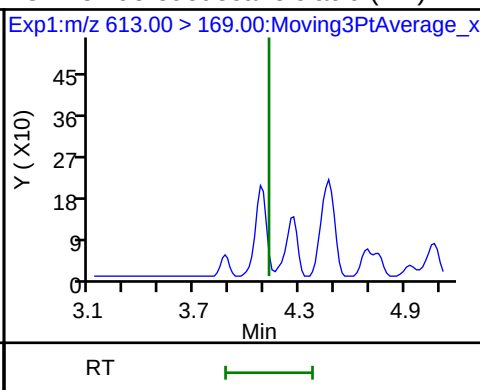
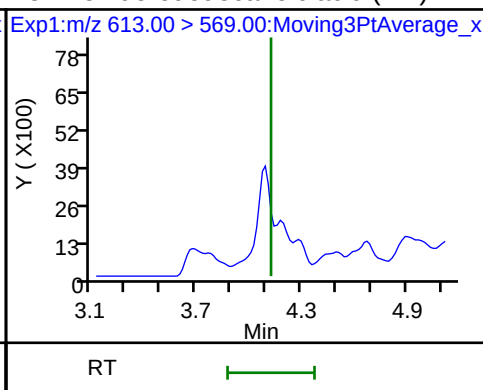
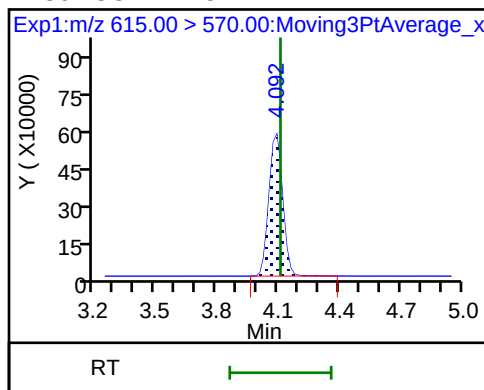




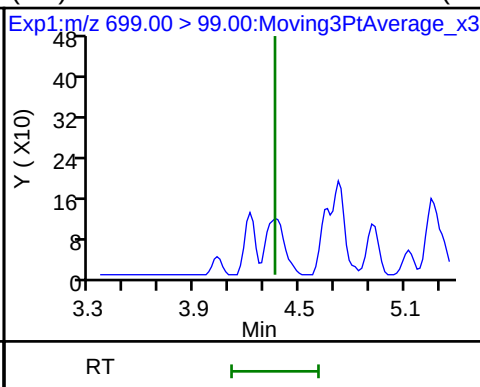
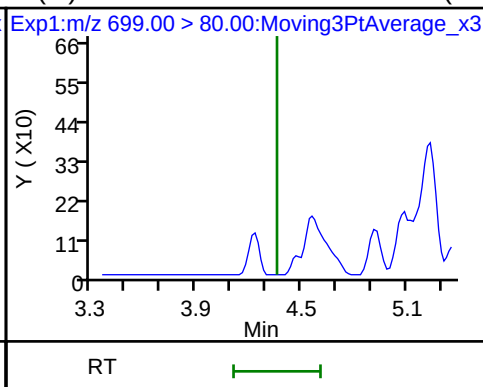
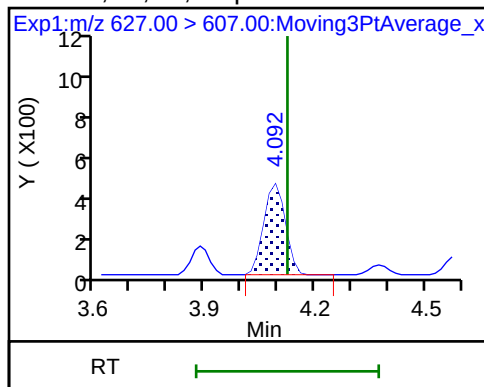
D 36 13C2 PFDaA

37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)



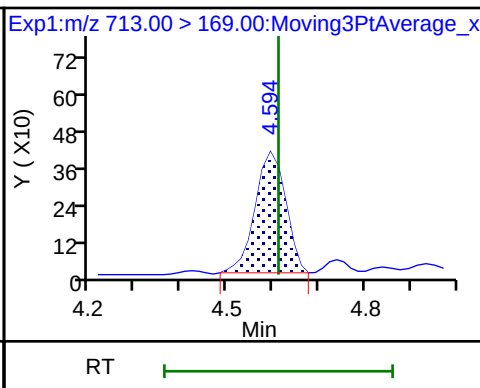
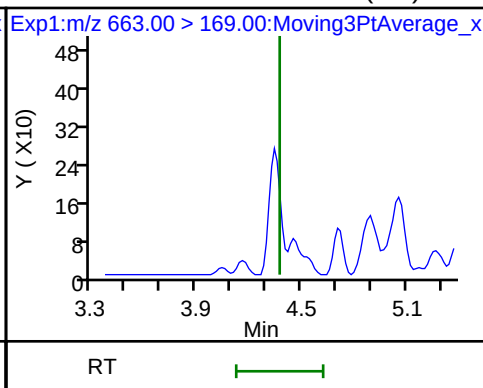
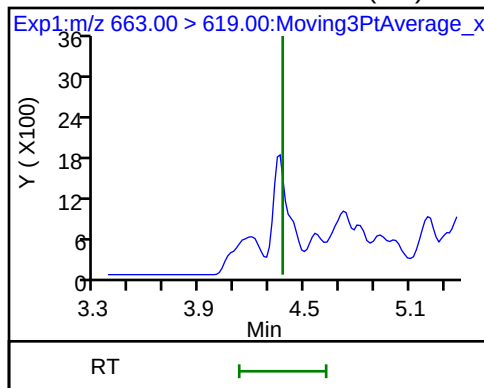
74 1H,1H,2H,2H-perfluorododecanesulfonic acid (PF (ND))



41 Perfluorotridecanoic acid (ND)

41 Perfluorotridecanoic acid (ND)

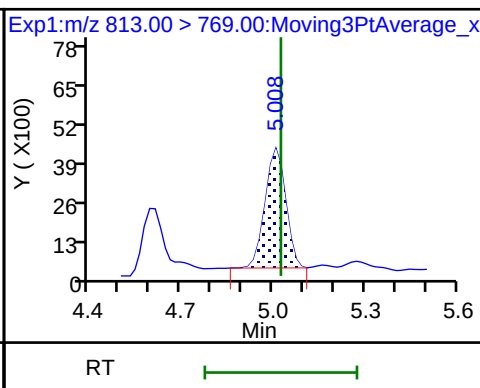
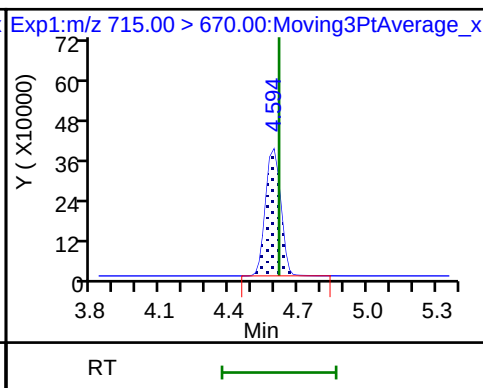
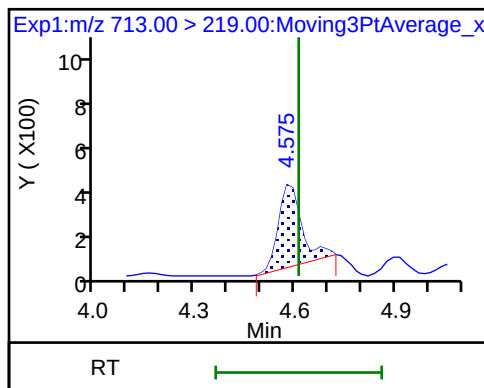
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

45 Perfluorohexadecanoic acid

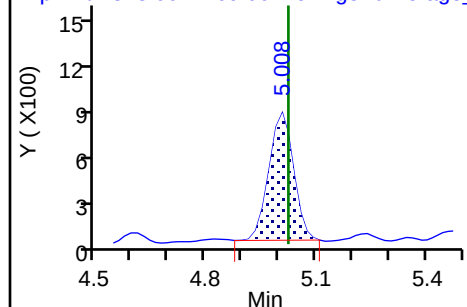


45 Perfluorohexadecanoic acid

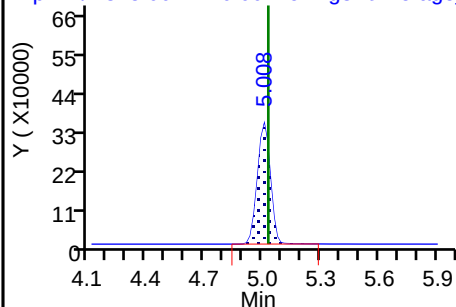
D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid (ND)

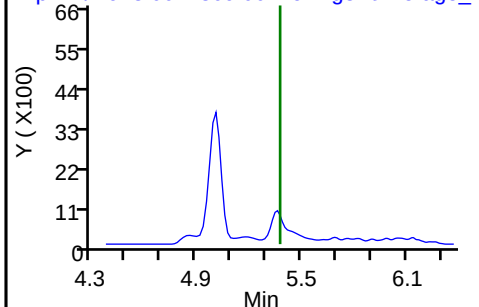
Exp1:m/z 813.00 > 169.00:Moving3PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving3PtAverage_x

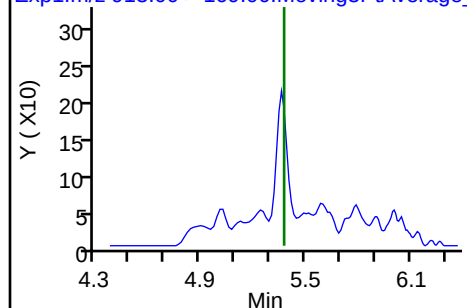


Exp1:m/z 913.00 > 869.00:Moving3PtAverage_x



46 Perfluorooctadecanoic acid (ND)

Exp1:m/z 913.00 > 169.00:Moving3PtAverage_x



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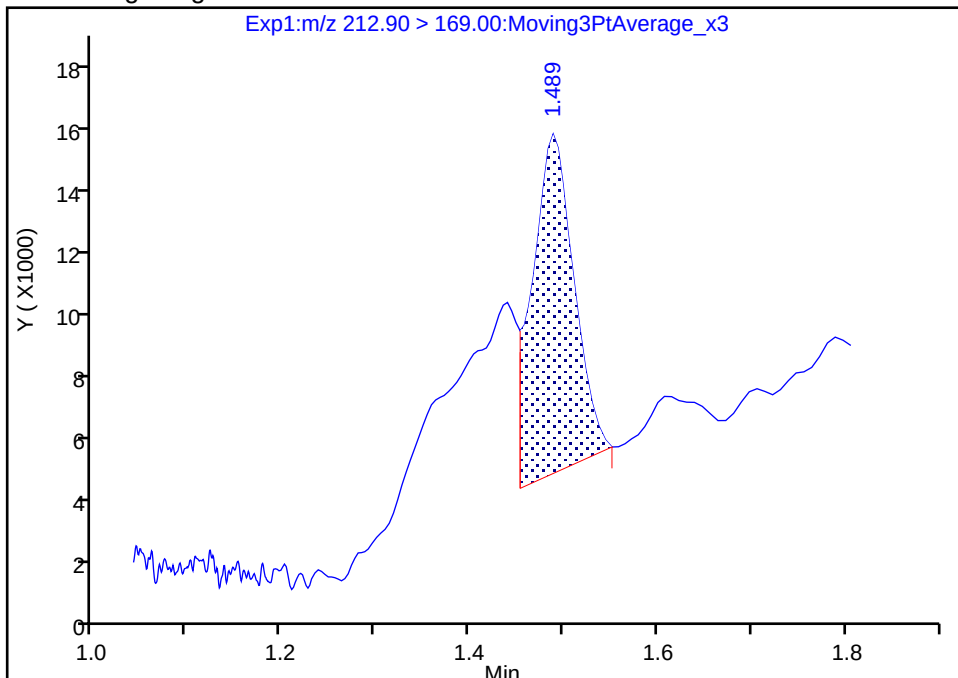
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Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9		
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1		
Client ID:	MW-12				
Operator ID:	A9\Administrator	ALS Bottle#:	23	Worklist Smp#:	4
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

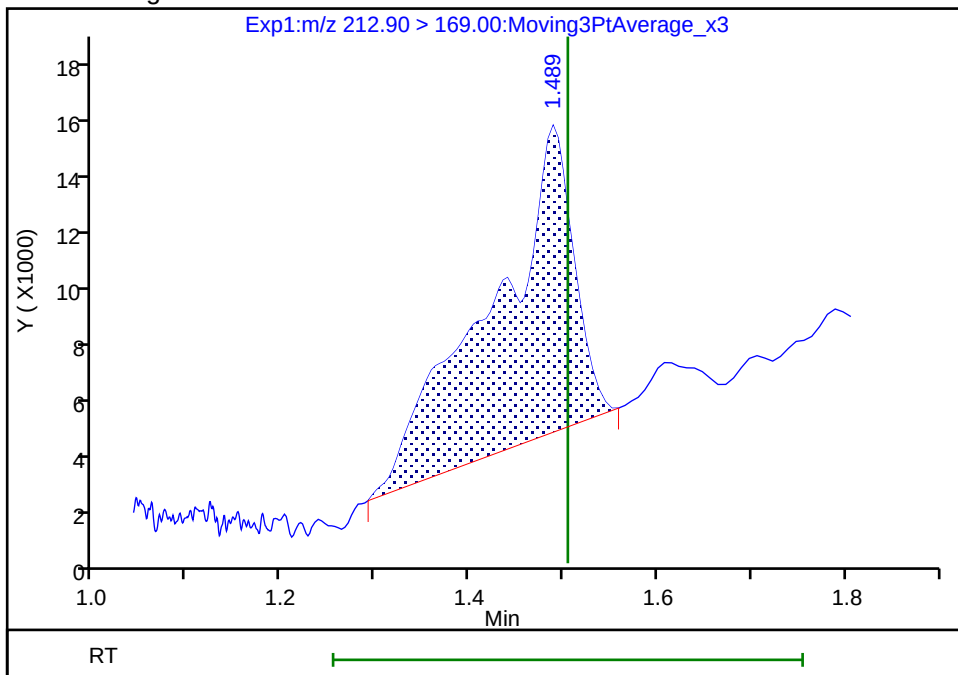
RT: 1.49
Area: 31114
Amount: 0.022792
Amount Units: ng/ml

Processing Integration Results



RT: 1.49
Area: 63070
Amount: 0.046201
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:49:35
Audit Action: Manually Integrated

Audit Reason: Baseline
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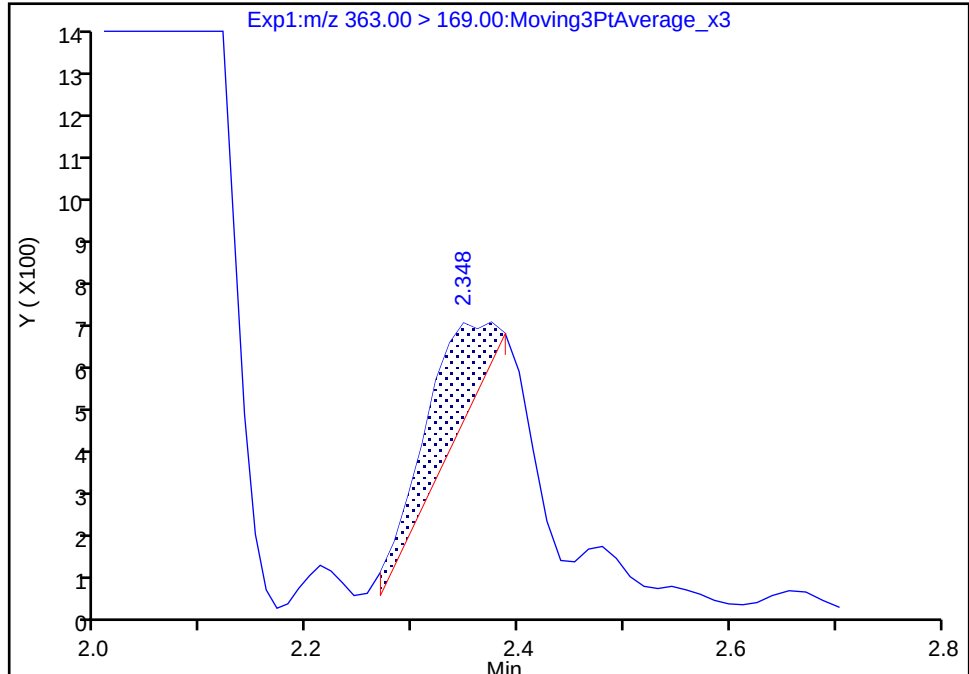
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Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9		
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1		
Client ID:	MW-12				
Operator ID:	A9\Administrator	ALS Bottle#:	23	Worklist Smp#:	4
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 2

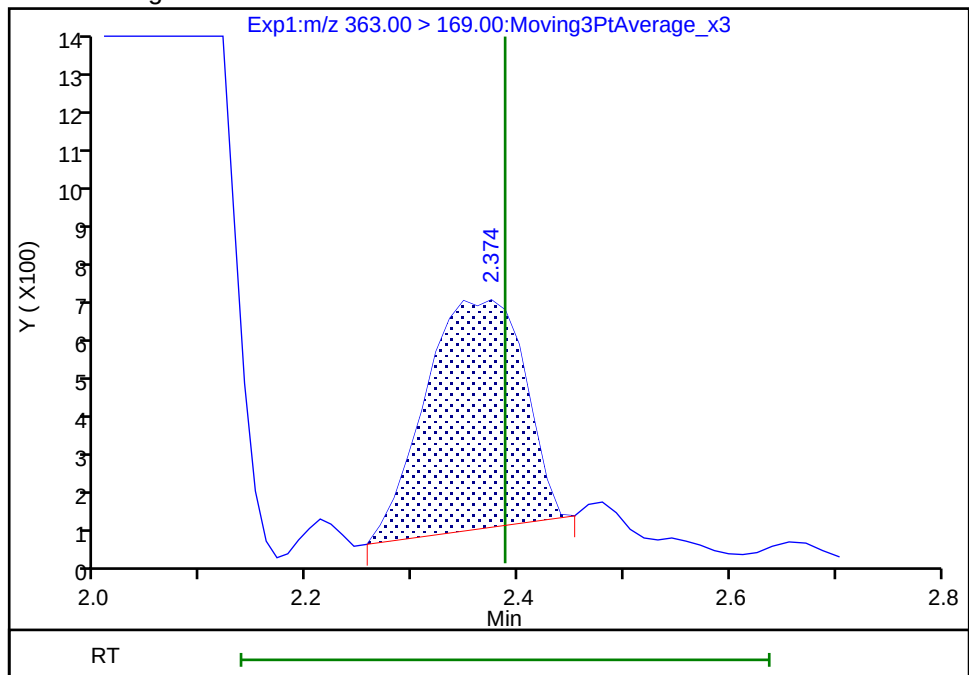
RT: 2.35
Area: 985
Amount: 0.008449
Amount Units: ng/ml

Processing Integration Results



RT: 2.37
Area: 3773
Amount: 0.008449
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:49:51
Audit Action: Manually Integrated

Audit Reason: Baseline
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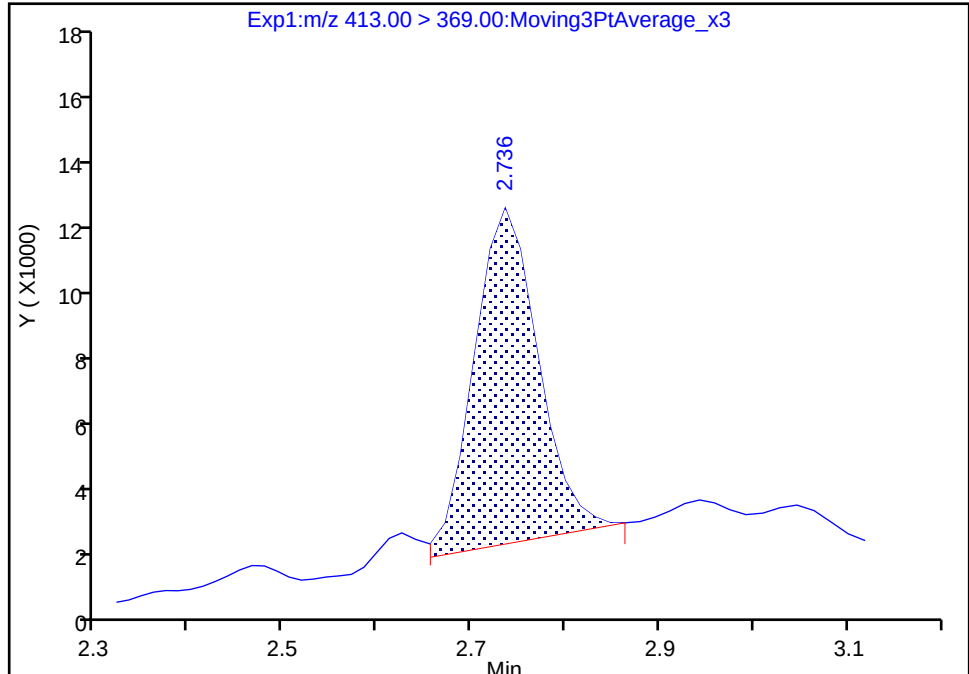
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_034.d				
Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9		
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1		
Client ID:	MW-12				
Operator ID:	A9\Administrator	ALS Bottle#:	23	Worklist Smp#:	4
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

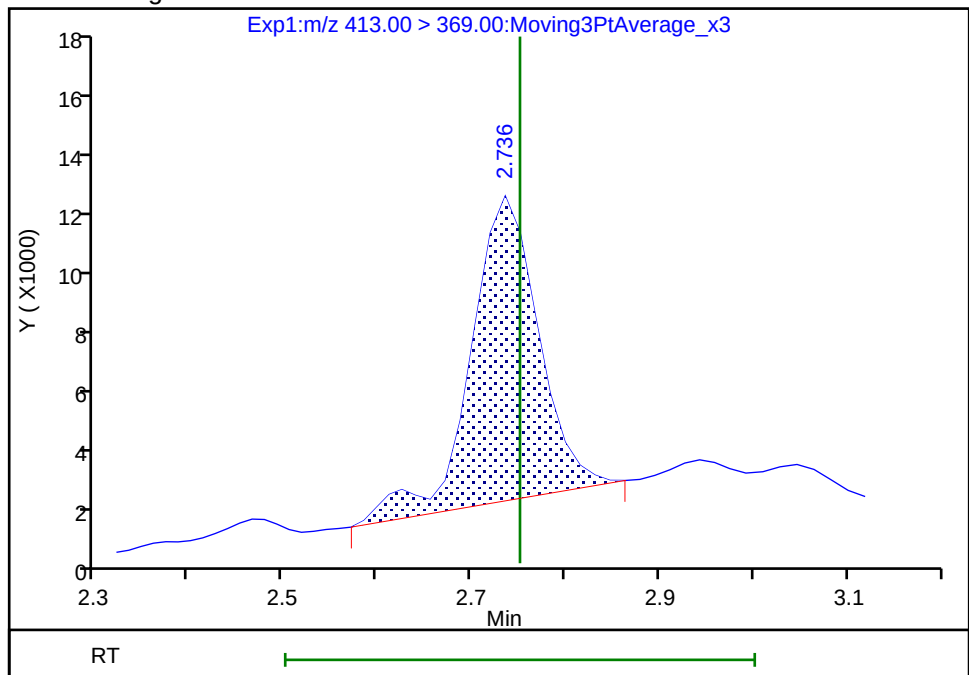
RT: 2.74
Area: 48826
Amount: 0.025869
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 52194
Amount: 0.027653
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:50:08

Audit Action: Manually Integrated

Audit Reason: Isomers

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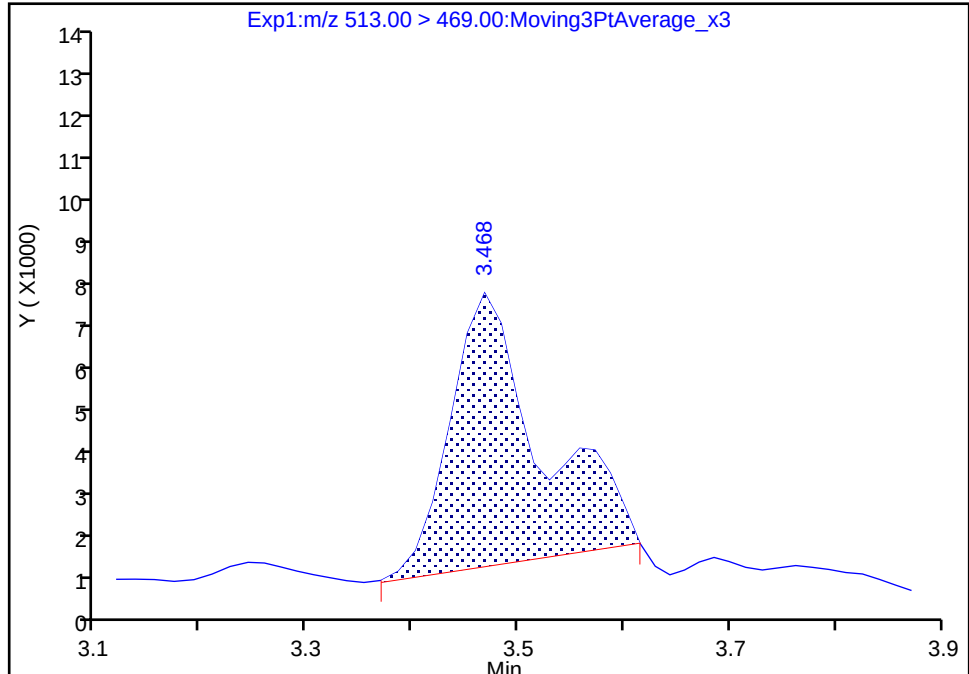
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Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9		
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1		
Client ID:	MW-12				
Operator ID:	A9\Administrator	ALS Bottle#:	23	Worklist Smp#:	4
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

24 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

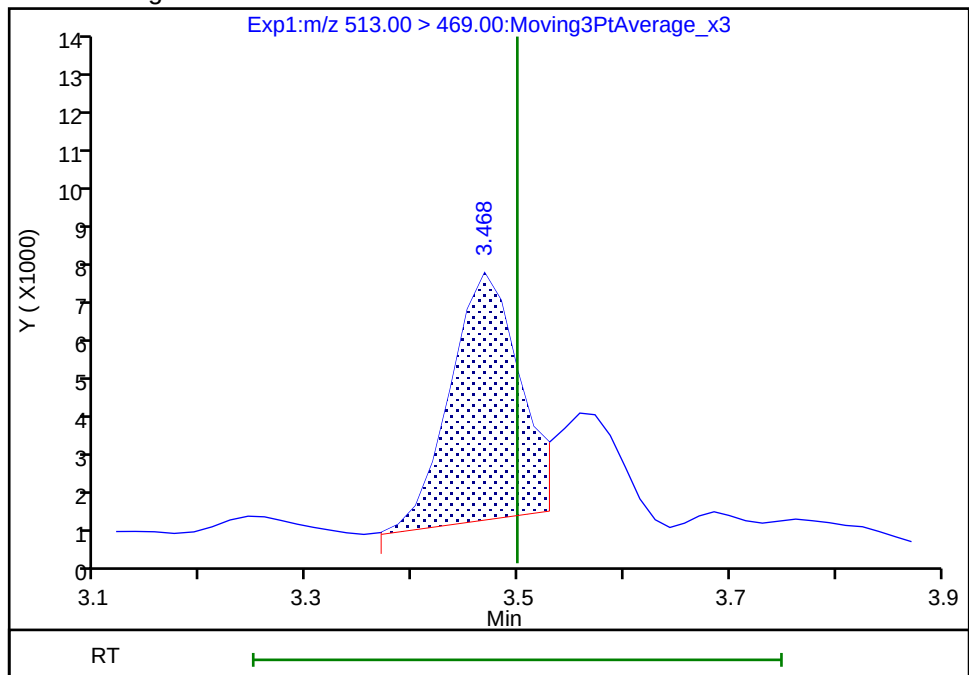
RT: 3.47
Area: 37200
Amount: 0.023716
Amount Units: ng/ml

Processing Integration Results



RT: 3.47
Area: 28408
Amount: 0.018110
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:50:33
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

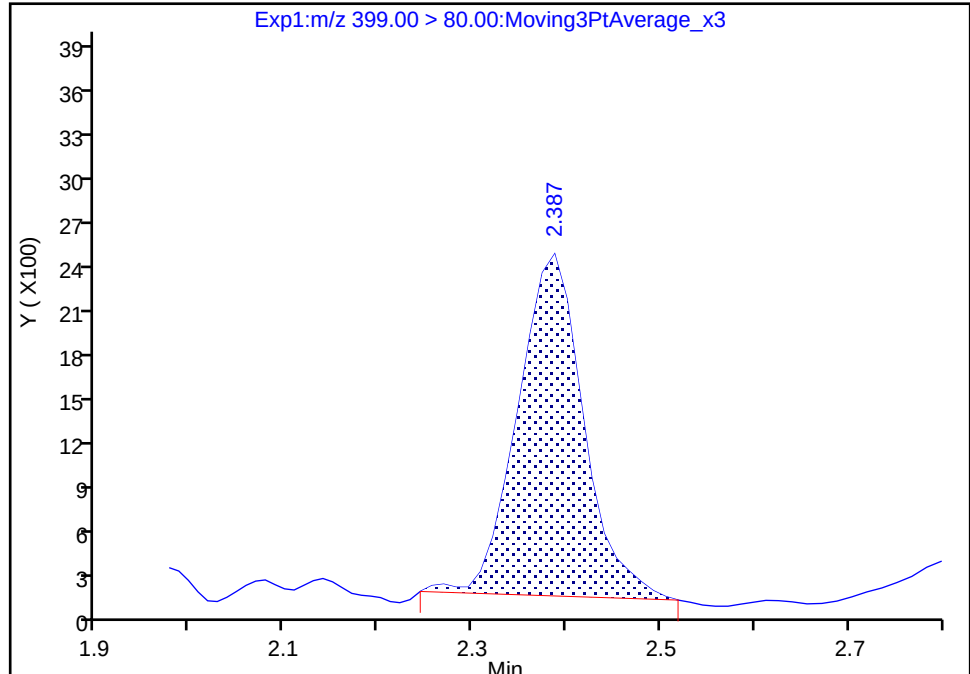
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_034.d		
Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1
Client ID:	MW-12		
Operator ID:	A9\Administrator	ALS Bottle#:	23
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	4

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

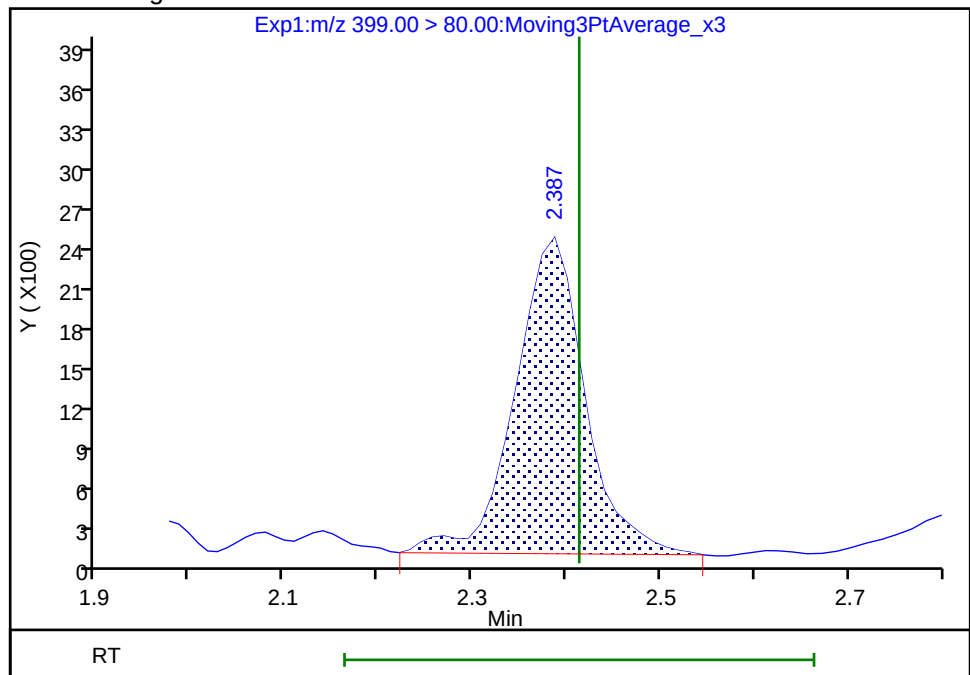
RT: 2.39
Area: 11413
Amount: 0.009271
Amount Units: ng/ml

Processing Integration Results



RT: 2.39
Area: 12392
Amount: 0.010066
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:49:57

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

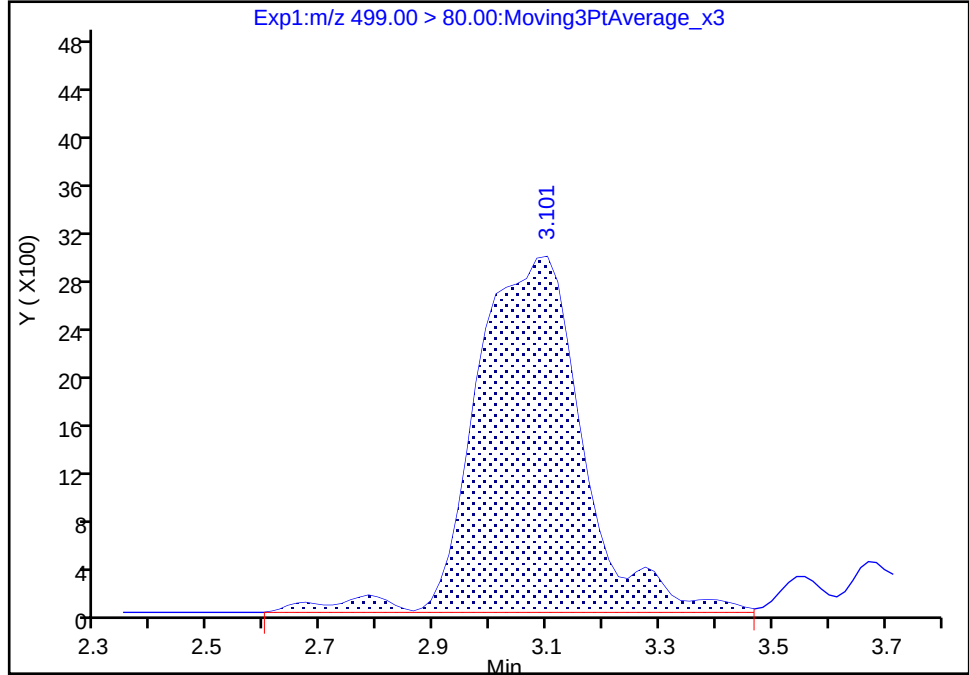
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_034.d		
Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1
Client ID:	MW-12		
Operator ID:	A9\Administrator	ALS Bottle#:	23
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	4

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

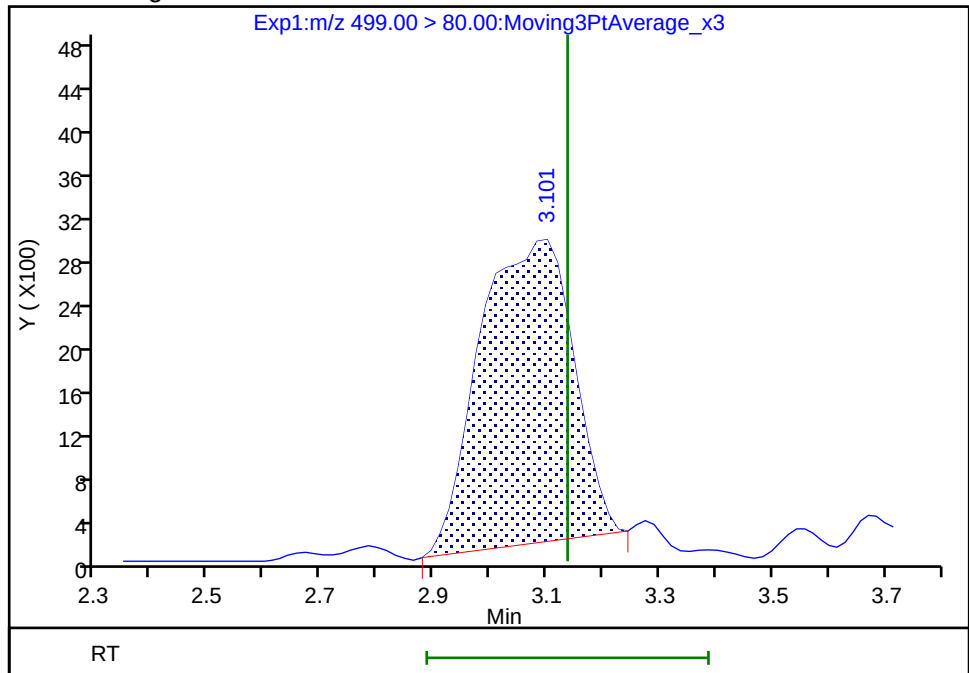
RT: 3.10
Area: 39211
Amount: 0.039656
Amount Units: ng/ml

Processing Integration Results



RT: 3.10
Area: 32465
Amount: 0.032833
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

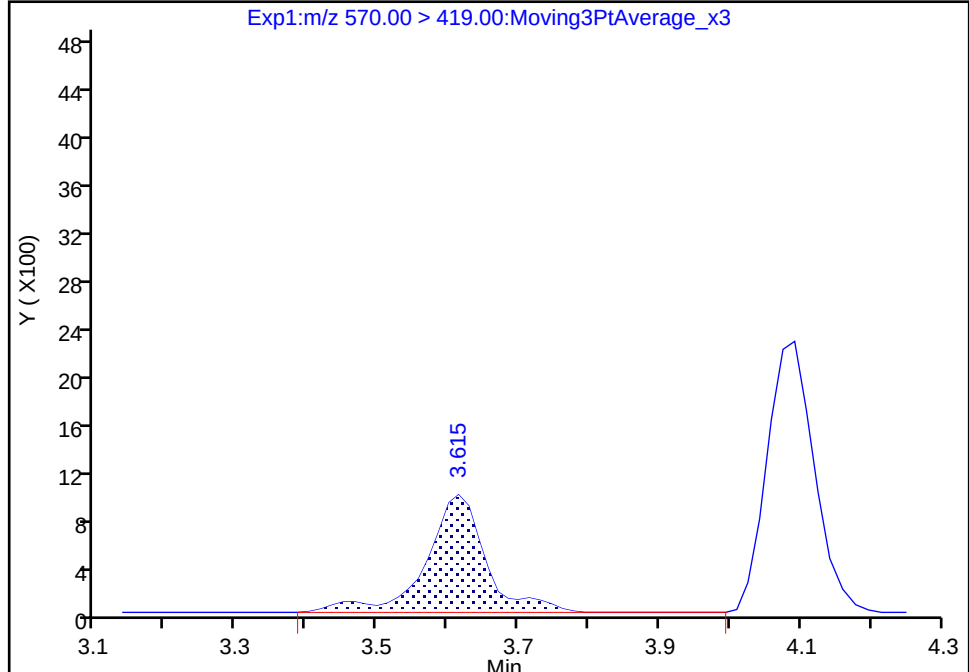
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Injection Date: 18-Aug-2018 08:20:51 Instrument ID: A9
Lims ID: 320-42105-A-1-A Lab Sample ID: 320-42105-1
Client ID: MW-12
Operator ID: A9\Administrator ALS Bottle#: 23 Worklist Smp#: 4
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

28 N-methyl perfluorooctane sulfonamidoacetic a, CAS: 2355-31-9

Signal: 1

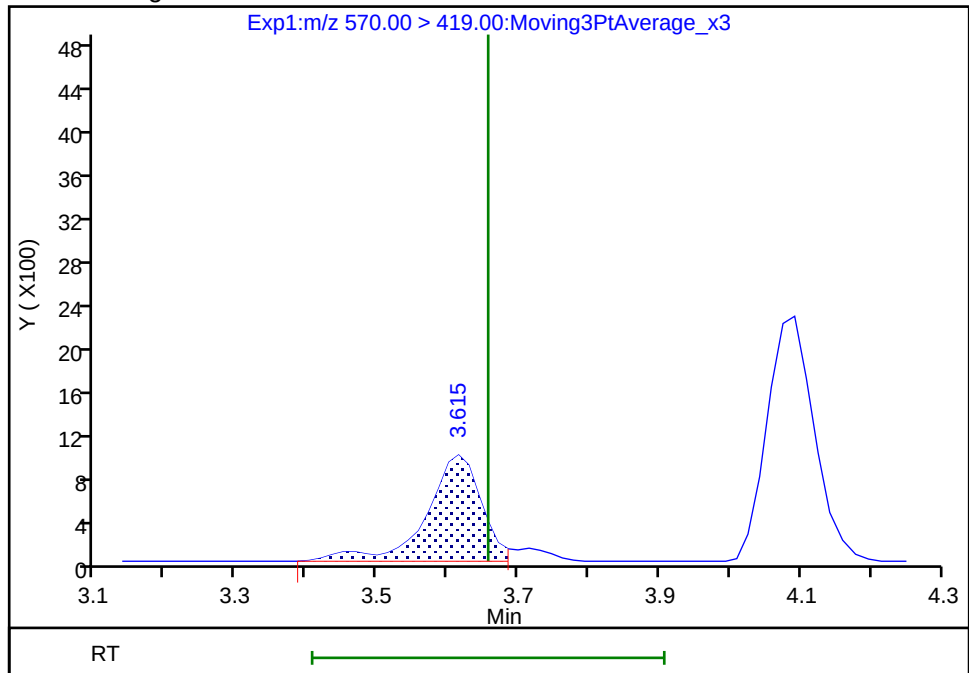
RT: 3.61
Area: 5725
Amount: 0.007130
Amount Units: ng/ml

Processing Integration Results



RT: 3.61
Area: 5270
Amount: 0.006563
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:50:40
Audit Action: Manually Integrated

Audit Reason: Baseline
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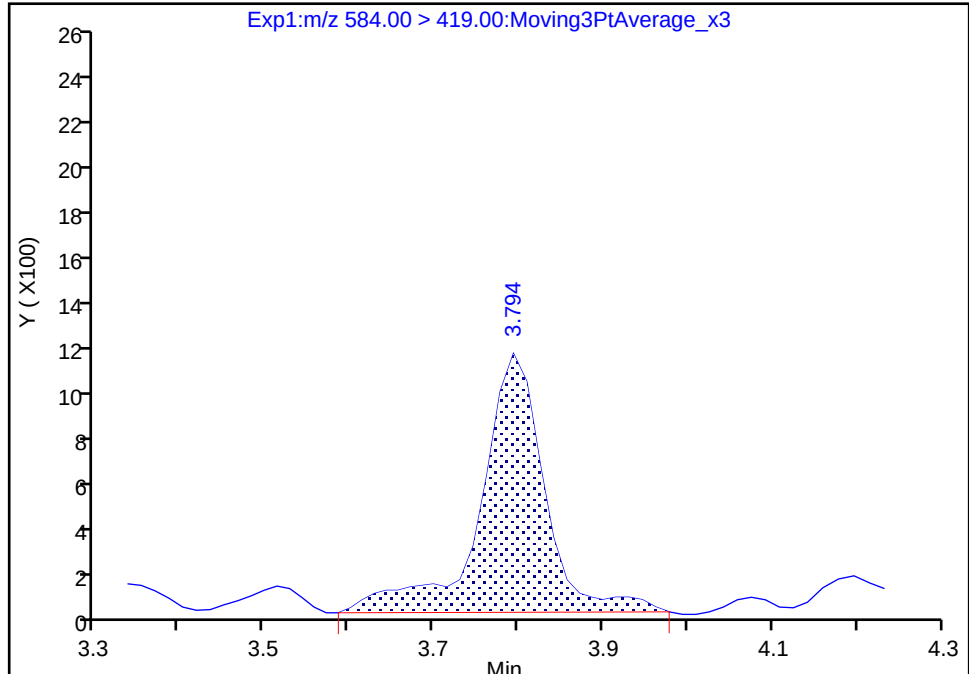
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Injection Date:	18-Aug-2018 08:20:51	Instrument ID:	A9		
Lims ID:	320-42105-A-1-A	Lab Sample ID:	320-42105-1		
Client ID:	MW-12				
Operator ID:	A9\Administrator	ALS Bottle#:	23	Worklist Smp#:	4
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

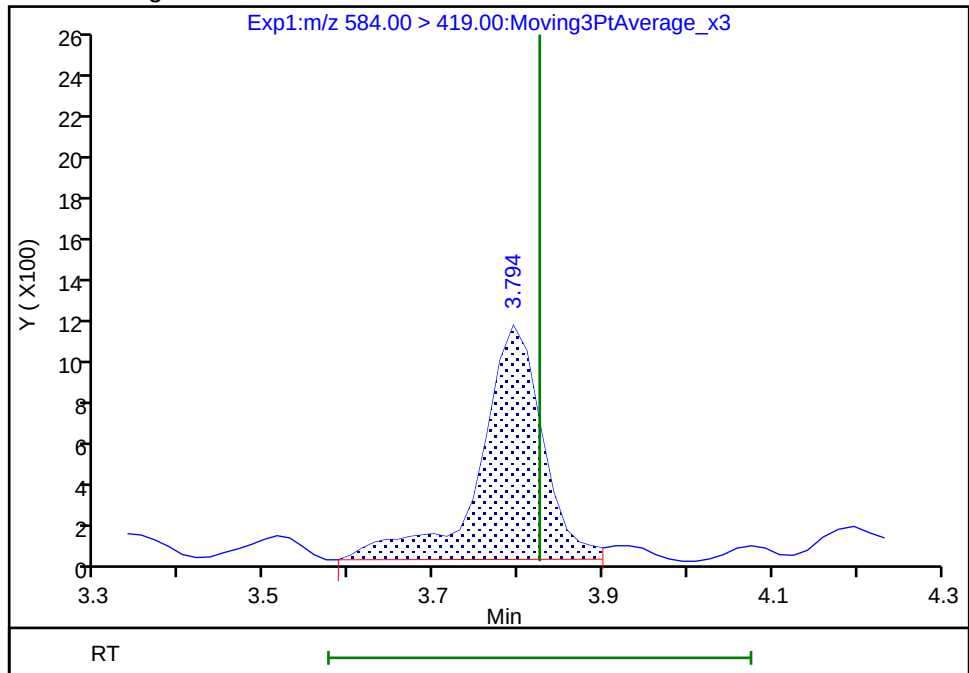
RT: 3.79
Area: 6053
Amount: 0.009757
Amount Units: ng/ml

Processing Integration Results



RT: 3.79
Area: 5840
Amount: 0.009414
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:50:48
Audit Action: Manually Integrated

Audit Reason: Baseline
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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-11</u>	Lab Sample ID: <u>320-42105-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_037.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>295.7 (mL)</u>	Date Analyzed: <u>08/18/2018 08:43</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	4.4		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.5		1.7	0.41
307-24-4	Perfluorohexanoic acid (PFHxA)	1.9		1.7	0.49
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.3	J	1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	8.2		1.7	0.72
375-95-1	Perfluorononanoic acid (PFNA)	0.85	J	1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.46
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.92	J B	1.7	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.34	J	1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	25		1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6
27619-97-2	6:2 FTS	ND		17	1.7
39108-34-4	8:2 FTS	ND		17	1.7

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-11</u>	Lab Sample ID: <u>320-42105-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_037.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>295.7 (mL)</u>	Date Analyzed: <u>08/18/2018 08:43</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	59		25-150
STL01893	13C5 PFPeA	60		25-150
STL00993	13C2 PFHxA	61		25-150
STL01892	13C4-PFHpA	61		25-150
STL00990	13C4 PFOA	59		25-150
STL00995	13C5 PFNA	55		25-150
STL00996	13C2 PFDA	55		25-150
STL00997	13C2 PFUnA	47		25-150
STL00998	13C2 PFDoA	45		25-150
STL02116	13C2-PFTeDA	43		25-150
STL02337	13C3-PFBS	60		25-150
STL00994	18O2 PFHxS	61		25-150
STL00991	13C4 PFOS	51		25-150
STL01056	13C8 FOSA	44		25-150
STL02118	d3-NMeFOSAA	57		25-150
STL02117	d5-NEtFOSAA	57		25-150
STL02279	M2-6:2FTS	69		25-150
STL02280	M2-8:2FTS	68		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d
 Lims ID: 320-42105-A-2-A
 Client ID: MW-11
 Sample Type: Client
 Inject. Date: 18-Aug-2018 08:43:24 ALS Bottle#: 26 Worklist Smp#: 7
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:54:01 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:54:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.500	-0.006	0.546	5088289	1.47		58.9	19289	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.499	1.505	-0.006	1.003	249605	0.1297			13.1	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.773	-0.008	1.000	137982	0.0733			1.8	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.774	-0.010	0.645	4596876	1.49		59.7	3193	
D 47 13C3-PFBS										
301.90 > 83.00	1.806	1.807	-0.001	0.660	55861	1.40		60.1	128	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.798	1.814	-0.016	0.995	32730	0.0131			3.7	
298.90 > 99.00	1.798	1.814	-0.016	0.995	10835		3.02(1.35-4.05)		1.1	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.050	-0.002	0.749	4976003	1.53		61.2	6414	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.059	-0.011	1.000	102352	0.0575			4.6	
313.00 > 119.00	2.048	2.059	-0.011	1.000	8857		11.56(6.96-20.87)		10.7	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.374	2.387	-0.013	0.994	98931	0.0399			4.8	
363.00 > 169.00	2.374	2.387	-0.013	0.994	16441		6.02(2.17-6.52)		16.4	
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.388	-0.001	0.873	5865582	1.52		60.9	13984	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.402	-0.001	0.877	3419385	1.44		61.1	7405	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.414	-0.013	1.000	50435	0.0273			20.0	
399.00 > 99.00	2.401	2.414	-0.013	1.000	13636		3.70(1.90-5.70)		9.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.721	-0.001	0.994	586422	1.64		69.2	368	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.736	-0.016	1.000	15644	0.0284			36.2	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.736	2.751	-0.015	1.000	548415	0.2413			33.0	M
413.00 > 169.00	2.736	2.751	-0.015	1.000	224528		2.44(1.36-4.08)		289	M
* 62 13C2-PFOA										
415.00 > 370.00	2.736	2.751	-0.015		9029145	2.50			10619	
D 14 13C4 PFOA										
417.00 > 372.00	2.736	2.753	-0.017	1.000	5252113	1.47		58.7	9569	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.752	2.767	-0.015	0.882	13116	0.0101			6.4	
449.00 > 99.00	2.752	2.767	-0.015	0.882	4730		2.77(1.84-5.53)		16.1	
20 Perfluorononanoic acid										
463.00 > 419.00	3.119	3.137	-0.018	1.000	46831	0.0252			4.8	
463.00 > 169.00	3.119	3.137	-0.018	1.000	9321		5.02(2.68-8.03)		22.7	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.119	3.137	-0.018	1.000	1007130	0.7415			343	
499.00 > 99.00	3.119	3.137	-0.018	1.000	236431		4.26(2.04-6.12)		467	
D 19 13C5 PFNA										
468.00 > 423.00	3.119	3.138	-0.019	1.140	4546738	1.37		54.9	5746	
D 18 13C4 PFOS										
503.00 > 80.00	3.119	3.138	-0.019	1.140	3098828	1.22		51.1	1905	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.468	3.483	-0.015	1.000	2372	0.004500			8.8	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.483	-0.015	1.268	83366	1.62		67.7	514	
D 21 13C8 FOSA										
506.00 > 78.00	3.483	3.483	0.0	1.273	1519505	1.11		44.5	4133	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.403	3.499	-0.097	0.977	12891	0.007228			8.0	M
D 23 13C2 PFDA										
515.00 > 470.00	3.483	3.499	-0.016	1.273	4898200	1.36		54.5	12666	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.629	3.645	-0.016	1.327	2211675	1.42		56.7	3881	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.629	3.657	-0.028	1.000	3712	0.004224			1.7	
D 30 13C2 PFUnA										
565.00 > 520.00	3.810	3.811	-0.001	1.393	3549423	1.18		47.4	6169	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.794	3.811	-0.017	1.387	1678740	1.42		56.7	1247	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.810	3.825	-0.015	1.000	12434	0.0101			2.5	M
563.00 > 169.00	3.762	3.825	-0.063	0.988	1305		9.53(5.24-15.72)		3.1	M
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.810	3.825	-0.015	1.004	10261	0.0155			19.0	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 36 13C2 PFDaA										
615.00 > 570.00	4.092	4.110	-0.018	1.496	3937971	1.13		45.3	8433	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.594	4.616	-0.022	1.679	3035609	1.08		43.2	8936	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d

Injection Date: 18-Aug-2018 08:43:24

Instrument ID: A9

Lims ID: 320-42105-A-2-A

Lab Sample ID: 320-42105-2

Client ID: MW-11

Operator ID: A9\Administrator

ALS Bottle#: 26

Worklist Smp#: 7

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

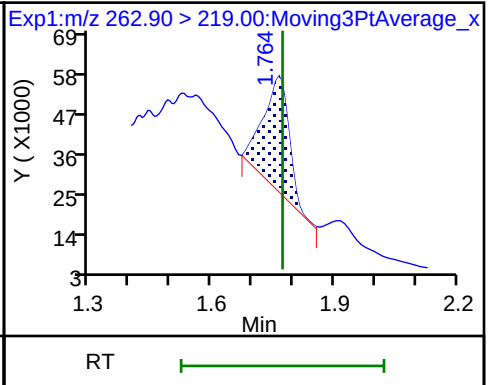
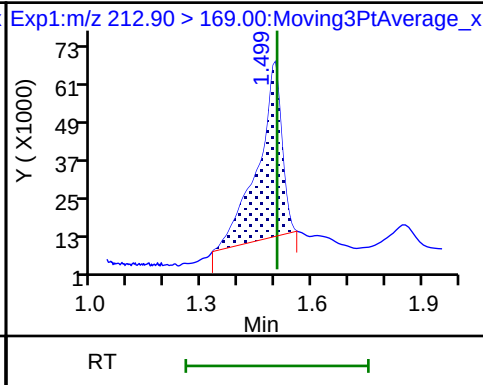
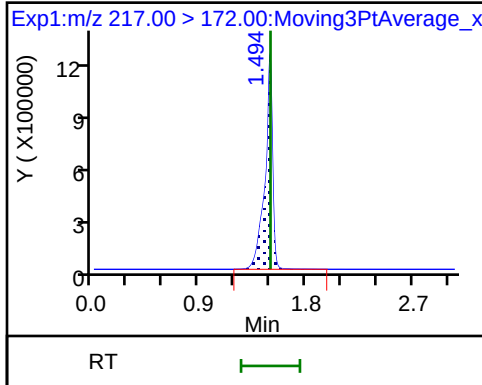
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

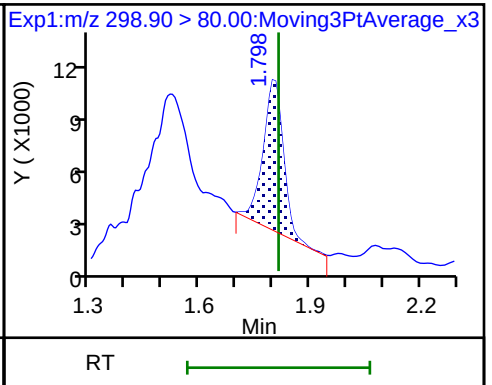
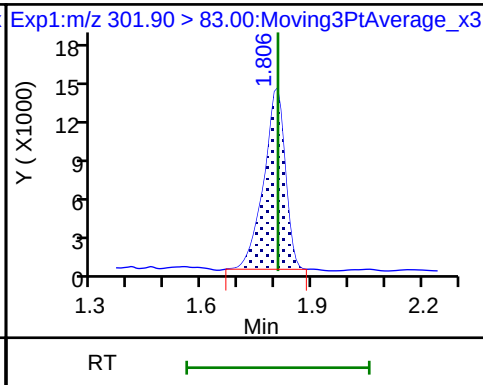
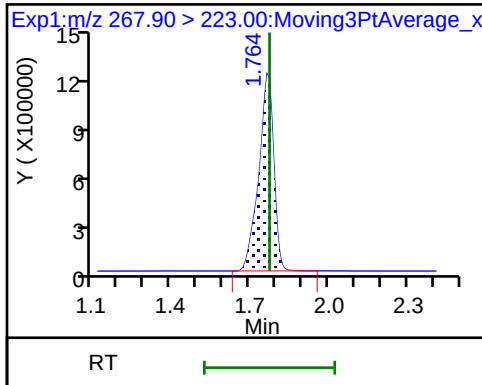
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

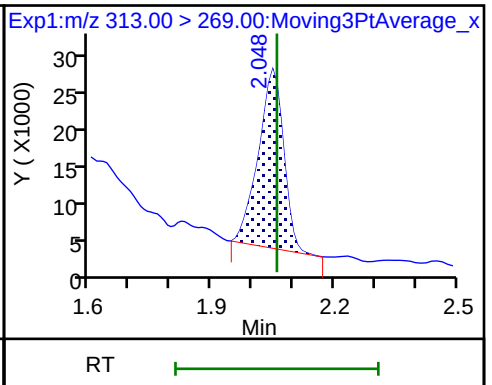
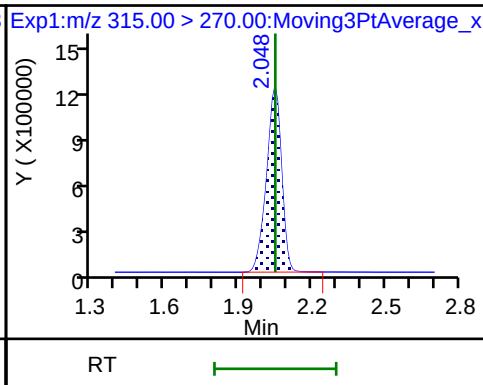
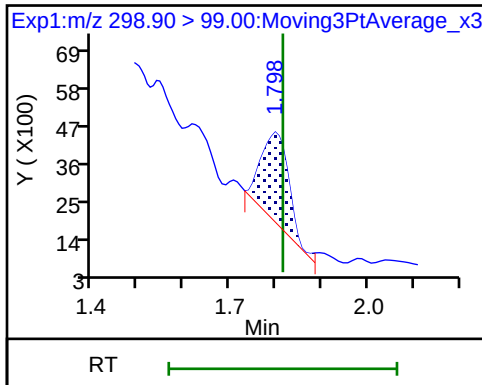
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

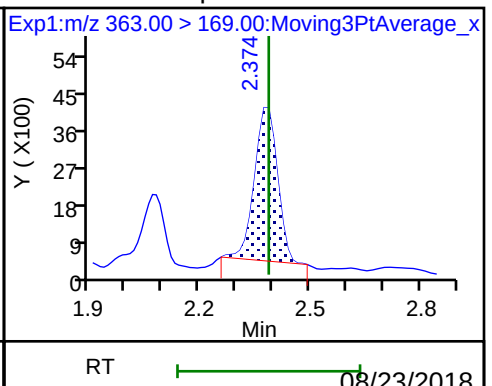
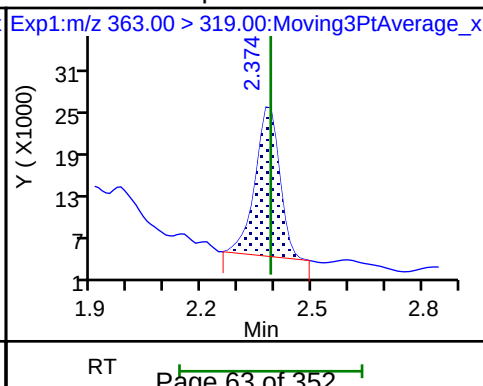
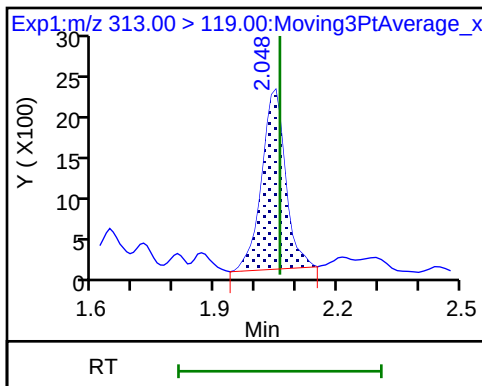
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

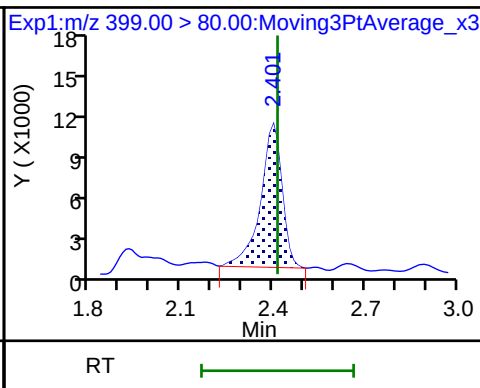
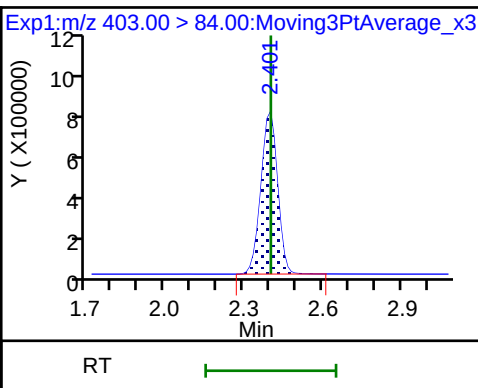
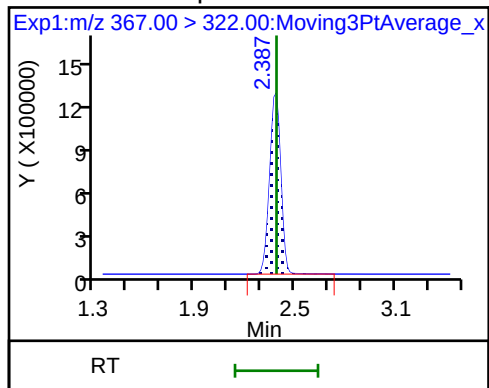
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

D 11 18O2 PFHxS

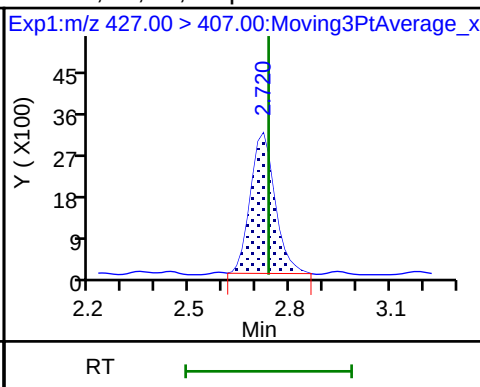
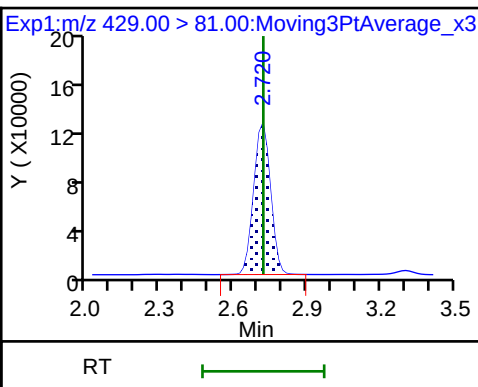
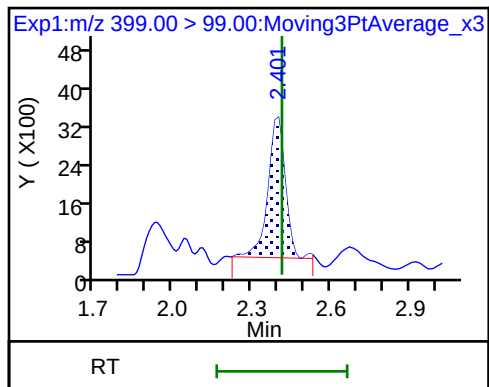
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

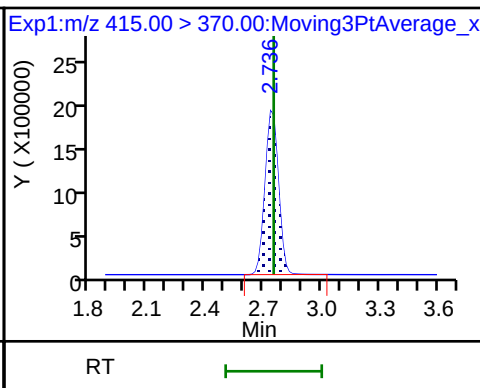
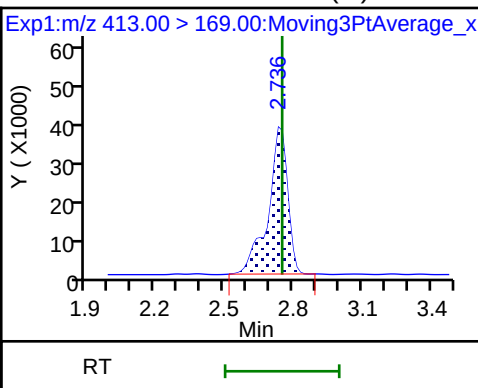
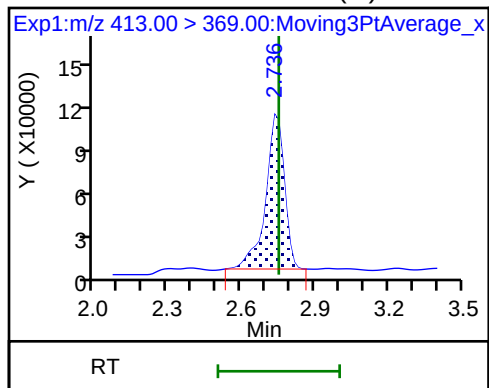
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

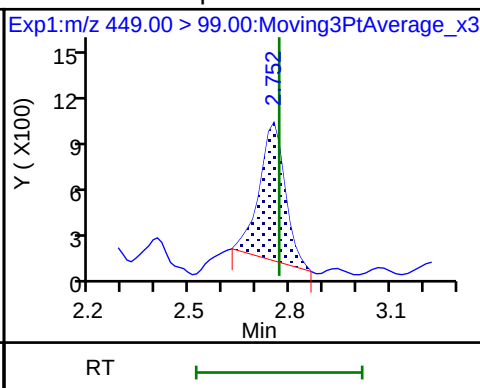
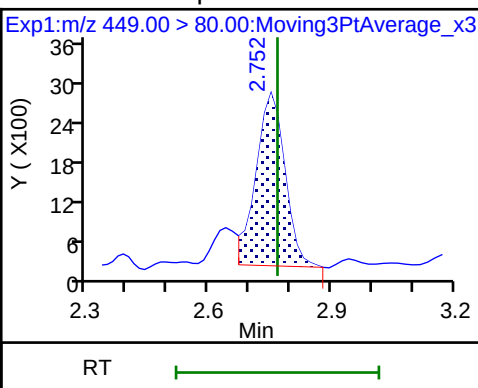
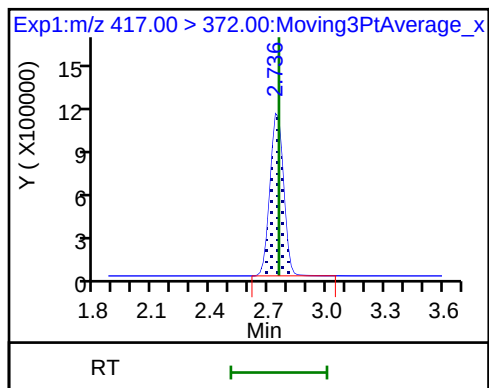
* 62 13C2-PFOA

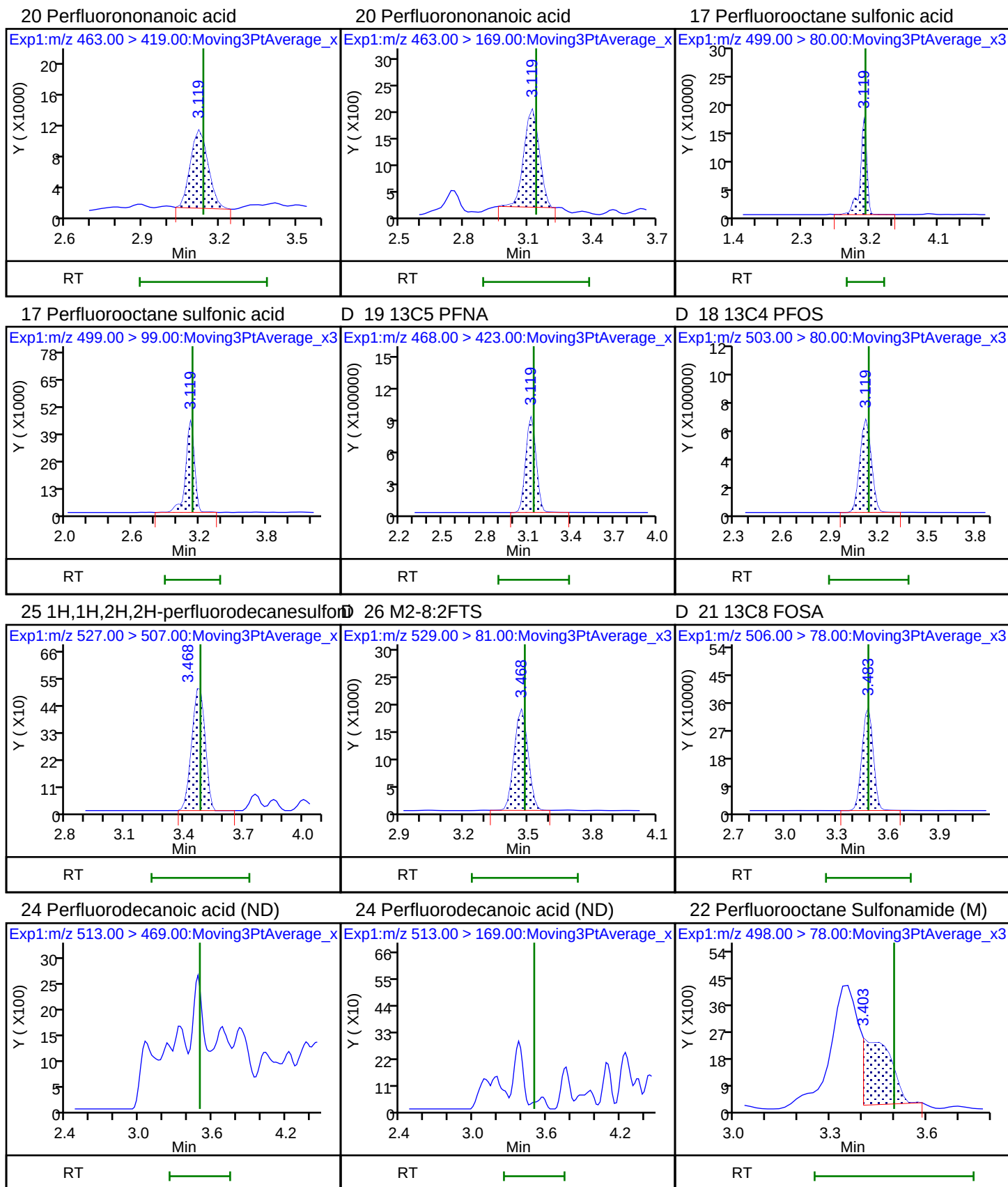


D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

16 Perfluoroheptanesulfonic acid

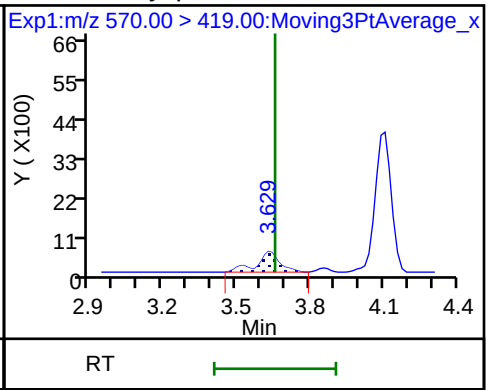
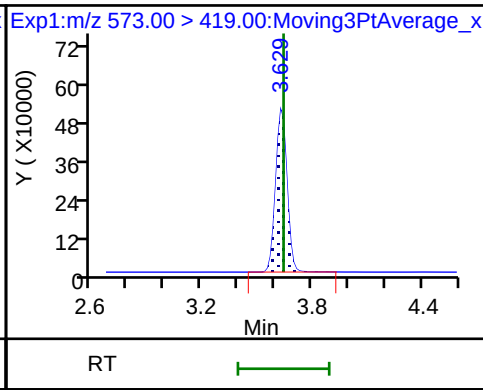
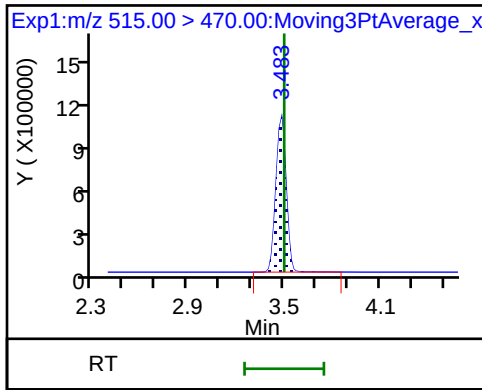




D 23 13C2 PFDA

D 27 d3-NMeFOSAA

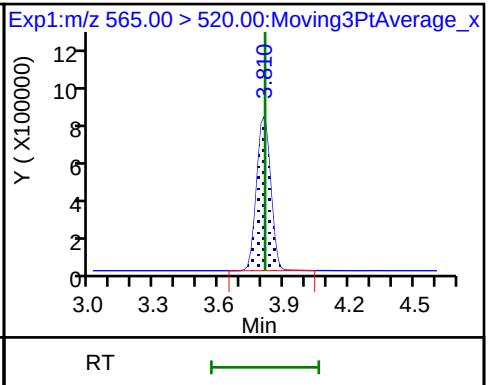
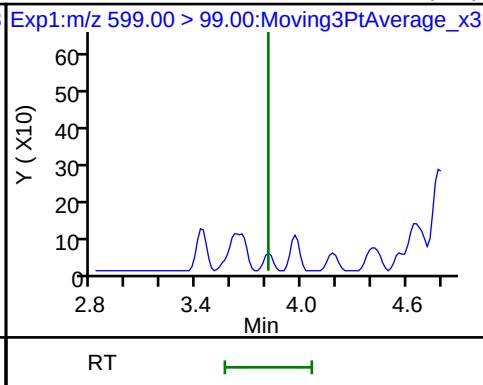
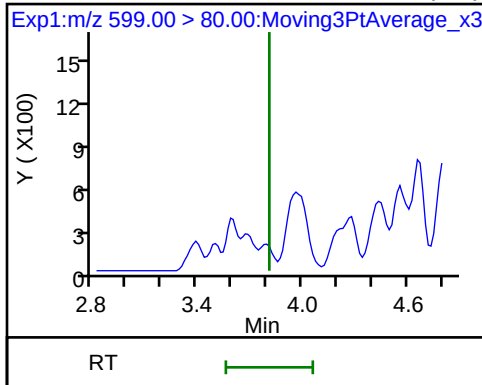
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid (ND)

29 Perfluorodecane Sulfonic acid (ND)

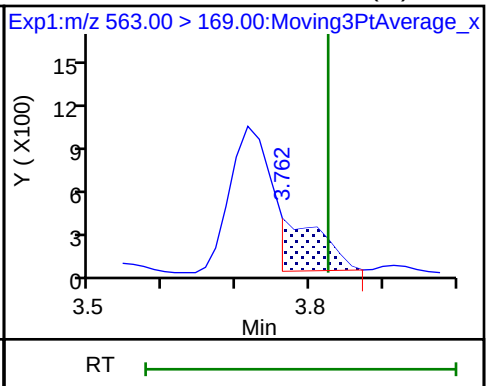
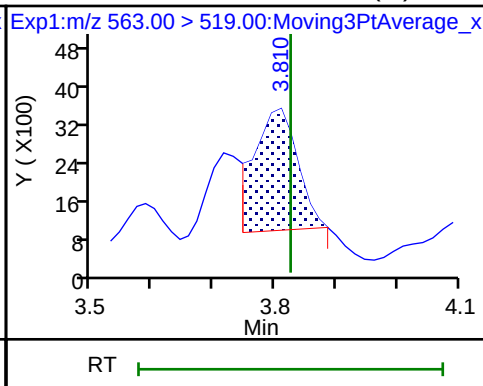
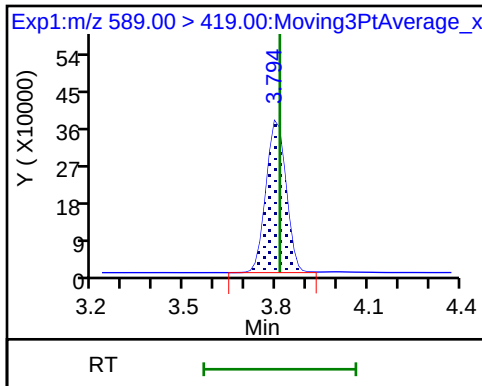
D 30 13C2 PFUnA



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid (M)

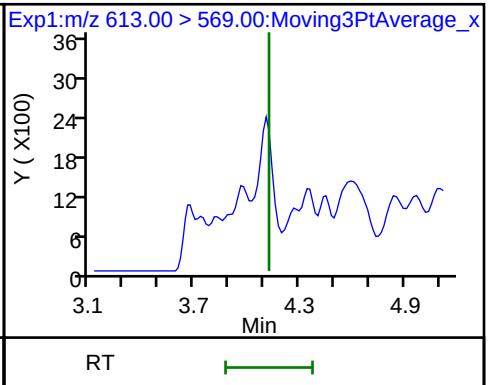
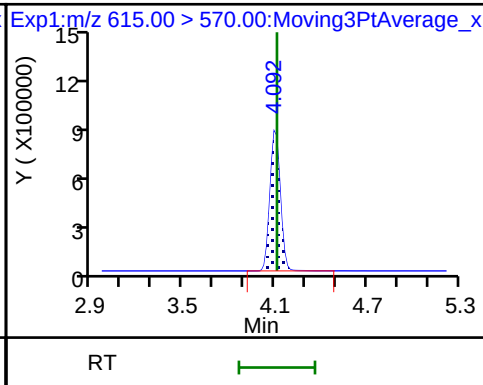
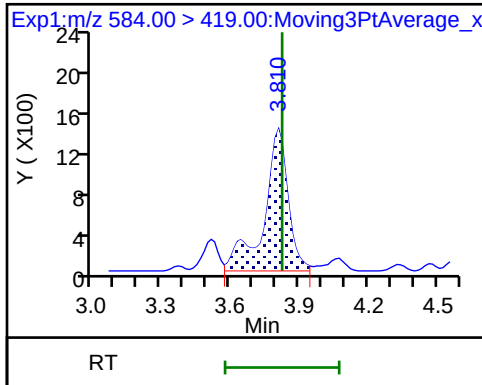
31 Perfluoroundecanoic acid (M)



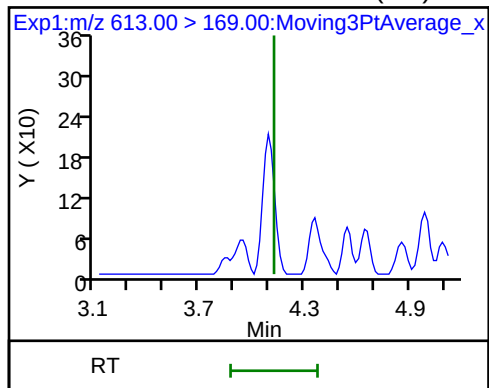
33 N-ethyl perfluorooctane sulfonamid

D 36 13C2 PFDaA

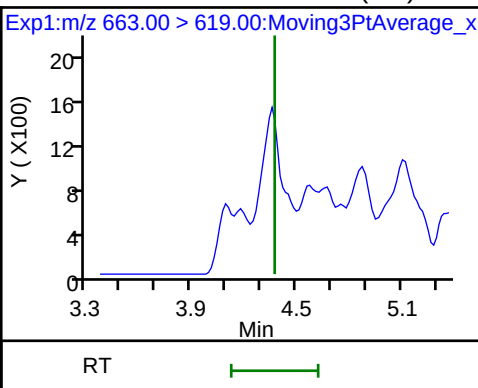
37 Perfluorododecanoic acid (ND)



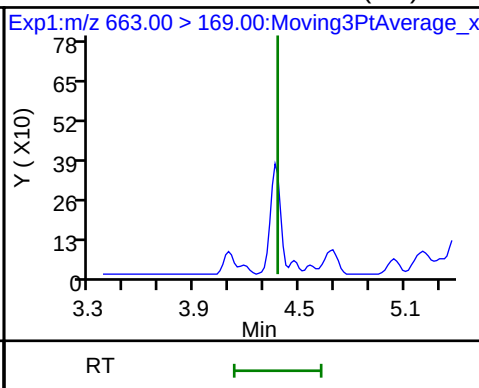
37 Perfluorododecanoic acid (ND)



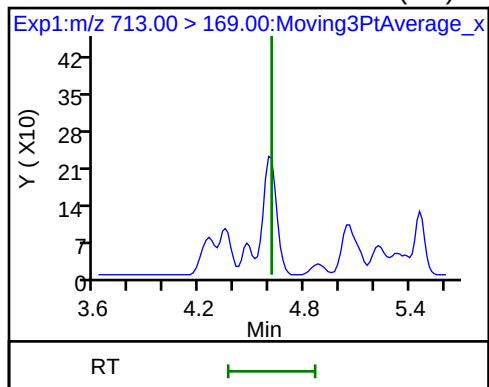
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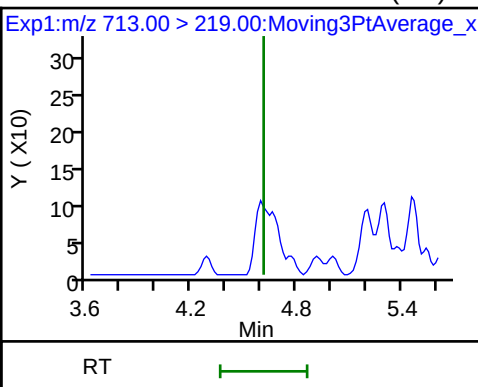
41 Perfluorotridecanoic acid (ND)



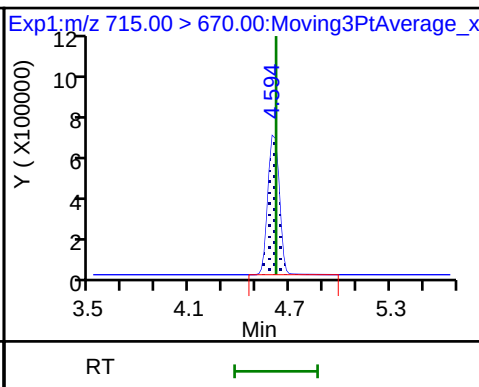
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

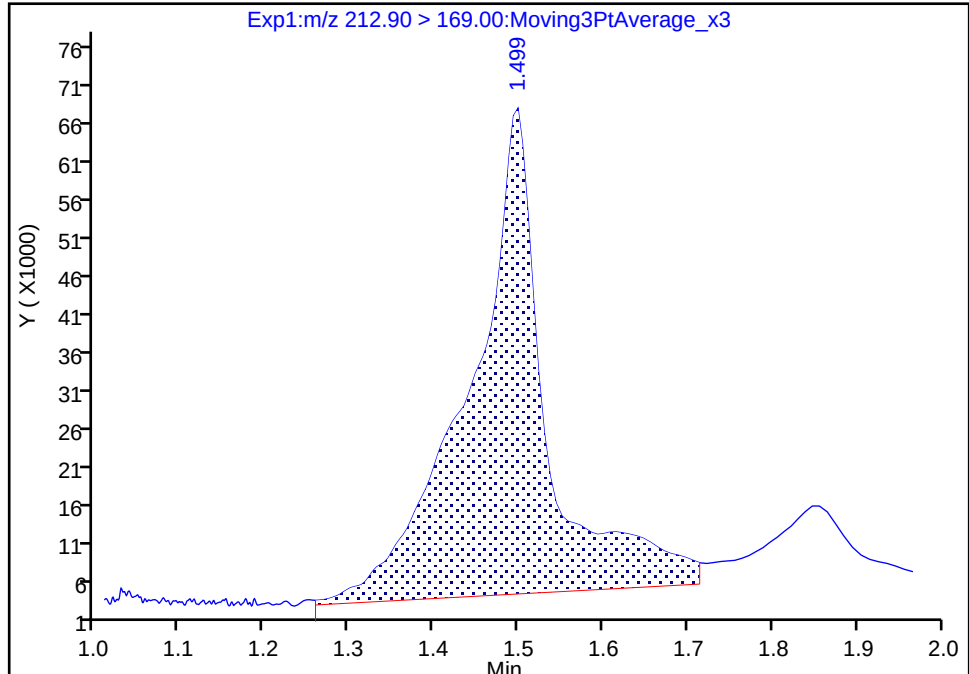
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d		
Injection Date:	18-Aug-2018 08:43:24	Instrument ID:	A9
Lims ID:	320-42105-A-2-A	Lab Sample ID:	320-42105-2
Client ID:	MW-11		
Operator ID:	A9\Administrator	ALS Bottle#:	26
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	7

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

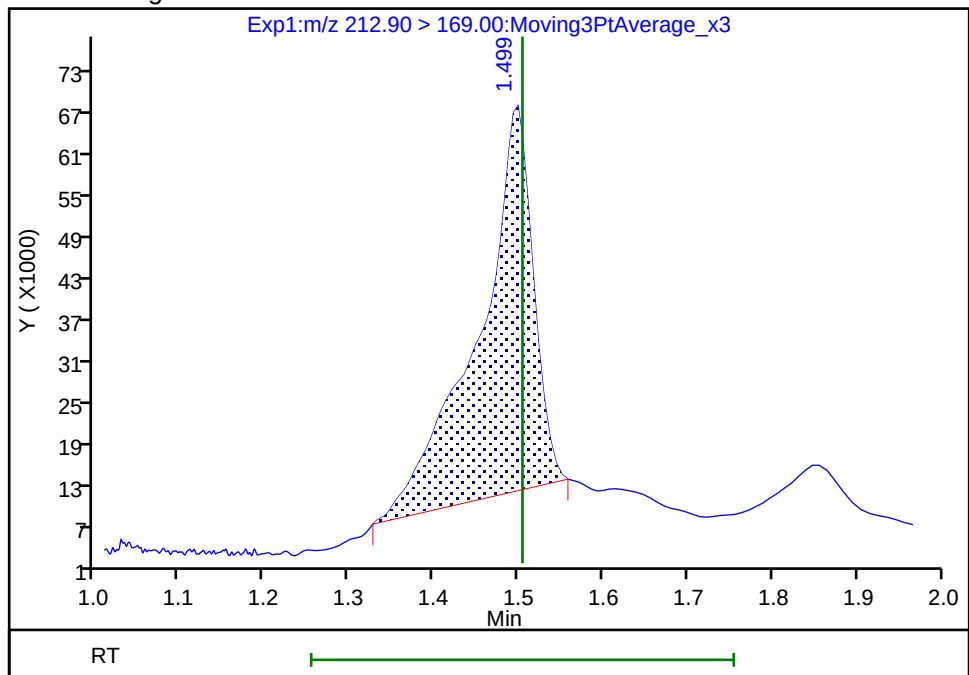
RT: 1.50
Area: 405106
Amount: 0.210496
Amount Units: ng/ml

Processing Integration Results



RT: 1.50
Area: 249605
Amount: 0.129696
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:52:54
Audit Action: Manually Integrated

Audit Reason: Baseline
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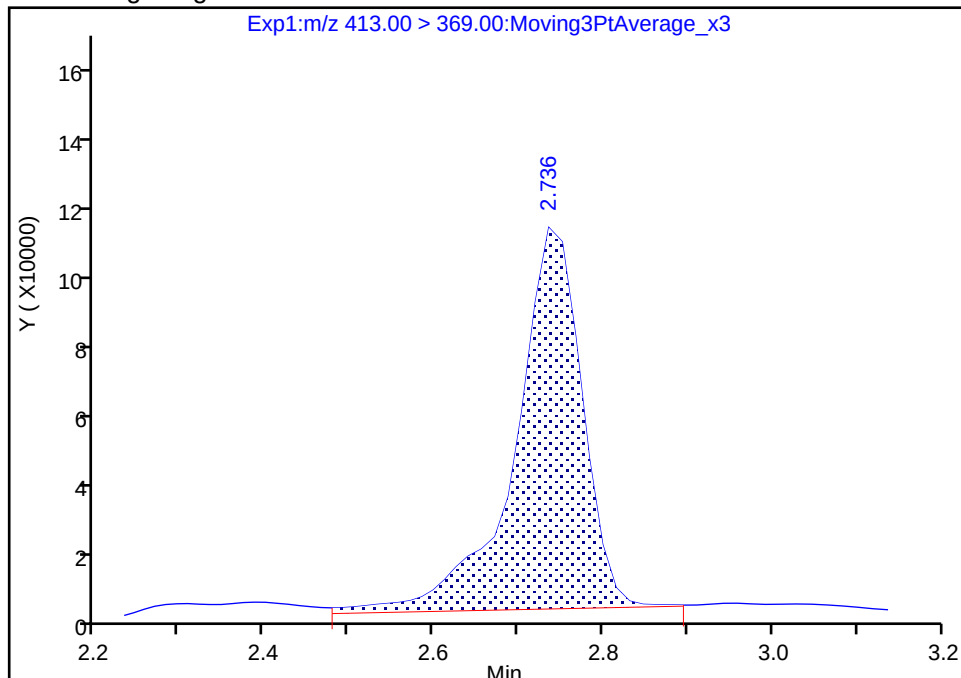
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d				
Injection Date:	18-Aug-2018 08:43:24	Instrument ID:	A9		
Lims ID:	320-42105-A-2-A	Lab Sample ID:	320-42105-2		
Client ID:	MW-11				
Operator ID:	A9\Administrator	ALS Bottle#:	26	Worklist Smp#:	7
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

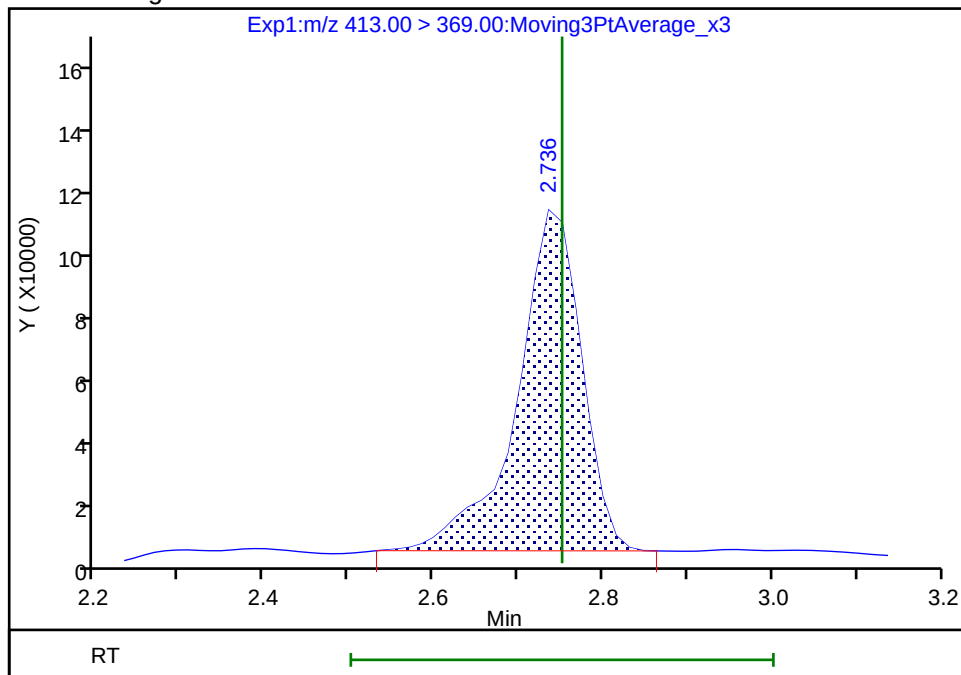
RT: 2.74
Area: 582465
Amount: 0.256283
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 548415
Amount: 0.241301
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

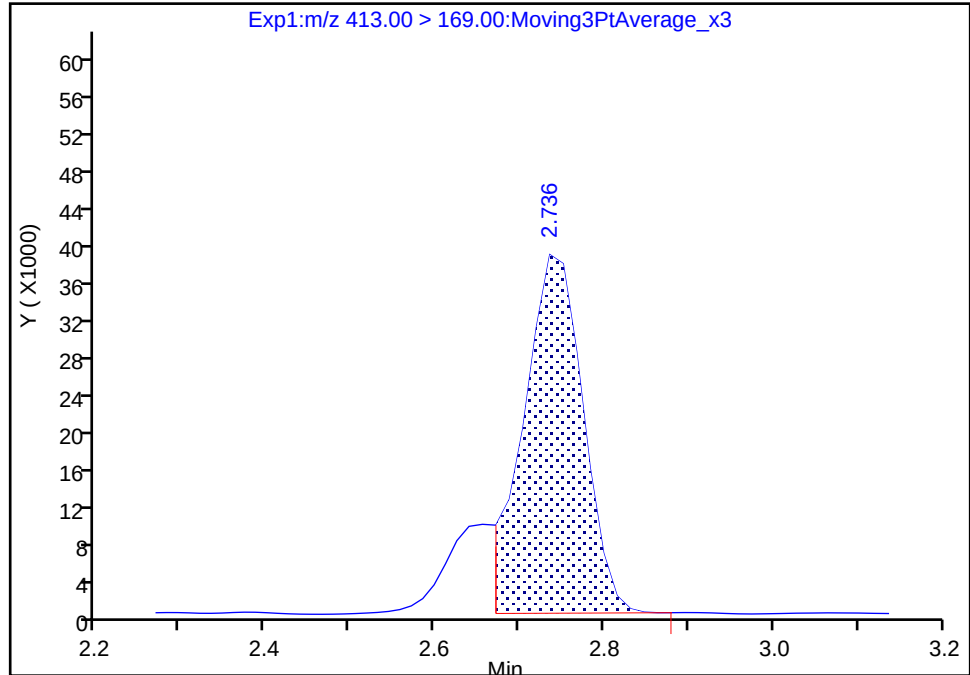
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d		
Injection Date:	18-Aug-2018 08:43:24	Instrument ID:	A9
Lims ID:	320-42105-A-2-A	Lab Sample ID:	320-42105-2
Client ID:	MW-11		
Operator ID:	A9\Administrator	ALS Bottle#:	26
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector	EXP1
		Worklist Smp#:	7

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

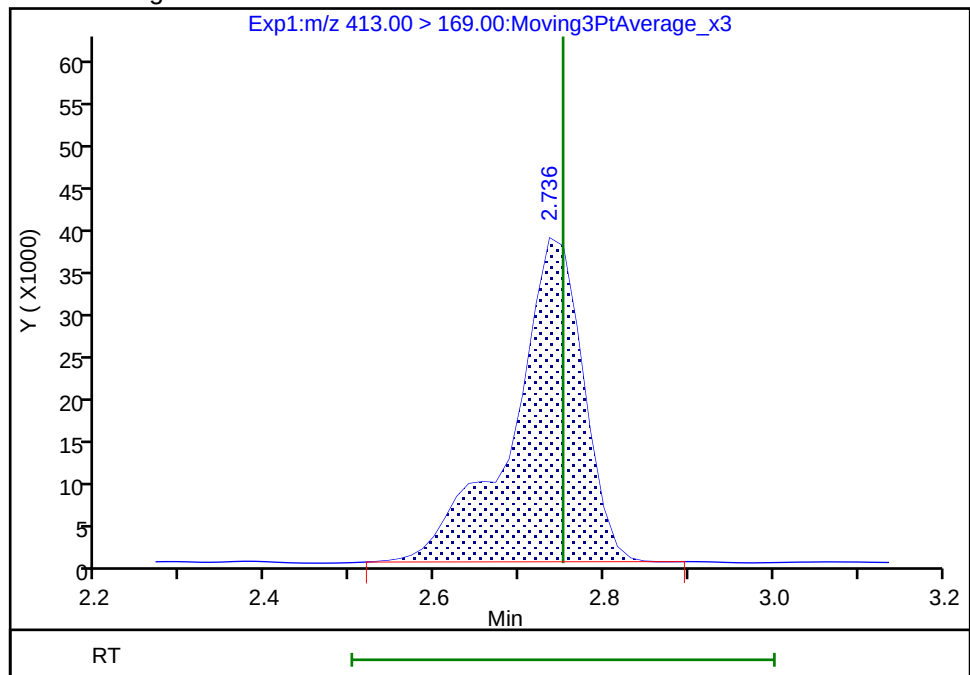
RT: 2.74
Area: 187456
Amount: 0.256283
Amount Units: ng/ml

Processing Integration Results



RT: 2.74
Area: 224528
Amount: 0.241301
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:53:11

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

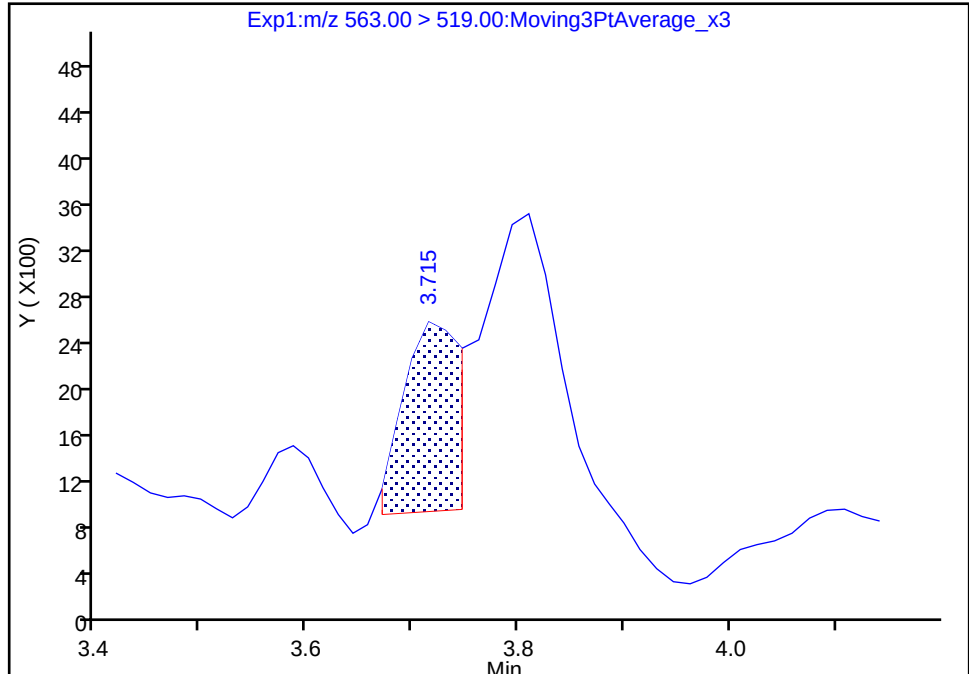
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d				
Injection Date:	18-Aug-2018 08:43:24	Instrument ID:	A9		
Lims ID:	320-42105-A-2-A	Lab Sample ID:	320-42105-2		
Client ID:	MW-11				
Operator ID:	A9\Administrator	ALS Bottle#:	26	Worklist Smp#:	7
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

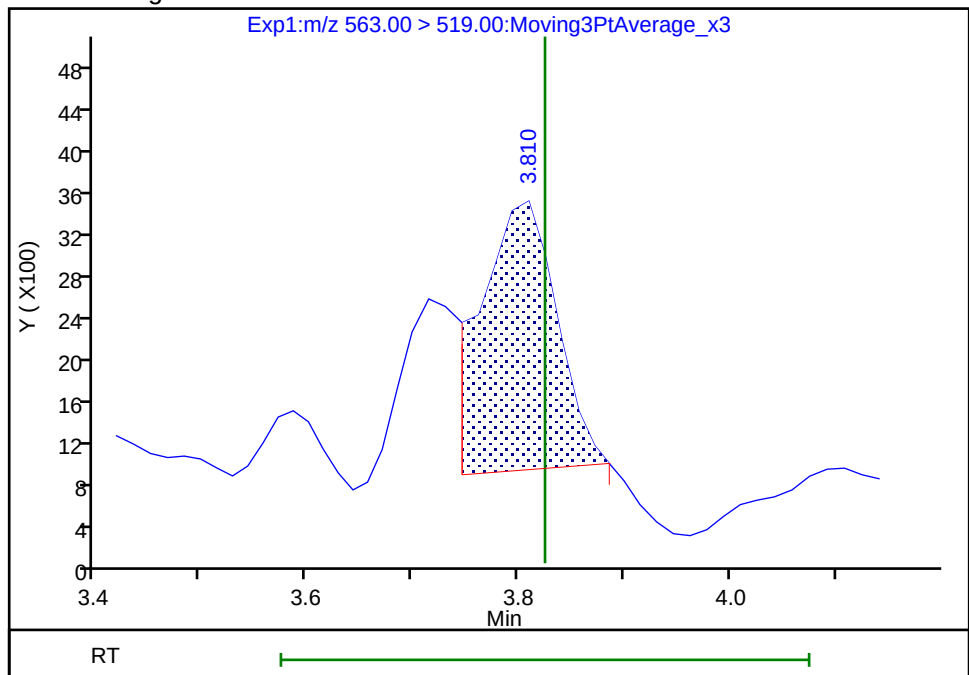
RT: 3.71
Area: 5625
Amount: 0.004574
Amount Units: ng/ml

Processing Integration Results



RT: 3.81
Area: 12434
Amount: 0.010111
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:53:46
Audit Action: Manually Integrated

Audit Reason: Baseline
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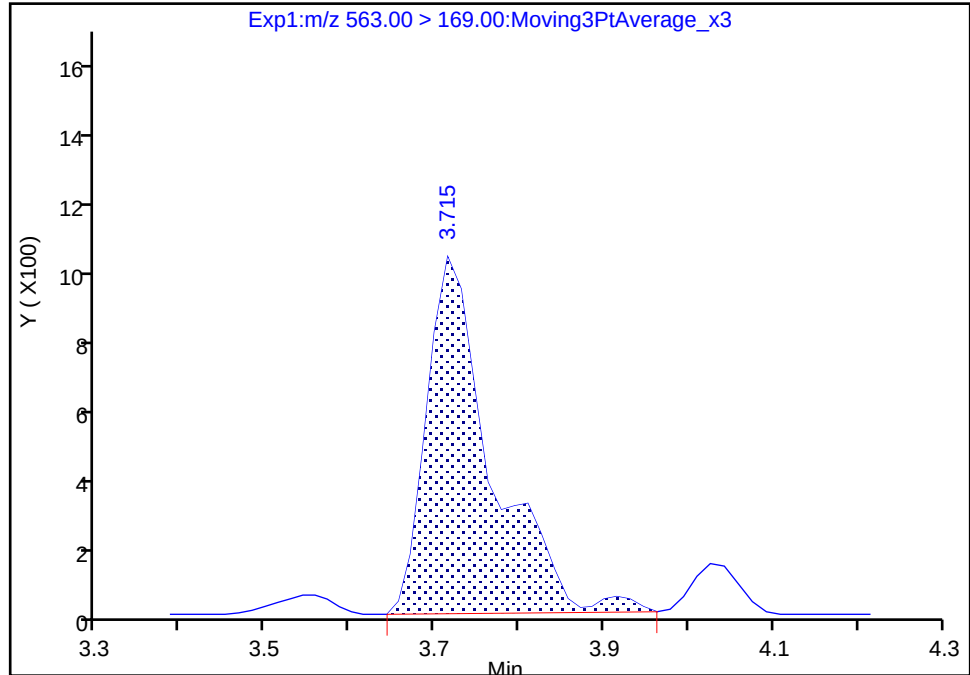
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d
Injection Date: 18-Aug-2018 08:43:24 Instrument ID: A9
Lims ID: 320-42105-A-2-A Lab Sample ID: 320-42105-2
Client ID: MW-11
Operator ID: A9\Administrator ALS Bottle#: 26 Worklist Smp#: 7
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 2

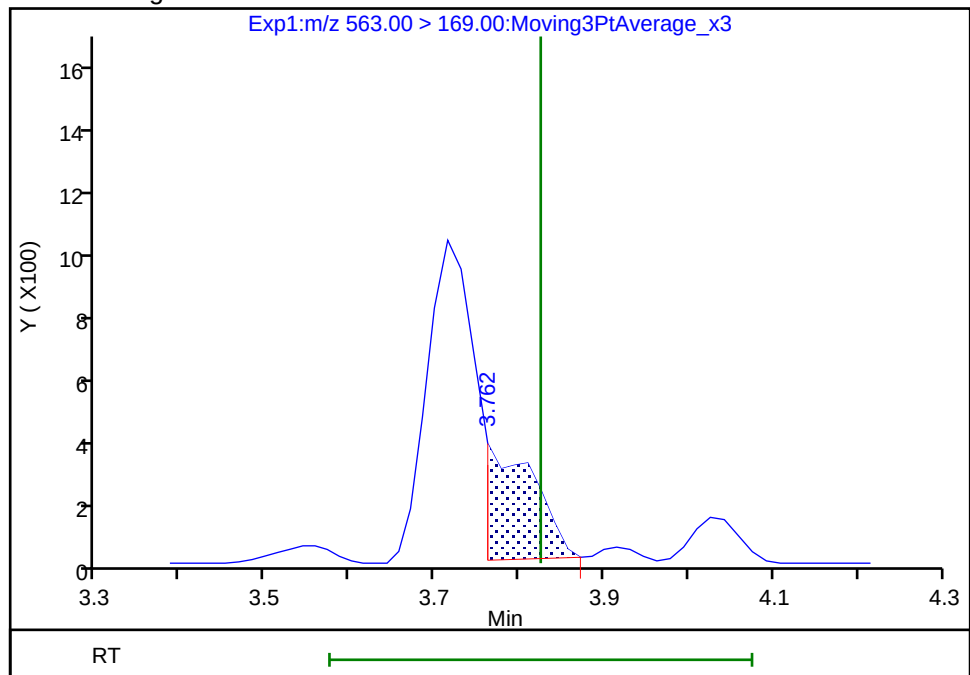
RT: 3.71
Area: 5298
Amount: 0.004574
Amount Units: ng/ml

Processing Integration Results



RT: 3.76
Area: 1305
Amount: 0.010111
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:53:48

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

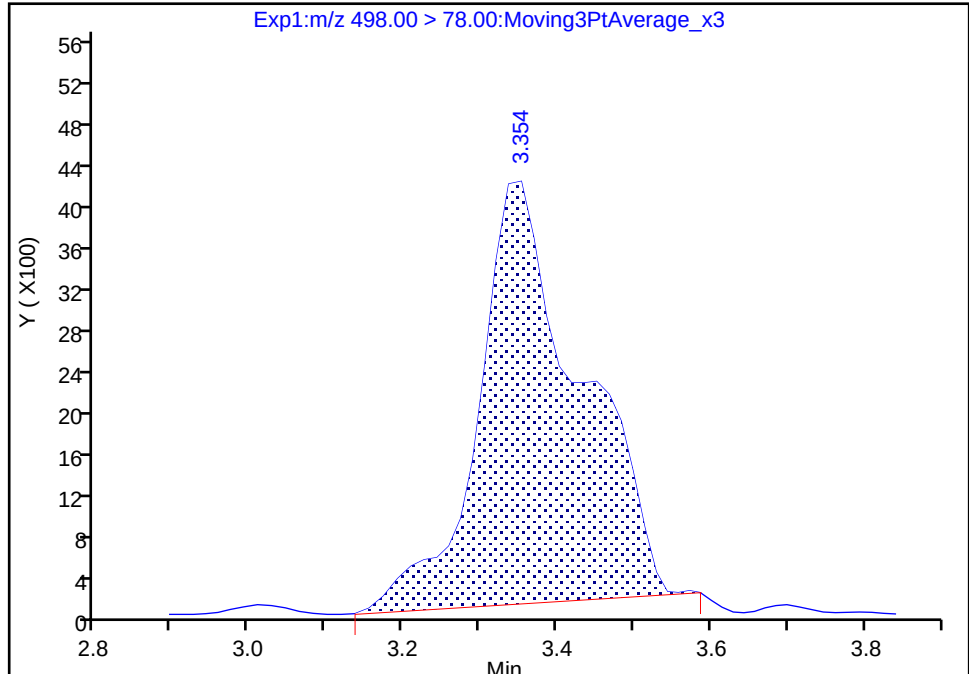
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d				
Injection Date:	18-Aug-2018 08:43:24	Instrument ID:	A9		
Lims ID:	320-42105-A-2-A	Lab Sample ID:	320-42105-2		
Client ID:	MW-11				
Operator ID:	A9\Administrator	ALS Bottle#:	26	Worklist Smp#:	7
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

22 Perfluorooctane Sulfonamide, CAS: 754-91-6

Signal: 1

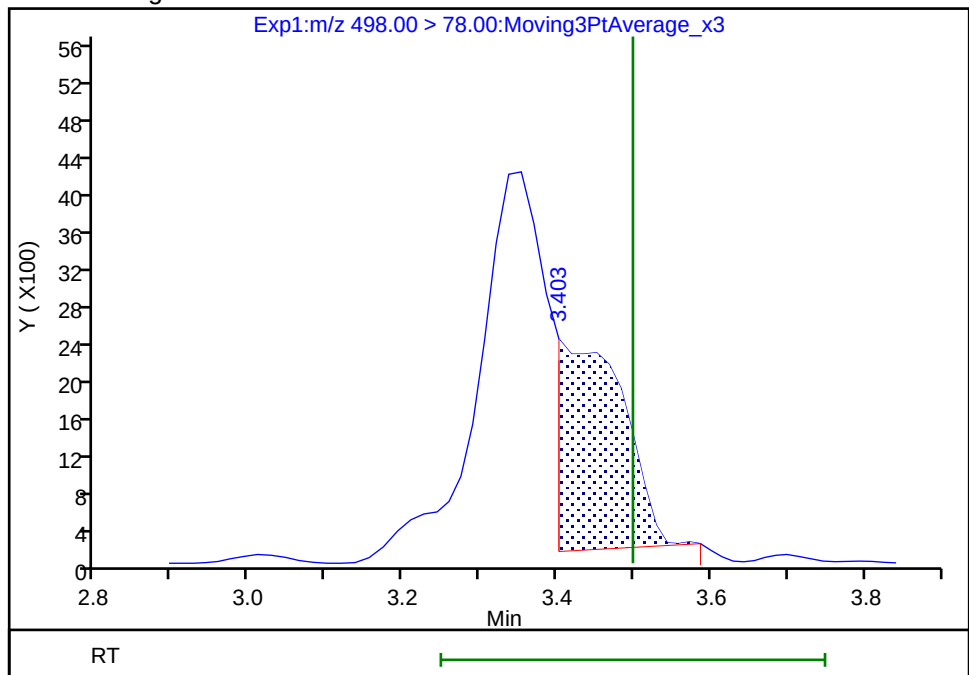
RT: 3.35
Area: 38400
Amount: 0.021530
Amount Units: ng/ml

Processing Integration Results



RT: 3.40
Area: 12891
Amount: 0.007228
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:53:25
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

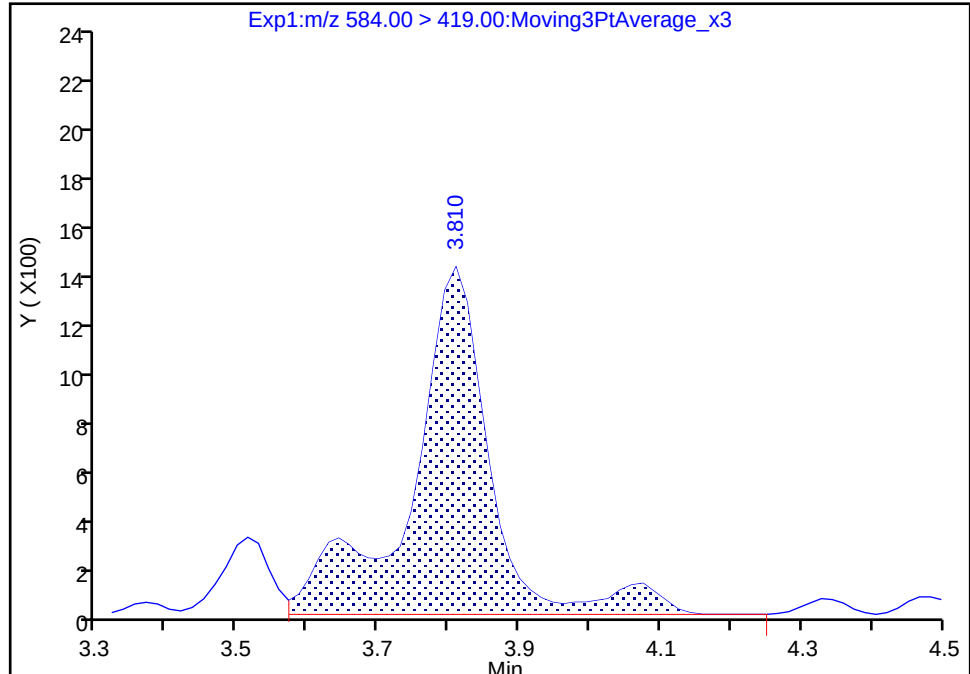
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_037.d				
Injection Date:	18-Aug-2018 08:43:24	Instrument ID:	A9		
Lims ID:	320-42105-A-2-A	Lab Sample ID:	320-42105-2		
Client ID:	MW-11				
Operator ID:	A9\Administrator	ALS Bottle#:	26	Worklist Smp#:	7
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

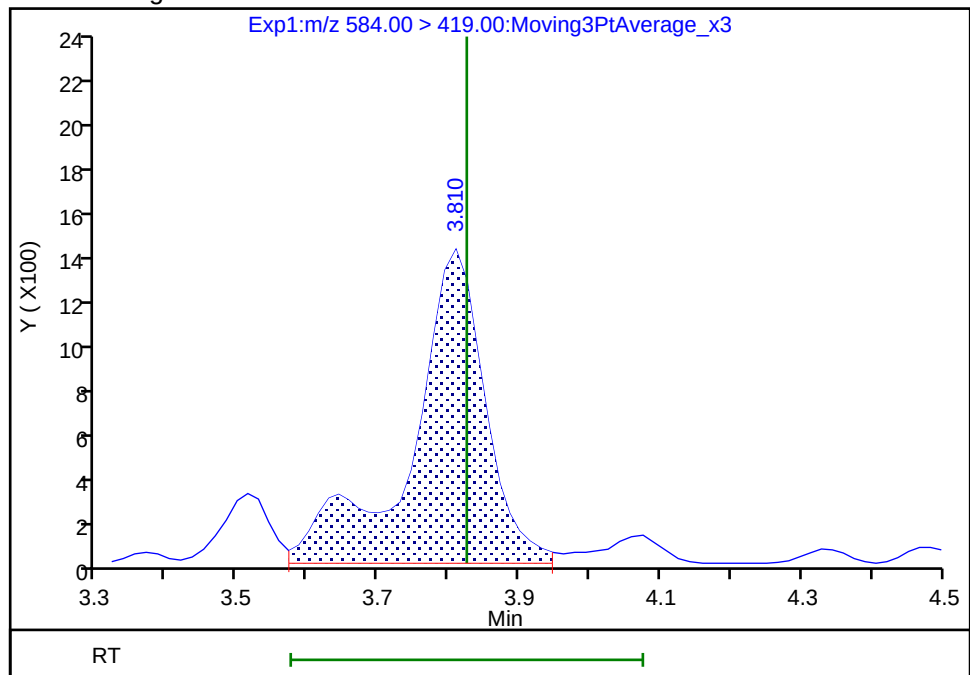
RT: 3.81
Area: 11048
Amount: 0.016732
Amount Units: ng/ml

Processing Integration Results



RT: 3.81
Area: 10261
Amount: 0.015540
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:53:55
Audit Action: Manually Integrated

Audit Reason: Baseline
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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>Field Duplicate</u>	Lab Sample ID: <u>320-42105-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_038.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>283.6 (mL)</u>	Date Analyzed: <u>08/18/2018 08:50</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	5.4		1.8	0.31
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.9		1.8	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	2.3		1.8	0.51
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	7.7		1.8	0.75
375-95-1	Perfluorononanoic acid (PFNA)	0.81	J	1.8	0.24
335-76-2	Perfluorodecanoic acid (PFDA)	0.37	J	1.8	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.97
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.8	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.44	J	1.8	0.18
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.8	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.36	J	1.8	0.17
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	30		1.8	0.48
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.49	J	1.8	0.31
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		18	2.7
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7
27619-97-2	6:2 FTS	2.6	J	18	1.8
39108-34-4	8:2 FTS	ND		18	1.8

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>Field Duplicate</u>	Lab Sample ID: <u>320-42105-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_038.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>283.6 (mL)</u>	Date Analyzed: <u>08/18/2018 08:50</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	40		25-150
STL01893	13C5 PFPeA	39		25-150
STL00993	13C2 PFHxA	39		25-150
STL01892	13C4-PFHpA	41		25-150
STL00990	13C4 PFOA	41		25-150
STL00995	13C5 PFNA	39		25-150
STL00996	13C2 PFDA	36		25-150
STL00997	13C2 PFUnA	35		25-150
STL00998	13C2 PFDoA	31		25-150
STL02116	13C2-PFTeDA	30		25-150
STL02337	13C3-PFBS	41		25-150
STL00994	18O2 PFHxS	41		25-150
STL00991	13C4 PFOS	36		25-150
STL01056	13C8 FOSA	32		25-150
STL02118	d3-NMeFOSAA	36		25-150
STL02117	d5-NEtFOSAA	38		25-150
STL02279	M2-6:2FTS	52		25-150
STL02280	M2-8:2FTS	46		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d
 Lims ID: 320-42105-A-3-A
 Client ID: Field Duplicate
 Sample Type: Client
 Inject. Date: 18-Aug-2018 08:50:54 ALS Bottle#: 27 Worklist Smp#: 8
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:56:40 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:56:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 1 13C4 PFBA

217.00 > 172.00	1.505	1.500	0.005	0.547	3385334	1.00		39.9	8655	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.505	1.505	0.0	1.000	195565	0.1527		8.9		M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.774	1.773	0.002	1.000	66103	0.0546		1.1		M

D 3 13C5-PFPeA

267.90 > 223.00	1.774	1.774	0.0	0.644	2955551	0.9779		39.1	2742	
5 Perfluorobutanesulfonic acid										R
298.90 > 80.00	1.815	1.814	0.001	1.000	20739	0.0124		2.7		R
298.90 > 99.00	1.815	1.814	0.001	1.000	4326		4.79(1.35-4.05)	0.9		

D 7 13C2 PFHxA

315.00 > 270.00	2.060	2.050	0.010	0.748	3104831	0.9733		38.9	4058	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.060	2.059	0.001	1.000	72310	0.0651		3.5		
313.00 > 119.00	2.060	2.059	0.001	1.000	4047		17.87(6.96-20.87)	4.9		M
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.401	2.387	0.014	1.005	68840	0.0423		3.9		
363.00 > 169.00	2.388	2.387	0.001	1.000	16206		4.25(2.17-6.52)	19.1		

D 9 13C4-PFHpA

367.00 > 322.00	2.388	2.388	0.0	0.868	3845207	1.02		40.7	6516	

D 11 18O2 PFHxS

403.00 > 84.00	2.415	2.402	0.013	0.877	2229096	0.9602		40.6	7084	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.415	2.414	0.001	1.000	37098	0.0309		14.9		M
399.00 > 99.00	2.401	2.414	-0.013	0.995	7912		4.69(1.90-5.70)	7.5		M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.737	2.721	0.016	0.994	430377	1.23		51.7	402	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.737	2.736	0.001	1.000	30084	0.0745			102	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.753	2.751	0.002	1.000	342743	0.2190			20.8	M
413.00 > 169.00	2.753	2.751	0.002	1.000	127090		2.70(1.36-4.08)		149	M
* 62 13C2-PFOA										
415.00 > 370.00	2.753	2.751	0.002		8855300	2.50			17175	
D 14 13C4 PFOA										
417.00 > 372.00	2.753	2.753	0.0	1.000	3616885	1.03		41.2	9464	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.768	2.767	0.001	0.882	9238	0.0102			5.3	
449.00 > 99.00	2.768	2.767	0.001	0.882	3769		2.45(1.84-5.53)		14.7	
20 Perfluorononanoic acid										
463.00 > 419.00	3.138	3.137	0.001	1.000	29886	0.0229			3.2	M
463.00 > 169.00	3.138	3.137	0.001	1.000	4962		6.02(2.68-8.03)		12.5	M
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.138	3.137	0.001	1.000	801396	0.8479			298	M
499.00 > 99.00	3.138	3.137	0.001	1.000	209000		3.83(2.04-6.12)		594	
D 19 13C5 PFNA										
468.00 > 423.00	3.138	3.138	0.0	1.140	3193194	0.9825		39.3	4487	
D 18 13C4 PFOS										
503.00 > 80.00	3.138	3.138	0.0	1.140	2156541	0.8667		36.3	518	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	3341	0.009561			15.0	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	55266	1.10		45.8	314	
D 21 13C8 FOSA										
506.00 > 78.00	3.499	3.483	0.016	1.271	1060762	0.7911		31.6	1889	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	14337	0.0105			1.9	
513.00 > 169.00	3.483	3.499	-0.016	0.996	1639		8.75(7.12-21.35)		5.2	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.499	3.499	0.0	1.000	17351	0.0139			8.9	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.271	3185275	0.9035		36.1	4547	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.658	3.645	0.013	1.329	1367198	0.8934		35.7	2103	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.658	3.657	0.001	1.000	2888	0.005316			3.1	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.827	3.811	0.016	1.390	2574566	0.8758		35.0	2953	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.811	3.811	0.0	1.385	1116959	0.9621		38.5	1238	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.827	3.825	0.002	1.000	9253	0.0104			2.2	M
563.00 > 169.00	3.795	3.825	-0.030	0.992	1001		9.24(5.24-15.72)		4.1	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.827	3.825	0.002	1.004	11715	0.0267			23.2	M
D 36 13C2 PFDaA										
615.00 > 570.00	4.127	4.110	0.017	1.499	2631066	0.7716		30.9	5302	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.616	4.616	0.0	1.677	2073074	0.7517		30.1	7034	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d

Injection Date: 18-Aug-2018 08:50:54

Instrument ID: A9

Lims ID: 320-42105-A-3-A

Lab Sample ID: 320-42105-3

Client ID: Field Duplicate

Operator ID: A9\Administrator

ALS Bottle#: 27

Worklist Smp#: 8

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

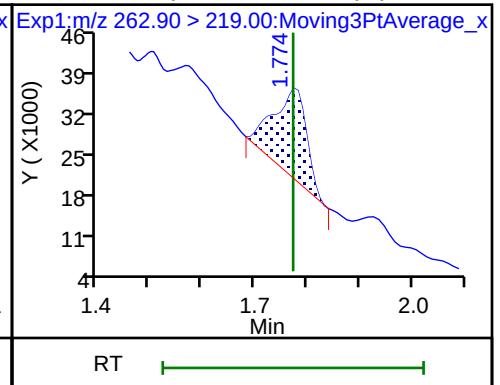
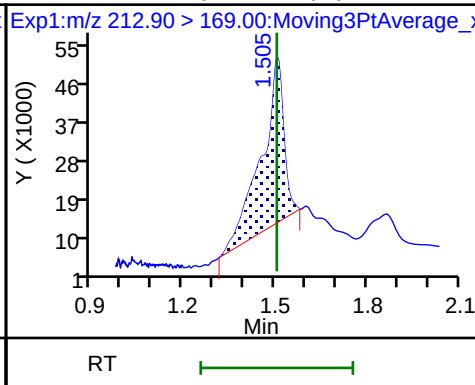
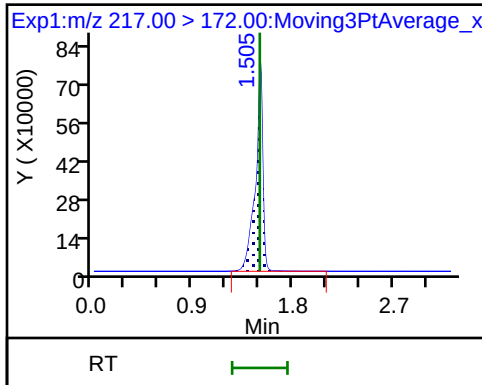
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

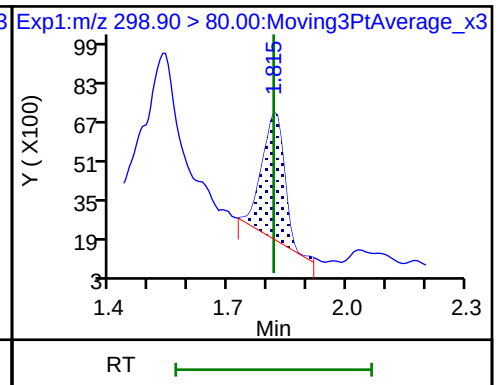
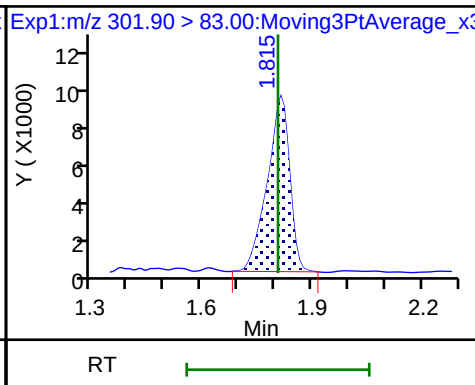
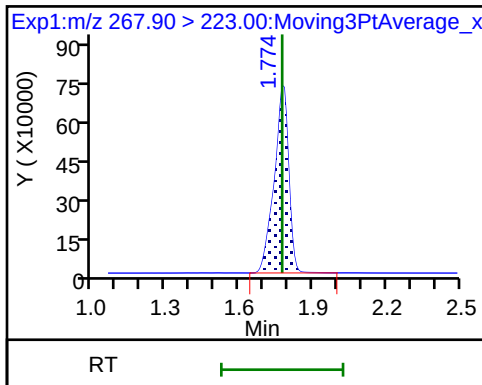
4 Perfluoropentanoic acid (M)



D 3 13C5-PFPeA

D 47 13C3-PFBS

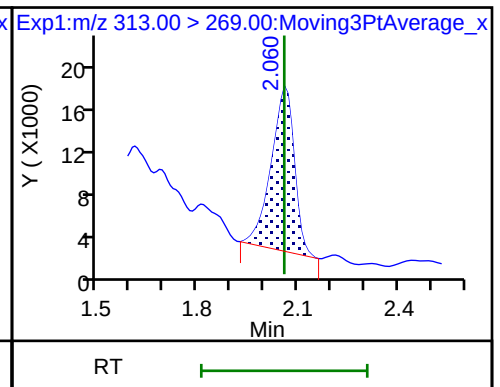
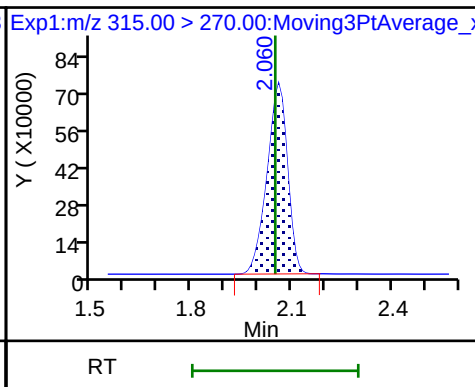
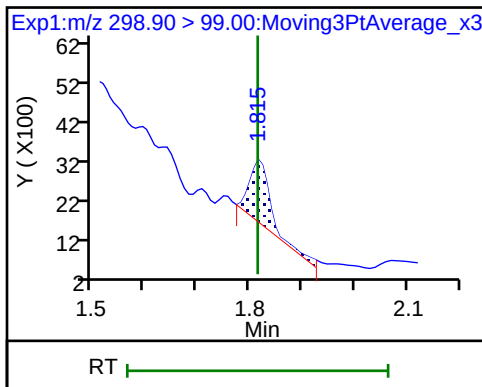
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

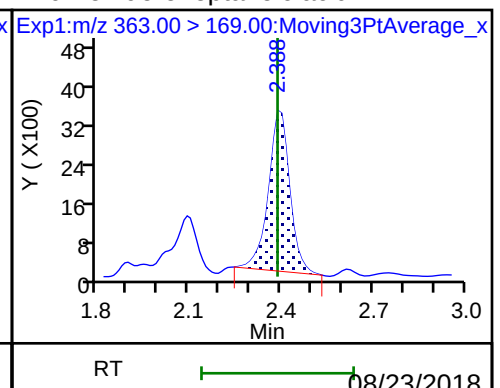
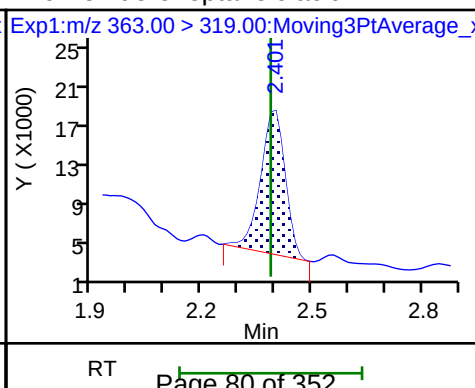
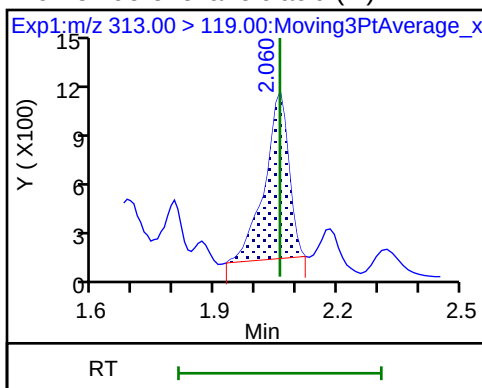
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid (M)

10 Perfluoroheptanoic acid

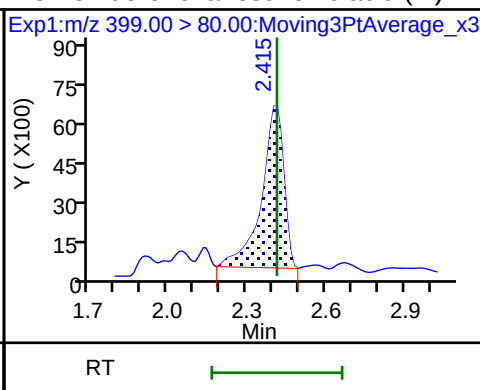
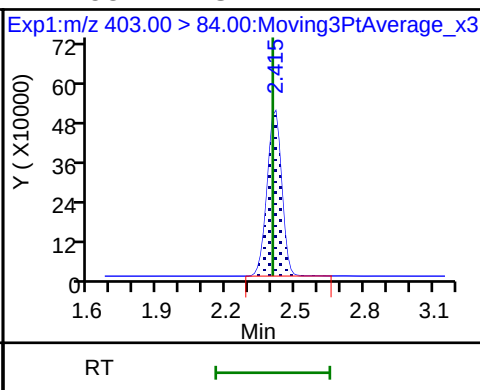
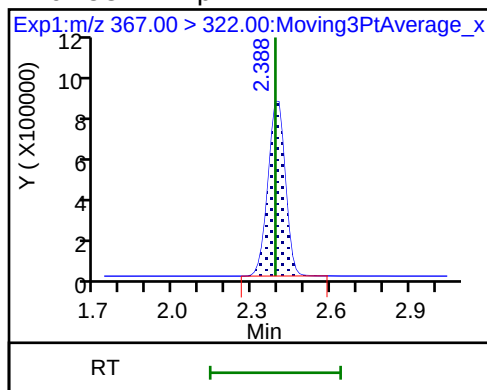
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

D 11 18O2 PFHxS

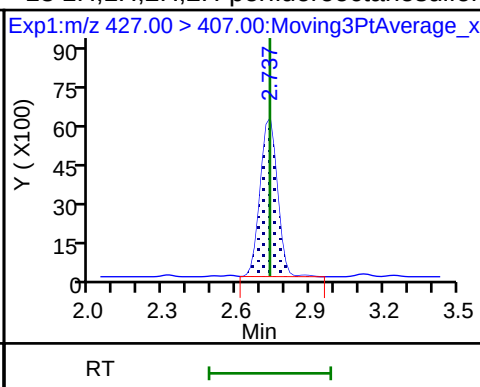
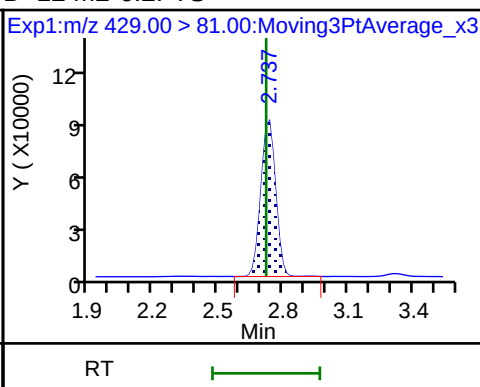
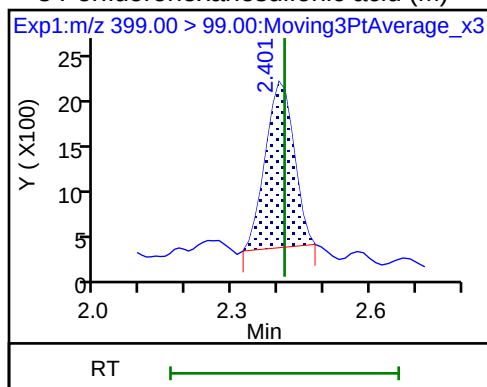
8 Perfluorohexanesulfonic acid (M)



8 Perfluorohexanesulfonic acid (M)

D 12 M2-6:2FTS

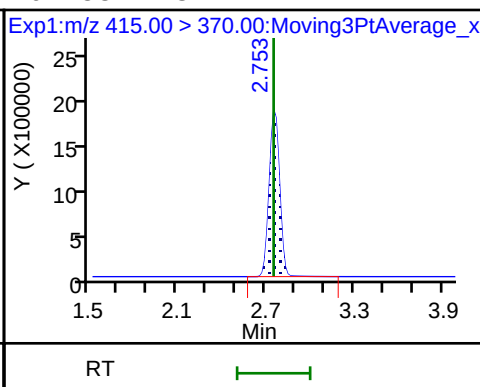
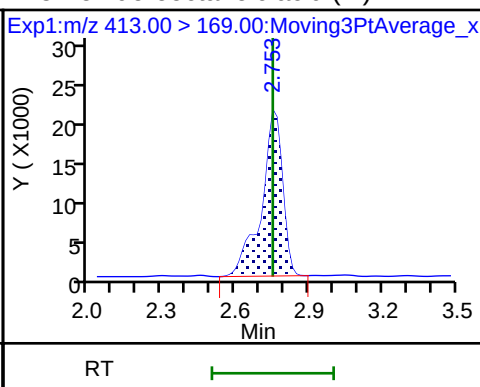
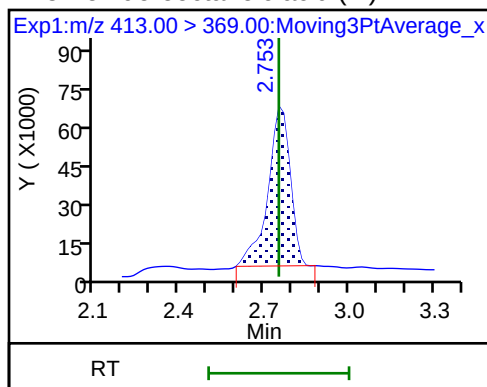
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

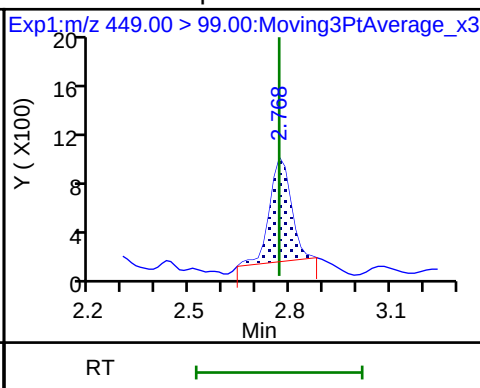
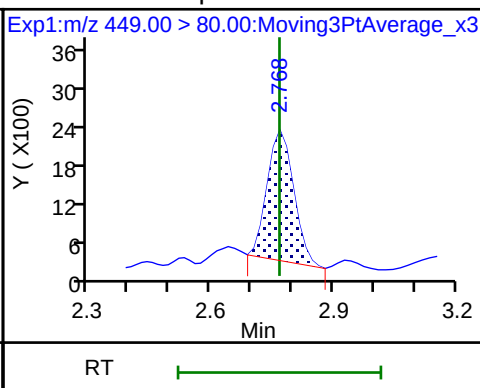
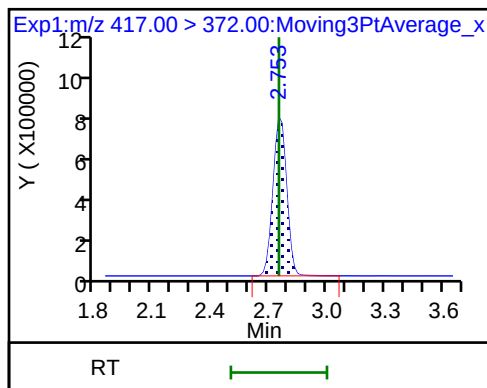
* 62 13C2-PFOA

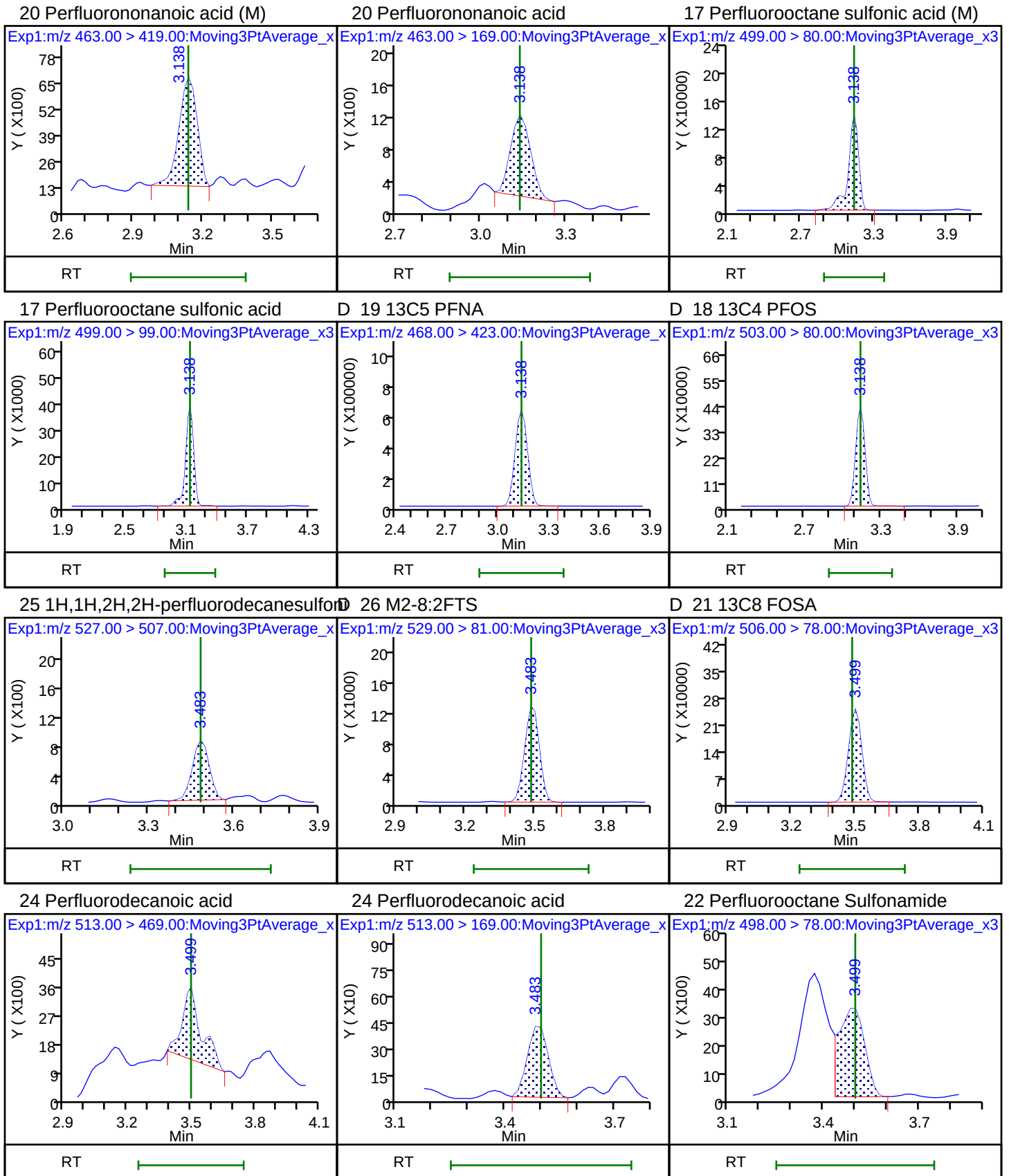


D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

16 Perfluoroheptanesulfonic acid

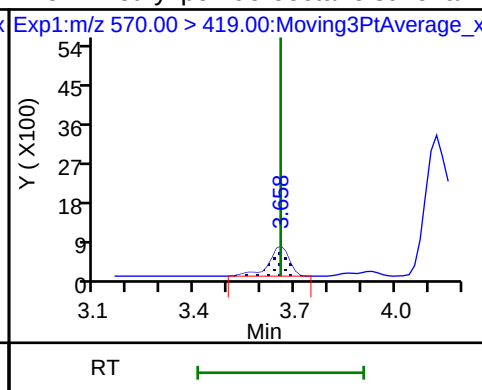
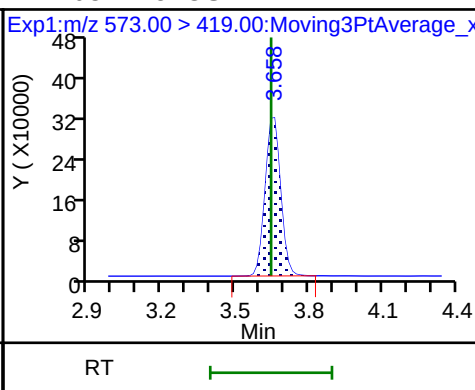
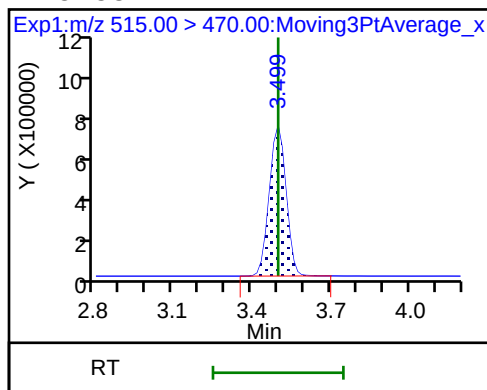




D 23 13C2 PFDA

D 27 d3-NMeFOSAA

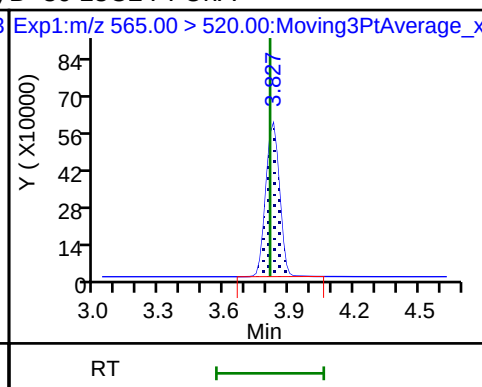
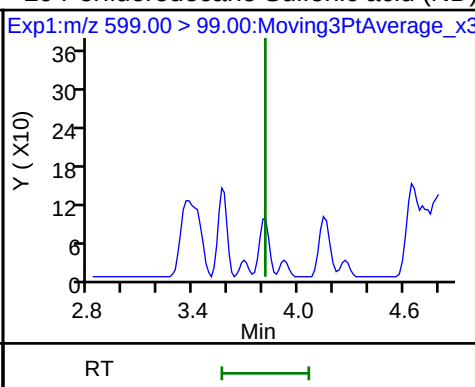
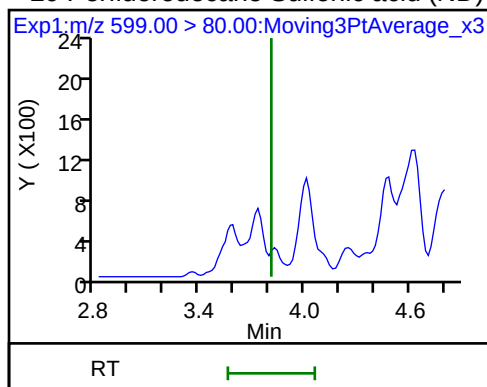
28 N-methyl perfluorooctane sulfonami (M)



29 Perfluorodecane Sulfonic acid (ND)

29 Perfluorodecane Sulfonic acid (ND)

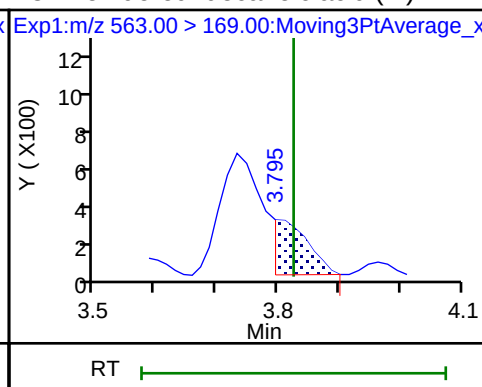
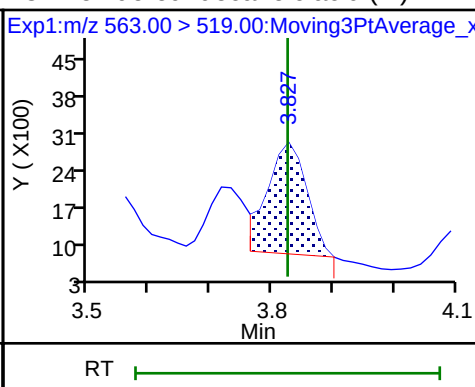
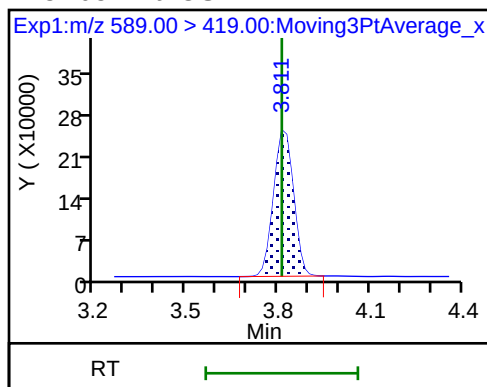
D 30 13C2 PFUnA



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid (M)

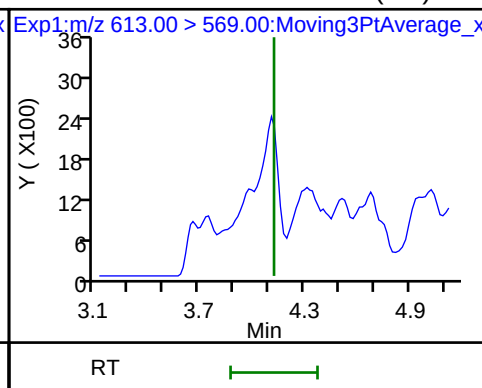
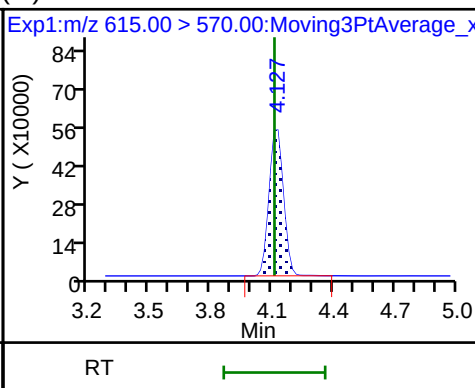
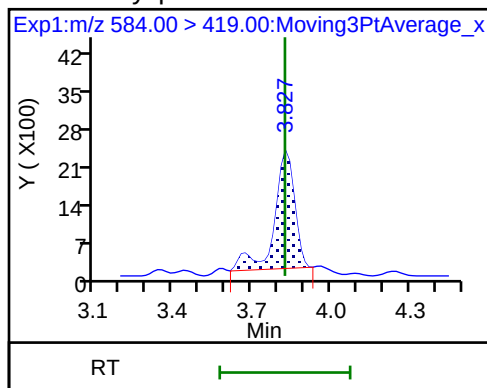
31 Perfluoroundecanoic acid (M)



33 N-ethyl perfluorooctane sulfonamid (M)

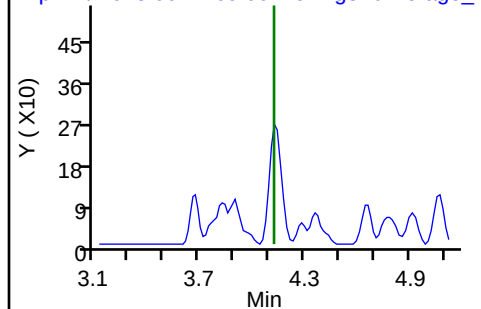
D 36 13C2 PFDaA

37 Perfluorododecanoic acid (ND)



37 Perfluorododecanoic acid (ND)

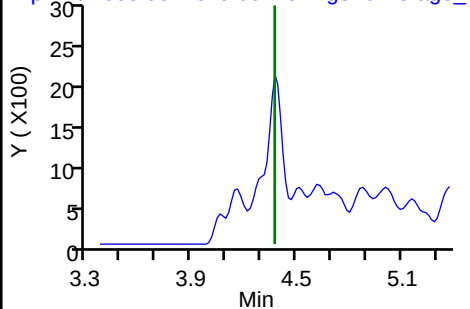
Exp1:m/z 613.00 > 169.00:Moving3PtAverage_x



RT

41 Perfluorotridecanoic acid (ND)

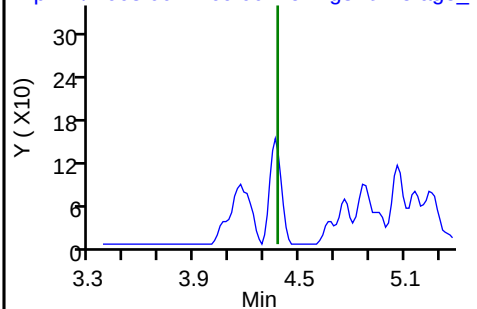
Exp1:m/z 663.00 > 619.00:Moving3PtAverage_x



RT

41 Perfluorotridecanoic acid (ND)

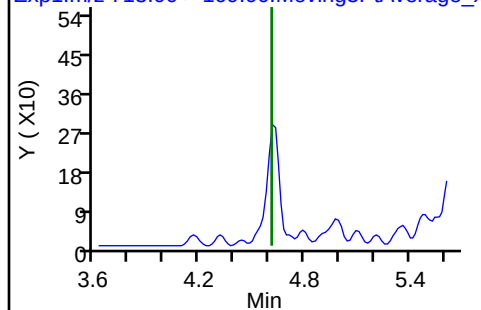
Exp1:m/z 663.00 > 169.00:Moving3PtAverage_x



RT

42 Perfluorotetradecanoic acid (ND)

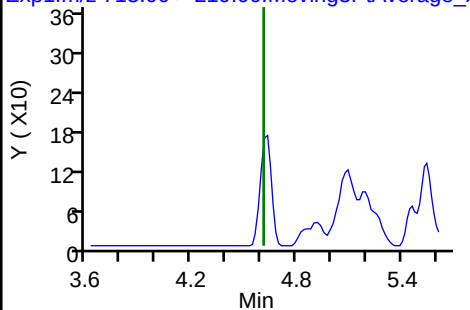
Exp1:m/z 713.00 > 169.00:Moving3PtAverage_x



RT

42 Perfluorotetradecanoic acid (ND)

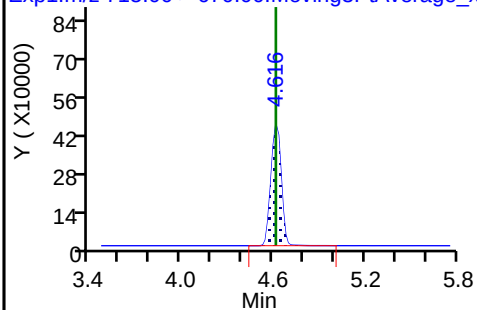
Exp1:m/z 713.00 > 219.00:Moving3PtAverage_x



RT

D 43 13C2-PFTeDA

Exp1:m/z 715.00 > 670.00:Moving3PtAverage_x



RT

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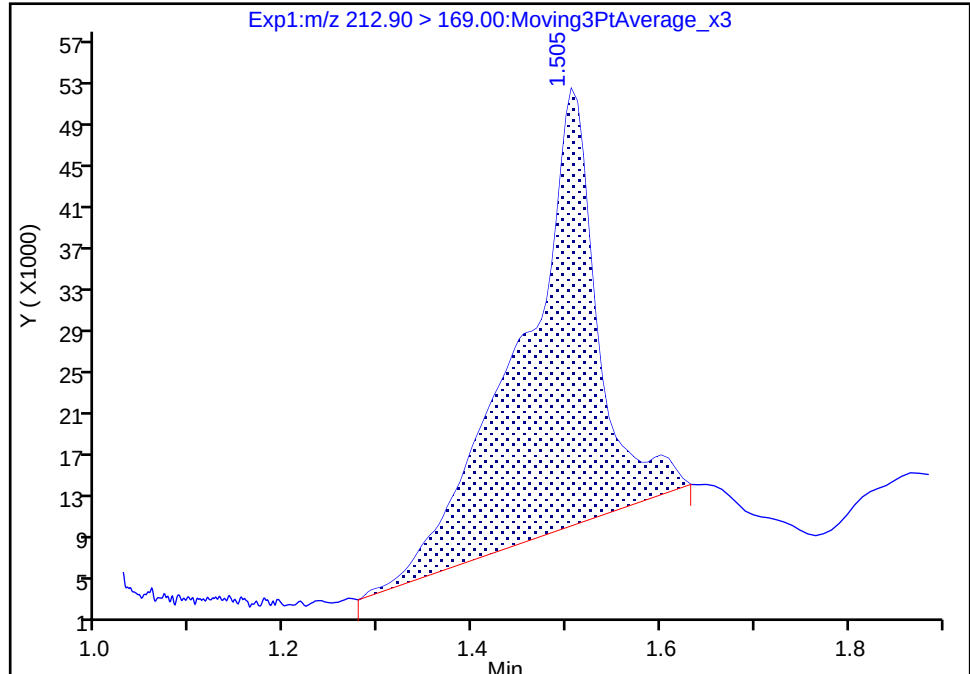
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

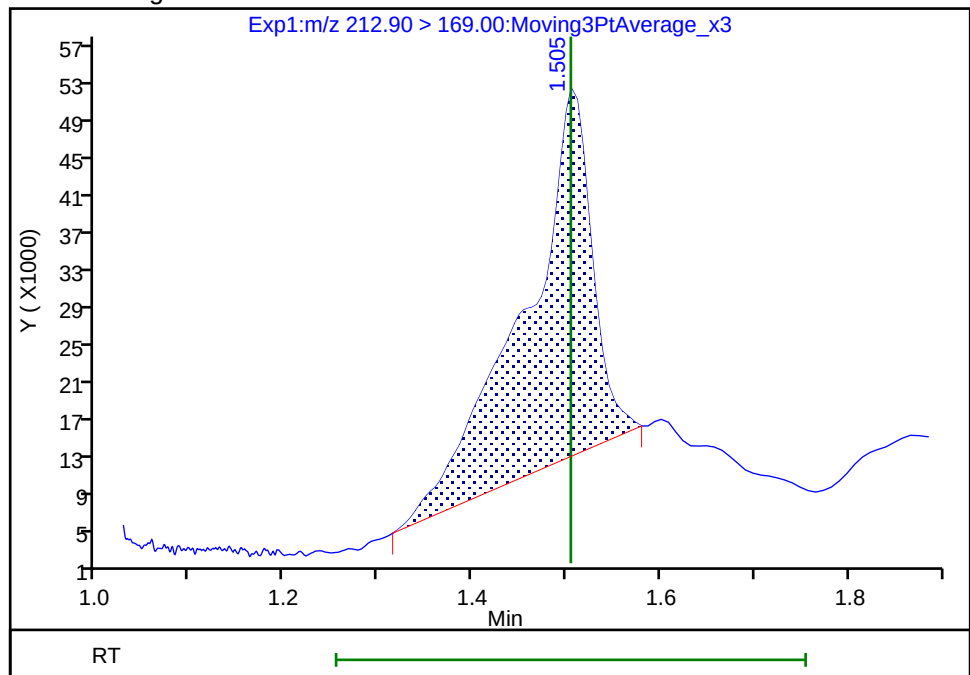
RT: 1.51
Area: 239576
Amount: 0.187106
Amount Units: ng/ml

Processing Integration Results



RT: 1.51
Area: 195565
Amount: 0.152734
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:54:38
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

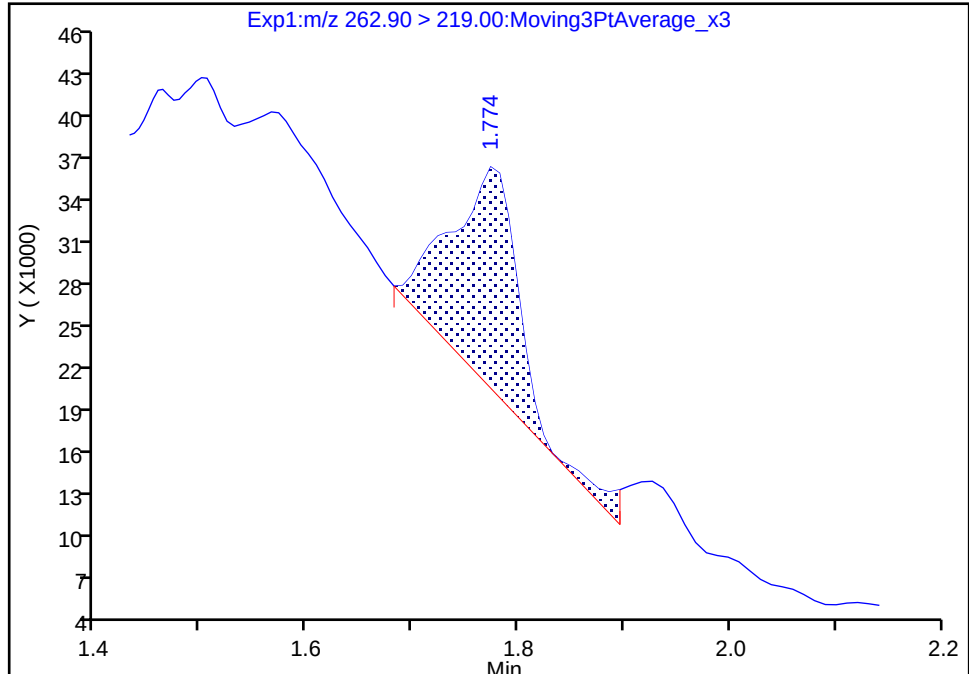
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

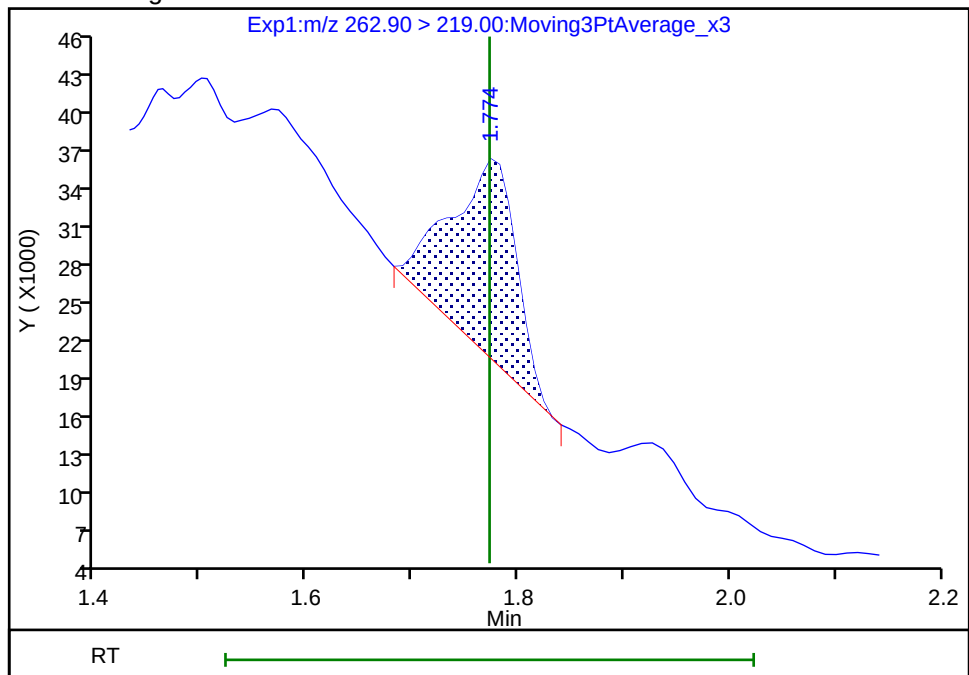
RT: 1.77
Area: 69786
Amount: 0.057660
Amount Units: ng/ml

Processing Integration Results



RT: 1.77
Area: 66103
Amount: 0.054617
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:54:43
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

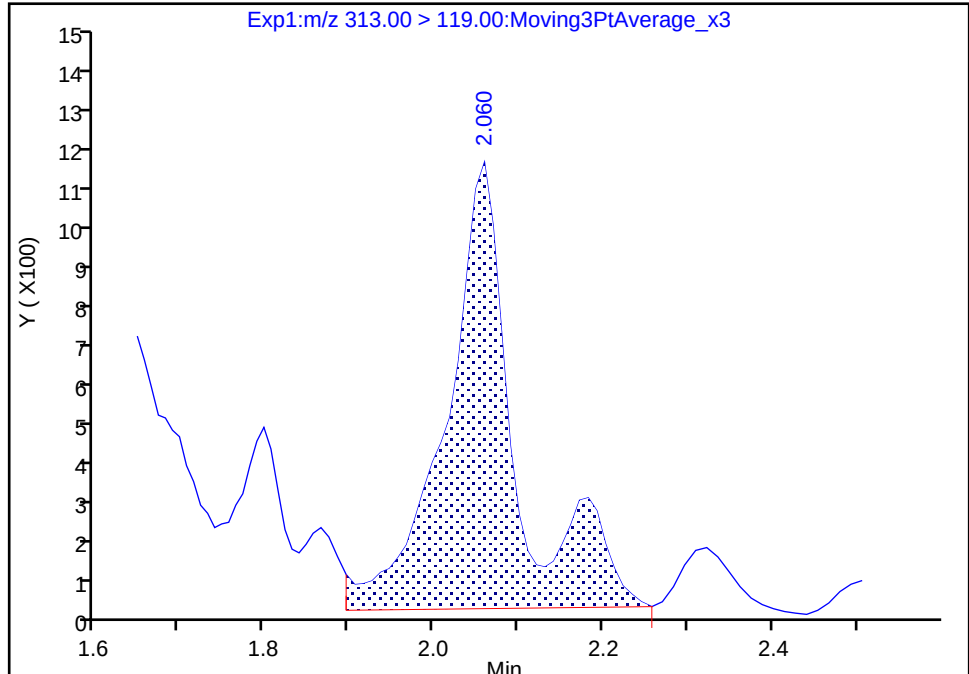
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d				
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9		
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3		
Client ID:	Field Duplicate				
Operator ID:	A9\Administrator	ALS Bottle#:	27	Worklist Smp#:	8
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

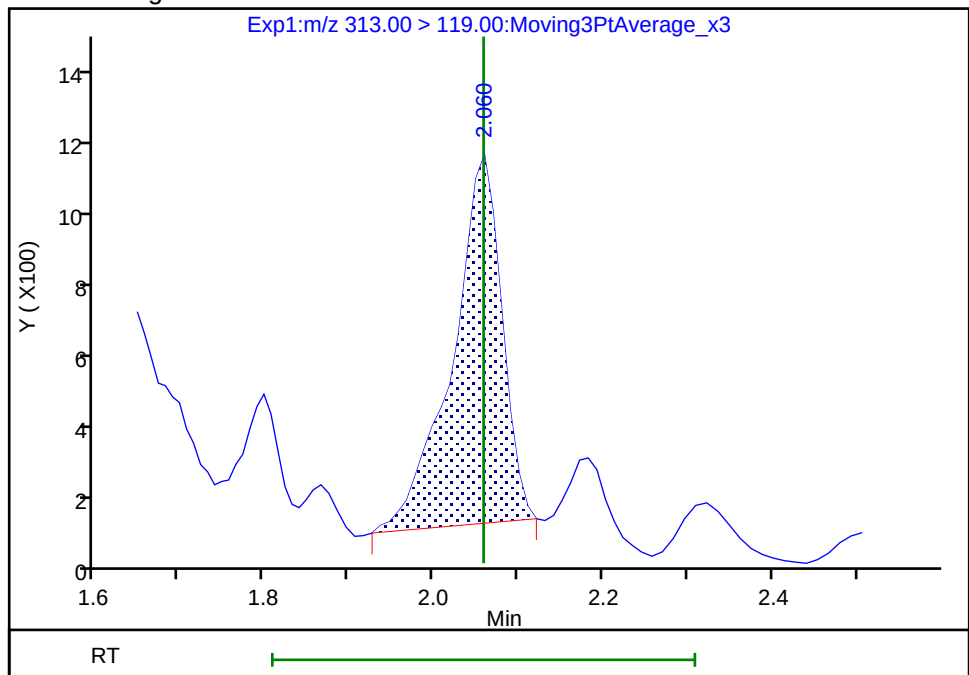
RT: 2.06
Area: 6276
Amount: 0.065088
Amount Units: ng/ml

Processing Integration Results



RT: 2.06
Area: 4047
Amount: 0.065088
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:54:54
Audit Action: Manually Integrated

Audit Reason: Baseline
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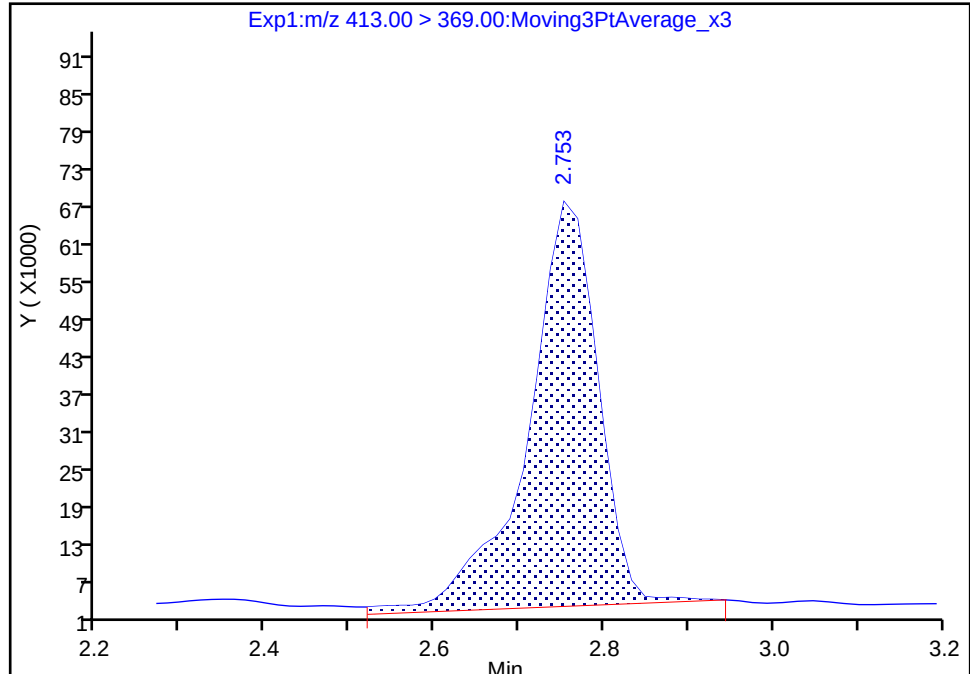
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

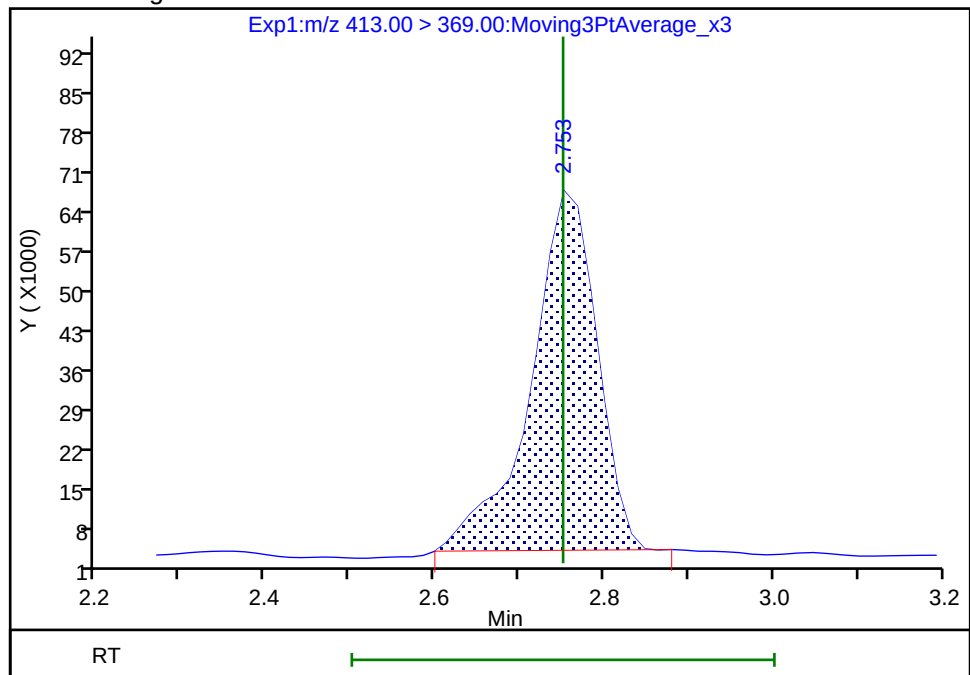
RT: 2.75
Area: 373006
Amount: 0.238322
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 342743
Amount: 0.218987
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:10
Audit Action: Manually Integrated

Audit Reason: Baseline
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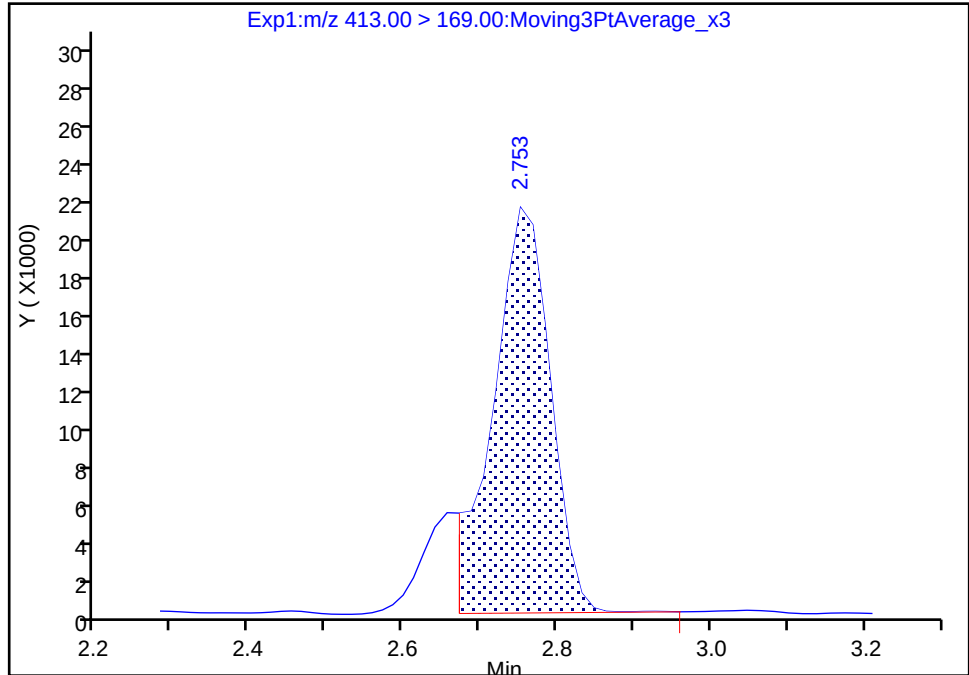
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

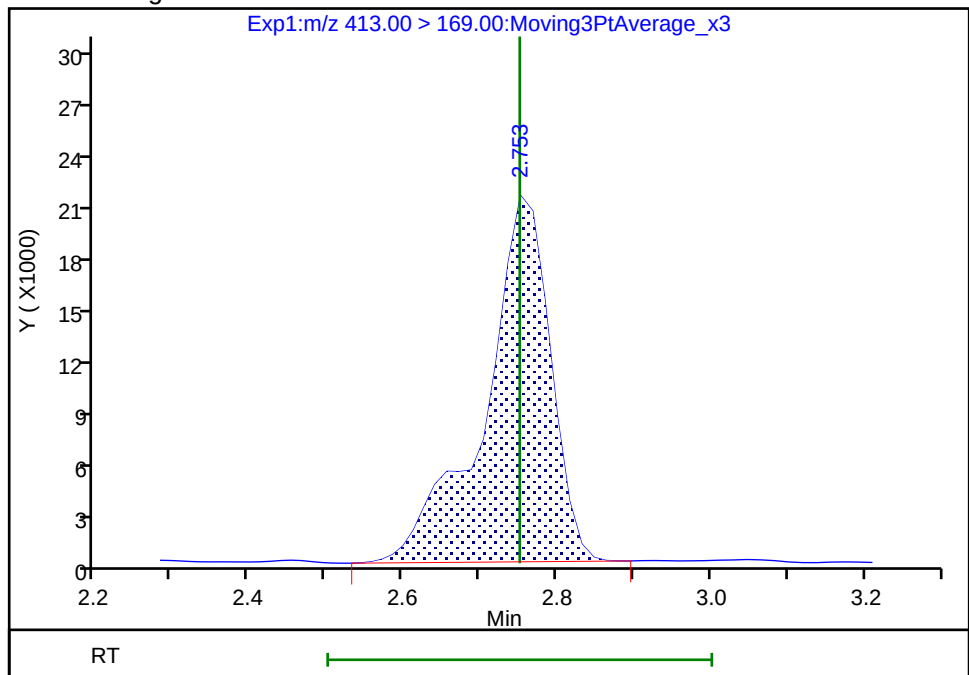
RT: 2.75
Area: 109961
Amount: 0.238322
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 127090
Amount: 0.218987
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:15

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

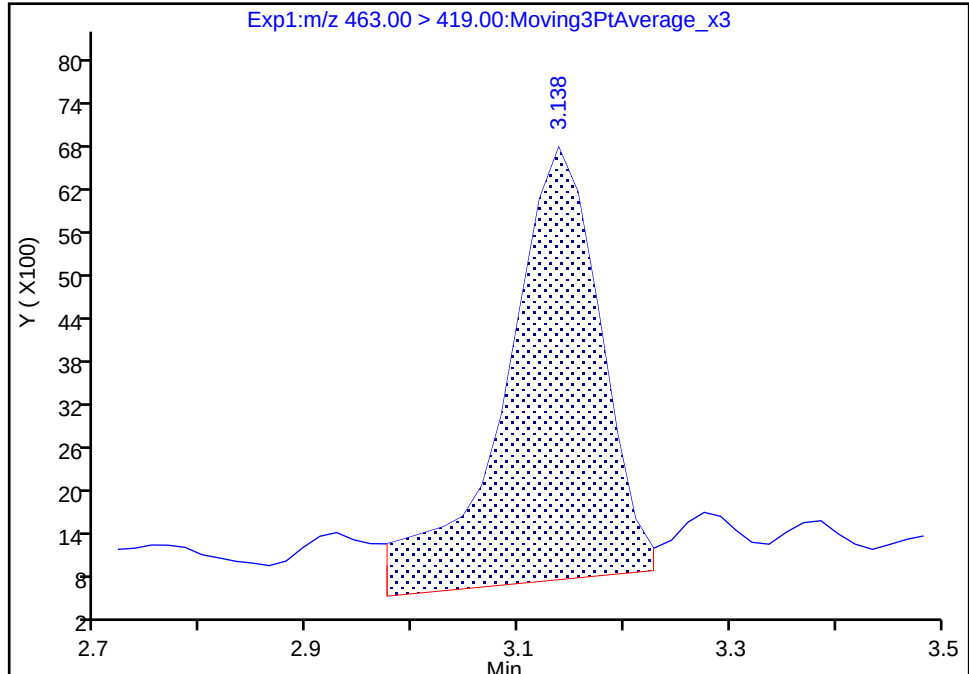
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d				
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9		
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3		
Client ID:	Field Duplicate				
Operator ID:	A9\Administrator	ALS Bottle#:	27	Worklist Smp#:	8
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

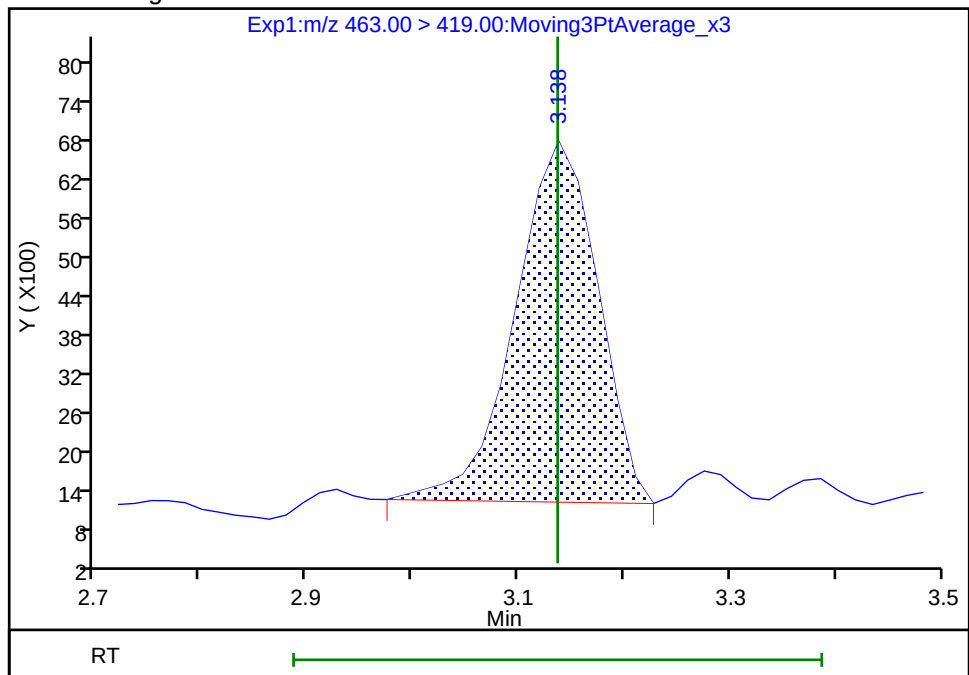
RT: 3.14
Area: 37641
Amount: 0.028785
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 29886
Amount: 0.022854
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:24
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

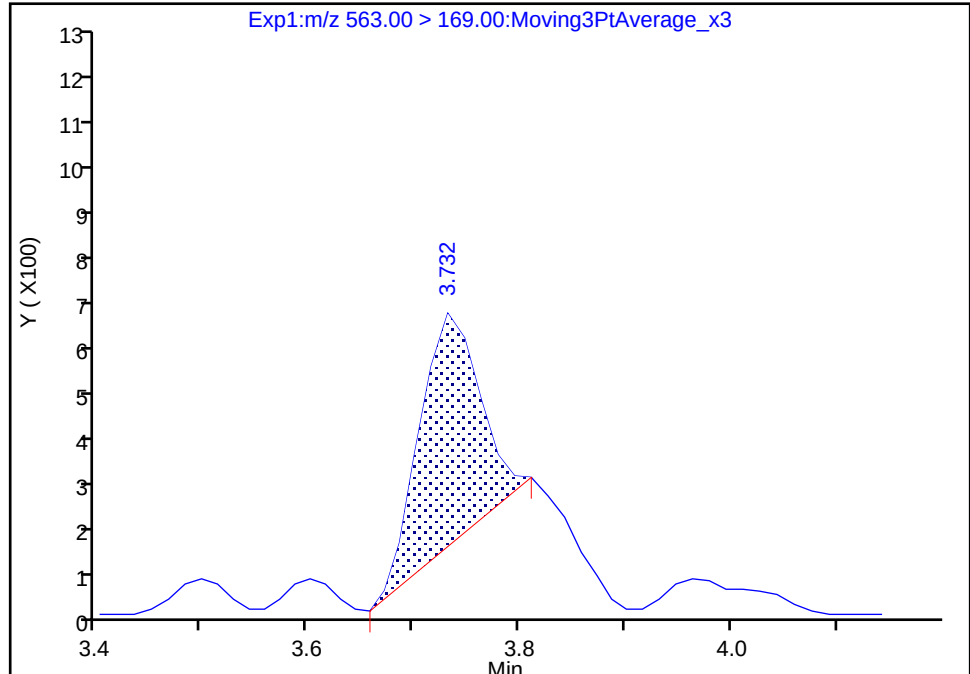
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 2

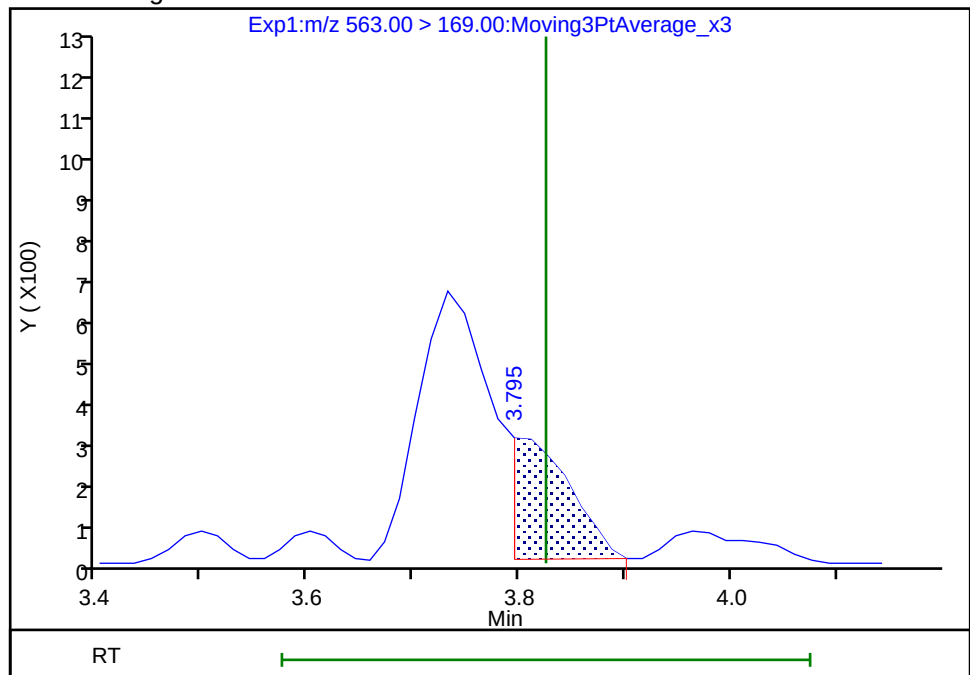
RT: 3.73
Area: 1933
Amount: 0.005135
Amount Units: ng/ml

Processing Integration Results



RT: 3.80
Area: 1001
Amount: 0.010374
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:56:19

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

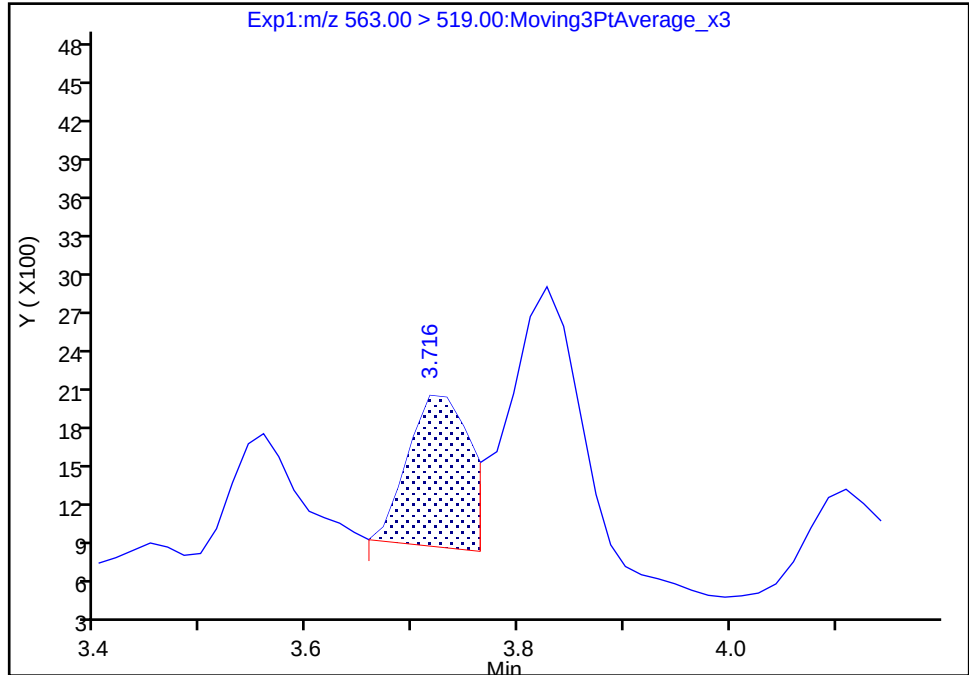
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d
Injection Date: 18-Aug-2018 08:50:54 Instrument ID: A9
Lims ID: 320-42105-A-3-A Lab Sample ID: 320-42105-3
Client ID: Field Duplicate
Operator ID: A9\Administrator ALS Bottle#: 27 Worklist Smp#: 8
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

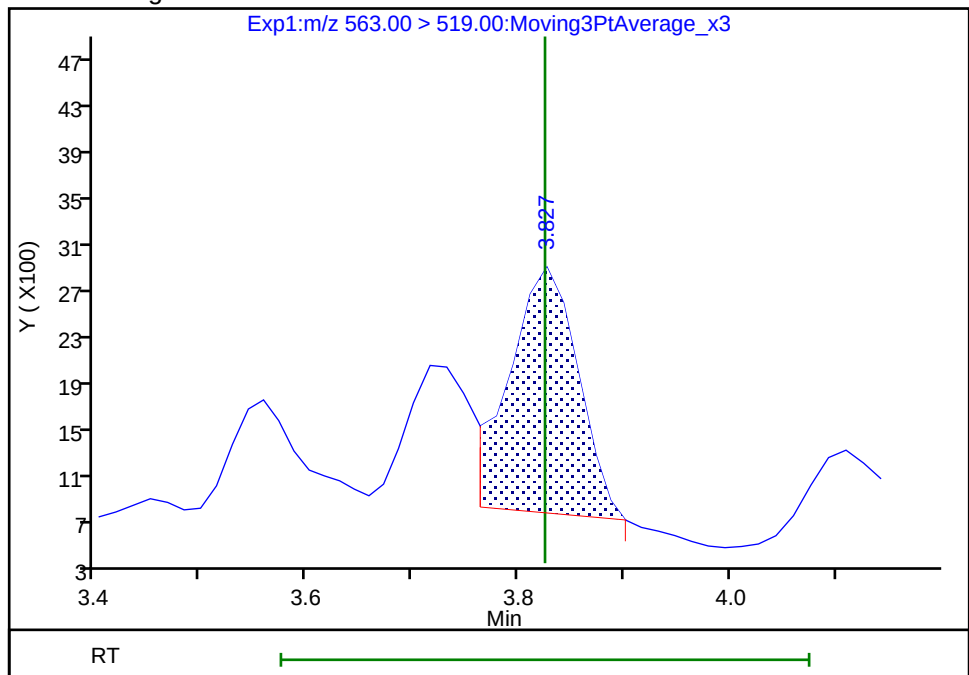
RT: 3.72
Area: 4580
Amount: 0.005135
Amount Units: ng/ml

Processing Integration Results



RT: 3.83
Area: 9253
Amount: 0.010374
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:56:21

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

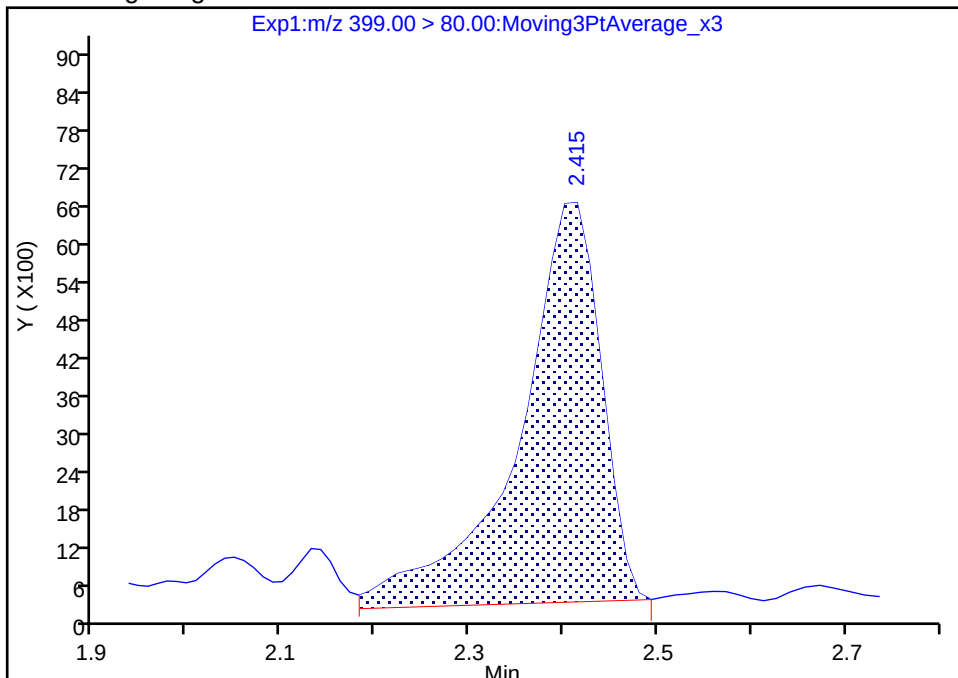
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

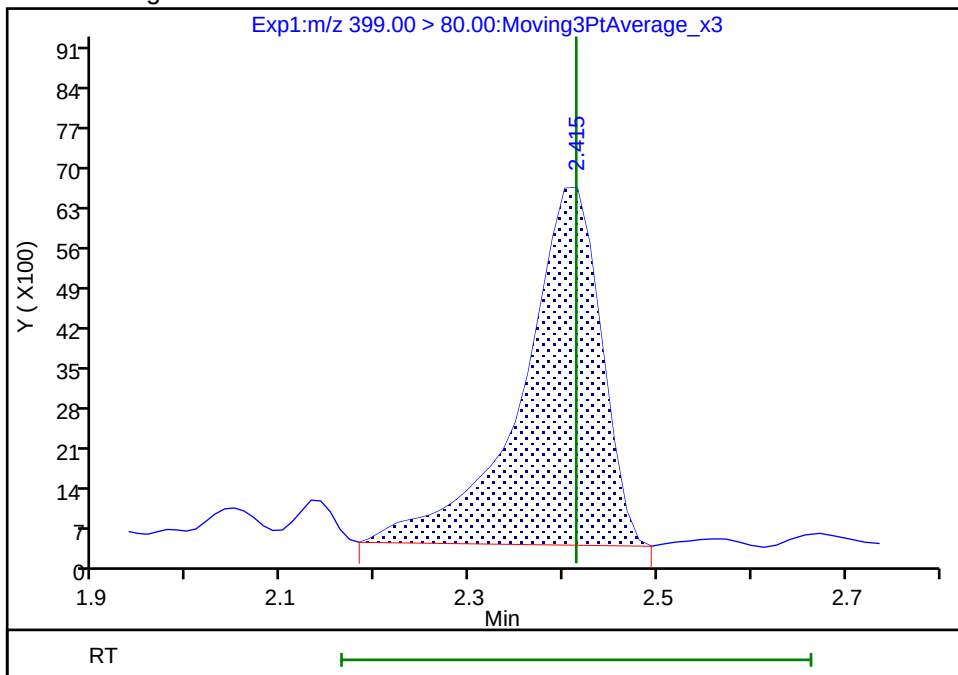
RT: 2.41
Area: 39094
Amount: 0.032513
Amount Units: ng/ml

Processing Integration Results



RT: 2.41
Area: 37098
Amount: 0.030853
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:01

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

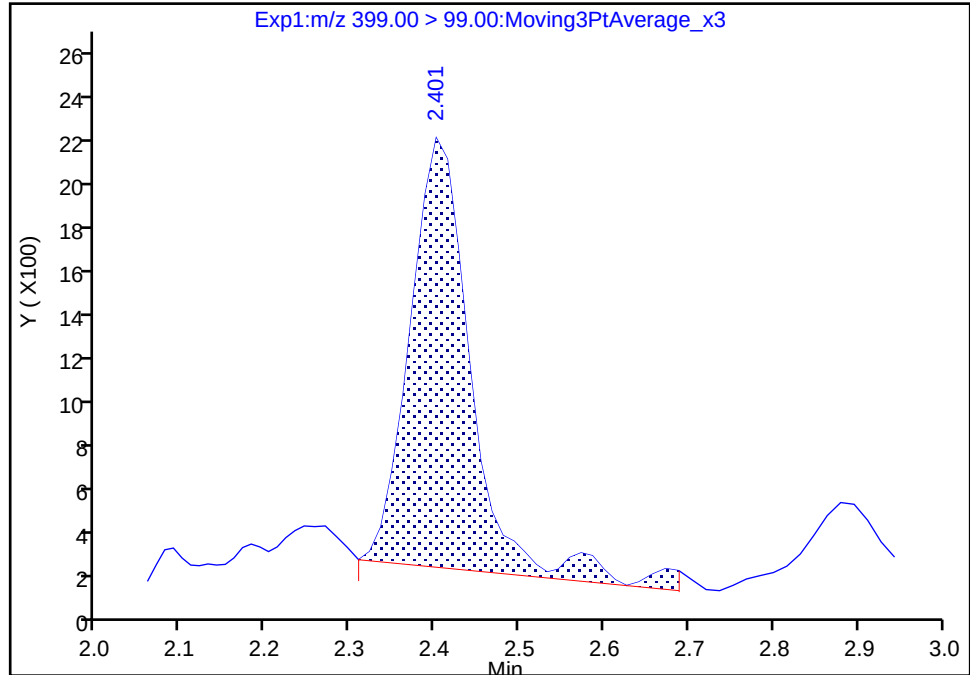
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d
Injection Date: 18-Aug-2018 08:50:54 Instrument ID: A9
Lims ID: 320-42105-A-3-A Lab Sample ID: 320-42105-3
Client ID: Field Duplicate
Operator ID: A9\Administrator ALS Bottle#: 27 Worklist Smp#: 8
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

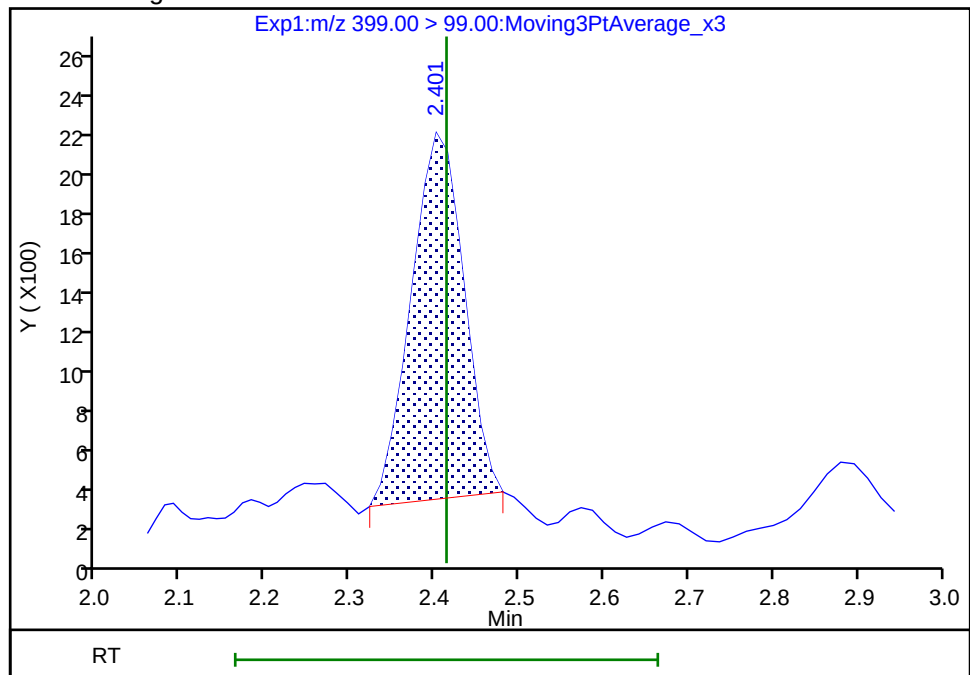
RT: 2.40
Area: 9879
Amount: 0.032513
Amount Units: ng/ml

Processing Integration Results



RT: 2.40
Area: 7912
Amount: 0.030853
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:05

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

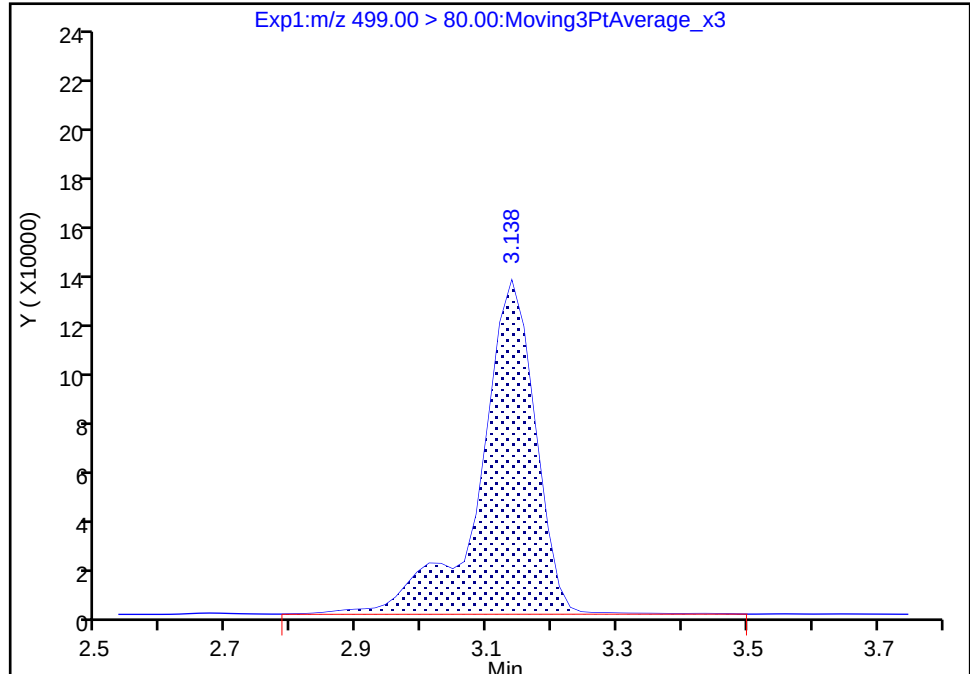
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

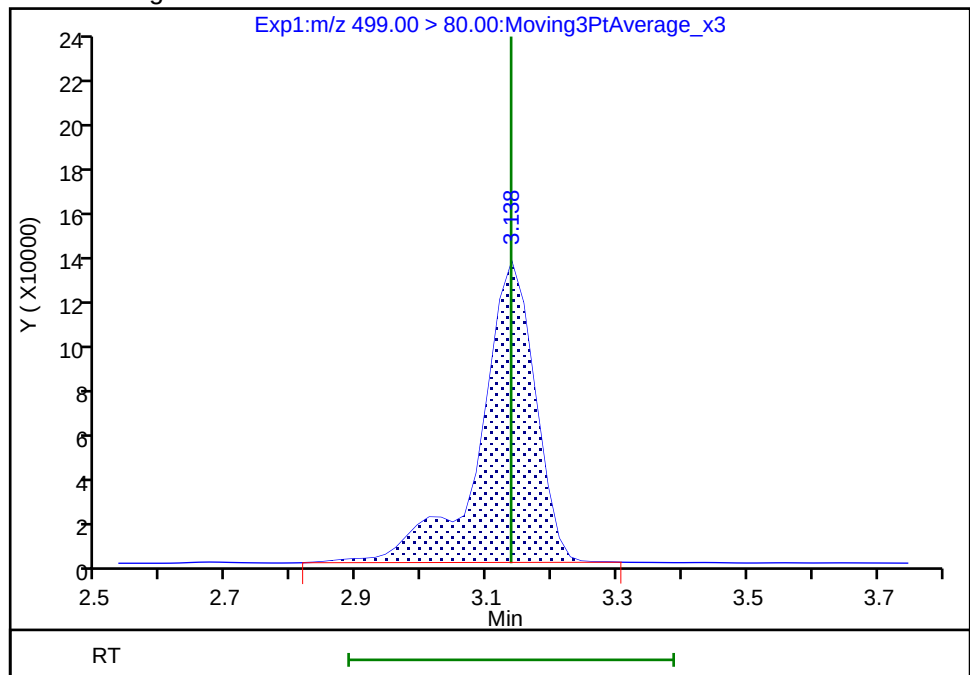
RT: 3.14
Area: 812576
Amount: 0.859722
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 801396
Amount: 0.847893
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:36
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

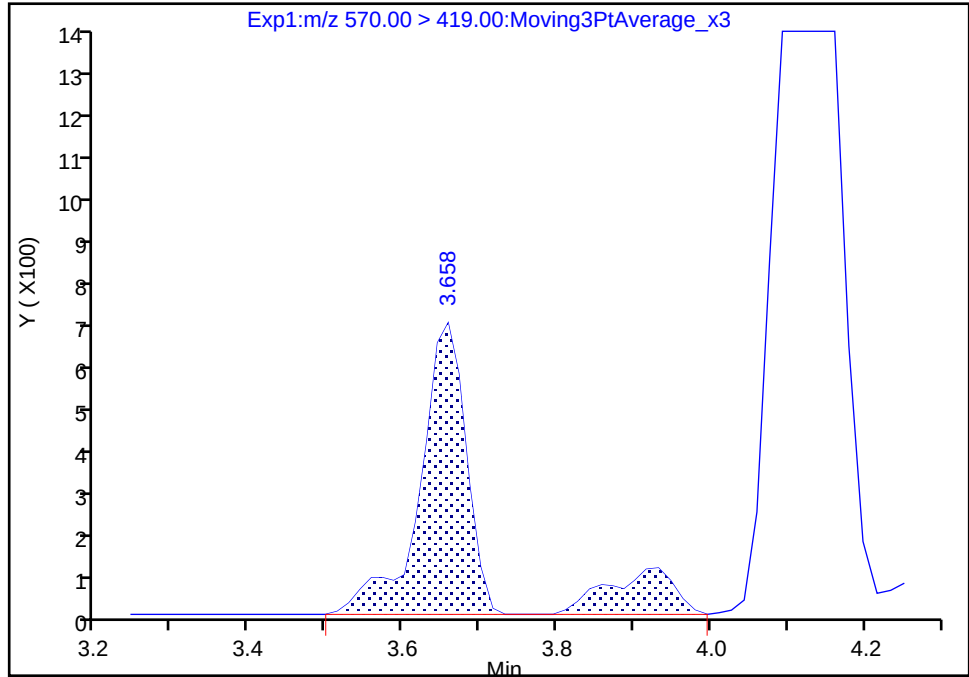
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d
Injection Date: 18-Aug-2018 08:50:54 Instrument ID: A9
Lims ID: 320-42105-A-3-A Lab Sample ID: 320-42105-3
Client ID: Field Duplicate
Operator ID: A9\Administrator ALS Bottle#: 27 Worklist Smp#: 8
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

28 N-methyl perfluorooctane sulfonamidoacetic a, CAS: 2355-31-9

Signal: 1

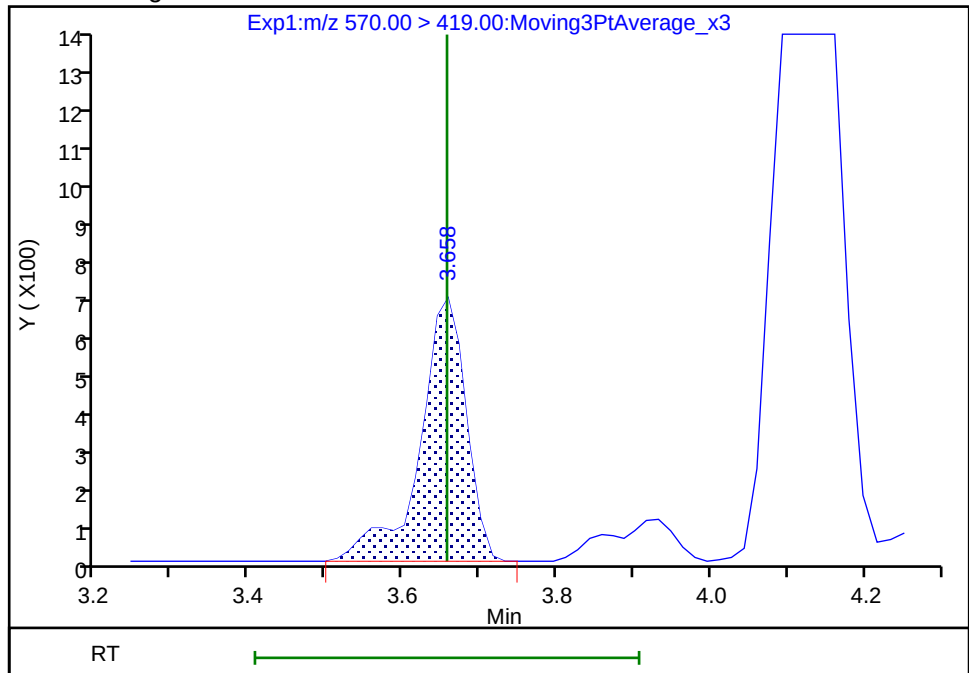
RT: 3.66
Area: 3549
Amount: 0.006533
Amount Units: ng/ml

Processing Integration Results



RT: 3.66
Area: 2888
Amount: 0.005316
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:55:45
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

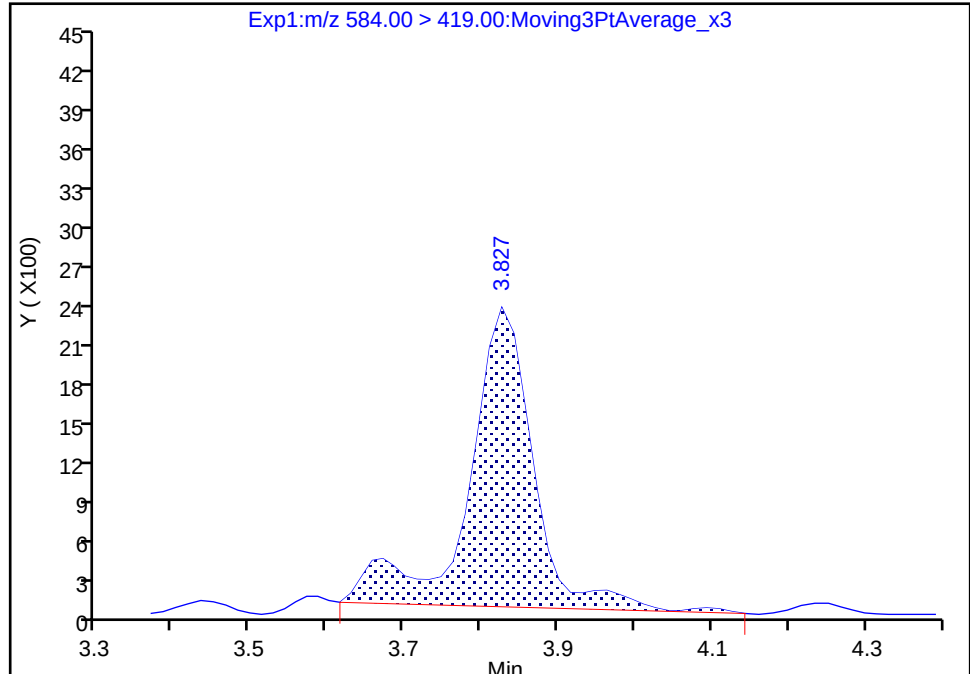
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_038.d		
Injection Date:	18-Aug-2018 08:50:54	Instrument ID:	A9
Lims ID:	320-42105-A-3-A	Lab Sample ID:	320-42105-3
Client ID:	Field Duplicate		
Operator ID:	A9\Administrator	ALS Bottle#:	27
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

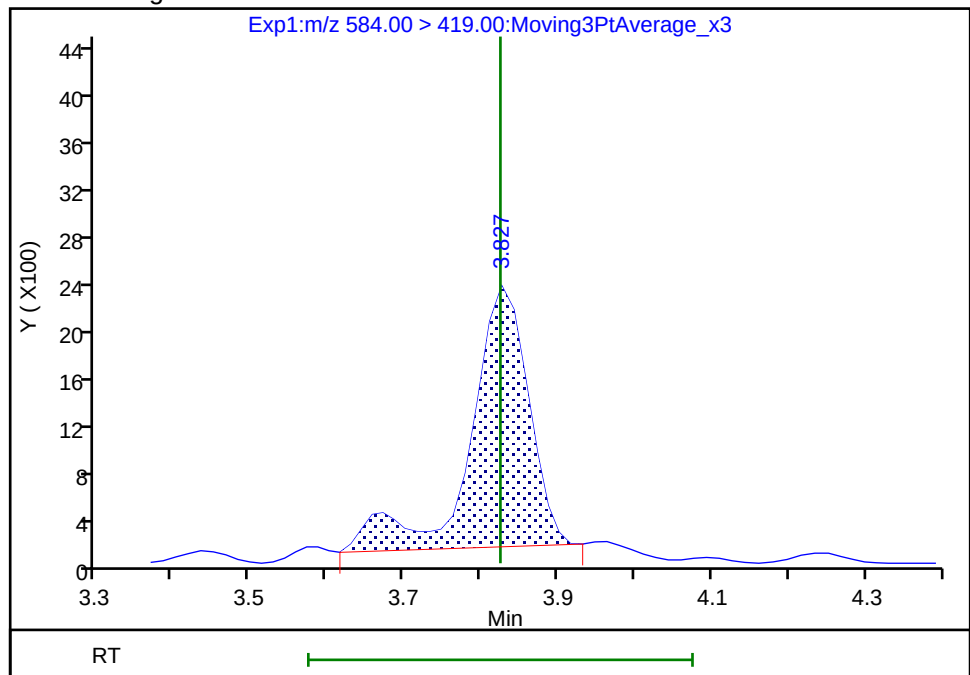
RT: 3.83
Area: 13565
Amount: 0.030877
Amount Units: ng/ml

Processing Integration Results



RT: 3.83
Area: 11715
Amount: 0.026666
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:56:31
Audit Action: Manually Integrated

Audit Reason: Baseline
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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>Equipment Blank</u>	Lab Sample ID: <u>320-42105-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_039.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 12:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>303.4 (mL)</u>	Date Analyzed: <u>08/18/2018 08:58</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.6	0.29
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.6	0.40
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.6	0.48
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.6	0.70
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.6	0.22
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.6	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.91
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.6	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.24
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	1.6	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.6	0.44
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.29
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		16	2.6
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		16	1.6
27619-97-2	6:2 FTS	ND		16	1.6
39108-34-4	8:2 FTS	ND		16	1.6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>Equipment Blank</u>	Lab Sample ID: <u>320-42105-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_039.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 12:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>303.4 (mL)</u>	Date Analyzed: <u>08/18/2018 08:58</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	95		25-150
STL01893	13C5 PFPeA	99		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	98		25-150
STL00995	13C5 PFNA	96		25-150
STL00996	13C2 PFDA	95		25-150
STL00997	13C2 PFUnA	93		25-150
STL00998	13C2 PFDoA	97		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	96		25-150
STL00994	18O2 PFHxS	94		25-150
STL00991	13C4 PFOS	92		25-150
STL01056	13C8 FOSA	89		25-150
STL02118	d3-NMeFOSAA	111		25-150
STL02117	d5-NEtFOSAA	113		25-150
STL02279	M2-6:2FTS	119		25-150
STL02280	M2-8:2FTS	134		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d
 Lims ID: 320-42105-A-4-A
 Client ID: Equipment Blank
 Sample Type: Client
 Inject. Date: 18-Aug-2018 08:58:25 ALS Bottle#: 28 Worklist Smp#: 9
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 08:00:03 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 22-Aug-2018 08:00:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.499	1.500	-0.001	0.545	8326245	2.37		94.9	28560	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.505	1.505	0.0	1.003	10774	0.003421		0.6		M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.773	1.773	0.001	1.000	11673	0.003702		1.1		
D 3 13C5-PFPeA										
267.90 > 223.00	1.773	1.774	-0.001	0.644	7699559	2.46		98.5	13235	
D 47 13C3-PFBS										
301.90 > 83.00	1.806	1.807	-0.001	0.656	90524	2.23		95.9	539	
D 7 13C2 PFHxA										
315.00 > 270.00	2.059	2.050	0.009	0.748	7603901	2.30		92.2	15100	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.059	-0.011	0.995	19085	0.007014		3.8		
313.00 > 119.00	2.079	2.059	0.020	1.010	1375		13.88(6.96-20.87)	2.2		
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.388	-0.001	0.868	9655945	2.47		98.8	22523	
D 11 18O2 PFHxS										
403.00 > 84.00	2.414	2.402	0.012	0.877	5357456	2.23		94.3	15791	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.401	2.414	-0.013	0.995	23222	0.008035		34.9		M
399.00 > 99.00	2.401	2.414	-0.013	0.995	6597		3.52(1.90-5.70)	12.4		
D 12 M2-6:2FTS										
429.00 > 81.00	2.736	2.721	0.015	0.994	1019727	2.81		119	1795	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.736	2.736	0.0	1.000	16482	0.0172		55.9		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.752	2.751	0.001	1.000	40115	0.0105			2.7	M
413.00 > 169.00	2.752	2.751	0.001	1.000	15358		2.61(1.36-4.08)		27.9	
* 62 13C2-PFOA										
415.00 > 370.00	2.752	2.751	0.001		9160677	2.50			20710	
D 14 13C4 PFOA										
417.00 > 372.00	2.752	2.753	-0.001	1.000	8845828	2.44		97.5	17733	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.137	3.137	0.0	1.000	4528	0.001827			2.6	M
499.00 > 99.00	3.137	3.137	0.0	1.000	1305		3.47(2.04-6.12)		5.5	M
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.138	-0.001	1.140	8050012	2.39		95.8	12188	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.138	-0.001	1.140	5654755	2.20		91.9	1267	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.484	3.483	0.001	1.000	2535	0.002397			8.3	
D 26 M2-8:2FTS										
529.00 > 81.00	3.484	3.483	0.001	1.266	167294	3.21		134	815	
D 21 13C8 FOSA										
506.00 > 78.00	3.499	3.483	0.016	1.272	3103200	2.24		89.5	5834	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	12805	0.003470			2.0	
513.00 > 169.00	3.484	3.499	-0.015	0.996	920		13.92(7.12-21.35)		2.9	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.499	3.499	0.0	1.000	3111	0.000854			9.0	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	8630586	2.37		94.7	13475	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.643	3.645	-0.002	1.324	4382428	2.77		111	5988	
D 30 13C2 PFUnA										
565.00 > 520.00	3.826	3.811	0.015	1.390	7074840	2.33		93.1	12811	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.810	3.811	-0.001	1.385	3385297	2.82		113	3866	
D 36 13C2 PFDoA										
615.00 > 570.00	4.109	4.110	-0.001	1.493	8573691	2.43		97.2	15698	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.109	4.125	-0.016	1.000	13378	0.003806			3.4	
613.00 > 169.00	4.109	4.125	-0.016	1.000	1754		7.63(4.68-14.05)		6.6	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.630	4.611	0.019	1.004	1704	0.004099			7.7	
713.00 > 219.00	4.612	4.611	0.001	1.000	1821		0.94(0.70-2.09)		9.4	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.612	4.616	-0.004	1.676	6388264	2.24		89.6	14962	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d

Injection Date: 18-Aug-2018 08:58:25

Instrument ID: A9

Lims ID: 320-42105-A-4-A

Lab Sample ID: 320-42105-4

Client ID: Equipment Blank

Operator ID: A9\Administrator

ALS Bottle#: 28

Worklist Smp#: 9

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

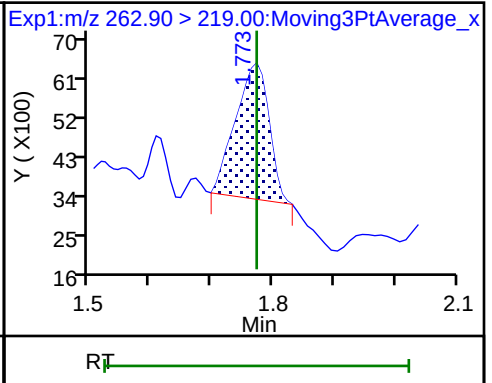
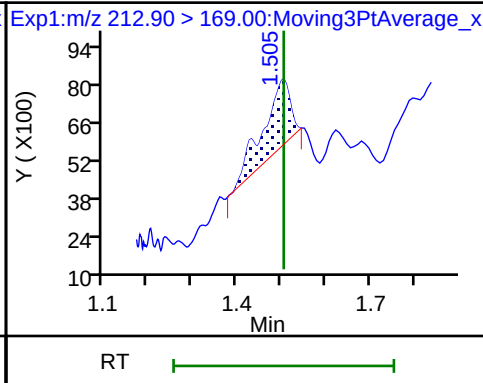
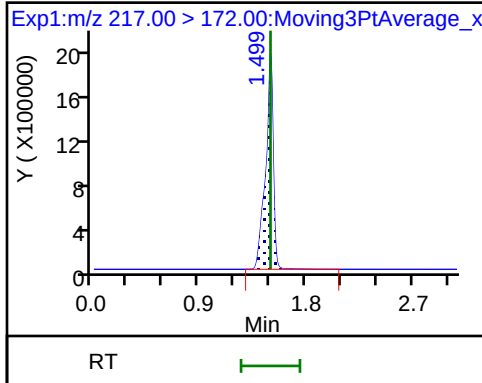
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

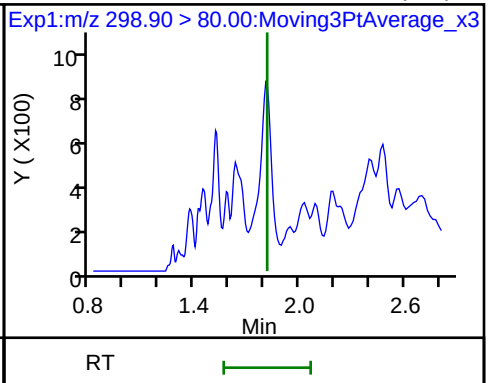
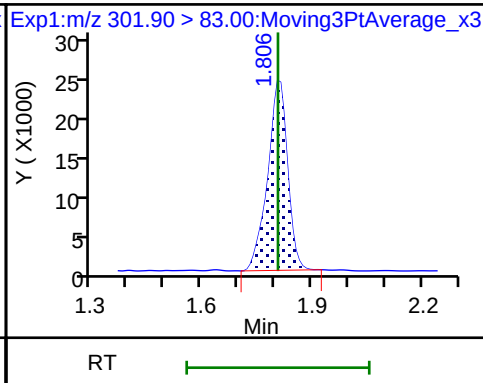
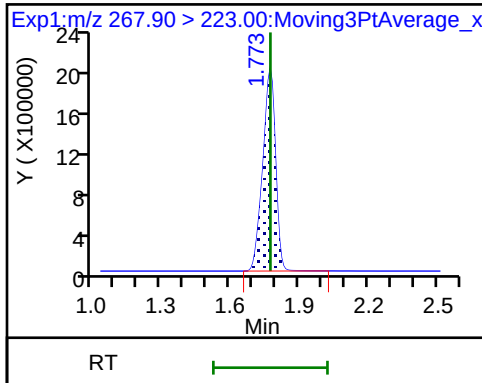
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

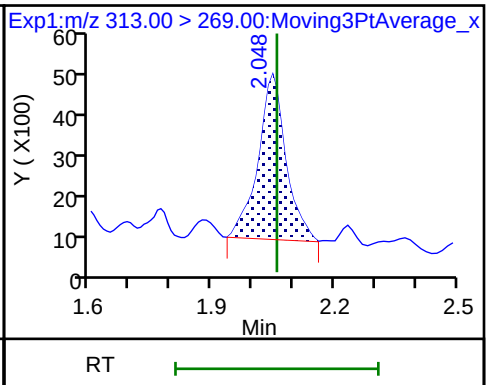
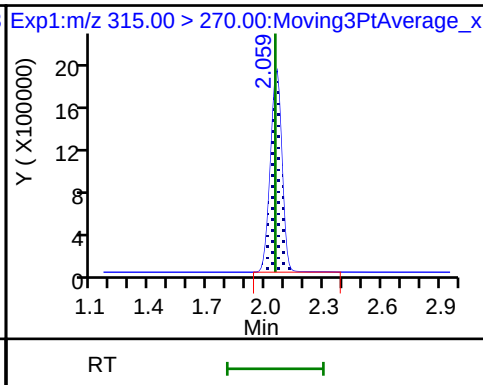
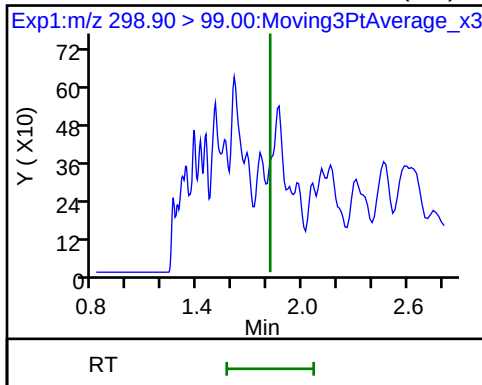
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

D 7 13C2 PFHxA

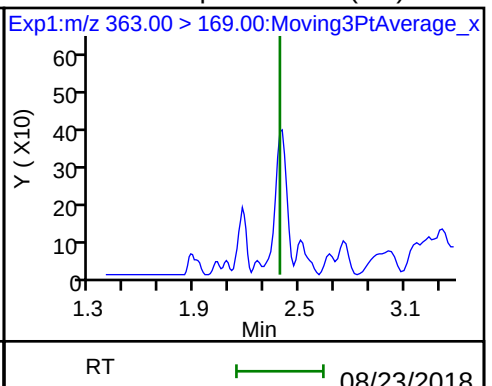
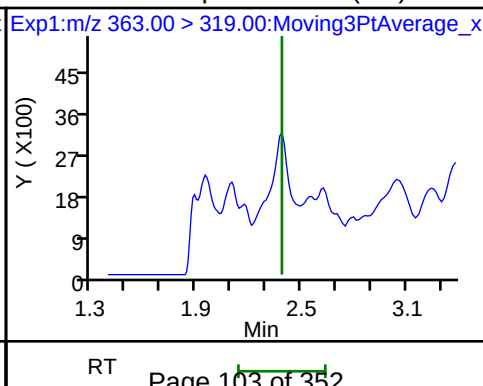
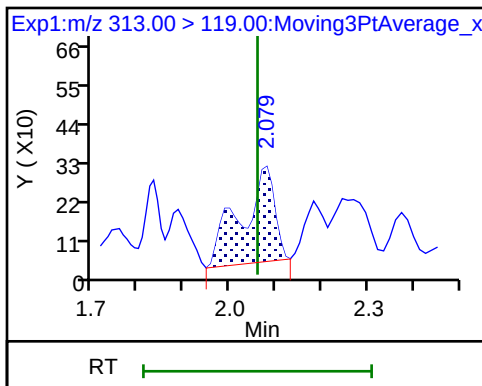
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid (ND)

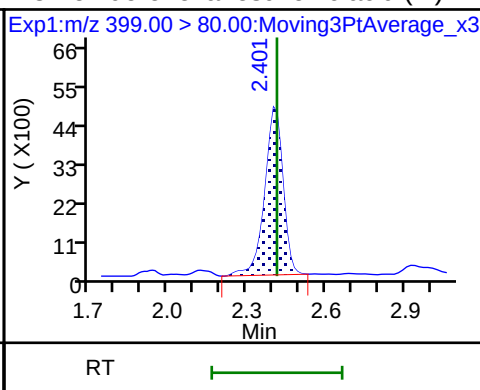
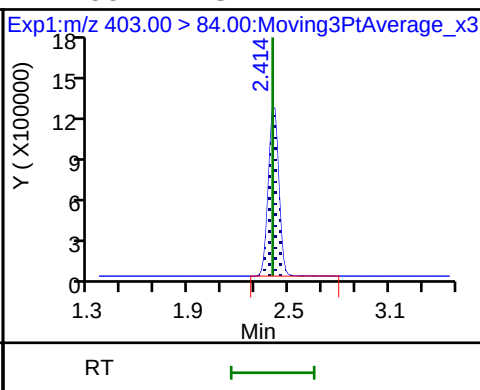
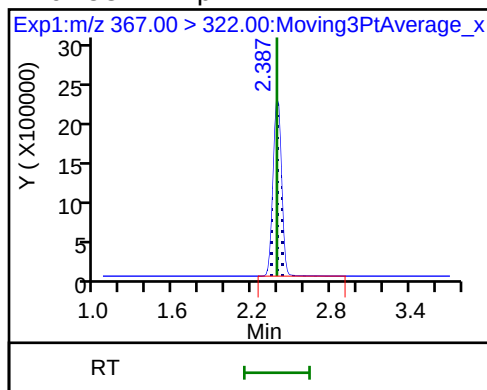
10 Perfluoroheptanoic acid (ND)



D 9 13C4-PFHpA

D 11 18O2 PFHxS

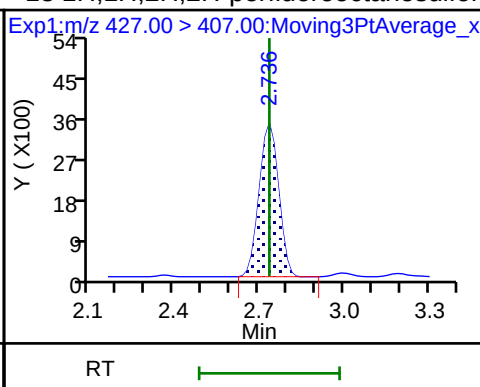
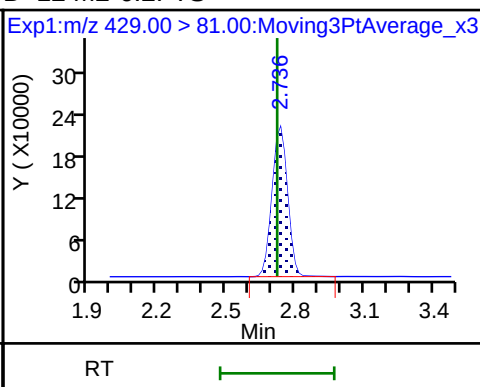
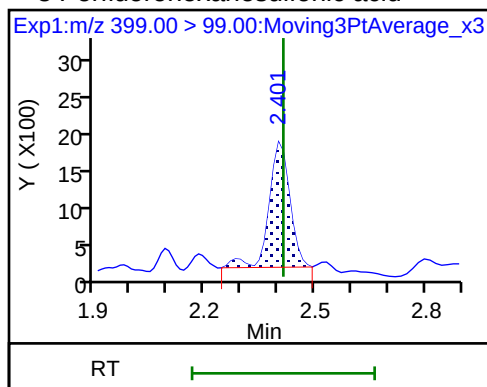
8 Perfluorohexanesulfonic acid (M)



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

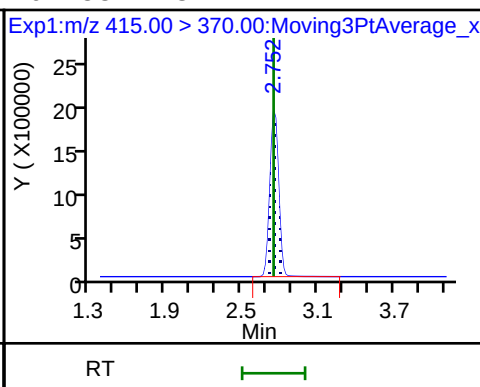
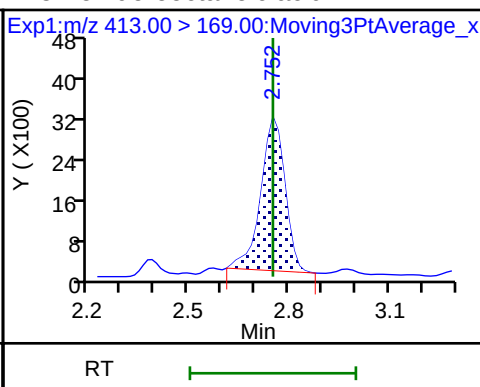
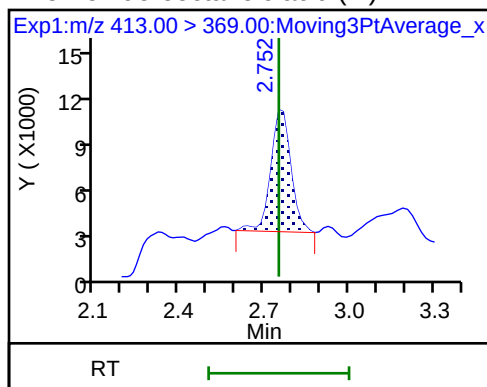
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid

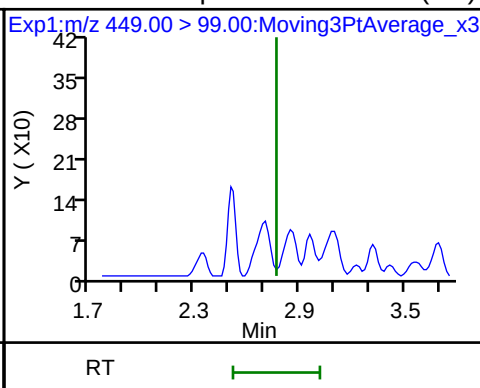
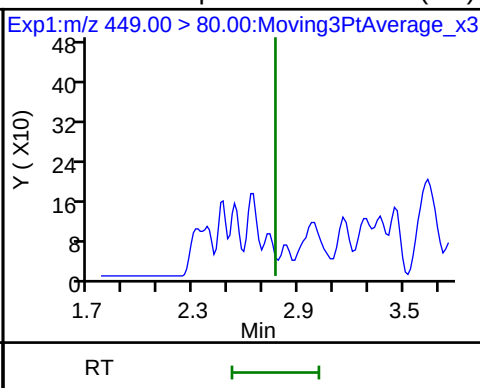
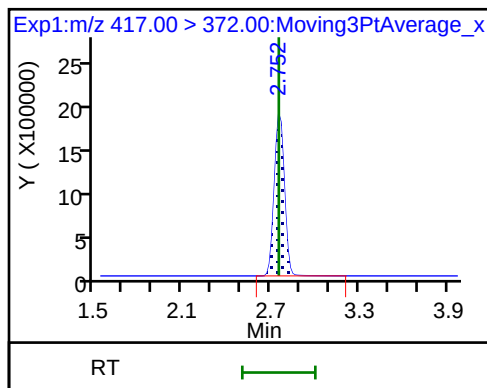
* 62 13C2-PFOA

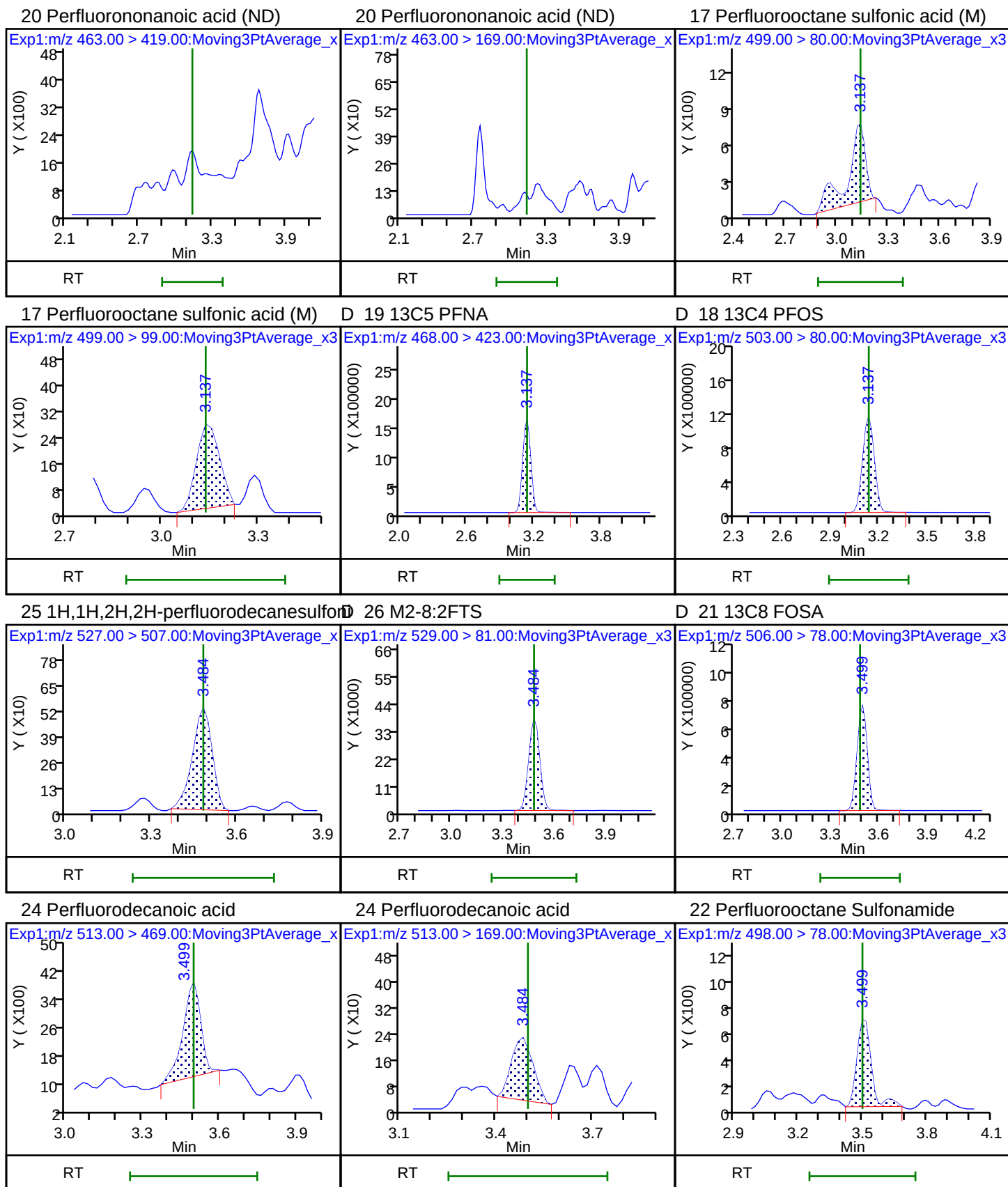


D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid (ND)

16 Perfluoroheptanesulfonic acid (ND)

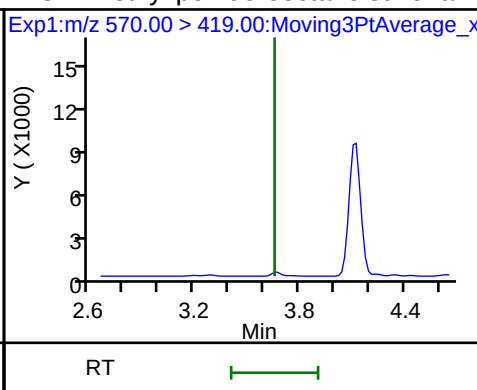
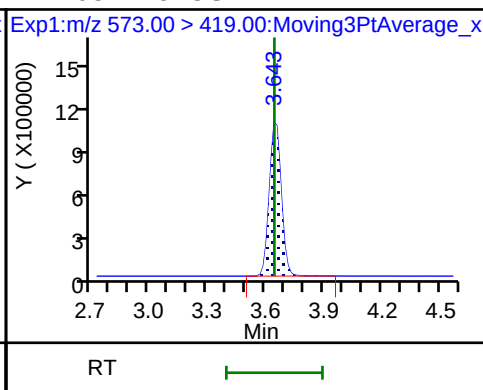
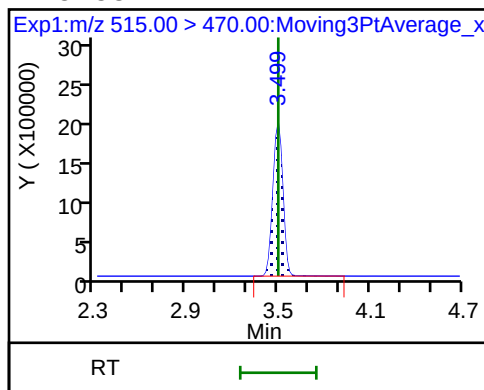




D 23 13C2 PFDA

D 27 d3-NMeFOSAA

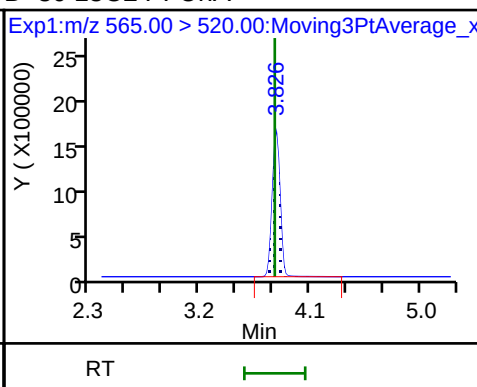
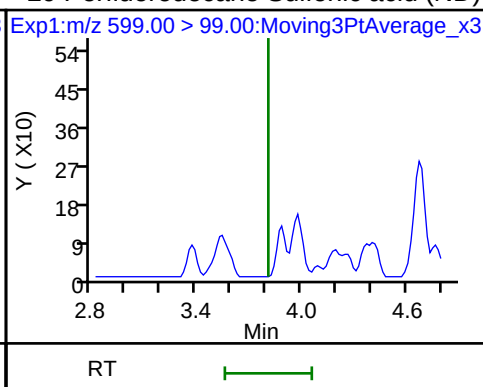
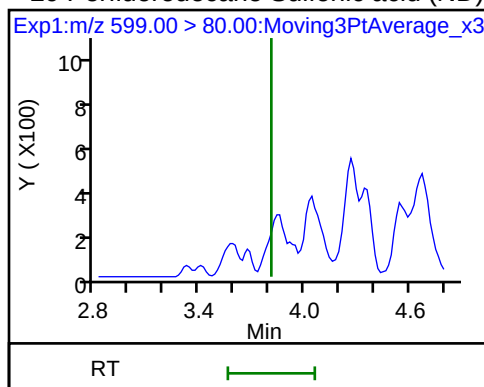
28 N-methyl perfluorooctane sulfonami (ND)



29 Perfluorodecane Sulfonic acid (ND)

29 Perfluorodecane Sulfonic acid (ND)

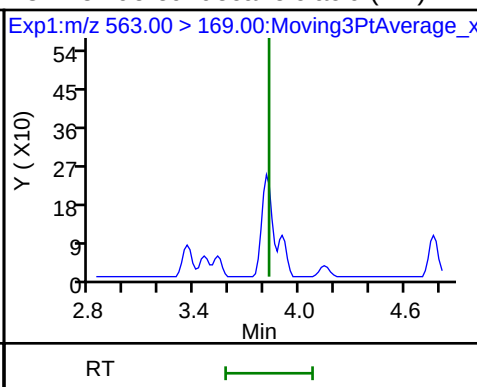
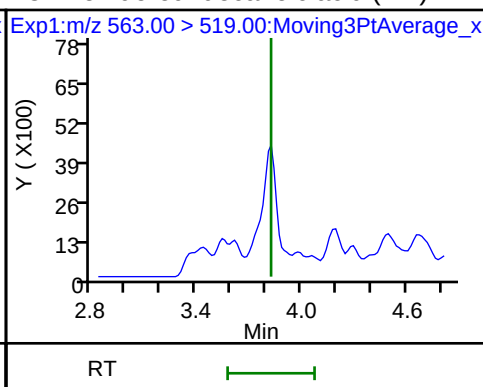
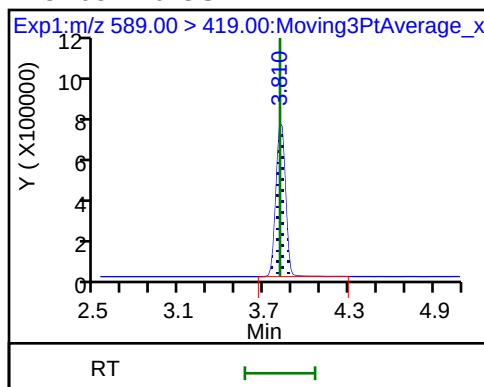
D 30 13C2 PFUnA



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid (ND)

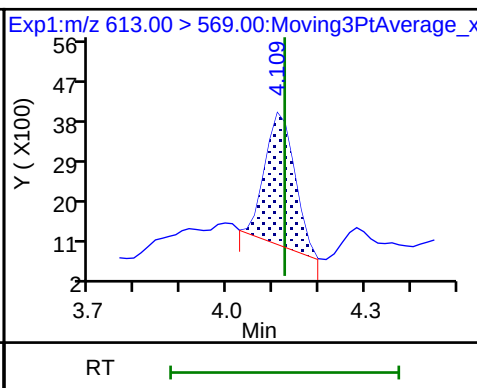
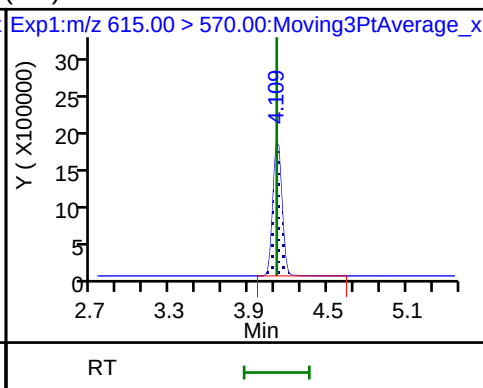
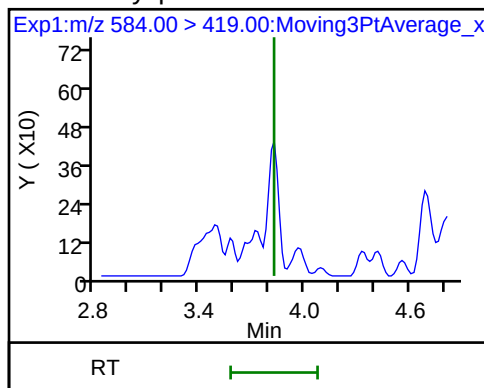
31 Perfluoroundecanoic acid (ND)



33 N-ethyl perfluorooctane sulfonamid (ND)

D 35 13C2 PFDaA

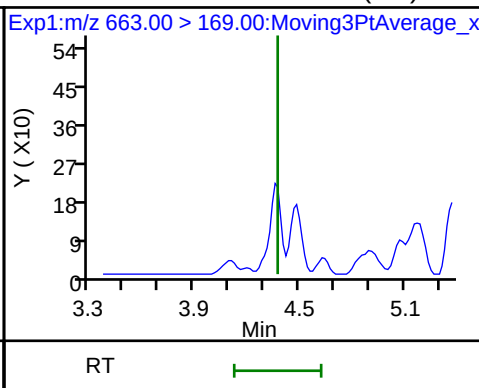
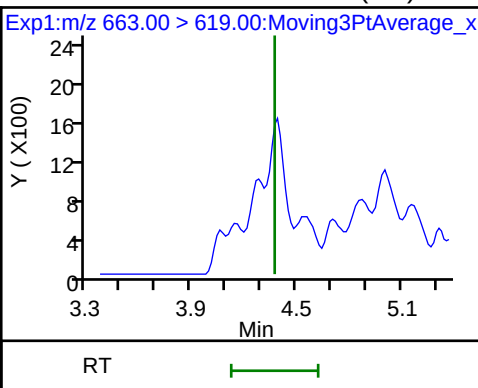
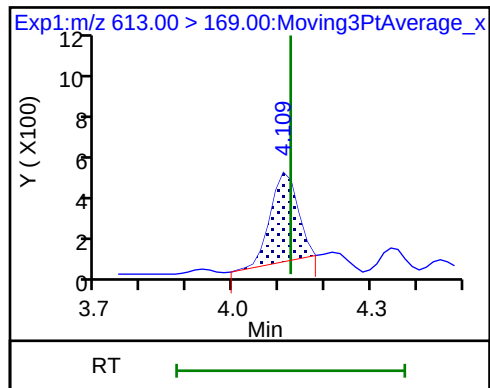
37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

41 Perfluorotridecanoic acid (ND)

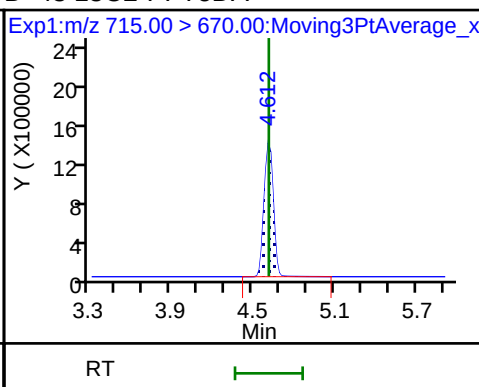
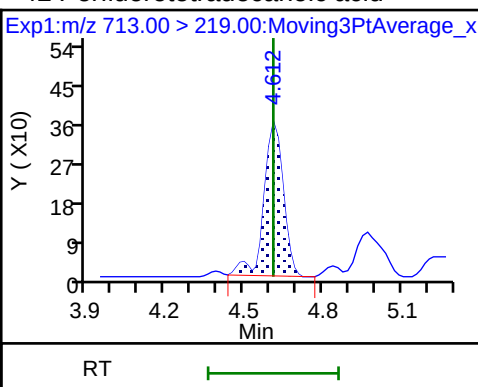
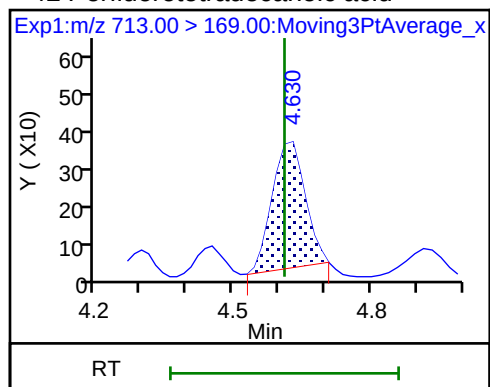
41 Perfluorotridecanoic acid (ND)



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA



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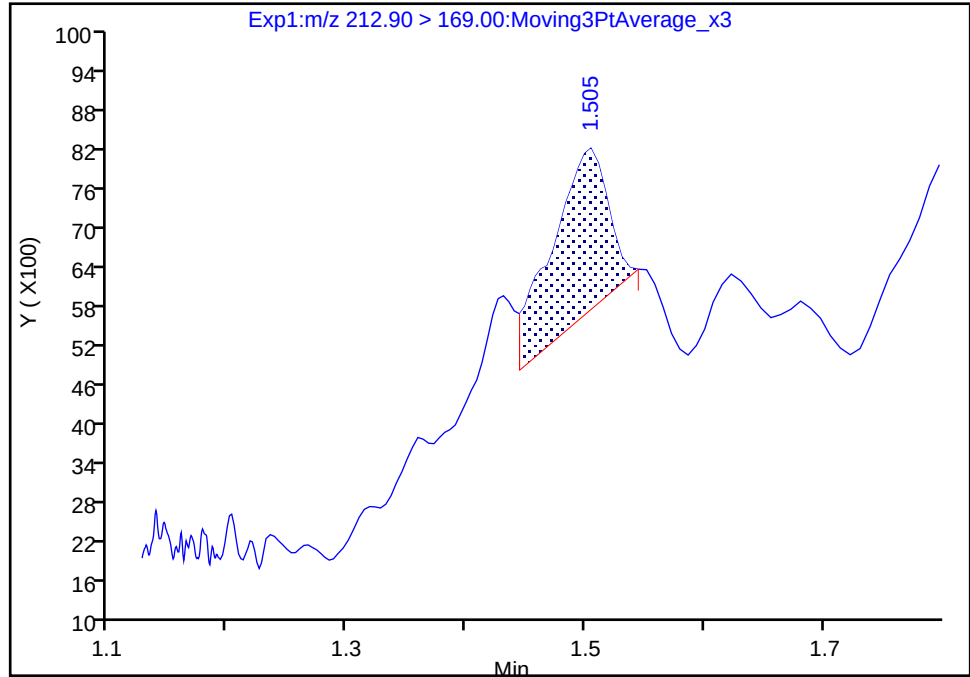
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d				
Injection Date:	18-Aug-2018 08:58:25	Instrument ID:	A9		
Lims ID:	320-42105-A-4-A	Lab Sample ID:	320-42105-4		
Client ID:	Equipment Blank				
Operator ID:	A9\Administrator	ALS Bottle#:	28	Worklist Smp#:	9
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

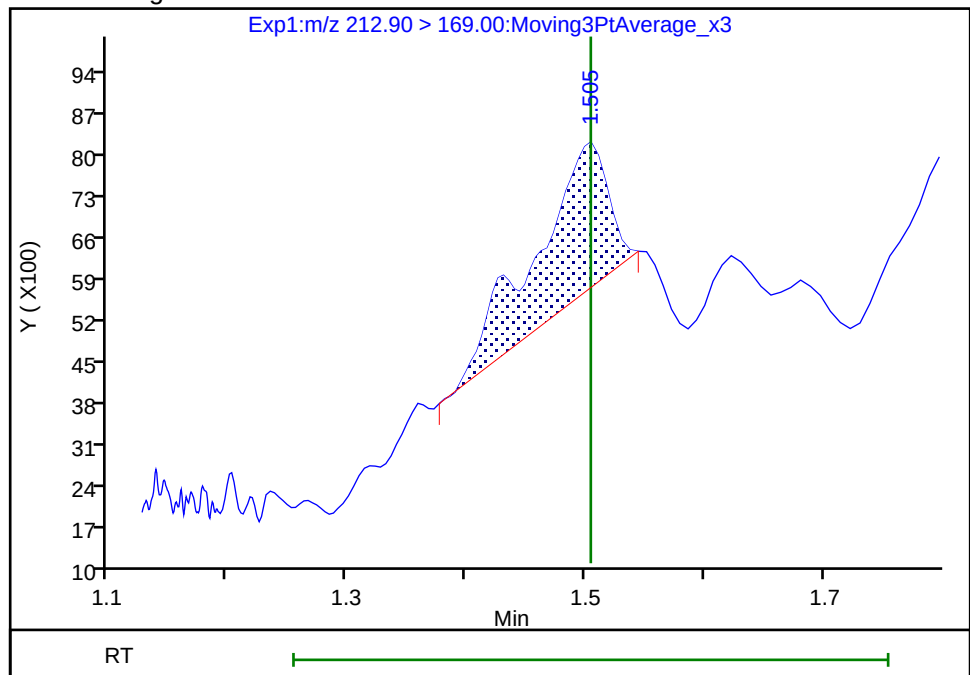
RT: 1.50
Area: 8389
Amount: 0.002664
Amount Units: ng/ml

Processing Integration Results



RT: 1.50
Area: 10774
Amount: 0.003421
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:57:17

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

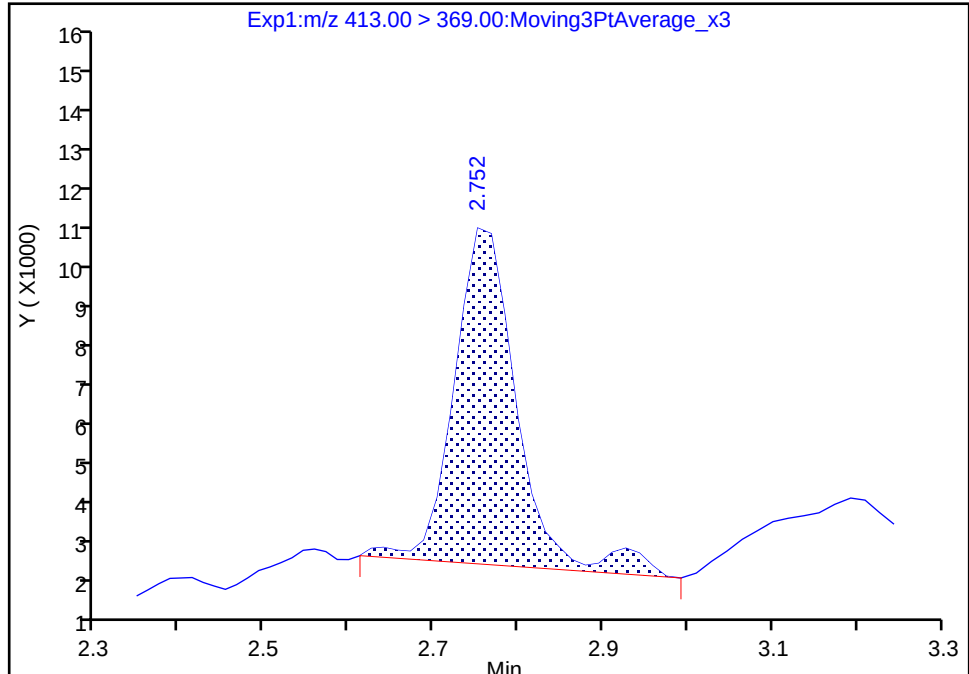
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d		
Injection Date:	18-Aug-2018 08:58:25	Instrument ID:	A9
Lims ID:	320-42105-A-4-A	Lab Sample ID:	320-42105-4
Client ID:	Equipment Blank		
Operator ID:	A9\Administrator	ALS Bottle#:	28
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	9

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

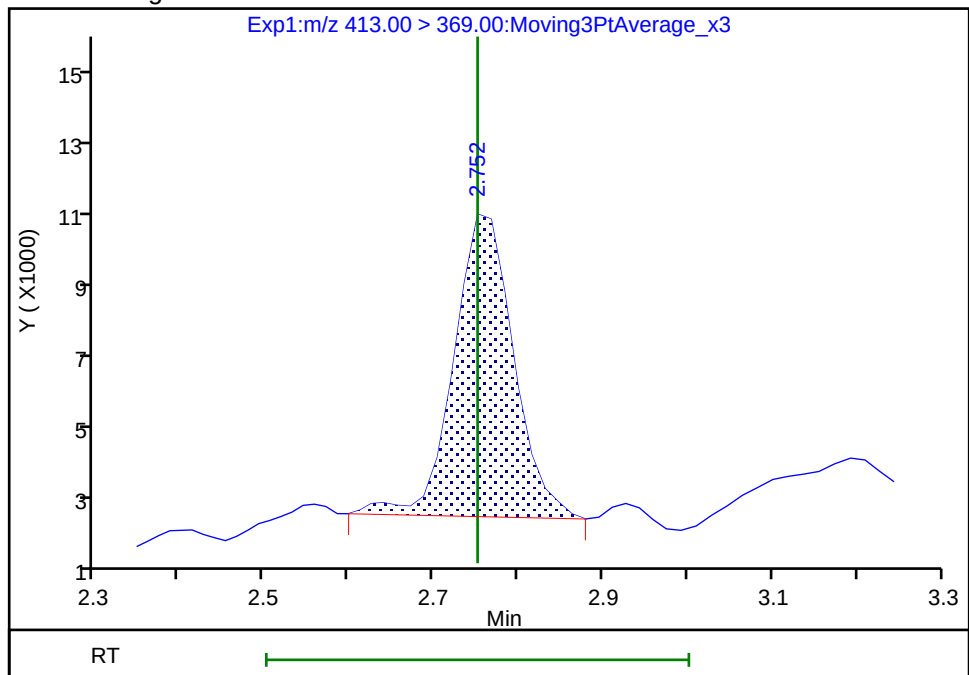
RT: 2.75
Area: 42538
Amount: 0.011113
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 40115
Amount: 0.010480
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:57:40
Audit Action: Manually Integrated

Audit Reason: Baseline
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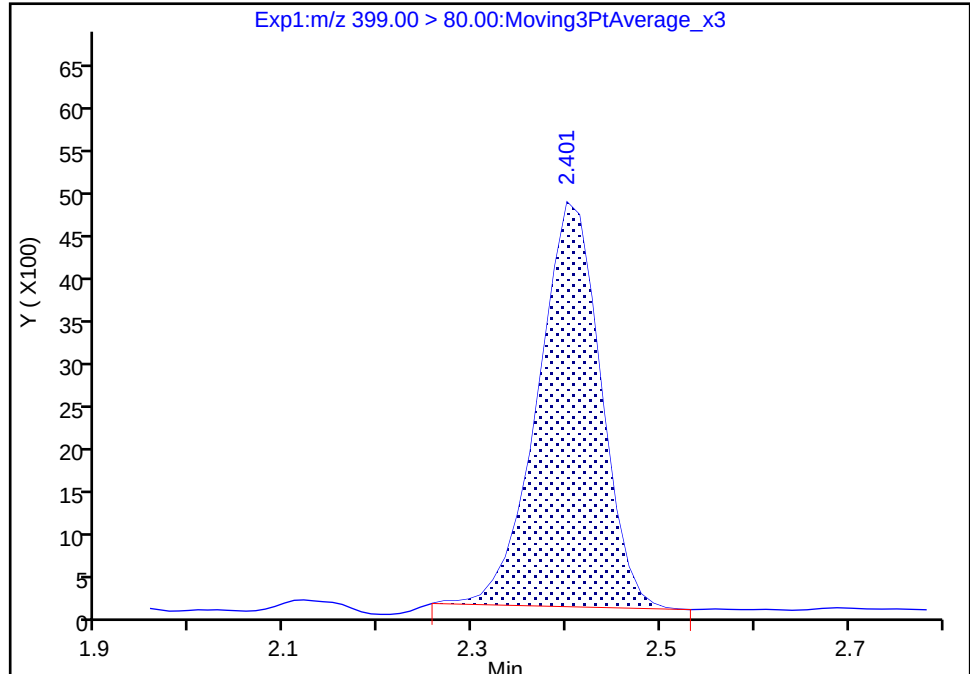
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d		
Injection Date:	18-Aug-2018 08:58:25	Instrument ID:	A9
Lims ID:	320-42105-A-4-A	Lab Sample ID:	320-42105-4
Client ID:	Equipment Blank		
Operator ID:	A9\Administrator	ALS Bottle#:	28
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	9

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

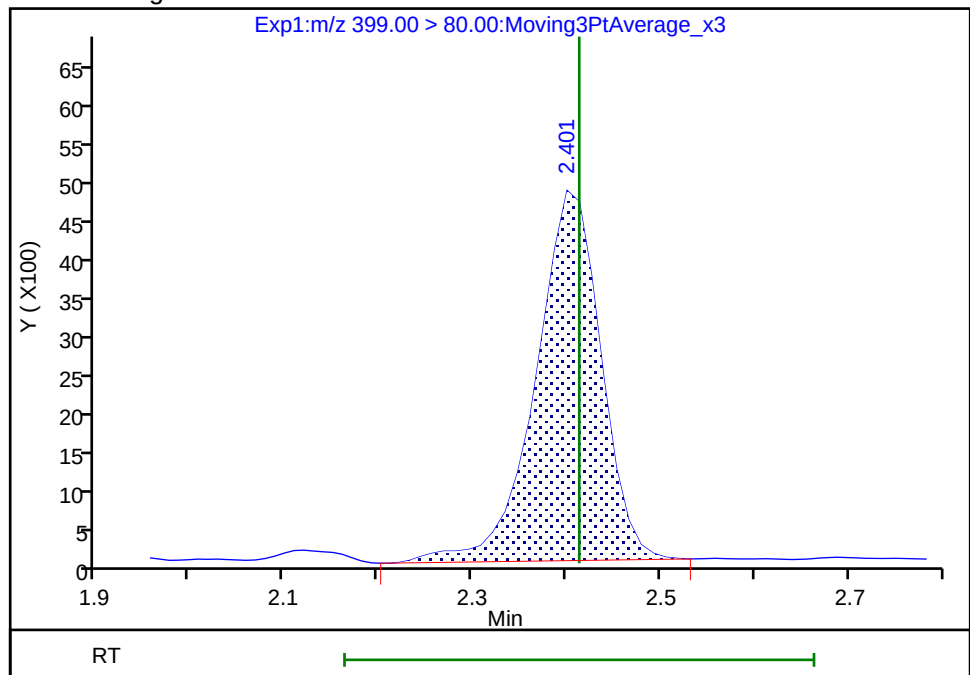
RT: 2.40
Area: 22118
Amount: 0.007653
Amount Units: ng/ml

Processing Integration Results



RT: 2.40
Area: 23222
Amount: 0.008035
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:57:33

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

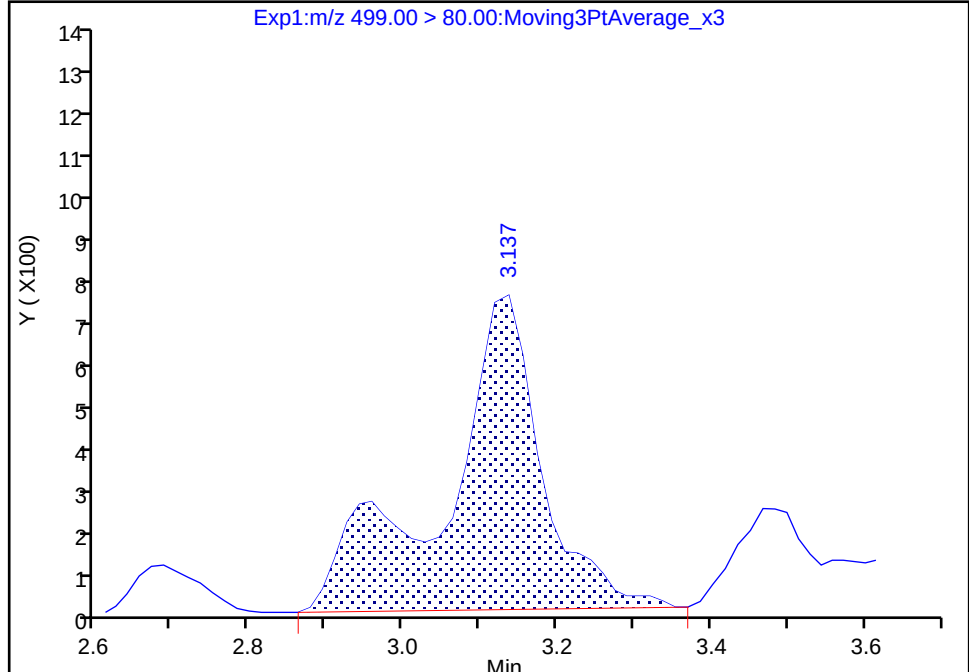
Data File:	\\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d		
Injection Date:	18-Aug-2018 08:58:25	Instrument ID:	A9
Lims ID:	320-42105-A-4-A	Lab Sample ID:	320-42105-4
Client ID:	Equipment Blank		
Operator ID:	A9\Administrator	ALS Bottle#:	28
Injection Vol:	20.0 ul	Dil. Factor:	1.0000
Method:	PFAS_A9	Limit Group:	LC PFC ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	9

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

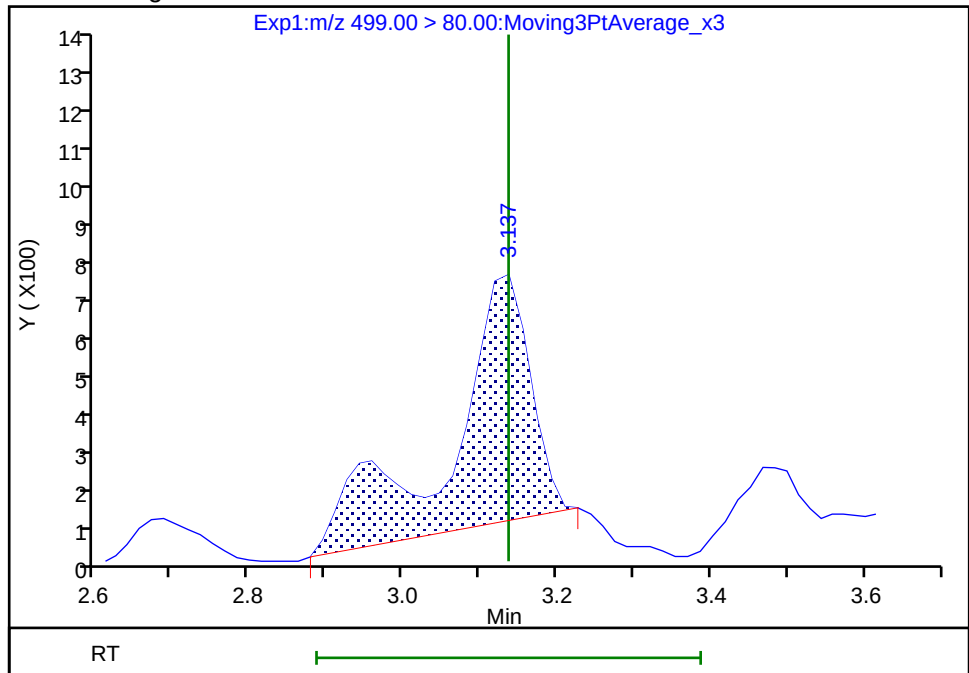
RT: 3.14
Area: 6335
Amount: 0.002556
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 4528
Amount: 0.001827
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:57:49
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

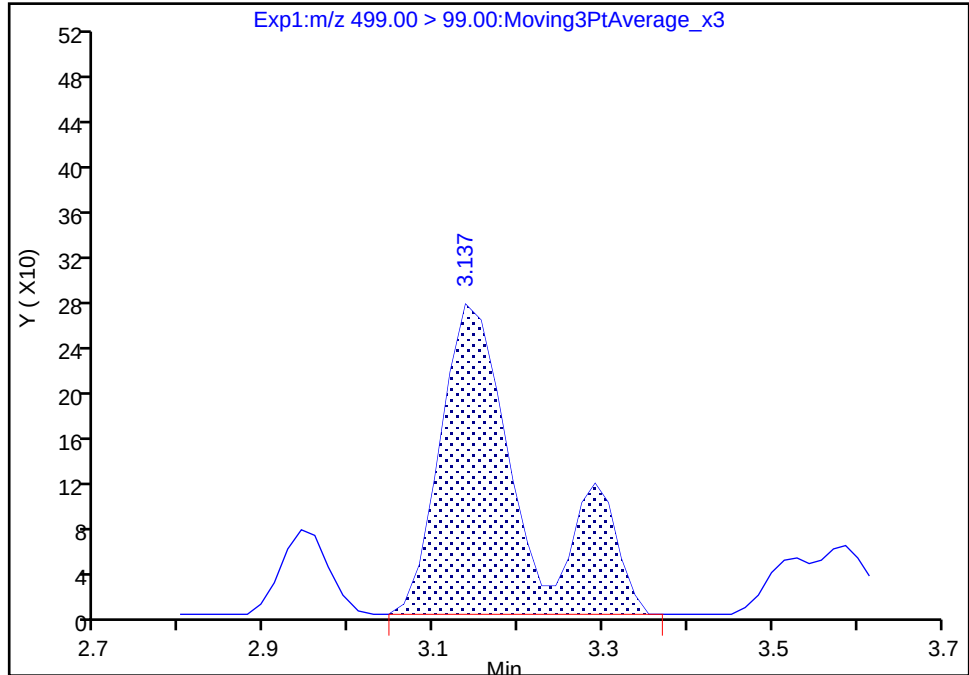
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_039.d
Injection Date: 18-Aug-2018 08:58:25 Instrument ID: A9
Lims ID: 320-42105-A-4-A Lab Sample ID: 320-42105-4
Client ID: Equipment Blank
Operator ID: A9\Administrator ALS Bottle#: 28 Worklist Smp#: 9
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

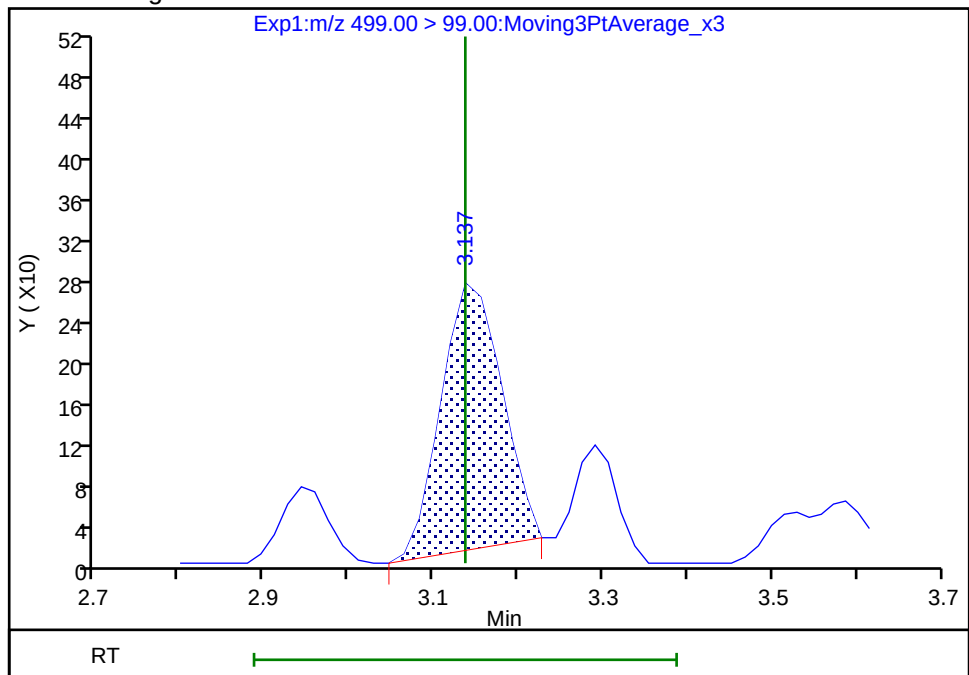
RT: 3.14
Area: 1878
Amount: 0.002556
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 1305
Amount: 0.001827
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:57:53

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-10D</u>	Lab Sample ID: <u>320-42105-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_040.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 12:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>308.3 (mL)</u>	Date Analyzed: <u>08/18/2018 09:05</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.91	J	1.6	0.28
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.44	J	1.6	0.40
307-24-4	Perfluorohexanoic acid (PFHxA)	0.69	J	1.6	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.21	J	1.6	0.20
335-67-1	Perfluorooctanoic acid (PFOA)	0.90	J	1.6	0.69
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.6	0.22
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.6	0.25
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.89
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.6	0.45
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.6	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.24
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.16
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.6	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.15
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.53	J	1.6	0.44
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.26
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.28
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		16	2.5
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		16	1.5
27619-97-2	6:2 FTS	ND		16	1.6
39108-34-4	8:2 FTS	ND		16	1.6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-10D</u>	Lab Sample ID: <u>320-42105-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_040.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 12:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>308.3 (mL)</u>	Date Analyzed: <u>08/18/2018 09:05</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	75		25-150
STL01893	13C5 PFPeA	76		25-150
STL00993	13C2 PFHxA	76		25-150
STL01892	13C4-PFHpA	79		25-150
STL00990	13C4 PFOA	76		25-150
STL00995	13C5 PFNA	70		25-150
STL00996	13C2 PFDA	71		25-150
STL00997	13C2 PFUnA	59		25-150
STL00998	13C2 PFDoA	60		25-150
STL02116	13C2-PFTeDA	60		25-150
STL02337	13C3-PFBS	78		25-150
STL00994	18O2 PFHxS	75		25-150
STL00991	13C4 PFOS	67		25-150
STL01056	13C8 FOSA	70		25-150
STL02118	d3-NMeFOSAA	67		25-150
STL02117	d5-NEtFOSAA	70		25-150
STL02279	M2-6:2FTS	118		25-150
STL02280	M2-8:2FTS	76		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_040.d
 Lims ID: 320-42105-A-5-A
 Client ID: MW-10D
 Sample Type: Client
 Inject. Date: 18-Aug-2018 09:05:58 ALS Bottle#: 29 Worklist Smp#: 10
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-5-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 08:01:37 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 22-Aug-2018 08:01:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 1 13C4 PFBA

217.00 > 172.00 1.505 1.500 0.005 0.547 6708600 1.88 75.2 19235

2 Perfluorobutyric acid

212.90 > 169.00 1.505 1.505 0.0 1.000 71436 0.0282 3.7 M

4 Perfluoropentanoic acid

262.90 > 219.00 1.773 1.773 0.001 0.995 33735 0.0137 2.2

D 3 13C5-PFPeA

267.90 > 223.00 1.781 1.774 0.007 0.647 6032963 1.90 75.9 8959

D 47 13C3-PFBS

301.90 > 83.00 1.814 1.807 0.007 0.659 74861 1.81 78.0 339

5 Perfluorobutanesulfonic acid

298.90 > 80.00 2.018 1.814 0.204 1.112 662 0.000197 0.0 R

298.90 > 99.00 2.008 1.814 0.194 1.107 512 1.29(1.35-4.05) 0.4 R

D 7 13C2 PFHxA

315.00 > 270.00 2.059 2.050 0.009 0.748 6337228 1.89 75.5 14778

6 Perfluorohexanoic acid

313.00 > 269.00 2.059 2.059 0.0 1.000 48219 0.0213 6.8

313.00 > 119.00 2.059 2.059 0.0 1.000 5048 9.55(6.96-20.87) 5.0

10 Perfluoroheptanoic acid

363.00 > 319.00 2.401 2.387 0.014 1.005 20984 0.006339 2.4

363.00 > 169.00 2.401 2.387 0.014 1.005 3694 5.68(2.17-6.52) 9.2

D 9 13C4-PFHpA

367.00 > 322.00 2.388 2.388 0.0 0.868 7823746 1.97 78.7 12550

D 11 18O2 PFHxS

403.00 > 84.00 2.414 2.402 0.012 0.877 4343616 1.78 75.2 11380

8 Perfluorohexanesulfonic acid

399.00 > 80.00 2.414 2.414 0.0 1.000 17912 0.007645 19.0

399.00 > 99.00 2.414 2.414 0.0 1.000 7388 2.42(1.90-5.70) 10.9

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.736	2.721	0.015	0.994	1035098	2.81		118	2281	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.736	2.736	0.0	1.000	26179	0.0269			95.9	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.752	2.751	0.001	1.000	83772	0.0277			5.4	M
413.00 > 169.00	2.768	2.751	0.017	1.006	27891		3.00(1.36-4.08)		45.3	M
* 62 13C2-PFOA										
415.00 > 370.00	2.752	2.751	0.001		9319572	2.50			19759	
D 14 13C4 PFOA										
417.00 > 372.00	2.752	2.753	-0.001	1.000	6995658	1.90		75.8	14986	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.010	3.137	-0.127	0.960	29987	0.0163			7.9	M
499.00 > 99.00	3.137	3.137	0.0	1.000	3150		9.52(2.04-6.12)		9.4	M
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.138	-0.001	1.140	5960236	1.74		69.7	7109	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.138	-0.001	1.140	4191149	1.60		67.0	3809	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.484	3.483	0.001	1.000	6853	0.0112			29.2	
D 26 M2-8:2FTS										
529.00 > 81.00	3.484	3.483	0.001	1.266	96421	1.82		75.9	528	
D 21 13C8 FOSA										
506.00 > 78.00	3.499	3.483	0.016	1.272	2457628	1.74		69.7	4441	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	15755	0.005614			2.8	
513.00 > 169.00	3.499	3.499	0.0	1.000	1405		11.21(7.12-21.35)		3.9	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.499	3.499	0.0	1.000	3873	0.001343			10.6	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	6563746	1.77		70.8	9067	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.657	3.645	0.012	1.329	2716128	1.69		67.5	3838	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.657	3.657	0.0	1.000	3015	0.002793			1.4	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.826	3.811	0.015	1.390	4543245	1.47		58.7	4467	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.810	3.811	-0.001	1.385	2123776	1.74		69.5	2448	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.810	3.825	-0.015	0.996	9717	0.006173			2.5	
563.00 > 169.00	3.810	3.825	-0.015	0.996	1457		6.67(5.24-15.72)		6.6	
D 36 13C2 PFDaA										
615.00 > 570.00	4.125	4.110	0.015	1.499	5340948	1.49		59.5	17102	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.612	4.616	-0.004	1.676	4340373	1.50		59.8	7203	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_040.d

Injection Date: 18-Aug-2018 09:05:58

Instrument ID: A9

Lims ID: 320-42105-A-5-A

Lab Sample ID: 320-42105-5

Client ID: MW-10D

Operator ID: A9\Administrator

ALS Bottle#: 29

Worklist Smp#: 10

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

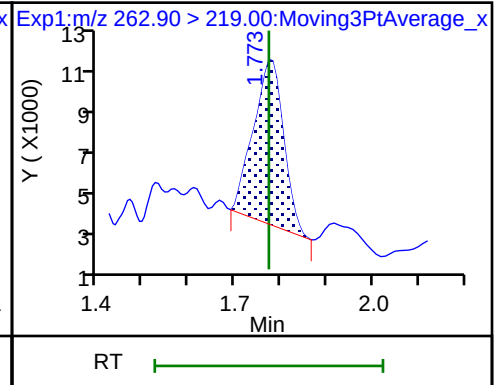
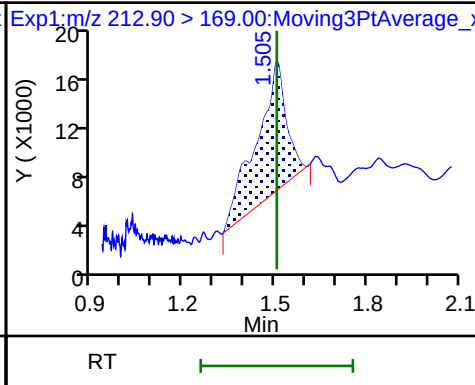
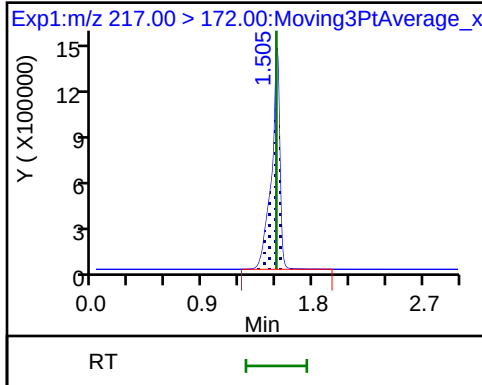
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

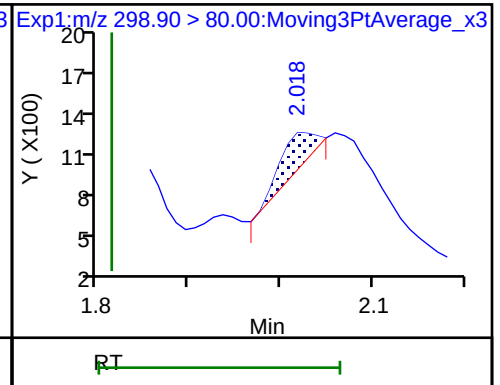
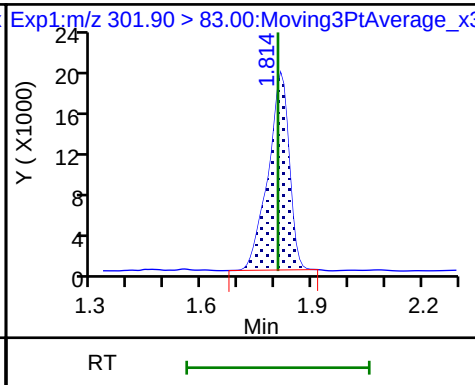
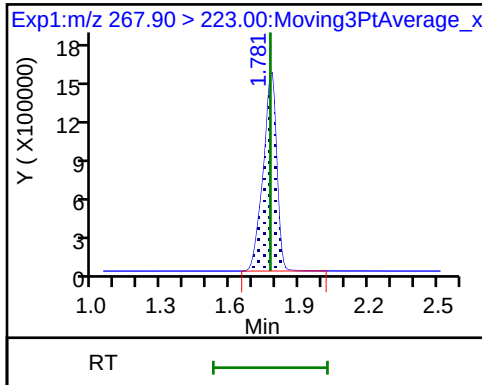
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

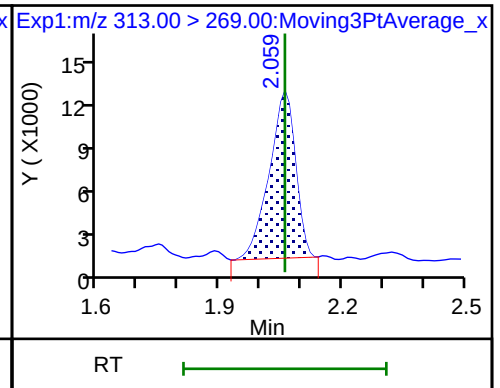
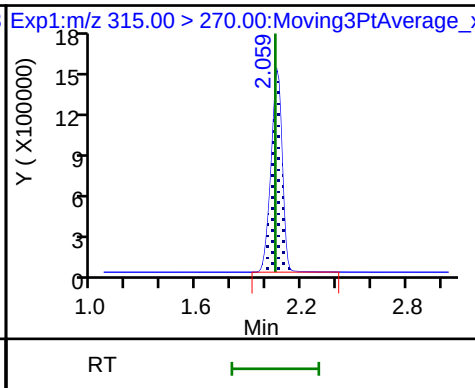
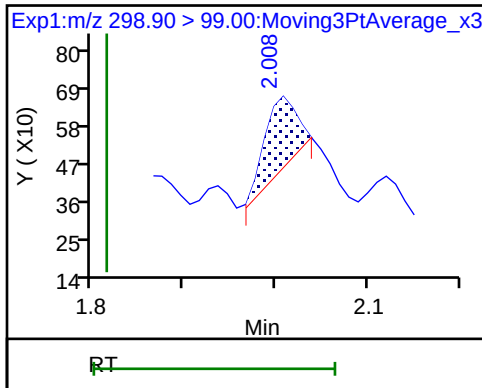
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

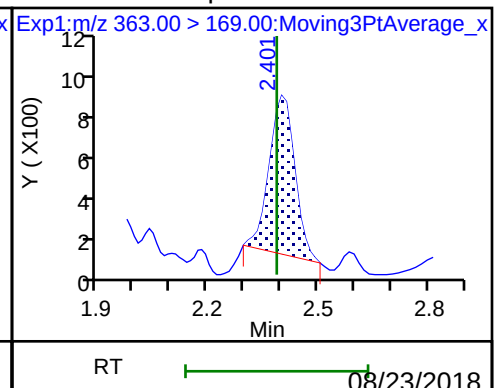
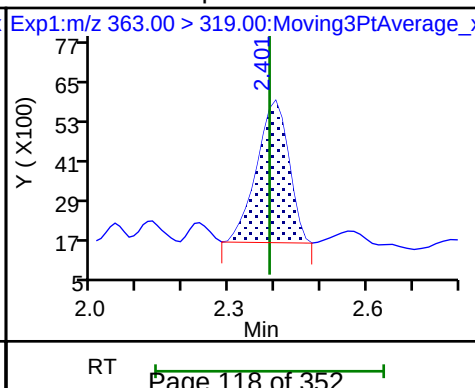
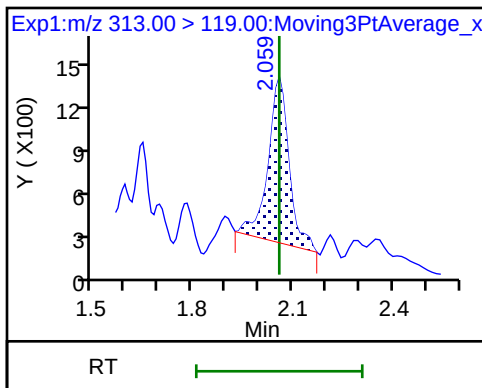
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

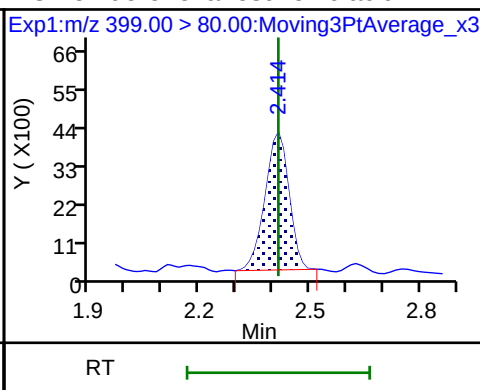
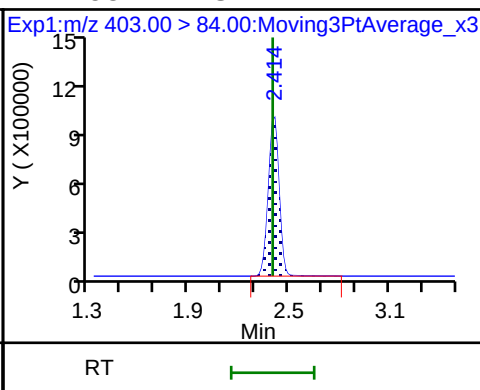
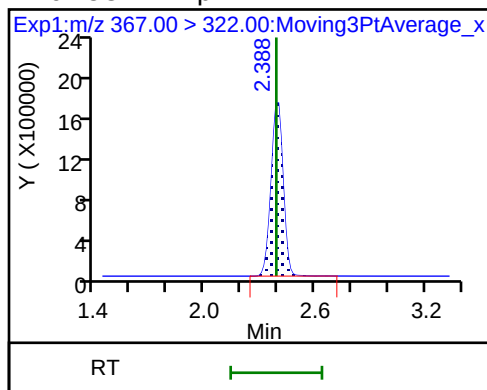
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

D 11 18O2 PFHxS

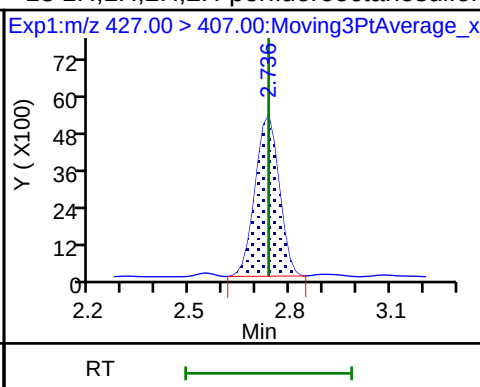
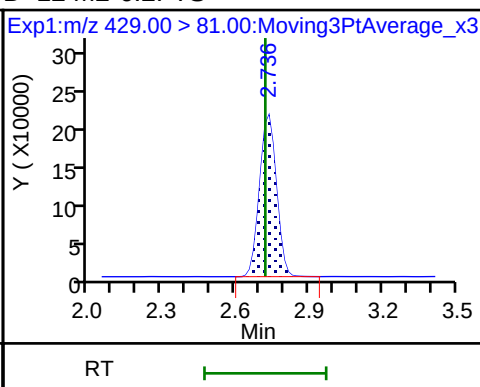
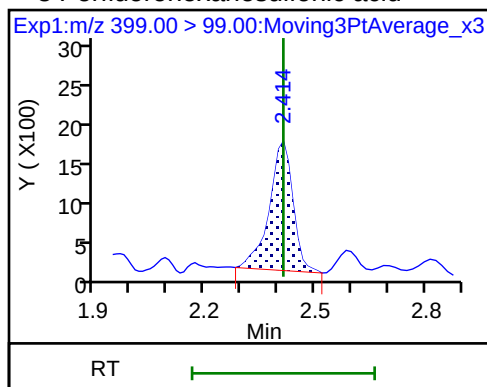
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

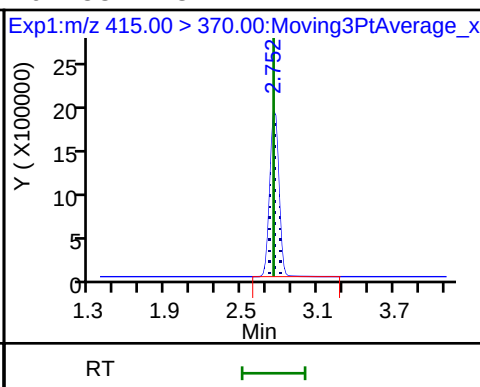
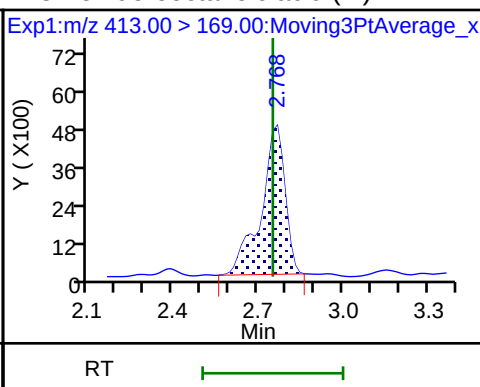
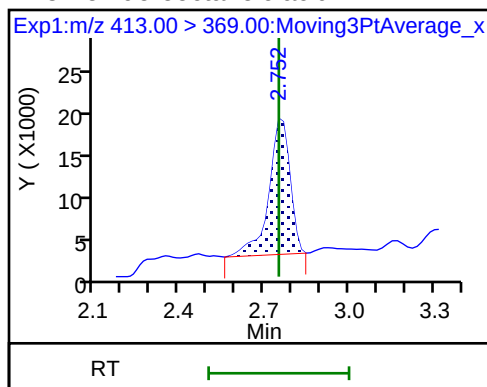
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid (M)

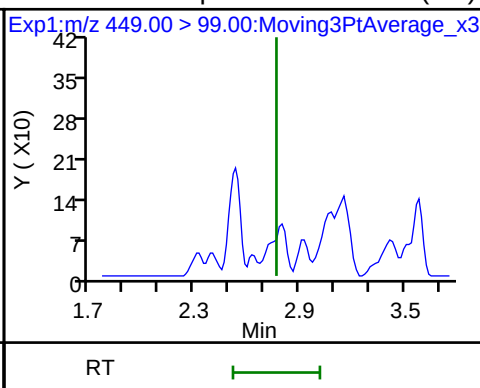
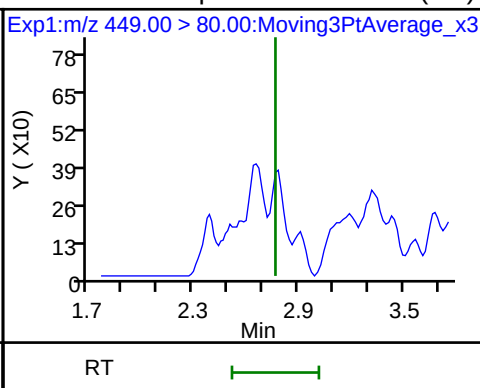
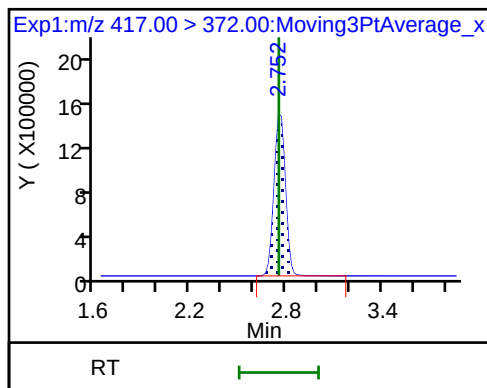
* 62 13C2-PFOA

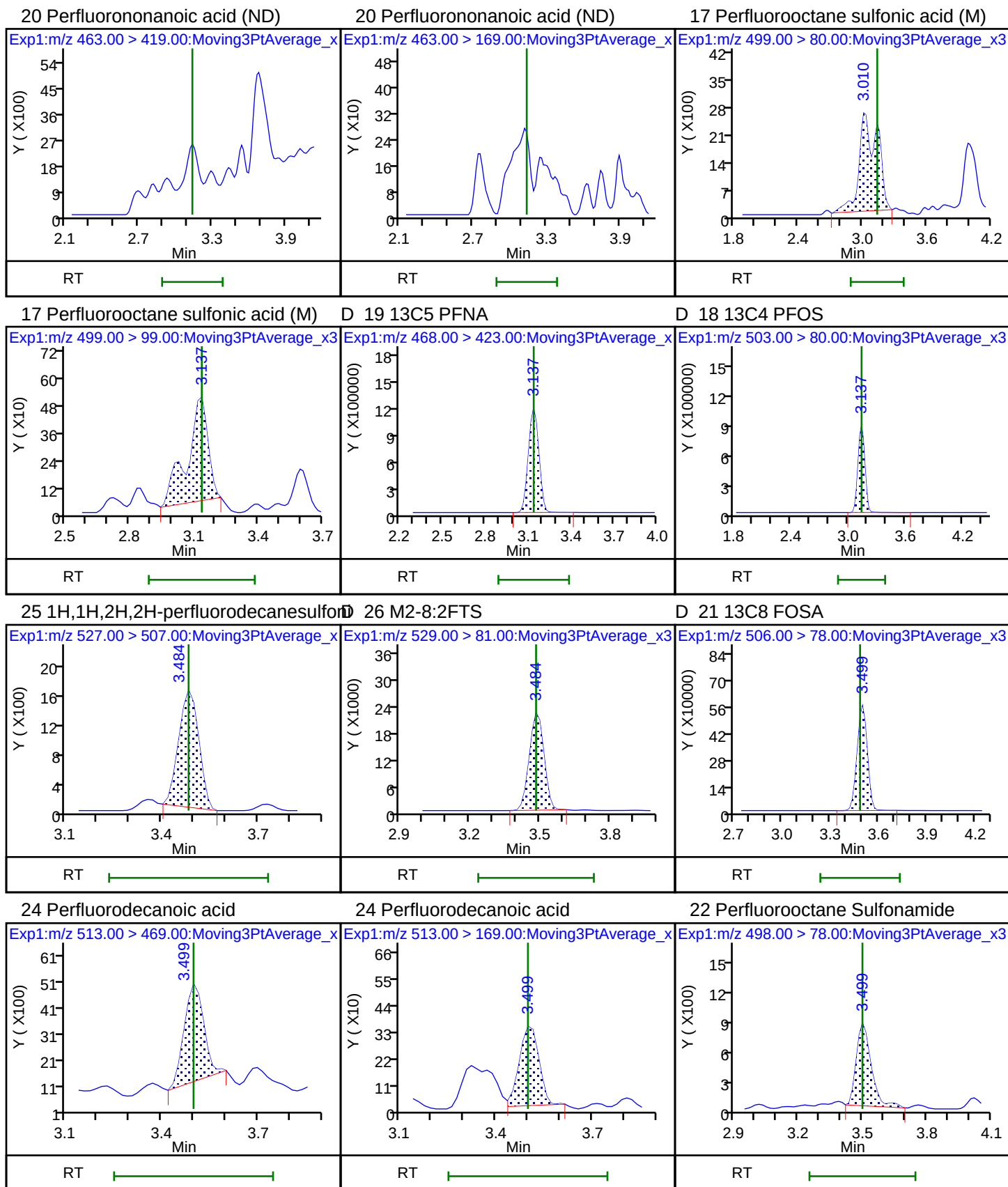


D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid (ND)

16 Perfluoroheptanesulfonic acid (ND)

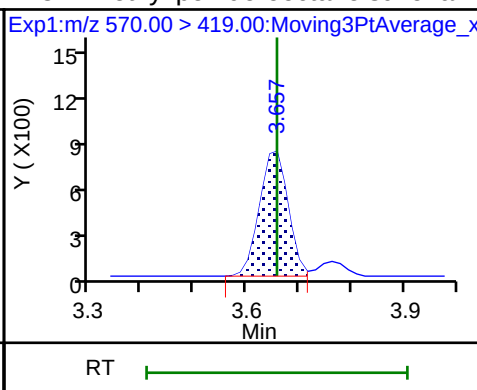
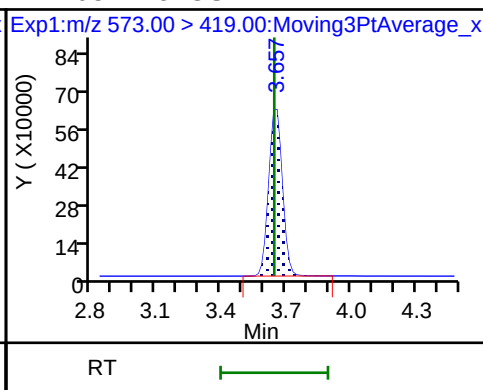
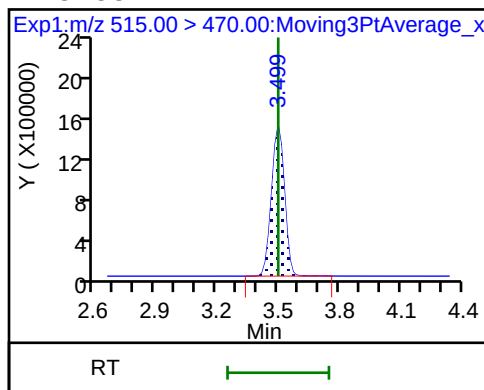




D 23 13C2 PFDA

D 27 d3-NMeFOSAA

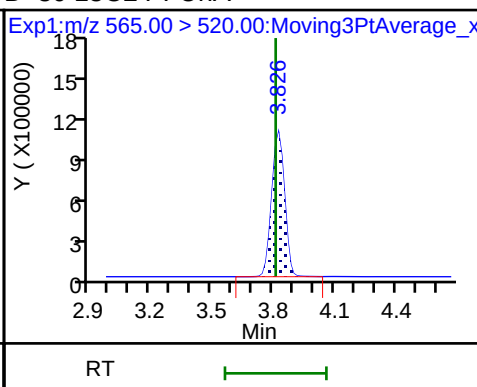
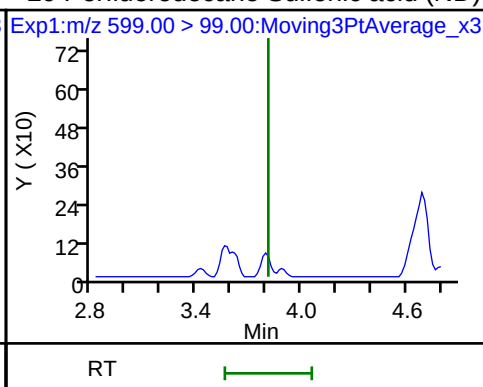
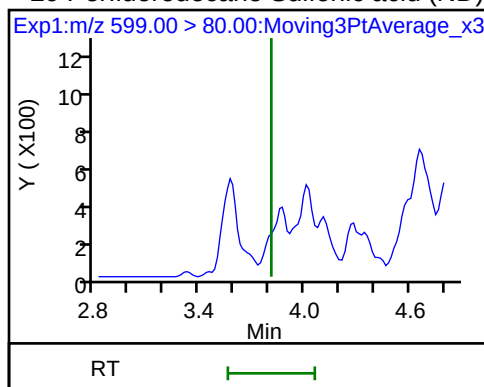
28 N-methyl perfluorooctane sulfonami (M)



29 Perfluorodecane Sulfonic acid (ND)

29 Perfluorodecane Sulfonic acid (ND)

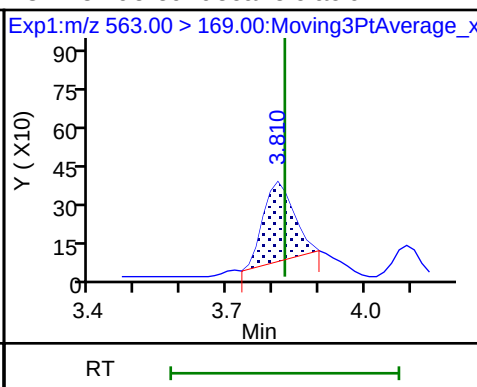
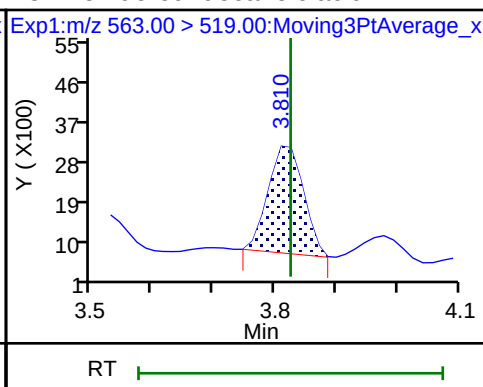
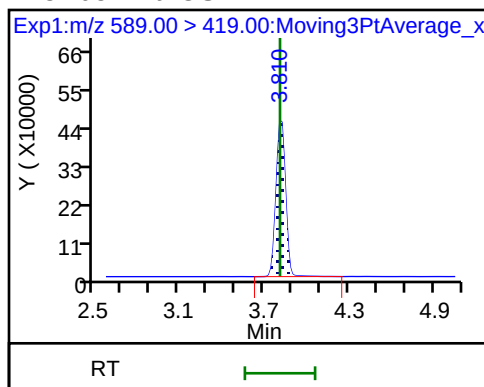
D 30 13C2 PFUnA



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

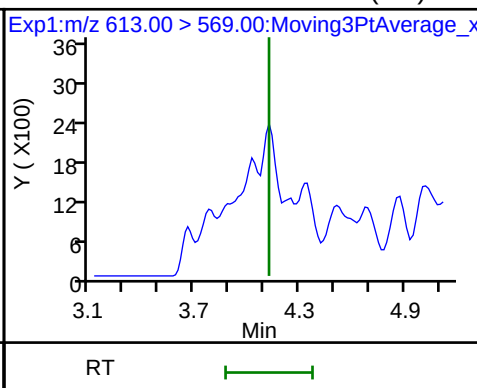
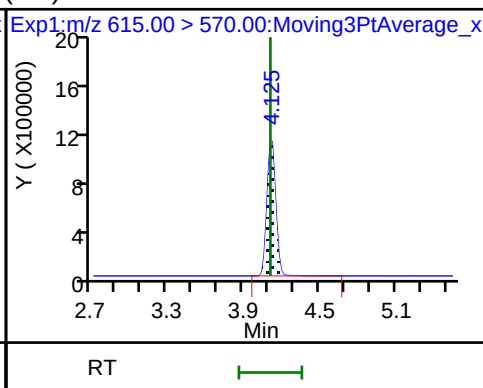
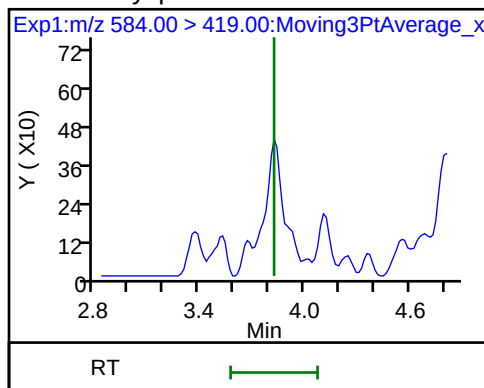
31 Perfluoroundecanoic acid



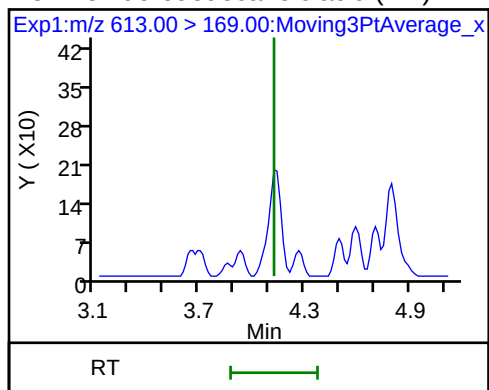
33 N-ethyl perfluorooctane sulfonamid (ND)

D 36 13C2 PFDaA

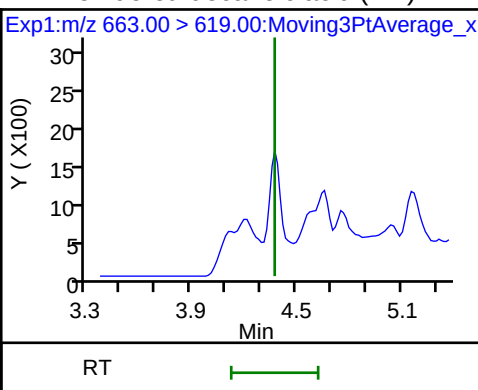
37 Perfluorododecanoic acid (ND)



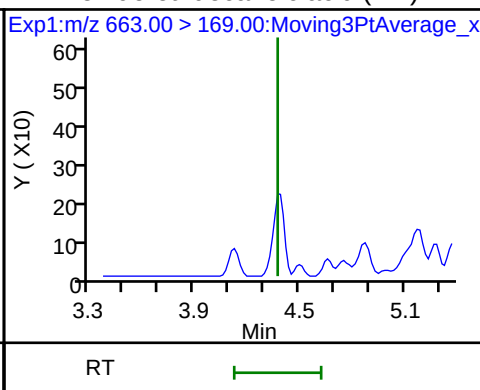
37 Perfluorododecanoic acid (ND)



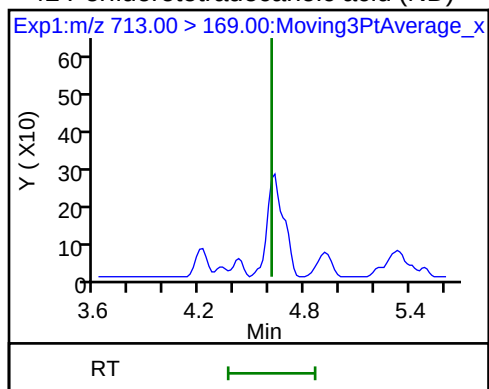
41 Perfluorotridecanoic acid (ND)



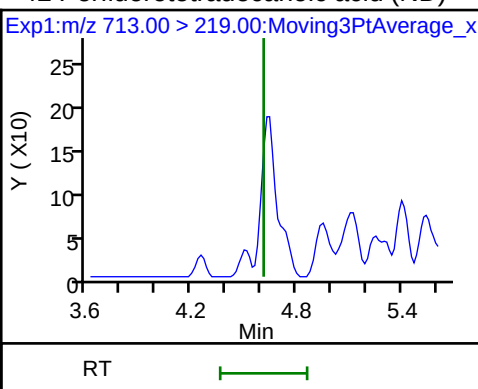
41 Perfluorotridecanoic acid (ND)



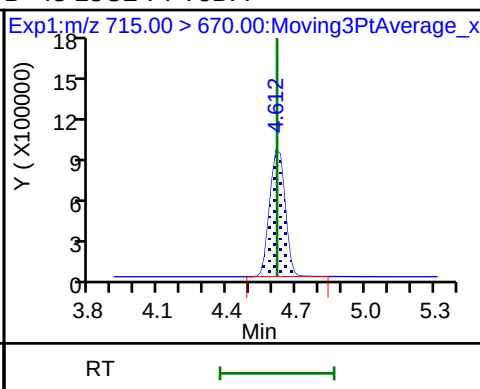
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

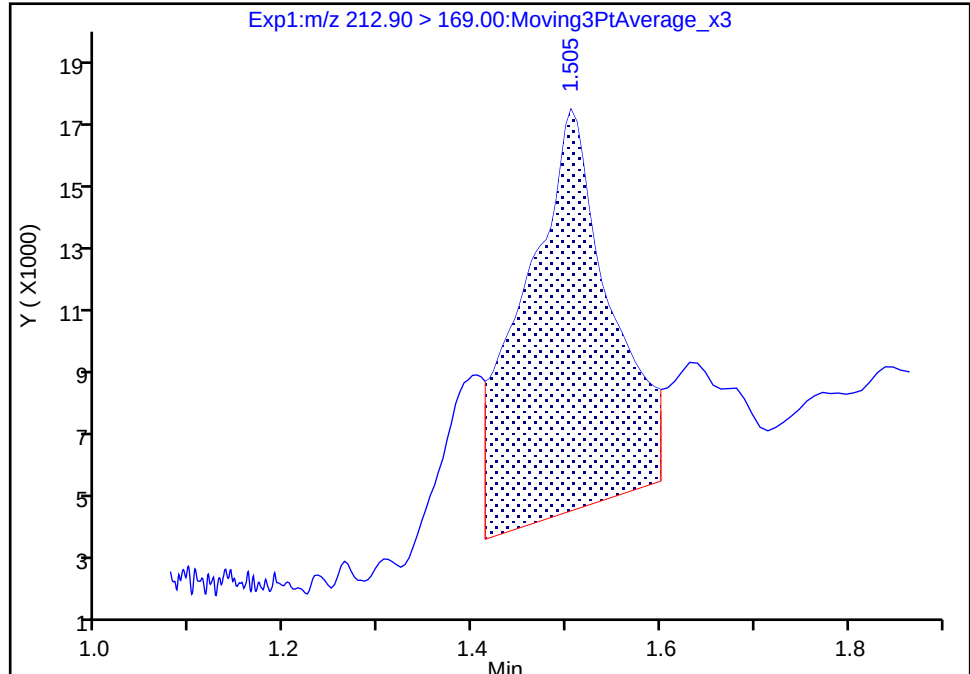
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Injection Date:	18-Aug-2018 09:05:58	Instrument ID:	A9		
Lims ID:	320-42105-A-5-A	Lab Sample ID:	320-42105-5		
Client ID:	MW-10D				
Operator ID:	A9\Administrator	ALS Bottle#:	29	Worklist Smp#:	10
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

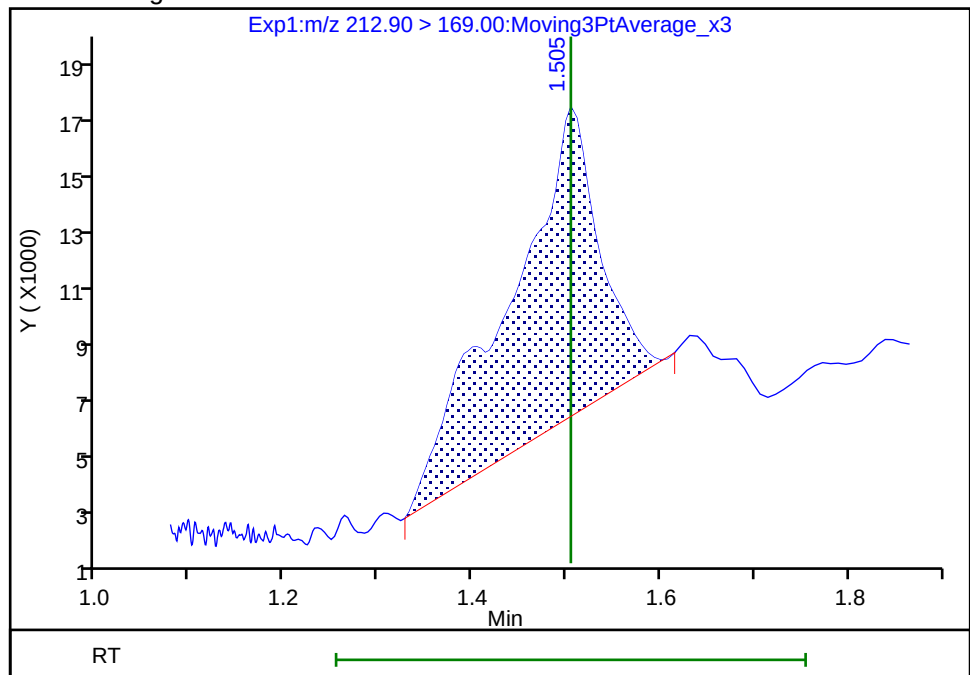
RT: 1.50
Area: 78758
Amount: 0.031039
Amount Units: ng/ml

Processing Integration Results



RT: 1.50
Area: 71436
Amount: 0.028153
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 08:00:52
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

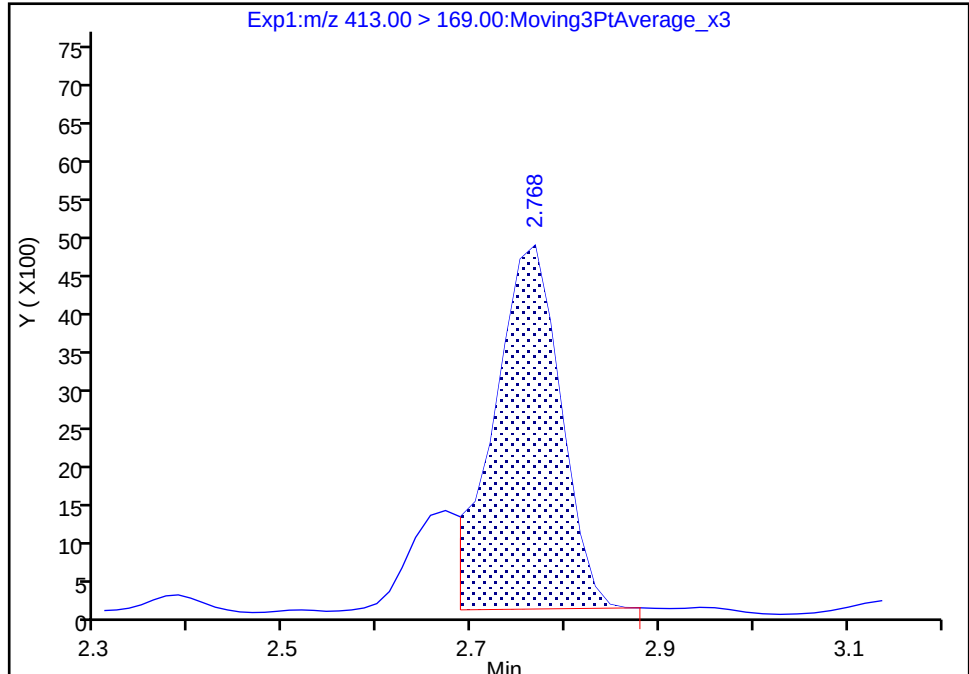
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Lims ID:	320-42105-A-5-A	Lab Sample ID:	320-42105-5		
Client ID:	MW-10D				
Operator ID:	A9\Administrator	ALS Bottle#:	29	Worklist Smp#:	10
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector:	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

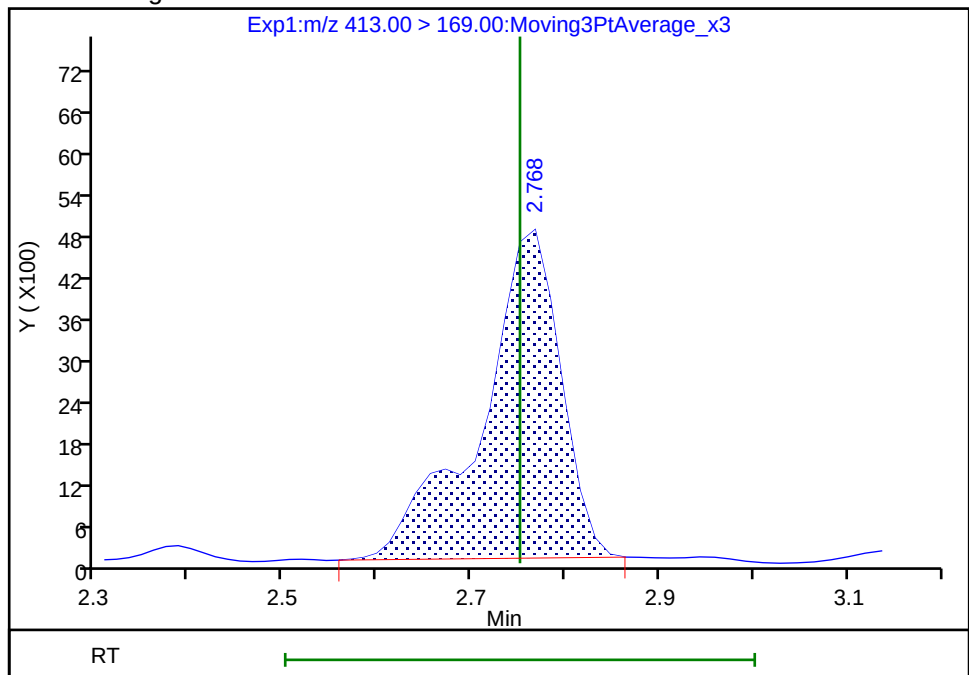
RT: 2.77
Area: 23307
Amount: 0.027673
Amount Units: ng/ml

Processing Integration Results



RT: 2.77
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Amount: 0.027673
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 08:01:06
Audit Action: Manually Integrated

Audit Reason: Isomers
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TestAmerica Sacramento

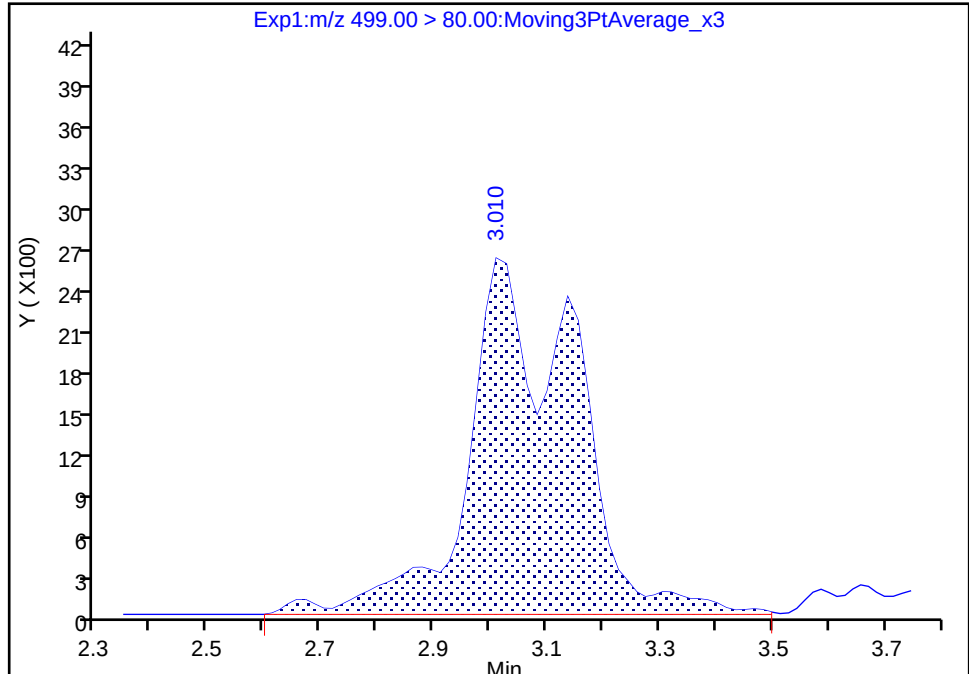
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Lims ID:	320-42105-A-5-A	Lab Sample ID:	320-42105-5		
Client ID:	MW-10D				
Operator ID:	A9\Administrator	ALS Bottle#:	29	Worklist Smp#:	10
Injection Vol:	20.0 ul	Dil. Factor:	1.0000		
Method:	PFAS_A9	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

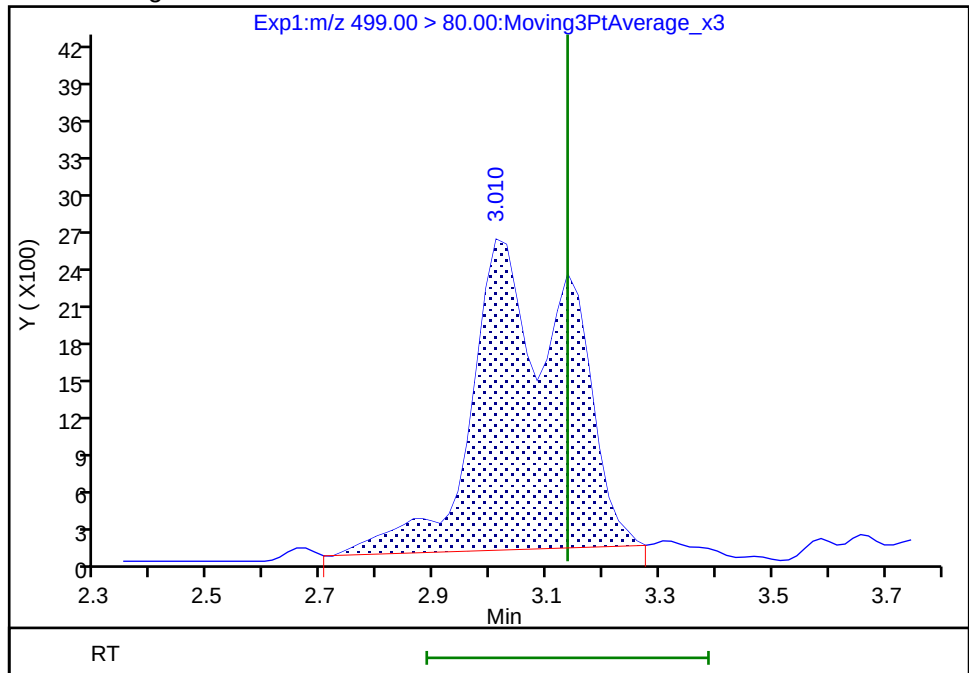
RT: 3.01
Area: 34582
Amount: 0.018826
Amount Units: ng/ml

Processing Integration Results



RT: 3.01
Area: 29987
Amount: 0.016325
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 08:01:15
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

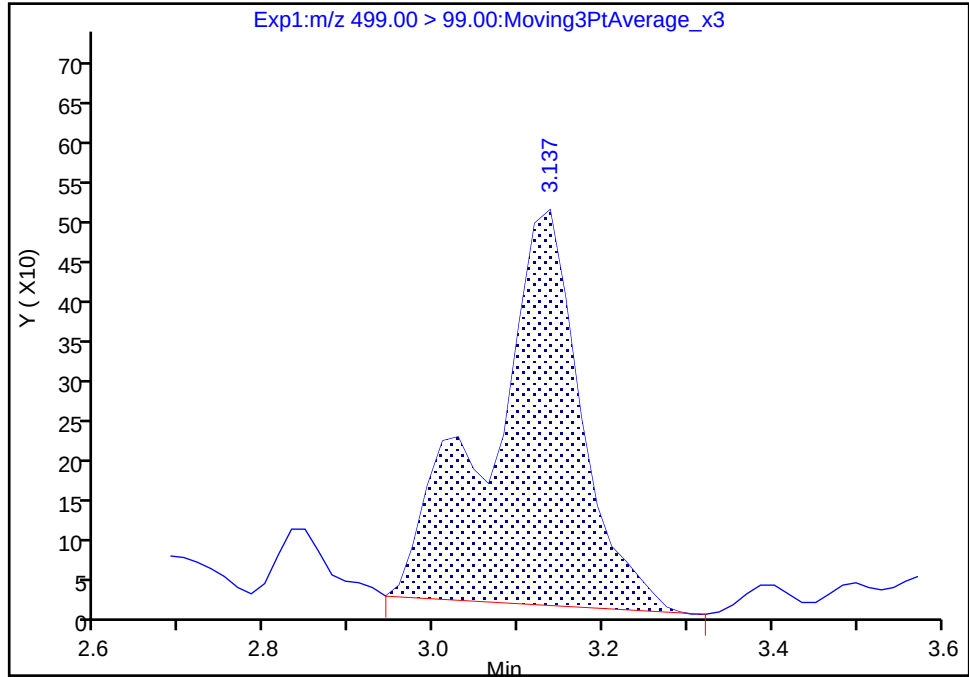
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_040.d
Injection Date: 18-Aug-2018 09:05:58 Instrument ID: A9
Lims ID: 320-42105-A-5-A Lab Sample ID: 320-42105-5
Client ID: MW-10D
Operator ID: A9\Administrator ALS Bottle#: 29 Worklist Smp#: 10
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

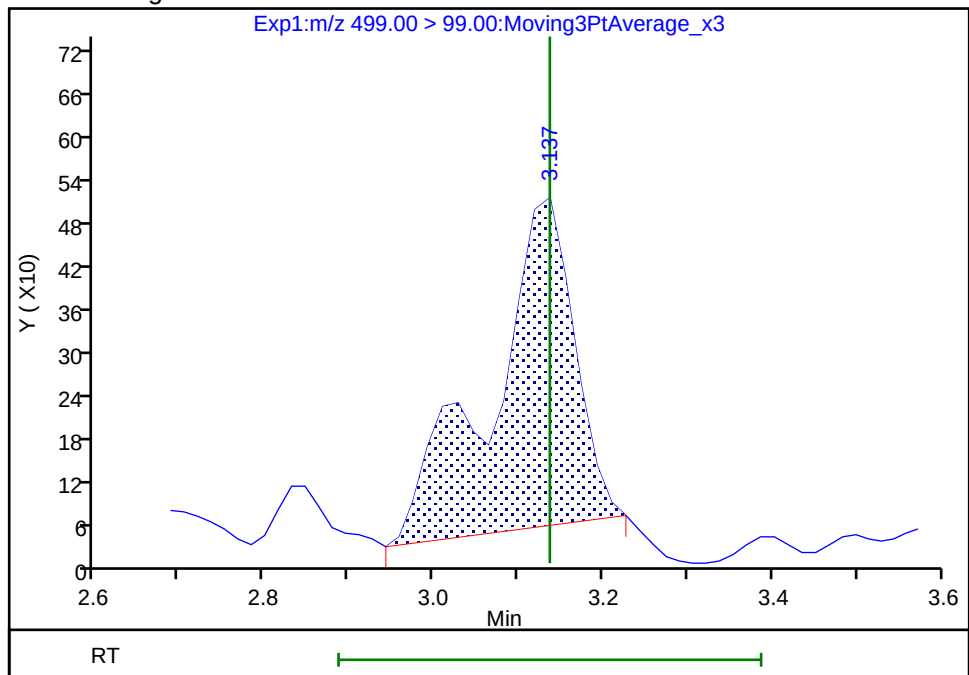
RT: 3.14
Area: 3770
Amount: 0.018826
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 3150
Amount: 0.016325
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 08:01:19

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

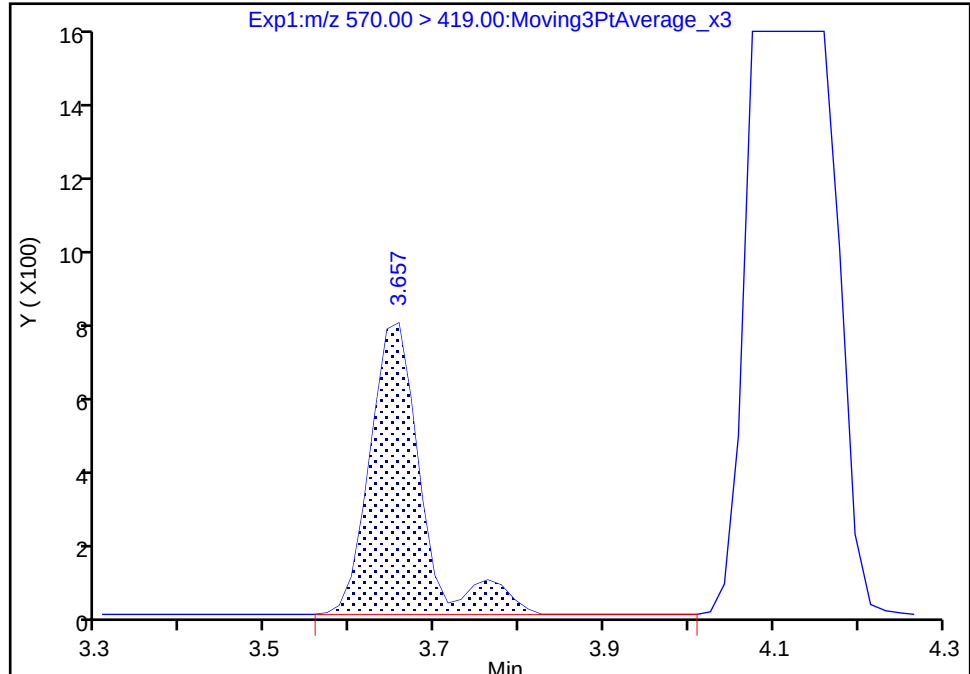
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_040.d
Injection Date: 18-Aug-2018 09:05:58 Instrument ID: A9
Lims ID: 320-42105-A-5-A Lab Sample ID: 320-42105-5
Client ID: MW-10D
Operator ID: A9\Administrator ALS Bottle#: 29 Worklist Smp#: 10
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

28 N-methyl perfluorooctane sulfonamidoacetic a, CAS: 2355-31-9

Signal: 1

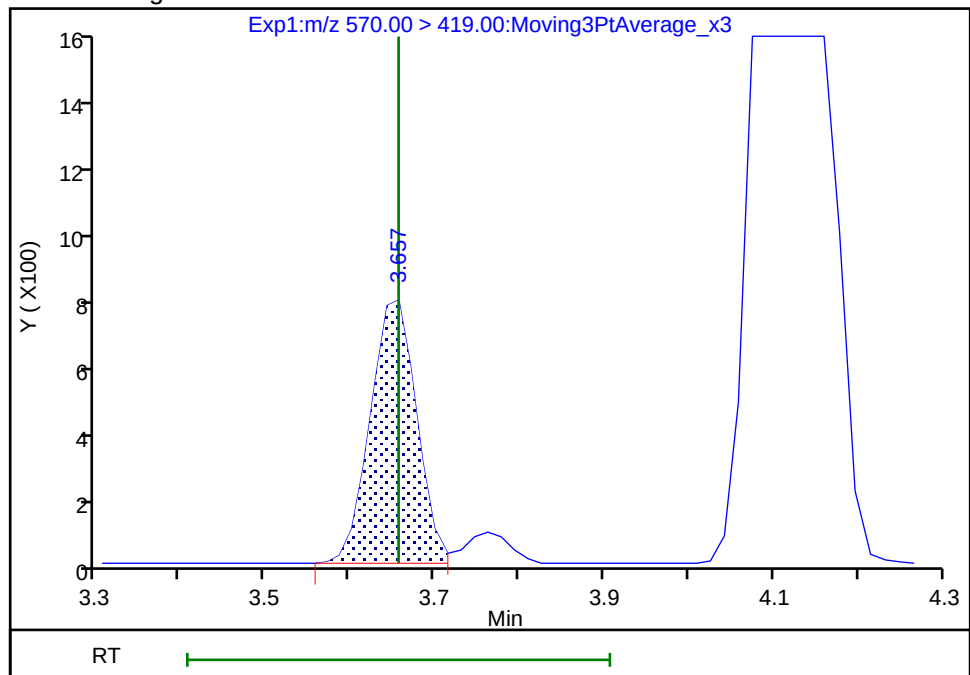
RT: 3.66
Area: 3358
Amount: 0.003111
Amount Units: ng/ml

Processing Integration Results



RT: 3.66
Area: 3015
Amount: 0.002793
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 08:01:30
Audit Action: Manually Integrated

Audit Reason: Baseline
Page 127 of 352

08/23/2018

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-239851/2	2018.08.14LLICAL_005.d
Level 2	IC 320-239851/3	2018.08.14LLICAL_006.d
Level 3	IC 320-239851/4	2018.08.14LLICAL_007.d
Level 4	IC 320-239851/5	2018.08.14LLICAL_008.d
Level 5	IC 320-239851/6	2018.08.14LLICAL_009.d
Level 6	IC 320-239851/7	2018.08.14LLICAL_010.d
Level 7	IC 320-239851/8	2018.08.14LLICAL_011.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.489	1.489	1.489	1.494	1.494	1.494	1.494				1.242 - 1.742	1.492
Perfluoropentanoic acid (PFPeA)	1.756	1.764	1.756	1.764	1.764	1.765	1.764				1.512 - 2.012	1.762
Perfluorobutanesulfonic acid (PFBS)	1.797	1.798	1.797	1.806	1.805	1.807	1.806				1.552 - 2.052	1.802
4:2 FTS	2.007	2.008	2.007	2.018	2.007	2.019	2.008				1.760 - 2.260	2.011
Perfluorohexanoic acid (PFHxA)	2.038	2.048	2.048	2.048	2.048	2.049	2.049				1.797 - 2.297	2.047
Perfluoropentanesulfonic acid (PFPeS)	2.069	2.069	2.069	2.079	2.068	2.070	2.069				1.820 - 2.320	2.070
HFPO-DA (GenX)	2.150	2.151	2.140	2.151	2.150	2.152	2.151				1.898 - 2.398	2.149
Perfluoroheptanoic acid (PFHpA)	2.387	2.387	2.374	2.387	2.387	2.388	2.388				2.135 - 2.635	2.385
Perfluorohexanesulfonic acid (PFHxS)	2.400	2.401	2.400	2.400	2.400	2.401	2.401				2.150 - 2.650	2.400
DONA	2.426	2.427	2.427	2.427	2.426	2.428	2.427				2.177 - 2.677	2.427
6:2 FTS	2.719	2.720	2.720	2.720	2.719	2.721	2.720				2.470 - 2.970	2.720
Perfluorooctanoic acid (PFOA)	2.751	2.752	2.751	2.751	2.751	2.753	2.752				2.502 - 3.002	2.752
Perfluoroheptanesulfonic Acid (PFHpS)	2.767	2.752	2.751	2.767	2.751	2.768	2.768				2.511 - 3.011	2.761
Perfluorononanoic acid (PFNA)	3.137	3.137	3.137	3.137	3.136	3.138	3.137				2.887 - 3.387	3.137
Perfluorooctanesulfonic acid (PFOS)	3.137	3.137	3.137	3.137	3.136	3.138	3.137				2.887 - 3.387	3.137
F-53B Major	3.353	3.354	3.337	3.337	3.337	3.353	3.354				3.096 - 3.596	3.346
Perfluorooctane Sulfonamide (FOSA)	3.467	3.468	3.468	3.468	3.467	3.468	3.468				3.218 - 3.718	3.468
8:2 FTS	3.483	3.483	3.483	3.483	3.483	3.483	3.484				3.233 - 3.733	3.483
Perfluorononanesulfonic acid (PFNS)	3.483	3.483	3.483	3.483	3.483	3.483	3.484				3.233 - 3.733	3.483
Perfluorodecanoic acid (PFDA)	3.499	3.499	3.499	3.499	3.498	3.499	3.499				3.249 - 3.749	3.499
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.658	3.657	3.657	3.657	3.644	3.658	3.657				3.405 - 3.905	3.655
Perfluorodecanesulfonic acid (PFDS)	3.810	3.810	3.809	3.809	3.810	3.811	3.810				3.560 - 4.060	3.810
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.826	3.825	3.825	3.825	3.826	3.827	3.826				3.576 - 4.076	3.826
Perfluoroundecanoic acid (PFUnA)	3.826	3.825	3.825	3.825	3.826	3.827	3.826				3.576 - 4.076	3.826
F-53B Minor	3.995	3.994	3.978	3.978	3.979	3.995	3.994				3.737 - 4.237	3.988
10:2 FTS	4.126	4.125	4.125	4.125	4.126	4.126	4.125				3.875 - 4.375	4.125
Perfluorododecanoic acid (PFDoA)	4.126	4.125	4.125	4.125	4.126	4.126	4.125				3.875 - 4.375	4.125
Perfluorododecanesulfonic acid (PFDoS)	4.360	4.360	4.359	4.360	4.361	4.361	4.360				4.110 - 4.610	4.360
Perfluorotridecanoic Acid (PFTriA)	4.391	4.391	4.390	4.391	4.392	4.392	4.391				4.141 - 4.641	4.391
Perfluorotetradecanoic acid (PFTeA)	4.633	4.633	4.629	4.630	4.634	4.634	4.645				4.384 - 4.884	4.634
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	5.062	5.059	5.059	5.062	5.062	+++++				4.811 - 5.311	5.061
Perfluoro-n-octadecanoic acid (PFODA)	5.422	5.422	5.419	5.419	5.422	5.423	5.419				5.171 - 5.671	5.421

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
13C4 PFBA	1.489	1.489	1.489	1.494	1.494	1.494	1.494				1.242 - 1.742	1.492
13C5 PFPeA	1.756	1.764	1.756	1.764	1.764	1.765	1.764				1.512 - 2.012	1.762
13C3-PFBS	1.797	1.798	1.797	1.806	1.797	1.807	1.798				1.550 - 2.050	1.800
M2-4:2FTS	2.007	2.008	2.007	2.018	2.007	2.019	2.008				1.760 - 2.260	2.011
13C2 PFHxA	2.038	2.048	2.038	2.048	2.048	2.049	2.049				1.796 - 2.296	2.045
13C3 HFPO-DA	2.140	2.141	2.140	2.151	2.150	2.152	2.151				1.896 - 2.396	2.146
13C4-PFHpA	2.374	2.387	2.374	2.387	2.387	2.388	2.388				2.134 - 2.634	2.384
18O2 PFHxS	2.400	2.401	2.400	2.400	2.400	2.401	2.401				2.150 - 2.650	2.400
M2-6:2FTS	2.719	2.720	2.720	2.735	2.719	2.721	2.720				2.472 - 2.972	2.722
13C8 PFOA	2.735	2.736	2.736	2.751	2.735	2.753	2.752				2.492 - 2.992	2.743
13C4 PFOA	2.751	2.752	2.751	2.751	2.751	2.753	2.752				2.502 - 3.002	2.752
13C8 PFOS	3.119	3.119	3.119	3.119	3.118	3.138	3.137				2.874 - 3.374	3.124
13C4 PFOS	3.137	3.137	3.137	3.137	3.136	3.138	3.137				2.887 - 3.387	3.137
13C5 PFNA	3.137	3.137	3.137	3.137	3.136	3.138	3.137				2.887 - 3.387	3.137
13C8 FOSA	3.467	3.468	3.468	3.468	3.467	3.468	3.468				3.218 - 3.718	3.468
M2-8:2FTS	3.483	3.483	3.483	3.483	3.483	3.483	3.484				3.233 - 3.733	3.483
13C2 PFDA	3.499	3.499	3.499	3.499	3.498	3.499	3.499				3.249 - 3.749	3.499
d3-NMeFOSAA	3.658	3.657	3.643	3.643	3.644	3.658	3.657				3.401 - 3.901	3.651
d5-NEtFOSAA	3.826	3.825	3.809	3.809	3.810	3.827	3.826				3.569 - 4.069	3.819
13C2 PFUnA	3.826	3.825	3.825	3.825	3.826	3.827	3.826				3.576 - 4.076	3.826
13C2 PFDoA	4.126	4.125	4.125	4.125	4.126	4.126	4.125				3.875 - 4.375	4.125
13C2-PFTeDA	4.633	4.633	4.629	4.630	4.634	4.634	4.645				4.384 - 4.884	4.634
13C2-PFHxDA	5.062	5.062	5.059	5.059	5.062	5.062	5.059				4.811 - 5.311	5.061

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-239851/2	2018.08.14LLICAL_005.d
Level 2	IC 320-239851/3	2018.08.14LLICAL_006.d
Level 3	IC 320-239851/4	2018.08.14LLICAL_007.d
Level 4	IC 320-239851/5	2018.08.14LLICAL_008.d
Level 5	IC 320-239851/6	2018.08.14LLICAL_009.d
Level 6	IC 320-239851/7	2018.08.14LLICAL_010.d
Level 7	IC 320-239851/8	2018.08.14LLICAL_011.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C8 PFOA	2808459 2736076	2748711 2913983	2843984 2821855	2842160	Ave		2816461.23				2.2		50.0			
13C8 PFOS	538600 492665	490715 542479	511544 469249	499123	Ave		506339.271				5.2		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851
SDG No.: _____
Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N
Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	1.0780 0.9209	0.9316 0.8611	0.9309	0.9563	0.9402	AveID		0.9456				6.9		35.0			
Perfluoropentanoic acid (PFPeA)	1.1921 0.9584	1.0948 0.8798	1.0191	1.0183	1.0038	AveID		1.0238				9.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	106.10 98.843	107.67 88.811	107.94	111.38	108.50	AveID		104.18				7.5		50.0			
4:2 FTS	21.905 19.864	21.353 19.471	21.639	20.170	21.683	AveID		20.869				4.8		50.0			
Perfluorohexanoic acid (PFHxA)	0.9401 0.8431	0.9795 0.7839	0.8953	0.9075	0.9124	AveID		0.8945				7.2		35.0			
Perfluoropentanesulfonic acid (PFPeS)	48.416 48.907	48.588 44.888	51.823	51.297	52.595	AveID		49.502				5.3		50.0			
HFPO-DA (GenX)	1.2798 1.7269	1.6815 1.4569	1.6767	1.3840	1.5846	AveID		1.5415				11.1		35.0			
Perfluoroheptanoic acid (PFHpA)	1.1255 0.9314	1.1788 0.8649	1.0634	1.1728	1.0674	AveID		1.0577				11.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	1.4734 1.2628	1.4261 1.1612	1.1741	1.2043	1.2283	AveID		1.2757				9.7		35.0			
DONA	2.8223 2.4901	2.8239 2.1447	2.9200	2.8245	2.5720	AveID		2.6568				10.3		50.0			
6:2 FTS	2.3717 2.2441	2.3451 2.0681	2.1285	2.2512	2.1990	AveID		2.2297				4.9		35.0			
Perfluorooctanoic acid (PFOA)	1.2985 0.9306	1.2115 0.8505	1.1319	1.1028	1.0469	AveID		1.0818				14.3		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.0230 0.9876	0.9477 0.9663	0.9958	1.0685	1.0522	AveID		1.0059				4.4		50.0			
Perfluorononanoic acid (PFNA)	1.0808 0.9016	1.1333 0.8354	1.0759	1.0987	1.0408	AveID		1.0238				10.9		35.0			
Perfluorooctanesulfonic acid (PFOS)	1.0268 1.0860	0.9687 1.0728	1.1106	1.0330	1.0346	AveID		1.0475				4.5		35.0			
F-53B Major	1.2813 1.1683	1.2188 1.1046	1.2344	1.2065	1.1944	AveID		1.2012				4.6		50.0			
Perfluorooctane Sulfonamide (FOSA)	2.9024 2.8110	3.0143 2.4416	3.2078	2.9918	3.1718	AveID		2.9344				8.8		35.0			
8:2 FTS	13.429 16.947	16.335 13.526	15.802	15.328	14.632	AveID		15.143				8.9		35.0			
Perfluorononanesulfonic acid (PFNS)	0.6644 0.7002	0.6940 0.6567	0.6979	0.6849	0.6826	AveID		0.6830				2.5		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851
SDG No.: _____
Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N
Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0235 0.9722	1.1745 0.9023	1.1218	1.2242	1.0637	AveID		1.0689				10.6		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9373 0.9903	1.0718 0.9550	1.0289	0.9896	0.9809	AveID		0.9934				4.5		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.8348 0.8412	0.7977 0.7662	0.9053	0.8826	0.8471	AveID		0.8393				5.6		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	1.1100 0.9677	0.9259 0.9987	0.9150	0.9479	1.0178	AveID		0.9833				6.8		35.0			
Perfluoroundecanoic acid (PFUnA)	0.8999 0.7677	0.9549 0.7221	0.9775	0.8581	0.8828	AveID		0.8661				10.8		35.0			
F-53B Minor	1.5881 1.2920	1.5005 1.1873	1.4522	1.5711	1.3343	AveID		1.4179				10.6		50.0			
10:2 FTS	12.492 9.3686	8.0642 9.7989	9.7322	10.173	9.2265	AveID		9.8364				13.7		50.0			
Perfluorododecanoic acid (PFDoA)	1.0730 0.9293	1.1327 0.7839	1.1910	1.0780	0.9859	AveID		1.0248				13.4		35.0			
Perfluorododecanesulfonic acid (PFDoS)	0.0955 0.0945	0.1196 0.1007	0.0949	0.0986	0.0925	AveID		0.0995				9.3		50.0			
Perfluorotridecanoic Acid (PFTriA)	0.8962 0.7506	0.8839 0.6317	0.8701	0.8911	0.8107	AveID		0.8192				12.0		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.1823 0.1617	0.1696 0.1562	0.1571	0.1532	0.1587	AveID		0.1627				6.2		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.8103	1.3815 ++++	1.0694	0.9827	0.9099	L2ID	0.0246	0.9050							0.9940		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	0.7116 0.6718	0.7332 0.6308	0.7549	0.7735	0.7295	AveID		0.7150				6.9		50.0			
13C4 PFBA	0.9425 1.0129	0.9453 1.0042	0.9388	0.8911	0.9660	Ave		0.9573				4.4		50.0			
13C5 PFPeA	0.8400 0.8941	0.8409 0.8877	0.8395	0.8164	0.8545	Ave		0.8533				3.3		50.0			
13C3-PFBS	0.0110 0.0120	0.0107 0.0119	0.0106	0.0102	0.0112	Ave		0.0111				6.2		50.0			
M2-4:2FTS	0.0933 0.0926	0.0980 0.0894	0.0919	0.0875	0.0899	Ave		0.0918				3.7		50.0			
13C2 PFHxA	0.9009 0.9557	0.8859 0.9461	0.9058	0.8216	0.8885	Ave		0.9006				4.9		50.0			
13C3 HFPO-DA	0.1258 0.1132	0.1114 0.1368	0.0982	0.1176	0.1155	Ave		0.1169				10.3		50.0			
13C4-PFHpA	1.0597 1.1402	1.0431 1.0949	1.0921	0.9744	1.0651	Ave		1.0671				4.8		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
18O2 PFHxS	0.6703 0.6693	0.6594 0.6662	0.6625	0.6136	0.6464	Ave		0.6554				3.1		50.0			
M2-6:2FTS	0.1042 0.0938	0.0968 0.1043	0.1039	0.0837	0.1053	Ave		0.0989				8.1		50.0			
13C4 PFOA	1.0110 0.9992	1.0068 0.9858	0.9497	0.9492	1.0298	Ave		0.9902				3.1		50.0			
13C4 PFOS	0.6914 0.7254	0.7050 0.6768	0.7105	0.6667	0.7415	Ave		0.7025				3.8		50.0			
13C5 PFNA	0.9310 0.9863	0.9342 0.9022	0.8950	0.8501	0.9243	Ave		0.9176				4.6		50.0			
13C8 FOSA	0.3871 0.3744	0.3829 0.3756	0.3750	0.3738	0.3810	Ave		0.3785				1.4		50.0			
M2-8:2FTS	0.0149 0.0140	0.0145 0.0136	0.0142	0.0131	0.0153	Ave		0.0142				5.2		50.0			
13C2 PFDA	1.0249 1.0094	0.9917 0.9507	1.0363	0.9365	1.0176	Ave		0.9953				3.8		50.0			
d3-NMeFOSAA	0.4090 0.4845	0.4358 0.4453	0.4073	0.4022	0.4400	Ave		0.4320				6.7		50.0			
d5-NEtFOSAA	0.3541 0.3181	0.3593 0.2847	0.3477	0.3053	0.3252	Ave		0.3278				8.4		50.0			
13C2 PFUnA	0.8571 0.8574	0.8584 0.8066	0.7824	0.8011	0.8466	Ave		0.8300				3.9		50.0			
13C2 PFDoA	0.9805 1.0064	0.9834 0.9637	0.9087	0.9084	0.9880	Ave		0.9627				4.1		50.0			
13C2-PFTeDA	0.7557 0.8065	0.8022 0.7784	0.7770	0.7534	0.7766	Ave		0.7785				2.6		50.0			
13C2-PFHxDA	0.8407 0.9086	0.8654 0.8758	0.8293	0.7727	0.8721	Ave		0.8521				5.1		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-239851/2	2018.08.14LLICAL_005.d
Level 2	IC 320-239851/3	2018.08.14LLICAL_006.d
Level 3	IC 320-239851/4	2018.08.14LLICAL_007.d
Level 4	IC 320-239851/5	2018.08.14LLICAL_008.d
Level 5	IC 320-239851/6	2018.08.14LLICAL_009.d
Level 6	IC 320-239851/7	2018.08.14LLICAL_010.d
Level 7	IC 320-239851/8	2018.08.14LLICAL_011.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C8 PFOA	Ave	6873704 7131974	6727469 6906491	6960651	6956186	6696547	2.45 2.45	2.45 2.45	2.45	2.45	2.45
13C8 PFOS	Ave	1287254 1296525	1172809 1121506	1222589	1192904	1177469	2.39 2.39	2.39 2.39	2.39	2.39	2.39

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-239851/2	2018.08.14LLICAL_005.d
Level 2	IC 320-239851/3	2018.08.14LLICAL_006.d
Level 3	IC 320-239851/4	2018.08.14LLICAL_007.d
Level 4	IC 320-239851/5	2018.08.14LLICAL_008.d
Level 5	IC 320-239851/6	2018.08.14LLICAL_009.d
Level 6	IC 320-239851/7	2018.08.14LLICAL_010.d
Level 7	IC 320-239851/8	2018.08.14LLICAL_011.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	86418 15349362	147102 27821570	765806	3027342	7379226	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	85179 14099524	153782 25126764	749683	2953022	6969791	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	87401 17295123	169552 30159908	883036	3578331	8696482	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	19066 3672286	35528 6986142	187037	684694	1836255	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	72038 13258249	144934 23862599	710673	2648441	6586984	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid (PFPeS)		AveID	42321 9080336	81190 16174853	449848	1748787	4473196	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
HFPO-DA (GenX)		AveID	13695 3216048	31294 6414648	144326	577987	1486534	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	101448 17475592	205394 30470313	1017622	4059390	9237998	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	76447 12656591	142930 22650329	620268	2388604	5870856	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
DONA		AveID	156354 28000019	313240 43996628	1712626	6301147	14596562	0.0236 4.71	0.0471 9.42	0.236	0.942	2.36
6:2 FTS		AveID	19935 3283635	35954 6577980	183797	634274	1783153	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	111776 15316971	203941 27005677	942910	3722262	8768800	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	57275 11222813	106237 20033023	590259	2408919	6034683	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorononanoic acid (PFNA)		AveID	85589 14633531	176839 24249982	843777	3317945	7816378	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid (PFOS)		AveID	56038 12030038	105852 21680254	641677	2270332	5784165	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
F-53B Major		AveID	70232 12998127	133756 22419338	716298	2663128	6706429	0.0233 4.66	0.0466 9.32	0.233	0.932	2.33
Perfluorooctane Sulfonamide (FOSA)		AveID	95564 17316605	192783 29503304	1053940	3973171	9819871	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2 FTS		AveID	16311 3743134	37778 5686987	188756	683544	1739649	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorononanesulfonic acid (PFNS)		AveID	37510 8023770	78457 13729329	417143	1557209	3947964	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40
Perfluorodecanoic acid (PFDA)		AveID	89221 16148187	194562 27601250	1018661	4072679	8795283	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	32611 7895729	78017 13683452	367254	1413942	3506588	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	47327 9679763	90555 16085382	543347	2014964	4919739	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	33429 5065452	55561 9149789	278760	1027982	2689326	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	65604 10831661	136908 18741950	670196	2441812	6072941	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
F-53B Minor		AveID	87984 14527954	166436 24356135	851738	3505012	7572280	0.0236 4.71	0.0471 9.42	0.236	0.942	2.36
10:2 FTS		AveID	15267 2082230	18767 4145794	116977	456491	1103821	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
Perfluorododecanoic acid (PFDoA)		AveID	89490 15388726	186049 24307420	948348	3478617	7914632	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanesulfonic acid (PFDoS)		AveID	5439 1091580	13632 2123040	57225	226152	539677	0.0242 4.84	0.0484 9.68	0.242	0.968	2.42
Perfluorotridecanoic Acid (PFTriA)		AveID	74745 12430083	145190 19589162	692793	2875351	6507751	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	11720 2145526	22726 3911593	106957	410023	1001686	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	++++ 12114833	199682 ++++	777122	2697530	6447807	++++ 5.00	0.0500 ++++	0.250	1.00	2.50
Perfluoro-n-octadecanoic acid (PFODA)		AveID	50881 10044387	105984 17776512	548531	2123289	5169704	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	8016662 8333676	7894768 8077508	8226605	7914125	7848915	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	7145037 7355937	7023276 7140271	7356113	7250202	6943290	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	86666 92040	82837 89317	86064	84501	84324	2.33 2.33	2.33 2.33	2.33	2.33	2.33
M2-4:2FTS	13PF OA	Ave	740974 711802	764250 671476	752063	725909	682550	2.34 2.34	2.34 2.34	2.34	2.34	2.34

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1 Analy Batch No.: 239851

SDG No.: _____

Instrument ID: A9 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/14/2018 14:32 Calibration End Date: 08/14/2018 15:17 Calibration ID: 40619

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C2 PFHxA	13PF OA	Ave	7662490 7863093	7398722 7610215	7937448	7296324	7219162	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3 HFPO-DA	13PF OA	Ave	1070102 931143	930512 1100758	860769	1044046	938095	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	9013706 9380968	8711868 8807489	9569519	8653248	8654643	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5393615 5209492	5209540 5069605	5491972	5154749	4968675	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	842314 733165	768192 796845	865327	705848	812599	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	8599610 8221072	8408666 7929901	8321934	8429911	8367232	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	5622372 5705912	5628630 5204842	5952246	5660162	5759512	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	7918937 8115022	7801711 7257342	7842884	7549430	7509892	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	3292559 3080115	3197848 3020932	3285594	3320058	3096022	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	121458 110436	115636 105114	119448	111483	118891	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	8717513 8304952	8282585 7647452	9080466	8316795	8268590	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	3479194 3986340	3639516 3581959	3569470	3571827	3575014	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	3011744 2617161	3000388 2290372	3046528	2711140	2642308	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	7290417 7054425	7168778 6488608	6856002	7114360	6879149	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	8340078 8280027	8212619 7752244	7962594	8067021	8027742	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	6427561 6635951	6699736 6261598	6808485	6691013	6309954	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	7150348 7475812	7227164 7045312	7266638	6862425	7086357	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 14-Aug-2018 14:32:49 ALS Bottle#: 10 Worklist Smp#: 2
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD1
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:15:24 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 14:50:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.489	1.492	-0.003	1.000	86418	0.0285		114	3.5	
D 1 13C4 PFBA										
217.00 > 172.00	1.489	1.492	-0.003	0.541	8016662	2.46		98.5	13401	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.756	1.762	-0.006	1.000	85179	0.0291		116	8.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.756	1.762	-0.006	0.638	7145037	2.46		98.4	9960	
D 47 13C3-PFBS										
301.90 > 83.00	1.797	1.800	-0.003	0.653	86666	2.30		98.9	535	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.797	1.802	-0.005	1.000	87401	0.0225		102	16.1	
298.90 > 99.00	1.797	1.802	-0.005	1.000	30269		2.89(1.35-4.05)	102	12.3	
D 60 M2-4:2FTS										
329.00 > 81.00	2.007	2.010	-0.003	0.730	740974	2.37		102	953	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.007	2.010	-0.003	1.117	19066	0.0245		105	149	
D 7 13C2 PFHxA										
315.00 > 270.00	2.038	2.046	-0.008	0.741	7662490	2.50		100	15415	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.038	2.047	-0.009	1.000	72038	0.0263		105	16.1	M
313.00 > 119.00	2.038	2.047	-0.009	1.000	5030		14.32(6.96-20.87)	105	10.3	M
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.069	2.070	-0.001	1.151	42321	0.0229		97.8	98.0	
349.00 > 99.00	2.069	2.070	-0.001	1.151	19780		2.14(1.15-3.45)	97.8	31.4	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.140	2.146	-0.006	0.778	1070102	2.69		108	2172	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.150	2.148	0.002	1.005	13695	0.0208		83.0	5.9	
D 9 13C4-PFHpA										
367.00 > 322.00	2.374	2.384	-0.010	0.863	9013706	2.48		99.3	22502	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.385	0.002	1.006	101448	0.0266		106	14.4	
363.00 > 169.00	2.374	2.385	-0.011	1.000	21898		4.63(2.17-6.52)	106	64.4	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.400	2.400	0.0	1.000	76447	0.0263		115	84.2	
399.00 > 99.00	2.400	2.400	0.0	1.000	25729		2.97(1.90-5.70)	115	27.7	M
D 11 18O2 PFHxS										
403.00 > 84.00	2.400	2.400	0.0	0.872	5393615	2.42		102	6285	
76 DONA										
377.00 > 251.00	2.426	2.427	-0.001	0.774	156354	0.0250		106	366	
377.00 > 85.00	2.426	2.427	-0.001	0.774	64996		2.41(1.13-3.39)	106	92.0	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.719	2.720	-0.001	1.000	19935	0.0252		106	32.4	
D 12 M2-6:2FTS										
429.00 > 81.00	2.719	2.722	-0.003	0.988	842314	2.50		105	1643	
D 73 13C8 PFOA										
421.00 > 376.00	2.735	2.742	-0.007		6873704	2.44		99.7	14354	
D 14 13C4 PFOA										
417.00 > 372.00	2.751	2.752	-0.001	1.000	8599610	2.55		102	16617	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.751	2.752	-0.001	1.000	111776	0.0300		120	7.3	M
413.00 > 169.00	2.751	2.752	-0.001	1.000	37575		2.97(1.36-4.08)	120	65.3	
* 62 13C2-PFOA										
415.00 > 370.00	2.751	2.752	-0.001		8505698	2.50			14510	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.767	2.761	0.006	0.882	57275	0.0242		102	65.5	
449.00 > 99.00	2.767	2.761	0.006	0.882	13783		4.16(1.84-5.53)	102	63.8	
D 72 13C8 PFOS										
507.00 > 99.00	3.119	3.124	-0.005		1287254	2.54		106	3372	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.137	0.0	1.140	5622372	2.35		98.4	5301	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.137	3.137	0.0	1.000	85589	0.0264		106	8.7	M
463.00 > 169.00	3.137	3.137	0.0	1.000	15240		5.62(2.68-8.03)	106	31.3	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.137	0.0	1.140	7918937	2.54		101	12496	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.137	0.0	1.000	56038	0.0227		98.0	54.7	
499.00 > 99.00	3.137	3.137	0.0	1.000	17050		3.29(2.04-6.12)	98.0	48.5	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.353	3.346	0.007	1.069	70232	0.0249		107	185	
D 21 13C8 FOSA										
506.00 > 78.00	3.467	3.468	-0.001	1.260	3292559	2.56		102	4714	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.467	3.468	-0.001	1.000	95564	0.0247		98.9	188	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	37510	0.0233		97.3	65.2	
549.00 > 99.00	3.483	3.483	0.0	1.110	6673		5.62(3.02-9.05)	97.3	58.8	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	16311	0.0212		88.7	70.4	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	121458	2.51		105	557	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	8717513	2.57		103	15995	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	89221	0.0239		95.8	13.0	
513.00 > 169.00	3.499	3.499	0.0	1.000	6818		13.09(7.12-21.35)	95.8	17.2	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.658	3.651	0.007	1.329	3479194	2.37		94.7	4893	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.658	3.655	0.003	1.000	32611	0.0236		94.4	14.1	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.810	3.810	0.0	1.215	47327	0.0240		99.5	69.1	
599.00 > 99.00	3.810	3.810	0.0	1.215	11340		4.17(2.14-6.43)	99.5	59.3	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.826	3.819	0.007	1.391	3011744	2.70		108	2858	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.826	3.826	0.0	1.000	33429	0.0282		113	50.5	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.826	3.826	0.0	1.391	7290417	2.58		103	5079	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.826	3.826	0.0	1.000	65604	0.0260		104	14.2	
563.00 > 169.00	3.826	3.826	0.0	1.000	6383		10.28(5.24-15.72)	104	29.1	
35 MeFOSA										
512.00 > 169.00	3.963	3.963	0.0		20422	NC			100	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.995	3.987	0.008	1.273	87984	0.0264		112	294	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.126	4.125	0.001	1.185	15267	0.0306		127	46.9	
D 36 13C2 PFDaA										
615.00 > 570.00	4.126	4.125	0.001	1.500	8340078	2.55		102	11278	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.126	4.125	0.001	1.000	89490	0.0262		105	20.4	
613.00 > 169.00	4.126	4.125	0.001	1.000	11639		7.69(4.68-14.05)	105	27.5	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.360	4.360	0.0	1.390	5439	0.0232		96.0	13.9	
699.00 > 99.00	4.360	4.360	0.0	1.390	10318		0.53(0.28-0.83)	96.0	62.5	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.391	4.391	0.0	1.064	74745	0.0274		109	27.9	
663.00 > 169.00	4.391	4.391	0.0	1.064	9992		7.48(3.09-9.27)	109	42.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 43 13C2-PFTeDA										
715.00 > 670.00	4.633	4.634	-0.001	1.684	6427561	2.43		97.1	14797	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.633	4.634	-0.001	1.000	11720	0.0280		112	82.8	
713.00 > 219.00	4.633	4.634	-0.001	1.000	9305		1.26(0.70-2.09)	112	75.9	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.062	5.061	0.001	1.000	130272	0.0232		92.7	39.7	
813.00 > 169.00	5.062	5.061	0.001	1.000	23024		5.66(2.77-8.32)	92.7	75.6	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.062	5.061	0.001	1.840	7150348	2.47		98.7	11639	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.422	5.421	0.001	1.071	50881	0.0249		99.5	16.2	
913.00 > 169.00	5.422	5.421	0.001	1.071	9615		5.29(2.55-7.64)	99.5	69.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL1_00010

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

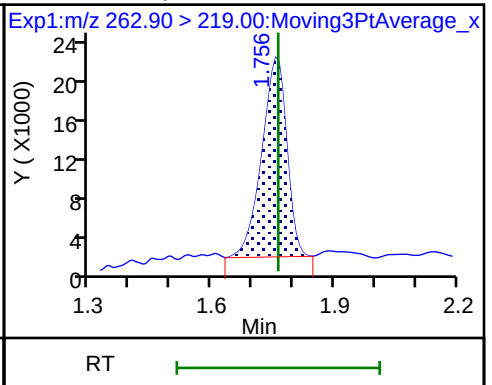
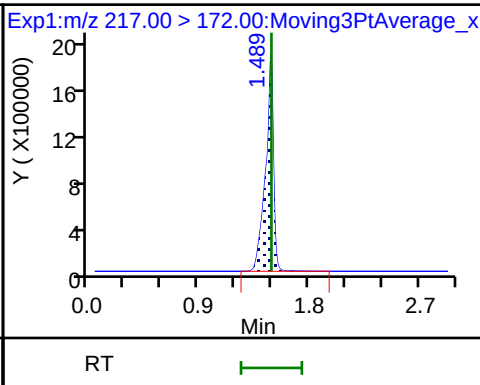
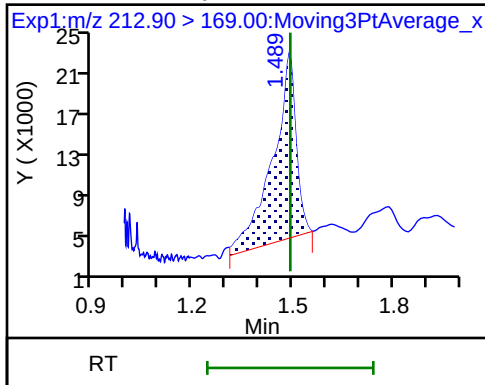
Method: PFAS_A9

Limit Group: LC PFC ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

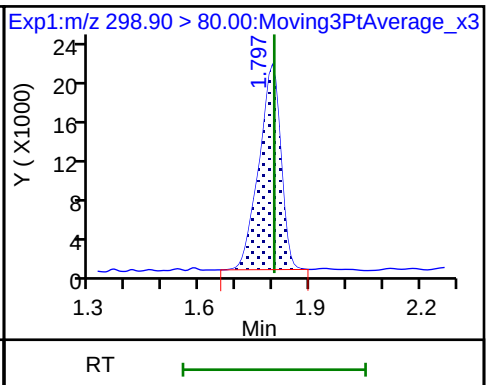
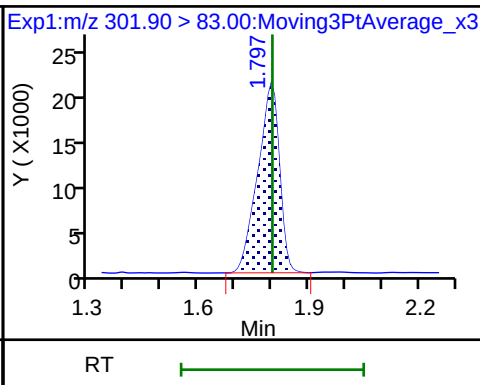
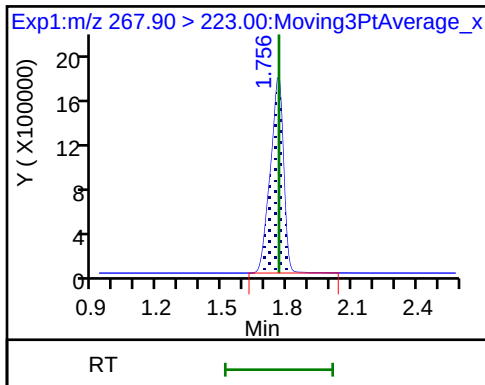
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

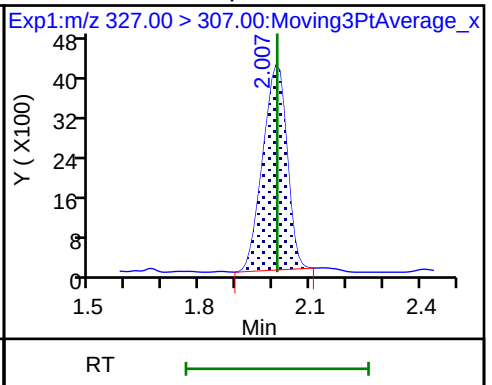
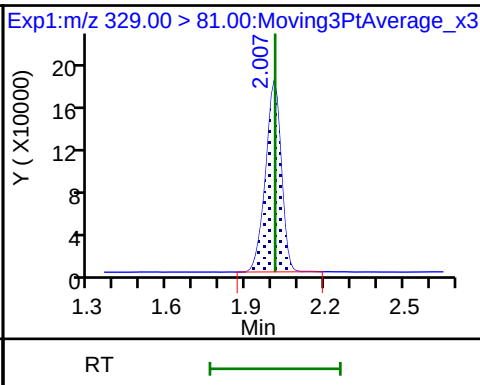
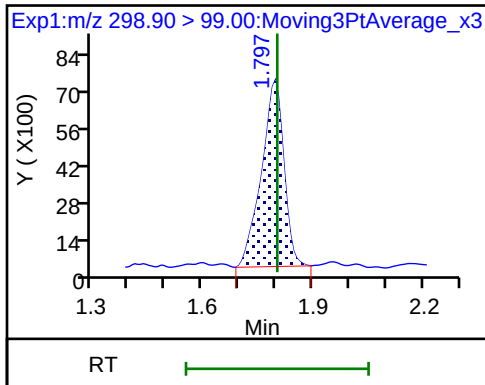
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 60 M2-4:2FTS

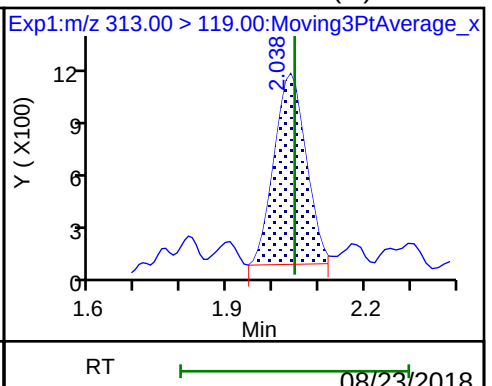
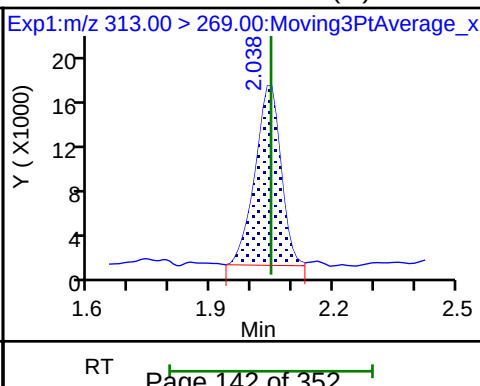
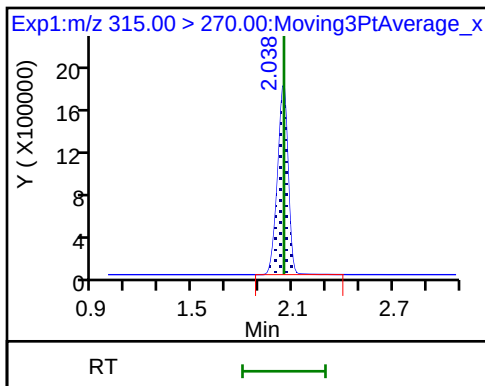
61 1H,1H,2H,2H-perfluorohexanesulfoni

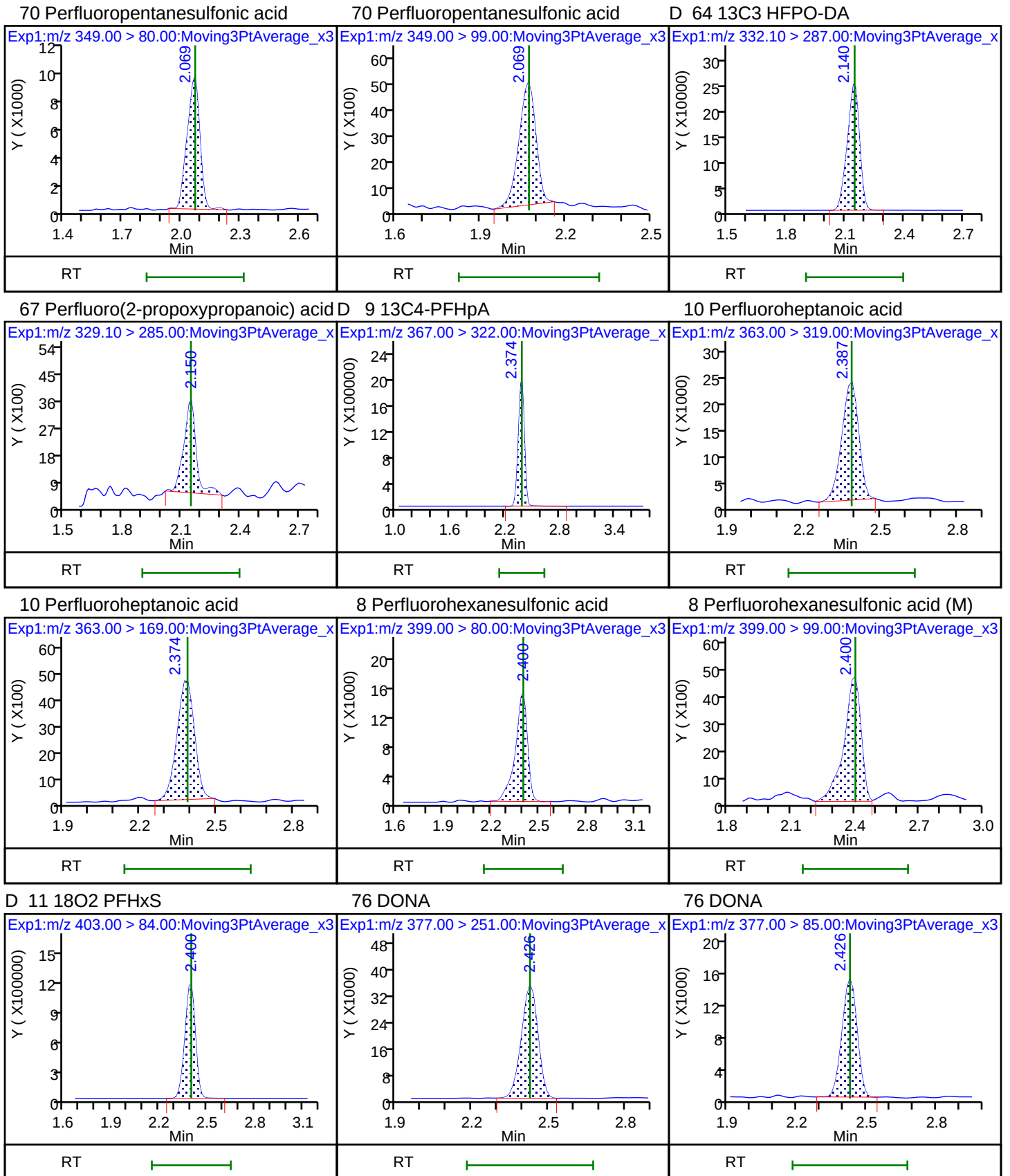


D 7 13C2 PFHxA

6 Perfluorohexanoic acid (M)

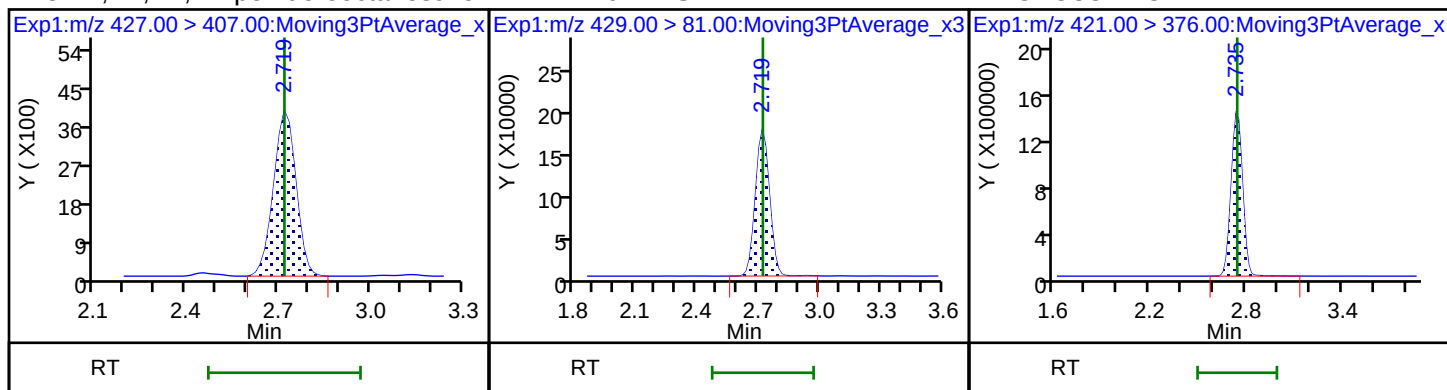
6 Perfluorohexanoic acid (M)





13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

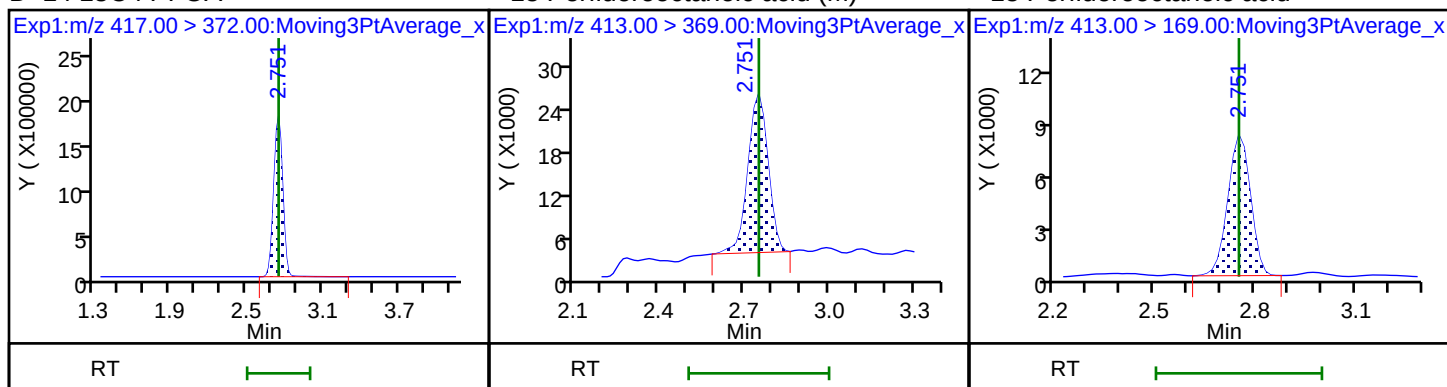
D 73 13C8 PFOA



D 14 13C4 PFOA

15 Perfluorooctanoic acid (M)

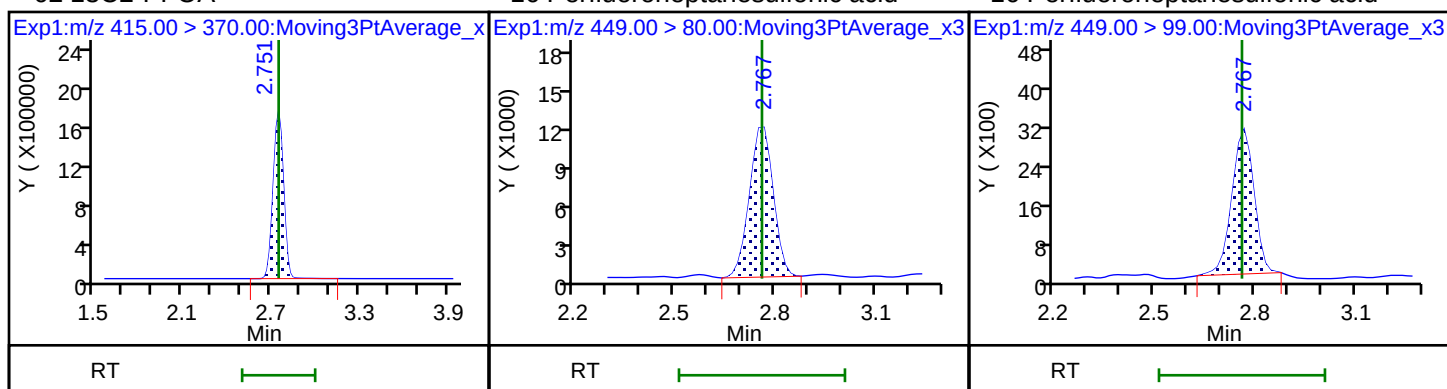
15 Perfluorooctanoic acid



* 62 13C2-PFOA

16 Perfluoroheptanesulfonic acid

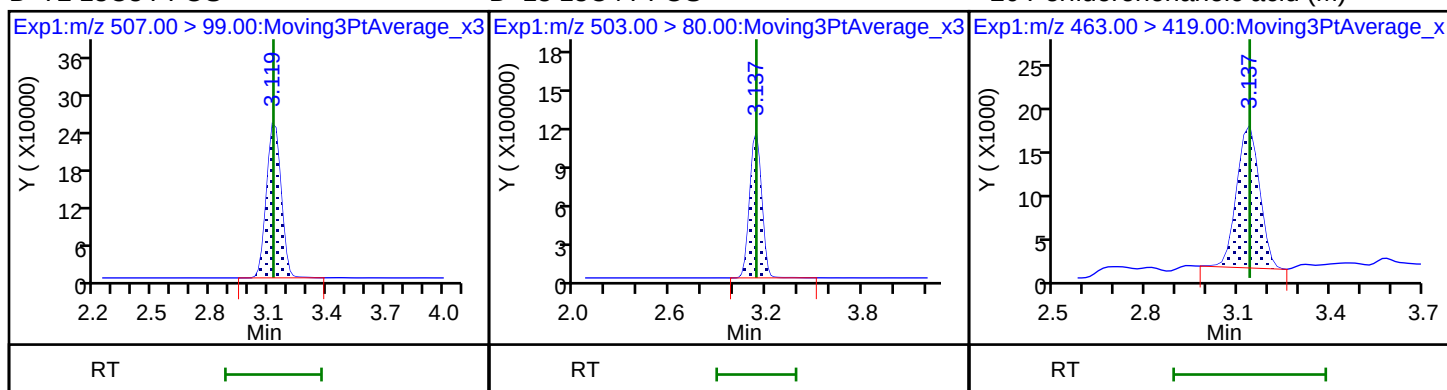
16 Perfluoroheptanesulfonic acid

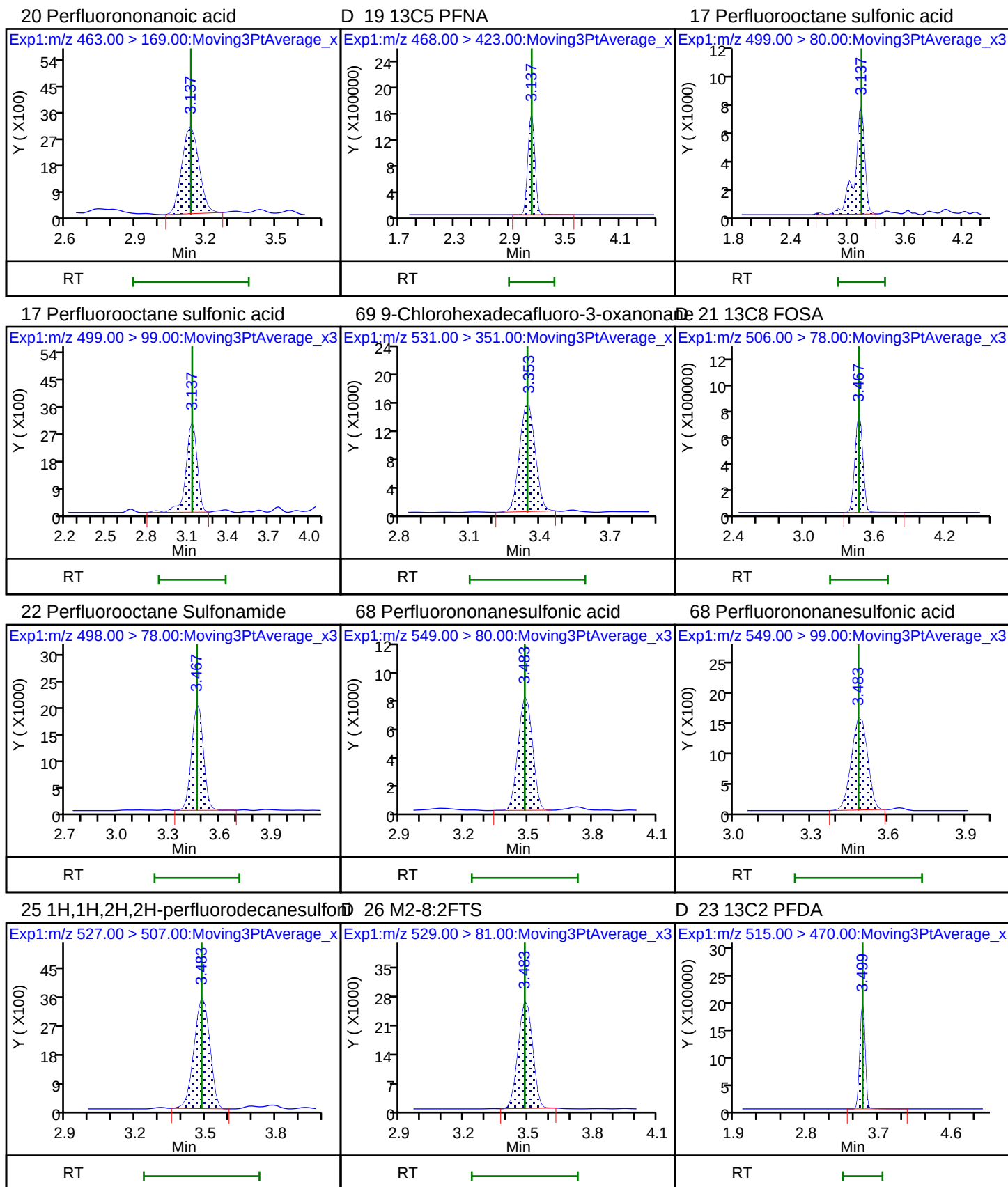


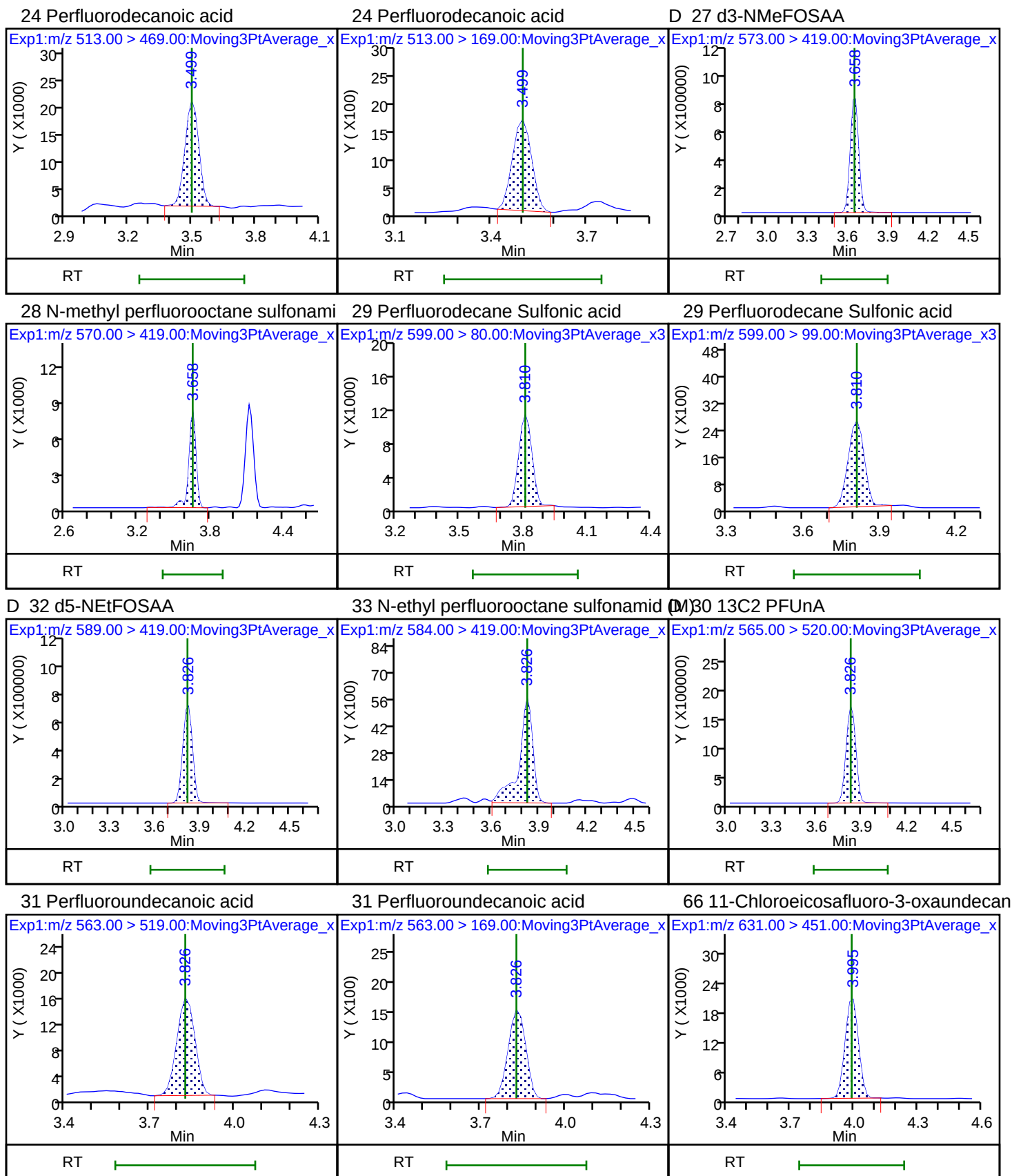
D 72 13C8 PFOS

D 18 13C4 PFOS

20 Perfluorononanoic acid (M)

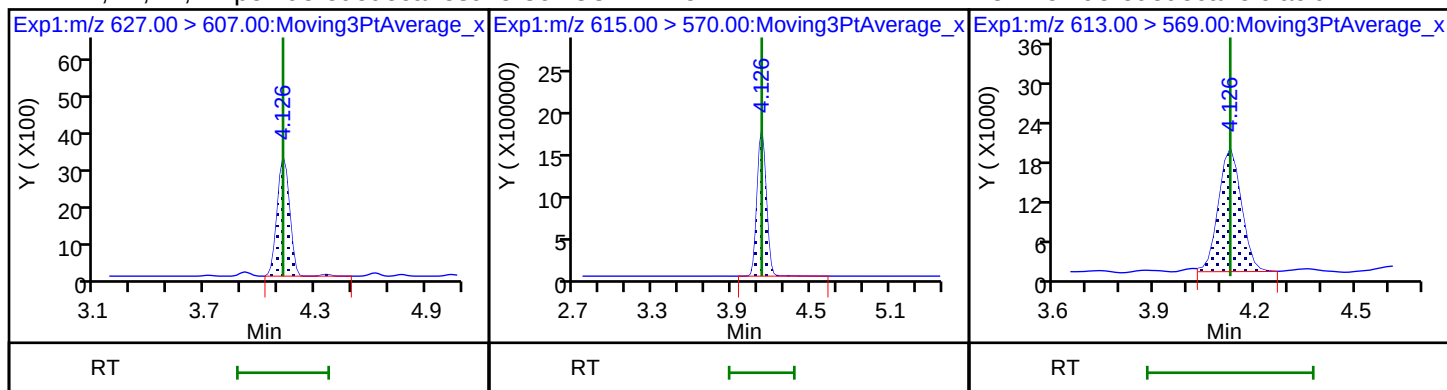






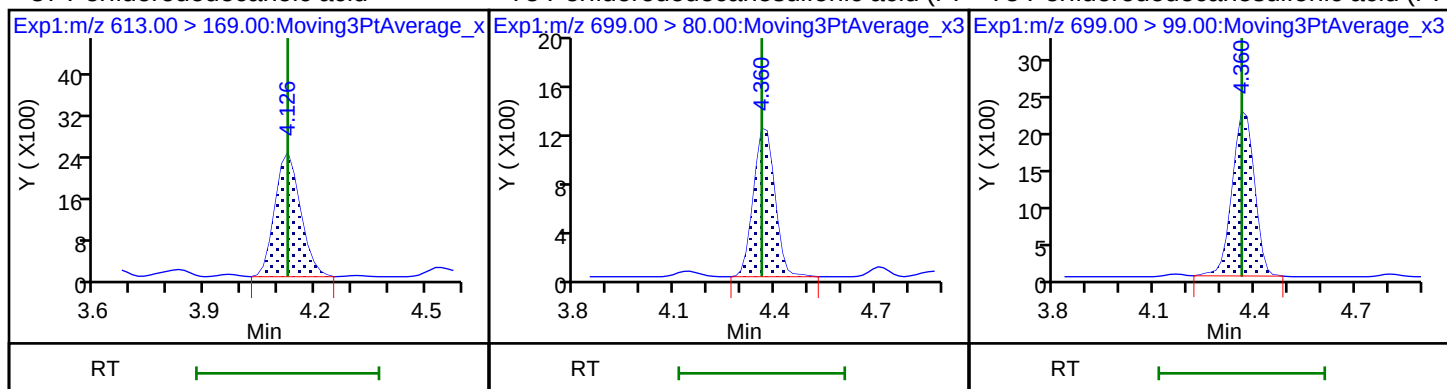
74 1H,1H,2H,2H-perfluorododecanesulfonate 36 13C2 PFDaA

37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

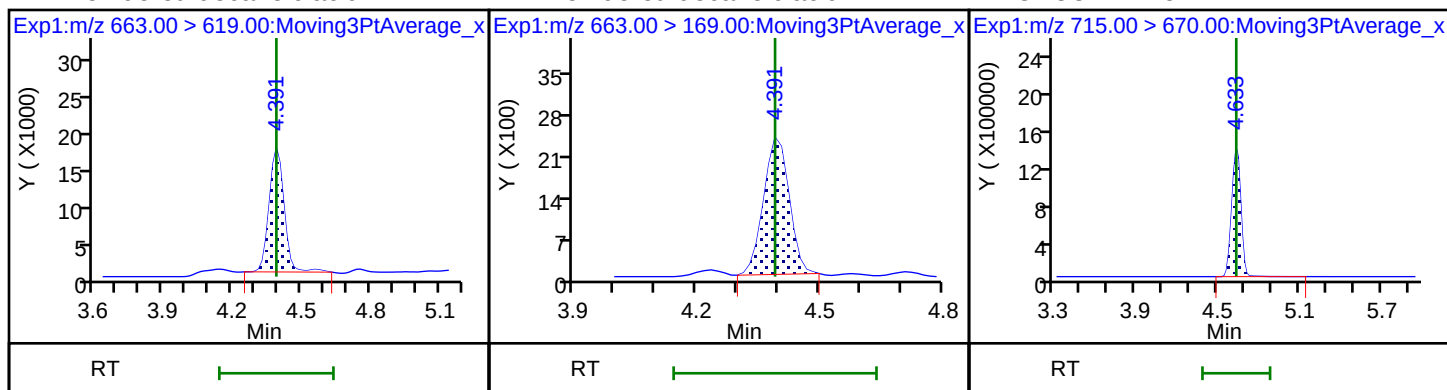
75 Perfluorododecanesulfonic acid (PF 75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

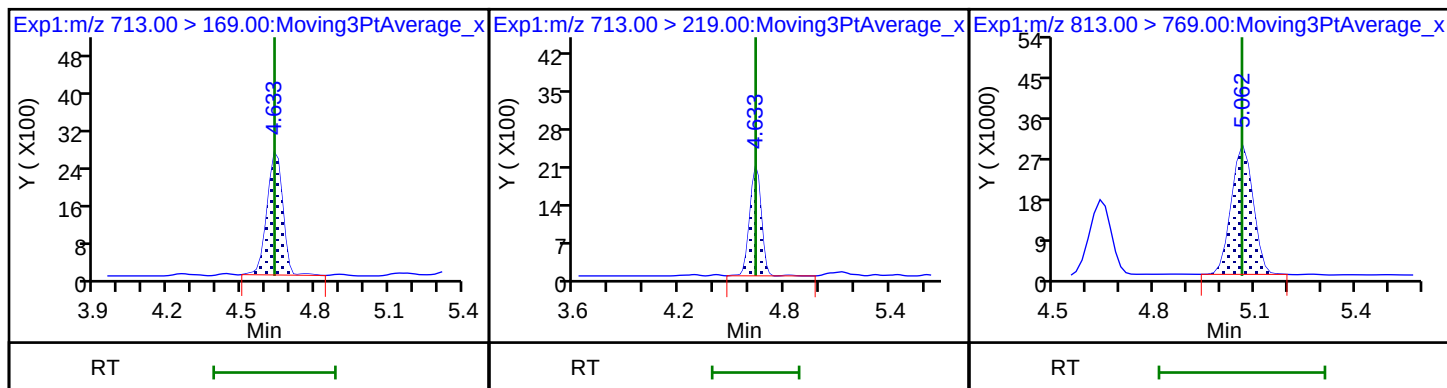
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

45 Perfluorohexadecanoic acid

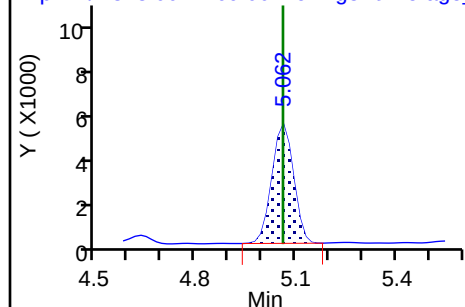


45 Perfluorohexadecanoic acid

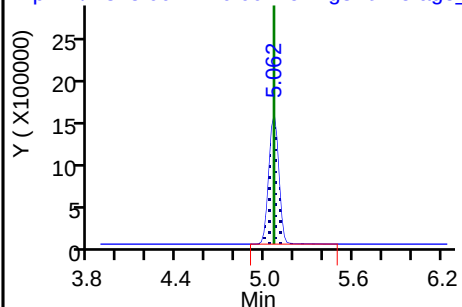
D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid

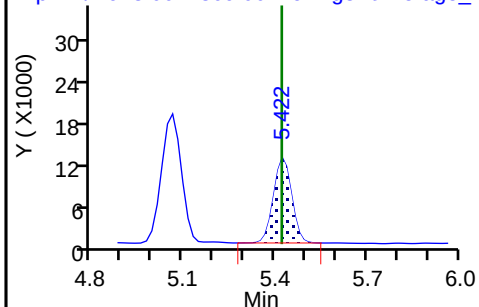
Exp1:m/z 813.00 > 169.00:Moving3PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving3PtAverage_x

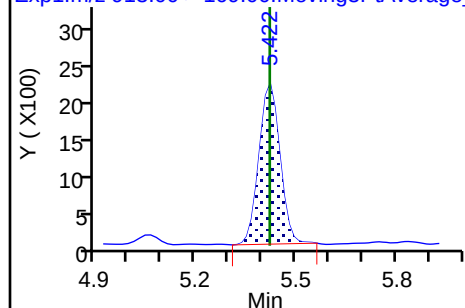


Exp1:m/z 913.00 > 869.00:Moving3PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 169.00:Moving3PtAverage_x



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

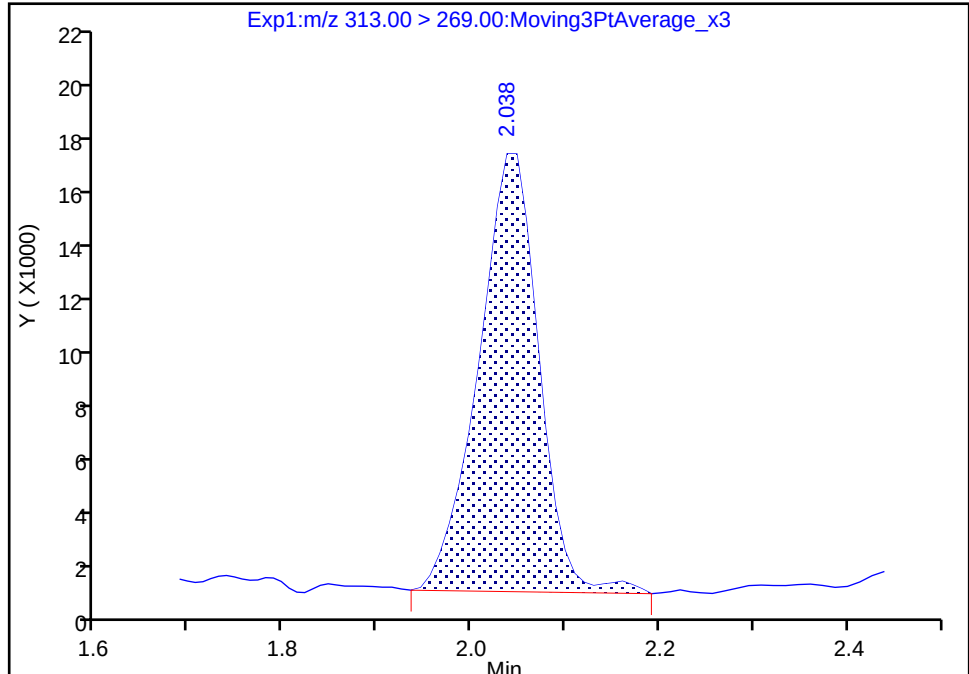
Detector: EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

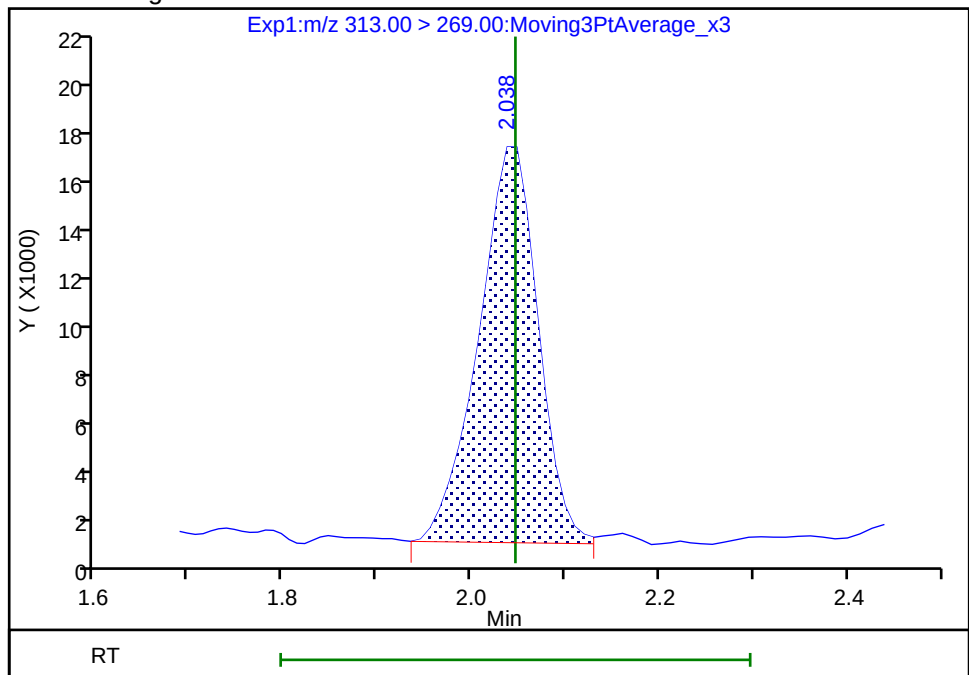
RT: 2.04
Area: 73146
Amount: 0.026617
Amount Units: ng/ml

Processing Integration Results



RT: 2.04
Area: 72038
Amount: 0.026274
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:57:30

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#:

10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor:

1.0000

Method: PFAS_A9

Limit Group:

LC PFC ICAL

Column:

Detector

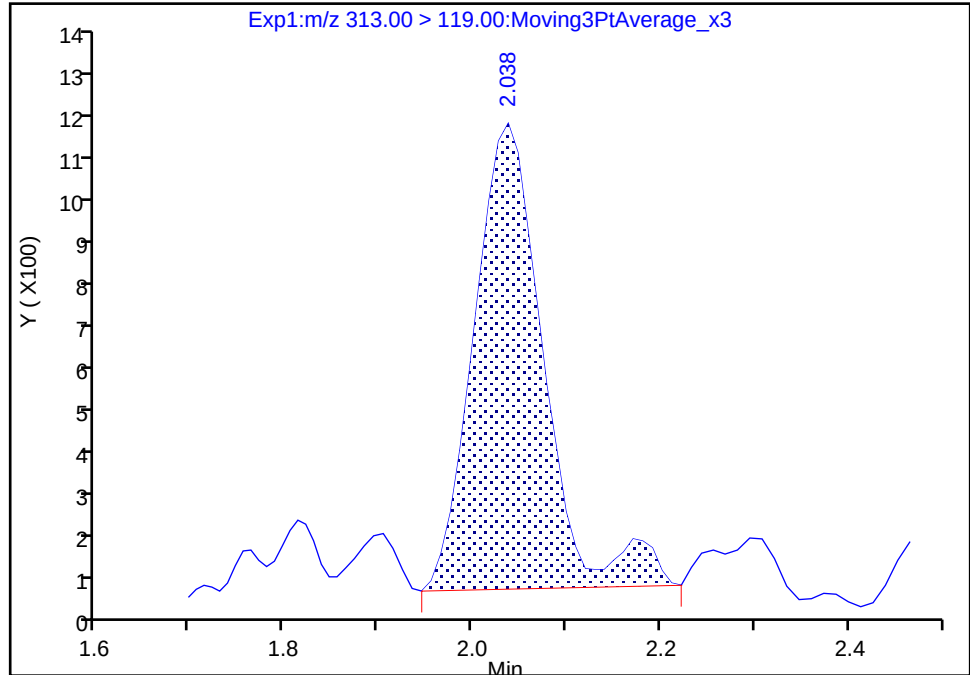
EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

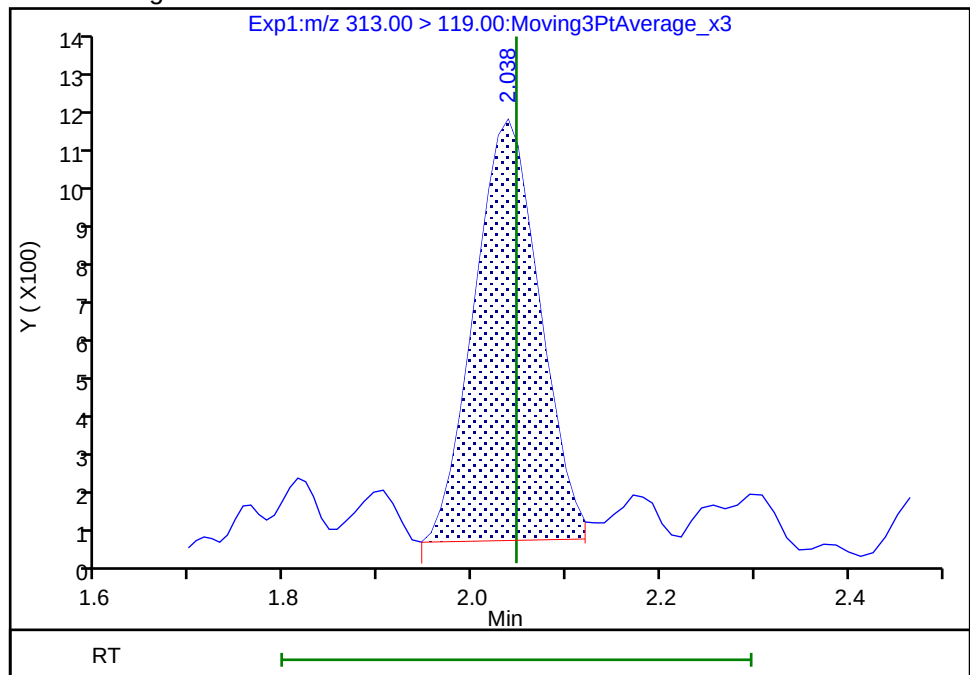
RT: 2.04
Area: 5377
Amount: 0.026617
Amount Units: ng/ml

Processing Integration Results



RT: 2.04
Area: 5030
Amount: 0.026274
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:57:32

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

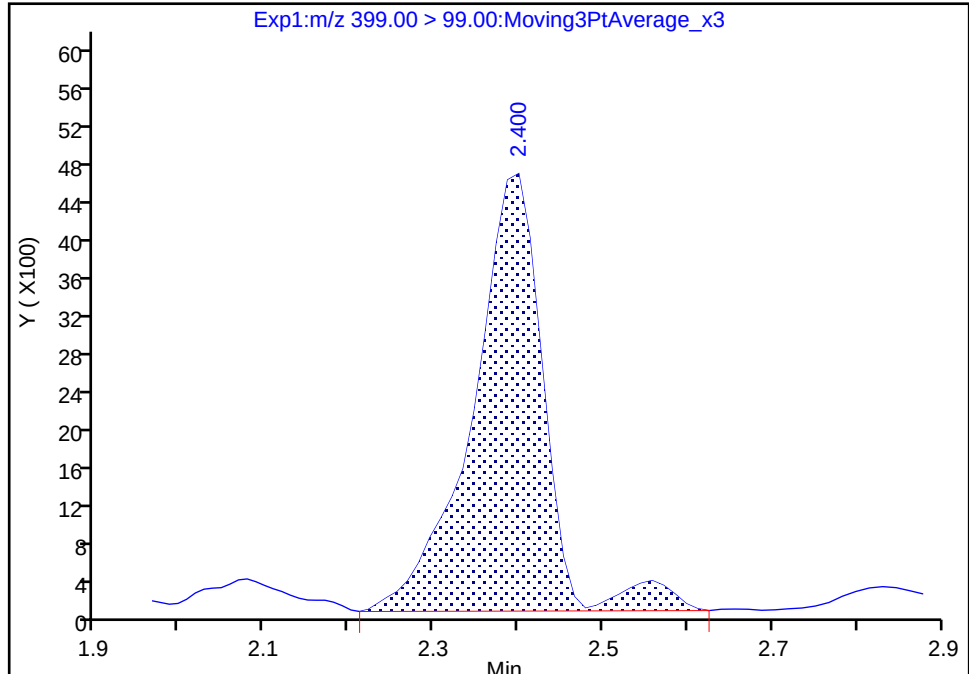
Detector: EXP1

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

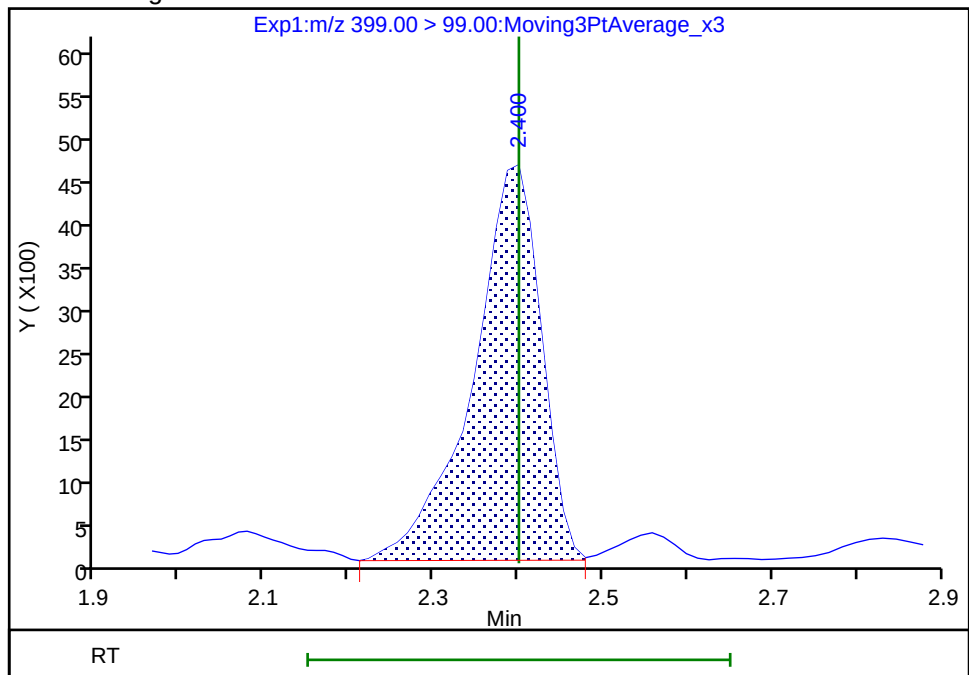
RT: 2.40
Area: 27106
Amount: 0.026275
Amount Units: ng/ml

Processing Integration Results



RT: 2.40
Area: 25729
Amount: 0.026275
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:57:42

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

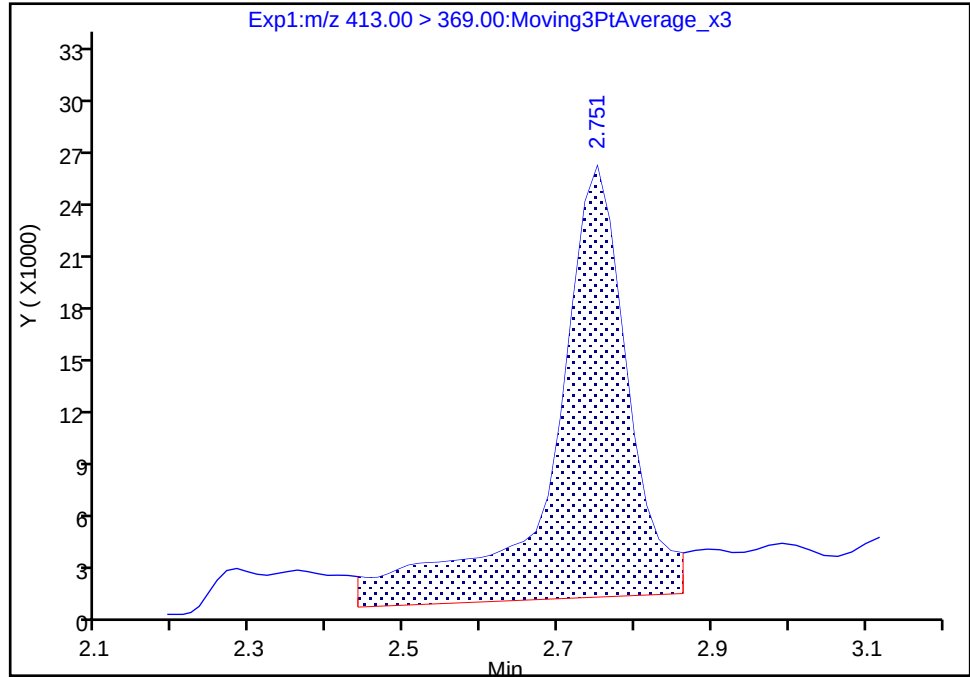
Detector: EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

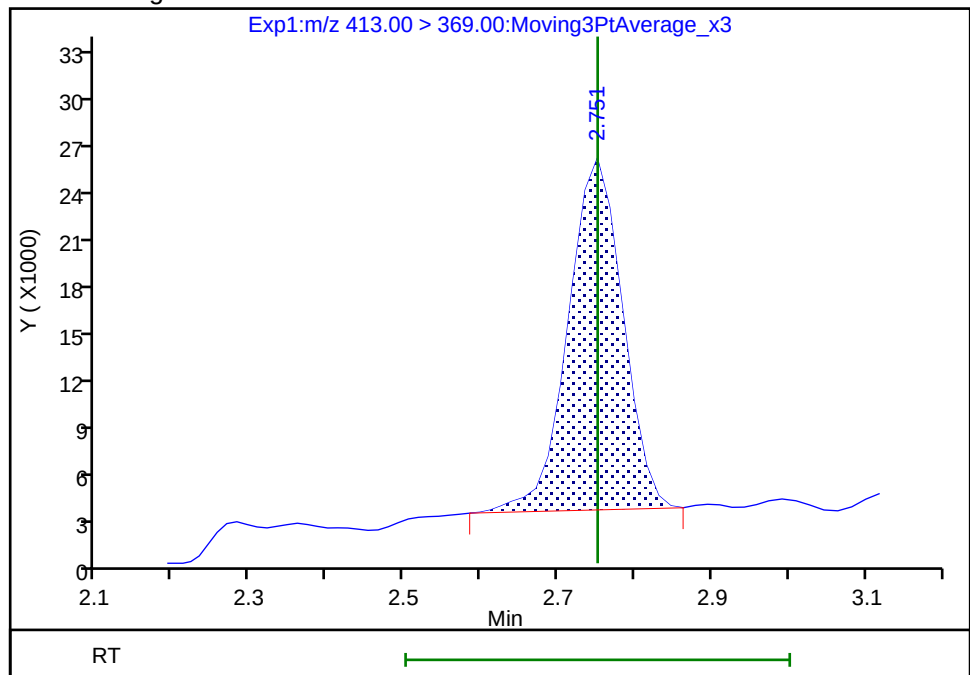
RT: 2.75
Area: 171628
Amount: 0.042242
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 111776
Amount: 0.030037
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:57:52

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

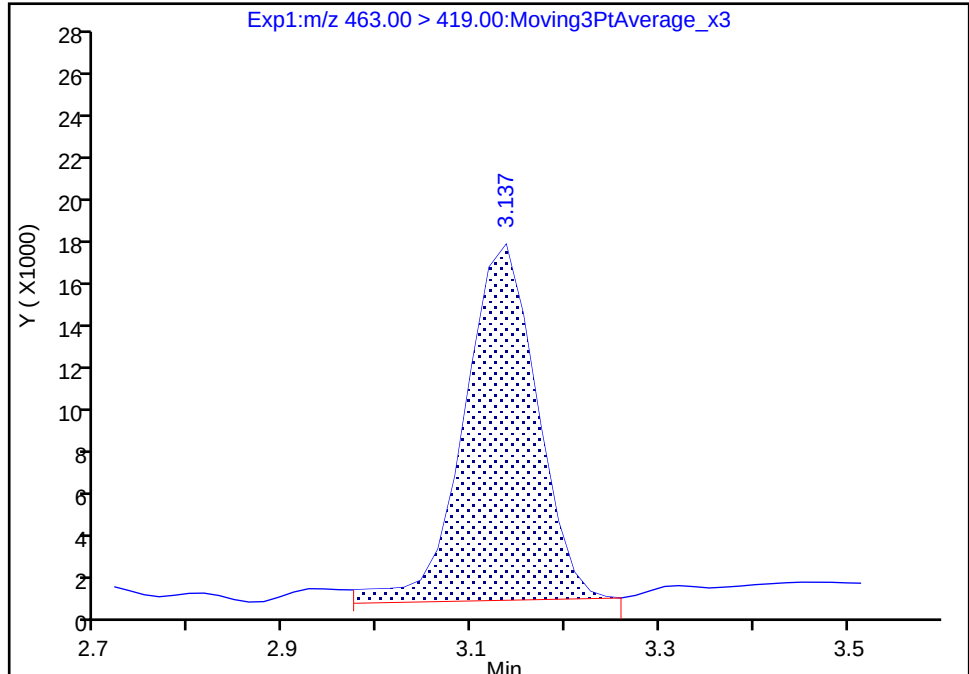
Detector: EXP1

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

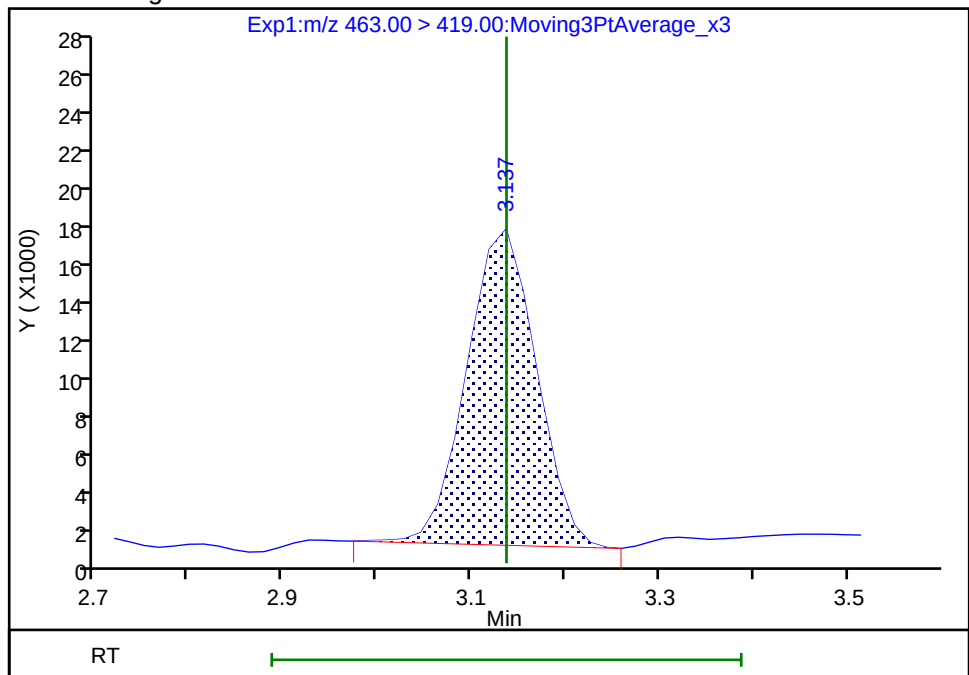
RT: 3.14
Area: 91017
Amount: 0.027800
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 85589
Amount: 0.026392
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:58:05

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_005.d

Injection Date: 14-Aug-2018 14:32:49

Instrument ID: A9

Lims ID: IC L1 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

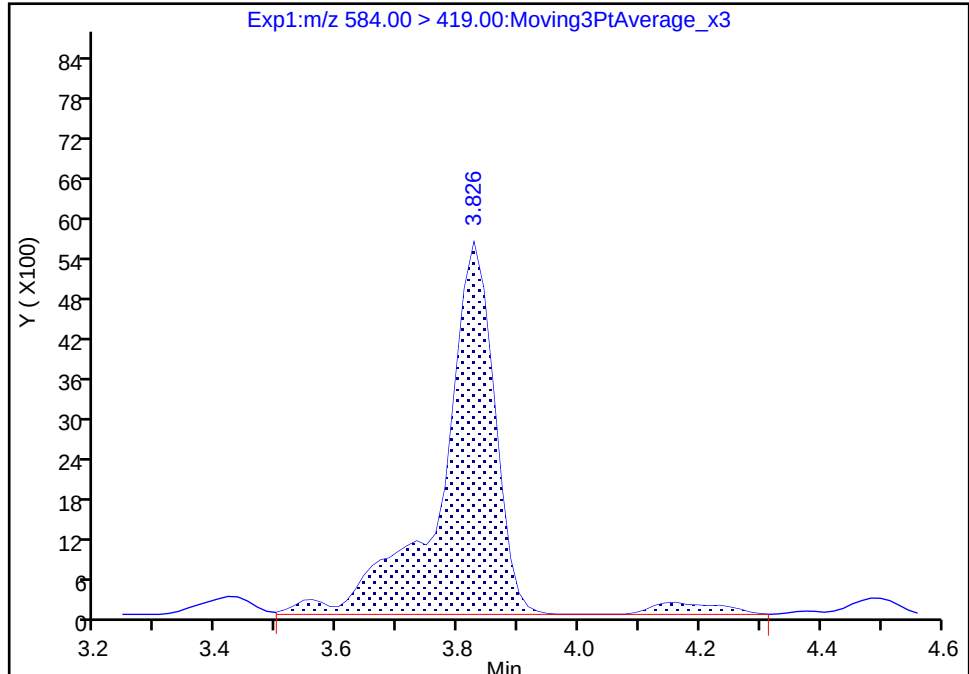
Detector: EXP1

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

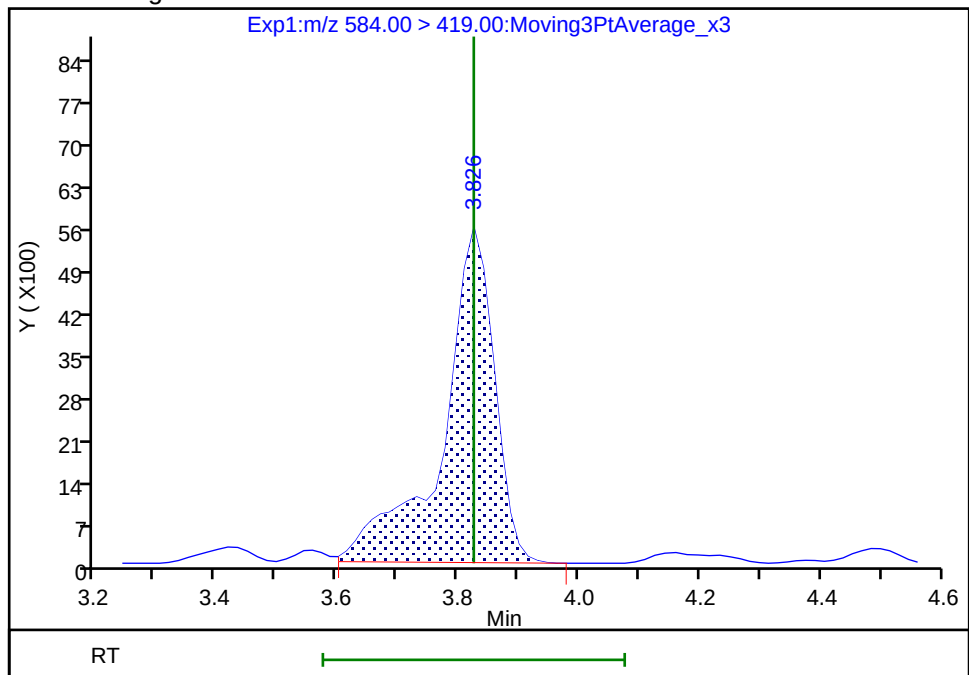
RT: 3.83
Area: 36001
Amount: 0.030019
Amount Units: ng/ml

Processing Integration Results



RT: 3.83
Area: 33429
Amount: 0.028220
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:58:24

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_006.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 14-Aug-2018 14:40:21 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:15:39 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 14:58:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.489	1.492	-0.003	0.541	7894768	2.47		98.8	11622	
2 Perfluorobutyric acid										
212.90 > 169.00	1.489	1.492	-0.003	1.000	147102	0.0493		98.5	8.7	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.762	0.002	0.641	7023276	2.46		98.6	8262	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.762	0.002	1.000	153782	0.0535		107	14.7	
D 47 13C3-PFBS										
301.90 > 83.00	1.798	1.800	-0.002	0.653	82837	2.24		96.3	438	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.798	1.802	-0.004	1.000	169552	0.0457		103	30.6	
298.90 > 99.00	1.798	1.802	-0.004	1.000	63534		2.67(1.35-4.05)	103	25.2	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.008	2.010	-0.002	1.117	35528	0.0478		102	281	
D 60 M2-4:2FTS										
329.00 > 81.00	2.008	2.010	-0.002	0.730	764250	2.49		107	868	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.046	0.002	0.744	7398722	2.46		98.4	8187	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.047	0.001	1.000	144934	0.0547		109	32.0	
313.00 > 119.00	2.038	2.047	-0.009	0.995	11140		13.01(6.96-20.87)	109	27.0	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.069	2.070	-0.001	1.151	81190	0.0460		98.2	173	
349.00 > 99.00	2.069	2.070	-0.001	1.151	35434		2.29(1.15-3.45)	98.2	57.8	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.141	2.146	-0.005	0.778	930512	2.38		95.3	2509	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										M
329.10 > 285.00	2.151	2.149	0.002	1.005	31294	0.0545		109	13.7	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.384	0.003	0.868	8711868	2.44		97.8	23054	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.385	0.002	1.000	205394	0.0557		111	28.2	
363.00 > 169.00	2.374	2.385	-0.011	0.994	40429		5.08(2.17-6.52)	111	86.7	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.400	0.001	1.000	142930	0.0509		112	166	
399.00 > 99.00	2.401	2.400	0.001	1.000	39123		3.65(1.90-5.70)	112	52.8	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.400	0.001	0.872	5209540	2.38		101	7823	
76 DONA										
377.00 > 251.00	2.427	2.427	0.0	0.774	313240	0.0501		106	629	
377.00 > 85.00	2.427	2.427	0.0	0.774	126243		2.48(1.13-3.39)	106	189	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	1.000	35954	0.0499		105	60.7	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.722	-0.002	0.988	768192	2.33		97.9	1649	
D 73 13C8 PFOA										
421.00 > 376.00	2.736	2.742	-0.006		6727469	2.39		97.6	5036	
* 62 13C2-PFOA										
415.00 > 370.00	2.752	2.752	0.0		8351610	2.50			15860	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.752	2.752	0.0	1.000	203941	0.0560		112	13.0	
413.00 > 169.00	2.752	2.752	0.0	1.000	73153		2.79(1.36-4.08)	112	103	
D 14 13C4 PFOA										
417.00 > 372.00	2.752	2.752	0.0	1.000	8408666	2.54		102	17409	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.752	2.761	-0.009	0.877	106237	0.0448		94.2	160	
449.00 > 99.00	2.752	2.761	-0.009	0.877	30828		3.45(1.84-5.53)	94.2	97.4	
D 72 13C8 PFOS										
507.00 > 99.00	3.119	3.124	-0.005		1172809	2.32		96.9	1536	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.137	0.0	1.140	7801711	2.55		102	11599	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.137	3.137	0.0	1.000	105852	0.0429		92.5	117	M
499.00 > 99.00	3.137	3.137	0.0	1.000	28083		3.77(2.04-6.12)	92.5	81.9	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.137	0.0	1.140	5628630	2.40		100	5145	
20 Perfluorononanoic acid										
463.00 > 419.00	3.137	3.137	0.0	1.000	176839	0.0553		111	18.5	
463.00 > 169.00	3.137	3.137	0.0	1.000	32406		5.46(2.68-8.03)	111	70.3	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.354	3.346	0.008	1.069	133756	0.0473		101	302	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.468	3.468	0.0	1.000	192783	0.0514		103	271	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.468	0.0	1.260	3197848	2.53		101	5980	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	115636	2.43		102	553	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	37778	0.0517		108	117	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	78457	0.0488		102	154	
549.00 > 99.00	3.483	3.483	0.0	1.110	16725		4.69(3.02-9.05)	102	157	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	8282585	2.49		99.6	15922	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	194562	0.0549		110	33.8	M
513.00 > 169.00	3.499	3.499	0.0	1.000	11481		16.95(7.12-21.35)	110	28.0	M
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.657	3.651	0.006	1.329	3639516	2.52		101	7965	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.657	3.655	0.002	1.000	78017	0.0539		108	26.3	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.810	3.810	0.0	1.214	90555	0.0458		95.1	167	
599.00 > 99.00	3.810	3.810	0.0	1.214	19240		4.71(2.14-6.43)	95.1	142	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.825	3.819	0.006	1.390	3000388	2.74		110	2165	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.825	3.826	-0.001	1.000	136908	0.0551		110	28.9	
563.00 > 169.00	3.825	3.826	-0.001	1.000	10652		12.85(5.24-15.72)	110	57.4	
D 30 13C2 PFUnA										
565.00 > 520.00	3.825	3.826	-0.001	1.390	7168778	2.59		103	17349	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.825	3.826	-0.001	1.000	55561	0.0471		94.2	93.1	
35 MeFOSA										
512.00 > 169.00	3.962	3.963	-0.001		29075	NC			103	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.994	3.987	0.007	1.273	166436	0.0498		106	587	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.125	4.125	0.0	1.184	18767	0.0395		82.0	62.5	M
37 Perfluorododecanoic acid										
613.00 > 569.00	4.125	4.125	0.0	1.000	186049	0.0553		111	41.7	
613.00 > 169.00	4.125	4.125	0.0	1.000	19378		9.60(4.68-14.05)	111	52.8	
D 36 13C2 PFDaA										
615.00 > 570.00	4.125	4.125	0.0	1.499	8212619	2.55		102	8132	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.360	4.360	0.0	1.390	13632	0.0582		120	36.7	
699.00 > 99.00	4.360	4.360	0.0	1.390	20812		0.66(0.28-0.83)	120	104	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.391	4.391	0.0	1.064	145190	0.0540		108	50.5	
663.00 > 169.00	4.391	4.391	0.0	1.064	22568		6.43(3.09-9.27)	108	84.5	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.633	4.634	-0.001	1.000	22726	0.0521		104	142	
713.00 > 219.00	4.633	4.634	-0.001	1.000	14864		1.53(0.70-2.09)	104	87.4	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.633	4.634	-0.001	1.684	6699736	2.58		103	14690	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.062	5.061	0.001	1.840	7227164	2.54		102	10609	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.062	5.061	0.001	1.000	199682	0.0492		98.4	56.2	
813.00 > 169.00	5.062	5.061	0.001	1.000	36445		5.48(2.77-8.32)	98.4	114	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.422	5.421	0.001	1.071	105984	0.0513		103	32.2	
913.00 > 169.00	5.422	5.421	0.001	1.071	20118		5.27(2.55-7.64)	103	176	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL2_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_006.d

Injection Date: 14-Aug-2018 14:40:21

Instrument ID: A9

Lims ID: IC L2 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

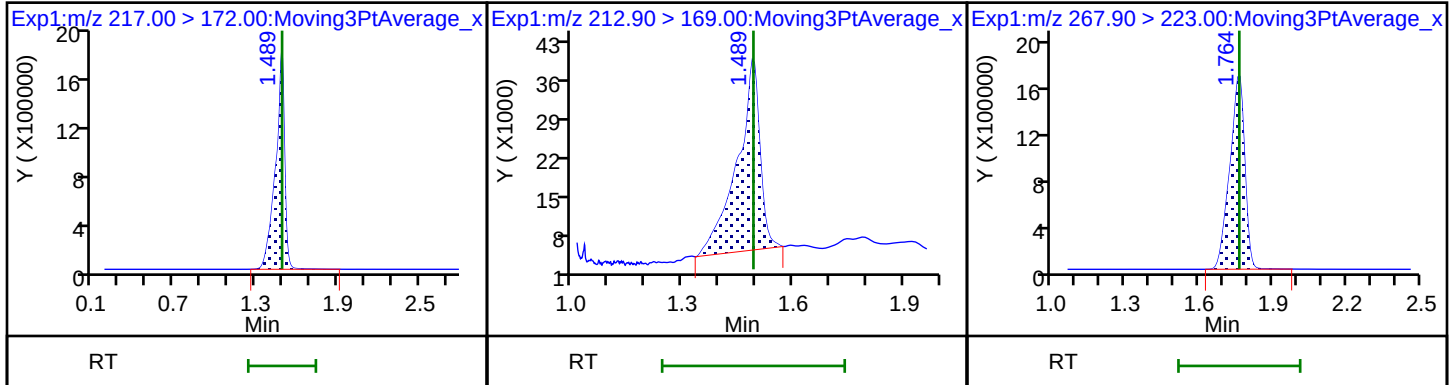
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

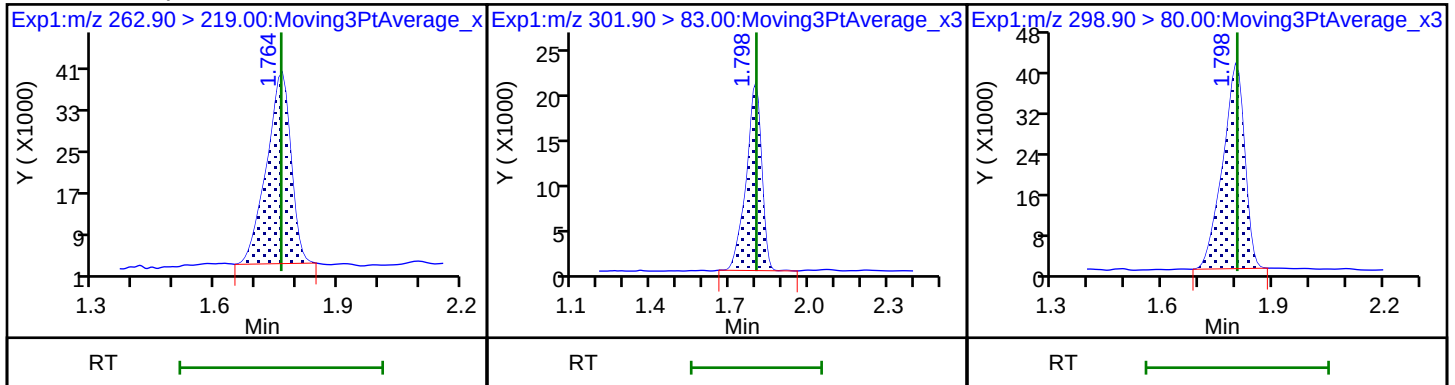
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

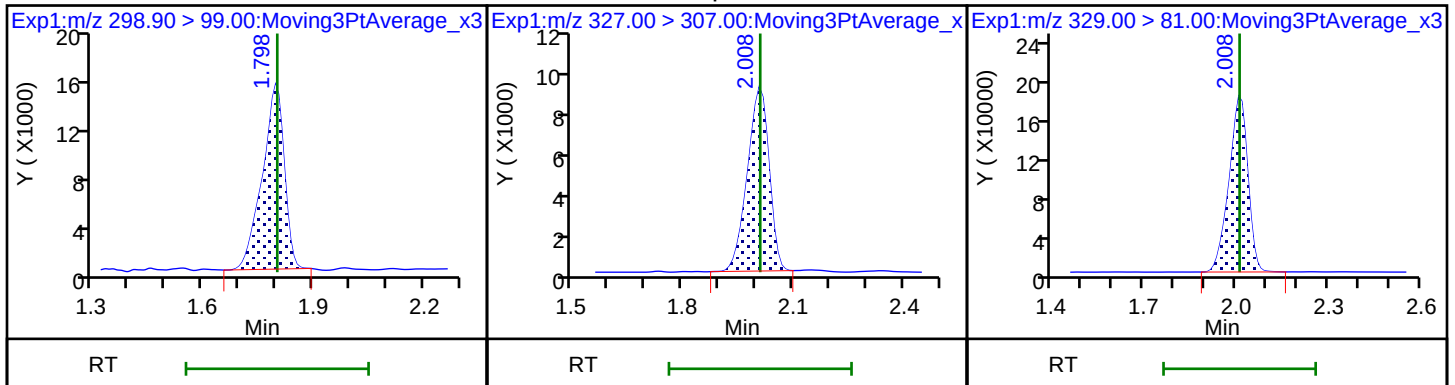
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

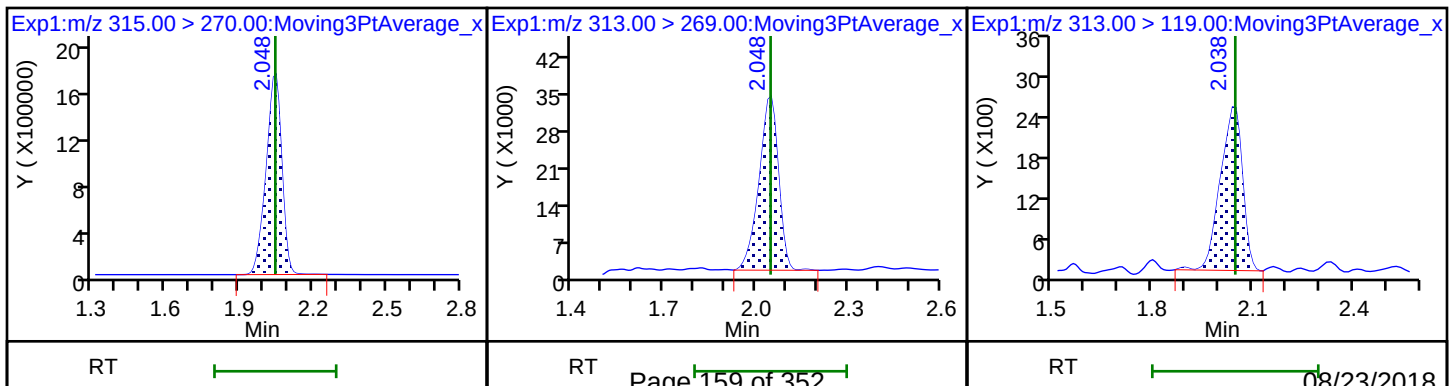
D 60 M2-4:2FTS



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

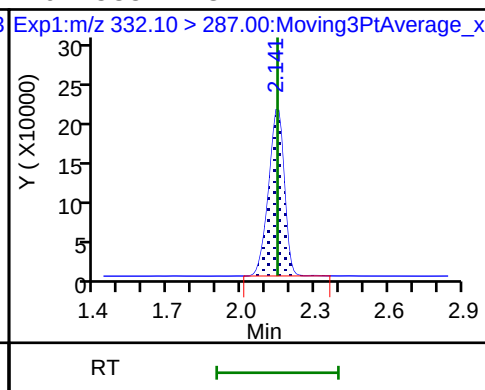
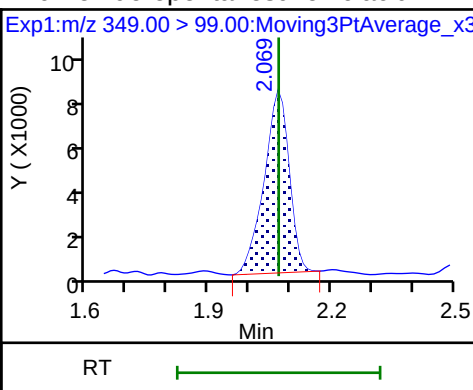
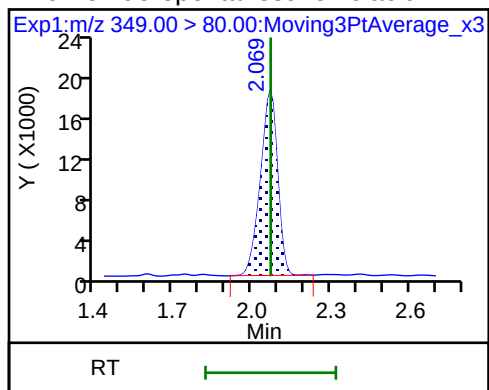
6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid

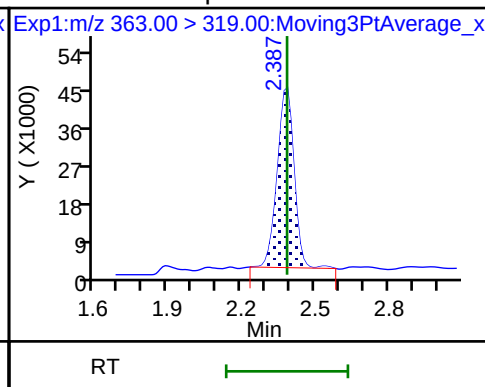
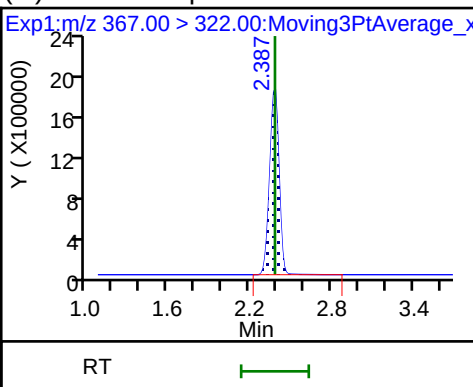
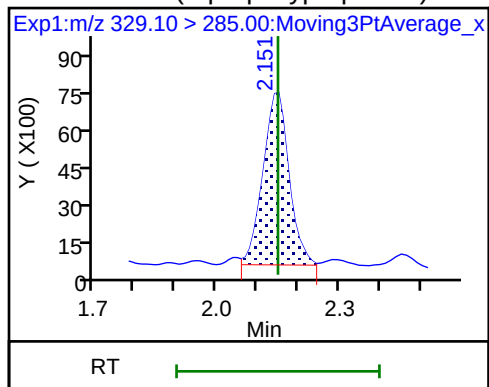
70 Perfluoropentanesulfonic acid

D 64 13C3 HFPO-DA



67 Perfluoro(2-propoxypropanoic) acid (M)9 13C4-PFHpA

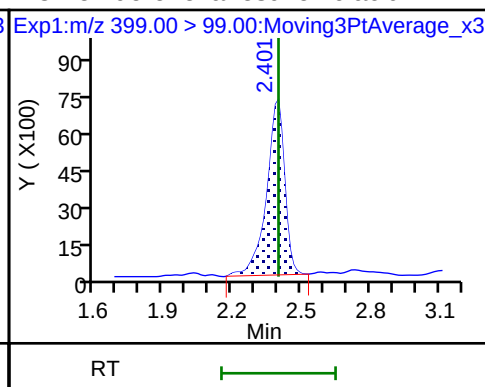
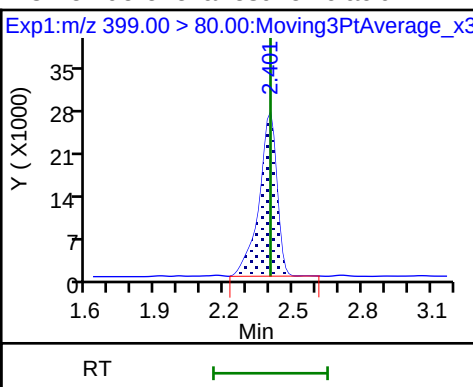
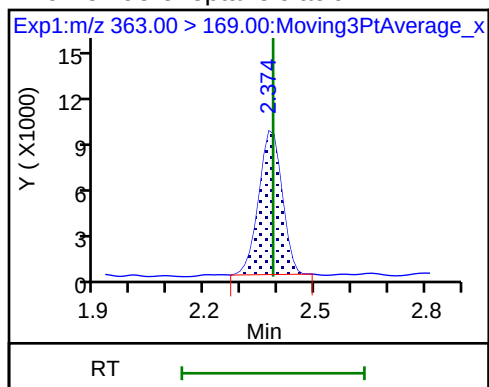
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

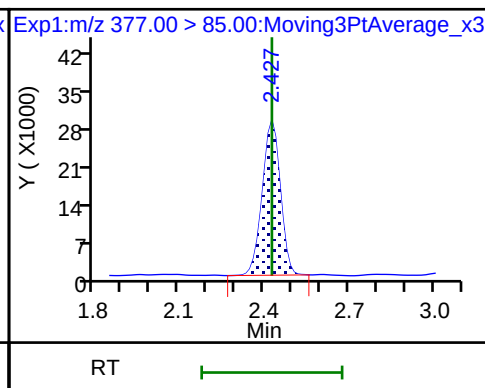
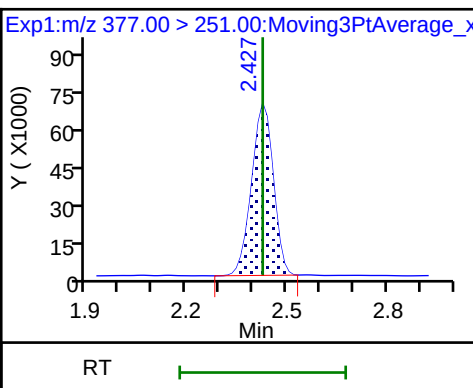
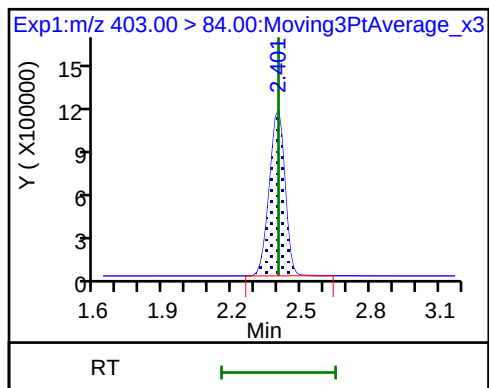
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

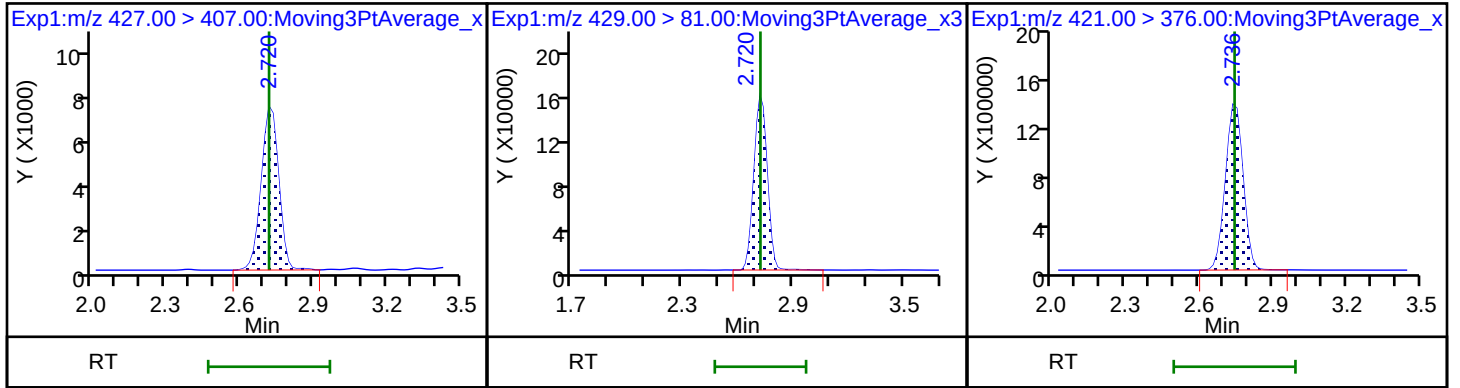
76 DONA

76 DONA



13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

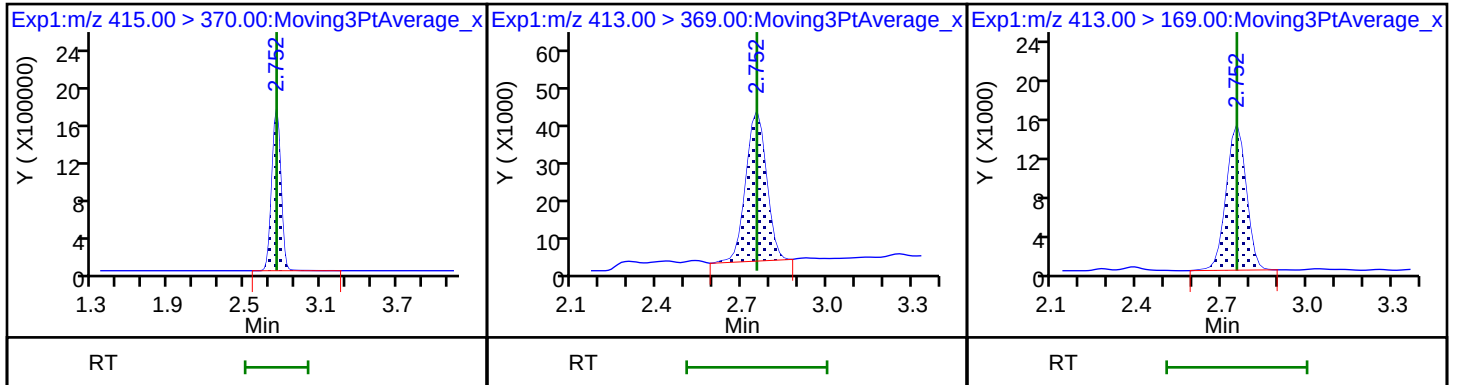
D 73 13C8 PFOA



* 62 13C2-PFOA

15 Perfluorooctanoic acid

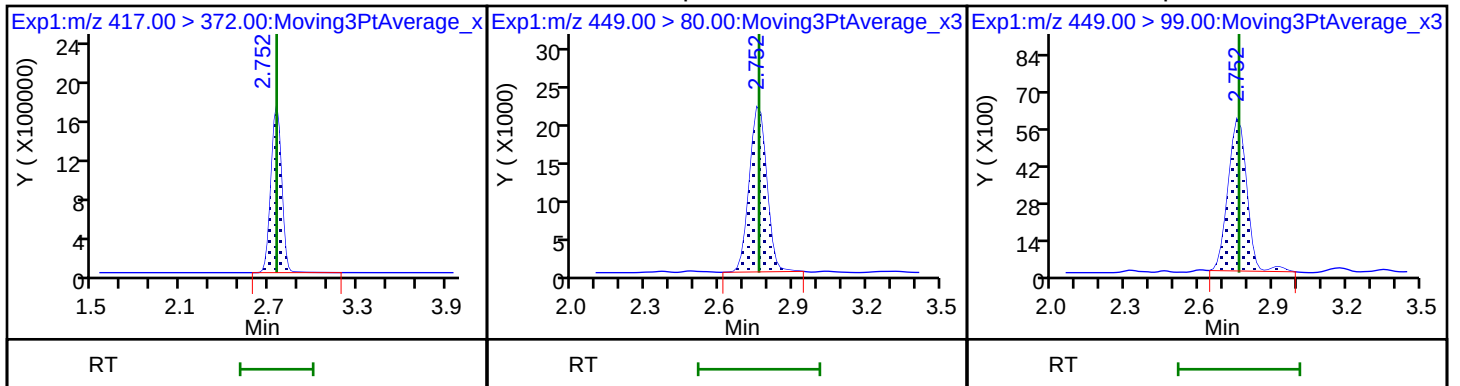
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

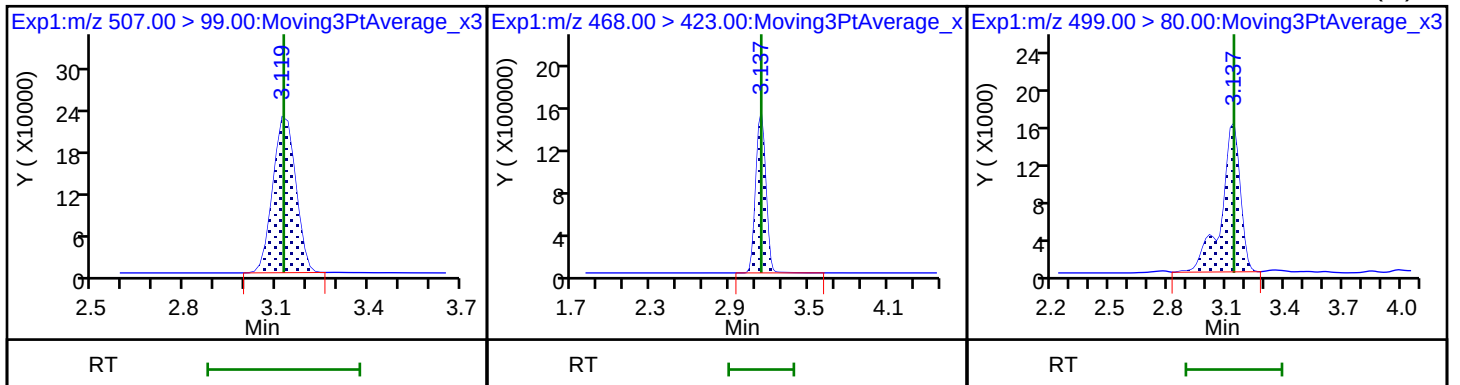
16 Perfluoroheptanesulfonic acid

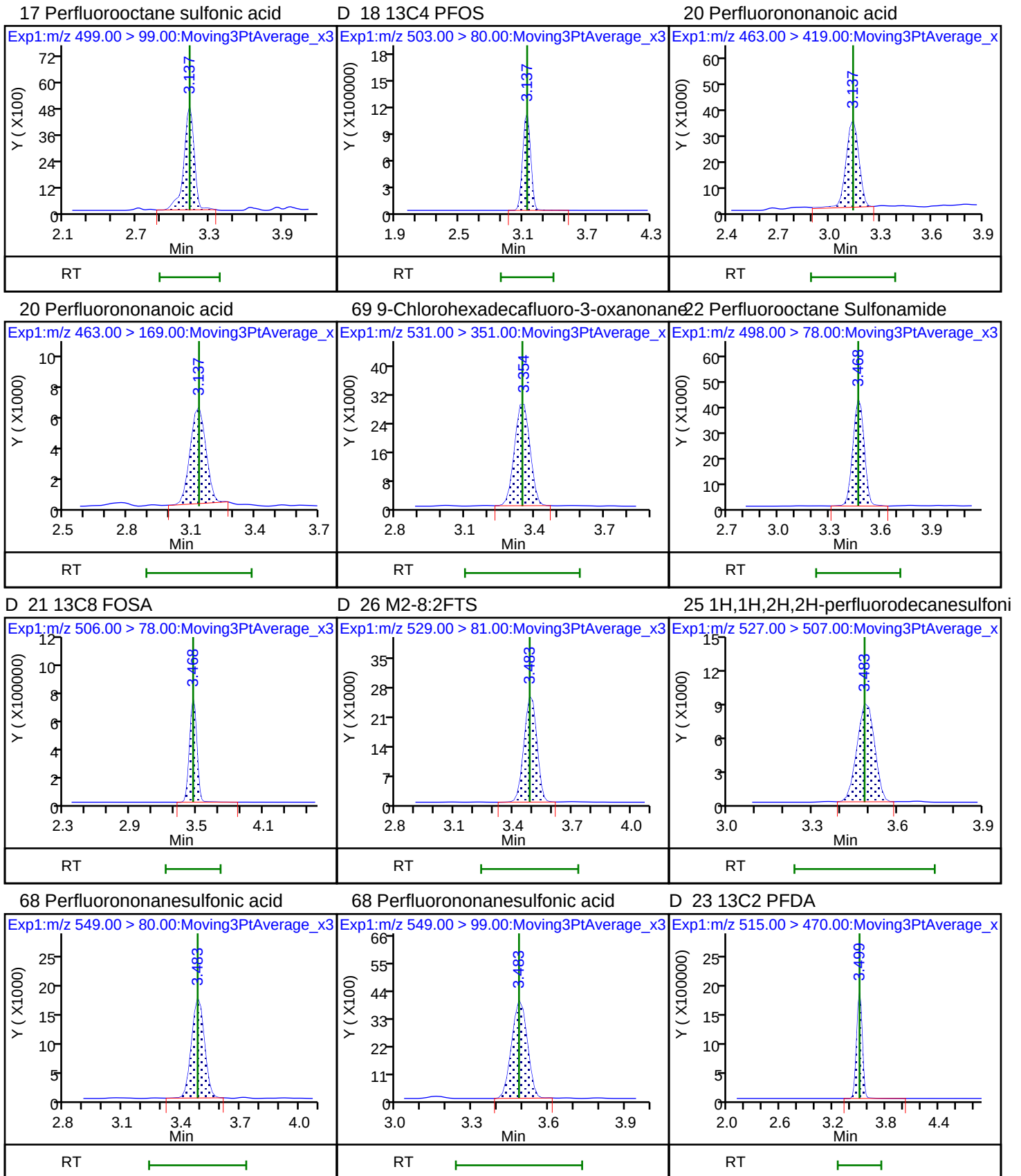


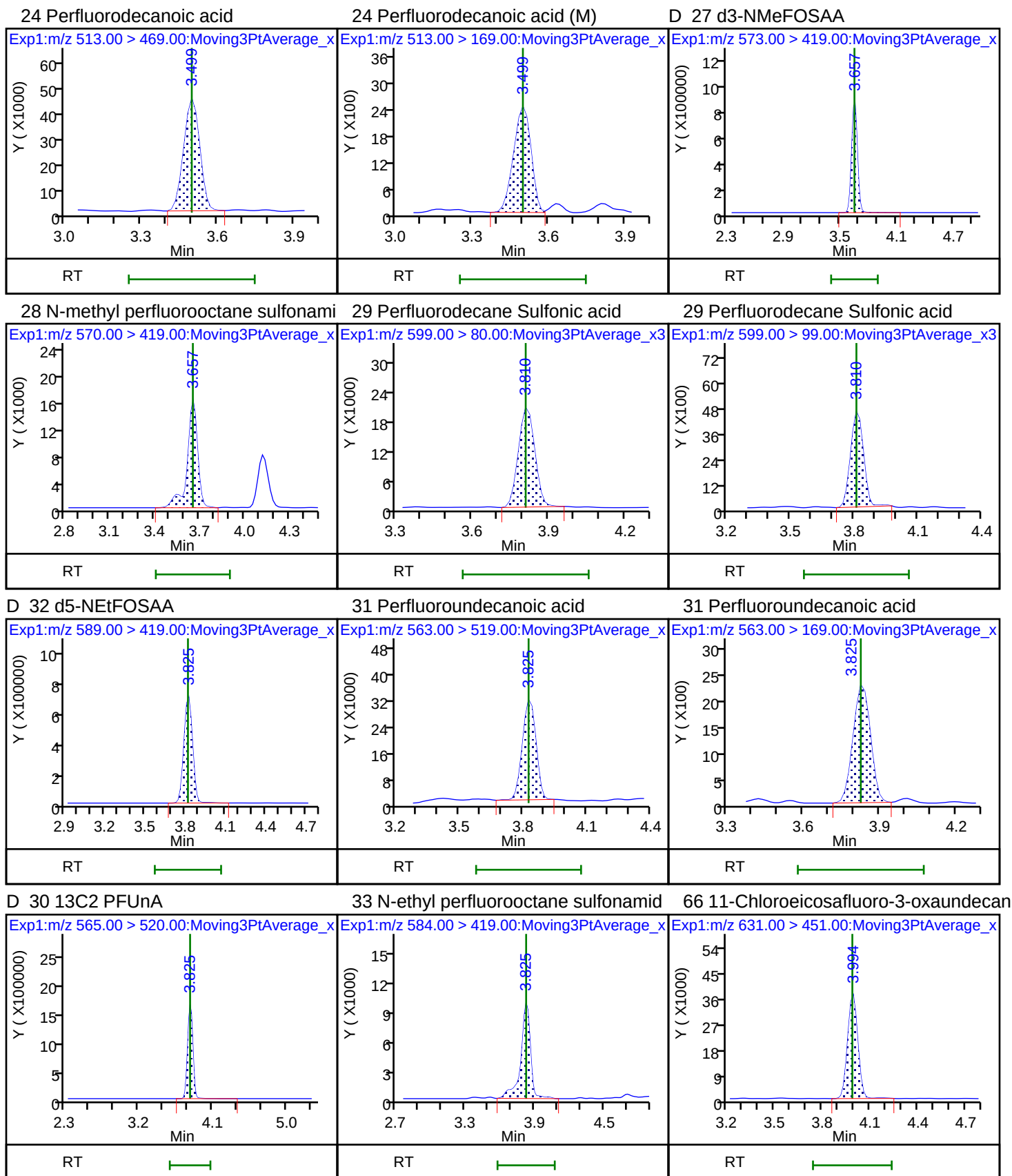
D 72 13C8 PFOS

D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid (M)

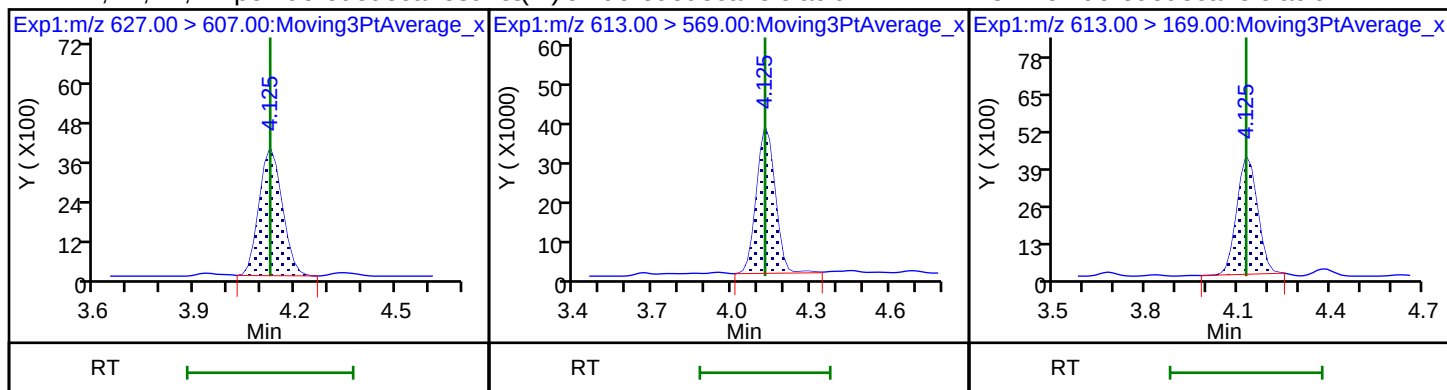






74 1H,1H,2H,2H-perfluorododecanesulfonic acid

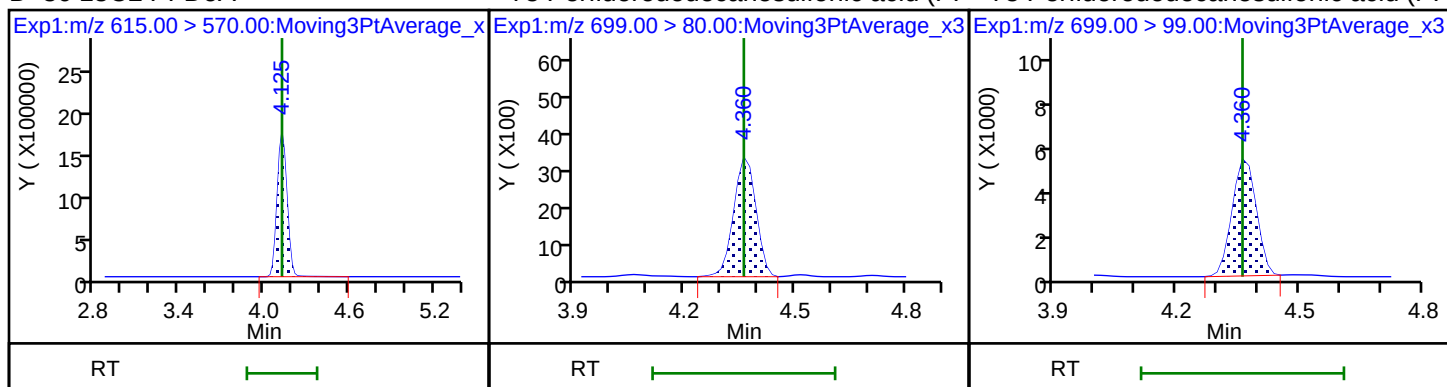
37 Perfluorododecanoic acid



D 36 13C2 PFDa

75 Perfluorododecanesulfonic acid (PF

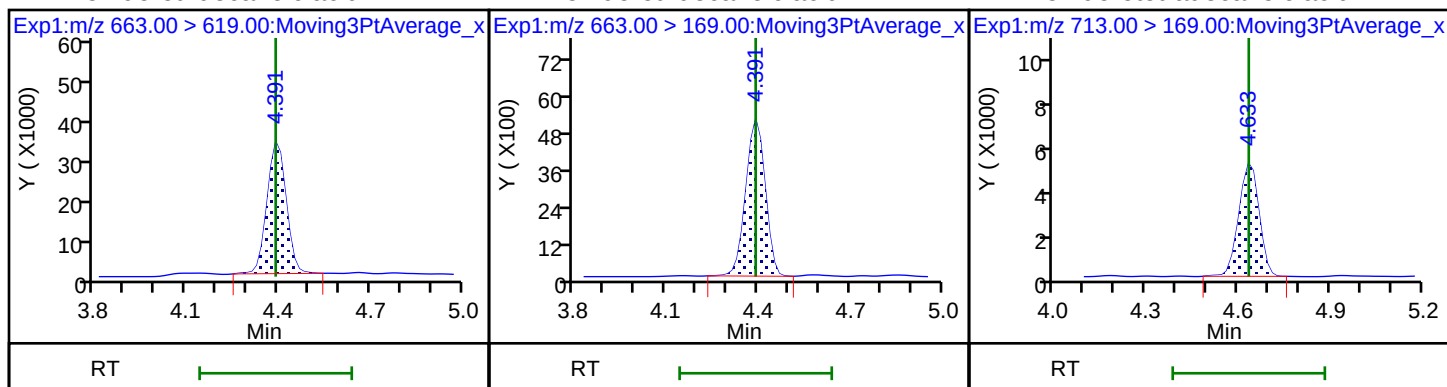
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

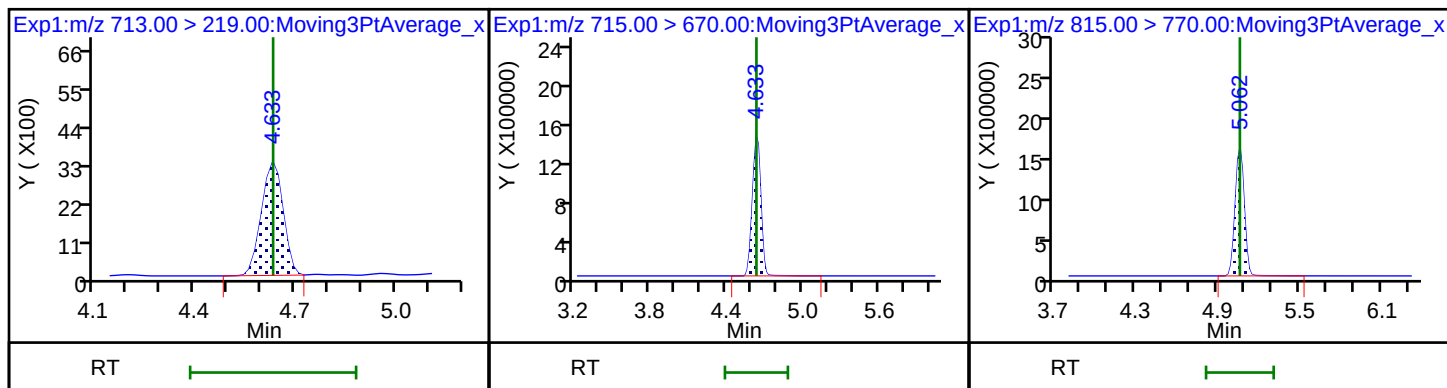
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

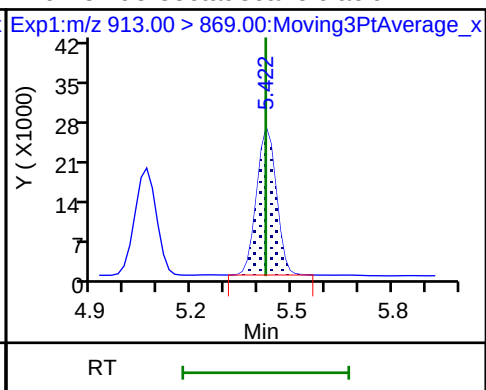
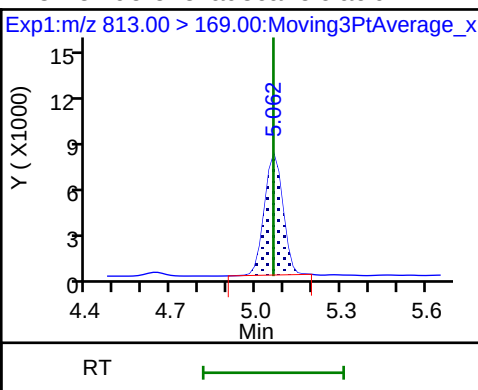
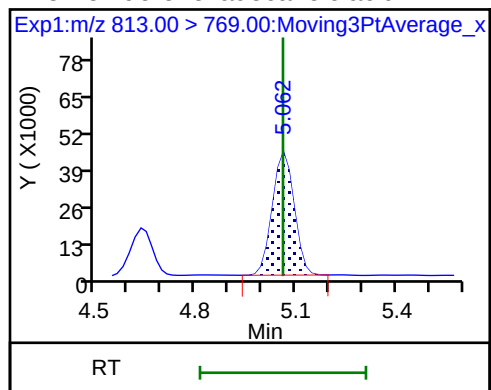
D 44 13C2-PFHxDA



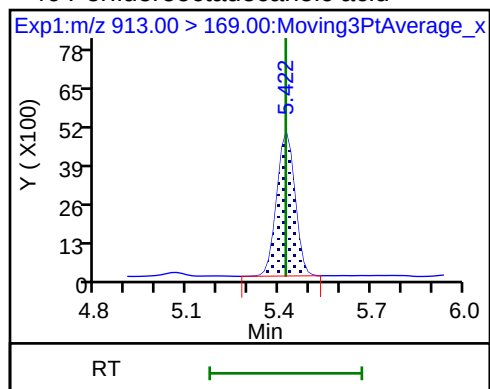
45 Perfluorohexadecanoic acid

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_006.d

Injection Date: 14-Aug-2018 14:40:21

Instrument ID: A9

Lims ID: IC L2 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

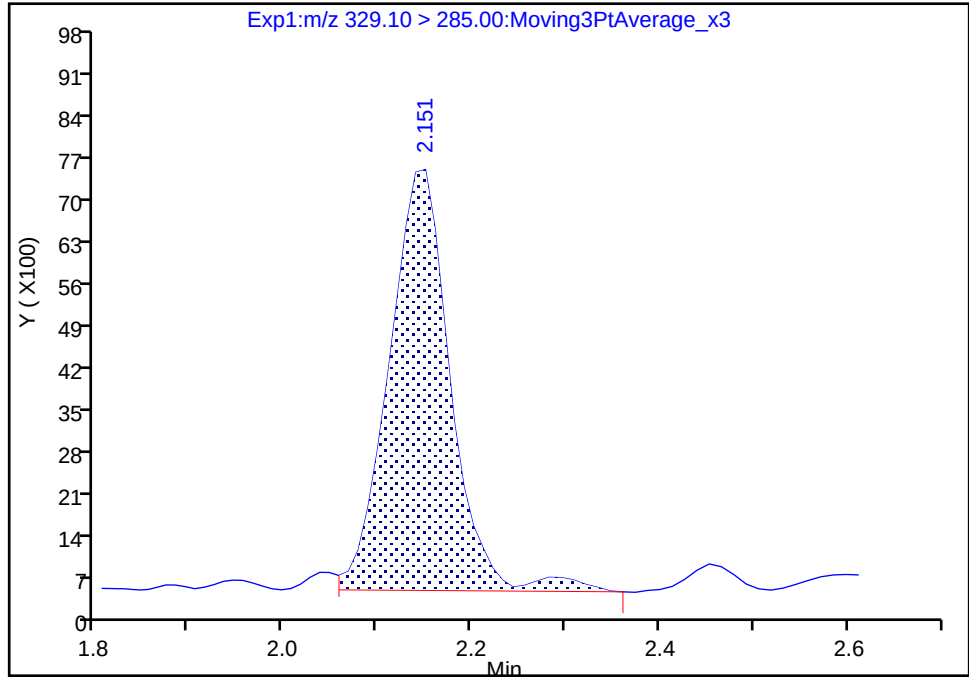
Detector EXP1

67 Perfluoro(2-propoxypropanoic) acid, CAS: 13252-13-6

Signal: 1

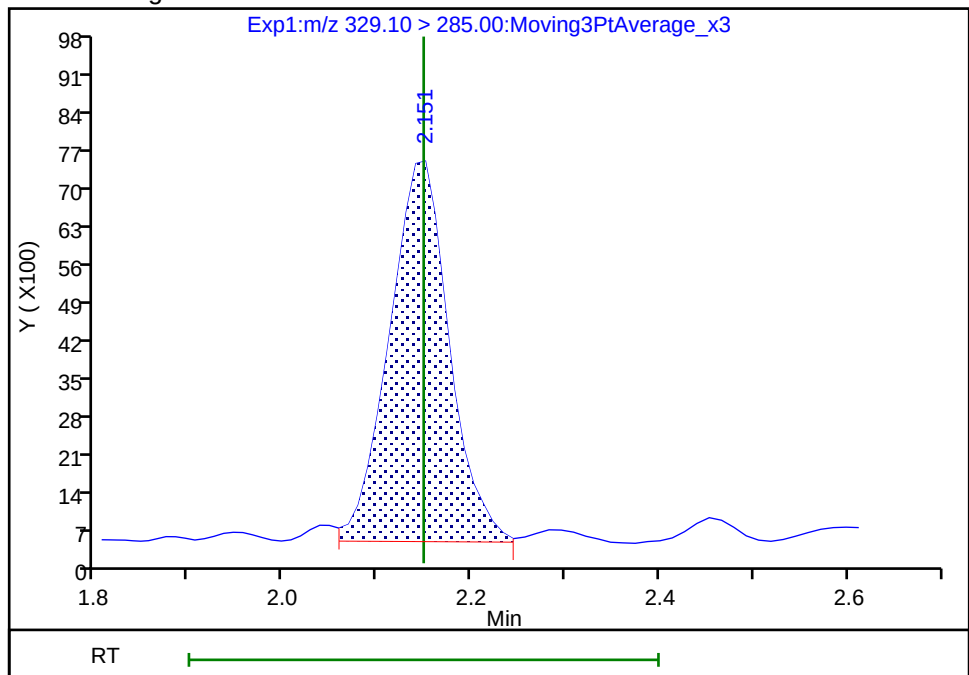
RT: 2.15
Area: 32195
Amount: 0.055862
Amount Units: ng/ml

Processing Integration Results



RT: 2.15
Area: 31294
Amount: 0.054543
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:59:17

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

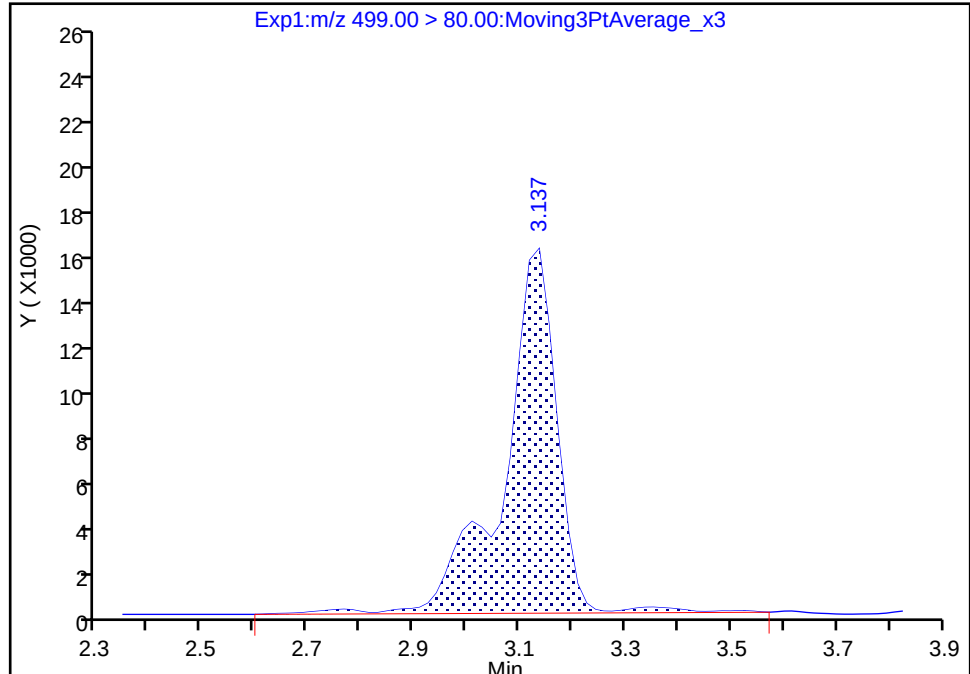
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Injection Date: 14-Aug-2018 14:40:21 Instrument ID: A9
Lims ID: IC L2 Full
Client ID:
Operator ID: A9\Administrator ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

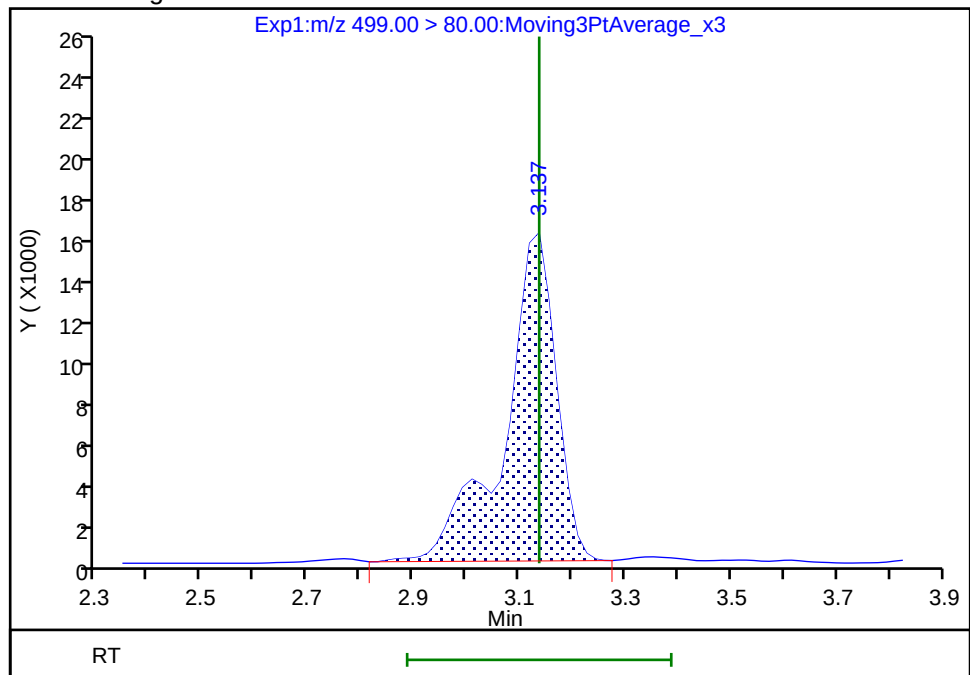
RT: 3.14
Area: 110472
Amount: 0.044525
Amount Units: ng/ml

Processing Integration Results



RT: 3.14
Area: 105852
Amount: 0.042909
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:59:29

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_006.d

Injection Date: 14-Aug-2018 14:40:21

Instrument ID: A9

Lims ID: IC L2 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#:

11

Worklist Smp#: 3

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

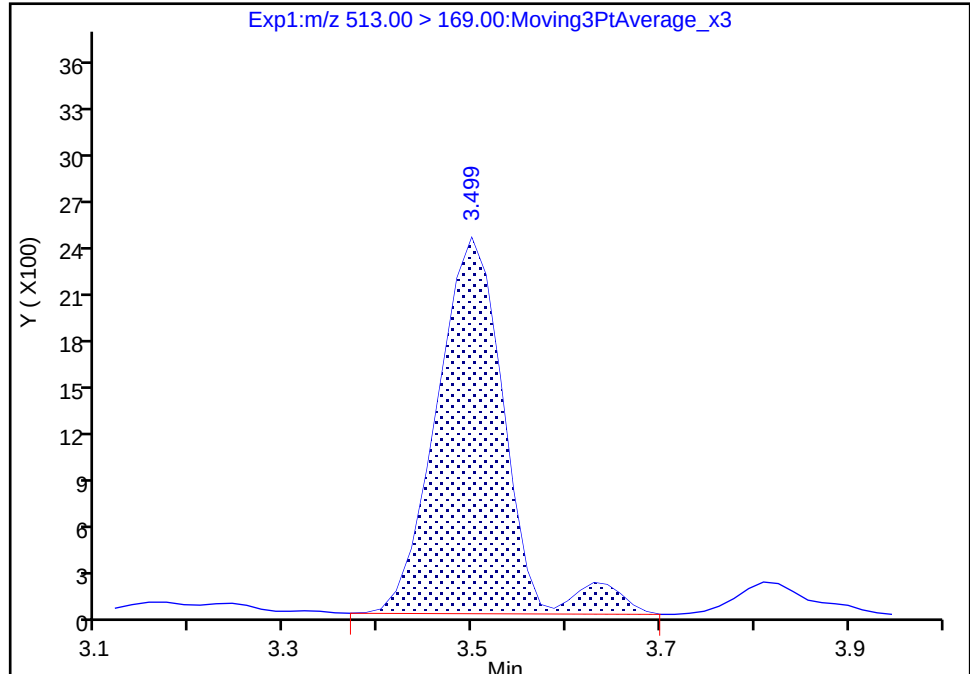
Detector EXP1

24 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 2

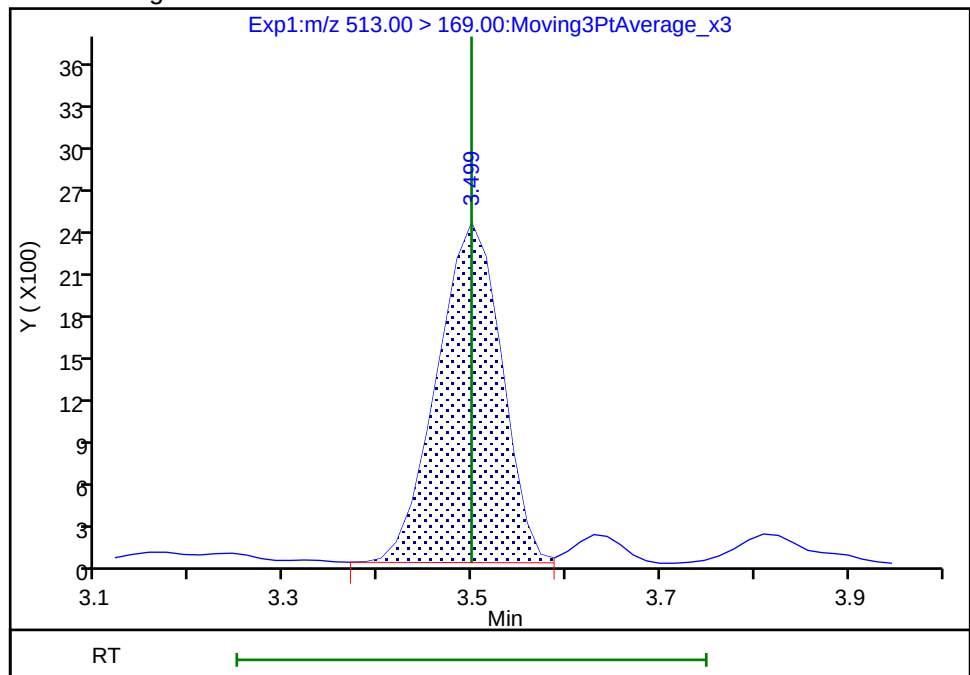
RT: 3.50
Area: 12198
Amount: 0.054941
Amount Units: ng/ml

Processing Integration Results



RT: 3.50
Area: 11481
Amount: 0.054941
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:59:42

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_006.d

Injection Date: 14-Aug-2018 14:40:21

Instrument ID: A9

Lims ID: IC L2 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

Method: PFAS_A9

Limit Group: LC PFC ICAL

Column:

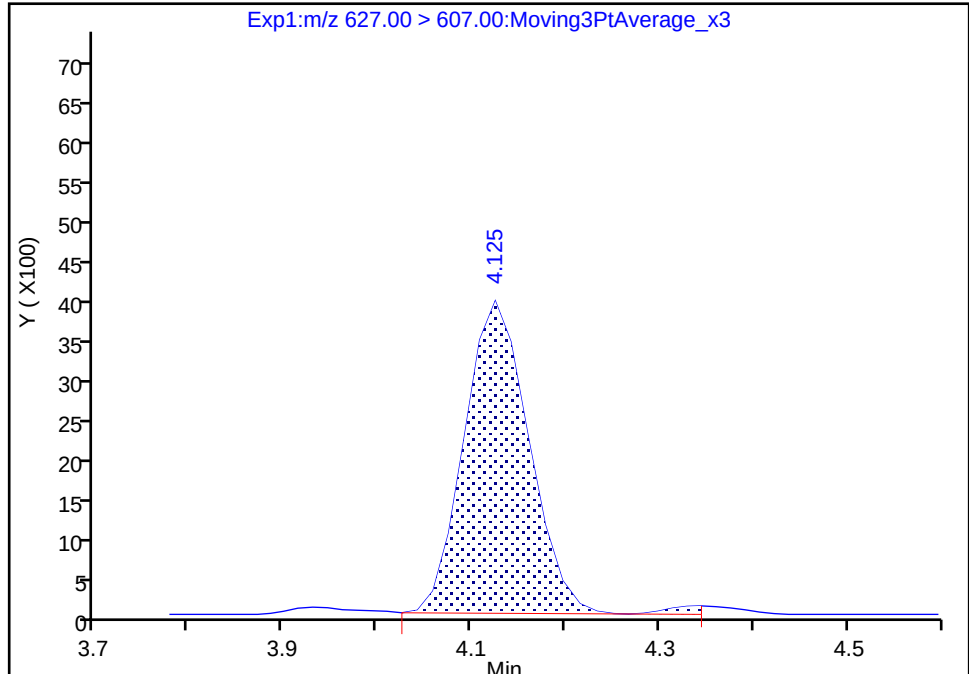
Detector: EXP1

74 1H,1H,2H,2H-perfluorododecanesulfonic acid (, CAS: 120226-60-0

Signal: 1

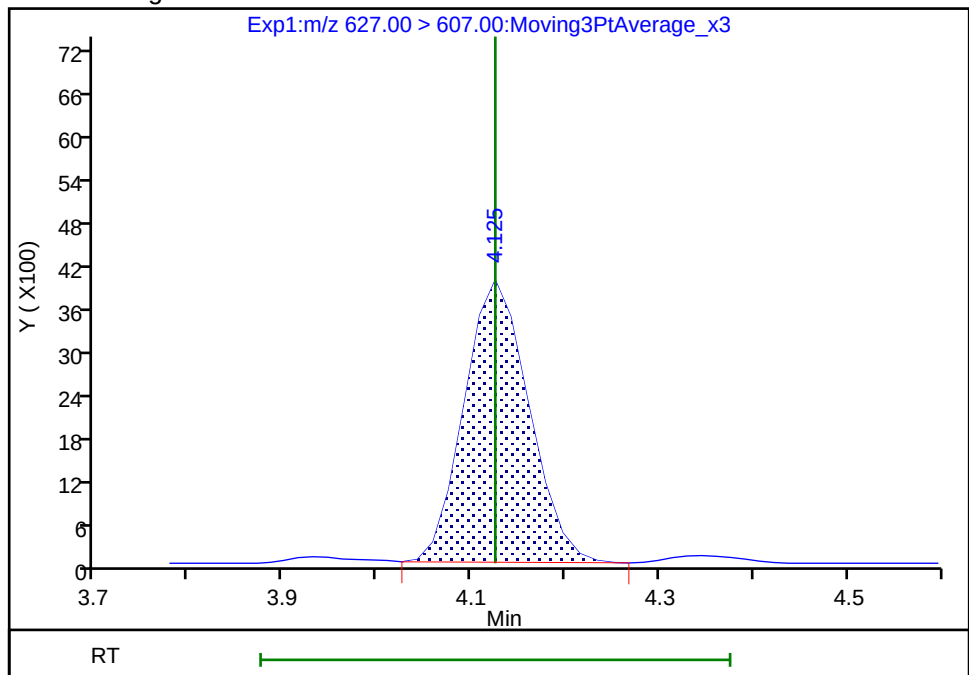
RT: 4.13
Area: 19030
Amount: 0.040004
Amount Units: ng/ml

Processing Integration Results



RT: 4.13
Area: 18767
Amount: 0.039516
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 15-Aug-2018 08:59:52

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_007.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 14-Aug-2018 14:47:51 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:15:53 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 14:59:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.489	1.492	-0.003	1.000	765806	0.2461		98.4	40.1	
D 1 13C4 PFBA										
217.00 > 172.00	1.489	1.492	-0.003	0.541	8226605	2.45		98.1	14348	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.756	1.762	-0.006	1.000	749683	0.2489		99.5	70.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.756	1.762	-0.006	0.638	7356113	2.46		98.4	9193	
D 47 13C3-PFBS										
301.90 > 83.00	1.797	1.800	-0.003	0.653	86064	2.22		95.3	497	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.797	1.802	-0.005	1.000	883036	0.2290		104	165	
298.90 > 99.00	1.797	1.802	-0.005	1.000	304275		2.90(1.35-4.05)	104	110	
D 60 M2-4:2FTS										
329.00 > 81.00	2.007	2.010	-0.003	0.730	752063	2.34		100	757	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.007	2.010	-0.003	1.117	187037	0.2421		104	1346	
D 7 13C2 PFHxA										
315.00 > 270.00	2.038	2.046	-0.008	0.741	7937448	2.51		101	8685	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.047	0.001	1.005	710673	0.2502		100	158	
313.00 > 119.00	2.038	2.047	-0.009	1.000	50628		14.04(6.96-20.87)	100	77.7	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.069	2.070	-0.001	1.151	449848	0.2455		105	1078	
349.00 > 99.00	2.069	2.070	-0.001	1.151	209005		2.15(1.15-3.45)	105	392	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.140	2.146	-0.006	0.778	860769	2.10		84.0	1614	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.140	2.149	-0.009	1.000	144326	0.2719		109	61.3	
D 9 13C4-PFHpA										
367.00 > 322.00	2.374	2.384	-0.010	0.863	9569519	2.56		102	23291	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.374	2.385	-0.011	1.000	1017622	0.2513		101	138	
363.00 > 169.00	2.374	2.385	-0.011	1.000	214830		4.74(2.17-6.52)	101	411	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.400	2.400	0.0	1.000	620268	0.2094		92.0	653	
399.00 > 99.00	2.400	2.400	0.0	1.000	174530		3.55(1.90-5.70)	92.0	224	
D 11 18O2 PFHxS										
403.00 > 84.00	2.400	2.400	0.0	0.872	5491972	2.39		101	9460	
76 DONA										
377.00 > 251.00	2.427	2.427	0.0	0.774	1712626	0.2588		110	3839	
377.00 > 85.00	2.427	2.427	0.0	0.774	709633		2.41(1.13-3.39)	110	943	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	1.000	183797	0.2262		95.5	300	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.722	-0.002	0.988	865327	2.50		105	1722	
D 73 13C8 PFOA										
421.00 > 376.00	2.736	2.742	-0.006		6960651	2.47		101	22726	
D 14 13C4 PFOA										
417.00 > 372.00	2.751	2.752	-0.001	1.000	8321934	2.40		95.9	18992	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.751	2.752	-0.001	1.000	942910	0.2618		105	60.2	
413.00 > 169.00	2.751	2.752	-0.001	1.000	330442		2.85(1.36-4.08)	105	598	
* 62 13C2-PFOA										
415.00 > 370.00	2.751	2.752	-0.001		8762692	2.50			17932	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.751	2.761	-0.010	0.877	590259	0.2356		99.0	745	
449.00 > 99.00	2.751	2.761	-0.010	0.877	148245		3.98(1.84-5.53)	99.0	445	
D 72 13C8 PFOS										
507.00 > 99.00	3.119	3.124	-0.005		1222589	2.41		101	2192	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.137	0.0	1.140	5952246	2.42		101	5807	
20 Perfluorononanoic acid										
463.00 > 419.00	3.137	3.137	0.0	1.000	843777	0.2627		105	85.4	
463.00 > 169.00	3.137	3.137	0.0	1.000	152406		5.54(2.68-8.03)	105	259	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.137	0.0	1.140	7842884	2.44		97.5	11051	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.137	0.0	1.000	641677	0.2460		106	645	
499.00 > 99.00	3.137	3.137	0.0	1.000	145607		4.41(2.04-6.12)	106	376	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.337	3.346	-0.009	1.064	716298	0.2394		103	1171	
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.468	0.0	1.260	3285594	2.48		99.1	5421	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.468	3.468	0.0	1.000	1053940	0.2733		109	2176	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	417143	0.2452		102	899	
549.00 > 99.00	3.483	3.483	0.0	1.110	81452		5.12(3.02-9.05)	102	598	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	188756	0.2499		104	729	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	119448	2.39		100.0	552	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	1018661	0.2624		105	165	
513.00 > 169.00	3.499	3.499	0.0	1.000	67093		15.18(7.12-21.35)	105	150	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	9080466	2.60		104	14957	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.643	3.651	-0.008	1.324	3569470	2.36		94.3	4267	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.657	3.655	0.002	1.004	367254	0.2589		104	138	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.809	3.810	-0.001	1.214	543347	0.2600		108	711	
599.00 > 99.00	3.809	3.810	-0.001	1.214	106694		5.09(2.14-6.43)	108	475	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.809	3.819	-0.010	1.385	3046528	2.65		106	2593	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.825	3.826	-0.001	1.004	278760	0.2326		93.1	428	
D 30 13C2 PFUnA										
565.00 > 520.00	3.825	3.826	-0.001	1.390	6856002	2.36		94.3	11459	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.825	3.826	-0.001	1.000	670196	0.2822		113	143	
563.00 > 169.00	3.825	3.826	-0.001	1.000	58877		11.38(5.24-15.72)	113	309	
35 MeFOSA										
512.00 > 169.00	3.962	3.963	-0.001		187034	NC			440	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.978	3.987	-0.009	1.268	851738	0.2412		102	2408	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.125	4.125	0.0	1.184	116977	0.2384		98.9	306	
D 36 13C2 PFDaA										
615.00 > 570.00	4.125	4.125	0.0	1.499	7962594	2.36		94.4	6101	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.125	4.125	0.0	1.000	948348	0.2905		116	198	
613.00 > 169.00	4.125	4.125	0.0	1.000	106485		8.91(4.68-14.05)	116	351	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.359	4.360	-0.001	1.390	57225	0.2309		95.4	161	
699.00 > 99.00	4.359	4.360	-0.001	1.390	94398		0.61(0.28-0.83)	95.4	407	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.390	4.391	-0.001	1.064	692793	0.2655		106	270	
663.00 > 169.00	4.390	4.391	-0.001	1.064	116999		5.92(3.09-9.27)	106	420	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 43 13C2-PFTeDA										
715.00 > 670.00	4.629	4.634	-0.005	1.683	6808485	2.49		99.8	16841	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.629	4.634	-0.005	1.000	106957	0.2414		96.6	548	
713.00 > 219.00	4.629	4.634	-0.005	1.000	82157		1.30(0.70-2.09)	96.6	415	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.061	-0.002	1.000	777122	0.2683		107	202	
813.00 > 169.00	5.059	5.061	-0.002	1.000	132213		5.88(2.77-8.32)	107	354	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.059	5.061	-0.002	1.838	7266638	2.43		97.3	10155	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.419	5.421	-0.002	1.071	548531	0.2639		106	158	
913.00 > 169.00	5.419	5.421	-0.002	1.071	95819		5.72(2.55-7.64)	106	706	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL3_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_007.d

Injection Date: 14-Aug-2018 14:47:51

Instrument ID: A9

Lims ID: IC L3 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 12

Worklist Smp#: 4

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

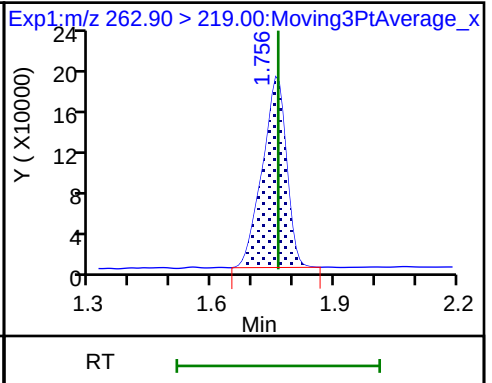
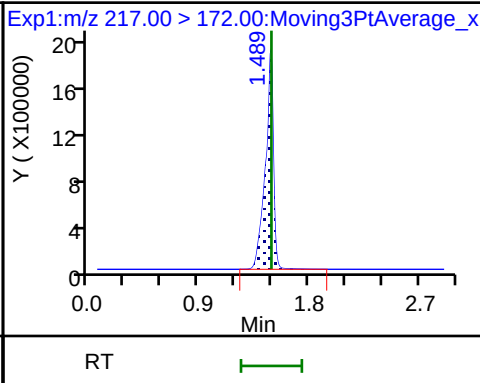
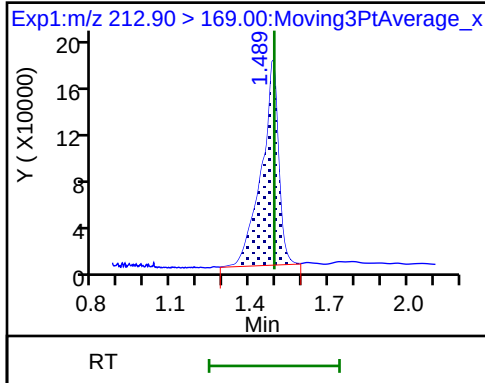
Method: PFAS_A9

Limit Group: LC PFC ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

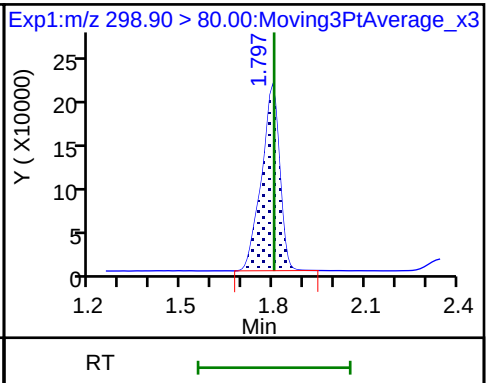
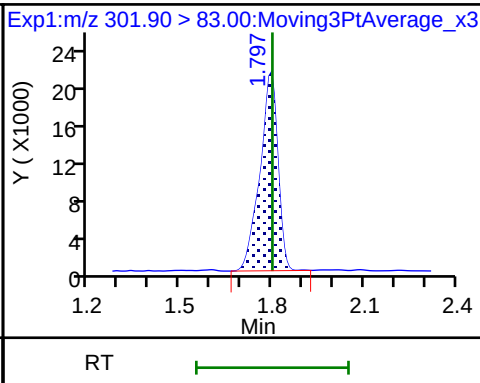
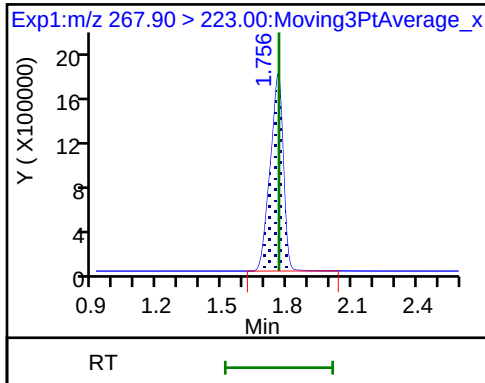
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

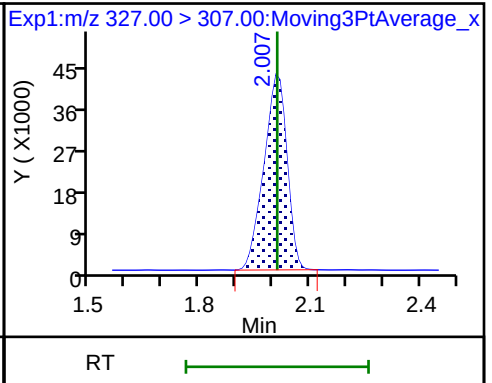
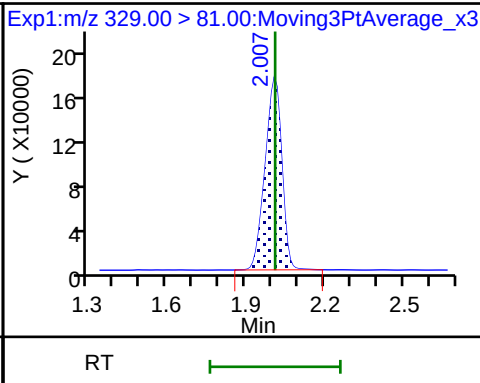
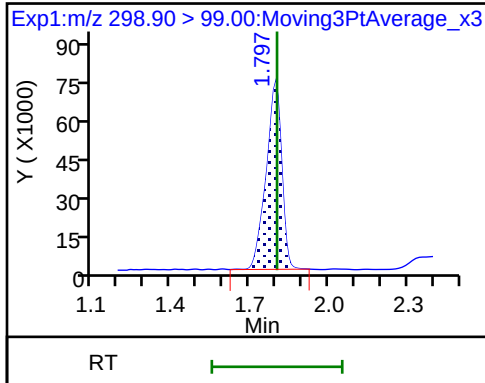
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 60 M2-4:2FTS

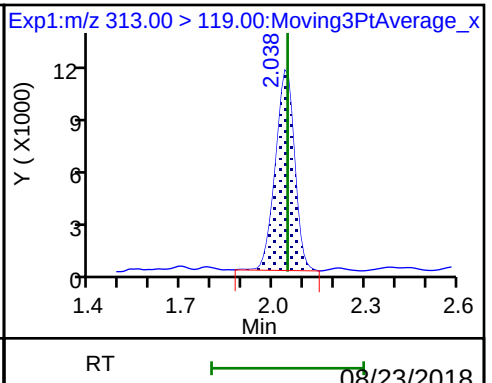
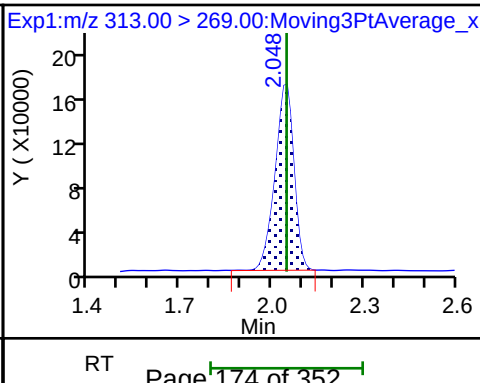
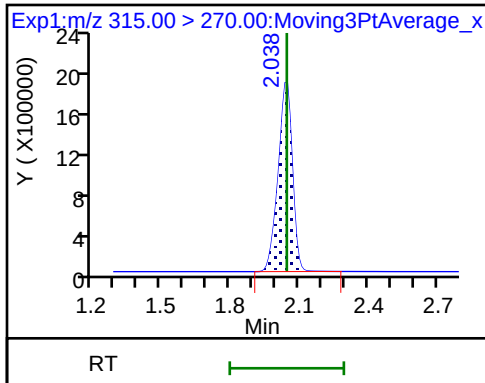
61 1H,1H,2H,2H-perfluorohexanesulfoni

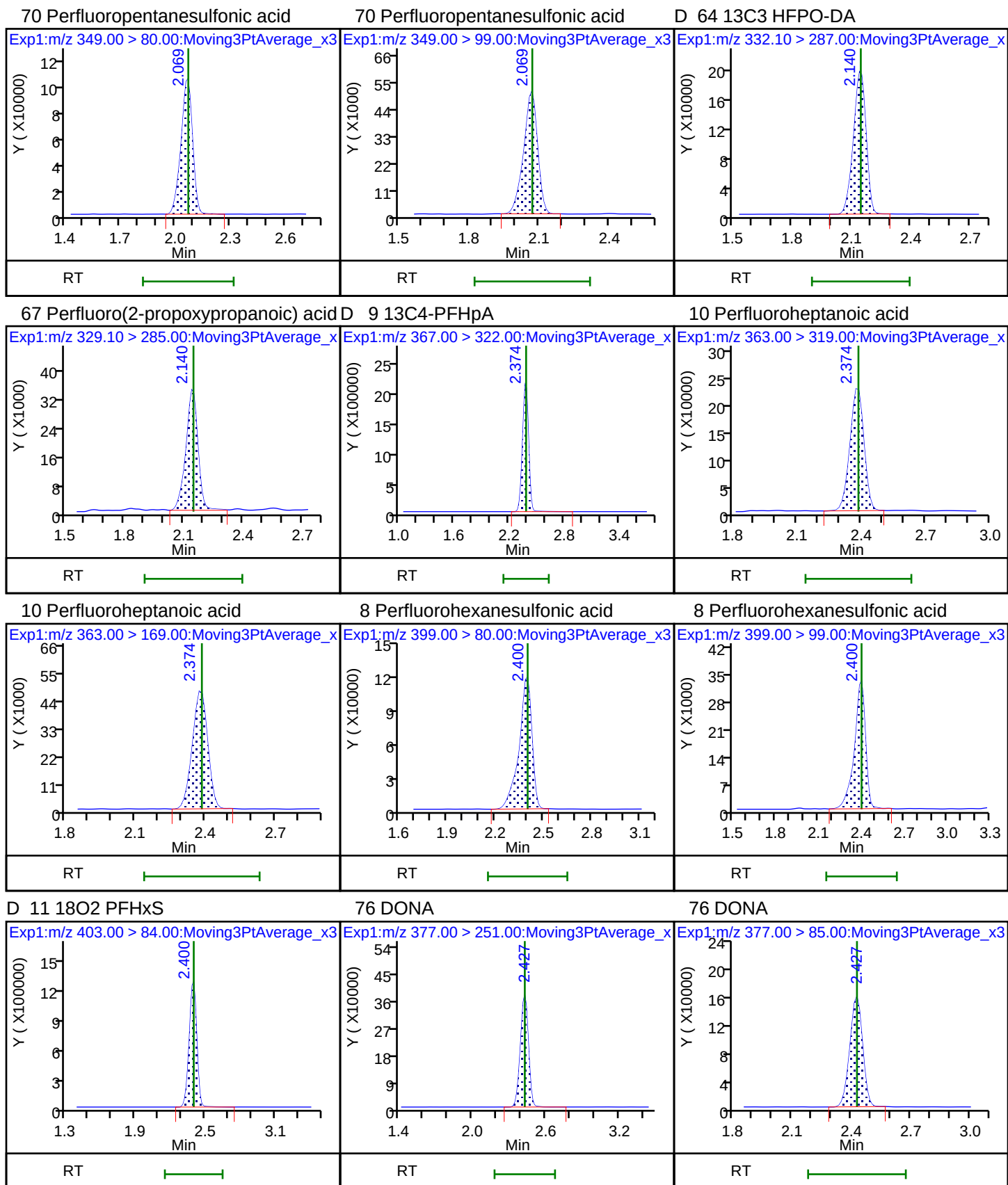


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

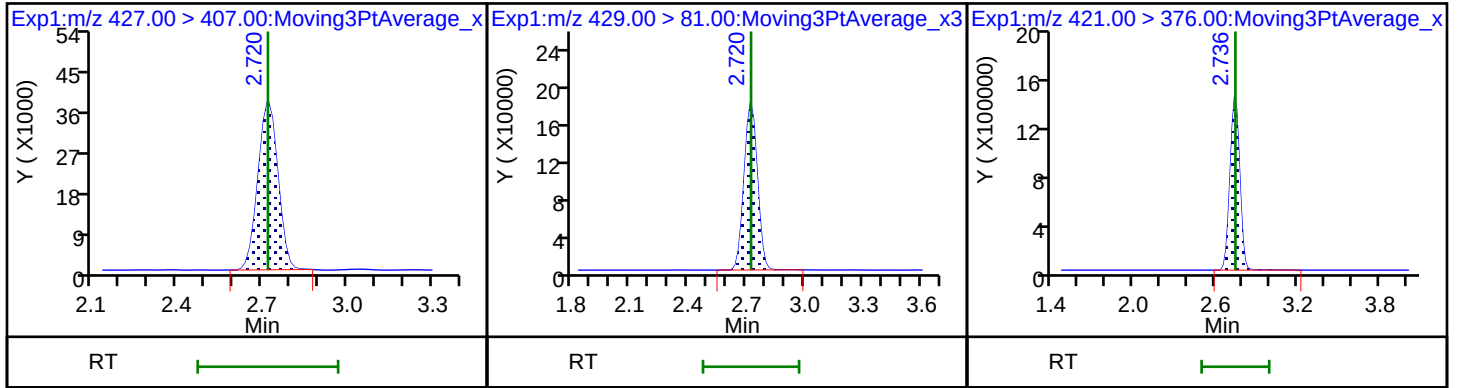
6 Perfluorohexanoic acid





13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

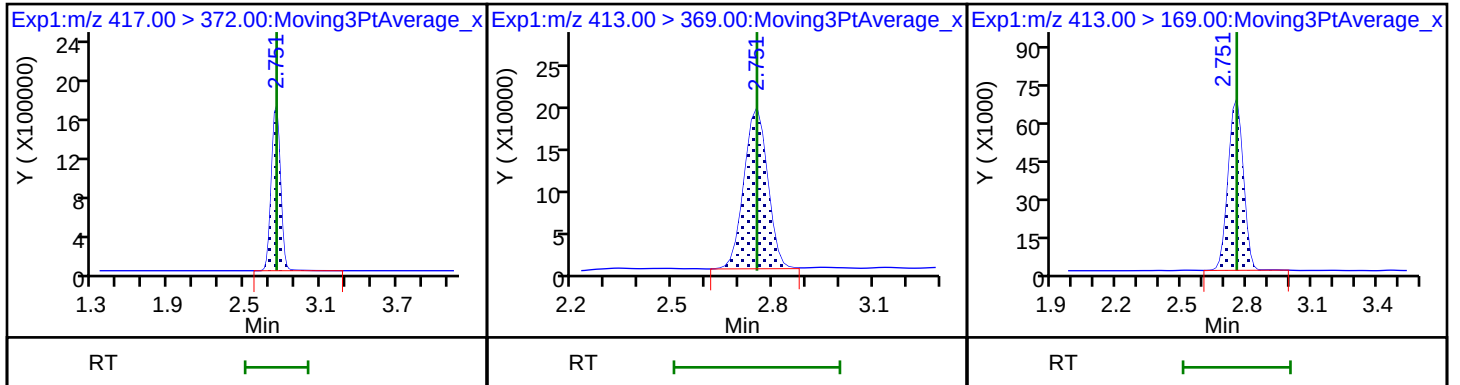
D 73 13C8 PFOA



D 14 13C4 PFOA

15 Perfluorooctanoic acid

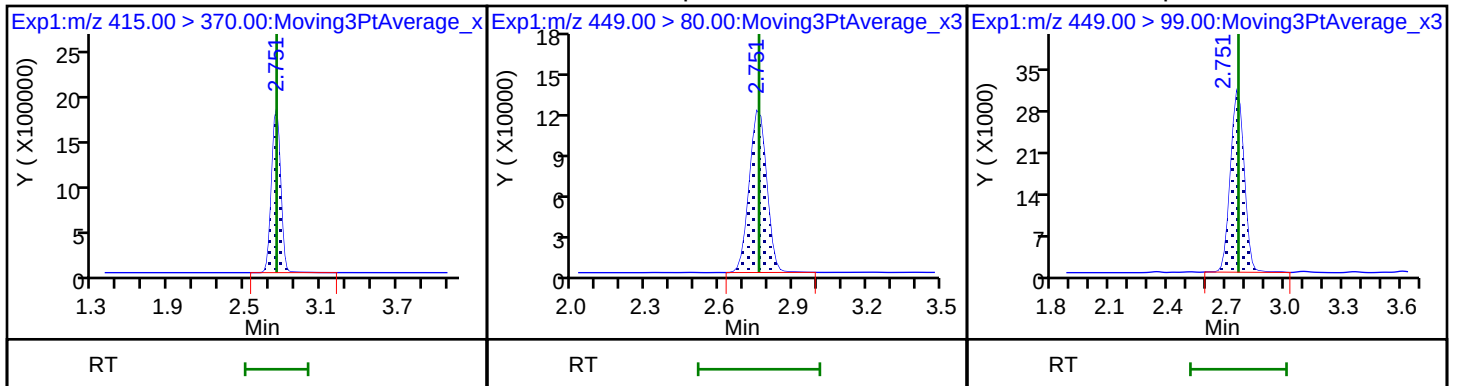
15 Perfluorooctanoic acid



* 62 13C2-PFOA

16 Perfluoroheptanesulfonic acid

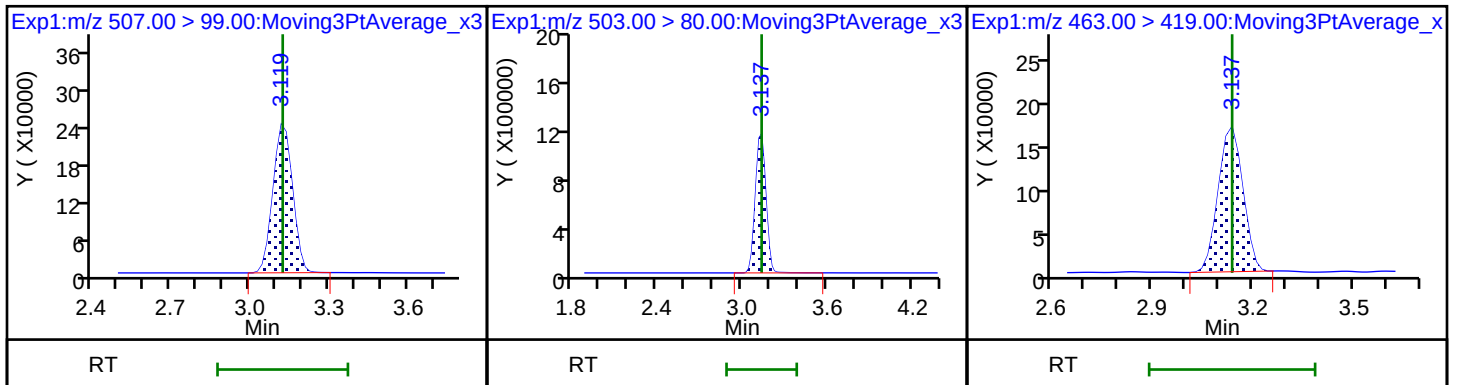
16 Perfluoroheptanesulfonic acid

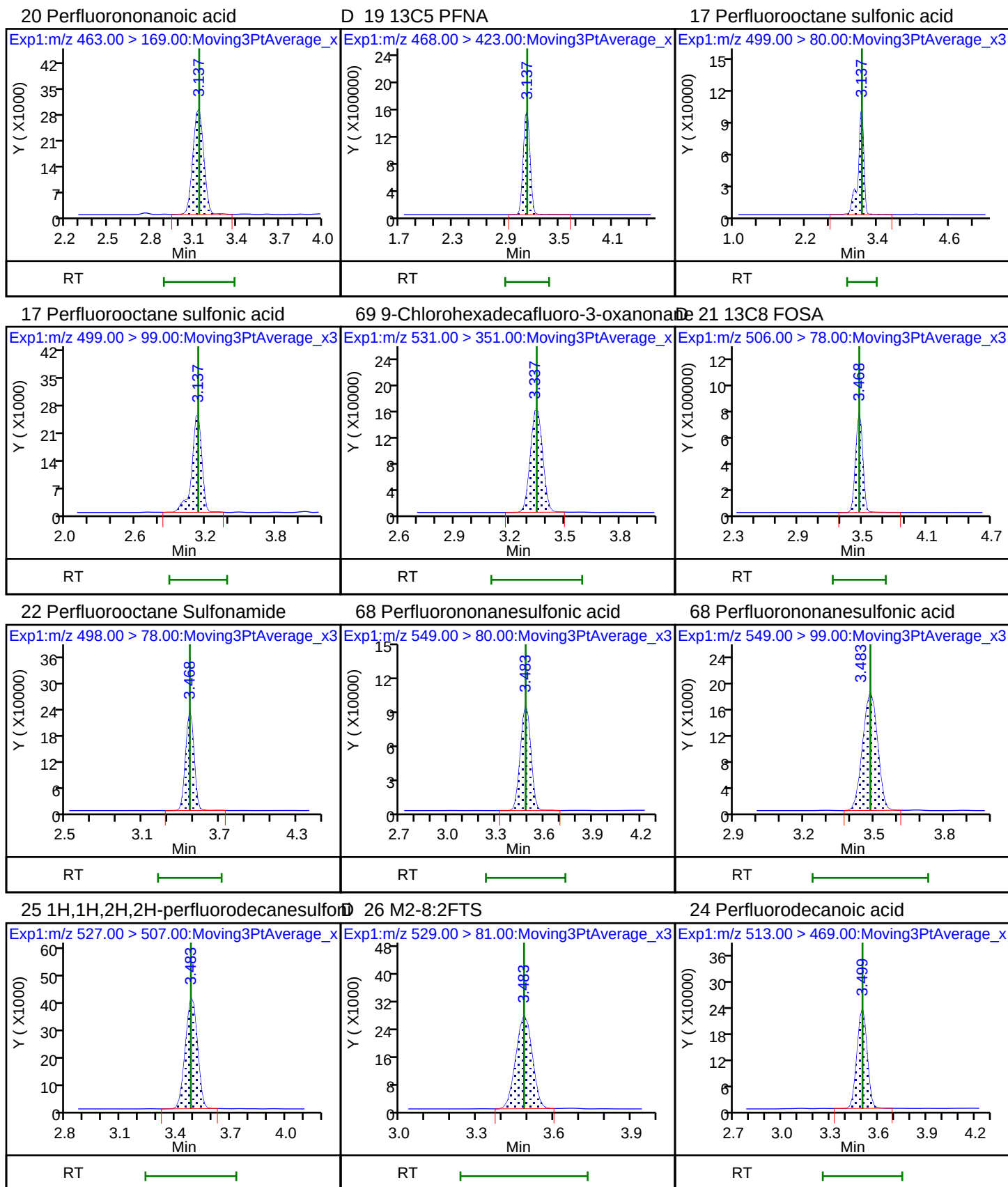


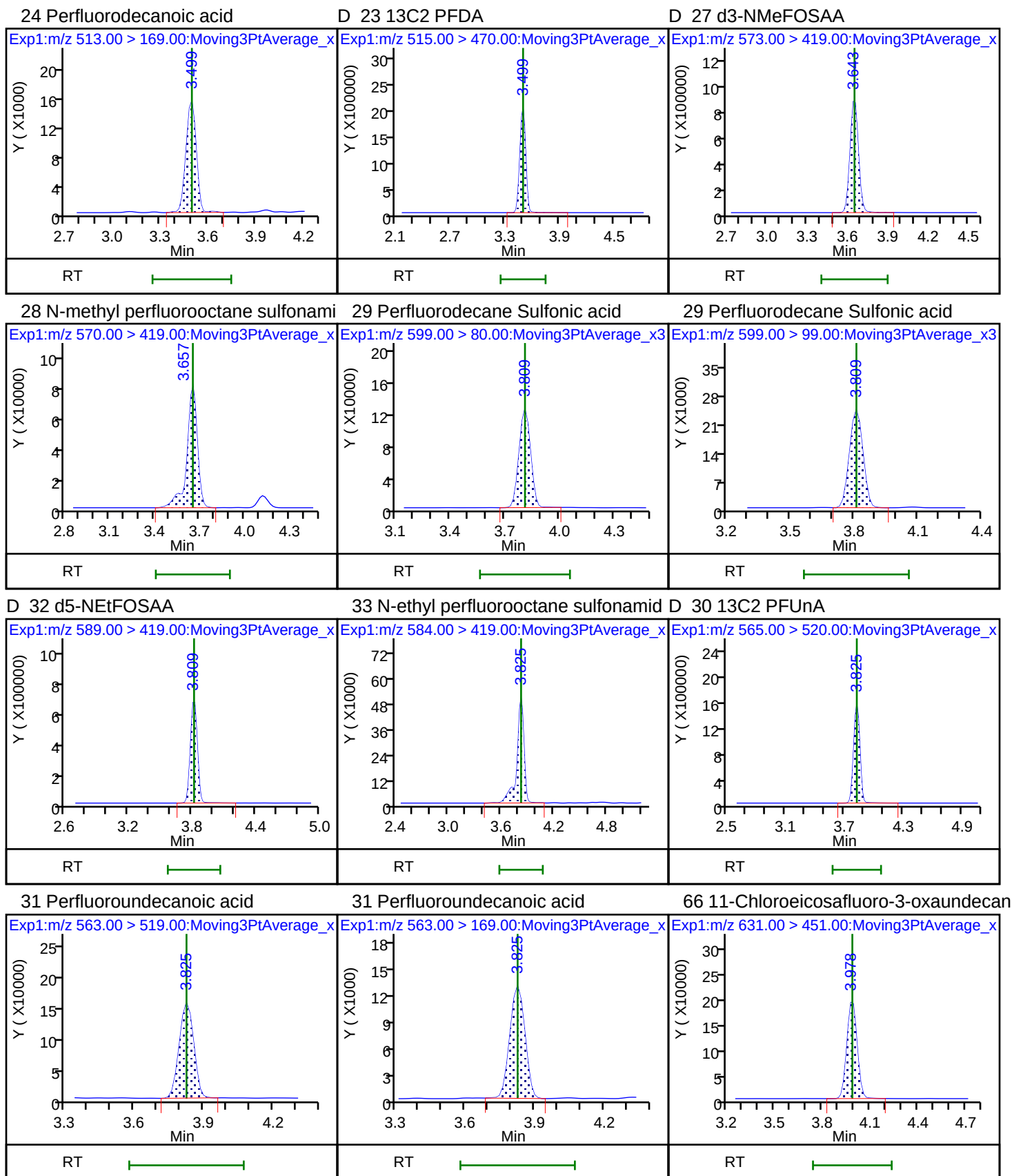
D 72 13C8 PFOS

D 18 13C4 PFOS

20 Perfluorononanoic acid

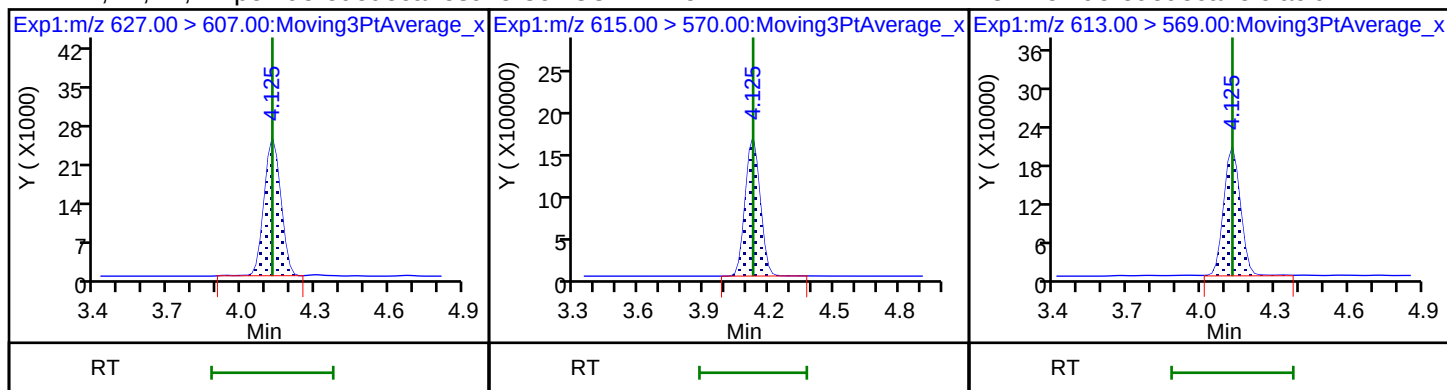






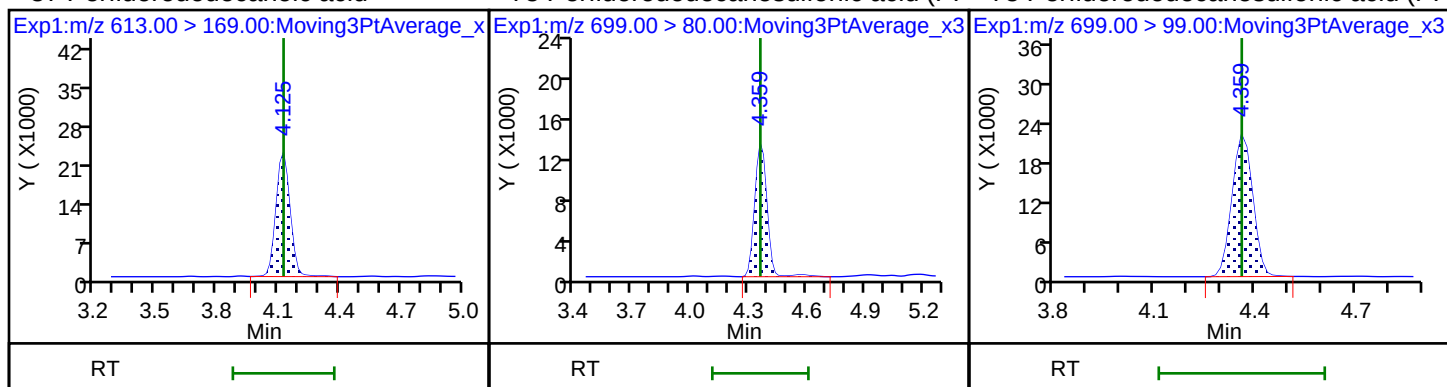
74 1H,1H,2H,2H-perfluorododecanesulfonic acid 36 13C2 PFDa

37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

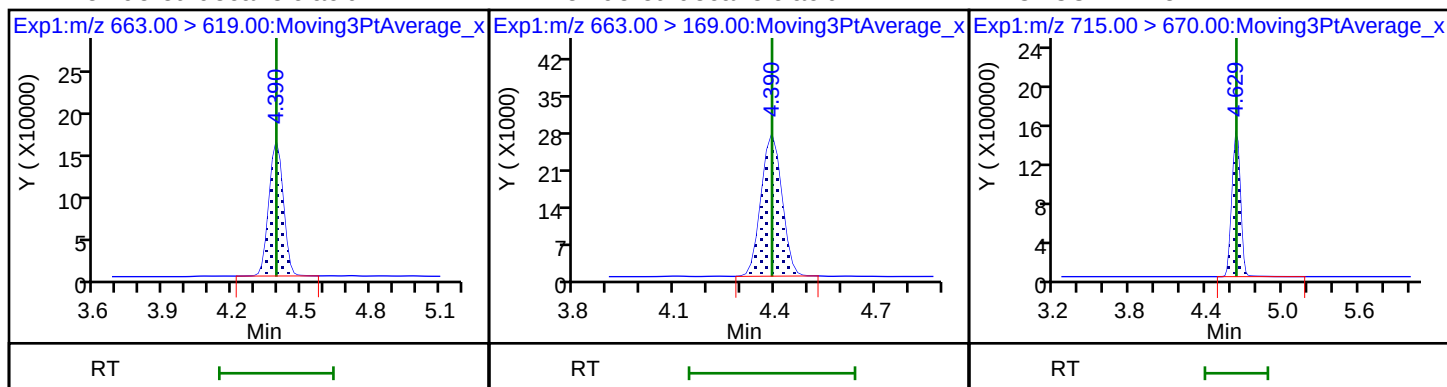
75 Perfluorododecanesulfonic acid (PF 75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

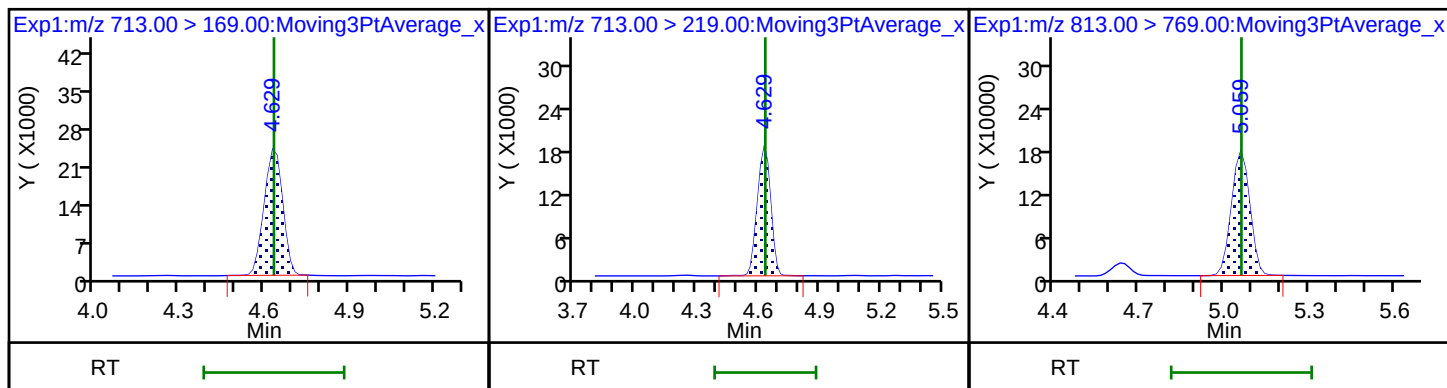
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

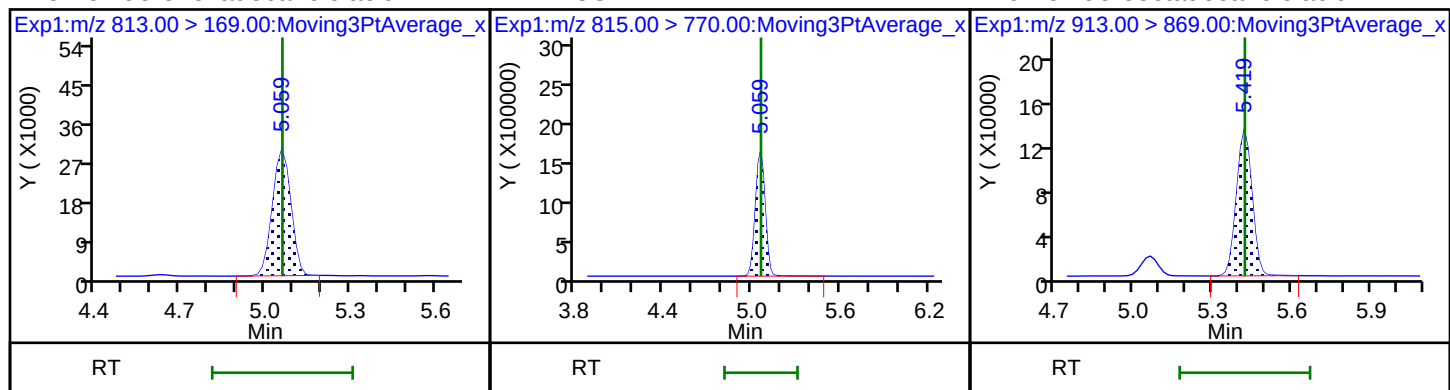
45 Perfluorohexadecanoic acid



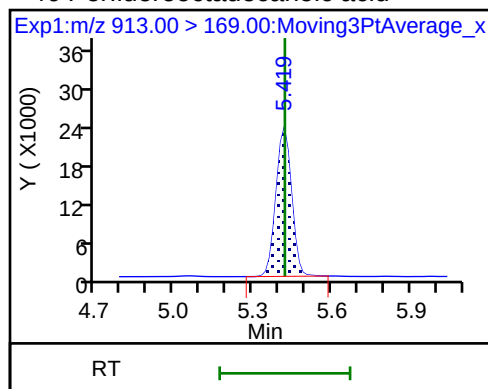
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_008.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: ICIS Calib Level: 4
 Inject. Date: 14-Aug-2018 14:55:21 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:16:03 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 15:15:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.492	0.002	0.543	7914125	2.33		93.1	11376	
2 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.492	0.002	1.000	3027342	1.01		101	160	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.762	0.002	0.641	7250202	2.39		95.7	11938	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.762	0.002	1.000	2953022	0.99		99.5	271	
D 47 13C3-PFBS										
301.90 > 83.00	1.806	1.800	0.006	0.656	84501	2.15		92.4	514	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.806	1.802	0.004	1.000	3578331	0.9451		107	622	
298.90 > 99.00	1.806	1.802	0.004	1.000	1206498		2.97(1.35-4.05)	107	451	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.018	2.010	0.008	1.117	684694	0.9027		96.7	2974	
D 60 M2-4:2FTS										
329.00 > 81.00	2.018	2.010	0.008	0.733	725909	2.23		95.3	924	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.046	0.002	0.744	7296324	2.28		91.2	17111	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.047	0.001	1.000	2648441	1.01		101	534	
313.00 > 119.00	2.048	2.047	0.001	1.000	207638		12.76(6.96-20.87)	101	366	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.079	2.070	0.009	1.151	1748787	0.9720		104	2750	
349.00 > 99.00	2.079	2.070	0.009	1.151	824139		2.12(1.15-3.45)	104	1145	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.146	0.005	0.782	1044046	2.51		101	2261	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.151	2.149	0.002	1.000	577987	0.8978		89.8	268	
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.384	0.003	0.868	8653248	2.28		91.3	18404	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.385	0.002	1.000	4059390	1.11		111	525	
363.00 > 169.00	2.387	2.385	0.002	1.000	884218		4.59(2.17-6.52)	111	1903	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.400	2.400	0.0	1.000	2388604	0.8590		94.4	2147	
399.00 > 99.00	2.400	2.400	0.0	1.000	681632		3.50(1.90-5.70)	94.4	729	
D 11 18O2 PFHxS										
403.00 > 84.00	2.400	2.400	0.0	0.872	5154749	2.21		93.6	5339	
76 DONA										
377.00 > 251.00	2.427	2.427	0.0	0.774	6301147	1.00		106	7389	
377.00 > 85.00	2.427	2.427	0.0	0.774	2683388		2.35(1.13-3.39)	106	3321	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	0.994	634274	0.9572		101	823	
D 12 M2-6:2FTS										
429.00 > 81.00	2.735	2.722	0.013	0.994	705848	2.01		84.6	972	
D 73 13C8 PFOA										
421.00 > 376.00	2.751	2.742	0.009		6956186	2.47		101	12184	
* 62 13C2-PFOA										
415.00 > 370.00	2.751	2.752	-0.001		8880897	2.50			16728	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.751	2.752	-0.001	1.000	3722262	1.02		102	238	
413.00 > 169.00	2.751	2.752	-0.001	1.000	1313918		2.83(1.36-4.08)	102	1924	
D 14 13C4 PFOA										
417.00 > 372.00	2.751	2.752	-0.001	1.000	8429911	2.40		95.9	18871	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.767	2.761	0.006	0.882	2408919	1.01		106	2559	
449.00 > 99.00	2.767	2.761	0.006	0.882	559521		4.31(1.84-5.53)	106	1592	
D 72 13C8 PFOS										
507.00 > 99.00	3.119	3.124	-0.005		1192904	2.36		98.6	3374	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.137	0.0	1.140	7549430	2.32		92.6	12503	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.137	0.0	1.000	2270332	0.9152		98.6	1792	
499.00 > 99.00	3.137	3.137	0.0	1.000	560762		4.05(2.04-6.12)	98.6	1330	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.137	0.0	1.140	5660162	2.27		94.9	4214	
20 Perfluorononanoic acid										
463.00 > 419.00	3.137	3.137	0.0	1.000	3317945	1.07		107	318	
463.00 > 169.00	3.137	3.137	0.0	1.000	566727		5.85(2.68-8.03)	107	1035	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.337	3.346	-0.009	1.064	2663128	0.9362		100	2977	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.468	3.468	0.0	1.000	3973171	1.02		102	4505	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.468	0.0	1.260	3320058	2.47		98.8	3991	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	111483	2.21		92.1	434	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	683544	0.9697		101	2124	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	1557209	0.9628		100	2743	
549.00 > 99.00	3.483	3.483	0.0	1.110	275890		5.64(3.02-9.05)	100	1054	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	4072679	1.15		115	617	
513.00 > 169.00	3.499	3.499	0.0	1.000	259503		15.69(7.12-21.35)	115	396	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	8316795	2.35		94.1	29254	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.643	3.651	-0.008	1.324	3571827	2.33		93.1	3458	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.657	3.655	0.002	1.004	1413942	1.00		99.6	365	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.809	3.810	-0.001	1.214	2014964	1.01		105	2535	
599.00 > 99.00	3.809	3.810	-0.001	1.214	431501		4.67(2.14-6.43)	105	1546	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.809	3.819	-0.010	1.384	2711140	2.33		93.1	3556	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.825	3.826	-0.001	1.000	2441812	0.99		99.1	467	
563.00 > 169.00	3.825	3.826	-0.001	1.000	243813		10.02(5.24-15.72)	99.1	765	
D 30 13C2 PFUnA										
565.00 > 520.00	3.825	3.826	-0.001	1.390	7114360	2.41		96.5	13871	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.825	3.826	-0.001	1.004	1027982	0.9640		96.4	1085	
35 MeFOSA										
512.00 > 169.00	3.962	3.963	-0.001		712079	NC			655	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.978	3.987	-0.009	1.268	3505012	1.04		111	6054	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.125	4.125	0.0	1.184	456491	1.00		103	1535	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.125	4.125	0.0	1.000	3478617	1.05		105	659	
613.00 > 169.00	4.125	4.125	0.0	1.000	367652		9.46(4.68-14.05)	105	1112	
D 36 13C2 PFDaA										
615.00 > 570.00	4.125	4.125	0.0	1.499	8067021	2.36		94.4	9598	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.360	4.360	0.0	1.390	226152	0.9598		99.2	624	
699.00 > 99.00	4.360	4.360	0.0	1.390	393771		0.57(0.28-0.83)	99.2	2125	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.391	4.391	0.0	1.064	2875351	1.09		109	1035	
663.00 > 169.00	4.391	4.391	0.0	1.064	466921		6.16(3.09-9.27)	109	1537	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.630	4.634	-0.004	1.000	410023	0.9417		94.2	1680	
713.00 > 219.00	4.630	4.634	-0.004	1.000	299442		1.37(0.70-2.09)	94.2	1369	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.630	4.634	-0.004	1.683	6691013	2.42		96.8	14802	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.059	5.061	-0.002	1.839	6862425	2.27		90.7	12412	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.061	-0.002	1.000	2697530	1.06		106	681	
813.00 > 169.00	5.059	5.061	-0.002	1.000	477696		5.65(2.77-8.32)	106	1258	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.419	5.421	-0.002	1.071	2123289	1.08		108	562	
913.00 > 169.00	5.419	5.421	-0.002	1.071	390283		5.44(2.55-7.64)	108	1758	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_008.d

Injection Date: 14-Aug-2018 14:55:21

Instrument ID: A9

Lims ID: IC L4 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 13

Worklist Smp#: 5

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

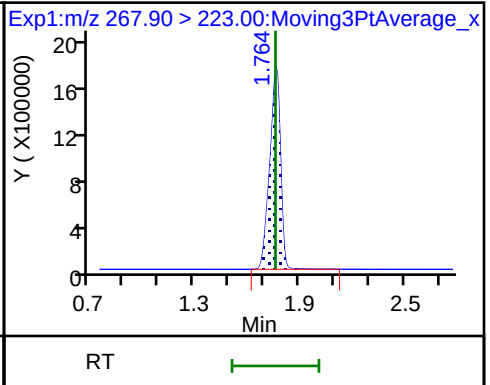
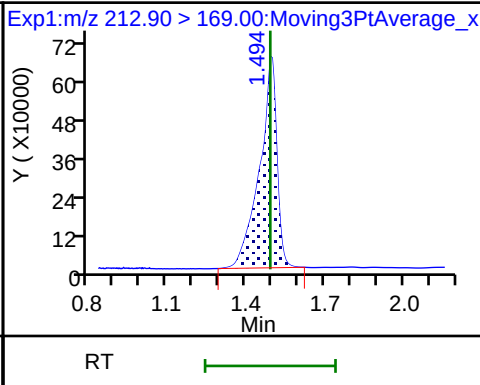
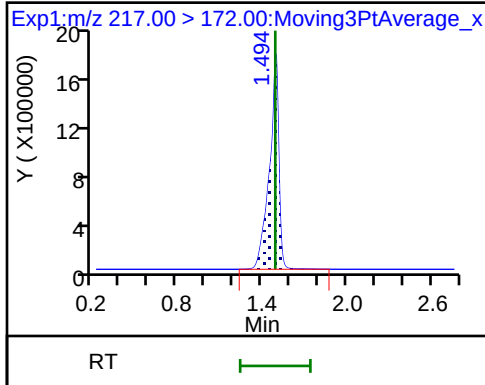
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

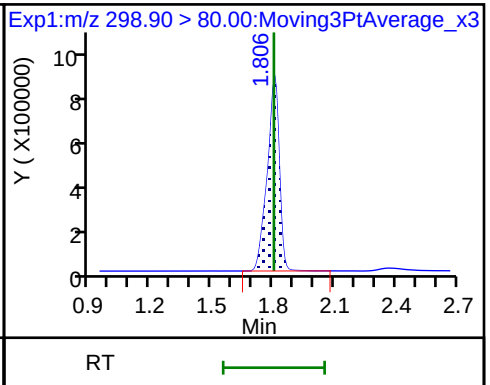
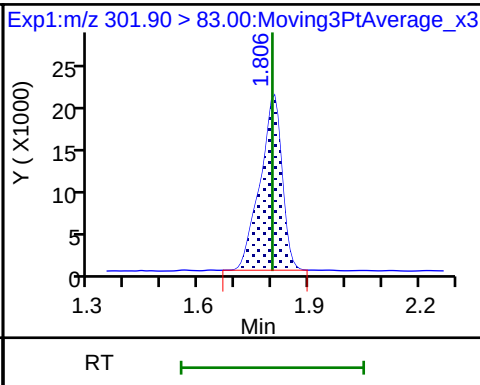
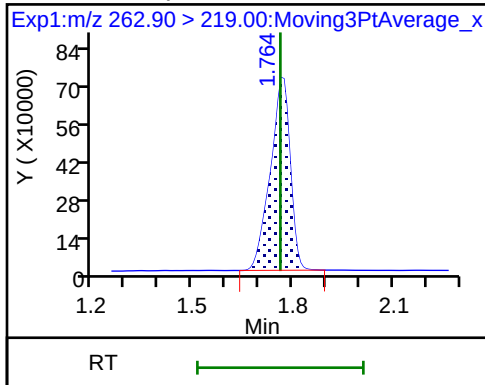
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

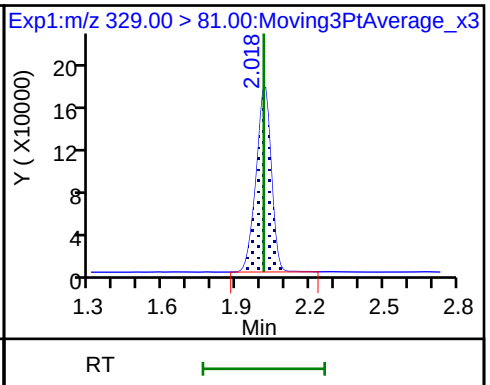
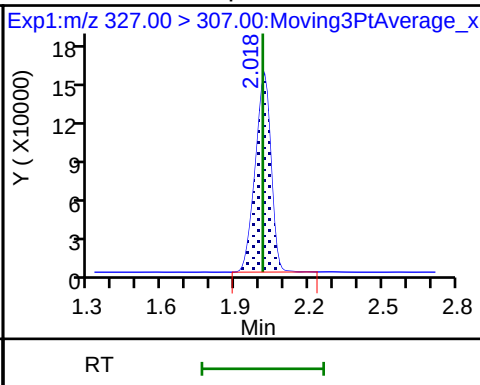
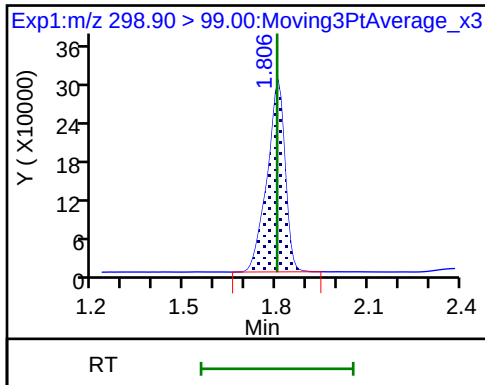
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

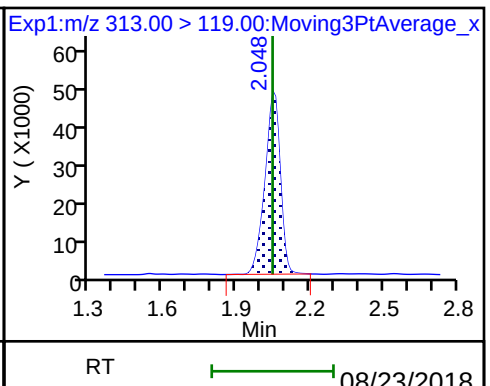
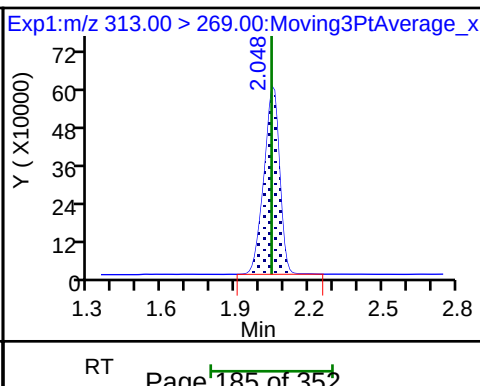
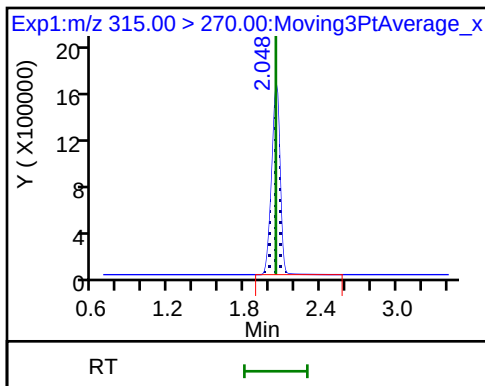
D 60 M2-4:2FTS



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

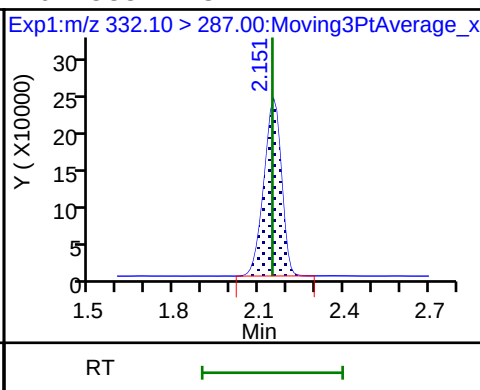
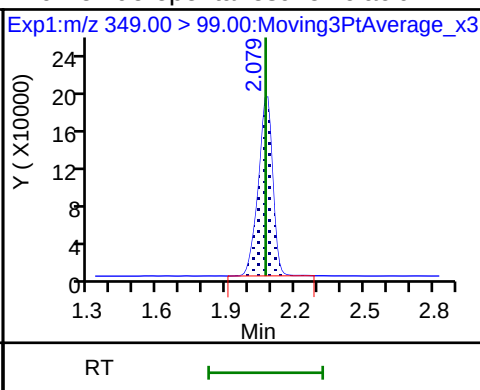
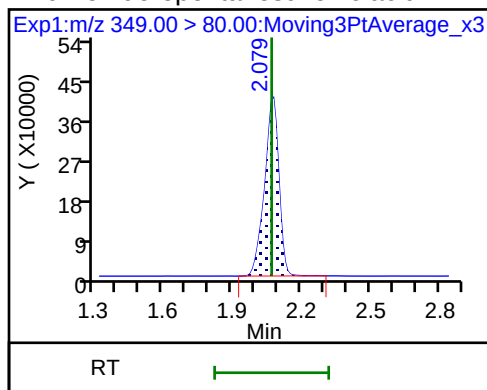
6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid

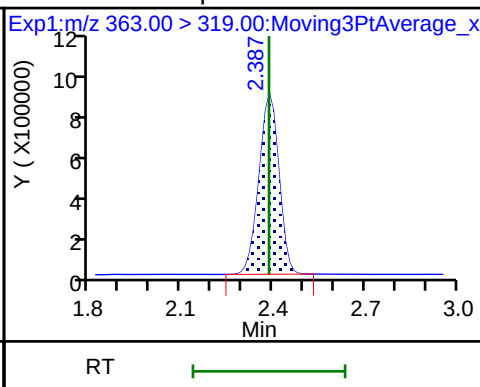
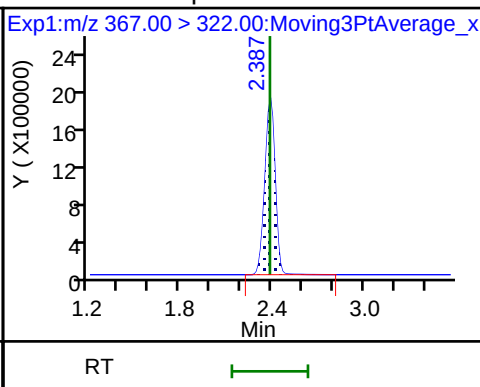
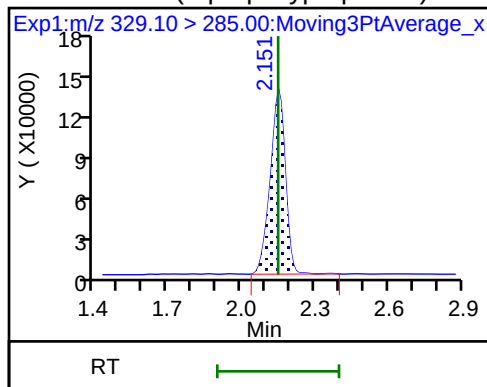
70 Perfluoropentanesulfonic acid

D 64 13C3 HFPO-DA



67 Perfluoro(2-propoxypropanoic) acid D 9 13C4-PFHpA

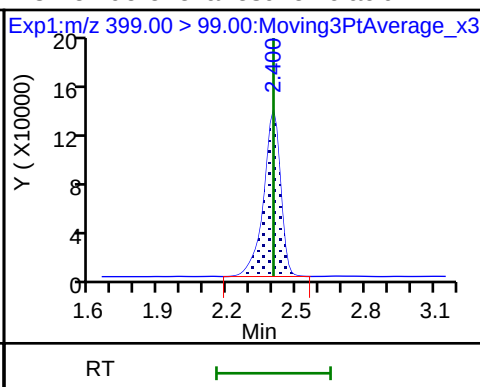
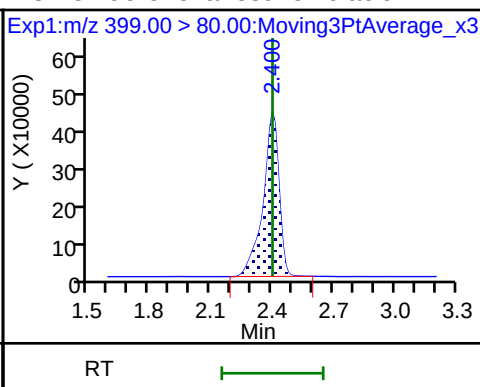
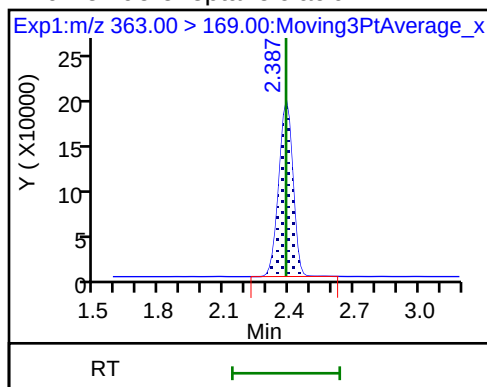
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

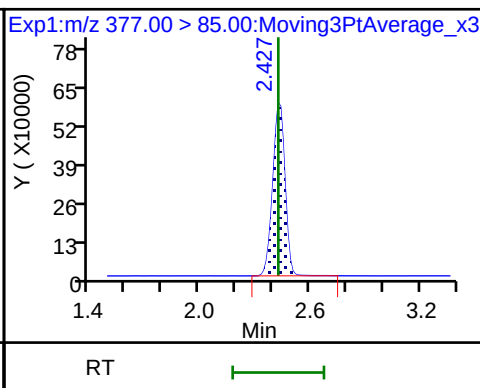
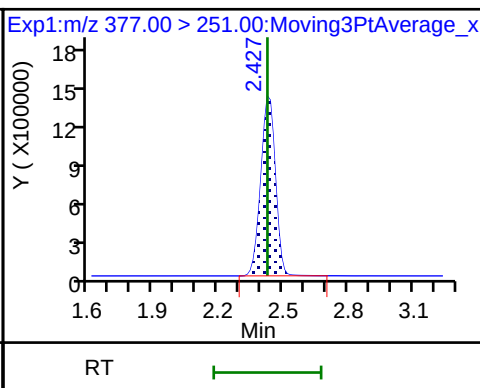
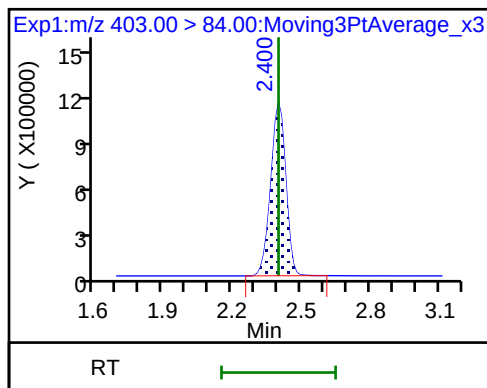
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

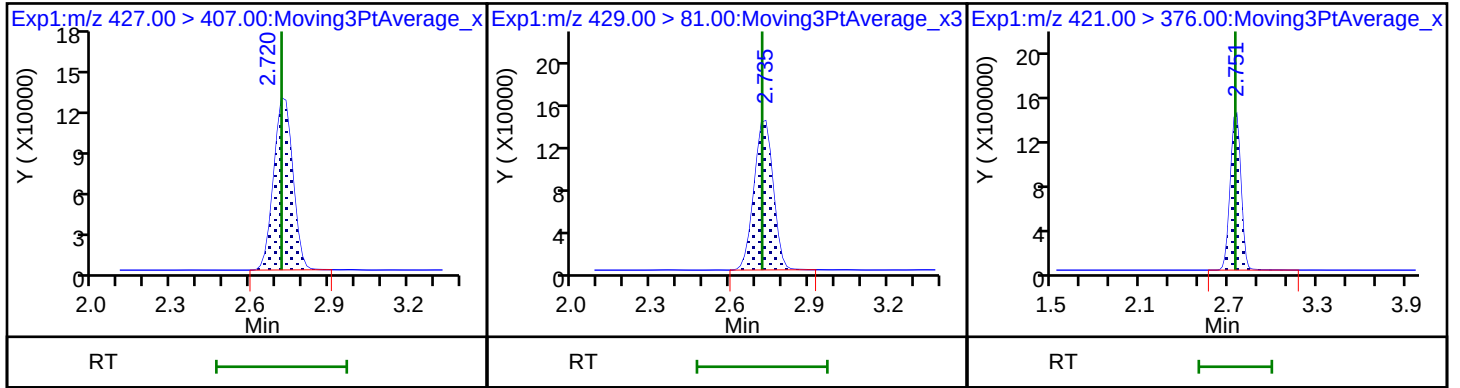
76 DONA

76 DONA



13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

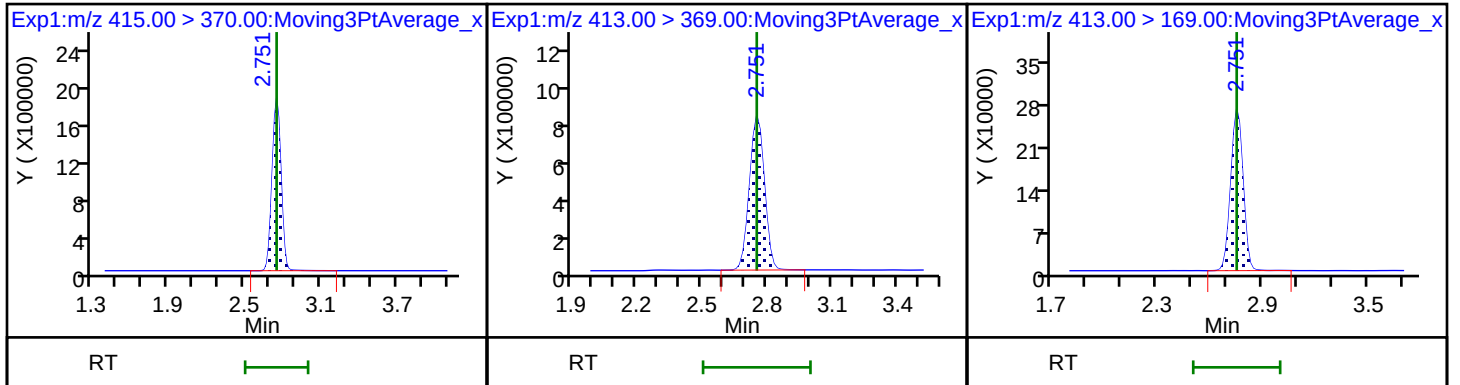
D 73 13C8 PFOA



* 62 13C2-PFOA

15 Perfluorooctanoic acid

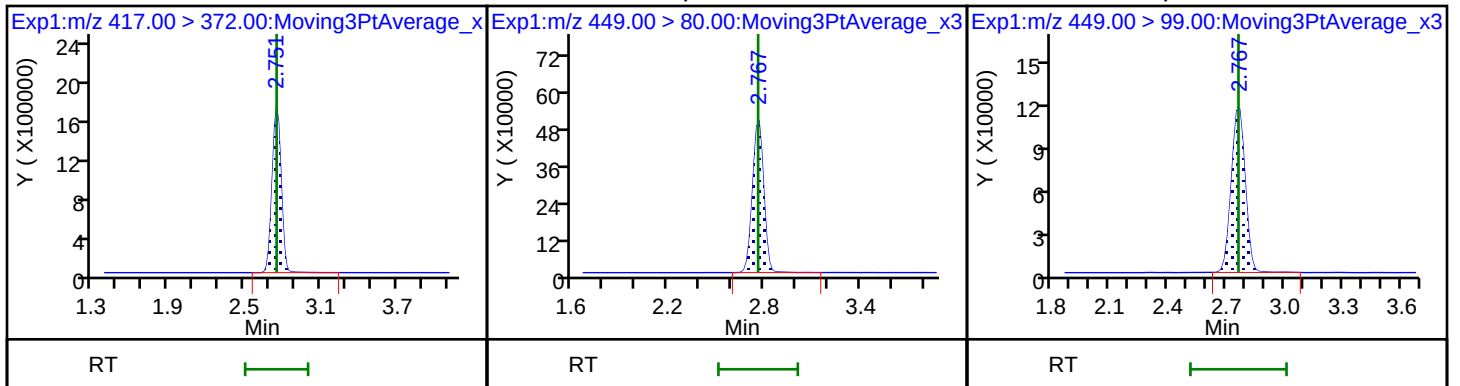
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

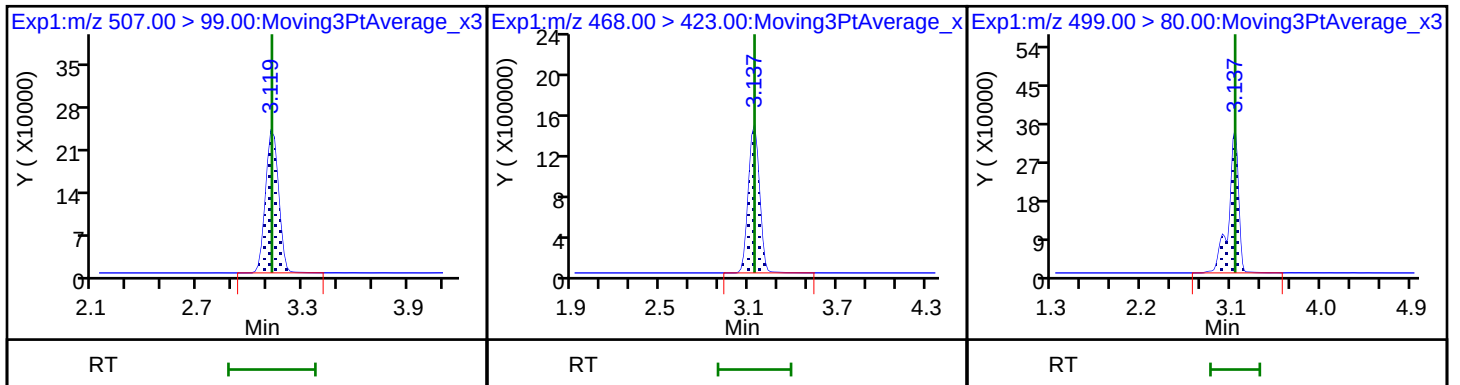
16 Perfluoroheptanesulfonic acid

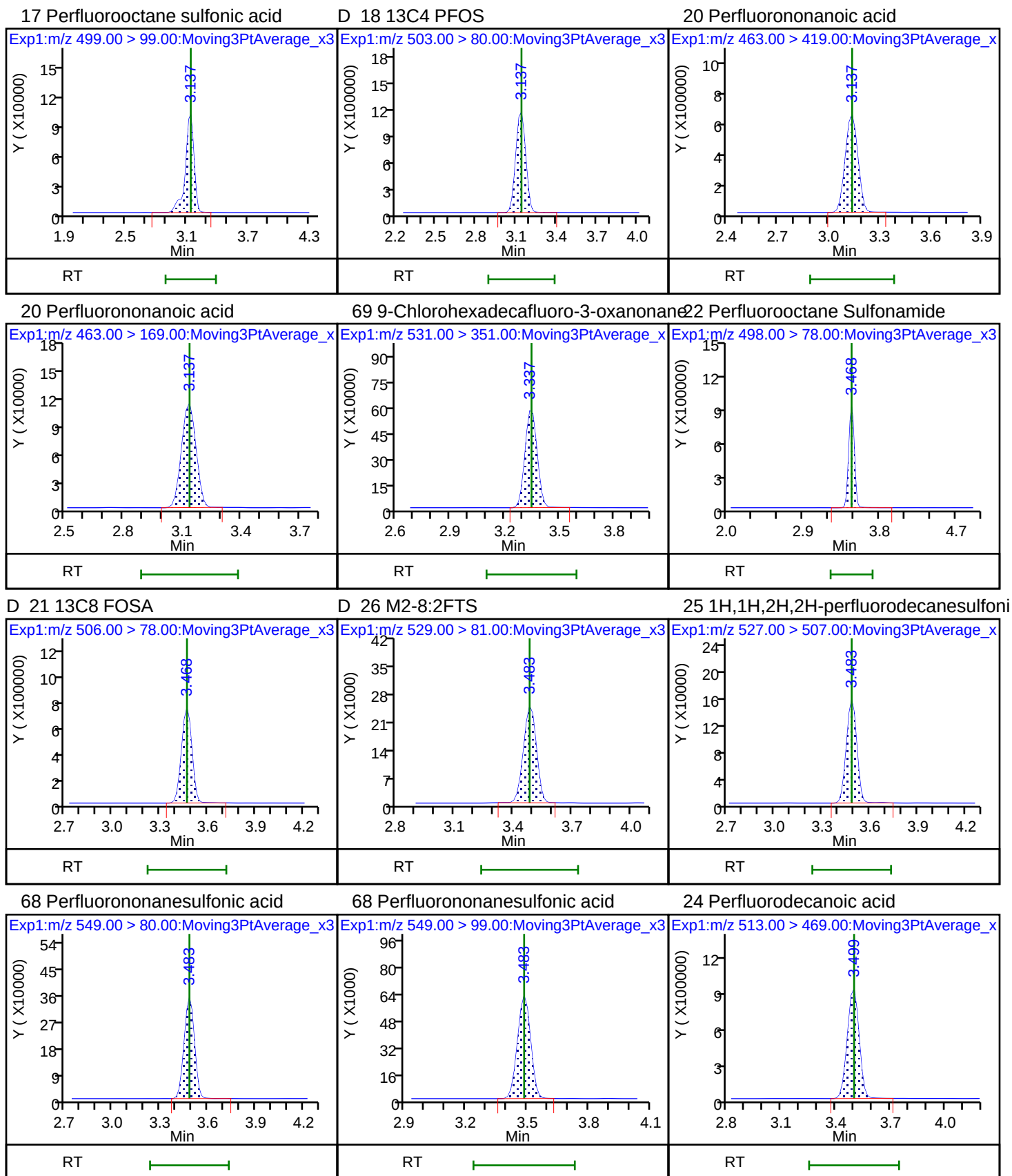


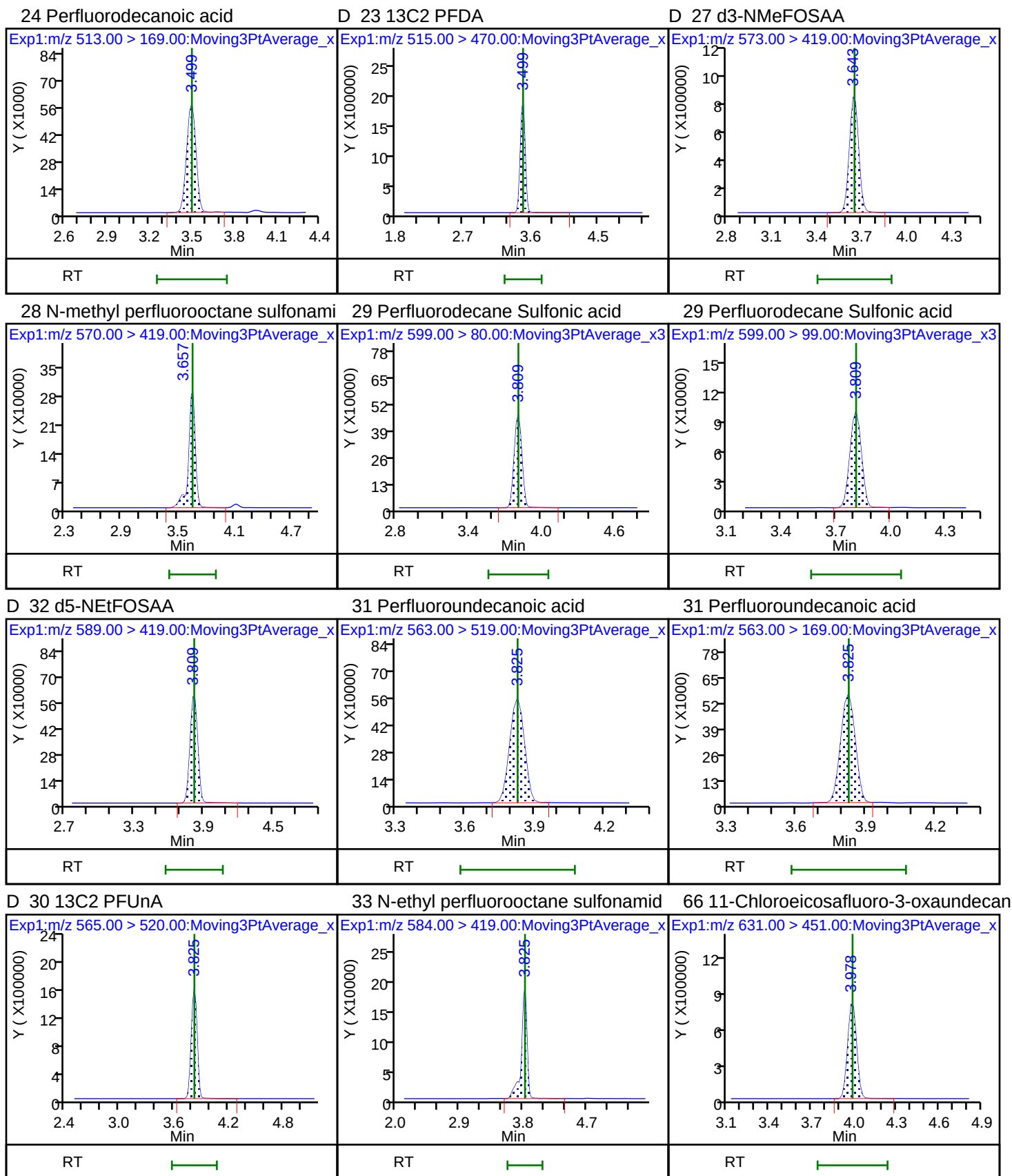
D 72 13C8 PFOS

D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

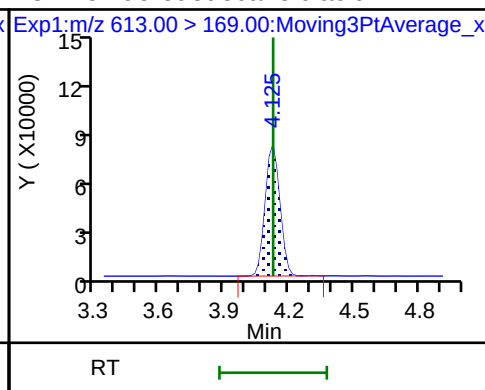
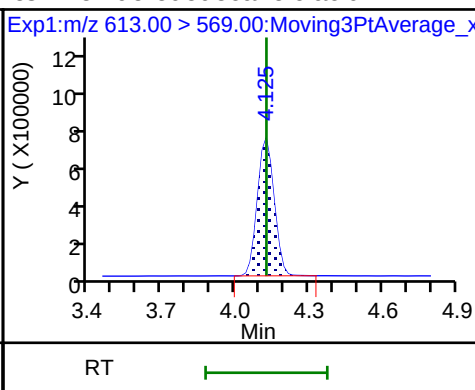
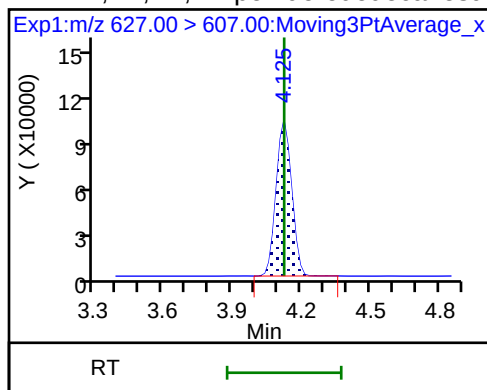






74 1H,1H,2H,2H-perfluorododecanesulfo37 Perfluorododecanoic acid

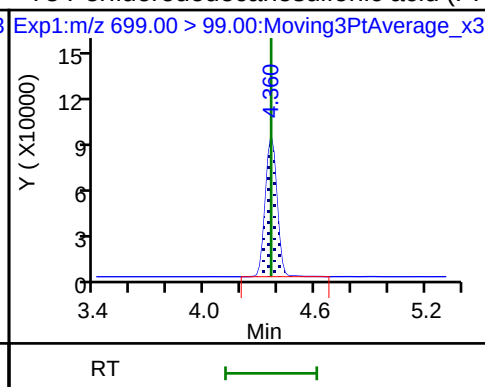
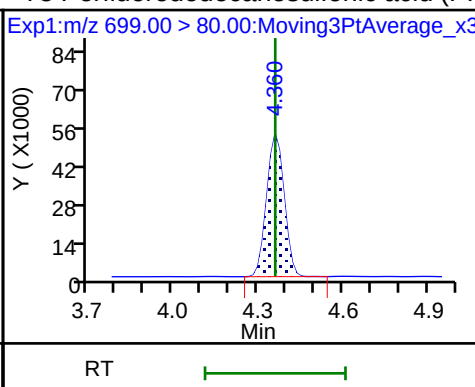
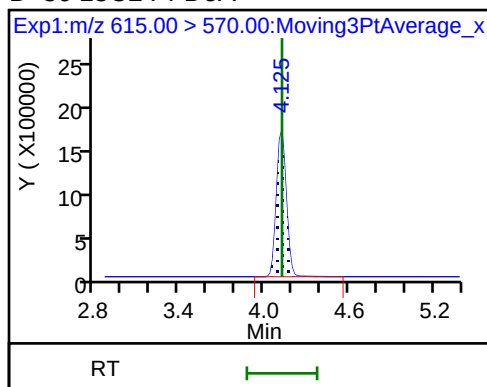
37 Perfluorododecanoic acid



D 36 13C2 PFDa

75 Perfluorododecanesulfonic acid (PF

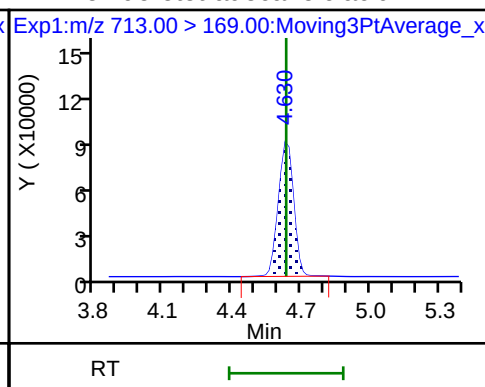
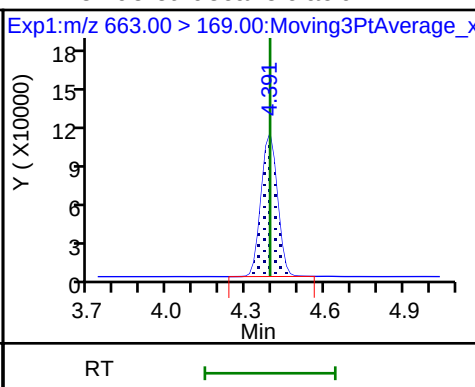
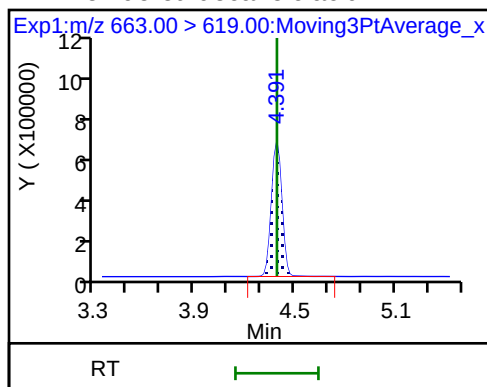
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

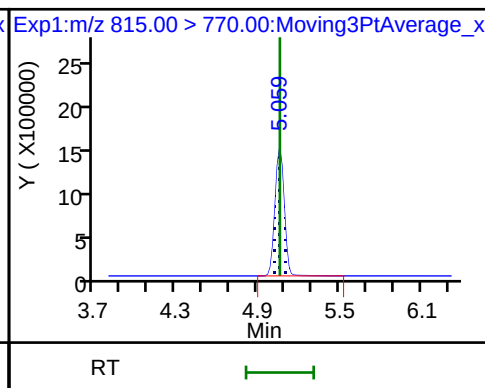
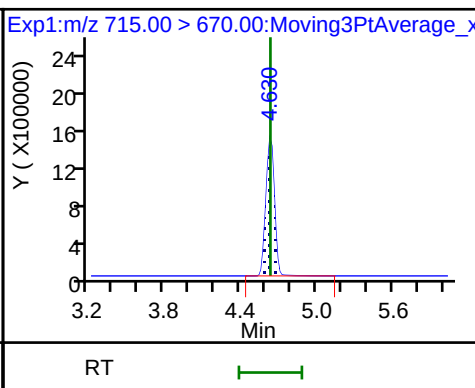
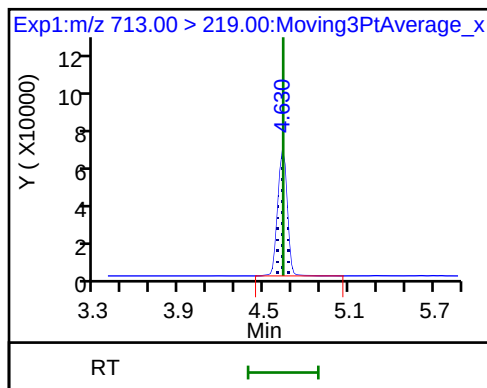
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

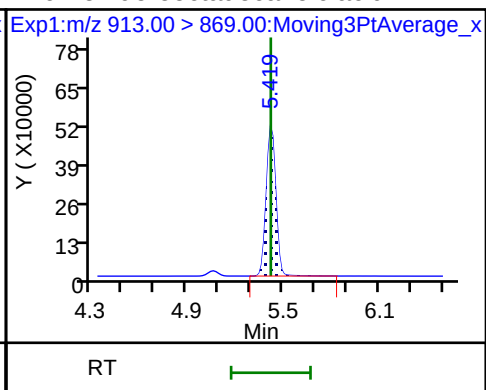
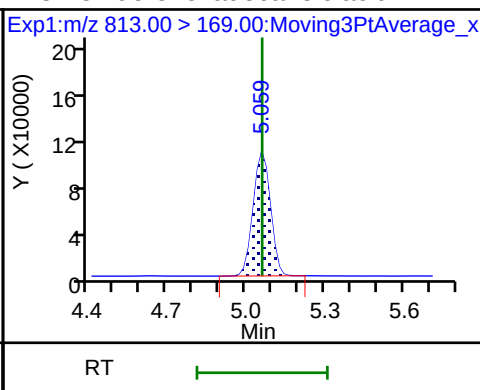
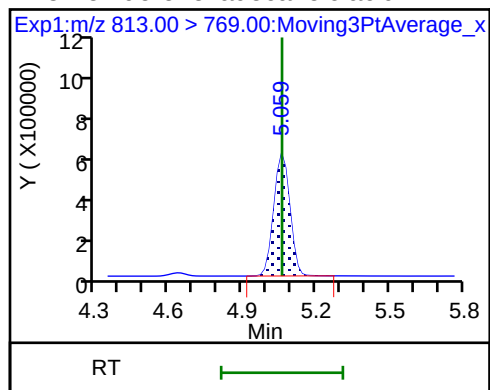
D 44 13C2-PFHxDA



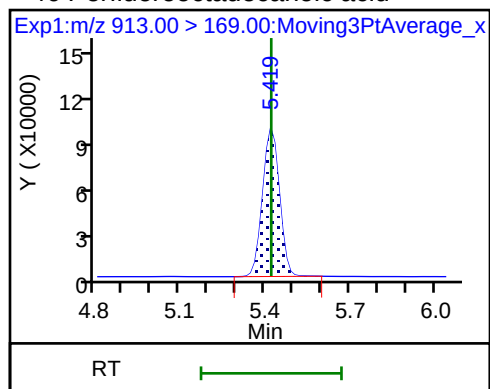
45 Perfluorohexadecanoic acid

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_009.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 14-Aug-2018 15:02:51 ALS Bottle#: 14 Worklist Smp#: 6
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:16:13 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 15:16:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.492	0.002	1.000	7379226	2.49		99.4	274	
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.492	0.002	0.543	7848915	2.52		101	14560	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.762	0.002	1.000	6969791	2.45		98.1	599	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.762	0.002	0.641	6943290	2.50		100	7400	
D 47 13C3-PFBS										
301.90 > 83.00	1.797	1.800	-0.003	0.653	84324	2.34		101	512	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.805	1.802	0.003	1.005	8696482	2.30		104	1367	
298.90 > 99.00	1.805	1.802	0.003	1.005	3079543		2.82(1.35-4.05)	104	1030	
D 60 M2-4:2FTS										
329.00 > 81.00	2.007	2.010	-0.003	0.730	682550	2.29		98.0	782	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.007	2.010	-0.003	1.117	1836255	2.43		104	4086	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.046	0.002	0.744	7219162	2.47		98.7	6169	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.047	0.001	1.000	6586984	2.55		102	1330	
313.00 > 119.00	2.048	2.047	0.001	1.000	482829		13.64(6.96-20.87)	102	981	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.068	2.070	-0.002	1.151	4473196	2.49		106	6251	
349.00 > 99.00	2.068	2.070	-0.002	1.151	2059953		2.17(1.15-3.45)	106	2512	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.150	2.146	0.004	0.782	938095	2.47		98.7	2249	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.150	2.149	0.001	1.000	1486534	2.57		103	612	
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.384	0.003	0.868	8654643	2.50		99.8	16588	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.385	0.002	1.000	9237998	2.52		101	1037	
363.00 > 169.00	2.387	2.385	0.002	1.000	2109669		4.38(2.17-6.52)	101	3171	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.400	2.400	0.0	1.000	5870856	2.19		96.3	5377	
399.00 > 99.00	2.400	2.400	0.0	1.000	1611323		3.64(1.90-5.70)	96.3	1681	
D 11 18O2 PFHxS										
403.00 > 84.00	2.400	2.400	0.0	0.872	4968675	2.33		98.6	14113	
76 DONA										
377.00 > 251.00	2.426	2.427	-0.001	0.774	14596562	2.28		96.8	25305	
377.00 > 85.00	2.426	2.427	-0.001	0.774	6632238		2.20(1.13-3.39)	96.8	7046	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.719	2.720	-0.001	1.000	1783153	2.34		98.6	2517	
D 12 M2-6:2FTS										
429.00 > 81.00	2.719	2.722	-0.003	0.988	812599	2.53		106	1596	
D 73 13C8 PFOA										
421.00 > 376.00	2.735	2.742	-0.007		6696547	2.38		97.1	5205	
D 14 13C4 PFOA										
417.00 > 372.00	2.751	2.752	-0.001	1.000	8367232	2.60		104	16070	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.751	2.752	-0.001	1.000	8768800	2.42		96.8	582	
413.00 > 169.00	2.751	2.752	-0.001	1.000	3212061		2.73(1.36-4.08)	96.8	3638	
* 62 13C2-PFOA										
415.00 > 370.00	2.751	2.752	-0.001		8125351	2.50			18163	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.751	2.761	-0.010	0.877	6034683	2.49		105	6267	
449.00 > 99.00	2.751	2.761	-0.010	0.877	1427053		4.23(1.84-5.53)	105	2167	
D 72 13C8 PFOS										
507.00 > 99.00	3.118	3.124	-0.006		1177469	2.33		97.3	2759	
D 18 13C4 PFOS										
503.00 > 80.00	3.136	3.137	-0.001	1.140	5759512	2.52		106	4434	
20 Perfluorononanoic acid										
463.00 > 419.00	3.136	3.137	-0.001	1.000	7816378	2.54		102	712	
463.00 > 169.00	3.136	3.137	-0.001	1.000	1430279		5.46(2.68-8.03)	102	2268	
D 19 13C5 PFNA										
468.00 > 423.00	3.136	3.137	-0.001	1.140	7509892	2.52		101	12488	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.136	3.137	-0.001	1.000	5784165	2.29		98.8	4375	
499.00 > 99.00	3.136	3.137	-0.001	1.000	1350717		4.28(2.04-6.12)	98.8	2366	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.337	3.346	-0.009	1.064	6706429	2.32		99.4	8242	
D 21 13C8 FOSA										
506.00 > 78.00	3.467	3.468	-0.001	1.260	3096022	2.52		101	6305	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.467	3.468	-0.001	1.000	9819871	2.70		108	6455	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	3947964	2.40		99.9	3816	
549.00 > 99.00	3.483	3.483	0.0	1.110	708985		5.57(3.02-9.05)	99.9	1996	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	1739649	2.31		96.6	3542	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	118891	2.57		107	848	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.498	3.499	-0.001	1.000	8795283	2.49		99.5	1177	
513.00 > 169.00	3.498	3.499	-0.001	1.000	627038		14.03(7.12-21.35)	99.5	466	
D 23 13C2 PFDA										
515.00 > 470.00	3.498	3.499	-0.001	1.272	8268590	2.56		102	9019	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.644	3.651	-0.007	1.324	3575014	2.55		102	4427	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.644	3.655	-0.011	1.000	3506588	2.47		98.7	932	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.810	3.810	0.0	1.215	4919739	2.43		101	4288	
599.00 > 99.00	3.810	3.810	0.0	1.215	1057107		4.65(2.14-6.43)	101	2910	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.810	3.819	-0.009	1.385	2642308	2.48		99.2	2084	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.826	3.826	0.0	1.004	2689326	2.59		104	2845	
D 30 13C2 PFUnA										
565.00 > 520.00	3.826	3.826	0.0	1.391	6879149	2.55		102	14608	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.826	3.826	0.0	1.000	6072941	2.55		102	1005	
563.00 > 169.00	3.826	3.826	0.0	1.000	550650		11.03(5.24-15.72)	102	1253	
35 MeFOSA										
512.00 > 169.00	3.963	3.963	0.0		1760560	NC			831	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.979	3.987	-0.008	1.268	7572280	2.22		94.1	14062	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.126	4.125	0.001	1.185	1103821	2.26		93.8	2187	
D 36 13C2 PFDaA										
615.00 > 570.00	4.126	4.125	0.001	1.500	8027742	2.57		103	10318	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.126	4.125	0.001	1.000	7914632	2.41		96.2	1452	
613.00 > 169.00	4.126	4.125	0.001	1.000	895178		8.84(4.68-14.05)	96.2	2003	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.361	4.360	0.001	1.390	539677	2.25		93.0	1176	
699.00 > 99.00	4.361	4.360	0.001	1.390	935043		0.58(0.28-0.83)	93.0	2126	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.392	4.391	0.001	1.064	6507751	2.47		99.0	2381	
663.00 > 169.00	4.392	4.391	0.001	1.064	1179754		5.52(3.09-9.27)	99.0	2698	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 43 13C2-PFTeDA										
715.00 > 670.00	4.634	4.634	0.0	1.684	6309954	2.49		99.7	11221	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.634	4.634	0.0	1.000	1001686	2.44		97.6	2120	
713.00 > 219.00	4.634	4.634	0.0	1.000	735914		1.36(0.70-2.09)	97.6	2671	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.062	5.061	0.001	1.000	6447807	2.49		99.5	1431	
813.00 > 169.00	5.062	5.061	0.001	1.000	1169343		5.51(2.77-8.32)	99.5	2236	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.062	5.061	0.001	1.840	7086357	2.56		102	11471	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.422	5.421	0.001	1.071	5169704	2.55		102	1016	
913.00 > 169.00	5.422	5.421	0.001	1.071	1003453		5.15(2.55-7.64)	102	2659	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_009.d

Injection Date: 14-Aug-2018 15:02:51

Instrument ID: A9

Lims ID: IC L5 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 14

Worklist Smp#: 6

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

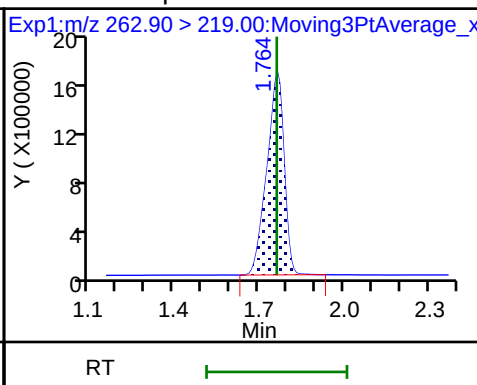
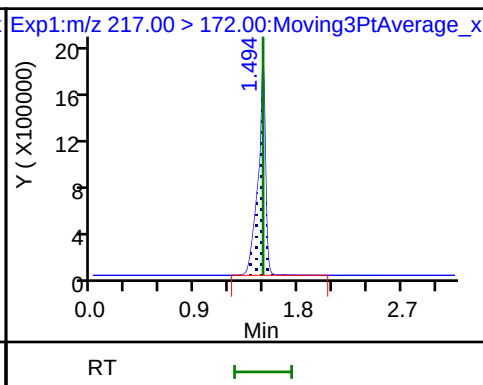
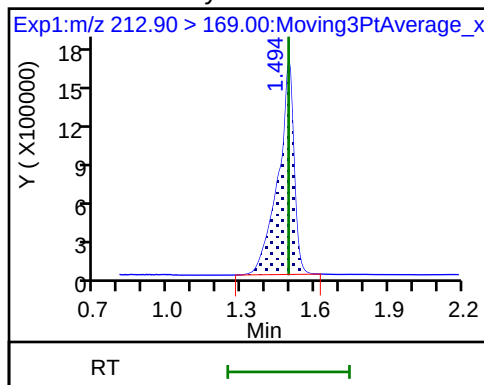
Method: PFAS_A9

Limit Group: LC PFC ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

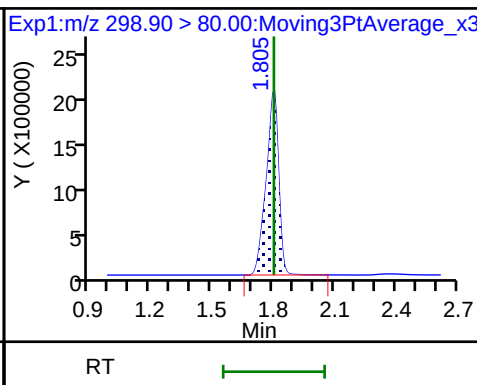
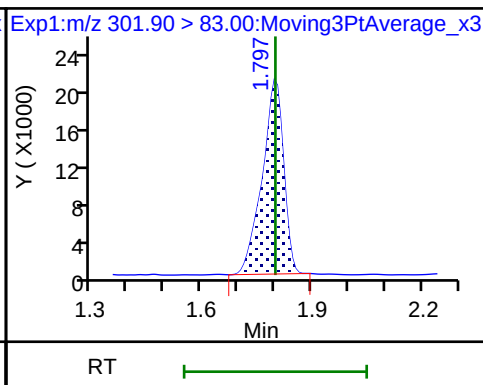
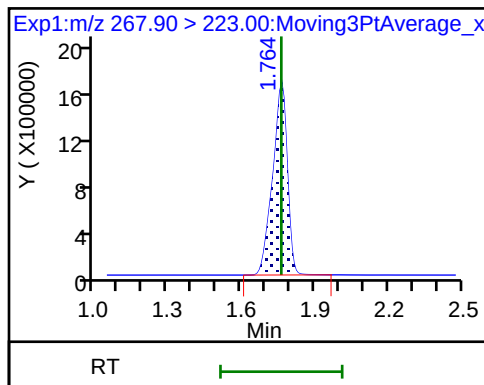
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

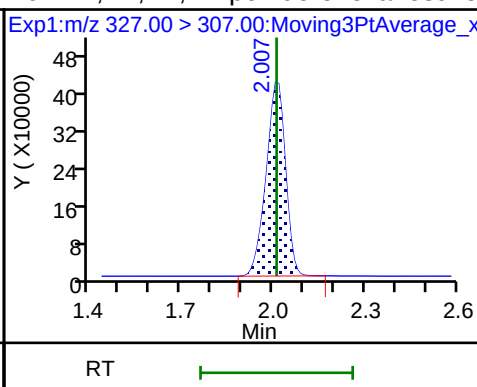
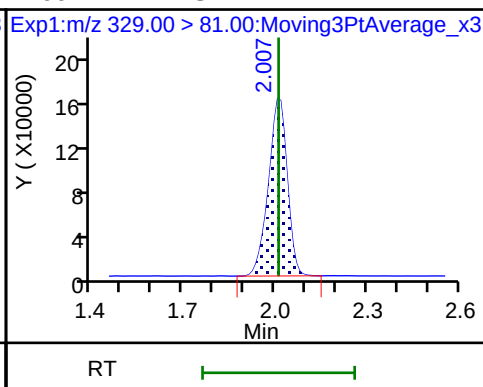
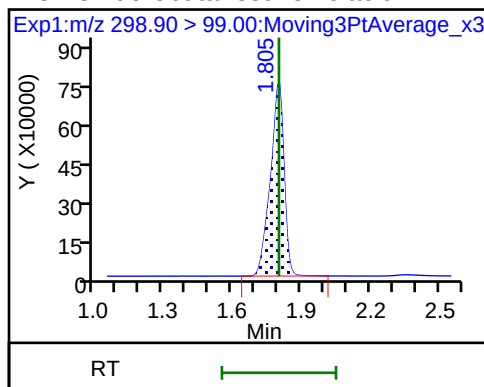
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 60 M2-4:2FTS

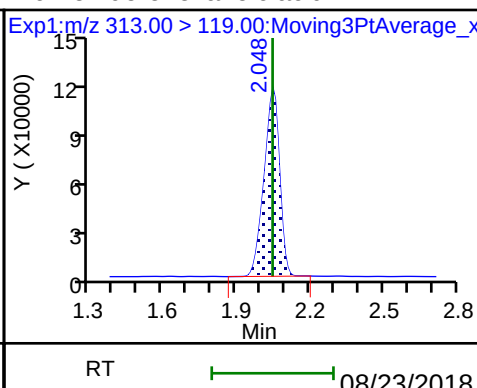
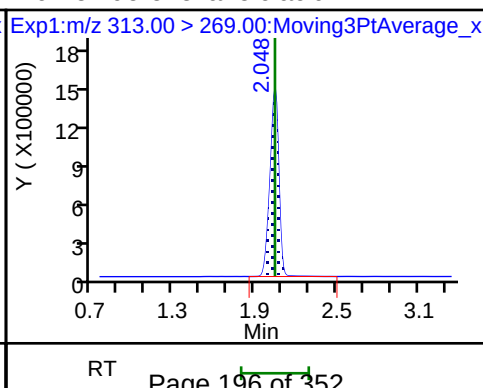
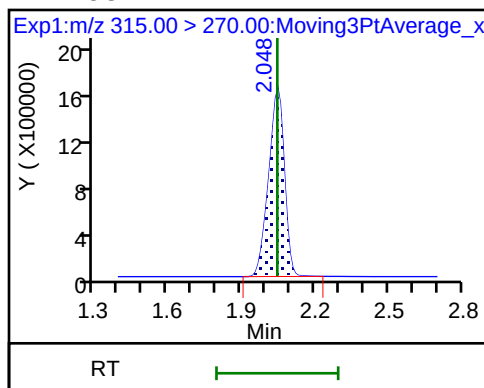
61 1H,1H,2H,2H-perfluorohexanesulfoni

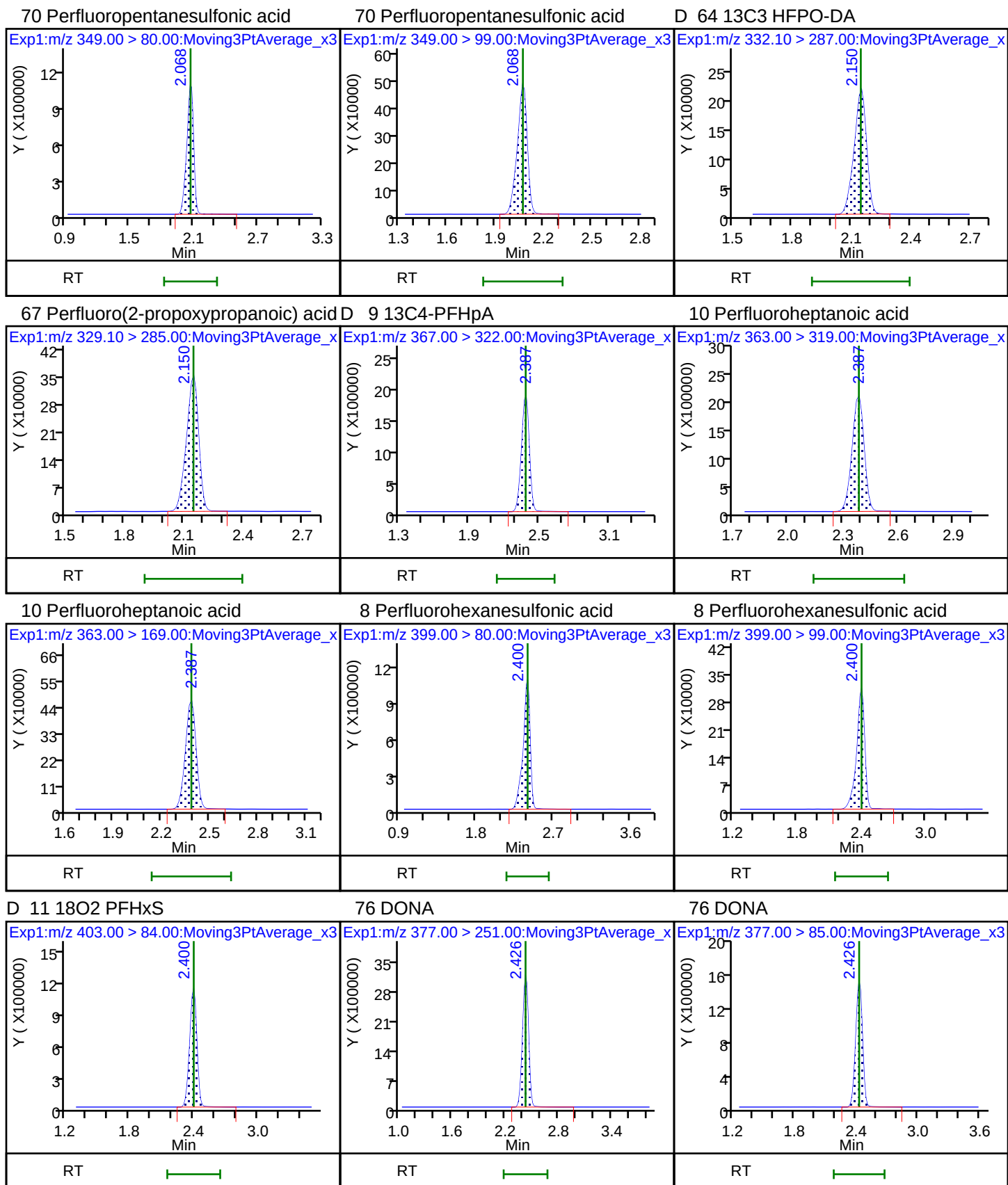


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

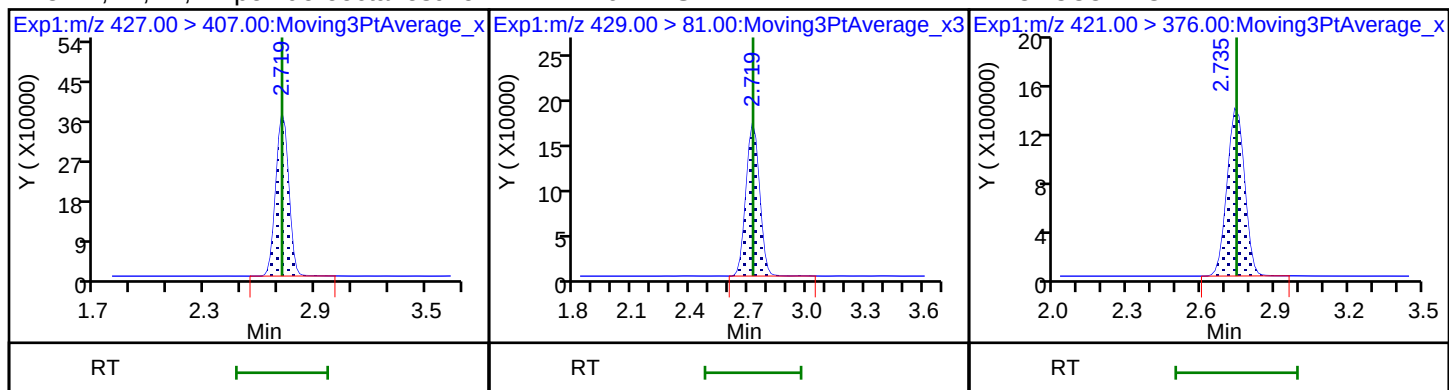
6 Perfluorohexanoic acid





13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

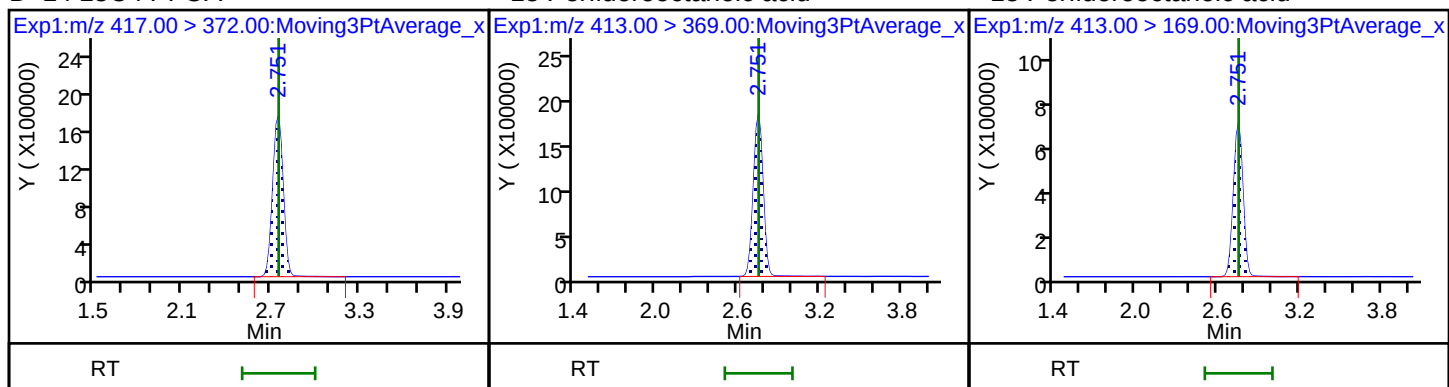
D 73 13C8 PFOA



D 14 13C4 PFOA

15 Perfluorooctanoic acid

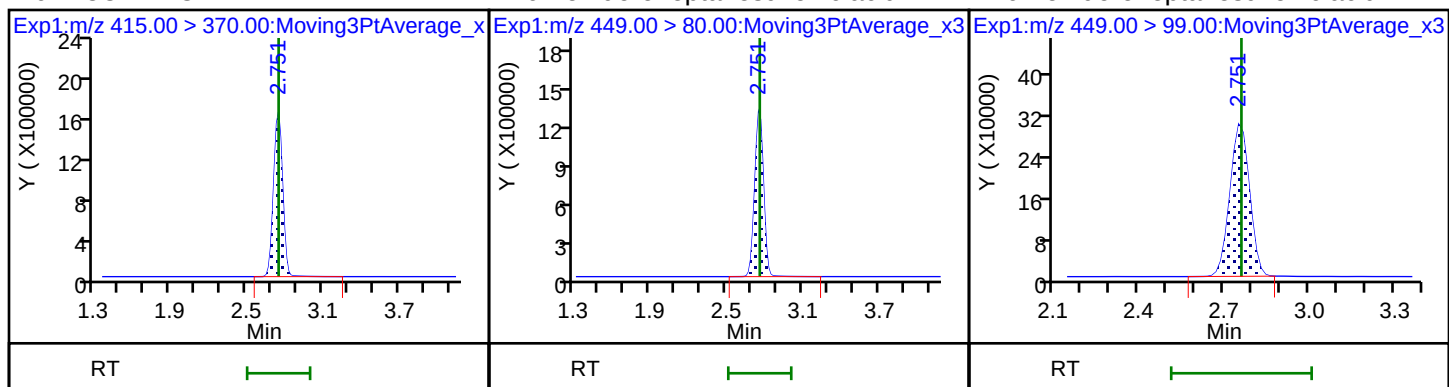
15 Perfluorooctanoic acid



* 62 13C2-PFOA

16 Perfluoroheptanesulfonic acid

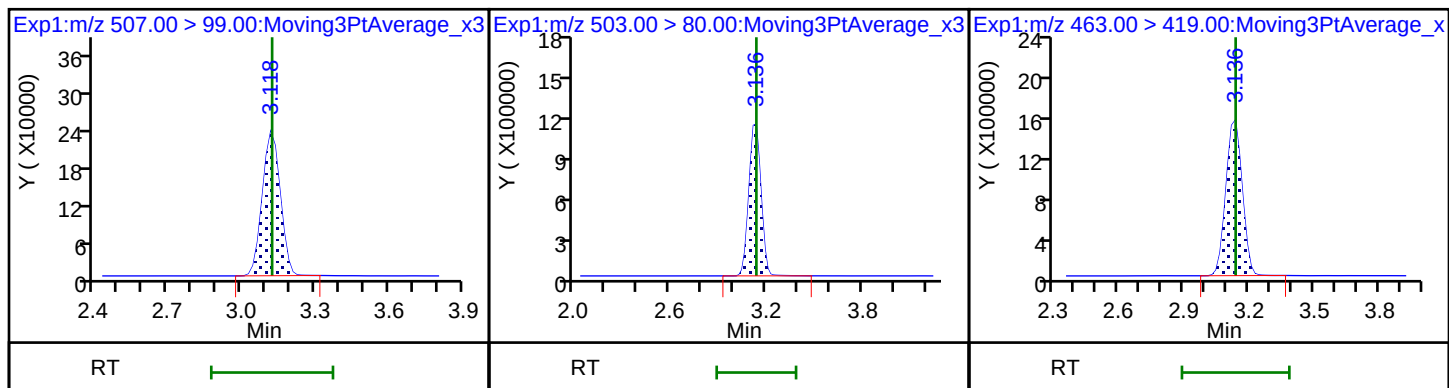
16 Perfluoroheptanesulfonic acid

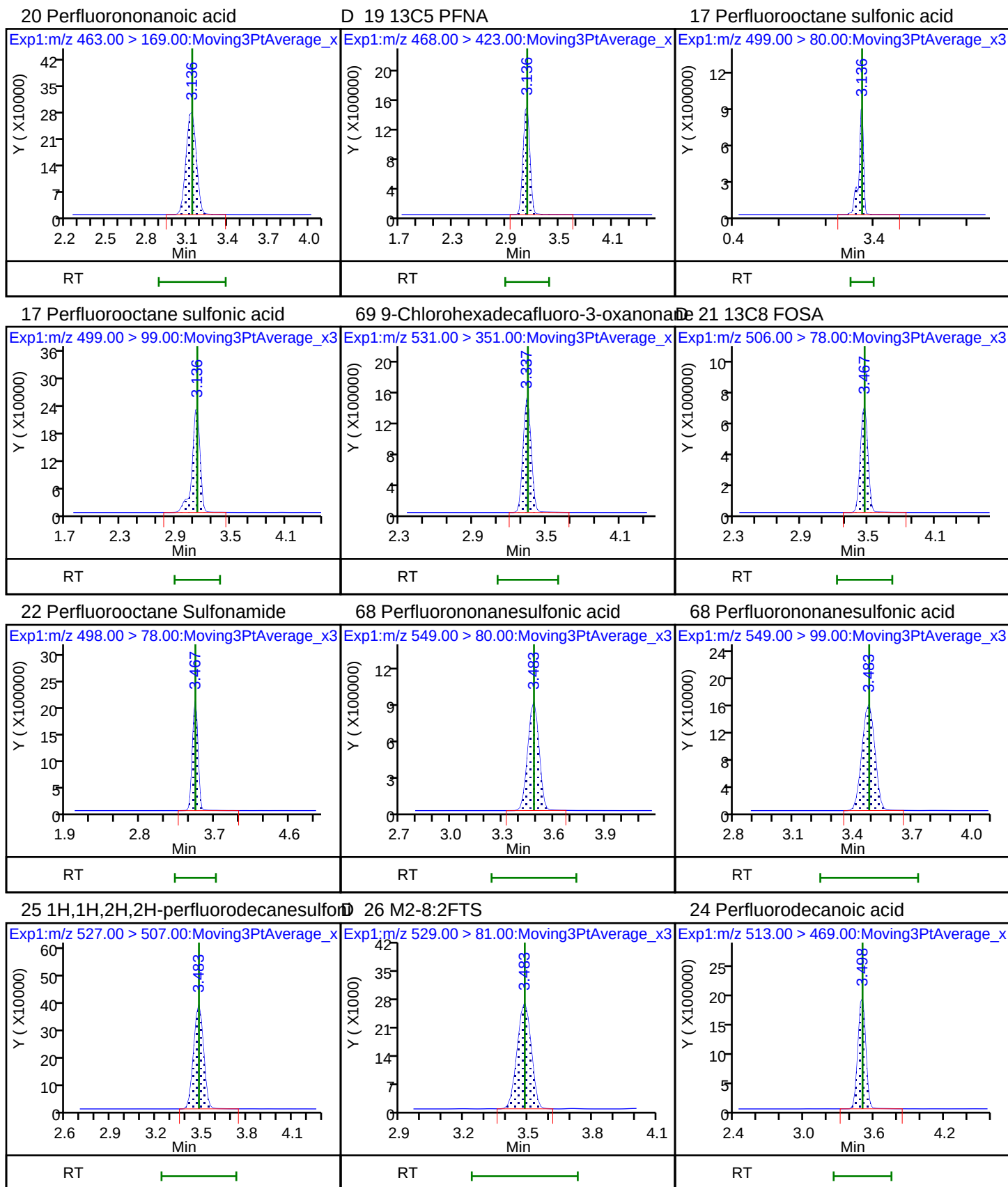


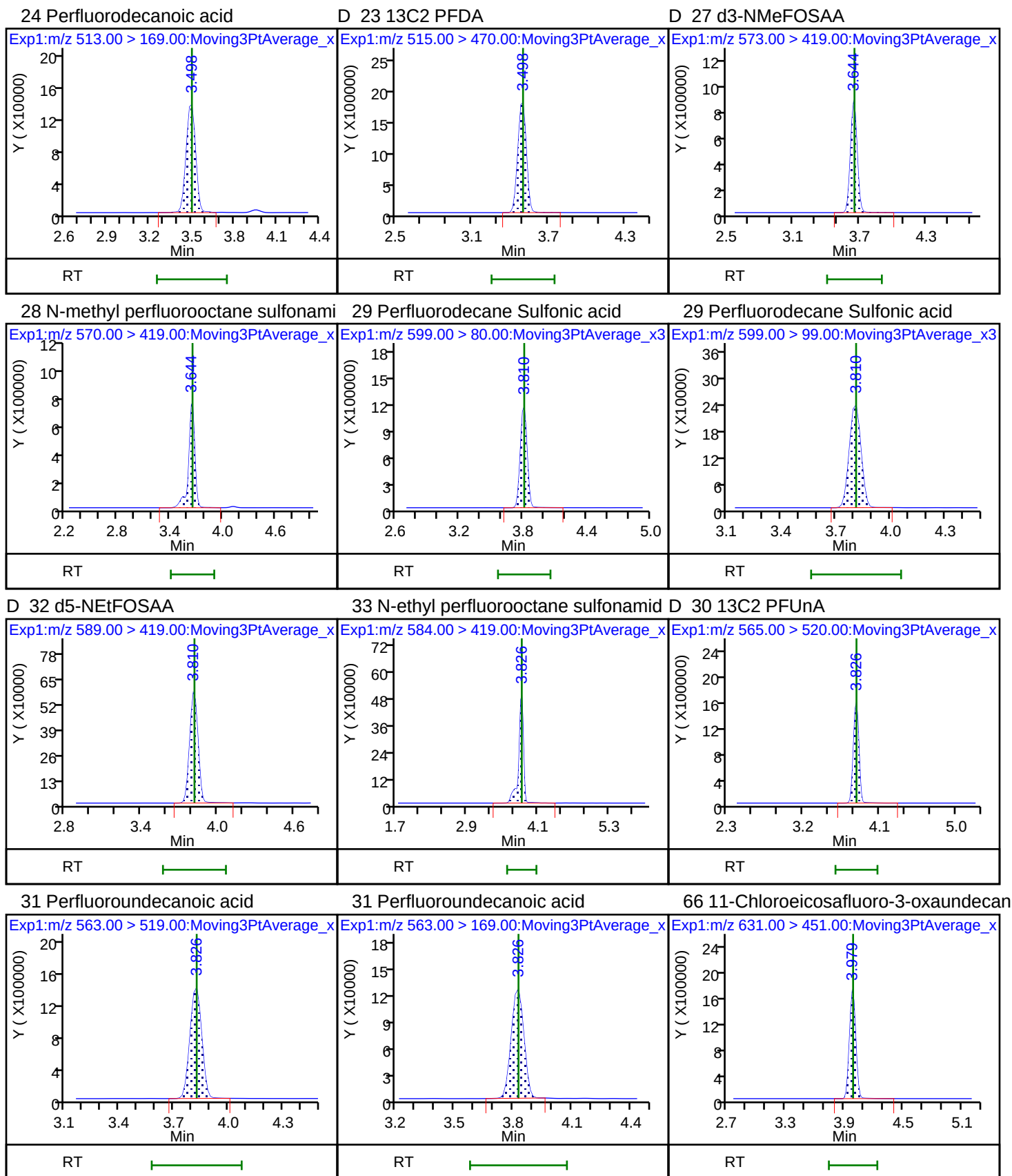
D 72 13C8 PFOS

D 18 13C4 PFOS

20 Perfluorononanoic acid

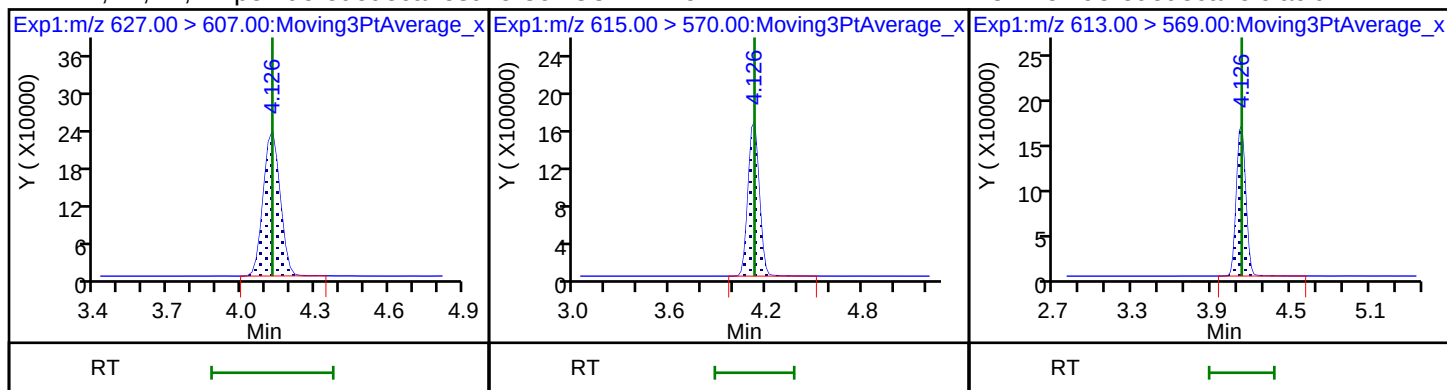






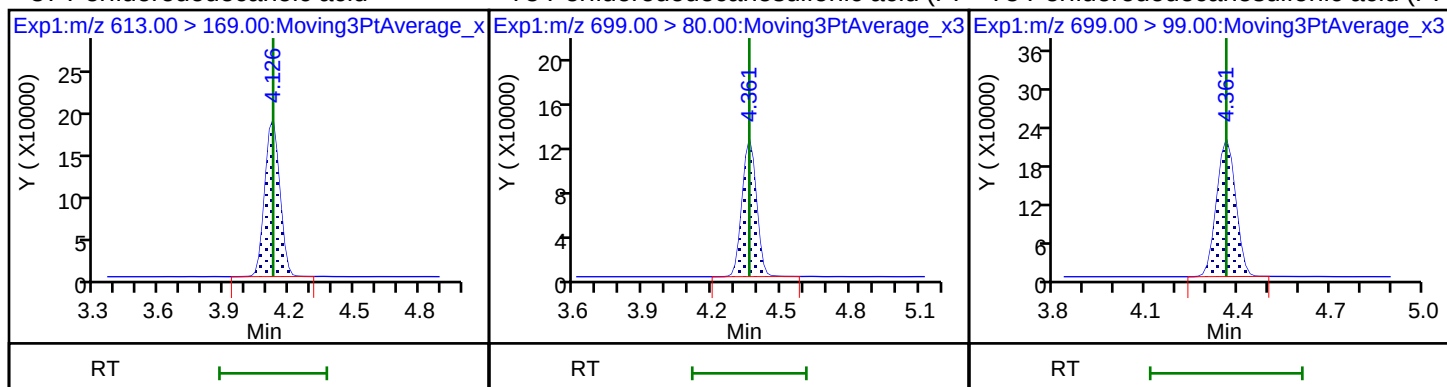
74 1H,1H,2H,2H-perfluorododecanesulfonic acid 36 13C2 PFDa

37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

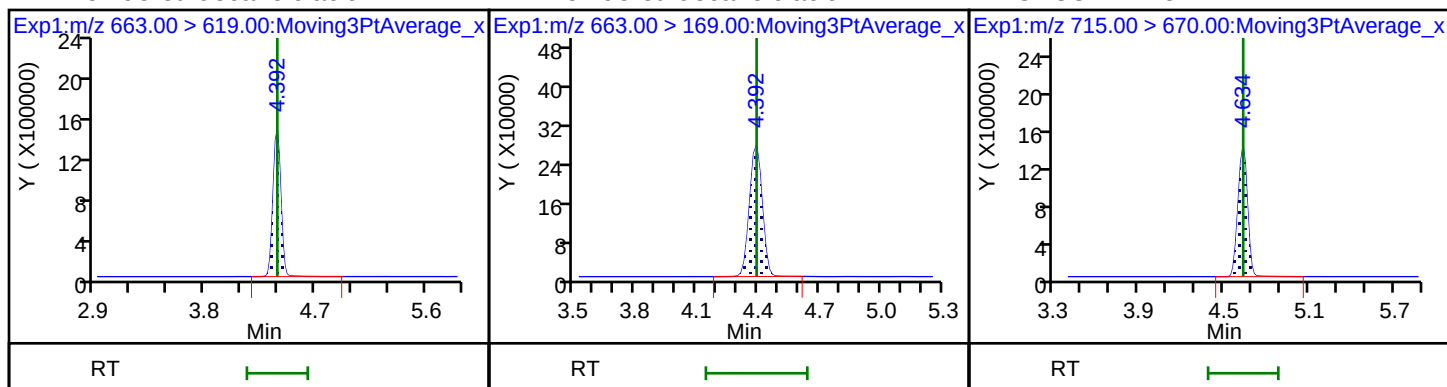
75 Perfluorododecanesulfonic acid (PF 75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

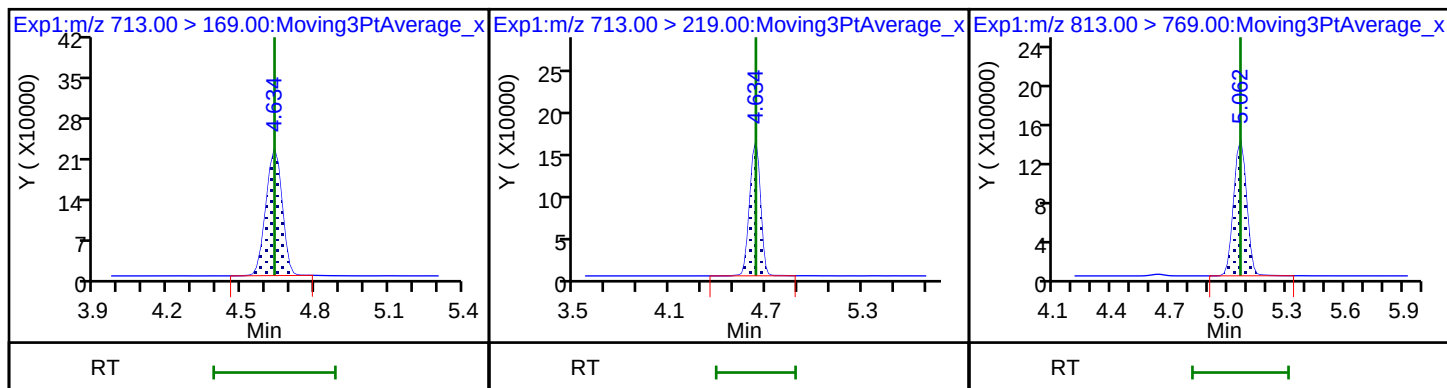
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

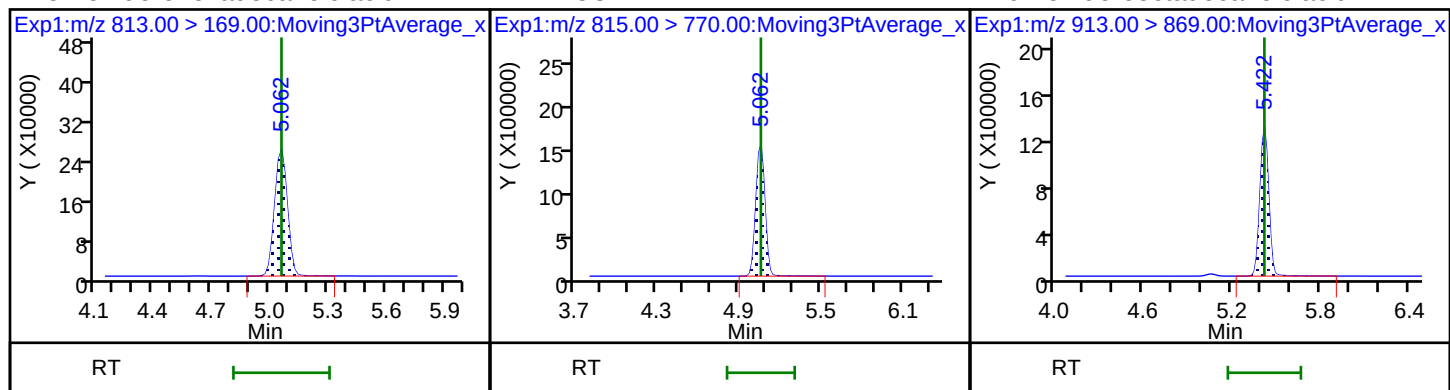
45 Perfluorohexadecanoic acid



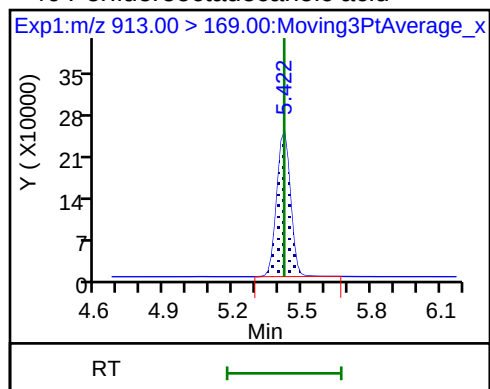
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_010.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 14-Aug-2018 15:10:21 ALS Bottle#: 15 Worklist Smp#: 7
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD6
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:16:29 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 15:55:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.492	0.002	0.543	8333676	2.65		106	12654	
2 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.492	0.002	1.000	15349362	4.87		97.4	758	
D 3 13C5-PFPeA										
267.90 > 223.00	1.765	1.762	0.003	0.641	7355937	2.62		105	7888	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.765	1.762	0.003	1.000	14099524	4.68		93.6	1135	
D 47 13C3-PFBS										
301.90 > 83.00	1.807	1.800	0.007	0.656	92040	2.52		109	500	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.807	1.802	0.005	1.000	17295123	4.19		94.9	2646	
298.90 > 99.00	1.807	1.802	0.005	1.000	6288537		2.75(1.35-4.05)	94.9	2025	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.019	2.010	0.009	1.117	3672286	4.45		95.2	9383	
D 60 M2-4:2FTS										
329.00 > 81.00	2.019	2.010	0.009	0.733	711802	2.36		101	761	
D 7 13C2 PFHxA										
315.00 > 270.00	2.049	2.046	0.003	0.745	7863093	2.65		106	15367	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.049	2.047	0.002	1.000	13258249	4.71		94.2	2369	
313.00 > 119.00	2.049	2.047	0.002	1.000	1007150		13.16(6.96-20.87)	94.2	1826	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.070	2.070	0.0	1.146	9080336	4.63		98.8	11405	
349.00 > 99.00	2.070	2.070	0.0	1.146	4256839		2.13(1.15-3.45)	98.8	5466	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.152	2.146	0.006	0.782	931143	2.42		96.8	2043	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.152	2.149	0.003	1.000	3216048	5.60		112	1209	
D 9 13C4-PFHpA										
367.00 > 322.00	2.388	2.384	0.004	0.868	9380968	2.67		107	22843	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.388	2.385	0.003	1.000	17475592	4.40		88.1	1838	
363.00 > 169.00	2.388	2.385	0.003	1.000	4690822		3.73(2.17-6.52)	88.1	8445	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.400	0.001	1.000	12656591	4.50		99.0	9746	
399.00 > 99.00	2.401	2.400	0.001	1.000	3471232		3.65(1.90-5.70)	99.0	2961	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.400	0.001	0.872	5209492	2.42		102	15045	
76 DONA										
377.00 > 251.00	2.428	2.427	0.001	0.774	28000019	4.41		93.7	40294	
377.00 > 85.00	2.428	2.427	0.001	0.774	13561255		2.06(1.13-3.39)	93.7	14602	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.721	2.720	0.001	1.000	3283635	4.77		101	3493	
D 12 M2-6:2FTS										
429.00 > 81.00	2.721	2.722	-0.001	0.988	733165	2.25		94.9	1044	
D 73 13C8 PFOA										
421.00 > 376.00	2.753	2.742	0.010		7131974	2.53		103	13327	
* 62 13C2-PFOA										
415.00 > 370.00	2.753	2.752	0.0		8227647	2.50			9161	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.753	2.752	0.0	1.000	15316971	4.31		86.0	995	
413.00 > 169.00	2.753	2.752	0.0	1.000	6422035		2.39(1.36-4.08)	86.0	6206	
D 14 13C4 PFOA										
417.00 > 372.00	2.753	2.752	0.0	1.000	8221072	2.52		101	15438	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.768	2.761	0.007	0.882	11222813	4.67		98.2	6667	
449.00 > 99.00	2.768	2.761	0.007	0.882	3021010		3.71(1.84-5.53)	98.2	4358	
D 72 13C8 PFOS										
507.00 > 99.00	3.138	3.124	0.014		1296525	2.56		107	4855	
D 19 13C5 PFNA										
468.00 > 423.00	3.138	3.137	0.001	1.140	8115022	2.69		107	12919	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.138	3.137	0.001	1.000	12030038	4.81		104	6039	
499.00 > 99.00	3.138	3.137	0.001	1.000	2817133		4.27(2.04-6.12)	104	4312	
D 18 13C4 PFOS										
503.00 > 80.00	3.138	3.137	0.001	1.140	5705912	2.47		103	5940	
20 Perfluorononanoic acid										
463.00 > 419.00	3.138	3.137	0.001	1.000	14633531	4.40		88.1	1359	
463.00 > 169.00	3.138	3.137	0.001	1.000	3101124		4.72(2.68-8.03)	88.1	5783	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.353	3.346	0.007	1.069	12998127	4.53		97.3	10899	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.468	3.468	0.0	1.000	17316605	4.79		95.8	5182	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.468	0.0	1.260	3080115	2.47		98.9	3369	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	110436	2.36		98.5	448	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	3743134	5.36		112	6382	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	8023770	4.92		103	4196	
549.00 > 99.00	3.483	3.483	0.0	1.110	1405829		5.71(3.02-9.05)	103	6373	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	16148187	4.55		91.0	1723	
513.00 > 169.00	3.499	3.499	0.0	1.000	1244858		12.97(7.12-21.35)	91.0	580	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.271	8304952	2.54		101	10686	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.658	3.651	0.007	1.329	3986340	2.80		112	4131	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.658	3.655	0.003	1.000	7895729	4.98		99.7	1836	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.811	3.810	0.001	1.214	9679763	4.83		100	9158	
599.00 > 99.00	3.811	3.810	0.001	1.214	2243203		4.32(2.14-6.43)	100	8330	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.827	3.819	0.008	1.390	2617161	2.43		97.1	2615	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.827	3.826	0.001	1.000	10831661	4.43		88.6	1655	
563.00 > 169.00	3.827	3.826	0.001	1.000	1189951		9.10(5.24-15.72)	88.6	2878	
D 30 13C2 PFUnA										
565.00 > 520.00	3.827	3.826	0.001	1.390	7054425	2.58		103	12198	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.827	3.826	0.001	1.000	5065452	4.92		98.4	3493	
35 MeFOSA										
512.00 > 169.00	3.964	3.963	0.001		3659700	NC			1140	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.995	3.987	0.008	1.273	14527954	4.29		91.1	19215	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.126	4.125	0.001	1.185	2082230	4.59		95.2	4492	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.126	4.125	0.001	1.000	15388726	4.53		90.7	3095	
613.00 > 169.00	4.126	4.125	0.001	1.000	1817810		8.47(4.68-14.05)	90.7	3441	
D 36 13C2 PFDaA										
615.00 > 570.00	4.126	4.125	0.001	1.499	8280027	2.61		105	11217	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.361	4.360	0.001	1.390	1091580	4.60		94.9	2333	
699.00 > 99.00	4.361	4.360	0.001	1.390	2071281		0.53(0.28-0.83)	94.9	7401	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.392	4.391	0.001	1.064	12430083	4.58		91.6	4037	
663.00 > 169.00	4.392	4.391	0.001	1.064	2278190		5.46(3.09-9.27)	91.6	6558	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.634	4.634	0.0	1.000	2145526	4.97		99.4	5129	
713.00 > 219.00	4.634	4.634	0.0	1.000	1580071		1.36(0.70-2.09)	99.4	6526	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.634	4.634	0.0	1.684	6635951	2.59		104	12417	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.743	4.743	0.0		2285	NC			0.0	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.062	5.061	0.001	1.839	7475812	2.67		107	10289	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.062	5.061	0.001	1.000	12114833	4.45		89.0	2373	
813.00 > 169.00	5.062	5.061	0.001	1.000	2532082		4.78(2.77-8.32)	89.0	4476	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.423	5.421	0.002	1.071	10044387	4.70		94.0	1778	
913.00 > 169.00	5.423	5.421	0.002	1.071	1973860		5.09(2.55-7.64)	94.0	4694	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00010

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_010.d

Injection Date: 14-Aug-2018 15:10:21

Instrument ID: A9

Lims ID: IC L6 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 15

Worklist Smp#: 7

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

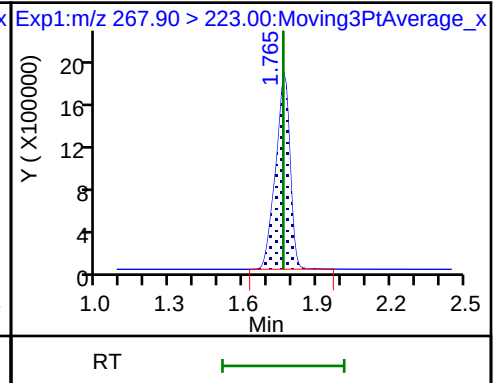
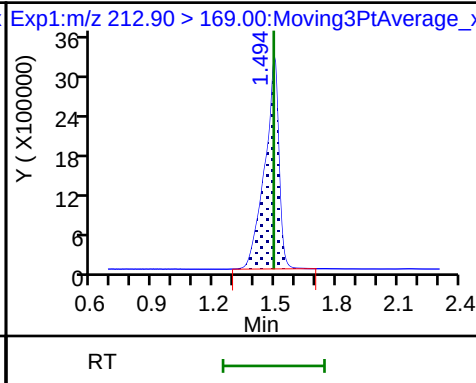
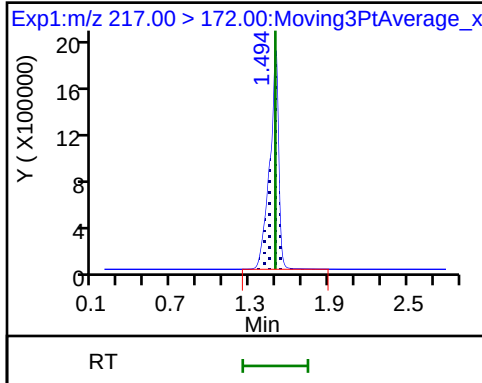
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

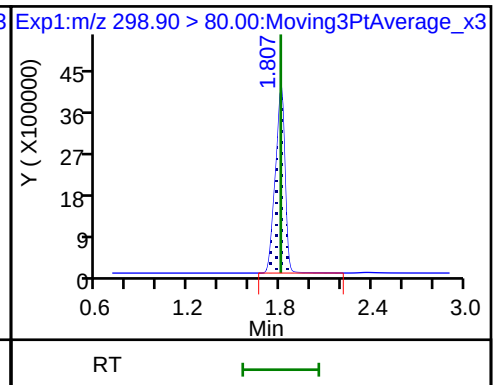
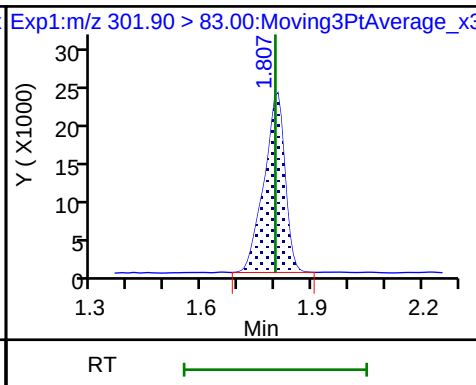
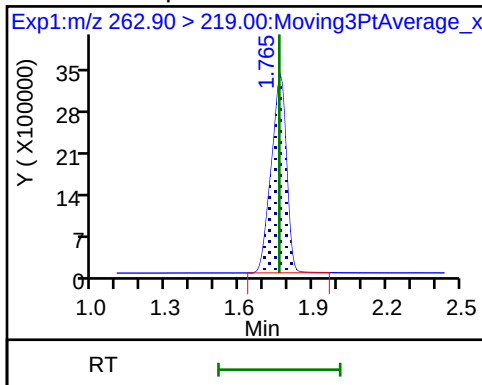
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

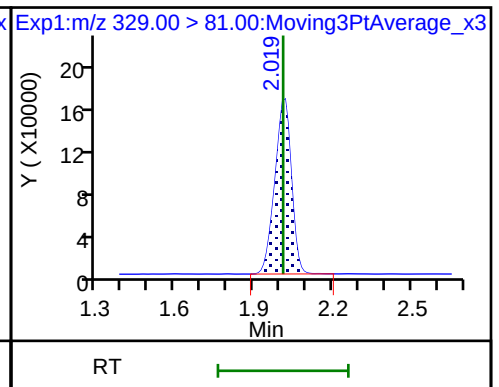
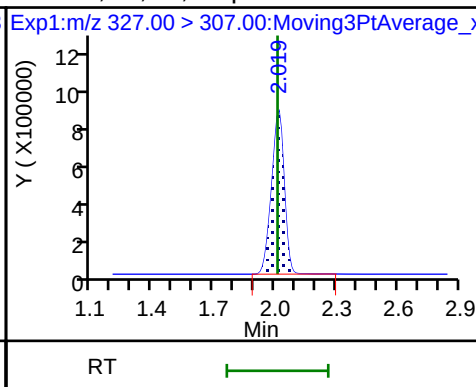
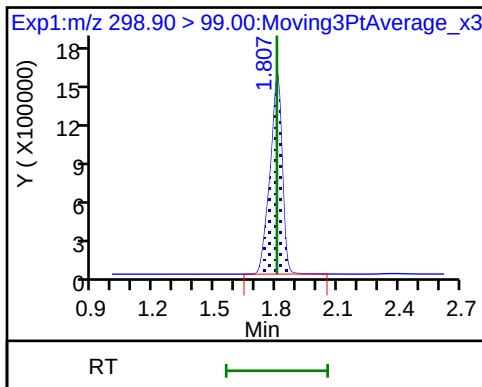
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

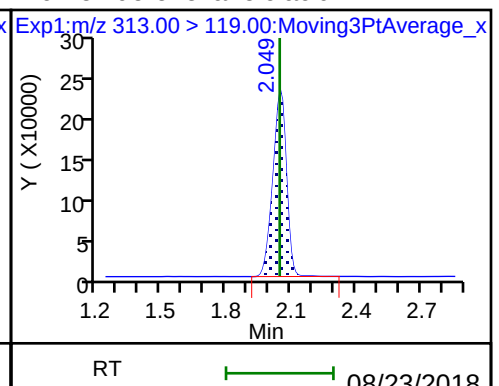
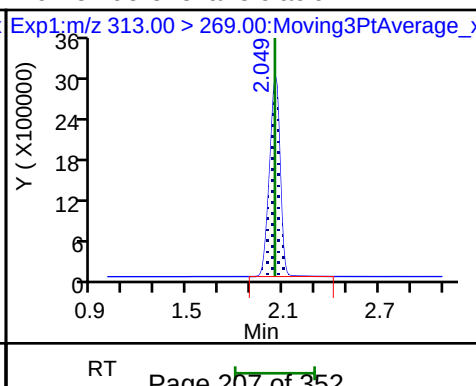
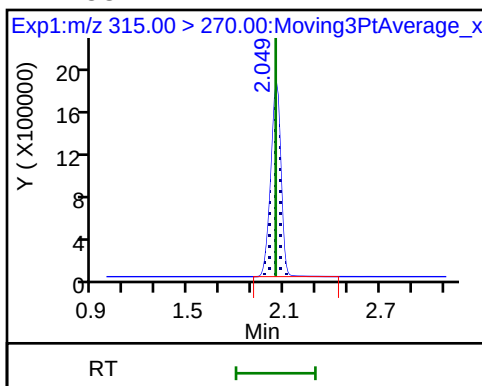
D 60 M2-4:2FTS

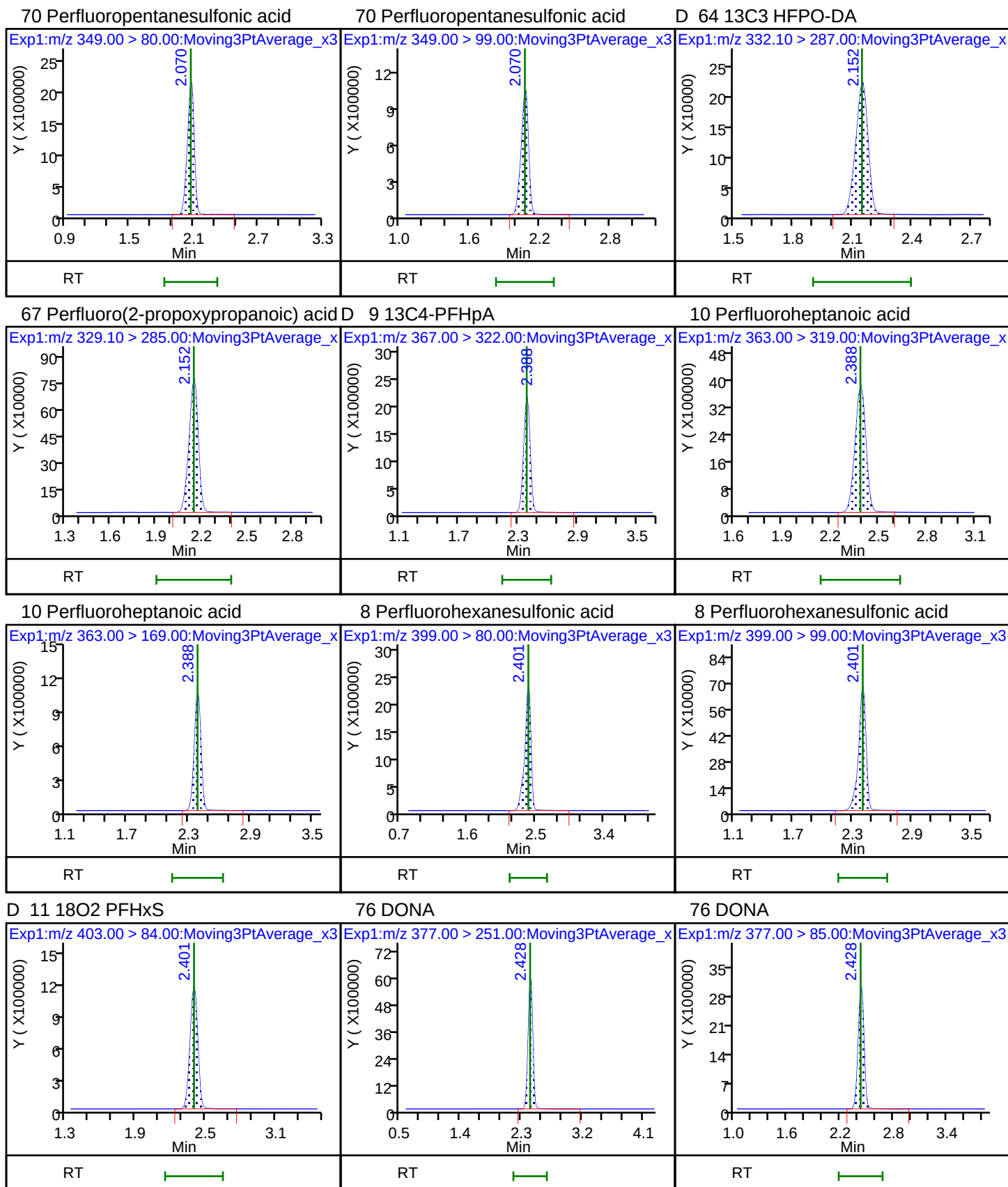


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

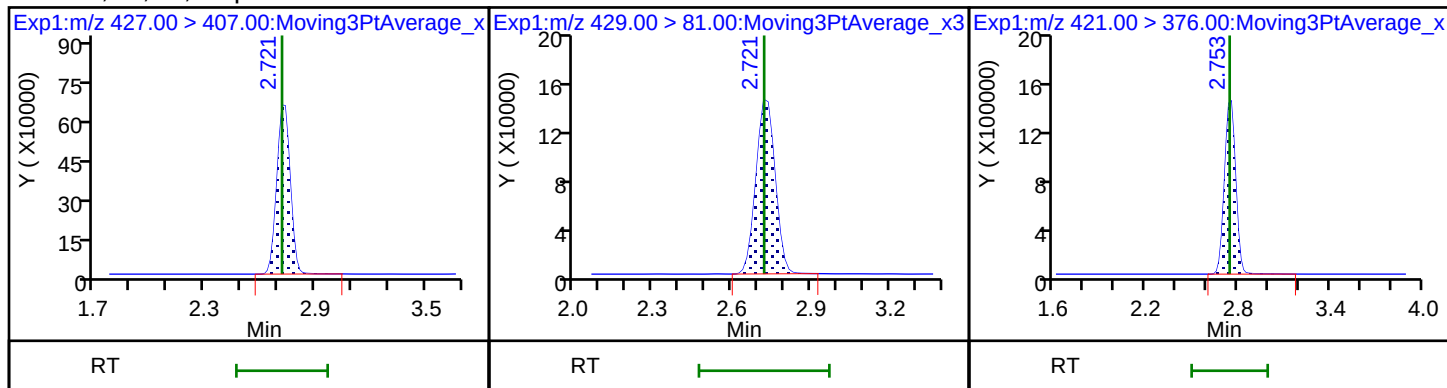
6 Perfluorohexanoic acid





13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

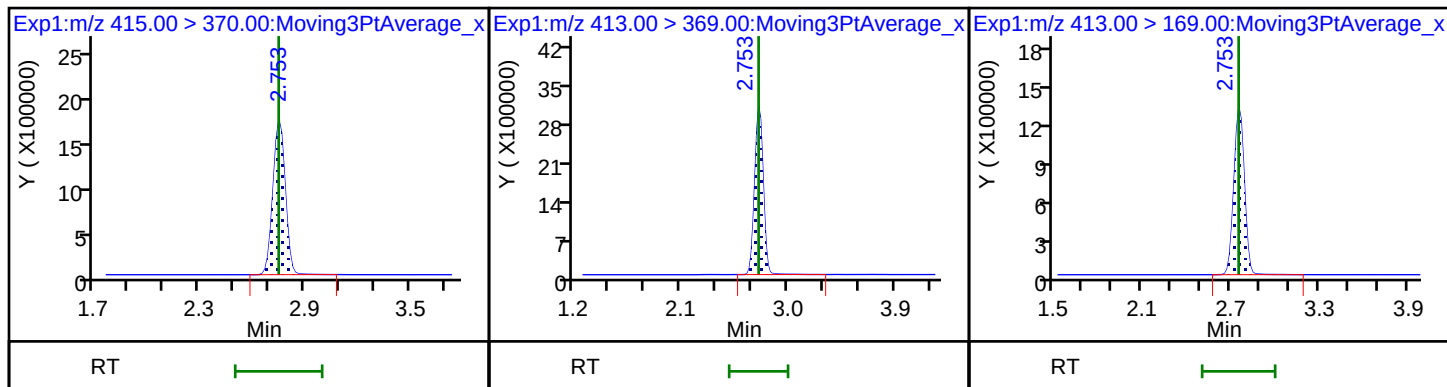
D 73 13C8 PFOA



* 62 13C2-PFOA

15 Perfluorooctanoic acid

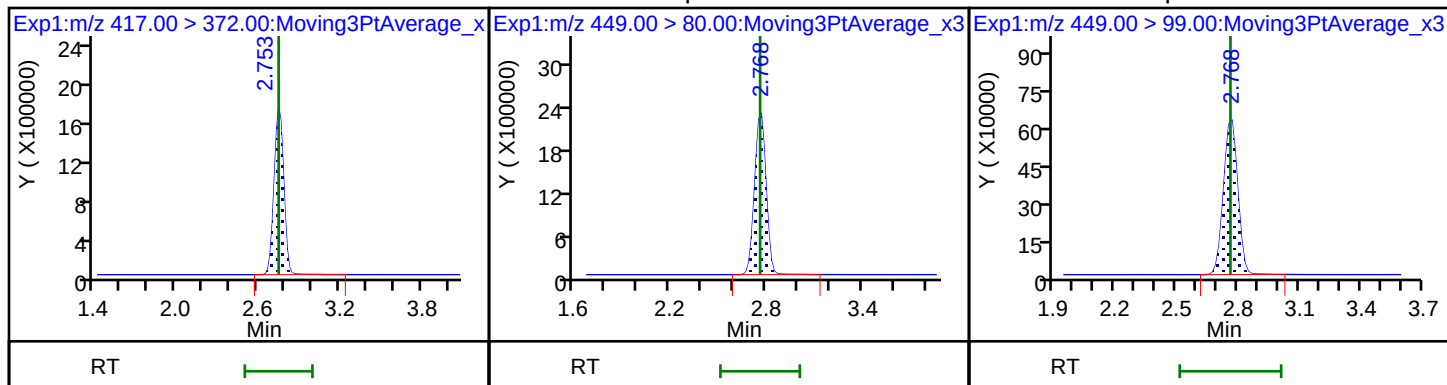
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

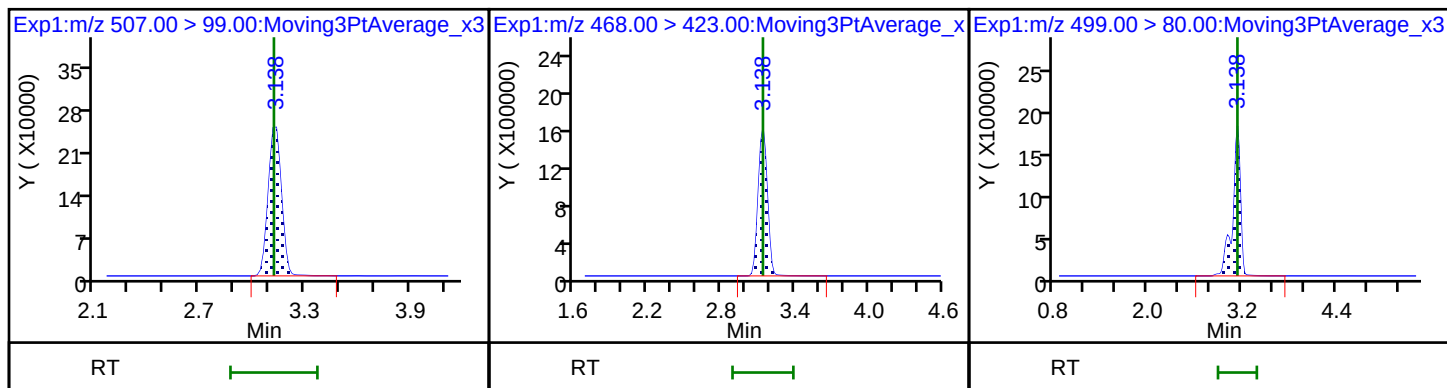
16 Perfluoroheptanesulfonic acid

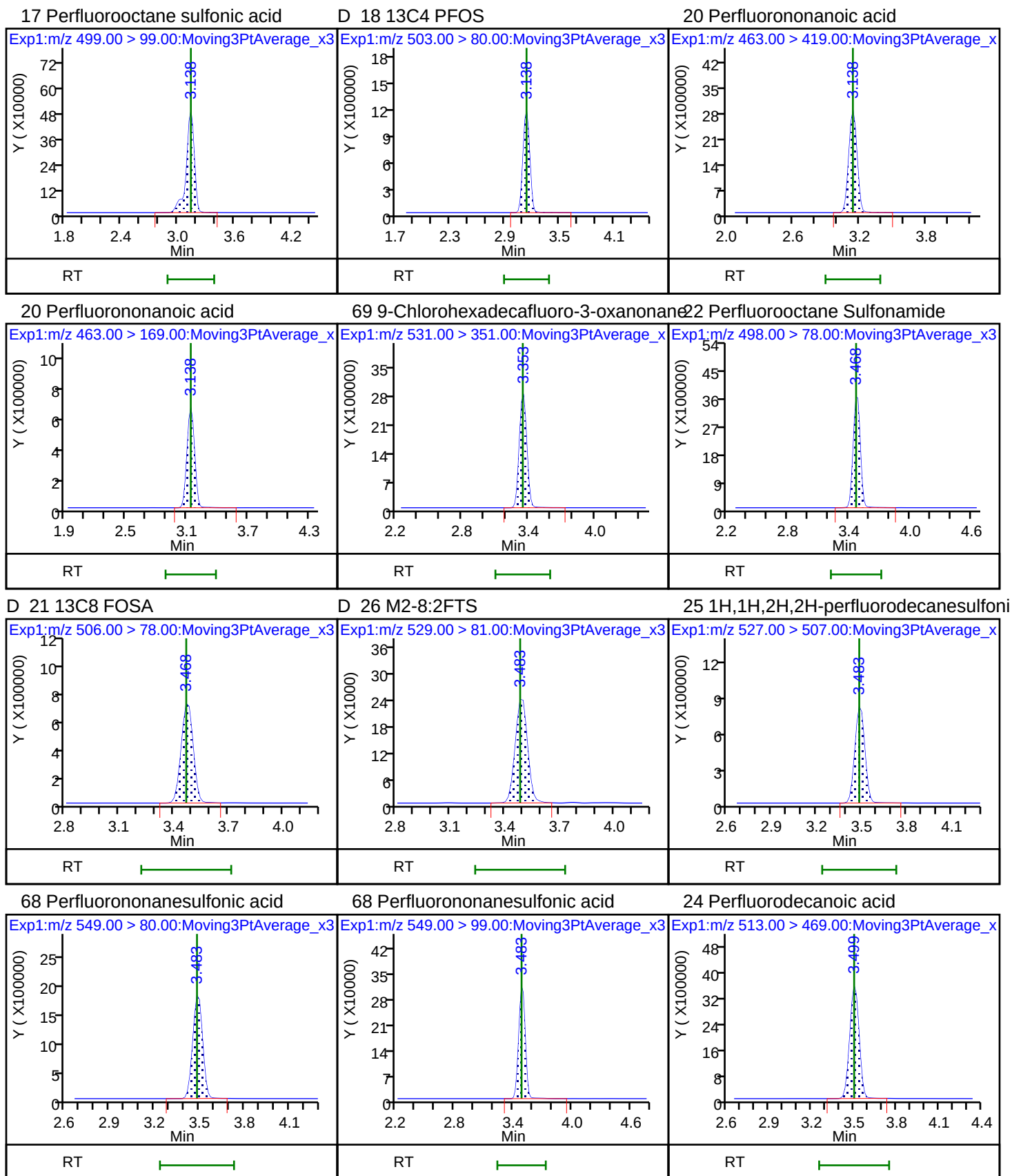


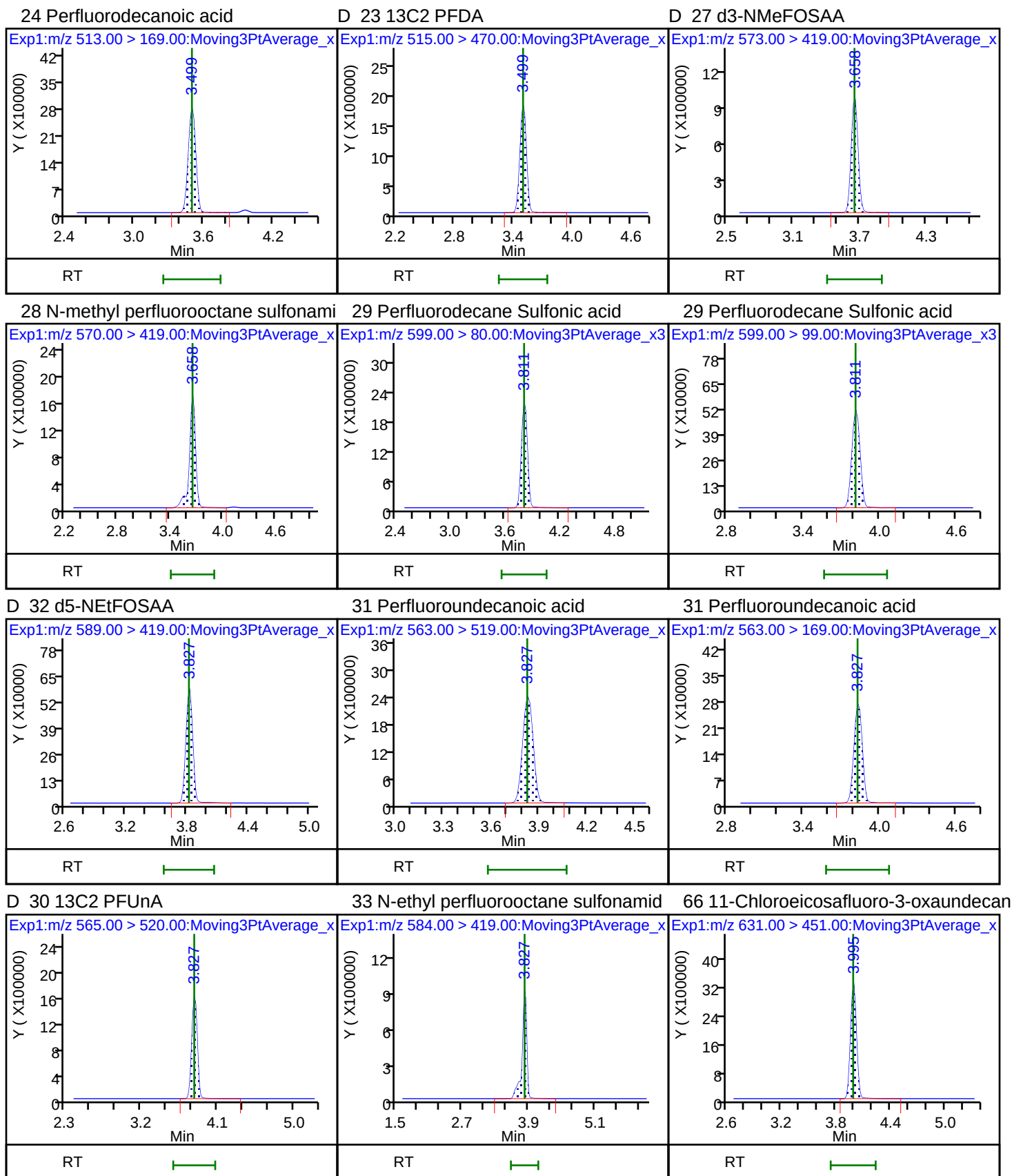
D 72 13C8 PFOS

D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

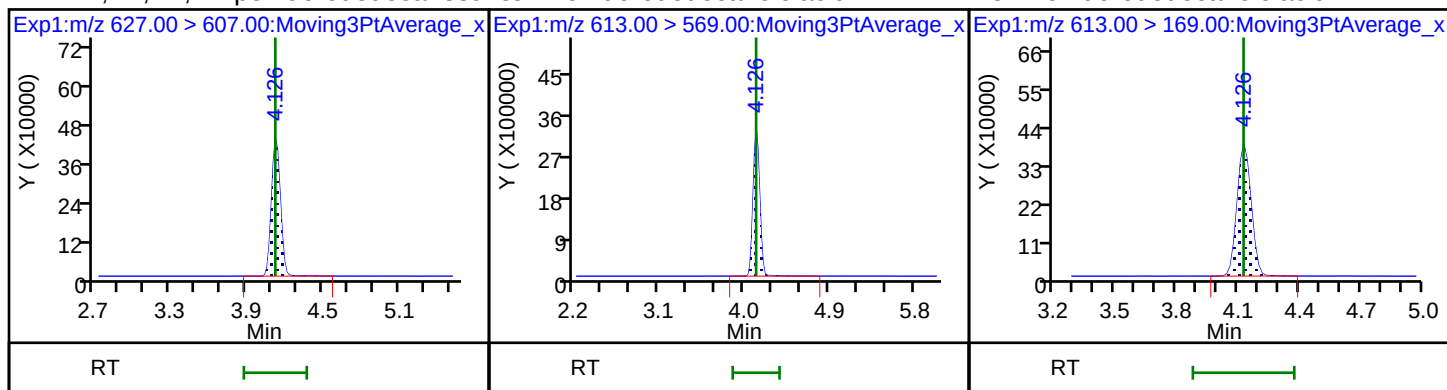






74 1H,1H,2H,2H-perfluorododecanesulfo37 Perfluorododecanoic acid

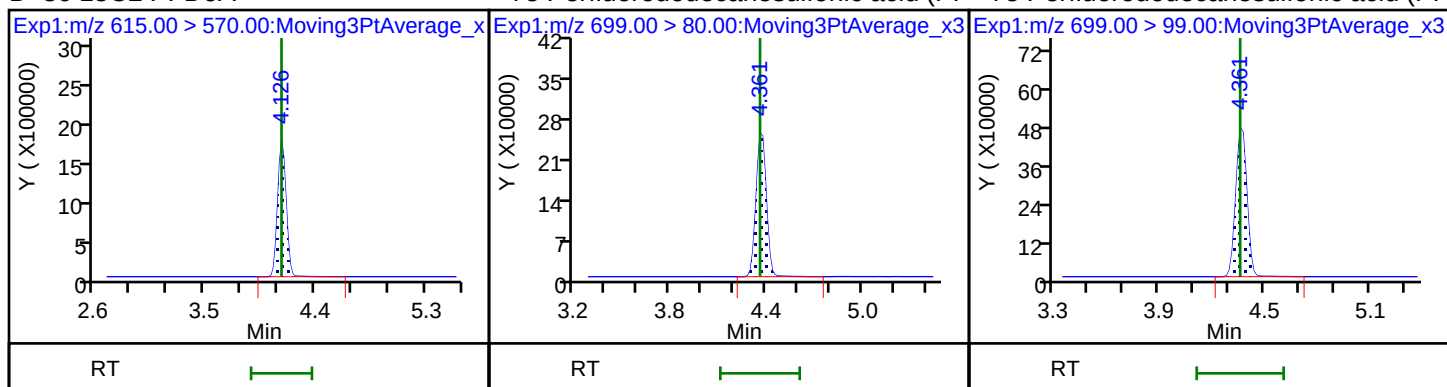
37 Perfluorododecanoic acid



D 36 13C2 PFDa

75 Perfluorododecanesulfonic acid (PF

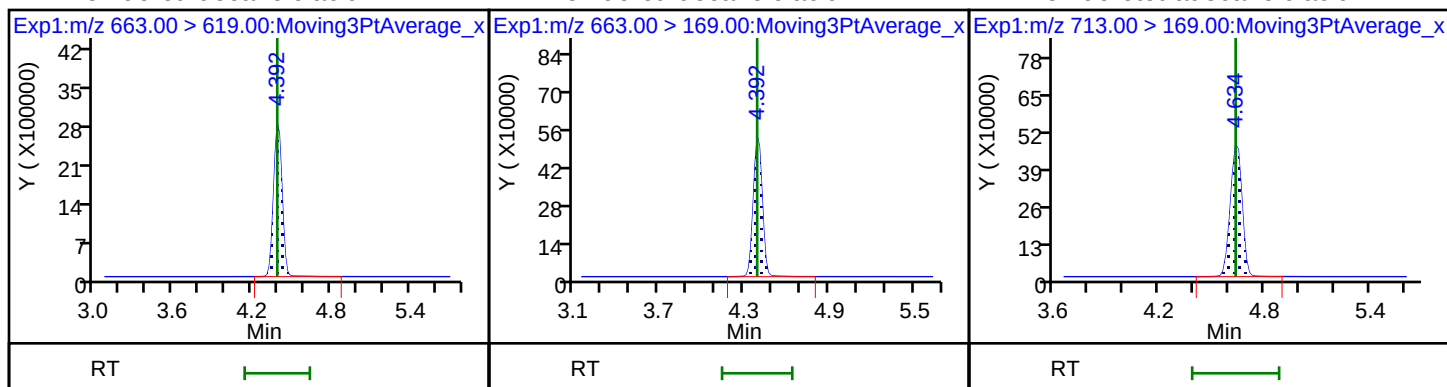
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

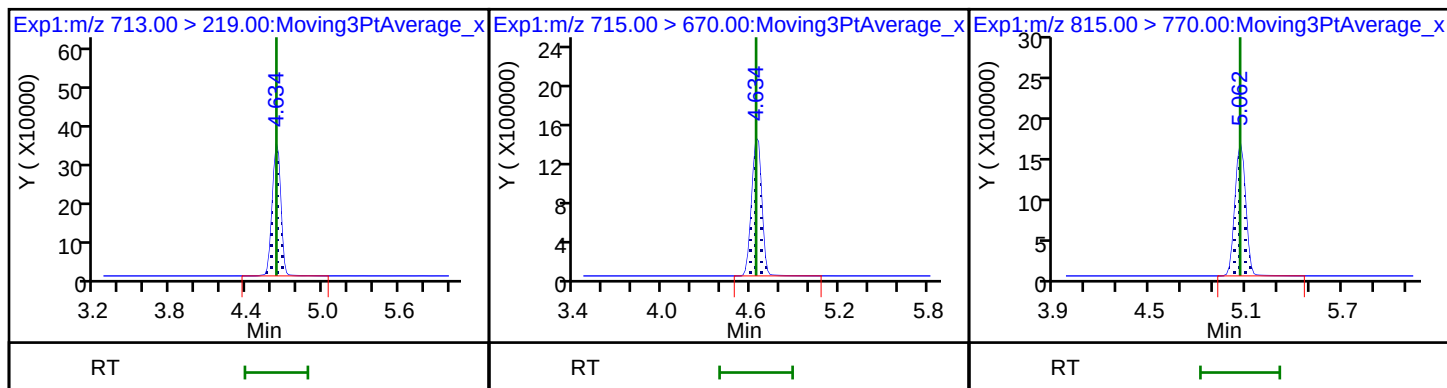
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

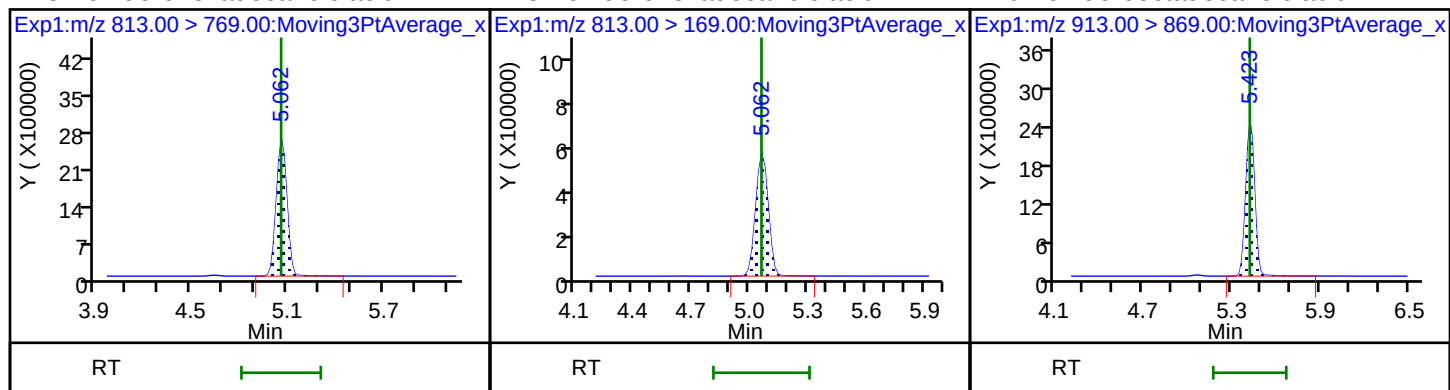
D 44 13C2-PFHxDA



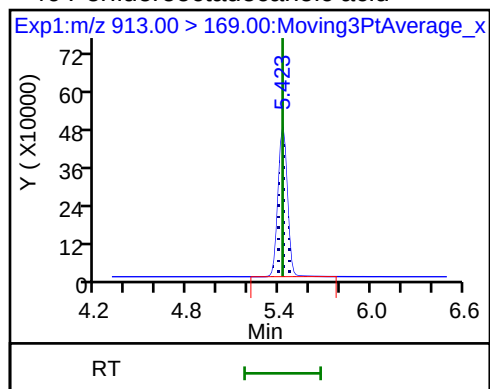
45 Perfluorohexadecanoic acid

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 14-Aug-2018 15:17:53 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: IC PFC STD7
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:16:51 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 15:56:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.492	0.002	1.000	27821570	9.11		91.1	1172	
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.492	0.002	0.543	8077508	2.62		105	12600	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.762	0.002	1.000	25126764	8.59		85.9	1787	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.762	0.002	0.641	7140271	2.60		104	6812	
D 47 13C3-PFBS										
301.90 > 83.00	1.798	1.800	-0.002	0.653	89317	2.51		108	659	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.806	1.802	0.004	1.005	30159908	7.54		85.3	4272	
298.90 > 99.00	1.806	1.802	0.004	1.005	12015742		2.51(1.35-4.05)	85.3	3831	
D 60 M2-4:2FTS										
329.00 > 81.00	2.008	2.010	-0.002	0.730	671476	2.27		97.4	770	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.008	2.010	-0.002	1.117	6986142	8.71		93.3	12137	
D 7 13C2 PFHxA										
315.00 > 270.00	2.049	2.046	0.003	0.744	7610215	2.63		105	12354	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.049	2.047	0.002	1.000	23862599	8.76		87.6	4281	
313.00 > 119.00	2.049	2.047	0.002	1.000	2046893		11.66(6.96-20.87)	87.6	3559	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.069	2.070	-0.001	1.151	16174853	8.51		90.7	20790	
349.00 > 99.00	2.069	2.070	-0.001	1.151	8124006		1.99(1.15-3.45)	90.7	9237	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.146	0.005	0.782	1100758	2.93		117	2362	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.151	2.149	0.002	1.000	6414648	9.45		94.5	2375	
D 9 13C4-PFHpA										
367.00 > 322.00	2.388	2.384	0.004	0.868	8807489	2.57		103	15982	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.388	2.385	0.003	1.000	30470313	8.18		81.8	3267	
363.00 > 169.00	2.388	2.385	0.003	1.000	8663032		3.52(2.17-6.52)	81.8	11344	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.400	0.001	1.000	22650329	8.28		91.0	12696	
399.00 > 99.00	2.401	2.400	0.001	1.000	6532855		3.47(1.90-5.70)	91.0	7231	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.400	0.001	0.872	5069605	2.40		102	11211	
76 DONA										
377.00 > 251.00	2.427	2.427	0.0	0.774	43996628	7.60		80.7	45079	
377.00 > 85.00	2.427	2.427	0.0	0.774	22393537		1.96(1.13-3.39)	80.7	19997	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	1.000	6577980	8.79		92.8	5444	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.722	-0.002	0.988	796845	2.51		105	1389	
D 73 13C8 PFOA										
421.00 > 376.00	2.752	2.742	0.010		6906491	2.45		100	22352	
D 14 13C4 PFOA										
417.00 > 372.00	2.752	2.752	0.0	1.000	7929901	2.49		99.6	14696	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.752	2.752	0.0	1.000	27005677	7.87		78.6	1624	
413.00 > 169.00	2.752	2.752	0.0	1.000	11851691		2.28(1.36-4.08)	78.6	10434	
* 62 13C2-PFOA										
415.00 > 370.00	2.752	2.752	0.0		8044000	2.50			14666	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.768	2.761	0.007	0.882	20033023	9.15		96.1	11525	
449.00 > 99.00	2.768	2.761	0.007	0.882	5582481		3.59(1.84-5.53)	96.1	6873	
D 72 13C8 PFOS										
507.00 > 99.00	3.137	3.124	0.013		1121506	2.21		92.7	2352	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.137	0.0	1.140	5204842	2.30		96.3	3129	
20 Perfluorononanoic acid										
463.00 > 419.00	3.137	3.137	0.0	1.000	24249982	8.16		81.6	2145	
463.00 > 169.00	3.137	3.137	0.0	1.000	5759775		4.21(2.68-8.03)	81.6	5361	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.137	0.0	1.140	7257342	2.46		98.3	15226	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.137	0.0	1.000	21680254	9.50		102	7758	
499.00 > 99.00	3.137	3.137	0.0	1.000	5703302		3.80(2.04-6.12)	102	6662	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.354	3.346	0.008	1.069	22419338	8.57		92.0	14007	
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.468	0.0	1.260	3020932	2.48		99.2	4777	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.468	3.468	0.0	1.000	29503304	8.32		83.2	7520	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.484	3.483	0.001	1.110	13729329	9.23		96.2	8424	
549.00 > 99.00	3.484	3.483	0.001	1.110	2771628		4.95(3.02-9.05)	96.2	10242	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.484	3.483	0.001	1.000	5686987	8.56		89.3	8041	
D 26 M2-8:2FTS										
529.00 > 81.00	3.484	3.483	0.001	1.266	105114	2.30		95.8	587	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	27601250	8.44		84.4	3125	
513.00 > 169.00	3.499	3.499	0.0	1.000	2489053		11.09(7.12-21.35)	84.4	597	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	7647452	2.39		95.5	13472	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.657	3.651	0.006	1.329	3581959	2.58		103	4774	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.657	3.655	0.002	1.000	13683452	9.61		96.1	2971	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.810	3.810	0.0	1.214	16085382	8.80		91.3	10723	
599.00 > 99.00	3.810	3.810	0.0	1.214	4045152		3.98(2.14-6.43)	91.3	7358	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.826	3.819	0.007	1.390	2290372	2.17		86.9	1927	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.826	3.826	0.0	1.000	9149789	10.2		102	6845	
D 30 13C2 PFUnA										
565.00 > 520.00	3.826	3.826	0.0	1.390	6488608	2.43		97.2	10818	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.826	3.826	0.0	1.000	18741950	8.34		83.4	2750	
563.00 > 169.00	3.826	3.826	0.0	1.000	2117373		8.85(5.24-15.72)	83.4	3908	
35 MeFOSA										
512.00 > 169.00	3.962	3.963	-0.001		7237020	NC			958	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.994	3.987	0.007	1.273	24356135	7.89		83.7	16931	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.125	4.125	0.0	1.184	4145794	9.60		99.6	6254	
D 36 13C2 PFDaA										
615.00 > 570.00	4.125	4.125	0.0	1.499	7752244	2.50		100	16797	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.125	4.125	0.0	1.000	24307420	7.65		76.5	4289	
613.00 > 169.00	4.125	4.125	0.0	1.000	3509943		6.93(4.68-14.05)	76.5	5539	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.360	4.360	0.0	1.390	2123040	9.80		101	4001	
699.00 > 99.00	4.360	4.360	0.0	1.390	3861513		0.55(0.28-0.83)	101	13829	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.391	4.391	0.0	1.064	19589162	7.71		77.1	5623	
663.00 > 169.00	4.391	4.391	0.0	1.064	3968059		4.94(3.09-9.27)	77.1	4899	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 43 13C2-PFTeDA										
715.00 > 670.00	4.645	4.634	0.011	1.688	6261598	2.50		100.0	13450	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.645	4.634	0.011	1.000	3911593	9.60		96.0	10913	
713.00 > 219.00	4.630	4.634	-0.004	0.997	2923879		1.34(0.70-2.09)	96.0	7584	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.061	-0.002	1.000	20417813	7.98		79.8	3770	
813.00 > 169.00	5.059	5.061	-0.002	1.000	4695102		4.35(2.77-8.32)	79.8	7703	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.059	5.061	-0.002	1.838	7045312	2.57		103	9286	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.419	5.421	-0.002	1.071	17776512	8.82		88.2	3126	
913.00 > 169.00	5.419	5.421	-0.002	1.071	3786399		4.69(2.55-7.64)	88.2	6432	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL7_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Injection Date: 14-Aug-2018 15:17:53

Instrument ID: A9

Lims ID: IC L7 Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 16

Worklist Smp#: 8

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

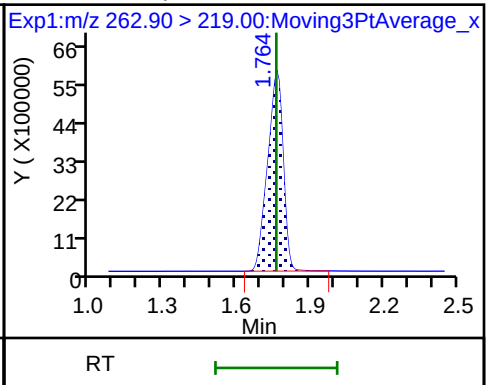
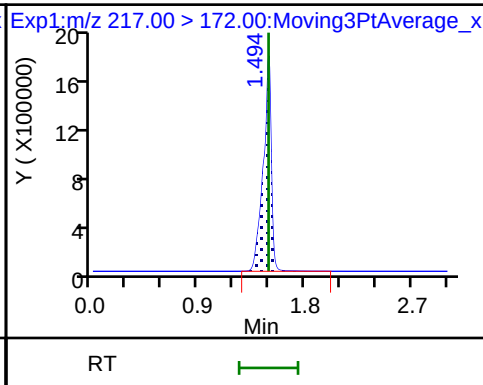
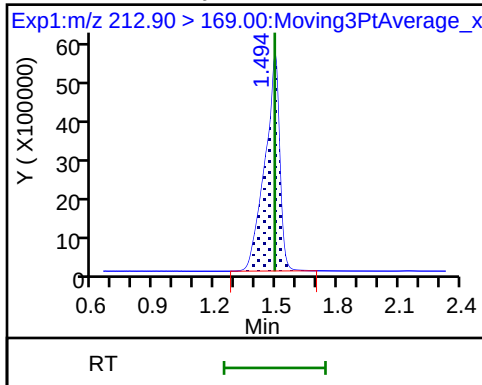
Method: PFAS_A9

Limit Group: LC PFC ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

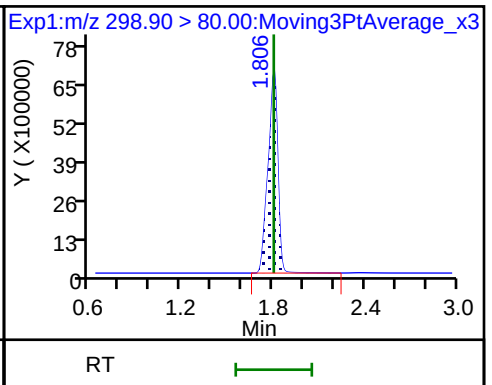
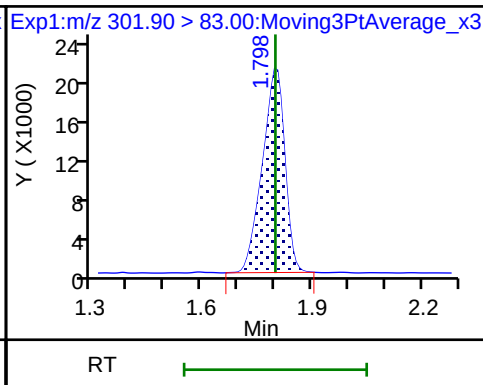
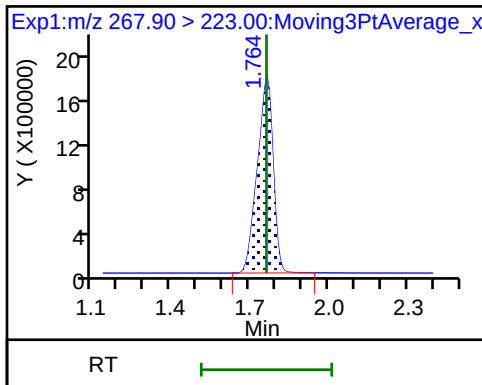
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

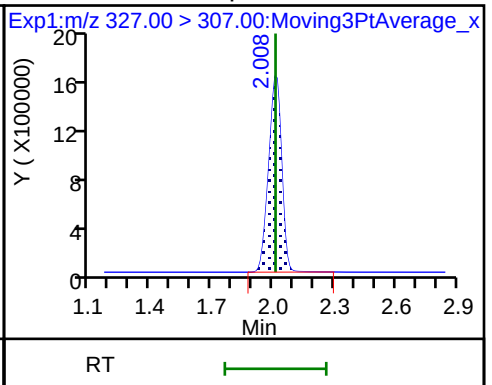
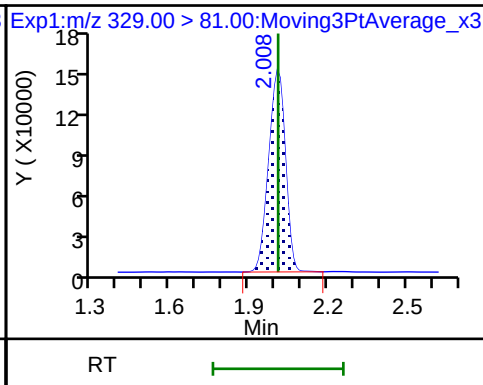
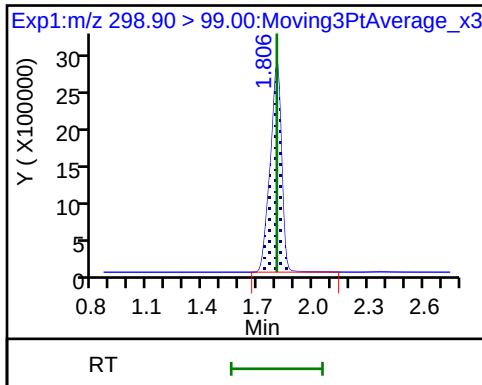
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 60 M2-4:2FTS

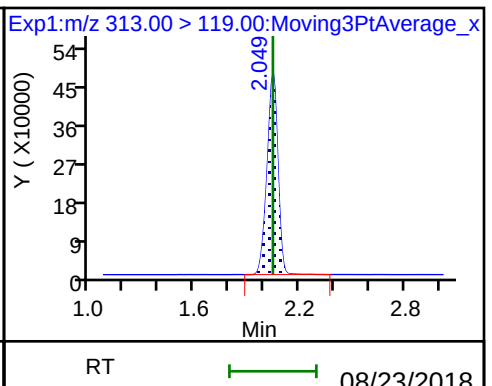
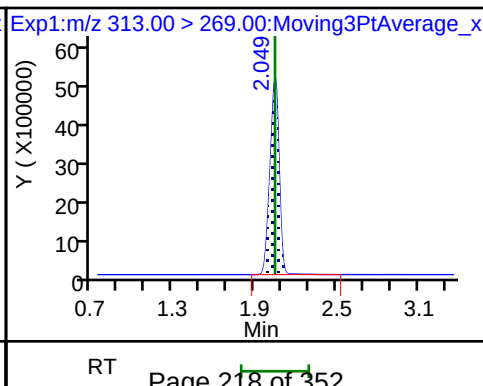
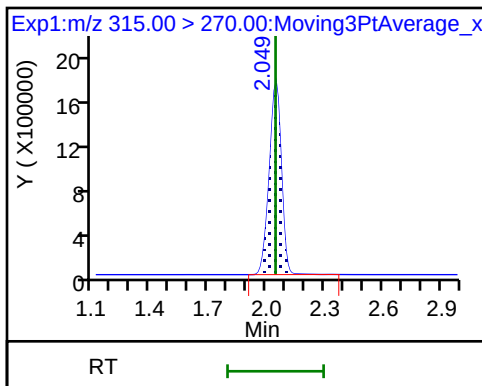
61 1H,1H,2H,2H-perfluorohexanesulfoni

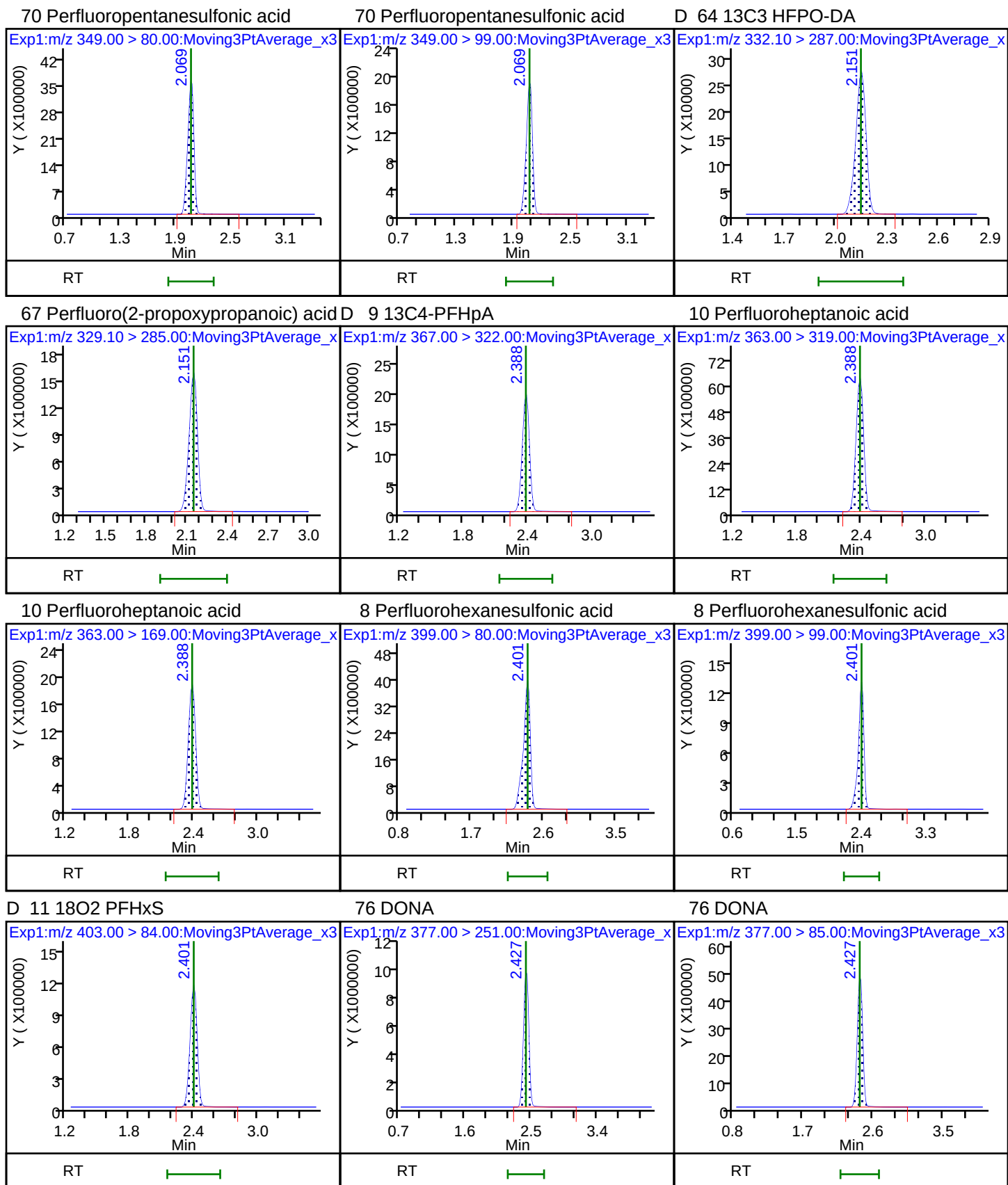


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

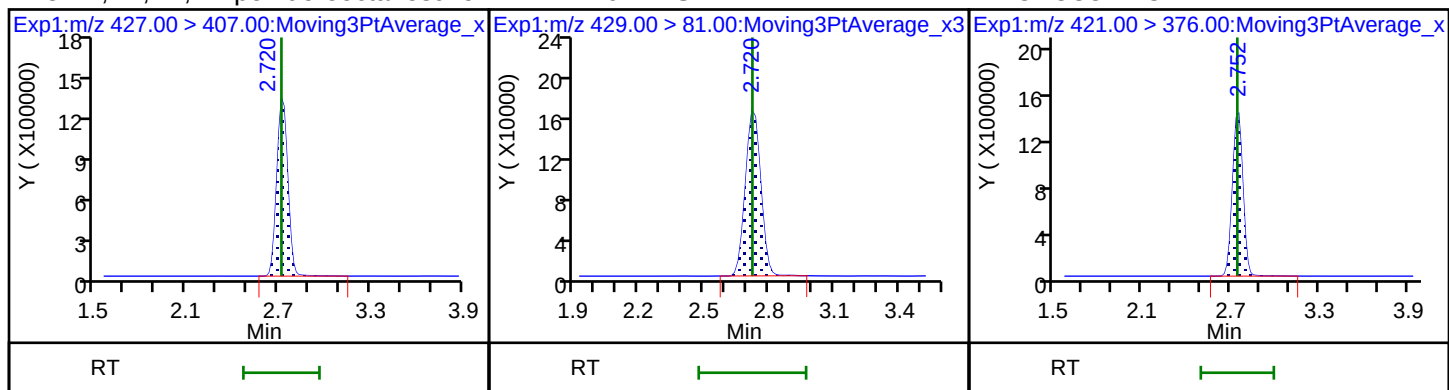
6 Perfluorohexanoic acid





13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

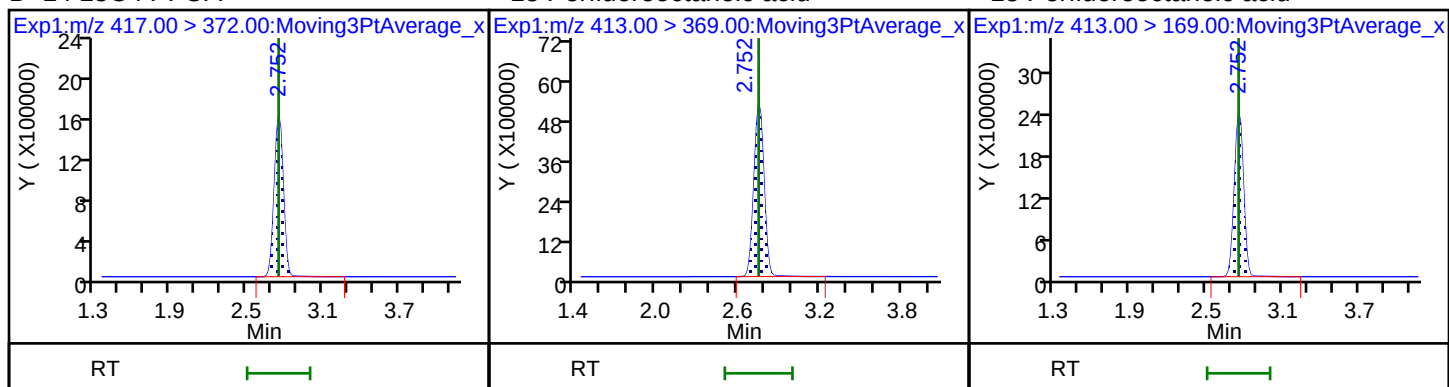
D 73 13C8 PFOA



D 14 13C4 PFOA

15 Perfluorooctanoic acid

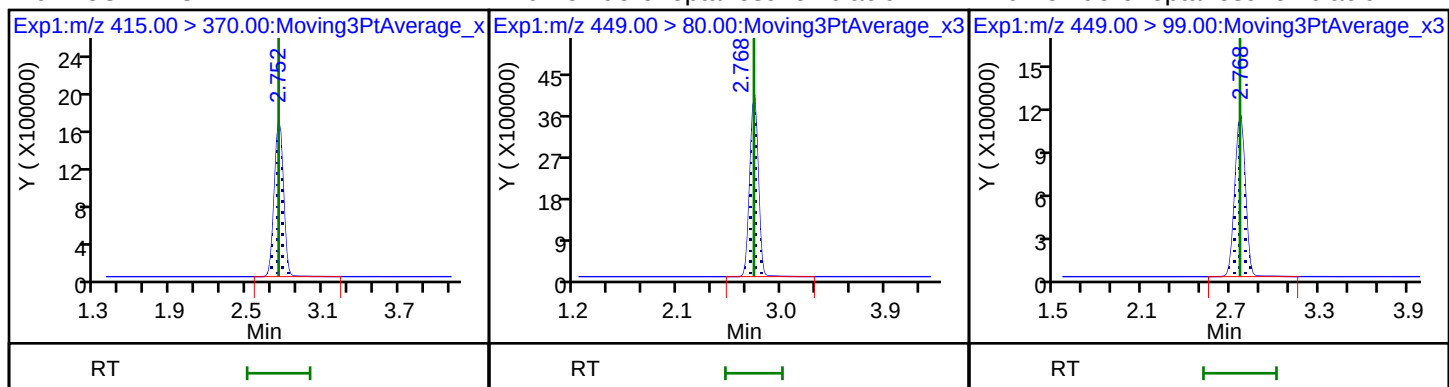
15 Perfluorooctanoic acid



* 62 13C2-PFOA

16 Perfluoroheptanesulfonic acid

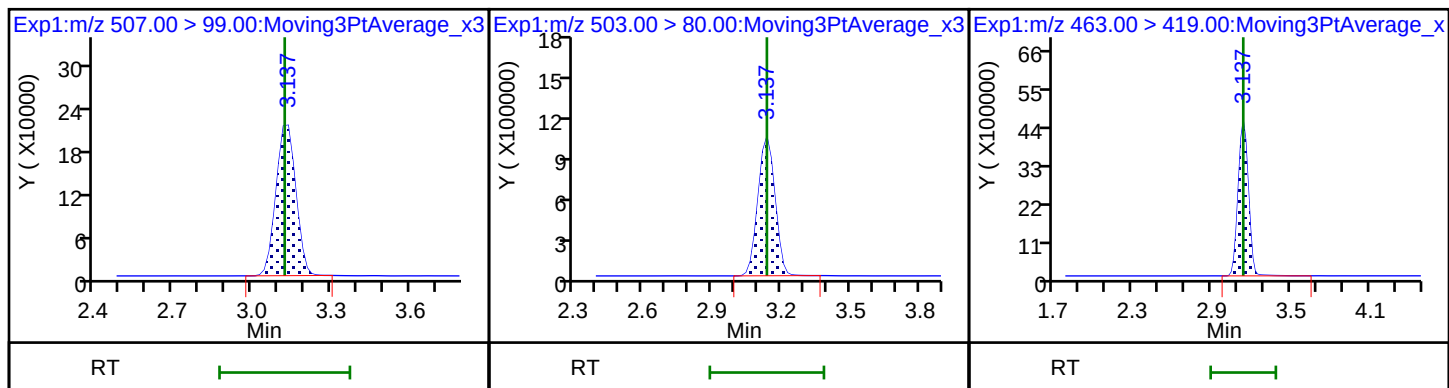
16 Perfluoroheptanesulfonic acid

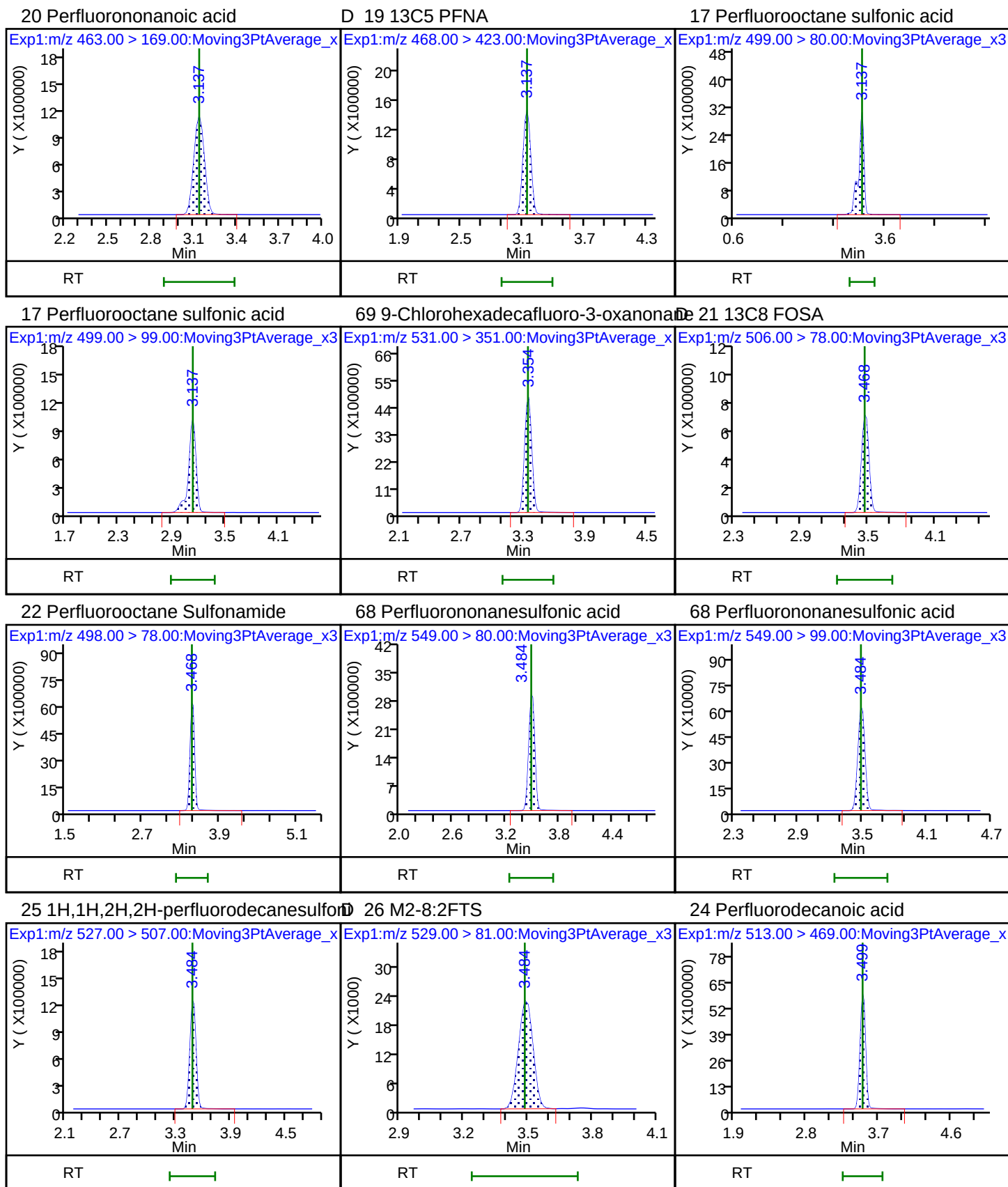


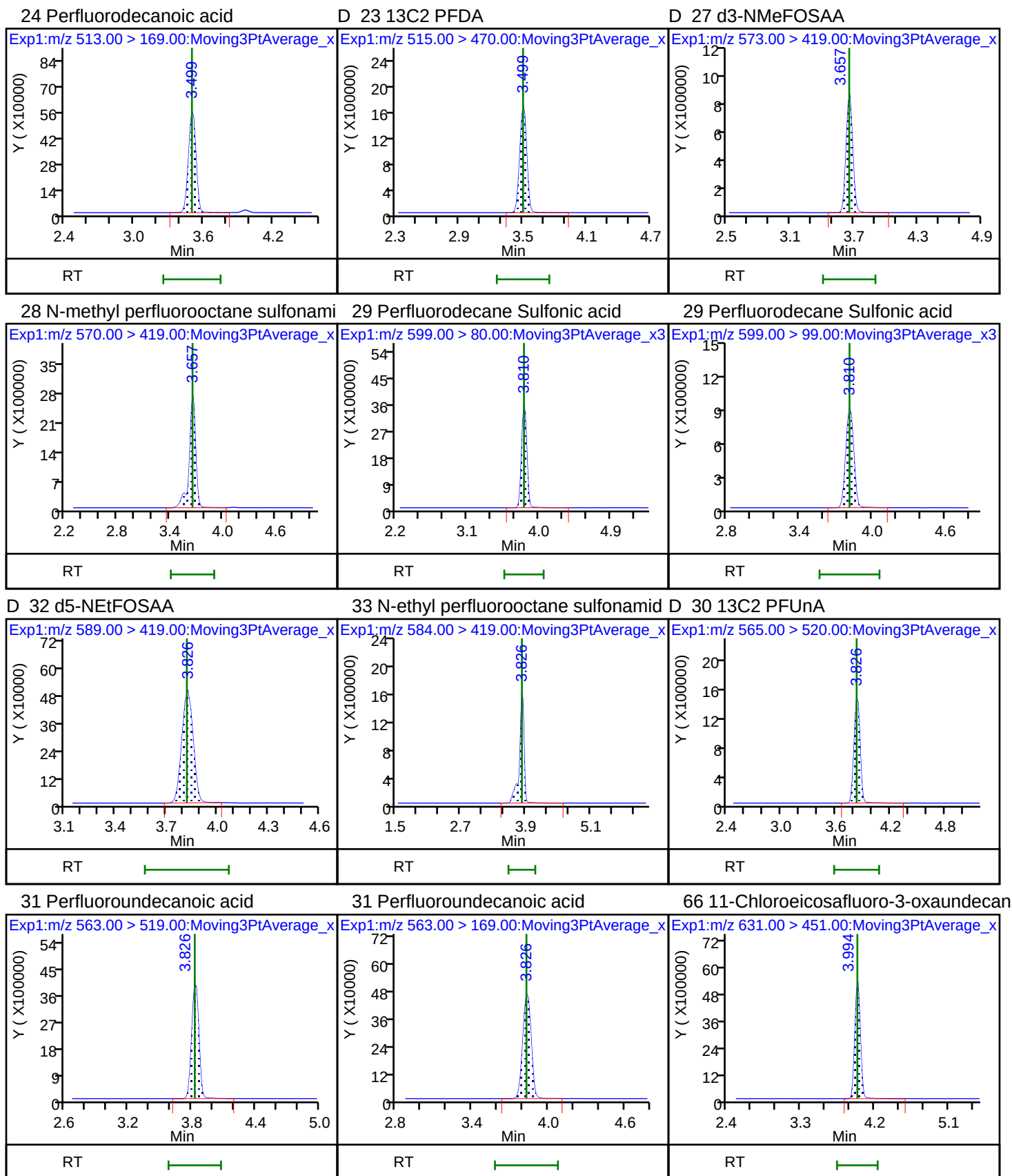
D 72 13C8 PFOS

D 18 13C4 PFOS

20 Perfluorononanoic acid

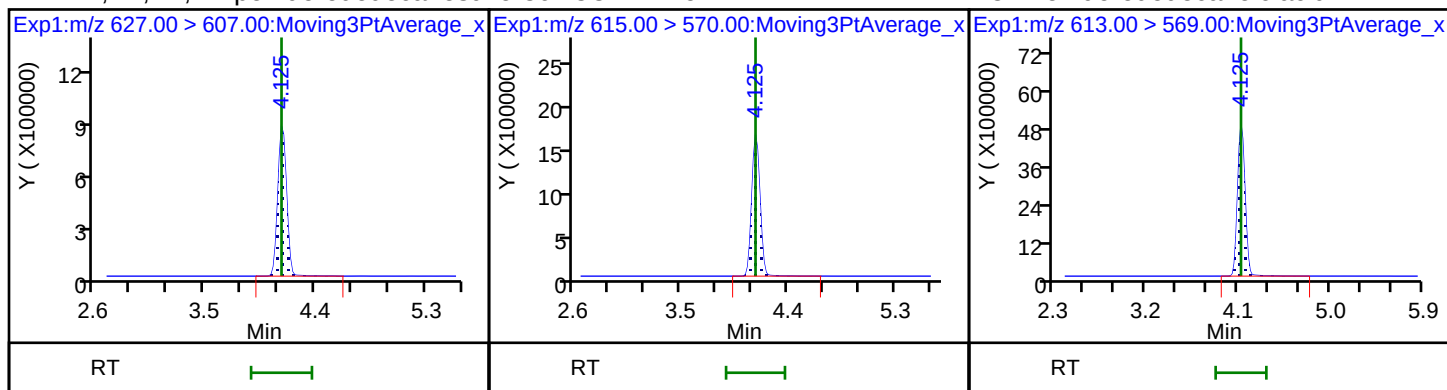






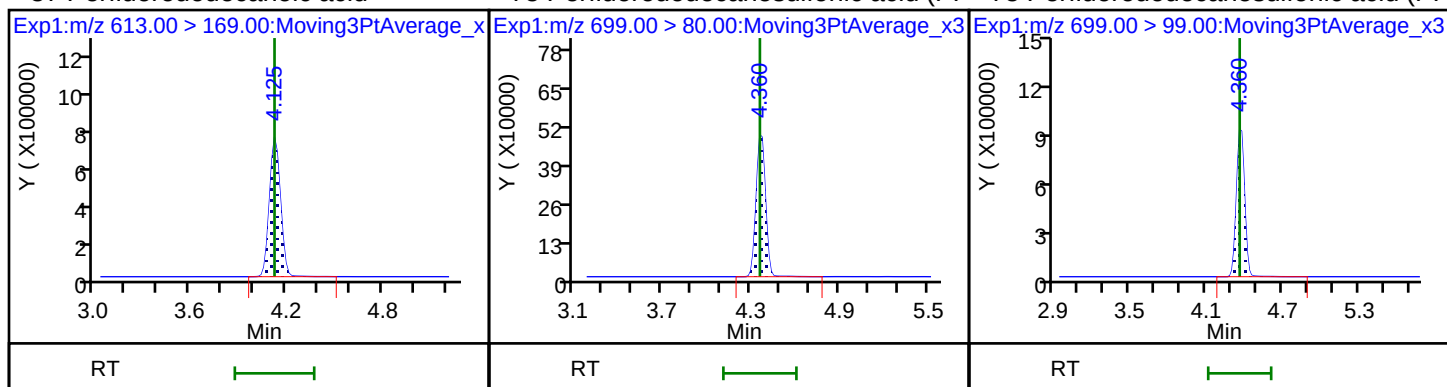
74 1H,1H,2H,2H-perfluorododecanesulfonic acid 36 13C2 PFDaA

37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

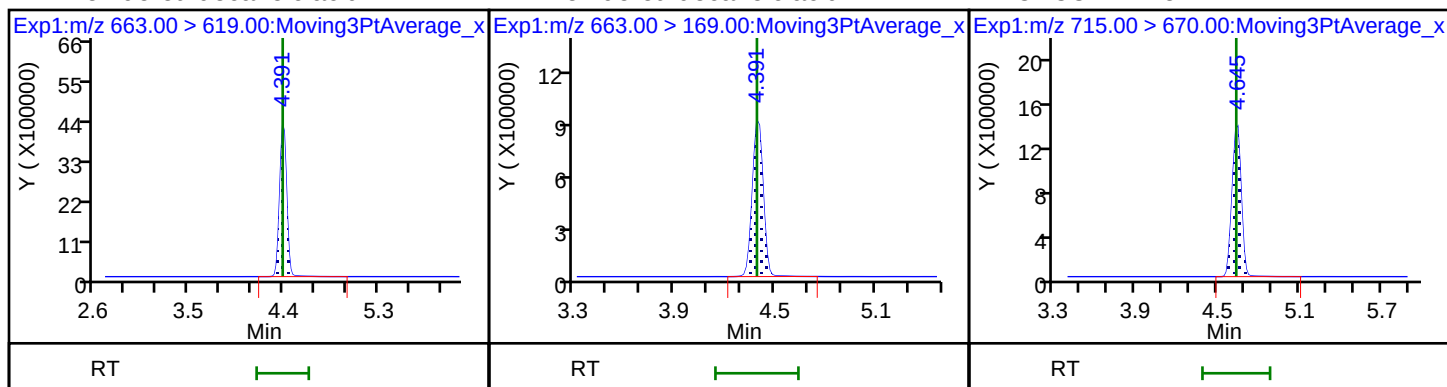
75 Perfluorododecanesulfonic acid (PF 75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

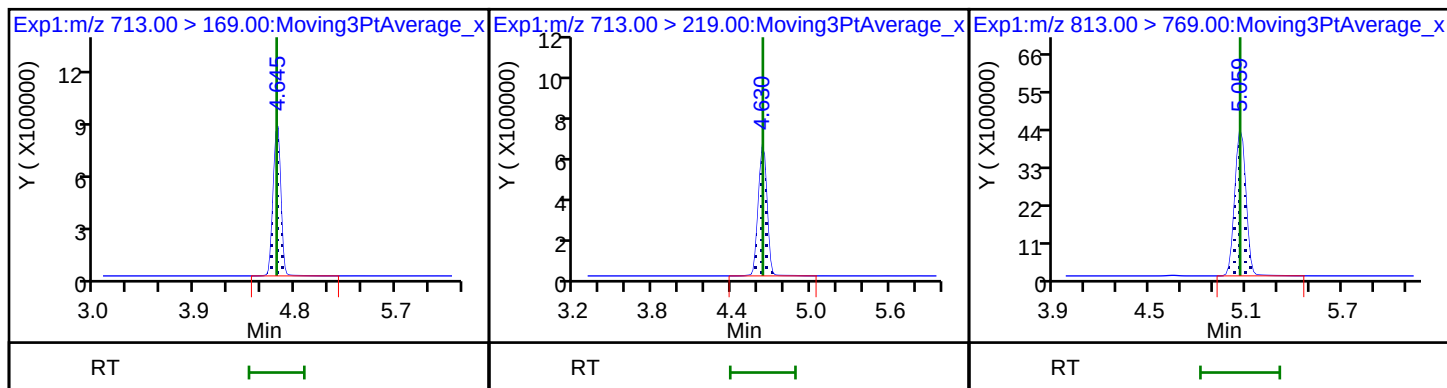
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

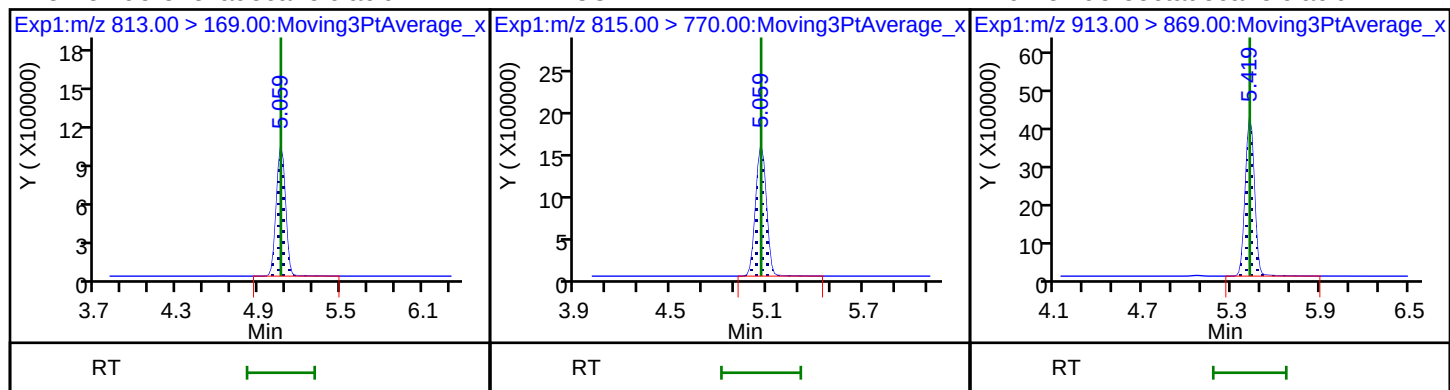
45 Perfluorohexadecanoic acid



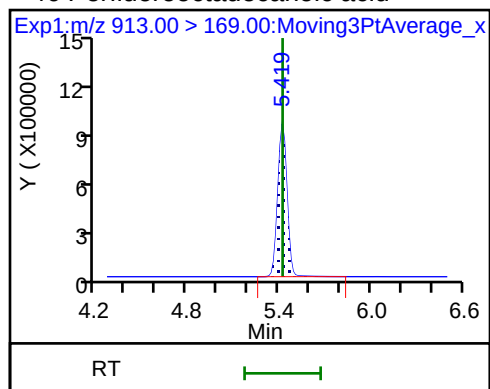
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Lab Sample ID: ICV 320-239851/10 Calibration Date: 08/14/2018 15:32

Instrument ID: A9 Calib Start Date: 08/14/2018 14:32

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17

Lab File ID: 2018.08.14LLICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9456	0.9592		2.54	2.50	1.4	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.024	1.004		2.45	2.50	-1.9	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	104.2	106.9		2.27	2.21	2.6	50.0
4:2 FTS	AveID	20.87	20.86		2.34	2.34	-0.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.8945	0.8988		2.51	2.50	0.5	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	49.50	49.60		2.35	2.35	0.2	50.0
HFPO-DA (GenX)	AveID	1.541	1.696		2.75	2.50	10.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.058	1.085		2.56	2.50	2.6	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.276	1.247		2.23	2.28	-2.3	40.0
DONA	AveID	2.657	2.683		2.38	2.36	1.0	50.0
6:2 FTS	AveID	2.230	2.147		2.29	2.38	-3.7	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.082	1.079		2.49	2.50	-0.2	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.006	1.115		2.63	2.38	10.9	50.0
Perfluorononanoic acid (PFNA)	AveID	1.024	0.9585		2.34	2.50	-6.4	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.047	1.081		2.39	2.31	3.2	40.0
F-53B Major	AveID	1.201	1.197		2.32	2.33	-0.3	50.0
8:2 FTS	AveID	15.14	15.21		2.41	2.40	0.4	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.6830	0.7184		2.52	2.40	5.2	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	2.934	3.191		2.72	2.50	8.7	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.069	1.104		2.58	2.50	3.3	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9934	1.119		2.82	2.50	12.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.8393	0.8872		2.55	2.41	5.7	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9833	1.057		2.69	2.50	7.5	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8661	0.8720		2.52	2.50	0.7	40.0
F-53B Minor	AveID	1.418	1.462		2.43	2.36	3.1	50.0
10:2 FTS	AveID	9.836	10.69		2.62	2.41	8.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.025	1.060		2.59	2.50	3.4	40.0
Perfluorododecanesulfonic acid (PFDoS)	AveID	0.0995	0.0892		2.17	2.42	-10.3	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8192	0.7736		2.36	2.50	-5.6	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.1627	0.1449		2.23	2.50	-11.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Lab Sample ID: ICV 320-239851/10 Calibration Date: 08/14/2018 15:32
 Instrument ID: A9 Calib Start Date: 08/14/2018 14:32
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17
 Lab File ID: 2018.08.14LLICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8986		2.46	2.50	-1.8	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7150	0.7179		2.51	2.50	0.4	50.0
13C4 PFBA	Ave	0.9573	0.9476		2.47	2.50	-1.0	50.0
13C5 PFPeA	Ave	0.8533	0.8619		2.53	2.50	1.0	50.0
13C3-PFBS	Ave	0.0111	0.0111		2.32	2.33	-0.2	50.0
M2-4:2FTS	Ave	0.0918	0.0885		2.25	2.34	-3.5	50.0
13C2 PFHxA	Ave	0.9006	0.8848		2.46	2.50	-1.8	50.0
13C3 HFPO-DA	Ave	0.1169	0.1083		2.32	2.50	-7.4	50.0
13C4-PFHpA	Ave	1.067	1.053		2.47	2.50	-1.3	50.0
18O2 PFHxS	Ave	0.6554	0.6213		2.24	2.37	-5.2	50.0
M2-6:2FTS	Ave	0.0989	0.0960		2.31	2.38	-2.9	40.0
13C8 PFOA	Ave	2816461	2832848		2.46	2.45	0.6	50.0
13C4 PFOA	Ave	0.9902	0.9716		2.45	2.50	-1.9	50.0
13C4 PFOS	Ave	0.7025	0.6956		2.37	2.39	-1.0	50.0
13C5 PFNA	Ave	0.9176	0.9071		2.47	2.50	-1.1	50.0
13C8 PFOS	Ave	506339	498627		2.35	2.39	-1.5	50.0
13C8 FOSA	Ave	0.3785	0.3633		2.40	2.50	-4.0	50.0
M2-8:2FTS	Ave	0.0142	0.0143		2.41	2.40	0.5	40.0
13C2 PFDA	Ave	0.995	0.9734		2.44	2.50	-2.2	50.0
d3-NMeFOSAA	Ave	0.4320	0.4287		2.48	2.50	-0.8	50.0
13C2 PFUnA	Ave	0.8300	0.8161		2.46	2.50	-1.7	50.0
d5-NEtFOSAA	Ave	0.3278	0.3373		2.57	2.50	2.9	50.0
13C2 PFDoA	Ave	0.9627	0.9386		2.44	2.50	-2.5	50.0
13C2-PFTeDA	Ave	0.7785	0.7943		2.55	2.50	2.0	50.0
13C2-PFHxDA	Ave	0.8521	0.8622		2.53	2.50	1.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_013.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 14-Aug-2018 15:32:52 ALS Bottle#: 17 Worklist Smp#: 10
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist:
 Method: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 15-Aug-2018 09:17:09 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK009

First Level Reviewer: roycea

Date: 14-Aug-2018 15:58:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.492	0.002	0.543	7852421	2.47		99.0	13566	
2 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.492	0.002	1.000	7532050	2.54			352	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.762	0.002	0.641	7142359	2.53		101	14496	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.762	0.002	1.000	7173645	2.45			604	
D 47 13C3-PFBS										
301.90 > 83.00	1.798	1.800	-0.002	0.653	85156	2.32		99.8	409	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.806	1.802	0.004	1.005	8664432	2.27			1344	
298.90 > 99.00	1.798	1.802	-0.004	1.000	3082621		2.81(1.35-4.05)		1065	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.018	2.010	0.008	1.123	1786078	2.34			4771	
D 60 M2-4:2FTS										
329.00 > 81.00	2.018	2.010	0.008	0.733	685305	2.25		96.5	844	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.046	0.002	0.744	7332051	2.46		98.2	10961	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.047	0.001	1.000	6590312	2.51			1268	
313.00 > 119.00	2.048	2.047	0.001	1.000	494366		13.33(6.96-20.87)		915	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.069	2.070	-0.001	1.151	4269212	2.35			7764	
349.00 > 99.00	2.069	2.070	-0.001	1.151	2016100		2.12(1.15-3.45)		2115	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.146	0.005	0.782	897288	2.32		92.6	2153	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.151	2.149	0.002	1.000	1521783	2.75			543	
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.384	0.003	0.868	8727203	2.47		98.7	19616	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.385	0.002	1.000	9468263	2.56			1053	
363.00 > 169.00	2.387	2.385	0.002	1.000	2121922		4.46(2.17-6.52)		3901	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.400	0.001	0.872	4870123	2.24		94.8	5367	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.400	0.001	1.000	5852758	2.23			3364	
399.00 > 99.00	2.401	2.400	0.001	1.000	1583577		3.70(1.90-5.70)		1795	
76 DONA										
377.00 > 251.00	2.427	2.427	0.0	0.774	14568428	2.38			23291	
377.00 > 85.00	2.427	2.427	0.0	0.774	6642921		2.19(1.13-3.39)		5546	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	1.000	1622155	2.29			1796	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.722	-0.002	0.988	755705	2.31		97.1	1461	
D 73 13C8 PFOA										
421.00 > 376.00	2.736	2.742	-0.006		6933395	2.46		101	10760	
* 62 13C2-PFOA										
415.00 > 370.00	2.752	2.752	0.0		8286548	2.50			20216	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.752	2.752	0.0	1.000	8690671	2.49			555	
413.00 > 169.00	2.752	2.752	0.0	1.000	3150918		2.76(1.36-4.08)		3936	
D 14 13C4 PFOA										
417.00 > 372.00	2.752	2.752	0.0	1.000	8051493	2.45		98.1	12065	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.768	2.761	0.007	0.882	6106709	2.63			5755	
449.00 > 99.00	2.768	2.761	0.007	0.882	1369582		4.46(1.84-5.53)		2459	
D 72 13C8 PFOS										
507.00 > 99.00	3.137	3.124	0.013		1191718	2.35		98.5	5014	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.137	0.0	1.140	7516715	2.47		98.9	9046	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.137	0.0	1.000	5767424	2.39			3510	
499.00 > 99.00	3.137	3.137	0.0	1.000	1349530		4.27(2.04-6.12)		2310	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.137	0.0	1.140	5510852	2.37		99.0	5589	
20 Perfluorononanoic acid										
463.00 > 419.00	3.137	3.137	0.0	1.000	7204367	2.34			659	
463.00 > 169.00	3.137	3.137	0.0	1.000	1403222		5.13(2.68-8.03)		1963	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.354	3.346	0.008	1.069	6431859	2.32			5491	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.483	3.468	0.015	1.004	9605868	2.72			5273	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.468	0.0	1.260	3010346	2.40		96.0	3693	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	113517	2.41		100	592	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	1730252	2.41			5007	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	3975324	2.52			3325	
549.00 > 99.00	3.483	3.483	0.0	1.110	689751		5.76(3.02-9.05)		3508	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	8065995	2.44		97.8	8685	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	8903987	2.58			1238	
513.00 > 169.00	3.499	3.499	0.0	1.000	648479		13.73(7.12-21.35)		1316	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.658	3.651	0.007	1.329	3552780	2.48		99.2	6237	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.658	3.655	0.003	1.000	3974219	2.82			1152	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.811	3.810	0.0	1.215	4935347	2.55			4882	
599.00 > 99.00	3.811	3.810	0.0	1.215	1011579		4.88(2.14-6.43)		2706	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.826	3.819	0.007	1.391	2795362	2.57		103	3365	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.826	3.826	0.0	1.000	5896611	2.52			984	
563.00 > 169.00	3.826	3.826	0.0	1.000	567984		10.38(5.24-15.72)		1469	
D 30 13C2 PFUnA										
565.00 > 520.00	3.826	3.826	0.0	1.391	6762357	2.46		98.3	11540	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.826	3.826	0.0	1.000	2953586	2.69			3252	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.995	3.987	0.008	1.273	7940004	2.43			12391	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.126	4.125	0.001	1.000	8242004	2.59			1549	
613.00 > 169.00	4.126	4.125	0.001	1.000	888628		9.27(4.68-14.05)		2235	
D 36 13C2 PFDaA										
615.00 > 570.00	4.126	4.125	0.001	1.499	7777396	2.44		97.5	7958	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.126	4.125	0.001	1.184	1221229	2.62			3980	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.360	4.360	0.0	1.390	497773	2.17			943	
699.00 > 99.00	4.360	4.360	0.0	1.390	906074		0.55(0.28-0.83)		2363	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.391	4.391	0.0	1.064	6016390	2.36			2073	
663.00 > 169.00	4.391	4.391	0.0	1.064	1119257		5.38(3.09-9.27)		2843	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.633	4.634	-0.001	1.000	953461	2.23			2599	
713.00 > 219.00	4.633	4.634	-0.001	1.000	676284		1.41(0.70-2.09)		2297	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 43 13C2-PFTeDA										
715.00 > 670.00	4.633	4.634	-0.001	1.684	6582351	2.55		102	12161	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.062	5.061	0.001	1.840	7144472	2.53		101	9097	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.062	5.061	0.001	1.000	6419875	2.46			1379	
813.00 > 169.00	5.062	5.061	0.001	1.000	1178581		5.45(2.77-8.32)		2840	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.423	5.421	0.002	1.071	5129185	2.51			1076	
913.00 > 169.00	5.423	5.421	0.002	1.071	956242		5.36(2.55-7.64)		2321	

Reagents:

LCPFCIC_FULL_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_013.d

Injection Date: 14-Aug-2018 15:32:52

Instrument ID: A9

Lims ID: ICV Full

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 17

Worklist Smp#: 10

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

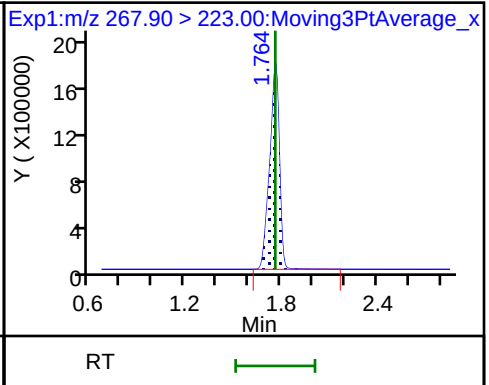
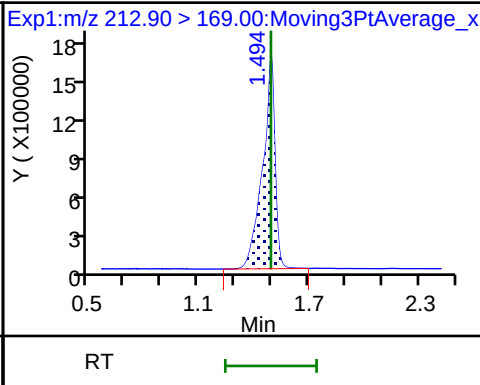
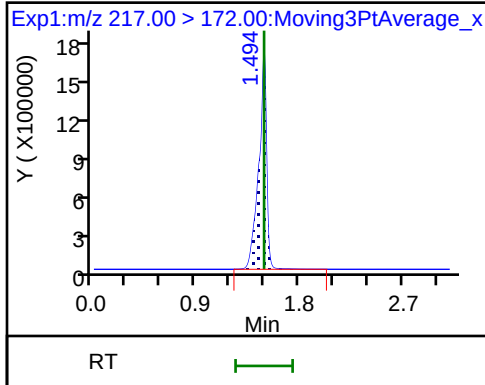
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

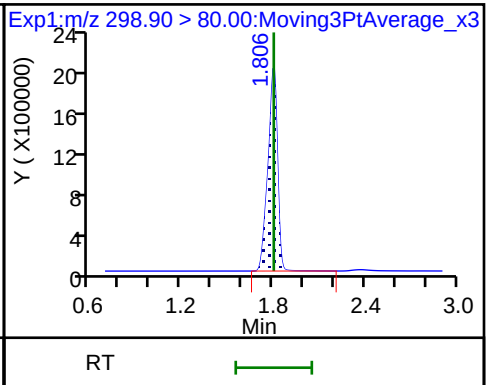
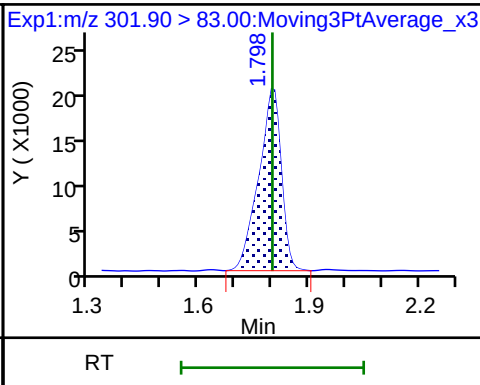
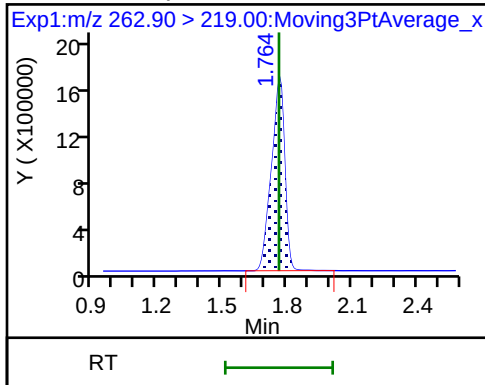
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

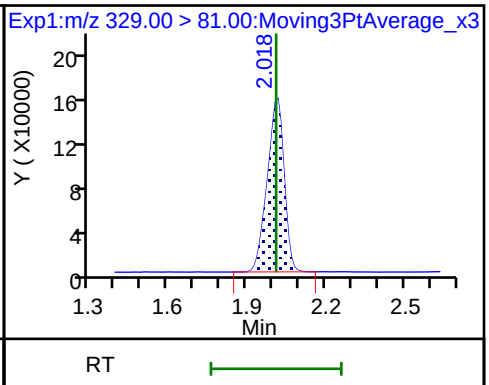
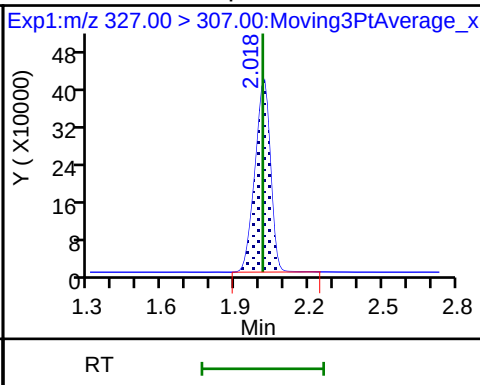
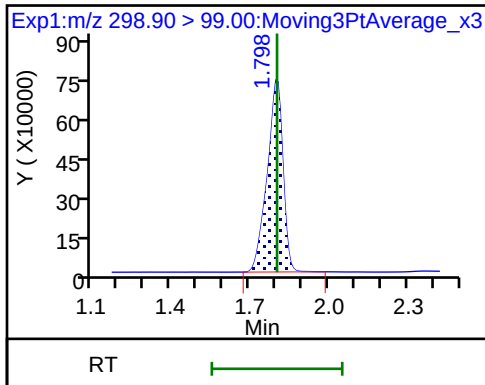
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

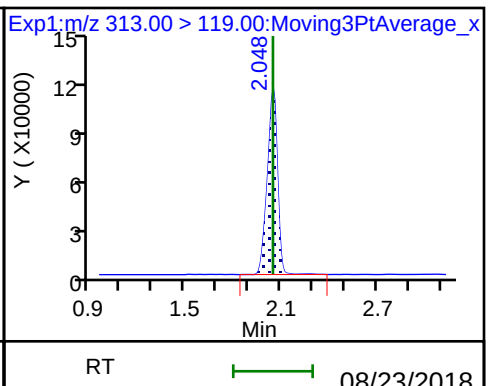
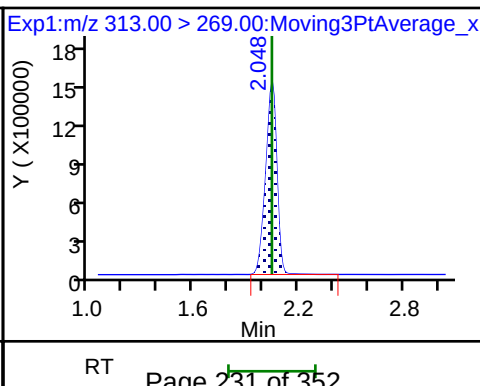
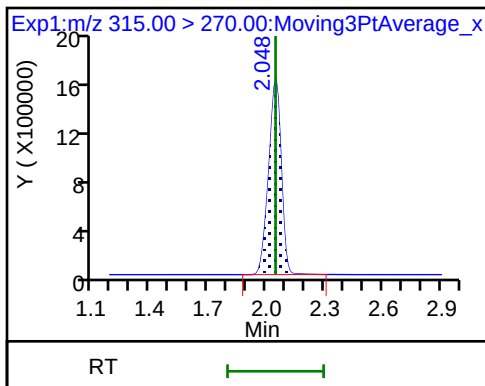
D 60 M2-4:2FTS



D 7 13C2 PFHxA

6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

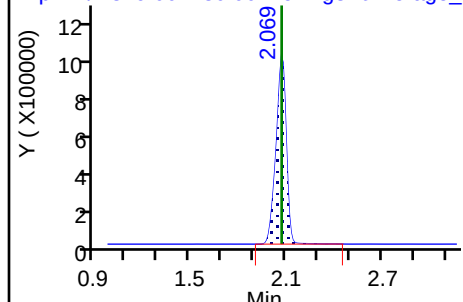


70 Perfluoropentanesulfonic acid

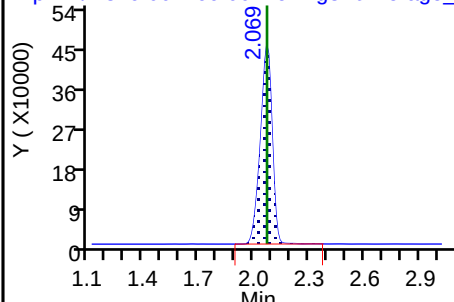
70 Perfluoropentanesulfonic acid

D 64 13C3 HFPO-DA

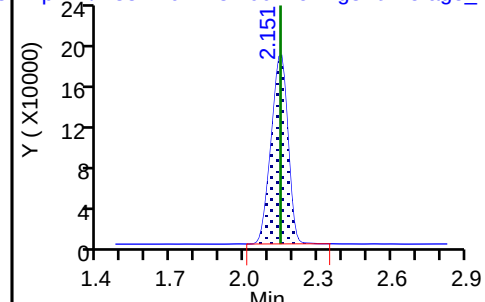
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Exp1:m/z 349.00 > 99.00:Moving3PtAverage_x3



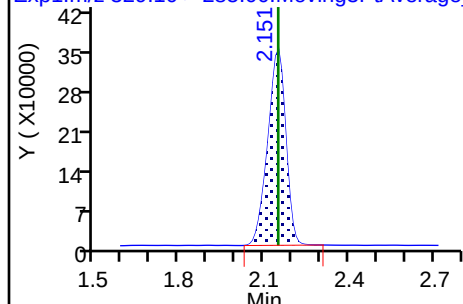
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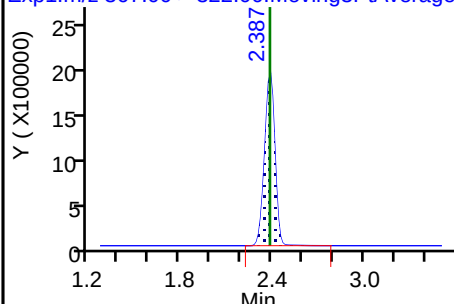
67 Perfluoro(2-propoxypropanoic) acid D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

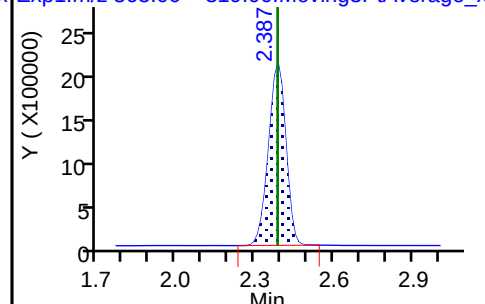
Exp1:m/z 329.10 > 285.00:Moving3PtAverage_x3



Exp1:m/z 367.00 > 322.00:Moving3PtAverage_x3



Exp1:m/z 363.00 > 319.00:Moving3PtAverage_x3

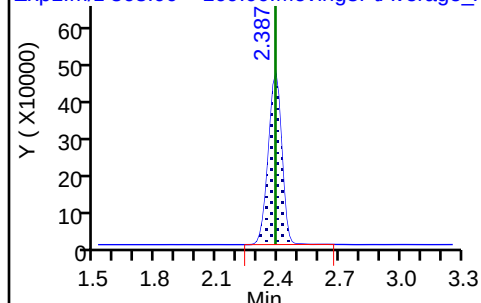


10 Perfluoroheptanoic acid

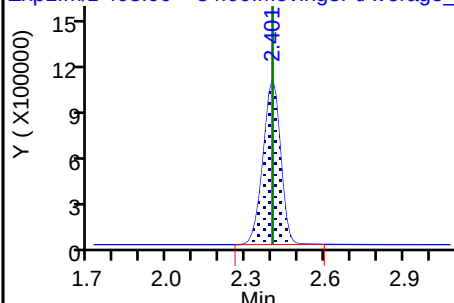
D 11 18O2 PFHxS

8 Perfluorohexanesulfonic acid

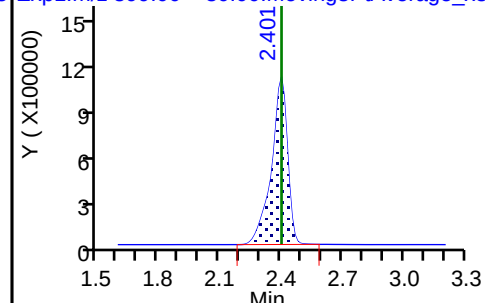
Exp1:m/z 363.00 > 169.00:Moving3PtAverage_x3



Exp1:m/z 403.00 > 84.00:Moving3PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving3PtAverage_x3

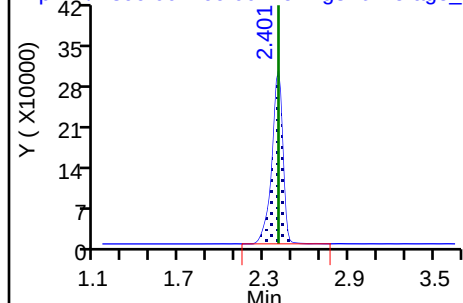


8 Perfluorohexanesulfonic acid

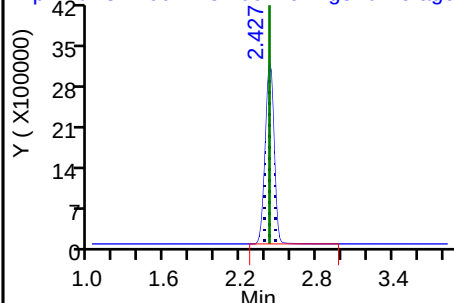
76 DONA

76 DONA

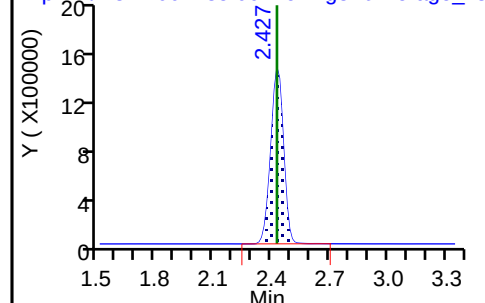
Exp1:m/z 399.00 > 99.00:Moving3PtAverage_x3



Exp1:m/z 377.00 > 251.00:Moving3PtAverage_x3

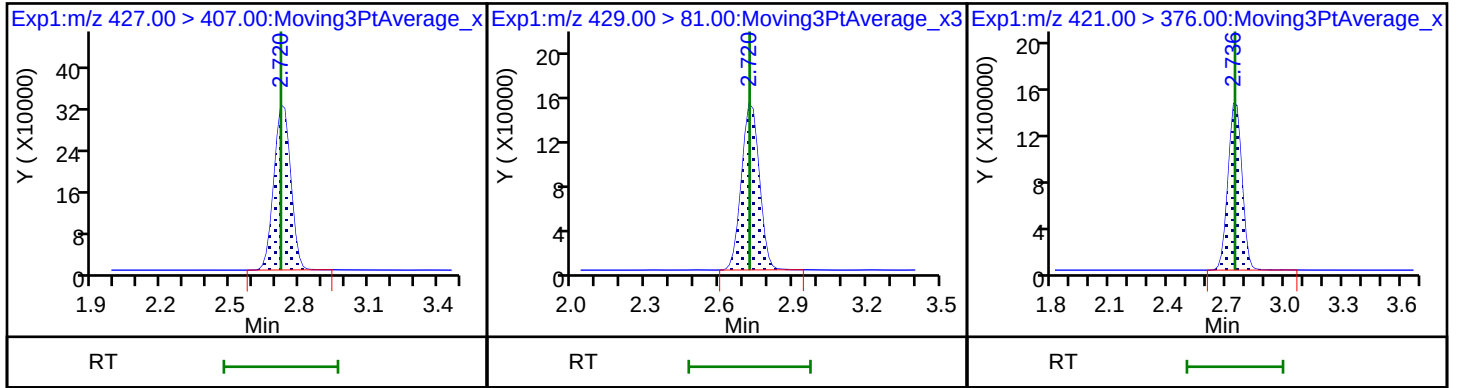


Exp1:m/z 377.00 > 85.00:Moving3PtAverage_x3



13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS

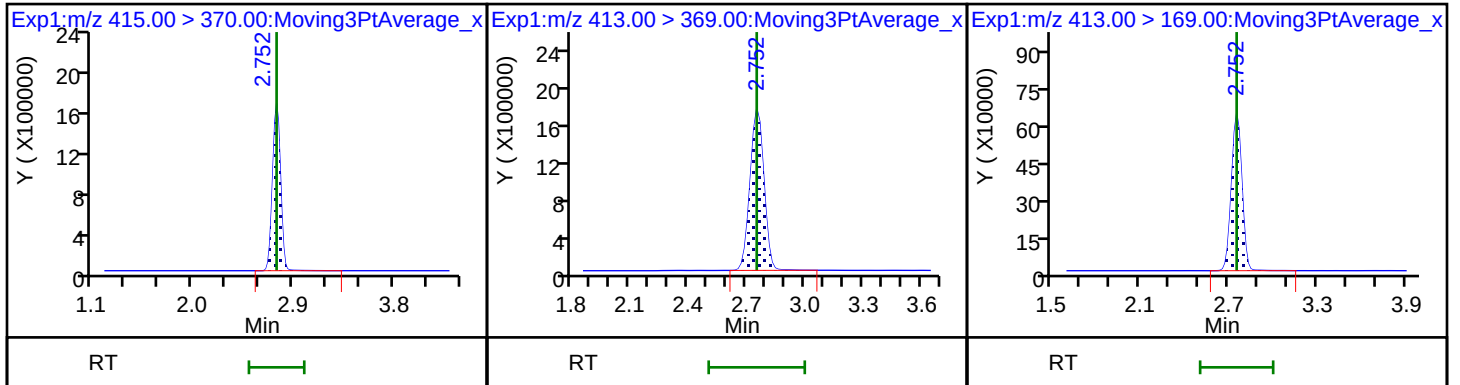
D 73 13C8 PFOA



* 62 13C2-PFOA

15 Perfluorooctanoic acid

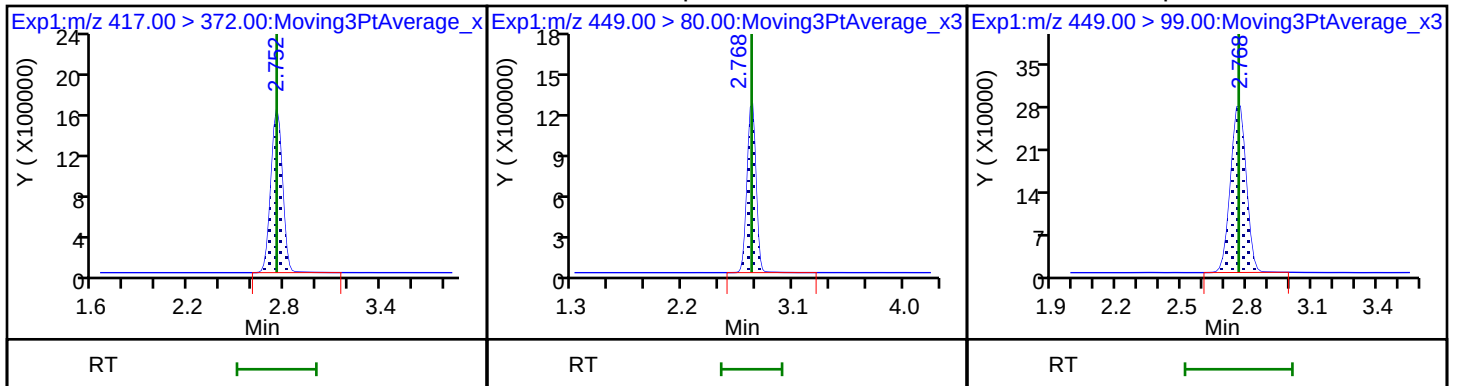
15 Perfluorooctanoic acid



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

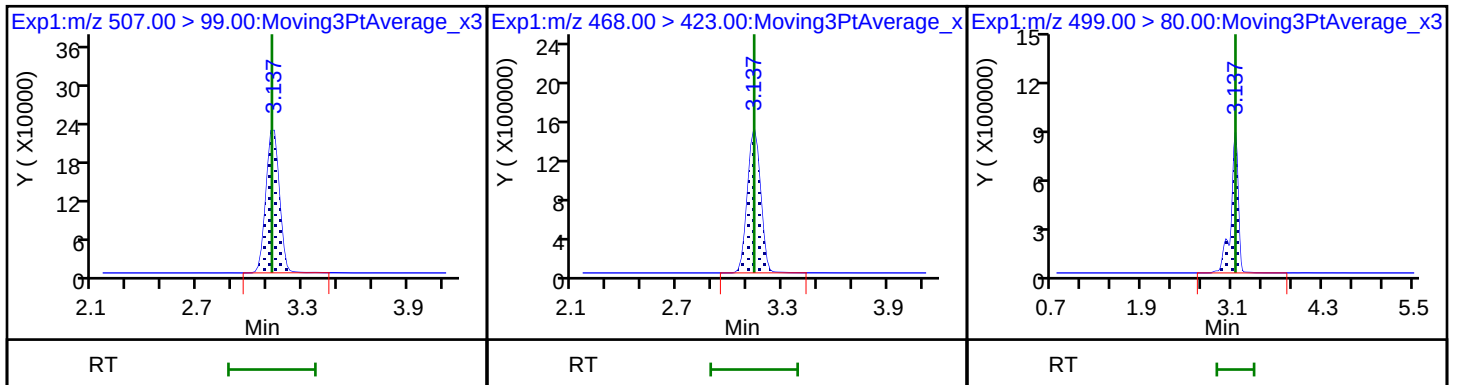
16 Perfluoroheptanesulfonic acid

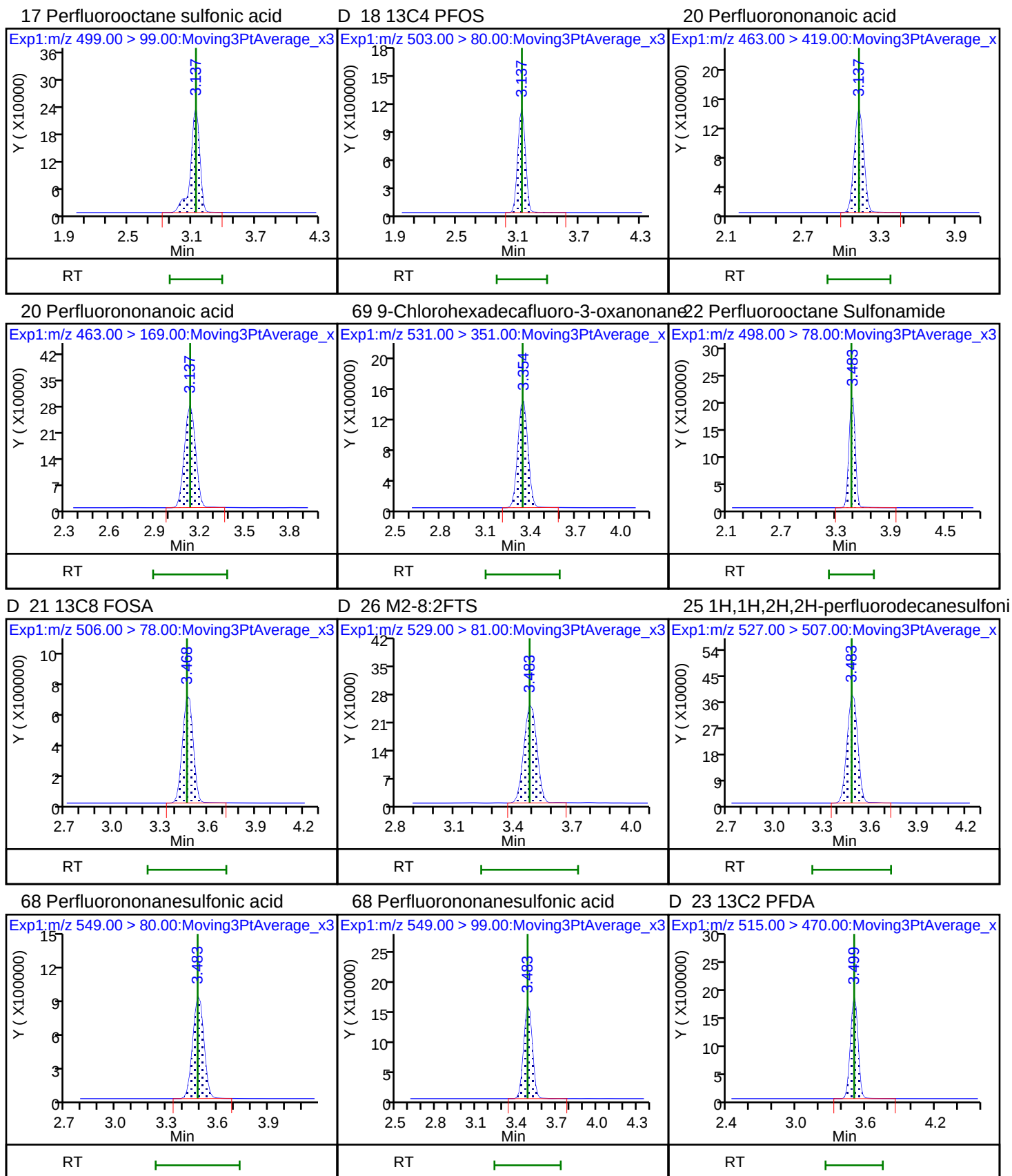


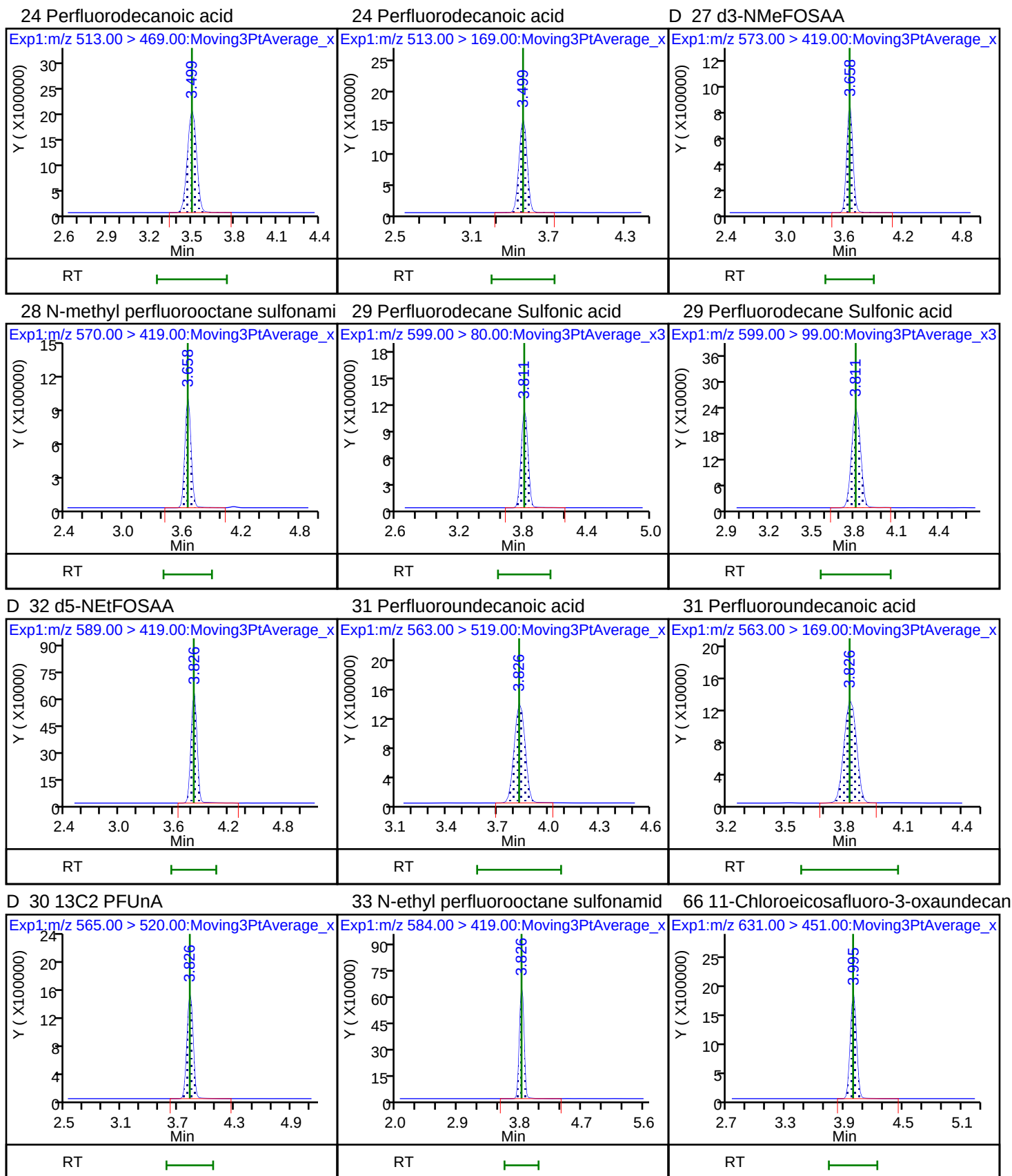
D 72 13C8 PFOS

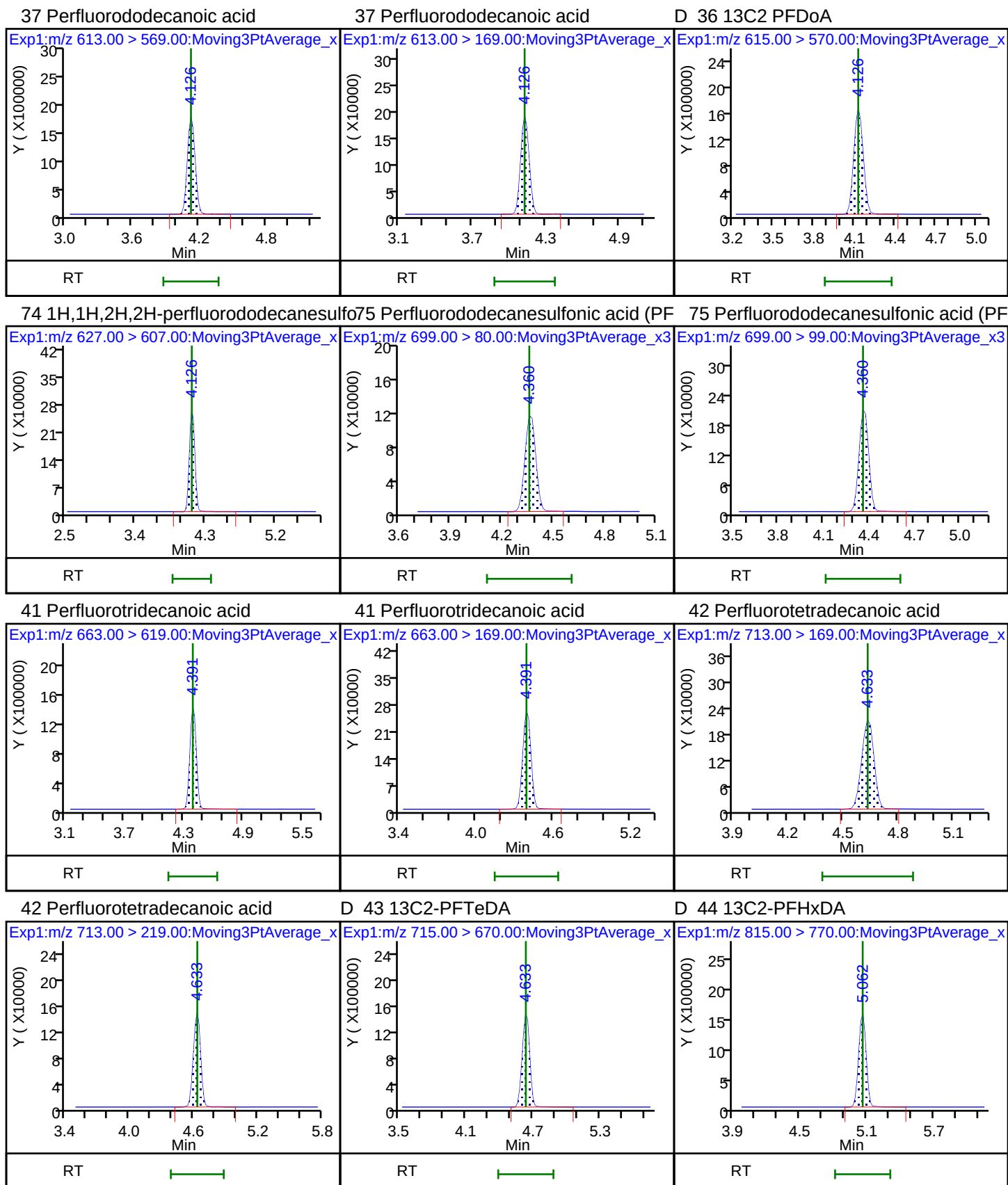
D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid





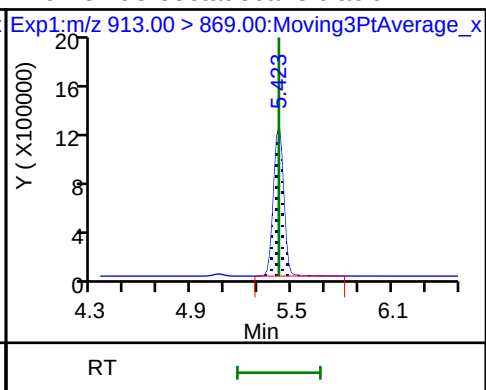
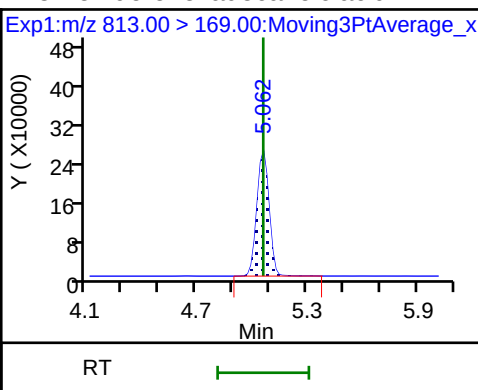
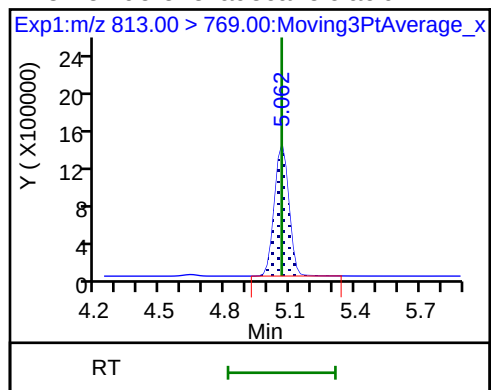




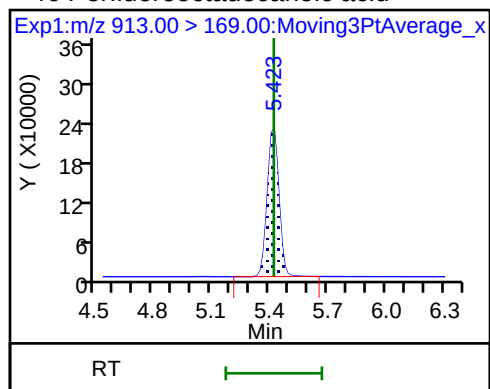
45 Perfluorohexadecanoic acid

45 Perfluorohexadecanoic acid

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Lab Sample ID: CCVL 320-240679/2 Calibration Date: 08/18/2018 04:42

Instrument ID: A9 Calib Start Date: 08/14/2018 14:32

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17

Lab File ID: 2018.08.18LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9456	0.9301		0.0492	0.0500	-1.6	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.024	1.087		0.0531	0.0500	6.2	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	104.2	104.8		0.0445	0.0442	0.6	50.0
4:2 FTS	AveID	20.87	19.60			0.0467	-6.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.8945	0.9265		0.0518	0.0500	3.6	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	49.50	47.03		0.0446	0.0469	-5.0	50.0
HFPO-DA (GenX)	AveID	1.541	1.872		0.0607	0.0500	21.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.058	1.167		0.0552	0.0500	10.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.276	1.253		0.0447	0.0455	-1.8	50.0
DONA	AveID	2.657	2.951		0.0523	0.0471	11.1	50.0
6:2 FTS	AveID	2.230	2.186			0.0474	-2.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.006	0.9651		0.0457	0.0476	-4.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.082	1.245		0.0576	0.0501	15.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.024	1.107		0.0541	0.0500	8.1	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.047	1.048		0.0464	0.0464	0.0	50.0
F-53B Major	AveID	1.201	1.262		0.0490	0.0466	5.1	50.0
8:2 FTS	AveID	15.14	13.28			0.0479	-12.3	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.069	1.211		0.0567	0.0500	13.3	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.6830	0.6406		0.0450	0.0480	-6.2	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	2.934	3.025		0.0515	0.0500	3.1	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9934	1.040			0.0500	4.7	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.8393	0.7682		0.0441	0.0482	-8.5	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9833	0.9185			0.0500	-6.6	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8661	0.996		0.0575	0.0500	15.0	50.0
F-53B Minor	AveID	1.418	1.499		0.0498	0.0471	5.7	50.0
10:2 FTS	AveID	9.836	8.534		0.0418	0.0482	-13.2	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.025	1.127		0.0550	0.0500	9.9	50.0
Perfluorododecanesulfonic acid (PFDoS)	AveID	0.0995	0.1038		0.0505	0.0484	4.3	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8192	0.8634		0.0527	0.0500	5.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.1627	0.1633		0.0502	0.0500	0.4	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240679/2 Calibration Date: 08/18/2018 04:42
 Instrument ID: A9 Calib Start Date: 08/14/2018 14:32
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17
 Lab File ID: 2018.08.18LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.405		0.0505	0.0500	1.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7150	0.6879		0.0481	0.0500	-3.8	50.0
13C4 PFBA	Ave	0.9573	0.9386		2.45	2.50	-2.0	50.0
13C5 PFPeA	Ave	0.8533	0.8323		2.44	2.50	-2.5	50.0
13C3-PFBS	Ave	0.0111	0.0112		2.36	2.33	1.4	50.0
M2-4:2FTS	Ave	0.0918	0.0967		2.46	2.34	5.4	50.0
13C2 PFHxA	Ave	0.9006	0.8975		2.49	2.50	-0.3	50.0
13C3 HFPO-DA	Ave	0.1169	0.1051		2.25	2.50	-10.1	50.0
13C4-PFHpA	Ave	1.067	1.032		2.42	2.50	-3.3	50.0
18O2 PFHxS	Ave	0.6554	0.6532		2.36	2.37	-0.3	50.0
M2-6:2FTS	Ave	0.0989	0.1038		2.49	2.38	5.0	50.0
13C8 PFOA	Ave	2816461	2850031		2.48	2.45	1.2	50.0
13C4 PFOA	Ave	0.9902	0.9723		2.45	2.50	-1.8	50.0
13C4 PFOS	Ave	0.7025	0.6741		2.29	2.39	-4.0	50.0
13C5 PFNA	Ave	0.9176	0.9081		2.47	2.50	-1.0	50.0
13C8 PFOS	Ave	506339	501423		2.37	2.39	-1.0	50.0
M2-8:2FTS	Ave	0.0142	0.0160		2.69	2.40	12.4	50.0
13C2 PFDA	Ave	0.995	0.9659		2.43	2.50	-3.0	50.0
13C8 FOSA	Ave	0.3785	0.3762		2.48	2.50	-0.6	50.0
d3-NMeFOSAA	Ave	0.4320	0.4416		2.56	2.50	2.2	50.0
13C2 PFUnA	Ave	0.8300	0.7728		2.33	2.50	-6.9	50.0
d5-NEtFOSAA	Ave	0.3278	0.3505		2.67	2.50	6.9	50.0
13C2 PFDoA	Ave	0.9627	0.9200		2.39	2.50	-4.4	50.0
13C2-PFTeDA	Ave	0.7785	0.7097		2.28	2.50	-8.8	50.0
13C2-PFHxDA	Ave	0.8521	0.7761		2.28	2.50	-8.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62911.b\2018.08.18LLA_005.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 18-Aug-2018 04:42:48 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62911.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 20-Aug-2018 16:05:31 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK022

First Level Reviewer: mongkols

Date: 20-Aug-2018 16:05:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.505	1.500	0.005	1.000	145651	0.0492		98.4	10.8	
D 1 13C4 PFBA										
217.00 > 172.00	1.505	1.500	0.005	0.547	7829851	2.45		98.0	4126	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.781	1.773	0.008	1.005	151009	0.0531		106	15.0	
D 3 13C5-PFPeA										
267.90 > 223.00	1.773	1.774	-0.001	0.644	6943397	2.44		97.5	11037	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.814	1.806	0.008	1.000	173750	0.0445		101	176	
298.90 > 99.00	1.814	1.806	0.008	1.000	64111		2.71(1.35-4.05)		92.2	
D 47 13C3-PFBS										
301.90 > 83.00	1.814	1.807	0.007	0.659	87178	2.36		101	688	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.028	2.018	0.010	1.118	34319	0.0439		93.9	392	
D 60 M2-4:2FTS										
329.00 > 81.00	2.028	2.019	0.009	0.737	753636	2.46		105	1065	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.059	2.049	0.010	1.000	138743	0.0518		104	39.4	
313.00 > 119.00	2.059	2.049	0.010	1.000	10018		13.85(6.96-20.87)		25.3	
D 7 13C2 PFHxA										
315.00 > 270.00	2.059	2.060	-0.001	0.748	7487298	2.49		99.7	13358	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.090	2.079	0.011	1.152	82701	0.0446		95.0	219	
349.00 > 99.00	2.079	2.079	0.0	1.146	38848		2.13(1.15-3.45)		65.2	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.161	2.151	0.010	1.005	32811	0.0607		121	13.0	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.152	-0.001	0.782	876489	2.25		89.9	2735	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.388	-0.001	1.000	200968	0.0552		110	27.4	
363.00 > 169.00	2.387	2.388	-0.001	1.000	42835		4.69(2.17-6.52)		201	
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.389	-0.002	0.868	8607850	2.42		96.7	23903	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.401	0.0	1.000	124250	0.0447		98.2	167	
399.00 > 99.00	2.401	2.401	0.0	1.000	40109		3.10(1.90-5.70)		53.2	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.402	-0.001	0.872	5154965	2.36		99.7	5885	
76 DONA										
377.00 > 251.00	2.440	2.427	0.013	0.782	312678	0.0523		111	710	
377.00 > 85.00	2.440	2.427	0.013	0.782	124492		2.51(1.13-3.39)		329	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	1.000	35884	0.0465		98.0	126	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.752	2.736	0.016	1.000	202140	0.0576		115	12.9	
413.00 > 169.00	2.752	2.736	0.016	1.000	66807		3.03(1.36-4.08)		116	
* 62 13C2-PFOA										
415.00 > 370.00	2.752	2.736	0.016		8342325	2.50			12982	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.737	-0.017	0.988	822649	2.49		105	1506	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.752	2.752	0.0	0.882	103328	0.0457		95.9	165	
449.00 > 99.00	2.752	2.752	0.0	0.882	27908		3.70(1.84-5.53)		138	
D 73 13C8 PFOA										
421.00 > 376.00	2.736	2.753	-0.017		6975452	2.48		101	10308	
D 14 13C4 PFOA										
417.00 > 372.00	2.752	2.753	-0.001	1.000	8111429	2.45		98.2	11519	
20 Perfluorononanoic acid										
463.00 > 419.00	3.119	3.119	0.0	1.000	167687	0.0541		108	19.2	
463.00 > 169.00	3.137	3.119	0.018	1.006	30219		5.55(2.68-8.03)		64.4	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.119	3.119	0.0	1.000	109394	0.0464		100	113	
499.00 > 99.00	3.119	3.119	0.0	1.000	30728		3.56(2.04-6.12)		84.7	
D 72 13C8 PFOS										
507.00 > 99.00	3.119	3.120	-0.001		1198400	2.37		99.0	3638	
D 18 13C4 PFOS										
503.00 > 80.00	3.119	3.138	-0.019	1.134	5375793	2.29		96.0	3534	
D 19 13C5 PFNA										
468.00 > 423.00	3.119	3.138	-0.019	1.134	7575652	2.47		99.0	11442	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.337	3.321	0.016	1.070	132286	0.0490		105	180	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.468	3.468	0.0	1.000	33952	0.0420		87.7	96.3	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.468	0.015	1.117	69158	0.0450		93.8	180	
549.00 > 99.00	3.483	3.468	0.015	1.117	12373		5.59(3.02-9.05)		99.9	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.483	3.484	-0.001	1.000	189852	0.0515		103	558	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.483	3.484	-0.001	1.000	195178	0.0567		113	33.3	
513.00 > 169.00	3.483	3.484	-0.001	1.000	11964		16.31(7.12-21.35)		29.1	
D 21 13C8 FOSA										
506.00 > 78.00	3.483	3.484	-0.001	1.266	3137947	2.48		99.4	5338	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.484	-0.016	1.260	127833	2.69		112	641	
D 23 13C2 PFDA										
515.00 > 470.00	3.483	3.499	-0.016	1.266	8057494	2.43		97.0	5175	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.643	3.629	0.014	1.000	76634	0.0524		105	20.6	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.643	3.645	-0.002	1.324	3683666	2.56		102	6741	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.794	3.794	0.0	1.216	83288	0.0441		91.5	88.2	
599.00 > 99.00	3.794	3.794	0.0	1.216	26108		3.19(2.14-6.43)		76.3	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.810	3.810	0.0	1.000	53716	0.0467		93.4	113	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.810	3.810	0.0	1.000	128402	0.0575		115	28.7	
563.00 > 169.00	3.810	3.810	0.0	1.000	9369		13.70(5.24-15.72)		39.4	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.810	3.811	-0.001	1.385	2924098	2.67		107	2585	
D 30 13C2 PFUnA										
565.00 > 520.00	3.810	3.827	-0.017	1.385	6446916	2.33		93.1	7923	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.978	3.962	0.016	1.275	158758	0.0498		106	458	
35 MeFOSA										
512.00 > 169.00	3.978	3.978	0.0		34419	NC			125	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.109	4.092	0.017	1.185	21956	0.0418		86.8	64.1	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.109	4.092	0.017	1.000	172930	0.0550		110	42.2	
613.00 > 169.00	4.109	4.092	0.017	1.000	13890		12.45(4.68-14.05)		48.3	
D 36 13C2 PFDaA										
615.00 > 570.00	4.109	4.110	-0.001	1.493	7675268	2.39		95.6	7749	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.345	4.329	0.016	1.393	11299	0.0505		104	35.6	R
699.00 > 99.00	4.345	4.329	0.016	1.393	13320		0.85(0.28-0.83)		46.8	R
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.360	4.360	0.0	1.061	132543	0.0527		105	43.9	
663.00 > 169.00	4.376	4.360	0.016	1.065	20461		6.48(3.09-9.27)		77.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.615	4.594	0.021	1.000	19339	0.0502		100	94.0	
713.00 > 219.00	4.597	4.594	0.003	0.996	13534		1.43(0.70-2.09)		69.2	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.615	4.616	-0.001	1.677	5920868	2.28		91.2	9292	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.029	5.025	0.004	1.000	181964	0.0505		101	55.1	
813.00 > 169.00	5.029	5.025	0.004	1.000	30351		6.00(2.77-8.32)		121	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.029	5.029	0.0	1.827	6474724	2.28		91.1	8097	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.365	5.362	0.003	1.067	89078	0.0481		96.2	34.5	
913.00 > 169.00	5.365	5.362	0.003	1.067	16023		5.56(2.55-7.64)		196	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL2_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62911.b\2018.08.18LLA_005.d

Injection Date: 18-Aug-2018 04:42:48

Instrument ID: A9

Lims ID: CCVL

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 21

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

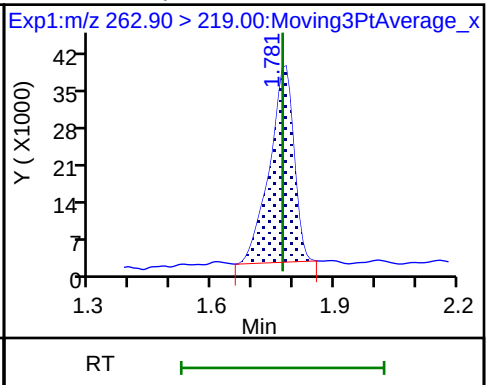
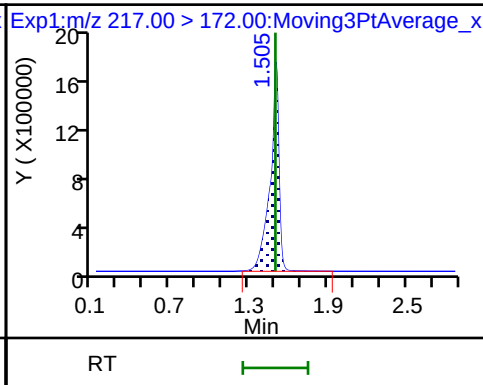
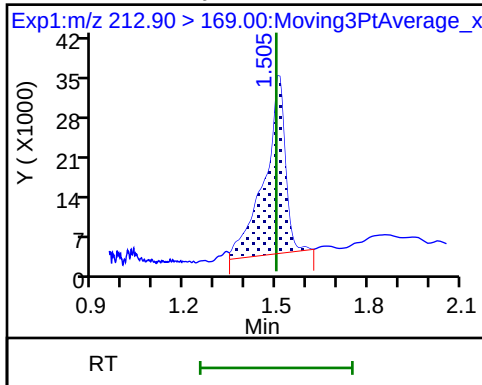
Method: PFAS_A9

Limit Group: LC PFC ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

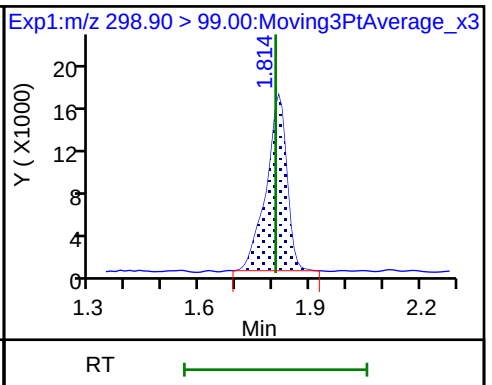
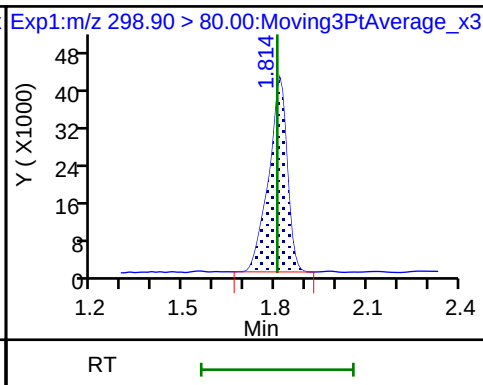
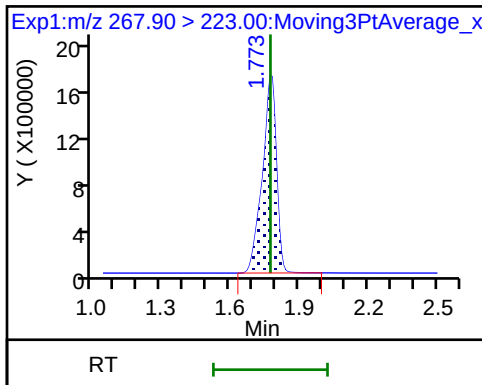
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

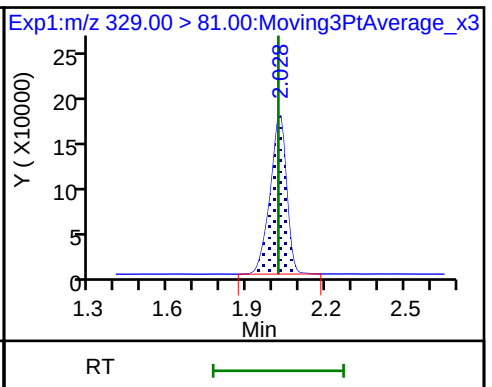
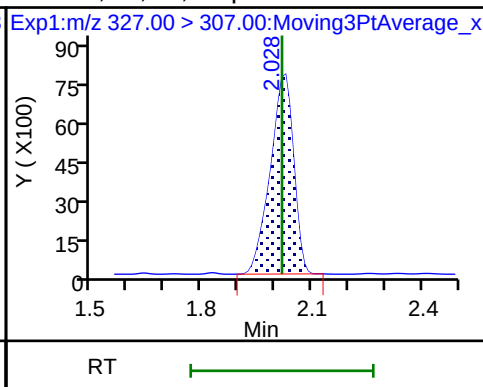
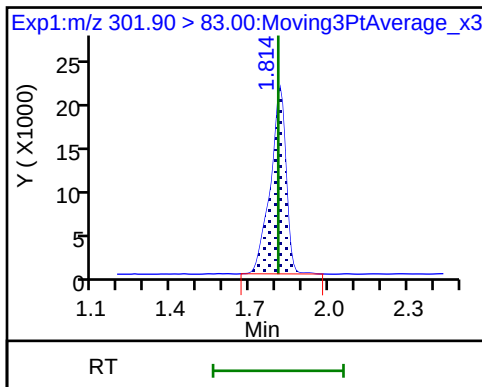
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfonate

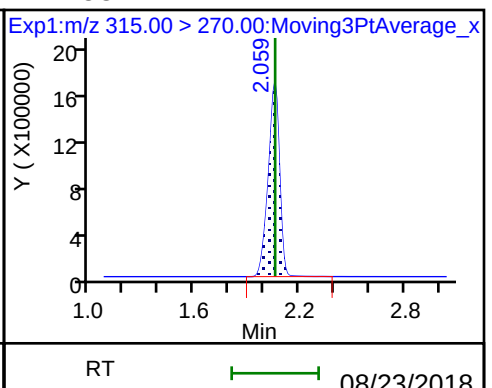
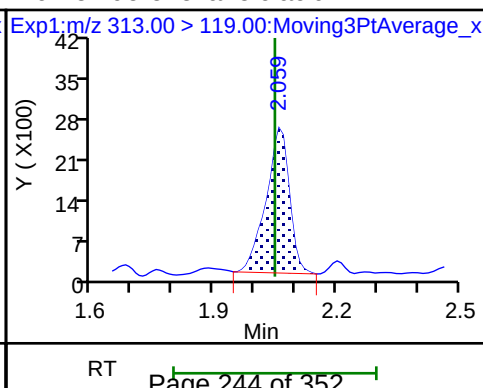
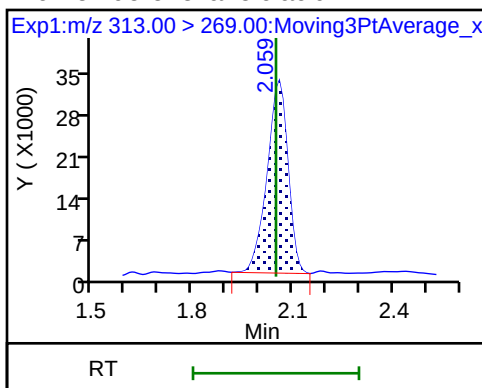
D 60 M2-4:2FTS

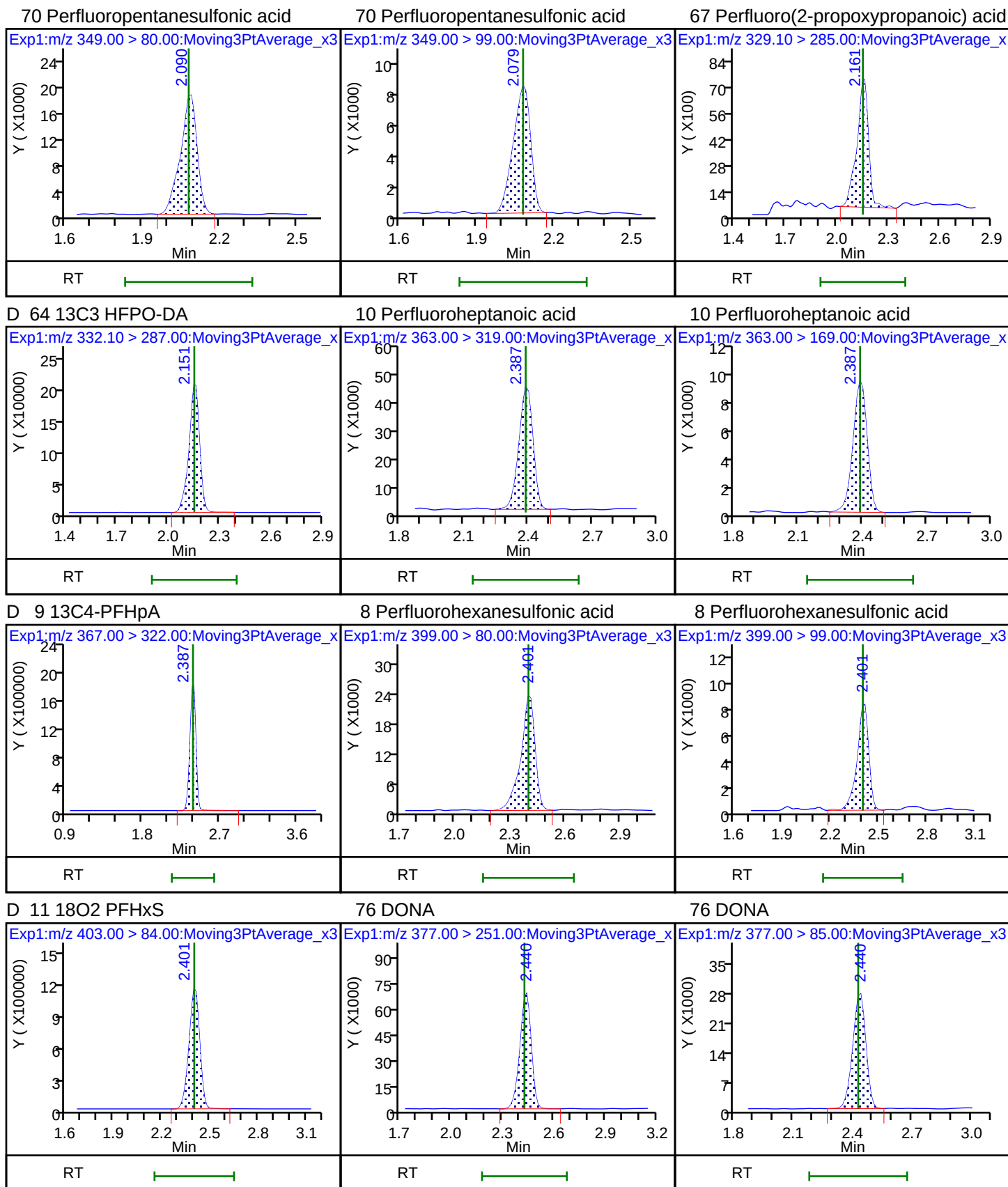


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

D 7 13C2 PFHxA

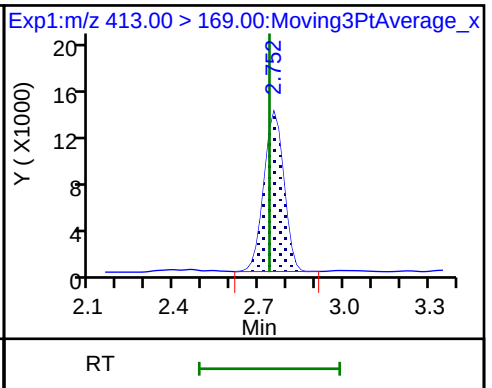
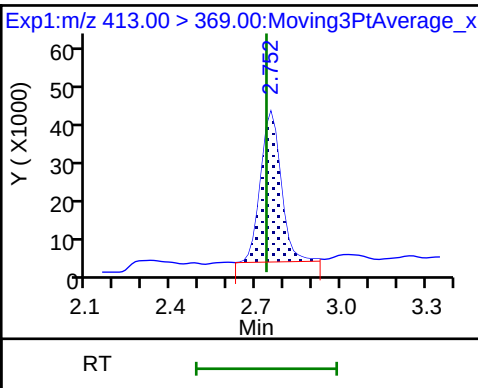
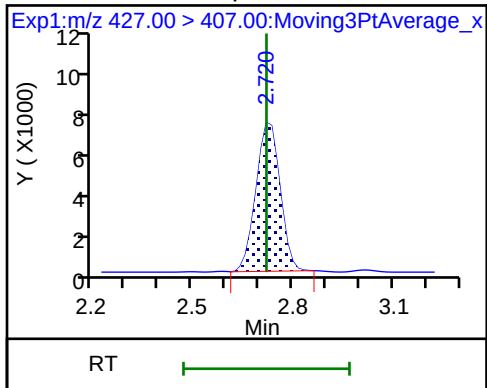




13 1H,1H,2H,2H-perfluorooctanesulfonyl

15 Perfluorooctanoic acid

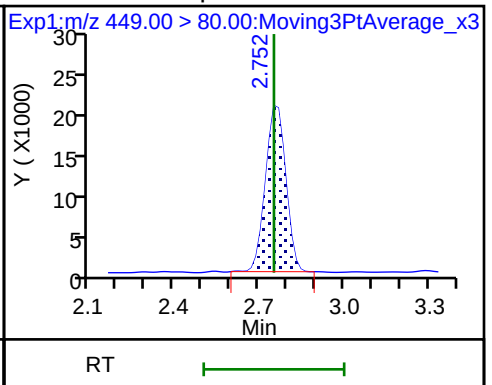
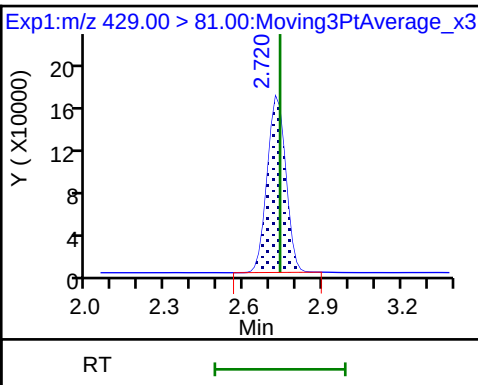
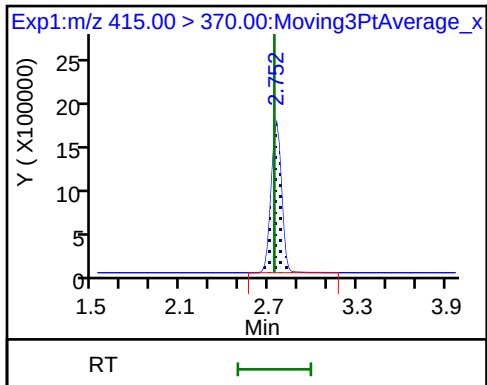
15 Perfluorooctanoic acid



* 62 13C2-PFOA

D 12 M2-6:2FTS

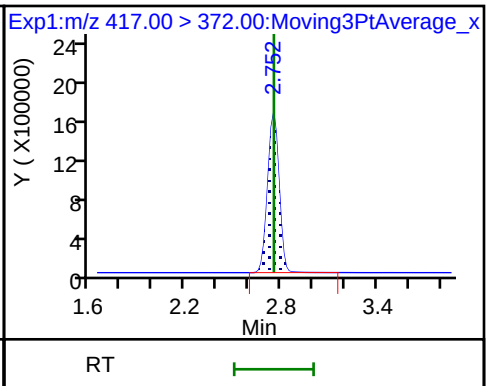
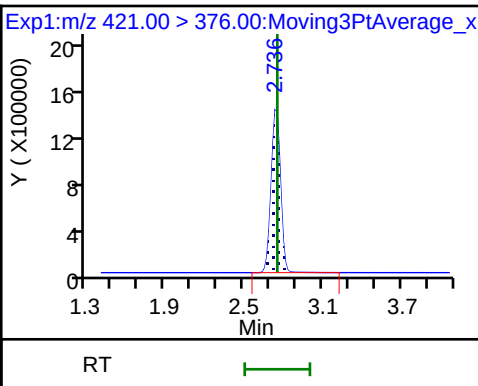
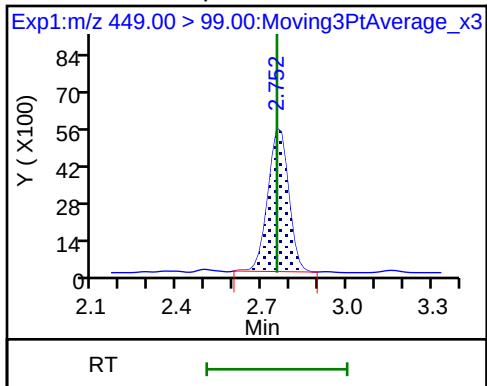
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 73 13C8 PFOA

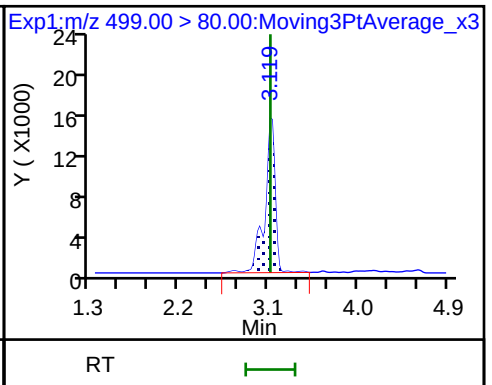
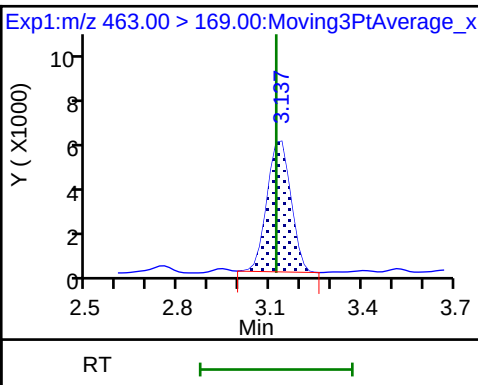
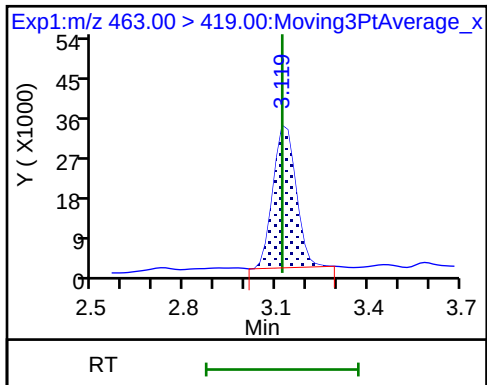
D 14 13C4 PFOA



20 Perfluorononanoic acid

20 Perfluorononanoic acid

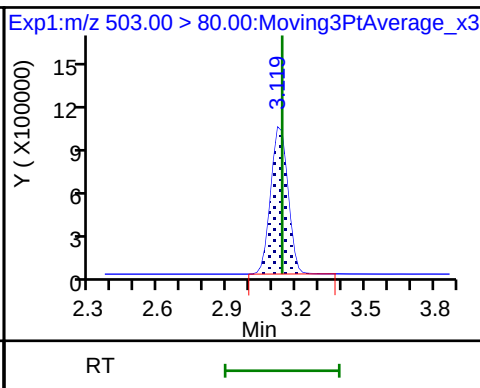
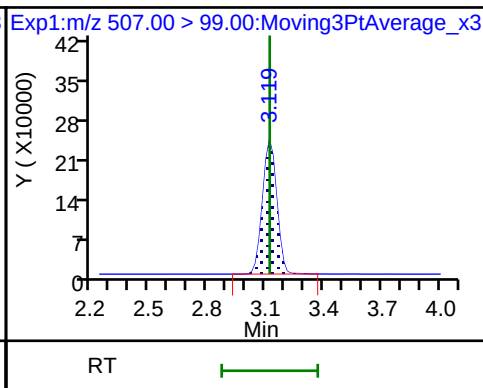
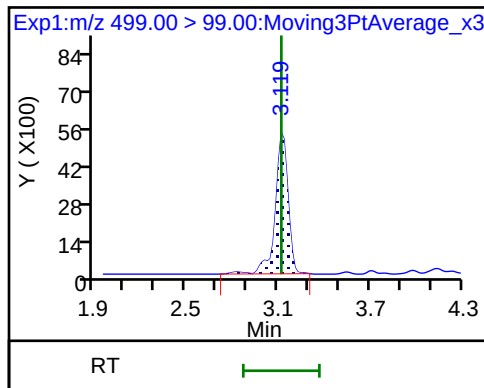
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

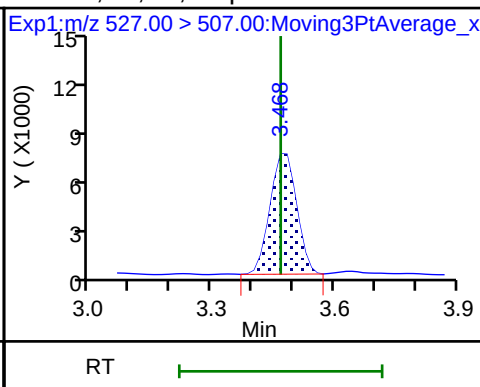
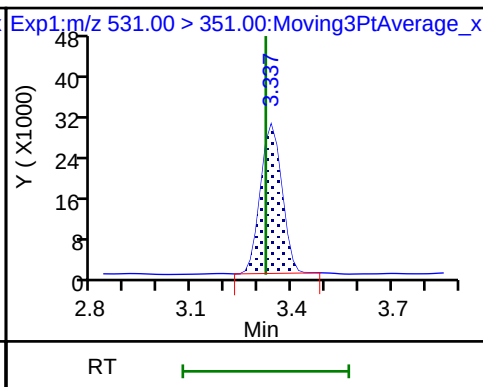
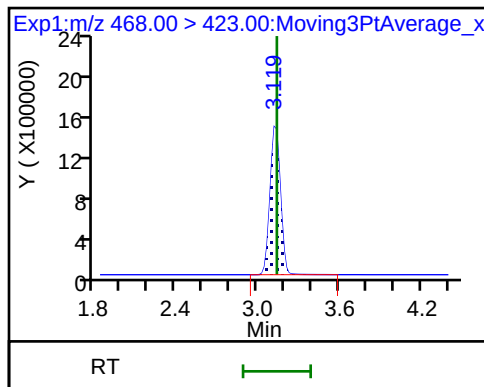
D 72 13C8 PFOS

D 18 13C4 PFOS



D 19 13C5 PFNA

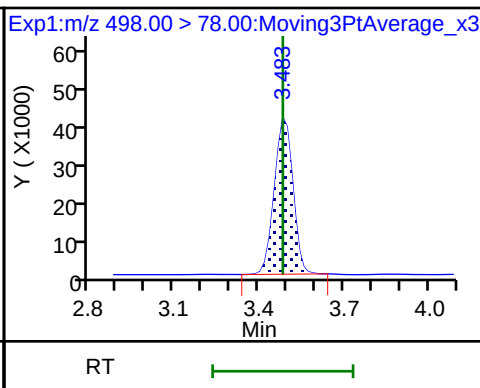
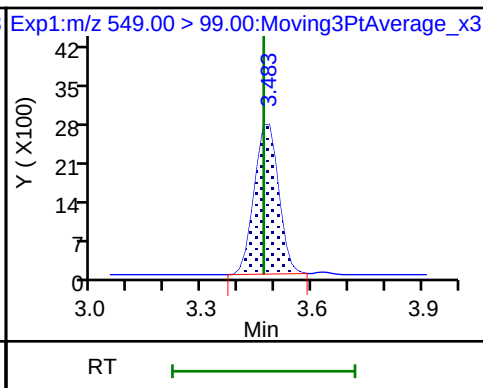
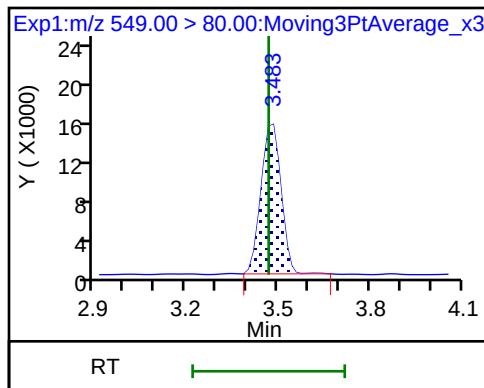
69 9-Chlorohexadecafluoro-3-oxanonan-25 1H,1H,2H,2H-perfluorodecanesulfoni



68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid

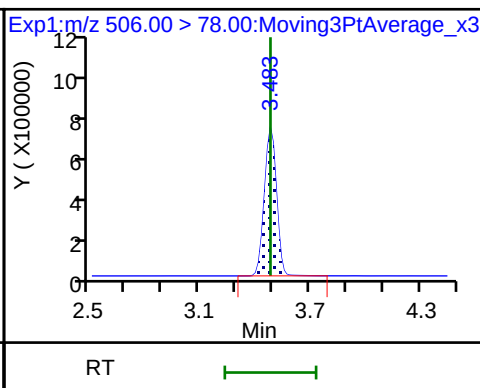
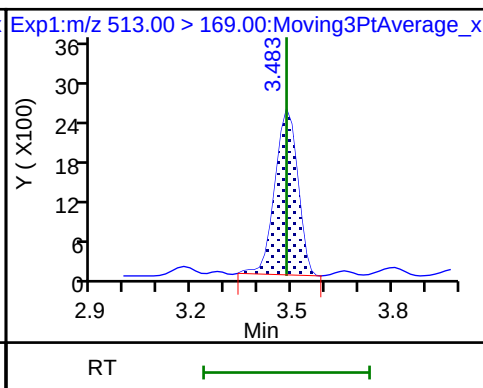
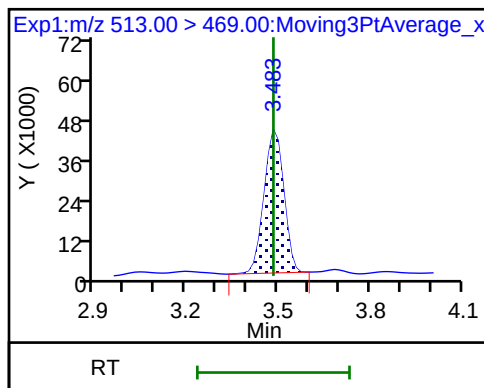
22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid

24 Perfluorodecanoic acid

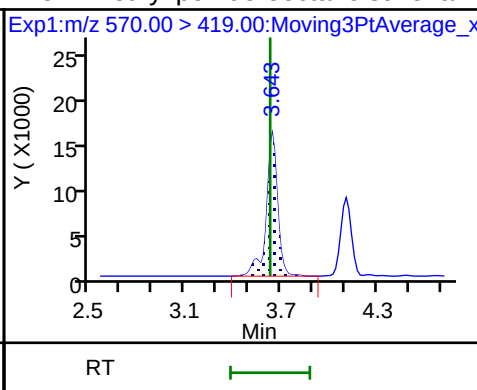
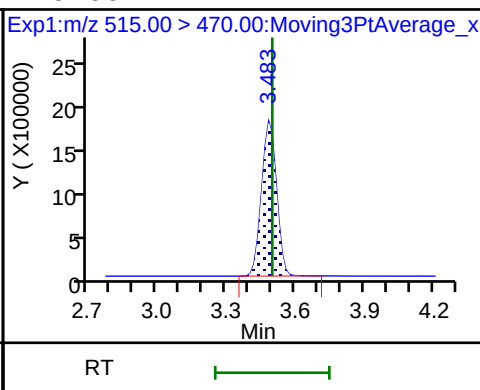
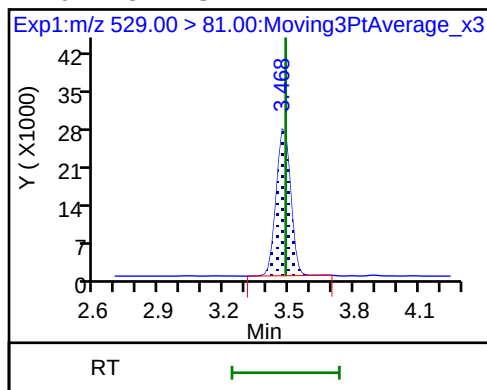
D 21 13C8 FOSA



D 26 M2-8:2FTS

D 23 13C2 PFDA

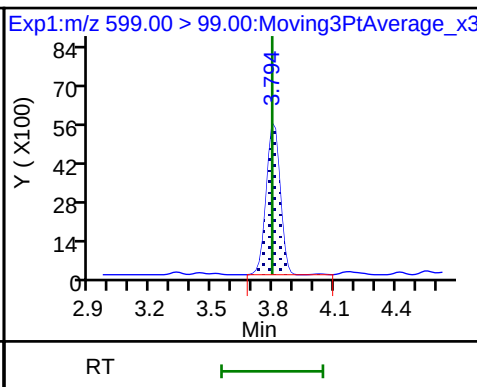
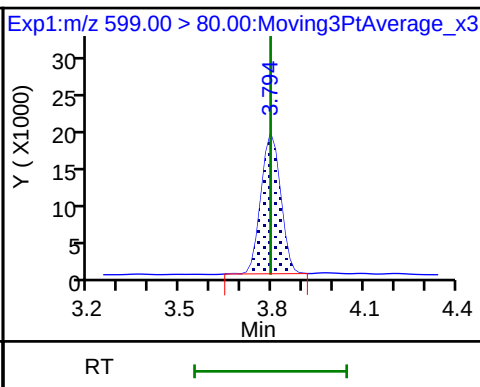
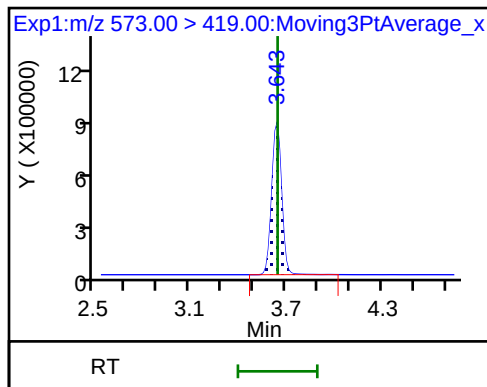
28 N-methyl perfluorooctane sulfonami



D 27 d3-NMeFOSAA

29 Perfluorodecane Sulfonic acid

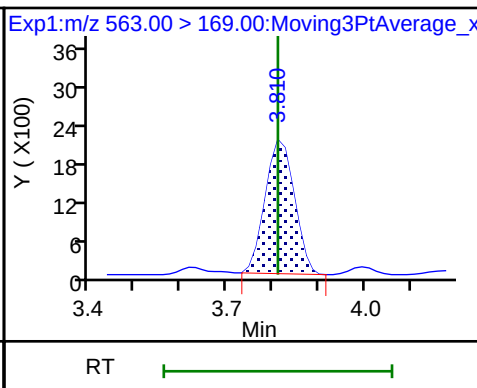
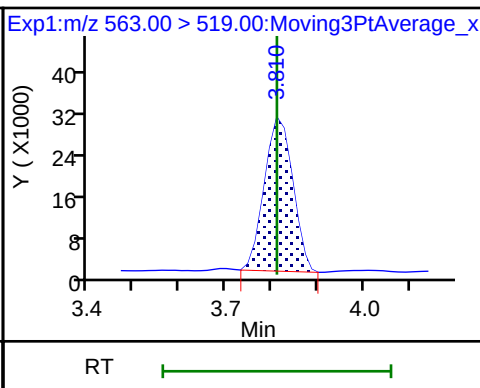
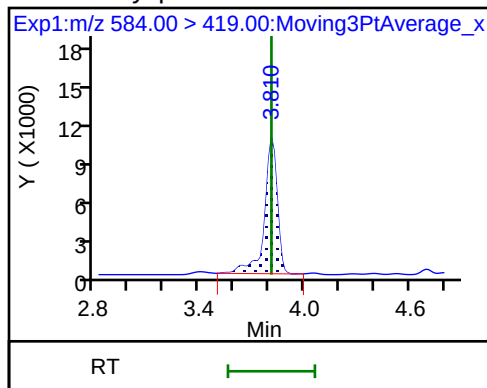
29 Perfluorodecane Sulfonic acid



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

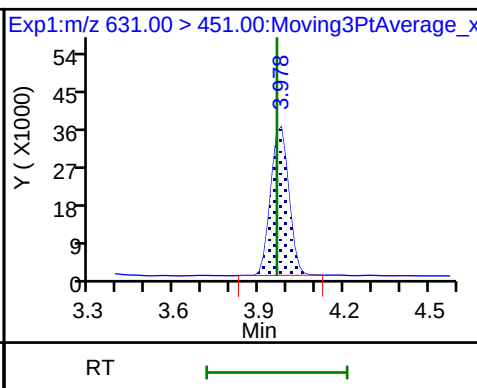
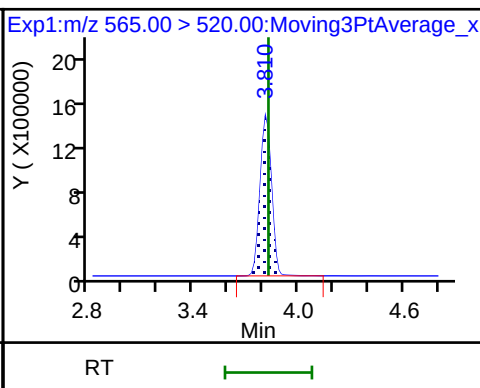
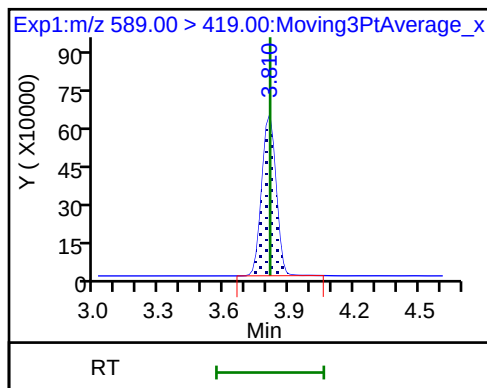
31 Perfluoroundecanoic acid



D 32 d5-NEtFOSAA

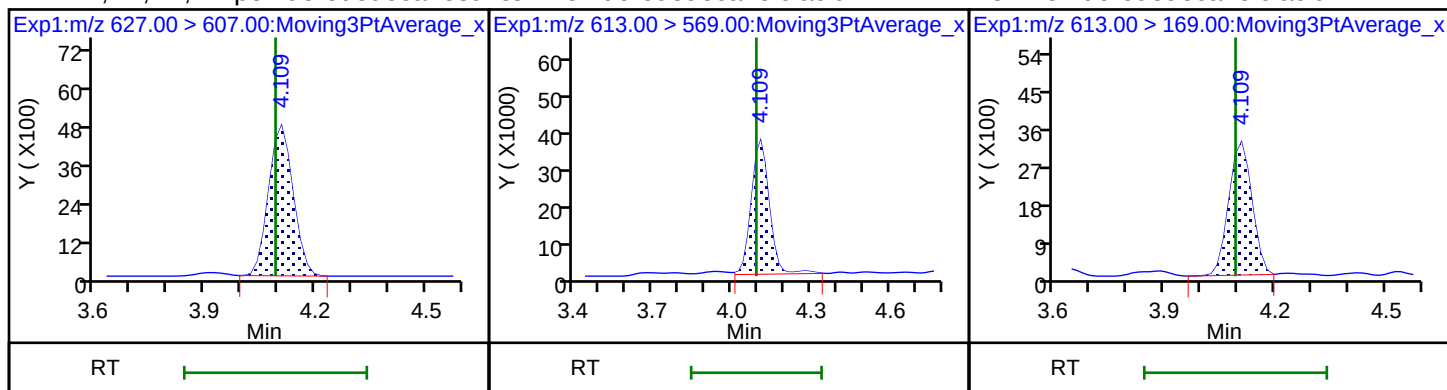
D 30 13C2 PFUnA

66 11-Chloroeicosafuoro-3-oxaundecan



74 1H,1H,2H,2H-perfluorododecanesulfo37 Perfluorododecanoic acid

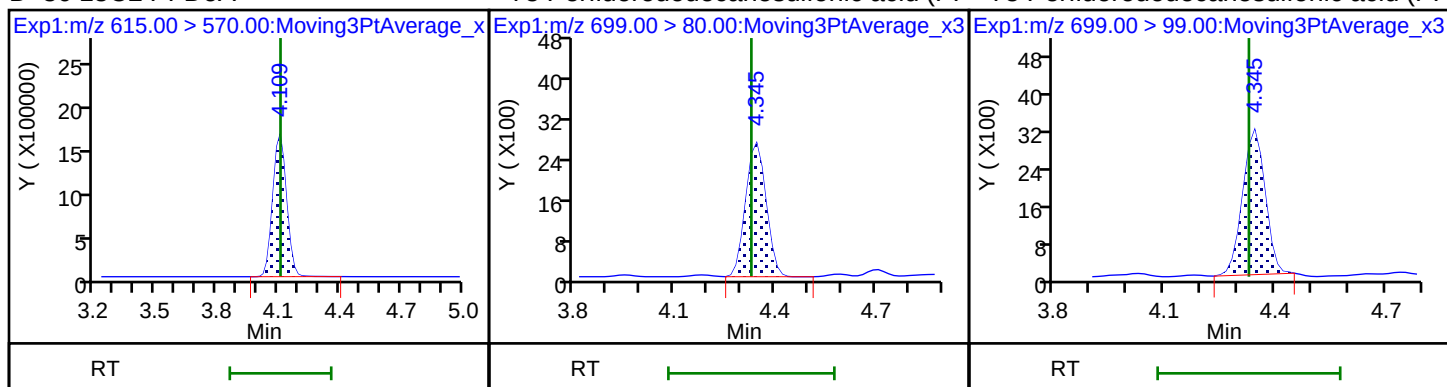
37 Perfluorododecanoic acid



D 36 13C2 PFDa

75 Perfluorododecanesulfonic acid (PF

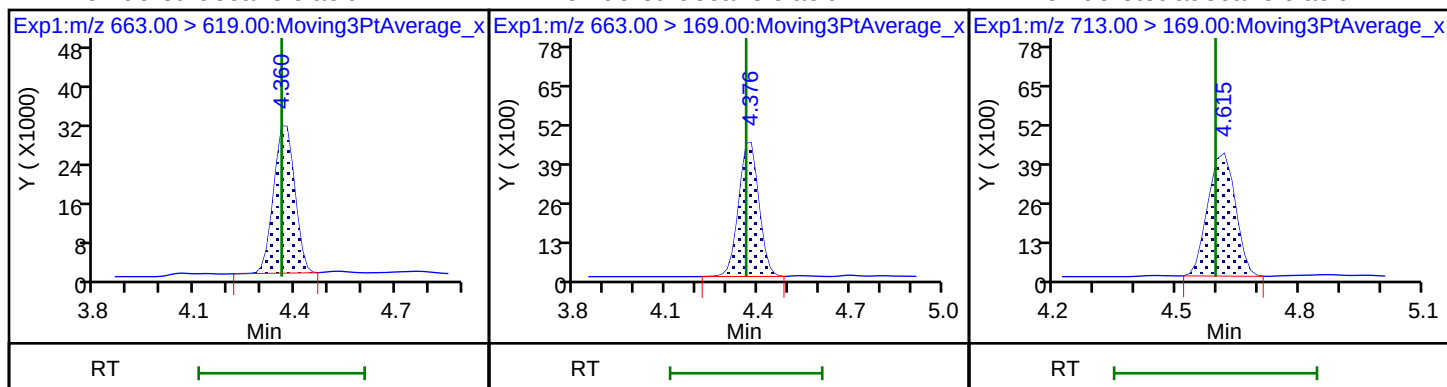
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

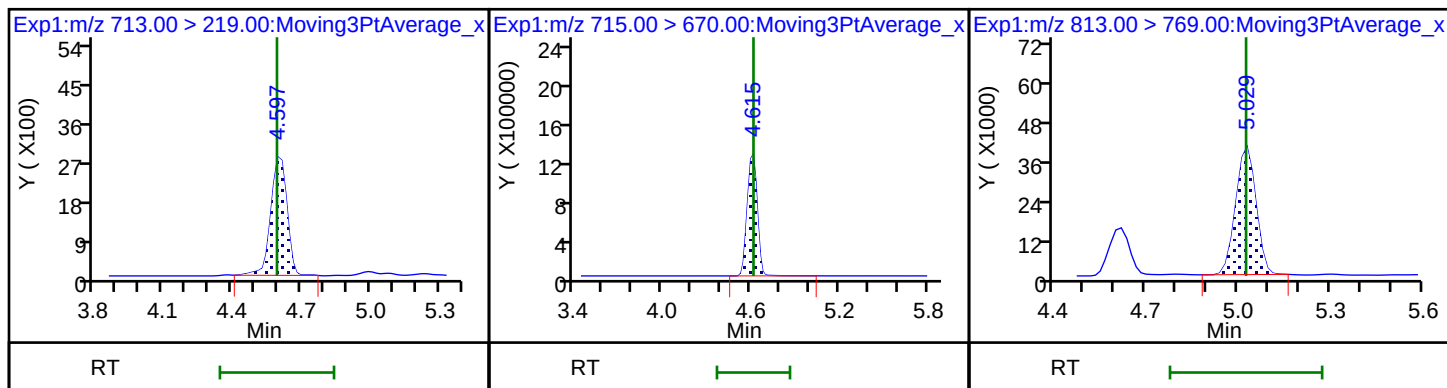
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

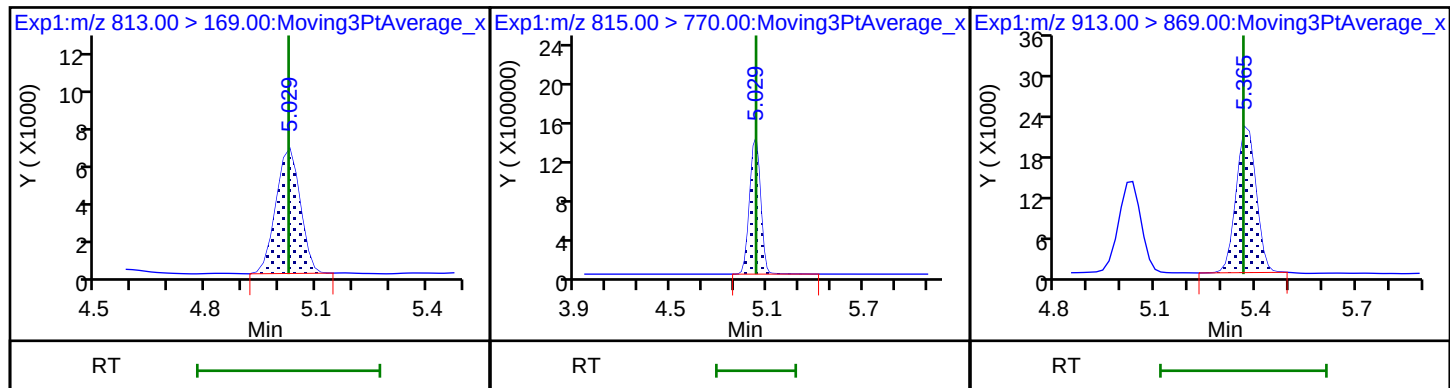
45 Perfluorohexadecanoic acid



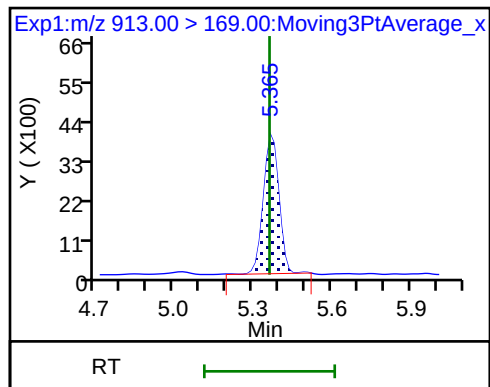
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Lab Sample ID: CCV 320-240679/3 Calibration Date: 08/18/2018 04:50

Instrument ID: A9 Calib Start Date: 08/14/2018 14:32

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17

Lab File ID: 2018.08.18LLA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9456	0.9288		0.982	1.00	-1.8	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.024	1.008		0.984	1.00	-1.6	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	104.2	107.9		0.915	0.884	3.6	50.0
4:2 FTS	AveID	20.87	22.04		0.986	0.934	5.6	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.8945	0.8928		0.998	1.00	-0.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	49.50	50.01		0.948	0.938	1.0	50.0
HFPO-DA (GenX)	AveID	1.541	1.568		1.02	1.00	1.7	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.058	1.050		0.993	1.00	-0.7	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.276	1.190		0.849	0.910	-6.7	40.0
DONA	AveID	2.657	3.056		1.08	0.942	15.0	50.0
6:2 FTS	AveID	2.230	2.275		0.967	0.948	2.0	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.082	1.112		1.03	1.00	2.8	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.006	1.024		0.969	0.952	1.8	50.0
Perfluorononanoic acid (PFNA)	AveID	1.024	0.9723		0.950	1.00	-5.0	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.047	1.071		0.949	0.928	2.2	40.0
F-53B Major	AveID	1.201	1.269		0.984	0.932	5.6	50.0
8:2 FTS	AveID	15.14	13.64		0.863	0.958	-9.9	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.6830	0.6707		0.943	0.960	-1.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.069	1.162		1.09	1.00	8.7	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	2.934	3.267		1.11	1.00	11.3	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9934	1.022		1.03	1.00	2.9	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.8393	0.9493		1.09	0.964	13.1	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9833	0.9292		0.945	1.00	-5.5	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8661	0.9464		1.09	1.00	9.3	40.0
F-53B Minor	AveID	1.418	1.502		0.998	0.942	5.9	50.0
10:2 FTS	AveID	9.836	7.768		0.761	0.964	-21.0	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.025	1.043		1.02	1.00	1.7	40.0
Perfluorododecanesulfonic acid (PFDoS)	AveID	0.0995	0.0970		0.943	0.968	-2.6	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8192	0.8254		1.01	1.00	0.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.1627	0.1568		0.964	1.00	-3.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240679/3 Calibration Date: 08/18/2018 04:50
 Instrument ID: A9 Calib Start Date: 08/14/2018 14:32
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17
 Lab File ID: 2018.08.18LLA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9460		1.02	1.00	1.8	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7150	0.7238		1.01	1.00	1.2	50.0
13C4 PFBA	Ave	0.9573	0.9701		2.53	2.50	1.3	50.0
13C5 PFPeA	Ave	0.8533	0.8797		2.58	2.50	3.1	50.0
13C3-PFBS	Ave	0.0111	0.0114		2.39	2.33	2.6	50.0
M2-4:2FTS	Ave	0.0918	0.1066		2.71	2.34	16.1	50.0
13C2 PFHxA	Ave	0.9006	0.9318		2.59	2.50	3.5	50.0
13C3 HFPO-DA	Ave	0.1169	0.1183		2.53	2.50	1.1	50.0
13C4-PFHpA	Ave	1.067	1.103		2.58	2.50	3.4	50.0
18O2 PFHxS	Ave	0.6554	0.6796		2.45	2.37	3.7	50.0
M2-6:2FTS	Ave	0.0989	0.1007		2.42	2.38	1.9	40.0
13C4 PFOA	Ave	0.9902	0.9831		2.48	2.50	-0.7	50.0
13C8 PFOA	Ave	2816461	2914906		2.53	2.45	3.5	50.0
13C4 PFOS	Ave	0.7025	0.6841		2.33	2.39	-2.6	50.0
13C5 PFNA	Ave	0.9176	0.9767		2.66	2.50	6.4	50.0
13C8 PFOS	Ave	506339	466415		2.20	2.39	-7.9	50.0
M2-8:2FTS	Ave	0.0142	0.0184		3.09	2.40	29.1	40.0
13C2 PFDA	Ave	0.995	0.9882		2.48	2.50	-0.7	50.0
13C8 FOSA	Ave	0.3785	0.3812		2.52	2.50	0.7	50.0
d3-NMeFOSAA	Ave	0.4320	0.4838		2.80	2.50	12.0	50.0
d5-NEtFOSAA	Ave	0.3278	0.3751		2.86	2.50	14.4	50.0
13C2 PFUnA	Ave	0.8300	0.8047		2.42	2.50	-3.0	50.0
13C2 PFDoA	Ave	0.9627	0.9684		2.51	2.50	0.6	50.0
13C2-PFTeDA	Ave	0.7785	0.7906		2.54	2.50	1.6	50.0
13C2-PFHxDA	Ave	0.8521	0.8618		2.53	2.50	1.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62911.b\2018.08.18LLA_006.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 18-Aug-2018 04:50:16 ALS Bottle#: 28 Worklist Smp#: 3
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62911.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 20-Aug-2018 16:06:01 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK022

First Level Reviewer: mongkols

Date: 20-Aug-2018 16:06:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.500	1.500	0.0	1.000	2918963	0.9822		98.2	232	
D 1 13C4 PFBA										
217.00 > 172.00	1.500	1.500	0.0	0.548	7857188	2.53		101	22408	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.773	1.773	0.0	1.000	2872129	0.9844		98.4	269	
D 3 13C5-PFPeA										
267.90 > 223.00	1.773	1.774	-0.001	0.648	7124922	2.58		103	14161	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.806	1.806	0.0	1.000	3512123	0.9154		104	2842	
298.90 > 99.00	1.806	1.806	0.0	1.000	1200726		2.92(1.35-4.05)		1456	
D 47 13C3-PFBS										
301.90 > 83.00	1.806	1.807	-0.001	0.660	85625	2.39		103	564	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.018	2.018	0.0	1.117	757958	0.9862		106	5377	
D 60 M2-4:2FTS										
329.00 > 81.00	2.018	2.019	-0.001	0.738	806378	2.71		116	1037	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.049	2.049	0.0	1.000	2695124	1.00		99.8	743	
313.00 > 119.00	2.049	2.049	0.0	1.000	197009		13.68(6.96-20.87)		405	
D 7 13C2 PFHxA										
315.00 > 270.00	2.049	2.060	-0.011	0.749	7546862	2.59		103	27524	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.079	2.079	0.0	1.151	1727460	0.9476		101	3701	
349.00 > 99.00	2.079	2.079	0.0	1.151	769435		2.25(1.15-3.45)		1322	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.151	2.151	0.0	1.000	600898	1.02		102	258	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.152	-0.001	0.786	957861	2.53		101	1811	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.388	2.388	0.0	1.000	3753632	0.99		99.3	488	
363.00 > 169.00	2.388	2.388	0.0	1.000	864748		4.34(2.17-6.52)		2685	
D 9 13C4-PFHpA										
367.00 > 322.00	2.388	2.389	-0.001	0.873	8935263	2.58		103	27068	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.401	2.401	0.0	1.000	2383899	0.8488		93.3	1967	
399.00 > 99.00	2.401	2.401	0.0	1.000	644636		3.70(1.90-5.70)		852	
D 11 18O2 PFHxS										
403.00 > 84.00	2.401	2.402	-0.001	0.877	5206878	2.45		104	8103	
76 DONA										
377.00 > 251.00	2.427	2.427	0.0	0.778	6379501	1.08		115	8112	
377.00 > 85.00	2.427	2.427	0.0	0.778	2755487		2.32(1.13-3.39)		5901	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.720	0.0	1.000	703778	0.9672		102	1797	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.736	2.736	0.0	1.000	3544764	1.03		103	226	
413.00 > 169.00	2.736	2.736	0.0	1.000	1282958		2.76(1.36-4.08)		2040	
* 62 13C2-PFOA										
415.00 > 370.00	2.736	2.736	0.0		8099338	2.50			13888	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.737	-0.017	0.994	775070	2.42		102	1343	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.752	2.752	0.0	0.882	2159769	0.9688		102	2332	
449.00 > 99.00	2.752	2.752	0.0	0.882	552349		3.91(1.84-5.53)		1467	
D 73 13C8 PFOA										
421.00 > 376.00	2.736	2.753	-0.017		7134232	2.53		103	8094	
D 14 13C4 PFOA										
417.00 > 372.00	2.736	2.753	-0.017	1.000	7962058	2.48		99.3	19039	
20 Perfluorononanoic acid										
463.00 > 419.00	3.119	3.119	0.0	1.000	3076541	0.9497		95.0	321	
463.00 > 169.00	3.119	3.119	0.0	1.000	554864		5.54(2.68-8.03)		1082	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.119	3.119	0.0	1.000	2202815	0.9488		102	2090	
499.00 > 99.00	3.119	3.119	0.0	1.000	505571		4.36(2.04-6.12)		1356	
D 72 13C8 PFOS										
507.00 > 99.00	3.119	3.120	-0.001		1114731	2.20		92.1	2761	
D 18 13C4 PFOS										
503.00 > 80.00	3.119	3.138	-0.019	1.140	5297060	2.33		97.4	4840	
D 19 13C5 PFNA										
468.00 > 423.00	3.119	3.138	-0.019	1.140	7910201	2.66		106	11757	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.321	3.321	0.0	1.065	2620705	0.9844		106	2002	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.468	3.468	0.0	1.000	777868	0.8631		90.1	1960	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.468	3.468	0.0	1.112	1427089	0.9428		98.2	1754	
549.00 > 99.00	3.468	3.468	0.0	1.112	229238		6.23(3.02-9.05)		1127	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.484	0.0	1.000	4034893	1.11		111	3749	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.484	3.484	0.0	1.000	3719920	1.09		109	549	
513.00 > 169.00	3.484	3.484	0.0	1.000	246691		15.08(7.12-21.35)		329	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.484	0.0	1.273	3087315	2.52		101	5045	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.484	-0.016	1.268	142540	3.09		129	645	
D 23 13C2 PFDA										
515.00 > 470.00	3.484	3.499	-0.015	1.273	8004074	2.48		99.3	14932	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.629	3.629	0.0	1.000	1602572	1.03		103	505	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.629	3.645	-0.016	1.327	3918692	2.80		112	5674	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.794	3.794	0.0	1.216	2028180	1.09		113	1398	
599.00 > 99.00	3.794	3.794	0.0	1.216	450872		4.50(2.14-6.43)		1151	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.810	3.810	0.0	1.004	1129112	0.9449		94.5	1395	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.810	3.810	0.0	1.000	2467252	1.09		109	466	
563.00 > 169.00	3.810	3.810	0.0	1.000	224492		10.99(5.24-15.72)		979	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.794	3.811	-0.017	1.387	3037997	2.86		114	2820	
D 30 13C2 PFUnA										
565.00 > 520.00	3.810	3.827	-0.017	1.393	6517173	2.42		97.0	13039	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.962	3.962	0.0	1.270	3135867	1.00		106	7302	
35 MeFOSA										
512.00 > 169.00	3.978	3.978	0.0		702216	NC			604	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.092	4.092	0.0	1.180	445689	0.7613		79.0	1177	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.092	4.092	0.0	1.000	3270821	1.02		102	663	
613.00 > 169.00	4.092	4.092	0.0	1.000	360509		9.07(4.68-14.05)		1440	
D 36 13C2 PFDaA										
615.00 > 570.00	4.092	4.110	-0.018	1.496	7843317	2.51		101	10995	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.329	4.329	0.0	1.388	207993	0.9432		97.4	617	
699.00 > 99.00	4.329	4.329	0.0	1.388	389579		0.53(0.28-0.83)		960	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.360	4.360	0.0	1.065	2589521	1.01		101	871	
663.00 > 169.00	4.360	4.360	0.0	1.065	418955		6.18(3.09-9.27)		1695	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.594	4.594	0.0	1.000	401675	0.9639		96.4	1684	
713.00 > 219.00	4.594	4.594	0.0	1.000	265914		1.51(0.70-2.09)		1573	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.594	4.616	-0.022	1.679	6403525	2.54		102	10756	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.025	5.025	0.0	1.000	2641152	1.02		102	752	
813.00 > 169.00	5.025	5.025	0.0	1.000	457260		5.78(2.77-8.32)		1478	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.025	5.029	-0.004	1.837	6980045	2.53		101	8201	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.362	5.362	0.0	1.067	2020872	1.01		101	515	
913.00 > 169.00	5.362	5.362	0.0	1.067	341379		5.92(2.55-7.64)		1711	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62911.b\2018.08.18LLA_006.d

Injection Date: 18-Aug-2018 04:50:16

Instrument ID: A9

Lims ID: CCV L4

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 28

Worklist Smp#: 3

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

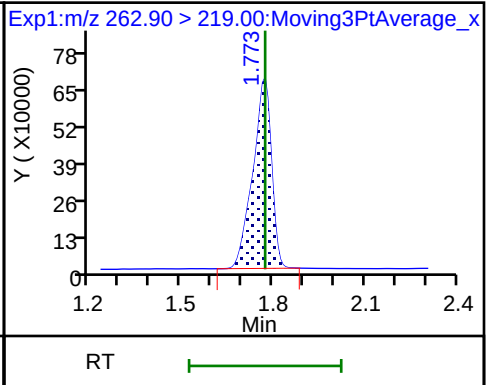
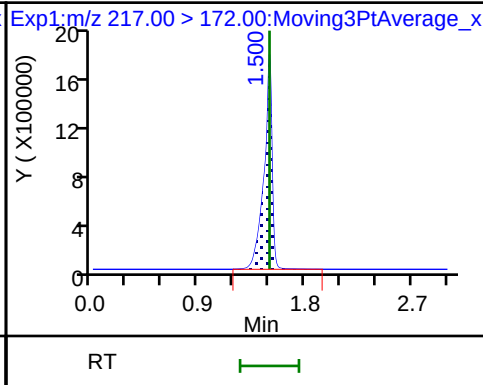
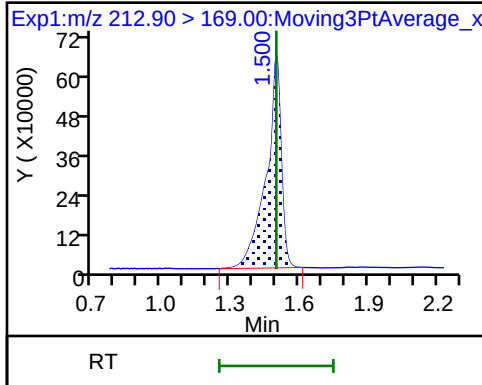
Method: PFAS_A9

Limit Group: LC PFC ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

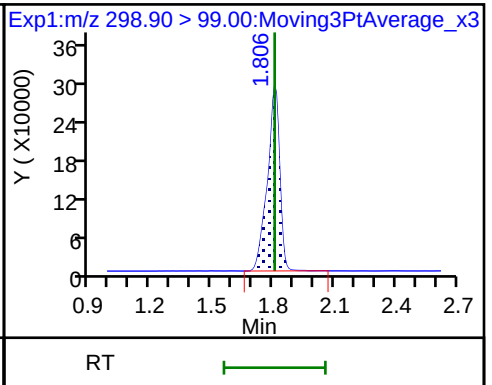
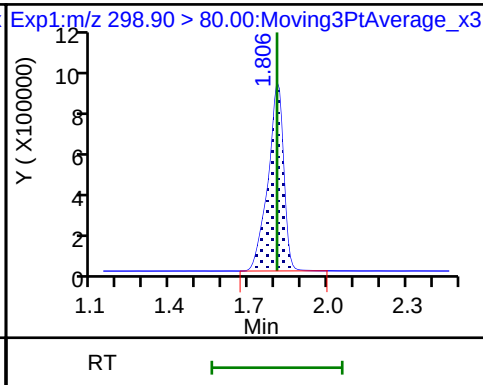
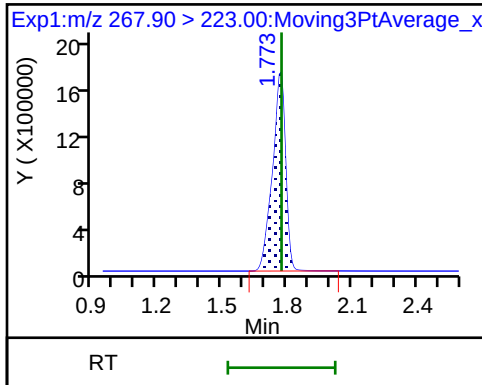
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

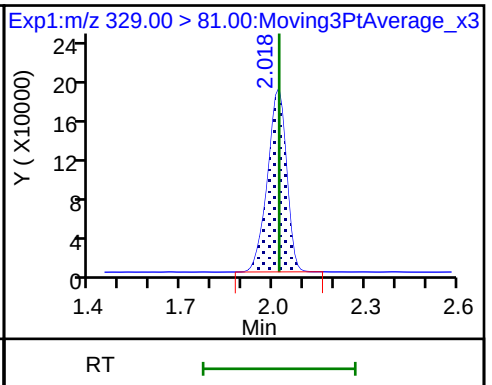
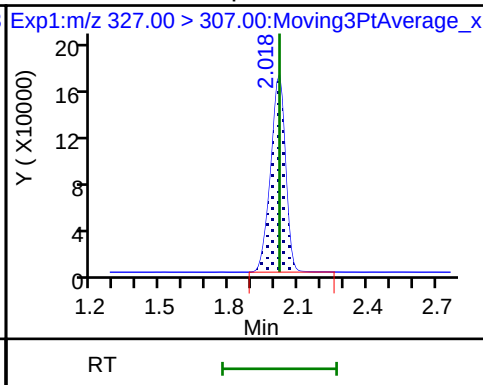
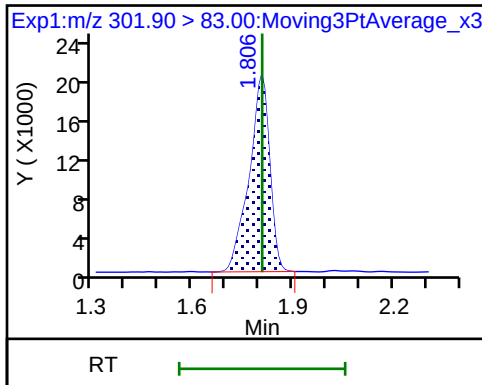
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfonate

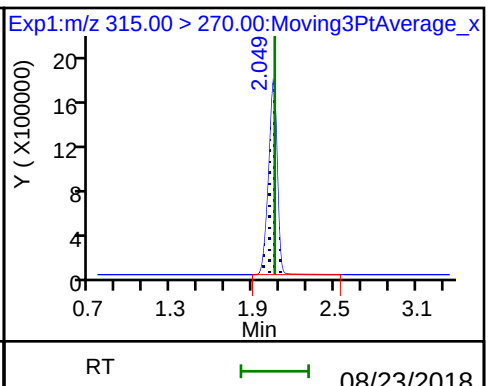
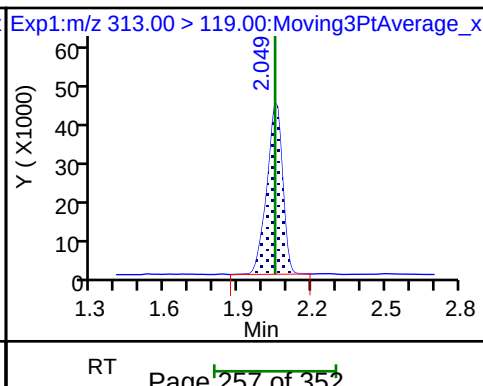
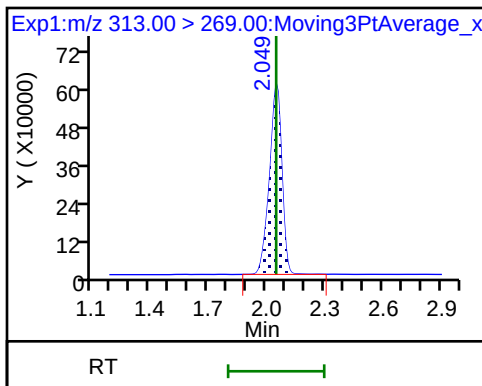
D 60 M2-4:2FTS

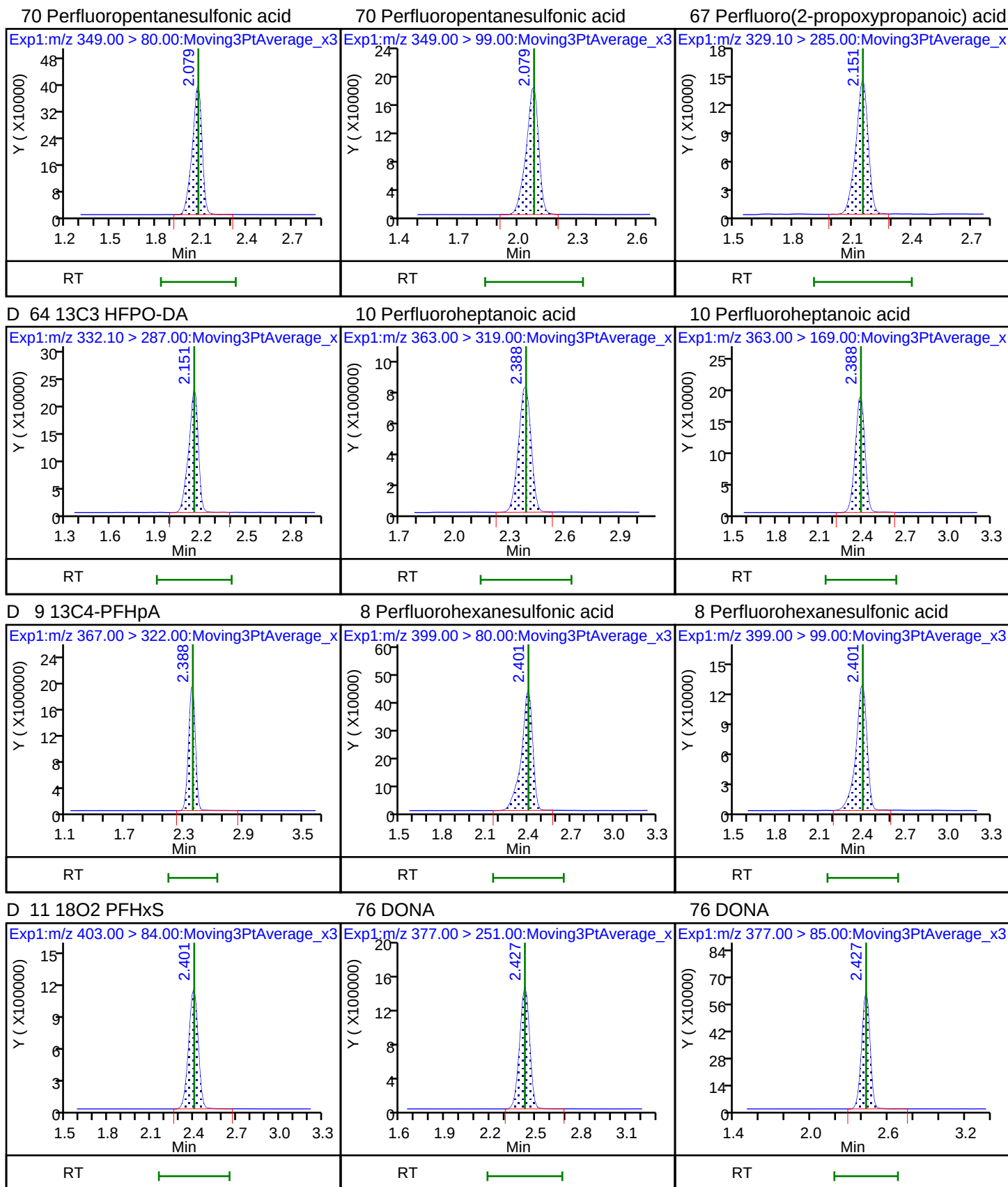


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

D 7 13C2 PFHxA

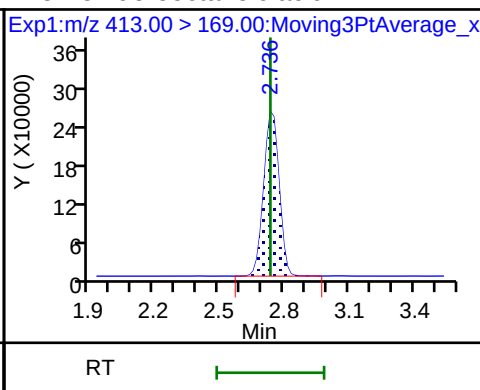
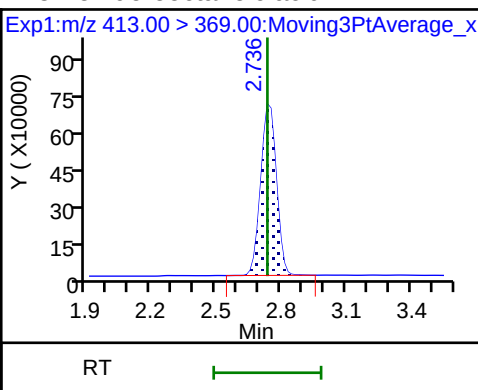
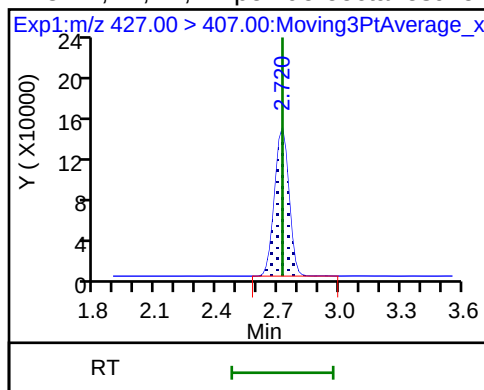




13 1H,1H,2H,2H-perfluorooctanesulfonyl

15 Perfluorooctanoic acid

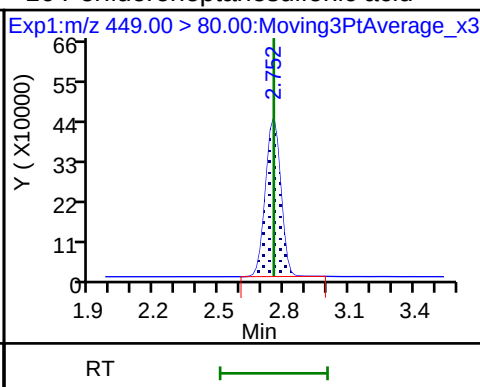
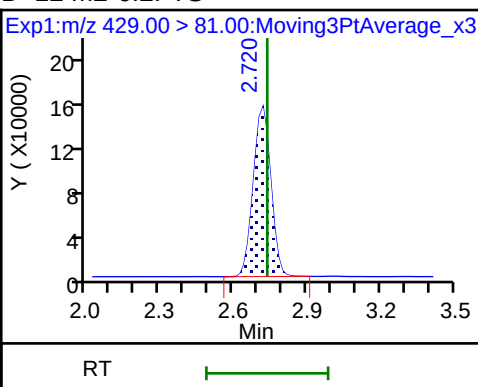
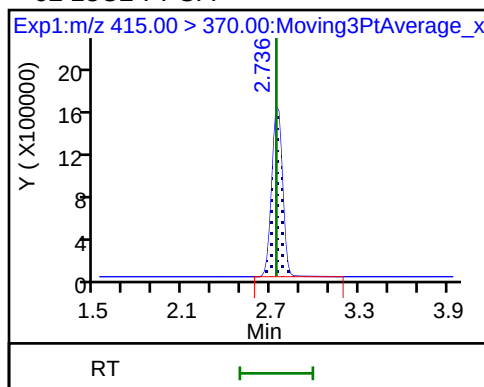
15 Perfluorooctanoic acid



* 62 13C2-PFOA

D 12 M2-6:2FTS

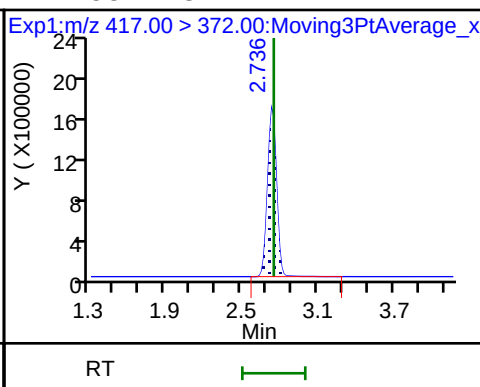
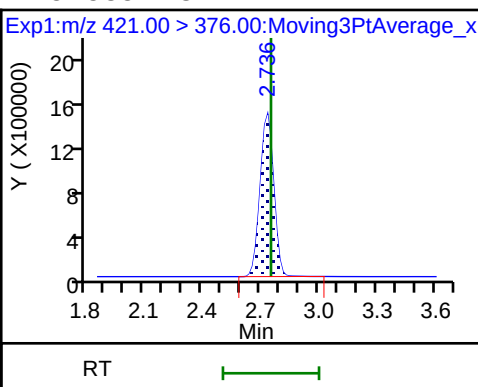
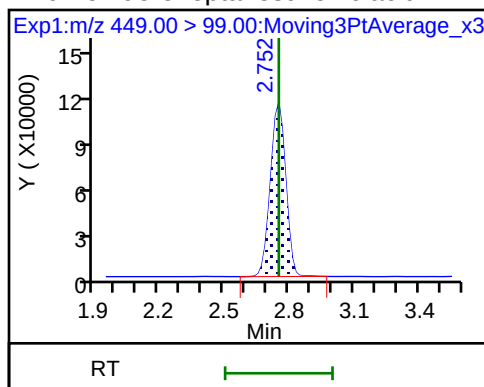
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 73 13C8 PFOA

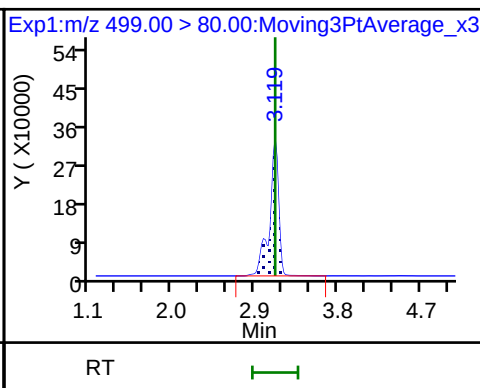
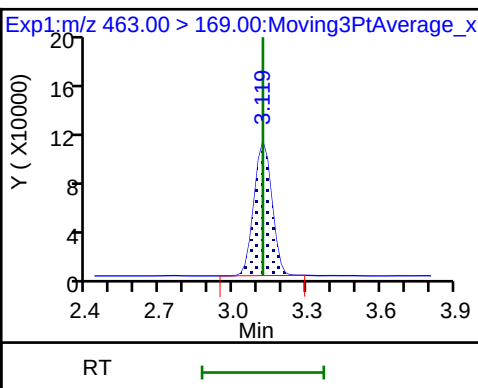
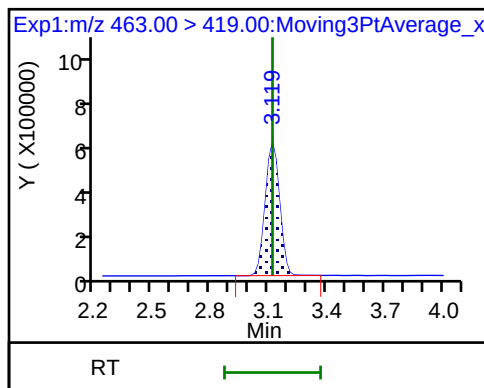
D 14 13C4 PFOA



20 Perfluorononanoic acid

20 Perfluorononanoic acid

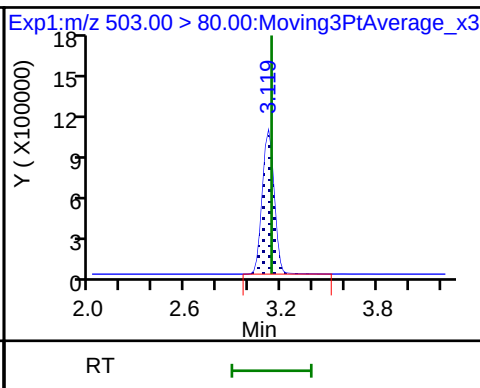
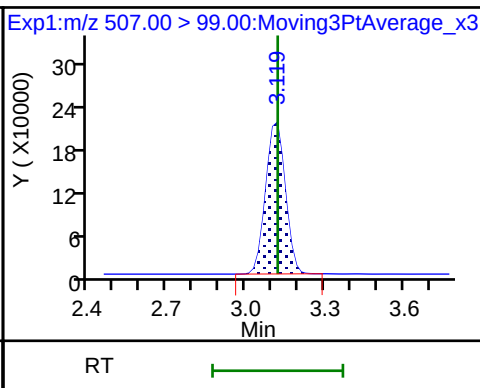
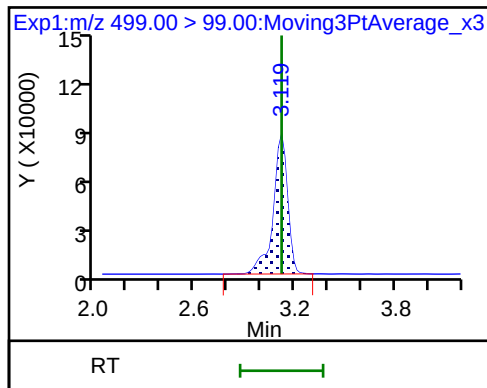
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

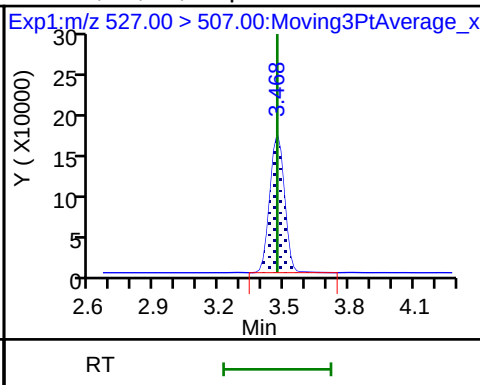
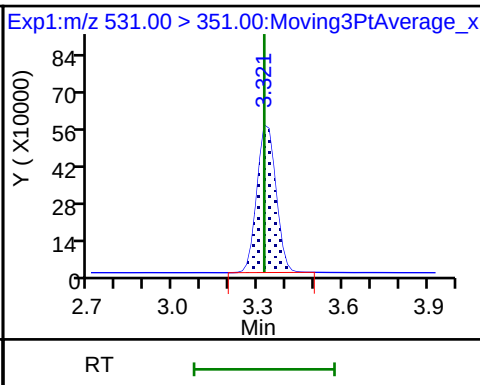
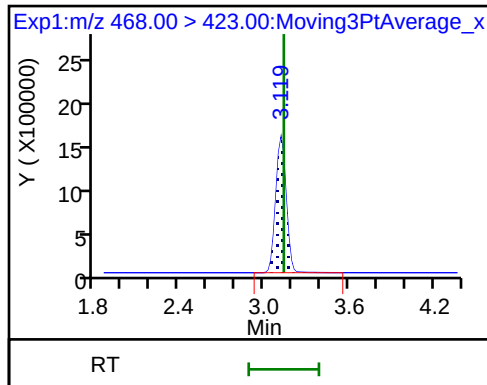
D 72 13C8 PFOS

D 18 13C4 PFOS



D 19 13C5 PFNA

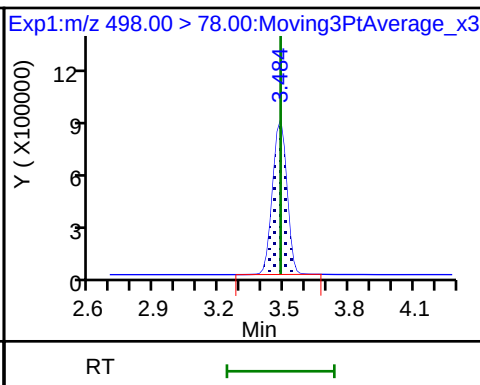
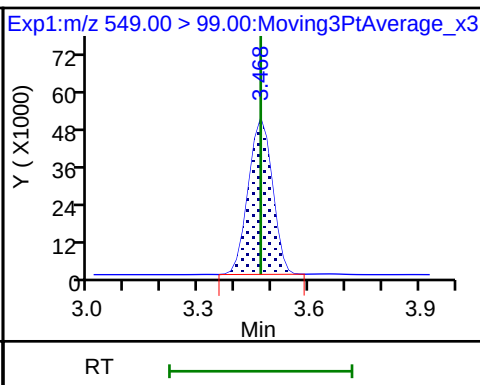
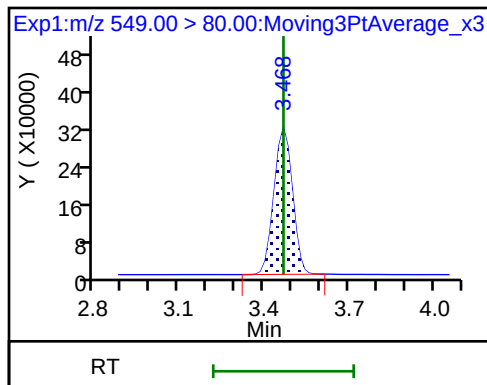
69 9-Chlorohexadecafluoro-3-oxanonan-25 1H,1H,2H,2H-perfluorodecanesulfoni



68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid

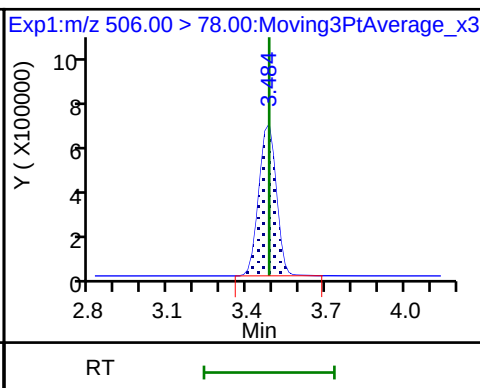
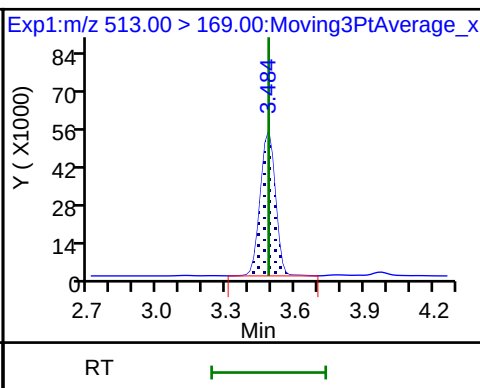
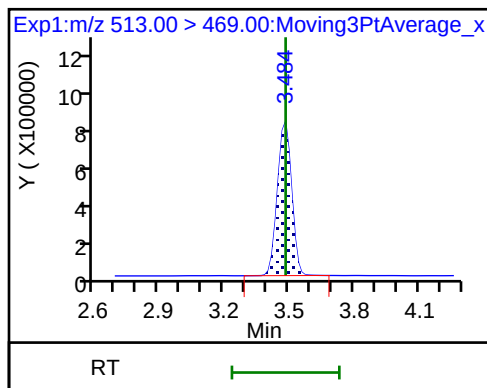
22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid

24 Perfluorodecanoic acid

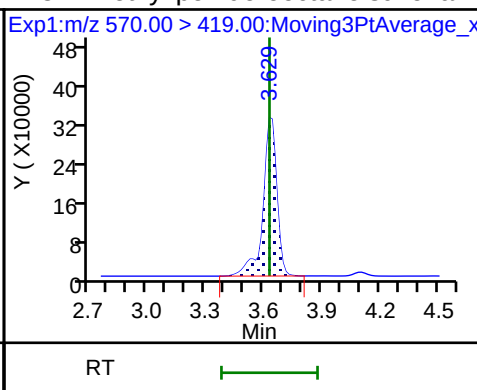
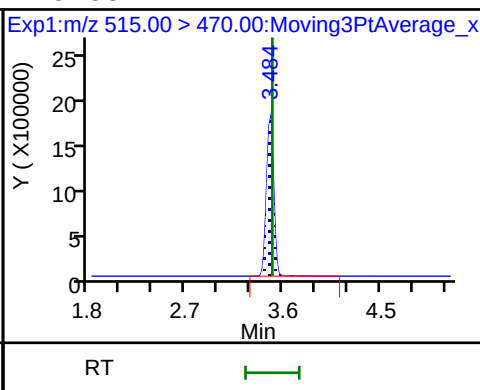
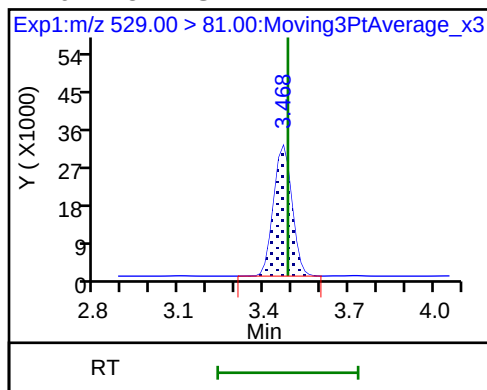
D 21 13C8 FOSA



D 26 M2-8:2FTS

D 23 13C2 PFDA

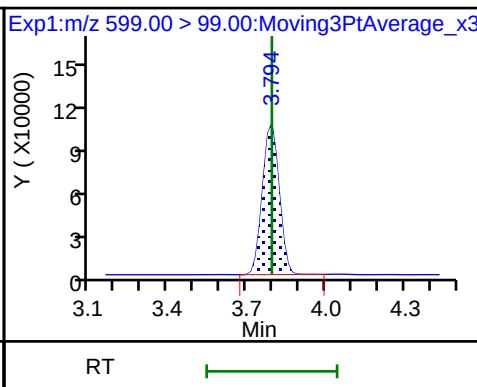
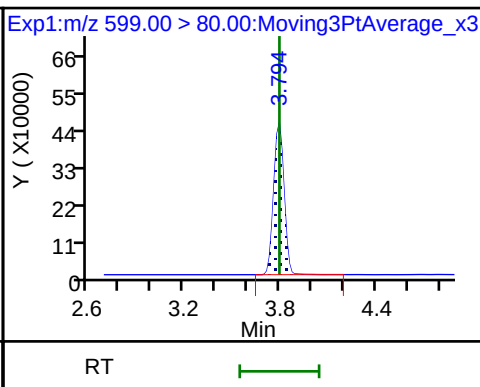
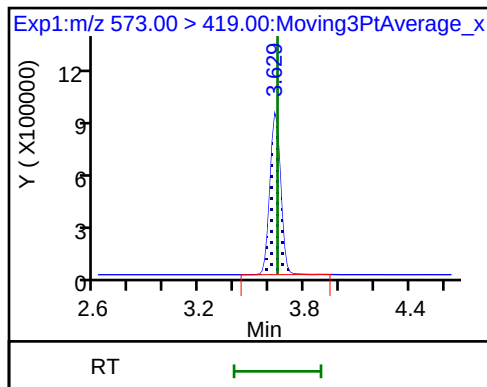
28 N-methyl perfluorooctane sulfonami



D 27 d3-NMeFOSAA

29 Perfluorodecane Sulfonic acid

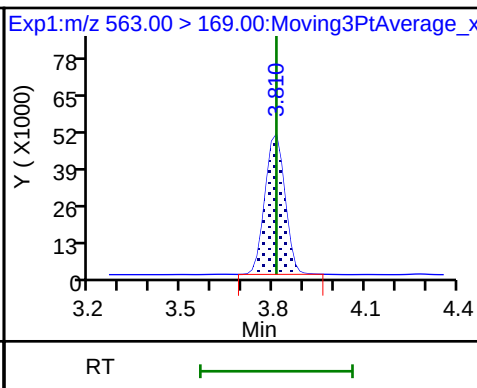
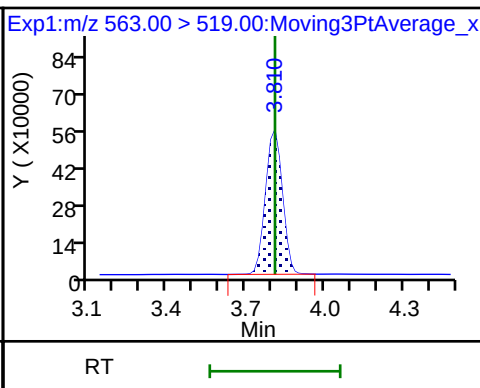
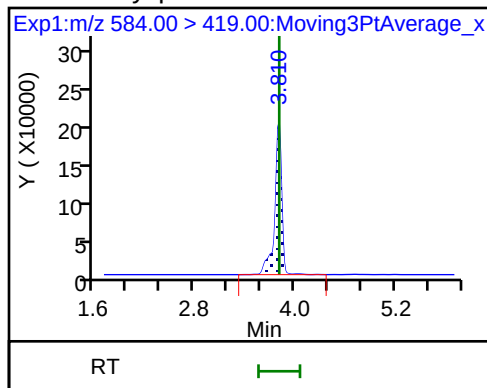
29 Perfluorodecane Sulfonic acid



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

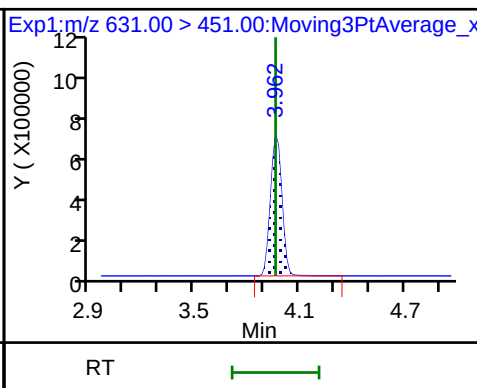
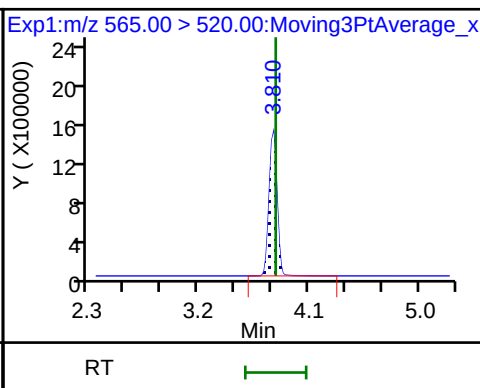
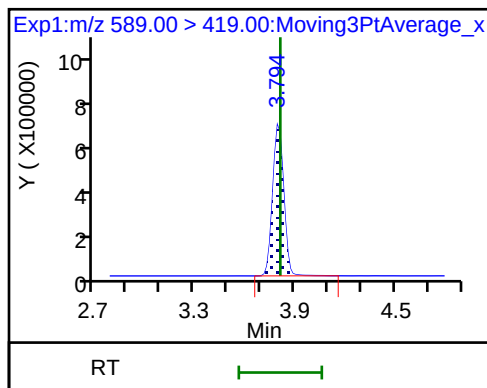
31 Perfluoroundecanoic acid



D 32 d5-NEtFOSAA

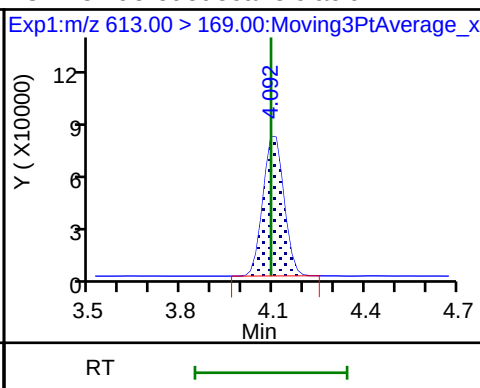
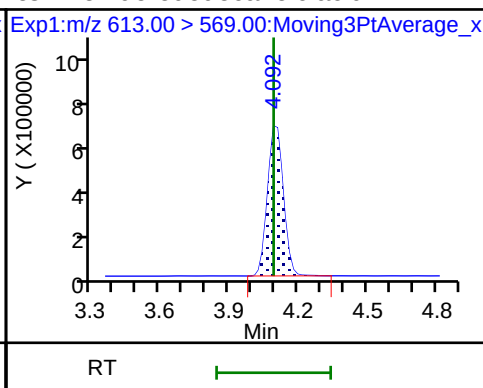
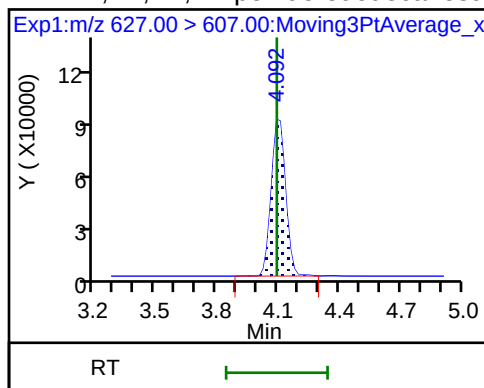
D 30 13C2 PFUnA

66 11-Chloroeicosafluoro-3-oxaundecan



74 1H,1H,2H,2H-perfluorododecanesulfo37 Perfluorododecanoic acid

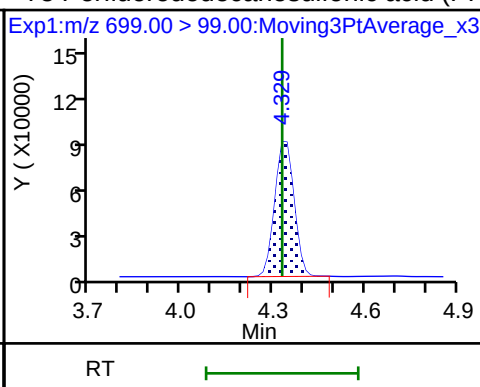
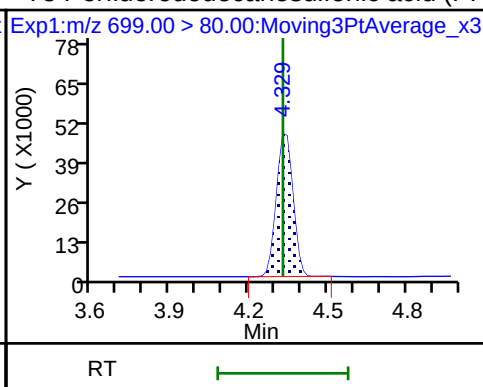
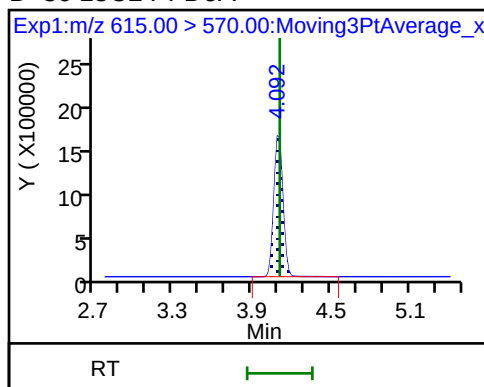
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

75 Perfluorododecanesulfonic acid (PF

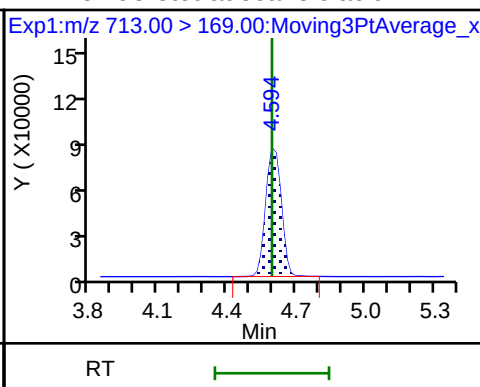
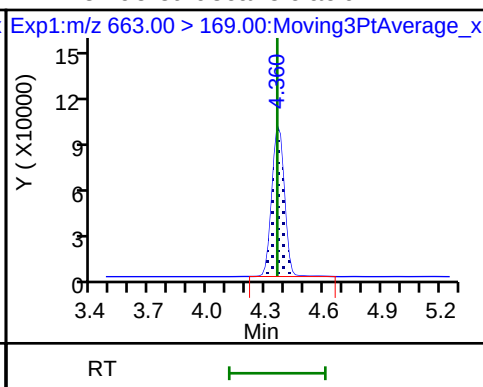
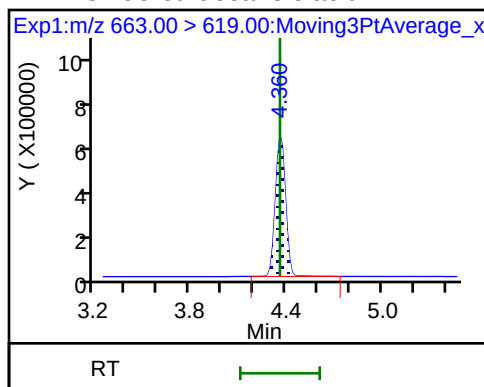
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

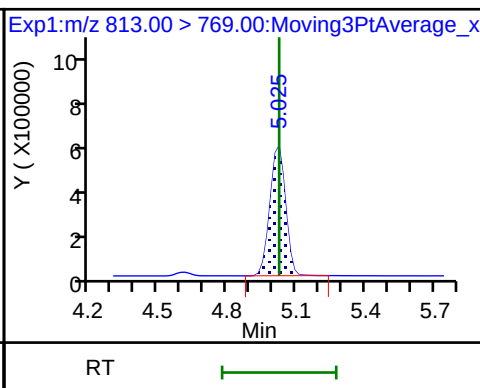
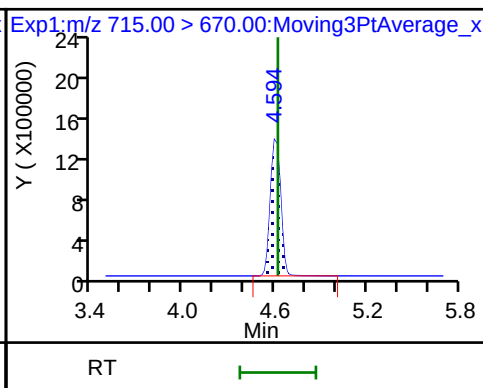
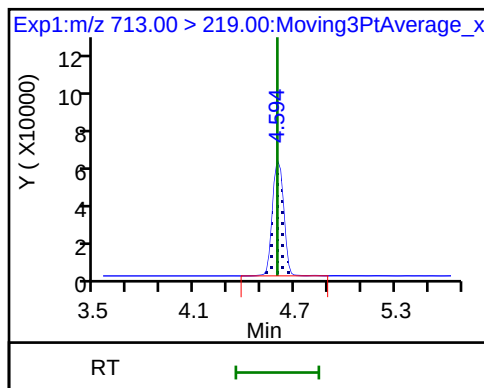
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

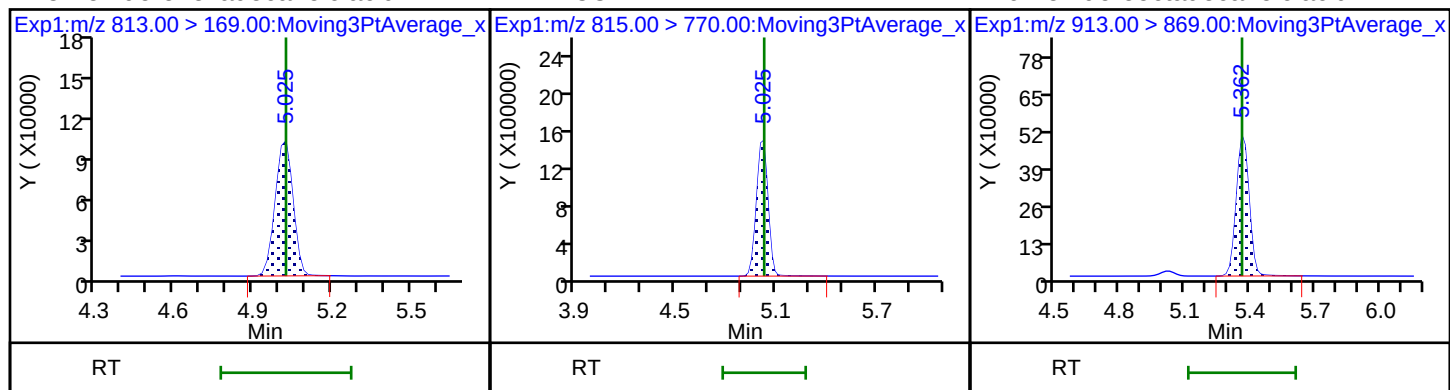
45 Perfluorohexadecanoic acid



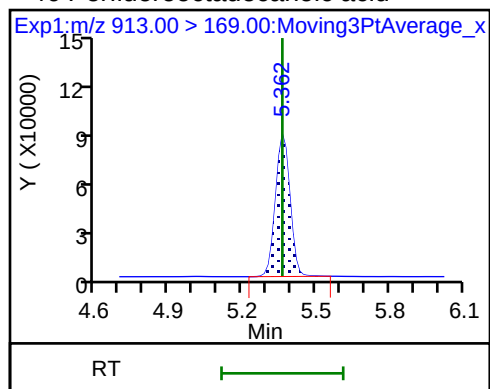
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Lab Sample ID: CCV 320-240682/1 Calibration Date: 08/18/2018 07:58

Instrument ID: A9 Calib Start Date: 08/14/2018 14:32

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17

Lab File ID: 2018.08.18LLA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9456	0.9512		2.51	2.50	0.6	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.024	0.9749		2.38	2.50	-4.8	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	104.2	105.8		2.24	2.21	1.5	50.0
4:2 FTS	AveID	20.87	20.94		2.34	2.34	0.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.8945	0.8841		2.47	2.50	-1.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	49.50	50.02		2.37	2.35	1.0	50.0
HFPO-DA (GenX)	AveID	1.541	1.600		2.59	2.50	3.8	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.058	1.093		2.58	2.50	3.3	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.276	1.156		2.06	2.28	-9.3	40.0
DONA	AveID	2.657	2.900		2.57	2.36	9.2	50.0
6:2 FTS	AveID	2.230	2.013		2.14	2.37	-9.7	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.006	1.117		2.64	2.38	11.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.082	1.084		2.51	2.50	0.2	40.0
Perfluorononanoic acid (PFNA)	AveID	1.024	1.022		2.50	2.50	-0.2	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.047	1.154		2.56	2.32	10.2	40.0
F-53B Major	AveID	1.201	1.280		2.48	2.33	6.5	50.0
8:2 FTS	AveID	15.14	13.16		2.08	2.40	-13.1	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.6830	0.7569		2.66	2.40	10.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.069	1.218		2.85	2.50	14.0	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	2.934	3.219		2.74	2.50	9.7	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9934	1.000		2.52	2.50	0.7	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.8393	0.9648		2.77	2.41	15.0	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9833	0.9521		2.42	2.50	-3.2	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8661	0.8950		2.58	2.50	3.3	40.0
F-53B Minor	AveID	1.418	1.529		2.54	2.36	7.8	50.0
10:2 FTS	AveID	9.836	8.949		2.19	2.41	-9.0	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.025	1.044		2.55	2.50	1.9	40.0
Perfluorododecanesulfonic acid (PFDoS)	AveID	0.0995	0.0988		2.40	2.42	-0.7	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8192	0.7803		2.38	2.50	-4.7	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.1627	0.1663		2.56	2.50	2.2	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240682/1 Calibration Date: 08/18/2018 07:58
 Instrument ID: A9 Calib Start Date: 08/14/2018 14:32
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17
 Lab File ID: 2018.08.18LLA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9244		2.53	2.50	1.1	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7150	0.6946		2.43	2.50	-2.9	50.0
13C4 PFBA	Ave	0.9573	0.9368		2.45	2.50	-2.1	50.0
13C5 PFPeA	Ave	0.8533	0.8866		2.60	2.50	3.9	50.0
13C3-PFBS	Ave	0.0111	0.0114		2.39	2.33	2.8	50.0
M2-4:2FTS	Ave	0.0918	0.0978		2.49	2.34	6.6	50.0
13C2 PFHxA	Ave	0.9006	0.8752		2.43	2.50	-2.8	50.0
13C3 HFPO-DA	Ave	0.1169	0.1167		2.50	2.50	-0.2	50.0
13C4-PFHpA	Ave	1.067	1.052		2.46	2.50	-1.5	50.0
18O2 PFHxS	Ave	0.6554	0.6709		2.42	2.37	2.4	50.0
M2-6:2FTS	Ave	0.0989	0.1113		2.67	2.38	12.5	40.0
13C8 PFOA	Ave	2816461	2871092		2.49	2.45	1.9	50.0
13C4 PFOA	Ave	0.9902	0.9763		2.46	2.50	-1.4	50.0
13C4 PFOS	Ave	0.7025	0.6606		2.25	2.39	-6.0	50.0
13C5 PFNA	Ave	0.9176	0.8947		2.44	2.50	-2.5	50.0
13C8 PFOS	Ave	506339	462344		2.18	2.39	-8.7	50.0
M2-8:2FTS	Ave	0.0142	0.0154		2.59	2.40	7.9	40.0
13C2 PFDA	Ave	0.995	0.9215		2.31	2.50	-7.4	50.0
13C8 FOSA	Ave	0.3785	0.3645		2.41	2.50	-3.7	50.0
d3-NMeFOSAA	Ave	0.4320	0.4515		2.61	2.50	4.5	50.0
d5-NEtFOSAA	Ave	0.3278	0.3547		2.71	2.50	8.2	50.0
13C2 PFUnA	Ave	0.8300	0.8073		2.43	2.50	-2.7	50.0
13C2 PFDoA	Ave	0.9627	0.9449		2.45	2.50	-1.9	50.0
13C2-PFTeDA	Ave	0.7785	0.7393		2.37	2.50	-5.0	50.0
13C2-PFHxDA	Ave	0.8521	0.8273		2.43	2.50	-2.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_031.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 18-Aug-2018 07:58:20 ALS Bottle#: 29 Worklist Smp#: 1
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:45:45 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:45:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.500	1.500	0.0	0.545	7709550	2.45		97.9	4331	
2 Perfluorobutyric acid										
212.90 > 169.00	1.505	1.505	0.0	1.003	7333370	2.51		101	458	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.774	1.773	0.002	1.005	7113199	2.38		95.2	676	
D 3 13C5-PFPeA										
267.90 > 223.00	1.766	1.774	-0.008	0.641	7296214	2.60		104	10964	
D 47 13C3-PFBS										
301.90 > 83.00	1.807	1.807	0.0	0.657	87152	2.39		103	671	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.807	1.814	-0.007	1.000	8760538	2.24		102	7377	
298.90 > 99.00	1.807	1.814	-0.007	1.000	3076391		2.85(1.35-4.05)		3585	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.019	2.018	0.001	1.117	1833025	2.34		100	3175	
D 60 M2-4:2FTS										
329.00 > 81.00	2.019	2.019	0.0	0.733	751961	2.49		107	971	
D 7 13C2 PFHxA										
315.00 > 270.00	2.050	2.050	0.0	0.745	7202058	2.43		97.2	11400	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.050	2.059	-0.009	1.000	6366967	2.47		98.8	1677	
313.00 > 119.00	2.050	2.059	-0.009	1.000	469537		13.56(6.96-20.87)		961	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.080	2.079	0.001	1.151	4396698	2.37		101	5863	
349.00 > 99.00	2.080	2.079	0.001	1.151	1959757		2.24(1.15-3.45)		3505	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.152	2.152	0.0	0.782	960615	2.50		99.8	1949	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.152	2.161	-0.009	1.000	1536980	2.59		104	642	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.389	2.387	0.002	1.000	9454139	2.58		103	1212	
363.00 > 169.00	2.389	2.387	0.002	1.000	2186793		4.32(2.17-6.52)		5141	
D 9 13C4-PFHpA										
367.00 > 322.00	2.389	2.388	0.001	0.868	8653308	2.46		98.5	19702	
D 11 18O2 PFHxS										
403.00 > 84.00	2.402	2.402	0.0	0.872	5223009	2.42		102	11001	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.402	2.414	-0.012	1.000	5810410	2.06		90.7	3978	
399.00 > 99.00	2.402	2.414	-0.012	1.000	1613544		3.60(1.90-5.70)		2162	
76 DONA										
377.00 > 251.00	2.428	2.440	-0.012	0.778	14851747	2.57		109	31388	
377.00 > 85.00	2.428	2.440	-0.012	0.778	6735442		2.21(1.13-3.39)		12371	
D 12 M2-6:2FTS										
429.00 > 81.00	2.721	2.721	0.0	0.988	869884	2.67		113	1649	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.721	2.736	-0.015	1.000	1747559	2.14		90.3	3788	
D 73 13C8 PFOA										
421.00 > 376.00	2.737	2.737	0.0		7026997	2.49		102	18774	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.753	2.751	0.002	1.000	8720913	2.51		100	536	
413.00 > 169.00	2.753	2.751	0.002	1.000	3169438		2.75(1.36-4.08)		4649	
* 62 13C2-PFOA										
415.00 > 370.00	2.753	2.751	0.002		8229517	2.50			16562	
D 14 13C4 PFOA										
417.00 > 372.00	2.753	2.753	0.0	1.000	8034775	2.46		98.6	8793	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.753	2.767	-0.014	0.882	5781242	2.64		111	4706	
449.00 > 99.00	2.753	2.767	-0.014	0.882	1361049		4.25(1.84-5.53)		3574	
D 72 13C8 PFOS										
507.00 > 99.00	3.120	3.120	0.0		1105002	2.18		91.3	2291	
20 Perfluorononanoic acid										
463.00 > 419.00	3.120	3.137	-0.017	1.000	7525815	2.50		99.8	781	
463.00 > 169.00	3.120	3.137	-0.017	1.000	1403630		5.36(2.68-8.03)		2748	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.120	3.137	-0.017	1.000	5822312	2.56		110	2886	
499.00 > 99.00	3.120	3.137	-0.017	1.000	1332280		4.37(2.04-6.12)		2020	
D 19 13C5 PFNA										
468.00 > 423.00	3.120	3.138	-0.018	1.133	7362740	2.44		97.5	10759	
D 18 13C4 PFOS										
503.00 > 80.00	3.120	3.138	-0.018	1.133	5197022	2.25		94.0	3351	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.337	3.353	-0.016	1.070	6484267	2.48		107	5343	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.468	3.483	-0.015	1.000	1593914	2.08		86.9	3802	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.468	3.483	-0.015	1.111	3949855	2.66		111	3914	
549.00 > 99.00	3.468	3.483	-0.015	1.111	641187		6.16(3.02-9.05)		2059	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.483	-0.015	1.260	121099	2.59		108	845	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.483	0.001	1.265	2999323	2.41		96.3	4796	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.484	3.499	-0.015	1.000	9239562	2.85		114	1286	
513.00 > 169.00	3.484	3.499	-0.015	1.000	634542		14.56(7.12-21.35)		562	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.499	-0.015	1.000	9655596	2.74		110	10383	
D 23 13C2 PFDA										
515.00 > 470.00	3.484	3.499	-0.015	1.265	7583429	2.31		92.6	15555	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.631	3.645	-0.014	1.319	3715568	2.61		105	5475	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.645	3.657	-0.012	1.004	3717120	2.52		101	1265	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.795	3.809	-0.014	1.216	5056116	2.77		115	3159	
599.00 > 99.00	3.795	3.809	-0.014	1.216	1025016		4.93(2.14-6.43)		2415	
D 30 13C2 PFUnA										
565.00 > 520.00	3.811	3.811	0.0	1.385	6643610	2.43		97.3	9153	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.795	3.811	-0.016	1.379	2919329	2.71		108	2927	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.811	3.825	-0.014	1.000	5945803	2.58		103	1095	
563.00 > 169.00	3.811	3.825	-0.014	1.000	577774		10.29(5.24-15.72)		2287	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.811	3.825	-0.014	1.004	2779503	2.42		96.8	2600	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.964	3.978	-0.014	1.270	7830131	2.54		108	10522	
35 MeFOSA										
512.00 > 169.00	3.980	3.994	-0.014		1709727	NC			891	
D 36 13C2 PFDaA										
615.00 > 570.00	4.110	4.110	0.0	1.493	7776058	2.45		98.1	10220	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.110	4.125	-0.015	1.000	8117346	2.55		102	1597	
613.00 > 169.00	4.093	4.125	-0.032	0.996	859583		9.44(4.68-14.05)		1596	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.093	4.125	-0.032	1.180	1090470	2.19		91.0	2899	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.346	4.359	-0.013	1.393	519862	2.40		99.3	1337	
699.00 > 99.00	4.346	4.359	-0.013	1.393	954156		0.54(0.28-0.83)		2344	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.375	-0.014	1.061	6067737	2.38		95.3	1690	
663.00 > 169.00	4.361	4.375	-0.014	1.061	1089468		5.57(3.09-9.27)		2251	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.598	4.611	-0.013	1.000	1011893	2.56		102	2740	
713.00 > 219.00	4.598	4.611	-0.013	1.000	699951		1.45(0.70-2.09)		2229	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.598	4.616	-0.018	1.670	6084062	2.37		95.0	10722	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.029	5.025	0.004	1.000	6293606	2.53		101	1349	
813.00 > 169.00	5.029	5.025	0.004	1.000	1122354		5.61(2.77-8.32)		2755	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.029	5.029	0.0	1.827	6808067	2.43		97.1	10642	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.366	5.377	-0.011	1.067	4728687	2.43		97.1	1136	
913.00 > 169.00	5.366	5.377	-0.011	1.067	857940		5.51(2.55-7.64)		2834	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_031.d

Injection Date: 18-Aug-2018 07:58:20

Instrument ID: A9

Lims ID: CCV L5

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 29

Worklist Smp#: 1

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

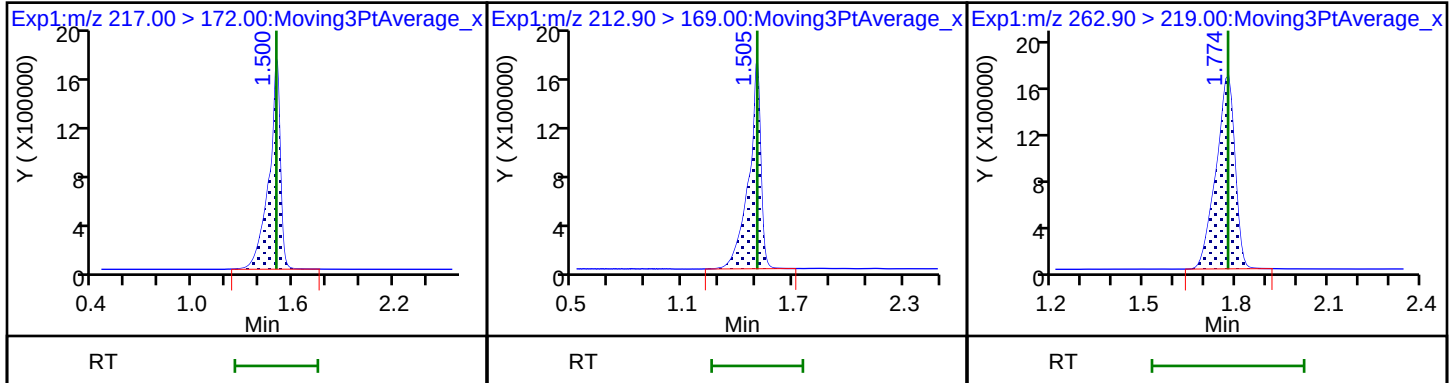
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

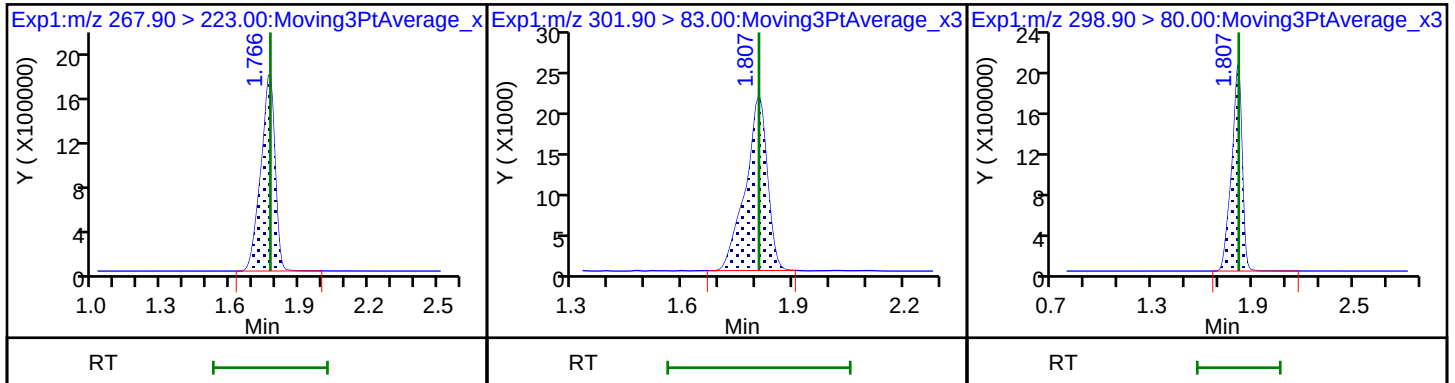
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

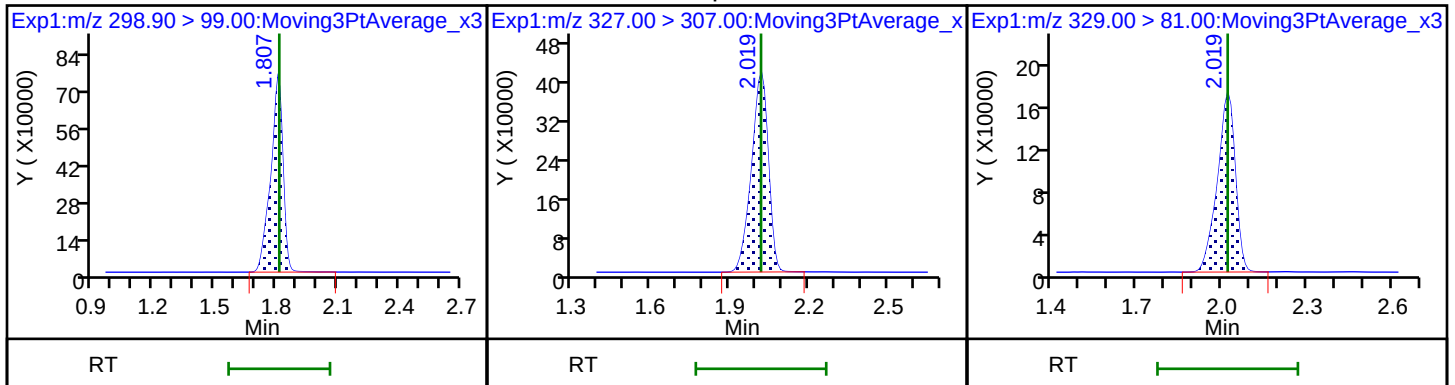
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

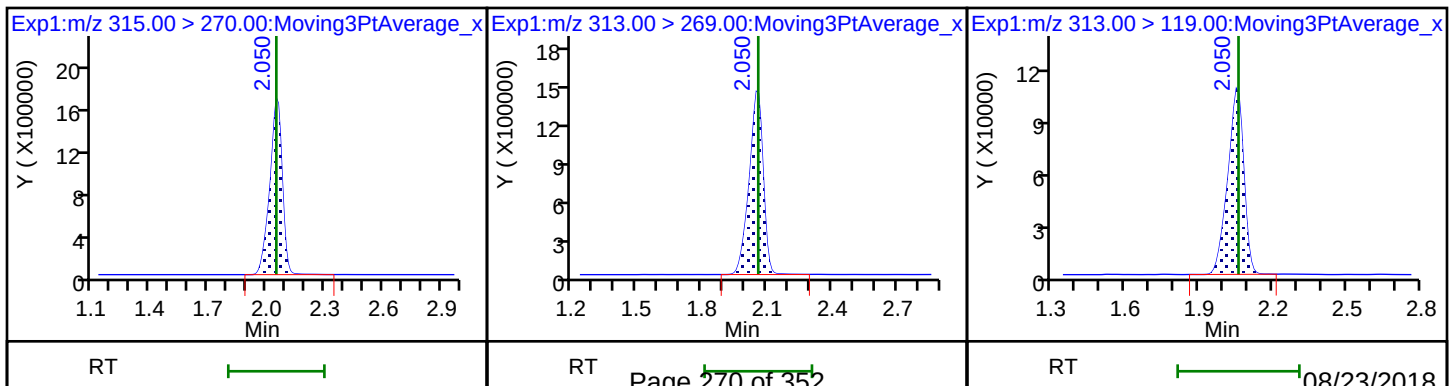
D 60 M2-4:2FTS

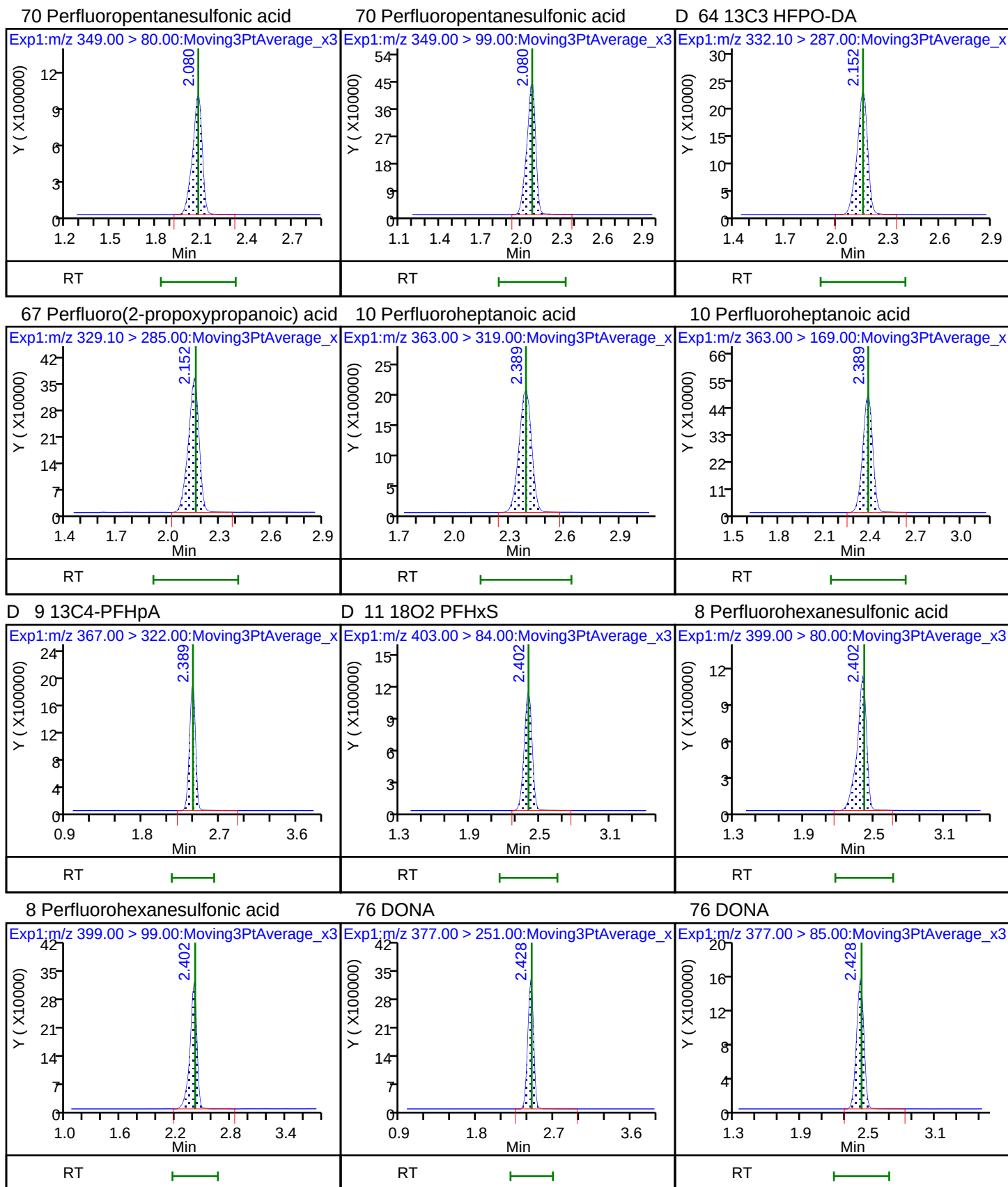


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

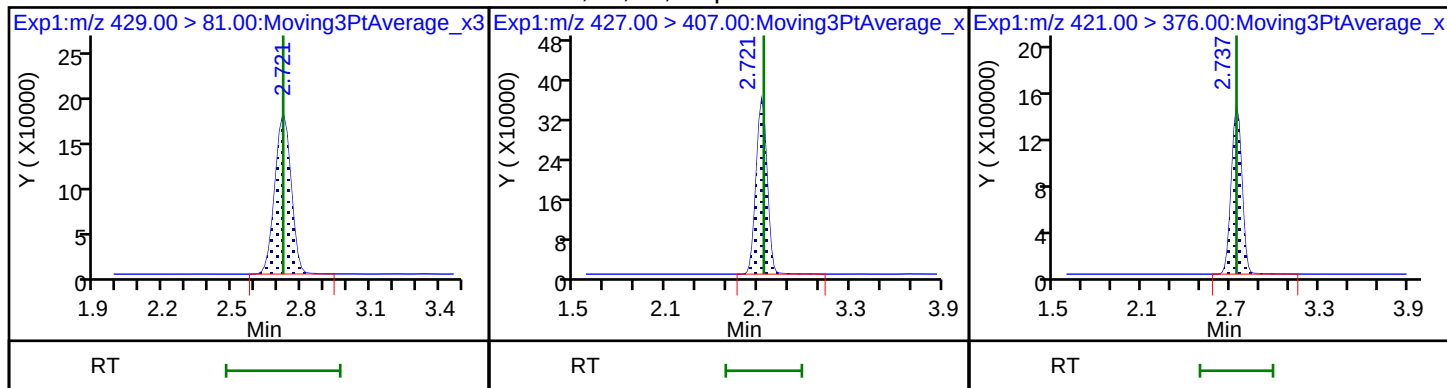
6 Perfluorohexanoic acid





D 12 M2-6:2FTS

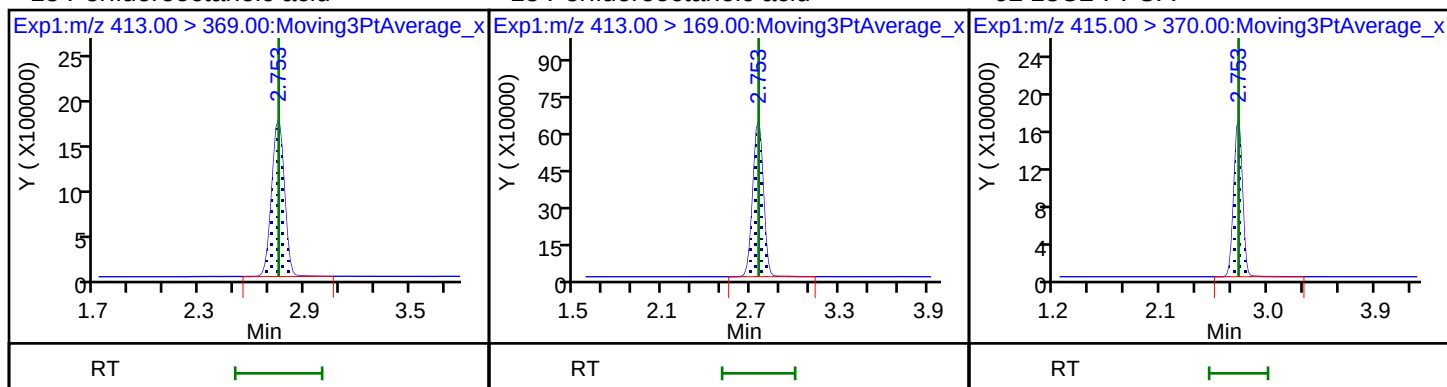
13 1H,1H,2H,2H-perfluorooctanesulfonD 73 13C8 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

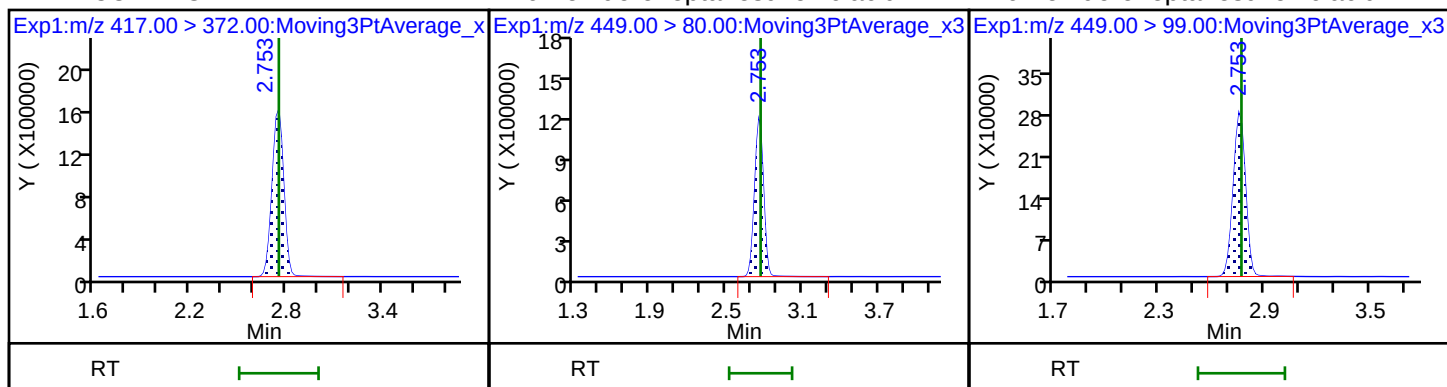
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

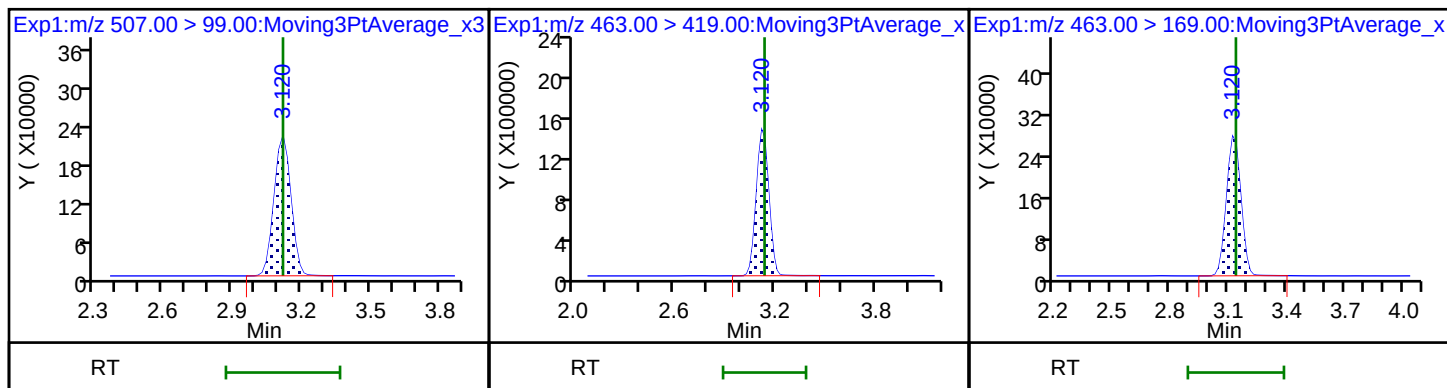
16 Perfluoroheptanesulfonic acid



D 72 13C8 PFOS

20 Perfluorononanoic acid

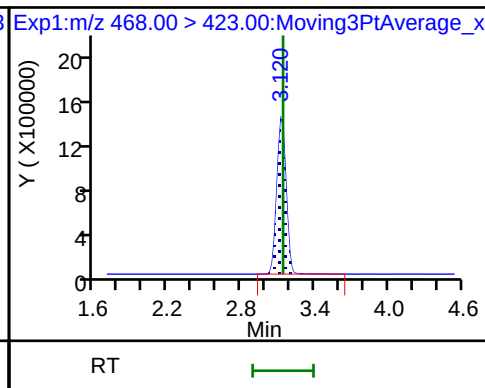
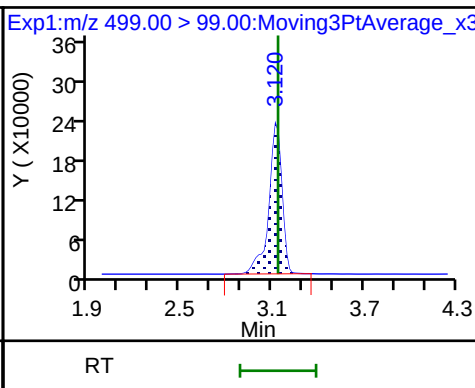
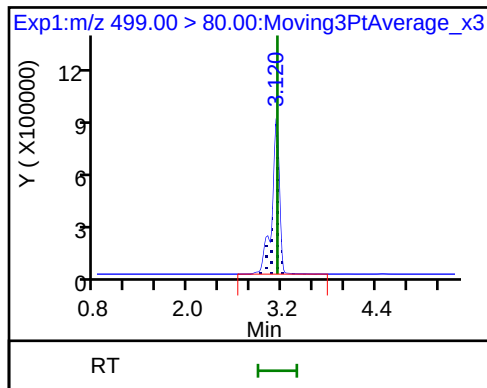
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

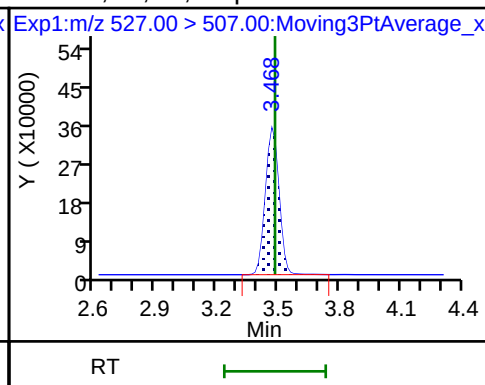
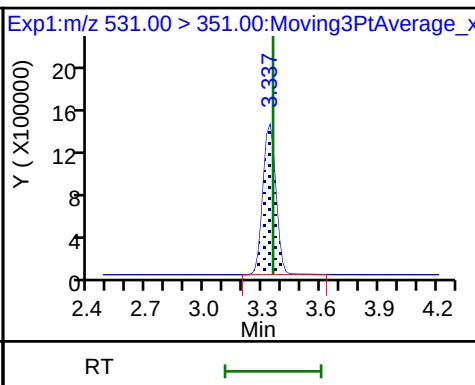
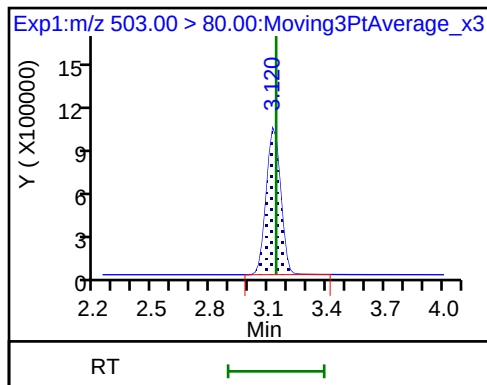
17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



D 18 13C4 PFOS

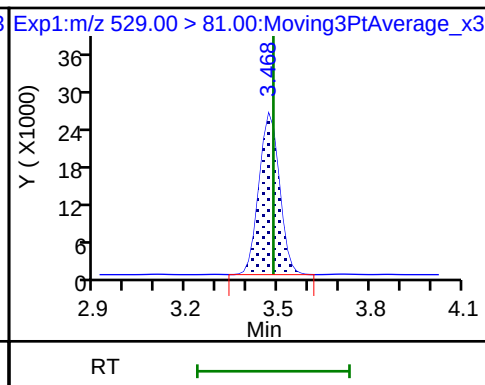
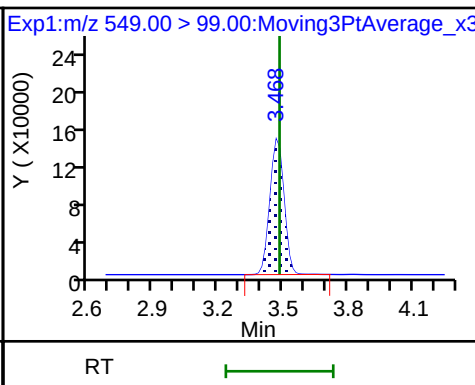
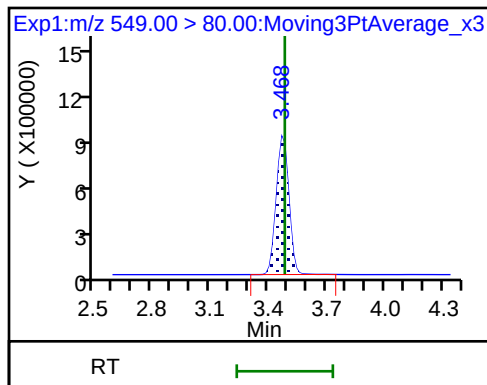
69 9-Chlorohexadecafluoro-3-oxanonan-25 1H,1H,2H,2H-perfluorodecanesulfoni



68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid

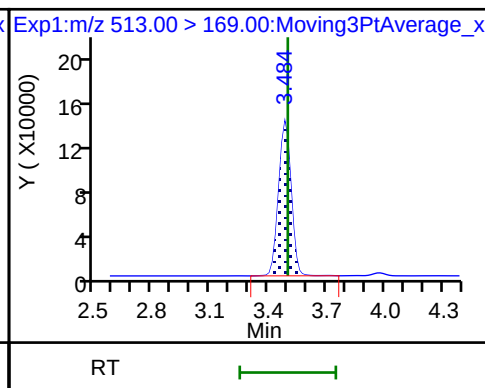
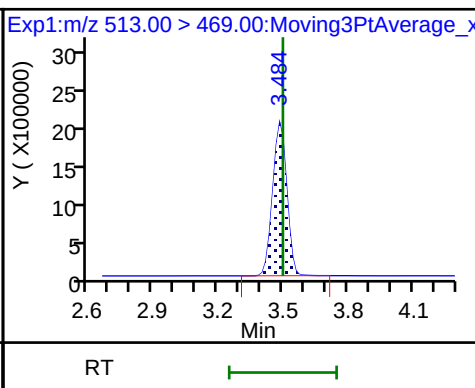
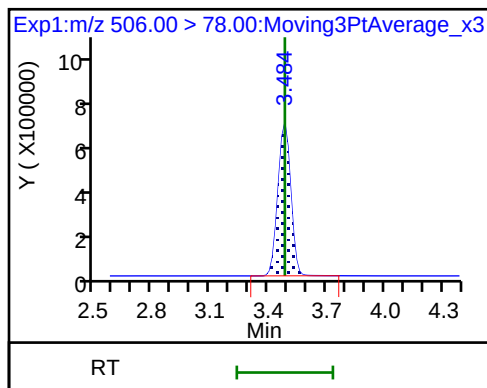
D 26 M2-8:2FTS

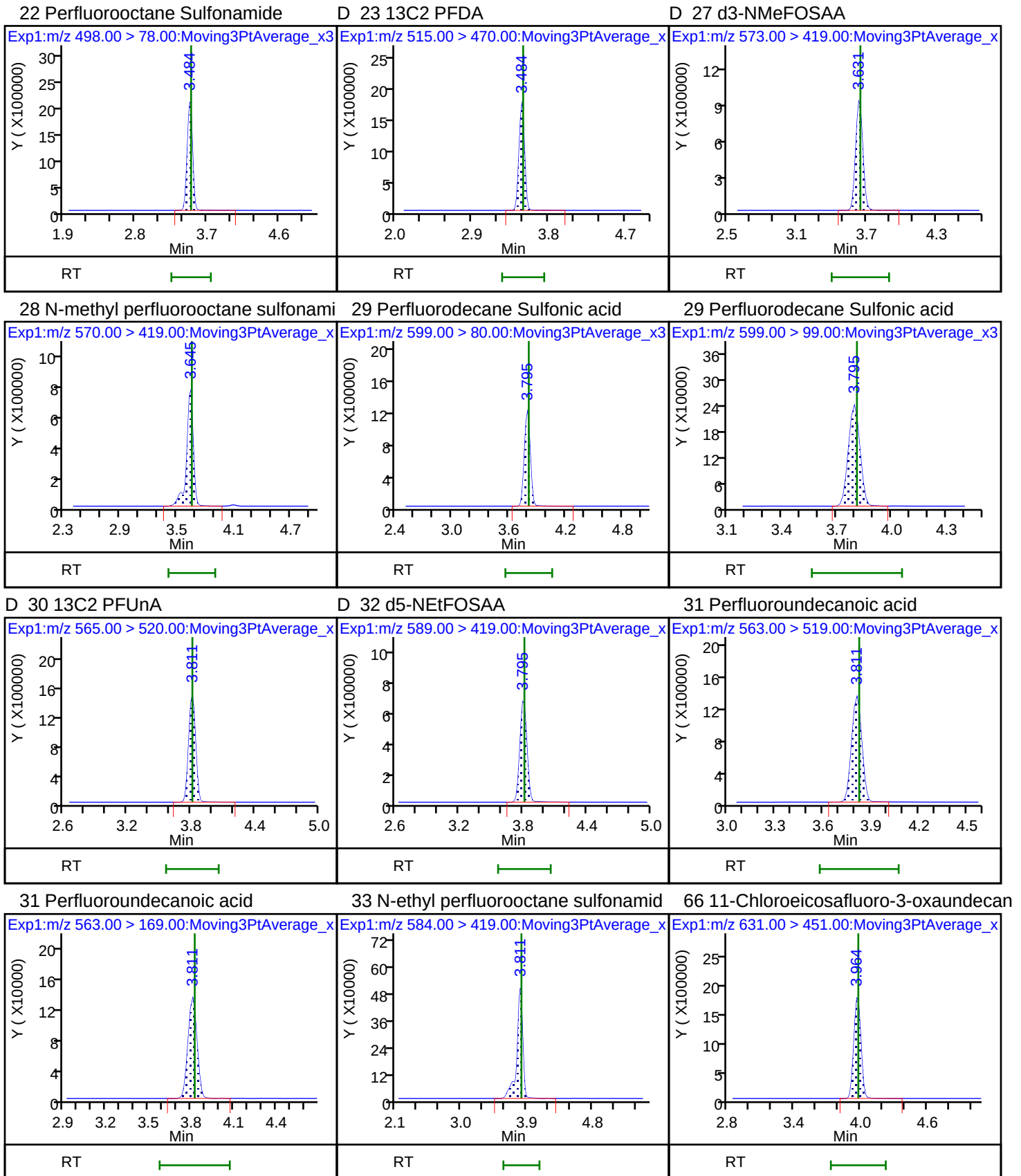


D 21 13C8 FOSA

24 Perfluorodecanoic acid

24 Perfluorodecanoic acid

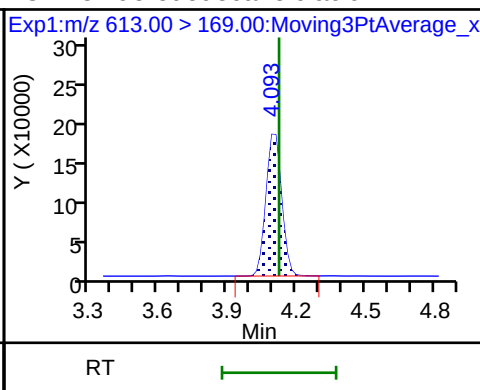
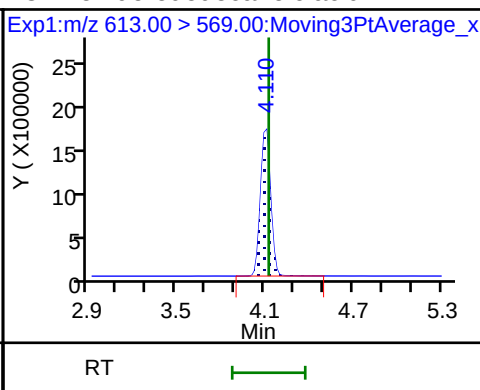
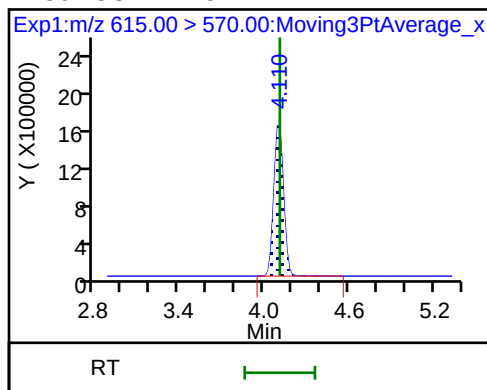




D 36 13C2 PFDaA

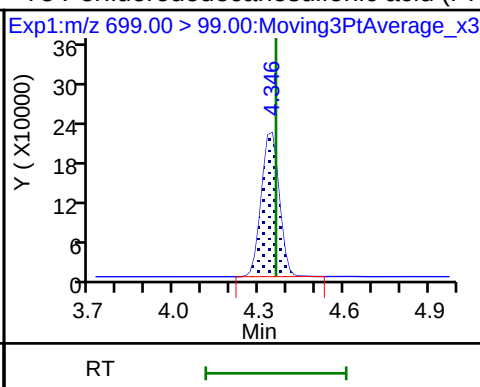
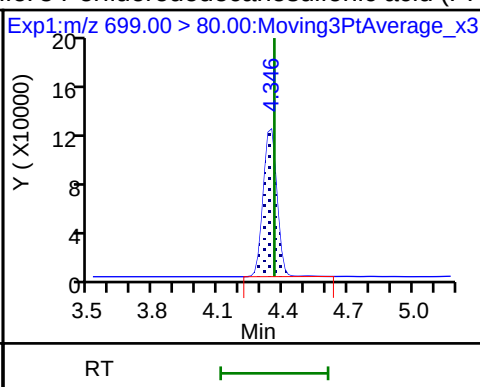
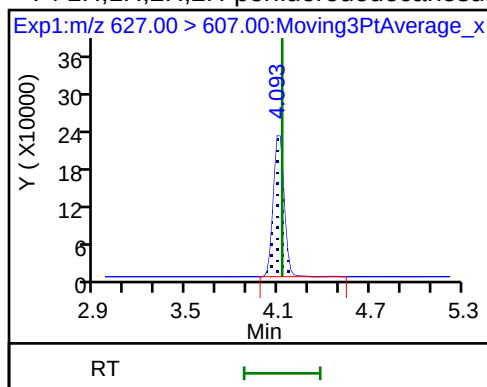
37 Perfluorododecanoic acid

37 Perfluorododecanoic acid



74 1H,1H,2H,2H-perfluorododecanesulfonate 75 Perfluorododecanesulfonic acid (PF

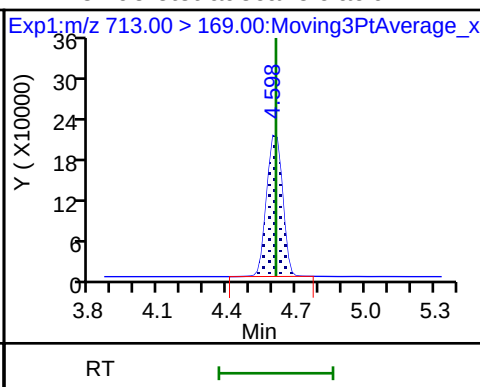
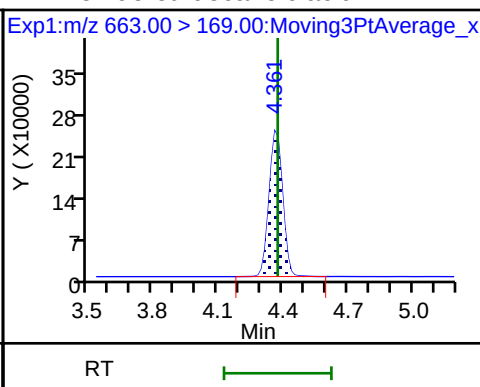
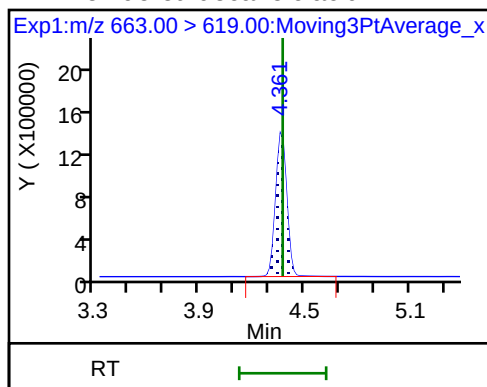
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

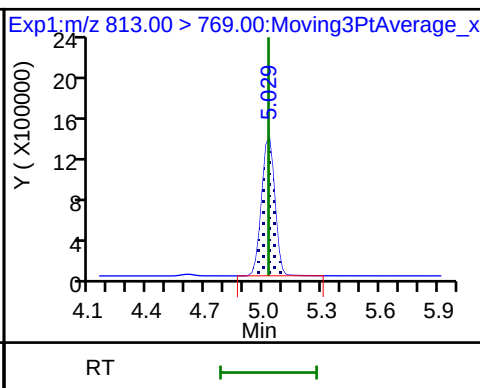
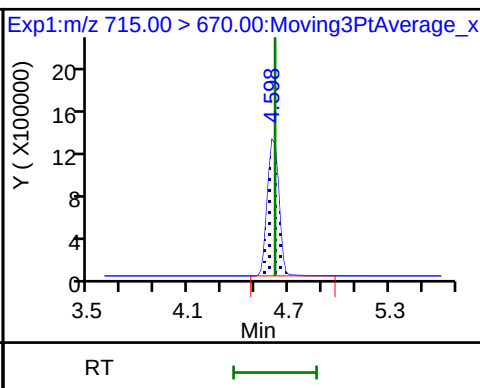
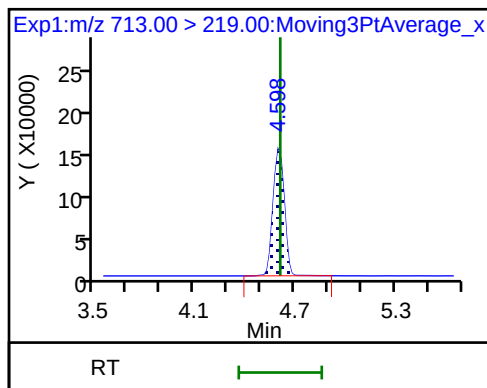
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

45 Perfluorohexadecanoic acid

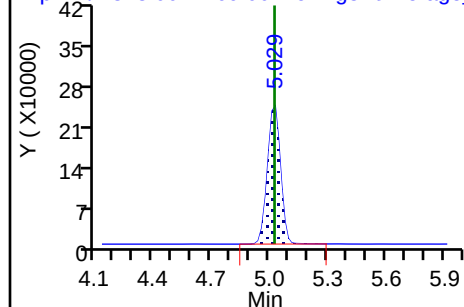


45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

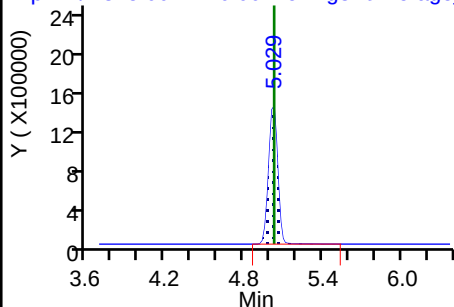
46 Perfluorooctadecanoic acid

Exp1:m/z 813.00 > 169.00:Moving3PtAverage_x



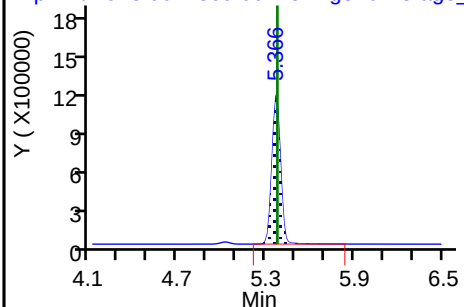
RT

Exp1:m/z 815.00 > 770.00:Moving3PtAverage_x



RT

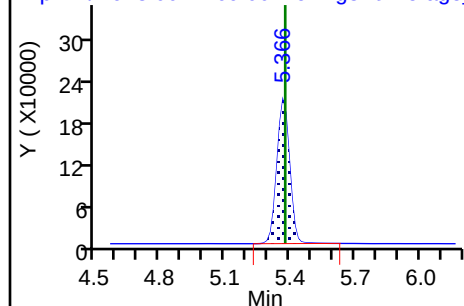
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RT

46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 169.00:Moving3PtAverage_x



RT

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Lab Sample ID: CCV 320-240682/11 Calibration Date: 08/18/2018 09:13

Instrument ID: A9 Calib Start Date: 08/14/2018 14:32

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17

Lab File ID: 2018.08.18LLA_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9456	0.9456		1.00	1.00	0.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.024	1.049		1.02	1.00	2.5	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	104.2	107.0		0.908	0.884	2.8	50.0
4:2 FTS	AveID	20.87	21.71		0.972	0.934	4.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.8945	0.9270		1.04	1.00	3.6	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	49.50	50.07		0.949	0.938	1.1	50.0
HFPO-DA (GenX)	AveID	1.541	1.576		1.02	1.00	2.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.058	1.115		1.05	1.00	5.4	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.276	1.212		0.865	0.910	-5.0	40.0
DONA	AveID	2.657	3.041		1.08	0.942	14.5	50.0
6:2 FTS	AveID	2.230	2.198		0.934	0.948	-1.4	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.082	1.094		1.01	1.00	1.2	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.006	1.007		0.953	0.952	0.0	50.0
Perfluorononanoic acid (PFNA)	AveID	1.024	1.052		1.03	1.00	2.8	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.047	1.114		0.987	0.928	6.3	40.0
F-53B Major	AveID	1.201	1.243		0.964	0.932	3.5	50.0
8:2 FTS	AveID	15.14	14.54		0.920	0.958	-4.0	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.6830	0.7090		0.997	0.960	3.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.069	1.137		1.06	1.00	6.4	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	2.934	3.323		1.13	1.00	13.3	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9934	0.9795		0.986	1.00	-1.4	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.8393	0.997		1.14	0.964	18.8	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9833	0.9079		0.923	1.00	-7.7	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8661	0.8577		0.990	1.00	-1.0	40.0
F-53B Minor	AveID	1.418	1.511		1.00	0.942	6.6	50.0
10:2 FTS	AveID	9.836	8.712		0.854	0.964	-11.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.025	1.046		1.02	1.00	2.1	40.0
Perfluorododecanesulfonic acid (PFDoS)	AveID	0.0995	0.0971		0.945	0.968	-2.4	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.8192	0.8139		0.993	1.00	-0.7	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.1627	0.1641		1.01	1.00	0.9	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240682/11 Calibration Date: 08/18/2018 09:13
 Instrument ID: A9 Calib Start Date: 08/14/2018 14:32
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 08/14/2018 15:17
 Lab File ID: 2018.08.18LLA_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9440		1.02	1.00	1.6	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7150	0.6910		0.966	1.00	-3.4	50.0
13C4 PFBA	Ave	0.9573	0.9522		2.49	2.50	-0.5	50.0
13C5 PFPeA	Ave	0.8533	0.8419		2.47	2.50	-1.3	50.0
13C3-PFBS	Ave	0.0111	0.0112		2.34	2.33	0.7	50.0
M2-4:2FTS	Ave	0.0918	0.0939		2.39	2.34	2.3	50.0
13C2 PFHxA	Ave	0.9006	0.9047		2.51	2.50	0.5	50.0
13C3 HFPO-DA	Ave	0.1169	0.1111		2.38	2.50	-5.0	50.0
13C4-PFHpA	Ave	1.067	1.092		2.56	2.50	2.4	50.0
18O2 PFHxS	Ave	0.6554	0.6581		2.37	2.37	0.4	50.0
M2-6:2FTS	Ave	0.0989	0.0985		2.37	2.38	-0.4	40.0
13C4 PFOA	Ave	0.9902	0.9912		2.50	2.50	0.1	50.0
13C8 PFOA	Ave	2816461	2949665		2.56	2.45	4.7	50.0
13C4 PFOS	Ave	0.7025	0.6794		2.31	2.39	-3.3	50.0
13C5 PFNA	Ave	0.9176	0.9001		2.45	2.50	-1.9	50.0
13C8 PFOS	Ave	506339	490238		2.31	2.39	-3.2	50.0
M2-8:2FTS	Ave	0.0142	0.0171		2.88	2.40	20.1	40.0
13C2 PFDA	Ave	0.995	1.015		2.55	2.50	1.9	50.0
13C8 FOSA	Ave	0.3785	0.3902		2.58	2.50	3.1	50.0
d3-NMeFOSAA	Ave	0.4320	0.4697		2.72	2.50	8.7	50.0
d5-NEtFOSAA	Ave	0.3278	0.3757		2.87	2.50	14.6	50.0
13C2 PFUnA	Ave	0.8300	0.8759		2.64	2.50	5.5	50.0
13C2 PFDoA	Ave	0.9627	1.000		2.60	2.50	3.9	50.0
13C2-PFTeDA	Ave	0.7785	0.7327		2.35	2.50	-5.9	50.0
13C2-PFHxDA	Ave	0.8521	0.8419		2.47	2.50	-1.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_041.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 18-Aug-2018 09:13:28 ALS Bottle#: 28 Worklist Smp#: 11
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A9\Administrator Instrument ID: A9
 Sublist: chrom-PFAS_A9*sub5
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 08:02:16 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 08:02:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.505	1.500	0.005	0.547	7944278	2.49		99.5	24329	
2 Perfluorobutyric acid										
212.90 > 169.00	1.505	1.505	0.0	1.000	3004955	1.00		100	272	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.773	1.773	0.0	1.000	2947020	1.02		102	297	
D 3 13C5-PFPeA										
267.90 > 223.00	1.773	1.774	-0.002	0.644	7023540	2.47		98.7	15370	
D 47 13C3-PFBS										
301.90 > 83.00	1.814	1.807	0.007	0.659	86585	2.34		101	519	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.814	1.814	0.0	1.000	3524101	0.9084		103	3038	
298.90 > 99.00	1.814	1.814	0.0	1.000	1258288		2.80(1.35-4.05)		1301	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.018	2.018	0.0	1.112	755066	0.9715		104	2319	
D 60 M2-4:2FTS										
329.00 > 81.00	2.018	2.019	-0.001	0.733	731466	2.39		102	947	
D 7 13C2 PFHxA										
315.00 > 270.00	2.059	2.050	0.009	0.748	7547916	2.51		100	11907	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.059	2.059	0.0	1.000	2798631	1.04		104	708	
313.00 > 119.00	2.059	2.059	0.0	1.000	196397		14.25(6.96-20.87)		413	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.079	2.079	0.0	1.146	1748954	0.9487		101	2910	
349.00 > 99.00	2.079	2.079	0.0	1.146	849846		2.06(1.15-3.45)		1446	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.161	2.152	0.009	0.785	926906	2.38		95.0	1780	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.161	2.161	0.0	1.000	584382	1.02		102	252	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.387	2.387	0.0	1.000	4064805	1.05		105	573	
363.00 > 169.00	2.387	2.387	0.0	1.000	846844		4.80(2.17-6.52)		1812	
D 9 13C4-PFHpA										
367.00 > 322.00	2.387	2.388	-0.001	0.868	9112376	2.56		102	18571	
D 11 18O2 PFHxS										
403.00 > 84.00	2.414	2.402	0.012	0.877	5193661	2.37		100	14582	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.414	2.414	0.0	1.000	2422215	0.8646		95.0	2414	
399.00 > 99.00	2.414	2.414	0.0	1.000	670747		3.61(1.90-5.70)		1065	
76 DONA										
377.00 > 251.00	2.440	2.440	0.0	0.778	6494446	1.08		114	14551	
377.00 > 85.00	2.440	2.440	0.0	0.778	2761704		2.35(1.13-3.39)		5523	
D 12 M2-6:2FTS										
429.00 > 81.00	2.736	2.721	0.015	0.994	780351	2.37		99.6	1725	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.736	2.736	0.0	1.000	684535	0.9344		98.6	1807	
D 73 13C8 PFOA										
421.00 > 376.00	2.751	2.737	0.014		7219304	2.56		105	15512	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.751	2.751	0.0	1.000	3623771	1.01		101	235	
413.00 > 169.00	2.751	2.751	0.0	1.000	1249136		2.90(1.36-4.08)		1931	
* 62 13C2-PFOA										
415.00 > 370.00	2.751	2.751	0.0		8342779	2.50			28357	
D 14 13C4 PFOA										
417.00 > 372.00	2.751	2.753	-0.002	1.000	8269210	2.50		100	12412	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.767	2.767	0.0	0.882	2172507	0.9527		100	2753	
449.00 > 99.00	2.767	2.767	0.0	0.882	556728		3.90(1.84-5.53)		2273	
D 72 13C8 PFOS										
507.00 > 99.00	3.137	3.120	0.017		1171668	2.31		96.8	1944	
20 Perfluorononanoic acid										
463.00 > 419.00	3.137	3.137	0.0	1.000	3160910	1.03		103	353	
463.00 > 169.00	3.137	3.137	0.0	1.000	555051		5.69(2.68-8.03)		1326	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.137	0.0	1.000	2342968	0.9866		106	1923	
499.00 > 99.00	3.137	3.137	0.0	1.000	548319		4.27(2.04-6.12)		1308	
D 19 13C5 PFNA										
468.00 > 423.00	3.137	3.138	-0.001	1.140	7509143	2.45		98.1	10824	
D 18 13C4 PFOS										
503.00 > 80.00	3.137	3.138	-0.001	1.140	5418632	2.31		96.7	4599	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.353	3.353	0.0	1.069	2626548	0.9645		103	2221	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.483	3.483	0.0	1.000	793911	0.9196		96.0	2092	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.483	3.483	0.0	1.110	1543122	1.00		104	2056	
549.00 > 99.00	3.483	3.483	0.0	1.110	241363		6.39(3.02-9.05)		1231	
D 26 M2-8:2FTS										
529.00 > 81.00	3.483	3.483	0.0	1.266	136544	2.88		120	861	
D 21 13C8 FOSA										
506.00 > 78.00	3.499	3.483	0.016	1.272	3255490	2.58		103	5863	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.499	3.499	0.0	1.000	3849830	1.06		106	611	
513.00 > 169.00	3.499	3.499	0.0	1.000	255272		15.08(7.12-21.35)		356	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.499	3.499	0.0	1.000	4327493	1.13		113	4925	
D 23 13C2 PFDA										
515.00 > 470.00	3.499	3.499	0.0	1.272	8463748	2.55		102	13762	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.657	3.645	0.012	1.329	3918687	2.72		109	2991	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.657	3.657	0.0	1.000	1535383	0.9860		98.6	537	M
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.809	3.809	0.0	1.214	2178230	1.14		119	2179	
599.00 > 99.00	3.809	3.809	0.0	1.214	459770		4.74(2.14-6.43)		1026	
D 30 13C2 PFUnA										
565.00 > 520.00	3.825	3.811	0.014	1.390	7307137	2.64		106	12186	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.809	3.811	-0.002	1.384	3134291	2.87		115	2213	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.825	3.825	0.0	1.000	2506950	0.99		99.0	510	
563.00 > 169.00	3.825	3.825	0.0	1.000	238323		10.52(5.24-15.72)		1026	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.825	3.825	0.0	1.004	1138200	0.9233		92.3	1724	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.978	3.978	0.0	1.268	3227876	1.00		107	10153	
35 MeFOSA										
512.00 > 169.00	3.994	3.994	0.0		739832	NC			570	
D 36 13C2 PFDaA										
615.00 > 570.00	4.108	4.110	-0.002	1.493	8342245	2.60		104	6353	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.125	4.125	0.0	1.004	3491040	1.02		102	751	
613.00 > 169.00	4.125	4.125	0.0	1.004	374117		9.33(4.68-14.05)		1029	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.125	4.125	0.0	1.184	478829	0.8538		88.6	3089	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.359	4.359	0.0	1.390	213064	0.9446		97.6	503	
699.00 > 99.00	4.359	4.359	0.0	1.390	397375		0.54(0.28-0.83)		1091	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.375	4.375	0.0	1.065	2715760	0.99		99.3	963	
663.00 > 169.00	4.375	4.375	0.0	1.065	417225		6.51(3.09-9.27)		1541	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.611	4.611	0.0	1.000	401358	1.01		101	1483	
713.00 > 219.00	4.611	4.611	0.0	1.000	279716		1.43(0.70-2.09)		1673	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.611	4.616	-0.005	1.676	6112875	2.35		94.1	11741	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.025	5.025	0.0	1.000	2652083	1.02		102	643	
813.00 > 169.00	5.025	5.025	0.0	1.000	450701		5.88(2.77-8.32)		1221	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.025	5.029	-0.004	1.826	7023873	2.47		98.8	8623	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.377	5.377	0.0	1.070	1941366	0.9664		96.6	575	
913.00 > 169.00	5.377	5.377	0.0	1.070	356565		5.44(2.55-7.64)		1653	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL4_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_041.d

Injection Date: 18-Aug-2018 09:13:28

Instrument ID: A9

Lims ID: CCV L4

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 28

Worklist Smp#: 11

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

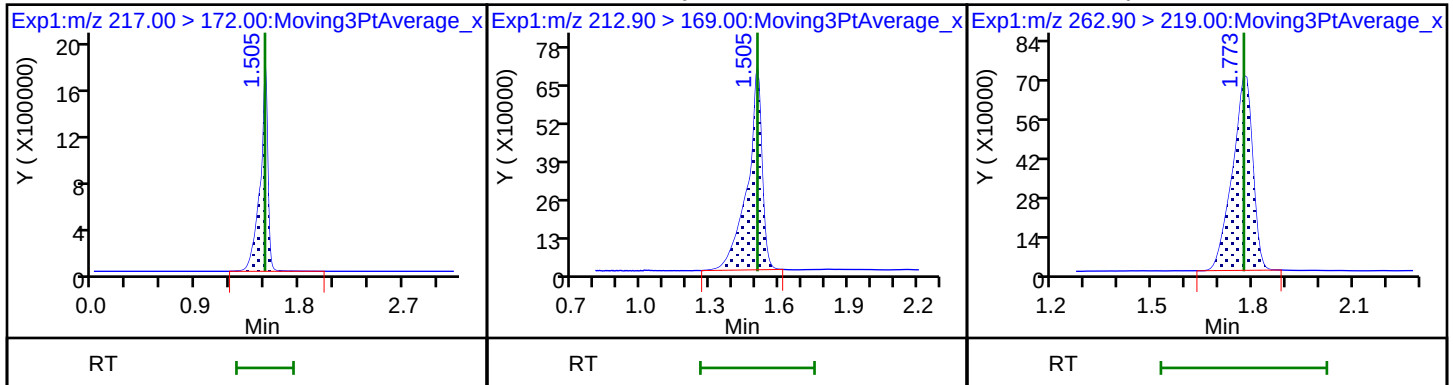
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

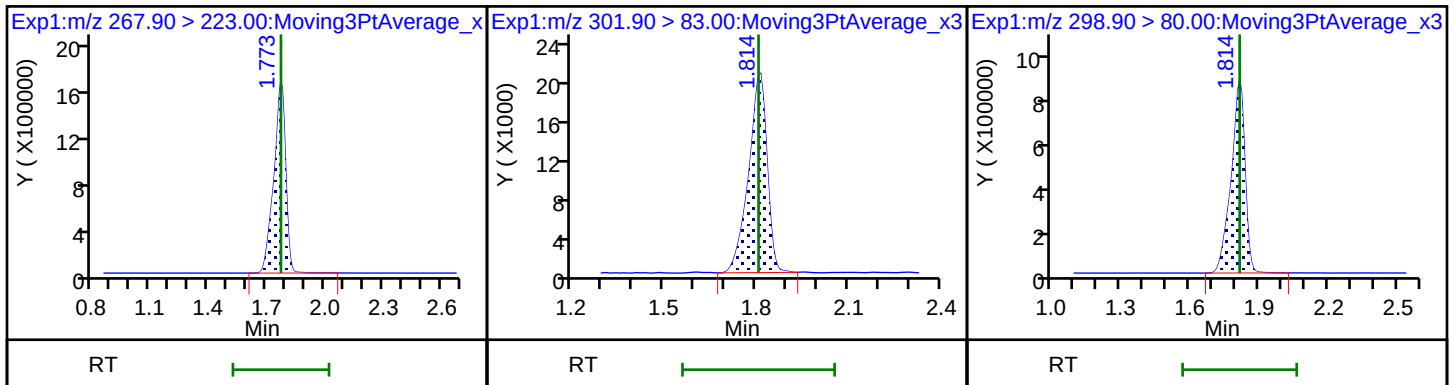
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

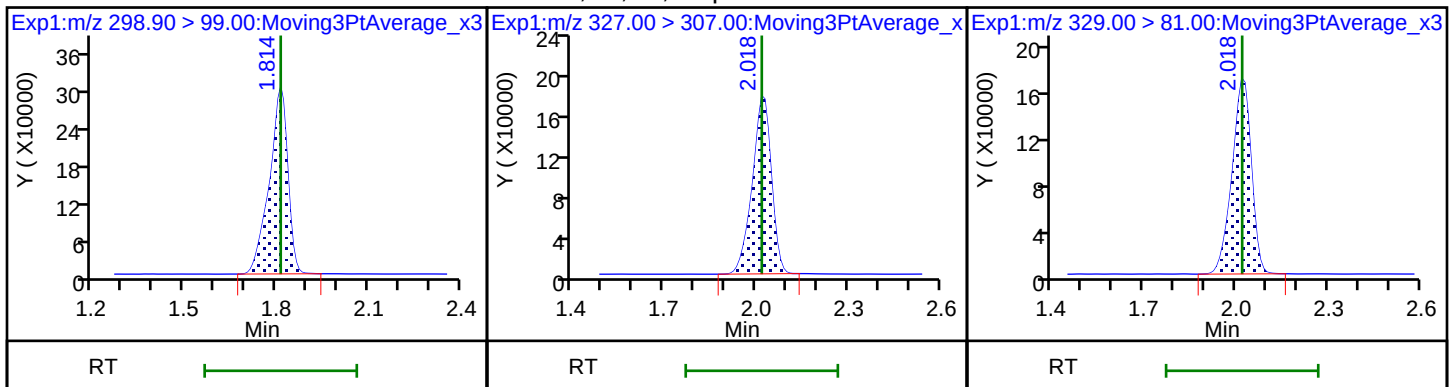
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

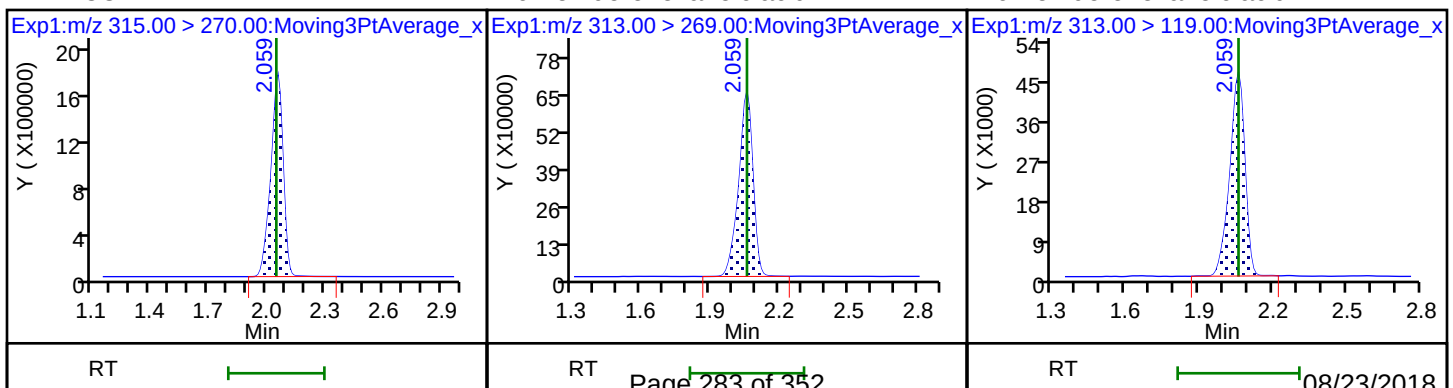
D 60 M2-4:2FTS

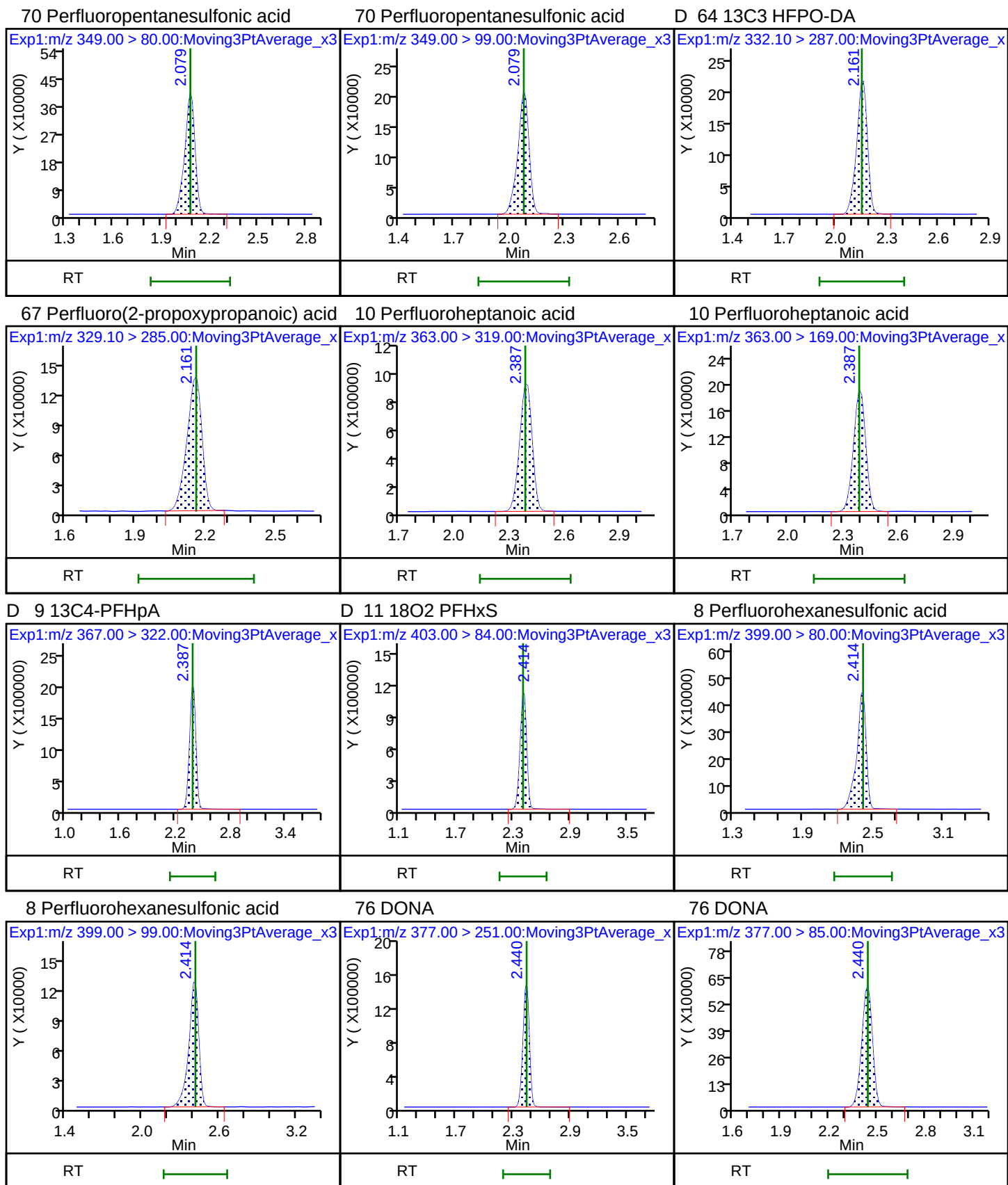


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

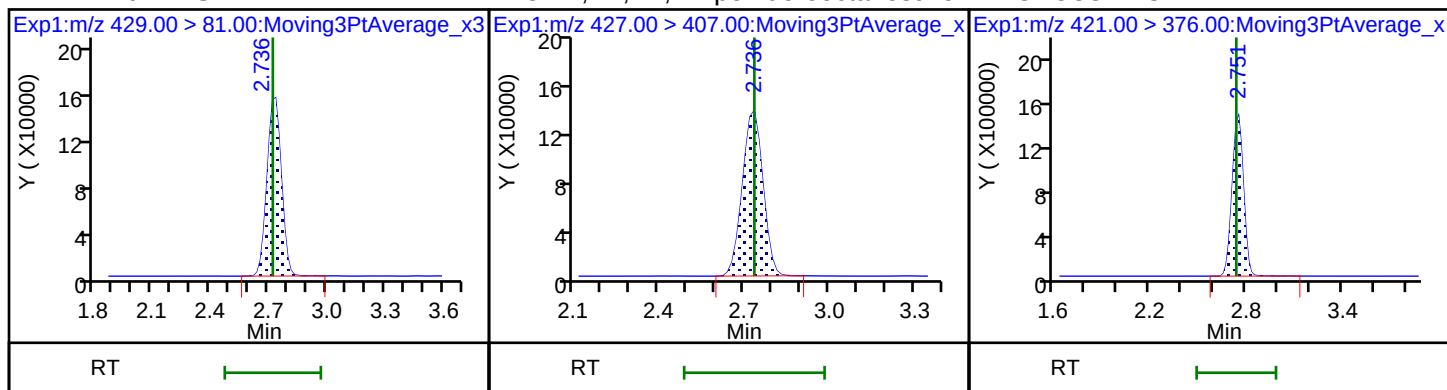
6 Perfluorohexanoic acid





D 12 M2-6:2FTS

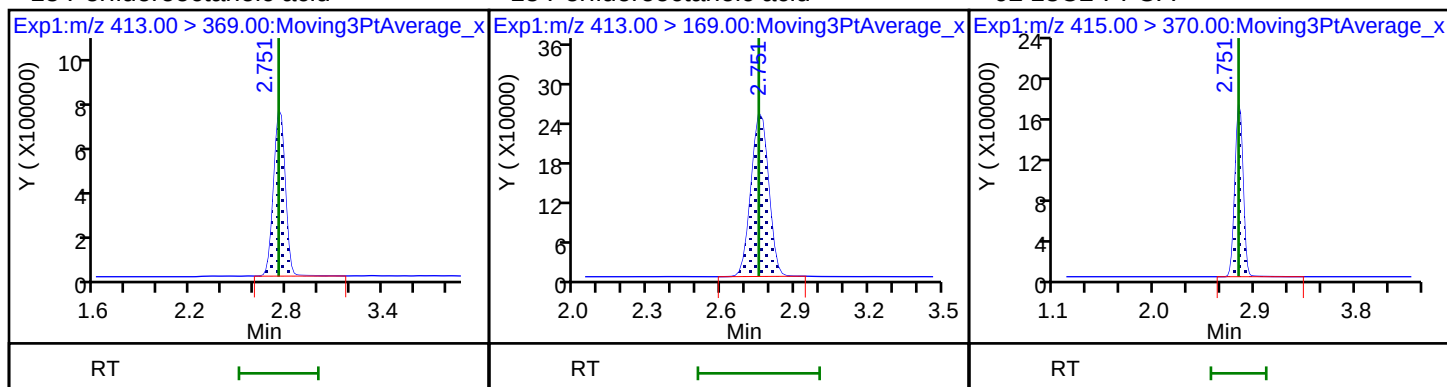
13 1H,1H,2H,2H-perfluorooctanesulfonD 73 13C8 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

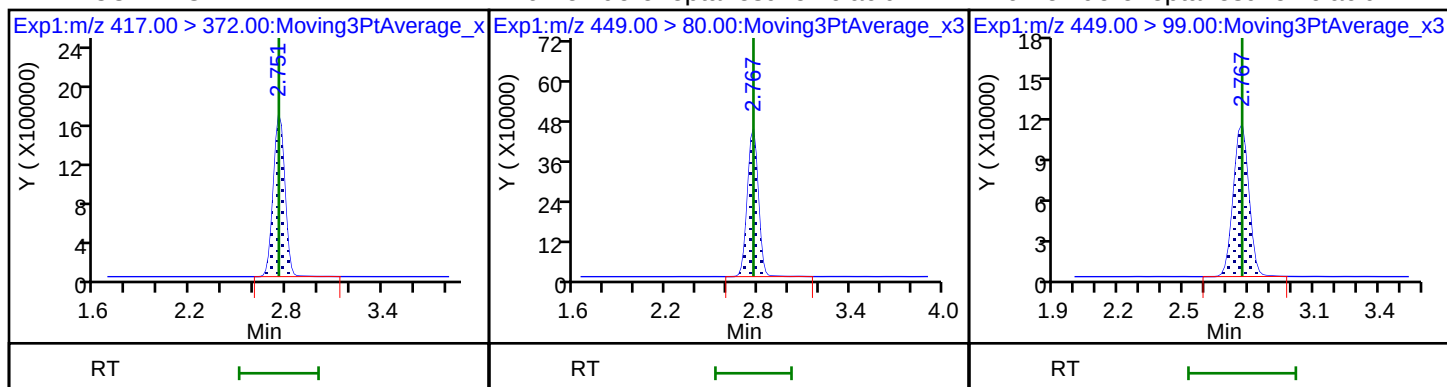
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

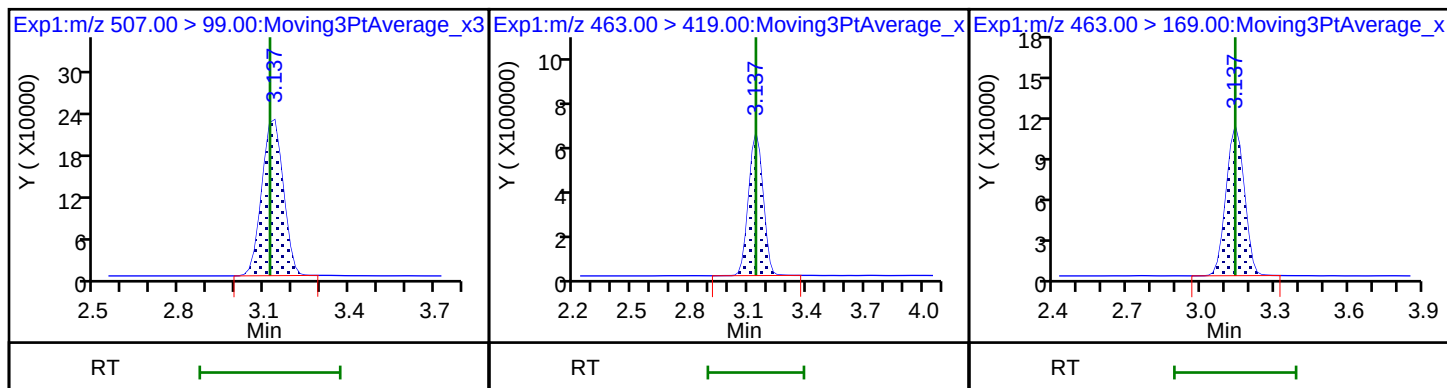
16 Perfluoroheptanesulfonic acid



D 72 13C8 PFOS

20 Perfluorononanoic acid

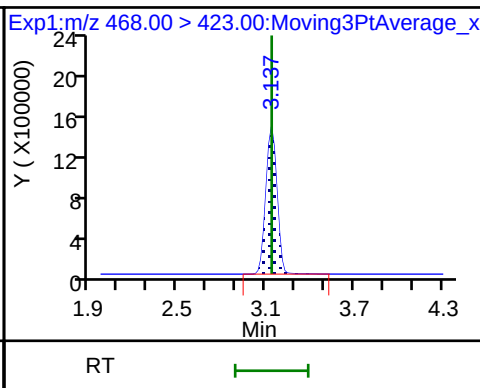
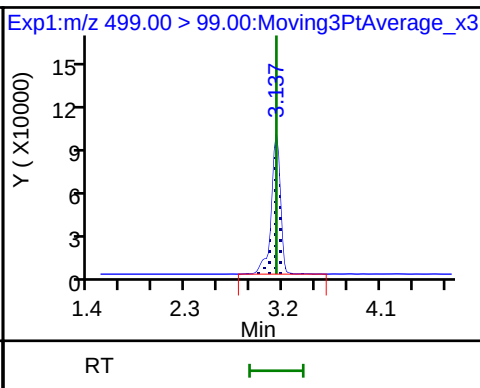
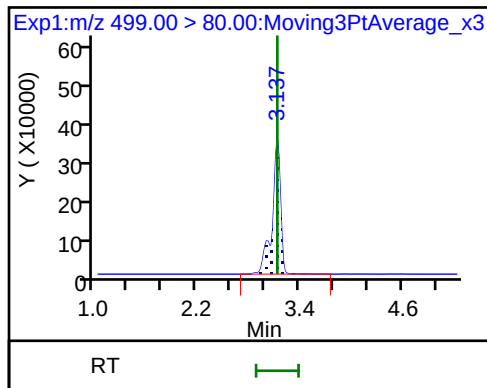
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

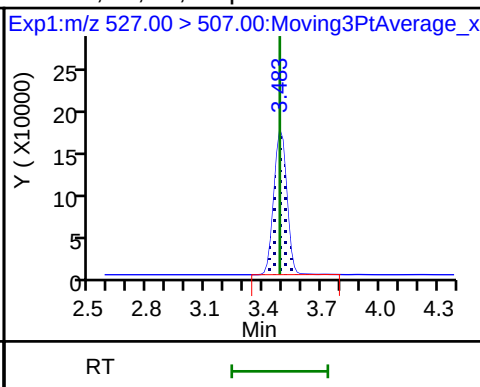
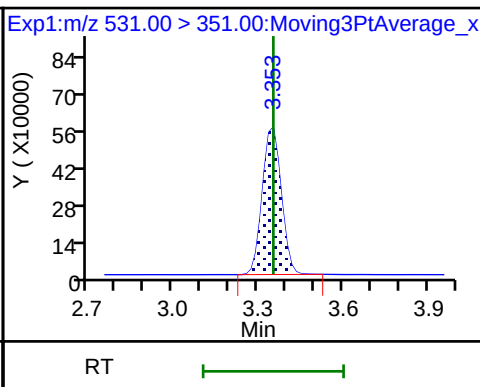
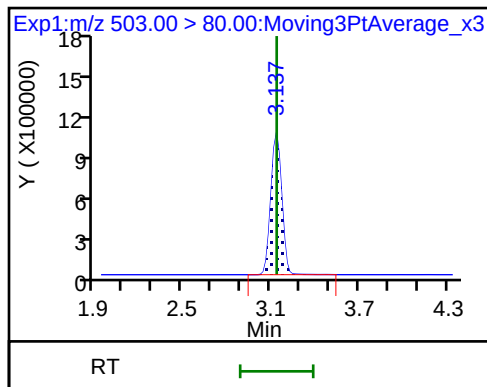
17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



D 18 13C4 PFOS

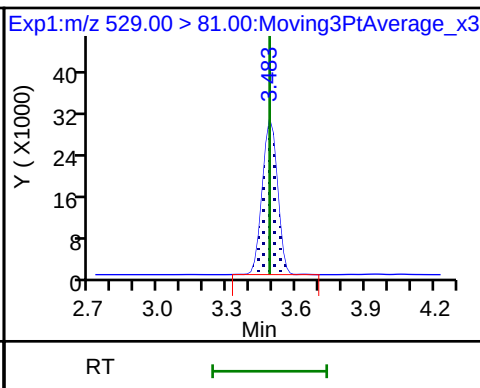
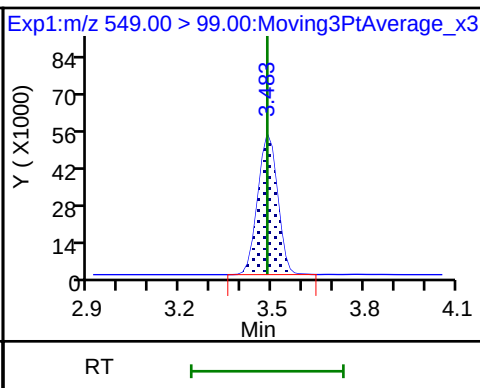
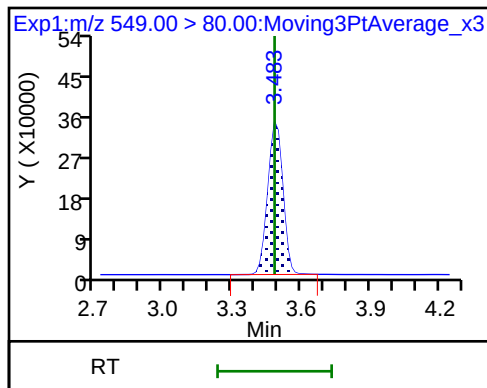
69 9-Chlorohexadecafluoro-3-oxanonan-25 1H,1H,2H,2H-perfluorodecanesulfoni



68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid

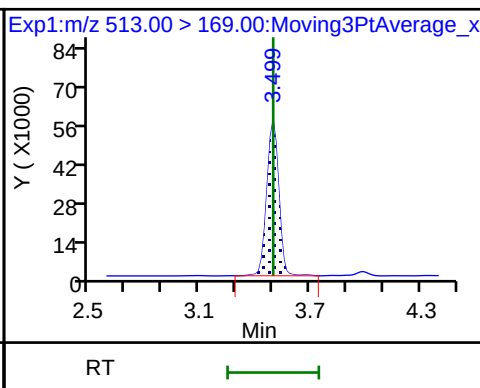
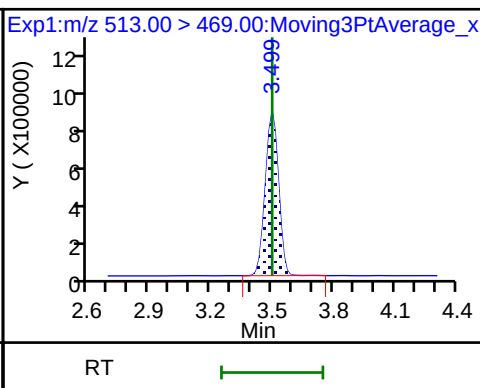
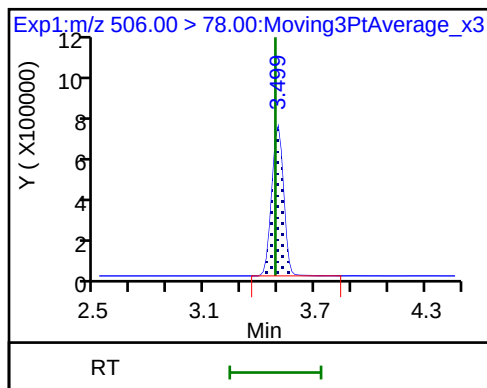
D 26 M2-8:2FTS

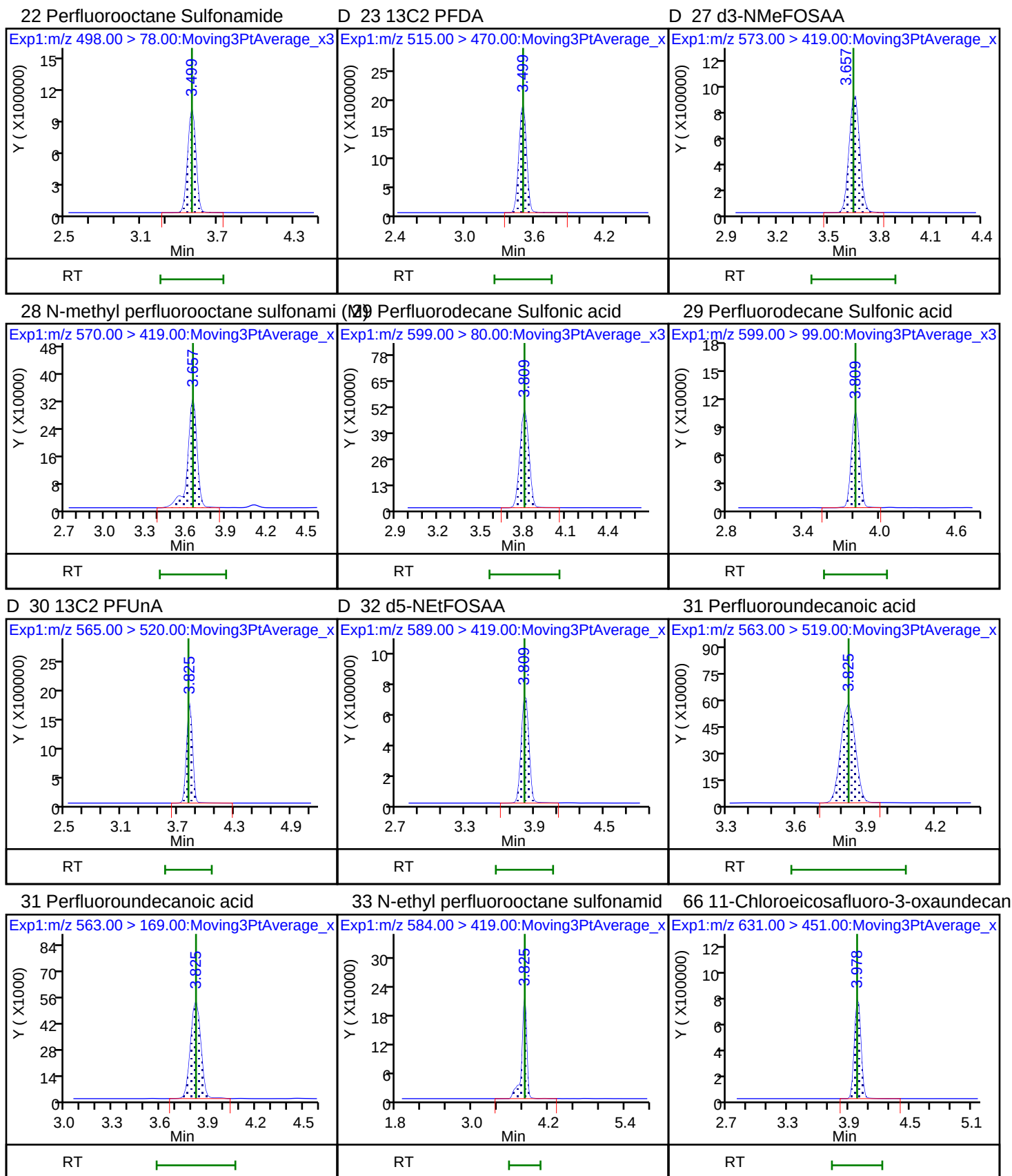


D 21 13C8 FOSA

24 Perfluorodecanoic acid

24 Perfluorodecanoic acid

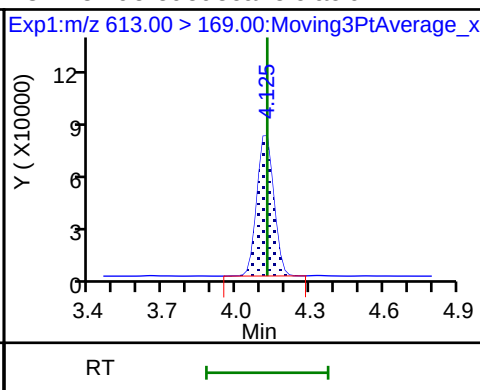
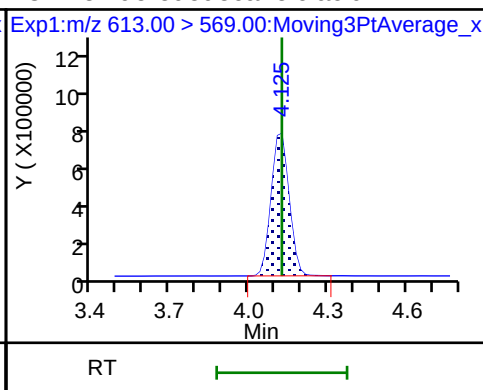
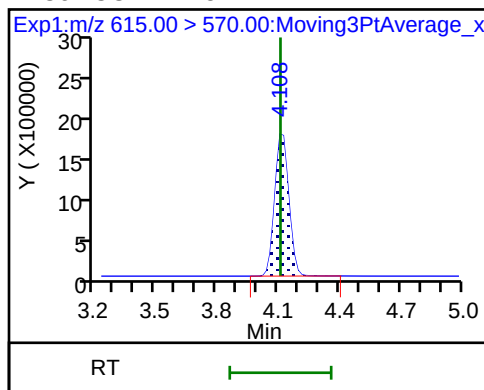




D 36 13C2 PFDaA

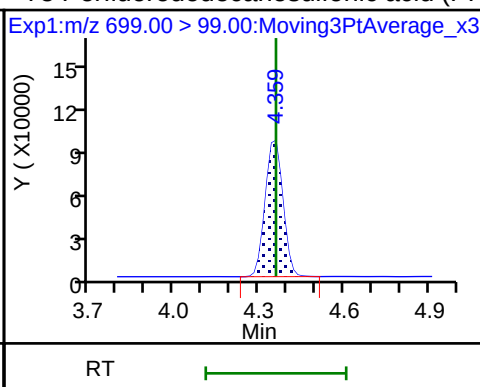
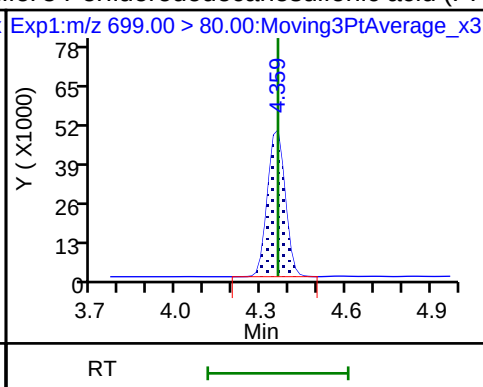
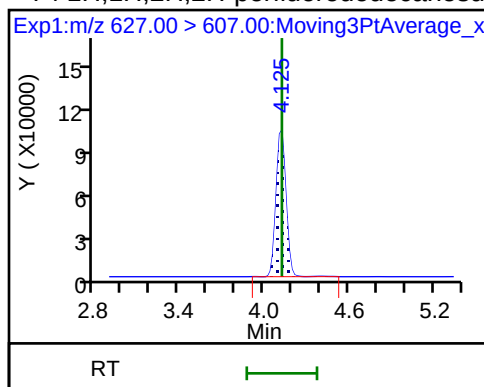
37 Perfluorododecanoic acid

37 Perfluorododecanoic acid



74 1H,1H,2H,2H-perfluorododecanesulfonate 75 Perfluorododecanesulfonic acid (PF

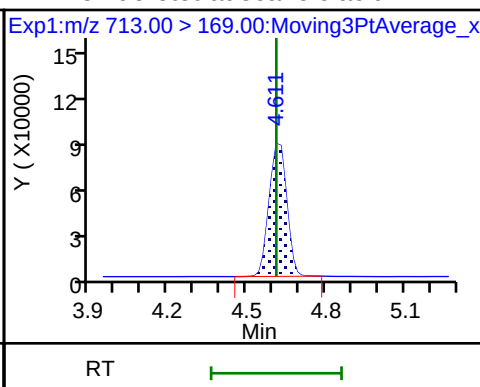
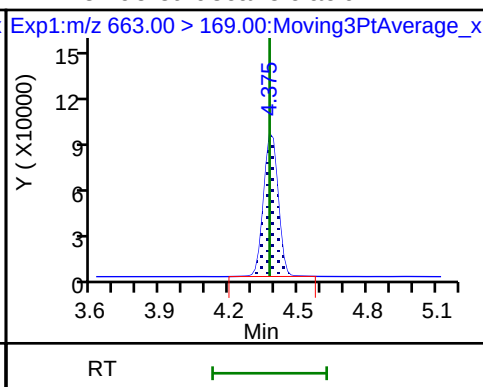
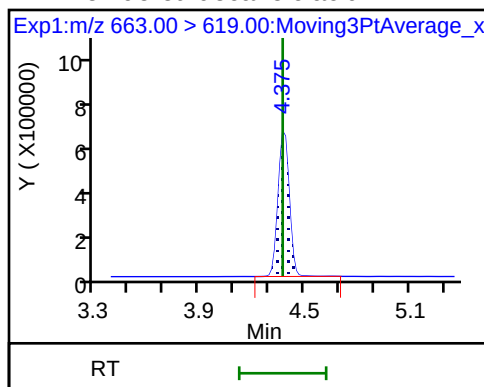
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

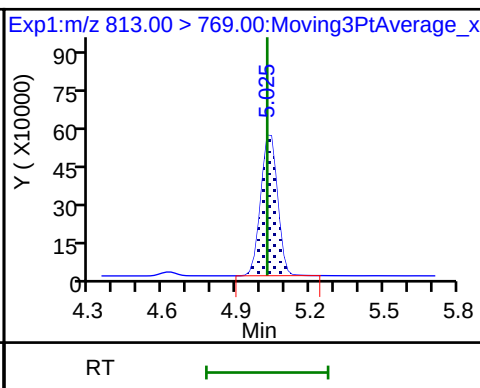
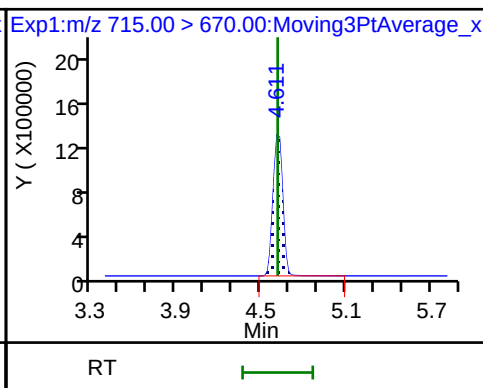
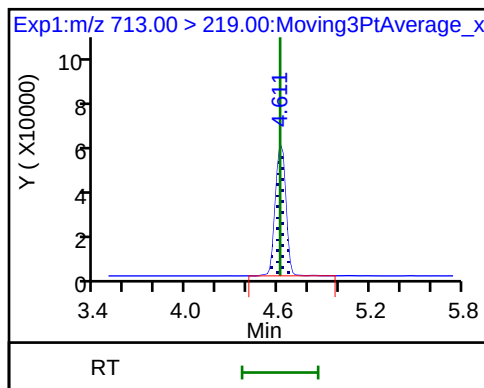
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

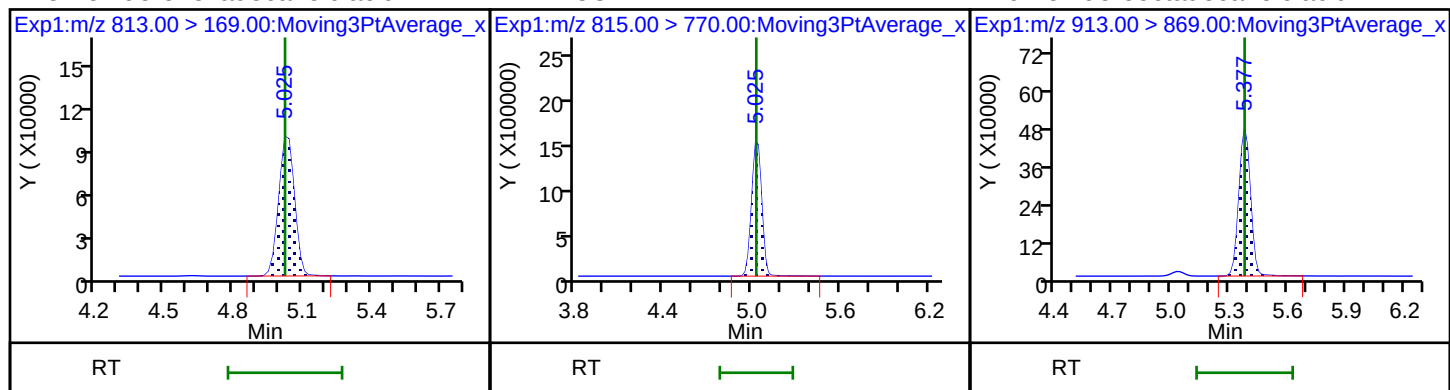
45 Perfluorohexadecanoic acid



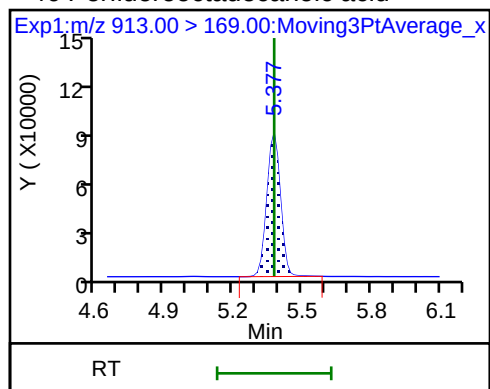
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento

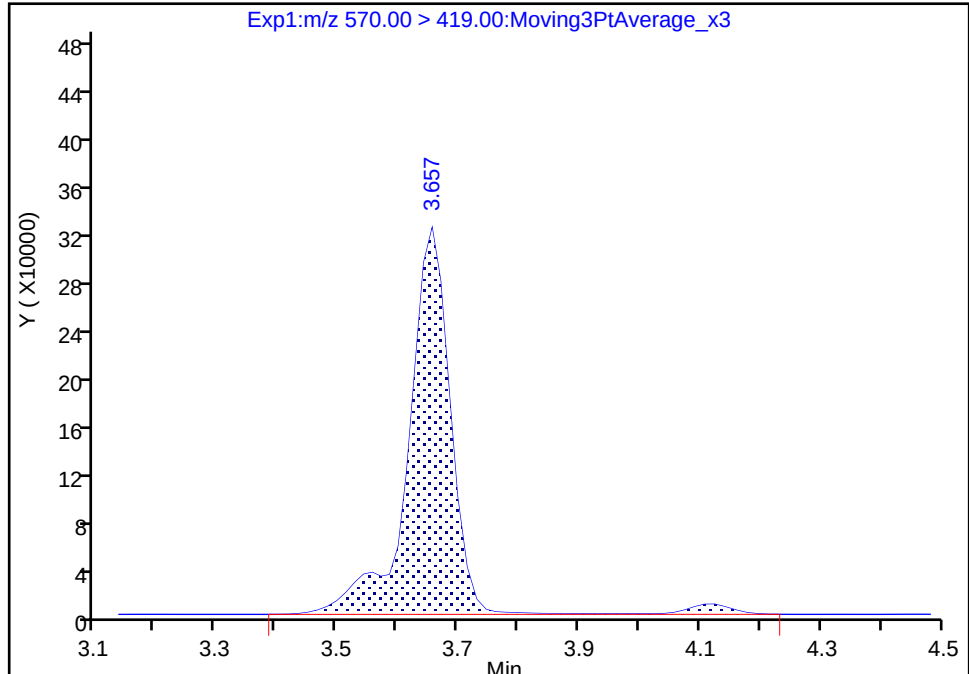
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Injection Date: 18-Aug-2018 09:13:28 Instrument ID: A9
Lims ID: CCV L4
Client ID:
Operator ID: A9\Administrator ALS Bottle#: 28 Worklist Smp#: 11
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

28 N-methyl perfluorooctane sulfonamidoacetic a, CAS: 2355-31-9

Signal: 1

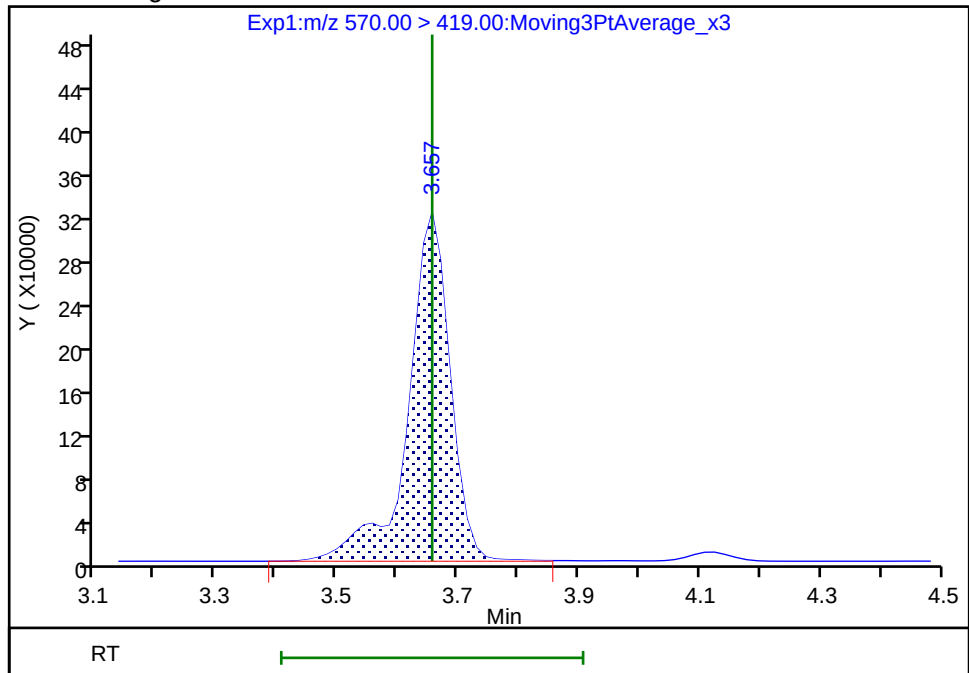
RT: 3.66
Area: 1580161
Amount: 1.014780
Amount Units: ng/ml

Processing Integration Results



RT: 3.66
Area: 1535383
Amount: 0.986023
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 08:02:06

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-240465/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_032.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>08/18/2018 08:05</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		2.0	0.35
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25
335-67-1	Perfluorooctanoic acid (PFOA)	ND		2.0	0.85
375-95-1	Perfluorononanoic acid (PFNA)	ND		2.0	0.27
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.0	0.31
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.386	J	2.0	0.29
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.289	J	2.0	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9
27619-97-2	6:2 FTS	ND		20	2.0
39108-34-4	8:2 FTS	ND		20	2.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-240465/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_032.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>08/18/2018 08:05</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	94		25-150
STL01893	13C5 PFPeA	98		25-150
STL00993	13C2 PFHxA	95		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	94		25-150
STL00995	13C5 PFNA	95		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	90		25-150
STL00998	13C2 PFDoA	95		25-150
STL02116	13C2-PFTeDA	99		25-150
STL02337	13C3-PFBS	97		25-150
STL00994	18O2 PFHxS	95		25-150
STL00991	13C4 PFOS	94		25-150
STL01056	13C8 FOSA	95		25-150
STL02118	d3-NMeFOSAA	103		25-150
STL02117	d5-NEtFOSAA	110		25-150
STL02279	M2-6:2FTS	123		25-150
STL02280	M2-8:2FTS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_032.d
 Lims ID: MB 320-240465/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 18-Aug-2018 08:05:49 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-240465/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:48:24 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:48:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.495	1.500	-0.005	0.546	8053243	2.35		93.9	28738	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.500	1.505	-0.005	1.004	14423	0.004735		0.9		M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.765	1.773	-0.007	1.000	10140	0.003307		1.3		
D 3 13C5-PFPeA										
267.90 > 223.00	1.765	1.774	-0.009	0.645	7486847	2.45		97.9	12519	
D 47 13C3-PFBS										
301.90 > 83.00	1.807	1.807	0.0	0.660	89967	2.27		97.5	590	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.807	1.814	-0.007	1.000	4296	0.001066		5.3		
298.90 > 99.00	1.807	1.814	-0.007	1.000	1781		2.41(1.35-4.05)	2.9		
D 7 13C2 PFHxA										
315.00 > 270.00	2.050	2.050	0.0	0.749	7640064	2.37		94.7	11709	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.039	2.059	-0.020	0.995	13160	0.004814		3.5		
313.00 > 119.00	2.039	2.059	-0.020	0.995	1546		8.51(6.96-20.87)	2.8		
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.142	2.152	-0.010	0.783	1102067	2.63		105	2777	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	1.937	2.161	-0.224	0.904	1285	0.001891		1.0		
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.389	2.387	0.002	1.006	7574	0.001890		1.4		
363.00 > 169.00	2.389	2.387	0.002	1.006	2159		3.51(2.17-6.52)	8.1		
D 9 13C4-PFHpA										
367.00 > 322.00	2.375	2.388	-0.013	0.868	9469851	2.48		99.1	29306	
D 11 18O2 PFHxS										
403.00 > 84.00	2.402	2.402	0.0	0.878	5268037	2.24		94.8	20012	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.389	2.414	-0.025	0.995	20505	0.007216			33.0	
399.00 > 99.00	2.389	2.414	-0.025	0.995	7104		2.89(1.90-5.70)		13.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.721	2.721	0.0	0.994	1033362	2.92		123	1876	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.721	2.736	-0.015	1.000	32721	0.0337			97.7	
D 73 13C8 PFOA										
421.00 > 376.00	2.737	2.737	0.0		11362	0.004034		0.0	124	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.753	2.751	0.002	1.006	28263	0.007870			1.8	M
413.00 > 169.00	2.737	2.751	-0.014	1.000	11639		2.43(1.36-4.08)		21.8	M
* 62 13C2-PFOA										
415.00 > 370.00	2.737	2.751	-0.014		8959371	2.50			25493	
D 14 13C4 PFOA										
417.00 > 372.00	2.737	2.753	-0.016	1.000	8298925	2.34		93.5	16467	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.120	3.137	-0.017	1.000	6138	0.002484			5.3	
499.00 > 99.00	3.138	3.137	0.001	1.006	0		0.00(2.04-6.12)			
D 19 13C5 PFNA										
468.00 > 423.00	3.120	3.138	-0.018	1.140	7845692	2.39		95.4	11102	
D 18 13C4 PFOS										
503.00 > 80.00	3.120	3.138	-0.018	1.140	5639084	2.24		93.7	5311	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.337	3.353	-0.016	1.070	3883	0.001370			5.1	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.483	-0.015	1.267	119136	2.34		97.5	454	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.483	0.001	1.273	3235898	2.39		95.4	5382	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.484	3.499	-0.015	1.000	12017	0.003421			1.9	
513.00 > 169.00	3.452	3.499	-0.047	0.991	1510		7.96(7.12-21.35)		3.5	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.499	-0.015	1.000	7431	0.001956			17.1	
D 23 13C2 PFDA										
515.00 > 470.00	3.484	3.499	-0.015	1.273	8216985	2.30		92.1	12085	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.631	3.645	-0.014	1.327	4000440	2.58		103	5604	
D 30 13C2 PFUnA										
565.00 > 520.00	3.795	3.811	-0.016	1.387	6667443	2.24		89.7	21937	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.795	3.811	-0.016	1.387	3236178	2.76		110	3271	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.795	3.825	-0.030	1.000	18312	0.007927			4.0	
563.00 > 169.00	3.795	3.825	-0.030	1.000	2904		6.31(5.24-15.72)		18.5	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.795	3.825	-0.030	1.000	18481	0.0145			27.8	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.964	3.978	-0.014	1.270	7342	0.002195			24.5	
D 36 13C2 PFDa										
615.00 > 570.00	4.094	4.110	-0.017	1.496	8157081	2.36		94.6	7505	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.094	4.125	-0.032	1.000	24881	0.007441			4.8	
613.00 > 169.00	4.110	4.125	-0.015	1.004	2129		11.69(4.68-14.05)		8.6	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.375	-0.014	1.065	23943	0.008958			7.7	
663.00 > 169.00	4.361	4.375	-0.014	1.065	3438		6.96(3.09-9.27)		11.1	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.598	4.611	-0.013	1.000	4353	0.009640			32.7	
713.00 > 219.00	4.598	4.611	-0.013	1.000	2628		1.66(0.70-2.09)		15.6	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.598	4.616	-0.018	1.680	6938952	2.49		99.5	14286	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.012	5.025	-0.013	1.000	77480	0.002247			21.9	
813.00 > 169.00	5.012	5.025	-0.013	1.000	14738		5.26(2.77-8.32)		52.0	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.012	5.029	-0.017	1.831	7282642	2.38		95.4	9848	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.366	5.377	-0.011	1.071	11396	0.005471			3.4	
913.00 > 169.00	5.366	5.377	-0.011	1.071	2256		5.05(2.55-7.64)		17.6	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_032.d

Injection Date: 18-Aug-2018 08:05:49

Instrument ID: A9

Lims ID: MB 320-240465/1-A

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 21

Worklist Smp#: 2

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

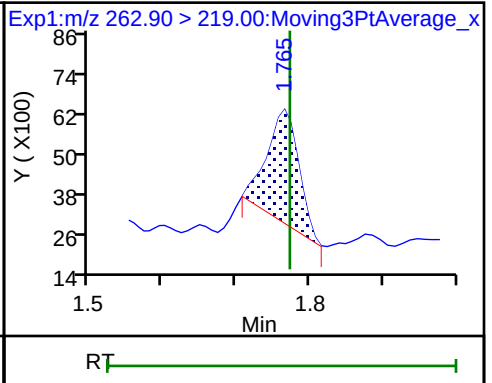
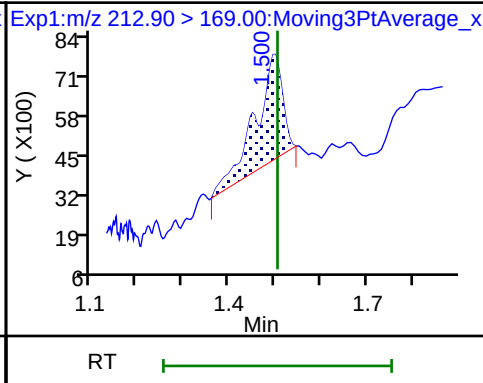
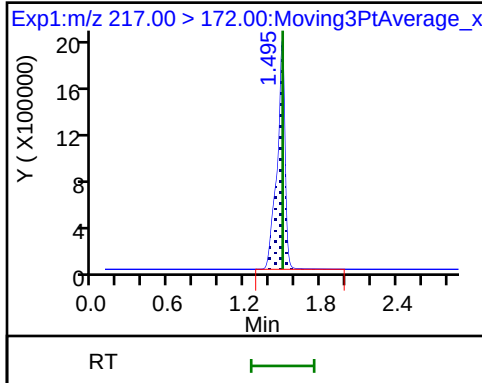
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

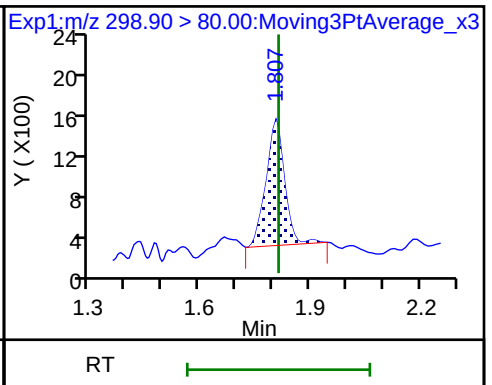
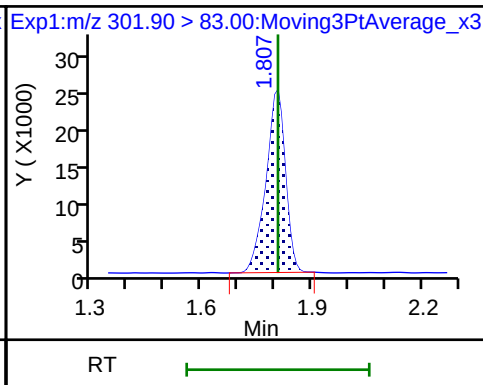
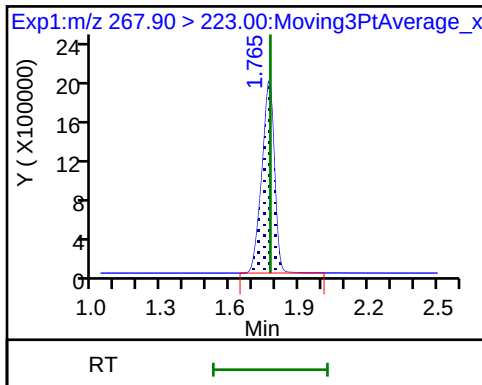
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

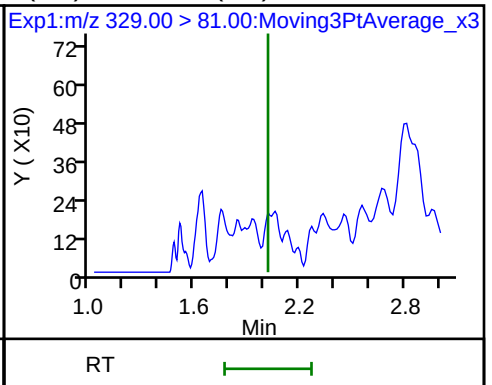
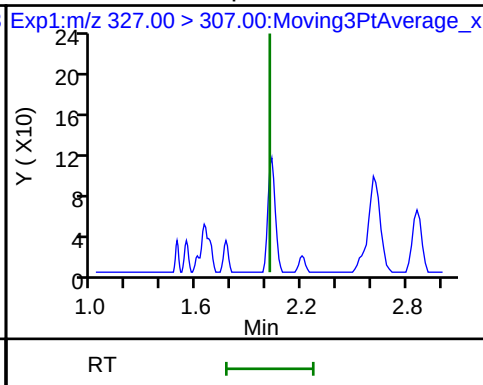
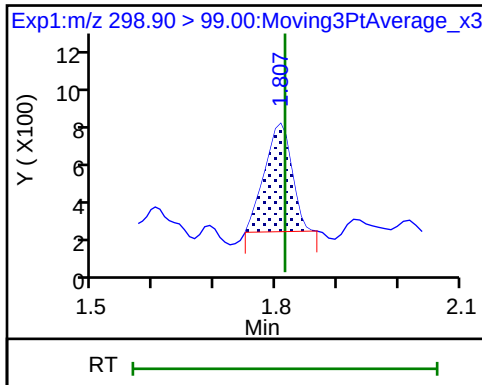
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate (ND)

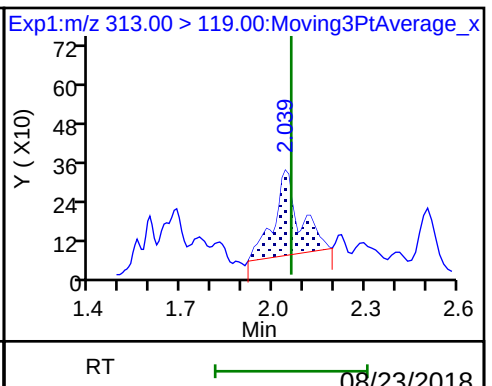
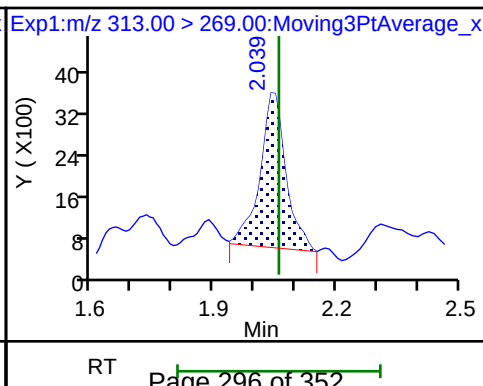
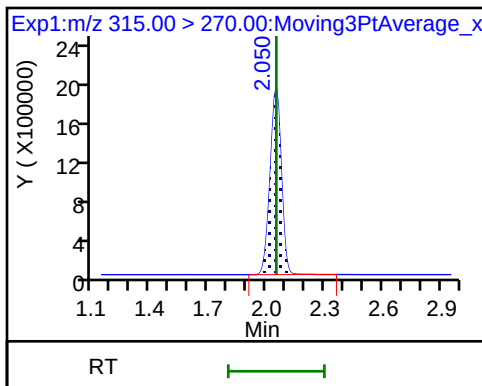
D 50 M2-4:2FTS (ND)



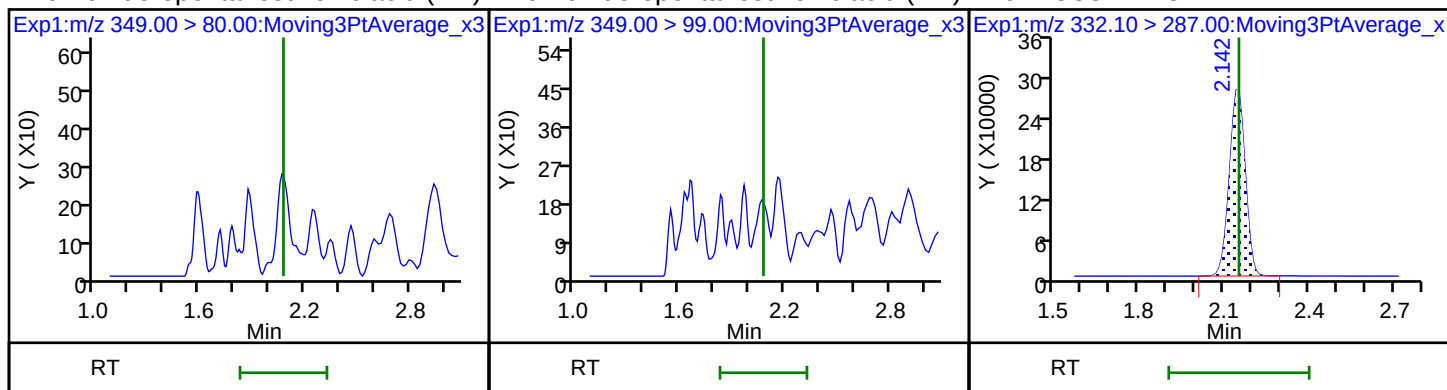
D 7 13C2 PFHxA

6 Perfluorohexanoic acid

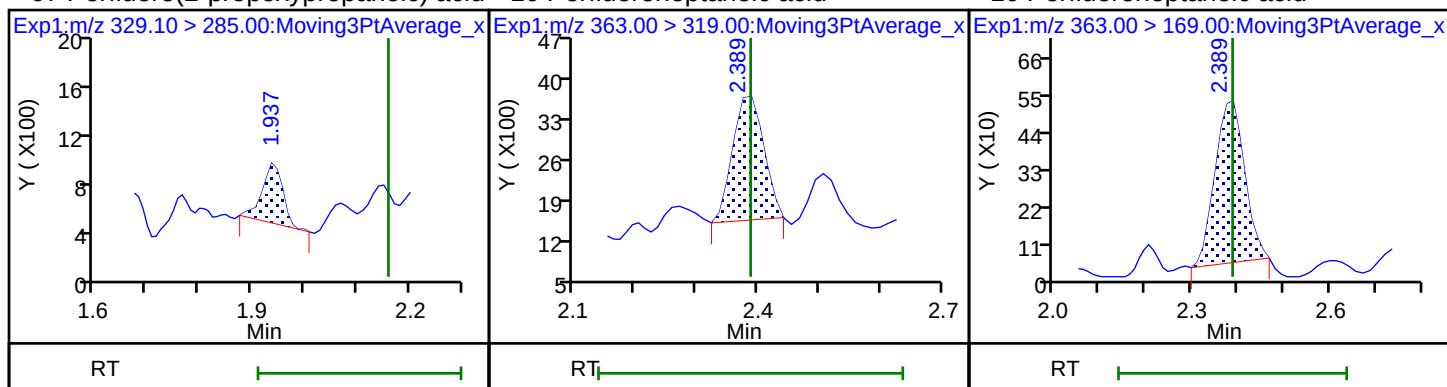
6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid (ND) 70 Perfluoropentanesulfonic acid (ND) D 64 13C3 HFPO-DA



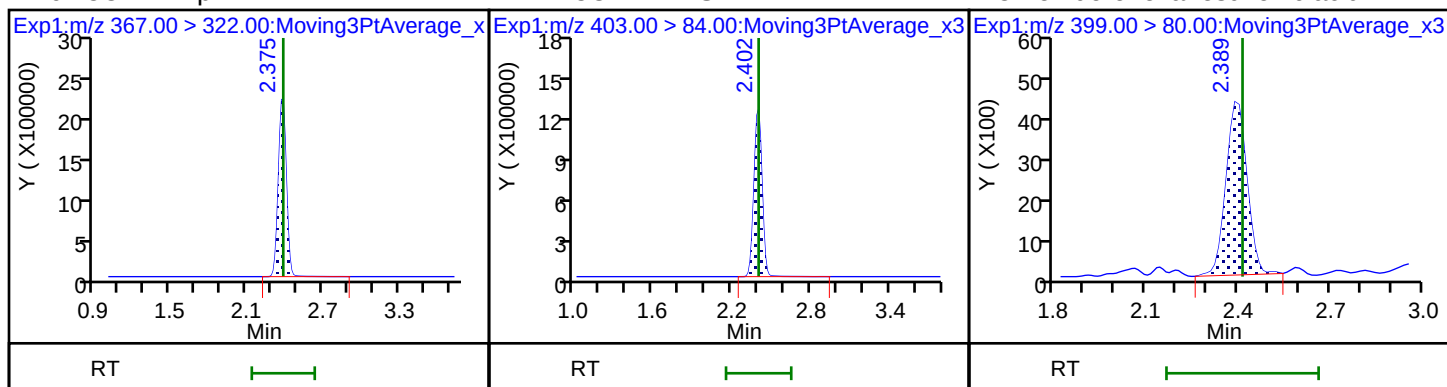
67 Perfluoro(2-propoxypropanoic) acid 10 Perfluoroheptanoic acid 10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

D 11 18O2 PFHxS

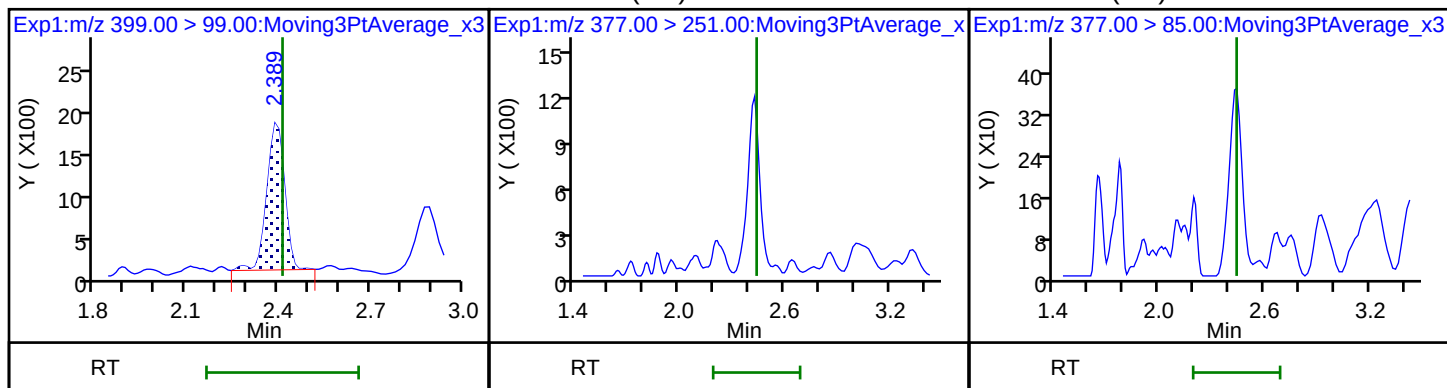
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

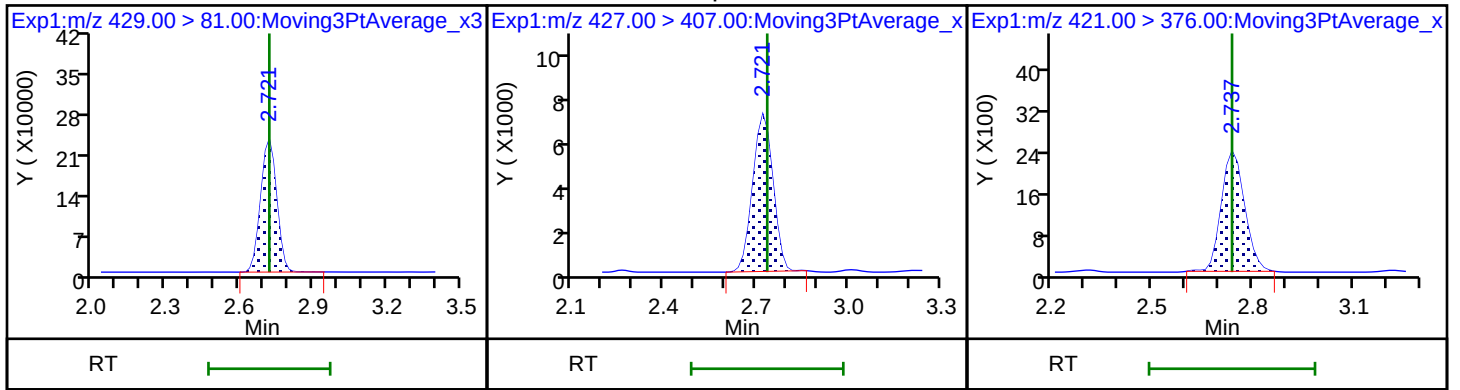
76 DONA (ND)

76 DONA (ND)



D 12 M2-6:2FTS

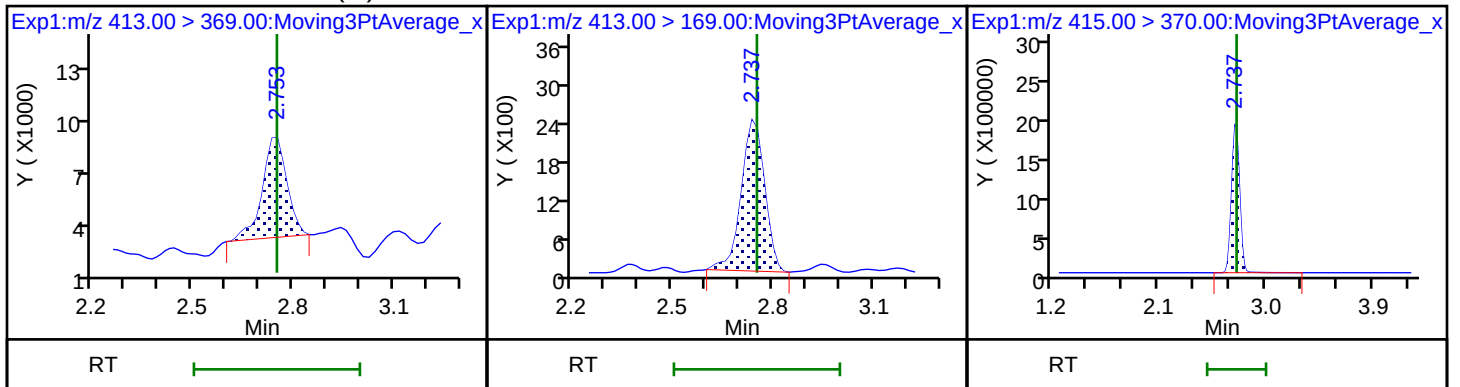
13 1H,1H,2H,2H-perfluorooctanesulfonD 73 13C8 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid

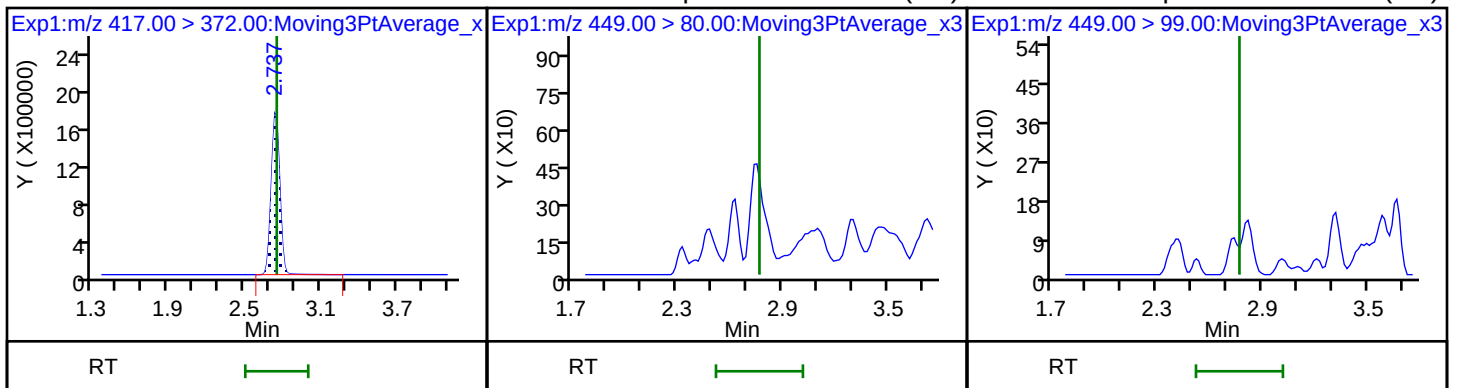
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid (ND)

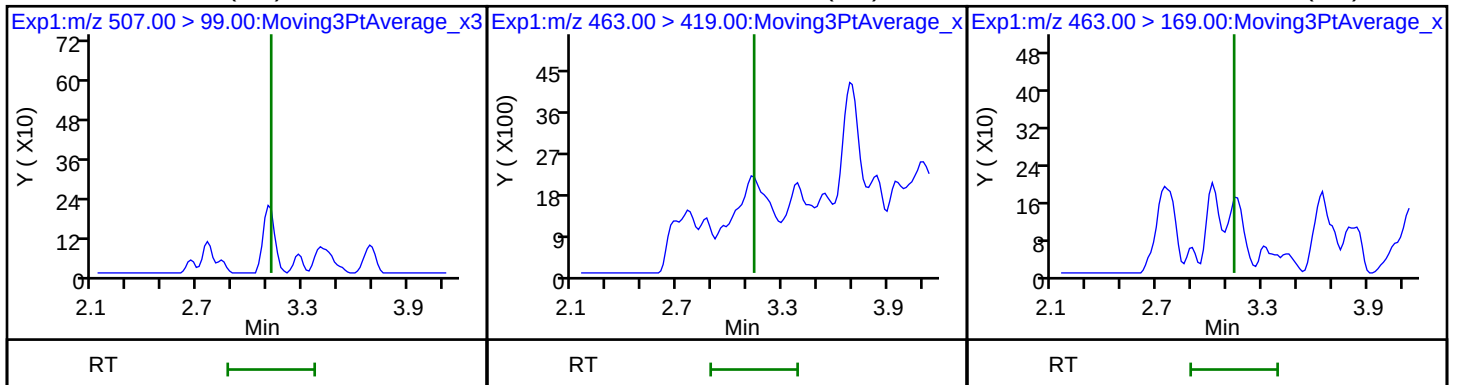
16 Perfluoroheptanesulfonic acid (ND)

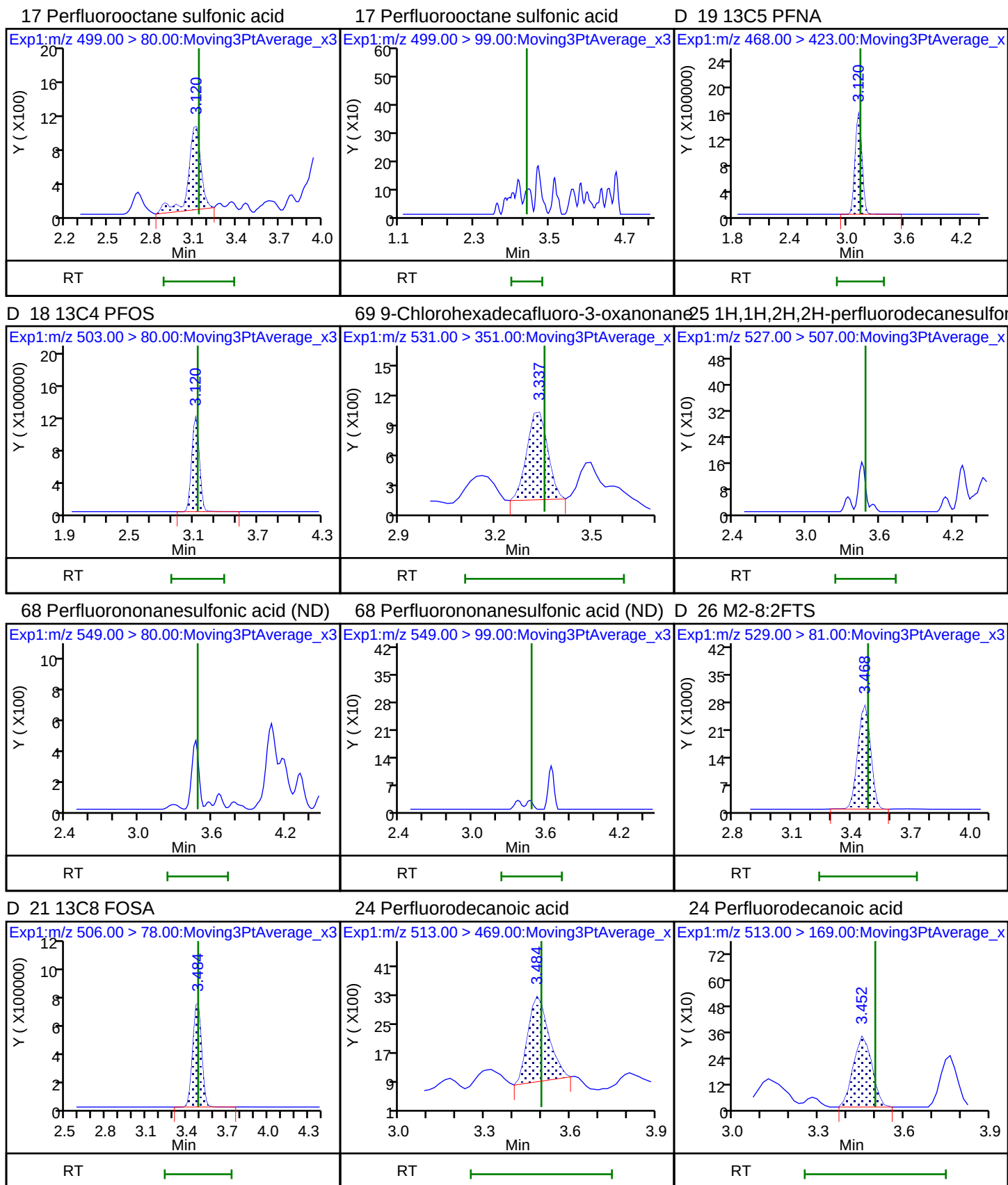


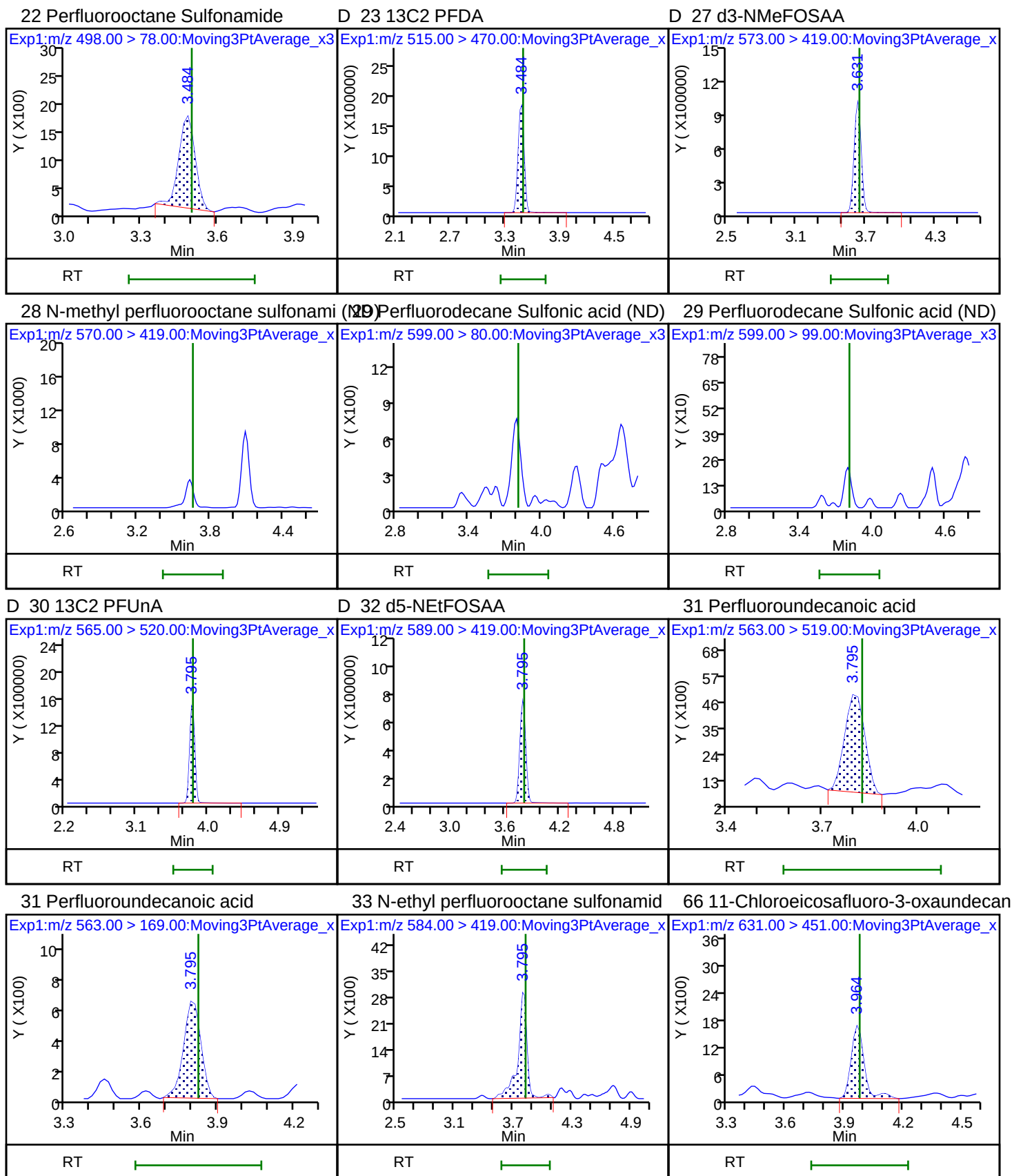
D 72 13C8 PFOS (ND)

20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)



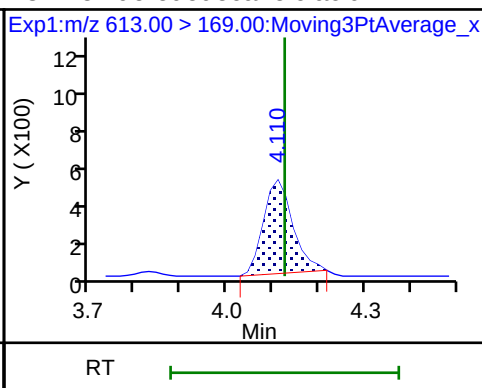
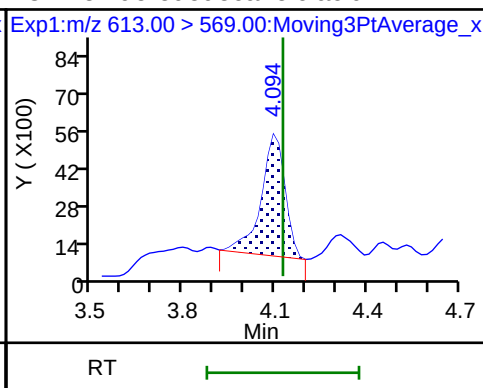
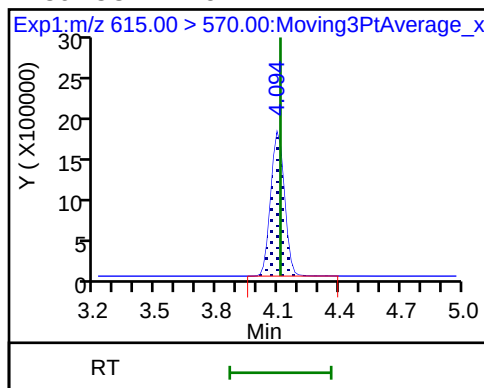




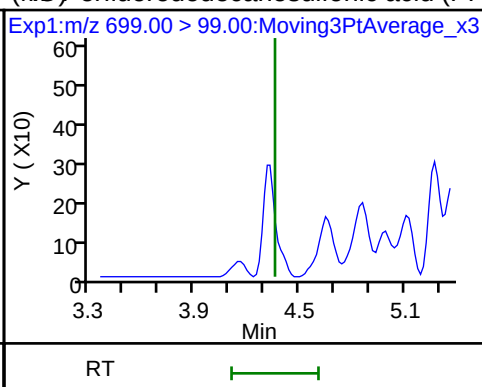
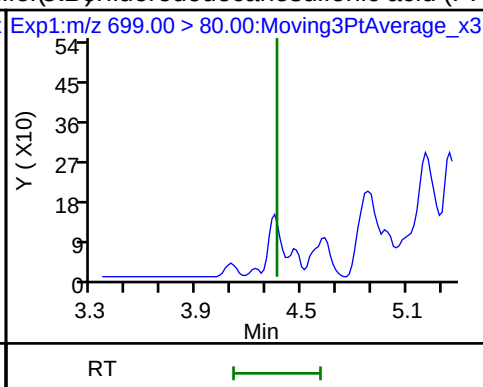
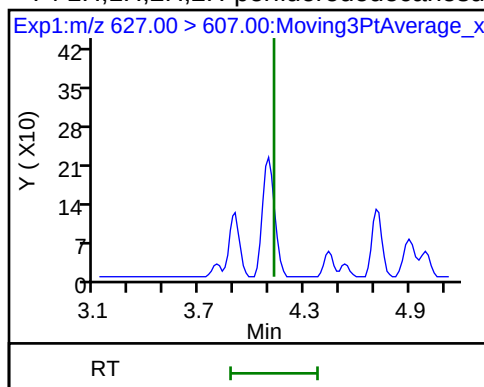
D 36 13C2 PFDaA

37 Perfluorododecanoic acid

37 Perfluorododecanoic acid



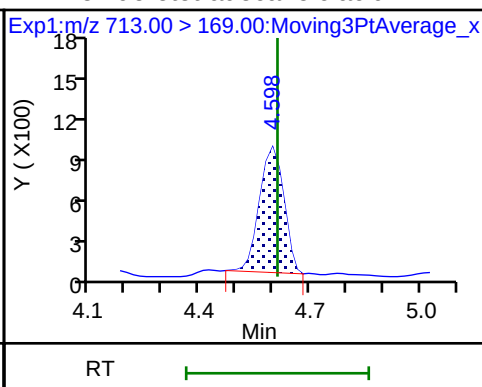
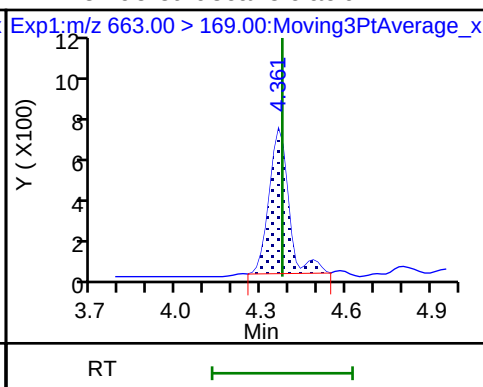
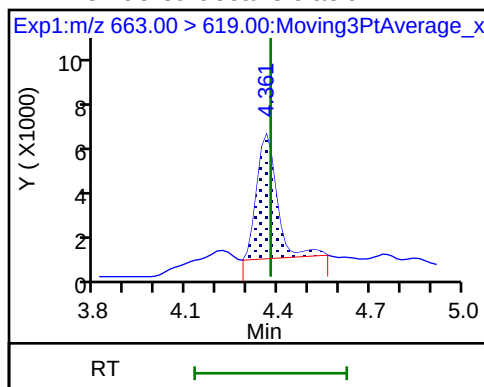
74 1H,1H,2H,2H-perfluorododecanesulfonic acid (PF (ND))



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

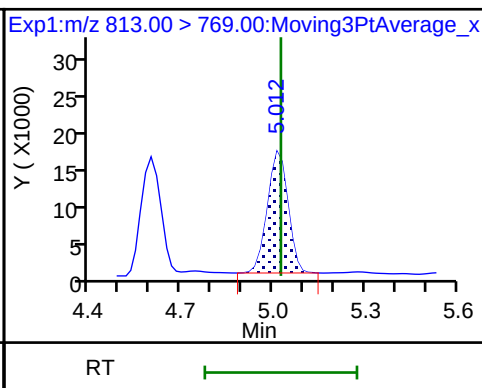
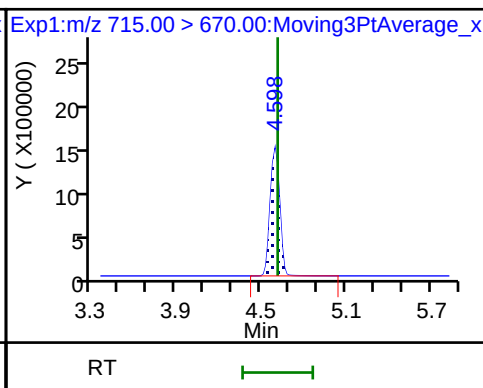
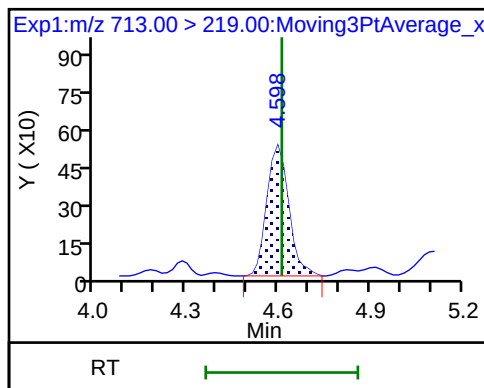
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

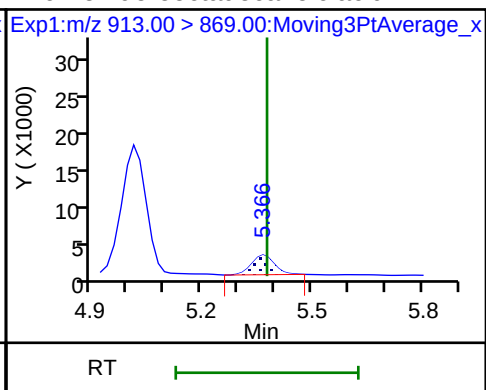
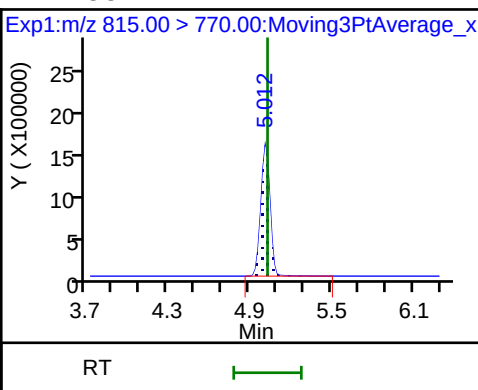
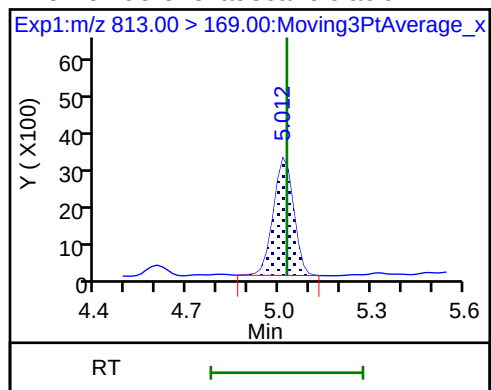
45 Perfluorohexadecanoic acid



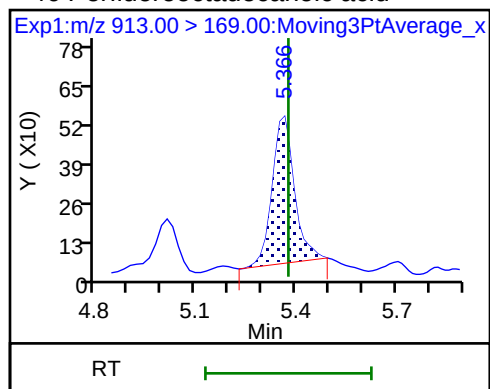
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento

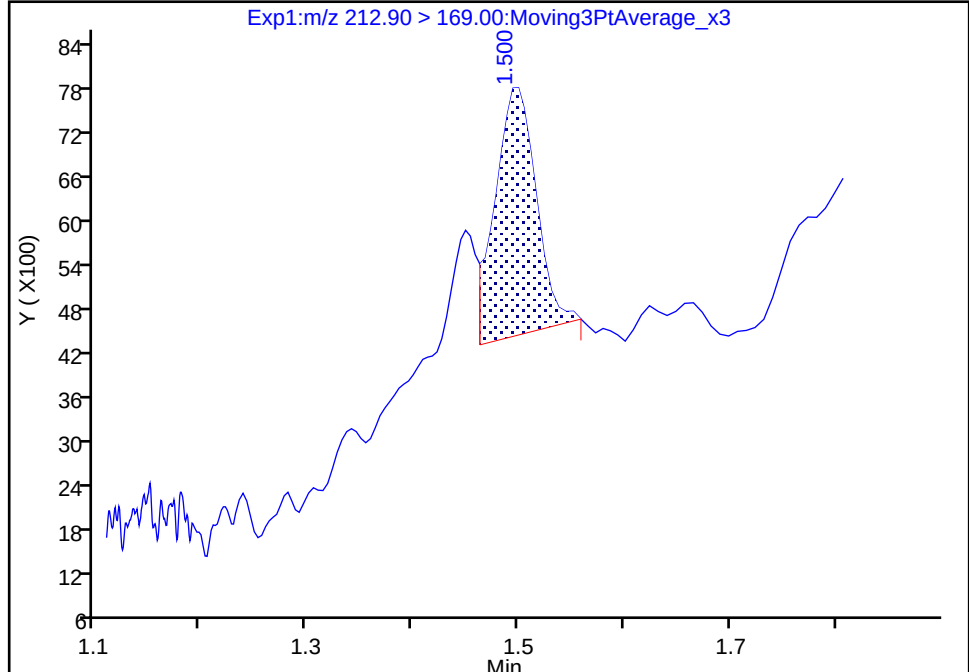
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_032.d
Injection Date: 18-Aug-2018 08:05:49 Instrument ID: A9
Lims ID: MB 320-240465/1-A
Client ID:
Operator ID: A9\Administrator ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

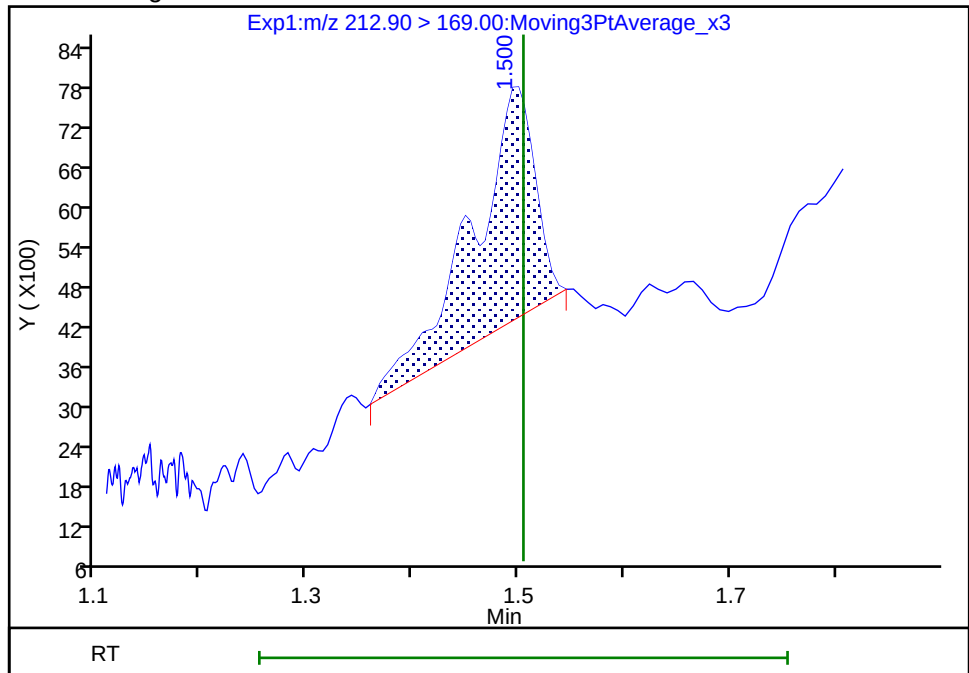
RT: 1.50
Area: 9021
Amount: 0.002962
Amount Units: ng/ml

Processing Integration Results



RT: 1.50
Area: 14423
Amount: 0.004735
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:47:55
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

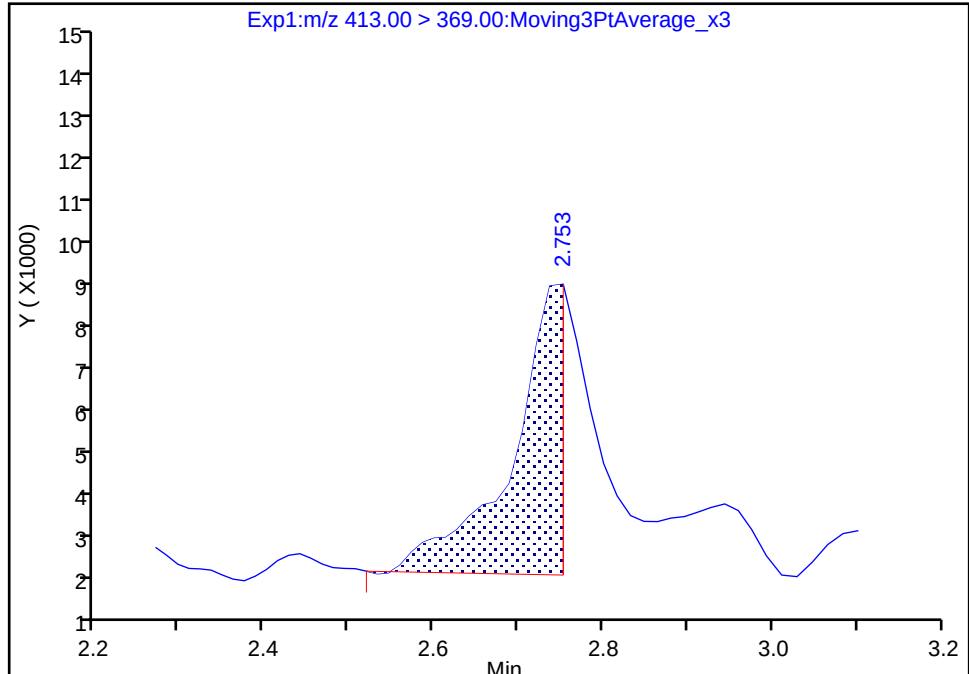
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_032.d
Injection Date: 18-Aug-2018 08:05:49 Instrument ID: A9
Lims ID: MB 320-240465/1-A
Client ID:
Operator ID: A9\Administrator ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

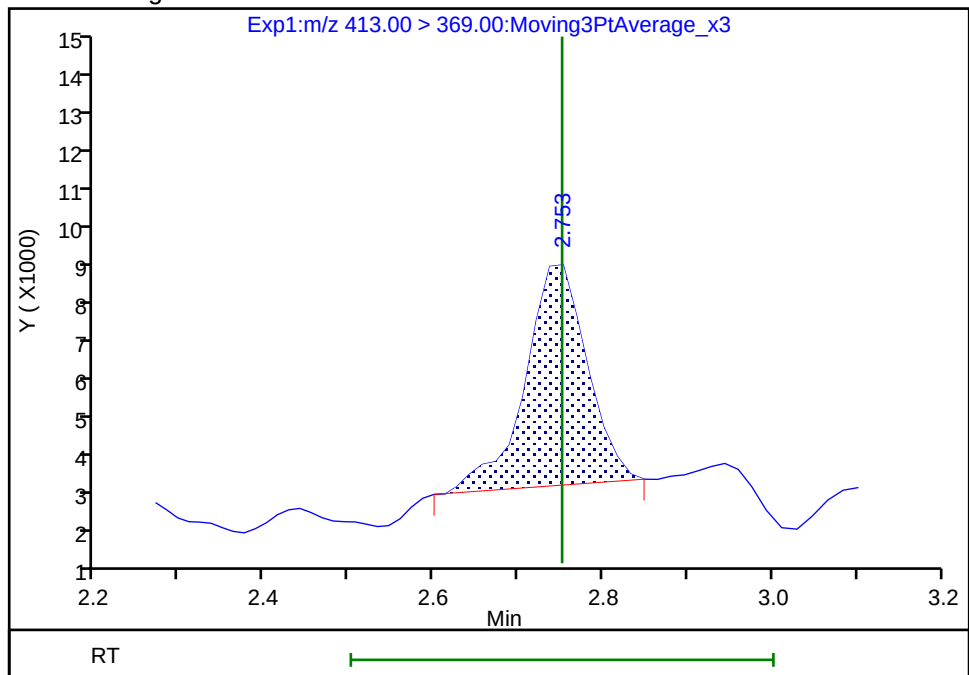
RT: 2.75
Area: 26742
Amount: 0.007447
Amount Units: ng/ml

Processing Integration Results



RT: 2.75
Area: 28263
Amount: 0.007870
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:48:12
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-240465/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_033.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>08/18/2018 08:13</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	40.0		2.0	0.35
2706-90-3	Perfluoropentanoic acid (PFPeA)	38.9		2.0	0.49
307-24-4	Perfluorohexanoic acid (PFHxA)	40.3		2.0	0.58
375-85-9	Perfluoroheptanoic acid (PFHpA)	39.3		2.0	0.25
335-67-1	Perfluorooctanoic acid (PFOA)	41.1		2.0	0.85
375-95-1	Perfluorononanoic acid (PFNA)	42.2		2.0	0.27
335-76-2	Perfluorodecanoic acid (PFDA)	42.3		2.0	0.31
2058-94-8	Perfluoroundecanoic acid (PFUnA)	42.7		2.0	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	40.7		2.0	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	40.6		2.0	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	40.4		2.0	0.29
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35.7		2.0	0.20
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.8		2.0	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	42.7		2.0	0.19
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	37.9		2.0	0.54
335-77-3	Perfluorodecanesulfonic acid (PFDS)	39.6		2.0	0.32
754-91-6	Perfluorooctane Sulfonamide (FOSA)	43.4		2.0	0.35
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	38.1		20	3.1
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	37.7		20	1.9
27619-97-2	6:2 FTS	34.9		20	2.0
39108-34-4	8:2 FTS	36.1		20	2.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-240465/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_033.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>08/18/2018 08:13</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	100		25-150
STL01893	13C5 PFPeA	101		25-150
STL00993	13C2 PFHxA	95		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	98		25-150
STL00995	13C5 PFNA	97		25-150
STL00996	13C2 PFDA	98		25-150
STL00997	13C2 PFUnA	97		25-150
STL00998	13C2 PFDoA	96		25-150
STL02116	13C2-PFTeDA	111		25-150
STL02337	13C3-PFBS	100		25-150
STL00994	18O2 PFHxS	102		25-150
STL00991	13C4 PFOS	99		25-150
STL01056	13C8 FOSA	99		25-150
STL02118	d3-NMeFOSAA	106		25-150
STL02117	d5-NEtFOSAA	113		25-150
STL02279	M2-6:2FTS	113		25-150
STL02280	M2-8:2FTS	122		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_033.d
 Lims ID: LCS 320-240465/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 18-Aug-2018 08:13:18 ALS Bottle#: 22 Worklist Smp#: 3
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-240465/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:48:24 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:49:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.500	-0.006	0.546	8272069	2.49		99.5	14113	
2 Perfluorobutyric acid										
212.90 > 169.00	1.499	1.505	-0.006	1.004	3128890	1.00		100	198	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.773	-0.008	1.000	2982464	0.9731		97.3	290	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.774	-0.010	0.645	7484266	2.53		101	13481	
D 47 13C3-PFBS										
301.90 > 83.00	1.806	1.807	-0.001	0.660	89181	2.32		99.7	510	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.806	1.814	-0.008	1.000	3570218	0.8935		101	3179	
298.90 > 99.00	1.806	1.814	-0.008	1.000	1203350		2.97(1.35-4.05)		1221	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.008	2.018	-0.010	1.112	775871	0.9692		104	3539	
D 7 13C2 PFHxA										
315.00 > 270.00	2.049	2.050	-0.001	0.749	7452171	2.38		95.3	6418	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.049	2.059	-0.010	1.000	2689069	1.01		101	742	
313.00 > 119.00	2.049	2.059	-0.010	1.000	205592		13.08(6.96-20.87)		552	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.069	2.079	-0.010	1.146	1801883	0.9490		101	2983	
349.00 > 99.00	2.069	2.079	-0.010	1.146	845278		2.13(1.15-3.45)		1486	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.152	-0.001	0.786	914701	2.25		90.1	1867	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.141	2.161	-0.020	0.995	623889	1.11		111	303	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.374	2.387	-0.013	1.000	3883150	0.9822		98.2	526	
363.00 > 169.00	2.374	2.387	-0.013	1.000	872878		4.45(2.17-6.52)		2292	
D 9 13C4-PFHpA										
367.00 > 322.00	2.374	2.388	-0.014	0.868	9344618	2.52		101	12574	
D 11 18O2 PFHxS										
403.00 > 84.00	2.387	2.402	-0.015	0.873	5490428	2.41		102	19561	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.387	2.414	-0.027	1.000	2428683	0.8200		90.1	2466	
399.00 > 99.00	2.387	2.414	-0.027	1.000	710613		3.42(1.90-5.70)		933	
76 DONA										
377.00 > 251.00	2.427	2.440	-0.013	0.778	6846157	1.07		113	14974	
377.00 > 85.00	2.427	2.440	-0.013	0.778	3003245		2.28(1.13-3.39)		4760	
D 12 M2-6:2FTS										
429.00 > 81.00	2.720	2.721	-0.001	0.994	917649	2.67		113	2039	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.720	2.736	-0.016	1.000	752188	0.8731		92.1	2101	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.736	2.751	-0.015	1.000	3752340	1.03		103	254	
413.00 > 169.00	2.736	2.751	-0.015	1.000	1337952		2.80(1.36-4.08)		1893	
* 62 13C2-PFOA										
415.00 > 370.00	2.736	2.751	-0.015		8682801	2.50			8933	
D 14 13C4 PFOA										
417.00 > 372.00	2.736	2.753	-0.017	1.000	8443327	2.46		98.2	10832	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.752	2.767	-0.015	0.882	2594426	1.07		112	2827	
449.00 > 99.00	2.752	2.767	-0.015	0.882	611510		4.24(1.84-5.53)		2190	
20 Perfluorononanoic acid										
463.00 > 419.00	3.119	3.137	-0.018	1.000	3329516	1.06		106	336	
463.00 > 169.00	3.119	3.137	-0.018	1.000	616833		5.40(2.68-8.03)		1145	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.119	3.137	-0.018	1.000	2398662	0.9486		102	1305	
499.00 > 99.00	3.119	3.137	-0.018	1.000	562379		4.27(2.04-6.12)		1541	
D 19 13C5 PFNA										
468.00 > 423.00	3.119	3.138	-0.019	1.140	7699832	2.42		96.6	9627	
D 18 13C4 PFOS										
503.00 > 80.00	3.119	3.138	-0.019	1.140	5769288	2.36		98.9	5153	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.321	3.353	-0.032	1.065	2811507	0.9696		104	3171	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.468	3.483	-0.015	1.000	824448	0.9021		94.2	1915	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.468	3.483	-0.015	1.112	1633070	0.99		103	1944	
549.00 > 99.00	3.452	3.483	-0.031	1.107	279580		5.84(3.02-9.05)		1181	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.483	-0.015	1.268	144550	2.92		122	525	
D 21 13C8 FOSA										
506.00 > 78.00	3.468	3.483	-0.015	1.268	3258721	2.48		99.1	8790	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.468	3.499	-0.031	1.000	3832627	1.06		106	575	
513.00 > 169.00	3.468	3.499	-0.031	1.000	258773		14.81(7.12-21.35)		695	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.468	3.499	-0.031	1.000	4150571	1.09		109	4851	
D 23 13C2 PFDA										
515.00 > 470.00	3.468	3.499	-0.031	1.268	8468986	2.45		98.0	10520	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.629	3.645	-0.016	1.327	3993715	2.66		106	6632	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.629	3.657	-0.028	1.000	1511160	0.9522		95.2	483	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.778	3.809	-0.031	1.211	2006179	0.99		103	1062	
599.00 > 99.00	3.778	3.809	-0.031	1.211	440309		4.56(2.14-6.43)		1090	
D 30 13C2 PFUnA										
565.00 > 520.00	3.794	3.811	-0.017	1.387	6966208	2.42		96.7	9998	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.794	3.811	-0.017	1.387	3209895	2.82		113	2119	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.794	3.825	-0.031	1.000	2576120	1.07		107	514	
563.00 > 169.00	3.794	3.825	-0.031	1.000	251994		10.22(5.24-15.72)		749	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.794	3.825	-0.031	1.000	1189480	0.9422		94.2	2380	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.962	3.978	-0.016	1.270	3359958	0.9817		104	7483	
D 36 13C2 PFDaA										
615.00 > 570.00	4.092	4.110	-0.018	1.496	8057267	2.41		96.4	4179	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.092	4.125	-0.033	1.000	3356903	1.02		102	723	
613.00 > 169.00	4.092	4.125	-0.033	1.000	353984		9.48(4.68-14.05)		775	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.092	4.125	-0.033	1.180	552442	0.9305		96.5	1870	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.329	4.359	-0.030	1.388	221553	0.9225		95.3	499	
699.00 > 99.00	4.329	4.359	-0.030	1.388	389342		0.57(0.28-0.83)		1625	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.360	4.375	-0.015	1.065	2681682	1.02		102	917	
663.00 > 169.00	4.360	4.375	-0.015	1.065	452464		5.93(3.09-9.27)		1269	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.594	4.611	-0.017	1.000	491102	1.01		101	2074	
713.00 > 219.00	4.594	4.611	-0.017	1.000	298115		1.65(0.70-2.09)		1678	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.594	4.616	-0.022	1.679	7474486	2.76		111	16766	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.008	5.025	-0.017	1.000	2761873	1.08		108	905	
813.00 > 169.00	5.008	5.025	-0.017	1.000	471501		5.86(2.77-8.32)		1498	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.008	5.029	-0.021	1.831	6909941	2.33		93.4	10723	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.362	5.377	-0.015	1.071	1904645	0.9637		96.4	481	
913.00 > 169.00	5.348	5.377	-0.029	1.068	355655		5.36(2.55-7.64)		1332	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_033.d

Injection Date: 18-Aug-2018 08:13:18

Instrument ID: A9

Lims ID: LCS 320-240465/2-A

Client ID:

Operator ID: A9\Administrator

ALS Bottle#: 22

Worklist Smp#: 3

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

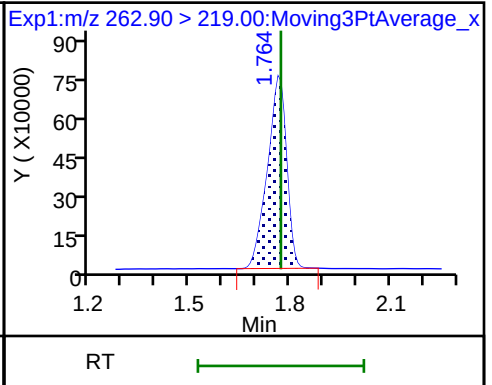
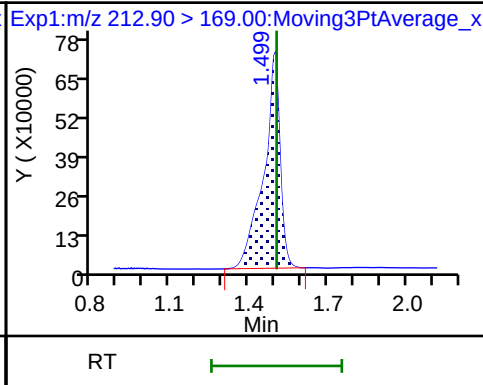
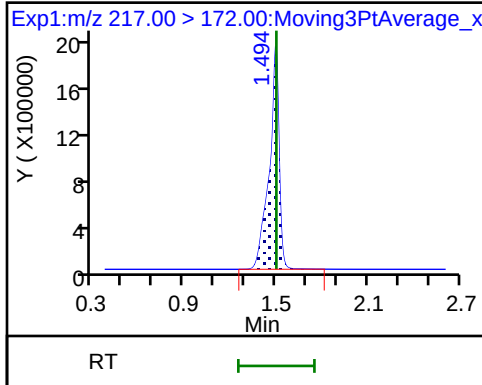
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Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

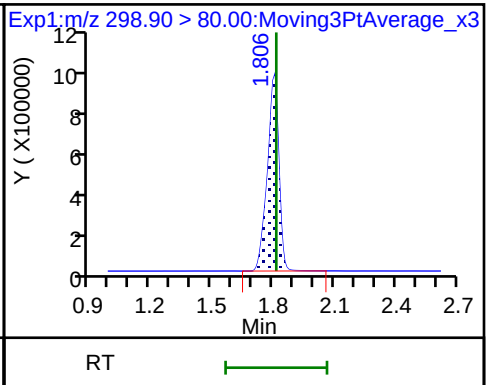
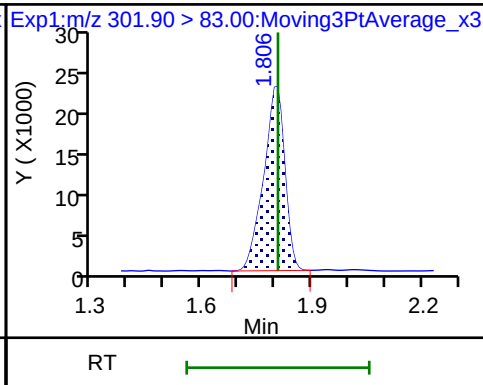
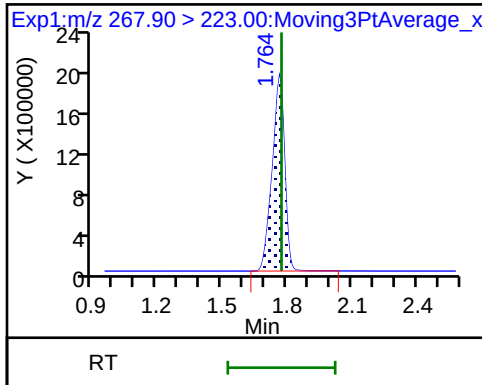
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

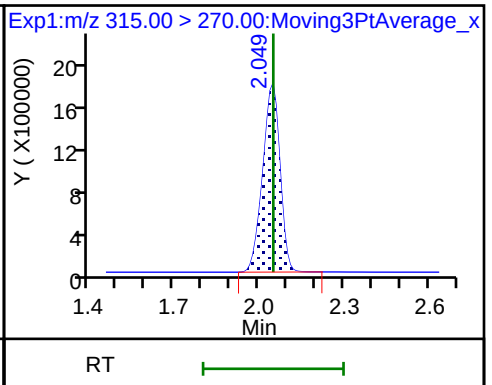
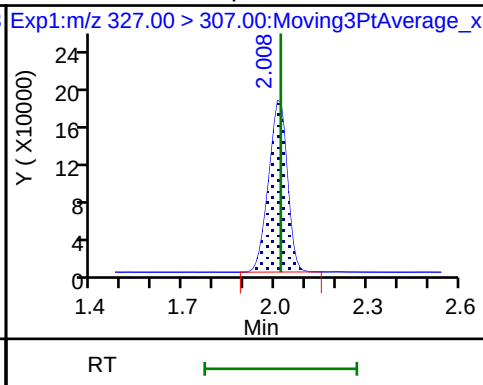
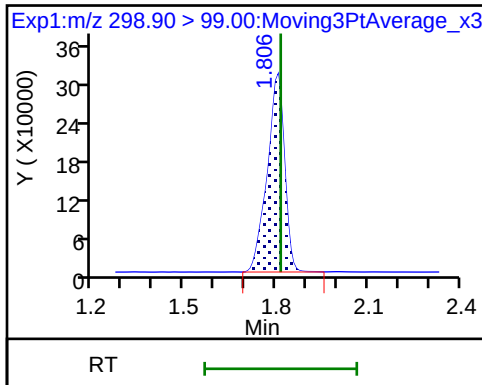
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

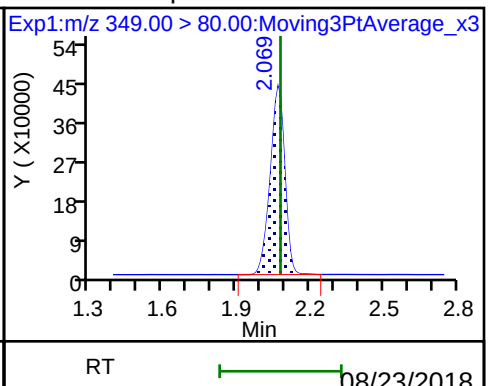
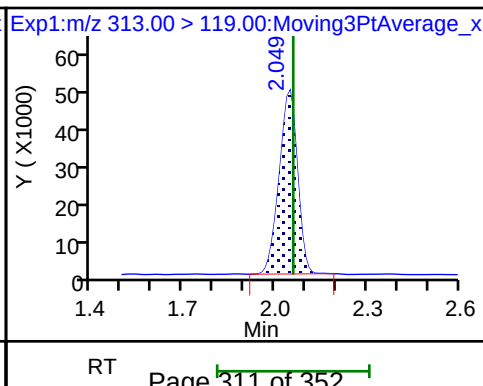
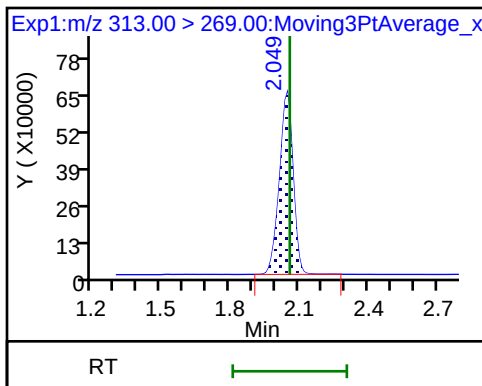
D 7 13C2 PFHxA

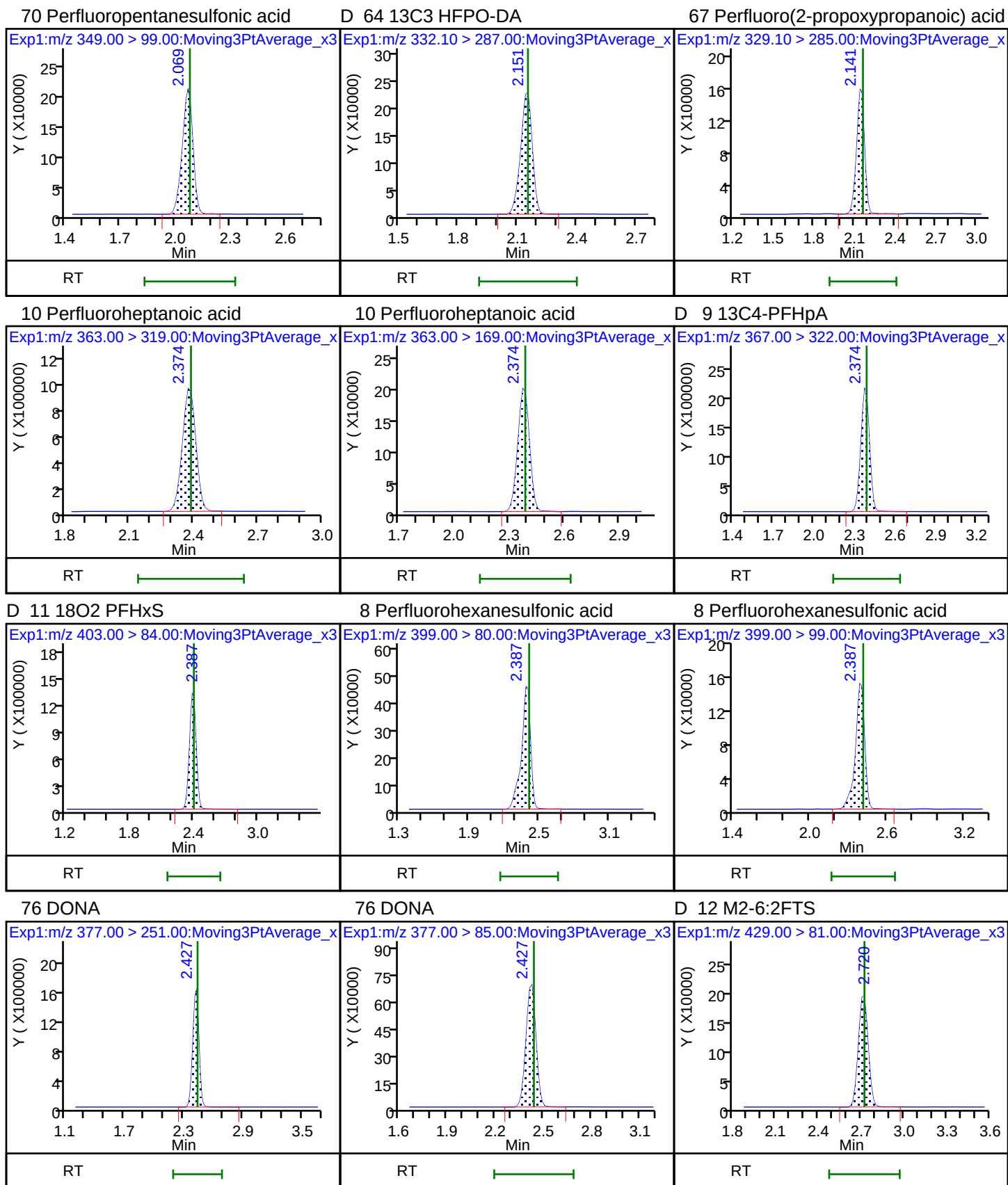


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

70 Perfluoropentanesulfonic acid

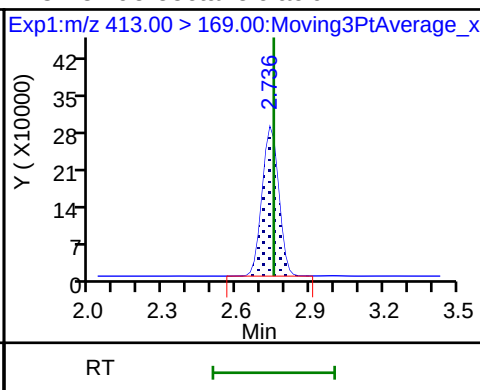
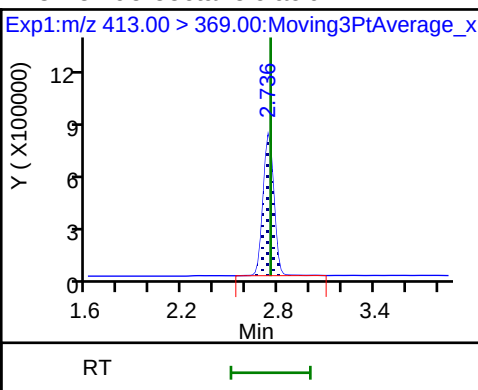
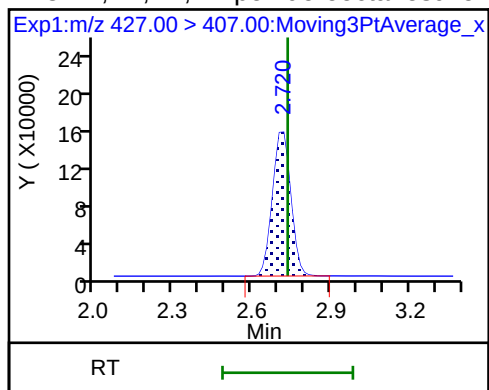




13 1H,1H,2H,2H-perfluorooctanesulfonyl

15 Perfluorooctanoic acid

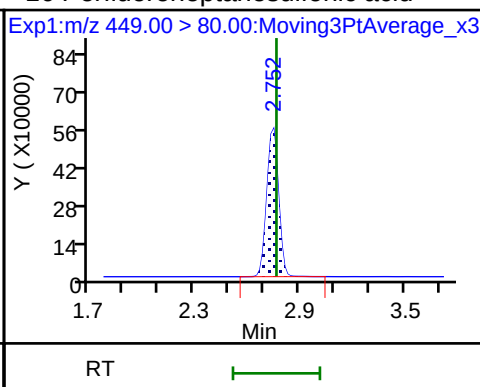
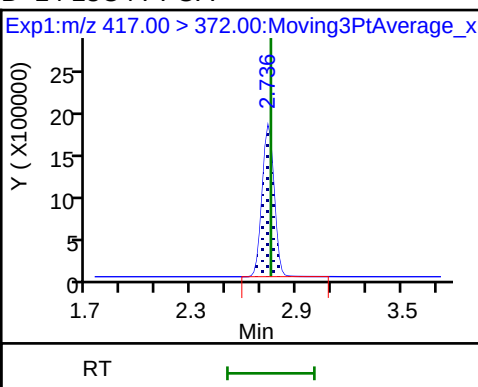
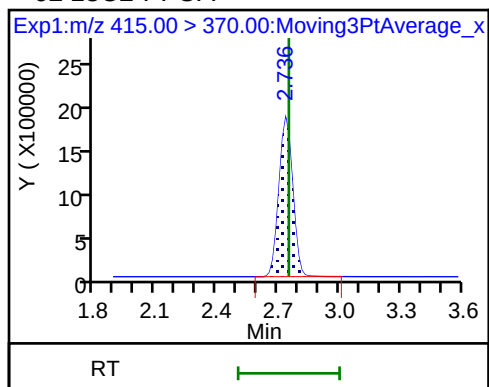
15 Perfluorooctanoic acid



* 62 13C2-PFOA

D 14 13C4 PFOA

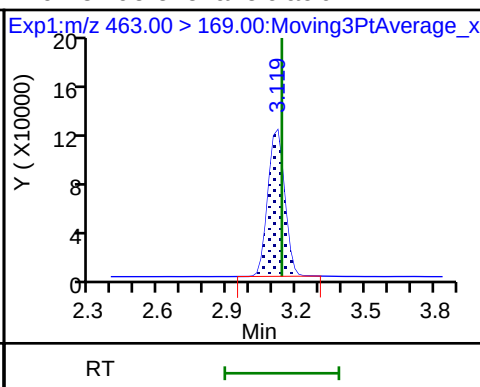
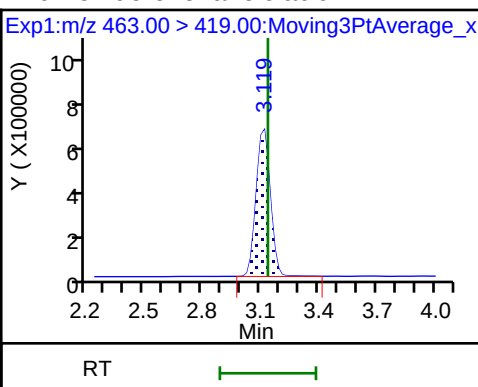
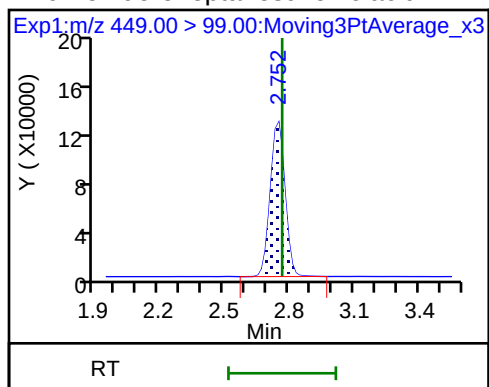
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

20 Perfluorononanoic acid

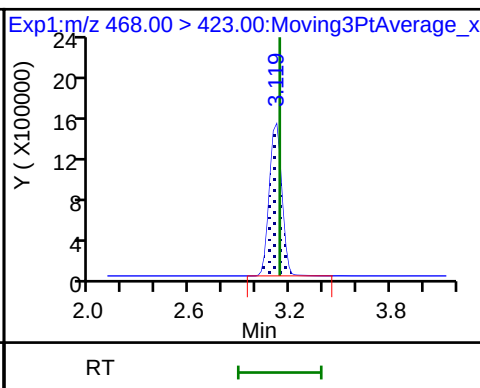
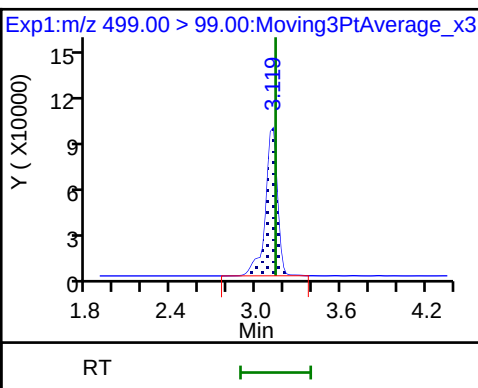
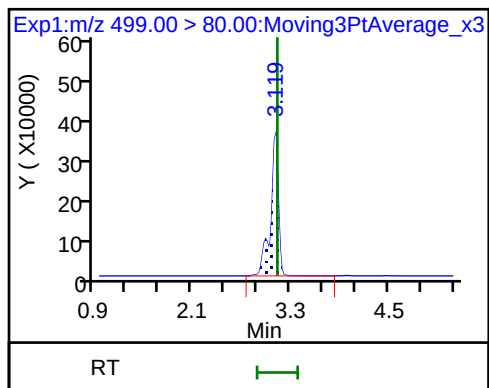
20 Perfluorononanoic acid



17 Perfluorooctane sulfonic acid

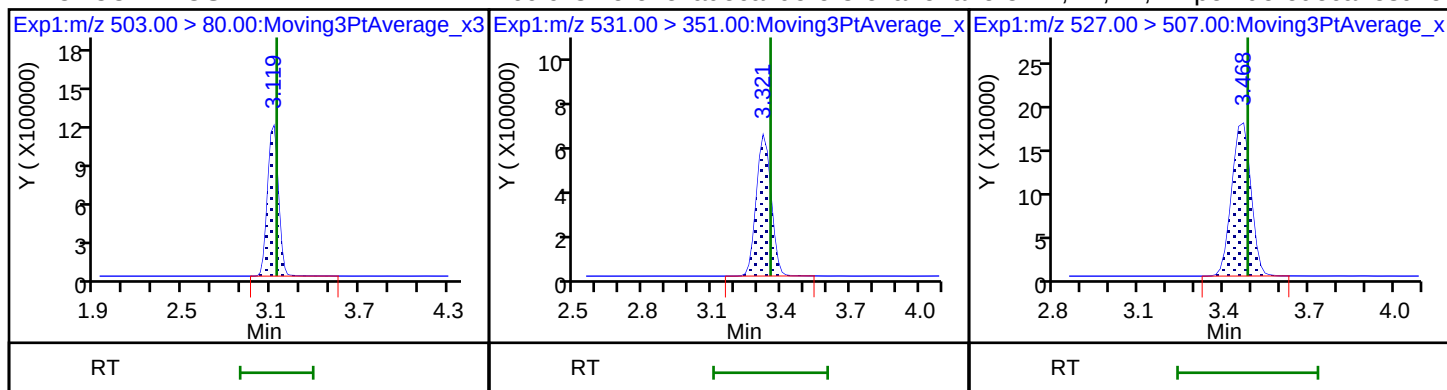
17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA



D 18 13C4 PFOS

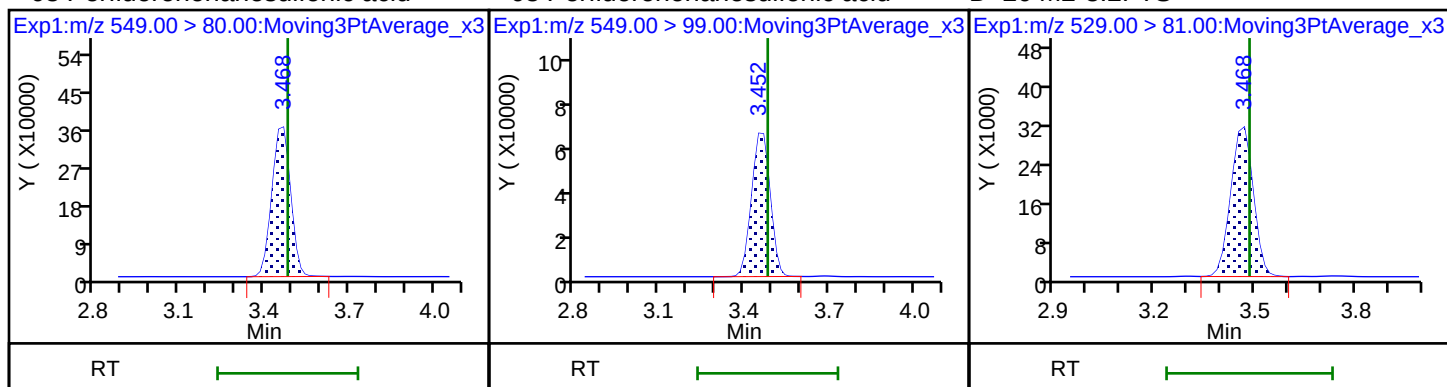
69 9-Chlorohexadecafluoro-3-oxanonan-25 1H,1H,2H,2H-perfluorodecanesulfoni



68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid

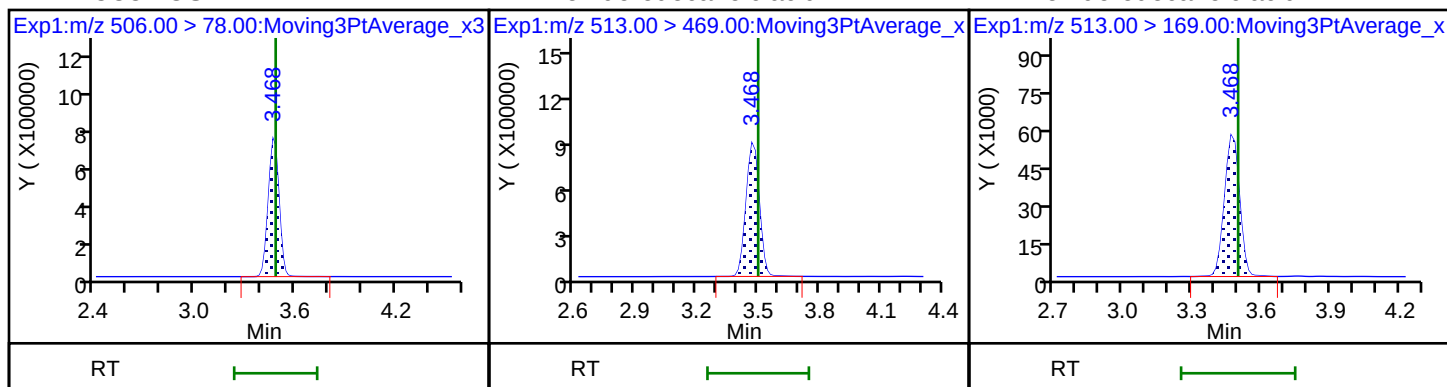
D 26 M2-8:2FTS



D 21 13C8 FOSA

24 Perfluorodecanoic acid

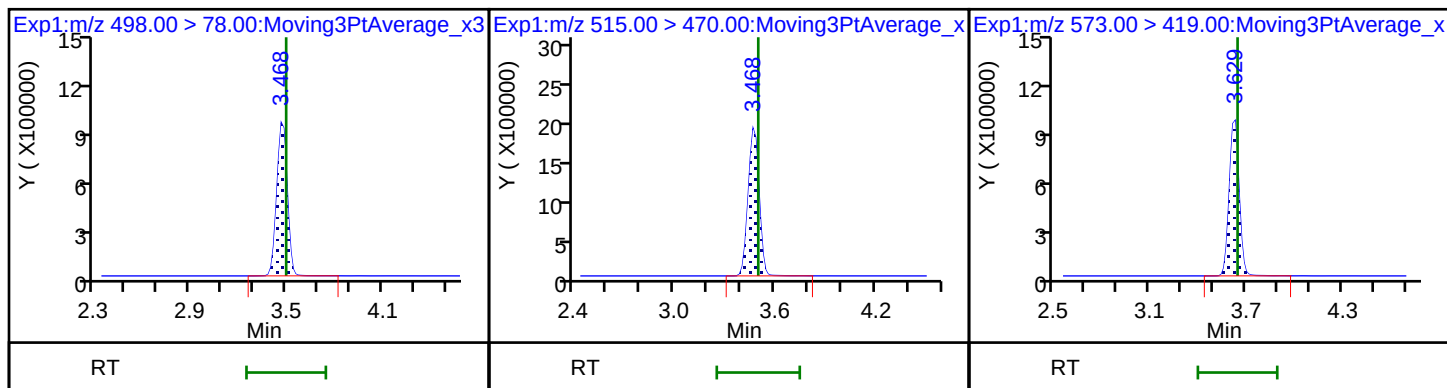
24 Perfluorodecanoic acid



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

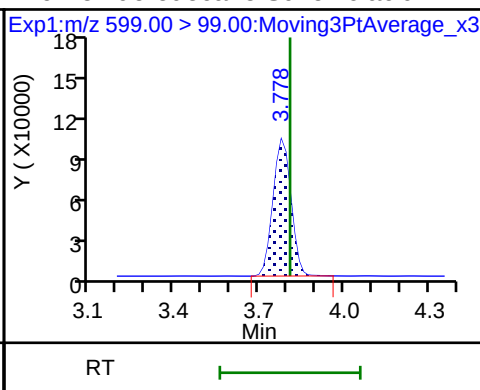
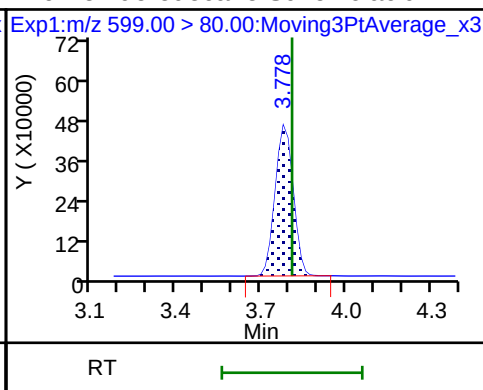
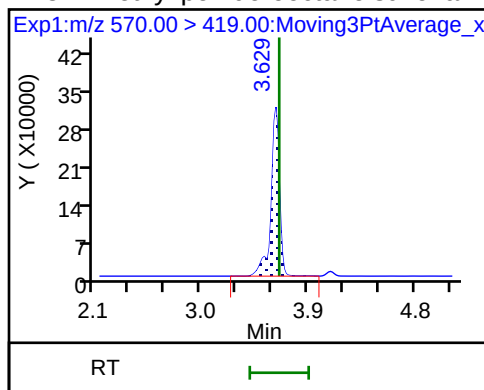
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

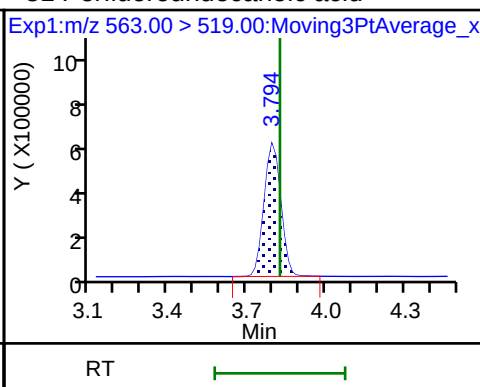
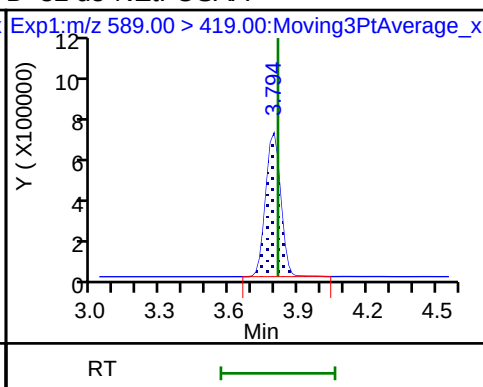
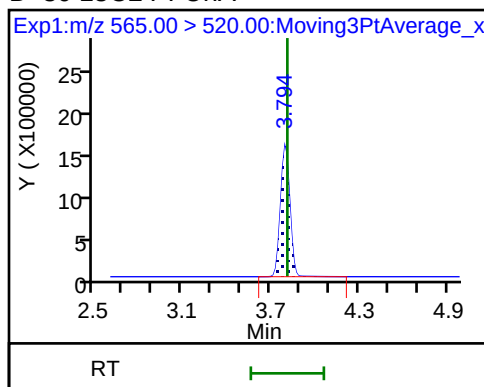
29 Perfluorodecane Sulfonic acid



D 30 13C2 PFUnA

D 32 d5-NEtFOSAA

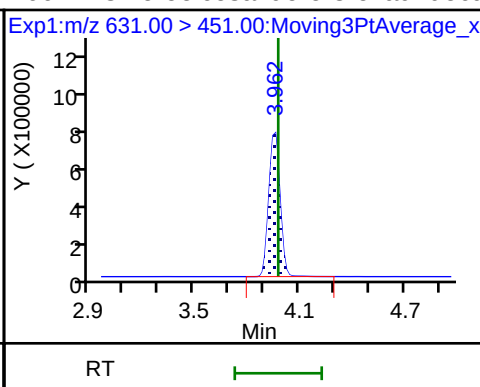
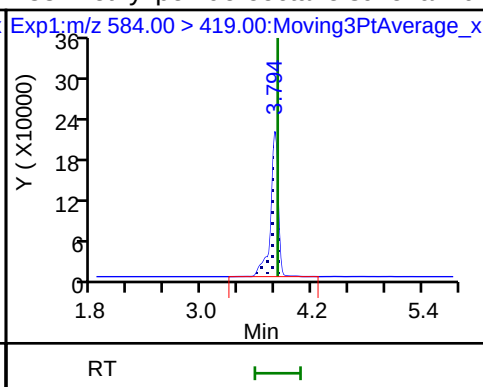
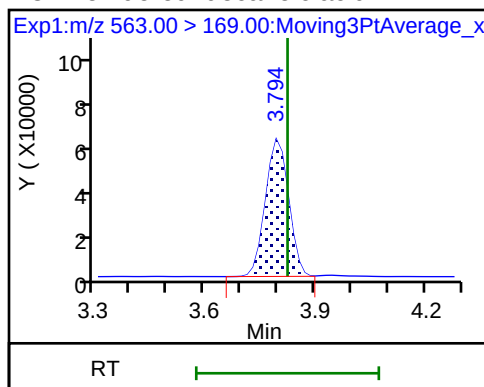
31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

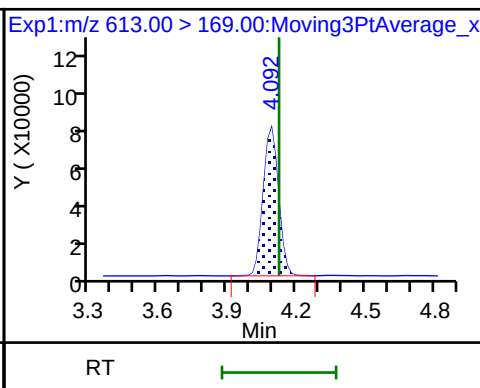
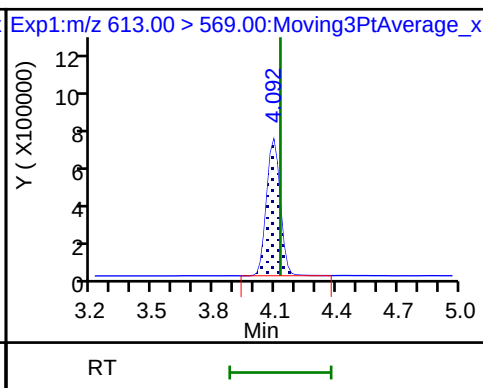
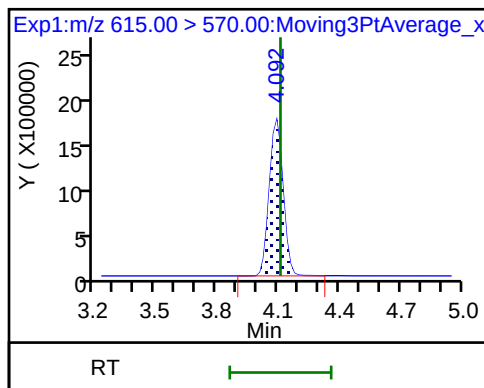
66 11-Chloroeicosafluoro-3-oxaundecan



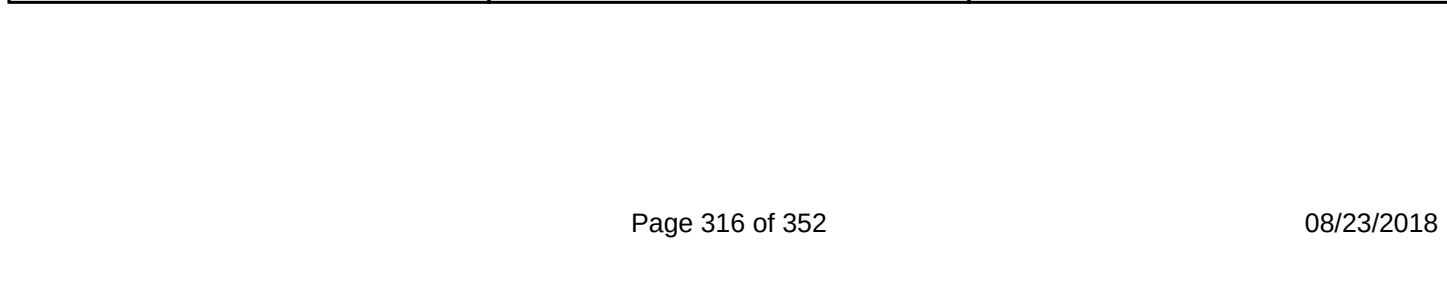
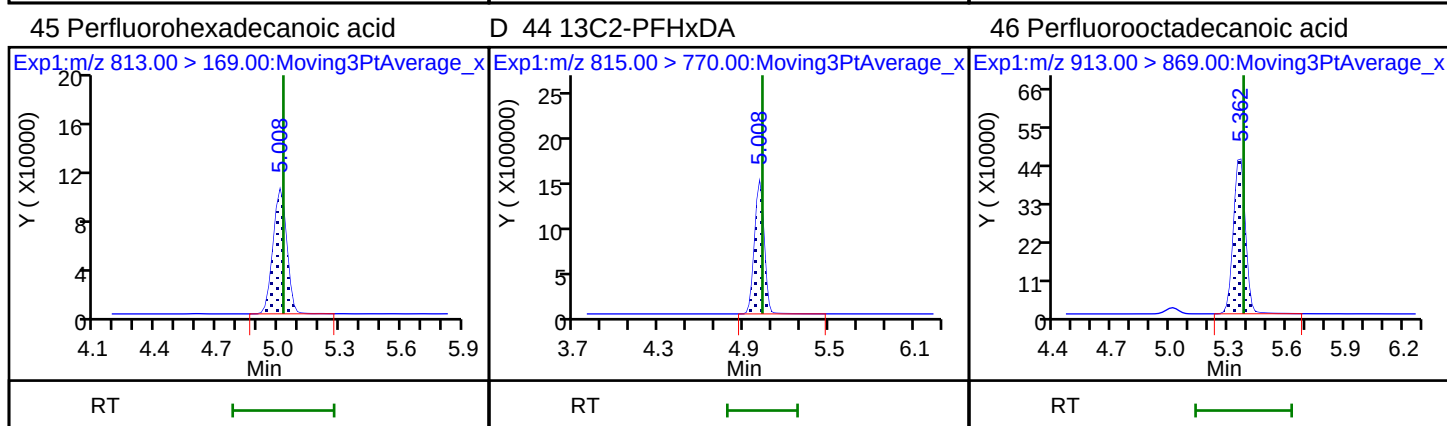
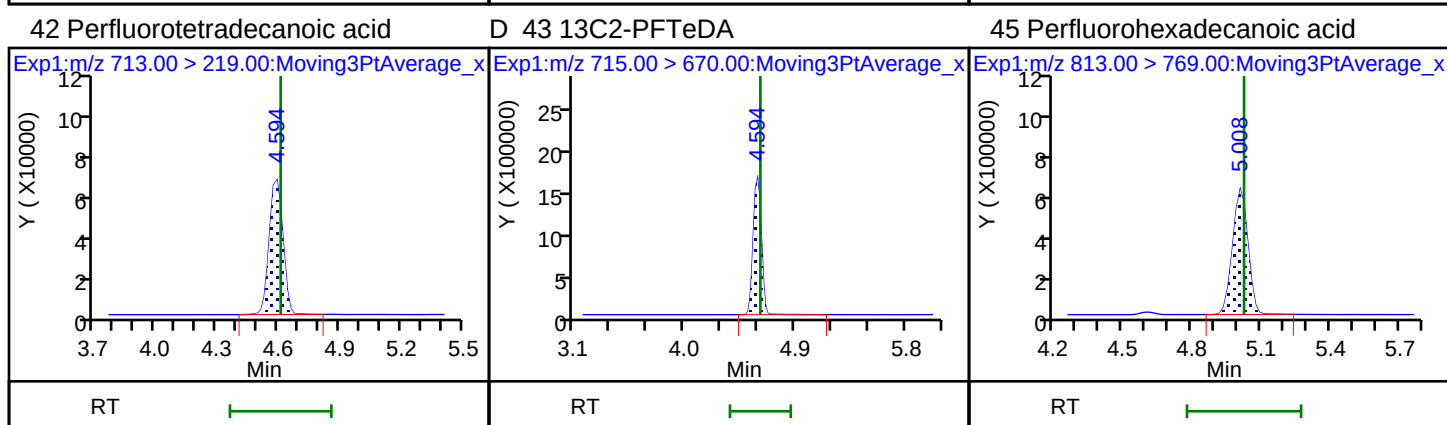
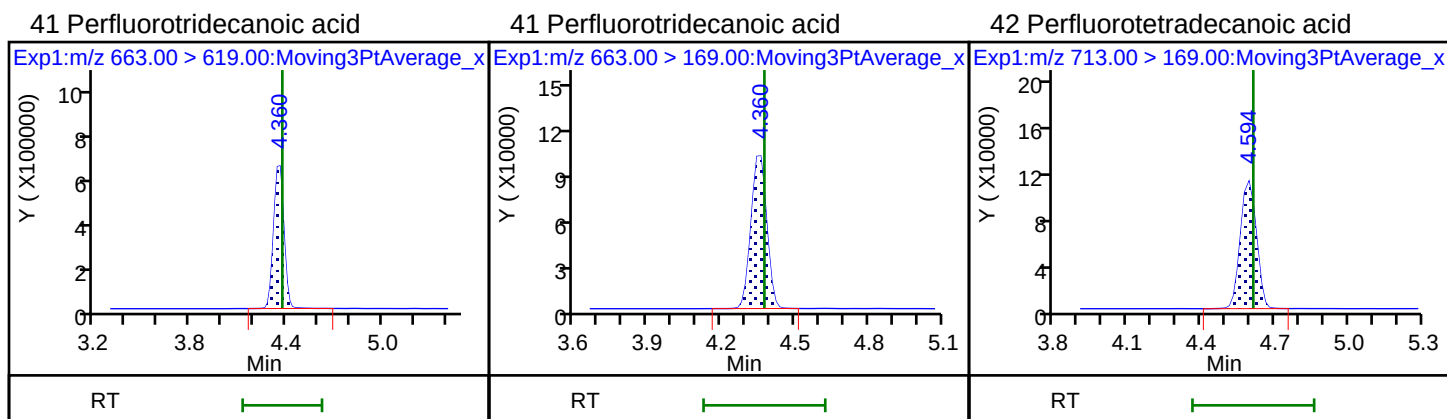
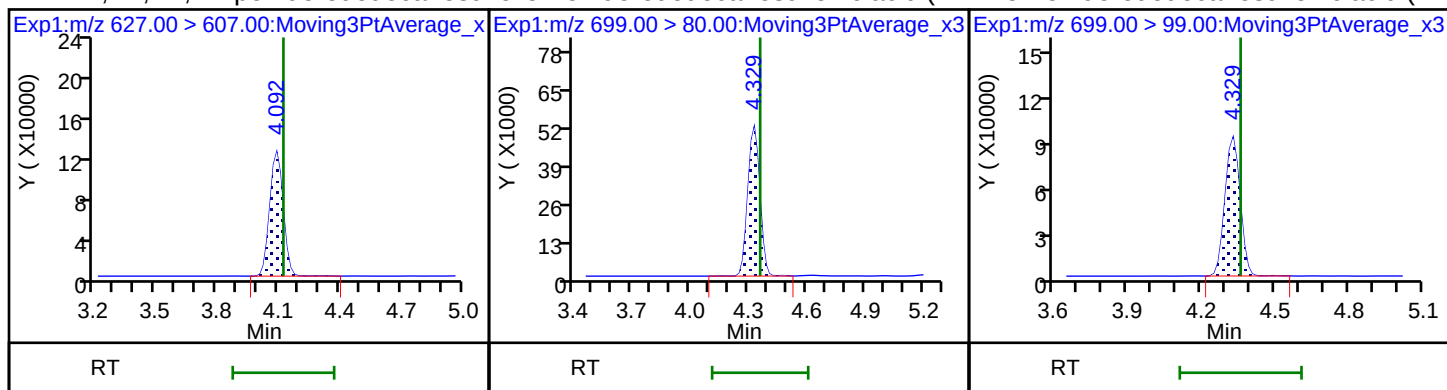
D 36 13C2 PFDaA

37 Perfluorododecanoic acid

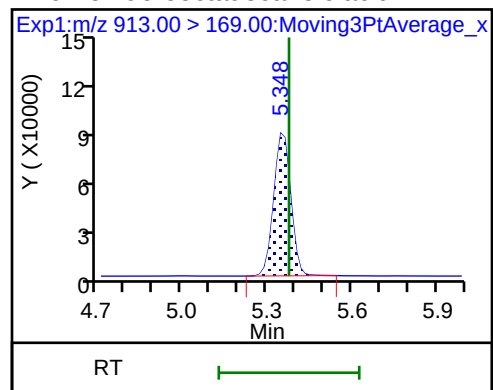
37 Perfluorododecanoic acid



74 1H,1H,2H,2H-perfluorododecanesulfo75 Perfluorododecanesulfonic acid (PF 75 Perfluorododecanesulfonic acid (PF



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-12 MS</u>	Lab Sample ID: <u>320-42105-1 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_035.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>315.2 (mL)</u>	Date Analyzed: <u>08/18/2018 08:28</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	32.3		1.6	0.28
2706-90-3	Perfluoropentanoic acid (PFPeA)	30.9		1.6	0.39
307-24-4	Perfluorohexanoic acid (PFHxA)	29.3		1.6	0.46
375-85-9	Perfluoroheptanoic acid (PFHpA)	29.6		1.6	0.20
335-67-1	Perfluorooctanoic acid (PFOA)	32.0		1.6	0.67
375-95-1	Perfluorononanoic acid (PFNA)	33.5		1.6	0.21
335-76-2	Perfluorodecanoic acid (PFDA)	31.6		1.6	0.25
2058-94-8	Perfluoroundecanoic acid (PFUnA)	31.5		1.6	0.87
307-55-1	Perfluorododecanoic acid (PFDoA)	28.5		1.6	0.44
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	26.2		1.6	1.0
376-06-7	Perfluorotetradecanoic acid (PFTeA)	26.1		1.6	0.23
375-73-5	Perfluorobutanesulfonic acid (PFBS)	27.2		1.6	0.16
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	29.1		1.6	0.13
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	34.3		1.6	0.15
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	29.2		1.6	0.43
335-77-3	Perfluorodecanesulfonic acid (PFDS)	27.2		1.6	0.25
754-91-6	Perfluorooctane Sulfonamide (FOSA)	32.5		1.6	0.28
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	30.5		16	2.5
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	27.5		16	1.5
27619-97-2	6:2 FTS	27.5		16	1.6
39108-34-4	8:2 FTS	33.3		16	1.6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-12 MS</u>	Lab Sample ID: <u>320-42105-1 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_035.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>315.2 (mL)</u>	Date Analyzed: <u>08/18/2018 08:28</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	37		25-150
STL01893	13C5 PFPeA	38		25-150
STL00993	13C2 PFHxA	41		25-150
STL01892	13C4-PFHpA	39		25-150
STL00990	13C4 PFOA	36		25-150
STL00995	13C5 PFNA	34		25-150
STL00996	13C2 PFDA	34		25-150
STL00997	13C2 PFUnA	32		25-150
STL00998	13C2 PFDoA	31		25-150
STL02116	13C2-PFTeDA	26		25-150
STL02337	13C3-PFBS	39		25-150
STL00994	18O2 PFHxS	36		25-150
STL00991	13C4 PFOS	32		25-150
STL01056	13C8 FOSA	32		25-150
STL02118	d3-NMeFOSAA	38		25-150
STL02117	d5-NEtFOSAA	42		25-150
STL02279	M2-6:2FTS	44		25-150
STL02280	M2-8:2FTS	36		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_035.d
 Lims ID: 320-42105-A-1-B MS
 Client ID: MW-12
 Sample Type: MS
 Inject. Date: 18-Aug-2018 08:28:24 ALS Bottle#: 24 Worklist Smp#: 5
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-1-b ms
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:52:06 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 22-Aug-2018 07:52:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.494	1.500	-0.006	0.546	3256042	0.9342		37.4	6355	
2 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.505	-0.011	1.000	1255060	1.02		102	71.6	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.764	1.773	-0.008	1.000	1190112	0.9754		97.5	73.2	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.774	-0.010	0.645	2979618	0.9591		38.4	6763	
D 47 13C3-PFBS										
301.90 > 83.00	1.797	1.807	-0.010	0.657	36177	0.8970		38.6	196	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.805	1.814	-0.009	1.005	1387917	0.8562		96.9	384	M
298.90 > 99.00	1.805	1.814	-0.009	1.005	477572		2.91(1.35-4.05)		238	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.017	2.018	-0.001	1.122	779719	2.40		257	5067	
D 60 M2-4:2FTS										
329.00 > 81.00	1.772	2.019	-0.247	0.648	574	0.001717		0.0	0.9	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.050	-0.003	0.749	3349851	1.02		40.9	9915	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.059	-0.012	1.000	1106293	0.9230		92.3	178	
313.00 > 119.00	2.048	2.059	-0.012	1.000	85676		12.91(6.96-20.87)		189	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.068	2.079	-0.011	1.151	711287	0.9234		98.4	846	
349.00 > 99.00	2.068	2.079	-0.011	1.151	325614		2.18(1.15-3.45)		263	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.150	2.152	-0.002	0.786	391465	0.9195		36.8	1159	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.140	2.161	-0.021	0.995	250503	1.04		104	122	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.373	2.387	-0.014	1.000	1496463	0.9344		93.4	195	
363.00 > 169.00	2.373	2.387	-0.014	1.000	333559		4.49(2.17-6.52)		275	
D 9 13C4-PFHpA										
367.00 > 322.00	2.373	2.388	-0.015	0.868	3785253	0.9743		39.0	4700	
D 11 18O2 PFHxS										
403.00 > 84.00	2.386	2.402	-0.016	0.873	2049784	0.8590		36.3	6521	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.399	2.414	-0.015	1.006	1013987	0.9171		101	995	
399.00 > 99.00	2.399	2.414	-0.015	1.006	278189		3.64(1.90-5.70)		206	
76 DONA										
377.00 > 251.00	2.426	2.440	-0.014	0.778	2522472	1.15		122	4132	
377.00 > 85.00	2.426	2.440	-0.014	0.778	1086284		2.32(1.13-3.39)		1349	
D 12 M2-6:2FTS										
429.00 > 81.00	2.719	2.721	-0.002	0.994	378903	1.05		44.3	871	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.719	2.736	-0.017	1.000	307818	0.8653		91.3	966	
D 73 13C8 PFOA										
421.00 > 376.00	2.735	2.737	-0.002		2127	0.000755		0.0	11.3	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.735	2.751	-0.016	1.000	1428301	1.01		101	113	
413.00 > 169.00	2.735	2.751	-0.016	1.000	495390		2.88(1.36-4.08)		961	
* 62 13C2-PFOA										
415.00 > 370.00	2.735	2.751	-0.016		9102180	2.50			16899	
D 14 13C4 PFOA										
417.00 > 372.00	2.735	2.753	-0.018	1.000	3277262	0.9090		36.4	6975	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.750	2.767	-0.017	0.882	900745	1.08		113	850	
449.00 > 99.00	2.750	2.767	-0.017	0.882	208134		4.33(1.84-5.53)		664	
20 Perfluorononanoic acid										
463.00 > 419.00	3.117	3.137	-0.020	1.000	1236623	1.06		106	119	
463.00 > 169.00	3.117	3.137	-0.020	1.000	201333		6.14(2.68-8.03)		617	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.117	3.137	-0.020	1.000	799327	0.9204		99.2	259	
499.00 > 99.00	3.117	3.137	-0.020	1.000	188298		4.25(2.04-6.12)		555	
D 19 13C5 PFNA										
468.00 > 423.00	3.117	3.138	-0.021	1.140	2856759	0.8551		34.2	5433	
D 18 13C4 PFOS										
503.00 > 80.00	3.117	3.138	-0.021	1.140	1981622	0.7748		32.4	1452	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.319	3.353	-0.034	1.065	839104	0.8425		90.4	1134	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.466	3.483	-0.017	1.000	299859	1.05		110	924	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.466	3.483	-0.017	1.112	476658	0.8418		87.7	674	
549.00 > 99.00	3.466	3.483	-0.017	1.112	86639		5.50(3.02-9.05)		430	
D 26 M2-8:2FTS										
529.00 > 81.00	3.466	3.483	-0.017	1.267	45137	0.8712		36.4	241	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.483	-0.002	1.273	1090410	0.7912		31.6	2719	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.481	3.499	-0.018	1.000	1305985	1.00		99.5	203	
513.00 > 169.00	3.481	3.499	-0.018	1.000	84693		15.42(7.12-21.35)		295	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.499	-0.018	1.000	1311706	1.02		102	2253	
D 23 13C2 PFDA										
515.00 > 470.00	3.481	3.499	-0.018	1.273	3069484	0.8470		33.9	7713	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.628	3.645	-0.017	1.327	1497739	0.9522		38.1	2923	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.628	3.657	-0.029	1.000	571317	0.9600		96.0	527	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.792	3.809	-0.017	1.217	596828	0.8577		89.0	260	
599.00 > 99.00	3.792	3.809	-0.017	1.217	120399		4.96(2.14-6.43)		272	
D 30 13C2 PFUnA										
565.00 > 520.00	3.808	3.811	-0.003	1.393	2408365	0.7970		31.9	8044	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.792	3.811	-0.019	1.387	1238627	1.04		41.5	1749	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.808	3.825	-0.017	1.000	828881	0.99		99.3	195	
563.00 > 169.00	3.808	3.825	-0.017	1.000	75765		10.94(5.24-15.72)		341	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.808	3.825	-0.017	1.004	422612	0.8675		86.7	651	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.961	3.978	-0.017	1.271	916700	0.7797		82.8	2138	
D 36 13C2 PFDaA										
615.00 > 570.00	4.090	4.110	-0.020	1.496	2753511	0.7856		31.4	5384	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.090	4.125	-0.035	1.000	1013562	0.8979		89.8	231	
613.00 > 169.00	4.090	4.125	-0.035	1.000	115381		8.78(4.68-14.05)		433	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.090	4.125	-0.035	1.180	189462	1.02		106	943	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.328	4.359	-0.031	1.388	50045	0.6067		62.7	122	
699.00 > 99.00	4.328	4.359	-0.031	1.388	87133		0.57(0.28-0.83)		417	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.359	4.375	-0.016	1.066	744381	0.8250		82.5	291	
663.00 > 169.00	4.359	4.375	-0.016	1.066	112873		6.59(3.09-9.27)		475	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.593	4.611	-0.018	1.000	97655	0.8230		82.3	643	
713.00 > 219.00	4.593	4.611	-0.018	1.000	73459		1.33(0.70-2.09)		439	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.593	4.616	-0.023	1.679	1823445	0.6433		25.7	4496	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.007	5.025	-0.018	1.000	629799	0.9741		97.4	341	
813.00 > 169.00	5.007	5.025	-0.018	1.000	108312		5.81(2.77-8.32)		404	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 44 13C2-PFHxDA										
815.00 > 770.00	5.007	5.029	-0.022	1.831	1737620	0.5601		22.4	3526	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.362	5.377	-0.015	1.071	459088	0.9237		92.4	382	
913.00 > 169.00	5.362	5.377	-0.015	1.071	79772		5.76(2.55-7.64)		644	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_035.d

Injection Date: 18-Aug-2018 08:28:24

Instrument ID: A9

Lims ID: 320-42105-A-1-B MS

Client ID: MW-12

Operator ID: A9\Administrator

ALS Bottle#: 24

Worklist Smp#: 5

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

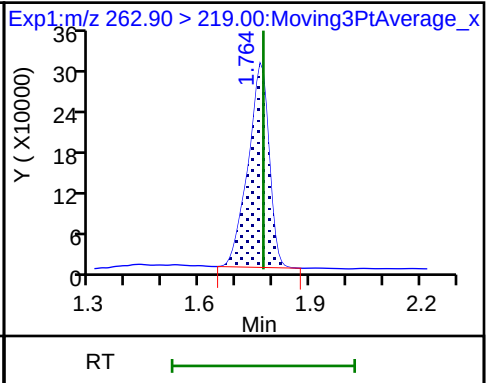
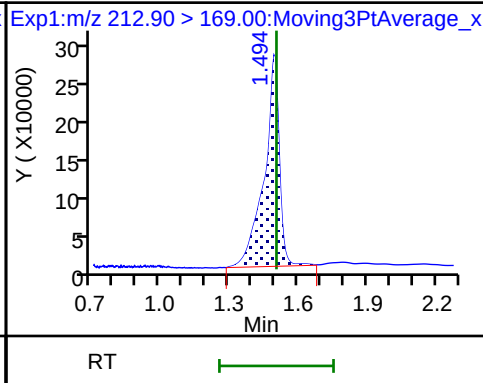
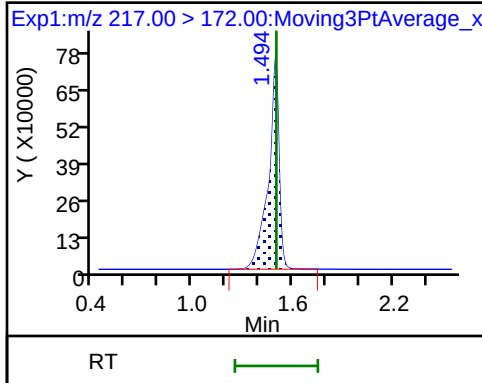
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

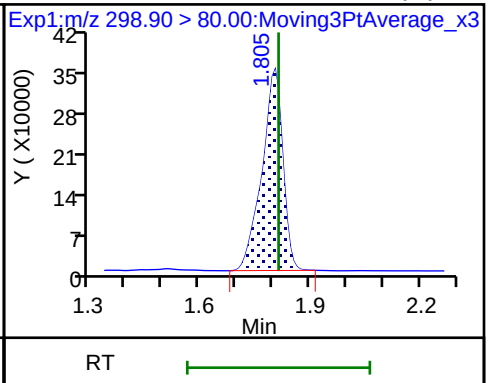
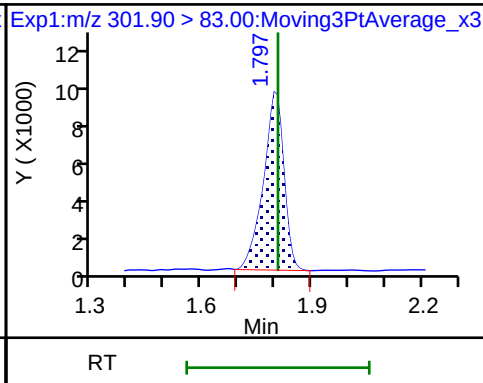
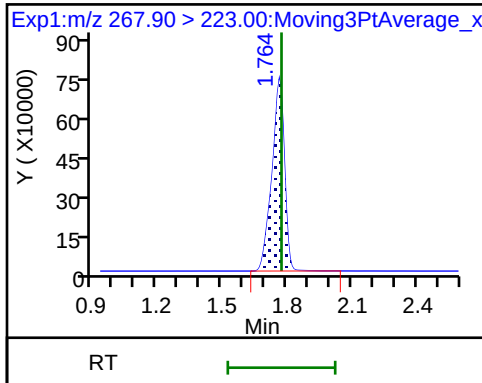
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

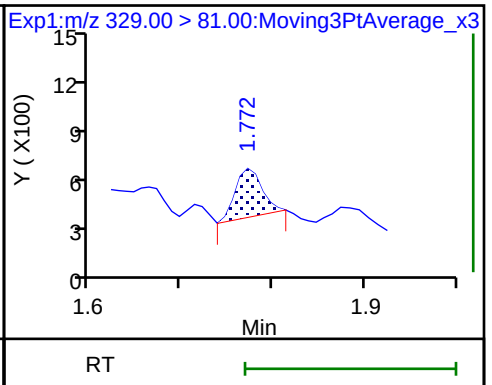
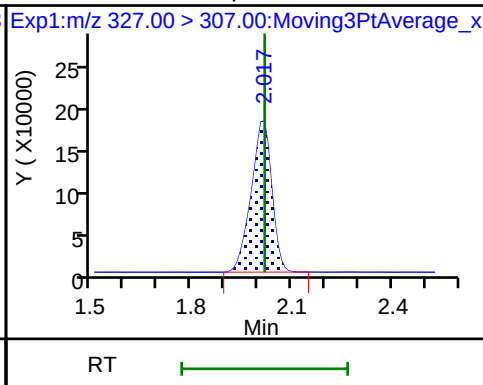
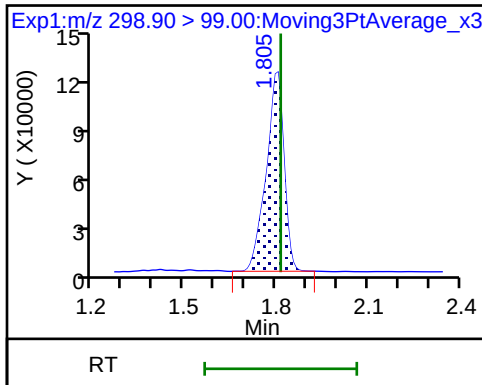
5 Perfluorobutanesulfonic acid (M)



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

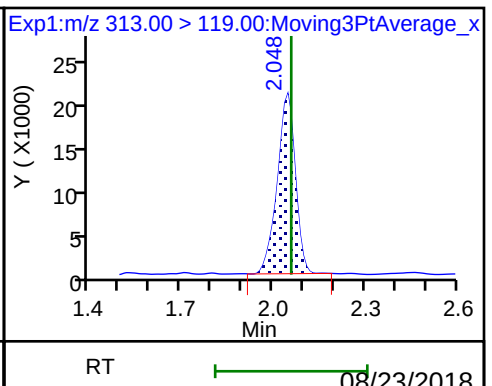
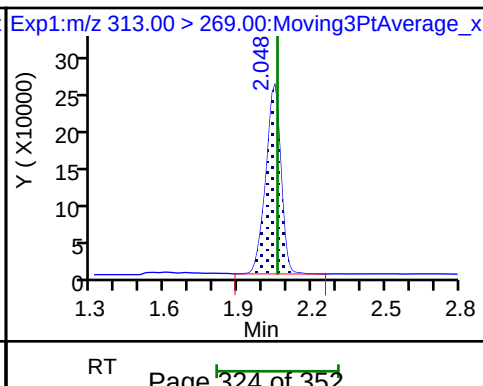
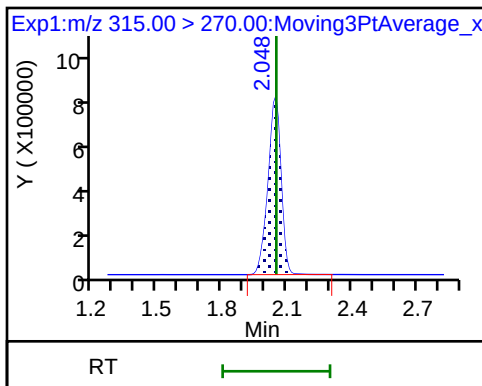
D 60 M2-4:2FTS

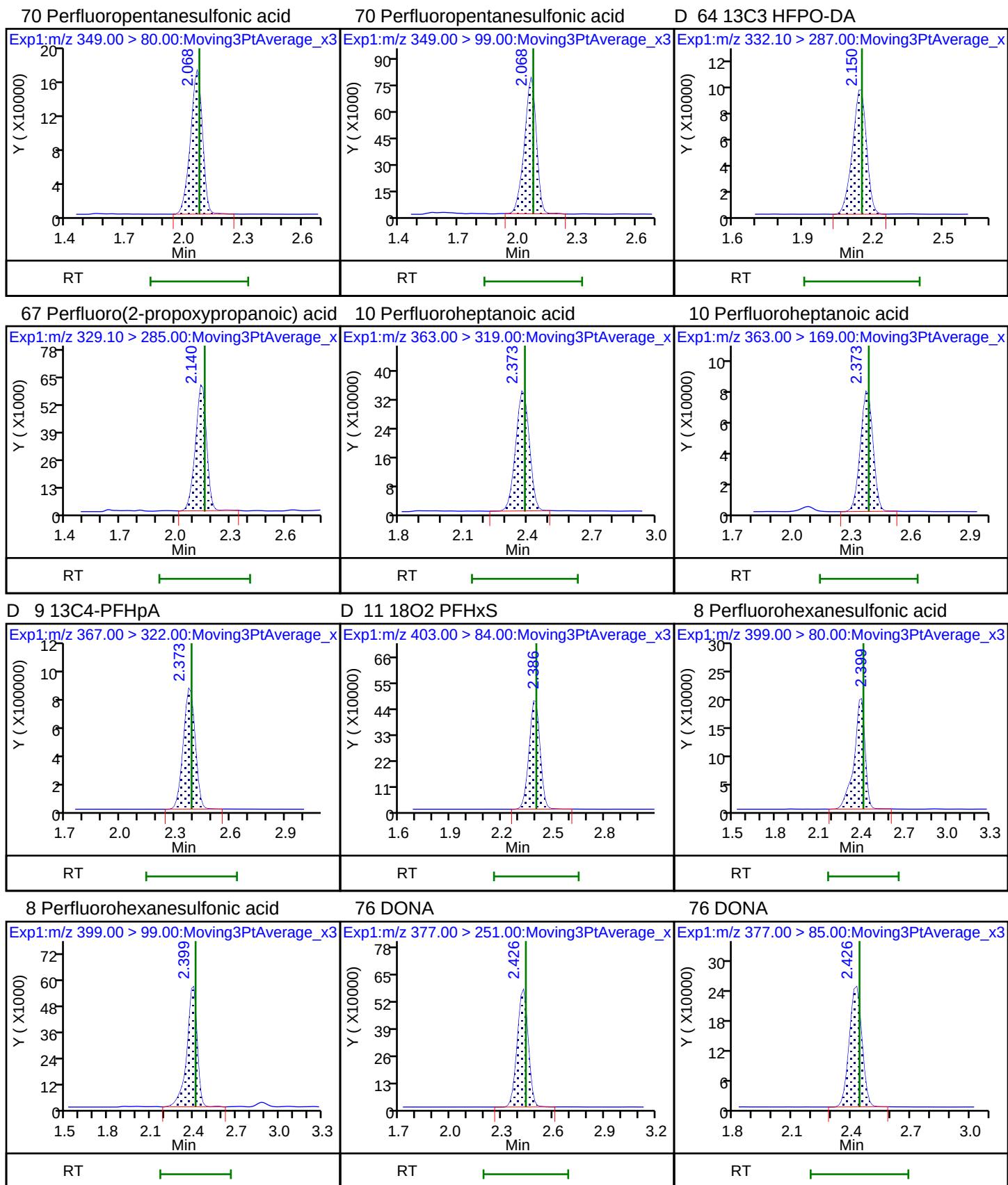


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

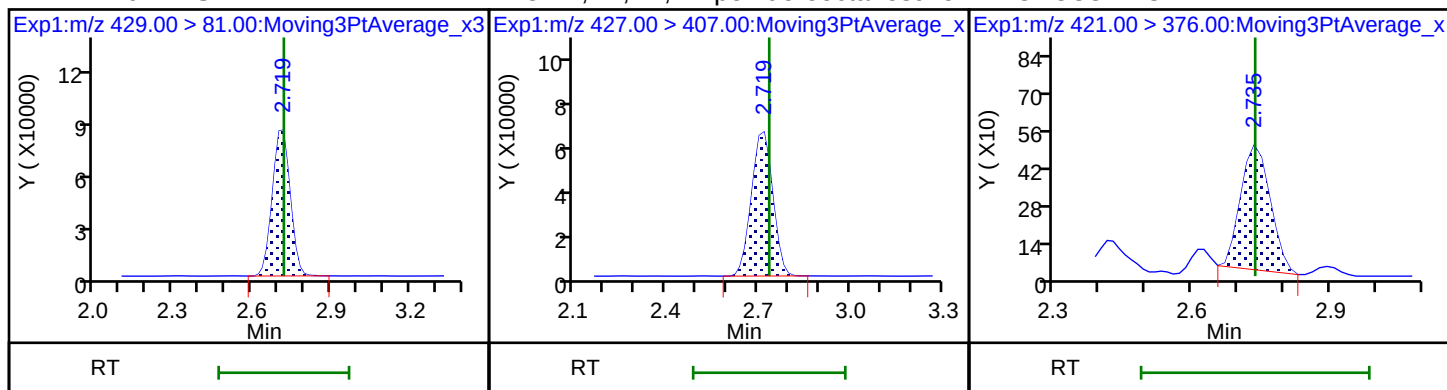
6 Perfluorohexanoic acid





D 12 M2-6:2FTS

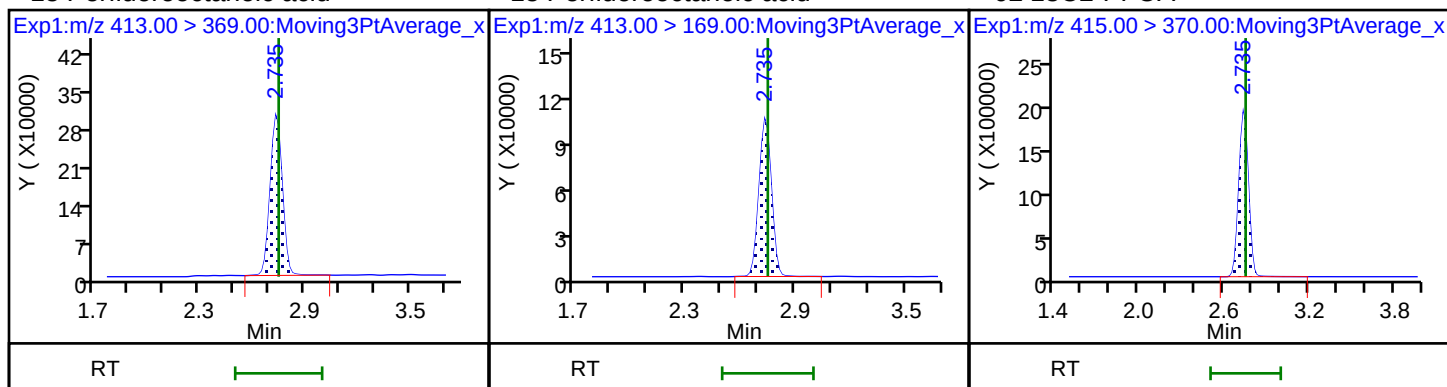
13 1H,1H,2H,2H-perfluorooctanesulfonD 73 13C8 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

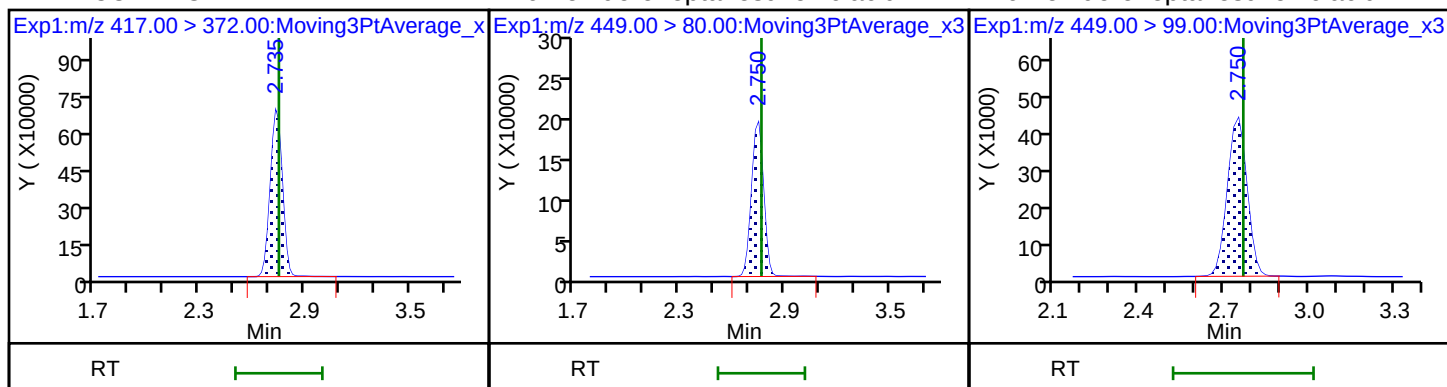
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

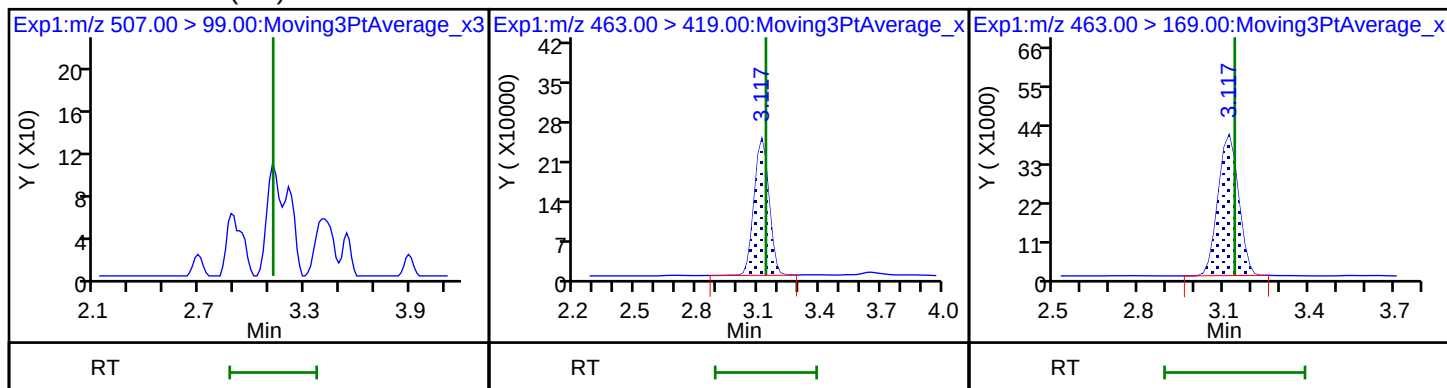
16 Perfluoroheptanesulfonic acid

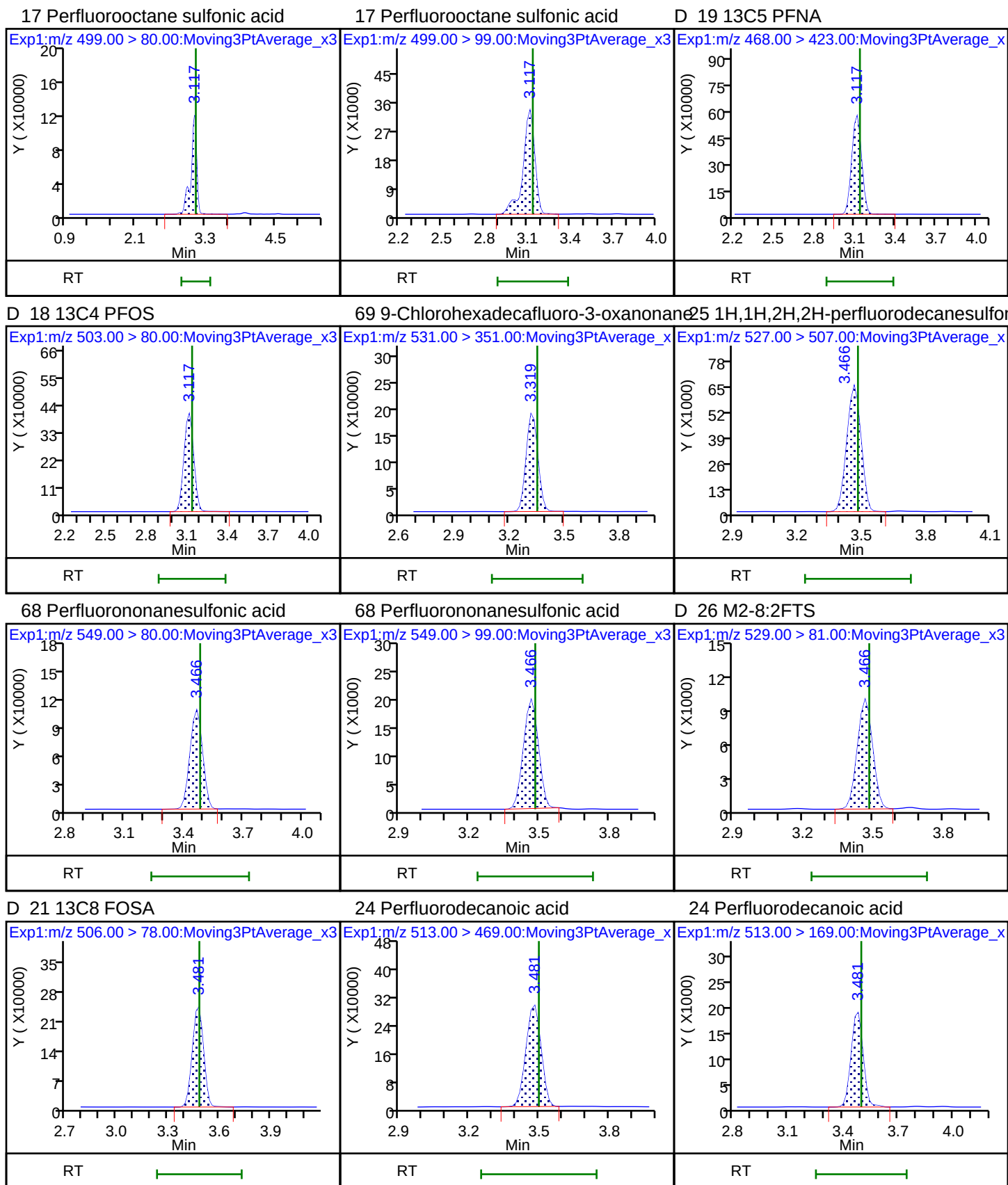


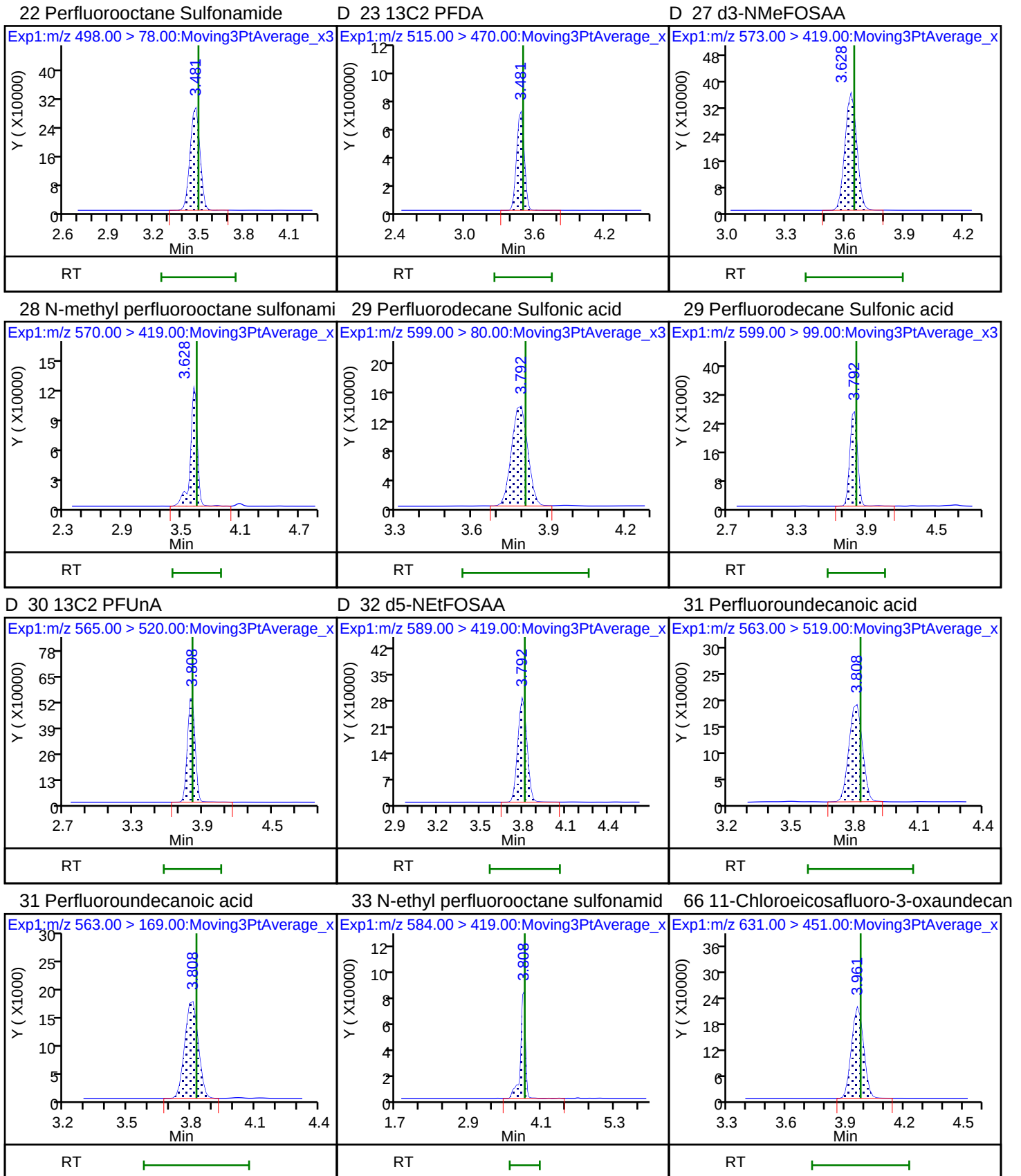
D 72 13C8 PFOS (ND)

20 Perfluorononanoic acid

20 Perfluorononanoic acid



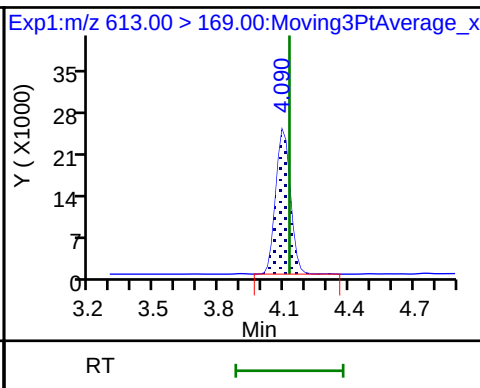
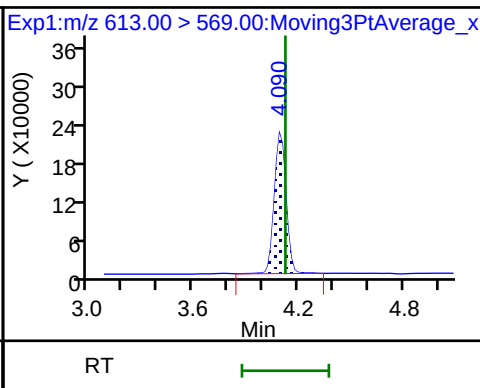
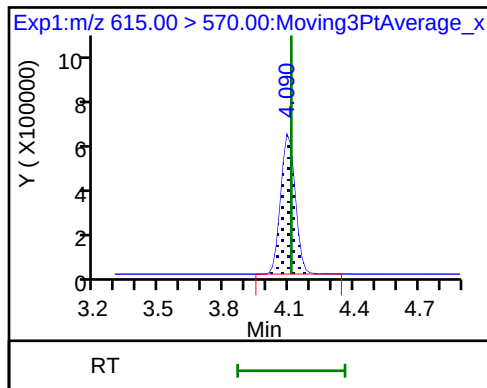




D 36 13C2 PFDaA

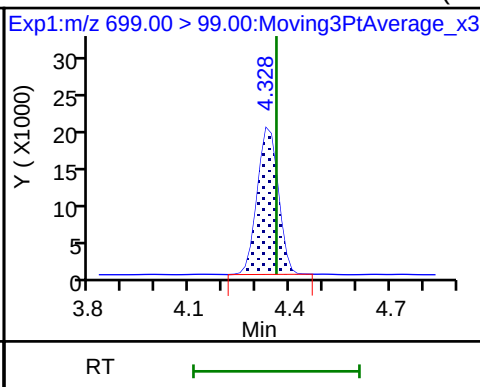
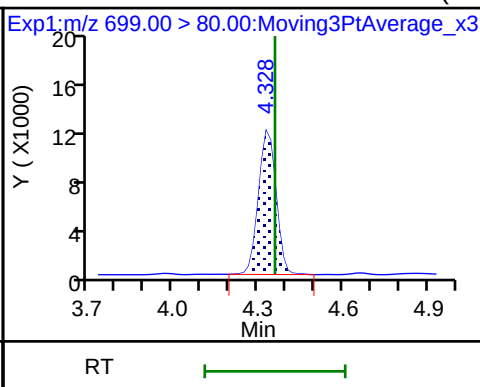
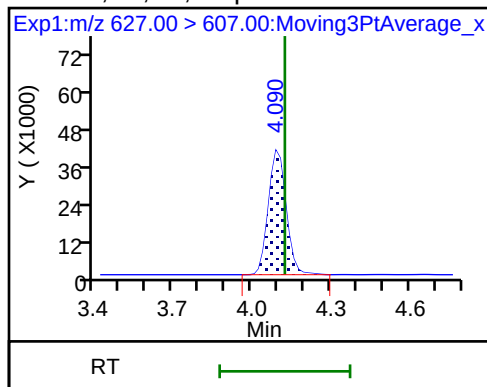
37 Perfluorododecanoic acid

37 Perfluorododecanoic acid



74 1H,1H,2H,2H-perfluorododecanesulfonate 75 Perfluorododecanesulfonic acid (PF

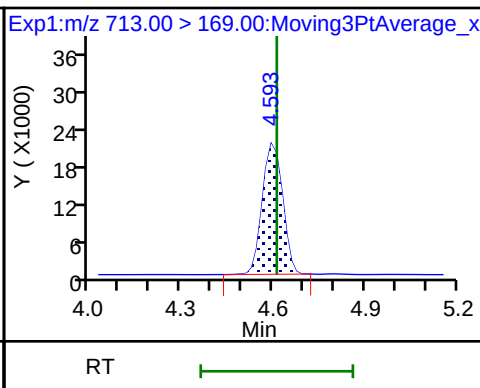
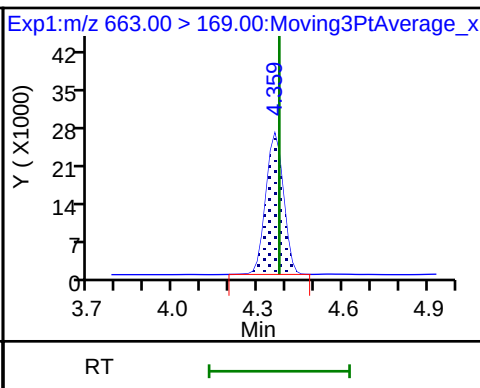
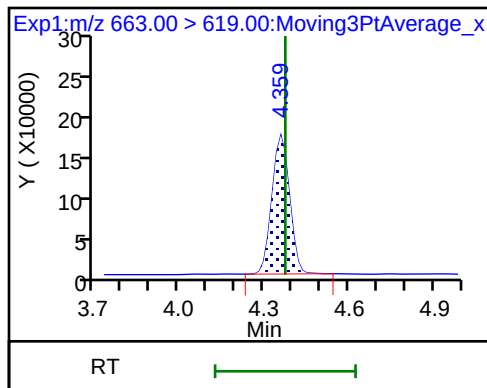
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

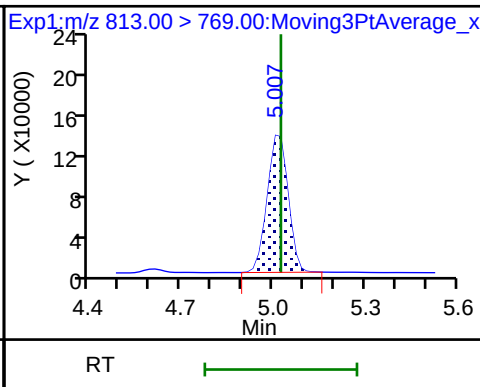
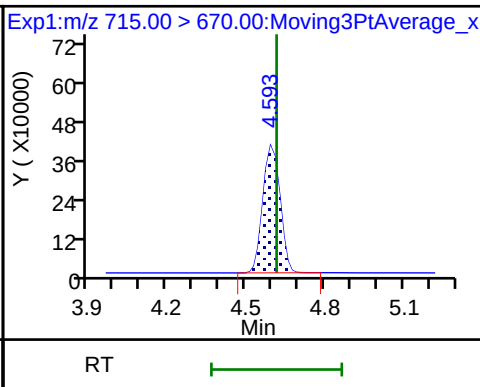
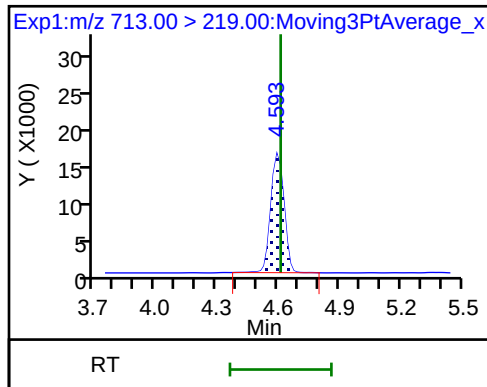
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

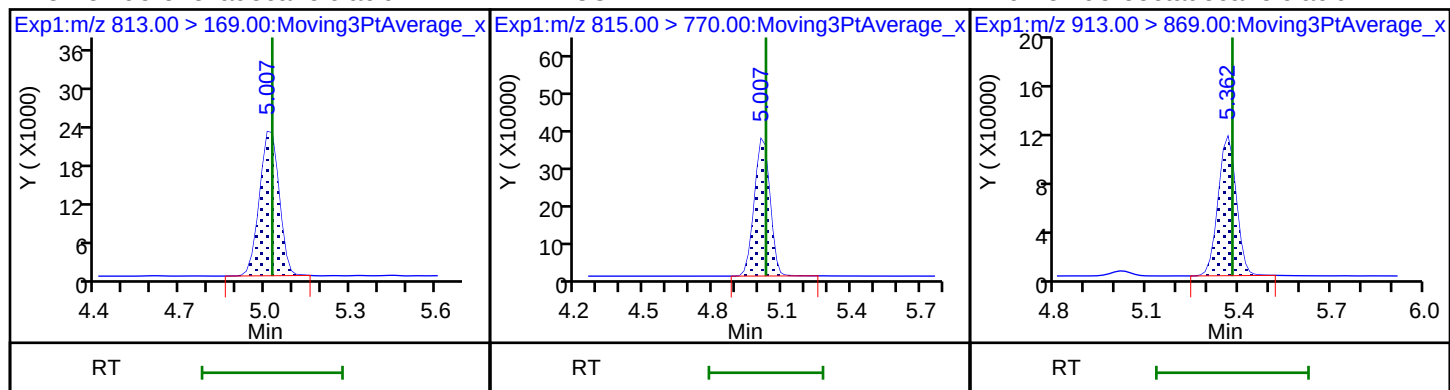
45 Perfluorohexadecanoic acid



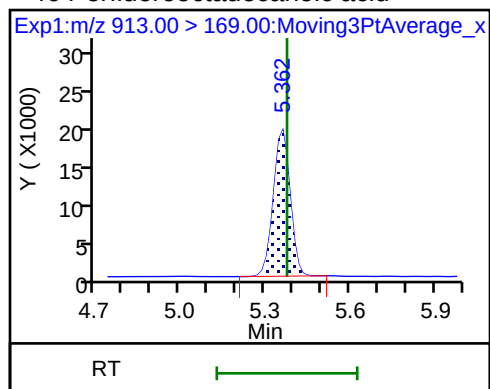
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento

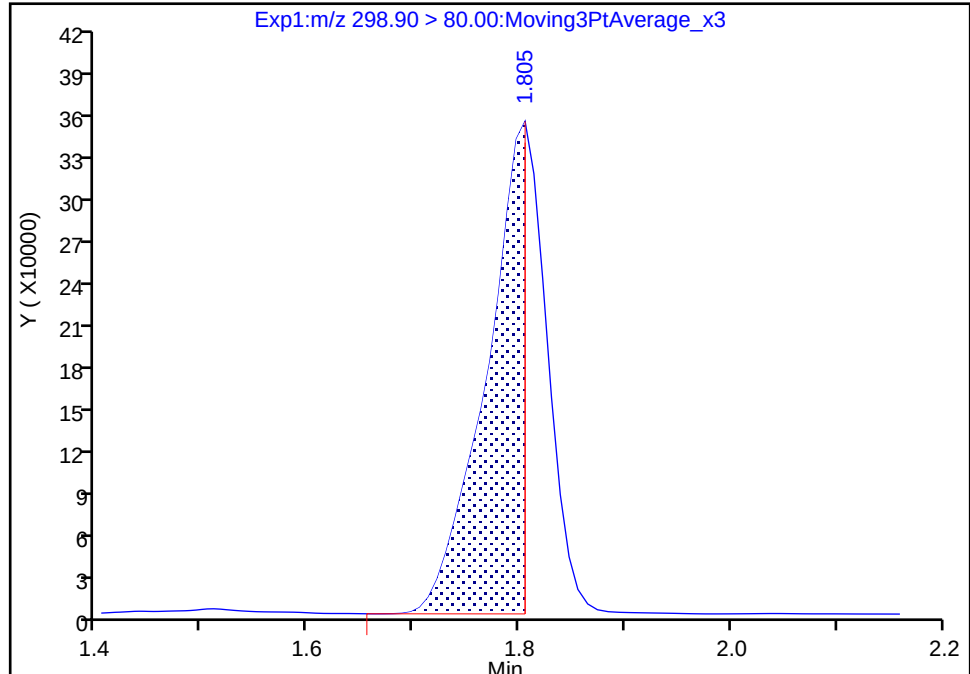
Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_035.d
Injection Date: 18-Aug-2018 08:28:24 Instrument ID: A9
Lims ID: 320-42105-A-1-B MS
Client ID: MW-12
Operator ID: A9\Administrator ALS Bottle#: 24 Worklist Smp#: 5
Injection Vol: 20.0 ul Dil. Factor: 1.0000
Method: PFAS_A9 Limit Group: LC PFC ICAL
Column: Detector EXP1

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

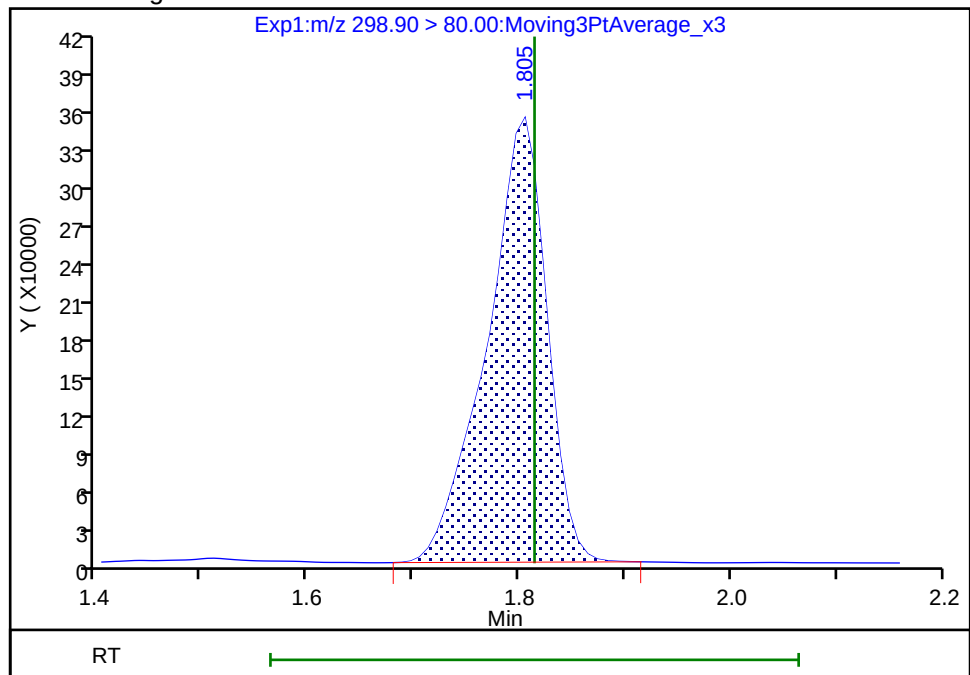
RT: 1.81
Area: 868884
Amount: 0.536025
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 1387917
Amount: 0.856222
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 22-Aug-2018 07:51:45
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
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08/23/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-12 MSD</u>	Lab Sample ID: <u>320-42105-1 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_036.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>306.6 (mL)</u>	Date Analyzed: <u>08/18/2018 08:35</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	33.7		1.6	0.29
2706-90-3	Perfluoropentanoic acid (PFPeA)	31.4		1.6	0.40
307-24-4	Perfluorohexanoic acid (PFHxA)	32.0		1.6	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	31.6		1.6	0.20
335-67-1	Perfluorooctanoic acid (PFOA)	32.2		1.6	0.69
375-95-1	Perfluorononanoic acid (PFNA)	35.8		1.6	0.22
335-76-2	Perfluorodecanoic acid (PFDA)	34.2		1.6	0.25
2058-94-8	Perfluoroundecanoic acid (PFUnA)	31.9		1.6	0.90
307-55-1	Perfluorododecanoic acid (PFDoA)	34.4		1.6	0.45
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	29.9		1.6	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	31.7		1.6	0.24
375-73-5	Perfluorobutanesulfonic acid (PFBS)	28.9		1.6	0.16
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	27.7		1.6	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	37.5		1.6	0.15
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	31.5		1.6	0.44
335-77-3	Perfluorodecanesulfonic acid (PFDS)	26.7		1.6	0.26
754-91-6	Perfluorooctane Sulfonamide (FOSA)	37.6		1.6	0.29
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	31.8		16	2.5
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	31.3		16	1.5
27619-97-2	6:2 FTS	32.4		16	1.6
39108-34-4	8:2 FTS	29.3		16	1.6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-42105-1</u>
SDG No.: _____	
Client Sample ID: <u>MW-12 MSD</u>	Lab Sample ID: <u>320-42105-1 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.08.18LLA_036.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>08/07/2018 11:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>08/17/2018 09:05</u>
Sample wt/vol: <u>306.6 (mL)</u>	Date Analyzed: <u>08/18/2018 08:35</u>
Con. Extract Vol.: <u>10.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>20 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>240682</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	56		25-150
STL01893	13C5 PFPeA	60		25-150
STL00993	13C2 PFHxA	60		25-150
STL01892	13C4-PFHpA	63		25-150
STL00990	13C4 PFOA	58		25-150
STL00995	13C5 PFNA	52		25-150
STL00996	13C2 PFDA	49		25-150
STL00997	13C2 PFUnA	49		25-150
STL00998	13C2 PFDoA	43		25-150
STL02116	13C2-PFTeDA	32		25-150
STL02337	13C3-PFBS	55		25-150
STL00994	18O2 PFHxS	57		25-150
STL00991	13C4 PFOS	49		25-150
STL01056	13C8 FOSA	46		25-150
STL02118	d3-NMeFOSAA	55		25-150
STL02117	d5-NEtFOSAA	62		25-150
STL02279	M2-6:2FTS	77		25-150
STL02280	M2-8:2FTS	67		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_036.d
 Lims ID: 320-42105-A-1-C MSD
 Client ID: MW-12
 Sample Type: MSD
 Inject. Date: 18-Aug-2018 08:35:54 ALS Bottle#: 25 Worklist Smp#: 6
 Injection Vol: 20.0 ul Dil. Factor: 1.0000
 Sample Info: 320-42105-a-1-c msd
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A9\Administrator Instrument ID: A9
 Method: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\PFAS_A9.m
 Limit Group: LC PFC ICAL
 Last Update: 22-Aug-2018 07:52:30 Calib Date: 14-Aug-2018 15:17:53
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A9\20180814-62685.b\2018.08.14LLICAL_011.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 22-Aug-2018 07:52:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.500	1.500	0.0	0.548	5011376	1.41		56.4	17912	
2 Perfluorobutyric acid										
212.90 > 169.00	1.500	1.505	-0.005	1.000	1959942	1.03		103	115	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.774	1.773	0.002	1.005	1865700	0.9637		96.4	98.9	
D 3 13C5-PFPeA										
267.90 > 223.00	1.765	1.774	-0.009	0.645	4727855	1.49		59.7	8518	
D 47 13C3-PFBS										
301.90 > 83.00	1.799	1.807	-0.008	0.657	53000	1.29		55.4	276	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.807	1.814	-0.007	1.005	2101974	0.8851		100	448	
298.90 > 99.00	1.807	1.814	-0.007	1.005	739926		2.84(1.35-4.05)		307	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.019	2.018	0.001	1.122	1660134	3.49		374	5200	
D 7 13C2 PFHxA										
315.00 > 270.00	2.050	2.050	0.0	0.749	4986667	1.49		59.7	13274	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.050	2.059	-0.009	1.000	1752379	0.9821		98.2	252	
313.00 > 119.00	2.050	2.059	-0.009	1.000	134344		13.04(6.96-20.87)		298	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.070	2.079	-0.009	1.151	1089284	0.9653		103	931	
349.00 > 99.00	2.070	2.079	-0.009	1.151	484382		2.25(1.15-3.45)		270	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.152	2.152	0.0	0.786	588401	1.36		54.2	1450	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.152	2.161	-0.009	1.000	407076	1.12		112	196	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.389	2.387	0.002	1.006	2544822	0.9691		96.9	331	
363.00 > 169.00	2.376	2.387	-0.011	1.000	534196		4.76(2.17-6.52)		288	
D 9 13C4-PFHpA										
367.00 > 322.00	2.376	2.388	-0.012	0.868	6206679	1.57		62.7	7129	
D 11 18O2 PFHxS										
403.00 > 84.00	2.402	2.402	0.0	0.878	3290686	1.35		57.2	6166	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.402	2.414	-0.012	1.000	1509951	0.8506		93.5	1023	
399.00 > 99.00	2.402	2.414	-0.012	1.000	412189		3.66(1.90-5.70)		430	
76 DONA										
377.00 > 251.00	2.428	2.440	-0.012	0.778	4182548	1.23		131	9095	
377.00 > 85.00	2.428	2.440	-0.012	0.778	1690438		2.47(1.13-3.39)		1666	
D 12 M2-6:2FTS										
429.00 > 81.00	2.721	2.721	0.0	0.994	673040	1.83		77.2	1169	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.721	2.736	-0.015	1.000	627843	0.99		105	1545	
D 73 13C8 PFOA										
421.00 > 376.00	2.737	2.737	0.0		3570	0.001268		0.0	22.0	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.737	2.751	-0.014	1.000	2267295	0.9861		98.5	184	
413.00 > 169.00	2.737	2.751	-0.014	1.000	811317		2.79(1.36-4.08)		1202	
* 62 13C2-PFOA										
415.00 > 370.00	2.737	2.751	-0.014		9279404	2.50			17531	
D 14 13C4 PFOA										
417.00 > 372.00	2.737	2.753	-0.016	1.000	5313308	1.45		57.8	16879	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.753	2.767	-0.014	0.882	1477922	1.15		121	1179	
449.00 > 99.00	2.753	2.767	-0.014	0.882	349557		4.23(1.84-5.53)		1324	
20 Perfluorononanoic acid										
463.00 > 419.00	3.120	3.137	-0.017	1.000	2007341	1.10		110	215	
463.00 > 169.00	3.120	3.137	-0.017	1.000	358169		5.60(2.68-8.03)		747	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.120	3.137	-0.017	1.000	1291440	0.9647		104	421	
499.00 > 99.00	3.120	3.137	-0.017	1.000	294206		4.39(2.04-6.12)		850	
D 19 13C5 PFNA										
468.00 > 423.00	3.120	3.138	-0.018	1.140	4468724	1.31		52.5	12402	
D 18 13C4 PFOS										
503.00 > 80.00	3.120	3.138	-0.018	1.140	3054558	1.17		49.0	2287	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.321	3.353	-0.032	1.064	1301630	0.8479		91.0	1639	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.468	3.483	-0.015	1.000	481390	0.8988		93.8	1221	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.468	3.483	-0.015	1.111	728271	0.8343		86.9	1032	
549.00 > 99.00	3.468	3.483	-0.015	1.111	119685		6.08(3.02-9.05)		682	
D 26 M2-8:2FTS										
529.00 > 81.00	3.468	3.483	-0.015	1.267	84714	1.60		67.0	443	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.483	0.001	1.273	1600616	1.14		45.6	4431	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.484	3.499	-0.015	1.000	2029721	1.05		105	364	
513.00 > 169.00	3.484	3.499	-0.015	1.000	126383		16.06(7.12-21.35)		357	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.499	-0.015	1.000	2166632	1.15		115	4711	
D 23 13C2 PFDA										
515.00 > 470.00	3.484	3.499	-0.015	1.273	4522554	1.22		49.0	4333	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.630	3.645	-0.015	1.326	2205374	1.38		55.0	3384	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.630	3.657	-0.027	1.000	855590	0.9763		97.6	412	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.795	3.809	-0.014	1.216	877554	0.8181		84.9	446	
599.00 > 99.00	3.795	3.809	-0.014	1.216	177832		4.93(2.14-6.43)		511	
D 30 13C2 PFUnA										
565.00 > 520.00	3.811	3.811	0.0	1.392	3781725	1.23		49.1	12370	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.795	3.811	-0.016	1.387	1873271	1.54		61.6	2110	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.811	3.825	-0.014	1.000	1280242	0.9771		97.7	300	
563.00 > 169.00	3.811	3.825	-0.014	1.000	119379		10.72(5.24-15.72)		471	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.811	3.825	-0.014	1.004	707497	0.9602		96.0	898	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.963	3.978	-0.015	1.270	1387318	0.7655		81.3	5026	
D 36 13C2 PFDaA										
615.00 > 570.00	4.093	4.110	-0.017	1.495	3879208	1.09		43.4	3612	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.093	4.125	-0.032	1.000	1676781	1.05		105	404	
613.00 > 169.00	4.093	4.125	-0.032	1.000	168645		9.94(4.68-14.05)		493	
74 1H,1H,2H,2H-perfluorododecanesulfo										
627.00 > 607.00	4.093	4.125	-0.032	1.180	301220	0.8658		89.8	894	
75 Perfluorododecanesulfonic acid (PF										
699.00 > 80.00	4.330	4.359	-0.029	1.388	66853	0.5257		54.3	170	
699.00 > 99.00	4.330	4.359	-0.029	1.388	113374		0.59(0.28-0.83)		328	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.375	-0.014	1.065	1166564	0.9177		91.8	440	
663.00 > 169.00	4.361	4.375	-0.014	1.065	197820		5.90(3.09-9.27)		623	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.597	4.611	-0.014	1.000	147437	0.9709		97.1	738	
713.00 > 219.00	4.597	4.611	-0.014	1.000	94399		1.56(0.70-2.09)		524	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.597	4.616	-0.019	1.680	2333450	0.8075		32.3	7857	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.011	5.025	-0.014	1.000	793734	0.9635		96.3	354	
813.00 > 169.00	5.011	5.025	-0.014	1.000	132580		5.99(2.77-8.32)		536	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 44 13C2-PFHxDA										
815.00 > 770.00	5.011	5.029	-0.018	1.831	2213406	0.6998		28.0	4520	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.365	5.377	-0.012	1.071	577342	0.9120		91.2	391	
913.00 > 169.00	5.365	5.377	-0.012	1.071	101314		5.70(2.55-7.64)		753	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A9\20180818-62912.b\2018.08.18LLA_036.d

Injection Date: 18-Aug-2018 08:35:54

Instrument ID: A9

Lims ID: 320-42105-A-1-C MSD

Client ID: MW-12

Operator ID: A9\Administrator

ALS Bottle#: 25

Worklist Smp#: 6

Injection Vol: 20.0 ul

Dil. Factor: 1.0000

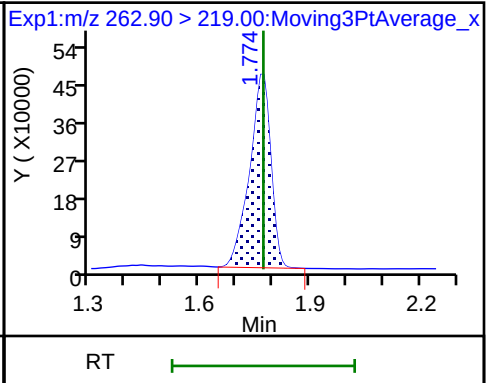
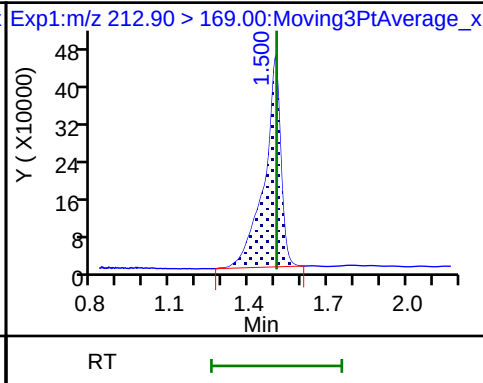
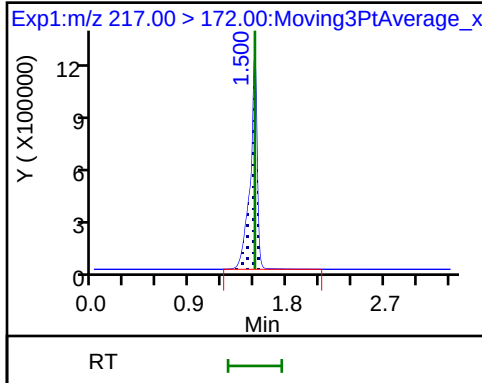
Method: PFAS_A9

Limit Group: LC PFC ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

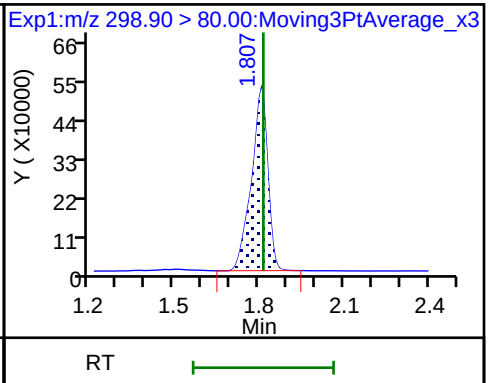
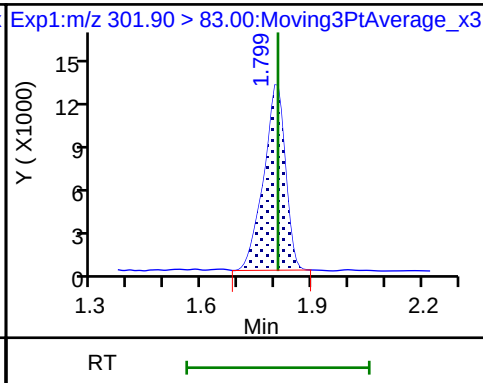
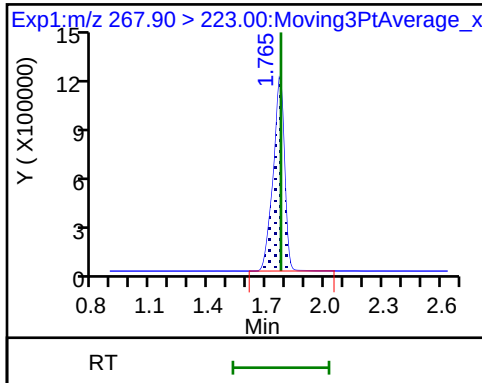
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

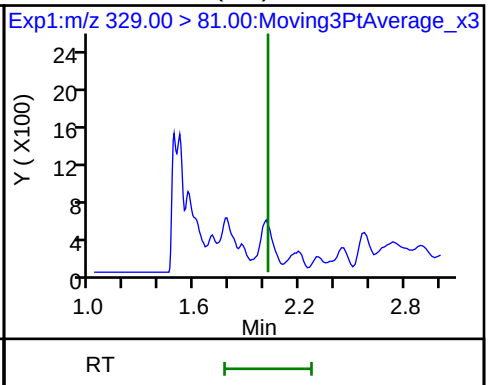
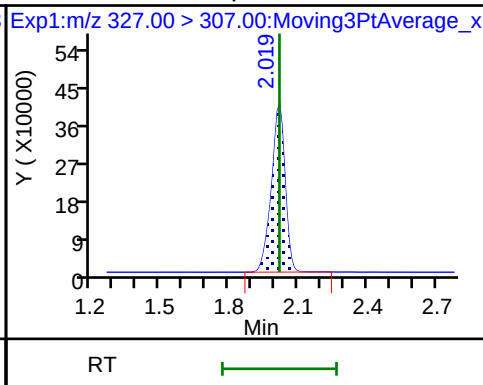
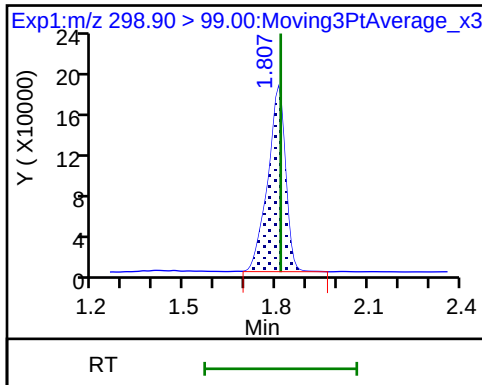
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

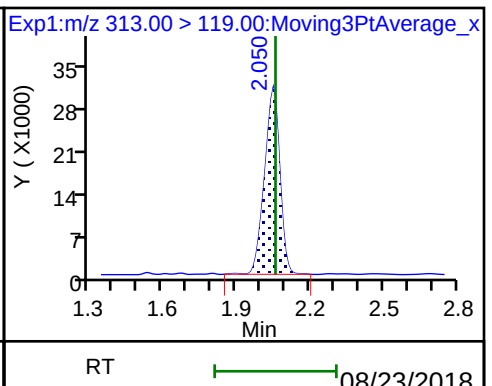
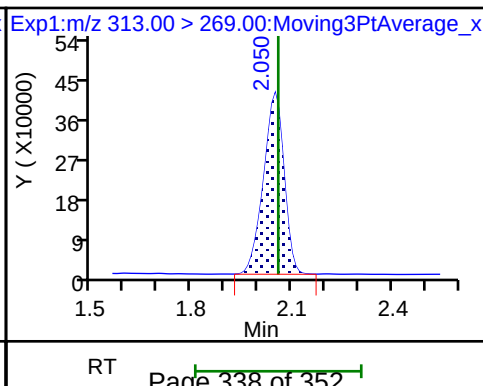
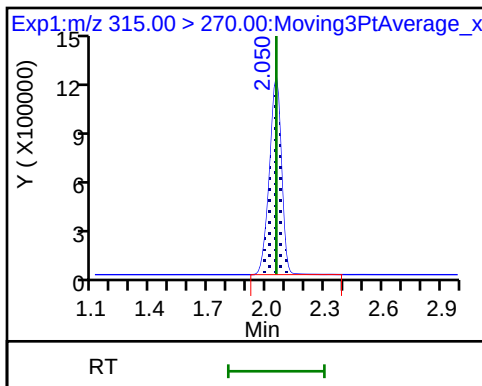
D 60 M2-4:2FTS (ND)

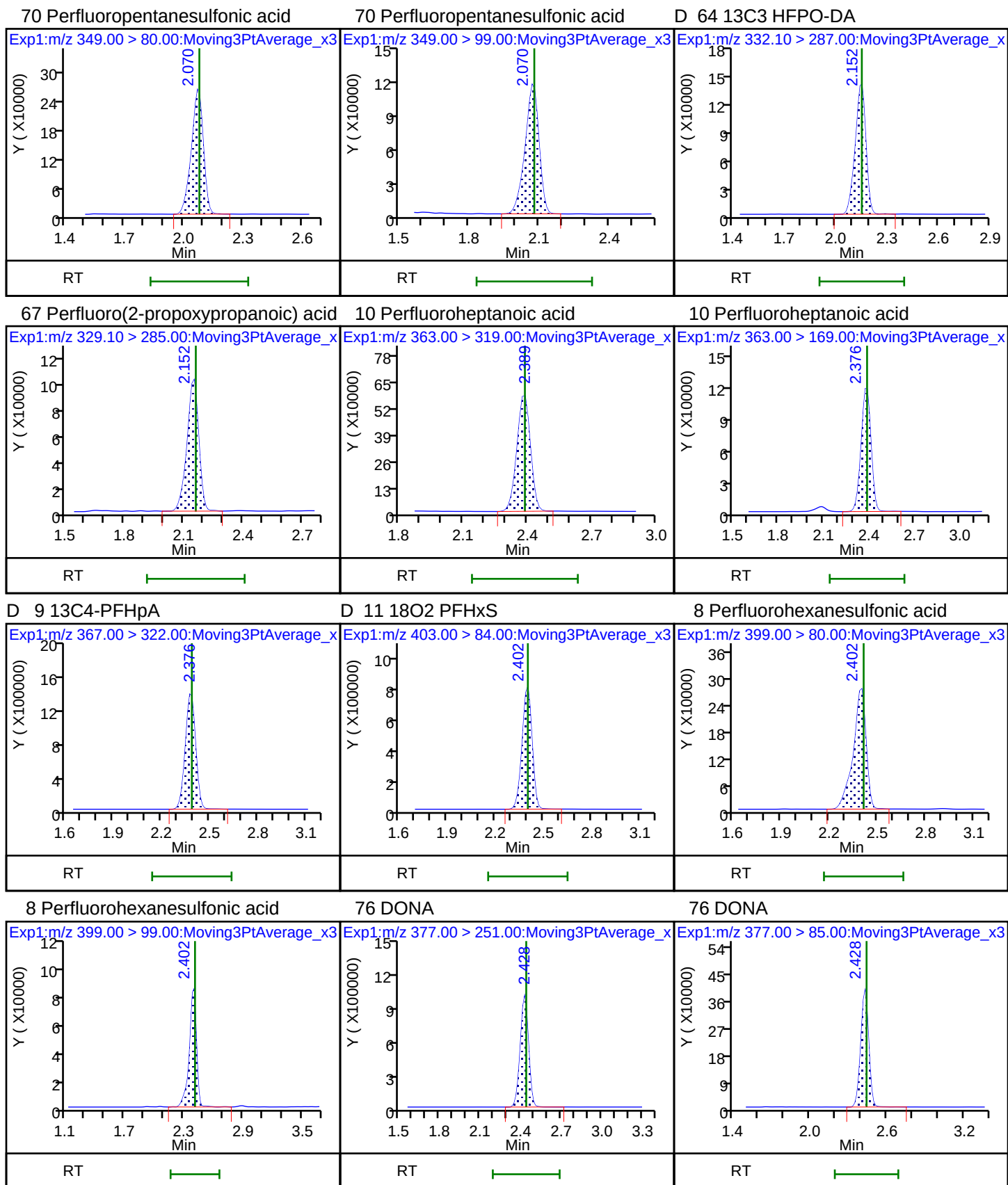


D 7 13C2 PFHxA

6 Perfluorohexanoic acid

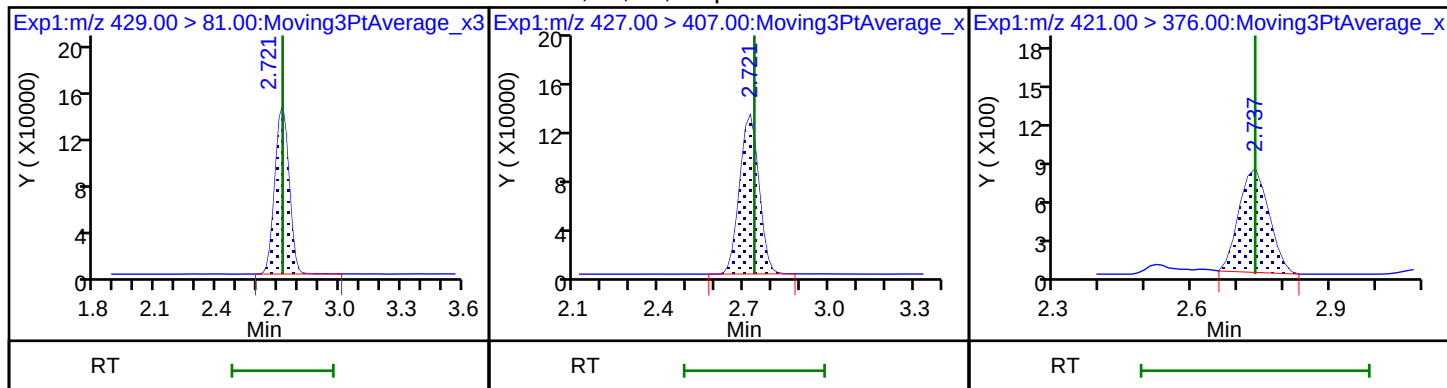
6 Perfluorohexanoic acid





D 12 M2-6:2FTS

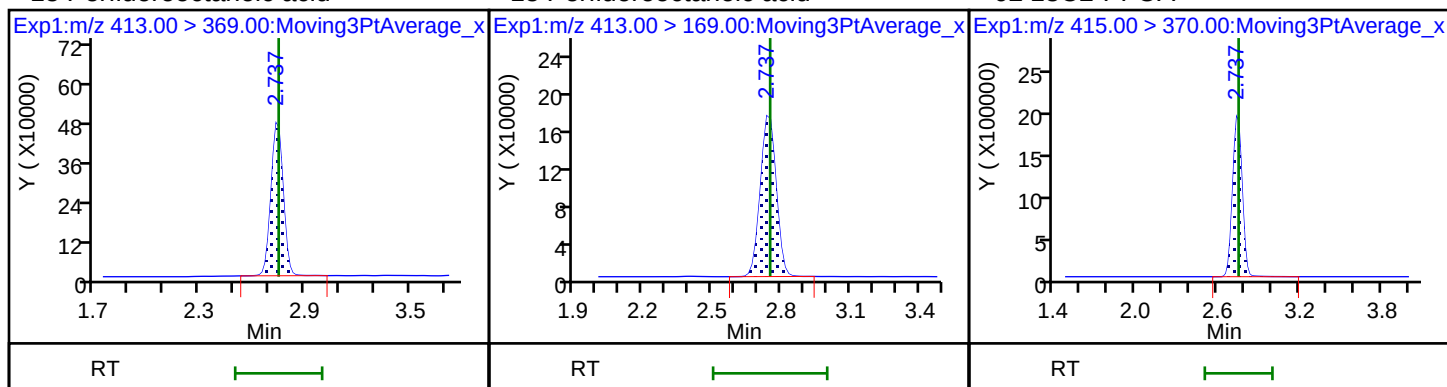
13 1H,1H,2H,2H-perfluorooctanesulfonD 73 13C8 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

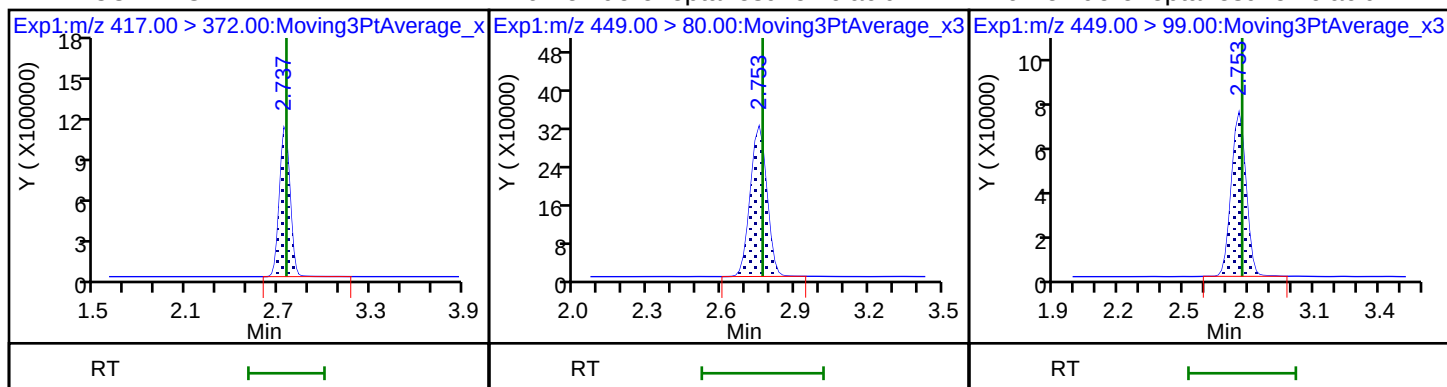
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

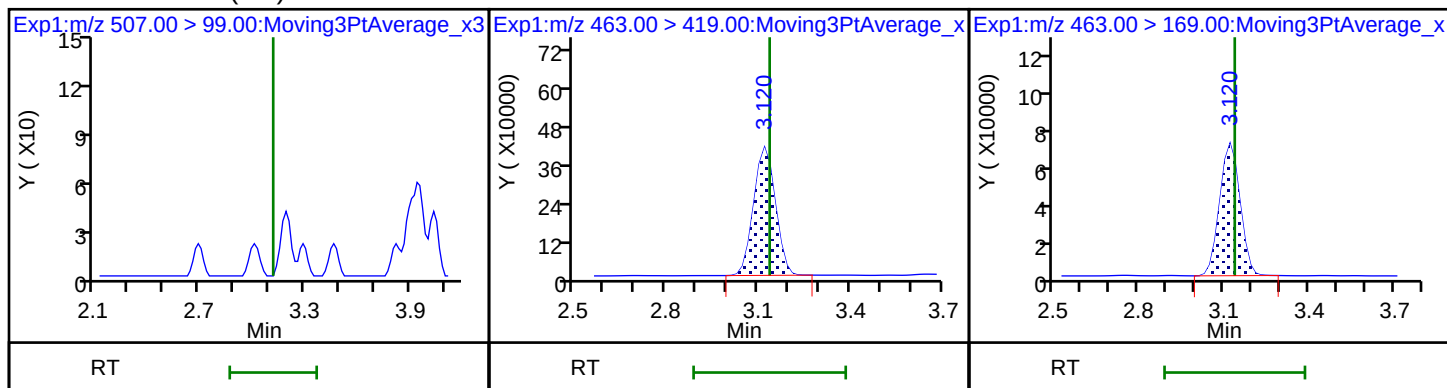
16 Perfluoroheptanesulfonic acid

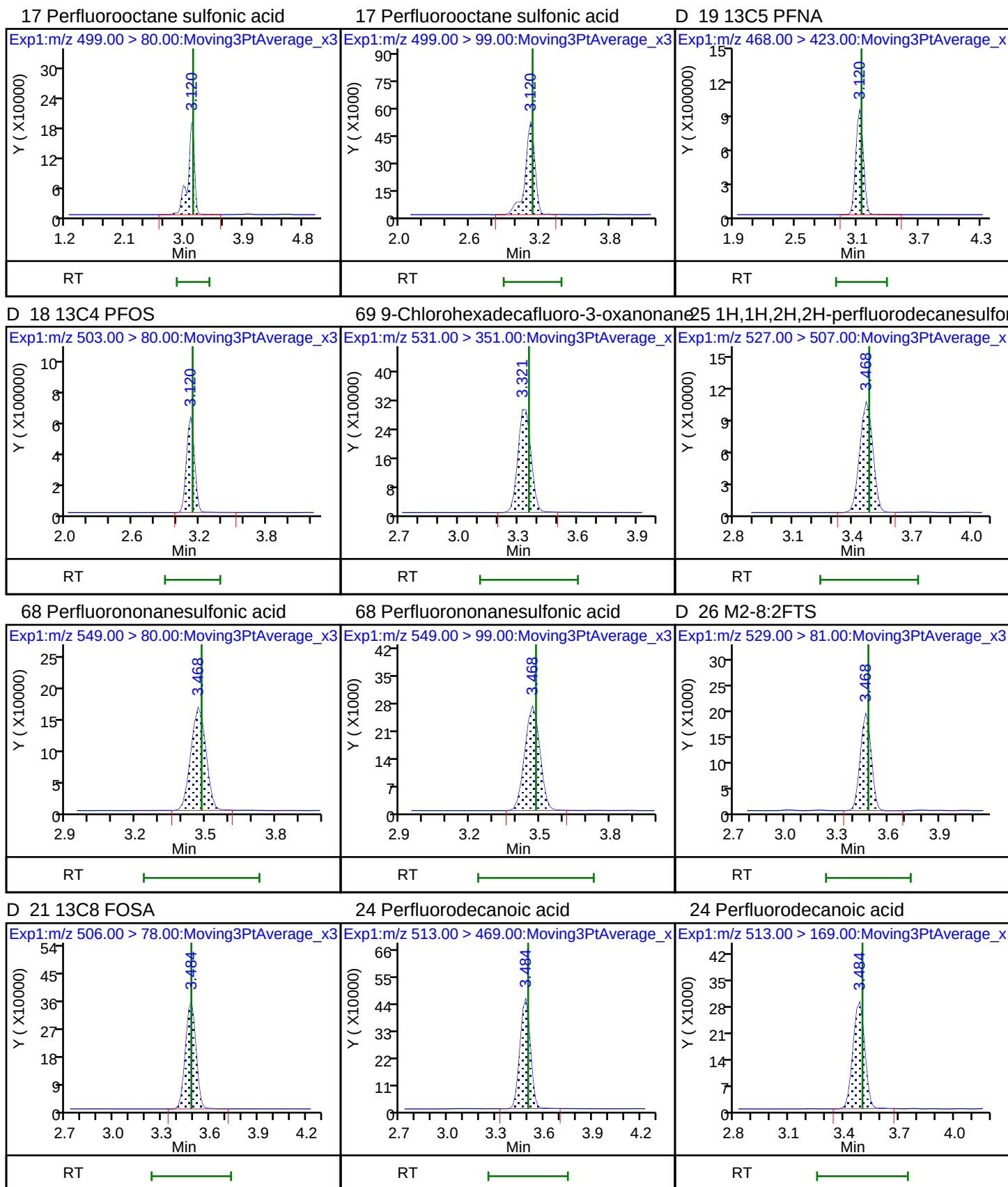


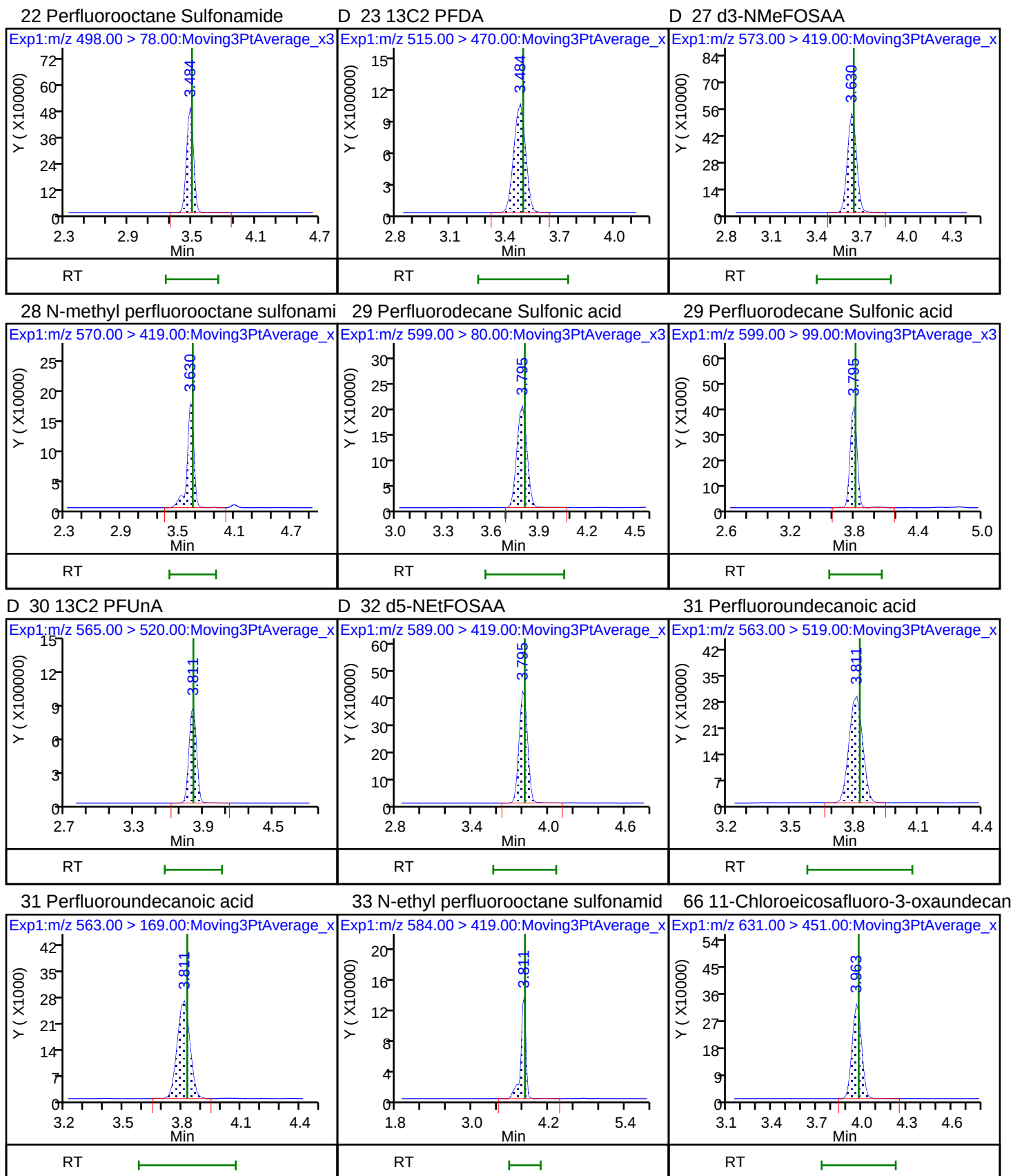
D 72 13C8 PFOS (ND)

20 Perfluorononanoic acid

20 Perfluorononanoic acid



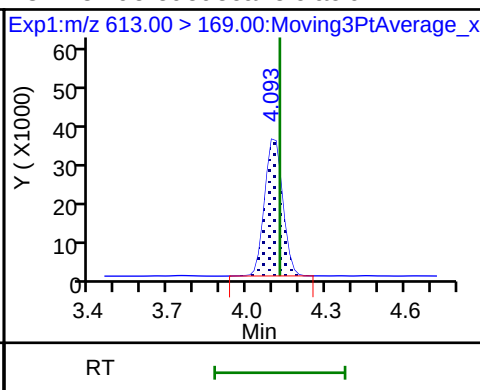
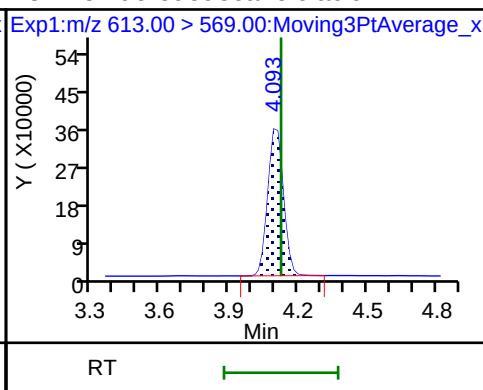
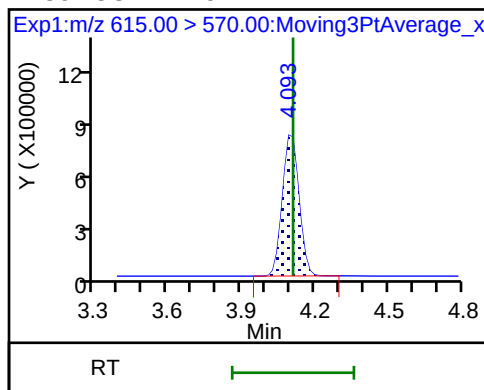




D 36 13C2 PFDaA

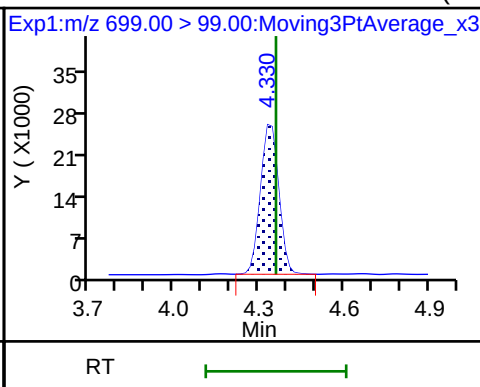
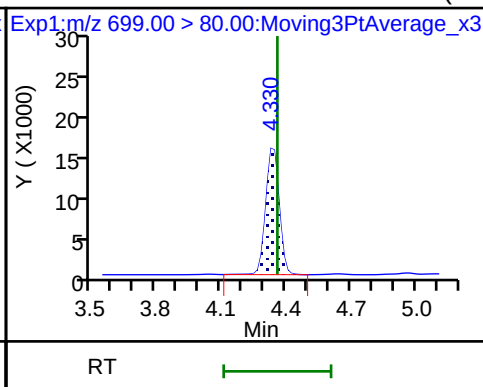
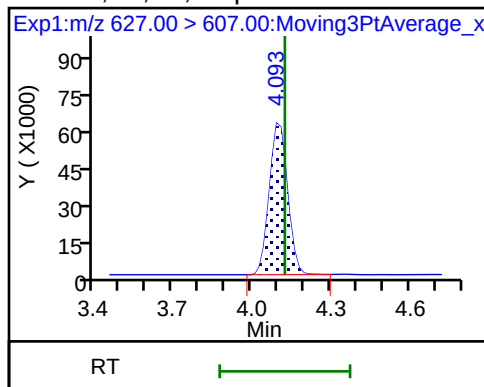
37 Perfluorododecanoic acid

37 Perfluorododecanoic acid



74 1H,1H,2H,2H-perfluorododecanesulfonate 75 Perfluorododecanesulfonic acid (PF

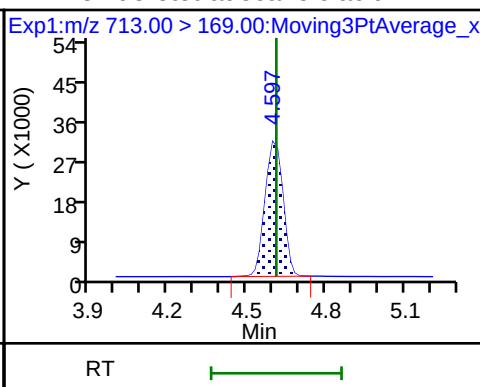
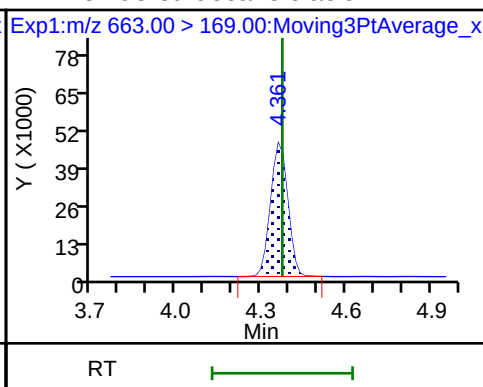
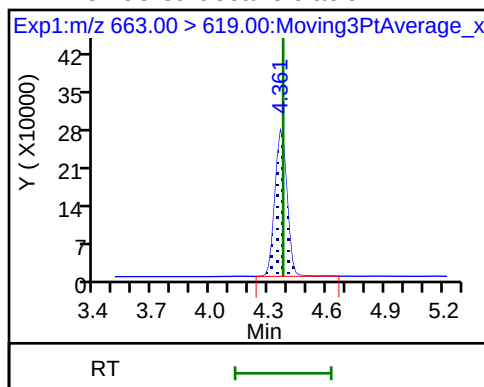
75 Perfluorododecanesulfonic acid (PF



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

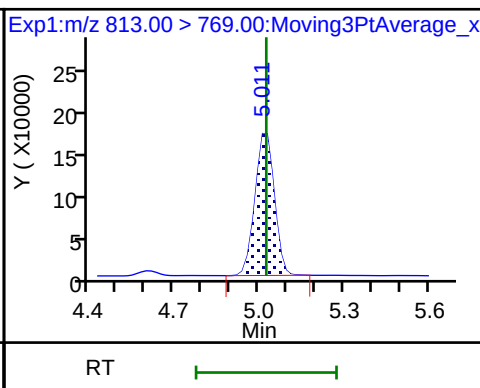
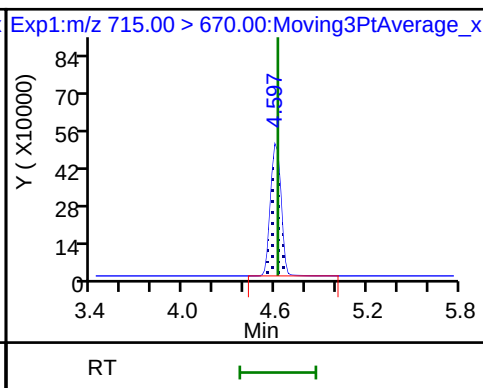
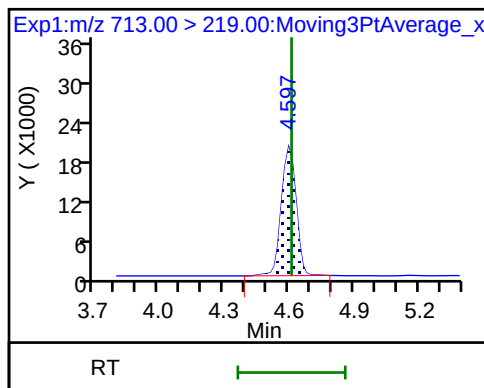
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

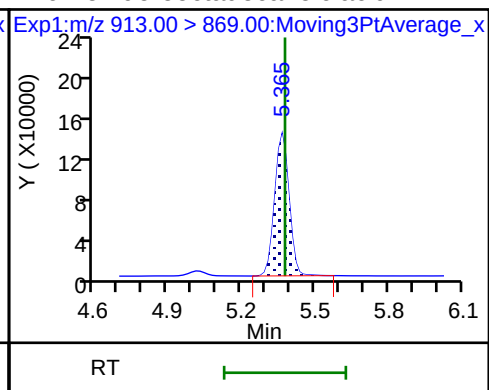
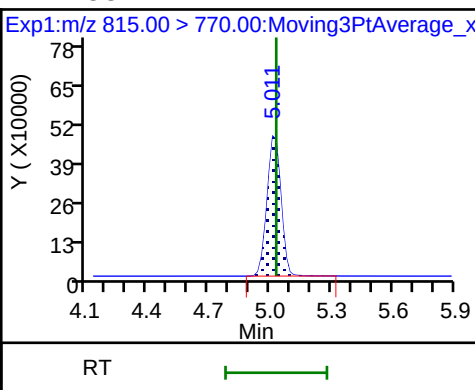
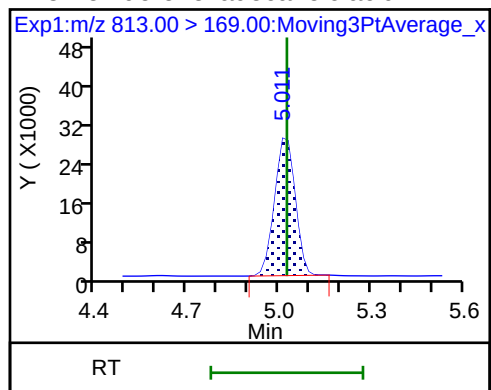
45 Perfluorohexadecanoic acid



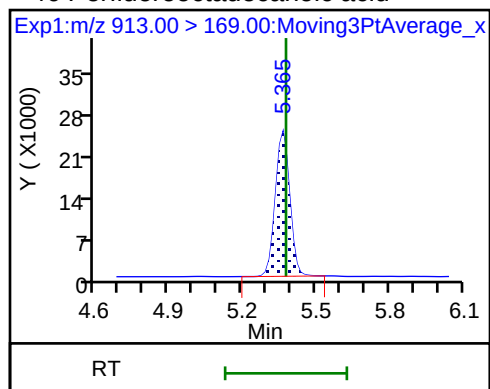
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Instrument ID: A9 Start Date: 08/14/2018 14:32Analysis Batch Number: 239851 End Date: 08/14/2018 15:32

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-239851/2		08/14/2018 14:32	1	2018.08.14LLICA L 005.d	Acquity 2.1 (mm)
IC 320-239851/3		08/14/2018 14:40	1	2018.08.14LLICA L 006.d	Acquity 2.1 (mm)
IC 320-239851/4		08/14/2018 14:47	1	2018.08.14LLICA L 007.d	Acquity 2.1 (mm)
IC 320-239851/5 ICIS		08/14/2018 14:55	1	2018.08.14LLICA L 008.d	Acquity 2.1 (mm)
IC 320-239851/6		08/14/2018 15:02	1	2018.08.14LLICA L 009.d	Acquity 2.1 (mm)
IC 320-239851/7		08/14/2018 15:10	1	2018.08.14LLICA L 010.d	Acquity 2.1 (mm)
IC 320-239851/8		08/14/2018 15:17	1	2018.08.14LLICA L 011.d	Acquity 2.1 (mm)
ICB 320-239851/9		08/14/2018 15:25	1	2018.08.14LLICA L 012.d	Acquity 2.1 (mm)
ICV 320-239851/10		08/14/2018 15:32	1	2018.08.14LLICA L 013.d	Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Instrument ID: A9 Start Date: 08/18/2018 04:35Analysis Batch Number: 240679 End Date: 08/18/2018 07:05

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-240679/1		08/18/2018 04:35	1	2018.08.18LLA_0 04.d	Acquity 2.1 (mm)
CCVL 320-240679/2		08/18/2018 04:42	1	2018.08.18LLA_0 05.d	Acquity 2.1 (mm)
CCV 320-240679/3 CCVIS		08/18/2018 04:50	1	2018.08.18LLA_0 06.d	Acquity 2.1 (mm)
CCV 320-240679/14		08/18/2018 06:13	1		Acquity 2.1 (mm)
CCV 320-240679/21		08/18/2018 07:05	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Instrument ID: A9 Start Date: 08/18/2018 07:58Analysis Batch Number: 240682 End Date: 08/18/2018 09:13

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240682/1		08/18/2018 07:58	1	2018.08.18LLA_0 31.d	Acquity 2.1 (mm)
MB 320-240465/1-A		08/18/2018 08:05	1	2018.08.18LLA_0 32.d	Acquity 2.1 (mm)
LCS 320-240465/2-A		08/18/2018 08:13	1	2018.08.18LLA_0 33.d	Acquity 2.1 (mm)
320-42105-1		08/18/2018 08:20	1	2018.08.18LLA_0 34.d	Acquity 2.1 (mm)
320-42105-1 MS		08/18/2018 08:28	1	2018.08.18LLA_0 35.d	Acquity 2.1 (mm)
320-42105-1 MSD		08/18/2018 08:35	1	2018.08.18LLA_0 36.d	Acquity 2.1 (mm)
320-42105-2		08/18/2018 08:43	1	2018.08.18LLA_0 37.d	Acquity 2.1 (mm)
320-42105-3		08/18/2018 08:50	1	2018.08.18LLA_0 38.d	Acquity 2.1 (mm)
320-42105-4		08/18/2018 08:58	1	2018.08.18LLA_0 39.d	Acquity 2.1 (mm)
320-42105-5		08/18/2018 09:05	1	2018.08.18LLA_0 40.d	Acquity 2.1 (mm)
CCV 320-240682/11		08/18/2018 09:13	1	2018.08.18LLA_0 41.d	Acquity 2.1 (mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Batch Number: 240465 Batch Start Date: 08/17/18 09:04 Batch Analyst: Kouchari, ShamiranBatch Method: 3535 Batch End Date: 08/17/18 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC ALL_SU 00094	LCPFC-IS 00071
MB 320-240465/1		3535, 537 (modified)				250 mL	10.00 mL	500 uL	500 uL
LCS 320-240465/2		3535, 537 (modified)				250 mL	10.00 mL	500 uL	500 uL
320-42105-A-1	MW-12	3535, 537 (modified)	T	340.01 g	27.84 g	312.2 mL	10.00 mL	500 uL	500 uL
320-42105-A-1 MS	MW-12	3535, 537 (modified)	T	343.21 g	28.02 g	315.2 mL	10.00 mL	500 uL	500 uL
320-42105-A-1 MSD	MW-12	3535, 537 (modified)	T	335.15 g	28.52 g	306.6 mL	10.00 mL	500 uL	500 uL
320-42105-A-2	MW-11	3535, 537 (modified)	T	323.91 g	28.19 g	295.7 mL	10.00 mL	500 uL	500 uL
320-42105-A-3	Field Duplicate	3535, 537 (modified)	T	313.62 g	30.07 g	283.6 mL	10.00 mL	500 uL	500 uL
320-42105-A-4	Equipment Blank	3535, 537 (modified)	T	331.51 g	28.16 g	303.4 mL	10.00 mL	500 uL	500 uL
320-42105-A-5	MW-10D	3535, 537 (modified)	T	337.21 g	28.96 g	308.3 mL	10.00 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00180	AnalysisComment				
MB 320-240465/1		3535, 537 (modified)							
LCS 320-240465/2		3535, 537 (modified)		500 uL					
320-42105-A-1	MW-12	3535, 537 (modified)	T		179.49 g weight remaining.				
320-42105-A-1 MS	MW-12	3535, 537 (modified)	T	500 uL	205.67 g weight remaining.				
320-42105-A-1 MSD	MW-12	3535, 537 (modified)	T	500 uL	141.31 g weight remaining.				
320-42105-A-2	MW-11	3535, 537 (modified)	T		119.61 g weight remaining.				
320-42105-A-3	Field Duplicate	3535, 537 (modified)	T		166.37 g weight remaining.				
320-42105-A-4	Equipment Blank	3535, 537 (modified)	T						
320-42105-A-5	MW-10D	3535, 537 (modified)	T		63.55 g weight remaining.				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (modified)

Page 1 of 2

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-42105-1

SDG No.: _____

Batch Number: 240465 Batch Start Date: 08/17/18 09:04 Batch Analyst: Kouchari, ShamiranBatch Method: 3535 Batch End Date: 08/17/18 16:00

Batch Notes	
Analyst ID - Aliquot Step	SKD
Balance ID	QA-078
Batch Comment	Client labels match TA label, SKD 08/17/18
Analyst ID - Final Volume Step	SKD
H2O ID	08/16/18
Hexane ID	1328641
Internal Standard ID#	1314738
Manifold ID	N
Methanol ID	1328630
Sodium Hydroxide ID	1333885
Pipette ID	I46345G
Analyst ID - Reagent Drop	SKD
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	MNV
Analyst ID - SU Reagent Drop	SKD
Analyst ID - SU Reagent Drop Witness	MNV
Solvent Lot #	1328387
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137a

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact Company Name: <u>Lu Engineers</u> Address: <u>339 East Avenue, Suite 200</u> City/State/Zip: <u>Buffalo, NY 14204</u> Phone: <u>585-385-7417</u> Fax: <u>585-385-7417</u> Project Name: <u>Sub Landfill</u> Site: <u>5091-01</u> PO # <u>5091-01</u>		Project Manager: <u>Greg Andrus</u> Tel/Fax: <u>585-385-7417</u> Analysis Turnaround Time ☐ CALENDAR DAYS ☒ WORKING DAYS TAT if different from Below ☐ 2 weeks ☒ 1 week ☐ 2 days ☐ 1 day		Site Contact: Lab Contact: <u>Debbie Johnson</u> Date: _____ Carrier: _____		COC No: _____ of _____ COCs Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: _____ Sample Specific Notes: _____	
Sample Identification Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont.		Filtered Sample (Y/N) Perform MS/MSB (Y/N)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
MW-12 8/7/18 11:20 G GW 4		2 2		GW-Grandwater			
MW-12-MS 8/7/18 11:20 G GW 4		2 2		Distilled WATER			
MW-12-MSD 8/7/18 11:20 G GW 4		2 2		2 2			
MW-11 8/7/18 11:55 G GW 4		2 2		2 2			
Field Duplicate 8/7/18 12:10 G GW 4		2 2		2 2			
Equipment Blank 8/7/18 12:35 G GW 4		2 2		2 2			
MW-10D 8/7/18 12:35 G GW 4		2 2		2 2			
Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other _____ Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Return to Client ☐ Disposal by Lab ☒ Archive for _____ Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Special Instructions/QC Requirements & Comments: Category B deliverable required, NYDEC EDD		Cooler Temp. (°C): Obs'd: <u>3.0</u> Cor'd: <u>3.12</u> Therm ID No.: <u>AX-3</u>		Date/Time: <u>8/10/18 1030</u>			
Custody Seal No.: _____ Relinquished by: <u>Laura R. Hegor</u> Company: <u>Lu Engineers</u>		Received by: <u>Tammy Johnson</u> Company: <u>TA-BL</u>		Date/Time: <u>8/14/18 950</u>			
Relinquished by: <u>Greg Andrus</u> Company: <u>TA-BL</u>		Received by: <u>Debbie Johnson</u> Company: <u>TA-BL</u>		Date/Time: <u>8/14/18 950</u>			

2 No time listed on Container Label. PH 8/14/18

Login Sample Receipt Checklist

Client: Joseph C. Lu Eng & Land Surveying PC

Job Number: 320-42105-1

Login Number: 42105

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

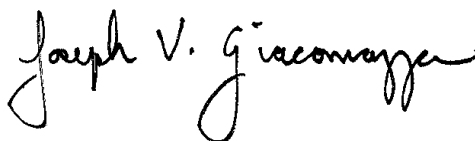
Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	523046
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

ANALYTICAL REPORT

Job Number: 480-140145-1

Job Description: Cuba Landfill

For:
Joseph C. Lu Eng & Land Surveying PC
339 East Avenue
Suite 200
Rochester, NY 14604
Attention: Mr. Greg Andrus



Approved for release.
Joe V Giacomazza
Project Management Assistant II
8/21/2018 11:16 AM

Designee for
Orlette S Johnson, Senior Project Manager
10 Hazelwood Drive, Amherst, NY, 14228-2298
(484)685-0864
orlette.johnson@testamericainc.com
08/21/2018

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report.

TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NYDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

TestAmerica Laboratories, Inc.

TestAmerica Buffalo 10 Hazelwood Drive, Amherst, NY 14228-2298
Tel (716) 691-2600 Fax (716) 691-7991 www.testamericainc.com



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Definitions/Glossary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.

Glossary

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

Job Narrative
480-140145-1

Comments

No additional comments.

Receipt

The samples were received on 8/9/2018 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

Receipt Exceptions

COC Requests analysis for PFSs but no volumes were received.

GC/MS Semi VOA

Method(s) 8270D SIM ID: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-11 (480-140145-2) and FIELD DUPLICATE (480-140145-3). Elevated reporting limits (RLs) are provided.

Method(s) 8270D SIM ID: The 1,4-Dioxane result reported for samples MW-11 (480-140145-2) and FIELD DUPLICATE (480-140145-3) have an E flag qualifier indicating the results are over the calibration range on the raw data. The actual amounts are within the calibration range; however, the E flag is generated based upon the bias corrected concentration. The LIMS system calculates a bias correction based on the recovery of the 1,4-Dioxane-d8 isotope.

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

Organic Prep

Method(s) 3510C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: MW-12 (480-140145-1), MW-12 (480-140145-1[MS]) and MW-12 (480-140145-1[MSD]). The reporting limits (RLs) have been adjusted proportionately.

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

Sample Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-140145-1	MW-12	Water	08/07/18 11:20	08/09/18 09:45
480-140145-2	MW-11	Water	08/07/18 11:55	08/09/18 09:45
480-140145-3	FIELD DUPLICATE	Water	08/07/18 00:00	08/09/18 09:45
480-140145-4	EQUIPMENT BLANK	Water	08/07/18 12:10	08/09/18 09:45
480-140145-5	MW-10D	Water	08/07/18 12:35	08/09/18 09:45

Detection Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Client Sample ID: MW-12

Lab Sample ID: 480-140145-1

No Detections.

Client Sample ID: MW-11

Lab Sample ID: 480-140145-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
1,4-Dioxane	18	E	1.0	0.50	ug/L	5			8270D SIM ID	Total/NA

Client Sample ID: FIELD DUPLICATE

Lab Sample ID: 480-140145-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
1,4-Dioxane	19	E	1.0	0.50	ug/L	5			8270D SIM ID	Total/NA

Client Sample ID: EQUIPMENT BLANK

Lab Sample ID: 480-140145-4

No Detections.

Client Sample ID: MW-10D

Lab Sample ID: 480-140145-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
1,4-Dioxane	0.30		0.20	0.10	ug/L	1			8270D SIM ID	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

Client Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Client Sample ID: MW-12

Date Collected: 08/07/18 11:20

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-1

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	1.0	ug/L	—	08/10/18 14:31	08/16/18 14:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	28		15 - 110				08/10/18 14:31	08/16/18 14:33	1

Client Sample ID: MW-11

Date Collected: 08/07/18 11:55

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-2

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	18	E	1.0	0.50	ug/L	—	08/10/18 14:31	08/17/18 10:56	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	27		15 - 110				08/10/18 14:31	08/17/18 10:56	5

Client Sample ID: FIELD DUPLICATE

Date Collected: 08/07/18 00:00

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-3

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	19	E	1.0	0.50	ug/L	—	08/10/18 14:31	08/17/18 11:20	5
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	27		15 - 110				08/10/18 14:31	08/17/18 11:20	5

Client Sample ID: EQUIPMENT BLANK

Date Collected: 08/07/18 12:10

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-4

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L	—	08/10/18 14:31	08/16/18 15:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	31		15 - 110				08/10/18 14:31	08/16/18 15:45	1

Client Sample ID: MW-10D

Date Collected: 08/07/18 12:35

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-5

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.30		0.20	0.10	ug/L	—	08/10/18 14:31	08/16/18 16:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	29		15 - 110				08/10/18 14:31	08/16/18 16:09	1

Isotope Dilution Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DXE (15-110)
480-140145-1	MW-12	28
480-140145-1 MS	MW-12	28
480-140145-1 MSD	MW-12	29
480-140145-2	MW-11	27
480-140145-3	FIELD DUPLICATE	27
480-140145-4	EQUIPMENT BLANK	31
480-140145-5	MW-10D	29
LCS 480-429107/2-A	Lab Control Sample	33
MB 480-429107/1-A	Method Blank	31

Surrogate Legend

DXE = 1,4-Dioxane-d8

QC Sample Results

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-429107/1-A

Matrix: Water

Analysis Batch: 429969

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 429107

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		08/10/18 14:31	08/16/18 12:59	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	31		15 - 110				08/10/18 14:31	08/16/18 12:59	1

Lab Sample ID: LCS 480-429107/2-A

Matrix: Water

Analysis Batch: 429969

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 429107

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane			1.00	1.09		ug/L		109	40 - 140
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits						
1,4-Dioxane-d8	33		15 - 110						

Lab Sample ID: 480-140145-1 MS

Matrix: Water

Analysis Batch: 429969

Client Sample ID: MW-12

Prep Type: Total/NA

Prep Batch: 429107

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	11.3		ug/L		113	40 - 140
Isotope Dilution	MS %Recovery	MS Qualifier	Limits						
1,4-Dioxane-d8	28		15 - 110						

Lab Sample ID: 480-140145-1 MSD

Matrix: Water

Analysis Batch: 429969

Client Sample ID: MW-12

Prep Type: Total/NA

Prep Batch: 429107

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,4-Dioxane	ND		10.0	11.0		ug/L		110	40 - 140	2	20
Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits								
1,4-Dioxane-d8	29		15 - 110								

QC Association Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

GC/MS Semi VOA

Prep Batch: 429107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-140145-1	MW-12	Total/NA	Water	3510C	
480-140145-2	MW-11	Total/NA	Water	3510C	
480-140145-3	FIELD DUPLICATE	Total/NA	Water	3510C	
480-140145-4	EQUIPMENT BLANK	Total/NA	Water	3510C	
480-140145-5	MW-10D	Total/NA	Water	3510C	
MB 480-429107/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-429107/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-140145-1 MS	MW-12	Total/NA	Water	3510C	
480-140145-1 MSD	MW-12	Total/NA	Water	3510C	

Analysis Batch: 429969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-140145-1	MW-12	Total/NA	Water	8270D SIM ID	429107
480-140145-4	EQUIPMENT BLANK	Total/NA	Water	8270D SIM ID	429107
480-140145-5	MW-10D	Total/NA	Water	8270D SIM ID	429107
MB 480-429107/1-A	Method Blank	Total/NA	Water	8270D SIM ID	429107
LCS 480-429107/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	429107
480-140145-1 MS	MW-12	Total/NA	Water	8270D SIM ID	429107
480-140145-1 MSD	MW-12	Total/NA	Water	8270D SIM ID	429107

Analysis Batch: 430190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-140145-2	MW-11	Total/NA	Water	8270D SIM ID	429107
480-140145-3	FIELD DUPLICATE	Total/NA	Water	8270D SIM ID	429107

Lab Chronicle

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Client Sample ID: MW-12

Date Collected: 08/07/18 11:20

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			429107	08/10/18 14:31	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	429969	08/16/18 14:33	DMR	TAL BUF

Client Sample ID: MW-11

Date Collected: 08/07/18 11:55

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			429107	08/10/18 14:31	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		5	430190	08/17/18 10:56	DMR	TAL BUF

Client Sample ID: FIELD DUPLICATE

Date Collected: 08/07/18 00:00

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			429107	08/10/18 14:31	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		5	430190	08/17/18 11:20	DMR	TAL BUF

Client Sample ID: EQUIPMENT BLANK

Date Collected: 08/07/18 12:10

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			429107	08/10/18 14:31	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	429969	08/16/18 15:45	DMR	TAL BUF

Client Sample ID: MW-10D

Date Collected: 08/07/18 12:35

Date Received: 08/09/18 09:45

Lab Sample ID: 480-140145-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			429107	08/10/18 14:31	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	429969	08/16/18 16:09	DMR	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Method Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Method	Method Description	Protocol	Laboratory
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: Joseph C. Lu Eng & Land Surveying PC
Project/Site: Cuba Landfill

TestAmerica Job ID: 480-140145-1

Laboratory: TestAmerica Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-19

Method 8270D

SIM-ID

Semivolatile Organic Compounds
(GC/MS SIM / Isotope Dilution) by
Method 8270D

FORM II
GC/MS SEMI VOA SURROGATE RECOVERY

Lab Name: TestAmerica Buffalo

Job No.: 480-140145-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): RXI-5Sil MS ID: 0.25 (mm)

Client Sample ID	Lab Sample ID	DXE #
MW-12	480-140145-1	28
MW-11	480-140145-2	27
FIELD DUPLICATE	480-140145-3	27
EQUIPMENT BLANK	480-140145-4	31
MW-10D	480-140145-5	29
	MB 480-429107/1-A	31
	LCS 480-429107/2-A	33
MW-12 MS	480-140145-1 MS	28
MW-12 MSD	480-140145-1 MSD	29

DXE = 1,4-Dioxane-d8

QC LIMITS
15-110

Column to be used to flag recovery values

FORM II 8270D SIM ID

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: U3310622.D
Lab ID: LCS 480-429107/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
1,4-Dioxane	1.00	1.09	109	40-140	
1,4-Dioxane-d8	10.0	3.30	33	15-110	

Column to be used to flag recovery and RPD values

FORM III 8270D SIM ID

FORM III
GC/MS SEMI VOA MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: U3310623.D
Lab ID: 480-140145-1 MS Client ID: MW-12 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
1,4-Dioxane	10.0	ND	11.3	113	40-140	
1,4-Dioxane-d8	100	28	27.7	28	15-110	

Column to be used to flag recovery and RPD values

FORM III 8270D SIM ID

FORM III
GC/MS SEMI VOA MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: U3310624.D
 Lab ID: 480-140145-1 MSD Client ID: MW-12 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
1,4-Dioxane	10.0	11.0	110	2	20	40-140	
1,4-Dioxane-d8	100	29.4	29			15-110	

Column to be used to flag recovery and RPD values

FORM III 8270D SIM ID

FORM IV
GC/MS SEMI VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Lab File ID: U3310621.D Lab Sample ID: MB 480-429107/1-A
Matrix: Water Date Extracted: 08/10/2018 14:31
Instrument ID: HP5973U Date Analyzed: 08/16/2018 12:59
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 480-429107/2-A	U3310622.D	08/16/2018 13:22
MW-12 MS	480-140145-1 MS	U3310623.D	08/16/2018 13:46
MW-12 MSD	480-140145-1 MSD	U3310624.D	08/16/2018 14:10
MW-12	480-140145-1	U3310625.D	08/16/2018 14:33
EQUIPMENT BLANK	480-140145-4	U3310628.D	08/16/2018 15:45
MW-10D	480-140145-5	U3310629.D	08/16/2018 16:09
MW-11	480-140145-2	U3310674.D	08/17/2018 10:56
FIELD DUPLICATE	480-140145-3	U3310675.D	08/17/2018 11:20

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Lab File ID: U3309386.D DFTPP Injection Date: 07/11/2018
Instrument ID: HP5973U DFTPP Injection Time: 18:14
Analysis Batch No.: 424045

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10-80% of Base Peak	42.8
68	Less than 2% of mass 69	0.0 (0.0) 1
69	Mass 69 Relative abundance	42.1
70	Less than 2% of mass 69	0.2 (0.4) 1
127	10-80% of Base Peak	47.6
197	Less than 2% of mass 198	0.0
198	Base peak	100.0
199	5-9% of mass 198	7.0
275	10-60% of Base Peak	26.3
365	Greater than 1% of mass 198	3.3
441	present but less than 24% of mass 442	10.2 (15.4) 2
442	Greater than 50% of mass 198	66.2
443	15-24% of mass 442	13.4 (20.3) 2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 480-424045/3	U3309387.D	07/11/2018	18:42
	IC 480-424045/4	U3309388.D	07/11/2018	19:06
	ICIS 480-424045/5	U3309389.D	07/11/2018	19:30
	IC 480-424045/6	U3309390.D	07/11/2018	19:54
	IC 480-424045/7	U3309391.D	07/11/2018	20:18
	IC 480-424045/8	U3309392.D	07/11/2018	20:42

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Lab File ID: U3310619.D DFTPP Injection Date: 08/16/2018
Instrument ID: HP5973U DFTPP Injection Time: 12:07
Analysis Batch No.: 429969

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10-80% of Base Peak	49.8
68	Less than 2% of mass 69	0.0 (0.0) 1
69	Mass 69 Relative abundance	47.2
70	Less than 2% of mass 69	0.2 (0.5) 1
127	10-80% of Base Peak	49.9
197	Less than 2% of mass 198	0.0
198	Base peak	100.0
199	5-9% of mass 198	6.9
275	10-60% of Base Peak	25.7
365	Greater than 1% of mass 198	3.7
441	present but less than 24% of mass 442	9.1 (16.1) 2
442	Greater than 50% of mass 198	56.3
443	15-24% of mass 442	10.8 (19.1) 2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 480-429969/3	U3310620.D	08/16/2018	12:35
	MB 480-429107/1-A	U3310621.D	08/16/2018	12:59
	LCS 480-429107/2-A	U3310622.D	08/16/2018	13:22
MW-12 MS	480-140145-1 MS	U3310623.D	08/16/2018	13:46
MW-12 MSD	480-140145-1 MSD	U3310624.D	08/16/2018	14:10
MW-12	480-140145-1	U3310625.D	08/16/2018	14:33
EQUIPMENT BLANK	480-140145-4	U3310628.D	08/16/2018	15:45
MW-10D	480-140145-5	U3310629.D	08/16/2018	16:09

FORM V
GC/MS SEMI VOA INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Lab File ID: U3310672.D DFTPP Injection Date: 08/17/2018
 Instrument ID: HP5973U DFTPP Injection Time: 10:04
 Analysis Batch No.: 430190

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10-80% of Base Peak	49.4
68	Less than 2% of mass 69	0.0 (0.0) 1
69	Mass 69 Relative abundance	46.8
70	Less than 2% of mass 69	0.1 (0.2) 1
127	10-80% of Base Peak	49.1
197	Less than 2% of mass 198	0.0
198	Base peak	100.0
199	5-9% of mass 198	7.2
275	10-60% of Base Peak	26.7
365	Greater than 1% of mass 198	3.6
441	present but less than 24% of mass 442	8.4 (15.1) 2
442	Greater than 50% of mass 198	55.5
443	15-24% of mass 442	11.3 (20.3) 2

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 480-430190/3	U3310673.D	08/17/2018	10:32
MW-11	480-140145-2	U3310674.D	08/17/2018	10:56
FIELD DUPLICATE	480-140145-3	U3310675.D	08/17/2018	11:20

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Sample No.: ICIS 480-424045/5 Date Analyzed: 07/11/2018 19:30
 Instrument ID: HP5973U GC Column: RXI-5Sil MS(0.5 ID: 0.25(mm)
 Lab File ID (Standard): U3309389.D Heated Purge: (Y/N) N
 Calibration ID: 34301

	DCBd4					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	374104	5.84				
UPPER LIMIT	748208	6.34				
LOWER LIMIT	187052	5.34				
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVIS 480-429969/3		363711 5.71				
CCVIS 480-430190/3		297625 5.71				

DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D SIM ID

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Sample No.: CCVIS 480-429969/3 Date Analyzed: 08/16/2018 12:35
 Instrument ID: HP5973U GC Column: RXI-5Sil MS(0.5 ID: 0.25 (mm)
 Lab File ID (Standard): U3310620.D Heated Purge: (Y/N) N
 Calibration ID: 34301

		DCBd4					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		363711	5.71				
UPPER LIMIT		727422	6.21				
LOWER LIMIT		181856	5.21				
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 480-429107/1-A		345645	5.71				
LCS 480-429107/2-A		328536	5.72				
480-140145-1 MS	MW-12 MS	325794	5.71				
480-140145-1 MSD	MW-12 MSD	315532	5.72				
480-140145-1	MW-12	317325	5.71				
480-140145-4	EQUIPMENT BLANK	291317	5.71				
480-140145-5	MW-10D	295985	5.71				

DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D SIM ID

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Sample No.: CCVIS 480-430190/3 Date Analyzed: 08/17/2018 10:32
 Instrument ID: HP5973U GC Column: RXI-5Sil MS(0.5 ID: 0.25(mm)
 Lab File ID (Standard): U3310673.D Heated Purge: (Y/N) N
 Calibration ID: 34301

		DCBd4					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		297625	5.71				
UPPER LIMIT		595250	6.21				
LOWER LIMIT		148813	5.21				
LAB SAMPLE ID	CLIENT SAMPLE ID						
480-140145-2	MW-11	280774	5.71				
480-140145-3	FIELD DUPLICATE	282840	5.71				

DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8270D SIM ID

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: MW-12 Lab Sample ID: 480-140145-1
Matrix: Water Lab File ID: U3310625.D
Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 11:20
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 100 (mL) Date Analyzed: 08/16/2018 14:33
Con. Extract Vol.: 1 (mL) Dilution Factor: 1
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	ND		2.0	1.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	28		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310625.D
 Lims ID: 480-140145-B-1-B
 Client ID: MW-12
 Sample Type: Client
 Inject. Date: 16-Aug-2018 14:33:30 ALS Bottle#: 8 Worklist Smp#: 8
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-008
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 14:56:02 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 14:56:13

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ng/ul	%Rec	Flags
D 1 1,4-Dioxane-d8	96	2.450	2.384	0.066	100	107111	2.78	27.8	
3 1,4-Dioxane	88		2.413				ND		U
* 2 1,4-Dichlorobenzene-d4	152	5.714	5.709	0.005	97	317325	4.00		

QC Flag Legend

Review Flags

U - Marked Undetected

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310625.D

Injection Date: 16-Aug-2018 14:33:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-B-1-B

Lab Sample ID: 480-140145-1

Worklist Smp#: 8

Client ID: MW-12

Injection Vol: 1.0 ul

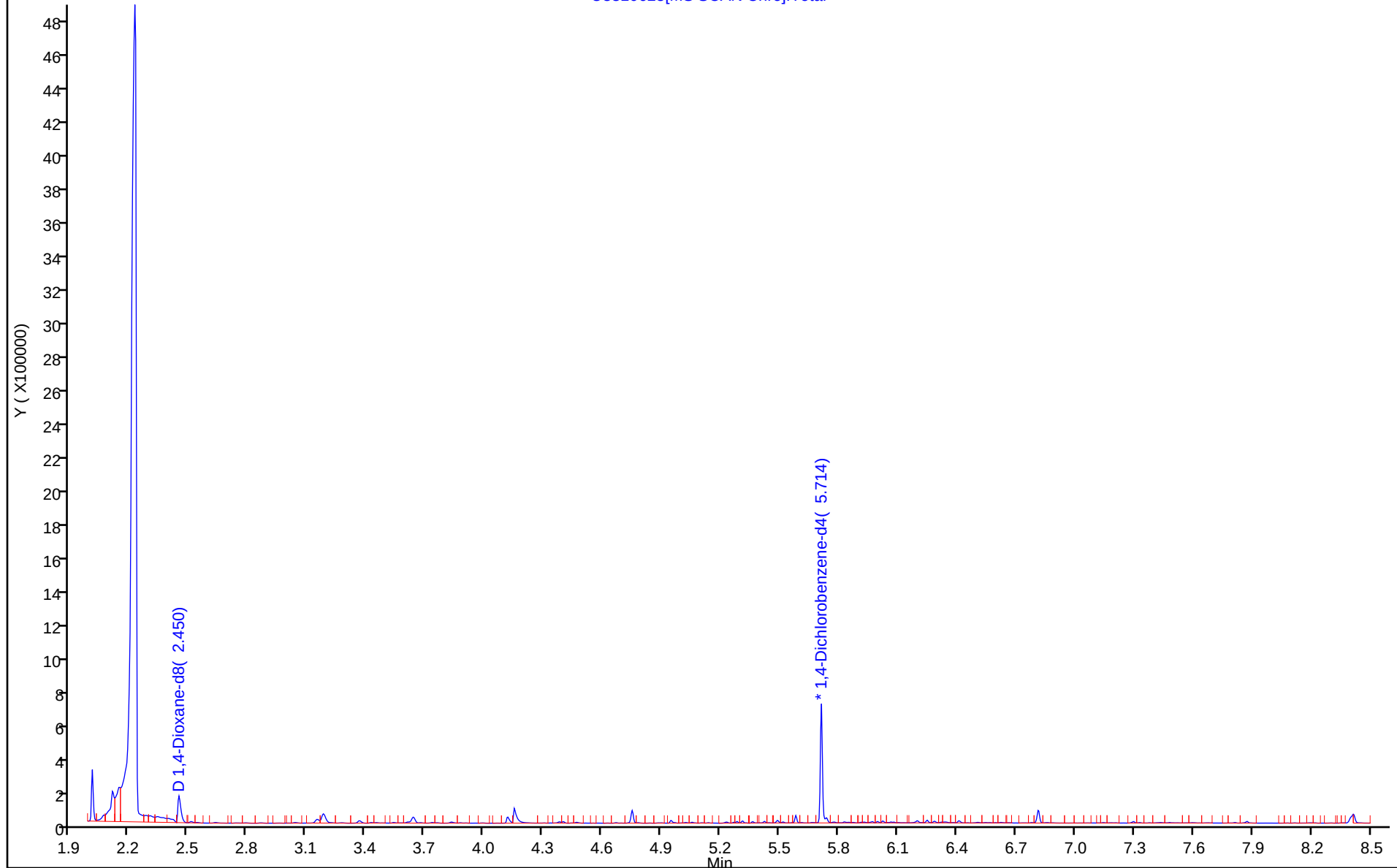
Dil. Factor: 1.0000

ALS Bottle#: 8

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310625[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310625.D

Injection Date: 16-Aug-2018 14:33:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-1-B

Lab Sample ID: 480-140145-1

Client ID: MW-12

Operator ID: MKP

ALS Bottle#: 8

Worklist Smp#: 8

Injection Vol: 1.0 ul

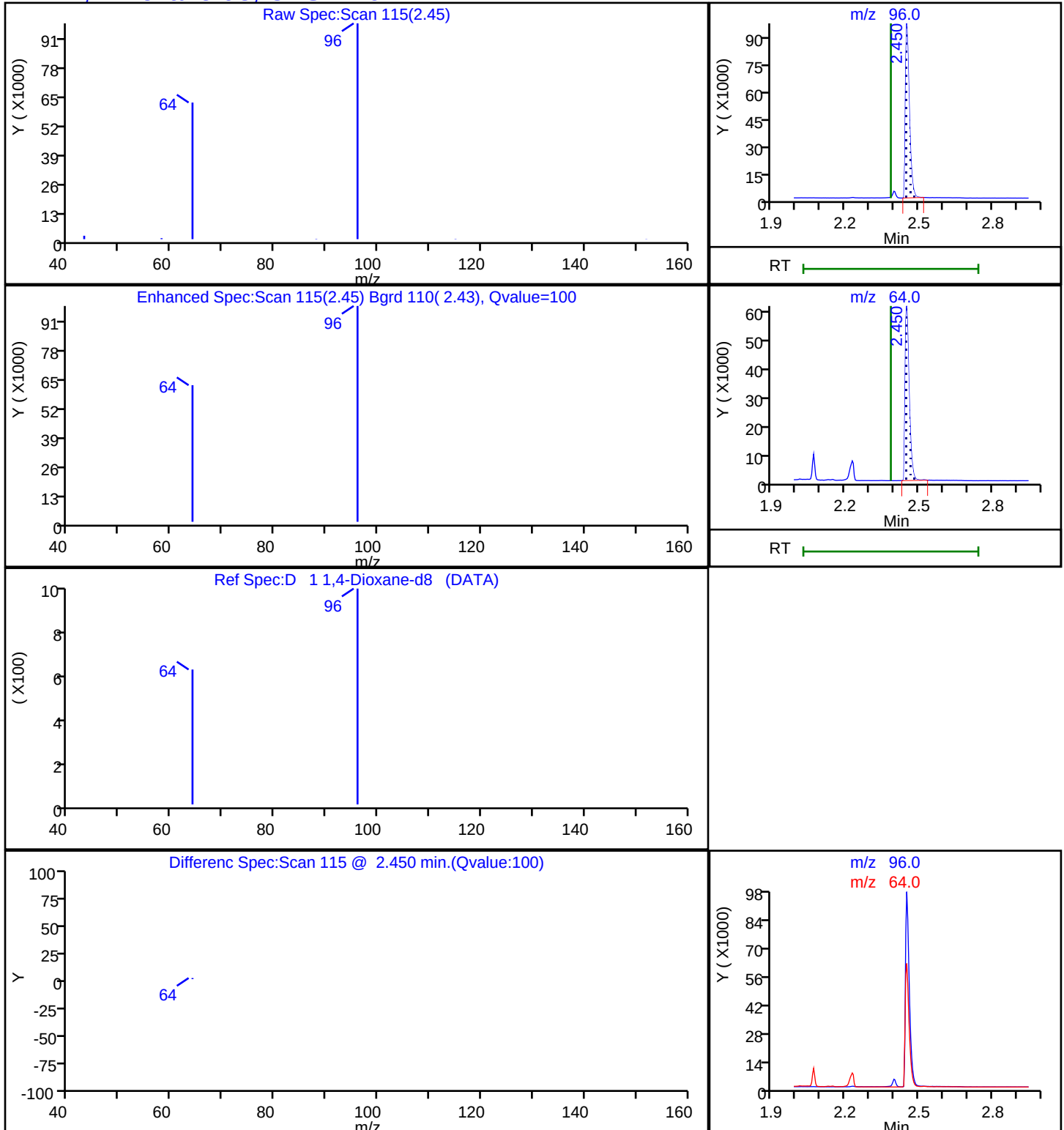
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310625.D

Injection Date: 16-Aug-2018 14:33:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-1-B

Lab Sample ID: 480-140145-1

Client ID: MW-12

Operator ID: MKP

ALS Bottle#: 8 Worklist Smp#: 8

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

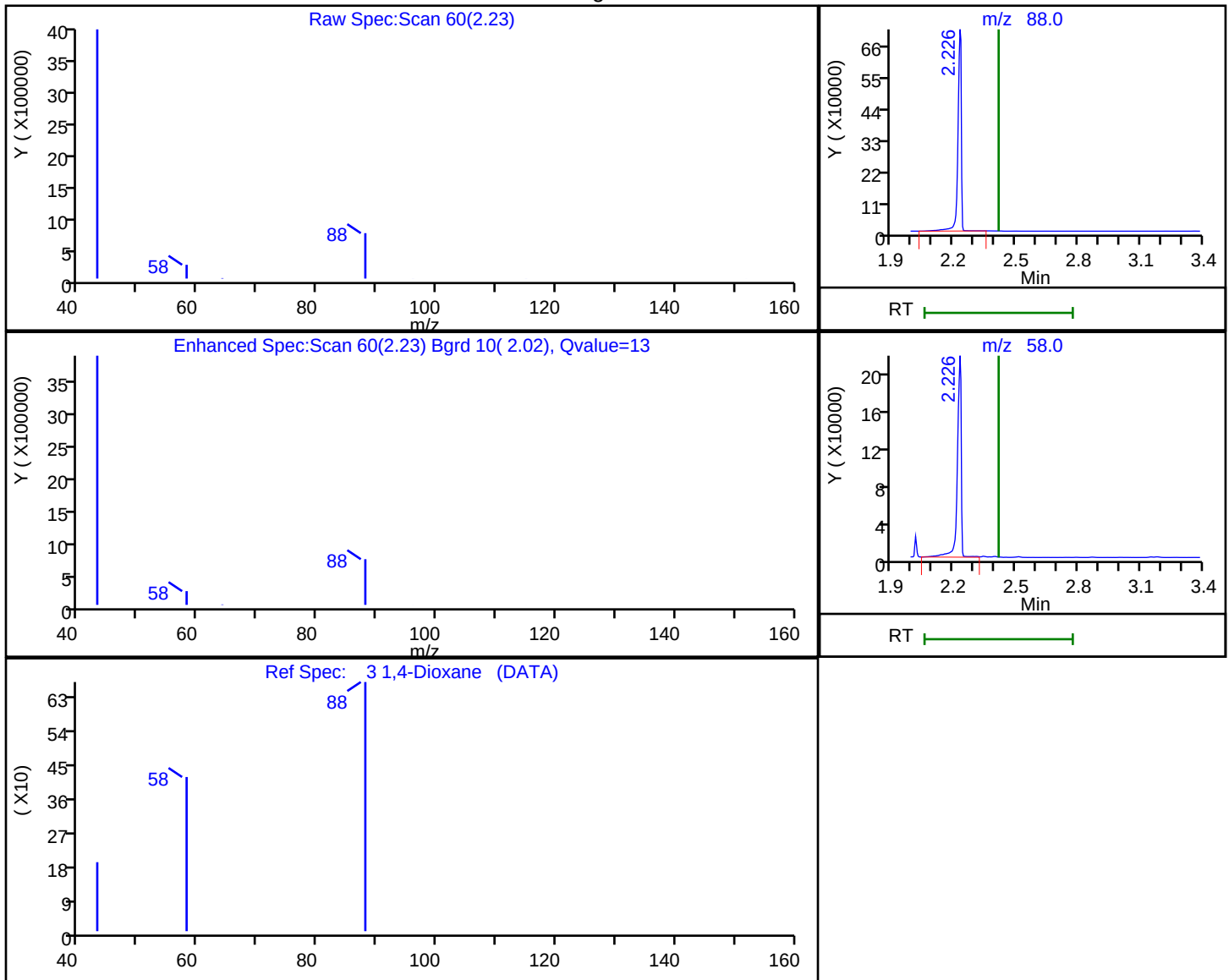
Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

Processing Results



RT	Mass	Response	Amount
2.23	88.00	806840	68.080340
2.23	58.00	281070	

Reviewer: pagem, 16-Aug-2018 14:55:59

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Client Sample ID: MW-11 Lab Sample ID: 480-140145-2
 Matrix: Water Lab File ID: U3310674.D
 Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 11:55
 Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
 Sample wt/vol: 1000 (mL) Date Analyzed: 08/17/2018 10:56
 Con. Extract Vol.: 1 (mL) Dilution Factor: 5
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 430190 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	18	E	1.0	0.50

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	27		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310674.D
 Lims ID: 480-140145-B-2-A
 Client ID: MW-11
 Sample Type: Client
 Inject. Date: 17-Aug-2018 10:56:30 ALS Bottle#: 91 Worklist Smp#: 4
 Injection Vol: 1.0 ul Dil. Factor: 5.0000
 Sample Info: 480-0073990-004
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 17-Aug-2018 14:40:34 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK014

First Level Reviewer: richardsd

Date: 17-Aug-2018 12:44:59

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ng/ul	%Rec	Flags
D 1 1,4-Dioxane-d8	96	2.409	2.376	0.033	100	18278	0.5364	26.8	
3 1,4-Dioxane	88	2.437	2.417	0.020	97	36208	3.60		Ea
* 2 1,4-Dichlorobenzene-d4	152	5.709	5.705	0.004	99	280774	4.00		

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

a - User Assigned ID

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310674.D

Injection Date: 17-Aug-2018 10:56:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-B-2-A

Lab Sample ID: 480-140145-2

Worklist Smp#: 4

Client ID: MW-11

Injection Vol: 1.0 ul

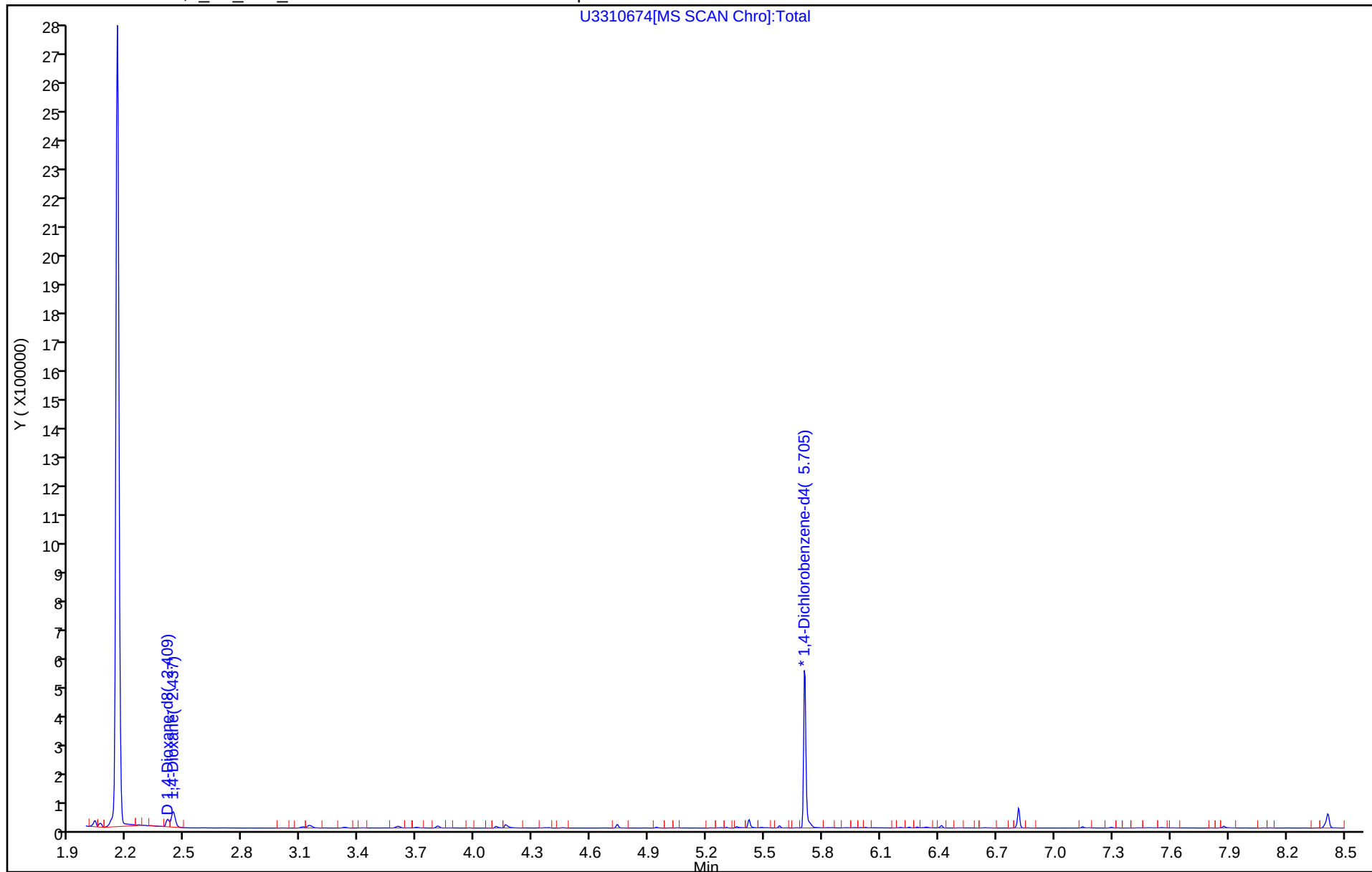
Dil. Factor: 5.0000

ALS Bottle#: 91

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310674[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310674.D

Injection Date: 17-Aug-2018 10:56:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-2-A

Lab Sample ID: 480-140145-2

Client ID: MW-11

Operator ID: MKP

ALS Bottle#: 91

Worklist Smp#: 4

Injection Vol: 1.0 ul

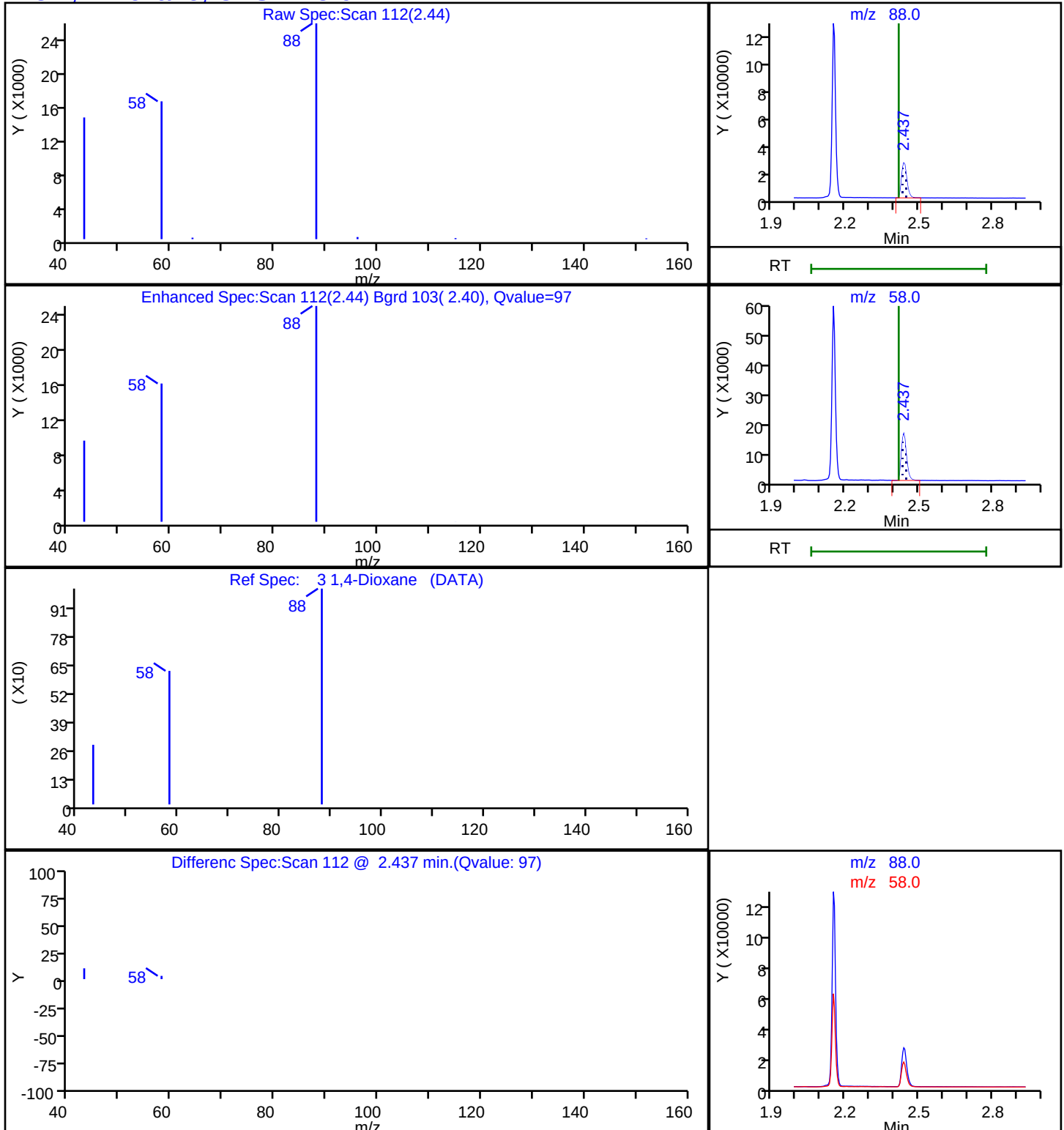
Dil. Factor: 5.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310674.D

Injection Date: 17-Aug-2018 10:56:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-2-A

Lab Sample ID: 480-140145-2

Client ID: MW-11

Operator ID: MKP

ALS Bottle#: 91

Worklist Smp#: 4

Injection Vol: 1.0 ul

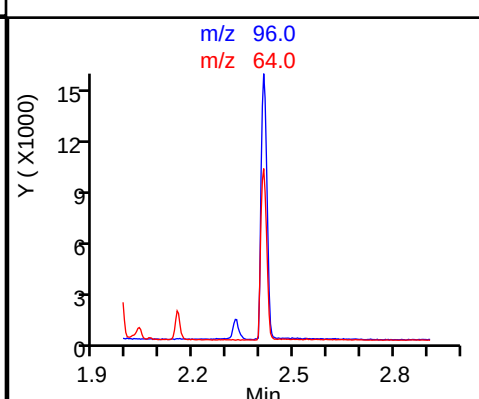
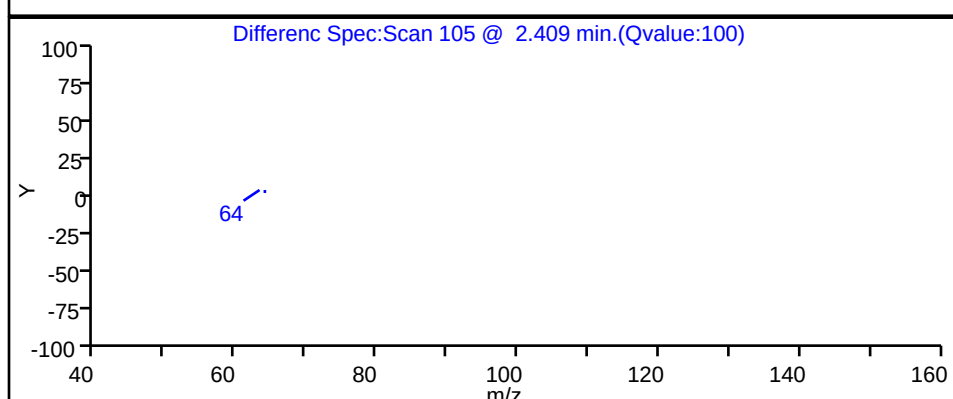
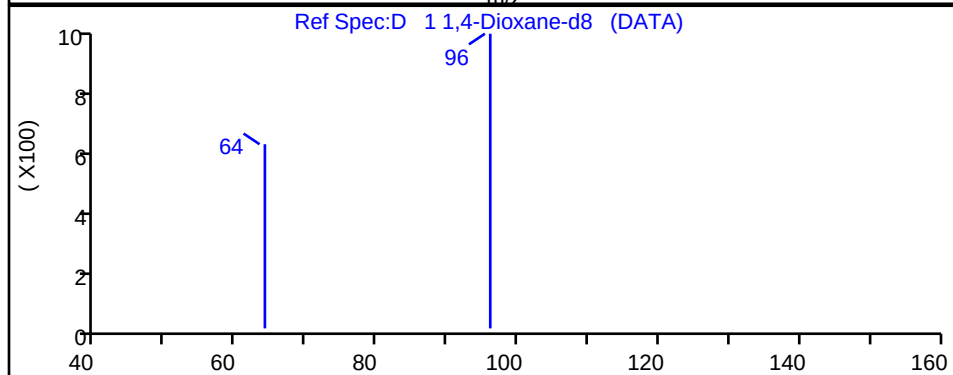
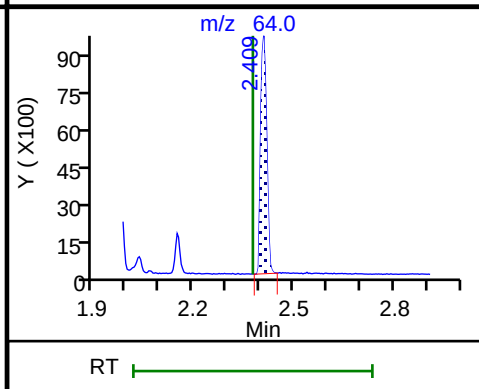
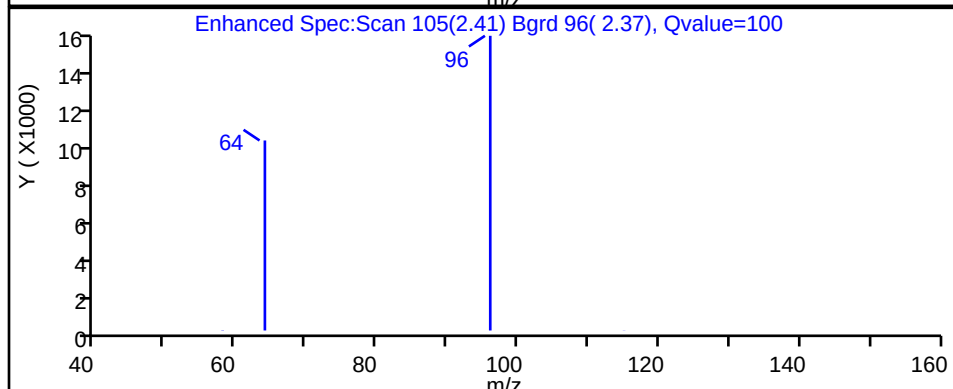
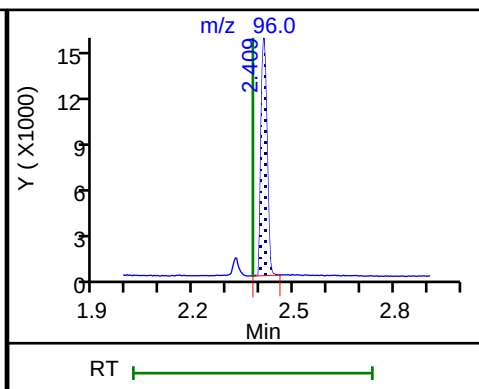
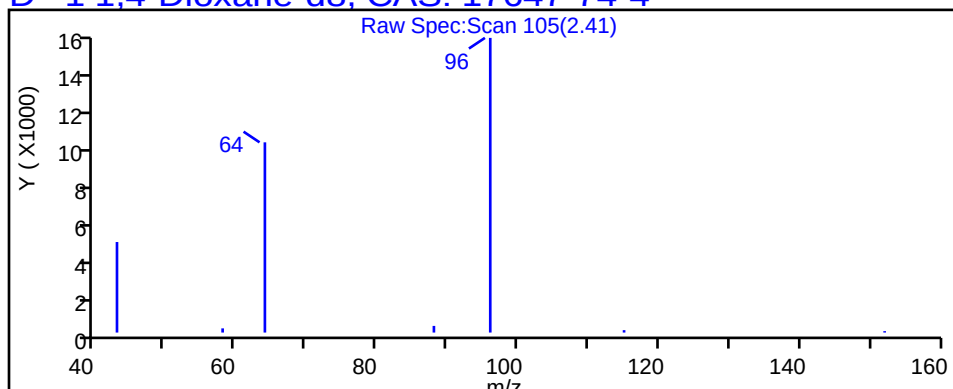
Dil. Factor: 5.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

TestAmerica Buffalo

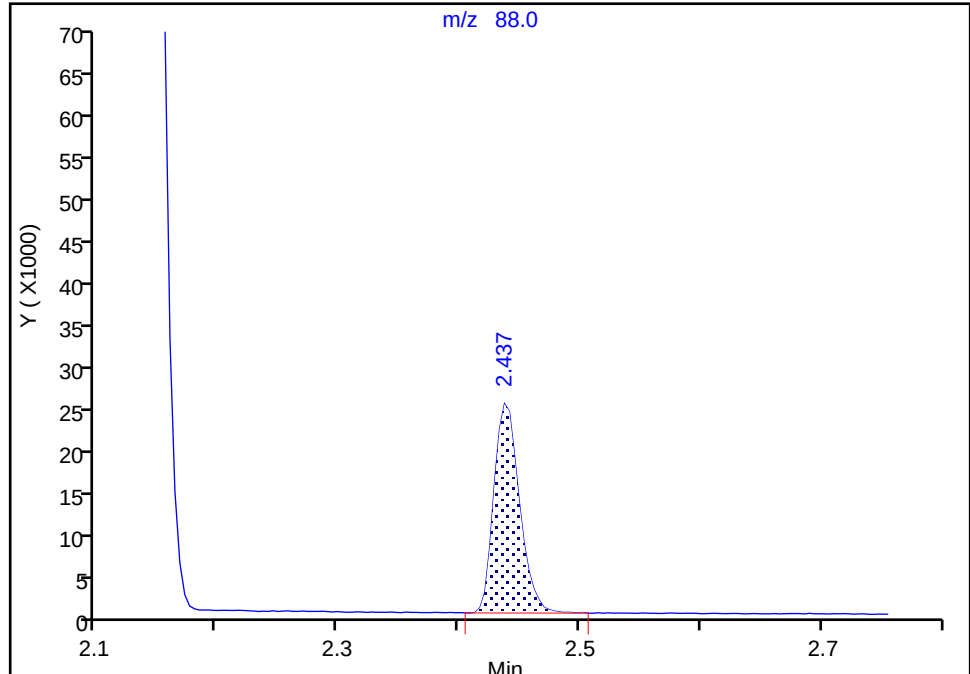
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Injection Date:	17-Aug-2018 10:56:30	Instrument ID:	HP5973U
Lims ID:	480-140145-B-2-A	Lab Sample ID:	480-140145-2
Client ID:	MW-11		
Operator ID:	MKP	ALS Bottle#:	91
Injection Vol:	1.0 ul	Dil. Factor:	5.0000
Method:	1,4_Dx_SIM_HP5973U	Limit Group:	MB - 8270D SIM ID ICAL
Column:		Detector:	MS SCAN
		Worklist Smp#:	4

3 1,4-Dioxane, CAS: 123-91-1

Signal: 1

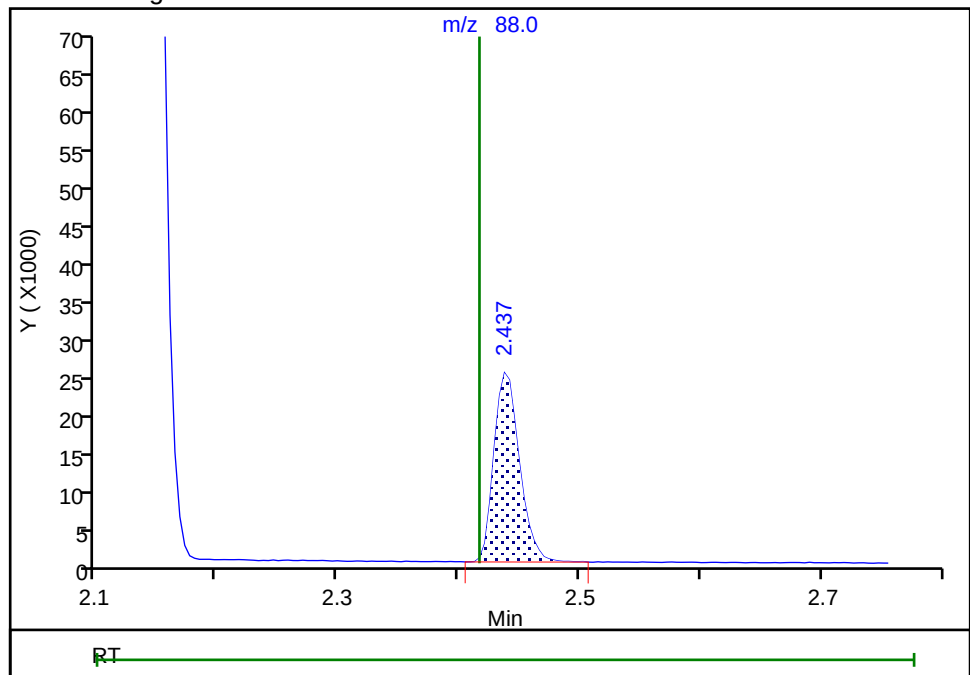
RT: 2.44
Area: 36208
Amount: 3.601733
Amount Units: ng/ul

Processing Integration Results



RT: 2.44
Area: 36208
Amount: 3.601733
Amount Units: ng/ul

Manual Integration Results



Reviewer: richardsd, 17-Aug-2018 12:44:51

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: FIELD DUPLICATE Lab Sample ID: 480-140145-3
Matrix: Water Lab File ID: U3310675.D
Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 00:00
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 1000 (mL) Date Analyzed: 08/17/2018 11:20
Con. Extract Vol.: 1 (mL) Dilution Factor: 5
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 430190 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	19	E	1.0	0.50

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	27		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310675.D
 Lims ID: 480-140145-A-3-A
 Client ID: FIELD DUPLICATE
 Sample Type: Client
 Inject. Date: 17-Aug-2018 11:20:30 ALS Bottle#: 92 Worklist Smp#: 5
 Injection Vol: 1.0 ul Dil. Factor: 5.0000
 Sample Info: 480-0073990-005
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 17-Aug-2018 14:40:34 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK014

First Level Reviewer: richardsd

Date: 17-Aug-2018 12:45:08

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ng/ul	%Rec	Flags
D 1 1,4-Dioxane-d8	96	2.409	2.376	0.033	100	18548	0.5404	27.0	
3 1,4-Dioxane	88	2.437	2.417	0.020	97	38640	3.79		E
* 2 1,4-Dichlorobenzene-d4	152	5.705	5.705	0.000	96	282840	4.00		

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310675.D

Injection Date: 17-Aug-2018 11:20:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-A-3-A

Lab Sample ID: 480-140145-3

Worklist Smp#: 5

Client ID: FIELD DUPLICATE

Injection Vol: 1.0 ul

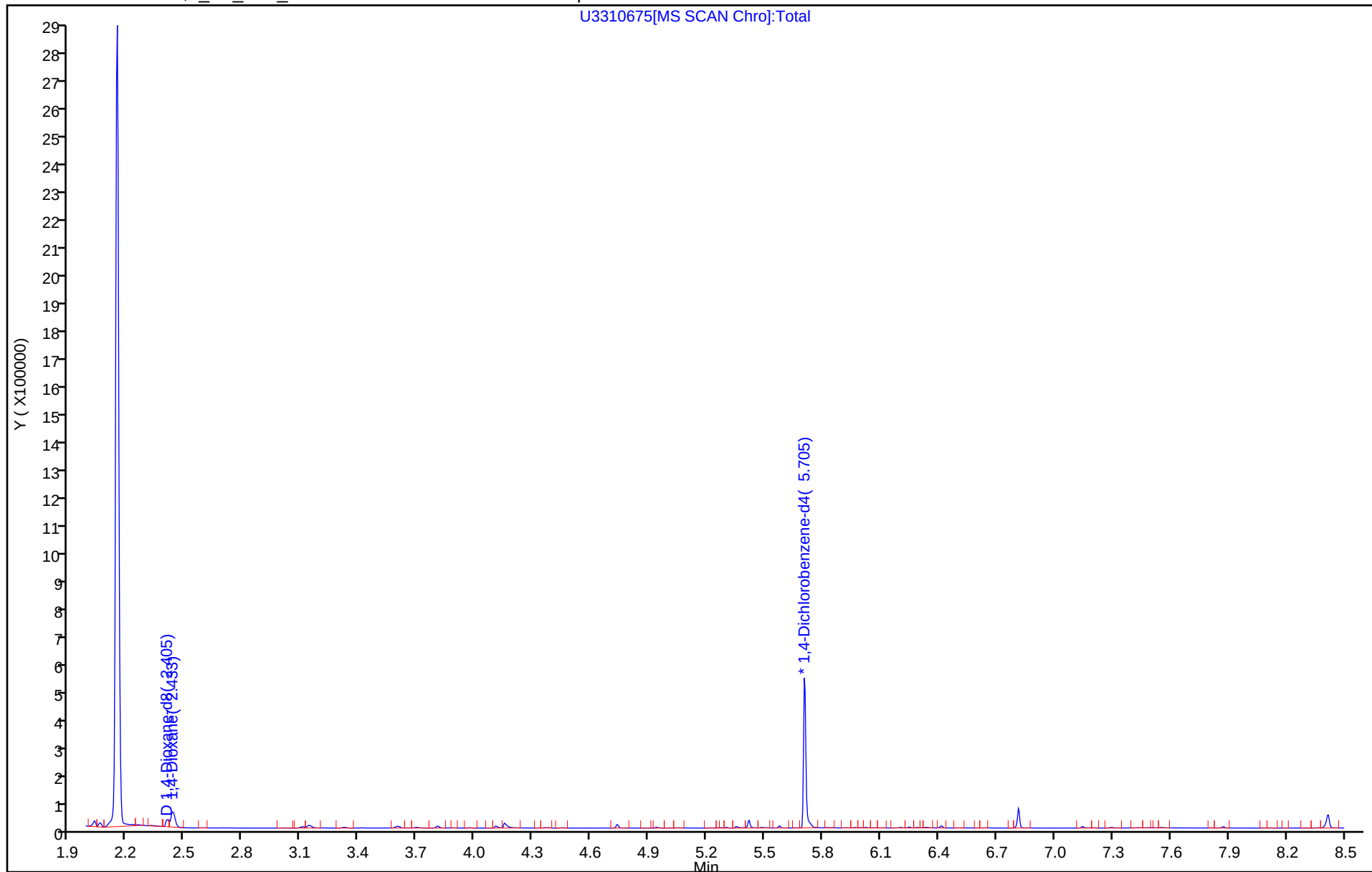
Dil. Factor: 5.0000

ALS Bottle#: 92

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310675[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310675.D

Injection Date: 17-Aug-2018 11:20:30

Instrument ID: HP5973U

Lims ID: 480-140145-A-3-A

Lab Sample ID: 480-140145-3

Client ID: FIELD DUPLICATE

Operator ID: MKP

ALS Bottle#: 92

Worklist Smp#: 5

Injection Vol: 1.0 ul

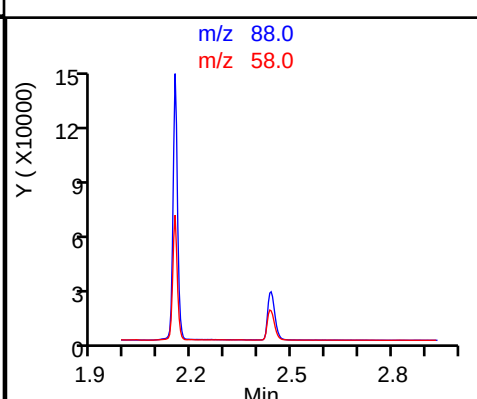
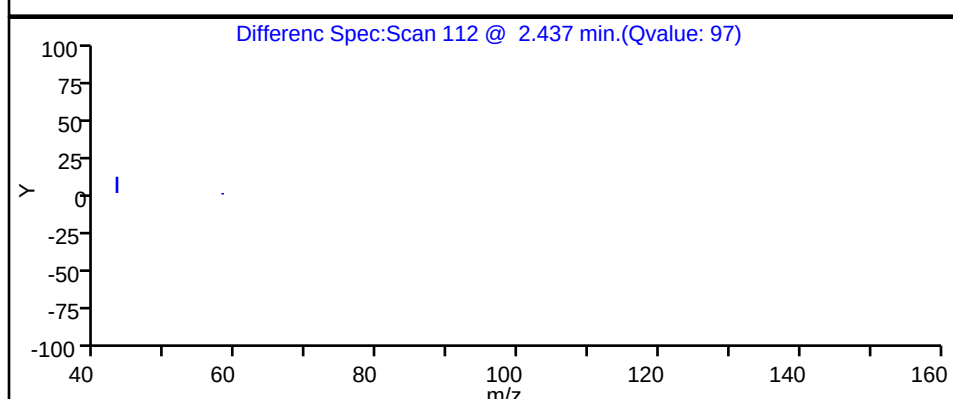
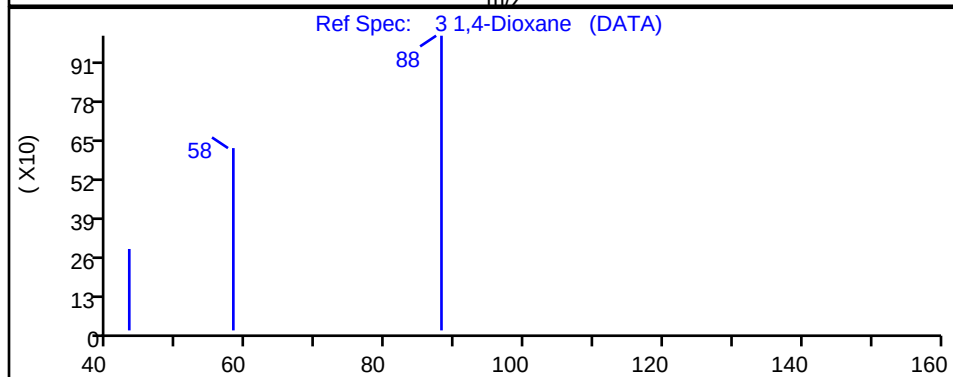
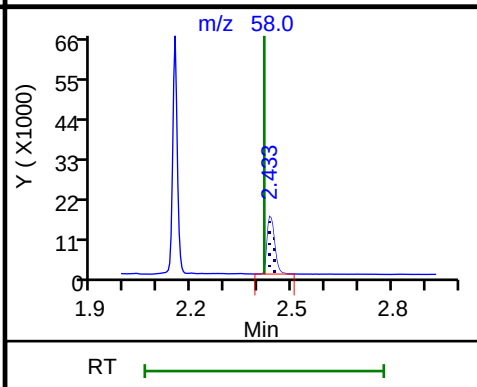
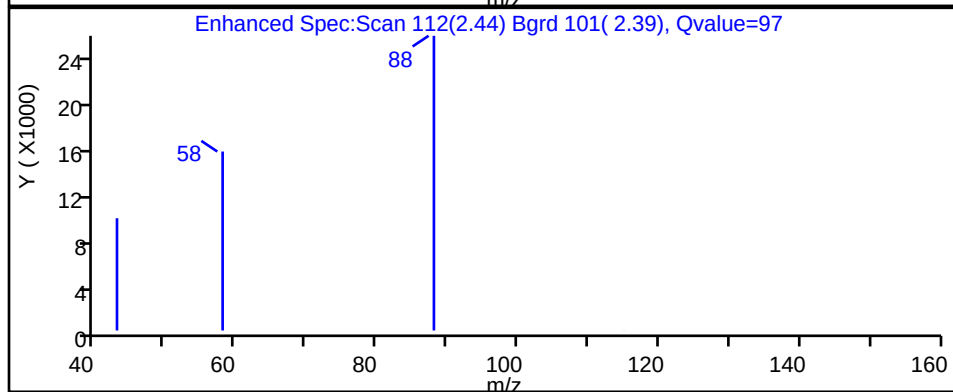
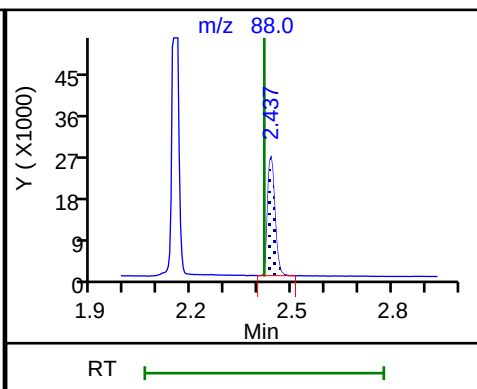
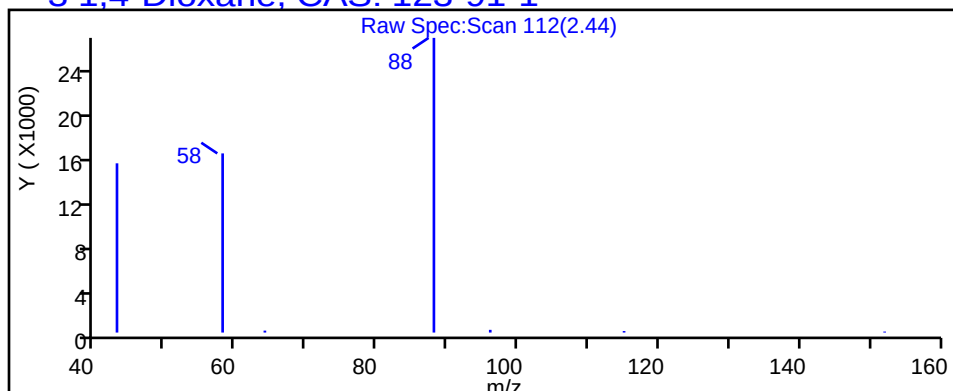
Dil. Factor: 5.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310675.D

Injection Date: 17-Aug-2018 11:20:30

Instrument ID: HP5973U

Lims ID: 480-140145-A-3-A

Lab Sample ID: 480-140145-3

Client ID: FIELD DUPLICATE

Operator ID: MKP

ALS Bottle#: 92

Worklist Smp#: 5

Injection Vol: 1.0 ul

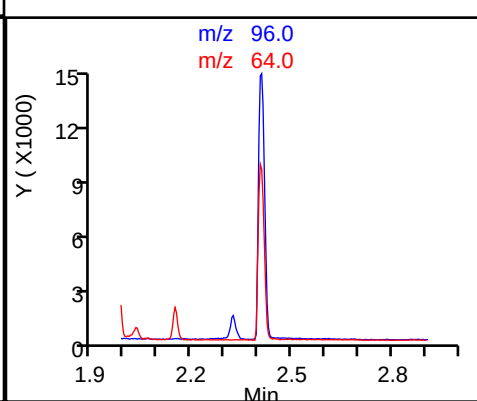
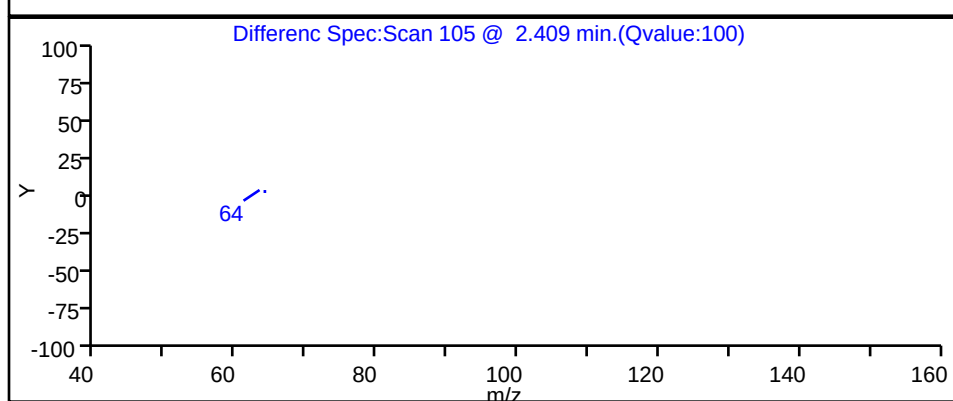
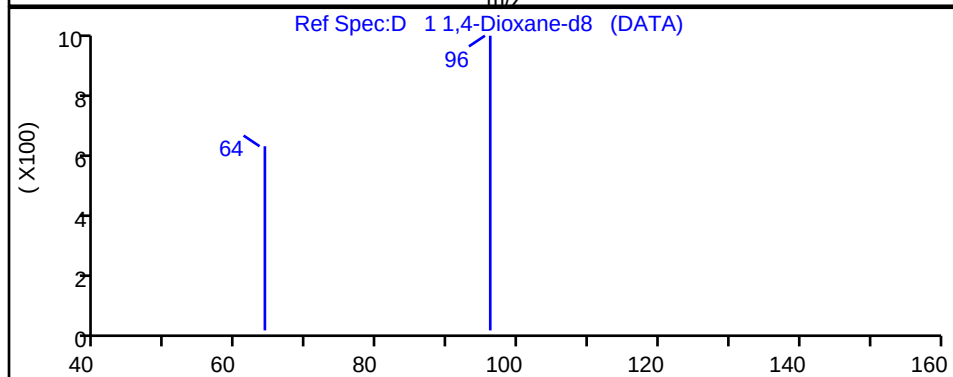
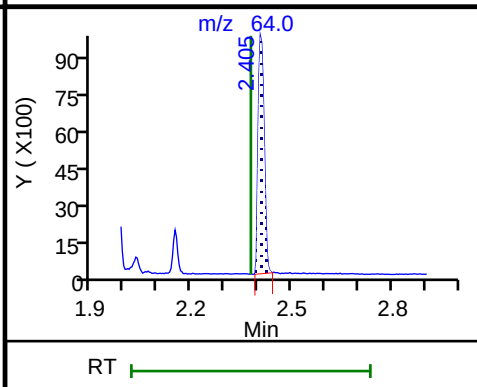
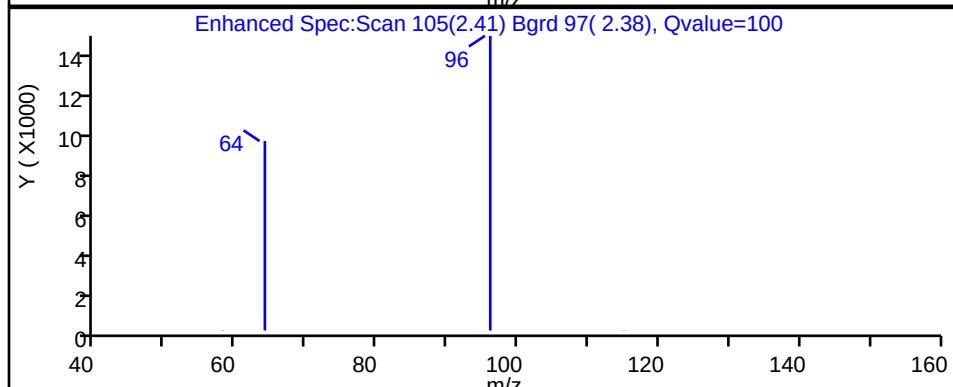
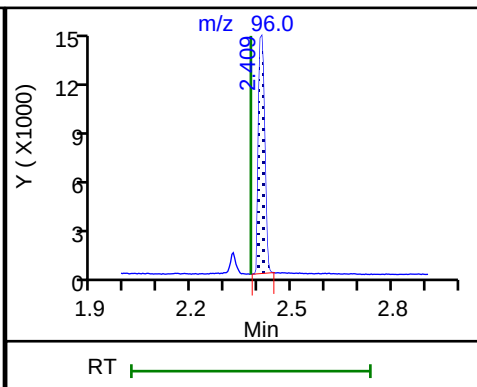
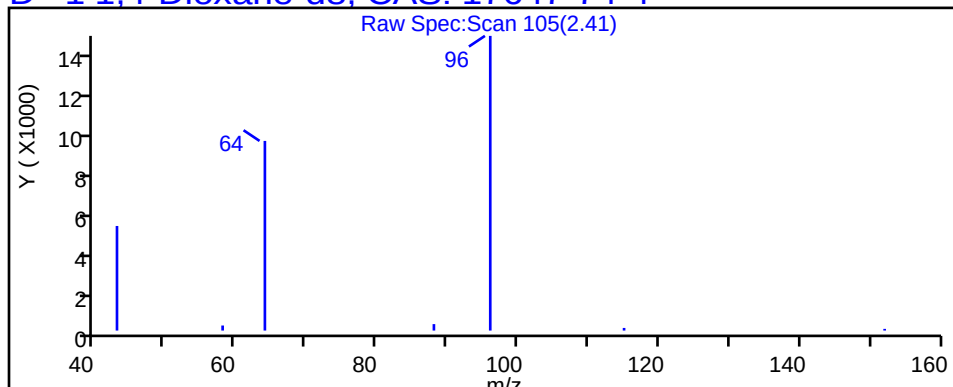
Dil. Factor: 5.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: EQUIPMENT BLANK Lab Sample ID: 480-140145-4
Matrix: Water Lab File ID: U3310628.D
Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 12:10
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 1000 (mL) Date Analyzed: 08/16/2018 15:45
Con. Extract Vol.: 1 (mL) Dilution Factor: 1
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	ND		0.20	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	31		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310628.D
 Lims ID: 480-140145-B-4-A
 Client ID: EQUIPMENT BLANK
 Sample Type: Client
 Inject. Date: 16-Aug-2018 15:45:30 ALS Bottle#: 11 Worklist Smp#: 11
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-011
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 16:08:27 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 16:08:36

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ng/ul	%Rec	Flags
D 1 1,4-Dioxane-d8	96	2.458	2.384	0.074	98	111051	3.14	31.4	
3 1,4-Dioxane	88		2.413				ND		U
* 2 1,4-Dichlorobenzene-d4	152	5.714	5.709	0.005	98	291317	4.00		

QC Flag Legend

Review Flags

U - Marked Undetected

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310628.D

Injection Date: 16-Aug-2018 15:45:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-B-4-A

Lab Sample ID: 480-140145-4

Worklist Smp#: 11

Client ID: EQUIPMENT BLANK

Injection Vol: 1.0 ul

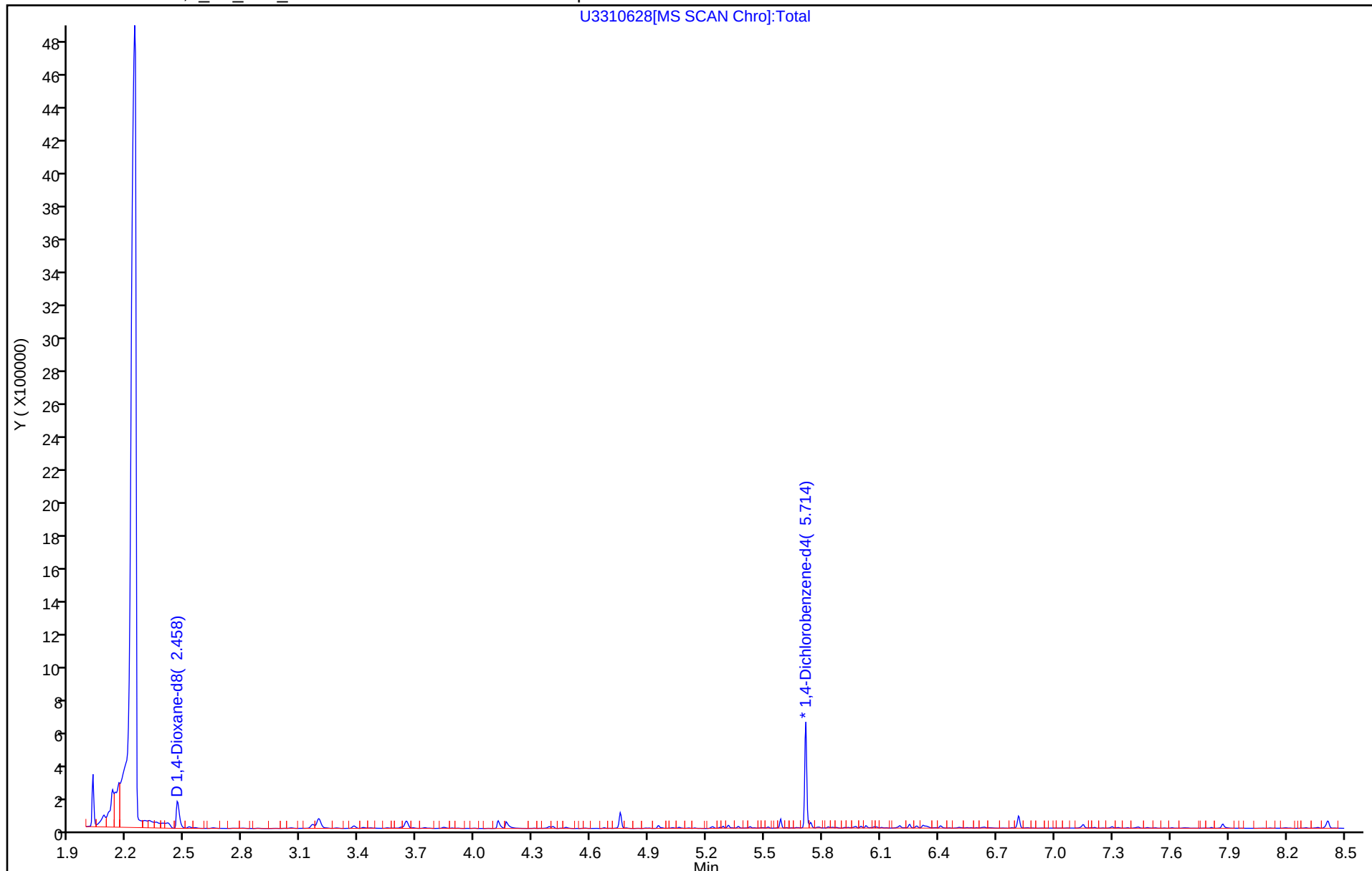
Dil. Factor: 1.0000

ALS Bottle#: 11

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310628[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310628.D

Injection Date: 16-Aug-2018 15:45:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-4-A

Lab Sample ID: 480-140145-4

Client ID: EQUIPMENT BLANK

Operator ID: MKP

ALS Bottle#: 11

Worklist Smp#: 11

Injection Vol: 1.0 ul

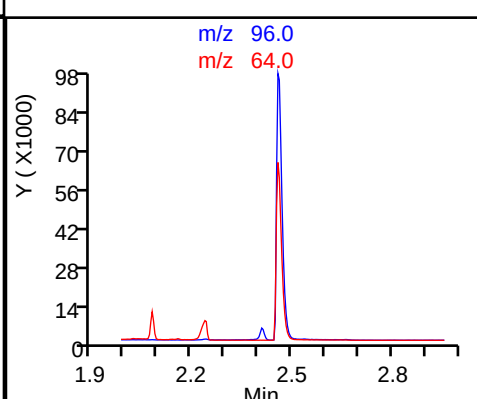
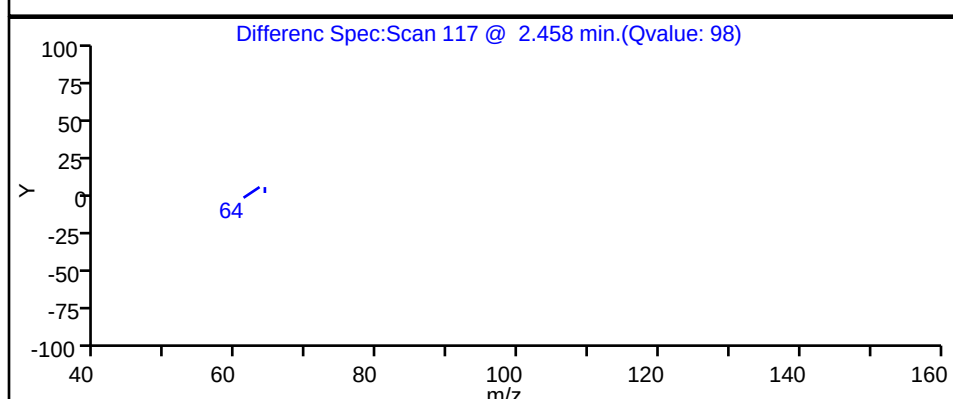
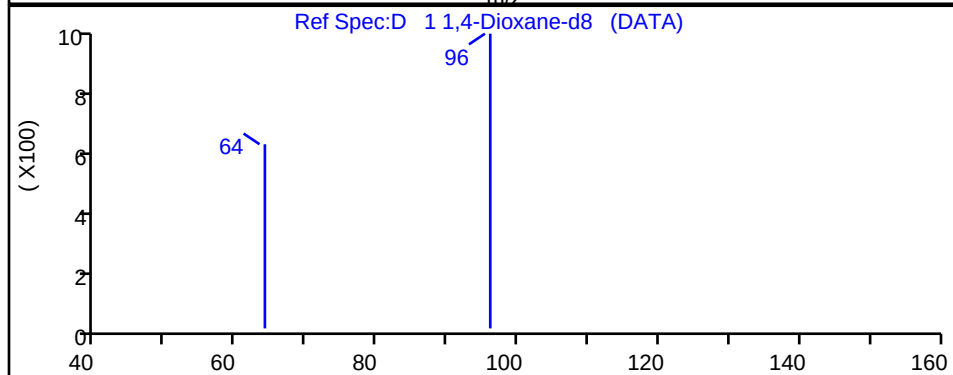
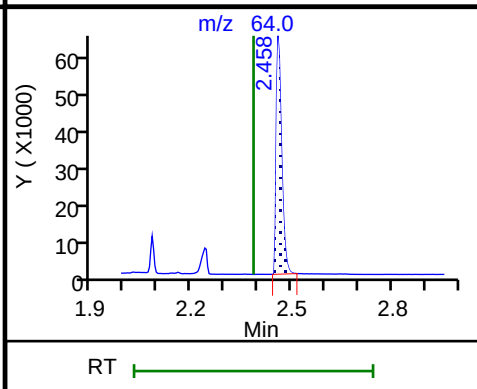
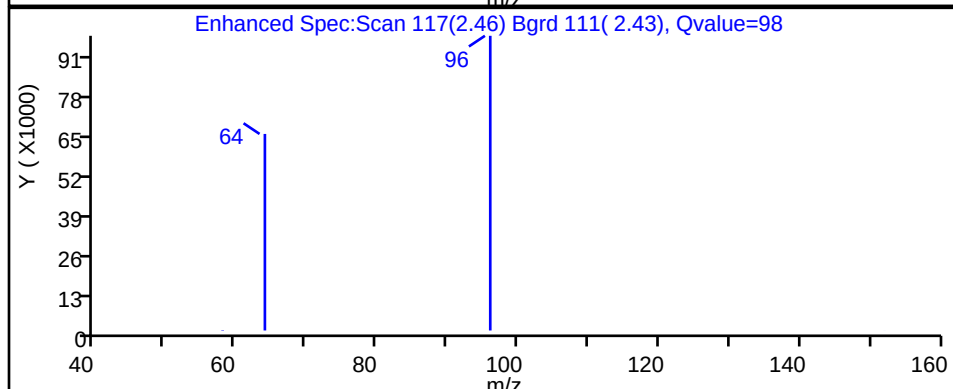
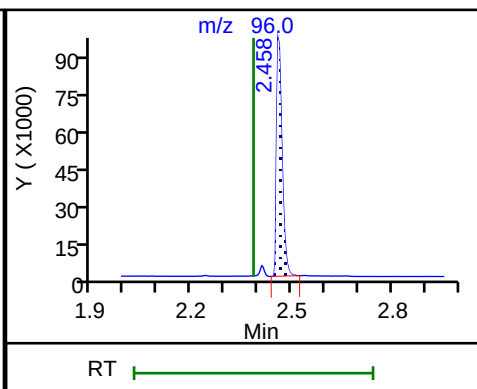
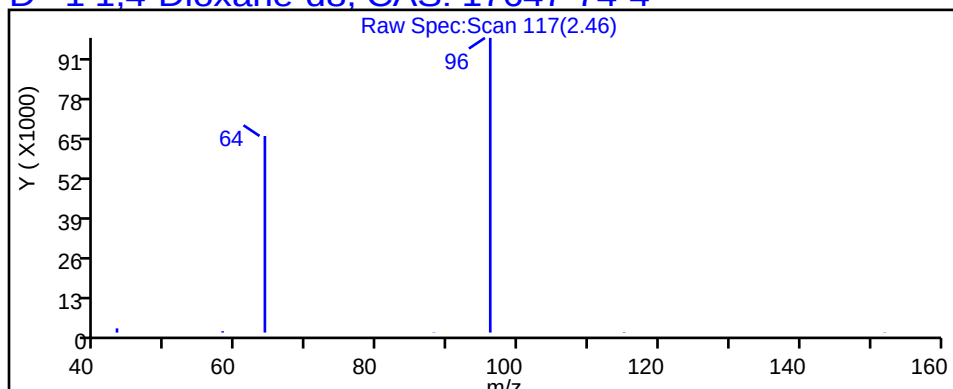
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310628.D

Injection Date: 16-Aug-2018 15:45:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-4-A

Lab Sample ID: 480-140145-4

Client ID: EQUIPMENT BLANK

Operator ID: MKP

ALS Bottle#: 11 Worklist Smp#: 11

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

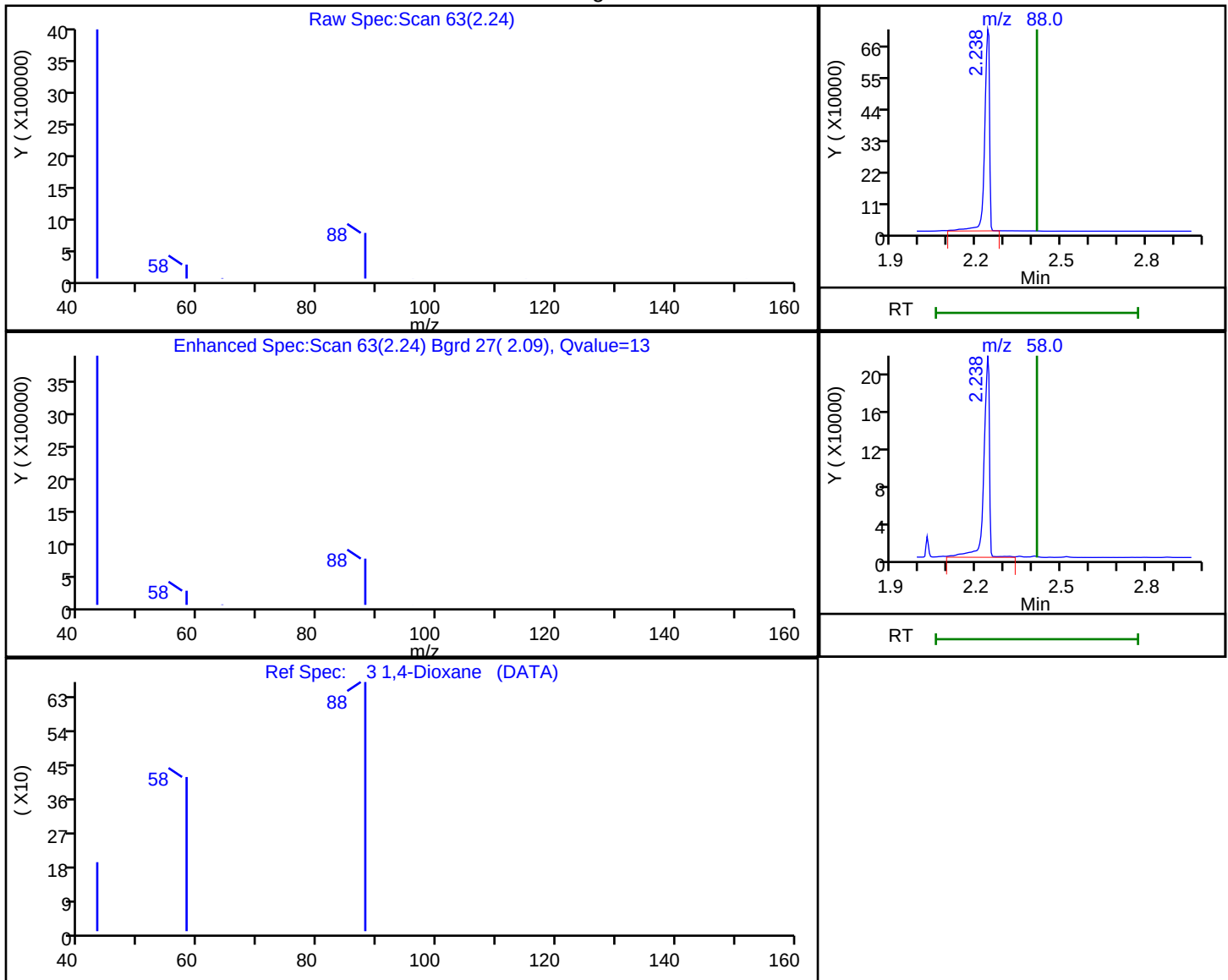
Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

Processing Results



RT	Mass	Response	Amount
2.24	88.00	858412	69.861526
2.24	58.00	302659	

Reviewer: pagem, 16-Aug-2018 16:08:25

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: MW-10D Lab Sample ID: 480-140145-5
Matrix: Water Lab File ID: U3310629.D
Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 12:35
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 1000 (mL) Date Analyzed: 08/16/2018 16:09
Con. Extract Vol.: 1 (mL) Dilution Factor: 1
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	0.30		0.20	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	29		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310629.D
 Lims ID: 480-140145-A-5-A
 Client ID: MW-10D
 Sample Type: Client
 Inject. Date: 16-Aug-2018 16:09:30 ALS Bottle#: 12 Worklist Smp#: 12
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-012
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 14:25:56 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 16:28:44

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ng/ul	%Rec	Flags
D 1 1,4-Dioxane-d8	96	2.450	2.384	0.066	100	103661	2.89	28.9	
3 1,4-Dioxane	88	2.486	2.413	0.073	99	3179	0.2992		
* 2 1,4-Dichlorobenzene-d4	152	5.714	5.709	0.005	99	295985	4.00		

Reagents:

MB_LLIS_WRK_00151 Amount Added: 20.00 Units: uL Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310629.D

Injection Date: 16-Aug-2018 16:09:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-A-5-A

Lab Sample ID: 480-140145-5

Worklist Smp#: 12

Client ID: MW-10D

Injection Vol: 1.0 ul

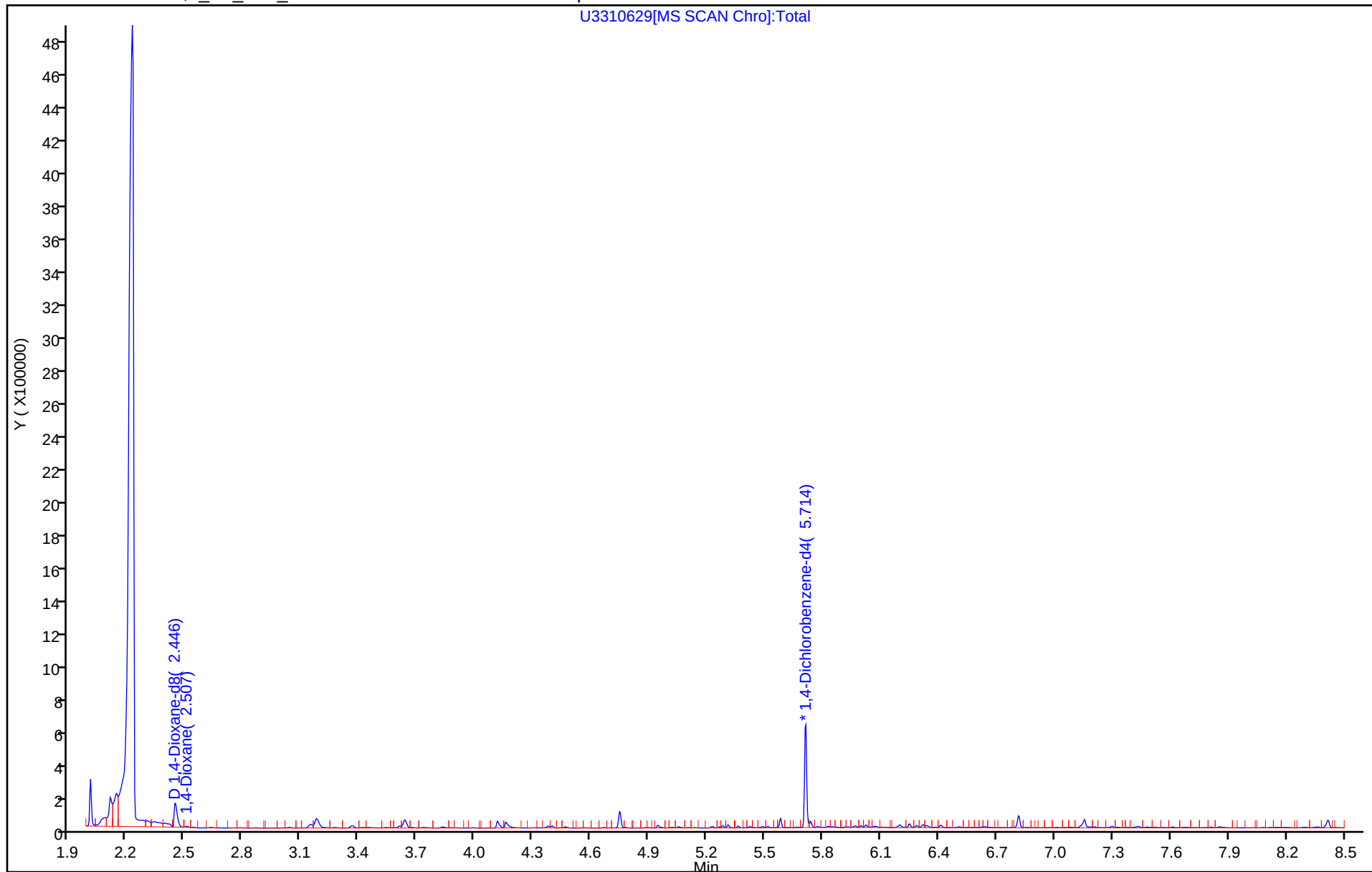
Dil. Factor: 1.0000

ALS Bottle#: 12

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310629[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310629.D

Injection Date: 16-Aug-2018 16:09:30

Instrument ID: HP5973U

Lims ID: 480-140145-A-5-A

Lab Sample ID: 480-140145-5

Client ID: MW-10D

Operator ID: MKP

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

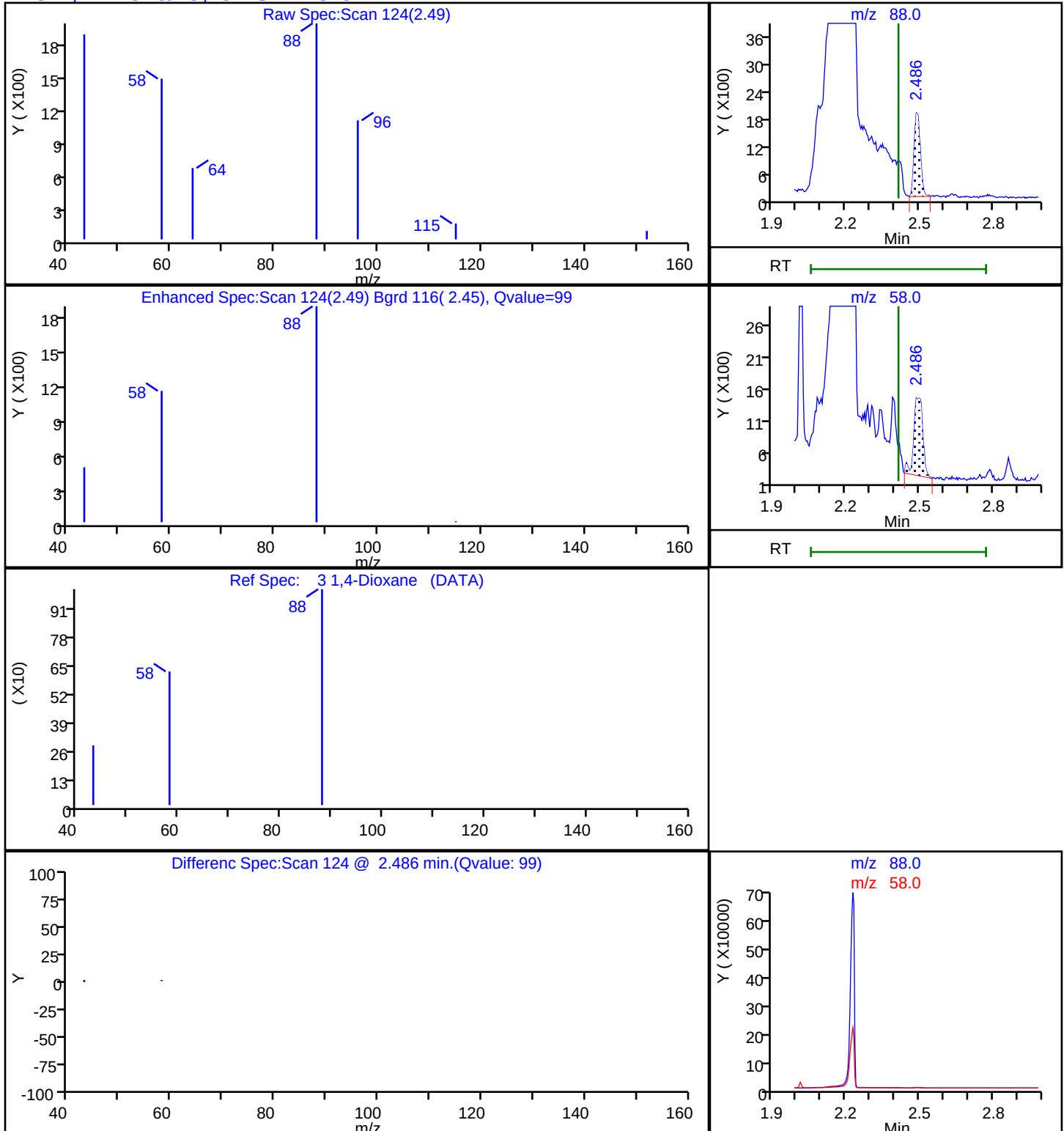
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310629.D

Injection Date: 16-Aug-2018 16:09:30

Instrument ID: HP5973U

Lims ID: 480-140145-A-5-A

Lab Sample ID: 480-140145-5

Client ID: MW-10D

Operator ID: MKP

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

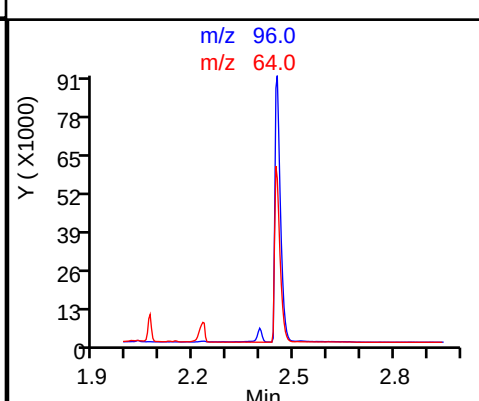
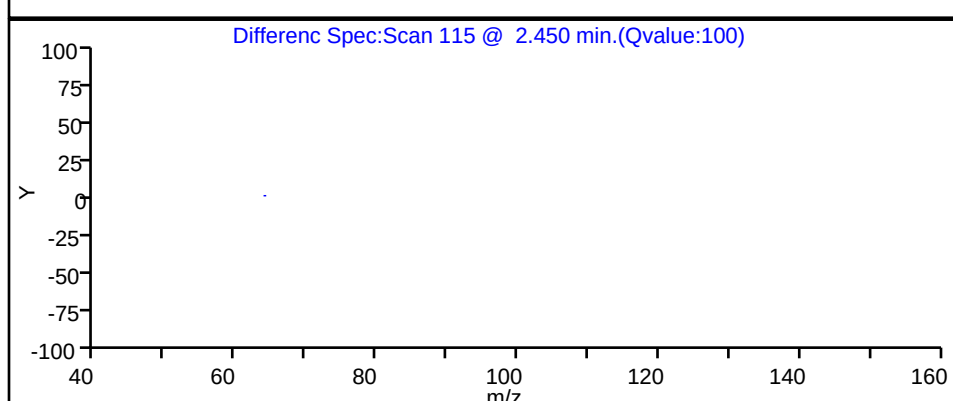
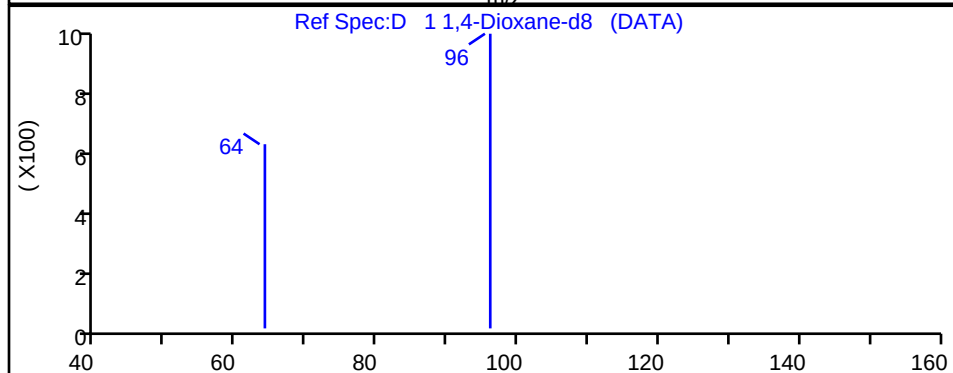
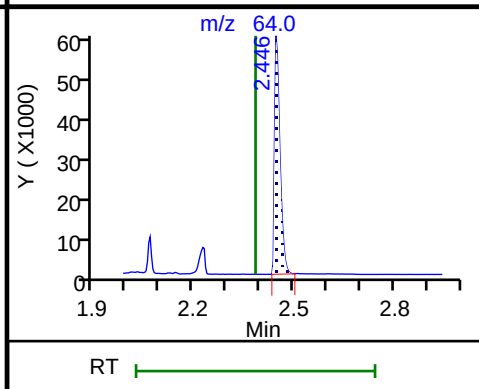
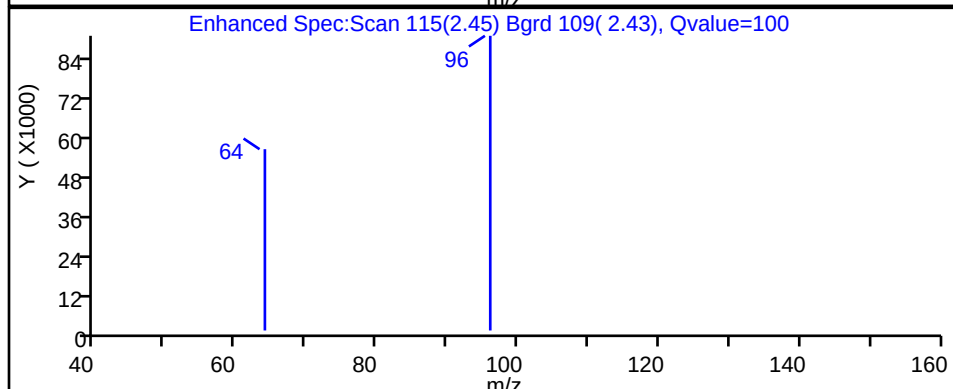
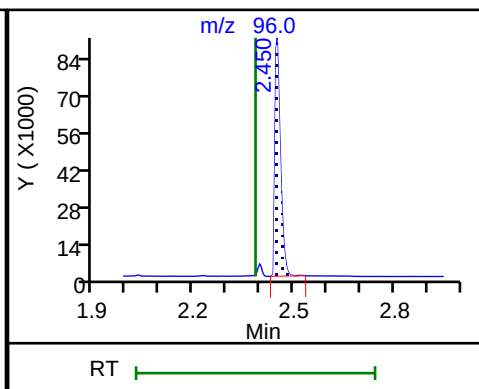
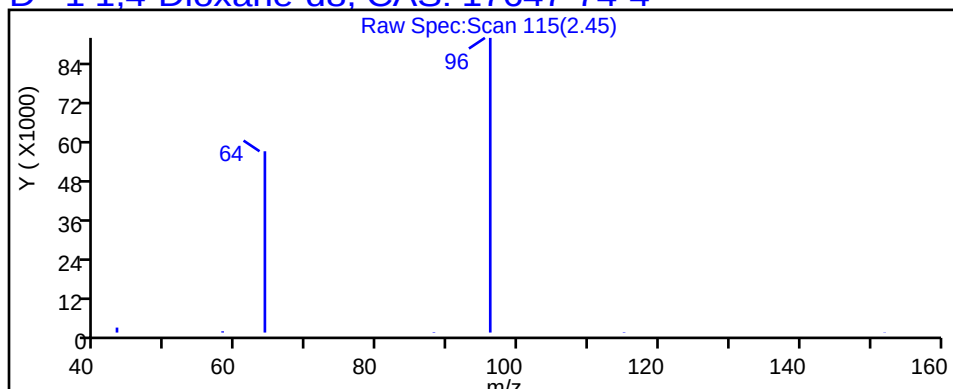
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1 Analy Batch No.: 424045

SDG No.: _____

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 18:42 Calibration End Date: 07/11/2018 20:42 Calibration ID: 34301

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-424045/3	U3309387.D
Level 2	ICIS 480-424045/5	U3309389.D
Level 3	IC 480-424045/6	U3309390.D
Level 4	IC 480-424045/7	U3309391.D
Level 5	IC 480-424045/8	U3309392.D
Level 6	IC 480-424045/4	U3309388.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
1,4-Dioxane	0.9779 1.0553	1.0802	1.0751	1.0742	1.0779	L2ID	-0.025	1.1068			0.0100				1.0000		0.9900
1,4-Dioxane-d8	0.4794 0.4907	0.4899	0.4884	0.4807	0.4834	Ave		0.4854			0.0100	1.0		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1 Analy Batch No.: 424045

SDG No.: _____

Instrument ID: HP5973U GC Column: RXI-5Sil MS ID: 0.25 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 18:42 Calibration End Date: 07/11/2018 20:42 Calibration ID: 34301

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 480-424045/3	U3309387.D
Level 2	ICIS 480-424045/5	U3309389.D
Level 3	IC 480-424045/6	U3309390.D
Level 4	IC 480-424045/7	U3309391.D
Level 5	IC 480-424045/8	U3309392.D
Level 6	IC 480-424045/4	U3309388.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/UL)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
1,4-Dioxane		L2ID	7707 16928	29697	35587	43653	50828	0.200 0.400	0.600	0.800	1.00	1.20
1,4-Dioxane-d8	DCBd 4	Ave	78809 160410	274931	331002	406370	471566	2.00 4.00	6.00	8.00	10.0	12.0

Curve Type Legend:

Ave = Average ISTD
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309387.D
 Lims ID: IC - SIM 0.2
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 11-Jul-2018 18:42:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-003
 Operator ID: DR Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:01:30 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 11-Jul-2018 20:15:02

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.592	2.588	0.004	98	78809	2.00	1.98	
3 1,4-Dioxane	88	2.633	2.625	0.008	99	7707	0.2000	0.1989	
* 2 1,4-Dichlorobenzene-d4	152	5.840	5.840	0.000	99	328765	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00053

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00149

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309387.D

Injection Date: 11-Jul-2018 18:42:30

Instrument ID: HP5973U

Operator ID: DR

Lims ID: IC - SIM 0.2

Worklist Smp#: 3

Client ID:

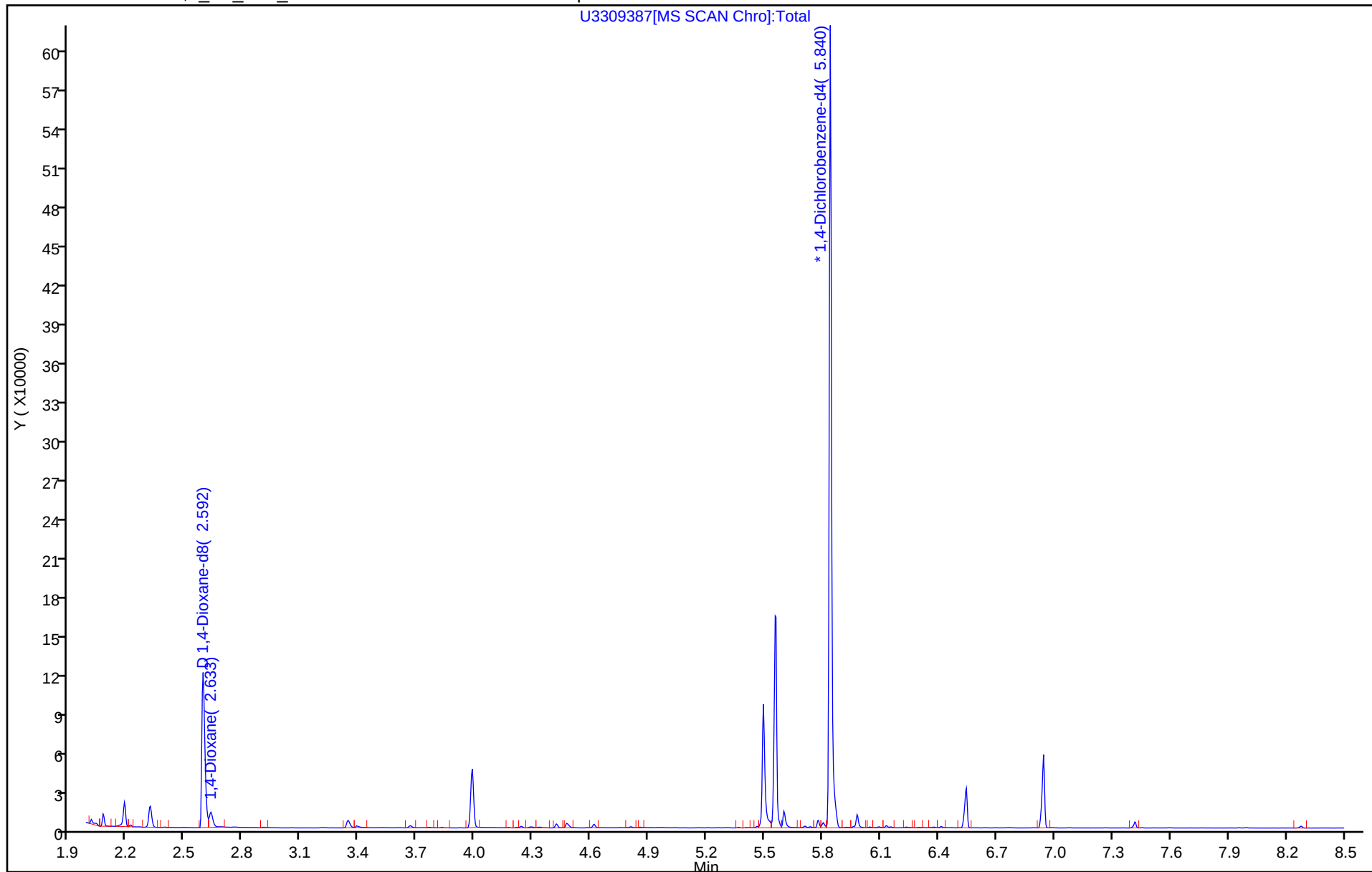
Injection Vol: 1.0 ul

Dil. Factor: 1.0000

ALS Bottle#: 3

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309388.D
 Lims ID: IC - SIM 0.4
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 11-Jul-2018 19:06:30 ALS Bottle#: 4 Worklist Smp#: 4
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-004
 Operator ID: DR Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:01:31 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 11-Jul-2018 20:15:06

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.600	2.588	0.012	99	160410	4.00	4.04	
3 1,4-Dioxane	88	2.637	2.625	0.012	99	16928	0.4000	0.4035	
* 2 1,4-Dichlorobenzene-d4	152	5.840	5.840	0.000	99	326903	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00054
 MB_LLIS_WRK_00149

Amount Added: 1.00
 Amount Added: 20.00

Units: mL
 Units: uL Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309388.D

Injection Date: 11-Jul-2018 19:06:30

Instrument ID: HP5973U

Operator ID: DR

Lims ID: IC - SIM 0.4

Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul

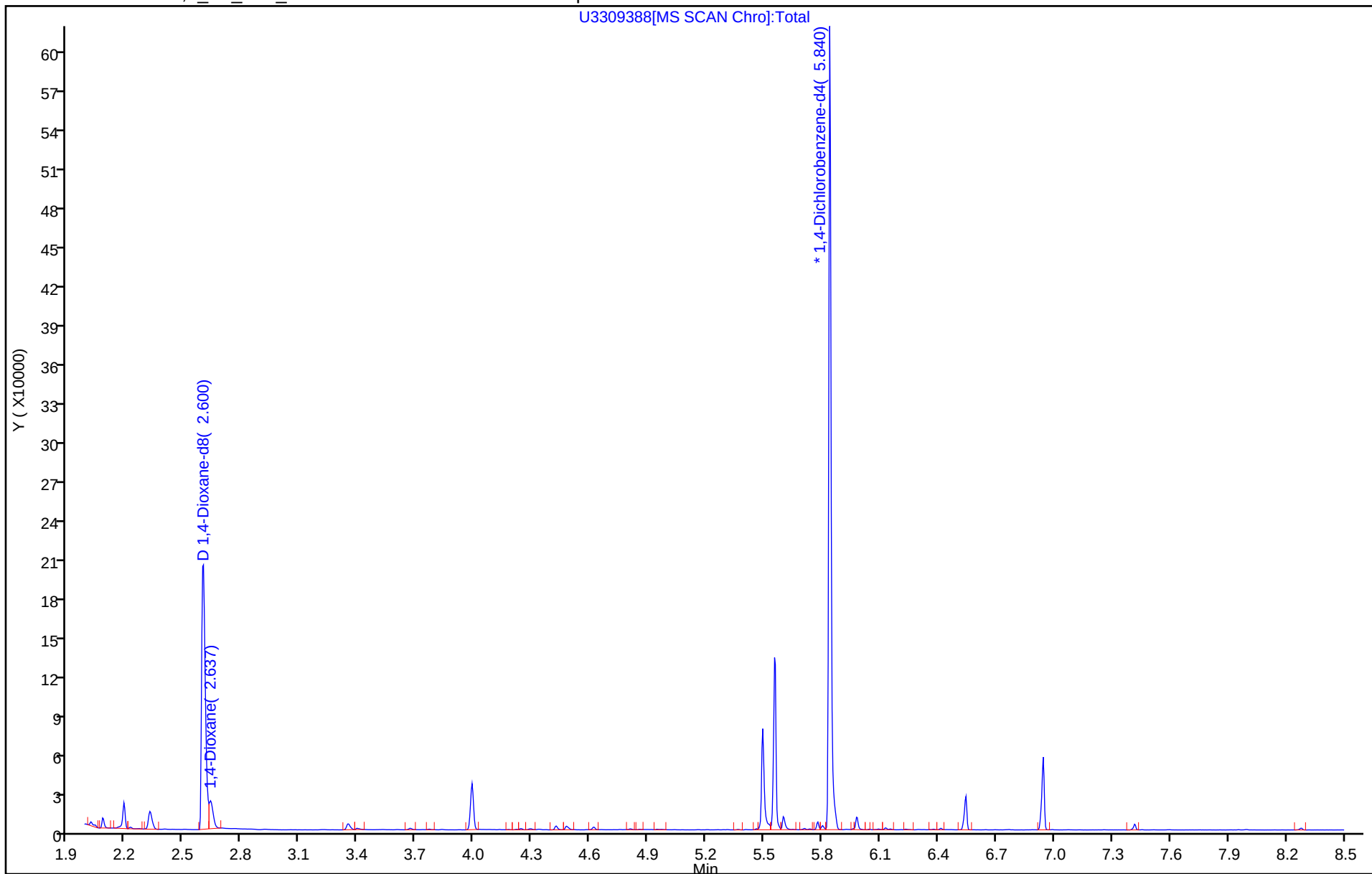
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3309388[MS SCAN Chro]:Total



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309389.D
 Lims ID: ICIS - SIM 0.6
 Client ID:
 Sample Type: ICIS Calib Level: 3
 Inject. Date: 11-Jul-2018 19:30:30 ALS Bottle#: 5 Worklist Smp#: 5
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-005
 Operator ID: DR Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:01:32 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 11-Jul-2018 20:15:09

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.596	2.596	0.000	99	274931	6.00	6.06	
3 1,4-Dioxane	88	2.633	2.633	0.000	97	29697	0.6000	0.6077	
* 2 1,4-Dichlorobenzene-d4	152	5.840	5.840	0.000	99	374104	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00055
 MB_LLIS_WRK_00149

Amount Added: 1.00
 Amount Added: 20.00

Units: mL
 Units: uL Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309389.D

Injection Date: 11-Jul-2018 19:30:30

Instrument ID: HP5973U

Operator ID: DR

Lims ID: ICIS - SIM 0.6

Worklist Smp#: 5

Client ID:

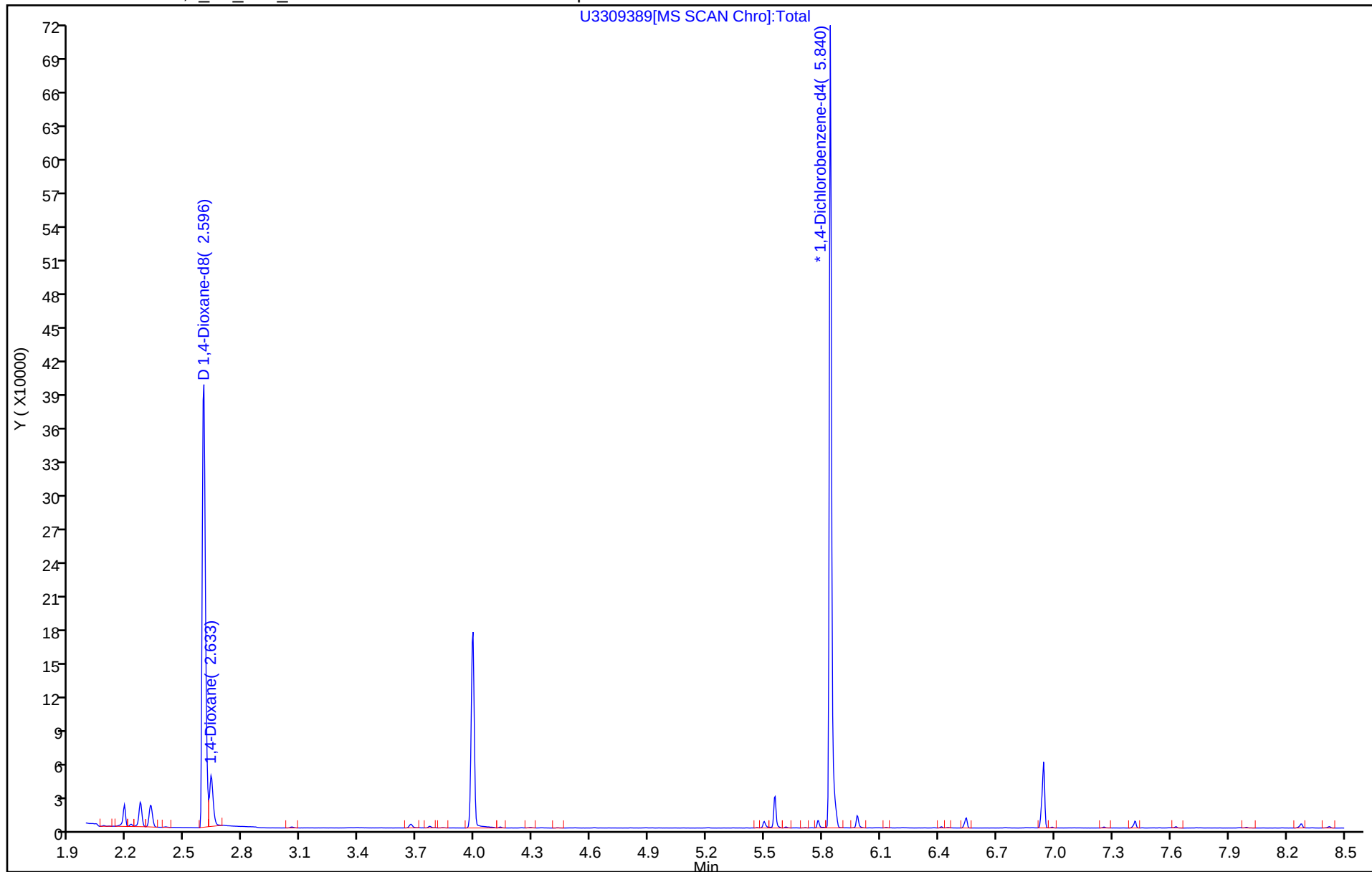
Injection Vol: 1.0 ul

Dil. Factor: 1.0000

ALS Bottle#: 5

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309390.D
 Lims ID: IC - SIM 0.8
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 11-Jul-2018 19:54:30 ALS Bottle#: 6 Worklist Smp#: 6
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-006
 Operator ID: DR Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:01:34 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 11-Jul-2018 20:15:13

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.592	2.596	-0.004	98	331002	8.00	8.05	
3 1,4-Dioxane	88	2.633	2.633	0.000	99	35587	0.8000	0.7992	
* 2 1,4-Dichlorobenzene-d4	152	5.840	5.840	0.000	99	338883	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00056

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00149

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309390.D

Injection Date: 11-Jul-2018 19:54:30

Instrument ID: HP5973U

Operator ID: DR

Lims ID: IC - SIM 0.8

Worklist Smp#: 6

Client ID:

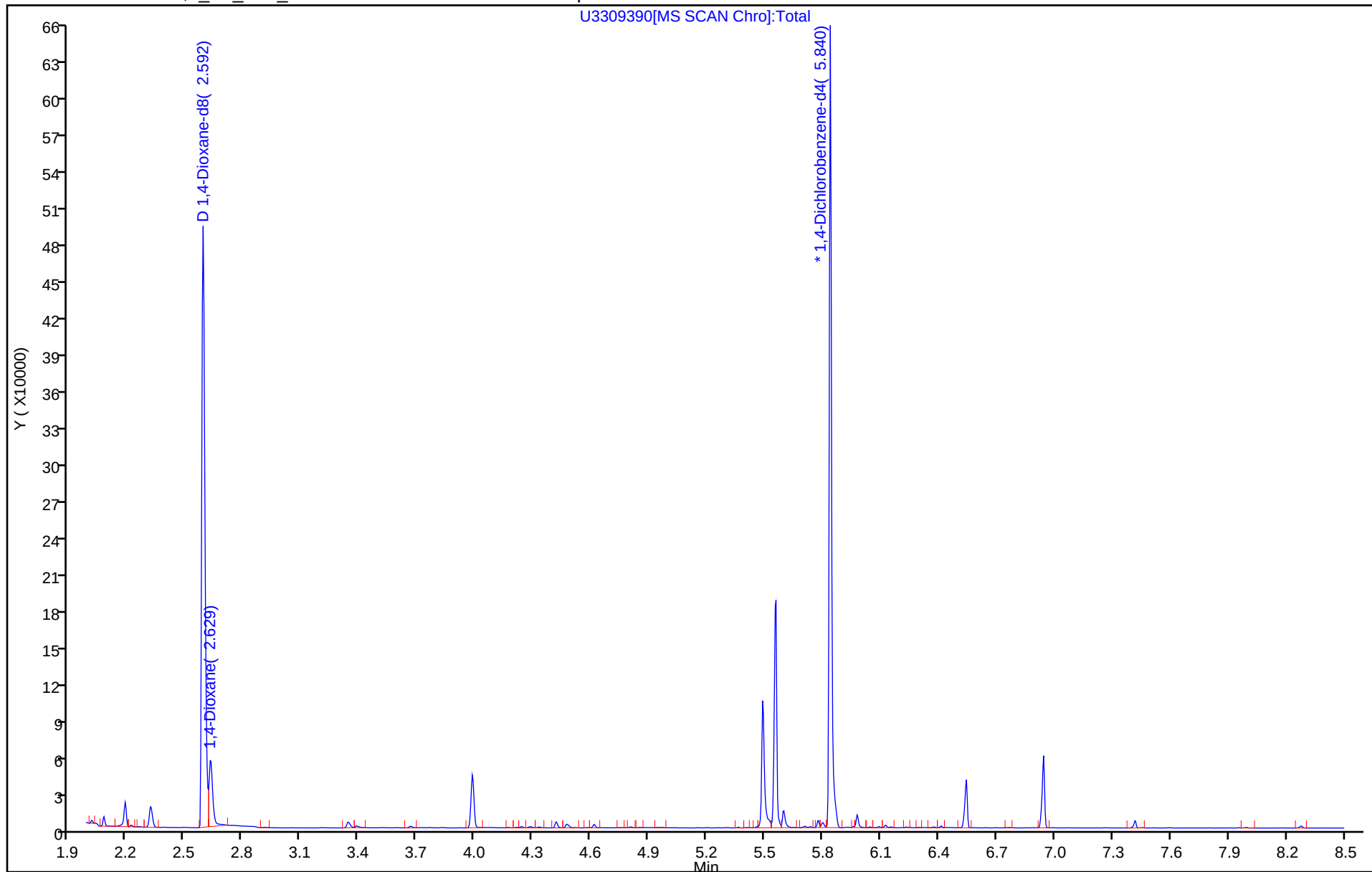
Injection Vol: 1.0 ul

Dil. Factor: 1.0000

ALS Bottle#: 6

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309391.D
 Lims ID: IC - SIM 1.0
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 11-Jul-2018 20:18:30 ALS Bottle#: 7 Worklist Smp#: 7
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-007
 Operator ID: DR Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:01:35 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 12-Jul-2018 11:00:28

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.592	2.596	-0.004	97	406370	10.0	9.90	
3 1,4-Dioxane	88	2.633	2.633	0.000	100	43653	1.00	0.99	
* 2 1,4-Dichlorobenzene-d4	152	5.840	5.840	0.000	98	338149	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00057

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00149

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309391.D

Injection Date: 11-Jul-2018 20:18:30

Instrument ID: HP5973U

Operator ID: DR

Lims ID: IC - SIM 1.0

Worklist Smp#: 7

Client ID:

Injection Vol: 1.0 ul

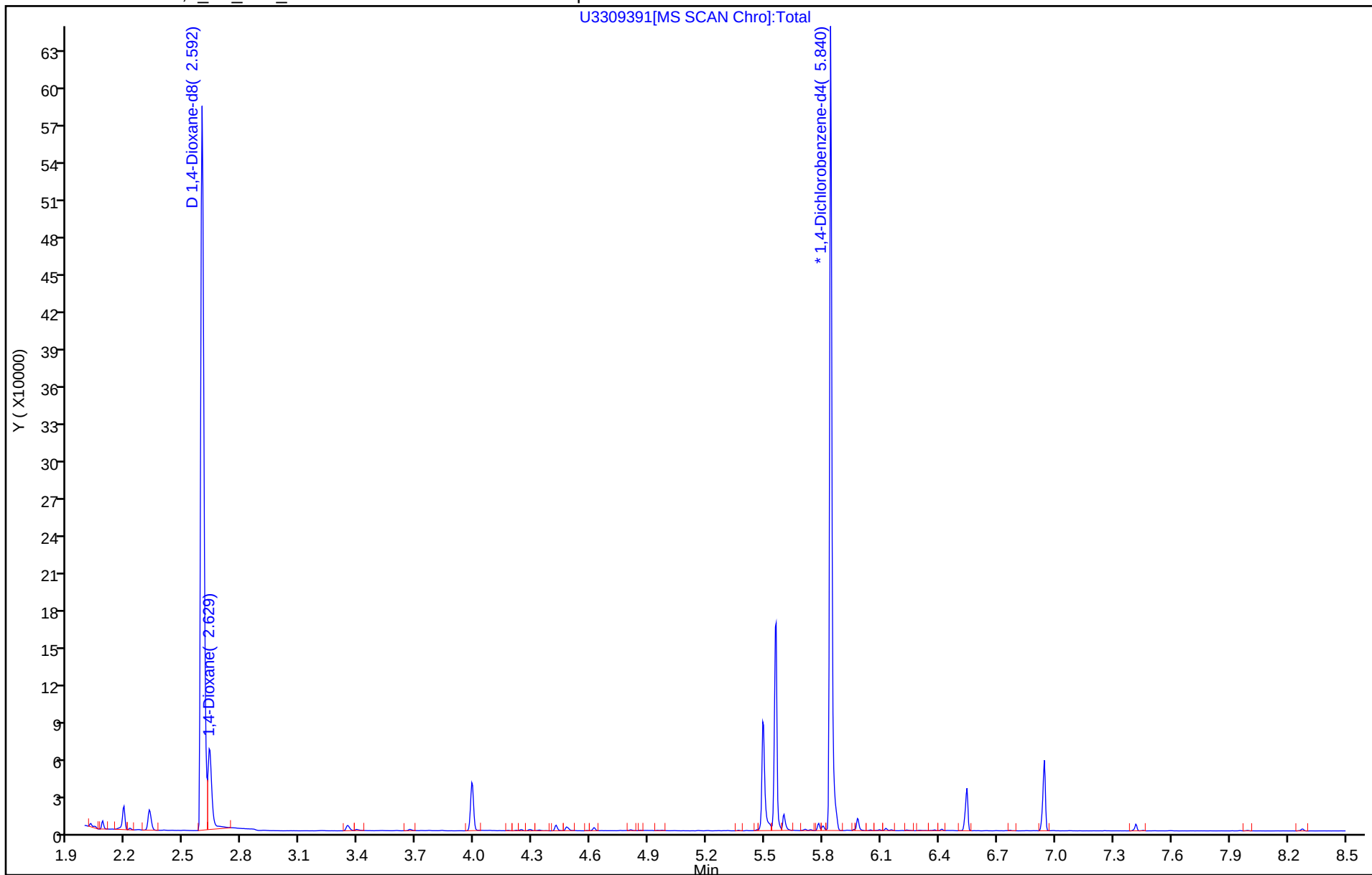
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3309391[MS SCAN Chro]:Total



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Lims ID: IC - SIM 1.2
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 11-Jul-2018 20:42:30 ALS Bottle#: 8 Worklist Smp#: 8
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-008
 Operator ID: DR Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:01:36 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 12-Jul-2018 11:00:32

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.588	2.596	-0.008	98	471566	12.0	11.9	
3 1,4-Dioxane	88	2.625	2.633	-0.008	98	50828	1.20	1.19	
* 2 1,4-Dichlorobenzene-d4	152	5.840	5.840	0.000	99	325204	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00058

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00149

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D

Injection Date: 11-Jul-2018 20:42:30

Instrument ID: HP5973U

Operator ID: DR

Lims ID: IC - SIM 1.2

Worklist Smp#: 8

Client ID:

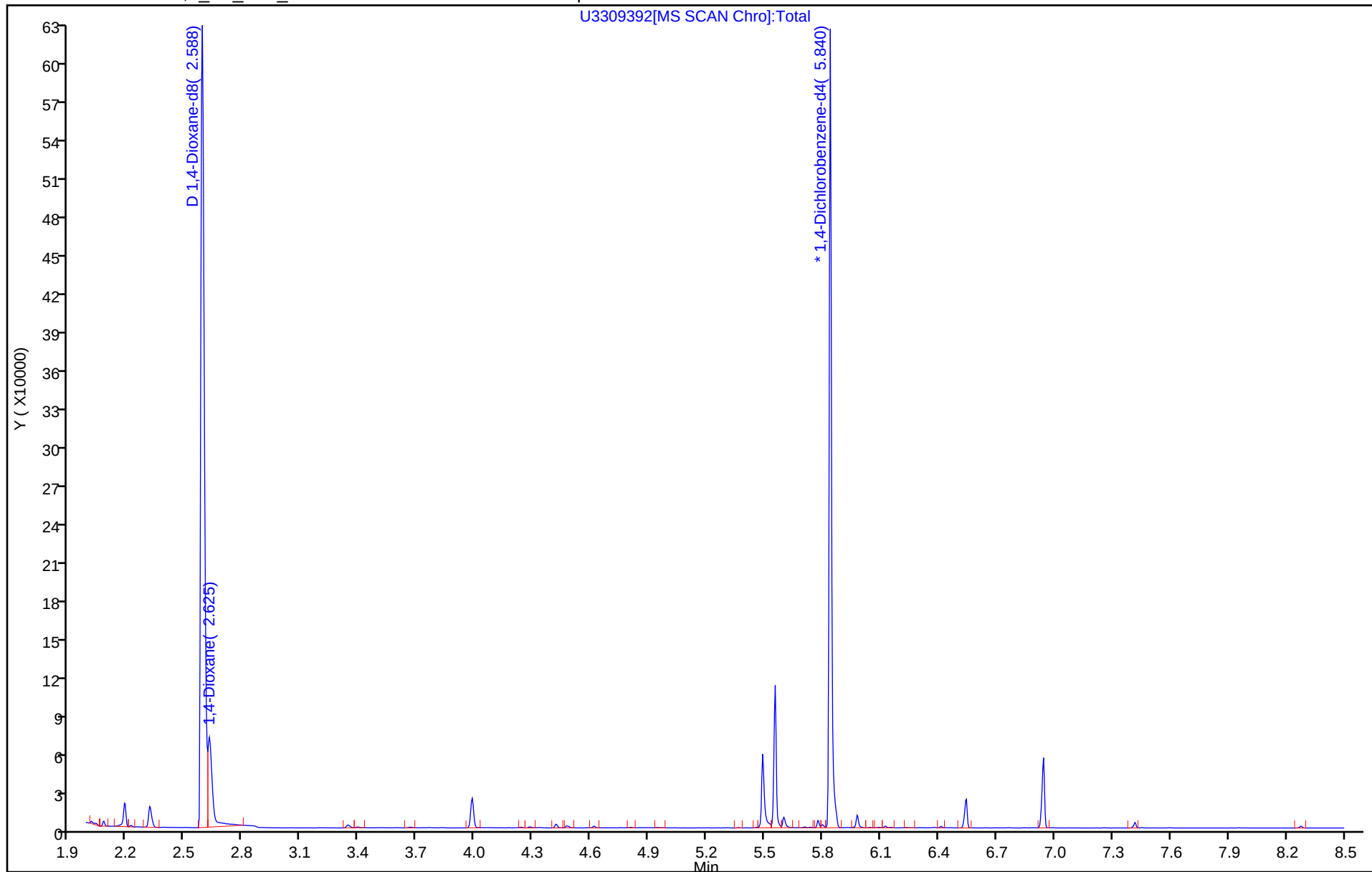
Injection Vol: 1.0 ul

Dil. Factor: 1.0000

ALS Bottle#: 8

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Lab Sample ID: CCVIS 480-429969/3 Calibration Date: 08/16/2018 12:35
Instrument ID: HP5973U Calib Start Date: 07/11/2018 18:42
GC Column: RXI-5Sil MS(0.5 ID: 0.25(mm) Calib End Date: 07/11/2018 20:42
Lab File ID: U3310620.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,4-Dioxane	L2ID		1.096	0.0100	616	600	2.7	20.0
1,4-Dioxane-d8	Ave	0.4854	0.4101	0.0100	5070	6000	-15.5	20.0

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310620.D
 Lims ID: CCVIS
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Aug-2018 12:35:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-003
 Operator ID: MKP Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 13:39:11 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 12:54:00

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.376	2.384	-0.008	99	223742	6.00	5.07	
3 1,4-Dioxane	88	2.413	2.413	0.000	97	24511	0.6000	0.6160	
* 2 1,4-Dichlorobenzene-d4	152	5.709	5.709	0.000	99	363711	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00059

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310620.D

Injection Date: 16-Aug-2018 12:35:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: CCVIS

Worklist Smp#: 3

Client ID:

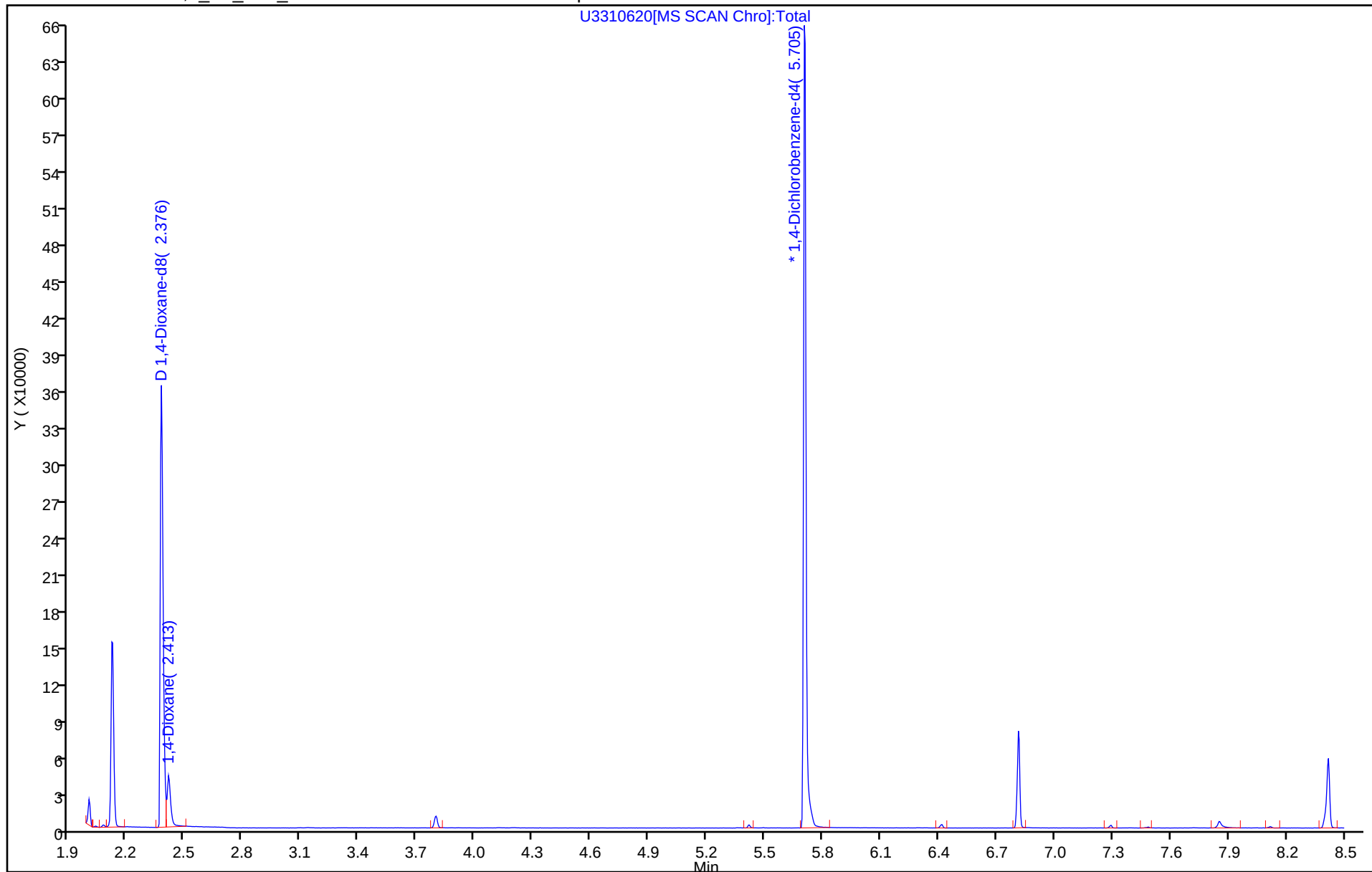
Injection Vol: 1.0 ul

Dil. Factor: 1.0000

ALS Bottle#: 3

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Lab Sample ID: CCVIS 480-430190/3 Calibration Date: 08/17/2018 10:32
Instrument ID: HP5973U Calib Start Date: 07/11/2018 18:42
GC Column: RXI-5Sil MS(0.5 ID: 0.25(mm) Calib End Date: 07/11/2018 20:42
Lab File ID: U3310673.D Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,4-Dioxane	L2ID		1.107	0.0100	622	600	3.7	20.0
1,4-Dioxane-d8	Ave	0.4854	0.3977	0.0100	4920	6000	-18.1	20.0

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310673.D
 Lims ID: CCVIS
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 17-Aug-2018 10:32:30 ALS Bottle#: 98 Worklist Smp#: 3
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: CCVIS
 Operator ID: MKP Instrument ID: HP5973U
 Sublist: chrom-1,4_Dx_SIM_HP5973U*sub1
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 17-Aug-2018 14:40:34 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK014

First Level Reviewer: pagem

Date: 17-Aug-2018 10:49:57

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.380	2.376	0.004	98	177556	6.00	4.92	
3 1,4-Dioxane	88	2.417	2.417	0.000	97	19663	0.6000	0.6225	
* 2 1,4-Dichlorobenzene-d4	152	5.705	5.705	0.000	97	297625	4.00	4.00	

Reagents:

MB_1,4SIM_WRK_00059

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310673.D

Injection Date: 17-Aug-2018 10:32:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: CCVIS

Worklist Smp#: 3

Client ID:

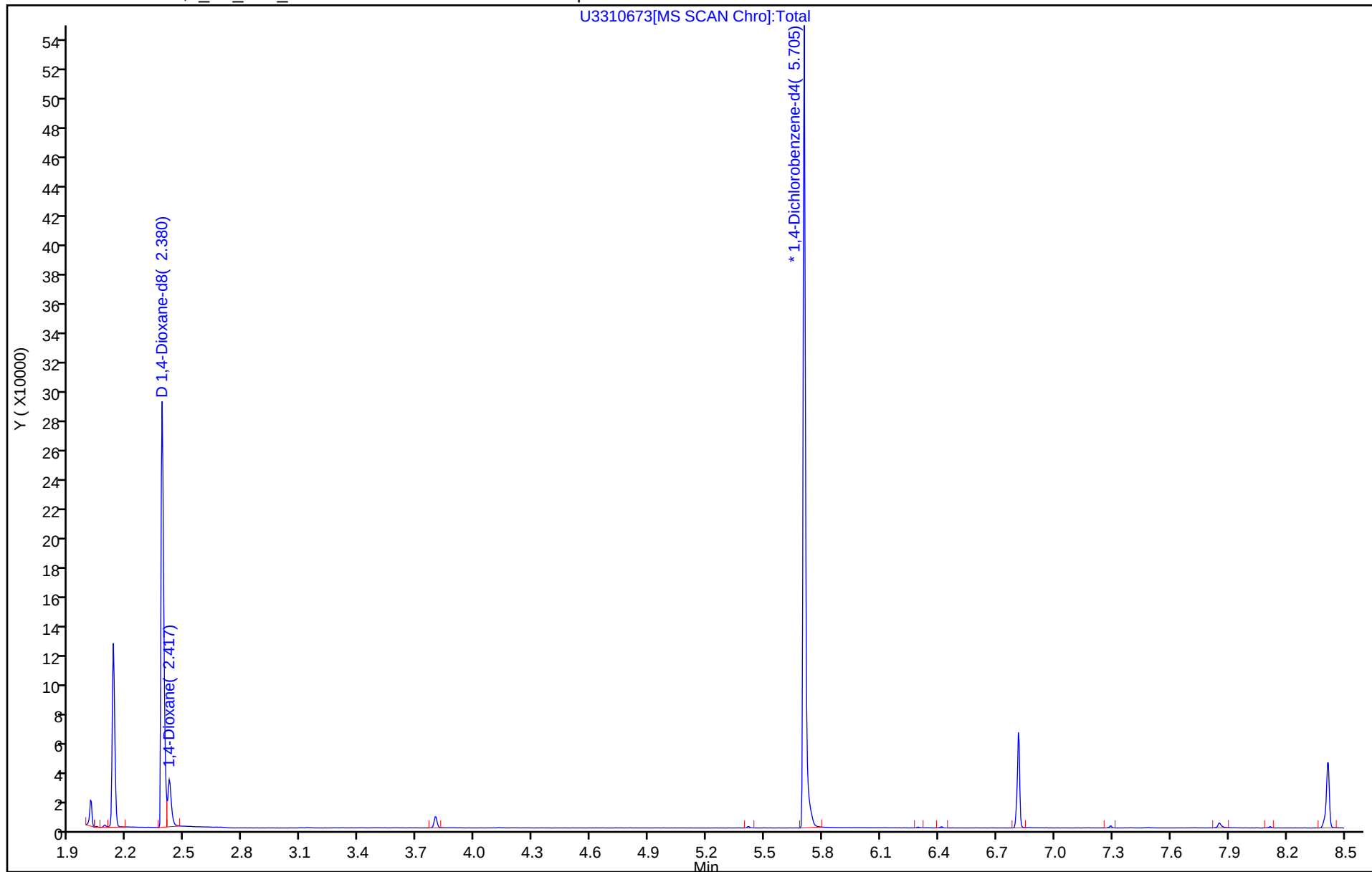
Injection Vol: 1.0 ul

Dil. Factor: 1.0000

ALS Bottle#: 98

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309386.D
 Lims ID: DFTPP
 Client ID:
 Sample Type: DFTPP
 Inject. Date: 11-Jul-2018 18:14:30 ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073014-002
 Operator ID: DR Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 12-Jul-2018 11:02:18 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: Deconvolution ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK004

First Level Reviewer: richardsd

Date: 11-Jul-2018 19:10:47

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
* 2 1,4-Dichlorobenzene-d4	152		5.840				4.00	ND	
4 DFTPP									
7 4,4'-DDE	246		11.082					ND	
5 4,4'-DDD	235	11.227	11.227	0.000	93	1464			NR
6 4,4'-DDT	235	11.504	11.504	0.000	97	776818	NR		NR

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Reagents:

MB_DFTPP_WRK_00333

Amount Added: 1.00

Units: mL

MB_LLIS_WRK_00149

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309386.D

Injection Date: 11-Jul-2018 18:14:30

Instrument ID: HP5973U

Lims ID: DFTPP

Client ID:

Operator ID: DR

ALS Bottle#: 2 Worklist Smp#: 2

Injection Vol: 1.0 ul

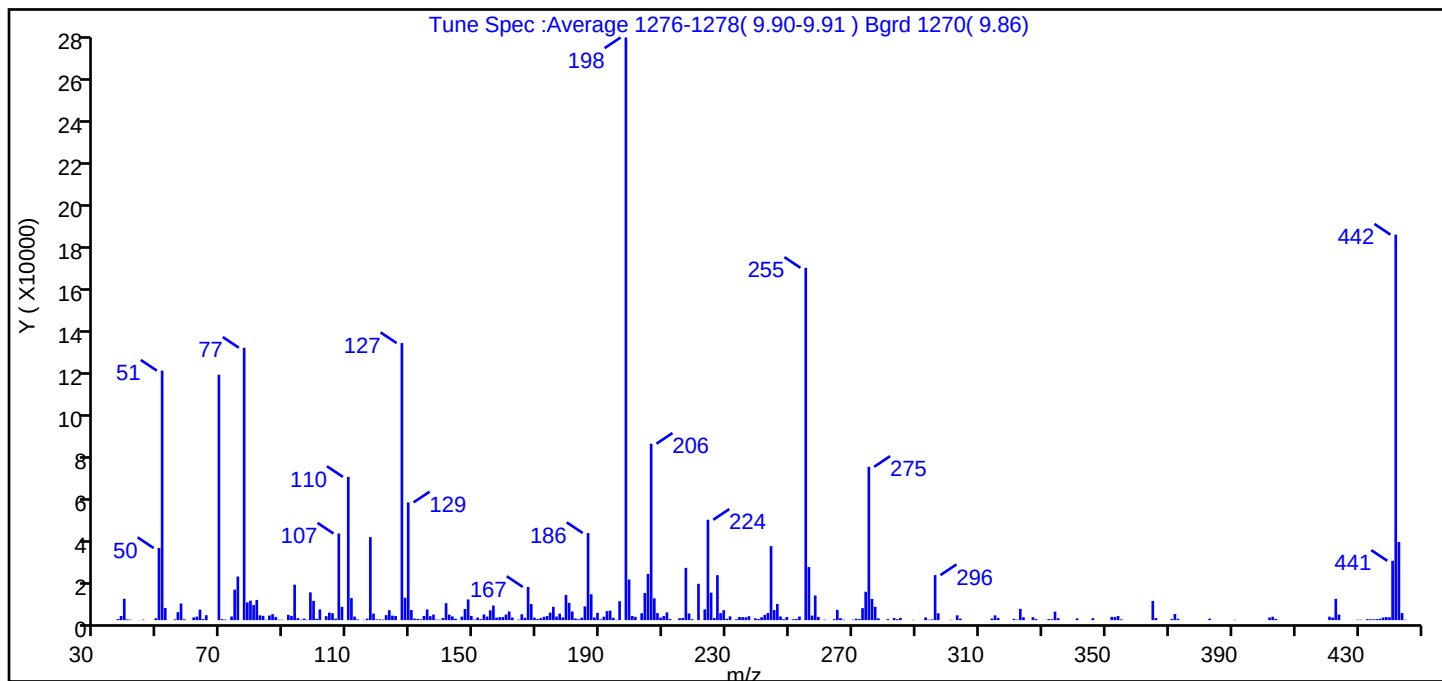
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Tune Method: DFTPP Method 8270D, BP 198

4 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	base peak, or >90% of 442	100.0 (151.1)
51	10-80% of the base peak	42.8
68	<2% of mass 69	0.0 (0.0)
69	Present	42.1
70	<2% of mass 69	0.2 (0.4)
127	10-80% of the base peak	47.6
197	<2% of mass 198	0.0
199	5-9% of mass 198	7.0
275	10-60% of the base peak	26.3
365	>1% of mass 198	3.3
441	present but <24% of mass 442	10.2 (15.4)
442	base peak, or >50% of 198	66.2
443	15-24% of mass 442	13.4 (20.3)

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309386.D\1,4_Dx_SIM_HP5973U.rsl\tspe
Injection Date: 11-Jul-2018 18:14:30
Spectrum: Tune Spec :Average 1276-1278(9.90-9.91) Bgrd 1270(9.86)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 268

m/z	Y	m/z	Y	m/z	Y	m/z	Y
37.00	511	121.00	275	191.00	1660	273.00	5720
38.00	1986	122.00	2378	192.00	4290	274.00	13526
39.00	10205	123.00	4750	193.00	4542	275.00	73040
40.00	357	124.00	2124	194.00	1155	276.00	10131
41.00	192	125.00	1998	195.00	185	277.00	6389
43.00	13	127.00	131968	196.00	9025	278.00	859
44.00	45	128.00	10671	198.00	277504	281.00	517
45.00	251	129.00	56080	199.00	19344	283.00	1040
49.00	889	130.00	4826	200.00	1994	284.00	465
50.00	34336	131.00	706	201.00	1560	285.00	1041
51.00	118840	132.00	613	203.00	3286	289.00	166
52.00	5825	133.00	411	204.00	12943	293.00	1295
55.00	368	134.00	1969	205.00	22032	294.00	192
56.00	3795	135.00	5089	206.00	84032	295.00	353
57.00	7913	136.00	1876	207.00	10377	296.00	21448
58.00	429	137.00	2638	208.00	3353	297.00	3275
61.00	1281	138.00	261	209.00	1215	301.00	170
62.00	1669	139.00	183	210.00	1951	303.00	2309
63.00	5025	140.00	1040	211.00	3724	304.00	741
64.00	510	141.00	8078	212.00	578	314.00	757
65.00	2353	142.00	2616	215.00	906	315.00	2286
69.00	116880	143.00	1773	216.00	1031	316.00	996
70.00	508	144.00	654	217.00	24912	321.00	615
71.00	257	146.00	1672	218.00	3200	322.00	214
73.00	1745	147.00	5311	219.00	460	323.00	5363
74.00	14543	148.00	9861	221.00	17304	324.00	1375
75.00	20768	149.00	2018	223.00	5107	327.00	1418
77.00	129744	150.00	270	224.00	47816	328.00	592
78.00	8427	151.00	1243	225.00	13089	332.00	484
79.00	9287	152.00	455	226.00	1005	333.00	435
80.00	7174	153.00	2705	227.00	21416	334.00	4093
81.00	9632	154.00	1689	228.00	3320	335.00	918
82.00	2266	155.00	4687	229.00	4715	341.00	852

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309386.D\1,4_Dx_SIM_HP5973U.rsl\tspe

Injection Date: 11-Jul-2018 18:14:30

Spectrum: Tune Spec :Average 1276-1278(9.90-9.91) Bgrd 1270(9.86)

Base Peak: 198.00

Minimum % Base Peak: 0

Number of Points: 268

m/z	Y	m/z	Y	m/z	Y	m/z	Y
83.00	2046	156.00	6935	230.00	642	346.00	951
84.00	187	157.00	1181	231.00	1806	352.00	1578
85.00	2209	158.00	1431	233.00	436	353.00	1500
86.00	2823	159.00	1450	234.00	1531	354.00	1965
87.00	1544	160.00	2670	235.00	1421	355.00	384
88.00	195	161.00	4129	236.00	1372	365.00	9163
89.00	191	162.00	1244	237.00	1882	366.00	997
91.00	2515	164.00	245	239.00	864	371.00	577
92.00	2039	165.00	2802	240.00	525	372.00	2943
93.00	16896	166.00	1121	241.00	1379	373.00	651
94.00	951	167.00	15808	242.00	2508	383.00	718
95.00	231	168.00	7660	243.00	3416	391.00	191
96.00	716	169.00	1181	244.00	35256	402.00	1277
97.00	192	170.00	495	245.00	4786	403.00	1625
98.00	13242	171.00	933	246.00	7719	404.00	566
99.00	9169	172.00	1560	247.00	1755	421.00	1668
100.00	608	173.00	1959	248.00	452	422.00	1263
101.00	5111	174.00	3581	249.00	1506	423.00	10154
103.00	1902	175.00	6362	251.00	435	424.00	2667
104.00	3580	176.00	1699	252.00	569	430.00	199
105.00	3295	177.00	3092	253.00	1731	431.00	172
106.00	656	178.00	1324	255.00	167808	433.00	465
107.00	41248	179.00	12013	256.00	25296	434.00	417
108.00	6371	180.00	8244	257.00	2151	435.00	367
110.00	68216	181.00	4101	258.00	11735	436.00	512
111.00	10506	182.00	803	259.00	1533	437.00	690
112.00	1707	183.00	425	261.00	224	438.00	1277
113.00	369	184.00	1180	264.00	482	439.00	1455
115.00	174	185.00	6541	265.00	4907	440.00	1382
116.00	700	186.00	41488	266.00	928	441.00	28256
117.00	39576	187.00	12325	267.00	244	442.00	183616
118.00	3108	188.00	1281	270.00	238	443.00	37240
119.00	347	189.00	3506	271.00	657	444.00	3380
120.00	358	190.00	347	272.00	488	445.00	169

m/z	Y	m/z	Y	m/z	Y	m/z	Y
83.00	2046	156.00	6935	230.00	642	346.00	951
84.00	187	157.00	1181	231.00	1806	352.00	1578
85.00	2209	158.00	1431	233.00	436	353.00	1500
86.00	2823	159.00	1450	234.00	1531	354.00	1965
87.00	1544	160.00	2670	235.00	1421	355.00	384
88.00	195	161.00	4129	236.00	1372	365.00	9163
89.00	191	162.00	1244	237.00	1882	366.00	997
91.00	2515	164.00	245	239.00	864	371.00	577
92.00	2039	165.00	2802	240.00	525	372.00	2943
93.00	16896	166.00	1121	241.00	1379	373.00	651
94.00	951	167.00	15808	242.00	2508	383.00	718
95.00	231	168.00	7660	243.00	3416	391.00	191
96.00	716	169.00	1181	244.00	35256	402.00	1277
97.00	192	170.00	495	245.00	4786	403.00	1625
98.00	13242	171.00	933	246.00	7719	404.00	566
99.00	9169	172.00	1560	247.00	1755	421.00	1668
100.00	608	173.00	1959	248.00	452	422.00	1263
101.00	5111	174.00	3581	249.00	1506	423.00	10154
103.00	1902	175.00	6362	251.00	435	424.00	2667
104.00	3580	176.00	1699	252.00	569	430.00	199
105.00	3295	177.00	3092	253.00	1731	431.00	172
106.00	656	178.00	1324	255.00	167808	433.00	465
107.00	41248	179.00	12013	256.00	25296	434.00	417
108.00	6371	180.00	8244	257.00	2151	435.00	367
110.00	68216	181.00	4101	258.00	11735	436.00	512
111.00	10506	182.00	803	259.00	1533	437.00	690
112.00	1707	183.00	425	261.00	224	438.00	1277
113.00	369	184.00	1180	264.00	482	439.00	1455
115.00	174	185.00	6541	265.00	4907	440.00	1382
116.00	700	186.00	41488	266.00	928	441.00	28256
117.00	39576	187.00	12325	267.00	244	442.00	183616
118.00	3108	188.00	1281	270.00	238	443.00	37240
119.00	347	189.00	3506	271.00	657	444.00	3380
120.00	358	190.00	347	272.00	488	445.00	169

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309386.D

Injection Date: 11-Jul-2018 18:14:30

Instrument ID: HP5973U

Lims ID: DFTPP

Client ID:

Operator ID: DR

ALS Bottle#: 2 Worklist Smp#: 2

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

6 4,4'-DDT, Detector: MS SCAN

SW-846 Method

%Breakdown =

$$\left(\frac{\text{Area Breakdown Cpnds}}{\text{Total Area Breakdown Cpnds}} \right) * 100$$

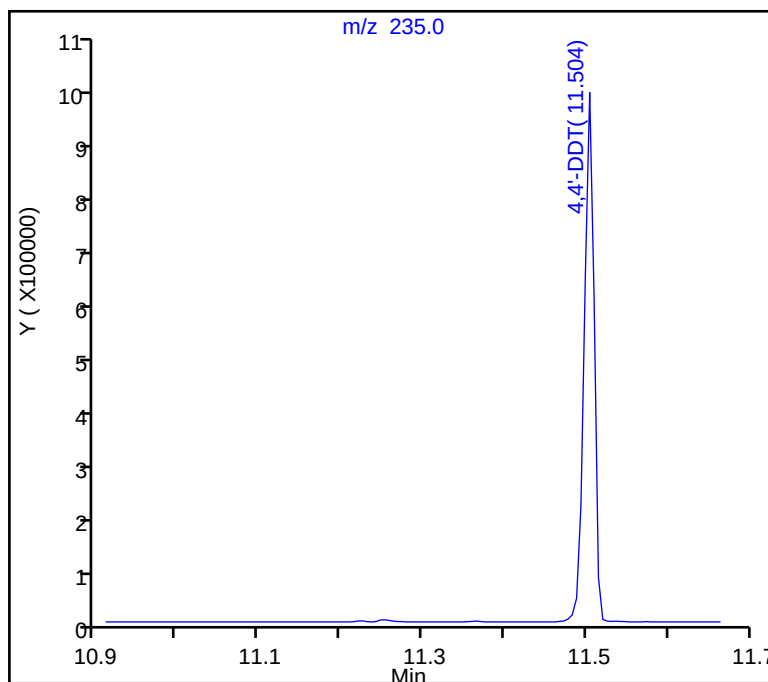
6 4,4'-DDT, Area = 776818

5 4,4'-DDD, Area = 1464

7 4,4'-DDE, Area = 0

%Breakdown: 0.19%, Max Limit: 20.00%

Passed



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310619.D
 Lims ID: DFTPP
 Client ID:
 Sample Type: DFTPP
 Inject. Date: 16-Aug-2018 12:07:30 ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: DFTPP
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 13:39:09 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: Deconvolution ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 12:30:35

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
4 DFTPP									
7 4,4'-DDE	246		10.805					ND	U
5 4,4'-DDD	235	11.083	11.083	0.000	94	11221		NR	
6 4,4'-DDT	235	11.355	11.355	0.000	97	930305	NR	NR	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

U - Marked Undetected

Reagents:

MB_DFTPP_WRK_00336

Amount Added: 1.00

Units: mL

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310619.D

Injection Date: 16-Aug-2018 12:07:30

Instrument ID: HP5973U

Lims ID: DFTPP

Client ID:

Operator ID: MKP

ALS Bottle#: 2 Worklist Smp#: 2

Injection Vol: 1.0 ul

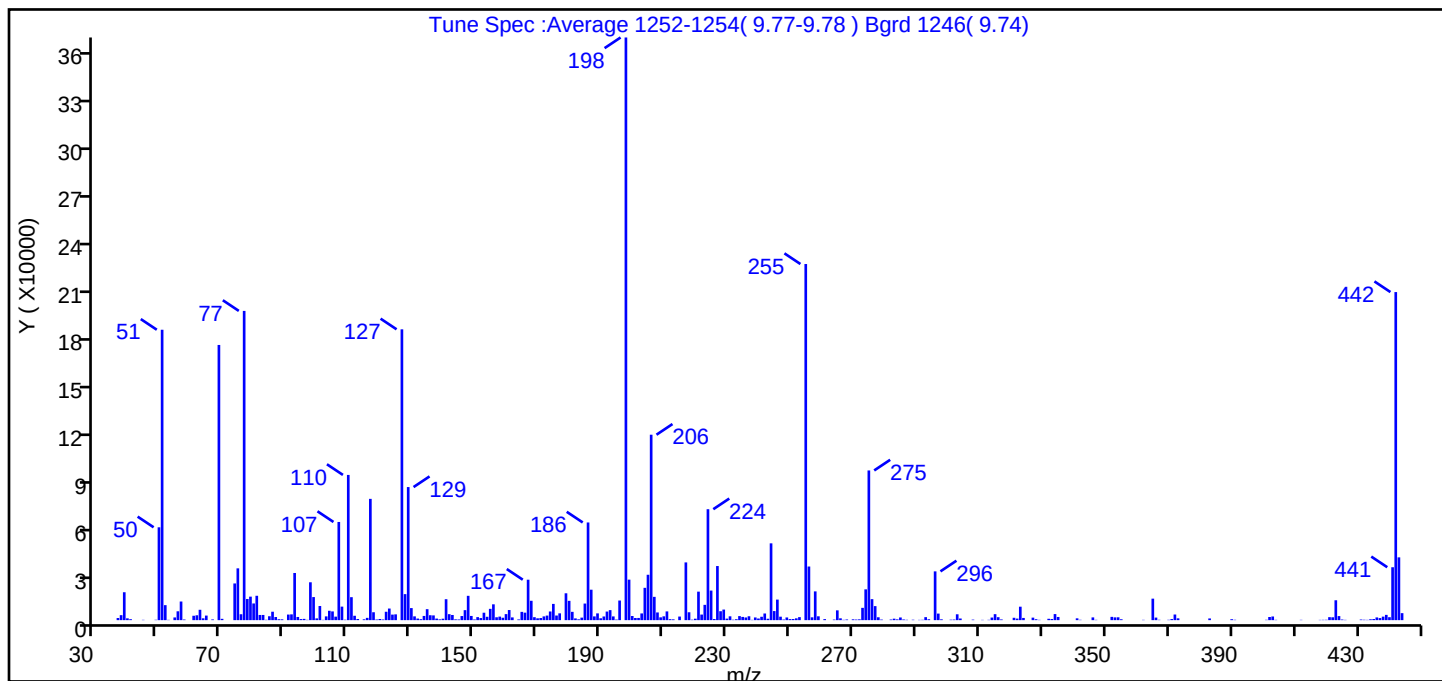
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Tune Method: DFTPP Method 8270D, BP 198

4 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	base peak, or >90% of 442	100.0 (177.6)
51	10-80% of the base peak	49.8
68	<2% of mass 69	0.0 (0.0)
69	Present	47.2
70	<2% of mass 69	0.2 (0.5)
127	10-80% of the base peak	49.9
197	<2% of mass 198	0.0
199	5-9% of mass 198	6.9
275	10-60% of the base peak	25.7
365	>1% of mass 198	3.7
441	present but <24% of mass 442	9.1 (16.1)
442	base peak, or >50% of 198	56.3
443	15-24% of mass 442	10.8 (19.1)

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310619.D\1,4_Dx_SIM_HP5973U.rsl\tspe
Injection Date: 16-Aug-2018 12:07:30
Spectrum: Tune Spec :Average 1252-1254(9.77-9.78) Bgrd 1246(9.74)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 299

m/z	Y	m/z	Y	m/z	Y	m/z	Y
37.00	1314	129.00	82296	207.00	14403	293.00	1850
38.00	3076	130.00	7454	208.00	4757	294.00	550
39.00	17256	131.00	2337	209.00	1736	296.00	30160
40.00	1122	132.00	982	210.00	2354	297.00	4052
41.00	591	133.00	587	211.00	5403	298.00	506
45.00	188	134.00	2599	212.00	599	301.00	288
49.00	223	135.00	6790	213.00	497	302.00	366
50.00	57416	136.00	3033	215.00	2220	303.00	3624
51.00	179584	137.00	2929	217.00	35704	304.00	1010
52.00	9268	138.00	968	218.00	4871	308.00	319
53.00	179	139.00	482	219.00	279	311.00	171
55.00	1668	140.00	893	220.00	898	313.00	200
56.00	5473	141.00	12948	221.00	17624	314.00	1604
57.00	11523	142.00	3690	222.00	3446	315.00	3697
58.00	387	143.00	3190	223.00	9458	316.00	1828
61.00	2710	144.00	498	224.00	68600	317.00	434
62.00	3006	145.00	411	225.00	18288	321.00	1458
63.00	6410	146.00	2531	226.00	681	322.00	967
64.00	1129	147.00	6181	227.00	33464	323.00	8315
65.00	2822	148.00	15041	228.00	5515	324.00	1362
67.00	442	149.00	2595	229.00	6542	327.00	1551
69.00	170176	150.00	422	230.00	939	328.00	575
70.00	813	151.00	1868	231.00	2371	329.00	180
74.00	22688	152.00	1292	232.00	261	332.00	839
75.00	32032	153.00	4595	233.00	567	333.00	709
76.00	3651	154.00	2076	234.00	2504	334.00	3752
77.00	191232	155.00	6981	235.00	1992	335.00	1959
78.00	13064	156.00	9784	236.00	1652	341.00	1120
79.00	14532	157.00	1777	237.00	2408	342.00	209
80.00	10319	158.00	2185	238.00	179	346.00	1694
81.00	15066	159.00	1491	239.00	1660	347.00	200
82.00	3196	160.00	3730	240.00	1010	352.00	2022
83.00	3211	161.00	6252	241.00	2086	353.00	1711

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310619.D\1_4_Dx_SIM_HP5973U.rsl\tspe

Injection Date: 16-Aug-2018 12:07:30

Spectrum: Tune Spec :Average 1252-1254(9.77-9.78) Bgrd 1246(9.74)

Base Peak: 198.00

Minimum % Base Peak: 0

Number of Points: 299

m/z	Y	m/z	Y	m/z	Y	m/z	Y
84.00	215	162.00	1691	242.00	4112	354.00	1763
85.00	2417	164.00	431	243.00	867	355.00	550
86.00	5210	165.00	5113	244.00	47496	362.00	185
87.00	1923	166.00	4625	245.00	5609	365.00	13288
88.00	565	167.00	25008	246.00	12713	366.00	1582
89.00	498	168.00	11972	247.00	2135	367.00	213
91.00	3454	169.00	1823	248.00	371	370.00	214
92.00	3577	170.00	1140	249.00	1658	371.00	669
93.00	29160	171.00	1312	250.00	651	372.00	3481
94.00	1964	172.00	2319	251.00	709	373.00	1117
95.00	665	173.00	2825	252.00	1115	383.00	1053
96.00	786	174.00	5358	253.00	1862	390.00	571
97.00	191	175.00	10044	255.00	220224	391.00	221
98.00	23416	176.00	2860	256.00	33160	401.00	222
99.00	14264	177.00	4210	257.00	1748	402.00	1942
100.00	1085	179.00	16608	258.00	17784	403.00	2258
101.00	8742	180.00	11936	259.00	2378	404.00	195
102.00	177	181.00	5137	261.00	639	412.00	186
103.00	2328	182.00	1074	264.00	344	418.00	166
104.00	5789	183.00	514	265.00	6057	419.00	204
105.00	5394	184.00	1558	266.00	1127	420.00	230
106.00	2168	185.00	10260	267.00	190	421.00	1849
107.00	60712	186.00	60408	268.00	400	422.00	1775
108.00	8360	187.00	18824	270.00	503	423.00	12295
109.00	273	188.00	2315	271.00	375	424.00	2508
110.00	89800	189.00	4182	272.00	503	425.00	379
111.00	14203	190.00	1150	273.00	7605	426.00	175
112.00	2705	191.00	2269	274.00	19040	431.00	374
113.00	712	192.00	5311	275.00	92568	432.00	244
115.00	514	193.00	6189	276.00	12980	433.00	176
116.00	1409	194.00	2304	277.00	8672	434.00	537
117.00	75000	195.00	351	278.00	1777	435.00	688
118.00	4887	196.00	12132	279.00	356	436.00	1680
119.00	375	198.00	360320	282.00	386	437.00	1285

Report Date: 16-Aug-2018 13:39:10

Chrom Revision: 2.3 19-Jul-2018 15:14:50

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310619.D\1,4_Dx_SIM_HP5973U.rslt\spe

Injection Date: 16-Aug-2018 12:07:30

Spectrum: Tune Spec :Average 1252-1254(9.77-9.78) Bgrd 1246(9.74)

Base Peak: 198.00

Minimum % Base Peak: 0

Number of Points: 299

m/z	Y	m/z	Y	m/z	Y	m/z	Y
120.00	708	199.00	25040	283.00	908	438.00	2172
121.00	395	200.00	2551	284.00	484	439.00	3257
122.00	5184	201.00	1332	285.00	1654	440.00	1828
123.00	7176	202.00	1360	286.00	411	441.00	32720
124.00	3424	203.00	4146	287.00	208	442.00	202880
125.00	3579	204.00	19984	289.00	260	443.00	38824
127.00	179840	205.00	28064	291.00	172	444.00	4325
128.00	16087	206.00	114672	292.00	214		

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310619.D

Injection Date: 16-Aug-2018 12:07:30

Instrument ID: HP5973U

Lims ID: DFTPP

Client ID:

Operator ID: MKP

ALS Bottle#: 2 Worklist Smp#: 2

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

6 4,4'-DDT, Detector: MS SCAN

SW-846 Method

%Breakdown =

$$\left(\frac{\text{Area Breakdown Cpnds}}{\text{Total Area Breakdown Cpnds}} \right) * 100$$

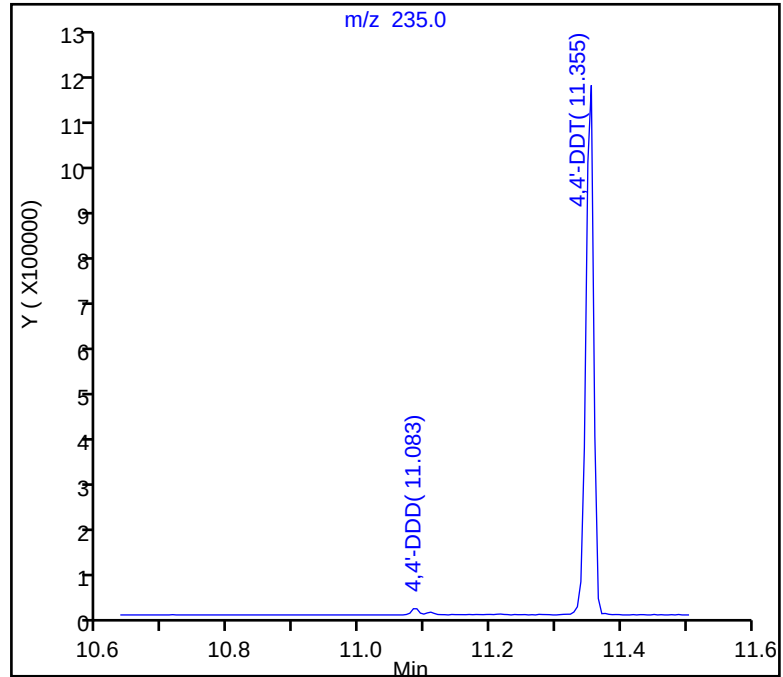
6 4,4'-DDT, Area = 930305

5 4,4'-DDD, Area = 11221

7 4,4'-DDE, Area = 0

%Breakdown: 1.19%, Max Limit: 20.00%

Passed



TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310672.D
 Lims ID: DFTPP
 Client ID:
 Sample Type: DFTPP
 Inject. Date: 17-Aug-2018 10:04:30 ALS Bottle#: 97 Worklist Smp#: 2
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: DFTPP
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 17-Aug-2018 14:40:33 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: Deconvolution ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK014

First Level Reviewer: pagem

Date: 17-Aug-2018 10:28:00

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
4 DFTPP									
7 4,4'-DDE	246	10.805	10.805	0.000	0	1164			NR
5 4,4'-DDD	235	11.088	11.088	0.000	91	9013			NR
6 4,4'-DDT	235	11.355	11.355	0.000	97	758694	NR		NR

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Reagents:

MB_DFTPP_WRK_00336

Amount Added: 1.00

Units: mL

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310672.D

Injection Date: 17-Aug-2018 10:04:30

Instrument ID: HP5973U

Lims ID: DFTPP

Client ID:

Operator ID: MKP

ALS Bottle#: 97 Worklist Smp#: 2

Injection Vol: 1.0 ul

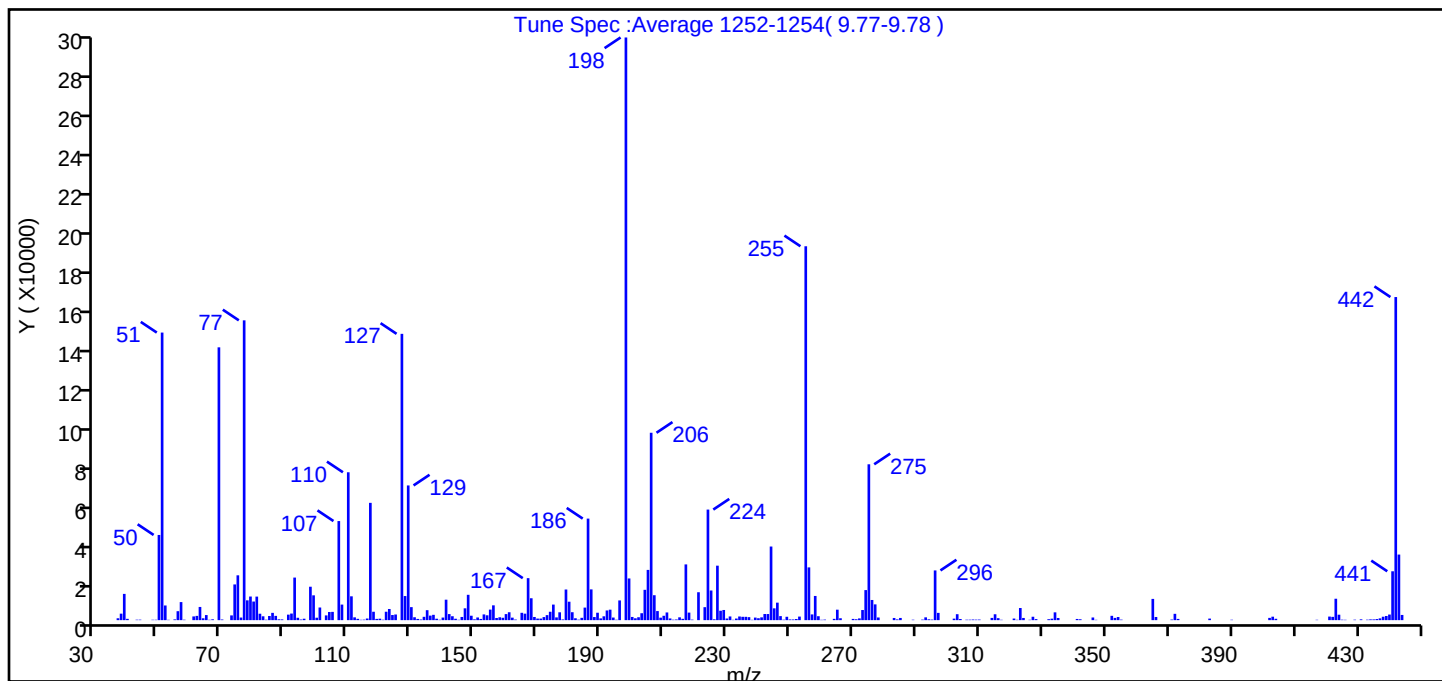
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Tune Method: DFTPP Method 8270D, BP 198

4 DFTPP



m/z	Ion Abundance Criteria	% Relative Abundance
198	base peak, or >90% of 442	100.0 (180.3)
51	10-80% of the base peak	49.4
68	<2% of mass 69	0.0 (0.0)
69	Present	46.8
70	<2% of mass 69	0.1 (0.2)
127	10-80% of the base peak	49.1
197	<2% of mass 198	0.0
199	5-9% of mass 198	7.2
275	10-60% of the base peak	26.7
365	>1% of mass 198	3.6
441	present but <24% of mass 442	8.4 (15.1)
442	base peak, or >50% of 198	55.5
443	15-24% of mass 442	11.3 (20.3)

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310672.D\1,4_Dx_SIM_HP5973U.rsl\tspe
Injection Date: 17-Aug-2018 10:04:30
Spectrum: Tune Spec :Average 1252-1254(9.77-9.78)
Base Peak: 198.00
Minimum % Base Peak: 0
Number of Points: 287

m/z	Y	m/z	Y	m/z	Y	m/z	Y
37.00	946	125.00	2837	200.00	1601	284.00	381
38.00	3262	127.00	143936	201.00	932	285.00	1104
39.00	13199	128.00	12111	202.00	1461	289.00	215
40.00	657	129.00	67720	203.00	3478	292.00	272
43.00	226	130.00	6542	204.00	15243	293.00	1407
44.00	243	131.00	1453	205.00	25256	294.00	418
48.00	192	132.00	618	206.00	94208	295.00	285
49.00	195	133.00	320	207.00	12528	296.00	24992
50.00	42824	134.00	1673	208.00	4560	297.00	3652
51.00	144576	135.00	5006	209.00	1247	302.00	754
52.00	7371	136.00	2280	210.00	2195	303.00	2987
53.00	167	137.00	2673	211.00	3866	304.00	570
55.00	373	138.00	712	212.00	851	306.00	219
56.00	4499	139.00	193	213.00	221	307.00	232
57.00	9076	140.00	1301	214.00	337	308.00	318
58.00	223	141.00	10283	215.00	1416	309.00	260
61.00	1870	142.00	3045	216.00	661	310.00	295
62.00	2143	143.00	1964	217.00	28024	314.00	1127
63.00	6632	144.00	707	218.00	3792	315.00	2958
64.00	934	145.00	171	219.00	254	316.00	992
65.00	2551	146.00	1598	221.00	14030	317.00	179
66.00	176	147.00	5948	223.00	6517	321.00	805
67.00	427	148.00	12736	224.00	55584	322.00	182
69.00	137152	149.00	2219	225.00	14904	323.00	6096
70.00	323	150.00	414	226.00	420	324.00	1098
73.00	2383	151.00	1343	227.00	27384	326.00	189
74.00	17952	152.00	604	228.00	4738	327.00	1708
75.00	22536	153.00	2882	229.00	5109	328.00	524
76.00	1301	154.00	2432	230.00	828	332.00	476
77.00	150720	155.00	5298	231.00	1858	333.00	742
78.00	9959	156.00	7445	232.00	169	334.00	3921
79.00	11871	157.00	1086	233.00	804	335.00	1086
80.00	9352	158.00	1437	234.00	1840	341.00	591

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310672.D\1_4_Dx_SIM_HP5973U.rsl\tspe

Injection Date: 17-Aug-2018 10:04:30

Spectrum: Tune Spec :Average 1252-1254(9.77-9.78)

Base Peak: 198.00

Minimum % Base Peak: 0

Number of Points: 287

m/z	Y	m/z	Y	m/z	Y	m/z	Y
81.00	11837	159.00	1195	235.00	1679	342.00	438
82.00	3228	160.00	3044	236.00	1669	346.00	1336
83.00	1933	161.00	3967	237.00	1503	347.00	169
84.00	216	162.00	1254	238.00	166	352.00	2171
85.00	2083	163.00	304	239.00	1285	353.00	1129
86.00	3660	165.00	3689	240.00	964	354.00	1563
87.00	2145	166.00	3252	241.00	1399	355.00	257
88.00	419	167.00	21112	242.00	3081	365.00	10679
89.00	368	168.00	11007	243.00	3069	366.00	1587
91.00	2767	169.00	1589	244.00	37008	371.00	297
92.00	3309	170.00	797	245.00	5931	372.00	3179
93.00	21400	171.00	787	246.00	8793	373.00	619
94.00	1193	172.00	1537	247.00	2027	383.00	787
95.00	307	173.00	2517	248.00	233	390.00	200
96.00	716	174.00	4215	249.00	1696	402.00	1135
98.00	16800	175.00	7825	250.00	355	403.00	1736
99.00	12473	176.00	1380	251.00	343	404.00	682
100.00	1220	177.00	3942	252.00	565	417.00	182
101.00	6355	178.00	350	253.00	1793	421.00	1792
103.00	2387	179.00	15404	255.00	187968	422.00	1651
104.00	4085	180.00	9267	256.00	26520	423.00	10761
105.00	4155	181.00	3984	257.00	2878	424.00	2733
107.00	49816	182.00	944	258.00	12158	425.00	228
108.00	7822	183.00	244	259.00	1976	426.00	173
110.00	74344	184.00	1168	260.00	170	429.00	233
111.00	11977	185.00	6304	261.00	274	431.00	402
112.00	1406	186.00	51048	264.00	651	433.00	234
113.00	659	187.00	15460	265.00	5259	434.00	381
114.00	178	188.00	1549	266.00	950	435.00	363
115.00	247	189.00	3729	270.00	621	436.00	555
116.00	821	190.00	871	271.00	453	437.00	892
117.00	58968	191.00	1931	272.00	877	438.00	1721
118.00	4219	192.00	4872	273.00	5089	439.00	2086
119.00	631	193.00	5267	274.00	15109	440.00	2813

Report Date: 17-Aug-2018 14:40:33

Chrom Revision: 2.3 19-Jul-2018 15:14:50

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310672.D\1,4_Dx_SIM_HP5973U.rsl\tspe

Injection Date: 17-Aug-2018 10:04:30

Spectrum: Tune Spec :Average 1252-1254(9.77-9.78)

Base Peak: 198.00

Minimum % Base Peak: 0

Number of Points: 287

m/z	Y	m/z	Y	m/z	Y	m/z	Y
120.00	732	194.00	1303	275.00	78352	441.00	24568
121.00	210	195.00	211	276.00	10135	442.00	162432
122.00	4226	196.00	9914	277.00	7929	443.00	32968
123.00	5606	198.00	292928	278.00	1335	444.00	2611
124.00	2575	199.00	20960	283.00	1091		

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180817-73990.b\U3310672.D

Injection Date: 17-Aug-2018 10:04:30

Instrument ID: HP5973U

Lims ID: DFTPP

Client ID:

Operator ID: MKP

ALS Bottle#: 97 Worklist Smp#: 2

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

6 4,4'-DDT, Detector: MS SCAN

SW-846 Method

%Breakdown =

$$\left(\frac{\text{Area Breakdown Cpnds}}{\text{Total Area Breakdown Cpnds}} \right) * 100$$

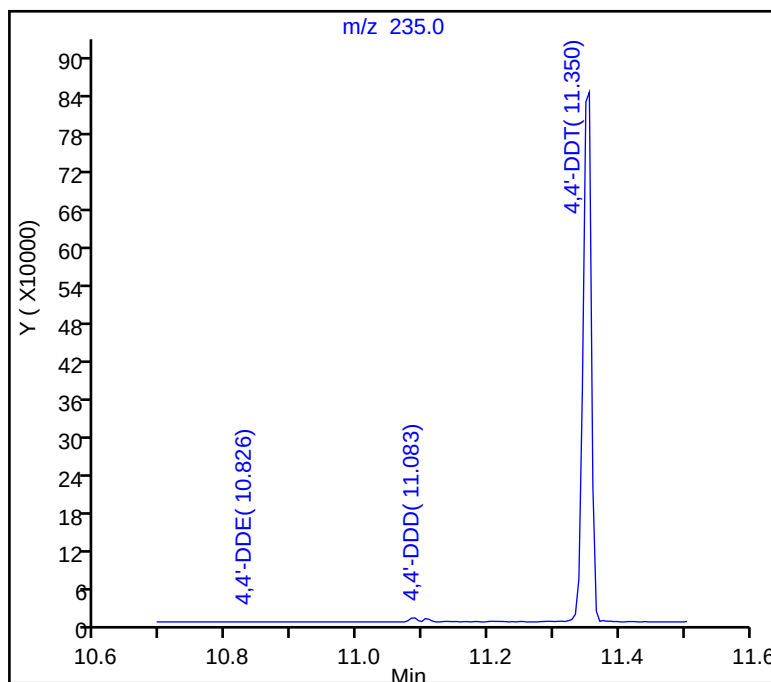
6 4,4'-DDT, Area = 758694

5 4,4'-DDD, Area = 9013

7 4,4'-DDE, Area = 1164

%Breakdown: 1.32%, Max Limit: 20.00%

Passed



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 480-429107/1-A
 Matrix: Water Lab File ID: U3310621.D
 Analysis Method: 8270D SIM ID Date Collected: _____
 Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
 Sample wt/vol: 1000 (mL) Date Analyzed: 08/16/2018 12:59
 Con. Extract Vol.: 1 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	ND		0.20	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	31		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310621.D
 Lims ID: MB 480-429107/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Aug-2018 12:59:30 ALS Bottle#: 4 Worklist Smp#: 4
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-004
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 13:38:52 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 13:39:06

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.462	2.384	0.078	100	130113	10.0	3.10	
3 1,4-Dioxane	88		2.413					ND	U
* 2 1,4-Dichlorobenzene-d4	152	5.714	5.709	0.005	97	345645	4.00	4.00	

QC Flag Legend

Review Flags

U - Marked Undetected

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310621.D

Injection Date: 16-Aug-2018 12:59:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: MB 480-429107/1-A

Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul

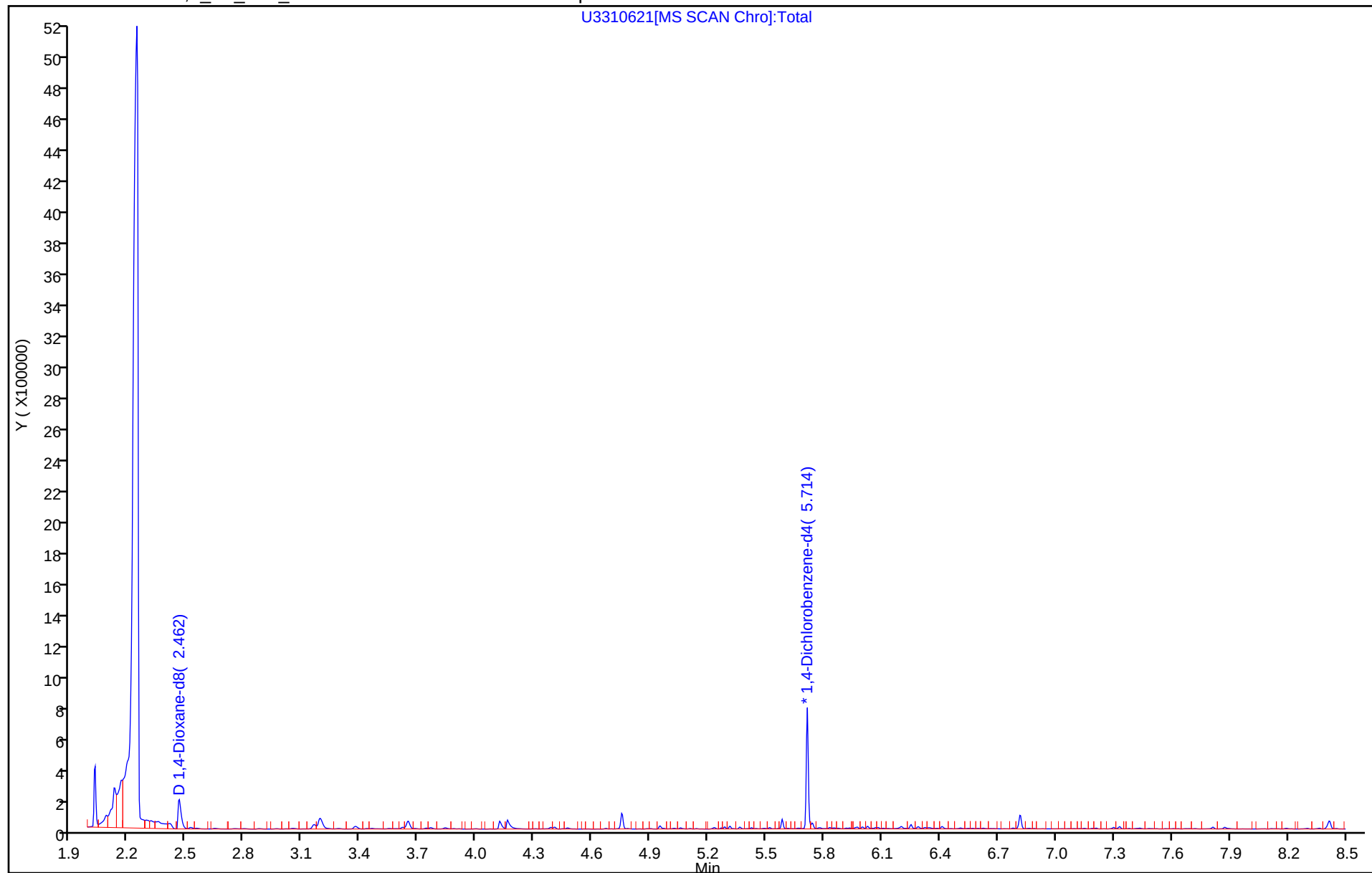
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310621[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310621.D

Injection Date: 16-Aug-2018 12:59:30

Instrument ID: HP5973U

Lims ID: MB 480-429107/1-A

Client ID:

Operator ID: MKP

ALS Bottle#: 4

Worklist Smp#: 4

Injection Vol: 1.0 ul

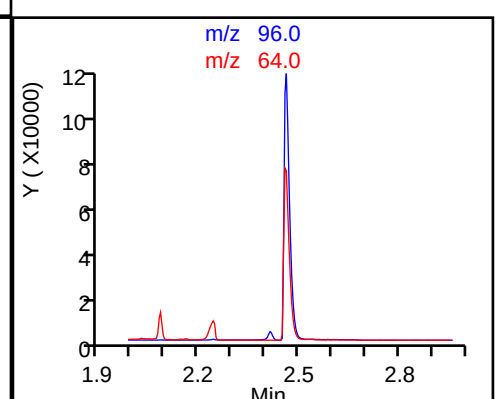
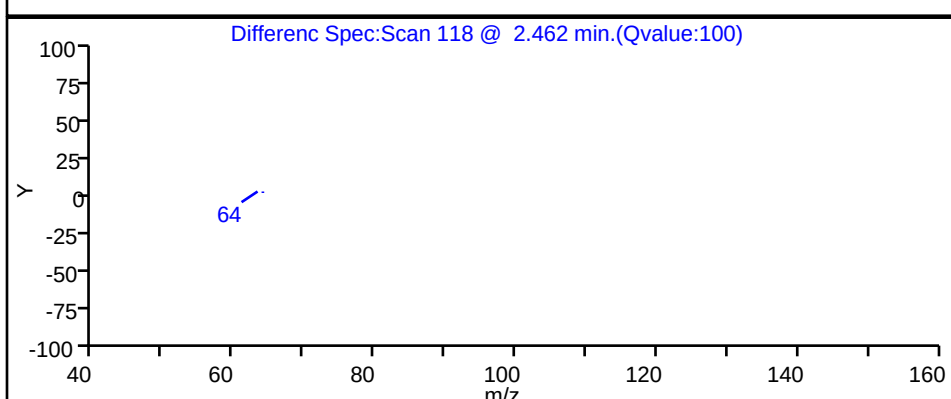
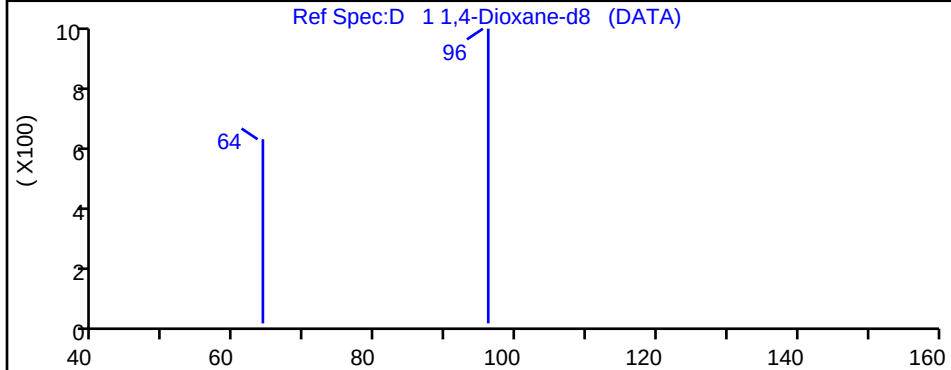
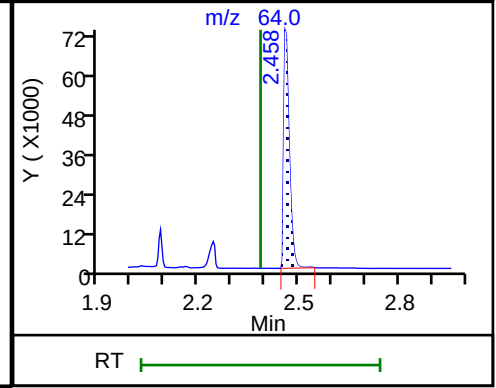
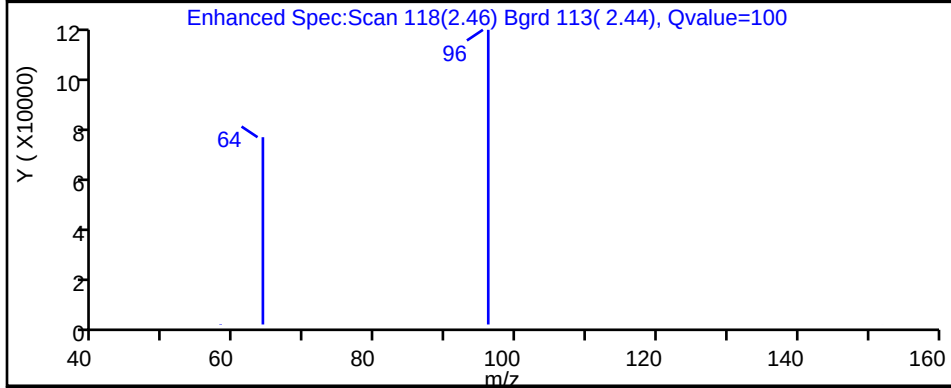
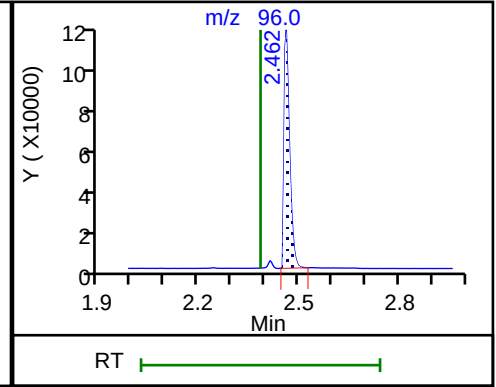
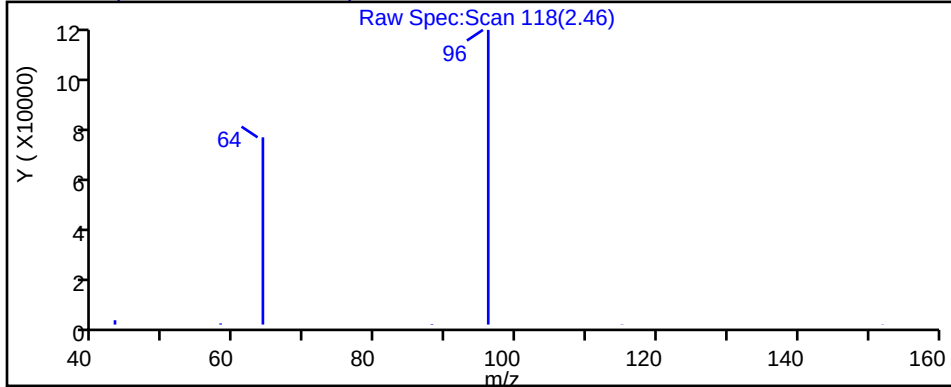
Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310621.D

Injection Date: 16-Aug-2018 12:59:30

Instrument ID: HP5973U

Lims ID: MB 480-429107/1-A

Client ID:

Operator ID: MKP

ALS Bottle#:

4

Worklist Smp#: 4

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

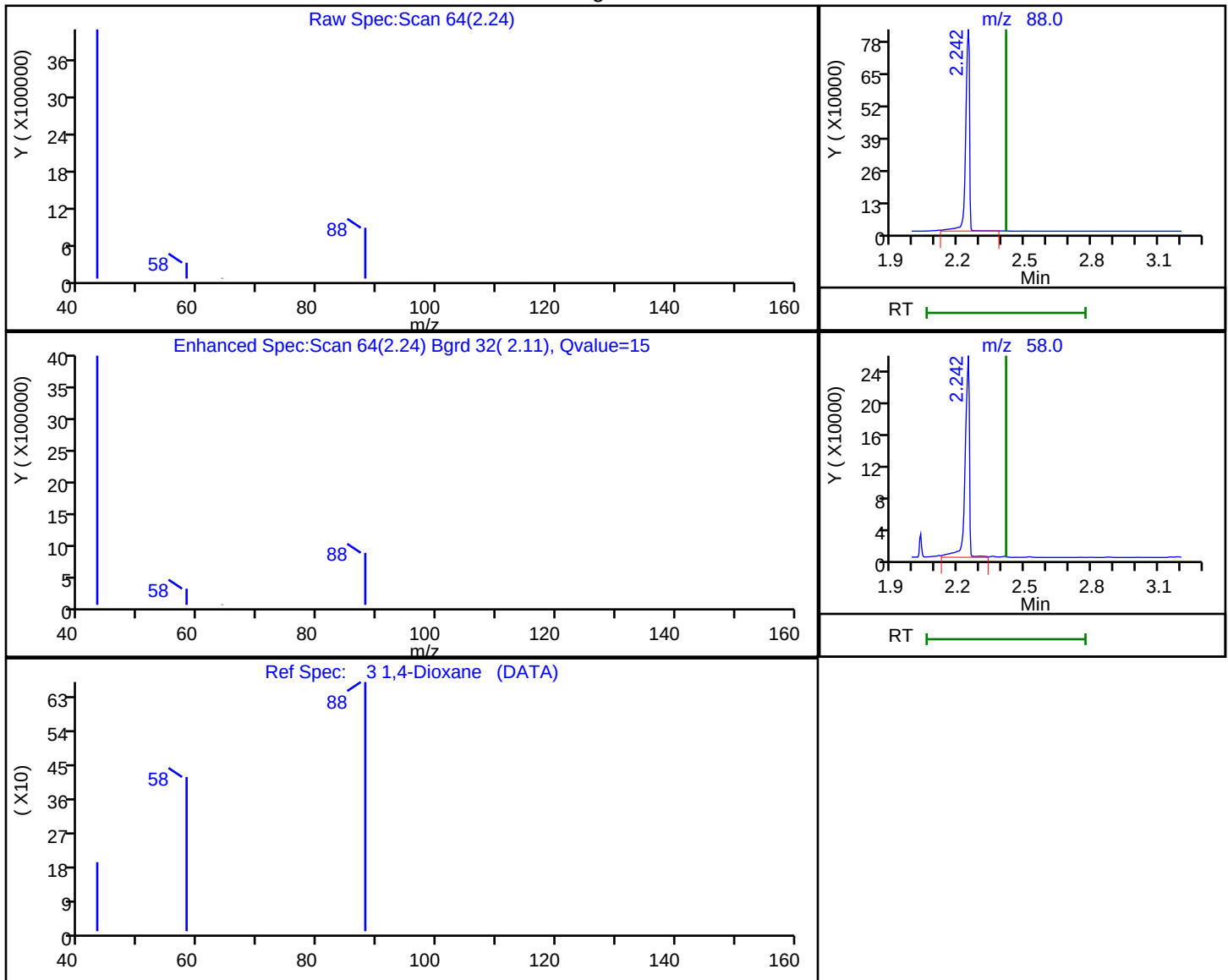
Limit Group: MB - 8270D SIM ID ICAL

Column:

Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

Processing Results



RT	Mass	Response	Amount
2.24	88.00	992520	68.942206
2.24	58.00	349316	

Reviewer: pagem, 16-Aug-2018 13:38:48

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: _____ Lab Sample ID: LCS 480-429107/2-A
Matrix: Water Lab File ID: U3310622.D
Analysis Method: 8270D SIM ID Date Collected: _____
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 1000 (mL) Date Analyzed: 08/16/2018 13:22
Con. Extract Vol.: 1 (mL) Dilution Factor: 1
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	1.09		0.20	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	33		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310622.D
 Lims ID: LCS 480-429107/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Aug-2018 13:22:30 ALS Bottle#: 5 Worklist Smp#: 5
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-005
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 13:48:49 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 13:48:49

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.523	2.384	0.139	100	131515	10.0	3.30	
3 1,4-Dioxane	88	2.560	2.413	0.147	97	15572	1.00	1.09	a
* 2 1,4-Dichlorobenzene-d4	152	5.717	5.709	0.008	97	328536	4.00	4.00	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310622.D

Injection Date: 16-Aug-2018 13:22:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: LCS 480-429107/2-A

Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul

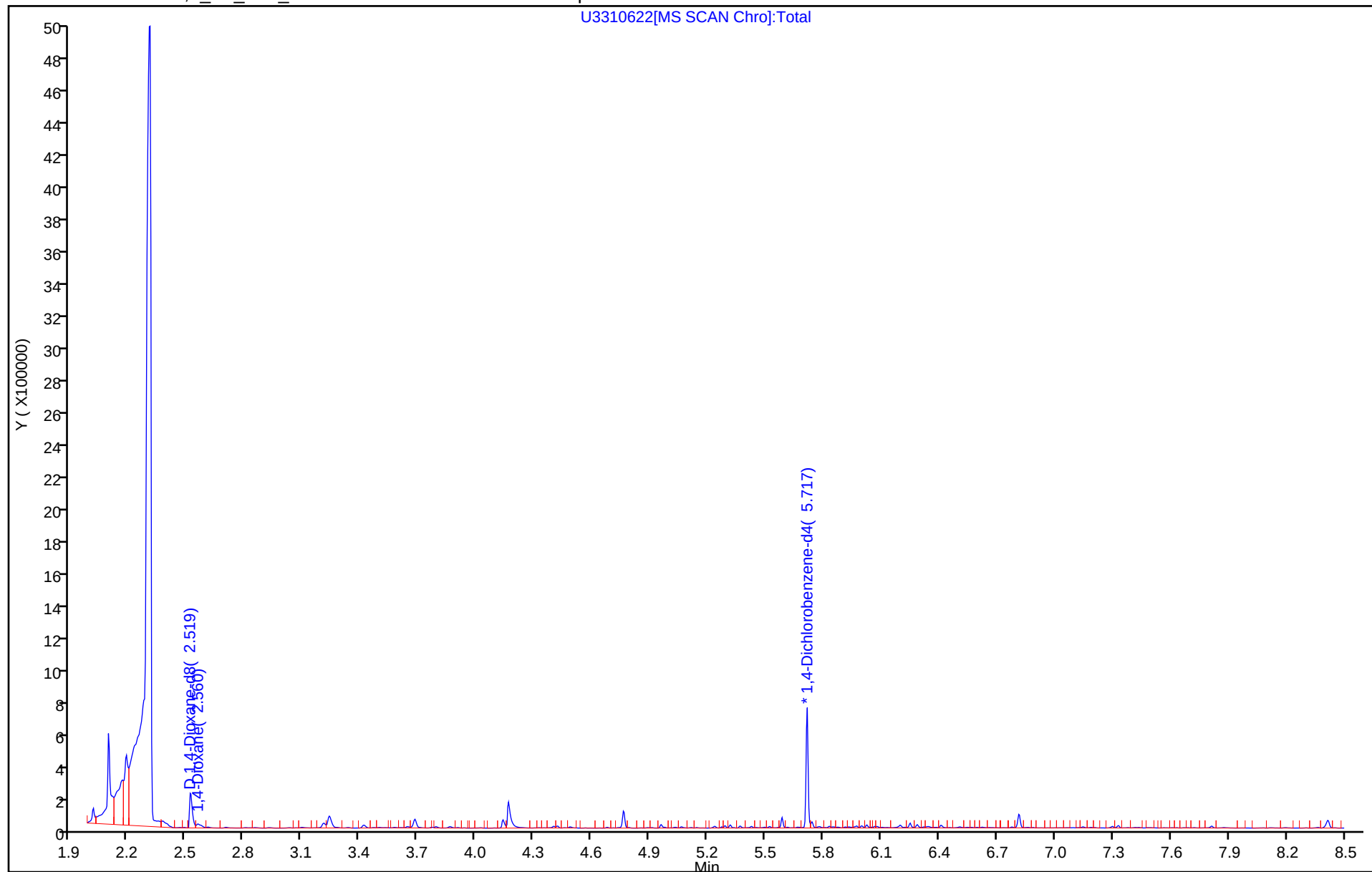
Dil. Factor: 1.0000

ALS Bottle#: 5

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310622[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310622.D

Injection Date: 16-Aug-2018 13:22:30

Instrument ID: HP5973U

Lims ID: LCS 480-429107/2-A

Client ID:

Operator ID: MKP

ALS Bottle#:

5

Worklist Smp#: 5

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

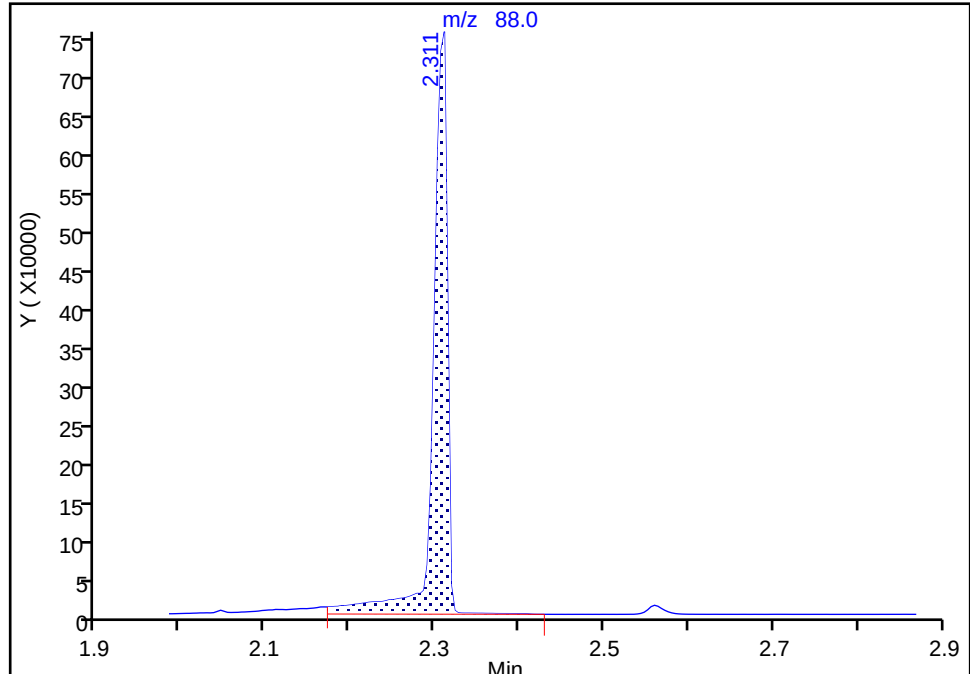
Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

Signal: 1

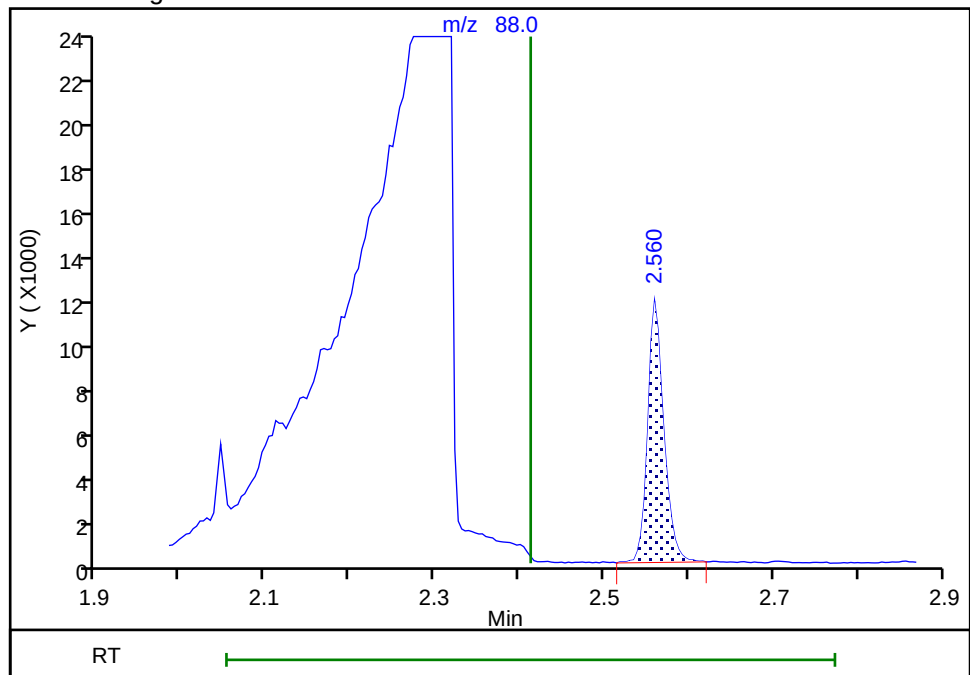
RT: 2.31
Area: 885585
Amount: 60.861141
Amount Units: ng/ul

Processing Integration Results



RT: 2.56
Area: 15572
Amount: 1.091930
Amount Units: ng/ul

Manual Integration Results



Reviewer: pagem, 16-Aug-2018 13:48:24

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: MW-12 MS Lab Sample ID: 480-140145-1 MS
Matrix: Water Lab File ID: U3310623.D
Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 11:20
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 100 (mL) Date Analyzed: 08/16/2018 13:46
Con. Extract Vol.: 1 (mL) Dilution Factor: 1
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	11.3		2.0	1.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	28		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310623.D
 Lims ID: 480-140145-B-1-A MS
 Client ID: MW-12
 Sample Type: MS
 Inject. Date: 16-Aug-2018 13:46:30 ALS Bottle#: 6 Worklist Smp#: 6
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-006
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 14:13:25 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 14:13:32

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.507	2.384	0.123	97	109349	10.0	2.77	a
3 1,4-Dioxane	88	2.548	2.413	0.135	98	13381	1.00	1.13	a
* 2 1,4-Dichlorobenzene-d4	152	5.713	5.709	0.004	95	325794	4.00	4.00	
7 4,4'-DDE	246		10.805					ND	
5 4,4'-DDD	235		11.083					ND	
6 4,4'-DDT	235		11.355					ND	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310623.D

Injection Date: 16-Aug-2018 13:46:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-B-1-A MS

Worklist Smp#: 6

Client ID: MW-12

Injection Vol: 1.0 ul

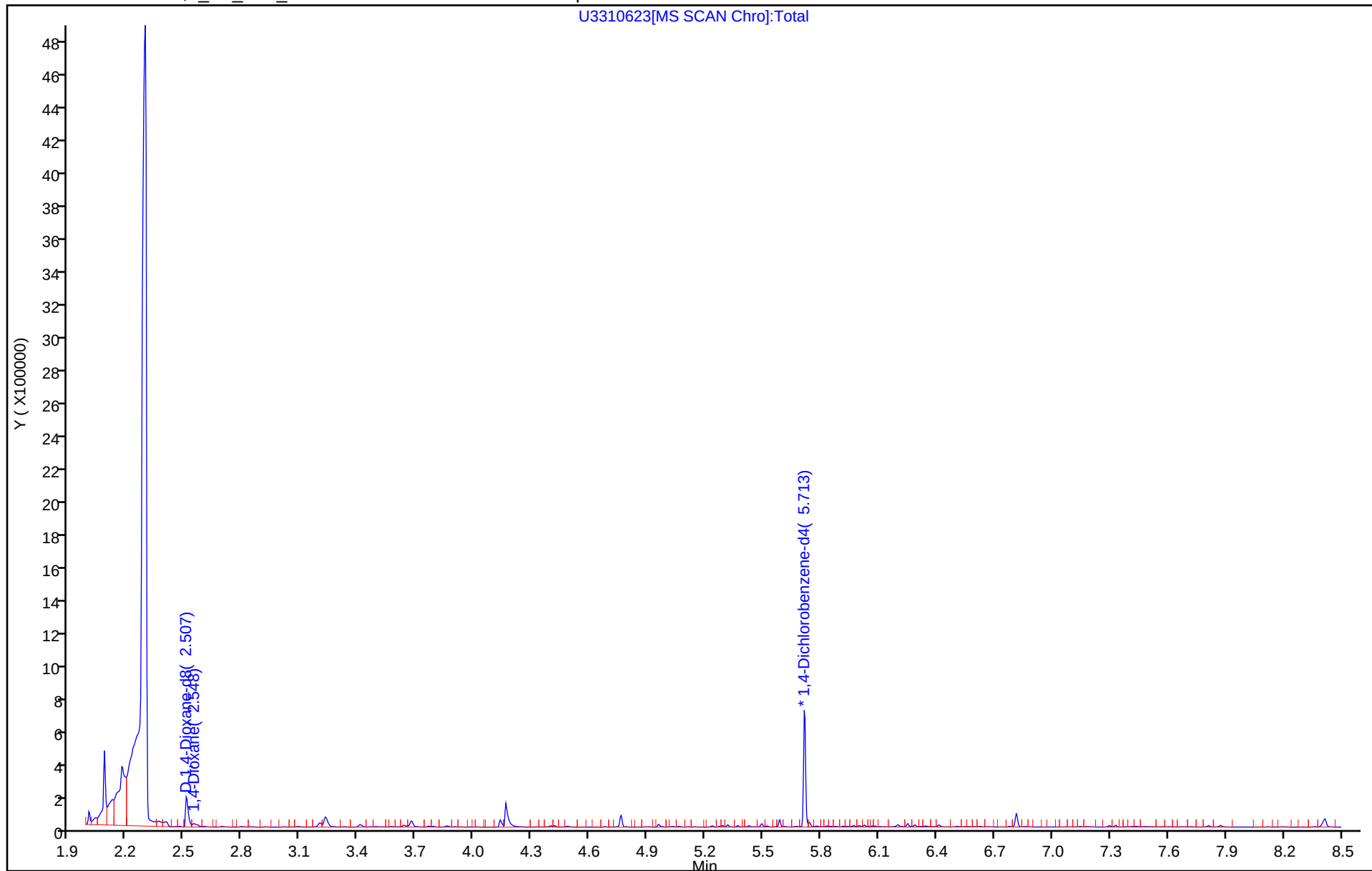
Dil. Factor: 1.0000

ALS Bottle#: 6

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310623[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310623.D

Injection Date: 16-Aug-2018 13:46:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-1-A MS

Client ID: MW-12

Operator ID: MKP

ALS Bottle#: 6 Worklist Smp#: 6

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

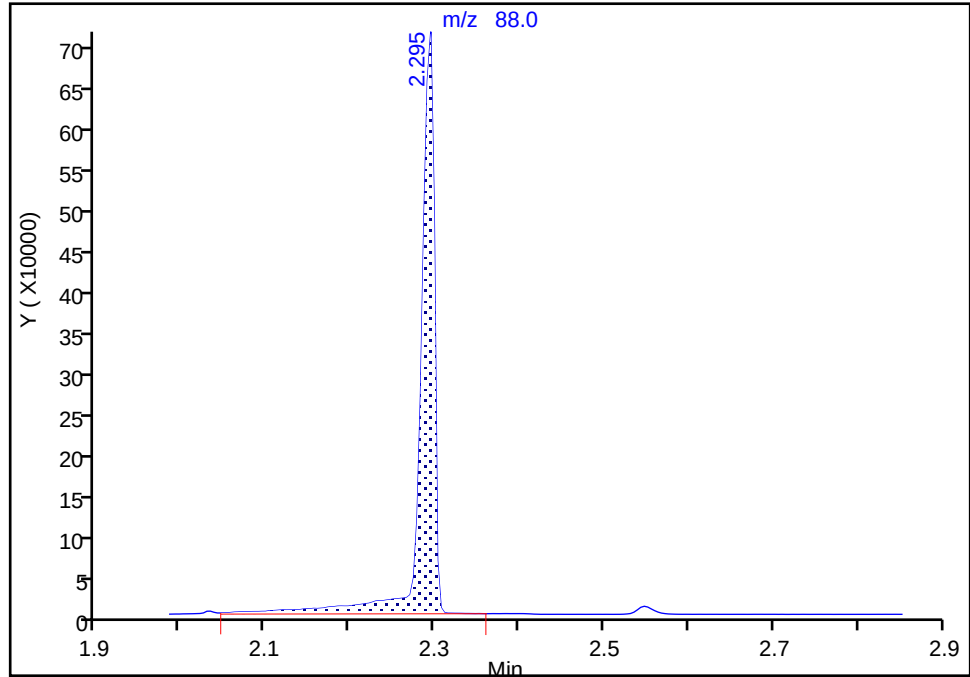
Detector: MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

Signal: 1

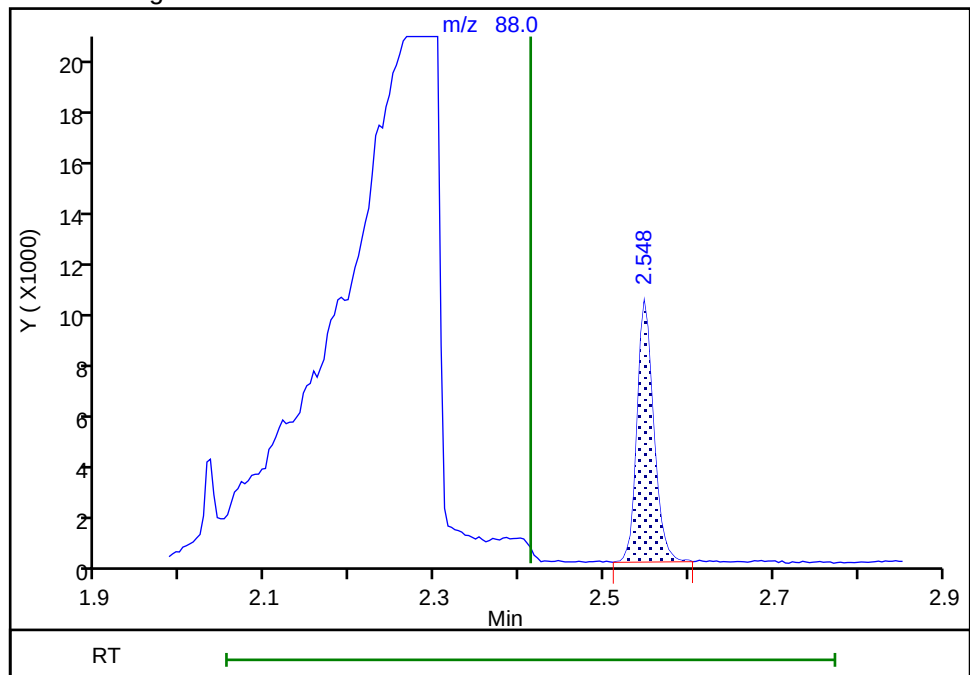
RT: 2.29
Area: 809262
Amount: 66.887539
Amount Units: ng/ul

Processing Integration Results



RT: 2.55
Area: 13381
Amount: 1.127753
Amount Units: ng/ul

Manual Integration Results



Reviewer: pagem, 16-Aug-2018 14:13:22

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310623.D

Injection Date: 16-Aug-2018 13:46:30

Instrument ID: HP5973U

Lims ID: 480-140145-B-1-A MS

Client ID: MW-12

Operator ID: MKP

ALS Bottle#: 6 Worklist Smp#: 6

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

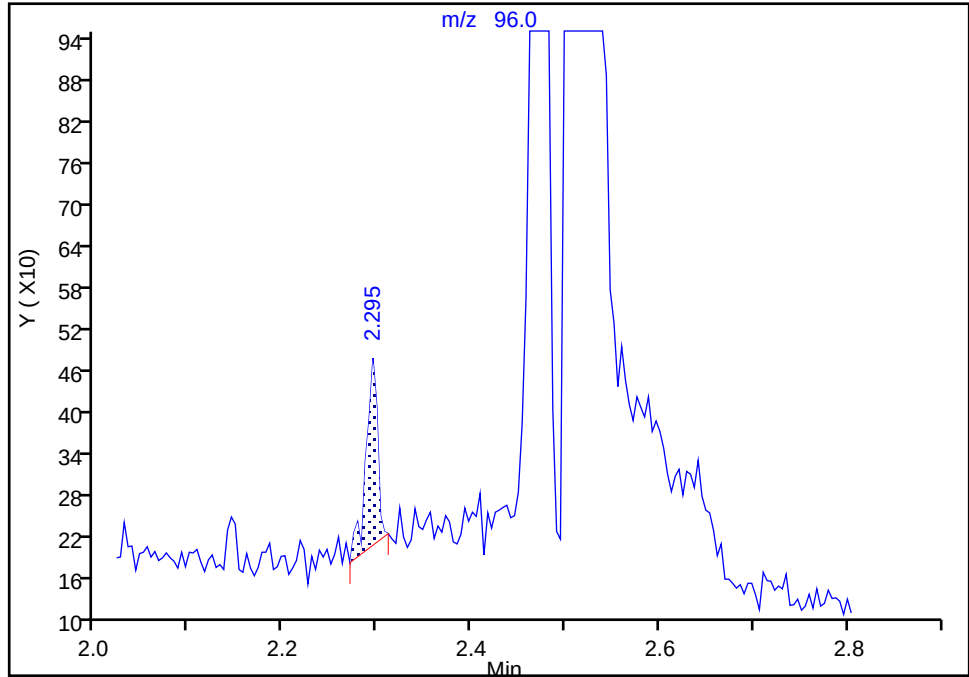
Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

Signal: 1

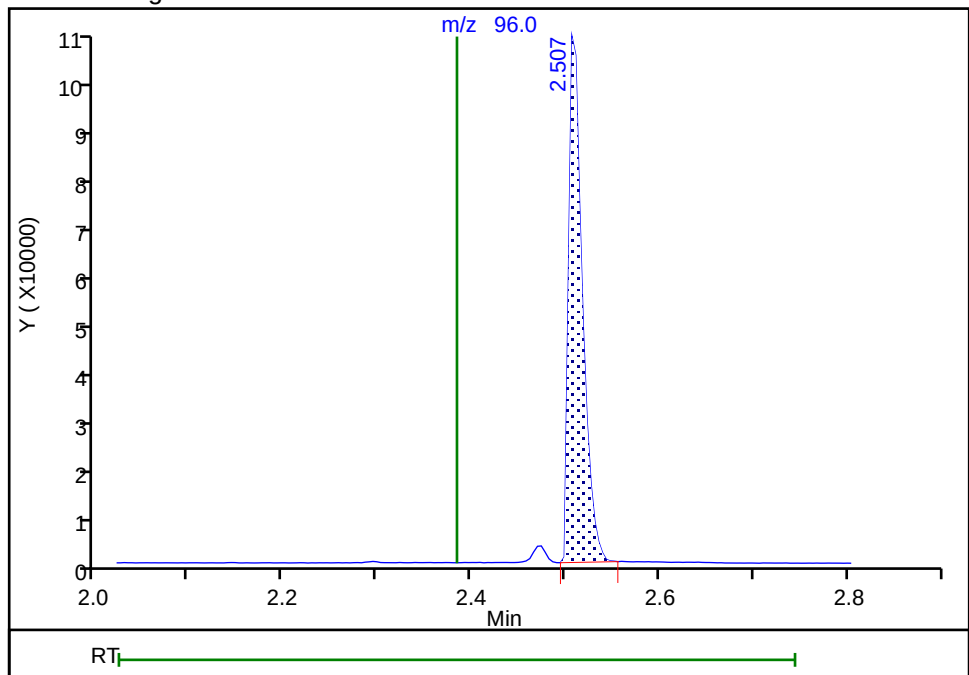
RT: 2.29
Area: 226
Amount: 0.005716
Amount Units: ng/ul

Processing Integration Results



RT: 2.51
Area: 109349
Amount: 2.765793
Amount Units: ng/ul

Manual Integration Results



Reviewer: pagem, 16-Aug-2018 14:13:19

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1
SDG No.: _____
Client Sample ID: MW-12 MSD Lab Sample ID: 480-140145-1 MSD
Matrix: Water Lab File ID: U3310624.D
Analysis Method: 8270D SIM ID Date Collected: 08/07/2018 11:20
Extract. Method: 3510C Date Extracted: 08/10/2018 14:31
Sample wt/vol: 100 (mL) Date Analyzed: 08/16/2018 14:10
Con. Extract Vol.: 1 (mL) Dilution Factor: 1
Injection Volume: 1 (uL) Level: (low/med) Low
% Moisture: _____ GPC Cleanup: (Y/N) N
Analysis Batch No.: 429969 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
123-91-1	1,4-Dioxane	11.0		2.0	1.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
17647-74-4	1,4-Dioxane-d8	29		15-110

TestAmerica Buffalo
Target Compound Quantitation Report

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310624.D
 Lims ID: 480-140145-A-1-A MSD
 Client ID: MW-12
 Sample Type: MSD
 Inject. Date: 16-Aug-2018 14:10:30 ALS Bottle#: 7 Worklist Smp#: 7
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 480-0073956-007
 Operator ID: MKP Instrument ID: HP5973U
 Method: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\1,4_Dx_SIM_HP5973U.m
 Limit Group: MB - 8270D SIM ID ICAL
 Last Update: 16-Aug-2018 14:29:49 Calib Date: 11-Jul-2018 20:42:30
 Integrator: Picker ID Type: RT Order ID
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Buffalo\ChromData\HP5973U\20180711-73014.b\U3309392.D
 Column 1 : Det: MS SCAN
 Process Host: XAWRK052

First Level Reviewer: pagem

Date: 16-Aug-2018 14:29:56

Compound	Sig	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ng/ul	OnCol Amt ng/ul	Flags
D 1 1,4-Dioxane-d8	96	2.511	2.384	0.127	100	112667	10.0	2.94	a
3 1,4-Dioxane	88	2.547	2.413	0.134	97	13475	1.00	1.10	a
* 2 1,4-Dichlorobenzene-d4	152	5.718	5.709	0.009	99	315532	4.00	4.00	
7 4,4'-DDE	246		10.805					ND	
5 4,4'-DDD	235		11.083					ND	
6 4,4'-DDT	235		11.355					ND	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

MB_LLIS_WRK_00151

Amount Added: 20.00

Units: uL

Run Reagent

TestAmerica Buffalo

Data File: \\ChromNA\\Buffalo\\ChromData\\HP5973U\\20180816-73956.b\\U3310624.D

Injection Date: 16-Aug-2018 14:10:30

Instrument ID: HP5973U

Operator ID: MKP

Lims ID: 480-140145-A-1-A MSD

Worklist Smp#: 7

Client ID: MW-12

Injection Vol: 1.0 ul

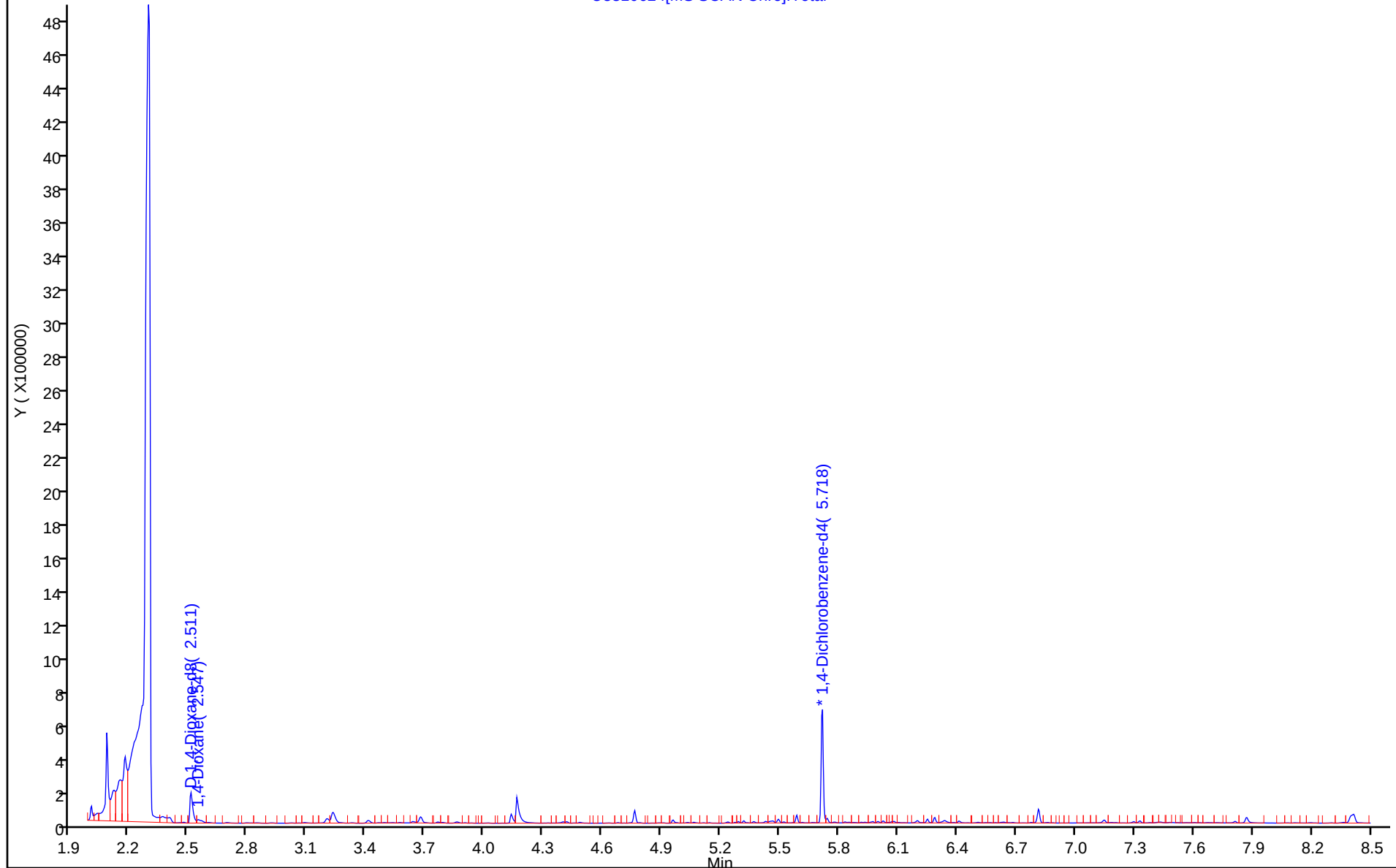
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

U3310624[MS SCAN Chro]:Total



TestAmerica Buffalo

Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310624.D

Injection Date: 16-Aug-2018 14:10:30

Instrument ID: HP5973U

Lims ID: 480-140145-A-1-A MSD

Client ID: MW-12

Operator ID: MKP

ALS Bottle#: 7 Worklist Smp#: 7

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 1,4_Dx_SIM_HP5973U

Limit Group: MB - 8270D SIM ID ICAL

Column:

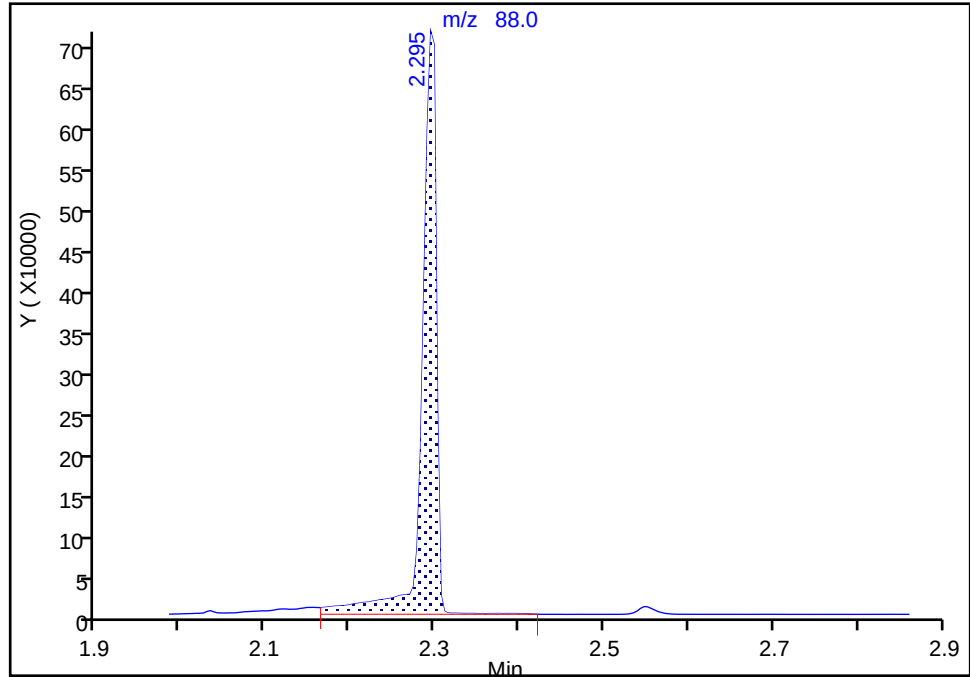
Detector MS SCAN

3 1,4-Dioxane, CAS: 123-91-1

Signal: 1

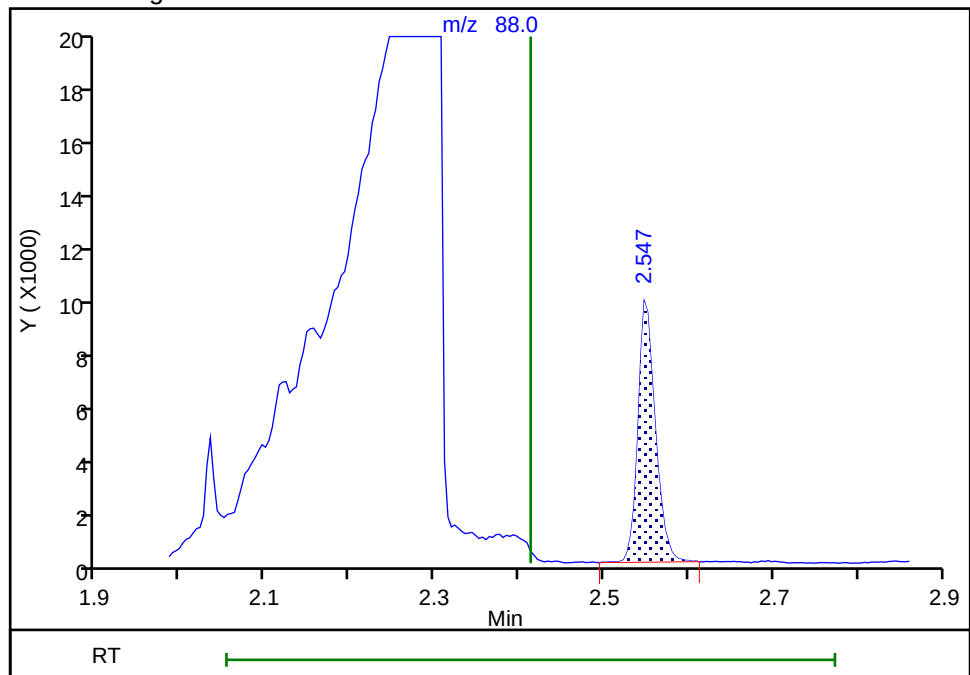
RT: 2.29
Area: 834436
Amount: 66.937129
Amount Units: ng/ul

Processing Integration Results



RT: 2.55
Area: 13475
Amount: 1.102731
Amount Units: ng/ul

Manual Integration Results



Reviewer: pagem, 16-Aug-2018 14:29:44

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Buffalo

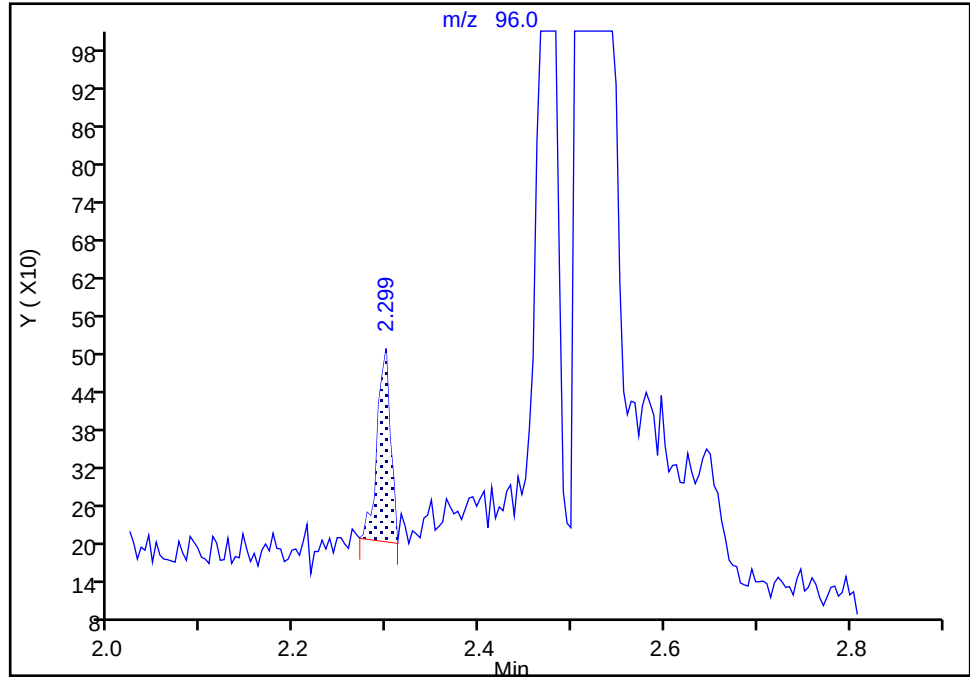
Data File: \\ChromNA\Buffalo\ChromData\HP5973U\20180816-73956.b\U3310624.D
Injection Date: 16-Aug-2018 14:10:30 Instrument ID: HP5973U
Lims ID: 480-140145-A-1-A MSD
Client ID: MW-12
Operator ID: MKP ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 1,4_Dx_SIM_HP5973U Limit Group: MB - 8270D SIM ID ICAL
Column: Detector MS SCAN

D 1 1,4-Dioxane-d8, CAS: 17647-74-4

Signal: 1

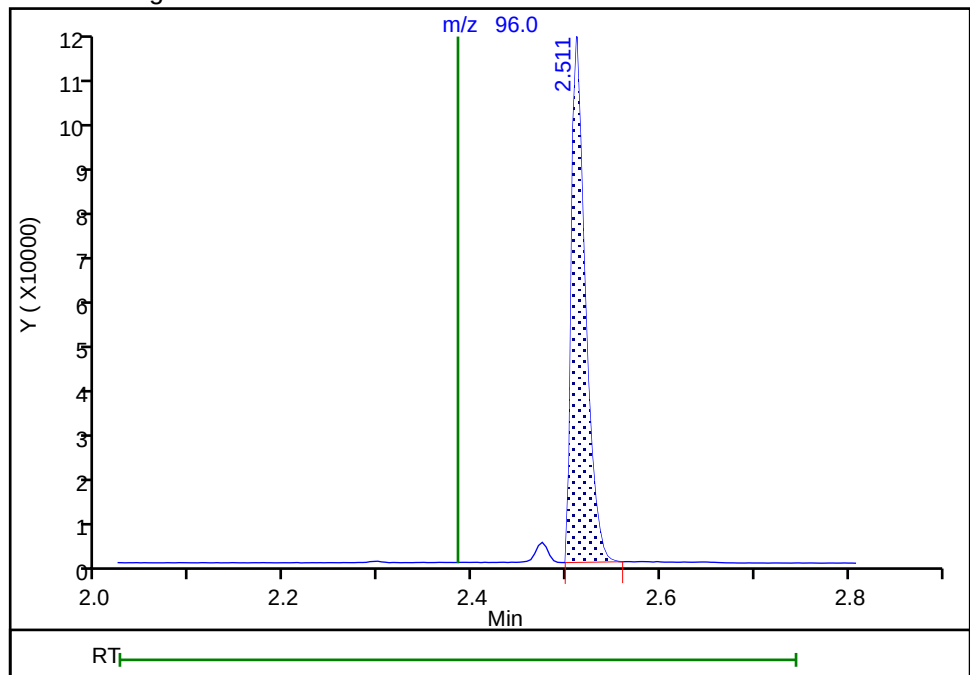
RT: 2.30
Area: 297
Amount: 0.007756
Amount Units: ng/ul

Processing Integration Results



RT: 2.51
Area: 112667
Amount: 2.942396
Amount Units: ng/ul

Manual Integration Results



Reviewer: pagem, 16-Aug-2018 14:29:43

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica BuffaloJob No.: 480-140145-1

SDG No.: _____

Instrument ID: HP5973UStart Date: 07/11/2018 18:14Analysis Batch Number: 424045End Date: 07/12/2018 05:09

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-424045/2		07/11/2018 18:14	1	U3309386.D	RXI-5Sil MS(0.5 0.25 (mm))
IC 480-424045/3		07/11/2018 18:42	1	U3309387.D	RXI-5Sil MS(0.5 0.25 (mm))
IC 480-424045/4		07/11/2018 19:06	1	U3309388.D	RXI-5Sil MS(0.5 0.25 (mm))
ICIS 480-424045/5		07/11/2018 19:30	1	U3309389.D	RXI-5Sil MS(0.5 0.25 (mm))
IC 480-424045/6		07/11/2018 19:54	1	U3309390.D	RXI-5Sil MS(0.5 0.25 (mm))
IC 480-424045/7		07/11/2018 20:18	1	U3309391.D	RXI-5Sil MS(0.5 0.25 (mm))
IC 480-424045/8		07/11/2018 20:42	1	U3309392.D	RXI-5Sil MS(0.5 0.25 (mm))
ICV 480-424045/9		07/11/2018 21:06	1		RXI-5Sil MS(0.5 0.25 (mm))
CCVIS 480-424045/10		07/11/2018 21:30	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/11/2018 21:55	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/11/2018 22:19	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/11/2018 22:44	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/11/2018 23:08	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/11/2018 23:33	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/11/2018 23:57	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 00:22	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 00:46	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 01:10	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 01:35	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 01:58	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 02:22	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 02:46	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 03:10	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 03:34	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 03:58	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 04:22	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 04:45	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		07/12/2018 05:09	1		RXI-5Sil MS(0.5 0.25 (mm))

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica BuffaloJob No.: 480-140145-1

SDG No.: _____

Instrument ID: HP5973UStart Date: 08/16/2018 12:07Analysis Batch Number: 429969End Date: 08/16/2018 23:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-429969/2		08/16/2018 12:07	1	U3310619.D	RXI-5Sil MS(0.5 0.25 (mm))
CCVIS 480-429969/3		08/16/2018 12:35	1	U3310620.D	RXI-5Sil MS(0.5 0.25 (mm))
MB 480-429107/1-A		08/16/2018 12:59	1	U3310621.D	RXI-5Sil MS(0.5 0.25 (mm))
LCS 480-429107/2-A		08/16/2018 13:22	1	U3310622.D	RXI-5Sil MS(0.5 0.25 (mm))
480-140145-1 MS		08/16/2018 13:46	1	U3310623.D	RXI-5Sil MS(0.5 0.25 (mm))
480-140145-1 MSD		08/16/2018 14:10	1	U3310624.D	RXI-5Sil MS(0.5 0.25 (mm))
480-140145-1		08/16/2018 14:33	1	U3310625.D	RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 14:57	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 15:21	1		RXI-5Sil MS(0.5 0.25 (mm))
480-140145-4		08/16/2018 15:45	1	U3310628.D	RXI-5Sil MS(0.5 0.25 (mm))
480-140145-5		08/16/2018 16:09	1	U3310629.D	RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 16:32	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 16:56	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 17:21	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 17:45	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 18:09	10		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 18:34	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 18:58	10		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 19:22	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 19:46	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 20:10	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 20:33	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 20:57	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 21:21	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 21:45	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 22:08	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 22:32	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 22:56	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 23:20	1		RXI-5Sil MS(0.5 0.25 (mm))
ZZZZZ		08/16/2018 23:44	1		RXI-5Sil MS(0.5 0.25 (mm))

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1

SDG No.: _____

Instrument ID: HP5973U Start Date: 08/17/2018 10:04Analysis Batch Number: 430190 End Date: 08/17/2018 12:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
DFTPP 480-430190/2		08/17/2018 10:04	1	U3310672.D	RXI-5Sil MS(0.5 0.25 (mm)
CCVIS 480-430190/3		08/17/2018 10:32	1	U3310673.D	RXI-5Sil MS(0.5 0.25 (mm)
480-140145-2		08/17/2018 10:56	5	U3310674.D	RXI-5Sil MS(0.5 0.25 (mm)
480-140145-3		08/17/2018 11:20	5	U3310675.D	RXI-5Sil MS(0.5 0.25 (mm)
ZZZZZ		08/17/2018 11:44	10		RXI-5Sil MS(0.5 0.25 (mm)
ZZZZZ		08/17/2018 12:08	1		RXI-5Sil MS(0.5 0.25 (mm)
ZZZZZ		08/17/2018 12:31	40		RXI-5Sil MS(0.5 0.25 (mm)

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1

SDG No.: _____

Batch Number: 429107 Batch Start Date: 08/10/18 14:31 Batch Analyst: Gruning, Anton TBatch Method: 3510C Batch End Date: _____

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ReceivedpH	FirstAdjustpH	OP_SIM LCS 00004	OP_SimSurr 00006
MB 480-429107/1		3510C, 8270D SIM ID		1000 mL	1 mL	7 SU	<2 SU		1 mL
LCS 480-429107/2		3510C, 8270D SIM ID		1000 mL	1 mL	7 SU	<2 SU	1 mL	1 mL
480-140145-B-1 MS	MW-12	3510C, 8270D SIM ID	T	100 mL	1 mL	7 SU	<2 SU	1 mL	1 mL
480-140145-A-1 MSD	MW-12	3510C, 8270D SIM ID	T	100 mL	1 mL	7 SU	<2 SU	1 mL	1 mL
480-140145-B-1	MW-12	3510C, 8270D SIM ID	T	100 mL	1 mL	7 SU	<2 SU		1 mL
480-140145-B-2	MW-11	3510C, 8270D SIM ID	T	1000 mL	1 mL	7 SU	<2 SU		1 mL
480-140145-A-3	FIELD DUPLICATE	3510C, 8270D SIM ID	T	1000 mL	1 mL	7 SU	<2 SU		1 mL
480-140145-B-4	EQUIPMENT BLANK	3510C, 8270D SIM ID	T	1000 mL	1 mL	5 SU	<2 SU		1 mL
480-140145-A-5	MW-10D	3510C, 8270D SIM ID	T	1000 mL	1 mL	7 SU	<2 SU		1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 480-429107/1		3510C, 8270D SIM ID							
LCS 480-429107/2		3510C, 8270D SIM ID							
480-140145-B-1 MS	MW-12	3510C, 8270D SIM ID	T	Cloudy matrix					
480-140145-A-1 MSD	MW-12	3510C, 8270D SIM ID	T	Cloudy matrix					
480-140145-B-1	MW-12	3510C, 8270D SIM ID	T	Cloudy matrix					
480-140145-B-2	MW-11	3510C, 8270D SIM ID	T						
480-140145-A-3	FIELD DUPLICATE	3510C, 8270D SIM ID	T						
480-140145-B-4	EQUIPMENT BLANK	3510C, 8270D SIM ID	T						
480-140145-A-5	MW-10D	3510C, 8270D SIM ID	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

8270D SIM ID

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: TestAmerica Buffalo Job No.: 480-140145-1

SDG No.: _____

Batch Number: 429107 Batch Start Date: 08/10/18 14:31 Batch Analyst: Gruning, Anton TBatch Method: 3510C Batch End Date: _____

Batch Notes	
Acid Used for pH Adjustment ID	4727536
Analyst ID - Concentration	AG
Analyst ID - Extraction	AG
Method/Fraction	3510C/8270D_SIM_MS_ID
Na2SO4 ID	4791972
Prep Solvent ID	4811128
Prep Solvent Volume Used	180 mL
Analyst ID - Spike Analyst	AG
Analyst ID - Spike Witness Analyst	AG
Sufficient Volume for Batch QC	Yes
Vial Lot Number	1709111094

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Company Name: <i>Joe Engineers</i> Address: <i>335 East Avenue Suite 200</i> City/State/Zip: <i>Buffalo NY 14201</i> Phone: <i>585-385-7417</i> Fax: <i>585-385-7417</i> Project Name: <i>Joe Engineers</i> Site: <i>Joe Engineers</i> PO #: <i>50191-01</i>		Client Contact Project Manager: <i>Joe Andrus</i> Tel/Fax: <i>585-385-7417</i> Analysis Turnaround Time ☐ CALENDAR DAYS ☒ WORKING DAYS TAT if different from Below _____ ☐ 2 weeks ☒ 1 week ☐ 2 days ☐ 1 day		Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other: Project Manager: <i>Joe Andrus</i> Tel/Fax: <i>585-385-7417</i> Analysis Turnaround Time ☐ CALENDAR DAYS ☒ WORKING DAYS TAT if different from Below _____ ☐ 2 weeks ☒ 1 week ☐ 2 days ☐ 1 day		Site Contact: Lab Contact: <i>(537) 6151</i> Perform MS / MSD (Y / N) Filtered Sample (Y / N)		Date: _____ Carrier: _____ COC No.: _____ of _____ 480-140145 COC					
Sample Identification <i>MW-12</i> <i>MW-12-MS</i> <i>MW-12-MSD</i> <i>MW-11</i> <i>Field Duplicate</i> <i>Equipment Blank</i> <i>MW-107</i>		Sample Date <i>8/17/18</i> 		Sample Time <i>11:20</i> <i>11:20</i> <i>11:20</i> <i>11:35</i> <i>12:10</i> <i>12:35</i>		Sample Type (C=Comp, G=Grab) <i>GW</i> <i>GW</i> <i>GW</i> <i>GW</i> <i>W</i> <i>GW</i>		Matrix 		# of Cont. 		Sample Specific Notes: <i>GW-Gravel water</i> <i>Distilled water</i>	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other _____ Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown													
Special Instructions/QC Requirements & Comments: <i>Cat. B, MSPEC EDD</i> Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months													
Custody Seals Intact: ☐ Yes ☐ No Relinquished by: <i>David K. Major</i> Relinquished by: _____ Relinquished by: _____				Custody Seal No.: _____ Company: <i>Joe Engineers</i> Company: _____ Company: _____				Cooler Temp. (°C): <i>3.6</i> Obs'd: <i>3.6</i> Therm ID No.: <i>41 ICE</i> Received by: _____ Received by: _____ Received in Laboratory by: <i>Ammon Kolb</i> Company: <i>TA</i>					
Date/Time: <i>8/18/18</i> Date/Time: _____ Date/Time: _____				Date/Time: _____ Date/Time: _____ Date/Time: <i>8/18/18 0945</i>									

Login Sample Receipt Checklist

Client: Joseph C. Lu Eng & Land Surveying PC

Job Number: 480-140145-1

Login Number: 140145
List Number: 1
Creator: Wallace, Cameron

List Source: TestAmerica Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	LU ENGINEERS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

SITE-WIDE INSPECTION FORM

Cuba Landfill Site
Town of Cuba, Allegany County

NAME OF INSPECTOR: Laura Gregor

COMPANY OF INSPECTOR: Lu Engineers

DATE OF INSPECTION: 5/8/2018

CURRENT USE OF SITE: Closed Landfill

EVIDENCE OF VANDALISM (wells, vents, protective cover damage):

None

EVIDENCE OF COVER SYSTEM INTRUSION (ruts, burrows, excavations):

None

EVIDENCE OF PENETRATIONS (poles, posts, stakes): None

EVIDENCE OF HUMAN ENCROACHMENT (trash, fire pits, tire/footprints):

GENERAL SITE CONDITION (gates, access road, culverts): Good, gates are secure/locked; lumber on both sides of the entrance. Access road is in good condition and cap generally appears to be in good condition with the exception of minor exposed geotextile material; this exposed material does not appear to spreading between sampling/inspection events

EVIDENCE OF EROSION, SETTLEMENT RUTTING, POTHOLE, SLIPPAGE:

Erosion control material (geotextile) exposed on hill directly adjacent to the access road (Refer to photographs)

EVIDENCE OF STRESSED VEGETATION OR BARE SPOTS: The easternmost portion of the willow trees adjacent to the detention pond appear to be unhealthy and/or dead

EVIDENCE OF DAMAGE TO WELLS/VENTS: MW-1S is upheaved approximately 1.0 feet (Refer to photographs). The protective caps from the landfill vents have fallen out (refer to photographs).

EVIDENCE OF COVER SYSTEM SUBSIDENCE NEAR WELLS/VENTS:

None

EVIDENCE OF WILDLIFE INTRUSION (nests, burrows, wasp nests):

None

EVIDENCE OF SPILLED LIQUIDS (well tampering/vent blowout):

None

GAS VENTS: Unusual conditions- belching, whistling, excessive gas production:

None; protective vent caps have fallen out

MONITORING WELLS: Well covers in place and secure: Yes

EVIDENCE OF DRAINAGE ISSUES (i.e., blockage due to sedimentation, ponding):

None

EVIDENCE OF SWALE OVERFLOW (i.e., stormwater pathway strays from swales):

None

EVIDENCE OF WILLOW TREE MORTALITY:

It appears that approximately 30% of the willow trees (eastern-most) are unhealthy and/or dead (Refer to photographs).

EVIDENCE OF PHYTOREMEDIATION FAILURE (i.e., excessive leachate on access road south of willow trees):

There was a small amount of standing water along the access road adjacent to the willow trees

All 14 gas vents were screened; no readings were detected.

LANDFILL/GAS VENT MONITORING DATA

[illegible]

Enclosure 1

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the three questions in the Verification of Site Details Section. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional Controls/ Engineering Controls (IC/ECs)(Boxes 3, 4, and 5)

1.1.1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party should petition the Department separately to request approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you cannot certify "YES" for each Control listed in Box 3 & Box 4, sign and date the form in Box 5. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a plan of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) must be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 6 and Box 7):

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page as follows:

- For the Institutional Controls on the use of the property, the certification statement in Box 6 shall be completed and may be made by the property owner or designated representative.
- For the Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional, as noted on the form.



Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form



Site No. 902012

Site Details

Box 1

Site Name Cuba Municipal Waste Disposal

Site Address: Jackson Hill Road Zip Code: 14727

City/Town: Cuba

County: Allegany

Site Acreage: 38.9

Reporting Period: January 25, ²⁰¹⁸ to January 25, ²⁰¹⁹

YES NO

1. Is the information above correct?

☒ ☐

If NO, include handwritten above or on a separate sheet.

2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?

☒

3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?

☐ ☒

4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?

☒

If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.

5. Is the site currently undergoing development?

☐ ☒

Box 2

YES NO

6. Is the current site use consistent with the use(s) listed below?
Closed Landfill

☒ ☐

7. Are all ICs/ECs in place and functioning as designed?

☒ ☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

Description of Institutional ControlsParcel

155.00-1-6.15

Owner

Village of Cuba

Institutional Control

Site Management Plan

Ground Water Use Restriction
 Soil Management Plan
 Landuse Restriction
 Surface Water Use Restriction
 Monitoring Plan
 O&M Plan

A Site Management Plan (SMP) was approved in August 2011 to manage remaining contamination at the Site in perpetuity or until extinguishment of the Environmental Notice in accordance with ECL Article 71, Title 36.

A Declaration of Covenants and Restrictions (DCR) has been filed on the two entire parcels (~40 acres) that provides an enforceable legal instrument to ensure compliance with the SMP and all ECs and ICs placed on the Site. The DCR was filed with Allegany County in October 2011, and recorded on 10/11/11 as Instrument No.2011-50956.

Because there is remaining contamination at this site, Engineering Controls (ECs) and Institutional Controls (ICs) have been implemented to protect public health and the environment for future use. The Controlled Property has the following Engineering Controls:

1. An engineered landfill cap;
2. Fourteen passive gas vents were installed within the landfill cap boundaries;
3. Four drainage swales were included in the landfill cap design to promote efficient drainage over the cap;
4. One hundred sixty eight willow trees were planted south of the retention pond to mitigate potential leachate seepage south of the site;
5. To minimize the potential of vehicular traffic, 8-ft chain link fence gates were installed at the entrances of the property on Deep Snow Road, one to the southwest of the site and one to the north of the site. Gates have been secured with locks to minimize the potential for trespassing;
6. An access road to control access to the contaminated area;and
7. Sentinel wells for long-term monitoring of site groundwater.

A series of ICs are required to implement, maintain and monitor these ECs. The DCR requires compliance with these ICs, to ensure that:

- All ECs must be operated and maintained as specified in the SMP;and
- All ECs on the Site must be inspected and certified at a frequency and in a manner defined in the SMP; and
- Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in the SMP; and
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP; and
- An exclusion against any uses other than for a landfill;and

- On-site environmental monitoring devices, including but not limited to, groundwater monitoring wells and passive soil gas vents, must be protected and replaced as necessary to ensure continued functioning in the manner specified in the SMP.

In addition, the DCR places the following restrictions on the entire property:

- The property may only be used for its current use as a landfill.
- The property may not be used for a higher level of use without additional remediation and amendment of the DCR, as approved by the NYSDEC.
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP.
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area, and any potential impacts that are identified must be monitored or mitigated.
- Vegetable gardens and farming on the property are prohibited.
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the controlled property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP.

NYSDEC retains the right to access such controlled property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

These EC/ICs are designed to:

- Prevent ingestion/direct contact with contaminated soil
- Prevent exposure to contaminants volatilizing from contaminated soil
- Prevent exposure to onsite groundwater
- Prevent the migration of LNAPL from the small impacted area of the landfill and the release of LNAPL contaminants into groundwater.

155.00-1-7

VILLAGE OF CUBA

Site Management Plan

Soil Management Plan

Monitoring Plan

O&M Plan

Ground Water Use Restriction

Landuse Restriction

Surface Water Use Restriction

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- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP; and
- An exclusion against any uses other than for a landfill;and
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In addition, the DCR places the following restrictions on the entire property:

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- The property may not be used for a higher level of use without additional remediation and amendment of the DCR, as approved by the NYSDEC.
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP.
- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area, and any potential impacts that are identified must be monitored or mitigated.
- Vegetable gardens and farming on the property are prohibited.
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the controlled property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP.

NYSDEC retains the right to access such controlled property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

These EC/ICs are designed to:

- Prevent ingestion/direct contact with contaminated soil
- Prevent exposure to contaminants volatilizing from contaminated soil
- Prevent exposure to onsite groundwater
- Prevent the migration of LNAPL from the small impacted area of the landfill and the release of LNAPL contaminants into groundwater.

Description of Engineering ControlsParcelEngineering Control**155.00-1-6.15**

Cover System
Subsurface Barriers
Fencing/Access Control

155.00-1-7

Subsurface Barriers
Cover System
Fencing/Access Control

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

- a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;
- b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and complete.

YES NO

✓

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

- (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;
- (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;
- (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;
- (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and
- (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES NO

✓

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and
DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 902012

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1, 2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Gregory L. Andrus, P.G. at 339 East Ave. Rochester, NY 14604
print name print business address

am certifying as Owner's Representative (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.


Signature of Owner, Remedial Party, or Designated Representative
Rendering Certification

2/22/19
Date

IC/EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Gregory L. Andrews, P.E. at 339 East Ave. Rochester, NY 14604
print name print business address

am certifying as a Professional Engineer for the Owner
(Owner or Remedial Party)


Signature of Professional Engineer, for the Owner or
Remedial Party, Rendering Certification

Stamp
(Required for PE)

2/22/19
Date

Enclosure 3
Periodic Review Report (PRR) General Guidance

- I. Executive Summary: (1/2-page or less)
 - A. Provide a brief summary of site, nature and extent of contamination, and remedial history.
 - B. Effectiveness of the Remedial Program - Provide overall conclusions regarding;
 1. progress made during the reporting period toward meeting the remedial objectives for the site
 2. the ultimate ability of the remedial program to achieve the remedial objectives for the site.
 - C. Compliance
 1. Identify any areas of non-compliance regarding the major elements of the Site Management Plan (SMP, i.e., the Institutional/Engineering Control (IC/EC) Plan, the Monitoring Plan, and the Operation & Maintenance (O&M) Plan).
 2. Propose steps to be taken and a schedule to correct any areas of non-compliance.
 - D. Recommendations
 1. recommend whether any changes to the SMP are needed
 2. recommend any changes to the frequency for submittal of PRRs (increase, decrease)
 3. recommend whether the requirements for discontinuing site management have been met.
- II. Site Overview (one page or less)
 - A. Describe the site location, boundaries (figure), significant features, surrounding area, and the nature and extent of contamination prior to site remediation.
 - B. Describe the chronology of the main features of the remedial program for the site, the components of the selected remedy, cleanup goals, site closure criteria, and any significant changes to the selected remedy that have been made since remedy selection.
- III. Evaluate Remedy Performance, Effectiveness, and Protectiveness
Using tables, graphs, charts and bulleted text to the extent practicable, describe the effectiveness of the remedy in achieving the remedial goals for the site. Base findings, recommendations, and conclusions on objective data. Evaluations and should be presented simply and concisely.
- IV. IC/EC Plan Compliance Report (if applicable)
 - A. IC/EC Requirements and Compliance
 1. Describe each control, its objective, and how performance of the control is evaluated.
 2. Summarize the status of each goal (whether it is fully in place and its effectiveness).
 3. Corrective Measures: describe steps proposed to address any deficiencies in ICECs.
 4. Conclusions and recommendations for changes.
 - B. IC/EC Certification
 1. The certification must be complete (even if there are IC/EC deficiencies), and certified by the appropriate party as set forth in a Department-approved certification form(s).
- V. Monitoring Plan Compliance Report (if applicable)
 - A. Components of the Monitoring Plan (tabular presentations preferred) - Describe the requirements of the monitoring plan by media (i.e., soil, groundwater, sediment, etc.) and by any remedial technologies being used at the site.
 - B. Summary of Monitoring Completed During Reporting Period - Describe the monitoring tasks actually completed during this PRR reporting period. Tables and/or figures should be used to show all data.
 - C. Comparisons with Remedial Objectives - Compare the results of all monitoring with the remedial objectives for the site. Include trend analyses where possible.
 - D. Monitoring Deficiencies - Describe any ways in which monitoring did not fully comply with the monitoring plan.
 - E. Conclusions and Recommendations for Changes - Provide overall conclusions regarding the monitoring completed and the resulting evaluations regarding remedial effectiveness.
- VI. Operation & Maintenance (O&M) Plan Compliance Report (if applicable)
 - A. Components of O&M Plan - Describe the requirements of the O&M plan including required activities, frequencies, recordkeeping, etc.
 - B. Summary of O&M Completed During Reporting Period - Describe the O&M tasks actually completed during this PRR reporting period.
 - C. Evaluation of Remedial Systems - Based upon the results of the O&M activities completed, evaluated

the ability of each component of the remedy subject to O&M requirements to perform as designed/expected.

- D. O&M Deficiencies - Identify any deficiencies in complying with the O&M plan during this PRR reporting period.
- E. Conclusions and Recommendations for Improvements - Provide an overall conclusion regarding O&M for the site and identify any suggested improvements requiring changes in the O&M Plan.

VII. Overall PRR Conclusions and Recommendations

- A. Compliance with SMP - For each component of the SMP (i.e., IC/EC, monitoring, O&M), summarize;
 - 1. whether all requirements of each plan were met during the reporting period
 - 2. any requirements not met
 - 3. proposed plans and a schedule for coming into full compliance.
- B. Performance and Effectiveness of the Remedy - Based upon your evaluation of the components of the SMP, form conclusions about the performance of each component and the ability of the remedy to achieve the remedial objectives for the site.
- C. Future PRR Submittals
 - 1. Recommend, with supporting justification, whether the frequency of the submittal of PRRs should be changed (either increased or decreased).
 - 2. If the requirements for site closure have been achieved, contact the Departments Project Manager for the site to determine what, if any, additional documentation is needed to support a decision to discontinue site management.

VIII. Additional Guidance

Additional guidance regarding the preparation and submittal of an acceptable PRR can be obtained from the Departments Project Manager for the site.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7220 | F: (716) 851-7226
www.dec.ny.gov

June 5, 2018

Village of Cuba
Honorable Michele Miller, Mayor
17 East Main Street
Cuba, NY 14727

RE: Request for sampling of Emerging Contaminants
Cuba Municipal Waste Disposal, Cuba
Allegany County, Site No.: 902012

Dear Mayor Miller (as Owner):

The New York State Department of Environmental Conservation (DEC) is undertaking a Statewide evaluation of remediation sites to better understand the risk posed to New Yorkers by 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS). PFAS have historically not been evaluated at remediation sites, and 1,4-dioxane has not been evaluated at the levels that are now thought to represent a health concern. This initiative is being undertaken as a result of these "emerging contaminants" having been found in a number of drinking water supplies in New York. Accordingly, the DEC is requiring that you test site groundwater for these chemicals. To accommodate this requirement, a select number of existing monitoring wells, representative of the potential of the above-referenced site to be a source of these emerging contaminants, must be sampled. DEC recommends that at least one of these wells should be upgradient of the site.

The attached guidance provides information on the analytical methods and reporting requirements. A second guidance document describes special precautions that need to be considered when sampling for PFAS.



Department of
Environmental
Conservation

Please prepare a draft letter work plan that identifies the wells proposed for sampling, brief description of the sampling methods, and anticipated sampling date within the next 60 days. If you wish to discuss the scope of the requested water testing, please contact me at 716-851-7220 or david.szymanski@dec.ny.gov.

Sincerely,

A handwritten signature in dark ink, appearing to read 'D. Szymanski'.

David Szymanski
Environmental Program Specialist -1
Region 9 Div. of Environmental Remediation

Ec: Chad Staniszewski – NYSDEC
Greg Andrus – Lu Engineers

attachments

Collection of Groundwater Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) from Monitoring Wells Sample Protocol

Samples collected using this protocol are intended to be analyzed for perfluorooctanoic acid (PFOA) and other perfluorinated compounds by Modified (Low Level) Test Method 537.

The procedure used must be consistent with the NYSDEC March 1991 Sampling Guidelines and Protocols http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf with the following materials limitations.

At this time acceptable materials for sampling include: stainless steel, high density polyethylene (HDPE), PVC, silicone, acetate and polypropylene. Equipment blanks should be generated at least daily. Additional materials may be acceptable if pre-approved by NYSDEC. Requests to use alternate equipment should include clean equipment blanks. **NOTE: Grunfos pumps and bladder pumps are known to contain PFC materials (e.g. Teflon™ washers for Grunfos pumps and LDPE bladders for bladder pumps).** All sampling equipment components and sample containers should not come in contact with aluminum foil, low density polyethylene (LDPE), glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. Standard two step decontamination using detergent and clean water rinse will be performed for equipment that does come in contact with PFC materials. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFC materials must be avoided. Many food and drink packaging materials and “plumbers thread seal tape” contain PFCs.

All clothing worn by sampling personnel must have been laundered multiple times. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

Pre-cleaned sample bottles with closures, coolers, ice, sample labels and a chain of custody form will be provided by the laboratory.

1. Fill two pre-cleaned 500 mL HDPE or polypropylene bottle with the sample.
2. Cap the bottles with an acceptable cap and liner closure system.
3. Label the sample bottles.
4. Fill out the chain of custody.
5. Place in a cooler maintained at $4 \pm 2^\circ$ Celsius.

Collect one equipment blank for every sample batch, not to exceed 20 samples.

Collect one field duplicate for every sample batch, not to exceed 20 samples.

Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, not to exceed 20 samples.

Request appropriate data deliverable (Category A or B) and an electronic data deliverable.

Groundwater Sampling for Emerging Contaminants

April 2018

Issue: NYSDEC has committed to analyzing representative groundwater samples at remediation sites for emerging contaminants (1,4-dioxane and PFAS) as described in the below guidance.

Implementation

NYSDEC project managers will be contacting site owners to schedule sampling for these chemicals. Only groundwater sampling is required. The number of samples required will be similar to the number of samples where "full TAL/TCL sampling" would typically be required in a remedial investigation. If sampling is not feasible (e.g., the site no longer has any monitoring wells in place), sampling may be waived on a site-specific basis after first considering potential sources of these chemicals and whether there are water supplies nearby.

Upon a new site being brought into any program (i.e., SSF, BCP), PFAS and 1,4-dioxane will be incorporated into the investigation of groundwater as part of the standard "full TAL/TCL" sampling. Until an SCO is established for PFAS, soil samples do not need to be analyzed for PFAS unless groundwater contamination is detected. Separate guidance will be developed to address sites where emerging contaminants are found in the groundwater. The analysis currently performed for SVOCs in soil is adequate for evaluation of 1,4-dioxane, which already has an established SCO.

Analysis and Reporting

Labs should provide a full category B deliverable, and a DUSR should be prepared by a data validator, and the electronic data submission should meet the requirements provided at: <https://www.dec.ny.gov/chemical/62440.html> ,

The work plan should explicitly describe analysis and reporting requirements.

PFAS sample analysis: Currently, ELAP does not offer certification for PFAS compounds in matrices other than finished drinking water. However, laboratories analyzing environmental samples (ex. soil, sediments, and groundwater) are required, by DER, to hold ELAP certification for PFOA and PFOS in drinking water by EPA Method 537 or ISO 25101.

Modified EPA Method 537 is the preferred method to use for groundwater samples due to the ability to achieve 2 ng/L (ppt) detection limits. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve similar reporting limits, the project manager should discuss this with a DER chemist. Note: Reporting limits for PFOA and PFOS should not exceed 2 ng/L.

PFAS sample reporting: DER has developed a PFAS target analyte list (below) with the intent of achieving reporting consistency between labs for commonly reportable analytes. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. This list may be updated in the future as new information is learned and as labs develop new capabilities. If lab and/or matrix specific issues are encountered for any particular compounds, the NYSDEC project manager will make case-by-case decisions as to whether particular analytes may be temporarily or permanently discontinued from analysis for each site. Any technical lab issues should be brought to the attention of a NYSDEC chemist.

Some sampling using this full PFAS target analyte list is needed to understand the nature of contamination. It may also be critical to differentiate PFAS compounds associated with a site from other

sources of these chemicals. Like routine refinements to parameter lists based on investigative findings, the full PFAS target analyte list may not be needed for all sampling intended to define the extent of contamination. Project managers may approve a shorter analyte list (e.g., just the UCMR3 list) for some reporting on a case by case basis.

1,4-Dioxane Analysis and Reporting: The method detection limit (MDL) for 1,4-dioxane should be no higher than 0.28 µg/l (ppb). ELAP offers certification for both EPA Methods 8260 and 8270. In order to get the appropriate detection limits, the lab would need to run either of these methods in "selective ion monitoring" (SIM) mode. DER is advising the use of method 8270, since this method provides a more robust extraction procedure, uses a larger sample volume, and is less vulnerable to interference from chlorinated solvents (we acknowledge that 8260 has been shown to have a higher recovery in some studies).

Full PFAS Target Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluorooctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Bold entries depict the 6 original UCMR3 chemicals