DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
JACKSONVILLE, FL 32212-0030

5090
Ser EV32/0889
September 2, 2020

Tennessee Department of Environment and Conservation
Attn: Mr. Roger Donovan
William Snodgrass Tennessee Tower
312 Rosa Parks Ave, 14th Floor
Nashville, TN 37243-1538

SUBJECT: DRAFT PER- AND POLYFLUOROALKYL SITE INSPECTION REPORT, NAVAL SUPPORT ACTIVITY MID-SOUTH, MILLINGTON, TN

In accordance with Navy Directive, the Draft Per- and Polyfluoroalkyl Substances Site Inspection Report, NSA Mid-South, Millington, TN is enclosed for your review.

My point of contact for this project is Ms. Karen Campbell, Remedial Project Manager, who may be reached at (904) 542-1594 or karen.j.campbell@navy.mil.

Sincerely,

W. B. POWERS, PE
Environmental Business Line Leader
By direction of the
Commanding Officer

Enclosure: Draft Per- and Polyfluoroalkyl Substances Site Inspection Report, NSA Mid-South, Millington, TN

Copy to:
Mr. Jim Heide, NSA MS PWD
Mr. Charlie Burroughs, TDEC

Naval Facilities Engineering Command Southeast
Jacksonville, Florida

Draft Final
Per- and Polyfluoroalkyl Substances
Site Inspection Report

Solid Waste Management Unit 2 – Southside Landfill and
Solid Waste Management Unit 9 – Sewage Lagoons

Naval Support Activity Mid-South
Millington, Tennessee

September 2020

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DRAFT FINAL
PER- AND POLYFLUOROALKYL SUBSTANCES SITE INSPECTION REPORT SOLID WASTE MANAGEMENT UNIT 2 – SOUTHSIDE LANDFILL AND SOLID WASTE MANAGEMENT UNIT 9 – SEWAGE LAGOONS

NAVAL SUPPORT ACTIVITY MID-SOUTH
MILLINGTON, TENNESSEE

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Department of the Navy
Naval Facilities Engineering Command Southeast
135 Ajax Street North
Jacksonville, Florida 32212-0030

Submitted by:
Tetra Tech
5700 Lake Wright Drive, Suite 102
Norfolk, Virginia 23502

CONTRACT NUMBER N6247016D9008
CONTRACT TASK ORDER N6945018F0382

SEPTEMBER 2020

PREPARED UNDER THE DIRECTION OF:

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Table of Contents

List of Appendices

List of Tables

List of Figures

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Acronyms and Abbreviations

AFFF	Aqueous film-forming foam
bgs	Below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
DoD	Department of Defense
DON	Department of the Navy
DOT	Department of Transportation
FS	Feasibility Study
GPS	Global positioning system
HDPE	High-density polyethylene
ID	Inner diameter
IDW	Investigation-derived waste
LUC	Land use control
mL	Milliliter
MNA	Monitored natural attenuation
MS/MSD	Matrix spike/matrix spike duplicate
NAS	Naval Air Station
NFA	No further action
NAVFAC	Naval Facilities Engineering Command
ng/L	Nanogram per liter
NSA	Naval Support Activity

PA	Preliminary Assessment
PCB	Polychlorinated biphenyl
PFAS	Per- and polyfluoroalkyl substances
PFBS	Perfluorobutanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PID	Photoionization detector
PSL	Project Screening Level
PVC	Polyvinyl chloride
QA	Quality assurance
QC	Quality control
RCI	Reactivity, corrosivity, and ignitability
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SI	Site Inspection
SVOC	Semivolatile organic compound
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound
WWTP	Wastewater treatment plant

WWII	World War II

Executive Summary

INTRODUCTION

This Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection (SI) Report is for Solid Waste Management Unit (SWMU) 2 – Southside Landfill and SWMU 9 – Sewage Lagoons located at Naval Support Activity (NSA) Mid-South in Millington, Tennessee. This SI Report has been prepared by Tetra Tech for the Department of the Navy (DON) under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N6247016D9008, Contract Task Order (CTO) N6945018F0343 for Naval Facilities Engineering Command (NAVFAC) Southeast.

In 2018, the Navy conducted a Preliminary Assessment (PA) of potential sources of PFAS at NSA Mid-South. The PA recommended that two sites, SWMU 2 – Southside Landfill and SWMU 9 – Sewage Lagoons, proceed to the SI phase to further evaluate the potential presence of PFAS.

OBJECTIVE

The objective of the SI was to investigate groundwater at these two suspected PFAS release areas to determine if PFAS, specifically perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), and perfluorobutanesulfonic acid (PFBS), are present at concentrations greater than Project Screening Levels (PSLs) and to determine if action(s) is required to protect human health and the environment, in accordance with Navy policy.

SWMU 2 SITE DESCRIPTION

SWMU 2 is the closed landfill on the southern side of NSA Mid-South. The landfill reportedly received residential and industrial waste from base operations between 1942 and 1970. The landfill also received approximately 2 tons per year of wastewater sludge from the wastewater treatment plant (WWTP). The WWTP treated both domestic wastewater and limited amounts of industrial wastewater from aircraft operations. Wastewater from aircraft operations may have contained PFAS from historical aqueous film-forming foam (AFFF) use and releases. The landfill was constructed without a liner.

The PFAS PA recommended SWMU 2 for further PFAS evaluation because it received wastewater sludge from the WWTP that may have contained PFAS from historical AFFF use and releases.

SWMU 9 SITE DESCRIPTION

SWMU 9 comprises two inactive sewage lagoons (encompassing approximately 12 acres) along the southern boundary of the installation. The two lagoons were used as part of the wastewater treatment system from 1969 to 1978. Although primarily domestic wastewater was treated, limited amounts of industrial wastewater from aircraft maintenance were also treated at the WWTP.

The PFAS PA recommended SWMU 9 for further PFAS evaluation because it received wastewater sludge from the WWTP that may have contained PFAS from historical AFFF use and releases.

SITE INSPECTION RESULTS

The methods for conducting the PFAS SI included installing two temporary monitoring wells and collecting groundwater samples at SWMU 9 and collecting groundwater samples from two existing monitoring wells at SWMU 2. The groundwater samples were analyzed to determine if concentrations of PFOA, PFOS, or PFBS exceed the PSLs.

Laboratory analytical results for groundwater samples collected at SWMU 2 and SWMU 9 show that all concentrations of PFOA, PFOS, and PFBS were either less than the respective human health-based PSLs or were not detected above the reporting limit.

RECOMMENDATION

Because the detected concentrations of PFOA, PFOS, and PFBS in groundwater at SWMU 2 and SWMU 9 are less than the respective PSLs, no further action with regards to PFAS is recommended.

1.0 Introduction

This Per- and Polyfluoroalkyl Substances (PFAS) Site Inspection (SI) Report is for Solid Waste Management Unit (SWMU) 2 – Southside Landfill and SWMU 9 – Sewage Lagoons located at Naval Support Activity (NSA) Mid-South in Millington, Tennessee. This SI Report has been prepared by Tetra Tech for the Department of the Navy (DON) under Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N6247016D9008, Contract Task Order (CTO) N6945018F0382 for Naval Facilities Engineering Command (NAVFAC) Southeast.

The objective of the SI was to investigate groundwater at these two suspected PFAS release areas (SWMUs 2 and 9) to determine if PFAS, specifically perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), and perfluorobutanesulfonic acid (PFBS), are present in groundwater at concentrations greater than Project Screening Levels (PSLs) and, if so, to determine if action(s) are required to protect human health and the environment, in accordance with Navy policy (NAVFAC, 2017).

1.1 PFAS Characteristics and Use at Naval Installations

PFAS have been identified by the United States Department of Defense (DoD) and United States Environmental Protection Agency (USEPA) as “emerging contaminants” also known as “chemicals of emerging concern.”[1] (USEPA, 2014). PFAS are of environmental concern because of their persistence in the environment and in organisms, their migration potential in aqueous systems (e.g., groundwater), their historically widespread use in commercial products, and their possible health effects at low levels of exposure. PFAS are anthropogenic compounds with multiple strong carbon-fluorine bonds. The chemical properties of PFAS make them commercially useful as surfactants and surface-active agents able to repel oil, grease, and water. PFAS have been manufactured for use in a wide variety of products including firefighting foam (particularly aqueous film-forming foam [AFFF]), non-stick cookware, fiber and fabric stain protection, food packaging, and personal care products.

[1] Per DoD Instruction 4715.18: “As identified by the Assistant Secretary of Defense (Energy, Installations & Environment), an emerging contaminant is a contaminant that:
-Has a reasonably possible pathway to enter the environment;
-Presents a potential unacceptable human health or environmental risk; and
-Does not have regulatory standards based on peer-reviewed science, or the regulatory standards are evolving due to new science, detection capabilities, or pathways.”

PFAS have been used in a variety of military applications, including as a component in AFFF, which was routinely used at firefighting training areas and equipment test areas. In addition, current and historical AFFF storage and transfer areas are of potential concern for release to the environment. Therefore, a key element for identifying PFAS sources at DON facilities is to identify areas where AFFF was released to the environment in large quantities, either as repeated small releases or significant one-time releases.

In 2016, the Navy began reviewing their current and former operational areas, including NSA Mid-South, for areas where PFAS-containing material could have been used, stored, released, or disposed. DoD follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process to investigate contaminated sites.

In the CERCLA process, a Preliminary Assessment (PA) is prepared to compile historical records and information on the subject area and to determine where known or suspected PFAS releases to the environment occurred.

In 2018, the Navy conducted a PA of potential sources of PFAS at NSA Mid-South to identify locations with known or suspected PFAS-containing material use, storage, release, or disposal (Tetra Tech, 2019). The PA recommended that two sites, SWMU 2 – Southside Landfill and SWMU 9 – Sewage Lagoons, proceed to the SI phase to further evaluate the potential presence of PFAS. The site-specific and technical information presented in the PA Report was used to develop the field sampling program described in the approved Sampling and Analysis Plan (SAP) prepared for this project (Tetra Tech, 2020).

1.2 Scope of Site Inspection

The objectives of the NSA Mid-South PFAS SI investigation were to:

- Define the source and nature of the two potential PFAS release areas identified in the PA.
- Collect groundwater samples from the two suspected PFAS release areas to determine if PFAS are present.
- Identify and describe pathways for potential migration of PFAS contaminant, if present.
- Identify areas where PFAS concentrations in groundwater exceed PSLs.
- Conclude whether a no further action (NFA) determination, removal action, or Remedial Investigation (RI)/Feasibility Study (FS) is warranted.
- Document findings in an SI Report.

The goal of the SI was to determine and document whether PFAS, specifically PFOA, PFOS, and PFBS, are present at concentrations greater than PSLs at the two potential PFAS source areas, SWMU 2 and SWMU 9, and to determine if action(s) is required to protect human health, and the environment in accordance with Navy policy.

To meet the objectives, the SI field program at NSA Mid-South included the following:

- Installation of two temporary groundwater monitoring wells and collection of groundwater samples at SWMU 2.
- Collection of groundwater samples from two existing monitoring wells at SWMU 9.
- Chemical analysis of groundwater samples for PFAS.

Details of the field investigation are presented in Section 3.

1.3 Report Organization

This SI Report consists of six sections:

- Section 1.0 is the introduction and includes the purpose and scope and report organization.
- Section 2.0 describes project background, physical setting, and site characteristics.
- Section 3.0 discusses SI activities.
- Section 4.0 presents the results of the SI.
- Section 5.0 presents contaminant migration pathways and the potential receptors.
- Section 6.0 presents the conclusions and recommendations based on the results of the SI.
- Section 7.0 lists references used in the preparation of this report.

The appendices include the following:

- Appendix A – Site Inspection Field Documentation
- Appendix B – Data Tables and Analytical Results
- Appendix C – Data Validation Report
- Appendix D – Waste Disposal Manifest

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2.0 Project Background and Physical Setting

This section provides a brief description of the project background and physical setting along with a summary of previous relevant investigations completed at SWMUs 2 and 9 at NSA Mid-South. Figure 2-1 shows the general location of NSA Mid-South. Figure 2-2 shows the layout and current condition of SWMUs 2 and 9.

2.1 Facility Description

Previously known as Naval Air Station (NAS) Memphis and NSA Memphis, NSA Mid-South is located in Millington, Tennessee, approximately 20 miles north of Memphis in West Tennessee (Figure 2-1). The facility is in Shelby County.

The original base was created in November 1917 as an Army Signal Corps Aviation School named Park Field. Its mission was to train Allied Forces pilots to serve in World War I. It remained in full operational service until November 1918, when all training was halted due to the signing of the Armistice of November 11,1918. Following the Armistice, the base was transformed into an airfield incorporating airmail routes for Tennessee and bordering states. The government acquired Park Field in March 1920, but airfield usage waned until it became a storage area for aircraft.

Following the stock market crash of 1929, the base became a temporary refuge for unemployed workers. The Resettlement Administration of 1937 obtained the land and converted it into a tract of modern farms, which served as teaching examples of correctly managed land. The Resettlement Administration managed the land for the next few years until the beginning of World War II (WWII). The onset of WWII brought the military facet back to the base through the arrival of Naval aviation. In February 1942, the Navy Shore Station Development Board recommended approval of a reserve aviation base at Park Field. The Naval Reserve Aviation Base was commissioned on September 15, 1942, and served to train pilots for WWII duty. By January 1, 1943, the Naval Reserve Aviation Base was officially designated as NAS Memphis, and it incorporated the current area north of Navy Road (see Figure 2-1).

Following the end of WWII, NAS Memphis was used almost solely by the Reserve Training Command until 1948. On April 1, 1949, the NAS Memphis mission shifted into one of management for operational and logistical requirements for all commands of the base (excluding the Naval Hospital). As a result of the 1995 Base Realignment and Closure (BRAC) Act, NAS Memphis was operationally closed and realigned as NSA Memphis on September 30, 1995, and subsequently renamed NSA Mid-South on

October 1, 1998. Under BRAC, over 1,800 acres of government property on the northern side of the base were transferred to the Millington Municipal Airport Authority and the City of Millington. The current size of the NSA Mid-South active installation is 1,600 acres, and the BRAC property associated with the former installation is 1,858 acres.

SWMU 2 is the closed landfill on the southern side of NSA Mid-South (Figure 2-2), and SWMU 9 comprises two inactive sewage lagoons along the southern boundary of the installation (Figure 2-2). Details of the operational histories of the SWMUs 2 and 9 sites are presented below.

2.1.1 SWMU 2 – Southside Landfill

SWMU 2 is a closed landfill on the southern side of NSA Mid-South (Figure 2-2). It is surrounded by woods and bounded on the west and east by Patrol Road. To the south of the landfill lies the Big Creek Drainage Canal which flows west.

The landfill reportedly received residential and industrial waste from base operations between 1942 and 1970. Some wastes, including solvent-contaminated materials, were burned at the site. The landfill also received approximately 2 tons per year of wastewater sludge from the wastewater treatment plant (WWTP). The WWTP treated both domestic wastewater and limited amounts of industrial wastewater from aircraft operations. Wastewater from the aircraft operations may have contained PFAS from historical AFFF use and releases. The landfill was constructed without a liner.

Currently, the landfill is enclosed within a 42-acre fenced area that is covered with a combination of mature hardwoods, pines, and heavy undergrowth. SWMU 2 was investigated under the Resource Conservation and Recovery Act (RCRA) regulatory framework. The conclusion of the RCRA Facility Investigation (RFI) Report for SWMU 2 was that the fluvial deposits and deep alluvial groundwater was contaminated with chlorinated solvents (EnSafe, 1998). The Big Creek Drainage Canal is the discharge body for groundwater migrating beneath the landfill area. The canal also receives surface runoff from the landfill.

Groundwater wells are regularly sampled as part of ongoing monitored natural attenuation (MNA) sampling. Sediment and surface water samples collected during the RFI from the Big Creek Drainage Canal were not impacted by landfill activities. Potential risks to ecological receptors at the site were also considered negligible.

The final remedy for SWMU 2 includes MNA and land use controls (LUCs), more specifically, maintenance of the landfill cover, fencing, and security; monitoring of

groundwater; inspection of the landfill cover, fence, signs, and monitoring wells; sampling of the Big Creek Drainage Canal; and preparation of monitoring reports. LUCs restrict residential and commercial reuse of the property and use of alluvial groundwater (TDEC, 2005a).

The PFAS PA (Tetra Tech, 2019) recommended SWMU 2 for further PFAS evaluation because it received wastewater sludge from the WWTP that may have contained PFAS from historical AFFF use and releases.

2.1.2 SWMU 9 – Sewage Lagoons

SWMU 9 comprises two inactive sewage lagoons along the southern boundary of the installation, approximately 175 feet south of the Big Creek Drainage Canal and 450 feet southwest of the facility's South Gate (Figure 2-2). The western lagoon measures approximately 400,000 square feet (over 9 acres) and is separated from the approximately 141,000-square-foot (over 3 acres) eastern lagoon by a 25-foot-wide dike. The lagoons are bordered by woods and the Big Creek Drainage Canal to the north, woods to the south and west, and Singleton Avenue to the east. The land surrounding the lagoons slopes away on all sides for a few feet, with surface water draining generally west before it enters the Big Creek Drainage Canal, which flows northwest. The lagoon bottom sediments are composed of clay and wastewater sludge underlain by clayey silt.

The two lagoons were used as part of the wastewater treatment system from 1969 to 1978. Although primarily domestic wastewater was treated, limited amounts of industrial wastewater from aircraft maintenance were also treated at the WWTP. This industrial wastewater may have contained a wide variety of contaminants including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals. The lagoons received approximately 35 percent of the wastewater produced at NSA Mid- South; the other 65 percent was directed to SWMU 28, the former WWTP.

An influent line from the former WWTP crossed the Big Creek Drainage Canal and entered the lagoon area at the northwestern corner of the larger western lagoon. The wastewater was chlorinated prior to discharge into the Big Creek Drainage Canal through the effluent line at the northeastern corner of the lagoons. According to NSA Memphis personnel, all influent and effluent control valves were closed and concrete-sealed in 1978 when the sewer system was connected to the City of Millington sewage treatment system (EnSafe, 1998).

The RFI Report for SWMU 9 concluded that there was negligible risk from exposure to contaminants in site soil, sediment, and surface water and that there was limited impact

to site groundwater from VOCs and arsenic. Samples of fish tissue indicated that consuming fish from the lagoons would pose an unacceptable risk to human health. Pesticides, polychlorinated biphenyls (PCBs), and arsenic were identified as chemicals of concern for fish consumption. Potential risks to ecological receptors did not warrant any action (EnSafe, 1998).

The remedy for SWMU 9 includes LUCs to prohibit fishing and the use of groundwater as a potable water source (TDEC, 2005b). The fishing prohibition was removed when there was massive flooding in 2010 which eroded out the walls and the pond no longer held water.

The PFAS PA (Tetra Tech, 2019) recommended SWMU 9 for further PFAS evaluation because it received wastewater sludge from the WWTP that may have contained PFAS from historical AFFF use and releases.

2.2 Physical Setting

NSA Mid-South is in Shelby County, which is situated within the north-central Mississippi Embayment, a trough of stratified rock with an overlying veneer of unconsolidated sediments sloping southward and through which the Mississippi River flows. The associated unconsolidated sediments are defined as the Wilcox Group, Claiborne Group, Terrace Deposits, and surficial loess. The surficial loess deposits are windblown sediments characterized as silt, clay, and silty clay that contain some sand.

The general topography of Shelby County can be described as relatively flat alluvial plain with some gently rolling land. The topographic profile of NSA Mid-South is generally flat, with a mean elevation of approximately 260 to 270 feet above mean sea level. The topography of NSA Mid-South has been altered through cut and fill for the construction of the air station (Park Field), which was originally built by the Army in 1917. It is unknown whether cut and fill operations occurred at SWMUs 2 or 9.

2.2.1 Regional Geology

The two principal stratigraphic units encountered during environmental investigations at NSA Mid-South are loess/alluvium and fluvial deposits. The loess eolian deposits consisting of silt, silty clay, clay, and minor amounts of sand are the principal unit present at the ground surface throughout NSA Mid-South. Alluvium, which is restricted to stream valleys (e.g., along the Big Creek Drainage Canal), includes reworked loess. The loess is typically 0 to 65 feet thick in the Memphis area, and at NSA Mid-South, it ranges from 15 to 45 feet thick. Water-bearing zones are present in the upper part of

the loess (between 5 and 15 feet below ground surface [bgs]); however, yields are low, and this unit is not known to be used as a water supply source.

The fluvial deposits that underlie the loess in upland areas consist of sand, gravel, and some clay, with thin layers of ferruginous sandstone and conglomerate at the base. This unit ranges from 0 to 100 feet thick in the Memphis area. At NSA Mid-South, it ranges from 10 to 35 feet thick and represents the most significant component of the surficial aquifer.

Below the fluvial deposits are the Cockfield Formation and Cook Mountain Formation of the Jackson Upper Claiborne Confining Unit. The Cockfield is a heterogeneous formation of very fine silty sand interbedded with clay and silt lenses or clay with interbedded fine sand lenses. Water-bearing sands are present in the Upper Cockfield Formation.

Below the Cockfield Formation is the Cook Mountain Formation, which is predominantly clay and silty clay. It is considered a principal regional confining unit between the surficial water-bearing zones and the underlying aquifers. The lower portion of the Claiborne Group is the Memphis Sand, which is made up of sand, clay, and minor amounts of lignite. The Memphis Aquifer (in the Memphis Sand) is one of the primary drinking water aquifers in the area of Memphis, Tennessee.

The Wilcox Group underlies the Claiborne Group and consists of the Flour Island Formation and Port Pillow Formation. The Flour Island Formation is a confining unit separating the Memphis Sand and Fort Pillow Aquifers. The Fort Pillow Aquifer is a regional drinking water source (Tetra Tech, 2010).

2.2.2 Regional Hydrogeology

The average depth to the perched, shallow, water-bearing zone at NSA Mid-South is approximately 5 to 15 feet bgs. A surficial aquifer containing alluvium deposits is only known to exist near the Big Creek Drainage Canal and near SWMU 2 and 9; however, the aquifer does not supply water for any known drinking water wells at NSA Mid-South or in the surrounding community. Memphis Sand and Fort Pillow are the principal aquifers for water supply in the region. The Memphis Sand Aquifer consists primarily of a thick body of sand that includes subordinate layers of clay and silt at various horizons. It is found 350 to 1,100 feet bgs and has an average depth of 500 feet. This is a regional aquifer that underlies portions of Tennessee, Missouri, Kentucky, and northeastern Arkansas. The Fort Pillow Aquifer consists of sand and some clay. It ranges in thickness from 0 to 1,500 feet and was once used as the second principal aquifer for water supply to the City of Memphis. This aquifer is also the primary water

source used by some industries in Memphis and Millington (EM^2, 2001 and Malcolm Pirnie, 2005).

2.2.3 Site-Specific Geology

During the completion of the RFI (EnSafe, 1998), lithologic cross sections were prepared depicting the vertical thicknesses of stratigraphic units at SWMUs 2 and 9. The cross sections from the RFI are included in this report as Figures 2-3 through 2-6.

At SWMU 2, the subsurface geology consists of the alluvium, which extends from land surface to the top of the Cockfield Formation at most locations near the Big Creek Drainage Canal. The upper alluvium consists of clay, silty clay, clayey silt, and silt, with lenses of fine sand. In general, the clay content decreases and the sand content increases with depth; the basal portion of the upper alluvium at most soil boring locations consists of a sandy silt and silty or clayey sand. Sand laminations or lenses in the middle to lower portions of the upper alluvium were generally water bearing and measure from less than 1 inch to up to 6 inches thick.

The deep alluvium primarily consists of sand and gravel, although the uppermost section contains a silty or clayey fine- to medium-grained sand with sparse to frequent gravel, which coarsens downward to a medium- to very coarse-grained sand and gravel above its erosional contact with the underlying Cockfield Formation. Most of the gravel is subangular to rounded gray quartz or chert, with the longest dimension of individual gravels generally ranging from 0.5 to 2 inches in the upper portion and from 0.75 to 4 inches in the lower portion. Some clay, silt, or sandy silt seams, along with occasional snail shells and wood fragments, are present in the upper portion of the deep alluvium. Sandy gravel lenses are common throughout the deep alluvium.

The geology at SWMU 9 is like that of SWMU 2; the subsurface geology consists of alluvium, with the loess and fluvial deposits seen elsewhere on the installation absent. Alluvium is present from the land surface to the top of the Cockfield Formation.

2.2.4 Site-Specific Hydrogeology

Two water-bearing zones are present within the alluvium. The first water-bearing zone is unconfined and present in thin sand lenses near the base and middle of the upper alluvium. The upper alluvium consists of clay, silty clay, clayey silt, and silt. The water-bearing sand lenses of the first water-bearing zone are more common in soil borings at SWMU 2 than at SWMU 9 (EnSafe, 1998; 2000; and 2001). The second water-bearing zone is semi-confined to unconfined in the sand and gravel of the deep alluvium sand

and gravel. The lithologic cross sections in Figures 2-3 to 2-6 depict the vertical thicknesses of the units at SWMUs 2 and 9.

Groundwater in the alluvium flows in a south and southeasterly direction near SWMU 2 toward the Big Creek Drainage Canal (Figure 2-2). Groundwater in the alluvium flows in a northwesterly direction near SWMU 9 toward the Big Creek Drainage Canal (Figure 2-2).

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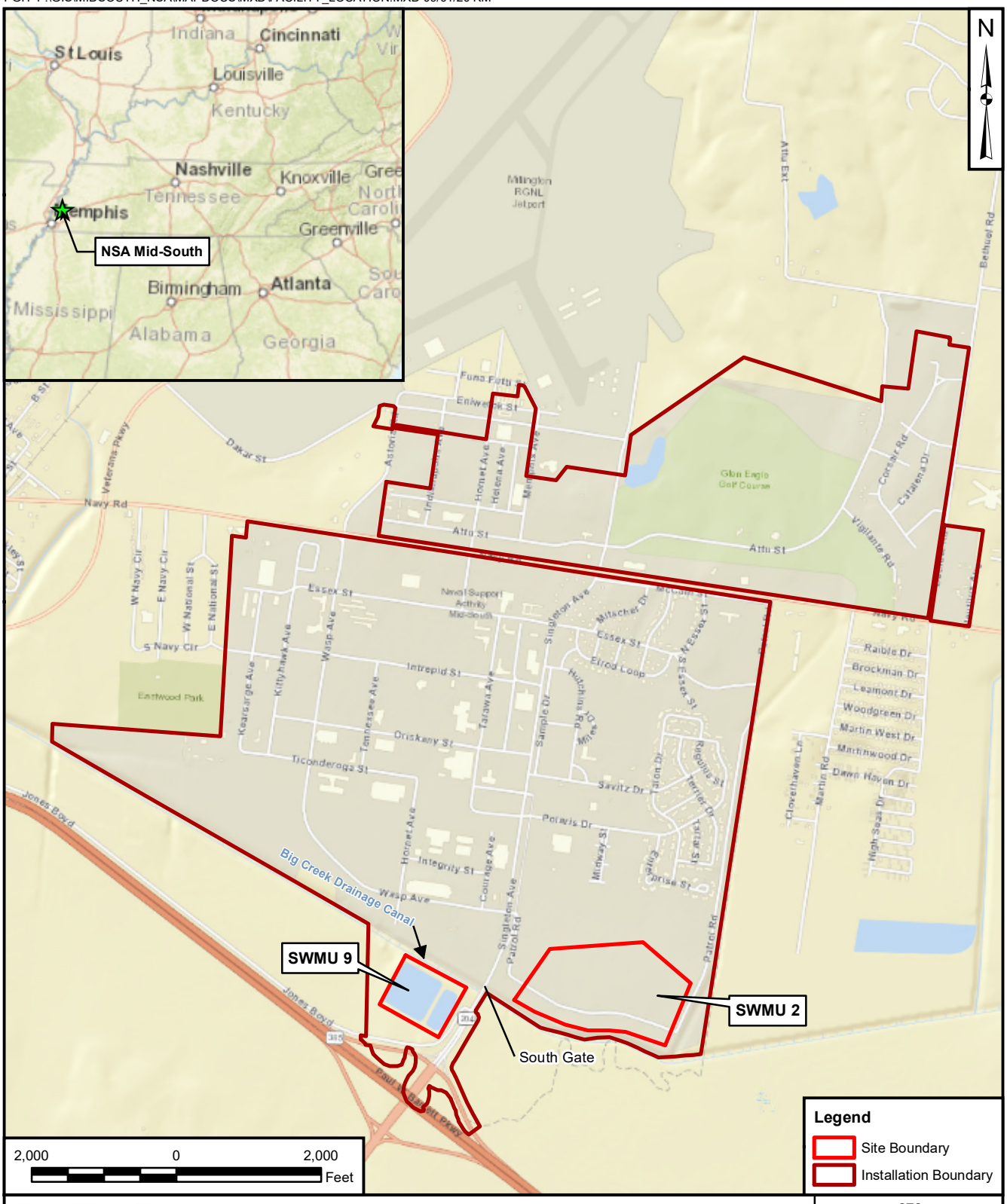

NAVFAC

FACILITY LOCATION MAP
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	N6945018F0382
DRAWN BY	DATE
K. MOORE	05/17/19
CHECKED BY	DATE
L. BASILIO	09/01/20
FIGURE NUMBER	
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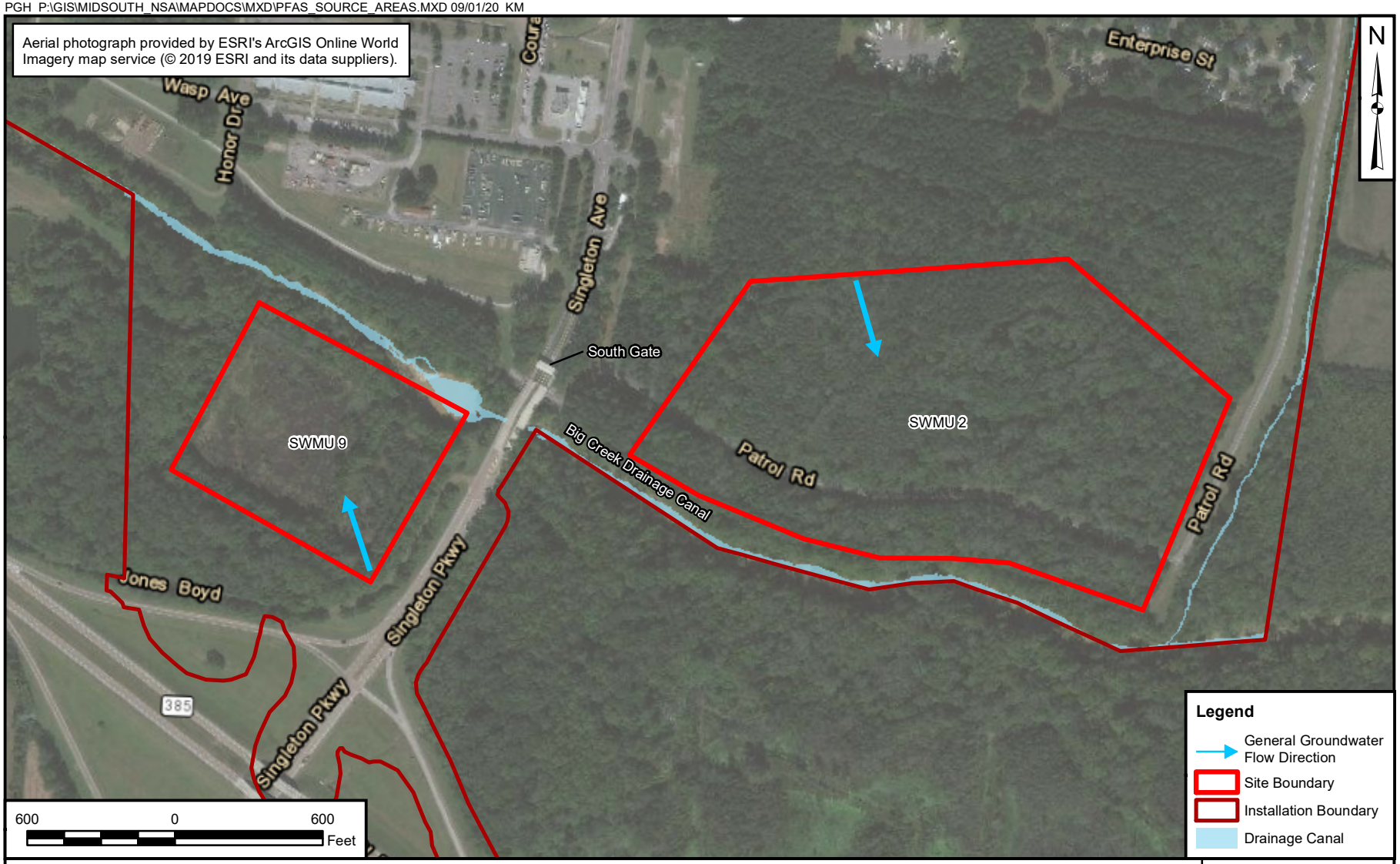

NAVFAC

POTENTIAL PFAS SOURCE LOCATIONS
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	N6945018F0382
DRAWN BY	K. MOORE
DATE	05/17/19
CHECKED BY	L. BASILIO
DATE	09/01/20
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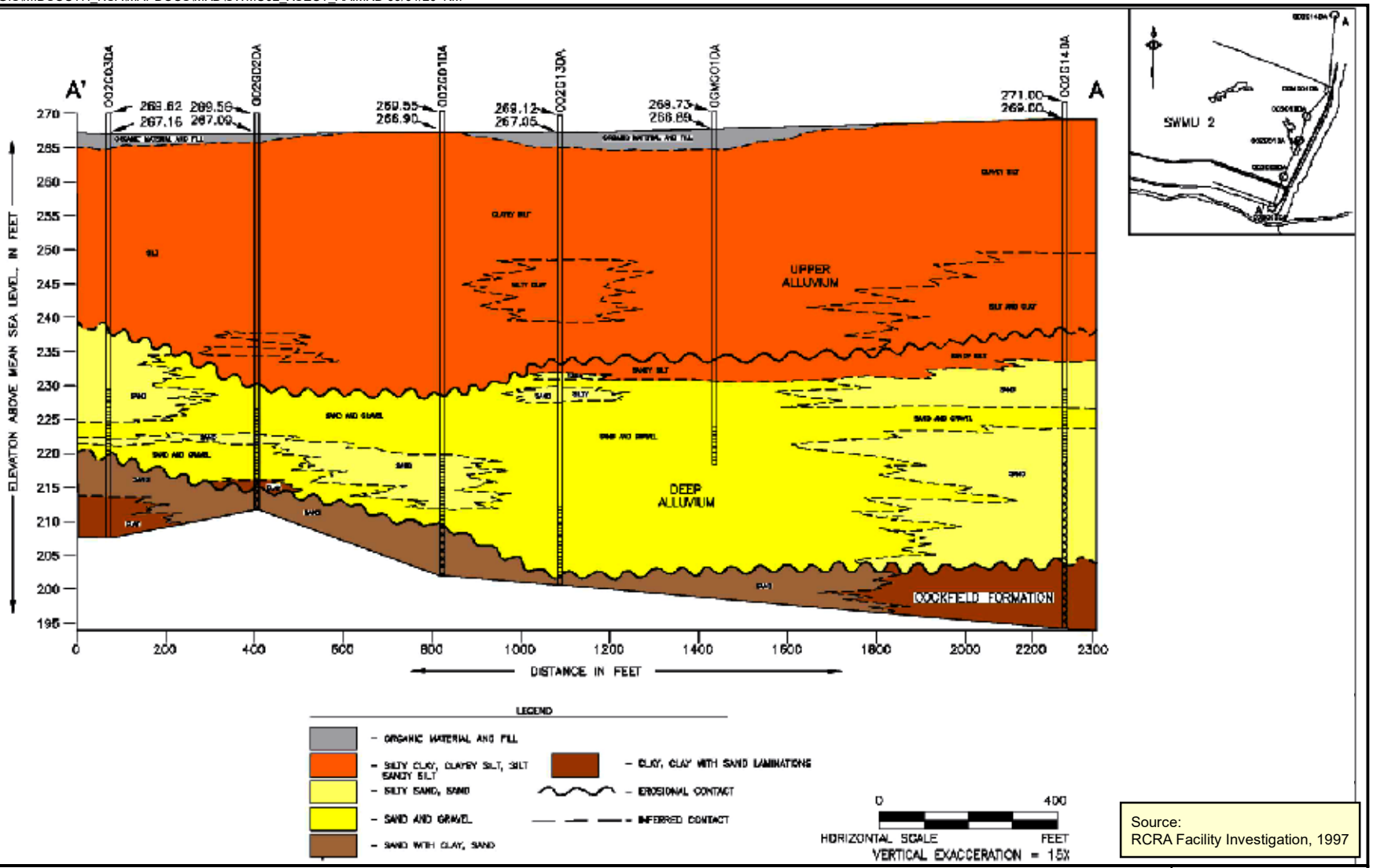

Source:
RCRA Facility Investigation, 1997

GEOLOGIC CROSS SECTION (A-A')
SWMU 2
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	N6945018F0382
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K. MOORE	05/17/19
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L. BASILIO	09/01/20
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2-3	

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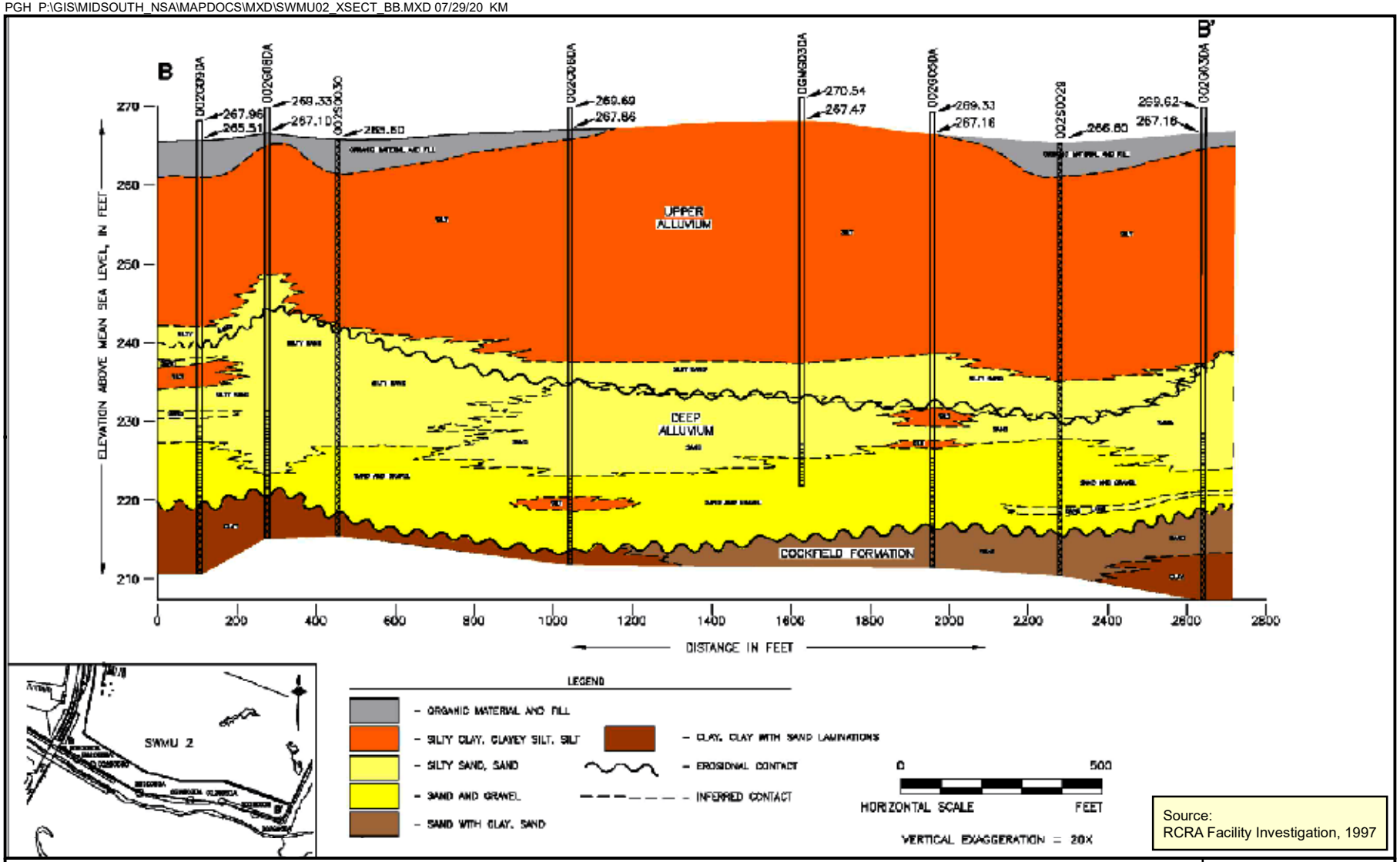

Source:
RCRA Facility Investigation, 1997

GEOLOGIC CROSS SECTION (B-B')
SWMU 2
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	N6945018F0382
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K. MOORE	05/17/19
CHECKED BY	DATE
L. BASILIO	07/29/20
FIGURE NUMBER	
2-4	

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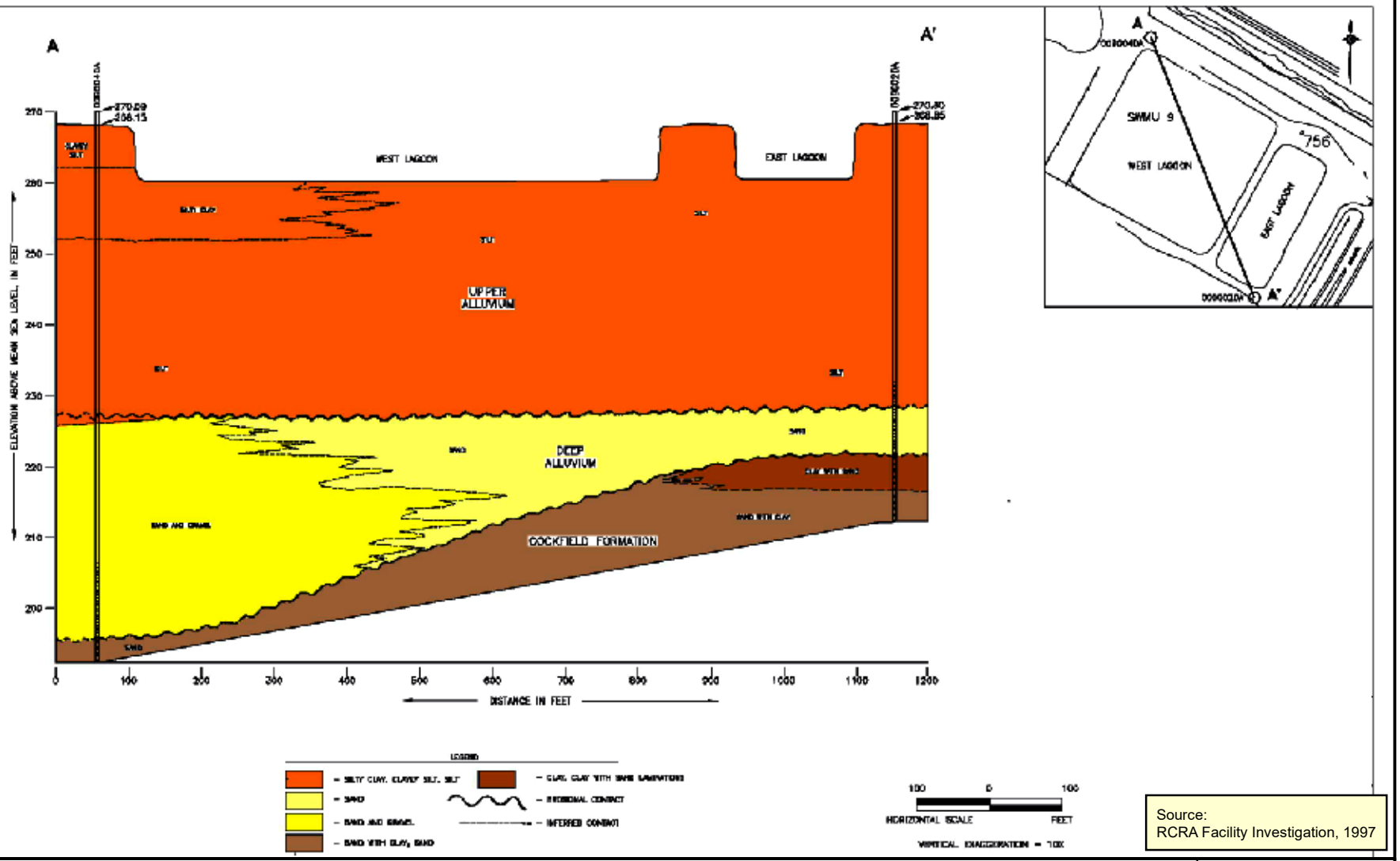
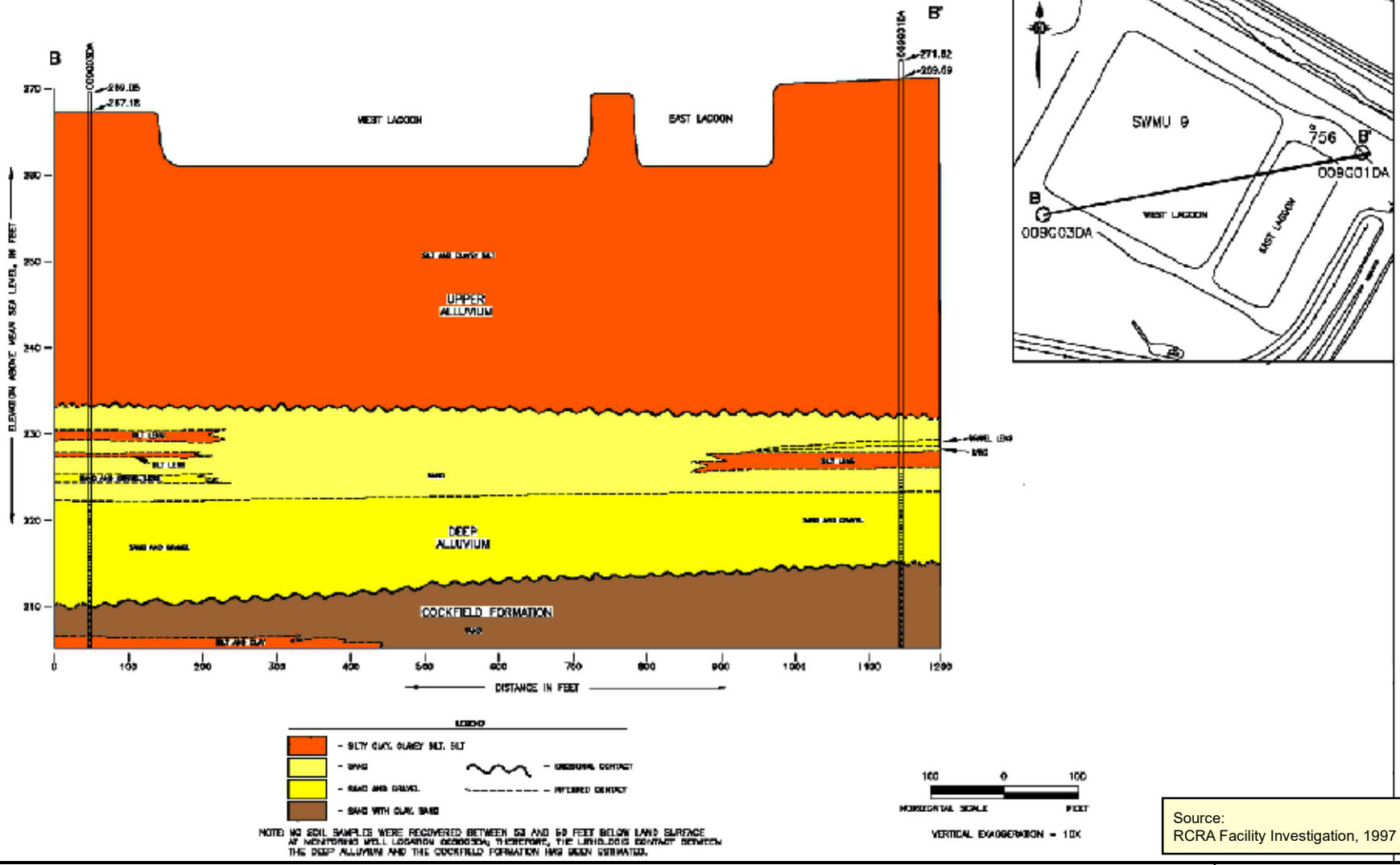


Source:
RCRA Facility Investigation, 1997

GEOLOGIC CROSS SECTION (A-A')
SWMU 9
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	N6945018F0382
DRAWN BY	DATE
K. MOORE	05/17/19
CHECKED BY	DATE
L. BASILIO	09/01/20
FIGURE NUMBER	
2-5	

PGH P:\GIS\MIDSOUTH_NSA\MAPDOCS\MXD\SWMU09_XSECT_BB.MXD 09/01/20 KM



Source:
RCRA Facility Investigation, 1997

NAVFAC

GEOLOGIC CROSS SECTION (B-B')
SWMU 9
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	N6945018F0382
DRAWN BY	K. MOORE
DATE	05/17/19
CHECKED BY	L. BASILIO
DATE	09/01/20
FIGURE NUMBER	2-6

3.0 Site Inspection Activities

The following subsections provide a detailed discussion of the field and investigative activities conducted during the SI at SWMUs 2 and 9 from April 6 to 9, 2020. Figures 3-1 and 3-2 show SI sample locations and site details at SWMUs 2 and 9, respectively.

3.1 General Description and Information

The SI was conducted to determine whether PFAS are present in groundwater at SWMUs 2 and 9 at concentrations greater than PSLs. The SI included the collection and laboratory analysis of groundwater samples from two existing monitoring wells at SWMU 2, drilling and installation of two temporary monitoring wells and collection and laboratory analysis of groundwater samples from SWMU 9, global positioning system (GPS) surveying of the temporary groundwater monitoring wells, and reporting of results. The SI was conducted in accordance with the approved SAP (Tetra Tech, 2020).

3.2 Site Preparation Activities

3.2.1 Utility Clearance

After Tetra Tech identified the area where intrusive activities would occur prior to sample collection, clearances needed for intrusive work were obtained in accordance with the Navy's established procedures and requirements. This included obtaining a Digging Permit from NSA Mid-South.

Utility clearance requirements were also completed through the Tennessee One-Call service. Tetra Tech placed the first request ticket (#200734835) with Tennessee One Call for utility location markings at the two proposed locations for SWMU 9 on March 13, 2020, and then updated the ticket on March 31, 2020. All contacted utility companies reported that there were no utility lines present.

Tetra Tech also contacted the City of Millington Public Works department on March 16, 2020, to inform them of the proposed activities and requested that they mark the locations of any utilities they may have in the area. The City of Millington Public Works stated that they did not have any utilities in the area.

3.2.2 Vegetation Management

No vegetation clearing was required at the site to facilitate sampling activities.

3.2.3 Permitting

A permit for the drilling and installation of the two temporary monitoring wells at SWMU 9 (Permit # 20-033) was obtained from the Shelby County Health Department, Pollution Control Section.

3.3 Soil Boring /Monitoring Well Installation Program

Two temporary monitoring wells (009TW01 and 009TW02) were installed by Cascade Environmental at SWMU 9 for the collection of groundwater samples. A Geoprobe 8140 LC, a rotary sonic drilling rig, was used to advance the borings for the temporary monitoring wells. A licensed Tennessee well driller drilled the borings and installed the temporary monitoring wells at SWMU 9 on April 6, 2020.

3.3.1 Soil Boring/Monitoring Well Locations

Figure 3-2 shows the locations of the soil borings and temporary monitoring wells installed at SWMU 9. The locations were selected based on physical access restrictions at the densely wooded SWMU 9 site. Access along the northern side of SWMU 9 was not possible due to erosion of the land surface and bank along Big Creek Drainage Canal. In order to gain access and avoid this area, the Navy would have been required to go through the process of acquiring easement from neighboring property owners. The soil borings and temporary wells were located as close to the perimeter of SWMU 9 as possible. All drilling and sampling activities were conducted on NSA Mid-South property.

3.3.2 Installation of Soil Borings

The two temporary well borings were drilled on natural ground. Each 6-inch diameter borehole was continuously sampled from the ground surface to the total depth (30 to 35 feet bgs) using a continuous 5-foot core barrel sampling device. As each boring was drilled, an on-site geologist logged lithologic descriptions on a Field Log Boring Form. The lithologic logging information was used to determine the first encountered groundwater zone and to aid in selecting the screened interval for the temporary monitoring wells. Soil cores and workers' breathing space were field screened using a MultiRAE photoionization detector (PID) meter; no readings above background were detected. The completed soil boring logs are included in Appendix A. Both borings at SWMU 9 was converted into temporary monitoring wells.

Solid investigation-derived waste (IDW) composed of soil cuttings generated during drilling activities was containerized in properly labeled, Department of Transportation

(DOT)-approved, 55-gallon drums and stored on wooden pallets at a centralized location designated by NSA Mid-South personnel pending analysis for subsequent disposal.

3.3.3 Temporary Monitoring Well Installation

Both borings at SWMU 9 were converted into temporary monitoring wells. The temporary monitoring wells were constructed with new, flush-threaded, 2-inch inner diameter (ID), Schedule 40, polyvinyl chloride (PVC) riser pipe and PVC factory-slotted screen. The screen slot size was 0.01-inch, and the screen length was 10 feet. The annular space surrounding each well screen was backfilled with Gillibrand Industrial 20/40 silica sand filter pack. The sand filter pack extended from the bottom of the borehole to approximately 2 feet above the top of the screen. The annular space above the sand pack was backfilled with approximately 4 feet of Halliburton Holeplug 3/8-inch bentonite chips. No PFAS-containing materials were used in the construction of the temporary wells. Temporary monitoring well construction diagrams are included in Appendix A.

3.3.4 Temporary Monitoring Well Development

Both temporary monitoring wells at SWMU 9 were developed by surging and pumping with an electric submersible pump provided by the drilling subcontractor. During the well development process, water quality parameters including temperature, pH, specific conductance, and turbidity were recorded on a development log sheet. Well development continued until a minimum of three well volumes were evacuated from the temporary monitoring wells. Well development logs are included in Appendix A.

During development of temporary monitoring well TW02, the well was pumped dry after approximately 5 minutes of pumping. The well was allowed to recharge and was pumped dry in 5-minute intervals until three well volumes were purged from the well.

Water generated during temporary monitoring well development was containerized in properly labeled, DOT-approved, 55-gallons drums and stored on wooden pallets at a centralized location designated by NSA Mid-South personnel pending analysis for subsequent disposal. The existing monitoring wells at SWMU 2 were not redeveloped.

3.4 Groundwater Sampling Program

The two temporary monitoring wells installed at SWMU 9 (009TW01 and 009TW02) and two existing monitoring wells at SWMU 2 (002G02DA and 002G05DA) were used for

the collection of groundwater samples. The monitoring wells were sampled on April 8, 2020.

3.4.1 Groundwater Sampling Locations

Figure 3-1 shows the locations of the two existing monitoring wells sampled at SWMU 2, and Figure 3-2 shows the locations of the temporary monitoring wells sampled at SWMU 9.

3.4.2 Groundwater Sampling and Preservation Methodology

After the temporary monitoring wells were developed, the monitoring wells were allowed to stabilize and recharge overnight prior to the commencement of groundwater sampling. Following recharge, the depth to groundwater was measured relative to the top of the PVC casing at each well location. The newly installed temporary monitoring wells and the existing monitoring wells were then purged with a peristaltic pump for sampling using low-flow sampling methods with dedicated high-density polyethylene (HDPE) tubing. During purging activities, a YSI 556 water quality instrument was used to monitor water quality parameters including dissolved oxygen, oxidation-reduction potential, temperature, conductivity, and pH. A Lamotte 2020 WE turbidity meter was used to measure the turbidity of the water. All water quality measurements were recorded on groundwater sample logs. After three water quality readings were obtained showing stabilized (within 10 percent) water quality parameters, groundwater was sampled from the monitoring wells. Copies of groundwater sample logs are included in Appendix A.

Groundwater samples were collected directly from the discharge tube into laboratory-supplied, 250-milliliter (mL) HDPE sample containers. All samples were submitted to Battelle Laboratories in Norwell, Massachusetts, for analysis of PFAS.

Each member of the sampling crew donned a new pair of gloves at each sampling location. Upon filling the sample containers, they were appropriately labeled, sealed in plastic Ziplock-type bags, and placed in an ice chest filled with ice and the ice chest cooler prepared for shipping. The samples were packaged for shipment at the conclusion of each day.

Water generated during monitoring well sampling was containerized in properly labeled, DOT-approved, 55-gallon drums and stored on wooden pallets at a centralized location designated by NSA Mid-South personnel pending analysis for subsequent disposal.

3.4.3 Abandonment of Temporary Monitoring Wells

After the groundwater samples were collected, the two temporary monitoring wells at SWMU 9 were abandoned by the licensed Tennessee well driller. Monitoring well abandonment activities were conducted on April 8, 2020. During the abandonment process, the PVC piping from each temporary monitoring well was cut below the ground surface and the well screen and casing and annular space sealed in place using Haliburton Holeplug 3/8-inch bentonite chips to the ground surface . The plugged temporary monitoring wells, 002TW01 and 002TW02, were returned to grade with the surrounding native soil at SWMU 9.

3.5 Field Surveying

Field surveying was conducted by Tetra Tech using a handheld Trimble GeoXT GPS to determine the horizontal (XY) location of each temporary monitoring well installed at SWMU 9. The accuracy of locations is approximately 0.5 meter in the horizontal axis. The horizontal points are referenced to the Tennessee State Plane Coordinate System, North American Datum 1983. Table 3-1 summarizes the temporary monitoring well coordinates, and samples. Sample locations are shown on Figures 3-1 and 3-2.

3.6 Field Sample Documentation

Field documentation and tracking of sample custody were integral parts of the overall quality assurance (QA)/quality control (QC) process for the SI. The field documentation system serves as a record of activities conducted in the field during sample collection and data generation. It provided the means to identify, track, and monitor each sample from the time of collection through the final reporting of data.

3.6.1 Sample Identification

The sample identification scheme presented in the SAP (Tetra Tech, 2020) was used to identify and label the field samples collected and the field QC blanks created during the SI. The sample identification procedure was used for the sample labels and chain-of-custody documents to maintain consistency in the labeling process and to allow efficient handling of the samples.

3.6.2 Field Logbooks/Sample Log Sheets

The field team maintained a field logbook and field log sheets containing pertinent information regarding the samples. The field logs are intended to provide sufficient data and observations to enable the field team and other interested parties to reconstruct

events that occurred during field activities. Field documentation was completed on data sheets (e.g., boring log forms, sampling sheets, etc.) using ink. Sample logs sheets are included in Appendix A.

3.7 Sample Handling, Packaging, and Shipping

The following chain-of-custody procedures documented sample possession from the time of sample collection until its ultimate disposal. For these procedures, a sample was considered to be in custody if it was:

- In one's actual possession.
- In view after being in one's possession.
- Secured (i.e., locked up) so that no one could tamper with it.
- In a secured area available to authorized personnel only.

The following strict chain-of-custody procedures were maintained throughout the investigation:

- A chain-of-custody record was completed in the field. The original accompanied the samples, and copies were maintained at intermediate steps.
- At the point where responsibility for custody of the samples changed, the new current and custodian signed the chain-of-custody record and noted the date and time.

The SI samples were packed in accordance with the UFP-SAP sample handling procedures. The sample containers were then placed in a cooler lined with a large plastic bag and covered with ice. A temperature blank was placed in each cooler prior to shipment. The plastic bag was sealed with a knot, and the chain-of-custody form(s) was sealed in a Ziploc-type bag and taped to the inside of the cooler lid. Signed and dated custody seals were applied to opposite ends of the cooler and then covered with strapping tape to provide a tamper-evident seal. A FedEx airbill was applied to the shipping cooler. Tetra Tech maintained custody of the samples until they were relinquished to FedEx. The FedEx tracking number (airbill number) was recorded on the chain-of-custody form(s), and the sender's copy of the airbill was maintained for shipment tracking. All samples were shipped to Battelle Laboratories via overnight delivery and were received within the allowable sample holding times and within the required temperature range.

Laboratory sample custody procedures (receipt of samples, archiving, and disposal) were followed in accordance with Battelle SOPs. Coolers were received and checked for proper temperature and a sample cooler receipt form was completed to note

conditions and any discrepancies. The chain-of-custody form was checked against each sample containers for correctness. Samples were logged into the Laboratory Information Management System and given a unique log number that could be tracked through processing.

3.8 Quality Control Samples

The QA/QC samples were collected during sampling activities to assess the variability introduced in sampling, handling, shipping, and laboratory analysis. Field QA/QC samples included equipment (rinsate) blanks, temperature blanks, field blanks, source water blanks, field duplicate, and matrix spike/matrix spike duplicate (MS/MSD) samples.

3.8.1 Field Duplicates

Field duplicates consisted of a single sample split into two portions. Field duplicates were collected at the rate of 1 for every 10 samples during the field investigation to assess the overall precision of the sampling and analysis program. One field duplicate sample was collected during the SI and analyzed for PFAS.

3.8.2 Equipment Blanks

Equipment rinsate blanks were obtained under representative field conditions by collecting the rinse water generated by running laboratory-certified PFAS-free water through and over sample collection equipment (i.e., HDPE tubing) before use. One equipment rinsate blank was collected during the SI and analyzed for PFAS.

3.8.3 Matrix Spike/Matrix Spike Duplicate

MS/MSD samples are used to determine whether an analytical procedure is working within established control limits. The recoveries of the spiked analytes are evaluated to determine accuracy in a given matrix. MS/MSD samples were collected at a rate of 1 for every 20 samples during the field investigation. Two MS/MSD samples were accidently collected during the SI, but only one MS/MSD sample was analyzed for PFAS.

3.8.4 Temperature Blanks

Temperature blanks were used to determine whether samples were adequately cooled during shipment. Temperature blanks consisted of analyte-free water supplied by the laboratory. One temperature blank was submitted to the laboratory in each cooler, and the temperature was checked upon receipt at the laboratory.

3.8.5 Field Blanks

Field blanks are prepared at the analytical laboratory by filling one 250-mL HDPE container with PFAS-free water. The container with the PFAS-free water was then opened by the field team at the sample location and transferred into a new 250-mL HDPE container at the site. Field blanks thus serve to identify contamination of the water samples or sample containers that might have occurred at the site. One field blank was collected during the SI and analyzed for PFAS.

3.8.6 Source Water Blanks

Source water blanks are used to determine if the water obtained from sources on the base for drilling (i.e., decontamination) contains PFAS. One source water blank was collected during the SI from the water source located at the vehicle maintenance area, Building 1633, where the drilling crew obtained water. The source water blank was analyzed for PFAS.

3.9 Decontamination Procedures

A decontamination pad was constructed for heavy equipment at the site. The decontamination pad was set up at a sufficient distance from the sample locations to prevent cross-contamination. The pad consisted of a plastic liner supported and secured on all sides by 6-inch-tall drilling rods. Wash racks were used at the decontamination pad to hold the equipment above the ground to facilitate cleaning during decontamination activities. Potable water for decontamination of heavy equipment was obtained from a water spigot at the NSA Mid-South vehicle maintenance facility, Building 1633. The decontamination liquids were containerized in properly labeled, DOT-approved, 55-gallon drums and stored on wooden pallets at a centralized location designated by NSA Mid-South personnel pending analysis for subsequent disposal.

The water level meter used to measure groundwater levels (the only reusable, non-dedicated, sampling equipment used during the SI) was decontaminated prior to beginning sampling and between sample locations. Decontamination of the water level meter was accomplished by spraying the tool with an Alconox solution, rinsing with certified PFAS-free water, and then wiping any residual liquid with a paper towel.

At the conclusion of all field activities, the non-disposable equipment was decontaminated and then shipped back to the equipment supplier.

3.10 Investigation-Derived Waste

The types of waste generated as a result of SI activities were disposable sampling equipment, personal protective equipment, soil, development and purge liquids, and decontamination liquids. The liquid IDW was collected and placed into six 55-gallon, DOT-approved, steel drums. The solid IDW was collected and placed into two 55-gallon, DOT-approved, steel drums. The waste containers were clearly identified and labeled "Investigation-Derived Waste." The generated IDW was temporarily stored at a fenced and locked location, as designated by NSA Mid-South Public Works personnel.

One composite liquid sample and one composite soil sample were collected from the drums containing liquid and soil IDW, respectively, and submitted to Gulf Coast Analytical Laboratories in Baton Rouge, Louisiana, for analysis. The IDW samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals, TCLP VOCs, TCLP SVOCs, TCLP pesticides, TCLP herbicides, and reactivity, corrosivity, and ignitability (RCI).

The shipping cooler containing the IDW samples was delayed by FedEx and arrived late to the laboratory. The temperature of the samples upon arrival at the laboratory was above criteria at 20.3 degrees Celsius. After consultation with the Tetra Tech Chemist, Tetra Tech QA Manager and IDW subcontractor and with approval of the NAVFAC Remedial Project Manager, the IDW samples were disposed of and a new set of IDW samples was collected on April 27, 2020.

The liquid and solid IDW drums were transported to and disposed of as non-hazardous waste at the Clean Harbors Chattanooga landfill on June 19, 2020. A copy of the waste disposal manifest is included in Appendix B.

3.11 Recordkeeping

Records, including daily activity logs, sample log sheets, and chain-of-custody forms, were completed in accordance with the SAP. The information recorded daily included field activities, weather conditions, identities and arrival and departure times of personnel, management issues, etc. Copies of field forms are included in Appendix A.

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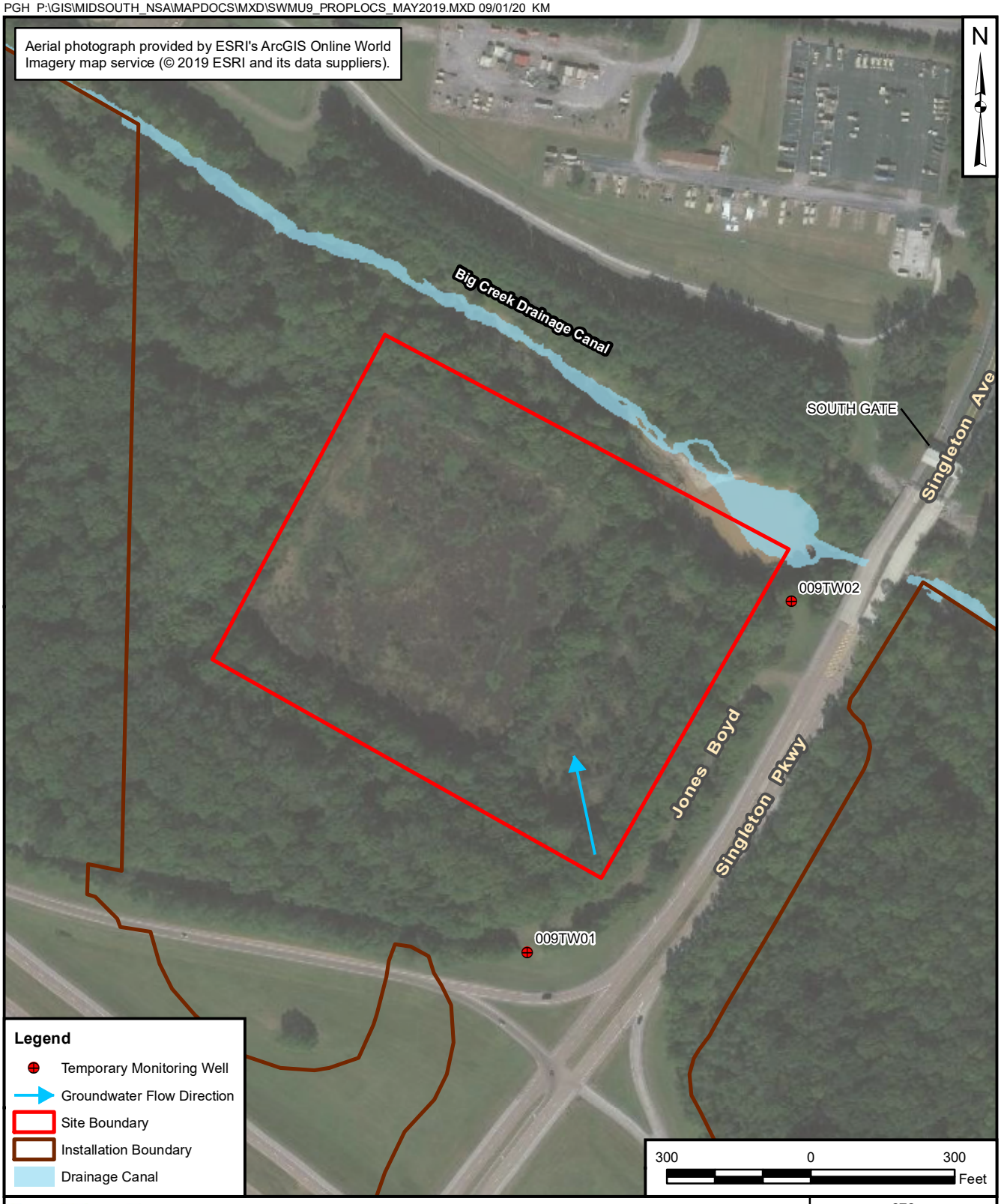

NAVFAC

SAMPLE LOCATIONS
SWMU 9
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TENNESSEE

CTO	
N6945018F0382	
DRAWN BY	DATE
J. ENGLISH	05/07/19
CHECKED BY	DATE
L. BASILIO	09/01/20
FIGURE NUMBER	
3-2	

TABLE 3-1

REVISION 0
SEPTEMBER 2020

SAMPLE LOCATION COORDINATES
SWMUs 2 AND 9
NSA MID-SOUTH
MILLINGTON, TENNESSEE
PAGE 1 OF 1

Location	Site	Northing (Feet)	Easting (Feet)
002G02DA	SWMU 2	382744.29	816914.09
002G05DA	SWMU 2	382649.99	816154.09
009TW01	SWMU 9	382417.74	813510.68
009TW02	SWMU 9	383117.80	814087.22

Note:
Coordinates are Tennessee State Plane, NAD 83
NAD 83 - North American Datum of 1983.

4.0 Site Inspection Results

The primary objective of the SI was to investigate groundwater at the two suspected PFAS release areas, SWMUs 2 and 9, to determine whether PFAS are present at concentrations greater than PSLs and to determine if action(s) is required to protect human health and the environment, in accordance with Navy policy.

The SI consisted of drilling two soil borings for the installation of two temporary groundwater monitoring wells, collection and analysis of groundwater samples from the two temporary monitoring wells and two existing monitoring wells, GPS surveying of sample locations, and reporting results. Field activities associated with the SI were conducted April 6 to 9 and 27, 2020.

The analytical data presented in this SI Report were subjected to a data validation process performed by Tetra Tech personnel to ensure the integrity and defensibility of the data. Samples collected for chemical analysis during the SI were prepared and analyzed by Battelle Laboratories in Norwell, Massachusetts. Battelle is accredited by the DoD Environmental Laboratory Accreditation Program and the National Environmental Laboratory Accreditation Program.

4.1 Analytical Parameters and Methods

Groundwater samples were collected at SWMUs 2 and 9 and submitted to the laboratory for chemical analysis for PFAS using the method shown in Table 4-1. IDW samples collected during the SI for chemical analysis were analyzed for TCLP VOCs, TCLP SVOCs, TCLP herbicides, TCLP pesticides, TCLP metals, and RCI using the methods shown in Table 4-1.

4.2 Project Screening Levels

USEPA tap water Regional Screening Levels (RSLs) for PFOA, PFOS, and PFBS are the PSLs used for screening of SI data based on Navy Policy (DoD, 2019). The RSLs are based on a residential scenario using a Hazard Quotient of 0.1. Analytical results for groundwater samples collected are compared to the following PSLs:

- PFOA at 40 nanograms per liter (ng/L),
- PFOS at 40 ng/L, and
- PFBS at 40,000 ng/L.

These PSLs are used for screening to determine whether further investigation is warranted or the site can proceed to site closeout. Site management decisions are required only for PFAS with numerical criteria. Therefore, analytical results for PFAS other than PFOA, PFOS, and PFBS are documented in an appendix to this SI report (Appendix C) but are not included or discussed in the body of the report).

4.3 Groundwater Analytical Results – SWMU 2

Figure 4-1 is a tag map depicting the locations and analytical results of groundwater samples collected during the SI at SWMU 2. Table 4-2 presents groundwater analytical results for SWMU 2.

PFOA was detected in both groundwater samples at concentrations of 0.85 ng/L (002G02DA) and 1.42 ng/L (002G05DA). These concentrations are less than the PSL of 40 ng/L.

PFOS was detected in one groundwater sample at a concentration of 1.01 ng/L (002G02DA), less than the PSL of 40 ng/L. PFOA was not detected at a concentration greater than the reporting limit in monitoring well 002G05DA.

PFBS was detected in both groundwater samples at concentrations of 3.31 ng/L (002G02DA) and 2.71 ng/L (002G05DA). These concentrations are less than the PSL of 40,000 ng/L.

4.4 Groundwater Analytical Results - SWMU 9

Figure 4-2 is a tag map depicting the locations and analytical results of groundwater samples collected during the SI at SWMU 9. Table 4-2 presents groundwater analytical results for SWMU 9.

PFOA was not detected at concentrations greater than reporting limits in the groundwater samples collected from either temporary well 009TW01 or 009TW02.

PFOS was detected in both groundwater samples at concentrations of 0.91 ng/L (009TW01) and 2.77 J/2.58J ng/L (009TW02). These concentrations are less than the PSL of 40 ng/L.

PFBS was detected in both groundwater samples at concentrations of 0.48 ng/L (009TW01) and 0.55J/0.59J ng/L (009TW02). These concentrations are less than the PSL of 40,000 ng/L.

4.5 Data Validation

The analytical data were reviewed with reference to the DoD documents entitled *Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15* (2020), and *Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1.1, Appendix B Table B-15* (2018). USEPA Stage 4 validation was conducted on data from 100 percent of the samples collected during the SI. Data validation was conducted to evaluate false positives and included evaluations of: data completeness, holding time compliance, sample preservation, calibrations, field QC and laboratory-generated blanks, field duplicate precision, and detection limits.

Data validation specifications require that various data qualifiers be assigned when a deficiency is detected or when a result is less than the associated detection limit. If no qualifier is assigned to a result that has been validated, the data user is assured that no technical deficiencies were identified during validation. These flags were used to infer the general quality of the data and whether data quality meets the data quality objectives of the project, as presented in the SAP.

After the data were validated, a list was developed of non-conformities requiring data qualifier flags used to alert the data user to inaccurate or imprecise data. A data validation report was then prepared that presented qualification of the data and rationales for making such qualifications (see Appendix D). The result was a data package that had been carefully reviewed for its adherence to prescribed technical requirements. Several extracted internal standard recoveries were outside the quality control limits. One LCS percent recovery was outside the QC limits. The non-compliances are not significant enough to render the affected data as unusable or rejected according to the data validation guidelines used for this project.

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Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2019 ESRI and its data suppliers).

N

002G11DA
002G12DA
002G01DA
002GGM05DA
002G06DA
002GGM02DA
002G03DA
002G28DA
002G24DA
002G27DA
002G26DA
002G25DA

Patrol Rd
Big Creek Drainage Canal

002G05DA	PSL	20200408
POLYFLUOROALKYL SUBSTANCES (ng/L)		
PERFLUOROOCTANOIC ACID (PFOA)	40	1.42 J
PERFLUOROBUTANESULFONIC ACID (PFBS)	40000	2.71 J
PERFLUOROOCTANESULFONIC ACID (PFOS)	40	0.89 U

002G02DA	PSL	20200408
POLYFLUOROALKYL SUBSTANCES (ng/L)		
PERFLUOROOCTANOIC ACID (PFOA)	40	0.85 J
PERFLUOROBUTANESULFONIC ACID (PFBS)	40000	3.31 J
PERFLUOROOCTANESULFONIC ACID (PFOS)	40	1.01 J

Legend

- Existing Monitoring Well Sampled
- Monitoring Well
- Groundwater Flow Direction
- Site Boundary
- Installation Boundary
- Drainage Canal

Notes:
1) PSL = Project Screening Level
2) J = Estimated Concentration
3) U = Non-detect

200 0 200 Feet

NAVFAC

PFOA, PFOS, AND PFBS CONCENTRATIONS IN GROUNDWATER SWMU 2 PFAS SITE INSPECTION NSA MID-SOUTH MILLINGTON, TENNESSEE

CTO	
N6945018F0382	
DRAWN BY	DATE
S. PAXTON	07/28/20
CHECKED BY	DATE
L. BASILIO	09/01/20
FIGURE NUMBER	
4-1	

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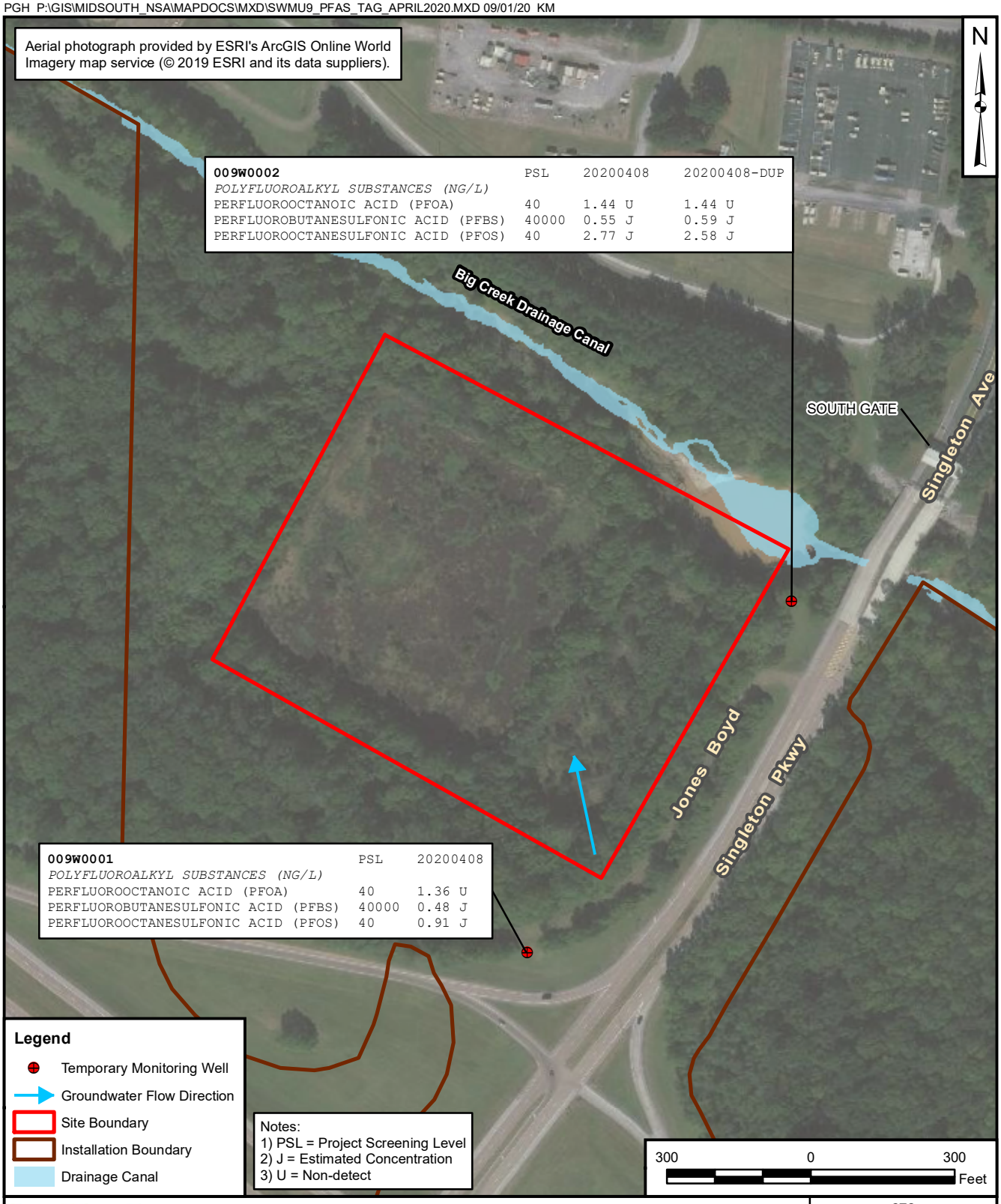

NAVFAC

PFOA, PFOS, AND PFBS CONCENTRATIONS IN GROUNDWATER SWMU 9 PFAS SITE INSPECTION NSA MID-SOUTH MILLINGTON, TENNESSEE

CTO	N6945018F0382
DRAWN BY	S. PAXTON
DATE	07/28/20
CHECKED BY	L. BASILIO
DATE	09/01/20
FIGURE NUMBER	4-2

TABLE 4-1

REVISION 0
SEPTEMBER 2020

ANALYTICAL PARAMETERS AND METHODS
SWMUs 2 AND 9
NSA MID-SOUTH
MILLINGTON, TENNESSEE

Analysis	Method [1]
Groundwater	
Per- and Polyfluoroalkyl Substances	PFAS by LCMSMS compliant with QSM 5.3 Table B-15
IDW	
TCLP Volatile Organic Compounds	1311/8260B
TCLP Semivolatile Organic Compounds	1311/8270D
TCLP Pesticides	1311/8081B
TCLP Herbicides	1311/8151A
TCLP Metals	1311/6020B/6020A/7470A
Reactivity	SW-846 Chapter 7/9034/9012A
Corrosivity	9040/9045
Ignitability	1010

(1) All methods from EPA SW-846 except as noted.

IDW - Investigative Derived Waste
TCLP - Toxicity Characteristic Leaching Procedure
LCMSMS - liquid chromatography tandem mass spectroscopy
QSM - Quality Systems Manual

TABLE 4-2

REVISION 0
SEPTEMBER 2020

ANALYTICAL RESULTS
SWMUs 2 AND 9
NSA MID-SOUTH
MILLINGTON, TENNESSEE
PAGE 1 OF 1

Location	Project Screening Level	002G02DA	002G05DA	009TW01	009TW02	009TW02
Site		SWMU 2	SWMU 2	SWMU 9	SWMU 9	SWMU 9
Sample ID		002G02DA-040820	002G05DA-040820	009MW01-040820	009MW02-040820	009MW02-040820-D[1]
Sample Date		4/8/2020	4/8/2020	4/8/2020	4/8/2020	4/8/2020
Matrix		GW	GW	GW	GW	GW
PER- AND POLYFLUOROALKYL SUBSTANCES (ng/L)						
Perfluorooctanoic Acid (PFOA)	40	0.85 J	1.42 J	1.36 U	1.44 U	1.44 U
Perfluorooctanesulfonic Acid (PFOS)	40	1.01 J	0.89 U	0.91 J	2.77 J	2.58 J
Perfluorobutanesulfonic Acid (PFBS)	40,000	3.31 J	2.71 J	0.48 J	0.55 J	0.59 J

1 - Duplicate sample.
GW - Groundwater.
J - The result is an estimated quantity.
ng/L - nanograms per liter.
U - The analyte was analyzed for, but was not detected at a level greater or equal to the adjusted detection limit.

5.0 Contaminant Migration and Receptors

This section presents a brief overview of the conceptual site model (CSM) and potential receptors and potential points of exposure as identified in the PA (Tetra Tech, 2019) and SAP (Tetra Tech, 2020)

Drinking Water

Drinking water supply wells are perceived to represent the exposure point of greatest concern because humans drinking groundwater incur the greatest degree of potential exposure to PFAS. However, there are no drinking water wells at SWMU 2 and 9. LUCs prohibit the use of groundwater at both sites.

In 2018, a water well search was conducted by the Shelby County Health Department for wells within a 1-mile radius of SWMUs 2 and 9. No wells are located within 1 mile of SWMU 2. One well is located approximately 0.85 mile south of SWMU 9; however, this well is not hydraulically downgradient of SWMU 9. The results of the survey confirmed that there are no potable, domestic, or public water supply wells downgradient of the potential PFAS release sites.

NSA Mid-South obtains its drinking water from five deep production wells and processes the water at the installation's water treatment plant. The wells are capable of producing 4.5 million gallons per day collectively, although the demand for the installation is approximately 1 million gallons per day (Tetra Tech, 2010). The two active wells draw from the Memphis Sand Aquifer, and the three standby wells draw from the Fort Pillow Aquifer. Primary supply wells PW-N1 and PW-N2 (Memphis Sand Aquifer) are located on property that was transferred to the City of Millington in 1999 following the realignment of NAS Memphis to NSA Mid-South; however, the Navy retained ownership of these wells. The NSA Mid-South potable water system currently serves approximately 500 water connections (Tetra Tech, 2019). In January 2016, the production wells were sampled for PFOS and PFOA; no PFOS and PFOA were detected in the samples (sample-specific quantitation limits were 1.3 ng/L for PFOS and 0.67 ng/L for PFOA). The production wells are greater than 1 mile from SWMUs 2 and 9 and are not downgradient of these potential PFAS release sites.

Groundwater Pathway

The groundwater pathway is a concern for SWMU 2 because the landfill does not have a liner to prevent the migration of waste contaminants to groundwater. Groundwater at

the site generally flows to the southeast toward the Big Creek Drainage Canal (EnSafe, 2001). As discussed above, there are no water supply wells within 1 mile of SWMU 2.

As part of the remedy for SWMU 2, groundwater is monitored, and LUCs prohibit use of groundwater. Although direct exposure to groundwater (i.e., use as a drinking water source) is restricted via LUCs, groundwater could discharge to the Big Creek Drainage Canal as discussed below.

Groundwater contamination is a concern at SWMU 9 because the lagoons received industrial wastewater from aircraft maintenance activities. Groundwater at the site generally flows to the northwest toward the Big Creek Drainage Canal. There is one water supply well within 1 mile of SWMU 9; however, the well is not hydrologically downgradient of SWMU 9.

As part of the remedy for SWMU 9, LUCs prohibiting the use of groundwater were implemented. Although direct exposure to groundwater (i.e., use as a drinking water source) is restricted via LUCs, groundwater could discharge to the Big Creek Drainage Canal as discussed below.

The Rules and Regulations of Wells of the Shelby County Groundwater Quality Control Board (SCGWQCB, 2018) restricts the use of private water supply wells in areas of Shelby County serviced by a public water system. Public water is provided by the City of Millington in the areas surrounding the base property. According to Section 12.01.H of the Rules and Regulations, "The construction of a well shall not be permitted at a premise where public water is available and which said water supply has a capacity to provide the quantity of water which the user has stated is necessary...." According to Section 12.01.1 of the Rules and Regulations, "When a public water system (PWS) is available to a residential premise the potable water shall be obtained from the public water system." Therefore the potential for exposure via groundwater pathway is unlikely.

Surface Water Pathway

Surface drainage from the SWMU 2 landfill flows southwest to the Big Creek Drainage Canal, which flows west and borders the southern perimeter of NSA Mid-South. Potentially impacted groundwater could discharge to the Big Creek Drainage Canal. Therefore, the potential for exposure via the surface water pathway exists.

The land surrounding the SWMU 9 lagoons slopes away on all sides for a short distance, with surface water draining generally west before it enters the Big Creek

Drainage Canal. Potentially impacted groundwater could discharge into the Big Creek Drainage Canal. Therefore, potential exposure via surface water may occur. A LUC was put in place that prohibits recreational fishing at SWMU 9, which serves to somewhat limit contact with the site's surface water through elimination of this activity. However, direct contact with surface water is not restricted.

Soil and Air Pathways

The unlined landfill at SWMU 2 has been inactive since 1970. Since then, access to the site (and waste contaminants) has been restricted via the placement of a fence around the site, installation of a soil cover, and maturation of hardwoods and pines and heavy undergrowth. The fence surrounding the perimeter of the site and soil cover would prevent any human contact (exposure) with impacted soil at the site, thus creating an incomplete soil exposure pathway.

The well-vegetated land cover would preclude any fugitive dust emissions and potential air exposures, resulting in an incomplete air exposure pathway. PFAS of current environmental interest are unlikely to volatilize, and airborne transport of PFAS is considered to be a limited migration and exposure pathway.

The SWMU 9 sewage lagoons have been inactive since 1978 when the base connected to the City of Millington's sewer system. The site is bordered on its northern, western, and southern sides by heavy vegetation, mitigating fugitive dust emissions. This heavy vegetation prevents some potential soil exposure but does not eliminate it. PFAS of current environmental interest are unlikely to volatilize, and airborne transport of PFAS is considered to be a limited migration and exposure pathway.

Land Use

Land use on the installation is administrative in nature; NSA Mid-South serves as the Navy's Human Resources Center of Excellence. Its largest commands are the Navy Personnel Command, Navy Recruiting Command, and Navy Manpower Analysis Center, as well as the United States Army Corps of Engineers Finance Center. More than 7,500 military, civilian, and contract personnel are assigned to or work on the base. As the landlord of the installation, NSA Mid-South performs the many tasks necessary for the proper functioning of a self-contained city, including housing, food service, utilities, and facilities for purchase of essential food stuffs and personal items. The land surrounding the base is primarily residential land interspersed with

agricultural, commercial, and industrial land uses. South of SWMUs 2 and 9, the land is mostly rural and agricultural.

No residents are present at SWMU 2 or SWMU 9. Trespassers are considered unlikely because SWMU 2 has restricted access and SWMU 9 is heavily overgrown. LUCs at SWMU 2 prohibit residential use of the property. Hypothetical future residential use of SWMU 9 is possible, but the Navy plans to retain the property and has no plans for residential development or use at either site. LUCs at both sites prohibit the use of groundwater.

Ecological

Habitats and wildlife at SWMU 2 are typical for southern pine/mixed hardwood forests, including an understory of pine and oak saplings and numerous herbaceous species, with an overstory dominated by loblolly pine and various oaks. Dominant avian species include mockingbird, robin, eastern meadowlark, eastern, bluebird, red-tailed hawk, and mourning dove. Mammals reported to occupy the wooded area in and around SWMU 2 include deer, fox, squirrels, raccoon, cottontail rabbits, coyote, and rodent species such as moles, voles, shrews, rats, and mice. No specific reptiles or amphibians were identified at SWMU 2. Big Creek Drainage Canal is shallow (less than 2 feet) and unlikely to contain fish populations; however, populations of benthic microinvertebrates such as crayfish, mollusk, and insects are likely (EnSafe, 2001).

The ecosystem associated with SWMU 9 consists of upland, open water, and riparian habitats. The upland area surrounding the lagoons is made up of bottomland hardwoods and shrubby understory that may support a variety of terrestrial species such as cottontail rabbits, squirrels, racoons, robins, hawks, and other similar species. Terrestrial invertebrates such as earthworms and other insects are expected to be present. In addition to supporting fish and benthic invertebrates, the ponds offer riparian and open water habitats that would provide cover and foraging areas for species such as belted kingfisher and beaver (EnSafe, 1998).

No federal- or state-listed threatened or endangered species were observed at NSA Mid-South (EnSafe, 2006a, 2006b).

Potential Receptors

During development of the CSM for these sites, consideration was given to the types of human receptors that could be exposed to PFAS in groundwater at SWMU 2 and SWMU 9 and how the receptors could be exposed (i.e., exposure mechanisms).

Emphasis is placed on potential human exposure because screening values protective of nonhuman species are unavailable. Figure 5-1 graphically depicts the CSM model, as summarized below.

Based on current and future land use, potential receptors include current and future Navy and civilian personnel, contractors, construction workers, and hypothetical future residents that could be exposed to PFAS in groundwater. Human exposure might occur via dermal contact with or ingestion of groundwater (incidental ingestion of groundwater for construction workers). Both sites have restricted access, LUCs prohibit the use of groundwater, and there are no plans for development; therefore, pathways for human exposure to groundwater are incomplete.

Terrestrial, aquatic, and piscivorous ecological receptors would not be exposed to groundwater but may be exposed to surface water if it was contaminated by groundwater. However, USEPA screening values protective of ecological receptors are unavailable.

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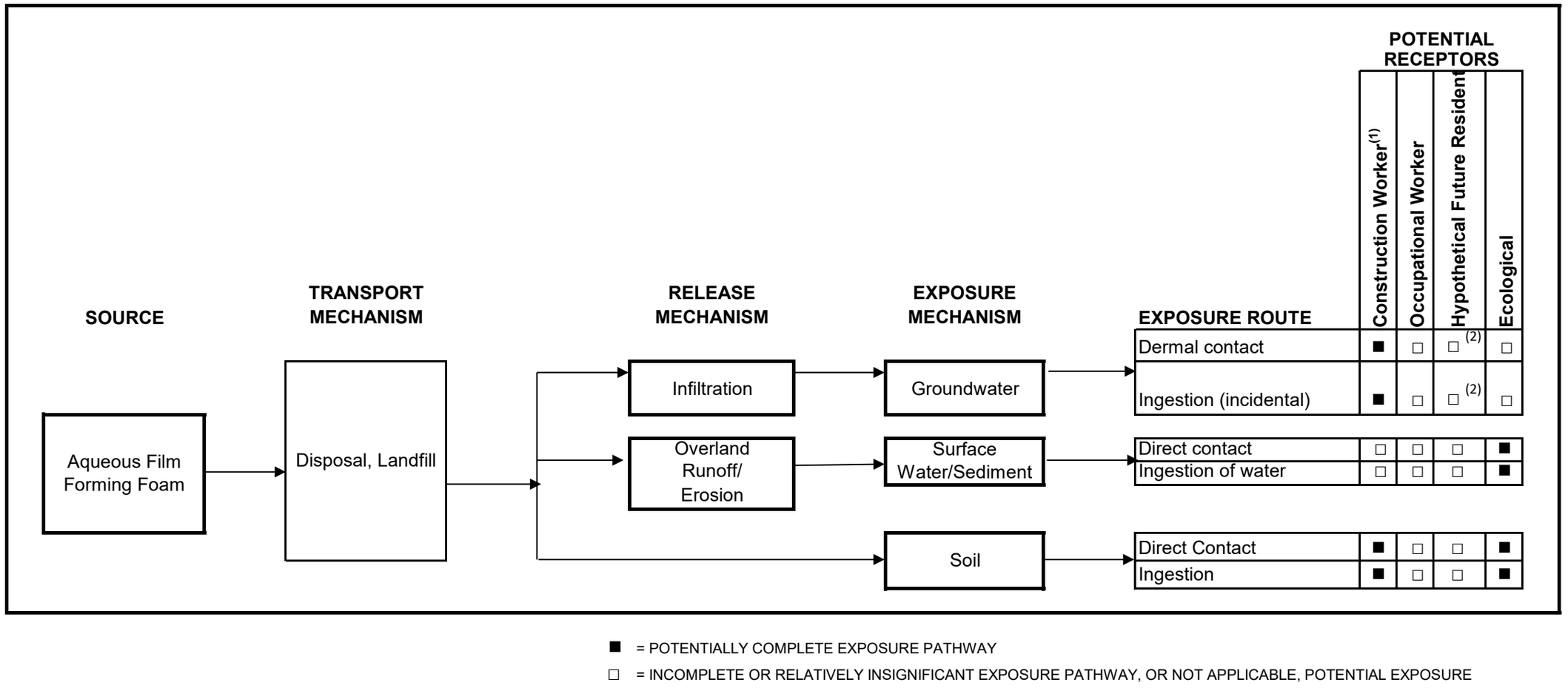
FIGURE 5-1

CONCEPTUAL SITE MODEL
PFAS SITE INSPECTION
NSA MID-SOUTH
MILLINGTON, TN



■ = POTENTIALLY COMPLETE EXPOSURE PATHWAY

□ = INCOMPLETE OR RELATIVELY INSIGNIFICANT EXPOSURE PATHWAY, OR NOT APPLICABLE, POTENTIAL EXPOSURE

1 - Exposure to groundwater is considered to be a potentially complete pathway only for the construction worker because the groundwater at the site is not a drinking water source. Direct contact for construction workers is considered to be a potentially complete pathway because contact could occur during excavation or construction activities.

2 - The base is supplied by public water, and it assumed that a hypothetical future resident would use the public water supply, as well.

6.0 Summary of Conclusions and Recommendations

This section provides a discussion of the conclusions of the SI and recommendations based on the conclusions.

6.1 Summary of Conclusions

The following conclusions are based on the results of the SI at SWMU 2 and SWMU 9:

- PFOA, PFOS and PFBS in groundwater samples from SWMU 2 and SWMU 9 were either detected at concentrations less than the respective PSLs or were not detected.
- LUCs prohibit the use of groundwater at SWMU 2 and SWMU 9.
- No residents are present at SWMU 2 or SWMU 9. The Navy plans to retain the property, and there are no plans for residential development or use.
- SWMU 2 has restricted access, and SWMU 9 is heavily overgrown, limiting access.
- No potable, domestic, or public water supply wells are within 1 mile downgradient of SWMU 2 or SWMU 9.

Three major aspects of chemical contamination and environmental fate and transport are considered to evaluate potential human health risks: (1) contaminants with toxic characteristics are found in environmental media and were released by human action, (2) potential exposure points exist, and (3) human receptors have the potential to be present at the point of exposure. Risk is a function of both toxicity and exposure. If any one of these factors is absent for a site, the exposure route is incomplete, and no potential risks are considered to exist for human receptors via that exposure route.

None of the PFAS were detected in groundwater at concentrations exceeding risk-based PSLs. Therefore, all detected concentrations of analyzed PFAS in groundwater are within acceptable risk-based concentrations for a residential scenario (i.e., for unrestricted land use), and no remedial action of groundwater for PFAS is required for unrestricted use for protection of human health.

6.2 Recommendations

The analytic approach in the SAP (Tetra Tech, 2020) described how the chemical data will be used in decision making. The Decision Rule states, “If validated groundwater concentrations of PFAS are detected in any sample, convene the Project Team to

develop a plan to delineate the nature and extent of PFAS as required by Navy Policy (NAVFAC, 2017); otherwise, recommend no further action at this time for PFAS."

Validated groundwater concentrations of PFAS were detected in excess of reporting limits. However, because the detected concentrations of PFOA, PFOS, and PFBS in groundwater at SWMU 2 and SWMU 9 are less than PSLs, LUCs prohibit the use of the groundwater, and there is a lack of human exposure to groundwater, NFA is recommended.

At the time this SI report was produced, no USEPA Tier 2 or Tier 3 toxicity values were available for PFAS other than PFOA, PFOS, and PFBS. If USEPA develops Tier 2 or Tier 3 toxicity values for additional PFAS, the data in this report should be re-evaluated.

Similarly, no USEPA values protective of ecological receptors are available. If screening levels for ecological receptors are developed by USEPA in the future, ecological risk exposure pathways should be evaluated.

7.0 References

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Tetra Tech, 2020. *Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Potential Sources of Per- and Polyfluoroalkyl Substances, Naval Support Activity Mid-South, Millington, Tennessee.* January.

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APPENDIX A

SITE INSPECTION FIELD DOCUMENTATION

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Tetra Tech Inc
1500 CityWest Blvd. Suite 1000
Houston TX 77042
Telephone: 832-251-5160
Fax: 713-784-2962

WELL NUMBER 009TW01

CLIENT US NAVY
PROJECT NAME NSA Mid South
PROJECT NUMBER SE180382
PROJECT LOCATION SWMU 9
DATE STARTED 4/6/20 **COMPLETED** 4/6/20
GROUND ELEVATION 179.27 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Cascade
GROUND WATER LEVELS:
DRILLING METHOD Rotosonic with continuous 5 foot core barrell sampling
AT TIME OF DRILLING 30.00 ft / Elev 149.27 ft
LOGGED BY Cory O'Brien **CHECKED BY** Larry Basilio
AT END OF DRILLING 3.30 ft / Elev 175.97 ft
NOTES Converted from borehole 009TW01, N 382417.74 E 813510.68
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				Casing Top Elev: 180.77 (ft)
		GM	(GM) GRAVEL, yellowish orange, angular to subangluar, loose.	
			2.0 177.3	
	1	ML	(ML) SILT, light gray, trace sand, soft, dry.	
5				
	2			
			9.0 170.3	
10			(ML) SILT, light brown, trace sand, medium stiff, dry, hematite nodules.	
	3	ML		
15				
	4			
			17.0 162.3	
20			(ML) SILT, greenish gray, trace sand, soft, damp.	
	5	ML		Haliburton Hole plug 3/8 Bentonite chips
25				

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Tetra Tech Inc
1500 CityWest Blvd. Suite 1000
Houston TX 77042
Telephone: 832-251-5160
Fax: 713-784-2962

WELL NUMBER 009TW01

CLIENT US NAVY **PROJECT NAME** NSA Mid South

PROJECT NUMBER SE180382 **PROJECT LOCATION** SWMU 9

DEPTH (ft)	SAMPLE TYPE NUMBER		GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25				(ML) SILT, greenish gray, trace sand, soft, damp. *(continued)*	
	6	ML			
30				30.0 ▽ 149.3	
				(MH) SANDY SILT, greenish gray, soft, small bivalves and other organic material.	20-40 Gillbrand Industrial Sand 0.010" slot x 10'
	7	MH			
35				35.0 144.3	

Bottom of borehole at 35.0 feet.

Tetra Tech Inc
1500 CityWest Blvd. Suite 1000
Houston TX 77042
Telephone: 832-251-5160
Fax: 713-784-2962

WELL NUMBER 009TW02

CLIENT US NAVY
PROJECT NAME NSA Mid South
PROJECT NUMBER SE180382
PROJECT LOCATION SWMU 9
DATE STARTED 4/6/20 **COMPLETED** 4/6/20
GROUND ELEVATION 178.64 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Cascade
GROUND WATER LEVELS:
DRILLING METHOD Rotosonic with continuous 5 foot core barrell sampling
AT TIME OF DRILLING 18.00 ft / Elev 160.64 ft
LOGGED BY Cory O'Brien **CHECKED BY** Larry Basilio
AT END OF DRILLING 17.37 ft / Elev 161.27 ft
NOTES Converted from borehole 009TW02, N 383177.80 E 814087.22
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0				Casing Top Elev: 181.76 (ft)
	1	ML	(ML) SILT, tan, massive.	
5				
	2		8.0 170.6	
		ML	(ML) SILT, brown, trace sand, hematite nodules <1mm.	
10			10.0 168.6	
		GM	(GM) GRAVEL, brown, angular to subrounded, loose.	
	3		11.0 167.6	
		ML	(ML) SILT, brown with gray mottles.	
15				
	4		18.0 160.6	
20			(SM) SILT to SANDY SILT, gray, wet.	Haliburton Hole plug 3/8 Bentonite chips
	5	SM		
25			25.0 153.6	

(Continued Next Page)

Tetra Tech Inc
1500 CityWest Blvd. Suite 1000
Houston TX 77042
Telephone: 832-251-5160
Fax: 713-784-2962

WELL NUMBER 009TW02

CLIENT US NAVY **PROJECT NAME** NSA Mid South

PROJECT NUMBER SE180382 **PROJECT LOCATION** SWMU 9

DEPTH (ft)	SAMPLE TYPE NUMBER		GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
25					
	6	SM		(SM) SILT , gray, with sand, wet.	0.010" slot x 10'
30				30.0 148.6	20-40 Gillbrand Industrial Sand

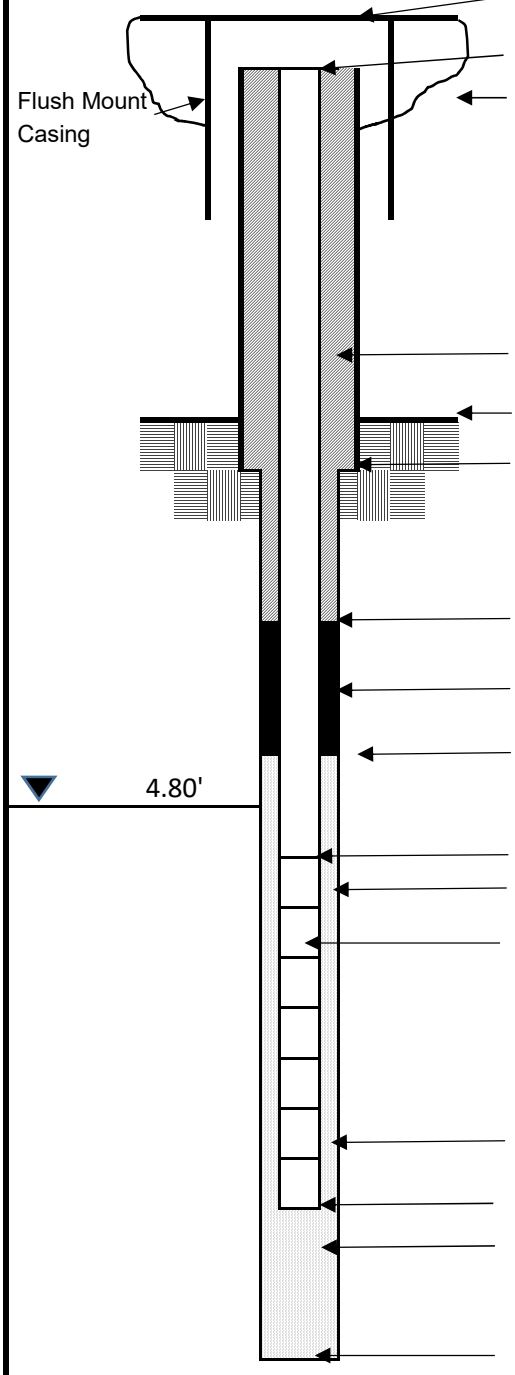
Bottom of borehole at 30.0 feet.

TETRA TECH

Well No. 009TW01

MONITORING WELL CONSTRUCTION SHEET
OVERBURDEN / BEDROCK - FLUSH MOUNT

Project Name: NSA Mid South	Drilling Co.: Cascade	Boring No.: 009TW01
Project No: SE180382	Driller: Fred Dorse	Date Completed:04-06-2020
Site Name: SWMU 09	Drilling Method: Sonic	Northing:382417.74
Geologist: Cory O'Brien	Dev. Method: Pump / Surge	Easting:813510.68



Elevation / Height Top of Flush Mount Casing: NA /

Elevation / Depth Top of Riser: 1.5' /

Type of Surface Seal: NA

Type of Protective Casing: Temp Well

I.D. of Protective Casing: NA

Borehole Diameter: 6''

Type of Riser and I.D.: Schedule 40 PVC - 2 inch

Type of Backfill: NA

Elevation / Depth Top of Rock: NA / NA

Depth and Diameter of Surface Casing: NA

Elevation / Depth of Seal: / 19'

Type of Seal: Haliburton Hole plug 3/8 Bentonite chips

Elevation / Depth Top of Filter Pack: / 23'

Elevation / Depth Top of Screen: / 25'

Diameter of Hole in Bedrock: NA

Type of Screen and I.D.: Schedule 40 PVC - 2 inch

Slot Size and Length: 0.010" slot x 10'

Type of Filter Pack: 20-40 Gillbrand Industrial Sand

Elevation / Depth Bottom of Screen: / 35'

Elevation / Depth Bottom of Filter Pack: / 35'

Type of Backfill Below Filter Pack: NA

Elevation / Depth Bottom of Hole: / 35'

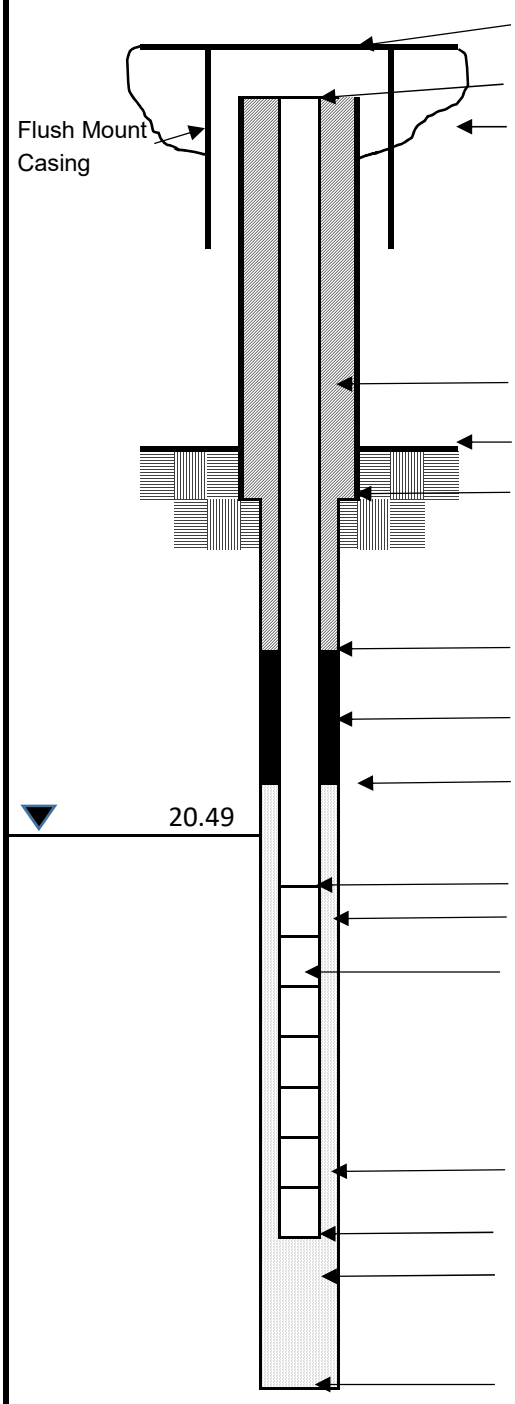
Not To Scale

TETRA TECH

Well No. 009TW02

MONITORING WELL CONSTRUCTION SHEET
OVERBURDEN / BEDROCK - FLUSH MOUNT

Project Name: NSA Mid South	Drilling Co.: Cascade	Boring No.: 009TW02
Project No: SE180382	Driller: Fred Dorse	Date Completed:04-06-2020
Site Name: SWMU 09	Drilling Method: Sonic	Northing:383177.80
Geologist: Cory O'Brien	Dev. Method: Pump / Surge	Easting:814087.22



Not To Scale

Elevation / Height Top of Flush Mount Casing:	NA	/
Elevation / Depth Top of Riser:	3.12'	/
Type of Surface Seal:	NA	
Type of Protective Casing:	Temp Well	
I.D. of Protective Casing:	NA	
Borehole Diameter:	6''	
Type of Riser and I.D.:	Schedule 40 PVC - 2 inch	
Type of Backfill:	NA	
Elevation / Depth Top of Rock:	NA	/ NA
Depth and Diameter of Surface Casing:	NA	
Elevation / Depth of Seal:	/ 14'	
Type of Seal:	Haliburton Hole plug 3/8 Bentonite chips	
Elevation / Depth Top of Filter Pack:	/ 23.35'	
Elevation / Depth Top of Screen:	/ 20'	
Diameter of Hole in Bedrock:	NA	
Type of Screen and I.D.:	Schedule 40 PVC - 2 inch	
Slot Size and Length:	0.010" slot x 10'	
Type of Filter Pack:	20-40 Gillbrand Industrial Sand	
Elevation / Depth Bottom of Screen:	/ 30'	
Elevation / Depth Bottom of Filter Pack:	/ 30'	
Type of Backfill Below Filter Pack:	NA	
Elevation / Depth Bottom of Hole:	/ 30'	

TETRA TECH

MONITORING WELL DEVELOPMENT RECORD

Event: NSA Mid South April 2020
Project Site Name: SWMU 09
Project Number: SE180382

WELL INFORMATION:

Well No.:	009TW01	**Casing ID (in.):**	2"
Drilling Co.:	Cascade	**Depth to Bottom (ft.):**	35'
Date Installed:	4/6/2020	**Static Water Level Before (ft.):**	3.02'
Date Developed:	4/7/2020	**Static Water Level After (ft.):**	4.80'
Dev. Method:	Pump/Surge	**Screen Length (ft.):**	10'
Pump Type:	Submersible	**Specific Capacity:**	-
Developed By:	Cory O'Brien		

DEVELOPMENT DATA:

Time	Estimated Sediment Thickness (ft.)	Cumulative Water Volume (Gal.)	Water Level (ft. below TOC)	Temp. (C°)	pH (S.U.)	SC (mS/cm)	Turbidity (NTU)	Remarks: (odor, color, etc.)
8:20	-	0	5.17	18.83	7.12	0.127	3113 AU	Muddy, Brown
8:25	-	5	-	18.74	6.83	0.011	3486 AU	Muddy, Brown
8:40	-	10	-	18.95	6.88	0.825	1011 AU	Muddy, Brown
9:05	-	15	-	19.30	7.10	0.836	72	Cloudy
9:20	-	20	-	19.55	7.06	0.218	155	Cloudy
9:32	-	25	-	19.29	6.98	0.431	99	Cloudy
9:47	-	30	21.06	19.25	7.23	0.920	42	Cloudy
9:57	-	32	20.70	19.30	6.95	0.482	54	Cloudy

MONITORING WELL DEVELOPMENT RECORD

Event: NSA Mid South
Project Site Name: SWMU 09
Project Number: SE180382

WELL INFORMATION:

Well No.:	009TW02	**Casing ID (in.):**	2"
Drilling Co.:	Cascade	**Depth to Bottom (ft.):**	30'
Date Installed:	4/6/2020	**Static Water Level Before (ft.):**	17.81
Date Developed:	4/7/2020	**Static Water Level After (ft.):**	NA
Dev. Method:	Pump/Surge	**Screen Length (ft.):**	10'
Pump Type:	Submersible	**Specific Capacity:**	NA
Developed By:	Cory O'Brien		

DEVELOPMENT DATA:

Time	Estimated Sediment Thickness (ft.)	Cumulative Water Volume (Gal.)	Water Level (ft. below TOC)	Temp. (C°)	pH (S.U.)	SC (mS/cm)	Turbidity (NTU)	Remarks: (odor, color, etc.)
10:40	-	2	26'	19.17	8.05	0.197	Overrange	Very Muddy
Well went dry. Turned off pump and purged the water every 5 min untill 12:00. Approximatly 6 gallons of water was removed from the well.								

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: NSA Mid South April 2020
Project Site Name: SWMU 02
Project No.: SE180382

Sample ID:	002G02DA-040820	**Sampled By:**	Cory O'Brien
QA/QC Duplicate ID:	NA	**Sample Date:**	04/08/20
MS/MSD Collected:	YES (circled) NO	**Sample Time:**	1235

WELL INFORMATION:

Well ID :	002G02DA	**Purge Date:**	04/08/20
Well Diameter (in):	2"	**Static Water Level (ft-BTOR):**	7.56'
Top of Screen (ft-BTOR):	41'	**PID Monitor Reading:**	0.0
Bottom of Screen (ft-BTOR):	51'	**Purge Method:**	Low Flow - Peristaltic
Total Well Depth (ft-BTOR):	51'	**Sample Method:**	Low Flow - Peristaltic

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI 556	**Pump Controller:**	Geo pump
Turbidity Meter:	Lamotte 2020 WE		

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
1205	7.56	-	-	Start	Purge	-	-	-	-	-	-
1210	7.66	150	Clear	6.62	0.670	1.21	2.67	17.19	45.6	788	-
1215	7.71	150	Clear	6.60	0.669	0.96	1.25	17.16	36.6	786	-
1220	7.69	150	Clear	6.59	0.665	0.87	0.90	17.10	33.2	783	-
1225	7.72	150	Clear	6.58	0.666	0.78	0.82	17.16	31.6	783	-

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
1205	1225	20	3	6.58	0.666	0.78	0.82	17.16	31.6	783	-

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
PFAS		Cold 4°C	6	250 mL	HDPE	yes

OBSERVATIONS / NOTES:

Total Depth TOC: 52.92'

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: NSA Mid South April 2020
Project Site Name: SWMU 02
Project No.: SE180382

Sample ID:	002G05DA-040820	**Sampled By:**	Cory O'Brien
QA/QC Duplicate ID:	NA	**Sample Date:**	04/08/20
MS/MSD Collected:	YES (NO)	**Sample Time:**	1445

WELL INFORMATION:

Well ID :	002G05DA	**Purge Date:**	04/08/20
Well Diameter (in):	2"	**Static Water Level (ft-BTOR):**	10.10'
Top of Screen (ft-BTOR):	40.5'	**PID Monitor Reading:**	0.0
Bottom of Screen (ft-BTOR):	50.5'	**Purge Method:**	Low Flow - Peristaltic
Total Well Depth (ft-BTOR):	50.5'	**Sample Method:**	Low Flow - Peristaltic

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI 556	**Pump Controller:**	Geo pump
Turbidity Meter:	Lamotte 2020 WE		

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
1345	10.10	-	-	Start	Purge	-	-	-	-	-	-
1350	10.65	150	Lt. Brown	6.61	1.037	0.83	141.0	18.06	-93.8	1192	-
1355	10.69	150	Lt. Brown	6.68	1.059	2.83	101.1	18.78	-91.8	1202	-
1400	10.66	150	Cloudy	6.65	1.068	0.73	85.2	19.31	-94.6	1197	-
1405	10.66	150	Cloudy	6.64	1.078	0.62	75.3	19.69	-96.9	1200	-
1410	10.66	150	Cloudy	6.66	1.068	0.54	66.6	19.23	-97.0	1200	-
1415	10.66	150	Cloudy	6.64	1.066	0.46	56.8	19.24	-96.9	1195	-
1420	10.66	150	Cloudy	6.64	1.067	0.42	48.8	19.29	-97.0	1198	-
1425	10.66	150	Cloudy	6.64	1.069	0.42	50.4	19.37	-96.7	1199	-
1430	10.67	150	Cloudy	6.64	1.061	0.43	43.9	18.95	-95.5	1197	-
1435	10.67	150	Cloudy	6.64	1.065	0.40	35.4	18.16	-96.0	1198	-
1440	10.67	150	Cloudy	6.64	1.073	0.42	36.0	19.58	-95.7	1198	-

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
1345	1440	65	9.75	6.64	1.073	0.42	36	19.58	-95.7	1198	-

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
PFAS		Cold 4°C	2	250 mL	HDPE	yes

OBSERVATIONS / NOTES:

Sampled at 1445. Had to leave site due to security requirements to be out of the area by 1455 to lock the gate.
Total Depth TOC: 53.16'

Coordinates:	N	E	Signature(s):

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: NSA Mid South April 2020
Project Site Name: SWMU 09
Project No.: SE180382

Sample ID:	0009-MW1-040820	**Sampled By:**	Cory O'Brien
QA/QC Duplicate ID:	NA	**Sample Date:**	04/08/20
MS/MSD Collected:	YES NO	**Sample Time:**	10:30

WELL INFORMATION:

Well ID :	TW01	**Purge Date:**	04/08/20
Well Diameter (in):	2"	**Static Water Level (ft-BTOR):**	4.80'
Top of Screen (ft-BTOR):	25'	**PID Monitor Reading:**	0
Bottom of Screen (ft-BTOR):	35'	**Purge Method:**	Low Flow - Peristaltic
Total Well Depth (ft-BTOR):	35'	**Sample Method:**	Low Flow - Peristaltic

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI 556	**Pump Controller:**	Geo pump
Turbidity Meter:	Lamotte 2020 WE		

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
920	4.80	-	-	Start	Purge	-	-	-	-	-	-
925	5.64	150	Clear	6.91	0.748	1.23	14.10	18.36	-123.4	858	-
935	6.09	150	Clear	6.90	0.761	0.69	12.10	18.48	-127.6	869	-
940	6.41	150	Clear	6.90	0.760	0.54	6.94	18.36	-128.0	870	-
945	6.59	150	Clear	6.90	0.762	0.51	6.03	18.32	-125.1	873	-
950	6.74	150	Clear	6.90	0.766	0.48	6.27	18.44	-128.7	876	-
955	6.92	150	Clear	6.89	0.774	0.46	4.60	18.42	-127.7	885	-
1000	7.03	150	Clear	6.88	0.779	0.41	4.81	18.41	-132.5	892	-
1005	7.10	150	Clear	6.88	0.783	0.41	3.87	18.50	-130.1	894	-
1010	7.18	150	Clear	6.86	0.790	0.43	3.66	18.48	-121.3	903	-
1015	7.28	150	Clear	6.87	0.798	0.33	3.43	18.55	-122.7	910	-
1020	7.41	150	Clear	6.87	0.804	0.29	3.19	18.64	-118.5	915	-
1025	7.48	150	Clear	6.87	0.811	0.29	2.47	18.74	-122.3	922	-

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
920	1025	65	9.75	6.87	0.811	0.29	2.47	18.74	-122.3	922	-

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
PFAS		Cold 4°C	6	250 mL	HDPE	yes

OBSERVATIONS / NOTES:

Total Depth TOC: 37.01' Ground Surface: 38.52'

180.77 HAE

Coordinates:	N	E	Signature(s):
NAD 1983	382417.74	813510.68	

GROUNDWATER SAMPLE LOG SHEET

TETRA TECH

Event: NSA Mid South April 2020
Project Site Name: SWMU 09
Project No.: SE180382

Sample ID:	0009-MW2-040820	**Sampled By:**	Cory O'Brien
QA/QC Duplicate ID:	FD01-040820	**Sample Date:**	04/08/20
MS/MSD Collected:	YES (NO)	**Sample Time:**	845

WELL INFORMATION:

Well ID :	TW02	**Purge Date:**	04/08/20
Well Diameter (in):	2"	**Static Water Level (ft-BTOR):**	20.49'
Top of Screen (ft-BTOR):	20'	**PID Monitor Reading:**	0
Bottom of Screen (ft-BTOR):	30'	**Purge Method:**	Low Flow - Peristaltic
Total Well Depth (ft-BTOR):	30'	**Sample Method:**	Low Flow - Peristaltic

EQUIPMENT INFORMATION:

Water Quality Instrument:	YSI 556	**Pump Controller:**	Geo pump
Turbidity Meter:	Lamotte 2020 WE		

PURGE DATA:

Time (Hrs)	H_20 Level (ft-BTOR)	Flow mL / min.	Color	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
806	20.49	-	-	Start	Purge	-	-	-	-	-	-
811	22.41	250	Clear	7.53	0.420	2.71	14.0	18.57	29.3	479	-
816	23.32	250	Clear	7.58	0.422	2.57	14.3	18.63	20.3	481	-
821	23.96	200	Clear	7.61	0.426	2.51	13.5	18.72	14.8	484	-
826	24.44	200	Clear	7.61	0.431	2.56	16.1	18.58	13.4	492	-
831	24.89	200	Clear	7.61	0.440	2.50	31.1	18.55	12.6	502	-
836	25.17	200	Clear	7.61	0.447	2.59	32.9	18.67	13.6	510	-
841	25.39	200	Clear	7.61	0.455	2.65	35.9	18.85	13.4	516	-

FINAL PURGE / SAMPLE DATA:

Start Purge	End Purge	Total (min.)	Total Vol. (L.)	pH (S.U.)	S.C. (mS/cm)	DO (mg/L)	Turbidity (NTU)	Temp. (C°)	ORP (mV)	Salinity (ppt)	Other
806	841	35	6.5	7.61	0.455	2.65	35.9	18.85	13.4	516	-

ANALYSIS, PRESERVATION AND BOTTLE REQUIRMENTS

Analysis	Method	Preservative	Number	Vol.	Bottle Type	Collected
PFAS		Cold 4°C	4	250 mL	HDPE	yes

OBSERVATIONS / NOTES:

Total Depth TOC: 32.62' Ground Surface: 29.50'

181.76 HAE

Coordinates:	N	E	Signature(s):
NAD 1983	383117.8	814087.22	

APPENDIX B

WASTE DISPOSAL MANIFEST

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NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter) DG 2002706100

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CESQG

Manifest Document No.:

2. Page 1 of 1

3. Generator's Name and Mailing Address
Naval Support Activity Mid-South
5722 Integrity Drive. Bldg. 455
MILLINGTON TN 38054
4. Generator's Phone (901) 874-5367

Site Address : SAME

5. Transporter 1 Company Name: Clean Harbors Environmental Services, Inc.
6. US EPA ID Number: MAD039322250
A. State Transporter's ID
B. Transporter 1 Phone: (781) 792-5000

7. Transporter 2 Company Name
8. US EPA ID Number
C. State Transporter's ID
D. Transporter 2 Phone

9. Designated Facility Name and Site Address
Clean Harbors Chattanooga LLC
3300 Cummings Road
Chattanooga, TN 37419
10. US EPA ID Number: TND982141392
E. State Facility's ID
F. Facility's Phone: (423) 821-6926

11. WASTE DESCRIPTION	Containers No.	Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. NOT REGULATED BY DOT, (CONTAMINATED SOIL)	3	DM	900	P
b. NOT REGULATED BY DOT, (GROUNDWATER)	5	DM	400	P
c.				
d.				

GENERATOR

G. Additional Descriptions for Materials Listed Above
11a.CH2023220 3X55
11b.CH2023223 5X55

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY PHONE #: (800) 433-3718
GENERATOR: Naval Support Activity Mid-South

NON-HAZARDOUS WASTE

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: James Heldt
Signature:
Date: Month 06 Day 09 Year 20

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Steve Gafford
Signature:
Date: Month 6 Day 17 Year 20

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.
Printed/Typed Name: Chris White
Signature:
Date: Month 6 Day 19 Year 20

APPENDIX C

DATA TABLES AND ANALYTICAL RESULTS

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TABLE C-1

REVISION 0
SEPTEMBER 2020

ANALYTICAL RESULTS
SWMUs 2 AND 9
NSA MID-SOUTH
MILLINGTON, TENNESSEE

LOCATION	002G02DA	002G05DA	009W0001	009W0002	009W0002	009W0002	QC	QC	QC
SAMPLE ID	002G02DA-040820	002G05DA-040820	009MW01-040820	009MW02-040820	009MW02-040820-AVG	009MW02-040820-D	009MW01-FB-040820	009MW02-EB-04082020	SB01-040820
SAMPLE DATE	20200408	20200408	20200408	20200408	20200408	20200408	20200408	20200408	20200408
MATRIX	GW	GW	GW	GW	GW	GW	QC	QC	SOURCE WATER
POLYFLUOROALKYL SUBSTANCES (NG/L)									
11CL-PF3OUDS	0.47 U	0.45 U	0.45 U	0.48 U	0.48 U	0.48 U	0.48 U	0.45 U	0.42 U
4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)	0.94 U	0.89 U	0.91 U	0.96 U	0.96 U	0.96 U	0.96 U	0.91 U	0.85 U
9CL-PF3ONS	0.94 U	0.89 U	0.91 U	0.96 U	0.96 U	0.96 U	0.96 U	0.91 U	0.85 U
HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)	0.47 U	0.45 U	0.45 U	0.48 U	0.48 U	0.48 U	0.48 U	0.45 U	0.42 U
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)	0.94 U	0.89 UJ	0.91 U	0.96 U	0.96 U	0.96 U	0.96 U	0.91 U	0.85 U
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)	0.94 U	0.89 U	0.91 U	0.96 U	0.96 U	0.96 U	0.96 U	0.91 U	0.85 U
PENTADECAFLUOROOCTANOIC ACID (PFOA)	0.85 J	1.42 J	1.36 U	1.44 U	1.44 U	1.44 U	1.44 U	1.36 U	1.27 U
PERFLUOROBUTANESULFONIC ACID (PFBS)	3.31 J	2.71 J	0.48 J	0.55 J	0.57	0.59 J	0.48 U	0.45 U	0.42 U
PERFLUORODECANOIC ACID (PFDA)	0.47 U	0.45 U	0.45 U	0.48 U	0.48 U	0.48 U	0.48 U	0.45 U	0.42 U
PERFLUORODODECANOIC ACID (PFDOA)	0.47 UJ	0.45 UJ	0.45 UJ	0.48 U	0.48 U	0.48 U	0.48 U	0.45 U	0.42 U
PERFLUOROHEPTANOIC ACID (PFHPA)	1.02 J	0.89 U	0.91 U	0.34 J	0.305	0.27 J	0.96 U	0.91 U	0.85 U
PERFLUOROHEXANESULFONIC ACID (PFHXS)	7.72	1 J	0.36 U	2.93 J	2.945	2.96 J	0.38 U	0.36 U	0.34 U
PERFLUOROHEXANOIC ACID (PFHXA)	3.24 J	2.67 J	1.36 U	0.59 J	0.575	0.56 J	1.44 U	1.36 U	1.27 U
PERFLUORONONANOIC ACID (PFNA)	0.42 J	0.89 U	0.91 U	0.96 U	0.96 U	0.96 U	0.96 U	0.91 U	0.85 U
PERFLUOROOCTANESULFONIC ACID (PFOS)	1.01 J	0.89 U	0.91 J	2.77 J	2.675	2.58 J	0.96 U	0.91 U	0.85 U
PERFLUOROTETRADECANOIC ACID (PFTEA)	1.92 UJ	1.92 UX	1.82 UX	1.92 UJ	1.92 U	1.92 UJ	1.92 U	1.82 U	1.69 U
PERFLUOROTRIDECANOIC ACID (PFTRIA)	0.48 UJ	0.18 X	0.45 UX	0.48 UJ	0.48 U	0.48 UJ	0.48 U	0.45 U	0.42 U
PERFLUOROUNDECANOIC ACID (PFUNA)	0.47 U	0.45 U	0.45 U	0.48 U	0.48 U	0.48 U	0.48 U	0.45 U	0.42 U

TABLE C-2

STATISTICS
SWMUs 2 AND 9
NSA MID-SOUTH
MILLINGTON, TENNESSEE
PAGE 1 OF 1

Parameter	Frequency of Detection		Minimum Conc Detected	Maximum Conc Detected	Location of Maximum Concentration Detected	Sample of Maximum Concentration Detected	Minimum Conc ND	Maximum Conc ND	Average of Detected Results	Average of All Results	StdDev
	Number	Percent									
Polyfluorinated Alkyl Substances (ng/L)											
PENTADECAFLUOROOCTANOIC ACID (PFOA)	2/4	50	0.85 J	1.42 J	002G05DA	002G05DA-040820	1.36	1.44	1.135	0.9175	0.342770574
PERFLUOROBUTANESULFONIC ACID (PFBS)	4/4	100	0.48 J	3.31 J	002G02DA	002G02DA-040820	NULL	NULL	1.7675	1.7675	1.455938987
PERFLUOROHEPTANOIC ACID (PFHPA)	2/4	50	0.27 J	1.02 J	002G02DA	002G02DA-040820	0.89	0.91	0.6625	0.55625	0.316658991
PERFLUOROHEXANESULFONIC ACID (PFHXS)	3/4	75	1 J	7.72	002G02DA	002G02DA-040820	0.36	0.36	3.888333	2.96125	3.377761525
PERFLUOROHEXANOIC ACID (PFHXA)	3/4	75	0.56 J	3.24 J	002G02DA	002G02DA-040820	1.36	1.36	2.161666	1.79125	1.364455783
PERFLUORONONANOIC ACID (PFNA)	1/4	25	0.42 J	0.42 J	002G02DA	002G02DA-040820	0.89	0.96	0.42	0.45	0.024832774
PERFLUOROOCTANESULFONIC ACID (PFOS)	3/4	75	0.91 J	2.77 J	009W0002	009MW02-040820	0.89	0.89	1.531666	1.26	0.974927348

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration.
1/2 the detection limit was used for B qualified data.
J - estimated value
ng/L - nanograms per liter

Associated Samples:

sample_id	*sacode*	*qc_type*
002G02DA-040820	*NORMAL*	*NM*
002G05DA-040820	*NORMAL*	*NM*
009MW01-040820	*NORMAL*	*NM*
009MW02-040820	*ORIG*	*NM*
009MW02-040820-D	*DUP*	*FD*

APPENDIX D

DATA VALIDATION REPORT

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TETRA TECH

INTERNAL CORRESPONDENCE

TO: **L. BASILIO** **DATE:** **MAY 21, 2020**

FROM: **TERRI L. SOLOMON** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAVAL SUPPORT ACTIVITY (NSA), MID-SOUTH
MILLINGTON, TENNESSEE
SAMPLE DELIVERY GROUPS (SDGs) 20-0470; 20-0493

SAMPLES: 5/Aqueous

002G02DA-040820 002G05DA-040820
009MW01-040820 009MW02-040820
FD01-040820

1/Field Blank & 1/Source Water Blank

009MW01-FB-040820 SB01-040820

1/Equipment Blank

009MW02-EB-04082020

Overview

The sample set for NSA Mid-South, SDGs 20-0470 and 20-0493, consisted of five (5) aqueous samples, one (1) field blank sample, (1) source water blank, and one (1) equipment blank. All samples were analyzed for polyfluoroalkyl substances (PFAS). One (1) field duplicate pair, 009MW02-040820 / FD01-040820, was included in this SDG.

The samples were collected by Tetra Tech, Inc. on April 8, 2020 and analyzed by Battelle Laboratory. All analyses were conducted in accordance with Department of Defense ((DOD)/Department of Energy (DOE) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1.1, PFAS using LC/MS/MS Appendix B Table B-15 (February 2018). The data contained in these SDGs were validated via EPA Stage 4 with regard to the following parameters:

* • Data completeness
* • Hold times/Sample Preservation
* • Mass Calibration
* • LC/MS/MS System Tuning and Performance
* • Mass Spectral Acquisition Rate
* • Instrument Sensitivity Check
* • Ion Transition Check
* • Initial/Continuing Calibrations
* • Laboratory Instrument / Preparation/ Field Blank Results
• Extraction Internal Standard Recoveries
* • Injection Internal Standard Recoveries
• Laboratory Control Sample Results

- Matrix Spike / Matrix Spike Duplicate Recoveries
* • Field Duplicate Precision
* • Compound Identification
* • Compound Quantitation
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Qualified analytical results are presented in Appendix A, results as reported by the laboratory are presented in Appendix B, and documentation supporting these findings is presented in Appendix C.

PFAS

The labeled extraction internal standard recovery for 13C2-PFTeDA was below the 20% quality control limit for sample 009MW01-040820 and 002G05DA-040820 . The laboratory re-prepared and reanalyzed the sample with similar results. The reanalyzed sample 009MW01-040820 results for perfluorotetradecanoic acid (PFTeDA) and perfluorotridecanoic acid (PFTrDA) were reported and validated due to other quality control noncompliances in the original analyses. Sample 002G05DA-040820 results for perfluorotetradecanoic acid (PFTeDA) and perfluorotridecanoic acid (PFTrDA) were reported and validated. The nondetected results reported for PFTeDA and PFTrDA in the affected samples were qualified (UX) and (X), respectively.

The following labeled extraction internal standard recoveries were below the 50% quality control limits but greater than 20%:

Sample	Labeled Standard	Compounds Affected	Data Qualification
009MW02-040820	13C2-PFTeDA	PFTeDA	UJ; estimated nondetect
		PFTrDA	UJ; estimated nondetect
009MW01-040820	13C2-PFDoA	PFDoA(1)	UJ; estimated nondetect
002G02DA-040820	13C2-PFDoA	PFDoA	UJ; estimated nondetect
	13C2-PFTeDA	PFTeDA	UJ; estimated nondetect
		PFTrDA	UJ; estimated nondetect
002G05DA-040820	13C2-PFDoA	PFDoA	UJ; estimated nondetect
	d5-EtFOSAA	NEFOSA(2)	UJ; estimated nondetect
FD01-040820	13C2-PFTeDA	PFTeDA	UJ; estimated nondetect
		PFTrDA	UJ; estimated nondetect

(1) PFDoA = Perfluorododecanoic acid
(2) NEFOSA = N-Ethylperfluorooctane sulfonamidoacetate

The laboratory control sample (LCS) percent recovery for PFTrDA was above the quality control limit for SDG 20-0470. The PFTrDA results for samples 002G02DA-040820 and 002G05DA-040820 were affected. The detected result reported for PFTrDA for sample 002G05DA-040820 was qualified with an “X” qualifier because of a low extraction internal standard recovery. No validation action was required for the nondetected result reported for PFTrDA for sample 002G02DA-040820.

Detected results reported below the limit of quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated, (J).

Additional Comments

SDG 20-0470 contained original analyses of samples 002G02DA-040820, 002G05DA-040820, 009MW01-040820, 009MW02-040820, FD01-040820. The laboratory reanalyzed all of these samples due to extracted internal standard recoveries outside the quality control limits. The reanalyzed sample internal standard recoveries were comparable to the original analyses with the following exceptions, 13C2-PFTeDA for samples 002G02DA-040820 and 002G05DA-040820. The PFTeDA and PFTrDA results for samples 002G02DA-040820 and 002G05DA-040820 were reported and validated from SDG 20-0470. All other PFAS results were

reported and validated from SDG 20-0493.

Non-detected results were reported to the limit of detection (LOD).

The laboratory uses a primary transition for the quantitation of a compound and a secondary transition for confirmation.

The matrix spike / matrix spike duplicate percent recoveries for PFTrDA were above the quality control limits for the original and reanalysis of sample 002G02DA-040820. No validation actions were required as the sample result reported for PFTrDA in the affected sample was nondetected.

The continuing calibration verification on 04/22/2020 at 17:05 had a percent recovery for 4,8-dioxa-3h-perfluorononanoic acid (ADONA) below the 70% quality control limit on the secondary transition. No validation actions were required as the secondary transition is not used for compound quantitation.

The continuing calibration verification on 04/22/2020 at 23:06 had a percent recovery for 9Cl-PF3ONS above the 130% quality control limit on the secondary transition. No validation actions were required as the secondary transition is not used for compound quantitation.

The result for perfluorooctanoic acid (PFOS) and the surrogate percent recovery for 13C8-PFOS were checked and verified in sample FD01-040820. The laboratory checked and verified the sample result for perfluorohexanesulfonic acid (PFHxS) for sample 002G02DA-040820 for SDGs 20-0470 and 20-0493. The result for pentadecafluorooctanoic acid (PFOA) for sample 002G05DA-040820 was checked and verified using a linear regression for the initial calibration.

Executive Summary

Laboratory Performance Issues: Several extracted internal standard recoveries were outside the quality control limits. One LCS percent recovery was outside the quality control limits.

Other Factors Affecting Data Quality: Detected results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the Department of Defense (DOD) documents entitled “Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis be QSM Table B-15” (May 2020), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", Version 5.1.1, Appendix B Table B-15 (February 2018). The text of this report has been formulated to address only those areas affecting data quality.

for Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A - Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

Appendix A

Qualified Analytical Results

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: SE180383	NSAMPLE	002G02DA-040820			002G05DA-040820		
SDG: 20-0470	LAB_ID	H4731-FS			H4732-FS		
FRACTION: PFAS	SAMP_DATE	4/8/2020			4/8/2020		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.92	UJ	N	1.92	UX	N
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.48	UJ	N	0.18	X	NP

PROJ_NO: SE180383	NSAMPLE	002G02DA-040820			002G05DA-040820			009MW01-040820			009MW01-FB-040820		
SDG: 20-0493	LAB_ID	H4731-FS1			H4732-FS1			H4730-FS1			H4729-FS1		
FRACTION: PFAS	SAMP_DATE	4/8/2020			4/8/2020			4/8/2020			4/8/2020		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
11CL-PF3OUDS		0.47	U		0.45	U		0.45	U		0.48	U	
4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)		0.94	U		0.89	U		0.91	U		0.96	U	
9CL-PF3ONS		0.94	U		0.89	U		0.91	U		0.96	U	
HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)		0.47	U		0.45	U		0.45	U		0.48	U	
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.94	U		0.89	UJ	N	0.91	U		0.96	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		0.94	U		0.89	U		0.91	U		0.96	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		0.85	J	P	1.42	J	P	1.36	U		1.44	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		3.31	J	P	2.71	J	P	0.48	J	P	0.48	U	
PERFLUORODECANOIC ACID (PFDA)		0.47	U		0.45	U		0.45	U		0.48	U	
PERFLUORODODECANOIC ACID (PFDOA)		0.47	UJ	N	0.45	UJ	N	0.45	UJ	N	0.48	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1.02	J	P	0.89	U		0.91	U		0.96	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		7.72			1	J	P	0.36	U		0.38	U	
PERFLUOROHEXANOIC ACID (PFHXA)		3.24	J	P	2.67	J	P	1.36	U		1.44	U	
PERFLUORONONANOIC ACID (PFNA)		0.42	J	P	0.89	U		0.91	U		0.96	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		1.01	J	P	0.89	U		0.91	J	P	0.96	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)								1.82	UX	N	1.92	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)								0.45	UX	N	0.48	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.47	U		0.45	U		0.45	U		0.48	U	

PROJ_NO: SE180383	NSAMPLE	009MW02-040820			009MW02-EB-04082020			FD01-040820			SB01-040820		
SDG: 20-0493	LAB_ID	H4728-FS1			H4727-FS1			H4734-FS1			H4733-FS1		
FRACTION: PFAS	SAMP_DATE	4/8/2020			4/8/2020			4/8/2020			4/8/2020		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							009MW02-040820					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
11CL-PF3OUDS		0.48	U		0.45	U		0.48	U		0.42	U	
4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)		0.96	U		0.91	U		0.96	U		0.85	U	
9CL-PF3ONS		0.96	U		0.91	U		0.96	U		0.85	U	
HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)		0.48	U		0.45	U		0.48	U		0.42	U	
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.96	U		0.91	U		0.96	U		0.85	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		0.96	U		0.91	U		0.96	U		0.85	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1.44	U		1.36	U		1.44	U		1.27	U	
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.55	J	P	0.45	U		0.59	J	P	0.42	U	
PERFLUORODECANOIC ACID (PFDA)		0.48	U		0.45	U		0.48	U		0.42	U	
PERFLUORODODECANOIC ACID (PFDOA)		0.48	U		0.45	U		0.48	U		0.42	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		0.34	J	P	0.91	U		0.27	J	P	0.85	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		2.93	J	P	0.36	U		2.96	J	P	0.34	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.59	J	P	1.36	U		0.56	J	P	1.27	U	
PERFLUORONONANOIC ACID (PFNA)		0.96	U		0.91	U		0.96	U		0.85	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		2.77	J	P	0.91	U		2.58	J	P	0.85	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		1.92	UJ	N	1.82	U		1.92	UJ	N	1.69	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.48	UJ	N	0.45	U		0.48	UJ	N	0.42	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.48	U		0.45	U		0.48	U		0.42	U	

Appendix B

Results as Reported by the Laboratory

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		009MW02-EB-04082020						
Battelle ID		H4727-FS1						
Sample Type		SA						
Collection Date		04/08/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		QC						
Sample Size		0.275						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	1.36 U	H4727-FS1(0)	1.000	4/22/2020	0.48	1.36	4.55
PFHpA	375-85-9	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.24	0.91	4.55
PFOA	335-67-1	1.36 U	H4727-FS1(0)	1.000	4/22/2020	0.46	1.36	4.55
PFNA	375-95-1	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.28	0.91	4.55
PFDA	335-76-2	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.13	0.45	4.55
PFUnA	2058-94-8	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.20	0.45	4.55
PFDoA	307-55-1	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.17	0.45	4.55
PFTrDA	72629-94-8	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.14	0.45	4.55
PFTeDA	376-06-7	1.82 U	H4727-FS1(0)	1.000	4/22/2020	0.66	1.82	4.55
NMeFOSAA	2355-31-9	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.32	0.91	4.55
NEtFOSAA	2991-50-6	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.45	0.91	4.55
PFBS	375-73-5	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.13	0.45	4.55
PFHxS	355-46-4	0.36 U	H4727-FS1(0)	1.000	4/22/2020	0.10	0.36	4.55
PFOS	1763-23-1	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.40	0.91	4.55
HFPO-DA	13252-13-6	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.23	0.45	4.55
Adona	919005-14-4	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.25	0.91	4.55
11Cl-PF3OUdS	763051-92-9	0.45 U	H4727-FS1(0)	1.000	4/22/2020	0.21	0.45	4.55
9Cl-PF3ONS	756426-58-1	0.91 U	H4727-FS1(0)	1.000	4/22/2020	0.25	0.91	4.55

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	009MW02-EB-04082020
Battelle ID	H4727-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C5-PFHxA	98	H4727-FS1(0)	4/22/2020
13C4-PFHpA	102	H4727-FS1(0)	4/22/2020
13C8-PFOA	103	H4727-FS1(0)	4/22/2020
13C9-PFNA	104	H4727-FS1(0)	4/22/2020
13C6-PFDA	102	H4727-FS1(0)	4/22/2020
13C7-PFUnA	102	H4727-FS1(0)	4/22/2020
13C2-PFDoA	101	H4727-FS1(0)	4/22/2020
13C2-PFTeDA	120	H4727-FS1(0)	4/22/2020
d3-MeFOSAA	97	H4727-FS1(0)	4/22/2020
d5-EtFOSAA	96	H4727-FS1(0)	4/22/2020
13C3-PFBS	99	H4727-FS1(0)	4/22/2020
13C3-PFHxS	105	H4727-FS1(0)	4/22/2020
13C8-PFOS	101	H4727-FS1(0)	4/22/2020
13C3-HFPO-DA	90	H4727-FS1(0)	4/22/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		009MW02-040820						
Battelle ID		H4728-FS1						
Sample Type		SA						
Collection Date		04/08/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		GW						
Sample Size		0.260						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.59 J	H4728-FS1(0)	1.000	4/22/2020	0.51	1.44	4.81
PFHpA	375-85-9	0.34 J	H4728-FS1(0)	1.000	4/22/2020	0.25	0.96	4.81
PFOA	335-67-1	1.44 U	H4728-FS1(0)	1.000	4/22/2020	0.49	1.44	4.81
PFNA	375-95-1	0.96 U	H4728-FS1(0)	1.000	4/22/2020	0.30	0.96	4.81
PFDA	335-76-2	0.48 U	H4728-FS1(0)	1.000	4/22/2020	0.13	0.48	4.81
PFUnA	2058-94-8	0.48 U	H4728-FS1(0)	1.000	4/22/2020	0.21	0.48	4.81
PFDoA	307-55-1	0.48 U	H4728-FS1(0)	1.000	4/22/2020	0.18	0.48	4.81
PFTrDA	72629-94-8	0.48 U	H4728-FS1(0)	1.000	4/22/2020	0.14	0.48	4.81
PFTeDA	376-06-7	1.92 U	H4728-FS1(0)	1.000	4/22/2020	0.70	1.92	4.81
NMeFOSAA	2355-31-9	0.96 U	H4728-FS1(0)	1.000	4/22/2020	0.34	0.96	4.81
NEtFOSAA	2991-50-6	0.96 U	H4728-FS1(0)	1.000	4/22/2020	0.48	0.96	4.81
PFBS	375-73-5	0.55 J	H4728-FS1(0)	1.000	4/22/2020	0.13	0.48	4.81
PFHxS	355-46-4	2.93 J	H4728-FS1(0)	1.000	4/22/2020	0.11	0.38	4.81
PFOS	1763-23-1	2.77 J	H4728-FS1(0)	1.000	4/22/2020	0.42	0.96	4.81
HFPO-DA	13252-13-6	0.48 U	H4728-FS1(0)	1.000	4/22/2020	0.24	0.48	4.81
Adona	919005-14-4	0.96 U	H4728-FS1(0)	1.000	4/22/2020	0.26	0.96	4.81
11Cl-PF3OUdS	763051-92-9	0.48 U	H4728-FS1(0)	1.000	4/22/2020	0.22	0.48	4.81
9Cl-PF3ONS	756426-58-1	0.96 U	H4728-FS1(0)	1.000	4/22/2020	0.26	0.96	4.81

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	009MW02-040820
Battelle ID	H4728-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	104		H4728-FS1(0)	4/22/2020
13C4-PFHpA	107		H4728-FS1(0)	4/22/2020
13C8-PFOA	100		H4728-FS1(0)	4/22/2020
13C9-PFNA	98		H4728-FS1(0)	4/22/2020
13C6-PFDA	99		H4728-FS1(0)	4/22/2020
13C7-PFUnA	89		H4728-FS1(0)	4/22/2020
13C2-PFDoA	62		H4728-FS1(0)	4/22/2020
13C2-PFTeDA	28	N	H4728-FS1(0)	4/22/2020
d3-MeFOSAA	73		H4728-FS1(0)	4/22/2020
d5-EtFOSAA	70		H4728-FS1(0)	4/22/2020
13C3-PFBS	104		H4728-FS1(0)	4/22/2020
13C3-PFHxS	103		H4728-FS1(0)	4/22/2020
13C8-PFOS	86		H4728-FS1(0)	4/22/2020
13C3-HFPO-DA	95		H4728-FS1(0)	4/22/2020

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		009MW01-FB-040820						
Battelle ID		H4729-FS1						
Sample Type		SA						
Collection Date		04/08/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		QC						
Sample Size		0.260						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	1.44 U	H4729-FS1(0)	1.000	4/22/2020	0.51	1.44	4.81
PFHpA	375-85-9	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.25	0.96	4.81
PFOA	335-67-1	1.44 U	H4729-FS1(0)	1.000	4/22/2020	0.49	1.44	4.81
PFNA	375-95-1	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.30	0.96	4.81
PFDA	335-76-2	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.13	0.48	4.81
PFUnA	2058-94-8	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.21	0.48	4.81
PFDoA	307-55-1	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.18	0.48	4.81
PFTrDA	72629-94-8	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.14	0.48	4.81
PFTeDA	376-06-7	1.92 U	H4729-FS1(0)	1.000	4/22/2020	0.70	1.92	4.81
NMeFOSAA	2355-31-9	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.34	0.96	4.81
NEtFOSAA	2991-50-6	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.48	0.96	4.81
PFBS	375-73-5	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.13	0.48	4.81
PFHxS	355-46-4	0.38 U	H4729-FS1(0)	1.000	4/22/2020	0.11	0.38	4.81
PFOS	1763-23-1	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.42	0.96	4.81
HFPO-DA	13252-13-6	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.24	0.48	4.81
Adona	919005-14-4	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.26	0.96	4.81
11Cl-PF3OUdS	763051-92-9	0.48 U	H4729-FS1(0)	1.000	4/22/2020	0.22	0.48	4.81
9Cl-PF3ONS	756426-58-1	0.96 U	H4729-FS1(0)	1.000	4/22/2020	0.26	0.96	4.81

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	009MW01-FB-040820
Battelle ID	H4729-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C5-PFHxA	101	H4729-FS1(0)	4/22/2020
13C4-PFHpA	115	H4729-FS1(0)	4/22/2020
13C8-PFOA	110	H4729-FS1(0)	4/22/2020
13C9-PFNA	113	H4729-FS1(0)	4/22/2020
13C6-PFDA	105	H4729-FS1(0)	4/22/2020
13C7-PFUnA	106	H4729-FS1(0)	4/22/2020
13C2-PFDoA	103	H4729-FS1(0)	4/22/2020
13C2-PFTeDA	125	H4729-FS1(0)	4/22/2020
d3-MeFOSAA	99	H4729-FS1(0)	4/22/2020
d5-EtFOSAA	92	H4729-FS1(0)	4/22/2020
13C3-PFBS	106	H4729-FS1(0)	4/22/2020
13C3-PFHxS	114	H4729-FS1(0)	4/22/2020
13C8-PFOS	109	H4729-FS1(0)	4/22/2020
13C3-HFPO-DA	100	H4729-FS1(0)	4/22/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	009MW01-040820
Battelle ID	H4730-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	GW
Sample Size	0.275
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)		Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	1.36	U	H4730-FS1(0)	1.000	4/22/2020	0.48	1.36	4.55
PFHpA	375-85-9	0.91	U	H4730-FS1(0)	1.000	4/22/2020	0.24	0.91	4.55
PFOA	335-67-1	1.36	U	H4730-FS1(0)	1.000	4/22/2020	0.46	1.36	4.55
PFNA	375-95-1	0.91	U	H4730-FS1(0)	1.000	4/22/2020	0.28	0.91	4.55
PFDA	335-76-2	0.45	U	H4730-FS1(0)	1.000	4/22/2020	0.13	0.45	4.55
PFUnA	2058-94-8	0.45	U	H4730-FS1(0)	1.000	4/22/2020	0.20	0.45	4.55
PFDoA	307-55-1	0.45	U	H4730-FS1(0)	1.000	4/22/2020	0.17	0.45	4.55
PFTrDA	72629-94-8	0.45	U	H4730-FS1(0)	1.000	4/22/2020	0.14	0.45	4.55
PFTeDA	376-06-7	1.82	U	H4730-FS1(0)	1.000	4/22/2020	0.66	1.82	4.55
NMeFOSAA	2355-31-9	0.91	U	H4730-FS1(0)	1.000	4/22/2020	0.32	0.91	4.55
NEtFOSAA	2991-50-6	0.91	U	H4730-FS1(0)	1.000	4/22/2020	0.45	0.91	4.55
PFBS	375-73-5	0.48	J	H4730-FS1(0)	1.000	4/22/2020	0.13	0.45	4.55
PFHxS	355-46-4	0.36	U	H4730-FS1(0)	1.000	4/22/2020	0.10	0.36	4.55
PFOS	1763-23-1	0.91	J	H4730-FS1(0)	1.000	4/22/2020	0.40	0.91	4.55
HFPO-DA	13252-13-6	0.45	U	H4730-FS1(0)	1.000	4/22/2020	0.23	0.45	4.55
Adona	919005-14-4	0.91	U	H4730-FS1(0)	1.000	4/22/2020	0.25	0.91	4.55
11Cl-PF3OUdS	763051-92-9	0.45	U	H4730-FS1(0)	1.000	4/22/2020	0.21	0.45	4.55
9Cl-PF3ONS	756426-58-1	0.91	U	H4730-FS1(0)	1.000	4/22/2020	0.25	0.91	4.55

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	009MW01-040820
Battelle ID	H4730-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	96		H4730-FS1(0)	4/22/2020
13C4-PFHpA	104		H4730-FS1(0)	4/22/2020
13C8-PFOA	93		H4730-FS1(0)	4/22/2020
13C9-PFNA	85		H4730-FS1(0)	4/22/2020
13C6-PFDA	87		H4730-FS1(0)	4/22/2020
13C7-PFUnA	71		H4730-FS1(0)	4/22/2020
13C2-PFDoA	42	N	H4730-FS1(0)	4/22/2020
13C2-PFTeDA	9	N	H4730-FS1(0)	4/22/2020
d3-MeFOSAA	70		H4730-FS1(0)	4/22/2020
d5-EtFOSAA	54		H4730-FS1(0)	4/22/2020
13C3-PFBS	116		H4730-FS1(0)	4/22/2020
13C3-PFHxS	122		H4730-FS1(0)	4/22/2020
13C8-PFOS	86		H4730-FS1(0)	4/22/2020
13C3-HFPO-DA	92		H4730-FS1(0)	4/22/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		002G02DA-040820						
Battelle ID		H4731-FS1						
Sample Type		SA						
Collection Date		04/08/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		GW						
Sample Size		0.265						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	3.24 J	H4731-FS1(0)	1.000	4/22/2020	0.50	1.42	4.72
PFHpA	375-85-9	1.02 J	H4731-FS1(0)	1.000	4/22/2020	0.25	0.94	4.72
PFOA	335-67-1	0.85 J	H4731-FS1(0)	1.000	4/22/2020	0.48	1.42	4.72
PFNA	375-95-1	0.42 J	H4731-FS1(0)	1.000	4/22/2020	0.29	0.94	4.72
PFDA	335-76-2	0.47 U	H4731-FS1(0)	1.000	4/22/2020	0.13	0.47	4.72
PFUnA	2058-94-8	0.47 U	H4731-FS1(0)	1.000	4/22/2020	0.21	0.47	4.72
PFDoA	307-55-1	0.47 U	H4731-FS1(0)	1.000	4/22/2020	0.18	0.47	4.72
PFTrDA	72629-94-8	0.23 J	H4731-FS1(0)	1.000	4/22/2020	0.14	0.47	4.72
PFTeDA	376-06-7	1.89 U	H4731-FS1(0)	1.000	4/22/2020	0.69	1.89	4.72
NMeFOSAA	2355-31-9	0.94 U	H4731-FS1(0)	1.000	4/22/2020	0.33	0.94	4.72
NEtFOSAA	2991-50-6	0.94 U	H4731-FS1(0)	1.000	4/22/2020	0.47	0.94	4.72
PFBS	375-73-5	3.31 J	H4731-FS1(0)	1.000	4/22/2020	0.13	0.47	4.72
PFHxS	355-46-4	7.72	H4731-FS1(0)	1.000	4/22/2020	0.10	0.38	4.72
PFOS	1763-23-1	1.01 J	H4731-FS1(0)	1.000	4/22/2020	0.42	0.94	4.72
HFPO-DA	13252-13-6	0.47 U	H4731-FS1(0)	1.000	4/22/2020	0.24	0.47	4.72
Adona	919005-14-4	0.94 U	H4731-FS1(0)	1.000	4/22/2020	0.25	0.94	4.72
11Cl-PF3OUdS	763051-92-9	0.47 U	H4731-FS1(0)	1.000	4/22/2020	0.22	0.47	4.72
9Cl-PF3ONS	756426-58-1	0.94 U	H4731-FS1(0)	1.000	4/22/2020	0.25	0.94	4.72

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G02DA-040820
Battelle ID	H4731-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	92		H4731-FS1(0)	4/22/2020
13C4-PFHpA	103		H4731-FS1(0)	4/22/2020
13C8-PFOA	101		H4731-FS1(0)	4/22/2020
13C9-PFNA	98		H4731-FS1(0)	4/22/2020
13C6-PFDA	95		H4731-FS1(0)	4/22/2020
13C7-PFUnA	70		H4731-FS1(0)	4/22/2020
13C2-PFDoA	39	N	H4731-FS1(0)	4/22/2020
13C2-PFTeDA	6	N	H4731-FS1(0)	4/22/2020
d3-MeFOSAA	77		H4731-FS1(0)	4/22/2020
d5-EtFOSAA	62		H4731-FS1(0)	4/22/2020
13C3-PFBS	112		H4731-FS1(0)	4/22/2020
13C3-PFHxS	130		H4731-FS1(0)	4/22/2020
13C8-PFOS	103		H4731-FS1(0)	4/22/2020
13C3-HFPO-DA	84		H4731-FS1(0)	4/22/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G05DA-040820
Battelle ID	H4732-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	GW
Sample Size	0.280
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	2.67 J	H4732-FS1(0)	1.000	4/22/2020	0.47	1.34	4.46
PFHpA	375-85-9	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.23	0.89	4.46
PFOA	335-67-1	1.42 J	H4732-FS1(0)	1.000	4/22/2020	0.46	1.34	4.46
PFNA	375-95-1	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.28	0.89	4.46
PFDA	335-76-2	0.45 U	H4732-FS1(0)	1.000	4/22/2020	0.13	0.45	4.46
PFUnA	2058-94-8	0.45 U	H4732-FS1(0)	1.000	4/22/2020	0.20	0.45	4.46
PFDoA	307-55-1	0.45 U	H4732-FS1(0)	1.000	4/22/2020	0.17	0.45	4.46
PFTrDA	72629-94-8	1.26 J	H4732-FS1(0)	1.000	4/22/2020	0.13	0.45	4.46
PFTeDA	376-06-7	0.91 J	H4732-FS1(0)	1.000	4/22/2020	0.65	1.79	4.46
NMeFOSAA	2355-31-9	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.31	0.89	4.46
NEtFOSAA	2991-50-6	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.45	0.89	4.46
PFBS	375-73-5	2.71 J	H4732-FS1(0)	1.000	4/22/2020	0.13	0.45	4.46
PFHxS	355-46-4	1.00 J	H4732-FS1(0)	1.000	4/22/2020	0.10	0.36	4.46
PFOS	1763-23-1	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.39	0.89	4.46
HFPO-DA	13252-13-6	0.45 U	H4732-FS1(0)	1.000	4/22/2020	0.22	0.45	4.46
Adona	919005-14-4	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.24	0.89	4.46
11Cl-PF3OUdS	763051-92-9	0.45 U	H4732-FS1(0)	1.000	4/22/2020	0.21	0.45	4.46
9Cl-PF3ONS	756426-58-1	0.89 U	H4732-FS1(0)	1.000	4/22/2020	0.24	0.89	4.46

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G05DA-040820
Battelle ID	H4732-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	84		H4732-FS1(0)	4/22/2020
13C4-PFHpA	102		H4732-FS1(0)	4/22/2020
13C8-PFOA	96		H4732-FS1(0)	4/22/2020
13C9-PFNA	89		H4732-FS1(0)	4/22/2020
13C6-PFDA	97		H4732-FS1(0)	4/22/2020
13C7-PFUnA	69		H4732-FS1(0)	4/22/2020
13C2-PFDoA	34	N	H4732-FS1(0)	4/22/2020
13C2-PFTeDA	5	N	H4732-FS1(0)	4/22/2020
d3-MeFOSAA	57		H4732-FS1(0)	4/22/2020
d5-EtFOSAA	46	N	H4732-FS1(0)	4/22/2020
13C3-PFBS	97		H4732-FS1(0)	4/22/2020
13C3-PFHxS	120		H4732-FS1(0)	4/22/2020
13C8-PFOS	94		H4732-FS1(0)	4/22/2020
13C3-HFPO-DA	80		H4732-FS1(0)	4/22/2020

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		SB01-040820						
Battelle ID		H4733-FS1						
Sample Type		SA						
Collection Date		04/08/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		QC						
Sample Size		0.295						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	1.27 U	H4733-FS1(0)	1.000	4/22/2020	0.45	1.27	4.24
PFHpA	375-85-9	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.22	0.85	4.24
PFOA	335-67-1	1.27 U	H4733-FS1(0)	1.000	4/22/2020	0.43	1.27	4.24
PFNA	375-95-1	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.26	0.85	4.24
PFDA	335-76-2	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.12	0.42	4.24
PFUnA	2058-94-8	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.19	0.42	4.24
PFDoA	307-55-1	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.16	0.42	4.24
PFTrDA	72629-94-8	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.13	0.42	4.24
PFTeDA	376-06-7	1.69 U	H4733-FS1(0)	1.000	4/22/2020	0.62	1.69	4.24
NMeFOSAA	2355-31-9	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.30	0.85	4.24
NEtFOSAA	2991-50-6	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.42	0.85	4.24
PFBS	375-73-5	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.12	0.42	4.24
PFHxS	355-46-4	0.34 U	H4733-FS1(0)	1.000	4/22/2020	0.09	0.34	4.24
PFOS	1763-23-1	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.37	0.85	4.24
HFPO-DA	13252-13-6	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.21	0.42	4.24
Adona	919005-14-4	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.23	0.85	4.24
11Cl-PF3OUdS	763051-92-9	0.42 U	H4733-FS1(0)	1.000	4/22/2020	0.19	0.42	4.24
9Cl-PF3ONS	756426-58-1	0.85 U	H4733-FS1(0)	1.000	4/22/2020	0.23	0.85	4.24

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	SB01-040820
Battelle ID	H4733-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C5-PFHxA	95	H4733-FS1(0)	4/22/2020
13C4-PFHpA	103	H4733-FS1(0)	4/22/2020
13C8-PFOA	104	H4733-FS1(0)	4/22/2020
13C9-PFNA	103	H4733-FS1(0)	4/22/2020
13C6-PFDA	103	H4733-FS1(0)	4/22/2020
13C7-PFUnA	103	H4733-FS1(0)	4/22/2020
13C2-PFDoA	99	H4733-FS1(0)	4/22/2020
13C2-PFTeDA	106	H4733-FS1(0)	4/22/2020
d3-MeFOSAA	99	H4733-FS1(0)	4/22/2020
d5-EtFOSAA	98	H4733-FS1(0)	4/22/2020
13C3-PFBS	102	H4733-FS1(0)	4/22/2020
13C3-PFHxS	104	H4733-FS1(0)	4/22/2020
13C8-PFOS	116	H4733-FS1(0)	4/22/2020
13C3-HFPO-DA	90	H4733-FS1(0)	4/22/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		FD01-040820						
Battelle ID		H4734-FS1						
Sample Type		SA						
Collection Date		04/08/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		QC						
Sample Size		0.260						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.56 J	H4734-FS1(0)	1.000	4/22/2020	0.51	1.44	4.81
PFHpA	375-85-9	0.27 J	H4734-FS1(0)	1.000	4/22/2020	0.25	0.96	4.81
PFOA	335-67-1	1.44 U	H4734-FS1(0)	1.000	4/22/2020	0.49	1.44	4.81
PFNA	375-95-1	0.96 U	H4734-FS1(0)	1.000	4/22/2020	0.30	0.96	4.81
PFDA	335-76-2	0.48 U	H4734-FS1(0)	1.000	4/22/2020	0.13	0.48	4.81
PFUnA	2058-94-8	0.48 U	H4734-FS1(0)	1.000	4/22/2020	0.21	0.48	4.81
PFDoA	307-55-1	0.48 U	H4734-FS1(0)	1.000	4/22/2020	0.18	0.48	4.81
PFTrDA	72629-94-8	0.48 U	H4734-FS1(0)	1.000	4/22/2020	0.14	0.48	4.81
PFTeDA	376-06-7	1.92 U	H4734-FS1(0)	1.000	4/22/2020	0.70	1.92	4.81
NMeFOSAA	2355-31-9	0.96 U	H4734-FS1(0)	1.000	4/22/2020	0.34	0.96	4.81
NEtFOSAA	2991-50-6	0.96 U	H4734-FS1(0)	1.000	4/22/2020	0.48	0.96	4.81
PFBS	375-73-5	0.59 J	H4734-FS1(0)	1.000	4/22/2020	0.13	0.48	4.81
PFHxS	355-46-4	2.96 J	H4734-FS1(0)	1.000	4/22/2020	0.11	0.38	4.81
PFOS	1763-23-1	2.58 J	H4734-FS1(0)	1.000	4/22/2020	0.42	0.96	4.81
HFPO-DA	13252-13-6	0.48 U	H4734-FS1(0)	1.000	4/22/2020	0.24	0.48	4.81
Adona	919005-14-4	0.96 U	H4734-FS1(0)	1.000	4/22/2020	0.26	0.96	4.81
11Cl-PF3OUdS	763051-92-9	0.48 U	H4734-FS1(0)	1.000	4/22/2020	0.22	0.48	4.81
9Cl-PF3ONS	756426-58-1	0.96 U	H4734-FS1(0)	1.000	4/22/2020	0.26	0.96	4.81

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	FD01-040820
Battelle ID	H4734-FS1
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	96		H4734-FS1(0)	4/22/2020
13C4-PFHpA	106		H4734-FS1(0)	4/22/2020
13C8-PFOA	98		H4734-FS1(0)	4/22/2020
13C9-PFNA	95		H4734-FS1(0)	4/22/2020
13C6-PFDA	99		H4734-FS1(0)	4/22/2020
13C7-PFUnA	86		H4734-FS1(0)	4/22/2020
13C2-PFDoA	63		H4734-FS1(0)	4/22/2020
13C2-PFTeDA	21	N	H4734-FS1(0)	4/22/2020
d3-MeFOSAA	75		H4734-FS1(0)	4/22/2020
d5-EtFOSAA	70		H4734-FS1(0)	4/22/2020
13C3-PFBS	103		H4734-FS1(0)	4/22/2020
13C3-PFHxS	102		H4734-FS1(0)	4/22/2020
13C8-PFOS	101		H4734-FS1(0)	4/22/2020
13C3-HFPO-DA	88		H4734-FS1(0)	4/22/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G02DA-040820
Battelle ID	H4731-FS
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	GW
Sample Size	0.260
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	3.31 J	H4731-FS(0)	1.000	4/23/2020	0.51	1.44	4.81
PFHpA	375-85-9	1.07 J	H4731-FS(0)	1.000	4/23/2020	0.25	0.96	4.81
PFOA	335-67-1	1.05 J	H4731-FS(0)	1.000	4/23/2020	0.49	1.44	4.81
PFNA	375-95-1	0.49 J	H4731-FS(0)	1.000	4/23/2020	0.30	0.96	4.81
PFDA	335-76-2	0.48 U	H4731-FS(0)	1.000	4/23/2020	0.13	0.48	4.81
PFUnA	2058-94-8	0.48 U	H4731-FS(0)	1.000	4/23/2020	0.21	0.48	4.81
PFDoA	307-55-1	0.48 U	H4731-FS(0)	1.000	4/23/2020	0.18	0.48	4.81
PFTrDA	72629-94-8	0.48 U	H4731-FS(0)	1.000	4/23/2020	0.14	0.48	4.81
PFTeDA	376-06-7	1.92 U	H4731-FS(0)	1.000	4/23/2020	0.70	1.92	4.81
NMeFOSAA	2355-31-9	0.96 U	H4731-FS(0)	1.000	4/23/2020	0.34	0.96	4.81
NEtFOSAA	2991-50-6	0.96 U	H4731-FS(0)	1.000	4/23/2020	0.48	0.96	4.81
PFBS	375-73-5	3.56 J	H4731-FS(0)	1.000	4/23/2020	0.13	0.48	4.81
PFHxS	355-46-4	8.79	H4731-FS(0)	1.000	4/23/2020	0.11	0.38	4.81
PFOS	1763-23-1	1.26 J	H4731-FS(0)	1.000	4/23/2020	0.42	0.96	4.81
HFPO-DA	13252-13-6	0.48 U	H4731-FS(0)	1.000	4/23/2020	0.24	0.48	4.81
Adona	919005-14-4	0.96 U	H4731-FS(0)	1.000	4/23/2020	0.26	0.96	4.81
11Cl-PF3OUdS	763051-92-9	0.48 U	H4731-FS(0)	1.000	4/23/2020	0.22	0.48	4.81
9Cl-PF3ONS	756426-58-1	0.96 U	H4731-FS(0)	1.000	4/23/2020	0.26	0.96	4.81

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G02DA-040820
Battelle ID	H4731-FS
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	67		H4731-FS(0)	4/23/2020
13C4-PFHpA	78		H4731-FS(0)	4/23/2020
13C8-PFOA	73		H4731-FS(0)	4/23/2020
13C9-PFNA	70		H4731-FS(0)	4/23/2020
13C6-PFDA	64		H4731-FS(0)	4/23/2020
13C7-PFUnA	60		H4731-FS(0)	4/23/2020
13C2-PFDoA	52		H4731-FS(0)	4/23/2020
13C2-PFTeDA	38	N	H4731-FS(0)	4/23/2020
d3-MeFOSAA	41	N	H4731-FS(0)	4/23/2020
d5-EtFOSAA	40	N	H4731-FS(0)	4/23/2020
13C3-PFBS	68		H4731-FS(0)	4/23/2020
13C3-PFHxS	80		H4731-FS(0)	4/23/2020
13C8-PFOS	77		H4731-FS(0)	4/23/2020
13C3-HFPO-DA	63		H4731-FS(0)	4/23/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G05DA-040820
Battelle ID	H4732-FS
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	GW
Sample Size	0.260
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	3.35 J	H4732-FS(0)	1.000	4/23/2020	0.51	1.44	4.81
PFHpA	375-85-9	0.96 U	H4732-FS(0)	1.000	4/23/2020	0.25	0.96	4.81
PFOA	335-67-1	1.68 J	H4732-FS(0)	1.000	4/23/2020	0.49	1.44	4.81
PFNA	375-95-1	0.96 U	H4732-FS(0)	1.000	4/23/2020	0.30	0.96	4.81
PFDA	335-76-2	0.48 U	H4732-FS(0)	1.000	4/23/2020	0.13	0.48	4.81
PFUnA	2058-94-8	0.48 U	H4732-FS(0)	1.000	4/23/2020	0.21	0.48	4.81
PFDoA	307-55-1	0.48 U	H4732-FS(0)	1.000	4/23/2020	0.18	0.48	4.81
PFTrDA	72629-94-8	0.18 J	H4732-FS(0)	1.000	4/23/2020	0.14	0.48	4.81
PFTeDA	376-06-7	1.92 U	H4732-FS(0)	1.000	4/23/2020	0.70	1.92	4.81
NMeFOSAA	2355-31-9	0.96 U	H4732-FS(0)	1.000	4/23/2020	0.34	0.96	4.81
NEtFOSAA	2991-50-6	0.96 U	H4732-FS(0)	1.000	4/23/2020	0.48	0.96	4.81
PFBS	375-73-5	2.63 J	H4732-FS(0)	1.000	4/23/2020	0.13	0.48	4.81
PFHxS	355-46-4	1.11 J	H4732-FS(0)	1.000	4/23/2020	0.11	0.38	4.81
PFOS	1763-23-1	2.15 J	H4732-FS(0)	1.000	4/23/2020	0.42	0.96	4.81
HFPO-DA	13252-13-6	0.48 U	H4732-FS(0)	1.000	4/23/2020	0.24	0.48	4.81
Adona	919005-14-4	0.96 U	H4732-FS(0)	1.000	4/23/2020	0.26	0.96	4.81
11Cl-PF3OUdS	763051-92-9	0.48 U	H4732-FS(0)	1.000	4/23/2020	0.22	0.48	4.81
9Cl-PF3ONS	756426-58-1	0.96 U	H4732-FS(0)	1.000	4/23/2020	0.26	0.96	4.81

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	002G05DA-040820
Battelle ID	H4732-FS
Sample Type	SA
Collection Date	04/08/2020
Extraction Date	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	69		H4732-FS(0)	4/23/2020
13C4-PFHpA	85		H4732-FS(0)	4/23/2020
13C8-PFOA	80		H4732-FS(0)	4/23/2020
13C9-PFNA	82		H4732-FS(0)	4/23/2020
13C6-PFDA	75		H4732-FS(0)	4/23/2020
13C7-PFUnA	67		H4732-FS(0)	4/23/2020
13C2-PFDoA	50		H4732-FS(0)	4/23/2020
13C2-PFTeDA	16	N	H4732-FS(0)	4/23/2020
d3-MeFOSAA	72		H4732-FS(0)	4/23/2020
d5-EtFOSAA	70		H4732-FS(0)	4/23/2020
13C3-PFBS	84		H4732-FS(0)	4/23/2020
13C3-PFHxS	90		H4732-FS(0)	4/23/2020
13C8-PFOS	88		H4732-FS(0)	4/23/2020
13C3-HFPO-DA	67		H4732-FS(0)	4/23/2020

Appendix C

Support Documentation

ANALYTE	ORIGINAL 009MW02-040820	DUPLICATE FD01-040820	RL	RPD	RPD > 30% Aqueous	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2XRL
PERFLUOROBUTANESULFONIC ACID (PFBS)	0.55	0.59	4.81	7.02	FALSE	FALSE	FALSE	FALSE
PERFLUOROHEPTANOIC ACID (PFHPA)	0.34	0.27	4.81	22.95	FALSE	FALSE	FALSE	FALSE
PERFLUOROHEXANESULFONIC ACID (PFHXS)	2.93	2.96	4.81	1.02	FALSE	FALSE	FALSE	FALSE
PERFLUOROHEXANOIC ACID (PFHXA)	0.59	0.56	4.81	5.22	FALSE	FALSE	FALSE	FALSE
PERFLUOROOCTANESULFONIC ACID (PFOS)	2.77	2.58	4.81	7.10	FALSE	FALSE	FALSE	FALSE

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 0176 | PAGE 1 OF 1

PROJECT NO: SE180382 SS.SI.MS	FACILITY: NSA Mid-South	PROJECT MANAGER L. Basile	PHONE NUMBER	LABORATORY NAME AND CONTACT: Battelle J. Thorn
SAMPLERS (SIGNATURE) W.D. Olson		FIELD OPERATIONS LEADER W.D. Olson	PHONE NUMBER 850 443 6855	ADDRESS 141 Longwater Dr 202
		CARRIER/WAYBILL NUMBER Fedex 8147 5746 6858		CITY, STATE Norwell MA

STANDARD TAT ☐ Per SOW
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P
PRESERVATIVE USED: 4°C
TYPE OF ANALYSIS: PFAS

DATE YEAR 2020	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS			COMMENTS
4/8	0747	009MW02-ER-040820		—	—	QC	G	2	2	H4727	
4/8	0845	009MW02-040820		—	—	GW	G	2	2	H4728	
4/8	0925	009MW01-FB-040820		—	—	QC	G	2	2	H4729	bottle set sent by lab second week
4/8	1030	009MW01-040820		—	—	GW	G	6	6	H4730	MS/MSD
4/8	1235	002G02DA-040820		—	—	GW	G	6	6	H4731	MS/MSD
4/8	1445	002G05DA-040820		—	—	GW	G	2	2	H4732	
4/8	1510	SB01-040820		—	—	SO	G	2	2	H4733	
4/8	0000	FD01-040820		—	—	QC	G	2	2	H4734	D. Pitt

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY W.D. Olson	4-9-2020	0700	1. RECEIVED BY	4-9-2020	0700
2. RELINQUISHED BY	4-9-2020	1130	2. RECEIVED BY	4-10-2020	8:25
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Sample Summary

Client: Tetra Tech
SDG: 20-0493
Project/Site: NSA Mid-South, Millington, Tennessee
CTO: SE180383

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Receipt Date
CY734PB-FS	Procedural Blank	WATER	4/21/2020	4/21/2020
CY735LCS-FS	Laboratory Control Sample	WATER	4/21/2020	4/21/2020
H4727-FS1	009MW02-EB-04082020	QC	4/8/2020	4/10/2020
H4728-FS1	009MW02-040820	GW	4/8/2020	4/10/2020
H4729-FS1	009MW01-FB-040820	QC	4/8/2020	4/10/2020
H4730-FS1	009MW01-040820	GW	4/8/2020	4/10/2020
H4731-FS1	002G02DA-040820	GW	4/8/2020	4/10/2020
H4731MS-FS1	002G02DA-040820	GW	4/8/2020	4/10/2020
H4731MSD-FS1	002G02DA-040820	GW	4/8/2020	4/10/2020
H4732-FS1	002G05DA-040820	GW	4/8/2020	4/10/2020
H4733-FS1	SB01-040820	QC	4/8/2020	4/10/2020
H4734-FS1	FD01-040820	QC	4/8/2020	4/10/2020

QA/QC Summary
Batch 20-0493

Project:	CTO-SE180383: NSA Mid-South, Millington, Tennessee
Client Project Manager:	Larry Basilio
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	GW, QC
Data Set:	DP-20-0424
Analytical SOP:	5-369
Method Reference:	PFAS to QSM 5.3 Table B-15

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
4/8/2020	4/10/2020	3.6

Corrective Actions	None.
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	Samples are re-extracted from SDG 20-0470 to verify extracted internal standard exceedances.

	METHOD SUMMARIES
Sample Preparation	Water samples were fortified with surrogates in the original sample container from the field. The water was extracted using a Weak-anion exchange (WAX) solid phase extraction (SPE) cartridges. Target analytes are eluted from the WAX SPE using 0.5% NH_3 in methanol. Extracts were further refined using Envi-carb to remove co-extracted interferences. Extracts were concentrated to approximately 500 µL under nitrogen with a water bath set between 50 °C and 60 °C, reconstituted with methanol/water and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis in 80:20 methanol/water (V/V).
Prep comments	pH of all samples prior to SPE extraction was verified between 6 and 8. Samples H4728-FS1 (009MW02-040820), H4730-FS1 (009MW01-040820), H4731-FS1 (002G02DA-040820), H4731MS-FS1 (002G02DA-040820), H4731MSD-FS1 (002G02DA-040820), H4732-FS1 (002G05DA-040820), and H4734-FS1 (FD01-040820) contained particulates. Samples H4728-FS1 (009MW02-040820) and H4734-FS1 (FD01-040820) clogged the top filter of the SPE cartridge during extraction, the filter was popped and left inside the SPE cartridge for the remainder of the extraction and elution process.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on Sciex 5500 LC-MS/MS.

QA/QC Summary
Batch 20-0493

	MeFOSAA, EtFOSAA, PFHxS, and PFOS in the LCS, MS, MSD, and field samples when detected, were detected and reported as a combination of the branched and linear isomers.

Holding Times	Extraction Date(s)	Analysis Date(s)
	4/21/2020	4/20, 22, and 23/2020

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ ½ the LOQ Samples >10x PB	No exceedances noted.
	No comments.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery	No exceedances noted.
	No comments.

Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A MS/MSD was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery and <30% RPD	Two (2) exceedances noted.
	PFTrDA in both the MS and MSD are recovered high due to the low recovery of the extracted internal standard 13C2-PFTeDA used to quantify PFTrDA, which does not have a direct labeled analog. Any detections of PFTrDA in samples (none above the LOD outside of the LCS, MS, and MSD) should be considered biased high. Samples were reanalyzed, confirming the original results. The quant reports for data not reported is included in the unused data section of the full data package.

QA/QC Summary
Batch 20-0493

Extracted Internal Standard Analytes	Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
50-150% of true value	Fifteen (15) exceedances noted.
	Several samples had suppressed or enhanced recoveries for select extracted internal standards. The table below indicates if the extracted internal standard was within +/- 50% of the area of the L5 calibration point ("P") or if the area showed suppression ("↓"), or enhancement ("↑") for these extracted internal standards.

	13C2-PFDoA	13C2-PFTeDA	d3-MeFOSAA	d5-EtFOSAA
H4731MS-FS1 (002G02DA-040820)	↓	↓	P	↓
H4731MSD-FS1 (002G02DA-040820)	↓	↓		
H4728-FS1 (009MW02-040820)		↓		
H4730-FS1 (009MW01-040820)	↓	↓		
H4731-FS1 (002G02DA-040820)	↓	↓		
H4732-FS1 (002G05DA-040820)	↓	↓		↓
H4734-FS1 (FD01-040820)		↓		

The remaining extracted internal standards in each impacted sample, fortified from the same solution, pass criteria, suggesting that the suppression is matrix related to these analytes only. Samples with exceedances are re-extracted from SDG 20-0470 for verification.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
+/- 50% of the area of the L5 calibration point.	No exceedances noted.
	No comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
+/- 30% of true value, $R^2 \geq 0.99$	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
+/- 30% of true value	No exceedances noted.
	No comments.

QA/QC Summary
Batch 20-0493

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
+/- 30% of true value	No exceedances noted.
	The following secondary transitions are outside of criteria: • Adona in KY35 CCV (4/22/2020 17:05:12) • 9Cl-PF3ONS in KY37 CCV (4/22/2020 23:06:10) The secondary transition is monitored solely for peak identification, not quantification. There is no impact on the reported data.

Instrument Blank (IB)	Immediately following the highest standard analyzed and daily prior to sample analysis.
≤ ½ the LOQ	No exceedances noted.
	No comments.

BATTELLE
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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project Number: 100134454
Preparation Batch: 20-0493
Data Set: DP-20-0424
Test Code: Master_369B

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	0	None
Matrix Spike / Matrix Spike Duplicate Recovery	2	Exceedances were confirmed by reanalysis of a fresh aliquot of the MS and MSD. Confirmation analyses are included in the Unused Data section. LMG 04/23/2020
Matrix Spike / Matrix Spike Duplicate Precision	0	None
Extracted Internal Standard Analytes (Surrogates)	15	Exceedances were confirmed by reanalysis of a fresh aliquot of the samples. Confirmation analyses are included in the Unused Data section. LMG 04/23/2020
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

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BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	CTO-SE180383: NSA Mid-South, Milling	**Data Set Number:**	DP-20-0424
Project Number:	100134454	**Prep Batch Number:**	20-0493
Entered By:	Lauren Griffith	**Entered On:**	04/23/2020
Test Code (Matrix Type):	Master_369B(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
LMG 04/23/2020

KY33 is not being used for 13C7-PFUnA in the SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY38 is not being used for d3-MeFOSAA in the SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY39 is not being used for d3-MeFOSAA in the SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY33 is not being used for PFOA in the BASE method. There is no impact on the data with this point removed.
LMG 04/23/2020

ADONA is outside of passing criteria in the secondary transition for KY35 CCV (4/22/2020 17:05:12). The primary passes, the secondary is only being monitored and there is no impact on the data.
LMG 04/23/2020

9Cl-PF3ONS is outside of passing criteria in the secondary transition for KY37 CCV (4/22/2020 23:06:10). The primary passes, the secondary is only being monitored and there is no impact on the data.
LMG 04/23/2020

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2020.04.23 16:50:54 -04'00'

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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	KY40 IB
Battelle ID	KY40 IB_04/20/2020
Sample Type	IB
Collection Date	NA
Extraction Date	NA
Analysis Date	04/20/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	Water
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	0.27	1.00	5.00

Surrogate Recoveries (%)

13C5-PFHxA	97
13C4-PFHpA	97
13C8-PFOA	98
13C9-PFNA	102
13C6-PFDA	103
13C7-PFUnA	104
13C2-PFDoA	101
13C2-PFTeDA	100
d3-MeFOSAA	101
d5-EtFOSAA	109
13C3-PFBS	100
13C3-PFHxS	97
13C8-PFOS	103
13C3-HFPO-DA	95

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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	KY40 IB
Battelle ID	KY40 IB_04/22/2020
Sample Type	IB
Collection Date	NA
Extraction Date	NA
Analysis Date	04/22/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	Water
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	0.27	1.00	5.00

Surrogate Recoveries (%)

13C5-PFHxA	99
13C4-PFHpA	97
13C8-PFOA	100
13C9-PFNA	106
13C6-PFDA	98
13C7-PFUnA	101
13C2-PFDoA	100
13C2-PFTeDA	97
d3-MeFOSAA	93
d5-EtFOSAA	92
13C3-PFBS	88
13C3-PFHxS	89
13C8-PFOS	98
13C3-HFPO-DA	98

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		Procedural Blank						
Battelle ID		CY734PB-FS						
Sample Type		PB						
Collection Date		04/21/2020						
Extraction Date		04/21/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		WATER						
Sample Size		0.250						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	CY734PB-FS(0)	1.000	4/22/2020	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	CY734PB-FS(0)	1.000	4/22/2020	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	CY734PB-FS(0)	1.000	4/22/2020	0.27	1.00	5.00

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Project No.: 100134454

Client ID	Procedural Blank
Battelle ID	CY734PB-FS
Sample Type	PB
Collection Date	04/21/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C5-PFHxA	94	CY734PB-FS(0)	4/22/2020
13C4-PFHpA	105	CY734PB-FS(0)	4/22/2020
13C8-PFOA	102	CY734PB-FS(0)	4/22/2020
13C9-PFNA	106	CY734PB-FS(0)	4/22/2020
13C6-PFDA	108	CY734PB-FS(0)	4/22/2020
13C7-PFUnA	107	CY734PB-FS(0)	4/22/2020
13C2-PFDoA	102	CY734PB-FS(0)	4/22/2020
13C2-PFTeDA	123	CY734PB-FS(0)	4/22/2020
d3-MeFOSAA	95	CY734PB-FS(0)	4/22/2020
d5-EtFOSAA	96	CY734PB-FS(0)	4/22/2020
13C3-PFBS	99	CY734PB-FS(0)	4/22/2020
13C3-PFHxS	102	CY734PB-FS(0)	4/22/2020
13C8-PFOS	103	CY734PB-FS(0)	4/22/2020
13C3-HFPO-DA	94	CY734PB-FS(0)	4/22/2020

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		Laboratory Control Sample								
Battelle ID		CY735LCS-FS								
Sample Type		LCS								
Collection Date		04/21/2020								
Extraction Date		04/21/2020								
Analytical Instrument		Sciex 5500 LC/MS/MS								
% Moisture		NA								
Matrix		WATER								
Sample Size		0.250								
Size Unit-Basis		L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	32.38	CY735LCS-FS(0)	1.000	4/22/2020	40.40	80		72	129
PFHpA	375-85-9	36.12	CY735LCS-FS(0)	1.000	4/22/2020	40.00	90		72	130
PFOA	335-67-1	32.48	CY735LCS-FS(0)	1.000	4/22/2020	40.00	81		71	133
PFNA	375-95-1	37.81	CY735LCS-FS(0)	1.000	4/22/2020	40.00	95		69	130
PFDA	335-76-2	34.01	CY735LCS-FS(0)	1.000	4/22/2020	40.00	85		71	129
PFUnA	2058-94-8	34.78	CY735LCS-FS(0)	1.000	4/22/2020	40.00	87		69	133
PFDoA	307-55-1	35.44	CY735LCS-FS(0)	1.000	4/22/2020	40.00	89		72	134
PFTrDA	72629-94-8	29.33	CY735LCS-FS(0)	1.000	4/22/2020	40.00	73		65	144
PFTeDA	376-06-7	33.75	CY735LCS-FS(0)	1.000	4/22/2020	40.00	84		71	132
NMeFOSAA	2355-31-9	34.96	CY735LCS-FS(0)	1.000	4/22/2020	40.00	87		65	136
NEtFOSAA	2991-50-6	32.31	CY735LCS-FS(0)	1.000	4/22/2020	40.00	81		61	135
PFBS	375-73-5	32.66	CY735LCS-FS(0)	1.000	4/22/2020	40.00	82		72	130
PFHxS	355-46-4	34.33	CY735LCS-FS(0)	1.000	4/22/2020	40.40	85		68	131
PFOS	1763-23-1	34.65	CY735LCS-FS(0)	1.000	4/22/2020	40.40	86		65	140
HFPO-DA	13252-13-6	34.52	CY735LCS-FS(0)	1.000	4/22/2020	40.00	86		74	148
Adona	919005-14-4	38.30	CY735LCS-FS(0)	1.000	4/22/2020	40.00	96		61	143
11Cl-PF3OUdS	763051-92-9	35.70	CY735LCS-FS(0)	1.000	4/22/2020	40.00	89		52	158
9Cl-PF3ONS	756426-58-1	41.87	CY735LCS-FS(0)	1.000	4/22/2020	40.00	105		59	147

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	Laboratory Control Sample
Battelle ID	CY735LCS-FS
Sample Type	LCS
Collection Date	04/21/2020
Extraction Date	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**	**Extract ID**	**Analysis Date**
13C5-PFHxA	102	CY735LCS-FS(0)	4/22/2020
13C4-PFHpA	105	CY735LCS-FS(0)	4/22/2020
13C8-PFOA	105	CY735LCS-FS(0)	4/22/2020
13C9-PFNA	103	CY735LCS-FS(0)	4/22/2020
13C6-PFDA	102	CY735LCS-FS(0)	4/22/2020
13C7-PFUnA	102	CY735LCS-FS(0)	4/22/2020
13C2-PFDoA	109	CY735LCS-FS(0)	4/22/2020
13C2-PFTeDA	130	CY735LCS-FS(0)	4/22/2020
d3-MeFOSAA	101	CY735LCS-FS(0)	4/22/2020
d5-EtFOSAA	99	CY735LCS-FS(0)	4/22/2020
13C3-PFBS	104	CY735LCS-FS(0)	4/22/2020
13C3-PFHxS	108	CY735LCS-FS(0)	4/22/2020
13C8-PFOS	103	CY735LCS-FS(0)	4/22/2020
13C3-HFPO-DA	97	CY735LCS-FS(0)	4/22/2020

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Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

			MS/MSD Background Sample								
Client ID		002G02DA-040820	002G02DA-040820								
Battelle ID		H4731MS-FS1	H4731-FS1								
Sample Type		MS	SA								
Collection Date		04/08/2020	04/08/2020								
Extraction Date		04/21/2020	04/21/2020								
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS								
% Moisture		NA	NA								
Matrix		GW	GW								
Sample Size		0.260	0.265								
Size Unit-Basis		L	L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	34.08	3.24 J	H4731MS-FS1(0)	1.000	4/22/2020	38.85	79		72	129
PFHpA	375-85-9	33.04	1.02 J	H4731MS-FS1(0)	1.000	4/22/2020	38.46	83		72	130
PFOA	335-67-1	30.60	0.85 J	H4731MS-FS1(0)	1.000	4/22/2020	38.46	77		71	133
PFNA	375-95-1	34.04	0.42 J	H4731MS-FS1(0)	1.000	4/22/2020	38.46	87		69	130
PFDA	335-76-2	32.49	0.47 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	84		71	129
PFUnA	2058-94-8	32.12	0.47 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	84		69	133
PFDoA	307-55-1	33.65	0.47 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	87		72	134
PFTrDA	72629-94-8	65.98	0.23 J	H4731MS-FS1(0)	1.000	4/22/2020	38.46	171	N	65	144
PFTeDA	376-06-7	31.34	1.89 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	81		71	132
NMeFOSAA	2355-31-9	31.96	0.94 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	83		65	136
NEtFOSAA	2991-50-6	30.07	0.94 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	78		61	135
PFBS	375-73-5	36.68	3.31 J	H4731MS-FS1(0)	1.000	4/22/2020	38.46	87		72	130
PFHxS	355-46-4	40.06	7.72	H4731MS-FS1(0)	1.000	4/22/2020	38.85	83		68	131
PFOS	1763-23-1	34.01	1.01 J	H4731MS-FS1(0)	1.000	4/22/2020	38.85	85		65	140
HFPO-DA	13252-13-6	31.98	0.47 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	83		74	148
Adona	919005-14-4	36.77	0.94 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	96		61	143
11Cl-PF3OUdS	763051-92-9	23.42	0.47 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	61		52	158
9Cl-PF3ONS	756426-58-1	28.04	0.94 U	H4731MS-FS1(0)	1.000	4/22/2020	38.46	73		59	147

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Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

		MS/MSD Background Sample
Client ID	002G02DA-040820	002G02DA-040820
Battelle ID	H4731MS-FS1	H4731-FS1
Sample Type	MS	SA
Collection Date	04/08/2020	04/08/2020
Extraction Date	04/21/2020	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	Recovery		Extract ID	Analysis Date
13C5-PFHxA	89		H4731MS-FS1(0)	4/22/2020
13C4-PFHpA	102		H4731MS-FS1(0)	4/22/2020
13C8-PFOA	91		H4731MS-FS1(0)	4/22/2020
13C9-PFNA	74		H4731MS-FS1(0)	4/22/2020
13C6-PFDA	61		H4731MS-FS1(0)	4/22/2020
13C7-PFUnA	50		H4731MS-FS1(0)	4/22/2020
13C2-PFDoA	31	N	H4731MS-FS1(0)	4/22/2020
13C2-PFTeDA	7	N	H4731MS-FS1(0)	4/22/2020
d3-MeFOSAA	48	N	H4731MS-FS1(0)	4/22/2020
d5-EtFOSAA	38	N	H4731MS-FS1(0)	4/22/2020
13C3-PFBS	96		H4731MS-FS1(0)	4/22/2020
13C3-PFHxS	117		H4731MS-FS1(0)	4/22/2020
13C8-PFOS	74		H4731MS-FS1(0)	4/22/2020
13C3-HFPO-DA	81		H4731MS-FS1(0)	4/22/2020

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Project No.: 100134454

		MS/MSD Background Sample												
Client ID		002G02DA-040820	002G02DA-040820											
Battelle ID		H4731MSD-FS1	H4731-FS1											
Sample Type		MSD	SA											
Collection Date		04/08/2020	04/08/2020											
Extraction Date		04/21/2020	04/21/2020											
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS											
% Moisture		NA	NA											
Matrix		GW	GW											
Sample Size		0.270	0.265											
Size Unit-Basis		L	L			Analysis				Control Limits				RPD
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper	RPD	Qual	Limit
PFHxA	307-24-4	32.40	3.24 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.41	78		72	129	1.3		≤ 30
PFHpA	375-85-9	32.38	1.02 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	85		72	130	2.4		≤ 30
PFOA	335-67-1	29.15	0.85 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	76		71	133	1.3		≤ 30
PFNA	375-95-1	32.07	0.42 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	85		69	130	2.3		≤ 30
PFDA	335-76-2	29.62	0.47 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	80		71	129	4.9		≤ 30
PFUnA	2058-94-8	29.48	0.47 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	80		69	133	4.9		≤ 30
PFDoA	307-55-1	31.16	0.47 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	84		72	134	3.5		≤ 30
PFTrDA	72629-94-8	68.43	0.23 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	184	N	65	144	7.3		≤ 30
PFTeDA	376-06-7	29.68	1.89 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	80		71	132	1.2		≤ 30
NMeFOSAA	2355-31-9	30.71	0.94 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	83		65	136	0.0		≤ 30
NEtFOSAA	2991-50-6	32.24	0.94 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	87		61	135	10.9		≤ 30
PFBS	375-73-5	32.96	3.31 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	80		72	130	8.4		≤ 30
PFHxS	355-46-4	42.79	7.72	H4731MSD-FS1(0)	1.000	4/22/2020	37.41	94		68	131	12.4		≤ 30
PFOS	1763-23-1	33.23	1.01 J	H4731MSD-FS1(0)	1.000	4/22/2020	37.41	86		65	140	1.2		≤ 30
HFPO-DA	13252-13-6	29.24	0.47 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	79		74	148	4.9		≤ 30
Adona	919005-14-4	32.75	0.94 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	88		61	143	8.7		≤ 30
11Cl-PF3OUdS	763051-92-9	22.62	0.47 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	61		52	158	0.0		≤ 30
9Cl-PF3ONS	756426-58-1	30.53	0.94 U	H4731MSD-FS1(0)	1.000	4/22/2020	37.04	82		59	147	11.6		≤ 30

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Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

		MS/MSD Background Sample
Client ID	002G02DA-040820	002G02DA-040820
Battelle ID	H4731MSD-FS1	H4731-FS1
Sample Type	MSD	SA
Collection Date	04/08/2020	04/08/2020
Extraction Date	04/21/2020	04/21/2020
Analytical Instrument	Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	93		H4731MSD-FS1(0)	4/22/2020
13C4-PFHpA	104		H4731MSD-FS1(0)	4/22/2020
13C8-PFOA	97		H4731MSD-FS1(0)	4/22/2020
13C9-PFNA	92		H4731MSD-FS1(0)	4/22/2020
13C6-PFDA	86		H4731MSD-FS1(0)	4/22/2020
13C7-PFUnA	73		H4731MSD-FS1(0)	4/22/2020
13C2-PFDoA	45	N	H4731MSD-FS1(0)	4/22/2020
13C2-PFTeDA	8	N	H4731MSD-FS1(0)	4/22/2020
d3-MeFOSAA	76		H4731MSD-FS1(0)	4/22/2020
d5-EtFOSAA	59		H4731MSD-FS1(0)	4/22/2020
13C3-PFBS	105		H4731MSD-FS1(0)	4/22/2020
13C3-PFHxS	114		H4731MSD-FS1(0)	4/22/2020
13C8-PFOS	94		H4731MSD-FS1(0)	4/22/2020
13C3-HFPO-DA	87		H4731MSD-FS1(0)	4/22/2020

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Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highest concentration level in the calibration
J	Analyte detected below the Limit of Quantitation (LOQ)
MI	Significant Matrix Interference - value could not be determined.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported

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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454
Preparation Batch: 20-0493
Data Set: DP-20-0424

		CY734PB-FS (Procedural Blank)	CY735LCS-FS (Laboratory Control Sample)	H4731MS-FS1 (002G02DA-040820)	H4731MSD-FS1 (002G02DA-040820)	H4727-FS1 (009MW02-EB-04082020)	H4728-FS1 (009MW02-040820)	H4729-FS1 (009MW01-FB-040820)	H4730-FS1 (009MW01-040820)	H4731-FS1 (002G02DA-040820)	H4732-FS1 (002G05DA-040820)	H4733-FS1 (SB01-040820)	H4734-FS1 (FD01-040820)
PFHxA	307-24-4	-	L	L	L	-	L	-	-	L	L	-	L
PFHpA	375-85-9	-	L	L	L	-	L	-	-	L	-	-	L
PFOA	335-67-1	-	L	L	L	-	-	-	-	L	L	-	-
PFNA	375-95-1	-	L	L	L	-	-	-	-	L	-	-	-
PFDA	335-76-2	-	L	L	L	-	-	-	-	-	-	-	-
PFUnA	2058-94-8	-	L	L	L	-	-	-	-	-	-	-	-
PFDoA	307-55-1	-	L	L	L	-	-	-	-	-	-	-	-
PFTrDA	72629-94-8	-	L	L	L	-	-	-	-	L	L	-	-
PFTeDA	376-06-7	-	L	L	L	-	-	-	-	-	L	-	-
NMeFOSAA	2355-31-9	-	L/Br	L/Br	L/Br	-	-	-	-	-	-	-	-
NEtFOSAA	2991-50-6	-	L/Br	L/Br	L/Br	-	-	-	-	-	-	-	-
PFBS	375-73-5	-	L	L	L	-	L	-	L	L	L	-	L
PFHxS	355-46-4	-	L/Br	L/Br	L/Br	-	L/Br	-	-	L/Br	L/Br	-	L/Br
PFOS	1763-23-1	-	L/Br	L/Br	L/Br	-	L/Br	-	L/Br	L/Br	-	-	L/Br
HFPO-DA	13252-13-6	-	L	L	L	-	-	-	-	-	-	-	-
Adona	919005-14-4	-	L	L	L	-	-	-	-	-	-	-	-
11Cl-PF3OUdS	763051-92-9	-	L	L	L	-	-	-	-	-	-	-	-
9Cl-PF3ONS	756426-58-1	-	L	L	L	-	-	-	-	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

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			Passing criteria = 50% to 150% of internal standard area (compared to mid-point of calibration)							
Sample Name	Sample ID	Analysis Date	13C3-PFBA		13C2-PFOA		13C2-PFDA		13C4-PFOS	
KY37	L5	4/20/20 14:54	-		680,698.58		578,345.39		111,596.30	
		Lower	-		340,349.29		289,172.70		55,798.15	
		Upper	-		1,021,047.87		867,518.09		167,394.45	

Sample Name	Sample ID	Analysis Date	13C3-PFBA	Qual	User	13C2-PFOA	Qual	User	13C2-PFDA	Qual	User	13C4-PFOS	Qual	User
KY33	L1	4/20/20 14:10	-			685,851.45			583,637.08			113,406.45		
KY34	L2	4/20/20 14:21	-			692,997.73			612,384.43			113,834.38		
KY35	L3	4/20/20 14:32	-			641,449.10			566,574.14			101,040.90		
KY36	L4	4/20/20 14:43	-			636,541.63			587,554.21			113,046.94		
KY37	L5	4/20/20 14:54	-			680,698.58			578,345.39			111,596.30		
KY38	L6	4/20/20 15:05	-			651,113.45			547,447.94			105,883.76		
KY39	L7	4/20/20 15:16	-			666,123.88			545,800.61			108,727.57		
KY40 IB	IB	4/20/20 15:27	-			648,526.97			541,233.91			107,209.57		
KY41 ICC	ICC	4/20/20 15:38	-			685,171.24			624,302.06			123,181.09		
KY35 CCV	CCV	4/22/20 17:05	-			618,582.30			569,472.20			115,609.28		
KY40 IB	IB	4/22/20 17:27	-			718,441.26			644,339.09			130,629.97		
KY37 CCV	CCV	4/22/20 19:27	-			695,623.44			627,238.07			117,772.97		
CY734PB-FS(0)	Procedural Blank	4/22/20 19:49	-			556,708.42			475,812.14			94,576.80		
CY735LCS-FS(0)	Laboratory Control Sample	4/22/20 20:00	-			497,469.42			432,712.00			86,849.26		
H4727-FS1(0)	009MW02-EB-04082020	4/22/20 20:11	-			515,163.89			454,576.72			90,260.65		
H4728-FS1(0)	009MW02-040820	4/22/20 20:22	-			559,469.30			436,457.52			101,154.34		
H4729-FS1(0)	009MW01-FB-040820	4/22/20 20:33	-			612,969.29			553,923.50			101,651.32		
H4730-FS1(0)	009MW01-040820	4/22/20 20:43	-			540,943.75			351,722.30			78,535.27		
KY36 CCV	CCV	4/22/20 21:16	-			567,961.17			532,853.56			104,569.74		
H4731-FS1(0)	002G02DA-040820	4/22/20 21:27	-			596,574.82			412,892.54			88,486.76		
H4731MS-FS1(0)	002G02DA-040820	4/22/20 21:38	-			616,368.41			451,892.64			99,562.70		
H4731MSD-FS1(0)	002G02DA-040820	4/22/20 21:49	-			598,772.94			438,034.00			91,844.48		
H4732-FS1(0)	002G05DA-040820	4/22/20 22:00	-			670,537.50			446,306.53			105,156.51		
H4733-FS1(0)	SB01-040820	4/22/20 22:11	-			627,100.32			574,818.00			103,328.23		
H4734-FS1(0)	FD01-040820	4/22/20 22:22	-			692,947.38			508,608.88			111,688.59		
KY37 CCV	CCV	4/22/20 23:06	-			630,844.92			586,117.38			116,301.17		
~~KY36 CCV~~	~~CCV~~	~~4/23/20 9:51~~	~~-~~			~~662,334.74~~			~~624,141.42~~			~~124,971.65~~		
~~H4728-FS1(0)~~	~~009MW02-040820~~	~~4/23/20 10:13~~	~~-~~			~~667,392.88~~			~~550,501.12~~			~~116,440.56~~		1
~~H4730-FS1(0)~~	~~009MW01-040820~~	~~4/23/20 10:24~~	~~-~~			~~623,685.30~~			~~456,319.92~~			~~100,551.27~~		1
~~H4731-FS1(0)~~	~~002G02DA-040820~~	~~4/23/20 10:35~~	~~-~~			~~572,305.55~~			~~433,395.56~~			~~95,009.33~~		1
~~H4731MS-FS1(0)~~	~~002G02DA-040820~~	~~4/23/20 10:46~~	~~-~~			~~640,356.16~~			~~485,217.60~~			~~99,799.03~~		1
~~H4731MSD-FS1(0)~~	~~002G02DA-040820~~	~~4/23/20 10:57~~	~~-~~			~~649,179.08~~			~~479,353.62~~			~~105,168.97~~		1
~~H4732-FS1(0)~~	~~002G05DA-040820~~	~~4/23/20 11:08~~	~~-~~			~~606,038.58~~			~~444,424.69~~			~~97,025.03~~		1
~~H4734-FS1(0)~~	~~FD01-040820~~	~~4/23/20 11:19~~	~~-~~			~~561,099.74~~			~~479,260.87~~			~~93,138.24~~		1
~~KY37 CCV~~	~~CCV~~	~~4/23/20 11:40~~	~~-~~			~~515,605.94~~			~~467,146.39~~			~~98,110.39~~		

1 Samples were reanalyzed for confirmation only and were not reported. Data is included in the Unused Data section. LMG 04/23/2020

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Summary Asymmetry Report

Created with Analyst Reporter
Printed: 23/04/2020 12:15:34 PM

Sample Name	KY38	**Injection Vial**	9
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:05:22 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.61	1.10	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.91	1.00	0.8 – 1.5

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Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 23/04/2020 12:16:23 PM

Sample Name	KY39	**Injection Vial**	10
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:16:18 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.61	45	>10
PFBS_2	298.9 / 99.0	1.61	41	>10
PFHxA_1	313.0 / 269.0	1.92	27	>10
PFHxA_2	313.0 / 119.0	1.92	26	>10
PFHpA_1	363.0 / 319.0	2.30	32	>10
PFHpA_2	363.0 / 169.0	2.30	32	>10
PFHxS_1	399.0 / 80.0	2.32	50	>10
PFHxS_2	399.0 / 99.0	2.32	39	>10
PFOA_1	413.0 / 369.0	2.69	42	>10
PFOA_2	413.0 / 169.0	2.69	35	>10
PFNA_1	463.0 / 419.0	3.07	35	>10
PFNA_2	463.0 / 219.0	3.06	36	>10
PFOS_1	499.0 / 80.0	3.06	57	>10
PFOS_2	499.0 / 99.0	3.06	48	>10
PFDA_1	513.0 / 469.0	3.41	36	>10
PFDA_2	513.0 / 219.0	3.41	41	>10
PFUnA_1	563.0 / 519.0	3.72	37	>10
PFUnA_2	563.0 / 269.0	3.72	41	>10
PFDoA_1	613.0 / 569.0	4.00	34	>10
PFDoA_2	613.0 / 319.0	4.00	45	>10
PFTrDA_1	663.0 / 619.0	4.24	42	>10
PFTrDA_2	663.0 / 169.0	4.24	47	>10
PFTeDA_1	713.0 / 669.0	4.46	60	>10
PFTeDA_2	713.0 / 169.0	4.46	52	>10
NMeFOSAA_1	570.0 / 419.0	3.56	52	>10
NMeFOSAA_2	570.0 / 512.0	3.56	56	>10
NEtFOSAA_1	584.0 / 419.0	3.72	48	>10
NEtFOSAA_2	584.0 / 483.0	3.72	53	>10
HFPO-DA_1	285.0 / 169.0	2.03	34	>10
HFPO-DA_2	285.0 / 118.8	2.03	28	>10
ADONA_1	377.0 / 251.0	2.34	54	>10
ADONA_2	377.0 / 85.0	2.34	42	>10
9Cl-PF3ONS_1	531.0 / 351.0	3.25	44	>10
9Cl-PF3ONS_2	531.0 / 83.0	3.25	27	>10
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	50	>10
11Cl-pf3OUdS_2	631.0 / 83.0	3.85	25	>10

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 23/04/2020 12:16:23 PM

Sample Name	KY39	**Injection Vial**	10
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:16:18 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFDoA	615.0 / 570.0	3.99	31	>10
d3-MeFOSAA	573.0 / 419.0	3.56	30	>10
d5-EtFOSAA	589.0 / 419.0	3.71	31	>10
13C5-PFHxA	318.0 / 273.0	1.91	37	>10
13C4-PFHpA	367.0 / 322.0	2.29	50	>10
13C8-PFOA	421.0 / 376.0	2.68	46	>10
13C9-PFNA	472.0 / 427.0	3.06	35	>10
13C6-PFDA	519.0 / 474.0	3.40	37	>10
13C7-PFUnA	570.0 / 525.0	3.71	36	>10
13C2-PFTeDA	715.0 / 670.0	4.45	42	>10
13C3-PFBS	302.0 / 99.0	1.59	39	>10
13C3-PFHxS	402.0 / 99.0	2.31	52	>10
13C8-PFOS	507.0 / 99.0	3.05	41	>10
13C3-HFPO-DA	287.0 / 169.0	2.03	43	>10

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Precision and Bias at the LOQ for PFAS in non-potable Water

Analyte	CAS No.	Average (ng/L)	ST DEV	2 Sigma	n [1]
PFBA	375-22-4	11.00	0.9226	1.85	14
PFPeA	2706-90-3	9.81	0.7228	1.45	11
PFHxA	307-24-4	9.88	1.1365	2.27	43
PFHpA	375-85-9	9.76	0.9225	1.85	43
PFOA	335-67-1	9.93	1.3923	2.78	44
PFNA	375-95-1	9.71	1.1236	2.25	43
PFDA	335-76-2	9.51	0.9842	1.97	43
PFUnA	2058-94-8	9.55	0.9267	1.85	43
PFDoA	307-55-1	10.22	0.9055	1.81	43
PFTrDA	72629-94-8	9.93	1.2752	2.55	43
PFTeDA	376-06-7	10.39	0.9707	1.94	43
NMeFOSAA	2355-31-9	10.02	1.5564	3.11	43
NEtFOSAA	2991-50-6	9.55	1.4218	2.84	43
PFOSA	754-91-6	10.06	0.8394	1.68	11
PFBS	375-73-5	9.63	1.1816	2.36	43
PFPeS	2706-91-4	9.88	0.9203	1.84	5
PFHxS	355-46-4	9.90	1.1346	2.27	43
PFHpS	375-92-8	10.13	1.0851	2.17	11
PFOS	1763-23-1	9.78	1.2383	2.48	44
PFNS	68259-12-1	9.45	1.0923	2.18	5
PFDS	335-77-3	9.55	1.3140	2.63	11
4:2FTS	757124-72-4	10.38	1.7353	3.47	6
6:2FTS	27619-97-2	10.08	1.1871	2.37	12
8:2FTS	39108-34-4	9.59	1.4345	2.87	12
HFPO-DA	13252-13-6	10.92	1.4420	2.88	25
Adona	919005-14-4	10.38	1.4862	2.97	25
11Cl-PF3OUdS	763051-92-9	9.80	1.5701	3.14	25
9Cl-PF3ONS	756426-58-1	9.52	1.0952	2.19	25

[1] Minimum of 20 samples required per QAM for determination of uncertainty, results including less than 20 data points are estimated.

BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

QSM 5.1.1 compliant with Table B-15 requirements

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)
PFBA	375-22-4	0.45	1.0	5.0
PFPeA	2706-90-3	0.26	1.0	5.0
PFHxA	307-24-4	0.53	1.5	5.0
PFHpA	375-85-9	0.26	1.0	5.0
PFOA	335-67-1	0.51	1.5	5.0
PFNA	375-95-1	0.31	1.0	5.0
PFDA	335-76-2	0.14	0.5	5.0
PFUnA	2058-94-8	0.22	0.5	5.0
PFDoA	307-55-1	0.19	0.5	5.0
PFTrDA	72629-94-8	0.15	0.5	5.0
PFTeDA	376-06-7	0.73	2.0	5.0
NMeFOSAA	2355-31-9	0.35	1.0	5.0
NEtFOSAA	2991-50-6	0.50	1.0	5.0
PFOSA	754-91-6	0.46	1.0	5.0
PFBS	375-73-5	0.14	0.5	5.0
PFPeS	2706-91-4	0.26	1.0	5.0
PFHxS	355-46-4	0.11	0.4	5.0
PFHpS	375-92-8	0.85	2.0	5.0
PFOS	1763-23-1	0.44	1.0	5.0
PFNS	68259-12-1	0.36	1.0	5.0
PFDS	335-77-3	0.27	1.0	5.0
4:2FTS	747124-72-4	0.50	1.0	5.0
6:2FTS	27619-97-2	0.53	1.5	5.0
8:2FTS	39108-34-4	0.60	2.0	5.0
3:3 FTCA	356-02-5	1.32	3.0	5.0
5:3 FTCA	914637-49-3	1.59	3.0	5.0
7:3 FTCA	812-70-4	1.40	3.0	5.0
HFPO-DA	13252-13-6	0.25	0.5	5.0
Adona	919005-14-4	0.27	1.0	5.0
11Cl-PF3OUdS	763051-92-9	0.23	0.5	5.0
9Cl-PF3ONS	756426-58-1	0.27	1.0	5.0

Analytes on ELAP QSM 5.1.1 Scope of accreditation
MDL calculated based on 40 CFR 136 (2017)

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ID 596 10/19

Analytical Transitions for PFAS in non-potable water, solid, and tissue

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFBA	375-22-4	Target	213.0 / 169.0	NA
PFPeA	2706-90-3	Target	263.0 / 219.0	NA
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFOSA	754-91-6	Target	498.0 / 78.0	498.0 / 83.0
PFBS	375-73-5	Target	299.0 / 80.0	299.0 / 99.0
PFPeS	BDO-2114	Target	349.0 / 99.0	249.0 / 80.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFHpS	375-99-6	Target	449.0 / 80.0	449.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
PFNS	98789-57-2	Target	549.0 / 99.0	549.0 / 80.0
PFDS	2806-15-7	Target	599.0 / 80.0	599.0 / 99.0
4:2FTS	BDO-2205	Target	327.0 / 307.0	327.0 / 80.0
6:2FTS	27619-97-2	Target	427.0 / 407.0	427.0 / 81.0
8:2FTS	39108-34-4	Target	527.0 / 507.0	527.0 / 487.0
3:3 FTCA	356-02-5	Target	241.0 / 177.0	NA
5:3 FTCA	914637-49-3	Target	341.0 / 237.0	NA
7:3 FTCA	812-70-4	Target	441.0 / 337.0	NA
HFPO-DA	13252-13-6	Target	285.0 /169.0	285.0 /118.8
Adona	919005-14-4	Target	377.0 / 251.0	377.0 / 85.0
9Cl-PF3ONS	756426-58-1	Target	531.0 / 351.0	531.0 / 83.0
11Cl-PF3OUdS	763051-92-9	Target	631.0 / 451.0	631.0 / 83.0

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
13C4-PFBA	NA	SIS[1]	217.0 / 172.0	NA
13C5-PFPeA	NA	SIS[1]	268.0 / 223.0	NA
13C5-PFHxA	NA	SIS[1]	318.0 / 273.0	NA
13C4-PFHpA	NA	SIS[1]	367.0 / 322.0	NA
13C8-PFOA	NA	SIS[1]	421.0 / 376.0	NA
13C9-PFNA	NA	SIS[1]	472.0 / 427.0	NA
13C6-PFDA	NA	SIS[1]	519.0 / 474.0	NA
13C7-PFUnA	NA	SIS[1]	570.0 / 525.0	NA
13C2-PFDoA	NA	SIS[1]	615.0 / 570.0	NA
13C2-PFTeDA	NA	SIS[1]	715.0 / 670.0	NA
d3-MeFOSAA	NA	SIS[1]	573.0 / 419.0	NA
d5-EtFOSAA	NA	SIS[1]	589.0 / 419.0	NA
13C8-FOSA	NA	SIS[1]	506.0 / 78.0	NA
13C3-PFBS	NA	SIS[1]	302.0 / 99.0	NA
13C3-PFHxS	NA	SIS[1]	402.0 / 99.0	NA
13C8-PFOS	NA	SIS[1]	507.0 / 99.0	NA
13C2-4:2FTS	NA	SIS[1]	329.0 / 81.0	NA
13C2-6:2FTS	NA	SIS[1]	429.0 / 81.0	NA
13C2-8:2FTS	NA	SIS[1]	529.0 / 81.0	NA
$^{13}C_3$-HFPO-DA	NA	SIS	287.0 / 169.0	NA
13C3-PFBA	NA	IS[2]	216.0 / 172.0	NA
13C2-PFOA	NA	IS[2]	415.0 / 370.0	NA
13C2-PFDA	NA	IS[2]	515.0 / 470.0	NA
13C4-PFOS	NA	IS[2]	503.0 / 99.0	NA

[1] – extracted internal standard (surrogate)
[2] – injection internal standard

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Non-Potable Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
125	1	1	0.250	0.5
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
10,000	1	1	0.250	40.0
25,000	1	1	0.250	100.0

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	28-Jan-2020

Request ID:	19010
Company Name:	Battelle Memorial Institute
Instrument ID:	Instrument AC
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU 23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____

_____

_____

_____

Performed By: Rami Haddad **Date:** 28-Jan-2020

Approved By : Kevin McInerney 2020.02.11 13:59:16 -05'00' **Date:** 02/11/2020

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.5	Read Only
☑ CAD Medium	3.7	Read Only
☑ CAD High	4.5	Read Only
☑ CAD 12	4.5	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.62e7	Read Only	0.9036	Read Only
Q1 500.380	3.18e7	Read Only	0.9358	Read Only
Q1 906.673	5.18e7	Read Only	1.0839	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.48e7	Read Only	0.6863	Read Only
Q3 500.380	3.20e7	Read Only	0.7462	Read Only
Q3 906.673	5.05e7	Read Only	0.8272	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__20.41%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.30e7	Read Only	1.0302	Read Only
MS/MS 195.1	1.49e7	Read Only	0.7042	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.03e7	Read Only	0.6424	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	1.69e7	Read Only	0.6868	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	2.37e6	Read Only	0.6791	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	1.0	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.5	Read Only
☑ CAD Medium	3.7	Read Only
☑ CAD High	4.5	Read Only
☑ CAD 12	4.5	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	8.37 e6	≥1.2^{e}6	0.7878	0.6 to 0.8
Q1 500.380	2.85 e7	≥9.0^{e}6	0.7726	0.6 to 0.8
Q1 906.673	3.40 e7	≥1.4^{e}7	0.7909	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.39 e8	≥6.8^{e}7	0.7381	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	6.14 e6	≥1.2^{e}6	0.7216	0.6 to 0.8
Q3 500.380	2.54 e7	≥9.0^{e}6	0.7305	0.6 to 0.8
Q3 906.673	3.09 e7	≥1.4^{e}7	0.7509	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.40 e8	≥6.8^{e}7	0.7194	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 20.59% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	6.41 e7	N/A	0.7810	Read Only
MS/MS 195.1	1.32 e7	N/A	0.7490	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.19 e7	≥1.0^{e}7	0.7265	0.6 to 0.8
Q1 933.636	1000	50	6.51 e7	≥4.0^{e}7	0.7040	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.73 e7	≥8.0^{e}6	0.6559	0.6 to 0.8
Q3 933.636	1000	50	6.24 e7	≥4.0^{e}7	0.7431	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	2.85 e6	Read Only	0.6624	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.78 e6	≥7.2 ^{e}6	0.1647	<0.35
ER 922.010	0.05	2.76 e7	≥2.8 ^{e}6	0.2165	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.46 e7	≥2.4 ^{e}7	0.2552	<0.65
ER 922.010	0.05	8.83 e7	≥6.8 ^{e}7	0.4727	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	8.22 e7	≥4.4 ^{e}7	0.1857	<0.35
ER 601.978	0.05	1.01 e8	≥5.6 ^{e}7	0.1787	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.78 e8	≥1.2 ^{e}8	0.4069	<0.65
ER 601.978	0.05	5.92 e8	≥1.6 ^{e}8	0.3897	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.75 e6	≥2.0 e6	> 2.84 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	5.50 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	Yes 365	Fragment Intensity	> 1.07 e7	≥1.6x 10e6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

Sample Preparation

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BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	Project No.(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

This Batch Contains The Following Samples:	
CY734PB-FS	H4731-FS1
CY735LCS-FS	H4731MS-FS1
H4727-FS1	H4731MSD-FS1
H4728-FS1	H4732-FS1
H4729-FS1	H4733-FS1
H4730-FS1	H4734-FS1

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Allison Wamness

Approved By:	Date	Initials
Denise Schumitz	04/24/2020	DMS

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BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	Project No.(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	Description
CY734PB-FS	Procedural Blank
CY735LCS-FS	Laboratory Control Sample
H4727-FS1	009MW02-EB-04082020
H4728-FS1	009MW02-040820
H4729-FS1	009MW01-FB-040820
H4730-FS1	009MW01-040820
H4731-FS1	002G02DA-040820
H4731MS-FS1	Matrix Spike of 002G02DA-040820
H4731MSD-FS1	Matrix Spike Duplicate of 002G02DA-040820
H4732-FS1	002G05DA-040820
H4733-FS1	SB01-040820
H4734-FS1	FD01-040820

Samples Assigned By: Kelsey Harnden Date : April 21, 2020

Comments:

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BATTELLE - NORWELL OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Requested On/By:	04/21/2020 AW	**Purpose:**	Sample Preparation
Relinquished On/By:	04/21/2020 MDS	**Last Activity:**	Transfer

Accepted On/By:	04/21/2020 AW	**Returned On/To:**	
Stored In Facility:	Sample Preparation	**Returned To Facility:**	
Stored Until	04/21/2020		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	H4727	2	C	Consumed	NA
2	H4728	2	C	Consumed	NA
3	H4729	2	C	Consumed	NA
4	H4730	4	C	Consumed	NA
5	H4731	4	C	Consumed	NA
6	H4732	2	C	Consumed	NA
7	H4733	2	C	Consumed	NA
8	H4734	2	C	Consumed	NA

Total Samples 8 * "C" = Consumed Container

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BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s) CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s) 100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CY734PB-FS	Procedural Blank	250.0	NA	--	04/21/20 AW
CY735LCS-FS	Laboratory Control Sample	250.0	NA	--	04/21/20 AW
H4727-FS1	009MW02-EB-04082020	275.0	2	C	04/22/20 KB
H4728-FS1	009MW02-040820	260.0	2	C	04/22/20 KB
H4729-FS1	009MW01-FB-040820	260.0	2	C	04/22/20 KB
H4730-FS1	009MW01-040820	275.0	4	C	04/22/20 KB
H4731-FS1	002G02DA-040820	265.0	4	C	04/22/20 KB
H4731MS-FS1	Matrix Spike	260.0	5	C	04/22/20 KB
H4731MSD-FS1	Matrix Spike Duplicate	270.0	6	C	04/22/20 KB
H4732-FS1	002G05DA-040820	280.0	2	C	04/22/20 KB
H4733-FS1	SB01-040820	295.0	2	C	04/22/20 KB
H4734-FS1	FD01-040820	260.0	2	C	04/22/20 KB

Comments:

Samples Assigned By: Kelsey Harnden Date : April 21, 2020

* - "C" = Sample is Consumed

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BATTELLE - NORWELL OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CY734PB-FS	KY44	SIS	1	125	04/21/20 AW	KH	NA
CY735LCS-FS	KY44	SIS	1	125	04/21/20 AW	KH	NA
CY735LCS-FS	KY48	LCS/MS	1	100	04/21/20 AW	KH	NA
H4727-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4728-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4729-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4730-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4731-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4731MS-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4731MS-FS1	KY48	LCS/MS	1	100	04/21/20 AW	KH	NA
H4731MSD-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4731MSD-FS1	KY48	LCS/MS	1	100	04/21/20 AW	KH	NA
H4732-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4733-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA
H4734-FS1	KY44	SIS	1	125	04/21/20 AW	KH	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KY44	Pipette	B814657482
KY48	Pipette	B814657482

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BATTELLE - NORWELL OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s) | **Project No.(s)**

CTO-SE180383: NSA Mid-South, Millington, Tennessee | 100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	1st Extraction	2nd Extraction	3rd Extraction	Conc. ID	Turbo °C	Turbo PSI	KD °C	Comment
CY734PB-FS	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
CY735LCS-FS	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4727-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4728-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4729-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4730-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4731-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4731MS-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4731MSD-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4732-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4733-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA
H4734-FS1	04/21/20 AW	NA	NA	NEVAP_4	NA	NA	NA	NA

Solvents/Reagent Preparations:

Name	ID	Expires	Lot No	Procedure	Comments
Whatman Indicator paper pH 0-14	200217-01	02/17/24	10D0391	NA	
Phenomenex Strata X-AW 33um Polymeric Weak Anion	200312-01	03/12/25	S308-0109/S20-001194	NA	

Solvents/Reagents:

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BATTELLE - NORWELL OPERATIONS
EXTRACT CLEANUP FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Extract Id	Date	Init.	Comments
CY734PB-FS(0)	04/21/20	KH	NA
CY735LCS-FS(0)	04/21/20	KH	NA
H4727-FS1(0)	04/21/20	KH	NA
H4728-FS1(0)	04/21/20	KH	NA
H4729-FS1(0)	04/21/20	KH	NA
H4730-FS1(0)	04/21/20	KH	NA
H4731-FS1(0)	04/21/20	KH	NA
H4731MS-FS1(0)	04/21/20	KH	NA
H4731MSD-FS1(0)	04/21/20	KH	NA
H4732-FS1(0)	04/21/20	KH	NA
H4733-FS1(0)	04/21/20	KH	NA
H4734-FS1(0)	04/21/20	KH	NA

Cleanup:
Envi-Carb

Reagents:

Reagent Prep	Name	Expires	Lot No	Procedure
191209-01	Supelclean ENVI-Carb SPE Bulk Packing	12/09/24	122395	NA

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BATTELLE - NORWELL OPERATIONS
EXTRACT CLEANUP FORM

Project Title(s)	Project No.(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Extract Id	Date	Init.	Comments

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BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CY734PB-FS(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
CY735LCS-FS(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4727-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4728-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4729-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4730-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4731-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4731MS-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4731MSD-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4732-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4733-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH
H4734-FS1(0)	875	125	KY45	125	1	1000	1.000	04/22/20 KB	KH

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KY45	Pipette	B814657482

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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BATTELLE - NORWELL OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CY734PB-FS	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
CY735LCS-FS	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4727-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4728-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4729-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4730-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4731-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4731MS-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4731MSD-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4732-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4733-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW
H4734-FS1	0	--	4/21/2020 11:24:00 AM	NA		NA	NA	1.000	1.000	04/21/20 AW

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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BATTELLE - NORWELL OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s) CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s) 100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Apr 22 2020 2:43PM KH	**Received On/By:**	Apr 22 2020 2:43PM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CY734PB-FS(0)	1000	1	Intact	NA
2	CY735LCS-FS(0)	1000	1	Intact	NA
3	H4727-FS1(0)	1000	1	Intact	NA
4	H4728-FS1(0)	1000	1	Intact	NA
5	H4729-FS1(0)	1000	1	Intact	NA
6	H4730-FS1(0)	1000	1	Intact	NA
7	H4731-FS1(0)	1000	1	Intact	NA
8	H4731MS-FS1(0)	1000	1	Intact	NA
9	H4731MSD-FS1(0)	1000	1	Intact	NA
10	H4732-FS1(0)	1000	1	Intact	NA
11	H4733-FS1(0)	1000	1	Intact	NA
12	H4734-FS1(0)	1000	1	Intact	NA

Total Extracts: 12

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BATTELLE - NORWELL OPERATIONS
SAMPLE SPECIFIC COMMENTS

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID:	Comment:	Date/Initials:
CY734PB-FS	Extraction started at 11:24 AM, manifold 2, ended 12:22PM	04/21/20 AW
CY735LCS-FS	Extraction started at 11:24 AM, manifold 2, ended 12:27 PM	04/21/20 AW
H4727-FS1	Extraction started at 11:24 AM, manifold 2, ended 12:51 PM	04/21/20 AW
H4728-FS1	Extraction started at 11:24 AM, manifold 4, ended 2:05 PM	04/21/20 AW
H4728-FS1	Sample contains particulates	04/21/20 AW
H4728-FS1	Sample was allowed to elute through column until it no longer was eluting. Filter was popped at 1:57 PM and eluting continued.	04/21/20 AW
H4729-FS1	Extraction started at 11:24 AM, manifold 2, ended 1:08 PM	04/21/20 AW
H4730-FS1	Extraction started at 11:24 AM, manifold 4, ended 1:08 PM	04/21/20 AW
H4730-FS1	Sample contains particulates	04/21/20 AW
H4731-FS1	Extraction started at 11:24 AM, manifold 4, ended 12:40 PM	04/21/20 AW
H4731-FS1	Sample contains particulates	04/21/20 AW
H4731MS-FS1	Extraction started at 11:24 AM, manifold 4, ended 12:44 PM	04/21/20 AW
H4731MS-FS1	Sample contains particulates	04/21/20 AW
H4731MSD-FS	Extraction started at 11:24 AM, manifold 4, ended 12:38 PM	04/21/20 AW
H4731MSD-FS	Sample contains particulates	04/21/20 AW
H4732-FS1	Extraction started at 11:24 AM, manifold 4, ended 12:55 PM	04/21/20 AW
H4732-FS1	Sample contains particulates	04/21/20 AW
H4733-FS1	Extraction started at 11:24 AM, manifold 2, ended 1:05 PM	04/21/20 AW
H4734-FS1	Extraction started at 11:24 AM, manifold 4, ended 2:12 PM	04/21/20 AW
H4734-FS1	Sample contains particulates	04/21/20 AW
H4734-FS1	Sample was allowed to elute through column until it no longer was eluting. Filter was popped at 1:58 PM and eluting continued.	04/21/20 AW

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BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title(s)	Project No.(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0493

CTO-SE180383: NSA Mid-South

GW, QC

Entered By:	On:

Task Leader Approval:	On:
SupervisorApproval:	On:
PM Approval:	On:

Analytical Calibrations

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 12:18:10 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MEOH		4/20/2020 1:37:56 PM	5-0369.dam	AC_04202020_05-369.wiff
2	MEOH		4/20/2020 1:48:52 PM	5-0369.dam	AC_04202020_05-369.wiff
3	MEOH		4/20/2020 1:59:47 PM	5-0369.dam	AC_04202020_05-369.wiff
4	KY33	L1	4/20/2020 2:10:43 PM	5-0369.dam	AC_04202020_05-369.wiff
5	KY34	L2	4/20/2020 2:21:38 PM	5-0369.dam	AC_04202020_05-369.wiff
6	KY35	L3	4/20/2020 2:32:34 PM	5-0369.dam	AC_04202020_05-369.wiff
7	KY36	L4	4/20/2020 2:43:31 PM	5-0369.dam	AC_04202020_05-369.wiff
8	KY37	L5	4/20/2020 2:54:27 PM	5-0369.dam	AC_04202020_05-369.wiff
9	KY38	L6	4/20/2020 3:05:22 PM	5-0369.dam	AC_04202020_05-369.wiff
10	KY39	L7	4/20/2020 3:16:18 PM	5-0369.dam	AC_04202020_05-369.wiff
11	KY40 IB	IB	4/20/2020 3:27:15 PM	5-0369.dam	AC_04202020_05-369.wiff
12	KY41 ICC	ICC	4/20/2020 3:38:10 PM	5-0369.dam	AC_04202020_05-369.wiff
13	KY42 BRANCHED	Branched Standard	4/20/2020 3:49:07 PM	5-0369.dam	AC_04202020_05-369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 12:21:56 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
13	MeOH		4/22/2020 4:54:16 PM	5-0369.dam	AC_04222020_5-369.wiff
14	KY35 CCV	CCV	4/22/2020 5:05:12 PM	5-0369.dam	AC_04222020_5-369.wiff
15	KY39	L7	4/22/2020 5:16:08 PM	5-0369.dam	AC_04222020_5-369.wiff
16	KY40 IB	IB	4/22/2020 5:27:02 PM	5-0369.dam	AC_04222020_5-369.wiff
17	MeOH		4/22/2020 5:38:00 PM	5-0369.dam	AC_04222020_5-369.wiff
~~18~~	~~CY726PB-FS(0)~~		~~4/22/2020 5:48:56 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~19~~	~~CY727LCS-FS(0)~~		~~4/22/2020 5:59:52 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~20~~	~~H4792-FS(0)~~		~~4/22/2020 6:10:48 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~21~~	~~H4792MS-FS(0)~~		~~4/22/2020 6:21:44 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~22~~	~~H4792MSD-FS(0)~~		~~4/22/2020 6:32:41 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~23~~	~~H4793-FS(0)~~		~~4/22/2020 6:43:38 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
24	MeOH		4/22/2020 6:54:35 PM	5-0369.dam	AC_04222020_5-369.wiff
25	MeOH		4/22/2020 7:05:31 PM	5-0369.dam	AC_04222020_5-369.wiff
26	MeOH		4/22/2020 7:16:29 PM	5-0369.dam	AC_04222020_5-369.wiff
27	KY37 CCV	CCV	4/22/2020 7:27:25 PM	5-0369.dam	AC_04222020_5-369.wiff
28	MeOH		4/22/2020 7:38:20 PM	5-0369.dam	AC_04222020_5-369.wiff
29	CY734PB-FS(0)	Procedural Blank	4/22/2020 7:49:16 PM	5-0369.dam	AC_04222020_5-369.wiff
30	CY735LCS-FS(0)	Laboratory Control Sample	4/22/2020 8:00:13 PM	5-0369.dam	AC_04222020_5-369.wiff
31	H4727-FS1(0)	009MW02-EB-04082020	4/22/2020 8:11:08 PM	5-0369.dam	AC_04222020_5-369.wiff
32	H4728-FS1(0)	009MW02-040820	4/22/2020 8:22:04 PM	5-0369.dam	AC_04222020_5-369.wiff
33	H4729-FS1(0)	009MW01-FB-040820	4/22/2020 8:33:01 PM	5-0369.dam	AC_04222020_5-369.wiff
34	H4730-FS1(0)	009MW01-040820	4/22/2020 8:43:56 PM	5-0369.dam	AC_04222020_5-369.wiff
35	MeOH		4/22/2020 8:54:52 PM	5-0369.dam	AC_04222020_5-369.wiff
36	MeOH		4/22/2020 9:05:48 PM	5-0369.dam	AC_04222020_5-369.wiff
37	KY36 CCV	CCV	4/22/2020 9:16:45 PM	5-0369.dam	AC_04222020_5-369.wiff
38	H4731-FS1(0)	002G02DA-040820	4/22/2020 9:27:41 PM	5-0369.dam	AC_04222020_5-369.wiff
39	H4731MS-FS1(0)	002G02DA-040820	4/22/2020 9:38:39 PM	5-0369.dam	AC_04222020_5-369.wiff
40	H4731MSD-FS1(0)	002G02DA-040820	4/22/2020 9:49:34 PM	5-0369.dam	AC_04222020_5-369.wiff
41	H4732-FS1(0)	002G05DA-040820	4/22/2020 10:00:31 PM	5-0369.dam	AC_04222020_5-369.wiff
42	H4733-FS1(0)	SB01-040820	4/22/2020 10:11:26 PM	5-0369.dam	AC_04222020_5-369.wiff
43	H4734-FS1(0)	FD01-040820	4/22/2020 10:22:23 PM	5-0369.dam	AC_04222020_5-369.wiff
24	MeOH		4/22/2020 10:33:20 PM	5-0369.dam	AC_04222020_5-369.wiff
25	MeOH		4/22/2020 10:44:17 PM	5-0369.dam	AC_04222020_5-369.wiff
26	MeOH		4/22/2020 10:55:13 PM	5-0369.dam	AC_04222020_5-369.wiff
46	KY37 CCV	CCV	4/22/2020 11:06:10 PM	5-0369.dam	AC_04222020_5-369.wiff
36	MeOH		4/23/2020 9:28:42 AM	5-0369.dam	AC_04222020_5-369.wiff
1	MEOH		4/23/2020 9:40:29 AM	5-0369.dam	AC_04222020_5-369.wiff
~~2~~	~~KY36 CCV~~	~~CCV~~	~~4/23/2020 9:51:26 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
3	MEOH		4/23/2020 10:02:24 AM	5-0369.dam	AC_04222020_5-369.wiff

2

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 12:21:56 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
4	H4728 FS1(0)	009MW02-040820	4/23/2020 10:13:21 AM	5-0369.dam	AC_04222020_5-369.wiff
5	H4730 FS1(0)	009MW01-040820	4/23/2020 10:24:17 AM	5-0369.dam	AC_04222020_5-369.wiff
6	H4731 FS1(0)	002G02DA-040820	4/23/2020 10:35:14 AM	5-0369.dam	AC_04222020_5-369.wiff
7	H4731MS FS1(0)	002G02DA-040820	4/23/2020 10:46:10 AM	5-0369.dam	AC_04222020_5-369.wiff
8	H4731MSD FS1(0)	002G02DA-040820	4/23/2020 10:57:06 AM	5-0369.dam	AC_04222020_5-369.wiff
9	H4732 FS1(0)	002G05DA-040820	4/23/2020 11:08:03 AM	5-0369.dam	AC_04222020_5-369.wiff
10	H4734 FS1(0)	FD01-040820	4/23/2020 11:19:00 AM	5-0369.dam	AC_04222020_5-369.wiff
11	MEOH		4/23/2020 11:29:57 AM	5-0369.dam	AC_04222020_5-369.wiff
12	KY37 CCV	CCV	4/23/2020 11:40:54 AM	5-0369.dam	AC_04222020_5-369.wiff

1

1 Samples were reanalyzed for confirmation only and were not reported. Data is included in the Unused Data section. LMG 04/23/2020

2 Samples do not apply to this batch. LMG 04/23/2020

BATTELLE

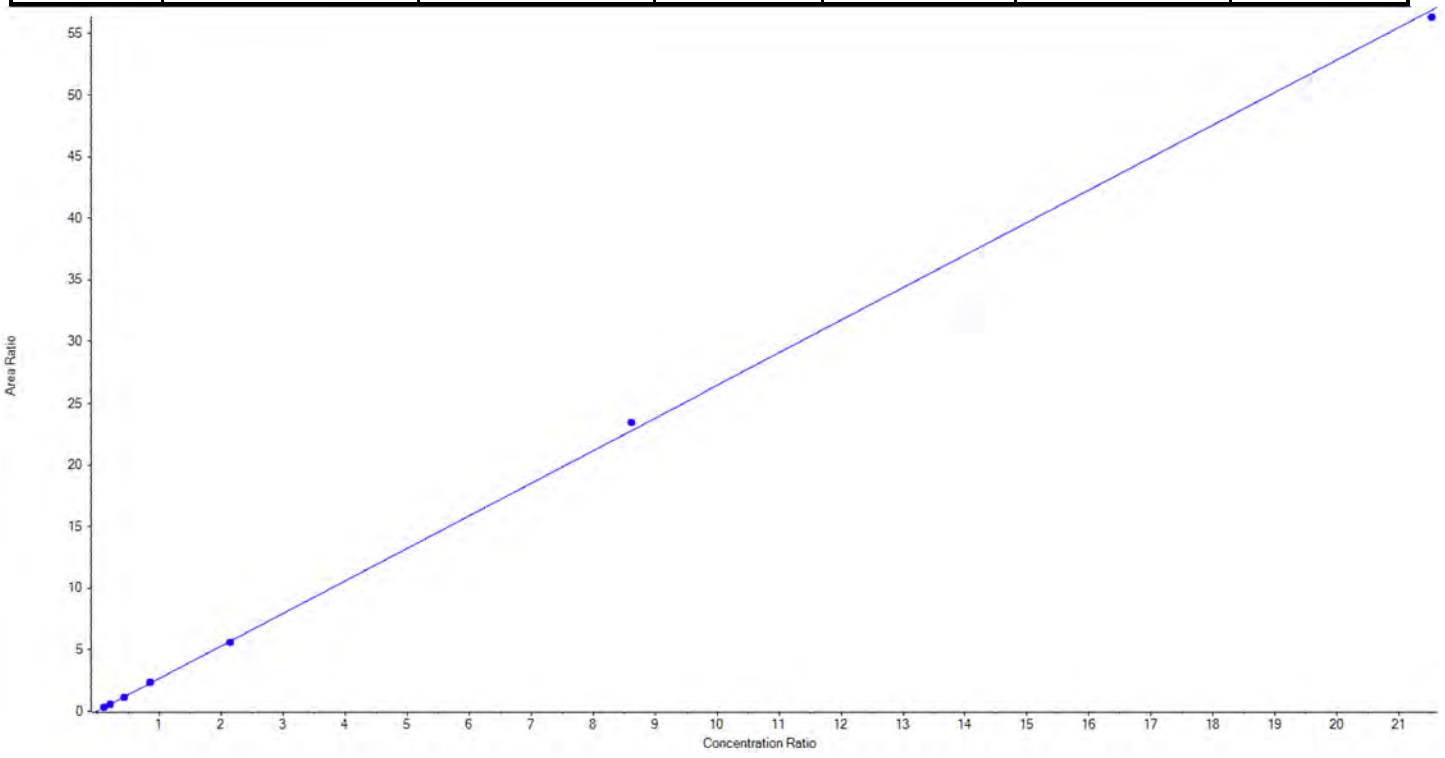
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFBS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	298.9 / 80.0	**Result Table**	20-0493
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.64201 x + 0.01958 (r = 0.99983) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	123.52	98.8
5	KY34	L2	True	250.00	253.19	101.3
6	KY35	L3	True	500.00	490.76	98.2
7	KY36	L4	True	1000.00	1016.75	101.7
8	KY37	L5	True	2500.00	2455.55	98.2
9	KY38	L6	True	10000.00	10285.52	102.9
10	KY39	L7	True	25000.00	24749.70	99.0



BATTELLE

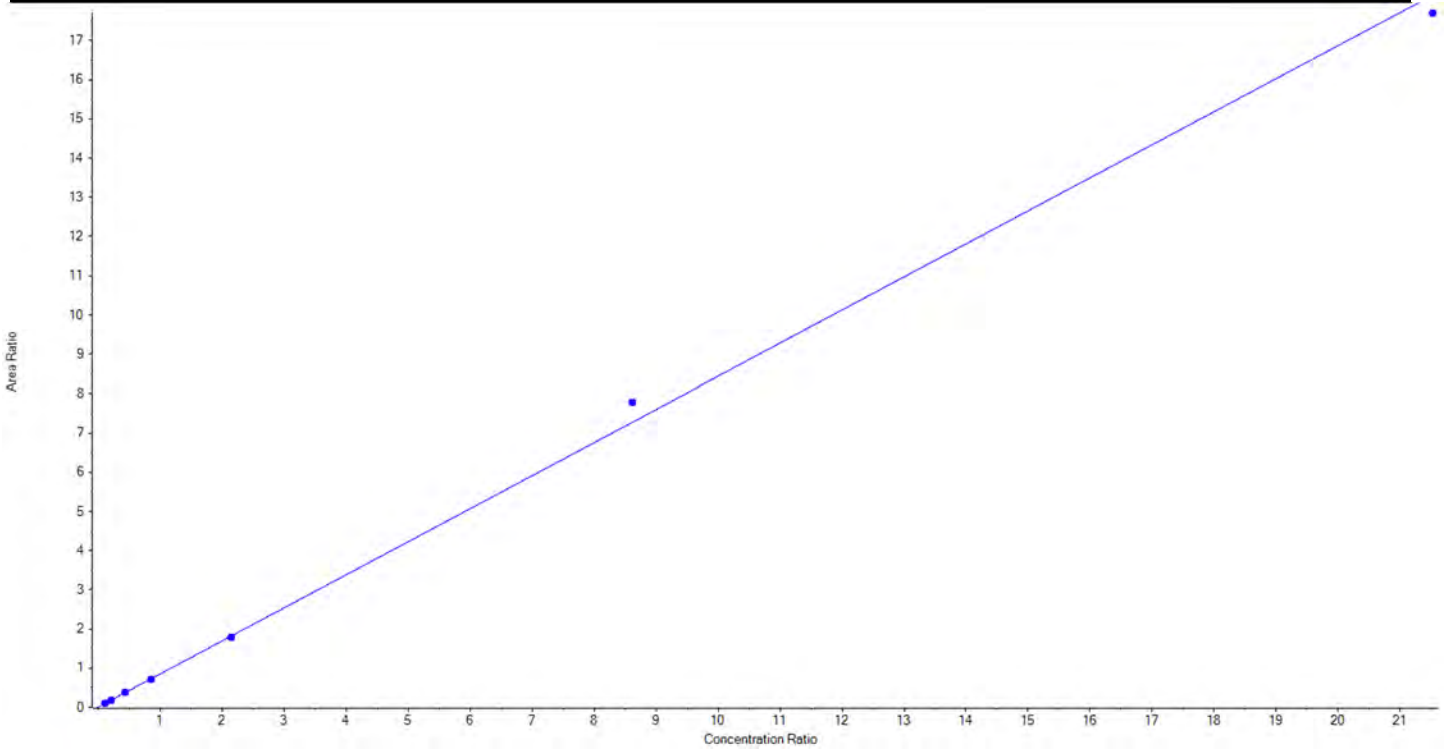
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFBS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	298.9 / 99.0	**Result Table**	20-0493
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.84305 x + 0.00873 (r = 0.99906) (weighting: 1 / x) r^2:0.9981

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	124.61	99.7
5	KY34	L2	True	250.00	248.93	99.6
6	KY35	L3	True	500.00	509.36	101.9
7	KY36	L4	True	1000.00	958.61	95.9
8	KY37	L5	True	2500.00	2462.52	98.5
9	KY38	L6	True	10000.00	10702.96	107.0
10	KY39	L7	True	25000.00	24368.00	97.5



BATTELLE

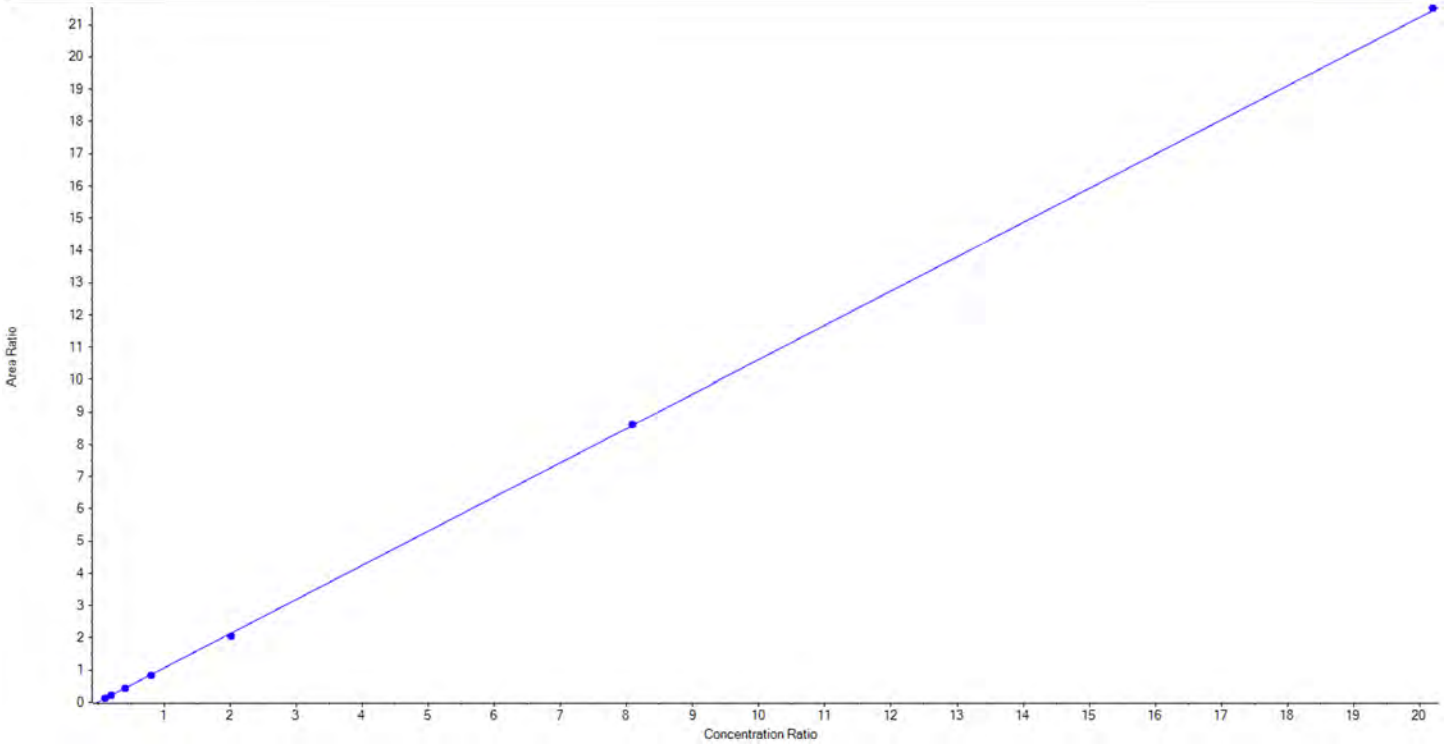
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFHxA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	313.0 / 269.0	**Result Table**	20-0493
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.06096 x + 0.00834 (r = 0.99989) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	134.45	106.5
5	KY34	L2	True	252.50	255.24	101.1
6	KY35	L3	True	505.00	508.51	100.7
7	KY36	L4	True	1010.00	961.33	95.2
8	KY37	L5	True	2525.00	2414.89	95.6
9	KY38	L6	True	10100.00	10156.21	100.6
10	KY39	L7	True	25250.00	25338.13	100.4



BATTELLE

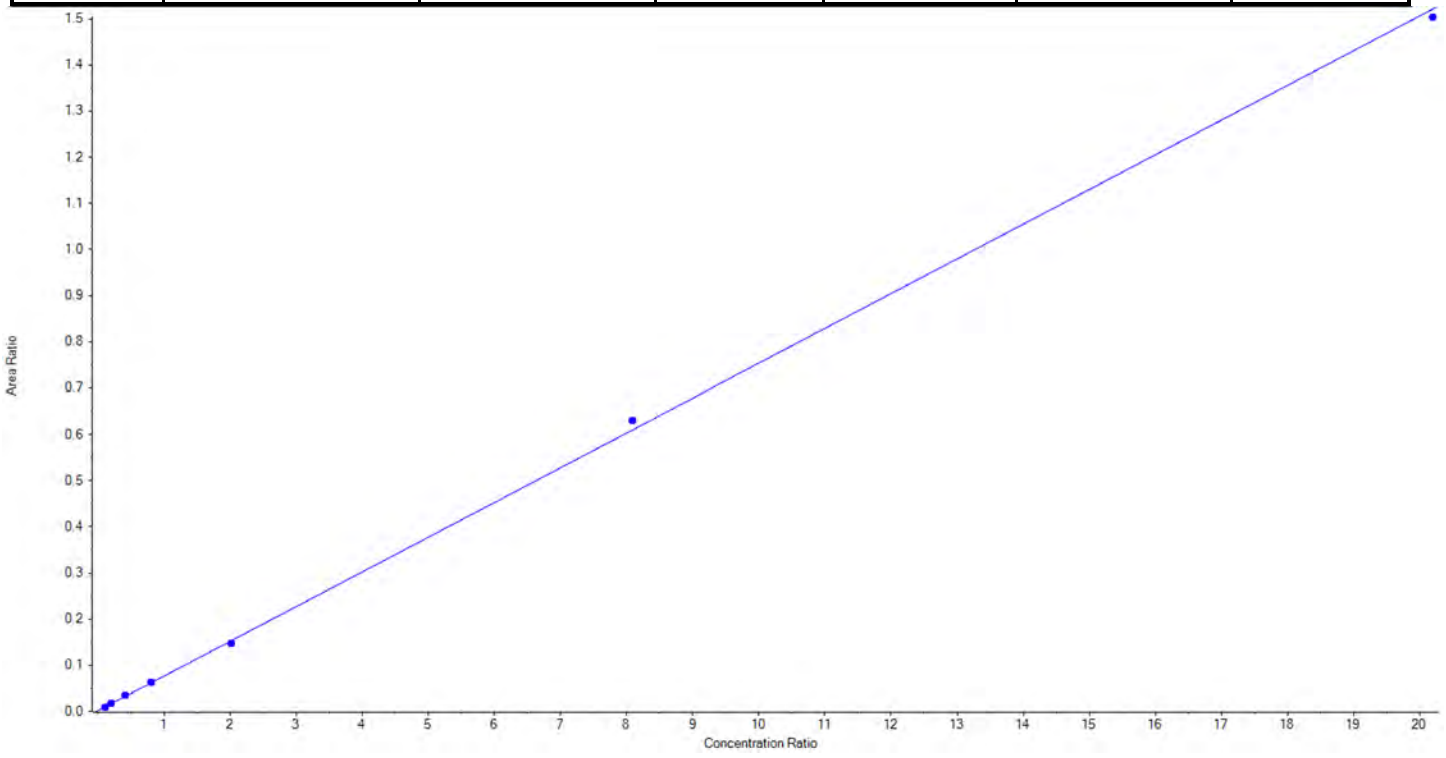
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFHxA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	313.0 / 119.0	**Result Table**	20-0493
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.07522 x + 0.00139 (r = 0.99969) (weighting: 1 / x) r^2:0.9994

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	114.21	90.5
5	KY34	L2	True	252.50	261.81	103.7
6	KY35	L3	True	505.00	535.88	106.1
7	KY36	L4	True	1010.00	1022.83	101.3
8	KY37	L5	True	2525.00	2428.85	96.2
9	KY38	L6	True	10100.00	10445.98	103.4
10	KY39	L7	True	25250.00	24959.19	98.9



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Calibration Summary Report

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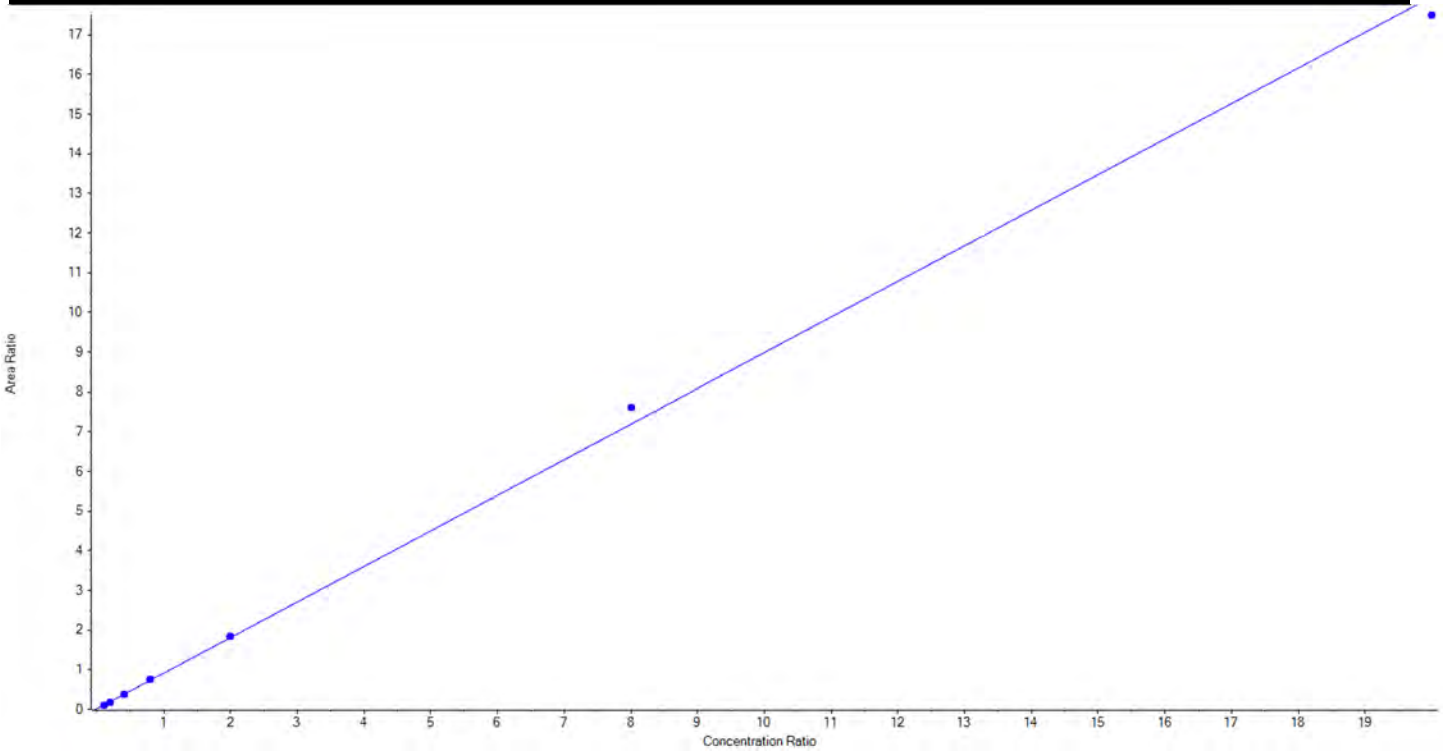
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFHpA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	363.0 / 319.0	**Result Table**	20-0493
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89707 x + 0.01624 (r = 0.99924) (weighting: 1 / x) r^2:0.9985

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	124.60	99.7
5	KY34	L2	True	250.00	231.87	92.8
6	KY35	L3	True	500.00	503.66	100.7
7	KY36	L4	True	1000.00	1017.96	101.8
8	KY37	L5	True	2500.00	2540.34	101.6
9	KY38	L6	True	10000.00	10599.92	106.0
10	KY39	L7	True	25000.00	24356.65	97.4



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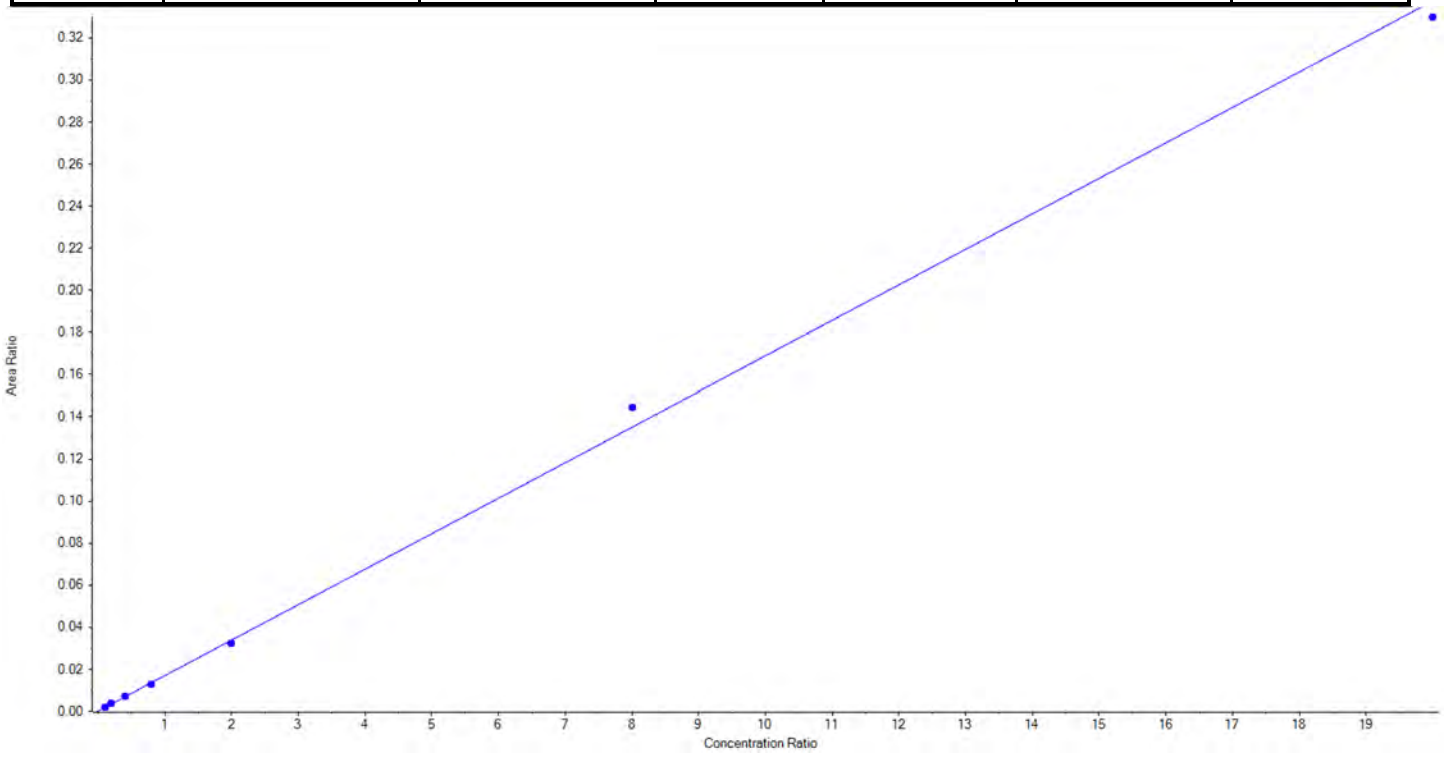
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFHpA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	363.0 / 169.0	**Result Table**	20-0493
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01687 x + 1.15904e-4 (r = 0.99897) (weighting: 1 / x) r^2:0.9979

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	121.78	97.4
5	KY34	L2	True	250.00	260.16	104.1
6	KY35	L3	True	500.00	525.43	105.1
7	KY36	L4	True	1000.00	926.70	92.7
8	KY37	L5	True	2500.00	2397.71	95.9
9	KY38	L6	True	10000.00	10712.13	107.1
10	KY39	L7	True	25000.00	24431.10	97.7



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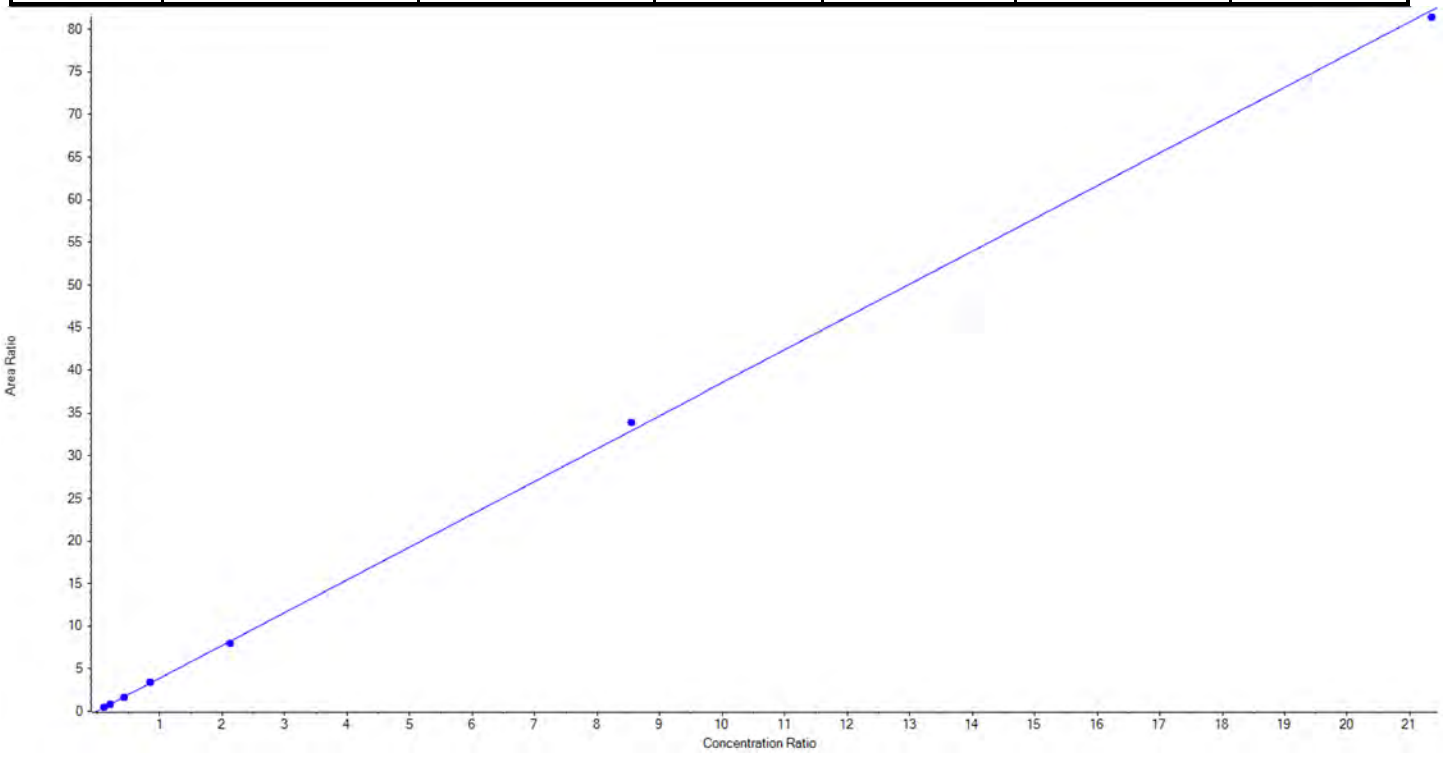
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFHxS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	399.0 / 80.0	**Result Table**	20-0493
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 3.84991 x + 0.03600 (r = 0.99978) (weighting: 1 / x) r^2:0.9996

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	132.62	105.1
5	KY34	L2	True	252.50	239.74	95.0
6	KY35	L3	True	505.00	500.69	99.2
7	KY36	L4	True	1010.00	1027.77	101.8
8	KY37	L5	True	2525.00	2447.34	96.9
9	KY38	L6	True	10100.00	10418.77	103.2
10	KY39	L7	True	25250.00	25001.81	99.0



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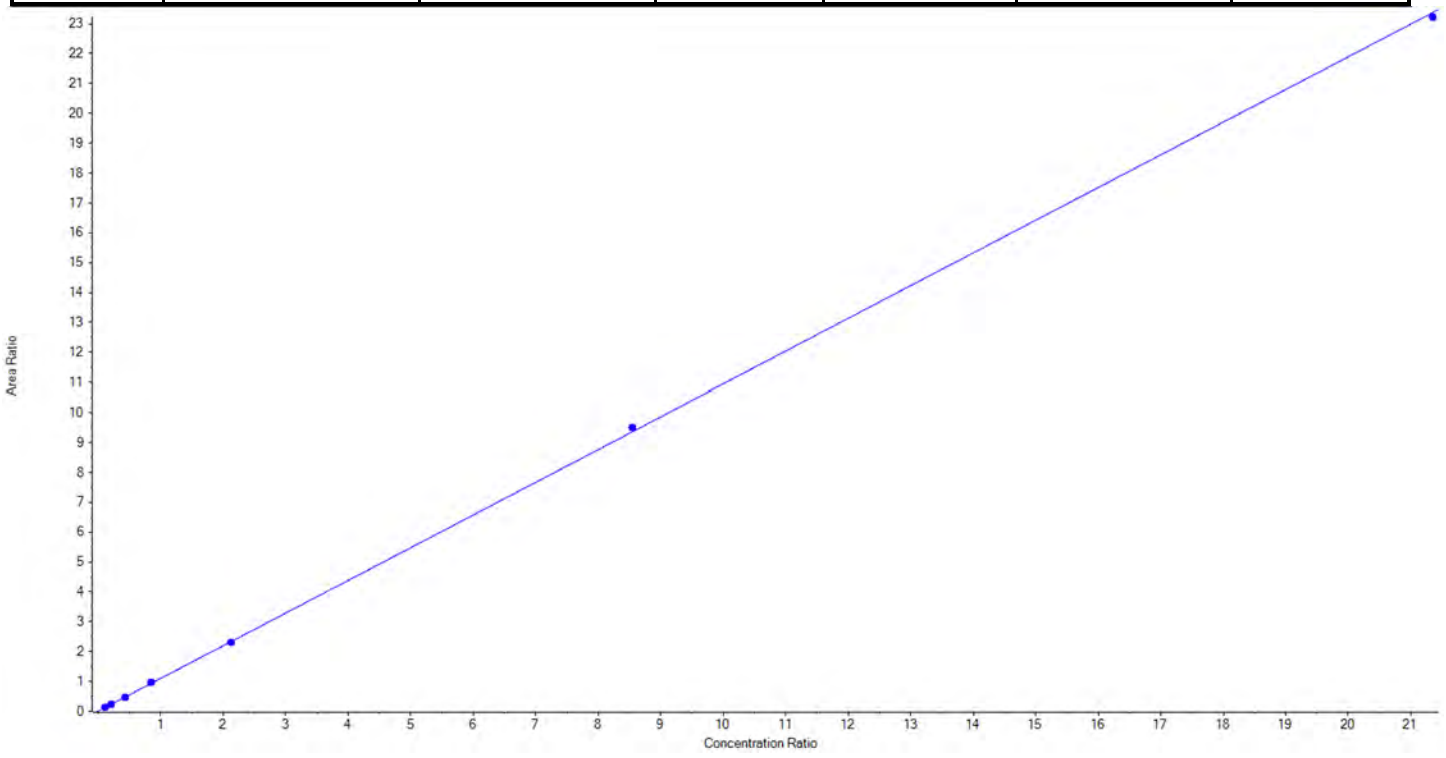
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFHxS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	399.0 / 99.0	**Result Table**	20-0493
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.09437 x + 0.00490 (r = 0.99990) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	134.16	106.3
5	KY34	L2	True	252.50	236.54	93.7
6	KY35	L3	True	505.00	488.18	96.7
7	KY36	L4	True	1010.00	1040.51	103.0
8	KY37	L5	True	2525.00	2506.11	99.3
9	KY38	L6	True	10100.00	10278.17	101.8
10	KY39	L7	True	25250.00	25085.08	99.4



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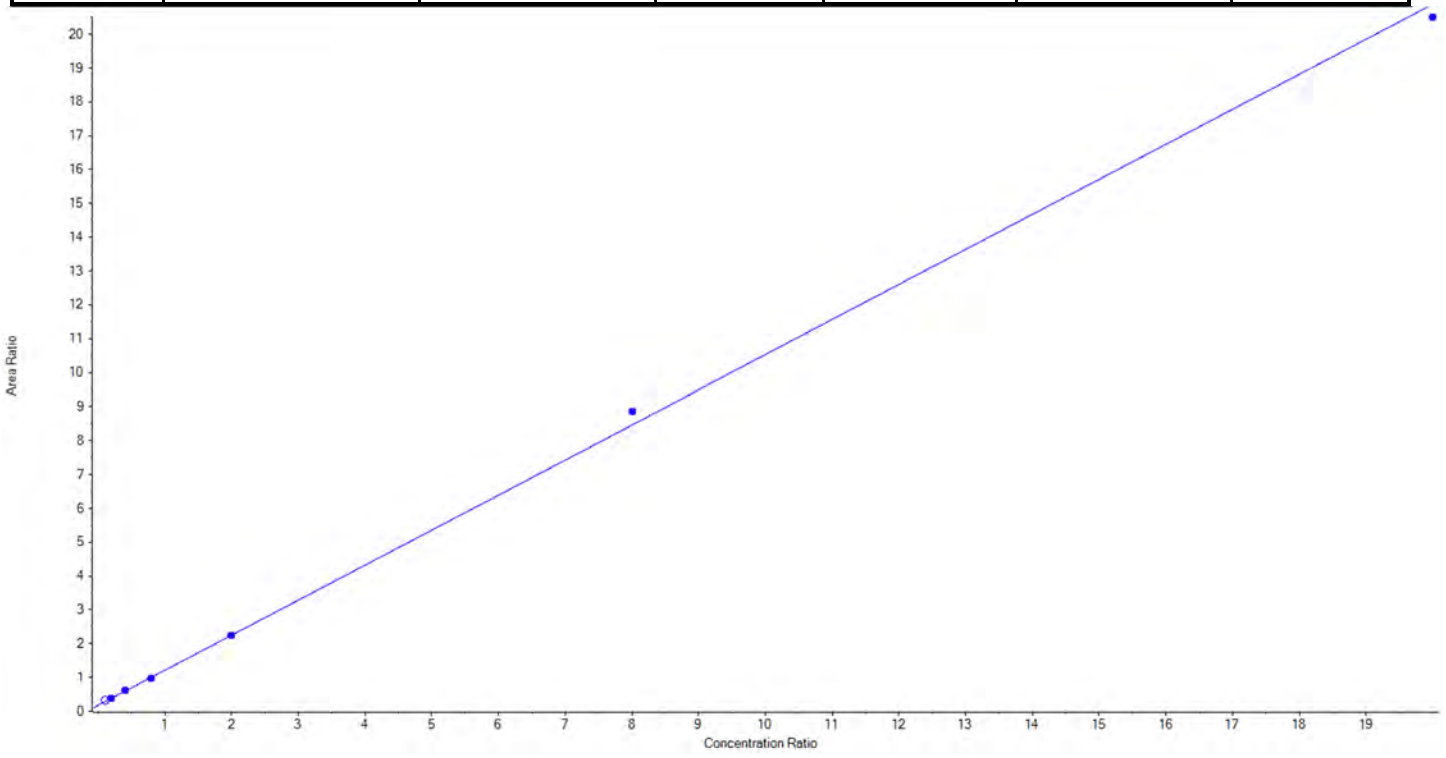
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFOA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	413.0 / 369.0	**Result Table**	20-0493
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.03539 x + 0.17883 (r = 0.99948) (weighting: 1 / x) r^2:0.9990

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	190.99	152.8
5	KY34	L2	True	250.00	241.52	96.6
6	KY35	L3	True	500.00	523.86	104.8
7	KY36	L4	True	1000.00	953.88	95.4
8	KY37	L5	True	2500.00	2505.34	100.2
9	KY38	L6	True	10000.00	10486.37	104.9
10	KY39	L7	True	25000.00	24539.03	98.2



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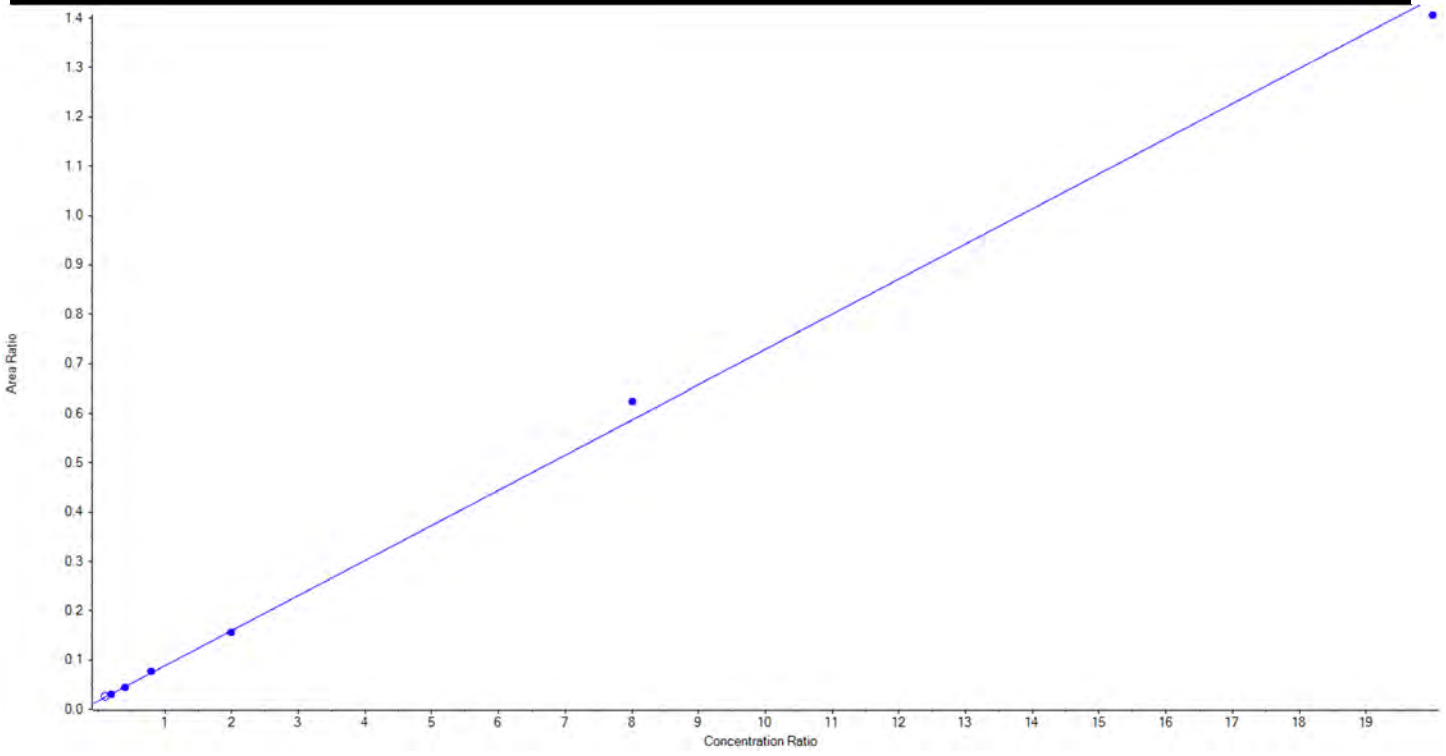
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFOA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	413.0 / 169.0	**Result Table**	20-0493
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.07118 x + 0.01701 (r = 0.99911) (weighting: 1 / x) r^2:0.9982

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	162.41	129.9
5	KY34	L2	True	250.00	245.08	98.0
6	KY35	L3	True	500.00	484.74	97.0
7	KY36	L4	True	1000.00	1036.67	103.7
8	KY37	L5	True	2500.00	2430.28	97.2
9	KY38	L6	True	10000.00	10655.04	106.6
10	KY39	L7	True	25000.00	24398.20	97.6



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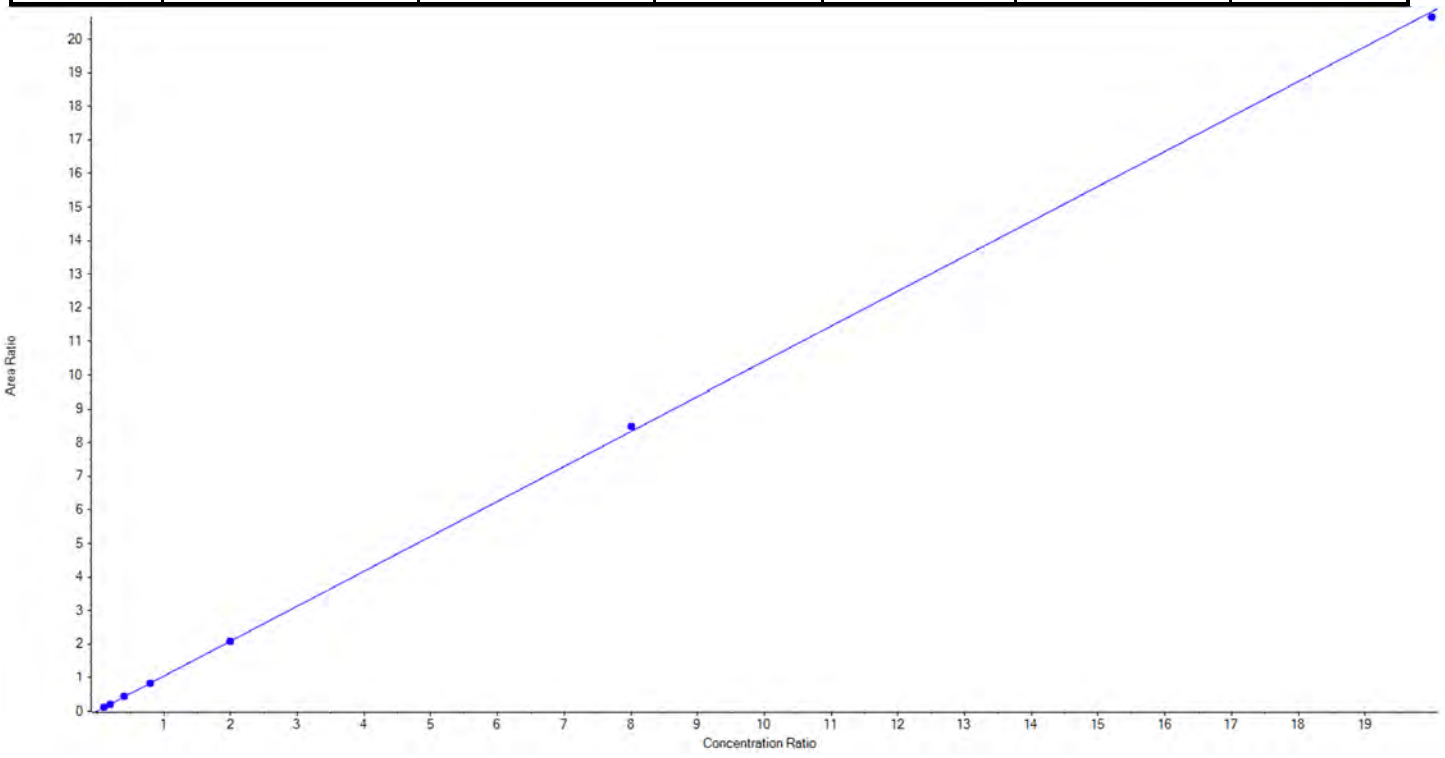
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFNA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	463.0 / 419.0	**Result Table**	20-0493
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.04040 x + 0.00980 (r = 0.99991) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	118.40	94.7
5	KY34	L2	True	250.00	252.53	101.0
6	KY35	L3	True	500.00	521.40	104.3
7	KY36	L4	True	1000.00	985.74	98.6
8	KY37	L5	True	2500.00	2509.13	100.4
9	KY38	L6	True	10000.00	10183.04	101.8
10	KY39	L7	True	25000.00	24804.77	99.2



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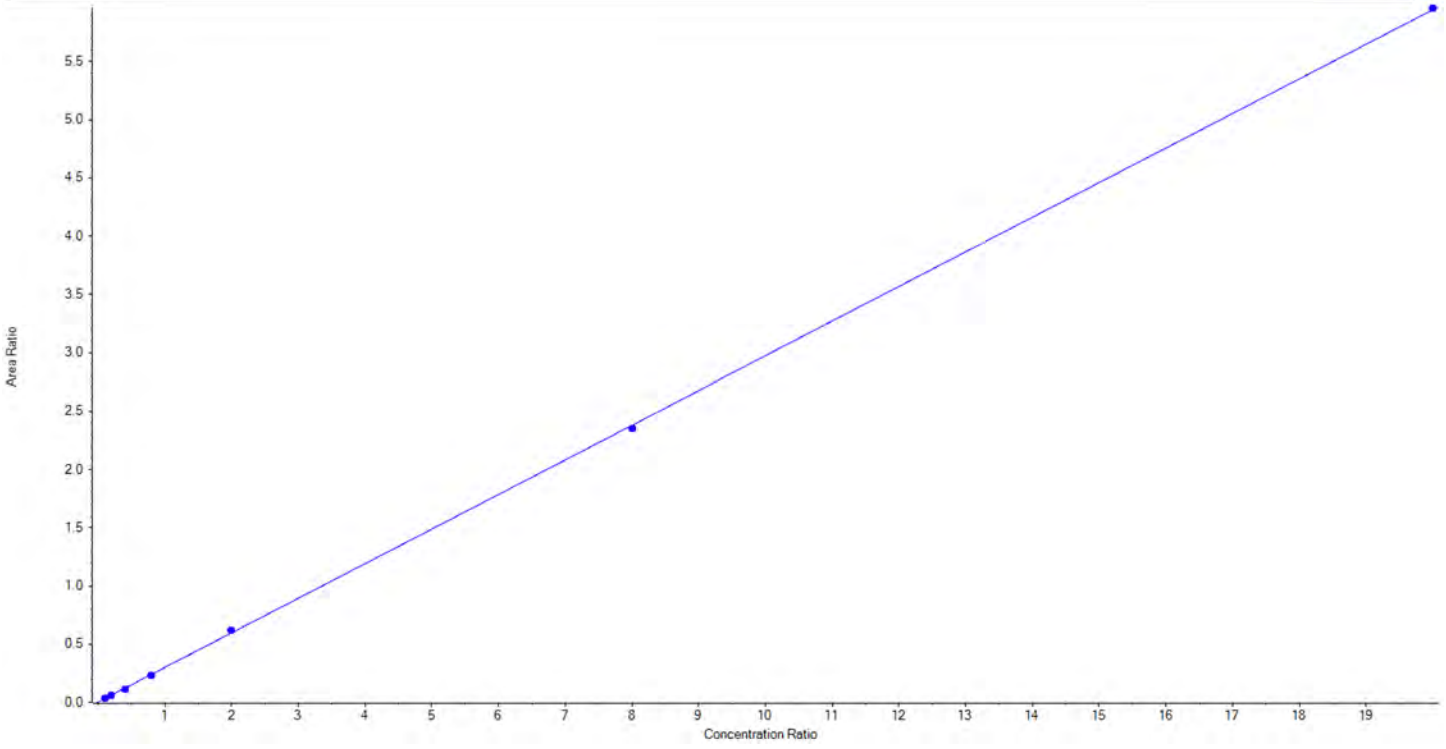
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFNA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	463.0 / 219.0	**Result Table**	20-0493
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.29705 x + 0.00256 (r = 0.99987) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	130.77	104.6
5	KY34	L2	True	250.00	255.23	102.1
6	KY35	L3	True	500.00	470.97	94.2
7	KY36	L4	True	1000.00	956.77	95.7
8	KY37	L5	True	2500.00	2605.24	104.2
9	KY38	L6	True	10000.00	9898.40	99.0
10	KY39	L7	True	25000.00	25057.63	100.2



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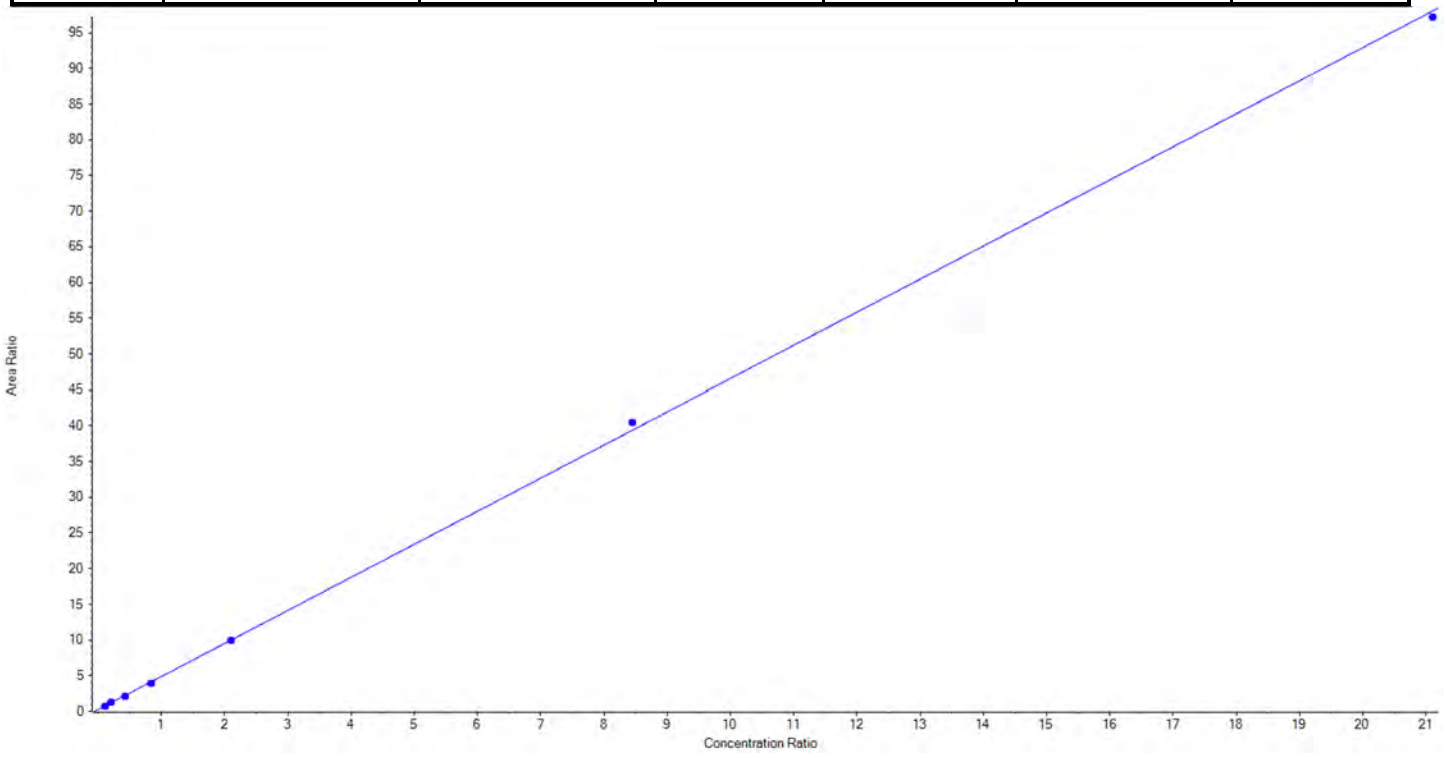
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFOS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	499.0 / 80.0	**Result Table**	20-0493
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 4.63418 x + 0.23516 (r = 0.99980) (weighting: 1 / x) r^2:0.9996

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	130.68	103.5
5	KY34	L2	True	252.50	260.93	103.3
6	KY35	L3	True	505.00	491.81	97.4
7	KY36	L4	True	1010.00	957.79	94.8
8	KY37	L5	True	2525.00	2494.44	98.8
9	KY38	L6	True	10100.00	10404.69	103.0
10	KY39	L7	True	25250.00	25028.41	99.1



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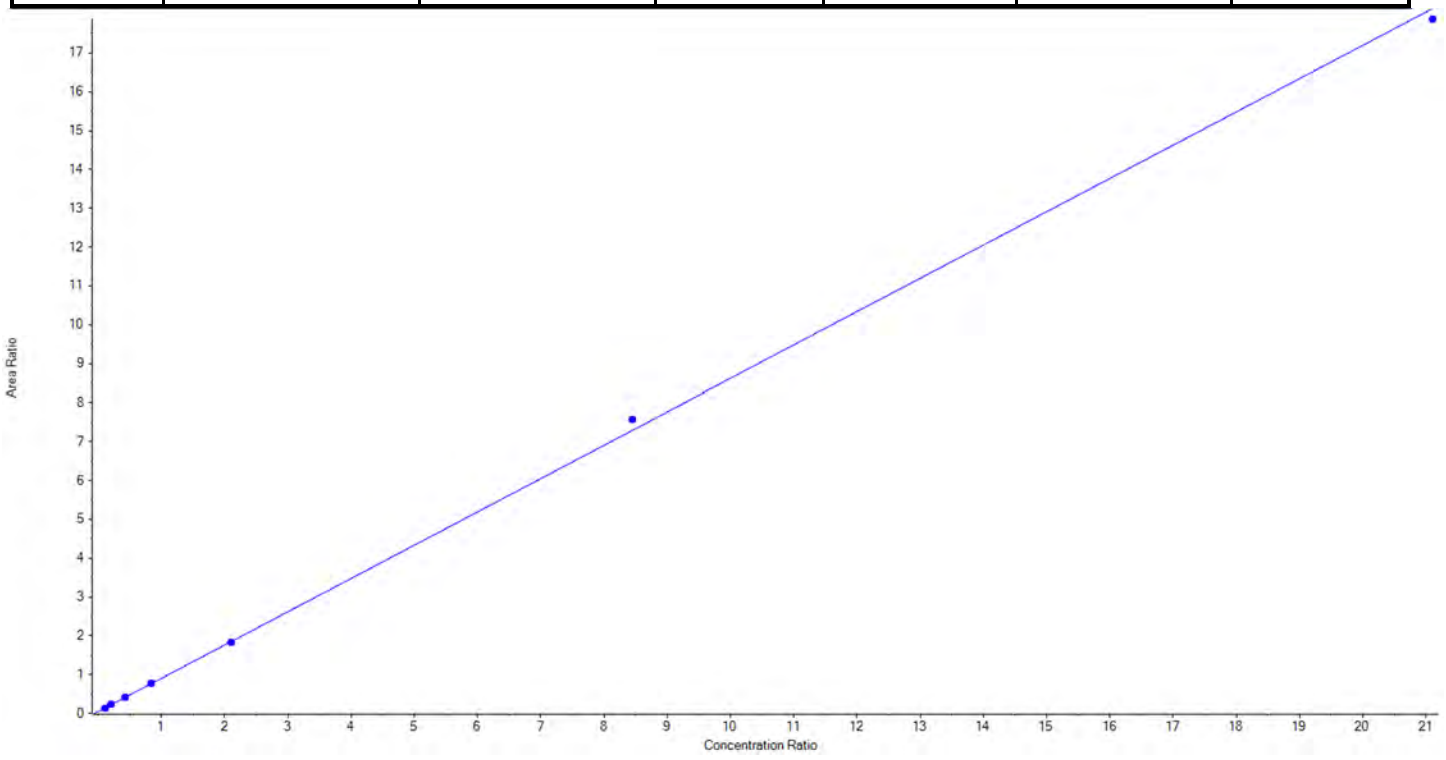
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFOS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	499.0 / 99.0	**Result Table**	20-0493
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.85769 x + 0.04342 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	118.53	93.9
5	KY34	L2	True	252.50	261.99	103.8
6	KY35	L3	True	505.00	507.76	100.6
7	KY36	L4	True	1010.00	1018.50	100.8
8	KY37	L5	True	2525.00	2485.13	98.4
9	KY38	L6	True	10100.00	10510.61	104.1
10	KY39	L7	True	25250.00	24866.23	98.5



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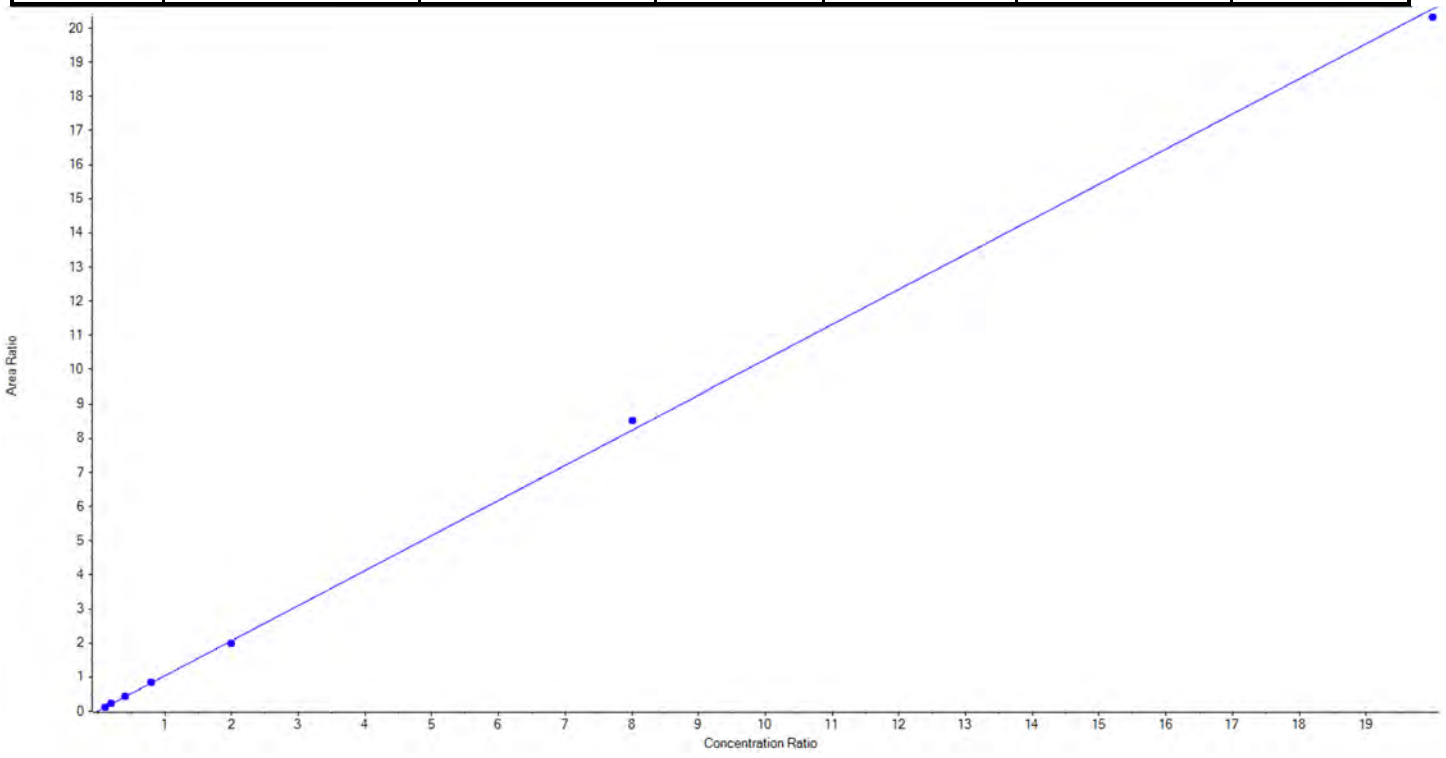
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFDA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	513.0 / 469.0	**Result Table**	20-0493
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.02768 x + 0.01296 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	112.19	89.8
5	KY34	L2	True	250.00	270.60	108.2
6	KY35	L3	True	500.00	512.14	102.4
7	KY36	L4	True	1000.00	1008.72	100.9
8	KY37	L5	True	2500.00	2406.56	96.3
9	KY38	L6	True	10000.00	10364.04	103.6
10	KY39	L7	True	25000.00	24700.75	98.8



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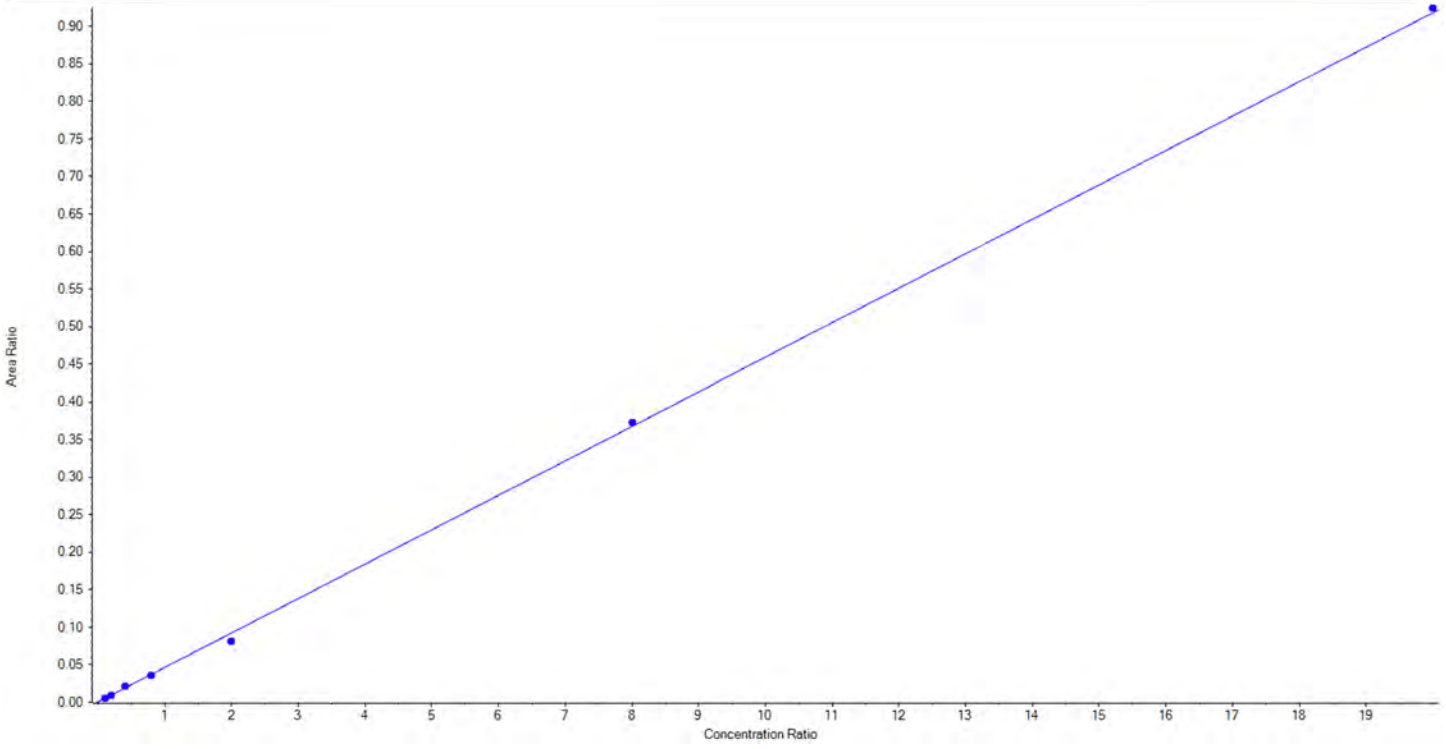
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFDA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	513.0 / 219.0	**Result Table**	20-0493
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04588 x + 6.74242e-4 (r = 0.99932) (weighting: 1 / x) r^2:0.9986

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	130.35	104.3
5	KY34	L2	True	250.00	250.96	100.4
6	KY35	L3	True	500.00	545.23	109.1
7	KY36	L4	True	1000.00	972.14	97.2
8	KY37	L5	True	2500.00	2177.68	87.1
9	KY38	L6	True	10000.00	10128.82	101.3
10	KY39	L7	True	25000.00	25169.81	100.7



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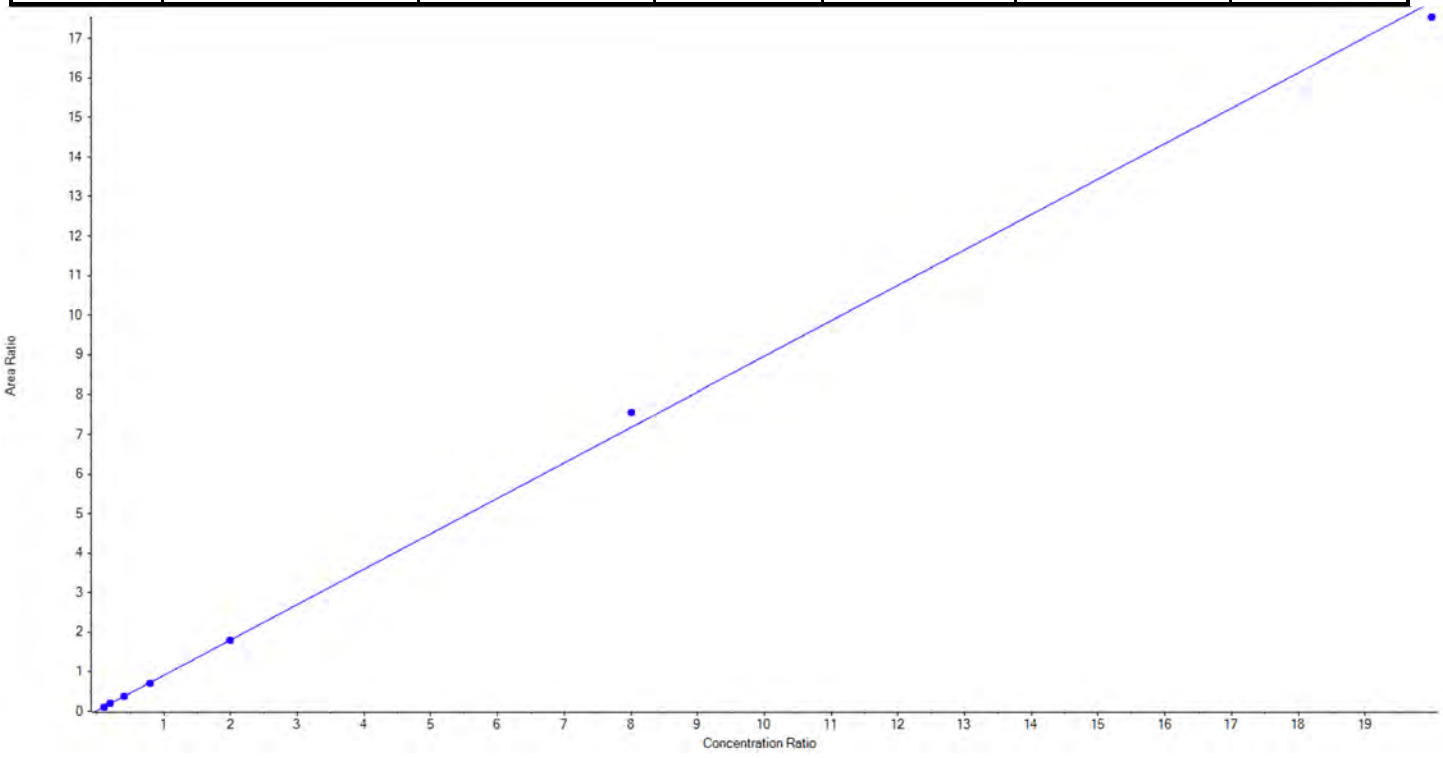
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFUnA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	563.0 / 519.0	**Result Table**	20-0493
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89515 x + 0.01418 (r = 0.99937) (weighting: 1 / x) r^2:0.9987

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	109.37	87.5
5	KY34	L2	True	250.00	267.94	107.2
6	KY35	L3	True	500.00	526.58	105.3
7	KY36	L4	True	1000.00	968.65	96.9
8	KY37	L5	True	2500.00	2497.61	99.9
9	KY38	L6	True	10000.00	10537.86	105.4
10	KY39	L7	True	25000.00	24467.00	97.9



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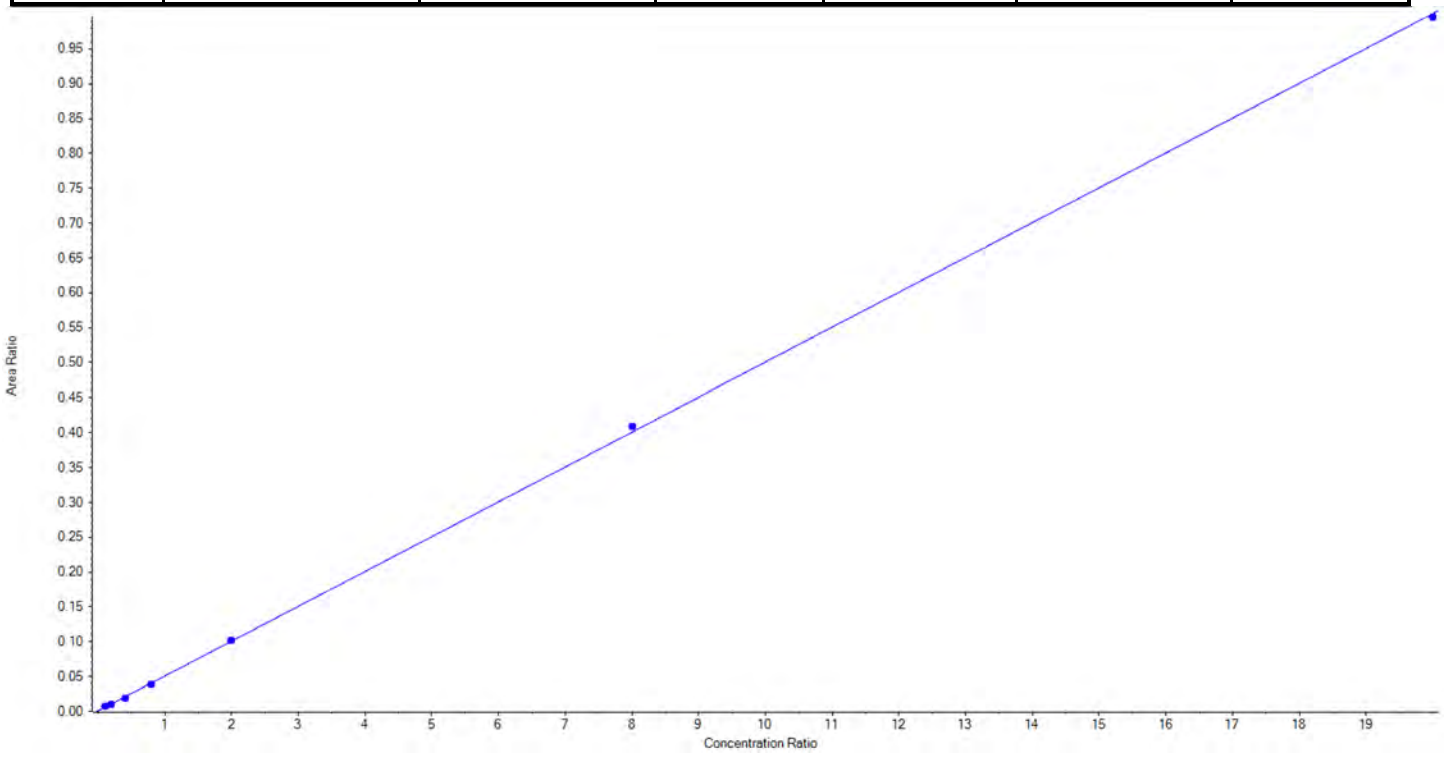
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFUnA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	563.0 / 269.0	**Result Table**	20-0493
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05000 x + 7.35824e-4 (r = 0.99973) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	147.26	117.8
5	KY34	L2	True	250.00	242.35	96.9
6	KY35	L3	True	500.00	441.14	88.2
7	KY36	L4	True	1000.00	940.38	94.0
8	KY37	L5	True	2500.00	2539.85	101.6
9	KY38	L6	True	10000.00	10189.35	101.9
10	KY39	L7	True	25000.00	24874.67	99.5



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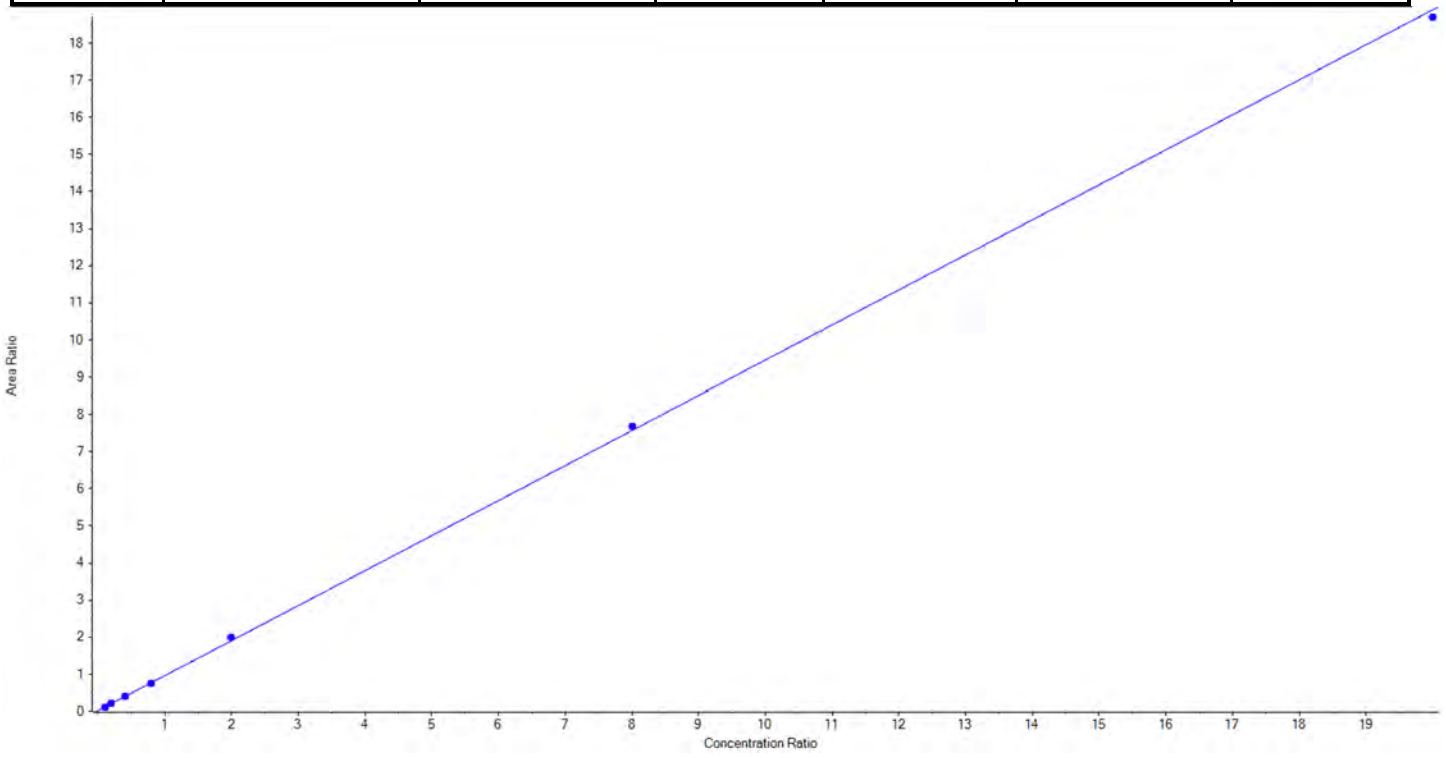
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFDoA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	613.0 / 569.0	**Result Table**	20-0493
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.94417 x + 0.01766 (r = 0.99984) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	118.16	94.5
5	KY34	L2	True	250.00	255.56	102.2
6	KY35	L3	True	500.00	495.04	99.0
7	KY36	L4	True	1000.00	988.52	98.9
8	KY37	L5	True	2500.00	2621.00	104.8
9	KY38	L6	True	10000.00	10160.38	101.6
10	KY39	L7	True	25000.00	24736.35	99.0



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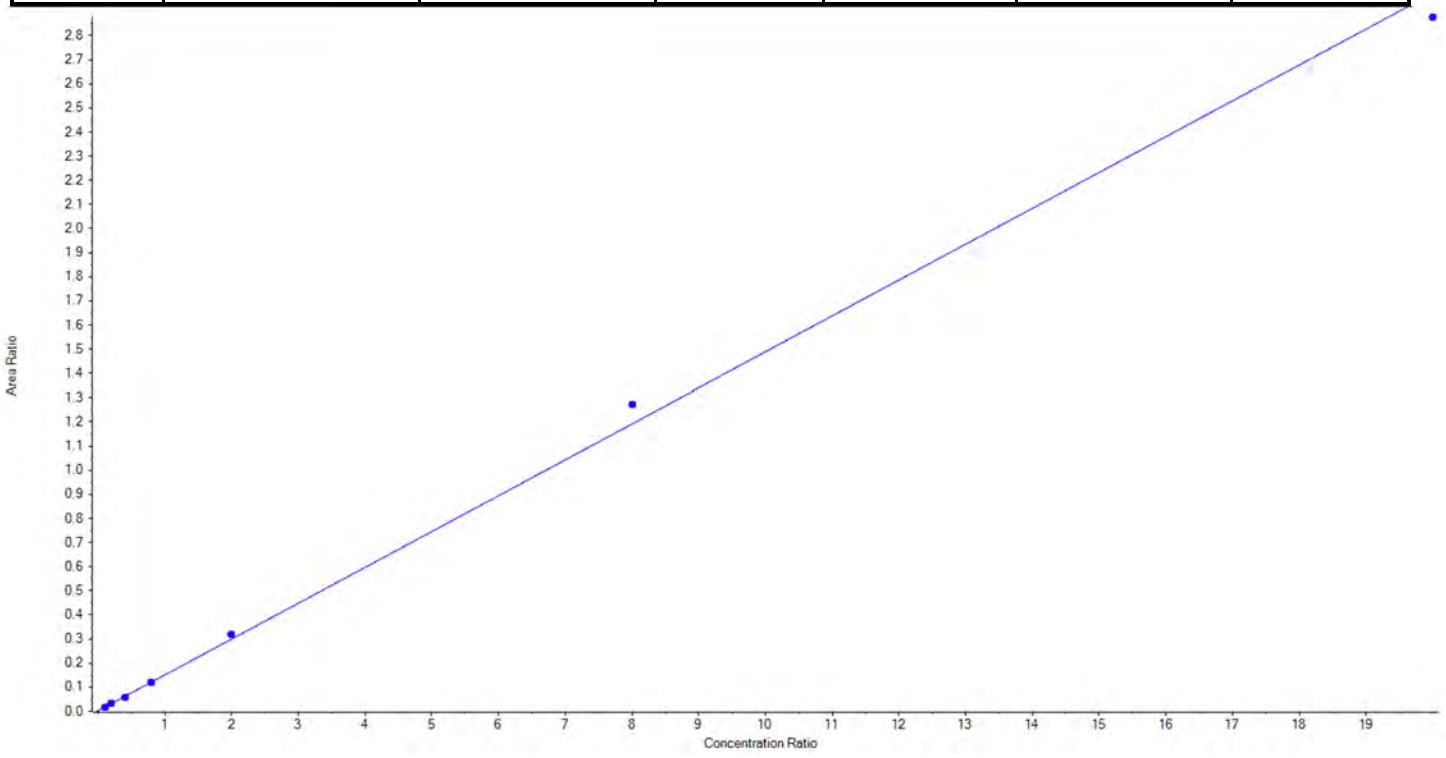
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFDoA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	613.0 / 319.0	**Result Table**	20-0493
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.14866 x + 0.00225 (r = 0.99875) (weighting: 1 / x) r^2:0.9975

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	117.62	94.1
5	KY34	L2	True	250.00	254.00	101.6
6	KY35	L3	True	500.00	466.08	93.2
7	KY36	L4	True	1000.00	1005.68	100.6
8	KY37	L5	True	2500.00	2673.49	106.9
9	KY38	L6	True	10000.00	10691.50	106.9
10	KY39	L7	True	25000.00	24166.63	96.7



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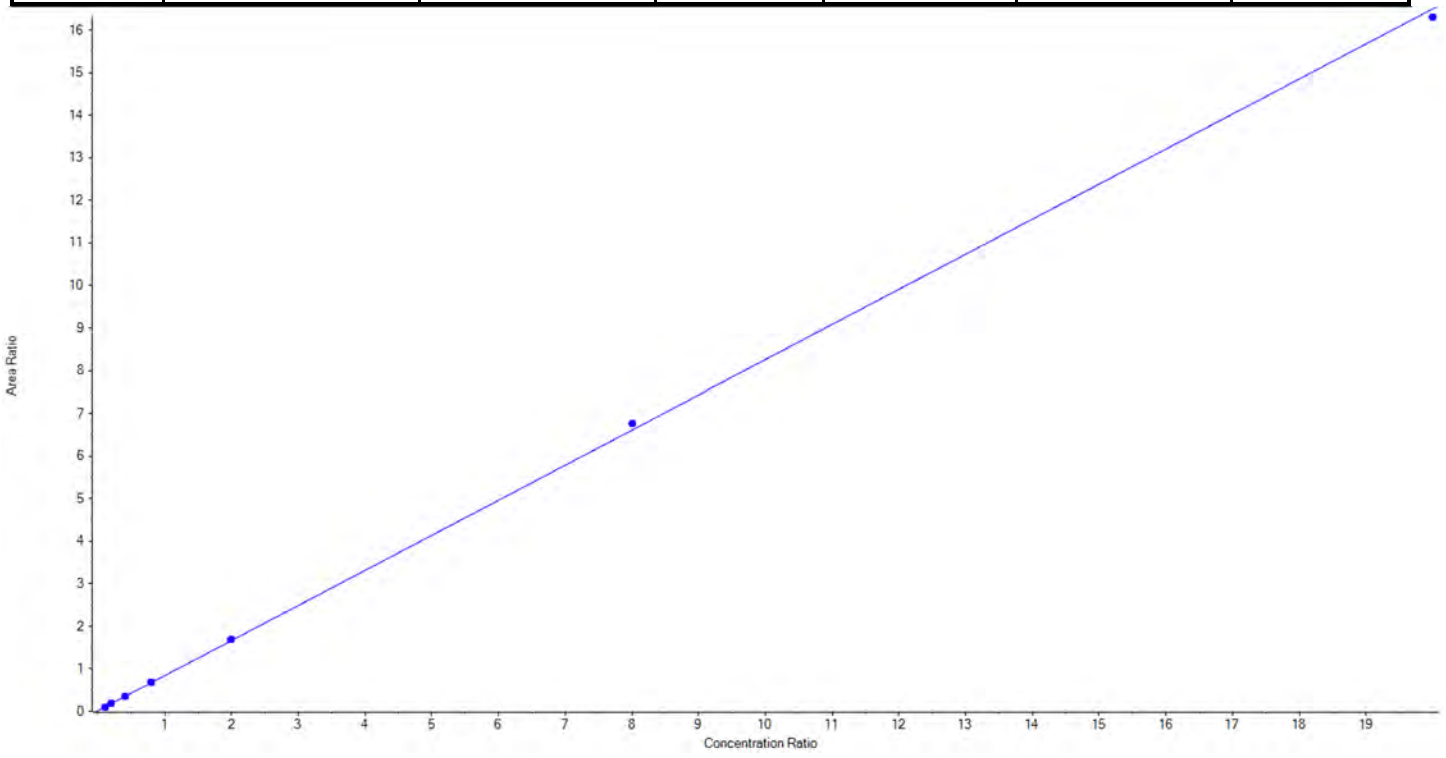
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFTrDA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	663.0 / 619.0	**Result Table**	20-0493
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.82432 x + 0.01587 (r = 0.99985) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	117.29	93.8
5	KY34	L2	True	250.00	250.30	100.1
6	KY35	L3	True	500.00	513.73	102.8
7	KY36	L4	True	1000.00	1004.44	100.4
8	KY37	L5	True	2500.00	2539.50	101.6
9	KY38	L6	True	10000.00	10246.37	102.5
10	KY39	L7	True	25000.00	24703.37	98.8



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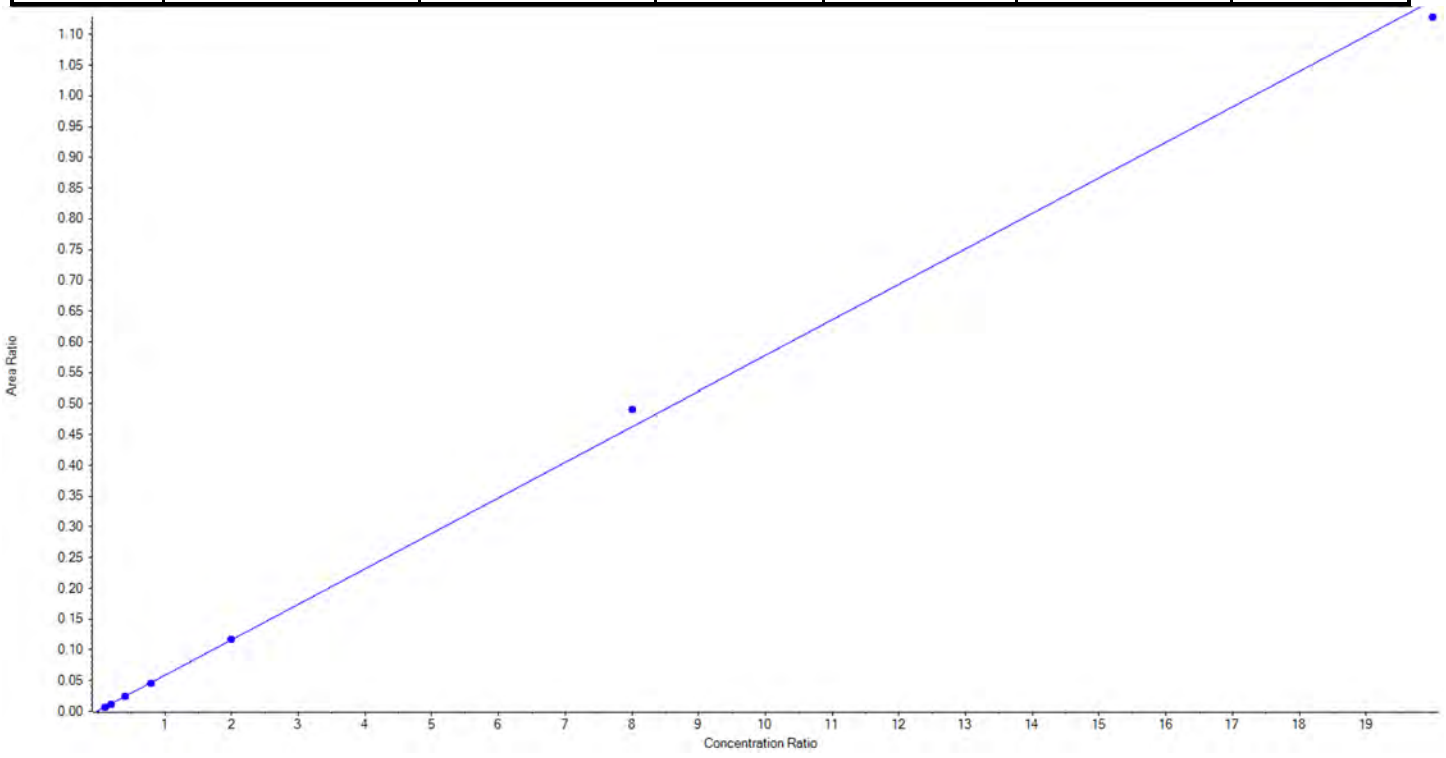
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFTrDA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	663.0 / 169.0	**Result Table**	20-0493
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05772 x + 8.73427e-4 (r = 0.99927) (weighting: 1 / x) r^2:0.9985

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	125.77	100.6
5	KY34	L2	True	250.00	236.11	94.5
6	KY35	L3	True	500.00	519.74	104.0
7	KY36	L4	True	1000.00	969.45	96.9
8	KY37	L5	True	2500.00	2509.08	100.4
9	KY38	L6	True	10000.00	10604.14	106.0
10	KY39	L7	True	25000.00	24410.72	97.6



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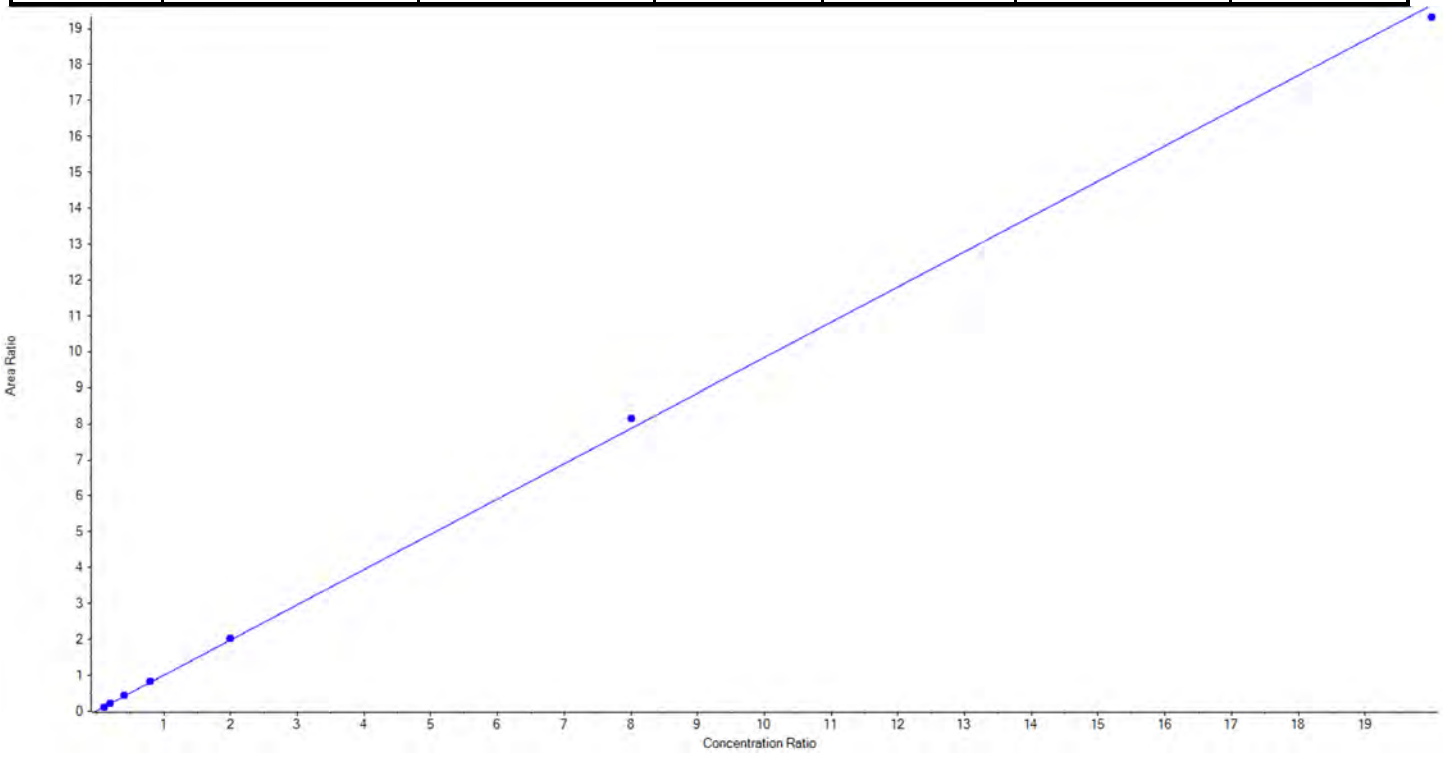
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFTeDA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	713.0 / 669.0	**Result Table**	20-0493
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.98194 x + 0.02289 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	112.84	90.3
5	KY34	L2	True	250.00	249.59	99.8
6	KY35	L3	True	500.00	522.50	104.5
7	KY36	L4	True	1000.00	1018.59	101.9
8	KY37	L5	True	2500.00	2540.92	101.6
9	KY38	L6	True	10000.00	10362.65	103.6
10	KY39	L7	True	25000.00	24567.91	98.3



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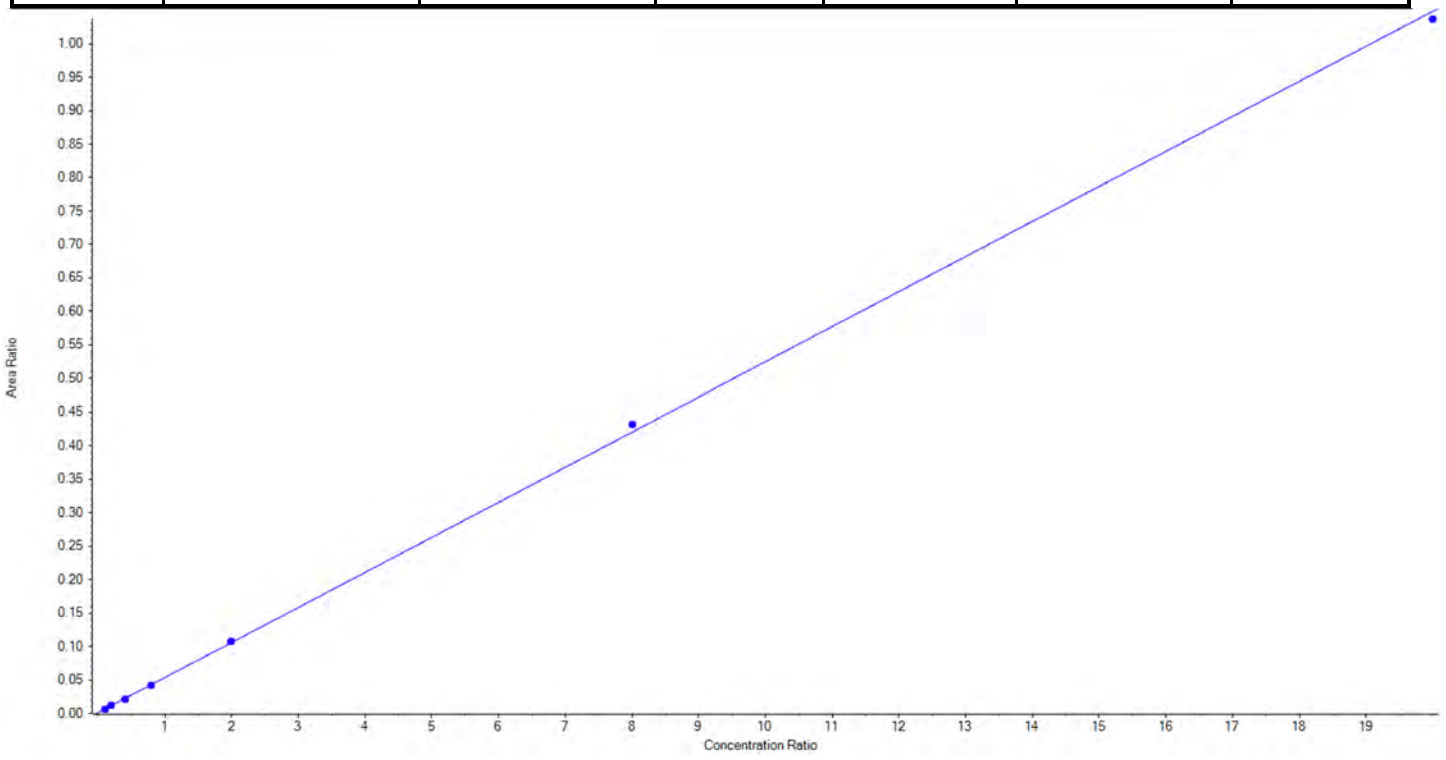
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	PFTeDA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	713.0 / 169.0	**Result Table**	20-0493
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05237 x + 0.00109 (r = 0.99983) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	120.88	96.7
5	KY34	L2	True	250.00	261.85	104.7
6	KY35	L3	True	500.00	485.95	97.2
7	KY36	L4	True	1000.00	984.71	98.5
8	KY37	L5	True	2500.00	2533.04	101.3
9	KY38	L6	True	10000.00	10270.42	102.7
10	KY39	L7	True	25000.00	24718.15	98.9



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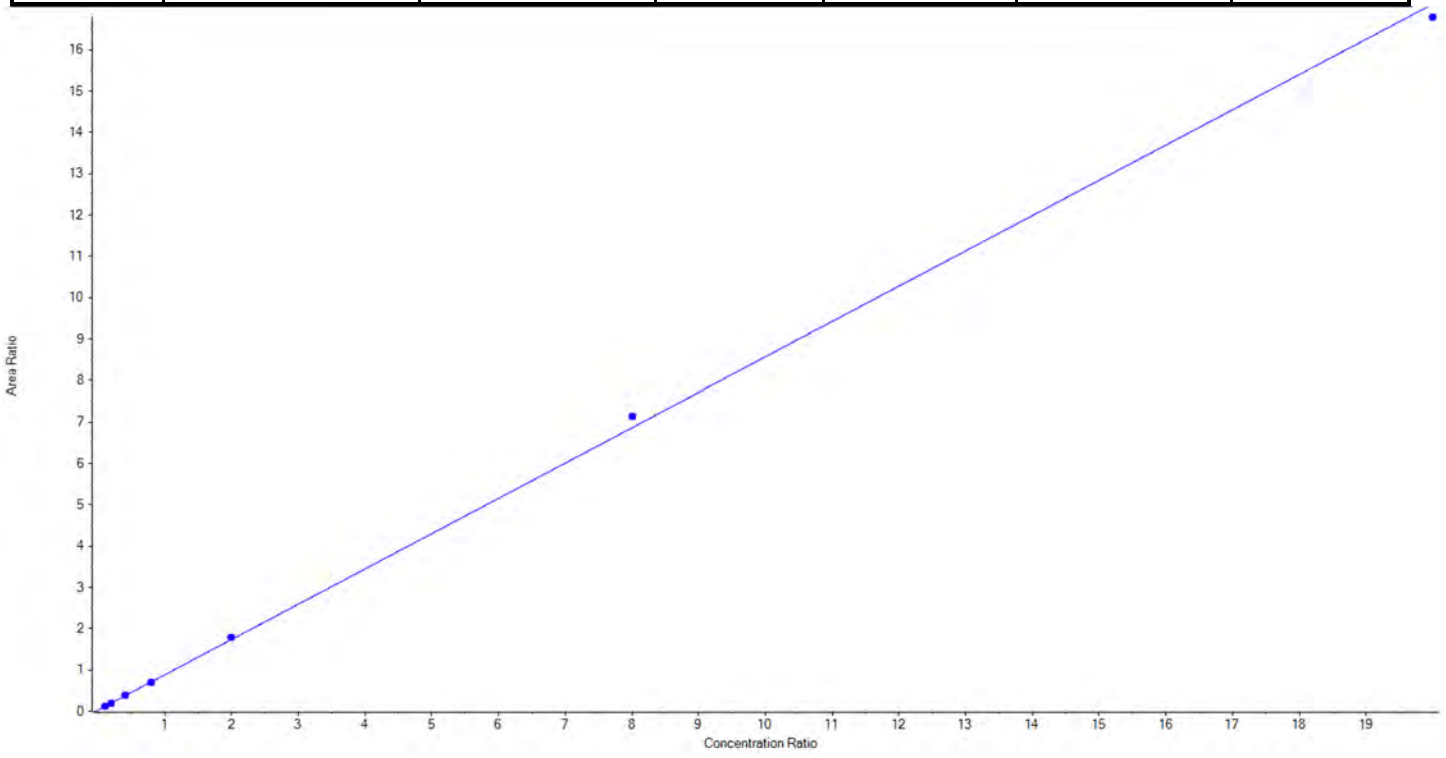
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	NMeFOSAA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	570.0 / 419.0	**Result Table**	20-0493
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.85386 x + 0.03158 (r = 0.99961) (weighting: 1 / x) r^2:0.9992

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	114.15	91.3
5	KY34	L2	True	250.00	252.73	101.1
6	KY35	L3	True	500.00	518.35	103.7
7	KY36	L4	True	1000.00	984.94	98.5
8	KY37	L5	True	2500.00	2585.94	103.4
9	KY38	L6	True	10000.00	10385.85	103.9
10	KY39	L7	True	25000.00	24533.04	98.1



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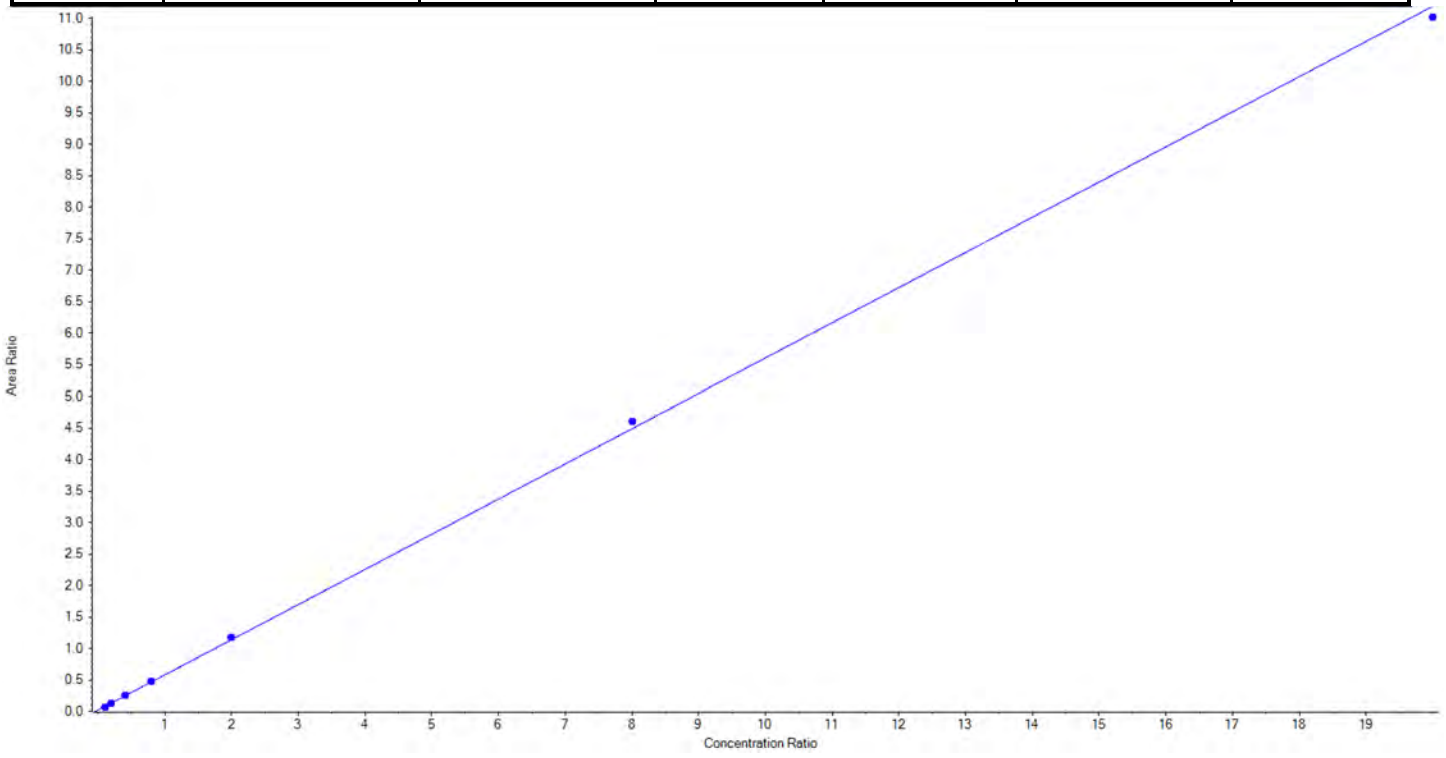
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	NMeFOSAA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	570.0 / 512.0	**Result Table**	20-0493
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.55844 x + 0.02083 (r = 0.99973) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	111.26	89.0
5	KY34	L2	True	250.00	249.81	99.9
6	KY35	L3	True	500.00	518.45	103.7
7	KY36	L4	True	1000.00	1023.46	102.4
8	KY37	L5	True	2500.00	2599.94	104.0
9	KY38	L6	True	10000.00	10257.48	102.6
10	KY39	L7	True	25000.00	24614.59	98.5



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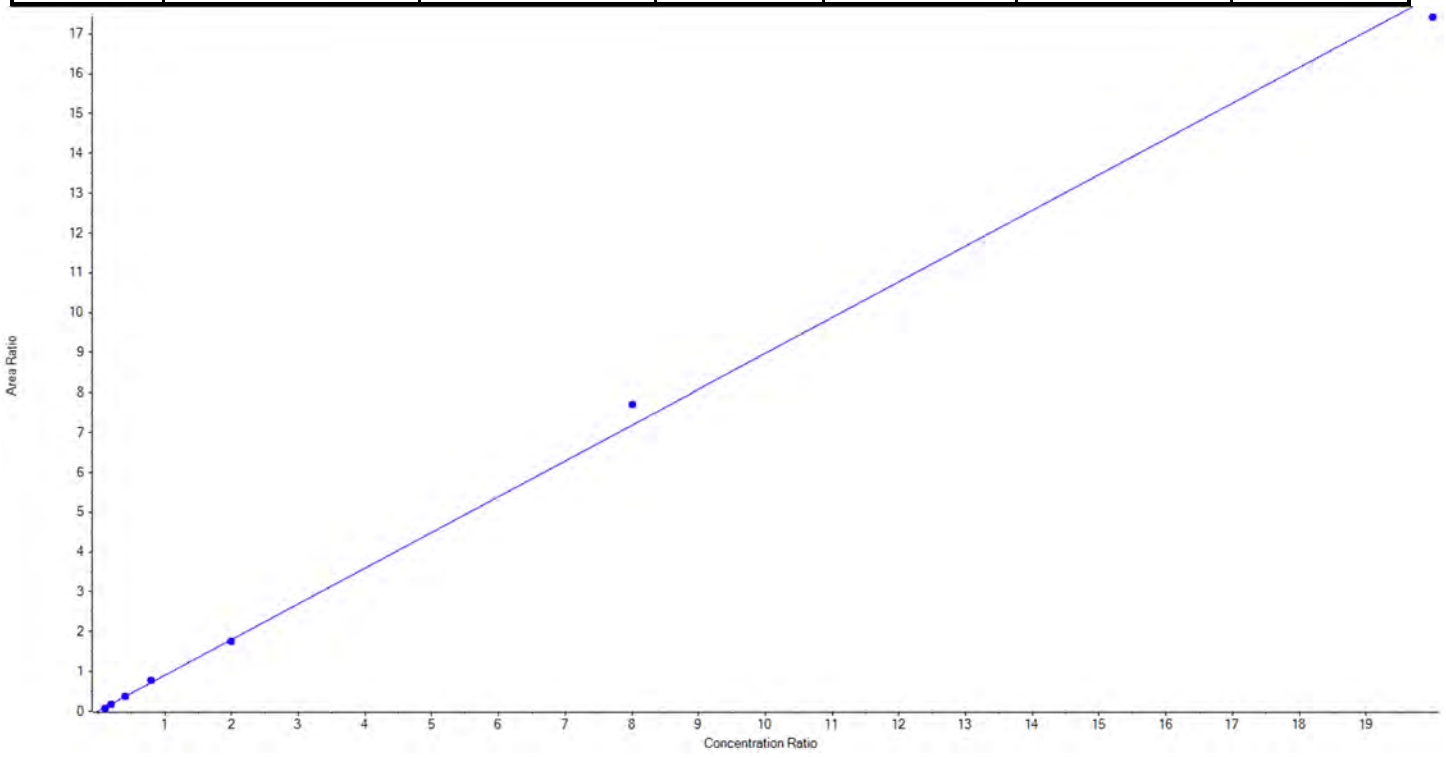
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	NEtFOSAA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	584.0 / 419.0	**Result Table**	20-0493
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89723 x + 0.00733 (r = 0.99883) (weighting: 1 / x) r^2:0.9977

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	107.45	86.0
5	KY34	L2	True	250.00	249.03	99.6
6	KY35	L3	True	500.00	527.55	105.5
7	KY36	L4	True	1000.00	1071.52	107.2
8	KY37	L5	True	2500.00	2437.67	97.5
9	KY38	L6	True	10000.00	10722.18	107.2
10	KY39	L7	True	25000.00	24259.60	97.0



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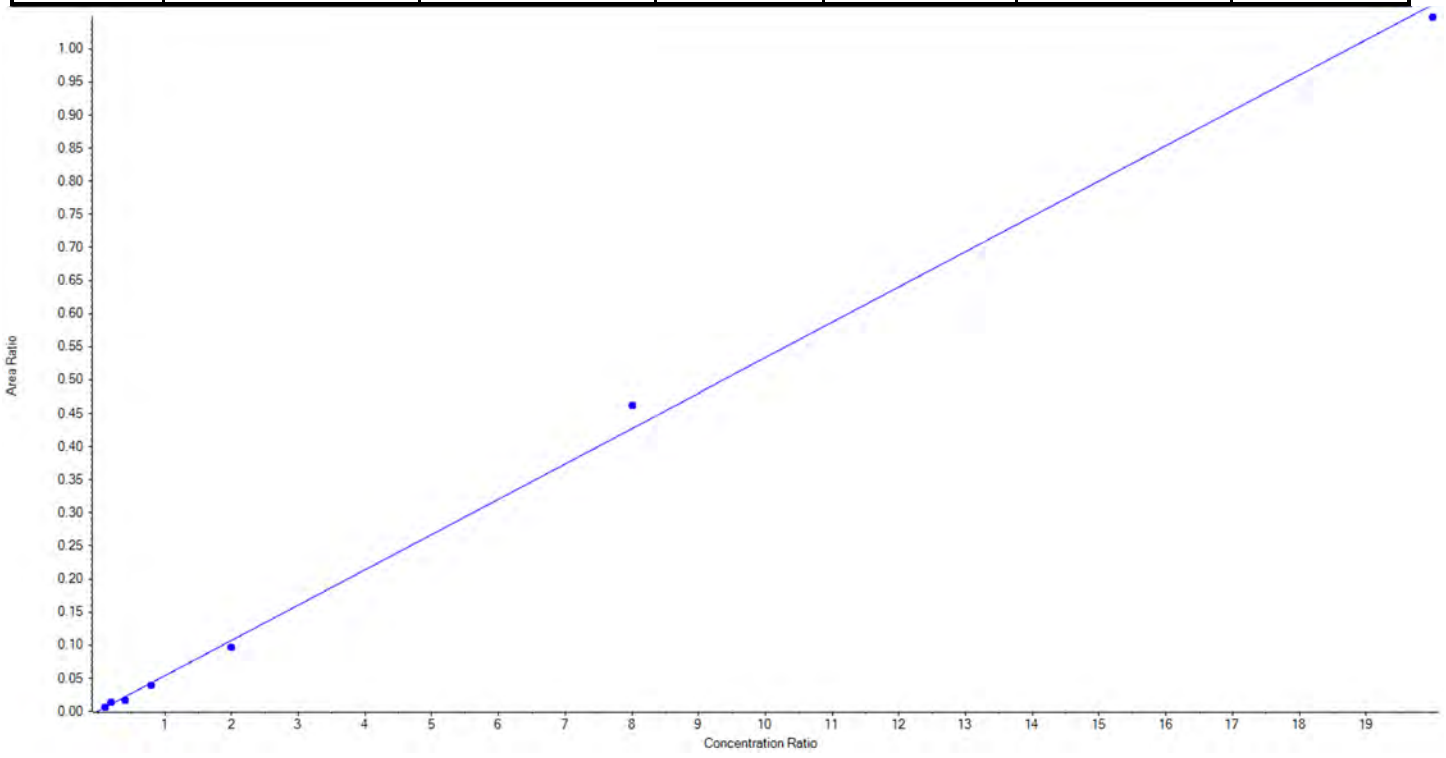
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	NEtFOSAA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	584.0 / 483.0	**Result Table**	20-0493
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05332 x + 4.79672e-4 (r = 0.99793) (weighting: 1 / x) r^2:0.9959

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	138.63	110.9
5	KY34	L2	True	250.00	309.00	123.6
6	KY35	L3	True	500.00	392.31	78.5
7	KY36	L4	True	1000.00	907.87	90.8
8	KY37	L5	True	2500.00	2243.11	89.7
9	KY38	L6	True	10000.00	10830.82	108.3
10	KY39	L7	True	25000.00	24553.25	98.2



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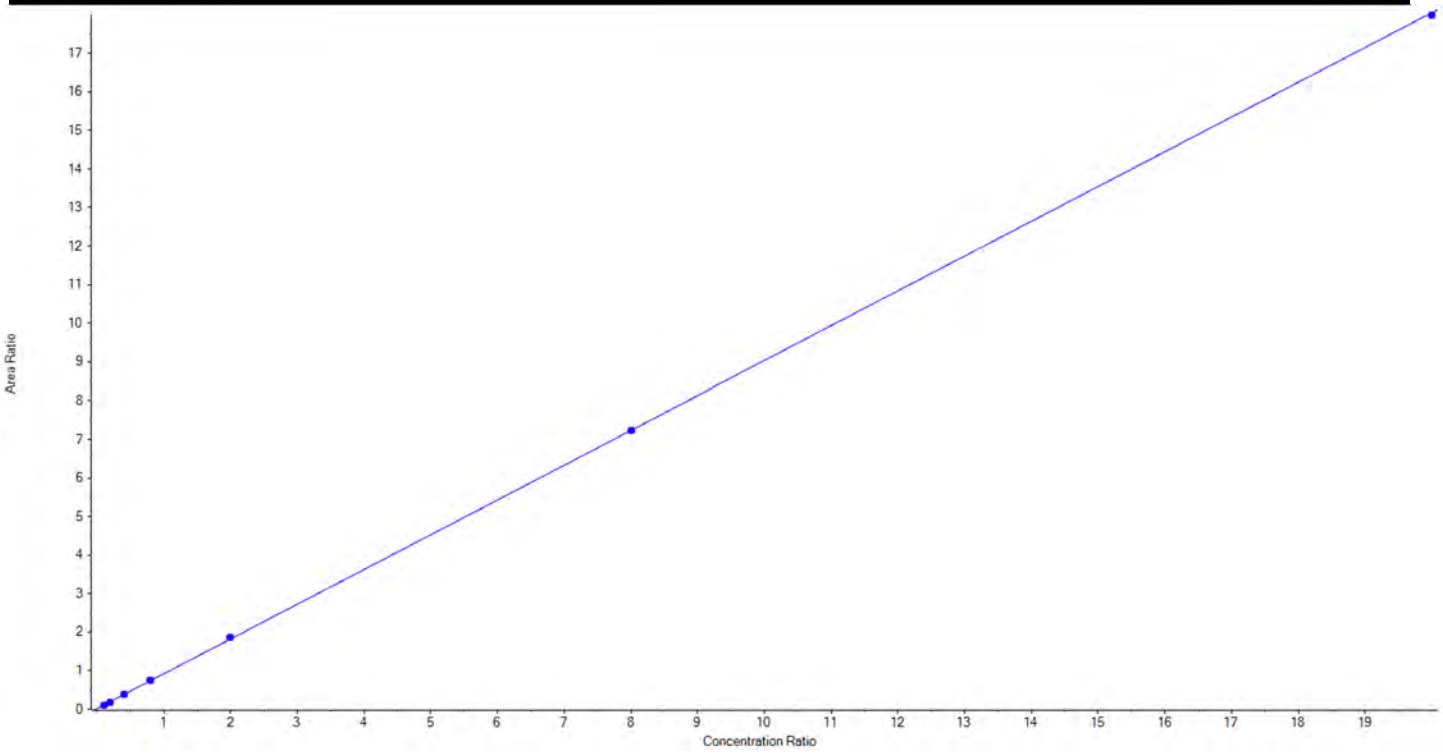
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	HFPO-DA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	285.0 / 169.0	**Result Table**	20-0493
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.90160 x + 0.02055 (r = 0.99993) (weighting: 1 / x) r^2:0.9999

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	117.71	94.2
5	KY34	L2	True	250.00	239.81	95.9
6	KY35	L3	True	500.00	524.23	104.9
7	KY36	L4	True	1000.00	1029.66	103.0
8	KY37	L5	True	2500.00	2564.66	102.6
9	KY38	L6	True	10000.00	9986.02	99.9
10	KY39	L7	True	25000.00	24912.92	99.7



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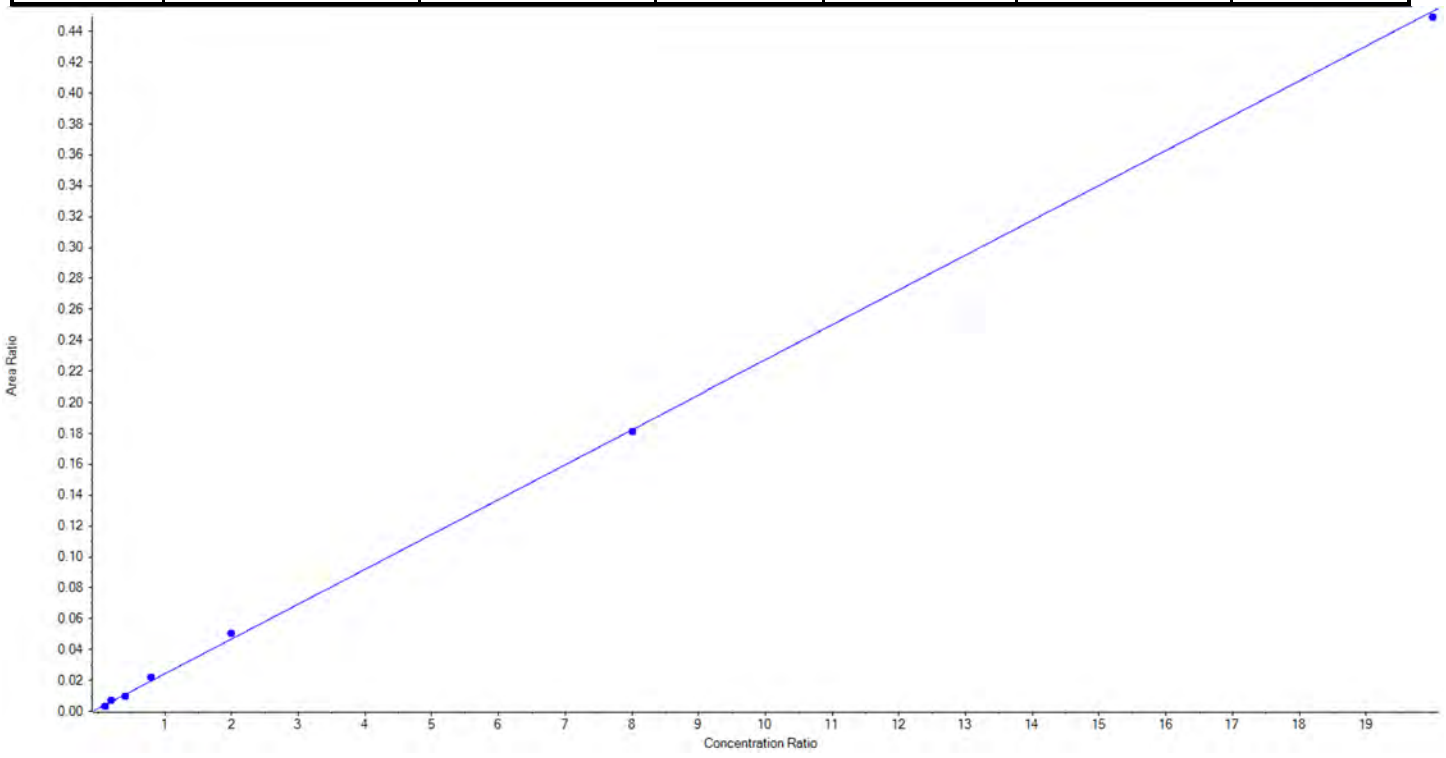
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	HFPO-DA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	285.0 / 118.8	**Result Table**	20-0493
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.02257 x + 0.00172 (r = 0.99921) (weighting: 1 / x) r^2:0.9984

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	96.85	77.5
5	KY34	L2	True	250.00	298.08	119.2
6	KY35	L3	True	500.00	427.62	85.5
7	KY36	L4	True	1000.00	1107.09	110.7
8	KY37	L5	True	2500.00	2710.87	108.4
9	KY38	L6	True	10000.00	9947.47	99.5
10	KY39	L7	True	25000.00	24787.02	99.2



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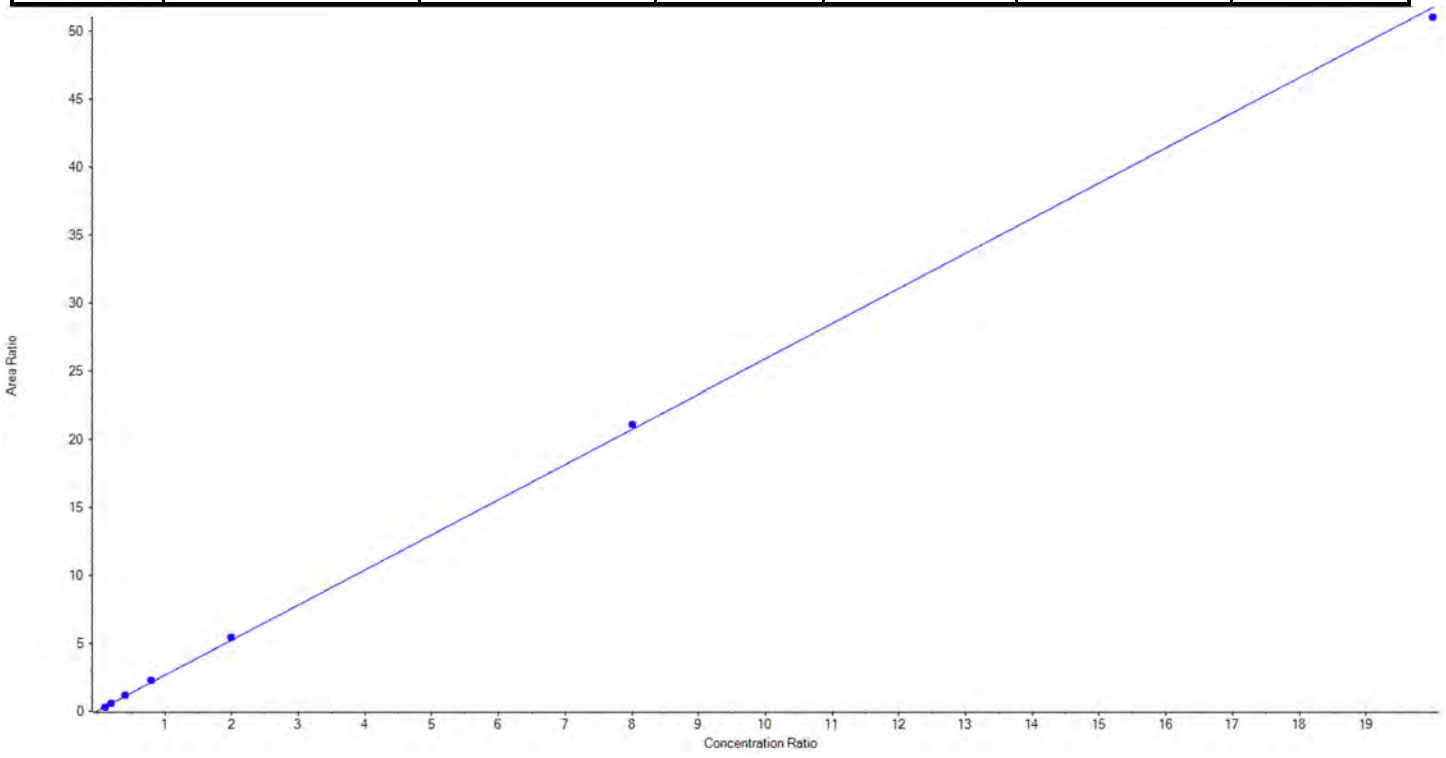
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	ADONA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	377.0 / 251.0	**Result Table**	20-0493
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.58419 x + 0.06792 (r = 0.99974) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	108.72	87.0
5	KY34	L2	True	250.00	244.19	97.7
6	KY35	L3	True	500.00	527.94	105.6
7	KY36	L4	True	1000.00	1055.53	105.6
8	KY37	L5	True	2500.00	2592.12	103.7
9	KY38	L6	True	10000.00	10189.92	101.9
10	KY39	L7	True	25000.00	24656.59	98.6



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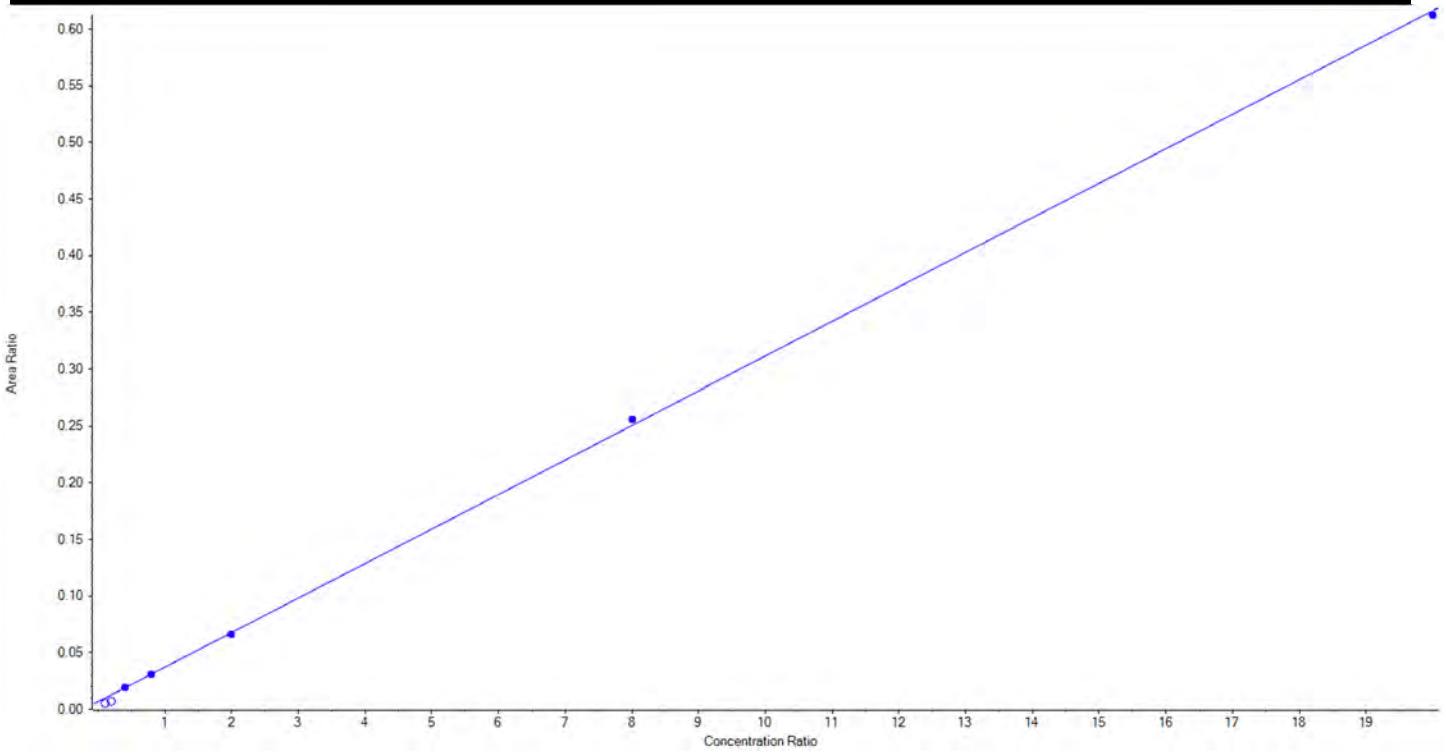
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	ADONA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	377.0 / 85.0	**Result Table**	20-0493
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.03048 x + 0.00677 (r = 0.99988) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	< 0	N/A
5	KY34	L2	False	250.00	15.72	6.3
6	KY35	L3	True	500.00	510.54	102.1
7	KY36	L4	True	1000.00	985.23	98.5
8	KY37	L5	True	2500.00	2445.18	97.8
9	KY38	L6	True	10000.00	10220.89	102.2
10	KY39	L7	True	25000.00	24838.16	99.4



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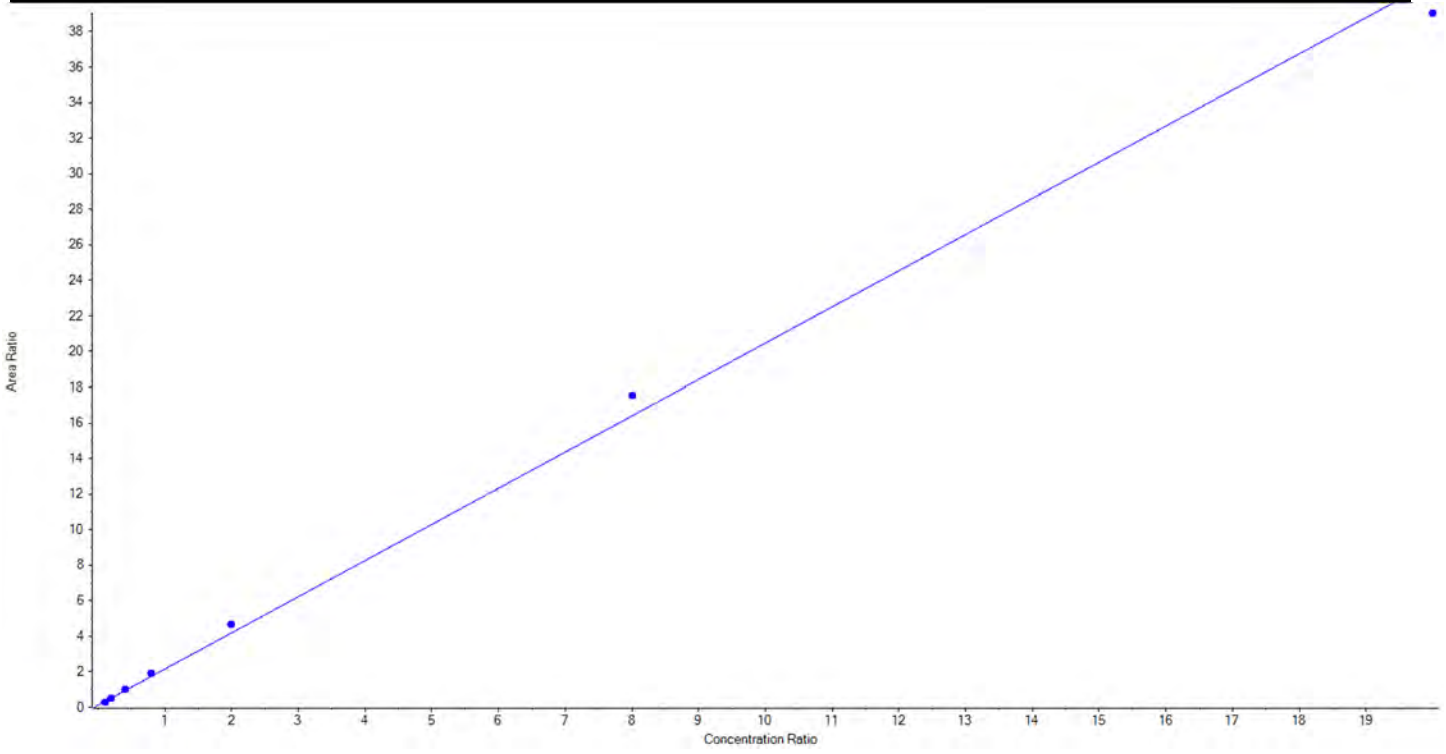
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	9Cl-PF3ONS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	531.0 / 351.0	**Result Table**	20-0493
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.03522 x + 0.11866 (r = 0.99787) (weighting: 1 / x) r^2:0.9957

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	94.38	75.5
5	KY34	L2	True	250.00	233.70	93.5
6	KY35	L3	True	500.00	536.20	107.2
7	KY36	L4	True	1000.00	1090.93	109.1
8	KY37	L5	True	2500.00	2796.84	111.9
9	KY38	L6	True	10000.00	10719.25	107.2
10	KY39	L7	True	25000.00	23903.70	95.6



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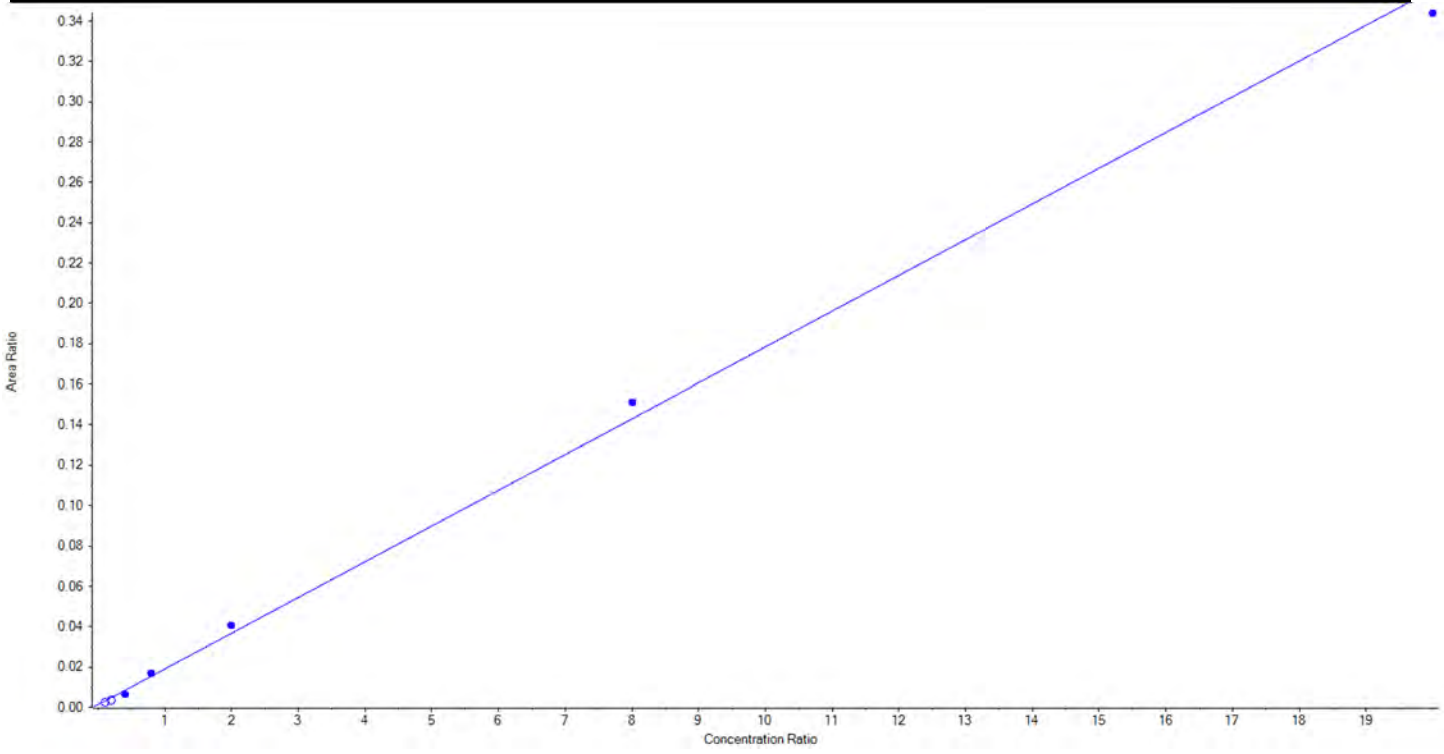
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	9Cl-PF3ONS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	531.0 / 83.0	**Result Table**	20-0493
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01771 x + 0.00131 (r = 0.99795) (weighting: 1 / x) r^2:0.9959

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	65.41	52.3
5	KY34	L2	False	250.00	152.00	60.8
6	KY35	L3	True	500.00	378.10	75.6
7	KY36	L4	True	1000.00	1108.10	110.8
8	KY37	L5	True	2500.00	2782.76	111.3
9	KY38	L6	True	10000.00	10555.90	105.6
10	KY39	L7	True	25000.00	24175.14	96.7



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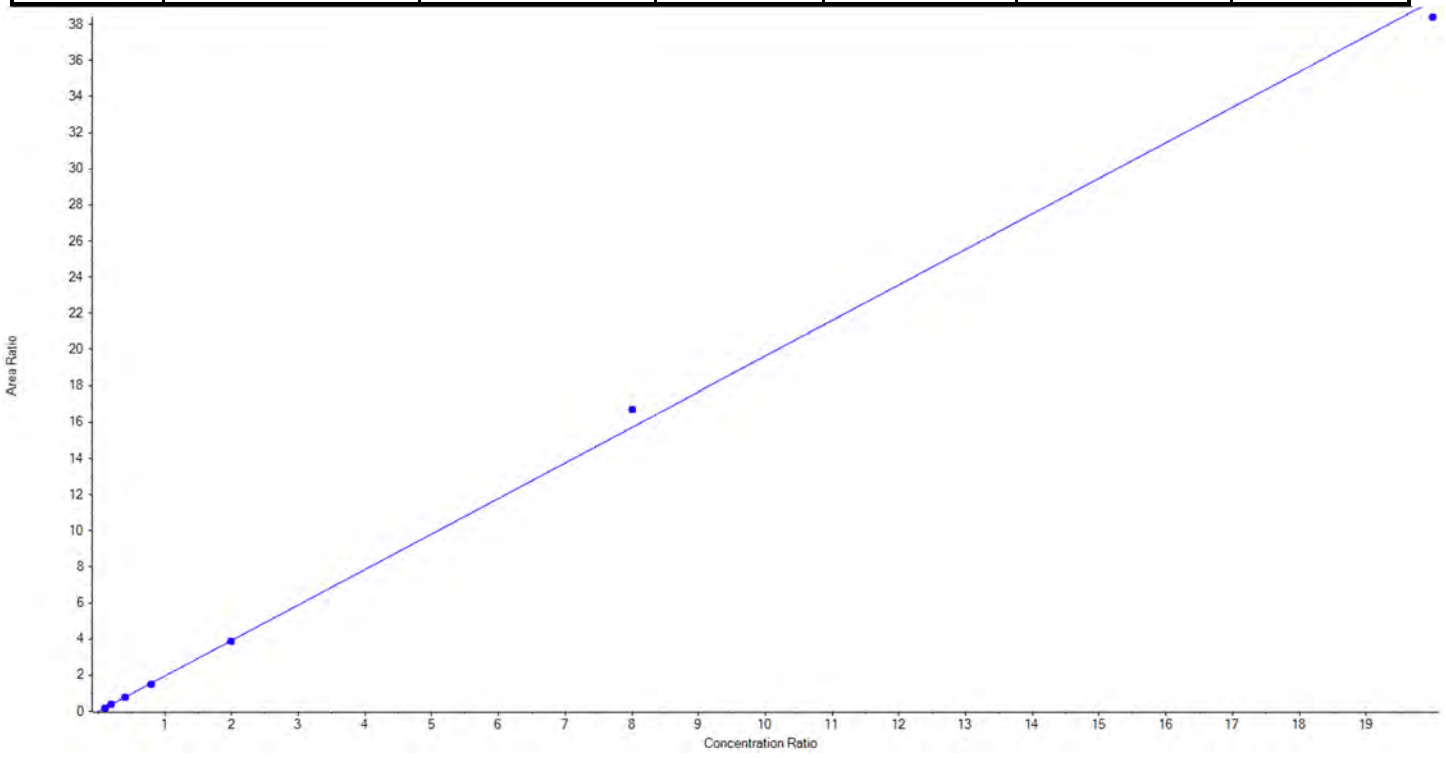
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	11Cl-pf3OUdS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	631.0 / 451.0	**Result Table**	20-0493
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.96548 x + -0.01075 (r = 0.99925) (weighting: 1 / x) r^2:0.9985

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	122.55	98.0
5	KY34	L2	True	250.00	249.95	100.0
6	KY35	L3	True	500.00	514.76	103.0
7	KY36	L4	True	1000.00	958.20	95.8
8	KY37	L5	True	2500.00	2481.88	99.3
9	KY38	L6	True	10000.00	10623.88	106.2
10	KY39	L7	True	25000.00	24423.78	97.7



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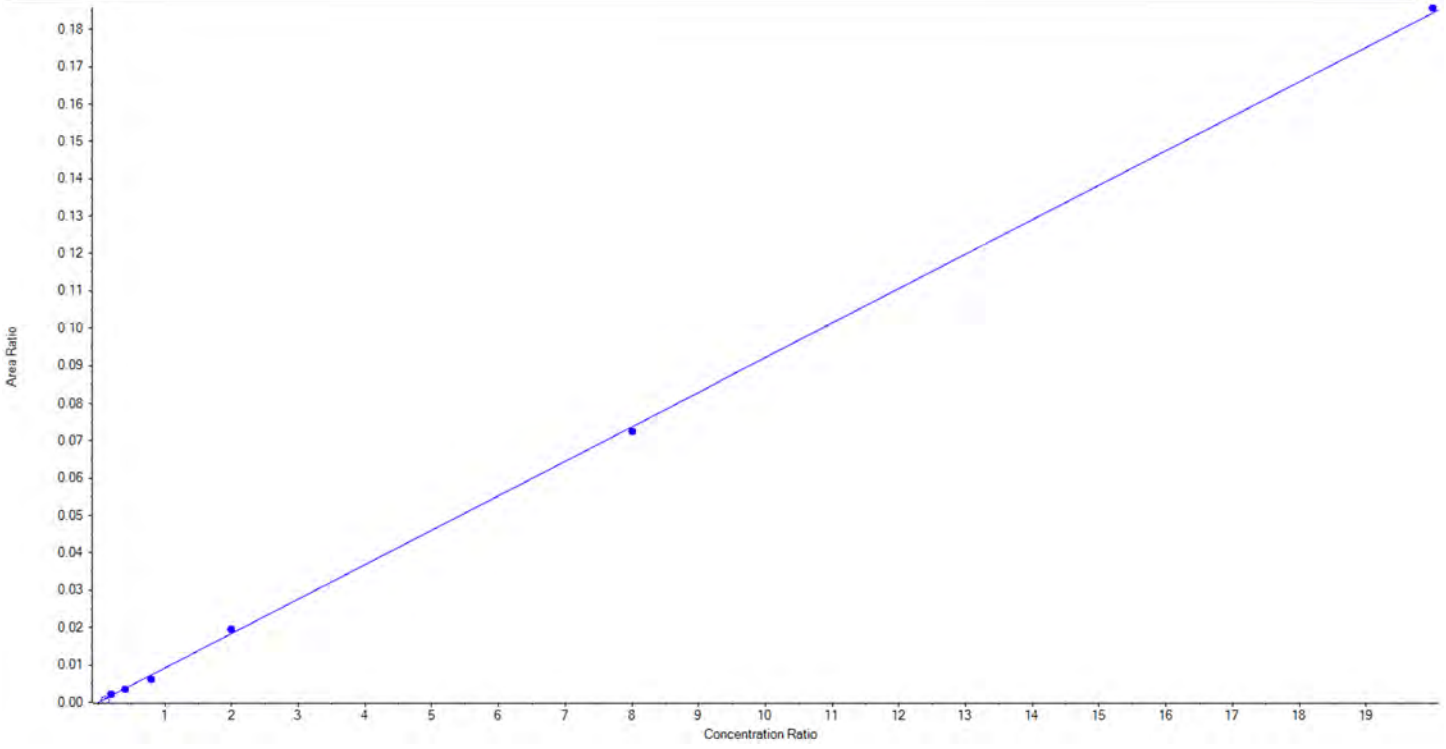
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:16 PM

Analyte Name	11Cl-pf3OUdS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	631.0 / 83.0	**Result Table**	20-0493
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.00922 x + -2.69659e-5 (r = 0.99933) (weighting: 1 / x) r^2:0.9987

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	78.86	63.1
5	KY34	L2	True	250.00	293.81	117.5
6	KY35	L3	True	500.00	468.35	93.7
7	KY36	L4	True	1000.00	842.33	84.2
8	KY37	L5	True	2500.00	2639.21	105.6
9	KY38	L6	True	10000.00	9830.10	98.3
10	KY39	L7	True	25000.00	25176.21	100.7



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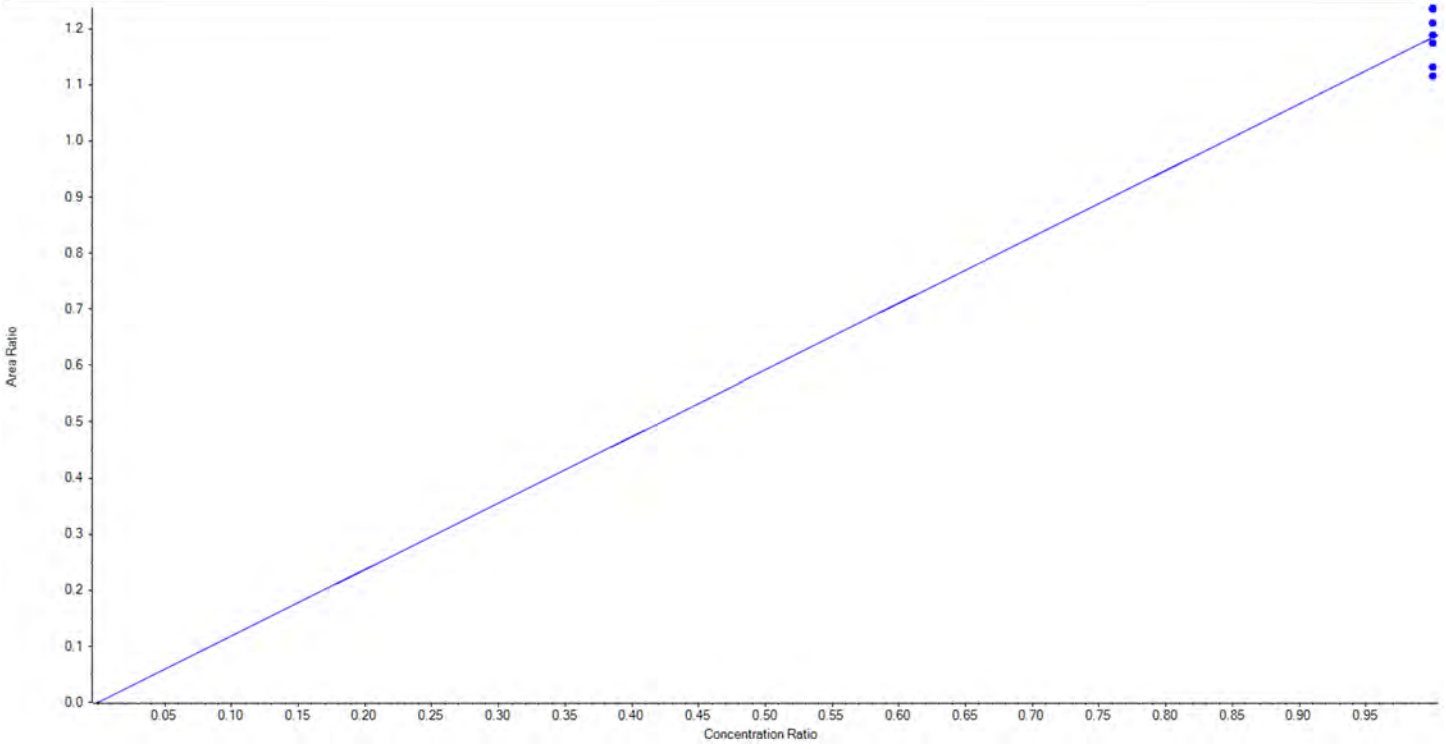
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C2-PFDoA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	615.0 / 570.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.18420 x (std. dev. = 0.04781) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1276.50	102.1
5	KY34	L2	True	1250.00	1193.52	95.5
6	KY35	L3	True	1250.00	1239.34	99.2
7	KY36	L4	True	1250.00	1177.15	94.2
8	KY37	L5	True	1250.00	1254.45	100.4
9	KY38	L6	True	1250.00	1303.64	104.3
10	KY39	L7	True	1250.00	1305.40	104.4



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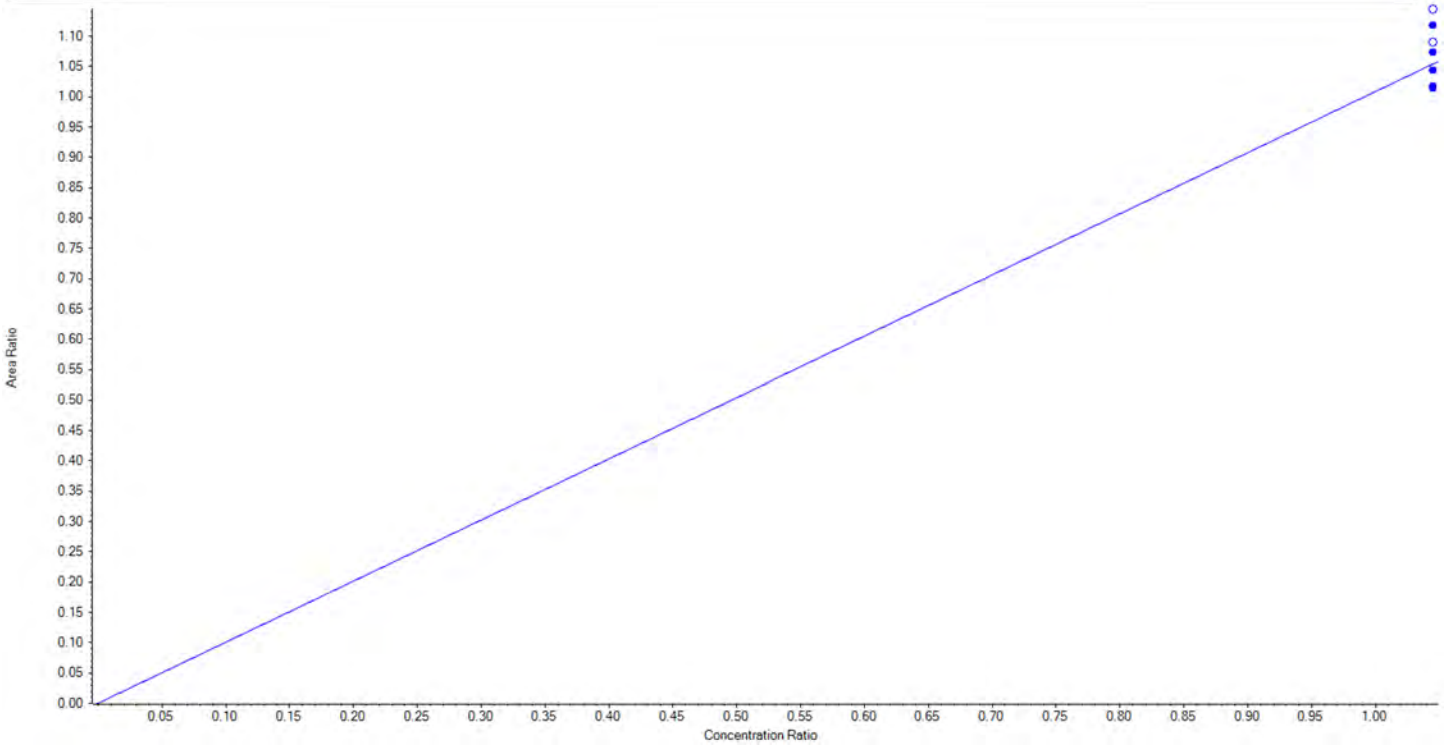
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	d3-MeFOSAA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	573.0 / 419.0	**Result Table**	20-0493_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.00861 x (std. dev. = 0.04154) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1203.86	96.3
5	KY34	L2	True	1250.00	1206.61	96.5
6	KY35	L3	True	1250.00	1273.68	101.9
7	KY36	L4	True	1250.00	1238.99	99.1
8	KY37	L5	True	1250.00	1326.85	106.2
9	KY38	L6	False	1250.00	1293.67	103.5
10	KY39	L7	False	1250.00	1357.62	108.6



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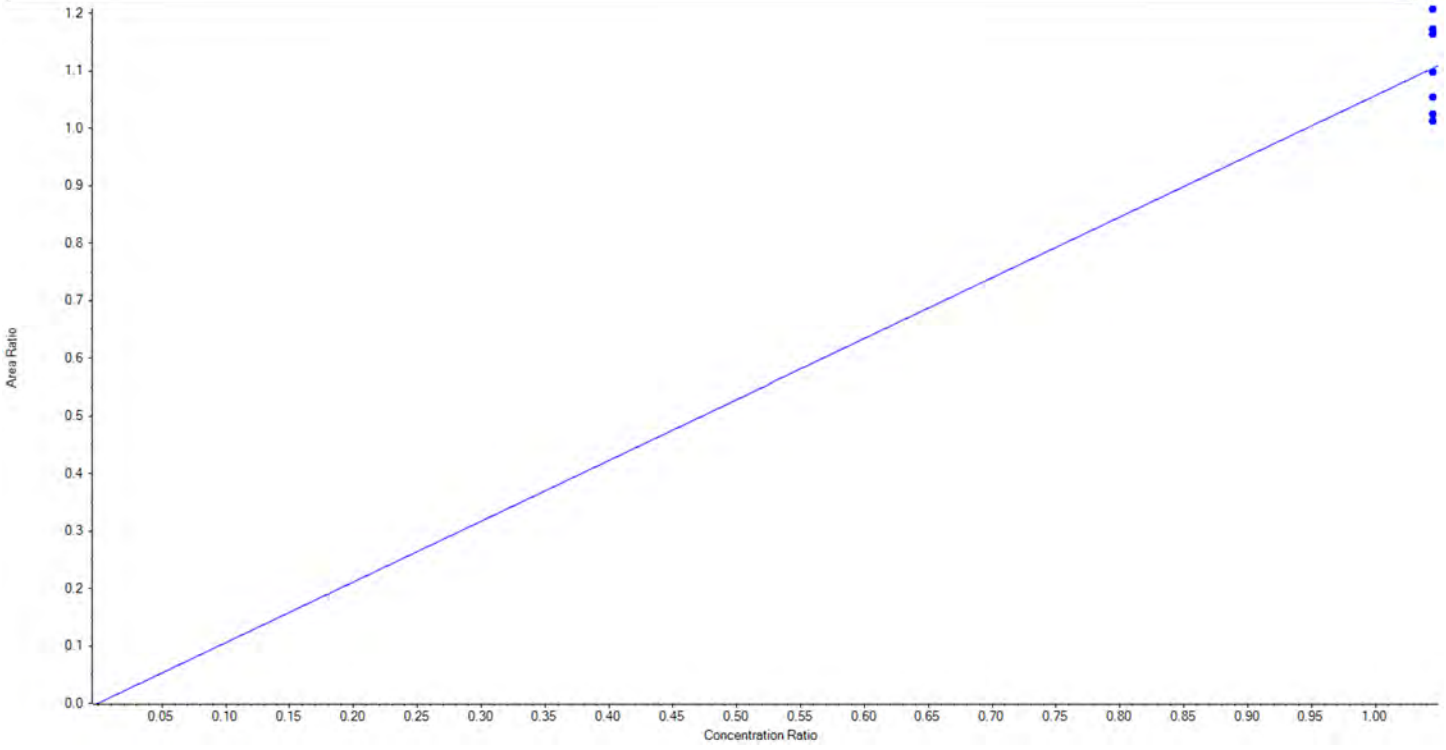
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	d5-EtFOSAA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	589.0 / 419.0	**Result Table**	20-0493_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.05714 x (std. dev. = 0.07421) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1366.43	109.3
5	KY34	L2	True	1250.00	1241.71	99.3
6	KY35	L3	True	1250.00	1326.73	106.1
7	KY36	L4	True	1250.00	1192.56	95.4
8	KY37	L5	True	1250.00	1316.63	105.3
9	KY38	L6	True	1250.00	1160.66	92.9
10	KY39	L7	True	1250.00	1145.28	91.6



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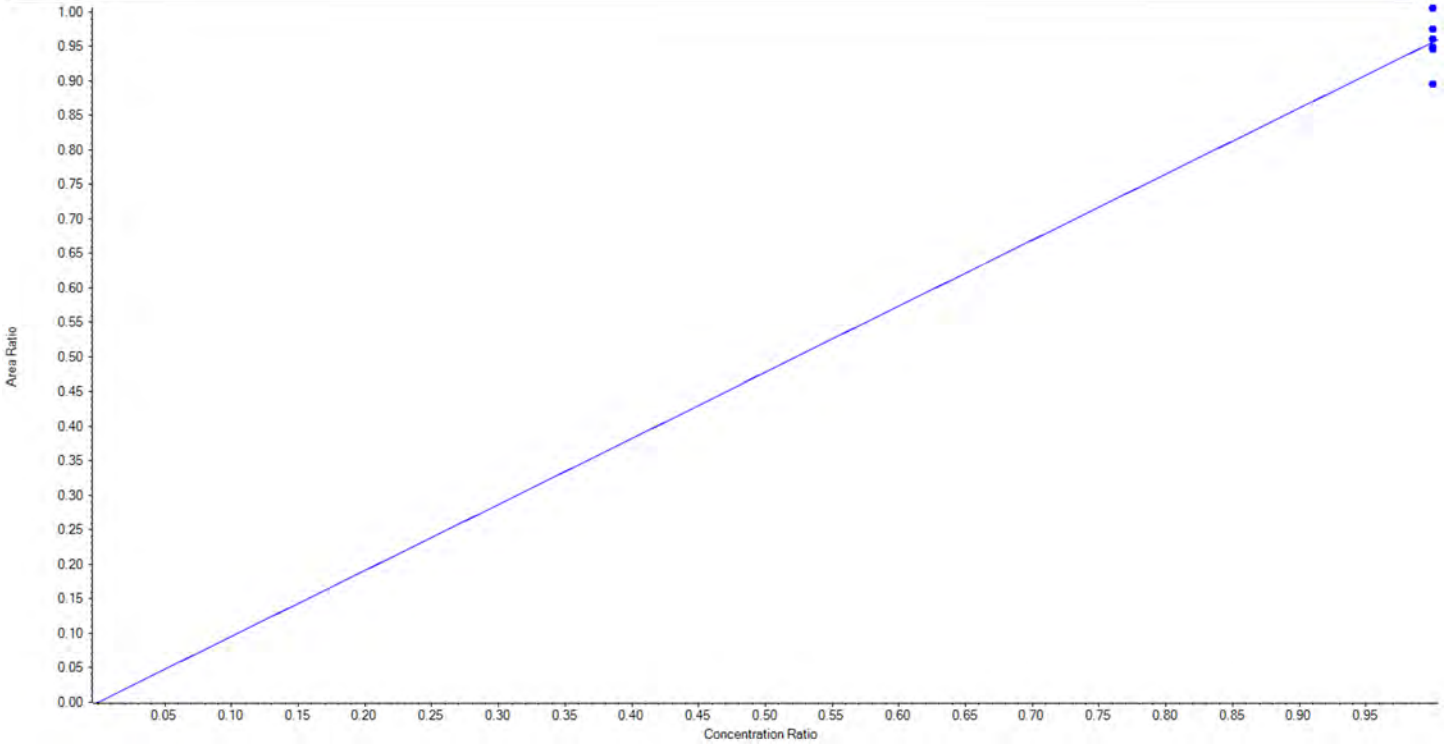
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C5-PFHxA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	318.0 / 273.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.95634 x (std. dev. = 0.03340) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1240.34	99.2
5	KY34	L2	True	1250.00	1170.81	93.7
6	KY35	L3	True	1250.00	1236.59	98.9
7	KY36	L4	True	1250.00	1255.63	100.5
8	KY37	L5	True	1250.00	1256.47	100.5
9	KY38	L6	True	1250.00	1275.63	102.1
10	KY39	L7	True	1250.00	1314.53	105.2



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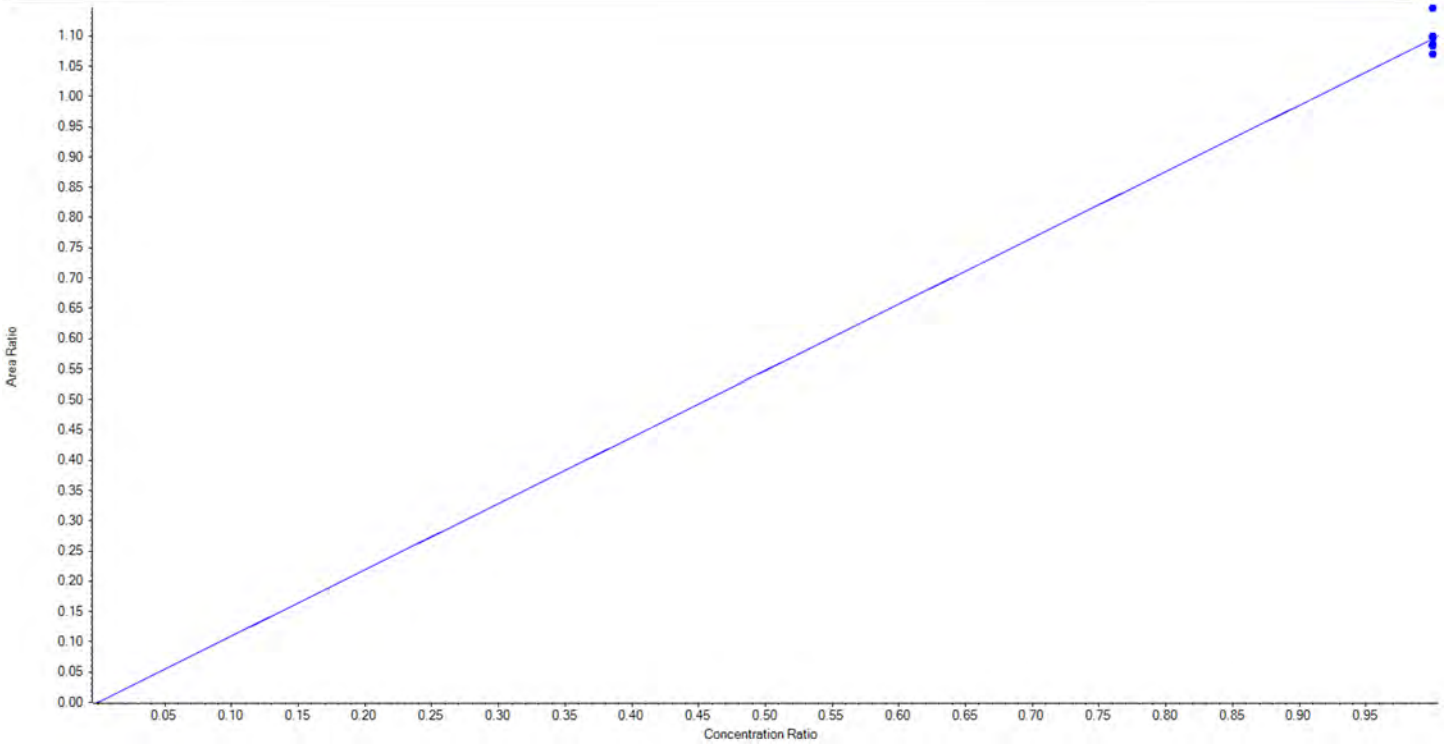
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C4-PFHpA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	367.0 / 322.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.09481 x (std. dev. = 0.02457) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1220.88	97.7
5	KY34	L2	True	1250.00	1238.05	99.0
6	KY35	L3	True	1250.00	1255.42	100.4
7	KY36	L4	True	1250.00	1251.70	100.1
8	KY37	L5	True	1250.00	1236.08	98.9
9	KY38	L6	True	1250.00	1239.60	99.2
10	KY39	L7	True	1250.00	1308.28	104.7



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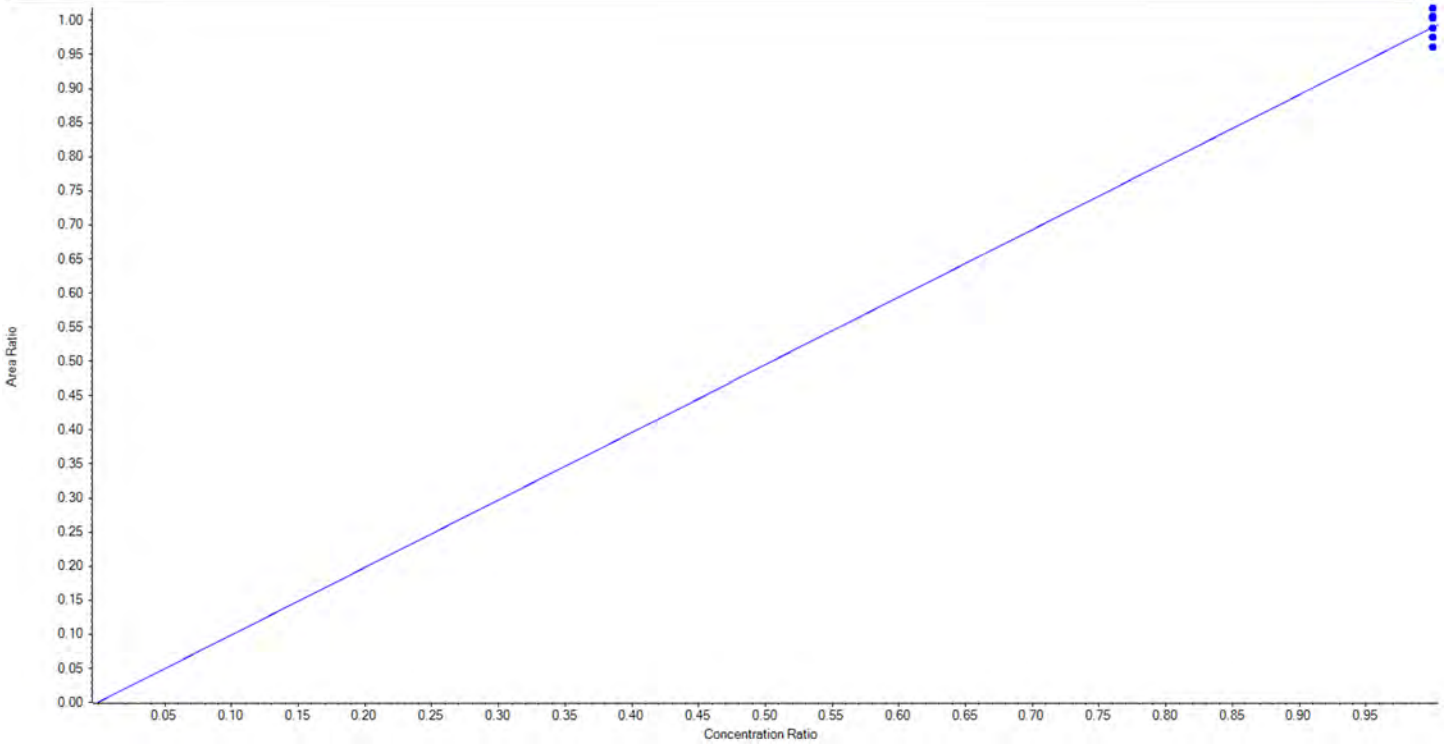
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C8-PFOA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	421.0 / 376.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.98998 x (std. dev. = 0.02034) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1232.08	98.6
5	KY34	L2	True	1250.00	1213.33	97.1
6	KY35	L3	True	1250.00	1270.14	101.6
7	KY36	L4	True	1250.00	1249.04	99.9
8	KY37	L5	True	1250.00	1232.28	98.6
9	KY38	L6	True	1250.00	1267.63	101.4
10	KY39	L7	True	1250.00	1285.51	102.8



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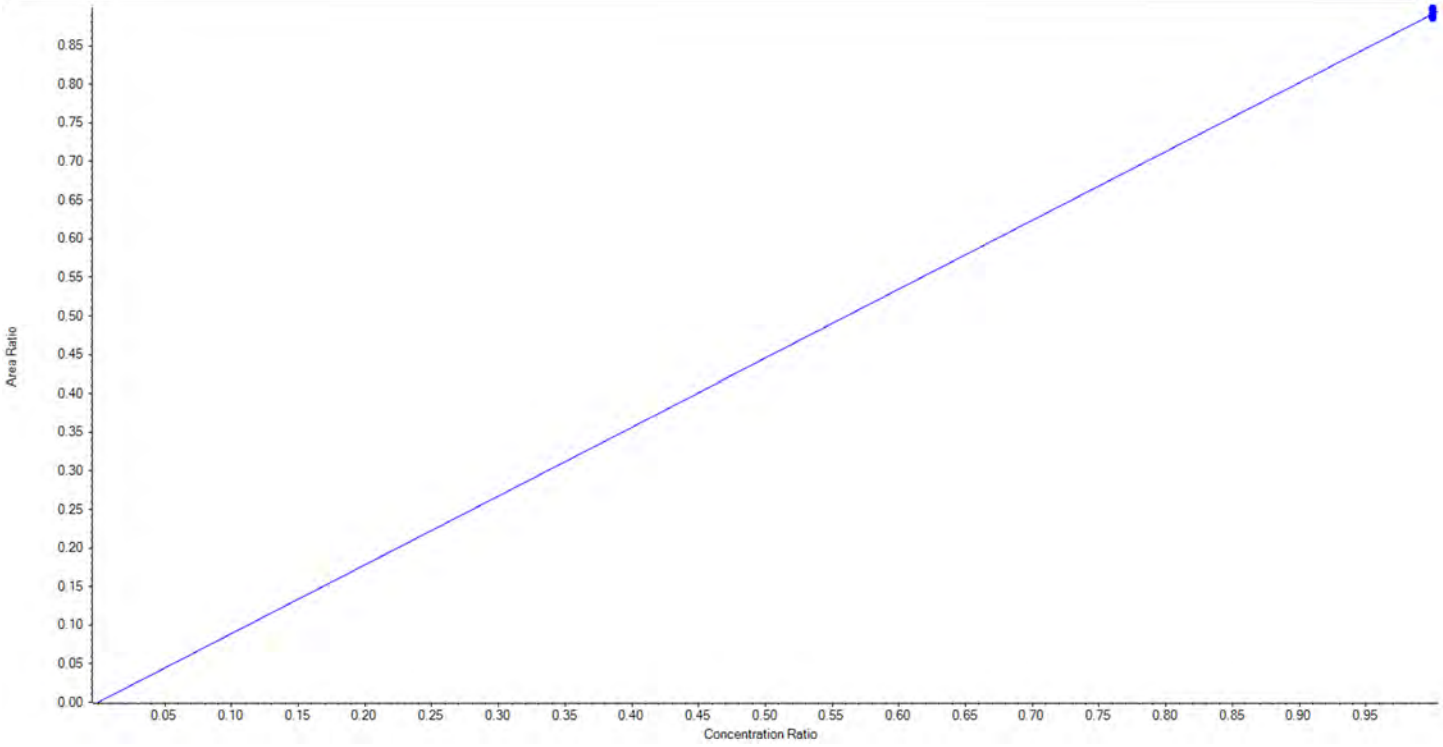
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C9-PFNA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	472.0 / 427.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89119 x (std. dev. = 0.00468) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1256.56	100.5
5	KY34	L2	True	1250.00	1251.28	100.1
6	KY35	L3	True	1250.00	1243.12	99.5
7	KY36	L4	True	1250.00	1260.60	100.9
8	KY37	L5	True	1250.00	1245.83	99.7
9	KY38	L6	True	1250.00	1248.40	99.9
10	KY39	L7	True	1250.00	1244.20	99.5



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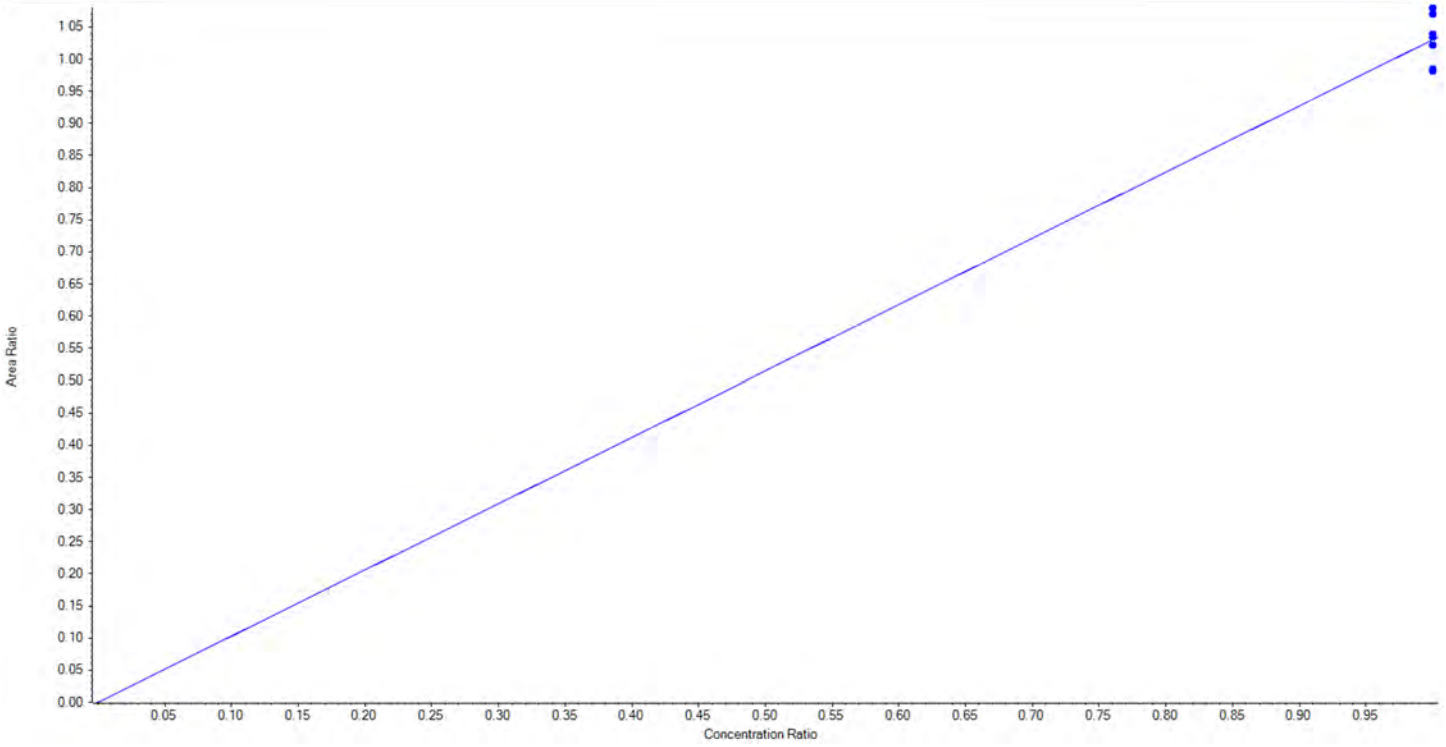
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C6-PFDA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	519.0 / 474.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.03014 x (std. dev. = 0.03812) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1299.15	103.9
5	KY34	L2	True	1250.00	1193.57	95.5
6	KY35	L3	True	1250.00	1260.51	100.8
7	KY36	L4	True	1250.00	1191.22	95.3
8	KY37	L5	True	1250.00	1309.56	104.8
9	KY38	L6	True	1250.00	1240.42	99.2
10	KY39	L7	True	1250.00	1255.58	100.5



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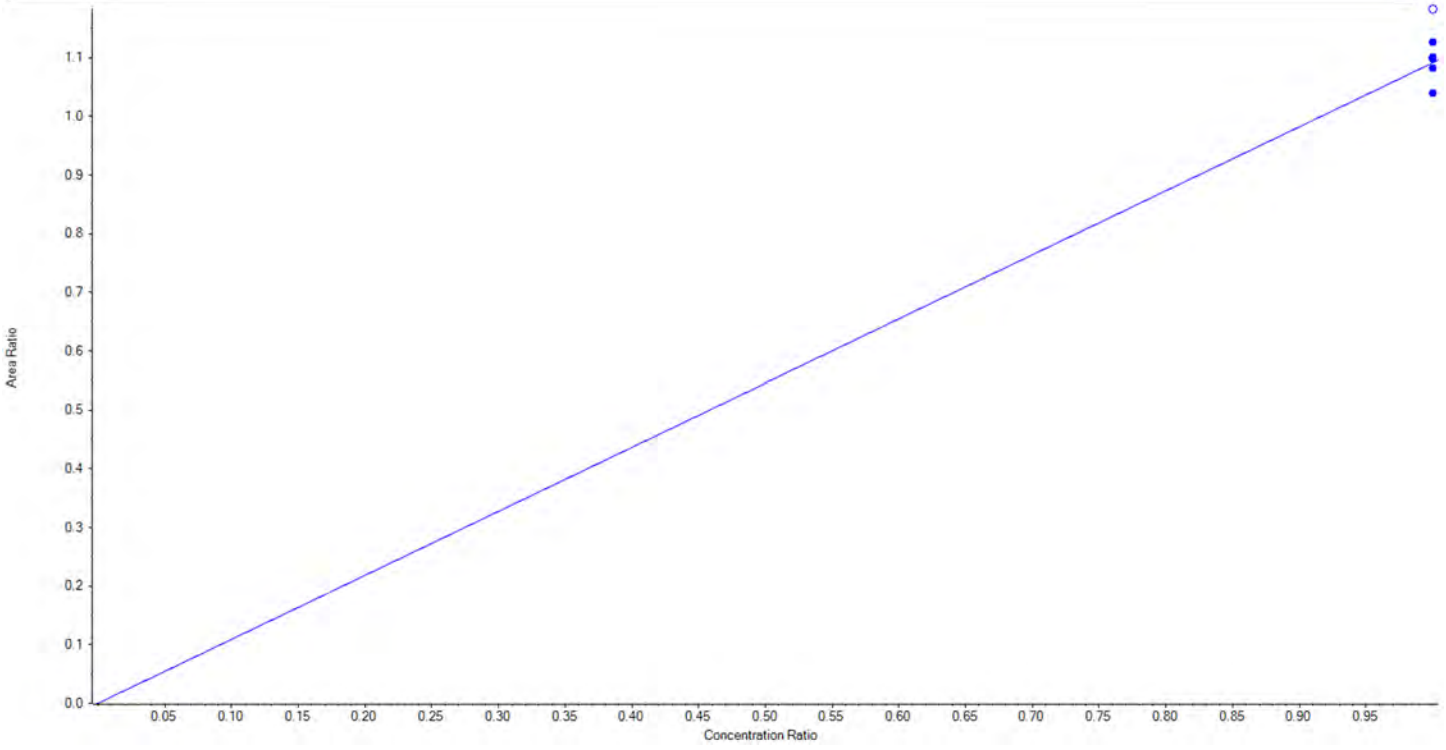
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C7-PFUnA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	570.0 / 525.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.09121 x (std. dev. = 0.02898) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	1250.00	1354.91	108.4
5	KY34	L2	True	1250.00	1190.89	95.3
6	KY35	L3	True	1250.00	1257.71	100.6
7	KY36	L4	True	1250.00	1239.74	99.2
8	KY37	L5	True	1250.00	1290.25	103.2
9	KY38	L6	True	1250.00	1259.90	100.8
10	KY39	L7	True	1250.00	1261.51	100.9



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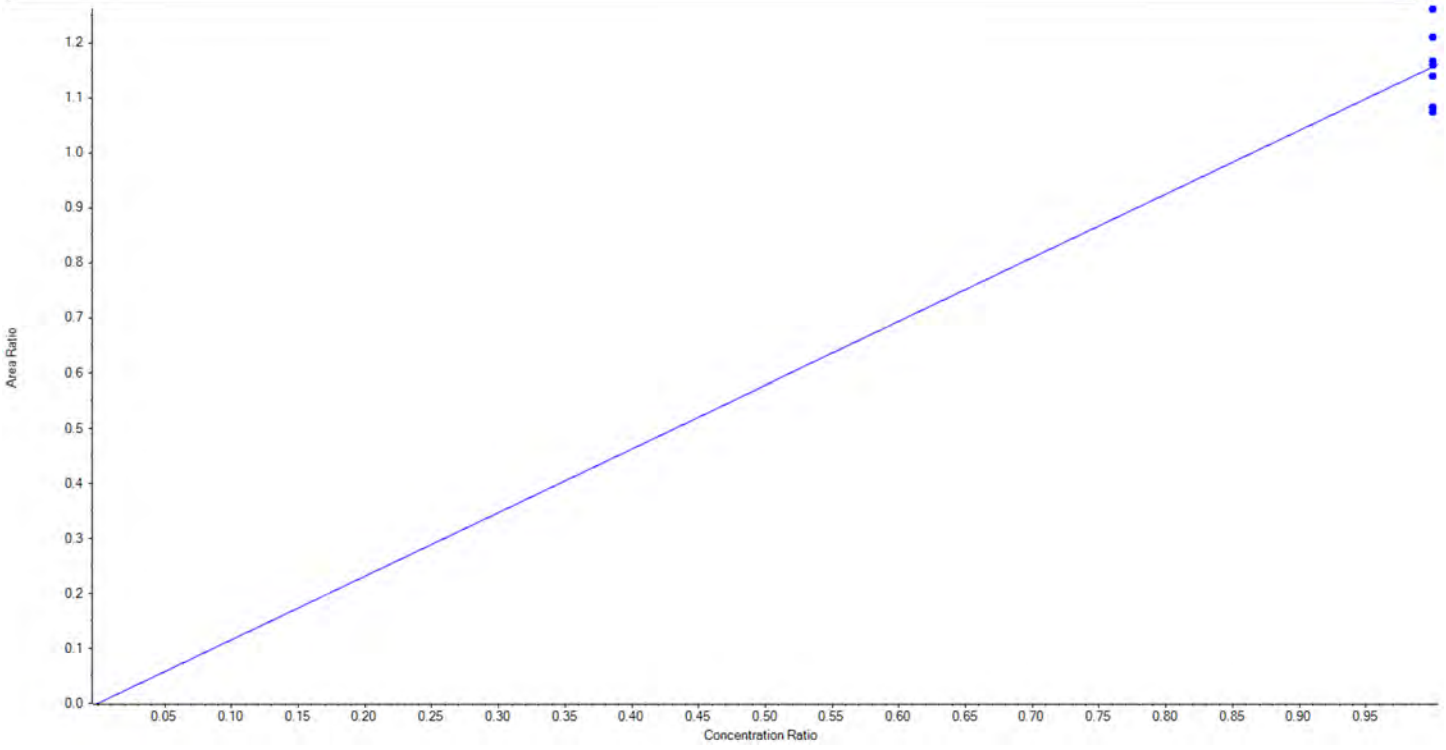
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C2-PFTeDA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	715.0 / 670.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.15636 x (std. dev. = 0.06659) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1253.20	100.3
5	KY34	L2	True	1250.00	1170.27	93.6
6	KY35	L3	True	1250.00	1232.62	98.6
7	KY36	L4	True	1250.00	1160.48	92.8
8	KY37	L5	True	1250.00	1261.77	100.9
9	KY38	L6	True	1250.00	1308.15	104.7
10	KY39	L7	True	1250.00	1363.52	109.1



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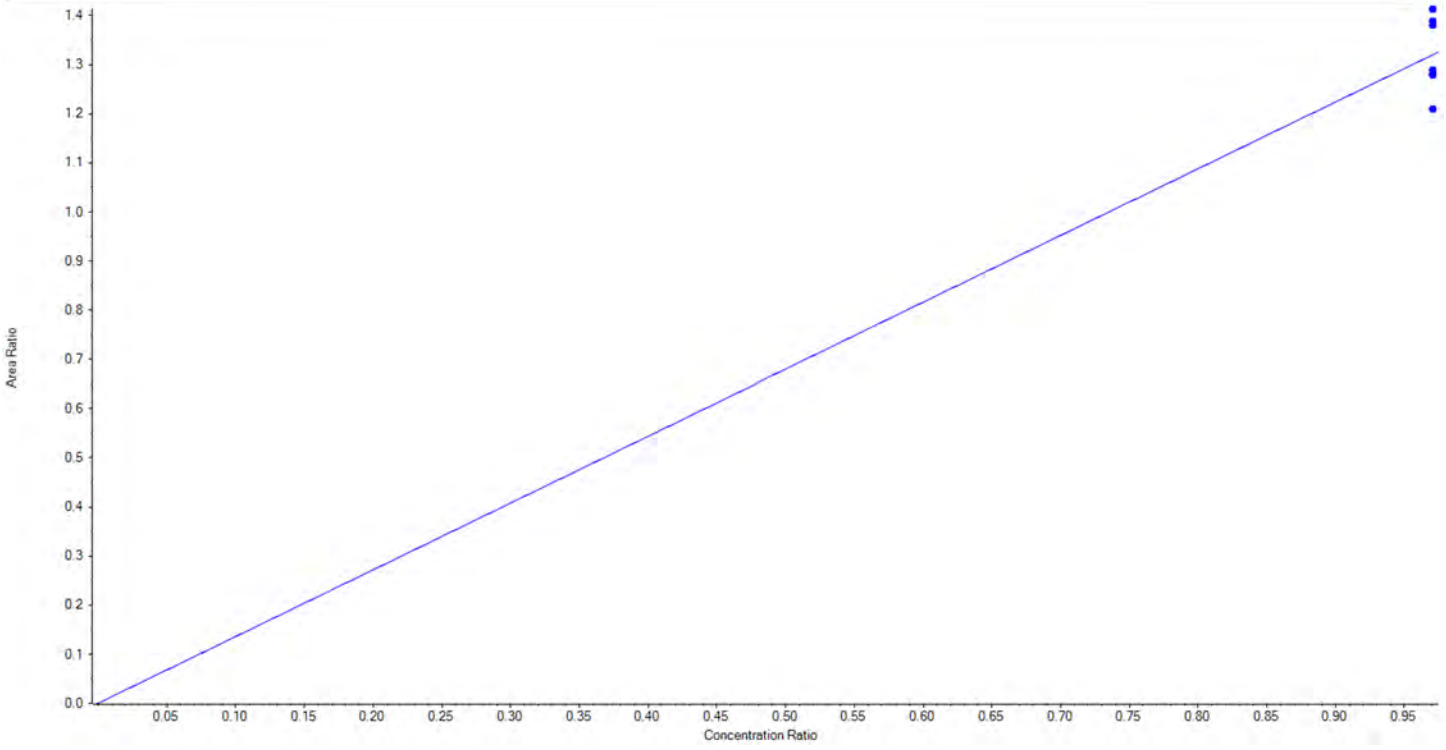
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C3-PFBS	**Data File**	AC_04202020_05-369.wiff
MRM Transition	302.0 / 99.0	**Result Table**	20-0493_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.35996 x (std. dev. = 0.07675) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1161.25	1134.44	97.7
5	KY34	L2	True	1161.25	1124.34	96.8
6	KY35	L3	True	1161.25	1242.99	107.0
7	KY36	L4	True	1161.25	1064.69	91.7
8	KY37	L5	True	1161.25	1214.59	104.6
9	KY38	L6	True	1161.25	1126.30	97.0
10	KY39	L7	True	1161.25	1221.40	105.2



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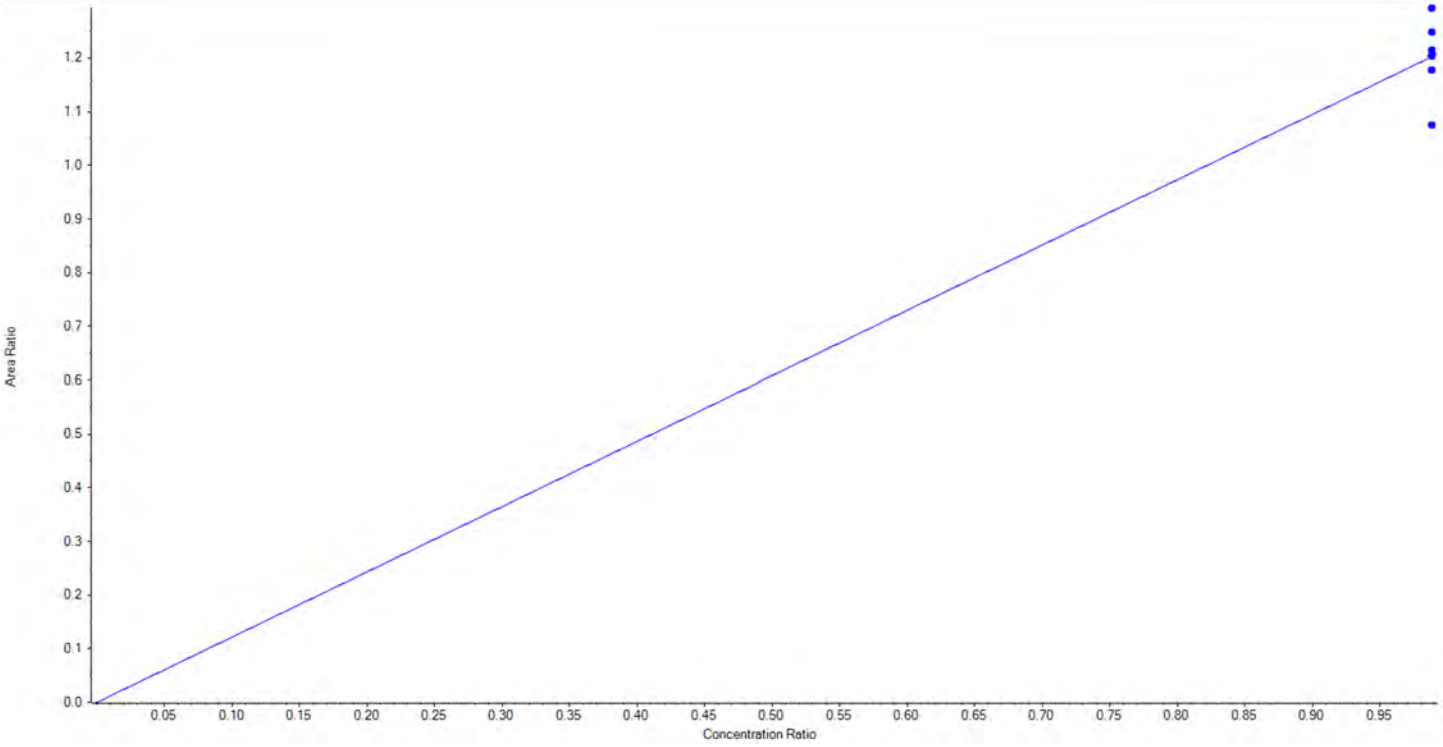
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C3-PFHxS	**Data File**	AC_04202020_05-369.wiff
MRM Transition	402.0 / 99.0	**Result Table**	20-0493_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.21622 x (std. dev. = 0.06842) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1182.50	1185.59	100.3
5	KY34	L2	True	1182.50	1228.42	103.9
6	KY35	L3	True	1182.50	1271.67	107.5
7	KY36	L4	True	1182.50	1057.11	89.4
8	KY37	L5	True	1182.50	1183.25	100.1
9	KY38	L6	True	1182.50	1157.41	97.9
10	KY39	L7	True	1182.50	1194.05	101.0



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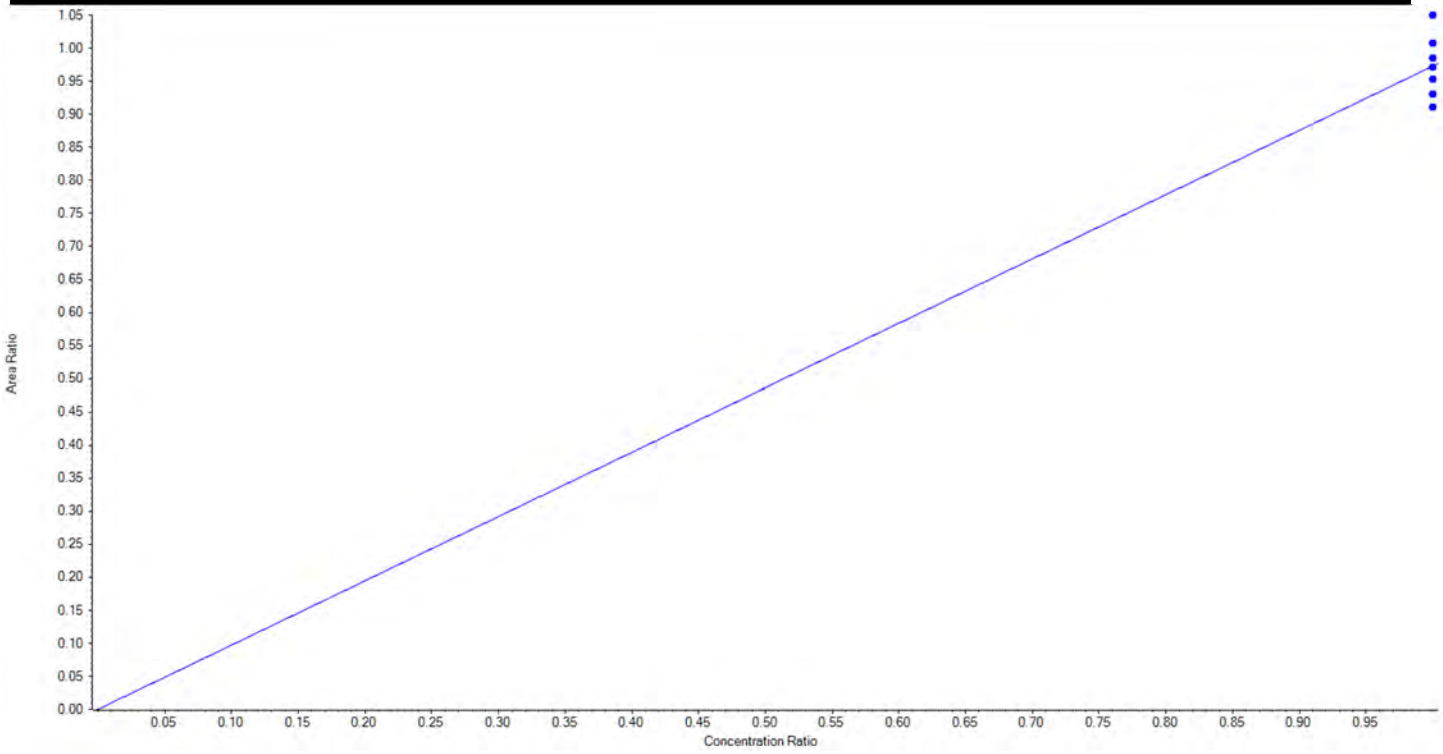
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C8-PFOS	**Data File**	AC_04202020_05-369.wiff
MRM Transition	507.0 / 99.0	**Result Table**	20-0493_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.97309 x (std. dev. = 0.04722) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1196.25	1211.49	101.3
5	KY34	L2	True	1196.25	1120.16	93.6
6	KY35	L3	True	1196.25	1291.20	107.9
7	KY36	L4	True	1196.25	1144.59	95.7
8	KY37	L5	True	1196.25	1239.94	103.7
9	KY38	L6	True	1196.25	1194.52	99.9
10	KY39	L7	True	1196.25	1171.85	98.0



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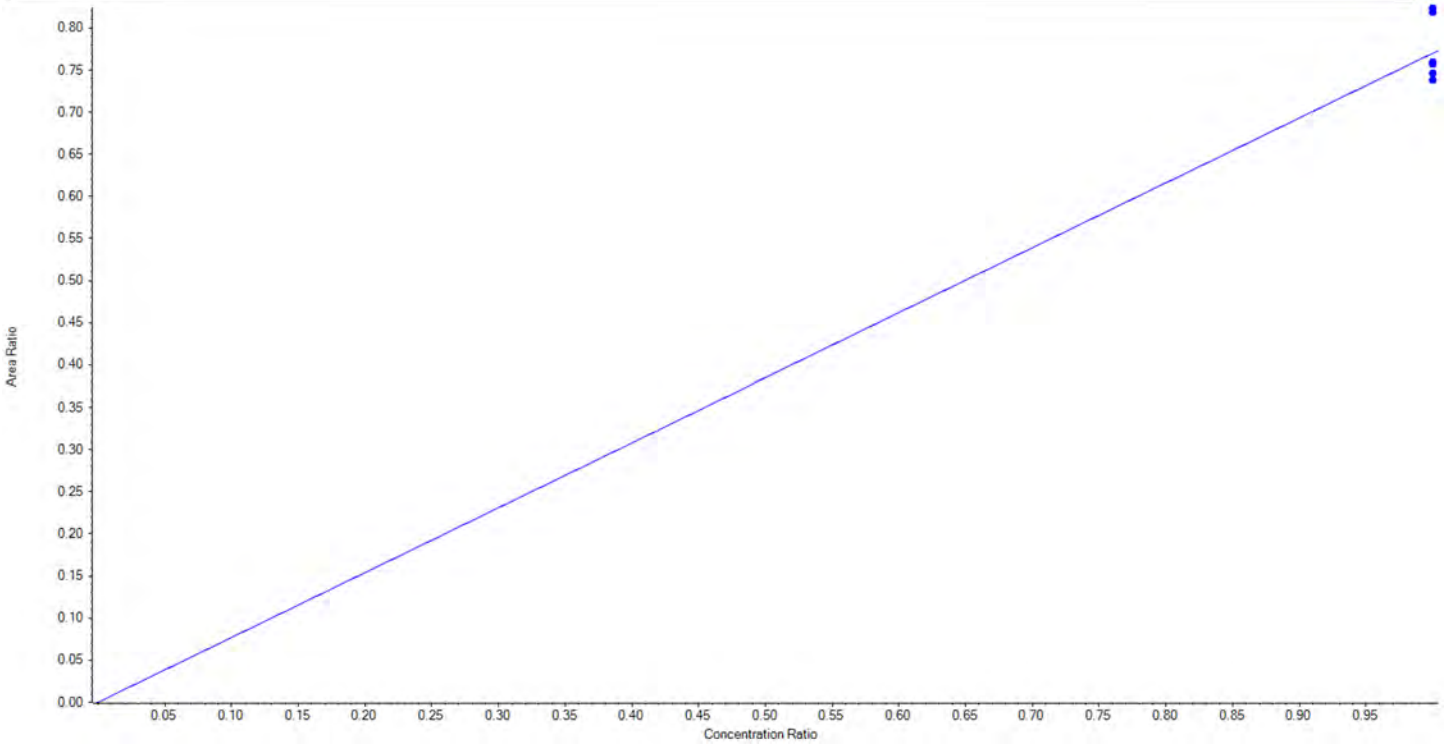
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:15 PM

Analyte Name	13C3-HFPO-DA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	287.0 / 169.0	**Result Table**	20-0493_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.77000 x (std. dev. = 0.03574) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1197.69	95.8
5	KY34	L2	True	1250.00	1211.95	97.0
6	KY35	L3	True	1250.00	1229.58	98.4
7	KY36	L4	True	1250.00	1212.08	97.0
8	KY37	L5	True	1250.00	1232.43	98.6
9	KY38	L6	True	1250.00	1336.76	106.9
10	KY39	L7	True	1250.00	1329.51	106.4



BATTELLE

	Isotope Dilution Calibration Curve Concentrations (ng/L)							ICC (ng/L)
	KY33	KY34	KY35	KY36	KY37	KY38	KY39	KY41
PFBA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFPeA	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFHxA	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFHpA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFOA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFNA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFDA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFUnA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFDoA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFTrDA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFTeDA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
NMeFOSAA (Branched)	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
NEtFOSAA (Branched)	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFOSA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFBS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFPeS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFHxS (Branched)	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFHpS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFOS (Branched)	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFDS	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFNS	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
4:2FTS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
6:2FTS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
8:2FTS	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
3:3 FTCA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
5:3 FTCA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
7:3 FTCA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
HFPO-DA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
Adona	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
9Cl-PF3ONS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
11Cl-PF3OUdS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
	Surrogates / Extracted Internal Standards							
13C4-PFBA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C5-PFPeA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C5-PFHxA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C4-PFHpA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C8-PFOA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C9-PFNA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C6-PFDA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C7-PFUnA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFDoA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFTeDA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
d3-MeFOSAA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
d5-EtFOSAA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C8-FOSA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C3-PFBS	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25
13C3-PFHxS	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50
13C8-PFOS	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25
13C2-4:2FTS	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75
13C2-6:2FTS	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25
13C2-8:2FTS	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50
13C3-HFPO-DA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
	Internal Standards							
13C3-PFBA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFOA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFDA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C4-PFOS	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25

Sample Name	KY41 ICC	**Injection Vial**	12
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:38:10 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.59	2331.12	2500.00	93.24
PFBS_2	298.9 / 99.0	1.59	2285.32	2500.00	91.41
PFHxA_1	313.0 / 269.0	1.90	2273.40	2525.00	90.04
PFHxA_2	313.0 / 119.0	1.90	2219.94	2525.00	87.92
PFHpA_1	363.0 / 319.0	2.29	2250.80	2500.00	90.03
PFHpA_2	363.0 / 169.0	2.30	2275.59	2500.00	91.02
PFHxS_1	399.0 / 80.0	2.31	2468.98	2525.00	97.78
PFHxS_2	399.0 / 99.0	2.31	2393.68	2525.00	94.80
PFOA_1	413.0 / 369.0	2.69	2358.81	2500.00	94.35
PFOA_2	413.0 / 169.0	2.68	2414.18	2500.00	96.57
PFNA_1	463.0 / 419.0	3.06	2314.57	2500.00	92.58
PFNA_2	463.0 / 219.0	3.06	2293.27	2500.00	91.73
PFOS_1	499.0 / 80.0	3.05	2501.05	2525.00	99.05
PFOS_2	499.0 / 99.0	3.06	2513.67	2525.00	99.55
PFDA_1	513.0 / 469.0	3.41	2472.92	2500.00	98.92
PFDA_2	513.0 / 219.0	3.41	2341.06	2500.00	93.64
PFUnA_1	563.0 / 519.0	3.71	2310.07	2500.00	92.40
PFUnA_2	563.0 / 269.0	3.71	2243.82	2500.00	89.75
PFDoA_1	613.0 / 569.0	3.99	2373.00	2500.00	94.92
PFDoA_2	613.0 / 319.0	3.99	2344.18	2500.00	93.77
PFTrDA_1	663.0 / 619.0	4.24	2316.67	2500.00	92.67
PFTrDA_2	663.0 / 169.0	4.24	2397.15	2500.00	95.89
PFTeDA_1	713.0 / 669.0	4.45	2303.70	2500.00	92.15
PFTeDA_2	713.0 / 169.0	4.45	2294.29	2500.00	91.77
NMeFOSAA_1	570.0 / 419.0	3.55	2384.55	2500.00	95.38
NMeFOSAA_2	570.0 / 512.0	3.55	2470.51	2500.00	98.82
NEtFOSAA_1	584.0 / 419.0	3.71	2294.70	2500.00	91.79
NEtFOSAA_2	584.0 / 483.0	3.72	2188.90	2500.00	87.56
HFPO-DA_1	285.0 / 169.0	2.01	2272.88	2500.00	90.92
HFPO-DA_2	285.0 / 118.8	2.01	2172.36	2500.00	86.89
ADONA_1	377.0 / 251.0	2.33	2293.97	2500.00	91.76
ADONA_2	377.0 / 85.0	2.33	2036.95	2500.00	81.48
9Cl-PF3ONS_1	531.0 / 351.0	3.24	2651.54	2500.00	106.06
9Cl-PF3ONS_2	531.0 / 83.0	3.24	2859.05	2500.00	114.36
11Cl-pf3OUdS_1	631.0 / 451.0	3.84	2324.31	2500.00	92.97
11Cl-pf3OUdS_2	631.0 / 83.0	3.84	2348.01	2500.00	93.92

Sample Name	KY35 CCV	**Injection Vial**	14
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 5:05:12 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.58	504.43	500.00	100.89
PFBS_2	298.9 / 99.0	1.58	488.28	500.00	97.66
PFHxA_1	313.0 / 269.0	1.89	505.67	505.00	100.13
PFHxA_2	313.0 / 119.0	1.88	537.62	505.00	106.46
PFHpA_1	363.0 / 319.0	2.27	518.37	500.00	103.67
PFHpA_2	363.0 / 169.0	2.28	574.87	500.00	114.97
PFHxS_1	399.0 / 80.0	2.29	530.83	505.00	105.11
PFHxS_2	399.0 / 99.0	2.29	553.35	505.00	109.57
PFOA_1	413.0 / 369.0	2.66	358.35	500.00	71.67
PFOA_2	413.0 / 169.0	2.66	358.85	500.00	71.77
PFNA_1	463.0 / 419.0	3.03	517.02	500.00	103.40
PFNA_2	463.0 / 219.0	3.03	489.73	500.00	97.95
PFOS_1	499.0 / 80.0	3.02	488.54	505.00	96.74
PFOS_2	499.0 / 99.0	3.03	511.04	505.00	101.20
PFDA_1	513.0 / 469.0	3.38	523.21	500.00	104.64
PFDA_2	513.0 / 219.0	3.37	532.99	500.00	106.60
PFUnA_1	563.0 / 519.0	3.68	560.37	500.00	112.07
PFUnA_2	563.0 / 269.0	3.68	592.23	500.00	118.45
PFDoA_1	613.0 / 569.0	3.96	564.35	500.00	112.87
PFDoA_2	613.0 / 319.0	3.96	524.30	500.00	104.86
PFTrDA_1	663.0 / 619.0	4.20	543.43	500.00	108.69
PFTrDA_2	663.0 / 169.0	4.20	532.78	500.00	106.56
PFTeDA_1	713.0 / 669.0	4.41	513.72	500.00	102.74
PFTeDA_2	713.0 / 169.0	4.41	528.10	500.00	105.62
NMeFOSAA_1	570.0 / 419.0	3.52	567.27	500.00	113.45
NMeFOSAA_2	570.0 / 512.0	3.53	494.77	500.00	98.95
NEtFOSAA_1	584.0 / 419.0	3.68	498.42	500.00	99.68
NEtFOSAA_2	584.0 / 483.0	3.68	523.78	500.00	104.76
HFPO-DA_1	285.0 / 169.0	2.00	522.51	500.00	104.50
HFPO-DA_2	285.0 / 118.8	1.99	456.54	500.00	91.31
ADONA_1	377.0 / 251.0	2.31	526.69	500.00	105.34
ADONA_2	377.0 / 85.0	2.31	281.87	500.00	56.37
9Cl-PF3ONS_1	531.0 / 351.0	3.22	554.94	500.00	110.99
9Cl-PF3ONS_2	531.0 / 83.0	3.21	640.52	500.00	128.10
11Cl-pf3OUdS_1	631.0 / 451.0	3.81	556.61	500.00	111.32
11Cl-pf3OUdS_2	631.0 / 83.0	3.81	636.90	500.00	127.38

Sample Name	KY37 CCV	**Injection Vial**	27
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 7:27:25 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.58	2544.83	2500.00	101.79
PFBS_2	298.9 / 99.0	1.58	2517.43	2500.00	100.70
PFHxA_1	313.0 / 269.0	1.89	2495.03	2525.00	98.81
PFHxA_2	313.0 / 119.0	1.89	2509.67	2525.00	99.39
PFHpA_1	363.0 / 319.0	2.28	2554.94	2500.00	102.20
PFHpA_2	363.0 / 169.0	2.28	2513.76	2500.00	100.55
PFHxS_1	399.0 / 80.0	2.30	2512.08	2525.00	99.49
PFHxS_2	399.0 / 99.0	2.30	2466.96	2525.00	97.70
PFOA_1	413.0 / 369.0	2.67	2405.26	2500.00	96.21
PFOA_2	413.0 / 169.0	2.67	2574.55	2500.00	102.98
PFNA_1	463.0 / 419.0	3.04	2529.90	2500.00	101.20
PFNA_2	463.0 / 219.0	3.04	2496.37	2500.00	99.85
PFOS_1	499.0 / 80.0	3.04	2431.70	2525.00	96.31
PFOS_2	499.0 / 99.0	3.04	2439.35	2525.00	96.61
PFDA_1	513.0 / 469.0	3.38	2495.60	2500.00	99.82
PFDA_2	513.0 / 219.0	3.38	2467.14	2500.00	98.69
PFUnA_1	563.0 / 519.0	3.69	2678.48	2500.00	107.14
PFUnA_2	563.0 / 269.0	3.69	2438.41	2500.00	97.54
PFDoA_1	613.0 / 569.0	3.97	2507.26	2500.00	100.29
PFDoA_2	613.0 / 319.0	3.97	2429.42	2500.00	97.18
PFTrDA_1	663.0 / 619.0	4.20	2523.88	2500.00	100.96
PFTrDA_2	663.0 / 169.0	4.20	2609.24	2500.00	104.37
PFTeDA_1	713.0 / 669.0	4.41	2420.81	2500.00	96.83
PFTeDA_2	713.0 / 169.0	4.41	2510.54	2500.00	100.42
NMeFOSAA_1	570.0 / 419.0	3.53	2566.63	2500.00	102.67
NMeFOSAA_2	570.0 / 512.0	3.53	2578.91	2500.00	103.16
NEtFOSAA_1	584.0 / 419.0	3.69	2521.26	2500.00	100.85
NEtFOSAA_2	584.0 / 483.0	3.69	2434.92	2500.00	97.40
HFPO-DA_1	285.0 / 169.0	2.00	2577.12	2500.00	103.08
HFPO-DA_2	285.0 / 118.8	2.00	2830.86	2500.00	113.23
ADONA_1	377.0 / 251.0	2.32	2661.42	2500.00	106.46
ADONA_2	377.0 / 85.0	2.32	2615.64	2500.00	104.63
9Cl-PF3ONS_1	531.0 / 351.0	3.23	2924.34	2500.00	116.97
9Cl-PF3ONS_2	531.0 / 83.0	3.23	2933.76	2500.00	117.35
11Cl-pf3OUdS_1	631.0 / 451.0	3.82	2666.70	2500.00	106.67
11Cl-pf3OUdS_2	631.0 / 83.0	3.82	2733.17	2500.00	109.33

Sample Name	KY36 CCV	**Injection Vial**	37
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 9:16:45 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.58	987.70	1000.00	98.77
PFBS_2	298.9 / 99.0	1.58	988.19	1000.00	98.82
PFHxA_1	313.0 / 269.0	1.89	944.82	1010.00	93.55
PFHxA_2	313.0 / 119.0	1.88	991.47	1010.00	98.17
PFHpA_1	363.0 / 319.0	2.28	984.31	1000.00	98.43
PFHpA_2	363.0 / 169.0	2.28	885.75	1000.00	88.58
PFHxS_1	399.0 / 80.0	2.30	989.38	1010.00	97.96
PFHxS_2	399.0 / 99.0	2.30	1022.81	1010.00	101.27
PFOA_1	413.0 / 369.0	2.67	851.56	1000.00	85.16
PFOA_2	413.0 / 169.0	2.67	935.69	1000.00	93.57
PFNA_1	463.0 / 419.0	3.04	940.28	1000.00	94.03
PFNA_2	463.0 / 219.0	3.05	942.64	1000.00	94.26
PFOS_1	499.0 / 80.0	3.04	985.45	1010.00	97.57
PFOS_2	499.0 / 99.0	3.04	955.66	1010.00	94.62
PFDA_1	513.0 / 469.0	3.39	1047.34	1000.00	104.73
PFDA_2	513.0 / 219.0	3.39	1077.97	1000.00	107.80
PFUnA_1	563.0 / 519.0	3.69	934.20	1000.00	93.42
PFUnA_2	563.0 / 269.0	3.69	1018.38	1000.00	101.84
PFDoA_1	613.0 / 569.0	3.97	974.12	1000.00	97.41
PFDoA_2	613.0 / 319.0	3.97	1009.92	1000.00	100.99
PFTrDA_1	663.0 / 619.0	4.20	995.08	1000.00	99.51
PFTrDA_2	663.0 / 169.0	4.20	1012.70	1000.00	101.27
PFTeDA_1	713.0 / 669.0	4.42	957.23	1000.00	95.72
PFTeDA_2	713.0 / 169.0	4.41	998.84	1000.00	99.88
NMeFOSAA_1	570.0 / 419.0	3.54	979.39	1000.00	97.94
NMeFOSAA_2	570.0 / 512.0	3.53	997.61	1000.00	99.76
NEtFOSAA_1	584.0 / 419.0	3.69	991.89	1000.00	99.19
NEtFOSAA_2	584.0 / 483.0	3.70	1033.01	1000.00	103.30
HFPO-DA_1	285.0 / 169.0	2.00	1033.68	1000.00	103.37
HFPO-DA_2	285.0 / 118.8	2.00	1214.69	1000.00	121.47
ADONA_1	377.0 / 251.0	2.32	1054.53	1000.00	105.45
ADONA_2	377.0 / 85.0	2.31	942.28	1000.00	94.23
9Cl-PF3ONS_1	531.0 / 351.0	3.23	1186.68	1000.00	118.67
9Cl-PF3ONS_2	531.0 / 83.0	3.23	1158.63	1000.00	115.86
11Cl-pf3OUdS_1	631.0 / 451.0	3.82	1007.31	1000.00	100.73
11Cl-pf3OUdS_2	631.0 / 83.0	3.82	1010.19	1000.00	101.02

Sample Name	KY37 CCV	**Injection Vial**	46
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 11:06:10 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.58	2506.29	2500.00	100.25
PFBS_2	298.9 / 99.0	1.58	2517.50	2500.00	100.70
PFHxA_1	313.0 / 269.0	1.88	2538.90	2525.00	100.55
PFHxA_2	313.0 / 119.0	1.88	2558.50	2525.00	101.33
PFHpA_1	363.0 / 319.0	2.27	2579.83	2500.00	103.19
PFHpA_2	363.0 / 169.0	2.27	2640.63	2500.00	105.63
PFHxS_1	399.0 / 80.0	2.29	2471.34	2525.00	97.87
PFHxS_2	399.0 / 99.0	2.29	2545.77	2525.00	100.82
PFOA_1	413.0 / 369.0	2.66	2383.10	2500.00	95.32
PFOA_2	413.0 / 169.0	2.66	2386.64	2500.00	95.47
PFNA_1	463.0 / 419.0	3.03	2404.36	2500.00	96.17
PFNA_2	463.0 / 219.0	3.03	2395.05	2500.00	95.80
PFOS_1	499.0 / 80.0	3.03	2524.33	2525.00	99.97
PFOS_2	499.0 / 99.0	3.03	2660.98	2525.00	105.39
PFDA_1	513.0 / 469.0	3.38	2688.96	2500.00	107.56
PFDA_2	513.0 / 219.0	3.38	2403.65	2500.00	96.15
PFUnA_1	563.0 / 519.0	3.68	2498.97	2500.00	99.96
PFUnA_2	563.0 / 269.0	3.68	2392.35	2500.00	95.69
PFDoA_1	613.0 / 569.0	3.96	2486.58	2500.00	99.46
PFDoA_2	613.0 / 319.0	3.96	2585.90	2500.00	103.44
PFTrDA_1	663.0 / 619.0	4.20	2482.92	2500.00	99.32
PFTrDA_2	663.0 / 169.0	4.20	2642.65	2500.00	105.71
PFTeDA_1	713.0 / 669.0	4.41	2449.65	2500.00	97.99
PFTeDA_2	713.0 / 169.0	4.41	2609.10	2500.00	104.36
NMeFOSAA_1	570.0 / 419.0	3.52	2640.66	2500.00	105.63
NMeFOSAA_2	570.0 / 512.0	3.52	2658.53	2500.00	106.34
NEtFOSAA_1	584.0 / 419.0	3.68	2628.15	2500.00	105.13
NEtFOSAA_2	584.0 / 483.0	3.68	2515.39	2500.00	100.62
HFPO-DA_1	285.0 / 169.0	2.00	2597.87	2500.00	103.91
HFPO-DA_2	285.0 / 118.8	2.00	2602.18	2500.00	104.09
ADONA_1	377.0 / 251.0	2.31	2659.61	2500.00	106.38
ADONA_2	377.0 / 85.0	2.31	2804.54	2500.00	112.18
9Cl-PF3ONS_1	531.0 / 351.0	3.22	3050.56	2500.00	122.02
9Cl-PF3ONS_2	531.0 / 83.0	3.22	3412.11	2500.00	136.48
11Cl-pf3OUdS_1	631.0 / 451.0	3.81	2588.99	2500.00	103.56
11Cl-pf3OUdS_2	631.0 / 83.0	3.81	2585.81	2500.00	103.43

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QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 12:31:50 PM

Sample Name	KY41 ICC	**Injection Vial**	12
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:38:10 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.99	1215.88	1250.00	97.27
d3-MeFOSAA	573.0 / 419.0	3.55	1249.69	1250.00	99.97
d5-EtFOSAA	589.0 / 419.0	3.71	1207.79	1250.00	96.62
13C5-PFHxA	318.0 / 273.0	1.89	1266.49	1250.00	101.32
13C4-PFHpA	367.0 / 322.0	2.28	1309.93	1250.00	104.79
13C8-PFOA	421.0 / 376.0	2.68	1247.75	1250.00	99.82
13C9-PFNA	472.0 / 427.0	3.05	1331.91	1250.00	106.55
13C6-PFDA	519.0 / 474.0	3.39	1180.03	1250.00	94.40
13C7-PFUnA	570.0 / 525.0	3.70	1277.47	1250.00	102.20
13C2-PFTeDA	715.0 / 670.0	4.45	1230.33	1250.00	98.43
13C3-PFBS	302.0 / 99.0	1.57	1127.51	1161.25	97.09
13C3-PFHxS	402.0 / 99.0	2.30	1090.79	1182.50	92.24
13C8-PFOS	507.0 / 99.0	3.04	1155.78	1196.25	96.62
13C3-HFPO-DA	287.0 / 169.0	2.01	1301.38	1250.00	104.11

Sample Name	KY35 CCV	**Injection Vial**	14
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 5:05:12 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.95	1188.33	1250.00	95.07
d3-MeFOSAA	573.0 / 419.0	3.52	1118.79	1250.00	89.50
d5-EtFOSAA	589.0 / 419.0	3.68	1183.45	1250.00	94.68
13C5-PFHxA	318.0 / 273.0	1.88	1245.14	1250.00	99.61
13C4-PFHpA	367.0 / 322.0	2.27	1274.56	1250.00	101.96
13C8-PFOA	421.0 / 376.0	2.65	1289.82	1250.00	103.19
13C9-PFNA	472.0 / 427.0	3.02	1377.27	1250.00	110.18
13C6-PFDA	519.0 / 474.0	3.36	1315.98	1250.00	105.28
13C7-PFUnA	570.0 / 525.0	3.67	1247.20	1250.00	99.78
13C2-PFTeDA	715.0 / 670.0	4.40	1205.67	1250.00	96.45
13C3-PFBS	302.0 / 99.0	1.56	1077.42	1161.25	92.78
13C3-PFHxS	402.0 / 99.0	2.28	1042.97	1182.50	88.20
13C8-PFOS	507.0 / 99.0	3.02	1192.71	1196.25	99.70
13C3-HFPO-DA	287.0 / 169.0	1.99	1284.75	1250.00	102.78

Sample Name	KY37 CCV	**Injection Vial**	27
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 7:27:25 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.96	1235.58	1250.00	98.85
d3-MeFOSAA	573.0 / 419.0	3.53	1259.11	1250.00	100.73
d5-EtFOSAA	589.0 / 419.0	3.68	1178.54	1250.00	94.28
13C5-PFHxA	318.0 / 273.0	1.88	1205.40	1250.00	96.43
13C4-PFHpA	367.0 / 322.0	2.27	1250.85	1250.00	100.07
13C8-PFOA	421.0 / 376.0	2.67	1233.18	1250.00	98.65
13C9-PFNA	472.0 / 427.0	3.03	1335.87	1250.00	106.87
13C6-PFDA	519.0 / 474.0	3.37	1219.34	1250.00	97.55
13C7-PFUnA	570.0 / 525.0	3.68	1211.31	1250.00	96.90
13C2-PFTeDA	715.0 / 670.0	4.41	1232.34	1250.00	98.59
13C3-PFBS	302.0 / 99.0	1.56	1120.37	1161.25	96.48
13C3-PFHxS	402.0 / 99.0	2.29	1122.20	1182.50	94.90
13C8-PFOS	507.0 / 99.0	3.03	1242.50	1196.25	103.87
13C3-HFPO-DA	287.0 / 169.0	2.00	1263.46	1250.00	101.08

Sample Name	KY36 CCV	**Injection Vial**	37
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 9:16:45 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.96	1230.98	1250.00	98.48
d3-MeFOSAA	573.0 / 419.0	3.53	1256.93	1250.00	100.55
d5-EtFOSAA	589.0 / 419.0	3.69	1250.75	1250.00	100.06
13C5-PFHxA	318.0 / 273.0	1.88	1326.58	1250.00	106.13
13C4-PFHpA	367.0 / 322.0	2.27	1308.15	1250.00	104.65
13C8-PFOA	421.0 / 376.0	2.67	1267.83	1250.00	101.43
13C9-PFNA	472.0 / 427.0	3.03	1419.27	1250.00	113.54
13C6-PFDA	519.0 / 474.0	3.38	1171.06	1250.00	93.68
13C7-PFUnA	570.0 / 525.0	3.68	1273.22	1250.00	101.86
13C2-PFTeDA	715.0 / 670.0	4.41	1210.37	1250.00	96.83
13C3-PFBS	302.0 / 99.0	1.56	1070.47	1161.25	92.18
13C3-PFHxS	402.0 / 99.0	2.30	1111.00	1182.50	93.95
13C8-PFOS	507.0 / 99.0	3.03	1182.15	1196.25	98.82
13C3-HFPO-DA	287.0 / 169.0	2.00	1258.75	1250.00	100.70

Sample Name	KY37 CCV	**Injection Vial**	46
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 11:06:10 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.95	1194.43	1250.00	95.55
d3-MeFOSAA	573.0 / 419.0	3.52	1210.89	1250.00	96.87
d5-EtFOSAA	589.0 / 419.0	3.68	1144.16	1250.00	91.53
13C5-PFHxA	318.0 / 273.0	1.88	1251.66	1250.00	100.13
13C4-PFHpA	367.0 / 322.0	2.27	1229.37	1250.00	98.35
13C8-PFOA	421.0 / 376.0	2.66	1247.44	1250.00	99.79
13C9-PFNA	472.0 / 427.0	3.02	1416.07	1250.00	113.29
13C6-PFDA	519.0 / 474.0	3.36	1189.01	1250.00	95.12
13C7-PFUnA	570.0 / 525.0	3.67	1244.09	1250.00	99.53
13C2-PFTeDA	715.0 / 670.0	4.40	1202.03	1250.00	96.16
13C3-PFBS	302.0 / 99.0	1.56	1076.65	1161.25	92.72
13C3-PFHxS	402.0 / 99.0	2.29	1111.85	1182.50	94.03
13C8-PFOS	507.0 / 99.0	3.02	1164.23	1196.25	97.32
13C3-HFPO-DA	287.0 / 169.0	1.99	1235.57	1250.00	98.85

SDG 20-0470 USE FOR PFTeDA AND PFTrDA ONLY

Sample Summary

Client: Tetra Tech
SDG: 20-0470
Project/Site: NSA Mid-South, Millington, Tennessee
CTO: SE180383

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Receipt Date
CY680PB-FS	Procedural Blank	WATER	4/14/2020	4/14/2020
CY681LCS-FS	Laboratory Control Sample	WATER	4/14/2020	4/14/2020
H4728-FS	009MW02-040820	GW	4/8/2020	4/10/2020
H4730-FS	009MW01-040820	GW	4/8/2020	4/10/2020
H4731-FS	002G02DA-040820	GW	4/8/2020	4/10/2020
H4731MS-FS	002G02DA-040820	GW	4/8/2020	4/10/2020
H4731MSD-FS	002G02DA-040820	GW	4/8/2020	4/10/2020
H4732-FS	002G05DA-040820	GW	4/8/2020	4/10/2020
H4734-FS	FD01-040820	QC	4/8/2020	4/10/2020

QA/QC Summary
Batch 20-0470

Project:	CTO-SE180383: NSA Mid-South, Millington, Tennessee
Client Project Manager:	Larry Basilio
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	GW, QC
Data Set:	DP-20-0405
Analytical SOP:	5-369
Method Reference:	PFAS to QSM 5.3 Table B-15

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
4/8/2020	4/10/2020	3.6

Corrective Actions	None.
Sample Storage	The water samples were stored refrigerated until extraction.
Related samples	Samples are re-extracted in SDG 20-0493 to verify extracted internal standard exceedances. Samples H4727-FS (009MW02-EB-04082020), H4729-FS (009MW01-FB-040820), and H4733-FS (SB01-040820) were extracted but not reported in this data set as they passed all parameters and were reported in SDG 20-0493.

	METHOD SUMMARIES
Sample Preparation	Water samples were fortified with surrogates in the original sample container from the field. The water was extracted using a Weak-anion exchange (WAX) solid phase extraction (SPE) cartridges. Target analytes are eluted from the WAX SPE using 0.5% NH_3 in methanol. Extracts were further refined using Envi-carb to remove co-extracted interferences. Extracts were concentrated to approximately 500 µL under nitrogen with a water bath set between 50 °C and 60 °C, reconstituted with methanol/water and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis in 80:20 methanol/water (V/V).
Prep comments	pH of all samples prior to SPE extraction was verified between 6 and 8. Samples H4728-FS (009MW02-040820), H4730-FS (009MW01-040820), H4731-FS (002G02DA-040820), H4731MS-FS (002G02DA-040820), H4731MSD-FS (002G02DA-040820), H4732-FS (002G05DA-040820), and H4734-FS (FD01-040820) contained particulates. Sample H4728-FS (009MW02-040820) clogged the top filter of the SPE cartridge during extraction, the filter was popped and left inside the SPE cartridge for the remainder of the extraction and elution process.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.

QA/QC Summary
Batch 20-0470

Analysis Comments	Samples analyzed on Sciex 5500 LC-MS/MS. MeFOSAA, EtFOSAA, PFHxS, and PFOS in the LCS, MS, MSD, and field samples when detected, were detected and reported as a combination of the branched and linear isomers.

Holding Times	Extraction Date(s)	Analysis Date(s)
	4/14/2020	4/13, 15 – 17, 20, and 22 – 23/2020

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ ½ the LOQ Samples >10x PB	No exceedances noted.
	No comments.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery	One (1) exceedance noted.
	PFTrDA in the LCS is recovered high due to the low recovery of the extracted internal standard 13C2-PFTeDA used to quantify PFTrDA, which does not have a direct labeled analog. Any detections of PFTrDA in samples (none above the LOD outside of the LCS, MS, and MSD) should be considered biased high. The sample was reanalyzed, confirming the original results. The quant reports for data not reported is included in the unused data section of the full data package.

Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A MS/MSD was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery and <30% RPD	Two (2) exceedances noted.
	PFTrDA in both the MS and MSD are recovered high due to the low recovery of the extracted internal standard 13C2-PFTeDA used to quantify PFTrDA, which does not have a direct labeled analog. Any detections of PFTrDA in samples (none above the LOD outside of the LCS, MS, and MSD) should be considered biased high. Samples were reanalyzed, confirming the original results. The quant reports for data not reported is included in the unused data section of the full data package.

QA/QC Summary
Batch 20-0470

<table>
<tr><td>Extracted Internal Standard Analytes</td><td>Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.</td></tr>
<tr><td rowspan="2">50-150% of true value</td><td>Twenty-three (23) exceedances noted.</td></tr>
<tr><td>Several samples had suppressed or enhanced recoveries for select extracted internal standards. The table below indicates if the extracted internal standard was within +/- 50% of the area of the L5 calibration point (“P”) or if the area showed suppression (“↓”), or enhancement (“↑”) for these extracted internal standards.
<table>
<tr><th></th><th>13C9-PFNA</th><th>13C2-PFDoA</th><th>13C2-PFTeDA</th><th>d3-MeFOSAA</th><th>d5-EtFOSAA</th></tr>
<tr><td>CY680PB-FS (Procedural Blank)</td><td></td><td></td><td>↓</td><td></td><td></td></tr>
<tr><td>CY681LCS-FS (Laboratory Control Sample)</td><td></td><td></td><td>↓</td><td></td><td></td></tr>
<tr><td>H4731MS-FS (002G02DA-040820)</td><td></td><td>↓</td><td>↓</td><td></td><td>↓</td></tr>
<tr><td>H4731MSD-FS (002G02DA-040820)</td><td></td><td>↓</td><td>↓</td><td>↓</td><td>↓</td></tr>
<tr><td>H4728-FS (009MW02-040820)</td><td>P</td><td>↓</td><td>↓</td><td>↓</td><td>P</td></tr>
<tr><td>H4730-FS (009MW01-040820)</td><td></td><td>↓</td><td>↓</td><td></td><td>↓</td></tr>
<tr><td>H4731-FS (002G02DA-040820)</td><td></td><td></td><td>↓</td><td>↓</td><td>↓</td></tr>
<tr><td>H4732-FS (002G05DA-040820)</td><td></td><td></td><td>↓</td><td></td><td></td></tr>
<tr><td>H4734-FS (FD01-040820)</td><td></td><td>↓</td><td>↓</td><td></td><td></td></tr>
</table>
The remaining extracted internal standards in each impacted sample, fortified from the same solution, pass criteria, suggesting that the suppression is matrix related to these analytes only. Samples with exceedances are re-extracted in SDG 20-0493 for verification.</td></tr>
</table>

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
+/- 50% of the area of the L5 calibration point.	No exceedances noted.
	No comments.

Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting.
+/- 30% of true value, $R^2 \geq 0.99$	No exceedances noted.
	No comments.

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
+/- 30% of true value	No exceedances noted.
	No comments.

QA/QC Summary
Batch 20-0470

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
+/- 30% of true value	No exceedances noted.
	The following secondary transitions are outside of criteria: • Adona in KY37 CCV (4/17/2020 01:20:44) • Adona in KY35 CCV (4/22/2020 17:05:12) • 9Cl-PF3ONS in KY36 CCV (4/16/2020 23:41:51) The secondary transition is monitored solely for peak identification, not quantification. There is no impact on the reported data.

Instrument Blank (IB)	Immediately following the highest standard analyzed and daily prior to sample analysis.
≤ ½ the LOQ	No exceedances noted.
	No comments.

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project Number: 100134454
Preparation Batch: 20-0470
Data Set: DP-20-0405
Test Code: Master_369B

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	1	Exceedance was confirmed by reanalysis of a fresh aliquot of the LCS. Confirmation analysis is included in the Unused Data section. LMG 04/23/2020
Matrix Spike / Matrix Spike Duplicate Recovery	2	Exceedances were confirmed by reanalysis of a fresh aliquot of the MS and MSD. Confirmation analyses are included in the Unused Data section. LMG 04/23/2020
Matrix Spike / Matrix Spike Duplicate Precision	0	None
Extracted Internal Standard Analytes (Surrogates)	23	Exceedances were confirmed by reanalysis of a fresh aliquot of the samples. Confirmation analyses are included in the Unused Data section. LMG 04/23/2020
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

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It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	CTO-SE180383: NSA Mid-South, Milling	**Data Set Number:**	DP-20-0405
Project Number:	100134454	**Prep Batch Number:**	20-0470
Entered By:	Lauren Griffith	**Entered On:**	04/23/2020
Test Code (Matrix Type):	Master_369B(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
LMG 04/23/2020

KY38 is not being used for d3-MeFOSAA in the SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY39 is not being used for 13C2-PFDoA and d3-MeFOSAA in the SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY33 is not being used for 13C7-PFUnA in the A_SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY38 is not being used for d3-MeFOSAA in the A_SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY39 is not being used for d3-MeFOSAA in the A_SIS method. There is no impact on the data with this point removed.
LMG 04/23/2020

KY33 is not being used for PFOA in the A_BASE method. There is no impact on the data with this point removed.
LMG 04/23/2020

ADONA is outside of passing criteria in the secondary transition for KY37 CCV (4/17/2020 1:20:44) and KY35 CCV (4/22/2020 17:05:12). The primary passes, the secondary is only being monitored and there is no impact on the data.
LMG 04/23/2020

9Cl-PF3ONS is outside of passing criteria in the secondary transition for KY36 CCV (4/16/2020 23:41:51). The primary passes, the secondary is only being monitored and there is no impact on the data.
LMG 04/23/2020

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2020.04.23 16:55:59 -04'00'

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	KY40 IB
Battelle ID	KY40 IB_04/13/2020
Sample Type	IB
Collection Date	NA
Extraction Date	NA
Analysis Date	04/13/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	Water
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	0.27	1.00	5.00

Surrogate Recoveries (%)	
13C5-PFHxA	103
13C4-PFHpA	103
13C8-PFOA	101
13C9-PFNA	110
13C6-PFDA	99
13C7-PFUnA	97
13C2-PFDoA	97
13C2-PFTeDA	93
d3-MeFOSAA	94
d5-EtFOSAA	93
13C3-PFBS	88
13C3-PFHxS	87
13C8-PFOS	86
13C3-HFPO-DA	100

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	KY40 IB
Battelle ID	KY40 IB_04/15/2020
Sample Type	IB
Collection Date	NA
Extraction Date	NA
Analysis Date	04/15/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	Water
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	0.27	1.00	5.00

Surrogate Recoveries (%)

13C5-PFHxA	97
13C4-PFHpA	95
13C8-PFOA	98
13C9-PFNA	91
13C6-PFDA	105
13C7-PFUnA	106
13C2-PFDoA	101
13C2-PFTeDA	105
d3-MeFOSAA	96
d5-EtFOSAA	96
13C3-PFBS	90
13C3-PFHxS	97
13C8-PFOS	92
13C3-HFPO-DA	94

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	KY40 IB
Battelle ID	KY40 IB_04/20/2020
Sample Type	IB
Collection Date	NA
Extraction Date	NA
Analysis Date	04/20/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	Water
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	0.27	1.00	5.00

Surrogate Recoveries (%)

13C5-PFHxA	97
13C4-PFHpA	97
13C8-PFOA	98
13C9-PFNA	102
13C6-PFDA	103
13C7-PFUnA	104
13C2-PFDoA	101
13C2-PFTeDA	100
d3-MeFOSAA	101
d5-EtFOSAA	109
13C3-PFBS	100
13C3-PFHxS	97
13C8-PFOS	103
13C3-HFPO-DA	95

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	KY40 IB
Battelle ID	KY40 IB_04/22/2020
Sample Type	IB
Collection Date	NA
Extraction Date	NA
Analysis Date	04/22/2020
Analytical Instrument	Sciex 5500 LC/MS/MS
% Moisture	NA
Matrix	Water
Sample Size	0.250
Size Unit-Basis	L

Analyte	CAS No.	Result (ng/L)	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	0.27	1.00	5.00

Surrogate Recoveries (%)	
13C5-PFHxA	99
13C4-PFHpA	97
13C8-PFOA	100
13C9-PFNA	106
13C6-PFDA	98
13C7-PFUnA	101
13C2-PFDoA	100
13C2-PFTeDA	97
d3-MeFOSAA	93
d5-EtFOSAA	92
13C3-PFBS	88
13C3-PFHxS	89
13C8-PFOS	98
13C3-HFPO-DA	98

BATTELLE
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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		Procedural Blank						
Battelle ID		CY680PB-FS						
Sample Type		PB						
Collection Date		04/14/2020						
Extraction Date		04/14/2020						
Analytical Instrument		Sciex 5500 LC/MS/MS						
% Moisture		NA						
Matrix		WATER						
Sample Size		0.250						
Size Unit-Basis		L						
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	1.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.53	1.50	5.00
PFHpA	375-85-9	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.26	1.00	5.00
PFOA	335-67-1	1.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.51	1.50	5.00
PFNA	375-95-1	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.31	1.00	5.00
PFDA	335-76-2	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.14	0.50	5.00
PFUnA	2058-94-8	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.22	0.50	5.00
PFDoA	307-55-1	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.19	0.50	5.00
PFTrDA	72629-94-8	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.15	0.50	5.00
PFTeDA	376-06-7	2.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.73	2.00	5.00
NMeFOSAA	2355-31-9	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.35	1.00	5.00
NEtFOSAA	2991-50-6	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.50	1.00	5.00
PFBS	375-73-5	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.14	0.50	5.00
PFHxS	355-46-4	0.40 U	CY680PB-FS(0)	1.000	4/17/2020	0.11	0.40	5.00
PFOS	1763-23-1	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.44	1.00	5.00
HFPO-DA	13252-13-6	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.25	0.50	5.00
Adona	919005-14-4	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.27	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.50 U	CY680PB-FS(0)	1.000	4/17/2020	0.23	0.50	5.00
9Cl-PF3ONS	756426-58-1	1.00 U	CY680PB-FS(0)	1.000	4/17/2020	0.27	1.00	5.00

BATTELLE
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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	Procedural Blank
Battelle ID	CY680PB-FS
Sample Type	PB
Collection Date	04/14/2020
Extraction Date	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	90		CY680PB-FS(0)	4/17/2020
13C4-PFHpA	90		CY680PB-FS(0)	4/17/2020
13C8-PFOA	89		CY680PB-FS(0)	4/17/2020
13C9-PFNA	90		CY680PB-FS(0)	4/17/2020
13C6-PFDA	94		CY680PB-FS(0)	4/17/2020
13C7-PFUnA	82		CY680PB-FS(0)	4/17/2020
13C2-PFDoA	75		CY680PB-FS(0)	4/17/2020
13C2-PFTeDA	43	N	CY680PB-FS(0)	4/17/2020
d3-MeFOSAA	82		CY680PB-FS(0)	4/17/2020
d5-EtFOSAA	77		CY680PB-FS(0)	4/17/2020
13C3-PFBS	98		CY680PB-FS(0)	4/17/2020
13C3-PFHxS	103		CY680PB-FS(0)	4/17/2020
13C8-PFOS	92		CY680PB-FS(0)	4/17/2020
13C3-HFPO-DA	84		CY680PB-FS(0)	4/17/2020

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Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID		Laboratory Control Sample								
Battelle ID		CY681LCS-FS								
Sample Type		LCS								
Collection Date		04/14/2020								
Extraction Date		04/14/2020								
Analytical Instrument		Sciex 5500 LC/MS/MS								
% Moisture		NA								
Matrix		WATER								
Sample Size		0.250								
Size Unit-Basis		L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	40.62	CY681LCS-FS(0)	1.000	4/17/2020	40.40	101		72	129
PFHpA	375-85-9	40.68	CY681LCS-FS(0)	1.000	4/17/2020	40.00	102		72	130
PFOA	335-67-1	41.45	CY681LCS-FS(0)	1.000	4/17/2020	40.00	104		71	133
PFNA	375-95-1	40.80	CY681LCS-FS(0)	1.000	4/17/2020	40.00	102		69	130
PFDA	335-76-2	42.91	CY681LCS-FS(0)	1.000	4/17/2020	40.00	107		71	129
PFUnA	2058-94-8	39.72	CY681LCS-FS(0)	1.000	4/17/2020	40.00	99		69	133
PFDoA	307-55-1	40.32	CY681LCS-FS(0)	1.000	4/17/2020	40.00	101		72	134
PFTrDA	72629-94-8	98.70	CY681LCS-FS(0)	1.000	4/17/2020	40.00	247	N	65	144
PFTeDA	376-06-7	39.89	CY681LCS-FS(0)	1.000	4/17/2020	40.00	100		71	132
NMeFOSAA	2355-31-9	39.44	CY681LCS-FS(0)	1.000	4/17/2020	40.00	99		65	136
NEtFOSAA	2991-50-6	38.50	CY681LCS-FS(0)	1.000	4/17/2020	40.00	96		61	135
PFBS	375-73-5	41.37	CY681LCS-FS(0)	1.000	4/17/2020	40.00	103		72	130
PFHxS	355-46-4	42.32	CY681LCS-FS(0)	1.000	4/17/2020	40.40	105		68	131
PFOS	1763-23-1	44.15	CY681LCS-FS(0)	1.000	4/17/2020	40.40	109		65	140
HFPO-DA	13252-13-6	41.50	CY681LCS-FS(0)	1.000	4/17/2020	40.00	104		74	148
Adona	919005-14-4	44.77	CY681LCS-FS(0)	1.000	4/17/2020	40.00	112		61	143
11Cl-PF3OUdS	763051-92-9	27.19	CY681LCS-FS(0)	1.000	4/17/2020	40.00	68		52	158
9Cl-PF3ONS	756426-58-1	38.55	CY681LCS-FS(0)	1.000	4/17/2020	40.00	96		59	147

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

Client ID	Laboratory Control Sample
Battelle ID	CY681LCS-FS
Sample Type	LCS
Collection Date	04/14/2020
Extraction Date	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	**Recovery**		**Extract ID**	**Analysis Date**
13C5-PFHxA	89		CY681LCS-FS(0)	4/17/2020
13C4-PFHpA	91		CY681LCS-FS(0)	4/17/2020
13C8-PFOA	90		CY681LCS-FS(0)	4/17/2020
13C9-PFNA	84		CY681LCS-FS(0)	4/17/2020
13C6-PFDA	87		CY681LCS-FS(0)	4/17/2020
13C7-PFUnA	77		CY681LCS-FS(0)	4/17/2020
13C2-PFDoA	67		CY681LCS-FS(0)	4/17/2020
13C2-PFTeDA	16	N	CY681LCS-FS(0)	4/17/2020
d3-MeFOSAA	79		CY681LCS-FS(0)	4/17/2020
d5-EtFOSAA	68		CY681LCS-FS(0)	4/17/2020
13C3-PFBS	106		CY681LCS-FS(0)	4/17/2020
13C3-PFHxS	114		CY681LCS-FS(0)	4/17/2020
13C8-PFOS	88		CY681LCS-FS(0)	4/17/2020
13C3-HFPO-DA	85		CY681LCS-FS(0)	4/17/2020

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It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

			MS/MSD Background Sample								
Client ID		002G02DA-040820	002G02DA-040820								
Battelle ID		H4731MS-FS	H4731-FS								
Sample Type		MS	SA								
Collection Date		04/08/2020	04/08/2020								
Extraction Date		04/14/2020	04/14/2020								
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS								
% Moisture		NA	NA								
Matrix		GW	GW								
Sample Size		0.260	0.260								
Size Unit-Basis		L	L			Analysis				Control Limits	
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper
PFHxA	307-24-4	44.24	3.31 J	H4731MS-FS(0)	1.000	4/23/2020	38.85	105		72	129
PFHpA	375-85-9	41.87	1.07 J	H4731MS-FS(0)	1.000	4/23/2020	38.46	106		72	130
PFOA	335-67-1	41.68	1.05 J	H4731MS-FS(0)	1.000	4/23/2020	38.46	106		71	133
PFNA	375-95-1	41.82	0.49 J	H4731MS-FS(0)	1.000	4/23/2020	38.46	107		69	130
PFDA	335-76-2	38.26	0.48 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	99		71	129
PFUnA	2058-94-8	38.42	0.48 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	100		69	133
PFDoA	307-55-1	39.47	0.48 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	103		72	134
PFTrDA	72629-94-8	143.69	0.48 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	374	N	65	144
PFTeDA	376-06-7	39.68	1.92 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	103		71	132
NMeFOSAA	2355-31-9	43.71	0.96 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	114		65	136
NEtFOSAA	2991-50-6	38.28	0.96 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	100		61	135
PFBS	375-73-5	47.40	3.56 J	H4731MS-FS(0)	1.000	4/23/2020	38.46	114		72	130
PFHxS	355-46-4	51.06	8.79	H4731MS-FS(0)	1.000	4/23/2020	38.85	109		68	131
PFOS	1763-23-1	44.39	1.26 J	H4731MS-FS(0)	1.000	4/23/2020	38.85	111		65	140
HFPO-DA	13252-13-6	39.22	0.48 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	102		74	148
Adona	919005-14-4	43.66	0.96 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	114		61	143
11Cl-PF3OUdS	763051-92-9	27.96	0.48 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	73		52	158
9Cl-PF3ONS	756426-58-1	36.55	0.96 U	H4731MS-FS(0)	1.000	4/23/2020	38.46	95		59	147

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

		MS/MSD Background Sample
Client ID	002G02DA-040820	002G02DA-040820
Battelle ID	H4731MS-FS	H4731-FS
Sample Type	MS	SA
Collection Date	04/08/2020	04/08/2020
Extraction Date	04/14/2020	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	Recovery		Extract ID	Analysis Date
13C5-PFHxA	69		H4731MS-FS(0)	4/23/2020
13C4-PFHpA	80		H4731MS-FS(0)	4/23/2020
13C8-PFOA	75		H4731MS-FS(0)	4/23/2020
13C9-PFNA	65		H4731MS-FS(0)	4/23/2020
13C6-PFDA	71		H4731MS-FS(0)	4/23/2020
13C7-PFUnA	59		H4731MS-FS(0)	4/23/2020
13C2-PFDoA	37	N	H4731MS-FS(0)	4/23/2020
13C2-PFTeDA	4	N	H4731MS-FS(0)	4/23/2020
d3-MeFOSAA	53		H4731MS-FS(0)	4/23/2020
d5-EtFOSAA	46	N	H4731MS-FS(0)	4/23/2020
13C3-PFBS	81		H4731MS-FS(0)	4/23/2020
13C3-PFHxS	94		H4731MS-FS(0)	4/23/2020
13C8-PFOS	74		H4731MS-FS(0)	4/23/2020
13C3-HFPO-DA	67		H4731MS-FS(0)	4/23/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

		MS/MSD Background Sample												
Client ID		002G02DA-040820	002G02DA-040820											
Battelle ID		H4731MSD-FS	H4731-FS											
Sample Type		MSD	SA											
Collection Date		04/08/2020	04/08/2020											
Extraction Date		04/14/2020	04/14/2020											
Analytical Instrument		Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS											
% Moisture		NA	NA											
Matrix		GW	GW											
Sample Size		0.260	0.260											
Size Unit-Basis		L	L			Analysis				Control Limits				RPD
Analyte	CAS No.	Result (ng/L)	Result (ng/L)	Extract ID	DF	Date	Target	Recovery	Qual	Lower	Upper	RPD	Qual	Limit
PFHxA	307-24-4	42.18	3.31 J	H4731MSD-FS(0)	1.000	4/23/2020	38.85	100		72	129	4.9		≤ 30
PFHpA	375-85-9	41.56	1.07 J	H4731MSD-FS(0)	1.000	4/23/2020	38.46	105		72	130	0.9		≤ 30
PFOA	335-67-1	41.02	1.05 J	H4731MSD-FS(0)	1.000	4/23/2020	38.46	104		71	133	1.9		≤ 30
PFNA	375-95-1	40.82	0.49 J	H4731MSD-FS(0)	1.000	4/23/2020	38.46	105		69	130	1.9		≤ 30
PFDA	335-76-2	40.23	0.48 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	105		71	129	5.9		≤ 30
PFUnA	2058-94-8	38.92	0.48 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	101		69	133	1.0		≤ 30
PFDoA	307-55-1	40.40	0.48 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	105		72	134	1.9		≤ 30
PFTrDA	72629-94-8	173.20	0.48 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	450	N	65	144	18.4		≤ 30
PFTeDA	376-06-7	39.70	1.92 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	103		71	132	0.0		≤ 30
NMeFOSAA	2355-31-9	40.60	0.96 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	106		65	136	7.3		≤ 30
NEtFOSAA	2991-50-6	39.23	0.96 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	102		61	135	2.0		≤ 30
PFBS	375-73-5	42.20	3.56 J	H4731MSD-FS(0)	1.000	4/23/2020	38.46	100		72	130	13.1		≤ 30
PFHxS	355-46-4	49.06	8.79	H4731MSD-FS(0)	1.000	4/23/2020	38.85	104		68	131	4.7		≤ 30
PFOS	1763-23-1	49.35	1.26 J	H4731MSD-FS(0)	1.000	4/23/2020	38.85	124		65	140	11.1		≤ 30
HFPO-DA	13252-13-6	40.44	0.48 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	105		74	148	2.9		≤ 30
Adona	919005-14-4	44.12	0.96 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	115		61	143	0.9		≤ 30
11Cl-PF3OUdS	763051-92-9	21.73	0.48 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	57		52	158	24.6		≤ 30
9Cl-PF3ONS	756426-58-1	39.08	0.96 U	H4731MSD-FS(0)	1.000	4/23/2020	38.46	102		59	147	7.1		≤ 30

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

		MS/MSD Background Sample
Client ID	002G02DA-040820	002G02DA-040820
Battelle ID	H4731MSD-FS	H4731-FS
Sample Type	MSD	SA
Collection Date	04/08/2020	04/08/2020
Extraction Date	04/14/2020	04/14/2020
Analytical Instrument	Sciex 5500 LC/MS/MS	Sciex 5500 LC/MS/MS

Surrogate Recoveries (%)	Recovery		Extract ID	Analysis Date
13C5-PFHxA	75		H4731MSD-FS(0)	4/23/2020
13C4-PFHpA	86		H4731MSD-FS(0)	4/23/2020
13C8-PFOA	78		H4731MSD-FS(0)	4/23/2020
13C9-PFNA	73		H4731MSD-FS(0)	4/23/2020
13C6-PFDA	72		H4731MSD-FS(0)	4/23/2020
13C7-PFUnA	56		H4731MSD-FS(0)	4/23/2020
13C2-PFDoA	24	N	H4731MSD-FS(0)	4/23/2020
13C2-PFTeDA	1	N	H4731MSD-FS(0)	4/23/2020
d3-MeFOSAA	47	N	H4731MSD-FS(0)	4/23/2020
d5-EtFOSAA	36	N	H4731MSD-FS(0)	4/23/2020
13C3-PFBS	91		H4731MSD-FS(0)	4/23/2020
13C3-PFHxS	98		H4731MSD-FS(0)	4/23/2020
13C8-PFOS	70		H4731MSD-FS(0)	4/23/2020
13C3-HFPO-DA	70		H4731MSD-FS(0)	4/23/2020

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454
Preparation Batch: 20-0470
Data Set: DP-20-0405

		CY680PB-FS (Procedural Blank)	CY681LCS-FS (Laboratory Control Sample)	H4731MS-FS (002G02DA-040820)	H4731MSD-FS (002G02DA-040820)	H4728-FS (009MW02-040820)	H4730-FS (009MW01-040820)	H4731-FS (002G02DA-040820)	H4732-FS (002G05DA-040820)	H4734-FS (FD01-040820)
PFHxA	307-24-4	-	L	L	L	-	-	L	L	L
PFHpA	375-85-9	-	L	L	L	L	-	L	-	L
PFOA	335-67-1	-	L	L	L	L	-	L	L	-
PFNA	375-95-1	-	L	L	L	-	-	L	-	-
PFDA	335-76-2	-	L	L	L	-	-	-	-	-
PFUnA	2058-94-8	-	L	L	L	-	-	-	-	-
PFDoA	307-55-1	-	L	L	L	-	-	-	-	-
PFTrDA	72629-94-8	-	L	L	L	L	-	-	L	-
PFTeDA	376-06-7	-	L	L	L	-	-	-	-	-
NMeFOSAA	2355-31-9	-	L/Br	L/Br	L/Br	-	-	-	-	-
NEtFOSAA	2991-50-6	-	L/Br	L/Br	L/Br	-	-	-	-	-
PFBS	375-73-5	-	L	L	L	L	L	L	L	L
PFHxS	355-46-4	-	L/Br	L/Br	L/Br	L/Br	-	L/Br	L/Br	L/Br
PFOS	1763-23-1	-	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br
HFPO-DA	13252-13-6	-	L	L	L	-	-	-	-	-
Adona	919005-14-4	-	L	L	L	-	-	-	-	-
11Cl-PF3OUdS	763051-92-9	-	L	L	L	-	-	-	-	-
9Cl-PF3ONS	756426-58-1	-	L	L	L	-	-	-	-	-

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

BATTELLE
It can be done

			Passing criteria = 50% to 150% of internal standard area (compared to mid-point of calibration)							
Sample Name	Sample ID	Analysis Date	13C3-PFBA		13C2-PFOA		13C2-PFDA		13C4-PFOS	
KY37	L5	4/13/20 12:27	-		567,875.00		506,476.59		97,133.09	
		Lower	-		283,937.50		253,238.30		48,566.55	
		Upper	-		851,812.50		759,714.89		145,699.64	

Sample Name	Sample ID	Analysis Date	13C3-PFBA	Qual	User	13C2-PFOA	Qual	User	13C2-PFDA	Qual	User	13C4-PFOS	Qual	User
KY33	L1	4/13/20 11:44	-			614,340.29			564,134.51			106,566.40		
KY34	L2	4/13/20 11:55	-			576,656.41			549,454.31			103,156.73		
KY35	L3	4/13/20 12:06	-			633,815.48			584,155.79			112,606.23		
KY36	L4	4/13/20 12:16	-			575,201.61			539,943.38			107,036.71		
KY37	L5	4/13/20 12:27	-			567,875.00			506,476.59			97,133.09		
KY38	L6	4/13/20 12:38	-			575,904.48			515,896.83			95,292.24		
KY39	L7	4/13/20 12:49	-			502,199.12			434,076.96			84,488.47		
KY40 IB	IB	4/13/20 13:00	-			623,947.73			630,016.55			129,086.78		
KY41 ICC	ICC	4/13/20 13:11	-			535,716.00			478,377.04			102,751.20		
KY36 CCV	CCV	4/15/20 10:02	-			638,272.59			563,283.49			117,785.55		
KY40 IB	IB	4/15/20 10:24	-			700,162.78			600,290.51			126,240.08		
KY36 CCV	CCV	4/16/20 23:41	-			706,468.47			676,501.17			137,057.66		
CY680PB-FS(0)	Procedural Blank	4/17/20 0:03	-			700,418.89			594,978.98			123,803.81		
CY681LCS-FS(0)	Laboratory Control Sample	4/17/20 0:14	-			756,374.09			567,056.10			120,296.10		
~~H4727-FS(0)~~	~~009MW02-EB-04082020~~	~~4/17/20 0:25~~	~~-~~			~~705,279.77~~			~~543,688.53~~			~~117,342.52~~		1
H4728-FS(0)	009MW02-040820	4/17/20 0:36	-			783,687.05			568,582.08			122,017.88		
~~H4729-FS(0)~~	~~009MW01-FB-040820~~	~~4/17/20 0:47~~	~~-~~			~~744,125.93~~			~~608,424.38~~			~~132,150.90~~		1
H4730-FS(0)	009MW01-040820	4/17/20 0:58	-			702,440.20			474,894.66			98,993.19		
KY37 CCV	CCV	4/17/20 1:20	-			716,848.62			629,337.33			129,051.26		
~~H4731-FS(0)~~	~~002G02DA-040820~~	~~4/17/20 1:31~~	~~-~~			~~703,162.53~~			~~592,482.04~~			~~119,615.61~~		2
~~H4731MS-FS(0)~~	~~002G02DA-040820~~	~~4/17/20 1:42~~	~~-~~			~~768,249.57~~			~~545,530.36~~			~~116,087.46~~		2
~~H4731MSD-FS(0)~~	~~002G02DA-040820~~	~~4/17/20 1:53~~	~~-~~			~~651,389.42~~			~~455,845.08~~			~~105,442.37~~		2
~~H4732-FS(0)~~	~~002G05DA-040820~~	~~4/17/20 2:04~~	~~-~~			~~761,094.88~~			~~579,463.99~~			~~120,999.33~~		2
~~H4733-FS(0)~~	~~SB01-040820~~	~~4/17/20 2:15~~	~~-~~			~~682,410.89~~			~~859,788.28~~	~~N~~		~~144,149.65~~		1
~~H4734-FS(0)~~	~~FD01-040820~~	~~4/17/20 2:26~~	~~-~~			~~771,146.81~~			~~589,592.97~~			~~129,031.69~~		2
~~KY36 CCV~~	~~CCV~~	~~4/17/20 2:48~~	~~-~~			~~760,605.44~~			~~717,462.16~~			~~149,485.24~~	N	

1 Samples were re-extracted and reported from SDG 20-0493 due to surrogate exceedances and are not reported with this batch. LMG 04/23/2020
2 Samples were reanalyzed due to a high internal standard area response in the closing CCV. Data is included in the Unused Data section to verify surrogate exceedances in the reanalyses. LMG 04/23/2020

Project Client: Tetra Tech
Project Name: CTO-SE180383: NSA Mid-South, Millington, Tennessee
Project No.: 100134454

BATTELLE
It can be done

			Passing criteria = 50% to 150% of internal standard area (compared to mid-point of calibration)							
Sample Name	Sample ID	Analysis Date	13C3-PFBA		13C2-PFOA		13C2-PFDA		13C4-PFOS	
KY37	L5	4/20/20 14:54	-		680,698.58		578,345.39		111,596.30	
		Lower	-		340,349.29		289,172.70		55,798.15	
		Upper	-		1,021,047.87		867,518.09		167,394.45	

Sample Name	Sample ID	Analysis Date	13C3-PFBA	Qual	User	13C2-PFOA	Qual	User	13C2-PFDA	Qual	User	13C4-PFOS	Qual	User
KY33	L1	4/20/20 14:10	-			685,851.45			583,637.08			113,406.45		
KY34	L2	4/20/20 14:21	-			692,997.73			612,384.43			113,834.38		
KY35	L3	4/20/20 14:32	-			641,449.10			566,574.14			101,040.90		
KY36	L4	4/20/20 14:43	-			636,541.63			587,554.21			113,046.94		
KY37	L5	4/20/20 14:54	-			680,698.58			578,345.39			111,596.30		
KY38	L6	4/20/20 15:05	-			651,113.45			547,447.94			105,883.76		
KY39	L7	4/20/20 15:16	-			666,123.88			545,800.61			108,727.57		
KY40 IB	IB	4/20/20 15:27	-			648,526.97			541,233.91			107,209.57		
KY41 ICC	ICC	4/20/20 15:38	-			685,171.24			624,302.06			123,181.09		
KY35 CCV	CCV	4/22/20 17:05	-			618,582.30			569,472.20			115,609.28		
KY40 IB	IB	4/22/20 17:27	-			718,441.26			644,339.09			130,629.97		
KY37 CCV	CCV	4/23/20 11:40	-			515,605.94			467,146.39			98,110.39		
~~CY680PB-FS(0)~~	~~Procedural Blank~~	~~4/23/20 12:03~~	~~-~~			~~516,413.72~~			~~462,572.63~~			~~100,760.83~~		1
~~CY681LCS-FS(0)~~	~~Laboratory Control Sample~~	~~4/23/20 12:14~~	~~-~~			~~676,086.80~~			~~476,858.79~~			~~110,446.67~~		1
~~H4728-FS(0)~~	~~009MW02-040820~~	~~4/23/20 12:25~~	~~-~~			~~771,171.41~~			~~549,020.70~~			~~128,438.23~~		1
~~H4730-FS(0)~~	~~009MW01-040820~~	~~4/23/20 12:36~~	~~-~~			~~646,727.85~~			~~394,526.54~~			~~92,409.84~~		1
H4731-FS(0)	002G02DA-040820	4/23/20 12:47	-			634,917.87			496,879.36			106,792.71		
H4731MS-FS(0)	002G02DA-040820	4/23/20 12:58	-			690,648.72			442,169.87			101,803.45		
H4731MSD-FS(0)	002G02DA-040820	4/23/20 13:09	-			596,649.26			403,885.69			90,885.71		
H4732-FS(0)	002G05DA-040820	4/23/20 13:19	-			663,595.19			520,698.05			107,668.87		
H4734-FS(0)	FD01-040820	4/23/20 13:30	-			712,580.62			472,002.86			103,563.58		
KY37 CCV	CCV	4/23/20 13:41	-			616,321.79			564,359.03			113,056.12		

1 Samples were reanalyzed for confirmation only and were not reported. Data is included in the Unused Data section. LMG 04/23/2020

BATTELLE

Summary Asymmetry Report

Created with Analyst Reporter
Printed: 23/04/2020 3:15:30 PM

Sample Name	KY38	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 12:38:49 PM	**Data File**	AC_04132020A_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.58	1.26	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.89	1.26	0.8 – 1.5

BATTELLE

Summary Asymmetry Report

Created with Analyst Reporter
Printed: 23/04/2020 3:15:29 PM

Sample Name	KY38	**Injection Vial**	9
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:05:22 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.61	1.10	0.8 – 1.5
PFHxA_1	313.0 / 269.0	1.91	1.00	0.8 – 1.5

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 23/04/2020 3:23:12 PM

Sample Name	KY39	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 12:49:46 PM	**Data File**	AC_04132020A_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.58	38	>10
PFBS_2	298.9 / 99.0	1.58	46	>10
PFHxA_1	313.0 / 269.0	1.89	27	>10
PFHxA_2	313.0 / 119.0	1.89	29	>10
PFHpA_1	363.0 / 319.0	2.28	38	>10
PFHpA_2	363.0 / 169.0	2.28	29	>10
PFHxS_1	399.0 / 80.0	2.30	58	>10
PFHxS_2	399.0 / 99.0	2.30	44	>10
PFOA_1	413.0 / 369.0	2.67	38	>10
PFOA_2	413.0 / 169.0	2.66	34	>10
PFNA_1	463.0 / 419.0	3.04	33	>10
PFNA_2	463.0 / 219.0	3.04	34	>10
PFOS_1	499.0 / 80.0	3.03	49	>10
PFOS_2	499.0 / 99.0	3.03	44	>10
PFDA_1	513.0 / 469.0	3.39	41	>10
PFDA_2	513.0 / 219.0	3.39	33	>10
PFUnA_1	563.0 / 519.0	3.70	37	>10
PFUnA_2	563.0 / 269.0	3.70	38	>10
PFDoA_1	613.0 / 569.0	3.99	37	>10
PFDoA_2	613.0 / 319.0	3.99	44	>10
PFTrDA_1	663.0 / 619.0	4.23	42	>10
PFTrDA_2	663.0 / 169.0	4.23	44	>10
PFTeDA_1	713.0 / 669.0	4.45	52	>10
PFTeDA_2	713.0 / 169.0	4.44	48	>10
NMeFOSAA_1	570.0 / 419.0	3.54	36	>10
NMeFOSAA_2	570.0 / 512.0	3.54	51	>10
NEtFOSAA_1	584.0 / 419.0	3.70	48	>10
NEtFOSAA_2	584.0 / 483.0	3.70	46	>10
HFPO-DA_1	285.0 / 169.0	2.00	36	>10
HFPO-DA_2	285.0 / 118.8	2.00	39	>10
ADONA_1	377.0 / 251.0	2.31	52	>10
ADONA_2	377.0 / 85.0	2.31	42	>10
9Cl-PF3ONS_1	531.0 / 351.0	3.23	33	>10
9Cl-PF3ONS_2	531.0 / 83.0	3.23	40	>10
11Cl-pf3OUdS_1	631.0 / 451.0	3.83	41	>10
11Cl-pf3OUdS_2	631.0 / 83.0	3.83	29	>10

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 23/04/2020 3:23:12 PM

Sample Name	KY39	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 12:49:46 PM	**Data File**	AC_04132020A_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFDoA	615.0 / 570.0	3.98	49	>10
d3-MeFOSAA	573.0 / 419.0	3.54	30	>10
d5-EtFOSAA	589.0 / 419.0	3.69	27	>10
13C5-PFHxA	318.0 / 273.0	1.88	36	>10
13C4-PFHpA	367.0 / 322.0	2.27	38	>10
13C8-PFOA	421.0 / 376.0	2.66	42	>10
13C9-PFNA	472.0 / 427.0	3.03	49	>10
13C6-PFDA	519.0 / 474.0	3.38	36	>10
13C7-PFUnA	570.0 / 525.0	3.69	30	>10
13C2-PFTeDA	715.0 / 670.0	4.44	40	>10
13C3-PFBS	302.0 / 99.0	1.56	38	>10
13C3-PFHxS	402.0 / 99.0	2.29	38	>10
13C8-PFOS	507.0 / 99.0	3.03	44	>10
13C3-HFPO-DA	287.0 / 169.0	2.00	36	>10

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 23/04/2020 3:23:12 PM

Sample Name	KY39	**Injection Vial**	10
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:16:18 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.61	45	>10
PFBS_2	298.9 / 99.0	1.61	41	>10
PFHxA_1	313.0 / 269.0	1.92	27	>10
PFHxA_2	313.0 / 119.0	1.92	26	>10
PFHpA_1	363.0 / 319.0	2.30	32	>10
PFHpA_2	363.0 / 169.0	2.30	32	>10
PFHxS_1	399.0 / 80.0	2.32	50	>10
PFHxS_2	399.0 / 99.0	2.32	39	>10
PFOA_1	413.0 / 369.0	2.69	42	>10
PFOA_2	413.0 / 169.0	2.69	35	>10
PFNA_1	463.0 / 419.0	3.07	35	>10
PFNA_2	463.0 / 219.0	3.06	36	>10
PFOS_1	499.0 / 80.0	3.06	57	>10
PFOS_2	499.0 / 99.0	3.06	48	>10
PFDA_1	513.0 / 469.0	3.41	36	>10
PFDA_2	513.0 / 219.0	3.41	41	>10
PFUnA_1	563.0 / 519.0	3.72	37	>10
PFUnA_2	563.0 / 269.0	3.72	41	>10
PFDoA_1	613.0 / 569.0	4.00	34	>10
PFDoA_2	613.0 / 319.0	4.00	45	>10
PFTrDA_1	663.0 / 619.0	4.24	42	>10
PFTrDA_2	663.0 / 169.0	4.24	47	>10
PFTeDA_1	713.0 / 669.0	4.46	60	>10
PFTeDA_2	713.0 / 169.0	4.46	52	>10
NMeFOSAA_1	570.0 / 419.0	3.56	52	>10
NMeFOSAA_2	570.0 / 512.0	3.56	56	>10
NEtFOSAA_1	584.0 / 419.0	3.72	48	>10
NEtFOSAA_2	584.0 / 483.0	3.72	53	>10
HFPO-DA_1	285.0 / 169.0	2.03	34	>10
HFPO-DA_2	285.0 / 118.8	2.03	28	>10
ADONA_1	377.0 / 251.0	2.34	54	>10
ADONA_2	377.0 / 85.0	2.34	42	>10
9Cl-PF3ONS_1	531.0 / 351.0	3.25	44	>10
9Cl-PF3ONS_2	531.0 / 83.0	3.25	27	>10
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	50	>10
11Cl-pf3OUdS_2	631.0 / 83.0	3.85	25	>10

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 23/04/2020 3:23:12 PM

Sample Name	KY39	**Injection Vial**	10
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:16:18 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFDoA	615.0 / 570.0	3.99	31	>10
d3-MeFOSAA	573.0 / 419.0	3.56	30	>10
d5-EtFOSAA	589.0 / 419.0	3.71	31	>10
13C5-PFHxA	318.0 / 273.0	1.91	37	>10
13C4-PFHpA	367.0 / 322.0	2.29	50	>10
13C8-PFOA	421.0 / 376.0	2.68	46	>10
13C9-PFNA	472.0 / 427.0	3.06	35	>10
13C6-PFDA	519.0 / 474.0	3.40	37	>10
13C7-PFUnA	570.0 / 525.0	3.71	36	>10
13C2-PFTeDA	715.0 / 670.0	4.45	42	>10
13C3-PFBS	302.0 / 99.0	1.59	39	>10
13C3-PFHxS	402.0 / 99.0	2.31	52	>10
13C8-PFOS	507.0 / 99.0	3.05	41	>10
13C3-HFPO-DA	287.0 / 169.0	2.03	43	>10

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It can be done

Precision and Bias at the LOQ for PFAS in non-potable Water

Analyte	CAS No.	Average (ng/L)	ST DEV	2 Sigma	n [1]
PFBA	375-22-4	11.00	0.9226	1.85	14
PFPeA	2706-90-3	9.81	0.7228	1.45	11
PFHxA	307-24-4	9.88	1.1365	2.27	43
PFHpA	375-85-9	9.76	0.9225	1.85	43
PFOA	335-67-1	9.93	1.3923	2.78	44
PFNA	375-95-1	9.71	1.1236	2.25	43
PFDA	335-76-2	9.51	0.9842	1.97	43
PFUnA	2058-94-8	9.55	0.9267	1.85	43
PFDoA	307-55-1	10.22	0.9055	1.81	43
PFTrDA	72629-94-8	9.93	1.2752	2.55	43
PFTeDA	376-06-7	10.39	0.9707	1.94	43
NMeFOSAA	2355-31-9	10.02	1.5564	3.11	43
NEtFOSAA	2991-50-6	9.55	1.4218	2.84	43
PFOSA	754-91-6	10.06	0.8394	1.68	11
PFBS	375-73-5	9.63	1.1816	2.36	43
PFPeS	2706-91-4	9.88	0.9203	1.84	5
PFHxS	355-46-4	9.90	1.1346	2.27	43
PFHpS	375-92-8	10.13	1.0851	2.17	11
PFOS	1763-23-1	9.78	1.2383	2.48	44
PFNS	68259-12-1	9.45	1.0923	2.18	5
PFDS	335-77-3	9.55	1.3140	2.63	11
4:2FTS	757124-72-4	10.38	1.7353	3.47	6
6:2FTS	27619-97-2	10.08	1.1871	2.37	12
8:2FTS	39108-34-4	9.59	1.4345	2.87	12
HFPO-DA	13252-13-6	10.92	1.4420	2.88	25
Adona	919005-14-4	10.38	1.4862	2.97	25
11Cl-PF3OUdS	763051-92-9	9.80	1.5701	3.14	25
9Cl-PF3ONS	756426-58-1	9.52	1.0952	2.19	25

[1] Minimum of 20 samples required per QAM for determination of uncertainty, results including less than 20 data points are estimated.

BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

QSM 5.1.1 compliant with Table B-15 requirements

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)
PFBA	375-22-4	0.45	1.0	5.0
PFPeA	2706-90-3	0.26	1.0	5.0
PFHxA	307-24-4	0.53	1.5	5.0
PFHpA	375-85-9	0.26	1.0	5.0
PFOA	335-67-1	0.51	1.5	5.0
PFNA	375-95-1	0.31	1.0	5.0
PFDA	335-76-2	0.14	0.5	5.0
PFUnA	2058-94-8	0.22	0.5	5.0
PFDoA	307-55-1	0.19	0.5	5.0
PFTrDA	72629-94-8	0.15	0.5	5.0
PFTeDA	376-06-7	0.73	2.0	5.0
NMeFOSAA	2355-31-9	0.35	1.0	5.0
NEtFOSAA	2991-50-6	0.50	1.0	5.0
PFOSA	754-91-6	0.46	1.0	5.0
PFBS	375-73-5	0.14	0.5	5.0
PFPeS	2706-91-4	0.26	1.0	5.0
PFHxS	355-46-4	0.11	0.4	5.0
PFHpS	375-92-8	0.85	2.0	5.0
PFOS	1763-23-1	0.44	1.0	5.0
PFNS	68259-12-1	0.36	1.0	5.0
PFDS	335-77-3	0.27	1.0	5.0
4:2FTS	747124-72-4	0.50	1.0	5.0
6:2FTS	27619-97-2	0.53	1.5	5.0
8:2FTS	39108-34-4	0.60	2.0	5.0
3:3 FTCA	356-02-5	1.32	3.0	5.0
5:3 FTCA	914637-49-3	1.59	3.0	5.0
7:3 FTCA	812-70-4	1.40	3.0	5.0
HFPO-DA	13252-13-6	0.25	0.5	5.0
Adona	919005-14-4	0.27	1.0	5.0
11Cl-PF3OUdS	763051-92-9	0.23	0.5	5.0
9Cl-PF3ONS	756426-58-1	0.27	1.0	5.0

Analytes on ELAP QSM 5.1.1 Scope of accreditation
MDL calculated based on 40 CFR 136 (2017)

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ID 596 10/19

Analytical Transitions for PFAS in non-potable water, solid, and tissue

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFBA	375-22-4	Target	213.0 / 169.0	NA
PFPeA	2706-90-3	Target	263.0 / 219.0	NA
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFOSA	754-91-6	Target	498.0 / 78.0	498.0 / 83.0
PFBS	375-73-5	Target	299.0 / 80.0	299.0 / 99.0
PFPeS	BDO-2114	Target	349.0 / 99.0	249.0 / 80.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFHpS	375-99-6	Target	449.0 / 80.0	449.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
PFNS	98789-57-2	Target	549.0 / 99.0	549.0 / 80.0
PFDS	2806-15-7	Target	599.0 / 80.0	599.0 / 99.0
4:2FTS	BDO-2205	Target	327.0 / 307.0	327.0 / 80.0
6:2FTS	27619-97-2	Target	427.0 / 407.0	427.0 / 81.0
8:2FTS	39108-34-4	Target	527.0 / 507.0	527.0 / 487.0
3:3 FTCA	356-02-5	Target	241.0 / 177.0	NA
5:3 FTCA	914637-49-3	Target	341.0 / 237.0	NA
7:3 FTCA	812-70-4	Target	441.0 / 337.0	NA
HFPO-DA	13252-13-6	Target	285.0 /169.0	285.0 /118.8
Adona	919005-14-4	Target	377.0 / 251.0	377.0 / 85.0
9Cl-PF3ONS	756426-58-1	Target	531.0 / 351.0	531.0 / 83.0
11Cl-PF3OUdS	763051-92-9	Target	631.0 / 451.0	631.0 / 83.0

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
13C4-PFBA	NA	SIS[1]	217.0 / 172.0	NA
13C5-PFPeA	NA	SIS[1]	268.0 / 223.0	NA
13C5-PFHxA	NA	SIS[1]	318.0 / 273.0	NA
13C4-PFHpA	NA	SIS[1]	367.0 / 322.0	NA
13C8-PFOA	NA	SIS[1]	421.0 / 376.0	NA
13C9-PFNA	NA	SIS[1]	472.0 / 427.0	NA
13C6-PFDA	NA	SIS[1]	519.0 / 474.0	NA
13C7-PFUnA	NA	SIS[1]	570.0 / 525.0	NA
13C2-PFDoA	NA	SIS[1]	615.0 / 570.0	NA
13C2-PFTeDA	NA	SIS[1]	715.0 / 670.0	NA
d3-MeFOSAA	NA	SIS[1]	573.0 / 419.0	NA
d5-EtFOSAA	NA	SIS[1]	589.0 / 419.0	NA
13C8-FOSA	NA	SIS[1]	506.0 / 78.0	NA
13C3-PFBS	NA	SIS[1]	302.0 / 99.0	NA
13C3-PFHxS	NA	SIS[1]	402.0 / 99.0	NA
13C8-PFOS	NA	SIS[1]	507.0 / 99.0	NA
13C2-4:2FTS	NA	SIS[1]	329.0 / 81.0	NA
13C2-6:2FTS	NA	SIS[1]	429.0 / 81.0	NA
13C2-8:2FTS	NA	SIS[1]	529.0 / 81.0	NA
$^{13}C_3$-HFPO-DA	NA	SIS	287.0 / 169.0	NA
13C3-PFBA	NA	IS[2]	216.0 / 172.0	NA
13C2-PFOA	NA	IS[2]	415.0 / 370.0	NA
13C2-PFDA	NA	IS[2]	515.0 / 470.0	NA
13C4-PFOS	NA	IS[2]	503.0 / 99.0	NA

[1] – extracted internal standard (surrogate)
[2] – injection internal standard

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Non-Potable Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
125	1	1	0.250	0.5
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
10,000	1	1	0.250	40.0
25,000	1	1	0.250	100.0

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	28-Jan-2020

Request ID:	19010
Company Name:	Battelle Memorial Institute
Instrument ID:	Instrument AC
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU 23051004

☑ **PASS** ☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments:_____

_____

_____

_____

Performed By: Rami Haddad **Date:** 28-Jan-2020

Approved By : Kevin McInerney 2020.02.11 13:59:16 -05'00' **Date:** 02/11/2020

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.8	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.5	Read Only
☑ CAD Medium	3.7	Read Only
☑ CAD High	4.5	Read Only
☑ CAD 12	4.5	2.4 to 4.5 x10^{-5} Torr

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	1.62e7	Read Only	0.9036	Read Only
Q1 500.380	3.18e7	Read Only	0.9358	Read Only
Q1 906.673	5.18e7	Read Only	1.0839	Read Only

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.48e7	Read Only	0.6863	Read Only
Q3 500.380	3.20e7	Read Only	0.7462	Read Only
Q3 906.673	5.05e7	Read Only	0.8272	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__20.41%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	7.30e7	Read Only	1.0302	Read Only
MS/MS 195.1	1.49e7	Read Only	0.7042	Read Only

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.03e7	Read Only	0.6424	Read Only

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	1.69e7	Read Only	0.6868	Read Only

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	2.37e6	Read Only	0.6791	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	1.0	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.5	Read Only
☑ CAD Medium	3.7	Read Only
☑ CAD High	4.5	Read Only
☑ CAD 12	4.5	2.4 to 4.5 x10^{-5} Torr

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	8.37 e6	≥1.2^{e}6	0.7878	0.6 to 0.8
Q1 500.380	2.85 e7	≥9.0^{e}6	0.7726	0.6 to 0.8
Q1 906.673	3.40 e7	≥1.4^{e}7	0.7909	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.39 e8	≥6.8^{e}7	0.7381	0.6 to 0.8

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	6.14 e6	≥1.2^{e}6	0.7216	0.6 to 0.8
Q3 500.380	2.54 e7	≥9.0^{e}6	0.7305	0.6 to 0.8
Q3 906.673	3.09 e7	≥1.4^{e}7	0.7509	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.40 e8	≥6.8^{e}7	0.7194	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 20.59% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	6.41 e7	N/A	0.7810	Read Only
MS/MS 195.1	1.32 e7	N/A	0.7490	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.19 e7	≥1.0^e7	0.7265	0.6 to 0.8
Q1 933.636	1000	50	6.51 e7	≥4.0^e7	0.7040	0.6 to 0.8

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.73 e7	≥8.0^e6	0.6559	0.6 to 0.8
Q3 933.636	1000	50	6.24 e7	≥4.0^e7	0.7431	0.6 to 0.8

☑ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	2.85 e6	Read Only	0.6624	Read Only

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.78 e6	≥7.2 ^e6	0.1647	<0.35
ER 922.010	0.05	2.76 e7	≥2.8 ^e6	0.2165	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.46 e7	≥2.4 ^e7	0.2552	<0.65
ER 922.010	0.05	8.83 e7	≥6.8 ^e7	0.4727	<0.65

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	8.22 e7	≥4.4 ^e7	0.1857	<0.35
ER 601.978	0.05	1.01 e8	≥5.6 ^e7	0.1787	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	3.78 e8	≥1.2 ^e8	0.4069	<0.65
ER 601.978	0.05	5.92 e8	≥1.6 ^e8	0.3897	<0.65

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.75 e6	≥2.0 e6	> 2.84 e7	≥6.4 e6

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	5.50 e7	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	Yes 365	Fragment Intensity	> 1.07 e7	≥1.6x 10e6

REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

Sample Preparation

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	Project No.(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

This Batch Contains The Following Samples:	
CY680PB-FS	H4731-FS
CY681LCS-FS	H4731MS-FS
H4727-FS	H4731MSD-FS
H4728-FS	H4732-FS
H4729-FS	H4733-FS
H4730-FS	H4734-FS

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Kelsey Harnden

Approved By:	Date	Initials
Denise Schumitz	04/27/2020	DMS

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It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	Description
CY680PB-FS	Procedural Blank
CY681LCS-FS	Laboratory Control Sample
H4727-FS	009MW02-EB-04082020
H4728-FS	009MW02-040820
H4729-FS	009MW01-FB-040820
H4730-FS	009MW01-040820
H4731-FS	002G02DA-040820
H4731MS-FS	Matrix Spike of 002G02DA-040820
H4731MSD-FS	Matrix Spike Duplicate of 002G02DA-040820
H4732-FS	002G05DA-040820
H4733-FS	SB01-040820
H4734-FS	FD01-040820

Samples Assigned By: Jonathan Thorn Date : April 10, 2020

Comments:

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Requested On/By:	04/15/2020 KH	**Purpose:**	Sample Preparation
Relinquished On/By:	04/15/2020 MDS	**Last Activity:**	Transfer

Accepted On/By:	04/15/2020 KH	**Returned On/To:**	
Stored In Facility:	Sample Preparation	**Returned To Facility:**	
Stored Until			
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	H4727	1	C	Consumed	NA
2	H4728	1	C	Consumed	NA
3	H4729	1	C	Consumed	NA
4	H4730	1	C	Consumed	NA
5	H4731	1	C	Consumed	NA
6	H4732	1	C	Consumed	NA
7	H4733	1	C	Consumed	NA
8	H4734	1	C	Consumed	NA

Total Samples 8 * "C" = Consumed Container

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BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s) CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s) 100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CY680PB-FS	Procedural Blank	250.0	NA	--	04/14/20 AW
CY681LCS-FS	Laboratory Control Sample	250.0	NA	--	04/14/20 AW
H4727-FS	009MW02-EB-04082020	270.0	1	C	04/15/20 KH
H4728-FS	009MW02-040820	255.0	1	C	04/15/20 KH
H4729-FS	009MW01-FB-040820	250.0	1	C	04/15/20 KH
H4730-FS	009MW01-040820	270.0	1	C	04/15/20 KH
H4731-FS	002G02DA-040820	260.0	1	C	04/15/20 KH
H4731MS-FS	Matrix Spike	260.0	2	C	04/15/20 KH
H4731MSD-FS	Matrix Spike Duplicate	260.0	3	C	04/15/20 KH
H4732-FS	002G05DA-040820	260.0	1	C	04/15/20 KH
H4733-FS	SB01-040820	270.0	1	C	04/15/20 KH
H4734-FS	FD01-040820	270.0	1	C	04/15/20 KH

Comments:

Samples Assigned By: Jonathan Thorn Date : April 10, 2020

* - "C" = Sample is Consumed

BATTELLE
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BATTELLE - NORWELL OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CY680PB-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
CY681LCS-FS	KX84	LCS/MS	1	100	04/14/20 AW	KB	NA
CY681LCS-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4727-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4728-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4729-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4730-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4731-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4731MS-FS	KX84	LCS/MS	1	100	04/14/20 AW	KB	NA
H4731MS-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4731MSD-FS	KX84	LCS/MS	1	100	04/14/20 AW	KB	NA
H4731MSD-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4732-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4733-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA
H4734-FS	KY44	SIS	1	125	04/14/20 AW	KB	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KX84	Pipette	B814659662
KY44	Pipette	B909301860

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BATTELLE - NORWELL OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID	1st Extraction	2nd Extraction	3rd Extraction	Conc. ID	Turbo °C	Turbo PSI	KD °C	Comment
CY680PB-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
CY681LCS-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4727-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4728-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4729-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4730-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4731-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4731MS-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4731MSD-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4732-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4733-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA
H4734-FS	04/14/20 AW	NA	NA	NA	NA	NA	NA	NA

Solvents/Reagent Preparations:

Name	ID	Expires	Lot No	Procedure	Comments
Whatman Indicator paper pH 0-14	200217-01	02/17/24	10D0391	NA	
Silanized Glass Wool	200218-01	02/18/25	122523	NA	
Phenomenex Strata X-AW 33um Polymeric Weak Anion	200312-01	03/12/25	S308-0109/S20-001194	NA	
0.5% NH3 in Methanol (w/v)	RP-200414-4	04/14/20	196258	Per 100 mL, 4.25 mL ammonia solution brought to 100 mL with methanol	
0.5% NH3 in Methanol (w/v)	RP-200414-4	04/14/20	10224584	Per 100 mL, 4.25 mL ammonia solution brought to 100 mL with methanol	

Solvents/Reagents:

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
EXTRACT CLEANUP FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Extract Id	Date	Init.	Comments
CY680PB-FS(0)	04/14/20	KH	NA
CY681LCS-FS(0)	04/14/20	KH	NA
H4727-FS(0)	04/14/20	KH	NA
H4728-FS(0)	04/14/20	KH	NA
H4729-FS(0)	04/14/20	KH	NA
H4730-FS(0)	04/14/20	KH	NA
H4731-FS(0)	04/14/20	KH	NA
H4731MS-FS(0)	04/14/20	KH	NA
H4731MSD-FS(0)	04/14/20	KH	NA
H4732-FS(0)	04/14/20	KH	NA
H4733-FS(0)	04/14/20	KH	NA
H4734-FS(0)	04/14/20	KH	NA

Cleanup:
Envi-Carb

Reagents:

Reagent Prep	Name	Expires	Lot No	Procedure
191209-01	Supelclean ENVI-Carb SPE Bulk Packing	12/09/24	122395	NA

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
EXTRACT CLEANUP FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Extract Id	Date	Init.	Comments

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CY680PB-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
CY681LCS-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4727-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4728-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4729-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4730-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4731-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4731MS-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4731MSD-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4732-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4733-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB
H4734-FS(0)	875	125	KX85	125	4	1000	1.000	04/16/20 KH	KB

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KX85	Pipette	B814657482

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CY680PB-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
CY681LCS-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4727-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4728-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4729-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4730-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4731-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4731MS-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4731MSD-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4732-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4733-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW
H4734-FS	0	--	4/14/2020 10:09:00 AM	NA		NA	NA	1.000	1.000	04/14/20 AW

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s) CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s) 100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Apr 16 2020 2:47PM KH	**Received On/By:**	Apr 16 2020 2:47PM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CY680PB-FS(0)	1000	1	Intact	NA
2	CY681LCS-FS(0)	1000	1	Intact	NA
3	H4727-FS(0)	1000	1	Intact	NA
4	H4728-FS(0)	1000	1	Intact	NA
5	H4729-FS(0)	1000	1	Intact	NA
6	H4730-FS(0)	1000	1	Intact	NA
7	H4731-FS(0)	1000	1	Intact	NA
8	H4731MS-FS(0)	1000	1	Intact	NA
9	H4731MSD-FS(0)	1000	1	Intact	NA
10	H4732-FS(0)	1000	1	Intact	NA
11	H4733-FS(0)	1000	1	Intact	NA
12	H4734-FS(0)	1000	1	Intact	NA

Total Extracts: 12

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE SPECIFIC COMMENTS

Project Title(s)
CTO-SE180383: NSA Mid-South, Millington, Tennessee

Project No.(s)
100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Sample ID:	Comment:	Date/Initials:
CY680PB-FS	Extraction started at 10:09 AM, manifold 5, ended 11:21 AM	04/14/20 AW
CY681LCS-FS	Extraction started at 10:09 AM, manifold 5, ended 11:21 AM	04/14/20 AW
H4727-FS	Extraction started at 10:09 AM, manifold 5, ended 11:32 AM	04/14/20 AW
H4728-FS	Extraction started at 10:09 AM, manifold 4, ended 1:07 PM	04/14/20 AW
H4728-FS	Sample contains particulates	04/14/20 AW
H4728-FS	Sample was allowed to elute through column until it no longer was eluting. Filter was popped at 1:00 PM and eluting continued.	04/14/20 AW
H4729-FS	Extraction started at 10:09 AM, manifold 5, ended 11:26 AM	04/14/20 AW
H4730-FS	Extraction started at 10:09 AM, manifold 4, ended 12:16 PM	04/14/20 AW
H4730-FS	Sample contains particulates	04/14/20 AW
H4731-FS	Extraction started at 10:09 AM, manifold 4, ended 11:37 AM	04/14/20 AW
H4731MS-FS	Extraction started at 10:09 AM, manifold 4, ended 11:36 AM	04/14/20 AW
H4731MS-FS	Sample contains particulates	04/14/20 AW
H4731MSD-FS	Extraction started at 10:09 AM, manifold 4, ended 11:41 AM	04/14/20 AW
H4731MSD-FS	Sample contains particulates	04/14/20 AW
H4732-FS	Extraction started at 10:09 AM, manifold 4, ended 11:56 AM	04/14/20 AW
H4732-FS	Sample contains particulates	04/14/20 AW
H4733-FS	Extraction started at 10:09 AM, manifold 4, ended 11:34 AM	04/14/20 AW
H4734-FS	Extraction started at 10:09 AM, manifold 4, ended 12:35 PM	04/14/20 AW
H4734-FS	Sample contains particulates	04/14/20 AW

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title(s)	**Project No.(s)**
CTO-SE180383: NSA Mid-South, Millington, Tennessee	100134454

20-0470

CTO-SE180383: NSA Mid-South

GW, QC

Entered By:	**On:**

Task Leader Approval:	**On:**
SupervisorApproval:	**On:**
PM Approval:	**On:**

Analytical Calibrations

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 15/04/2020 12:53:20 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
2	KY33	L1	4/13/2020 11:44:10 AM	5-0369.dam	AC_04132020A_5-369.wiff
3	KY34	L2	4/13/2020 11:55:06 AM	5-0369.dam	AC_04132020A_5-369.wiff
4	KY35	L3	4/13/2020 12:06:02 PM	5-0369.dam	AC_04132020A_5-369.wiff
5	KY36	L4	4/13/2020 12:16:57 PM	5-0369.dam	AC_04132020A_5-369.wiff
6	KY37	L5	4/13/2020 12:27:53 PM	5-0369.dam	AC_04132020A_5-369.wiff
7	KY38	L6	4/13/2020 12:38:49 PM	5-0369.dam	AC_04132020A_5-369.wiff
8	KY39	L7	4/13/2020 12:49:46 PM	5-0369.dam	AC_04132020A_5-369.wiff
9	KY40 IB	IB	4/13/2020 1:00:41 PM	5-0369.dam	AC_04132020A_5-369.wiff
10	KY41 ICC	ICC	4/13/2020 1:11:37 PM	5-0369.dam	AC_04132020A_5-369.wiff
11	KY42 BRANCHED	Branched Standard	4/13/2020 1:24:10 PM	5-0369.dam	AC_04132020A_5-369.wiff

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Printed: 23/04/2020 3:37:44 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	CONDITIONER		4/15/2020 9:40:25 AM	5-0369.dam	AC_04152020_5-369.wiff
2	MEOH		4/15/2020 9:51:20 AM	5-0369.dam	AC_04152020_5-369.wiff
3	KY36 CCV	CCV	4/15/2020 10:02:15 AM	5-0369.dam	AC_04152020_5-369.wiff
4	KY39	L7	4/15/2020 10:13:12 AM	5-0369.dam	AC_04152020_5-369.wiff
5	KY40 IB	IB	4/15/2020 10:24:07 AM	5-0369.dam	AC_04152020_5-369.wiff
6	MEOH		4/15/2020 10:35:04 AM	5-0369.dam	AC_04152020_5-369.wiff
7	CY636PB FS(0)		4/15/2020 10:46:00 AM	5-0369.dam	AC_04152020_5-369.wiff
8	H4514 FS1(0)		4/15/2020 10:56:55 AM	5-0369.dam	AC_04152020_5-369.wiff
9	KY37 CCV		4/15/2020 11:07:51 AM	5-0369.dam	AC_04152020_5-369.wiff
10	MEOH		4/15/2020 11:18:46 AM	5-0369.dam	AC_04152020_5-369.wiff
11	H4735 FS D(3)		4/15/2020 11:46:50 AM	5-0369.dam	AC_04152020_5-369.wiff
12	H4735 FS D(5)		4/15/2020 11:57:46 AM	5-0369.dam	AC_04152020_5-369.wiff
13	H4735 FS D(7)		4/15/2020 12:08:41 PM	5-0369.dam	AC_04152020_5-369.wiff
14	H4735 FS D(9)		4/15/2020 12:19:38 PM	5-0369.dam	AC_04152020_5-369.wiff
15	KY36 CCV		4/15/2020 12:30:34 PM	5-0369.dam	AC_04152020_5-369.wiff
16	MEOH		4/15/2020 12:41:31 PM	5-0369.dam	AC_04152020_5-369.wiff
1	CY686PB FS(0)		4/15/2020 2:39:18 PM	5-0369.dam	AC_04152020_5-369.wiff
2	CY687LCS FS(0)		4/15/2020 2:50:15 PM	5-0369.dam	AC_04152020_5-369.wiff
3	H4642 FS1(0)		4/15/2020 3:01:12 PM	5-0369.dam	AC_04152020_5-369.wiff
4	H4642 FS1 D(3)		4/15/2020 3:12:08 PM	5-0369.dam	AC_04152020_5-369.wiff
5	H4642 FS1 D(5)		4/15/2020 3:23:05 PM	5-0369.dam	AC_04152020_5-369.wiff
6	KX37 CCV		4/15/2020 3:34:00 PM	5-0369.dam	AC_04152020_5-369.wiff
7	MEOH		4/15/2020 3:44:57 PM	5-0369.dam	AC_04152020_5-369.wiff
8	CY690PB FS(0)		4/15/2020 3:55:53 PM	5-0369.dam	AC_04152020_5-369.wiff
9	CY691LCS FS(0)		4/15/2020 4:06:50 PM	5-0369.dam	AC_04152020_5-369.wiff
10	H4674 FS1(0)		4/15/2020 4:17:48 PM	5-0369.dam	AC_04152020_5-369.wiff
11	H4685 FS1(0)		4/15/2020 4:30:10 PM	5-0369.dam	AC_04152020_5-369.wiff
12	H4685MS FS1(0)		4/15/2020 4:41:07 PM	5-0369.dam	AC_04152020_5-369.wiff
13	H4685MSD FS1(0)		4/15/2020 4:52:04 PM	5-0369.dam	AC_04152020_5-369.wiff
14	H4675 FS1(0)		4/15/2020 5:02:59 PM	5-0369.dam	AC_04152020_5-369.wiff
15	H4675 FS1 D(3)		4/15/2020 5:13:55 PM	5-0369.dam	AC_04152020_5-369.wiff
16	MEOH		4/15/2020 5:24:52 PM	5-0369.dam	AC_04152020_5-369.wiff
17	KY36 CCV		4/15/2020 5:35:50 PM	5-0369.dam	AC_04152020_5-369.wiff
18	MEOH		4/15/2020 5:46:47 PM	5-0369.dam	AC_04152020_5-369.wiff
19	H4677 FS1(0)		4/15/2020 5:57:44 PM	5-0369.dam	AC_04152020_5-369.wiff
20	H4678 FS1(0)		4/15/2020 6:08:41 PM	5-0369.dam	AC_04152020_5-369.wiff
21	H4679 FS1(0)		4/15/2020 6:19:39 PM	5-0369.dam	AC_04152020_5-369.wiff
22	H4679 FS1 D(3)		4/15/2020 6:30:36 PM	5-0369.dam	AC_04152020_5-369.wiff
23	H4680 FS1(0)		4/15/2020 6:41:33 PM	5-0369.dam	AC_04152020_5-369.wiff

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Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
24	H4682-FS1(0)		4/15/2020 6:52:30 PM	5-0369.dam	AC_04152020_5-369.wiff
25	H4684-FS1(0)		4/15/2020 7:03:28 PM	5-0369.dam	AC_04152020_5-369.wiff
26	MEOH		4/15/2020 7:14:25 PM	5-0369.dam	AC_04152020_5-369.wiff
27	KY37-CCV		4/15/2020 7:25:21 PM	5-0369.dam	AC_04152020_5-369.wiff
28	MEOH		4/15/2020 7:36:18 PM	5-0369.dam	AC_04152020_5-369.wiff
29	CY696PB-FS(0)		4/15/2020 7:47:15 PM	5-0369.dam	AC_04152020_5-369.wiff
30	CY697LCS-FS(0)		4/15/2020 7:58:12 PM	5-0369.dam	AC_04152020_5-369.wiff
31	H4764-FS(0)		4/15/2020 8:09:08 PM	5-0369.dam	AC_04152020_5-369.wiff
32	H4764MS-FS(0)		4/15/2020 8:20:06 PM	5-0369.dam	AC_04152020_5-369.wiff
33	H4764MSD-FS(0)		4/15/2020 8:31:04 PM	5-0369.dam	AC_04152020_5-369.wiff
34	H4765-FS(0)		4/15/2020 8:42:02 PM	5-0369.dam	AC_04152020_5-369.wiff
35	KY36-CCV		4/15/2020 8:53:00 PM	5-0369.dam	AC_04152020_5-369.wiff
36	MEOH		4/15/2020 9:03:58 PM	5-0369.dam	AC_04152020_5-369.wiff
37	CY694PB-FS(0)		4/15/2020 9:14:54 PM	5-0369.dam	AC_04152020_5-369.wiff
38	CY695LCS-FS(0)		4/15/2020 9:25:52 PM	5-0369.dam	AC_04152020_5-369.wiff
39	H4686-FS1(0)		4/15/2020 9:36:48 PM	5-0369.dam	AC_04152020_5-369.wiff
40	H4687-FS1(0)		4/15/2020 9:47:45 PM	5-0369.dam	AC_04152020_5-369.wiff
41	H4688-FS1(0)		4/15/2020 9:58:43 PM	5-0369.dam	AC_04152020_5-369.wiff
42	H4689-FS1(0)		4/15/2020 10:09:40 PM	5-0369.dam	AC_04152020_5-369.wiff
43	H4690-FS1(0)		4/15/2020 10:20:38 PM	5-0369.dam	AC_04152020_5-369.wiff
44	H4691-FS1(0)		4/15/2020 10:31:35 PM	5-0369.dam	AC_04152020_5-369.wiff
45	KY37-CCV		4/15/2020 10:42:32 PM	5-0369.dam	AC_04152020_5-369.wiff
46	MEOH		4/15/2020 10:53:29 PM	5-0369.dam	AC_04152020_5-369.wiff
47	H4692-FS1(0)		4/15/2020 11:04:28 PM	5-0369.dam	AC_04152020_5-369.wiff
48	H4693-FS1(0)		4/15/2020 11:15:25 PM	5-0369.dam	AC_04152020_5-369.wiff
49	H4694-FS1(0)		4/15/2020 11:26:22 PM	5-0369.dam	AC_04152020_5-369.wiff
50	H4695-FS1(0)		4/15/2020 11:37:19 PM	5-0369.dam	AC_04152020_5-369.wiff
51	H4696-FS1(0)		4/15/2020 11:48:16 PM	5-0369.dam	AC_04152020_5-369.wiff
52	H4697-FS1(0)		4/15/2020 11:59:13 PM	5-0369.dam	AC_04152020_5-369.wiff
53	H4698-FS1(0)		4/16/2020 12:10:11 AM	5-0369.dam	AC_04152020_5-369.wiff
54	H4699-FS1(0)		4/16/2020 12:21:08 AM	5-0369.dam	AC_04152020_5-369.wiff
1	KY36-CCV		4/16/2020 12:32:05 AM	5-0369.dam	AC_04152020_5-369.wiff
2	MEOH		4/16/2020 12:43:05 AM	5-0369.dam	AC_04152020_5-369.wiff
3	CY692PB-FS(0)		4/16/2020 12:54:04 AM	5-0369.dam	AC_04152020_5-369.wiff
4	CY693LCS-FS(0)		4/16/2020 1:05:03 AM	5-0369.dam	AC_04152020_5-369.wiff
5	H4669-FS1(0)		4/16/2020 1:16:03 AM	5-0369.dam	AC_04152020_5-369.wiff
6	H4669-FS1-D(3)		4/16/2020 1:27:02 AM	5-0369.dam	AC_04152020_5-369.wiff
7	H4669-FS1-D(5)		4/16/2020 1:38:02 AM	5-0369.dam	AC_04152020_5-369.wiff
8	H4670-FS1(0)		4/16/2020 1:49:01 AM	5-0369.dam	AC_04152020_5-369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 3:37:44 PM

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9	H4670 FS1 D(3)		4/16/2020 2:00:01 AM	5 0369.dam	AC_04152020_5 369.wiff
10	KY37 CCV		4/16/2020 2:11:00 AM	5 0369.dam	AC_04152020_5 369.wiff
11	MEOH		4/16/2020 2:22:00 AM	5 0369.dam	AC_04152020_5 369.wiff
12	H4671 FS1(0)		4/16/2020 2:32:59 AM	5 0369.dam	AC_04152020_5 369.wiff
13	H4671 FS1 D(3)		4/16/2020 2:44:00 AM	5 0369.dam	AC_04152020_5 369.wiff
14	H4671 FS1 D(5)		4/16/2020 2:55:00 AM	5 0369.dam	AC_04152020_5 369.wiff
15	H4672 FS1(0)		4/16/2020 3:06:00 AM	5 0369.dam	AC_04152020_5 369.wiff
16	H4673 FS1(0)		4/16/2020 3:16:59 AM	5 0369.dam	AC_04152020_5 369.wiff
17	MEOH		4/16/2020 3:27:59 AM	5 0369.dam	AC_04152020_5 369.wiff
18	MEOH		4/16/2020 3:38:58 AM	5 0369.dam	AC_04152020_5 369.wiff
19	KY36 CCV		4/16/2020 3:49:58 AM	5 0369.dam	AC_04152020_5 369.wiff
20	MEOH		4/16/2020 4:00:58 AM	5 0369.dam	AC_04152020_5 369.wiff
20	MEOH		4/16/2020 7:22:39 AM	5 0369.dam	AC_04152020_5 369.wiff
20	MEOH		4/16/2020 7:34:54 AM	5 0369.dam	AC_04152020_5 369.wiff
20	MEOH		4/16/2020 8:00:48 AM	5 0369.dam	AC_04152020_5 369.wiff
1	KY36 CCV		4/16/2020 8:11:48 AM	5 0369.dam	AC_04152020_5 369.wiff
2	MEOH		4/16/2020 8:22:48 AM	5 0369.dam	AC_04152020_5 369.wiff
3	CY696PB FS(0)		4/16/2020 8:33:48 AM	5 0369.dam	AC_04152020_5 369.wiff
4	CY697LCS FS(0)		4/16/2020 8:44:47 AM	5 0369.dam	AC_04152020_5 369.wiff
5	H4764 FS(0)		4/16/2020 8:55:45 AM	5 0369.dam	AC_04152020_5 369.wiff
6	H4764MS FS(0)		4/16/2020 9:06:45 AM	5 0369.dam	AC_04152020_5 369.wiff
7	H4764MSD FS(0)		4/16/2020 9:17:45 AM	5 0369.dam	AC_04152020_5 369.wiff
8	H4765 FS(0)		4/16/2020 9:28:44 AM	5 0369.dam	AC_04152020_5 369.wiff
9	KY37 CCV		4/16/2020 9:39:42 AM	5 0369.dam	AC_04152020_5 369.wiff
10	H4642 FS1(0)		4/16/2020 9:51:03 AM	5 0369.dam	AC_04152020_5 369.wiff
11	KY37 CCV		4/16/2020 10:02:03 AM	5 0369.dam	AC_04152020_5 369.wiff
12	MEOH		4/16/2020 10:13:25 AM	5 0369.dam	AC_04152020_5 369.wiff
10	H4642 FS1(0)		4/16/2020 10:24:25 AM	5 0369.dam	AC_04152020_5 369.wiff
11	KY37 CCV		4/16/2020 10:35:26 AM	5 0369.dam	AC_04152020_5 369.wiff
12	MEOH		4/16/2020 10:46:55 AM	5 0369.dam	AC_04152020_5 369.wiff
13	MEOH		4/16/2020 10:57:53 AM	5 0369.dam	AC_04152020_5 369.wiff
14	H4674 FS1(0)		4/16/2020 11:11:53 AM	5 0369.dam	AC_04152020_5 369.wiff
15	H4675 FS1(0)		4/16/2020 11:22:53 AM	5 0369.dam	AC_04152020_5 369.wiff
16	H4677 FS1(0)		4/16/2020 11:33:52 AM	5 0369.dam	AC_04152020_5 369.wiff
17	H4678 FS1(0)		4/16/2020 11:44:51 AM	5 0369.dam	AC_04152020_5 369.wiff
18	H4679 FS1(0)		4/16/2020 11:55:50 AM	5 0369.dam	AC_04152020_5 369.wiff
19	H4679 FS1 D(3)		4/16/2020 12:06:49 PM	5 0369.dam	AC_04152020_5 369.wiff
20	KY36 CCV		4/16/2020 12:17:49 PM	5 0369.dam	AC_04152020_5 369.wiff
21	MEOH		4/16/2020 12:28:49 PM	5 0369.dam	AC_04152020_5 369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 3:37:44 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
~~22~~	~~H4680-FS1(0)~~		~~4/16/2020 12:39:49 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~23~~	~~H4682-FS1(0)~~		~~4/16/2020 12:50:48 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~24~~	~~H4684-FS1(0)~~		~~4/16/2020 1:01:47 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~25~~	~~H4685-FS1(0)~~		~~4/16/2020 1:12:47 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~26~~	~~H4685MS-FS1(0)~~		~~4/16/2020 1:23:46 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~27~~	~~H4685MSD-FS1(0)~~		~~4/16/2020 1:34:45 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~28~~	~~KY37 CCV~~		~~4/16/2020 1:45:45 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~29~~	~~MEOH~~		~~4/16/2020 1:56:41 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~30~~	~~H4687-FS1(0)~~		~~4/16/2020 2:07:40 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~31~~	~~H4688-FS1(0)~~		~~4/16/2020 2:18:39 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~32~~	~~H4689-FS1(0)~~		~~4/16/2020 2:29:37 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~33~~	~~H4690-FS1(0)~~		~~4/16/2020 2:40:34 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~34~~	~~H4691-FS1(0)~~		~~4/16/2020 2:51:33 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~35~~	~~H4692-FS1(0)~~		~~4/16/2020 3:02:31 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~36~~	~~H4694-FS1(0)~~		~~4/16/2020 3:13:29 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~37~~	~~H4695-FS1(0)~~		~~4/16/2020 3:24:27 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~38~~	~~H4697-FS1(0)~~		~~4/16/2020 3:35:25 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~39~~	~~KY36 CCV~~		~~4/16/2020 3:46:24 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~40~~	~~MEOH~~		~~4/16/2020 3:57:23 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~41~~	~~CY692PB-FS(0)~~		~~4/16/2020 4:08:22 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~42~~	~~H4669-FS1(0)~~		~~4/16/2020 4:19:21 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~43~~	~~H4670-FS1(0)~~		~~4/16/2020 4:30:20 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~44~~	~~H4671-FS1(0)~~		~~4/16/2020 4:41:18 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~45~~	~~H4672-FS1(0)~~		~~4/16/2020 4:52:16 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~46~~	~~H4673-FS1(0)~~		~~4/16/2020 5:03:15 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~47~~	~~MEOH~~		~~4/16/2020 5:14:13 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~48~~	~~MEOH~~		~~4/16/2020 5:25:11 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~49~~	~~KY37 CCV~~		~~4/16/2020 5:36:10 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~50~~	~~MEOH~~		~~4/16/2020 5:47:09 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~30~~	~~H4687-FS1(0)~~		~~4/16/2020 5:58:10 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~38~~	~~H4697-FS1(0)~~		~~4/16/2020 6:09:09 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~51~~	~~H4679-FS1-D(5)~~		~~4/16/2020 6:20:09 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~52~~	~~H4670-FS1-D(3)~~		~~4/16/2020 6:31:08 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
~~53~~	~~KY36 CCV~~		~~4/16/2020 6:42:05 PM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
1	MEOH		4/16/2020 11:30:51 PM	5-0369.dam	AC_04152020_5-369.wiff
2	KY36 CCV	CCV	4/16/2020 11:41:51 PM	5-0369.dam	AC_04152020_5-369.wiff
3	MEOH		4/16/2020 11:52:50 PM	5-0369.dam	AC_04152020_5-369.wiff
4	CY680PB-FS(0)	Procedural Blank	4/17/2020 12:03:50 AM	5-0369.dam	AC_04152020_5-369.wiff
5	CY681LCS-FS(0)	Laboratory Control Sample	4/17/2020 12:14:48 AM	5-0369.dam	AC_04152020_5-369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 3:37:44 PM

	Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	~~6~~	~~H4727-FS(0)~~	~~009MW02-EB-04082020~~	~~4/17/2020 12:25:47 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
	7	H4728-FS(0)	009MW02-040820	4/17/2020 12:36:47 AM	5-0369.dam	AC_04152020_5-369.wiff
1	~~8~~	~~H4729-FS(0)~~	~~009MW01-FB-040820~~	~~4/17/2020 12:47:47 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
	9	H4730-FS(0)	009MW01-040820	4/17/2020 12:58:47 AM	5-0369.dam	AC_04152020_5-369.wiff
	10	MEOH		4/17/2020 1:09:46 AM	5-0369.dam	AC_04152020_5-369.wiff
	11	KY37 CCV	CCV	4/17/2020 1:20:44 AM	5-0369.dam	AC_04152020_5-369.wiff
2	~~12~~	~~H4731-FS(0)~~	~~002G02DA-040820~~	~~4/17/2020 1:31:45 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
↓	~~13~~	~~H4731MS-FS(0)~~	~~002G02DA-040820~~	~~4/17/2020 1:42:44 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
	~~14~~	~~H4731MSD-FS(0)~~	~~002G02DA-040820~~	~~4/17/2020 1:53:44 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
	~~15~~	~~H4732-FS(0)~~	~~002G05DA-040820~~	~~4/17/2020 2:04:43 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
1	~~16~~	~~H4733-FS(0)~~	~~SB01-040820~~	~~4/17/2020 2:15:42 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
2	~~17~~	~~H4734-FS(0)~~	~~FD01-040820~~	~~4/17/2020 2:26:41 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
	~~18~~	~~MEOH~~		~~4/17/2020 2:37:42 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~
	~~19~~	~~KY36 CCV~~	~~CCV~~	~~4/17/2020 2:48:41 AM~~	~~5-0369.dam~~	~~AC_04152020_5-369.wiff~~

1 Samples were re-extracted and reported from SDG 20-0493 due to surrogate exceedances and are not reported with this batch. LMG 04/23/2020

2 Samples were reanalyzed due to a high internal standard area response in the closing CCV. Data is included in the Unused Data section. LMG 04/23/2020

3 Samples do not apply to this batch. LMG 04/23/2020

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 12:18:10 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MEOH		4/20/2020 1:37:56 PM	5-0369.dam	AC_04202020_05-369.wiff
2	MEOH		4/20/2020 1:48:52 PM	5-0369.dam	AC_04202020_05-369.wiff
3	MEOH		4/20/2020 1:59:47 PM	5-0369.dam	AC_04202020_05-369.wiff
4	KY33	L1	4/20/2020 2:10:43 PM	5-0369.dam	AC_04202020_05-369.wiff
5	KY34	L2	4/20/2020 2:21:38 PM	5-0369.dam	AC_04202020_05-369.wiff
6	KY35	L3	4/20/2020 2:32:34 PM	5-0369.dam	AC_04202020_05-369.wiff
7	KY36	L4	4/20/2020 2:43:31 PM	5-0369.dam	AC_04202020_05-369.wiff
8	KY37	L5	4/20/2020 2:54:27 PM	5-0369.dam	AC_04202020_05-369.wiff
9	KY38	L6	4/20/2020 3:05:22 PM	5-0369.dam	AC_04202020_05-369.wiff
10	KY39	L7	4/20/2020 3:16:18 PM	5-0369.dam	AC_04202020_05-369.wiff
11	KY40 IB	IB	4/20/2020 3:27:15 PM	5-0369.dam	AC_04202020_05-369.wiff
12	KY41 ICC	ICC	4/20/2020 3:38:10 PM	5-0369.dam	AC_04202020_05-369.wiff
13	KY42 BRANCHED	Branched Standard	4/20/2020 3:49:07 PM	5-0369.dam	AC_04202020_05-369.wiff

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Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 3:43:44 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
13	MeOH		4/22/2020 4:54:16 PM	5-0369.dam	AC_04222020_5-369.wiff
14	KY35 CCV	CCV	4/22/2020 5:05:12 PM	5-0369.dam	AC_04222020_5-369.wiff
15	KY39	L7	4/22/2020 5:16:08 PM	5-0369.dam	AC_04222020_5-369.wiff
16	KY40 IB	IB	4/22/2020 5:27:02 PM	5-0369.dam	AC_04222020_5-369.wiff
17	MeOH		4/22/2020 5:38:00 PM	5-0369.dam	AC_04222020_5-369.wiff
~~18~~	~~CY726PB-FS(0)~~		~~4/22/2020 5:48:56 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~19~~	~~CY727LCS-FS(0)~~		~~4/22/2020 5:59:52 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~20~~	~~H4792-FS(0)~~		~~4/22/2020 6:10:48 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~21~~	~~H4792MS-FS(0)~~		~~4/22/2020 6:21:44 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~22~~	~~H4792MSD-FS(0)~~		~~4/22/2020 6:32:41 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~23~~	~~H4793-FS(0)~~		~~4/22/2020 6:43:38 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~24~~	~~MeOH~~		~~4/22/2020 6:54:35 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~25~~	~~MeOH~~		~~4/22/2020 7:05:31 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~26~~	~~MeOH~~		~~4/22/2020 7:16:29 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~27~~	~~KY37 CCV~~		~~4/22/2020 7:27:25 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~28~~	~~MeOH~~		~~4/22/2020 7:38:20 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~29~~	~~CY734PB-FS(0)~~		~~4/22/2020 7:49:16 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~30~~	~~CY735LCS-FS(0)~~		~~4/22/2020 8:00:13 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~31~~	~~H4727-FS1(0)~~		~~4/22/2020 8:11:08 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~32~~	~~H4728-FS1(0)~~		~~4/22/2020 8:22:04 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~33~~	~~H4729-FS1(0)~~		~~4/22/2020 8:33:01 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~34~~	~~H4730-FS1(0)~~		~~4/22/2020 8:43:56 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~35~~	~~MeOH~~		~~4/22/2020 8:54:52 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~36~~	~~MeOH~~		~~4/22/2020 9:05:48 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~37~~	~~KY36 CCV~~		~~4/22/2020 9:16:45 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~38~~	~~H4731-FS1(0)~~		~~4/22/2020 9:27:41 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~39~~	~~H4731MS-FS1(0)~~		~~4/22/2020 9:38:39 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~40~~	~~H4731MSD-FS1(0)~~		~~4/22/2020 9:49:34 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~41~~	~~H4732-FS1(0)~~		~~4/22/2020 10:00:31 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~42~~	~~H4733-FS1(0)~~		~~4/22/2020 10:11:26 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~43~~	~~H4734-FS1(0)~~		~~4/22/2020 10:22:23 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~24~~	~~MeOH~~		~~4/22/2020 10:33:20 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~25~~	~~MeOH~~		~~4/22/2020 10:44:17 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~26~~	~~MeOH~~		~~4/22/2020 10:55:13 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~46~~	~~KY37 CCV~~		~~4/22/2020 11:06:10 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~36~~	~~MeOH~~		~~4/23/2020 9:28:42 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~1~~	~~MEOH~~		~~4/23/2020 9:40:29 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~2~~	~~KY36 CCV~~		~~4/23/2020 9:51:26 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
~~3~~	~~MEOH~~		~~4/23/2020 10:02:24 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~

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Sequence Report

Created with Analyst Reporter
Printed: 23/04/2020 3:43:44 PM

	Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
2	4	~~H4728-FS1(0)~~		~~4/23/2020 10:13:21 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~5~~	~~H4730-FS1(0)~~		~~4/23/2020 10:24:17 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~6~~	~~H4731-FS1(0)~~		~~4/23/2020 10:35:14 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~7~~	~~H4731MS-FS1(0)~~		~~4/23/2020 10:46:10 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~8~~	~~H4731MSD-FS1(0)~~		~~4/23/2020 10:57:06 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~9~~	~~H4732-FS1(0)~~		~~4/23/2020 11:08:03 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~10~~	~~H4734-FS1(0)~~		~~4/23/2020 11:19:00 AM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	11	MEOH		4/23/2020 11:29:57 AM	5-0369.dam	AC_04222020_5-369.wiff
	12	KY37 CCV	CCV	4/23/2020 11:40:54 AM	5-0369.dam	AC_04222020_5-369.wiff
	13	MEOH		4/23/2020 11:52:24 AM	5-0369.dam	AC_04222020_5-369.wiff
1	~~14~~	~~CY680PB-FS(0)~~	~~Procedural Blank~~	~~4/23/2020 12:03:20 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~15~~	~~CY681LCS-FS(0)~~	~~Laboratory Control Sample~~	~~4/23/2020 12:14:16 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~16~~	~~H4728-FS(0)~~	~~009MW02-040820~~	~~4/23/2020 12:25:14 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	~~17~~	~~H4730-FS(0)~~	~~009MW01-040820~~	~~4/23/2020 12:36:10 PM~~	~~5-0369.dam~~	~~AC_04222020_5-369.wiff~~
	18	H4731-FS(0)	002G02DA-040820	4/23/2020 12:47:08 PM	5-0369.dam	AC_04222020_5-369.wiff
	19	H4731MS-FS(0)	002G02DA-040820	4/23/2020 12:58:04 PM	5-0369.dam	AC_04222020_5-369.wiff
	20	H4731MSD-FS(0)	002G02DA-040820	4/23/2020 1:09:02 PM	5-0369.dam	AC_04222020_5-369.wiff
	21	H4732-FS(0)	002G05DA-040820	4/23/2020 1:19:58 PM	5-0369.dam	AC_04222020_5-369.wiff
	22	H4734-FS(0)	FD01-040820	4/23/2020 1:30:54 PM	5-0369.dam	AC_04222020_5-369.wiff
	23	KY37 CCV	CCV	4/23/2020 1:41:52 PM	5-0369.dam	AC_04222020_5-369.wiff

1 Samples were reanalyzed for confirmation only and were not reported. Data is included in the Unused Data section. LMG 04/23/2020

2 Samples do not apply to this batch. LMG 04/23/2020

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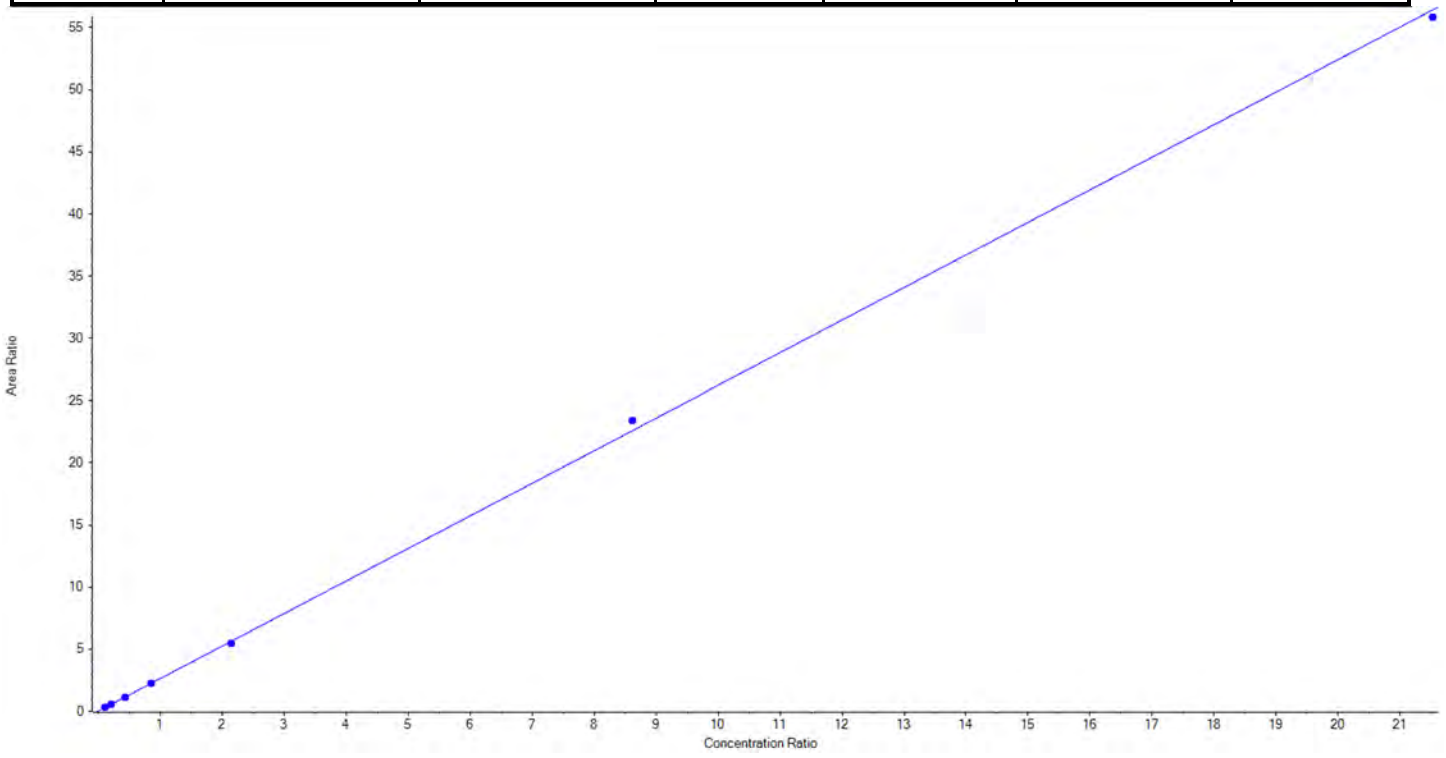
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFBS_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	298.9 / 80.0	**Result Table**	20-0470
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.62080 x + 0.00738 (r = 0.99975) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	132.51	106.0
3	KY34	L2	True	250.00	246.75	98.7
4	KY35	L3	True	500.00	486.97	97.4
5	KY36	L4	True	1000.00	980.80	98.1
6	KY37	L5	True	2500.00	2432.50	97.3
7	KY38	L6	True	10000.00	10355.33	103.6
8	KY39	L7	True	25000.00	24740.13	99.0



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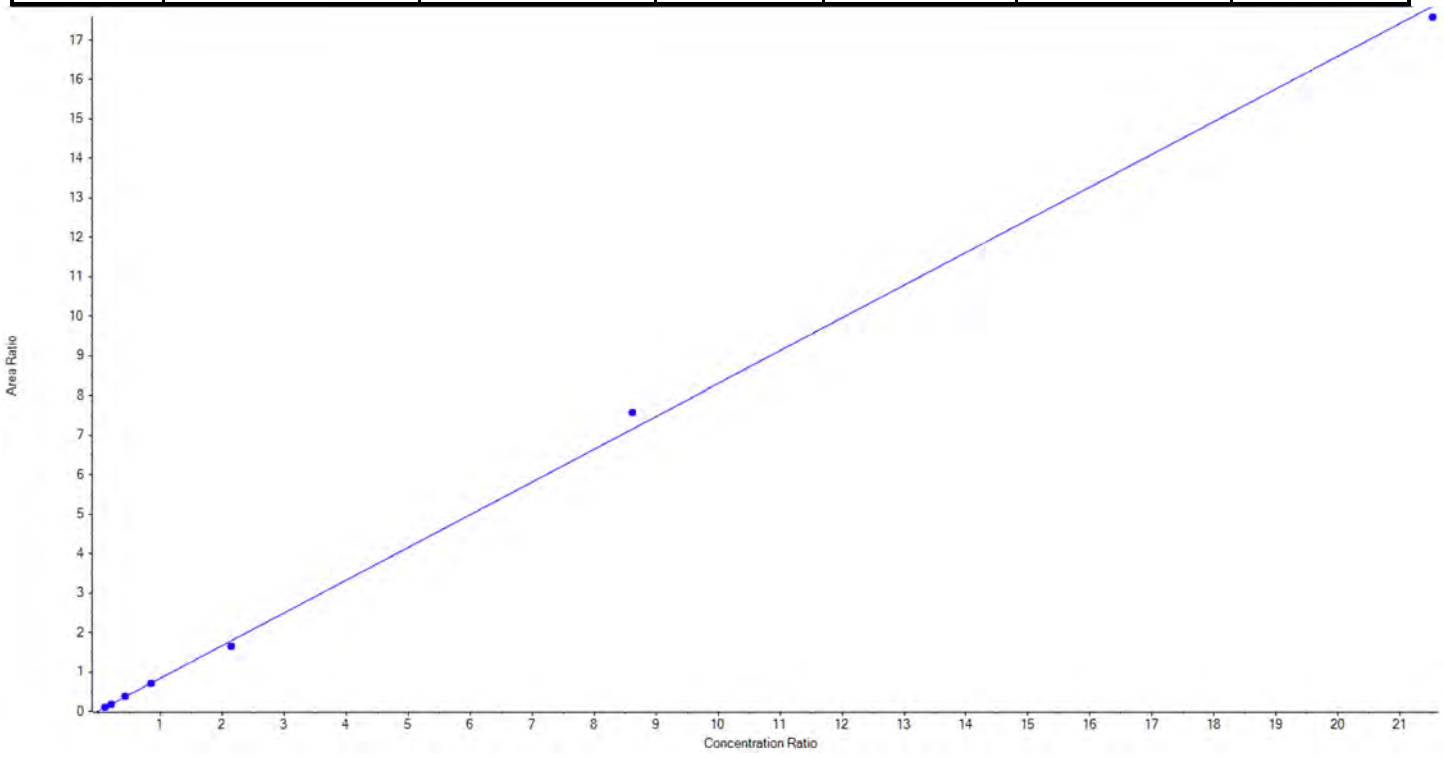
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFBS_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	298.9 / 99.0	**Result Table**	20-0470
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.82928 x + 0.00578 (r = 0.99918) (weighting: 1 / x) r^2:0.9984

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	127.08	101.7
3	KY34	L2	True	250.00	247.59	99.0
4	KY35	L3	True	500.00	529.50	105.9
5	KY36	L4	True	1000.00	970.36	97.0
6	KY37	L5	True	2500.00	2300.48	92.0
7	KY38	L6	True	10000.00	10590.34	105.9
8	KY39	L7	True	25000.00	24609.65	98.4



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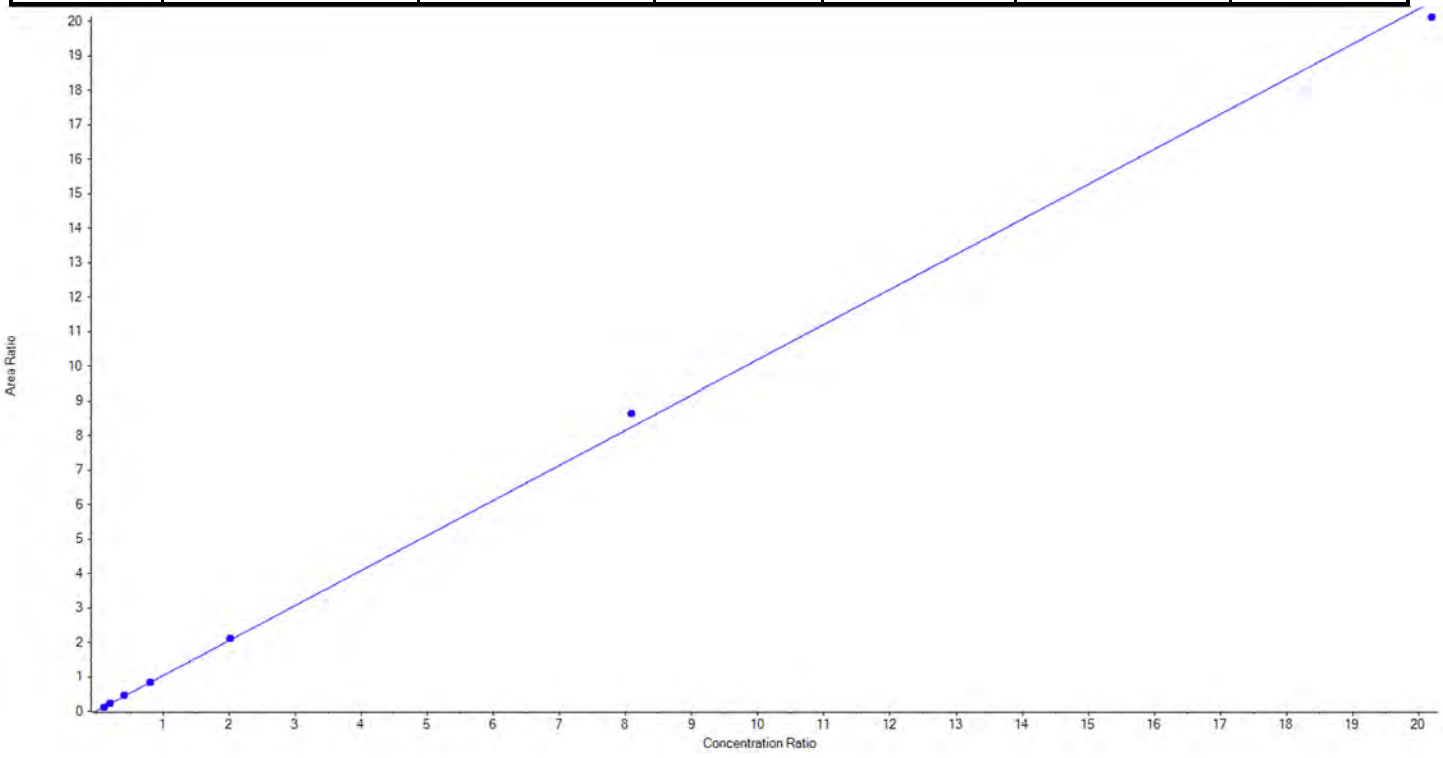
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFHxA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	313.0 / 269.0	**Result Table**	20-0470
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.01692 x + 0.01939 (r = 0.99948) (weighting: 1 / x) r^2:0.9990

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	126.25	117.17	92.8
3	KY34	L2	True	252.50	249.22	98.7
4	KY35	L3	True	505.00	529.28	104.8
5	KY36	L4	True	1010.00	997.37	98.8
6	KY37	L5	True	2525.00	2583.05	102.3
7	KY38	L6	True	10100.00	10581.74	104.8
8	KY39	L7	True	25250.00	24710.92	97.9



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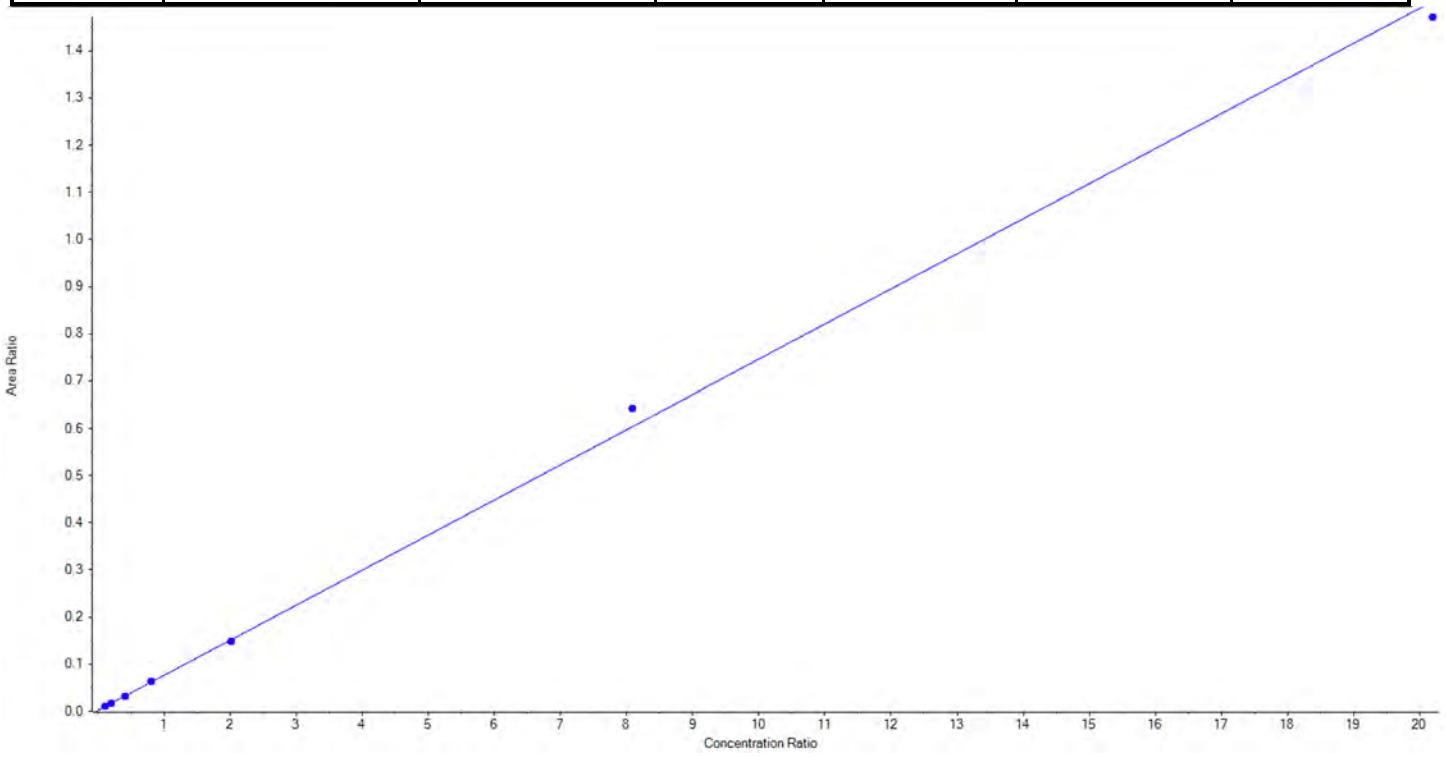
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFHxA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	313.0 / 119.0	**Result Table**	20-0470
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.07440 x + 0.00211 (r = 0.99922) (weighting: 1 / x) r^2:0.9984

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	126.25	130.04	103.0
3	KY34	L2	True	252.50	239.12	94.7
4	KY35	L3	True	505.00	507.69	100.5
5	KY36	L4	True	1010.00	1018.40	100.8
6	KY37	L5	True	2525.00	2444.33	96.8
7	KY38	L6	True	10100.00	10742.28	106.4
8	KY39	L7	True	25250.00	24686.88	97.8



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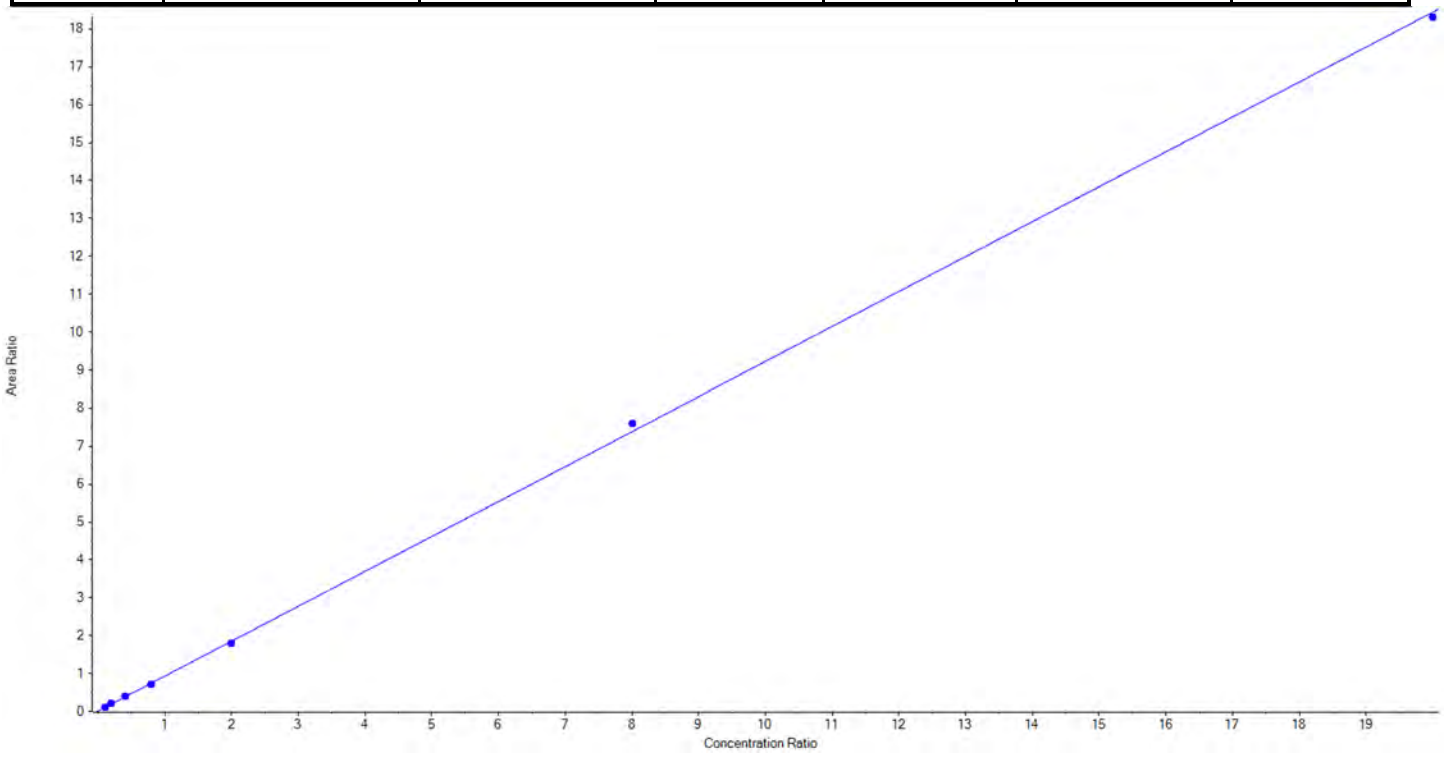
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFHpA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	363.0 / 319.0	**Result Table**	20-0470
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.92176 x + 0.00783 (r = 0.99977) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	123.22	98.6
3	KY34	L2	True	250.00	259.59	103.8
4	KY35	L3	True	500.00	520.53	104.1
5	KY36	L4	True	1000.00	950.03	95.0
6	KY37	L5	True	2500.00	2406.56	96.3
7	KY38	L6	True	10000.00	10292.26	102.9
8	KY39	L7	True	25000.00	24822.81	99.3



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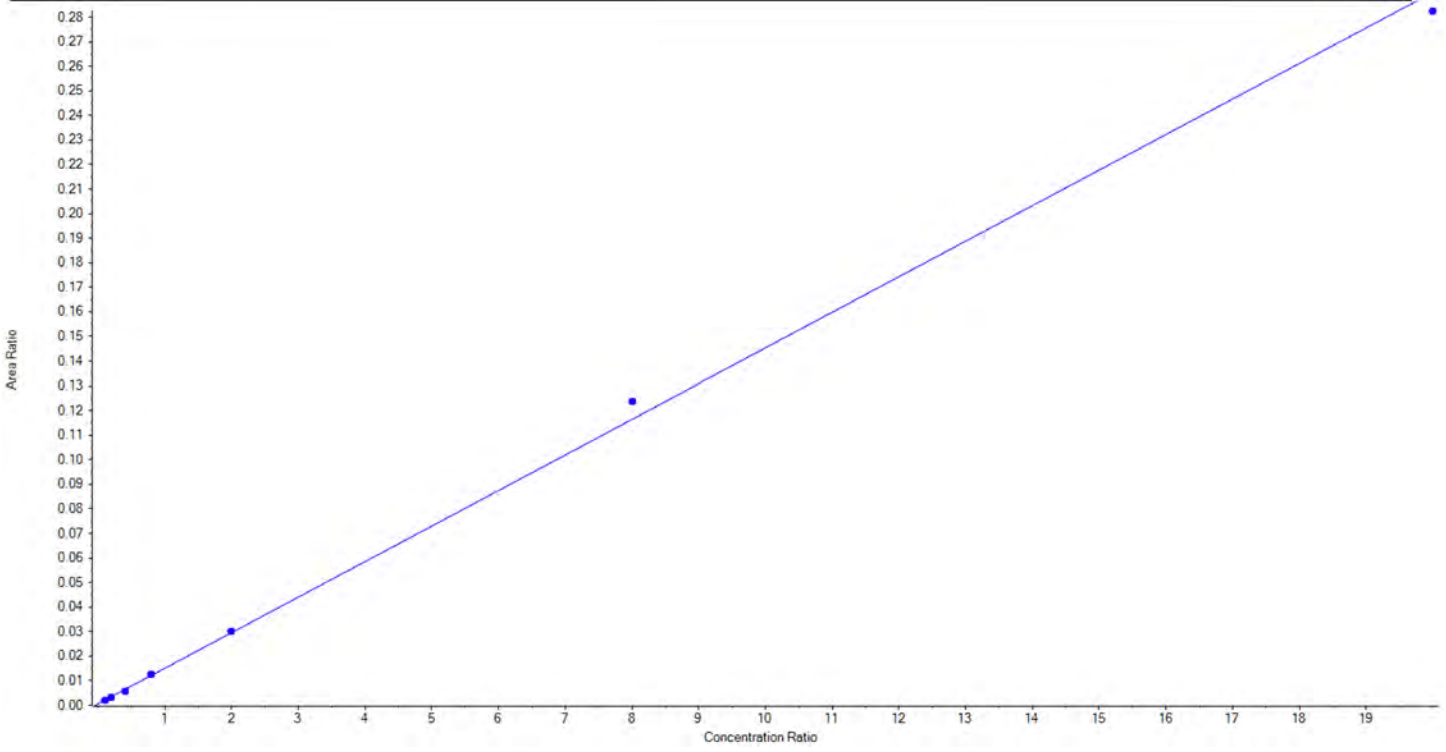
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFHpA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	363.0 / 169.0	**Result Table**	20-0470
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01447 x + 6.30358e-4 (r = 0.99910) (weighting: 1 / x) r^2:0.9982

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	130.16	104.1
3	KY34	L2	True	250.00	240.10	96.0
4	KY35	L3	True	500.00	451.17	90.2
5	KY36	L4	True	1000.00	1043.64	104.4
6	KY37	L5	True	2500.00	2539.32	101.6
7	KY38	L6	True	10000.00	10629.78	106.3
8	KY39	L7	True	25000.00	24340.83	97.4



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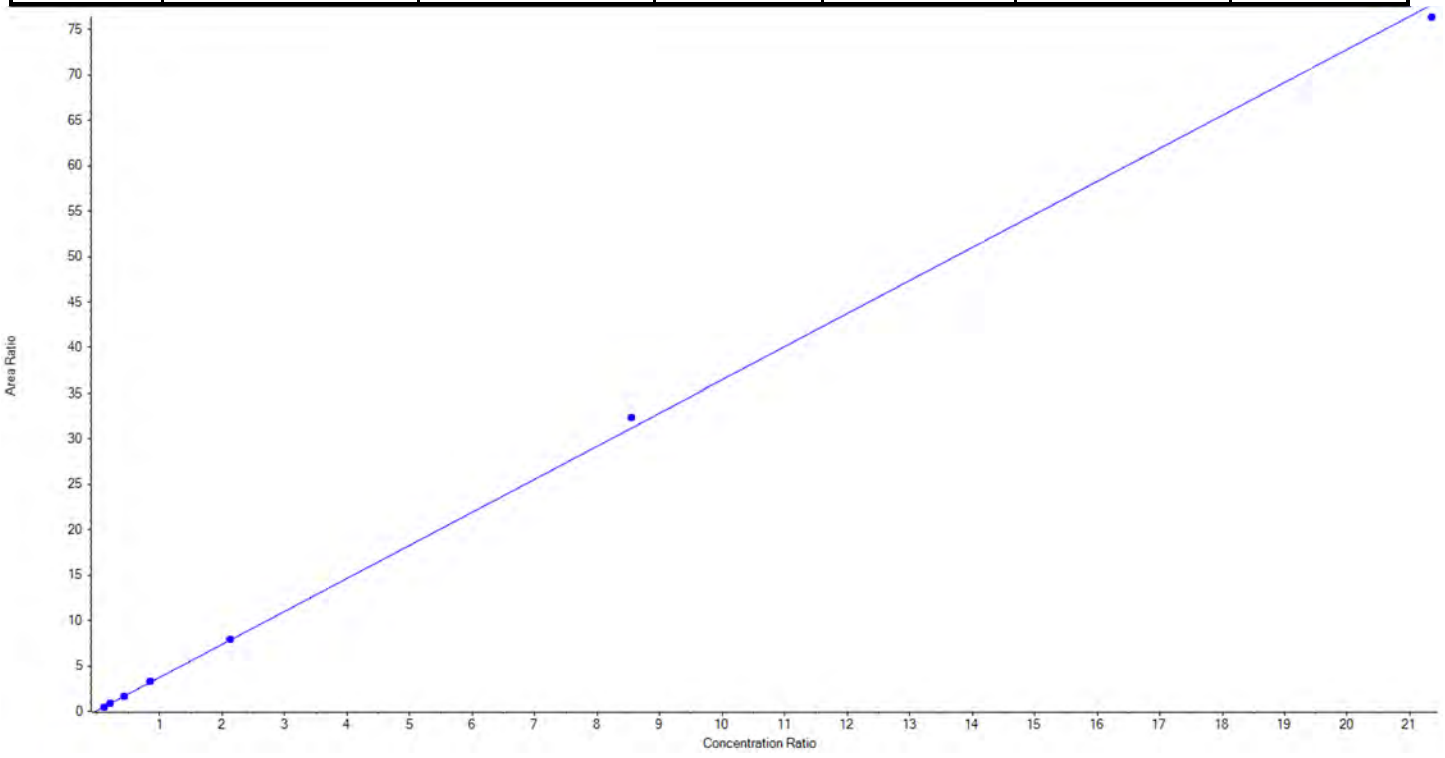
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFHxS_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	399.0 / 80.0	**Result Table**	20-0470
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 3.63598 x + 0.09509 (r = 0.99963) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	126.25	109.01	86.4
3	KY34	L2	True	252.50	268.09	106.2
4	KY35	L3	True	505.00	513.02	101.6
5	KY36	L4	True	1010.00	1036.63	102.6
6	KY37	L5	True	2525.00	2556.36	101.2
7	KY38	L6	True	10100.00	10481.48	103.8
8	KY39	L7	True	25250.00	24804.16	98.2



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Calibration Summary Report

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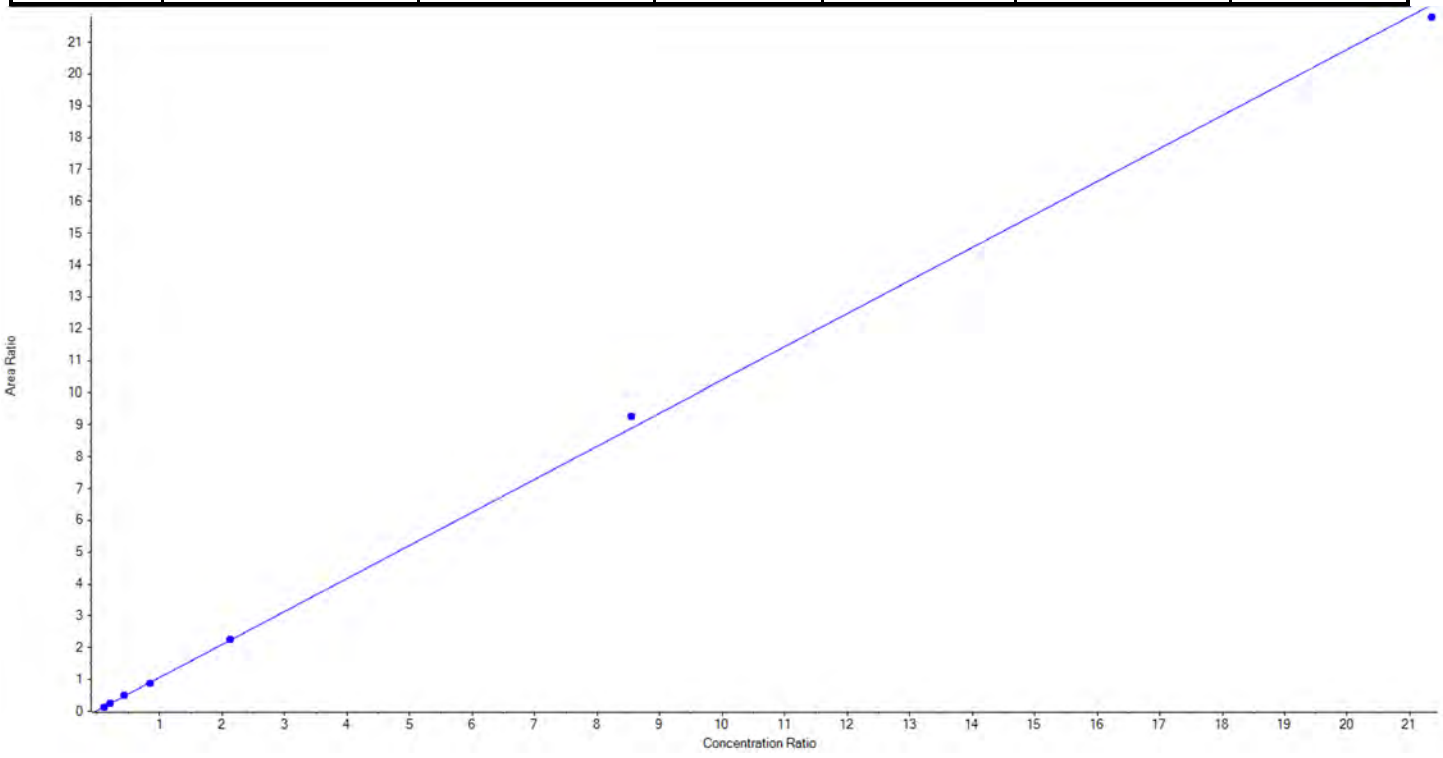
Analyte Name	PFHxS_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	399.0 / 99.0	**Result Table**	20-0470
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.03732 x + 0.02437 (r = 0.99956) (weighting: 1 / x) r^2:0.9991

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	126.25	112.67	89.3
3	KY34	L2	True	252.50	255.67	101.3
4	KY35	L3	True	505.00	551.38	109.2
5	KY36	L4	True	1010.00	983.32	97.4
6	KY37	L5	True	2525.00	2538.78	100.6
7	KY38	L6	True	10100.00	10521.07	104.2
8	KY39	L7	True	25250.00	24805.86	98.2



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Calibration Summary Report

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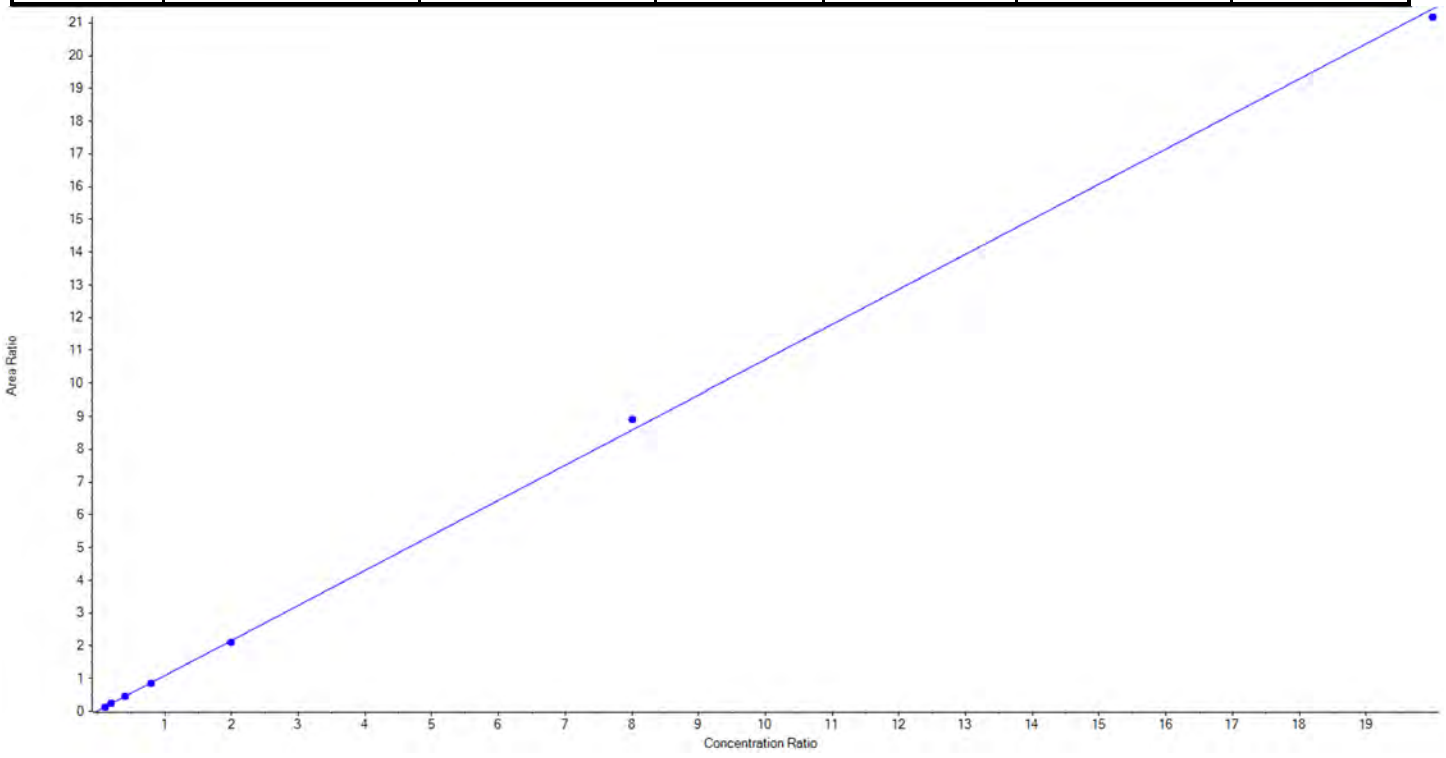
Analyte Name	PFOA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	413.0 / 369.0	**Result Table**	20-0470
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.07046 x + 0.02099 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	128.67	102.9
3	KY34	L2	True	250.00	242.78	97.1
4	KY35	L3	True	500.00	520.46	104.1
5	KY36	L4	True	1000.00	961.69	96.2
6	KY37	L5	True	2500.00	2423.08	96.9
7	KY38	L6	True	10000.00	10395.61	104.0
8	KY39	L7	True	25000.00	24702.70	98.8



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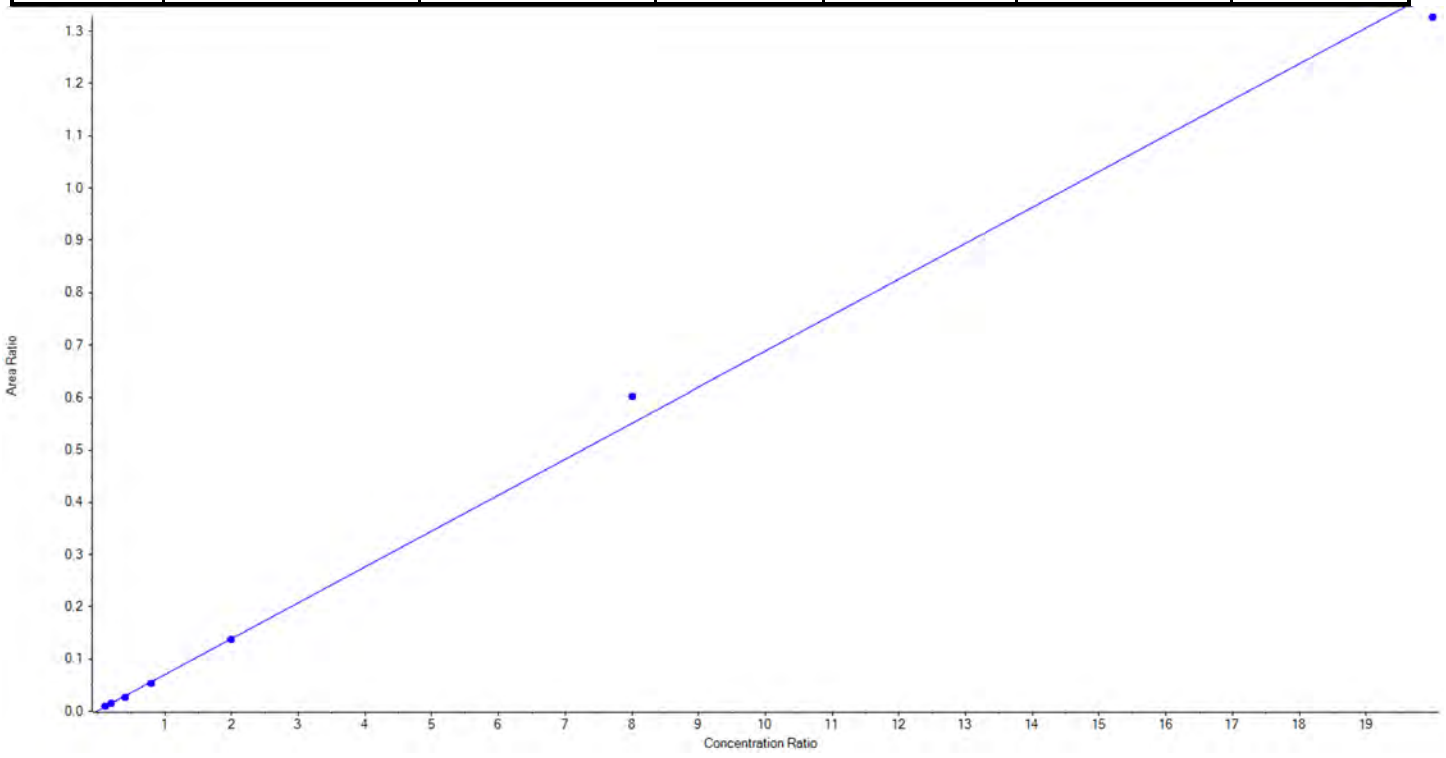
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFOA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	413.0 / 169.0	**Result Table**	20-0470
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.06868 x + 0.00156 (r = 0.99829) (weighting: 1 / x) r^2:0.9966

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	129.31	103.5
3	KY34	L2	True	250.00	253.19	101.3
4	KY35	L3	True	500.00	466.76	93.4
5	KY36	L4	True	1000.00	963.23	96.3
6	KY37	L5	True	2500.00	2490.72	99.6
7	KY38	L6	True	10000.00	10946.99	109.5
8	KY39	L7	True	25000.00	24124.81	96.5



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Calibration Summary Report

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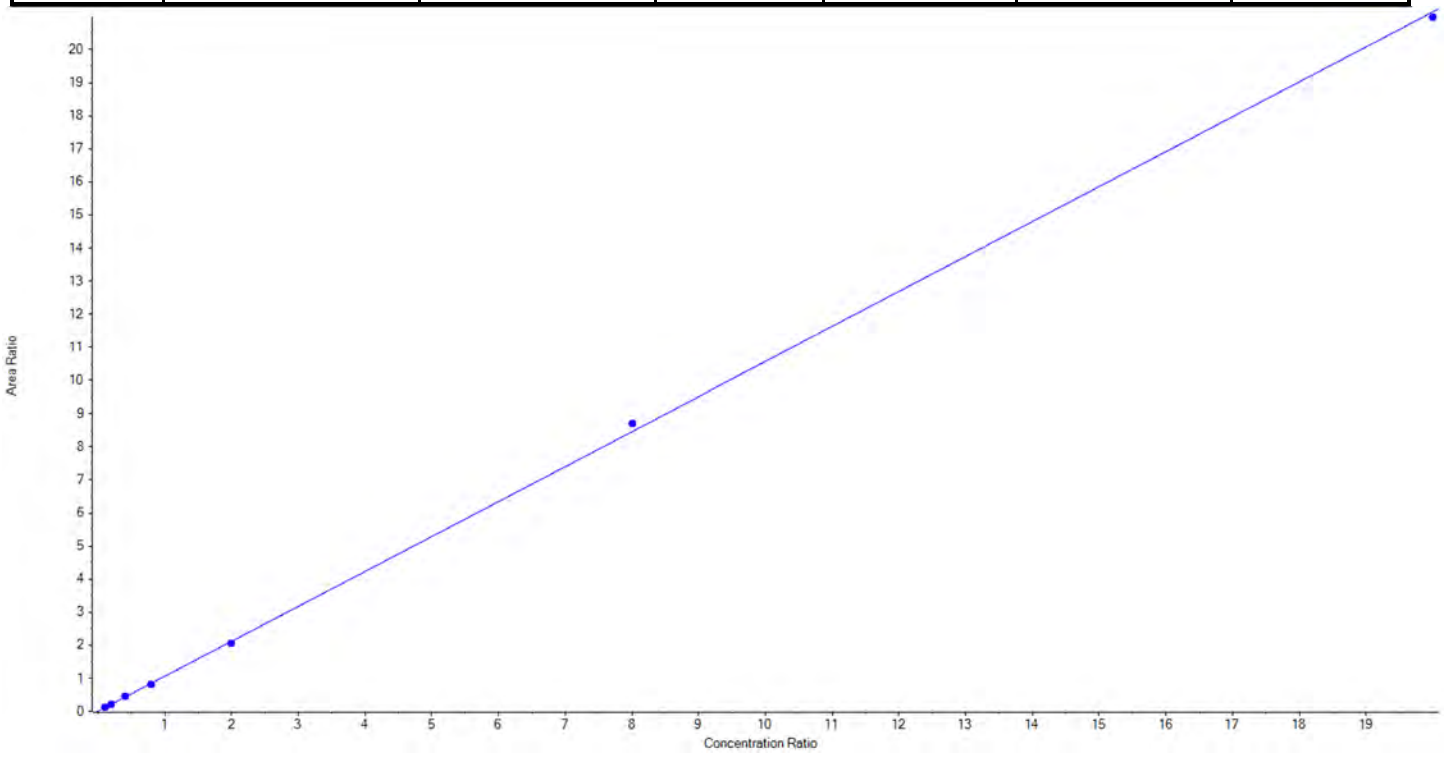
Analyte Name	PFNA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	463.0 / 419.0	**Result Table**	20-0470
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.05678 x + 0.00371 (r = 0.99980) (weighting: 1 / x) r^2:0.9996

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	124.00	99.2
3	KY34	L2	True	250.00	258.06	103.2
4	KY35	L3	True	500.00	515.00	103.0
5	KY36	L4	True	1000.00	956.31	95.6
6	KY37	L5	True	2500.00	2420.46	96.8
7	KY38	L6	True	10000.00	10286.63	102.9
8	KY39	L7	True	25000.00	24814.54	99.3



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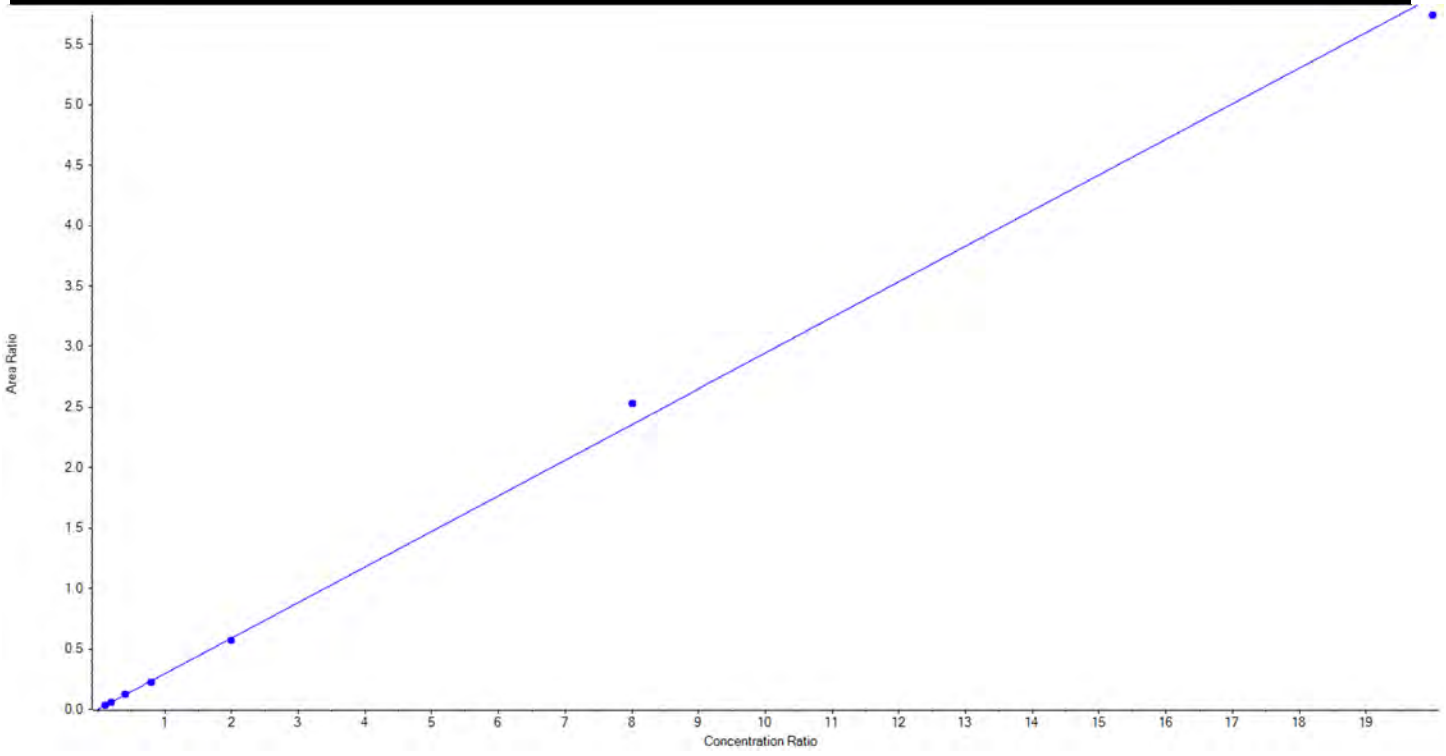
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFNA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	463.0 / 219.0	**Result Table**	20-0470
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.29462 x + 5.06945e-5 (r = 0.99892) (weighting: 1 / x) r^2:0.9978

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	126.27	101.0
3	KY34	L2	True	250.00	249.45	99.8
4	KY35	L3	True	500.00	509.61	101.9
5	KY36	L4	True	1000.00	957.99	95.8
6	KY37	L5	True	2500.00	2411.52	96.5
7	KY38	L6	True	10000.00	10757.34	107.6
8	KY39	L7	True	25000.00	24362.82	97.5



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Calibration Summary Report

Created with Analyst Reporter
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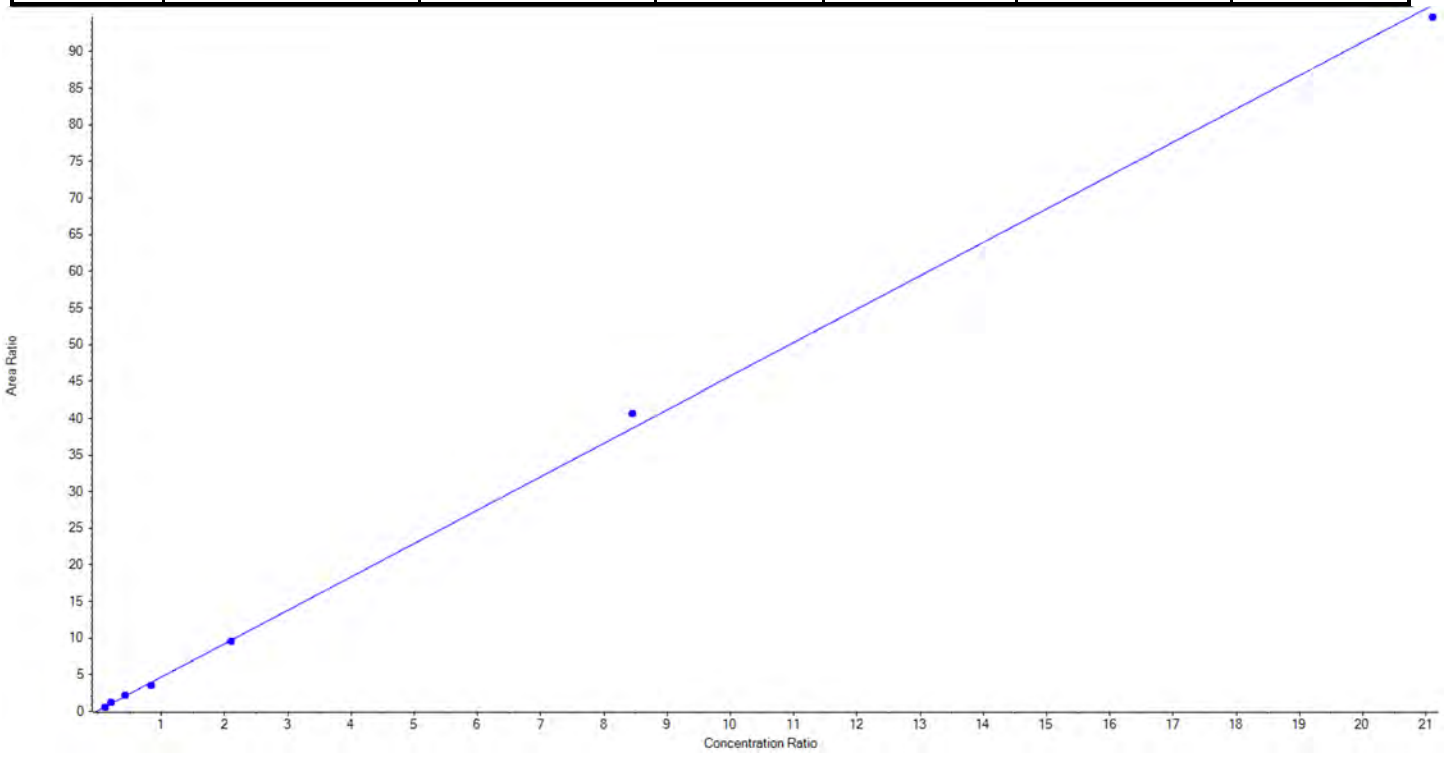
Analyte Name	PFOS_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	499.0 / 80.0	**Result Table**	20-0470
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 4.55965 x + 0.11590 (r = 0.99932) (weighting: 1 / x) r^2:0.9986

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	126.25	117.56	93.1
3	KY34	L2	True	252.50	274.04	108.5
4	KY35	L3	True	505.00	536.10	106.2
5	KY36	L4	True	1010.00	912.75	90.4
6	KY37	L5	True	2525.00	2481.83	98.3
7	KY38	L6	True	10100.00	10629.94	105.3
8	KY39	L7	True	25250.00	24816.53	98.3



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Calibration Summary Report

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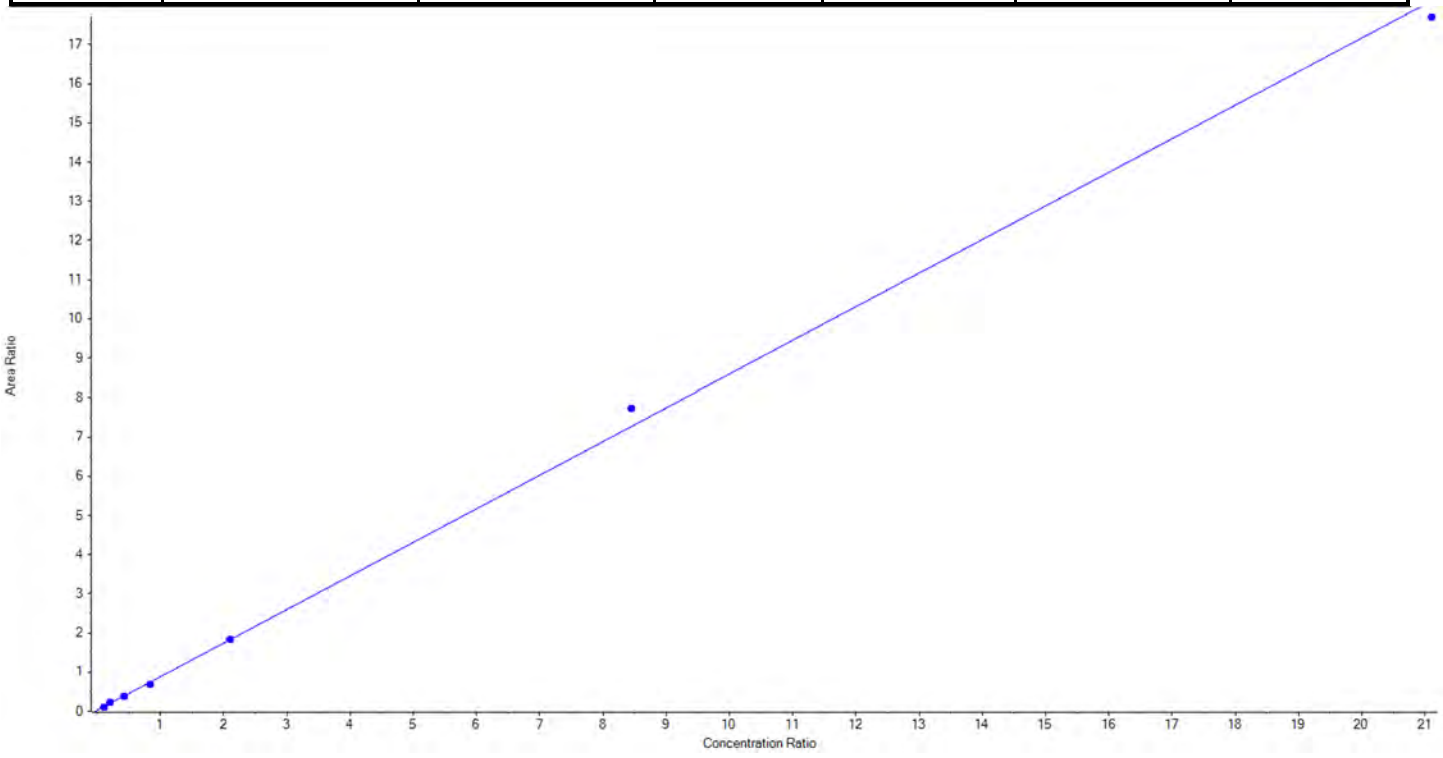
Analyte Name	PFOS_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	499.0 / 99.0	**Result Table**	20-0470
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.85705 x + 0.02556 (r = 0.99902) (weighting: 1 / x) r^2:0.9980

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	126.25	117.36	93.0
3	KY34	L2	True	252.50	290.29	115.0
4	KY35	L3	True	505.00	489.33	96.9
5	KY36	L4	True	1010.00	914.12	90.5
6	KY37	L5	True	2525.00	2538.09	100.5
7	KY38	L6	True	10100.00	10752.04	106.5
8	KY39	L7	True	25250.00	24667.51	97.7



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Calibration Summary Report

Created with Analyst Reporter
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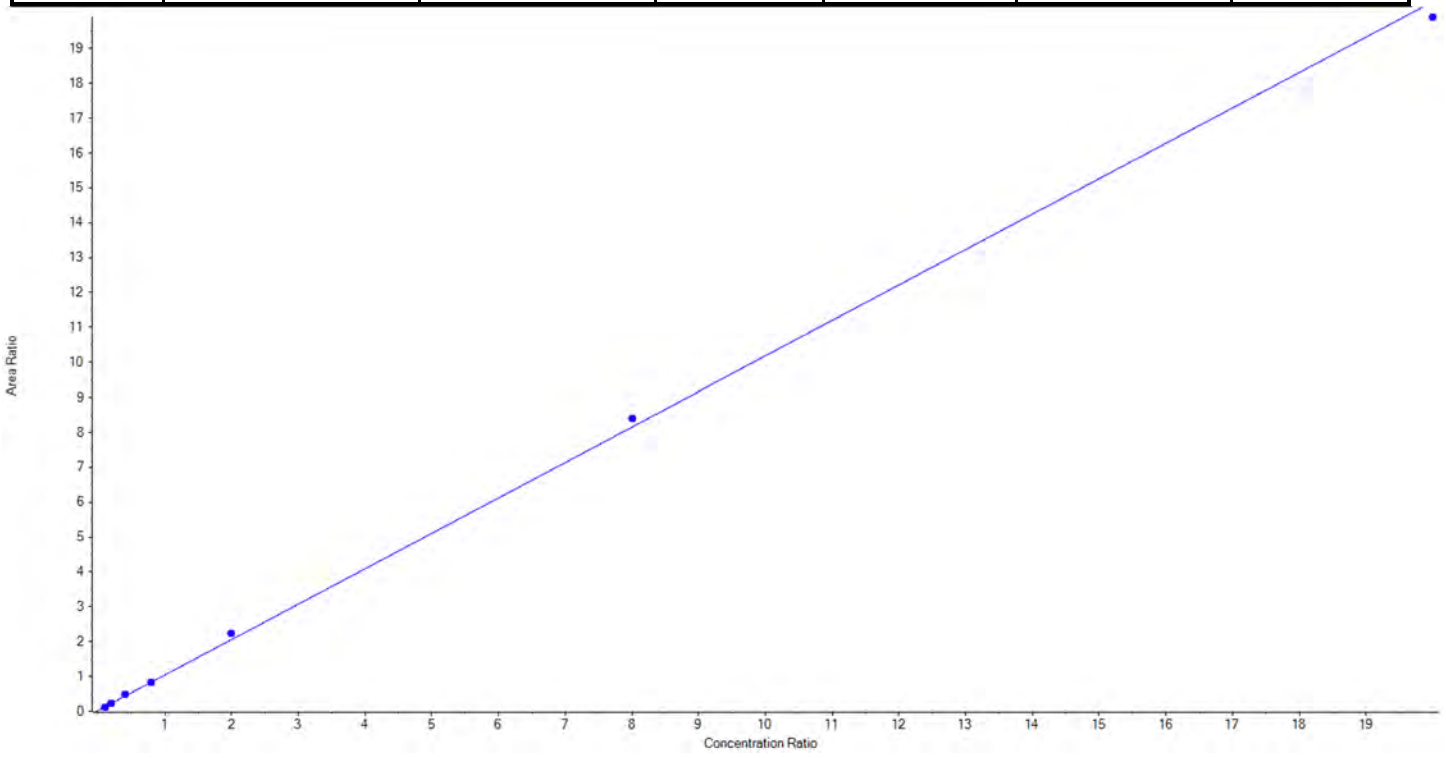
Analyte Name	PFDA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	513.0 / 469.0	**Result Table**	20-0470
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.01576 x + 0.02642 (r = 0.99929) (weighting: 1 / x) r^2:0.9986

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	97.41	77.9
3	KY34	L2	True	250.00	254.55	101.8
4	KY35	L3	True	500.00	559.21	111.8
5	KY36	L4	True	1000.00	992.98	99.3
6	KY37	L5	True	2500.00	2704.40	108.2
7	KY38	L6	True	10000.00	10311.50	103.1
8	KY39	L7	True	25000.00	24454.96	97.8



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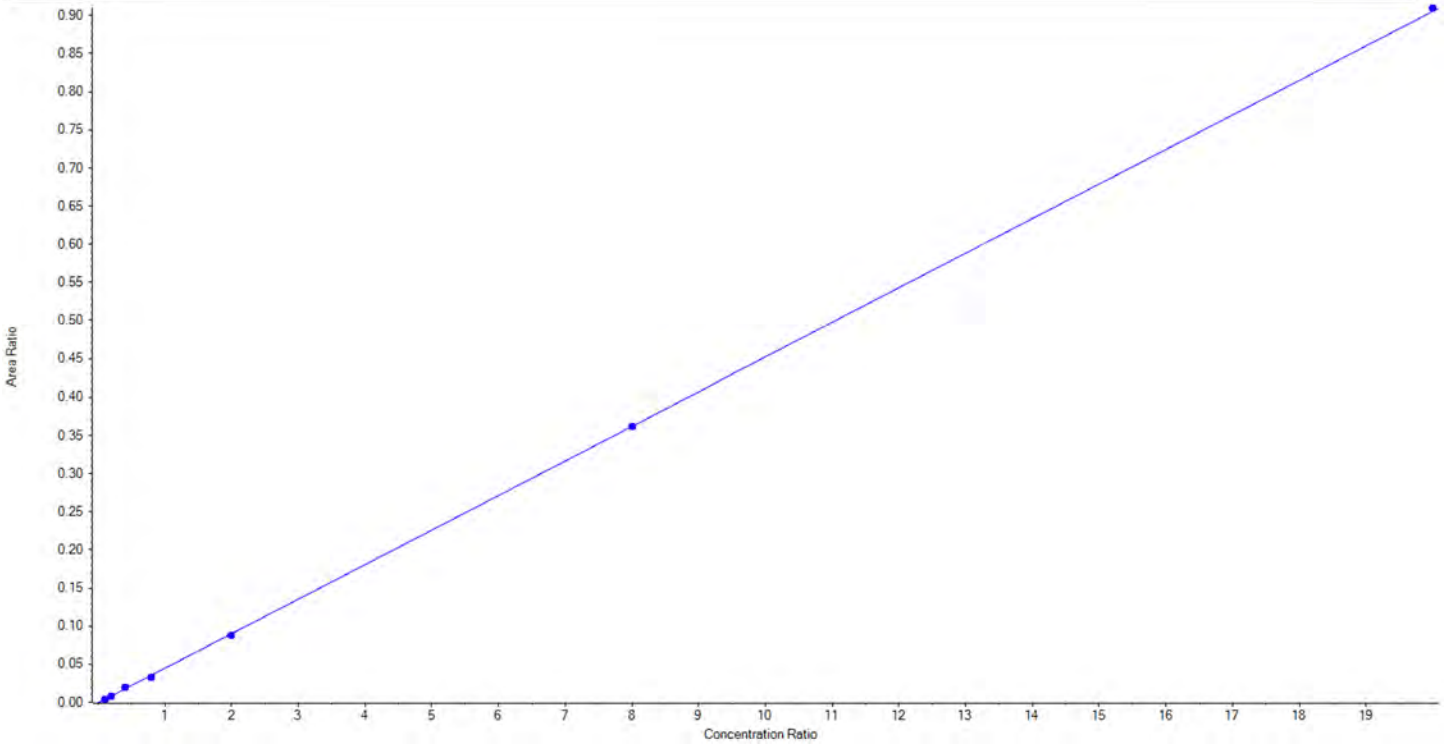
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFDA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	513.0 / 219.0	**Result Table**	20-0470
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04530 x + -6.46595e-4 (r = 0.99983) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	132.20	105.8
3	KY34	L2	True	250.00	237.11	94.8
4	KY35	L3	True	500.00	544.68	108.9
5	KY36	L4	True	1000.00	928.95	92.9
6	KY37	L5	True	2500.00	2431.39	97.3
7	KY38	L6	True	10000.00	9984.56	99.9
8	KY39	L7	True	25000.00	25116.10	100.5



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Calibration Summary Report

Created with Analyst Reporter
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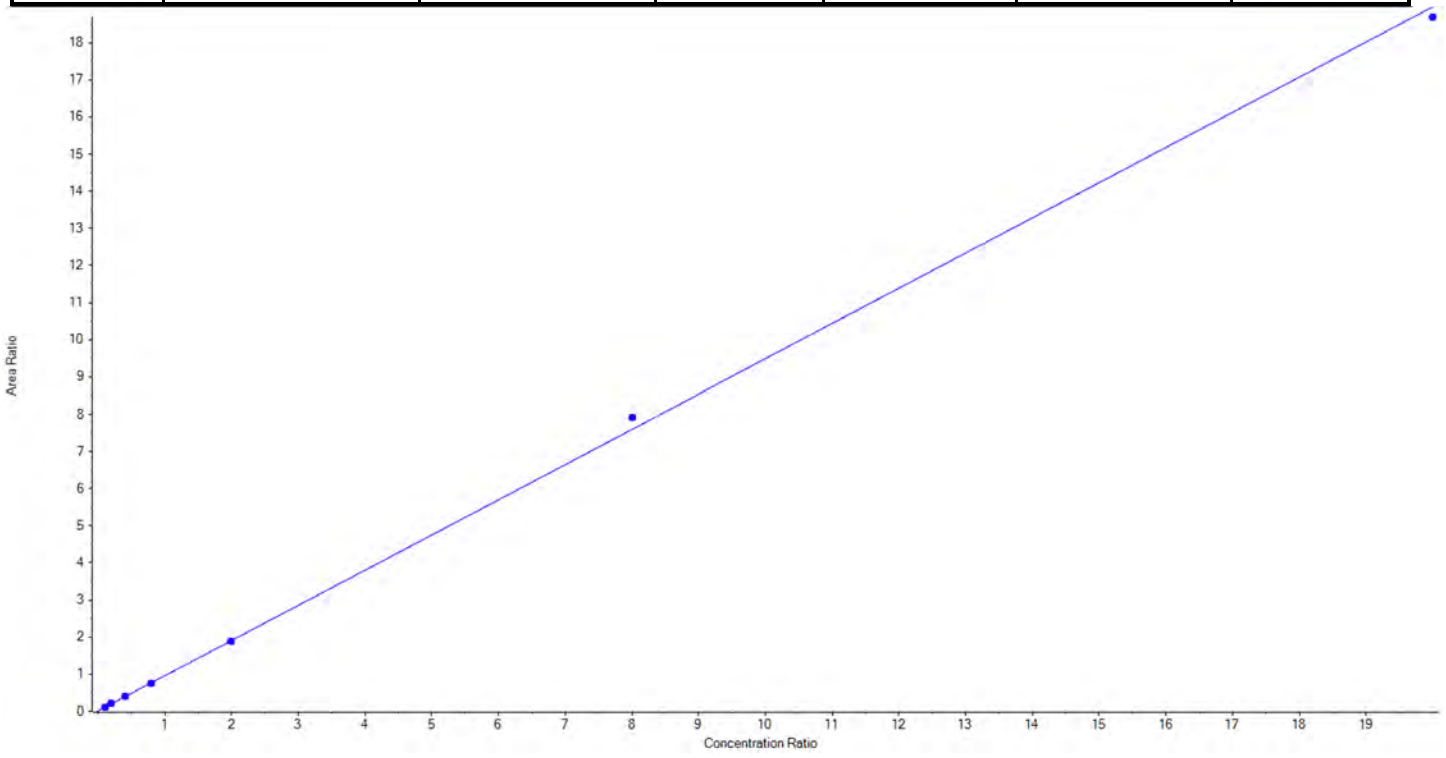
Analyte Name	PFUnA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	563.0 / 519.0	**Result Table**	20-0470
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.94778 x + 0.01220 (r = 0.99966) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	119.79	95.8
3	KY34	L2	True	250.00	256.79	102.7
4	KY35	L3	True	500.00	513.98	102.8
5	KY36	L4	True	1000.00	973.56	97.4
6	KY37	L5	True	2500.00	2466.29	98.7
7	KY38	L6	True	10000.00	10412.16	104.1
8	KY39	L7	True	25000.00	24632.44	98.5



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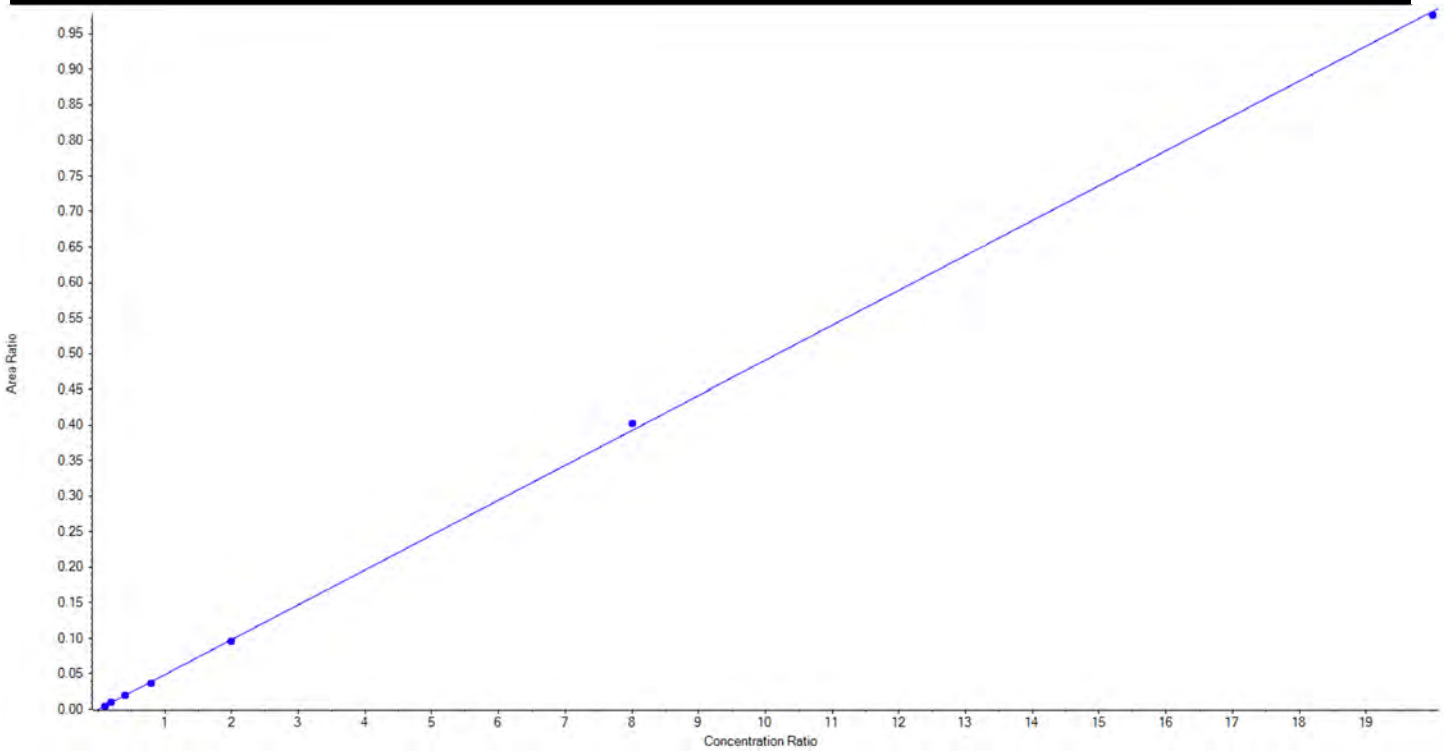
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFUnA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	563.0 / 269.0	**Result Table**	20-0470
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04910 x + -2.03119e-4 (r = 0.99977) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	128.51	102.8
3	KY34	L2	True	250.00	267.44	107.0
4	KY35	L3	True	500.00	490.73	98.2
5	KY36	L4	True	1000.00	924.34	92.4
6	KY37	L5	True	2500.00	2438.79	97.6
7	KY38	L6	True	10000.00	10263.45	102.6
8	KY39	L7	True	25000.00	24861.73	99.5



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Calibration Summary Report

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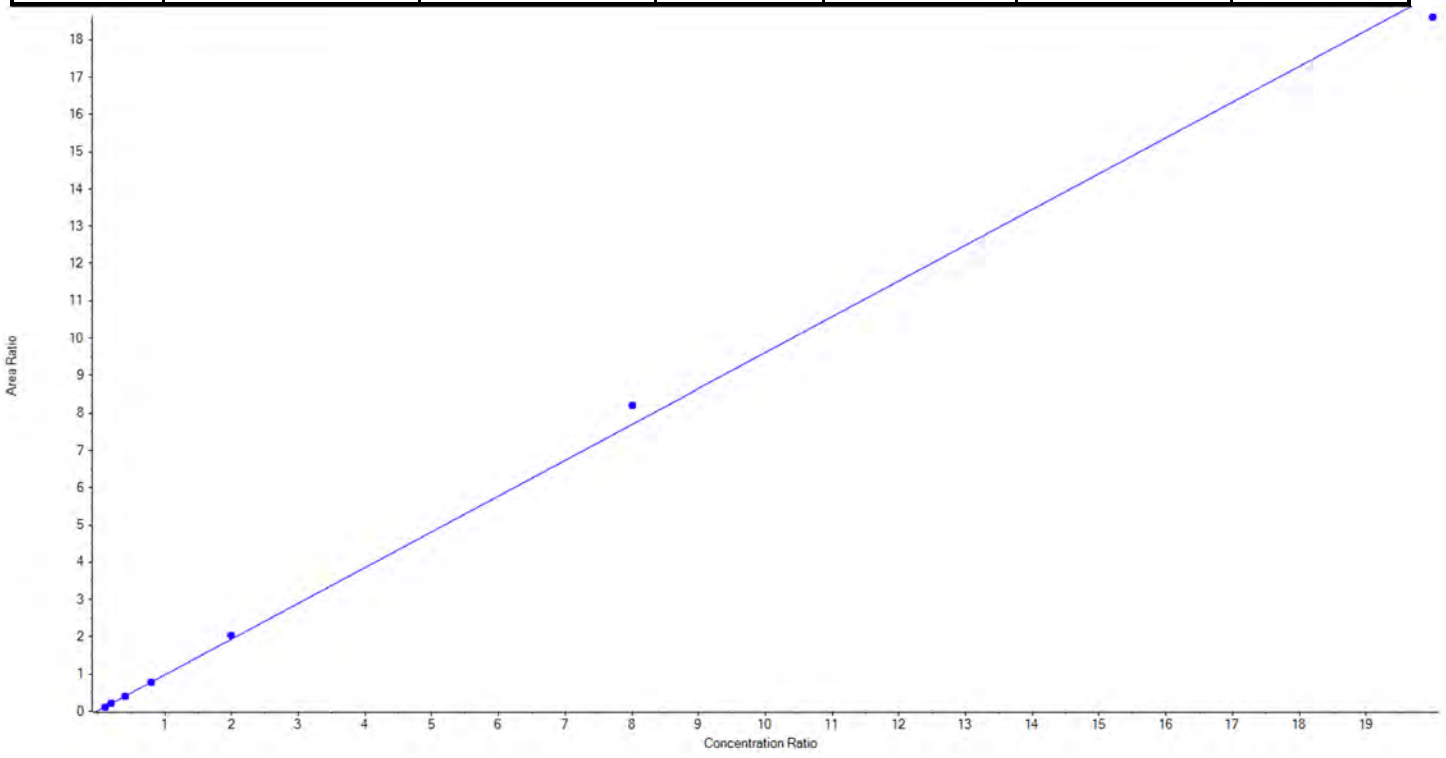
Analyte Name	PFDoA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	613.0 / 569.0	**Result Table**	20-0470
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.95943 x + 0.01916 (r = 0.99895) (weighting: 1 / x) r^2:0.9979

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	110.32	88.3
3	KY34	L2	True	250.00	252.61	101.0
4	KY35	L3	True	500.00	516.09	103.2
5	KY36	L4	True	1000.00	990.23	99.0
6	KY37	L5	True	2500.00	2624.38	105.0
7	KY38	L6	True	10000.00	10660.28	106.6
8	KY39	L7	True	25000.00	24221.09	96.9



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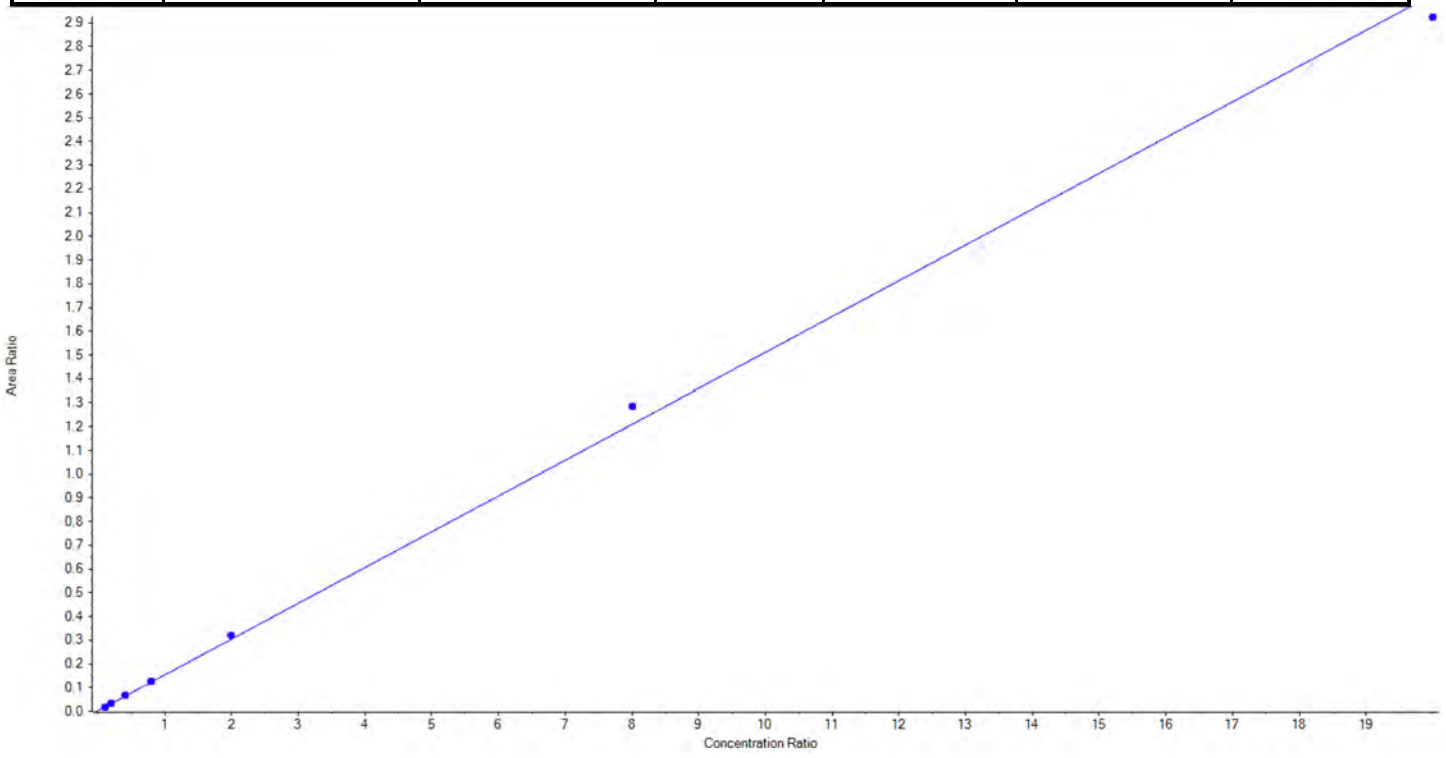
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFDoA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	613.0 / 319.0	**Result Table**	20-0470
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.15082 x + 0.00294 (r = 0.99892) (weighting: 1 / x) r^2:0.9978

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	102.40	81.9
3	KY34	L2	True	250.00	253.39	101.4
4	KY35	L3	True	500.00	536.61	107.3
5	KY36	L4	True	1000.00	1008.38	100.8
6	KY37	L5	True	2500.00	2635.95	105.4
7	KY38	L6	True	10000.00	10628.32	106.3
8	KY39	L7	True	25000.00	24209.94	96.8



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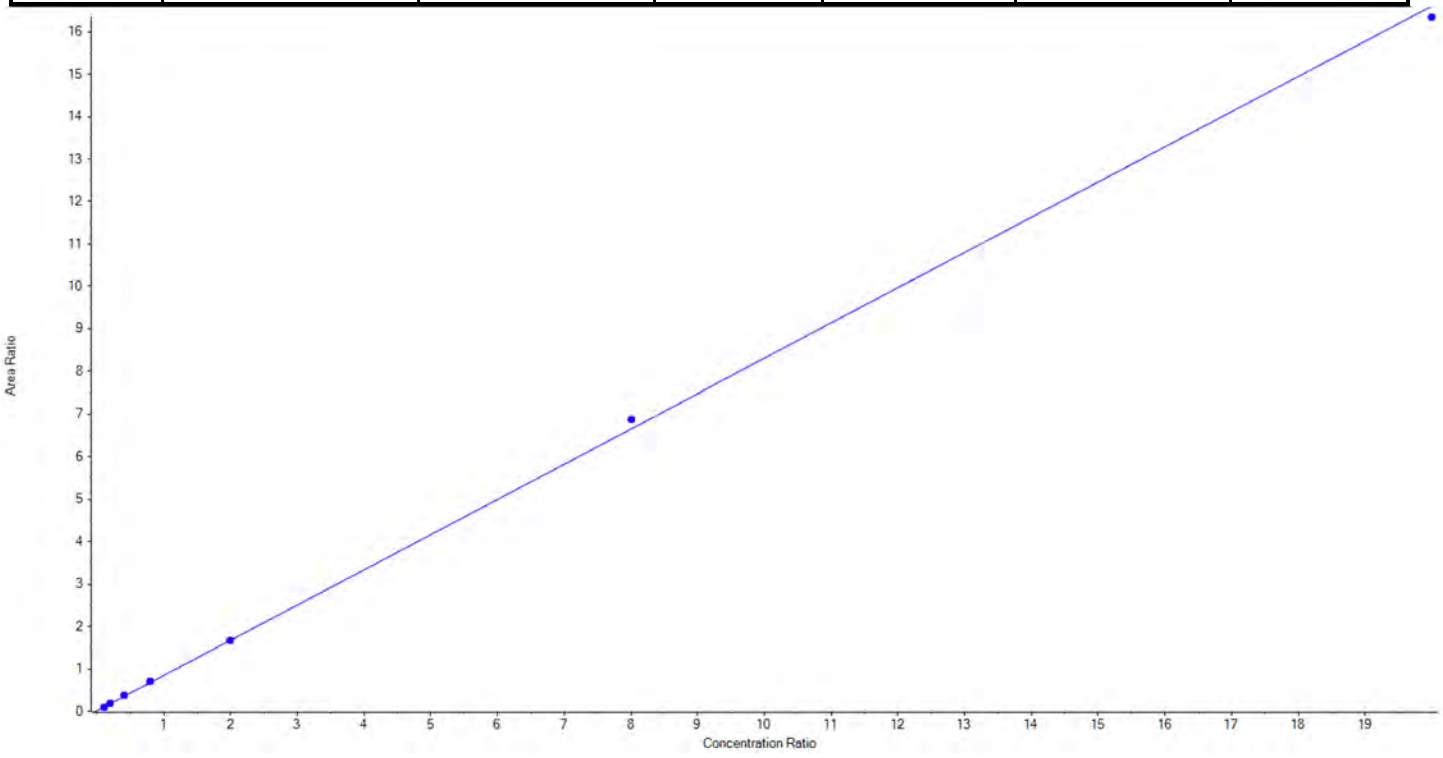
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFTrDA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	663.0 / 619.0	**Result Table**	20-0470
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.82946 x + 0.01592 (r = 0.99968) (weighting: 1 / x) r^2:0.9994

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	109.30	87.4
3	KY34	L2	True	250.00	252.70	101.1
4	KY35	L3	True	500.00	534.34	106.9
5	KY36	L4	True	1000.00	1025.76	102.6
6	KY37	L5	True	2500.00	2504.86	100.2
7	KY38	L6	True	10000.00	10341.37	103.4
8	KY39	L7	True	25000.00	24606.67	98.4



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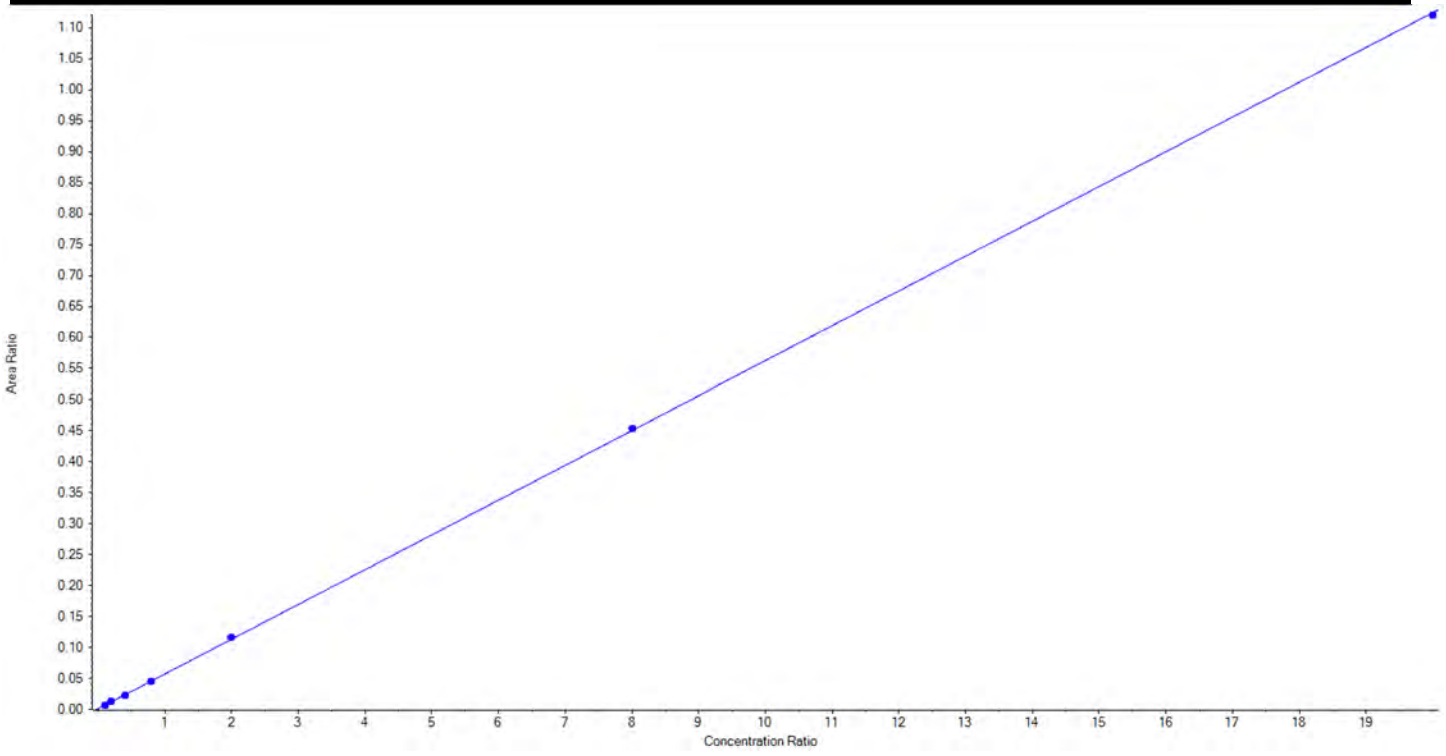
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFTrDA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	663.0 / 169.0	**Result Table**	20-0470
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05619 x + 8.79760e-4 (r = 0.99994) (weighting: 1 / x) r^2:0.9999

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	122.80	98.2
3	KY34	L2	True	250.00	264.47	105.8
4	KY35	L3	True	500.00	479.07	95.8
5	KY36	L4	True	1000.00	977.28	97.7
6	KY37	L5	True	2500.00	2552.98	102.1
7	KY38	L6	True	10000.00	10067.03	100.7
8	KY39	L7	True	25000.00	24911.37	99.7



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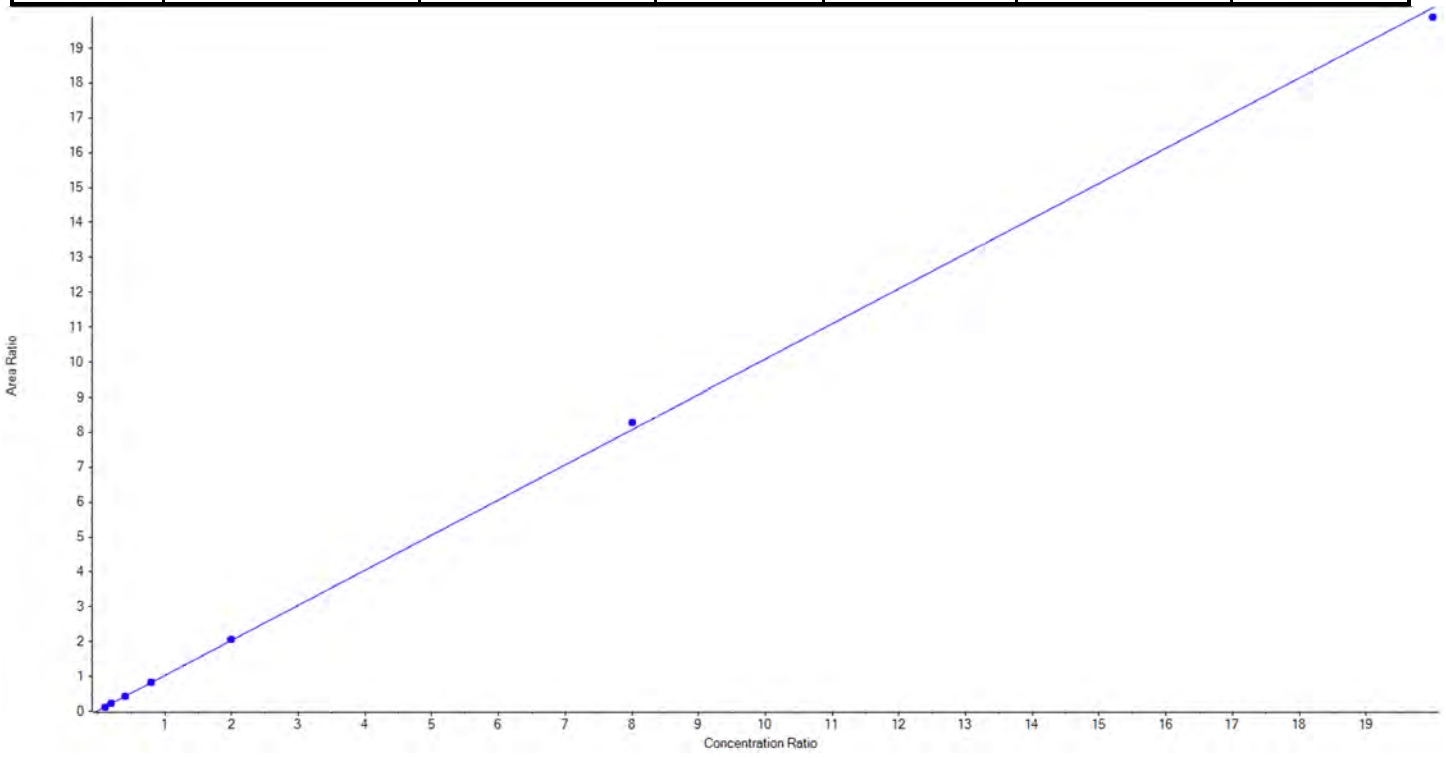
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFTeDA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	713.0 / 669.0	**Result Table**	20-0470
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.00656 x + 0.02104 (r = 0.99980) (weighting: 1 / x) r^2:0.9996

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	113.20	90.6
3	KY34	L2	True	250.00	250.67	100.3
4	KY35	L3	True	500.00	521.49	104.3
5	KY36	L4	True	1000.00	1022.11	102.2
6	KY37	L5	True	2500.00	2533.60	101.3
7	KY38	L6	True	10000.00	10264.40	102.6
8	KY39	L7	True	25000.00	24669.53	98.7



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Calibration Summary Report

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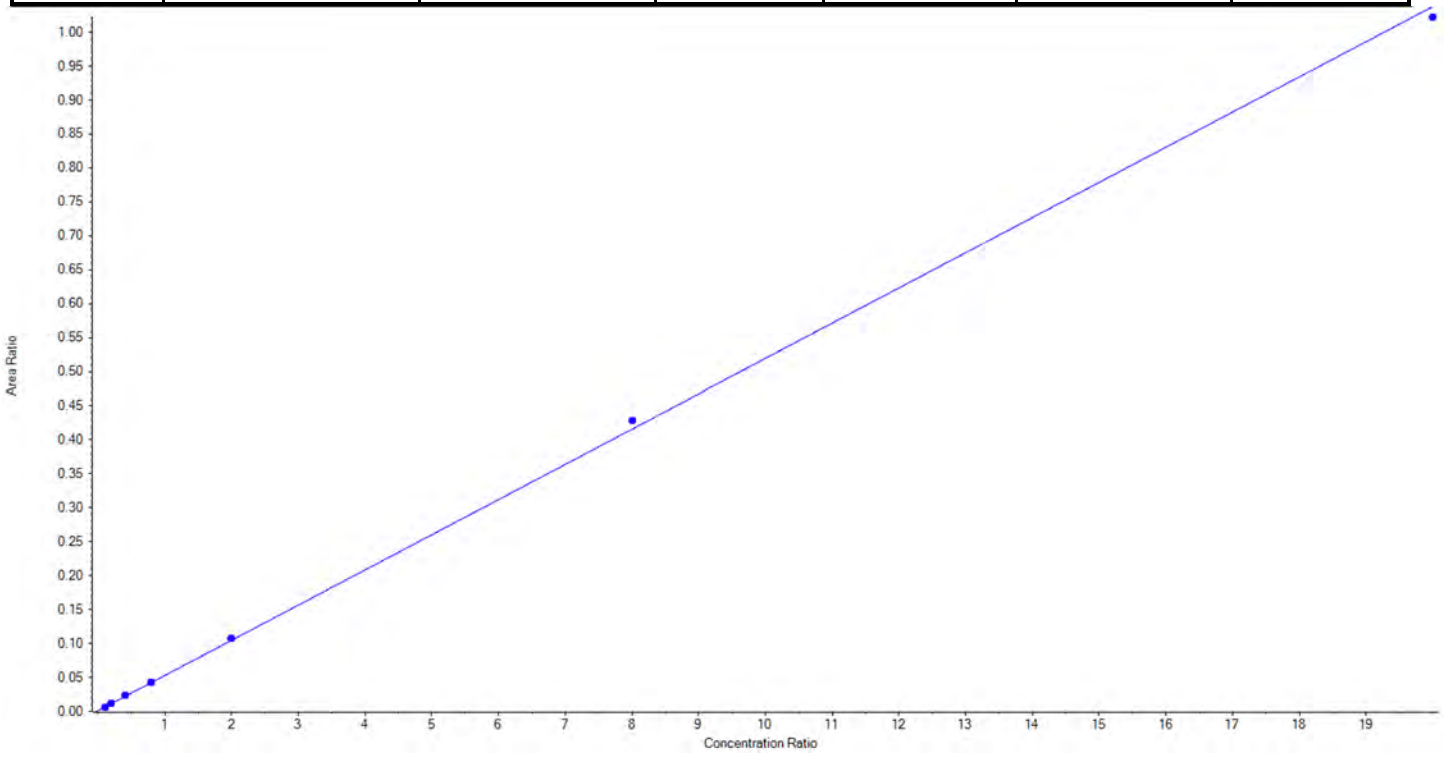
Printed: 23/04/2020 3:47:43 PM

Analyte Name	PFTeDA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	713.0 / 169.0	**Result Table**	20-0470
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05184 x + 9.84887e-4 (r = 0.99970) (weighting: 1 / x) r^2:0.9994

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	110.52	88.4
3	KY34	L2	True	250.00	248.42	99.4
4	KY35	L3	True	500.00	545.01	109.0
5	KY36	L4	True	1000.00	993.28	99.3
6	KY37	L5	True	2500.00	2561.53	102.5
7	KY38	L6	True	10000.00	10293.17	102.9
8	KY39	L7	True	25000.00	24623.06	98.5



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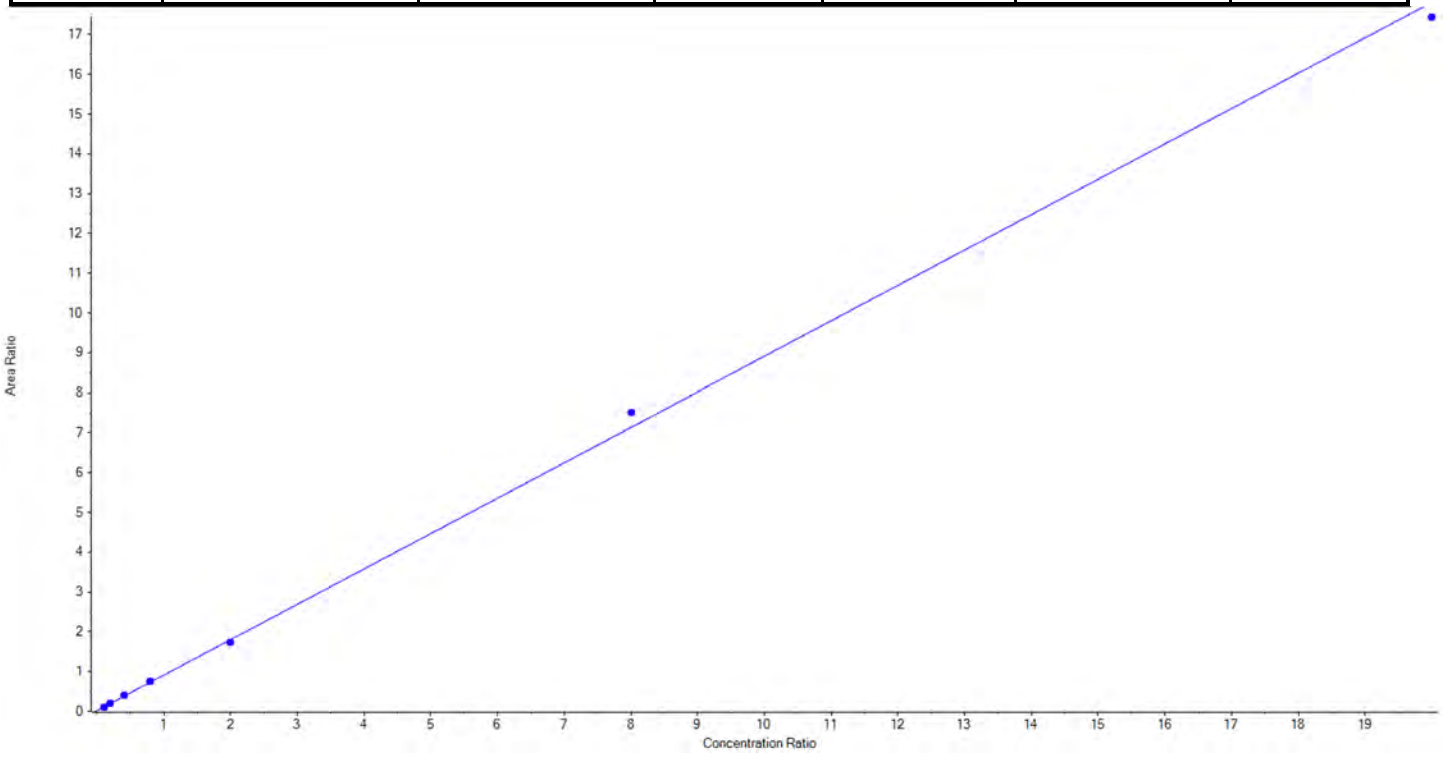
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	NMeFOSAA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	570.0 / 419.0	**Result Table**	20-0470
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.88938 x + 0.02194 (r = 0.99933) (weighting: 1 / x) r^2:0.9987

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	113.41	90.7
3	KY34	L2	True	250.00	246.67	98.7
4	KY35	L3	True	500.00	530.17	106.0
5	KY36	L4	True	1000.00	1045.82	104.6
6	KY37	L5	True	2500.00	2415.83	96.6
7	KY38	L6	True	10000.00	10543.64	105.4
8	KY39	L7	True	25000.00	24479.46	97.9



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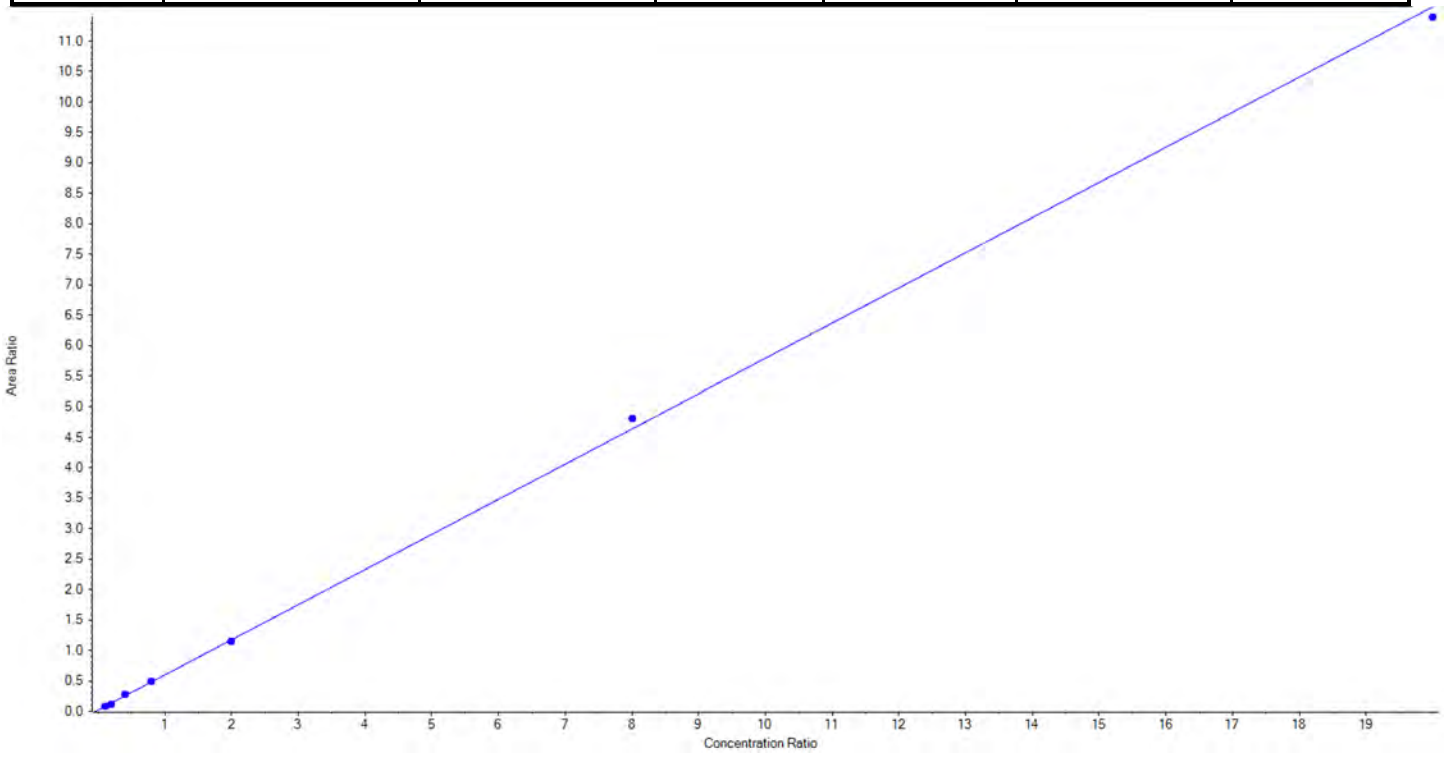
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	NMeFOSAA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	570.0 / 512.0	**Result Table**	20-0470
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.57716 x + 0.02079 (r = 0.99947) (weighting: 1 / x) r^2:0.9989

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	133.48	106.8
3	KY34	L2	True	250.00	198.25	79.3
4	KY35	L3	True	500.00	553.80	110.8
5	KY36	L4	True	1000.00	1027.70	102.8
6	KY37	L5	True	2500.00	2452.27	98.1
7	KY38	L6	True	10000.00	10377.10	103.8
8	KY39	L7	True	25000.00	24632.41	98.5



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Calibration Summary Report

Created with Analyst Reporter
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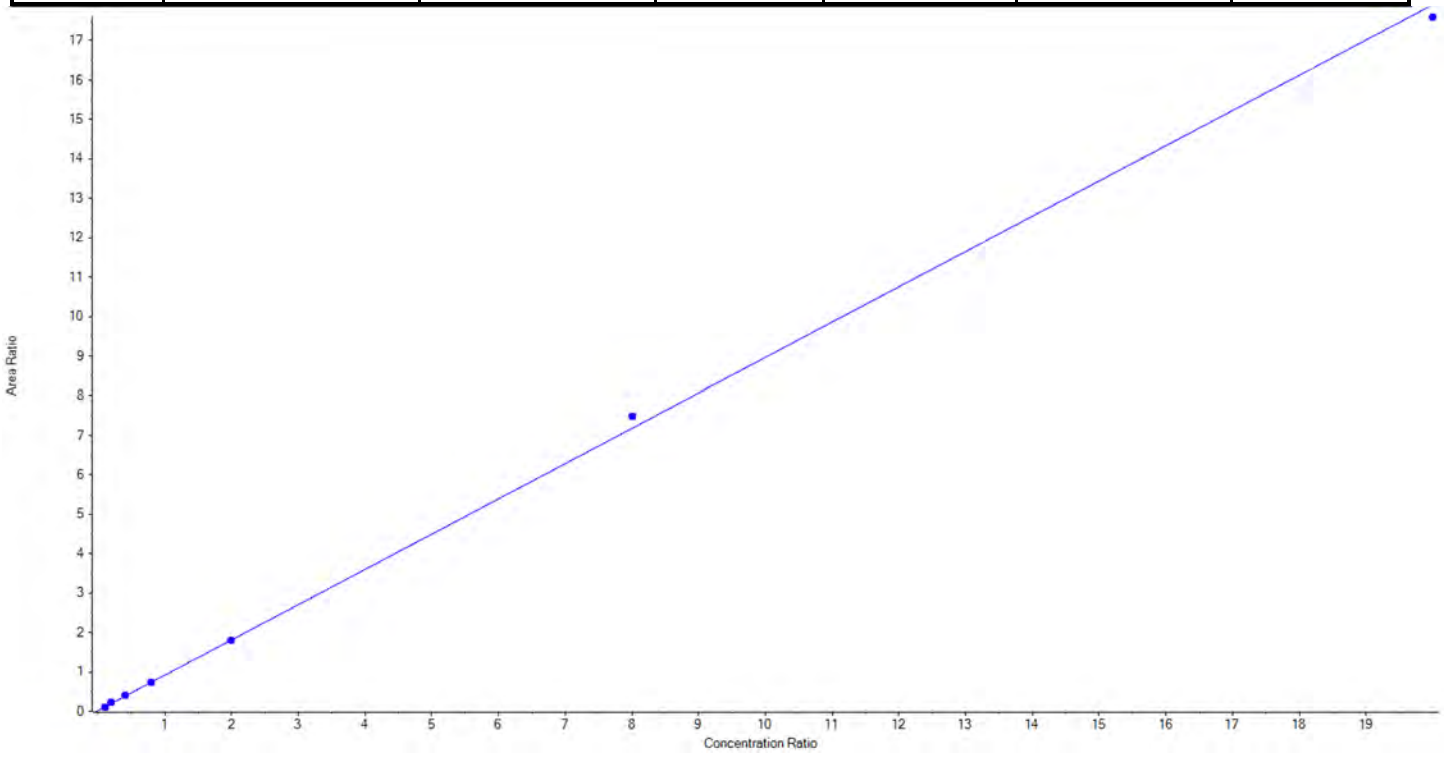
Analyte Name	NEtFOSAA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	584.0 / 419.0	**Result Table**	20-0470
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89434 x + 0.02289 (r = 0.99950) (weighting: 1 / x) r^2:0.9990

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	101.31	81.1
3	KY34	L2	True	250.00	274.54	109.8
4	KY35	L3	True	500.00	537.29	107.5
5	KY36	L4	True	1000.00	1004.63	100.5
6	KY37	L5	True	2500.00	2466.81	98.7
7	KY38	L6	True	10000.00	10430.57	104.3
8	KY39	L7	True	25000.00	24559.84	98.2



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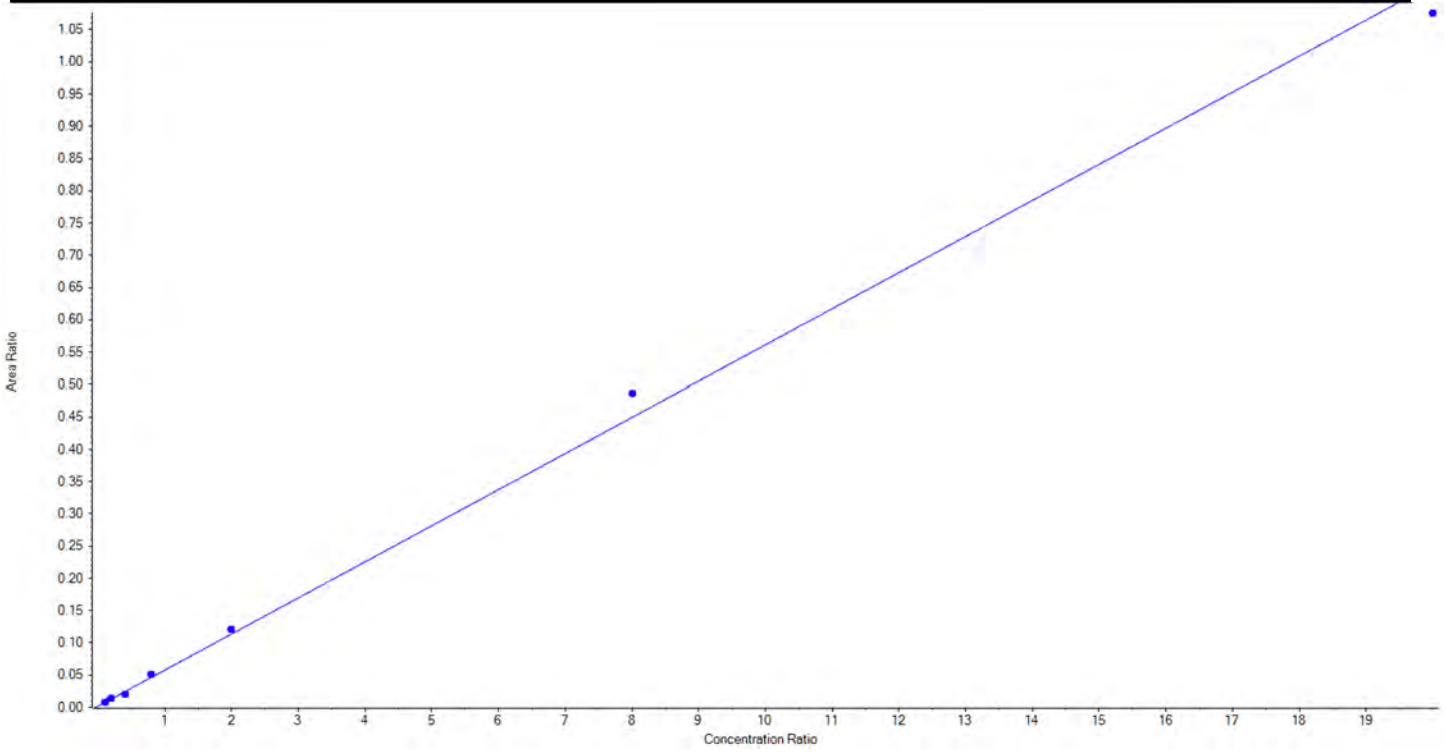
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	NEtFOSAA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	584.0 / 483.0	**Result Table**	20-0470
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05595 x + 0.00180 (r = 0.99790) (weighting: 1 / x) r^2:0.9958

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	117.33	93.9
3	KY34	L2	True	250.00	260.05	104.0
4	KY35	L3	True	500.00	403.01	80.6
5	KY36	L4	True	1000.00	1104.67	110.5
6	KY37	L5	True	2500.00	2669.23	106.8
7	KY38	L6	True	10000.00	10832.08	108.3
8	KY39	L7	True	25000.00	23988.63	96.0



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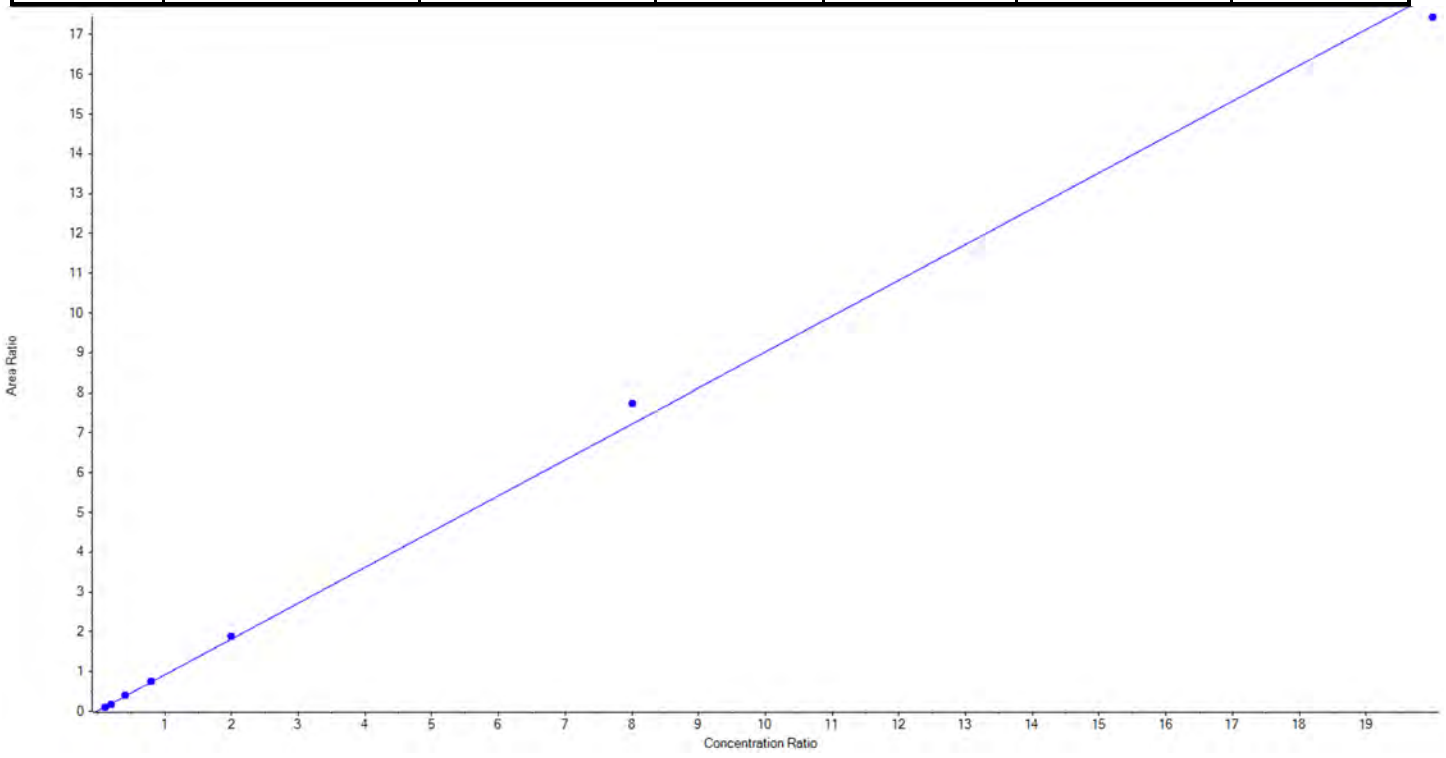
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	HFPO-DA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	285.0 / 169.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.90053 x + 0.01697 (r = 0.99885) (weighting: 1 / x) r^2:0.9977

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	113.19	90.6
3	KY34	L2	True	250.00	236.43	94.6
4	KY35	L3	True	500.00	528.34	105.7
5	KY36	L4	True	1000.00	1017.49	101.8
6	KY37	L5	True	2500.00	2591.92	103.7
7	KY38	L6	True	10000.00	10704.84	107.1
8	KY39	L7	True	25000.00	24182.78	96.7



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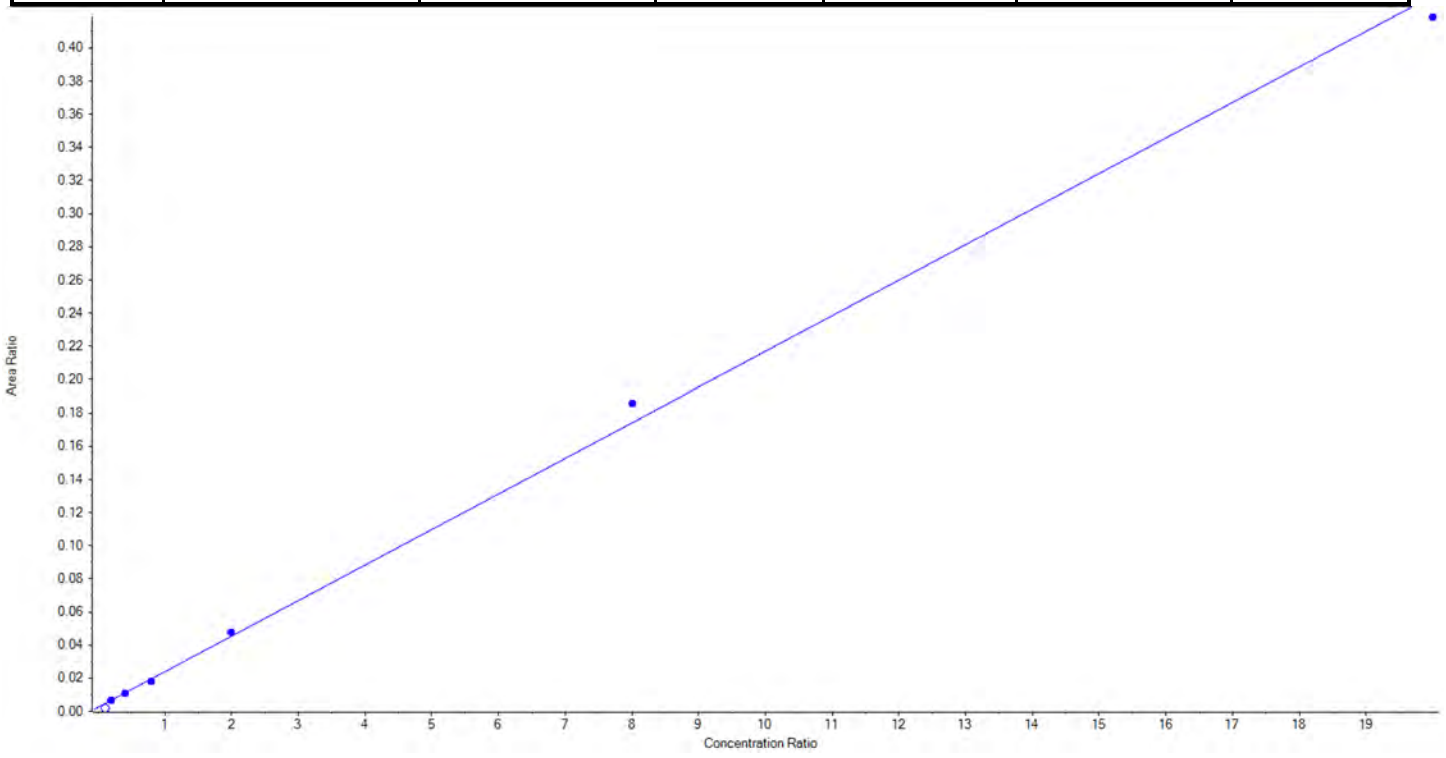
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	HFPO-DA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	285.0 / 118.8	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.02145 x + 0.00246 (r = 0.99877) (weighting: 1 / x) r^2:0.9975

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	False	125.00	< 0	N/A
3	KY34	L2	True	250.00	245.32	98.1
4	KY35	L3	True	500.00	500.86	100.2
5	KY36	L4	True	1000.00	920.73	92.1
6	KY37	L5	True	2500.00	2643.14	105.7
7	KY38	L6	True	10000.00	10690.25	106.9
8	KY39	L7	True	25000.00	24249.70	97.0



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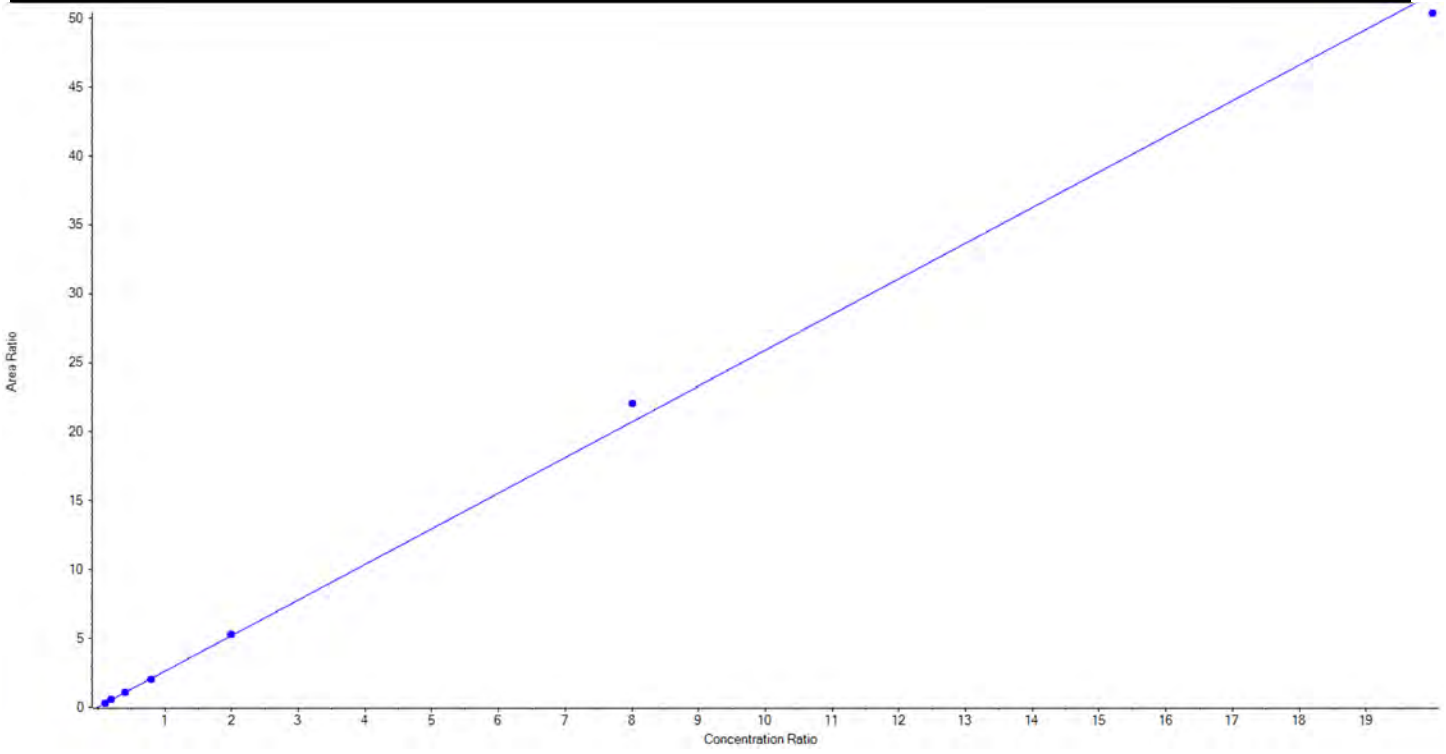
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	ADONA_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	377.0 / 251.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.58771 x + 0.02940 (r = 0.99914) (weighting: 1 / x) r^2:0.9983

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	116.90	93.5
3	KY34	L2	True	250.00	252.93	101.2
4	KY35	L3	True	500.00	509.06	101.8
5	KY36	L4	True	1000.00	980.73	98.1
6	KY37	L5	True	2500.00	2540.10	101.6
7	KY38	L6	True	10000.00	10652.67	106.5
8	KY39	L7	True	25000.00	24322.61	97.3



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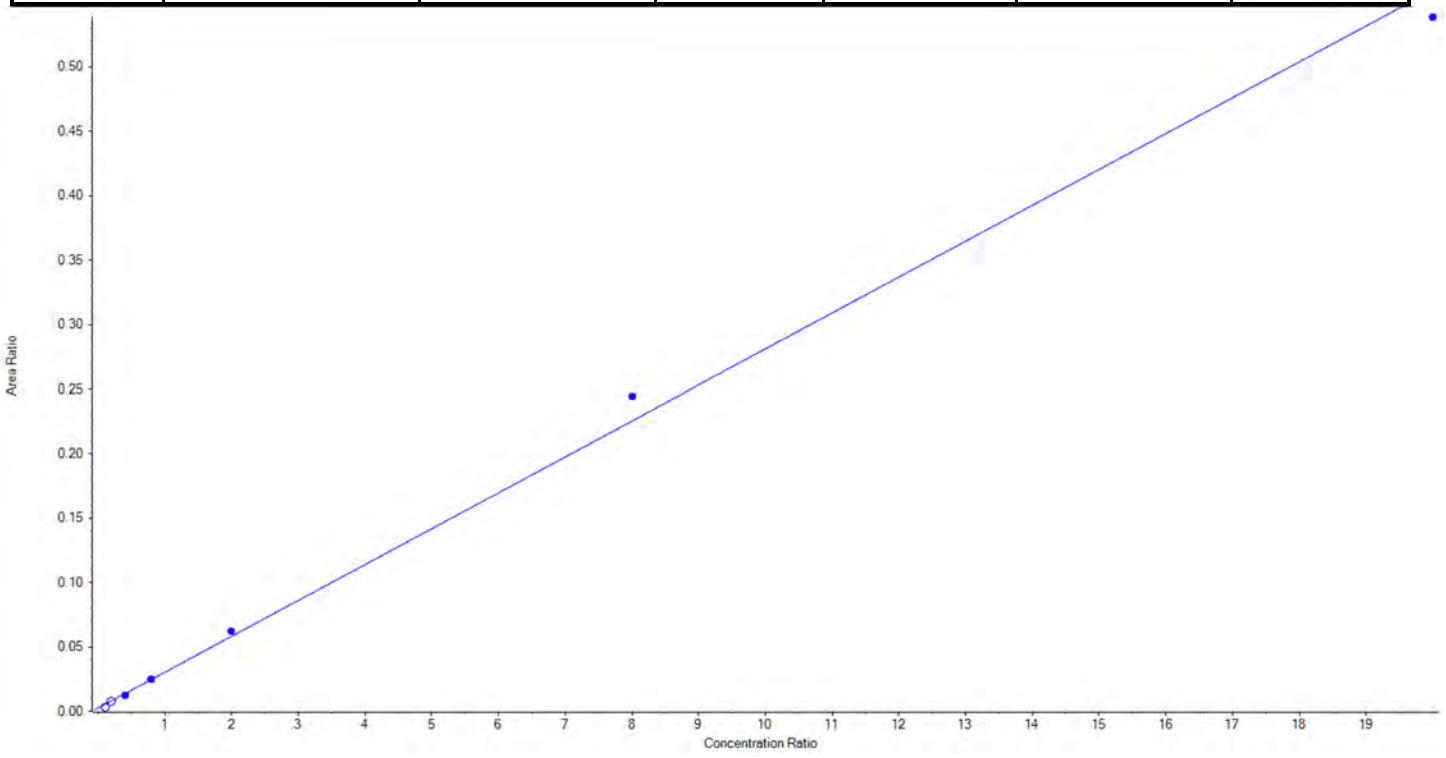
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	ADONA_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	377.0 / 85.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.02786 x + 0.00253 (r = 0.99809) (weighting: 1 / x) r^2:0.9962

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	False	125.00	33.91	27.1
3	KY34	L2	False	250.00	220.18	88.1
4	KY35	L3	True	500.00	451.51	90.3
5	KY36	L4	True	1000.00	984.26	98.4
6	KY37	L5	True	2500.00	2665.84	106.6
7	KY38	L6	True	10000.00	10840.87	108.4
8	KY39	L7	True	25000.00	24057.52	96.2



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Calibration Summary Report

Created with Analyst Reporter
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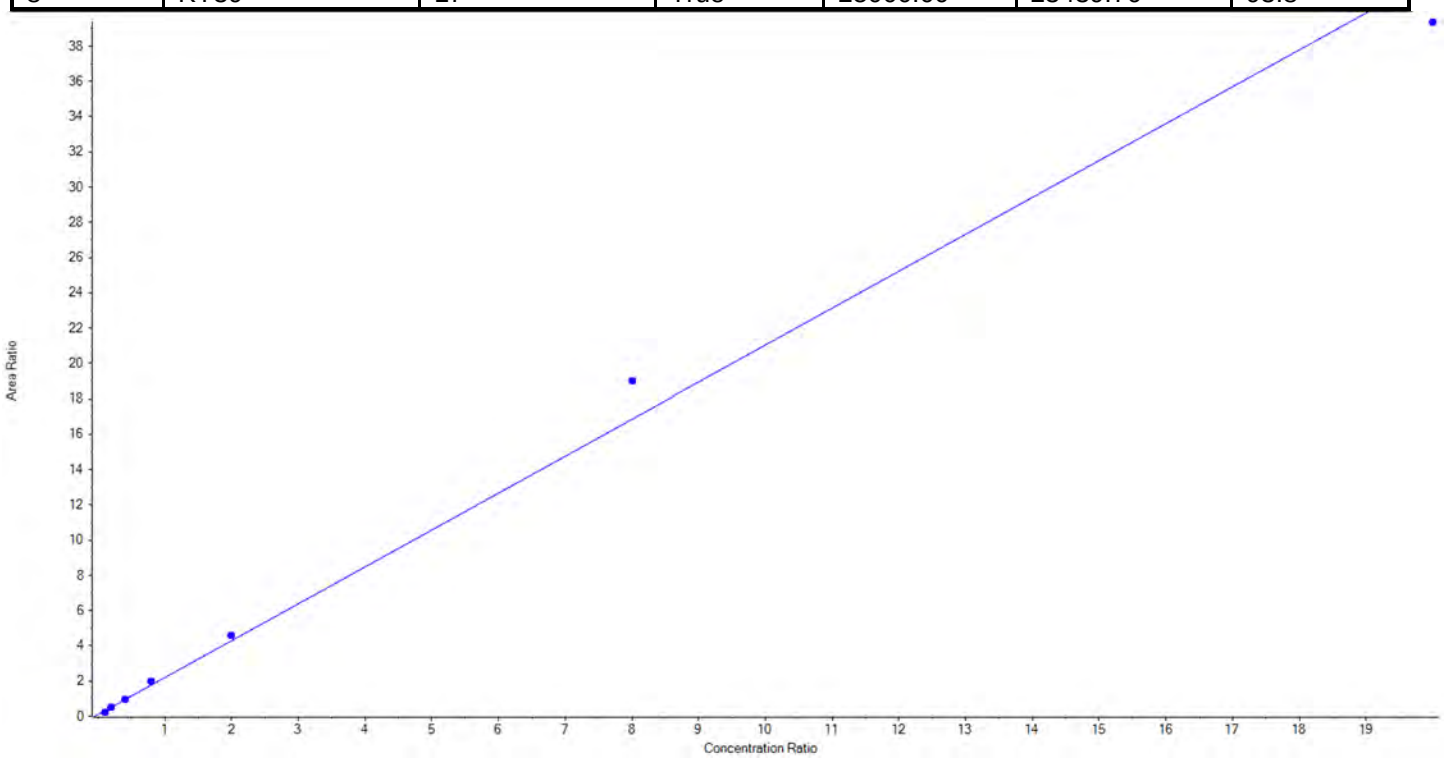
Analyte Name	9Cl-PF3ONS_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	531.0 / 351.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.09332 x + 0.10481 (r = 0.99591) (weighting: 1 / x) r^2:0.9918

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	88.26	70.6
3	KY34	L2	True	250.00	247.21	98.9
4	KY35	L3	True	500.00	527.47	105.5
5	KY36	L4	True	1000.00	1108.67	110.9
6	KY37	L5	True	2500.00	2691.64	107.7
7	KY38	L6	True	10000.00	11271.98	112.7
8	KY39	L7	True	25000.00	23439.76	93.8



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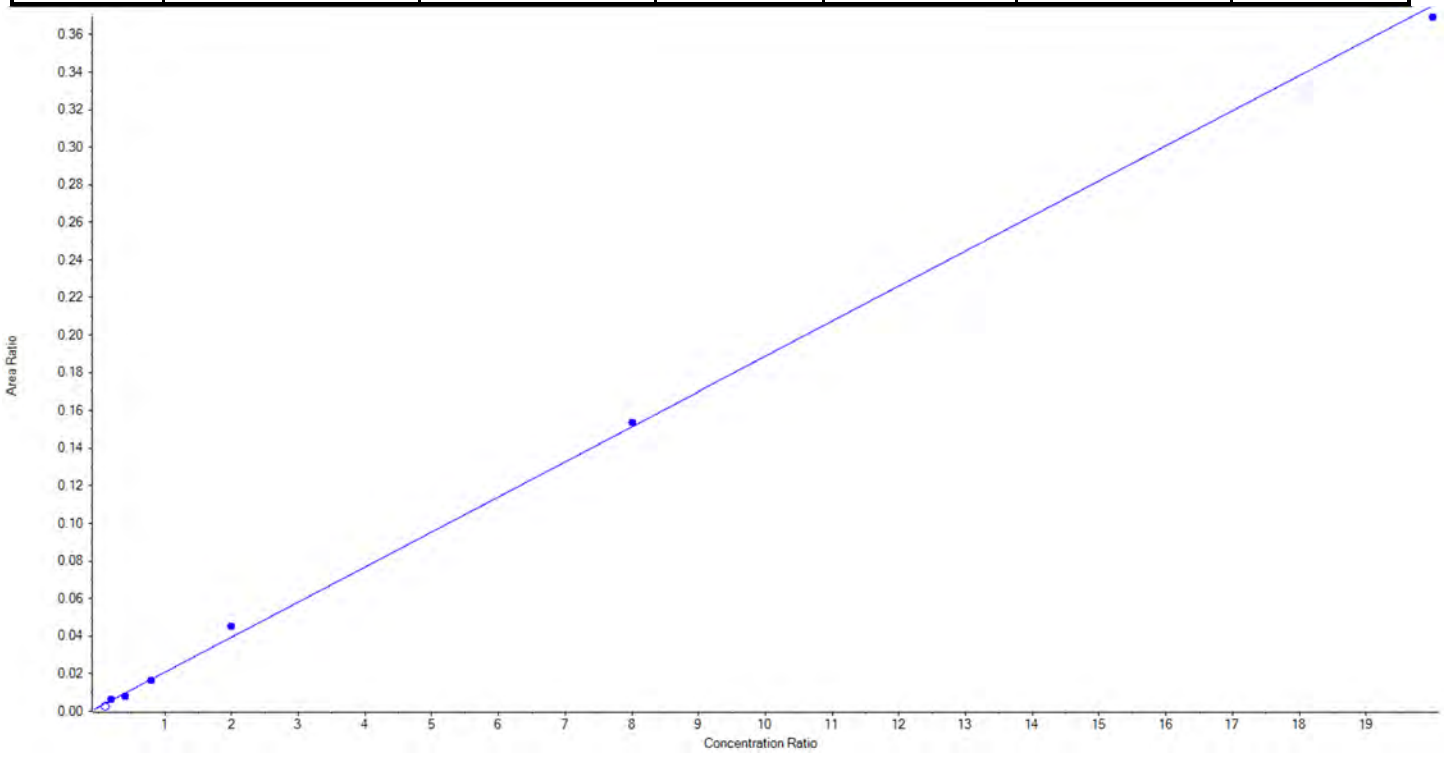
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	9Cl-PF3ONS_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	531.0 / 83.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01866 x + 0.00214 (r = 0.99854) (weighting: 1 / x) r^2:0.9971

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	False	125.00	51.45	41.2
3	KY34	L2	True	250.00	280.76	112.3
4	KY35	L3	True	500.00	383.87	76.8
5	KY36	L4	True	1000.00	956.63	95.7
6	KY37	L5	True	2500.00	2883.01	115.3
7	KY38	L6	True	10000.00	10159.15	101.6
8	KY39	L7	True	25000.00	24586.57	98.4



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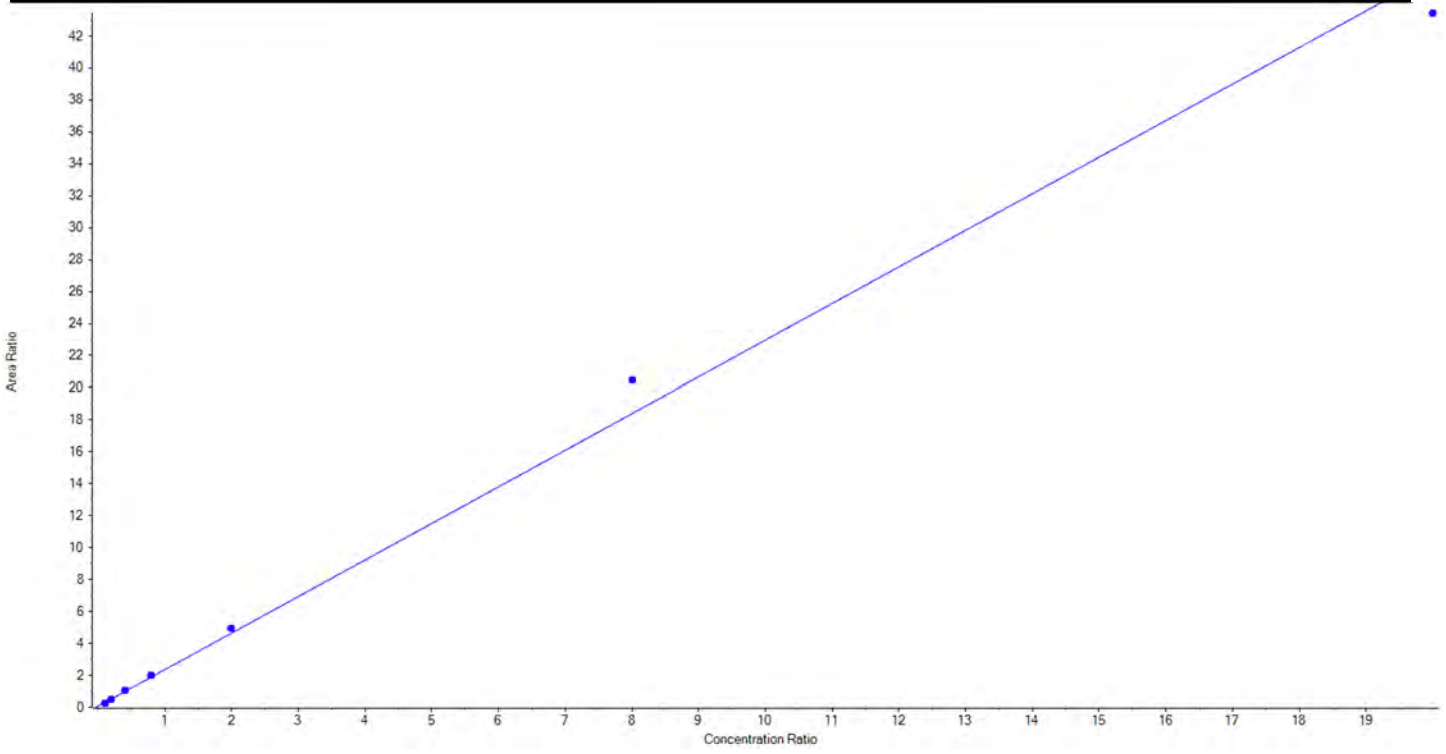
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	11Cl-pf3OUdS_1	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	631.0 / 451.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.28978 x + 0.06728 (r = 0.99703) (weighting: 1 / x) r^2:0.9941

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	125.00	99.02	79.2
3	KY34	L2	True	250.00	244.50	97.8
4	KY35	L3	True	500.00	530.77	106.2
5	KY36	L4	True	1000.00	1048.40	104.8
6	KY37	L5	True	2500.00	2650.49	106.0
7	KY38	L6	True	10000.00	11127.58	111.3
8	KY39	L7	True	25000.00	23674.24	94.7



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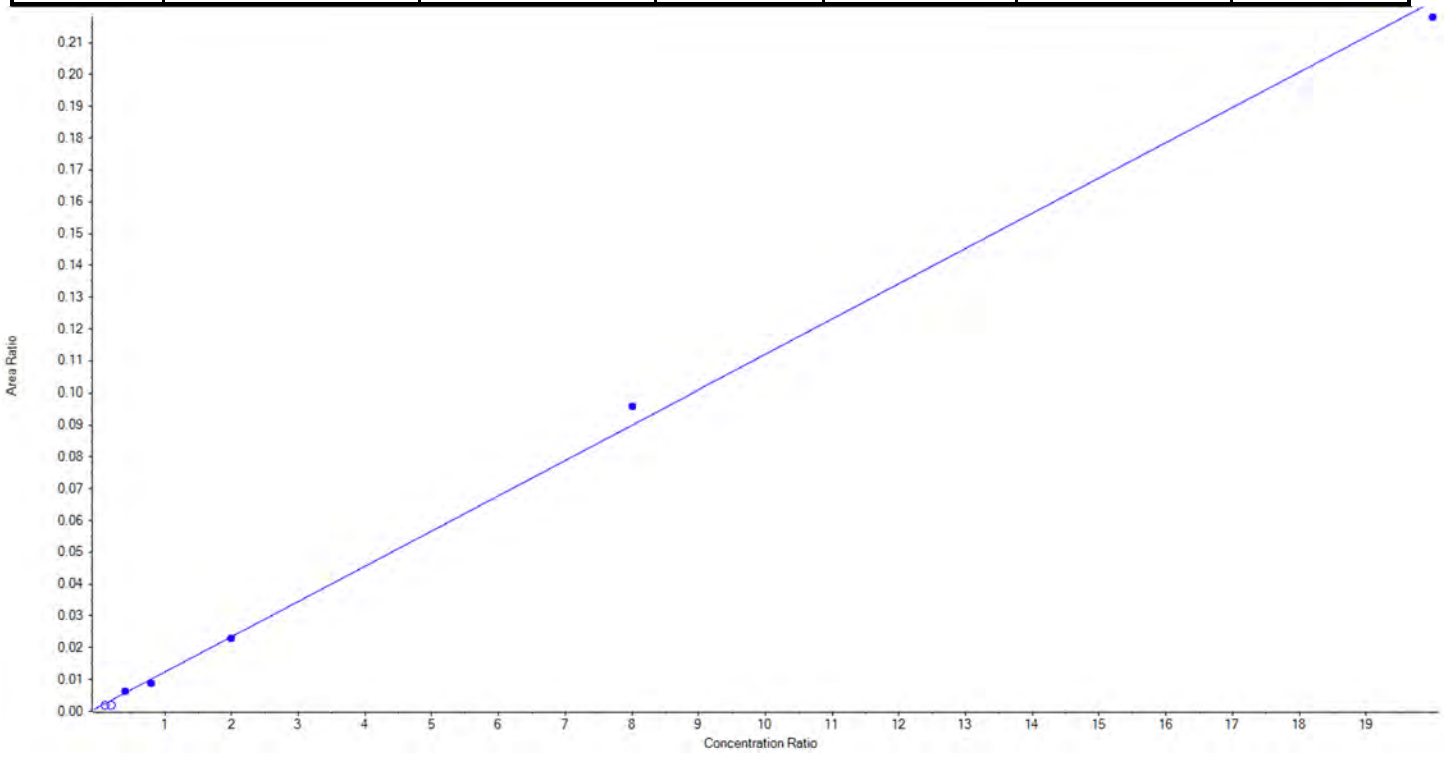
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:43 PM

Analyte Name	11Cl-pf3OUdS_2	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	631.0 / 83.0	**Result Table**	20-0470
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01108 x + 0.00128 (r = 0.99871) (weighting: 1 / x) r^2:0.9974

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	False	125.00	75.55	60.4
3	KY34	L2	False	250.00	75.23	30.1
4	KY35	L3	True	500.00	554.14	110.8
5	KY36	L4	True	1000.00	864.31	86.4
6	KY37	L5	True	2500.00	2454.71	98.2
7	KY38	L6	True	10000.00	10674.07	106.7
8	KY39	L7	True	25000.00	24452.76	97.8



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Calibration Summary Report

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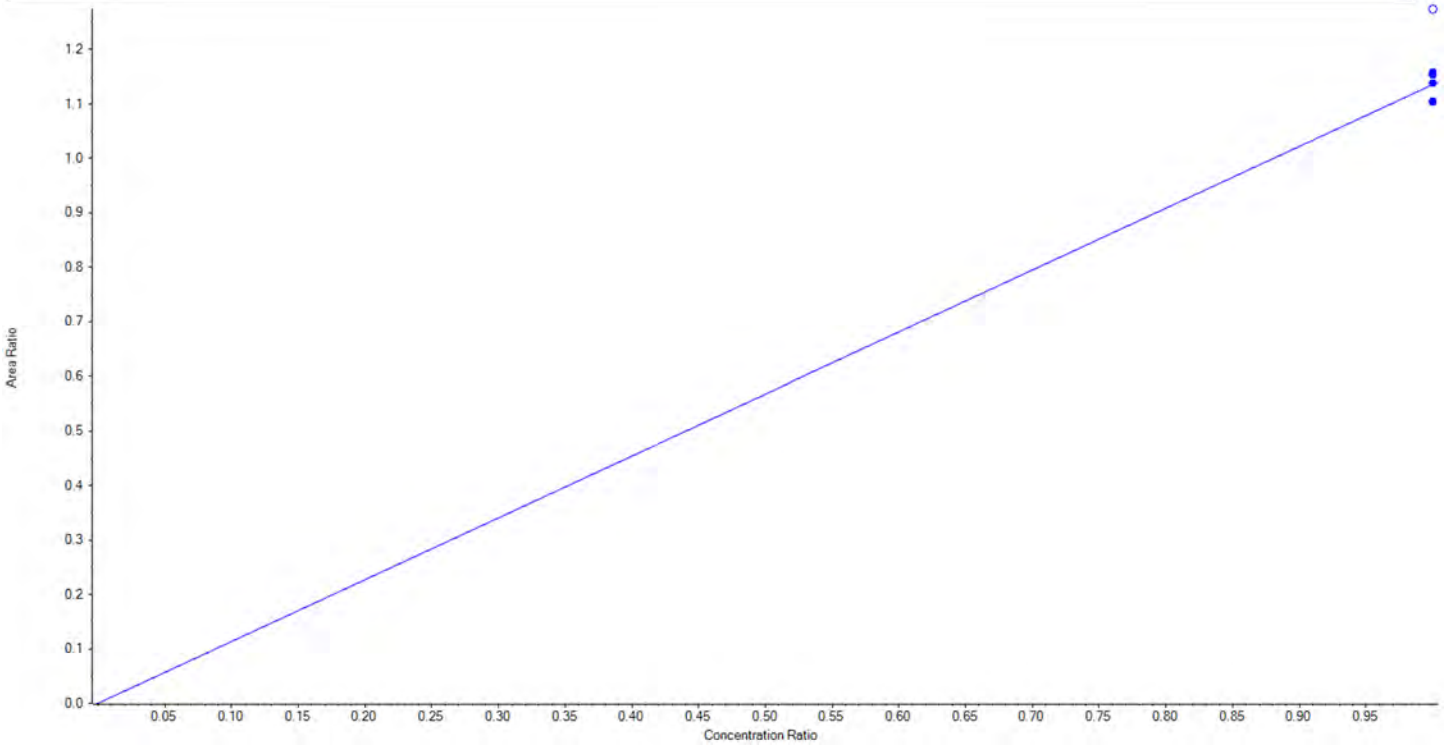
Analyte Name	13C2-PFDoA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	615.0 / 570.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.13568 x (std. dev. = 0.02519) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1271.27	101.7
3	KY34	L2	True	1250.00	1214.34	97.2
4	KY35	L3	True	1250.00	1216.65	97.3
5	KY36	L4	True	1250.00	1253.74	100.3
6	KY37	L5	True	1250.00	1275.47	102.0
7	KY38	L6	True	1250.00	1268.52	101.5
8	KY39	L7	False	1250.00	1402.59	112.2



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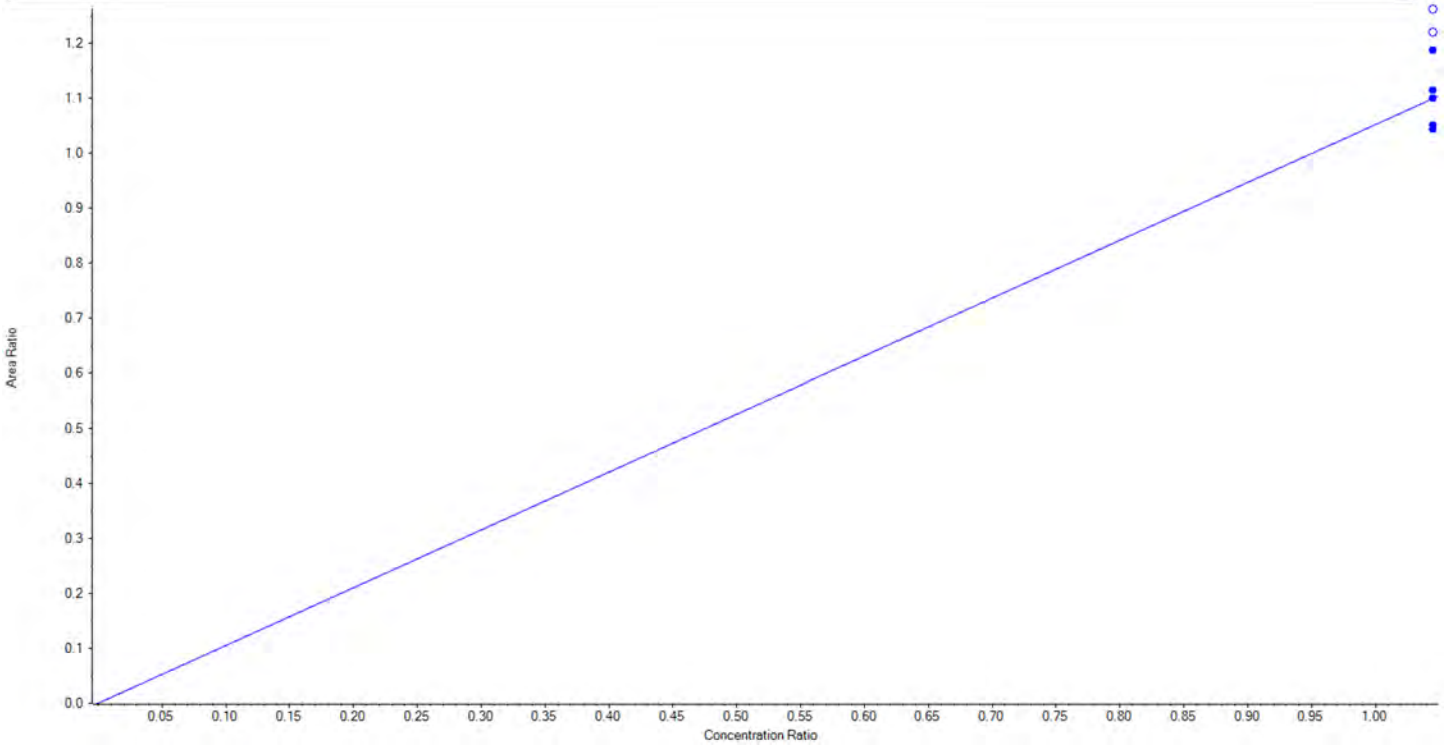
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	d3-MeFOSAA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	573.0 / 419.0	**Result Table**	20-0470_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.05238 x (std. dev. = 0.05528) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1250.22	100.0
3	KY34	L2	True	1250.00	1267.35	101.4
4	KY35	L3	True	1250.00	1195.96	95.7
5	KY36	L4	True	1250.00	1186.51	94.9
6	KY37	L5	True	1250.00	1349.96	108.0
7	KY38	L6	False	1250.00	1388.17	111.1
8	KY39	L7	False	1250.00	1435.27	114.8



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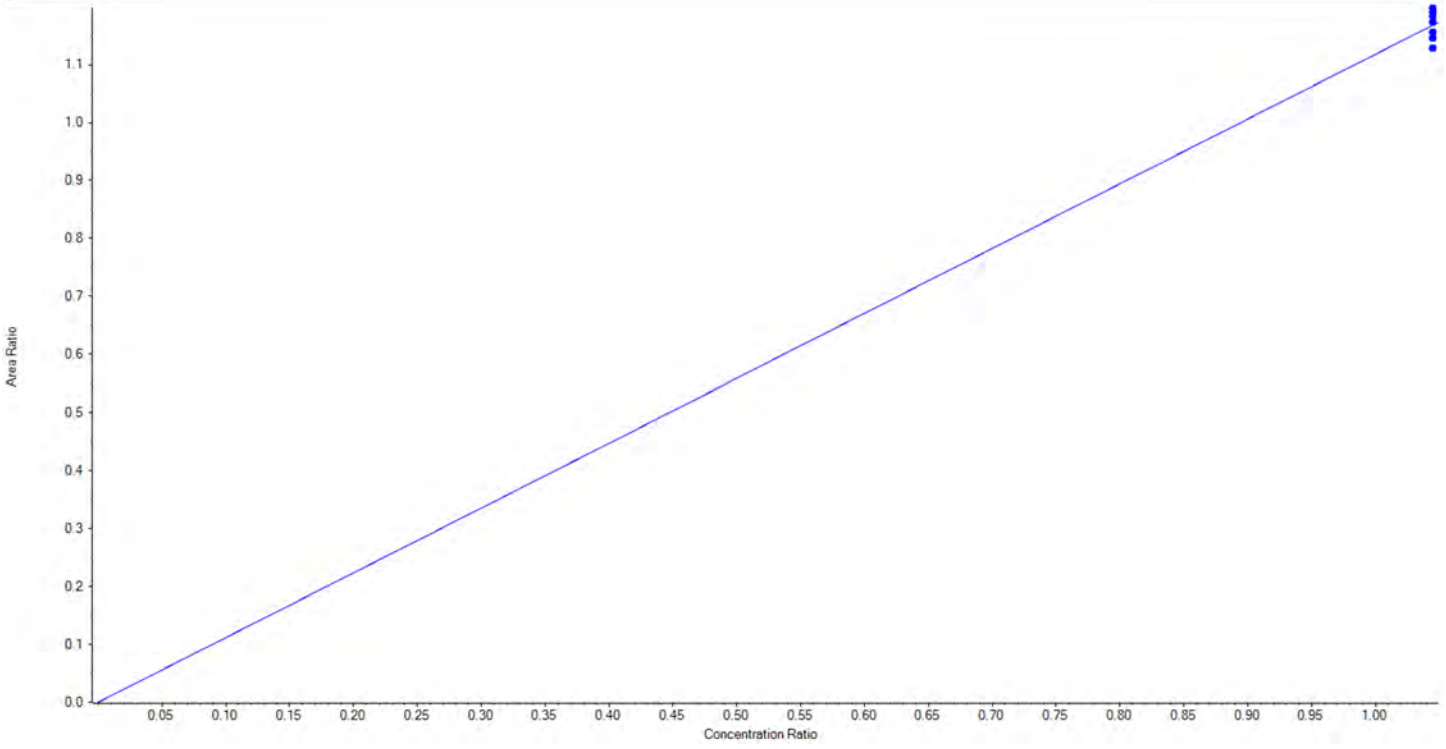
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	d5-EtFOSAA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	589.0 / 419.0	**Result Table**	20-0470_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.11792 x (std. dev. = 0.02442) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1256.53	100.5
3	KY34	L2	True	1250.00	1281.59	102.5
4	KY35	L3	True	1250.00	1236.68	98.9
5	KY36	L4	True	1250.00	1207.16	96.6
6	KY37	L5	True	1250.00	1273.94	101.9
7	KY38	L6	True	1250.00	1226.67	98.1
8	KY39	L7	True	1250.00	1267.43	101.4



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Calibration Summary Report

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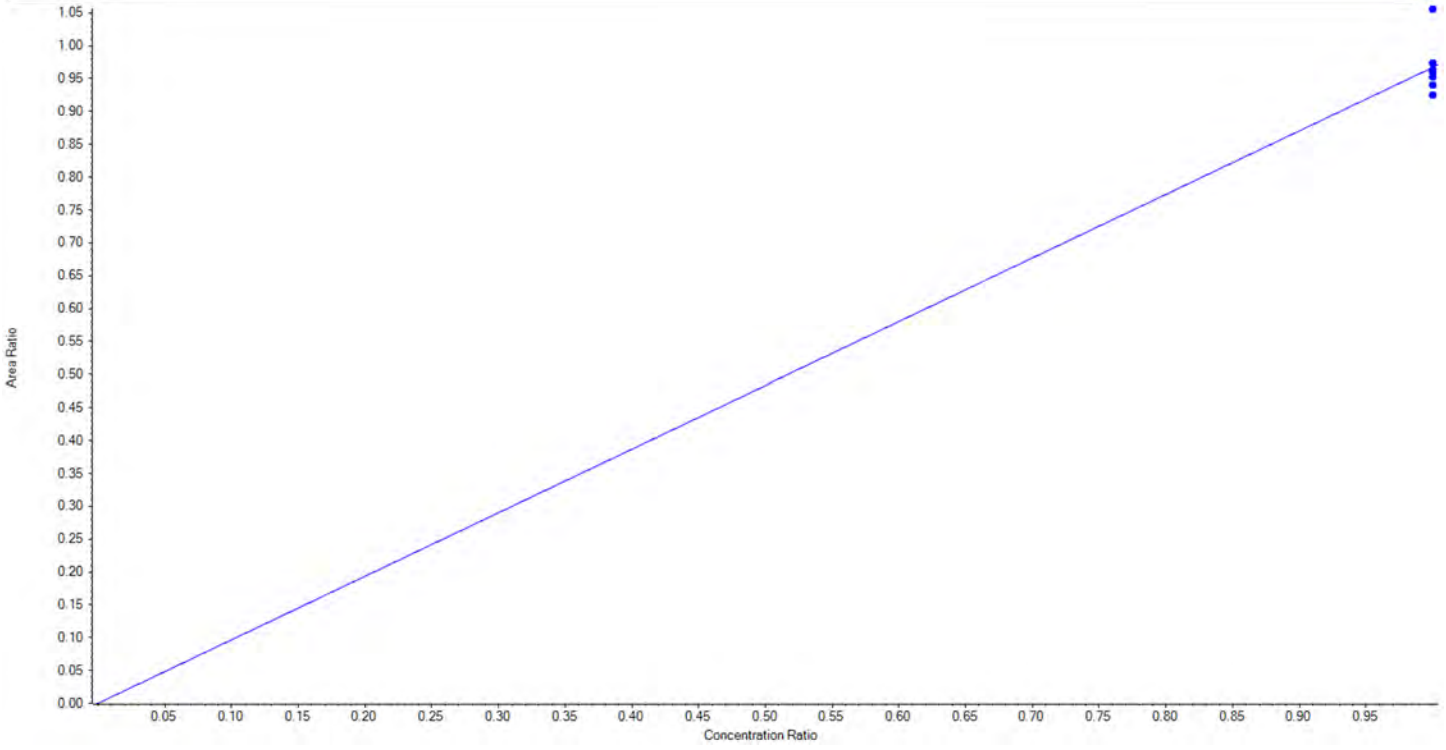
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C5-PFHxA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	318.0 / 273.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.96709 x (std. dev. = 0.04217) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1258.36	100.7
3	KY34	L2	True	1250.00	1214.83	97.2
4	KY35	L3	True	1250.00	1196.01	95.7
5	KY36	L4	True	1250.00	1240.50	99.2
6	KY37	L5	True	1250.00	1230.68	98.5
7	KY38	L6	True	1250.00	1245.10	99.6
8	KY39	L7	True	1250.00	1364.53	109.2



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Calibration Summary Report

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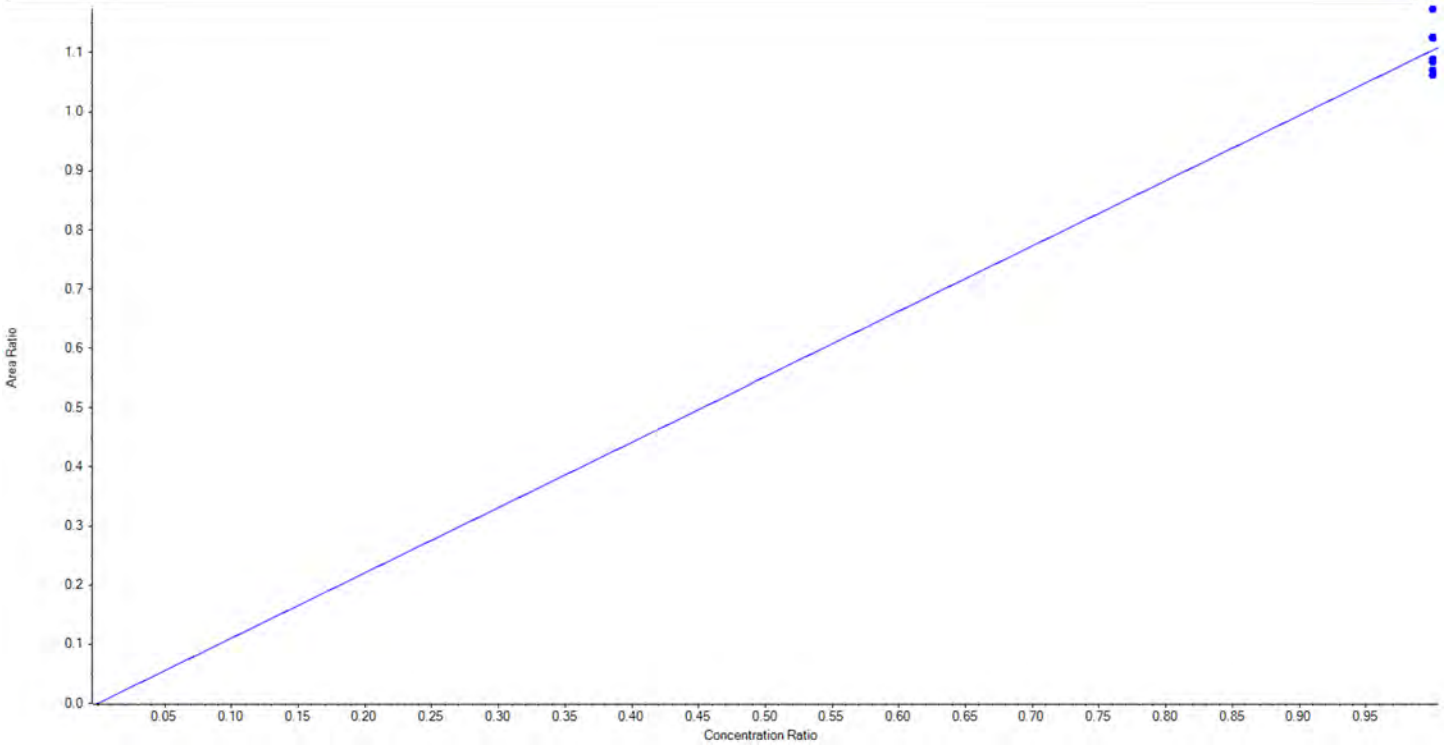
Analyte Name	13C4-PFHpA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	367.0 / 322.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.10411 x (std. dev. = 0.03929) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1232.78	98.6
3	KY34	L2	True	1250.00	1274.80	102.0
4	KY35	L3	True	1250.00	1201.55	96.1
5	KY36	L4	True	1250.00	1272.63	101.8
6	KY37	L5	True	1250.00	1212.60	97.0
7	KY38	L6	True	1250.00	1227.06	98.2
8	KY39	L7	True	1250.00	1328.57	106.3



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Calibration Summary Report

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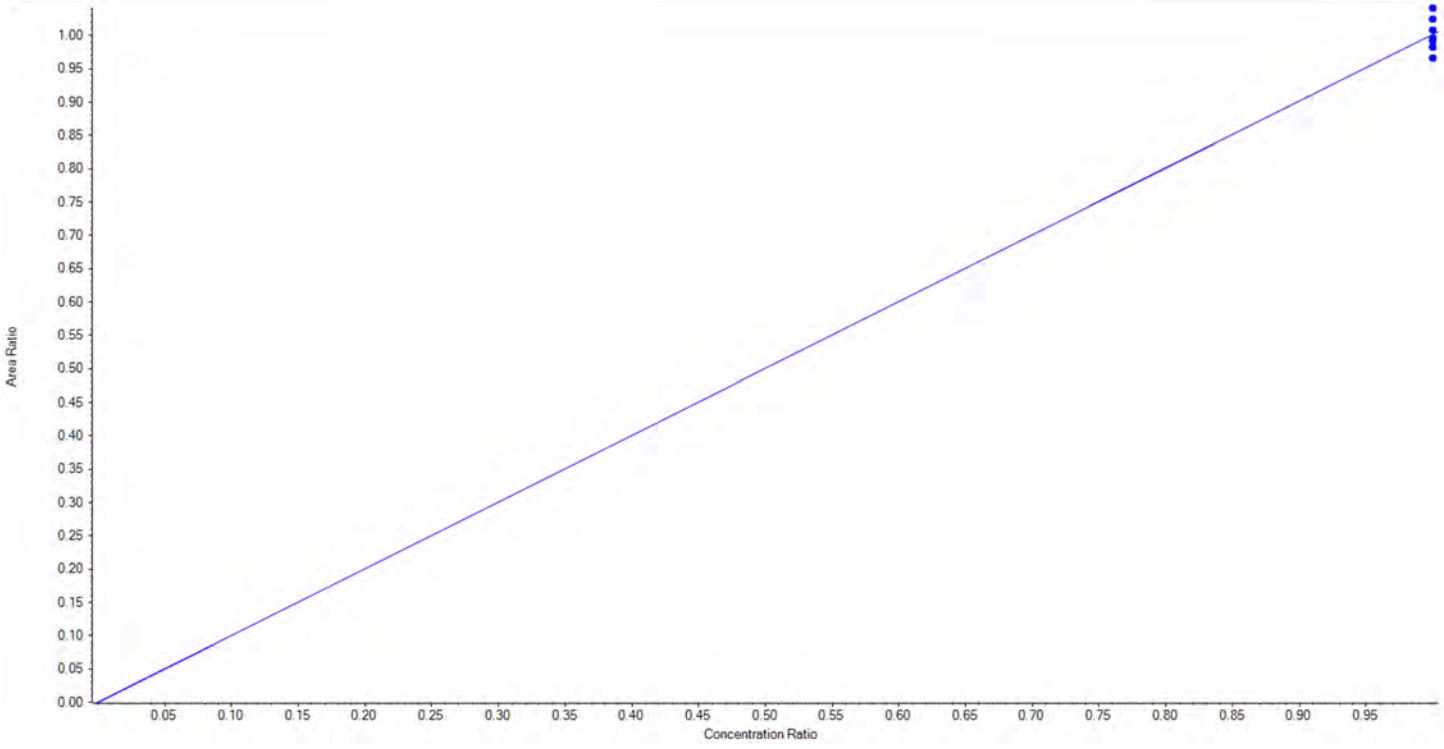
Analyte Name	13C8-PFOA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	421.0 / 376.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.00147 x (std. dev. = 0.02555) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1236.77	98.9
3	KY34	L2	True	1250.00	1279.59	102.4
4	KY35	L3	True	1250.00	1226.30	98.1
5	KY36	L4	True	1250.00	1243.76	99.5
6	KY37	L5	True	1250.00	1258.42	100.7
7	KY38	L6	True	1250.00	1205.86	96.5
8	KY39	L7	True	1250.00	1299.29	103.9



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Calibration Summary Report

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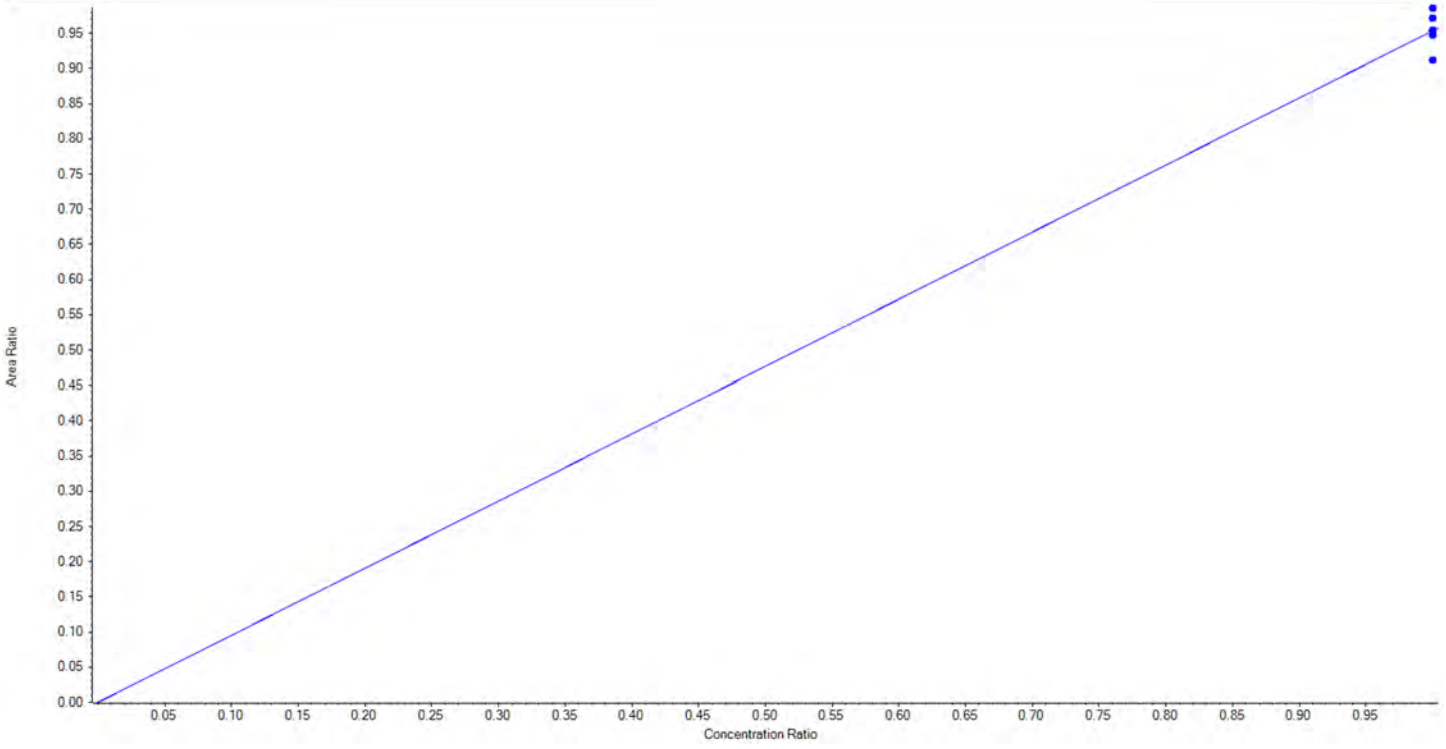
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C9-PFNA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	472.0 / 427.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.95365 x (std. dev. = 0.02291) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1274.02	101.9
3	KY34	L2	True	1250.00	1241.30	99.3
4	KY35	L3	True	1250.00	1245.98	99.7
5	KY36	L4	True	1250.00	1292.31	103.4
6	KY37	L5	True	1250.00	1251.02	100.1
7	KY38	L6	True	1250.00	1195.69	95.7
8	KY39	L7	True	1250.00	1249.67	100.0



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Calibration Summary Report

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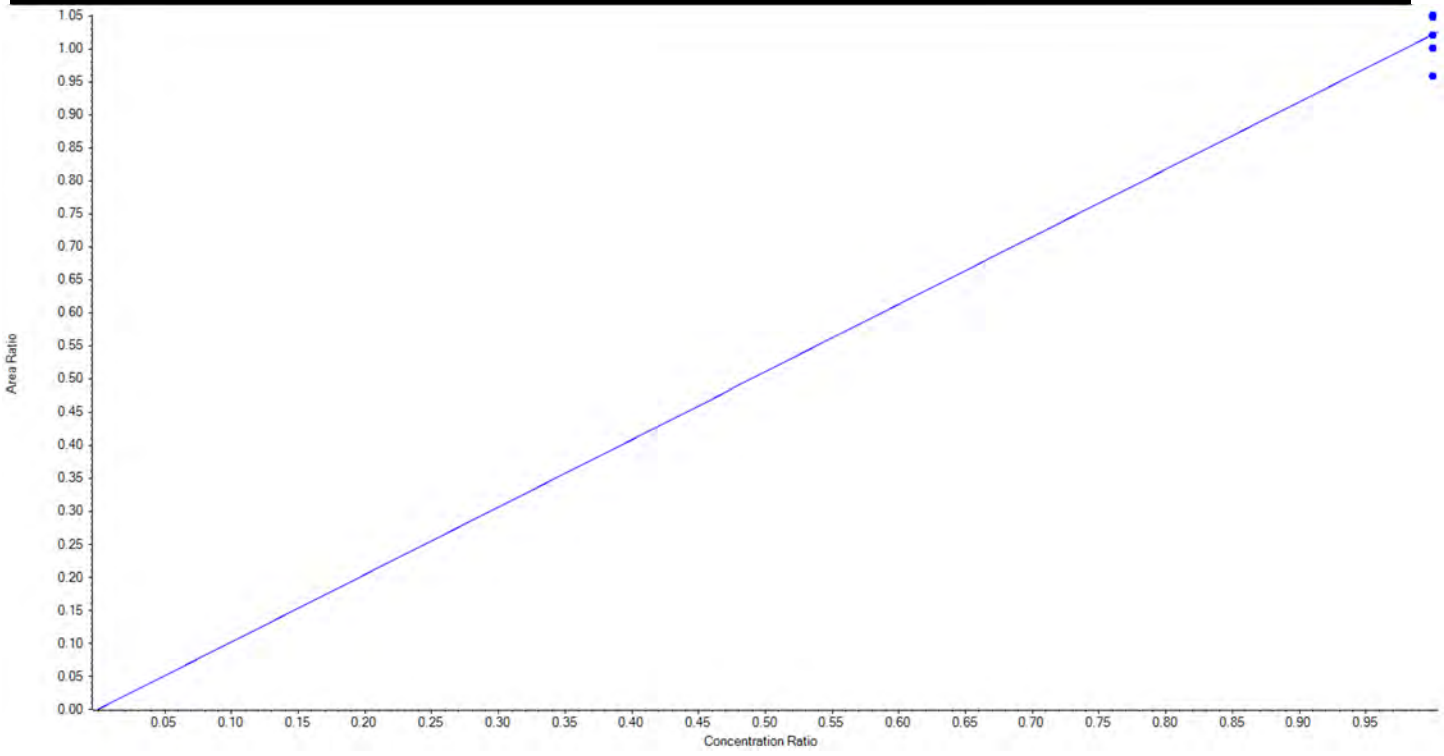
Analyte Name	13C6-PFDA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	519.0 / 474.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.02141 x (std. dev. = 0.03361) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1282.12	102.6
3	KY34	L2	True	1250.00	1224.21	97.9
4	KY35	L3	True	1250.00	1173.39	93.9
5	KY36	L4	True	1250.00	1285.95	102.9
6	KY37	L5	True	1250.00	1248.76	99.9
7	KY38	L6	True	1250.00	1249.62	100.0
8	KY39	L7	True	1250.00	1285.96	102.9



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Calibration Summary Report

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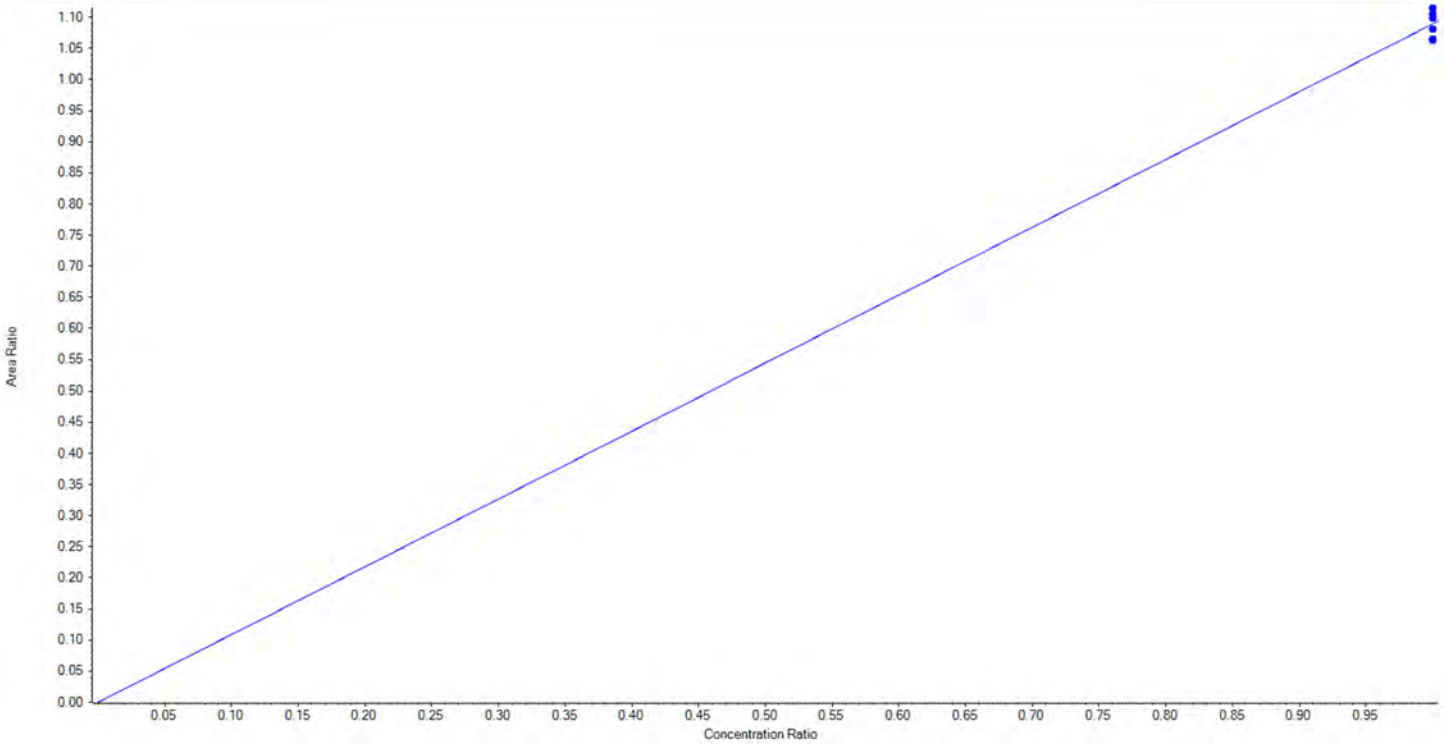
Analyte Name	13C7-PFUnA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	570.0 / 525.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.08943 x (std. dev. = 0.02027) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1260.87	100.9
3	KY34	L2	True	1250.00	1240.17	99.2
4	KY35	L3	True	1250.00	1268.15	101.5
5	KY36	L4	True	1250.00	1219.79	97.6
6	KY37	L5	True	1250.00	1279.13	102.3
7	KY38	L6	True	1250.00	1221.26	97.7
8	KY39	L7	True	1250.00	1260.63	100.9



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Calibration Summary Report

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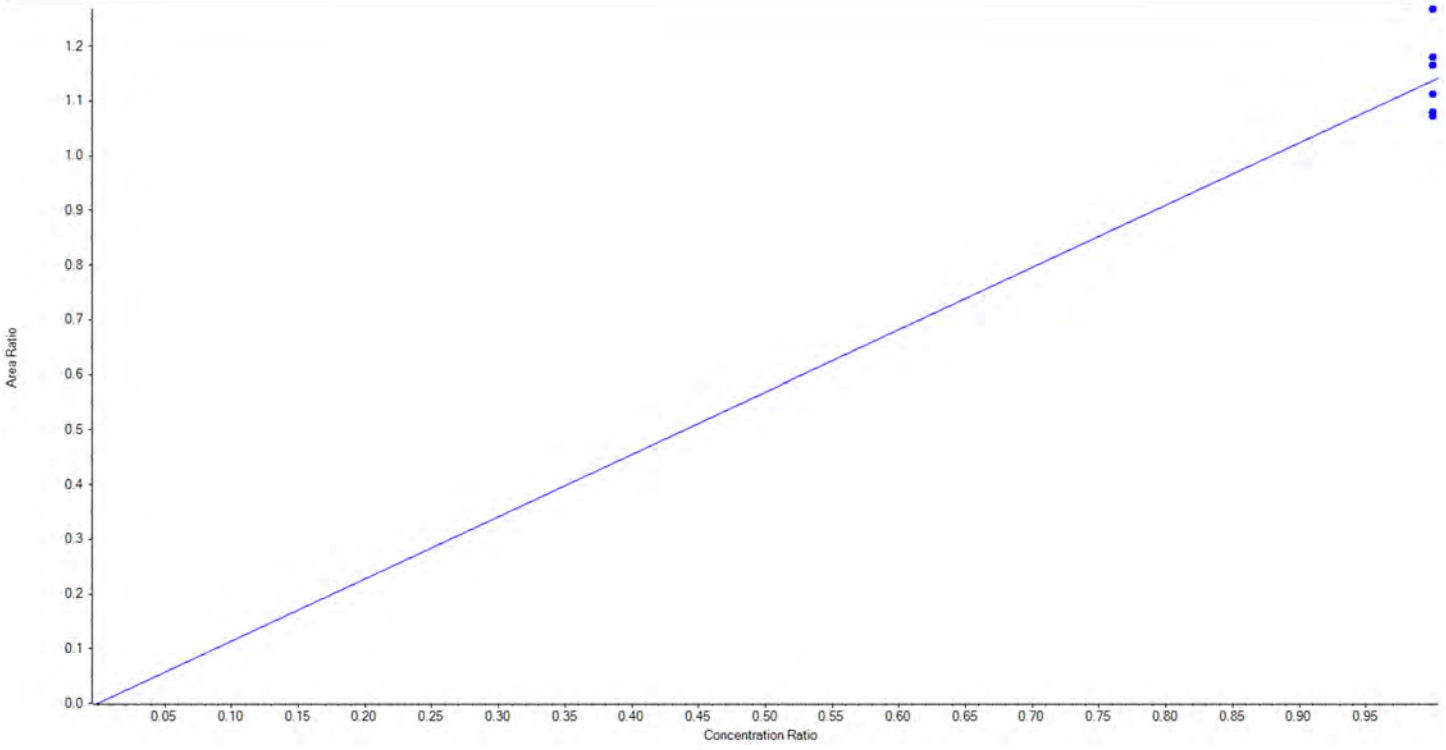
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C2-PFTeDA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	715.0 / 670.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.13694 x (std. dev. = 0.07217) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1222.95	97.8
3	KY34	L2	True	1250.00	1187.70	95.0
4	KY35	L3	True	1250.00	1179.17	94.3
5	KY36	L4	True	1250.00	1186.01	94.9
6	KY37	L5	True	1250.00	1282.14	102.6
7	KY38	L6	True	1250.00	1298.12	103.9
8	KY39	L7	True	1250.00	1393.90	111.5



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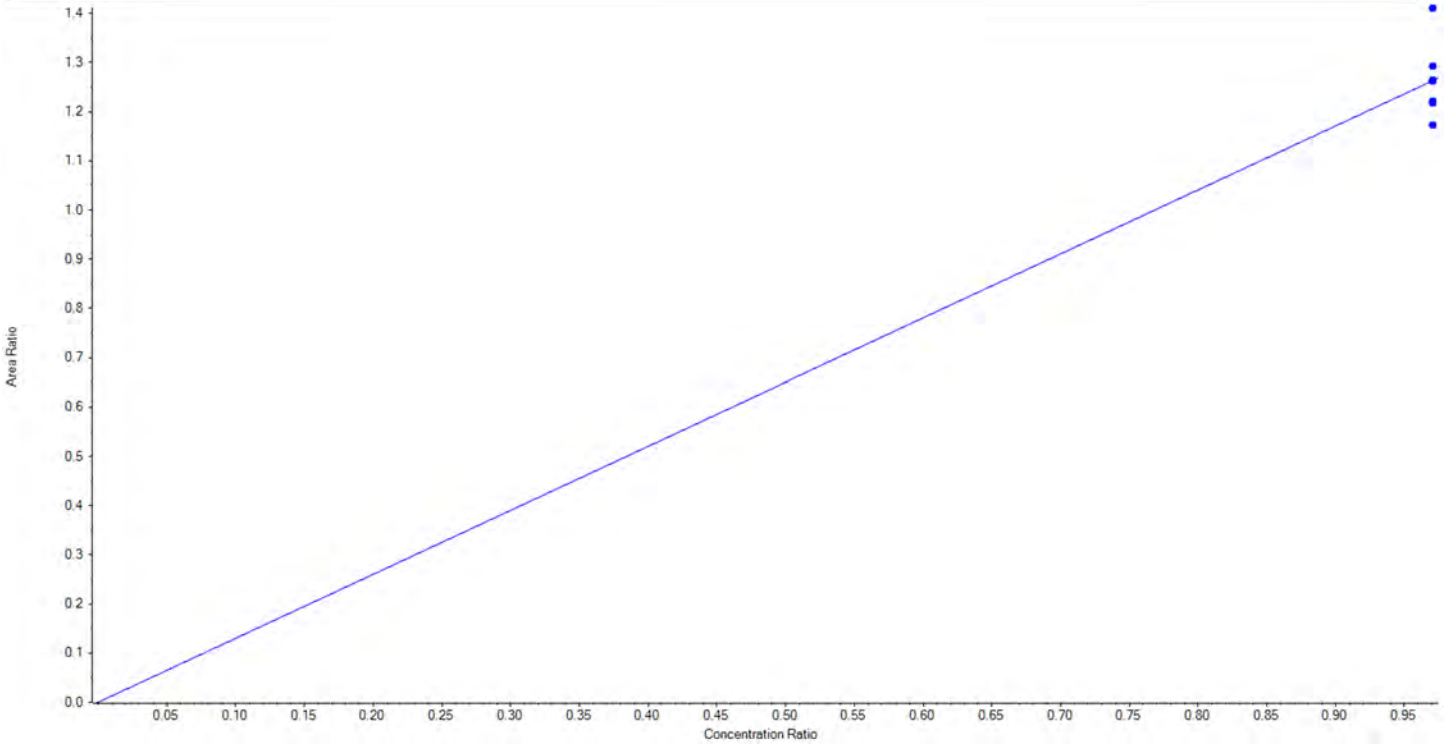
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C3-PFBS	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	302.0 / 99.0	**Result Table**	20-0470_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.30093 x (std. dev. = 0.07847) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1161.25	1119.34	96.4
3	KY34	L2	True	1161.25	1160.31	99.9
4	KY35	L3	True	1161.25	1122.88	96.7
5	KY36	L4	True	1161.25	1077.35	92.8
6	KY37	L5	True	1161.25	1188.83	102.4
7	KY38	L6	True	1161.25	1163.12	100.2
8	KY39	L7	True	1161.25	1296.93	111.7



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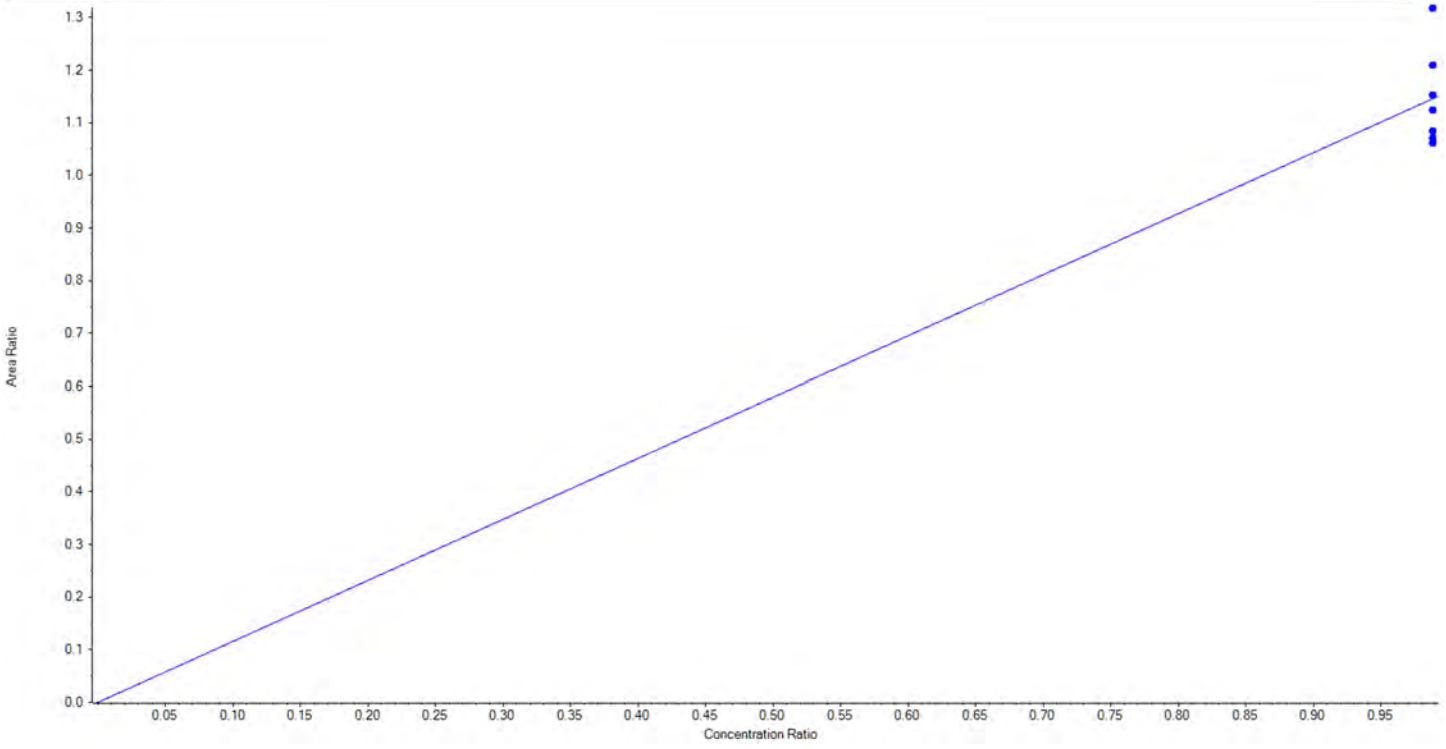
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C3-PFHxS	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	402.0 / 99.0	**Result Table**	20-0470_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.15900 x (std. dev. = 0.09282) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1182.50	1159.51	98.1
3	KY34	L2	True	1182.50	1106.19	93.6
4	KY35	L3	True	1182.50	1119.70	94.7
5	KY36	L4	True	1182.50	1094.97	92.6
6	KY37	L5	True	1182.50	1189.16	100.6
7	KY38	L6	True	1182.50	1247.91	105.5
8	KY39	L7	True	1182.50	1360.06	115.0



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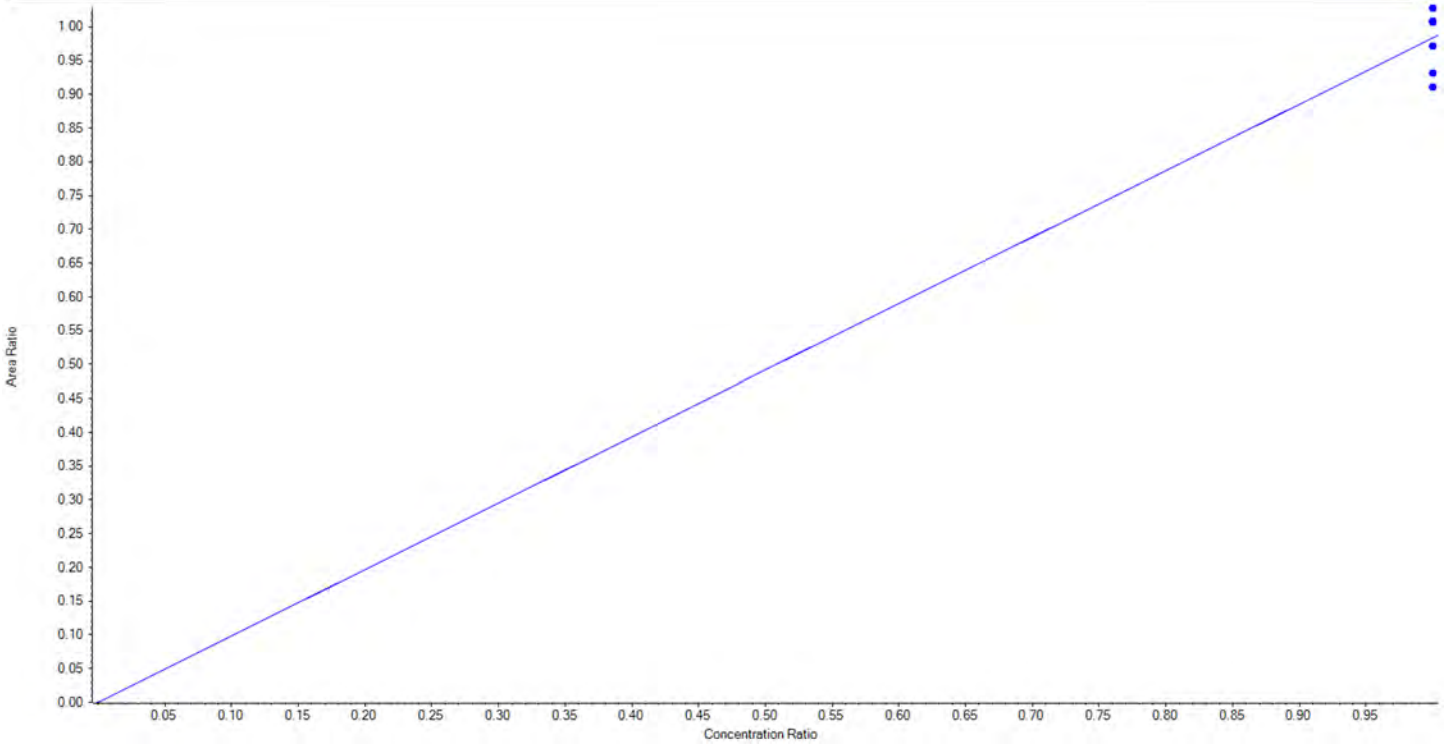
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C8-PFOS	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	507.0 / 99.0	**Result Table**	20-0470_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.98375 x (std. dev. = 0.04706) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1196.25	1181.03	98.7
3	KY34	L2	True	1196.25	1133.70	94.8
4	KY35	L3	True	1196.25	1107.00	92.5
5	KY36	L4	True	1196.25	1224.84	102.4
6	KY37	L5	True	1196.25	1249.87	104.5
7	KY38	L6	True	1196.25	1227.36	102.6
8	KY39	L7	True	1196.25	1249.93	104.5



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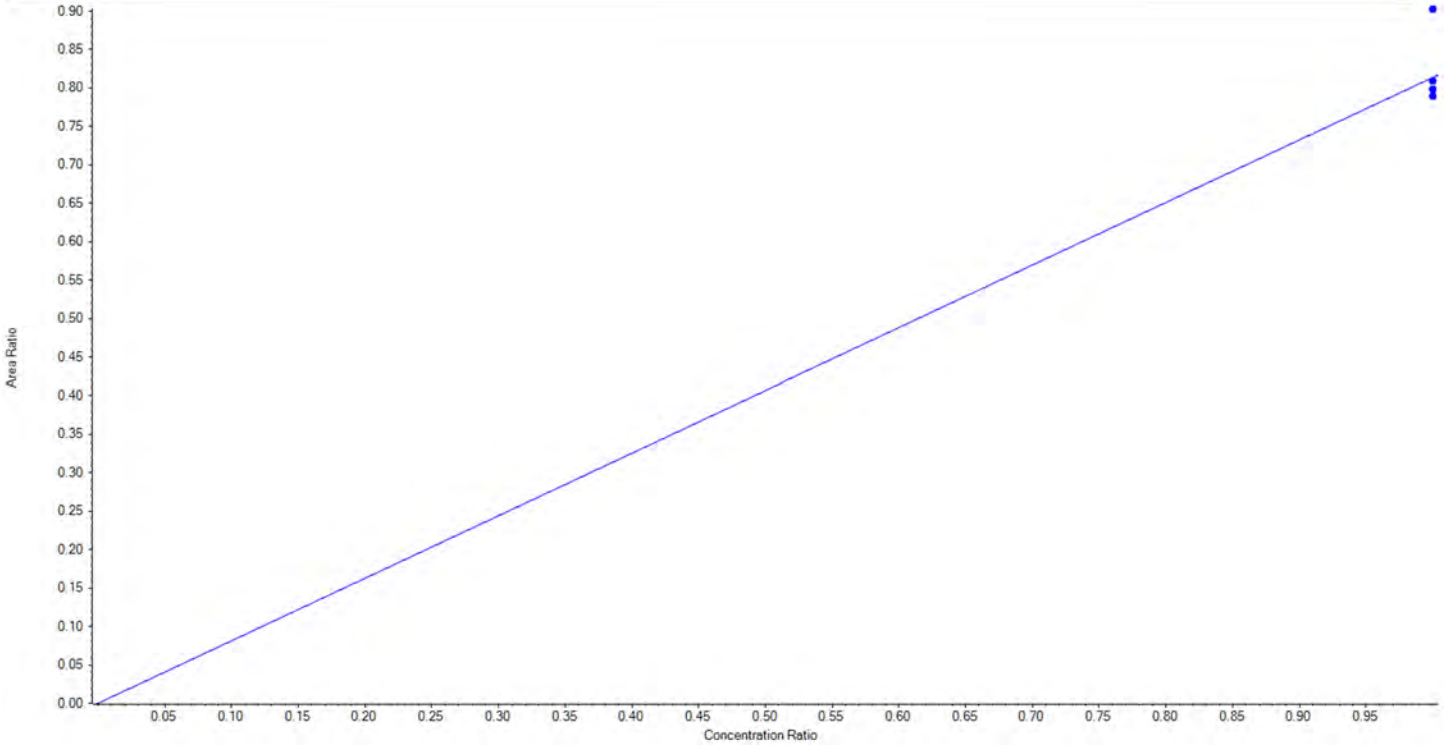
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C3-HFPO-DA	**Data File**	AC_04132020A_5-369.wiff
MRM Transition	287.0 / 169.0	**Result Table**	20-0470_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 11:44:10 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.81365 x (std. dev. = 0.03995) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KY33	L1	True	1250.00	1226.63	98.1
3	KY34	L2	True	1250.00	1242.50	99.4
4	KY35	L3	True	1250.00	1212.89	97.0
5	KY36	L4	True	1250.00	1213.13	97.1
6	KY37	L5	True	1250.00	1241.69	99.3
7	KY38	L6	True	1250.00	1226.62	98.1
8	KY39	L7	True	1250.00	1386.54	110.9



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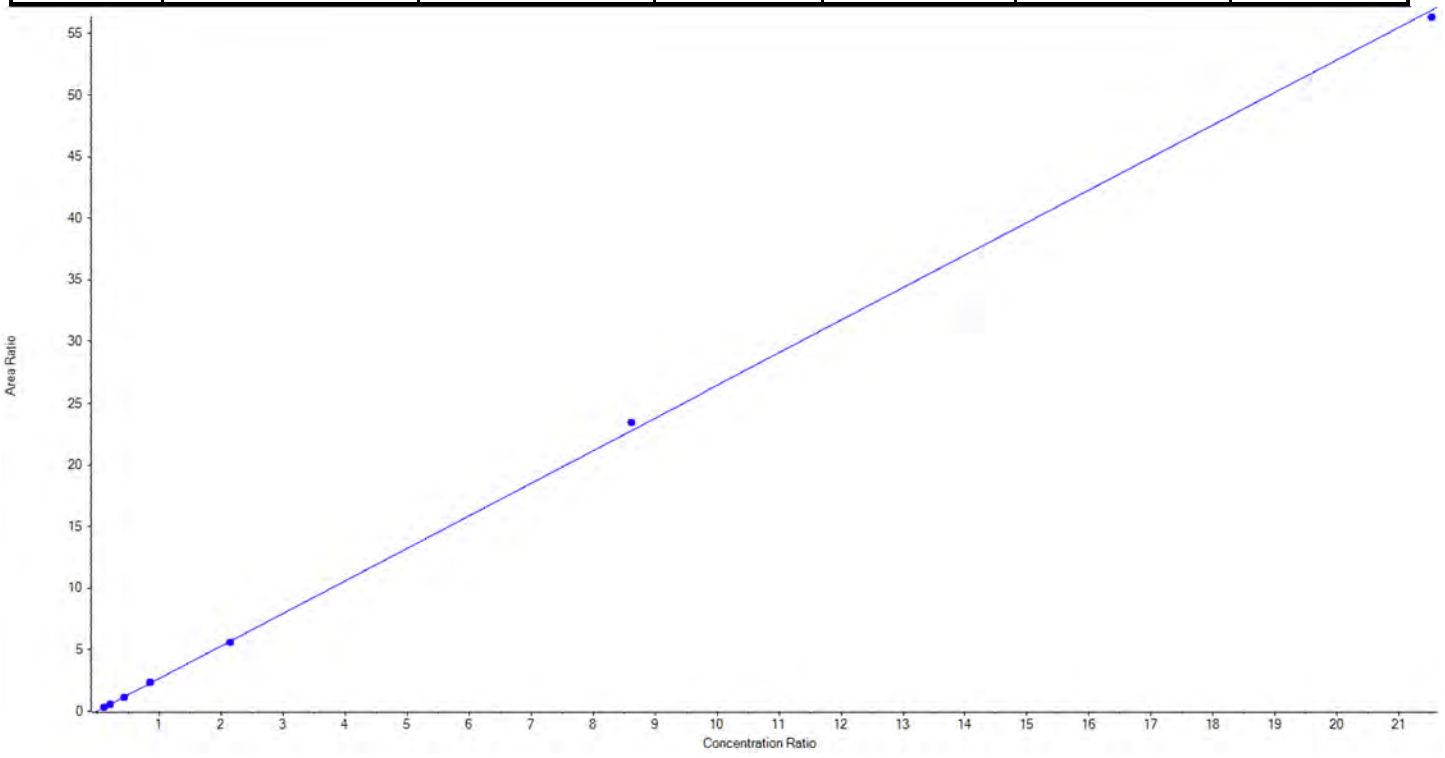
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFBS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	298.9 / 80.0	**Result Table**	20-0470A
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.64201 x + 0.01958 (r = 0.99983) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	123.52	98.8
5	KY34	L2	True	250.00	253.19	101.3
6	KY35	L3	True	500.00	490.76	98.2
7	KY36	L4	True	1000.00	1016.75	101.7
8	KY37	L5	True	2500.00	2455.55	98.2
9	KY38	L6	True	10000.00	10285.52	102.9
10	KY39	L7	True	25000.00	24749.70	99.0



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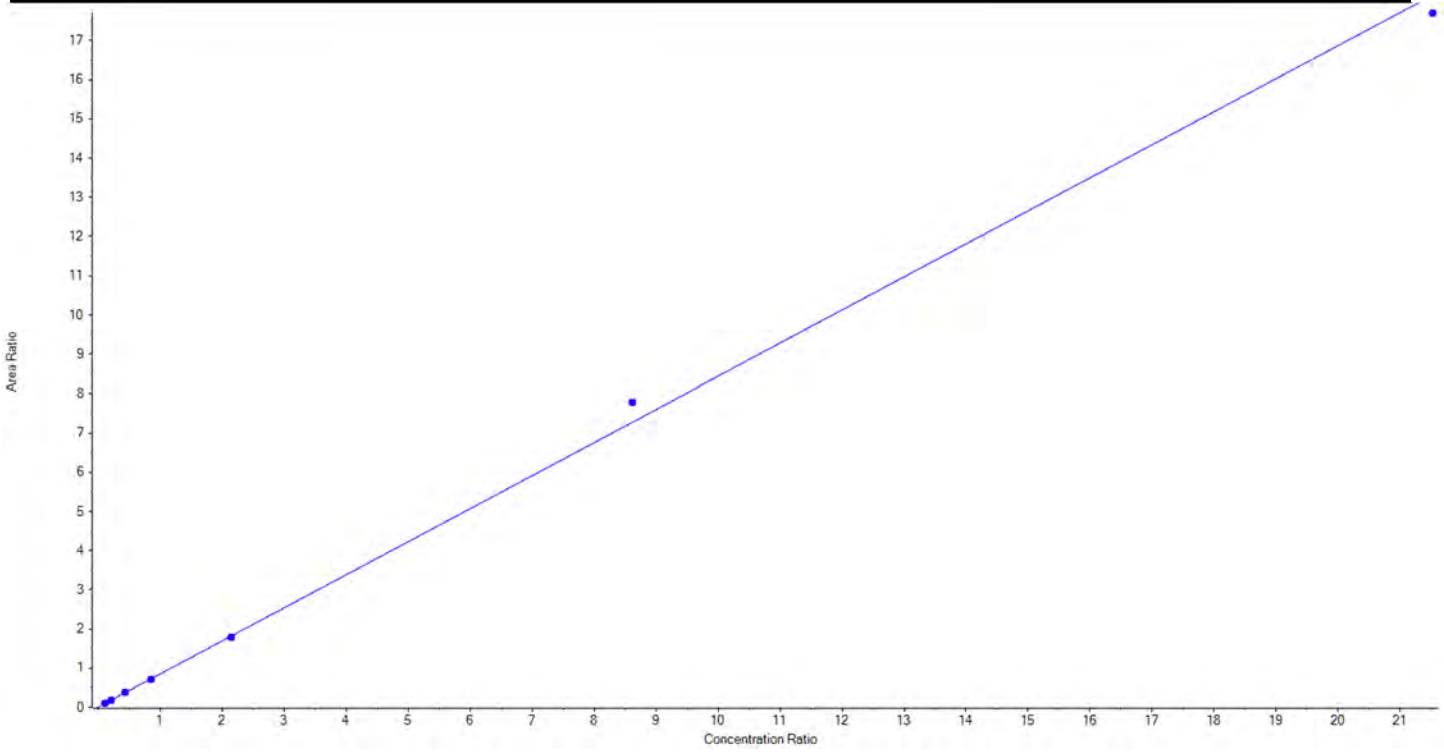
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFBS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	298.9 / 99.0	**Result Table**	20-0470A
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.84305 x + 0.00873 (r = 0.99906) (weighting: 1 / x) r^2:0.9981

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	124.61	99.7
5	KY34	L2	True	250.00	248.93	99.6
6	KY35	L3	True	500.00	509.36	101.9
7	KY36	L4	True	1000.00	958.61	95.9
8	KY37	L5	True	2500.00	2462.52	98.5
9	KY38	L6	True	10000.00	10702.96	107.0
10	KY39	L7	True	25000.00	24368.00	97.5



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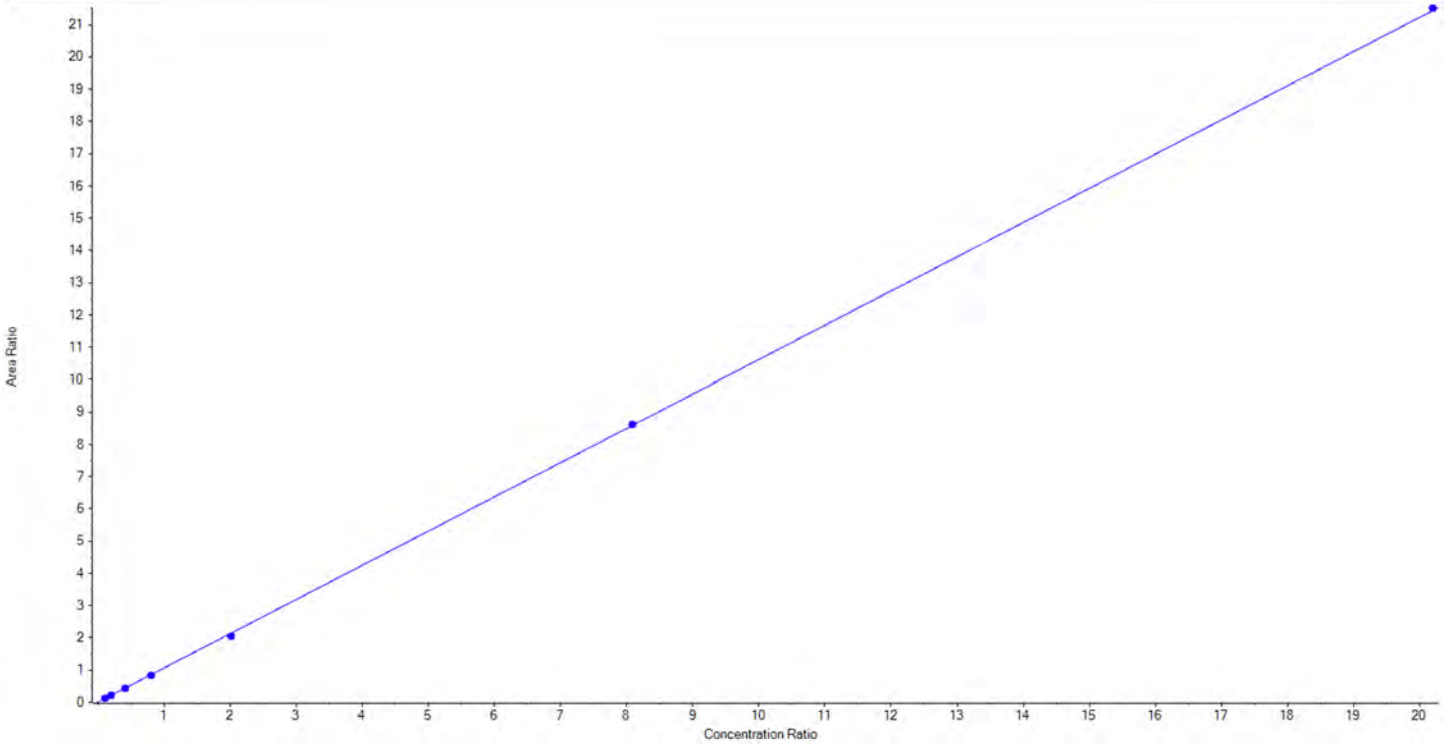
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFHxA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	313.0 / 269.0	**Result Table**	20-0470A
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.06096 x + 0.00834 (r = 0.99989) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	134.45	106.5
5	KY34	L2	True	252.50	255.24	101.1
6	KY35	L3	True	505.00	508.51	100.7
7	KY36	L4	True	1010.00	961.33	95.2
8	KY37	L5	True	2525.00	2414.89	95.6
9	KY38	L6	True	10100.00	10156.21	100.6
10	KY39	L7	True	25250.00	25338.13	100.4



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Calibration Summary Report

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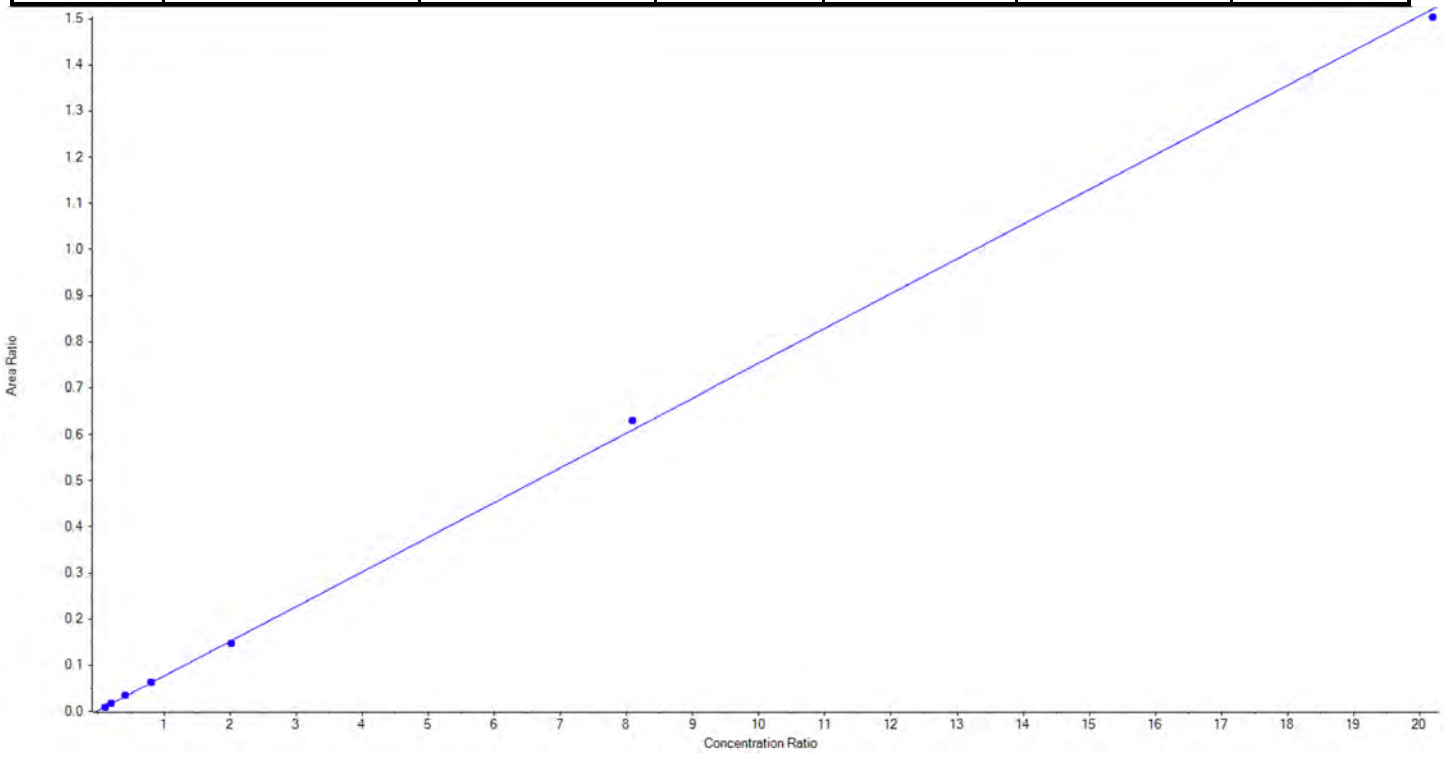
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFHxA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	313.0 / 119.0	**Result Table**	20-0470A
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.07522 x + 0.00139 (r = 0.99969) (weighting: 1 / x) r^2:0.9994

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	114.21	90.5
5	KY34	L2	True	252.50	261.81	103.7
6	KY35	L3	True	505.00	535.88	106.1
7	KY36	L4	True	1010.00	1022.83	101.3
8	KY37	L5	True	2525.00	2428.85	96.2
9	KY38	L6	True	10100.00	10445.98	103.4
10	KY39	L7	True	25250.00	24959.19	98.9



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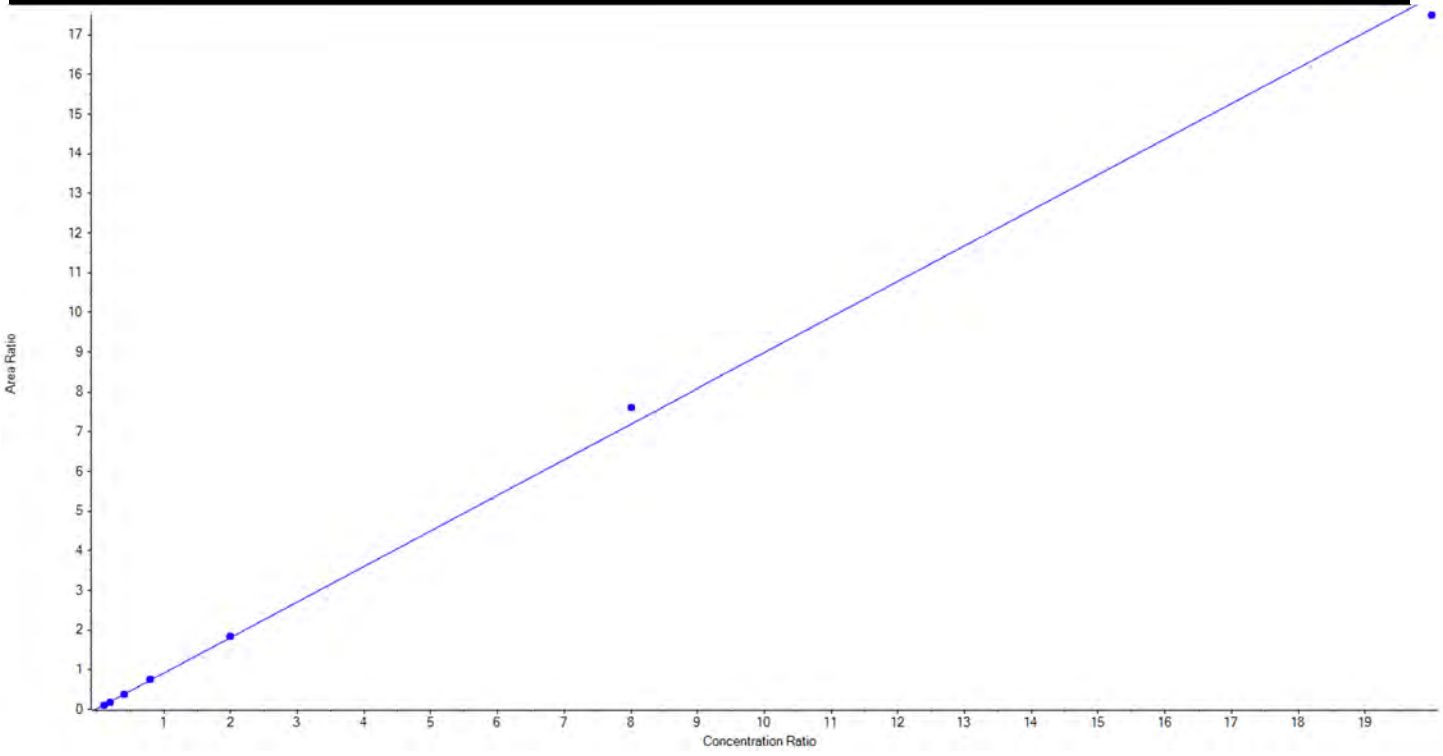
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFHpA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	363.0 / 319.0	**Result Table**	20-0470A
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89707 x + 0.01624 (r = 0.99924) (weighting: 1 / x) r^2:0.9985

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	124.60	99.7
5	KY34	L2	True	250.00	231.87	92.8
6	KY35	L3	True	500.00	503.66	100.7
7	KY36	L4	True	1000.00	1017.96	101.8
8	KY37	L5	True	2500.00	2540.34	101.6
9	KY38	L6	True	10000.00	10599.92	106.0
10	KY39	L7	True	25000.00	24356.65	97.4



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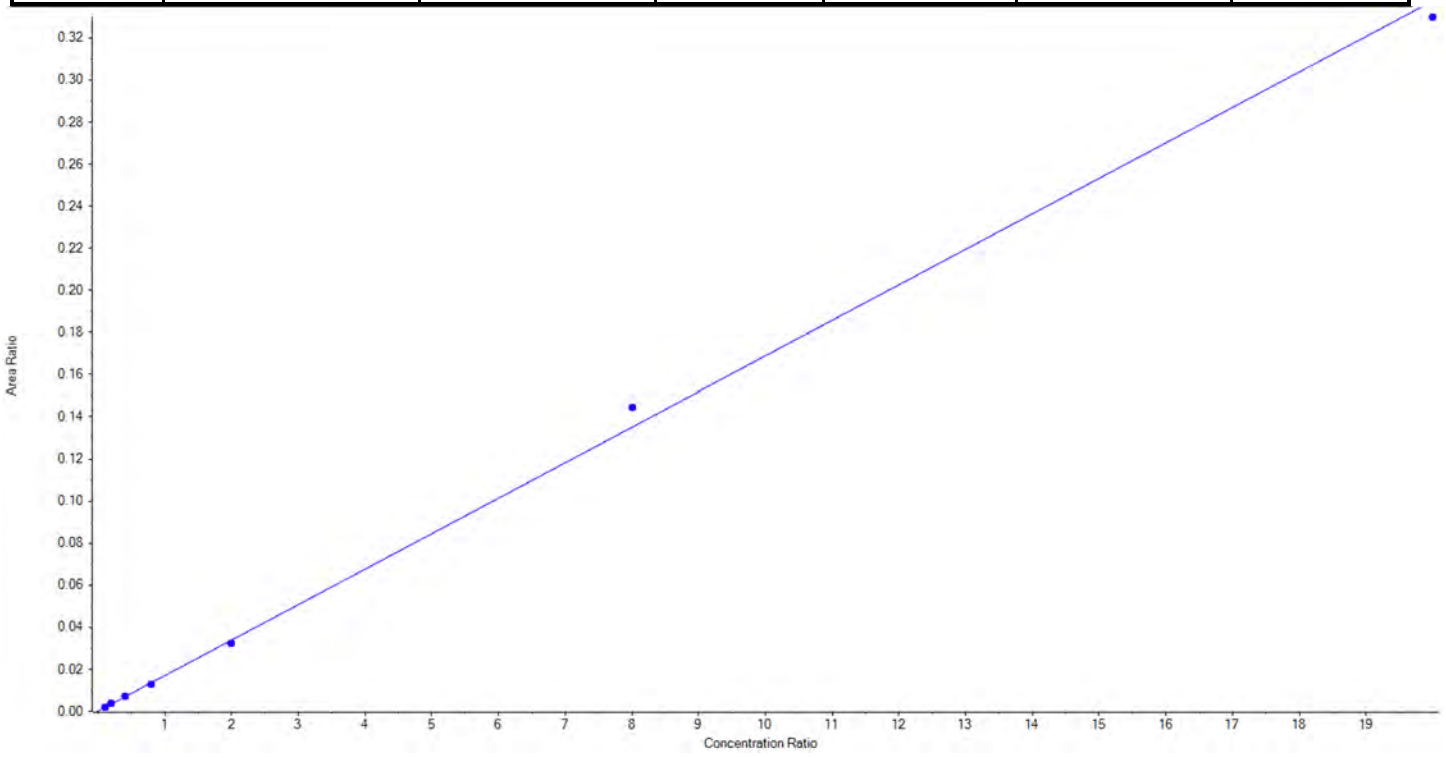
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFHpA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	363.0 / 169.0	**Result Table**	20-0470A
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01687 x + 1.15904e-4 (r = 0.99897) (weighting: 1 / x) r^2:0.9979

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	121.78	97.4
5	KY34	L2	True	250.00	260.16	104.1
6	KY35	L3	True	500.00	525.43	105.1
7	KY36	L4	True	1000.00	926.70	92.7
8	KY37	L5	True	2500.00	2397.71	95.9
9	KY38	L6	True	10000.00	10712.13	107.1
10	KY39	L7	True	25000.00	24431.10	97.7



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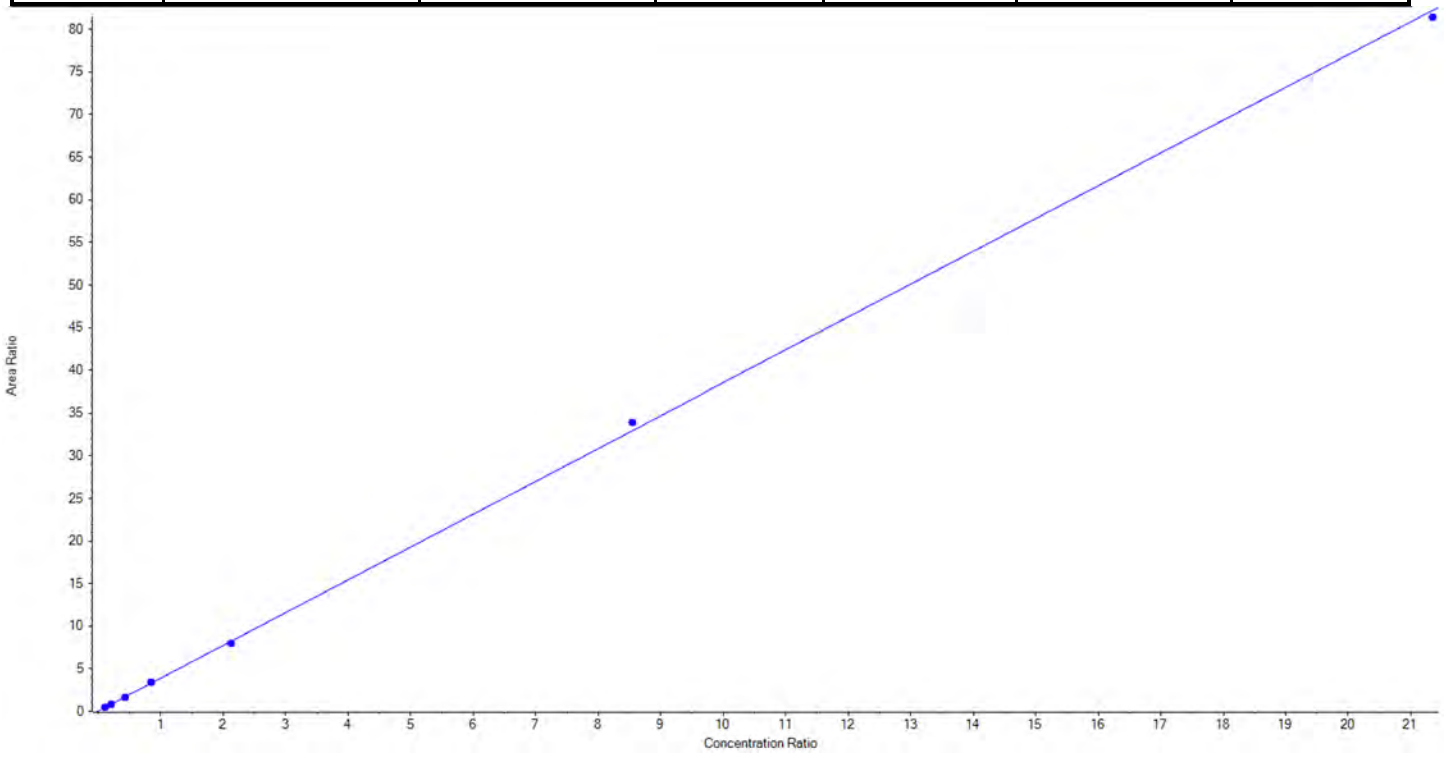
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFHxS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	399.0 / 80.0	**Result Table**	20-0470A
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 3.84991 x + 0.03600 (r = 0.99978) (weighting: 1 / x) r^2:0.9996

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	132.62	105.1
5	KY34	L2	True	252.50	239.74	95.0
6	KY35	L3	True	505.00	500.69	99.2
7	KY36	L4	True	1010.00	1027.77	101.8
8	KY37	L5	True	2525.00	2447.34	96.9
9	KY38	L6	True	10100.00	10418.77	103.2
10	KY39	L7	True	25250.00	25001.81	99.0



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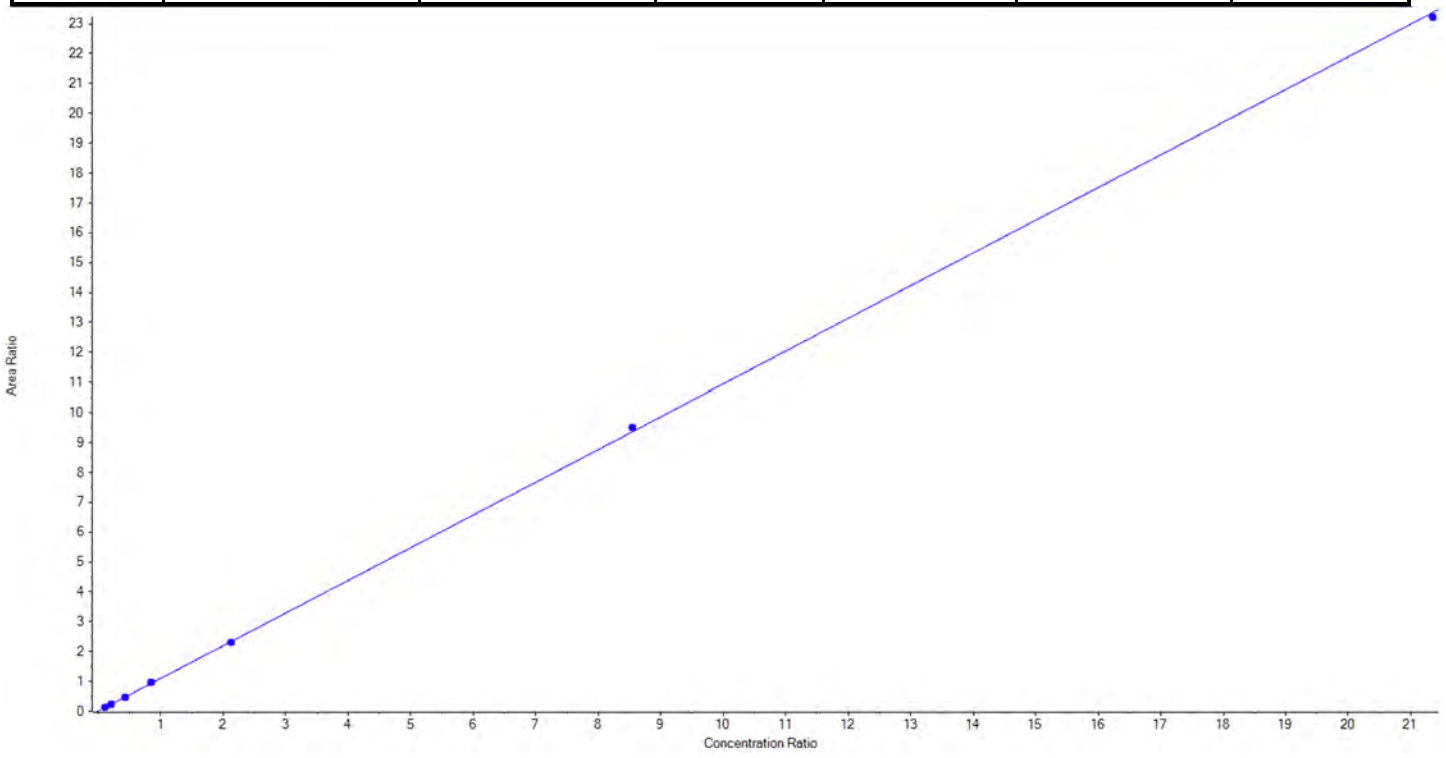
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFHxS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	399.0 / 99.0	**Result Table**	20-0470A
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.09437 x + 0.00490 (r = 0.99990) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	134.16	106.3
5	KY34	L2	True	252.50	236.54	93.7
6	KY35	L3	True	505.00	488.18	96.7
7	KY36	L4	True	1010.00	1040.51	103.0
8	KY37	L5	True	2525.00	2506.11	99.3
9	KY38	L6	True	10100.00	10278.17	101.8
10	KY39	L7	True	25250.00	25085.08	99.4



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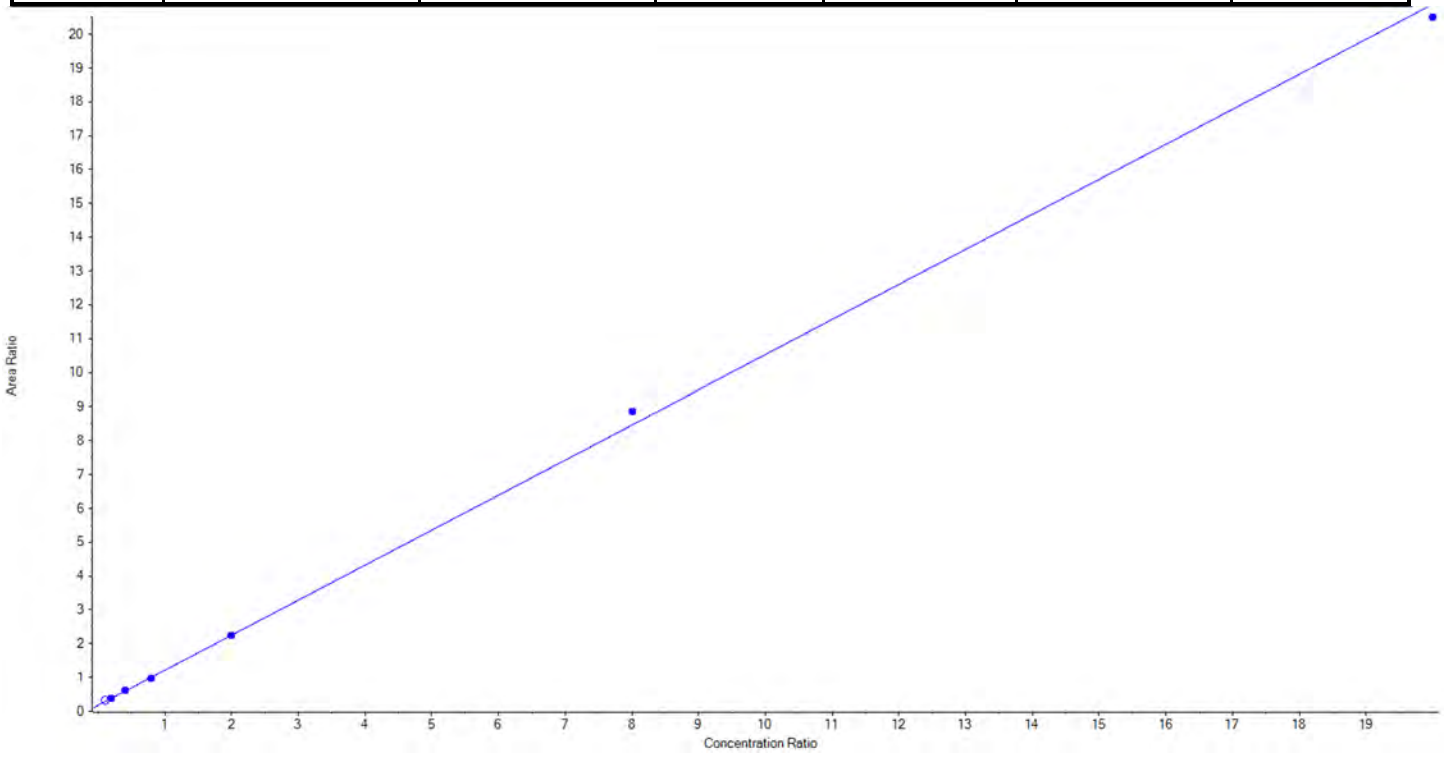
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFOA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	413.0 / 369.0	**Result Table**	20-0470A
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.03539 x + 0.17883 (r = 0.99948) (weighting: 1 / x) r^2:0.9990

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	190.99	152.8
5	KY34	L2	True	250.00	241.52	96.6
6	KY35	L3	True	500.00	523.86	104.8
7	KY36	L4	True	1000.00	953.88	95.4
8	KY37	L5	True	2500.00	2505.34	100.2
9	KY38	L6	True	10000.00	10486.37	104.9
10	KY39	L7	True	25000.00	24539.03	98.2



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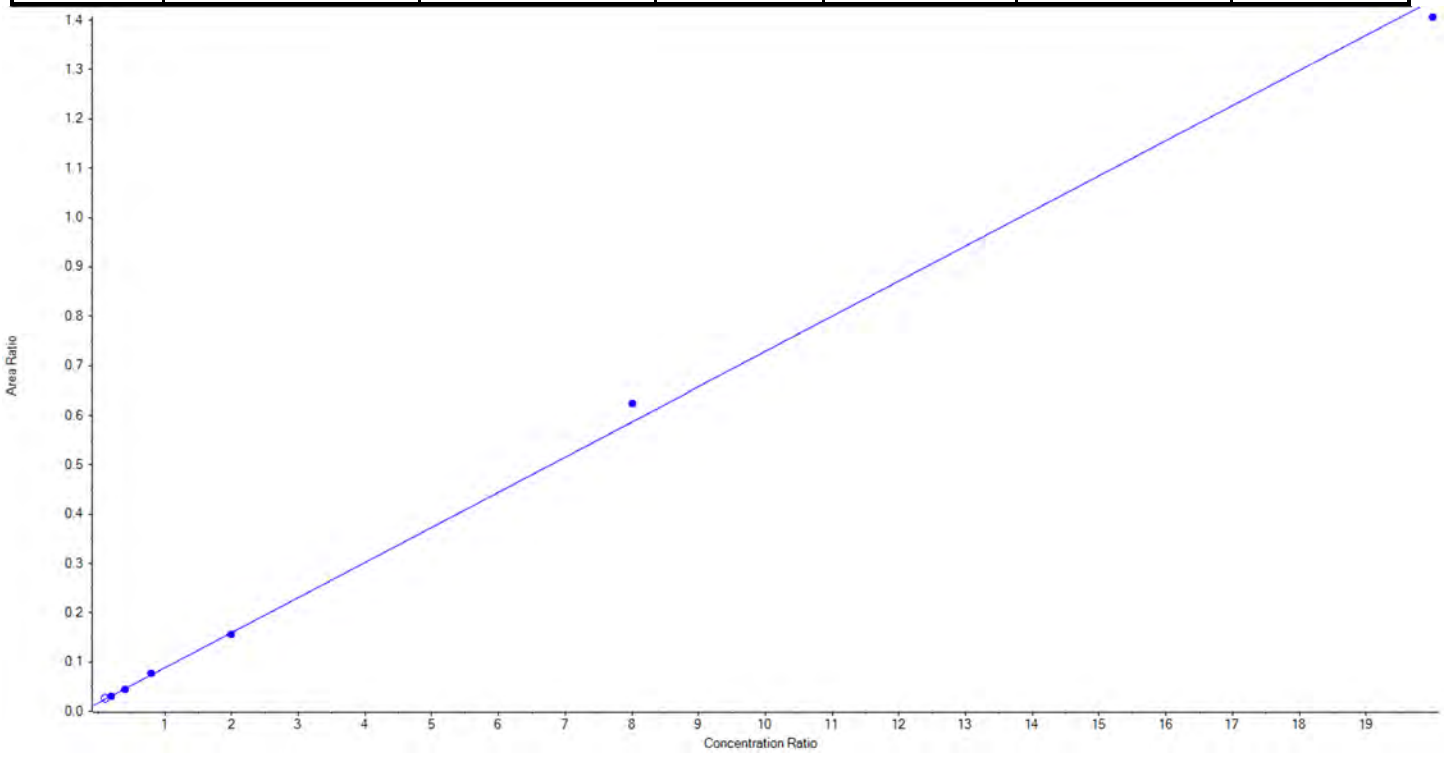
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFOA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	413.0 / 169.0	**Result Table**	20-0470A
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.07118 x + 0.01701 (r = 0.99911) (weighting: 1 / x) r^2:0.9982

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	162.41	129.9
5	KY34	L2	True	250.00	245.08	98.0
6	KY35	L3	True	500.00	484.74	97.0
7	KY36	L4	True	1000.00	1036.67	103.7
8	KY37	L5	True	2500.00	2430.28	97.2
9	KY38	L6	True	10000.00	10655.04	106.6
10	KY39	L7	True	25000.00	24398.20	97.6



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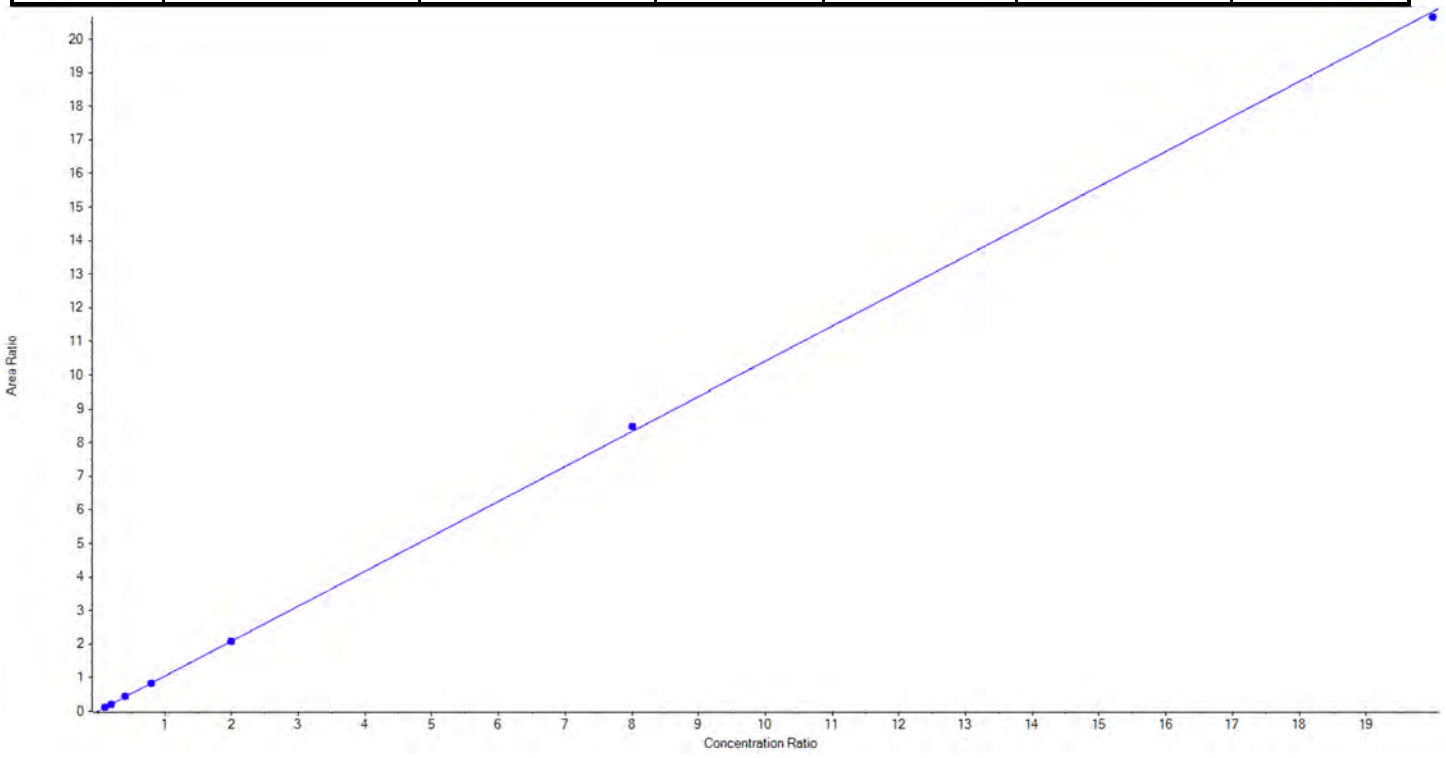
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFNA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	463.0 / 419.0	**Result Table**	20-0470A
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.04040 x + 0.00980 (r = 0.99991) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	118.40	94.7
5	KY34	L2	True	250.00	252.53	101.0
6	KY35	L3	True	500.00	521.40	104.3
7	KY36	L4	True	1000.00	985.74	98.6
8	KY37	L5	True	2500.00	2509.13	100.4
9	KY38	L6	True	10000.00	10183.04	101.8
10	KY39	L7	True	25000.00	24804.77	99.2



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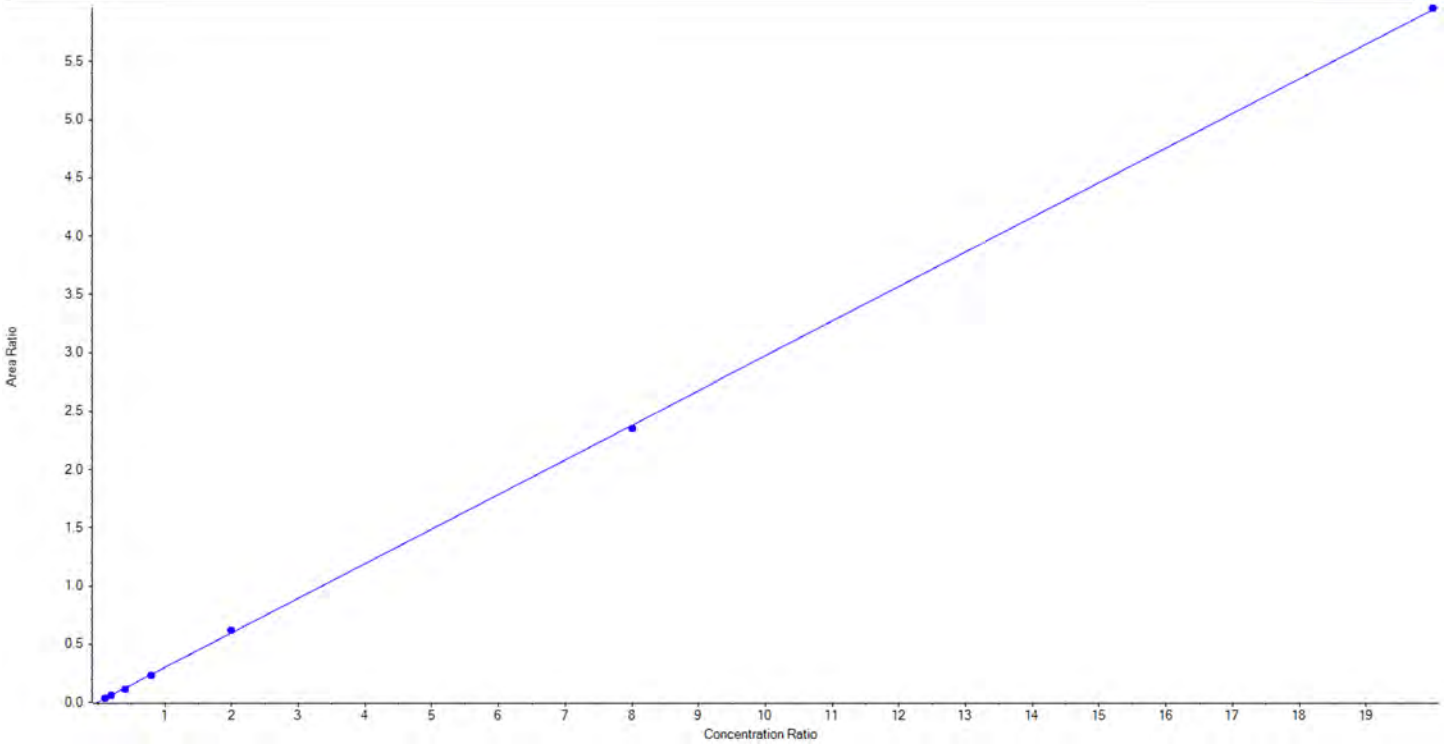
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFNA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	463.0 / 219.0	**Result Table**	20-0470A
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.29705 x + 0.00256 (r = 0.99987) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	130.77	104.6
5	KY34	L2	True	250.00	255.23	102.1
6	KY35	L3	True	500.00	470.97	94.2
7	KY36	L4	True	1000.00	956.77	95.7
8	KY37	L5	True	2500.00	2605.24	104.2
9	KY38	L6	True	10000.00	9898.40	99.0
10	KY39	L7	True	25000.00	25057.63	100.2



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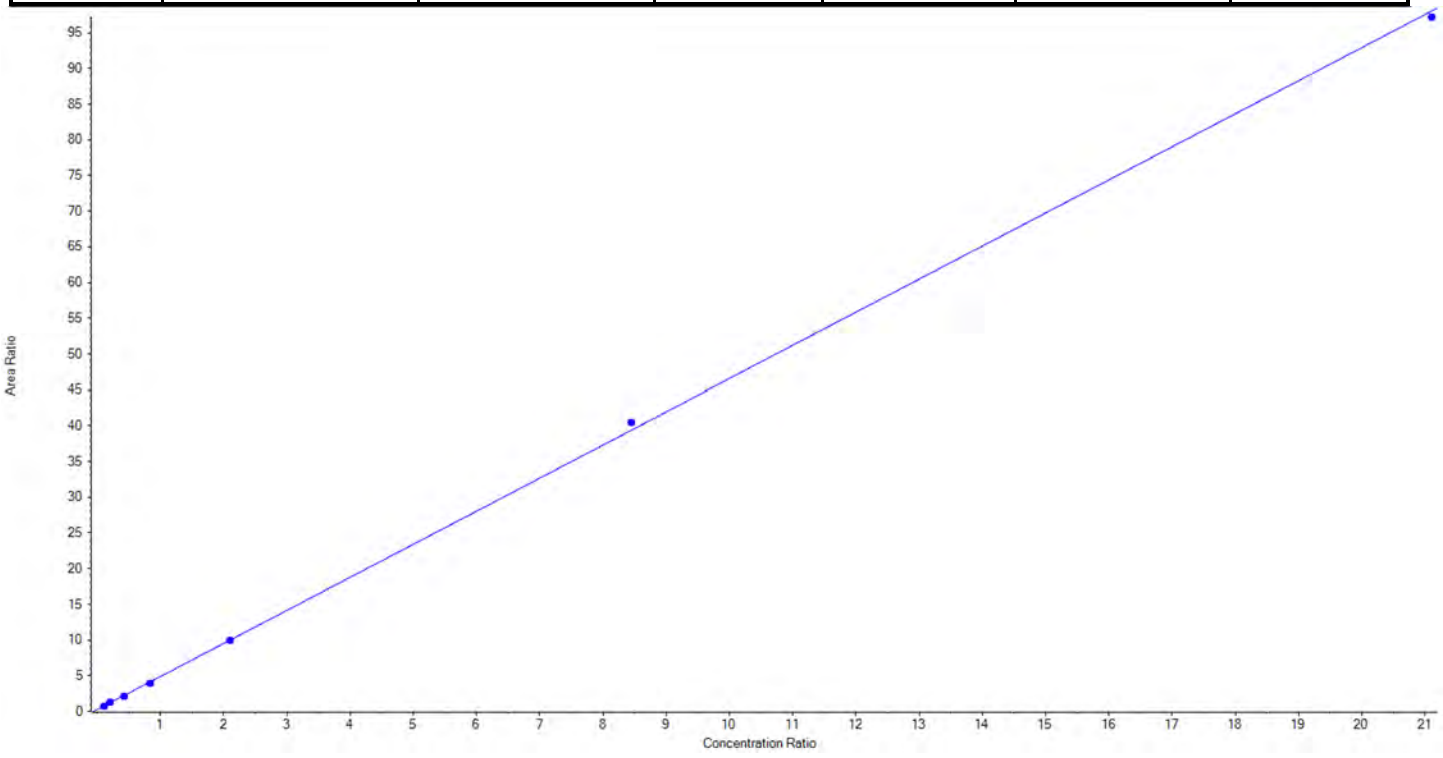
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFOS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	499.0 / 80.0	**Result Table**	20-0470A
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 4.63418 x + 0.23516 (r = 0.99980) (weighting: 1 / x) r^2:0.9996

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	130.68	103.5
5	KY34	L2	True	252.50	260.93	103.3
6	KY35	L3	True	505.00	491.81	97.4
7	KY36	L4	True	1010.00	957.79	94.8
8	KY37	L5	True	2525.00	2494.44	98.8
9	KY38	L6	True	10100.00	10404.69	103.0
10	KY39	L7	True	25250.00	25028.41	99.1



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Calibration Summary Report

Created with Analyst Reporter
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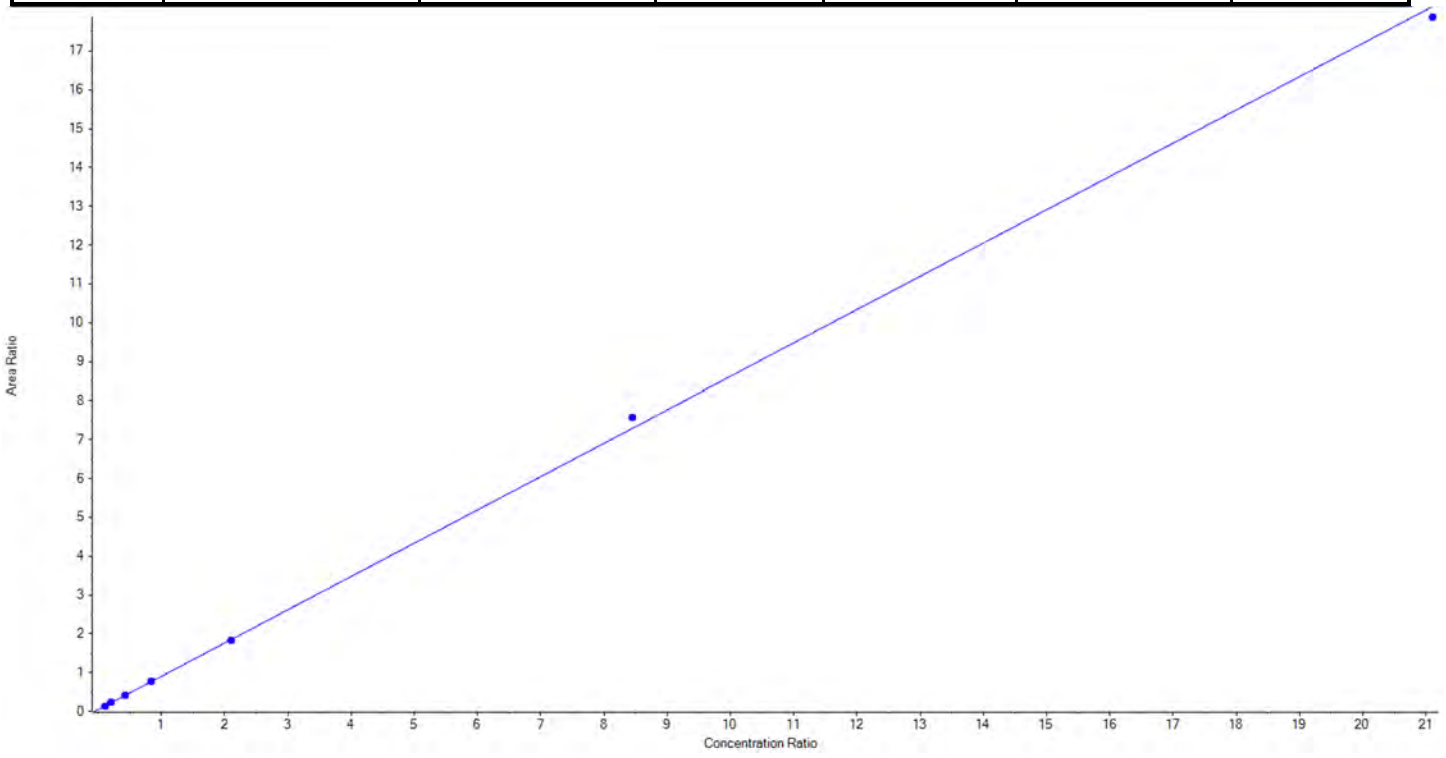
Analyte Name	PFOS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	499.0 / 99.0	**Result Table**	20-0470A
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.85769 x + 0.04342 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	126.25	118.53	93.9
5	KY34	L2	True	252.50	261.99	103.8
6	KY35	L3	True	505.00	507.76	100.6
7	KY36	L4	True	1010.00	1018.50	100.8
8	KY37	L5	True	2525.00	2485.13	98.4
9	KY38	L6	True	10100.00	10510.61	104.1
10	KY39	L7	True	25250.00	24866.23	98.5



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Calibration Summary Report

Created with Analyst Reporter
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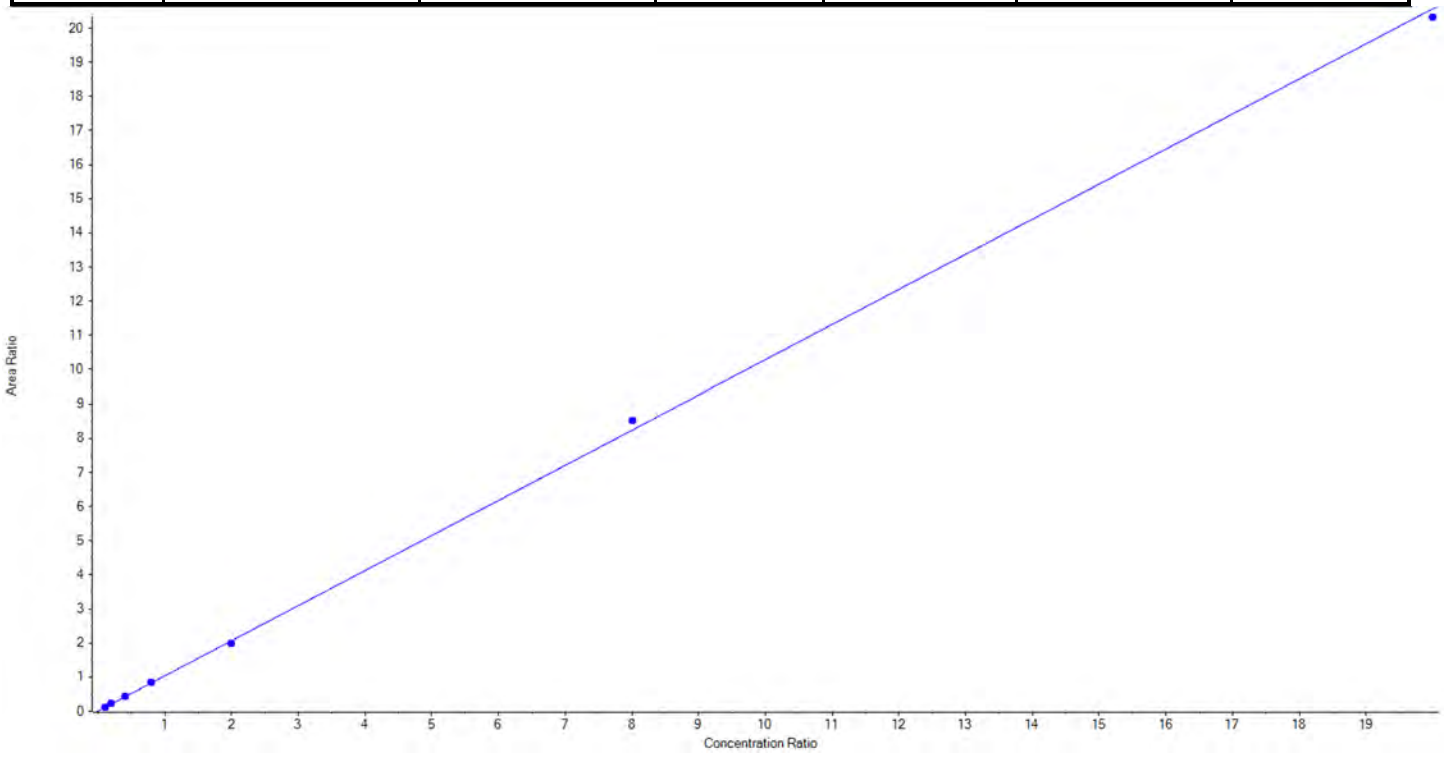
Analyte Name	PFDA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	513.0 / 469.0	**Result Table**	20-0470A
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.02768 x + 0.01296 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	112.19	89.8
5	KY34	L2	True	250.00	270.60	108.2
6	KY35	L3	True	500.00	512.14	102.4
7	KY36	L4	True	1000.00	1008.72	100.9
8	KY37	L5	True	2500.00	2406.56	96.3
9	KY38	L6	True	10000.00	10364.04	103.6
10	KY39	L7	True	25000.00	24700.75	98.8



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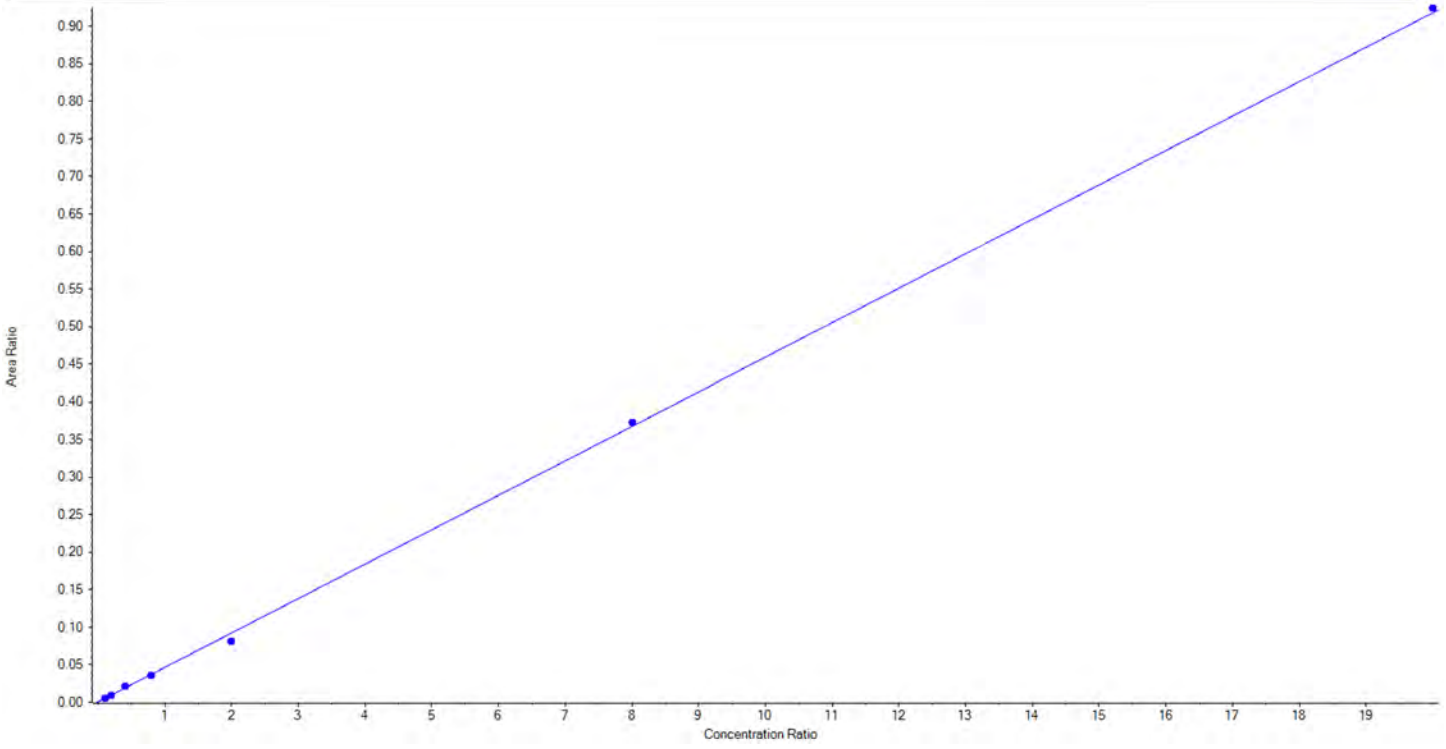
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFDA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	513.0 / 219.0	**Result Table**	20-0470A
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04588 x + 6.74242e-4 (r = 0.99932) (weighting: 1 / x) r^2:0.9986

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	130.35	104.3
5	KY34	L2	True	250.00	250.96	100.4
6	KY35	L3	True	500.00	545.23	109.1
7	KY36	L4	True	1000.00	972.14	97.2
8	KY37	L5	True	2500.00	2177.68	87.1
9	KY38	L6	True	10000.00	10128.82	101.3
10	KY39	L7	True	25000.00	25169.81	100.7



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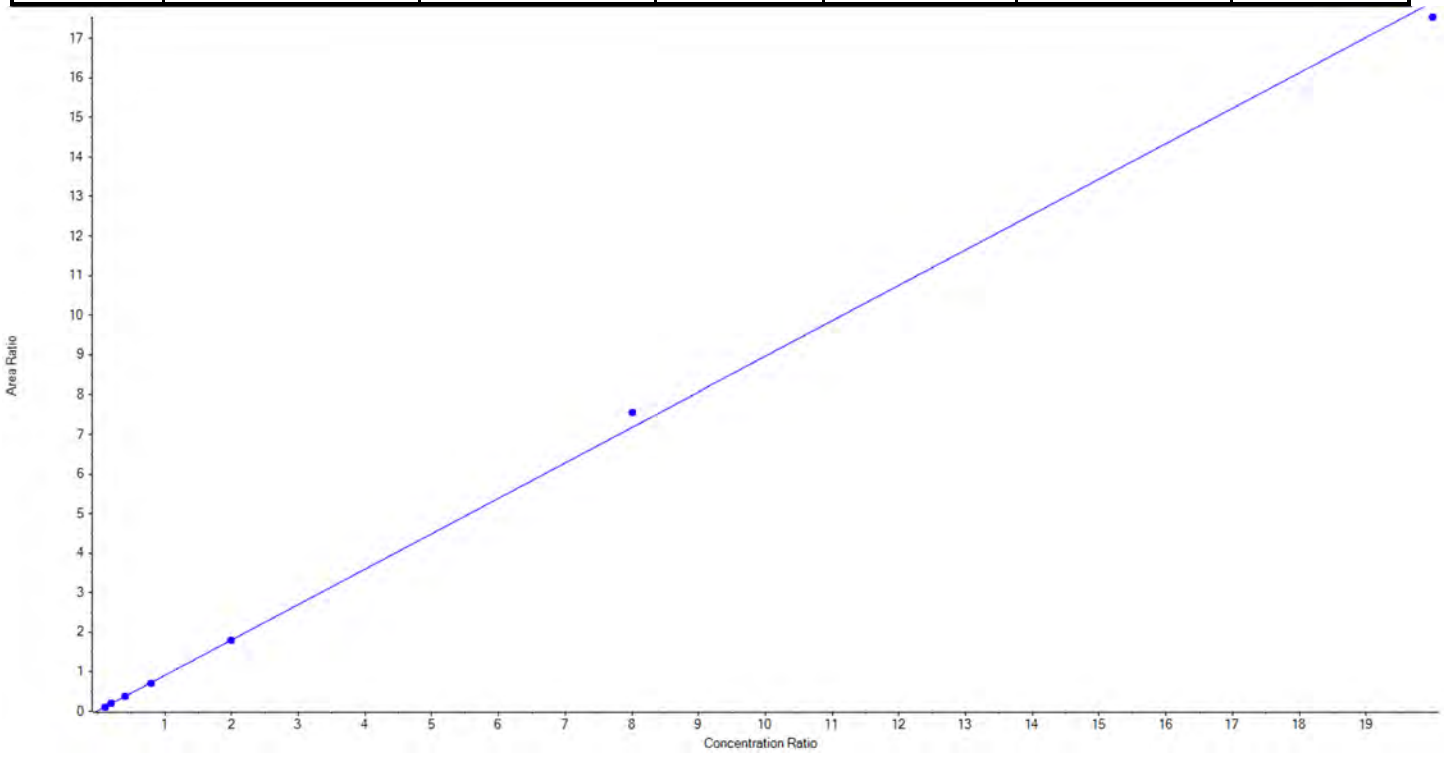
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFUnA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	563.0 / 519.0	**Result Table**	20-0470A
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89515 x + 0.01418 (r = 0.99937) (weighting: 1 / x) r^2:0.9987

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	109.37	87.5
5	KY34	L2	True	250.00	267.94	107.2
6	KY35	L3	True	500.00	526.58	105.3
7	KY36	L4	True	1000.00	968.65	96.9
8	KY37	L5	True	2500.00	2497.61	99.9
9	KY38	L6	True	10000.00	10537.86	105.4
10	KY39	L7	True	25000.00	24467.00	97.9



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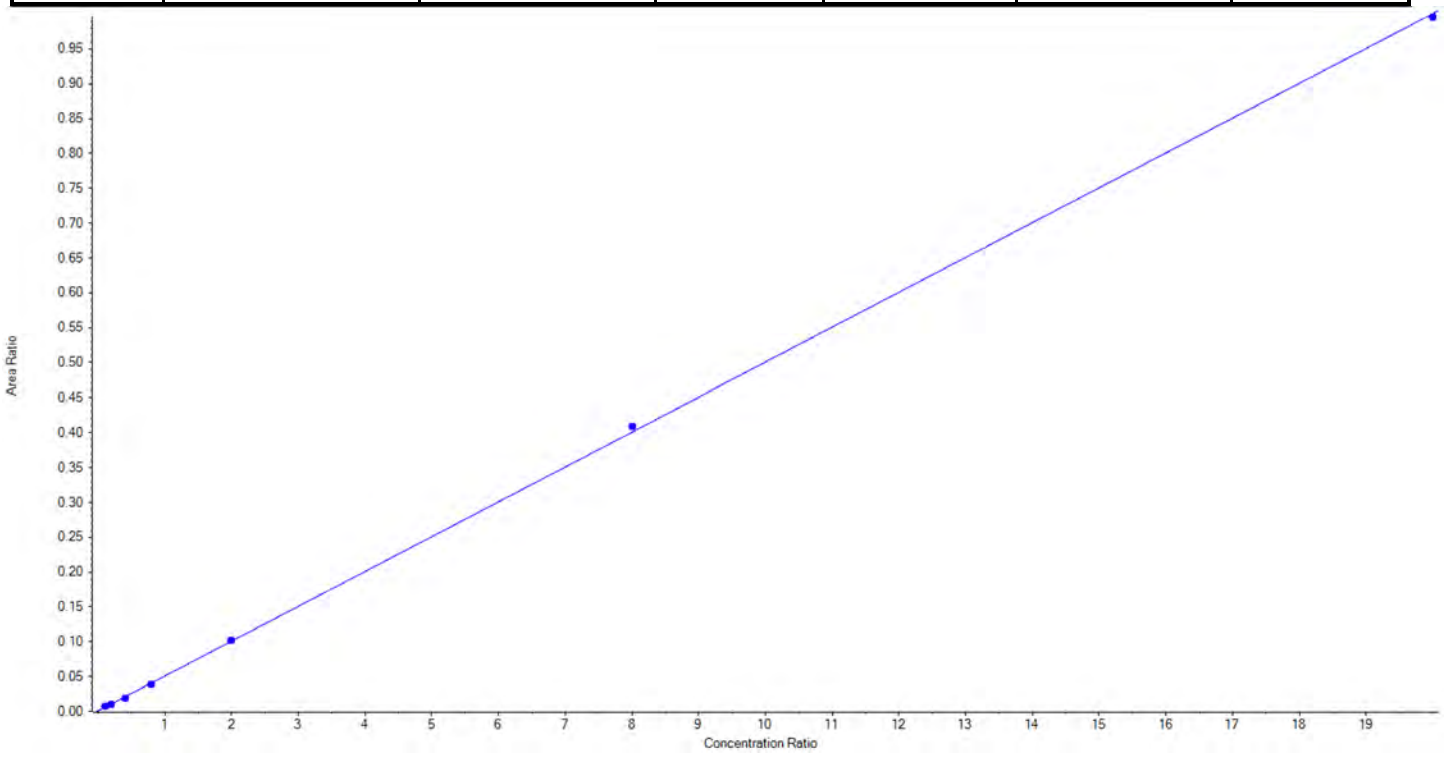
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFUnA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	563.0 / 269.0	**Result Table**	20-0470A
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05000 x + 7.35824e-4 (r = 0.99973) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	147.26	117.8
5	KY34	L2	True	250.00	242.35	96.9
6	KY35	L3	True	500.00	441.14	88.2
7	KY36	L4	True	1000.00	940.38	94.0
8	KY37	L5	True	2500.00	2539.85	101.6
9	KY38	L6	True	10000.00	10189.35	101.9
10	KY39	L7	True	25000.00	24874.67	99.5



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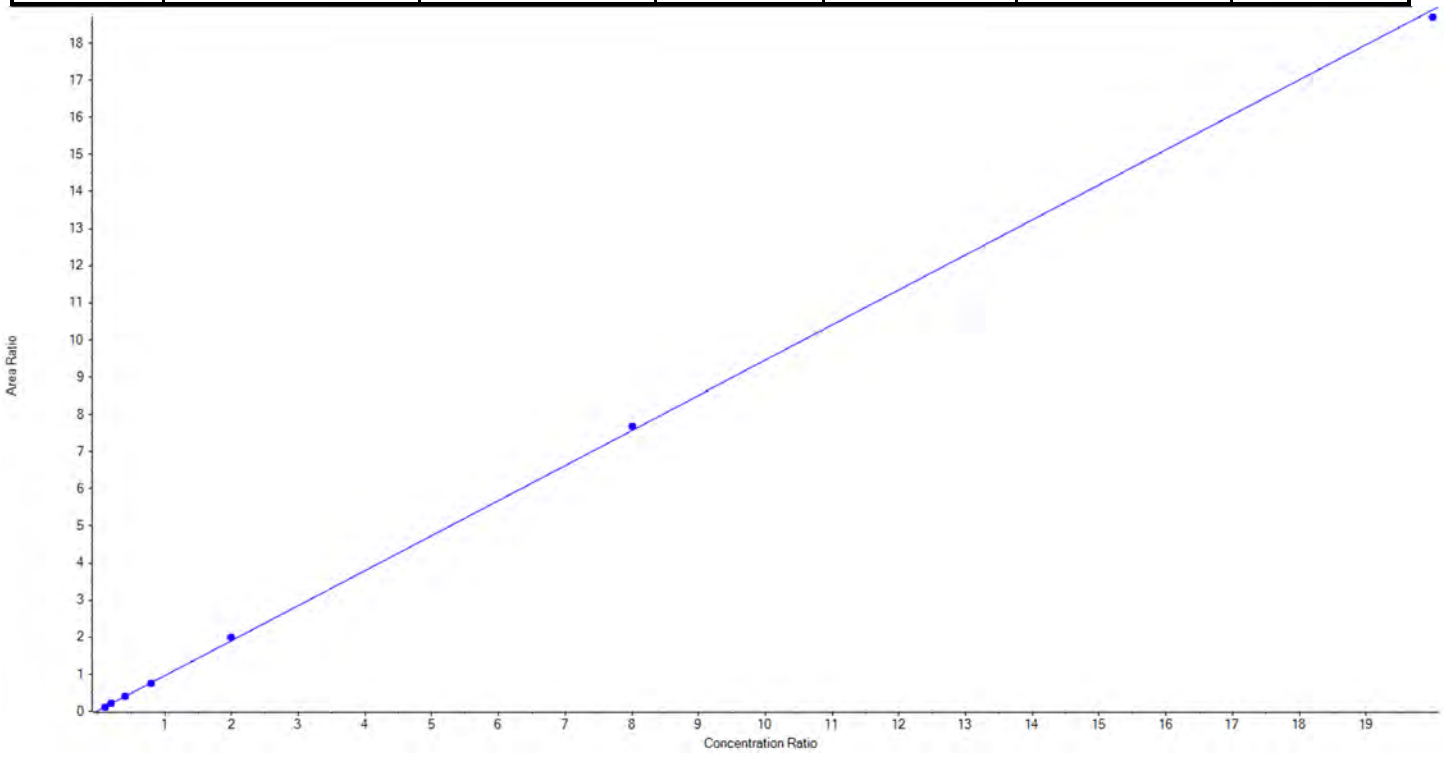
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFDoA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	613.0 / 569.0	**Result Table**	20-0470A
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.94417 x + 0.01766 (r = 0.99984) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	118.16	94.5
5	KY34	L2	True	250.00	255.56	102.2
6	KY35	L3	True	500.00	495.04	99.0
7	KY36	L4	True	1000.00	988.52	98.9
8	KY37	L5	True	2500.00	2621.00	104.8
9	KY38	L6	True	10000.00	10160.38	101.6
10	KY39	L7	True	25000.00	24736.35	99.0



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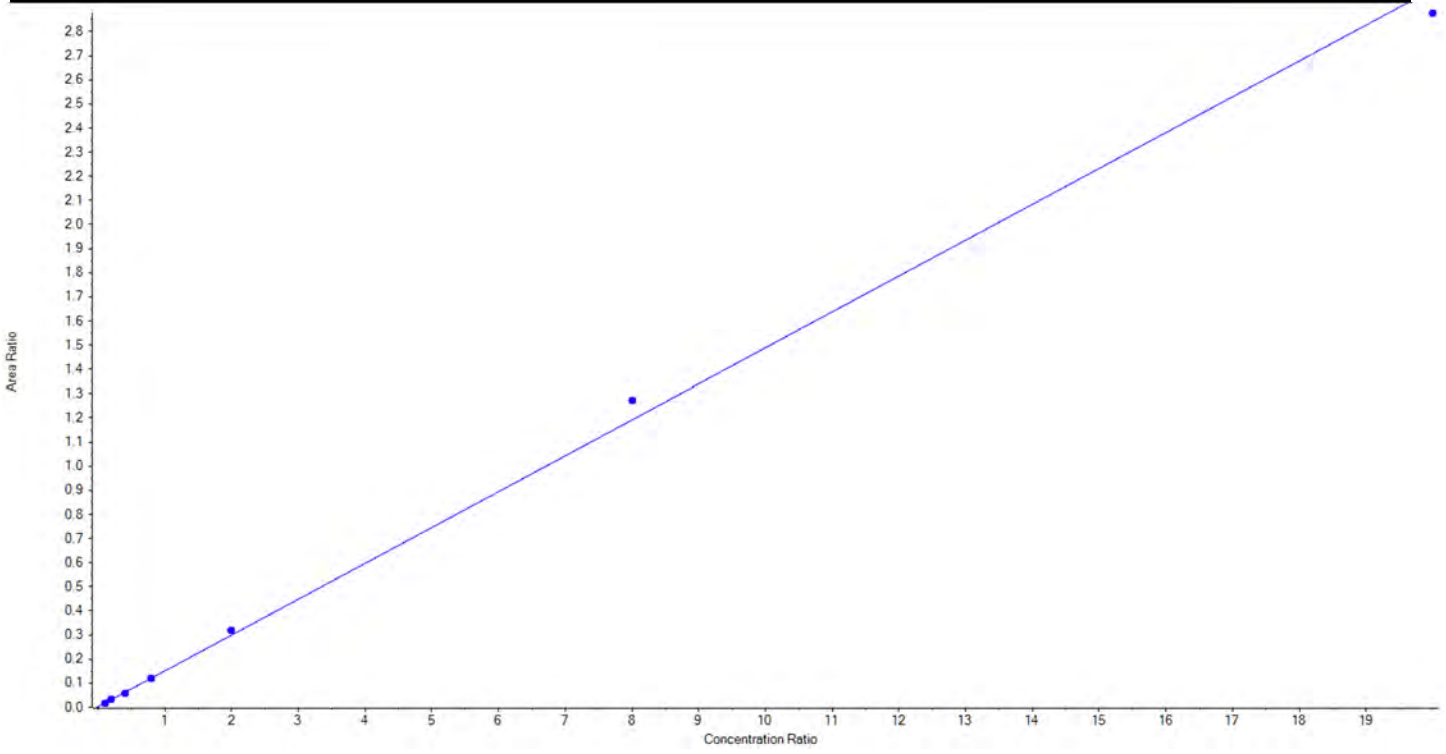
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFDoA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	613.0 / 319.0	**Result Table**	20-0470A
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.14866 x + 0.00225 (r = 0.99875) (weighting: 1 / x) r^2:0.9975

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	117.62	94.1
5	KY34	L2	True	250.00	254.00	101.6
6	KY35	L3	True	500.00	466.08	93.2
7	KY36	L4	True	1000.00	1005.68	100.6
8	KY37	L5	True	2500.00	2673.49	106.9
9	KY38	L6	True	10000.00	10691.50	106.9
10	KY39	L7	True	25000.00	24166.63	96.7



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Calibration Summary Report

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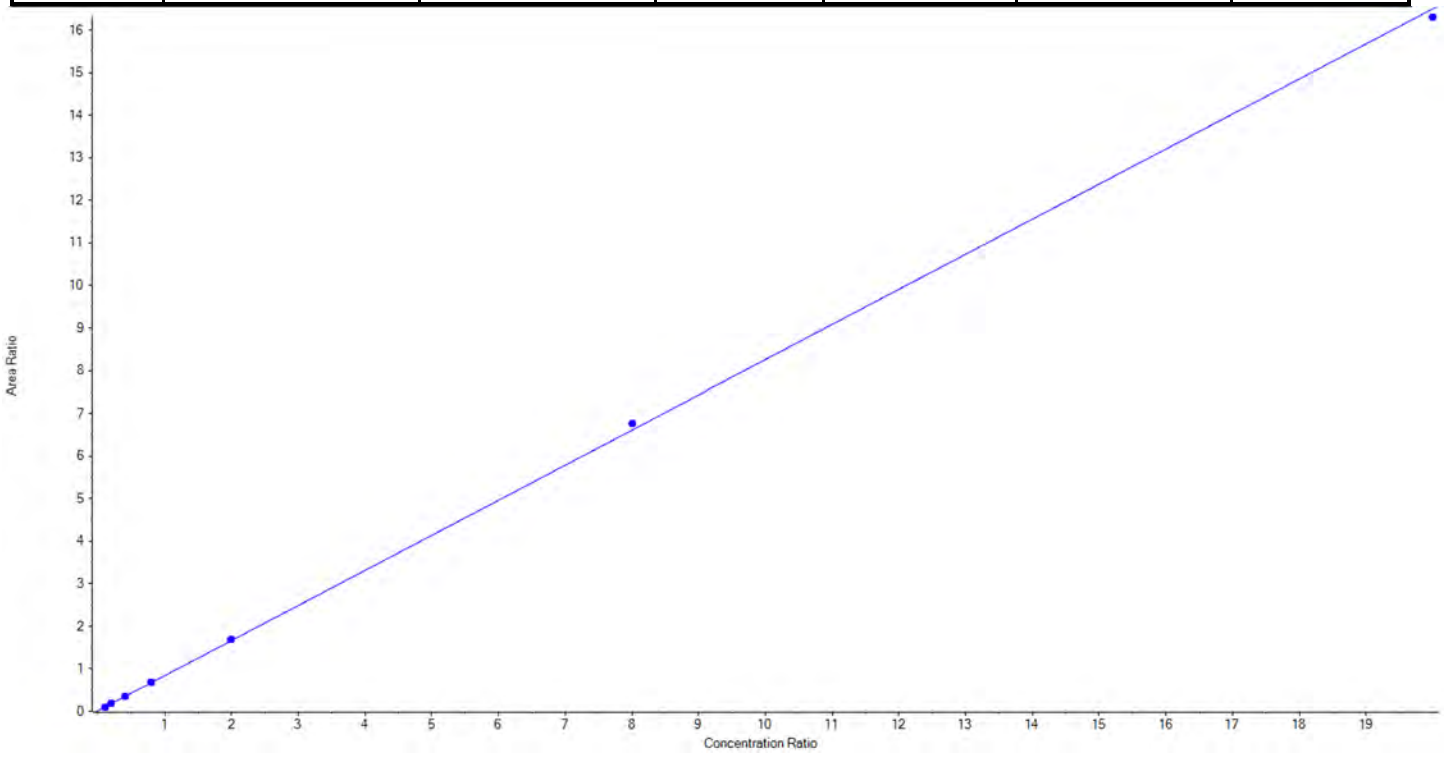
Analyte Name	PFTrDA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	663.0 / 619.0	**Result Table**	20-0470A
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.82432 x + 0.01587 (r = 0.99985) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	117.29	93.8
5	KY34	L2	True	250.00	250.30	100.1
6	KY35	L3	True	500.00	513.73	102.8
7	KY36	L4	True	1000.00	1004.44	100.4
8	KY37	L5	True	2500.00	2539.50	101.6
9	KY38	L6	True	10000.00	10246.37	102.5
10	KY39	L7	True	25000.00	24703.37	98.8



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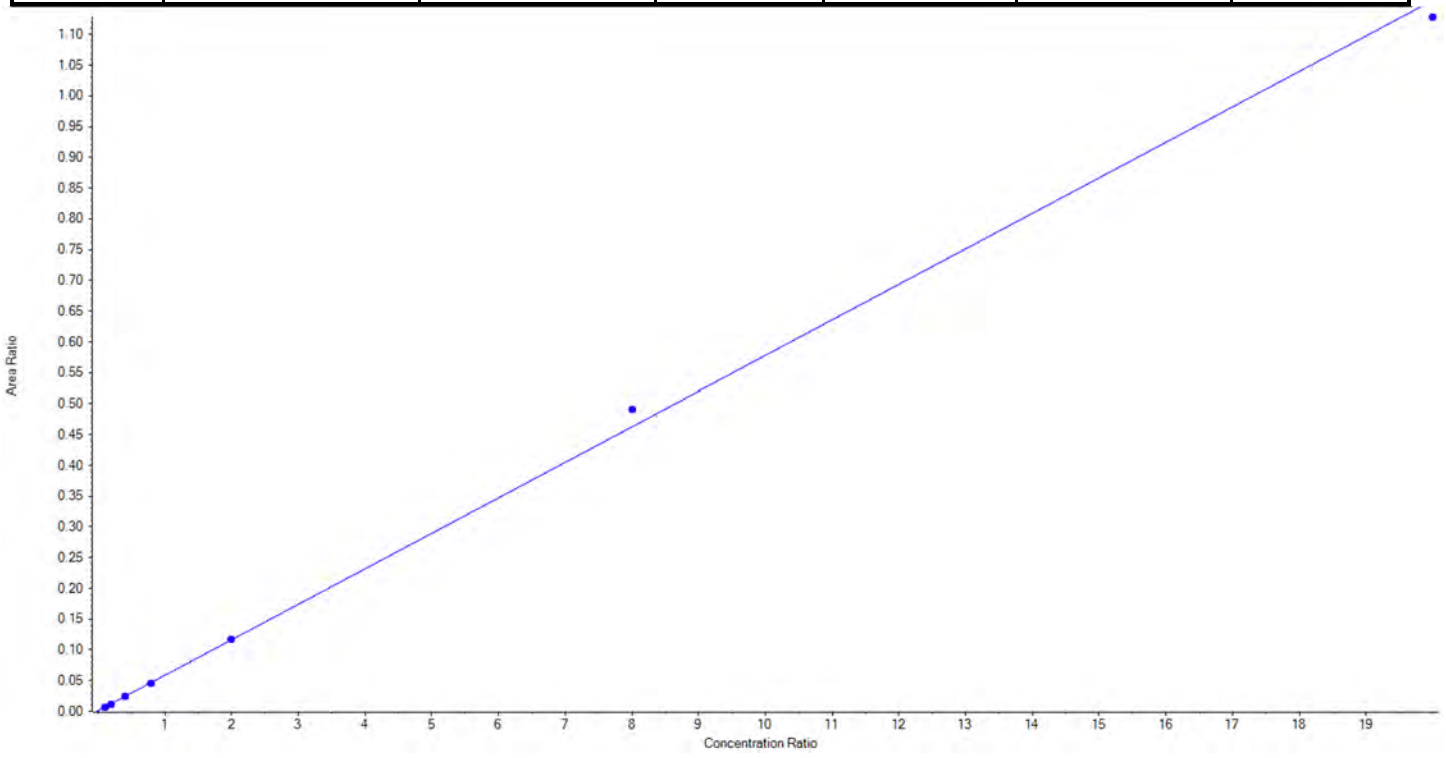
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFTrDA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	663.0 / 169.0	**Result Table**	20-0470A
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05772 x + 8.73427e-4 (r = 0.99927) (weighting: 1 / x) r^2:0.9985

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	125.77	100.6
5	KY34	L2	True	250.00	236.11	94.5
6	KY35	L3	True	500.00	519.74	104.0
7	KY36	L4	True	1000.00	969.45	96.9
8	KY37	L5	True	2500.00	2509.08	100.4
9	KY38	L6	True	10000.00	10604.14	106.0
10	KY39	L7	True	25000.00	24410.72	97.6



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Calibration Summary Report

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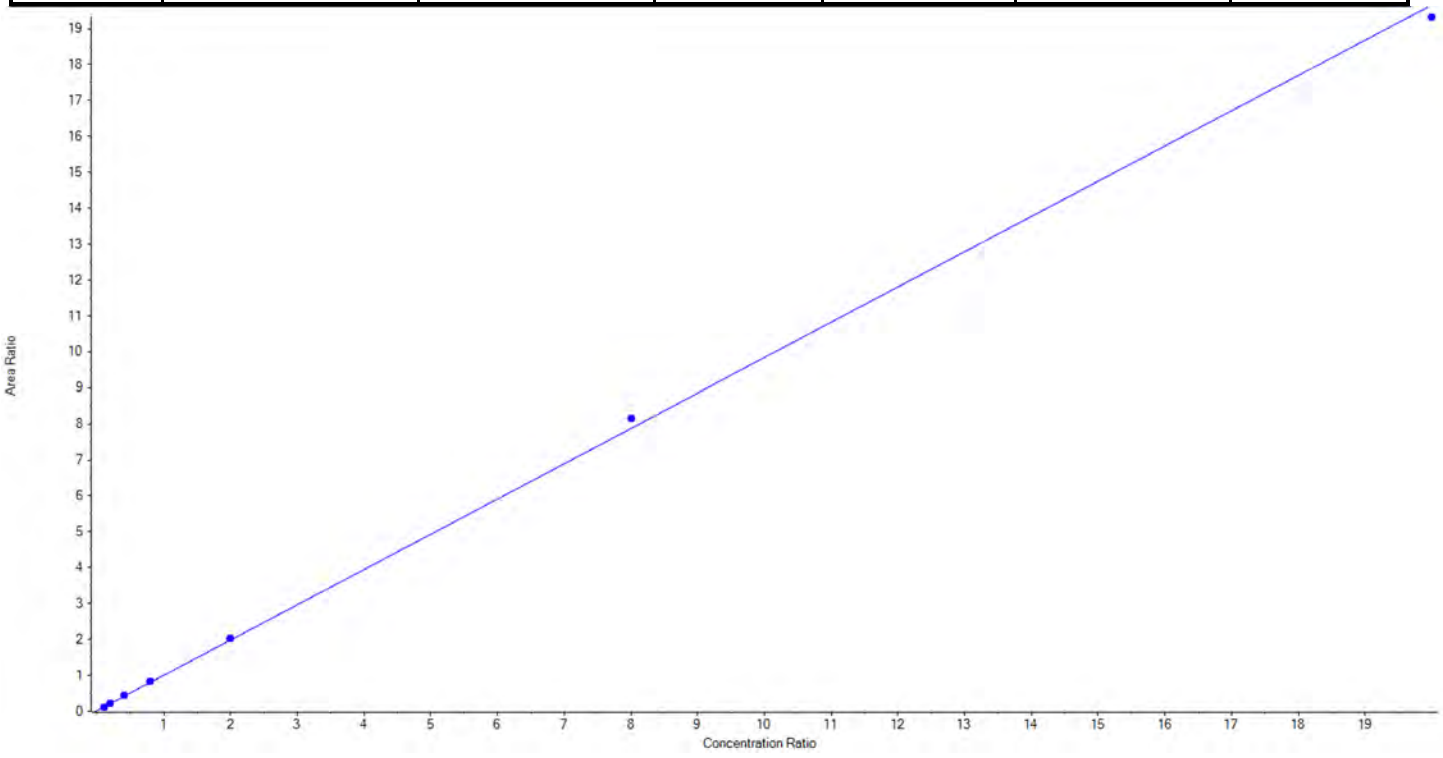
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFTeDA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	713.0 / 669.0	**Result Table**	20-0470A
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.98194 x + 0.02289 (r = 0.99967) (weighting: 1 / x) r^2:0.9993

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	112.84	90.3
5	KY34	L2	True	250.00	249.59	99.8
6	KY35	L3	True	500.00	522.50	104.5
7	KY36	L4	True	1000.00	1018.59	101.9
8	KY37	L5	True	2500.00	2540.92	101.6
9	KY38	L6	True	10000.00	10362.65	103.6
10	KY39	L7	True	25000.00	24567.91	98.3



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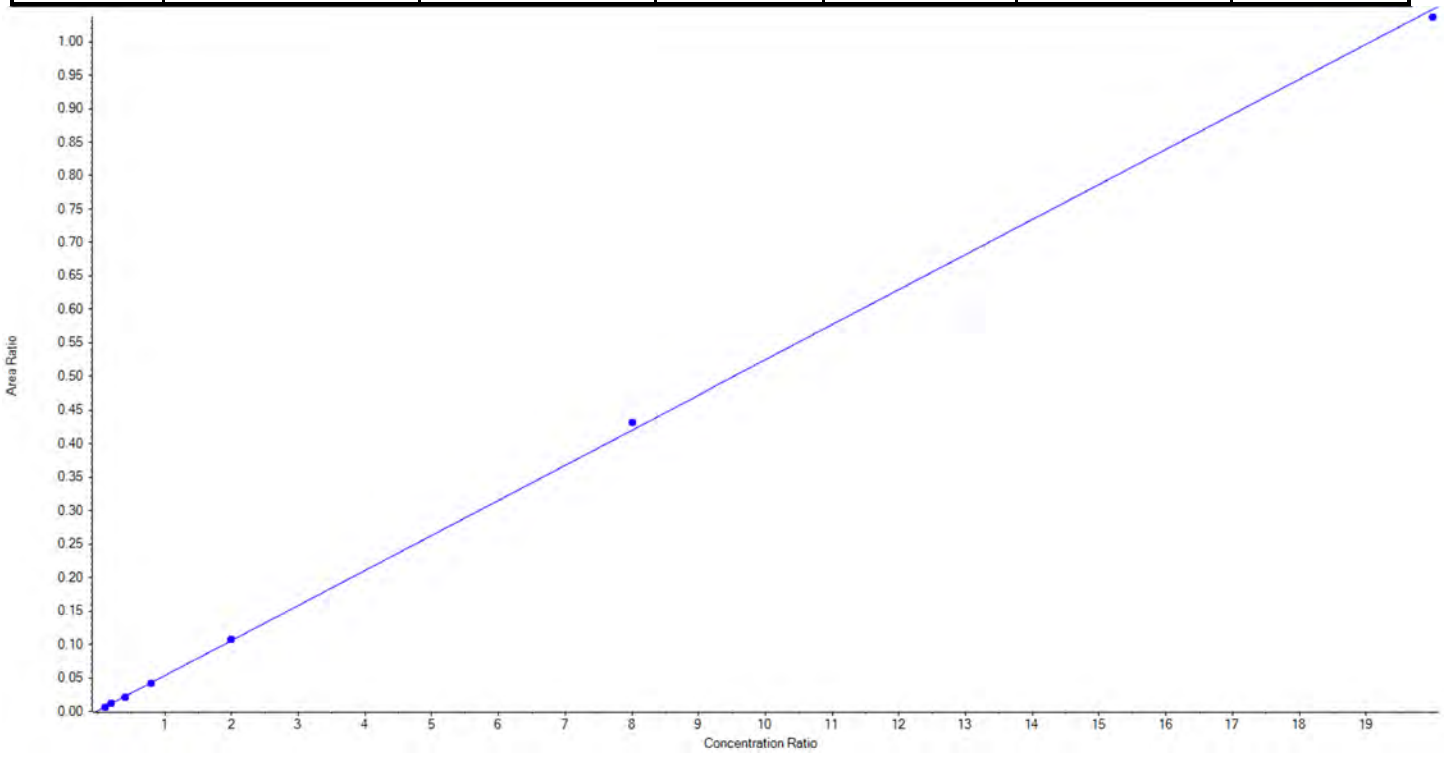
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	PFTeDA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	713.0 / 169.0	**Result Table**	20-0470A
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05237 x + 0.00109 (r = 0.99983) (weighting: 1 / x) r^2:0.9997

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	120.88	96.7
5	KY34	L2	True	250.00	261.85	104.7
6	KY35	L3	True	500.00	485.95	97.2
7	KY36	L4	True	1000.00	984.71	98.5
8	KY37	L5	True	2500.00	2533.04	101.3
9	KY38	L6	True	10000.00	10270.42	102.7
10	KY39	L7	True	25000.00	24718.15	98.9



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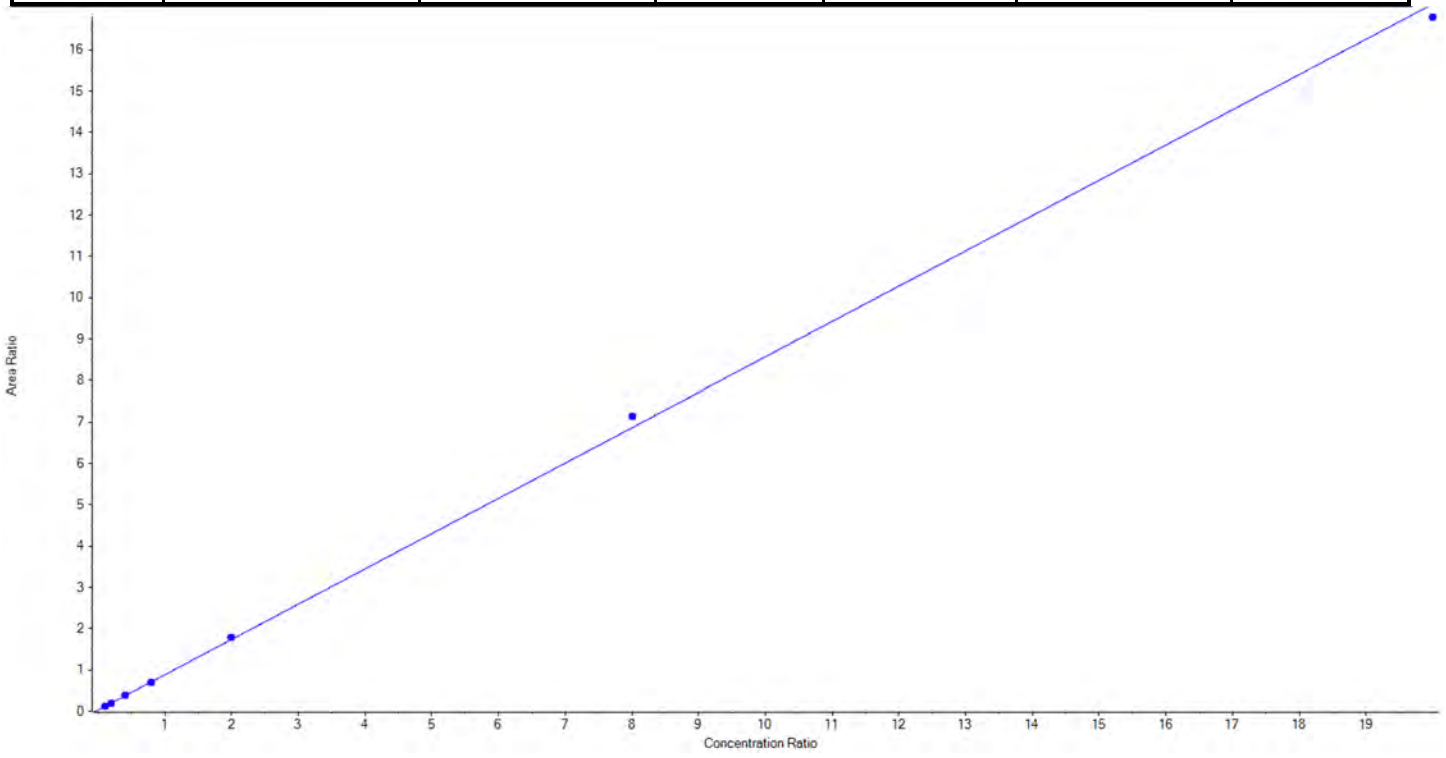
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	NMeFOSAA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	570.0 / 419.0	**Result Table**	20-0470A
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.85386 x + 0.03158 (r = 0.99961) (weighting: 1 / x) r^2:0.9992

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	114.15	91.3
5	KY34	L2	True	250.00	252.73	101.1
6	KY35	L3	True	500.00	518.35	103.7
7	KY36	L4	True	1000.00	984.94	98.5
8	KY37	L5	True	2500.00	2585.94	103.4
9	KY38	L6	True	10000.00	10385.85	103.9
10	KY39	L7	True	25000.00	24533.04	98.1



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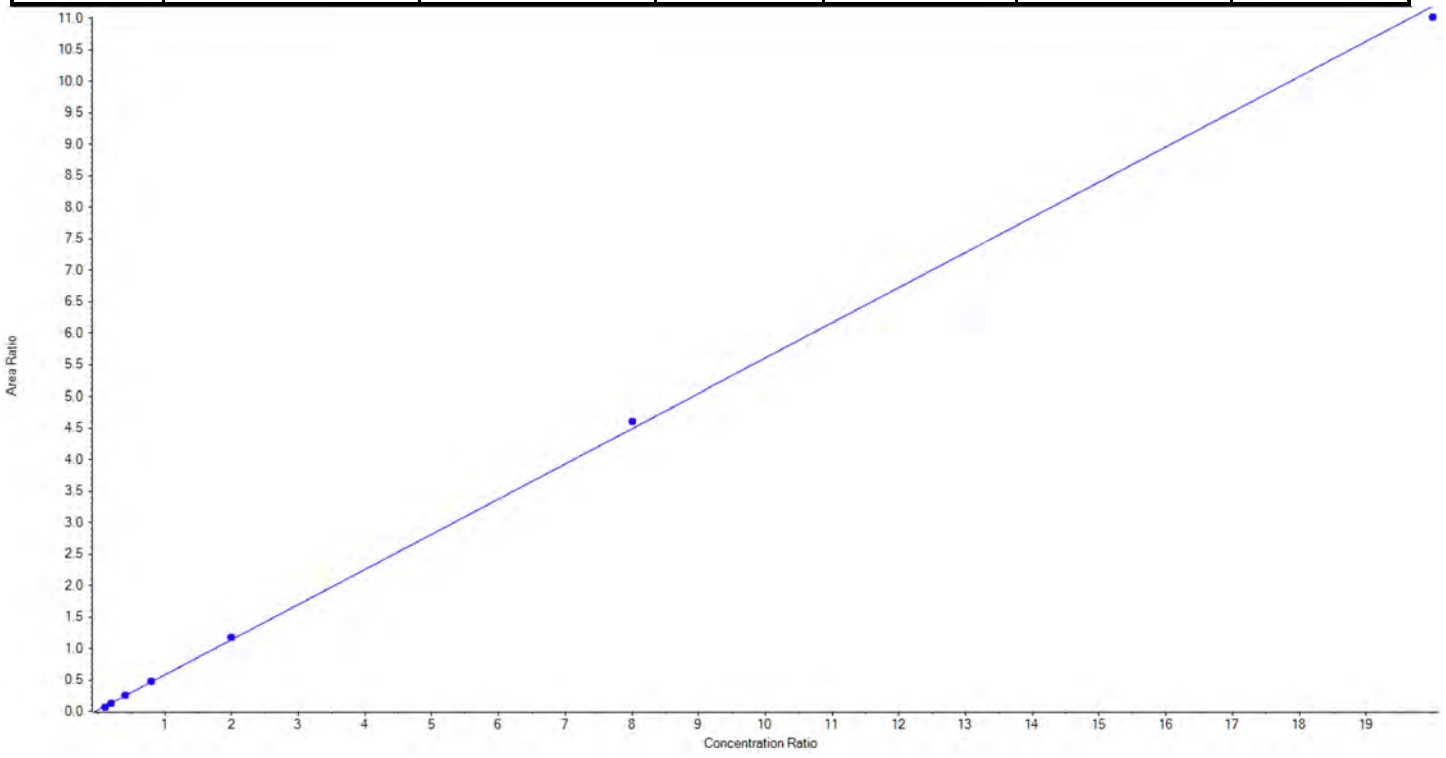
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	NMeFOSAA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	570.0 / 512.0	**Result Table**	20-0470A
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.55844 x + 0.02083 (r = 0.99973) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	111.26	89.0
5	KY34	L2	True	250.00	249.81	99.9
6	KY35	L3	True	500.00	518.45	103.7
7	KY36	L4	True	1000.00	1023.46	102.4
8	KY37	L5	True	2500.00	2599.94	104.0
9	KY38	L6	True	10000.00	10257.48	102.6
10	KY39	L7	True	25000.00	24614.59	98.5



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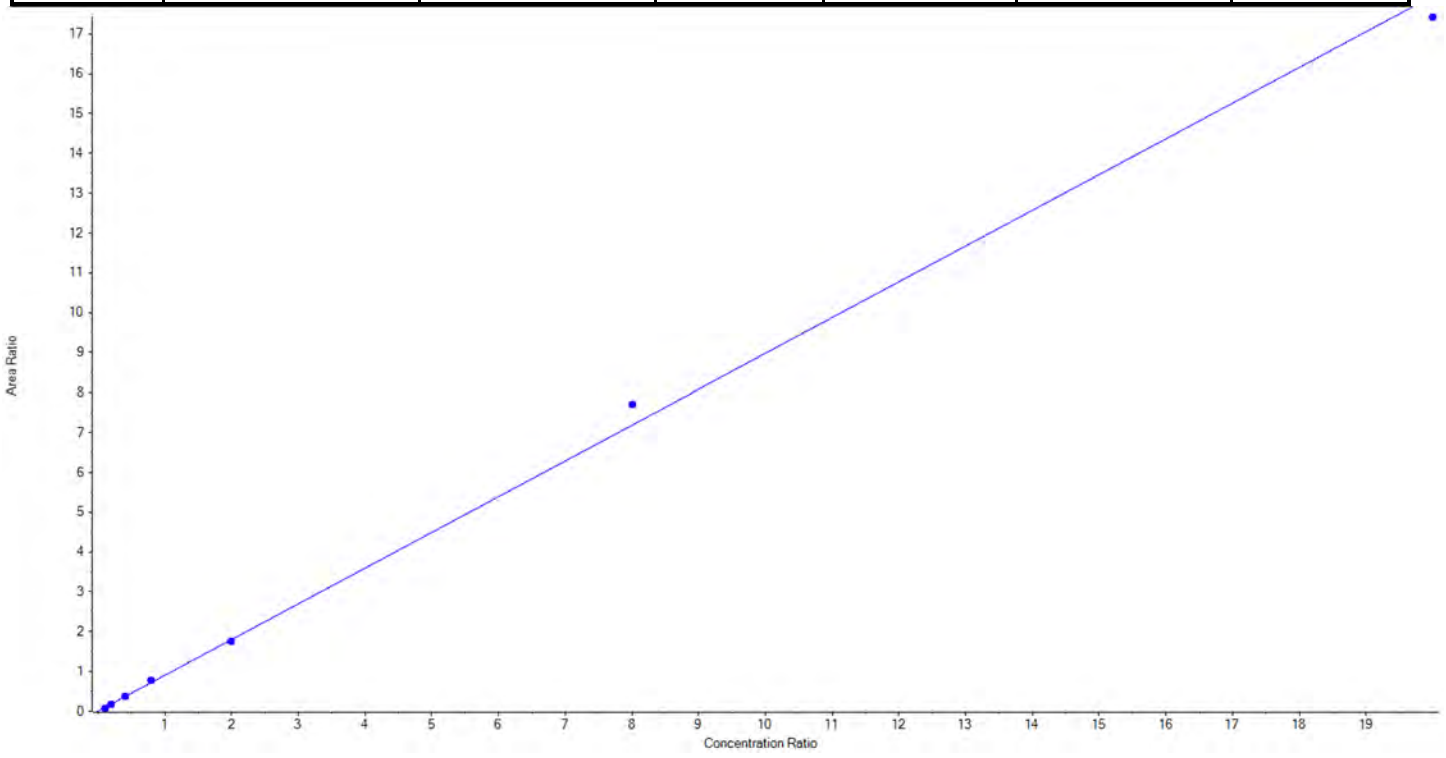
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	NEtFOSAA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	584.0 / 419.0	**Result Table**	20-0470A
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89723 x + 0.00733 (r = 0.99883) (weighting: 1 / x) r^2:0.9977

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	107.45	86.0
5	KY34	L2	True	250.00	249.03	99.6
6	KY35	L3	True	500.00	527.55	105.5
7	KY36	L4	True	1000.00	1071.52	107.2
8	KY37	L5	True	2500.00	2437.67	97.5
9	KY38	L6	True	10000.00	10722.18	107.2
10	KY39	L7	True	25000.00	24259.60	97.0



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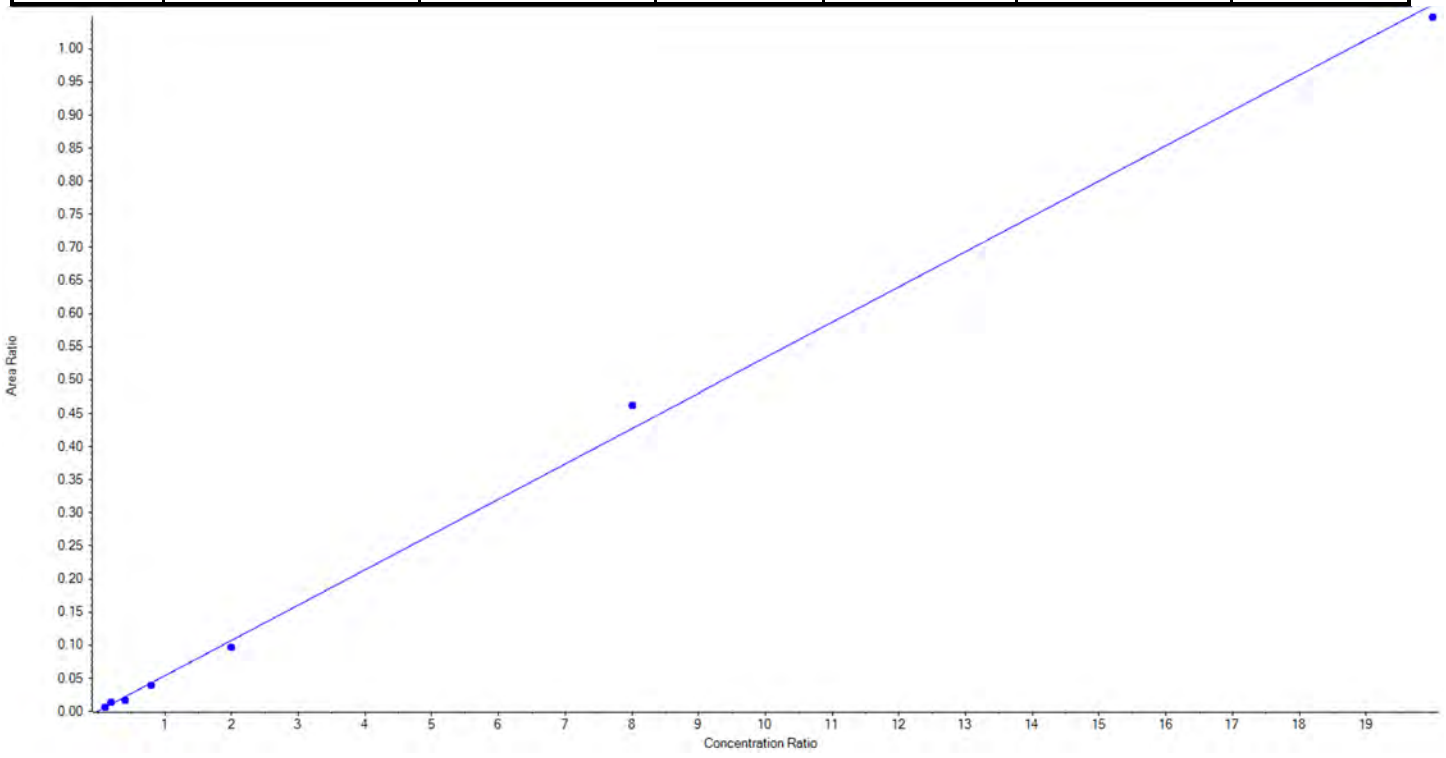
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	NEtFOSAA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	584.0 / 483.0	**Result Table**	20-0470A
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05332 x + 4.79672e-4 (r = 0.99793) (weighting: 1 / x) r^2:0.9959

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	138.63	110.9
5	KY34	L2	True	250.00	309.00	123.6
6	KY35	L3	True	500.00	392.31	78.5
7	KY36	L4	True	1000.00	907.87	90.8
8	KY37	L5	True	2500.00	2243.11	89.7
9	KY38	L6	True	10000.00	10830.82	108.3
10	KY39	L7	True	25000.00	24553.25	98.2



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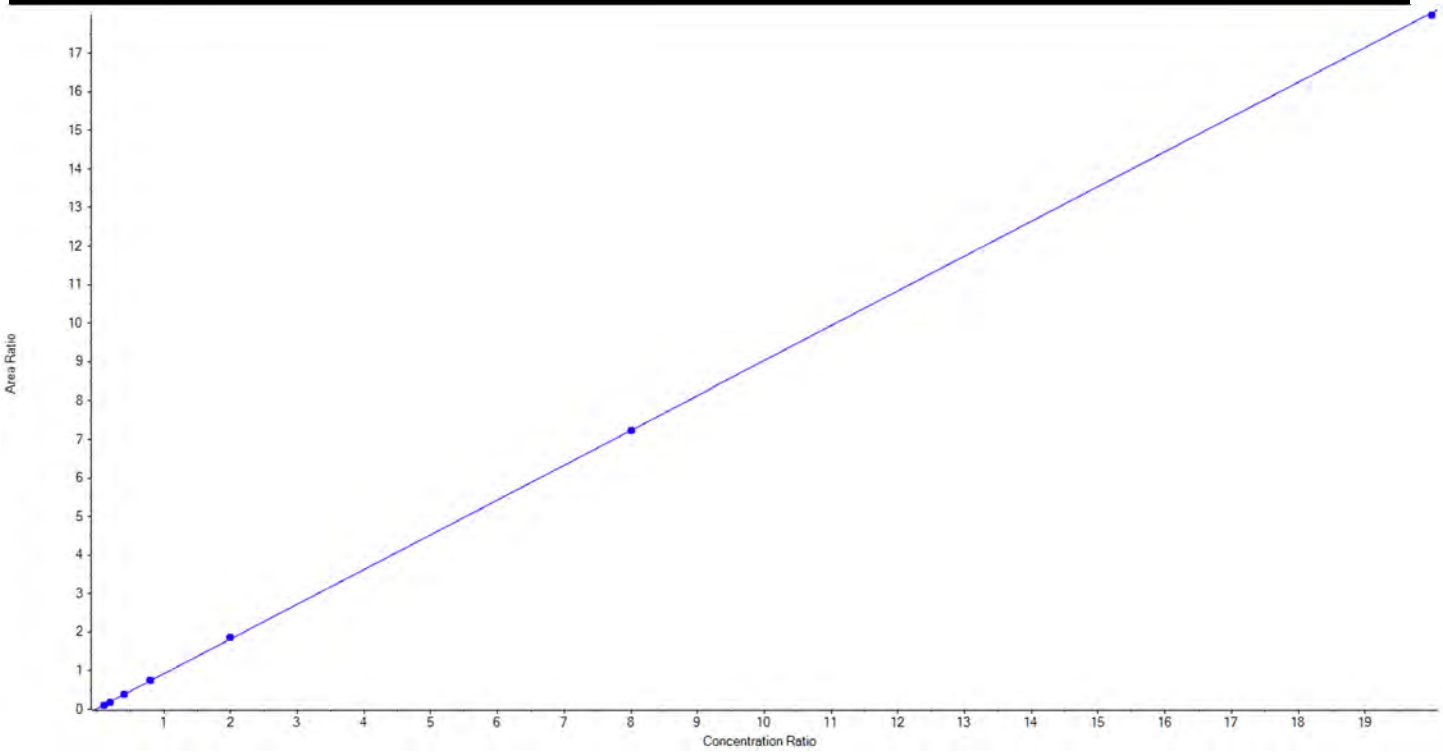
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	HFPO-DA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	285.0 / 169.0	**Result Table**	20-0470A
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.90160 x + 0.02055 (r = 0.99993) (weighting: 1 / x) r^2:0.9999

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	117.71	94.2
5	KY34	L2	True	250.00	239.81	95.9
6	KY35	L3	True	500.00	524.23	104.9
7	KY36	L4	True	1000.00	1029.66	103.0
8	KY37	L5	True	2500.00	2564.66	102.6
9	KY38	L6	True	10000.00	9986.02	99.9
10	KY39	L7	True	25000.00	24912.92	99.7



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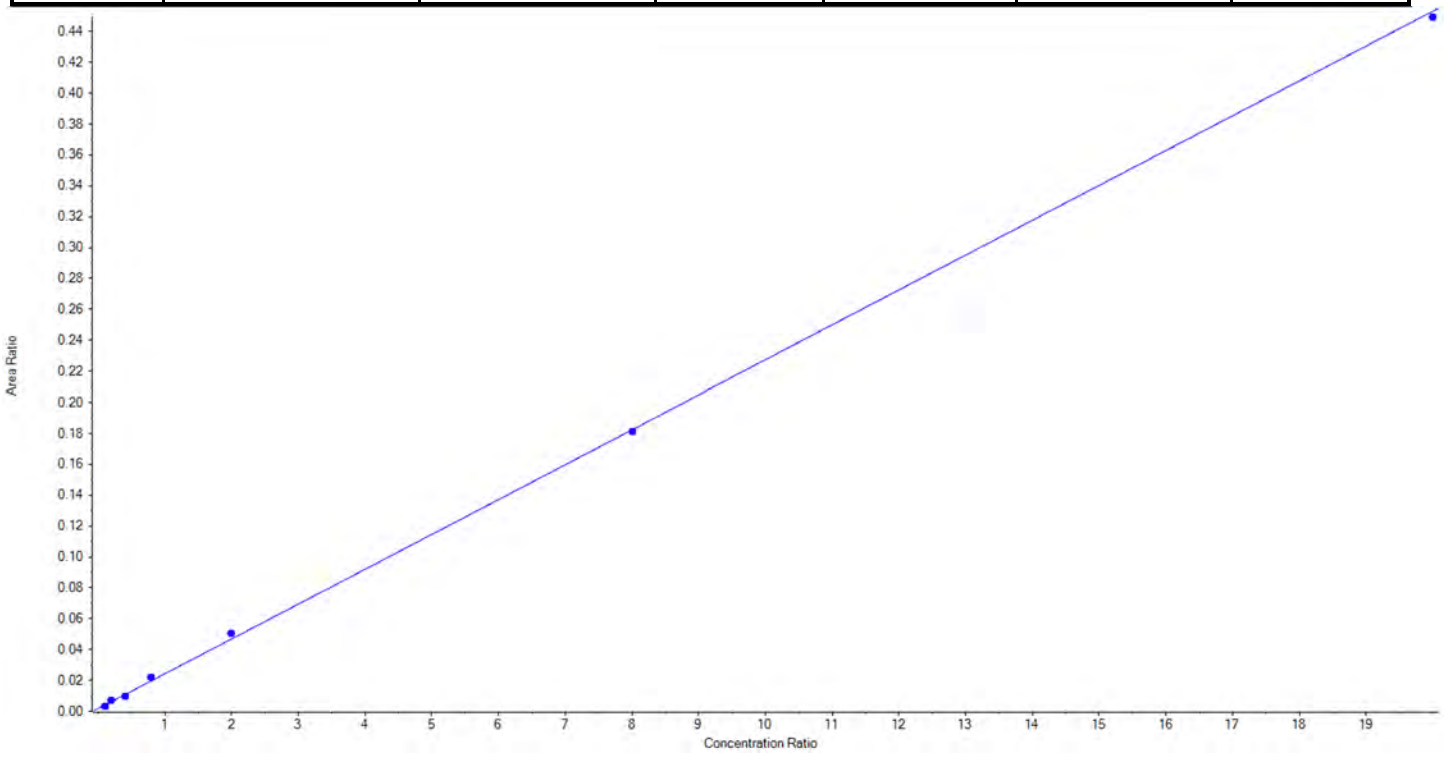
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	HFPO-DA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	285.0 / 118.8	**Result Table**	20-0470A
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.02257 x + 0.00172 (r = 0.99921) (weighting: 1 / x) r^2:0.9984

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	96.85	77.5
5	KY34	L2	True	250.00	298.08	119.2
6	KY35	L3	True	500.00	427.62	85.5
7	KY36	L4	True	1000.00	1107.09	110.7
8	KY37	L5	True	2500.00	2710.87	108.4
9	KY38	L6	True	10000.00	9947.47	99.5
10	KY39	L7	True	25000.00	24787.02	99.2



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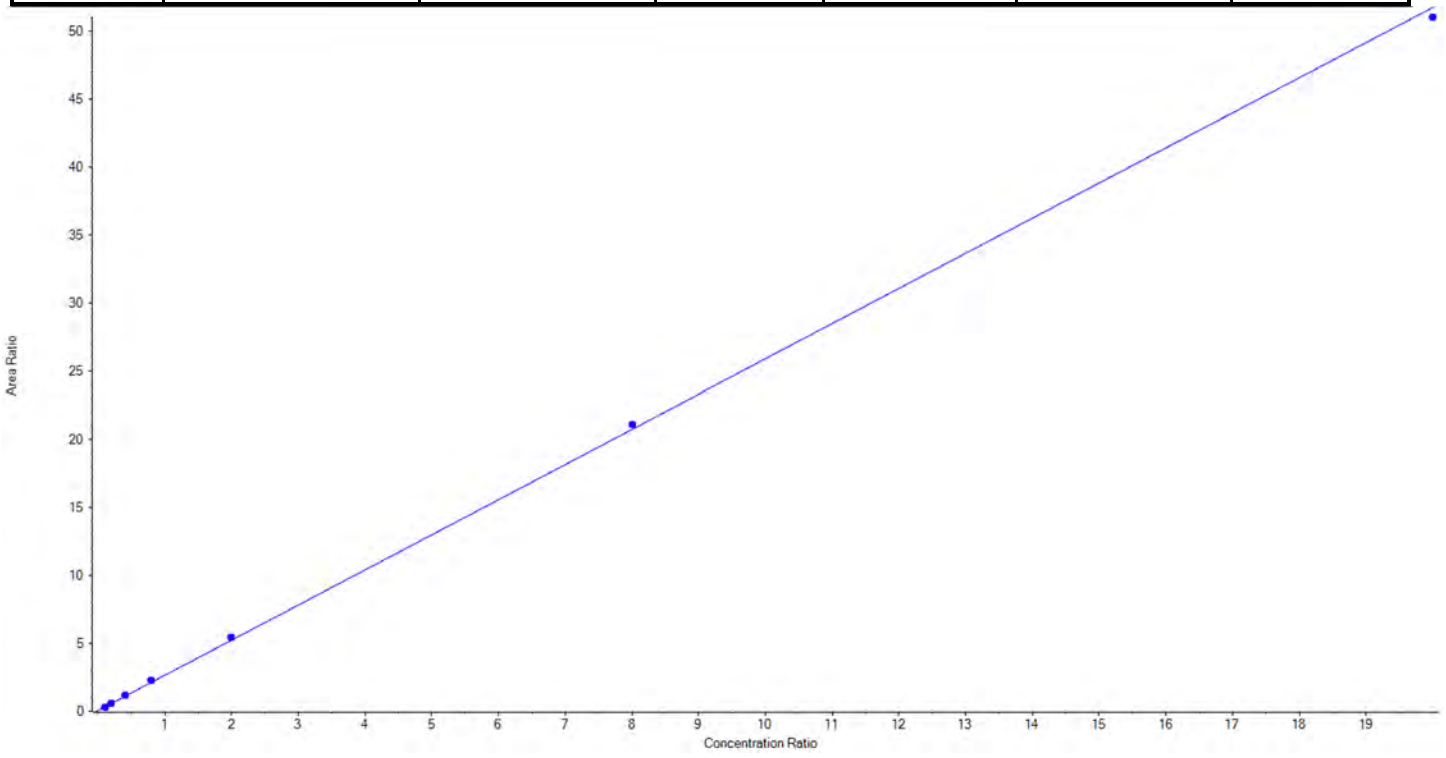
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	ADONA_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	377.0 / 251.0	**Result Table**	20-0470A
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.58419 x + 0.06792 (r = 0.99974) (weighting: 1 / x) r^2:0.9995

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	108.72	87.0
5	KY34	L2	True	250.00	244.19	97.7
6	KY35	L3	True	500.00	527.94	105.6
7	KY36	L4	True	1000.00	1055.53	105.6
8	KY37	L5	True	2500.00	2592.12	103.7
9	KY38	L6	True	10000.00	10189.92	101.9
10	KY39	L7	True	25000.00	24656.59	98.6



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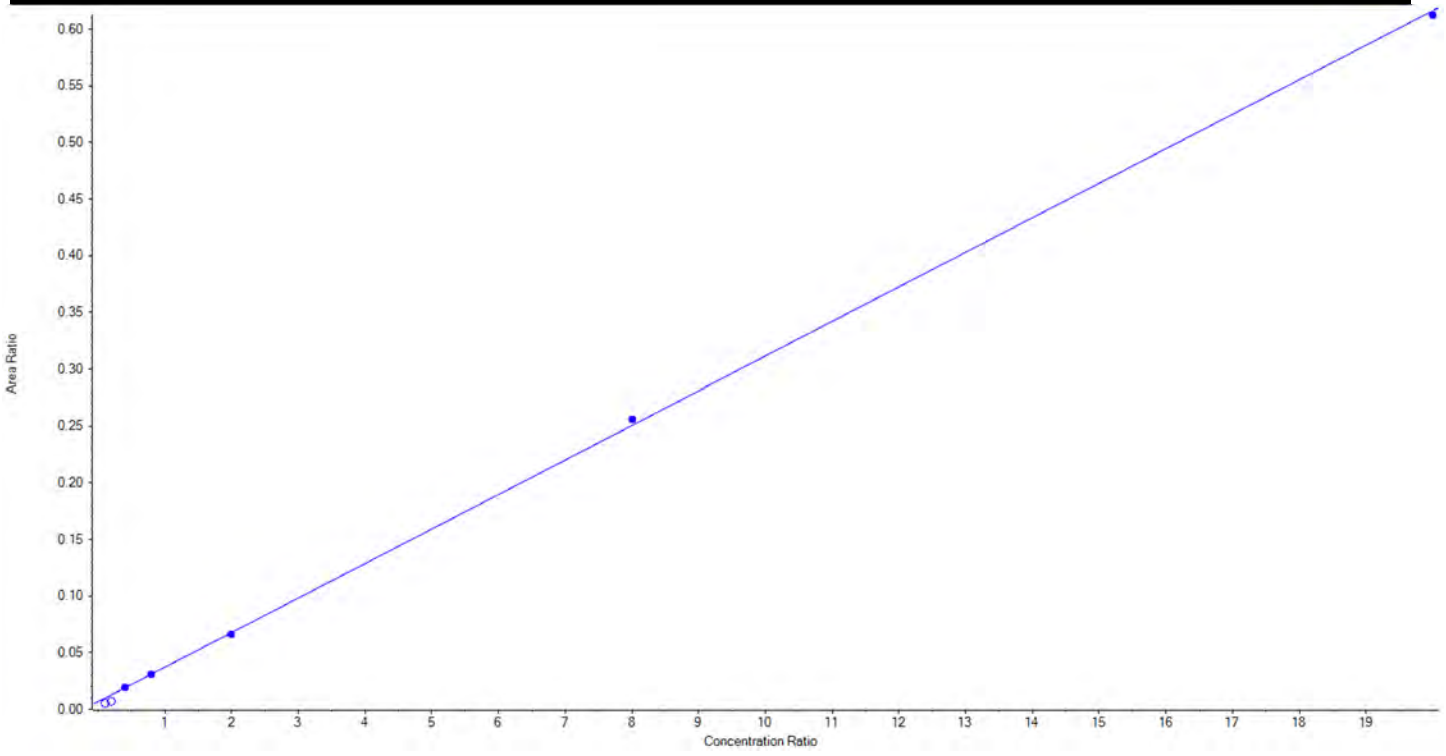
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	ADONA_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	377.0 / 85.0	**Result Table**	20-0470A
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.03048 x + 0.00677 (r = 0.99988) (weighting: 1 / x) r^2:0.9998

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	< 0	N/A
5	KY34	L2	False	250.00	15.72	6.3
6	KY35	L3	True	500.00	510.54	102.1
7	KY36	L4	True	1000.00	985.23	98.5
8	KY37	L5	True	2500.00	2445.18	97.8
9	KY38	L6	True	10000.00	10220.89	102.2
10	KY39	L7	True	25000.00	24838.16	99.4



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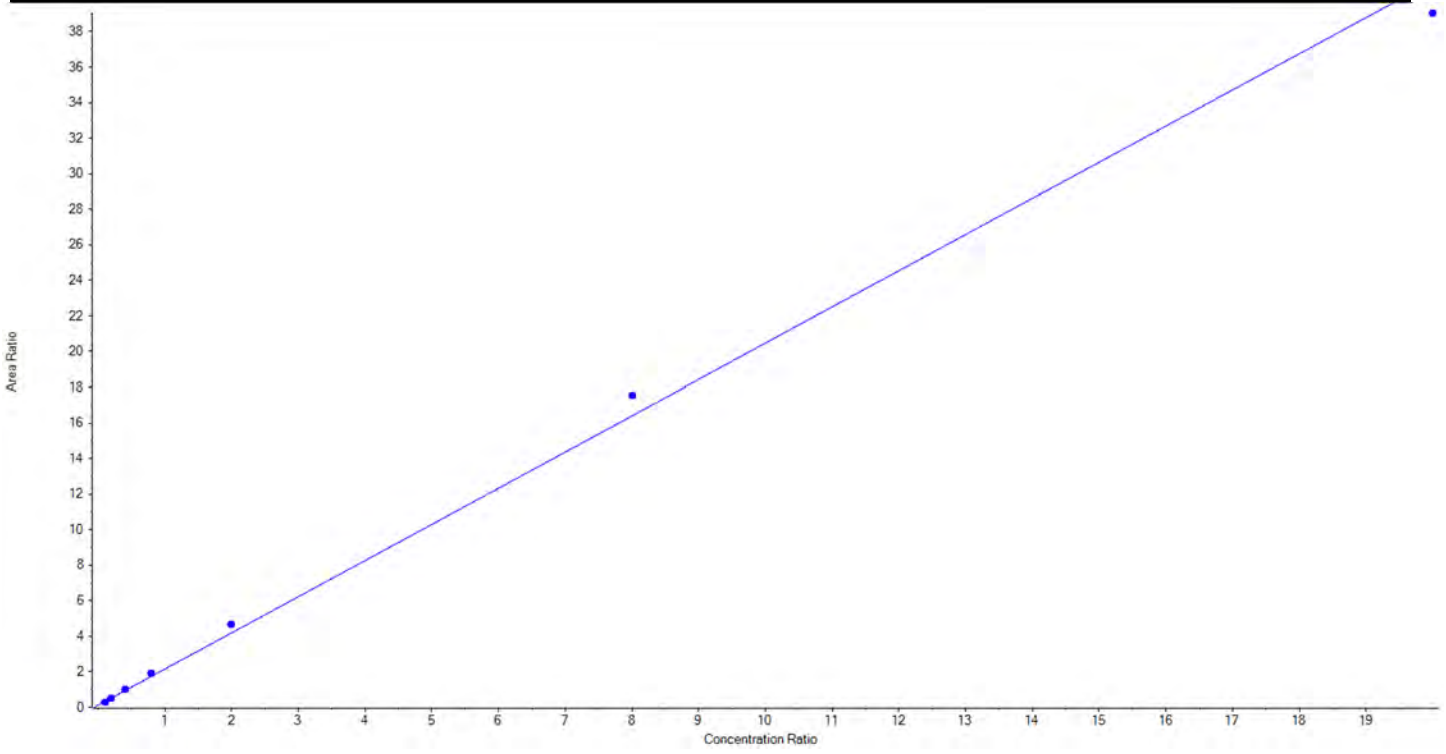
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	9Cl-PF3ONS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	531.0 / 351.0	**Result Table**	20-0470A
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.03522 x + 0.11866 (r = 0.99787) (weighting: 1 / x) r^2:0.9957

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	94.38	75.5
5	KY34	L2	True	250.00	233.70	93.5
6	KY35	L3	True	500.00	536.20	107.2
7	KY36	L4	True	1000.00	1090.93	109.1
8	KY37	L5	True	2500.00	2796.84	111.9
9	KY38	L6	True	10000.00	10719.25	107.2
10	KY39	L7	True	25000.00	23903.70	95.6



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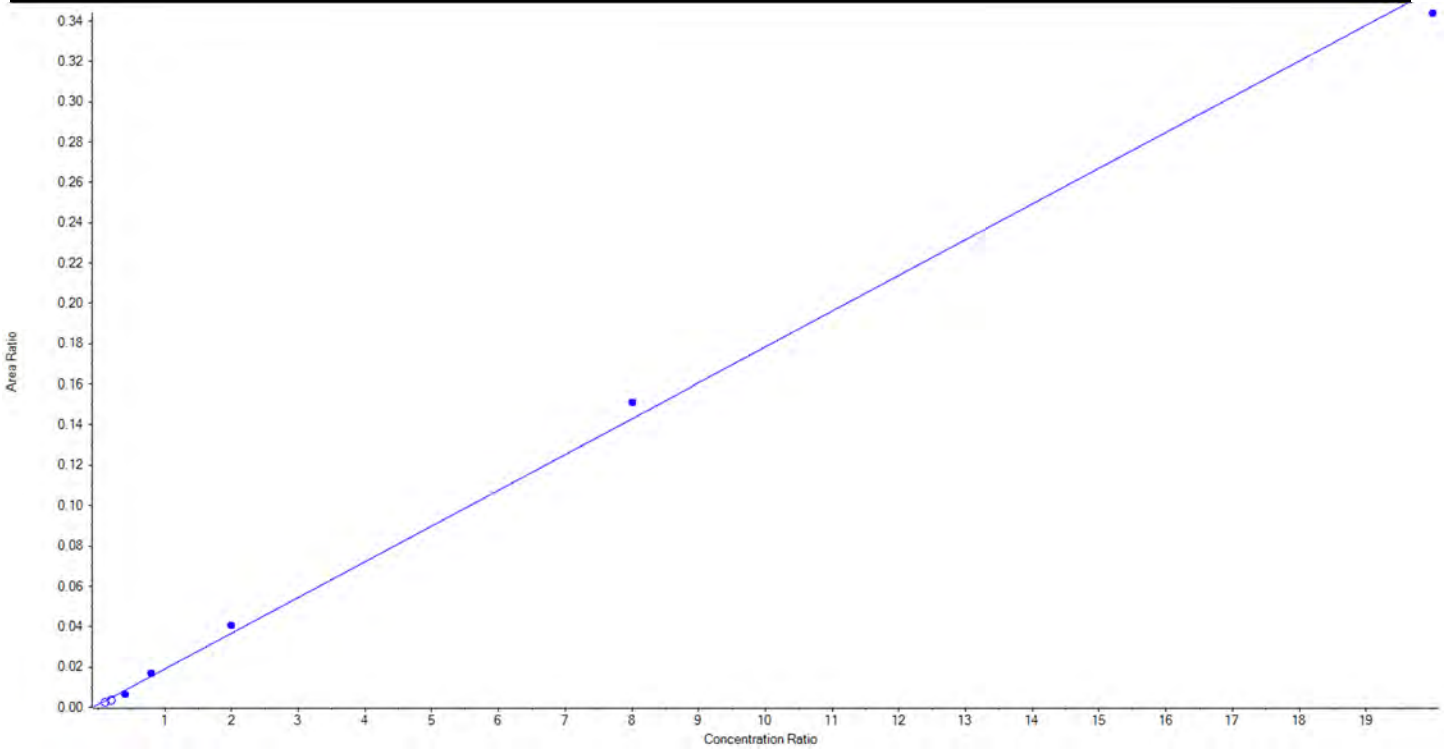
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	9Cl-PF3ONS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	531.0 / 83.0	**Result Table**	20-0470A
Internal Standard	13C3-HFPO-DA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01771 x + 0.00131 (r = 0.99795) (weighting: 1 / x) r^2:0.9959

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	65.41	52.3
5	KY34	L2	False	250.00	152.00	60.8
6	KY35	L3	True	500.00	378.10	75.6
7	KY36	L4	True	1000.00	1108.10	110.8
8	KY37	L5	True	2500.00	2782.76	111.3
9	KY38	L6	True	10000.00	10555.90	105.6
10	KY39	L7	True	25000.00	24175.14	96.7



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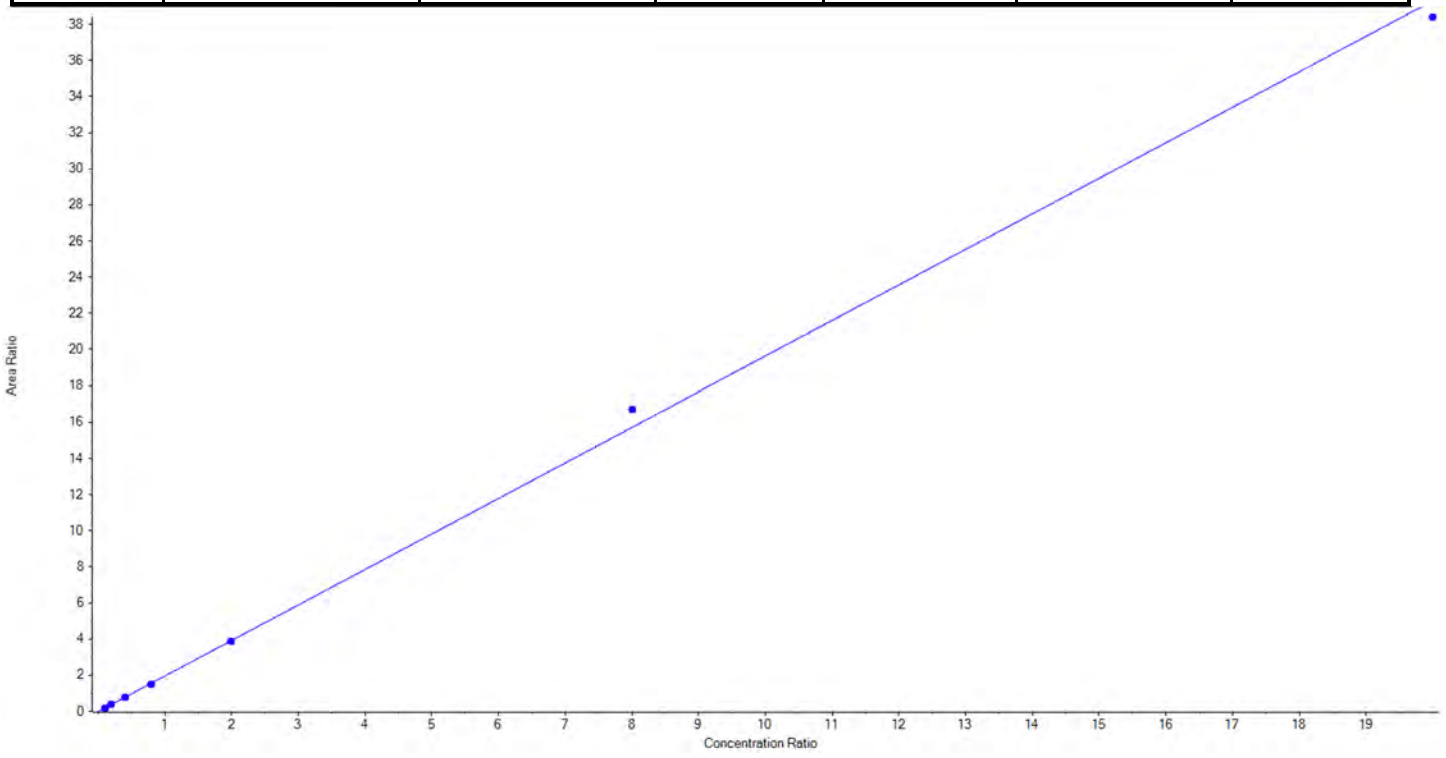
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	11Cl-pf3OUdS_1	**Data File**	AC_04202020_05-369.wiff
MRM Transition	631.0 / 451.0	**Result Table**	20-0470A
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.96548 x + -0.01075 (r = 0.99925) (weighting: 1 / x) r^2:0.9985

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	125.00	122.55	98.0
5	KY34	L2	True	250.00	249.95	100.0
6	KY35	L3	True	500.00	514.76	103.0
7	KY36	L4	True	1000.00	958.20	95.8
8	KY37	L5	True	2500.00	2481.88	99.3
9	KY38	L6	True	10000.00	10623.88	106.2
10	KY39	L7	True	25000.00	24423.78	97.7



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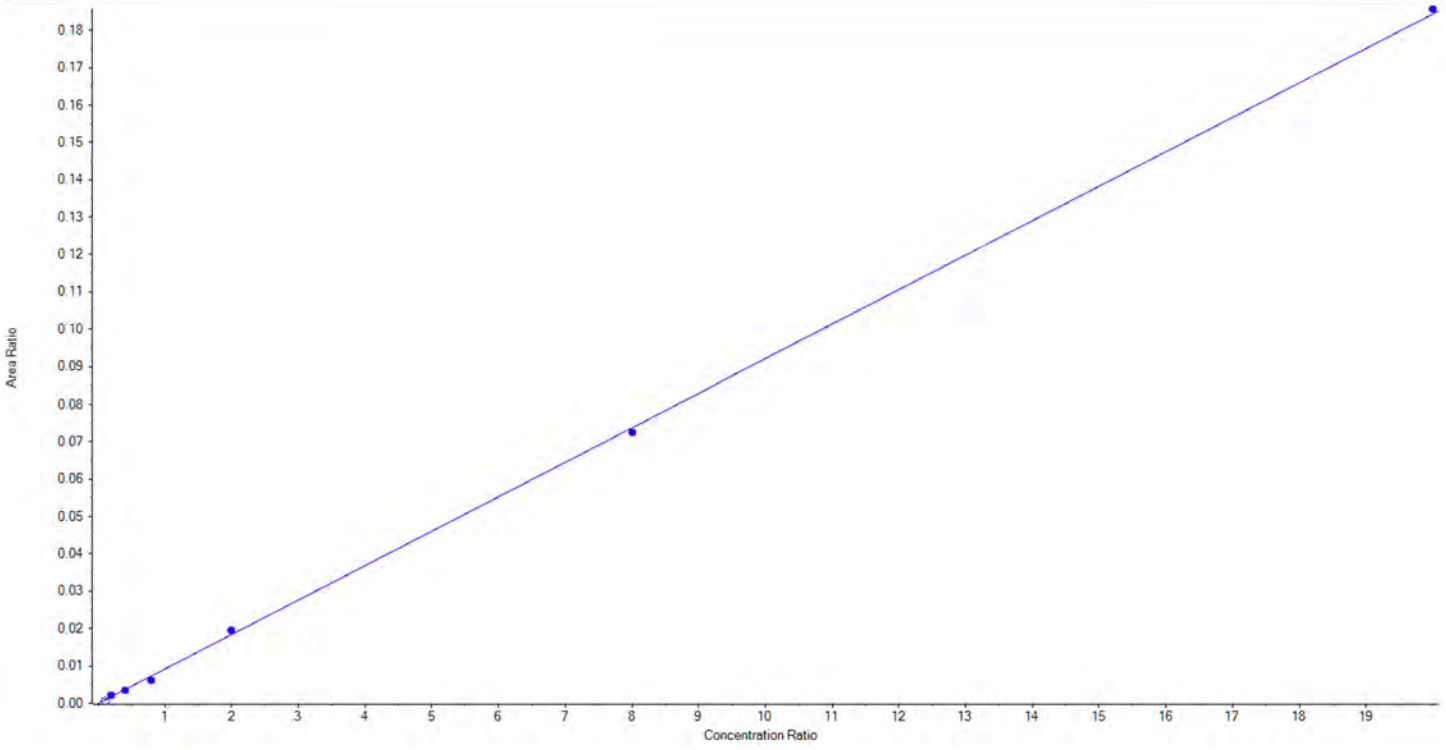
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:44 PM

Analyte Name	11Cl-pf3OUdS_2	**Data File**	AC_04202020_05-369.wiff
MRM Transition	631.0 / 83.0	**Result Table**	20-0470A
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.00922 x + -2.69659e-5 (r = 0.99933) (weighting: 1 / x) r^2:0.9987

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	125.00	78.86	63.1
5	KY34	L2	True	250.00	293.81	117.5
6	KY35	L3	True	500.00	468.35	93.7
7	KY36	L4	True	1000.00	842.33	84.2
8	KY37	L5	True	2500.00	2639.21	105.6
9	KY38	L6	True	10000.00	9830.10	98.3
10	KY39	L7	True	25000.00	25176.21	100.7



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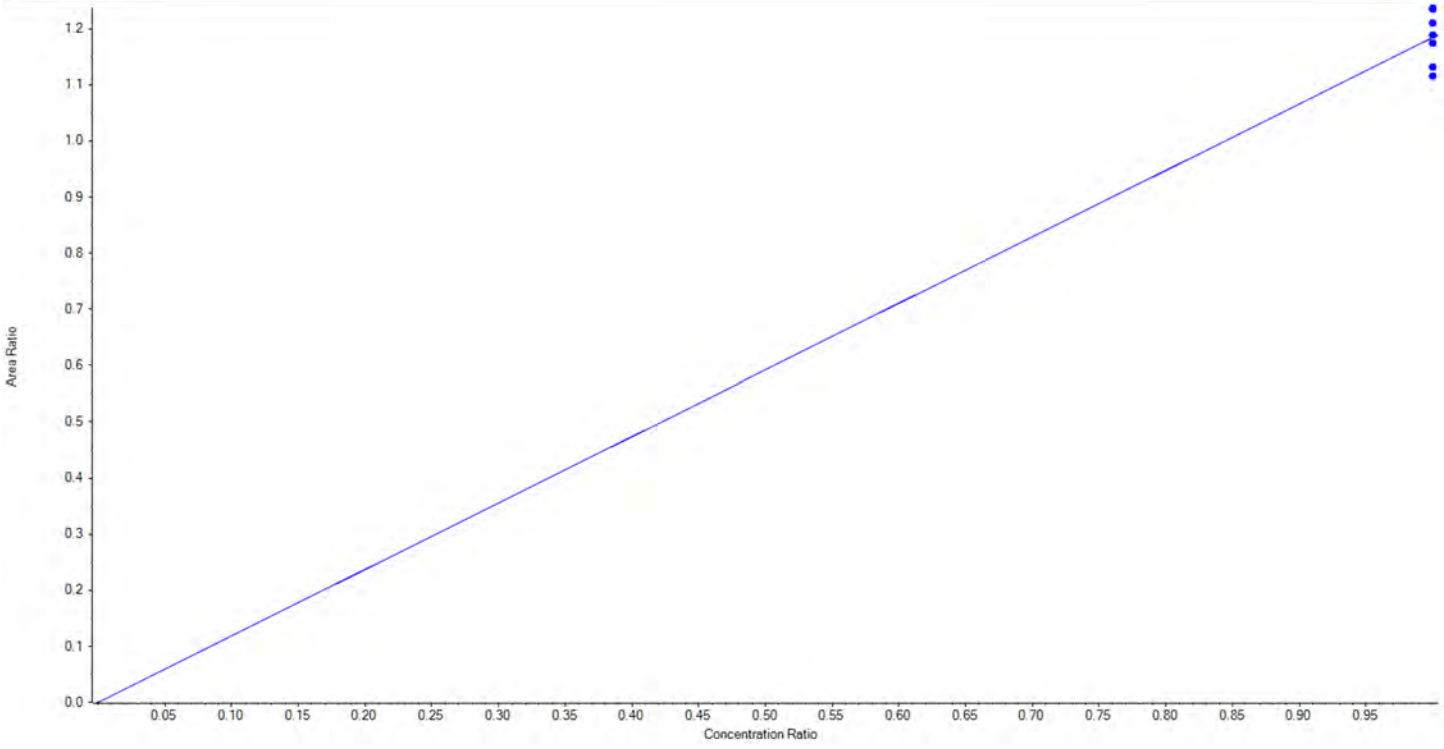
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C2-PFDoA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	615.0 / 570.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.18420 x (std. dev. = 0.04781) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1276.50	102.1
5	KY34	L2	True	1250.00	1193.52	95.5
6	KY35	L3	True	1250.00	1239.34	99.2
7	KY36	L4	True	1250.00	1177.15	94.2
8	KY37	L5	True	1250.00	1254.45	100.4
9	KY38	L6	True	1250.00	1303.64	104.3
10	KY39	L7	True	1250.00	1305.40	104.4



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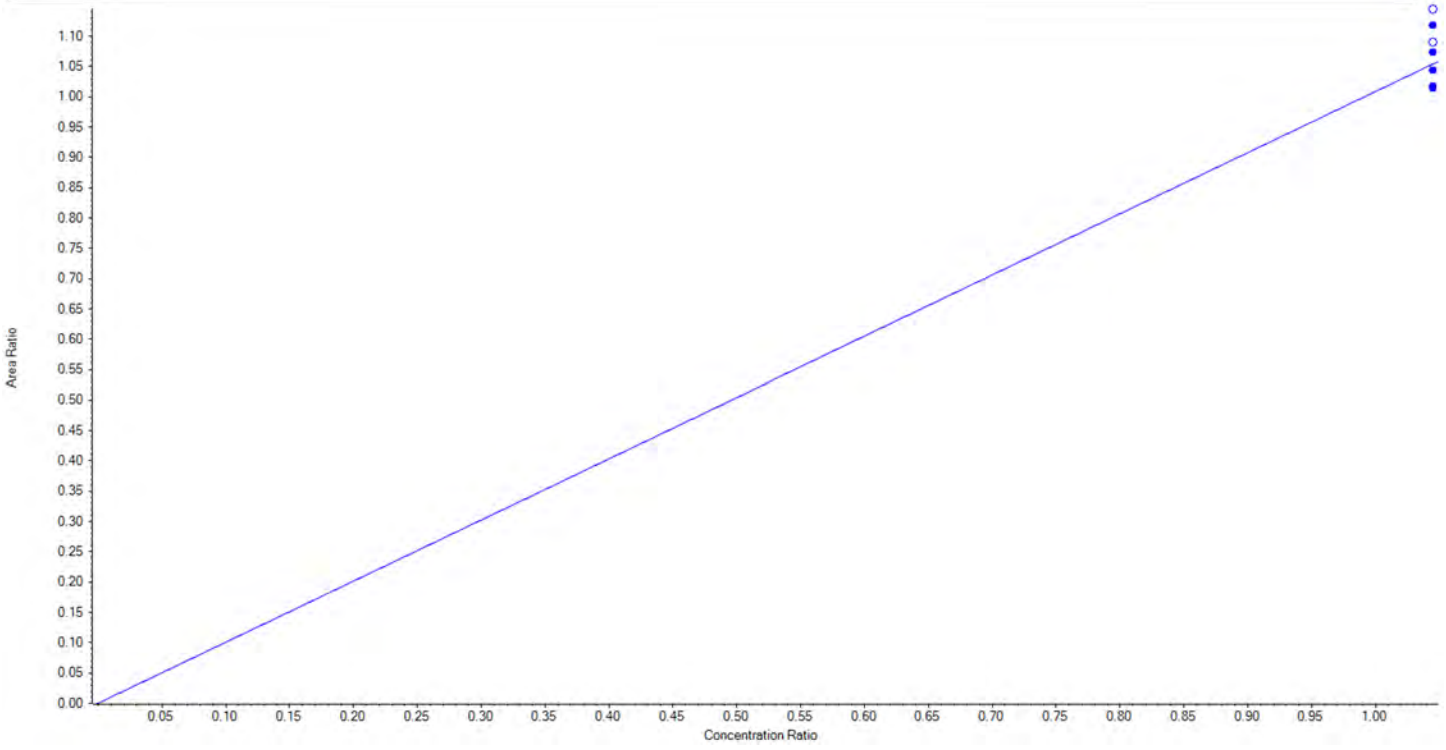
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	d3-MeFOSAA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	573.0 / 419.0	**Result Table**	20-0470A_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.00861 x (std. dev. = 0.04154) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1203.86	96.3
5	KY34	L2	True	1250.00	1206.61	96.5
6	KY35	L3	True	1250.00	1273.68	101.9
7	KY36	L4	True	1250.00	1238.99	99.1
8	KY37	L5	True	1250.00	1326.85	106.2
9	KY38	L6	False	1250.00	1293.67	103.5
10	KY39	L7	False	1250.00	1357.62	108.6



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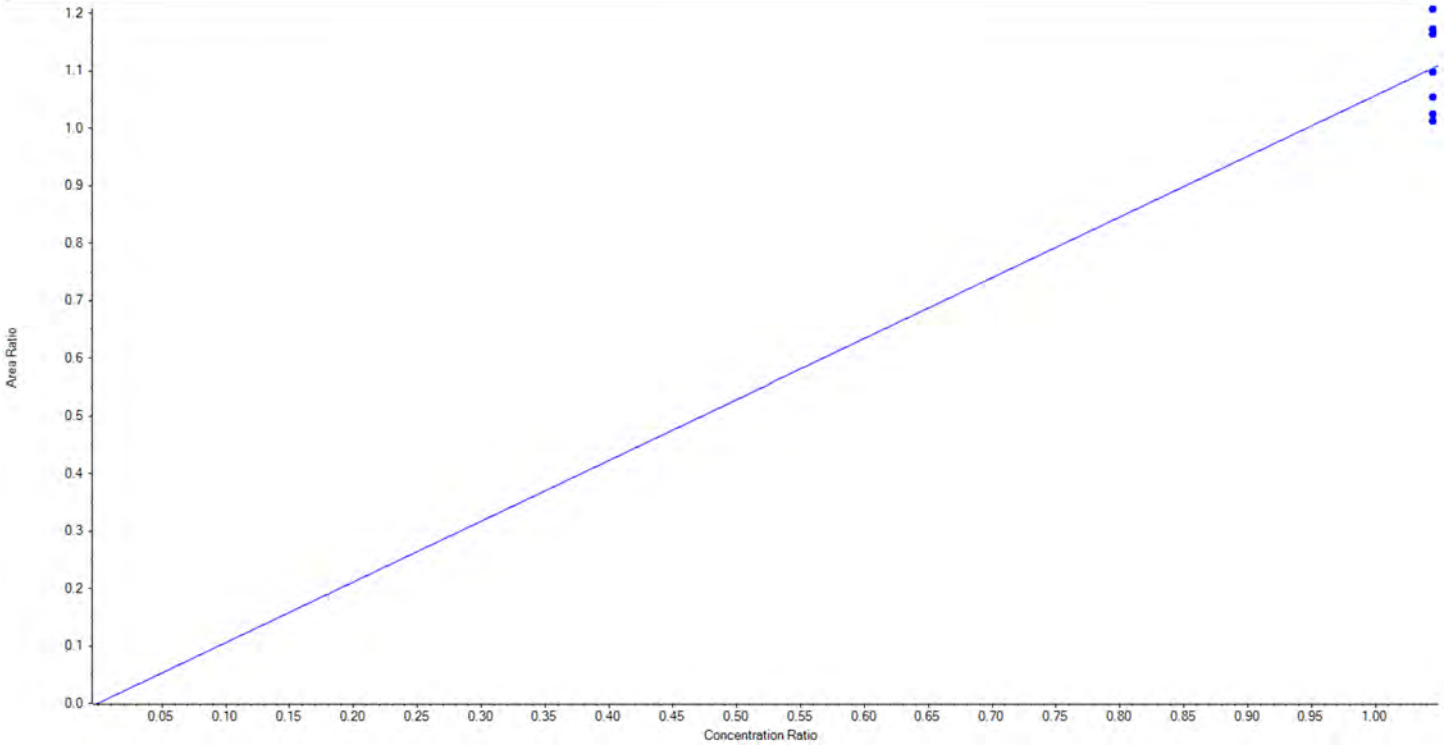
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	d5-EtFOSAA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	589.0 / 419.0	**Result Table**	20-0470A_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.05714 x (std. dev. = 0.07421) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1366.43	109.3
5	KY34	L2	True	1250.00	1241.71	99.3
6	KY35	L3	True	1250.00	1326.73	106.1
7	KY36	L4	True	1250.00	1192.56	95.4
8	KY37	L5	True	1250.00	1316.63	105.3
9	KY38	L6	True	1250.00	1160.66	92.9
10	KY39	L7	True	1250.00	1145.28	91.6



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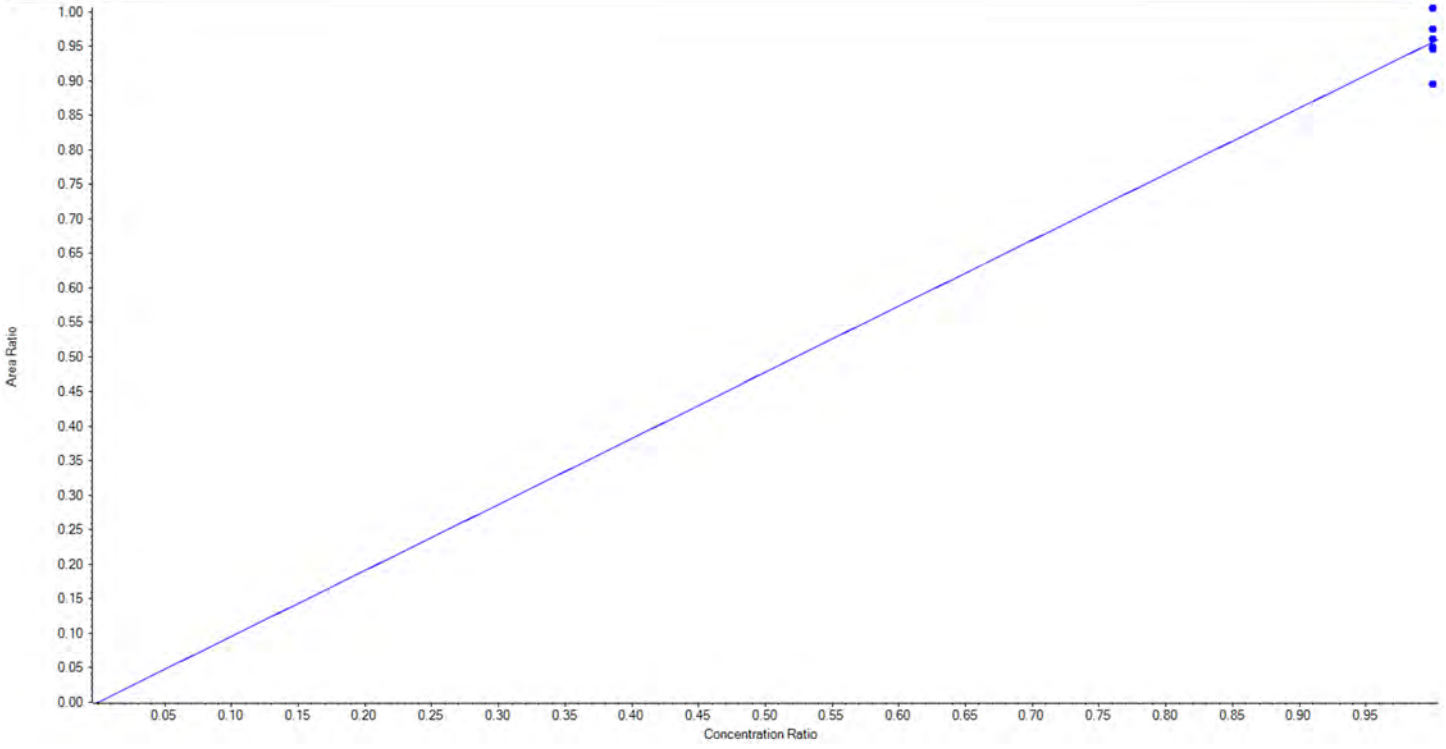
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C5-PFHxA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	318.0 / 273.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.95634 x (std. dev. = 0.03340) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1240.34	99.2
5	KY34	L2	True	1250.00	1170.81	93.7
6	KY35	L3	True	1250.00	1236.59	98.9
7	KY36	L4	True	1250.00	1255.63	100.5
8	KY37	L5	True	1250.00	1256.47	100.5
9	KY38	L6	True	1250.00	1275.63	102.1
10	KY39	L7	True	1250.00	1314.53	105.2



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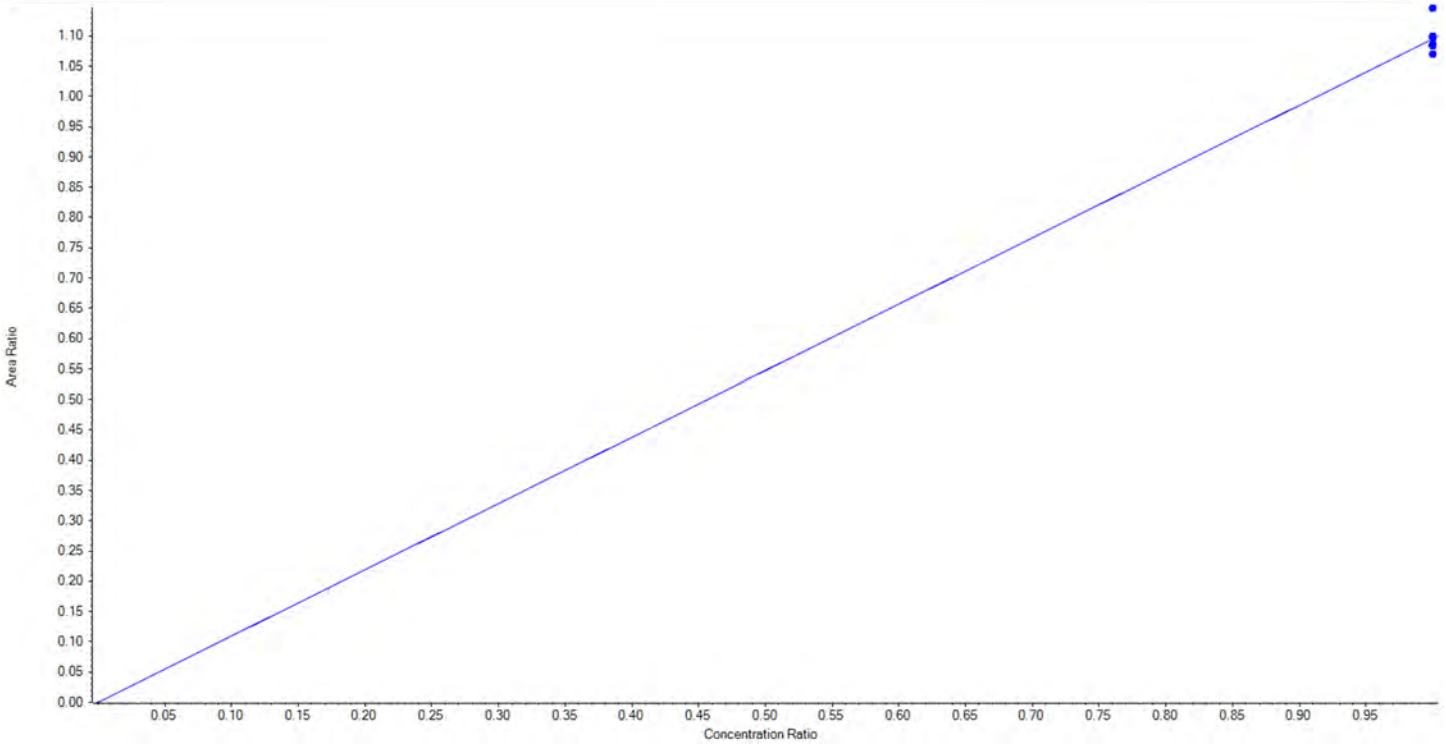
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C4-PFHpA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	367.0 / 322.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.09481 x (std. dev. = 0.02457) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1220.88	97.7
5	KY34	L2	True	1250.00	1238.05	99.0
6	KY35	L3	True	1250.00	1255.42	100.4
7	KY36	L4	True	1250.00	1251.70	100.1
8	KY37	L5	True	1250.00	1236.08	98.9
9	KY38	L6	True	1250.00	1239.60	99.2
10	KY39	L7	True	1250.00	1308.28	104.7



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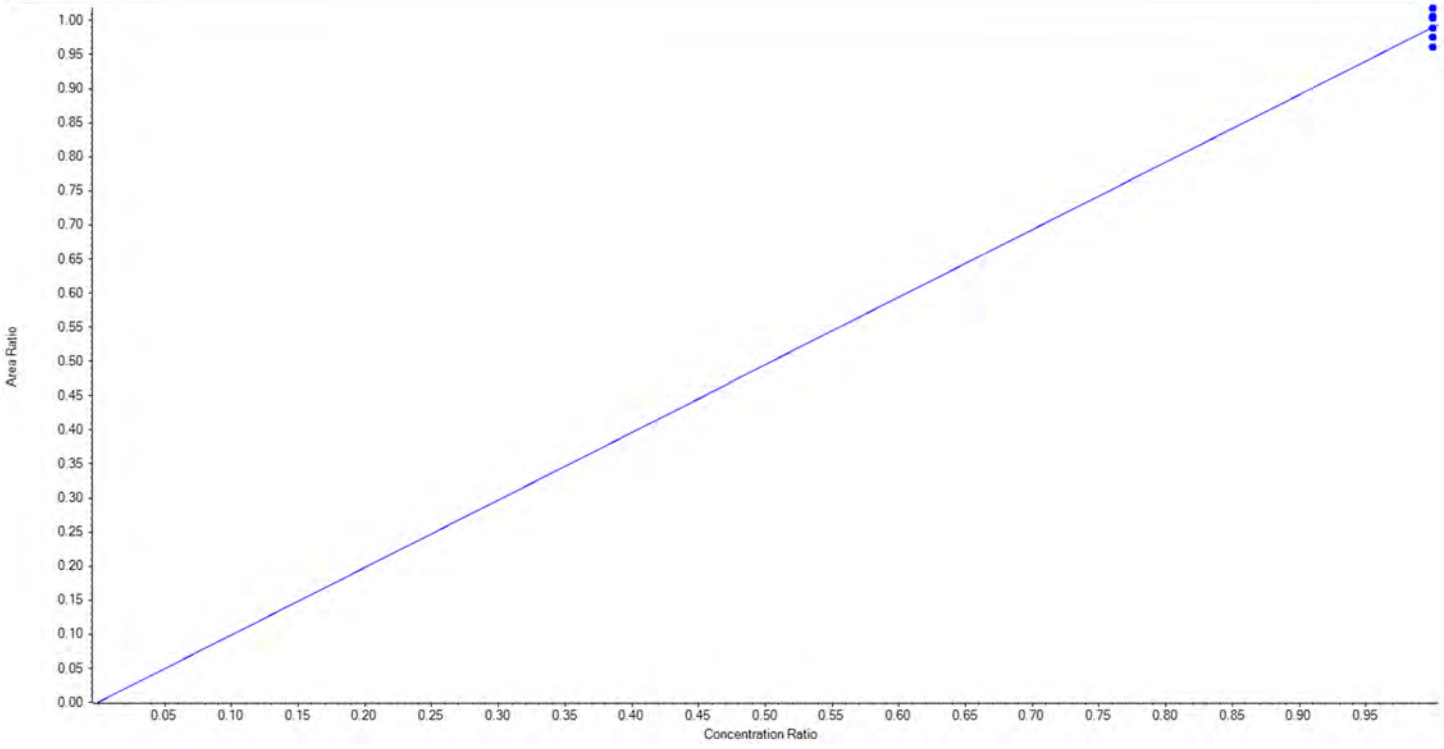
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C8-PFOA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	421.0 / 376.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.98998 x (std. dev. = 0.02034) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1232.08	98.6
5	KY34	L2	True	1250.00	1213.33	97.1
6	KY35	L3	True	1250.00	1270.14	101.6
7	KY36	L4	True	1250.00	1249.04	99.9
8	KY37	L5	True	1250.00	1232.28	98.6
9	KY38	L6	True	1250.00	1267.63	101.4
10	KY39	L7	True	1250.00	1285.51	102.8



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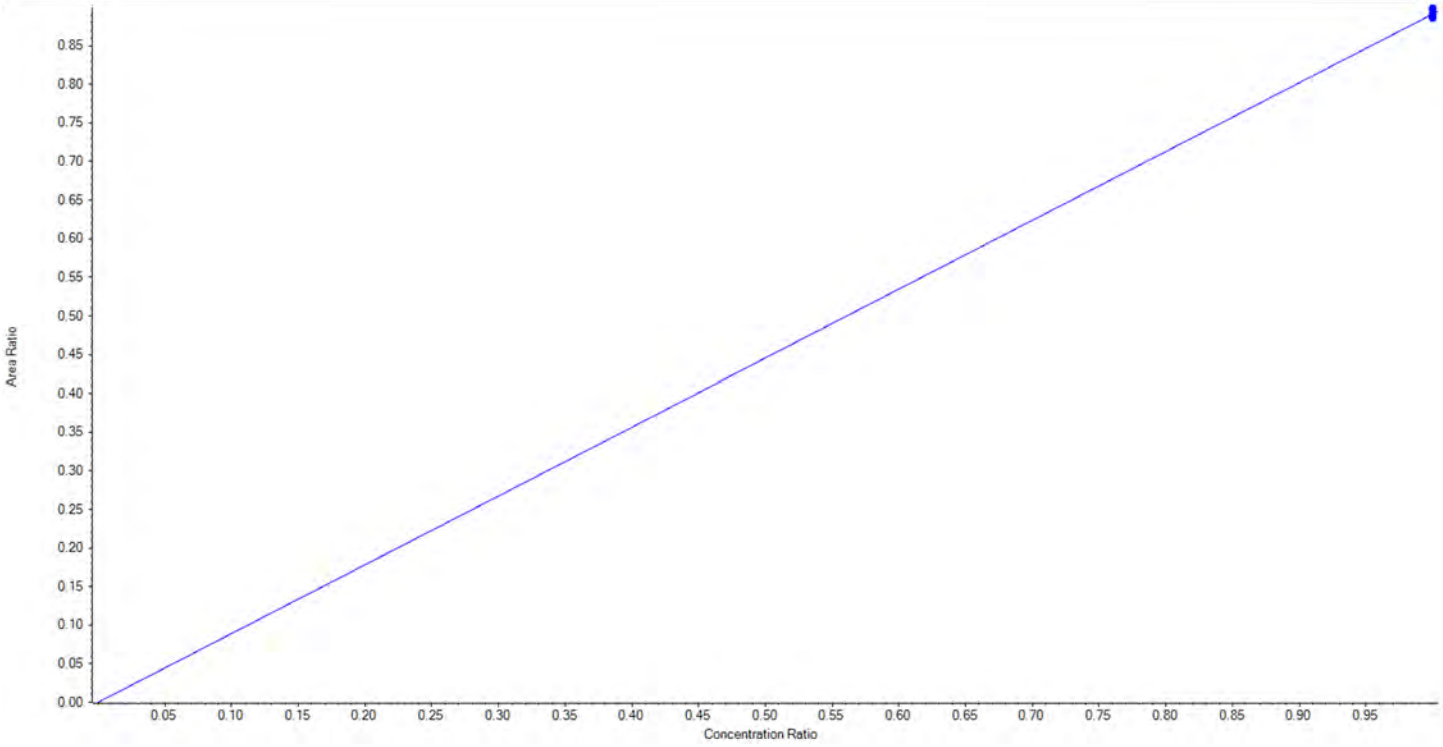
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C9-PFNA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	472.0 / 427.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.89119 x (std. dev. = 0.00468) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1256.56	100.5
5	KY34	L2	True	1250.00	1251.28	100.1
6	KY35	L3	True	1250.00	1243.12	99.5
7	KY36	L4	True	1250.00	1260.60	100.9
8	KY37	L5	True	1250.00	1245.83	99.7
9	KY38	L6	True	1250.00	1248.40	99.9
10	KY39	L7	True	1250.00	1244.20	99.5



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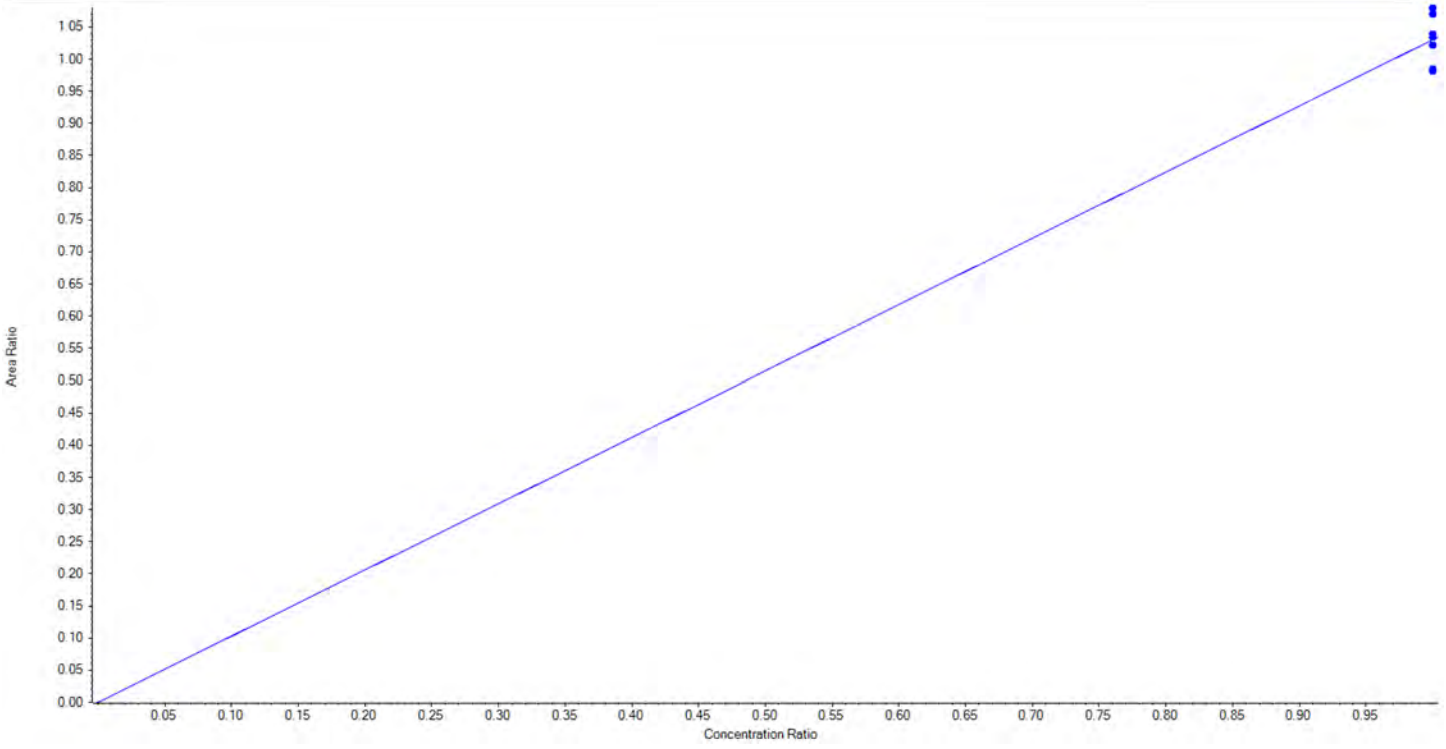
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C6-PFDA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	519.0 / 474.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.03014 x (std. dev. = 0.03812) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1299.15	103.9
5	KY34	L2	True	1250.00	1193.57	95.5
6	KY35	L3	True	1250.00	1260.51	100.8
7	KY36	L4	True	1250.00	1191.22	95.3
8	KY37	L5	True	1250.00	1309.56	104.8
9	KY38	L6	True	1250.00	1240.42	99.2
10	KY39	L7	True	1250.00	1255.58	100.5



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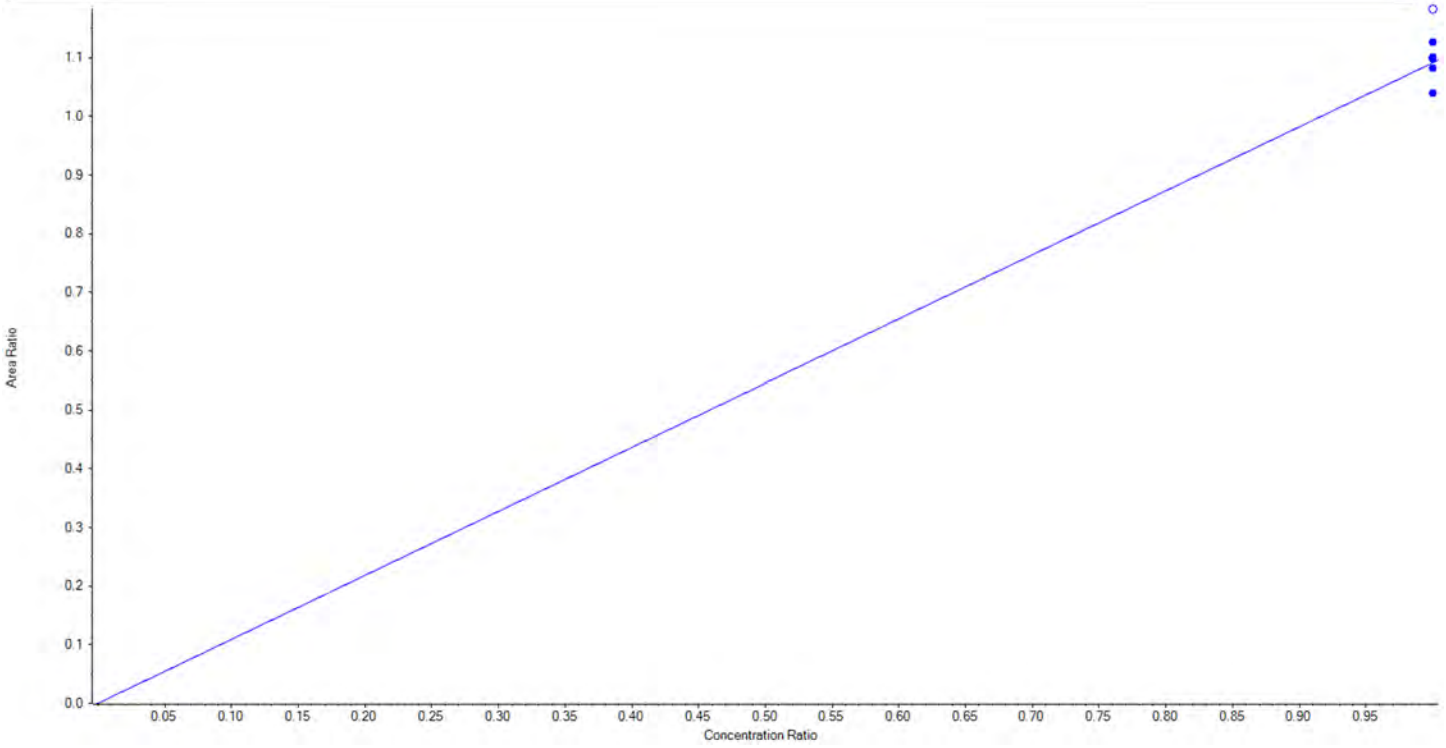
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C7-PFUnA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	570.0 / 525.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.09121 x (std. dev. = 0.02898) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	False	1250.00	1354.91	108.4
5	KY34	L2	True	1250.00	1190.89	95.3
6	KY35	L3	True	1250.00	1257.71	100.6
7	KY36	L4	True	1250.00	1239.74	99.2
8	KY37	L5	True	1250.00	1290.25	103.2
9	KY38	L6	True	1250.00	1259.90	100.8
10	KY39	L7	True	1250.00	1261.51	100.9



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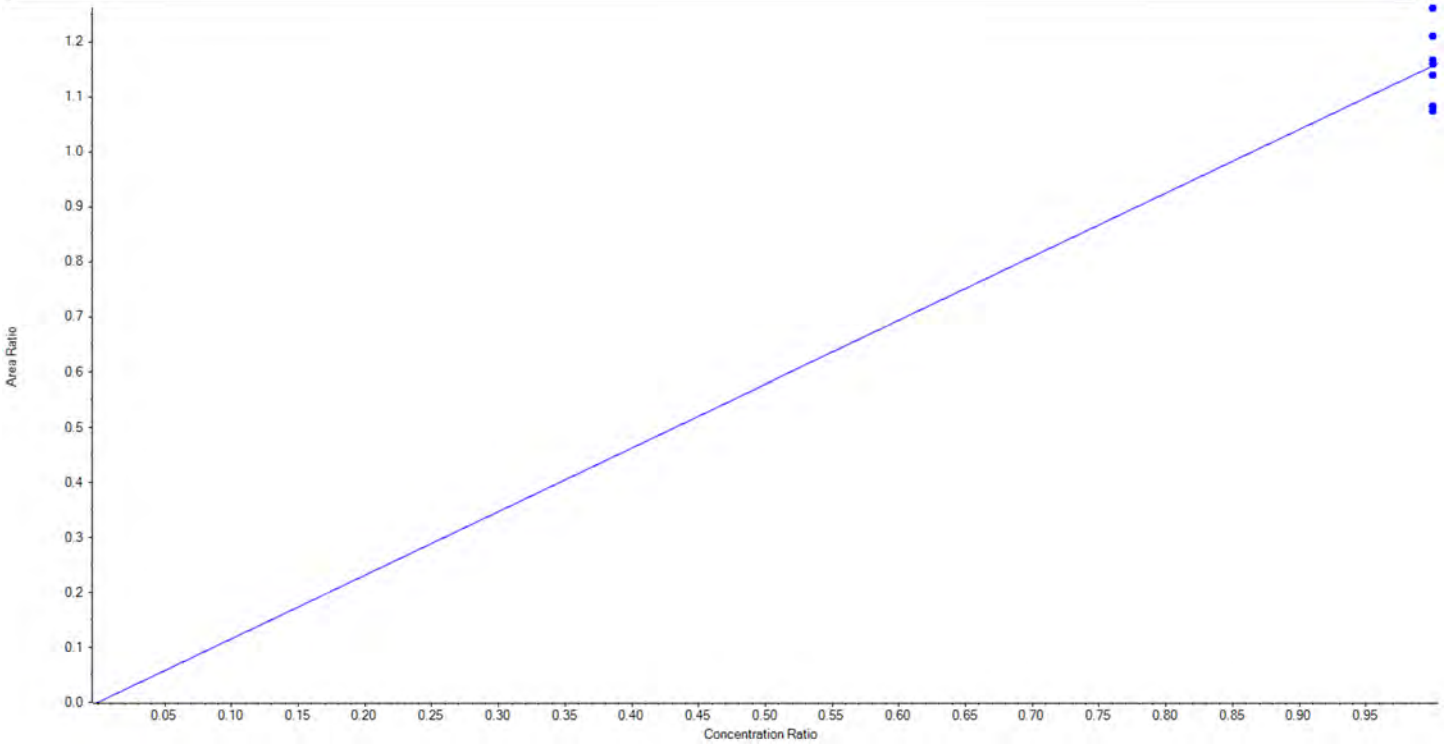
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C2-PFTeDA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	715.0 / 670.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.15636 x (std. dev. = 0.06659) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1253.20	100.3
5	KY34	L2	True	1250.00	1170.27	93.6
6	KY35	L3	True	1250.00	1232.62	98.6
7	KY36	L4	True	1250.00	1160.48	92.8
8	KY37	L5	True	1250.00	1261.77	100.9
9	KY38	L6	True	1250.00	1308.15	104.7
10	KY39	L7	True	1250.00	1363.52	109.1



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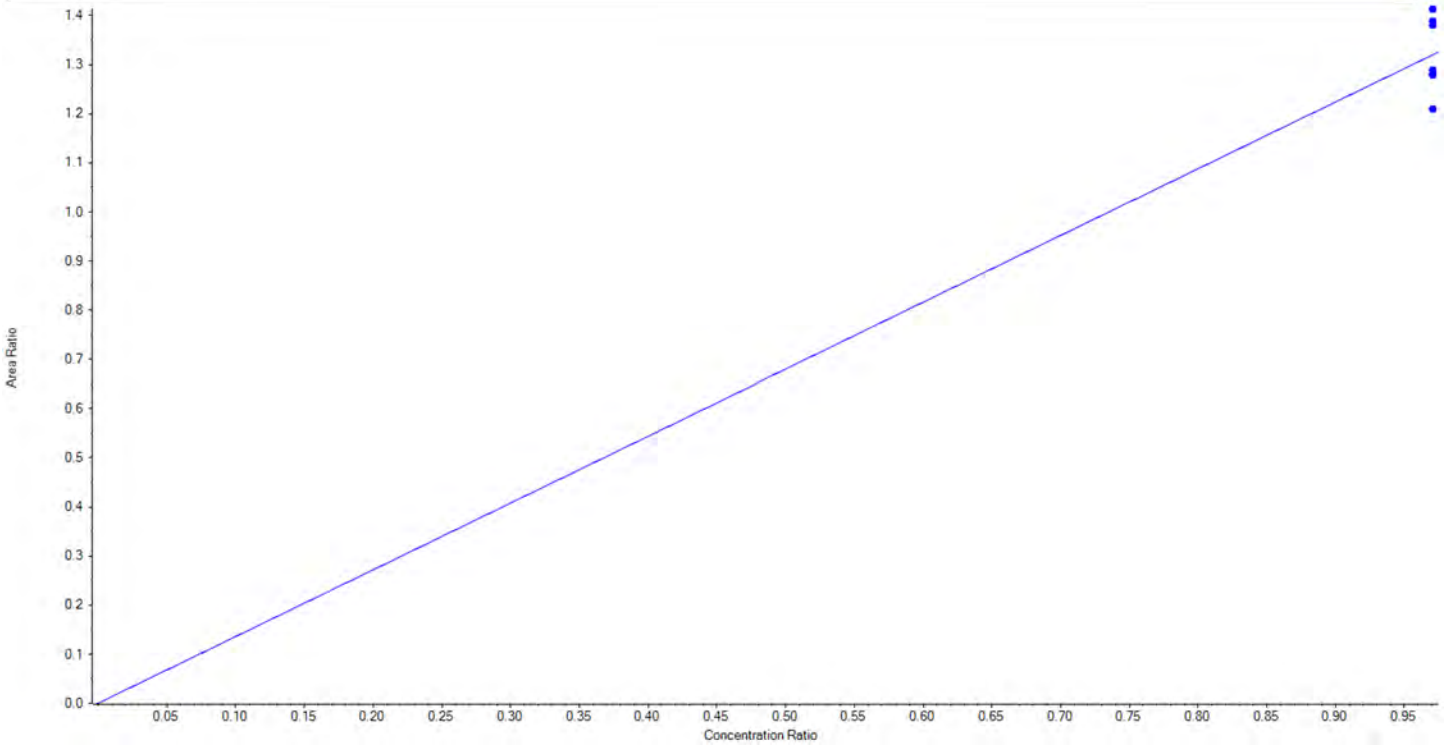
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C3-PFBS	**Data File**	AC_04202020_05-369.wiff
MRM Transition	302.0 / 99.0	**Result Table**	20-0470A_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.35996 x (std. dev. = 0.07675) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1161.25	1134.44	97.7
5	KY34	L2	True	1161.25	1124.34	96.8
6	KY35	L3	True	1161.25	1242.99	107.0
7	KY36	L4	True	1161.25	1064.69	91.7
8	KY37	L5	True	1161.25	1214.59	104.6
9	KY38	L6	True	1161.25	1126.30	97.0
10	KY39	L7	True	1161.25	1221.40	105.2



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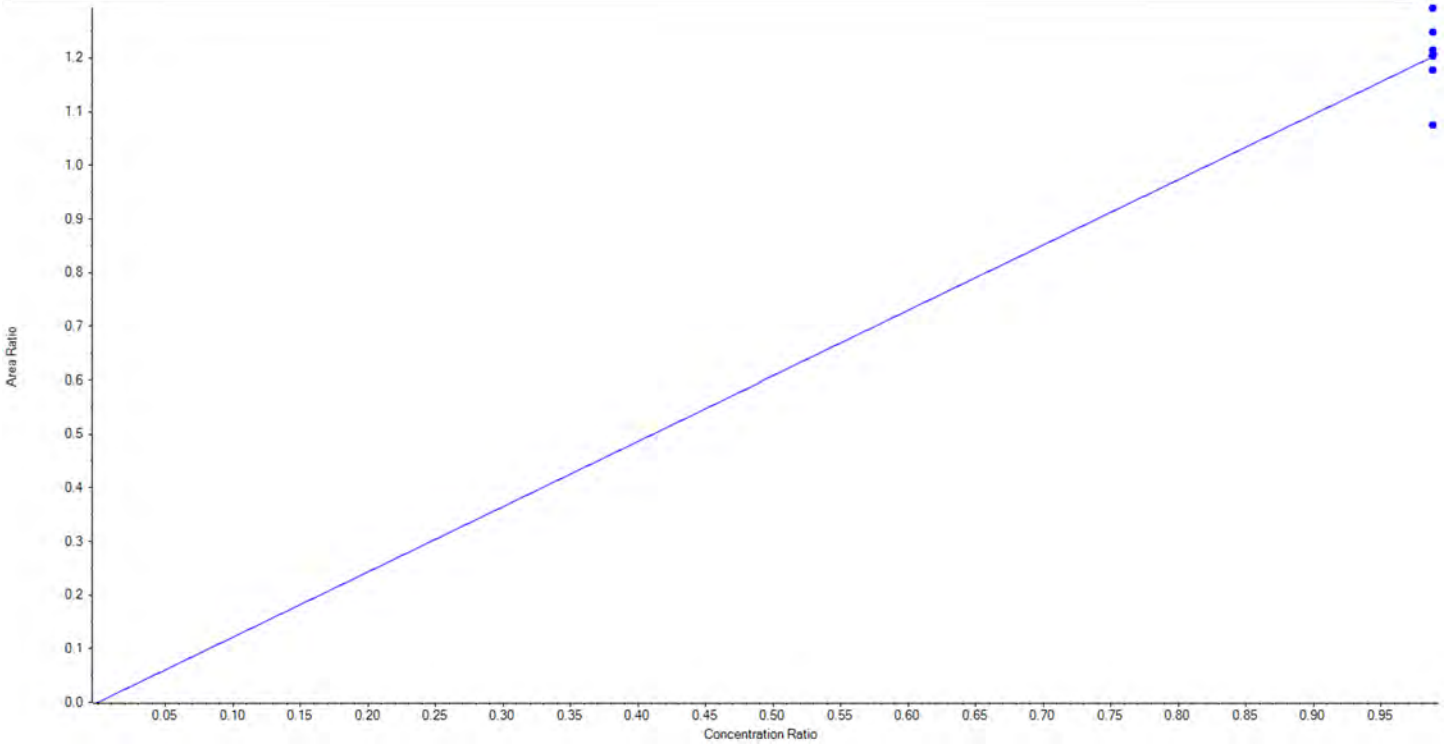
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C3-PFHxS	**Data File**	AC_04202020_05-369.wiff
MRM Transition	402.0 / 99.0	**Result Table**	20-0470A_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.21622 x (std. dev. = 0.06842) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1182.50	1185.59	100.3
5	KY34	L2	True	1182.50	1228.42	103.9
6	KY35	L3	True	1182.50	1271.67	107.5
7	KY36	L4	True	1182.50	1057.11	89.4
8	KY37	L5	True	1182.50	1183.25	100.1
9	KY38	L6	True	1182.50	1157.41	97.9
10	KY39	L7	True	1182.50	1194.05	101.0



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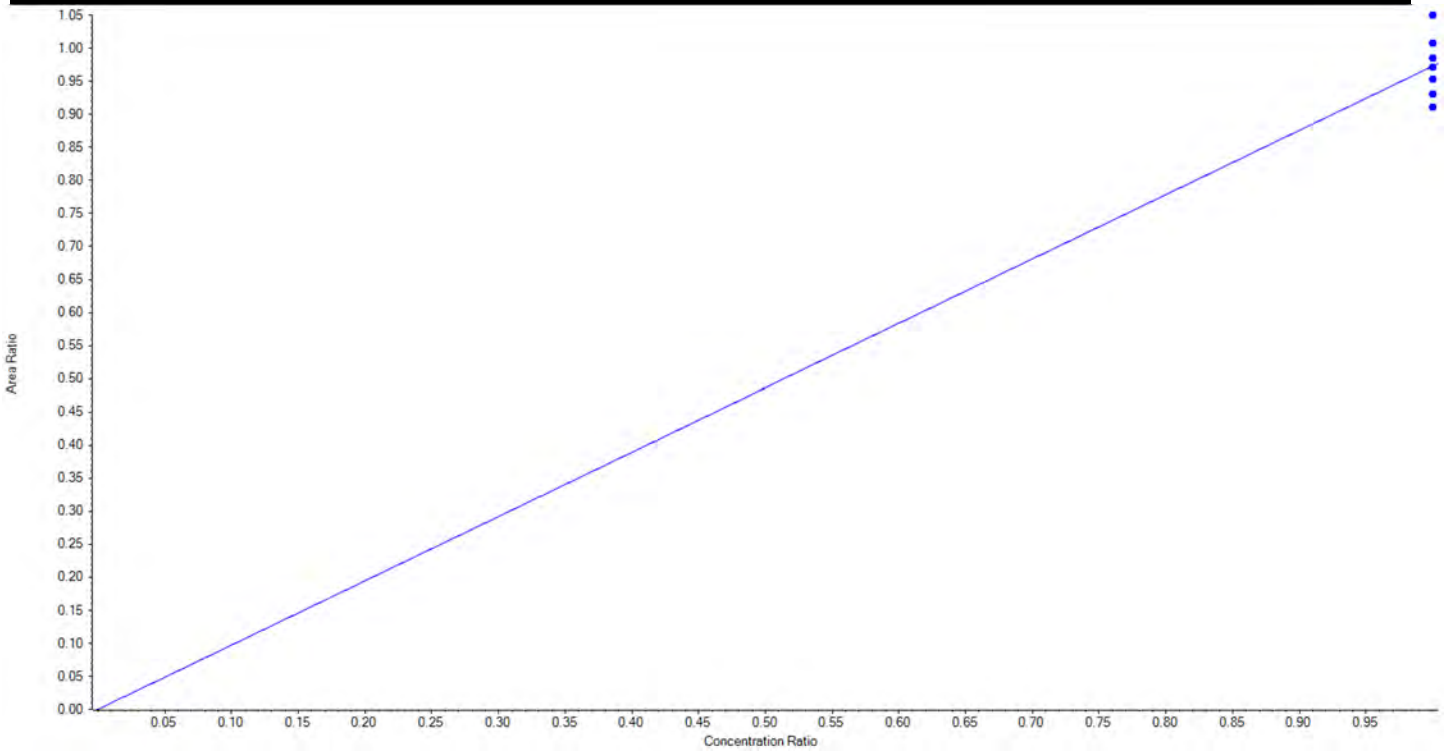
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C8-PFOS	**Data File**	AC_04202020_05-369.wiff
MRM Transition	507.0 / 99.0	**Result Table**	20-0470A_SIS
Internal Standard	13C4-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.97309 x (std. dev. = 0.04722) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1196.25	1211.49	101.3
5	KY34	L2	True	1196.25	1120.16	93.6
6	KY35	L3	True	1196.25	1291.20	107.9
7	KY36	L4	True	1196.25	1144.59	95.7
8	KY37	L5	True	1196.25	1239.94	103.7
9	KY38	L6	True	1196.25	1194.52	99.9
10	KY39	L7	True	1196.25	1171.85	98.0



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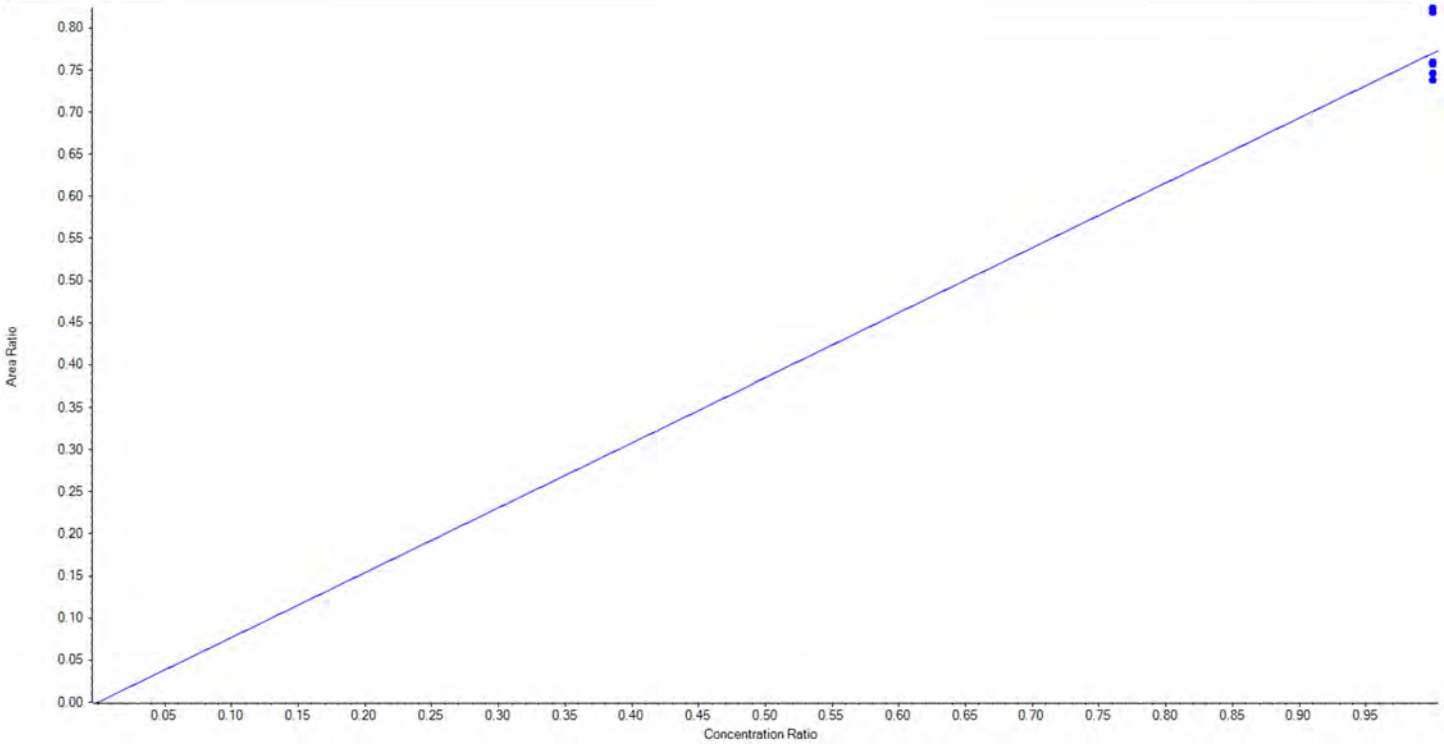
Calibration Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:47:42 PM

Analyte Name	13C3-HFPO-DA	**Data File**	AC_04202020_05-369.wiff
MRM Transition	287.0 / 169.0	**Result Table**	20-0470A_SIS
Internal Standard	13C2-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.77000 x (std. dev. = 0.03574) (weighting: None) r^2:N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
4	KY33	L1	True	1250.00	1197.69	95.8
5	KY34	L2	True	1250.00	1211.95	97.0
6	KY35	L3	True	1250.00	1229.58	98.4
7	KY36	L4	True	1250.00	1212.08	97.0
8	KY37	L5	True	1250.00	1232.43	98.6
9	KY38	L6	True	1250.00	1336.76	106.9
10	KY39	L7	True	1250.00	1329.51	106.4



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	Isotope Dilution Calibration Curve Concentrations (ng/L)							ICC (ng/L)
	KY33	KY34	KY35	KY36	KY37	KY38	KY39	KY41
PFBA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFPeA	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFHxA	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFHpA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFOA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFNA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFDA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFUnA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFDoA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFTrDA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFTeDA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
NMeFOSAA (Branched)	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
NEtFOSAA (Branched)	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFOSA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFBS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFPeS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFHxS (Branched)	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFHpS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
PFOS (Branched)	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFDS	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
PFNS	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
4:2FTS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
6:2FTS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
8:2FTS	126.25	252.50	505.00	1,010.00	2,525.00	10,100.00	25,250.00	2,525.00
3:3 FTCA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
5:3 FTCA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
7:3 FTCA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
HFPO-DA	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
Adona	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
9Cl-PF3ONS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
11Cl-PF3OUdS	125.00	250.00	500.00	1,000.00	2,500.00	10,000.00	25,000.00	2,500.00
	Surrogates / Extracted Internal Standards							
13C4-PFBA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C5-PFPeA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C5-PFHxA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C4-PFHpA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C8-PFOA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C9-PFNA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C6-PFDA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C7-PFUnA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFDoA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFTeDA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
d3-MeFOSAA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
d5-EtFOSAA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C8-FOSA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C3-PFBS	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25	1,161.25
13C3-PFHxS	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50	1,182.50
13C8-PFOS	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25
13C2-4:2FTS	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75	1,168.75
13C2-6:2FTS	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25	1,186.25
13C2-8:2FTS	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50	1,197.50
13C3-HFPO-DA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
	Internal Standards							
13C3-PFBA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFOA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C2-PFDA	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00	1,250.00
13C4-PFOS	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25	1,196.25

QC Summary Report

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Sample Name	KY41 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 1:11:37 PM	**Data File**	AC_04132020A_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.60	2451.25	2500.00	98.05
PFBS_2	298.9 / 99.0	1.60	2398.44	2500.00	95.94
PFHxA_1	313.0 / 269.0	1.90	2504.98	2525.00	99.21
PFHxA_2	313.0 / 119.0	1.90	2540.98	2525.00	100.63
PFHpA_1	363.0 / 319.0	2.29	2264.77	2500.00	90.59
PFHpA_2	363.0 / 169.0	2.29	2513.33	2500.00	100.53
PFHxS_1	399.0 / 80.0	2.31	2560.35	2525.00	101.40
PFHxS_2	399.0 / 99.0	2.31	2598.09	2525.00	102.89
PFOA_1	413.0 / 369.0	2.68	2258.25	2500.00	90.33
PFOA_2	413.0 / 169.0	2.68	2075.71	2500.00	83.03
PFNA_1	463.0 / 419.0	3.05	2270.13	2500.00	90.81
PFNA_2	463.0 / 219.0	3.05	2321.57	2500.00	92.86
PFOS_1	499.0 / 80.0	3.05	2463.19	2525.00	97.55
PFOS_2	499.0 / 99.0	3.05	2449.01	2525.00	96.99
PFDA_1	513.0 / 469.0	3.40	2381.48	2500.00	95.26
PFDA_2	513.0 / 219.0	3.40	2388.31	2500.00	95.53
PFUnA_1	563.0 / 519.0	3.71	2316.54	2500.00	92.66
PFUnA_2	563.0 / 269.0	3.71	2291.32	2500.00	91.65
PFDoA_1	613.0 / 569.0	3.99	2328.89	2500.00	93.16
PFDoA_2	613.0 / 319.0	3.99	2382.18	2500.00	95.29
PFTrDA_1	663.0 / 619.0	4.23	2332.14	2500.00	93.29
PFTrDA_2	663.0 / 169.0	4.23	2301.04	2500.00	92.04
PFTeDA_1	713.0 / 669.0	4.45	2280.01	2500.00	91.20
PFTeDA_2	713.0 / 169.0	4.45	2305.35	2500.00	92.21
NMeFOSAA_1	570.0 / 419.0	3.55	2347.18	2500.00	93.89
NMeFOSAA_2	570.0 / 512.0	3.55	2230.01	2500.00	89.20
NEtFOSAA_1	584.0 / 419.0	3.71	2267.70	2500.00	90.71
NEtFOSAA_2	584.0 / 483.0	3.71	2387.13	2500.00	95.49
HFPO-DA_1	285.0 / 169.0	2.01	2337.30	2500.00	93.49
HFPO-DA_2	285.0 / 118.8	2.02	2367.33	2500.00	94.69
ADONA_1	377.0 / 251.0	2.32	2235.07	2500.00	89.40
ADONA_2	377.0 / 85.0	2.32	2418.73	2500.00	96.75
9Cl-PF3ONS_1	531.0 / 351.0	3.24	2679.79	2500.00	107.19
9Cl-PF3ONS_2	531.0 / 83.0	3.23	2249.77	2500.00	89.99
11Cl-pf3OUdS_1	631.0 / 451.0	3.84	2578.62	2500.00	103.14
11Cl-pf3OUdS_2	631.0 / 83.0	3.84	2394.03	2500.00	95.76

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QC Summary Report

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Sample Name	KY36 CCV	**Injection Vial**	3
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/15/2020 10:02:15 AM	**Data File**	AC_04152020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.58	979.48	1000.00	97.95
PFBS_2	298.9 / 99.0	1.58	969.07	1000.00	96.91
PFHxA_1	313.0 / 269.0	1.89	1003.52	1010.00	99.36
PFHxA_2	313.0 / 119.0	1.89	998.29	1010.00	98.84
PFHpA_1	363.0 / 319.0	2.29	984.98	1000.00	98.50
PFHpA_2	363.0 / 169.0	2.29	1015.81	1000.00	101.58
PFHxS_1	399.0 / 80.0	2.30	992.10	1010.00	98.23
PFHxS_2	399.0 / 99.0	2.30	1022.08	1010.00	101.20
PFOA_1	413.0 / 369.0	2.68	989.06	1000.00	98.91
PFOA_2	413.0 / 169.0	2.68	1059.33	1000.00	105.93
PFNA_1	463.0 / 419.0	3.05	975.76	1000.00	97.58
PFNA_2	463.0 / 219.0	3.05	978.53	1000.00	97.85
PFOS_1	499.0 / 80.0	3.05	956.50	1010.00	94.70
PFOS_2	499.0 / 99.0	3.05	928.38	1010.00	91.92
PFDA_1	513.0 / 469.0	3.40	922.68	1000.00	92.27
PFDA_2	513.0 / 219.0	3.40	954.20	1000.00	95.42
PFUnA_1	563.0 / 519.0	3.71	973.89	1000.00	97.39
PFUnA_2	563.0 / 269.0	3.71	1032.79	1000.00	103.28
PFDoA_1	613.0 / 569.0	3.99	959.40	1000.00	95.94
PFDoA_2	613.0 / 319.0	3.99	985.20	1000.00	98.52
PFTrDA_1	663.0 / 619.0	4.24	1048.80	1000.00	104.88
PFTrDA_2	663.0 / 169.0	4.24	1059.65	1000.00	105.97
PFTeDA_1	713.0 / 669.0	4.46	1015.67	1000.00	101.57
PFTeDA_2	713.0 / 169.0	4.46	988.99	1000.00	98.90
NMeFOSAA_1	570.0 / 419.0	3.55	944.74	1000.00	94.47
NMeFOSAA_2	570.0 / 512.0	3.55	983.31	1000.00	98.33
NEtFOSAA_1	584.0 / 419.0	3.71	1008.67	1000.00	100.87
NEtFOSAA_2	584.0 / 483.0	3.71	815.00	1000.00	81.50
HFPO-DA_1	285.0 / 169.0	2.01	997.62	1000.00	99.76
HFPO-DA_2	285.0 / 118.8	2.01	865.13	1000.00	86.51
ADONA_1	377.0 / 251.0	2.32	1069.45	1000.00	106.95
ADONA_2	377.0 / 85.0	2.32	1158.23	1000.00	115.82
9Cl-PF3ONS_1	531.0 / 351.0	3.24	1029.68	1000.00	102.97
9Cl-PF3ONS_2	531.0 / 83.0	3.24	1294.46	1000.00	129.45
11Cl-pf3OUdS_1	631.0 / 451.0	3.84	1031.52	1000.00	103.15
11Cl-pf3OUdS_2	631.0 / 83.0	3.84	827.42	1000.00	82.74

QC Summary Report

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Sample Name	KY36 CCV	**Injection Vial**	2
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/16/2020 11:41:51 PM	**Data File**	AC_04152020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.56	1020.04	1000.00	102.00
PFBS_2	298.9 / 99.0	1.56	1071.89	1000.00	107.19
PFHxA_1	313.0 / 269.0	1.87	998.91	1010.00	98.90
PFHxA_2	313.0 / 119.0	1.87	952.80	1010.00	94.34
PFHpA_1	363.0 / 319.0	2.26	998.79	1000.00	99.88
PFHpA_2	363.0 / 169.0	2.26	1269.27	1000.00	126.93
PFHxS_1	399.0 / 80.0	2.28	1000.23	1010.00	99.03
PFHxS_2	399.0 / 99.0	2.28	986.51	1010.00	97.67
PFOA_1	413.0 / 369.0	2.65	932.49	1000.00	93.25
PFOA_2	413.0 / 169.0	2.65	1116.51	1000.00	111.65
PFNA_1	463.0 / 419.0	3.02	945.48	1000.00	94.55
PFNA_2	463.0 / 219.0	3.02	1008.14	1000.00	100.81
PFOS_1	499.0 / 80.0	3.01	1053.15	1010.00	104.27
PFOS_2	499.0 / 99.0	3.01	972.47	1010.00	96.28
PFDA_1	513.0 / 469.0	3.36	1081.74	1000.00	108.17
PFDA_2	513.0 / 219.0	3.36	1096.08	1000.00	109.61
PFUnA_1	563.0 / 519.0	3.67	930.28	1000.00	93.03
PFUnA_2	563.0 / 269.0	3.67	948.45	1000.00	94.84
PFDoA_1	613.0 / 569.0	3.95	1025.02	1000.00	102.50
PFDoA_2	613.0 / 319.0	3.95	1024.43	1000.00	102.44
PFTrDA_1	663.0 / 619.0	4.18	1037.87	1000.00	103.79
PFTrDA_2	663.0 / 169.0	4.18	1107.87	1000.00	110.79
PFTeDA_1	713.0 / 669.0	4.39	982.37	1000.00	98.24
PFTeDA_2	713.0 / 169.0	4.39	976.37	1000.00	97.64
NMeFOSAA_1	570.0 / 419.0	3.51	952.81	1000.00	95.28
NMeFOSAA_2	570.0 / 512.0	3.51	1016.93	1000.00	101.69
NEtFOSAA_1	584.0 / 419.0	3.67	982.95	1000.00	98.30
NEtFOSAA_2	584.0 / 483.0	3.67	842.04	1000.00	84.20
HFPO-DA_1	285.0 / 169.0	1.98	1020.33	1000.00	102.03
HFPO-DA_2	285.0 / 118.8	1.98	967.83	1000.00	96.78
ADONA_1	377.0 / 251.0	2.29	1102.08	1000.00	110.21
ADONA_2	377.0 / 85.0	2.29	1298.42	1000.00	129.84
9Cl-PF3ONS_1	531.0 / 351.0	3.20	1105.09	1000.00	110.51
9Cl-PF3ONS_2	531.0 / 83.0	3.20	1357.69	1000.00	135.77
11Cl-pf3OUdS_1	631.0 / 451.0	3.80	1052.24	1000.00	105.22
11Cl-pf3OUdS_2	631.0 / 83.0	3.79	1016.48	1000.00	101.65

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QC Summary Report

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Sample Name	KY37 CCV	**Injection Vial**	11
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/17/2020 1:20:44 AM	**Data File**	AC_04152020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.56	2537.71	2500.00	101.51
PFBS_2	298.9 / 99.0	1.56	2521.30	2500.00	100.85
PFHxA_1	313.0 / 269.0	1.86	2503.98	2525.00	99.17
PFHxA_2	313.0 / 119.0	1.86	2469.69	2525.00	97.81
PFHpA_1	363.0 / 319.0	2.25	2397.36	2500.00	95.89
PFHpA_2	363.0 / 169.0	2.25	3001.49	2500.00	120.06
PFHxS_1	399.0 / 80.0	2.27	2527.02	2525.00	100.08
PFHxS_2	399.0 / 99.0	2.27	2571.86	2525.00	101.86
PFOA_1	413.0 / 369.0	2.64	2567.99	2500.00	102.72
PFOA_2	413.0 / 169.0	2.63	2823.32	2500.00	112.93
PFNA_1	463.0 / 419.0	3.01	2281.13	2500.00	91.25
PFNA_2	463.0 / 219.0	3.01	2303.22	2500.00	92.13
PFOS_1	499.0 / 80.0	3.01	2321.83	2525.00	91.95
PFOS_2	499.0 / 99.0	3.01	2333.14	2525.00	92.40
PFDA_1	513.0 / 469.0	3.35	2569.89	2500.00	102.80
PFDA_2	513.0 / 219.0	3.35	2480.36	2500.00	99.21
PFUnA_1	563.0 / 519.0	3.66	2437.71	2500.00	97.51
PFUnA_2	563.0 / 269.0	3.66	2453.58	2500.00	98.14
PFDoA_1	613.0 / 569.0	3.94	2491.84	2500.00	99.67
PFDoA_2	613.0 / 319.0	3.94	2550.86	2500.00	102.03
PFTrDA_1	663.0 / 619.0	4.18	2445.19	2500.00	97.81
PFTrDA_2	663.0 / 169.0	4.18	2625.85	2500.00	105.03
PFTeDA_1	713.0 / 669.0	4.39	2401.53	2500.00	96.06
PFTeDA_2	713.0 / 169.0	4.39	2477.39	2500.00	99.10
NMeFOSAA_1	570.0 / 419.0	3.50	2550.99	2500.00	102.04
NMeFOSAA_2	570.0 / 512.0	3.50	2708.12	2500.00	108.32
NEtFOSAA_1	584.0 / 419.0	3.66	2380.71	2500.00	95.23
NEtFOSAA_2	584.0 / 483.0	3.66	2085.61	2500.00	83.42
HFPO-DA_1	285.0 / 169.0	1.97	2513.72	2500.00	100.55
HFPO-DA_2	285.0 / 118.8	1.97	2581.43	2500.00	103.26
ADONA_1	377.0 / 251.0	2.28	2673.76	2500.00	106.95
ADONA_2	377.0 / 85.0	2.28	3490.12	2500.00	139.60
9Cl-PF3ONS_1	531.0 / 351.0	3.20	2685.16	2500.00	107.41
9Cl-PF3ONS_2	531.0 / 83.0	3.20	2729.58	2500.00	109.18
11Cl-pf3OUdS_1	631.0 / 451.0	3.79	2629.41	2500.00	105.18
11Cl-pf3OUdS_2	631.0 / 83.0	3.79	2662.20	2500.00	106.49

QC Summary Report

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Printed: 23/04/2020 3:49:02 PM

Sample Name	KY41 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/13/2020 1:11:37 PM	**Data File**	AC_04132020A_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.98	1287.41	1250.00	102.99
d3-MeFOSAA	573.0 / 419.0	3.54	1225.13	1250.00	98.01
d5-EtFOSAA	589.0 / 419.0	3.70	1199.16	1250.00	95.93
13C5-PFHxA	318.0 / 273.0	1.90	1219.41	1250.00	97.55
13C4-PFHpA	367.0 / 322.0	2.28	1279.37	1250.00	102.35
13C8-PFOA	421.0 / 376.0	2.67	1280.92	1250.00	102.47
13C9-PFNA	472.0 / 427.0	3.04	1265.68	1250.00	101.25
13C6-PFDA	519.0 / 474.0	3.39	1314.24	1250.00	105.14
13C7-PFUnA	570.0 / 525.0	3.70	1289.87	1250.00	103.19
13C2-PFTeDA	715.0 / 670.0	4.44	1284.80	1250.00	102.78
13C3-PFBS	302.0 / 99.0	1.58	1042.20	1161.25	89.75
13C3-PFHxS	402.0 / 99.0	2.30	1045.65	1182.50	88.43
13C8-PFOS	507.0 / 99.0	3.04	1124.96	1196.25	94.04
13C3-HFPO-DA	287.0 / 169.0	2.01	1232.16	1250.00	98.57

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:02 PM

Sample Name	KY36 CCV	**Injection Vial**	3
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/15/2020 10:02:15 AM	**Data File**	AC_04152020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.99	1357.01	1250.00	108.56
d3-MeFOSAA	573.0 / 419.0	3.54	1263.13	1250.00	101.05
d5-EtFOSAA	589.0 / 419.0	3.70	1269.35	1250.00	101.55
13C5-PFHxA	318.0 / 273.0	1.89	1290.56	1250.00	103.25
13C4-PFHpA	367.0 / 322.0	2.28	1283.92	1250.00	102.71
13C8-PFOA	421.0 / 376.0	2.67	1260.72	1250.00	100.86
13C9-PFNA	472.0 / 427.0	3.04	1306.64	1250.00	104.53
13C6-PFDA	519.0 / 474.0	3.39	1330.55	1250.00	106.44
13C7-PFUnA	570.0 / 525.0	3.70	1310.77	1250.00	104.86
13C2-PFTeDA	715.0 / 670.0	4.45	1291.89	1250.00	103.35
13C3-PFBS	302.0 / 99.0	1.57	1174.94	1161.25	101.18
13C3-PFHxS	402.0 / 99.0	2.30	1180.03	1182.50	99.79
13C8-PFOS	507.0 / 99.0	3.04	1198.94	1196.25	100.23
13C3-HFPO-DA	287.0 / 169.0	2.00	1242.27	1250.00	99.38

QC Summary Report

Created with Analyst Reporter
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Sample Name	KY36 CCV	**Injection Vial**	2
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/16/2020 11:41:51 PM	**Data File**	AC_04152020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.94	1229.65	1250.00	98.37
d3-MeFOSAA	573.0 / 419.0	3.50	1158.35	1250.00	92.67
d5-EtFOSAA	589.0 / 419.0	3.66	1152.91	1250.00	92.23
13C5-PFHxA	318.0 / 273.0	1.86	1314.34	1250.00	105.15
13C4-PFHpA	367.0 / 322.0	2.25	1232.12	1250.00	98.57
13C8-PFOA	421.0 / 376.0	2.64	1287.88	1250.00	103.03
13C9-PFNA	472.0 / 427.0	3.01	1334.46	1250.00	106.76
13C6-PFDA	519.0 / 474.0	3.35	1208.57	1250.00	96.69
13C7-PFUnA	570.0 / 525.0	3.66	1237.38	1250.00	98.99
13C2-PFTeDA	715.0 / 670.0	4.39	1156.82	1250.00	92.55
13C3-PFBS	302.0 / 99.0	1.55	1158.76	1161.25	99.79
13C3-PFHxS	402.0 / 99.0	2.27	1143.89	1182.50	96.73
13C8-PFOS	507.0 / 99.0	3.01	1115.65	1196.25	93.26
13C3-HFPO-DA	287.0 / 169.0	1.98	1229.52	1250.00	98.36

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:02 PM

Sample Name	KY37 CCV	**Injection Vial**	11
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/17/2020 1:20:44 AM	**Data File**	AC_04152020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.93	1309.18	1250.00	104.73
d3-MeFOSAA	573.0 / 419.0	3.50	1119.48	1250.00	89.56
d5-EtFOSAA	589.0 / 419.0	3.66	1117.94	1250.00	89.44
13C5-PFHxA	318.0 / 273.0	1.85	1228.73	1250.00	98.30
13C4-PFHpA	367.0 / 322.0	2.24	1198.28	1250.00	95.86
13C8-PFOA	421.0 / 376.0	2.63	1195.57	1250.00	95.65
13C9-PFNA	472.0 / 427.0	3.00	1306.20	1250.00	104.50
13C6-PFDA	519.0 / 474.0	3.34	1280.02	1250.00	102.40
13C7-PFUnA	570.0 / 525.0	3.65	1260.87	1250.00	100.87
13C2-PFTeDA	715.0 / 670.0	4.38	1224.13	1250.00	97.93
13C3-PFBS	302.0 / 99.0	1.55	1193.54	1161.25	102.78
13C3-PFHxS	402.0 / 99.0	2.27	1164.67	1182.50	98.49
13C8-PFOS	507.0 / 99.0	3.00	1203.27	1196.25	100.59
13C3-HFPO-DA	287.0 / 169.0	1.97	1189.22	1250.00	95.14

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:04 PM

Sample Name	KY41 ICC	**Injection Vial**	12
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:38:10 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.59	2331.12	2500.00	93.24
PFBS_2	298.9 / 99.0	1.59	2285.32	2500.00	91.41
PFHxA_1	313.0 / 269.0	1.90	2273.40	2525.00	90.04
PFHxA_2	313.0 / 119.0	1.90	2219.94	2525.00	87.92
PFHpA_1	363.0 / 319.0	2.29	2250.80	2500.00	90.03
PFHpA_2	363.0 / 169.0	2.30	2275.59	2500.00	91.02
PFHxS_1	399.0 / 80.0	2.31	2468.98	2525.00	97.78
PFHxS_2	399.0 / 99.0	2.31	2393.68	2525.00	94.80
PFOA_1	413.0 / 369.0	2.69	2358.81	2500.00	94.35
PFOA_2	413.0 / 169.0	2.68	2414.18	2500.00	96.57
PFNA_1	463.0 / 419.0	3.06	2314.57	2500.00	92.58
PFNA_2	463.0 / 219.0	3.06	2293.27	2500.00	91.73
PFOS_1	499.0 / 80.0	3.05	2501.05	2525.00	99.05
PFOS_2	499.0 / 99.0	3.06	2513.67	2525.00	99.55
PFDA_1	513.0 / 469.0	3.41	2472.92	2500.00	98.92
PFDA_2	513.0 / 219.0	3.41	2341.06	2500.00	93.64
PFUnA_1	563.0 / 519.0	3.71	2310.07	2500.00	92.40
PFUnA_2	563.0 / 269.0	3.71	2243.82	2500.00	89.75
PFDoA_1	613.0 / 569.0	3.99	2373.00	2500.00	94.92
PFDoA_2	613.0 / 319.0	3.99	2344.18	2500.00	93.77
PFTrDA_1	663.0 / 619.0	4.24	2316.67	2500.00	92.67
PFTrDA_2	663.0 / 169.0	4.24	2397.15	2500.00	95.89
PFTeDA_1	713.0 / 669.0	4.45	2303.70	2500.00	92.15
PFTeDA_2	713.0 / 169.0	4.45	2294.29	2500.00	91.77
NMeFOSAA_1	570.0 / 419.0	3.55	2384.55	2500.00	95.38
NMeFOSAA_2	570.0 / 512.0	3.55	2470.51	2500.00	98.82
NEtFOSAA_1	584.0 / 419.0	3.71	2294.70	2500.00	91.79
NEtFOSAA_2	584.0 / 483.0	3.72	2188.90	2500.00	87.56
HFPO-DA_1	285.0 / 169.0	2.01	2272.88	2500.00	90.92
HFPO-DA_2	285.0 / 118.8	2.01	2172.36	2500.00	86.89
ADONA_1	377.0 / 251.0	2.33	2293.97	2500.00	91.76
ADONA_2	377.0 / 85.0	2.33	2036.95	2500.00	81.48
9Cl-PF3ONS_1	531.0 / 351.0	3.24	2651.54	2500.00	106.06
9Cl-PF3ONS_2	531.0 / 83.0	3.24	2859.05	2500.00	114.36
11Cl-pf3OUdS_1	631.0 / 451.0	3.84	2324.31	2500.00	92.97
11Cl-pf3OUdS_2	631.0 / 83.0	3.84	2348.01	2500.00	93.92

QC Summary Report

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Sample Name	KY35 CCV	**Injection Vial**	14
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 5:05:12 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.58	504.43	500.00	100.89
PFBS_2	298.9 / 99.0	1.58	488.28	500.00	97.66
PFHxA_1	313.0 / 269.0	1.89	505.67	505.00	100.13
PFHxA_2	313.0 / 119.0	1.88	537.62	505.00	106.46
PFHpA_1	363.0 / 319.0	2.27	518.37	500.00	103.67
PFHpA_2	363.0 / 169.0	2.28	574.87	500.00	114.97
PFHxS_1	399.0 / 80.0	2.29	530.83	505.00	105.11
PFHxS_2	399.0 / 99.0	2.29	553.35	505.00	109.57
PFOA_1	413.0 / 369.0	2.66	358.35	500.00	71.67
PFOA_2	413.0 / 169.0	2.66	358.85	500.00	71.77
PFNA_1	463.0 / 419.0	3.03	517.02	500.00	103.40
PFNA_2	463.0 / 219.0	3.03	489.73	500.00	97.95
PFOS_1	499.0 / 80.0	3.02	488.54	505.00	96.74
PFOS_2	499.0 / 99.0	3.03	511.04	505.00	101.20
PFDA_1	513.0 / 469.0	3.38	523.21	500.00	104.64
PFDA_2	513.0 / 219.0	3.37	532.99	500.00	106.60
PFUnA_1	563.0 / 519.0	3.68	560.37	500.00	112.07
PFUnA_2	563.0 / 269.0	3.68	592.23	500.00	118.45
PFDoA_1	613.0 / 569.0	3.96	564.35	500.00	112.87
PFDoA_2	613.0 / 319.0	3.96	524.30	500.00	104.86
PFTrDA_1	663.0 / 619.0	4.20	543.43	500.00	108.69
PFTrDA_2	663.0 / 169.0	4.20	532.78	500.00	106.56
PFTeDA_1	713.0 / 669.0	4.41	513.72	500.00	102.74
PFTeDA_2	713.0 / 169.0	4.41	528.10	500.00	105.62
NMeFOSAA_1	570.0 / 419.0	3.52	567.27	500.00	113.45
NMeFOSAA_2	570.0 / 512.0	3.53	494.77	500.00	98.95
NEtFOSAA_1	584.0 / 419.0	3.68	498.42	500.00	99.68
NEtFOSAA_2	584.0 / 483.0	3.68	523.78	500.00	104.76
HFPO-DA_1	285.0 / 169.0	2.00	522.51	500.00	104.50
HFPO-DA_2	285.0 / 118.8	1.99	456.54	500.00	91.31
ADONA_1	377.0 / 251.0	2.31	526.69	500.00	105.34
ADONA_2	377.0 / 85.0	2.31	281.87	500.00	56.37
9Cl-PF3ONS_1	531.0 / 351.0	3.22	554.94	500.00	110.99
9Cl-PF3ONS_2	531.0 / 83.0	3.21	640.52	500.00	128.10
11Cl-pf3OUdS_1	631.0 / 451.0	3.81	556.61	500.00	111.32
11Cl-pf3OUdS_2	631.0 / 83.0	3.81	636.90	500.00	127.38

QC Summary Report

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Sample Name	KY37 CCV	**Injection Vial**	12
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/23/2020 11:40:54 AM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.60	2452.68	2500.00	98.11
PFBS_2	298.9 / 99.0	1.59	2413.89	2500.00	96.56
PFHxA_1	313.0 / 269.0	1.91	2437.89	2525.00	96.55
PFHxA_2	313.0 / 119.0	1.91	2395.68	2525.00	94.88
PFHpA_1	363.0 / 319.0	2.29	2414.11	2500.00	96.56
PFHpA_2	363.0 / 169.0	2.29	2769.57	2500.00	110.78
PFHxS_1	399.0 / 80.0	2.31	2503.89	2525.00	99.16
PFHxS_2	399.0 / 99.0	2.31	2567.16	2525.00	101.67
PFOA_1	413.0 / 369.0	2.68	2300.09	2500.00	92.00
PFOA_2	413.0 / 169.0	2.68	2394.59	2500.00	95.78
PFNA_1	463.0 / 419.0	3.05	2496.74	2500.00	99.87
PFNA_2	463.0 / 219.0	3.05	2440.69	2500.00	97.63
PFOS_1	499.0 / 80.0	3.05	2487.01	2525.00	98.50
PFOS_2	499.0 / 99.0	3.05	2500.95	2525.00	99.05
PFDA_1	513.0 / 469.0	3.40	2655.21	2500.00	106.21
PFDA_2	513.0 / 219.0	3.39	2464.55	2500.00	98.58
PFUnA_1	563.0 / 519.0	3.70	2575.22	2500.00	103.01
PFUnA_2	563.0 / 269.0	3.70	2527.77	2500.00	101.11
PFDoA_1	613.0 / 569.0	3.98	2612.68	2500.00	104.51
PFDoA_2	613.0 / 319.0	3.98	2597.10	2500.00	103.88
PFTrDA_1	663.0 / 619.0	4.22	2589.34	2500.00	103.57
PFTrDA_2	663.0 / 169.0	4.22	2475.02	2500.00	99.00
PFTeDA_1	713.0 / 669.0	4.43	2503.27	2500.00	100.13
PFTeDA_2	713.0 / 169.0	4.43	2585.72	2500.00	103.43
NMeFOSAA_1	570.0 / 419.0	3.54	2780.69	2500.00	111.23
NMeFOSAA_2	570.0 / 512.0	3.54	2782.11	2500.00	111.28
NEtFOSAA_1	584.0 / 419.0	3.70	2386.13	2500.00	95.45
NEtFOSAA_2	584.0 / 483.0	3.70	2716.17	2500.00	108.65
HFPO-DA_1	285.0 / 169.0	2.02	2489.93	2500.00	99.60
HFPO-DA_2	285.0 / 118.8	2.01	2345.32	2500.00	93.81
ADONA_1	377.0 / 251.0	2.33	2608.48	2500.00	104.34
ADONA_2	377.0 / 85.0	2.33	2488.43	2500.00	99.54
9Cl-PF3ONS_1	531.0 / 351.0	3.24	2833.11	2500.00	113.32
9Cl-PF3ONS_2	531.0 / 83.0	3.24	2764.68	2500.00	110.59
11Cl-pf3OUdS_1	631.0 / 451.0	3.83	2604.26	2500.00	104.17
11Cl-pf3OUdS_2	631.0 / 83.0	3.83	2950.12	2500.00	118.00

Sample Name	KY37 CCV	**Injection Vial**	23
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/23/2020 1:41:52 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.59	2445.61	2500.00	97.82
PFBS_2	298.9 / 99.0	1.59	2469.14	2500.00	98.77
PFHxA_1	313.0 / 269.0	1.90	2577.51	2525.00	102.08
PFHxA_2	313.0 / 119.0	1.90	2617.79	2525.00	103.67
PFHpA_1	363.0 / 319.0	2.29	2512.46	2500.00	100.50
PFHpA_2	363.0 / 169.0	2.29	2636.42	2500.00	105.46
PFHxS_1	399.0 / 80.0	2.31	2519.16	2525.00	99.77
PFHxS_2	399.0 / 99.0	2.31	2473.96	2525.00	97.98
PFOA_1	413.0 / 369.0	2.68	2400.68	2500.00	96.03
PFOA_2	413.0 / 169.0	2.67	2476.92	2500.00	99.08
PFNA_1	463.0 / 419.0	3.05	2455.74	2500.00	98.23
PFNA_2	463.0 / 219.0	3.05	2317.42	2500.00	92.70
PFOS_1	499.0 / 80.0	3.05	2640.06	2525.00	104.56
PFOS_2	499.0 / 99.0	3.05	2546.13	2525.00	100.84
PFDA_1	513.0 / 469.0	3.40	2486.91	2500.00	99.48
PFDA_2	513.0 / 219.0	3.40	2313.56	2500.00	92.54
PFUnA_1	563.0 / 519.0	3.70	2514.46	2500.00	100.58
PFUnA_2	563.0 / 269.0	3.70	2304.70	2500.00	92.19
PFDoA_1	613.0 / 569.0	3.98	2535.93	2500.00	101.44
PFDoA_2	613.0 / 319.0	3.98	2568.85	2500.00	102.75
PFTrDA_1	663.0 / 619.0	4.22	2646.08	2500.00	105.84
PFTrDA_2	663.0 / 169.0	4.22	2650.86	2500.00	106.03
PFTeDA_1	713.0 / 669.0	4.43	2562.81	2500.00	102.51
PFTeDA_2	713.0 / 169.0	4.43	2548.98	2500.00	101.96
NMeFOSAA_1	570.0 / 419.0	3.54	2645.62	2500.00	105.82
NMeFOSAA_2	570.0 / 512.0	3.54	2627.59	2500.00	105.10
NEtFOSAA_1	584.0 / 419.0	3.70	2504.33	2500.00	100.17
NEtFOSAA_2	584.0 / 483.0	3.70	2787.37	2500.00	111.49
HFPO-DA_1	285.0 / 169.0	2.01	2550.53	2500.00	102.02
HFPO-DA_2	285.0 / 118.8	2.01	2532.70	2500.00	101.31
ADONA_1	377.0 / 251.0	2.32	2702.31	2500.00	108.09
ADONA_2	377.0 / 85.0	2.32	2471.23	2500.00	98.85
9Cl-PF3ONS_1	531.0 / 351.0	3.24	3049.73	2500.00	121.99
9Cl-PF3ONS_2	531.0 / 83.0	3.24	3198.20	2500.00	127.93
11Cl-pf3OUdS_1	631.0 / 451.0	3.83	2495.08	2500.00	99.80
11Cl-pf3OUdS_2	631.0 / 83.0	3.83	2486.82	2500.00	99.47

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:02 PM

Sample Name	KY41 ICC	**Injection Vial**	12
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:38:10 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.99	1215.88	1250.00	97.27
d3-MeFOSAA	573.0 / 419.0	3.55	1249.69	1250.00	99.97
d5-EtFOSAA	589.0 / 419.0	3.71	1207.79	1250.00	96.62
13C5-PFHxA	318.0 / 273.0	1.89	1266.49	1250.00	101.32
13C4-PFHpA	367.0 / 322.0	2.28	1309.93	1250.00	104.79
13C8-PFOA	421.0 / 376.0	2.68	1247.75	1250.00	99.82
13C9-PFNA	472.0 / 427.0	3.05	1331.91	1250.00	106.55
13C6-PFDA	519.0 / 474.0	3.39	1180.03	1250.00	94.40
13C7-PFUnA	570.0 / 525.0	3.70	1277.47	1250.00	102.20
13C2-PFTeDA	715.0 / 670.0	4.45	1230.33	1250.00	98.43
13C3-PFBS	302.0 / 99.0	1.57	1127.51	1161.25	97.09
13C3-PFHxS	402.0 / 99.0	2.30	1090.79	1182.50	92.24
13C8-PFOS	507.0 / 99.0	3.04	1155.78	1196.25	96.62
13C3-HFPO-DA	287.0 / 169.0	2.01	1301.38	1250.00	104.11

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:02 PM

Sample Name	KY35 CCV	**Injection Vial**	14
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 5:05:12 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.95	1188.33	1250.00	95.07
d3-MeFOSAA	573.0 / 419.0	3.52	1118.79	1250.00	89.50
d5-EtFOSAA	589.0 / 419.0	3.68	1183.45	1250.00	94.68
13C5-PFHxA	318.0 / 273.0	1.88	1245.14	1250.00	99.61
13C4-PFHpA	367.0 / 322.0	2.27	1274.56	1250.00	101.96
13C8-PFOA	421.0 / 376.0	2.65	1289.82	1250.00	103.19
13C9-PFNA	472.0 / 427.0	3.02	1377.27	1250.00	110.18
13C6-PFDA	519.0 / 474.0	3.36	1315.98	1250.00	105.28
13C7-PFUnA	570.0 / 525.0	3.67	1247.20	1250.00	99.78
13C2-PFTeDA	715.0 / 670.0	4.40	1205.67	1250.00	96.45
13C3-PFBS	302.0 / 99.0	1.56	1077.42	1161.25	92.78
13C3-PFHxS	402.0 / 99.0	2.28	1042.97	1182.50	88.20
13C8-PFOS	507.0 / 99.0	3.02	1192.71	1196.25	99.70
13C3-HFPO-DA	287.0 / 169.0	1.99	1284.75	1250.00	102.78

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:02 PM

Sample Name	KY37 CCV	**Injection Vial**	12
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/23/2020 11:40:54 AM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.97	1213.45	1250.00	97.08
d3-MeFOSAA	573.0 / 419.0	3.54	1076.55	1250.00	86.12
d5-EtFOSAA	589.0 / 419.0	3.70	1134.87	1250.00	90.79
13C5-PFHxA	318.0 / 273.0	1.90	1246.90	1250.00	99.75
13C4-PFHpA	367.0 / 322.0	2.28	1272.25	1250.00	101.78
13C8-PFOA	421.0 / 376.0	2.67	1287.56	1250.00	103.00
13C9-PFNA	472.0 / 427.0	3.04	1352.14	1250.00	108.17
13C6-PFDA	519.0 / 474.0	3.38	1198.32	1250.00	95.87
13C7-PFUnA	570.0 / 525.0	3.69	1225.54	1250.00	98.04
13C2-PFTeDA	715.0 / 670.0	4.42	1236.68	1250.00	98.93
13C3-PFBS	302.0 / 99.0	1.58	1042.13	1161.25	89.74
13C3-PFHxS	402.0 / 99.0	2.30	1037.89	1182.50	87.77
13C8-PFOS	507.0 / 99.0	3.04	1096.38	1196.25	91.65
13C3-HFPO-DA	287.0 / 169.0	2.01	1273.10	1250.00	101.85

QC Summary Report

Created with Analyst Reporter
Printed: 23/04/2020 3:49:02 PM

Sample Name	KY37 CCV	**Injection Vial**	23
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	4/23/2020 1:41:52 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0470A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	3.97	1261.37	1250.00	100.91
d3-MeFOSAA	573.0 / 419.0	3.54	1179.30	1250.00	94.34
d5-EtFOSAA	589.0 / 419.0	3.70	1223.34	1250.00	97.87
13C5-PFHxA	318.0 / 273.0	1.89	1212.25	1250.00	96.98
13C4-PFHpA	367.0 / 322.0	2.28	1242.02	1250.00	99.36
13C8-PFOA	421.0 / 376.0	2.67	1249.19	1250.00	99.93
13C9-PFNA	472.0 / 427.0	3.04	1335.22	1250.00	106.82
13C6-PFDA	519.0 / 474.0	3.38	1206.33	1250.00	96.51
13C7-PFUnA	570.0 / 525.0	3.69	1277.56	1250.00	102.20
13C2-PFTeDA	715.0 / 670.0	4.42	1228.68	1250.00	98.29
13C3-PFBS	302.0 / 99.0	1.57	1090.25	1161.25	93.89
13C3-PFHxS	402.0 / 99.0	2.30	1098.63	1182.50	92.91
13C8-PFOS	507.0 / 99.0	3.04	1145.79	1196.25	95.78
13C3-HFPO-DA	287.0 / 169.0	2.01	1236.17	1250.00	98.89

Mid-South
SDG 20-0493

PFAS Concentration = *[(PA - b)/m] * C_{IS} * PIV * DF/S*

Where:

PA	Area of target analyte/ area of internal standard
b	y Intercept from calibration curve
C_{IS}	Concentration of internal standard (ng/L)
m	Slope of calibration
DF	Dilution factor
S	Sample Size
PIV	Pre-injection volume (L)

Target Analyte	PFOS
Sample ID	FD01-040820
Sample Size (L)	0.26
Dilution Factor	1
PIV (L)	0.001
PFOS Area	311363
IS Area	109963.07
IS Amount (ng/L)	1196.5
Calibration Curve	y =4.63418 x +0.23516
Concentration (ng/L)	2.58
Reported Result (ng/L)	2.58

Surrgoate Concentration = *[(PA)/m] * C_{IS}*

Where:

PA	Area of target analyte/ area of internal standard
C_{IS}	Concentration of internal standard (ng/L)
m	Slope of calibration
Surrogate spike amount	1250

Surrogate	13C8-PFOS
Sample ID	FD01-040820
13C8-PFOS Area	109963.07
IS Area	111688.59
IS Amount (ng/L)	1196.25
Calibration Curve	y =0.97309 x
Concentration (ng/L)	1210.34
ng/ml	1.210338893

PIV	1	ml
Sample Size	0.26	L
Final Concentration	4.66	ng/L
Spike Concentration	1.196	ng
Sample Spike Concentration	4.60	ng/L
Calculated Surrogate %R	4.66/4.60*100	101.30
Reported Surrogate %R	101	

LABORATORY CONTROL SAMPLE

	Result	Target	Calculation	Recovery	Reported Recovery	QC Limits
PFNA	10 ng/L	10 ng/L	10/10*100	100.00	100	69-130

ICC RECOVERY (%)	Result	Target	Calculation	Recovery	Reported Recovery
1/21/2020					
PFNA	2455.08 ng/L	2500 ng/L	2455.08/2500*100	98.20	98.2

MS/MSD %R AOC11-PZ01D-20200108

PFNA MS %R	Spike Amount	MS Concentration	Sample Concentration	Reported %R	QC Limits
115.30	26.79	42.27	11.38	115	69-130
PFNA MSD %R	Spike Amount	MSD Concentration	Sample Concentration	Reported %R	QC Limits
111.57	26.79	41.27	11.38	112	69-130
RPD	3.29				
Reported RPD	2.6				
RPD Limits	< 30				

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PFAS Sample Quant Report

Created with Analyst Reporter
Printed: 23/04/2020 2:52:09 PM

Sample Name	H4734-FS1(0)	**Injection Vial**	43
Sample ID	FD01-040820	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 10:22:23 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.60	56618.02	154.56	61.1	True	13C3-PFBS	152515.74	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.59	19978.15	168.41	63.2	False	13C3-PFBS	152515.74	1161.25	PFBS	0.353	0.321	✓
PFHxA_1	313.0 / 269.0	1.90	83915.48	145.68	23.1	False	13C5-PFHxA	635767.07	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.90	5384.36	117.63	31.6	False	13C5-PFHxA	635767.07	1250.00	PFHxA	0.064	0.073	✓
PFHpA_1	363.0 / 319.0	2.29	54087.20	71.19	38.5	False	13C4-PFHpA	803263.83	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.26	660.85	52.37	16.5	True	13C4-PFHpA	803263.83	1250.00	PFHpA	0.012	0.018	✓
PFHxS_1	399.0 / 80.0	2.31	348883.75	768.46	276.2	False	13C3-PFHxS	137469.79	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	94897.14	740.61	331.7	False	13C3-PFHxS	137469.79	1182.50	PFHxS	0.272	0.281	✓
PFOA_1	413.0 / 369.0	2.68	170990.20	91.27	71.2	False	13C8-PFOA	672053.49	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.67	13521.88	54.60	62.9	True	13C8-PFOA	672053.49	1250.00	PFOA	0.079	0.073	✓
PFNA_1	463.0 / 419.0	3.04	36848.42	63.47	58.1	False	13C9-PFNA	588309.04	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.04	9480.24	57.02	73.2	False	13C9-PFNA	588309.04	1250.00	PFNA	0.257	0.285	✓
PFOS_1	499.0 / 80.0	2.98	311363.03	670.22	176.5	False	13C8-PFOS	109963.07	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.04	42928.29	483.93	170.0	False	13C8-PFOS	109963.07	1196.25	PFOS	0.138	0.186	✓
PFDA_1	513.0 / 469.0	3.39	6061.98	< 0	24.3	True	13C6-PFDA	516710.60	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.37	191.25	< 0	27.0	True	13C6-PFDA	516710.60	1250.00	PFDA	0.032	0.045	✓
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	479693.03	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	479693.03	1250.00	PFUnA	N/A	0.056	✓
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	378354.84	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	378354.84	1250.00	PFDoA	N/A	0.156	✓
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	123340.03	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	123340.03	1250.00	PFTrDA	N/A	0.069	✓
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	123340.03	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	123340.03	1250.00	PFTeDA	N/A	0.053	✓
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	87069.00	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	87069.00	1250.00	NMeFOSAA	N/A	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.69	958.94	5.29	54.1	False	d5-EtFOSAA	86142.46	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	86142.46	1250.00	NEtFOSAA	N/A	0.060	
HFPO-DA_1	285.0 / 169.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	471453.14	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	471453.14	1250.00	HFPO-DA	N/A	0.028	✓
ADONA_1	377.0 / 251.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	471453.14	1250.00	ADONA			
ADONA_2	377.0 / 85.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	471453.14	1250.00	ADONA	N/A	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	471453.14	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	471453.14	1250.00	9Cl-PF3ONS	N/A	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	479693.03	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	479693.03	1250.00	11Cl-PF3OUdS	N/A	0.005	✓

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PFAS Sample Quant Report

Created with Analyst Reporter
Printed: 23/04/2020 12:32:14 PM

Sample Name	H4734-FS1(0)	**Injection Vial**	43
Sample ID	FD01-040820	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 10:22:23 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	3.96	378354.84	785.24	1976.1	False	13C2-PFDA	508608.88	1250.00				
d3-MeFOSAA	573.0 / 419.0	3.53	87900.22	933.43	475.0	False	13C4-PFOS	111688.59	1196.25		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	3.68	86115.96	872.50	628.7	False	13C4-PFOS	111688.59	1196.25		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	1.90	635767.07	1199.21	597.4	False	13C2-PFOA	692947.38	1250.00		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.28	803263.83	1323.52	1307.0	False	13C2-PFOA	692947.38	1250.00		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.67	672053.49	1224.58	1507.4	False	13C2-PFOA	692947.38	1250.00		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.03	588309.04	1190.81	1281.3	False	13C2-PFOA	692947.38	1250.00		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.37	516710.60	1232.76	1724.5	False	13C2-PFDA	508608.88	1250.00		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	3.68	479693.03	1080.39	1302.5	False	13C2-PFDA	508608.88	1250.00		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.41	123340.03	262.14	1799.7	False	13C2-PFDA	508608.88	1250.00		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.58	152515.74	1201.16	678.8	False	13C4-PFOS	111688.59	1196.25		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.30	137469.79	1210.62	598.4	False	13C4-PFOS	111688.59	1196.25		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.03	109963.07	1210.33	491.2	False	13C4-PFOS	111688.59	1196.25		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.01	471453.14	1104.48	601.9	False	13C2-PFOA	692947.38	1250.00		N/A	N/A	✓

SDG 20-0493

Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

Sample ID:	H4731-FS1(0)
Client Sample ID:	002G02DA-04082020
Sample Size:	0.265
Units:	L
Dilution Factor:	1.000
PIV (L):	0.001
Target Analyte:	PFHxS
MRM Transition:	399.0 / 80.0
Data file:	AC_04202020_05-369.wiff
Result table:	20-0493
Area:	924,091.94
IS Name:	13C3-PFHxS
IS Area:	138,006.17
IS Amount (ng/L):	1182.5
y-intercept:	0.036
slope:	3.84991

$$\text{Concentration} = \frac{[(924091.94/138006.17) - 0.036]}{3.84991} * 1182.5 * 0.001 * 1 / 0.265$$

ng/L = 7.72

*Final concentration may vary based on rounding.

SDG 20-0470

Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

Sample ID:	H4731-FS(0)
Client Sample ID:	002G02DA-04082020
Sample Size:	0.26
Units:	L
Dilution Factor:	1.000
PIV (L):	0.001
Target Analyte:	PFHxS
MRM Transition:	399.0 / 80.0
Data file:	AC_04202020_05-369.wiff
Result table:	20-0470A
Area:	771,724.53
IS Name:	13C3-PFHxS
IS Area:	103,228.61
IS Amount (ng/L):	1182.5
y-intercept:	0.036
slope:	3.84991

$$\text{Concentration} = \frac{[(771724.53/103228.61) - 0.036]}{3.84991} * 1182.5 * 0.001 * 1 / 0.26$$

ng/L = 8.79

*Final concentration may vary based on rounding.

Mid-South
SDG 20-0493

INTIAL CALIBRATION (IC) LINEAR REGRESSION W/ INTERNAL STANDARD & SAMPLE CALCULATION

SAMPLE 002G05DA-040820

PFOA- 11/24/2019
13C8-PFOA (IS) CONCENTRATION = 1250

CONCENTRATION (IC CONC/IS CONC)	RESPONSE FACTOR (RF=IC/IS)	IC STANDARD	IS RESPONSE	RF	IC CONC	IC CONC/IS CONC
125	0.337032255	225557.93	669247.31	0.337032255	125	1.25
250	0.378882347	252309.14	665930.05	0.378882347	250	2.5
500	0.612751289	395379.92	645253.51	0.612751289	500	5
1000	0.968942156	610123.09	629679.58	0.968942156	1000	10
2500	2.254033656	1497421.66	664329.77	2.254033656	2500	25
10000	8.864809176	5794785.34	653684.16	8.864809176	10000	100
25000	20.50484256	13905995.66	678181.05	20.50484256	25000	250

CORREL
0.999639704
Y-INTERCEPT
0.250873461
SLOPE
0.000816893

SAMPLE RESPONSE	324078.9	
IS RESPONSE	636770.29	
PFOA RESPONSE	0.50894162	
ALIQUOT	0.28	L
DILUTION	1	

FINAL CONCENTRATION 1.1283 ng/L

REPORTED RESULT 1.42 ng/L

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PFAS Sample Quant Report

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Printed: 23/04/2020 2:52:09 PM

Sample Name	H4732-FS1(0)	**Injection Vial**	41
Sample ID	002G05DA-040820	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	4/22/2020 10:00:31 PM	**Data File**	AC_04222020_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.59	234697.22	759.32	24.5	True	13C3-PFBS	134331.49	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.59	39091.01	388.82	108.2	True	13C3-PFBS	134331.49	1161.25	PFBS	0.167	0.321	✓
PFHxA_1	313.0 / 269.0	1.86	345354.34	746.21	23.3	True	13C5-PFHxA	538185.72	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.89	14359.72	420.29	40.2	False	13C5-PFHxA	538185.72	1250.00	PFHxA	0.042	0.073	✓
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	744793.59	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	744793.59	1250.00	PFHpA	N/A	0.018	✓
PFHxS_1	399.0 / 80.0	2.28	143680.49	279.89	54.6	False	13C3-PFHxS	151682.11	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	28825.77	200.05	101.1	False	13C3-PFHxS	151682.11	1182.50	PFHxS	0.201	0.281	✓
PFOA_1	413.0 / 369.0	2.65	324078.90	398.53	89.3	True	13C8-PFOA	636770.29	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.66	22234.23	314.46	98.0	True	13C8-PFOA	636770.29	1250.00	PFOA	0.069	0.073	✓
PFNA_1	463.0 / 419.0	3.04	14048.54	19.89	31.1	True	13C9-PFNA	533048.95	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.05	4405.00	23.99	42.5	True	13C9-PFNA	533048.95	1250.00	PFNA	0.314	0.285	✓
PFOS_1	499.0 / 80.0	3.04	14933.06	< 0	36.4	True	13C8-PFOS	96277.51	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.05	2834.41	< 0	37.4	True	13C8-PFOS	96277.51	1196.25	PFOS	0.190	0.186	✓
PFDA_1	513.0 / 469.0	3.38	7891.60	5.82	32.4	False	13C6-PFDA	444630.02	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.35	433.44	8.19	24.7	False	13C6-PFDA	444630.02	1250.00	PFDA	0.055	0.045	✓
PFUnA_1	563.0 / 519.0	3.69	9451.24	19.66	46.2	True	13C7-PFUnA	334512.07	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.69	481.85	17.62	20.1	True	13C7-PFUnA	334512.07	1250.00	PFUnA	0.051	0.056	✓
PFDoA_1	613.0 / 569.0	3.96	9270.24	45.16	57.6	True	13C2-PFDoA	179054.06	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	3.97	1682.67	60.13	66.2	False	13C2-PFDoA	179054.06	1250.00	PFDoA	0.182	0.156	✓
PFTrDA_1	663.0 / 619.0	4.20	6033.41	353.56	104.5	True	13C2-PFTeDA	24227.90	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.20	451.69	384.80	40.3	False	13C2-PFTeDA	24227.90	1250.00	PFTrDA	0.075	0.069	✓
PFTeDA_1	713.0 / 669.0	4.42	5393.95	254.28	80.9	True	13C2-PFTeDA	24227.90	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.41	287.01	256.69	41.8	False	13C2-PFTeDA	24227.90	1250.00	PFTeDA	0.053	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.53	3508.24	35.48	103.9	False	d3-MeFOSAA	62853.48	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.53	2858.65	55.17	48.5	False	d3-MeFOSAA	62853.48	1250.00	NMeFOSAA	0.815	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.69	3140.98	71.38	150.2	False	d5-EtFOSAA	53629.86	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.65	340.74	137.70	98.9	False	d5-EtFOSAA	53629.86	1250.00	NEtFOSAA	0.108	0.060	
HFPO-DA_1	285.0 / 169.0	2.02	6920.95	< 0	40.6	False	13C3-HFPO-DA	410705.10	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	1.99	188.61	< 0	9.5	True	13C3-HFPO-DA	410705.10	1250.00	HFPO-DA	0.027	0.028	✓
ADONA_1	377.0 / 251.0	2.32	22357.15	< 0	151.1	False	13C3-HFPO-DA	410705.10	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.33	1207.75	< 0	36.5	False	13C3-HFPO-DA	410705.10	1250.00	ADONA	0.054	0.013	
9Cl-PF3ONS_1	531.0 / 351.0	3.23	21985.48	< 0	150.0	False	13C3-HFPO-DA	410705.10	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	410705.10	1250.00	9Cl-PF3ONS	N/A	0.008	
11Cl-pf3OUdS_1	631.0 / 451.0	3.82	17875.55	40.82	200.9	False	13C7-PFUnA	334512.07	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	334512.07	1250.00	11Cl-PF3OUdS	N/A	0.005	

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PFAS Calibration Quant Report

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Sample Name	KY33	**Injection Vial**	4
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:10:43 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.60	43968.24	123.52	477.2	False	13C3-PFBS	146259.73	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.60	14508.10	124.61	219.5	False	13C3-PFBS	146259.73	1161.25	PFBS	0.330	0.321	✓
PFHxA_1	313.0 / 269.0	1.91	79701.10	134.45	81.0	False	13C5-PFHxA	650836.29	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	5377.85	114.21	66.1	False	13C5-PFHxA	650836.29	1250.00	PFHxA	0.067	0.073	✓
PFHpA_1	363.0 / 319.0	2.31	77494.53	124.60	90.1	False	13C4-PFHpA	733380.32	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.31	1290.48	121.78	40.6	False	13C4-PFHpA	733380.32	1250.00	PFHpA	0.017	0.018	✓
PFHxS_1	399.0 / 80.0	2.33	63946.85	132.62	562.1	False	13C3-PFHxS	136698.57	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.33	17642.55	134.16	251.9	False	13C3-PFHxS	136698.57	1182.50	PFHxS	0.276	0.281	✓
PFOA_1	413.0 / 369.0	2.70	225557.93	190.99	69.3	True	13C8-PFOA	669247.31	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.70	17573.69	162.41	59.1	False	13C8-PFOA	669247.31	1250.00	PFOA	0.078	0.073	✓
PFNA_1	463.0 / 419.0	3.08	66573.65	118.40	137.4	False	13C9-PFNA	614436.33	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.07	20669.15	130.77	213.1	False	13C9-PFNA	614436.33	1250.00	PFNA	0.310	0.285	✓
PFOS_1	499.0 / 80.0	3.07	82862.54	130.68	130.8	False	13C8-PFOS	111761.41	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.07	14350.22	118.53	159.6	False	13C8-PFOS	111761.41	1196.25	PFOS	0.173	0.186	✓
PFDA_1	513.0 / 469.0	3.42	65737.22	112.19	192.7	False	13C6-PFDA	624867.43	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.42	3410.66	130.35	594.6	False	13C6-PFDA	624867.43	1250.00	PFDA	0.052	0.045	✓
PFUnA_1	563.0 / 519.0	3.73	63851.82	109.37	162.1	False	13C7-PFUnA	690318.33	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.73	4573.97	147.26	147.4	False	13C7-PFUnA	690318.33	1250.00	PFUnA	0.072	0.056	✓
PFDoA_1	613.0 / 569.0	4.01	75459.95	118.16	159.0	False	13C2-PFDoA	705794.89	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.01	11458.26	117.62	223.4	False	13C2-PFDoA	705794.89	1250.00	PFDoA	0.152	0.156	✓
PFTrDA_1	663.0 / 619.0	4.26	63074.85	117.29	238.5	False	13C2-PFTeDA	676619.84	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.26	4520.77	125.77	186.7	False	13C2-PFTeDA	676619.84	1250.00	PFTrDA	0.072	0.069	✓
PFTeDA_1	713.0 / 669.0	4.48	75461.49	112.84	360.1	False	13C2-PFTeDA	676619.84	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.47	4165.26	120.88	387.6	False	13C2-PFTeDA	676619.84	1250.00	PFTeDA	0.055	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.58	12778.67	114.15	593.0	False	d3-MeFOSAA	116648.02	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.57	8228.37	111.26	6530.0	False	d3-MeFOSAA	116648.02	1250.00	NMeFOSAA	0.644	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.73	11560.43	107.45	569.0	True	d5-EtFOSAA	136874.38	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.72	875.09	138.63	962.5	False	d5-EtFOSAA	136874.38	1250.00	NEtFOSAA	0.076	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.03	53357.88	117.71	397.7	False	13C3-HFPO-DA	506005.98	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.04	1754.76	96.85	50.5	False	13C3-HFPO-DA	506005.98	1250.00	HFPO-DA	0.033	0.028	✓
ADONA_1	377.0 / 251.0	2.34	148096.79	108.72	582.5	False	13C3-HFPO-DA	506005.98	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.34	2582.23	< 0	195.1	False	13C3-HFPO-DA	506005.98	1250.00	ADONA	0.017	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.26	137799.43	94.38	321.3	False	13C3-HFPO-DA	506005.98	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.27	1132.18	65.41	54.6	False	13C3-HFPO-DA	506005.98	1250.00	9Cl-PF3ONS	0.008	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.86	125599.89	122.55	416.0	False	13C7-PFUnA	690318.33	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.86	382.92	78.86	51.9	False	13C7-PFUnA	690318.33	1250.00	11Cl-PF3OUdS	0.003	0.005	✓

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PFAS Calibration Quant Report

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Sample Name	KY34	**Injection Vial**	5
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:21:38 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.60	86666.59	253.19	664.9	False	13C3-PFBS	145505.25	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.60	27565.83	248.93	334.9	False	13C3-PFBS	145505.25	1161.25	PFBS	0.318	0.321	✓
PFHxA_1	313.0 / 269.0	1.91	139658.90	255.24	125.7	False	13C5-PFHxA	620755.60	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	10643.13	261.81	91.7	False	13C5-PFHxA	620755.60	1250.00	PFHxA	0.076	0.073	✓
PFHpA_1	363.0 / 319.0	2.30	137251.68	231.87	121.8	False	13C4-PFHpA	751447.15	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	2725.71	260.16	64.7	False	13C4-PFHpA	751447.15	1250.00	PFHpA	0.020	0.018	✓
PFHxS_1	399.0 / 80.0	2.32	116089.92	239.74	1204.5	False	13C3-PFHxS	142171.19	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	31819.42	236.54	490.9	False	13C3-PFHxS	142171.19	1182.50	PFHxS	0.274	0.281	✓
PFOA_1	413.0 / 369.0	2.69	252309.14	241.52	88.0	False	13C8-PFOA	665930.05	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.69	20621.46	245.08	74.4	False	13C8-PFOA	665930.05	1250.00	PFOA	0.082	0.073	✓
PFNA_1	463.0 / 419.0	3.07	136005.38	252.53	214.1	False	13C9-PFNA	618229.78	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.07	39082.53	255.23	254.5	False	13C9-PFNA	618229.78	1250.00	PFNA	0.287	0.285	✓
PFOS_1	499.0 / 80.0	3.06	129242.50	260.93	181.3	False	13C8-PFOS	103725.67	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.06	23987.57	261.99	164.4	False	13C8-PFOS	103725.67	1196.25	PFOS	0.186	0.186	✓
PFDA_1	513.0 / 469.0	3.42	141818.36	270.60	212.0	False	13C6-PFDA	602364.42	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.41	5954.30	250.96	163.0	False	13C6-PFDA	602364.42	1250.00	PFDA	0.042	0.045	✓
PFUnA_1	563.0 / 519.0	3.73	131182.13	267.94	222.2	False	13C7-PFUnA	636636.93	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.72	6639.70	242.35	238.9	False	13C7-PFUnA	636636.93	1250.00	PFUnA	0.051	0.056	✓
PFDoA_1	613.0 / 569.0	4.01	145888.73	255.56	210.6	False	13C2-PFDoA	692417.28	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.01	22472.34	254.00	252.4	False	13C2-PFDoA	692417.28	1250.00	PFDoA	0.154	0.156	✓
PFTrDA_1	663.0 / 619.0	4.25	119952.61	250.30	298.3	False	13C2-PFTeDA	662967.58	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.25	7807.82	236.11	279.4	False	13C2-PFTeDA	662967.58	1250.00	PFTrDA	0.065	0.069	✓
PFTeDA_1	713.0 / 669.0	4.47	145156.76	249.59	561.0	False	13C2-PFTeDA	662967.58	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.47	7996.93	261.85	490.4	False	13C2-PFTeDA	662967.58	1250.00	PFTeDA	0.055	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.57	23707.87	252.73	97524.8	False	d3-MeFOSAA	116094.82	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.57	15375.46	249.81	217.6	False	d3-MeFOSAA	116094.82	1250.00	NMeFOSAA	0.649	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.73	23171.41	249.03	1608.3	False	d5-EtFOSAA	124521.20	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.74	1701.08	309.00	2015.9	False	d5-EtFOSAA	124521.20	1250.00	NEtFOSAA	0.073	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.02	100117.69	239.81	536.0	False	13C3-HFPO-DA	517365.68	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.02	3673.69	298.08	97.0	False	13C3-HFPO-DA	517365.68	1250.00	HFPO-DA	0.037	0.028	✓
ADONA_1	377.0 / 251.0	2.34	296320.31	244.19	842.2	False	13C3-HFPO-DA	517365.68	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.34	3702.38	15.72	509.3	False	13C3-HFPO-DA	517365.68	1250.00	ADONA	0.012	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.25	258247.41	233.70	433.1	False	13C3-HFPO-DA	517365.68	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.26	1792.45	152.00	69.7	True	13C3-HFPO-DA	517365.68	1250.00	9Cl-PF3ONS	0.007	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.86	243372.49	249.95	671.2	False	13C7-PFUnA	636636.93	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.86	1362.49	293.81	70.4	False	13C7-PFUnA	636636.93	1250.00	11Cl-PF3OUdS	0.006	0.005	✓

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PFAS Calibration Quant Report

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Sample Name	KY35	**Injection Vial**	6
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:32:34 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.60	162219.57	490.76	993.7	False	13C3-PFBS	142781.14	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.59	54045.02	509.36	353.8	False	13C3-PFBS	142781.14	1161.25	PFBS	0.333	0.321	✓
PFHxA_1	313.0 / 269.0	1.91	266987.26	508.51	163.7	False	13C5-PFHxA	606862.32	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	20413.56	535.88	135.4	False	13C5-PFHxA	606862.32	1250.00	PFHxA	0.076	0.073	✓
PFHpA_1	363.0 / 319.0	2.30	266394.12	503.66	186.6	False	13C4-PFHpA	705306.38	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	5083.63	525.43	102.7	False	13C4-PFHpA	705306.38	1250.00	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.31	217652.92	500.69	1144.7	False	13C3-PFHxS	130635.57	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	59660.43	488.18	491.2	False	13C3-PFHxS	130635.57	1182.50	PFHxS	0.274	0.281	✓
PFOA_1	413.0 / 369.0	2.69	395379.92	523.86	99.8	False	13C8-PFOA	645253.51	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.69	28786.71	484.74	85.8	False	13C8-PFOA	645253.51	1250.00	PFOA	0.073	0.073	✓
PFNA_1	463.0 / 419.0	3.06	252288.40	521.40	293.5	False	13C9-PFNA	568509.44	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.06	65085.53	470.97	291.5	False	13C9-PFNA	568509.44	1250.00	PFNA	0.258	0.285	✓
PFOS_1	499.0 / 80.0	3.06	227151.39	491.81	244.6	False	13C8-PFOS	106126.59	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.06	43243.60	507.76	237.7	False	13C8-PFOS	106126.59	1196.25	PFOS	0.190	0.186	✓
PFDA_1	513.0 / 469.0	3.41	255442.12	512.14	283.5	False	13C6-PFDA	588557.00	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.41	12174.10	545.23	715.5	False	13C6-PFDA	588557.00	1250.00	PFDA	0.048	0.045	✓
PFUnA_1	563.0 / 519.0	3.72	243392.43	526.58	256.3	False	13C7-PFUnA	622062.77	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.72	11433.79	441.14	299.0	False	13C7-PFUnA	622062.77	1250.00	PFUnA	0.047	0.056	✓
PFDoA_1	613.0 / 569.0	4.00	260487.85	495.04	297.6	False	13C2-PFDoA	665216.66	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.00	38368.21	466.08	404.8	False	13C2-PFDoA	665216.66	1250.00	PFDoA	0.147	0.156	✓
PFTrDA_1	663.0 / 619.0	4.25	229123.91	513.73	422.9	False	13C2-PFTeDA	646053.32	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.25	16070.38	519.74	401.6	False	13C2-PFTeDA	646053.32	1250.00	PFTrDA	0.070	0.069	✓
PFTeDA_1	713.0 / 669.0	4.46	279960.80	522.50	699.5	False	13C2-PFTeDA	646053.32	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.46	13858.92	485.95	677.4	False	13C2-PFTeDA	646053.32	1250.00	PFTeDA	0.050	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.56	42066.15	518.35	1000.0	False	d3-MeFOSAA	109076.37	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.56	27536.83	518.45	313.5	False	d3-MeFOSAA	109076.37	1250.00	NMeFOSAA	0.655	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.72	45670.08	527.55	650.3	False	d5-EtFOSAA	118315.94	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.71	2036.81	392.31	183.4	False	d5-EtFOSAA	118315.94	1250.00	NEtFOSAA	0.045	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.02	193688.33	524.23	599.0	False	13C3-HFPO-DA	485844.67	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.02	4586.16	427.62	124.5	False	13C3-HFPO-DA	485844.67	1250.00	HFPO-DA	0.024	0.028	✓
ADONA_1	377.0 / 251.0	2.33	563268.11	527.94	824.5	False	13C3-HFPO-DA	485844.67	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.32	9339.78	510.54	11141.5	False	13C3-HFPO-DA	485844.67	1250.00	ADONA	0.017	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.25	481804.92	536.20	571.3	False	13C3-HFPO-DA	485844.67	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.24	3239.99	378.10	124.8	False	13C3-HFPO-DA	485844.67	1250.00	9Cl-PF3ONS	0.007	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	496812.17	514.76	883.4	False	13C7-PFUnA	622062.77	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.85	2132.18	468.35	244.9	False	13C7-PFUnA	622062.77	1250.00	11Cl-PF3OUdS	0.004	0.005	✓

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PFAS Calibration Quant Report

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Sample Name	KY36	**Injection Vial**	7
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:43:31 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.60	319205.63	1016.75	1627.3	False	13C3-PFBS	136831.50	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.60	96419.34	958.61	523.3	False	13C3-PFBS	136831.50	1161.25	PFBS	0.302	0.321	✓
PFHxA_1	313.0 / 269.0	1.91	504044.17	961.33	243.6	False	13C5-PFHxA	611489.03	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	38487.53	1022.83	183.7	False	13C5-PFHxA	611489.03	1250.00	PFHxA	0.076	0.073	✓
PFHpA_1	363.0 / 319.0	2.30	521138.28	1017.96	288.3	False	13C4-PFHpA	697839.90	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	8809.24	926.70	180.8	False	13C4-PFHpA	697839.90	1250.00	PFHpA	0.017	0.018	✓
PFHxS_1	399.0 / 80.0	2.32	410927.13	1027.77	1598.6	False	13C3-PFHxS	121498.77	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	117593.45	1040.51	874.1	False	13C3-PFHxS	121498.77	1182.50	PFHxS	0.286	0.281	✓
PFOA_1	413.0 / 369.0	2.69	610123.09	953.88	129.9	False	13C8-PFOA	629679.58	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.69	47881.89	1036.67	134.0	False	13C8-PFOA	629679.58	1250.00	PFOA	0.078	0.073	✓
PFNA_1	463.0 / 419.0	3.06	474981.10	985.74	384.0	False	13C9-PFNA	572091.73	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.06	131541.26	956.77	514.5	False	13C9-PFNA	572091.73	1250.00	PFNA	0.277	0.285	✓
PFOS_1	499.0 / 80.0	3.06	415288.77	957.79	430.0	False	13C8-PFOS	105254.61	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.06	81431.36	1018.50	534.9	False	13C8-PFOS	105254.61	1196.25	PFOS	0.196	0.186	✓
PFDA_1	513.0 / 469.0	3.41	485822.95	1008.72	381.9	False	13C6-PFDA	576799.07	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.41	20968.18	972.14	391.0	False	13C6-PFDA	576799.07	1250.00	PFDA	0.043	0.045	✓
PFUnA_1	563.0 / 519.0	3.72	450104.00	968.65	376.7	False	13C7-PFUnA	635881.80	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.72	24385.56	940.38	315.2	False	13C7-PFUnA	635881.80	1250.00	PFUnA	0.054	0.056	✓
PFDoA_1	613.0 / 569.0	4.01	500809.81	988.52	410.5	False	13C2-PFDoA	655233.84	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.01	79841.46	1005.68	590.5	False	13C2-PFDoA	655233.84	1250.00	PFDoA	0.159	0.156	✓
PFTrDA_1	663.0 / 619.0	4.25	427819.66	1004.44	590.2	False	13C2-PFTeDA	630763.93	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.25	28789.36	969.45	592.5	False	13C2-PFTeDA	630763.93	1250.00	PFTrDA	0.067	0.069	✓
PFTeDA_1	713.0 / 669.0	4.46	519146.47	1018.59	1101.5	False	13C2-PFTeDA	630763.93	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.46	26711.63	984.71	854.4	False	13C2-PFTeDA	630763.93	1250.00	PFTeDA	0.051	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.56	83732.71	984.94	3549.2	False	d3-MeFOSAA	118874.91	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.56	56830.33	1023.46	660.9	False	d3-MeFOSAA	118874.91	1250.00	NMeFOSAA	0.679	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.72	92469.60	1071.52	2343.4	False	d5-EtFOSAA	119091.51	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.72	4669.29	907.87	689.6	True	d5-EtFOSAA	119091.51	1250.00	NEtFOSAA	0.050	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.02	362732.73	1029.66	804.8	False	13C3-HFPO-DA	475267.05	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.02	10316.36	1107.09	214.3	False	13C3-HFPO-DA	475267.05	1250.00	HFPO-DA	0.028	0.028	✓
ADONA_1	377.0 / 251.0	2.33	1069386.84	1055.53	1163.5	False	13C3-HFPO-DA	475267.05	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.33	14638.46	985.23	1664.5	False	13C3-HFPO-DA	475267.05	1250.00	ADONA	0.014	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.25	900578.80	1090.93	756.0	False	13C3-HFPO-DA	475267.05	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.25	8086.15	1108.10	235.1	False	13C3-HFPO-DA	475267.05	1250.00	9Cl-PF3ONS	0.009	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	951220.68	958.20	1134.3	False	13C7-PFUnA	635881.80	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.86	3933.59	842.33	154.2	False	13C7-PFUnA	635881.80	1250.00	11Cl-PF3OUdS	0.004	0.005	✓

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PFAS Calibration Quant Report

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Sample Name	KY37	**Injection Vial**	8
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 2:54:27 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.59	863898.85	2455.55	3272.6	False	13C3-PFBS	154094.24	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.59	276826.34	2462.52	918.5	False	13C3-PFBS	154094.24	1161.25	PFBS	0.320	0.321	✓
PFHxA_1	313.0 / 269.0	1.91	1346669.11	2414.89	427.2	False	13C5-PFHxA	654349.66	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.90	96549.36	2428.85	356.9	False	13C5-PFHxA	654349.66	1250.00	PFHxA	0.072	0.073	✓
PFHpA_1	363.0 / 319.0	2.30	1355468.46	2540.34	436.3	False	13C4-PFHpA	736933.78	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	23934.10	2397.71	326.7	False	13C4-PFHpA	736933.78	1250.00	PFHpA	0.018	0.018	✓
PFHxS_1	399.0 / 80.0	2.32	1074531.43	2447.34	2716.1	False	13C3-PFHxS	134250.65	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	312029.51	2506.11	1341.4	False	13C3-PFHxS	134250.65	1182.50	PFHxS	0.290	0.281	✓
PFOA_1	413.0 / 369.0	2.69	1497421.66	2505.34	205.1	False	13C8-PFOA	664329.77	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.69	103234.60	2430.28	191.5	False	13C8-PFOA	664329.77	1250.00	PFOA	0.069	0.073	✓
PFNA_1	463.0 / 419.0	3.06	1268600.18	2509.13	595.2	False	13C9-PFNA	604612.52	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.06	375871.53	2605.24	900.4	False	13C9-PFNA	604612.52	1250.00	PFNA	0.296	0.285	✓
PFOS_1	499.0 / 80.0	3.06	1114167.01	2494.44	509.0	False	13C8-PFOS	112559.87	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.06	205445.14	2485.13	655.4	False	13C8-PFOS	112559.87	1196.25	PFOS	0.184	0.186	✓
PFDA_1	513.0 / 469.0	3.41	1243014.55	2406.56	549.1	False	13C6-PFDA	624162.15	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.42	50305.80	2177.68	635.6	False	13C6-PFDA	624162.15	1250.00	PFDA	0.040	0.045	✓
PFUnA_1	563.0 / 519.0	3.72	1174342.18	2497.61	588.5	False	13C7-PFUnA	651415.02	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.72	66655.75	2539.85	541.1	False	13C7-PFUnA	651415.02	1250.00	PFUnA	0.057	0.056	✓
PFDoA_1	613.0 / 569.0	4.00	1372837.01	2621.00	648.9	False	13C2-PFDoA	687315.46	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.00	220081.80	2673.49	839.4	False	13C2-PFDoA	687315.46	1250.00	PFDoA	0.160	0.156	✓
PFTrDA_1	663.0 / 619.0	4.25	1141253.54	2539.50	880.0	False	13C2-PFTeDA	675073.13	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.25	78809.13	2509.08	1000.7	False	13C2-PFTeDA	675073.13	1250.00	PFTrDA	0.069	0.069	✓
PFTeDA_1	713.0 / 669.0	4.46	1362910.00	2540.92	1549.1	False	13C2-PFTeDA	675073.13	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.46	72380.27	2533.04	1502.9	False	13C2-PFTeDA	675073.13	1250.00	PFTeDA	0.053	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.56	226278.21	2585.94	1184.7	False	d3-MeFOSAA	125850.31	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.56	148801.32	2599.94	883.1	False	d3-MeFOSAA	125850.31	1250.00	NMeFOSAA	0.658	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.72	227615.93	2437.67	1732.7	False	d5-EtFOSAA	129543.12	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.72	12457.66	2243.11	1755.5	False	d5-EtFOSAA	129543.12	1250.00	NEtFOSAA	0.055	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.02	966555.85	2564.66	1314.6	False	13C3-HFPO-DA	516769.57	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.02	26179.80	2710.87	223.6	False	13C3-HFPO-DA	516769.57	1250.00	HFPO-DA	0.027	0.028	✓
ADONA_1	377.0 / 251.0	2.33	2804381.77	2592.12	1664.5	False	13C3-HFPO-DA	516769.57	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.33	34316.38	2445.18	1573.7	False	13C3-HFPO-DA	516769.57	1250.00	ADONA	0.012	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.25	2414562.21	2796.84	1022.7	False	13C3-HFPO-DA	516769.57	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.25	21056.36	2782.76	311.9	False	13C3-HFPO-DA	516769.57	1250.00	9Cl-PF3ONS	0.009	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	2535130.80	2481.88	1691.7	False	13C7-PFUnA	651415.02	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.85	12663.37	2639.21	397.1	False	13C7-PFUnA	651415.02	1250.00	11Cl-PF3OUdS	0.005	0.005	✓

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PFAS Calibration Quant Report

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Sample Name	KY38	**Injection Vial**	9
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:05:22 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.61	3175309.55	10285.52	3592.6	False	13C3-PFBS	135577.60	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.60	1054642.41	10702.96	1326.2	False	13C3-PFBS	135577.60	1161.25	PFBS	0.332	0.321	✓
PFHxA_1	313.0 / 269.0	1.91	5483082.59	10156.21	787.1	False	13C5-PFHxA	635451.77	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	400329.37	10445.98	627.0	False	13C5-PFHxA	635451.77	1250.00	PFHxA	0.073	0.073	✓
PFHpA_1	363.0 / 319.0	2.30	5389027.69	10599.92	811.0	False	13C4-PFHpA	706911.82	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	102288.99	10712.13	651.6	False	13C4-PFHpA	706911.82	1250.00	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.32	4230923.54	10418.77	2836.9	False	13C3-PFHxS	124597.22	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	1185800.18	10278.17	1936.0	False	13C3-PFHxS	124597.22	1182.50	PFHxS	0.280	0.281	✓
PFOA_1	413.0 / 369.0	2.70	5794785.34	10486.37	329.9	False	13C8-PFOA	653684.16	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.69	407724.37	10655.04	341.2	True	13C8-PFOA	653684.16	1250.00	PFOA	0.070	0.073	✓
PFNA_1	463.0 / 419.0	3.07	4917469.47	10183.04	1006.2	False	13C9-PFNA	579524.31	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.07	1364676.20	9898.40	1054.5	False	13C9-PFNA	579524.31	1250.00	PFNA	0.278	0.285	✓
PFOS_1	499.0 / 80.0	3.06	4171198.63	10404.69	828.9	False	13C8-PFOS	102885.59	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.06	779803.77	10510.61	1101.7	False	13C8-PFOS	102885.59	1196.25	PFOS	0.187	0.186	✓
PFDA_1	513.0 / 469.0	3.41	4775644.69	10364.04	1018.9	False	13C6-PFDA	559623.82	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.41	208410.57	10128.82	1360.1	False	13C6-PFDA	559623.82	1250.00	PFDA	0.044	0.045	✓
PFUnA_1	563.0 / 519.0	3.72	4552271.18	10537.86	790.0	False	13C7-PFUnA	602111.49	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.72	245835.10	10189.35	1702.5	False	13C7-PFUnA	602111.49	1250.00	PFUnA	0.054	0.056	✓
PFDoA_1	613.0 / 569.0	4.00	5200698.79	10160.38	928.2	False	13C2-PFDoA	676106.61	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.00	861215.71	10691.50	1236.8	False	13C2-PFDoA	676106.61	1250.00	PFDoA	0.166	0.156	✓
PFTrDA_1	663.0 / 619.0	4.25	4487007.23	10246.37	1235.1	False	13C2-PFTeDA	662493.44	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.25	324998.49	10604.14	1414.1	False	13C2-PFTeDA	662493.44	1250.00	PFTrDA	0.072	0.069	✓
PFTeDA_1	713.0 / 669.0	4.46	5408114.02	10362.65	2397.7	False	13C2-PFTeDA	662493.44	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.46	285794.47	10270.42	2313.9	False	13C2-PFTeDA	662493.44	1250.00	PFTeDA	0.053	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.57	827259.00	10385.85	1767.7	False	d3-MeFOSAA	116090.24	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.56	534409.41	10257.48	1925.6	False	d3-MeFOSAA	116090.24	1250.00	NMeFOSAA	0.646	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.72	838499.47	10722.18	2015.7	False	d5-EtFOSAA	108845.39	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.72	50341.07	10830.82	370.1	False	d5-EtFOSAA	108845.39	1250.00	NEtFOSAA	0.060	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.03	3872774.84	9986.02	2257.4	False	13C3-HFPO-DA	536153.90	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.03	97208.93	9947.47	628.4	False	13C3-HFPO-DA	536153.90	1250.00	HFPO-DA	0.025	0.028	✓
ADONA_1	377.0 / 251.0	2.34	11331133.43	10189.92	2245.1	False	13C3-HFPO-DA	536153.90	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.34	137276.38	10220.89	1914.0	False	13C3-HFPO-DA	536153.90	1250.00	ADONA	0.012	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.25	9421038.51	10719.25	2062.9	False	13C3-HFPO-DA	536153.90	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.25	80906.85	10555.90	992.0	False	13C3-HFPO-DA	536153.90	1250.00	9Cl-PF3ONS	0.009	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	10051701.66	10623.88	1943.8	False	13C7-PFUnA	602111.49	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.85	43640.83	9830.10	724.5	False	13C7-PFUnA	602111.49	1250.00	11Cl-PF3OUdS	0.004	0.005	✓

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PFAS Calibration Quant Report

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Printed: 23/04/2020 12:31:19 PM

Sample Name	KY39	**Injection Vial**	10
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	4/20/2020 3:16:18 PM	**Data File**	AC_04202020_05-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	20-0493
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/L)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.61	8504182.30	24749.70	6599.7	False	13C3-PFBS	150974.22	1161.25	PFBS			
PFBS_2	298.9 / 99.0	1.61	2672161.36	24368.00	2418.1	False	13C3-PFBS	150974.22	1161.25	PFBS	0.314	0.321	✓
PFHxA_1	313.0 / 269.0	1.92	14413204.41	25338.13	1355.0	False	13C5-PFHxA	669926.43	1250.00	PFHxA			
PFHxA_2	313.0 / 119.0	1.92	1007129.98	24959.19	565.3	False	13C5-PFHxA	669926.43	1250.00	PFHxA	0.070	0.073	✓
PFHpA_1	363.0 / 319.0	2.30	13354275.70	24356.65	1077.5	False	13C4-PFHpA	763278.63	1250.00	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	251778.49	24431.10	804.3	False	13C4-PFHpA	763278.63	1250.00	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.32	10748977.76	25001.81	2639.1	False	13C3-PFHxS	131993.98	1182.50	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	3064962.24	25085.08	2096.4	False	13C3-PFHxS	131993.98	1182.50	PFHxS	0.285	0.281	✓
PFOA_1	413.0 / 369.0	2.69	13905995.66	24539.03	483.4	False	13C8-PFOA	678183.05	1250.00	PFOA			
PFOA_2	413.0 / 169.0	2.69	953728.55	24398.20	579.1	False	13C8-PFOA	678183.05	1250.00	PFOA	0.069	0.073	✓
PFNA_1	463.0 / 419.0	3.07	12205005.63	24804.77	1317.2	False	13C9-PFNA	590889.01	1250.00	PFNA			
PFNA_2	463.0 / 219.0	3.06	3520081.76	25057.63	1370.5	False	13C9-PFNA	590889.01	1250.00	PFNA	0.288	0.285	✓
PFOS_1	499.0 / 80.0	3.06	10073523.46	25028.41	1130.4	False	13C8-PFOS	103644.25	1196.25	PFOS			
PFOS_2	499.0 / 99.0	3.06	1852335.09	24866.23	1589.1	False	13C8-PFOS	103644.25	1196.25	PFOS	0.184	0.186	✓
PFDA_1	513.0 / 469.0	3.41	11476149.24	24700.75	1091.5	False	13C6-PFDA	564757.96	1250.00	PFDA			
PFDA_2	513.0 / 219.0	3.41	522079.72	25169.81	1131.9	False	13C6-PFDA	564757.96	1250.00	PFDA	0.045	0.045	✓
PFUnA_1	563.0 / 519.0	3.72	10539900.79	24467.00	992.4	False	13C7-PFUnA	601064.21	1250.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.72	598461.80	24874.67	1537.2	False	13C7-PFUnA	601064.21	1250.00	PFUnA	0.057	0.056	✓
PFDoA_1	613.0 / 569.0	4.00	12623421.22	24736.35	1420.2	False	13C2-PFDoA	674983.20	1250.00	PFDoA			
PFDoA_2	613.0 / 319.0	4.00	1941510.94	24166.63	1487.7	False	13C2-PFDoA	674983.20	1250.00	PFDoA	0.154	0.156	✓
PFTrDA_1	663.0 / 619.0	4.24	11226512.93	24703.37	1609.9	False	13C2-PFTeDA	688461.40	1250.00	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.24	776688.84	24410.72	1660.7	False	13C2-PFTeDA	688461.40	1250.00	PFTrDA	0.069	0.069	✓
PFTeDA_1	713.0 / 669.0	4.46	13302611.23	24567.91	2847.7	False	13C2-PFTeDA	688461.40	1250.00	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.46	713734.37	24718.15	2500.6	False	13C2-PFTeDA	688461.40	1250.00	PFTeDA	0.054	0.053	✓
NMeFOSAA_1	570.0 / 419.0	3.56	2106964.37	24533.04	3746.3	False	d3-MeFOSAA	125491.17	1250.00	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.56	1382596.21	24614.59	2368.9	False	d3-MeFOSAA	125491.17	1250.00	NMeFOSAA	0.656	0.655	✓
NEtFOSAA_1	584.0 / 419.0	3.72	1916161.19	24259.60	1989.9	False	d5-EtFOSAA	109994.17	1250.00	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.72	115259.78	24553.25	1004.4	False	d5-EtFOSAA	109994.17	1250.00	NEtFOSAA	0.060	0.060	✓
HFPO-DA_1	285.0 / 169.0	2.03	9814129.75	24912.92	2048.2	False	13C3-HFPO-DA	545541.57	1250.00	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.03	245066.17	24787.02	1089.8	False	13C3-HFPO-DA	545541.57	1250.00	HFPO-DA	0.025	0.028	✓
ADONA_1	377.0 / 251.0	2.34	27845454.31	24656.59	2583.4	False	13C3-HFPO-DA	545541.57	1250.00	ADONA			
ADONA_2	377.0 / 85.0	2.34	334157.40	24838.16	2173.3	False	13C3-HFPO-DA	545541.57	1250.00	ADONA	0.012	0.013	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.25	21296947.86	23903.70	1667.6	False	13C3-HFPO-DA	545541.57	1250.00	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.25	187614.78	24175.14	789.1	False	13C3-HFPO-DA	545541.57	1250.00	9Cl-PF3ONS	0.009	0.008	✓
11Cl-pf3OUdS_1	631.0 / 451.0	3.85	23076573.02	24423.78	1776.0	False	13C7-PFUnA	601064.21	1250.00	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	3.85	111600.96	25176.21	694.8	False	13C7-PFUnA	601064.21	1250.00	11Cl-PF3OUdS	0.005	0.005	✓