DRAFT FOR REVIEW

PFAS SOIL INVESTIGATION WORK PLAN

FORMER CHEVRON KENAI REFINERY

NIKISKI, ALASKA

October 4, 2024

Project #: CHEVR-024-0013

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List of Abbreviations and Acronyms

ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
Chevron	Chevron Environmental Management Company
DO	dissolved oxygen
DRO	diesel range organics
Eurofins	Eurofins Lancaster Laboratory
ft	feet
FTA	fire training area
GRO	gasoline range organics
HDPE	high density polyethylene
IDW	investigation derived waste
LCS/LCSD	laboratory control sample/ laboratory control sample duplicate
MB	method blank
µg/L	micrograms per liter
µg/g	micrograms per gram
mL/min	milliliters per minute
MS/MSD	matrix spike/ matrix spike duplicate
ng/L	nanograms per liter
ng/g	nanograms per gram
QC	quality control
ORP	oxidation-reduction potential
PFAS	per- and polyfluoroalkyl substances
ppm	parts per million

List of Abbreviations and Acronyms (cont.)

RPD	relative percent differences
Site	Former Chevron Kenai Refinery
SOP	PFAS Sampling Standard Operating Procedure
Trihydro	Trihydro Corporation
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This per- and polyfluoroalkyl substances (PFAS) investigation Work Plan (Work Plan) was prepared by Trihydro Corporation (Trihydro) on behalf of Chevron Environmental Management Company (Chevron) in response to a request by the Alaska Department of Environmental Conservation (ADEC) in the letter dated June 24th, 2024, *ADEC Comments – Requirement for Work Plan*. ADEC is requiring that Chevron submit a work plan to assess the soils for PFAS in the historical fire training area at the Former Chevron Kenai Refinery (Site).

1.1 OBJECTIVES

The objective of this Work Plan is to assess the potential presence of PFAS in the former fire training area at the Site, including soils from the surface to a depth sufficient to be inclusive of fill materials and underlying soils at the time the fire training facility was in use. The exact date range of usage of fire training facility is unknown. However, a historical records search indicated that the fire training pit was used from approximately 1970-1980 and the Site had dry chemical fire extinguishers in the mid-1960s to the mid-1970s. The historical records search is included in Appendix A. Analytical sampling data will be compared to the ADEC Table B-1 Migration to Groundwater Cleanup Levels and Table C Groundwater Cleanup Levels from 18 AAC 75 as shown in Tables 1 and 2 (ADEC 2023). Work will be performed in two phases.

- Phase I will include an initial round of surface soil sampling in the historical fire training area, where all fire training activities were performed.
- Phase II will have two options, dependent upon the results of Phase I.
    - If Phase I surface soil impacts are below the ADEC cleanup levels, soil sampling will be performed at the six locations within the Fire Training Pit Area to assess the presence of PFAS vertically in the soil column. In addition, groundwater monitoring wells initially sampled in 2021, will be resampled to confirm the presence of PFAS within the groundwater.
    - If Phase I surface soil sampling results are above the ADEC cleanup levels, soil sampling will be performed at a subset of locations sampled during Phase I to assess the presence of PFAS vertically in the soil column. Sample locations will target Phase I locations with PFAS concentrations above the ADEC cleanup level. Prior to sampling, a letter and sample location figure will be submitted to ADEC.

An investigation report will be prepared and will include a summary of results, conclusions, and recommendations. The details of this work plan are further discussed in Sections 3 – 7.

2.0 SITE HISTORY

2.1 REFINERY SITE HISTORY

The Site is located at mile 22.5 of the Kenai Spur Highway in Nikiski, Alaska (Figure 1). Chevron owns property encompassing approximately 279 acres, of which approximately 106 acres was developed and operated as a petroleum refinery by Chevron from 1962 to 1991. Most of the structures, including all of the process units, on the property were removed by 1995. Current remaining site features include an office building, warehouse facility, various wells and other groundwater remediation infrastructure, and bluff stabilization measures including a rock revetment (Figure 2).

2.2 SITE HYDROGEOLOGY

The Site borders Cook Inlet in the Kenai Lowland physiographical province. According to Karlsotrm (1964), Pleistocene glaciers occurred in the Kenai Lowland and shaped both the modern topography and shallow subsurface sedimentary sequences. A persistent glacial lake is believed by the same source to have received sediments from both the Alaska Range (west) and Kenai Range (east). Stratified layers of sand and gravel were deposited in the proglacial fluvial and fluvial delta environments during periods of low lake water. In periods of great lake water, silt and clay were deposited. This sequence of gravel and clay covers most of the Site area and was proposed by Nelson (1981) to be at least 500 feet thick. The Site ground water consists of two unconfined aquifers, upper unconfined aquifer and lower unconfined aquifer (Figure 3).

The Pleistocene sediments, and deformation thereof, complicate site hydrogeology. Through most of the Site, water in the upper unconfined aquifer moves west towards Cook Inlet, while groundwater in the lower unconfined aquifer moves south-southwest, towards the southern property border (Figure 3). Benzene, diesel range organics (DRO), and gasoline range organics (GRO) plumes exists in both the upper and lower unconfined aquifers.

2.3 PFAS-CONTAINING MATERIALS AND POTENTIAL IMPACTS

Firefighting and firefighting training is an activity of petroleum refinery management. An extensive historical records search was performed by Chevron to identify the possible use and/or presence of PFAS containing materials onsite. On April 22, 2024, a letter report, *Historical Records Review and Evaluation* (Chevron 2024), was submitted to ADEC. All available information concluded that only non-PFAS foam was stored and used onsite, therefore, no PFAS and/or PFAS-containing firefighting foams or materials were stored or used during Site operation (Appendix A).

2.4 POTENTIAL SOURCE AREAS

Fire training activities were performed annually while the Site was operational, but there is no historical documentation indicating that PFAS-containing materials were stored or used onsite, therefore no potential source areas are known. The historical fire training area (FTA) (Figure 2), located to the southwest of the Chevron office is the area beginning investigated for possible PFAS contamination.

In the 2021 *Per- and Polyfluoroalkyl Substance Sampling Results Summary Letter* (Arcadis 2021), included in Appendix B, monitoring wells CMW-12, CMW-17, CMW-28R, and CMW-56 were sampled for PFAS compounds. Low concentrations were detected in all four wells; however, all concentrations were estimated (J-flagged) and were below the analytical quantitation limit of 2 parts per trillion (ppt). Groundwater sampling efforts in the area of the historical FTA did not directly indicate potential source areas.

3.0 SAMPLING APPROACH

Trihydro will implement surface soil characterization in the vicinity of the historical fire training area (Figure 4). The characterization will consist of two phases.

3.1 PHASE I

Phase I sampling is intended to assess the presences of PFAS in surface soil from 0 to 6 inches below ground surface (bgs) in the former fire training area (Figure 4). Further evaluation of the vertical extent of PFAS in soil will be completed in Phase II, dependent upon Phase I sampling results.

Trihydro proposes a grid of 19 sampling locations with a 100-foot grid spacing within the FTA perimeter. The grid will shift to 50-foot spacing in the approximate location of the former fire training pit area (Figure 4). These locations may be adjusted (based on site utilities, field observations, etc.). Sample locations will be marked with wood laths or pin flags and will be surveyed using a Real Time Kinematics (RTK) GPS to facilitate returning to the sample location for follow-up sampling, if necessary. Sampling will be performed as described in Section 3.3.

3.2 PHASE II

Phase II includes two options, depending upon the analytical results of Phase I.

3.2.1 OPTION 1

If Phase I surface soil impacts are below the ADEC cleanup levels, further soil investigation to assess the vertical PFAS impacts in the soil column up to a maximum depth of ten feet bgs will be performed at six sample locations (FT-SS14 through FT-SS19) within the Fire Training Pit Area. In addition, groundwater monitoring wells CMW-12, CMW-17, CMW-28R, and CMW-56, initially sampled in 2021, will be resampled to confirm the presence of PFAS within the groundwater. Groundwater sampling will be performed as described in Section 3.3 and the ADEC cleanup levels are reported in Table 2.

3.2.2 OPTION 2

If Phase I surface soil sampling results are above the ADEC cleanup levels, soil sampling will be performed at a subset of locations sampled during Phase I to assess the presence of PFAS vertically in the soil column. Sampling will assess vertical PFAS impacts in soil up to a maximum depth of ten feet bgs near the PFAS training and storage locations. Samples will target a subset of locations sampled in Phase I which have PFOS and PFOA concentrations in surface soil

above the ADEC cleanup level; all other PFAS compounds will be included in the final report. The ADEC cleanup levels are listed in Table 1. Phase II is contingent upon Phase I analytical results. Prior to sampling, a letter and sample location figure will be submitted to ADEC. The purpose of Phase II, Option 2 is to refine and expand the information provided by Phase I.

Phase II will begin after the data from Phase I sampling is received from the lab and the data has been validated and evaluated by the project team. Sampling will be performed at up to 6 locations found to have surface soil impacts of PFOS and PFOA, greater than ADEC cleanup levels from the Phase I effort. Six Phase I soil sample locations with the highest PFOS and PFOA detections will be targeted during Phase II, Option 2. Composite soil samples will be collected using a hand auger from 0 to 2 feet (ft) bgs and grab samples at 3 ft bgs and the maximum soil depth achievable with a hand auger, no more than 10 ft bgs. Sampling will be performed as described in Section 3.3.

Additionally, if necessary, Trihydro will expand the surface soil sample grid around or outside of locations where PFAS in the surface soil samples were above the ADEC cleanup level in Phase I, with the goal of delineating the lateral extent of PFAS in soil.

3.3 PFAS SAMPLING

PFAS sampling will be performed as outlined in the PFAS Sampling Standard Operating Procedure (SOP) provided in Appendix C. Many types of clothing, personal protective equipment (PPE), sunscreens, insect repellent, rain-repellent gear, and other sampling equipment pose a risk of PFAS cross-contamination. These are described as 'PFAS-incompatible', items which pose no risk of cross-contamination may be described as 'PFAS-free' or 'PFAS-compatible.' Some common PFAS-incompatible and PFAS-compatible materials items are detailed in Table 1 of the PFAS SOP. Sampling procedures will be reviewed prior to field activities to identify potential conflicts between site PPE requirements and PFAS-compatible materials. If conflicts are identified, procedures will be developed to minimize PFAS cross-contamination risks without compromising the facility's health and safety procedures such as requiring flame resistant clothing. See the SOP Section 3.5 for additional techniques that may be used to provide valid sampling.

In addition to working with PFAS compatible materials, the following practices will be observed: A fresh pair of powderless nitrile gloves will be worn at each location; gloves will be changed frequently and immediately before collecting each sample, in accordance with the SOP.

3.3.1 SOIL SAMPLE COLLECTION

In Phase I, each surface soil sample will be collected from 0-6 inches below ground surface (bgs). Reusable stainless steel or high density polyethylene (HDPE) hand tools will be used and decontaminated as outlined in 3.4. Composite samples will be collected by removing vegetative material, collecting soil from the targeted depth range, and then thoroughly mixing the soil in a stainless-steel bowl. Soil components coarser than sand, 4.75 millimeter diameter and larger, as well as vegetative material will be removed and then a portion of the mixed soil will be placed in the laboratory supplied sample container. Only hand-digging tools will be utilized. Sample collection will be documented on the surface sample log included in Appendix D.

Each sub-surface soil sample will be collected in Phase II using a hand auger and other PFAS compatible hand tools. Composite samples will be collected from 0-2 ft bgs and grab samples at 3 ft bgs and at the maximum boring depth achieved using a hand auger, no more than 10 ft bgs. Samplers will only use hand tools, primarily a hand auger. Sample collection tools, including the hand auger basket, stainless steel mixing bowl, and sample trowel, will be decontaminated as outlined in Section 4.4 prior to each sample interval. Sample collection will be documented on a soil boring log included in Appendix D. Write in the rain paper will not be used for field forms and as needed, electronic field forms may be used on a field tablet.

Sample bottle information, preservation, and hold times are outlined on Table 3.

3.3.2 GROUNDWATER SAMPLE COLLECTION

To minimize cross-contamination from equipment and construction material containing Teflon® or PFAS, special precautions will be taken when preparing for groundwater sampling. No Teflon® or other PFAS-incompatible sampling equipment will be used during sampling activities. It is not expected that any PFAS-incompatible tubing will be found in existing wells.

Wells will be sampled using low flow (minimal drawdown) techniques with the goal of maintaining minimum/stabilized drawdown (<0.3 feet) during purging, in accordance with ADEC Field Sampling Guidance (ADEC 2024). Stabilized drawdown means groundwater is recharging the screened interval at a rate that is equivalent to the purge rate and that stagnant casing water is not affecting the quality of the sample. Wells will be purged and sampled using only PFAS-compatible equipment.

Trihydro plans to use a submersible pump i.e. a monsoon pump to collect samples with the pump selection dependent upon the well diameter. If necessary, a certified PFAS-free HDPE bailer may be used to collect a grab sample and if so, this will be noted in the final report. Sample bottle information, preservation, and hold times are shown on Table 3.

The water level of each well will be measured before the start of purging and total well depth will be measured after sampling to minimize disturbance of settled solids in the bottom of the well casing during sampling. The pump intake will be set one foot below the water table for wells screened across the water table and will be set at the midpoint of the well screen for wells with submerged screen intervals.

Measurements of water quality parameters will be collected using a multi-parameter water quality meter. Water quality parameters will include pH, specific conductance, turbidity, temperature, oxidation-reduction potential (ORP), and dissolved oxygen (DO). They will be collected during purging and recorded on field forms (Appendix D). Write in the rain paper will not be used for field forms and as needed, electronic field forms may be used on a waterproof field tablet. Measurements will be taken when purging begins and every 3 to 5 minutes thereafter. During purging, the flow rate will remain between 50 and 500 milliliters per minute (mL/min). Flow will be measured by dividing the volume of a measuring cup into the time taken to fill said cup.

The groundwater will be sampled after water quality parameters stabilize. Water quality parameters are considered stable when a minimum of three (four if using temperature) of the parameters stabilize, that is, remain within the applicable following margins for three successive readings:

- ± 3% for temperature (minimum of ± 0.2 °C).
- ± 0.1 for pH.
- ± 3% for conductivity.
- ± 10 mv for redox potential.
- ± 10% for DO.
- ± 10% for turbidity (or less than 10 NTUs is achieved).

Parameters must be stable and will be recorded prior to sample collection.

If water quality parameter stabilization cannot be achieved upon purging for one well volume, this will be documented in the field logs and a sample will be collected. If a well is low yield and purges dry, then the well will be allowed to

recharge to approximately 80% of the pre-purge volume or for up to 24 hours (whichever occurs first) and then sampled.

Purge water removed from the wells will be discharged to the purge water holding tank until processed for off-site disposal, consistent with current groundwater sampling purge water management practices at the Site.

3.4 DECONTAMINATION PROCEDURES

PFAS have a tendency to adhere to sampling materials and have been noted in certain detergents. To the extent practical, disposable materials will be used for each monitoring well. The dedicated, disposable, sampling equipment will include HDPE tubing; HDPE pump bladders, powderless nitrile gloves; and laboratory-supplied sample containers.

Standard PFAS-free drinking water from Alaska Pure Water Products will be used for non-final decontamination wash and rinse step(s). The final rinse will be conducted with PFAS-free Laboratory supplied water. The decontamination process is detailed as follows.

3.4.1 HAND TOOLS

- Scrape or brush caked soils or other solids from the equipment.
- Wash in Alconox detergents.
- Rinse the instrument in PFAS-free drinking water.
- Rinse the instrument in PFAS-free Laboratory supplied DI water.
    - Collect equipment blanks as required.
- Place the instrument on or in clean, plastic, PFAS-free sheeting, in Ziplock® bags, or on decontaminated surfaces to prevent contact with potential PFAS contaminated soil and allow the equipment to air dry.

Sampling equipment that will come into contact with the sample will be PFAS-free and will be decontaminated prior to sampling and between samples using the process above. Alconox will be the only cleaning product to be used for equipment that may come into contact with sample media. Cleaning of equipment is performed to prevent cross-contamination between samples and to maintain a clean working environment for personnel.

3.4.2 DOWN-WELL EQUIPMENT (WATER LEVEL METERS, PUMPS, ETC.)

- Wash thoroughly in Alconox, use PFAS-free potable water. Scrape sand and sediments from pump.
- Rinse the instrument in PFAS-free drinking water.
- Rinse the instrument in PFAS-free Laboratory supplied DI water.
    - Collect equipment blank as required.
- Place the instrument on or in clean, plastic, PFAS-free sheeting, in Ziplock® bags, or on decontaminated surfaces to prevent contact with potential PFAS contaminated soil and allow the equipment to air dry.

Sampling equipment that will come into contact with the sample will be PFAS-free (e.g., water level indicators, sample pumps, etc.) and will be decontaminated prior to sampling and between samples using the process above. Alconox is the only cleaning product to be used for equipment that may come into contact with sample media. Cleaning of equipment is performed to prevent cross-contamination between samples and to maintain a clean working environment for personnel.

3.5 FIELD DOCUMENTATION

Field activities will be recorded in ink or ultra fine sharpies. No other sharpies or other similar indelible markers will be used per the SOP. No erasures will be made. If an incorrect entry is made, striking a single line through the incorrect information will make the correction; the person making the correction will initial and date the change. Electronic field forms will be used and completed field forms will be included in the final report.

3.6 SAMPLE IDENTIFICATION

Each soil sample will be given a unique identification (ID) number containing information about its general location, location number, sample type and depth according to the following pattern: the first three characters are an area identifier. The next two after the first dash indicate the sample type, followed by a two-digit location number. After the second dash the sample depth (maximum sample depth in the case of specific samples is indicated by another two-digit number. Surface samples require no depth indicators. In the case that multiple samples are taken in the same spot, both the location indicators will be the same. See the examples below:

FT-SS01

Where: FT = Area Identifier (Fire Training Area)
SS = Sample Type (SS – Surface Soil)
01 = Location number

FT-SB01-03

Where: FT = Area Identifier (Fire Training Area)

SB = Sample Type (SB – Soil Boring)

01 = Location number

03 = Sample depth denoted as the top of the sample interval

Monitoring wells will be sampled using their existing monitoring well ID.

4.0 ANALYTICAL METHODS

PFAS analysis will be conducted by Eurofins Lancaster Laboratory (Eurofins), an ADEC approved laboratory. Samples will be analyzed via the United States Environmental Protection Agency (USEPA) Method 1633. The PFAS analyte list, associated ADEC cleanup levels, and laboratory reporting limits are found in Tables 1 and 2 for soil and groundwater, respectively.

5.0 QUALITY ASSURANCE AND QUALITY CONTROL

This Section addresses the qualitative and quantitative criteria that will be used to evaluate the quality of the field and analytical data collected during the field activities.

5.1 FIELD QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

The following quality assurance and quality control samples (QA/QC) will be collected during the sampling event as described below.

1. Field Duplicate Samples. Duplicate samples will be collected to evaluate precision associated with the reproducibility of sampling techniques and the homogeneity of sample matrices. Duplicate samples will be collected at a minimum frequency of 10%, or one for every 10 samples. The duplicate sample will be "blind" to the laboratory; therefore, it will have a coded identity on its label and on the chain of custody (COC). The actual sampling location and identification will be recorded on the sampling log.
2. Equipment Blanks. Equipment blanks will be prepared and submitted for laboratory analysis to assess sampling equipment for potential PFAS impacts and to verify that equipment decontamination procedures are effective. Following ADEC guidance, Trihydro will take a minimum of one equipment blank per set of 20 samples collected using reusable sampling equipment.

QA/QC samples will be analyzed by Eurofins. The laboratory will follow proper QA/QC procedures, including laboratory blanks and duplicates. Data from the QC samples are used as a measure of performance and as an indicator of potential sources of cross-contamination. QC data generated by the laboratory will be submitted with the report.

5.2 LABORATORY ASSURANCE AND QUALITY CONTROL SAMPLES

Eurofins will follow proper QA/QC procedures, including laboratory blanks, duplicates, and spiked samples for calibration and identification of potential matrix effects. Data from the QC samples are used as a measure of performance and as an indicator of potential sources of cross-contamination. These data are submitted in the data packages provided by Eurofins.

5.3 DATA VALIDATION

Analytical data received from the laboratory will undergo Trihydro's data validation process. Data will be evaluated by the Tier I and Tier II data validation process and the *ADEC Contaminated Sites Program Laboratory Data Review Checklist* will be completed and attached to Trihydro's report.

Precision, accuracy, method compliance, and completeness of the data packages will be assessed during the data validation process. Precision is determined by evaluating the calculated relative percent difference (RPD) values from: laboratory duplicate pairs, matrix spike/matrix spike duplicate (MS/MSD) pairs, and laboratory control sample/laboratory control sample duplicate (LCS/LCSD) pairs. Laboratory accuracy is established by reviewing the demonstrated percent recoveries of the following items to identify potential biases in the analytical data: MS/MSD samples, LCS/LCSD samples, and organic system monitoring compounds (surrogates). Field accuracy is established by collecting and analyzing field QA/QC samples to monitor for possible ambient or cross-contamination during sampling and transportation. Method compliance is established by reviewing sample integrity, holding times, detection limits, surrogate recoveries, laboratory blanks, initial and continuing calibrations (where applicable), and the LCS/LCSD percent recoveries against method-specific requirements. Completeness is evaluated by determining the overall ratio of the number of samples and analyses planned versus the number of samples with valid analyses. Determination of completeness includes a review of the COC, laboratory analytical methods, and other laboratory and field documents associated with the analytical data set.

6.0 INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) are soils, waters, or other native martials, which may contain contaminants, which are permanently displaced by an investigation event.

6.1 WATER IDW

IDW water will include water collected in the decontamination process. Although PFAS compounds are new analytes for the Site, chemistry of purged groundwater will be similar to that of water generated during sampling events. Therefore, IDW water will be handled following Chevron Site procedures by storing the IDW in a drum, until off-site disposal is scheduled. A characterization sample of the IDW water will be collected and analyzed prior to off-site disposal. The sampling consumables and other disposable sampling material, such as PPE, will be discarded as standard trash.

6.2 SOIL IDW

Soil IDW is not anticipated for Phase I of this investigation as all samples are surface soils. During Phase II soil sampling, soil will be screened for evidence of petroleum impacts. If soil does not have evidence of petroleum impacts (visually) then the soil will be returned to the sample location or borehole. Soil with evidence of petroleum will be considered IDW and soil will be containerized and stored on-site pending analytical results. Soil will be disposed following Chevron Site procedures.

7.0 REPORTING

A final investigation report will be prepared after the investigation is complete. The report will be submitted to the ADEC to summarize the work performed as part of this site investigation. The report will include a summary of the field activities, results of analysis, figures, analytical data tables, and recommendations for future work. Deviations from this work plan will be included in the report. The following schedule outlines the estimated timeframe to implement this work plan.

Event	Approximate Timeframe
Phase I Sampling Events	May – June 2025
Phase II Sampling Events	July 2025
Report to ADEC	October – December 2025

8.0 REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2024. *Field Sampling Guidance* (August 2024).

ADEC. 2023. 18 AAC 75 Oil and Other Hazardous Substances Pollution Control. October.

Arcadis. 2021. *Per- and Polyfluoroalkyl Substances Sampling Results Summary Letter*, Former Chevron Kenai Refinery, Nikiski, AK. November 2021.

Chevron. 2024. *Historical Records Review and Evaluation,* Former Chevron Kenai Refinery, Nikiski, AK. April 2024.

Karlstorm, T. 1964. Quaternary Geology of the Kenai Lowland and Glacial History of the Cook Inlet Region, Alaska. *U.S. Geological Survey*, 66p.

Nelson, G. 1981. Hydrology and the Effects of Industrial Pumping in the Nikiski Area, Alaska. *U.S. Geological Survey, Open File Report 81-685*, 22.

TABLES

TABLE 1. PFAS ANALYTE LIST, ADEC CLEANUP LEVELS, RLs, and MDLs FOR SOIL

Analyte	Acronym	CAS Number	ADEC Cleanup Level[1] (µg/kg)	RL (µg/kg)	MDL (µg/kg)	Analytical Method
Perfluorobutanoic acid	PFBA	375-22-4	--	0.8	0.1	EPA 1633
Perfluoropentanoic acid	PFPeA	2706-90-3	--	0.4	0.1	
Perfluorohexanoic acid	PFHxA	307-24-4	--	0.2	0.09	
Perfluoroheptanoic acid	PFHpA	375-85-9	--	0.2	0.09	
Perfluorooctanoic acid	PFOA	335-67-1	1.7	0.2	0.051	
Perfluorononanoic acid	PFNA	375-95-1	--	0.2	0.05	
Perfluorodecanoic acid	PFDA	335-76-2	--	0.2	0.05	
Perfluoroundecanoic acid	PFUnA	2058-94-8	--	0.2	0.05	
Perfluorododecanoic acid	PFDoA	307-55-1	--	0.2	0.05	
Perfluorotridecanoic acid	PFTrDA	72629-94-8	--	0.2	0.05	
Perfluorotetradecanoic acid	PFTeDA	376-06-7	--	0.2	0.05	
Perfluorobutanesulfonic acid	PFBS	375-73-5	--	0.2	0.05	
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	--	0.2	0.05	
Perfluorohexanesulfonic acid	PFHxS	355-46-4	--	0.2	0.05	
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	--	0.2	0.05	
Perfluorooctanesulfonic acid	PFOS	1763-23-1	3.0	0.5	0.21	
Perfluorononanesulfonic acid	PFNS	68259-12-1	--	0.2	0.05	
Perfluorodecanesulfonic acid	PFDS	335-77-3	--	0.2	0.05	
Perfluorododecanesulfonic acid	PFDoS	79780-39-5	--	0.2	0.05	
1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2 FTS	757124-72-4	--	0.8	0.2	
1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2 FTS	27619-97-2	--	1	0.35	
1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2 FTS	39108-34-4	--	1	0.35	
Perfluorooctanesulfonamide	PFOSA	754-91-6	--	0.2	0.09	
N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8	--	0.2	0.05	
N-methylperfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9	--	0.2	0.05	
N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2	--	0.2	0.05	
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6	--	0.2	0.05	
N-methylperfluorooctane sulfonamidoethanol	NMeFOSE	24448-09-7	--	2	0.5	
N-ethylperfluorooctane sulfonamidoethanol	NEtFOSE	1691-99-2	--	2	0.5	
Hexafluoropropylene Oxide Dimer Acid	HFPO-DA	13252-13-6	--	1	0.5	
4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4	--	0.8	0.2	
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1	--	0.4	0.1	
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5	--	0.4	0.1	
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6	--	0.4	0.104	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	756426-58-1	--	0.8	0.2	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	--	0.8	0.2	
Perfluoro (2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7	--	0.4	0.1	
3-Perfluoropropylpropanoic acid	3:3 FTCA	356-02-5	--	1	0.25	
3-Perfluoropentylpropanoic acid	5:3 FTCA	914637-49-3	--	5	1	
3-Perfluoroheptylpropanoic acid	7:3 FTCA	812-70-4	--	5	1	

Notes:

[1] 18 AAC 75 Table B1 (ADEC 2023)

ADEC Alaska Department of Environmental Conservation

MDL Eurofins Lancaster Method Detection Limit

RL Eurofins Lancaster Reporting Limit or Requested Limit

µg/kg micrograms per kilogram

TABLE 2. PFAS ANALYTE LIST, ADEC CLEANUP LEVELS, RLs, and MDLs FOR GROUNDWATER

Analyte	Acronym	CAS Number	ADEC Cleanup Level[1] (µg/L)	RL (µg/L)	MDL (µg/L)	Analytical Method
Perfluorobutanoic acid	PFBA	375-22-4	--	0.004	0.0011	EPA 1633
Perfluoropentanoic acid	PFPeA	2706-90-3	--	0.002	0.0006	
Perfluorohexanoic acid	PFHxA	307-24-4	--	0.002	0.0005	
Perfluoroheptanoic acid	PFHpA	375-85-9	--	0.002	0.0008	
Perfluorooctanoic acid	PFOA	335-67-1	0.4	0.002	0.0009	
Perfluorononanoic acid	PFNA	375-95-1	--	0.002	0.0005	
Perfluorodecanoic acid	PFDA	335-76-2	--	0.002	0.0005	
Perfluoroundecanoic acid	PFUnA	2058-94-8	--	0.002	0.0005	
Perfluorododecanoic acid	PFDoA	307-55-1	--	0.002	0.0005	
Perfluorotridecanoic acid	PFTrDA	72629-94-8	--	0.002	0.0005	
Perfluorotetradecanoic acid	PFTeDA	376-06-7	--	0.002	0.0005	
Perfluorobutanesulfonic acid	PFBS	375-73-5	--	0.002	0.0005	
Perfluoropentanesulfonic acid	PFPeS	2706-91-4	--	0.002	0.0005	
Perfluorohexanesulfonic acid	PFHxS	355-46-4	--	0.002	0.0008	
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	--	0.002	0.0005	
Perfluorooctanesulfonic acid	PFOS	1763-23-1	0.4	0.002	0.0005	
Perfluorononanesulfonic acid	PFNS	68259-12-1	--	0.002	0.0005	
Perfluorodecanesulfonic acid	PFDS	335-77-3	--	0.002	0.0005	
Perfluorododecanesulfonic acid	PFDoS	79780-39-5	--	0.002	0.0006	
1H,1H,2H,2H-Perfluorohexane sulfonic acid	4:2 FTS	757124-72-4	--	0.004	0.001	
1H,1H,2H,2H-Perfluorooctane sulfonic acid	6:2 FTS	27619-97-2	--	0.004	0.001	
1H,1H,2H,2H-Perfluorodecane sulfonic acid	8:2 FTS	39108-34-4	--	0.004	0.001	
Perfluorooctanesulfonamide	PFOSA	754-91-6	--	0.002	0.0005	
N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8	--	0.002	0.0005	
N-ethylperfluorooctane sulfonamide	NMeFOSAA	2355-31-9	--	0.002	0.0005	
N-methylperfluorooctanesulfonamidoacetic acid	NEtFOSA	4151-50-2	--	0.002	0.0005	
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6	--	0.002	0.0005	
N-methylperfluorooctane sulfonamidoethanol	NMeFOSE	24448-09-7	--	0.01	0.0025	
N-ethylperfluorooctane sulfonamidoethanol	NEtFOSE	1691-99-2	--	0.01	0.0025	
Hexafluoropropylene Oxide Dimer Acid	HFPO-DA	13252-13-6	--	0.003	0.0012	
4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4	--	0.002	0.0005	
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1	--	0.002	0.0005	
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5	--	0.002	0.0005	
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6	--	0.002	0.0005	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ON	756426-58-1	--	0.002	0.0005	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	--	0.002	0.0005	
Perfluoro (2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7	--	0.002	0.0005	
3-Perfluoropropylpropanoic acid	3:3 FTCA	356-02-5	--	0.004	0.001	
3-Perfluoropentylpropanoic acid	5:3 FTCA	914637-49-3	--	0.01	0.0028	
3-Perfluoroheptylpropanoic acid	7:3 FTCA	812-70-4	--	0.01	0.0025	

Notes:

1 18 AAC 75 Table C (ADEC 2023)

ADEC Alaska Department of Environmental Conservation

MDL Eurofins Lancaster Method Detection Limit

RL Eurofins Lancaster Reporting Limit or Requested Limit

µg/L nanogram per liter

TABLE 3. PFAS SAMPLE METHODS, BOTTLE TYPE, PRESERVATIVE, AND HOLDING TIME

Parameter	Sample Medium	Analytical Method	Sample Container	Minimum Quantity Required Per Sample	Preservative	Arrival Temperature	Holding Time
PFAS Compounds	Groundwater	EPA 1633	2x 125 mL HDPE Bottles	250 ml	None	0-6 °C	28 days
PFAS Compounds	Soil	EPA 1633	1x 4 oz HDPE Jar	100 g	None	0-6 °C	28 days
Percent Moisture	Soil		1x 4 oz HDPE Jar	10 g	None	0-6 °C	--

Notes:

°C Degrees Celsius
g gram
ml milliliter
oz ounce
PFAS per- and polyfluoroalkyl substances

FIGURES

N

0 15 Miles

Trihydro CORPORATION

1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

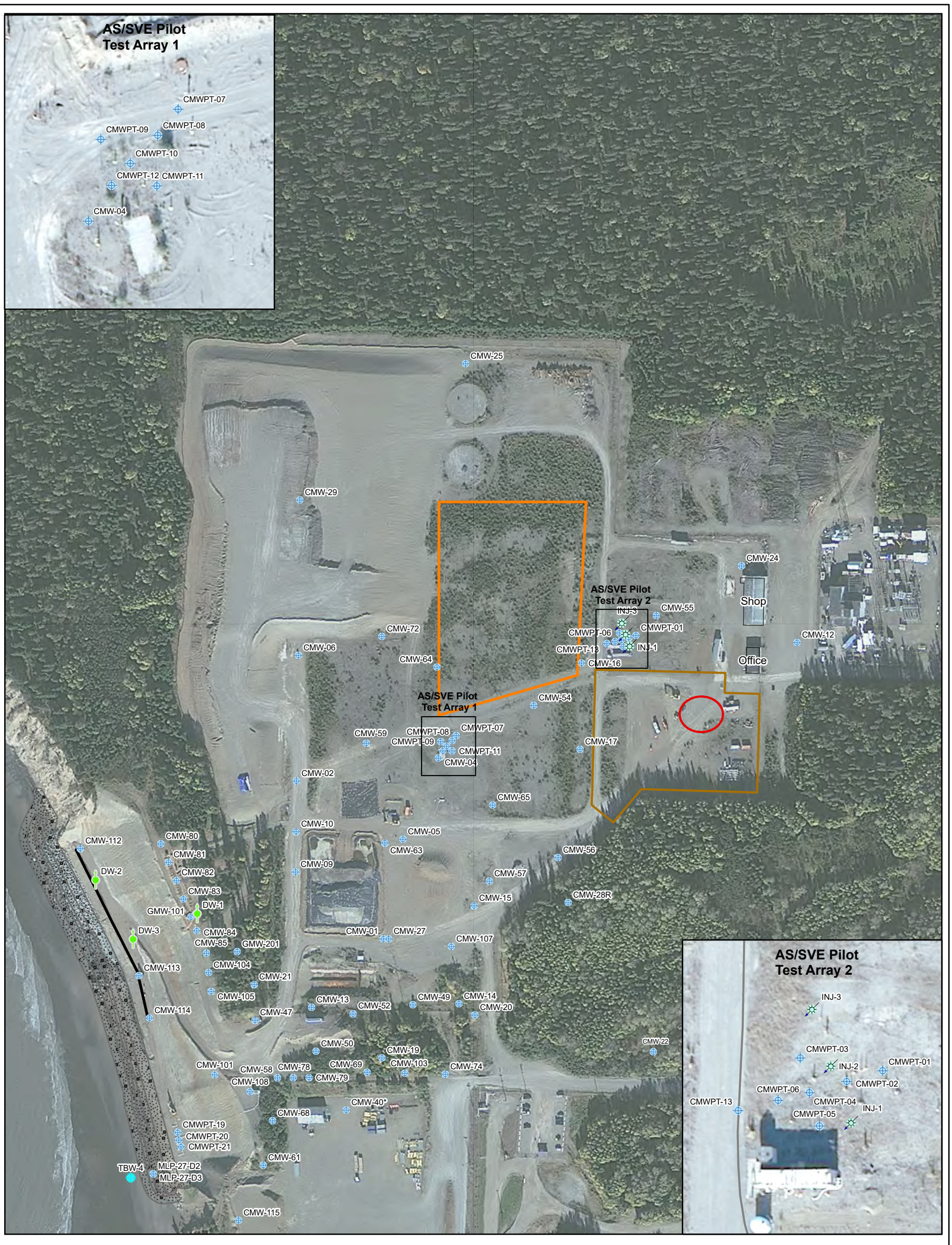
FIGURE 1

SITE VICINITY MAP

CHEVRON ENVIRONMENTAL MANAGEMENT AND REAL ESTATE COMPANY, FORMER KENAI REFINERY NIKISKI, ALASKA

Drawn By: DH	Checked By: CB	Scale: 1 " = 79,200 '	Date: 11/30/21	File: Fig1_Kenai_Site_Vicinity_2021.mxd

M:\CHEVRON\KENAI\GIS\PROJECTS\MAPPING\ANNUAL REPORT\2021 ANNUAL\FIG1 KENAI SITE VICINITY 2021.MXD



EXPLANATION

- MONITORING WELL
- EXTRACTION WELL
- INJECTION WELL
- FIRE TRAINING PIT AREA (APPROXIMATE)
- FIRE TRAINING PERIMETER
- ROCK REVETMENT (COMPLETED 2010 - 2012)
- AS-BUILT LAND TREATMENT UNIT (4.1 ACRES)

N

0 250'

NOTE:

* = REPAIRED IN JULY 2023

DRAFT

FIGURE 2

EXISTING GROUNDWATER MONITORING WELL LOCATIONS

CHEVRON ENVIRONMENTAL MANAGEMENT AND REAL ESTATE COMPANY, FORMER KENAI REFINERY NIKISKI, ALASKA

Trihydro Corporation
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307.745.7474 (F) 307.745.7729

Drawn By: DH	Checked By: BF	Scale: 1" = 250'	Date: 9/27/24	File: Fig2_Kenai_well_locs_2024

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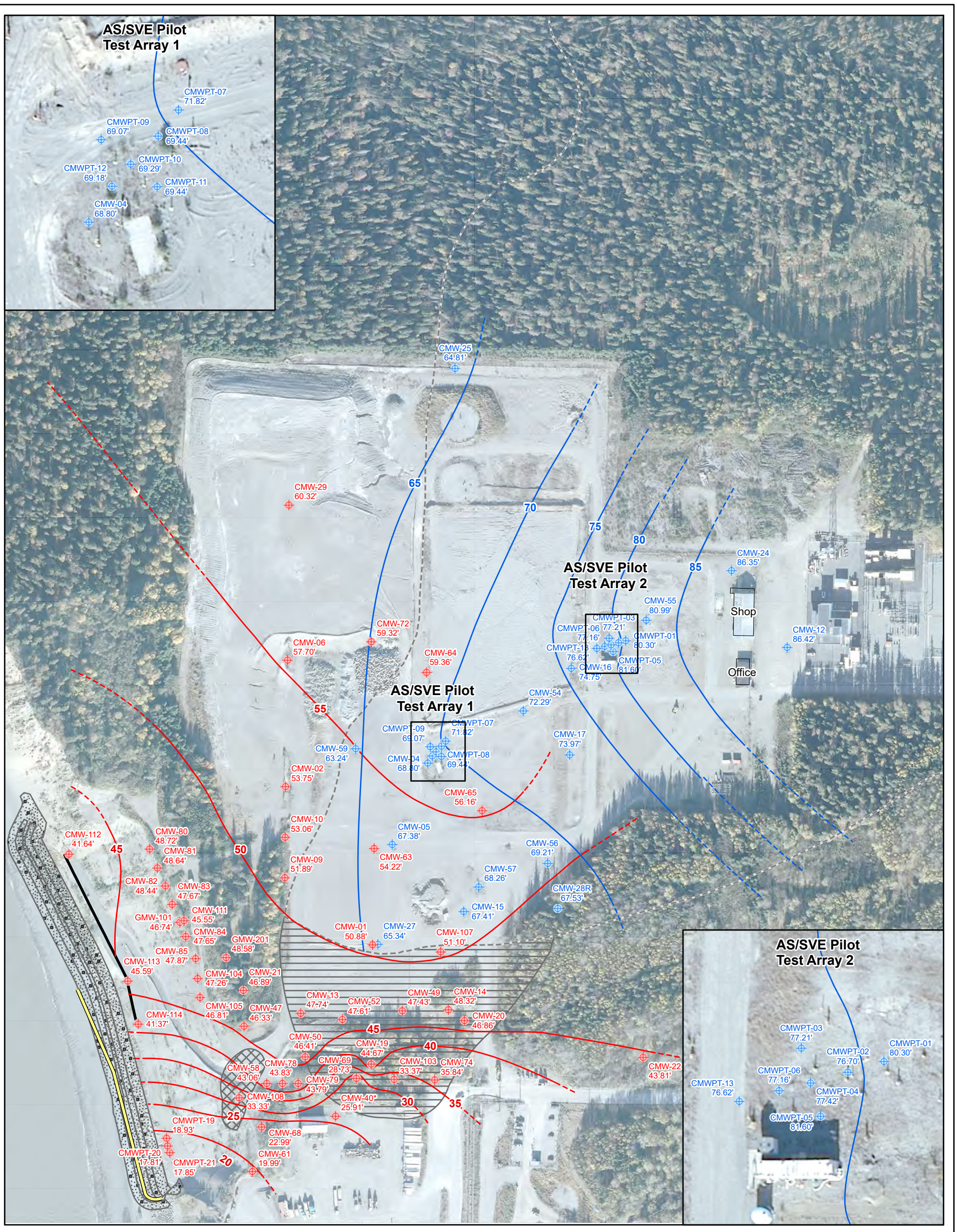

EXPLANATION

- UPPER UNCONFINED AQUIFER WELLS
- LOWER UNCONFINED AQUIFER WELLS
- UPPER UNCONFINED AQUIFER POTENTIOMETRIC SURFACE CONTOURS, DASHED WHERE INFERRED - 5' INTERVAL
- LOWER UNCONFINED AQUIFER POTENTIOMETRIC SURFACE CONTOURS, DASHED WHERE INFERRED - 5' INTERVAL
- SLURRY WALL
- REMAINING SEAWALL
- APPROXIMATE UPPER UNCONFINED AQUIFER BOUNDARY
- HYDROGEOLOGIC BARRIER IN UPPER AQUIFER
- EPHEMERALLY UNSATURATED
- ROCK REVETMENT (COMPLETED 2010 - 2012)

N

0 250'

NOTE:

* = REPAIRED IN JULY 2023

Tribyl Corporation
1,52 ommerce Drive
L ram , WY 82070
www.trihydro.com
(P) 307 745.7474 (F) 307/745.7729

FIGURE 3

GROUNDWATER SURFACE ELEVATIONS AUGUST 2024

CHEVRON ENVIRONMENTAL MANAGEMENT AND REAL ESTATE COMPANY, FORMER KENAI REFINERY NIKISKI, ALASKA

Drawn By: DH	Checked By: BF	Scale: 1" = 250'	Date: 9/27/24	File: Fig3_GroundwaterSurface

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EXPLANATION

- SAMPLE LOCATIONS
- MONITORING WELL
- EXTRACTION WELL
- INJECTION WELL
- FIRE TRAINING PIT AREA (APPROXIMATE)
- FIRE TRAINING PERIMETER

N

0 60'

NOTE:

* = REPAIRED IN JULY 2023

DRAFT

Tribyte CORPORATION
1152 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307.745.7474 (F) 307/745.7729

FIGURE 4

PHASE I SAMPLE LOCATIONS

CHEVRON ENVIRONMENTAL MANAGEMENT AND REAL ESTATE COMPANY, FORMER KENAI REFINERY NIKISKI, ALASKA

Drawn By: DH	Checked By: BF	Scale: 1" = 60'	Date: 9/27/24	File: Fig4_Fire_Training_Area

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APPENDIX A

HISTORICAL RECORDS REVIEW AND EVALUATION

James P. Kiernan, P.E.
Project Manager

Chevron Environmental Management Company
6001 Bollinger Canyon Road
Room B1266
San Ramon, CA 94583
Tel (925) 842-3220
jkiernan@chevron.com

April 22, 2024

Peter Campbell
Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
43335 Kalifornsky Beach Road, Suite 11
Soldotna, AK 99669

Subject: **Historical Records Review and Evaluation**
Former Chevron Kenai Refinery
Nikiski, Alaska
ADEC File No. 2323.38.040

Dear Mr. Campbell:

As discussed and agreed upon in prior communications with Alaska Department of Environmental Conservation (ADEC), Chevron Environmental Management Company (CEMC) has conducted an extensive historical records search for the Former Chevron Kenai Refinery site in Nikiski, Alaska, including retrieval and review of hundreds of files. Based on that review, CEMC concludes that there was no storage or use of PFAS-containing firefighting foams at the site. Based on this conclusion and given that there were no detections of PFAS in shallow groundwater other than estimated (J-flagged) results below the analytical quantitation limit of 2 parts per trillion (ppt) (as reported in our November 4, 2021 results summary report), there is no justification for further PFAS investigation at the site.

HISTORICAL RECORDS RESEARCH

Historical site maps ranging from original 1962 Plot Plans to a 1993 Simplified Plot Plan[1] document the location of fire water storage tankage, fire water pumps, and water hydrants; however, there is no evidence PFAS-containing foam was ever present. Thus, the maps and diagrams all support that only water and non-PFAS extinguishing agents were used. Further, no records indicate that any fires (based on inquiry to the local fire department and former employee interviews, including one who was a volunteer firefighter with Nikiski Fire Department from 1974-2000) have occurred at the site[2]. The only records of any foam present at the site (for training or emergencies) are for non-PFAS (fluorine-free) protein-based foam and a dry chemical extinguishing agent, as detailed below. These conclusions are further substantiated by former employee interviews conducted independently but in parallel to the records review. Excerpts from the relevant historical documentation are included as **Attachment 1**.

AOF 3% COLD FOAM (AOF 3CF) TECHNICAL DETAILS FOLLOWING ARCHIVES REVIEW

We reviewed comprehensive records of chemicals stored on-site at the time of facility decommissioning after operations ceased in 1991. These records included February 1992 inventories[2] of Aer-O-Foam 3% Cold Foam (noted as in the laboratory and in 5-gallon pails with 19 containers on-site in the boiler building) stored on-site at that time. Additionally, contemporary (circa 1986) product materials for Aer-O-Foam 3% Cold Foam (AOF 3CF) from the manufacturer (National Foam) were identified within company archives explaining AOF 3CF content[3]. Protein foams contain naturally occurring proteins, often derived from animal wastes such as ox blood, as the foaming agents. Thus, the only record of foam stored at the site is of a non-PFAS, cold-weather protein foam (i.e., AOF 3CF). The following additional external documents were reviewed, and all indicated that AOF 3CF is a fluorine-free, protein-based foam that does not contain PFAS:

- *A Firefighter's Guide to Foam* (January 2002) by National Foam[4] on page 19: Depicts the AOF 3CF approved uses in contrast to other firefighting foams and categorizes AOF 3CF as a protein foam.
- An exhibit to recent PFAS litigation[5] included an October 2008 addendum, *Perfluorocarbon-Containing Firefighting Foams and their Use in Firefighting Training in Minnesota* that also confirms (on Table 1, page 21) AOF 3CF (i.e., AOF 3% Cold) is a Class B protein foam.
- ITRC (2022[6]) notes in Figure 1 (reproduced below) of its *Aqueous Film-Forming Foam* fact sheet that protein foams are fluorine-free and do not contain PFAS.

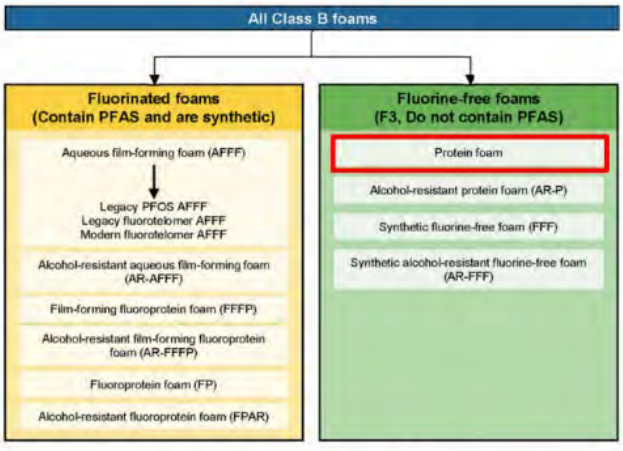


Figure 1. Types of Class B foams.
Source: S. Thomas, Wood, PLC. Used with permission. PFAS-1, Figure 3-2.

Based on a review of all available information, AOF 3% Cold Foam, the firefighting foam material identified in the historical site inventories, does not contain PFAS.

FIRE TRAINING AREA (FTA) RESEARCH FINDINGS

Known water-only training with a propane torch in June 1981 is included in the archival record[7]. For the period 1970-1980, a 1992 document reported annual diesel and "Special K" [sic][8] usage at the fire training area (FTA). **Attachment 2** includes additional information from archives regarding FTA operations and extinguishing agents[9]. Though not a "foam", this additional (dry chemical) fire extinguishing agent, Purple K, was also referenced as a firefighting foam in additional references[10] and in former employee interviews, including one with the site manager from the mid-1960s until the mid-1970s, who recalls only dry-chemical fire extinguishers used on-site. Many manufacturers have produced potassium bicarbonate-based Purple K over the years since its original development by the U.S. Navy in 1959, as an improvement over sodium bicarbonate for extinguishing oil and gasoline fires[11].

Based on one of the former employee interviews, sometime after 1978 (when the employee's tenure started), Chevron had a small, two-wheeled Master Stream fire wagon that could be hooked to the back of a truck or pushed by hand. Former employees do not recall any foam usage beyond AOF 3CF. All available information indicates that no storage, use, or training with any PFAS-containing foam was ever conducted on-site.

CONCLUSIONS

Based on the available information, the following conclusions regarding the potential for PFAS impacts from any historical operations can be made:

No PFAS Storage Occurred at the Former Chevron Refinery: Available information indicates that only non-PFAS foam was stored at the refinery during operation (i.e., before 1991). Fluorine-free AOF 3CF was listed as being on-site in 1992 during the chemical inventories and in 1993 when preliminary waste profiling began during decommissioning. Fluorine-free AOF 3CF is not a PFAS-containing foam.

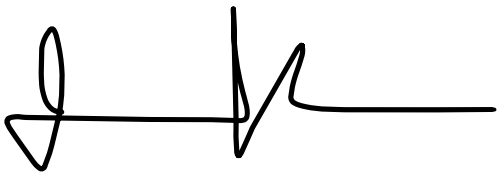
No PFAS Usage Occurred During Firefighting at the Former Chevron Refinery: No records of any PFAS release or use at the site were identified. No record of fire loss or response to any fires was identified based on fire department inquiry, available records, and interviews of long-time employees and local volunteer firefighter experience dating back to 1974.

No PFAS Was Used in Fire Training at the Former Chevron Refinery: Usage of dry chemical firefighting agent Purple K and non-PFAS protein foam (AOF 3% Cold Foam) identified at the site is not sufficient evidence to warrant PFAS sampling in site soils, particularly given the absence of any record indicating PFAS-containing foams were ever present or used on-site.

The conclusion from the extensive historical records search that there was **no identified on-site storage or use of PFAS-containing firefighting foams** is also consistent with the August 2021 monitoring well sampling results of *de minimis* estimated (J-flagged) trace concentrations of PFAS (all below the 2 ppt analytical quantitation limit)[12]. Based on this conclusion, there is no basis for requiring CEMC to prepare a PFAS soil investigation workplan, as there is no PFAS "source area" where there are no records of ever having stored or used PFAS-containing materials for firefighting or training purposes.

We appreciate your continued cooperation on this project. If you have any questions on this letter or need any additional information, please contact me at (925) 842-3220 or jkiernan@chevron.com.

Sincerely,



James P. Kiernan, P.E.
Project Manager

Cc: Dr. Shanna Clark, CEMC

Attachments:

1. Historical Records Excerpts
2. Fire Training Area Information

Notes:

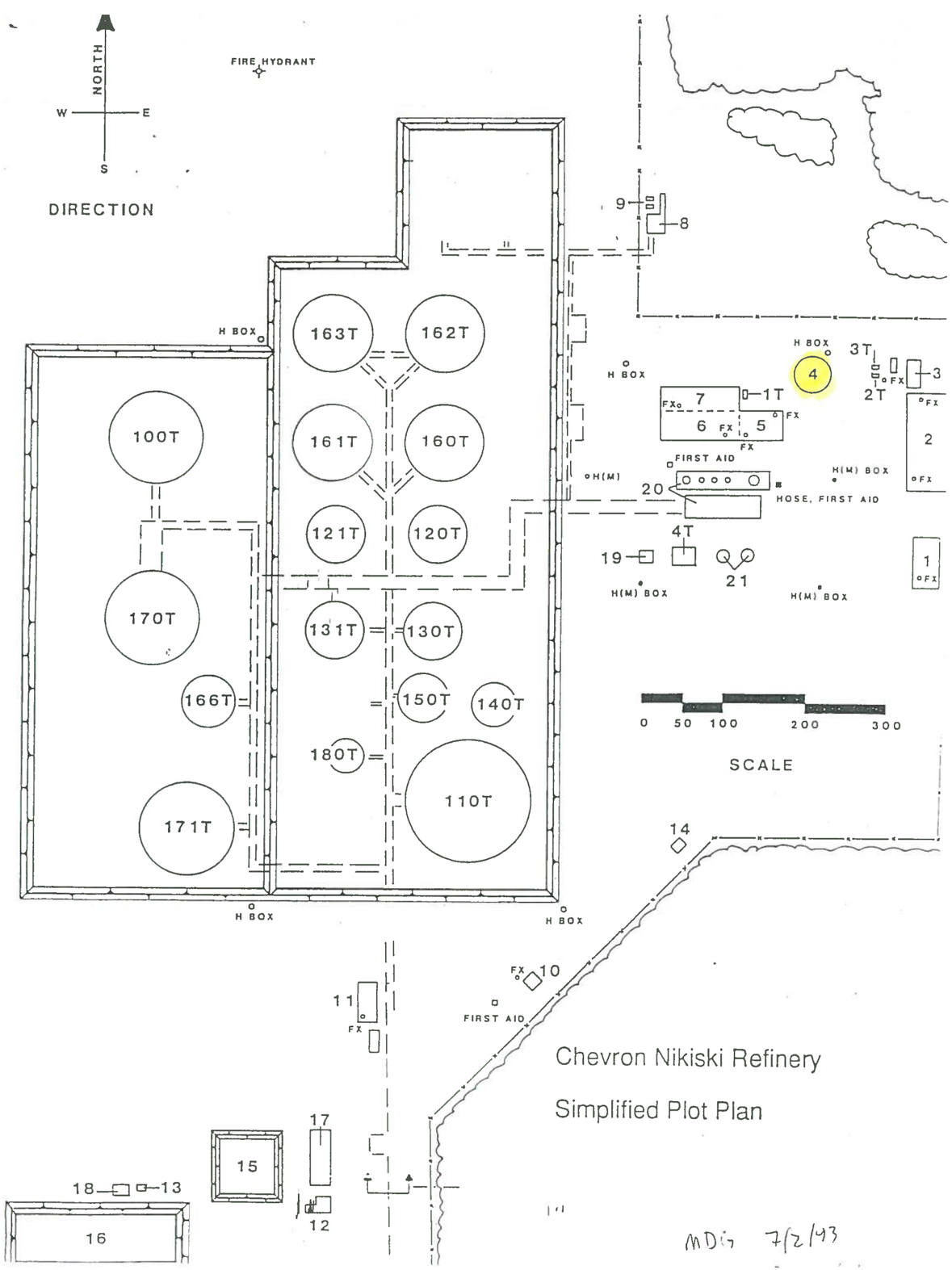
1. See Attachment 1, Plot Plan (1962) and Simplified Plot Plan (1992)
2. See Attachment 1, Chevron (1992a) *1991 Hazardous Substance Inventory for Refinery:* Chemicals Previously Used at the Refinery (dated 2/1/1992) and Chevron (1992b) *Hazardous Substance Inventory* data as of 2/12/1992
3. See Attachment 1, National Foam (circa 1986), Chapter 2 excerpt
4. http://www.foamtechnology.us/Firefighters.pdf
5. https://www.pca.state.mn.us/sites/default/files/pfc-foamreport-addendum.pdf
6. https://pfas-1.itrcweb.org/wp-content/uploads/2022/09/AFFF_PFAS_FactSheet_082522_508.pdf
7. See Attachment 2, Section 4.28 “SWMU 28: Fire Training Area Number 1” (text excerpt from page 49 of USEPA [1992] RCRA Facility Assessment Final Report prepared by PRC, November 23)
8. Believed to refer to Purple K, a contemporary dry chemical fire extinguishing product reportedly used (according to former employees) at the site and found elsewhere in the historical archival records.
9. See Attachment 2, Section 4.29 “SWMU 29: Fire Training Area Number 2” (text excerpt from page 50 of USEPA [1992] RCRA Facility Assessment Final Report prepared by PRC, November 23)
10. See Attachment 2, Section 3.2.23 “Fire Training Area” (text excerpt from page 3-21 of ENSR [1992] Phase II Site Assessment Workplan, August; “RCRA Information Needs” table revised 8/16/92)
11. See page 98 of Corbett (2009) *Fire Engineering’s Handbook for Firefighter I and II*.
12. See Table 2 of Arcadis (2021). *Per- and Polyfluoroalkyl Substances Sampling Results Summary Letter – Former Chevron Kenai Refinery, Nikiski, Alaska*. Submitted and received by ADEC on 11/4/21.

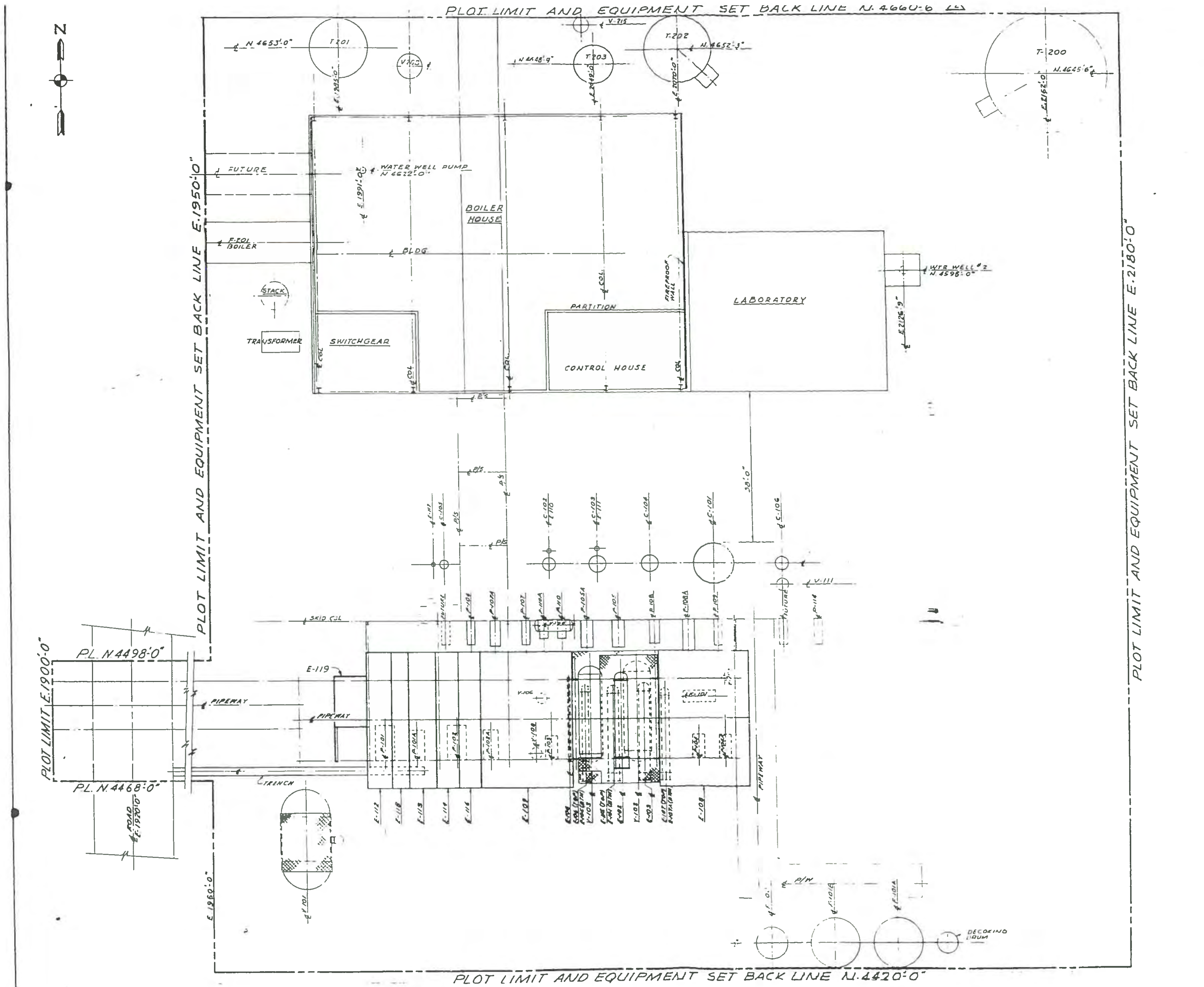
Simplified Plot Plan

1. Office
2. Maintenance Shop
3. Lube Oil Storage
4. Fire Water Tank
5. Lab
6. Control Room
7. Boiler
8. Asphalt Loading Racks
9. Asphalt Additive
10. Light Product Loading Racks
11. P300 Pump Station
12. Chemical Building for Water Treatment
13. Electric Shed
14. Radio/Telephone Shed
15. Storm Surge Pond
16. Water Treatment Pond
17. APT Seperator
18. B10 Disc Treater
19. Fuel Additive Pump Shed
20. Crude Unit
21. Fired Heaters

TANKS

1T	100	Gal. Gasoline
2T	500	Gal. Unleaded Gasoline
3T	500	Gal. Leaded Gasoline
4T	Fuel	Additive Tank
100T	93	MB Crude Oil
110T	155	MB Unfinished Gasoline/Diesel
120T	31	MB Military Jet Fuel
121T	31	MB Military Jet Fuel
130T	27	MB Jet Fuel
131T	27	MB Av. Gas
140T	15	MB Diesel
150T	21	MB Jet Fuel
160T	53	MB Diesel
161T	53	MB Diesel
162T	53	MB Diesel
163T	53	MB Diesel
166T	19	MB Residual Fuel Oil / Asphalt
170T	72	MB Residual Fuel Oil
171T	102	MB Residual Fuel Oil / Asphalt Charge Stock
180T	10	MB Mixed Fuel


NORTH
W
E
S
DIRECTION
FIRE HYDRANT
H BOX
163T
162T
161T
160T
121T
120T
131T
130T
150T
140T
180T
110T
100T
170T
166T
171T
9
8
7
6
5
4
3T
2T
1T
3
2
1
FX
FIRST AID
H(M)
H(M) BOX
20
HOSE, FIRST AID
4T
19
21
0 50 100 200 300
SCALE
14
10
11
17
15
18
13
16
12
Chevron Nikiski Refinery
Simplified Plot Plan
MDG 7/2/93



COLUMNS	C-101	ATMOSPHERIC COLUMN
	C-102	HEAVY ST. RUN GASOLINE STRIPPER
	C-103	CATF BASE STRIPPER
	C-104	DIESEL FURNACE OIL STRIPPER
	C-105	STABILIZER
	C-106	TURBINE FUEL STRIPPER
VESSELS	V-101	DESALTER
	V-102	ATMOSPHERIC OVERHEAD FIRST SEPARATOR
	V-103	ATMOSPHERIC OVERHEAD SECOND SEPARATOR
	V-104	STABILIZER OVERHEAD SEPARATOR
	V-105	SUCTION KNOCK-OUT DRUM
	V-106	FUEL GAS KNOCK-OUT DRUM
	V-107	CORROSION INHIBITOR SOLUTION DRUM
	V-108	OPEN BREAK WATER TANK
	V-201	DEAERATOR
	V-202	UTILITY AIR RECEIVER
	V-203	INSTRUMENT AIR RECEIVER
	V-204	BOILER BLOWDOWN DRUM
	V-205	INSTRUMENT AIR DRYER
	V-206	UTILITY AIR DRYER
	V-207	WATER SOFTENER
	V-208	HOT WELL
	V-109	GLYCOL SURGE TANK
	V-215	STEAM KNOCKOUT DRUM.
	V-111	STRIPPING ST'M K.O. DRUM
EXCHANGERS	E-101	RESIDUUM TO CRUDE EXCHANGER
	E-102	ATMOSPHERIC OVERHEAD CRUDE EXCHANGER
	E-103	RESIDUUM TO CRUDE EXCHANGER
	E-104	DESALTER WATER EXCHANGER
	E-105	DIESEL FURNACE OIL TO CRUDE EXCHANGER
	E-106	CATF. BASE TO CRUDE EXCHANGER
	E-107	RESIDUUM TO CRUDE EXCHANGER
	E-108	ATMOSPHERIC OVERHEAD REFLUX CONDENSER
	E-109	ATMOSPHERIC OVERHEAD PRODUCT CONDENSER
	E-110	HEAVY ST RUN GASOLINE REBOILER
	E-111	CATF. BASE STRIPPER REBOILER
	E-112	HEAVY ST RUN GASOLINE PRODUCT COOLER
	E-113	CATF BASE PRODUCT COOLER
	E-114	DIESEL FURNACE OIL PRODUCT COOLER
	E-115	STABILIZER FEED TO BOTTOMS EXCHANGER
	E-116	STABILIZER OVERHEAD
	E-117	STABILIZER REBOILER
	E-118	LIGHT ST RUN GASOLINE PRODUCT COOLER
	E-203A	FUEL OIL HEATER
	E-203B	FUEL OIL HEATER
	E-119	TURBINE FUEL COOLER
	E-120	GLYCOL COOLER
HEATERS	F-101	CRUDE HEATER
	F-101A	CRUDE HEATER
	F-102	DIESEL FURNACE STRIPPER HEATER
	F-201	BOILER
PUMPS	P-101&A	CRUDE CHARGE PUMP & SPARE
	P-102&A	CRUDE BOOSTER PUMP & SPARE
	P-103	WATER DRAW OFF PUMP
	P-104&A	CRUDE COLUMN REFLUX PUMP & SPARE
	P-105&A	STABILIZER FEED PUMP & SPARE
	P-106	HEAVY ST RUN GASOLINE PUMP
	P-107&A	CATF BASE STRIPPER BOTTOMS PUMP & SPARE
	P-108&A	DIESEL FURNACE STRIPPER BOTTOMS PUMP & SPARE
	P-109	CRUDE COLUMN BOTTOMS PUMP
	P-110&A	STABILIZER REFLUX PUMPS & SPARE
	P-111	INHIBITER INJECTION PUMP
	P-112	DESALTER INJECTION PUMP
	P101A,B,C	WATER WELL PUMP & SPARES
	P-202A-B	FIRE WATER PUMP & SPARES
	P-114	TURBINE FUEL STRIPPER BOTTOMS PUMP & SPARE
	P-115&A	GLYCOL CIRCULATION PUMP & SPARE
	P-204&P-204A	BOILER FEED WATER PUMP & SPARE
	P-205	CONDENSATE PUMP
	P-206&P-206A	FUEL OIL PUMP & SPARE
	P-208	CHEMICAL INJECTION PUMP
	P-209 A&B	TURBINE FUEL PUMP & SPARE
COMPRESSORS	K-101	ATMOSPHERIC OVERHEAD GAS COMPRESSOR
	K-201	INSTRUMENT AIR COMPRESSOR
	K-202	UTILITY AIR COMPRESSOR
	K-203	EMERGENCY GENERATOR
BUILDINGS		CONTROL HOUSE
		BOILER HOUSE
		LABORATORY BUILDING
		SWITCHGEAR
TANKS	T-200	RAW WATER TANK
	T-201	TREATED WATER TANK
	T-202	FUEL OIL STORAGE TANK
	T-203	TURBINE FUEL DAY TANK

REVISIONS

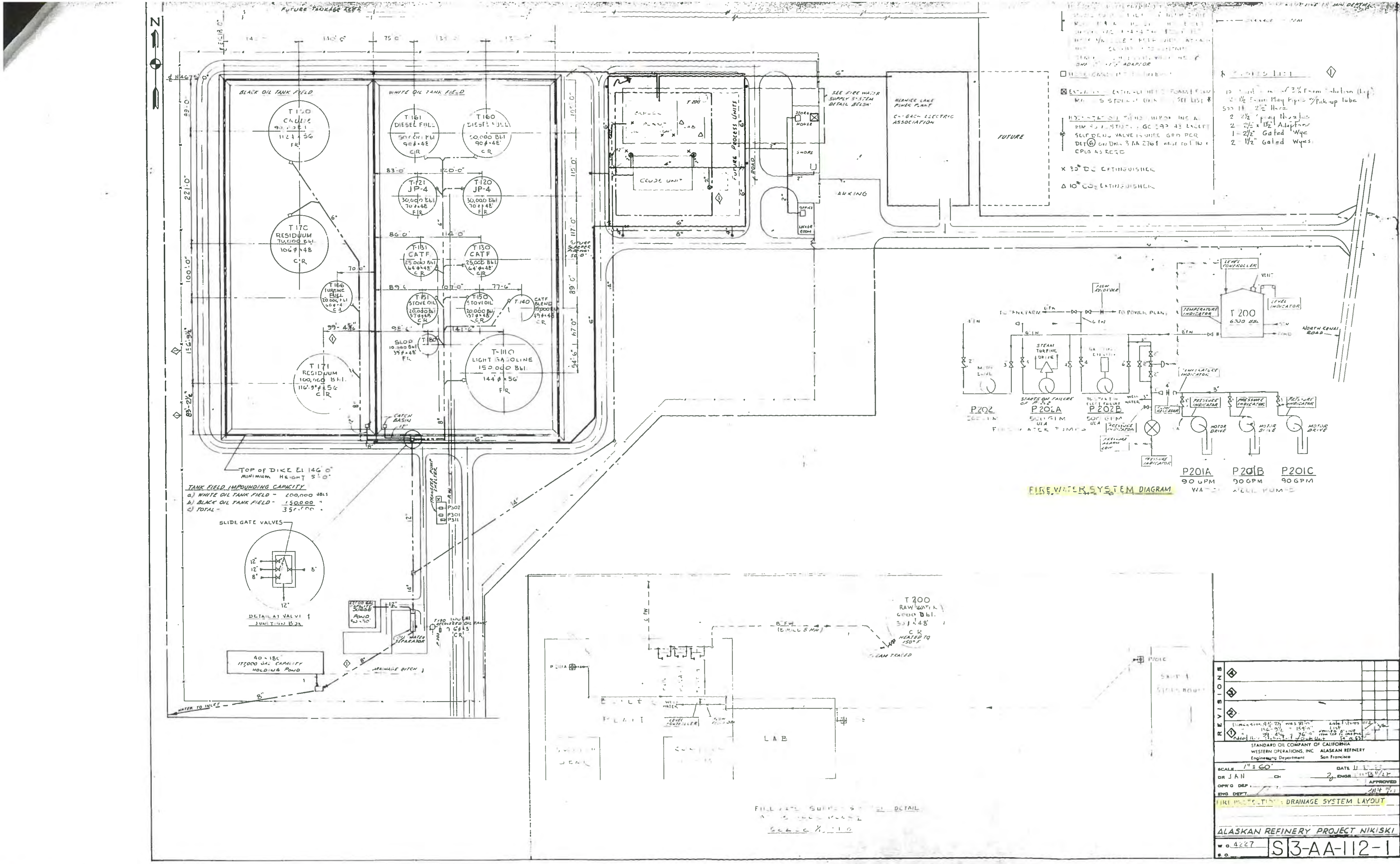
4	
3	REMOVE "HOLD" ON FUEL... [illegible]
2	ADD BOILER HOUSE & ALL RELATED EQUIP., ADD E-119, C-106, ... REVISED EQUIP. LIST 8-3
1	REDRAWN 4-16-62

STANDARD OIL COMPANY OF CALIFORNIA
[illegible] OPERATIONS [illegible] REFINERY
Engineering Department

SCALE 1" = 10'-0"
DATE 4-6-62
DR. AB CH.
APPROVED

PLOT PLAN
ON PLOT
PLANTS No. 1 & 2
ALASKAN REFINERY PROJECT NIKISKI

A 1-AA-182-3



FUTURE TANKAGE AREA
BLACK OIL TANK FIELD
WHITE OIL TANK FIELD
T 170 CRUDE
T 161 DIESEL FUEL
T 160 DIESEL FUEL
T-121 JP-4
T 120 JP-4
T 17C RESIDUUM
T 131 CATF
T 130 CATF
T 166 TURBINE FUEL
T 151 STOVE OIL
T 150 STOVE OIL
T 140 CATF BLEND
T 171 RESIDUUM
SLOP
T 180
T-110 LIGHT GASOLINE 150,000 BBL
CRUDE UNIT
FUTURE PROCESS UNITS
SEE FIRE WATER SUPPLY SYSTEM DETAIL BELOW
STORE HOUSE
SHOPS
PARKING
LOCKER ROOM
BELUGA LAKE POWER PLANT
CHUGACH ELECTRIC ASSOCIATION
FUTURE
x 30# DC EXTINGUISHER
Δ 10# CO2 EXTINGUISHER
TOP OF DIKE EL 146'0" MINIMUM HEIGHT 5'-0"
TANK FIELD IMPOUNDING CAPACITY
a) WHITE OIL TANK FIELD - 200,000 BBLS
b) BLACK OIL TANK FIELD - 150,000
c) TOTAL - 350,000
SLIDE GATE VALVES
DETAIL AT VALVE JUNCTION BOX
CATCH BASIN
TRANSFER PUMP SHELTER
OIL WATER SEPARATOR
HOLDING POND
DRAINAGE DITCH
WATER TO INLET
T 200 6000 BBL
LEVEL CONTROLLER
LEVEL INDICATOR
TEMPERATURE INDICATOR
FLOW RECORDER
NORTH KENAI ROAD
STEAM TURBINE DRIVE
P202
P202A
P202B
FIRE WATER PUMPS
PRESSURE INDICATOR
MOTOR DRIVE
P201A 90 GPM
P201B 90 GPM
P201C 90 GPM
WATER WELL PUMPS
FIREWATER SYSTEM DIAGRAM
T 200 RAW WATER 6000 BBL 32'φ×48' CR HEATED TO 150°F
STEAM TRACED
BOILER PLANT
LAB
FIRE WATER SUPPLY SYSTEM DETAIL
REVISIONS
STANDARD OIL COMPANY OF CALIFORNIA
WESTERN OPERATIONS, INC. ALASKAN REFINERY
Engineering Department San Francisco
SCALE 1" = 60'
DR JAN
FIRE PROTECTION & DRAINAGE SYSTEM LAYOUT
ALASKAN REFINERY PROJECT NIKISKI
W.O. 4227
S3-AA-112-1

CHEVRON U.S.A. INC. FACILITY: MNKE - KENAI REFINERY
CHEMICAL INVENTORY SYSTEM REPORT 106 - 02/01/92
INVENTORY BY WORK LOCATION

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	CENTRAL MSDS #	SUBSTANCE ID
LABORATORY	ACETIC ACID		000561	C64197
	ACETONE		001533	C67641
	ACTIVATED ALUMINA		X8272	S8272
	AER-O-FOAM 3% COLD FOAM	NTL FOAM		S18191
	AEROSOL OT SOLN 75% AQUEOUS	FISHER SCI		S35002
	AERSOL OT,SOLID	FISHER SCI		S8923
	ALCO JET	ALCONOX		S6746
	ALCOHOL	-PA-LAB		S13870
	AMMONIUM CHLORIDE		Y00128	C12125029
	AMMONIUM HYDROXIDE		000334	C1336216
	AMMONIUM THIOCYANATE		Y00036	C1762954
	ANILINE		Y00007	C62533
	ARSENIC TRIOXIDE		Y00035	C1327533
	ASCARITE		X2786	S2786
	ASCORBIC ACID	MALLINCKRT	X19392	S19392
	ASPHALT			C68516212
	BARIUN HYDROXIDE OCTAHYDRATE	JT BAKER	X35004	S35004
	BECKMAN ELECTRODE SOAKING SOL	BECKMAN		S18159
	BETZ BALANCED POLYMER 7110	BETZ LABS		S34544
	BETZ CONDUCTIVITY STANDARD	BETZ LABS	X3992	S3992
	BETZ ENCHEM DX-972	BETZ LABS	X24490	S24490
	BETZ HARDNESS BUFFER	BETZ LABS	X3301	S3301
	BETZ MAGNIFORM 304P	BETZ LABS		S15453
	BETZ MOLYVER 2 REAGENT PILLOWS	BETZ LABS		S11138
	BETZ PETROMEEN OS-16	BETZ LABS		S28900
	BETZ PROCHEM 4HL	BETZ LABS	X8009	S8009
	BETZ RESIN CLEANER	BETZ LABS		S34409
	BORIC ACID		001194	C10043353
	BUFFER PH 10.0		X2839	S2839
	BUFFER PH 4		X2836	S2836
	BUFFER PH 7		X2837	S2837
	CARBON DIOXIDE		000864	C124389
	CELITE (FILTER AIDS) 96003500			CC96003500
	CHEVRON AVGAS 100	CHEVRON	000607	CPS200205
	CHEVRON CUSTOM M/O SAE 10W30	CHEVRON	001457	CPS220104
	CHEVRON DETERGENT	CHEVRON	000869	CPS213502
	CHEVRON DIESEL FUEL (NOC)	CHEVRON	X6708	S6708
	CHEVRON GST OIL 46	CHEVRON	000280	CPS234230
	CHEVRON JET FUEL A-50	CHEVRON	000545	CPS216100
	CHEVRON JET FUEL JP-4	CHEVRON		CPS102200
	CHEVRON SOLVENT 51-L	CHEVRON	000162	CPS211150
	CHEVRON THINNER 225R	CHEVRON	000057	CPS210115
	CHEVRON WHITE OIL NO. 15 USP	CHEVRON	000332	CPS249407
	CHLOROFORM		000563	C67663
	CHLOROTHENE	RICCA CH		S33432
	CITRI PLUS	WITCO		S35006
	CRUDE OIL		002493	CPS296000
	CUPRIC SULFATE		Y00089	C7758987
	DRIERITE INDICATOR	HA HAMMOND	X21548	S21548
	DUOSEAL PUMP OIL	SARG-WELCH	X2925	S2925

1991 HAZARDOUS SUBSTANCE ~~LIST~~ INVENTORY FOR REFINERY —

CHEMICALS PREVIOUSLY USED AT REFINERY

CHEVRON U.S.A. INC. FACILITY: MNKE - KENAI REFINERY
CHEMICAL INVENTORY SYSTEM REPORT 106 - 02/01/92
INVENTORY BY WORK LOCATION

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	CENTRAL MSDS #	SUBSTANCE ID
LABORATORY	ERIOCHROME BLACK T	BAKER	X19360	S19360
	ETHYLENE GLYCOL			CPS310850
	FERROIN			C14708997
	FERROUS AMMONIUM SULFATE			C10045893
	FLUORESCANT REAGENT INDICATOR	UDP		S9492
	FREON 13	VARIOUS		S29804
	FREON 22		Y00010	C75456
	FULLERS EARTH			C8031183
	GALLIC ACID		Y00196	C149917
	GLYCEROL (GLYCERIN)		Y00199	C56815
	HEAVY OILS/RESIDUUM		002637	S15622
	HELIUM		Y00029	C7440597
	HEPTANE-N		000523	C142825
	HEXANE		001534	C110543
	HYDROBAC MUTANT BACTRL HYDRCRB	POLYBAC		S22302
	HYDROCHLORIC ACID		000514	C7647010
	HYDROGEN PEROXIDE		Y00087	C7722841
	IODINE		Y00203	C7553562
	ISOOCTANE		Y00070	C26635643
	ISOPROPYL ALCOHOL		000217	C67630
	LEAD OXIDE			C1309600
	LIQUI-NOX DETERGENT	ALCONOX		S16241
	MAGNESIUM CHLORIDE		Y00091	C7786303
	MANGANOUS SULFATE MONOHYDRATE		Y00124	C10034965
	MANOSTAT CHROMERGE	MANOSTAT		S17672
	MERCURIC CHLORIDE		Y00024	C7487947
	MERCURIC SULFATE		Y00126	C7783359
	MERCURY		Y00141	C7439976
	METHYL ALCOHOL			C67561
	METHYL ORANGE INDICATOR			S9552
	METHYL PURPLE INDICATOR		X1474	S1474
	METHYL RED		Y00221	C493527
	METHYLENE BLUE SOLUTION	MILCHEM	X28699	S28699
	METHYLENE CHLORIDE		000627	CC11570800
	MOLECULAR SIEVE		X2704	S2704
	MUSCOVITE TALC		Y00274	C1318941
	N-BUTYL ALCOHOL		Y00078	C71363
	NALCO 5606	NALCO		S34438
	NATURAL GAS	CHEVRON	000923	CPS262299
	NITRIC ACID		000492	C7697372
	NITROGEN		000950	S17955
	PETROLEUM ETHER		Y00249	C8032324
	PHENOL		000003	C108952
	PHENOLPHTHALEIN		Y00143	C77098
	PHOSPHORIC ACID		000477	C7664382
	POTASSIUM BIPHTHALATE		Y00129	C877247
	POTASSIUM CHROMATE		Y00127	C7789006
	POTASSIUM DICHROMATE	EM REAGENT	X33236	S33236
	POTASSIUM FERROCYANIDE		Y00217	C13943583
	POTASSIUM HYDROXIDE	VARIOUS		S15828

CHEVRON U.S.A. INC. FACILITY: MNKE - KENAI REFINERY
CHEMICAL INVENTORY SYSTEM REPORT 106 - 02/01/92
INVENTORY BY WORK LOCATION

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	CENTRAL MSDS #	SUBSTANCE ID
LABORATORY	POTASSIUM HYDROXIDE (SOLID)		003374	C1310583
	POTASSIUM IODIDE		Y00234	C7681110
	POTASSIUM PHOSPHATE, DIBASIC		X8485	S8485
	POTASSIUM THIOCYANATE			C333200
	PROPANE		000479	C74986
	SILICA GEL		Y00384	C63231674
	SILICA, AMORPHOUS			S743
	SILICONE OIL			S9885
	SILVER NITRATE		Y00133	C7761888
	SILVER SULFATE		Y00258	C10294265
	SODIUM AZIDE			C26628228
	SODIUM BISULFITE		Y00318	C7631905
	SODIUM BORATE		Y00275	C13333739
	SODIUM CARBONATE		Y00293	C497198
	SODIUM CHLORIDE		Y00328	C7647145
	SODIUM CHROMATE			C7775113
	SODIUM HYDROXIDE		Y00270	C1310732
	SODIUM HYDROXIDE SOLUTIONS		000106	CPS295008
	SODIUM IODIDE		Y00132	C7681825
	SODIUM SULFATE		Y00009	C7757826
	SODIUM THIOSULFATE (0.1N)	SHAPE PROD		S22905
	SOLAR SALT WATER SOFTENER	CARGILL		S8042
	STADIS 450 CONDUCTIVITY INPROV	DUPONT	X31841	S31841
	STARCH		Y00335	C9005258
	STARCH INDICATOR		X9505	S9505
	SULFUR		000423	C7704349
	SULFURIC ACID		000446	C7664939
	SWS-101 SILICONE FLUID	SWS SLCON		S35005
	TOLUENE		000632	C108883
	TRETOLITE C-10	PETROLITE	X3127	S3127
	TRIFLUOROTRICHLOROETHANE	JT BAKER		S35003
	XYLENE	BAKER		S18919
	XYLENE/DIMETHYL BENZENE		PE0014	C1330207
	ZINC (METAL)		Y00023	C7440666
	1,1,1-TRICHLOROETHANE		000544	C71556
	4-AMINOANTIPYRENE		Y00330	C83078

TOTALS FOR: LABORATORY
TOTAL SUBSTANCES 136
TOTAL SUBSTANCES WITH CHEVRON MSDS'S: 32
TOTAL SUBSTANCES WITHOUT CHEVRON MSDS'S: 104

CHEVRON U.S.A. INC. FACILITY: MNKE - KENAI REFINERY
CHEMICAL INVENTORY SYSTEN REPORT 106 - 02/01/92
INVENTORY BY WORK LOCATION

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	CENTRAL MSDS #	SUBSTANCE ID
MAINTENANCE SHP	ACETYLENE		000907	C74862
	ACTIVSOL T-776	DUBOIS CM		S34998
	AMCOTE 1200	RAMCO INSL		S3500I
	ASBESTOS		000302	C1332214
	ATLAS ELECTROLYTE BATTERY FLD	ATLAS SPLY		S7187
	CARBON MONOXIDE		000427	C630080
	CHEVRON ARCTIC GEAR LUBE 75W90	CHEVRON	001157	CPS250201
	CHEVRON ATF SPECIAL	CHEVRON	000404	CPS226587
	CHEVRON DELO 400 M/O SAE 10W	CHEVRON	000019	CPS225001
	CHEVRON DELO 400 M/O SAE 15W40	CHEVRON	001210	CPS225006
	CHEVRON DETERGENT	CHEVRON	000869	CPS213502
	CHEVRON DIESEL FUEL NO. 2	CHEVRON	000525	CPS272102
	CHEVRON GEAR OIL SAE 90	CHEVRON	000328	CPS250402
	CHEVRON GST OIL 32	CHEVRON	000221	CPS234229
	CHEVRON INDUSTRIAL GREASE NED	CHEVRON	000137	CPS253005
	CHEVRON MULTI-MOTIVE GREASE 1	CHEVRON	000261	CPS250701
	CHEVRON STARTING FLUID SPRAY	CHEVRON	000386	CPS213105
	FX-75 BONDING AGENT	FOX IND		S35080
	LIQUID AIR COMPRESSED OXYGEN	LIQUID AIR		S18192
	ROCKWELL LUBRICANT	BTR/ROCK		S2633
	S-C SUPER CONCENTRATE DEGREASR	RADIATOR S		S1526
	WAGNER PREMR PLUS BRAKE FLUID	WAGNER CM		S34999
	WELDING&CUTTING : FUMES&GASES		002710	S15628
	YELLOW 77 WIRE LUBE	ZDESL		S33718

TOTALS FOR: MAINTENANCE SHP
TOTAL SUBSTANCES 24
TOTAL SUBSTANCES WITH CHEVRON MSDS'S: 15
TOTAL SUBSTANCES WITHOUT CHEVRON MSDS'S: 9

CHEVRON U.S.A. INC. FACILITY: MNKE - KENAI REFINERY
CHEMICAL INVENTORY SYSTEM REPORT 106 - 02/01/92
INVENTORY BY WORK LOCATION

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	CENTRAL MSDS #	SUBSTANCE ID
OPERATIONS GENERAL	ACTIVATED ALUMINA 4-8 MESH			S9044
	ASBESTOS		000302	C1332214
	ATTAPULGUS CLAY			S18219
	BENZENE		000151	C71432
	BETZ CORRSHIELD 736	BETZ LABS	X11126	S11126
	CARBON MONOXIDE		000427	C630080
	CHEVRON ASPH CEMT AC-5	CHEVRON	001808	CPS291700
	CHEVRON DETERGENT	CHEVRON	000869	CPS213502
	CHEVRON DIESEL FUEL NO. 2	CHEVRON	000525	CPS272102
	CHEVRON GST OIL 32	CHEVRON	000221	CPS234229
	CHEVRON JET FUEL A-50	CHEVRON	000545	CPS216100
	CHEVRON REGULAR GASOLINE	CHEVRON	000363	CPS201305
	CHEVRON UNLEADED GASOLINE	CHEVRON	000372	CPS201110
	COMPRESSED GASES		002703	S15626
	CRUDE OIL		002493	CPS296800
	DOW ION EXCHANGE RESIN HCRS-NA	DOW CM		S18220
	DUPONT METAL DEACTIVATOR DMD-2	DUPONT	K00020	CPS267312
	HEAVY OILS/RESIDUUM		002637	S15622
	HYDROCARBON LIQUID-COMBUSTIB		002641	S15620
	HYDROCARBON LIQUID-EXTREM FLAM		002643	S15618
	HYDROCARBON LIQUID-FLAMMABLE		002642	S15619
	HYDROGEN SULFIDE (H2S)		000301	C7783064
	NALCO CUPROUS	NALCO		S18194
	NALCO 5375 POUR DEPRESSANT	NALCO		S15329
	NATURAL GAS	CHEVRON	000923	CPS262299
	NON-HYDROCARBON GASES		002640	S15623
	PAVEBOND ANTISTRIPP ADD	MORT THIO		S18199
	PROCESS GASES	CHEVRON	002644	S15617
	PROPANE		000479	C74986
	TECHROLINE GASOLINE ADDITIVE	CHEVRON	001272	CPS266308
	TURBINE FUEL, AVIATION JP-4	CHEVRON	000553	CPS202260
	UTILITY WATERS		002639	S15624
	WASTE WATERS/OILS		002638	S15625
	WELDING&CUTTING : FUMES&GASES		002710	S15628

TOTALS FOR: OPERATIONS GENERAL
TOTAL SUBSTANCES 34
TOTAL SUBSTANCES WITH CHEVRON MSDS'S: 26
TOTAL SUBSTANCES WITHOUT CHEVRON MSDS'S: 8

A-8215-03

CHEMICAL INVENTORY SYSTEM REPORT 106 - 02/12/92
FACILITY: MNKE-KENAI REFINERY
INVENTORY BY WORK LOCATION

HSI Date
2-12-92

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	QUANITY	CENTRAL MSDS #	SUBSTANCE ID
BOILER BUILDING	ACTIVATED ALUMINA		1-DRUM		
	AER-O-FOAM (3% COLD FOAM)		19-5gal BUCKETS		
	BETZ BALANCED POLYMER 7110		TANK		
	BETZ MAGNIFORM 304P		TANK (2340 lbs)		
	BETZ MAGNIFORM 304P		1-55gal DRUM		
	BETZ PETROMEEN OS-16		TANK (2080lbs)		
	BUFFER PH 7				
	CHEVRON GST OIL 32	CHEVRON	1-55gal DRUM		
	CITRI PLUS				
	DELO 400 MOTOR OIL (SAE 30)		1/4-55gal DRUM		
	ETHYLENE GLYCOL (USED)		6-55gal DRUMS		
	GASOLINE (EMERGENCY GENERATOR)				
	MISC. PAINTS & SOLVENTS		5gal		
	MOLECULAR SIEVE		1-55gal DRUM		
	SALT		432-80lbs BAGS		
	SALT (COARSE, SOLAR)		34-80lbs BAGS		
	SILICA GEL		2-DRUMS		
	WASTE OIL (East Forelands)		1-55gal DRUM		
NOTE: Not for SARA reporting.	SALVAGE DRUMS		6-55gal DRUM		
	USED DRUMS		2-55gal DRUMS		
LABORATORY	1,1,1 TCA CHLOROETHENE		5gal		
	1-BUTANOL		16pints		
	FREON 13		1-SMALL CYLINDER		
	GALLIC ACID		3lbs		
	HYDROBAC - S	POLYBAC CORP.	25lbs		
	HYDROCHLORIC ACID		1L		
	HYDROGEN PEROXIDE		1gal		
	MANGANOUS SULFATE MONOHYDRATE		6lbs		
	METHYLENE CHLORIDE		10L		
	POTASSIUM PHOSPHATE, DIBASIC		2000g		
	SILICONE OIL		5gal		
	SODIUM BISULFITE		700g		
	SODIUM HYDROXIDE		1lb		
	TRICHLOROETHYLENE		1L		
	UNKNOWN OIL		5gal		
NOTE: Not for SARA reporting.	RESIDUAL SAMPLE OIL		5gal		
	SAMPLE CONTAINERS		--		
	SOIL SAMPLES FROM DRILLING OPERATIONS		--		
TANK 200	ACETONE		1-55gal DRUM		
	DUPONT METAL DEACTIVATOR	DUPONT	1-55gal DRUM		
NOTE: Not for SARA reporting.	EMPTY DRUMS		3-DRUMS		
MAINTENANCE SHOP	ACETYLENE		1 TANK		
	CHEVRON GST 32 OIL	CHEVRON	1-55gal DRUM		
	CHEVRON H.D. CLEANER	CHEVRON	2-35lbs CONTAINER		

CHEMICAL INVENTORY SYSTEM REPORT 106 - 02/12/92
FACILITY: KENAI PIPELINE FACILITY
INVENTORY BY WORK LOCATION

WORK LOCATION NAME	SUBSTANCE NAME	MFGR	QUANITY	CENTRAL MSDS #	SUBSTANCE ID
MAINTENANCE SHOP	CHEVRON MOTOR OIL	CHEVRON	1-55gal DRUM		
	CHEVRON SRI GREASE-2	CHEVRON	1-35lbs CONTAINER		
	CHEVRON DETERGENT	CHEVRON	1.5-55gal DRUM		
	FOSTER FIBEROUS ADHESIVE	H.B. FULLER	1-5gal BUCKET		
	HYDRAULIC OIL		2-35lbs CONTAINER		
	LP GAS		1 TANK		
	MOTOR OIL (DELO 400 PLUS)		1-55gal DRUM		
	OXYGEN		1 TANK		
	SHELLZONE ANTIFREEZE		1-55gal DRUM		
CRUDE UNIT BUILDING	NALCO 5375		1 TANK (EMPTY?)		
IAF BUILDING	BETZ DX-972 (#4446)		1 TANK		
BIODISK BUILDING	CUPROS ALGAECIDE (COPPER SULFATE)		41/4-50lbs BAGS		

SECTION II
FOAM LIQUID

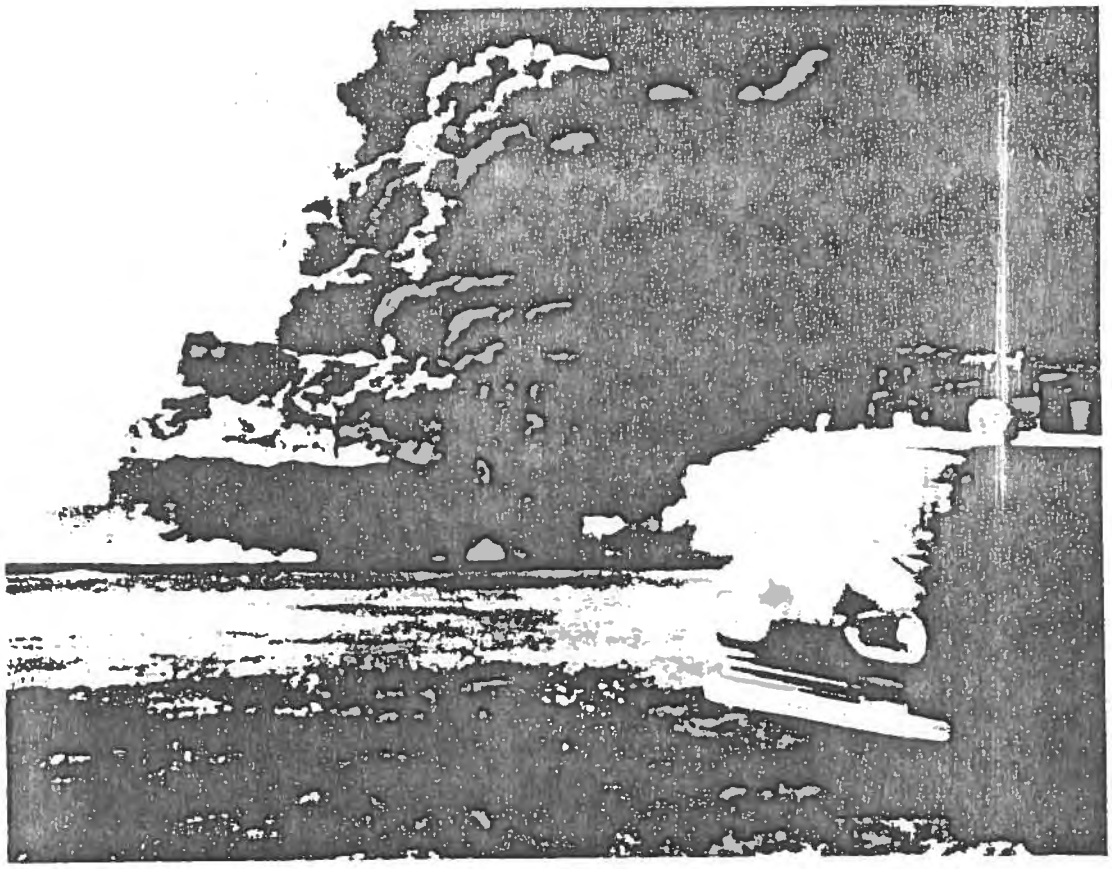


Figure 2-1. National Foam liquid and equipment extinguished this 114 ft. diameter crude oil fire in less than 1 hour, saving 50,000 barrels of product, the tank shell, and preventing a "boil over".

2.1 GENERAL

All foam systems, regardless of size, consist of a water supply, a proportioning device, an air aspirating foam maker(s) and a foam liquid supply. While all the components must function properly to assure system performance, the foam liquid is unquestionably the most vital component of the system.

National Foam System, Inc. has been a pioneer in the development of mechanical foam liquids and a world leader in fire fighting foam technology for more than fifty years. National Foam products have extinguished hundreds of flammable and combustible liquid fires, real fires "in anger" involving hazards such as storage tanks, process areas, marine tankers, loading facilities, and spills resulting from aircraft and automotive crashes. A performance record unparalleled in the industry. In every corner of the world, there are National Foam liquids and equipment, some in service for more than thirty years — month after month, year after year — providing reliable, proven flammable liquid fire protection.

2.2 CHOOSING A FOAM LIQUID

With more than one thousand different flammable liquid materials being manufactured and consumed; and with more than twelve separate fire fighting foams available for their protection — the choice of the most suitable foam to protect a particular hazard may appear difficult. However, this choice becomes objective and measurably simplified when dealing with a manufacturer that produces every type of foam liquid and all the appliances required for their use. National manufactures the longest and most comprehensive line of fire fighting foams available to the industry. Whether the hazard is a small marketing installation or a sophisticated storage and process facility, National's diverse product line simplifies selection of the best, most cost-effective foam liquid.

Basically, there are two general classes of foam liquid: the regular protein based type and the synthetic type. Within each class are modified forms which provide a specific foam to best meet the requirements of a particular hazard.

Protein Based Types

Aer-O-Foam 3% Regular
Aer-O-Foam 6% Regular
Aer-O-Foam 3% Cold Foam
Aer-O-Foam 6% Cold Foam
Aer-O-Foam XL-3 3% Fluoroprotein
Aer-O-Foam XL-6 6% Fluoroprotein
Aer-O-Foam XL-6 6% Fluoroprotein Cold Foam
Aer-O-Foam "99" 6% Alcohol Resistant

Synthetic Types
Aer-O-Water 6 — 6% AFFF
Aer-O-Water Plus — 3% AFFF
(Available in Cold Foam)
Aer-O-Water PSL — 6%-10% AFFF and
Alcohol Resistant
Universal — 3%-10% Multi-Purpose
High Expansion — 1½%-3% Syndet

Basically, there are two general classes of flammable liquids; hydrocarbons and polar solvents. Hydrocarbons are non-water miscible products such as crude oil, gasoline, hexane, naphtha, diesel oil, etc. Polar solvents are generally water miscible products such as alcohols, esters, ketones, etc. Some industrial solvents are a mixture of both classes.

The following information should be available for consideration in order to properly choose the most suitable foam liquid:
1. Principal flammable liquids requiring protection (actual chemical title).
2. Foam solution application rates (determines water supply requirements).
3. Foam liquid cost.
4. System components and field piping cost.
5. Projected cost of foam system maintenance.

A few dollars in foam liquid cost can save tens of thousands of dollars in field piping and maintenance expense. Conversely, protection systems can be over-designed around costly foam liquid, when a less expensive foam will provide totally acceptable protection. Table 2-1 lists foam liquids, the hazards they protect, and methods of application.

2.3 TESTING AND APPROVALS

All National Foam products undergo extensive testing from their conception in the research laboratory through rigid quality control standards prior to market. Foam liquid that is physically and chemically stable assures a long storage life and optimum fire performance. In this regard, National's foam liquid products are approved and listed by independent testing agencies such as Underwriters' Laboratories and Factory Mutuals. Certain liquids are also approved by the U.S. Coast Guard and other Federal agencies. These approvals are the customers' guarantee that National has demonstrated through extensive fire testing and evaluations that the product complies with the rigid requirements and specifications of the testing authority. We note further, any deviation from these standards can lead to a revocation of said listings or approval. In special cases, fire tests are conducted to determine the effectiveness of the foam on a particular flammable liquid and to compute the minimum application rates the hazard requires. NFPA Standards 11, 11B, 16 and 409 provide the guidelines for determining application rates. Some application rates for polar solvent or alcohol type fuels are determined by the foam liquid manufacturer through actual fire testing. The approvals for each particular foam liquid are provided in their descriptive paragraphs.

Table 2-1. Recommended Foams, Proportioning % and Application Methods for Various Hazards

FOAM LIQUID	HYDROCARBON HAZARDS (Reference — N.F.P.A. Standards 11 & 11B)			POLAR SOLVENT (ALCOHOL) HAZARDS	
	Storage Tanks (See Section VI) .10 GPM/Ft² (4 LPM/m²) Application Rate		Spill Fires — .16 GPM/Ft² (6 LPM/m²)	Storage Tanks (See Section VI)	Spill Fires Nozzles, Monitors, Overhead Devices
	N.F.P.A. Type II Fixed Topside Chambers	Subsurface Injection	Nozzles, Monitors, Overhead Devices	See Table 2-2 for Details on Application Rates and Proportioning Requirements	
Fluoroprotein					
Aer-O-Foam XL-3	3%	4%	3%	NR	NR
Aer-O-Foam XL-6 (& Cold Foam)	6%	6%	6%	NR	NR
Regular Protein					
Aer-O-Foam 3% (& Cold Foam)	3%	NR	3%	NR	NR
Aer-O-Foam 6% (& Cold Foam)	6%	NR	6%	NR	NR
Aer-O-Water (AFFF)					
Aer-O-Water Plus (& Cold Foam)	3%	NR	3%*	NR	NR
Aer-O-Water 6	NR	NR	6%*	NR	NR
Universal	3%	4%	3%*	6%-10% (Type II)	6%-10%
Aer-O-Water PSL	6%	NR	6%*	6%-10% (Type II)	6%-10%
Aer-O-Foam "99"	6%	NR	6%	6% (Type I)	6% (Skin Spills Only)

*N.F.P.A. 11B allows a minimum application rate of .10 gpm/ft² (4 lpm/m²) for nozzle applications. NR = Not Recommended

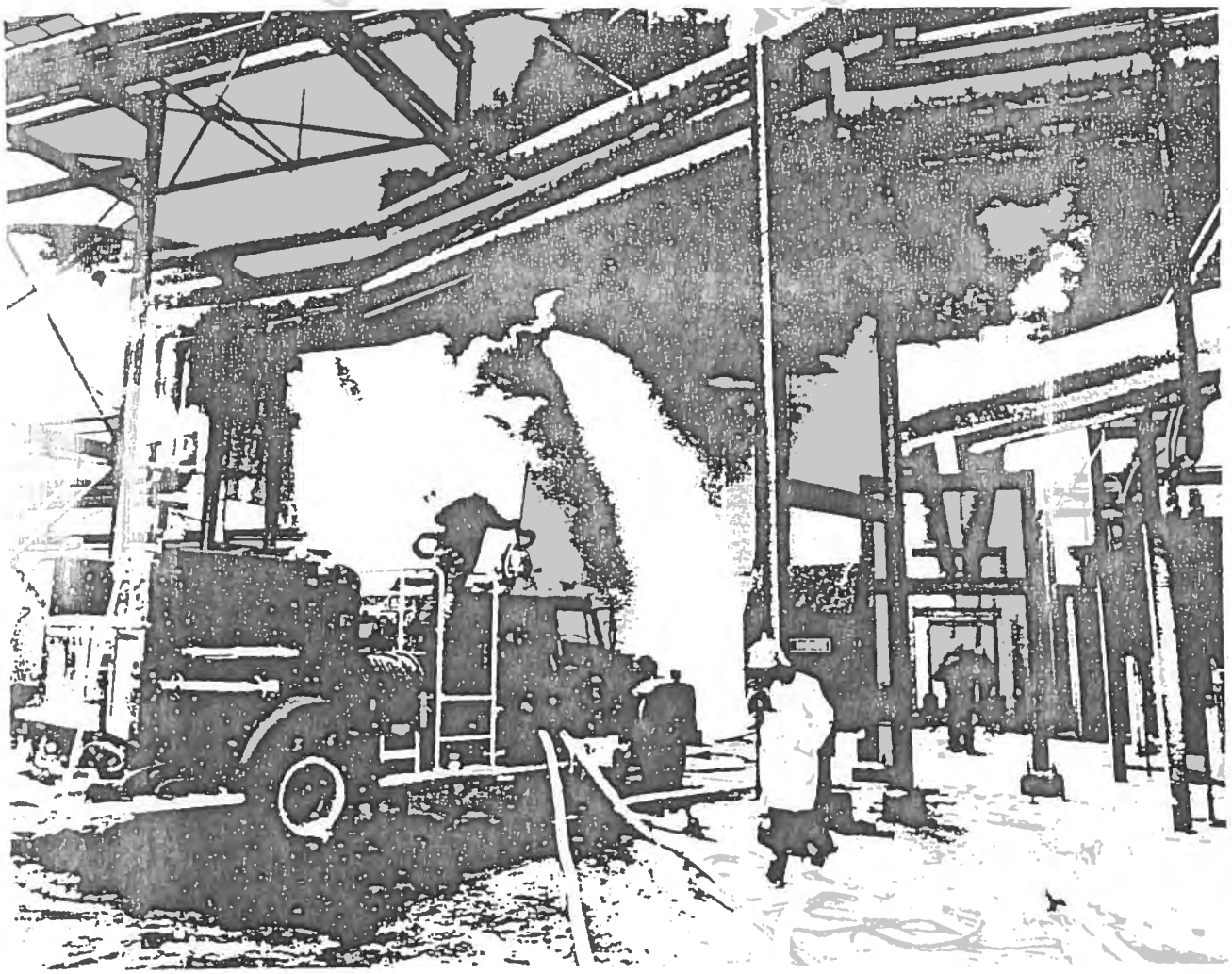


Figure 2-2. Proven again in action. National's XL-3 readily extinguished this gas-oil intermediate fire involving two 45 ft. diameter tanks and their common dike area. Foam-dry chemical truck built by National in 1968.

2.4 NATIONAL AER-O-FOAM XL FLUOROPROTEIN LIQUIDS

XL Fluoroprotein foam liquids represent the single most significant improvement in foam technology since mechanical foams were first introduced. By the combination of selected fluorocarbon surfactants with a quality protein hydrolysate base, a foam liquid with dramatically improved performance characteristics is produced. These improved characteristics include:

1. Increased extinguishment ability
2. Increased fluidity
3. Dry chemical compatibility
4. Superior sealability and burnback resistance
5. Vastly improved olephobic properties

These olephobic properties are so pronounced that they permit subsurface injection of XL foams into hydrocarbon storage tanks. (See Section VI, Storage Tank Protection.)

Since its development in 1965, Aer-O-Foam XL has repeatedly established itself as the best foam agent available for subsurface and topside storage tank protection. In its history there have been no performance failures in real emergencies and no reported failures due to natural deterioration in storage. The performance record of XL foams is in fact so unparalleled that more of the world's major oil and chemical companies rely on National Aer-O-Foam XL for protecting their flammable hydrocarbon products, than on any other foam.

XL Fluoroprotein foams are available for 3% and 6% proportioning and are suitable for use with fresh or sea water.

2.4.1 General Properties

Aer-O-Foam XL-3

Specific Gravity @ 60°F (15.5°C)	1.158 to 1.164
pH	7.1 to 7.5
Viscosity in Centistokes @ 20°F (−6.6°C)	400 csks
Minimum Usable Temperature	20°F (−6.6°C)
Maximum Usable Temperature	120°F (48.8°C)
Recommended Maximum Storage Temperatures	100°F (37.7°C)
Recommended Storage Container Material	Mild Steel
Approvals	Underwriters' Laboratories U. S. Coast Guard Factory Mutual New York Board of Standards SBG — Germany

Aer-O-Foam XL-6

Specific Gravity @ 60°F (15.5°C) .... 1.147 to 1.153
pH ..... 7.1 to 7.5
Viscosity in Centistokes
@ 20°F (−6.6°C) ..... 200 csks
Minimum Usable Temperature ..... 20°F (−6.6°C)
Maximum Usable Temperature ..... 120°F (48.8°C)
Recommended Maximum Storage
Temperatures ..... 100°F (37.7°C)
Recommended Storage Container
Material ..... Mild Steel
Approvals ..... U. S. Government
Underwriters' Laboratories

Aer-O-Foam XL-6 Cold Foam

Specific Gravity @ 60°F (15.5°C) ..... 1.11 to 1.15
pH ..... 7.1 to 7.5
Viscosity in Centistokes
@ −20°F (−29°C) ..... 1200 csks
Minimum Usable Temperature .... −20°F (−29°C)
Maximum Usable Temperature ..... 120°F (48.8°C)
Recommended Maximum Storage
Temperatures ..... 100°F (37.7°C)
Recommended Storage Container
Materials ..... Mild Steel
Approvals ..... Underwriters' Laboratories

2.4.2 Approximate Shipping Weights

5 Gallon (19 litre) Pails
(Plastic or Steel) ..... 53 lbs (24 kg)
55 Gallon (208 litre) Steel Drums ... 570 lbs (259 kg)
Wt. Per Gallon (3.78 litre) in Bulk ... 9.7 lbs (4.4 kg)

NOTE: Please indicate packaging preference on purchase order.

2.5 NATIONAL'S AER-O-FOAM REGULAR LIQUIDS

Three types of Aer-O-Foam Regular Liquids are available. These liquids are manufactured from pure protein hydrolysate, compounds for foam stabilization, freezing point depressants, and preservatives. All are carefully blended to produce a homogenous, highly stable foam liquid. Regular Aer-O-Foams are designed for use on hydrocarbon type flammable liquid fires through N.F.P.A. Type II devices and air aspirating foam nozzles. Available in both 3% and 6% concentrations. Regular Liquids can be used with fresh or sea water. Special "cold foams" are available for use in frigid climates or where heating of the foam liquid in storage is not feasible.

2.5.1 General Properties

Aer-O-Foam 3% Regular

Specific Gravity @ 60°F (15.5°C) ... 1.158 to 1.164
pH ..... 7.1 to 7.5
Viscosity in Centistokes
@ 20°F (−6.6°C) ..... 400 csks
Minimum Usable Temperature ..... 20°F (−6.6°C)
Maximum Usable Temperature ..... 120°F (48.8°C)
Recommended Maximum Storage
Temperature ..... 100°F (37.7°C)
Recommended Storage Container
Material ..... Mild Steel
Approvals ..... Underwriters' Laboratories
U. S. Coast Guard
Factory Mutual
SBG — Germany
Norsk Veritas — Norway
Norwegian Maritime Directorate

Aer-O-Foam 6% Regular

Specific Gravity @ 60°F (15.5°C) .... 1.139 to 1.145
pH ..... 7.1 to 7.5
Viscosity in Centistokes
@ 32°F (0°C) ..... 80 csks
Minimum Usable Temperature ..... 20°F (−6.6°C)
Maximum Usable Temperature ..... 120°F (48.8°C)
Recommended Maximum Storage
Temperatures ..... 100°F (37.7°C)
Recommended Storage Container
Material ..... Mild Steel
Approvals ..... U. S. Government
U. S. Coast Guard
Factory Mutual

Aer-O-Foam 3% Cold Foam

Specific Gravity @ 60°F (15.5°C) ..... 1.11 to 1.15
pH ..... 7.1 to 7.5
Viscosity in Centistokes
@ −20°F (−29°C) ..... 1200 csks
Minimum Usable Temperature .... −20°F (−29°C)
Maximum Usable Temperature ..... 120°F (48.8°C)
Recommended Maximum Storage
Temperatures ..... 100°F (37.7°C)
Recommended Storage Container
Material ..... Mild Steel
Approvals ..... Underwriters' Laboratories

3% and 6% Cold Foams to −40°F (−40°C) are available upon request.

2.5.2 Approximate Shipping Weights

5 Gallon (19 litre) Pails
(Plastic or Steel) ..... 53 lbs (24 kg)
55 Gallon (208 litre) Steel Drums ... 570 lbs (259 kg)
Wt. Per Gallon (3.78 litre) in Bulk ... 9.7 lbs (4.4 kg)

NOTE: Please indicate packaging preference on purchase order.

2.6 NATIONAL AER-O-WATER LIQUIDS (AFFF)

Aqueous Film Forming Foams (AFFF) were developed by the U.S. Navy in the middle 1960's. AFFF's are a combination of fluorocarbon surfactants and synthetic foaming agents that add a new dimension to crash rescue fire fighting: the aqueous film. This film is a thin layer of foam solution that rapidly spreads across the surface of a hydrocarbon fuel causing dramatic fire "knock down," an important factor in crash rescue fire fighting. The aqueous film is produced by the action of the fluorocarbon surfactant reducing the surface tension of the foam solution to a point where the solution can actually be supported by the surface tension of the hydrocarbon fuel. The effectiveness and durability of the aqueous film is directly influenced by the surface tension of the hydrocarbon. AFFF's are more effective on fuels with higher surface tension coefficients such as kerosene, diesel oil and jet fuels; less effective on fuels with low surface tension coefficients like hexane and high octane gasolines. AFFF foams are constructed to drain foam solution quickly from the foam bubble to produce optimum filming for rapid fire extinguishment. Long term sealability and burnback resistance are sacrificed by this rapid drainage.

National's contributions to the development of AFFF's has been significant. The greatest development to date was the introduction of Aer-O-Water Plus; designed for 3% proportioning, and patented by National Foam.

By design, Aer-O-Water Plus requires a very low energy input to produce a good quality foam and a long lasting blanket. When used through aspirating foam nozzles, the foam shows increased extinguishment ability and burnback resistance. Aero-O-Water Plus demonstrates such pronounced foam making ability that it will produce foam from non-aspirating equipment which has an impinging stream action to help entrain air. When used through certain water fog nozzles, Aer-O-Water Plus produces quality foam with overall improvement in fire "knockdown" and control when compared to conventional AFFF. Of even greater significance, Aer-O-Water Plus produces foam from standard water sprinkler heads. The foam produced is of sufficient quality to meet the requirements of Underwriters Laboratories, Inc. for AFFF, and is listed without limitation for use with most major standard sprinkler heads. Aer-O-Water Plus will also produce adequately expanded foam through many directional and spray nozzles used in special hazards systems. Existing water deluge systems are readily converted to Aer-O-Water Plus foam systems by merely adding the appropriate proportioning equipment.

Aer-O-Waters can be used with fresh or sea water, and Aer-O-Water Plus "Cold Foam" is available upon request. All Aer-O-Waters perform as excellent wetting agents on "Class A" fires, and are compatible with dry chemical agents.

2.6.1 General Properties

Aer-O-Water Plus

Specific Gravity @ 77°F (25°C)	1.05 to 1.07
pH	7.4 to 8.0
Viscosity in Centistokes @ 77°F (25°C)	15 csks
Minimum Usable Temperature	25°F (−3.8°C)
Maximum Usable Temperature	120°F (48.8°C)
Recommended Maximum Storage Temperatures	100°F (37.7°C)
Recommended Storage Container Material	Mild Steel (3/16") 304 Stainless Steel
Approvals	Underwriters' Laboratories Factory Mutual Conforms to fire performance of MIL-F-24385

Aero-O-Water Plus is available as a Cold Foam −20°F (−29°C)

Aer-O-Water 6

Specific Gravity @ 60°F (15.5°C)	1.02 to 1.04
pH	7.4 to 8.0
Viscosity in Centistokes @ 77°F (25°C)	4 csks
Minimum Usable Temperature	30°F (−1.1°C)
Maximum Usable Temperature	120°F (48.8°C)
Recommended Maximum Storage Temperature	100°F (37.7°C)
Recommended Storage Container Materials	Mild Steel (3/16") 304 Stainless Steel
Approvals	Military Specification MIL-F-24385 Underwriters' Laboratories

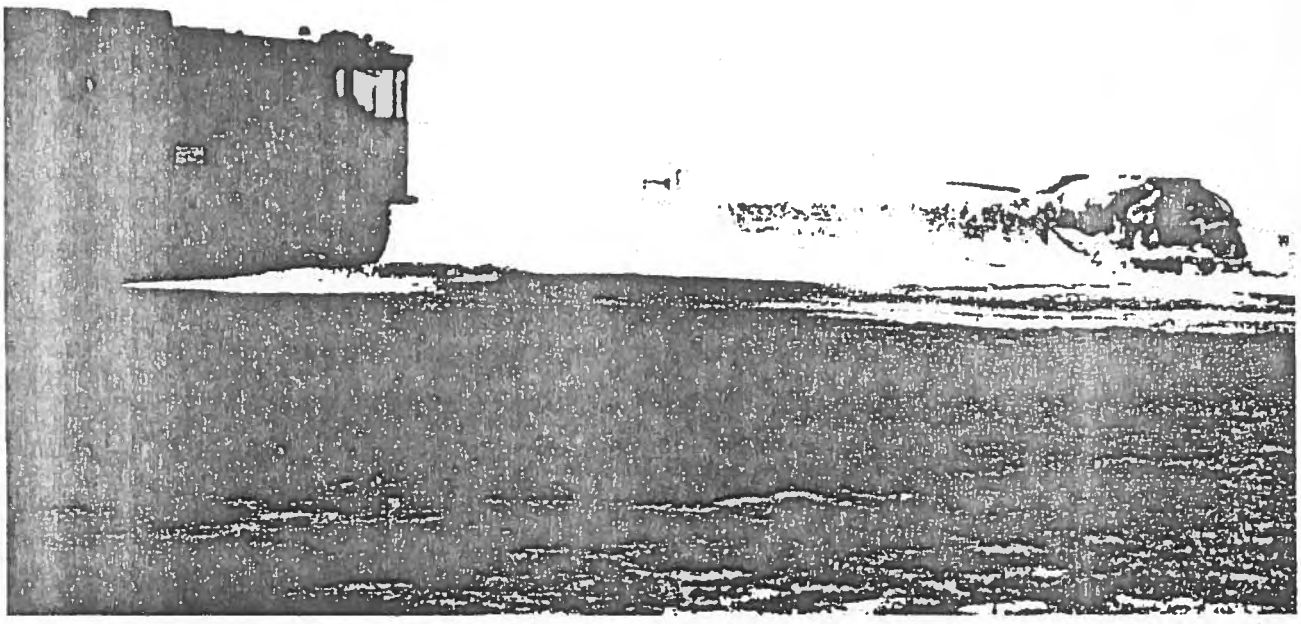


Figure 2-3. 7200 sq. ft. of JP-4 spill fire. Totally extinguished by Aer-O-Water Plus in 37 seconds. Application rate .07 gpm/ft.² (3 lpm/m²).

Synthetic foam liquids may require additional tests to evaluate surface tension, viscosity and the effectiveness of the aqueous film or polymeric membrane.

The Technical Service Report will list the results of all these tests. If the foam liquid sample produces results consistent with is original specifications, it is considered satisfactory and suitable for fire service. Significant deviation from the original specifications in any of the test results usually indicates one of the following problems:

1. Contamination
2. Improper Storage Procedures
3. Microbial Decomposition
4. Product Degradation
5. Any combination of the above

At this point, fire testing is recommended. The actual fire performance of a foam sample will determine its suitability for fire service.

2.11.2 Fire Tests

Various size tests can be devised depending upon agent and characteristics being evaluated. A test commonly employed is a modification of a Federal Specification (OF-555C) for Mechanical Foam Liquids intended for storage tank protection and industrial use.

A foam liquid is scored satisfactory if the fire is extinguished within 5 minutes application time. The resulting foam blanket must form a seal against reignition for 15 minutes when tested with a flaming torch. A void is then cut in the blanket and ignited. The opening must not enlarge significantly within an additional 5 minutes burn period.

Alcohol or polar solvent type foams are similarly fire tested on a polar fuel such as isopropanol. Aer-O-Foam "99" is tested via a Type I application, while Universal and Aer-O-Water PSL use a Type II method. AFFF (Aer-O-Water Plus and Aer-O-Water 6) are fire tested according to test procedures in Federal Military Specification MIL-F-24385.

2.11.3 Sample Collection

Obviously, the foam sample submitted must be representative of the foam liquid storage, whether in tanks or drums. Proper foam liquid sampling is of concern to the analyst in a twofold way. First, the original sample collected from storage and submitted for analysis, and secondly, the proper sampling of the submitted sample for test purposes. Depending upon the maintenance program adopted, foam liquid samples are collected in one of the following ways:

1. Collect one sample— bottom only
2. Collect two samples — one top and one bottom
3. Collect three samples — one each from top, bottom and middle
4. Collect one sample — composite after recirculating contents

All samples should be submitted in a clean one pint (500 ml) plastic bottle or steel can. If fire testing is recommended a larger sample will be requested. "Request for Analysis" forms are available from our local representative or from our home office.

Bottom Sampling

Since the bottom of the tank may collect sediment such as rust, scale, or degradation products, it is important that these excessive contaminants be separated when drawing a sample.

A suggested procedure is as follows:

1. Open the bottom-most drain and flush out one or two gallons of liquid into a large clean bucket.
2. Close down tightly on the valve and collect at least one pt (500 ml) in a clean plastic bottle. This is the sample to be submitted for analysis.
3. The initial flushings may be returned to the top of the tank by way of the filling funnel. A strainer will remove the excess sediment.

Composite Sampling

Composite sampling is a good technique to use where the number of samples being collected would get out of hand. However, the contents of a storage tank must not be recirculated where dilution is known or suspected to have occurred. Many fire protection engineers employ a periodic start-up of their pumps and recirculation of the foam liquid as part of their required maintenance program. Samples collected from the drain valve will, of course, be treated as bottom samples.

2.11.4 The Importance of Foam Liquid Sampling

It should be emphasized here, that if samples of foam liquid are sent to National's Technical Service Department on a regular basis, problems involving storage conditions can usually be detected and corrective measures recommended before the foam liquid is irreversibly damaged. Periodic sampling of foam liquid assures its ready status in a fire emergency.

2.11.5 Additional Technical Services

National's Technical Service Department is not limited to foam liquid analysis. While fire fighting foams find their main application in extinguishing flammable liquid fires, there are many other uses for foam liquids. As petrochemical processes and the products they produce become increasingly sophisticated, more and more applications for foam are being explored by the industry. Unique hazards require unique foams and special methods of application. Many non-flammable chemicals release caustic or toxic vapors. Specialized foams can be provided as vapor or fume suppressing agents. Some chemicals with vapor or flammability problems are violently reactive with water, the principal content of finished, expanded foam. Special techniques can be developed to attack these hazards. Our chemists and technicians are among the most knowledgeable and experienced in the industry. A modern laboratory complete with field test facility is devoted solely to the development and testing of foam agents. We are proud of National's record as a pioneer in the flammable liquid fire protection field, and are anxious and prepared to solve new problems born of advancing technology.

4.28 SWMU 28 - FIRE TRAINING EXERCISE AREA NUMBER 1

Unit Description

A fire training exercise is described in ADEC documents (1981a, 1981b). During the VSI, Chevron representatives described the nature and location of this fire training exercise as follows (PRC 1992b). A lit propane torch was used in conjunction with safety equipment to increase employee confidence in safety equipment. This training occurred at the southeast corner of the CRU. This is described as a small event, and no flammable materials were applied to soils.

Dates of Operation

This training exercise occurred once in June 1981.

Wastes Managed

Propane and water were used during this exercise. Wastes generated were gaseous and are expected to have dissipated by now.

History of Release/Release Controls

No release controls were used, although release to air may have occurred. An air permit was obtained from ADEC for a fire training exercise (ADEC 1981b).

Information Needs

The exact location of this SWMU should be provided on a map. No releases from this unit are expected to remain, so no further testing is recommended at this unit.

4.29 SWMU 29 - FIRE TRAINING EXERCISE AREA NUMBER 2

Unit Description

According to Chevron (1992d), this SWMU was an unlined pit south of the CRU. Every year, it was flooded with 50 gallons of diesel and water and set a fire. The fire was put out as a fire training exercise.

Dates of Operation

This training exercise was held annually from 1970 to 1980.

Wastes Managed

Some diesel and fire extinguishing material may remain in the soil matrix.

History of Release/Release Controls

No release controls are documented. An air permit was obtained from ADEC for a fire training exercise (ADEC 1981b). Activities at this SWMU probably resulted in a release to soils as well as air. Chevron plans surface soil sampling from this area (ENSR 1992c).

Information Needs

- Results from planned sampling and analysis of soils at this SWMU
- Description of any backfilling or soil removal which may have occurred

4.30 SWMU 30 - DISPOSAL AREA SOUTH OF CRU (Photograph 64)

Unit Description

A flat, graveled area used for disposal of facility equipment is south of the CRU and within the facility perimeter fence. This area was not mentioned in the Hart Crowser (1992a) report and may contain materials from the facility dismantling process.

3.2.22 Above-ground Fuel Tanks

Area Description

This area consists of the former locations of two, 300-500 gallon tanks of regular leaded and unleaded gasoline. The tanks were installed above a concrete containment pad and were surrounded by an 18" thick concrete wall.

Potential and Existing Sources/Types of Contamination

The potential that soil and groundwater contamination sourced from this area is highly unlikely.

Planned Course of Action; Phase II Assessment

No further sampling is planned in this area.

3.2.23 Fire Training Area

Area Description

This area was formerly an earthen pit in which fire-training exercises involving the use of diesel fuel were conducted. Once a year the pit was filled with water, and a 55 gallon drum of diesel fuel was pumped onto the surface of the water. This fuel was then ignited, and subsequently extinguished using "Special K" extinguisher (probable sodium bicarbonate). The water would then infilter into the ground, usually within a few hours.

Potential and Existing Sources/Types of Contamination

Unburned diesel fuel and dissolved hydrocarbons may have infiltered into soil at this location. No samples have been collected to date.

Planned Course of Action; Phase II Assessment

Samples will be collected from trench SS-5, following location of pit via airphotos analysis.

3.2.24 Crude Refining Unit

Area Description

This area is a complex, consisting of distillation towers, heat exchangers, pumps, a desalter, and furnaces. The crude unit is located on a concrete pad.

RCRA Information Needs (Cont'd)
SWMUs/AOCs on Chevron Alaskan Refinery
Kenai, Alaska

SWMU/AOC/ PAOC	Location	Unit Description (Narrative)	Dates of Operation	Operational Status	Waste Types	Waste Quantities	Waste Sources	Waste Disposition	Release Controls	Remarks
SWMU 26	Fire training area.	Unlined pit which was annually flooded with water and 50 gallons of diesel fuel. Fuel was ignited and fire was then extinguished using "Special K" (probably sodium bicarbonate).	Circa 1970 to 1980.	Abandoned.	Diesel, fire extinguisher.	On the order of 500 gallons of diesel fuel.	Fuel drums.	Still in place.	None	Pit was infilled after abandonment.
AOC 1	Wastewater treatment system (excluding designated SWMUs).	Boiler blowdown, east of 160t.	1963 to 1991.	Inactive.	Unknown.	Unknown.	Unknown.	Unknown.	None.	None.
AOC 2	Crude refining unit.	Series of pumps, heat exchangers, desalter, and furnaces.	1963 to 1991.	Inactive.	Crude oil and water.	Unknown.	Water stations, steam knockouts, and pumps.	Routed to API separator.	Monitored by operators.	1. Current concrete slab south of unit was not originally installed. 2. Prior to installation of slab extension, a large spill occurred south of the crude refining unit, east of the desalter.
AOC 3	Pipeline from dock to refinery	Numerous oil, water, steam, and condensate lines.	1963 to 1991.	Inactive.	Oil, refined products, and water.	Unknown.	Pipe leaks.	Still in place.	Spills recovered with vacuum trucks.	1. Possibly damaged by 1964 earthquake. 2. Two known leak incidents on the KPL site; under first bridge south of Chevron property and at stanchion #1(

APPENDIX B

PER- AND POLYFLUOROALKYL SUBSTANCES SAMPLING RESULTS SUMMARY LETTER

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ENVIRONMENT

Date:
November 4, 2021

Contact:
Steve Rice

Phone:
303.710.7537

Email:
Steve.Rice@arcadis.com

Our ref:
30099365

Subject:
Per- and Polyfluoroalkyl Substances Sampling Results Summary Letter
Former Chevron Kenai Refinery
Nikiski, Alaska

Dear Mr. Campbell:

On behalf of Chevron Environmental Management Company (CEMC), Arcadis U.S., Inc. (Arcadis) has prepared this *Per- and Polyfluoroalkyl Substances Sampling Results Summary Letter* to present groundwater analytical results obtained in general accordance with the *Per- and Polyfluoroalkyl Substances Sampling Work Plan* (Work Plan; Arcadis 2021b) for the former Chevron Kenai Refinery located in Nikiski, Alaska (Site; **Figure 1**). The Work Plan was submitted to the Alaska Department of Environmental Conservation (ADEC) on June 30, 2021, and subsequently conditionally approved by ADEC in a letter dated July 29, 2021 (ADEC 2021; **Attachment 1**). The Work Plan was prepared as requested by ADEC in a letter dated August 1, 2018 (ADEC 2018a) to sample groundwater for per- and polyfluoroalkyl substance (PFAS) compounds in the historical fire training area (FTA) at the Site. Trihydro Corporation (Trihydro) initially developed a preliminary PFAS Sampling Work Plan in 2018, which was subsequently approved with conditions on September 24, 2018 (ADEC 2018b). At the request of CEMC, Arcadis revised the preliminary Trihydro PFAS Sampling Work Plan to include additional details on PFAS sampling quality assurance and quality control procedures and resubmitted it for ADEC review and approval. The Work Plan included such details and incorporated ADEC comments regarding the sampling.

Groundwater Gauging

Groundwater gauging and sampling activities were conducted on August 13, 2021. Four monitoring wells (CMW-12, CMW-17, CMW-56, and CMW-28R) were gauged with a water level meter before sampling. The generalized groundwater flow direction is to the southwest towards Cook Inlet. Based on the understanding of groundwater flow, groundwater monitoring well CMW-12 is upgradient of the FTA. The approximate location of the FTA is shown on Figure 2. Depth to groundwater ranged from 56.30 feet below top of casing (CMW-12) to 74.70 feet below top of casing (CMW-28R). No light non-aqueous phase liquid (LNAPL) was observed in the four wells. The monitoring well gauging data is summarized in **Table 1**.

Groundwater Sampling

Groundwater samples were collected from the four wells using low-flow sampling techniques in accordance with the Arcadis guidance on PFAS Sampling Procedures and Low-Flow Groundwater Purging for Monitoring Wells (Arcadis 2018), Arcadis' PFAS Sampling and Analysis Guidance for Chevron Corporation (Arcadis 2021a), and a CEMC-developed Quality Assurance Project Plan (QAPP). During monitoring well purging, groundwater was collected in a flow through cell using a bladder pump and new high-density polyethylene and silicone tubing. Monitoring parameters, including pH, temperature, specific conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity, were recorded in 5-minute intervals (per United States Environmental Protection Agency [USEPA] low-flow sampling guidance) until the parameters stabilized. Groundwater sampling logs are provided in **Attachment 2**. The flow through cell and associated tubing were disconnected after parameter stabilization, and groundwater samples were then collected directly from the pump discharge into laboratory-supplied containers. A matrix spike (MS), matrix spike duplicate (MSD), and duplicate sample (with blind identification on the laboratory chain-of-custody) were collected at CMW-12 in separate bottles for each analysis. Equipment blanks (EBs) were collected by pouring PFAS-free water provided by the laboratory down the decontaminated depth to water meter into a laboratory-supplied container before the equipment's first use and in between sample locations. Equipment blanks were also collected by pouring laboratory-supplied PFAS-free water through the decontaminated stainless steel bladder pump and into a laboratory-supplied sample container before the equipment's first use and after each of the first three samples were collected. The increase in the number of EBs collected was a deviation from the approved Work Plan (Arcadis 2021b) but was conducted in the field to ensure that appropriate decontamination measures of reusable equipment were being implemented. Additionally, a field blank was collected for analysis using laboratory-supplied (and laboratory-verified) PFAS-free water. The field blank was collected by pouring laboratory-supplied PFAS-free water from its source container into a laboratory-supplied container. All samples were submitted to Eurofins Lancaster Laboratories Env, LLC (ELLE) in Lancaster, PA, an ADEC-certified laboratory, and analyzed for the ADEC-requested 18-analyte PFAS list by USEPA Method 537.1 modified. The ADEC-requested 18-analyte PFAS list corresponds to the full suite of PFAS in USEPA Method 537.1 Version 1.0 as of November 2018.

Groundwater Results

The laboratory analytical results and stabilized field parameters are summarized in **Table 2**, and the laboratory reports are included as **Attachment 3**. A Data Usability Summary Report (DUSR) prepared by Environmental Standards, Inc. (ESI) is included as **Attachment 4**. The validated data is included in **Table 2**.

The DUSR concluded that the results were useable. All results (see Table 2) were below the reporting limit and were thus estimated ("J" flag), due to results reported between the sample-specific method detection limit and reporting limit. Additional DUSR conclusions included J-flag labels due to excursions in pre-extracted internal standard recoveries, analyte qualitative identification, and/or due to extraction holding time exceedance. ELLE re-extracted and reanalyzed samples from CMW-17 and CMW-28R due to target analytes being detected in the method blank of the first extraction. Unfortunately, the necessary time for re-extraction meant the second extraction was performed outside of the QAPP and method-prescribed holding time. In the DUSR, ESI compared the original and second analysis PFAS results to evaluate precision using the field duplicate criteria. Acceptable precision was observed between the original and second analysis results, and ESI concluded that the extractions were consistent due to positive PFAS result concentrations below the RDL. Therefore, the results from the second analysis for CMW-17 and CMW-28R are J-flagged but considered valid and are presented in **Table 2**. No PFAS analytes were

detected in the EBs or field blank. The duplicate sample collected from CMW-12 displayed consistent results with the parent sample. The MS/MSD recoveries were within laboratory acceptance limits.

As shown in Table 2, low concentrations (below the reporting limit, but above the sample-specific method detection limit) of three or four constituents were estimated (and J-flagged) in the four wells. However, the sum of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) in the groundwater samples from the four monitoring wells were orders of magnitude below ADEC's Groundwater Action Level of 70 nanograms per liter (ng/L) for combined PFOS and PFOA. In fact, estimated results were all below the reporting limits (maximum PFOA of 0.7J ng/L in CMW-12, and maximum PFOS of 0.6J ng/L in CMW-17).

Please let CEMC or the Arcadis project team know if you have any questions regarding the results of the report.

Sincerely,

Arcadis U.S., Inc.

Steve Rice
Project Manager

Copies:

Mr. James Kiernan, CEMC
Mr. Atique ur Rehman, CEMC

Enclosures:

Tables

1 Groundwater Gauging Results
2 PFAS Groundwater Analytical Results

Figures

1 Site Location Map
2 Site Map with Sampling Locations

Attachments

1 ADEC Conditional Approval Letter dated July 29, 2021
2 Groundwater Sampling Logs
3 Laboratory Analytical Reports
4 Data Usability Summary Report

References

ADEC. 2018a. RE: Chevron USA Refinery-Nikiski 2017 Annual Site Status Report, ADEC Hazard ID: 313, ADEC Review Comments & Work Plan Requirement. August 1.

ADEC. 2018b. RE: Chevron USA Refinery-Nikiski 2018 Southern Plume Well Installation and PFAS Sampling Work Plan, ADEC Hazard ID: 313, ADEC Conditional Approval. September 24.

ADEC. 2021. RE: Chevron USA Refinery-Nikiski Per- and Polyfluoroalkyl Substances Sampling Work Plan, ADEC Hazard ID: 313, ADEC Conditional Approval – Report Required. July 29.

Arcadis. 2018. PFAS Sampling Procedures and Low-Flow Groundwater Purging for Monitoring Wells. June 19.

Arcadis. 2021a. Poly- and Perfluoroalkyl Substance (PFAS) Sampling and Analysis Guidance for Chevron Corporation. Revision 4. June 25.

Arcadis. 2021b. Per- and Polyfluoroalkyl Substances Sampling Work Plan, Former Chevron Kenai Refinery, Nikiski, AK, June 30.

TABLES

Table 1
Groundwater Gauging Results
Former Chevron Kenai Refinery
Nikiski, Alaska

Monitoring Well Name	Date	Depth to Water (feet btoc)	Total Well Depth (feet btoc)
CMW-12	8/13/2021	56.30	69.85
CMW-17	8/13/2021	66.05	77.18
CMW-56	8/13/2021	74.35	79.60
CMW-28R	8/13/2021	74.70	79.99

Note:
btoc = below top of casing

Table 2
PFAS Groundwater Analytical Results
Former Chevron Kenai Refinery
Nikiski, Alaska

Well Name	CMW-12	CMW-17	CMW-56	CMW-28R	EB-1	EB-2	EB-3	EB-4	EB-5	EB-6	EB-7	EB-8	FB-1
Sample Type	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Field Blank
Sample Identification	CMW-12-GW-210813	CMW-17-GW-210813	CMW-56-GW-210813	CMW-28-GW-210813	EB-1-W-2108	EB-2-W-2108	EB-3-W-2108	EB-4-W-2108	EB-5-W-2108	EB-6-W-2108	EB-7-W-2108	EB-8-W-2108	FB-W-2108
Laboratory Identification	410-51537-1	410-51537-2	410-51537-3	410-51537-4	410-51558-1	410-51558-2	410-51558-3	410-51558-4	410-51558-5	410-51558-6	410-51558-7	410-51558-8	410-51558-9
Sample Date	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021	8/13/2021
Method: 537.1 (modified) - Per- and Polyfluoroalkyl Substances (PFAS; ng/L)													
Perfluorohexanoic acid (PFHxA)	**0.94 J [1.1 J]**	<2 J	**0.94 J**	**1.4 J**	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluoroheptanoic acid (PFHpA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorooctanoic acid (PFOA)	**0.70 J [0.67 J]**	**0.66 J**	**0.81 J**	**0.85 J**	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorononanoic acid (PFNA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorodecanoic acid (PFDA)	<1.8 [<1.8]	<2 J	**0.56 J**	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorotridecanoic acid (PFTriA/PFTrDA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorotetradecanoic acid (PFTA/PFTeDA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorobutanesulfonic acid (PFBS)	**0.55 J [0.65 J]**	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorohexanesulfonic acid (PFHxS)	**1.1 J [1.2 J]**	**0.74 J**	**1.7 J**	**1.6 J**	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorooctanesulfonic acid (PFOS)	<1.8 [<1.8]	**0.6 J**	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	<2.7 [<2.7]	<3.1J	<3	<2.8 J	<3.1	<3.1	<3.0	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluorododecanoic acid (PFDoA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
HFPODA	<2.7 [<2.7]	<3.1J	<3	<2.8 J	<3.1	<3.1	<3.0	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
9Cl-PF3ONS	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
11Cl-PF3OUdS	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
DONA	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Perfluoroundecanoic acid (PFUA/PFUdA)	<1.8 [<1.8]	<2 J	<2	<1.9 J	<2.0	<2.1	<2.0	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Field Parameters													
Temperature (°C)	6.7	9	9.3	9.6	--	--	--	--	--	--	--	--	--
pH	6.99	6.33	6.47	6.50	--	--	--	--	--	--	--	--	--
Oxidation Reduction Potential (mV)	14.7	-218.1	-38.1	-48.2	--	--	--	--	--	--	--	--	--
Specific Conductance (mS/cm)	288.7	0.423	437.4	357.9	--	--	--	--	--	--	--	--	--
Turbidity (NTU)	0.00	0.00	0.00	0.00	--	--	--	--	--	--	--	--	--
Dissolved Oxygen (mg/L)	2.06	12.82	2.01	0.28	--	--	--	--	--	--	--	--	--

Notes:
Stabilized field parameters collected using flow through cell before collecting groundwater samples.
Equipment blank - 1, 3, 5, and 7 were collected by pouring laboratory supplied PFAS-free water through the bladder pump and into a laboratory-supplied sample container.
Equipment blank - 2, 4, 6, and 8 were collected by pouring PFAS-free water down the decontaminated depth to water meter into a laboratory-supplied sample container.
Field blank-1 was collected by pouring laboratory supplied PFAS-free water into a laboratory supplied container.
Bold results indicate a concentration measured at or above the method detection limit.

Acronyms and Symbols:
< = Concentration less than the reporting detection limit.
* = LCS or LCSD is outside acceptance limits.
[ ] = Duplicate groundwater sample results
°C = degrees Celsius
EB = equipment blank
FB = field blank
HDPE = high-density polyethylene
mg/L = milligram per liter
mS/cm = milliSiemens per centimeter
mV = millivolt
ng/L = nanogram per liter
NTU = nephelometric turbidity units
SB = Source Blank (referred to as Field Blank in text)

Qualifiers:
J = The concentration is an approximate value because it is less than the reporting limit but greater than or equal to the method detection limit.

FIGURES

TOPOGRAPHIC SOURCE:
U.S. Geological Survey
https://ngmdb.usgs.gov/topoview/

REFERENCES:
USGS Topographic Quadrangle:
Seal Beach, California
7.5-Minute Series

PROJECTIONS:
NAD 1983 State Plane California VI Feet

0 1,000 2,000
SCALE IN FEET

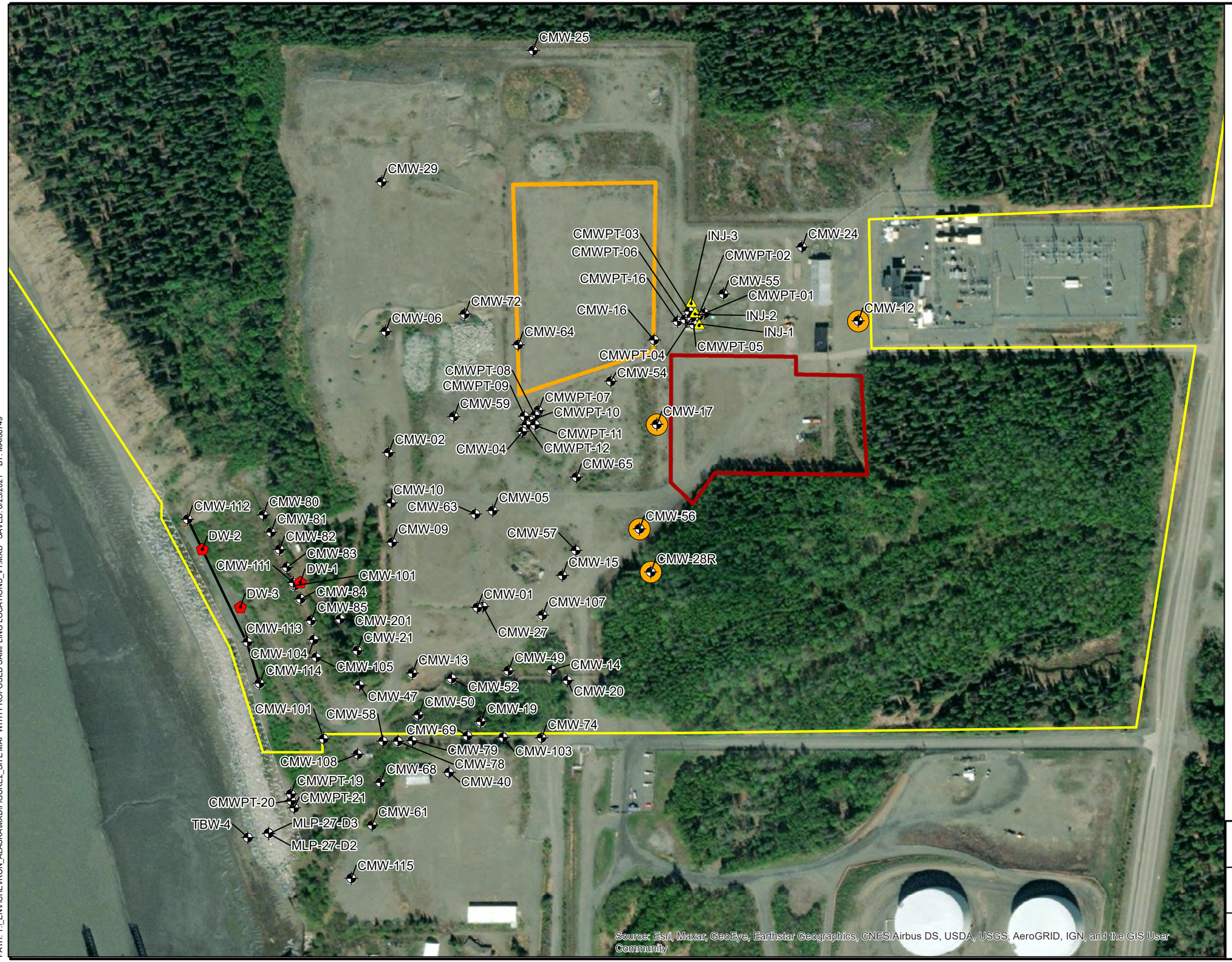
FORMER CHEVRON KENAI REFINERY
55310 CHEVRON RD
KENAI, AK 99611

SITE LOCATION MAP

ARCADIS

FIGURE
1

User Name: mai00749 DATE: 6/25/2021 3:19:32 PM
PATH: T:_ENV\Chevron_Alaska\MXD\Figure1_Site_Location_Map.mxd



Legend

- MONITORING WELL
- EXTRACTION WELL
- INJECTION WELL
- MONITORING WELL SAMPLED FOR PFAS COMPOUNDS
- SLURRY WALL
- PROPERTY BOUNDARY
- ROCK REVETMENT (COMPLETED 2010 - 2012)
- AS-BUILT LAND TREATMENT UNIT (4.1 ACRES)
- FORMER FIRE TRAINING AREA (APPROXIMATE LOCATION)

N

0 500 1,000

SCALE IN FEET

FORMER CHEVRON KENAI REFINERY
CHEVRON RD
KENAI, AK 99611

SITE MAP WITH SAMPLING LOCATIONS

ARCADIS

FIGURE 2

CITY:(KNOXVILLE) DIV/GROUP:(ENV/GIS) LD:(B.ALTOM) PIC:(M.FLEISCHNER) PM:(A.JUST) TM:(M.MILLER) PROJECT: B0048212.0000
PATH: T:_ENV\CHEVRON_ALASKA\MXD\FIGURE2_SITE MAP WITH PROPOSED SAMPLING LOCATIONS_V1.MXD SAVED: 6/25/2021 BY: MAI00749

ATTACHMENT 1

ADEC Conditional Approval Letter dated July 29, 2021

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

43335 Kalifornsky Beach Road, Suite 11
Soldotna, Alaska 99669
Phone: 907-262-5210
Fax: 907-262-2294
dec.alaska.gov

File: 2323.38.006

July 29, 2021

James Kiernan
Chevron Environmental Management Company
6101 Bollinger Canyon C2102
San Ramon, California 94583

Re: Chevron USA Refinery-Nikiski
Per and Polyfluoroalkyl Substances Work Plan
ADEC Hazard ID: 313
ADEC Conditional Approval – Report Required

Mr. Kiernan,

The Alaska Department of Environmental Conservation Contaminated Sites Program (ADEC), would like to thank you for submitting the June 30, 2021 Per and Polyfluoroalkyl Substances Work Plan. This work plan was prepared by Arcadis and was received in our office on June 30, 2021. The work plan was approved on July 27, 2021 approved with the following conditions:

1) The work plan states that monitoring wells will not be sampled if LNAPL is present in the well. Our understanding of this scenario is that PFAS can partition into LNAPLs and preferentially to the layer between the product and water, water and air, etc. Sampling the product and the interface is possible and preferable to no sample. Alternatively, sampling additional down gradient wells is an option.
2) Alaska requires that the following compounds be reported for water samples collected and analyzed by method USEPA 537:

PFAS Analytes to be Reported

Chemical Name	Acronym	CAS Number
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorodecanoic acid	PFDA	335-76-2
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluorononanoic acid	PFNA	375-95-1
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorotetradecanoic acid	PFTA	376-06-7
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluoroundecanoic acid	PFUnA	2058-94-8
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4

If you have questions about this letter, or any other aspect of this project, please contact me at (907) 262-3412, or via e-mail at peter.campbell@alaska.gov

Sincerely,

Peter Campbell
Environmental Program Specialist

Cc: Cassidy Birdsong, Trihydro Corporation
Steve Rice, Arcadis

ATTACHMENT 2

Groundwater Gauging and Sampling Logs

Groundwater Sampling Form

ARCADIS

Project Number	30099365	**Well ID**	CMW-12			**Date**	08/13/2021
Project Name/Location	Former Kenai Refinery		**Weather(°F)**	°, , winds at mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	3	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	56.30	**Total Depth (ft-bmp)**	69.85	**Water Column (ft)**	13.55	**Gallons in Well**	4.95
Purge Start	08:15	**Pump Intake (ft-bmp)**	63	**Purge Method**	Low-Flow	**Purge Equipment**	
Purge End	08:35	**Volumes Purged**	0.11	**Sample ID**	CMW-12-GW-210813	**Sampled by**	Anthony Garcia
Sample Time	08:40	**Gallons Purged**	0.53	**Replicate/ Code No.**	BD-1-GW-210813	**Sample Type**	

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:20	0	0	100	56.31	0.13	7	287.5	1.06	1.25	6.9	16.9	--	--
08:25	5	5	100	56.31	0.26	7	287.8	1.01	2.16	6.8	15.8	--	--
08:30	5	10	100	56.31	0.40	6.99	288.1	0	1.98	6.7	15	--	--
08:35	5	15	100	56.31	0.53	6.99	288.7	0	2.06	6.7	14.7		

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Well Locked at Arrival:

Condition of Well:

Well Locked at Departure:

Well Completion: NA

Key Number To Well: N/A

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30099365	**Well ID**	CMW-17			**Date**	08/13/2021
Project Name/Location	Former Kenai Refinery		**Weather(°F)**	°, , winds at mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.05	**Total Depth (ft-bmp)**	77.18	**Water Column (ft)**	11.13	**Gallons in Well**	7.23
Purge Start	11:26	**Pump Intake (ft-bmp)**	73	**Purge Method**	Low-Flow	**Purge Equipment**	
Purge End	11:05	**Volumes Purged**	0.07	**Sample ID**	CMW-17-GW-210813	**Sampled by**	Anthony Garcia
Sample Time	11:50	**Gallons Purged**	0.53	**Replicate/ Code No.**		**Sample Type**	

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:31	0	0	100	66.09	0.13	6.33	0.6	0.05	13.46	9	-216.5	--	--
11:36	5	5	100	66.09	0.26	6.33	0.6	0	13.01	8.8	-219.1	--	--
11:41	5	10	100	66.09	0.40	6.34	0.6	0	12.88	9	-218.4	--	--
11:46	5	15	100	66.09	0.53	6.33	0.6	0	12.82	9	-218.1		

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Well Locked at Arrival:

Condition of Well:

Well Locked at Departure:

Well Completion: NA

Key Number To Well: N/A

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30099365	**Well ID**	CMW-28R			**Date**	08/13/2021
Project Name/Location	Former Kenai Refinery		**Weather(°F)**	°, , winds at mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	74.70	**Total Depth (ft-bmp)**	79.99	**Water Column (ft)**	5.29	**Gallons in Well**	0.86
Purge Start	15:33	**Pump Intake (ft-bmp)**	77	**Purge Method**	Low-Flow	**Purge Equipment**	
Purge End	16:08	**Volumes Purged**	1.08	**Sample ID**	CMW-28R-GW-210813	**Sampled by**	Anthony Garcia
Sample Time	16:11	**Gallons Purged**	0.92	**Replicate/ Code No.**		**Sample Type**	

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:38	0	0	100	74.71	0.13	6.55	398	4.77	0.34	10	-40	--	--
15:43	5	5	100	74.71	0.26	6.51	397.4	3.65	0.31	9.6	-45	--	--
15:48	5	10	100	74.71	0.40	6.52	398	2.04	0.3	9.6	-45.5	--	--
15:53	5	15	100	74.71	0.53	6.51	397.7	0.69	0.29	9.6	-46.2	--	--
15:58	5	20	100	74.71	0.66	6.51	398	0	0.29	9.7	-47	--	--
16:03	5	25	100	74.71	0.79	6.5	398.1	0	0.28	9.6	-47.9	--	--
16:08	5	30	100	74.71	0.92	6.5	397.9	0	0.28	9.6	-48.2		

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Condition of Well:

Well Completion: NA

Well Locked at Arrival:

Well Locked at Departure:

Key Number To Well: N/A

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30099365	**Well ID**	CMW-56			**Date**	08/13/2021
Project Name/Location	Former Kenai Refinery		**Weather(°F)**	°, , winds at mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	74.35	**Total Depth (ft-bmp)**	79.6	**Water Column (ft)**	5.25	**Gallons in Well**	0.85
Purge Start	13:18	**Pump Intake (ft-bmp)**	77	**Purge Method**	Low-Flow	**Purge Equipment**	
Purge End	13:48	**Volumes Purged**	0.93	**Sample ID**	CMW-56-GW-210813	**Sampled by**	Anthony Garcia
Sample Time	13:52	**Gallons Purged**	0.79	**Replicate/ Code No.**		**Sample Type**	

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:23	0	0	100	74.40	0.13	6.48	449.1	4.18	1.27	9.8	-40.6	--	--
13:28	5	5	100	74.40	0.26	6.48	434.6	2.63	1.94	9.4	-40.4	--	--
13:33	5	10	100	74.40	0.40	6.48	437.5	0.81	2.07	9.4	-38.9	--	--
13:38	5	15	100	74.40	0.53	6.48	437.1	0	2.05	9.3	-38.8	--	--
13:43	5	20	100	74.40	0.66	6.47	436.3	0	2.08	9.3	-38	--	--
13:48	5	25	100	74.40	0.79	6.47	437.4	0	2.01	9.3	-38.1		

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	NA

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47
1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Well Locked at Arrival:

Condition of Well:

Well Locked at Departure:

Well Completion: NA

Key Number To Well: N/A

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

ATTACHMENT 3

Laboratory Analytical Report

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-51537-1
Client Project/Site: CEMC Former Kenai Refinery

For:
ARCADIS U.S. Inc
11001 West 120th Avenue
Broomfield, Colorado 80021

Attn: Steve Rice

Authorized for release by:
9/7/2021 9:57:30 PM

Amek Carter, Project Manager
(717)556-7252
Loran.Carter@eurofinset.com

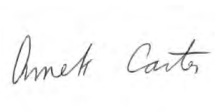
Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



Amek Carter
Project Manager
9/7/2021 9:57:30 PM

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 410-51537-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-51537-1

Receipt
The samples were received on 8/17/2021 10:32 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

PFAS
Method PFC_IDA: Target analyte(s) were detected in the method blank associated with the following samples: CMW-17-GW-210813 (410-51537-2) and CMW-28-GW-210813 (410-51537-4). The following action was taken: This sample(s) was re-extracted outside the required holding time and target analyte(s) were not detected in the re-extracted method blank.

Method PFC_IDA: Reporting limits were raised for the following sample: CMW-17-GW-210813 (410-51537-2). due to limited sample volume.

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

Detection Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Client Sample ID: CMW-12-GW-210813 — Lab Sample ID: 410-51537-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.94	J	1.8	0.44	ng/L	1		537 IDA	Total/NA
Perfluorooctanoic acid	0.70	J	1.8	0.44	ng/L	1		537 IDA	Total/NA
Perfluorobutanesulfonic acid	0.55	J	1.8	0.44	ng/L	1		537 IDA	Total/NA
Perfluorohexanesulfonic acid	1.1	J	1.8	0.44	ng/L	1		537 IDA	Total/NA

Client Sample ID: CMW-17-GW-210813 — Lab Sample ID: 410-51537-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid	0.67	J	2.0	0.51	ng/L	1		537 IDA	Total/NA
Perfluorohexanesulfonic acid	0.94	J	2.0	0.51	ng/L	1		537 IDA	Total/NA
Perfluorooctanesulfonic acid	0.64	J B	2.0	0.51	ng/L	1		537 IDA	Total/NA

Client Sample ID: CMW-56-GW-210813 — Lab Sample ID: 410-51537-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.94	J	2.0	0.50	ng/L	1		537 IDA	Total/NA
Perfluorooctanoic acid	0.81	J	2.0	0.50	ng/L	1		537 IDA	Total/NA
Perfluorodecanoic acid	0.56	J	2.0	0.50	ng/L	1		537 IDA	Total/NA
Perfluorohexanesulfonic acid	1.7	J	2.0	0.50	ng/L	1		537 IDA	Total/NA

Client Sample ID: CMW-28-GW-210813 — Lab Sample ID: 410-51537-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	1.5	J	1.9	0.47	ng/L	1		537 IDA	Total/NA
Perfluorooctanoic acid	0.89	J	1.9	0.47	ng/L	1		537 IDA	Total/NA
Perfluorohexanesulfonic acid	1.8	J	1.9	0.47	ng/L	1		537 IDA	Total/NA
Perfluorooctanesulfonic acid	0.59	J B	1.9	0.47	ng/L	1		537 IDA	Total/NA

Client Sample ID: BD-1-GW-210813 — Lab Sample ID: 410-51537-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	1.1	J	1.8	0.45	ng/L	1		537 IDA	Total/NA
Perfluorooctanoic acid	0.67	J	1.8	0.45	ng/L	1		537 IDA	Total/NA
Perfluorobutanesulfonic acid	0.65	J	1.8	0.45	ng/L	1		537 IDA	Total/NA
Perfluorohexanesulfonic acid	1.2	J	1.8	0.45	ng/L	1		537 IDA	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: CMW-12-GW-210813

Lab Sample ID: 410-51537-1

Date Collected: 08/13/21 08:40

Matrix: Water

Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	**0.94**	**J**	1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluoroheptanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorooctanoic acid	**0.70**	**J**	1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorononanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorodecanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorotridecanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorotetradecanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorobutanesulfonic acid	**0.55**	**J**	1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorohexanesulfonic acid	**1.1**	**J**	1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorooctanesulfonic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
NEtFOSAA	ND		2.7	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
NMeFOSAA	ND		1.8	0.53	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluorododecanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
HFPODA	ND		2.7	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
9Cl-PF3ONS	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
11Cl-PF3OUdS	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
DONA	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1
Perfluoroundecanoic acid	ND		1.8	0.44	ng/L		08/20/21 07:20	09/01/21 00:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*87*		*31 - 142*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C4 PFHpA	*87*		*30 - 144*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C8 PFOA	*94*		*49 - 127*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C9 PFNA	*89*		*47 - 136*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C6 PFDA	*90*		*47 - 128*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C2-PFDoDA	*71*		*28 - 136*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C2 PFTeDA	*73*		*10 - 144*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C3 PFBS	*104*		*19 - 178*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C3 PFHxS	*86*		*32 - 145*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C8 PFOS	*85*		*49 - 126*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
d3-NMeFOSAA	*84*		*32 - 151*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
d5-NEtFOSAA	*82*		*37 - 164*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C3 HFPO-DA	*93*		*20 - 153*	*08/20/21 07:20*	*09/01/21 00:13*	*1*
13C7 PFUnA	*84*		*40 - 135*	*08/20/21 07:20*	*09/01/21 00:13*	*1*

Client Sample ID: CMW-17-GW-210813

Lab Sample ID: 410-51537-2

Date Collected: 08/13/21 11:50

Matrix: Water

Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluoroheptanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorooctanoic acid	**0.67**	**J**	2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorononanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorodecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorotridecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorotetradecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorobutanesulfonic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorohexanesulfonic acid	**0.94**	**J**	2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorooctanesulfonic acid	**0.64**	**J B**	2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1

Client Sample ID: CMW-17-GW-210813
Lab Sample ID: 410-51537-2

Date Collected: 08/13/21 11:50
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		3.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
NMeFOSAA	ND		2.0	0.61	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluorododecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
HFPODA	ND		3.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
9Cl-PF3ONS	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
11Cl-PF3OUdS	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
DONA	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1
Perfluoroundecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 00:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*79*		*31 - 142*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C4 PFHpA	*81*		*30 - 144*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C8 PFOA	*88*		*49 - 127*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C9 PFNA	*90*		*47 - 136*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C6 PFDA	*94*		*47 - 128*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C2-PFDoDA	*77*		*28 - 136*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C2 PFTeDA	*64*		*10 - 144*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C3 PFBS	*116*		*19 - 178*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C3 PFHxS	*80*		*32 - 145*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C8 PFOS	*85*		*49 - 126*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
d3-NMeFOSAA	*83*		*32 - 151*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
d5-NEtFOSAA	*79*		*37 - 164*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C3 HFPO-DA	*67*		*20 - 153*	*08/20/21 07:20*	*09/01/21 00:47*	*1*
13C7 PFUnA	*90*		*40 - 135*	*08/20/21 07:20*	*09/01/21 00:47*	*1*

Client Sample ID: CMW-56-GW-210813
Lab Sample ID: 410-51537-3

Date Collected: 08/13/21 13:52
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	**0.94**	**J**	2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorooctanoic acid	**0.81**	**J**	2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorodecanoic acid	**0.56**	**J**	2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorohexanesulfonic acid	**1.7**	**J**	2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
NEtFOSAA	ND		3.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
NMeFOSAA	ND		2.0	0.61	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
HFPODA	ND		3.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
9Cl-PF3ONS	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
11Cl-PF3OUdS	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
DONA	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 00:58	1

Client Sample ID: CMW-56-GW-210813
Lab Sample ID: 410-51537-3

Date Collected: 08/13/21 13:52
Matrix: Water
Date Received: 08/17/21 10:32

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	91		31 - 142	08/20/21 07:20	09/01/21 00:58	1
13C4 PFHpA	95		30 - 144	08/20/21 07:20	09/01/21 00:58	1
13C8 PFOA	99		49 - 127	08/20/21 07:20	09/01/21 00:58	1
13C9 PFNA	101		47 - 136	08/20/21 07:20	09/01/21 00:58	1
13C6 PFDA	98		47 - 128	08/20/21 07:20	09/01/21 00:58	1
13C2-PFDoDA	80		28 - 136	08/20/21 07:20	09/01/21 00:58	1
13C2 PFTeDA	78		10 - 144	08/20/21 07:20	09/01/21 00:58	1
13C3 PFBS	116		19 - 178	08/20/21 07:20	09/01/21 00:58	1
13C3 PFHxS	90		32 - 145	08/20/21 07:20	09/01/21 00:58	1
13C8 PFOS	94		49 - 126	08/20/21 07:20	09/01/21 00:58	1
d3-NMeFOSAA	89		32 - 151	08/20/21 07:20	09/01/21 00:58	1
d5-NEtFOSAA	101		37 - 164	08/20/21 07:20	09/01/21 00:58	1
13C3 HFPO-DA	77		20 - 153	08/20/21 07:20	09/01/21 00:58	1
13C7 PFUnA	96		40 - 135	08/20/21 07:20	09/01/21 00:58	1

Client Sample ID: CMW-28-GW-210813
Lab Sample ID: 410-51537-4

Date Collected: 08/13/21 16:11
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	**1.5**	**J**	1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluoroheptanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorooctanoic acid	**0.89**	**J**	1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorononanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorodecanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorotridecanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorotetradecanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorobutanesulfonic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorohexanesulfonic acid	**1.8**	**J**	1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorooctanesulfonic acid	**0.59**	**J B**	1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
NEtFOSAA	ND		2.8	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
NMeFOSAA	ND		1.9	0.56	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluorododecanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
HFPODA	ND		2.8	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
9Cl-PF3ONS	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
11Cl-PF3OUdS	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
DONA	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1
Perfluoroundecanoic acid	ND		1.9	0.47	ng/L		08/20/21 07:20	09/01/21 01:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	84		31 - 142	08/20/21 07:20	09/01/21 01:09	1
13C4 PFHpA	87		30 - 144	08/20/21 07:20	09/01/21 01:09	1
13C8 PFOA	95		49 - 127	08/20/21 07:20	09/01/21 01:09	1
13C9 PFNA	97		47 - 136	08/20/21 07:20	09/01/21 01:09	1
13C6 PFDA	93		47 - 128	08/20/21 07:20	09/01/21 01:09	1
13C2-PFDoDA	78		28 - 136	08/20/21 07:20	09/01/21 01:09	1
13C2 PFTeDA	63		10 - 144	08/20/21 07:20	09/01/21 01:09	1
13C3 PFBS	109		19 - 178	08/20/21 07:20	09/01/21 01:09	1
13C3 PFHxS	87		32 - 145	08/20/21 07:20	09/01/21 01:09	1
13C8 PFOS	93		49 - 126	08/20/21 07:20	09/01/21 01:09	1
d3-NMeFOSAA	85		32 - 151	08/20/21 07:20	09/01/21 01:09	1

Client Sample ID: CMW-28-GW-210813
Lab Sample ID: 410-51537-4

Date Collected: 08/13/21 16:11
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	83		37 - 164	08/20/21 07:20	09/01/21 01:09	1
13C3 HFPO-DA	78		20 - 153	08/20/21 07:20	09/01/21 01:09	1
13C7 PFUnA	90		40 - 135	08/20/21 07:20	09/01/21 01:09	1

Client Sample ID: BD-1-GW-210813
Lab Sample ID: 410-51537-5

Date Collected: 08/13/21 00:00
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	**1.1**	**J**	1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorooctanoic acid	**0.67**	**J**	1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorobutanesulfonic acid	**0.65**	**J**	1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorohexanesulfonic acid	**1.2**	**J**	1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	09/01/21 01:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	86		31 - 142	08/20/21 07:20	09/01/21 01:20	1
13C4 PFHpA	91		30 - 144	08/20/21 07:20	09/01/21 01:20	1
13C8 PFOA	89		49 - 127	08/20/21 07:20	09/01/21 01:20	1
13C9 PFNA	95		47 - 136	08/20/21 07:20	09/01/21 01:20	1
13C6 PFDA	84		47 - 128	08/20/21 07:20	09/01/21 01:20	1
13C2-PFDoDA	72		28 - 136	08/20/21 07:20	09/01/21 01:20	1
13C2 PFTeDA	69		10 - 144	08/20/21 07:20	09/01/21 01:20	1
13C3 PFBS	101		19 - 178	08/20/21 07:20	09/01/21 01:20	1
13C3 PFHxS	86		32 - 145	08/20/21 07:20	09/01/21 01:20	1
13C8 PFOS	91		49 - 126	08/20/21 07:20	09/01/21 01:20	1
d3-NMeFOSAA	81		32 - 151	08/20/21 07:20	09/01/21 01:20	1
d5-NEtFOSAA	81		37 - 164	08/20/21 07:20	09/01/21 01:20	1
13C3 HFPO-DA	105		20 - 153	08/20/21 07:20	09/01/21 01:20	1
13C7 PFUnA	83		40 - 135	08/20/21 07:20	09/01/21 01:20	1

Isotope Dilution Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Method: 537 IDA - EPA 537 Isotope Dilution

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		13C5PHA	C4PFHA	C8PFOA	C9PFNA	C6PFDA	PFDoDA	PFTDA	C3PFBS
Lab Sample ID	Client Sample ID	(31-142)	(30-144)	(49-127)	(47-136)	(47-128)	(28-136)	(10-144)	(19-178)
410-51537-1	CMW-12-GW-210813	87	87	94	89	90	71	73	104
410-51537-1 MS	CMW-12-GW-210813	84	86	92	89	86	73	71	104
410-51537-1 MSD	CMW-12-GW-210813	86	88	93	92	89	75	75	113
410-51537-2	CMW-17-GW-210813	79	81	88	90	94	77	64	116
410-51537-3	CMW-56-GW-210813	91	95	99	101	98	80	78	116
410-51537-4	CMW-28-GW-210813	84	87	95	97	93	78	63	109
410-51537-5	BD-1-GW-210813	86	91	89	95	84	72	69	101
LCS 410-162732/2-A	Lab Control Sample	87	87	91	89	86	82	78	98
MB 410-162732/1-A	Method Blank	82	85	92	88	88	85	81	99

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		C3PFHS	C8PFOS	d3NMFOS	d5NEFOS	HFPODA	13C7PUA		
Lab Sample ID	Client Sample ID	(32-145)	(49-126)	(32-151)	(37-164)	(20-153)	(40-135)		
410-51537-1	CMW-12-GW-210813	86	85	84	82	93	84		
410-51537-1 MS	CMW-12-GW-210813	84	87	87	86	81	85		
410-51537-1 MSD	CMW-12-GW-210813	86	91	86	84	87	89		
410-51537-2	CMW-17-GW-210813	80	85	83	79	67	90		
410-51537-3	CMW-56-GW-210813	90	94	89	101	77	96		
410-51537-4	CMW-28-GW-210813	87	93	85	83	78	90		
410-51537-5	BD-1-GW-210813	86	91	81	81	105	83		
LCS 410-162732/2-A	Lab Control Sample	82	88	87	85	85	90		
MB 410-162732/1-A	Method Blank	77	84	84	90	92	90		

Surrogate Legend

13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
PFDoDA = 13C2-PFDoDA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA
13C7PUA = 13C7 PFUnA

Method: 537 IDA - EPA 537 Isotope Dilution

Lab Sample ID: MB 410-162732/1-A
Matrix: Water
Analysis Batch: 166713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 162732

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorooctanesulfonic acid	0.531	J	2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
NEtFOSAA	ND		3.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
NMeFOSAA	ND		2.0	0.60	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
HFPODA	ND		3.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
9Cl-PF3ONS	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
11Cl-PF3OUdS	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
DONA	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*82*		*31 - 142*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C4 PFHpA	*85*		*30 - 144*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C8 PFOA	*92*		*49 - 127*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C9 PFNA	*88*		*47 - 136*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C6 PFDA	*88*		*47 - 128*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C2-PFDoDA	*85*		*28 - 136*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C2 PFTeDA	*81*		*10 - 144*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C3 PFBS	*99*		*19 - 178*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C3 PFHxS	*77*		*32 - 145*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C8 PFOS	*84*		*49 - 126*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
d3-NMeFOSAA	*84*		*32 - 151*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
d5-NEtFOSAA	*90*		*37 - 164*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C3 HFPO-DA	*92*		*20 - 153*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C7 PFUnA	*90*		*40 - 135*	*08/20/21 07:20*	*08/31/21 23:51*	*1*

Lab Sample ID: LCS 410-162732/2-A
Matrix: Water
Analysis Batch: 166713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 162732

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid	25.6	27.5		ng/L		108	66 - 137
Perfluoroheptanoic acid	25.6	27.4		ng/L		107	66 - 141
Perfluorooctanoic acid	25.6	25.6		ng/L		100	65 - 136
Perfluorononanoic acid	25.6	28.4		ng/L		111	65 - 140
Perfluorodecanoic acid	25.6	28.2		ng/L		110	63 - 137
Perfluorotridecanoic acid	25.6	30.0		ng/L		117	58 - 146
Perfluorotetradecanoic acid	25.6	27.8		ng/L		108	64 - 141
Perfluorobutanesulfonic acid	22.7	21.3		ng/L		94	65 - 132
Perfluorohexanesulfonic acid	23.3	24.9		ng/L		107	60 - 128

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: LCS 410-162732/2-A
Matrix: Water
Analysis Batch: 166713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 162732

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid	23.7	25.8		ng/L		109	51 - 126
NEtFOSAA	25.6	26.0		ng/L		102	54 - 134
NMeFOSAA	25.6	27.0		ng/L		106	58 - 143
Perfluorododecanoic acid	25.6	28.6		ng/L		112	63 - 140
HFPODA	25.6	24.6		ng/L		96	37 - 147
9Cl-PF3ONS	23.8	25.5		ng/L		107	52 - 135
11Cl-PF3OUdS	23.8	24.5		ng/L		103	45 - 134
DONA	24.2	24.0		ng/L		99	49 - 158
Perfluoroundecanoic acid	25.6	28.5		ng/L		111	62 - 138

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C5 PFHxA	*87*		*31 - 142*
13C4 PFHpA	*87*		*30 - 144*
13C8 PFOA	*91*		*49 - 127*
13C9 PFNA	*89*		*47 - 136*
13C6 PFDA	*86*		*47 - 128*
13C2-PFDoDA	*82*		*28 - 136*
13C2 PFTeDA	*78*		*10 - 144*
13C3 PFBS	*98*		*19 - 178*
13C3 PFHxS	*82*		*32 - 145*
13C8 PFOS	*88*		*49 - 126*
d3-NMeFOSAA	*87*		*32 - 151*
d5-NEtFOSAA	*85*		*37 - 164*
13C3 HFPO-DA	*85*		*20 - 153*
13C7 PFUnA	*90*		*40 - 135*

Lab Sample ID: 410-51537-1 MS
Matrix: Water
Analysis Batch: 166713

Client Sample ID: CMW-12-GW-210813
Prep Type: Total/NA
Prep Batch: 162732

Analyte	Sample Result	Sample Qualifier	Spike Added	Site Water Result	Site Water Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid	0.94	J	23.2	26.3		ng/L		109	66 - 137
Perfluoroheptanoic acid	ND		23.2	25.9		ng/L		112	66 - 141
Perfluorooctanoic acid	0.70	J	23.2	24.3		ng/L		102	65 - 136
Perfluorononanoic acid	ND		23.2	26.5		ng/L		114	65 - 140
Perfluorodecanoic acid	ND		23.2	25.5		ng/L		110	63 - 137
Perfluorotridecanoic acid	ND		23.2	29.6		ng/L		127	58 - 146
Perfluorotetradecanoic acid	ND		23.2	25.4		ng/L		109	64 - 141
Perfluorobutanesulfonic acid	0.55	J	20.6	19.7		ng/L		93	65 - 132
Perfluorohexanesulfonic acid	1.1	J	21.2	23.5		ng/L		105	60 - 128
Perfluorooctanesulfonic acid	ND		21.5	23.4		ng/L		109	51 - 126
NEtFOSAA	ND		23.2	23.0		ng/L		99	54 - 134
NMeFOSAA	ND		23.2	23.8		ng/L		102	58 - 143
Perfluorododecanoic acid	ND		23.2	26.5		ng/L		114	63 - 140
HFPODA	ND		23.2	27.7		ng/L		119	37 - 147
9Cl-PF3ONS	ND		21.6	23.7		ng/L		110	52 - 134
11Cl-PF3OUdS	ND		21.6	23.4		ng/L		108	45 - 134
DONA	ND		21.9	22.6		ng/L		103	49 - 158
Perfluoroundecanoic acid	ND		23.2	25.8		ng/L		111	62 - 138

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Isotope Dilution	Site Water %Recovery	Site Water Qualifier	Limits
13C5 PFHxA	84		31 - 142
13C4 PFHpA	86		30 - 144
13C8 PFOA	92		49 - 127
13C9 PFNA	89		47 - 136
13C6 PFDA	86		47 - 128
13C2-PFDoDA	73		28 - 136
13C2 PFTeDA	71		10 - 144
13C3 PFBS	104		19 - 178
13C3 PFHxS	84		32 - 145
13C8 PFOS	87		49 - 126
d3-NMeFOSAA	87		32 - 151
d5-NEtFOSAA	86		37 - 164
13C3 HFPO-DA	81		20 - 153
13C7 PFUnA	85		40 - 135

Lab Sample ID: 410-51537-1 MSD
Matrix: Water
Analysis Batch: 166713

Client Sample ID: CMW-12-GW-210813
Prep Type: Total/NA
Prep Batch: 162732

Analyte	Sample Result	Sample Qualifier	Spike Added	Site Water Result	Site Water Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid	0.94	J	23.0	26.2		ng/L		110	66 - 137	0	30
Perfluoroheptanoic acid	ND		23.0	24.7		ng/L		107	66 - 141	5	30
Perfluorooctanoic acid	0.70	J	23.0	23.4		ng/L		99	65 - 136	4	30
Perfluorononanoic acid	ND		23.0	25.3		ng/L		110	65 - 140	4	30
Perfluorodecanoic acid	ND		23.0	25.7		ng/L		112	63 - 137	1	30
Perfluorotridecanoic acid	ND		23.0	28.3		ng/L		123	58 - 146	4	30
Perfluorotetradecanoic acid	ND		23.0	25.1		ng/L		109	64 - 141	1	30
Perfluorobutanesulfonic acid	0.55	J	20.4	19.4		ng/L		93	65 - 132	2	30
Perfluorohexanesulfonic acid	1.1	J	21.0	23.8		ng/L		108	60 - 128	1	30
Perfluorooctanesulfonic acid	ND		21.3	23.0		ng/L		108	51 - 126	2	30
NEtFOSAA	ND		23.0	22.6		ng/L		98	54 - 134	2	30
NMeFOSAA	ND		23.0	24.9		ng/L		108	58 - 143	5	30
Perfluorododecanoic acid	ND		23.0	25.6		ng/L		111	63 - 140	4	30
HFPODA	ND		23.0	24.9		ng/L		108	37 - 147	11	30
9Cl-PF3ONS	ND		21.4	23.4		ng/L		109	52 - 134	1	30
11Cl-PF3OUdS	ND		21.4	22.4		ng/L		105	45 - 134	4	30
DONA	ND		21.8	22.1		ng/L		102	49 - 158	2	30
Perfluoroundecanoic acid	ND		23.0	25.1		ng/L		109	62 - 138	3	30

Isotope Dilution	Site Water %Recovery	Site Water Qualifier	Limits
13C5 PFHxA	86		31 - 142
13C4 PFHpA	88		30 - 144
13C8 PFOA	93		49 - 127
13C9 PFNA	92		47 - 136
13C6 PFDA	89		47 - 128
13C2-PFDoDA	75		28 - 136
13C2 PFTeDA	75		10 - 144
13C3 PFBS	113		19 - 178
13C3 PFHxS	86		32 - 145
13C8 PFOS	91		49 - 126
d3-NMeFOSAA	86		32 - 151
d5-NEtFOSAA	84		37 - 164

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: 410-51537-1 MSD
Client Sample ID: CMW-12-GW-210813
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 166713
Prep Batch: 162732

Isotope Dilution	Site Water %Recovery	Site Water Qualifier	Limits
13C3 HFPO-DA	87		20 - 153
13C7 PFUnA	89		40 - 135

LCMS

Prep Batch: 162732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51537-1	CMW-12-GW-210813	Total/NA	Water	537 IDA	
410-51537-2	CMW-17-GW-210813	Total/NA	Water	537 IDA	
410-51537-3	CMW-56-GW-210813	Total/NA	Water	537 IDA	
410-51537-4	CMW-28-GW-210813	Total/NA	Water	537 IDA	
410-51537-5	BD-1-GW-210813	Total/NA	Water	537 IDA	
MB 410-162732/1-A	Method Blank	Total/NA	Water	537 IDA	
LCS 410-162732/2-A	Lab Control Sample	Total/NA	Water	537 IDA	
410-51537-1 MS	CMW-12-GW-210813	Total/NA	Water	537 IDA	
410-51537-1 MSD	CMW-12-GW-210813	Total/NA	Water	537 IDA	

Analysis Batch: 166713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51537-1	CMW-12-GW-210813	Total/NA	Water	537 IDA	162732
410-51537-2	CMW-17-GW-210813	Total/NA	Water	537 IDA	162732
410-51537-3	CMW-56-GW-210813	Total/NA	Water	537 IDA	162732
410-51537-4	CMW-28-GW-210813	Total/NA	Water	537 IDA	162732
410-51537-5	BD-1-GW-210813	Total/NA	Water	537 IDA	162732
MB 410-162732/1-A	Method Blank	Total/NA	Water	537 IDA	162732
LCS 410-162732/2-A	Lab Control Sample	Total/NA	Water	537 IDA	162732
410-51537-1 MS	CMW-12-GW-210813	Total/NA	Water	537 IDA	162732
410-51537-1 MSD	CMW-12-GW-210813	Total/NA	Water	537 IDA	162732

Prep Batch: 167381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51537-2 - RE	CMW-17-GW-210813	Total/NA	Water	537 IDA	
410-51537-4 - RE	CMW-28-GW-210813	Total/NA	Water	537 IDA	
MB 410-167381/1-A	Method Blank	Total/NA	Water	537 IDA	
LCS 410-167381/2-A	Lab Control Sample	Total/NA	Water	537 IDA	
LCSD 410-167381/3-A	Lab Control Sample Dup	Total/NA	Water	537 IDA	

Analysis Batch: 167868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51537-2 - RE	CMW-17-GW-210813	Total/NA	Water	537 IDA	167381
410-51537-4 - RE	CMW-28-GW-210813	Total/NA	Water	537 IDA	167381
MB 410-167381/1-A	Method Blank	Total/NA	Water	537 IDA	167381
LCS 410-167381/2-A	Lab Control Sample	Total/NA	Water	537 IDA	167381
LCSD 410-167381/3-A	Lab Control Sample Dup	Total/NA	Water	537 IDA	167381

Lab Chronicle

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Client Sample ID: CMW-12-GW-210813
Lab Sample ID: 410-51537-1
Date Collected: 08/13/21 08:40
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 00:13	UCD3	ELLE

Client Sample ID: CMW-17-GW-210813
Lab Sample ID: 410-51537-2
Date Collected: 08/13/21 11:50
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA	RE		167381	09/02/21 10:30	D5VP	ELLE
Total/NA	Analysis	537 IDA	RE	1	167868	09/03/21 15:21	QD9Y	ELLE
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 00:47	UCD3	ELLE

Client Sample ID: CMW-56-GW-210813
Lab Sample ID: 410-51537-3
Date Collected: 08/13/21 13:52
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 00:58	UCD3	ELLE

Client Sample ID: CMW-28-GW-210813
Lab Sample ID: 410-51537-4
Date Collected: 08/13/21 16:11
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA	RE		167381	09/02/21 10:30	D5VP	ELLE
Total/NA	Analysis	537 IDA	RE	1	167868	09/03/21 15:31	QD9Y	ELLE
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 01:09	UCD3	ELLE

Client Sample ID: BD-1-GW-210813
Lab Sample ID: 410-51537-5
Date Collected: 08/13/21 00:00
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 01:20	UCD3	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska	State	PA00009	06-30-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537 IDA	537 IDA	Water	11Cl-PF3OUdS
537 IDA	537 IDA	Water	9Cl-PF3ONS
537 IDA	537 IDA	Water	DONA
537 IDA	537 IDA	Water	HFPODA
537 IDA	537 IDA	Water	NEtFOSAA
537 IDA	537 IDA	Water	NMeFOSAA
537 IDA	537 IDA	Water	Perfluorobutanesulfonic acid
537 IDA	537 IDA	Water	Perfluorodecanoic acid
537 IDA	537 IDA	Water	Perfluorododecanoic acid
537 IDA	537 IDA	Water	Perfluoroheptanoic acid
537 IDA	537 IDA	Water	Perfluorohexanesulfonic acid
537 IDA	537 IDA	Water	Perfluorohexanoic acid
537 IDA	537 IDA	Water	Perfluorononanoic acid
537 IDA	537 IDA	Water	Perfluorooctanesulfonic acid
537 IDA	537 IDA	Water	Perfluorooctanoic acid
537 IDA	537 IDA	Water	Perfluorotetradecanoic acid
537 IDA	537 IDA	Water	Perfluorotridecanoic acid
537 IDA	537 IDA	Water	Perfluoroundecanoic acid

Method Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Method	Method Description	Protocol	Laboratory
537 IDA	EPA 537 Isotope Dilution	EPA	ELLE
537 IDA	EPA 537 Isotope Dilution	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-51537-1	CMW-12-GW-210813	Water	08/13/21 08:40	08/17/21 10:32
410-51537-2	CMW-17-GW-210813	Water	08/13/21 11:50	08/17/21 10:32
410-51537-3	CMW-56-GW-210813	Water	08/13/21 13:52	08/17/21 10:32
410-51537-4	CMW-28-GW-210813	Water	08/13/21 16:11	08/17/21 10:32
410-51537-5	BD-1-GW-210813	Water	08/13/21 00:00	08/17/21 10:32

Chevro[illegible] is Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. :

410-51537 Chain of Custody

tories Environmental use only
__ Sample # _____

SCR #: _____

Client Information

Facility # CEMC Former Kenai Refinery WBS

Site Address 55310 Chevron Road, Kenai, AK

Chevron PM: James Kiernan

Lead Consultant: Arcadis

Consultant/Office: 11001 West 120th Ave. Broomfield, CO

Consultant Project Mgr.: Steve Rice

Sampler: Anthony Garcia

State where samples were collected: Alaska

For Compliance: Yes ☐ No ☐

Sample Identification	Collected Date	Collected Time	Grab	Composite	Matrix: Soil (Sediment ☐ Soil ☐)	Water (Ground ☒ Potable ☐ NPDES ☐ Surface ☐)	Oil (Air ☐ Oil ☐)	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ____	TPH-GRO 8015 ☐ 8260 ☐	TPH-DRO without Silica Gel Cleanup ☐	TPH-DRO with Silica Gel Cleanup ☐	VPH ☐ EPH ☐ Method ____	Lead Total ☐ Diss. ☐ Method ____	18 PFA, compounds (USEPA 537.1 Modified)			
CMW-12-GW-210813	8/13/21	0840	X			X	6										X			
CMW-17-GW-210813	↓	1150	X			X	2										X			
CMW-56-GW-210813		1352	X			X	2										X			
CMW-28R-GW-210813		1611	X			X	2										X			
BD-1-GW-210813	↓	—	X			X	2										X			

Analyses Requested

Preservation and Filtration Codes

Preservation Codes

H = HCl	T = Thiosulfate
N = HNO_3	B = NaOH
S = H_2SO_4	P = H_3PO_4
F = Field Filtered	O = Other

☐ Results in Dry Weight

☐ J value reporting needed

☐ Must meet lowest detection limits possible for 8260 compounds

Remarks

MS/MSD for CMW-12-GW-210813

Turnaround Time Requested (TAT) (please circle)

(Standard) 5 day 4 day

72 hour 48 hour 24 hour

Data Package (circle if required)

Type I - Full Type III Type VI (Raw Data)

EDD (circle if required)

CVX-RTBU-FI_05 (default) Other: _____

	Relinquished by	Date	Time	Received by	Date	Time
1	Edwin Hernandez	8/2/21	11:45			
2		8/14/21	1805			
3						
4	Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____					
	Temperature Upon Receipt 3.8 °C			Custody Seals Intact? Yes (No)		

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The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7047 1117

DAB

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 410-51537-1

Login Number: 51537

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Bryan, Debra A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	

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ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-51558-1
Client Project/Site: CEMC Former Kenai Refinery

For:
ARCADIS U.S. Inc
11001 West 120th Avenue
Broomfield, Colorado 80021

Attn: Steve Rice

Authorized for release by:
9/1/2021 9:27:36 PM

Amek Carter, Project Manager
(717)556-7252
Loran.Carter@eurofinset.com

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Amek Carter
Project Manager
9/1/2021 9:27:36 PM

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Job ID: 410-51558-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-51558-1

Receipt
The samples were received on 8/17/2021 10:32 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

PFAS
Method PFC_IDA: Reporting limits were raised for the following samples: EB-1-W-2108 (410-51558-1), EB-2-W-2108 (410-51558-2) and EB-3-W-2108 (410-51558-3) due to limited sample volume.

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

Detection Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Client Sample ID: EB-1-W-2108 **Lab Sample ID: 410-51558-1**

No Detections.

Client Sample ID: EB-2-W-2108 **Lab Sample ID: 410-51558-2**

No Detections.

Client Sample ID: EB-3-W-2108 **Lab Sample ID: 410-51558-3**

No Detections.

Client Sample ID: EB-4-W-2108 **Lab Sample ID: 410-51558-4**

No Detections.

Client Sample ID: EB-5-W-2108 **Lab Sample ID: 410-51558-5**

No Detections.

Client Sample ID: EB-6-W-2108 **Lab Sample ID: 410-51558-6**

No Detections.

Client Sample ID: EB-7-W-2108 **Lab Sample ID: 410-51558-7**

No Detections.

Client Sample ID: EB-8-W-2108 **Lab Sample ID: 410-51558-8**

No Detections.

Client Sample ID: FB-W-2108 **Lab Sample ID: 410-51558-9**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: EB-1-W-2108 — **Lab Sample ID: 410-51558-1**
Date Collected: 08/13/21 07:25 — **Matrix: Water**
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluoroheptanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorooctanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorononanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorodecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorotridecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorotetradecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorobutanesulfonic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorohexanesulfonic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorooctanesulfonic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
NEtFOSAA	ND		3.1	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
NMeFOSAA	ND		2.0	0.61	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluorododecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
HFPODA	ND		3.1	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
9Cl-PF3ONS	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
11Cl-PF3OUdS	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
DONA	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1
Perfluoroundecanoic acid	ND		2.0	0.51	ng/L		08/20/21 07:20	09/01/21 01:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*91*		*31 - 142*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C4 PFHpA	*92*		*30 - 144*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C8 PFOA	*96*		*49 - 127*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C9 PFNA	*93*		*47 - 136*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C6 PFDA	*92*		*47 - 128*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C2-PFDoDA	*87*		*28 - 136*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C2 PFTeDA	*80*		*10 - 144*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C3 PFBS	*99*		*19 - 178*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C3 PFHxS	*85*		*32 - 145*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C8 PFOS	*88*		*49 - 126*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
d3-NMeFOSAA	*85*		*32 - 151*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
d5-NEtFOSAA	*85*		*37 - 164*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C3 HFPO-DA	*89*		*20 - 153*	*08/20/21 07:20*	*09/01/21 01:31*	*1*
13C7 PFUnA	*94*		*40 - 135*	*08/20/21 07:20*	*09/01/21 01:31*	*1*

Client Sample ID: EB-2-W-2108 — **Lab Sample ID: 410-51558-2**
Date Collected: 08/13/21 07:30 — **Matrix: Water**
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluoroheptanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorooctanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorononanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorodecanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorotridecanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorotetradecanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorobutanesulfonic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorohexanesulfonic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorooctanesulfonic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1

Client Sample ID: EB-2-W-2108
Lab Sample ID: 410-51558-2

Date Collected: 08/13/21 07:30
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		3.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
NMeFOSAA	ND		2.1	0.62	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluorododecanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
HFPODA	ND		3.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
9Cl-PF3ONS	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
11Cl-PF3OUdS	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
DONA	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1
Perfluoroundecanoic acid	ND		2.1	0.52	ng/L		08/20/21 07:20	09/01/21 01:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*96*		*31 - 142*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C4 PFHpA	*100*		*30 - 144*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C8 PFOA	*104*		*49 - 127*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C9 PFNA	*96*		*47 - 136*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C6 PFDA	*94*		*47 - 128*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C2-PFDoDA	*86*		*28 - 136*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C2 PFTeDA	*78*		*10 - 144*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C3 PFBS	*103*		*19 - 178*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C3 PFHxS	*90*		*32 - 145*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C8 PFOS	*90*		*49 - 126*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
d3-NMeFOSAA	*90*		*32 - 151*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
d5-NEtFOSAA	*90*		*37 - 164*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C3 HFPO-DA	*105*		*20 - 153*	*08/20/21 07:20*	*09/01/21 01:42*	*1*
13C7 PFUnA	*94*		*40 - 135*	*08/20/21 07:20*	*09/01/21 01:42*	*1*

Client Sample ID: EB-3-W-2108
Lab Sample ID: 410-51558-3

Date Collected: 08/13/21 10:50
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorooctanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
NEtFOSAA	ND		3.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
NMeFOSAA	ND		2.0	0.61	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
HFPODA	ND		3.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
9Cl-PF3ONS	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
11Cl-PF3OUdS	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
DONA	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	09/01/21 01:53	1

Client Sample ID: EB-3-W-2108
Lab Sample ID: 410-51558-3

Date Collected: 08/13/21 10:50
Matrix: Water
Date Received: 08/17/21 10:32

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*85*		*31 - 142*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C4 PFHpA	*87*		*30 - 144*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C8 PFOA	*91*		*49 - 127*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C9 PFNA	*91*		*47 - 136*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C6 PFDA	*88*		*47 - 128*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C2-PFDoDA	*83*		*28 - 136*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C2 PFTeDA	*79*		*10 - 144*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C3 PFBS	*100*		*19 - 178*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C3 PFHxS	*81*		*32 - 145*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C8 PFOS	*87*		*49 - 126*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
d3-NMeFOSAA	*87*		*32 - 151*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
d5-NEtFOSAA	*84*		*37 - 164*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C3 HFPO-DA	*90*		*20 - 153*	*08/20/21 07:20*	*09/01/21 01:53*	*1*
13C7 PFUnA	*90*		*40 - 135*	*08/20/21 07:20*	*09/01/21 01:53*	*1*

Client Sample ID: EB-4-W-2108
Lab Sample ID: 410-51558-4

Date Collected: 08/13/21 10:55
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*87*		*31 - 142*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C4 PFHpA	*94*		*30 - 144*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C8 PFOA	*95*		*49 - 127*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C9 PFNA	*94*		*47 - 136*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C6 PFDA	*90*		*47 - 128*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C2-PFDoDA	*84*		*28 - 136*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C2 PFTeDA	*82*		*10 - 144*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C3 PFBS	*101*		*19 - 178*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C3 PFHxS	*87*		*32 - 145*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
13C8 PFOS	*87*		*49 - 126*	*08/20/21 07:20*	*08/28/21 09:05*	*1*
d3-NMeFOSAA	*92*		*32 - 151*	*08/20/21 07:20*	*08/28/21 09:05*	*1*

Client Sample ID: EB-4-W-2108
Lab Sample ID: 410-51558-4

Date Collected: 08/13/21 10:55
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	98		37 - 164	08/20/21 07:20	08/28/21 09:05	1
13C3 HFPO-DA	93		20 - 153	08/20/21 07:20	08/28/21 09:05	1
13C7 PFUnA	90		40 - 135	08/20/21 07:20	08/28/21 09:05	1

Client Sample ID: EB-5-W-2108
Lab Sample ID: 410-51558-5

Date Collected: 08/13/21 12:30
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	82		31 - 142	08/20/21 07:20	08/28/21 09:17	1
13C4 PFHpA	86		30 - 144	08/20/21 07:20	08/28/21 09:17	1
13C8 PFOA	91		49 - 127	08/20/21 07:20	08/28/21 09:17	1
13C9 PFNA	93		47 - 136	08/20/21 07:20	08/28/21 09:17	1
13C6 PFDA	89		47 - 128	08/20/21 07:20	08/28/21 09:17	1
13C2-PFDoDA	88		28 - 136	08/20/21 07:20	08/28/21 09:17	1
13C2 PFTeDA	82		10 - 144	08/20/21 07:20	08/28/21 09:17	1
13C3 PFBS	100		19 - 178	08/20/21 07:20	08/28/21 09:17	1
13C3 PFHxS	84		32 - 145	08/20/21 07:20	08/28/21 09:17	1
13C8 PFOS	87		49 - 126	08/20/21 07:20	08/28/21 09:17	1
d3-NMeFOSAA	94		32 - 151	08/20/21 07:20	08/28/21 09:17	1
d5-NEtFOSAA	95		37 - 164	08/20/21 07:20	08/28/21 09:17	1
13C3 HFPO-DA	93		20 - 153	08/20/21 07:20	08/28/21 09:17	1
13C7 PFUnA	91		40 - 135	08/20/21 07:20	08/28/21 09:17	1

Client Sample ID: EB-6-W-2108
Lab Sample ID: 410-51558-6

Date Collected: 08/13/21 12:35
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*87*		*31 - 142*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C4 PFHpA	*89*		*30 - 144*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C8 PFOA	*94*		*49 - 127*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C9 PFNA	*95*		*47 - 136*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C6 PFDA	*87*		*47 - 128*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C2-PFDoDA	*84*		*28 - 136*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C2 PFTeDA	*83*		*10 - 144*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C3 PFBS	*100*		*19 - 178*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C3 PFHxS	*83*		*32 - 145*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C8 PFOS	*92*		*49 - 126*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
d3-NMeFOSAA	*94*		*32 - 151*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
d5-NEtFOSAA	*100*		*37 - 164*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C3 HFPO-DA	*94*		*20 - 153*	*08/20/21 07:20*	*08/28/21 09:28*	*1*
13C7 PFUnA	*94*		*40 - 135*	*08/20/21 07:20*	*08/28/21 09:28*	*1*

Client Sample ID: EB-7-W-2108
Lab Sample ID: 410-51558-7

Date Collected: 08/13/21 14:40
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1

Client Sample ID: EB-7-W-2108
Lab Sample ID: 410-51558-7

Date Collected: 08/13/21 14:40
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*92*		*31 - 142*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C4 PFHpA	*90*		*30 - 144*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C8 PFOA	*98*		*49 - 127*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C9 PFNA	*95*		*47 - 136*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C6 PFDA	*93*		*47 - 128*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C2-PFDoDA	*86*		*28 - 136*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C2 PFTeDA	*85*		*10 - 144*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C3 PFBS	*104*		*19 - 178*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C3 PFHxS	*88*		*32 - 145*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C8 PFOS	*91*		*49 - 126*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
d3-NMeFOSAA	*95*		*32 - 151*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
d5-NEtFOSAA	*100*		*37 - 164*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C3 HFPO-DA	*101*		*20 - 153*	*08/20/21 07:20*	*08/28/21 09:39*	*1*
13C7 PFUnA	*95*		*40 - 135*	*08/20/21 07:20*	*08/28/21 09:39*	*1*

Client Sample ID: EB-8-W-2108
Lab Sample ID: 410-51558-8

Date Collected: 08/13/21 14:45
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 09:50	1

Client Sample ID: EB-8-W-2108

Lab Sample ID: 410-51558-8

Date Collected: 08/13/21 14:45

Matrix: Water

Date Received: 08/17/21 10:32

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	84		31 - 142	08/20/21 07:20	08/28/21 09:50	1
13C4 PFHpA	85		30 - 144	08/20/21 07:20	08/28/21 09:50	1
13C8 PFOA	92		49 - 127	08/20/21 07:20	08/28/21 09:50	1
13C9 PFNA	93		47 - 136	08/20/21 07:20	08/28/21 09:50	1
13C6 PFDA	86		47 - 128	08/20/21 07:20	08/28/21 09:50	1
13C2-PFDoDA	90		28 - 136	08/20/21 07:20	08/28/21 09:50	1
13C2 PFTeDA	84		10 - 144	08/20/21 07:20	08/28/21 09:50	1
13C3 PFBS	101		19 - 178	08/20/21 07:20	08/28/21 09:50	1
13C3 PFHxS	84		32 - 145	08/20/21 07:20	08/28/21 09:50	1
13C8 PFOS	87		49 - 126	08/20/21 07:20	08/28/21 09:50	1
d3-NMeFOSAA	93		32 - 151	08/20/21 07:20	08/28/21 09:50	1
d5-NEtFOSAA	101		37 - 164	08/20/21 07:20	08/28/21 09:50	1
13C3 HFPO-DA	100		20 - 153	08/20/21 07:20	08/28/21 09:50	1
13C7 PFUnA	94		40 - 135	08/20/21 07:20	08/28/21 09:50	1

Client Sample ID: FB-W-2108

Lab Sample ID: 410-51558-9

Date Collected: 08/13/21 16:40

Matrix: Water

Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluoroheptanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorooctanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorononanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorodecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorotridecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorotetradecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorobutanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorohexanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorooctanesulfonic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
NEtFOSAA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
NMeFOSAA	ND		1.8	0.54	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluorododecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
HFPODA	ND		2.7	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
9Cl-PF3ONS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
11Cl-PF3OUdS	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
DONA	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1
Perfluoroundecanoic acid	ND		1.8	0.45	ng/L		08/20/21 07:20	08/28/21 10:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	91		31 - 142	08/20/21 07:20	08/28/21 10:01	1
13C4 PFHpA	89		30 - 144	08/20/21 07:20	08/28/21 10:01	1
13C8 PFOA	95		49 - 127	08/20/21 07:20	08/28/21 10:01	1
13C9 PFNA	90		47 - 136	08/20/21 07:20	08/28/21 10:01	1
13C6 PFDA	88		47 - 128	08/20/21 07:20	08/28/21 10:01	1
13C2-PFDoDA	89		28 - 136	08/20/21 07:20	08/28/21 10:01	1
13C2 PFTeDA	84		10 - 144	08/20/21 07:20	08/28/21 10:01	1
13C3 PFBS	101		19 - 178	08/20/21 07:20	08/28/21 10:01	1
13C3 PFHxS	88		32 - 145	08/20/21 07:20	08/28/21 10:01	1
13C8 PFOS	89		49 - 126	08/20/21 07:20	08/28/21 10:01	1
d3-NMeFOSAA	92		32 - 151	08/20/21 07:20	08/28/21 10:01	1

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Client Sample ID: FB-W-2108
Lab Sample ID: 410-51558-9
Date Collected: 08/13/21 16:40
Matrix: Water
Date Received: 08/17/21 10:32

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	92		37 - 164	08/20/21 07:20	08/28/21 10:01	1
13C3 HFPO-DA	97		20 - 153	08/20/21 07:20	08/28/21 10:01	1
13C7 PFUnA	94		40 - 135	08/20/21 07:20	08/28/21 10:01	1

Isotope Dilution Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Method: 537 IDA - EPA 537 Isotope Dilution

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		13C5PHA	C4PFHA	C8PFOA	C9PFNA	C6PFDA	PFDoDA	PFTDA	C3PFBS
Lab Sample ID	Client Sample ID	(31-142)	(30-144)	(49-127)	(47-136)	(47-128)	(28-136)	(10-144)	(19-178)
410-51558-1	EB-1-W-2108	91	92	96	93	92	87	80	99
410-51558-2	EB-2-W-2108	96	100	104	96	94	86	78	103
410-51558-3	EB-3-W-2108	85	87	91	91	88	83	79	100
410-51558-4	EB-4-W-2108	87	94	95	94	90	84	82	101
410-51558-5	EB-5-W-2108	82	86	91	93	89	88	82	100
410-51558-6	EB-6-W-2108	87	89	94	95	87	84	83	100
410-51558-7	EB-7-W-2108	92	90	98	95	93	86	85	104
410-51558-8	EB-8-W-2108	84	85	92	93	86	90	84	101
410-51558-9	FB-W-2108	91	89	95	90	88	89	84	101
LCS 410-162732/2-A	Lab Control Sample	87	87	91	89	86	82	78	98
MB 410-162732/1-A	Method Blank	82	85	92	88	88	85	81	99

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		C3PFHS	C8PFOS	d3NMFOS	d5NEFOS	HFPODA	13C7PUA		
Lab Sample ID	Client Sample ID	(32-145)	(49-126)	(32-151)	(37-164)	(20-153)	(40-135)		
410-51558-1	EB-1-W-2108	85	88	85	85	89	94		
410-51558-2	EB-2-W-2108	90	90	90	90	105	94		
410-51558-3	EB-3-W-2108	81	87	87	84	90	90		
410-51558-4	EB-4-W-2108	87	87	92	98	93	90		
410-51558-5	EB-5-W-2108	84	87	94	95	93	91		
410-51558-6	EB-6-W-2108	83	92	94	100	94	94		
410-51558-7	EB-7-W-2108	88	91	95	100	101	95		
410-51558-8	EB-8-W-2108	84	87	93	101	100	94		
410-51558-9	FB-W-2108	88	89	92	92	97	94		
LCS 410-162732/2-A	Lab Control Sample	82	88	87	85	85	90		
MB 410-162732/1-A	Method Blank	77	84	84	90	92	90		

Surrogate Legend

13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
PFDoDA = 13C2-PFDoDA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA
13C7PUA = 13C7 PFUnA

Method: 537 IDA - EPA 537 Isotope Dilution

Lab Sample ID: MB 410-162732/1-A
Matrix: Water
Analysis Batch: 166713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 162732

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluoroheptanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorooctanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorononanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorodecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorotridecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorotetradecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorobutanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorohexanesulfonic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorooctanesulfonic acid	0.531	J	2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
NEtFOSAA	ND		3.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
NMeFOSAA	ND		2.0	0.60	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluorododecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
HFPODA	ND		3.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
9Cl-PF3ONS	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
11Cl-PF3OUdS	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
DONA	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1
Perfluoroundecanoic acid	ND		2.0	0.50	ng/L		08/20/21 07:20	08/31/21 23:51	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFHxA	*82*		*31 - 142*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C4 PFHpA	*85*		*30 - 144*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C8 PFOA	*92*		*49 - 127*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C9 PFNA	*88*		*47 - 136*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C6 PFDA	*88*		*47 - 128*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C2-PFDoDA	*85*		*28 - 136*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C2 PFTeDA	*81*		*10 - 144*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C3 PFBS	*99*		*19 - 178*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C3 PFHxS	*77*		*32 - 145*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C8 PFOS	*84*		*49 - 126*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
d3-NMeFOSAA	*84*		*32 - 151*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
d5-NEtFOSAA	*90*		*37 - 164*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C3 HFPO-DA	*92*		*20 - 153*	*08/20/21 07:20*	*08/31/21 23:51*	*1*
13C7 PFUnA	*90*		*40 - 135*	*08/20/21 07:20*	*08/31/21 23:51*	*1*

Lab Sample ID: LCS 410-162732/2-A
Matrix: Water
Analysis Batch: 166713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 162732

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid	25.6	27.5		ng/L		108	66 - 137
Perfluoroheptanoic acid	25.6	27.4		ng/L		107	66 - 141
Perfluorooctanoic acid	25.6	25.6		ng/L		100	65 - 136
Perfluorononanoic acid	25.6	28.4		ng/L		111	65 - 140
Perfluorodecanoic acid	25.6	28.2		ng/L		110	63 - 137
Perfluorotridecanoic acid	25.6	30.0		ng/L		117	58 - 146
Perfluorotetradecanoic acid	25.6	27.8		ng/L		108	64 - 141
Perfluorobutanesulfonic acid	22.7	21.3		ng/L		94	65 - 132
Perfluorohexanesulfonic acid	23.3	24.9		ng/L		107	60 - 128

Method: 537 IDA - EPA 537 Isotope Dilution (Continued)

Lab Sample ID: LCS 410-162732/2-A
Matrix: Water
Analysis Batch: 166713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 162732

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid	23.7	25.8		ng/L		109	51 - 126
NEtFOSAA	25.6	26.0		ng/L		102	54 - 134
NMeFOSAA	25.6	27.0		ng/L		106	58 - 143
Perfluorododecanoic acid	25.6	28.6		ng/L		112	63 - 140
HFPODA	25.6	24.6		ng/L		96	37 - 147
9Cl-PF3ONS	23.8	25.5		ng/L		107	52 - 135
11Cl-PF3OUdS	23.8	24.5		ng/L		103	45 - 134
DONA	24.2	24.0		ng/L		99	49 - 158
Perfluoroundecanoic acid	25.6	28.5		ng/L		111	62 - 138

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C5 PFHxA	*87*		*31 - 142*
13C4 PFHpA	*87*		*30 - 144*
13C8 PFOA	*91*		*49 - 127*
13C9 PFNA	*89*		*47 - 136*
13C6 PFDA	*86*		*47 - 128*
13C2-PFDoDA	*82*		*28 - 136*
13C2 PFTeDA	*78*		*10 - 144*
13C3 PFBS	*98*		*19 - 178*
13C3 PFHxS	*82*		*32 - 145*
13C8 PFOS	*88*		*49 - 126*
d3-NMeFOSAA	*87*		*32 - 151*
d5-NEtFOSAA	*85*		*37 - 164*
13C3 HFPO-DA	*85*		*20 - 153*
13C7 PFUnA	*90*		*40 - 135*

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

LCMS

Prep Batch: 162732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51558-1	EB-1-W-2108	Total/NA	Water	537 IDA	
410-51558-2	EB-2-W-2108	Total/NA	Water	537 IDA	
410-51558-3	EB-3-W-2108	Total/NA	Water	537 IDA	
410-51558-4	EB-4-W-2108	Total/NA	Water	537 IDA	
410-51558-5	EB-5-W-2108	Total/NA	Water	537 IDA	
410-51558-6	EB-6-W-2108	Total/NA	Water	537 IDA	
410-51558-7	EB-7-W-2108	Total/NA	Water	537 IDA	
410-51558-8	EB-8-W-2108	Total/NA	Water	537 IDA	
410-51558-9	FB-W-2108	Total/NA	Water	537 IDA	
MB 410-162732/1-A	Method Blank	Total/NA	Water	537 IDA	
LCS 410-162732/2-A	Lab Control Sample	Total/NA	Water	537 IDA	

Analysis Batch: 165601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51558-4	EB-4-W-2108	Total/NA	Water	537 IDA	162732
410-51558-5	EB-5-W-2108	Total/NA	Water	537 IDA	162732
410-51558-6	EB-6-W-2108	Total/NA	Water	537 IDA	162732
410-51558-7	EB-7-W-2108	Total/NA	Water	537 IDA	162732
410-51558-8	EB-8-W-2108	Total/NA	Water	537 IDA	162732
410-51558-9	FB-W-2108	Total/NA	Water	537 IDA	162732

Analysis Batch: 166713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-51558-1	EB-1-W-2108	Total/NA	Water	537 IDA	162732
410-51558-2	EB-2-W-2108	Total/NA	Water	537 IDA	162732
410-51558-3	EB-3-W-2108	Total/NA	Water	537 IDA	162732
MB 410-162732/1-A	Method Blank	Total/NA	Water	537 IDA	162732
LCS 410-162732/2-A	Lab Control Sample	Total/NA	Water	537 IDA	162732

Lab Chronicle

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Client Sample ID: EB-1-W-2108
Lab Sample ID: 410-51558-1
Date Collected: 08/13/21 07:25
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 01:31	UCD3	ELLE

Client Sample ID: EB-2-W-2108
Lab Sample ID: 410-51558-2
Date Collected: 08/13/21 07:30
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 01:42	UCD3	ELLE

Client Sample ID: EB-3-W-2108
Lab Sample ID: 410-51558-3
Date Collected: 08/13/21 10:50
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	166713	09/01/21 01:53	UCD3	ELLE

Client Sample ID: EB-4-W-2108
Lab Sample ID: 410-51558-4
Date Collected: 08/13/21 10:55
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	165601	08/28/21 09:05	EDT9	ELLE

Client Sample ID: EB-5-W-2108
Lab Sample ID: 410-51558-5
Date Collected: 08/13/21 12:30
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	165601	08/28/21 09:17	EDT9	ELLE

Client Sample ID: EB-6-W-2108
Lab Sample ID: 410-51558-6
Date Collected: 08/13/21 12:35
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	165601	08/28/21 09:28	EDT9	ELLE

Lab Chronicle

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Client Sample ID: EB-7-W-2108
Lab Sample ID: 410-51558-7

Date Collected: 08/13/21 14:40
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	165601	08/28/21 09:39	EDT9	ELLE

Client Sample ID: EB-8-W-2108
Lab Sample ID: 410-51558-8

Date Collected: 08/13/21 14:45
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	165601	08/28/21 09:50	EDT9	ELLE

Client Sample ID: FB-W-2108
Lab Sample ID: 410-51558-9

Date Collected: 08/13/21 16:40
Matrix: Water
Date Received: 08/17/21 10:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 IDA			162732	08/20/21 07:20	S7AC	ELLE
Total/NA	Analysis	537 IDA		1	165601	08/28/21 10:01	EDT9	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska	State	PA00009	06-30-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537 IDA	537 IDA	Water	11Cl-PF3OUdS
537 IDA	537 IDA	Water	9Cl-PF3ONS
537 IDA	537 IDA	Water	DONA
537 IDA	537 IDA	Water	HFPODA
537 IDA	537 IDA	Water	NEtFOSAA
537 IDA	537 IDA	Water	NMeFOSAA
537 IDA	537 IDA	Water	Perfluorobutanesulfonic acid
537 IDA	537 IDA	Water	Perfluorodecanoic acid
537 IDA	537 IDA	Water	Perfluorododecanoic acid
537 IDA	537 IDA	Water	Perfluoroheptanoic acid
537 IDA	537 IDA	Water	Perfluorohexanesulfonic acid
537 IDA	537 IDA	Water	Perfluorohexanoic acid
537 IDA	537 IDA	Water	Perfluorononanoic acid
537 IDA	537 IDA	Water	Perfluorooctanesulfonic acid
537 IDA	537 IDA	Water	Perfluorooctanoic acid
537 IDA	537 IDA	Water	Perfluorotetradecanoic acid
537 IDA	537 IDA	Water	Perfluorotridecanoic acid
537 IDA	537 IDA	Water	Perfluoroundecanoic acid

Method Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Method	Method Description	Protocol	Laboratory
537 IDA	EPA 537 Isotope Dilution	EPA	ELLE
537 IDA	EPA 537 Isotope Dilution	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-51558-1	EB-1-W-2108	Water	08/13/21 07:25	08/17/21 10:32
410-51558-2	EB-2-W-2108	Water	08/13/21 07:30	08/17/21 10:32
410-51558-3	EB-3-W-2108	Water	08/13/21 10:50	08/17/21 10:32
410-51558-4	EB-4-W-2108	Water	08/13/21 10:55	08/17/21 10:32
410-51558-5	EB-5-W-2108	Water	08/13/21 12:30	08/17/21 10:32
410-51558-6	EB-6-W-2108	Water	08/13/21 12:35	08/17/21 10:32
410-51558-7	EB-7-W-2108	Water	08/13/21 14:40	08/17/21 10:32
410-51558-8	EB-8-W-2108	Water	08/13/21 14:45	08/17/21 10:32
410-51558-9	FB-W-2108	Water	08/13/21 16:40	08/17/21 10:32

Chevro[illegible] Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. #

410-51558 Chain of Custody

[illegible]ories Environmental use only
_ Sample # _____

SCR #: _____

Client Information

Facility # WBS
CEMC Former Chevron Kenai Refinery

Site Address
55310 Chevron Road, Kenai, AK

Chevron PM
James Kiernan

Lead Consultant
Arcadis

Consultant/Office
11001 West 120th Ave., Broomfield, CO

Consultant Project Mgr.
Steve Rice

Sampler
Anthony Garcia

State where samples were collected:
Alaska

For Compliance: Yes ☐ No ☐

Matrix

Soil ☐ Sediment ☐ Potable Water ☐ Ground ☐ NPDES ☐ Surface ☐ Oil ☐ Air ☐

Analyses Requested

Preservation and Filtration Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ____	TPH-GRO 8015 ☐ 8260 ☐	TPH-DRO without Silica Gel Cleanup ☐	TPH-DRO with Silica Gel Cleanup ☐	VPH ☐ EPH ☐ Method ____	Lead Total ☐ Diss. ☐ Method ____	18 PFAS Compounds (USEPA 537.1 Modified)			
EB-1-W-2108	8/13/21	0725	X		2									X			
EB-2-W-2108		0730			2									X			
EB-3-W-2108		1050			2									X			
EB-4-W-2108		1055			2									X			
EB-5-W-2108		1230			2									X			
EB-6-W-2108		1235			2									X			
EB-7-W-2108		1440			2									X			
EB-8-W-2108		1445			2									X			
FB-W-2108		1640			2									X			

Preservation Codes

H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
F = Field Filtered O = Other

☐ Results in Dry Weight

☐ J value reporting needed

☐ Must meet lowest detection limits possible for 8260 compounds

Remarks

Turnaround Time Requested (TAT) (please circle)

(Standard) 5 day 4 day
72 hour 48 hour 24 hour

Data Package (circle if required)

Type I - Full Type III Type VI (Raw Data)

EDD (circle if required)

CVX-RTBU-FI_05 (default) Other: _____

Relinquished by	Date	Time	Received by	Date	Time
	8/14/21	1865			
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time

Relinquished by Commercial Carrier:
UPS ____ FedEx X Other ____

Received by [signature] Date 9/17/21 Time 1032

Temperature Upon Receipt 3.8 °C

Custody Seals Intact? Yes (No)

DAB

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 410-51558-1

Login Number: 51558

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Bryan, Debra A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	

ATTACHMENT 4

Data Usability Summary Report

ENVIRONMENTAL® STANDARDS

Setting the Standards for Innovative Environmental Solutions

October 21, 2021

Mr. Atique ur Rehman
Pre-Execution Strategy Specialist
Chevron Environmental Management Company
1500 Louisiana Street #38142
Houston, TX 77002

VIA ELECTRONIC MAIL

Dear Mr. Rehman:

Enclosed is the quality assurance review for the per- and polyfluoroalkyl substances (PFAS) analytical data for the groundwater and associated quality control samples collected on August 13, 2021, for the Chevron Environmental Management Company Project in Kenai, Alaska. Based on this quality assurance review, PFAS results were qualified as "not-detected" due to method blank contamination and as estimated due to extraction holding time exceedance, analyte qualitative identification, labeled pre-extracted internal standard recoveries, and results reported between the sample-specific method detection limit and reporting detection limit. No results were determined to be unusable.

This quality assurance review was revised for minor text edits.

If you have any questions or comments, or if we can be of any further assistance, please feel free to call.

Sincerely,

Stephen T. Zeiner, CEAC
Senior Technical Chemist

Sincerely,

Rock J. Vitale, CEAC
Technical Director of Chemistry/
Principal

STZ/RJV:nd
Enc.

1140 Valley Forge Road P.O. Box 810 Valley Forge, PA 19482 Tel: 610.935.5577 Fax: 610.935.5583 Web: www.envstd.com

ENVIRONMENTAL® STANDARDS
Setting the Standards for Innovative Environmental Solutions

QUALITY ASSURANCE REPORT OF THE

GROUNDWATER AND ASSOCIATED QUALITY CONTROL SAMPLES

COLLECTED ON AGUST 13, 2021

FOR THE CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY PROJECT

KENAI, ALASKA

SAMPLE DELIVERY GROUPS: 410-51537-1 AND 410-51558-1

October 21, 2021
[Original date: October 18, 2021]

Prepared for:

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
1500 Louisiana Street #38142
Houston, TX 77002

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1140 Valley Forge Road
P.O. Box 810
Valley Forge, PA 19482-0810

TABLE OF CONTENTS

Introduction

This quality assurance review was revised for minor text edits.

This quality assurance (QA) review is based upon an examination of the data generated from the analyses of the groundwater and associated quality control (QC) samples collected on August 13, 2021, for the Chevron Environmental Management Company Project in Kenai, Alaska. The samples included in this QA review are presented on Table 1. The laboratory was requested to prepare a detailed data package to substantiate the reported analytical results.

This review has been performed with the guidance from the following documents. The data validation included the evaluation of the summary forms, raw data, and other miscellaneous information provided in the laboratory data package. Environmental Standards, Inc. (Environmental Standards) performed calculation checks of sample and QC results and performed a critical qualitative evaluation of the reported positive results.

- "National Functional Guidelines for High Resolution Superfund Methods Data Review," (US EPA, April 2016).
- "Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15," U.S. Department of Defense, May 2020.

The reported analytical results are presented in Section 2. Data were examined to determine the usability of the analytical results and compliance relative to the analytical requirements specified in the laboratory SOP. Qualifier codes have been placed next to the results to enable the data user to quickly assess the qualitative and/or quantitative reliability of any result. Details of this QA are presented in Section 1 of this report. This report was prepared to provide a critical review of the laboratory analyses and reported analytical results. QA reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories. The nature and extent of problems identified in this critical review should not be interpreted to mean that those results that do not have qualifier codes are less than valid.

TABLE 1

SAMPLES THAT HAVE UNDERGONE A RIGOROUS

QUALITY ASSURANCE REVIEW

Client Sample Identification	Laboratory Sample Identification	Sample Delivery Group	Matrix	Date Sample Collected	Parameter Examined
CMW-12-GW-210813	410-51537-1	410-51537-1	Aq	8/13/21	PFAS
CMW-12-GW-210813 (Matrix Spike)	410-51537-1MS	410-51537-1	Aq	8/13/21	PFAS
CMW-12-GW-210813 (Matrix Spike Duplicate)	410-51537-1MSD	410-51537-1	Aq	8/13/21	PFAS
CMW-17-GW-210813	410-51537-2	410-51537-1	Aq	8/13/21	PFAS
CMW-17-GW-210813RE (Re-extraction/analysis)	410-51537-2RE	410-51537-1	Aq	8/13/21	PFAS
CMW-56-GW-210813	410-51537-3	410-51537-1	Aq	8/13/21	PFAS
CMW-28R-GW-210813	410-51537-4	410-51537-1	Aq	8/13/21	PFAS
CMW-28R-GW-210813RE (Re-extraction/analysis)	410-51537-4RE	410-51537-1	Aq	8/13/21	PFAS
BD-1-GW-210813 (Field Duplicate of CMW-12-GW-210813)	410-51537-5	410-51537-1	Aq	8/13/21	PFAS
EB-1-W-2108 (Equipment Blank)	410-51558-1	410-51558-1	Aq	8/13/21	PFAS
EB-2-W-2108 (Equipment Blank)	410-51558-2	410-51558-1	Aq	8/13/21	PFAS
EB-3-W-2108 (Equipment Blank)	410-51558-3	410-51558-1	Aq	8/13/21	PFAS
EB-4-W-2108 (Equipment Blank)	410-51558-4	410-51558-1	Aq	8/13/21	PFAS
EB-5-W-2108 (Equipment Blank)	410-51558-5	410-51558-1	Aq	8/13/21	PFAS
EB-6-W-2108 (Equipment Blank)	410-51558-6	410-51558-1	Aq	8/13/21	PFAS
EB-7-W-2108 (Equipment Blank)	410-51558-7	410-51558-1	Aq	8/13/21	PFAS

TABLE 1 (Cont.)

Client Sample Identification	Laboratory Sample Identification	Sample Delivery Group	Matrix	Date Sample Collected	Parameter Examined
EB-8-W-2108 (Equipment Blank)	410-51558-8	410-51558-1	Aq	8/13/21	PFAS
FB-W-2108 (Field Blank)	410-51558-9	410-51558-1	Aq	8/13/21	PFAS

NOTES:

PFAS - Per- and Polyfluoroalkyl Substances (PFAS) according to Eurofins TestAmerica Standard Operating Procedure (SOP) for Modified US EPA Method 537.1 Isotope Dilution. (18 analyses)

Aq - Aqueous.

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 18 samples (including re-extraction/analyses, laboratory QC samples, equipment blanks, and a field blank) were collectively performed by Eurofins Lancaster Laboratories Environmental, LLC (ELLE) in Lancaster, Pennsylvania. The samples were collectively analyzed for per- and polyfluoroalkyl substances (PFAS) according to the laboratory-specific standard operating procedure (SOP) for Modified US EPA Method 537.1 Isotope Dilution. The analyses are specified on Table 1, and the analytical results are summarized in Section 2 of this report.

The findings offered in this report are based on a review of the holding times, condition of samples upon laboratory receipt, blank analysis results, labeled pre-extraction internal standard recoveries, pre-injection internal standard responses, matrix spike/matrix spike duplicate (MS/MSD) results, field duplicate precision, laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results, initial calibrations, second-source initial calibration verification (ICV) standards, continuing calibration verification (CCV) standards, and evaluation of positive results. The data validation included review of raw data and random calculation checks for the associated summary reports. The data validation included confirmation of qualitative identification and quantitation of positive results in samples.

Based upon the review of the data package provided, PFAS results were qualified as "not-detected" due to method blank contamination and as estimated due to extraction holding time exceedance, analyte qualitative identification, labeled pre-extraction internal standard recoveries, and results reported between the sample-specific method detection limit (MDL) and reporting detection limit (RDL). Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix interference. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Data Package Completeness Evaluation

1. The ELLE-provided data package allowed for sufficient information to perform the QA review. Reporting issues were not identified during the review of this data package.

2. ELLE provided results for an original and second extraction of SDG 410-51537-1 samples CMW-17-GW-210813 and CMW-28R-GW-210813 in the data package. As mentioned in the ELLE Case Narrative, the laboratory re-extracted and reanalyzed these samples for PFAS compounds due to a reported positive result for perfluorooctanesulfonic acid in the associated method blank. The second extraction was performed outside of the laboratory holding time. The data reviewer has evaluated the original and re-extraction analytical results for consistency and has addressed both initial and second extraction data for the remaining QC elements (*e.g.*, initial calibration, LCS recoveries, *etc.*). The re-extraction results are identified in the data tables by the Analysis Type Code of "REEXT."

Sample Holding Time Evaluation

- All samples were prepared and analyzed within the laboratory-specified holding times with the following exceptions.

- The reported MDLs and RDLs for PFAS analytes in SDG 410-51537-1 samples CMW-17-GW-210813RE and CMW-28R-GW-210813RE may be higher than reported and the "not-detected" results have been flagged "UJ" on the data tables. The reported positive results for PFAS analytes in SDG 410-51537-1 samples CMW-17-GW-210813RE and CMW-28R-GW-210813RE should be considered estimated and have been flagged "J" on the data tables. These samples were prepared outside of the laboratory-specified holding time from sample collection to extraction.

Sample Condition Upon Receipt Evaluation

- All samples were received in good condition (undamaged and within laboratory-specified temperature).

Method Blank Evaluation

- An evaluation of the method blank results for SDG 410-51537-1 indicated that perfluorooctanesulfonic acid contamination was present in method blank MB 410-162732/1-A associated with the initial sample preparation and contamination was not observed for method blank MB 410-167381/1-A associated with the extraction of samples CMW-17-GW-210813RE and CMW-28R-GW-210813RE. An evaluation of the method blank result for SDG 410-51558-1 indicated that contamination was not observed. Qualification of data due to method blank results is addressed below.

- The reported positive results for perfluorooctanesulfonic acid in SDG 410-51537-1 samples CMW-17-GW-210813 and CMW-28R-GW-210813 should be considered "not-detected" and have been flagged "UB" on the data tables. It should be noted that sample volumes and dilution factors were taken into consideration when evaluating blank contamination.

Equipment Blank Evaluation

- Eight equipment blanks, see Table 1, were collected and analyzed for PFAS in association with the investigative samples. An evaluation of the equipment blank sample results indicated that no PFAS compounds were detected. Qualification of data due to equipment blank results was not warranted.

Field Blank Evaluation

- One field blank, SDG 410-51558-1 sample FB-W-2108, was collected and analyzed for PFAS in association with the investigative samples. An evaluation of the field blank sample results indicated that no PFAS compounds were detected. Qualification of data due to field blank results was not warranted.

Labeled Pre-extraction Internal Standard Evaluation

- The labeled pre-extraction internal standard recoveries were evaluated against the laboratory acceptance limits. The pre-extraction internal standard recoveries were observed to be within the laboratory acceptance limits with the following exceptions.

- The reported MDLs and RDLs for perfluorobutanesulfonic acid and perfluorononanoic acid in SDG 410-51537-1 sample CMW-17-GW-210813RE may be higher than reported and the “not-detected” results have been flagged “UJ” on the data tables. High recoveries (> laboratory limits) were observed for 13C3-perfluorobutanesulfonic acid and 13C9-perfluorononanoic acid in this sample.

Matrix Spike/Matrix Spike Duplicate Evaluation

- The MS/MSD results were evaluated against the laboratory acceptance limits. The MS/MSD recoveries and precision were observed to be within the laboratory acceptance limits. Qualification of data due to MS/MSD results was not warranted.

Laboratory Control Sample Evaluation

- The LCS/LCSD results were evaluated against the laboratory acceptance limits. The LCS/LCSD recoveries and precision were observed to be within the laboratory acceptance limits. Qualification of data due to LCS/LCSD results was not warranted.

Field Duplicate Evaluation

- One field duplicate pair (SDG 410-51537-1 sample CMW-12-GW-210813 and its field duplicate, sample BD-1-GW-210813) was collected and analyzed for PFAS. Acceptable precision was observed between the field duplicate sample results to the limited extent that the observed positive results were below the RDL for both samples. Qualification of data due to field duplicate precision was not warranted.

Initial Calibration Evaluation

- The initial calibrations were evaluated against the laboratory acceptance limits. The initial calibrations were observed to be within the laboratory acceptance limits for target analytes. Qualification of data due to initial calibration results was not warranted.

Initial Calibration Verification Evaluation

- The ICVs were evaluated against the laboratory acceptance limits. The ICVs were observed to be within the laboratory acceptance limits for target analytes. Qualification of data due to ICV results was not warranted.

Continuing Calibration Verification Evaluation

- The CCVs were evaluated against the laboratory acceptance limits. The CCVs were observed to be within the laboratory acceptance limits for the target analytes for the associated reported sample results. Qualification of data due to CCV results was not warranted.

Pre-injection Internal Standard Evaluation

- The pre-injection internal standard recoveries were evaluated against the laboratory acceptance limits. The pre-injection internal standard recoveries were observed to be within the laboratory acceptance limits for samples. Qualification of data due to pre-injection internal standard recoveries was not warranted.

Results Reporting Evaluation

- ELLE preformed a re-extraction and reanalysis of the SDG 410-51537-1 samples CMW-17-GW-210813RE and CMW-28R-GW-210813RE for PFAS compounds (see Data Package Completeness Evaluation for more information). The data reviewer compared the original and second analysis PFAS results to evaluate precision using the field duplicate criteria. Acceptable precision was observed between the original and second analysis results (relative percent difference [RPD] < 20% when both results were > 5× the RDL, or the difference between the results was < the RDL when at least one result was < 5× the RDL).

  The reported positive PFAS results in the initial and second extractions of SDG 410-51537-1 sample CMW-17-GW-210813 included perfluorooctanoic acid, perfluorohexanesulfonic acid, and perfluorooctanesulfonic acid at concentrations between the MDL and RDL. Environmental Standards evaluation of the initial and second extractions of this sample indicates that the extractions were consistent due to the PFAS concentrations below the RDL.

The reported positive PFAS results in the initial and second extractions of SDG 410-51537-1 sample CMW-28R-GW-210813 included perfluorohexanoic acid, perfluorooctanoic acid, and perfluorohexanesulfonic acid at concentrations between the MDL and RDL. There was a reported positive result for perfluorooctanesulfonic acid at a concentration between the MDL and RDL in the initial extraction, but this PFAS was reported as "not-detected" in the second extraction. Even though perfluorooctanesulfonic acid was not detected in the second extraction, Environmental Standards' evaluation of the initial and second extractions of this sample indicates that the extractions were consistent due to the PFAS concentrations below the RDL.

- The reported positive result for perfluorooctanoic acid in SDG 410-51573-1 sample CMW-28R-GW-210813RE should be considered estimated and has been flagged "J" on the data tables. In the chromatograms for the sample, the composition of the linear and branched isomer peaks included in the response for the analyte between the primary and confirmation ions was significantly different.

- The positive results were reported at concentrations greater than the sample-specific MDL (adjusted for dilution factor and sample volume). The reported concentrations were reproduced with the information included in the data package. Based on the information provided, Environmental Standards was able to reproduce the reported results.

- The reported positive results reported at concentrations less than the sample-specific RDL (adjusted for dilution factors and sample volume) and above the MDL should be considered estimated and have been flagged "J" (unless flagged "UB") on the data tables.

B. Conclusions

Based on this QA review, several PFAS results were qualified as “not-detected” due to method blank contamination and as estimated due to extraction holding time exceedance, analyte qualitative identification, labeled pre-extraction internal standard recoveries, and results reported between the sample-specific MDL and RDL. In order to use any of the data, the data user should understand the qualifications and limitations as specified in this QA review.

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SECTION 2

RESULTS SUMMARY TABLE

DATA QUALIFIERS

UB This result should be considered “not-detected” because it was detected in a laboratory and/or equipment blank at a similar level.

R The data are unusable (note: the analyte may or may not be present in the sample).

J The associated value is an estimated quantity.

UJ This analyte was analyzed for, but was not detected. The associated reporting detection limit is an estimate and may be inaccurate or imprecise.

U Indicates the analyte was analyzed for but not detected (laboratory qualifier).

A. SAMPLE DELIVERY GROUP 410-51537-1

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	DONA	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	2.7	GW	410-51537-5	U	1	410-51537-1	HFPODA	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	2.7	GW	410-51537-5	U	1	410-51537-1	NEtFOSAA	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.54	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	NMeFOSAA	INIT	0.54	8/13/2021	FD
BD-1-GW-210813	TRG	0.65	ng/L	1.8	GW	410-51537-5	J	1	410-51537-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	1.2	ng/L	1.8	GW	410-51537-5	J	1	410-51537-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	1.1	ng/L	1.8	GW	410-51537-5	J	1	410-51537-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.67	ng/L	1.8	GW	410-51537-5	J	1	410-51537-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	FD
BD-1-GW-210813	TRG	0.45	ng/L	1.8	GW	410-51537-5	U	1	410-51537-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	FD
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	11Cl-PF3OUdS	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	9Cl-PF3ONS	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	DONA	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	2.7	GW	410-51537-1	U	1	410-51537-1	HFPODA	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	2.7	GW	410-51537-1	U	1	410-51537-1	NEtFOSAA	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.53	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	NMeFOSAA	INIT	0.53	8/13/2021	REG
CMW-12-GW-210813	TRG	0.55	ng/L	1.8	GW	410-51537-1	J	1	410-51537-1	Perfluorobutanesulfonic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluorodecanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluorododecanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluoroheptanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	1.1	ng/L	1.8	GW	410-51537-1	J	1	410-51537-1	Perfluorohexanesulfonic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.94	ng/L	1.8	GW	410-51537-1	J	1	410-51537-1	Perfluorohexanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluorononanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluorooctanesulfonic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.7	ng/L	1.8	GW	410-51537-1	J	1	410-51537-1	Perfluorooctanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluorotetradecanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluorotridecanoic acid	INIT	0.44	8/13/2021	REG
CMW-12-GW-210813	TRG	0.44	ng/L	1.8	GW	410-51537-1	U	1	410-51537-1	Perfluoroundecanoic acid	INIT	0.44	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	11Cl-PF3OUdS	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	9Cl-PF3ONS	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	DONA	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	3	GW	410-51537-2	U	1	410-51537-1	HFPODA	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	3	GW	410-51537-2	U	1	410-51537-1	NEtFOSAA	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.61	ng/L	2	GW	410-51537-2	U	1	410-51537-1	NMeFOSAA	INIT	0.61	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorobutanesulfonic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorodecanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorododecanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluoroheptanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.94	ng/L	2	GW	410-51537-2	J	1	410-51537-1	Perfluorohexanesulfonic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorohexanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorononanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.64	ng/L	2	GW	410-51537-2	UB	1	410-51537-1	Perfluorooctanesulfonic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.67	ng/L	2	GW	410-51537-2	J	1	410-51537-1	Perfluorooctanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorotetradecanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluorotridecanoic acid	INIT	0.51	8/13/2021	REG

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	U	1	410-51537-1	Perfluoroundecanoic acid	INIT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	11Cl-PF3OUdS	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	9Cl-PF3ONS	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	DONA	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	3.1	GW	410-51537-2	UJ	1	410-51537-1	HFPODA	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	3.1	GW	410-51537-2	UJ	1	410-51537-1	NEtFOSAA	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.61	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	NMeFOSAA	REEXT	0.61	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorobutanesulfonic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorodecanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorododecanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluoroheptanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.74	ng/L	2	GW	410-51537-2	J	1	410-51537-1	Perfluorohexanesulfonic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorohexanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorononanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.6	ng/L	2	GW	410-51537-2	J	1	410-51537-1	Perfluorooctanesulfonic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.66	ng/L	2	GW	410-51537-2	J	1	410-51537-1	Perfluorooctanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorotetradecanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluorotridecanoic acid	REEXT	0.51	8/13/2021	REG
CMW-17-GW-210813	TRG	0.51	ng/L	2	GW	410-51537-2	UJ	1	410-51537-1	Perfluoroundecanoic acid	REEXT	0.51	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	11Cl-PF3OUdS	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	9Cl-PF3ONS	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	DONA	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	3	GW	410-51537-3	U	1	410-51537-1	HFPODA	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	3	GW	410-51537-3	U	1	410-51537-1	NEtFOSAA	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.61	ng/L	2	GW	410-51537-3	U	1	410-51537-1	NMeFOSAA	INIT	0.61	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluorobutanesulfonic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.56	ng/L	2	GW	410-51537-3	J	1	410-51537-1	Perfluorodecanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluorododecanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluoroheptanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	1.7	ng/L	2	GW	410-51537-3	J	1	410-51537-1	Perfluorohexanesulfonic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.94	ng/L	2	GW	410-51537-3	J	1	410-51537-1	Perfluorohexanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluorononanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluorooctanesulfonic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.81	ng/L	2	GW	410-51537-3	J	1	410-51537-1	Perfluorooctanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluorotetradecanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluorotridecanoic acid	INIT	0.5	8/13/2021	REG
CMW-56-GW-210813	TRG	0.5	ng/L	2	GW	410-51537-3	U	1	410-51537-1	Perfluoroundecanoic acid	INIT	0.5	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	11Cl-PF3OUdS	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	9Cl-PF3ONS	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	DONA	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	2.8	GW	410-51537-4	U	1	410-51537-1	HFPODA	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	2.8	GW	410-51537-4	U	1	410-51537-1	NEtFOSAA	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.56	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	NMeFOSAA	INIT	0.56	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluorobutanesulfonic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluorodecanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluorododecanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluoroheptanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	1.8	ng/L	1.9	GW	410-51537-4	J	1	410-51537-1	Perfluorohexanesulfonic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	1.5	ng/L	1.9	GW	410-51537-4	J	1	410-51537-1	Perfluorohexanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluorononanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.59	ng/L	1.9	GW	410-51537-4	UB	1	410-51537-1	Perfluorooctanesulfonic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.89	ng/L	1.9	GW	410-51537-4	J	1	410-51537-1	Perfluorooctanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluorotetradecanoic acid	INIT	0.47	8/13/2021	REG

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluorotridecanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	U	1	410-51537-1	Perfluoroundecanoic acid	INIT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	11Cl-PF3OUdS	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	9Cl-PF3ONS	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	DONA	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	2.8	GW	410-51537-4	UJ	1	410-51537-1	HFPODA	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	2.8	GW	410-51537-4	UJ	1	410-51537-1	NEtFOSAA	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.56	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	NMeFOSAA	REEXT	0.56	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorobutanesulfonic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorodecanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorododecanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluoroheptanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	1.6	ng/L	1.9	GW	410-51537-4	J	1	410-51537-1	Perfluorohexanesulfonic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	1.4	ng/L	1.9	GW	410-51537-4	J	1	410-51537-1	Perfluorohexanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorononanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorooctanesulfonic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.85	ng/L	1.9	GW	410-51537-4	J	1	410-51537-1	Perfluorooctanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorotetradecanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluorotridecanoic acid	REEXT	0.47	8/13/2021	REG
CMW-28-GW-210813	TRG	0.47	ng/L	1.9	GW	410-51537-4	UJ	1	410-51537-1	Perfluoroundecanoic acid	REEXT	0.47	8/13/2021	REG

B. SAMPLE DELIVERY GROUP 410-51558-1

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	DONA	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	3.1	WATER	410-51558-1	U	1	410-51558-1	HFPODA	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	3.1	WATER	410-51558-1	U	1	410-51558-1	NEtFOSAA	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.61	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	NMeFOSAA	INIT	0.61	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.51	8/13/2021	EB
EB-1-W-2108	TRG	0.51	ng/L	2	WATER	410-51558-1	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.51	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	DONA	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	3.1	WATER	410-51558-2	U	1	410-51558-1	HFPODA	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	3.1	WATER	410-51558-2	U	1	410-51558-1	NEtFOSAA	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.62	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	NMeFOSAA	INIT	0.62	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.52	8/13/2021	EB
EB-2-W-2108	TRG	0.52	ng/L	2.1	WATER	410-51558-2	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.52	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	DONA	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	3	WATER	410-51558-3	U	1	410-51558-1	HFPODA	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	3	WATER	410-51558-3	U	1	410-51558-1	NEtFOSAA	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.61	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	NMeFOSAA	INIT	0.61	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.5	8/13/2021	EB

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.5	8/13/2021	EB
EB-3-W-2108	TRG	0.5	ng/L	2	WATER	410-51558-3	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.5	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	DONA	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-4	U	1	410-51558-1	HFPODA	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-4	U	1	410-51558-1	NEtFOSAA	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.54	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	NMeFOSAA	INIT	0.54	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	EB
EB-4-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-4	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	DONA	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-5	U	1	410-51558-1	HFPODA	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-5	U	1	410-51558-1	NEtFOSAA	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.54	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	NMeFOSAA	INIT	0.54	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	EB
EB-5-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-5	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	DONA	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-6	U	1	410-51558-1	HFPODA	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-6	U	1	410-51558-1	NEtFOSAA	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.54	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	NMeFOSAA	INIT	0.54	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	EB

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	EB
EB-6-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-6	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	DONA	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-7	U	1	410-51558-1	HFPODA	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-7	U	1	410-51558-1	NEtFOSAA	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.54	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	NMeFOSAA	INIT	0.54	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	EB
EB-7-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-7	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	DONA	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-8	U	1	410-51558-1	HFPODA	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-8	U	1	410-51558-1	NEtFOSAA	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.54	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	NMeFOSAA	INIT	0.54	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	EB
EB-8-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-8	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	EB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	11Cl-PF3OUdS	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	9Cl-PF3ONS	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	DONA	INIT	0.45	8/13/2021	FB

Field Sample ID	Result Type	Lab Result	Lab Units	Lab Detection Limit	Lab Matrix	Lab Sample ID	Lab Qualifier	Dilution Factor	Sample Delivery Group (SDG)	Parameter Name	Analysis Type Code	Method Detection Limit	Sample Date	Sample Purpose
FB-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-9	U	1	410-51558-1	HFPODA	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	2.7	WATER	410-51558-9	U	1	410-51558-1	NEtFOSAA	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.54	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	NMeFOSAA	INIT	0.54	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorobutanesulfonic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorodecanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorododecanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluoroheptanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorohexanesulfonic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorohexanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorononanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorooctanesulfonic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorooctanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorotetradecanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluorotridecanoic acid	INIT	0.45	8/13/2021	FB
FB-W-2108	TRG	0.45	ng/L	1.8	WATER	410-51558-9	U	1	410-51558-1	Perfluoroundecanoic acid	INIT	0.45	8/13/2021	FB

SECTION 3

SUPPORTING DOCUMENTATION

A. SAMPLE DELIVERY GROUP 410-51537-1

ENVIRONMENTAL STANDARDS

ORGANIC ANALYSIS SUPPORT DOCUMENTATION

Client Name:	Chevron EMC	EnvStd Project Manager:	STZ
Site/Project Name:	Former Chevron Kenai DV	Reviewed by:	STZ
Job Number/Task/Subtask:	20219586.A000	Approved by:	THW
Laboratory/Location:	Eurofins Lancaster Laboratories	Completion Date:	10/2021
SDG:	410-51537-1	Validation Level:	Stage 4
Sample Collection Dates:	8/13/2021		

The following table indicates criteria that were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail **Note:** All items examined have been included in the Support Document unless otherwise noted.							Problems Identified						
	Check (√) if Yes or Footnote Letter for Comments Below													
Parameter/ Method	PFAS*							PFAS*						
Condition upon Receipt	X													
Sample Preservation	X													
Holding Times	X							X						
Blank Analysis Results	X							X						
Surrogates	X													
Laboratory Control Sample	X													
Matrix Spike/Matrix Spike Duplicate	X													
Laboratory Duplicate														
Field Duplicate	X													
Sample Preparation	X													
Detection Limit/Sensitivity	X													
Mass Tuning	X													
GC Instrument Performance – Resolution Checks and DDT/Endrin Breakdown														
Initial Calibrations	X													
Continuing Calibrations	X													
Internal Standard Performance	X													
Retention Time Shifts	X													
Quantitation of Results	X							X						
Qualitative Identification: Targets	X							X						
Qualitative Identification: TICs														
Multiple Dilutions/Analyses														
Analytical Sequence	X													
GC Column Agreement	X													
Manual Integration	X													
Percent Solids														
Extract Cleanup Documentation, Checks, and Calibrations														
Deliverable was Complete	X													
Others:														

Comments: Qualitative Identification, Quantitation of Results, and Manual Integrations are not included in the Support Documentation unless a problem was identified.

* Laboratory SOP.

BLANK ANALYSIS RESULTS FOR ORGANIC PARAMETERS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (ng/L)	Qualification limit	
						5×	10×
PFAS	Aq	MB	MB 410-162732/1-A	Perfluorooctanesulfonic acid	0.531	2.655	5.31
PFAS	Aq	MB	MB 410-167381/1-A	None		0	0
PFAS	Aq	ICB	ICB 410-165786/8	None		0	0
PFAS	Aq	ICB	ICB 410-166660/8	Perfluorotetradecanoic acid	0.144	0.72	1.44
PFAS	Aq	ICB	ICB 410-166660/8	NEtFOSAA	0.361	1.805	3.61
PFAS	Aq	ICB	ICB 410-166660/8	NMeFOSAA	0.278	1.39	2.78
PFAS	Aq	EB	several	None		0	0
PFAS	Aq	FB	FB-W-2108	none		0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0

1 - V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other:

2 - MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank;
IB = Instrument Blank; SB = Storage Blank

Notes:

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF DUPLICATE RESULTS

Matrix: ◉ Aqueous ○ Non-aq.
Reporting Level: ◉ MDL ○ QL
Units: µg/L

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 20
If Either Result < 5 × Its QL, Dif. ≤: 1 **× Highest QL**

Sample ID:	CMW-12-GW-210813				**Duplicate Sample ID:**	BD-1-GW-210813					
Analyte	**Sample Concentration**	**Qual**	**QL**	**MDL**	**Duplicate Concentration**	**Qual**	**QL**	**MDL**	**Difference**	**RPD**	**Flag**
Perfluorohexanoic acid	0.94	J	1.8	0.44	1.1	J	1.8	0.45	NA	NA	
Perfluorooctanoic acid	0.7	J	1.8	0.44	0.67	J	1.8	0.45	NA	NA	
Perfluorobutanesulfonic acid	0.55	J	1.8	0.44	0.65	J	1.8	0.45	NA	NA	
Perfluorohexanesulfonic acid	1.1	J	1.8	0.44	1.2	J	1.8	0.45	NA	NA	

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified. The RL will be used for comparison purposes.
NA: The MDL (for QL reporting), RPD or Difference is not applicable

Comments:

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF DUPLICATE RESULTS

Matrix: (•) Aqueous ( ) Non-aq.
Reporting Level: (•) MDL ( ) QL
Units: µg/L

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 20
If Either Result < 5 × Its QL, Dif. ≤: 1 **× Highest QL**

Sample ID:	CMW-17-GW-210813				**Duplicate Sample ID:**	CMW-17-GW-210813 RE					
Analyte	**Sample Concentration**	**Qual**	**QL**	**MDL**	**Duplicate Concentration**	**Qual**	**QL**	**MDL**	**Difference**	**RPD**	**Flag**
Perfluorooctanoic acid	0.67	J	2.0	0.51	0.66	J	2.0	0.51	NA	NA	
Perfluorohexanesulfonic acid	0.94	J	2.0	0.51	0.74	J	2.0	0.51	NA	NA	
Perfluorooctanesulfonic acid	0.64	J	2.0	0.51	0.60	J	2.0	0.51	NA	NA	

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified. The RL will be used for comparison purposes.
NA: The MDL (for QL reporting), RPD or Difference is not applicable

Comments:

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF DUPLICATE RESULTS

Matrix: ◉ Aqueous ○ Non-aq.
Reporting Level: ◉ MDL ○ QL
Units: µg/L

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 20
If Either Result < 5 × Its QL, Dif. ≤: 1 **× Highest QL**

Sample ID:	CMW-28-GW-210813				**Duplicate Sample ID:**	CMW-28-GW-210813 RE					
Analyte	**Sample Concentration**	**Qual**	**QL**	**MDL**	**Duplicate Concentration**	**Qual**	**QL**	**MDL**	**Difference**	**RPD**	**Flag**
Perfluorohexanoic acid	1.5	J	1.9	0.47	1.4	J	1.9	0.47	NA	NA	
Perfluorooctanoic acid	0.89	J	1.9	0.47	0.85	J	1.9	0.47	NA	NA	
Perfluorohexanesulfonic acid	1.8	J	1.9	0.47	1.6	J	1.9	0.47	NA	NA	
Perfluorooctanesulfonic acid	0.59	J	1.9	0.47	0.47	U	1.9	0.47	NA	NA	

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified. The RL will be used for comparison purposes.
NA: The MDL (for QL reporting), RPD or Difference is not applicable

Comments:

Job Number: 410-51537-1

Job Description: CEMC Former Kenai Refinery

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

Job Narrative
410-51537-1

Receipt
The samples were received on 8/17/2021 10:32 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

PFAS
Method PFC_IDA: Target analyte(s) were detected in the method blank associated with the following samples: CMW-17-GW-210813 (410-51537-2) and CMW-28-GW-210813 (410-51537-4). The following action was taken: This sample(s) was re-extracted outside the required holding time and target analyte(s) were not detected in the re-extracted method blank.

Method PFC_IDA: Reporting limits were raised for the following sample: CMW-17-GW-210813 (410-51537-2). due to limited sample volume.

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

Sample Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51537-1
Project/Site: CEMC Former Kenai Refinery

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-51537-1	CMW-12-GW-210813	Water	08/13/21 08:40	08/17/21 10:32
410-51537-2	CMW-17-GW-210813	Water	08/13/21 11:50	08/17/21 10:32
410-51537-3	CMW-56-GW-210813	Water	08/13/21 13:52	08/17/21 10:32
410-51537-4	CMW-28-GW-210813	Water	08/13/21 16:11	08/17/21 10:32
410-51537-5	BD-1-GW-210813	Water	08/13/21 00:00	08/17/21 10:32

Chevro[illegible]is Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct.: [illegible]

410-51537 Chain of Custody

tories Environmental use only
Sample # _____

SCR #: _____

Client Information

Facility # CEMC Former Kenai Refinery
WBS

Site Address: 55310 Chevron Road, Kenai, AK

Chevron PM: James Kiernan
Lead Consultant: Arcadis

Consultant/Office: 11001 West 120th Ave. Broomfield, CO

Consultant Project Mgr.: Steve Rice

Sampler: Anthony Garcia

State where samples were collected: Alaska
For Compliance: Yes ☐ No ☐

Matrix: Soil ☐ Sediment ☐ Water: Potable ☐ Ground ☒ NPDES ☐ Surface ☐ Oil: ☐ Air ☐

Preservation and Filtration Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	TPH-GRO 8015 ☐ 8260 ☐	TPH-DRO without Silica Gel Cleanup ☐	TPH-DRO with Silica Gel Cleanup ☐	VPH ☐ EPH ☐ Method ___	Lead Total ☐ Diss. ☐ Method ___	18 PFAS compounds (USEPA 537.1 Modified)			
CMW-12-GW-210813	8/13/21	0840	X		6				X					X			
CMW-17-GW-210813	↓	1150	X		2				X					X			
CMW-56-GW-210813		1352	X		2				X					X			
CMW-28R-GW-210813		1611	X		2				X					X			
BD-1-GW-210813	↓	—	X		2				X					X			

Analyses Requested

Preservation Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
F = Field Filtered O = Other

☐ Results in Dry Weight
☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

Remarks
MS/MSD For CMW-12-GW-210813

Turnaround Time Requested (TAT) (please circle)
Standard | 5 day | 4 day | 72 hour | 48 hour | 24 hour

Data Package (circle if required)
Type I - Full | Type III | Type VI (Raw Data)

EDD (circle if required)
CVX-RTBU-FI_05 (default) | Other: _____

Relinquished by	Date	Time	Received by	Date	Time
Edwin Hernandez	8/2/21	11:45			
[signature]	8/14/21	1805			

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Received by [signature] Date 8/17/21 Time 1032

Temperature Upon Receipt 3.8 °C

Custody Seals Intact? Yes No

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7047 1117

DAB

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 410-51537-1

Login Number: 51537

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Bryan, Debra A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-12-GW-210813 Lab Sample ID: 410-51537-1

Matrix: Water Lab File ID: 21AUG31-10.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 08:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 281.3(mL) Date Analyzed: 09/01/2021 00:13

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	0.94	J	1.8	0.44
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.44
335-67-1	Perfluorooctanoic acid	0.70	J	1.8	0.44
375-95-1	Perfluorononanoic acid	ND		1.8	0.44
335-76-2	Perfluorodecanoic acid	ND		1.8	0.44
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.44
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.44
375-73-5	Perfluorobutanesulfonic acid	0.55	J	1.8	0.44
355-46-4	Perfluorohexanesulfonic acid	1.1	J	1.8	0.44
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.44
2991-50-6	NEtFOSAA	ND		2.7	0.44
2355-31-9	NMeFOSAA	ND		1.8	0.53
307-55-1	Perfluorododecanoic acid	ND		1.8	0.44
13252-13-6	HFPODA	ND		2.7	0.44
756426-58-1	9Cl-PF3ONS	ND		1.8	0.44
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.44
919005-14-4	DONA	ND		1.8	0.44
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.44

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-10.d
Lims ID: 410-51537-A-1-A
Client ID: CMW-12-GW-210813
Sample Type: Client
Inject. Date: 01-Sep-2021 00:13:45 ALS Bottle#: 69 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-A-1-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-008
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:20:08
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 MTP										
175.00 > 97.00		1.486				ND				
2 PPF Acid										M
163.00 > 119.00	1.819	1.833	-0.014	0.472	17812	0.1748			127	M
3 PFMOAA										
179.00 > 85.00		2.851				ND				
5 R-EVE										M
405.00 > 217.00	3.843	3.849	-0.006	0.996	717	0.0623			19.4	M
4 R-PSDA										
441.00 > 241.00		3.849				ND				
6 Perfluorobutanoic acid										M
213.00 > 169.00	3.857	3.849	0.008	1.000	47398	0.2377			155	M
D 7 13C4 PFBA										
217.00 > 172.00	3.857	3.849	0.008	1.000	2259390	8.58		85.8	119471	
* 8 13C3-PFBA										
216.00 > 172.00	3.857	3.850	0.007		1173619	5.00			3103	
9 Hydrolyzed PSDA										
439.00 > 343.00		3.872				ND				
10 PMPA										
229.00 > 185.00		3.994				ND				
11 PFPrS										
249.00 > 99.00	4.068	4.067	0.001	1.055	2076	0.0175			86.8	
12 NVHOS										
297.00 > 135.00		4.114				ND				
13 PFECA F										
229.00 > 85.00		4.127				0				
14 PFO2HxA										
245.00 > 85.00		4.332				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluoropentanoic acid										
263.00 > 219.00	4.459	4.455	0.004	0.998	117683	0.5274			132	
D 17 13C5 PFPeA										
268.00 > 223.00	4.468	4.456	0.012	1.158	2468032	8.49		84.9	93586	
16 3:3 FTCA										
241.00 > 177.00		4.457				ND				
18 Perfluorobutanesulfonic acid										M
299.00 > 80.00	4.523	4.513	0.010	0.998	64734	0.1541	Target=3.39		258	M
299.00 > 99.00	4.523	4.513	0.010	0.998	23022		2.81(1.69-5.08)		331	
D 19 13C3 PFBS										
302.00 > 80.00	4.533	4.520	0.013	1.175	3231612	9.66		104	62131	
20 PEPA										
279.00 > 235.00		4.569				0				
21 PFECA A										
279.00 > 85.00		4.595				ND				
22 PES										
315.00 > 135.00		4.693				ND				
23 PFECA B										
201.00 > 85.00		4.826				ND				
295.00 > 201.00		4.826								
24 4:2 FTS										
327.00 > 307.00		4.856				ND				
327.00 > 81.00		4.856								
D 25 M2-4:2 FTS										
329.00 > 81.00	4.869	4.858	0.011	0.855	443358	9.88		106	5593	
26 Perfluorohexanoic acid										M
313.00 > 269.00	4.908	4.896	0.012	1.000	77724	0.2650	Target=15.40		172	M
313.00 > 119.00	4.908	4.896	0.012	1.000	3931		19.77(7.70-23.10)		148	
$ 51 13C2 PFHxA										
315.00 > 270.00		4.897				ND				
D 27 13C5 PFHxA										
318.00 > 273.00	4.908	4.899	0.009	0.862	3549613	8.66		86.6	106938	
28 Perfluoropentanesulfonic acid										
349.00 > 80.00	4.929	4.918	0.011	1.087	28272	0.0824	Target=3.51		363	
349.00 > 99.00	4.929	4.918	0.011	1.087	7674		3.68(1.76-5.27)		147	
29 PFO3OA										
311.00 > 85.00		4.956				ND				
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.044	5.033	0.011	0.885	47932	9.27		92.7	3778	
32 Hydro-EVE Acid										
427.00 > 283.00		5.259				0				
34 R-PSDCA										
397.00 > 217.00		5.264				ND				
33 Hydro-PS Acid										
463.00 > 263.00		5.291				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluoroheptanoic acid										
363.00 > 319.00	5.316	5.306	0.010	1.000	19835	0.0552	Target=4.18		89.5	
363.00 > 169.00	5.305	5.306	-0.001	0.998	4627		4.29(2.09-6.27)		158	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00	5.327	5.309	0.018	1.002	85029	0.3126	Target=3.52		4320	
399.00 > 99.00	5.305	5.309	-0.004	0.998	24403		3.48(1.76-5.27)		42.9	
D 38 13C4 PFHpA										
367.00 > 322.00	5.316	5.311	0.005	0.933	3686865	8.72		87.2	95856	
D 39 13C3 PFHxS										
402.00 > 80.00	5.316	5.311	0.005	0.933	2416223	8.13		86.0	61500	
40 DONA										
377.00 > 251.00		5.353				ND				
41 PFECA G										
379.00 > 185.00		5.373				ND				
42 5:3 FTCA										
341.00 > 237.00		5.393				ND				
339.00 > 295.00		5.393								
43 6:2 FTUCA										
357.00 > 293.00	5.424	5.412	0.012	1.000	3459	0.0170			65.1	
D 44 13C-6:2 FTUCA										
359.00 > 294.00	5.424	5.412	0.012	0.952	1740349	5.94		59.4	68357	
45 6:2 FTCA										
377.00 > 293.00		5.430				ND				
D 46 13C-6:2 FTCA										
379.00 > 294.00	5.441	5.434	0.007	0.955	179853	13.8		138	7118	
47 PFO4DA										
377.00 > 85.00		5.486				0				
48 PS Acid										
443.00 > 147.00		5.533				ND				
49 EVE Acid										
407.00 > 263.00		5.550				ND				
50 PFECHS										
461.00 > 381.00		5.626				ND				
461.00 > 99.00		5.626								
53 6:2 FTS										
427.00 > 407.00	5.677	5.668	0.009	0.998	38859	0.4268	Target=1.41		2821	
427.00 > 81.00	5.677	5.668	0.009	0.998	25377		1.53(0.70-2.11)		402	
D 52 M2-6:2 FTS										
429.00 > 81.00	5.687	5.671	0.016	0.998	204920	9.32		98.1	8893	
54 Perfluoroheptanesulfonic acid										
449.00 > 80.00		5.674				ND				
449.00 > 99.00		5.674								
D 55 13C8 PFOA										
421.00 > 376.00	5.696	5.685	0.011	1.000	3458486	9.44		94.4	126270	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.696	5.685	0.011	1.000	58684	0.1955	Target=2.48		1524	M
413.00 > 169.00	5.687	5.685	0.002	0.998	23398		2.51(1.24-3.71)		3846	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
$ 35 13C4 PFOA										
417.00 > 372.00	5.696	5.686	0.010	1.000	36701	0.0970			2741	
* 57 13C2 PFOA										
415.00 > 370.00	5.696	5.688	0.008		1503813	5.00			65766	
58 TAF										
443.00 > 85.00		5.933				ND				
D 60 13C8 PFOS										
507.00 > 80.00	6.024	6.013	0.011	1.000	2918923	8.10		84.8	50350	
* 61 13C4 PFOS										
503.00 > 80.00	6.024	6.014	0.010		1709135	4.78			63715	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	6.024	6.015	0.009	1.000	22541	0.0676	Target=4.58		2250	
499.00 > 99.00	6.024	6.015	0.009	1.000	3407		6.62(2.29-6.87)		1119	
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.043	6.032	0.011	1.003	2553892	8.87		88.7	71429	
64 7:3 FTCA										
441.00 > 337.00		6.136				ND				
65 8:2 FTUCA										
457.00 > 393.00		6.142				ND				
D 66 13C-8:2 FTUCA										
459.00 > 394.00	6.157	6.146	0.011	0.969	1641891	5.63		56.3	79332	
D 68 13C-8:2 FTCA										
479.00 > 394.00	6.172	6.159	0.013	0.971	123475	12.9		129	10152	
67 8:2 FTCA										
477.00 > 393.00		6.159				ND				
69 9ClFOS										
531.00 > 351.00		6.188				ND				
71 Perfluorononanesulfonic acid										
549.00 > 80.00		6.314				ND				
549.00 > 99.00		6.314								
72 Perfluorodecanoic acid										
513.00 > 469.00	6.344	6.337	0.007	0.998	30276	0.1013	Target=8.64		510	
513.00 > 169.00	6.344	6.337	0.007	0.998	4453		6.80(4.32-12.97)		167	
* 74 13C2 PFDA										
515.00 > 470.00	6.354	6.339	0.015		1998594	5.00			84810	
D 75 13C6 PFDA										
519.00 > 474.00	6.354	6.339	0.015	1.000	3604409	8.97		89.7	152435	
73 8:2 FTS										
527.00 > 507.00		6.342				ND				
527.00 > 81.00		6.342								
D 76 M2-8:2 FTS										
529.00 > 81.00	6.354	6.344	0.010	1.000	154463	8.42		87.8	8180	
77 Perfluorooctanesulfonamide										
498.00 > 78.00	6.450	6.434	0.016	1.000	12972	0.0394			655	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 78 13C8 FOSA										
506.00 > 78.00	6.450	6.435	0.015	1.015	3329817	5.53		55.3	99575	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.501	6.487	0.014	1.023	922182	8.38		83.8	46767	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
81 Perfluorodecanesulfonic acid										
599.00 > 80.00		6.581				ND				
599.00 > 99.00		6.581								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.626	6.611	0.015	1.043	4013005	8.41		84.1	131069	
$ 70 13C2 PFUnA										
565.00 > 520.00	6.626	6.613	0.013	1.163	1759	0.003999			134	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.638	6.628	0.010	1.045	701615	8.22		82.2	22768	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
86 10:2 FTUCA										
557.00 > 493.00	6.725	6.709	0.016	1.000	2934	0.0207			97.7	
D 87 13C-10:2 FTUCA										
559.00 > 494.00	6.725	6.716	0.009	1.058	1591450	4.96		49.6	51091	
88 11ClFOS										
631.00 > 451.00		6.718				ND				
89 10:2 FTCA										
577.00 > 493.00		6.726				ND				
D 90 13C-10:2 FTCA										
579.00 > 494.00	6.737	6.730	0.007	1.060	99291	12.3		123	6384	
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.860	6.849	0.011	1.080	3292270	7.11		71.1	88543	
93 10:2 FTS										
627.00 > 607.00		6.864				ND				
627.00 > 81.00		6.864								
D 94 d7-N-MeFOSE-M										
623.00 > 59.00	6.880	6.872	0.008	1.083	133109	2.90		29.0	1090	
95 N-MeFOSE-M										
616.00 > 59.00		6.878				ND				
96 NMeFOSA										
512.00 > 169.00		6.888				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 97 d3-NMePFOSA										
515.00 > 169.00	6.901	6.888	0.013	1.086	34703	0.6872		6.9	407	
98 PFDoS										
699.00 > 80.00		7.028				ND				
D 99 d9-N-EtFOSE-M										
639.00 > 59.00	7.045	7.034	0.011	1.109	142687	2.80		28.0	1190	
100 N-EtFOSE-M										
630.00 > 59.00		7.042				ND				
D 102 d5-NEtPFOSA										
531.00 > 169.00	7.066	7.055	0.011	1.112	40698	0.8871		8.9	1116	
101 N-EtFOSA-M										
526.00 > 169.00		7.060				ND				
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.259	7.244	0.015	1.142	2561893	7.30		73.0	72965	
106 Perfluorohexadecanoic acid										
813.00 > 769.00		7.552				ND				
813.00 > 169.00		7.552								
107 Perfluorooctadecanoic acid										
913.00 > 869.00		7.775				ND				
913.00 > 169.00		7.775								

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 01-Sep-2021 07:40:28 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-10.d

Injection Date: 01-Sep-2021 00:13:45 Instrument ID: 30727

Lims ID: 410-51537-A-1-A Lab Sample ID: 410-51537-1

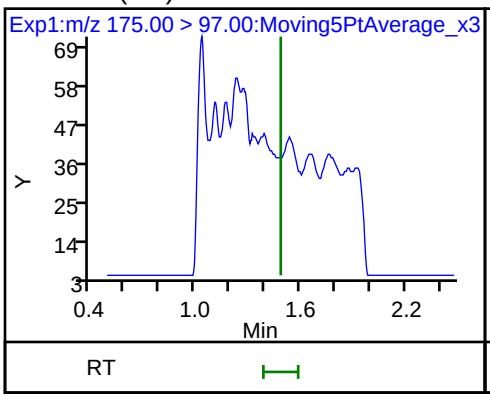
Client ID: CMW-12-GW-210813

Operator ID: US19_USR_INS20264 ALS Bottle#: 69 Worklist Smp#: 8

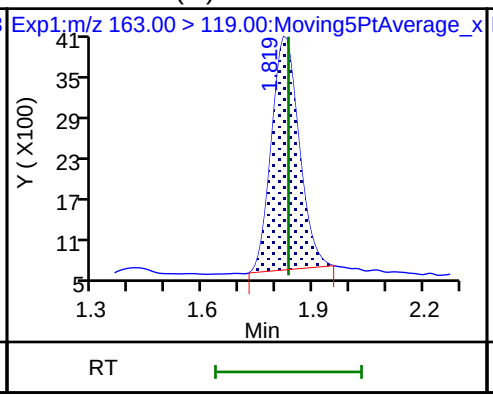
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

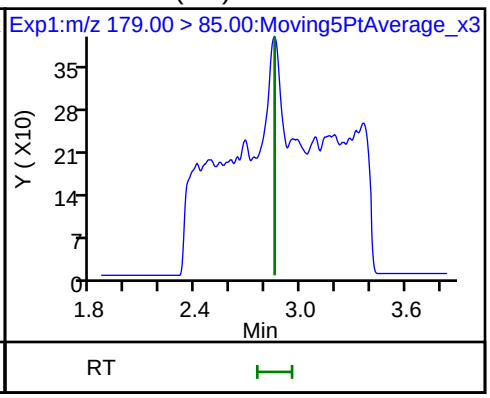
1 MTP (ND)



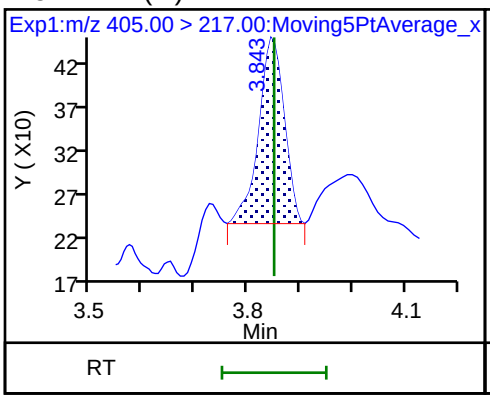
2 PPF Acid (M)



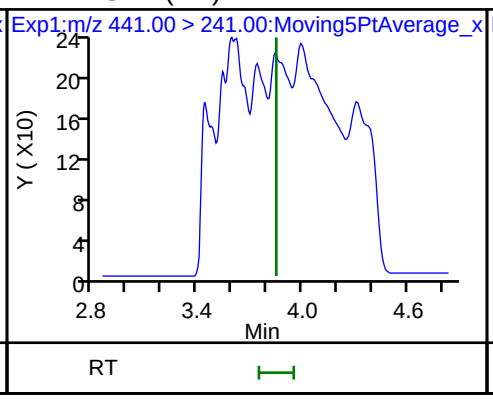
3 PFMOAA (ND)



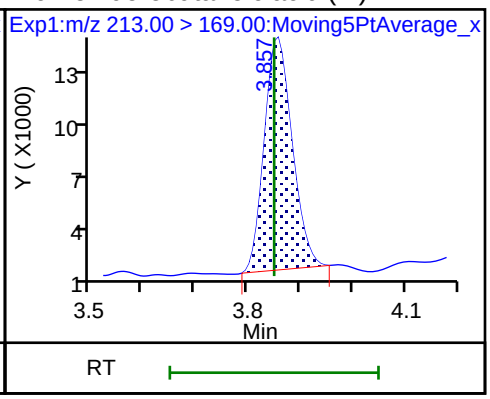
5 R-EVE (M)



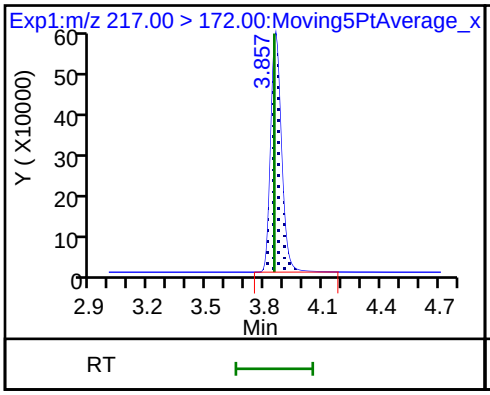
4 R-PSDA (ND)



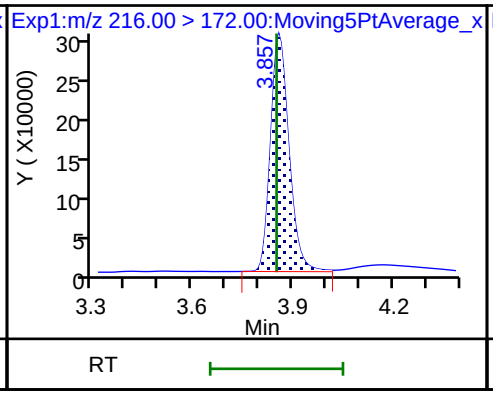
6 Perfluorobutanoic acid (M)



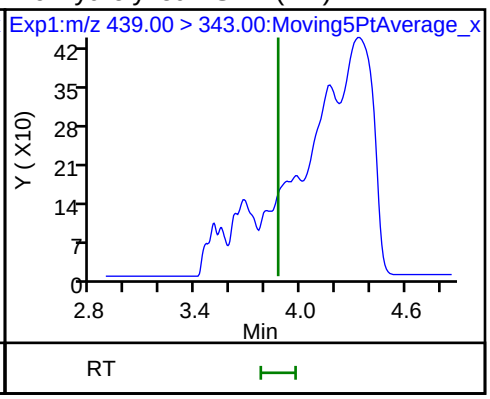
D 7 13C4 PFBA



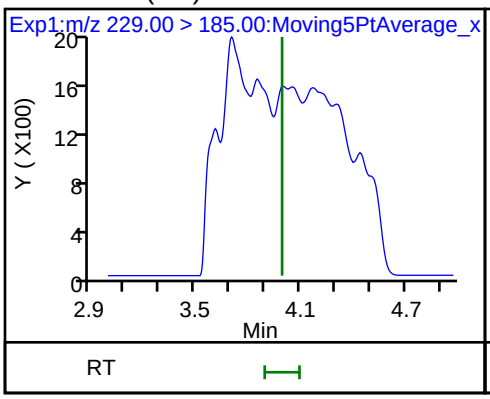
* 8 13C3-PFBA



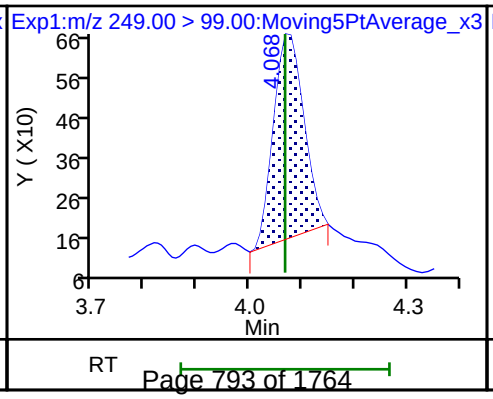
9 Hydrolyzed PSDA (ND)



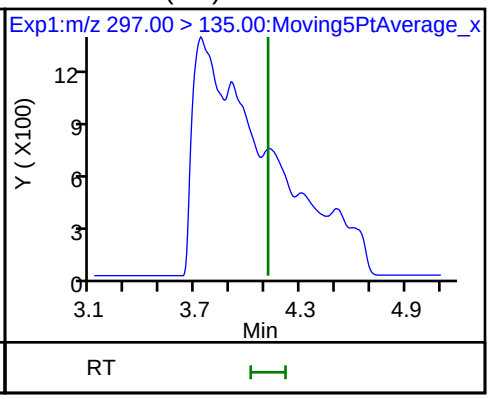
10 PMPA (ND)



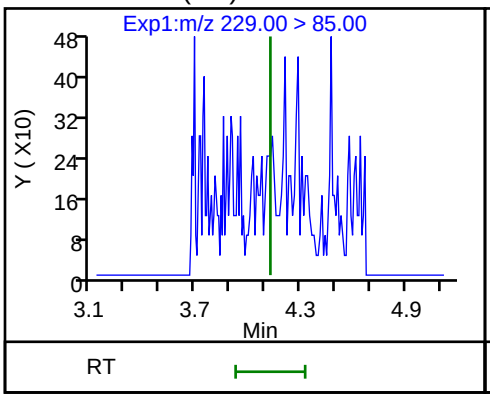
11 PFPrS



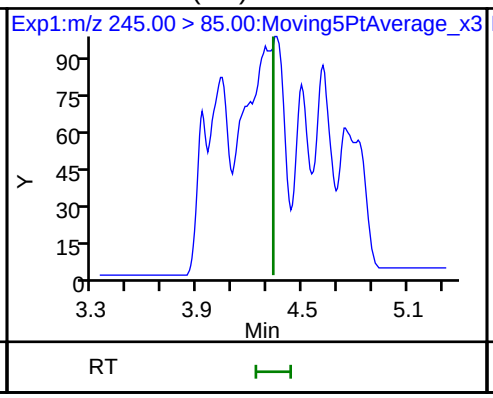
12 NVHOS (ND)



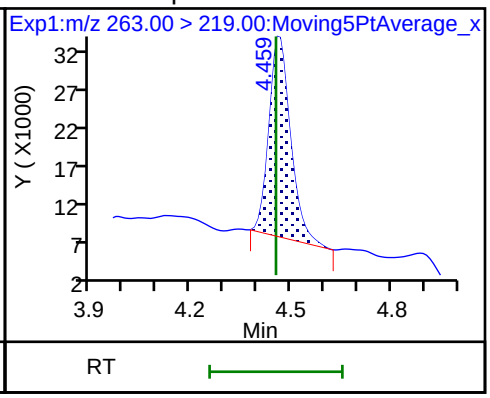
13 PFECA F (ND)



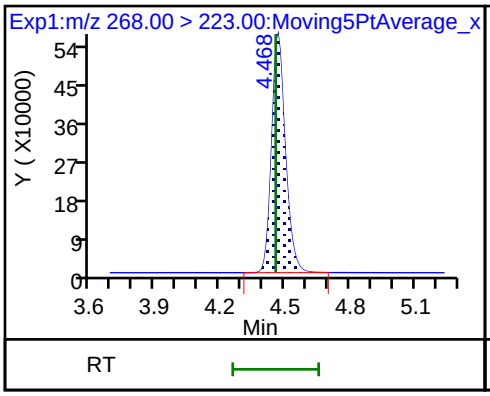
14 PFO2HxA (ND)



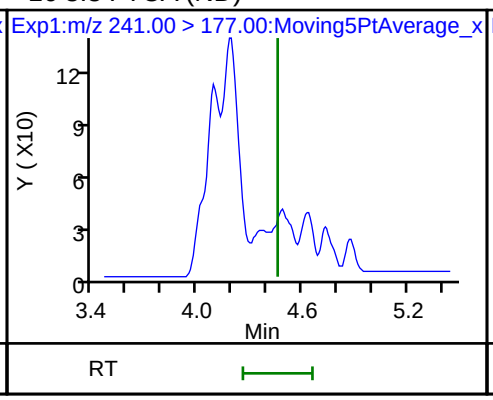
15 Perfluoropentanoic acid



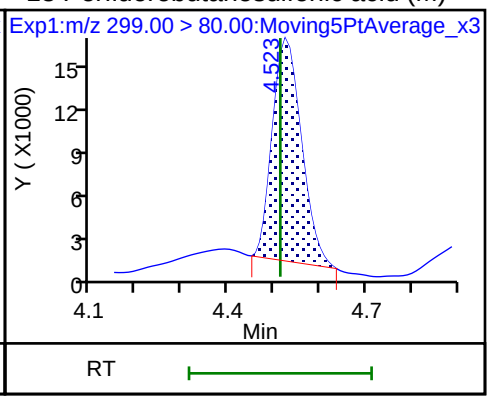
D 17 13C5 PFPeA



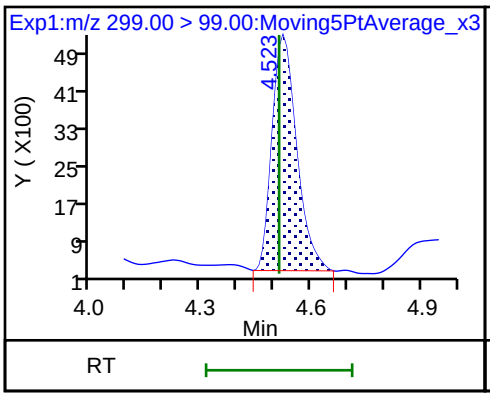
16 3:3 FTCA (ND)



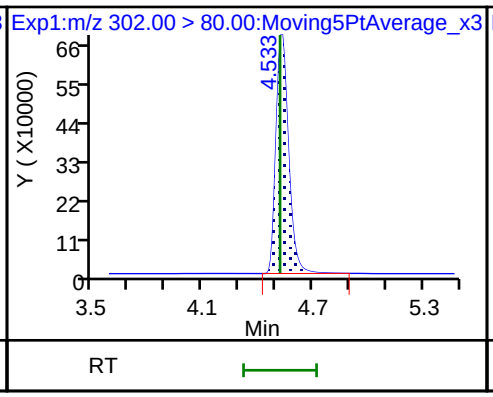
18 Perfluorobutanesulfonic acid (M)



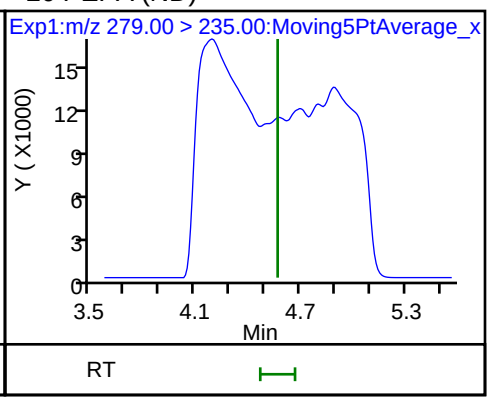
18 Perfluorobutanesulfonic acid



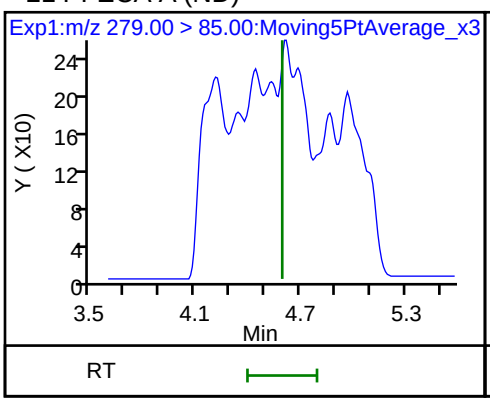
D 19 13C3 PFBS



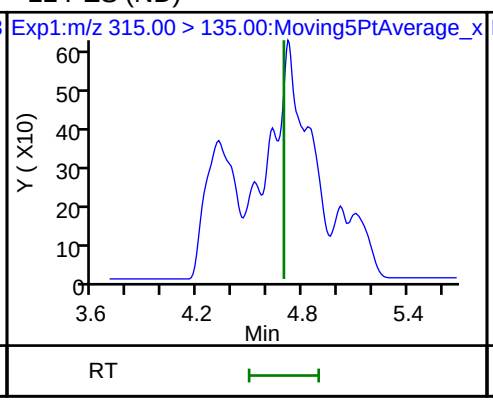
20 PEPA (ND)



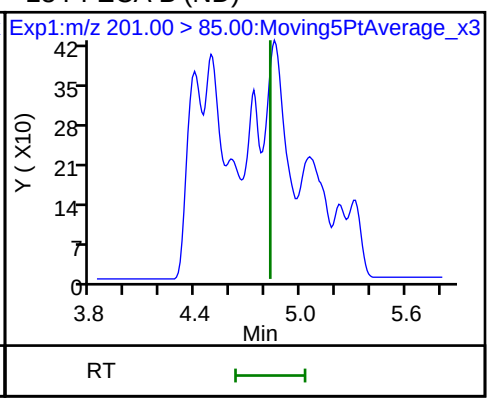
21 PFECA A (ND)



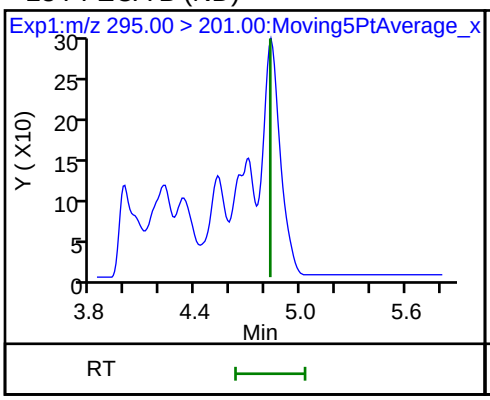
22 PES (ND)



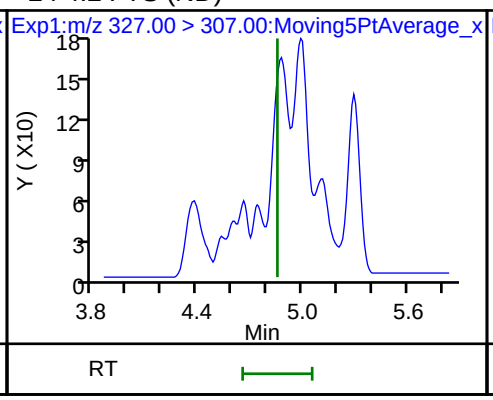
23 PFECA B (ND)



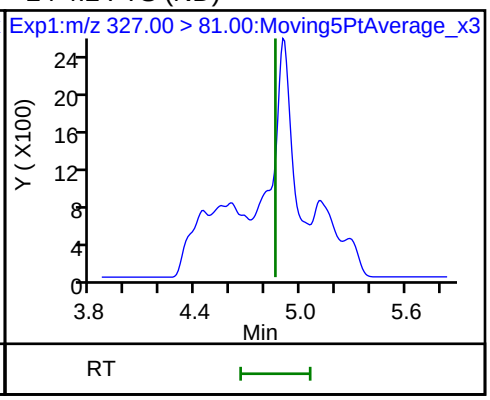
23 PFECA B (ND)



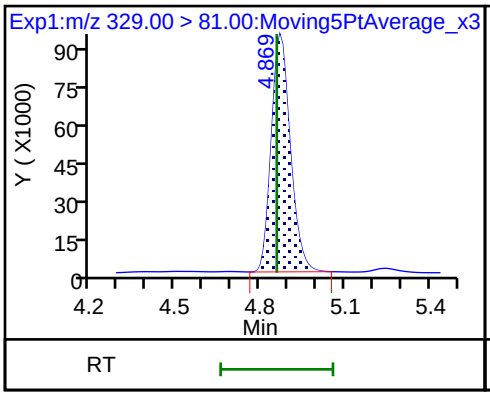
24 4:2 FTS (ND)



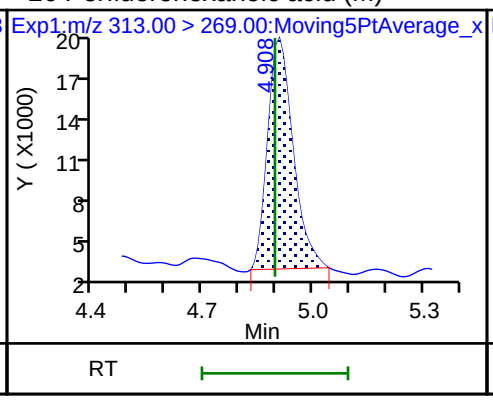
24 4:2 FTS (ND)



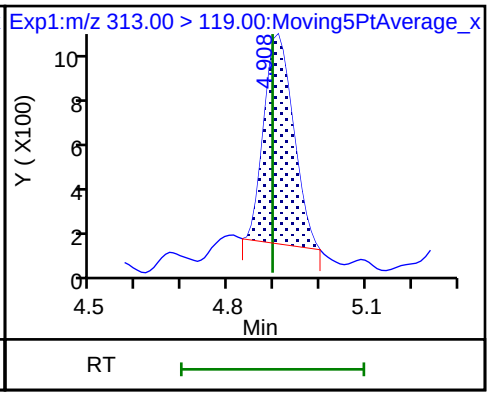
D 25 M2-4:2 FTS



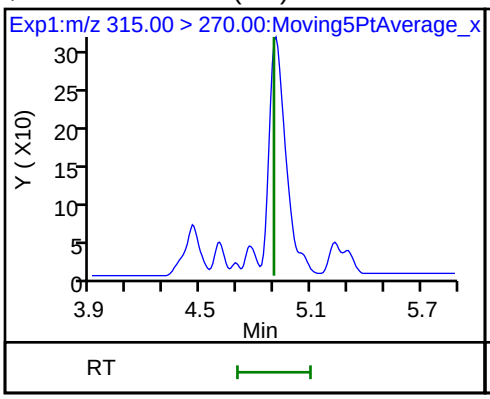
26 Perfluorohexanoic acid (M)



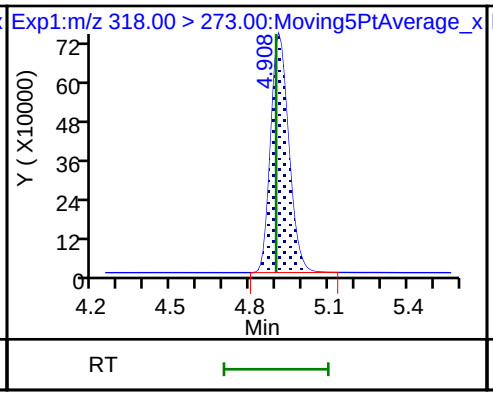
26 Perfluorohexanoic acid



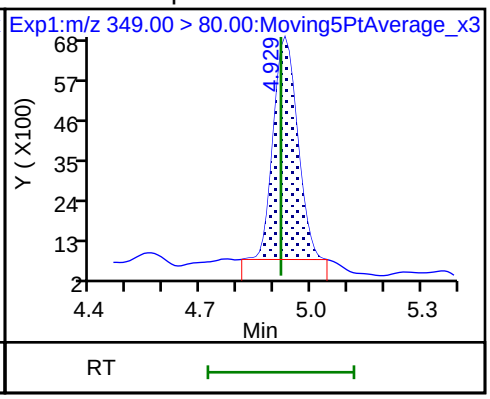
$ 51 13C2 PFHxA (ND)



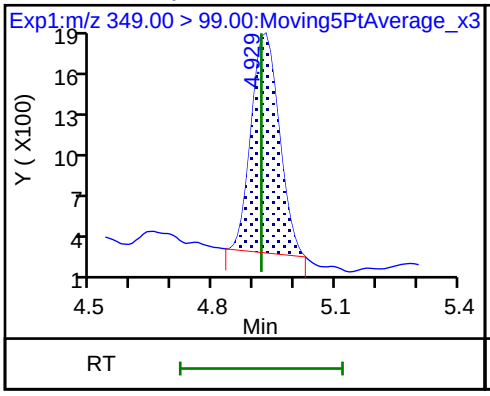
D 27 13C5 PFHxA



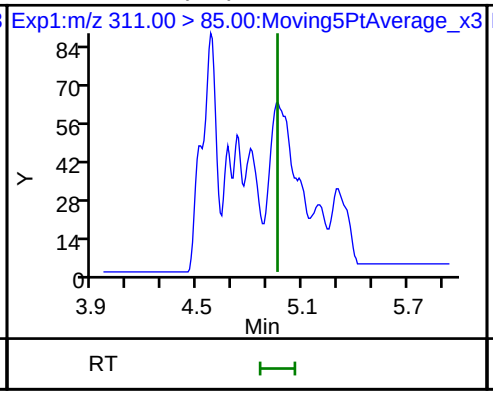
28 Perfluoropentanesulfonic acid



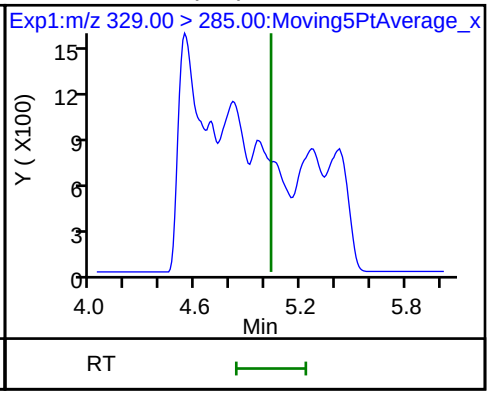
28 Perfluoropentanesulfonic acid



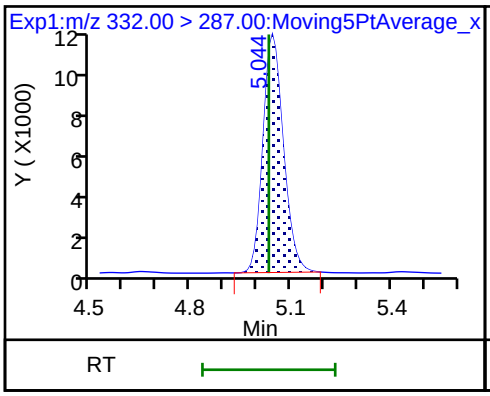
29 PFO3OA (ND)



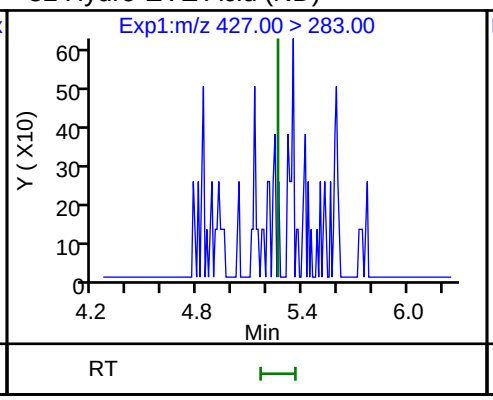
30 HFPO-DA (ND)



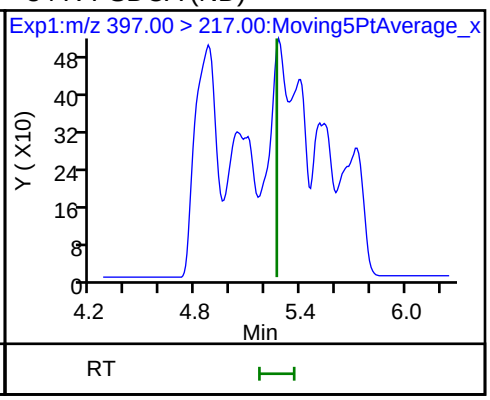
D 31 13C3 HFPO-DA



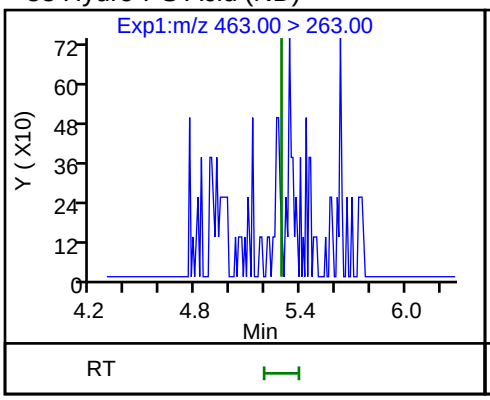
32 Hydro-EVE Acid (ND)



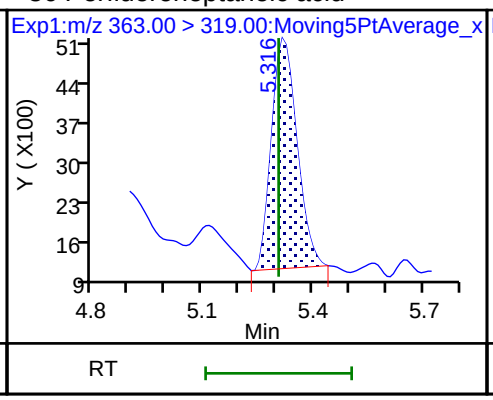
34 R-PSDCA (ND)



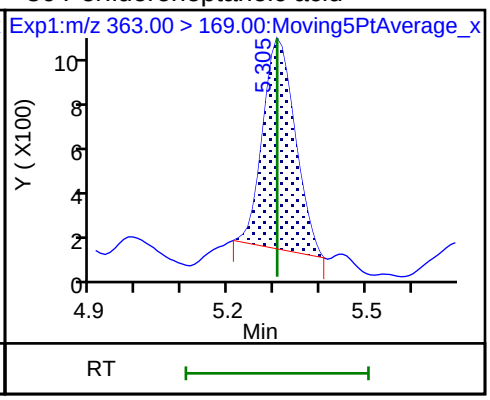
33 Hydro-PS Acid (ND)



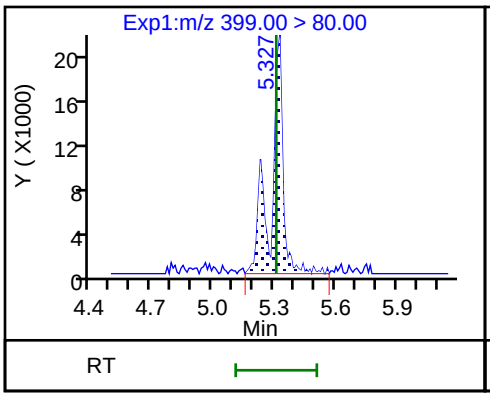
36 Perfluoroheptanoic acid



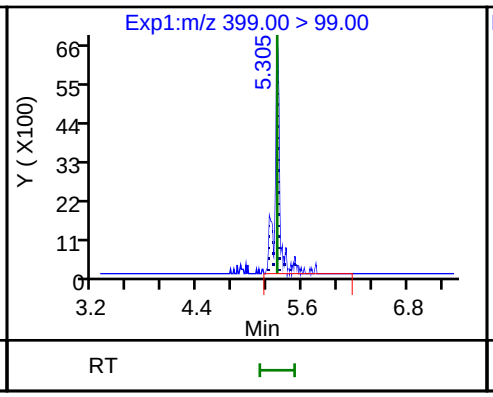
36 Perfluoroheptanoic acid



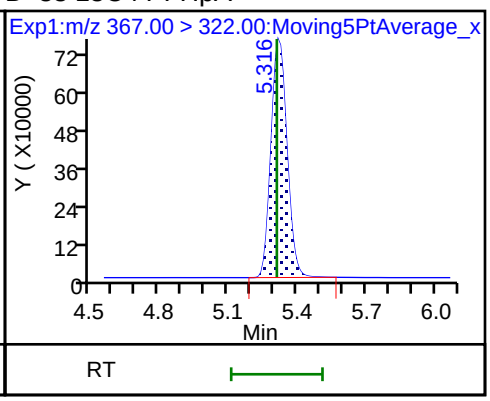
37 Perfluorohexanesulfonic acid



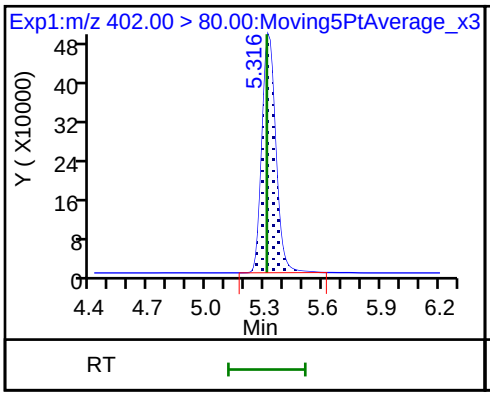
37 Perfluorohexanesulfonic acid



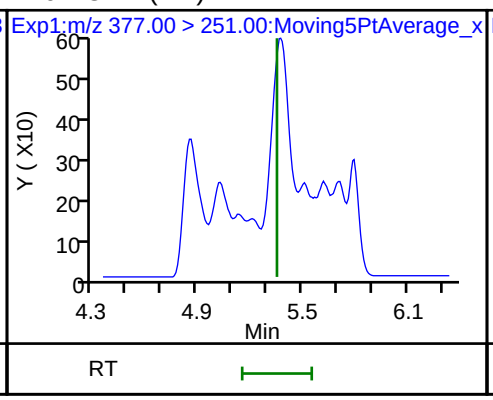
D 38 13C4 PFHpA



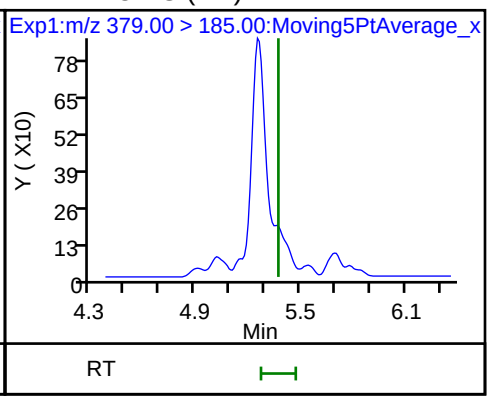
D 39 13C3 PFHxS



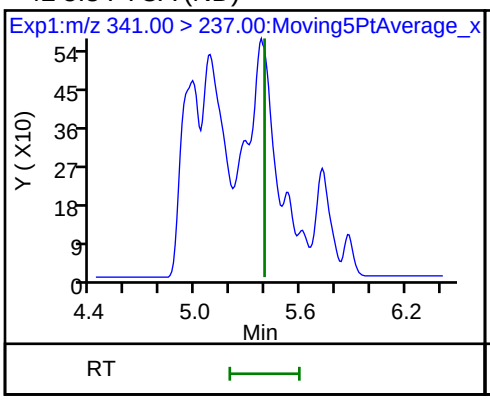
40 DONA (ND)



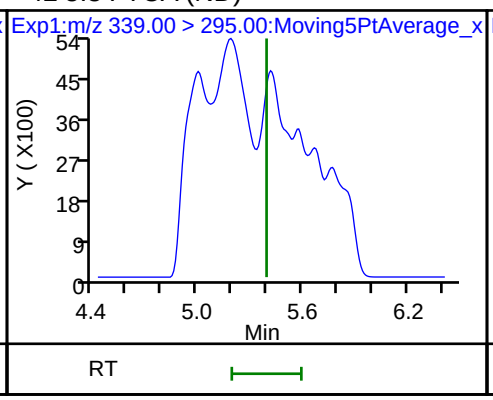
41 PFECA G (ND)



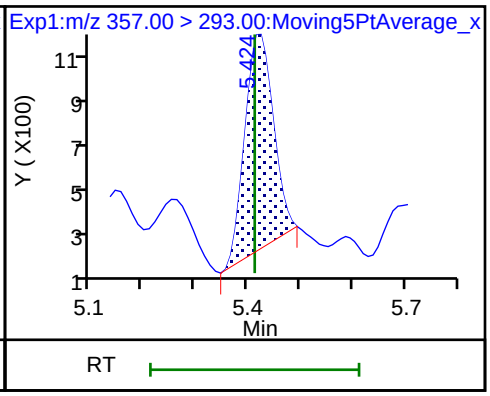
42 5:3 FTCA (ND)



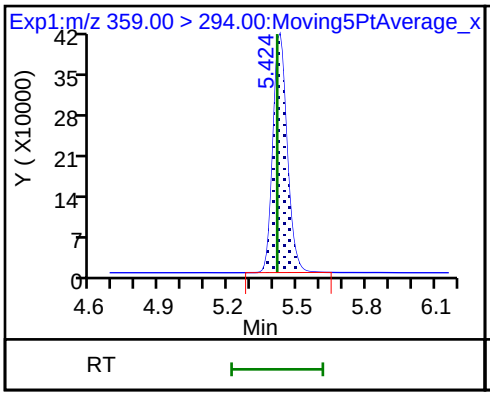
42 5:3 FTCA (ND)



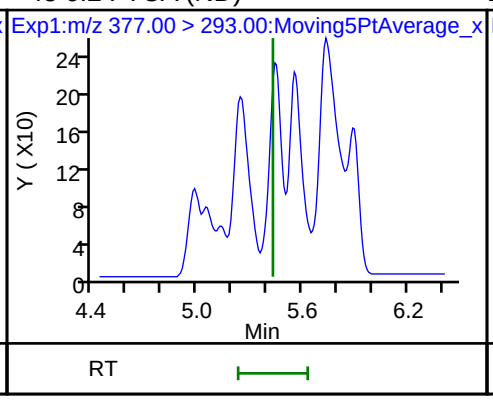
43 6:2 FTUCA



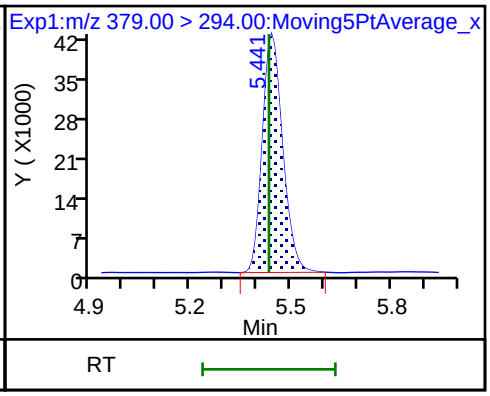
D 44 13C-6:2 FTUCA



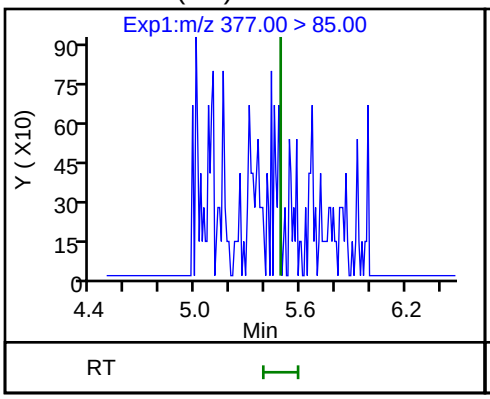
45 6:2 FTCA (ND)



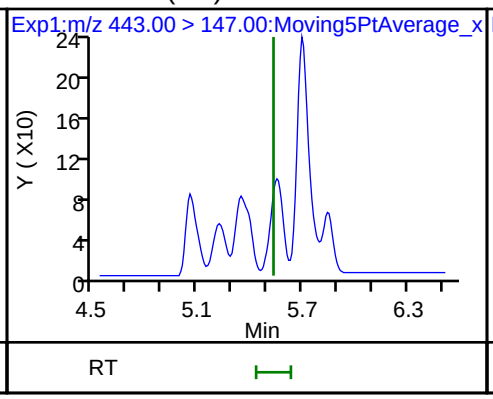
D 46 13C-6:2 FTCA



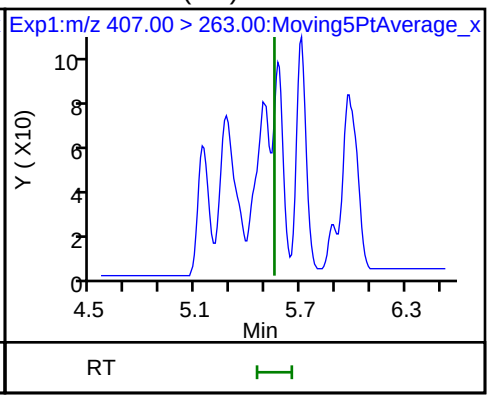
47 PFO4DA (ND)



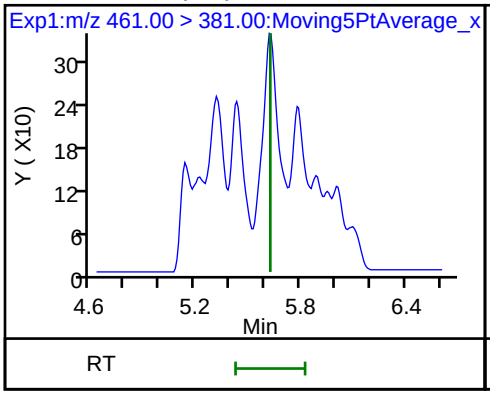
48 PS Acid (ND)



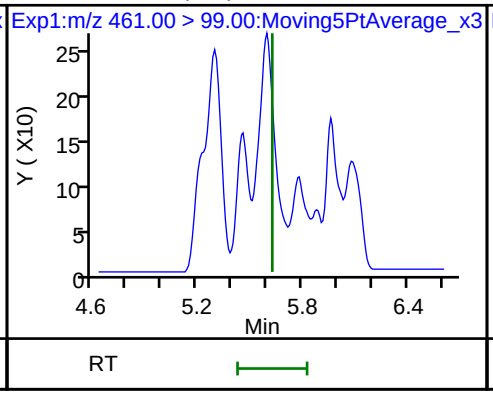
49 EVE Acid (ND)



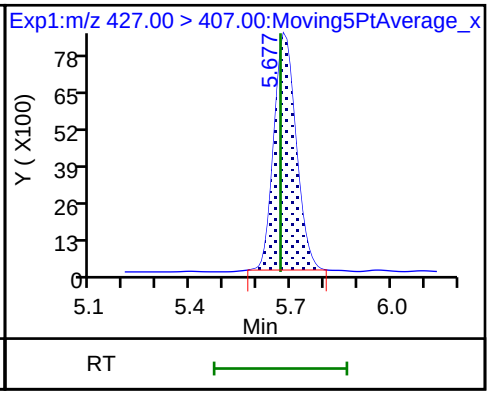
50 PFECHS (ND)



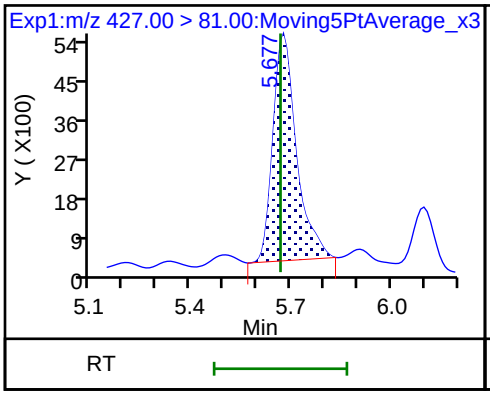
50 PFECHS (ND)



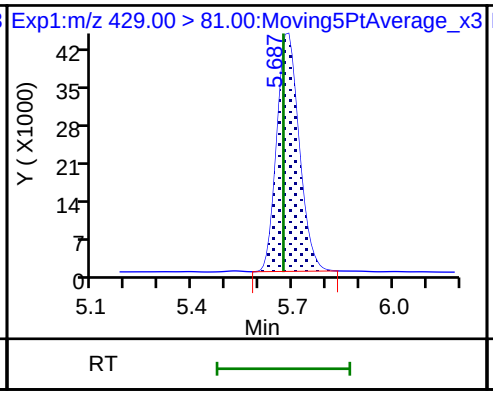
53 6:2 FTS



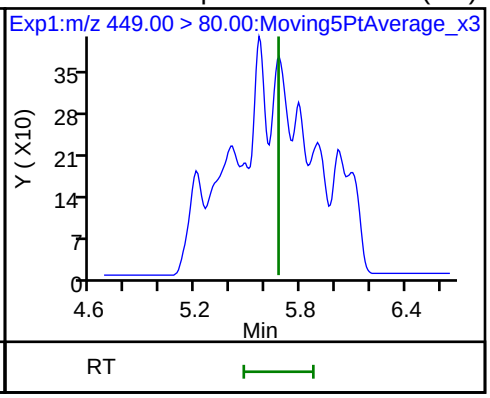
53 6:2 FTS



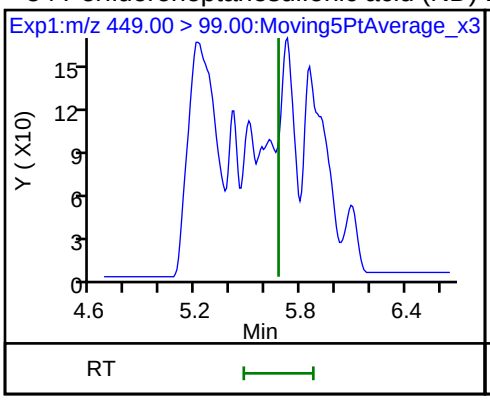
D 52 M2-6:2 FTS



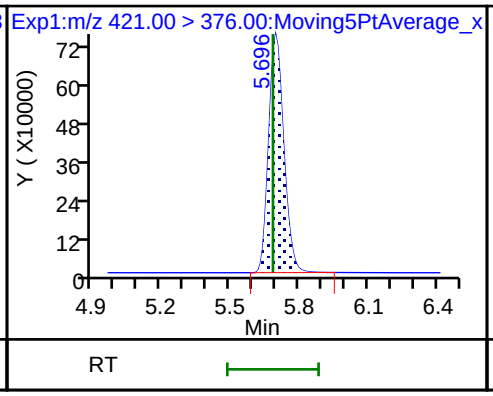
54 Perfluoroheptanesulfonic acid (ND)



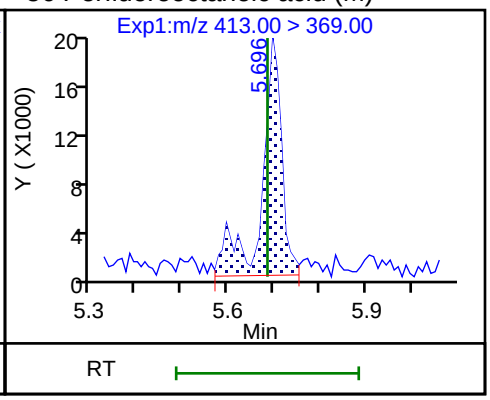
54 Perfluoroheptanesulfonic acid (ND)



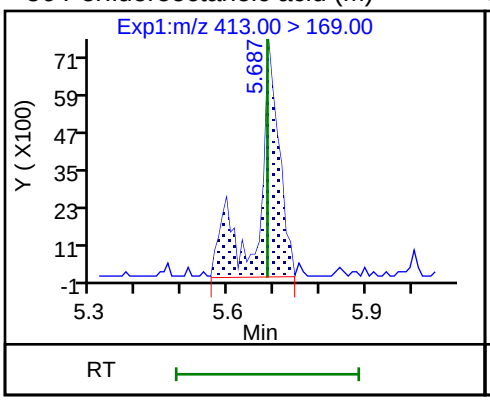
D 55 13C8 PFOA



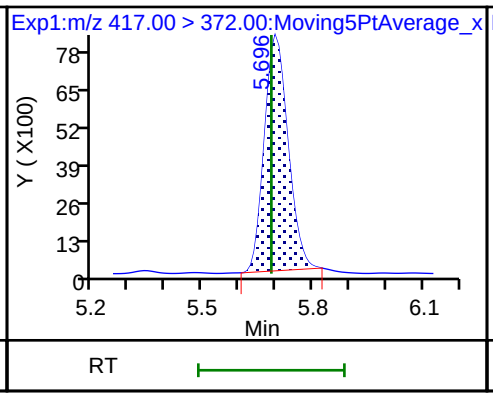
56 Perfluorooctanoic acid (M)



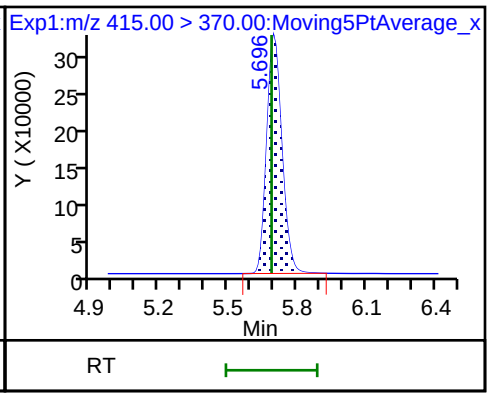
56 Perfluorooctanoic acid (M)



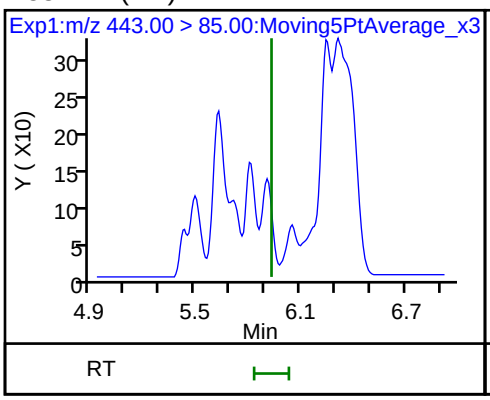
$ 35 13C4 PFOA



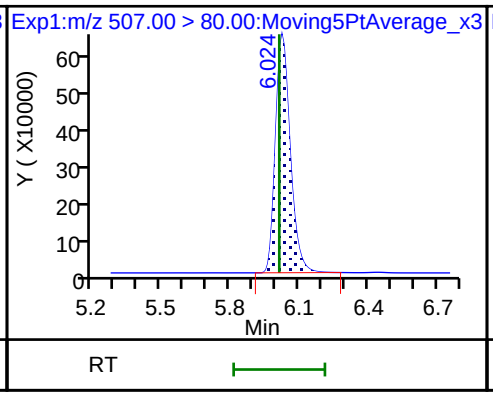
* 57 13C2 PFOA



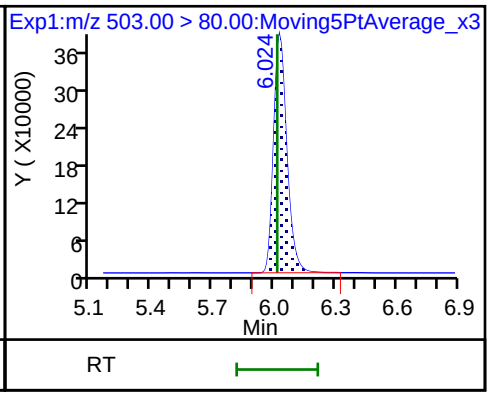
58 TAF (ND)



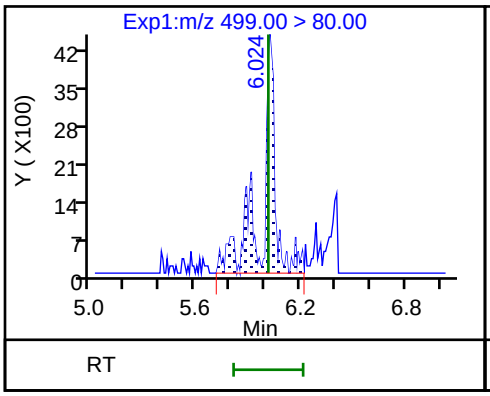
D 60 13C8 PFOS



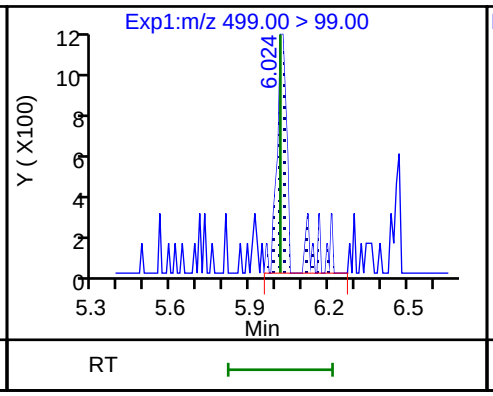
* 61 13C4 PFOS



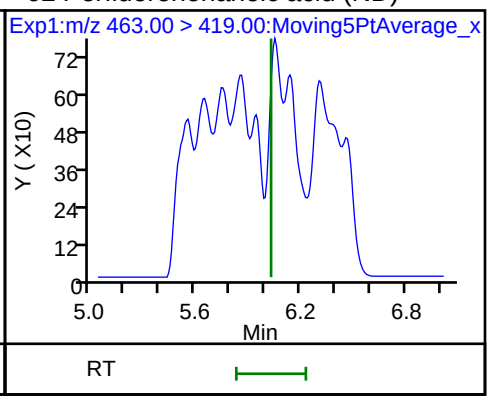
59 Perfluorooctanesulfonic acid



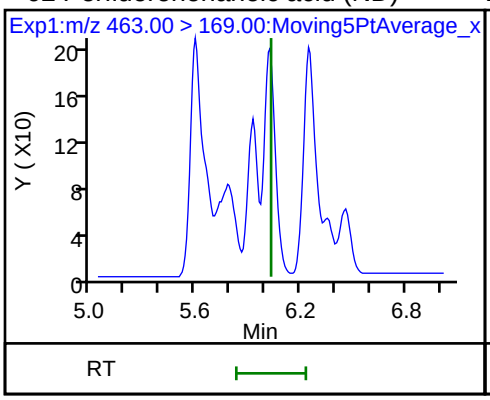
59 Perfluorooctanesulfonic acid



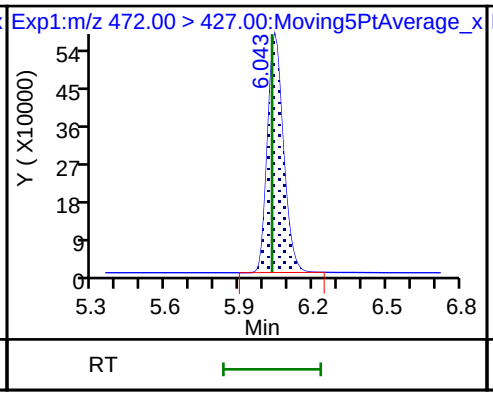
62 Perfluorononanoic acid (ND)



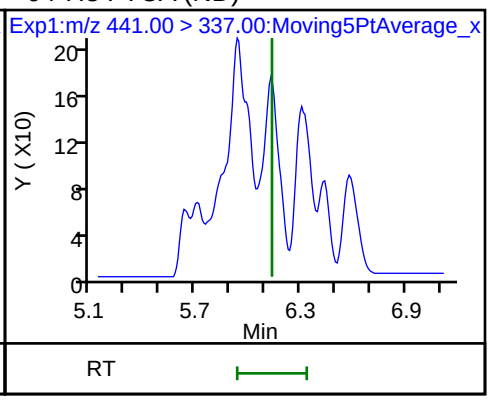
62 Perfluorononanoic acid (ND)



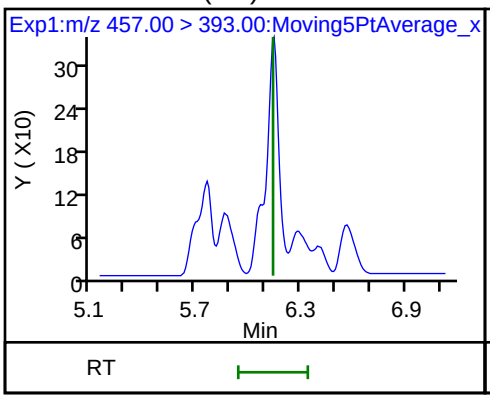
D 63 13C9 PFNA



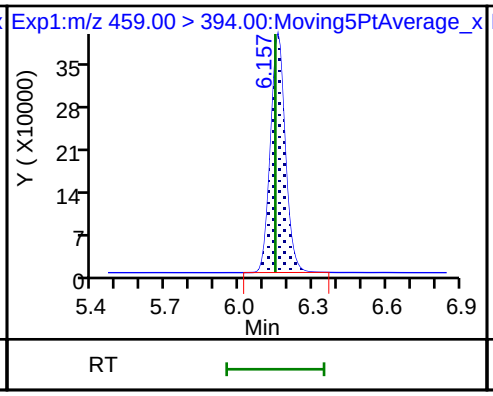
64 7:3 FTCA (ND)



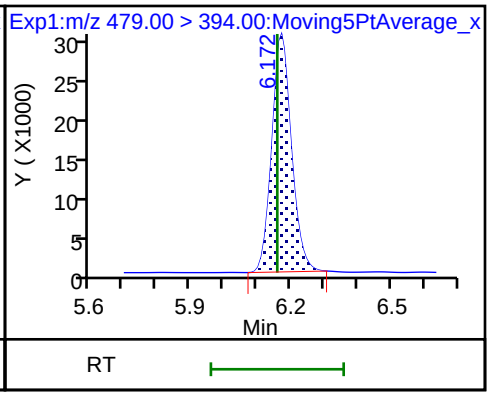
65 8:2 FTUCA (ND)



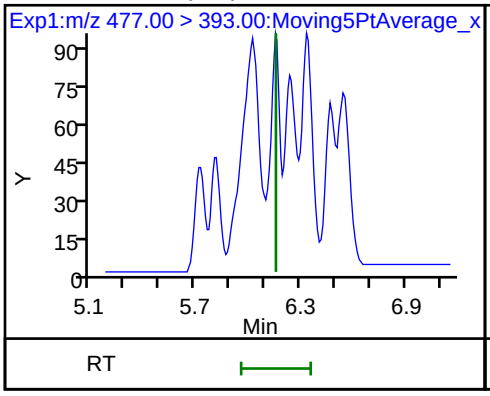
D 66 13C-8:2 FTUCA



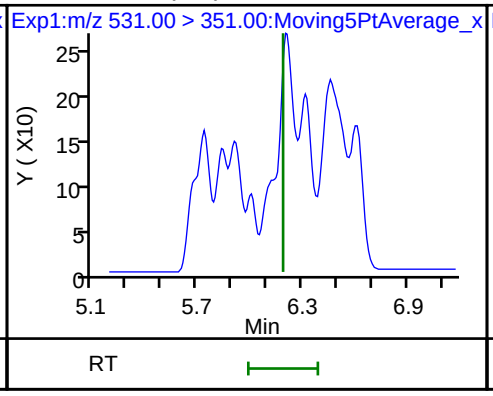
D 68 13C-8:2 FTCA



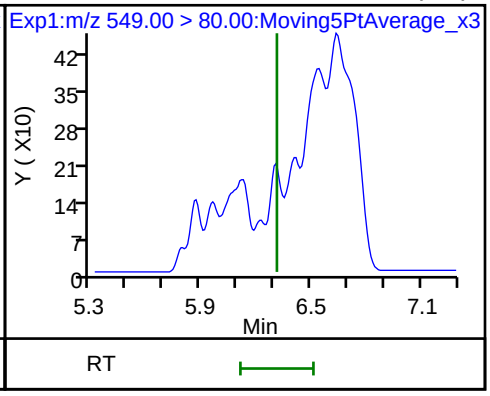
67 8:2 FTCA (ND)



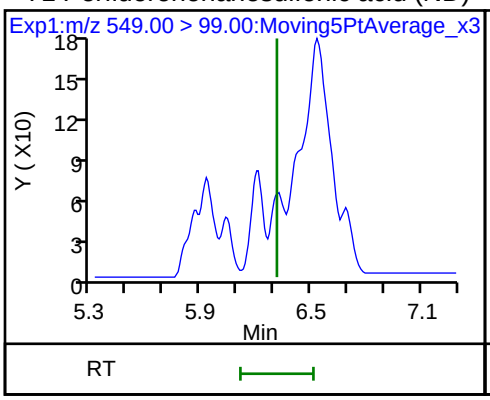
69 9ClFOS (ND)



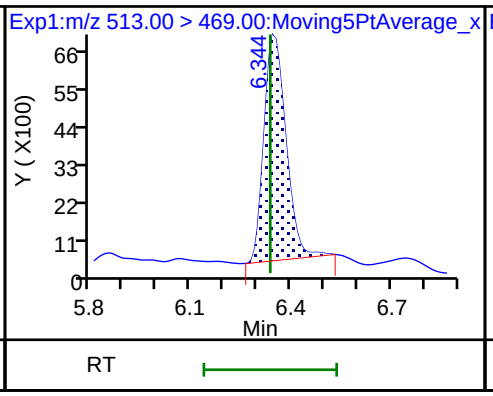
71 Perfluorononanesulfonic acid (ND)



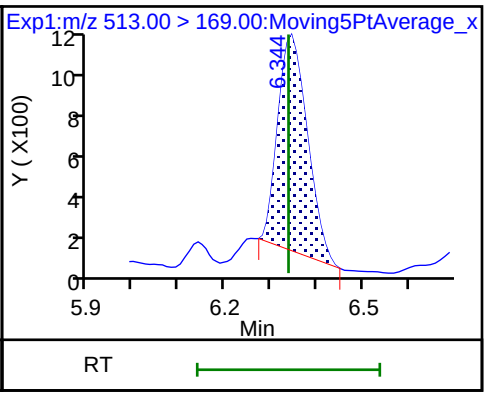
71 Perfluorononanesulfonic acid (ND)



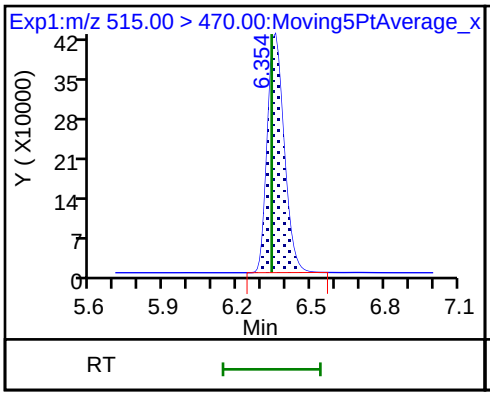
72 Perfluorodecanoic acid



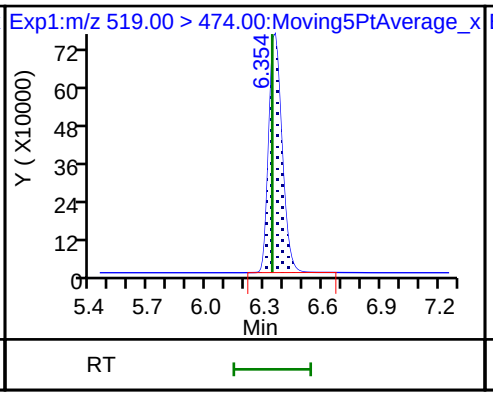
72 Perfluorodecanoic acid



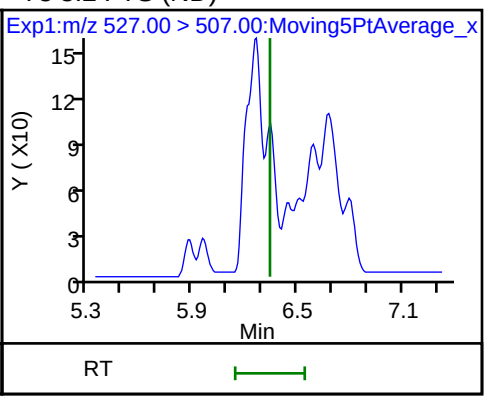
* 74 13C2 PFDA



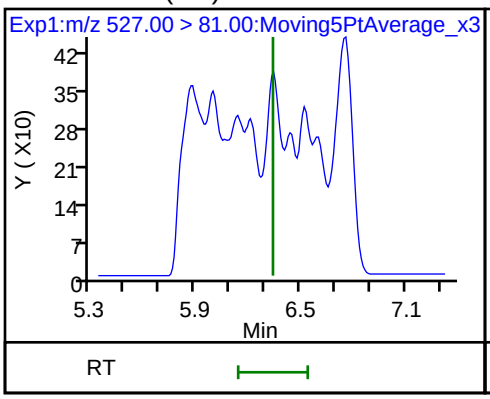
D 75 13C6 PFDA



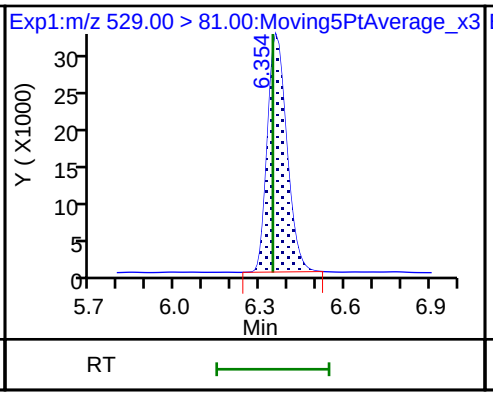
73 8:2 FTS (ND)



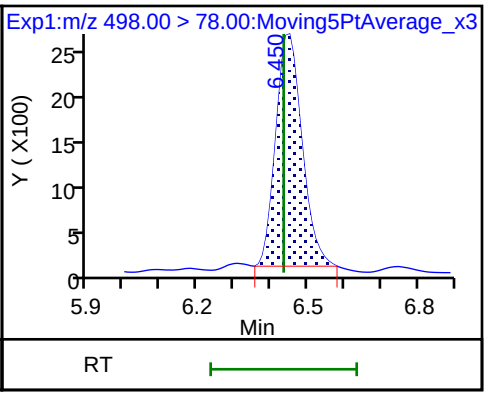
73 8:2 FTS (ND)



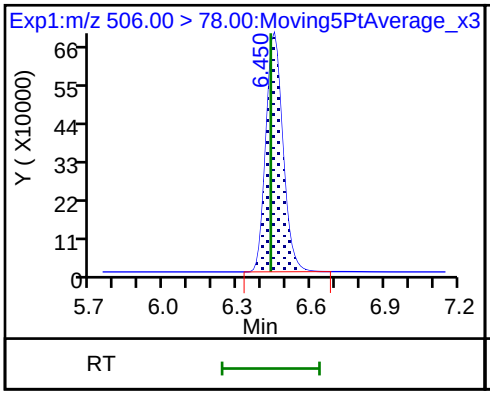
D 76 M2-8:2 FTS



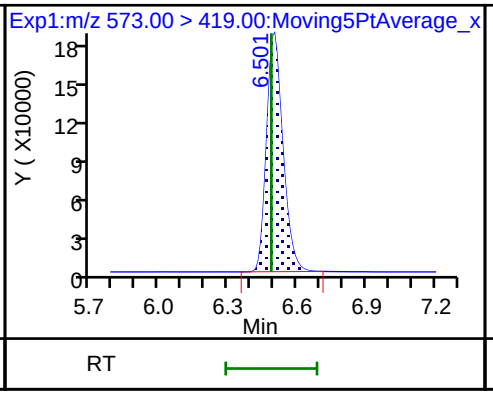
77 Perfluorooctanesulfonamide



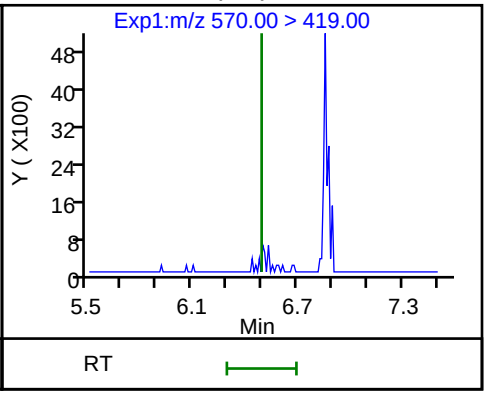
D 78 13C8 FOSA



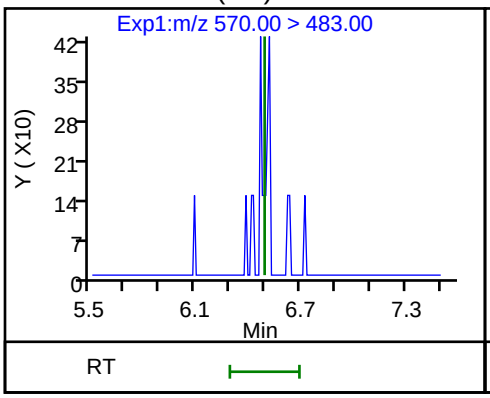
D 79 d3-NMeFOSAA



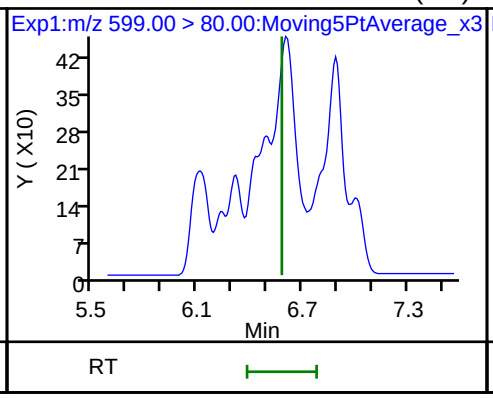
80 NMeFOSAA (ND)



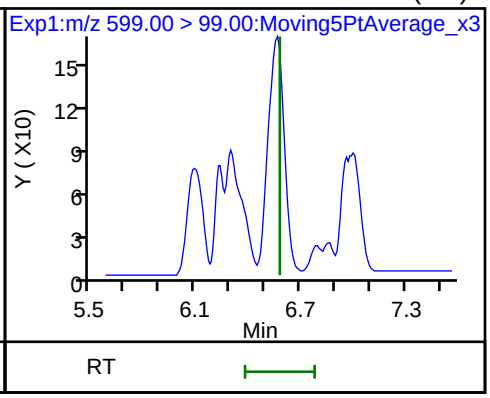
80 NMeFOSAA (ND)



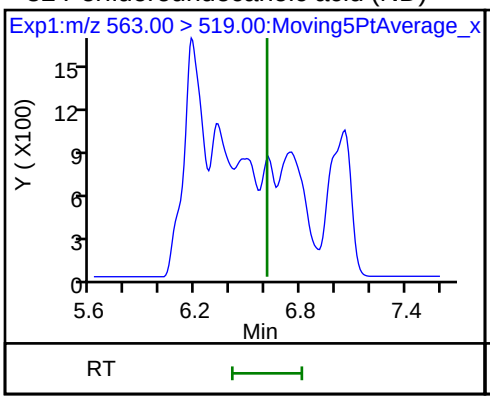
81 Perfluorodecanesulfonic acid (ND)



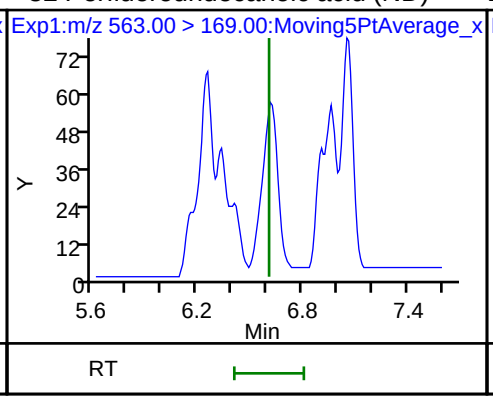
81 Perfluorodecanesulfonic acid (ND)



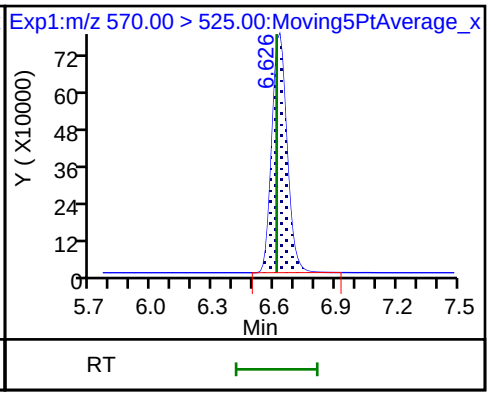
82 Perfluoroundecanoic acid (ND)



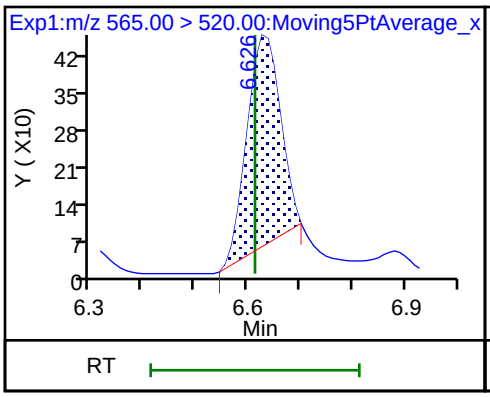
82 Perfluoroundecanoic acid (ND)



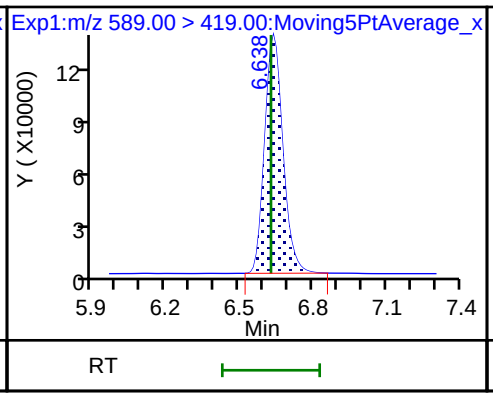
D 83 13C7 PFUnA



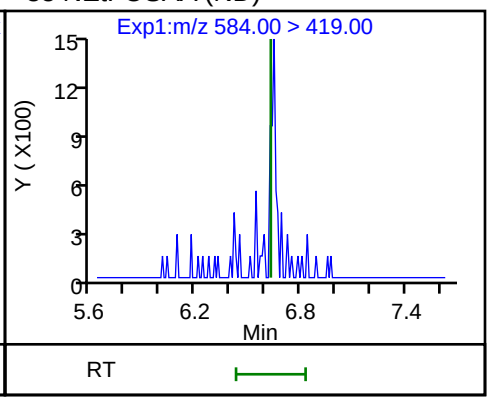
$ 70 13C2 PFUnA



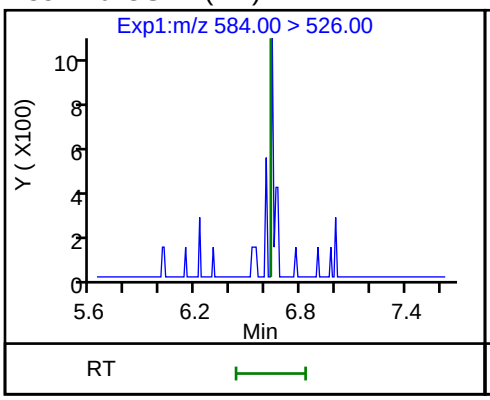
D 84 d5-NEtFOSAA



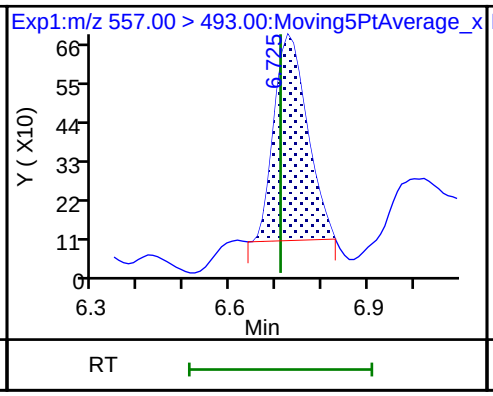
85 NEtFOSAA (ND)



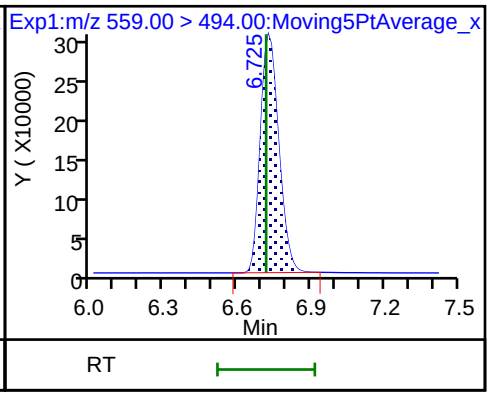
85 NEtFOSAA (ND)



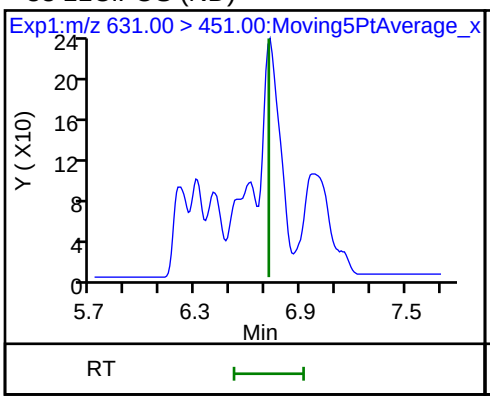
86 10:2 FTUCA



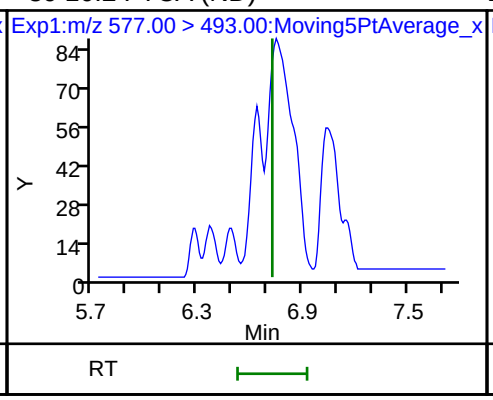
D 87 13C-10:2 FTUCA



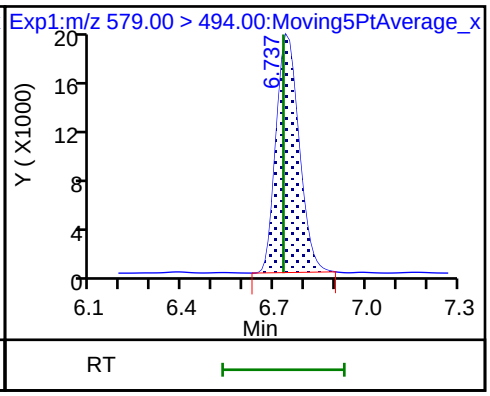
88 11ClFOS (ND)



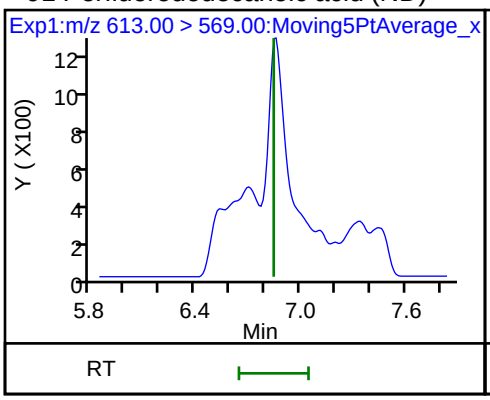
89 10:2 FTCA (ND)



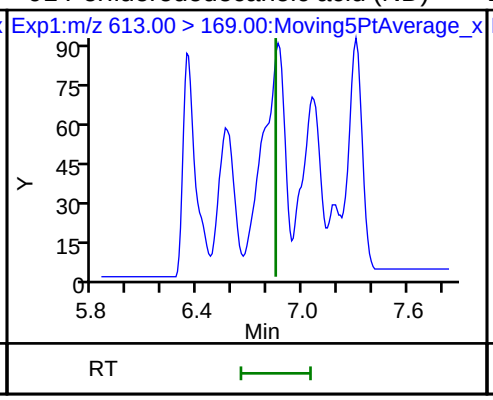
D 90 13C-10:2 FTCA



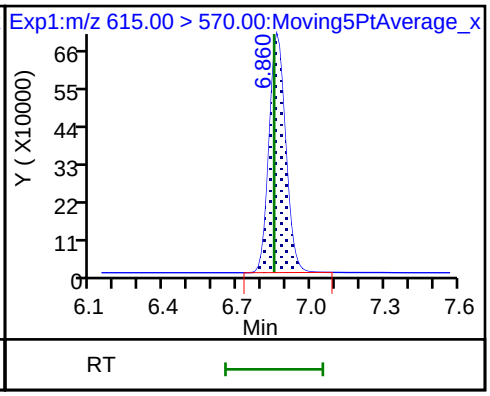
91 Perfluorododecanoic acid (ND)



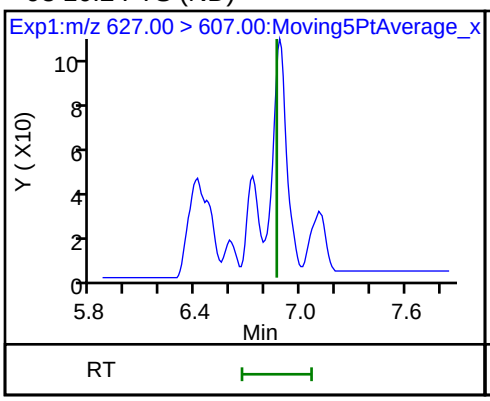
91 Perfluorododecanoic acid (ND)



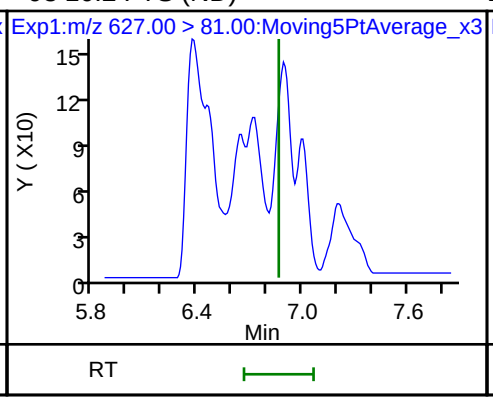
D 92 13C2-PFDoDA



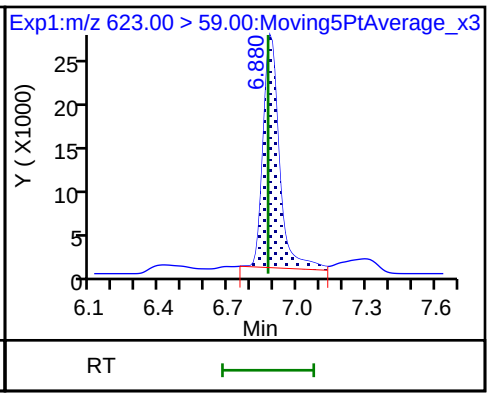
93 10:2 FTS (ND)



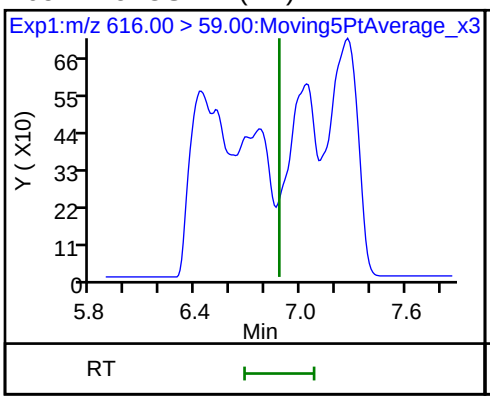
93 10:2 FTS (ND)



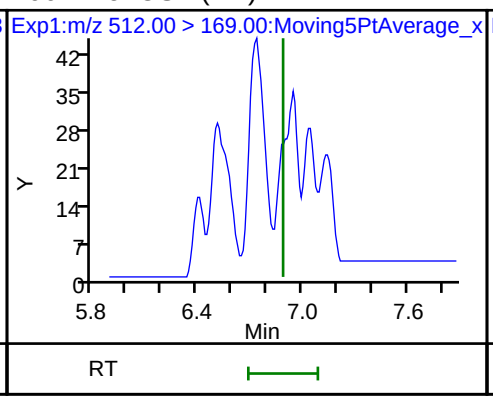
D 94 d7-N-MeFOSE-M



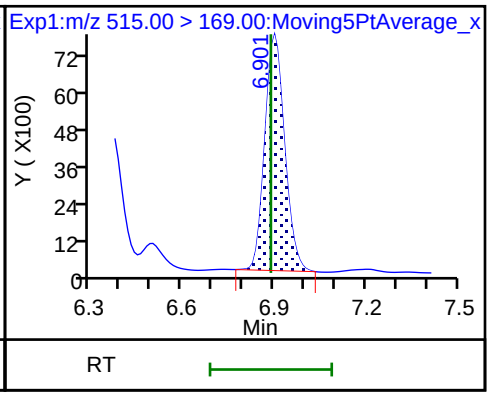
95 N-MeFOSE-M (ND)



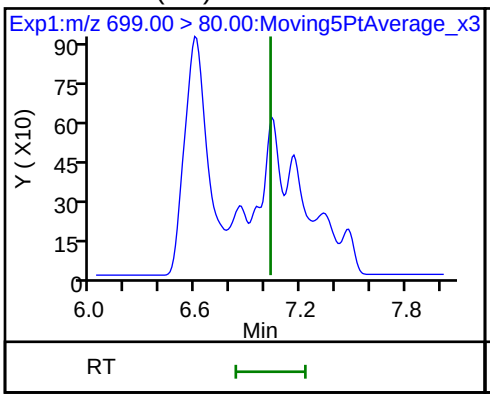
96 NMeFOSA (ND)



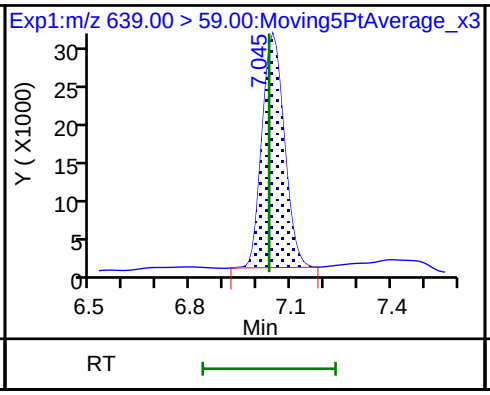
D 97 d3-NMePFOSA



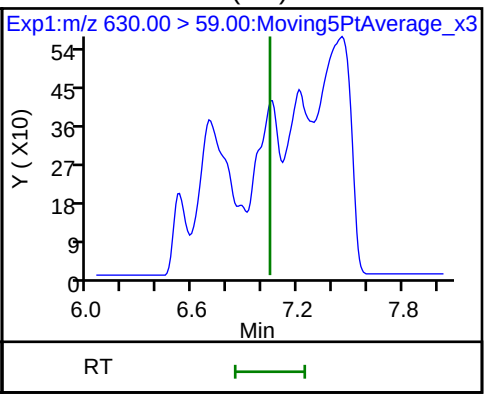
98 PFDoS (ND)



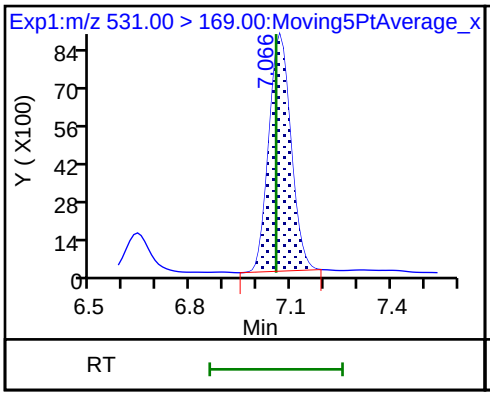
D 99 d9-N-EtFOSE-M



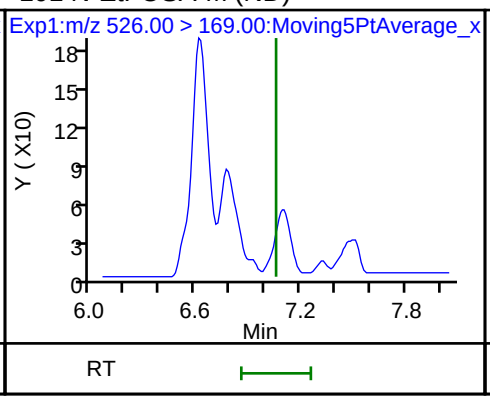
100 N-EtFOSE-M (ND)



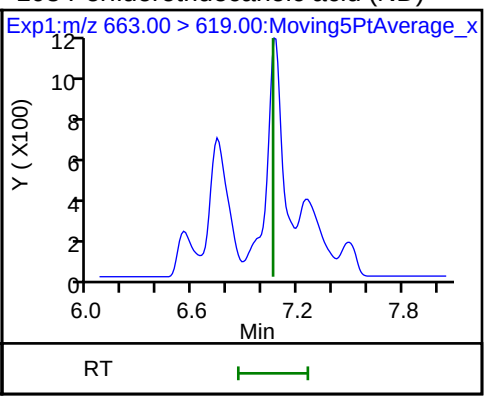
D 102 d5-NEtPFOSA



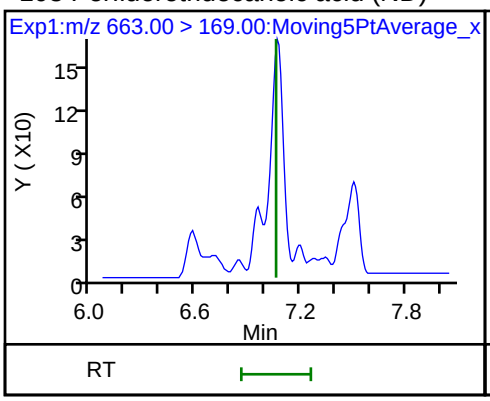
101 N-EtFOSA-M (ND)



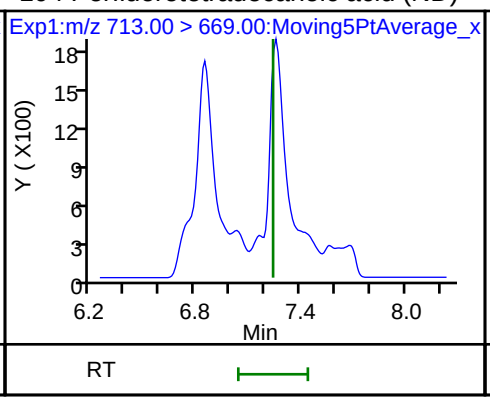
103 Perfluorotridecanoic acid (ND)



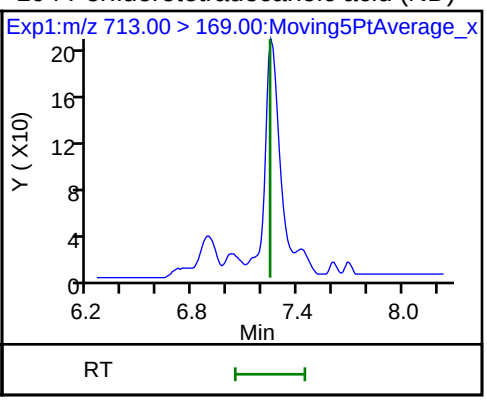
103 Perfluorotridecanoic acid (ND)



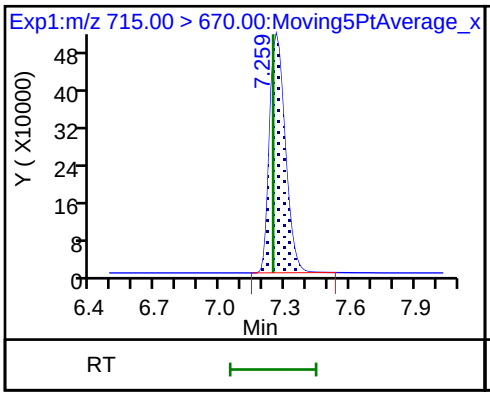
104 Perfluorotetradecanoic acid (ND)



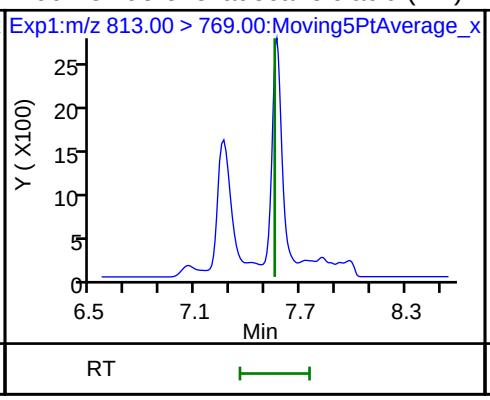
104 Perfluorotetradecanoic acid (ND)



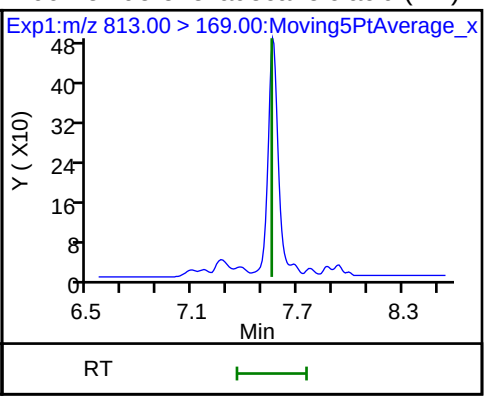
D 105 13C2 PFTeDA



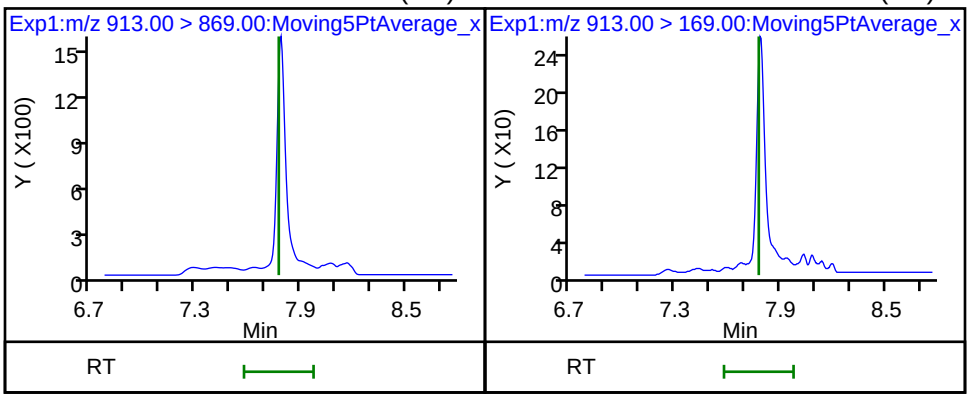
106 Perfluorohexadecanoic acid (ND)



106 Perfluorohexadecanoic acid (ND)



107 Perfluorooctadecanoic acid (ND) 107 Perfluorooctadecanoic acid (ND)



FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-17-GW-210813 Lab Sample ID: 410-51537-2

Matrix: Water Lab File ID: 21AUG31-13.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 11:50

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 247(mL) Date Analyzed: 09/01/2021 00:47

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		2.0	0.51
375-85-9	Perfluoroheptanoic acid	ND		2.0	0.51
335-67-1	Perfluorooctanoic acid	0.67	J	2.0	0.51
375-95-1	Perfluorononanoic acid	ND		2.0	0.51
335-76-2	Perfluorodecanoic acid	ND		2.0	0.51
72629-94-8	Perfluorotridecanoic acid	ND		2.0	0.51
376-06-7	Perfluorotetradecanoic acid	ND		2.0	0.51
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.51
355-46-4	Perfluorohexanesulfonic acid	0.94	J	2.0	0.51
1763-23-1	Perfluorooctanesulfonic acid	0.64	J B	2.0	0.51
2991-50-6	NEtFOSAA	ND		3.0	0.51
2355-31-9	NMeFOSAA	ND		2.0	0.61
307-55-1	Perfluorododecanoic acid	ND		2.0	0.51
13252-13-6	HFPODA	ND		3.0	0.51
756426-58-1	9Cl-PF3ONS	ND		2.0	0.51
763051-92-9	11Cl-PF3OUdS	ND		2.0	0.51
919005-14-4	DONA	ND		2.0	0.51
2058-94-8	Perfluoroundecanoic acid	ND		2.0	0.51

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-13.d
Lims ID: 410-51537-A-2-A
Client ID: CMW-17-GW-210813
Sample Type: Client
Inject. Date: 01-Sep-2021 00:47:06 ALS Bottle#: 72 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-A-2-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-011
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:29:13
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.837	3.850	-0.013		941839	5.00			1123	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.513				0				
299.00 > 99.00		4.513								
D 19 13C3 PFBS										
302.00 > 80.00	4.506	4.520	-0.014	1.174	2884384	10.7		116	13569	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.896				ND				
313.00 > 119.00		4.896								
D 27 13C5 PFHxA										
318.00 > 273.00	4.890	4.899	-0.009	0.860	3438405	7.95		79.5	81341	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.027	5.033	-0.006	0.884	36802	6.74		67.4	2124	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.306				ND				
363.00 > 169.00		5.306								
37 Perfluorohexanesulfonic acid										M
399.00 > 80.00	5.317	5.309	0.008	1.002	62096	0.2317	Target=3.52		1773	M
399.00 > 99.00	5.306	5.309	-0.003	1.000	14799		4.20(1.76-5.27)		2184	
D 38 13C4 PFHpA										
367.00 > 322.00	5.306	5.311	-0.005	0.933	3639801	8.15		81.5	107536	
D 39 13C3 PFHxS										
402.00 > 80.00	5.306	5.311	-0.005	0.933	2380943	7.59		80.2	34551	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.688	5.685	0.003	1.000	3410147	8.81		88.1	123749	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.678	5.685	-0.007	0.998	49211	0.1663	Target=2.48		845	M
413.00 > 169.00	5.688	5.685	0.003	1.000	16469		2.99(1.24-3.71)		1530	M
* 57 13C2 PFOA										
415.00 > 370.00	5.688	5.688	0.0		1588331	5.00			58214	
D 60 13C8 PFOS										
507.00 > 80.00	6.016	6.013	0.003	1.000	2814015	8.13		85.1	57011	
* 61 13C4 PFOS										
503.00 > 80.00	6.016	6.014	0.002		1641386	4.78			33112	
59 Perfluorooctanesulfonic acid										M
499.00 > 80.00	6.007	6.015	-0.008	0.998	51139	0.1591	Target=4.58		1991	M
499.00 > 99.00	6.016	6.015	0.001	1.000	12741		4.01(2.29-6.87)		24.9	
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.034	6.032	0.002	1.003	2499809	9.04		90.4	112400	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.334	6.337	-0.003	0.998	33913	0.1097	Target=8.64		394	
513.00 > 169.00	6.334	6.337	-0.003	0.998	3837		8.84(4.32-12.97)		168	
* 74 13C2 PFDA										
515.00 > 470.00	6.344	6.339	0.005		1971495	5.00			104894	
D 75 13C6 PFDA										
519.00 > 474.00	6.344	6.339	0.005	1.000	3730522	9.41		94.1	114672	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.491	6.487	0.004	1.023	898299	8.27		82.7	45893	
80 NMeFOSAA										R
570.00 > 419.00	6.511	6.494	0.017	1.003	3665	0.0483	Target=1.62		856	R
570.00 > 483.00	6.501	6.494	0.007	1.001	1138		3.22(0.81-2.43)		4.0	
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.614	6.611	0.003	1.043	4223202	8.97		89.7	118481	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.626	6.628	-0.002	1.044	666230	7.92		79.2	21574	
85 NEtFOSAA										
584.00 > 419.00	6.638	6.629	0.009	1.002	3564	0.0538	Target=1.36		1217	
584.00 > 526.00	6.638	6.629	0.009	1.002	1914		1.86(0.68-2.04)		3.1	
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.849	6.849	0.0	1.080	3520413	7.70		77.0	94100	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.247	7.244	0.002	1.142	2224733	6.43		64.3	56443	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 01-Sep-2021 07:40:49 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-13.d

Injection Date: 01-Sep-2021 00:47:06 Instrument ID: 30727

Lims ID: 410-51537-A-2-A Lab Sample ID: 410-51537-2

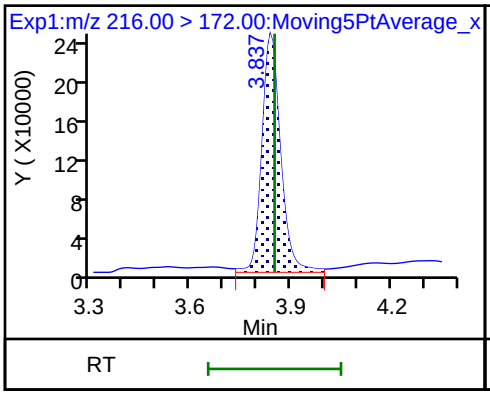
Client ID: CMW-17-GW-210813

Operator ID: US19_USR_INS20264 ALS Bottle#: 72 Worklist Smp#: 11

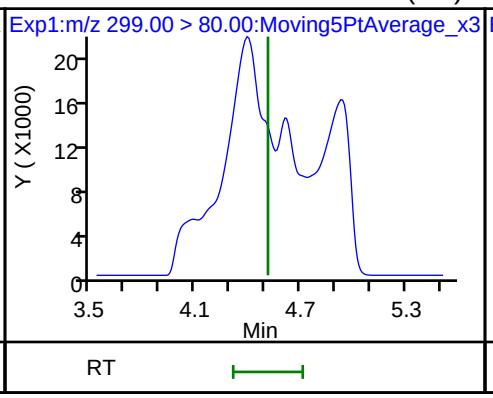
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

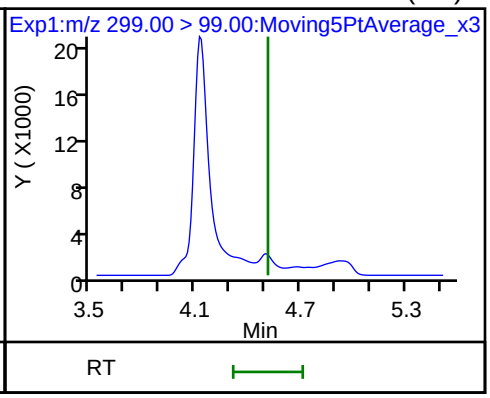
* 8 13C3-PFBA



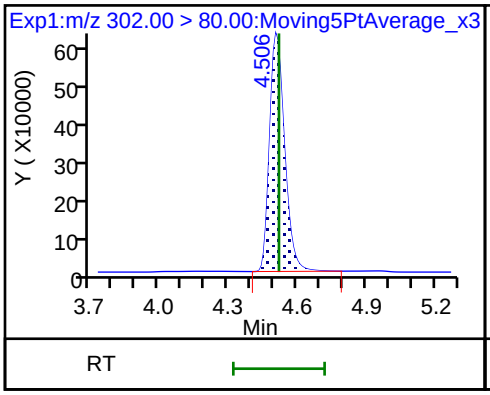
18 Perfluorobutanesulfonic acid (ND)



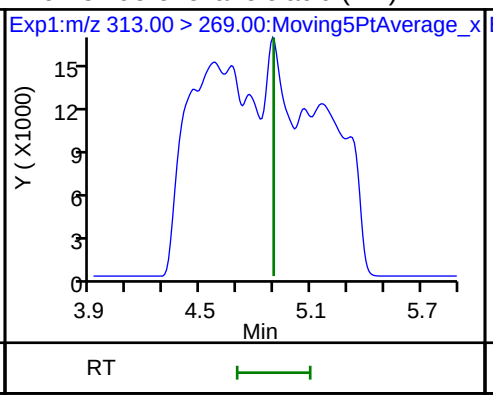
18 Perfluorobutanesulfonic acid (ND)



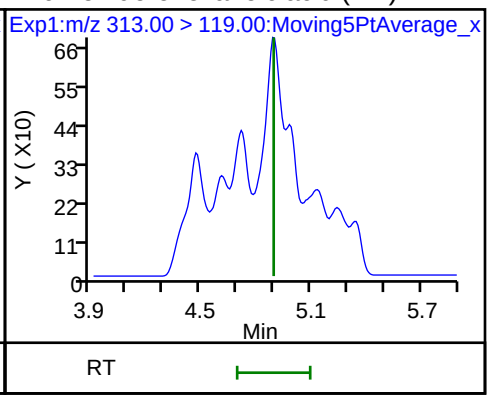
D 19 13C3 PFBS



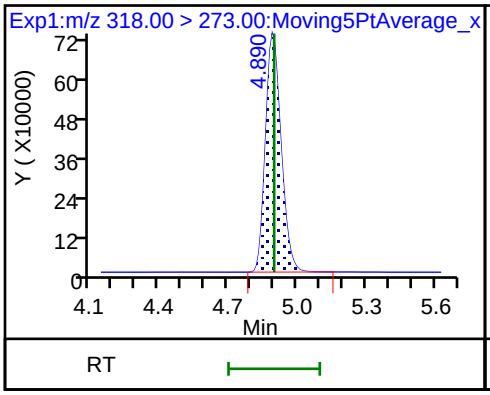
26 Perfluorohexanoic acid (ND)



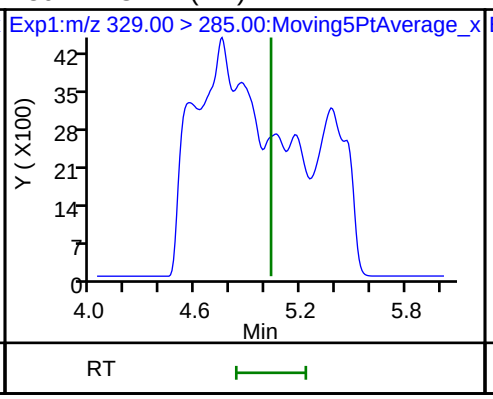
26 Perfluorohexanoic acid (ND)



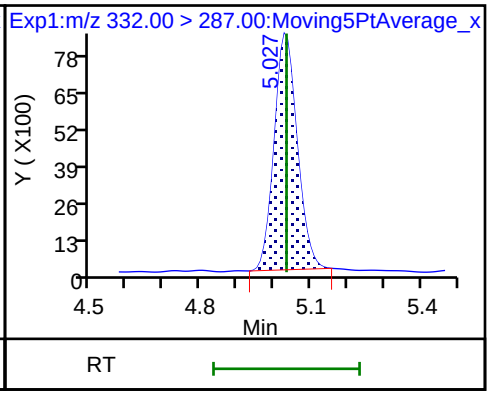
D 27 13C5 PFHxA



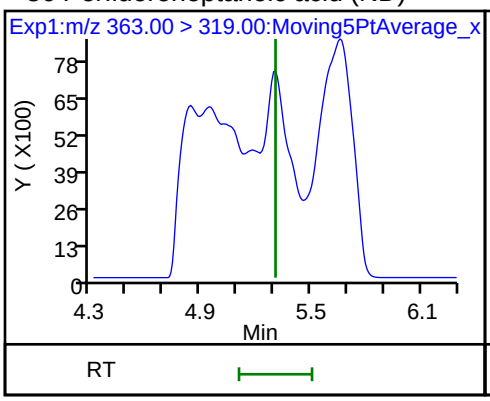
30 HFPO-DA (ND)



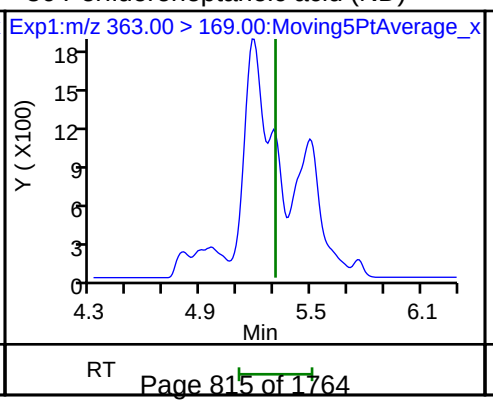
D 31 13C3 HFPO-DA



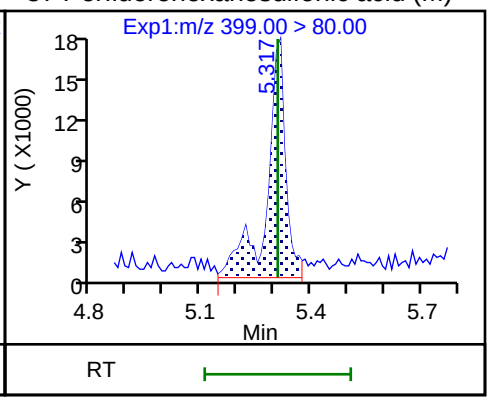
36 Perfluoroheptanoic acid (ND)



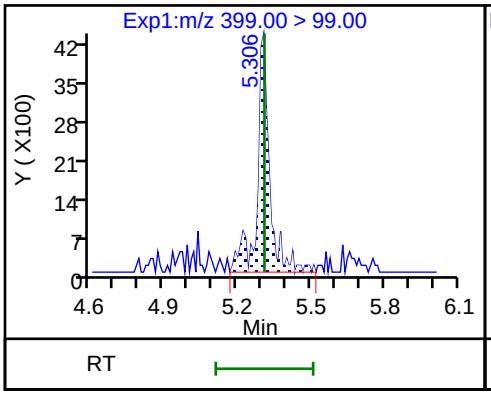
36 Perfluoroheptanoic acid (ND)



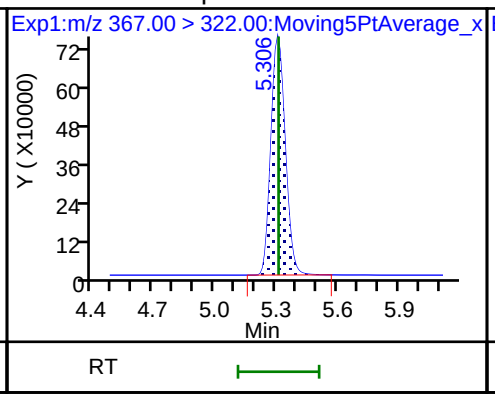
37 Perfluorohexanesulfonic acid (M)



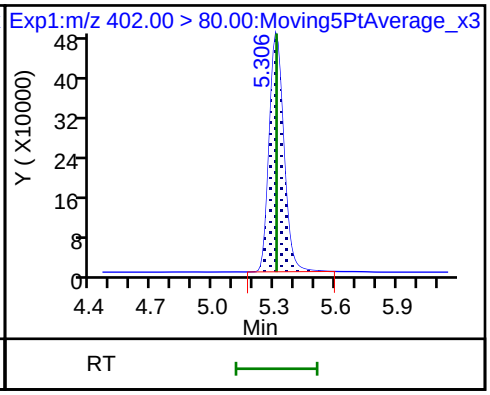
37 Perfluorohexanesulfonic acid



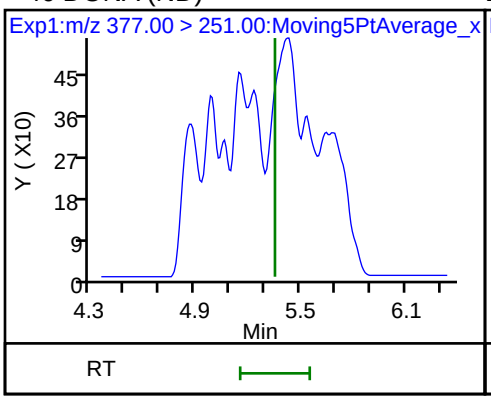
D 38 13C4 PFHpA



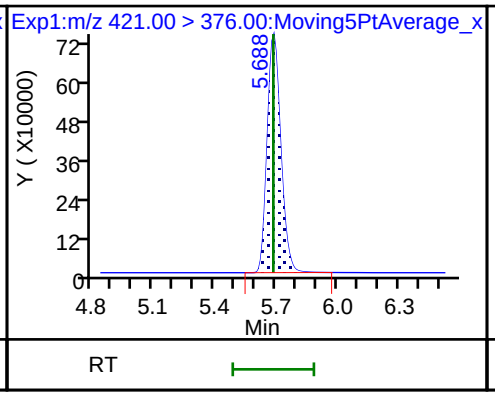
D 39 13C3 PFHxS



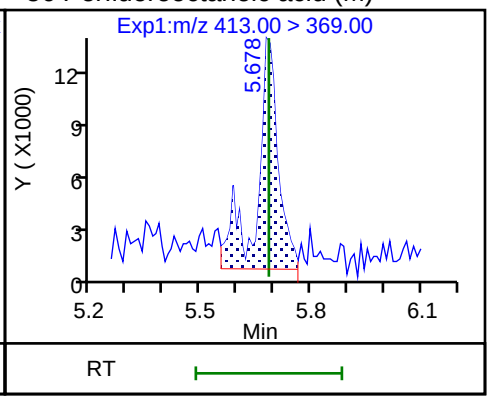
40 DONA (ND)



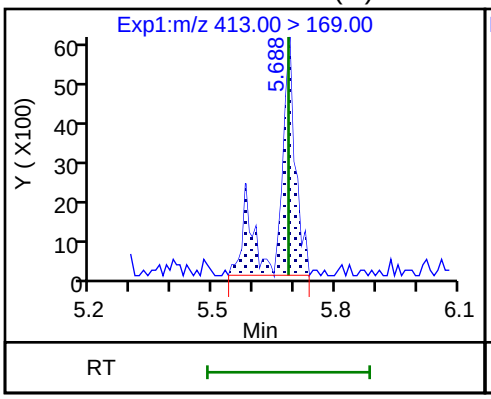
D 55 13C8 PFOA



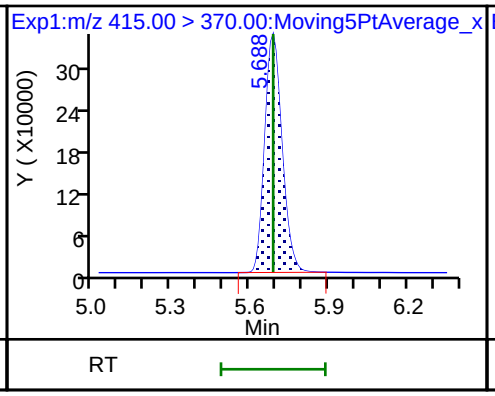
56 Perfluorooctanoic acid (M)



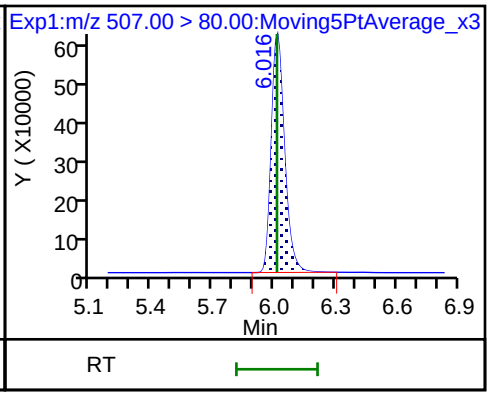
56 Perfluorooctanoic acid (M)



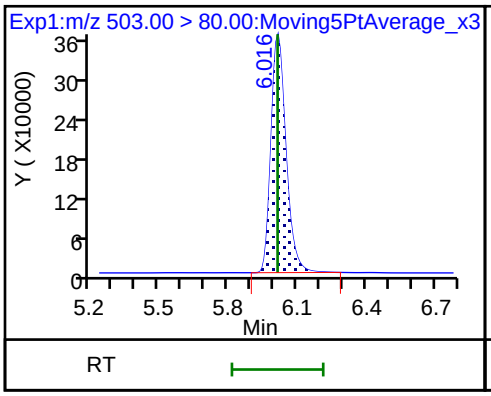
* 57 13C2 PFOA



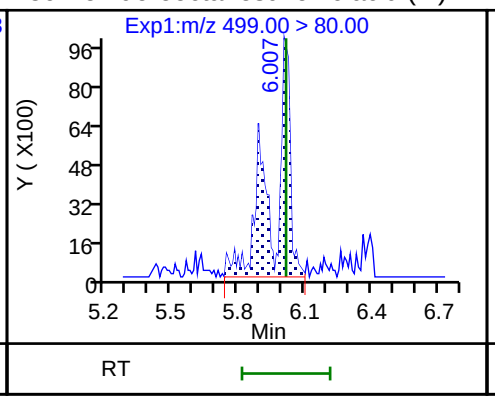
D 60 13C8 PFOS



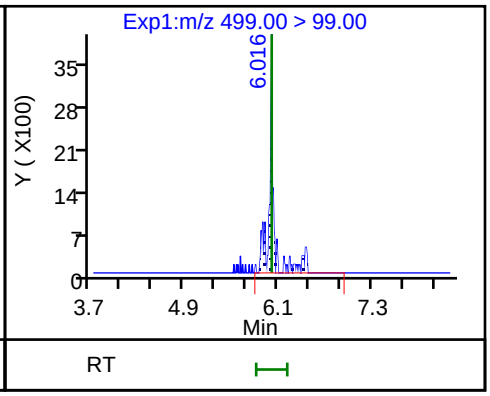
* 61 13C4 PFOS



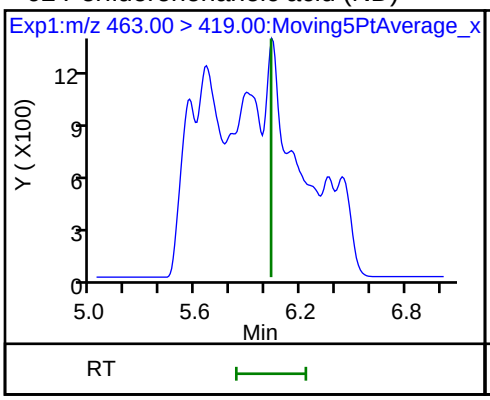
59 Perfluorooctanesulfonic acid (M)



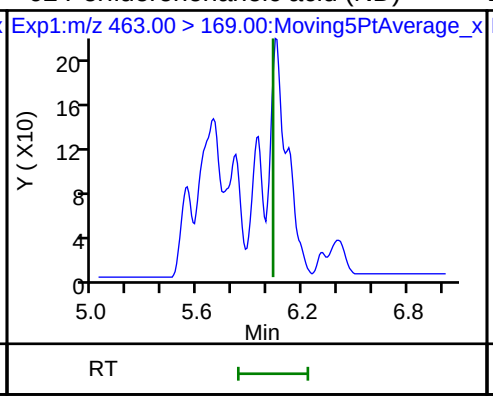
59 Perfluorooctanesulfonic acid



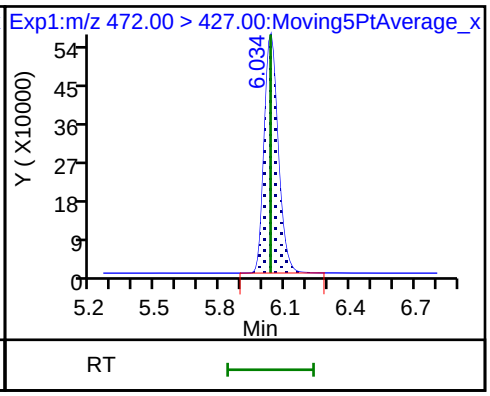
62 Perfluorononanoic acid (ND)



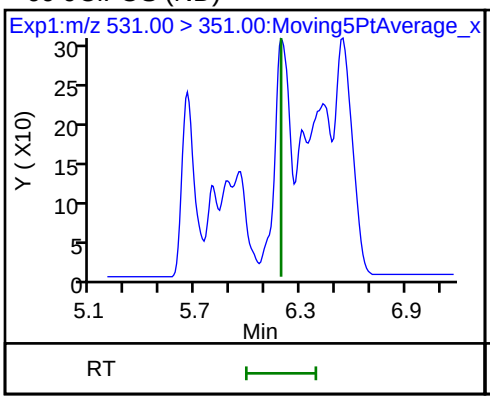
62 Perfluorononanoic acid (ND)



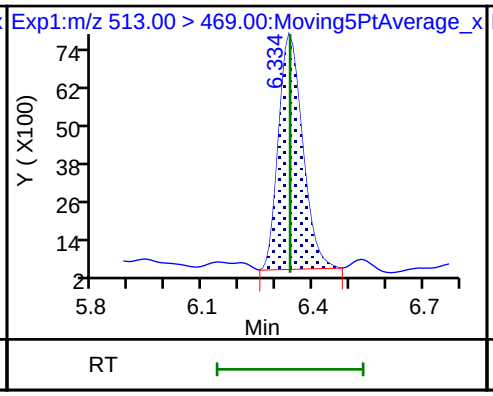
D 63 13C9 PFNA



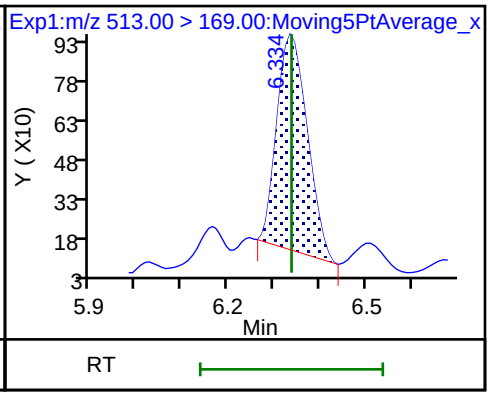
69 9ClFOS (ND)



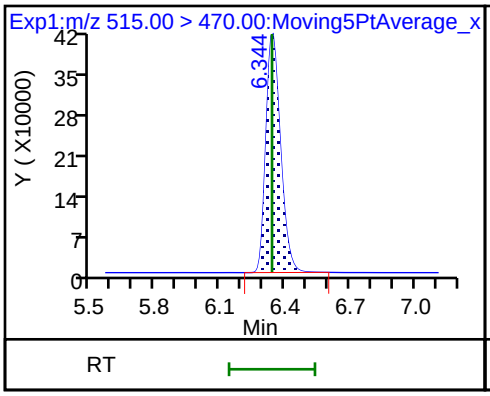
72 Perfluorodecanoic acid



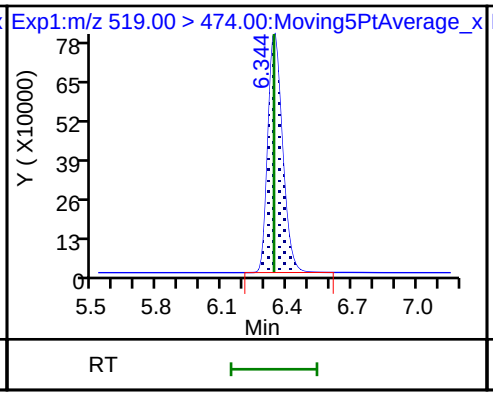
72 Perfluorodecanoic acid



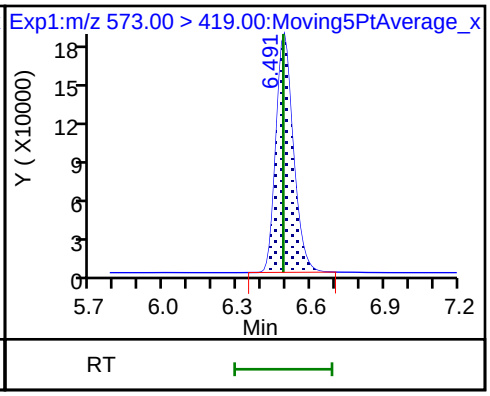
* 74 13C2 PFDA



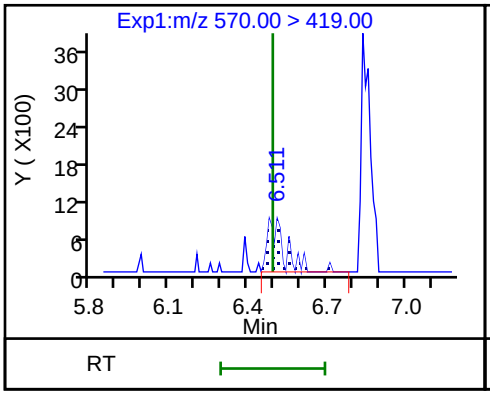
D 75 13C6 PFDA



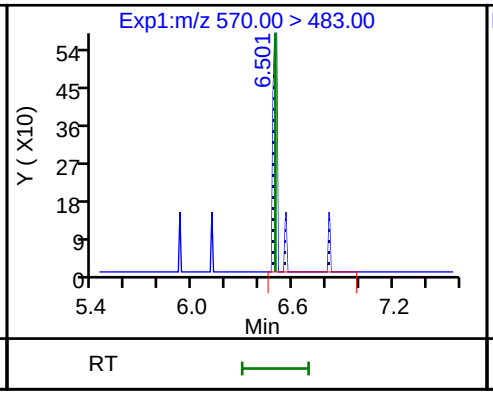
D 79 d3-NMeFOSAA



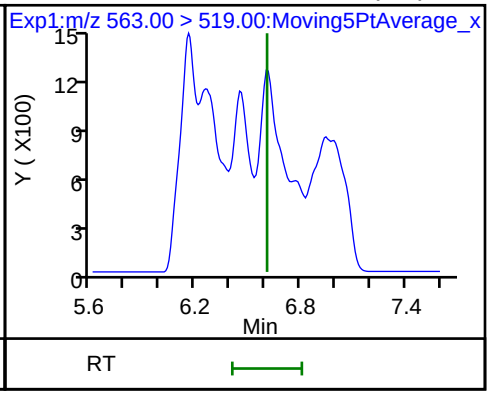
80 NMeFOSAA



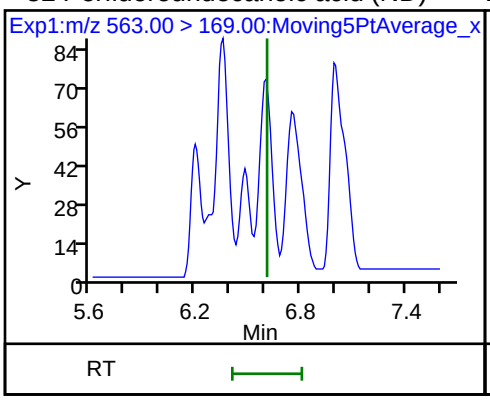
80 NMeFOSAA



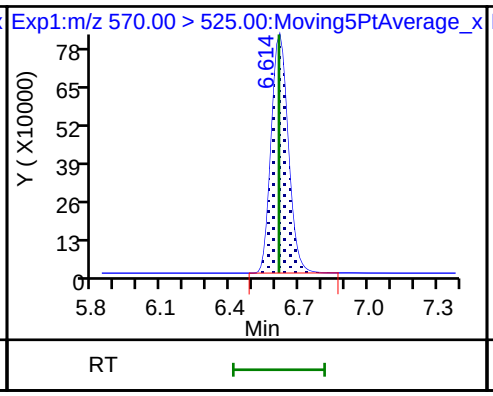
82 Perfluoroundecanoic acid (ND)



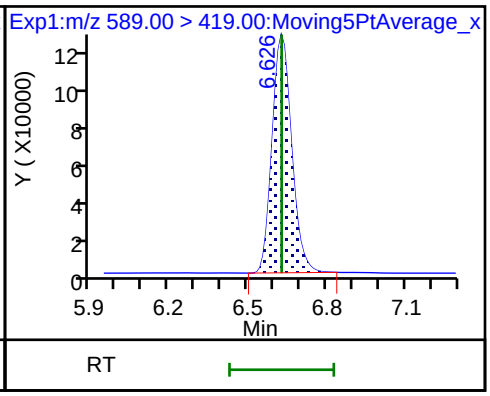
82 Perfluoroundecanoic acid (ND)



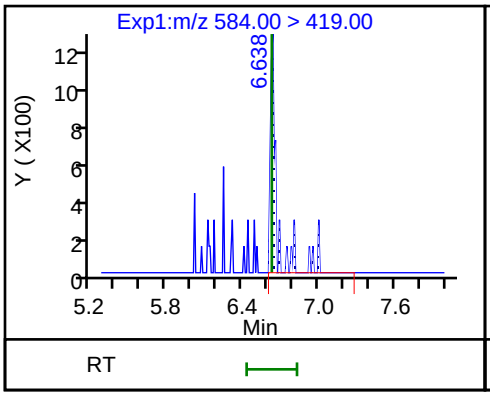
D 83 13C7 PFUnA



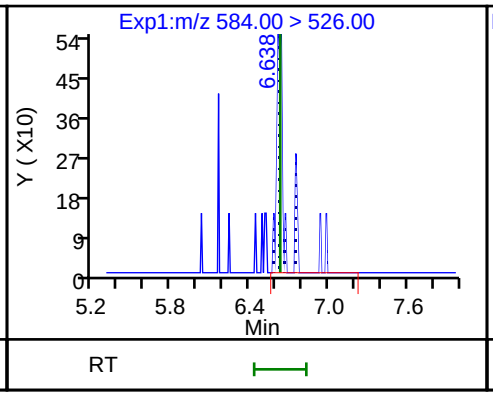
D 84 d5-NEtFOSAA



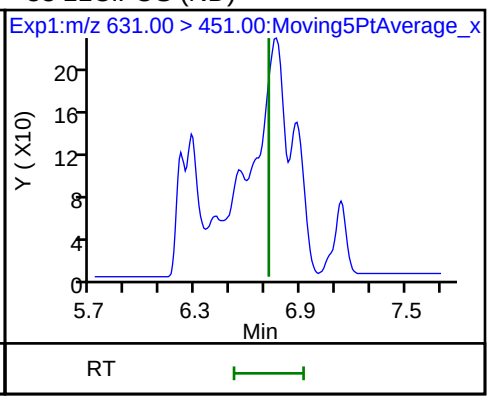
85 NEtFOSAA



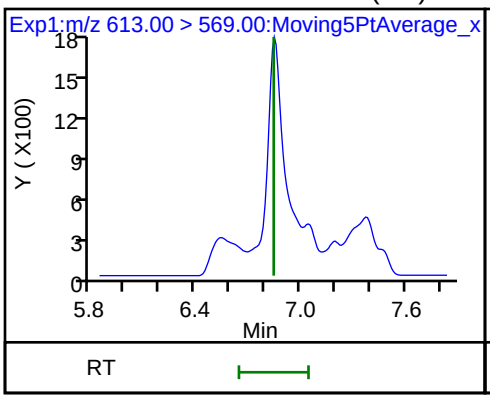
85 NEtFOSAA



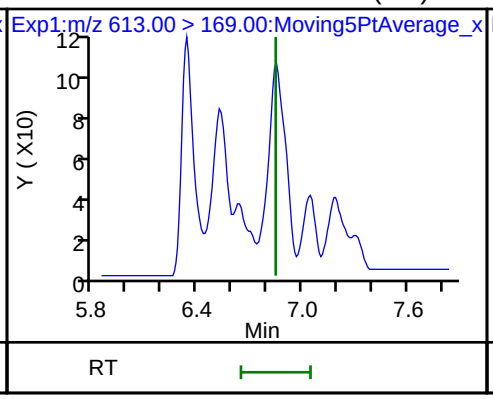
88 11ClFOS (ND)



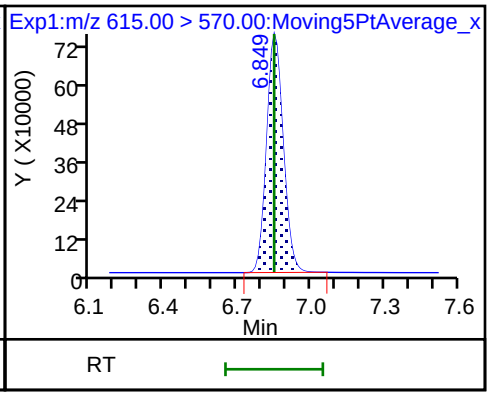
91 Perfluorododecanoic acid (ND)



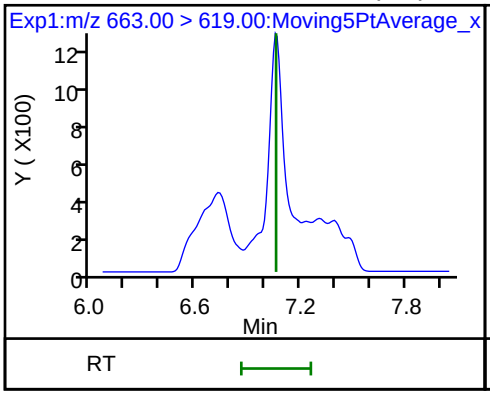
91 Perfluorododecanoic acid (ND)



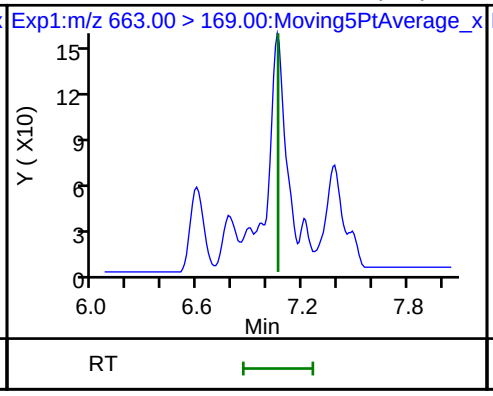
D 92 13C2-PFDoDA



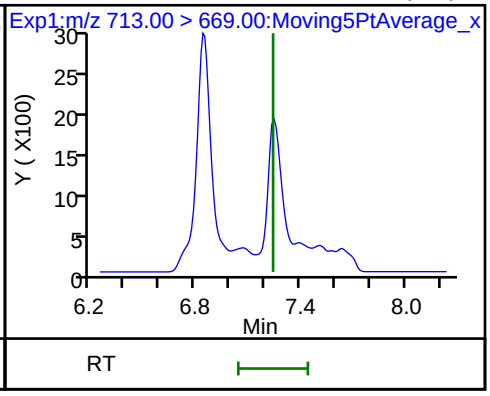
103 Perfluorotridecanoic acid (ND)



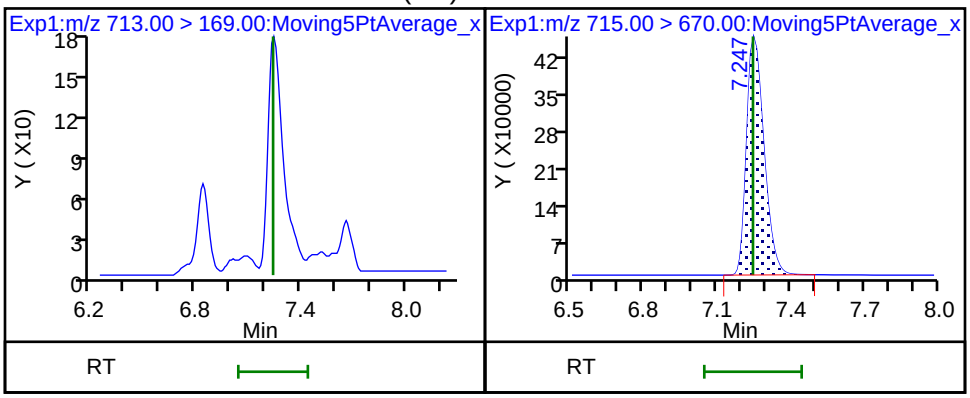
103 Perfluorotridecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND) D 105 13C2 PFTeDA



FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-17-GW-210813 RE Lab Sample ID: 410-51537-2 RE

Matrix: Water Lab File ID: 21SEP03-18.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 11:50

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 245(mL) Date Analyzed: 09/03/2021 15:21

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	*Perfluorohexanoic acid*	*ND*	*H*	*2.0*	*0.51*
375-85-9	*Perfluoroheptanoic acid*	*ND*	*H*	*2.0*	*0.51*
335-67-1	*Perfluorooctanoic acid*	*0.66*	*J H*	*2.0*	*0.51*
375-95-1	*Perfluorononanoic acid*	*ND*	*H*	*2.0*	*0.51*
335-76-2	*Perfluorodecanoic acid*	*ND*	*H*	*2.0*	*0.51*
72629-94-8	*Perfluorotridecanoic acid*	*ND*	*H*	*2.0*	*0.51*
376-06-7	*Perfluorotetradecanoic acid*	*ND*	*H*	*2.0*	*0.51*
375-73-5	*Perfluorobutanesulfonic acid*	*ND*	*H*	*2.0*	*0.51*
355-46-4	*Perfluorohexanesulfonic acid*	*0.74*	*J H*	*2.0*	*0.51*
1763-23-1	*Perfluorooctanesulfonic acid*	*0.60*	*J H*	*2.0*	*0.51*
2991-50-6	*NEtFOSAA*	*ND*	*H*	*3.1*	*0.51*
2355-31-9	*NMeFOSAA*	*ND*	*H*	*2.0*	*0.61*
307-55-1	*Perfluorododecanoic acid*	*ND*	*H*	*2.0*	*0.51*
13252-13-6	*HFPODA*	*ND*	*H*	*3.1*	*0.51*
756426-58-1	*9Cl-PF3ONS*	*ND*	*H*	*2.0*	*0.51*
763051-92-9	*11Cl-PF3OUdS*	*ND*	*H*	*2.0*	*0.51*
919005-14-4	*DONA*	*ND*	*H*	*2.0*	*0.51*
2058-94-8	*Perfluoroundecanoic acid*	*ND*	*H*	*2.0*	*0.51*

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\27632\20210903-38482.b\21SEP03-18.d
Lims ID: 410-51537-B-2-A
Client ID: CMW-17-GW-210813
Sample Type: Client
Inject. Date: 03-Sep-2021 15:21:06 ALS Bottle#: 22 Worklist Smp#: 16
Injection Vol: 7.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-B-2-A WL38482
Misc. Info.: Plate: 1 Rack: 1 410-0038482-016
Operator ID: US19INS00050\US19INS00050 Instrument ID: 27632

Method: \\chromfs\Lancaster\ChromData\27632\20210903-38482.b\PFAS_27632.m
Limit Group: LC - PFC IDA
Last Update: 07-Sep-2021 11:56:55 Calib Date: 30-Aug-2021 07:38:23
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\27632\20210830-38053.b\21AUG30MCAL-08.d

Column 1 : Gemini C18 50X3 50mm 3mm (3.00 mm) Det: EXP1
Process Host: CTX1627

First Level Reviewer: knightj Date: 07-Sep-2021 11:56:07
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 1 13C3-PFBA										sM
216.00 > 172.00	3.363	3.361	0.002		1268313	5.00			73.6	M
6 Perfluorobutanesulfonic acid										R
299.00 > 80.00	3.946	3.950	-0.004	1.001	32162	0.0933	Target=3.47		17.4	R
299.00 > 99.00	3.940	3.950	-0.010	1.000	2088		15.40(1.73-5.20)		4.4	
D 7 13C3 PFBS										
302.00 > 80.00	3.940	3.953	-0.013	1.172	2620356	24.3		261	14491	
11 Perfluorohexanoic acid										M
313.00 > 269.00	4.316	4.330	-0.014	1.000	53671	0.1050	Target=94.55		235	M
313.00 > 119.00	4.316	4.330	-0.014	1.000	941		57.04(47.27-141.82)		45.5	
D 10 13C5 PFHxA										
318.00 > 273.00	4.316	4.331	-0.015	0.845	7459414	7.98		79.8	56689	
14 Perfluoro(2-propoxypropanoic) ac										
329.00 > 285.00	4.454	4.463	-0.009	1.001	265	0.001603			0.8	
D 15 13C3 HFPO-DA										
332.00 > 287.00	4.449	4.464	-0.015	0.871	417343	6.20		62.0	18312	
17 Perfluorohexanesulfonic acid										M
399.00 > 80.00	4.724	4.736	-0.012	1.000	44776	0.1804	Target=3.68		1325	M
399.00 > 99.00	4.713	4.736	-0.023	0.997	10670		4.20(1.84-5.51)		4121	
16 Perfluoroheptanoic acid										
363.00 > 319.00	4.724	4.736	-0.012	1.000	71805	0.0703	Target=27.51		25.0	
363.00 > 169.00	4.785	4.736	0.049	1.013	2755		26.06(13.76-41.27)		19.8	
D 18 13C3 PFHxS										
402.00 > 80.00	4.724	4.737	-0.013	0.925	2080693	8.64		91.3	166586	
D 19 13C4 PFHpA										
367.00 > 322.00	4.724	4.738	-0.014	0.925	6243085	10.8		108	88160	
20 DONA										
377.00 > 251.00		4.782				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 13C8 PFOA										
421.00 > 376.00	5.102	5.115	-0.013	0.999	10071266	10.9		109	591458	
* 28 13C2 PFOA										
415.00 > 370.00	5.107	5.115	-0.008		2588379	5.00			126263	
27 Perfluorooctanoic acid										M
413.00 > 369.00	5.102	5.115	-0.013	1.000	90950	0.1615	Target=17.43		1134	M
413.00 > 169.00	5.112	5.115	-0.003	1.002	5710		15.93(8.71-26.14)		317	M
* 30 13C4 PFOS										
503.00 > 80.00	5.439	5.443	-0.004		855011	4.78			18490	
32 Perfluorooctanesulfonic acid										M
499.00 > 80.00	5.432	5.443	-0.011	0.999	35585	0.1467	Target=4.46		2179	M
499.00 > 99.00	5.432	5.443	-0.011	0.999	7901		4.50(2.23-6.69)		14.6	
D 31 13C8 PFOS										
507.00 > 80.00	5.439	5.445	-0.006	1.000	1923254	10.8		113	150568	
33 Perfluorononanoic acid										
463.00 > 419.00		5.461				ND				
463.00 > 169.00		5.461								
D 34 13C9 PFNA										
472.00 > 427.00	5.454	5.462	-0.008	1.003	4892283	13.9		139	182927	
35 9-Chlorohexadecafluoro-3-oxanona										
531.00 > 351.00		5.617				ND				
D 39 13C6 PFDA										
519.00 > 474.00	5.768	5.769	-0.001	1.000	8026422	11.3		113	287882	
37 Perfluorodecanoic acid										
513.00 > 469.00		5.769				ND				
513.00 > 169.00		5.769								
* 38 13C2 PFDA										
515.00 > 470.00	5.768	5.771	-0.003		1327913	5.00			83889	
D 45 d3-NMeFOSAA										
573.00 > 419.00	5.918	5.916	0.002	1.026	2021763	10.1		101	302927	
44 N-methylperfluorooctanesulfonami										
570.00 > 419.00		5.923				ND				
570.00 > 483.00		5.923								
47 Perfluoroundecanoic acid										
563.00 > 519.00		6.044				ND				
563.00 > 169.00		6.044								
D 48 13C7 PFUnA										
570.00 > 525.00	6.041	6.045	-0.004	1.047	7007986	9.87		98.7	206111	
D 50 d5-NEtFOSAA										
589.00 > 419.00	6.067	6.062	0.005	1.052	1391869	11.9		119	251560	
51 N-ethylperfluorooctanesulfonamid										
584.00 > 419.00		6.067				ND				
584.00 > 526.00		6.067								
52 11-Chloroeicosafluoro-3-oxaundec										
631.00 > 451.00		6.153				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
53 Perfluorododecanoic acid										
613.00 > 569.00		6.280				ND				
613.00 > 169.00		6.280								
D 54 13C2-PFDoDA										
615.00 > 570.00	6.285	6.282	0.003	1.090	5871350	7.33		73.3	216383	
65 Perfluorotridecanoic acid										
663.00 > 619.00		6.492				ND				
663.00 > 169.00		6.492								
D 67 13C2 PFTeDA										
715.00 > 670.00	6.681	6.674	0.007	1.158	1613105	2.78		27.8	47819	
66 Perfluorotetradecanoic acid										
713.00 > 669.00		6.674				ND				
713.00 > 169.00		6.674								

QC Flag Legend

Processing Flags
- ND - Not Detected or Marked ND
- R - Failed Signal Ratio Test
- s - Failed ISTD Recovery Test

Review Flags
- M - Manually Integrated

Reagents:

PFC_IS_MOD_00175 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 07-Sep-2021 11:57:14 Chrom Revision: 2.3 06-Sep-2021 12:07:10

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\27632\20210903-38482.b\21SEP03-18.d

Injection Date: 03-Sep-2021 15:21:06 Instrument ID: 27632

Lims ID: 410-51537-B-2-A Lab Sample ID: 410-51537-2

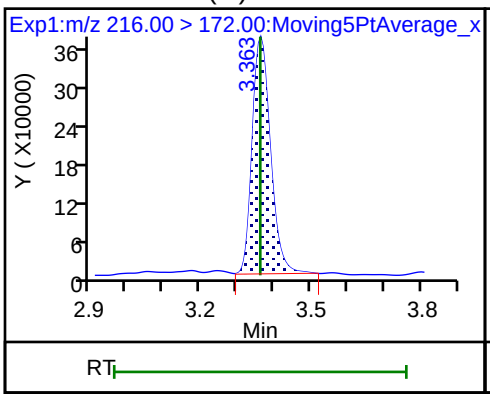
Client ID: CMW-17-GW-210813

Operator ID: US19INS00050\US19INS00050 ALS Bottle#: 22 Worklist Smp#: 16

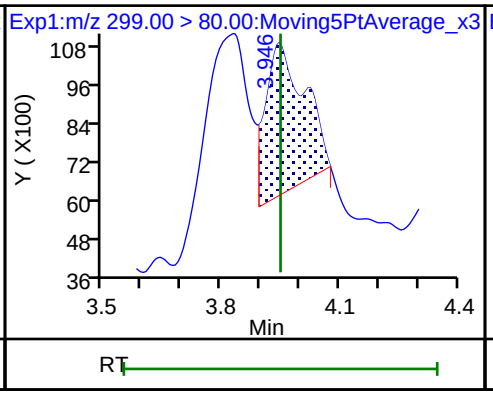
Injection Vol: 7.0 ul Dil. Factor: 1.0000

Method: PFAS_27632 Limit Group: LC - PFC IDA

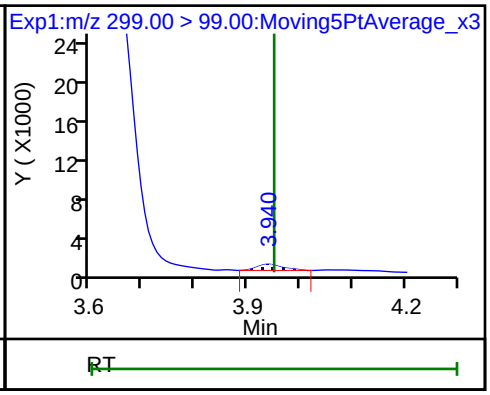
* 1 13C3-PFBA (M)



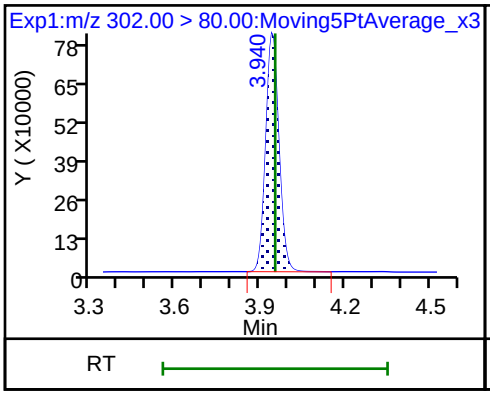
6 Perfluorobutanesulfonic acid



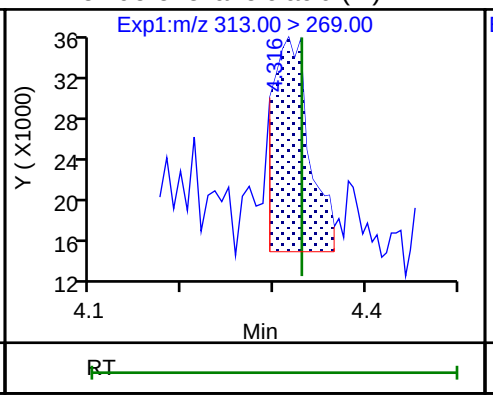
6 Perfluorobutanesulfonic acid



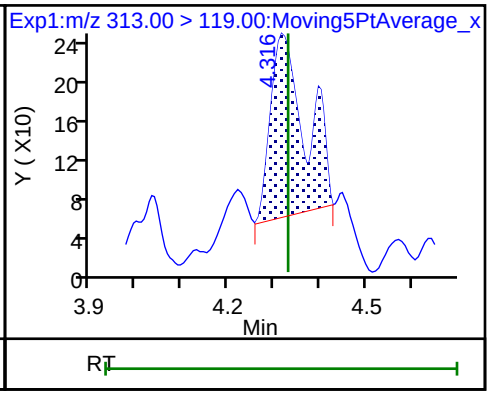
D 7 13C3 PFBS



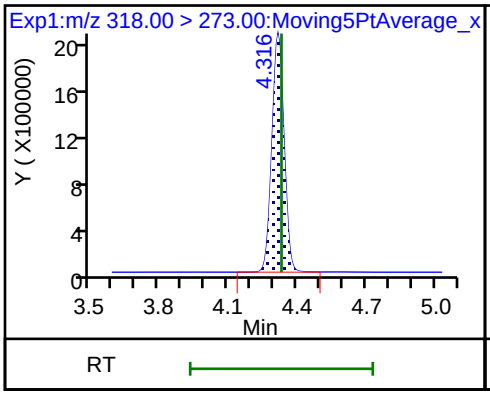
11 Perfluorohexanoic acid (M)



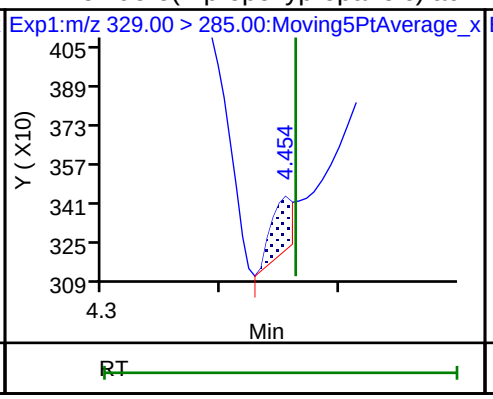
11 Perfluorohexanoic acid



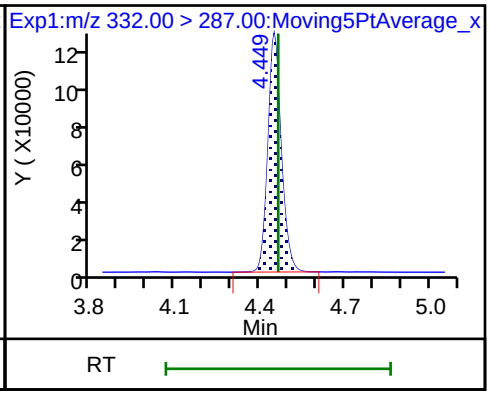
D 10 13C5 PFHxA



14 Perfluoro(2-propoxypropanoic) ac



D 15 13C3 HFPO-DA



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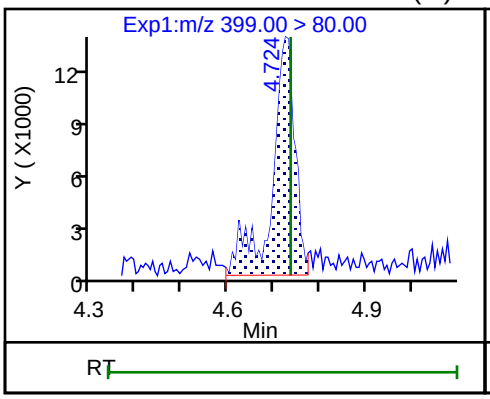
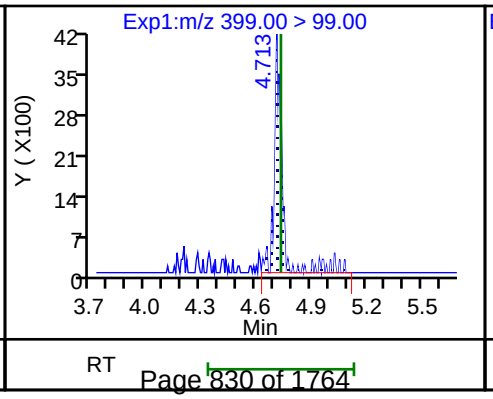
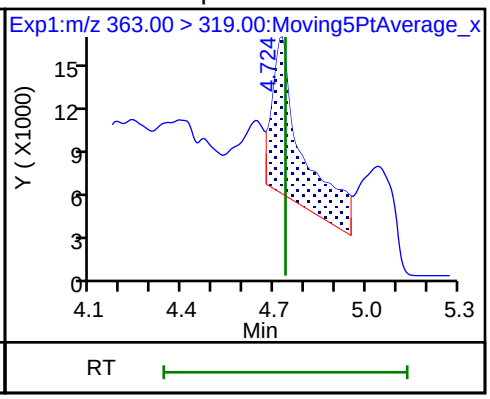


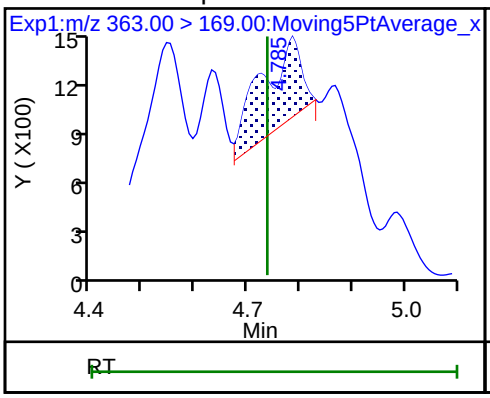
17 Perfluorohexanesulfonic acid



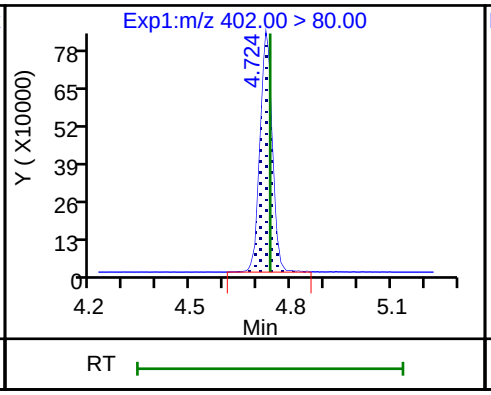
16 Perfluoroheptanoic acid



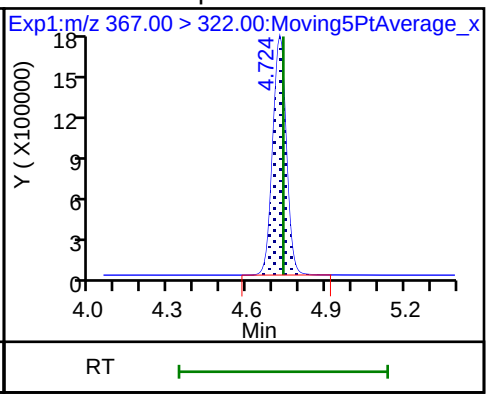
16 Perfluoroheptanoic acid



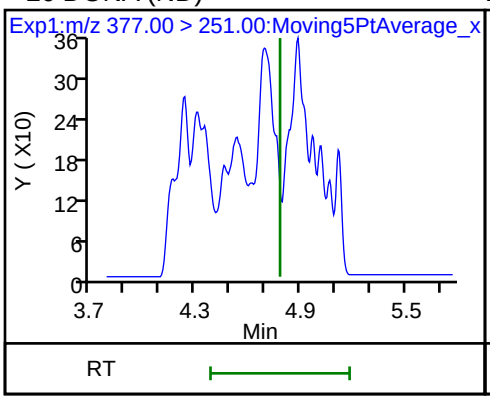
D 18 13C3 PFHxS



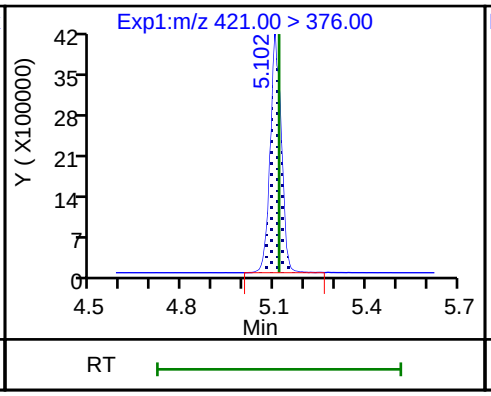
D 19 13C4 PFHpA



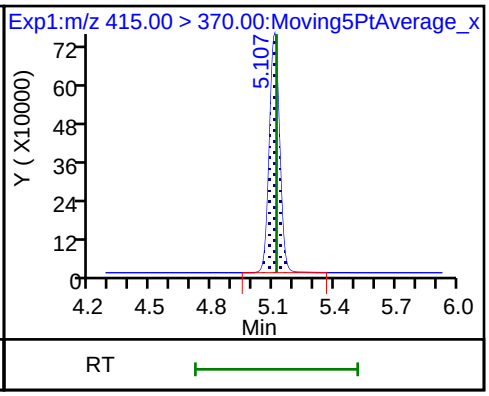
20 DONA (ND)



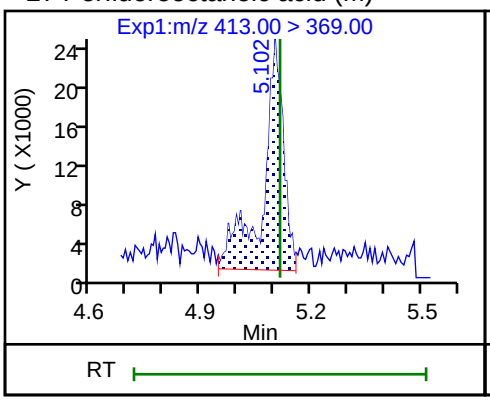
D 26 13C8 PFOA



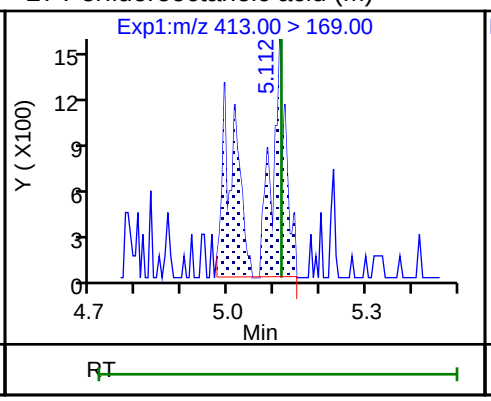
* 28 13C2 PFOA



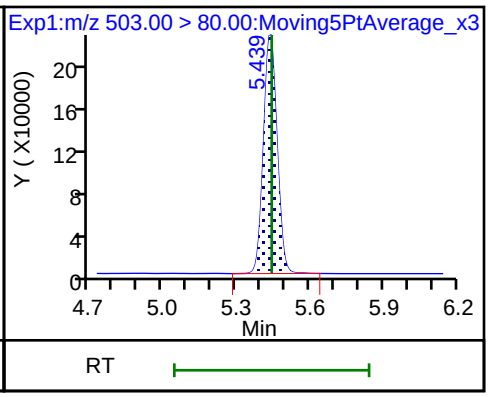
27 Perfluorooctanoic acid (M)



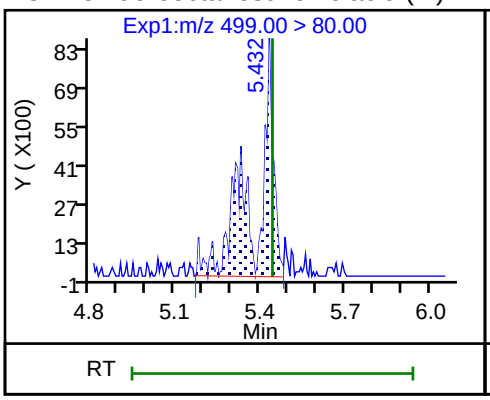
27 Perfluorooctanoic acid (M)



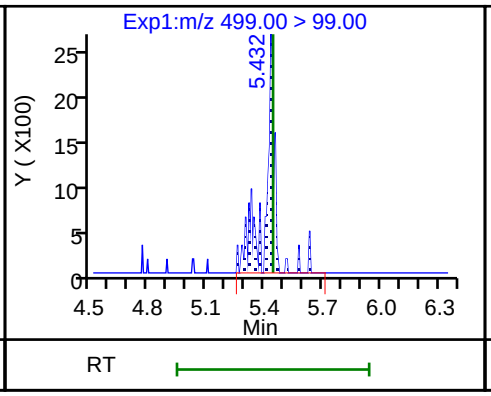
* 30 13C4 PFOS



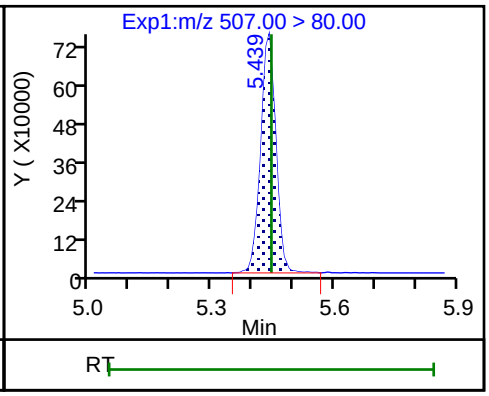
32 Perfluorooctanesulfonic acid (M)



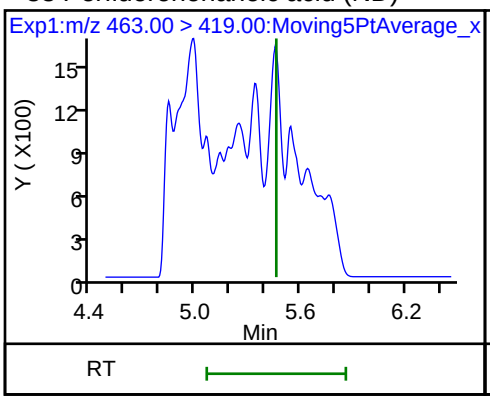
32 Perfluorooctanesulfonic acid



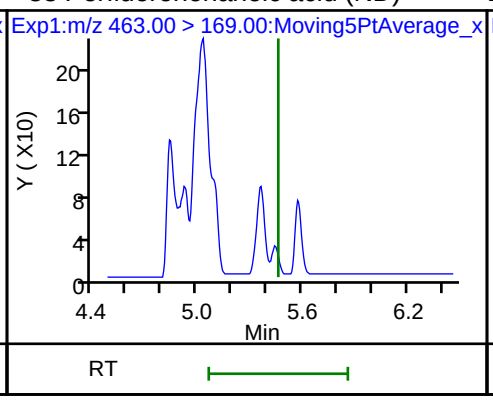
D 31 13C8 PFOS



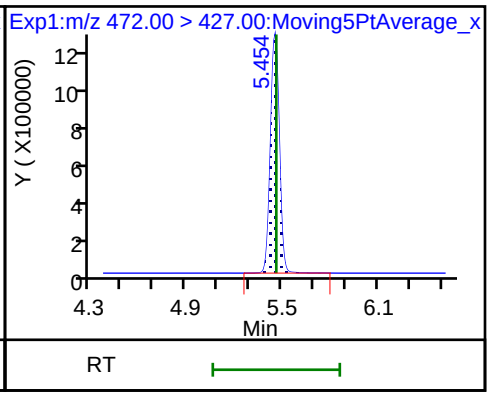
33 Perfluorononanoic acid (ND)



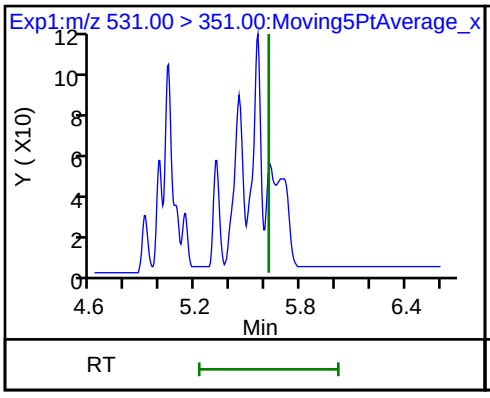
33 Perfluorononanoic acid (ND)



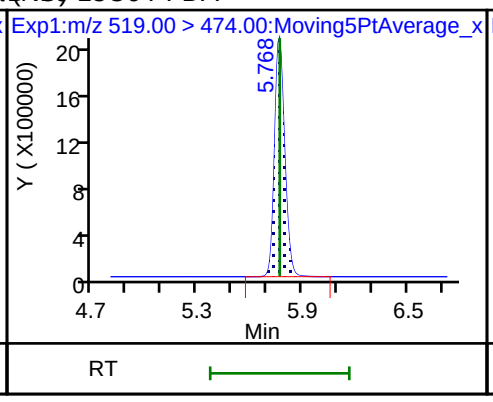
D 34 13C9 PFNA



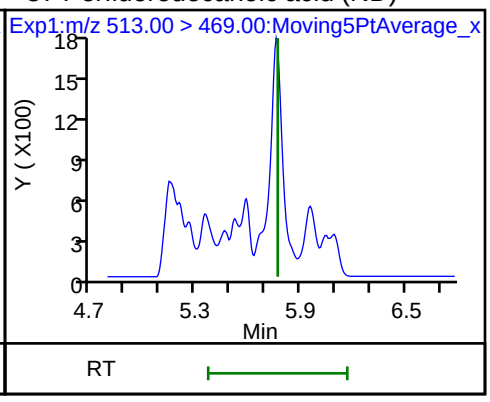
35 9-Chlorohexadecafluoro-3-oxanonanoic acid (ND)



D 39 13C6 PFDA



37 Perfluorodecanoic acid (ND)



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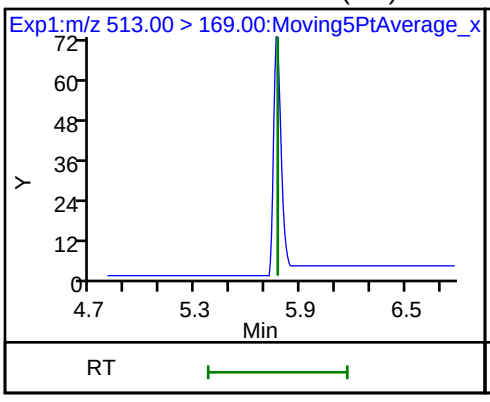
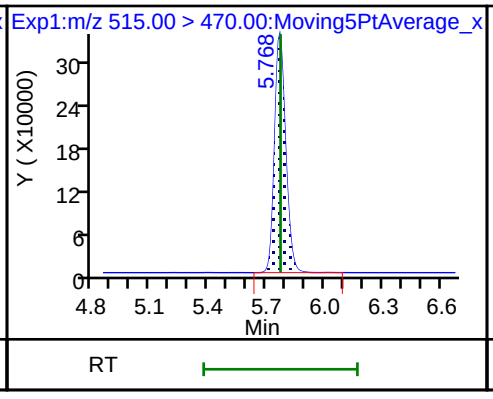
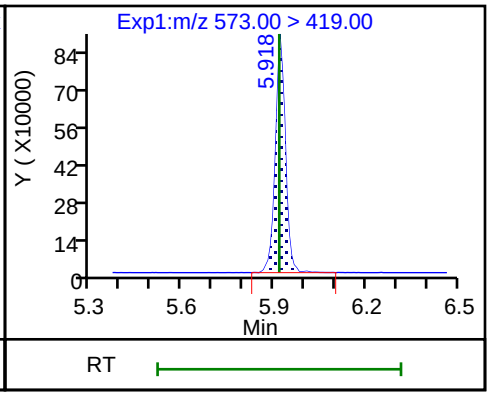


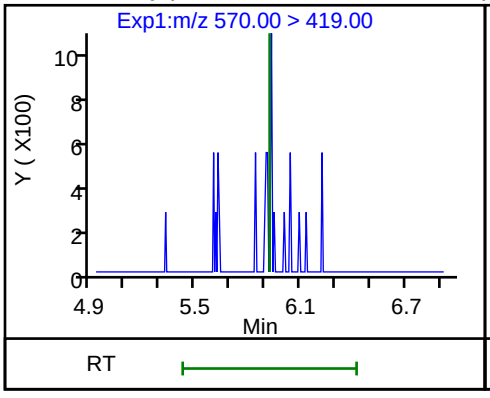
* 38 13C2 PFDA



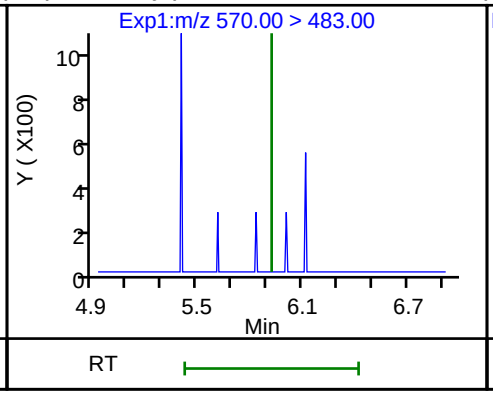
D 45 d3-NMeFOSAA



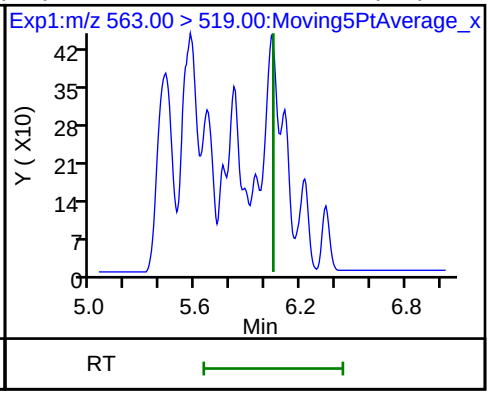
44 N-methylperfluorooctanesulfonami (ND)



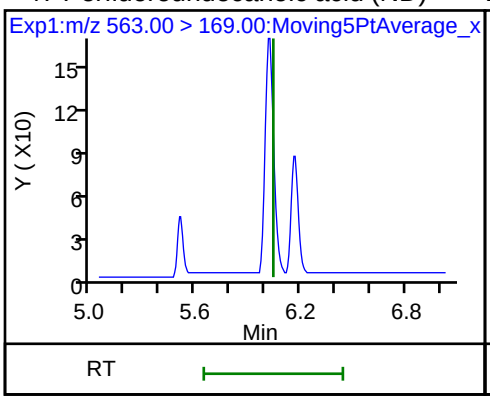
44 N-methylperfluorooctanesulfonami (ND)



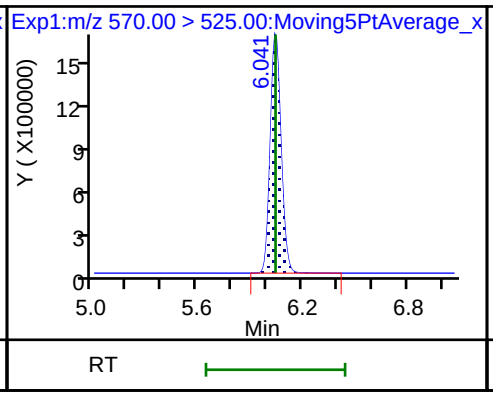
47 Perfluoroundecanoic acid (ND)



47 Perfluoroundecanoic acid (ND)



D 48 13C7 PFUnA



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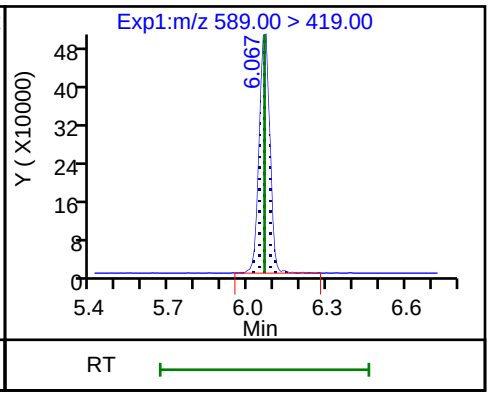
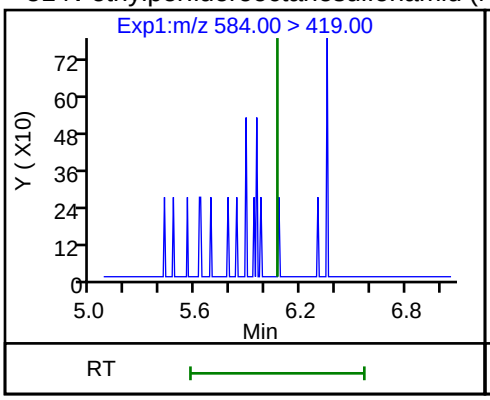
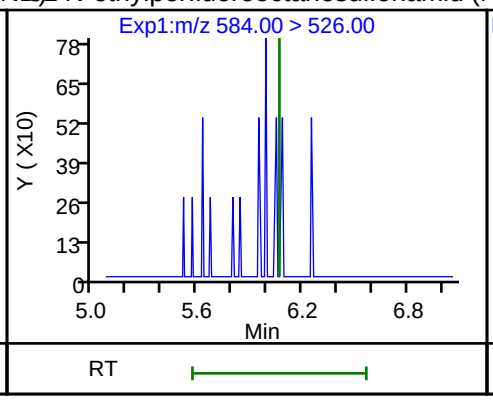


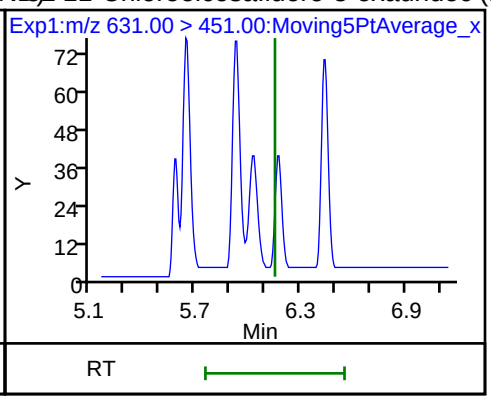
51 N-ethylperfluorooctanesulfonamid (ND)



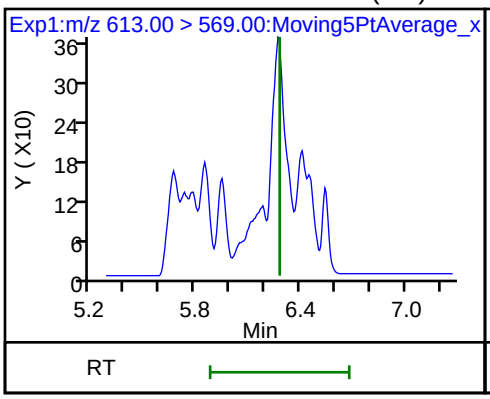
51 N-ethylperfluorooctanesulfonamid (ND)



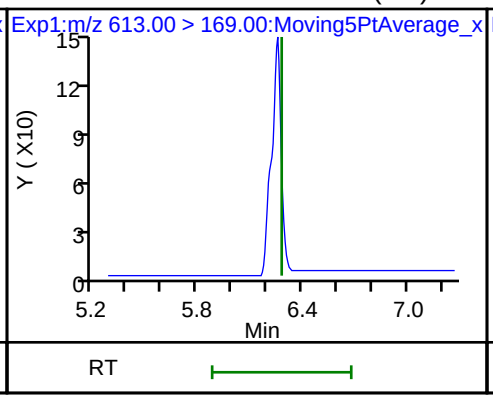
52 11-Chloroeicosafluoro-3-oxaundec (ND)



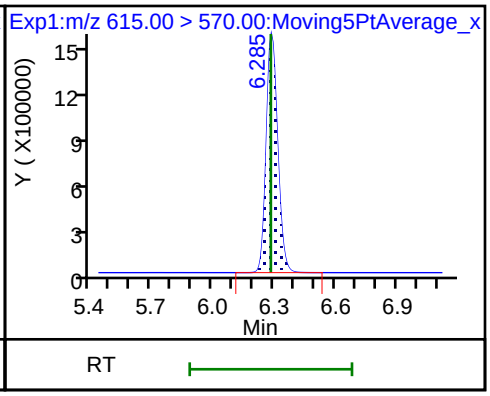
53 Perfluorododecanoic acid (ND)



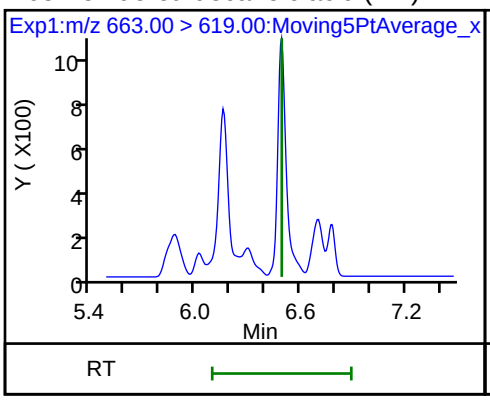
53 Perfluorododecanoic acid (ND)



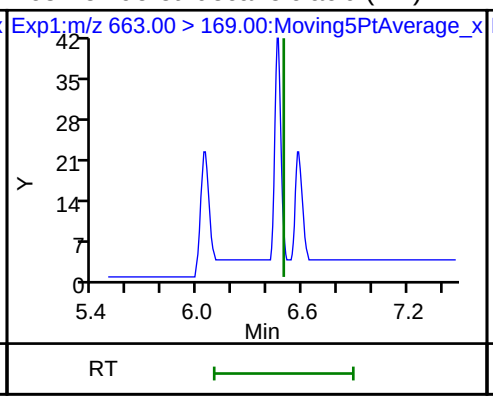
D 54 13C2-PFDoDA



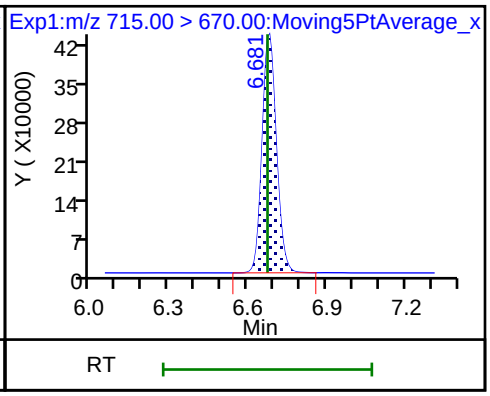
65 Perfluorotridecanoic acid (ND)



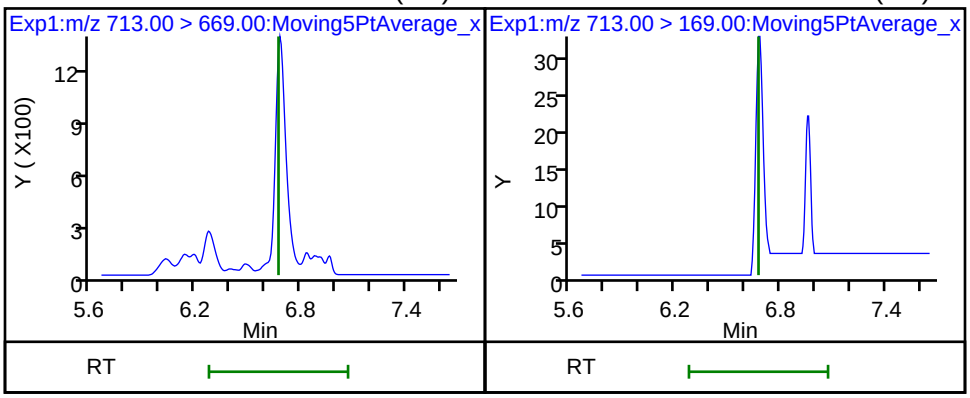
65 Perfluorotridecanoic acid (ND)



D 67 13C2 PFTeDA



66 Perfluorotetradecanoic acid (ND) 66 Perfluorotetradecanoic acid (ND)



FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-56-GW-210813 Lab Sample ID: 410-51537-3

Matrix: Water Lab File ID: 21AUG31-14.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 13:52

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 247.8(mL) Date Analyzed: 09/01/2021 00:58

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	0.94	J	2.0	0.50
375-85-9	Perfluoroheptanoic acid	ND		2.0	0.50
335-67-1	Perfluorooctanoic acid	0.81	J	2.0	0.50
375-95-1	Perfluorononanoic acid	ND		2.0	0.50
335-76-2	Perfluorodecanoic acid	0.56	J	2.0	0.50
72629-94-8	Perfluorotridecanoic acid	ND		2.0	0.50
376-06-7	Perfluorotetradecanoic acid	ND		2.0	0.50
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.50
355-46-4	Perfluorohexanesulfonic acid	1.7	J	2.0	0.50
1763-23-1	Perfluorooctanesulfonic acid	ND		2.0	0.50
2991-50-6	NEtFOSAA	ND		3.0	0.50
2355-31-9	NMeFOSAA	ND		2.0	0.61
307-55-1	Perfluorododecanoic acid	ND		2.0	0.50
13252-13-6	HFPODA	ND		3.0	0.50
756426-58-1	9Cl-PF3ONS	ND		2.0	0.50
763051-92-9	11Cl-PF3OUdS	ND		2.0	0.50
919005-14-4	DONA	ND		2.0	0.50
2058-94-8	Perfluoroundecanoic acid	ND		2.0	0.50

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-14.d
Lims ID: 410-51537-A-3-A
Client ID: CMW-56-GW-210813
Sample Type: Client
Inject. Date: 01-Sep-2021 00:58:09 ALS Bottle#: 73 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-A-3-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-012
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:31:08
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.859	3.850	0.009		1068158	5.00			1412	
18 Perfluorobutanesulfonic acid										M
299.00 > 80.00	4.526	4.513	0.013	1.000	40346	0.0944	Target=3.39		71.7	M
299.00 > 99.00	4.526	4.513	0.013	1.000	14015		2.88(1.69-5.08)		87.8	
D 19 13C3 PFBS										
302.00 > 80.00	4.526	4.520	0.006	1.173	3288375	10.8		116	29985	
26 Perfluorohexanoic acid										M
313.00 > 269.00	4.910	4.896	0.014	1.000	73704	0.2341	Target=15.40		48.8	M
313.00 > 119.00	4.900	4.896	0.004	0.998	5466		13.48(7.70-23.10)		127	M
D 27 13C5 PFHxA										
318.00 > 273.00	4.910	4.899	0.011	0.862	3810553	9.09		90.9	89536	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.045	5.033	0.012	0.885	40747	7.70		77.0	2323	
36 Perfluoroheptanoic acid										
363.00 > 319.00	5.317	5.306	0.011	1.000	25423	0.0637	Target=4.18		42.1	
363.00 > 169.00	5.306	5.306	0.0	0.998	4309		5.90(2.09-6.27)		139	
37 Perfluorohexanesulfonic acid										M
399.00 > 80.00	5.317	5.309	0.008	1.000	120491	0.4125	Target=3.52		5370	M
399.00 > 99.00	5.317	5.309	0.008	1.000	32901		3.66(1.76-5.27)		10235	
D 38 13C4 PFHpA										
367.00 > 322.00	5.317	5.311	0.006	0.933	4091058	9.45		94.5	122415	
D 39 13C3 PFHxS										
402.00 > 80.00	5.317	5.311	0.006	0.933	2594967	8.54		90.2	59111	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.697	5.685	0.012	1.000	3698247	9.87		98.7	100739	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.687	5.685	0.002	0.998	64660	0.2015	Target=2.48		1295	M
413.00 > 169.00	5.687	5.685	0.002	0.998	21959		2.94(1.24-3.71)		2007	M
* 57 13C2 PFOA										
415.00 > 370.00	5.697	5.688	0.009		1538634	5.00			67738	
D 60 13C8 PFOS										
507.00 > 80.00	6.025	6.013	0.012	1.000	3123628	9.02		94.3	57642	
* 61 13C4 PFOS										
503.00 > 80.00	6.025	6.014	0.011		1643671	4.78			36609	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	6.025	6.015	0.010	1.000	29723	0.0833	Target=4.58		1841	
499.00 > 99.00	6.025	6.015	0.010	1.000	7360		4.04(2.29-6.87)		2518	
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.034	6.032	0.002	1.002	2803607	10.1		101	103711	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										M
513.00 > 469.00	6.344	6.337	0.007	1.000	44198	0.1399	Target=8.64		446	
513.00 > 169.00	6.344	6.337	0.007	1.000	5220		8.47(4.32-12.97)		221	M
* 74 13C2 PFDA										
515.00 > 470.00	6.344	6.339	0.005		1934228	5.00			103469	
D 75 13C6 PFDA										
519.00 > 474.00	6.344	6.339	0.005	1.000	3811484	9.80		98.0	136751	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.490	6.487	0.003	1.023	947665	8.89		88.9	38900	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.626	6.611	0.015	1.044	4451066	9.64		96.4	87063	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.637	6.628	0.009	1.046	831950	10.1		101	32558	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.859	6.849	0.010	1.081	3590237	8.01		80.1	109416	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.259	7.244	0.015	1.144	2639078	7.77		77.7	74856	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 01-Sep-2021 07:40:53 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-14.d

Injection Date: 01-Sep-2021 00:58:09 Instrument ID: 30727

Lims ID: 410-51537-A-3-A Lab Sample ID: 410-51537-3

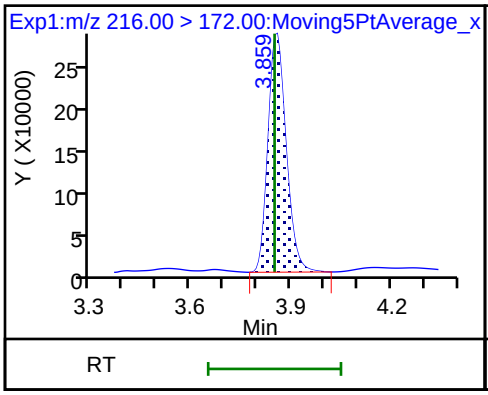
Client ID: CMW-56-GW-210813

Operator ID: US19_USR_INS20264 ALS Bottle#: 73 Worklist Smp#: 12

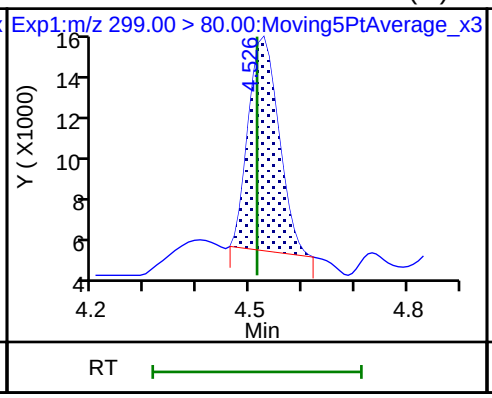
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

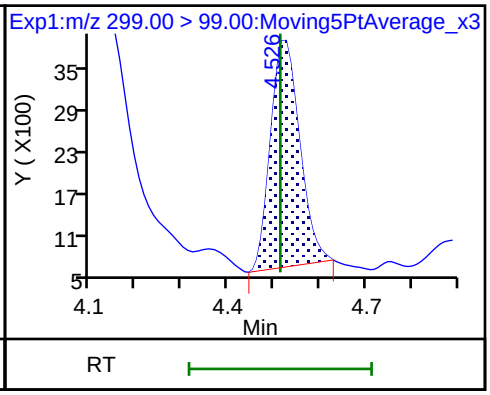
* 8 13C3-PFBA



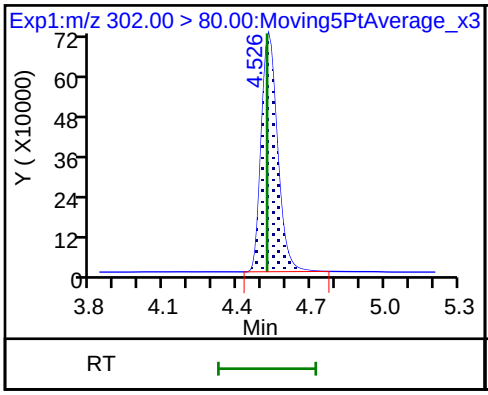
18 Perfluorobutanesulfonic acid (M)



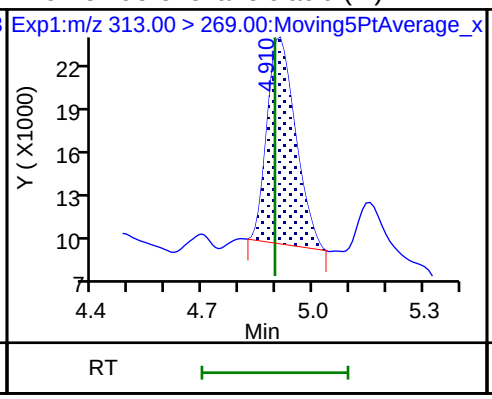
18 Perfluorobutanesulfonic acid



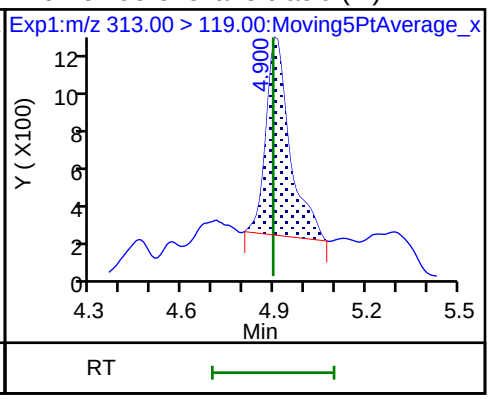
D 19 13C3 PFBS



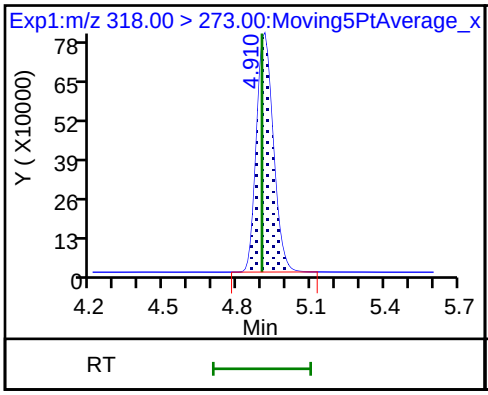
26 Perfluorohexanoic acid (M)



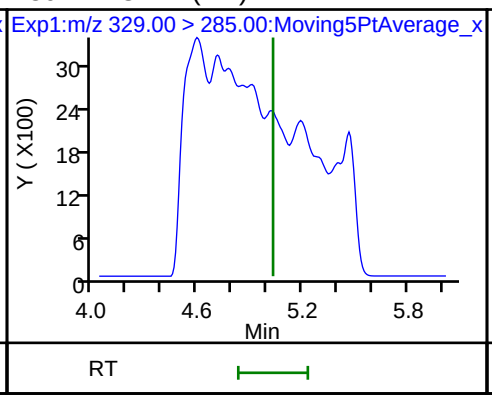
26 Perfluorohexanoic acid (M)



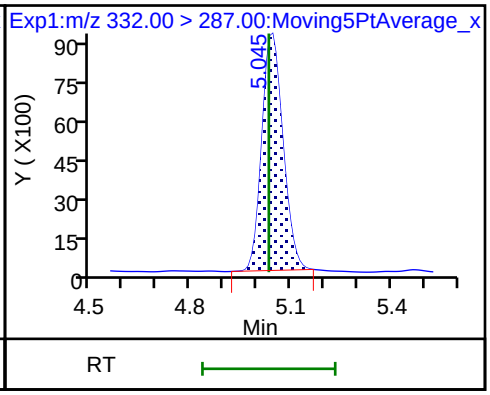
D 27 13C5 PFHxA



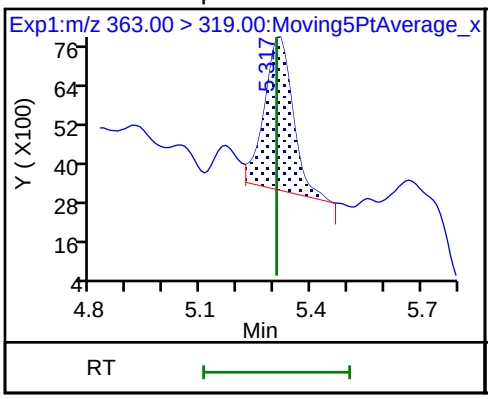
30 HFPO-DA (ND)



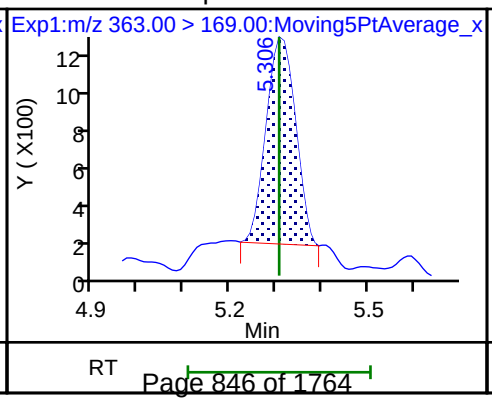
D 31 13C3 HFPO-DA



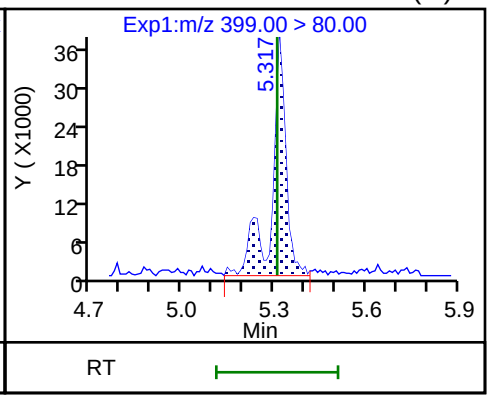
36 Perfluoroheptanoic acid



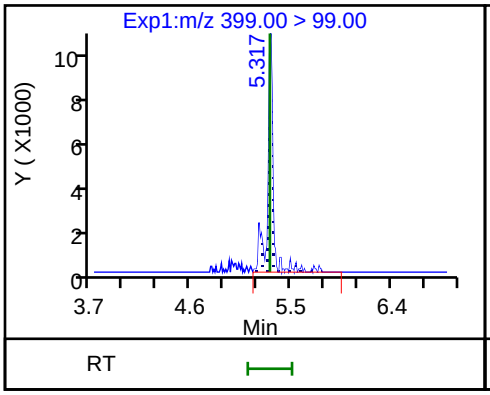
36 Perfluoroheptanoic acid



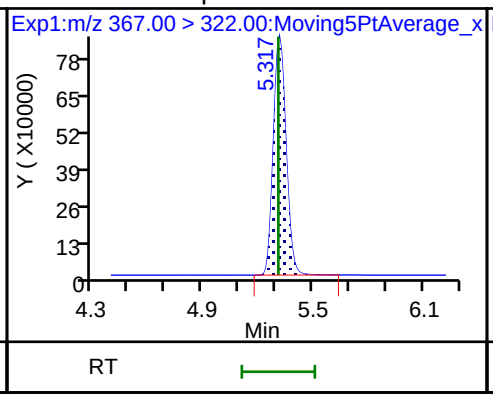
37 Perfluorohexanesulfonic acid (M)



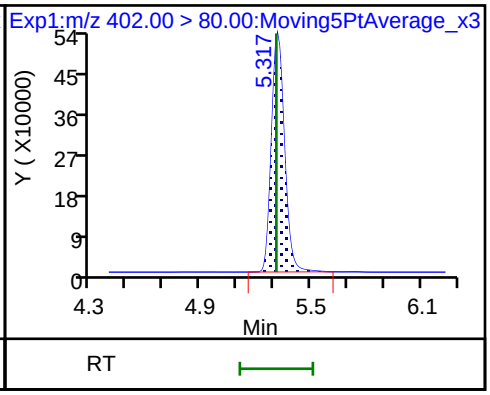
37 Perfluorohexanesulfonic acid



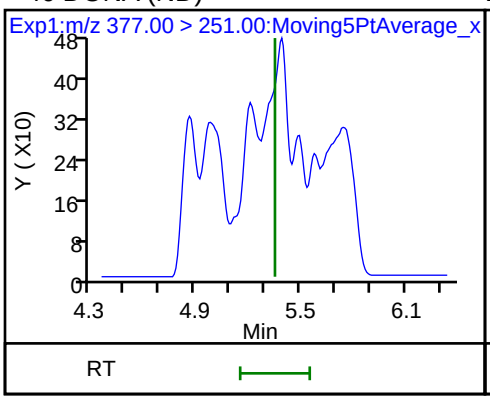
D 38 13C4 PFHpA



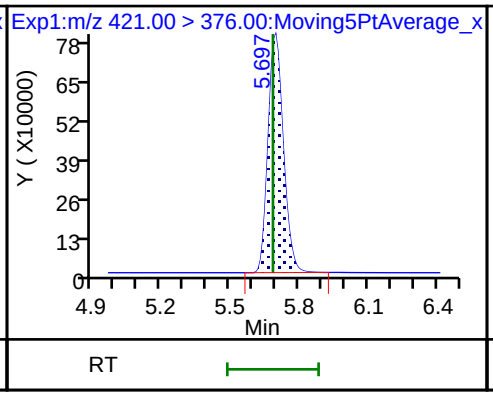
D 39 13C3 PFHxS



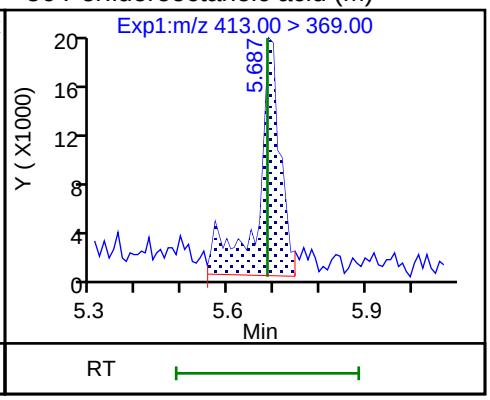
40 DONA (ND)



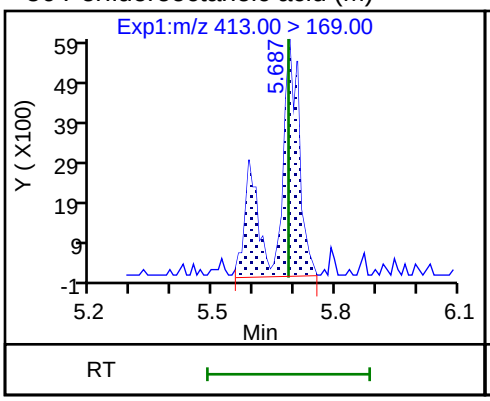
D 55 13C8 PFOA



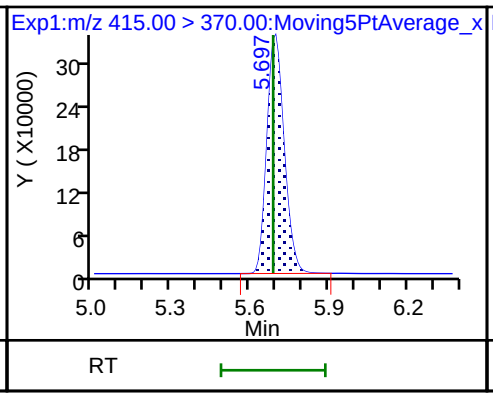
56 Perfluorooctanoic acid (M)



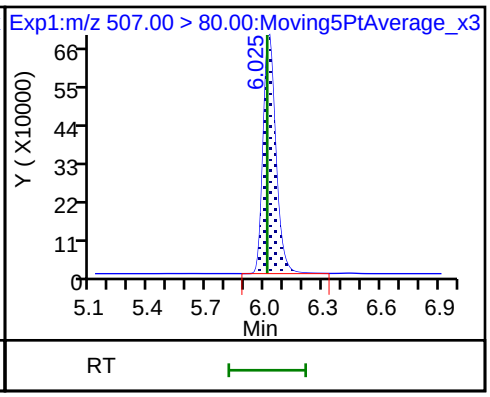
56 Perfluorooctanoic acid (M)



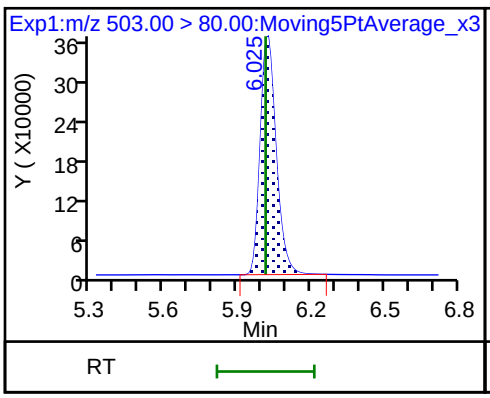
* 57 13C2 PFOA



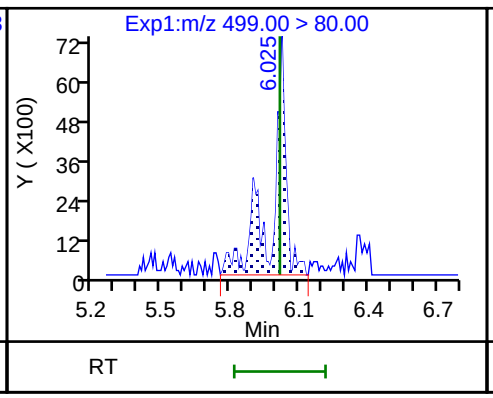
D 60 13C8 PFOS



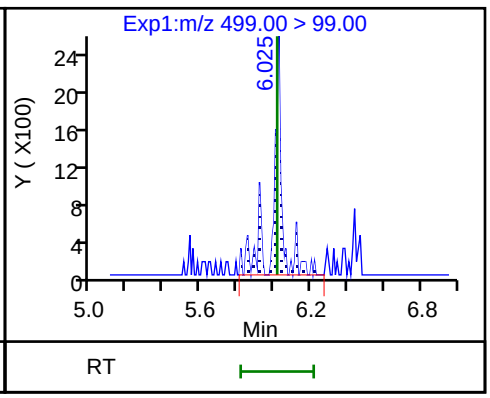
* 61 13C4 PFOS



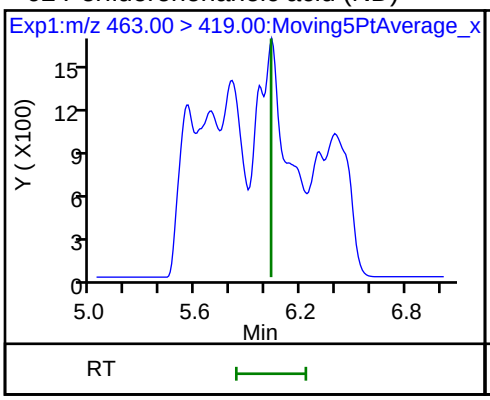
59 Perfluorooctanesulfonic acid



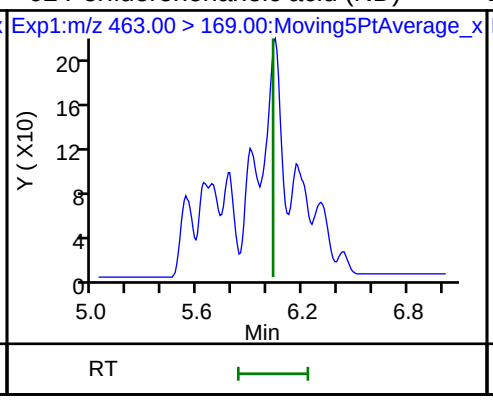
59 Perfluorooctanesulfonic acid



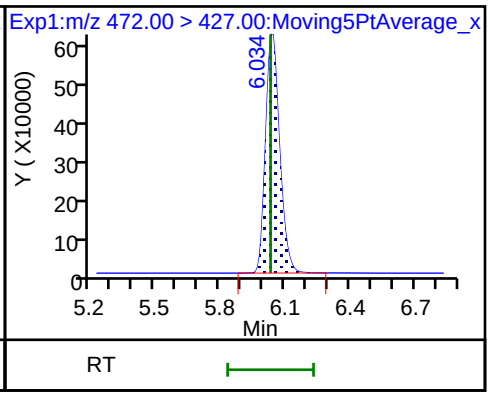
62 Perfluorononanoic acid (ND)



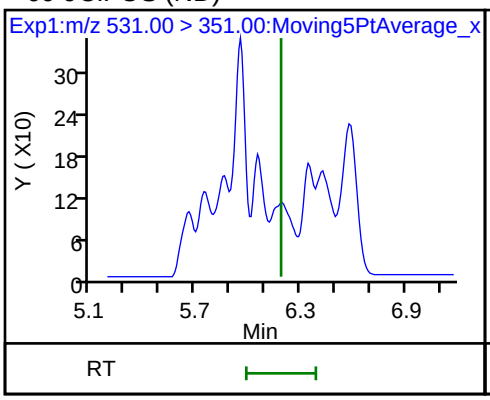
62 Perfluorononanoic acid (ND)



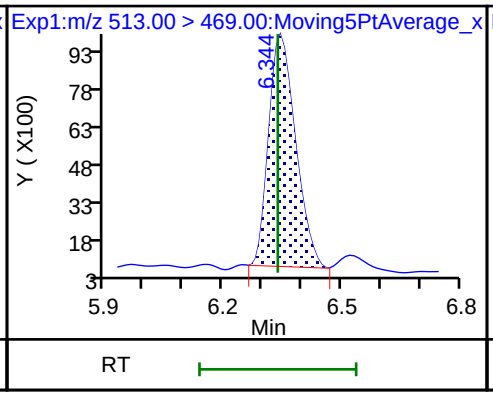
D 63 13C9 PFNA



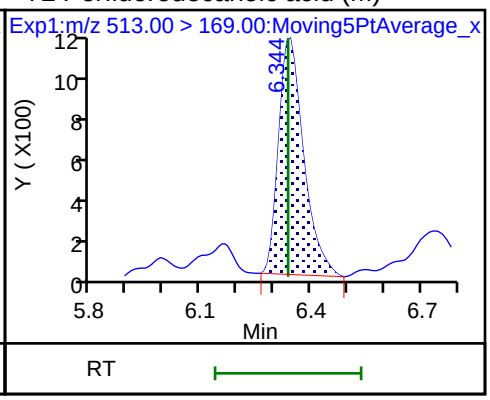
69 9ClFOS (ND)



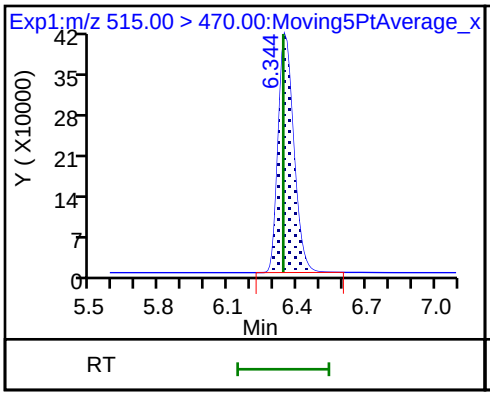
72 Perfluorodecanoic acid



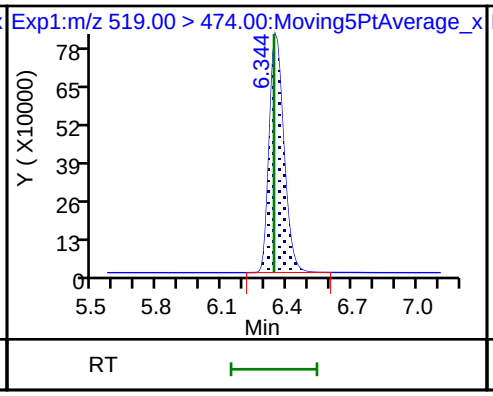
72 Perfluorodecanoic acid (M)



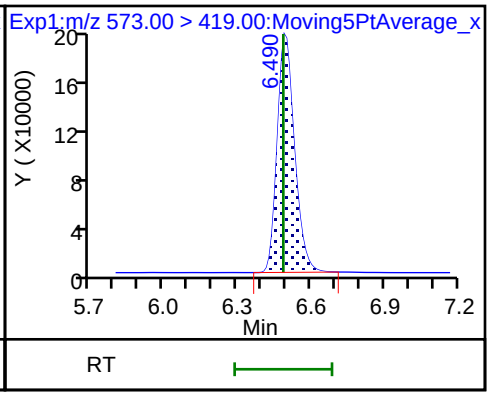
* 74 13C2 PFDA



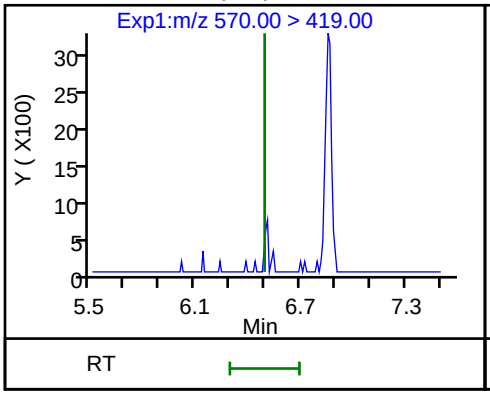
D 75 13C6 PFDA



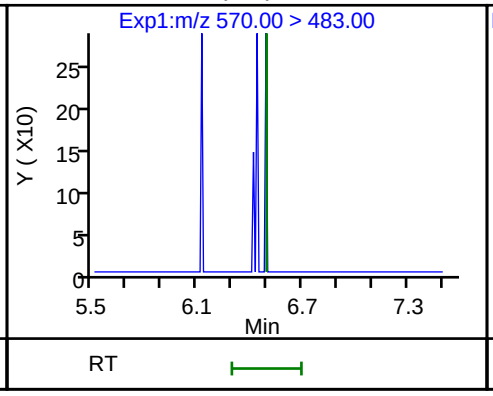
D 79 d3-NMeFOSAA



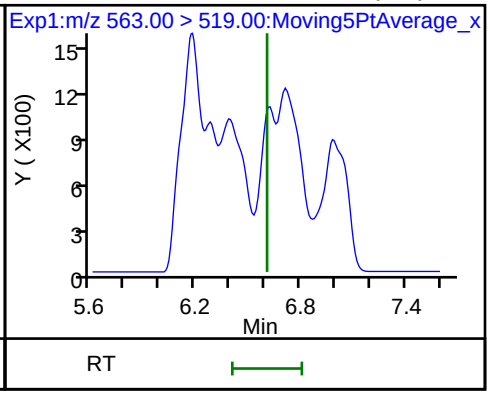
80 NMeFOSAA (ND)



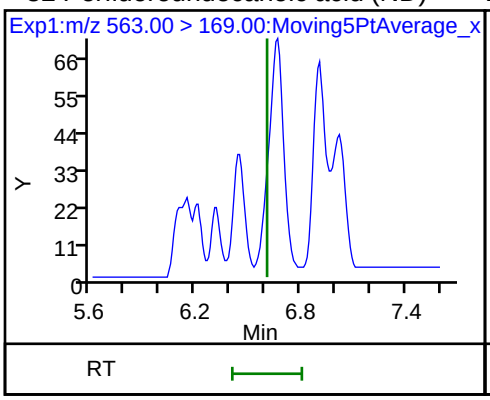
80 NMeFOSAA (ND)



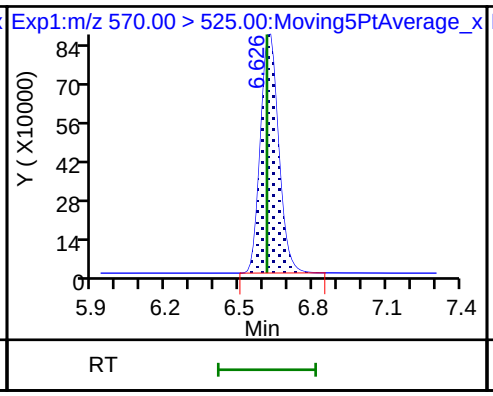
82 Perfluoroundecanoic acid (ND)



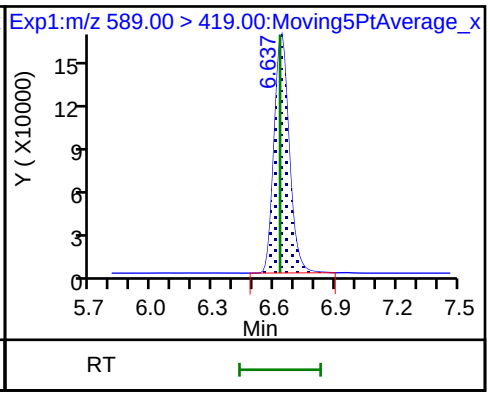
82 Perfluoroundecanoic acid (ND)



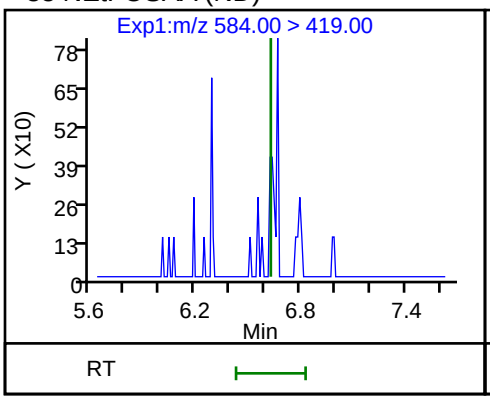
D 83 13C7 PFUnA



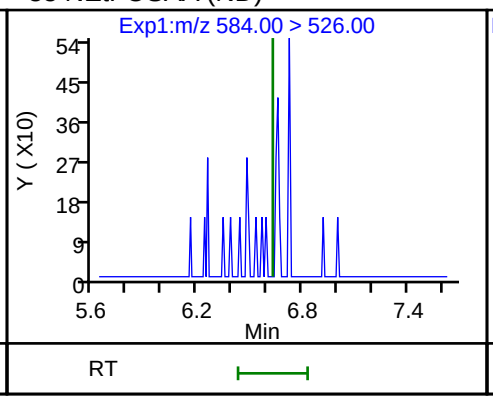
D 84 d5-NEtFOSAA



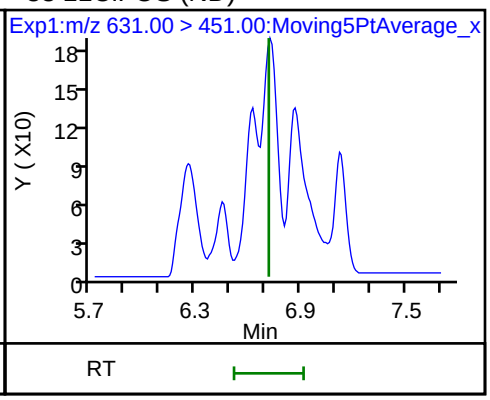
85 NEtFOSAA (ND)



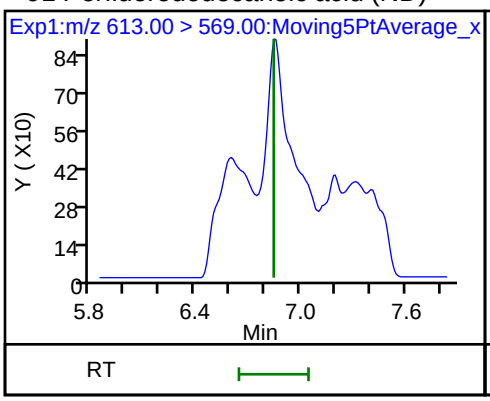
85 NEtFOSAA (ND)



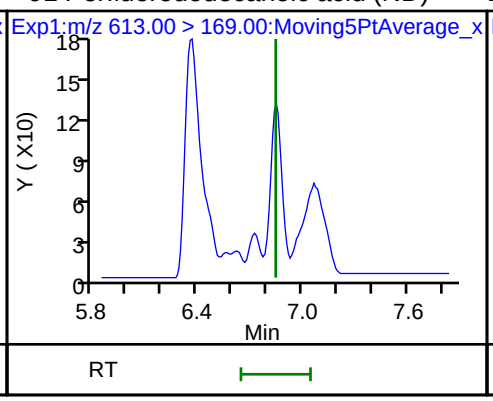
88 11ClFOS (ND)



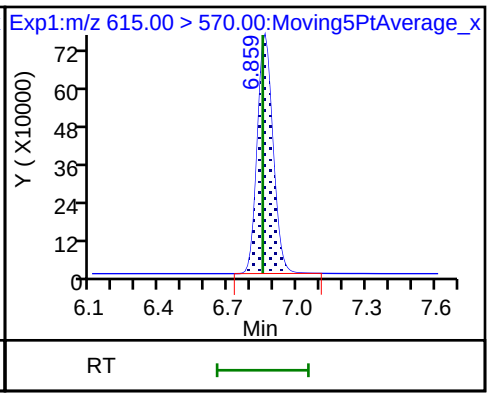
91 Perfluorododecanoic acid (ND)



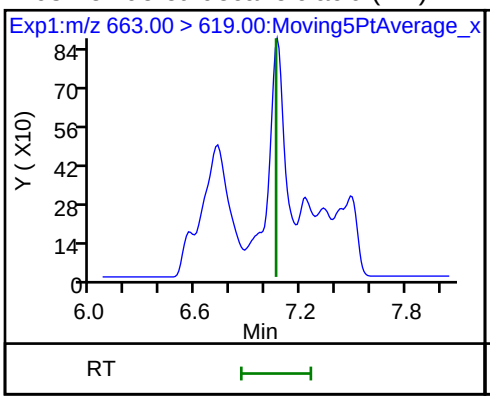
91 Perfluorododecanoic acid (ND)



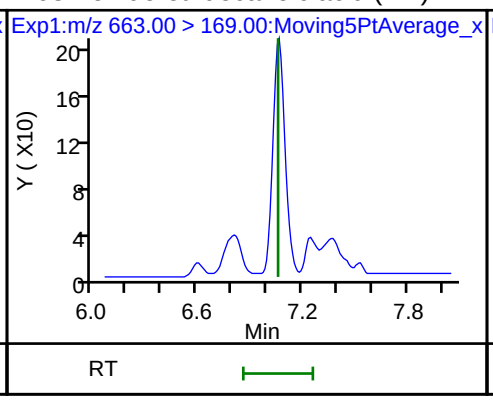
D 92 13C2-PFDoDA



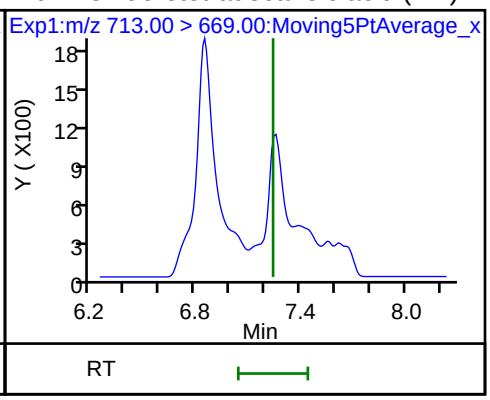
103 Perfluorotridecanoic acid (ND)



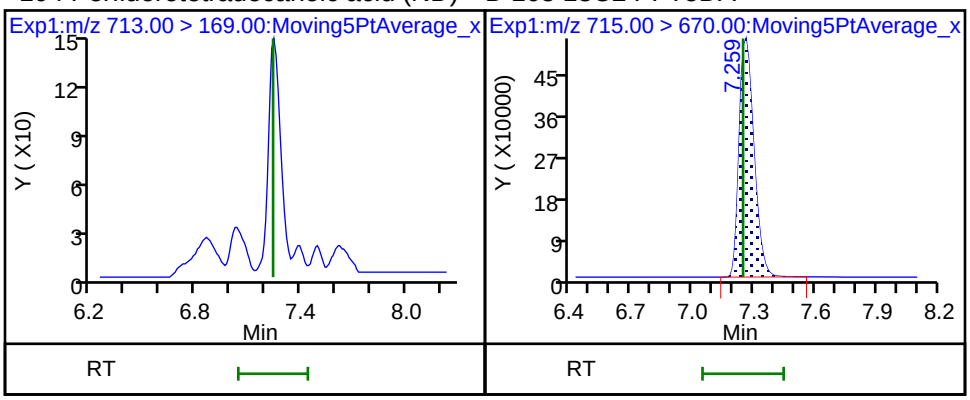
103 Perfluorotridecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND) D 105 13C2 PFTeDA



FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-28-GW-210813 Lab Sample ID: 410-51537-4

Matrix: Water Lab File ID: 21AUG31-15.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 16:11

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 267.3(mL) Date Analyzed: 09/01/2021 01:09

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	1.5	J	1.9	0.47
375-85-9	Perfluoroheptanoic acid	ND		1.9	0.47
335-67-1	Perfluorooctanoic acid	0.89	J	1.9	0.47
375-95-1	Perfluorononanoic acid	ND		1.9	0.47
335-76-2	Perfluorodecanoic acid	ND		1.9	0.47
72629-94-8	Perfluorotridecanoic acid	ND		1.9	0.47
376-06-7	Perfluorotetradecanoic acid	ND		1.9	0.47
375-73-5	Perfluorobutanesulfonic acid	ND		1.9	0.47
355-46-4	Perfluorohexanesulfonic acid	1.8	J	1.9	0.47
1763-23-1	Perfluorooctanesulfonic acid	0.59	J B	1.9	0.47
2991-50-6	NEtFOSAA	ND		2.8	0.47
2355-31-9	NMeFOSAA	ND		1.9	0.56
307-55-1	Perfluorododecanoic acid	ND		1.9	0.47
13252-13-6	HFPODA	ND		2.8	0.47
756426-58-1	9Cl-PF3ONS	ND		1.9	0.47
763051-92-9	11Cl-PF3OUdS	ND		1.9	0.47
919005-14-4	DONA	ND		1.9	0.47
2058-94-8	Perfluoroundecanoic acid	ND		1.9	0.47

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-15.d
Lims ID: 410-51537-A-4-A
Client ID: CMW-28-GW-210813
Sample Type: Client
Inject. Date: 01-Sep-2021 01:09:12 ALS Bottle#: 74 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-A-4-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-013
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:32:39
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.858	3.850	0.008		1143151	5.00			2472	
18 Perfluorobutanesulfonic acid										M
299.00 > 80.00	4.525	4.513	0.012	1.000	49621	0.1156	Target=3.39		134	M
299.00 > 99.00	4.525	4.513	0.012	1.000	17126		2.90(1.69-5.08)		163	
D 19 13C3 PFBS										
302.00 > 80.00	4.525	4.520	0.005	1.173	3301530	10.1		109	50385	
26 Perfluorohexanoic acid										
313.00 > 269.00	4.910	4.896	0.014	1.000	118810	0.4017	Target=15.40		122	
313.00 > 119.00	4.900	4.896	0.004	0.998	6756		17.59(7.70-23.10)		170	
D 27 13C5 PFHxA										
318.00 > 273.00	4.910	4.899	0.011	0.862	3579269	8.41		84.1	93875	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.045	5.033	0.012	0.885	41905	7.80		78.0	3183	
36 Perfluoroheptanoic acid										
363.00 > 319.00	5.317	5.306	0.011	1.000	31144	0.0833	Target=4.18		68.3	
363.00 > 169.00	5.317	5.306	0.011	1.000	7896		3.94(2.09-6.27)		294	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00	5.317	5.309	0.008	1.000	134838	0.4708	Target=3.52		10237	
399.00 > 99.00	5.317	5.309	0.008	1.000	39294		3.43(1.76-5.27)		12857	
D 38 13C4 PFHpA										
367.00 > 322.00	5.317	5.311	0.006	0.933	3833326	8.72		87.2	114118	
D 39 13C3 PFHxS										
402.00 > 80.00	5.317	5.311	0.006	0.933	2544218	8.24		87.1	52094	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.698	5.685	0.013	1.000	3600370	9.46		94.6	112087	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.698	5.685	0.013	1.000	74581	0.2387	Target=2.48		1580	M
413.00 > 169.00	5.698	5.685	0.013	1.000	25441		2.93(1.24-3.71)		2799	M
* 57 13C2 PFOA										
415.00 > 370.00	5.698	5.688	0.010		1563062	5.00			68399	
D 60 13C8 PFOS										
507.00 > 80.00	6.027	6.013	0.014	1.000	3081790	8.93		93.4	52216	
* 61 13C4 PFOS										
503.00 > 80.00	6.027	6.014	0.013		1638119	4.78			36140	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	6.018	6.015	0.003	0.998	55767	0.1584	Target=4.58		5387	
499.00 > 99.00	6.018	6.015	0.003	0.998	12111		4.60(2.29-6.87)		14.5	
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.046	6.032	0.014	1.003	2683840	9.72		97.2	84917	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.347	6.337	0.010	1.000	34551	0.1077	Target=8.64		355	
513.00 > 169.00	6.337	6.337	0.0	0.998	5730		6.03(4.32-12.97)		197	
* 74 13C2 PFDA										
515.00 > 470.00	6.347	6.339	0.008		2074223	5.00			63694	
D 75 13C6 PFDA										
519.00 > 474.00	6.347	6.339	0.008	1.000	3871376	9.29		92.9	118514	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.493	6.487	0.006	1.023	971298	8.50		85.0	39248	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.617	6.611	0.006	1.043	4471783	9.03		90.3	124554	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.640	6.628	0.012	1.046	733395	8.28		82.8	20543	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.861	6.849	0.012	1.081	3769871	7.84		78.4	89230	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.260	7.244	0.016	1.144	2276211	6.25		62.5	50485	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 01-Sep-2021 07:40:57 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-15.d

Injection Date: 01-Sep-2021 01:09:12 Instrument ID: 30727

Lims ID: 410-51537-A-4-A Lab Sample ID: 410-51537-4

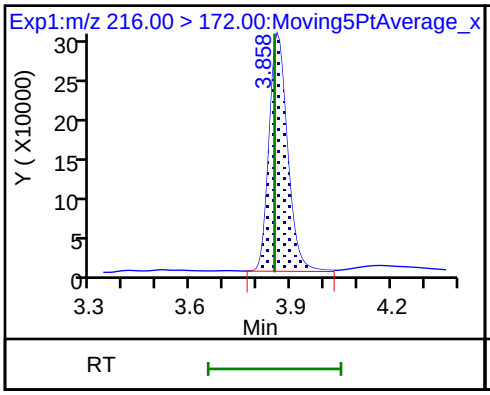
Client ID: CMW-28-GW-210813

Operator ID: US19_USR_INS20264 ALS Bottle#: 74 Worklist Smp#: 13

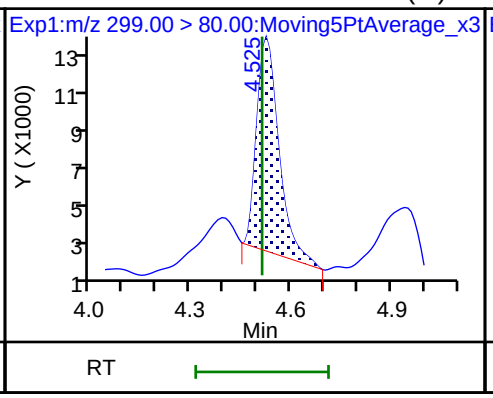
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

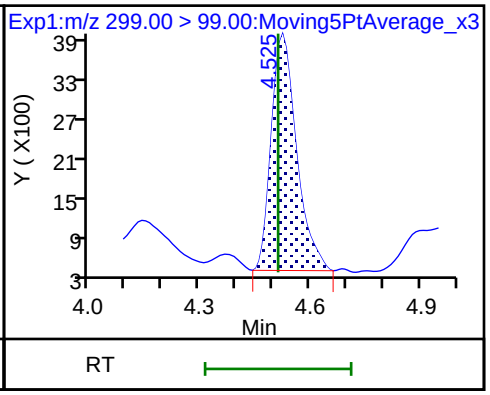
* 8 13C3-PFBA



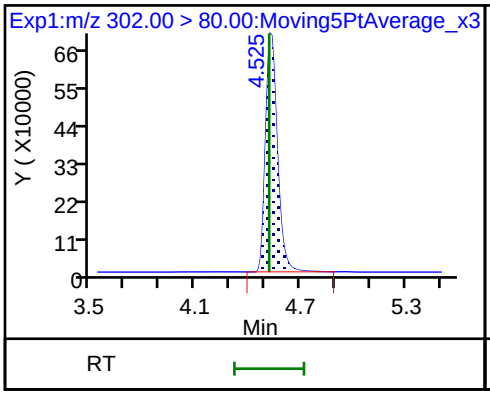
18 Perfluorobutanesulfonic acid (M)



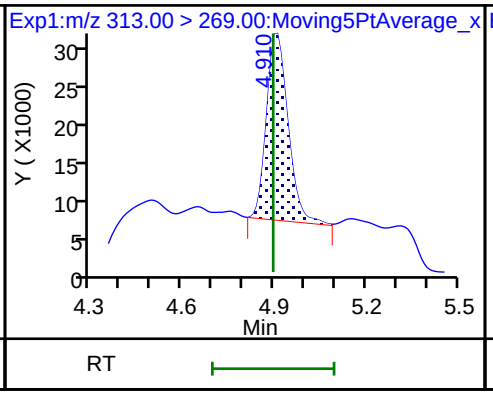
18 Perfluorobutanesulfonic acid



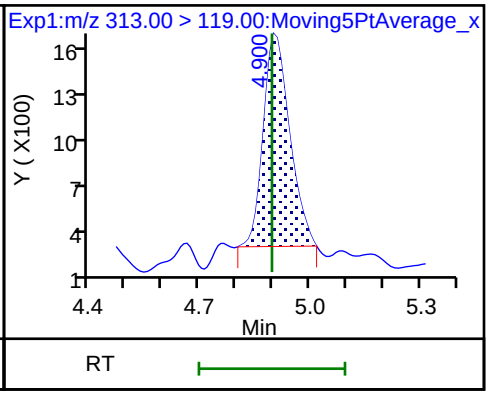
D 19 13C3 PFBS



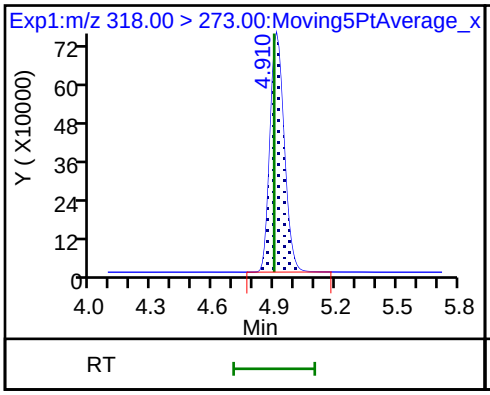
26 Perfluorohexanoic acid



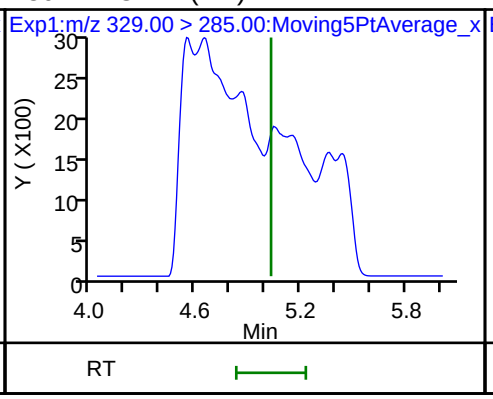
26 Perfluorohexanoic acid



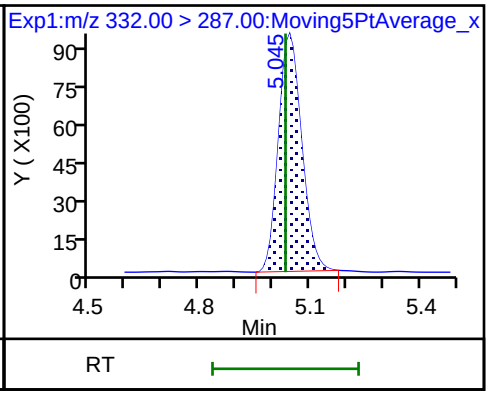
D 27 13C5 PFHxA



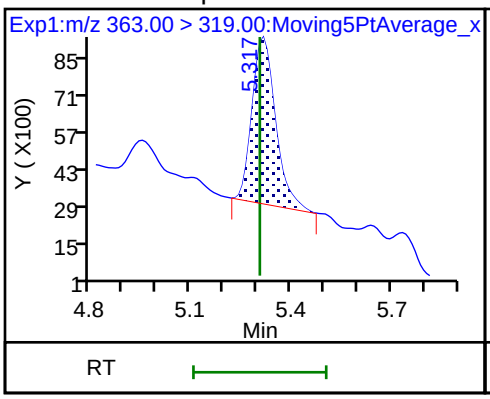
30 HFPO-DA (ND)



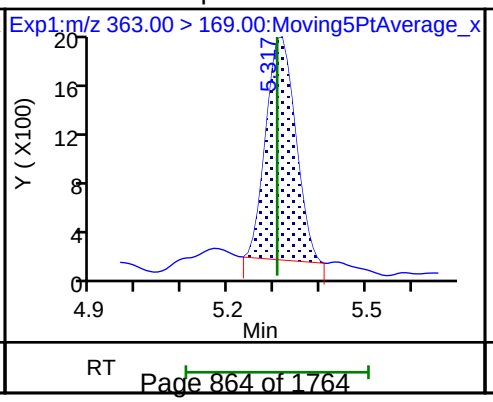
D 31 13C3 HFPO-DA



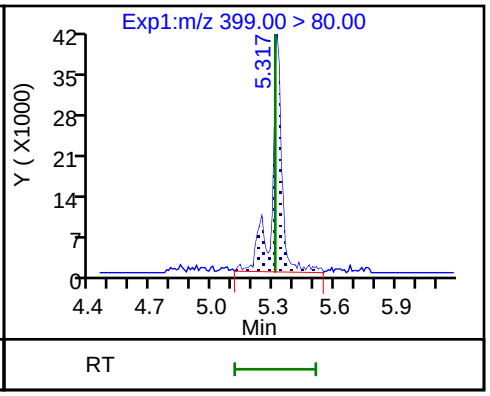
36 Perfluoroheptanoic acid



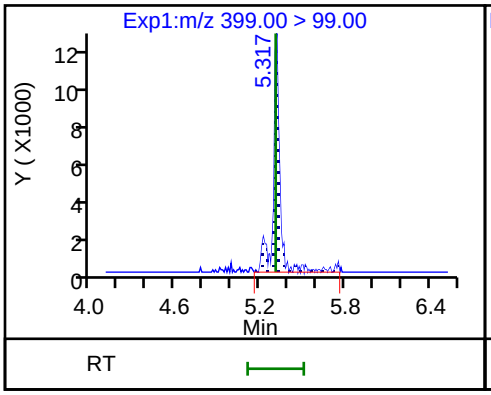
36 Perfluoroheptanoic acid



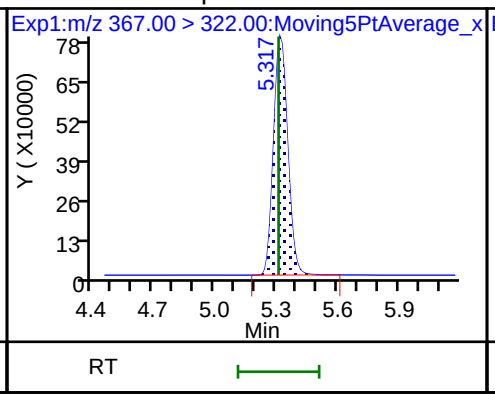
37 Perfluorohexanesulfonic acid



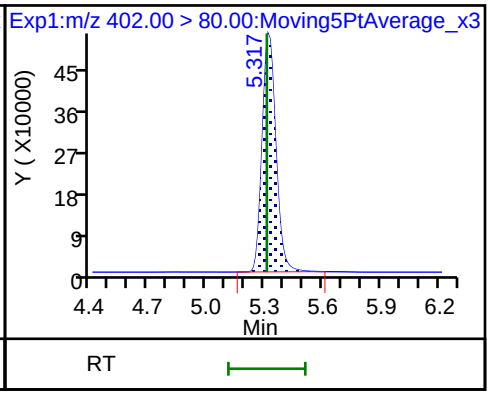
37 Perfluorohexanesulfonic acid



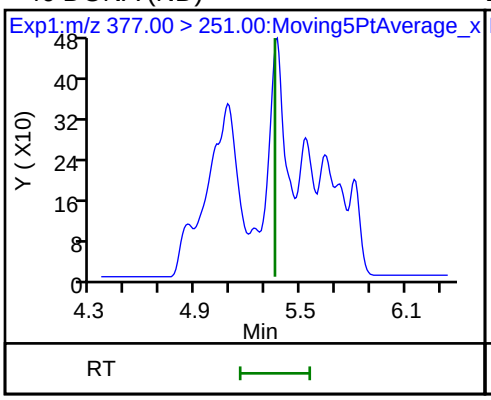
D 38 13C4 PFHpA



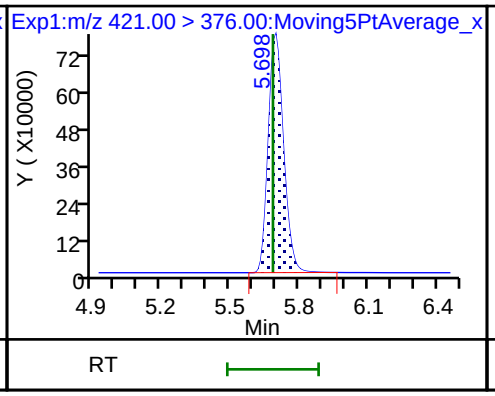
D 39 13C3 PFHxS



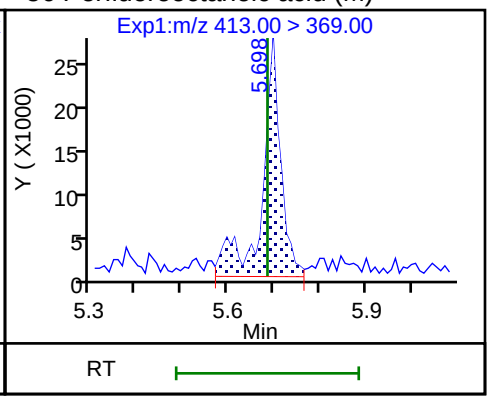
40 DONA (ND)



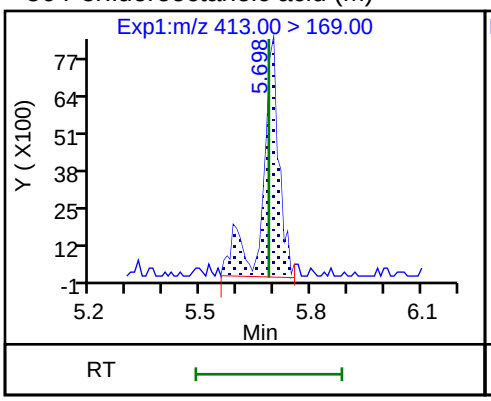
D 55 13C8 PFOA



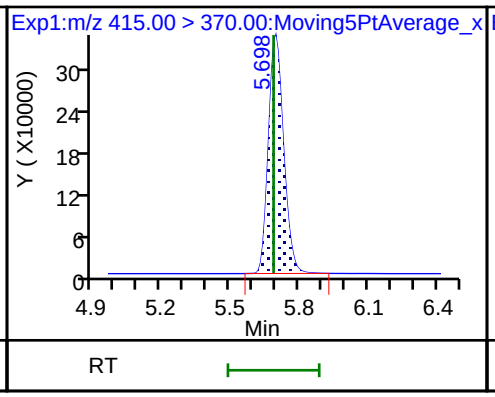
56 Perfluorooctanoic acid (M)



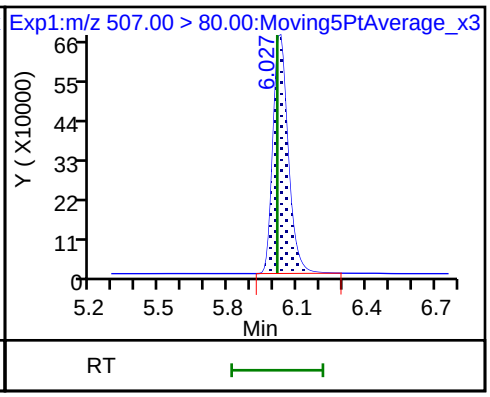
56 Perfluorooctanoic acid (M)



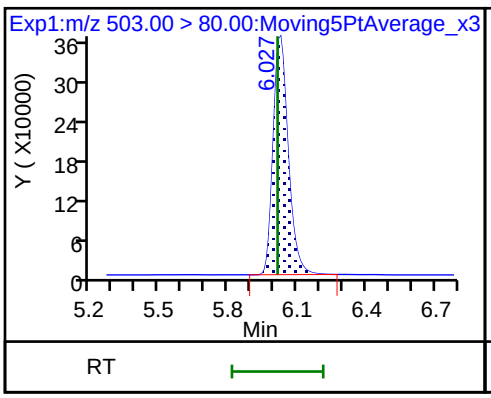
* 57 13C2 PFOA



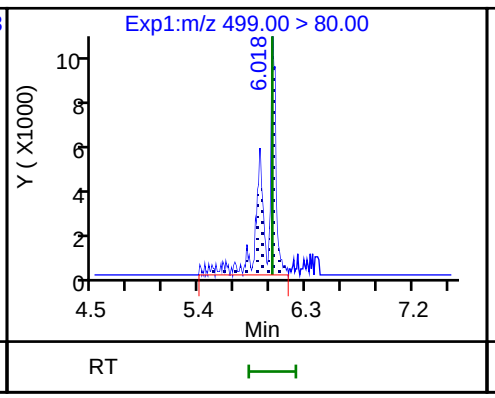
D 60 13C8 PFOS



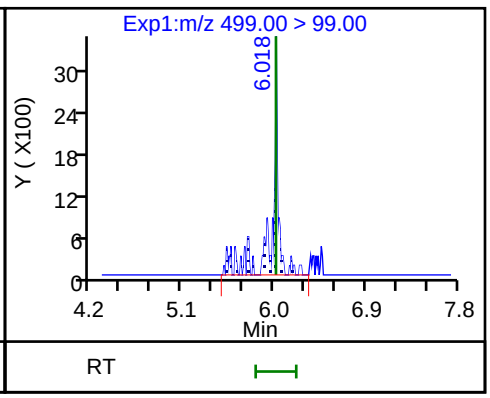
* 61 13C4 PFOS



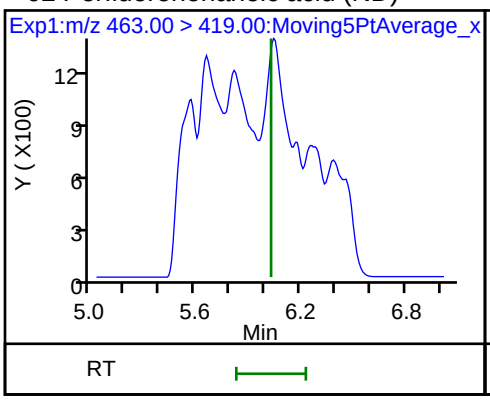
59 Perfluorooctanesulfonic acid



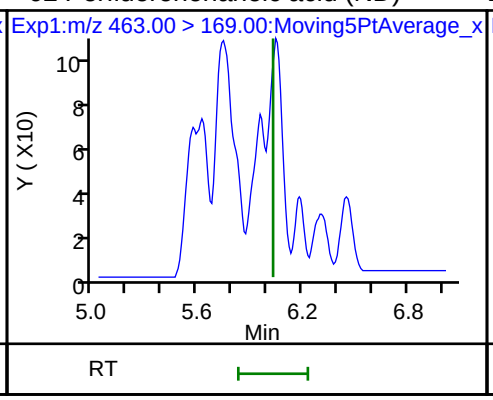
59 Perfluorooctanesulfonic acid



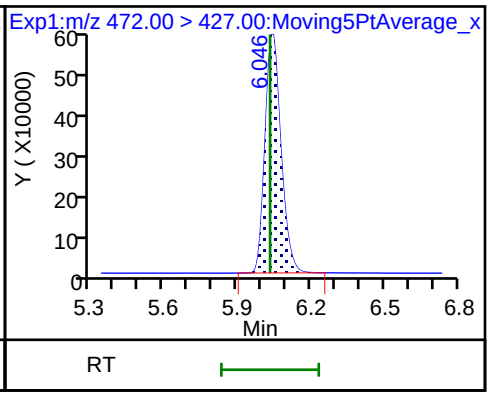
62 Perfluorononanoic acid (ND)



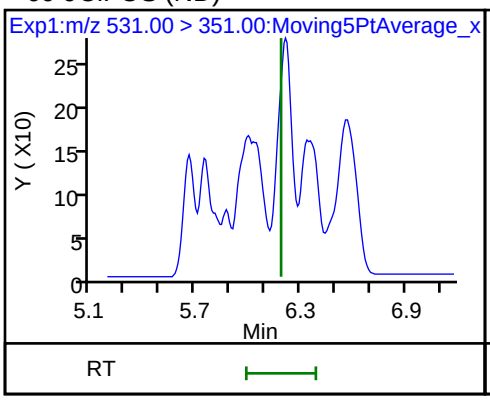
62 Perfluorononanoic acid (ND)



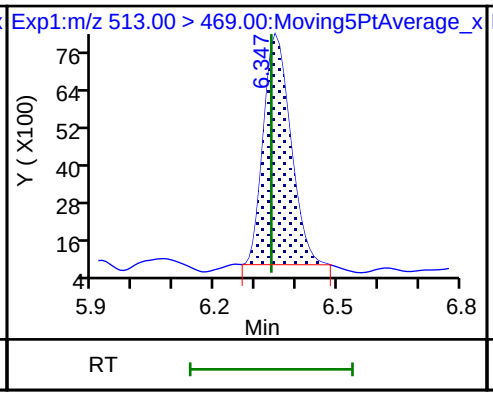
D 63 13C9 PFNA



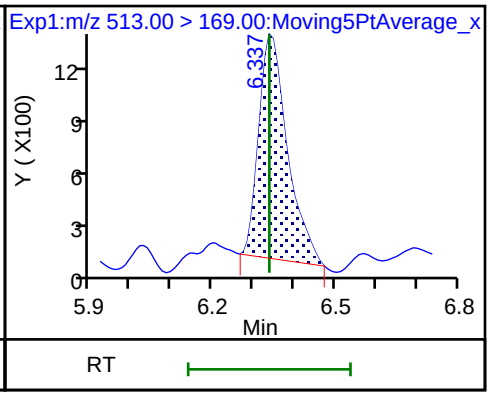
69 9ClFOS (ND)



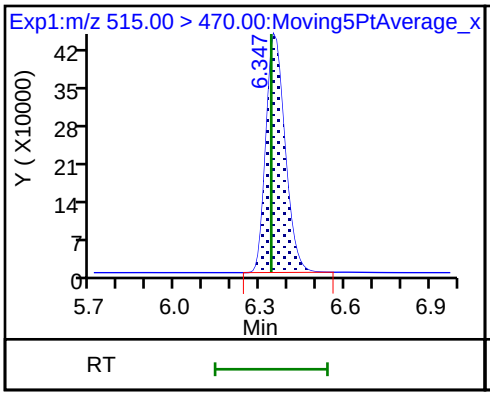
72 Perfluorodecanoic acid



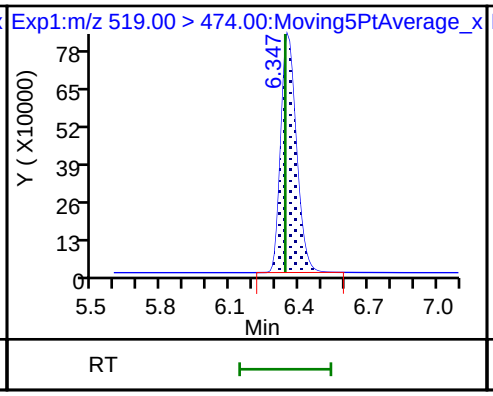
72 Perfluorodecanoic acid



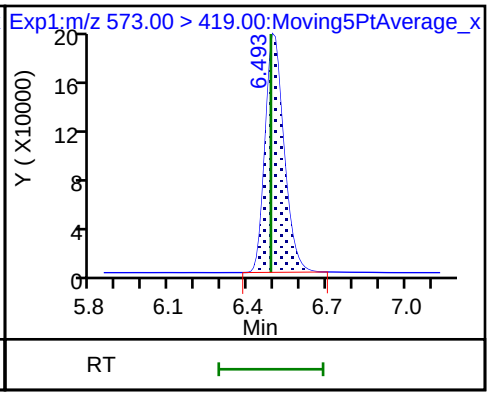
* 74 13C2 PFDA



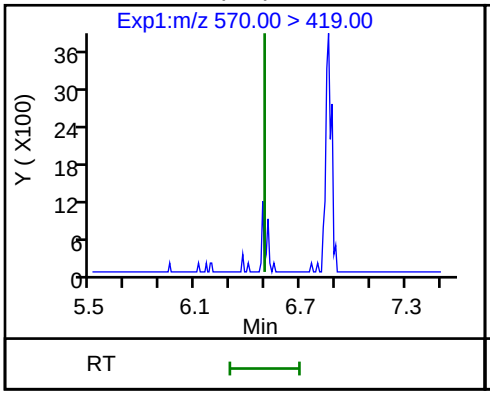
D 75 13C6 PFDA



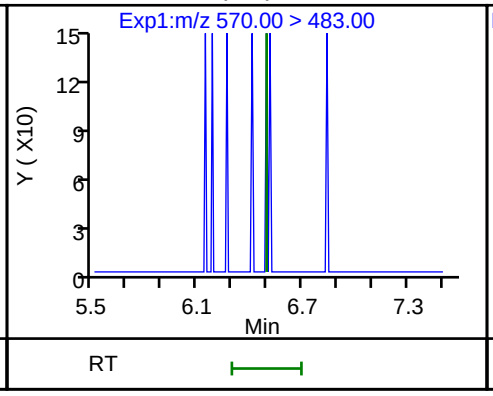
D 79 d3-NMeFOSAA



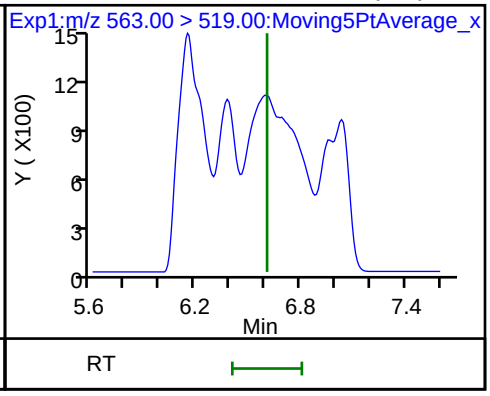
80 NMeFOSAA (ND)



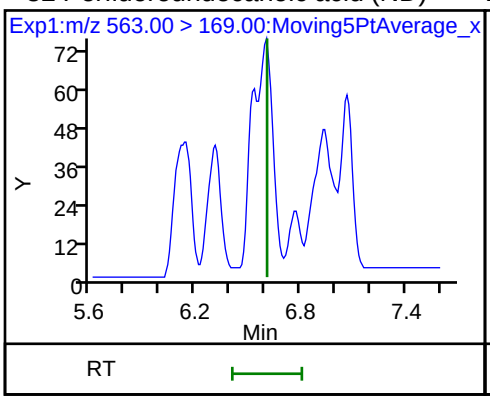
80 NMeFOSAA (ND)



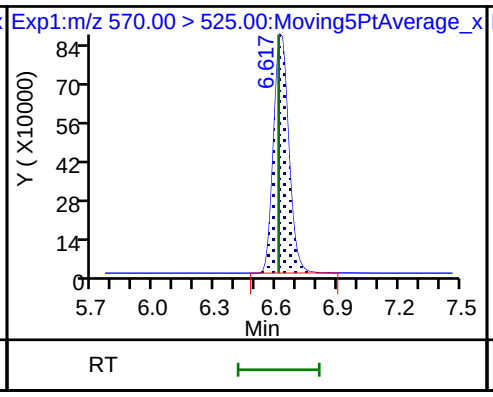
82 Perfluoroundecanoic acid (ND)



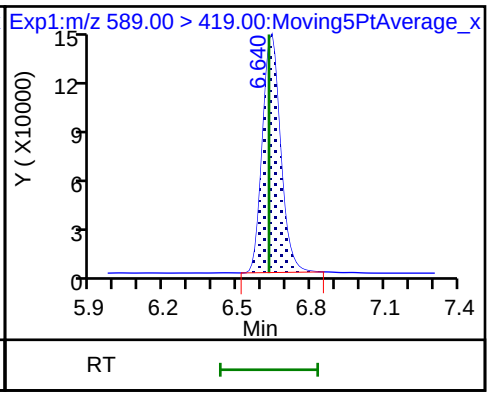
82 Perfluoroundecanoic acid (ND)



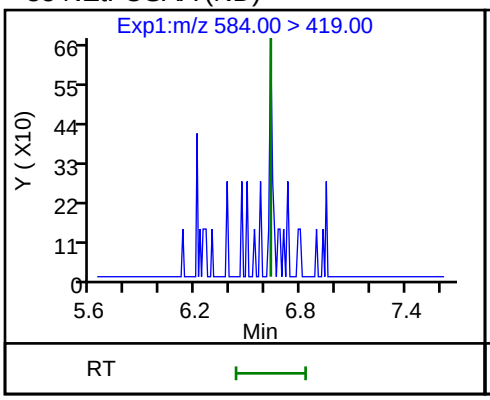
D 83 13C7 PFUnA



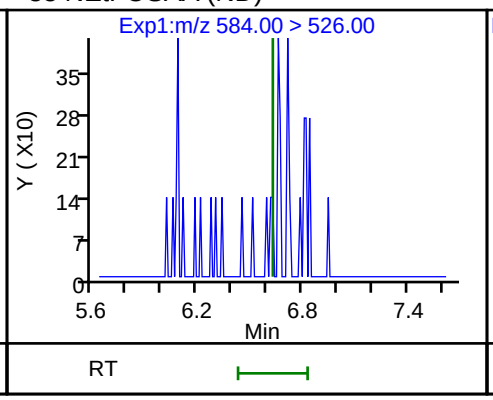
D 84 d5-NEtFOSAA



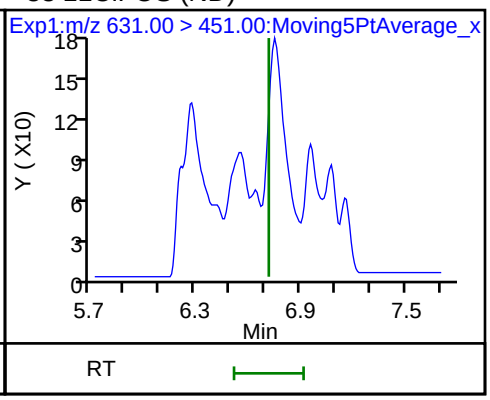
85 NEtFOSAA (ND)



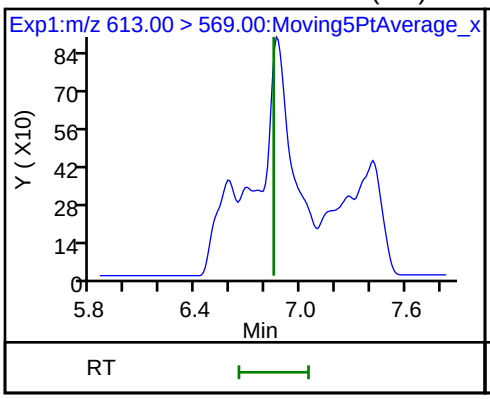
85 NEtFOSAA (ND)



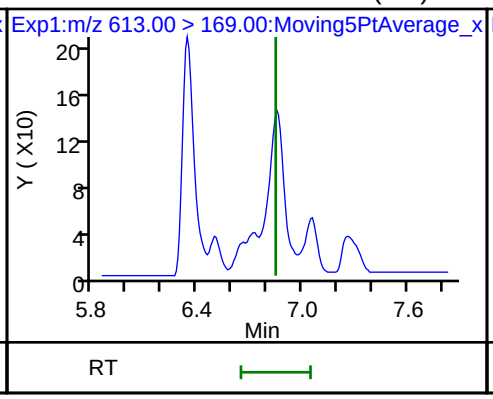
88 11ClFOS (ND)



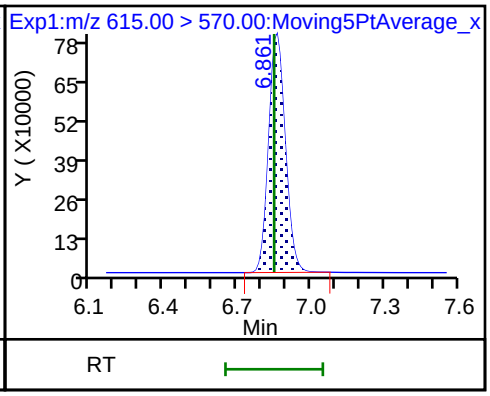
91 Perfluorododecanoic acid (ND)



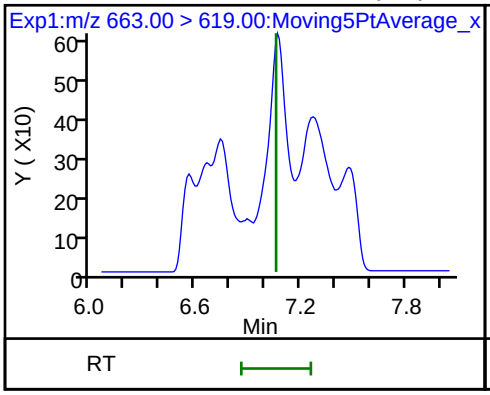
91 Perfluorododecanoic acid (ND)



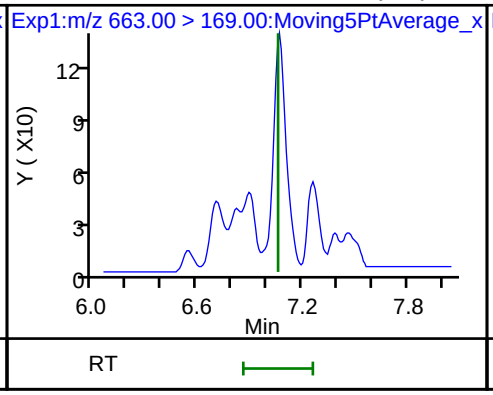
D 92 13C2-PFDoDA



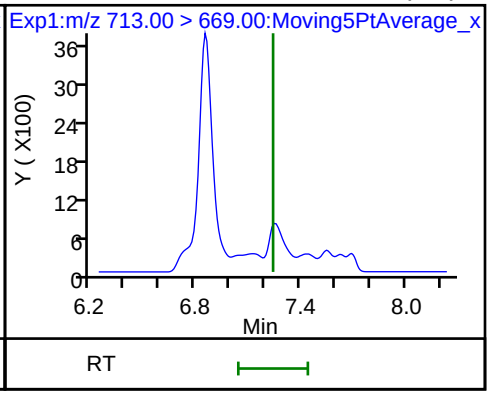
103 Perfluorotridecanoic acid (ND)



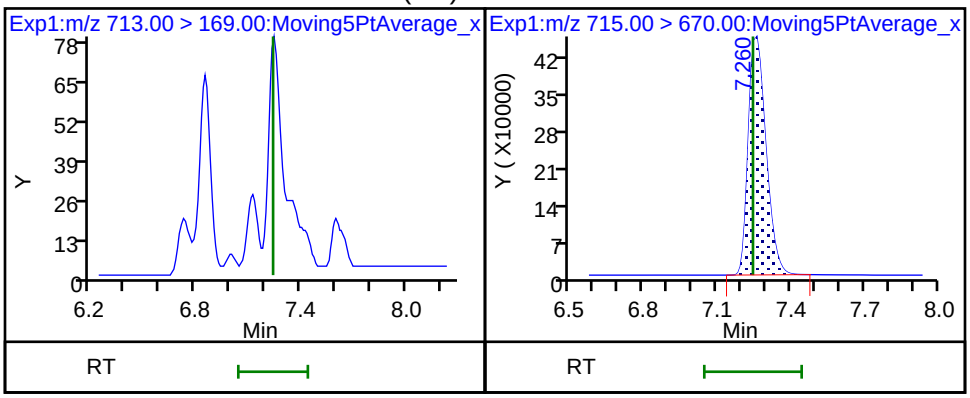
103 Perfluorotridecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND) D 105 13C2 PFTeDA



FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-28-GW-210813 RE Lab Sample ID: 410-51537-4 RE

Matrix: Water Lab File ID: 21SEP03-19.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 16:11

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 265.6(mL) Date Analyzed: 09/03/2021 15:31

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	*Perfluorohexanoic acid*	*1.4*	*J H*	*1.9*	*0.47*
375-85-9	*Perfluoroheptanoic acid*	*ND*	*H*	*1.9*	*0.47*
335-67-1	*Perfluorooctanoic acid*	*0.85*	*J H*	*1.9*	*0.47*
375-95-1	*Perfluorononanoic acid*	*ND*	*H*	*1.9*	*0.47*
335-76-2	*Perfluorodecanoic acid*	*ND*	*H*	*1.9*	*0.47*
72629-94-8	*Perfluorotridecanoic acid*	*ND*	*H*	*1.9*	*0.47*
376-06-7	*Perfluorotetradecanoic acid*	*ND*	*H*	*1.9*	*0.47*
375-73-5	*Perfluorobutanesulfonic acid*	*ND*	*H*	*1.9*	*0.47*
355-46-4	*Perfluorohexanesulfonic acid*	*1.6*	*J H*	*1.9*	*0.47*
1763-23-1	*Perfluorooctanesulfonic acid*	*ND*	*H*	*1.9*	*0.47*
2991-50-6	*NEtFOSAA*	*ND*	*H*	*2.8*	*0.47*
2355-31-9	*NMeFOSAA*	*ND*	*H*	*1.9*	*0.56*
307-55-1	*Perfluorododecanoic acid*	*ND*	*H*	*1.9*	*0.47*
13252-13-6	*HFPODA*	*ND*	*H*	*2.8*	*0.47*
756426-58-1	*9Cl-PF3ONS*	*ND*	*H*	*1.9*	*0.47*
763051-92-9	*11Cl-PF3OUdS*	*ND*	*H*	*1.9*	*0.47*
919005-14-4	*DONA*	*ND*	*H*	*1.9*	*0.47*
2058-94-8	*Perfluoroundecanoic acid*	*ND*	*H*	*1.9*	*0.47*

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\27632\20210903-38482.b\21SEP03-19.d
Lims ID: 410-51537-B-4-A
Client ID: CMW-28-GW-210813
Sample Type: Client
Inject. Date: 03-Sep-2021 15:31:41 ALS Bottle#: 23 Worklist Smp#: 17
Injection Vol: 7.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-B-4-A WL38482
Misc. Info.: Plate: 1 Rack: 1 410-0038482-017
Operator ID: US19INS00050\US19INS00050 Instrument ID: 27632

Method: \\chromfs\Lancaster\ChromData\27632\20210903-38482.b\PFAS_27632.m
Limit Group: LC - PFC IDA
Last Update: 07-Sep-2021 11:56:55 Calib Date: 30-Aug-2021 07:38:23
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\27632\20210830-38053.b\21AUG30MCAL-08.d

Column 1 : Gemini C18 50X3 50mm 3mm (3.00 mm) Det: EXP1
Process Host: CTX1627

First Level Reviewer: knightj Date: 07-Sep-2021 11:56:55
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 1 13C3-PFBA										
216.00 > 172.00	3.356	3.361	-0.005		1969851	5.00			288	
6 Perfluorobutanesulfonic acid										
299.00 > 80.00	3.946	3.950	-0.004	1.000	31597	0.0930	Target=3.47		85.3	
299.00 > 99.00	3.946	3.950	-0.004	1.000	9783		3.23(1.73-5.20)		143	
D 7 13C3 PFBS										
302.00 > 80.00	3.946	3.953	-0.007	1.176	2584030	15.4		166	56383	
11 Perfluorohexanoic acid										M
313.00 > 269.00	4.329	4.330	-0.001	1.002	195447	0.3608	Target=94.55		1310	M
313.00 > 119.00	4.322	4.330	-0.008	1.000	2014		97.04(47.27-141.82)		120	
D 10 13C5 PFHxA										
318.00 > 273.00	4.322	4.331	-0.009	0.846	7904447	9.61		96.1	65649	
14 Perfluoro(2-propoxypropanoic) ac										
329.00 > 285.00	4.460	4.463	-0.003	1.001	8666	0.0463			8.2	
D 15 13C3 HFPO-DA										
332.00 > 287.00	4.454	4.464	-0.010	0.871	472078	7.97		79.7	34398	
17 Perfluorohexanesulfonic acid										
399.00 > 80.00	4.736	4.736	0.0	1.001	106419	0.4168	Target=3.68		6960	
399.00 > 99.00	4.730	4.736	-0.006	1.000	28006		3.80(1.84-5.51)		11332	
16 Perfluoroheptanoic acid										
363.00 > 319.00	4.730	4.736	-0.006	1.000	65742	0.0698	Target=27.51		36.8	
363.00 > 169.00	4.730	4.736	-0.006	1.000	2350		27.98(13.76-41.27)		134	
D 18 13C3 PFHxS										
402.00 > 80.00	4.730	4.737	-0.007	0.925	2140661	10.1		107	173979	
D 19 13C4 PFHpA										
367.00 > 322.00	4.730	4.738	-0.008	0.925	5757012	11.3		113	69095	
20 DONA										
377.00 > 251.00		4.782				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 13C8 PFOA										
421.00 > 376.00	5.112	5.115	-0.003	1.000	9157251	11.2		112	586828	
* 28 13C2 PFOA										
415.00 > 370.00	5.112	5.115	-0.003		2277961	5.00			61427	
27 Perfluorooctanoic acid										M
413.00 > 369.00	5.112	5.115	-0.003	1.000	116226	0.2270	Target=17.43		1757	M
413.00 > 169.00	5.013	5.115	-0.102	0.981	9082		12.80(8.71-26.14)		3616	
* 30 13C4 PFOS										
503.00 > 80.00	5.439	5.443	-0.004		846447	4.78			20130	
32 Perfluorooctanesulfonic acid										M
499.00 > 80.00	5.439	5.443	-0.004	1.000	25735	0.0990	Target=4.46		1043	M
499.00 > 99.00	5.432	5.443	-0.011	0.999	3949		6.52(2.23-6.69)		2213	
D 31 13C8 PFOS										
507.00 > 80.00	5.439	5.445	-0.006	1.000	2060221	11.7		122	171117	
33 Perfluorononanoic acid										
463.00 > 419.00		5.461				ND				
463.00 > 169.00		5.461								
D 34 13C9 PFNA										
472.00 > 427.00	5.462	5.462	0.0	1.004	4515465	12.9		129	84266	
35 9-Chlorohexadecafluoro-3-oxanona										
531.00 > 351.00		5.617				ND				
D 39 13C6 PFDA										
519.00 > 474.00	5.767	5.769	-0.002	1.000	7479581	11.3		113	262256	
37 Perfluorodecanoic acid										
513.00 > 469.00		5.769				ND				
513.00 > 169.00		5.769								
* 38 13C2 PFDA										
515.00 > 470.00	5.767	5.771	-0.004		1234958	5.00			62907	
D 45 d3-NMeFOSAA										
573.00 > 419.00	5.910	5.916	-0.006	1.025	2003181	10.8		108	370228	
44 N-methylperfluorooctanesulfonami										
570.00 > 419.00		5.923				ND				
570.00 > 483.00		5.923								
47 Perfluoroundecanoic acid										
563.00 > 519.00		6.044				ND				
563.00 > 169.00		6.044								
D 48 13C7 PFUnA										
570.00 > 525.00	6.041	6.045	-0.004	1.047	7517878	11.4		114	146934	
D 50 d5-NEtFOSAA										
589.00 > 419.00	6.067	6.062	0.005	1.052	1468755	13.5		135	208176	
51 N-ethylperfluorooctanesulfonamid										
584.00 > 419.00		6.067				ND				
584.00 > 526.00		6.067								
52 11-Chloroeicosafluoro-3-oxaundec										
631.00 > 451.00		6.153				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
53 Perfluorododecanoic acid										
613.00 > 569.00		6.280				ND				
613.00 > 169.00		6.280								
D 54 13C2-PFDoDA										
615.00 > 570.00	6.284	6.282	0.002	1.090	5950112	7.98		79.8	222028	
65 Perfluorotridecanoic acid										
663.00 > 619.00		6.492				ND				
663.00 > 169.00		6.492								
D 67 13C2 PFTeDA										
715.00 > 670.00	6.673	6.674	-0.001	1.157	1315131	2.44		24.4	58536	
66 Perfluorotetradecanoic acid										
713.00 > 669.00		6.674				ND				
713.00 > 169.00		6.674								

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00175 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 07-Sep-2021 11:57:17 Chrom Revision: 2.3 06-Sep-2021 12:07:10

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\27632\20210903-38482.b\21SEP03-19.d

Injection Date: 03-Sep-2021 15:31:41 Instrument ID: 27632

Lims ID: 410-51537-B-4-A Lab Sample ID: 410-51537-4

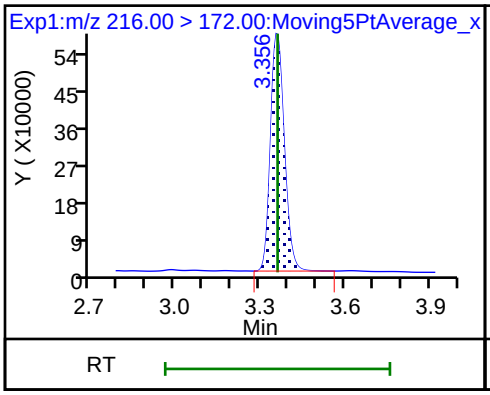
Client ID: CMW-28-GW-210813

Operator ID: US19INS00050\US19INS00050 ALS Bottle#: 23 Worklist Smp#: 17

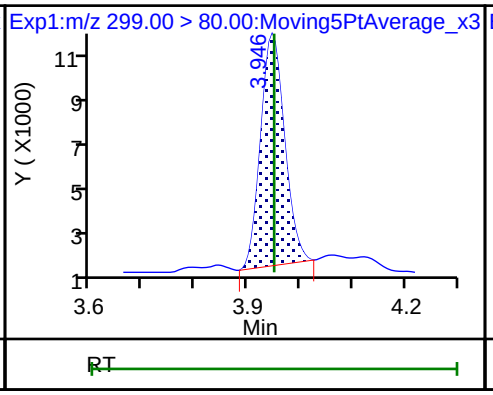
Injection Vol: 7.0 ul Dil. Factor: 1.0000

Method: PFAS_27632 Limit Group: LC - PFC IDA

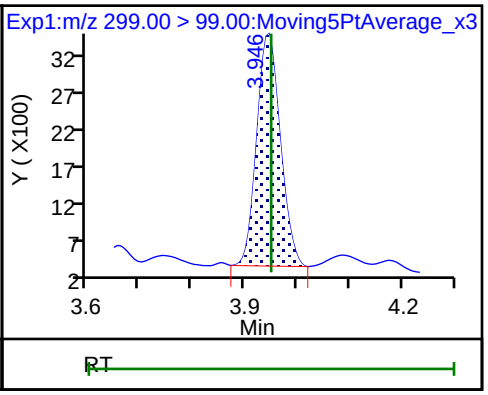
* 1 13C3-PFBA



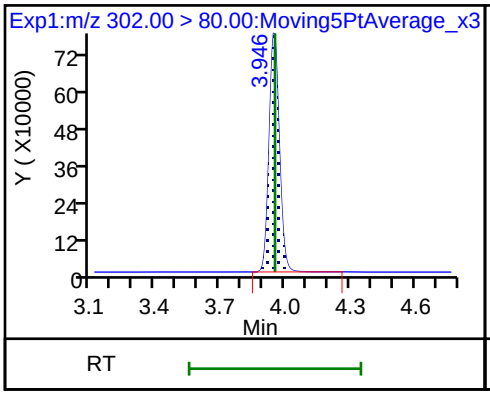
6 Perfluorobutanesulfonic acid



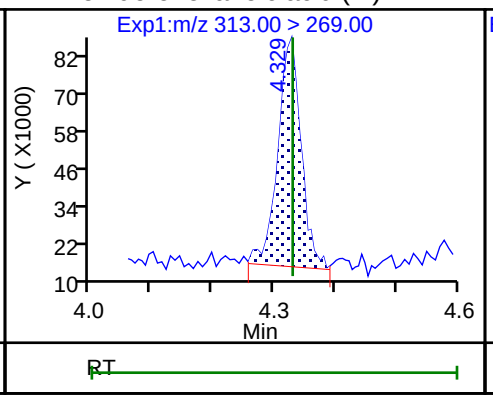
6 Perfluorobutanesulfonic acid



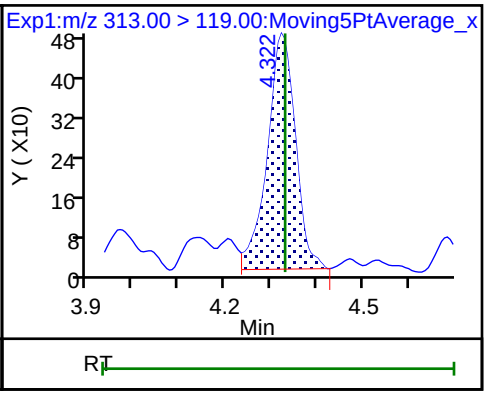
D 7 13C3 PFBS



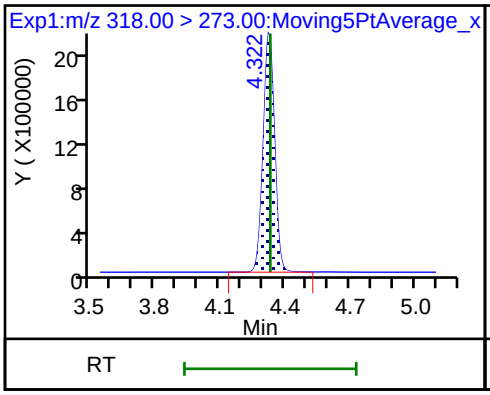
11 Perfluorohexanoic acid (M)



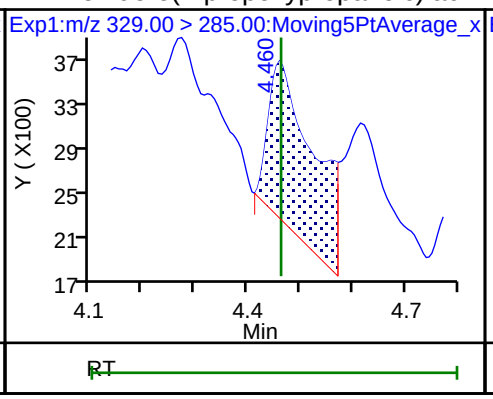
11 Perfluorohexanoic acid



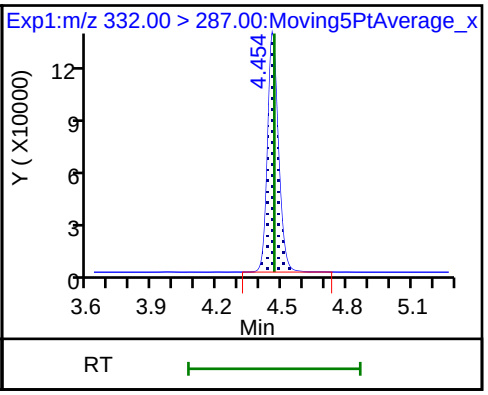
D 10 13C5 PFHxA



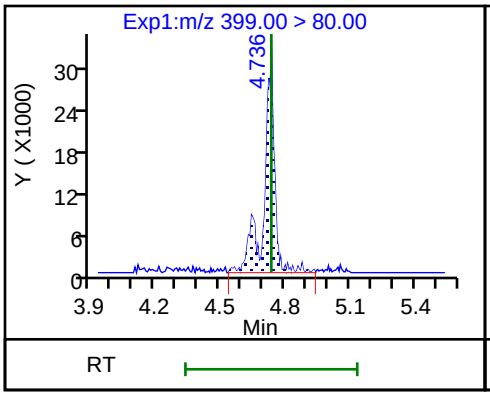
14 Perfluoro(2-propoxypropanoic) ac



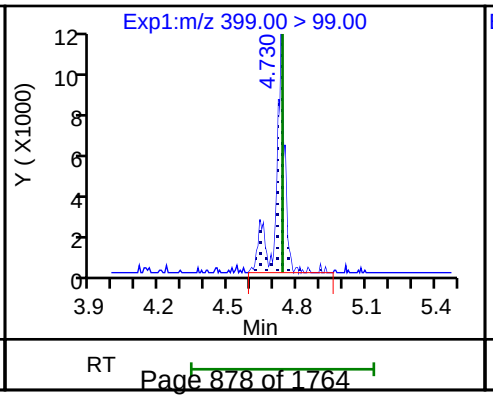
D 15 13C3 HFPO-DA



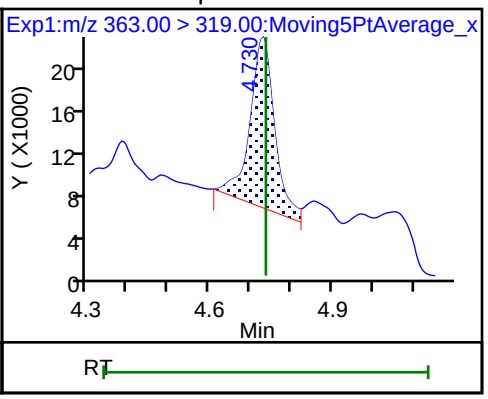
17 Perfluorohexanesulfonic acid



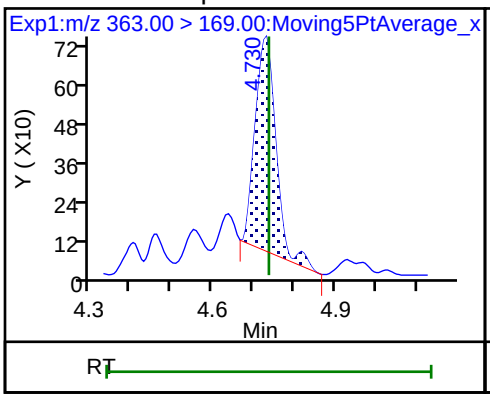
17 Perfluorohexanesulfonic acid



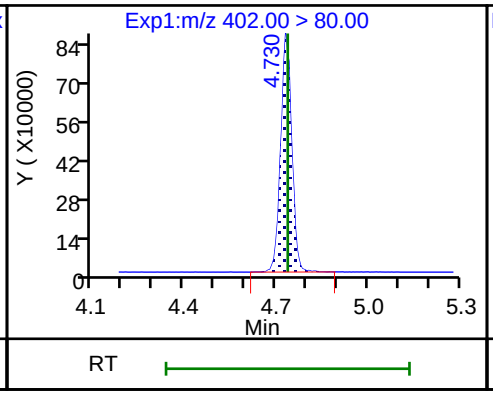
16 Perfluoroheptanoic acid



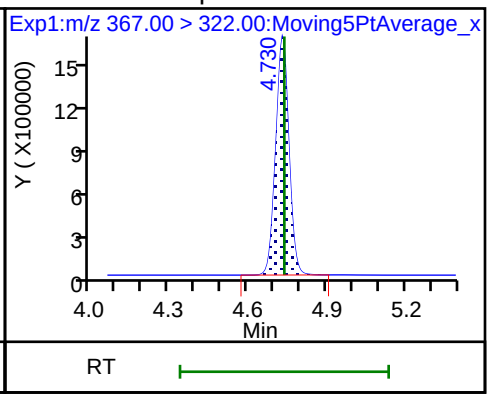
16 Perfluoroheptanoic acid



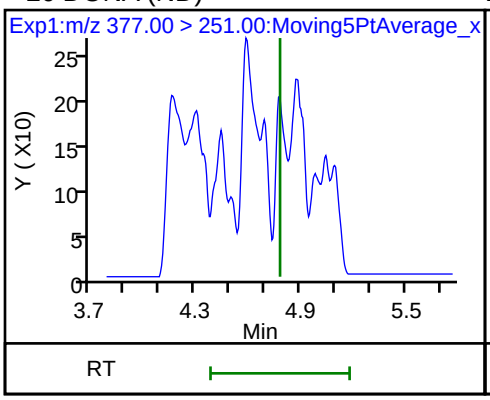
D 18 13C3 PFHxS



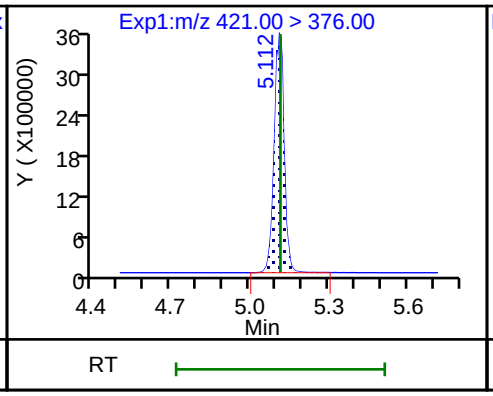
D 19 13C4 PFHpA



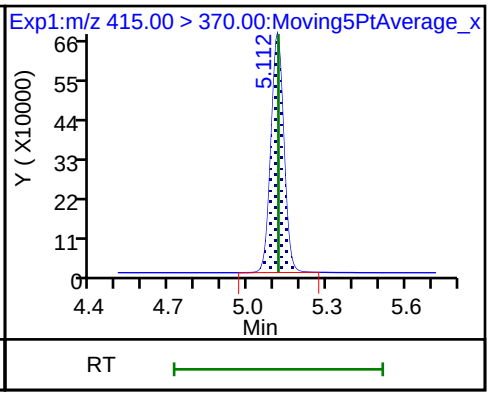
20 DONA (ND)



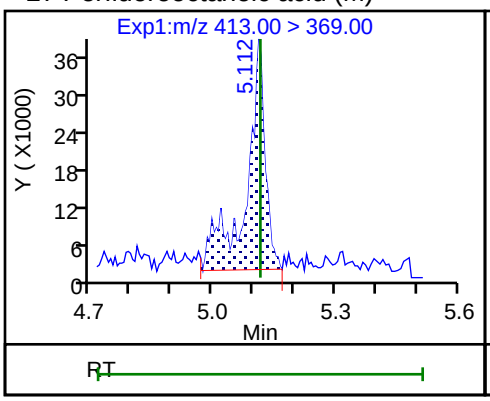
D 26 13C8 PFOA



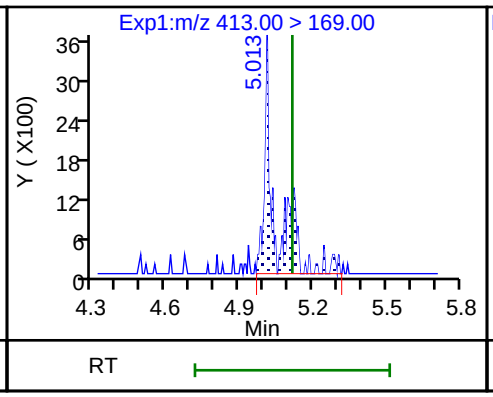
* 28 13C2 PFOA



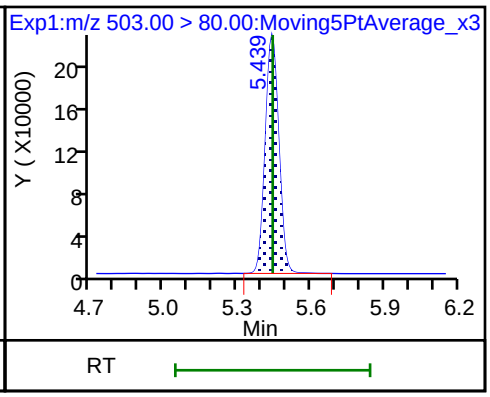
27 Perfluorooctanoic acid (M)



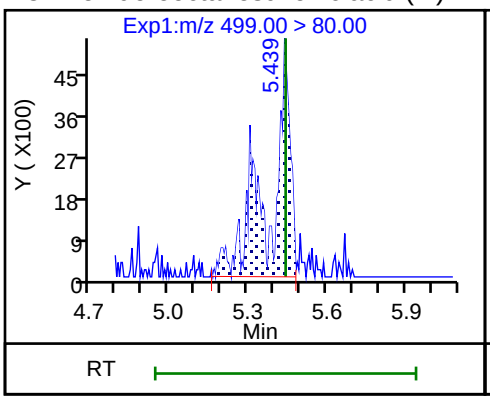
27 Perfluorooctanoic acid



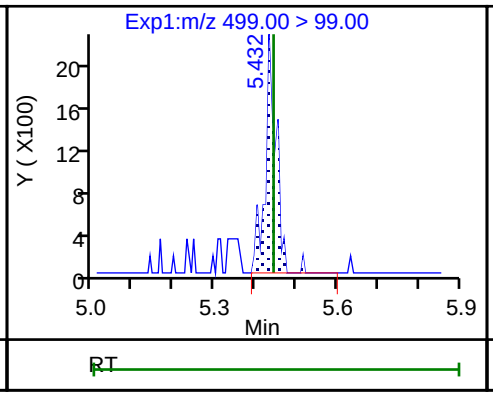
* 30 13C4 PFOS



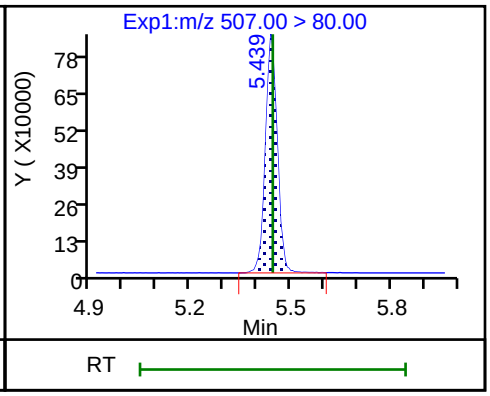
32 Perfluorooctanesulfonic acid (M)



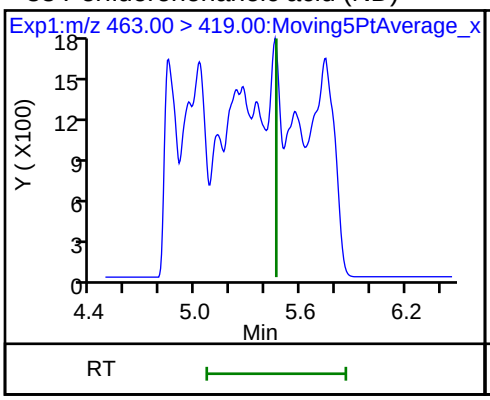
32 Perfluorooctanesulfonic acid



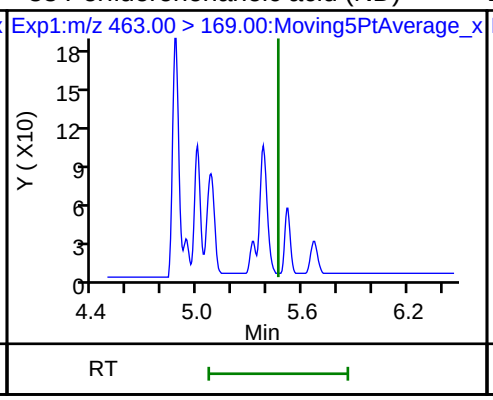
D 31 13C8 PFOS



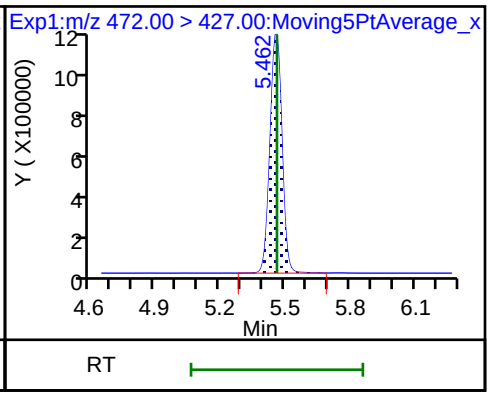
33 Perfluorononanoic acid (ND)



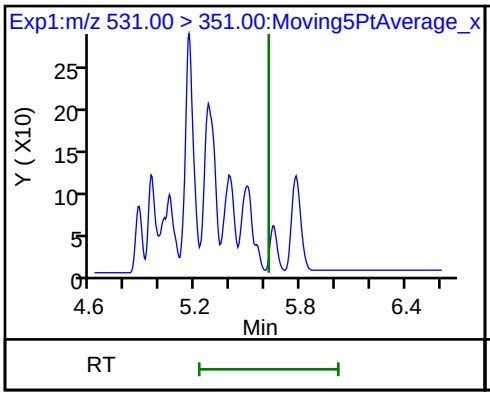
33 Perfluorononanoic acid (ND)



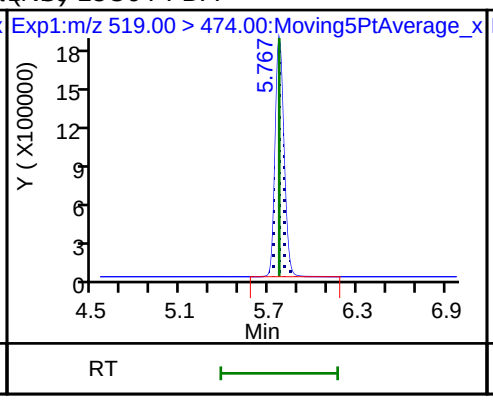
D 34 13C9 PFNA



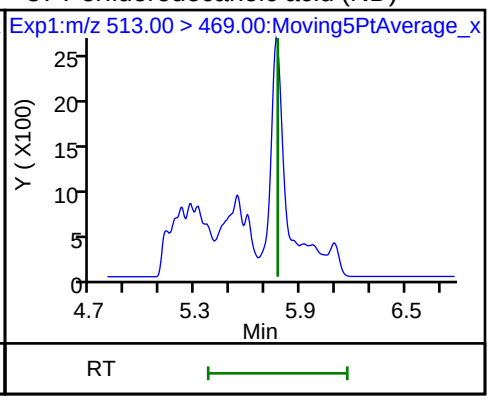
35 9-Chlorohexadecafluoro-3-oxanonanoic acid (ND)



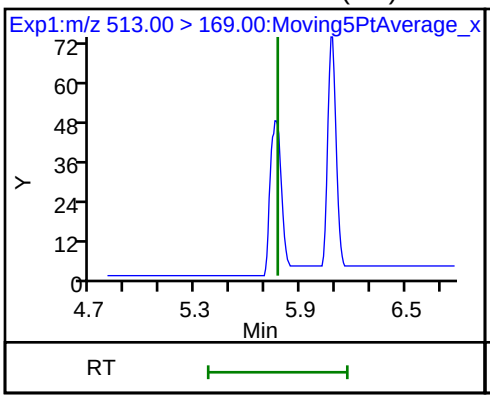
D 39 13C6 PFDA



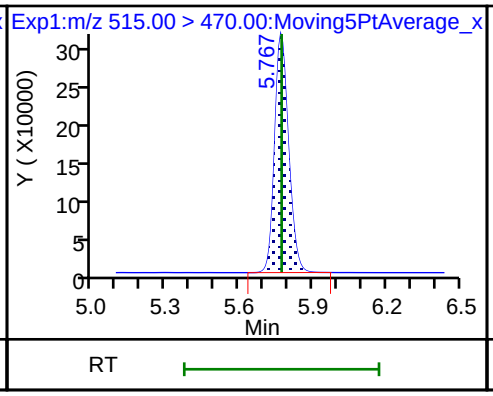
37 Perfluorodecanoic acid (ND)



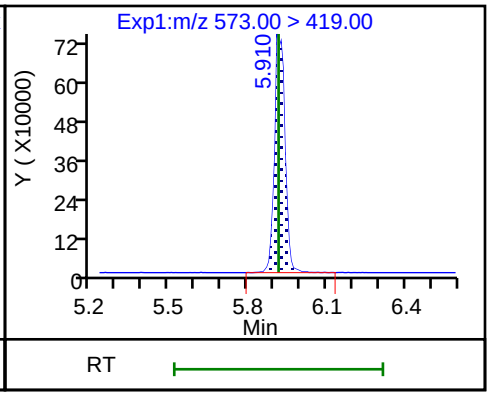
37 Perfluorodecanoic acid (ND)



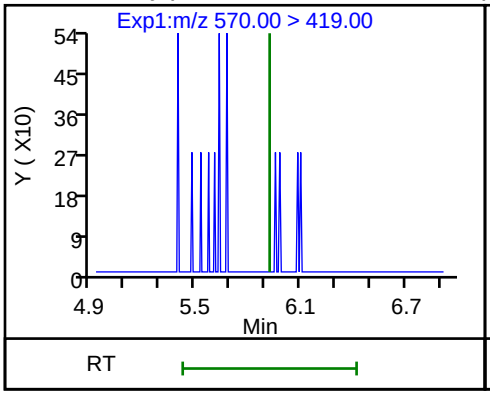
* 38 13C2 PFDA



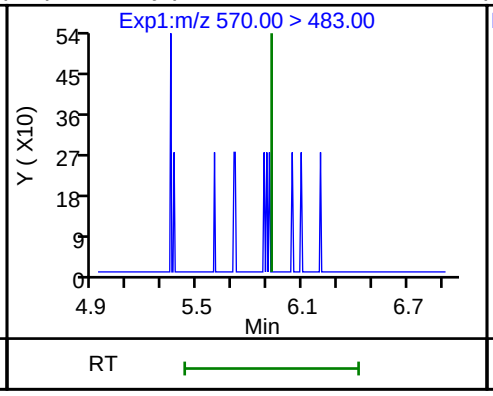
D 45 d3-NMeFOSAA



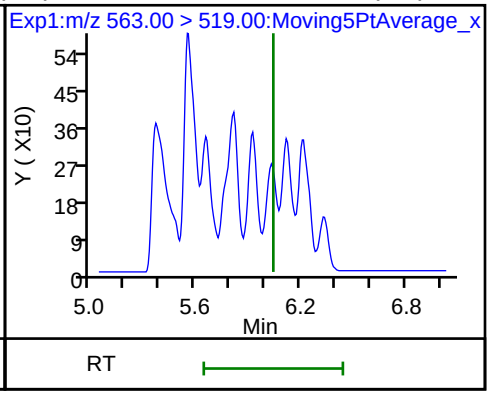
44 N-methylperfluorooctanesulfonami (ND)



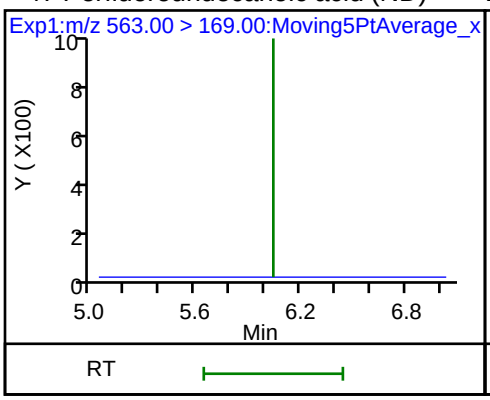
44 N-methylperfluorooctanesulfonami (ND)



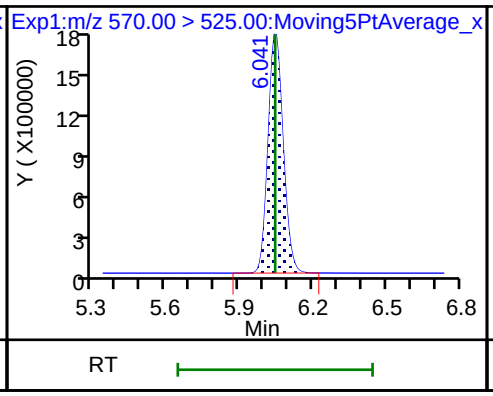
47 Perfluoroundecanoic acid (ND)



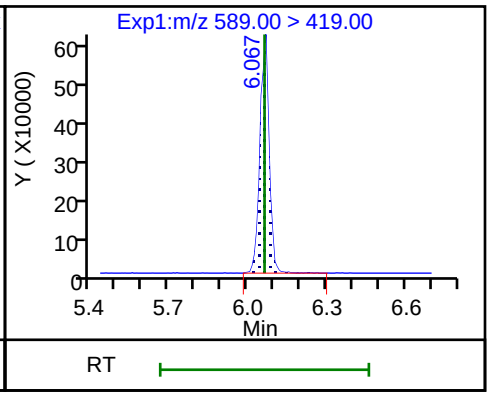
47 Perfluoroundecanoic acid (ND)



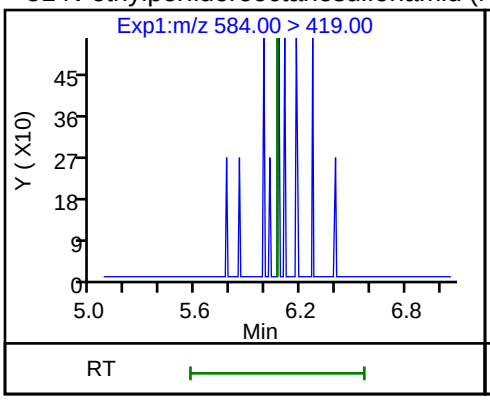
D 48 13C7 PFUnA



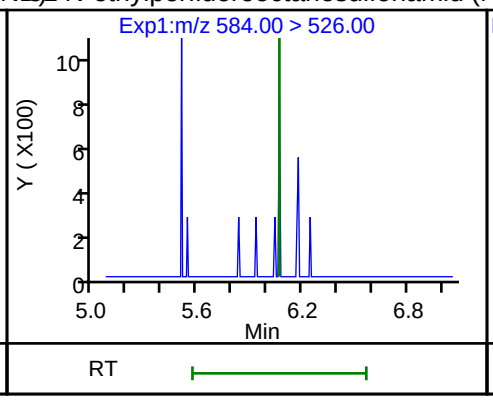
D 50 d5-NEtFOSAA



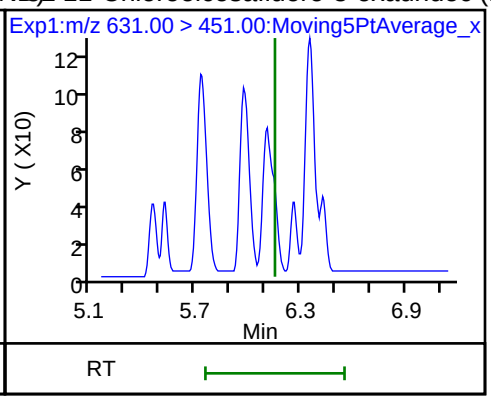
51 N-ethylperfluorooctanesulfonamid (ND)



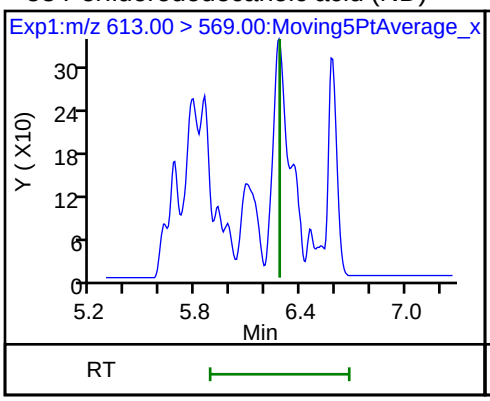
51 N-ethylperfluorooctanesulfonamid (ND)



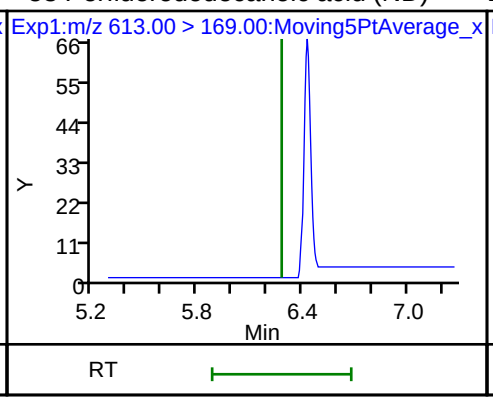
52 11-Chloroeicosafluoro-3-oxaundec (ND)



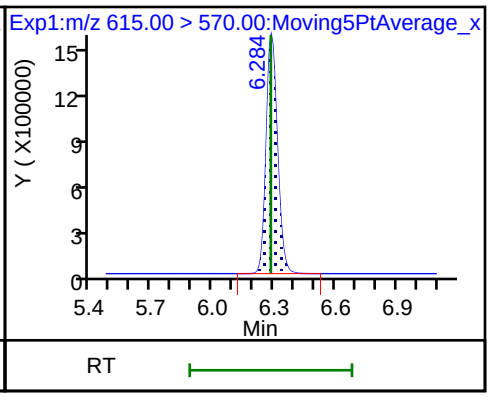
53 Perfluorododecanoic acid (ND)



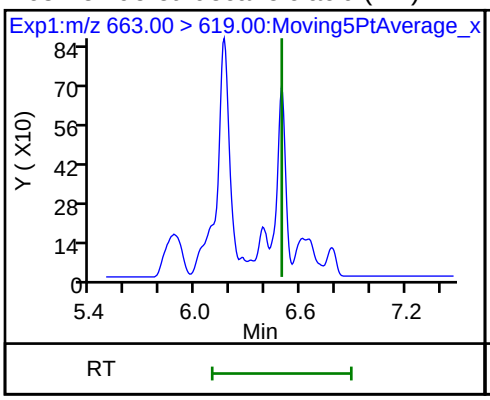
53 Perfluorododecanoic acid (ND)



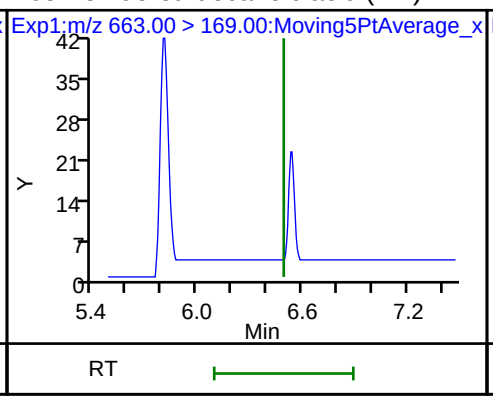
D 54 13C2-PFDoDA



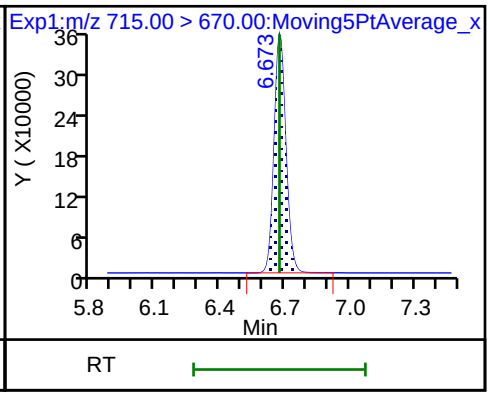
65 Perfluorotridecanoic acid (ND)



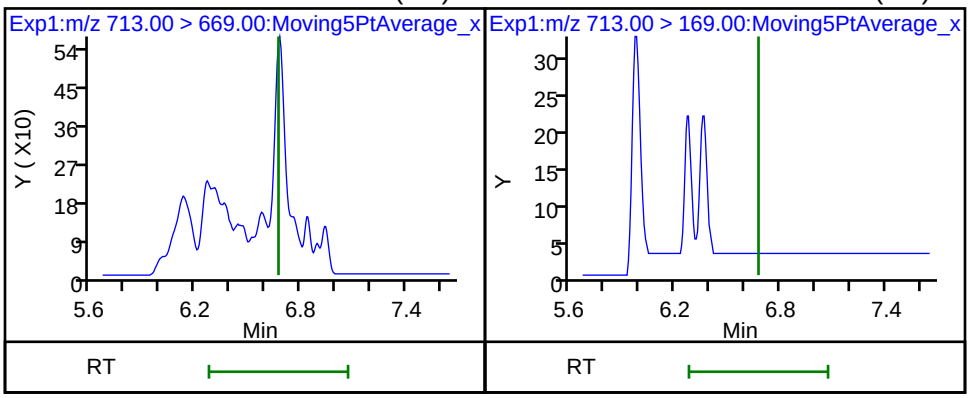
65 Perfluorotridecanoic acid (ND)



D 67 13C2 PFTeDA



66 Perfluorotetradecanoic acid (ND) 66 Perfluorotetradecanoic acid (ND)



FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: BD-1-GW-210813 Lab Sample ID: 410-51537-5

Matrix: Water Lab File ID: 21AUG31-16.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 00:00

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 277.5(mL) Date Analyzed: 09/01/2021 01:20

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	1.1	J	1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	0.67	J	1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	0.65	J	1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	1.2	J	1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-16.d
Lims ID: 410-51537-A-5-A
Client ID: BD-1-GW-210813
Sample Type: Client
Inject. Date: 01-Sep-2021 01:20:15 ALS Bottle#: 75 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51537-A-5-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-014
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:35:05
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.858	3.850	0.008		1172450	5.00			3044	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00	4.525	4.513	0.012	0.998	73955	0.1812	Target=3.39		285	
299.00 > 99.00	4.525	4.513	0.012	0.998	21000		3.52(1.69-5.08)		303	
D 19 13C3 PFBS										
302.00 > 80.00	4.535	4.520	0.015	1.175	3139352	9.39		101	51289	
26 Perfluorohexanoic acid										M
313.00 > 269.00	4.910	4.896	0.014	1.000	89015	0.3033	Target=15.40		201	
313.00 > 119.00	4.910	4.896	0.014	1.000	4777		18.63(7.70-23.10)		155	M
D 27 13C5 PFHxA										
318.00 > 273.00	4.910	4.899	0.011	0.862	3552221	8.58		85.8	107388	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.044	5.033	0.011	0.885	54642	10.5		105	4150	
36 Perfluoroheptanoic acid										
363.00 > 319.00	5.316	5.306	0.010	1.000	16346	0.0432	Target=4.18		75.7	
363.00 > 169.00	5.316	5.306	0.010	1.000	5872		2.78(2.09-6.27)		245	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00	5.316	5.309	0.007	1.000	90225	0.3294	Target=3.52		11611	
399.00 > 99.00	5.316	5.309	0.007	1.000	22377		4.03(1.76-5.27)		53.6	
D 38 13C4 PFHpA										
367.00 > 322.00	5.316	5.311	0.005	0.933	3878018	9.07		90.7	115749	
D 39 13C3 PFHxS										
402.00 > 80.00	5.316	5.311	0.005	0.933	2433541	8.10		85.7	61891	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.696	5.685	0.011	1.000	3295397	8.90		89.0	119861	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.696	5.685	0.011	1.000	52918	0.1851	Target=2.48		1511	M
413.00 > 169.00	5.687	5.685	0.002	0.998	18581		2.85(1.24-3.71)		6484	M
* 57 13C2 PFOA										
415.00 > 370.00	5.696	5.688	0.008		1520329	5.00			55364	
D 60 13C8 PFOS										
507.00 > 80.00	6.024	6.013	0.011	1.000	2971952	8.67		90.7	73353	
* 61 13C4 PFOS										
503.00 > 80.00	6.024	6.014	0.010		1626364	4.78			45144	
59 Perfluorooctanesulfonic acid										RM
499.00 > 80.00	6.015	6.015	0.0	0.998	21661	0.0638	Target=4.58		1682	RM
499.00 > 99.00	6.015	6.015	0.0	0.998	2903		7.46(2.29-6.87)		490	M
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.043	6.032	0.011	1.003	2597810	9.48		94.8	71982	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										M
513.00 > 469.00	6.352	6.337	0.015	1.000	36509	0.1206	Target=8.64		628	
513.00 > 169.00	6.342	6.337	0.005	0.998	3153		11.58(4.32-12.97)		156	M
* 74 13C2 PFDA										
515.00 > 470.00	6.352	6.339	0.013		2171942	5.00			115367	
D 75 13C6 PFDA										
519.00 > 474.00	6.352	6.339	0.013	1.000	3651891	8.37		83.7	193352	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.499	6.487	0.012	1.023	966432	8.08		80.8	39849	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.623	6.611	0.012	1.043	4292900	8.28		82.8	106578	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.634	6.628	0.006	1.044	747956	8.07		80.7	29668	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.865	6.849	0.016	1.081	3610624	7.17		71.7	109765	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.263	7.244	0.019	1.143	2619862	6.87		68.7	65635	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

Report Date: 01-Sep-2021 07:41:01 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-16.d

Injection Date: 01-Sep-2021 01:20:15 Instrument ID: 30727

Lims ID: 410-51537-A-5-A Lab Sample ID: 410-51537-5

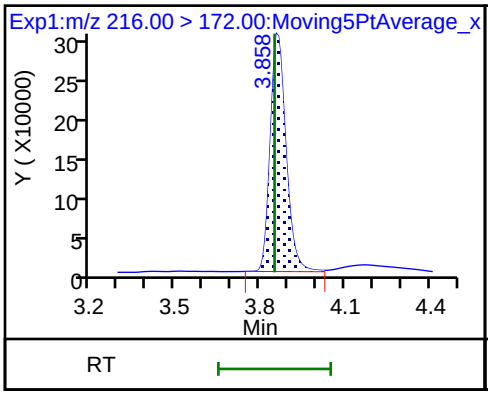
Client ID: BD-1-GW-210813

Operator ID: US19_USR_INS20264 ALS Bottle#: 75 Worklist Smp#: 14

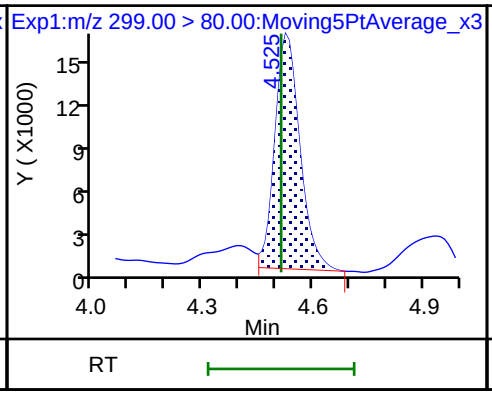
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

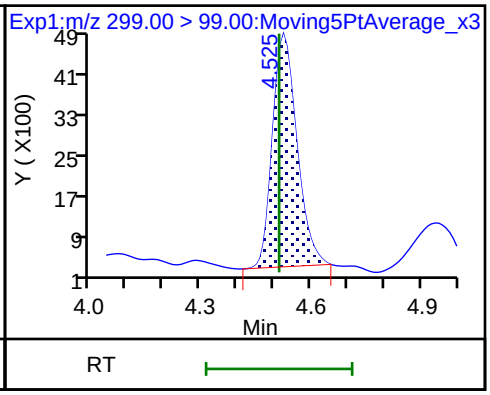
* 8 13C3-PFBA



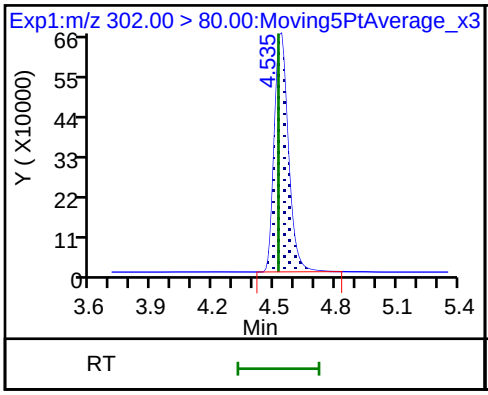
18 Perfluorobutanesulfonic acid



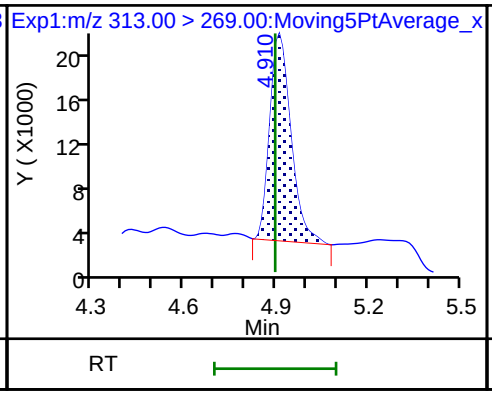
18 Perfluorobutanesulfonic acid



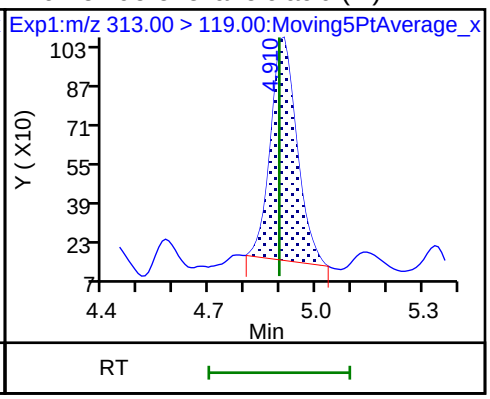
D 19 13C3 PFBS



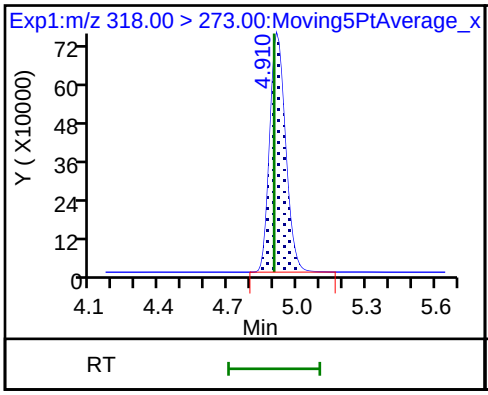
26 Perfluorohexanoic acid



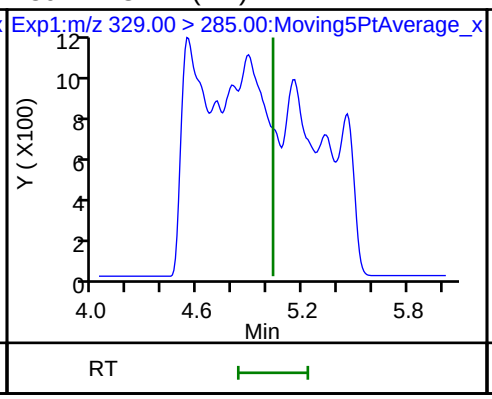
26 Perfluorohexanoic acid (M)



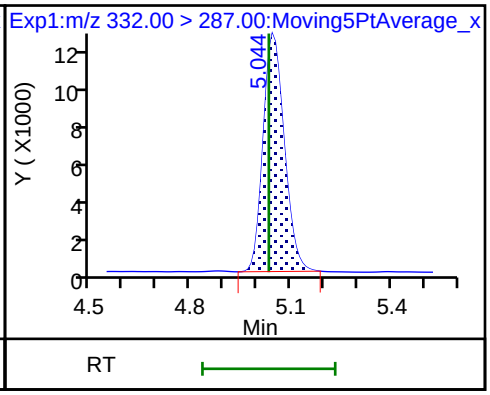
D 27 13C5 PFHxA



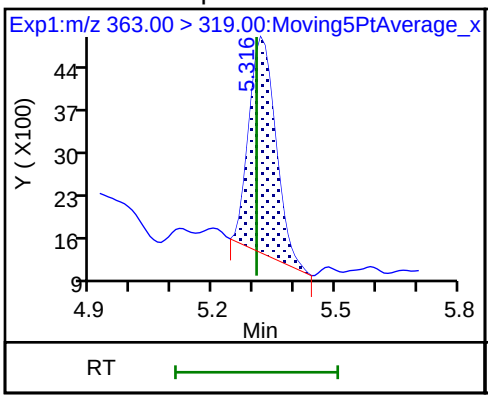
30 HFPO-DA (ND)



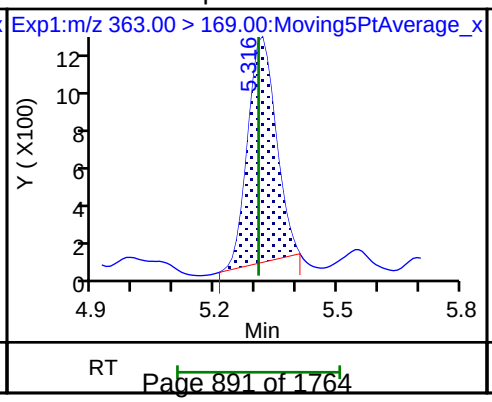
D 31 13C3 HFPO-DA



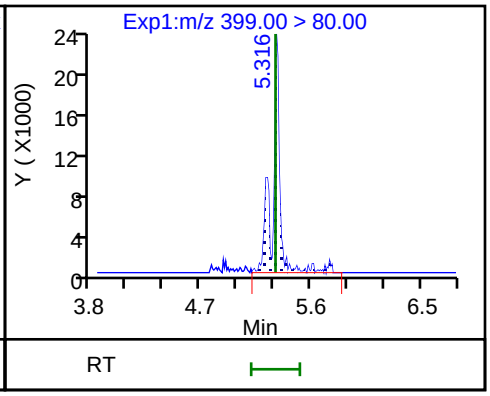
36 Perfluoroheptanoic acid



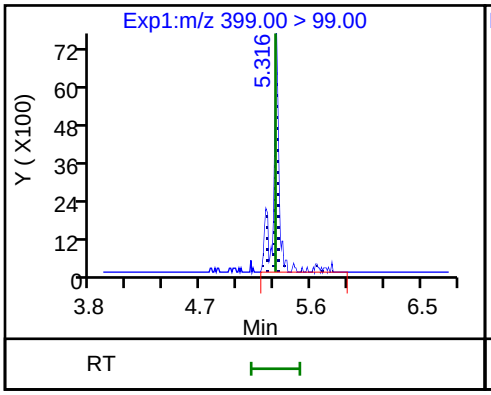
36 Perfluoroheptanoic acid



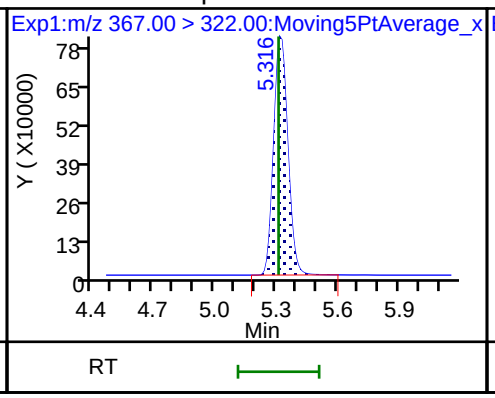
37 Perfluorohexanesulfonic acid



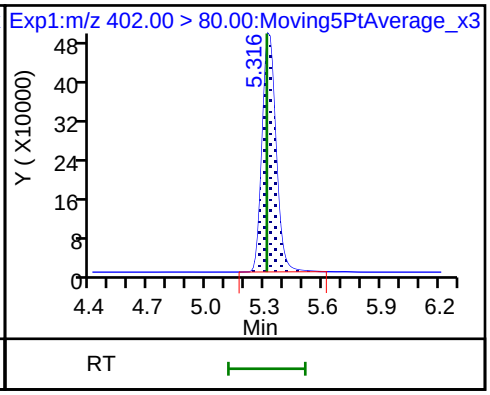
37 Perfluorohexanesulfonic acid



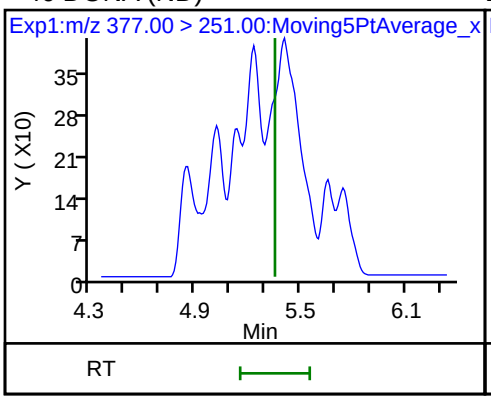
D 38 13C4 PFHpA



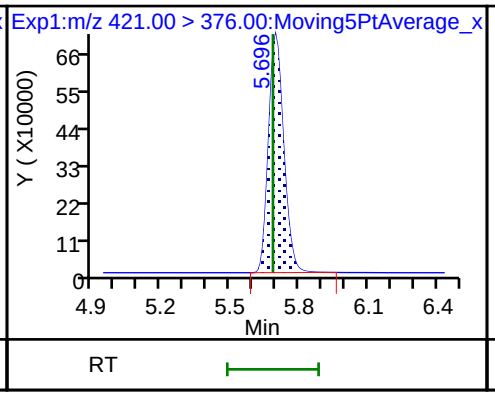
D 39 13C3 PFHxS



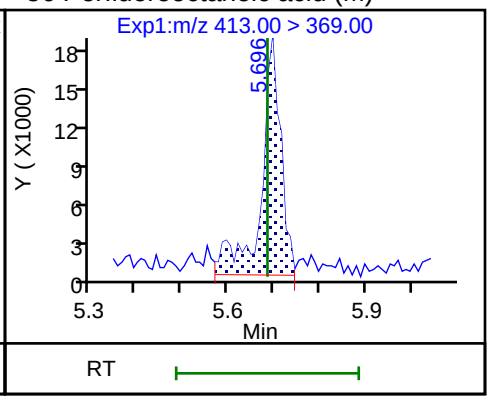
40 DONA (ND)



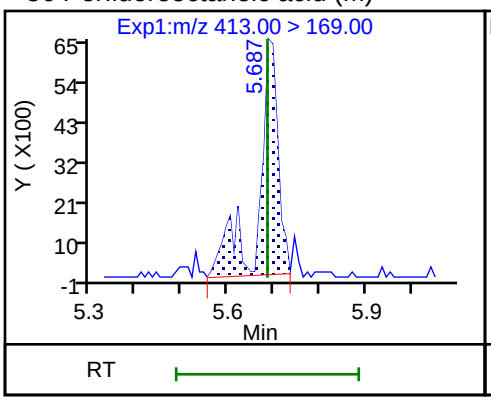
D 55 13C8 PFOA



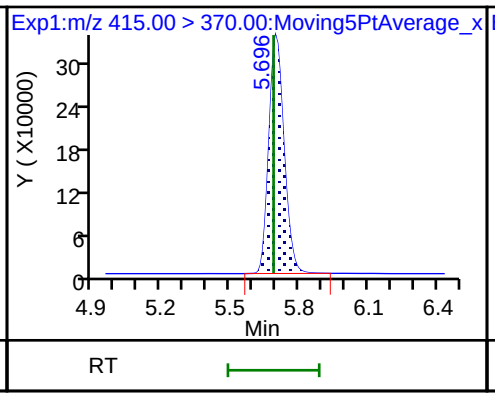
56 Perfluorooctanoic acid (M)



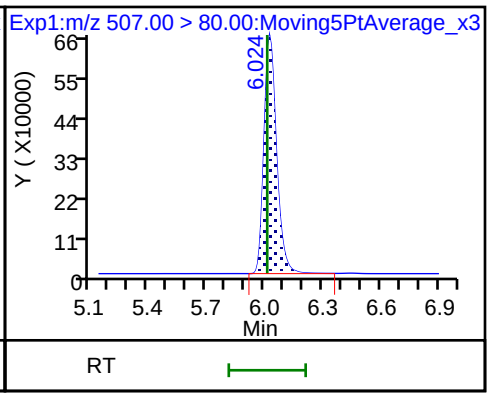
56 Perfluorooctanoic acid (M)



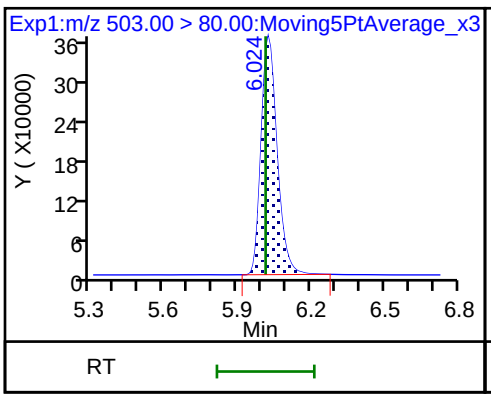
* 57 13C2 PFOA



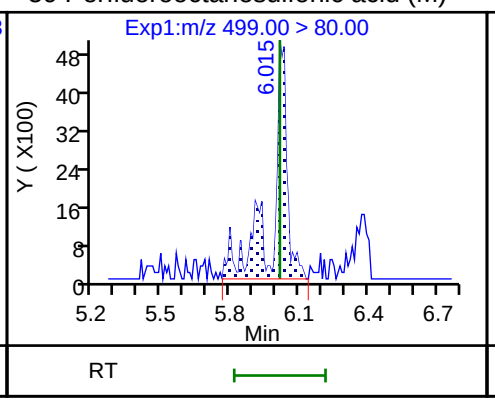
D 60 13C8 PFOS



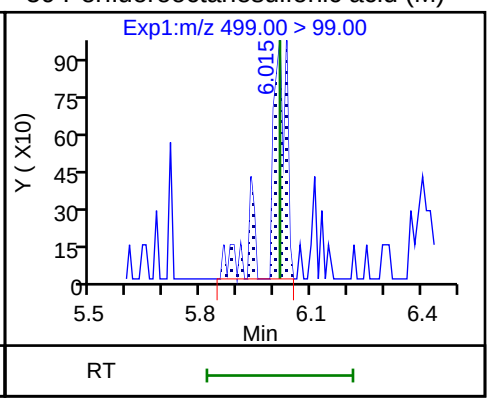
* 61 13C4 PFOS



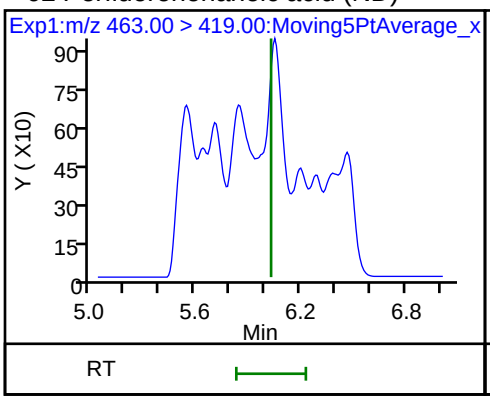
59 Perfluorooctanesulfonic acid (M)



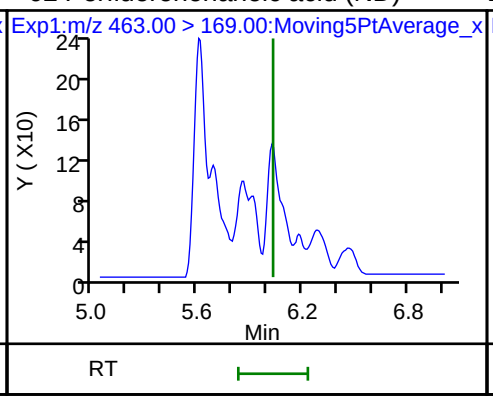
59 Perfluorooctanesulfonic acid (M)



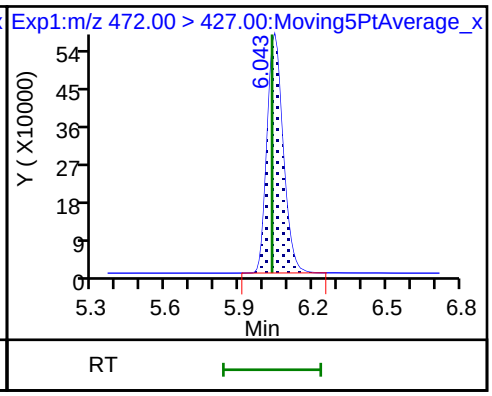
62 Perfluorononanoic acid (ND)



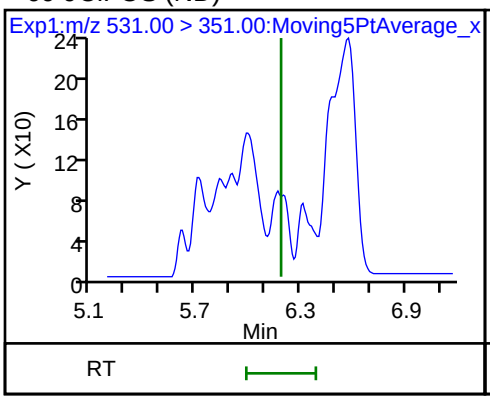
62 Perfluorononanoic acid (ND)



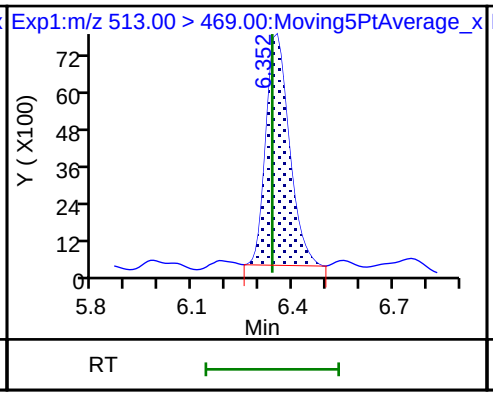
D 63 13C9 PFNA



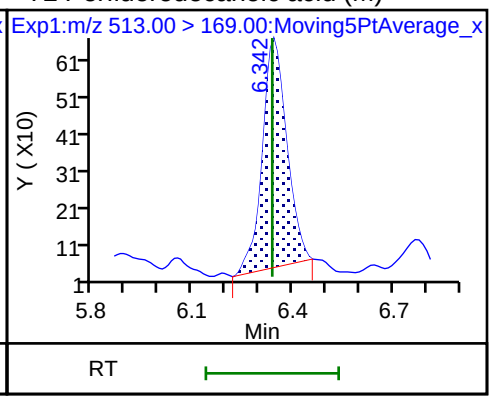
69 9ClFOS (ND)



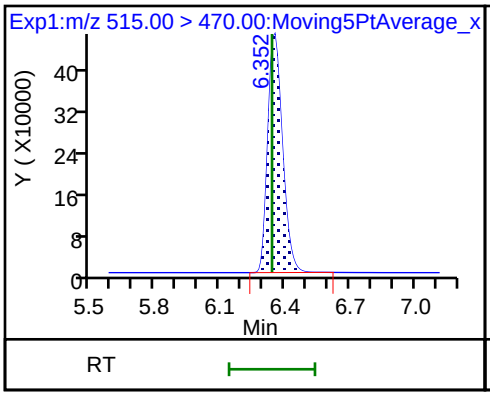
72 Perfluorodecanoic acid



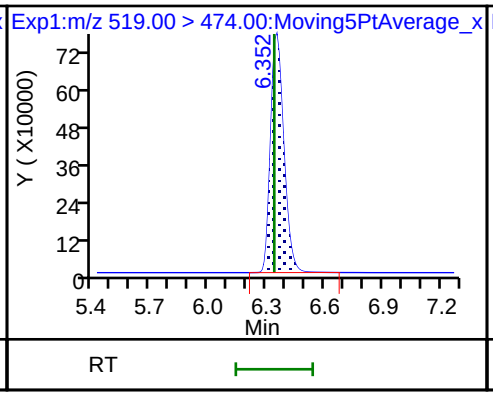
72 Perfluorodecanoic acid (M)



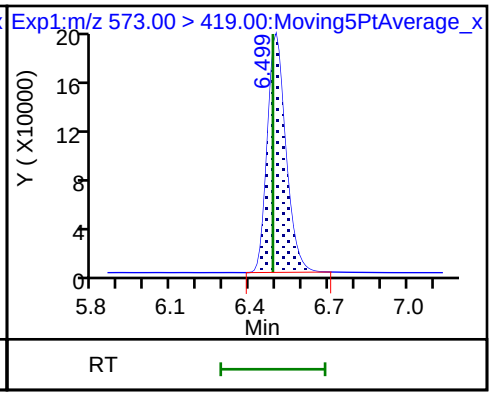
* 74 13C2 PFDA



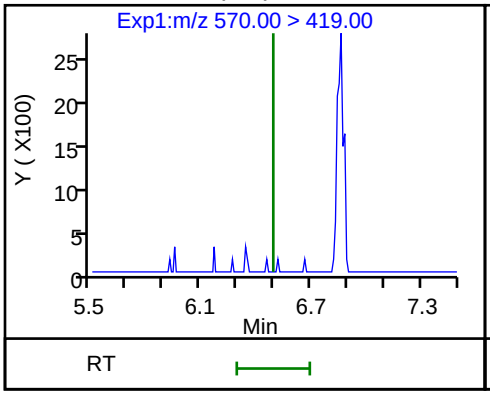
D 75 13C6 PFDA



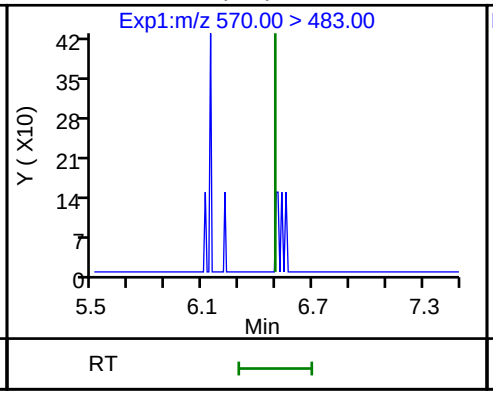
D 79 d3-NMeFOSAA



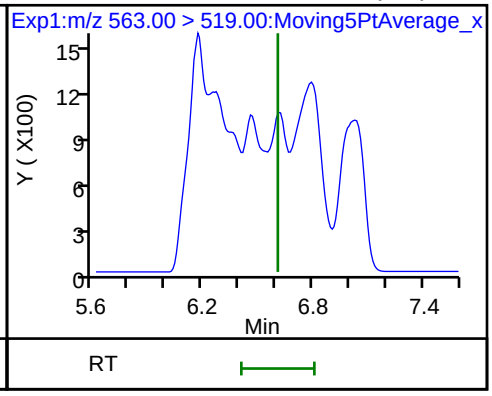
80 NMeFOSAA (ND)



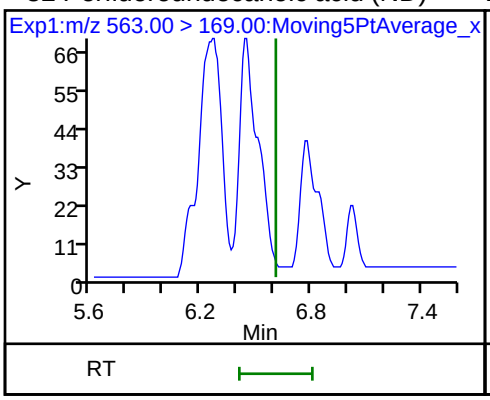
80 NMeFOSAA (ND)



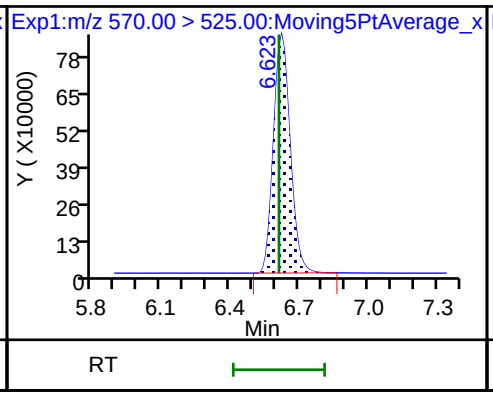
82 Perfluoroundecanoic acid (ND)



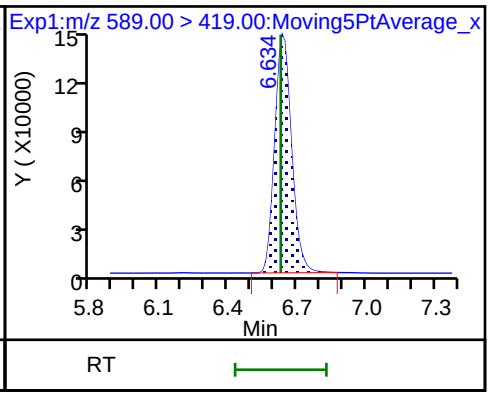
82 Perfluoroundecanoic acid (ND)



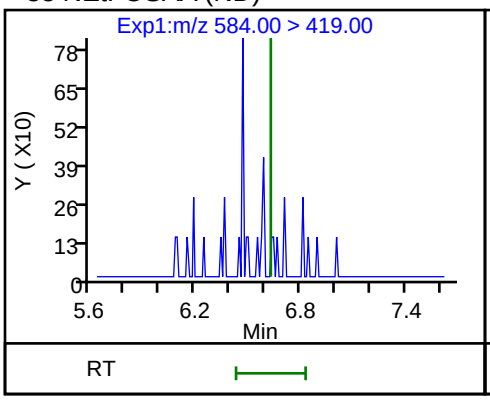
D 83 13C7 PFUnA



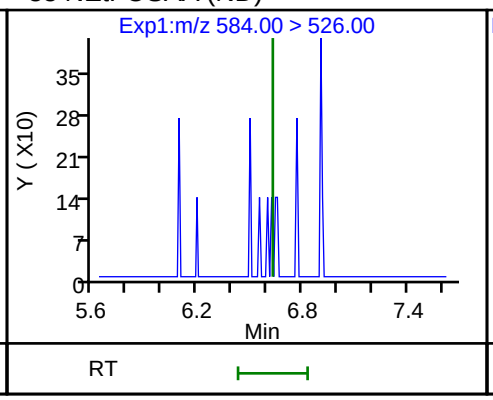
D 84 d5-NEtFOSAA



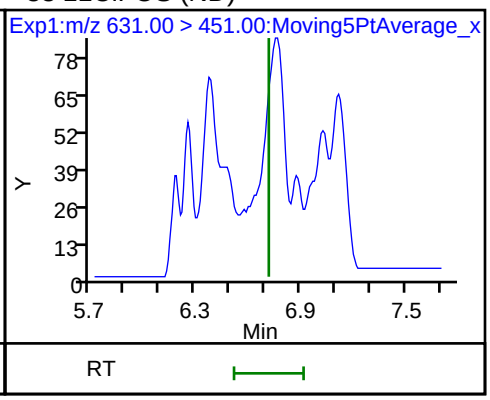
85 NEtFOSAA (ND)



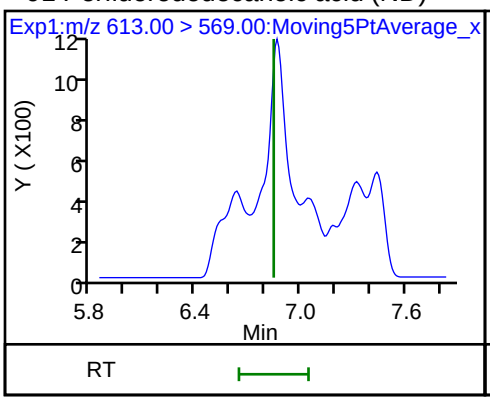
85 NEtFOSAA (ND)



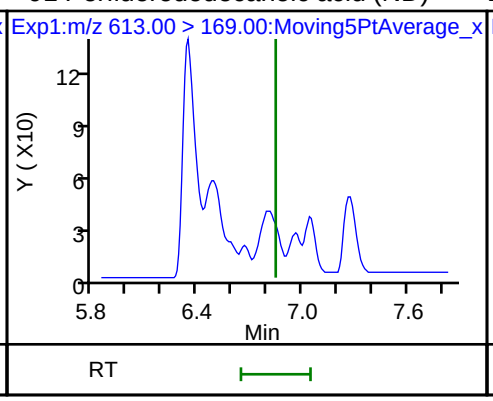
88 11ClFOS (ND)



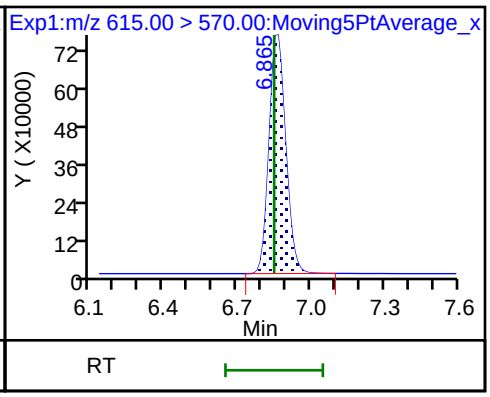
91 Perfluorododecanoic acid (ND)



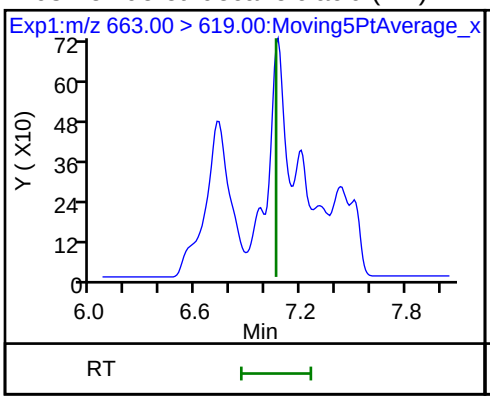
91 Perfluorododecanoic acid (ND)



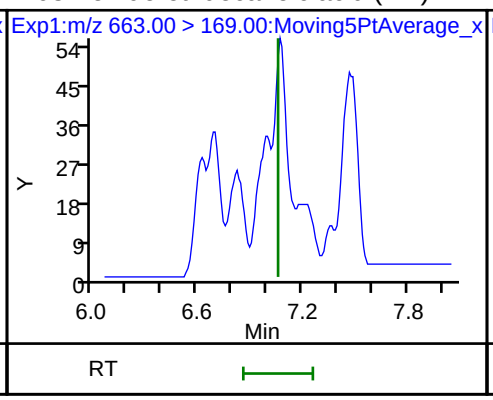
D 92 13C2-PFDoDA



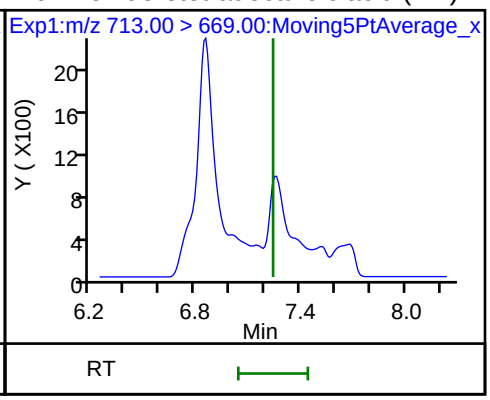
103 Perfluorotridecanoic acid (ND)



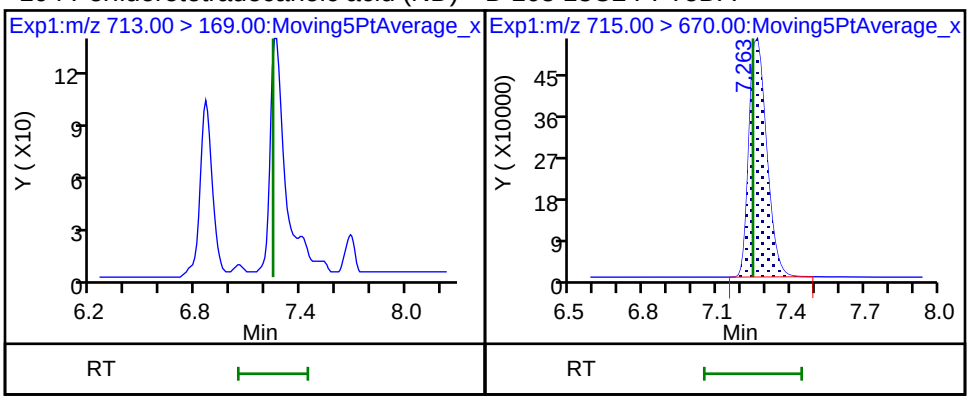
103 Perfluorotridecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND)



104 Perfluorotetradecanoic acid (ND) D 105 13C2 PFTeDA



FORM II
PFAS SURROGATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini C18 5 ID: 3 (mm)

Client Sample ID	Lab Sample ID	C3PFBS #	13C5PHA #	HFPODA #	C3PFHS #	C4PFHA #	C8PFOA #	C8PFOS #	C9PFNA #
CMW-12-GW-210813	410-51537-1	104	87	93	86	87	94	85	89
CMW-17-GW-210813	410-51537-2	116	79	67	80	81	88	85	90
CMW-17-GW-210813 RE	410-51537-2 RE	261 *5+	80	62	91	108	109	113	139 *5+
CMW-56-GW-210813	410-51537-3	116	91	77	90	95	99	94	101
CMW-28-GW-210813	410-51537-4	109	84	78	87	87	95	93	97
CMW-28-GW-210813 RE	410-51537-4 RE	166	96	80	107	113	112	122	129
BD-1-GW-210813	410-51537-5	101	86	105	86	91	89	91	95
	MB 410-162732/1-A	99	82	92	77	85	92	84	88
	MB 410-167381/1-A	118	123	99	127	122	122	112	116
	LCS 410-162732/2-A	98	87	85	82	87	91	88	89
	LCS 410-167381/2-A	125	120	118	126	118	117	119	122
	LCSD 410-167381/3-A	124	121	103	118	111	127	117	115
CMW-12-GW-210813 MS	410-51537-1 MS	104	84	81	84	86	92	87	89
CMW-12-GW-210813 MSD	410-51537-1 MSD	113	86	87	86	88	93	91	92

	QC LIMITS
C3PFBS = 13C3 PFBS	19-178
13C5PHA = 13C5 PFHxA	31-142
HFPODA = 13C3 HFPO-DA	20-153
C3PFHS = 13C3 PFHxS	32-145
C4PFHA = 13C4 PFHpA	30-144
C8PFOA = 13C8 PFOA	49-127
C8PFOS = 13C8 PFOS	49-126
C9PFNA = 13C9 PFNA	47-136

Column to be used to flag recovery values

FORM II 537 IDA

FORM II
PFAS SURROGATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini C18 5 ID: 3 (mm)

Client Sample ID	Lab Sample ID	C6PFDA #	d3NMFOS #	13C7PUA #	d5NEFOS #	PFDoDA #	PFTDA #
CMW-12-GW-210813	410-51537-1	90	84	84	82	71	73
CMW-17-GW-210813	410-51537-2	94	83	90	79	77	64
CMW-17-GW-210813 RE	410-51537-2 RE	113	101	99	119	73	28
CMW-56-GW-210813	410-51537-3	98	89	96	101	80	78
CMW-28-GW-210813	410-51537-4	93	85	90	83	78	63
CMW-28-GW-210813 RE	410-51537-4 RE	113	108	114	135	80	24
BD-1-GW-210813	410-51537-5	84	81	83	81	72	69
	MB 410-162732/1-A	88	84	90	90	85	81
	MB 410-167381/1-A	117	119	119	144	108	112
	LCS 410-162732/2-A	86	87	90	85	82	78
	LCS 410-167381/2-A	120	136	124	142	126	113
	LCSD 410-167381/3-A	121	117	110	130	112	109
CMW-12-GW-210813 MS	410-51537-1 MS	86	87	85	86	73	71
CMW-12-GW-210813 MSD	410-51537-1 MSD	89	86	89	84	75	75

	QC LIMITS
C6PFDA = 13C6 PFDA	47-128
d3NMFOS = d3-NMeFOSAA	32-151
13C7PUA = 13C7 PFUnA	40-135
d5NEFOS = d5-NEtFOSAA	37-164
PFDoDA = 13C2-PFDoDA	28-136
PFTDA = 13C2 PFTeDA	10-144

Column to be used to flag recovery values

FORM II 537 IDA

FORM III
PFAS LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21AUG31-09.d

Lab ID: LCS 410-162732/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorohexanoic acid	25.6	27.5	108	66-137	
Perfluoroheptanoic acid	25.6	27.4	107	66-141	
Perfluorooctanoic acid	25.6	25.6	100	65-136	
Perfluorononanoic acid	25.6	28.4	111	65-140	
Perfluorodecanoic acid	25.6	28.2	110	63-137	
Perfluorotridecanoic acid	25.6	30.0	117	58-146	
Perfluorotetradecanoic acid	25.6	27.8	108	64-141	
Perfluorobutanesulfonic acid	22.7	21.3	94	65-132	
Perfluorohexanesulfonic acid	23.3	24.9	107	60-128	
Perfluorooctanesulfonic acid	23.7	25.8	109	51-126	
NEtFOSAA	25.6	26.0	102	54-134	
NMeFOSAA	25.6	27.0	106	58-143	
Perfluorododecanoic acid	25.6	28.6	112	63-140	
HFPODA	25.6	24.6	96	37-147	
9Cl-PF3ONS	23.8	25.5	107	52-135	
11Cl-PF3OUdS	23.8	24.5	103	45-134	
DONA	24.2	24.0	99	49-158	
13C5 PFHxA	40.0	34.9	87	31-142	
13C4 PFHpA	40.0	35.0	87	30-144	
13C8 PFOA	40.0	36.4	91	49-127	
13C9 PFNA	40.0	35.8	89	47-136	
13C6 PFDA	40.0	34.2	86	47-128	
13C2-PFDoDA	40.0	32.8	82	28-136	
13C2 PFTeDA	40.0	31.4	78	10-144	
13C3 PFBS	37.2	36.4	98	19-178	
13C3 PFHxS	37.8	31.2	82	32-145	
13C8 PFOS	38.2	33.8	88	49-126	
d3-NMeFOSAA	40.0	34.6	87	32-151	
d5-NEtFOSAA	40.0	34.0	85	37-164	
13C3 HFPO-DA	40.0	34.1	85	20-153	
13C7 PFUnA	40.0	35.9	90	40-135	
Perfluoroundecanoic acid	25.6	28.5	111	62-138	

Column to be used to flag recovery and RPD values

FORM III 537 IDA

FORM III
PFAS LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21SEP03-16.d

Lab ID: LCS 410-167381/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorohexanoic acid	25.6	26.3	103	66-137	
Perfluoroheptanoic acid	25.6	24.0	94	66-141	
Perfluorooctanoic acid	25.6	24.7	96	65-136	
Perfluorononanoic acid	25.6	25.1	98	65-140	
Perfluorodecanoic acid	25.6	27.0	106	63-137	
Perfluorotridecanoic acid	25.6	26.0	101	58-146	
Perfluorotetradecanoic acid	25.6	30.1	117	64-141	
Perfluorobutanesulfonic acid	22.7	18.7	82	65-132	
Perfluorohexanesulfonic acid	23.3	20.2	87	60-128	
Perfluorooctanesulfonic acid	23.7	21.8	92	51-126	
NEtFOSAA	25.6	23.6	92	54-134	
NMeFOSAA	25.6	25.8	101	58-143	
Perfluorododecanoic acid	25.6	25.5	100	63-140	
HFPODA	25.6	22.7	89	37-147	
9Cl-PF3ONS	23.8	22.2	93	52-135	
11Cl-PF3OUdS	23.8	21.6	91	45-134	
DONA	24.2	26.4	109	49-158	
13C5 PFHxA	40.0	48.0	120	31-142	
13C4 PFHpA	40.0	47.2	118	30-144	
13C8 PFOA	40.0	46.9	117	49-127	
13C9 PFNA	40.0	48.9	122	47-136	
13C6 PFDA	40.0	48.2	120	47-128	
13C2-PFDoDA	40.0	50.4	126	28-136	
13C2 PFTeDA	40.0	45.4	113	10-144	
13C3 PFBS	37.2	46.5	125	19-178	
13C3 PFHxS	37.8	47.6	126	32-145	
13C8 PFOS	38.2	45.5	119	49-126	
d3-NMeFOSAA	40.0	54.3	136	32-151	
d5-NEtFOSAA	40.0	56.7	142	37-164	
13C3 HFPO-DA	40.0	47.4	118	20-153	
13C7 PFUnA	40.0	49.8	124	40-135	
Perfluoroundecanoic acid	25.6	26.5	104	62-138	

Column to be used to flag recovery and RPD values

FORM III 537 IDA

FORM III
PFAS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21SEP03-17.d

Lab ID: LCSD 410-167381/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorohexanoic acid	25.6	27.6	108	5	30	66-137	
Perfluoroheptanoic acid	25.6	24.3	95	1	30	66-141	
Perfluorooctanoic acid	25.6	23.7	93	4	30	65-136	
Perfluorononanoic acid	25.6	26.7	104	6	30	65-140	
Perfluorodecanoic acid	25.6	24.2	95	11	30	63-137	
Perfluorotridecanoic acid	25.6	26.6	104	2	30	58-146	
Perfluorotetradecanoic acid	25.6	27.1	106	10	30	64-141	
Perfluorobutanesulfonic acid	22.7	20.2	89	8	30	65-132	
Perfluorohexanesulfonic acid	23.3	21.7	93	7	30	60-128	
Perfluorooctanesulfonic acid	23.7	21.4	90	2	30	51-126	
NEtFOSAA	25.6	24.3	95	3	30	54-134	
NMeFOSAA	25.6	27.5	108	6	30	58-143	
Perfluorododecanoic acid	25.6	25.1	98	2	30	63-140	
HFPODA	25.6	27.1	106	18	30	37-147	
9Cl-PF3ONS	23.8	23.2	98	5	30	52-135	
11Cl-PF3OUdS	23.8	22.6	95	5	30	45-134	
DONA	24.2	27.7	114	5	30	49-158	
13C5 PFHxA	40.0	48.2	121			31-142	
13C4 PFHpA	40.0	44.6	111			30-144	
13C8 PFOA	40.0	50.8	127			49-127	
13C9 PFNA	40.0	46.0	115			47-136	
13C6 PFDA	40.0	48.4	121			47-128	
13C2-PFDoDA	40.0	44.8	112			28-136	
13C2 PFTeDA	40.0	43.6	109			10-144	
13C3 PFBS	37.2	46.2	124			19-178	
13C3 PFHxS	37.8	44.7	118			32-145	
13C8 PFOS	38.2	44.9	117			49-126	
d3-NMeFOSAA	40.0	46.6	117			32-151	
d5-NEtFOSAA	40.0	51.9	130			37-164	
13C3 HFPO-DA	40.0	41.1	103			20-153	
13C7 PFUnA	40.0	43.9	110			40-135	
Perfluoroundecanoic acid	25.6	27.9	109	5	30	62-138	

Column to be used to flag recovery and RPD values

FORM III 537 IDA

FORM III
PFAS MATRIX SPIKE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21AUG31-11.d

Lab ID: 410-51537-1 MS Client ID: CMW-12-GW-210813 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorohexanoic acid	23.2	0.94 J	26.3	109	66-137	
Perfluoroheptanoic acid	23.2	ND	25.9	112	66-141	
Perfluorooctanoic acid	23.2	0.70 J	24.3	102	65-136	
Perfluorononanoic acid	23.2	ND	26.5	114	65-140	
Perfluorodecanoic acid	23.2	ND	25.5	110	63-137	
Perfluorotridecanoic acid	23.2	ND	29.6	127	58-146	
Perfluorotetradecanoic acid	23.2	ND	25.4	109	64-141	
Perfluorobutanesulfonic acid	20.6	0.55 J	19.7	93	65-132	
Perfluorohexanesulfonic acid	21.2	1.1 J	23.5	105	60-128	
Perfluorooctanesulfonic acid	21.5	ND	23.4	109	51-126	
NEtFOSAA	23.2	ND	23.0	99	54-134	
NMeFOSAA	23.2	ND	23.8	102	58-143	
Perfluorododecanoic acid	23.2	ND	26.5	114	63-140	
HFPODA	23.2	ND	27.7	119	37-147	
9Cl-PF3ONS	21.6	ND	23.7	110	52-134	
11Cl-PF3OUdS	21.6	ND	23.4	108	45-134	
DONA	21.9	ND	22.6	103	49-158	
13C5 PFHxA	36.3	31	30.5	84	31-142	
13C4 PFHpA	36.3	31	31.1	86	30-144	
13C8 PFOA	36.3	34	33.4	92	49-127	
13C9 PFNA	36.3	32	32.2	89	47-136	
13C6 PFDA	36.3	32	31.3	86	47-128	
13C2-PFDoDA	36.3	25	26.3	73	28-136	
13C2 PFTeDA	36.3	26	25.7	71	10-144	
13C3 PFBS	33.7	34	35.0	104	19-178	
13C3 PFHxS	34.3	29	28.8	84	32-145	
13C8 PFOS	34.7	29	30.1	87	49-126	
d3-NMeFOSAA	36.3	30	31.5	87	32-151	
d5-NEtFOSAA	36.3	29	31.1	86	37-164	
13C3 HFPO-DA	36.3	33	29.2	81	20-153	
13C7 PFUnA	36.3	30	31.0	85	40-135	
Perfluoroundecanoic acid	23.2	ND	25.8	111	62-138	

Column to be used to flag recovery and RPD values

FORM III 537 IDA

FORM III
PFAS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21AUG31-12.d

Lab ID: 410-51537-1 MSD Client ID: CMW-12-GW-210813 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorohexanoic acid	23.0	26.2	110	0	30	66-137	
Perfluoroheptanoic acid	23.0	24.7	107	5	30	66-141	
Perfluorooctanoic acid	23.0	23.4	99	4	30	65-136	
Perfluorononanoic acid	23.0	25.3	110	4	30	65-140	
Perfluorodecanoic acid	23.0	25.7	112	1	30	63-137	
Perfluorotridecanoic acid	23.0	28.3	123	4	30	58-146	
Perfluorotetradecanoic acid	23.0	25.1	109	1	30	64-141	
Perfluorobutanesulfonic acid	20.4	19.4	93	2	30	65-132	
Perfluorohexanesulfonic acid	21.0	23.8	108	1	30	60-128	
Perfluorooctanesulfonic acid	21.3	23.0	108	2	30	51-126	
NEtFOSAA	23.0	22.6	98	2	30	54-134	
NMeFOSAA	23.0	24.9	108	5	30	58-143	
Perfluorododecanoic acid	23.0	25.6	111	4	30	63-140	
HFPODA	23.0	24.9	108	11	30	37-147	
9Cl-PF3ONS	21.4	23.4	109	1	30	52-134	
11Cl-PF3OUdS	21.4	22.4	105	4	30	45-134	
DONA	21.8	22.1	102	2	30	49-158	
13C5 PFHxA	36.0	30.8	86			31-142	
13C4 PFHpA	36.0	31.7	88			30-144	
13C8 PFOA	36.0	33.4	93			49-127	
13C9 PFNA	36.0	32.9	92			47-136	
13C6 PFDA	36.0	32.1	89			47-128	
13C2-PFDoDA	36.0	27.0	75			28-136	
13C2 PFTeDA	36.0	27.1	75			10-144	
13C3 PFBS	33.5	37.8	113			19-178	
13C3 PFHxS	34.0	29.2	86			32-145	
13C8 PFOS	34.4	31.2	91			49-126	
d3-NMeFOSAA	36.0	31.0	86			32-151	
d5-NEtFOSAA	36.0	30.2	84			37-164	
13C3 HFPO-DA	36.0	31.3	87			20-153	
13C7 PFUnA	36.0	32.0	89			40-135	
Perfluoroundecanoic acid	23.0	25.1	109	3	30	62-138	

Column to be used to flag recovery and RPD values

FORM III 537 IDA

FORM IV
PFAS METHOD BLANK SUMMARY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Lab File ID: 21AUG31-08.d Lab Sample ID: MB 410-162732/1-A

Matrix: Water Date Extracted: 08/20/2021 07:20

Instrument ID: 30727 Date Analyzed: 08/31/2021 23:51

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 410-162732/2-A	21AUG31-09.d	09/01/2021 00:02
CMW-12-GW-210813	410-51537-1	21AUG31-10.d	09/01/2021 00:13
CMW-12-GW-210813 MS	410-51537-1 MS	21AUG31-11.d	09/01/2021 00:24
CMW-12-GW-210813 MSD	410-51537-1 MSD	21AUG31-12.d	09/01/2021 00:35
CMW-17-GW-210813	410-51537-2	21AUG31-13.d	09/01/2021 00:47
CMW-56-GW-210813	410-51537-3	21AUG31-14.d	09/01/2021 00:58
CMW-28-GW-210813	410-51537-4	21AUG31-15.d	09/01/2021 01:09
BD-1-GW-210813	410-51537-5	21AUG31-16.d	09/01/2021 01:20

FORM IV
PFAS METHOD BLANK SUMMARY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51537-1

SDG No.:

Lab File ID: 21SEP03-15.d Lab Sample ID: MB 410-167381/1-A

Matrix: Water Date Extracted: 09/02/2021 10:30

Instrument ID: 27632 Date Analyzed: 09/03/2021 14:49

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 410-167381/2-A	21SEP03-16.d	09/03/2021 14:59
	LCSD 410-167381/3-A	21SEP03-17.d	09/03/2021 15:10
CMW-17-GW-210813 RE	410-51537-2 RE	21SEP03-18.d	09/03/2021 15:21
CMW-28-GW-210813 RE	410-51537-4 RE	21SEP03-19.d	09/03/2021 15:31

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Instrument ID: 27632 Calibration Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/30/2021 07:38

Calibration ID: 30090

		13C3PFBA		13PFOA		PFOS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		3182641	3.36	2269379	5.12	1001881	5.44
UPPER LIMIT		4773962	3.76	3404069	5.52	1502822	5.84
LOWER LIMIT		1591321	2.96	1134690	4.72	500941	5.04
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-165786/8		3417108	3.36	2471844	5.11	1110976	5.44
ICV 410-165786/9		3150513	3.36	2225952	5.14	1040776	5.47
CCV 410-167868/7		3149464	3.36	2042151	5.12	972086	5.45
MB 410-167381/1-A		3157756	3.37	2161898	5.13	979516	5.46
LCS 410-167381/2-A		3134350	3.36	2167999	5.11	958354	5.44
LCSD 410-167381/3-A		3055700	3.35	2056575	5.10	928019	5.43
410-51537-2 RE	CMW-17-GW-210813 RE	1268313	3.36	2588379	5.11	855011	5.44
410-51537-4 RE	CMW-28-GW-210813 RE	1969851	3.36	2277961	5.11	846447	5.44
CCV 410-167868/18		3510905	3.34	2234674	5.09	1031699	5.43

13C3PFBA = 13C3-PFBA
13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Instrument ID: 27632 Calibration Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/30/2021 07:38

Calibration ID: 30090

		PFDA					
		AREA #	RT #	#	RT #	#	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1329680	5.77				
UPPER LIMIT		1994520	6.17				
LOWER LIMIT		664840	5.37				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-165786/8		1389658	5.77				
ICV 410-165786/9		1205935	5.80				
CCV 410-167868/7		1277754	5.77				
MB 410-167381/1-A		1324724	5.78				
LCS 410-167381/2-A		1193107	5.77				
LCSD 410-167381/3-A		1342693	5.76				
410-51537-2 RE	CMW-17-GW-210813 RE	1327913	5.77				
410-51537-4 RE	CMW-28-GW-210813 RE	1234958	5.77				
CCV 410-167868/18		1336448	5.75				

PFDA = 13C2 PFDA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Instrument ID: 30727 Calibration Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/31/2021 21:25

Calibration ID: 30126

		13C3PFBA		13PFOA		PFOS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1078159	3.85	1328898	5.69	1472576	6.01
UPPER LIMIT		1617239	4.25	1993347	6.09	2208864	6.41
LOWER LIMIT		539080	3.45	664449	5.29	736288	5.61
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-166660/8		1330158	3.86	1639620	5.70	1742962	6.02
ICV 410-166660/9		1103970	3.86	1341963	5.70	1413849	6.03
CCV 410-166713/5		1078468	3.86	1316177	5.70	1401886	6.03
MB 410-162732/1-A		1273767	3.87	1691555	5.70	1783723	6.03
LCS 410-162732/2-A		1234682	3.86	1601863	5.70	1692914	6.02
410-51537-1	CMW-12-GW-210813	1173619	3.86	1503813	5.70	1709135	6.02
410-51537-1 MS	CMW-12-GW-210813 MS	1174095	3.87	1551563	5.71	1655606	6.03
410-51537-1 MSD	CMW-12-GW-210813 MSD	1075504	3.85	1517784	5.70	1617671	6.03
410-51537-2	CMW-17-GW-210813	941839	3.84	1588331	5.69	1641386	6.02
410-51537-3	CMW-56-GW-210813	1068158	3.86	1538634	5.70	1643671	6.03
410-51537-4	CMW-28-GW-210813	1143151	3.86	1563062	5.70	1638119	6.03
410-51537-5	BD-1-GW-210813	1172450	3.86	1520329	5.70	1626364	6.02
CCV 410-166713/18		1076815	3.86	1417405	5.70	1542568	6.03

13C3PFBA = 13C3-PFBA
13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Instrument ID: 30727 Calibration Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/31/2021 21:25

Calibration ID: 30126

		PFDA					
		AREA #	RT #	#	RT #	#	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1798089	6.34				
UPPER LIMIT		2697134	6.74				
LOWER LIMIT		899045	5.94				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-166660/8		2138580	6.34				
ICV 410-166660/9		1906304	6.35				
CCV 410-166713/5		1769832	6.35				
MB 410-162732/1-A		2121309	6.35				
LCS 410-162732/2-A		2129632	6.34				
410-51537-1	CMW-12-GW-210813	1998594	6.35				
410-51537-1 MS	CMW-12-GW-210813 MS	2029345	6.35				
410-51537-1 MSD	CMW-12-GW-210813 MSD	1989304	6.34				
410-51537-2	CMW-17-GW-210813	1971495	6.34				
410-51537-3	CMW-56-GW-210813	1934228	6.34				
410-51537-4	CMW-28-GW-210813	2074223	6.35				
410-51537-5	BD-1-GW-210813	2171942	6.35				
CCV 410-166713/18		1845526	6.35				

PFDA = 13C2 PFDA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Instrument ID: 27632 Start Date: 08/30/2021 06:35

Analysis Batch Number: 165786 End Date: 08/30/2021 08:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 410-165786/1		08/30/2021 06:35	1	21AUG30MCAL-02.d	Gemini C18 50mm 3(mm)
IC 410-165786/2		08/30/2021 06:45	1	21AUG30MCAL-03.d	Gemini C18 50mm 3(mm)
IC 410-165786/3		08/30/2021 06:56	1	21AUG30MCAL-04.d	Gemini C18 50mm 3(mm)
IC 410-165786/4		08/30/2021 07:06	1	21AUG30MCAL-05.d	Gemini C18 50mm 3(mm)
ICISAV 410-165786/5		08/30/2021 07:17	1	21AUG30MCAL-06.d	Gemini C18 50mm 3(mm)
IC 410-165786/6		08/30/2021 07:27	1	21AUG30MCAL-07.d	Gemini C18 50mm 3(mm)
IC 410-165786/7		08/30/2021 07:38	1	21AUG30MCAL-08.d	Gemini C18 50mm 3(mm)
ICB 410-165786/8		08/30/2021 07:48	1	21AUG30MCAL-09.d	Gemini C18 50mm 3(mm)
ICV 410-165786/9		08/30/2021 07:59	1	21AUG30MCAL-10.d	Gemini C18 50mm 3(mm)
WDM 410-165786/10		08/30/2021 08:10	1	21AUG30MCAL-11.d	Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Instrument ID: 27632 Start Date: 09/03/2021 13:45

Analysis Batch Number: 167868 End Date: 09/03/2021 23:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 410-167868/7		09/03/2021 13:45	1	21SEP03-09.d	Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 13:56	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 14:07	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 14:17	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 14:28	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 14:38	1		Gemini C18 50mm 3(mm)
MB 410-167381/1-A		09/03/2021 14:49	1	21SEP03-15.d	Gemini C18 50mm 3(mm)
LCS 410-167381/2-A		09/03/2021 14:59	1	21SEP03-16.d	Gemini C18 50mm 3(mm)
LCSD 410-167381/3-A		09/03/2021 15:10	1	21SEP03-17.d	Gemini C18 50mm 3(mm)
410-51537-2 RE	CMW-17-GW-210813 RE	09/03/2021 15:21	1	21SEP03-18.d	Gemini C18 50mm 3(mm)
410-51537-4 RE	CMW-28-GW-210813 RE	09/03/2021 15:31	1	21SEP03-19.d	Gemini C18 50mm 3(mm)
CCV 410-167868/18		09/03/2021 15:42	1	21SEP03-20.d	Gemini C18 50mm 3(mm)
CCV 410-167868/29		09/03/2021 17:38	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 19:14	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 19:24	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 19:35	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 19:45	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 19:56	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 20:07	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 20:17	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 20:28	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 20:38	1		Gemini C18 50mm 3(mm)
CCV 410-167868/47		09/03/2021 20:49	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 20:59	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 21:10	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 21:20	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 21:31	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 21:42	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 21:52	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 22:13	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 22:24	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 22:35	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 22:45	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 22:56	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 23:06	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/03/2021 23:17	1		Gemini C18 50mm 3(mm)
CCV 410-167868/62		09/03/2021 23:27	1		Gemini C18 50mm 3(mm)

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-165786/1	21AUG30MCAL-02.d
Level 2	IC 410-165786/2	21AUG30MCAL-03.d
Level 3	IC 410-165786/3	21AUG30MCAL-04.d
Level 4	IC 410-165786/4	21AUG30MCAL-05.d
Level 5	ICISAV 410-165786/5	21AUG30MCAL-06.d
Level 6	IC 410-165786/6	21AUG30MCAL-07.d
Level 7	IC 410-165786/7	21AUG30MCAL-08.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid	0.8687 0.8530	0.7830 0.8261	0.8692	0.8862	0.9064	LID1 F		0.8455							0.9990		0.9900
Perfluoropentanoic acid	1.1402 1.0211	1.0227 0.9726	1.1321	1.1203	1.1129	LID1 F		1.0102							0.9970		0.9900
Perfluorobutanesulfonic acid	1.0622 1.1460	0.9992 1.2596	1.0817	1.2386	1.2462	LID1 F		1.2229							0.9980		0.9900
4:2 Fluorotelomer sulfonic acid	1.9377 2.0211	1.7388 +++++	1.8376	1.9372	2.0468	LID1 F		2.0127							0.9990		0.9900
Perfluorohexanoic acid	0.7552 0.6727	0.6575 0.6778	0.6611	0.6852	0.7568	LID1 F		0.6853							0.9990		0.9900
Perfluoropentanesulfonic acid	0.5190 0.5235	0.4881 0.5495	0.5746	0.5744	0.5421	LID1 F		0.5426							0.9990		0.9900
HFPODA	2.8298 4.0761	3.1960 +++++	3.4146	3.4030	3.9811	LID1 F		3.9609							0.9960		0.9900
Perfluorohexanesulfonic acid	0.9498 1.0542	0.8655 1.1918	0.9030	0.9907	1.0817	LID1 F		1.1283							0.9950		0.9900
Perfluoroheptanoic acid	1.4701 +++++	1.2987 +++++	1.5058	1.6008	1.6739	LID1 F		1.6365							0.9980		0.9900
DONA	1.0936 1.2603	1.0216 1.2015	1.1592	1.3086	1.4210	LID1 F		1.2457							0.9970		0.9900
6:2 Fluorotelomer sulfonic acid	1.5653 1.5540	1.5423 +++++	1.4628	1.6064	1.6088	LID1 F		1.5705							1.0000		0.9900
Perfluoroheptanesulfonic acid	0.9220 1.0484	0.8826 1.1178	0.8856	0.9467	0.9796	LID1 F		1.0723							0.9970		0.9900
Perfluorooctanoic acid	0.5450 0.5598	0.4866 0.5599	0.5031	0.5321	0.5725	LID1 F		0.5592							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorooctanesulfonic acid	0.9582 1.1621	0.8586 1.2468	1.0708	1.0866	1.1852	LID1 F		1.2061							0.9980		0.9900
Perfluorononanoic acid	0.8316 0.8836	0.7824 0.8403	0.8546	0.9510	0.9822	LID1 F		0.8729							0.9970		0.9900
9Cl-PF3ONS	2.4735 2.6722	2.3194 2.8830	2.4955	2.7197	2.7967	LID1 F		2.8016							0.9990		0.9900
Perfluorononanesulfonic acid	0.8297 0.7879	0.7577 0.8462	0.8875	0.8699	0.8208	LID1 F		0.8285							0.9990		0.9900
Perfluorodecanoic acid	0.3596 0.3734	0.2759 0.3611	0.3596	0.3475	0.3699	LID1 F		0.3646							0.9990		0.9900
8:2 Fluorotelomer sulfonic acid	1.6611 1.6890	1.5066 +++++	1.5332	1.8769	1.8216	LID1 F		1.7354							0.9980		0.9900
Perfluorooctanesulfonamide	0.9510 1.0192	0.9128 0.9734	0.9647	1.0214	1.0683	LID1 F		0.9984							0.9990		0.9900
NMeFOSAA	0.8068 +++++	0.7492 +++++	0.7212	0.7557	0.8646	LID1 F		0.8246							0.9950		0.9900
Perfluorodecanesulfonic acid	0.6814 0.5953	0.4955 0.6063	0.6056	0.6001	0.6049	LID1 F		0.6026							1.0000		0.9900
Perfluoroundecanoic acid	0.2718 0.3011	0.2852 0.3125	0.3041	0.3298	0.3671	LID1 F		0.3160							0.9960		0.9900
NEtFOSAA	0.8859 +++++	0.8643 +++++	0.8370	0.9885	1.0486	LID1 F		1.0151							0.9960		0.9900
11Cl-PF3OUdS	1.8184 1.9172	1.4259 2.0721	1.8143	2.0135	2.0490	LID1 F		2.0191							0.9980		0.9900
Perfluorododecanoic acid	0.4124 0.3871	0.3598 0.4125	0.3927	0.4264	0.4417	LID1 F		0.4089							0.9980		0.9900
NMeFOSE	0.9709 0.8110	0.7444 0.8272	0.7397	0.8094	0.8109	LID1 F		0.8191							1.0000		0.9900
10:2 FTS	2.0282 2.1906	1.8905 +++++	2.1538	2.2551	2.4846	LID1 F		2.2667							0.9970		0.9900
NMeFOSA	1.1087 1.0272	0.9340 1.0768	1.0240	1.1565	1.0978	LID1 F		1.0680							0.9990		0.9900
Perfluorododecanesulfonic acid	0.2557 0.2626	0.2170 0.2767	0.2851	0.2677	0.2655	LID1 F		0.2711							0.9990		0.9900
NEtFOSE	0.5659 0.6369	0.5682 0.6488	0.5629	0.5857	0.5895	LID1 F		0.6349							0.9990		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
NEtFOSA	0.9613 0.9820	0.8196 0.9397	1.0122	0.9519	1.0055	LID1 F		0.9597							0.9990		0.9900
Perfluorotridecanoic acid	0.7301 +++++	0.6634 +++++	0.7010	0.7535	0.7320	LID1 F		0.7344							0.9990		0.9900
Perfluorotetradecanoic acid	0.9196 0.8651	0.8633 +++++	0.9450	0.9901	1.0264	LID1 F		0.9196							0.9940		0.9900
Perfluorohexadecanoic acid	0.4800 0.3809	0.4304 0.3899	0.4441	0.4160	0.4378	LID1 F		0.3947							0.9980		0.9900
Perfluorooctadecanoic acid	0.2499 0.2607	0.2448 0.2757	0.2839	0.2689	0.2936	LID1 F		0.2732							0.9990		0.9900
13C4 PFBA	1.0337 1.1091	1.0979 1.0928	1.1190	1.0903	1.1255	Ave		1.0955				2.8		20.0			
13C5 PFPeA	0.8403 0.8677	0.8654 0.8433	0.8428	0.8474	0.8932	Ave		0.8572				2.3		20.0			
13C3 PFBS	0.4024 0.4415	0.4112 0.4255	0.4291	0.4214	0.4482	Ave		0.4256				3.8		20.0			
M2-4:2 FTS	0.2067 0.1687	0.2194 +++++	0.2203	0.1996	0.1959	Ave		0.2018				9.4		20.0			
13C5 PFHxA	1.6973 1.8214	1.9220 1.6448	1.8701	1.7850	1.8957	Ave		1.8052				5.7		20.0			
13C3 HFPO-DA	0.1428 0.1288	0.1193 +++++	0.1261	0.1256	0.1374	Ave		0.1300				6.6		20.0			
13C3 PFHxS	0.4616 0.4353	0.5099 0.3720	0.5101	0.4751	0.4942	Ave		0.4655				10.6		20.0			
13C4 PFHpA	1.1072 1.0942	1.2443 0.9489	1.2101	1.1193	1.1198	Ave		1.1205				8.4		20.0			
M2-6:2 FTS	0.1479 0.1183	0.1607 +++++	0.1618	0.1443	0.1352	Ave		0.1447				11.3		20.0			
13C8 PFOA	1.7641 1.7371	1.9398 1.5970	1.8409	1.8202	1.8427	Ave		1.7917				6.0		20.0			
13C8 PFOS	0.9453 1.0469	1.0672 0.9874	0.9629	0.9869	0.9839	Ave		0.9972				4.4		20.0			
13C9 PFNA	1.9233 2.0014	2.0543 2.0374	1.9911	1.9428	1.8668	Ave		1.9739				3.4		20.0			
13C6 PFDA	2.7453 2.5582	2.8539 2.3072	2.6783	2.8525	2.7261	Ave		2.6745				7.2		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
M2-8:2 FTS	0.2505 0.2028	0.2549 +++++	0.2921	0.2340	0.2205	Ave		0.2425				12.8		20.0			
13C8 FOSA	1.9873 1.8783	1.8914 1.6897	2.1170	1.8632	1.9068	Ave		1.9048				6.8		20.0			
d3-NMeFOSAA	0.7122 +++++	0.6933 +++++	0.7842	0.8034	0.7618	Ave		0.7510				6.2		20.0			
13C7 PFUnA	2.7846 2.7371	2.6804 2.2105	2.9202	2.6766	2.7016	Ave		2.6730				8.3		20.0			
d5-NEtFOSAA	0.4602 +++++	0.4089 +++++	0.4968	0.4249	0.4087	Ave		0.4399				8.7		20.0			
13C2-PFDoDA	2.9869 3.2214	2.9170 2.5663	3.2668	3.0025	3.1593	Ave		3.0171				7.9		20.0			
d7-N-MeFOSE-M	0.2805 0.3160	0.2655 0.3031	0.3239	0.2734	0.2977	Ave		0.2943				7.5		20.0			
d3-NMePFOSA	0.1681 0.1837	0.1539 0.1681	0.1816	0.1465	0.1701	Ave		0.1674				8.1		20.0			
d9-N-EtFOSE-M	0.3290 0.3482	0.3030 0.3432	0.3532	0.3215	0.3437	Ave		0.3345				5.3		20.0			
d5-NEtPFOSA	0.1396 0.1421	0.1229 0.1345	0.1424	0.1321	0.1324	Ave		0.1351				5.1		20.0			
13C2 PFTeDA	2.0945 2.4271	1.9647 2.1776	2.2445	2.1408	2.2273	Ave		2.1823				6.6		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-165786/1	21AUG30MCAL-02.d
Level 2	IC 410-165786/2	21AUG30MCAL-03.d
Level 3	IC 410-165786/3	21AUG30MCAL-04.d
Level 4	IC 410-165786/4	21AUG30MCAL-05.d
Level 5	ICISAV 410-165786/5	21AUG30MCAL-06.d
Level 6	IC 410-165786/6	21AUG30MCAL-07.d
Level 7	IC 410-165786/7	21AUG30MCAL-08.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid		LID1F	128460 27443024	299377 44607229	1328073	5165229	12622588	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropentanoic acid		LID1F	137073 25699669	308210 40527086	1302763	5075452	12300567	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanesulfonic acid		LID1F	54106 12989514	126638 23436303	560799	2469428	6115913	0.177 44.3	0.443 88.5	1.77	7.08	17.7
4:2 Fluorotelomer sulfonic acid		LID1F	39604 6419441	85536 +++++	372233	1420299	3158002	0.187 46.7	0.467 +++++	1.87	7.47	18.7
Perfluorohexanoic acid		LID1F	135730 24702595	303351 40023887	1216845	4810512	12095809	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropentanesulfonic acid		LID1F	28021 6288751	65566 10835449	315744	1213887	2819547	0.188 46.9	0.469 93.8	1.88	7.50	18.8
HFPODA		LID1F	42798 10582403	91502 +++++	423943	1681496	4611279	0.200 50.0	0.500 +++++	2.00	8.00	20.0
Perfluorohexanesulfonic acid		LID1F	42340 8436499	96620 14514829	413495	1688351	4110895	0.182 45.6	0.456 91.2	1.82	7.30	18.2
Perfluoroheptanoic acid		LID1F	172352 +++++	387947 +++++	1793617	7046774	15803594	0.200 +++++	0.500 +++++	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
DONA		LID1 F	121161 26273056	288384 38678806	1304820	5443902	12677591	0.189 47.3	0.473 94.5	1.89	7.56	18.9
6:2 Fluorotelomer sulfonic acid		LID1 F	23246 3514954	56416 +++++	220909	864430	1738696	0.190 47.4	0.474 +++++	1.90	7.58	19.0
Perfluoroheptanesulfonic acid		LID1 F	42907 8758221	102856 14210131	423320	1684107	3886081	0.190 47.6	0.476 95.2	1.90	7.62	19.0
Perfluorooctanoic acid		LID1 F	101799 19604138	226611 32102653	911649	3809114	8895061	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorooctanesulfonic acid		LID1 F	38573 10555505	94789 17956330	433460	1777906	4677018	0.185 46.3	0.463 92.6	1.85	7.40	18.5
Perfluorononanoic acid		LID1 F	73601 16576933	179668 26981177	772897	3309612	7945889	0.200 50.0	0.500 100	2.00	8.00	20.0
9Cl-PF3ONS		LID1 F	100059 24389524	257323 41721596	1015106	4471460	11089480	0.186 46.5	0.465 93.0	1.86	7.44	18.6
Perfluorononanesulfonic acid		LID1 F	34648 7423633	86776 12640543	372667	1476277	3359884	0.192 48.0	0.480 96.0	1.92	7.68	19.2
Perfluorodecanoic acid		LID1 F	56989 10983521	120514 18039546	525919	2267989	5268508	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 Fluorotelomer sulfonic acid		LID1 F	23010 3773422	56322 +++++	234266	962758	2010118	0.192 47.9	0.479 +++++	1.92	7.66	19.2
Perfluorooctanesulfonamide		LID1 F	109107 22011515	264280 35611924	1115216	4354394	10642552	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSAA		LID1 F	33177 +++++	79508 +++++	308828	1389129	3441417	0.200 +++++	0.500 +++++	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorodecanesulfonic acid		LID1 F	28570 5632431	56980 9094712	255364	1022711	2486257	0.193 48.2	0.482 96.4	1.93	7.71	19.3
Perfluoroundecanoic acid		LID1 F	43696 9474809	117017 14958595	484907	2019637	5181910	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSAA		LID1 F	23537 +++++	54093 +++++	227069	960958	2239066	0.200 +++++	0.500 +++++	2.00	8.00	20.0
11Cl-PF3OUdS		LID1 F	73559 17498482	158192 29986208	738019	3310488	8124805	0.186 46.5	0.465 93.0	1.86	7.44	18.6
Perfluorododecanoic acid		LID1 F	71117 14336599	160628 22919171	700588	2929567	7291417	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSE		LID1 F	15724 2946131	30252 5429389	130830	506406	1261039	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTS		LID1 F	28271 4924956	71119 +++++	331154	1164008	2758916	0.193 48.2	0.482 +++++	1.93	7.71	19.3
NMeFOSA		LID1 F	10758 2169380	22006 3919202	101550	387756	975344	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanesulfonic acid		LID1 F	10766 2495159	25062 4167201	120693	458040	1095875	0.194 48.4	0.484 96.8	1.94	7.74	19.4
NEtFOSE		LID1 F	10747 2549593	26353 4820715	108565	430880	1058750	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSA		LID1 F	7747 1604560	15418 2736069	78698	287672	695434	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotridecanoic acid		LID1 F	125893 +++++	296227 +++++	1250401	5176113	12082618	0.200 +++++	0.500 +++++	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotetradecanoic acid		LID1 F	111196 24142454	259607 +++++	1158246	4849911	11944375	0.200 50.0	0.500 +++++	2.00	8.00	20.0
Perfluorohexadecanoic acid		LID1 F	58042 10630577	129439 18385103	544279	2037527	5094957	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorooctadecanoic acid		LID1 F	30218 7275554	73608 12998489	347927	1317111	3417147	0.200 50.0	0.500 100	2.00	8.00	20.0
13C4 PFBA	13C3 PFBA	Ave	7393671 6434175	7647143 5399570	7639423	7285986	6963185	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C5 PFPeA	13C3 PFBA	Ave	6010753 5033883	6027354 4166952	5753677	5662835	5526397	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFBS	13C3 PFBA	Ave	2693748 2397510	2680862 1967810	2741655	2635847	2595243	9.36 9.36	9.36 9.36	9.36	9.36	9.36
M2-4:2 FTS	13PF OA	Ave	1021953 635239	983845 +++++	1012802	916445	771452	9.34 9.34	9.34 +++++	9.34	9.34	9.34
13C5 PFHxA	13PF OA	Ave	8986053 7344279	9228012 5905247	9203278	8775458	7991396	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 HFPO-DA	13PF OA	Ave	756205 519244	572611 +++++	620787	617644	579143	10.0 10.0	10.0 +++++	10.0	10.0	10.0
13C3 PFHxS	13PF OA	Ave	2312075 1660295	2316023 1263255	2374958	2209654	1970977	9.46 9.46	9.46 9.46	9.46	9.46	9.46
13C4 PFHpA	13PF OA	Ave	5862041 4412010	5974226 3406592	5955617	5502685	4720474	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-6:2 FTS	13PF OA	Ave	744085 453337	733135 +++++	756672	674046	541521	9.50 9.50	9.50 +++++	9.50	9.50	9.50

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C8 PFOA	13PFOA	Ave	9339772 7004408	9313544 5733536	9059708	8948269	7767946	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C8 PFOS	PFOS	Ave	2080259 1877453	2282068 1488398	2091837	2113712	2039128	9.57 9.57	9.57 9.57	9.57	9.57	9.57
13C9 PFNA	PFOS	Ave	4425192 3752311	4592540 3210861	4522142	4350178	4044880	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C6 PFDA	PFDA	Ave	7924750 5882832	8736897 4995562	7312440	8158180	7121475	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-8:2 FTS	PFDA	Ave	692617 446836	747684 +++++	763984	641197	551741	9.58 9.58	9.58 +++++	9.58	9.58	9.58
13C8 FOSA	PFDA	Ave	5736655 4319303	5790240 3658668	5780051	5328784	4981265	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMeFOSAA	PFDA	Ave	2056033 +++++	2122527 +++++	2141142	2297819	1990141	10.0 +++++	10.0 +++++	10.0	10.0	10.0
13C7 PFUnA	PFDA	Ave	8038256 6294036	8205692 4786164	7973003	7655336	7057688	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtFOSAA	PFDA	Ave	1328438 +++++	1251752 +++++	1356425	1215191	1067666	10.0 +++++	10.0 +++++	10.0	10.0	10.0
13C2-PFDoDA	PFDA	Ave	8622085 7407785	8929947 5556569	8919139	8587208	8253247	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d7-N-MeFOSE-M	PFDA	Ave	809778 726546	812825 656351	884320	782046	777596	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMePFOSA	PFDA	Ave	485180 422394	471197 363971	495841	419088	444246	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d9-N-EtFOSE-M	PFDA	Ave	949598 800636	927630 743062	964317	919559	897939	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtPFOSA	PFDA	Ave	402951 326800	376213 291158	388765	377744	345829	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2 PFTeDA	PFDA	Ave	6045998 5581209	6014535 4714956	6128026	6122766	5818540	10.0 10.0	10.0 10.0	10.0	10.0	10.0

Curve Type Legend
Ave = Average ISTD
LID1F = Linear 1/Conc IsoDil FZ

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-165786/1	21AUG30MCAL-02.d
Level 2	IC 410-165786/2	21AUG30MCAL-03.d
Level 3	IC 410-165786/3	21AUG30MCAL-04.d
Level 4	IC 410-165786/4	21AUG30MCAL-05.d
Level 5	ICISAV 410-165786/5	21AUG30MCAL-06.d
Level 6	IC 410-165786/6	21AUG30MCAL-07.d
Level 7	IC 410-165786/7	21AUG30MCAL-08.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid	2.7 -2.3	-7.4	2.8	4.8	7.2	0.9	50 30	30	30	30	30	30
Perfluoropentanoic acid	12.9 -3.7	1.2	12.1	10.9	10.2	1.1	50 30	30	30	30	30	30
Perfluorobutanesulfonic acid	-13.1 3.0	-18.3	-11.5	1.3	1.9	-6.3	50 30	30	30	30	30	30
4:2 Fluorotelomer sulfonic acid	-3.7 +++++	-13.6	-8.7	-3.7	1.7	0.4	50	30	30	30	30	30
Perfluorohexanoic acid	10.2 -1.1	-4.1	-3.5	0.0	10.4	-1.8	50 30	30	30	30	30	30
Perfluoropentanesulfonic acid	-4.4 1.3	-10.1	5.9	5.9	-0.1	-3.5	50 30	30	30	30	30	30
HFPODA	-28.6 +++++	-19.3	-13.8	-14.1	0.5	2.9	50	30	30	30	30	30
Perfluorohexanesulfonic acid	-15.8 5.6	-23.3	-20.0	-12.2	-4.1	-6.6	50 30	30	30	30	30	30
Perfluoroheptanoic acid	-10.2 +++++	-20.6	-8.0	-2.2	2.3	+++++	50	30	30	30	30	
DONA	-12.2 -3.5	-18.0	-6.9	5.0	14.1	1.2	50 30	30	30	30	30	30
6:2 Fluorotelomer sulfonic acid	-0.3 +++++	-1.8	-6.9	2.3	2.4	-1.0	50	30	30	30	30	30
Perfluoroheptanesulfonic acid	-14.0 4.2	-17.7	-17.4	-11.7	-8.6	-2.2	50 30	30	30	30	30	30
Perfluorooctanoic acid	-2.5 0.1	-13.0	-10.0	-4.8	2.4	0.1	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid	-20.6 3.4	-28.8	-11.2	-9.9	-1.7	-3.6	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorononanoic acid	-4.7 -3.7	-10.4	-2.1	9.0	12.5	1.2	50 30	30	30	30	30	30
9Cl-PF3ONS	-11.7 2.9	-17.2	-10.9	-2.9	-0.2	-4.6	50 30	30	30	30	30	30
Perfluorononanesulfonic acid	0.2 2.1	-8.5	7.1	5.0	-0.9	-4.9	50 30	30	30	30	30	30
Perfluorodecanoic acid	-1.4 -1.0	-24.3	-1.4	-4.7	1.4	2.4	50 30	30	30	30	30	30
8:2 Fluorotelomer sulfonic acid	-4.3 +++++	-13.2	-11.7	8.2	5.0	-2.7	50	30	30	30	30	30
Perfluorooctanesulfonamide	-4.8 -2.5	-8.6	-3.4	2.3	7.0	2.1	50 30	30	30	30	30	30
NMeFOSAA	-2.2 +++++	-9.1	-12.5	-8.4	4.8	+++++	50	30	30	30	30	
Perfluorodecanesulfonic acid	13.1 0.6	-17.8	0.5	-0.4	0.4	-1.2	50 30	30	30	30	30	30
Perfluoroundecanoic acid	-14.0 -1.1	-9.7	-3.8	4.4	16.2	-4.7	50 30	30	30	30	30	30
NEtFOSAA	-12.7 +++++	-14.9	-17.5	-2.6	3.3	+++++	50	30	30	30	30	
11Cl-PF3OUdS	-9.9 2.6	-29.4	-10.1	-0.3	1.5	-5.0	50 30	30	30	30	30	30
Perfluorododecanoic acid	0.9 0.9	-12.0	-4.0	4.3	8.0	-5.3	50 30	30	30	30	30	30
NMeFOSE	18.5 1.0	-9.1	-9.7	-1.2	-1.0	-1.0	50 30	30	30	30	30	30
10:2 FTS	-10.5 +++++	-16.6	-5.0	-0.5	9.6	-3.4	50	30	30	30	30	30
NMeFOSA	3.8 0.8	-12.5	-4.1	8.3	2.8	-3.8	50 30	30	30	30	30	30
Perfluorododecanesulfonic acid	-5.7 2.1	-19.9	5.2	-1.3	-2.0	-3.1	50 30	30	30	30	30	30
NEtFOSE	-10.9 2.2	-10.5	-11.3	-7.7	-7.1	0.3	50 30	30	30	30	30	30
NEtFOSA	0.2 -2.1	-14.6	5.5	-0.8	4.8	2.3	50 30	30	30	30	30	30
Perfluorotridecanoic acid	-0.6 +++++	-9.7	-4.6	2.6	-0.3	+++++	50	30	30	30	30	

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorotetradecanoic acid	0.0 +++++	-6.1	2.8	7.7	11.6	-5.9	50	30	30	30	30	30
Perfluorohexadecanoic acid	21.6 -1.2	9.0	12.5	5.4	10.9	-3.5	50 30	30	30	30	30	30
Perfluorooctadecanoic acid	-8.5 0.9	-10.4	3.9	-1.6	7.5	-4.6	50 30	30	30	30	30	30
13C4 PFBA	-5.6 -0.2	0.2	2.2	-0.5	2.7	1.2	50 30	30	30	30	30	30
13C5 PFPeA	-2.0 -1.6	1.0	-1.7	-1.1	4.2	1.2	50 30	30	30	30	30	30
13C3 PFBS	-5.5 0.0	-3.4	0.8	-1.0	5.3	3.7	50 30	30	30	30	30	30
M2-4:2 FTS	2.4 +++++	8.7	9.2	-1.1	-2.9	-16.4	50	30	30	30	30	30
13C5 PFHxA	-6.0 -8.9	6.5	3.6	-1.1	5.0	0.9	50 30	30	30	30	30	30
13C3 HFPO-DA	9.9 +++++	-8.3	-3.0	-3.4	5.7	-0.9	50	30	30	30	30	30
13C3 PFHxS	-0.8 -20.1	9.6	9.6	2.1	6.2	-6.5	50 30	30	30	30	30	30
13C4 PFHpA	-1.2 -15.3	11.0	8.0	-0.1	-0.1	-2.4	50 30	30	30	30	30	30
M2-6:2 FTS	2.2 +++++	11.1	11.8	-0.3	-6.6	-18.2	50	30	30	30	30	30
13C8 PFOA	-1.5 -10.9	8.3	2.7	1.6	2.8	-3.0	50 30	30	30	30	30	30
13C8 PFOS	-5.2 -1.0	7.0	-3.4	-1.0	-1.3	5.0	50 30	30	30	30	30	30
13C9 PFNA	-2.6 3.2	4.1	0.9	-1.6	-5.4	1.4	50 30	30	30	30	30	30
13C6 PFDA	2.6 -13.7	6.7	0.1	6.7	1.9	-4.3	50 30	30	30	30	30	30
M2-8:2 FTS	3.3 +++++	5.1	20.5	-3.5	-9.1	-16.3	50	30	30	30	30	30
13C8 FOSA	4.3 -11.3	-0.7	11.1	-2.2	0.1	-1.4	50 30	30	30	30	30	30
d3-NMeFOSAA	-5.2 +++++	-7.7	4.4	7.0	1.4	+++++	50	30	30	30	30	

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 165786

SDG No.:

Instrument ID: 27632 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/30/2021 06:35 Calibration End Date: 08/30/2021 07:38 Calibration ID: 30090

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C7 PFUnA	4.2 -17.3	0.3	9.2	0.1	1.1	2.4	50 30	30	30	30	30	30
d5-NEtFOSAA	4.6 +++++	-7.0	12.9	-3.4	-7.1	+++++	50	30	30	30	30	
13C2-PFDoDA	-1.0 -14.9	-3.3	8.3	-0.5	4.7	6.8	50 30	30	30	30	30	30
d7-N-MeFOSE-M	-4.7 3.0	-9.8	10.1	-7.1	1.1	7.4	50 30	30	30	30	30	30
d3-NMePFOSA	0.4 0.4	-8.1	8.5	-12.5	1.6	9.7	50 30	30	30	30	30	30
d9-N-EtFOSE-M	-1.7 2.6	-9.4	5.6	-3.9	2.7	4.1	50 30	30	30	30	30	30
d5-NEtPFOSA	3.3 -0.5	-9.1	5.4	-2.3	-2.0	5.2	50 30	30	30	30	30	30
13C2 PFTeDA	-4.0 -0.2	-10.0	2.8	-1.9	2.1	11.2	50 30	30	30	30	30	30

Calibration / Perfluorobutanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

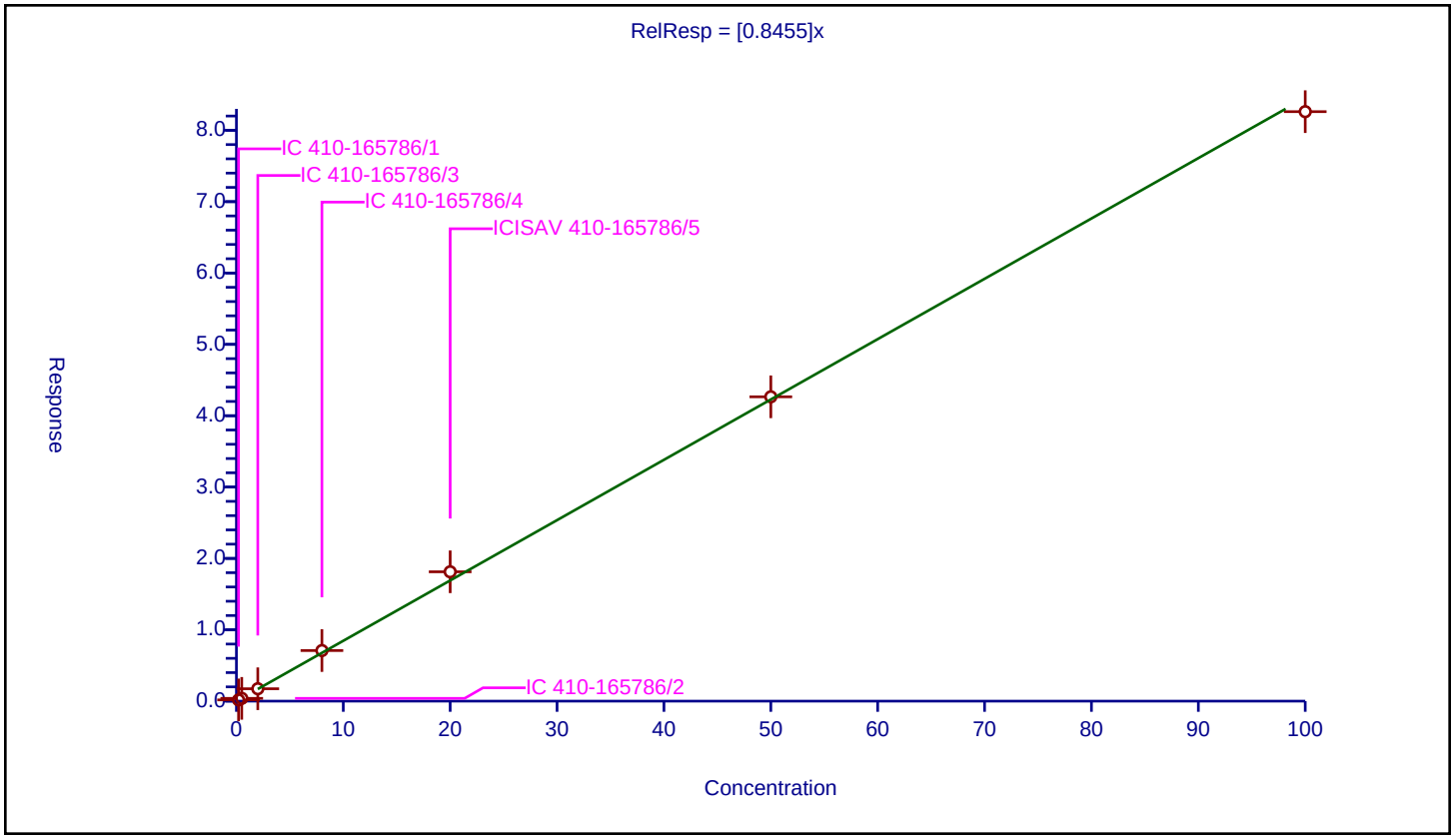
Curve Coefficients

Intercept:	0
Slope:	0.8455

Error Coefficients

Standard Error:	22100000
Relative Standard Error:	5.0
Correlation Coefficient:	0.985
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.173743	10.0	7393671.0	0.868716	Y
2	IC 410-165786/2	0.5	0.391489	10.0	7647143.0	0.782977	Y
3	IC 410-165786/3	2.0	1.738447	10.0	7639423.0	0.869223	Y
4	IC 410-165786/4	8.0	7.089266	10.0	7285986.0	0.886158	Y
5	ICISAV 410-165786/5	20.0	18.127607	10.0	6963185.0	0.90638	Y
6	IC 410-165786/6	50.0	42.65197	10.0	6434175.0	0.853039	Y
7	IC 410-165786/7	100.0	82.612558	10.0	5399570.0	0.826126	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

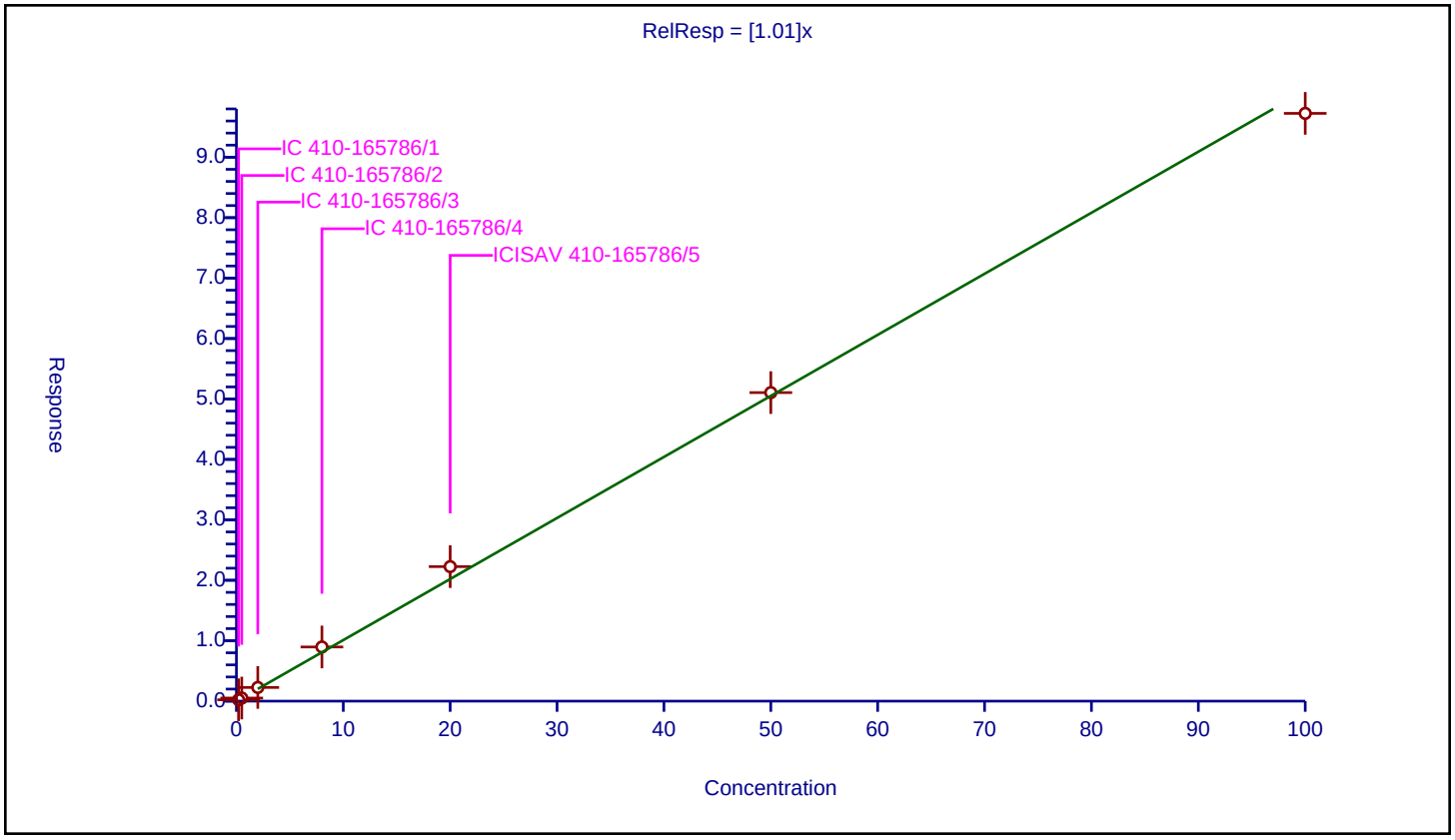
Curve Coefficients

Intercept:	0
Slope:	1.01

Error Coefficients

Standard Error:	20300000
Relative Standard Error:	9.6
Correlation Coefficient:	0.980
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.228046	10.0	6010753.0	1.140232	Y
2	IC 410-165786/2	0.5	0.511352	10.0	6027354.0	1.022704	Y
3	IC 410-165786/3	2.0	2.264227	10.0	5753677.0	1.132113	Y
4	IC 410-165786/4	8.0	8.96274	10.0	5662835.0	1.120343	Y
5	ICISAV 410-165786/5	20.0	22.257842	10.0	5526397.0	1.112892	Y
6	IC 410-165786/6	50.0	51.05337	10.0	5033883.0	1.021067	Y
7	IC 410-165786/7	100.0	97.258346	10.0	4166952.0	0.972583	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

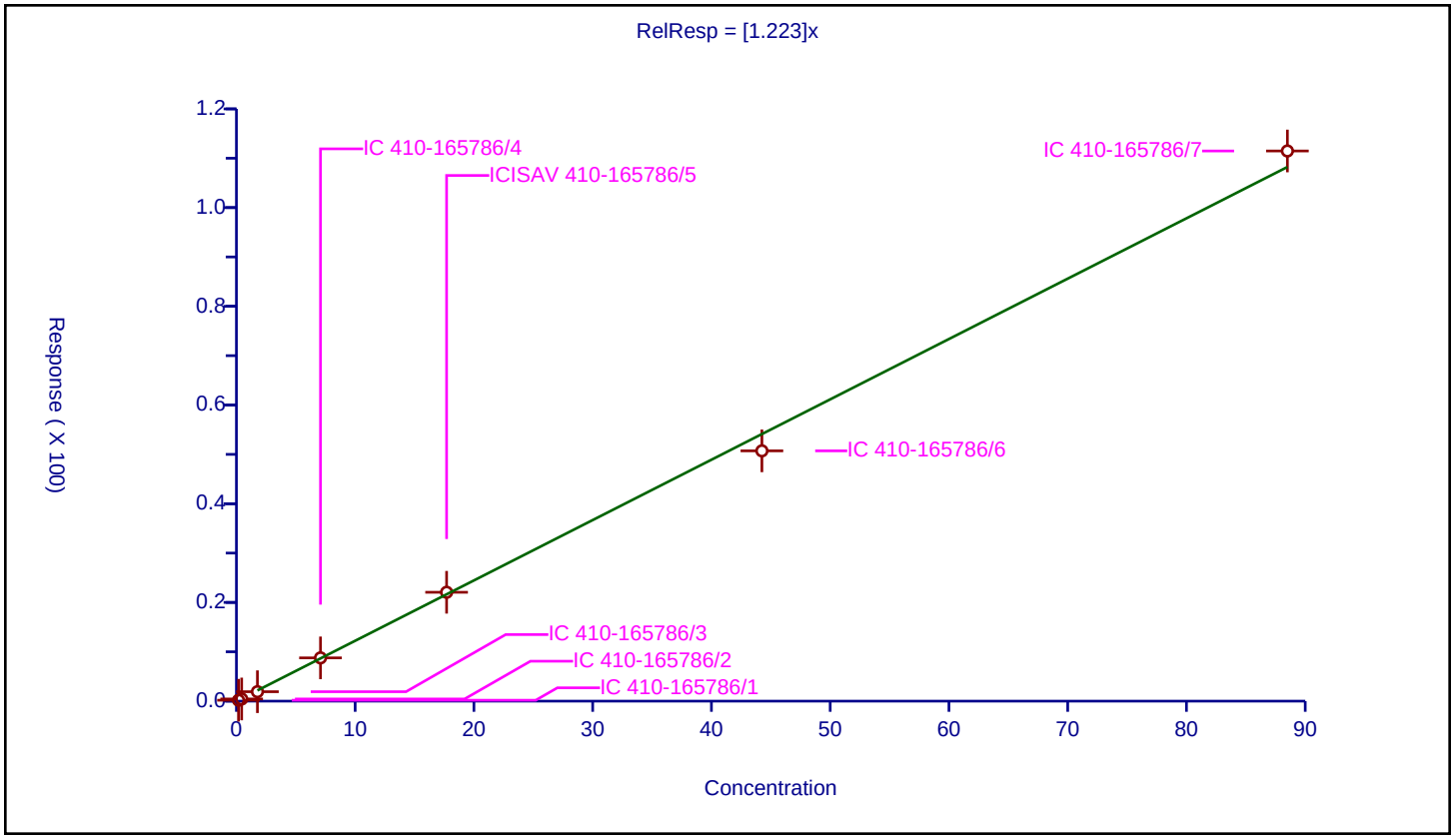
Curve Coefficients

Intercept:	0
Slope:	1.223

Error Coefficients

Standard Error:	11300000
Relative Standard Error:	10.8
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.177	0.188003	9.36	2693748.0	1.062163	Y
2	IC 410-165786/2	0.4425	0.442146	9.36	2680862.0	0.999199	Y
3	IC 410-165786/3	1.77	1.914566	9.36	2741655.0	1.081676	Y
4	IC 410-165786/4	7.08	8.769039	9.36	2635847.0	1.238565	Y
5	ICISAV 410-165786/5	17.7	22.057644	9.36	2595243.0	1.246195	Y
6	IC 410-165786/6	44.25	50.711718	9.36	2397510.0	1.146028	Y
7	IC 410-165786/7	88.5	111.476106	9.36	1967810.0	1.259617	Y



Calibration / 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

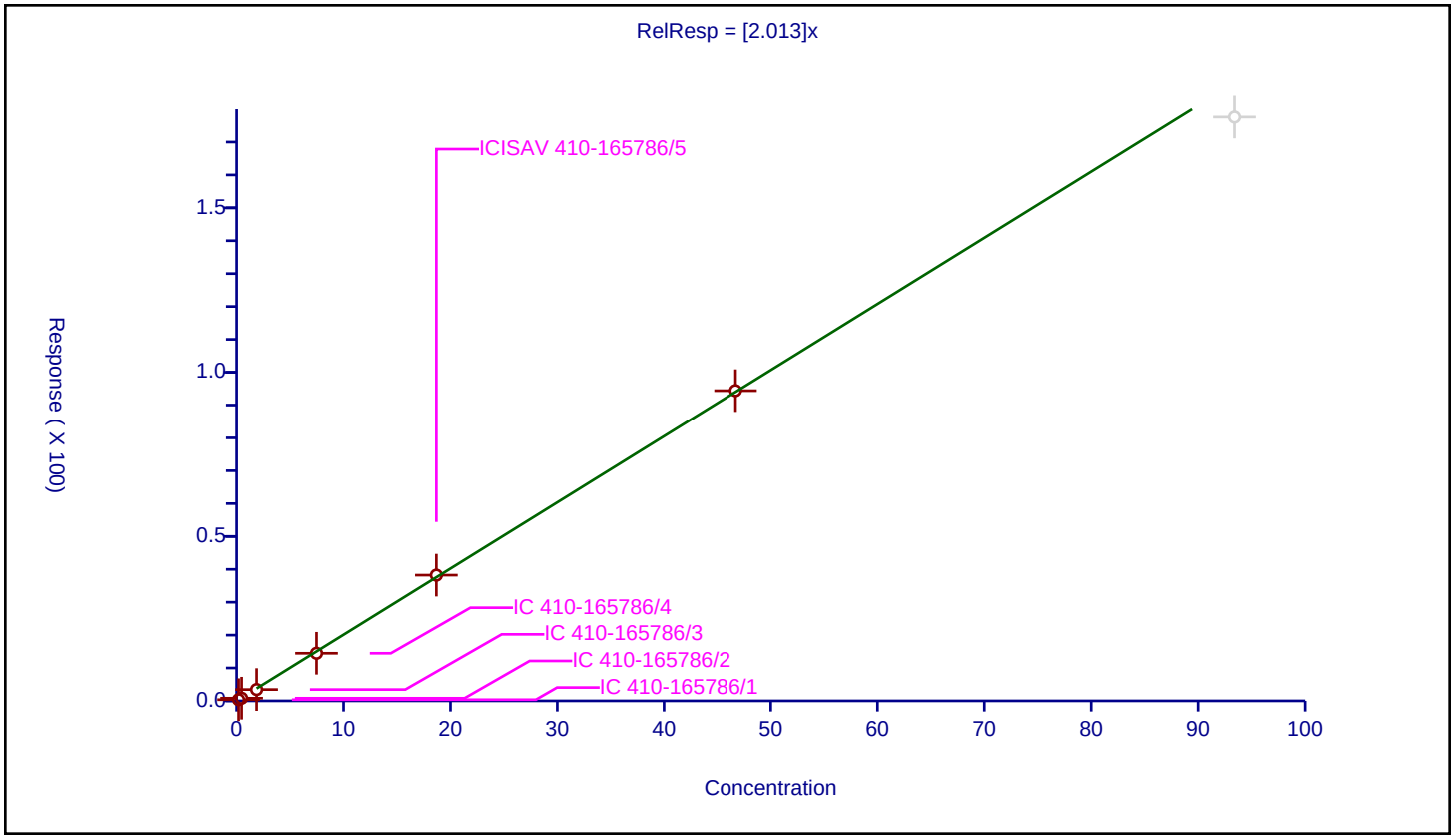
Curve Coefficients

Intercept:	0
Slope:	2.013

Error Coefficients

Standard Error:	3270000
Relative Standard Error:	7.6
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1868	0.361955	9.34	1021953.0	1.937662	Y
2	IC 410-165786/2	0.467	0.812024	9.34	983845.0	1.73881	Y
3	IC 410-165786/3	1.868	3.432711	9.34	1012802.0	1.83764	Y
4	IC 410-165786/4	7.472	14.475056	9.34	916445.0	1.93724	Y
5	ICISAV 410-165786/5	18.68	38.234056	9.34	771452.0	2.046791	Y
6	IC 410-165786/6	46.7	94.385859	9.34	635239.0	2.02111	Y
7	IC 410-165786/7	93.4	177.622716	9.34	507882.0	1.901742	N



Calibration / Perfluorohexanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

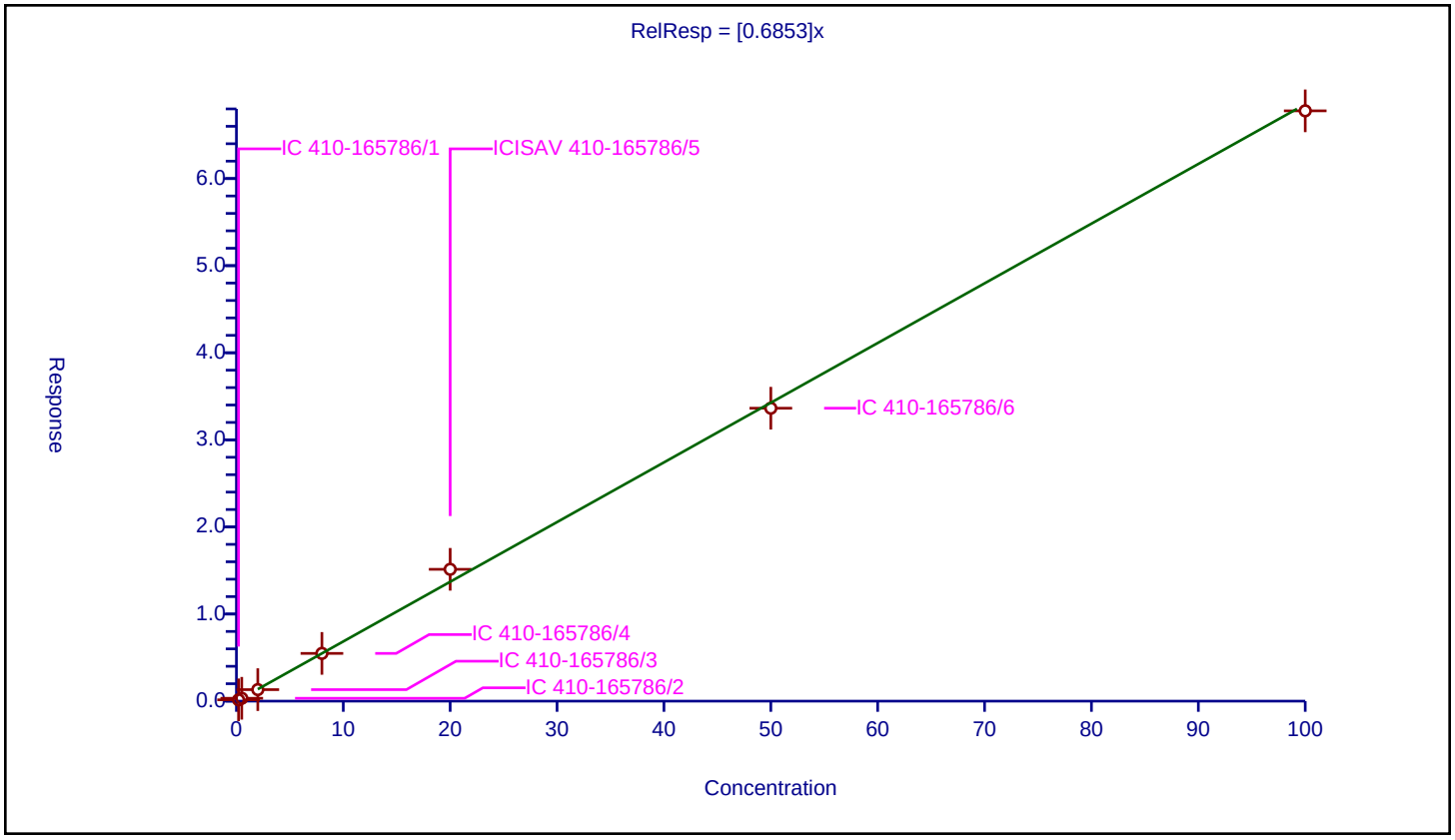
Curve Coefficients

Intercept:	0
Slope:	0.6853

Error Coefficients

Standard Error:	19900000
Relative Standard Error:	6.4
Correlation Coefficient:	0.983
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.151045	10.0	8986053.0	0.755226	Y
2	IC 410-165786/2	0.5	0.328728	10.0	9228012.0	0.657457	Y
3	IC 410-165786/3	2.0	1.322187	10.0	9203278.0	0.661093	Y
4	IC 410-165786/4	8.0	5.481779	10.0	8775458.0	0.685222	Y
5	ICISAV 410-165786/5	20.0	15.13604	10.0	7991396.0	0.756802	Y
6	IC 410-165786/6	50.0	33.635153	10.0	7344279.0	0.672703	Y
7	IC 410-165786/7	100.0	67.776821	10.0	5905247.0	0.677768	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

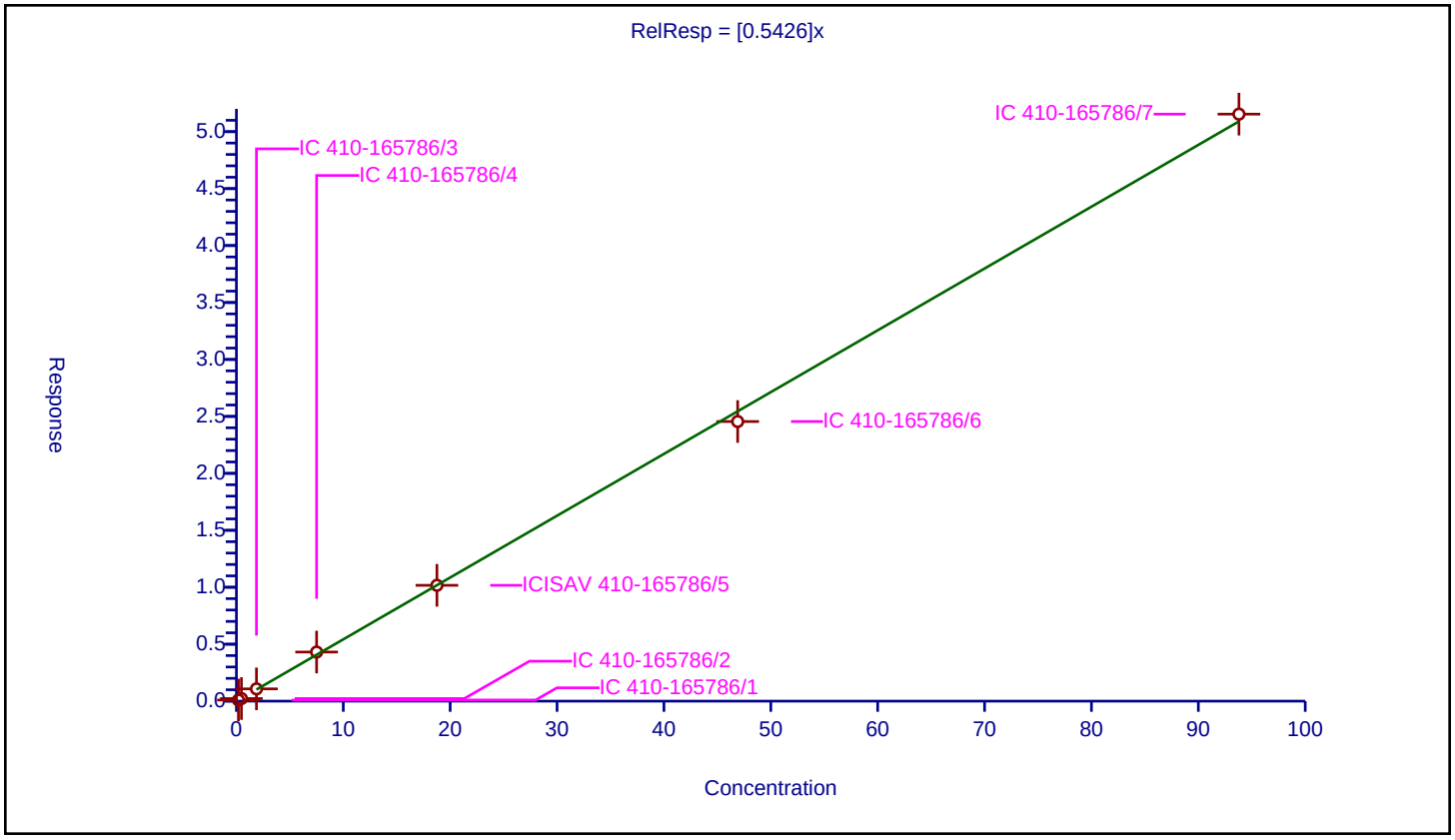
Curve Coefficients

Intercept:	0
Slope:	0.5426

Error Coefficients

Standard Error:	5270000
Relative Standard Error:	5.8
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1876	0.097365	9.36	2693748.0	0.519003	Y
2	IC 410-165786/2	0.469	0.228918	9.36	2680862.0	0.488098	Y
3	IC 410-165786/3	1.876	1.077949	9.36	2741655.0	0.5746	Y
4	IC 410-165786/4	7.504	4.310562	9.36	2635847.0	0.574435	Y
5	ICISAV 410-165786/5	18.76	10.168975	9.36	2595243.0	0.542056	Y
6	IC 410-165786/6	46.9	24.551601	9.36	2397510.0	0.523488	Y
7	IC 410-165786/7	93.8	51.539428	9.36	1967810.0	0.549461	Y



Calibration / Perfluoro(2-propoxypropanoic) acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

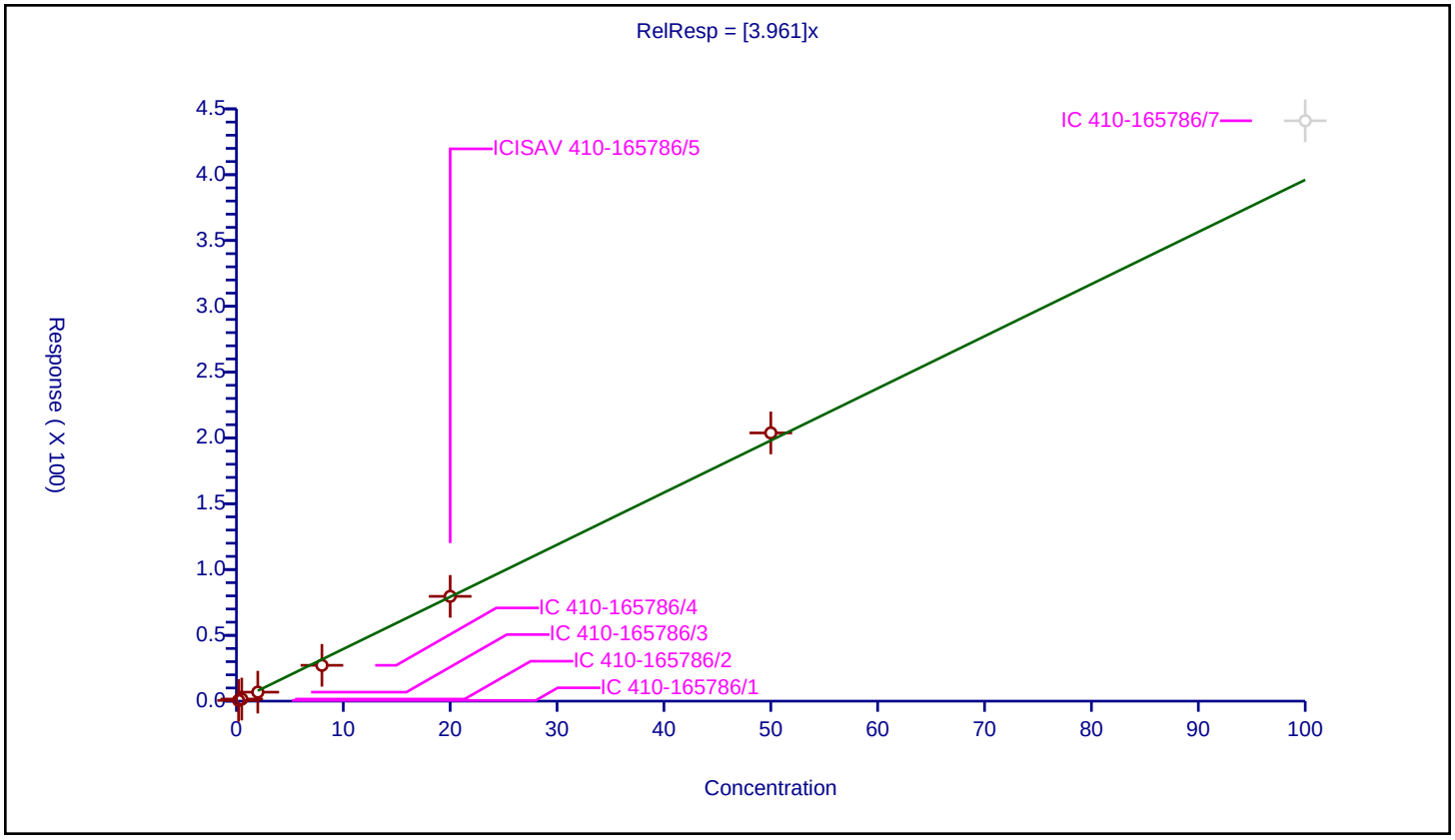
Curve Coefficients

Intercept:	0
Slope:	3.961

Error Coefficients

Standard Error:	5220000
Relative Standard Error:	17.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.565958	10.0	756205.0	2.829788	Y
2	IC 410-165786/2	0.5	1.597978	10.0	572611.0	3.195957	Y
3	IC 410-165786/3	2.0	6.829122	10.0	620787.0	3.414561	Y
4	IC 410-165786/4	8.0	27.224356	10.0	617644.0	3.403044	Y
5	ICISAV 410-165786/5	20.0	79.622459	10.0	579143.0	3.981123	Y
6	IC 410-165786/6	50.0	203.80405	10.0	519244.0	4.076081	Y
7	IC 410-165786/7	100.0	440.97783	10.0	430392.0	4.409778	N



Calibration / Perfluoroheptanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

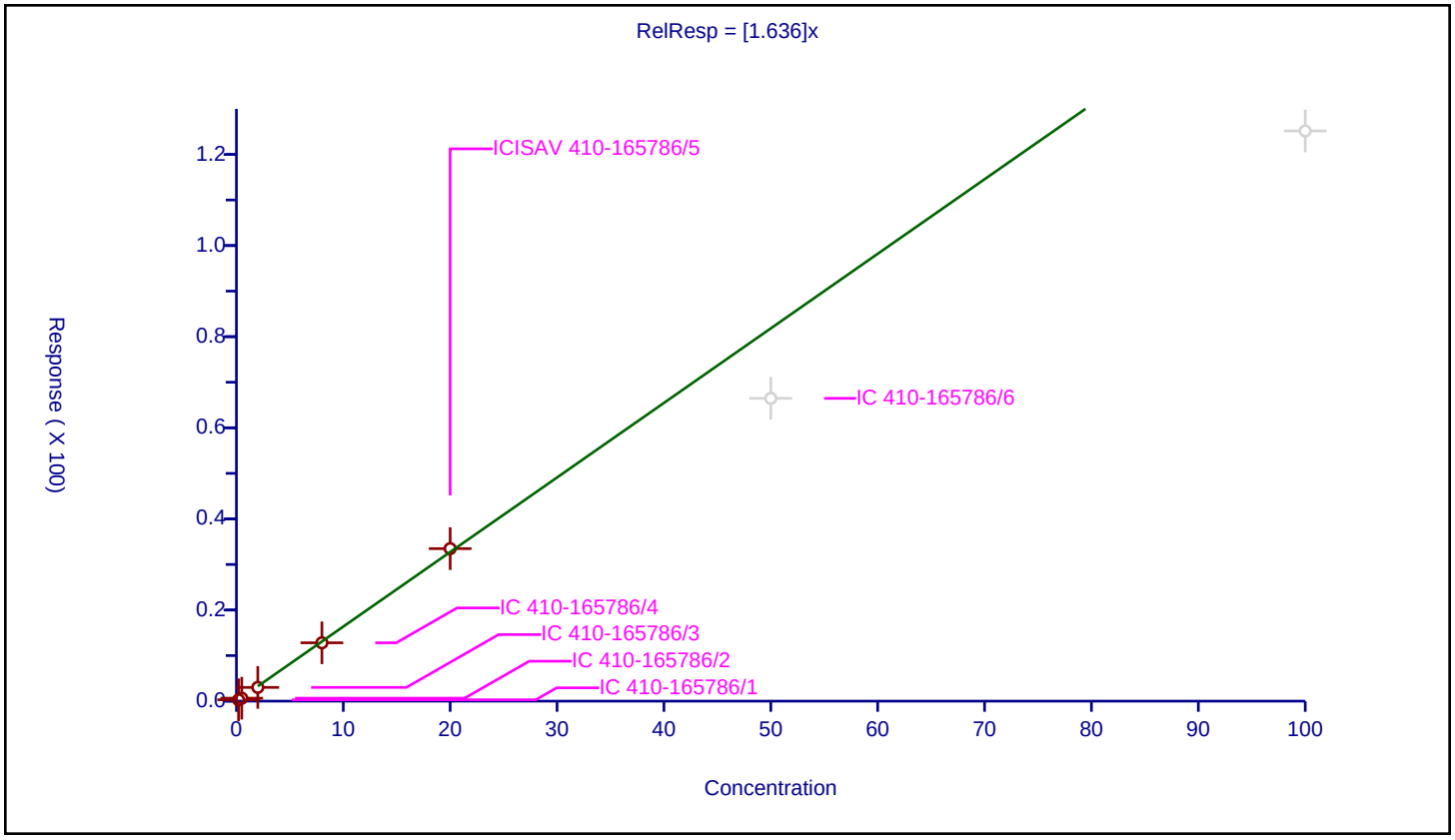
Curve Coefficients

Intercept:	0
Slope:	1.636

Error Coefficients

Standard Error:	8700000
Relative Standard Error:	12.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.294014	10.0	5862041.0	1.470068	Y
2	IC 410-165786/2	0.5	0.649368	10.0	5974226.0	1.298736	Y
3	IC 410-165786/3	2.0	3.011639	10.0	5955617.0	1.50582	Y
4	IC 410-165786/4	8.0	12.806065	10.0	5502685.0	1.600758	Y
5	ICISAV 410-165786/5	20.0	33.478829	10.0	4720474.0	1.673941	Y
6	IC 410-165786/6	50.0	66.460663	10.0	4412010.0	1.329213	N
7	IC 410-165786/7	100.0	125.166777	10.0	3406592.0	1.251668	N



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

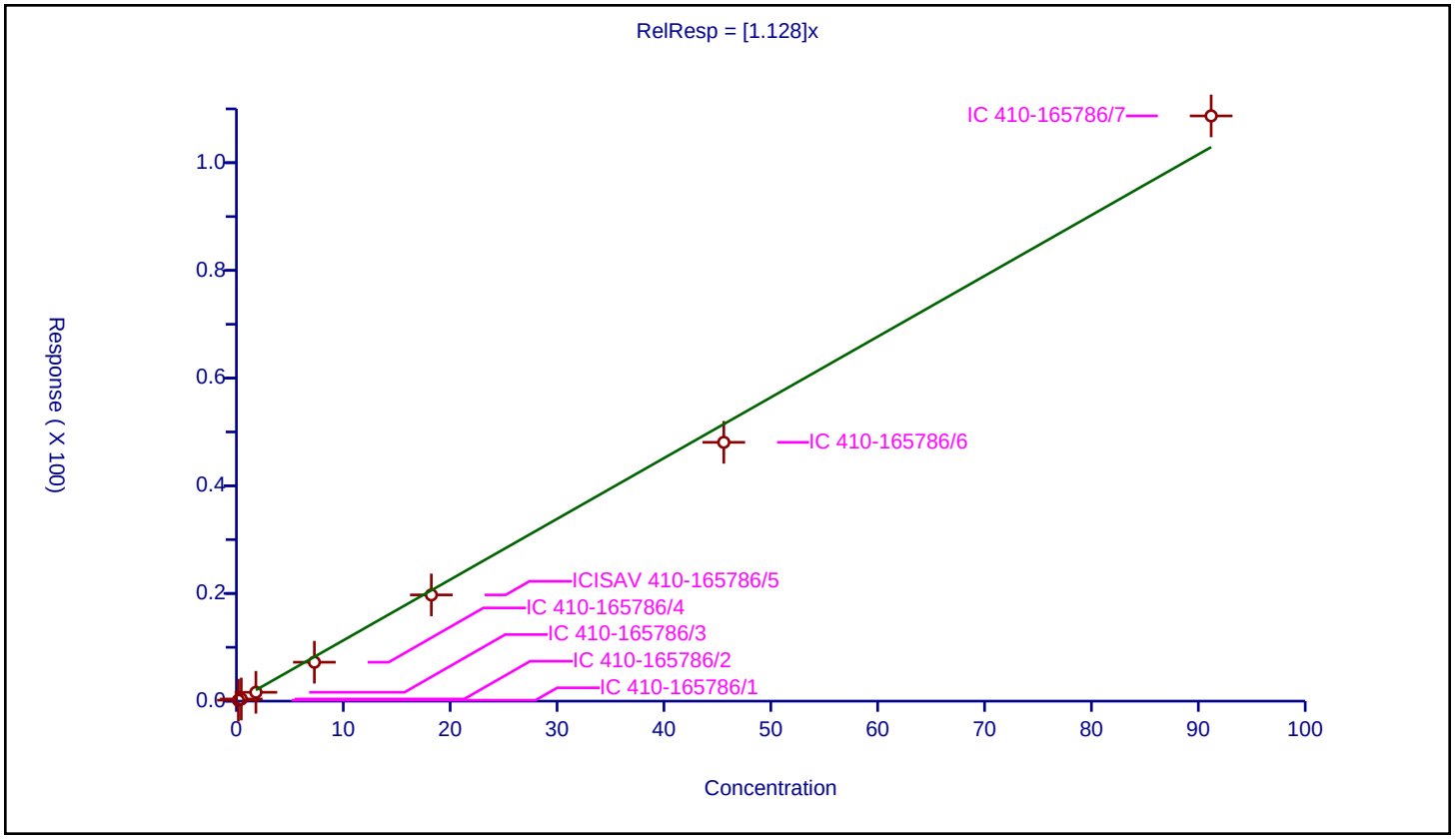
Curve Coefficients

Intercept:	0
Slope:	1.128

Error Coefficients

Standard Error:	7090000
Relative Standard Error:	15.5
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1824	0.173237	9.46	2312075.0	0.949763	Y
2	IC 410-165786/2	0.456	0.394653	9.46	2316023.0	0.865467	Y
3	IC 410-165786/3	1.824	1.647045	9.46	2374958.0	0.902985	Y
4	IC 410-165786/4	7.296	7.228191	9.46	2209654.0	0.990706	Y
5	ICISAV 410-165786/5	18.24	19.730858	9.46	1970977.0	1.081736	Y
6	IC 410-165786/6	45.6	48.069337	9.46	1660295.0	1.054152	Y
7	IC 410-165786/7	91.2	108.695618	9.46	1263255.0	1.191838	Y



Calibration / DONA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

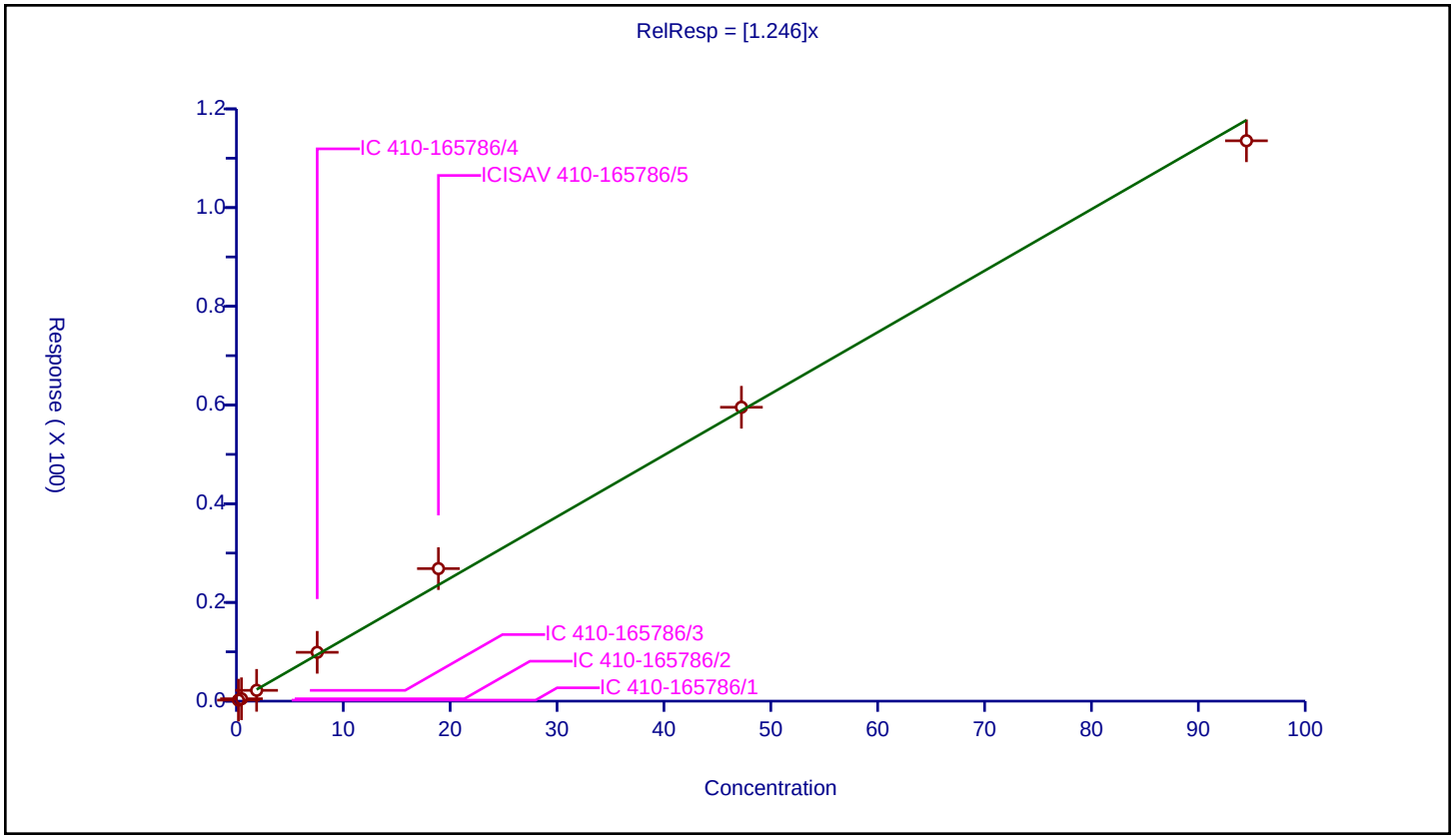
Curve Coefficients

Intercept:	0
Slope:	1.246

Error Coefficients

Standard Error:	19900000
Relative Standard Error:	11.2
Correlation Coefficient:	0.966
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.189	0.206687	10.0	5862041.0	1.093584	Y
2	IC 410-165786/2	0.4725	0.482714	10.0	5974226.0	1.021616	Y
3	IC 410-165786/3	1.89	2.190907	10.0	5955617.0	1.15921	Y
4	IC 410-165786/4	7.56	9.893174	10.0	5502685.0	1.308621	Y
5	ICISAV 410-165786/5	18.9	26.856606	10.0	4720474.0	1.420984	Y
6	IC 410-165786/6	47.25	59.548949	10.0	4412010.0	1.260295	Y
7	IC 410-165786/7	94.5	113.541058	10.0	3406592.0	1.201493	Y



Calibration / 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

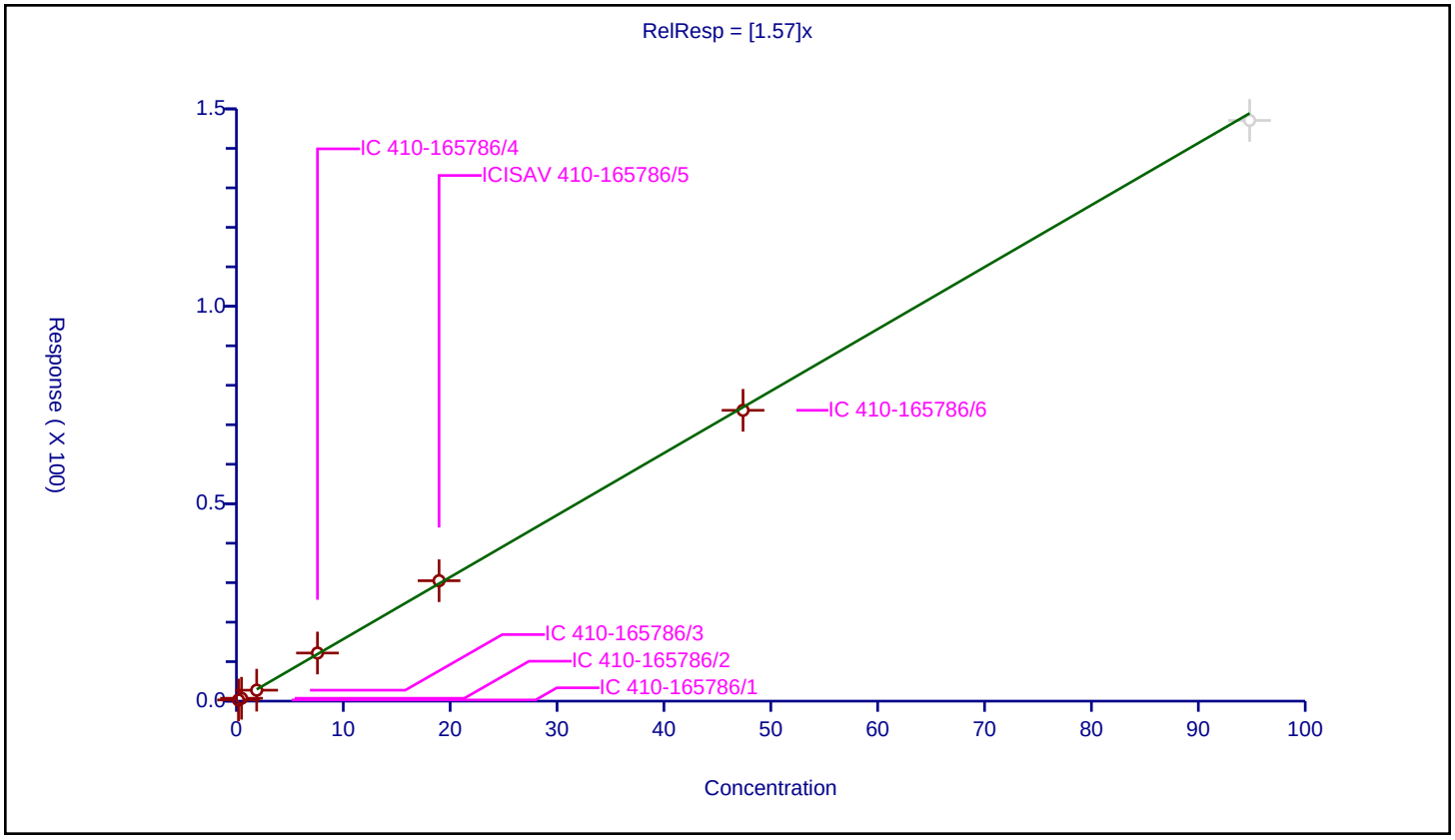
Curve Coefficients

Intercept:	0
Slope:	1.57

Error Coefficients

Standard Error:	1800000
Relative Standard Error:	3.5
Correlation Coefficient:	0.988
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1896	0.29679	9.5	744085.0	1.565348	Y
2	IC 410-165786/2	0.474	0.731041	9.5	733135.0	1.542281	Y
3	IC 410-165786/3	1.896	2.773508	9.5	756672.0	1.46282	Y
4	IC 410-165786/4	7.584	12.183271	9.5	674046.0	1.606444	Y
5	ICISAV 410-165786/5	18.96	30.502256	9.5	541521.0	1.608769	Y
6	IC 410-165786/6	47.4	73.658367	9.5	453337.0	1.553974	Y
7	IC 410-165786/7	94.8	147.079978	9.5	346175.0	1.551477	N



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

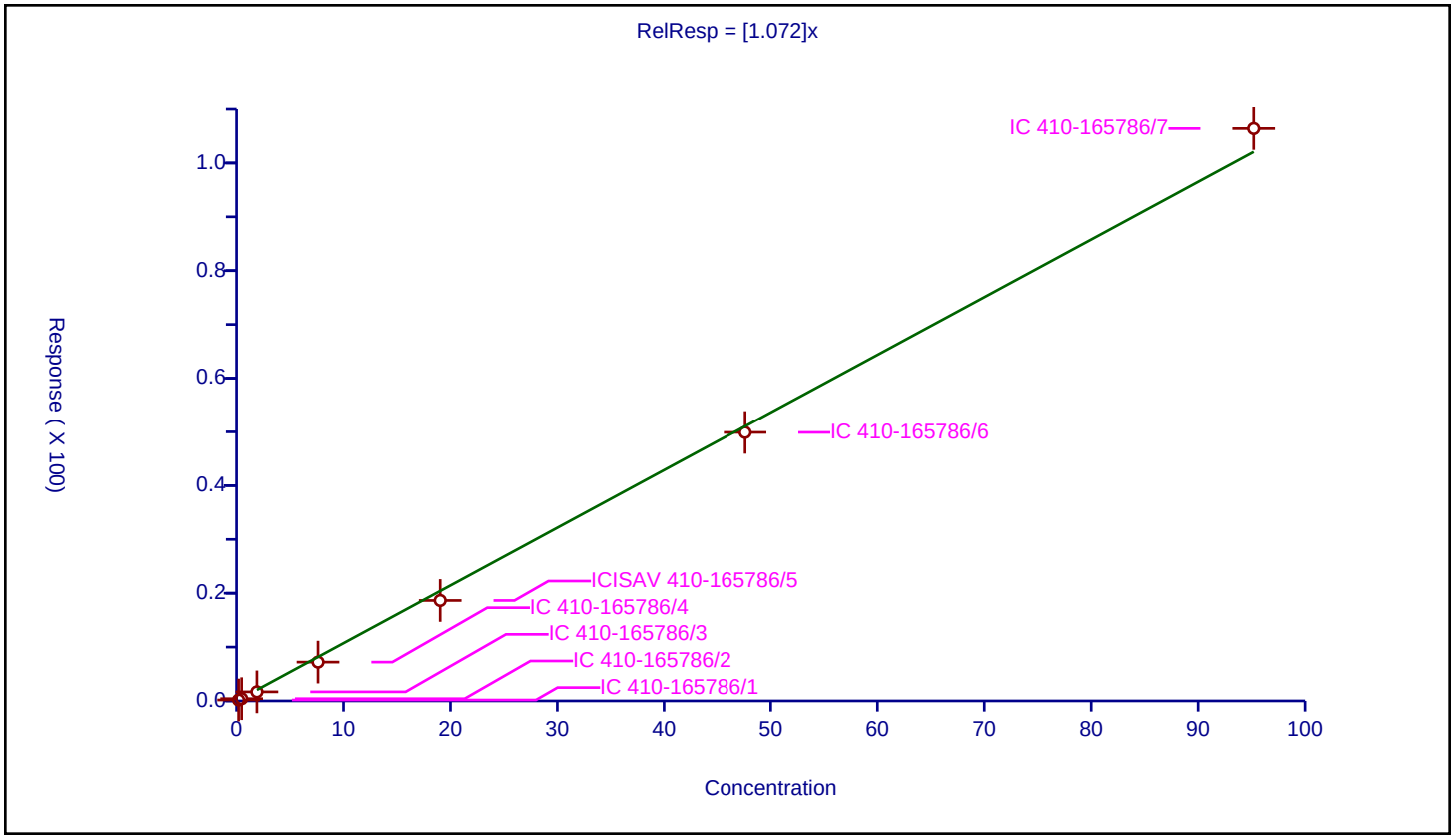
Curve Coefficients

Intercept:	0
Slope:	1.072

Error Coefficients

Standard Error:	7030000
Relative Standard Error:	13.2
Correlation Coefficient:	0.986
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1904	0.175557	9.46	2312075.0	0.922041	Y
2	IC 410-165786/2	0.476	0.420124	9.46	2316023.0	0.882614	Y
3	IC 410-165786/3	1.904	1.68618	9.46	2374958.0	0.885599	Y
4	IC 410-165786/4	7.616	7.210021	9.46	2209654.0	0.946694	Y
5	ICISAV 410-165786/5	19.04	18.651829	9.46	1970977.0	0.979613	Y
6	IC 410-165786/6	47.6	49.902439	9.46	1660295.0	1.048371	Y
7	IC 410-165786/7	95.2	106.413859	9.46	1263255.0	1.117793	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

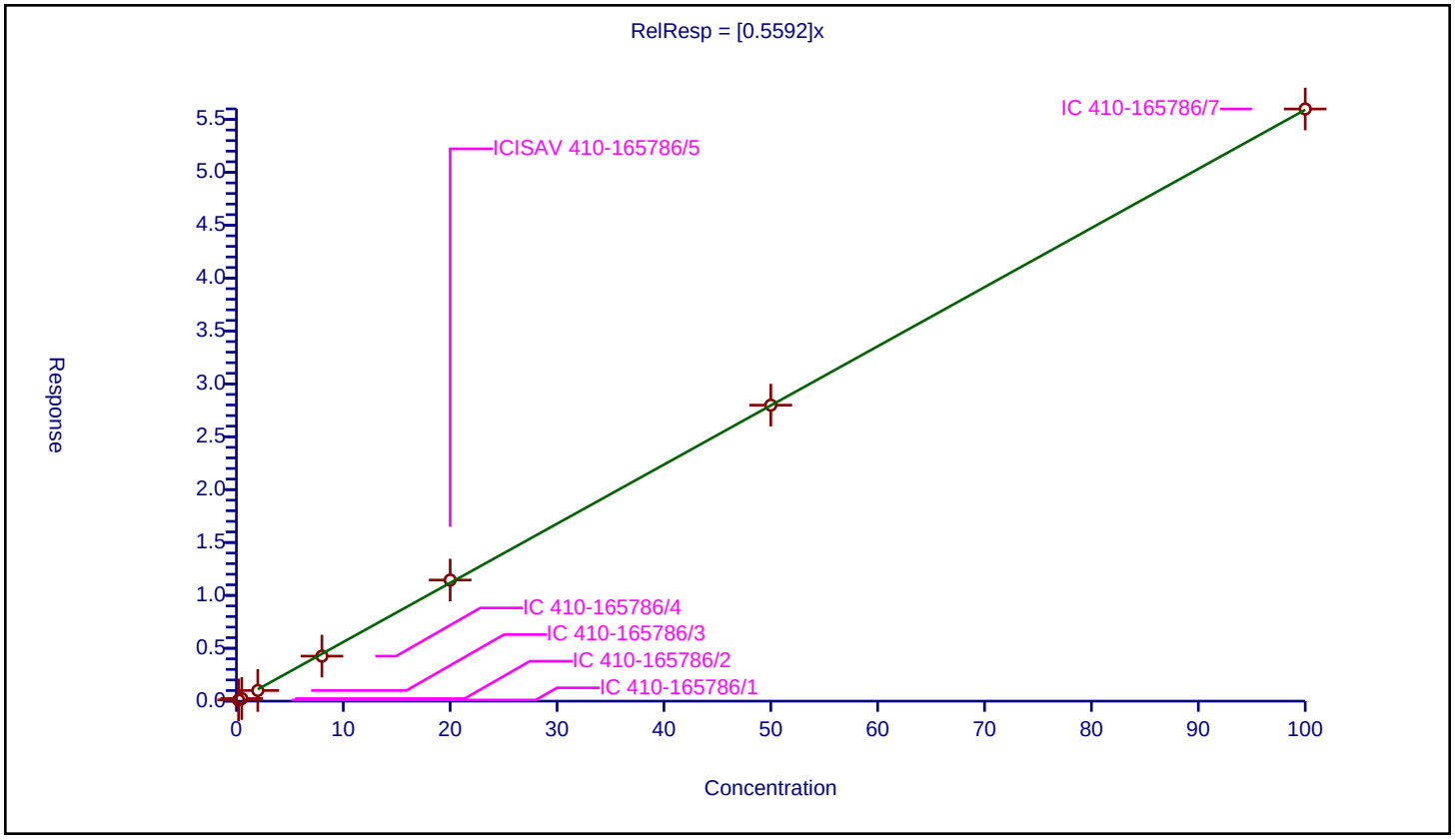
Curve Coefficients

Intercept:	0
Slope:	0.5592

Error Coefficients

Standard Error:	15900000
Relative Standard Error:	7.1
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.108995	10.0	9339772.0	0.544976	Y
2	IC 410-165786/2	0.5	0.243313	10.0	9313544.0	0.486627	Y
3	IC 410-165786/3	2.0	1.006268	10.0	9059708.0	0.503134	Y
4	IC 410-165786/4	8.0	4.256817	10.0	8948269.0	0.532102	Y
5	ICISAV 410-165786/5	20.0	11.450982	10.0	7767946.0	0.572549	Y
6	IC 410-165786/6	50.0	27.988287	10.0	7004408.0	0.559766	Y
7	IC 410-165786/7	100.0	55.99102	10.0	5733536.0	0.55991	Y



Calibration / Perfluorooctanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

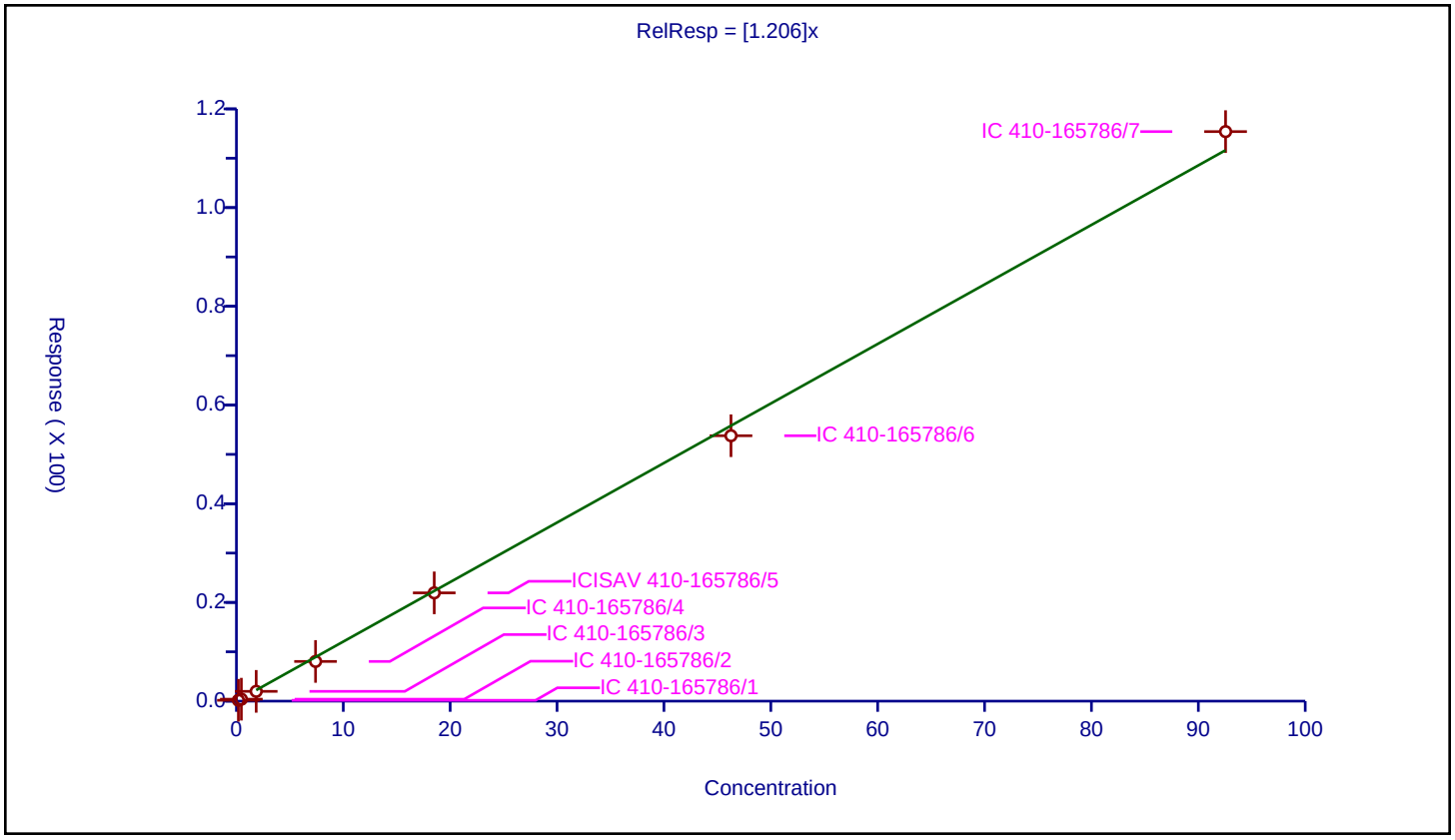
Curve Coefficients

Intercept:	0
Slope:	1.206

Error Coefficients

Standard Error:	8750000
Relative Standard Error:	15.8
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1851	0.177358	9.565	2080259.0	0.958174	Y
2	IC 410-165786/2	0.46275	0.397296	9.565	2282068.0	0.858555	Y
3	IC 410-165786/3	1.851	1.982011	9.565	2091837.0	1.070779	Y
4	IC 410-165786/4	7.404	8.045406	9.565	2113712.0	1.08663	Y
5	ICISAV 410-165786/5	18.51	21.938631	9.565	2039128.0	1.185231	Y
6	IC 410-165786/6	46.275	53.776795	9.565	1877453.0	1.162113	Y
7	IC 410-165786/7	92.55	115.394066	9.565	1488398.0	1.246829	Y



Calibration / Perfluorononanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

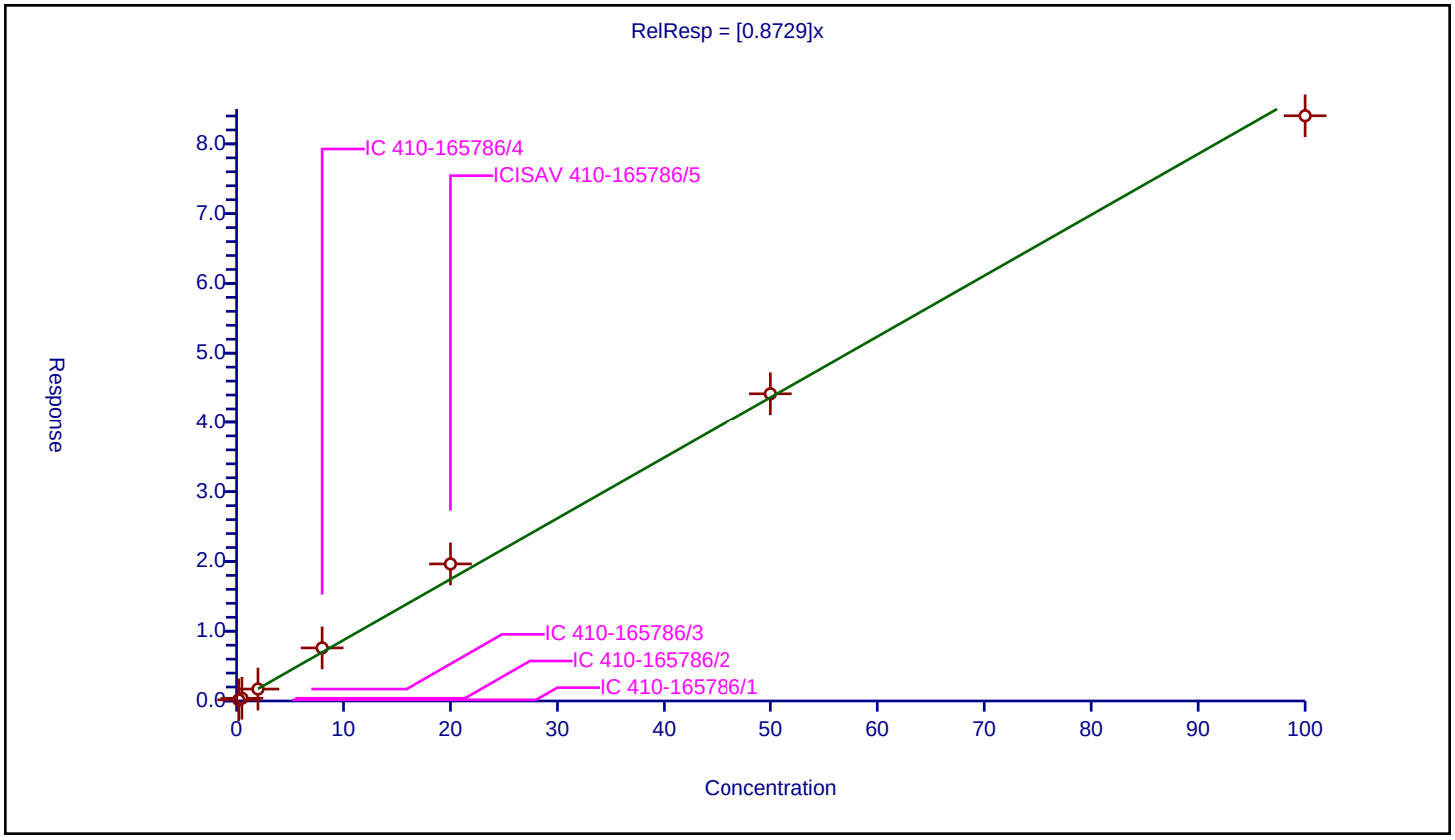
Curve Coefficients

Intercept:	0
Slope:	0.8729

Error Coefficients

Standard Error:	13400000
Relative Standard Error:	8.0
Correlation Coefficient:	0.984
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.166323	10.0	4425192.0	0.831614	Y
2	IC 410-165786/2	0.5	0.391217	10.0	4592540.0	0.782434	Y
3	IC 410-165786/3	2.0	1.709139	10.0	4522142.0	0.85457	Y
4	IC 410-165786/4	8.0	7.607992	10.0	4350178.0	0.950999	Y
5	ICISAV 410-165786/5	20.0	19.644313	10.0	4044880.0	0.982216	Y
6	IC 410-165786/6	50.0	44.177929	10.0	3752311.0	0.883559	Y
7	IC 410-165786/7	100.0	84.030972	10.0	3210861.0	0.84031	Y



Calibration / 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

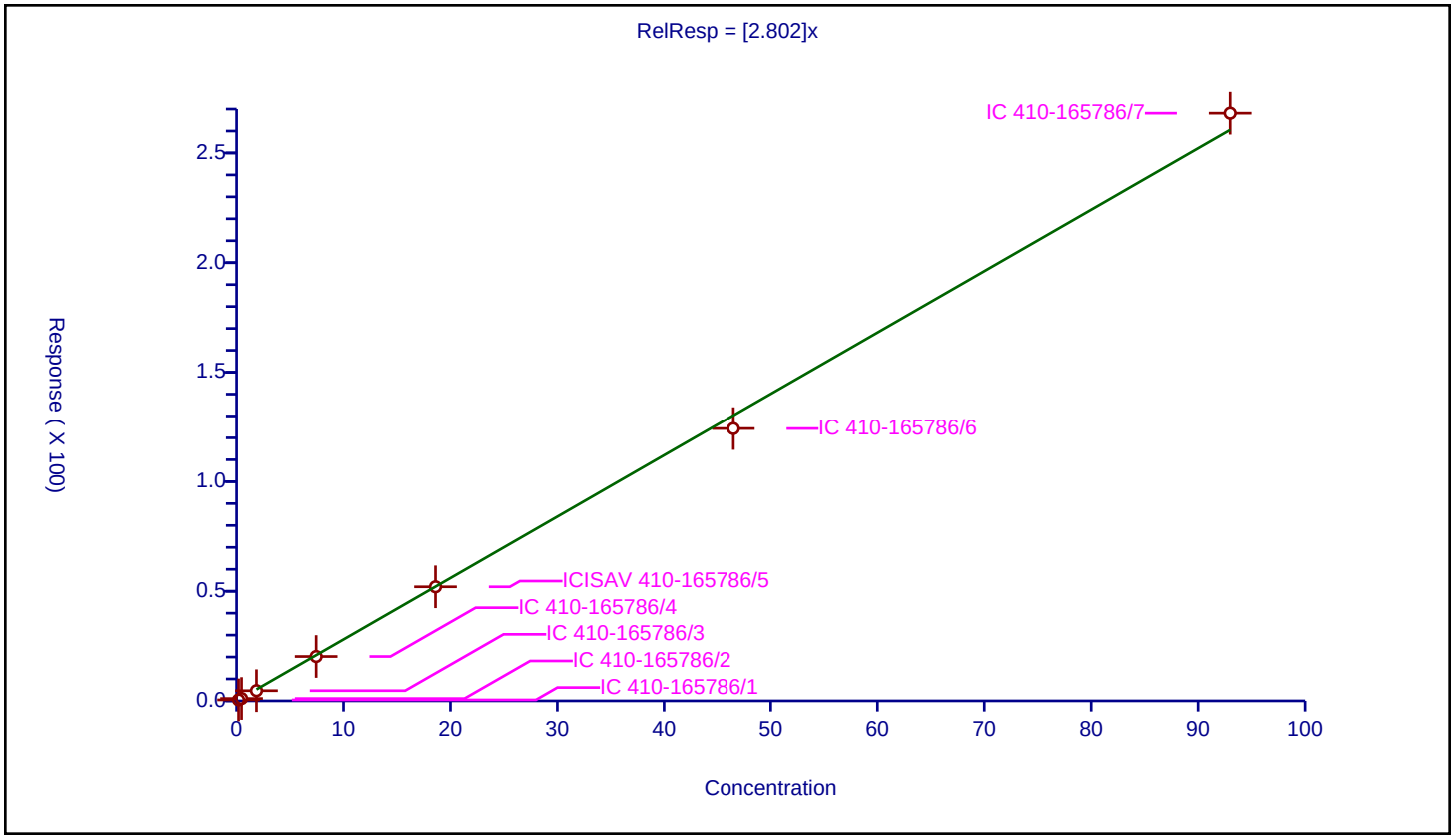
Curve Coefficients

Intercept:	0
Slope:	2.802

Error Coefficients

Standard Error:	20300000
Relative Standard Error:	9.9
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.186	0.46007	9.565	2080259.0	2.473494	Y
2	IC 410-165786/2	0.465	1.078537	9.565	2282068.0	2.319434	Y
3	IC 410-165786/3	1.86	4.641609	9.565	2091837.0	2.495489	Y
4	IC 410-165786/4	7.44	20.234315	9.565	2113712.0	2.719666	Y
5	ICISAV 410-165786/5	18.6	52.017763	9.565	2039128.0	2.796654	Y
6	IC 410-165786/6	46.5	124.256531	9.565	1877453.0	2.672183	Y
7	IC 410-165786/7	93.0	268.118518	9.565	1488398.0	2.882995	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

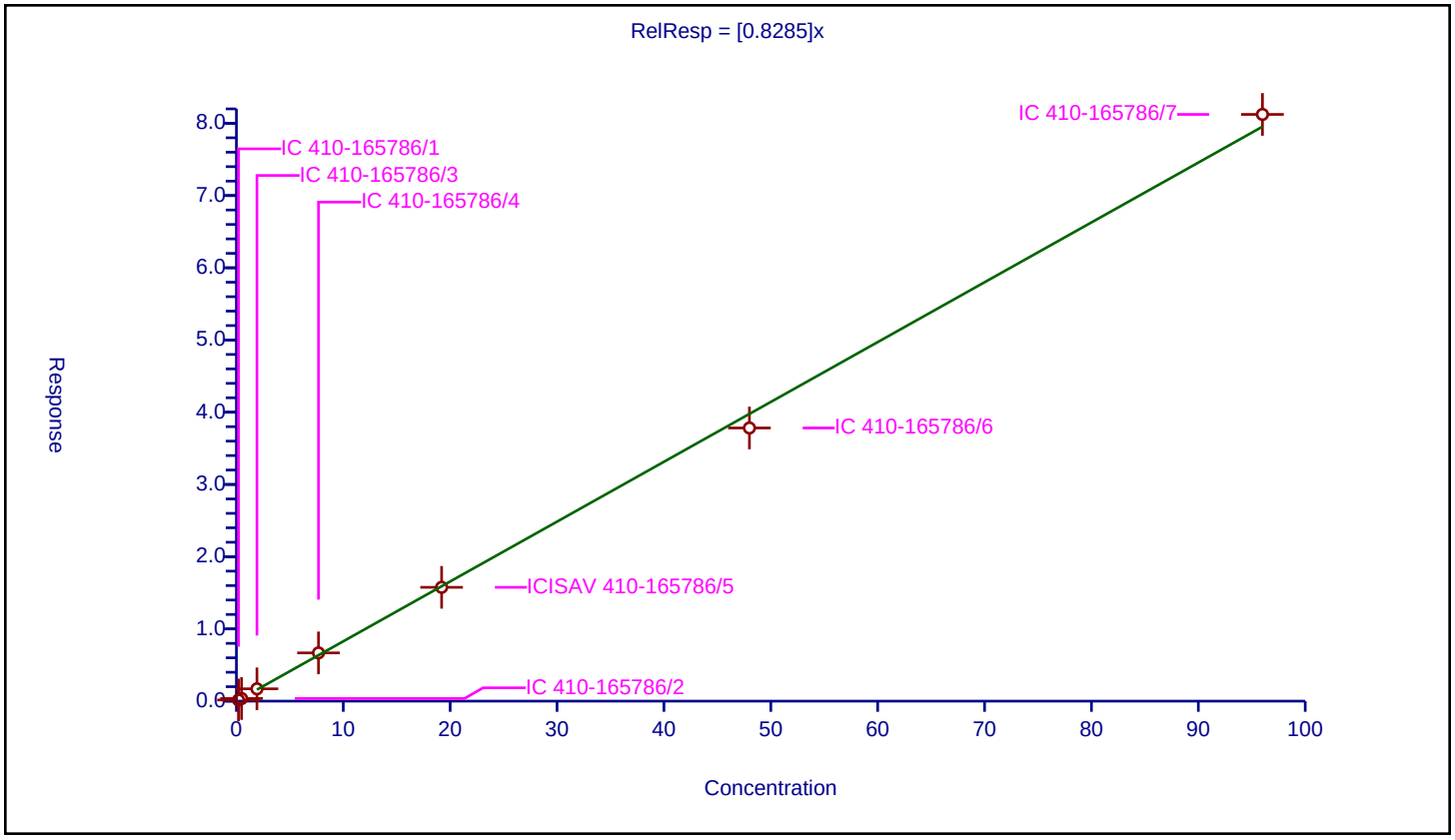
Curve Coefficients

Intercept:	0
Slope:	0.8285

Error Coefficients

Standard Error:	6170000
Relative Standard Error:	5.4
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.192	0.159311	9.565	2080259.0	0.829745	Y
2	IC 410-165786/2	0.48	0.363711	9.565	2282068.0	0.757731	Y
3	IC 410-165786/3	1.92	1.704033	9.565	2091837.0	0.887517	Y
4	IC 410-165786/4	7.68	6.68047	9.565	2113712.0	0.869853	Y
5	ICISAV 410-165786/5	19.2	15.760311	9.565	2039128.0	0.82085	Y
6	IC 410-165786/6	48.0	37.820947	9.565	1877453.0	0.787936	Y
7	IC 410-165786/7	96.0	81.232838	9.565	1488398.0	0.846175	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

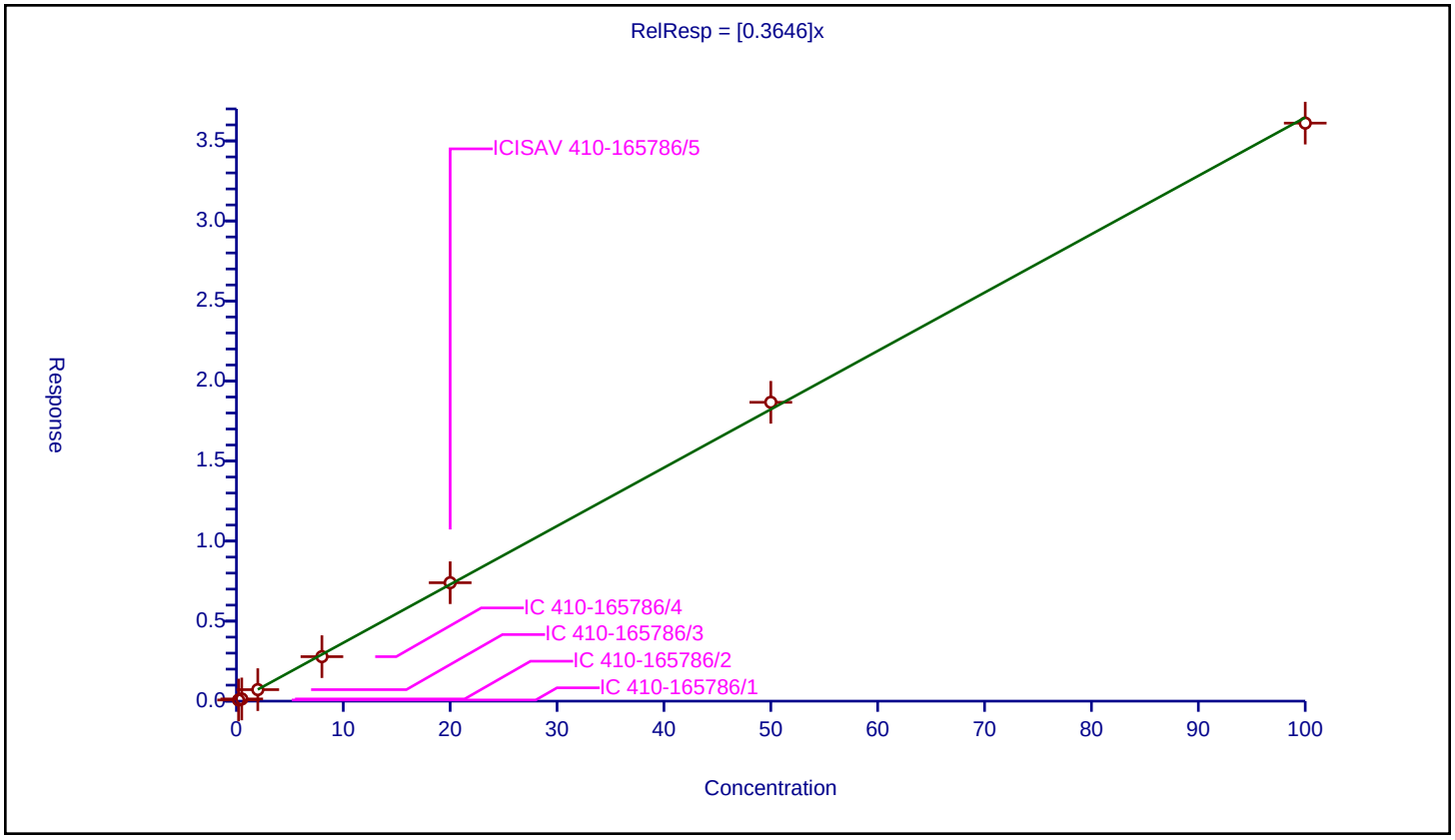
Curve Coefficients

Intercept:	0
Slope:	0.3646

Error Coefficients

Standard Error:	8940000
Relative Standard Error:	10.2
Correlation Coefficient:	0.985
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.071913	10.0	7924750.0	0.359563	Y
2	IC 410-165786/2	0.5	0.137937	10.0	8736897.0	0.275874	Y
3	IC 410-165786/3	2.0	0.719211	10.0	7312440.0	0.359606	Y
4	IC 410-165786/4	8.0	2.780018	10.0	8158180.0	0.347502	Y
5	ICISAV 410-165786/5	20.0	7.398057	10.0	7121475.0	0.369903	Y
6	IC 410-165786/6	50.0	18.670465	10.0	5882832.0	0.373409	Y
7	IC 410-165786/7	100.0	36.111144	10.0	4995562.0	0.361111	Y



Calibration / 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

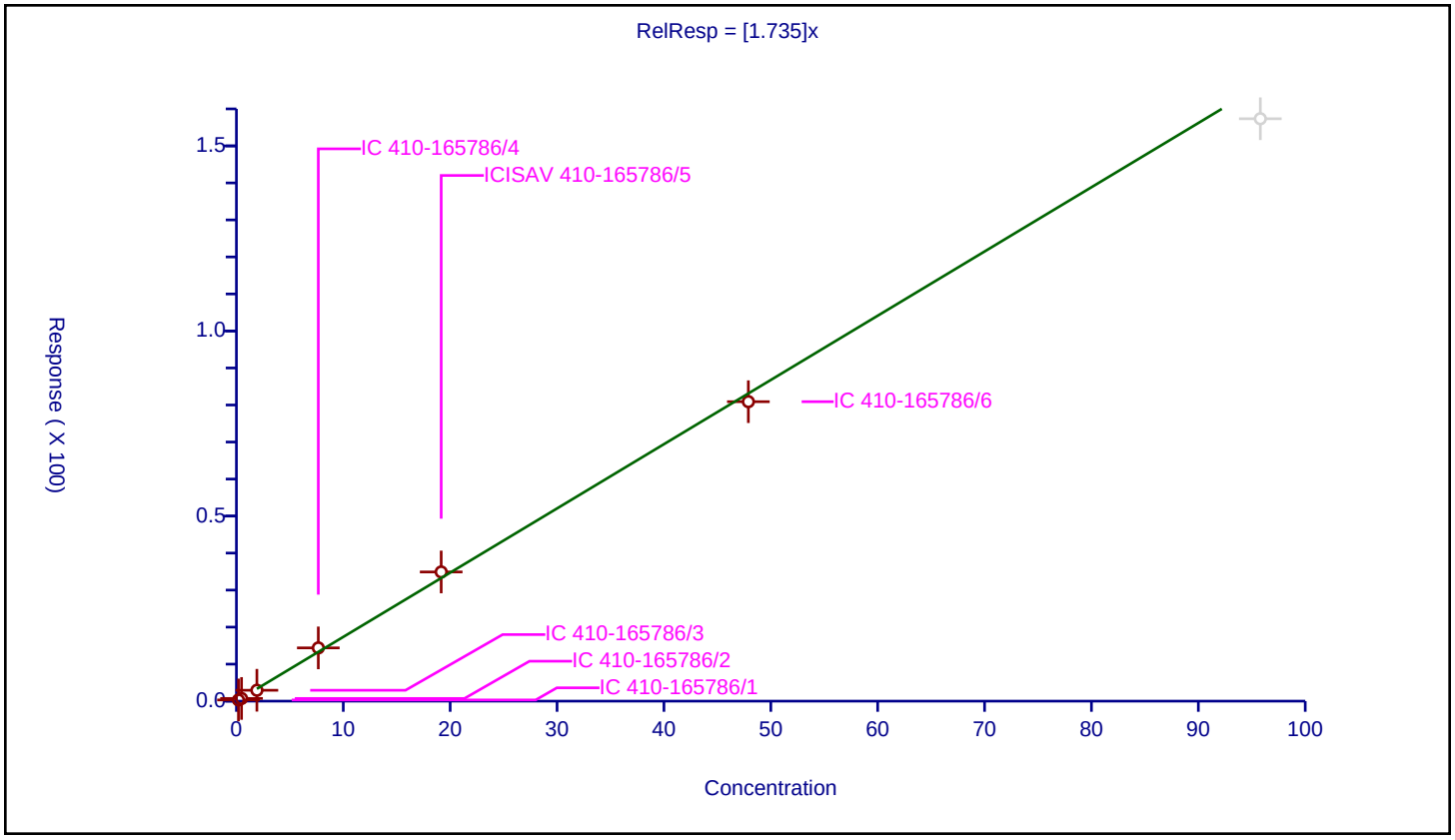
Curve Coefficients

Intercept:	0
Slope:	1.735

Error Coefficients

Standard Error:	1960000
Relative Standard Error:	9.2
Correlation Coefficient:	0.979
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1916	0.318265	9.58	692617.0	1.661091	Y
2	IC 410-165786/2	0.479	0.721648	9.58	747684.0	1.506572	Y
3	IC 410-165786/3	1.916	2.937585	9.58	763984.0	1.533187	Y
4	IC 410-165786/4	7.664	14.384381	9.58	641197.0	1.876876	Y
5	ICISAV 410-165786/5	19.16	34.90212	9.58	551741.0	1.821614	Y
6	IC 410-165786/6	47.9	80.900784	9.58	446836.0	1.688952	Y
7	IC 410-165786/7	95.8	157.338104	9.58	348195.0	1.64236	N



Calibration / Perfluorooctanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

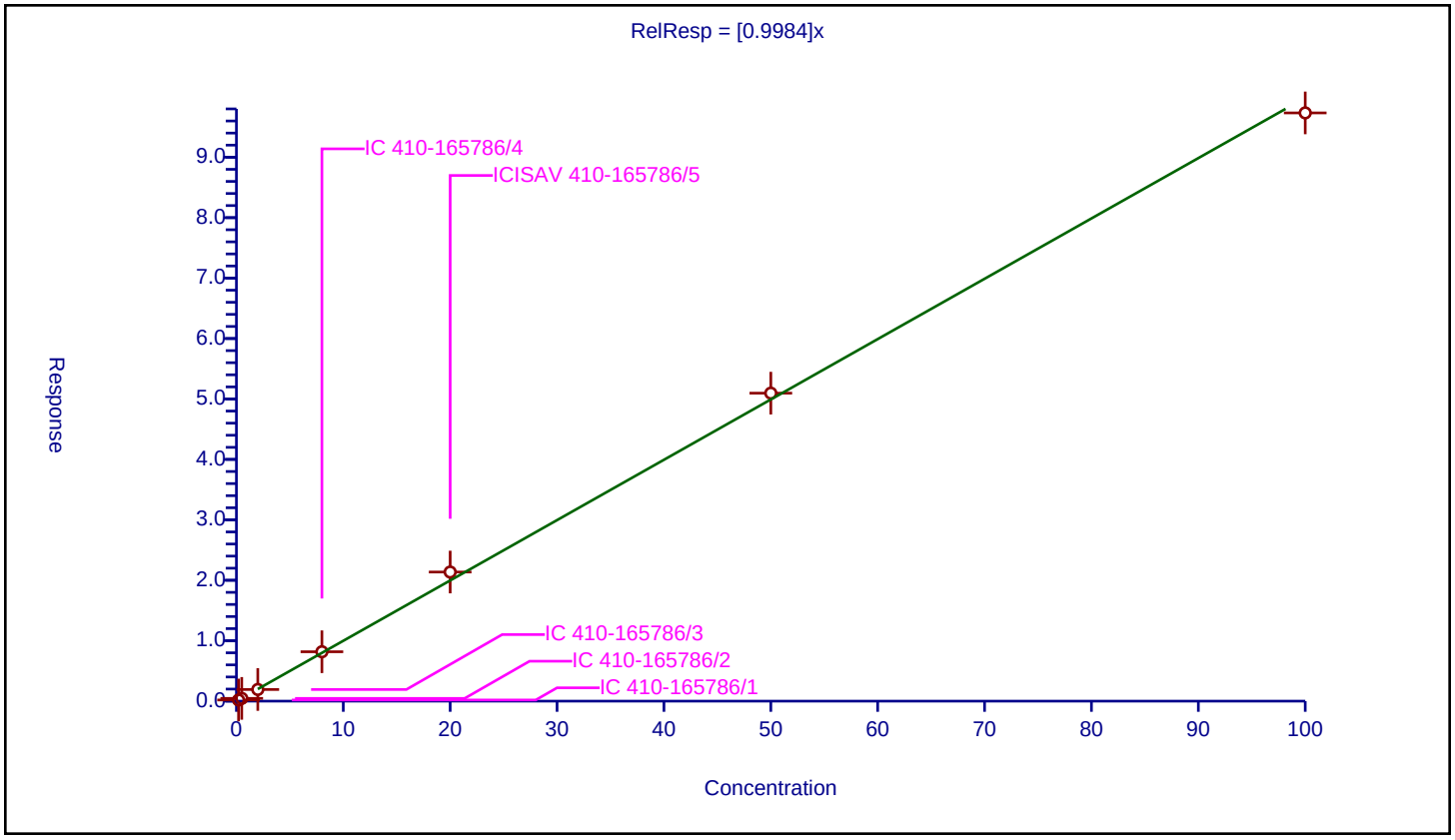
Curve Coefficients

Intercept:	0
Slope:	0.9984

Error Coefficients

Standard Error:	17700000
Relative Standard Error:	5.4
Correlation Coefficient:	0.983
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.190193	10.0	5736655.0	0.950964	Y
2	IC 410-165786/2	0.5	0.456423	10.0	5790240.0	0.912846	Y
3	IC 410-165786/3	2.0	1.929422	10.0	5780051.0	0.964711	Y
4	IC 410-165786/4	8.0	8.171459	10.0	5328784.0	1.021432	Y
5	ICISAV 410-165786/5	20.0	21.365159	10.0	4981265.0	1.068258	Y
6	IC 410-165786/6	50.0	50.960803	10.0	4319303.0	1.019216	Y
7	IC 410-165786/7	100.0	97.335763	10.0	3658668.0	0.973358	Y



Calibration / N-methylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

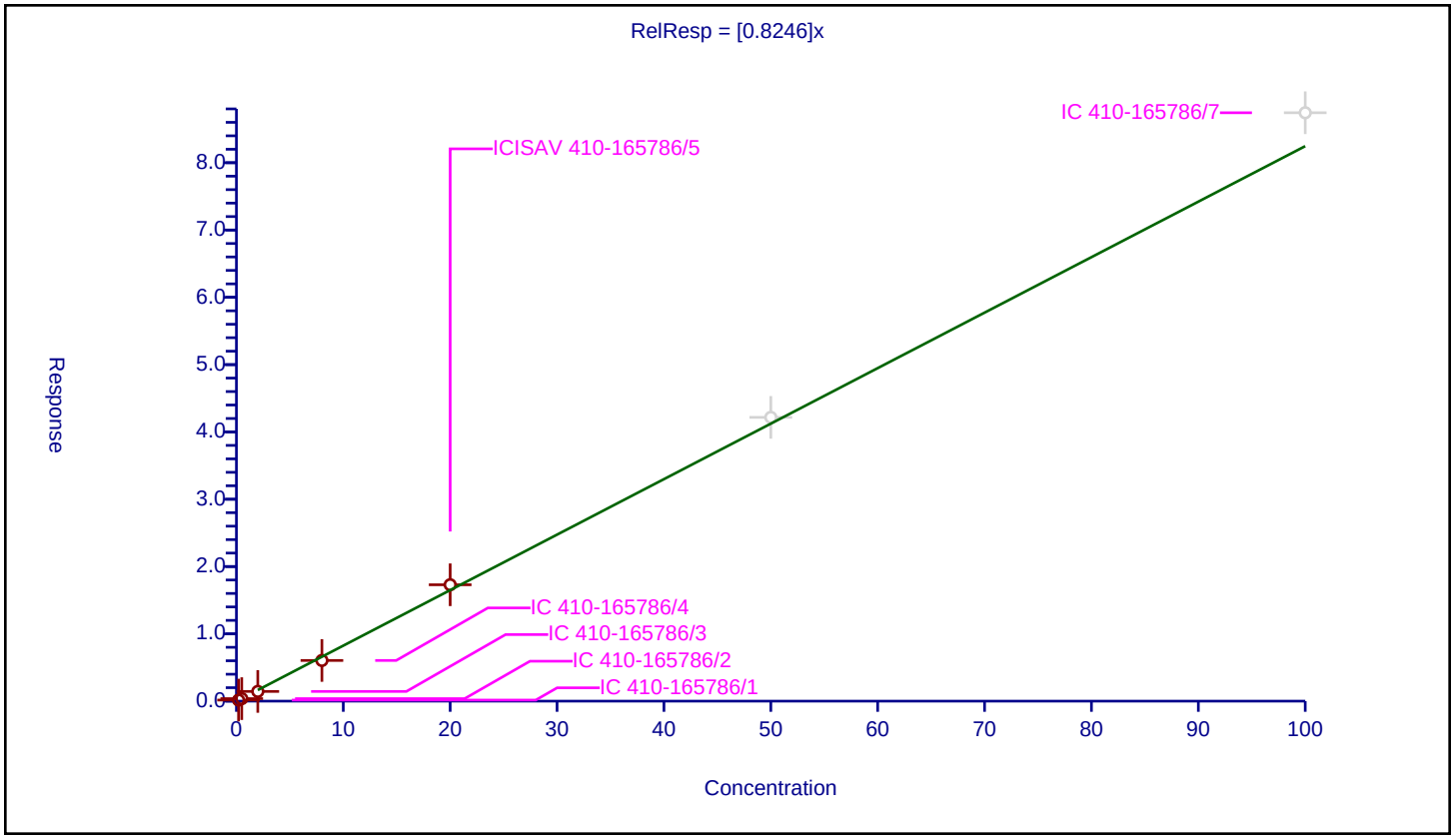
Curve Coefficients

Intercept:	0
Slope:	0.8246

Error Coefficients

Standard Error:	1860000
Relative Standard Error:	9.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.161364	10.0	2056033.0	0.806821	Y
2	IC 410-165786/2	0.5	0.374591	10.0	2122527.0	0.749182	Y
3	IC 410-165786/3	2.0	1.442352	10.0	2141142.0	0.721176	Y
4	IC 410-165786/4	8.0	6.045424	10.0	2297819.0	0.755678	Y
5	ICISAV 410-165786/5	20.0	17.292328	10.0	1990141.0	0.864616	Y
6	IC 410-165786/6	50.0	42.166645	10.0	1816449.0	0.843333	N
7	IC 410-165786/7	100.0	87.426199	10.0	1530767.0	0.874262	N



Calibration / Perfluorodecanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

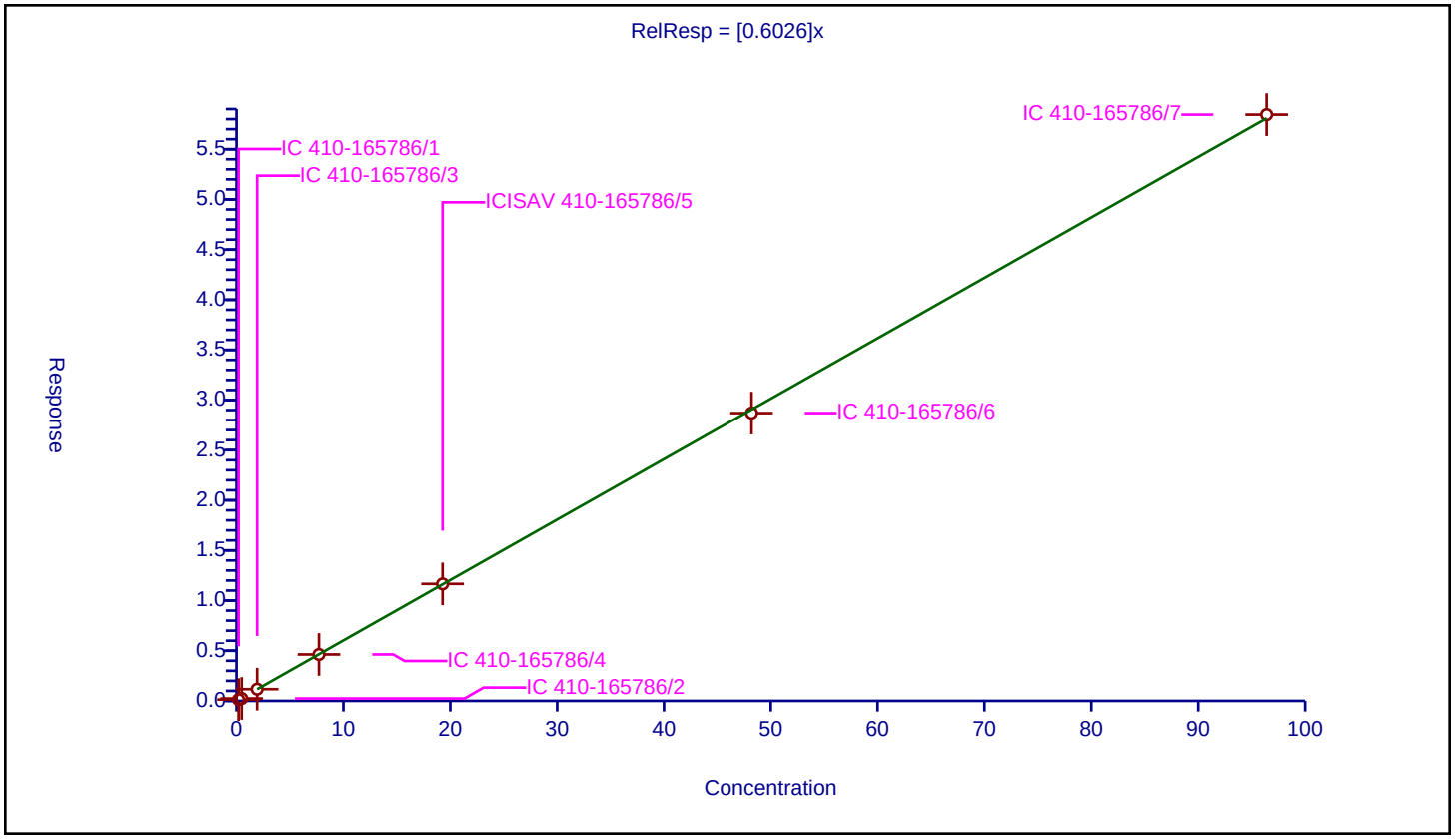
Curve Coefficients

Intercept:	0
Slope:	0.6026

Error Coefficients

Standard Error:	4500000
Relative Standard Error:	9.0
Correlation Coefficient:	0.986
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1928	0.131364	9.565	2080259.0	0.681351	Y
2	IC 410-165786/2	0.482	0.238824	9.565	2282068.0	0.495486	Y
3	IC 410-165786/3	1.928	1.167661	9.565	2091837.0	0.605633	Y
4	IC 410-165786/4	7.712	4.627987	9.565	2113712.0	0.600102	Y
5	ICISAV 410-165786/5	19.28	11.662362	9.565	2039128.0	0.604894	Y
6	IC 410-165786/6	48.2	28.695367	9.565	1877453.0	0.59534	Y
7	IC 410-165786/7	96.4	58.446007	9.565	1488398.0	0.606286	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

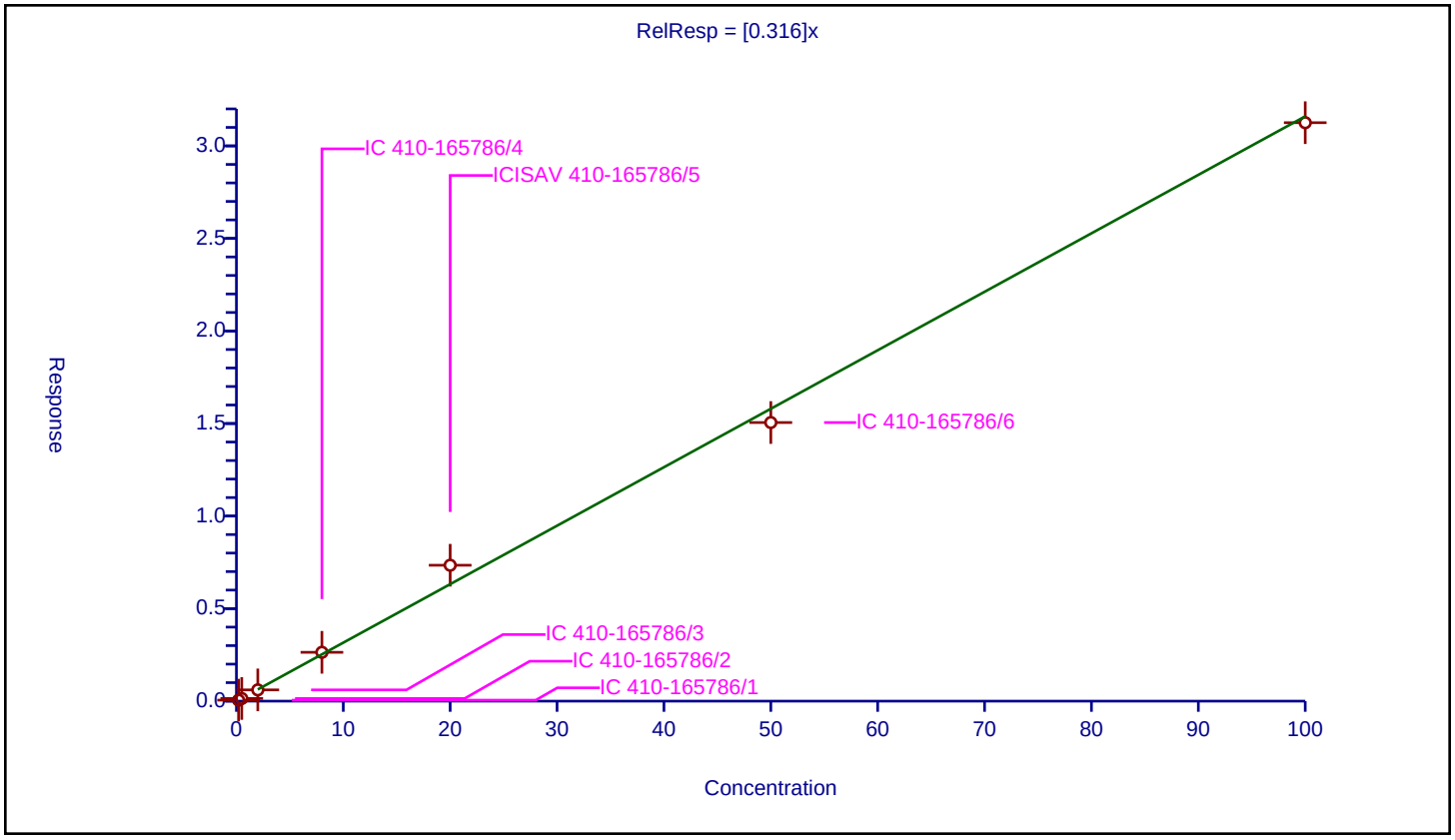
Curve Coefficients

Intercept:	0
Slope:	0.316

Error Coefficients

Standard Error:	7580000
Relative Standard Error:	10.1
Correlation Coefficient:	0.972
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.05436	10.0	8038256.0	0.2718	Y
2	IC 410-165786/2	0.5	0.142605	10.0	8205692.0	0.285209	Y
3	IC 410-165786/3	2.0	0.608186	10.0	7973003.0	0.304093	Y
4	IC 410-165786/4	8.0	2.638208	10.0	7655336.0	0.329776	Y
5	ICISAV 410-165786/5	20.0	7.34222	10.0	7057688.0	0.367111	Y
6	IC 410-165786/6	50.0	15.05363	10.0	6294036.0	0.301073	Y
7	IC 410-165786/7	100.0	31.253829	10.0	4786164.0	0.312538	Y



Calibration / N-ethylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

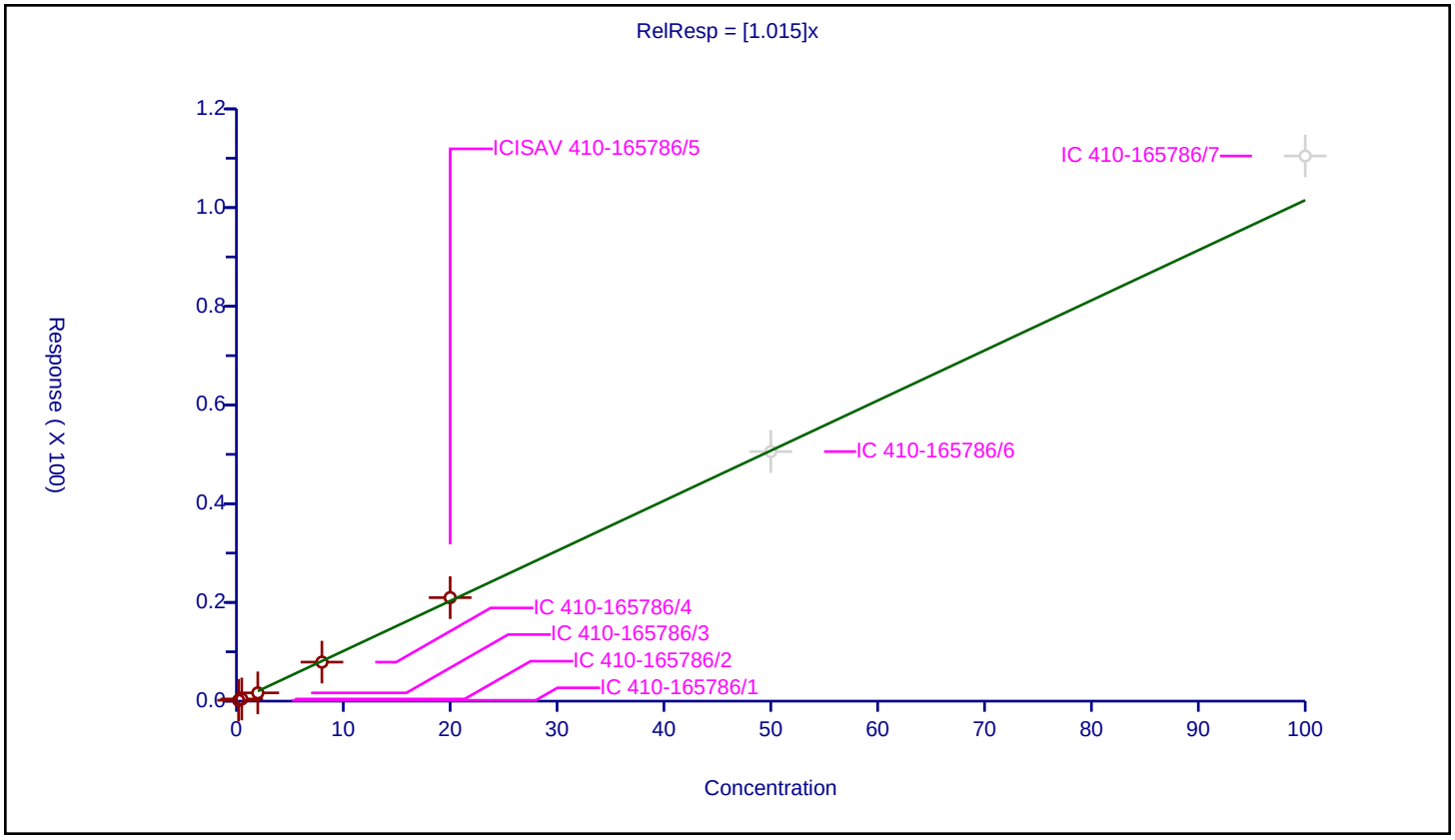
Curve Coefficients

Intercept:	0
Slope:	1.015

Error Coefficients

Standard Error:	1220000
Relative Standard Error:	13.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.177178	10.0	1328438.0	0.88589	Y
2	IC 410-165786/2	0.5	0.432138	10.0	1251752.0	0.864277	Y
3	IC 410-165786/3	2.0	1.674025	10.0	1356425.0	0.837013	Y
4	IC 410-165786/4	8.0	7.907876	10.0	1215191.0	0.988485	Y
5	ICISAV 410-165786/5	20.0	20.971596	10.0	1067666.0	1.04858	Y
6	IC 410-165786/6	50.0	50.563096	10.0	1004819.0	1.011262	N
7	IC 410-165786/7	100.0	110.45717	10.0	780256.0	1.104572	N



Calibration / 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

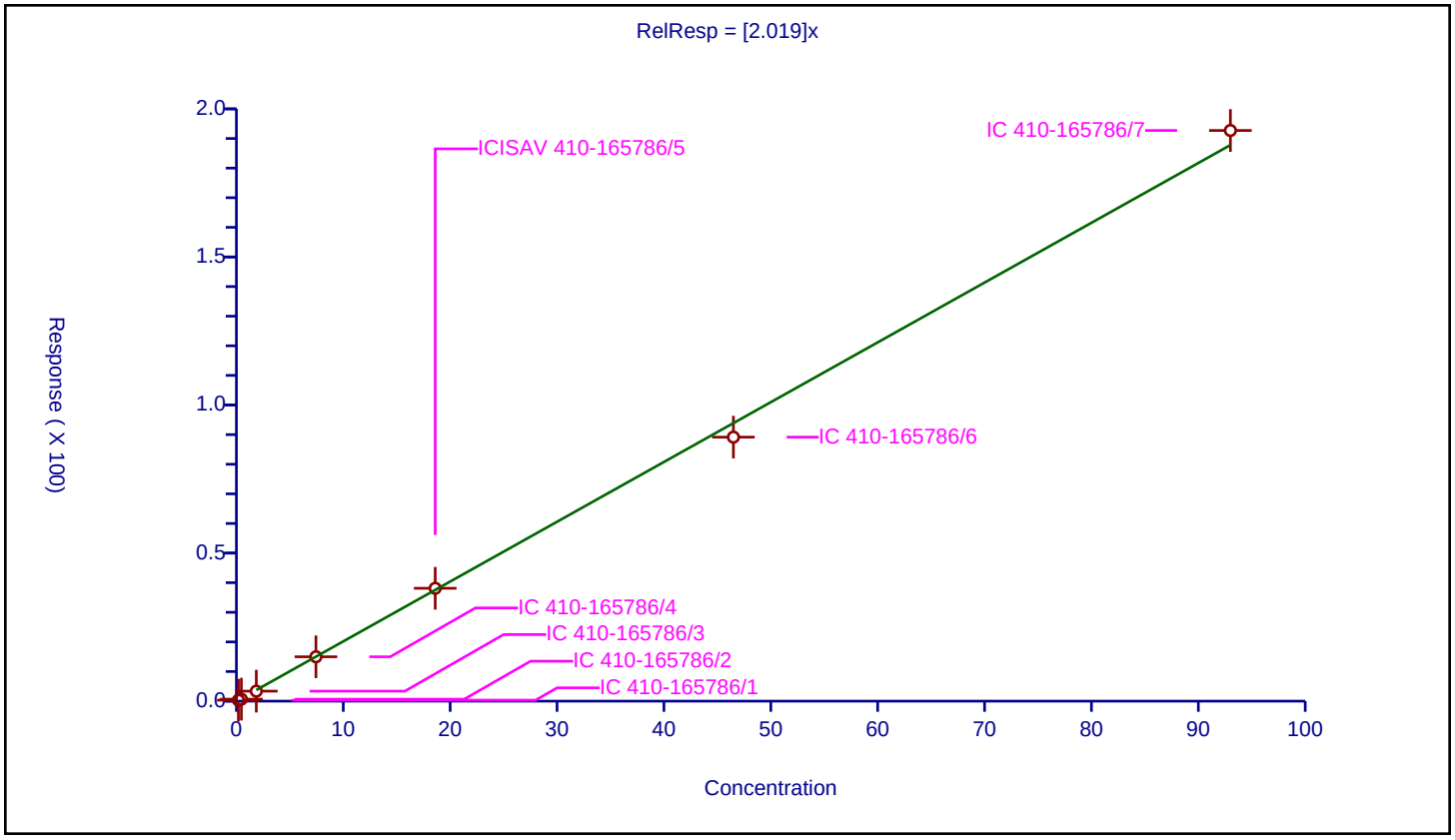
Curve Coefficients

Intercept:	0
Slope:	2.019

Error Coefficients

Standard Error:	14600000
Relative Standard Error:	13.5
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.186	0.338223	9.565	2080259.0	1.818404	Y
2	IC 410-165786/2	0.465	0.663042	9.565	2282068.0	1.425896	Y
3	IC 410-165786/3	1.86	3.374618	9.565	2091837.0	1.814311	Y
4	IC 410-165786/4	7.44	14.980668	9.565	2113712.0	2.013531	Y
5	ICISAV 410-165786/5	18.6	38.111271	9.565	2039128.0	2.048993	Y
6	IC 410-165786/6	46.5	89.148959	9.565	1877453.0	1.917182	Y
7	IC 410-165786/7	93.0	192.702543	9.565	1488398.0	2.07207	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

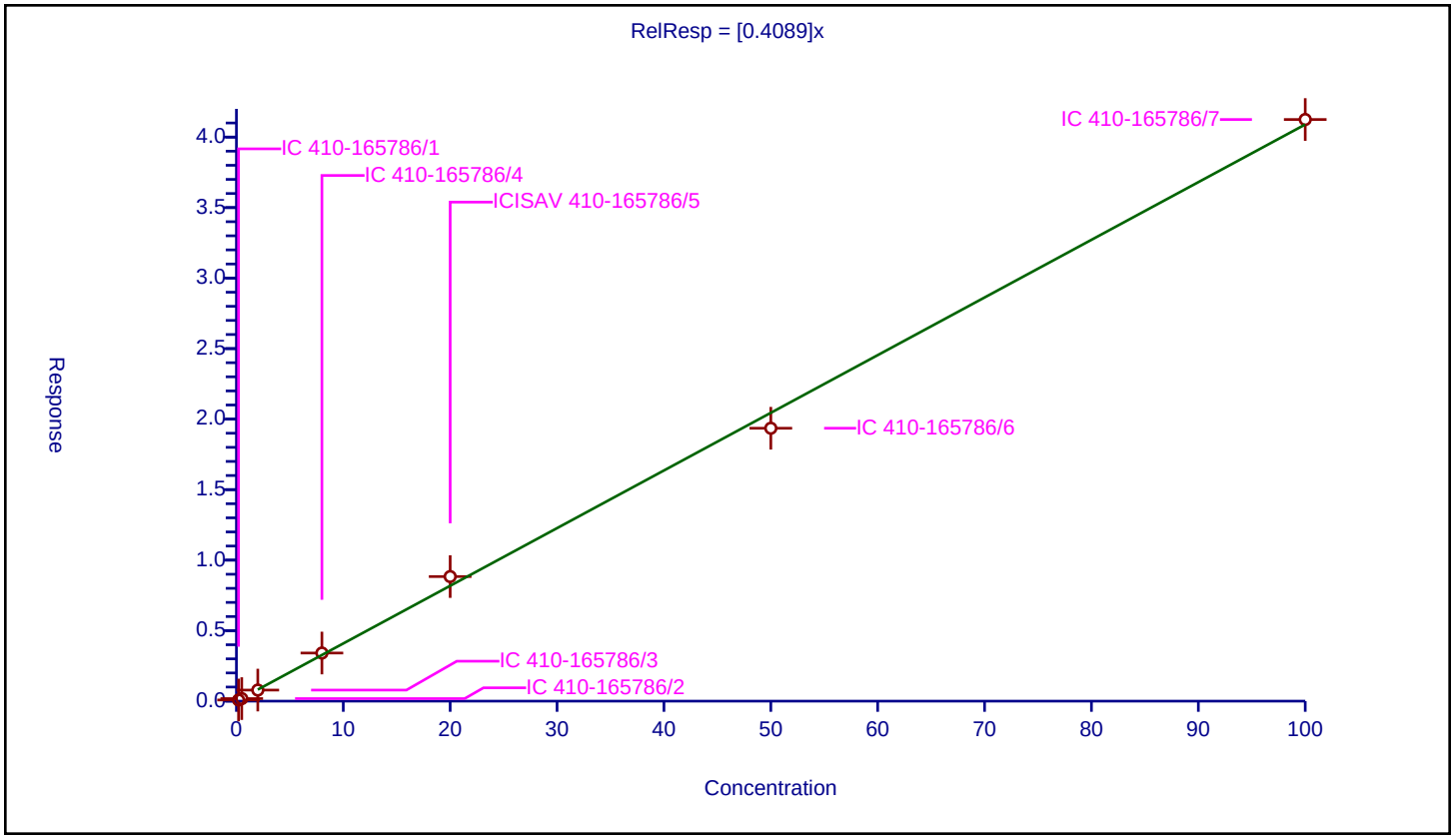
Curve Coefficients

Intercept:	0
Slope:	0.4089

Error Coefficients

Standard Error:	11500000
Relative Standard Error:	6.7
Correlation Coefficient:	0.979
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.082482	10.0	8622085.0	0.412412	Y
2	IC 410-165786/2	0.5	0.179876	10.0	8929947.0	0.359751	Y
3	IC 410-165786/3	2.0	0.785488	10.0	8919139.0	0.392744	Y
4	IC 410-165786/4	8.0	3.411548	10.0	8587208.0	0.426443	Y
5	ICISAV 410-165786/5	20.0	8.834604	10.0	8253247.0	0.44173	Y
6	IC 410-165786/6	50.0	19.353422	10.0	7407785.0	0.387068	Y
7	IC 410-165786/7	100.0	41.246984	10.0	5556569.0	0.41247	Y



Calibration / 1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

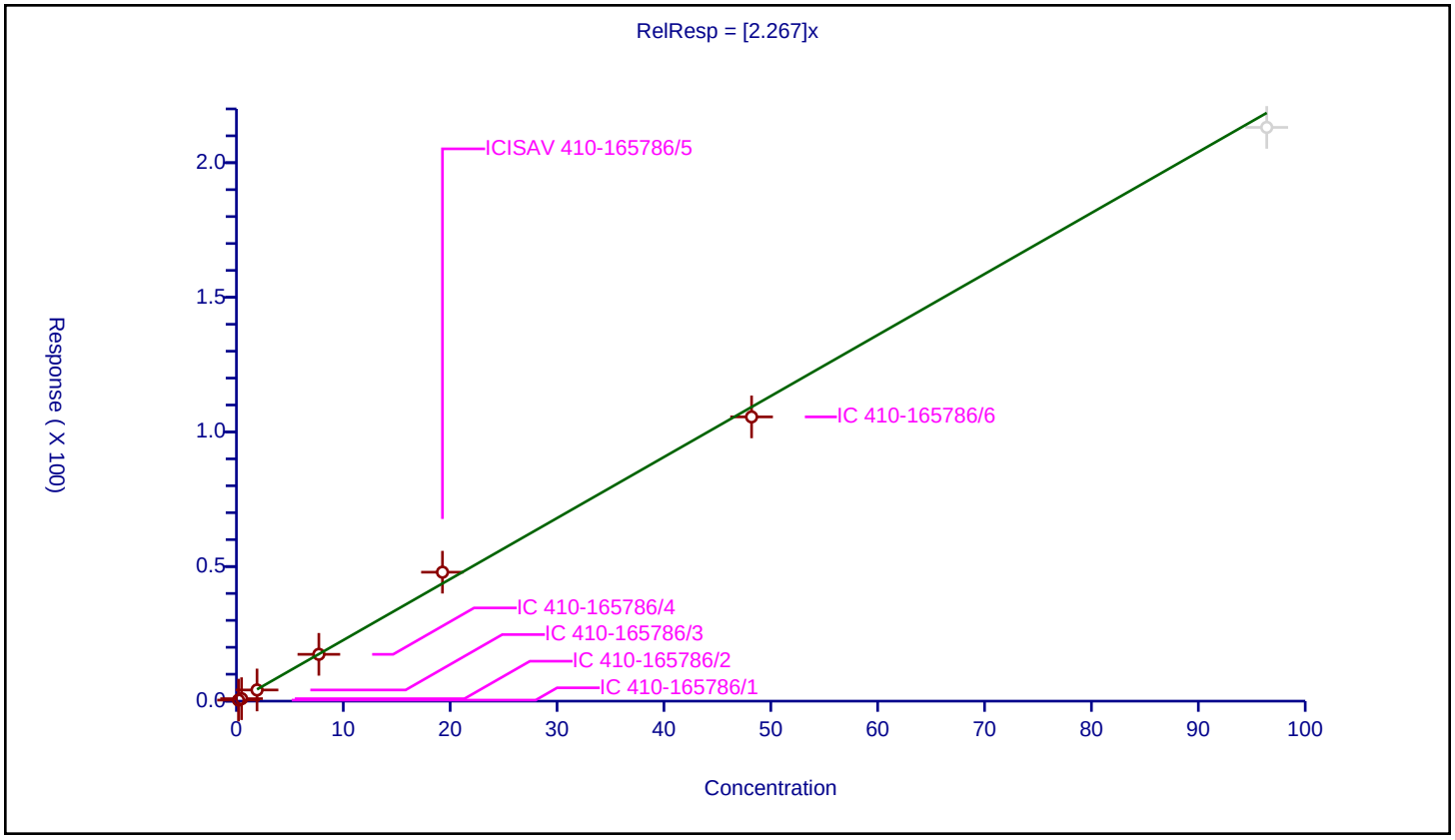
Curve Coefficients

Intercept:	0
Slope:	2.267

Error Coefficients

Standard Error:	2580000
Relative Standard Error:	10.1
Correlation Coefficient:	0.974
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1928	0.391033	9.58	692617.0	2.02818	Y
2	IC 410-165786/2	0.482	0.911241	9.58	747684.0	1.890541	Y
3	IC 410-165786/3	1.928	4.152515	9.58	763984.0	2.153794	Y
4	IC 410-165786/4	7.712	17.391218	9.58	641197.0	2.255085	Y
5	ICISAV 410-165786/5	19.28	47.903664	9.58	551741.0	2.48463	Y
6	IC 410-165786/6	48.2	105.589251	9.58	446836.0	2.190648	Y
7	IC 410-165786/7	96.4	213.126008	9.58	348195.0	2.210851	N



Calibration / 2-(N-methylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

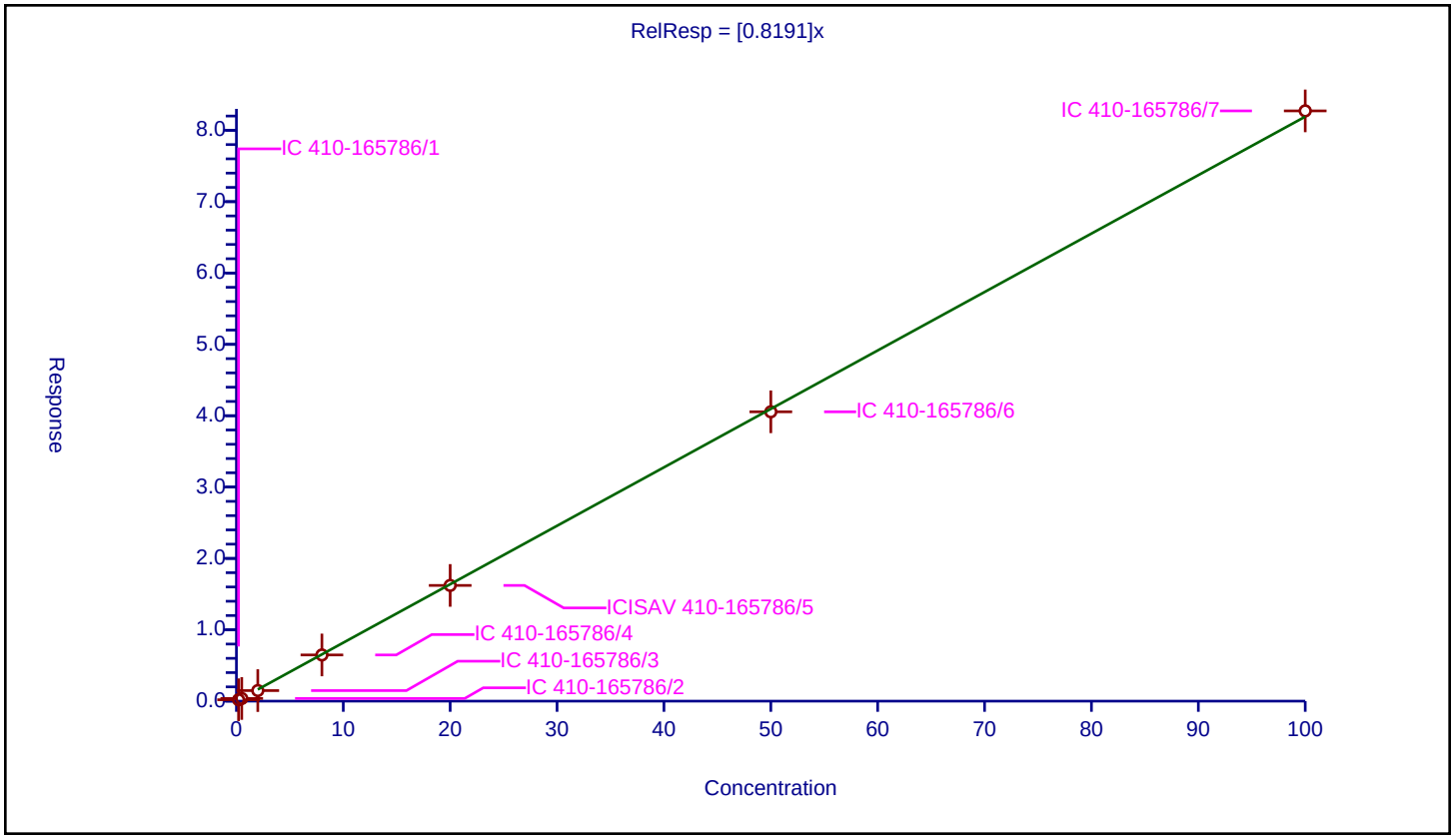
Curve Coefficients

Intercept:	0
Slope:	0.8191

Error Coefficients

Standard Error:	2580000
Relative Standard Error:	9.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.194177	10.0	809778.0	0.970883	Y
2	IC 410-165786/2	0.5	0.372183	10.0	812825.0	0.744367	Y
3	IC 410-165786/3	2.0	1.479442	10.0	884320.0	0.739721	Y
4	IC 410-165786/4	8.0	6.475399	10.0	782046.0	0.809425	Y
5	ICISAV 410-165786/5	20.0	16.217149	10.0	777596.0	0.810857	Y
6	IC 410-165786/6	50.0	40.549821	10.0	726546.0	0.810996	Y
7	IC 410-165786/7	100.0	82.720816	10.0	656351.0	0.827208	Y



Calibration / NMeFOSA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

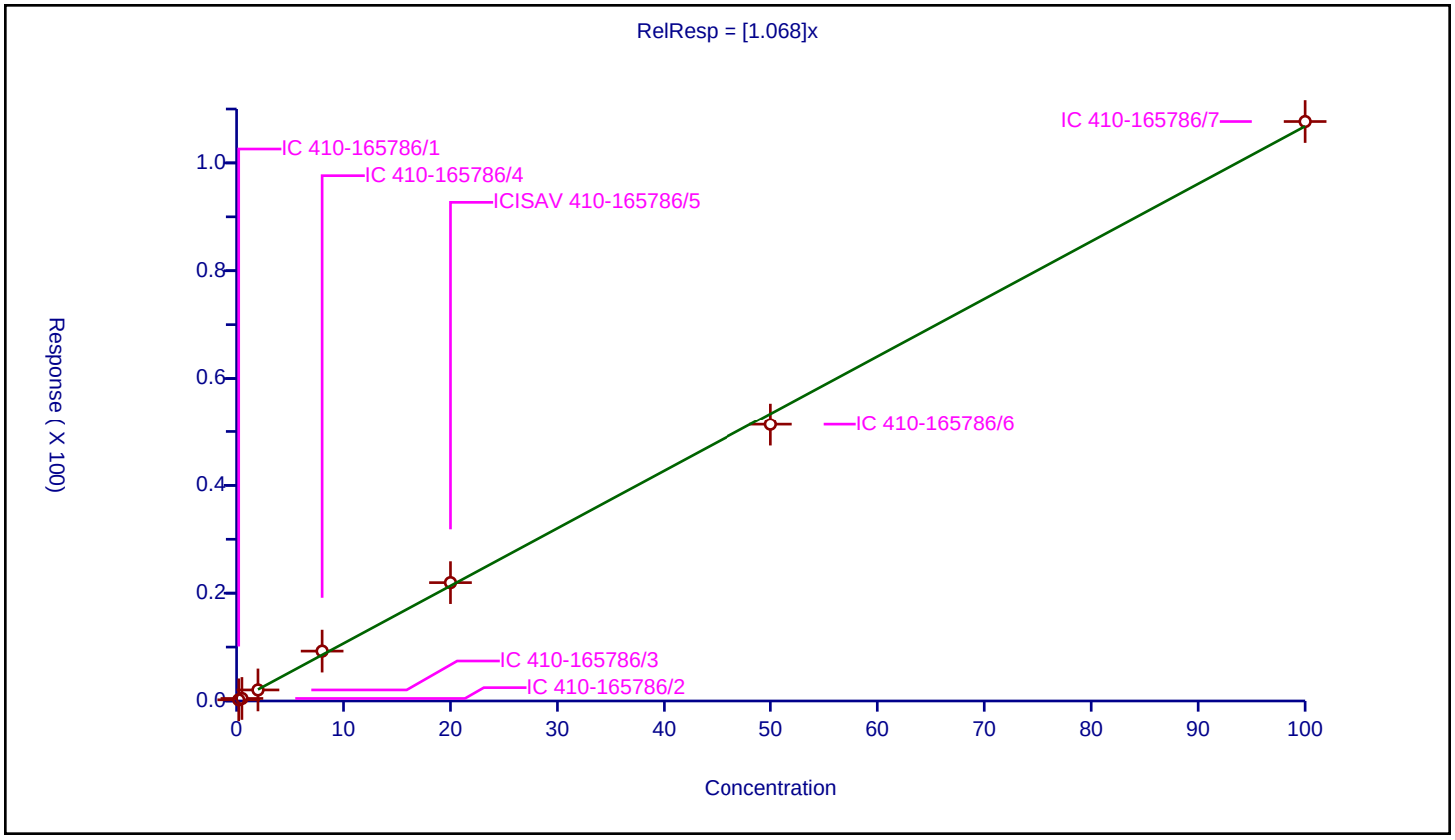
Curve Coefficients

Intercept:	0
Slope:	1.068

Error Coefficients

Standard Error:	1880000
Relative Standard Error:	6.8
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.221732	10.0	485180.0	1.108661	Y
2	IC 410-165786/2	0.5	0.467023	10.0	471197.0	0.934047	Y
3	IC 410-165786/3	2.0	2.048036	10.0	495841.0	1.024018	Y
4	IC 410-165786/4	8.0	9.252377	10.0	419088.0	1.156547	Y
5	ICISAV 410-165786/5	20.0	21.955043	10.0	444246.0	1.097752	Y
6	IC 410-165786/6	50.0	51.359158	10.0	422394.0	1.027183	Y
7	IC 410-165786/7	100.0	107.678963	10.0	363971.0	1.07679	Y



Calibration / Perfluorododecanesulfonic acid (PFDoS)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

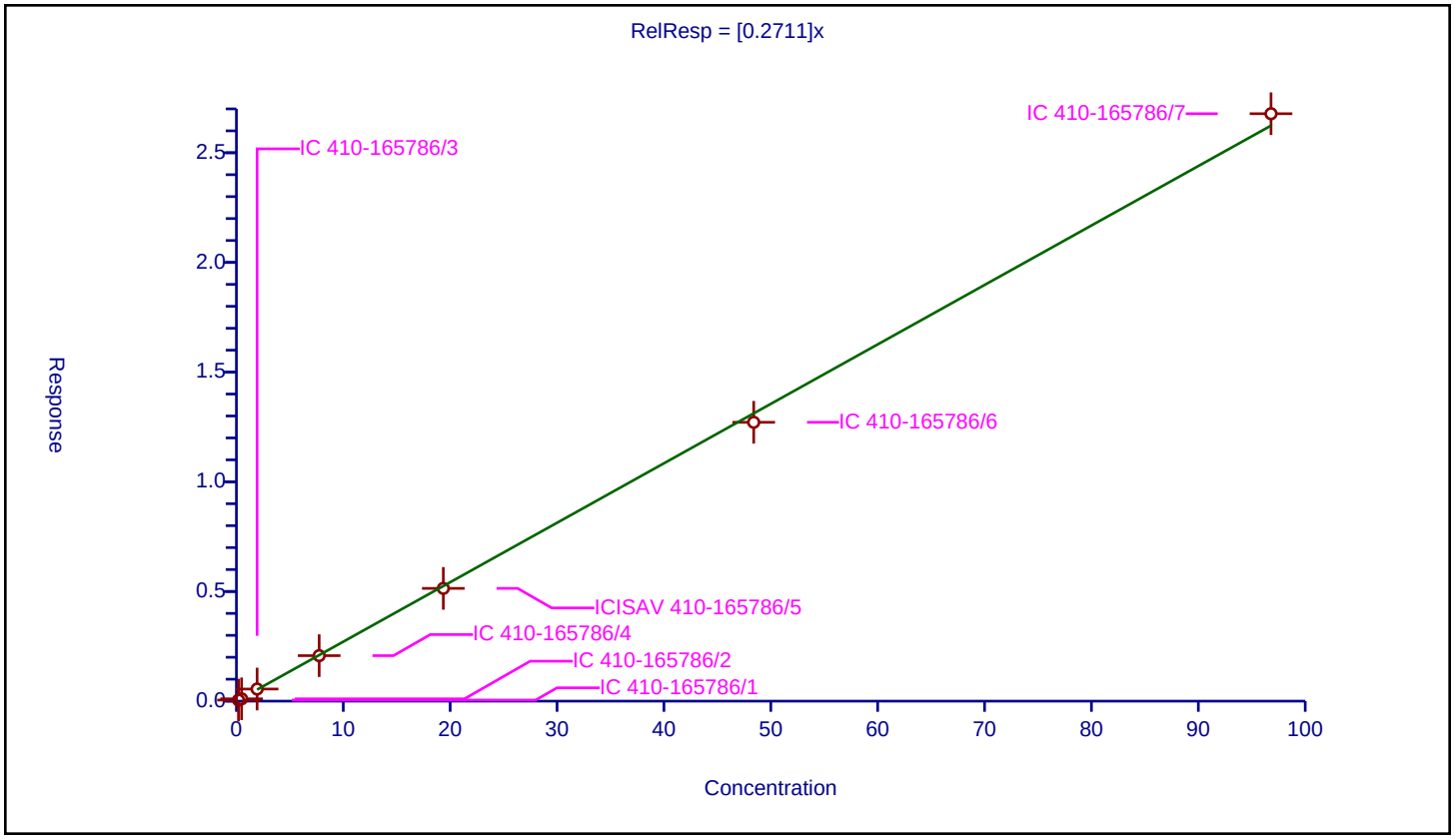
Curve Coefficients

Intercept:	0
Slope:	0.2711

Error Coefficients

Standard Error:	2040000
Relative Standard Error:	8.9
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.1936	0.049502	9.565	2080259.0	0.255692	Y
2	IC 410-165786/2	0.484	0.105044	9.565	2282068.0	0.217033	Y
3	IC 410-165786/3	1.936	0.551873	9.565	2091837.0	0.285058	Y
4	IC 410-165786/4	7.744	2.072729	9.565	2113712.0	0.267656	Y
5	ICISAV 410-165786/5	19.36	5.140454	9.565	2039128.0	0.265519	Y
6	IC 410-165786/6	48.4	12.712007	9.565	1877453.0	0.262645	Y
7	IC 410-165786/7	96.8	26.779986	9.565	1488398.0	0.276653	Y



Calibration / 2-(N-ethylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

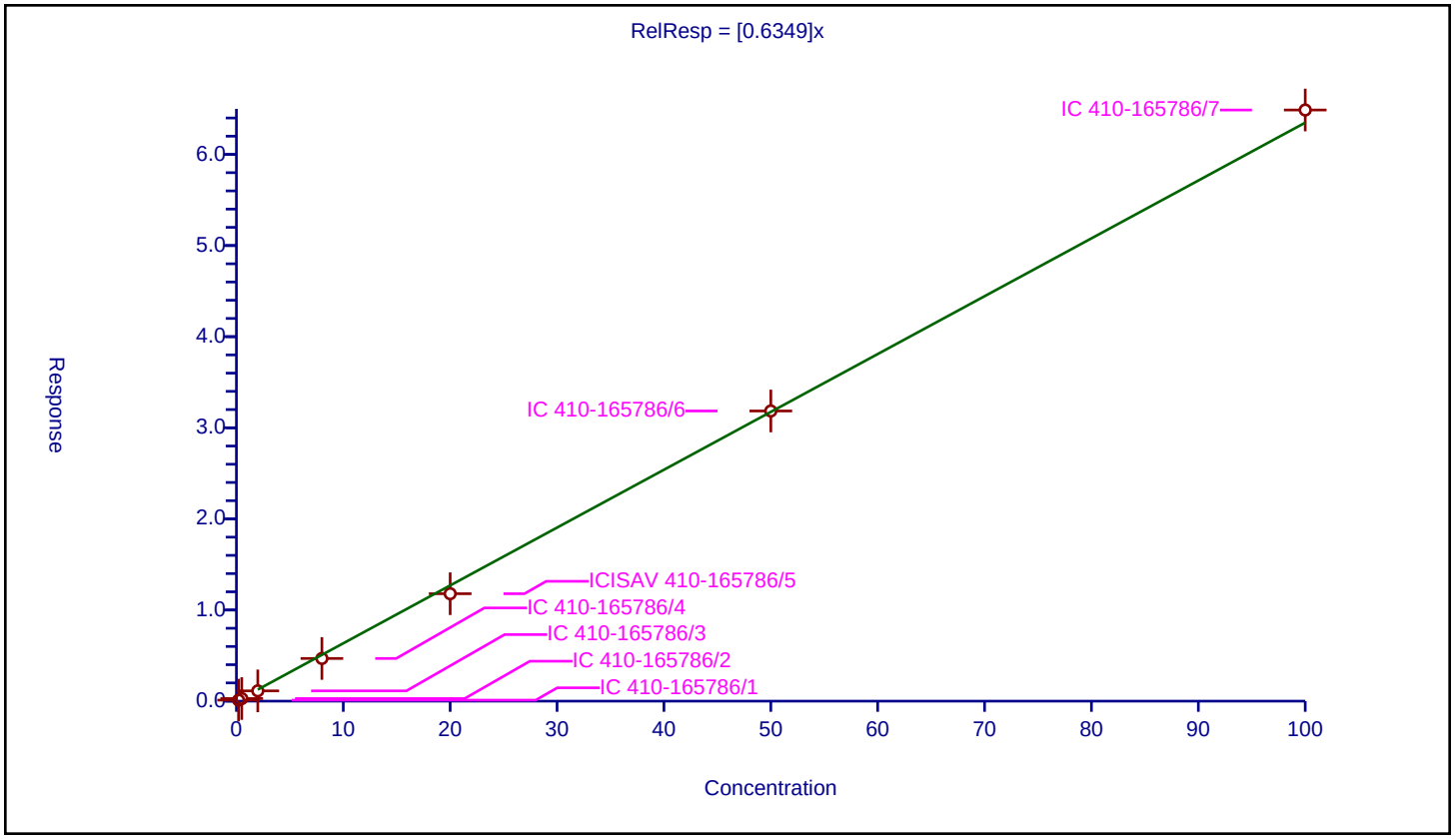
Curve Coefficients

Intercept:	0
Slope:	0.6349

Error Coefficients

Standard Error:	2280000
Relative Standard Error:	8.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.113174	10.0	949598.0	0.565871	Y
2	IC 410-165786/2	0.5	0.28409	10.0	927630.0	0.568179	Y
3	IC 410-165786/3	2.0	1.125823	10.0	964317.0	0.562911	Y
4	IC 410-165786/4	8.0	4.685724	10.0	919559.0	0.585716	Y
5	ICISAV 410-165786/5	20.0	11.79089	10.0	897939.0	0.589545	Y
6	IC 410-165786/6	50.0	31.844596	10.0	800636.0	0.636892	Y
7	IC 410-165786/7	100.0	64.876349	10.0	743062.0	0.648763	Y



Calibration / N-ethylperfluoro-1-octanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

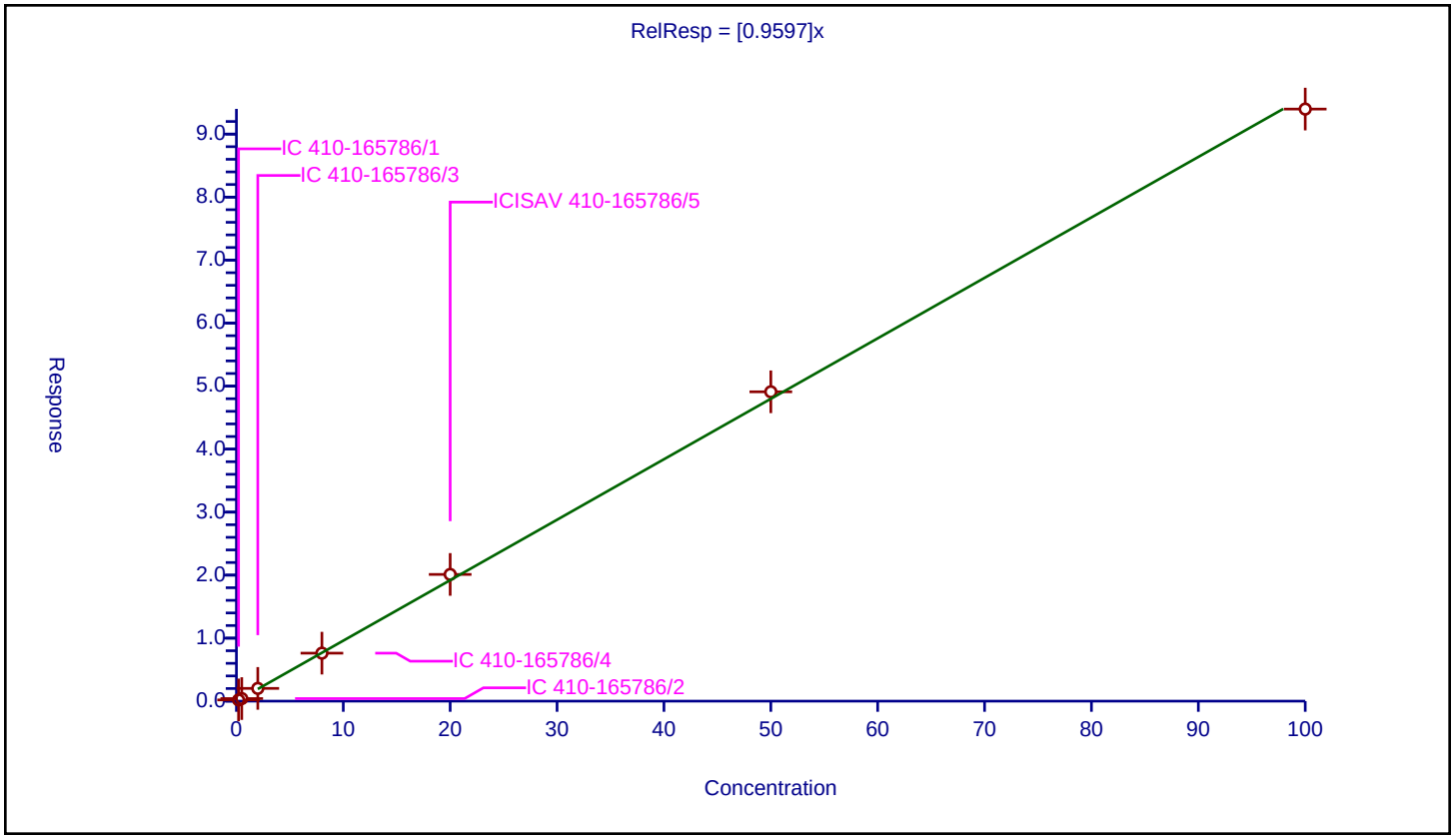
Curve Coefficients

Intercept:	0
Slope:	0.9597

Error Coefficients

Standard Error:	1330000
Relative Standard Error:	6.8
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.192257	10.0	402951.0	0.961283	Y
2	IC 410-165786/2	0.5	0.409821	10.0	376213.0	0.819642	Y
3	IC 410-165786/3	2.0	2.024308	10.0	388765.0	1.012154	Y
4	IC 410-165786/4	8.0	7.615528	10.0	377744.0	0.951941	Y
5	ICISAV 410-165786/5	20.0	20.109187	10.0	345829.0	1.005459	Y
6	IC 410-165786/6	50.0	49.099143	10.0	326800.0	0.981983	Y
7	IC 410-165786/7	100.0	93.971967	10.0	291158.0	0.93972	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

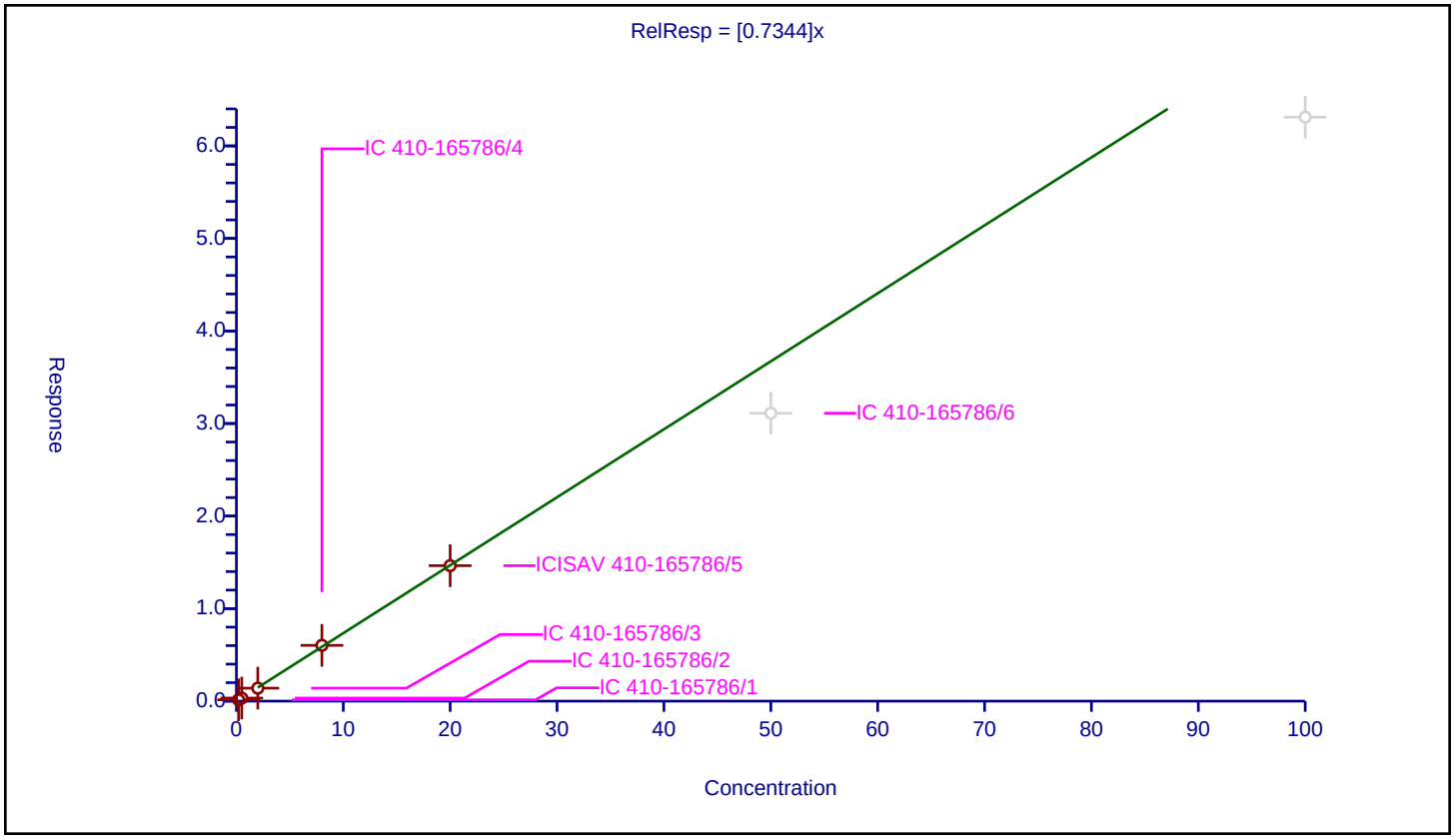
Curve Coefficients

Intercept:	0
Slope:	0.7344

Error Coefficients

Standard Error:	6600000
Relative Standard Error:	5.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.146012	10.0	8622085.0	0.730061	Y
2	IC 410-165786/2	0.5	0.331723	10.0	8929947.0	0.663446	Y
3	IC 410-165786/3	2.0	1.40193	10.0	8919139.0	0.700965	Y
4	IC 410-165786/4	8.0	6.027702	10.0	8587208.0	0.753463	Y
5	ICISAV 410-165786/5	20.0	14.639836	10.0	8253247.0	0.731992	Y
6	IC 410-165786/6	50.0	31.110403	10.0	7407785.0	0.622208	N
7	IC 410-165786/7	100.0	63.105526	10.0	5556569.0	0.631055	N



Calibration / Perfluorotetradecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

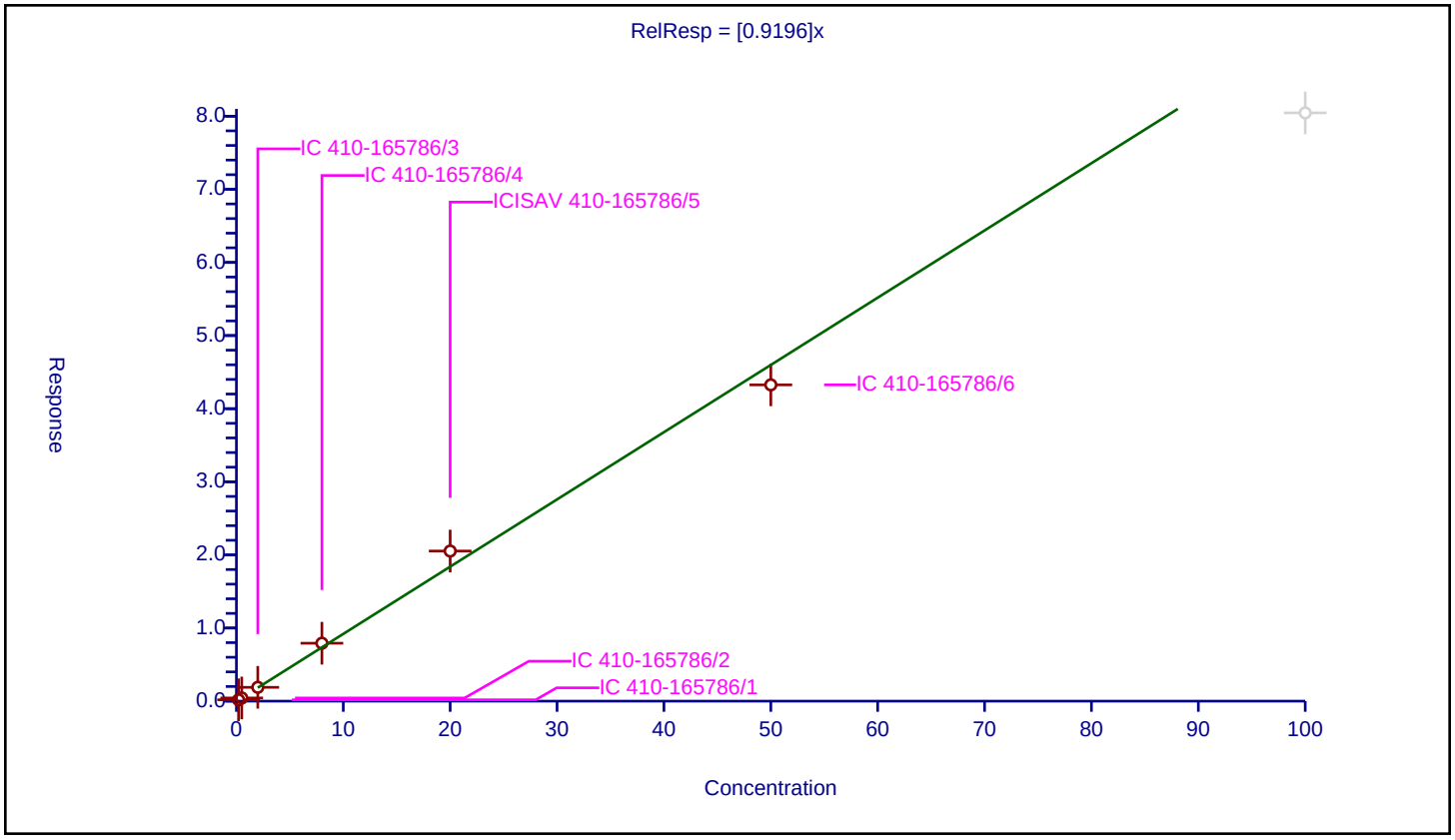
Curve Coefficients

Intercept:	0
Slope:	0.9196

Error Coefficients

Standard Error:	12300000
Relative Standard Error:	7.4
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.183917	10.0	6045998.0	0.919583	Y
2	IC 410-165786/2	0.5	0.431633	10.0	6014535.0	0.863265	Y
3	IC 410-165786/3	2.0	1.89008	10.0	6128026.0	0.94504	Y
4	IC 410-165786/4	8.0	7.921111	10.0	6122766.0	0.990139	Y
5	ICISAV 410-165786/5	20.0	20.528131	10.0	5818540.0	1.026407	Y
6	IC 410-165786/6	50.0	43.256674	10.0	5581209.0	0.865133	Y
7	IC 410-165786/7	100.0	80.455105	10.0	4714956.0	0.804551	N



Calibration / Perfluorohexadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

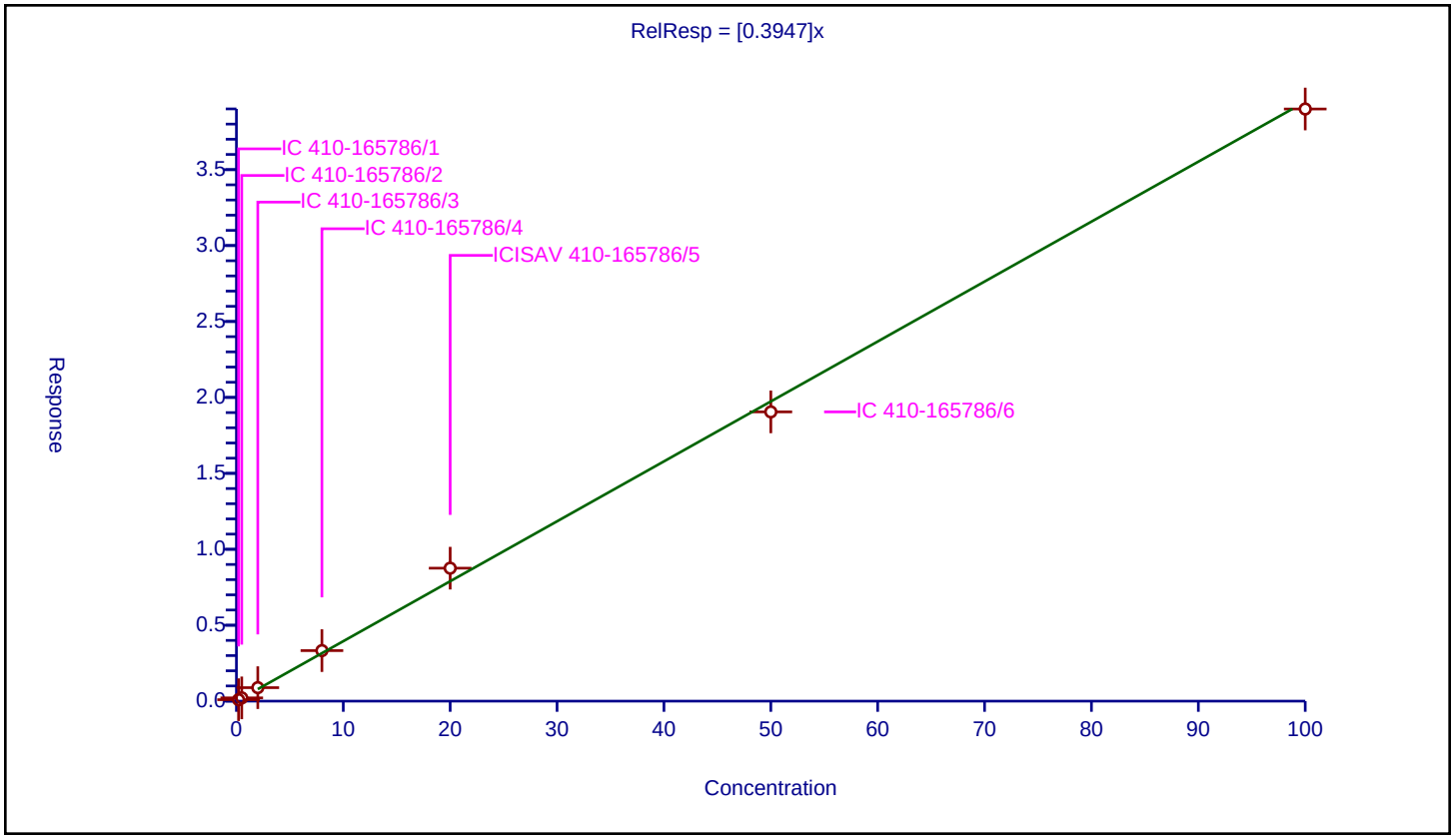
Curve Coefficients

Intercept:	0
Slope:	0.3947

Error Coefficients

Standard Error:	8960000
Relative Standard Error:	12.0
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.096001	10.0	6045998.0	0.480003	Y
2	IC 410-165786/2	0.5	0.21521	10.0	6014535.0	0.430421	Y
3	IC 410-165786/3	2.0	0.88818	10.0	6128026.0	0.44409	Y
4	IC 410-165786/4	8.0	3.327788	10.0	6122766.0	0.415974	Y
5	ICISAV 410-165786/5	20.0	8.756418	10.0	5818540.0	0.437821	Y
6	IC 410-165786/6	50.0	19.047086	10.0	5581209.0	0.380942	Y
7	IC 410-165786/7	100.0	38.993159	10.0	4714956.0	0.389932	Y



Calibration / Perfluorooctadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

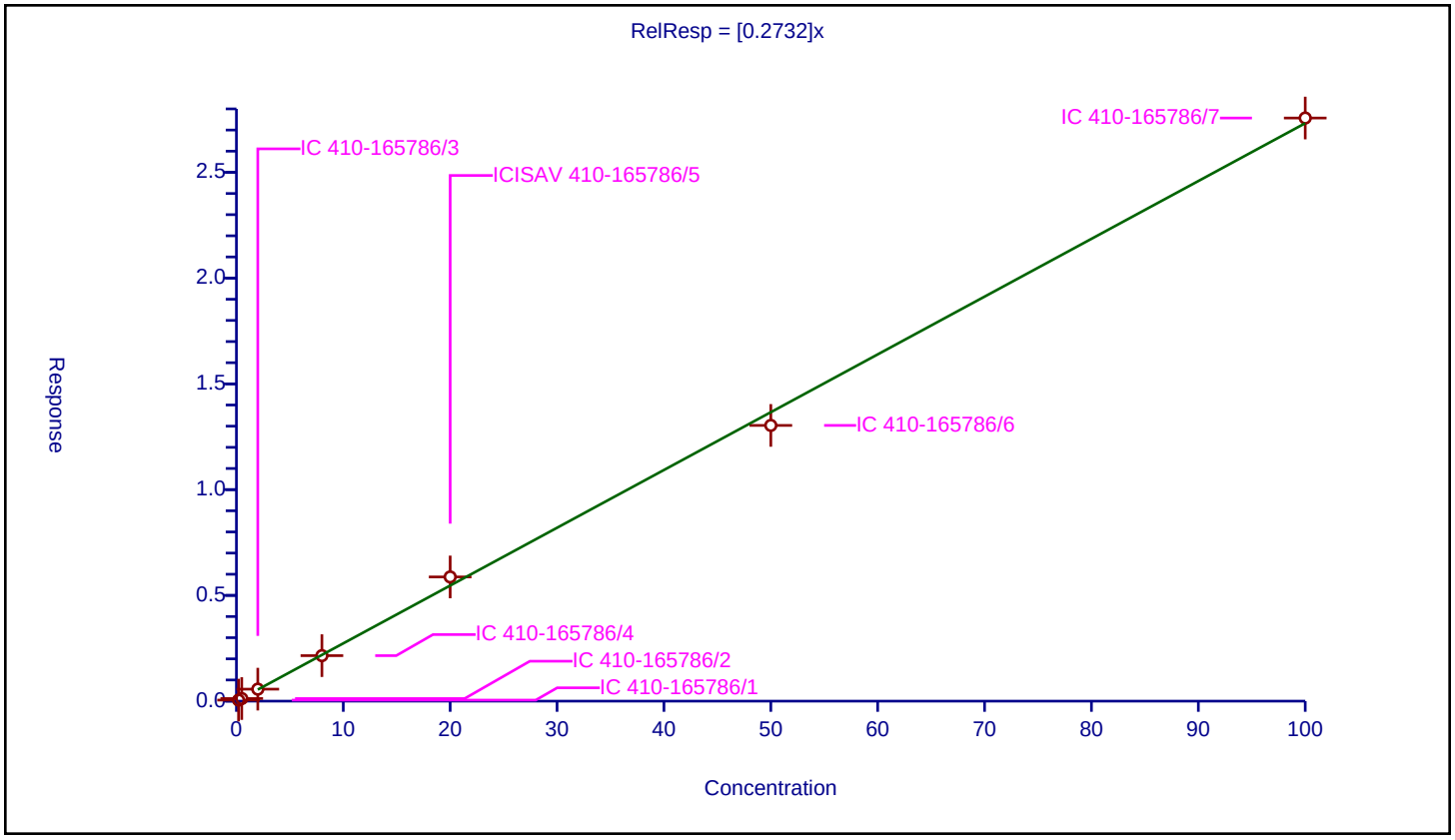
Curve Coefficients

Intercept:	0
Slope:	0.2732

Error Coefficients

Standard Error:	6260000
Relative Standard Error:	6.8
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-165786/1	0.2	0.04998	10.0	6045998.0	0.249901	Y
2	IC 410-165786/2	0.5	0.122384	10.0	6014535.0	0.244767	Y
3	IC 410-165786/3	2.0	0.567764	10.0	6128026.0	0.283882	Y
4	IC 410-165786/4	8.0	2.15117	10.0	6122766.0	0.268896	Y
5	ICISAV 410-165786/5	20.0	5.87286	10.0	5818540.0	0.293643	Y
6	IC 410-165786/6	50.0	13.035803	10.0	5581209.0	0.260716	Y
7	IC 410-165786/7	100.0	27.568633	10.0	4714956.0	0.275686	Y



Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\27632\20210830-38053.b\21AUG30MCAL-11.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 30-Aug-2021 08:10:09 ALS Bottle#: 20010 Worklist Smp#: 10
Injection Vol: 7.0 ul Dil. Factor: 1.0000
Sample Info: WDM WL38053
Misc. Info.: Plate: 1 Rack: 1 410-0038053-010
Operator ID: US19INS00050\US19INS00050 Instrument ID: 27632

Method: \\chromfs\Lancaster\ChromData\27632\20210830-38053.b\PFAS_27632.m
Limit Group: LC - PFC IDA
Last Update: 30-Aug-2021 20:30:09 Calib Date: 30-Aug-2021 07:38:23
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\27632\20210830-38053.b\21AUG30MCAL-08.d

Column 1 : Gemini C18 50X3 50mm 3mm (3.00 mm) Det: EXP1
Process Host: CTX1639

First Level Reviewer: knightj Date: 30-Aug-2021 08:52:45
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	3.364	3.364	0.0	1.000	8823609	10.0		100	121188	
* 1 13C3-PFBA										
216.00 > 172.00	3.364	3.361	0.003		4009866	5.00			3448	
D 4 13C5 PFPeA										
268.00 > 223.00	3.909	3.909	0.0	1.162	6843790	9.96		99.6	185811	
D 7 13C3 PFBS										
302.00 > 80.00	3.961	3.961	0.0	1.177	3015049	8.83		94.4	229386	
D 9 M2-4:2 FTS										
329.00 > 81.00	4.299	4.299	0.0	0.839	1093498	9.45		101	29450	
D 10 13C5 PFHxA										
318.00 > 273.00	4.339	4.339	0.0	0.847	10032582	9.69		96.9	355070	
D 12 13C2 PFHxA										
315.00 > 270.00	4.346	4.346	0.0	0.848	7593996	9.77		97.7	239687	
D 15 13C3 HFPO-DA										
332.00 > 287.00	4.475	4.475	0.0	0.873	675002	9.05		90.5	63801	
D 19 13C4 PFHpA										
367.00 > 322.00	4.745	4.745	0.0	0.926	6882148	10.7		107	205945	
D 18 13C3 PFHxS										
402.00 > 80.00	4.745	4.745	0.0	0.926	2602342	9.74		103	572945	
D 23 M2-6:2 FTS										
429.00 > 81.00	5.109	5.109	0.0	0.997	801163	9.65		102	47979	
27 Perfluorooctanoic acid										M
413.00 > 369.00	5.126	5.115	0.011	1.000	954489	1.66	Target=17.43		40267	M
413.00 > 169.00	5.114	5.115	-0.001	0.998	78391		12.18(8.71-26.14)		20392	
* 28 13C2 PFOA										
415.00 > 370.00	5.126	5.115	0.011		2868818	5.00			177230	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 25 13C4 PFOA										
417.00 > 372.00	5.126	5.126	0.0	1.000	6730006	9.78		97.8	510667	
D 26 13C8 PFOA										
421.00 > 376.00	5.126	5.126	0.0	1.000	10268056	9.99		99.9	601202	
* 30 13C4 PFOS										
503.00 > 80.00	5.451	5.443	0.008		1194686	4.78			80810	
D 31 13C8 PFOS										
507.00 > 80.00	5.451	5.451	0.0	1.000	2289616	9.19		96.1	500579	
D 34 13C9 PFNA										
472.00 > 427.00	5.473	5.473	0.0	1.004	4889951	9.92		99.2	104064	
D 39 13C6 PFDA										
519.00 > 474.00	5.779	5.779	0.0	1.000	8802275	9.87		98.7	183558	
* 38 13C2 PFDA										
515.00 > 470.00	5.779	5.771	0.008		1667104	5.00			106465	
D 41 M2-8:2 FTS										
529.00 > 81.00	5.787	5.787	0.0	1.001	811137	10.0		105	67280	
D 43 13C8 FOSA										
506.00 > 78.00	5.845	5.845	0.0	1.011	6766903	10.7		107	564208	
D 45 d3-NMeFOSAA										
573.00 > 419.00	5.929	5.929	0.0	1.026	2361562	9.43		94.3	478635	
D 48 13C7 PFUnA										
570.00 > 525.00	6.053	6.053	0.0	1.048	8960781	10.1		101	356793	
D 49 13C2 PFUnA										
565.00 > 520.00	6.053	6.053	0.0	1.181	7593985	9.26		92.6	598535	
D 50 d5-NEtFOSAA										
589.00 > 419.00	6.071	6.071	0.0	1.051	1612044	11.0		110	366979	
D 54 13C2-PFDoDA										
615.00 > 570.00	6.295	6.295	0.0	1.089	9839167	9.78		97.8	526732	
D 56 d7-N-MeFOSE-M										
623.00 > 59.00	6.310	6.310	0.0	1.092	966581	9.85		98.5	23123	
D 58 d3-NMePFOSA										
515.00 > 169.00	6.326	6.326	0.0	1.095	607322	10.9		109	888	
D 61 d9-N-EtFOSE-M										
639.00 > 59.00	6.475	6.475	0.0	1.120	1130752	10.1		101	20964	
D 63 d5-NEtPFOSA										
531.00 > 169.00	6.493	6.493	0.0	1.124	485626	10.8		108	24236	
D 67 13C2 PFTeDA										
715.00 > 670.00	6.686	6.686	0.0	1.157	6833515	9.39		93.9	231393	

QC Flag Legend

Processing Flags

Review Flags

M - Manually Integrated

Reagents:

PFC_LB_MOD_00024 Amount Added: 200.00 Units: uL

Report Date: 30-Aug-2021 20:30:09 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\27632\20210830-38053.b\21AUG30MCAL-11.d

Injection Date: 30-Aug-2021 08:10:09 Instrument ID: 27632

Lims ID: WDM

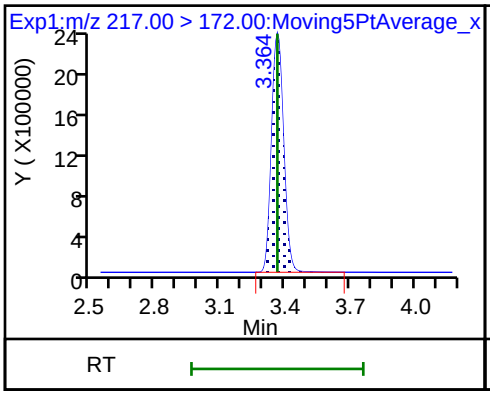
Client ID:

Operator ID: US19INS00050\US19INS00050 ALS Bottle#: 20010 Worklist Smp#: 10

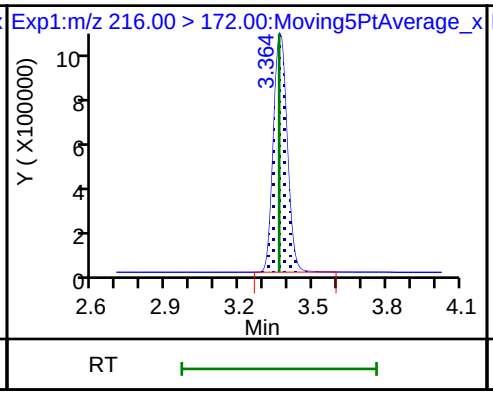
Injection Vol: 7.0 ul Dil. Factor: 1.0000

Method: PFAS_27632 Limit Group: LC - PFC IDA

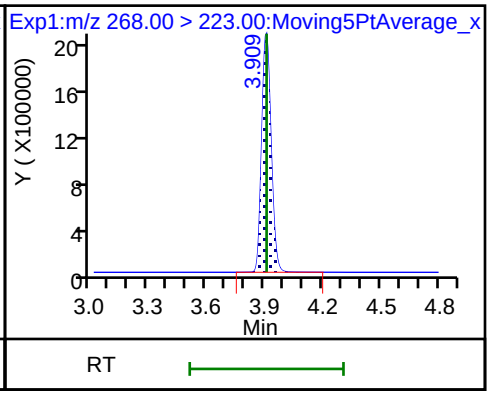
D 2 13C4 PFBA



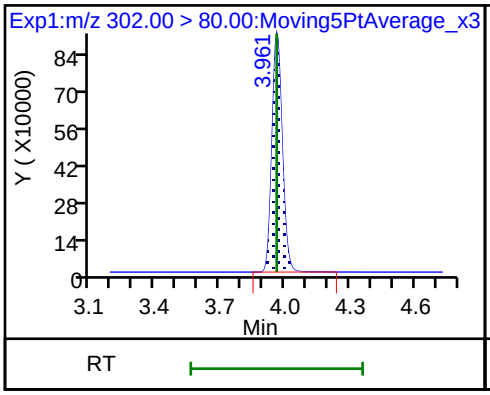
* 1 13C3-PFBA



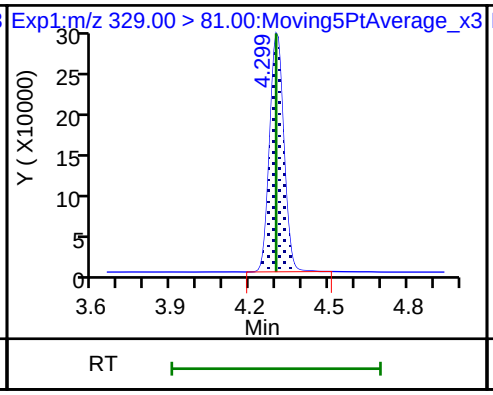
D 4 13C5 PFPeA



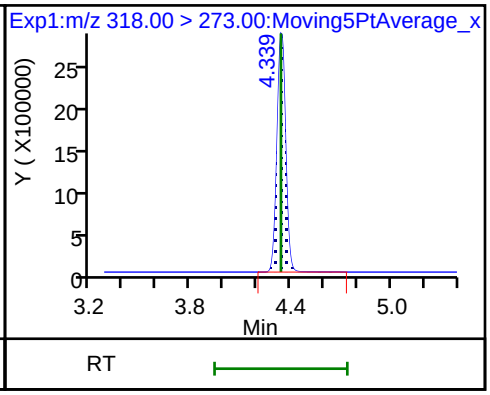
D 7 13C3 PFBS



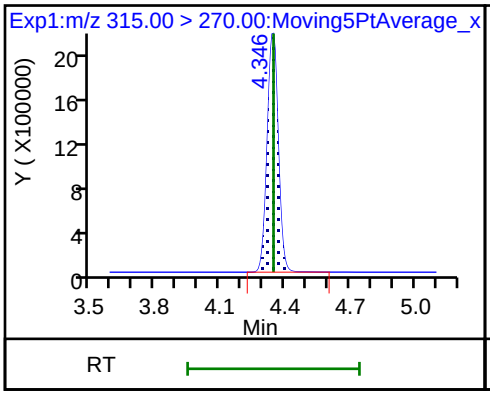
D 9 M2-4:2 FTS



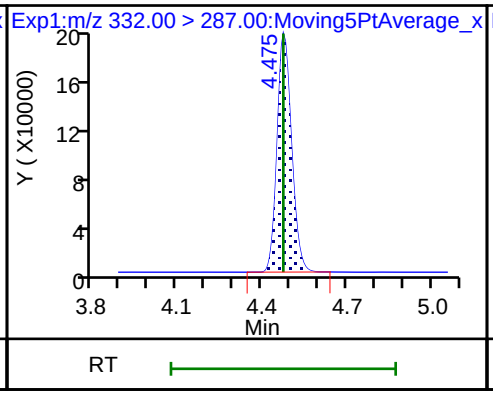
D 10 13C5 PFHxA



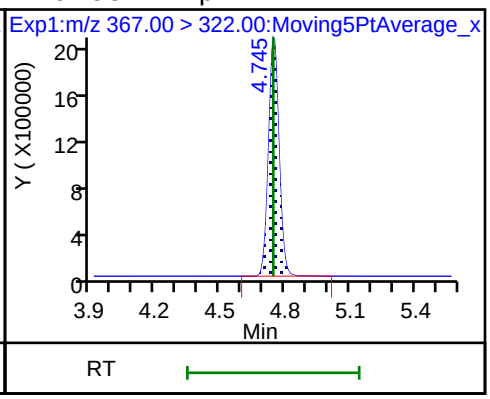
D 12 13C2 PFHxA



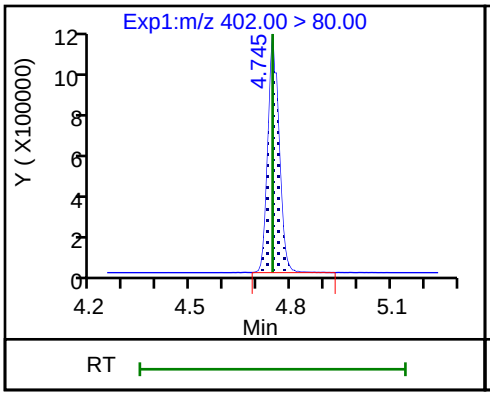
D 15 13C3 HFPO-DA



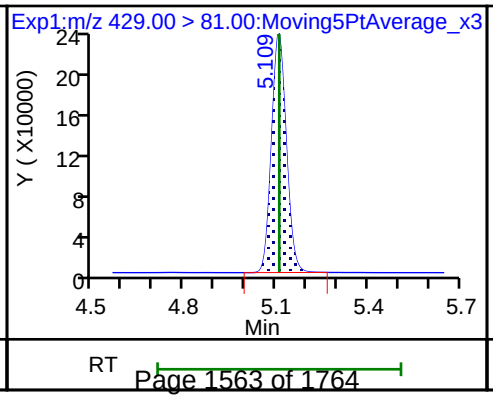
D 19 13C4 PFHpA



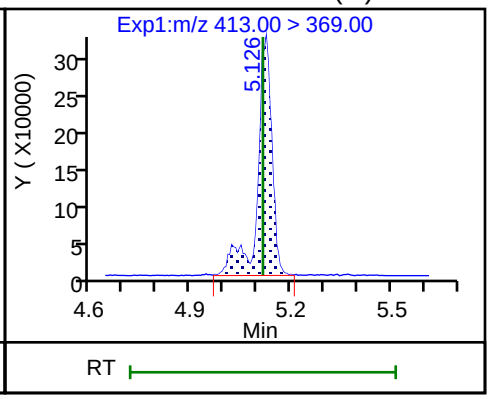
D 18 13C3 PFHxS



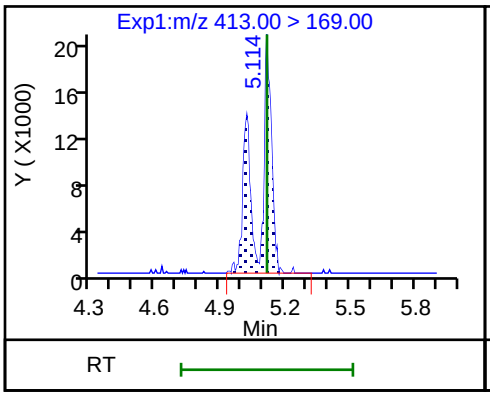
D 23 M2-6:2 FTS



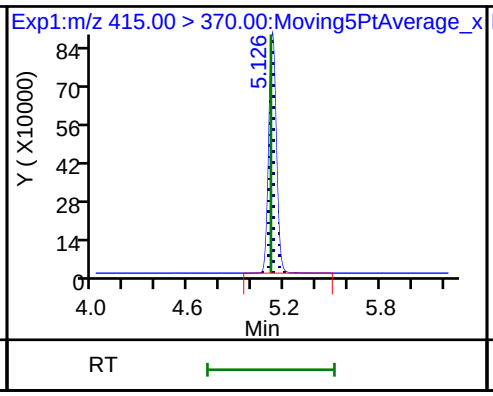
27 Perfluorooctanoic acid (M)



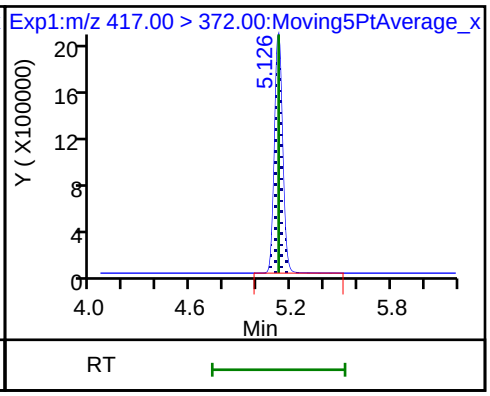
27 Perfluorooctanoic acid



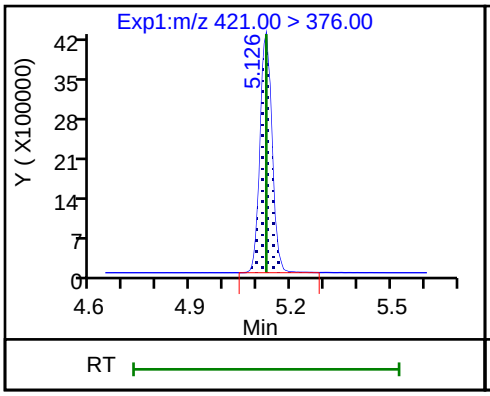
* 28 13C2 PFOA



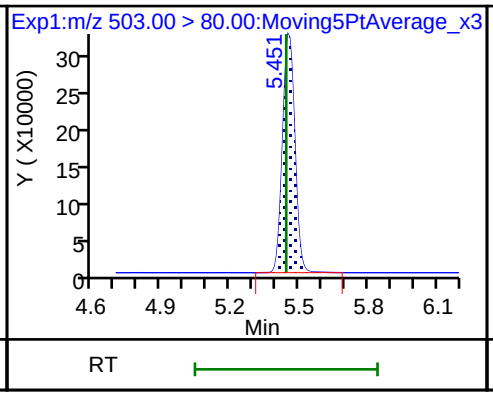
D 25 13C4 PFOA



D 26 13C8 PFOA



* 30 13C4 PFOS



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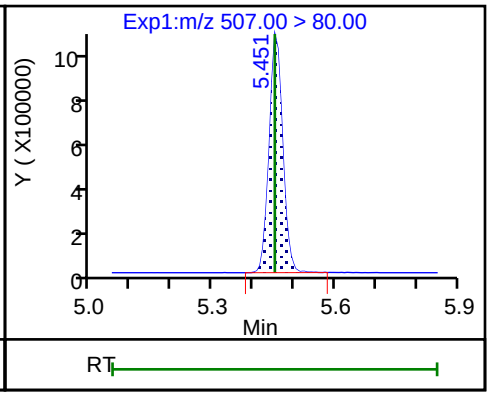
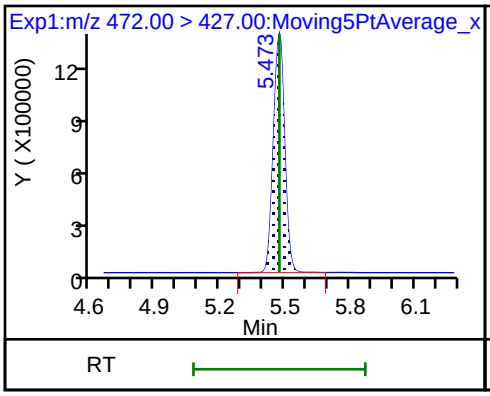
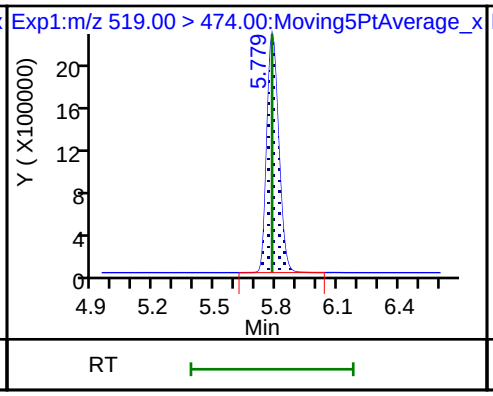


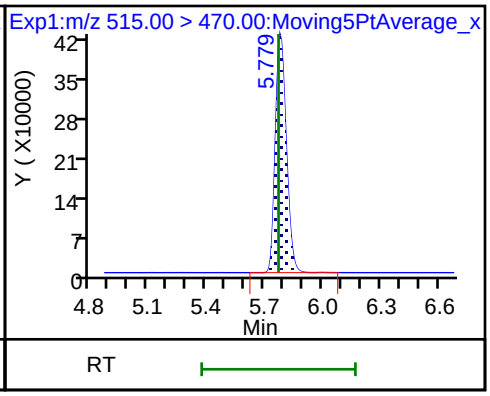
D 34 13C9 PFNA



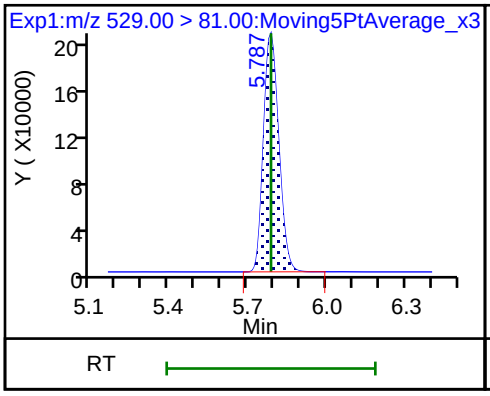
D 39 13C6 PFDA



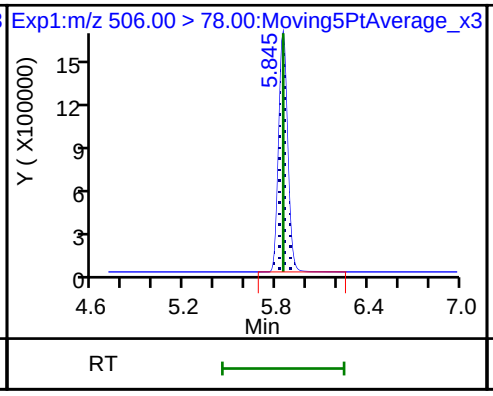
* 38 13C2 PFDA



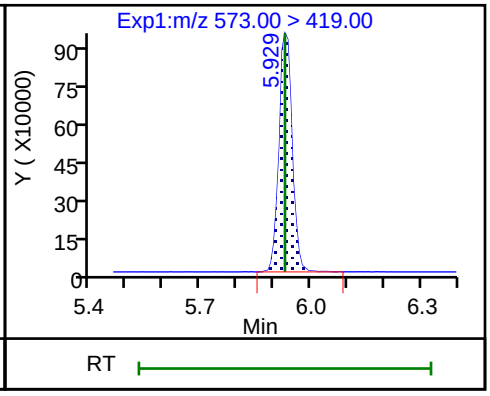
D 41 M2-8:2 FTS



D 43 13C8 FOSA



D 45 d3-NMeFOSAA



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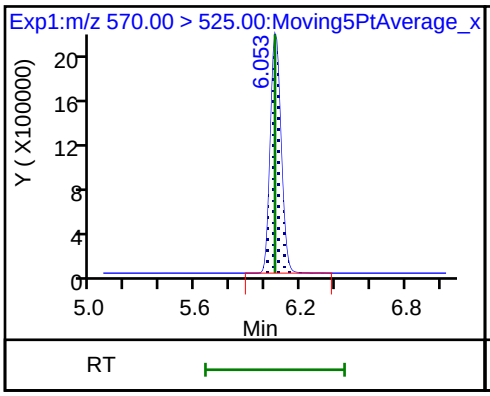

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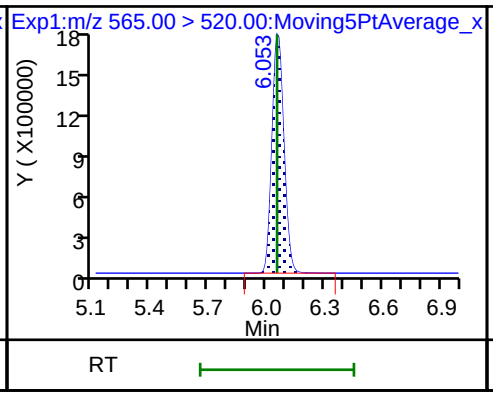

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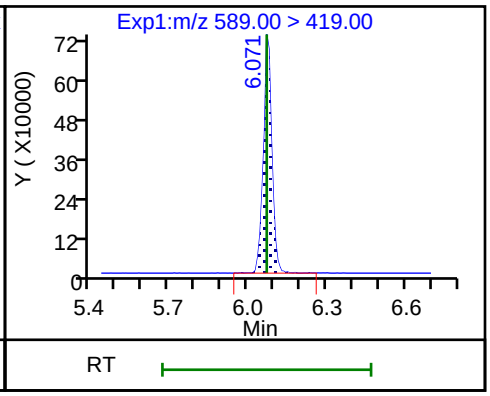

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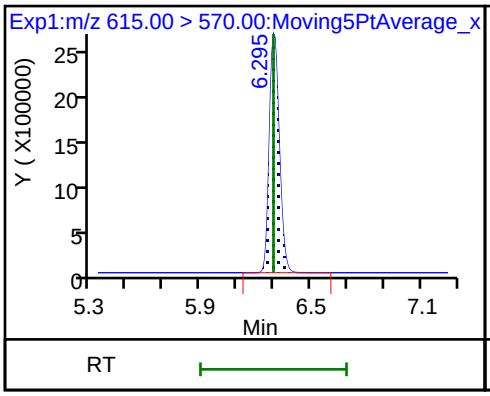
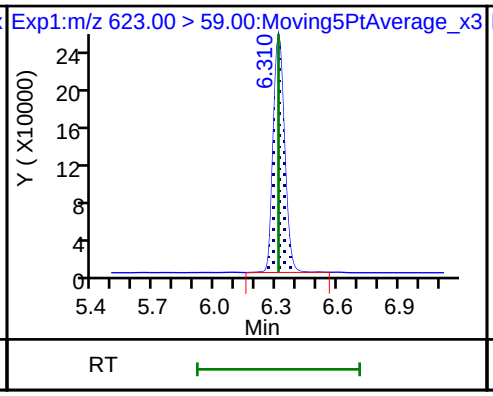
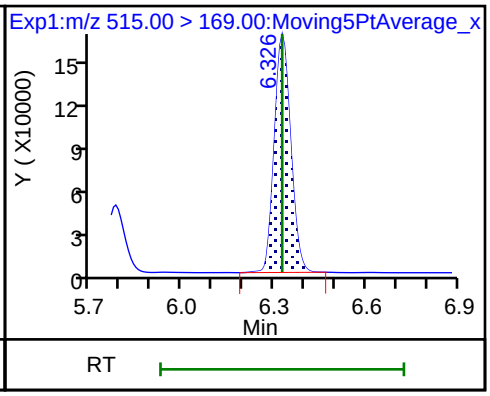


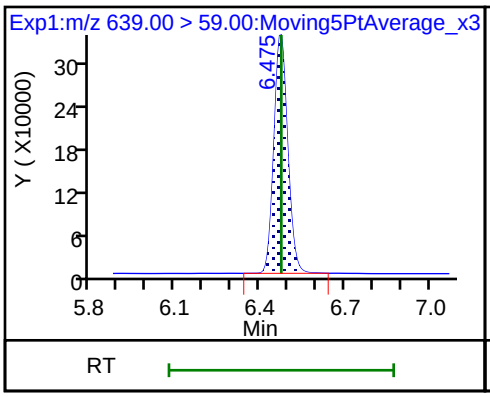
D 56 d7-N-MeFOSE-M



D 58 d3-NMePFOSA



D 61 d9-N-EtFOSE-M



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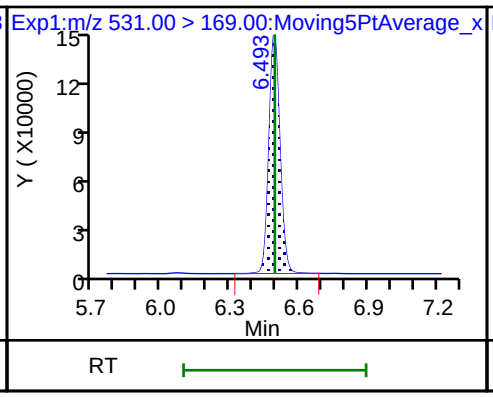
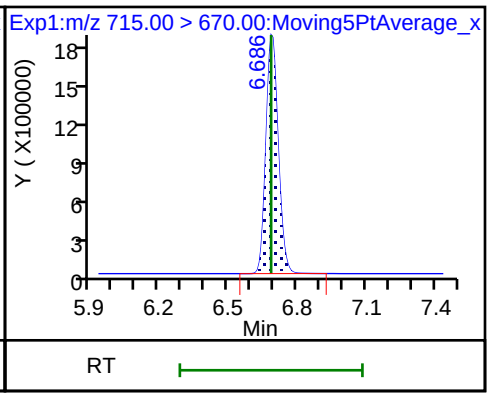


D 67 13C2 PFTeDA



FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: ICV 410-165786/9 Calibration Date: 08/30/2021 07:59

Instrument ID: 27632 Calib Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/30/2021 07:38

Lab File ID: 21AUG30MCAL-10.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid	LID1F		0.8196		1.94	2.00	-3.1	30.0
Perfluoropentanoic acid	LID1F		1.058		2.10	2.00	4.8	30.0
Perfluorobutanesulfonic acid	LID1F		1.030		1.49	1.77	-15.7	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		1.971		1.83	1.87	-2.1	30.0
Perfluorohexanoic acid	LID1F		0.6388		1.86	2.00	-6.8	30.0
Perfluoropentanesulfonic acid	LID1F		0.5283		1.83	1.88	-2.6	30.0
HFPODA	LID1F		3.214		1.62	2.00	-18.9	30.0
Perfluoroheptanoic acid	LID1F		1.471		1.80	2.00	-10.1	30.0
Perfluorohexanesulfonic acid	LID1F		0.9105		1.47	1.82	-19.3	30.0
DONA	LID1F		1.174		1.78	1.89	-5.8	30.0
6:2 Fluorotelomer sulfonic acid	LID1F		1.527		1.84	1.90	-2.8	30.0
Perfluoroheptanesulfonic acid	LID1F		0.8930		1.59	1.90	-16.7	30.0
Perfluorooctanoic acid	LID1F		0.4601		1.65	2.00	-17.7	30.0
Perfluorooctanesulfonic acid	LID1F		0.9416		1.45	1.85	-21.9	30.0
Perfluorononanoic acid	LID1F		0.7916		1.81	2.00	-9.3	30.0
9Cl-PF3ONS	LID1F		2.193		1.46	1.86	-21.7	30.0
Perfluorononanesulfonic acid	LID1F		0.7331		1.70	1.92	-11.5	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		1.793		1.98	1.92	3.3	30.0
Perfluorodecanoic acid	LID1F		0.2957		1.62	2.00	-18.9	30.0
Perfluorooctanesulfonamide	LID1F		0.9610		1.93	2.00	-3.7	30.0
NMeFOSAA	LID1F		0.8299		2.01	2.00	0.6	30.0
Perfluorodecanesulfonic acid	LID1F		0.5308		1.70	1.93	-11.9	30.0
Perfluoroundecanoic acid	LID1F		0.2832		1.79	2.00	-10.4	30.0
NEtFOSAA	LID1F		0.8861		1.75	2.00	-12.7	30.0
11Cl-PF3OUdS	LID1F		1.653		1.52	1.86	-18.1	30.0
Perfluorododecanoic acid	LID1F		0.3724		1.82	2.00	-8.9	30.0
10:2 FTS	LID1F		2.013		1.71	1.93	-11.2	30.0
NMeFOSE	LID1F		0.7870		1.92	2.00	-3.9	30.0
NMeFOSA	LID1F		1.045		1.96	2.00	-2.2	30.0
Perfluorododecanesulfonic acid	LID1F		0.2599		1.86	1.94	-4.1	30.0
NEtFOSE	LID1F		0.5796		1.83	2.00	-8.7	30.0
NEtFOSA	LID1F		0.9552		1.99	2.00	-0.5	30.0
Perfluorotridecanoic acid	LID1F		0.6787		1.85	2.00	-7.6	30.0
Perfluorotetradecanoic acid	LID1F		0.8787		1.91	2.00	-4.4	30.0
Perfluorohexadecanoic acid	LID1F		0.4113		2.08	2.00	4.2	30.0
Perfluorooctadecanoic acid	LID1F		0.2494		1.83	2.00	-8.7	30.0
13C4 PFBA	Ave	1.095	1.172		10.7	10.0	7.0	30.0
13C5 PFPeA	Ave	0.8572	0.9291		10.8	10.0	8.4	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: ICV 410-165786/9 Calibration Date: 08/30/2021 07:59

Instrument ID: 27632 Calib Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/30/2021 07:38

Lab File ID: 21AUG30MCAL-10.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C3 PFBS	Ave	0.4256	0.4570		10.1	9.36	7.4	30.0
M2-4:2 FTS	Ave	0.2018	0.2046		9.47	9.34	1.4	30.0
13C2 PFHxA	Ave	1.355	1.430		10.6	10.0	5.5	30.0
13C5 PFHxA	Ave	1.805	1.980		11.0	10.0	9.7	30.0
13C3 HFPO-DA	Ave	0.1300	0.1314		10.1	10.0	1.1	30.0
13C3 PFHxS	Ave	0.4655	0.5278		10.7	9.46	13.4	30.0
13C4 PFHpA	Ave	1.121	1.249		11.1	10.0	11.5	30.0
M2-6:2 FTS	Ave	0.1447	0.1654		10.9	9.50	14.3	30.0
13C4 PFOA	Ave	1.199	1.296		10.8	10.0	8.0	30.0
13C8 PFOA	Ave	1.792	2.028		11.3	10.0	13.2	30.0
13C8 PFOS	Ave	0.997	1.021		9.80	9.57	2.4	30.0
13C9 PFNA	Ave	1.974	2.185		11.1	10.0	10.7	30.0
13C6 PFDA	Ave	2.674	3.401		12.7	10.0	27.2	30.0
M2-8:2 FTS	Ave	0.2425	0.2923		11.5	9.58	20.5	30.0
13C8 FOSA	Ave	1.905	2.345		12.3	10.0	23.1	30.0
d3-NMeFOSAA	Ave	0.7510	0.8056		10.7	10.0	7.3	30.0
13C2 PFUnA	Ave	1.430	1.506		10.5	10.0	5.3	30.0
13C7 PFUnA	Ave	2.673	3.241		12.1	10.0	21.3	30.0
d5-NEtFOSAA	Ave	0.4399	0.5165		11.7	10.0	17.4	30.0
13C2-PFDoDA	Ave	3.017	3.658		12.1	10.0	21.2	30.0
d7-N-MeFOSE-M	Ave	0.2943	0.3277		11.1	10.0	11.3	30.0
d3-NMePFOSA	Ave	0.1674	0.1894		11.3	10.0	13.1	30.0
d9-N-EtFOSE-M	Ave	0.3345	0.3833		11.5	10.0	14.6	30.0
d5-NEtPFOSA	Ave	0.1351	0.1587		11.7	10.0	17.4	30.0
13C2 PFTeDA	Ave	2.182	2.574		11.8	10.0	18.0	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-167868/7 Calibration Date: 09/03/2021 13:45

Instrument ID: 27632 Calib Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/30/2021 07:38

Lab File ID: 21SEP03-09.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid	LID1F		0.9177		21.7	20.0	8.5	30.0
Perfluoropentanoic acid	LID1F		1.129		22.4	20.0	11.8	30.0
Perfluorobutanesulfonic acid	LID1F		1.269		18.4	17.7	3.8	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		2.038		18.9	18.7	1.3	30.0
Perfluorohexanoic acid	LID1F		0.7562		22.1	20.0	10.4	30.0
Perfluoropentanesulfonic acid	LID1F		0.6235		21.6	18.8	14.9	30.0
HFPODA	LID1F		4.098		20.7	20.0	3.5	30.0
Perfluoroheptanoic acid	LID1F		1.535		18.8	20.0	-6.2	30.0
Perfluorohexanesulfonic acid	LID1F		1.077		17.4	18.2	-4.5	30.0
DONA	LID1F		1.394		21.1	18.9	11.9	30.0
6:2 Fluorotelomer sulfonic acid	LID1F		1.631		19.7	19.0	3.9	30.0
Perfluoroheptanesulfonic acid	LID1F		0.9854		17.5	19.0	-8.1	30.0
Perfluorooctanoic acid	LID1F		0.5703		20.4	20.0	2.0	30.0
Perfluorooctanesulfonic acid	LID1F		1.236		19.0	18.5	2.4	30.0
Perfluorononanoic acid	LID1F		0.9722		22.3	20.0	11.4	30.0
9Cl-PF3ONS	LID1F		2.994		19.9	18.6	6.9	30.0
Perfluorononanesulfonic acid	LID1F		0.8514		19.7	19.2	2.8	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		1.846		20.4	19.2	6.4	30.0
Perfluorodecanoic acid	LID1F		0.3818		20.9	20.0	4.7	30.0
Perfluorooctanesulfonamide	LID1F		1.002		20.1	20.0	0.3	30.0
NMeFOSAA	LID1F		0.9394		22.8	20.0	13.9	30.0
Perfluorodecanesulfonic acid	LID1F		0.6265		20.0	19.3	4.0	30.0
Perfluoroundecanoic acid	LID1F		0.3639		23.0	20.0	15.2	30.0
NEtFOSAA	LID1F		1.018		20.1	20.0	0.3	30.0
11Cl-PF3OUdS	LID1F		2.240		20.6	18.6	10.9	30.0
Perfluorododecanoic acid	LID1F		0.4767		23.3	20.0	16.6	30.0
10:2 FTS	LID1F		2.289		19.5	19.3	1.0	30.0
NMeFOSE	LID1F		0.8250		20.1	20.0	0.7	30.0
NMeFOSA	LID1F		1.052		19.7	20.0	-1.5	30.0
Perfluorododecanesulfonic acid	LID1F		0.2799		20.0	19.4	3.3	30.0
NEtFOSE	LID1F		0.6002		18.9	20.0	-5.5	30.0
NEtFOSA	LID1F		0.9727		20.3	20.0	1.4	30.0
Perfluorotridecanoic acid	LID1F		0.8215		22.4	20.0	11.9	30.0
Perfluorotetradecanoic acid	LID1F		1.002		21.8	20.0	9.0	30.0
Perfluorohexadecanoic acid	LID1F		0.4303		21.8	20.0	9.0	30.0
Perfluorooctadecanoic acid	LID1F		0.2653		19.4	20.0	-2.9	30.0
13C4 PFBA	Ave	1.095	1.118		10.2	10.0	2.0	30.0
13C5 PFPeA	Ave	0.8572	0.8474		9.89	10.0	-1.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-167868/7 Calibration Date: 09/03/2021 13:45

Instrument ID: 27632 Calib Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/30/2021 07:38

Lab File ID: 21SEP03-09.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C3 PFBS	Ave	0.4256	0.3985		8.76	9.36	-6.4	30.0
M2-4:2 FTS	Ave	0.2018	0.1916		8.87	9.34	-5.1	30.0
13C2 PFHxA	Ave	1.355	1.484		11.0	10.0	9.6	30.0
13C5 PFHxA	Ave	1.805	1.975		10.9	10.0	9.4	30.0
13C3 HFPO-DA	Ave	0.1300	0.1383		10.6	10.0	6.3	30.0
13C3 PFHxS	Ave	0.4655	0.5100		10.4	9.46	9.6	30.0
13C4 PFHpA	Ave	1.121	1.226		10.9	10.0	9.4	30.0
M2-6:2 FTS	Ave	0.1447	0.1258		8.26	9.50	-13.1	30.0
13C8 PFOA	Ave	1.792	1.849		10.3	10.0	3.2	30.0
13C4 PFOA	Ave	1.199	1.303		10.9	10.0	8.6	30.0
13C8 PFOS	Ave	0.997	0.9513		9.12	9.57	-4.6	30.0
13C9 PFNA	Ave	1.974	1.863		9.44	10.0	-5.6	30.0
13C6 PFDA	Ave	2.674	2.742		10.3	10.0	2.5	30.0
M2-8:2 FTS	Ave	0.2425	0.2105		8.32	9.58	-13.2	30.0
13C8 FOSA	Ave	1.905	2.012		10.6	10.0	5.6	30.0
d3-NMeFOSAA	Ave	0.7510	0.8230		11.0	10.0	9.6	30.0
13C2 PFUnA	Ave	1.430	1.461		10.2	10.0	2.2	30.0
13C7 PFUnA	Ave	2.673	2.527		9.45	10.0	-5.5	30.0
d5-NEtFOSAA	Ave	0.4399	0.5027		11.4	10.0	14.3	30.0
13C2-PFDoDA	Ave	3.017	2.864		9.49	10.0	-5.1	30.0
d7-N-MeFOSE-M	Ave	0.2943	0.3168		10.8	10.0	7.6	30.0
d3-NMePFOSA	Ave	0.1674	0.1742		10.4	10.0	4.0	30.0
d9-N-EtFOSE-M	Ave	0.3345	0.3408		10.2	10.0	1.9	30.0
d5-NEtPFOSA	Ave	0.1351	0.1403		10.4	10.0	3.8	30.0
13C2 PFTeDA	Ave	2.182	2.207		10.1	10.0	1.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-167868/18 Calibration Date: 09/03/2021 15:42

Instrument ID: 27632 Calib Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/30/2021 07:38

Lab File ID: 21SEP03-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid	LID1F		0.8894		2.10	2.00	5.2	30.0
Perfluoropentanoic acid	LID1F		1.126		2.23	2.00	11.4	30.0
Perfluorobutanesulfonic acid	LID1F		1.098		1.59	1.77	-10.2	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		1.849		1.72	1.87	-8.1	30.0
Perfluorohexanoic acid	LID1F		0.6920		2.02	2.00	1.0	30.0
Perfluoropentanesulfonic acid	LID1F		0.5898		2.04	1.88	8.7	30.0
HFPODA	LID1F		3.222		1.63	2.00	-18.6	30.0
Perfluoroheptanoic acid	LID1F		1.518		1.86	2.00	-7.2	30.0
Perfluorohexanesulfonic acid	LID1F		0.9532		1.54	1.82	-15.5	30.0
DONA	LID1F		1.324		2.01	1.89	6.3	30.0
6:2 Fluorotelomer sulfonic acid	LID1F		1.535		1.85	1.90	-2.3	30.0
Perfluoroheptanesulfonic acid	LID1F		0.8703		1.55	1.90	-18.8	30.0
Perfluorooctanoic acid	LID1F		0.4904		1.75	2.00	-12.3	30.0
Perfluorooctanesulfonic acid	LID1F		1.028		1.58	1.85	-14.8	30.0
Perfluorononanoic acid	LID1F		0.8613		1.97	2.00	-1.3	30.0
9Cl-PF3ONS	LID1F		2.731		1.81	1.86	-2.5	30.0
Perfluorononanesulfonic acid	LID1F		0.8511		1.97	1.92	2.7	30.0
Perfluorodecanoic acid	LID1F		0.3151		1.73	2.00	-13.6	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		1.842		2.03	1.92	6.2	30.0
Perfluorooctanesulfonamide	LID1F		0.9764		1.96	2.00	-2.2	30.0
NMeFOSAA	LID1F		0.8165		1.98	2.00	-1.0	30.0
Perfluorodecanesulfonic acid	LID1F		0.5954		1.90	1.93	-1.2	30.0
Perfluoroundecanoic acid	LID1F		0.3194		2.02	2.00	1.1	30.0
NEtFOSAA	LID1F		0.8690		1.71	2.00	-14.4	30.0
11Cl-PF3OUdS	LID1F		1.822		1.68	1.86	-9.8	30.0
Perfluorododecanoic acid	LID1F		0.4075		1.99	2.00	-0.3	30.0
10:2 FTS	LID1F		2.286		1.94	1.93	0.8	30.0
NMeFOSE	LID1F		0.7705		1.88	2.00	-5.9	30.0
NMeFOSA	LID1F		1.045		1.96	2.00	-2.2	30.0
Perfluorododecanesulfonic acid	LID1F		0.2510		1.79	1.94	-7.4	30.0
NEtFOSE	LID1F		0.5389		1.70	2.00	-15.1	30.0
NEtFOSA	LID1F		0.9610		2.00	2.00	0.1	30.0
Perfluorotridecanoic acid	LID1F		0.6976		1.90	2.00	-5.0	30.0
Perfluorotetradecanoic acid	LID1F		0.9453		2.06	2.00	2.8	30.0
Perfluorohexadecanoic acid	LID1F		0.4256		2.16	2.00	7.8	30.0
Perfluorooctadecanoic acid	LID1F		0.2597		1.90	2.00	-5.0	30.0
13C4 PFBA	Ave	1.095	1.099		10.0	10.0	0.3	30.0
13C5 PFPeA	Ave	0.8572	0.8414		9.82	10.0	-1.8	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-167868/18 Calibration Date: 09/03/2021 15:42

Instrument ID: 27632 Calib Start Date: 08/30/2021 06:35

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/30/2021 07:38

Lab File ID: 21SEP03-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C3 PFBS	Ave	0.4256	0.3920		8.62	9.36	-7.9	30.0
M2-4:2 FTS	Ave	0.2018	0.1996		9.24	9.34	-1.1	30.0
13C2 PFHxA	Ave	1.355	1.470		10.9	10.0	8.5	30.0
13C5 PFHxA	Ave	1.805	1.953		10.8	10.0	8.2	30.0
13C3 HFPO-DA	Ave	0.1300	0.1316		10.1	10.0	1.2	30.0
13C3 PFHxS	Ave	0.4655	0.5337		10.8	9.46	14.7	30.0
13C4 PFHpA	Ave	1.121	1.168		10.4	10.0	4.3	30.0
M2-6:2 FTS	Ave	0.1447	0.1377		9.04	9.50	-4.9	30.0
13C4 PFOA	Ave	1.199	1.296		10.8	10.0	8.1	30.0
13C8 PFOA	Ave	1.792	1.871		10.4	10.0	4.4	30.0
13C8 PFOS	Ave	0.997	0.9746		9.35	9.57	-2.3	30.0
13C9 PFNA	Ave	1.974	1.897		9.61	10.0	-3.9	30.0
13C6 PFDA	Ave	2.674	2.838		10.6	10.0	6.1	30.0
M2-8:2 FTS	Ave	0.2425	0.2407		9.51	9.58	-0.7	30.0
13C8 FOSA	Ave	1.905	2.141		11.2	10.0	12.4	30.0
d3-NMeFOSAA	Ave	0.7510	0.8191		10.9	10.0	9.1	30.0
13C7 PFUnA	Ave	2.673	2.773		10.4	10.0	3.7	30.0
13C2 PFUnA	Ave	1.430	1.540		10.8	10.0	7.7	30.0
d5-NEtFOSAA	Ave	0.4399	0.5740		13.0	10.0	30.5*	30.0
13C2-PFDoDA	Ave	3.017	3.236		10.7	10.0	7.3	30.0
d7-N-MeFOSE-M	Ave	0.2943	0.3336		11.3	10.0	13.4	30.0
d3-NMePFOSA	Ave	0.1674	0.1821		10.9	10.0	8.8	30.0
d9-N-EtFOSE-M	Ave	0.3345	0.3641		10.9	10.0	8.8	30.0
d5-NEtPFOSA	Ave	0.1351	0.1450		10.7	10.0	7.3	30.0
13C2 PFTeDA	Ave	2.182	2.188		10.0	10.0	0.3	30.0

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Instrument ID: 30727 Start Date: 08/31/2021 19:29

Analysis Batch Number: 166660 End Date: 08/31/2021 22:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 410-166660/1		08/31/2021 19:29	1	21AUG31MCAL-09.d	Gemini C18 50mm 3(mm)
IC 410-166660/2		08/31/2021 19:40	1	21AUG31MCAL-10.d	Gemini C18 50mm 3(mm)
IC 410-166660/3		08/31/2021 19:51	1	21AUG31MCAL-11.d	Gemini C18 50mm 3(mm)
IC 410-166660/4		08/31/2021 20:02	1	21AUG31MCAL-12.d	Gemini C18 50mm 3(mm)
ICISAV 410-166660/5		08/31/2021 20:13	1	21AUG31MCAL-13.d	Gemini C18 50mm 3(mm)
IC 410-166660/6		08/31/2021 20:25	1	21AUG31MCAL-14.d	Gemini C18 50mm 3(mm)
IC 410-166660/7		08/31/2021 21:25	1	21AUG31MCAL-19.d	Gemini C18 50mm 3(mm)
ICB 410-166660/8		08/31/2021 21:38	1	21AUG31MCAL-20.d	Gemini C18 50mm 3(mm)
ICV 410-166660/9		08/31/2021 21:49	1	21AUG31MCAL-21.d	Gemini C18 50mm 3(mm)
WDM 410-166660/10		08/31/2021 22:00	1	21AUG31MCAL-22.d	Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Instrument ID: 30727 Start Date: 08/31/2021 23:40

Analysis Batch Number: 166713 End Date: 09/01/2021 17:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 410-166713/5		08/31/2021 23:40	1	21AUG31-07.d	Gemini C18 50mm 3(mm)
MB 410-162732/1-A		08/31/2021 23:51	1	21AUG31-08.d	Gemini C18 50mm 3(mm)
LCS 410-162732/2-A		09/01/2021 00:02	1	21AUG31-09.d	Gemini C18 50mm 3(mm)
410-51537-1	CMW-12-GW-210813	09/01/2021 00:13	1	21AUG31-10.d	Gemini C18 50mm 3(mm)
410-51537-1 MS	CMW-12-GW-210813 MS	09/01/2021 00:24	1	21AUG31-11.d	Gemini C18 50mm 3(mm)
410-51537-1 MSD	CMW-12-GW-210813 MSD	09/01/2021 00:35	1	21AUG31-12.d	Gemini C18 50mm 3(mm)
410-51537-2	CMW-17-GW-210813	09/01/2021 00:47	1	21AUG31-13.d	Gemini C18 50mm 3(mm)
410-51537-3	CMW-56-GW-210813	09/01/2021 00:58	1	21AUG31-14.d	Gemini C18 50mm 3(mm)
410-51537-4	CMW-28-GW-210813	09/01/2021 01:09	1	21AUG31-15.d	Gemini C18 50mm 3(mm)
410-51537-5	BD-1-GW-210813	09/01/2021 01:20	1	21AUG31-16.d	Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 01:31	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 01:42	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 01:53	1		Gemini C18 50mm 3(mm)
CCV 410-166713/18		09/01/2021 02:04	1	21AUG31-20.d	Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:15	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:26	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:37	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:48	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:00	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:11	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:22	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:33	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:44	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:55	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:06	1		Gemini C18 50mm 3(mm)
CCV 410-166713/30		09/01/2021 04:17	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:28	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:39	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:50	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:01	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:12	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:35	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:46	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:57	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:19	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:30	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:41	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:52	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:03	1		Gemini C18 50mm 3(mm)
CCV 410-166713/46		09/01/2021 07:14	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:25	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:36	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:48	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:59	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:10	1		Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Instrument ID: 30727 Start Date: 08/31/2021 23:40

Analysis Batch Number: 166713 End Date: 09/01/2021 17:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		09/01/2021 08:21	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:32	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:43	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:54	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:16	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:27	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:38	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:49	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:01	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:12	1		Gemini C18 50mm 3(mm)
CCV 410-166713/63		09/01/2021 10:23	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:34	10		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:45	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:56	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 11:07	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 11:18	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 11:29	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 11:40	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 11:52	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 12:03	1		Gemini C18 50mm 3(mm)
CCV 410-166713/75		09/01/2021 12:14	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 13:09	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 14:04	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 14:37	10		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 15:55	1		Gemini C18 50mm 3(mm)
CCV 410-166713/78		09/01/2021 16:06	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 16:17	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 16:28	10		Gemini C18 50mm 3(mm)
CCV 410-166713/97		09/01/2021 17:24	1		Gemini C18 50mm 3(mm)

537 IDA

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-166660/1	21AUG31MCAL-09.d
Level 2	IC 410-166660/2	21AUG31MCAL-10.d
Level 3	IC 410-166660/3	21AUG31MCAL-11.d
Level 4	IC 410-166660/4	21AUG31MCAL-12.d
Level 5	ICISAV 410-166660/5	21AUG31MCAL-13.d
Level 6	IC 410-166660/6	21AUG31MCAL-14.d
Level 7	IC 410-166660/7	21AUG31MCAL-19.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
MTP	0.0685 0.0709	0.0642 0.0782	0.0668	0.0718	0.0823	LID1 F		0.0762							0.9970		0.9900
PPF Acid	0.4347 0.4199	0.3884 0.4622	0.4033	0.4233	0.4907	LID1 F		0.4511							0.9970		0.9900
PFMOAA	0.2168 0.2227	0.2024 0.2683	0.2121	0.2162	0.2602	LID1 F		0.2516							0.9920		0.9900
Perfluorobutanoic acid	0.8716 0.8600	0.8212 0.8834	0.8944	0.9108	0.9237	LID1 F		0.8825							1.0000		0.9900
R-EVE	0.0574 0.0466	0.0432 0.0539	0.0434	0.0447	0.0506	LID1 F		0.0510							0.9950		0.9900
R-PSDA	0.0107 0.0149	0.0123 0.0184	0.0118	0.0143	0.0153	Q2ID	-0.001	0.0132	0.0000503						0.9970		0.9900
Hydrolyzed PSDA	0.0532 0.0692	0.0522 0.0727	0.0560	0.0616	0.0654	LID1 F		0.0702							0.9970		0.9900
PMPA	0.2361 0.2656	0.2437 0.2912	0.2555	0.2706	0.2787	LID1 F		0.2812							0.9980		0.9900
Perfluoropropanesulfonic acid	0.4750 0.5079	0.4219 0.5300	0.5053	0.5251	0.5540	LID1 F		0.5257							0.9990		0.9900
NVHOS	0.2191 0.2631	0.2283 0.2792	0.2397	0.2541	0.2774	LID1 F		0.2728							0.9990		0.9900
PFECA F	0.9361 0.8594	0.8399 0.8896	0.9315	0.9331	0.9712	LID1 F		0.8926							0.9990		0.9900
PFO2HxA	0.1584 0.1154	0.1278 0.1278	0.1215	0.1241	0.1365	LID1 F		0.1251							0.9970		0.9900
Perfluoropentanoic acid	0.9273 0.8911	0.8555 0.9051	0.9546	0.8587	0.9464	LID1 F		0.9042							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
3:3 FTCA	0.0515 0.0577	0.0443 0.0575	0.0550	0.0572	0.0609	LID1F		0.0578							0.9990		0.9900
Perfluorobutanesulfonic acid	1.0910 1.1574	0.9705 1.2406	1.0948	1.2235	1.1915	LID1F		1.2088							0.9990		0.9900
PEPA	0.1005 0.1063	0.0992 0.1100	0.1057	0.1113	0.1259	LID1F		0.1107							0.9970		0.9900
PFECA A	0.7415 0.7459	0.6878 0.7888	0.7243	0.7588	0.8021	LID1F		0.7761							0.9990		0.9900
Perfluoro (2-ethoxyethane) sulfonic acid	2.9022 3.2589	2.8404 3.3719	3.0772	3.1258	3.4377	LID1F		3.3318							0.9990		0.9900
PFECA B	0.7187 0.7487	0.6306 0.7638	0.7059	0.7345	0.7654	LID1F		0.7575							1.0000		0.9900
4:2 Fluorotelomer sulfonic acid	3.0339 3.1852	2.8989 3.1905	3.0147	3.3101	3.3576	LID1F		3.2099							1.0000		0.9900
Perfluorohexanoic acid	0.8566 0.7984	0.6866 0.8411	0.7481	0.7575	0.8601	LID1F		0.8263							0.9990		0.9900
Perfluoropentanesulfonic acid	0.8985 0.9405	0.8317 1.0175	0.9259	0.9510	0.9782	LID1F		0.9872							0.9990		0.9900
PFO3OA	0.0908 0.0912	0.0796 0.0999	0.0949	0.0846	0.0999	LID1F		0.0967							0.9980		0.9900
HFPODA	9.6866 10.387	10.009 10.589	8.4220	8.7191	10.008	LID1F		10.359							0.9980		0.9900
Hydro-EVE Acid	1.6580 1.5984	1.5237 1.5995	1.5142	1.6450	1.7719	LID1F		1.6192							0.9990		0.9900
R-PSDCA	1.9653 2.1808	1.8995 2.2072	1.9069	2.0717	2.2266	LID1F		2.1916							1.0000		0.9900
Hydro-PS Acid	1.4894 1.8282	1.6147 1.8782	1.6415	1.7283	1.8536	LID1F		1.8512							0.9990		0.9900
Perfluoroheptanoic acid	0.9674 0.9496	0.7690 0.9792	0.9007	0.9697	1.0324	LID1F		0.9750							0.9990		0.9900
Perfluorohexanesulfonic acid	0.9616 1.0117	0.8714 1.1063	0.9376	0.9281	1.0638	LID1F		1.0648							0.9970		0.9900
DONA	0.9424 1.2382	0.9873 1.3713	1.0339	1.1649	1.2543	LID1F		1.3071							0.9960		0.9900
PFECA G	1.5125 1.5239	1.4878 1.6126	1.5421	1.6051	1.8069	LID1F		1.6080							0.9970		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
5:3 FTCA	0.1936 0.1752	0.1413 0.1888	0.1475	0.1663	0.1726	LID1F		0.1817							0.9980		0.9900
6:2 FTUCA	1.1394 1.1917	1.0626 1.1391	1.1370	1.2689	1.2466	LID1F		1.1711							0.9990		0.9900
6:2 FTCA	1.1143 1.0748	0.9161 1.0566	1.0555	1.0006	1.0924	LID1F		1.0628							1.0000		0.9900
PFO4DA	0.0944 0.0927	0.0816 0.0957	0.0925	0.0876	0.1061	LID1F		0.0956							0.9980		0.9900
PS Acid	0.4738 0.5672	0.4897 0.5902	0.5016	0.5508	0.5754	LID1F		0.5790							0.9990		0.9900
EVE Acid	1.1432 1.1018	1.0729 1.0847	1.1142	1.1813	1.2130	LID1F		1.1083							0.9990		0.9900
Perfluoro-4-ethylcyclohexanesulfonic acid	1.6040 1.6625	1.4186 1.7005	1.5800	1.5435	1.6471	LID1F		1.6749							0.9990		0.9900
6:2 Fluorotelomer sulfonic acid	3.6219 4.0969	3.9646 4.2347	4.2634	4.3733	4.4128	LID1F		4.2213							0.9990		0.9900
Perfluoroheptanesulfonic acid	1.0104 1.0248	0.9393 1.0761	1.0111	0.9808	1.0620	LID1F		1.0550							0.9990		0.9900
Perfluorooctanoic acid	0.8946 0.8266	0.6535 0.9046	0.8080	0.7837	0.8311	LID1F		0.8677							0.9970		0.9900
TAF	0.0736 0.0723	0.0701 0.0541	0.0642	0.0570	0.0793	AveID		0.0672				13.7		20.0			
Perfluorooctanesulfonic acid	0.9757 1.0512	0.8987 1.1246	0.9545	1.0197	1.0809	LID1F		1.0921							0.9990		0.9900
Perfluorononanoic acid	0.9471 0.8874	0.7734 0.9121	0.7844	0.8844	0.9762	LID1F		0.9094							0.9990		0.9900
7:3 FTCA	4.8856 5.9178	4.2918 5.5760	4.7672	4.9237	5.7375	LID1F		5.6463							0.9980		0.9900
8:2 FTUCA	0.8230 0.9914	0.8659 0.9279	0.9221	0.9668	1.1033	LID1F		0.9662							0.9970		0.9900
8:2 FTCA	0.9109 0.9636	1.1527 0.8483	0.8294	0.8255	0.9612	LID1F		0.8924							0.9960		0.9900
9Cl-PF3ONS	1.4644 1.7686	1.4531 1.7326	1.6045	1.6985	1.7959	LID1F		1.7456							1.0000		0.9900
Perfluorononanesulfonic acid	0.8548 1.0268	0.9622 1.0080	0.9881	0.9837	1.0144	LID1F		1.0123							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid	0.7266 0.8085	0.6753 0.8409	0.7354	0.7852	0.8520	LID1 F		0.8289							0.9990		0.9900
8:2 Fluorotelomer sulfonic acid	5.9664 6.6048	6.1902 6.0587	6.0597	6.3248	6.1330	LID1 F		6.2301							0.9980		0.9900
Perfluorooctanesulfonamide	0.8804 1.0030	0.8702 0.9770	0.9657	0.9781	1.0120	LID1 F		0.9876							1.0000		0.9900
NMeFOSAA	0.7055 0.8268	0.7222 0.8520	0.7913	0.7919	0.8792	LID1 F		0.8442							0.9990		0.9900
Perfluorodecanesulfonic acid	0.8445 0.8874	0.7764 0.9075	0.8576	0.8993	0.8688	LID1 F		0.8963							1.0000		0.9900
Perfluoroundecanoic acid	0.7625 0.7484	0.7325 0.8442	0.7771	0.8075	0.8532	LID1 F		0.8159							0.9970		0.9900
NEtFOSAA	0.7446 0.9536	0.7004 1.0249	0.8016	0.8805	1.0253	LID1 F		0.9952							0.9980		0.9900
10:2 FTUCA	0.8569 0.8874	0.7960 0.8895	0.8231	0.8452	0.9146	LID1 F		0.8887							1.0000		0.9900
11Cl-PF3OUdS	1.0491 1.1772	1.0539 1.1783	1.0542	1.1372	1.2452	LID1 F		1.1817							0.9990		0.9900
10:2 FTCA	0.7886 0.8399	0.6948 0.7574	0.7140	0.7471	0.7941	LID1 F		0.7832							0.9980		0.9900
Perfluorododecanoic acid	0.9925 0.9270	0.8751 0.9834	0.9029	0.9595	1.0264	LID1 F		0.9704							0.9990		0.9900
10:2 FTS	6.3701 6.1239	5.0424 6.2112	4.9964	5.9424	5.5058	LID1 F		6.0805							0.9980		0.9900
NMeFOSE	1.0858 1.0509	0.9314 1.0804	1.0480	1.0254	1.0949	LID1 F		1.0706							1.0000		0.9900
NMeFOSA	0.9142 1.0121	0.8192 1.0634	0.9203	0.9884	1.0591	LID1 F		1.0430							0.9990		0.9900
Perfluorododecanesulfonic acid	0.7965 0.8672	0.8049 0.8657	0.8237	0.8558	0.9016	LID1 F		0.8689							1.0000		0.9900
NEtFOSE	1.0453 0.9854	1.0179 0.9662	1.0126	1.0356	1.0480	LID1 F		0.9844							0.9990		0.9900
NEtFOSA	0.9448 1.0940	0.9655 1.0615	1.0041	1.0326	1.0442	LID1 F		1.0663							1.0000		0.9900
Perfluorotridecanoic acid	0.6963 0.7172	0.6367 0.7578	0.6758	0.7436	0.7848	LID1 F		0.7476							0.9990		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorotetradecanoic acid	0.8515 0.8717	0.8019 0.9316	0.8283	0.8953	0.9348	LID1F		0.9122							0.9990		0.9900
Perfluorohexadecanoic acid	0.7897 0.6798	0.6297 0.7127	0.6761	0.6954	0.7335	LID1F		0.7046							0.9990		0.9900
Perfluorooctadecanoic acid	0.2952 0.3216	0.2654 0.3677	0.2961	0.3112	0.3356	LID1F		0.3477							0.9950		0.9900
13C4 PFBA	1.0364 1.1633	1.1312 1.1612	1.1235	1.1000	1.1367	Ave		1.1218				3.9		20.0			
13C5 PFPeA	1.1491 1.2129	1.2965 1.2179	1.2607	1.2507	1.2802	Ave		1.2383				4.0		20.0			
13C3 PFBS	1.3481 1.4292	1.4068 1.4242	1.4674	1.4169	1.4840	Ave		1.4252				3.1		20.0			
M2-4:2 FTS	0.1499 0.1398	0.1550 0.1462	0.1601	0.1430	0.1501	Ave		0.1492				4.6		20.0			
13C5 PFHxA	1.3593 1.3429	1.4304 1.3330	1.3917	1.3403	1.3368	Ave		1.3621				2.7		20.0			
13C3 HFPO-DA	0.0164 0.0172	0.0152 0.0178	0.0175	0.0183	0.0180	Ave		0.0172				6.2		20.0			
13C3 PFHxS	0.9367 1.0092	0.9771 0.9794	0.9839	1.0199	1.0077	Ave		0.9877				2.8		20.0			
13C4 PFHpA	1.4099 1.3540	1.5291 1.2810	1.4818	1.3442	1.4461	Ave		1.4066				6.1		20.0			
13C2-2H-Perfluoro-2-octenoic acid	0.9876 0.9647	1.0111 0.9854	0.9860	0.8890	0.9898	Ave		0.9734				4.1		20.0			
13C2-2-Perfluorohexylethanoic acid	0.0454 0.0419	0.0450 0.0420	0.0434	0.0429	0.0427	Ave		0.0433				3.2		20.0			
M2-6:2 FTS	0.0778 0.0713	0.0784 0.0621	0.0768	0.0717	0.0735	Ave		0.0731				7.7		20.0			
13C8 PFOA	1.2632 1.2076	1.2999 1.1040	1.2146	1.1856	1.2499	Ave		1.2178				5.2		20.0			
13C8 PFOS	0.9877 0.9743	1.0089 1.0067	1.0497	0.9948	1.0343	Ave		1.0081				2.6		20.0			
13C9 PFNA	0.8155 0.7835	0.8402 0.7908	0.8220	0.7800	0.8098	Ave		0.8060				2.7		20.0			
13C2-2H-Perfluoro-2-decenoic acid	0.6688 0.7748	0.7341 0.8108	0.7213	0.7050	0.6940	Ave		0.7298				6.7		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2-2-Perfluorooctylethanoic acid	0.0220 0.0241	0.0235 0.0260	0.0241	0.0249	0.0229	Ave		0.0239				5.4		20.0			
13C6 PFDA	0.9120 1.0586	1.0462 0.9894	1.0366	1.0085	0.9835	Ave		1.0050				5.0		20.0			
M2-8:2 FTS	0.0390 0.0440	0.0465 0.0448	0.0511	0.0469	0.0492	Ave		0.0459				8.5		20.0			
13C8 FOSA	1.3178 1.5893	1.4795 1.6523	1.4867	1.5002	1.5171	Ave		1.5061				6.9		20.0			
d3-NMeFOSAA	0.2443 0.2919	0.2647 0.3015	0.2682	0.2818	0.2757	Ave		0.2754				6.8		20.0			
13C7 PFUnA	1.0797 1.3307	1.1893 1.1905	1.1982	1.2080	1.1578	Ave		1.1935				6.2		20.0			
d5-NEtFOSAA	0.1951 0.2205	0.2219 0.2043	0.2252	0.2195	0.2077	Ave		0.2135				5.2		20.0			
13C2-2H-Perfluoro-2-dodecenoic acid	0.7575 0.8285	0.8433 0.7593	0.8489	0.8021	0.7791	Ave		0.8027				4.8		20.0			
13C2-2-Perfluorodecylethanoic acid	0.0186 0.0204	0.0217 0.0201	0.0198	0.0200	0.0203	Ave		0.0201				4.6		20.0			
13C2-PFDoDA	1.0344 1.2815	1.1619 1.2028	1.1370	1.1460	1.1489	Ave		1.1589				6.4		20.0			
d7-N-MeFOSE-M	0.1037 0.1203	0.1140 0.1331	0.1144	0.1104	0.1091	Ave		0.1150				8.3		20.0			
d3-NMePFOSA	0.1077 0.1348	0.1183 0.1509	0.1247	0.1249	0.1231	Ave		0.1263				10.7		20.0			
d9-N-EtFOSE-M	0.1151 0.1369	0.1227 0.1506	0.1239	0.1227	0.1213	Ave		0.1276				9.5		20.0			
d5-NEtPFOSA	0.0980 0.1191	0.1079 0.1343	0.1122	0.1130	0.1189	Ave		0.1148				9.8		20.0			
13C2 PFTeDA	0.7789 0.9441	0.9055 0.9095	0.8924	0.8702	0.8429	Ave		0.8777				6.1		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-166660/1	21AUG31MCAL-09.d
Level 2	IC 410-166660/2	21AUG31MCAL-10.d
Level 3	IC 410-166660/3	21AUG31MCAL-11.d
Level 4	IC 410-166660/4	21AUG31MCAL-12.d
Level 5	ICISAV 410-166660/5	21AUG31MCAL-13.d
Level 6	IC 410-166660/6	21AUG31MCAL-14.d
Level 7	IC 410-166660/7	21AUG31MCAL-19.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
MTP		LID1F	3464 814021	8206 1866474	31366	139316	388071	0.200 50.0	0.500 100	2.00	8.00	20.0
PPF Acid		LID1F	21969 4821098	49617 11031072	189335	821216	2314343	0.200 50.0	0.500 100	2.00	8.00	20.0
PFMOAA		LID1F	10957 2556493	25860 6403597	99583	419319	1227045	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanoic acid		LID1F	44050 9874538	104902 21081375	419890	1766901	4356238	0.200 50.0	0.500 100	2.00	8.00	20.0
R-EVE		LID1F	2903 535312	5523 1285827	20373	86619	238847	0.200 50.0	0.500 100	2.00	8.00	20.0
R-PSDA		Q2ID	706 210547	1957 539673	7254	35712	94135	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydrolyzed PSDA		LID1F	3496 976499	8294 2127750	34324	153892	402803	0.200 50.0	0.500 100	2.00	8.00	20.0
PMPA		LID1F	11933 3049483	31127 6948641	119942	524928	1314216	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropropanesulfonic acid		LID1F	21988 5341374	49369 11584906	217325	933113	2393065	0.183 45.8	0.458 91.6	1.83	7.33	18.3

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
NVHOS		LID1 F	14403 3711861	36272 8172105	147007	634916	1707821	0.200 50.0	0.500 100	2.00	8.00	20.0
PFECA F		LID1 F	47310 9867430	107286 21229483	437350	1810067	4580406	0.200 50.0	0.500 100	2.00	8.00	20.0
PFO2HxA		LID1 F	8006 1324877	16331 3048846	57054	240766	643794	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropentanoic acid		LID1 F	51967 10667385	125248 22654873	502912	1894080	5026456	0.200 50.0	0.500 100	2.00	8.00	20.0
3:3 FTCA		LID1 F	2884 691124	6488 1438474	28979	126200	323610	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanesulfonic acid		LID1 F	63474 14448038	136441 32134818	594164	2705712	6492105	0.177 44.3	0.443 88.5	1.77	7.08	17.7
PEPA		LID1 F	5078 1220994	12667 2625910	49612	216004	593734	0.200 50.0	0.500 100	2.00	8.00	20.0
PFECA A		LID1 F	48744 10521216	109261 23088559	444135	1896096	4938763	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoro (2-ethoxyethane) sulfonic acid		LID1 F	169808 40911862	401609 87836690	1679398	6951399	18837577	0.178 44.5	0.445 89.0	1.78	7.12	17.8
PFECA B		LID1 F	47247 10560164	100184 22356886	432851	1835217	4712566	0.200 50.0	0.500 100	2.00	8.00	20.0
4:2 Fluorotelomer sulfonic acid		LID1 F	24565 4951953	59037 10751680	239028	990254	2448112	0.187 46.7	0.467 93.4	1.87	7.47	18.7
Perfluorohexanoic acid		LID1 F	67325 12761272	138199 27660928	552141	2273691	5980664	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluoropentanesulfonic acid		LID1 F	55404 12443754	123930 27934541	532557	2229038	5649554	0.188 46.9	0.469 93.8	1.88	7.50	18.8
PFO3OA		LID1 F	4588 1047423	10164 2384630	44578	164059	471169	0.200 50.0	0.500 100	2.00	8.00	20.0
HFPODA		LID1 F	9179 2120753	21469 4649494	78010	357788	934991	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydro-EVE Acid		LID1 F	83798 18352475	194636 38172557	710922	3191150	8356101	0.200 50.0	0.500 100	2.00	8.00	20.0
R-PSDCA		LID1 F	129204 30761407	301756 64601628	1169332	5176702	13709159	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydro-PS Acid		LID1 F	97915 25787409	256518 54971420	1006559	4318721	11412505	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoroheptanoic acid		LID1 F	78863 15303315	165458 30946804	707811	2918928	7765719	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorohexanesulfonic acid		LID1 F	47501 11083530	109271 24378283	446171	1933182	5085205	0.182 45.6	0.456 91.2	1.82	7.30	18.2
DONA		LID1 F	72599 18856567	200742 40953441	767800	3313690	8915398	0.189 47.3	0.473 94.5	1.89	7.56	18.9
PFECA G		LID1 F	76440 17496639	190050 38484593	724000	3113627	8521228	0.200 50.0	0.500 100	2.00	8.00	20.0
5:3 FTCA		LID1 F	15781 2823078	30401 5966812	115888	500510	1297938	0.200 50.0	0.500 100	2.00	8.00	20.0
6:2 FTUCA		LID1 F	65069 13683866	151179 27692609	594554	2526114	6418108	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
6:2 FTCA		LID1F	2925 536256	5797 1094031	24283	96232	242819	0.200 50.0	0.500 100	2.00	8.00	20.0
PFO4DA		LID1F	4773 1063806	10426 2283440	43414	169987	500217	0.200 50.0	0.500 100	2.00	8.00	20.0
PS Acid		LID1F	31151 8000588	77799 17273498	307591	1376264	3542651	0.200 50.0	0.500 100	2.00	8.00	20.0
EVE Acid		LID1F	57778 12650931	137053 25886956	523082	2291567	5720607	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoro-4-ethylcyclohexanesulfonic acid		LID1F	80273 18452568	180226 37966651	761805	3257299	7977482	0.185 46.2	0.462 92.4	1.85	7.39	18.5
6:2 Fluorotelomer sulfonic acid		LID1F	15456 3297645	41474 6154617	164571	665420	1600283	0.190 47.4	0.474 94.8	1.90	7.58	19.0
Perfluoroheptanesulfonic acid		LID1F	52099 11719452	122948 24753158	502266	2132593	5299512	0.190 47.6	0.476 95.2	1.90	7.62	19.0
Perfluorooctanoic acid		LID1F	65343 11881480	119540 24637941	520465	2080766	5402928	0.200 50.0	0.500 100	2.00	8.00	20.0
TAF		AveID	3718 830320	8959 1290736	30138	110649	373992	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorooctanesulfonic acid		LID1F	59565 13928146	133116 30213698	554062	2434537	6187895	0.185 46.3	0.463 92.6	1.85	7.40	18.5
Perfluorononanoic acid		LID1F	51581 10217365	103082 20800084	385252	1789057	4728281	0.200 50.0	0.500 100	2.00	8.00	20.0
7:3 FTCA		LID1F	12825 2952519	27159 5773613	109671	473518	1275387	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
8:2 FTUCA		LID1 F	48651 11788373	124657 22157025	479389	2018027	5378663	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 FTCA		LID1 F	1775 356186	5308 650356	14390	60860	154678	0.200 50.0	0.500 100	2.00	8.00	20.0
9Cl-PF3ONS		LID1 F	89833 23547283	216286 46775070	935867	4074922	10331418	0.186 46.5	0.465 93.0	1.86	7.44	18.6
Perfluorononanesulfonic acid		LID1 F	54130 14111675	147837 28091099	594933	2436192	6023882	0.192 48.0	0.480 96.0	1.92	7.68	19.2
Perfluorodecanoic acid		LID1 F	58574 13135222	138558 24504417	549503	2344327	5885331	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 Fluorotelomer sulfonic acid		LID1 F	19693 4272313	54084 7661922	213642	841484	2029558	0.192 47.9	0.479 95.8	1.92	7.66	19.2
Perfluorooctanesulfonamide		LID1 F	102556 24462396	252491 47545294	1034922	4344442	10783760	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSAA		LID1 F	15232 3704277	37490 7567204	152949	660628	1702871	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorodecanesulfonic acid		LID1 F	53700 12246543	119791 25396655	518508	2236516	5180936	0.193 48.2	0.482 96.4	1.93	7.71	19.3
Perfluoroundecanoic acid		LID1 F	72772 15283093	170863 29598871	671114	2887790	6938609	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSAA		LID1 F	12844 3227409	30482 6165814	130141	572114	1495532	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTUCA		LID1 F	57379 11282768	131656 19892408	503631	2006848	5005291	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
11Cl-PF3OUdS		LID1 F	64353 15673935	156876 31810656	614888	2728323	7163144	0.186 46.5	0.465 93.0	1.86	7.44	18.6
10:2 FTCA		LID1 F	1294 263073	2958 448972	10192	44315	113366	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanoic acid		LID1 F	90754 18231646	199407 34839480	739985	3255167	8282840	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTS		LID1 F	21157 3986060	44332 7903948	177259	795553	1833409	0.193 48.2	0.482 96.4	1.93	7.71	19.3
NMeFOSE		LID1 F	9955 1940137	20829 4235433	86441	335187	838897	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSA		LID1 F	8702 2093809	19010 4724917	82708	365431	916052	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanesulfonic acid		LID1 F	50856 12017564	124699 24326737	500054	2137060	5398603	0.194 48.4	0.484 96.8	1.94	7.74	19.4
NEtFOSE		LID1 F	10634 2070718	24504 4284955	90407	376273	892829	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSA		LID1 F	8181 2000169	20433 4199537	81212	345496	871812	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotridecanoic acid		LID1 F	63667 14103976	145088 26844086	553880	2522764	6333233	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotetradecanoic acid		LID1 F	58627 12629074	142418 24954331	532819	2306662	5534316	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorohexadecanoic acid		LID1 F	54367 9849103	111835 19091278	434916	1791515	4342918	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorooctadecanoic acid		LID1F	20322 4659887	47137 9848522	190441	801804	1987131	0.200 50.0	0.500 100	2.00	8.00	20.0
13C4 PFBA	13C3 PFBA	Ave	2527007 2296319	2554832 2386490	2347448	2424863	2358014	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C5 PFPeA	13C3 PFBA	Ave	2801920 2394273	2928104 2503037	2634138	2757248	2655697	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFBS	13C3 PFBA	Ave	3076699 2640569	2973944 2739563	2869818	2923549	2881451	9.36 9.36	9.36 9.36	9.36	9.36	9.36
M2-4:2 FTS	13PFOA	Ave	404839 310931	407300 336990	396443	373949	364564	9.34 9.34	9.34 9.34	9.34	9.34	9.34
13C5 PFHxA	13PFOA	Ave	3929916 3196715	4025614 3288576	3690303	3751887	3476564	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 HFPO-DA	13PFOA	Ave	47380 40835	42901 43910	46313	51294	46713	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFHxS	13PFOA	Ave	2561876 2272748	2601439 2285787	2468157	2700670	2479274	9.46 9.46	9.46 9.46	9.46	9.46	9.46
13C4 PFHpA	13PFOA	Ave	4076158 3223152	4303302 3160284	3929290	3762679	3760832	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-octenoic acid	13PFOA	Ave	2855365 2296438	2845571 2431167	2614601	2488548	2574320	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorohexylethanoic acid	13PFOA	Ave	131254 99785	126563 103544	115027	120213	111144	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-6:2 FTS	13PFOA	Ave	213816 161324	209664 145644	193411	190595	181707	9.50 9.50	9.50 9.50	9.50	9.50	9.50

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C8 PFOA	13PFOA	Ave	3652161 2874677	3658366 2723762	3220763	3318771	3250602	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C8 PFOS	PFOS	Ave	3154591 2738757	3061803 2776653	2999446	3084401	2958328	9.57 9.57	9.57 9.57	9.57	9.57	9.57
13C9 PFNA	PFOS	Ave	2723068 2302684	2665649 2280336	2455690	2528602	2421747	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-decenoic acid	PFDA	Ave	2955767 2378133	2879363 2387996	2599509	2609157	2437431	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorooctylethanoic acid	PFDA	Ave	97428 73930	92096 76667	86754	92153	80462	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C6 PFDA	PFDA	Ave	4030946 3249114	4103821 2914166	3735859	3732194	3453927	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-8:2 FTS	PFDA	Ave	165032 129370	174741 126462	176282	166306	165462	9.58 9.58	9.58 9.58	9.58	9.58	9.58
13C8 FOSA	PFDA	Ave	5824285 4877914	5803351 4866351	5358161	5551923	5328061	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMeFOSAA	PFDA	Ave	1079579 896032	1038175 888127	966422	1042772	968369	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C7 PFUnA	PFDA	Ave	4772001 4084333	4665033 3506244	4318295	4470500	4066101	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtFOSAA	PFDA	Ave	862456 676893	870376 601588	811753	812246	729290	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-dodecenoic acid	PFDA	Ave	3348063 2542794	3307775 2236243	3059314	2968174	2736267	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorodecylethanoic acid	PFDA	Ave	82041 62644	85142 59279	71376	74148	71379	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-PFDoDA	PFDA	Ave	4571791 3933304	4557404 3542591	4097791	4240899	4034786	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d7-N-MeFOSE-M	PFDA	Ave	458418 369226	447279 392023	412395	408614	383108	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMePFOSA	PFDA	Ave	475925	464133	449333	462129	432447	10.0	10.0	10.0	10.0	10.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
			413766	444330				10.0	10.0			
d9-N-EtFOSE-M	PFDA	Ave	508656	481457	446422	454183	425986	10.0	10.0	10.0	10.0	10.0
			420269	443505				10.0	10.0			
d5-NEtPFOSA	PFDA	Ave	432944	423252	404403	418250	417467	10.0	10.0	10.0	10.0	10.0
			365655	395620				10.0	10.0			
13C2 PFTeDA	PFDA	Ave	3442462	3551983	3216218	3220406	2960223	10.0	10.0	10.0	10.0	10.0
			2897695	2678753				10.0	10.0			

Curve Type Legend

Ave = Average ISTD
AveID = Average isotope dilution
LID1F = Linear 1/Conc IsoDil FZ
Q2ID = Quadratic 1/conc^2 IsoDil

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-166660/1	21AUG31MCAL-09.d
Level 2	IC 410-166660/2	21AUG31MCAL-10.d
Level 3	IC 410-166660/3	21AUG31MCAL-11.d
Level 4	IC 410-166660/4	21AUG31MCAL-12.d
Level 5	ICISAV 410-166660/5	21AUG31MCAL-13.d
Level 6	IC 410-166660/6	21AUG31MCAL-14.d
Level 7	IC 410-166660/7	21AUG31MCAL-19.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
MTP	-10.0 2.7	-15.7	-12.3	-5.7	8.0	-6.9	50 30	30	30	30	30	30
PPF Acid	-3.6 2.5	-13.9	-10.6	-6.1	8.8	-6.9	50 30	30	30	30	30	30
PFMOAA	-13.8 6.6	-19.5	-15.7	-14.1	3.4	-11.5	50 30	30	30	30	30	30
Perfluorobutanoic acid	-1.2 0.1	-6.9	1.3	3.2	4.7	-2.5	50 30	30	30	30	30	30
R-EVE	12.7 5.7	-15.2	-14.9	-12.4	-0.6	-8.5	50 30	30	30	30	30	30
R-PSDA	0.5 0.7	0.6	-9.4	5.0	6.9	-4.5	50 30	30	30	30	30	30
Hydrolyzed PSDA	-24.2 3.6	-25.6	-20.2	-12.2	-6.8	-1.4	50 30	30	30	30	30	30
PMPA	-16.0 3.5	-13.3	-9.2	-3.8	-0.9	-5.6	50 30	30	30	30	30	30
Perfluoropropanesulfonic acid	-9.6 0.8	-19.7	-3.9	-0.1	5.4	-3.4	50 30	30	30	30	30	30
NVHOS	-19.7 2.3	-16.3	-12.1	-6.9	1.7	-3.5	50 30	30	30	30	30	30
PFECA F	4.9 -0.3	-5.9	4.4	4.5	8.8	-3.7	50 30	30	30	30	30	30
PFO2HxA	26.6 2.1	2.2	-2.9	-0.8	9.1	-7.8	50 30	30	30	30	30	30
Perfluoropentanoic acid	2.6 0.1	-5.4	5.6	-5.0	4.7	-1.4	50 30	30	30	30	30	30
3:3 FTCA	-11.0 -0.6	-23.4	-4.9	-1.1	5.3	-0.2	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid	-9.8 2.6	-19.7	-9.4	1.2	-1.4	-4.3	50 30	30	30	30	30	30
PEPA	-9.3 -0.6	-10.5	-4.6	0.6	13.7	-4.0	50 30	30	30	30	30	30
PFECA A	-4.5 1.6	-11.4	-6.7	-2.2	3.4	-3.9	50 30	30	30	30	30	30
Perfluoro (2-ethoxyethane) sulfonic acid	-12.9 1.2	-14.7	-7.6	-6.2	3.2	-2.2	50 30	30	30	30	30	30
PFECA B	-5.1 0.8	-16.7	-6.8	-3.0	1.1	-1.2	50 30	30	30	30	30	30
4:2 Fluorotelomer sulfonic acid	-5.5 -0.6	-9.7	-6.1	3.1	4.6	-0.8	50 30	30	30	30	30	30
Perfluorohexanoic acid	3.7 1.8	-16.9	-9.5	-8.3	4.1	-3.4	50 30	30	30	30	30	30
Perfluoropentanesulfonic acid	-9.0 3.1	-15.8	-6.2	-3.7	-0.9	-4.7	50 30	30	30	30	30	30
PFO3OA	-6.1 3.3	-17.7	-1.8	-12.6	3.3	-5.7	50 30	30	30	30	30	30
HFPODA	-6.5 2.2	-3.4	-18.7	-15.8	-3.4	0.3	50 30	30	30	30	30	30
Hydro-EVE Acid	2.4 -1.2	-5.9	-6.5	1.6	9.4	-1.3	50 30	30	30	30	30	30
R-PSDCA	-10.3 0.7	-13.3	-13.0	-5.5	1.6	-0.5	50 30	30	30	30	30	30
Hydro-PS Acid	-19.5 1.5	-12.8	-11.3	-6.6	0.1	-1.2	50 30	30	30	30	30	30
Perfluoroheptanoic acid	-0.8 0.4	-21.1	-7.6	-0.5	5.9	-2.6	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid	-9.7 3.9	-18.2	-12.0	-12.8	-0.1	-5.0	50 30	30	30	30	30	30
DONA	-27.9 4.9	-24.5	-20.9	-10.9	-4.0	-5.3	50 30	30	30	30	30	30
PFECA G	-5.9 0.3	-7.5	-4.1	-0.2	12.4	-5.2	50 30	30	30	30	30	30
5:3 FTCA	6.6 3.9	-22.2	-18.8	-8.5	-5.0	-3.6	50 30	30	30	30	30	30
6:2 FTUCA	-2.7 -2.7	-9.3	-2.9	8.4	6.4	1.8	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
6:2 FTCA	4.8 -0.6	-13.8	-0.7	-5.8	2.8	1.1	50 30	30	30	30	30	30
PFO4DA	-1.2 0.1	-14.6	-3.2	-8.3	11.0	-3.0	50 30	30	30	30	30	30
PS Acid	-18.2 1.9	-15.4	-13.4	-4.9	-0.6	-2.0	50 30	30	30	30	30	30
EVE Acid	3.2 -2.1	-3.2	0.5	6.6	9.4	-0.6	50 30	30	30	30	30	30
Perfluoro-4-ethylcyclohexanesulfonic acid	-4.2 1.5	-15.3	-5.7	-7.8	-1.7	-0.7	50 30	30	30	30	30	30
6:2 Fluorotelomer sulfonic acid	-14.2 0.3	-6.1	1.0	3.6	4.5	-2.9	50 30	30	30	30	30	30
Perfluoroheptanesulfonic acid	-4.2 2.0	-11.0	-4.2	-7.0	0.7	-2.9	50 30	30	30	30	30	30
Perfluorooctanoic acid	3.1 4.2	-24.7	-6.9	-9.7	-4.2	-4.7	50 30	30	30	30	30	30
TAF	9.4 -19.6	4.3	-4.5	-15.2	18.0	7.6	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid	-10.7 3.0	-17.7	-12.6	-6.6	-1.0	-3.7	50 30	30	30	30	30	30
Perfluorononanoic acid	4.1 0.3	-15.0	-13.7	-2.7	7.3	-2.4	50 30	30	30	30	30	30
7:3 FTCA	-13.5 -1.2	-24.0	-15.6	-12.8	1.6	4.8	50 30	30	30	30	30	30
8:2 FTUCA	-14.8 -4.0	-10.4	-4.6	0.1	14.2	2.6	50 30	30	30	30	30	30
8:2 FTCA	2.1 -4.9	29.2	-7.1	-7.5	7.7	8.0	50 30	30	30	30	30	30
9Cl-PF3ONS	-16.1 -0.7	-16.8	-8.1	-2.7	2.9	1.3	50 30	30	30	30	30	30
Perfluorononanesulfonic acid	-15.6 -0.4	-5.0	-2.4	-2.8	0.2	1.4	50 30	30	30	30	30	30
Perfluorodecanoic acid	-12.4 1.4	-18.5	-11.3	-5.3	2.8	-2.5	50 30	30	30	30	30	30
8:2 Fluorotelomer sulfonic acid	-4.2 -2.8	-0.6	-2.7	1.5	-1.6	6.0	50 30	30	30	30	30	30
Perfluorooctanesulfonamide	-10.9 -1.1	-11.9	-2.2	-1.0	2.5	1.6	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
NMeFOSAA	-16.4 0.9	-14.4	-6.3	-6.2	4.1	-2.1	50 30	30	30	30	30	30
Perfluorodecanesulfonic acid	-5.8 1.3	-13.4	-4.3	0.3	-3.1	-1.0	50 30	30	30	30	30	30
Perfluoroundecanoic acid	-6.5 3.5	-10.2	-4.8	-1.0	4.6	-8.3	50 30	30	30	30	30	30
NEtFOSAA	-25.2 3.0	-29.6	-19.4	-11.5	3.0	-4.2	50 30	30	30	30	30	30
10:2 FTUCA	-3.6 0.1	-10.4	-7.4	-4.9	2.9	-0.1	50 30	30	30	30	30	30
11Cl-PF3OUdS	-11.2 -0.3	-10.8	-10.8	-3.8	5.4	-0.4	50 30	30	30	30	30	30
10:2 FTCA	0.7 -3.3	-11.3	-8.8	-4.6	1.4	7.2	50 30	30	30	30	30	30
Perfluorododecanoic acid	2.3 1.3	-9.8	-7.0	-1.1	5.8	-4.5	50 30	30	30	30	30	30
10:2 FTS	4.8 2.1	-17.1	-17.8	-2.3	-9.5	0.7	50 30	30	30	30	30	30
NMeFOSE	1.4 0.9	-13.0	-2.1	-4.2	2.3	-1.8	50 30	30	30	30	30	30
NMeFOSA	-12.3 2.0	-21.5	-11.8	-5.2	1.6	-3.0	50 30	30	30	30	30	30
Perfluorododecanesulfonic acid	-8.3 -0.4	-7.4	-5.2	-1.5	3.8	-0.2	50 30	30	30	30	30	30
NEtFOSE	6.2 -1.8	3.4	2.9	5.2	6.5	0.1	50 30	30	30	30	30	30
NEtFOSA	-11.4 -0.4	-9.4	-5.8	-3.2	-2.1	2.6	50 30	30	30	30	30	30
Perfluorotridecanoic acid	-6.9 1.4	-14.8	-9.6	-0.5	5.0	-4.1	50 30	30	30	30	30	30
Perfluorotetradecanoic acid	-6.6 2.1	-12.1	-9.2	-1.8	2.5	-4.4	50 30	30	30	30	30	30
Perfluorohexadecanoic acid	12.1 1.2	-10.6	-4.0	-1.3	4.1	-3.5	50 30	30	30	30	30	30
Perfluorooctadecanoic acid	-15.1 5.7	-23.7	-14.9	-10.5	-3.5	-7.5	50 30	30	30	30	30	30
13C4 PFBA	-7.6 3.5	0.8	0.2	-1.9	1.3	3.7	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C5 PFPeA	-7.2 -1.6	4.7	1.8	1.0	3.4	-2.0	50 30	30	30	30	30	30
13C3 PFBS	-5.4 -0.1	-1.3	3.0	-0.6	4.1	0.3	50 30	30	30	30	30	30
M2-4:2 FTS	0.5 -2.0	3.9	7.3	-4.1	0.6	-6.2	50 30	30	30	30	30	30
13C5 PFHxA	-0.2 -2.1	5.0	2.2	-1.6	-1.9	-1.4	50 30	30	30	30	30	30
13C3 HFPO-DA	-4.7 3.5	-11.3	1.6	6.6	4.5	-0.2	50 30	30	30	30	30	30
13C3 PFHxS	-5.2 -0.8	-1.1	-0.4	3.3	2.0	2.2	50 30	30	30	30	30	30
13C4 PFHpA	0.2 -8.9	8.7	5.3	-4.4	2.8	-3.7	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-octenoic acid	1.5 1.2	3.9	1.3	-8.7	1.7	-0.9	50 30	30	30	30	30	30
13C2-2-Perfluorohexylethanoic acid	4.8 -3.1	3.8	0.1	-0.9	-1.4	-3.3	50 30	30	30	30	30	30
M2-6:2 FTS	6.5 -15.0	7.3	5.0	-2.0	0.6	-2.4	50 30	30	30	30	30	30
13C8 PFOA	3.7 -9.3	6.7	-0.3	-2.6	2.6	-0.8	50 30	30	30	30	30	30
13C8 PFOS	-2.0 -0.1	0.1	4.1	-1.3	2.6	-3.3	50 30	30	30	30	30	30
13C9 PFNA	1.2 -1.9	4.2	2.0	-3.2	0.5	-2.8	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-decenoic acid	-8.4 11.1	0.6	-1.2	-3.4	-4.9	6.2	50 30	30	30	30	30	30
13C2-2-Perfluorooctylethanoic acid	-7.9 8.8	-1.9	0.6	4.1	-4.3	0.6	50 30	30	30	30	30	30
13C6 PFDA	-9.2 -1.5	4.1	3.1	0.4	-2.1	5.3	50 30	30	30	30	30	30
M2-8:2 FTS	-15.1 -2.4	1.3	11.2	2.2	7.1	-4.2	50 30	30	30	30	30	30
13C8 FOSA	-12.5 9.7	-1.8	-1.3	-0.4	0.7	5.5	50 30	30	30	30	30	30
d3-NMeFOSAA	-11.3 9.5	-3.9	-2.6	2.3	0.1	6.0	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51537-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C7 PFUnA	-9.5 -0.3	-0.3	0.4	1.2	-3.0	11.5	50 30	30	30	30	30	30
d5-NEtFOSAA	-8.6 -4.3	4.0	5.5	2.8	-2.7	3.3	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-dodecenoic acid	-5.6 -5.4	5.1	5.8	-0.1	-2.9	3.2	50 30	30	30	30	30	30
13C2-2-Perfluorodecylethanoic acid	-7.8 -0.1	7.8	-1.7	-0.5	0.9	1.3	50 30	30	30	30	30	30
13C2-PFDoDA	-10.7 3.8	0.3	-1.9	-1.1	-0.9	10.6	50 30	30	30	30	30	30
d7-N-MeFOSE-M	-9.8 15.7	-0.9	-0.5	-4.0	-5.2	4.6	50 30	30	30	30	30	30
d3-NMePFOSA	-14.8 19.4	-6.3	-1.3	-1.2	-2.5	6.7	50 30	30	30	30	30	30
d9-N-EtFOSE-M	-9.8 18.0	-3.8	-2.9	-3.8	-4.9	7.3	50 30	30	30	30	30	30
d5-NEtPFOSA	-14.7 17.0	-6.0	-2.2	-1.5	3.6	3.8	50 30	30	30	30	30	30
13C2 PFTeDA	-11.3 3.6	3.2	1.7	-0.8	-4.0	7.6	50 30	30	30	30	30	30

Calibration / MTP

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

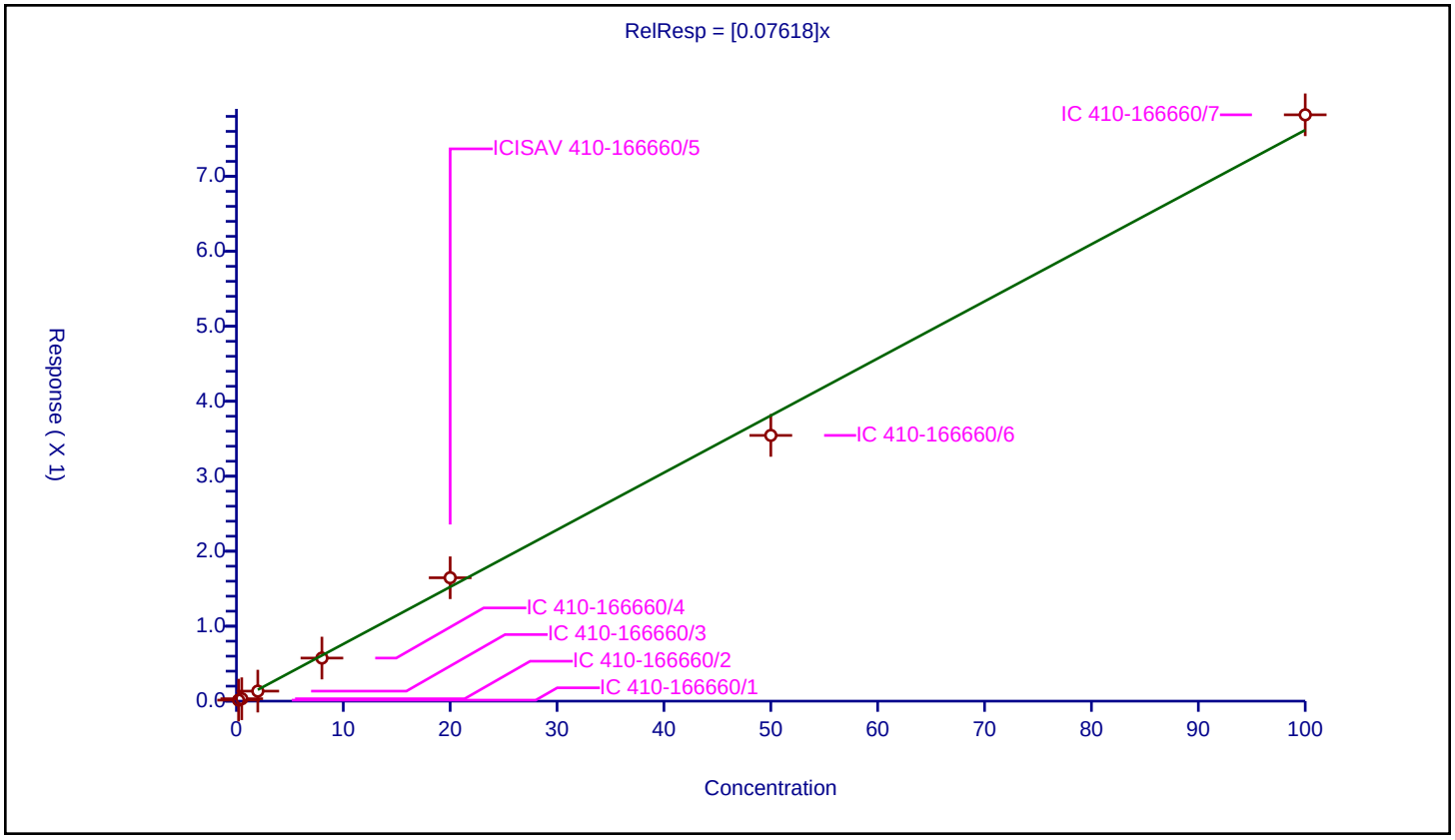
Curve Coefficients

Intercept:	0
Slope:	0.07618

Error Coefficients

Standard Error:	848000
Relative Standard Error:	10.4
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.013708	10.0	2527007.0	0.06854	Y
2	IC 410-166660/2	0.5	0.03212	10.0	2554832.0	0.064239	Y
3	IC 410-166660/3	2.0	0.133617	10.0	2347448.0	0.066809	Y
4	IC 410-166660/4	8.0	0.574531	10.0	2424863.0	0.071816	Y
5	ICISAV 410-166660/5	20.0	1.645754	10.0	2358014.0	0.082288	Y
6	IC 410-166660/6	50.0	3.544895	10.0	2296319.0	0.070898	Y
7	IC 410-166660/7	100.0	7.821001	10.0	2386490.0	0.07821	Y



Calibration / PPF Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

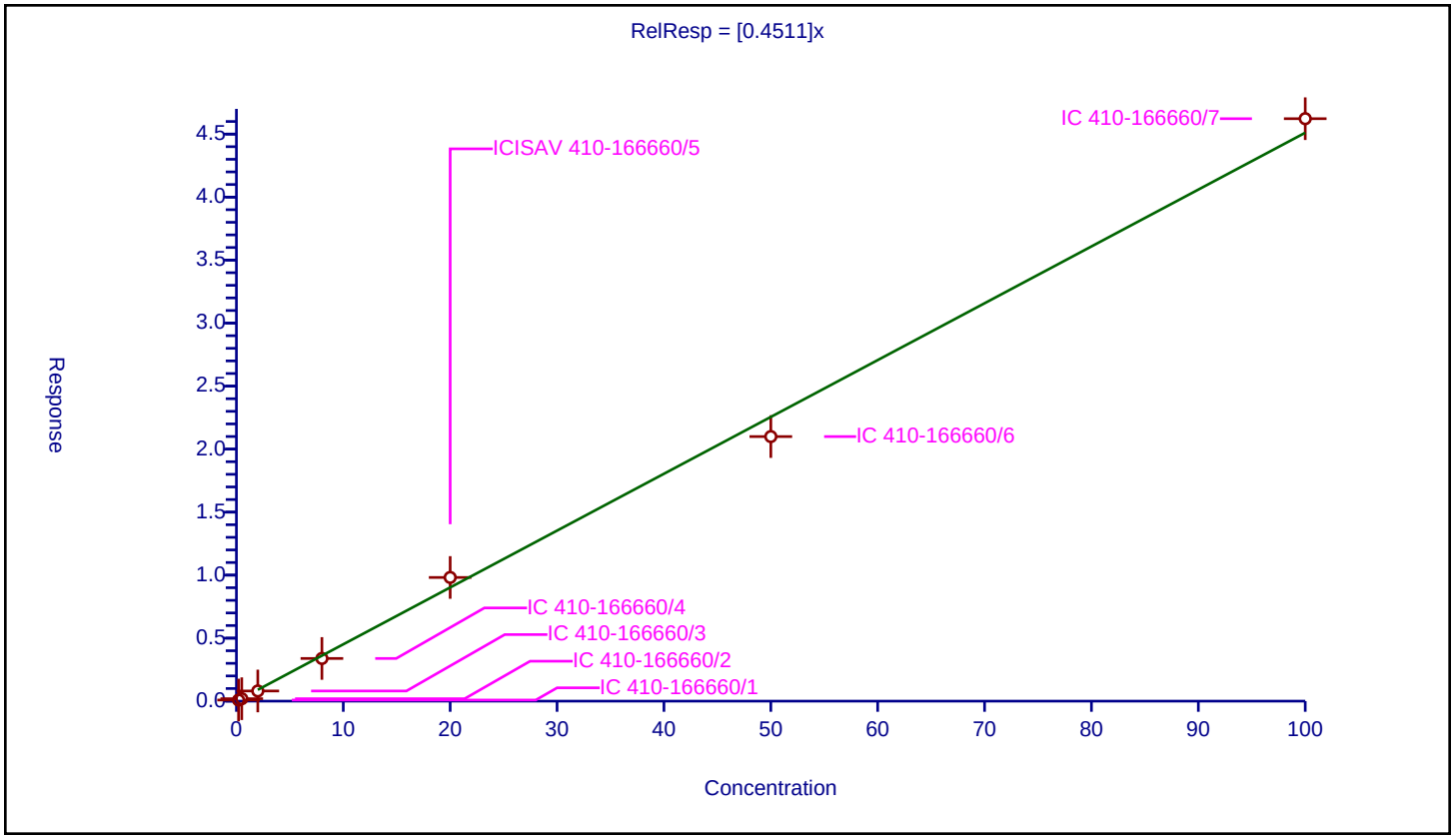
Curve Coefficients

Intercept:	0
Slope:	0.4511

Error Coefficients

Standard Error:	5020000
Relative Standard Error:	9.0
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.086937	10.0	2527007.0	0.434684	Y
2	IC 410-166660/2	0.5	0.194208	10.0	2554832.0	0.388417	Y
3	IC 410-166660/3	2.0	0.806557	10.0	2347448.0	0.403278	Y
4	IC 410-166660/4	8.0	3.386649	10.0	2424863.0	0.423331	Y
5	ICISAV 410-166660/5	20.0	9.814798	10.0	2358014.0	0.49074	Y
6	IC 410-166660/6	50.0	20.994897	10.0	2296319.0	0.419898	Y
7	IC 410-166660/7	100.0	46.222997	10.0	2386490.0	0.46223	Y



Calibration / PFMOAA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

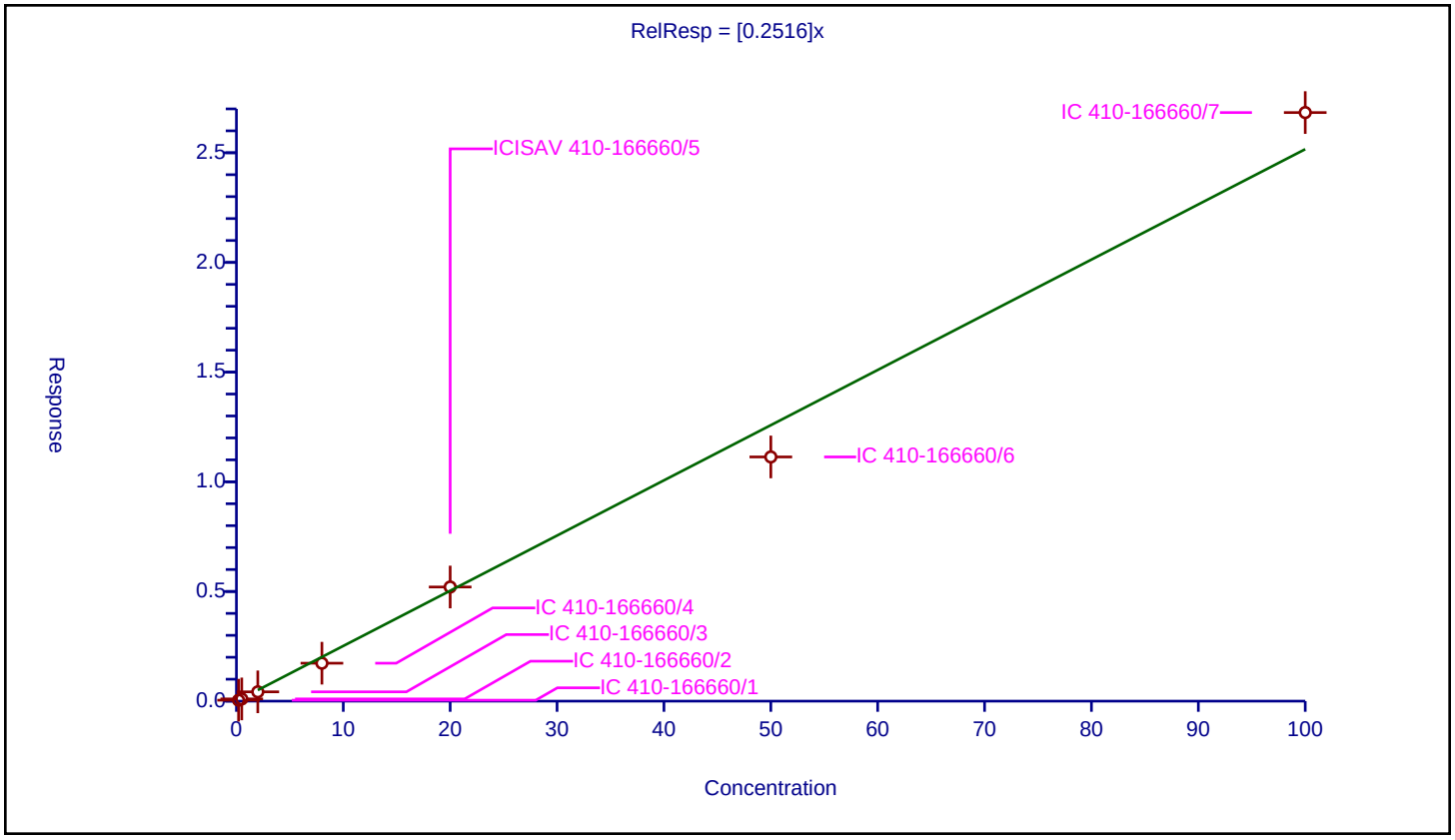
Curve Coefficients

Intercept:	0
Slope:	0.2516

Error Coefficients

Standard Error:	2860000
Relative Standard Error:	14.2
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.04336	10.0	2527007.0	0.216798	Y
2	IC 410-166660/2	0.5	0.10122	10.0	2554832.0	0.20244	Y
3	IC 410-166660/3	2.0	0.424218	10.0	2347448.0	0.212109	Y
4	IC 410-166660/4	8.0	1.729248	10.0	2424863.0	0.216156	Y
5	ICISAV 410-166660/5	20.0	5.203722	10.0	2358014.0	0.260186	Y
6	IC 410-166660/6	50.0	11.133005	10.0	2296319.0	0.22266	Y
7	IC 410-166660/7	100.0	26.8327	10.0	2386490.0	0.268327	Y



Calibration / Perfluorobutanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

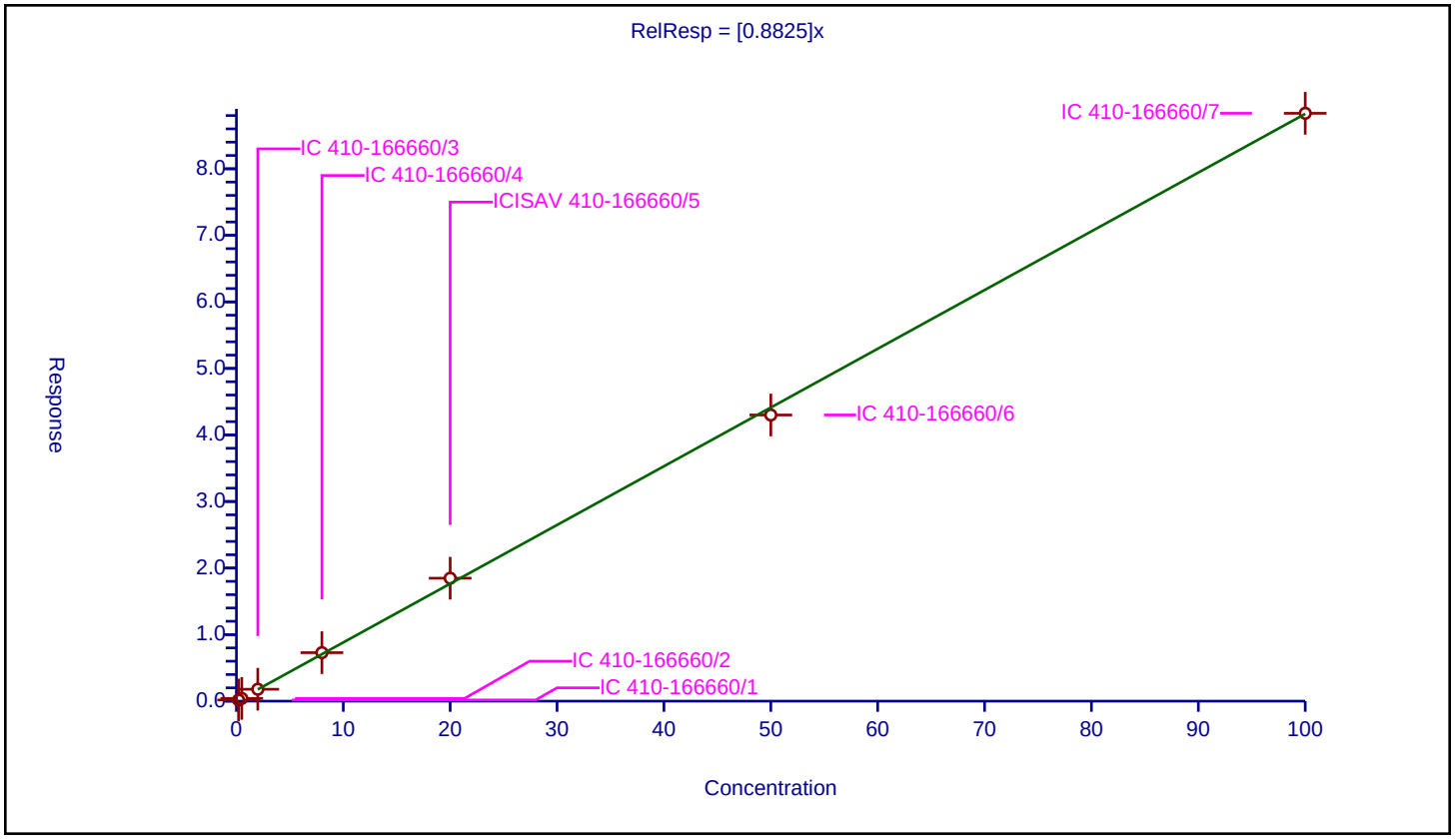
Curve Coefficients

Intercept:	0
Slope:	0.8825

Error Coefficients

Standard Error:	9700000
Relative Standard Error:	3.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.174317	10.0	2527007.0	0.871584	Y
2	IC 410-166660/2	0.5	0.410602	10.0	2554832.0	0.821205	Y
3	IC 410-166660/3	2.0	1.788708	10.0	2347448.0	0.894354	Y
4	IC 410-166660/4	8.0	7.286601	10.0	2424863.0	0.910825	Y
5	ICISAV 410-166660/5	20.0	18.474182	10.0	2358014.0	0.923709	Y
6	IC 410-166660/6	50.0	43.001595	10.0	2296319.0	0.860032	Y
7	IC 410-166660/7	100.0	88.336322	10.0	2386490.0	0.883363	Y



Calibration / R-EVE

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

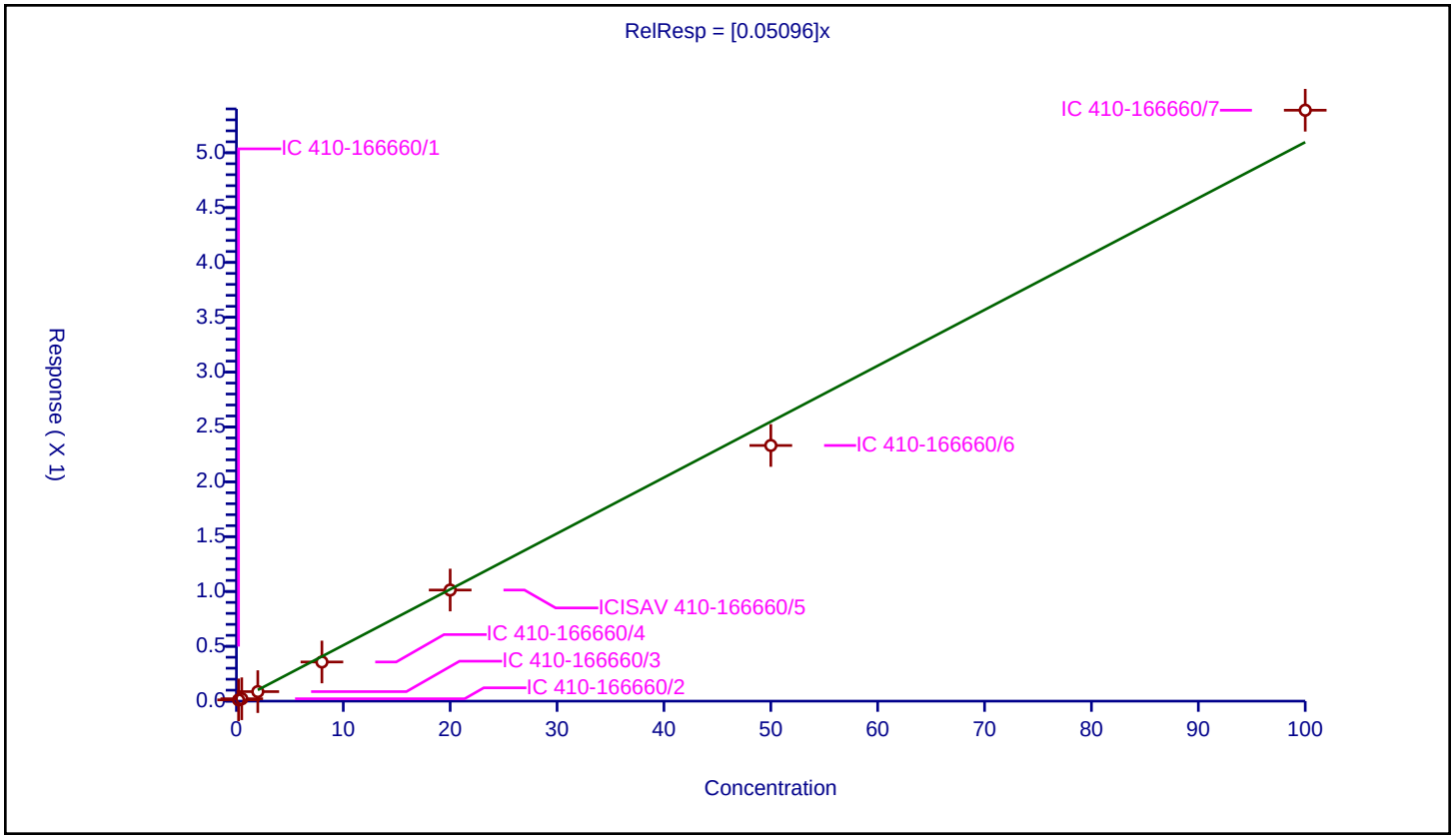
Curve Coefficients

Intercept:	0
Slope:	0.05096

Error Coefficients

Standard Error:	578000
Relative Standard Error:	12.0
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.011488	10.0	2527007.0	0.057439	Y
2	IC 410-166660/2	0.5	0.021618	10.0	2554832.0	0.043236	Y
3	IC 410-166660/3	2.0	0.086788	10.0	2347448.0	0.043394	Y
4	IC 410-166660/4	8.0	0.357212	10.0	2424863.0	0.044651	Y
5	ICISAV 410-166660/5	20.0	1.012916	10.0	2358014.0	0.050646	Y
6	IC 410-166660/6	50.0	2.331174	10.0	2296319.0	0.046623	Y
7	IC 410-166660/7	100.0	5.387942	10.0	2386490.0	0.053879	Y



Calibration / R-PSDA

Curve Type:	Quadratic
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

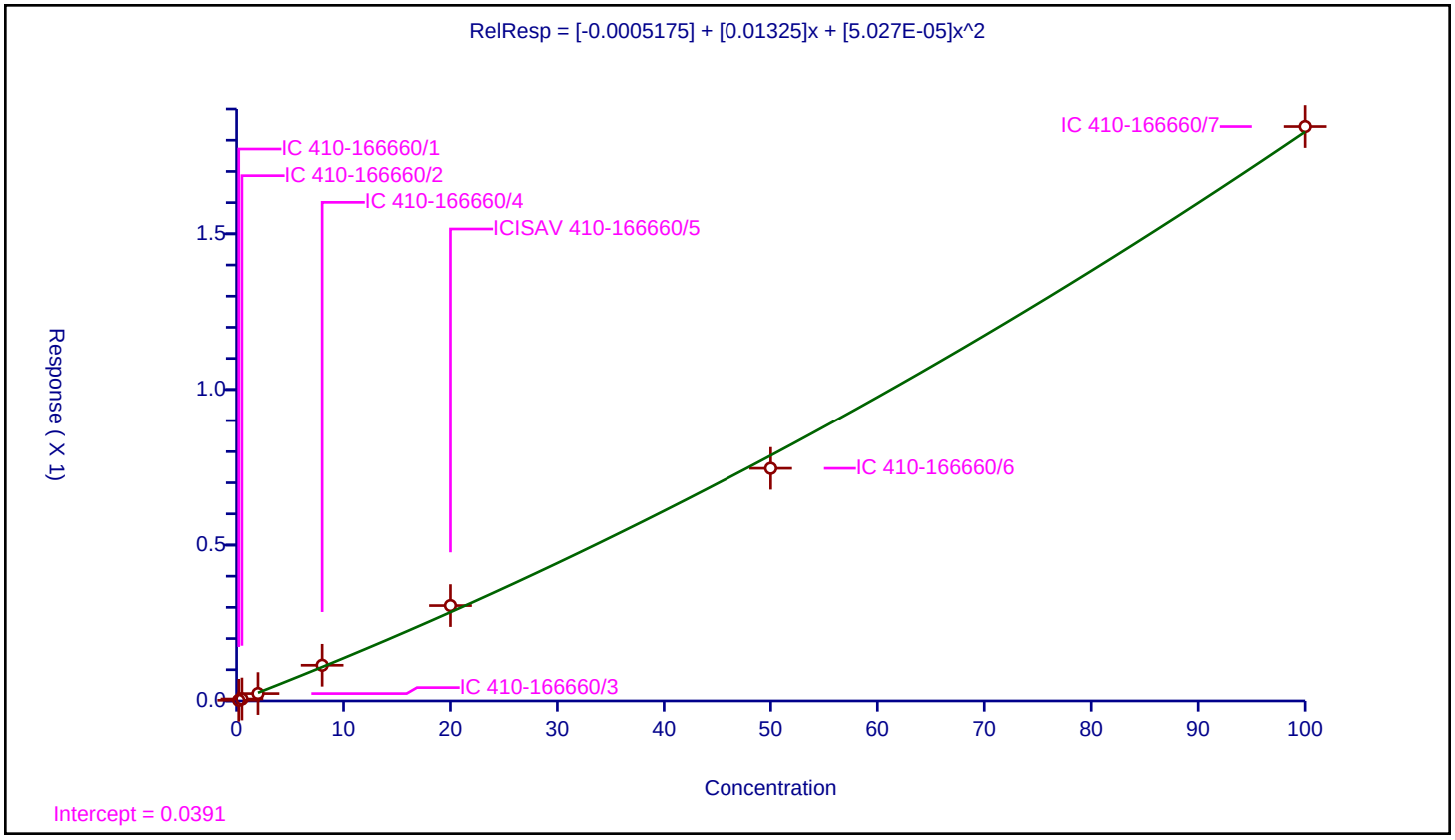
Curve Coefficients

Intercept:	-0.0005175
Slope:	0.01325
Second Order:	5.027E-05

Error Coefficients

Standard Error:	294000
Relative Standard Error:	6.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.002148	9.36	3076699.0	0.010739	Y
2	IC 410-166660/2	0.5	0.006159	9.36	2973944.0	0.012319	Y
3	IC 410-166660/3	2.0	0.023659	9.36	2869818.0	0.01183	Y
4	IC 410-166660/4	8.0	0.114335	9.36	2923549.0	0.014292	Y
5	ICISAV 410-166660/5	20.0	0.305785	9.36	2881451.0	0.015289	Y
6	IC 410-166660/6	50.0	0.746324	9.36	2640569.0	0.014926	Y
7	IC 410-166660/7	100.0	1.843849	9.36	2739563.0	0.018438	Y



Calibration / Hydrolyzed PSDA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

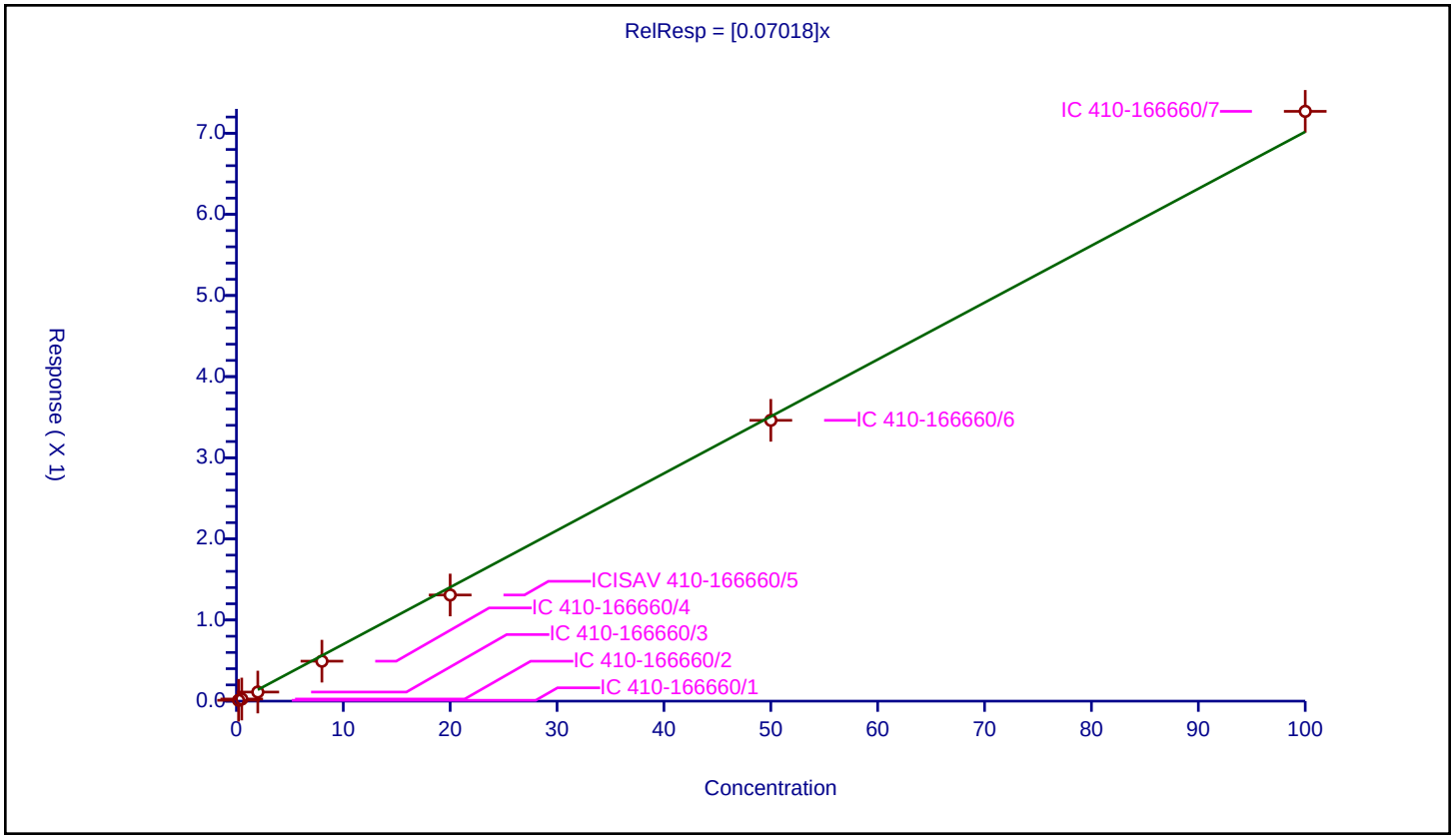
Curve Coefficients

Intercept:	0
Slope:	0.07018

Error Coefficients

Standard Error:	972000
Relative Standard Error:	17.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.010636	9.36	3076699.0	0.053178	Y
2	IC 410-166660/2	0.5	0.026104	9.36	2973944.0	0.052208	Y
3	IC 410-166660/3	2.0	0.111949	9.36	2869818.0	0.055974	Y
4	IC 410-166660/4	8.0	0.492699	9.36	2923549.0	0.061587	Y
5	ICISAV 410-166660/5	20.0	1.308451	9.36	2881451.0	0.065423	Y
6	IC 410-166660/6	50.0	3.461387	9.36	2640569.0	0.069228	Y
7	IC 410-166660/7	100.0	7.269678	9.36	2739563.0	0.072697	Y



Calibration / PMPA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

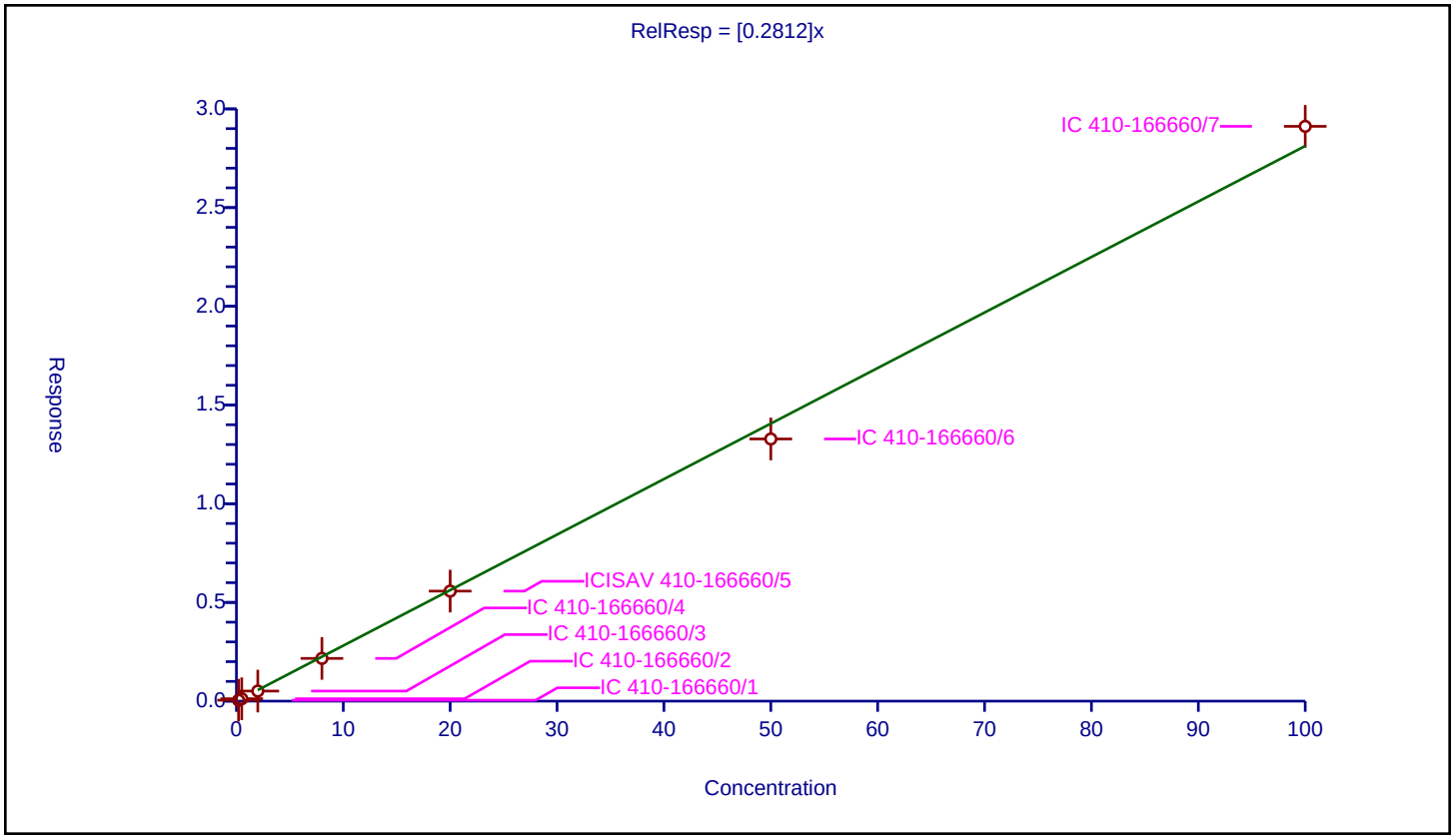
Curve Coefficients

Intercept:	0
Slope:	0.2812

Error Coefficients

Standard Error:	3150000
Relative Standard Error:	9.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.047222	10.0	2527007.0	0.236109	Y
2	IC 410-166660/2	0.5	0.121836	10.0	2554832.0	0.243672	Y
3	IC 410-166660/3	2.0	0.510946	10.0	2347448.0	0.255473	Y
4	IC 410-166660/4	8.0	2.164774	10.0	2424863.0	0.270597	Y
5	ICISAV 410-166660/5	20.0	5.573402	10.0	2358014.0	0.27867	Y
6	IC 410-166660/6	50.0	13.279875	10.0	2296319.0	0.265598	Y
7	IC 410-166660/7	100.0	29.116573	10.0	2386490.0	0.291166	Y



Calibration / PFPrS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

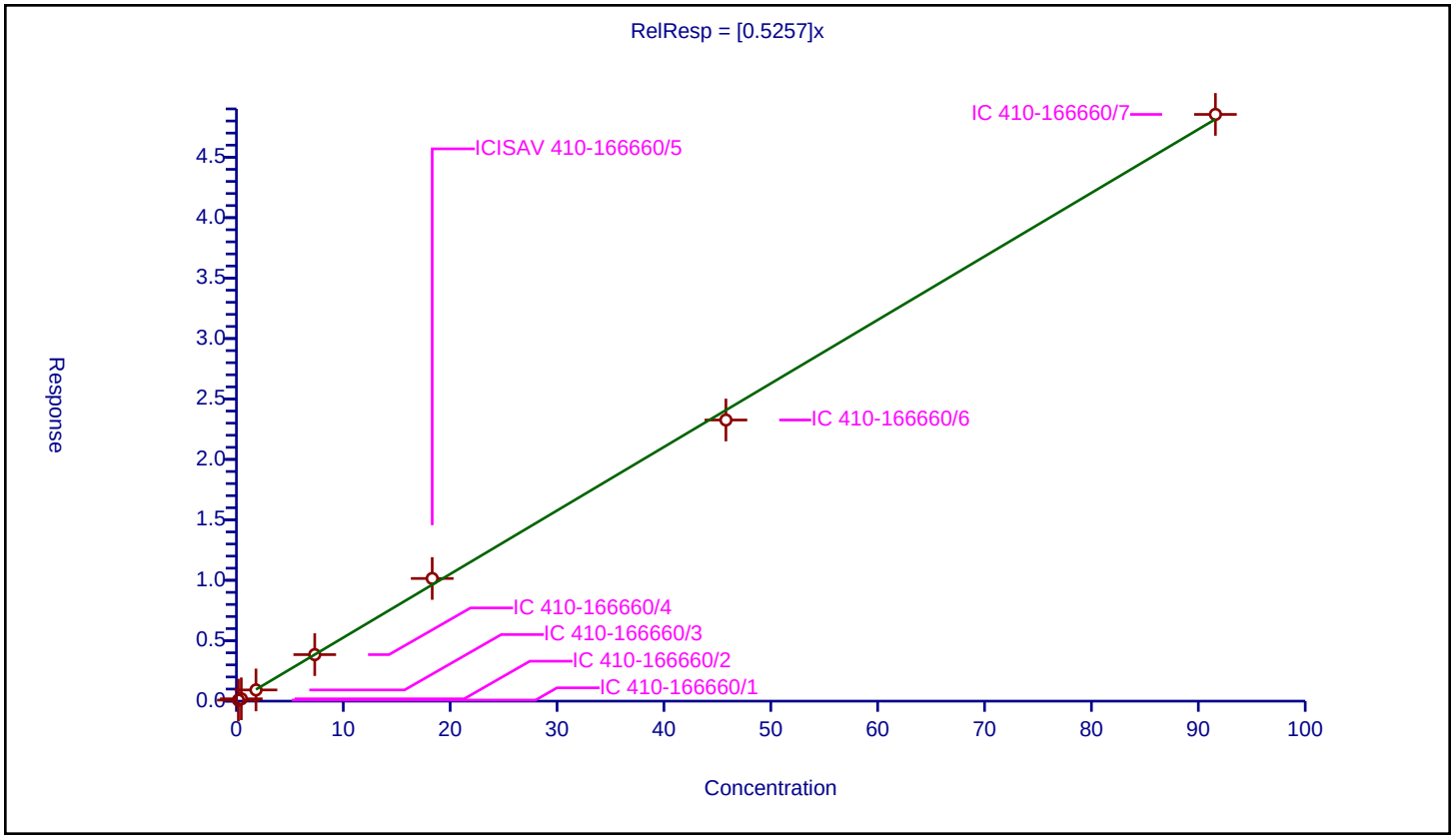
Curve Coefficients

Intercept:	0
Slope:	0.5257

Error Coefficients

Standard Error:	5310000
Relative Standard Error:	9.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1832	0.087012	10.0	2527007.0	0.474956	Y
2	IC 410-166660/2	0.458	0.193238	10.0	2554832.0	0.421916	Y
3	IC 410-166660/3	1.832	0.925793	10.0	2347448.0	0.505345	Y
4	IC 410-166660/4	7.328	3.848106	10.0	2424863.0	0.525124	Y
5	ICISAV 410-166660/5	18.32	10.148646	10.0	2358014.0	0.553965	Y
6	IC 410-166660/6	45.8	23.260592	10.0	2296319.0	0.507873	Y
7	IC 410-166660/7	91.6	48.543702	10.0	2386490.0	0.529953	Y



Calibration / NVHOS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

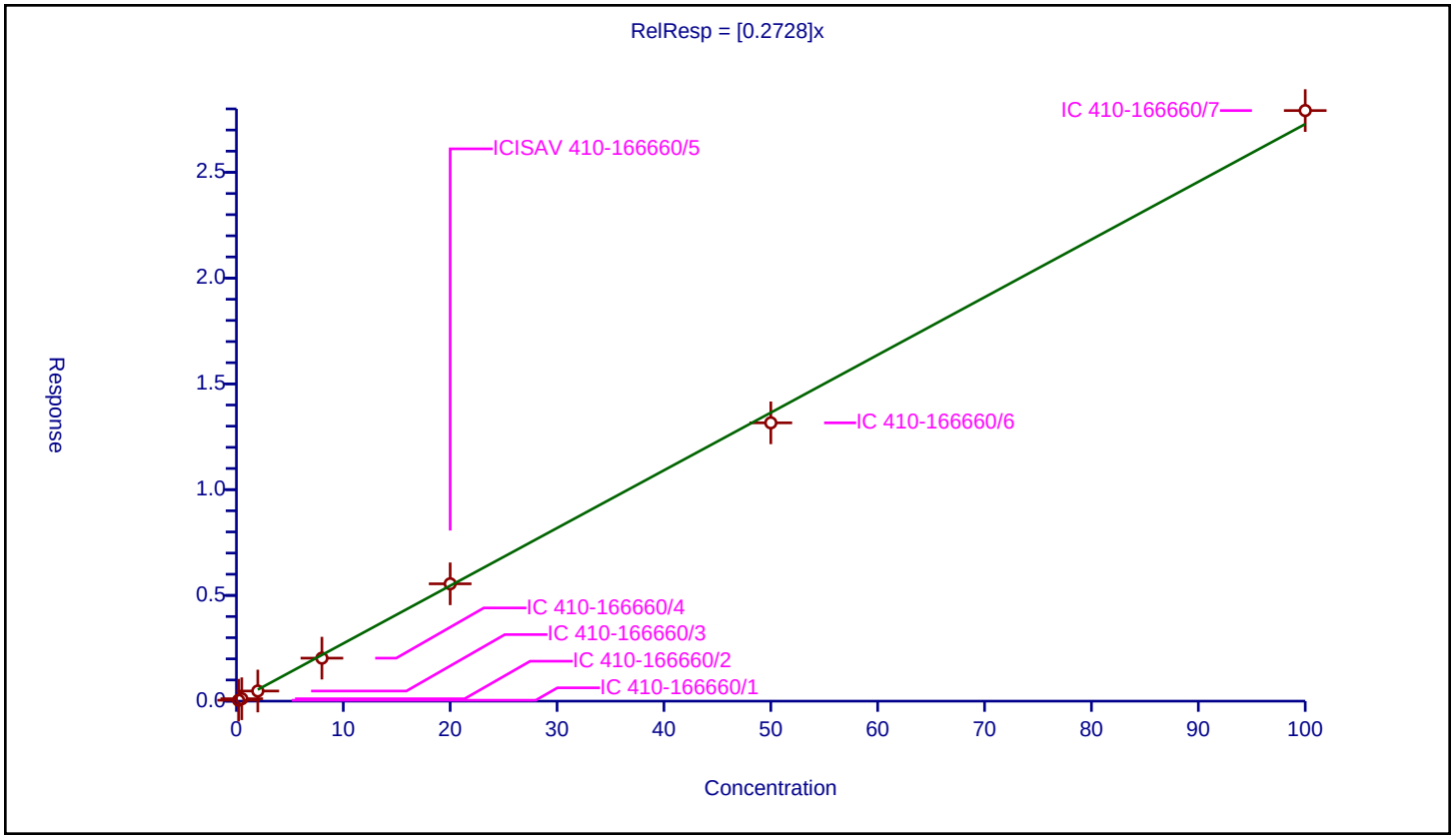
Curve Coefficients

Intercept:	0
Slope:	0.2728

Error Coefficients

Standard Error:	3740000
Relative Standard Error:	12.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.043817	9.36	3076699.0	0.219086	Y
2	IC 410-166660/2	0.5	0.11416	9.36	2973944.0	0.22832	Y
3	IC 410-166660/3	2.0	0.479468	9.36	2869818.0	0.239734	Y
4	IC 410-166660/4	8.0	2.03274	9.36	2923549.0	0.254092	Y
5	ICISAV 410-166660/5	20.0	5.547623	9.36	2881451.0	0.277381	Y
6	IC 410-166660/6	50.0	13.157399	9.36	2640569.0	0.263148	Y
7	IC 410-166660/7	100.0	27.920841	9.36	2739563.0	0.279208	Y



Calibration / PFECA F

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

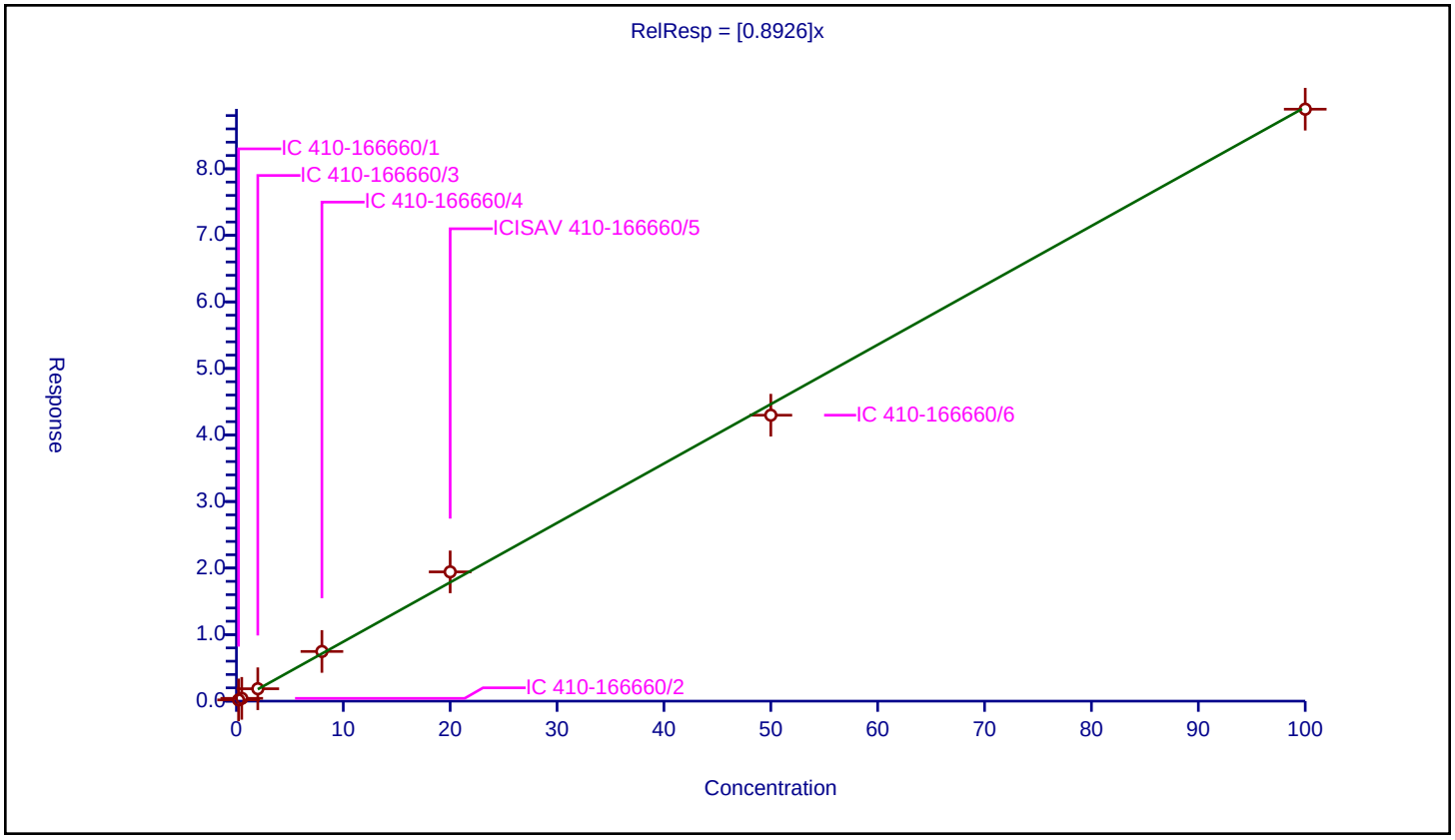
Curve Coefficients

Intercept:	0
Slope:	0.8926

Error Coefficients

Standard Error:	9770000
Relative Standard Error:	5.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.187218	10.0	2527007.0	0.936088	Y
2	IC 410-166660/2	0.5	0.419934	10.0	2554832.0	0.839867	Y
3	IC 410-166660/3	2.0	1.863087	10.0	2347448.0	0.931544	Y
4	IC 410-166660/4	8.0	7.464616	10.0	2424863.0	0.933077	Y
5	ICISAV 410-166660/5	20.0	19.424847	10.0	2358014.0	0.971242	Y
6	IC 410-166660/6	50.0	42.970641	10.0	2296319.0	0.859413	Y
7	IC 410-166660/7	100.0	88.956933	10.0	2386490.0	0.889569	Y



Calibration / PFO2HxA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

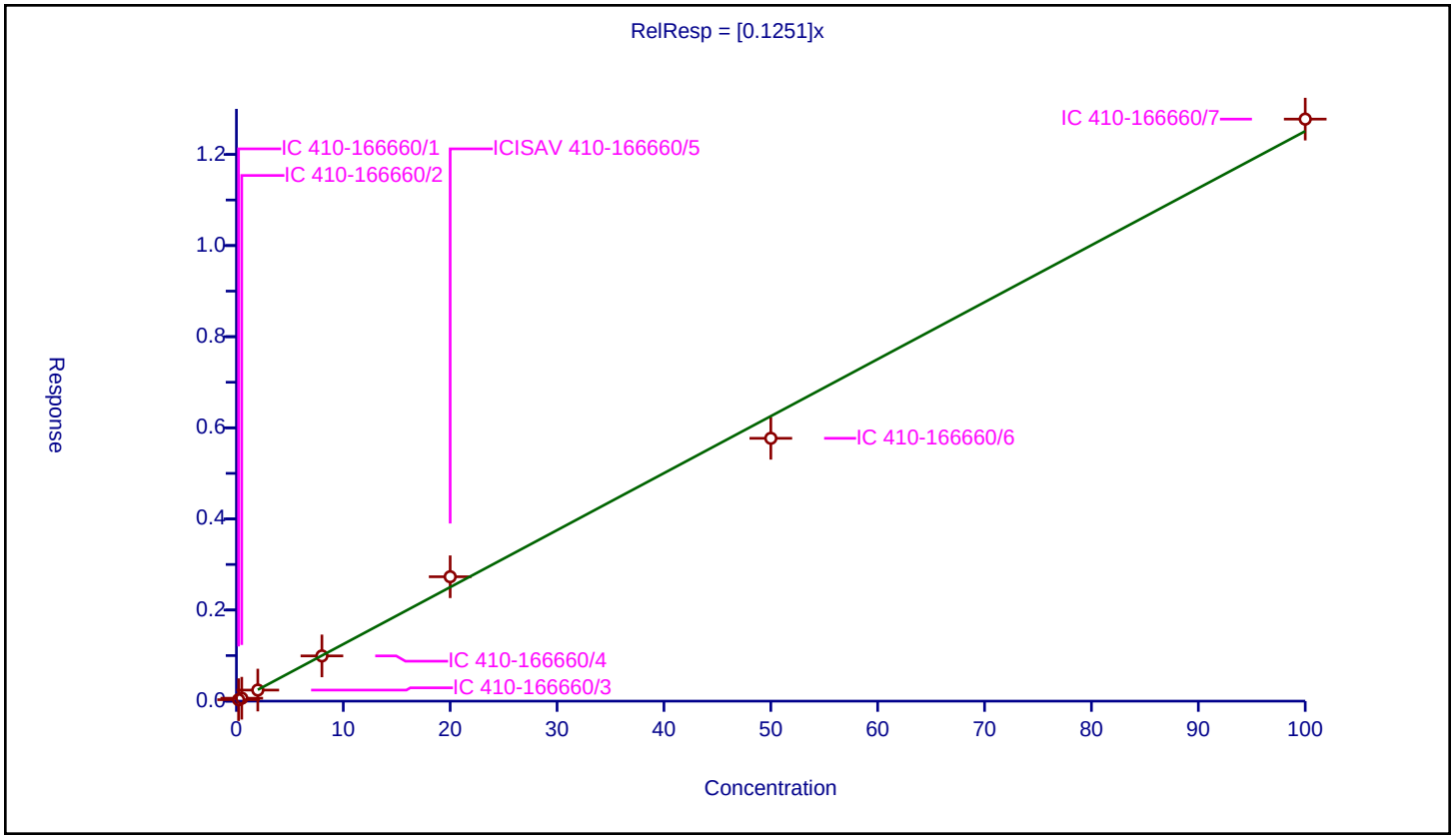
Curve Coefficients

Intercept:	0
Slope:	0.1251

Error Coefficients

Standard Error:	1390000
Relative Standard Error:	12.0
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.031682	10.0	2527007.0	0.158409	Y
2	IC 410-166660/2	0.5	0.063922	10.0	2554832.0	0.127844	Y
3	IC 410-166660/3	2.0	0.243047	10.0	2347448.0	0.121523	Y
4	IC 410-166660/4	8.0	0.992906	10.0	2424863.0	0.124113	Y
5	ICISAV 410-166660/5	20.0	2.730238	10.0	2358014.0	0.136512	Y
6	IC 410-166660/6	50.0	5.769569	10.0	2296319.0	0.115391	Y
7	IC 410-166660/7	100.0	12.77544	10.0	2386490.0	0.127754	Y



Calibration / 3:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

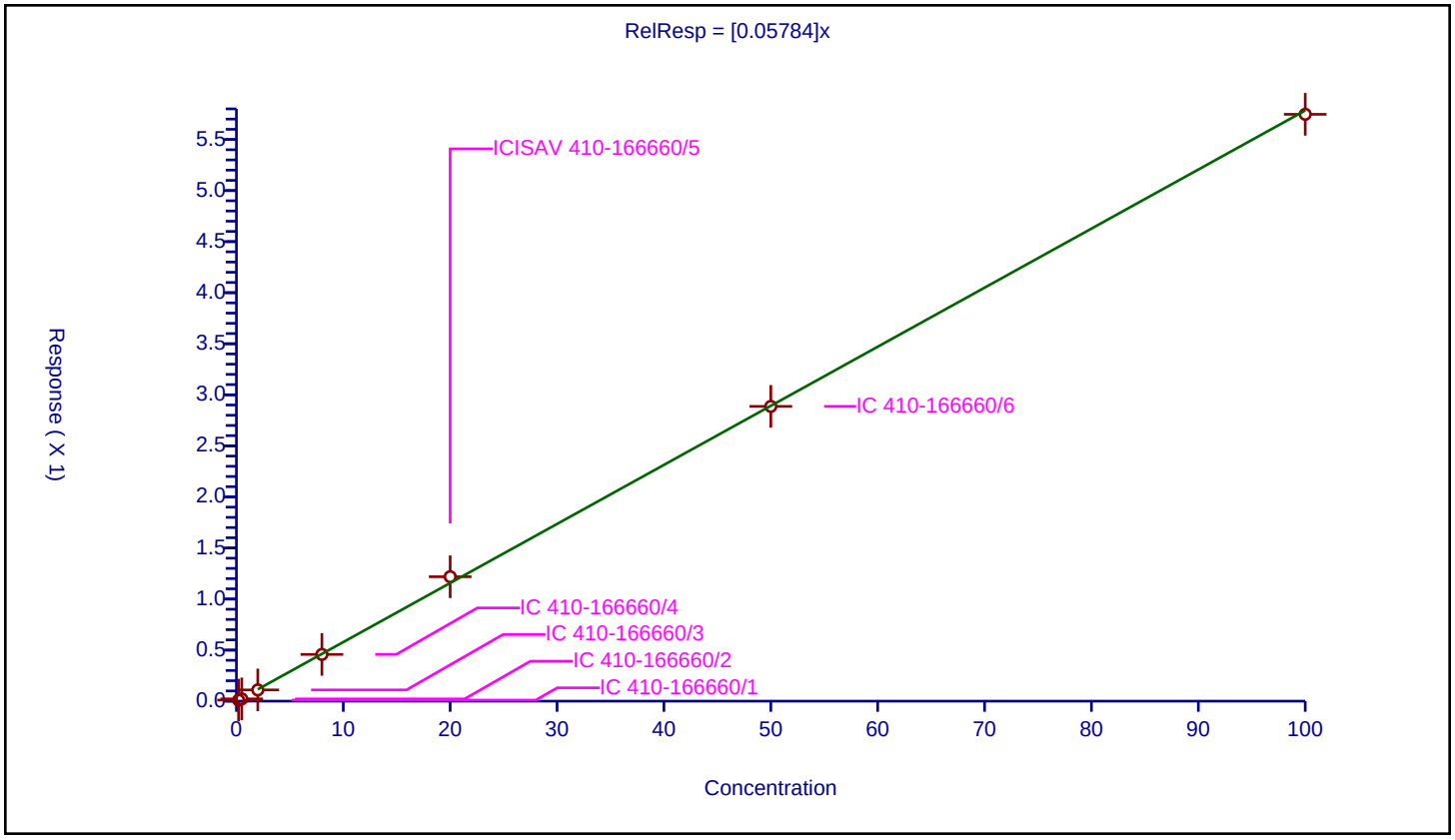
Curve Coefficients

Intercept:	0
Slope:	0.05784

Error Coefficients

Standard Error:	667000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.010293	10.0	2801920.0	0.051465	Y
2	IC 410-166660/2	0.5	0.022158	10.0	2928104.0	0.044315	Y
3	IC 410-166660/3	2.0	0.110013	10.0	2634138.0	0.055007	Y
4	IC 410-166660/4	8.0	0.457703	10.0	2757248.0	0.057213	Y
5	ICISAV 410-166660/5	20.0	1.21855	10.0	2655697.0	0.060928	Y
6	IC 410-166660/6	50.0	2.886571	10.0	2394273.0	0.057731	Y
7	IC 410-166660/7	100.0	5.746915	10.0	2503037.0	0.057469	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

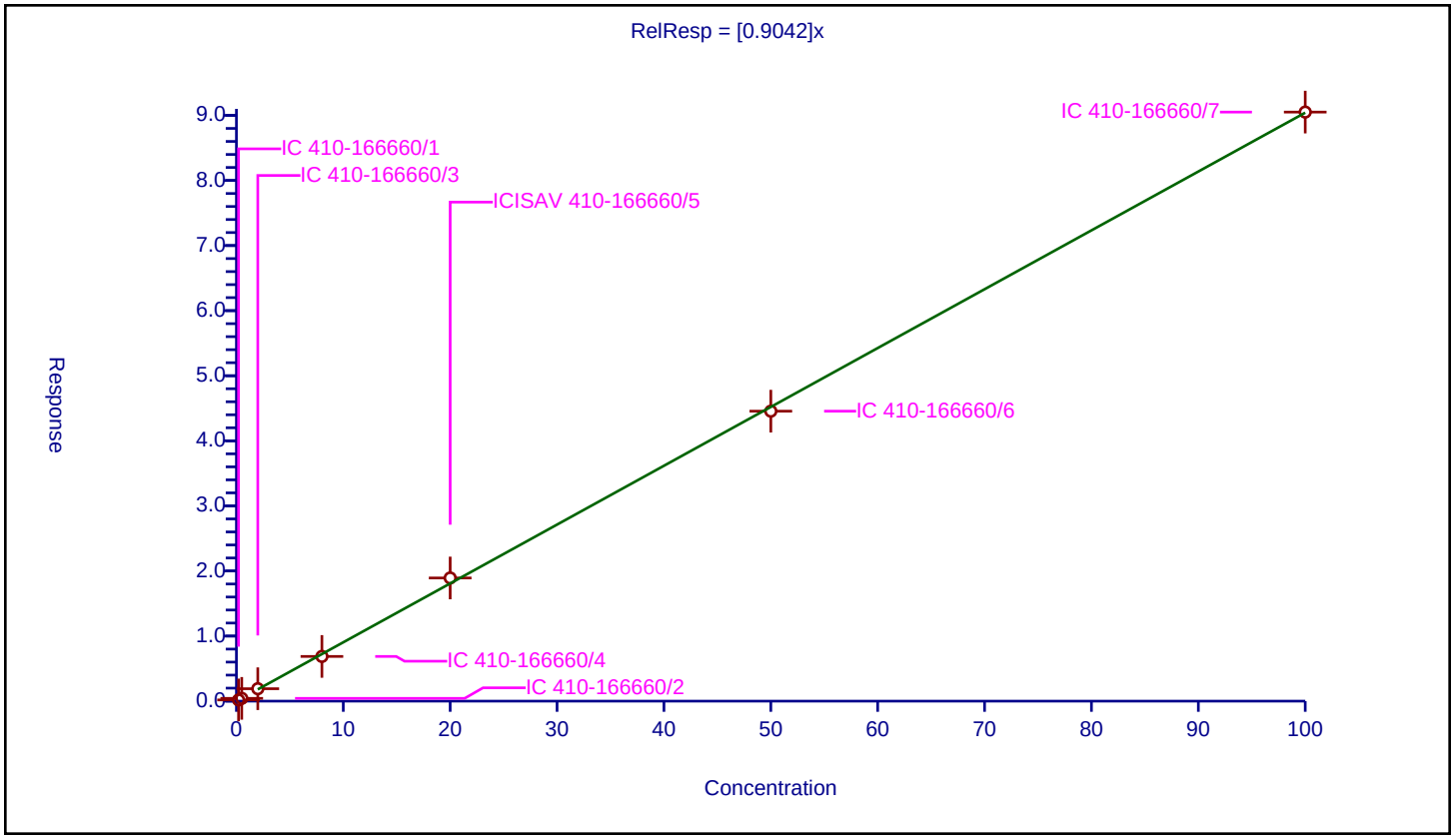
Curve Coefficients

Intercept:	0
Slope:	0.9042

Error Coefficients

Standard Error:	10500000
Relative Standard Error:	4.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.185469	10.0	2801920.0	0.927346	Y
2	IC 410-166660/2	0.5	0.427744	10.0	2928104.0	0.855489	Y
3	IC 410-166660/3	2.0	1.909209	10.0	2634138.0	0.954605	Y
4	IC 410-166660/4	8.0	6.869458	10.0	2757248.0	0.858682	Y
5	ICISAV 410-166660/5	20.0	18.927069	10.0	2655697.0	0.946353	Y
6	IC 410-166660/6	50.0	44.553754	10.0	2394273.0	0.891075	Y
7	IC 410-166660/7	100.0	90.509541	10.0	2503037.0	0.905095	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

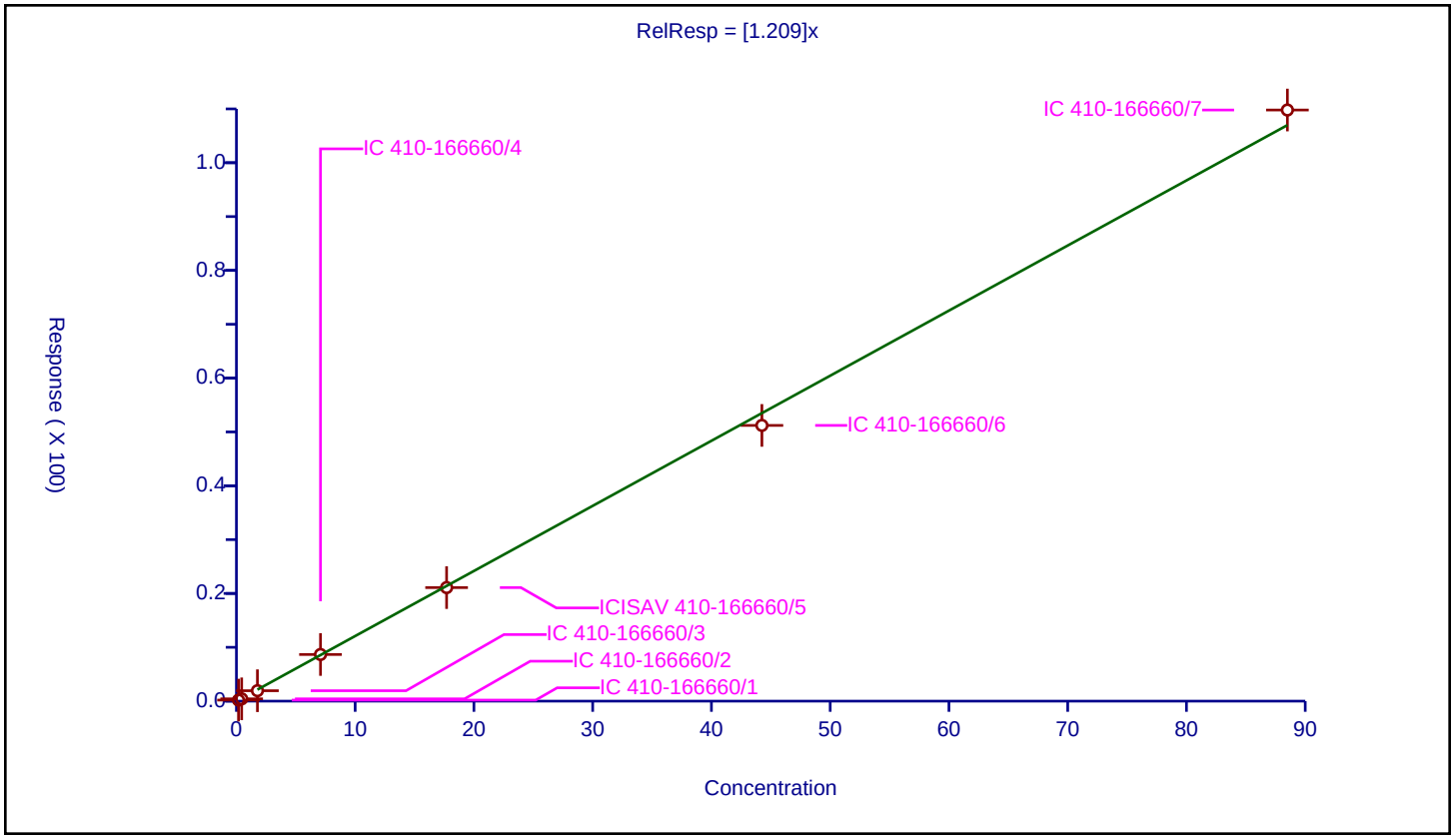
Curve Coefficients

Intercept:	0
Slope:	1.209

Error Coefficients

Standard Error:	14700000
Relative Standard Error:	10.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.177	0.193102	9.36	3076699.0	1.090972	Y
2	IC 410-166660/2	0.4425	0.429426	9.36	2973944.0	0.970453	Y
3	IC 410-166660/3	1.77	1.937884	9.36	2869818.0	1.09485	Y
4	IC 410-166660/4	7.08	8.662576	9.36	2923549.0	1.223528	Y
5	ICISAV 410-166660/5	17.7	21.088716	9.36	2881451.0	1.191453	Y
6	IC 410-166660/6	44.25	51.213824	9.36	2640569.0	1.157375	Y
7	IC 410-166660/7	88.5	109.791925	9.36	2739563.0	1.240587	Y



Calibration / PEPA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

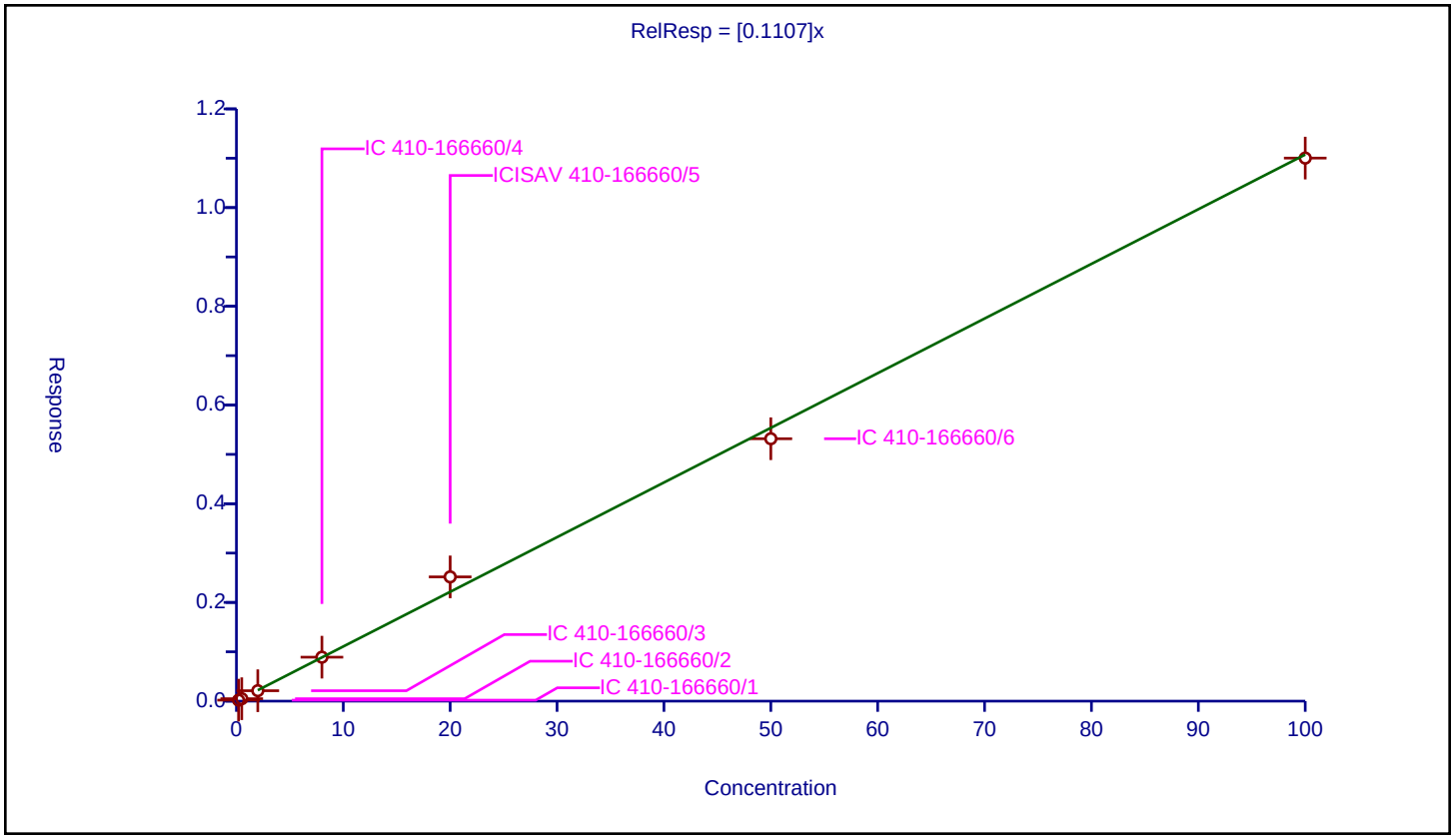
Curve Coefficients

Intercept:	0
Slope:	0.1107

Error Coefficients

Standard Error:	1210000
Relative Standard Error:	8.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.020095	10.0	2527007.0	0.100475	Y
2	IC 410-166660/2	0.5	0.049581	10.0	2554832.0	0.099161	Y
3	IC 410-166660/3	2.0	0.211344	10.0	2347448.0	0.105672	Y
4	IC 410-166660/4	8.0	0.890788	10.0	2424863.0	0.111349	Y
5	ICISAV 410-166660/5	20.0	2.517941	10.0	2358014.0	0.125897	Y
6	IC 410-166660/6	50.0	5.317179	10.0	2296319.0	0.106344	Y
7	IC 410-166660/7	100.0	11.003231	10.0	2386490.0	0.110032	Y



Calibration / PFECA A

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

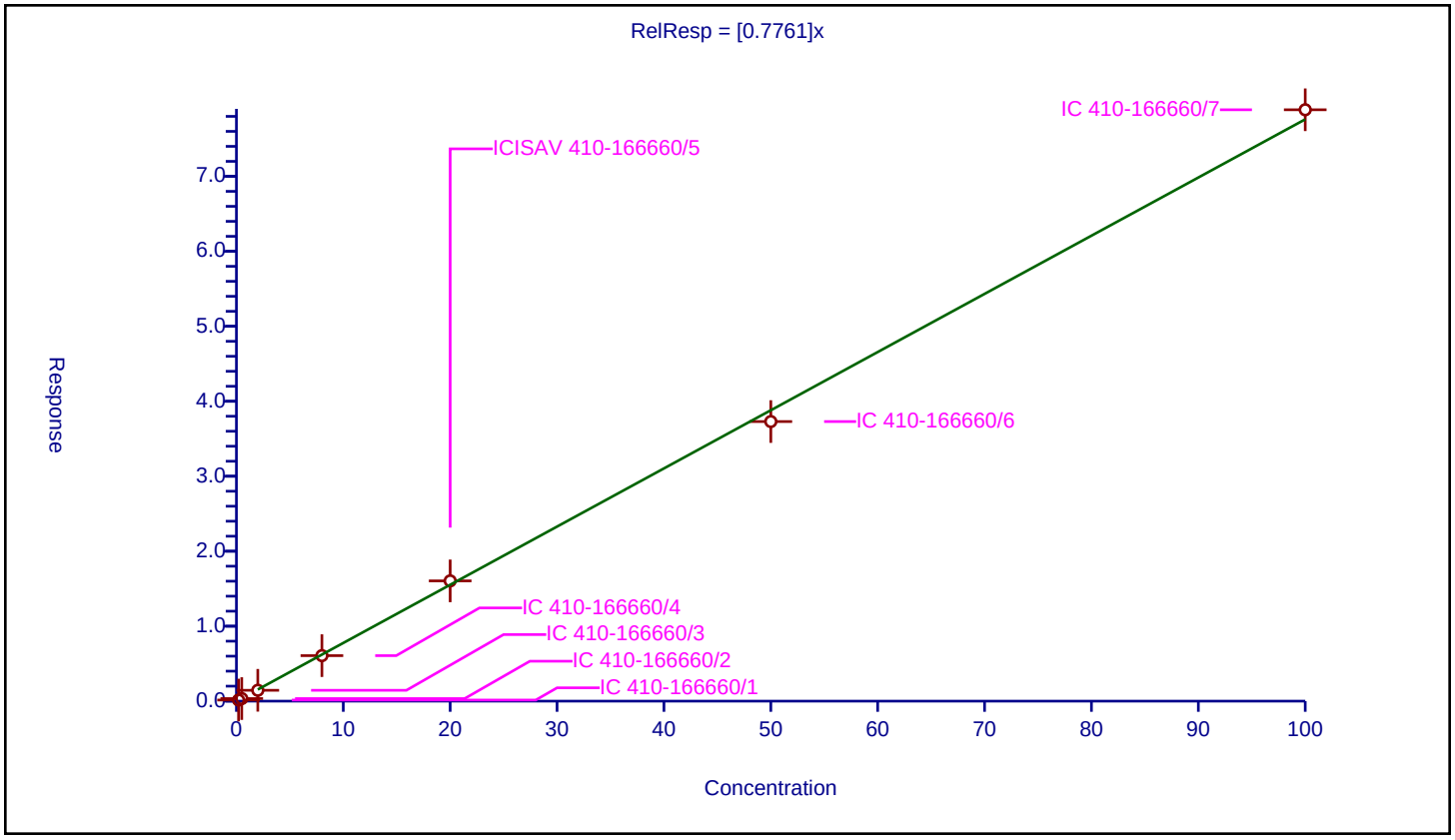
Curve Coefficients

Intercept:	0
Slope:	0.7761

Error Coefficients

Standard Error:	10600000
Relative Standard Error:	6.2
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.14829	9.36	3076699.0	0.74145	Y
2	IC 410-166660/2	0.5	0.343881	9.36	2973944.0	0.687762	Y
3	IC 410-166660/3	2.0	1.44856	9.36	2869818.0	0.72428	Y
4	IC 410-166660/4	8.0	6.070519	9.36	2923549.0	0.758815	Y
5	ICISAV 410-166660/5	20.0	16.042897	9.36	2881451.0	0.802145	Y
6	IC 410-166660/6	50.0	37.294455	9.36	2640569.0	0.745889	Y
7	IC 410-166660/7	100.0	78.884447	9.36	2739563.0	0.788844	Y



Calibration / PES

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

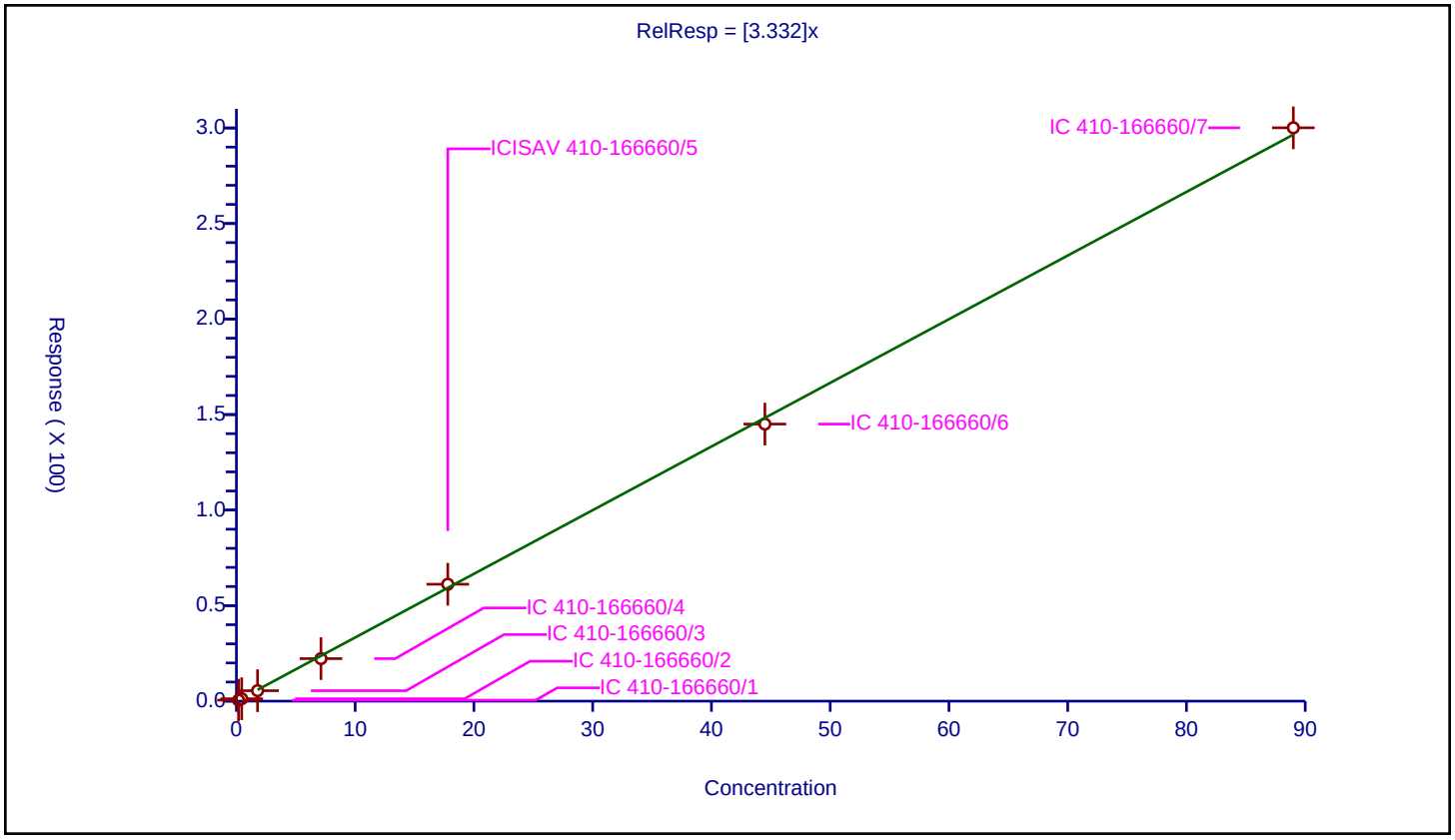
Curve Coefficients

Intercept:	0
Slope:	3.332

Error Coefficients

Standard Error:	40400000
Relative Standard Error:	9.1
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.178	0.516594	9.36	3076699.0	2.902211	Y
2	IC 410-166660/2	0.445	1.263998	9.36	2973944.0	2.840446	Y
3	IC 410-166660/3	1.78	5.477408	9.36	2869818.0	3.077196	Y
4	IC 410-166660/4	7.12	22.255517	9.36	2923549.0	3.125775	Y
5	ICISAV 410-166660/5	17.8	61.191296	9.36	2881451.0	3.437713	Y
6	IC 410-166660/6	44.5	145.019891	9.36	2640569.0	3.258874	Y
7	IC 410-166660/7	89.0	300.103125	9.36	2739563.0	3.371945	Y



Calibration / PFECA B

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

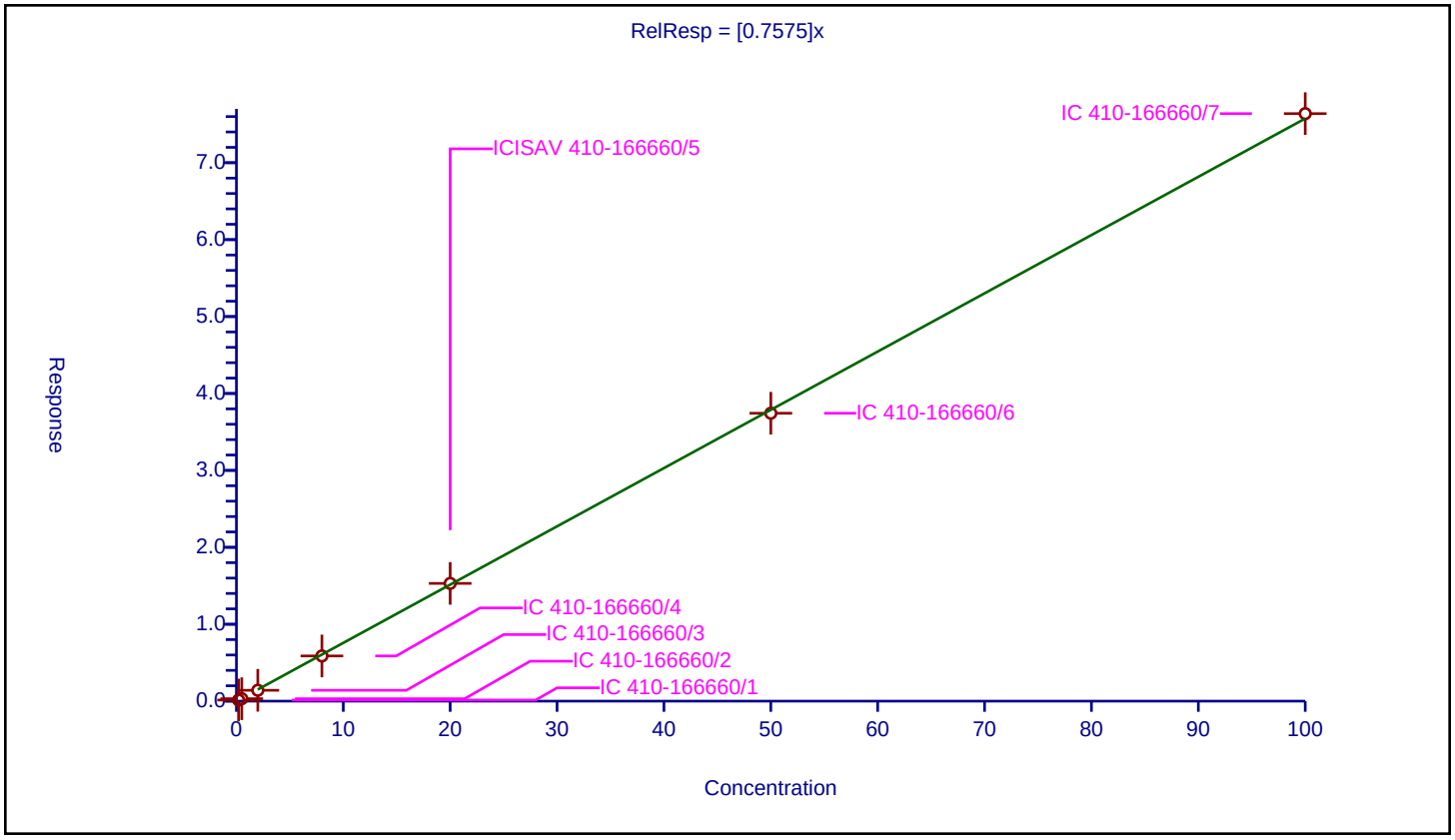
Curve Coefficients

Intercept:	0
Slope:	0.7575

Error Coefficients

Standard Error:	10300000
Relative Standard Error:	7.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.143736	9.36	3076699.0	0.718679	Y
2	IC 410-166660/2	0.5	0.315313	9.36	2973944.0	0.630625	Y
3	IC 410-166660/3	2.0	1.411757	9.36	2869818.0	0.705878	Y
4	IC 410-166660/4	8.0	5.875609	9.36	2923549.0	0.734451	Y
5	ICISAV 410-166660/5	20.0	15.308127	9.36	2881451.0	0.765406	Y
6	IC 410-166660/6	50.0	37.432514	9.36	2640569.0	0.74865	Y
7	IC 410-166660/7	100.0	76.384611	9.36	2739563.0	0.763846	Y



Calibration / 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

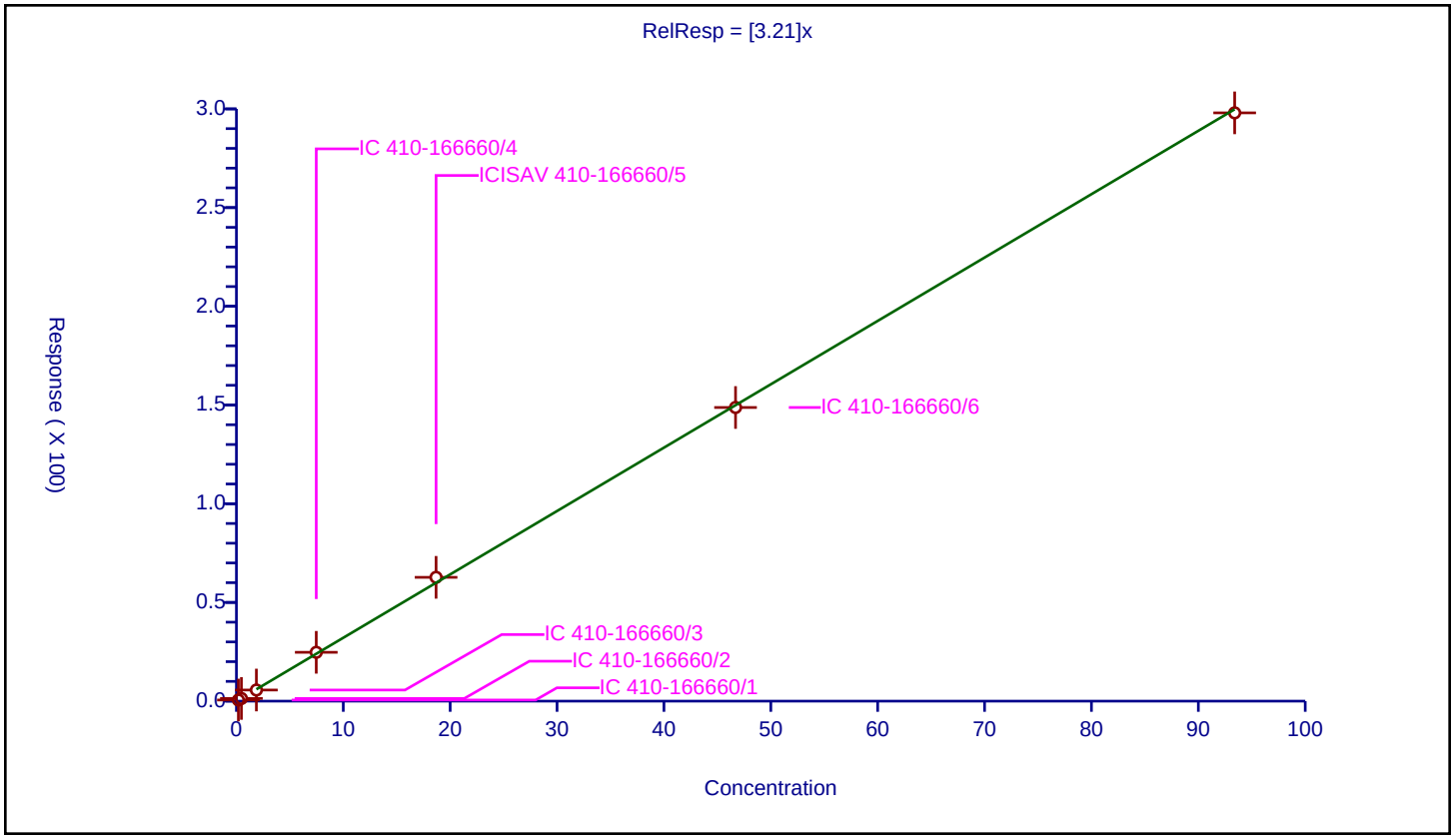
Curve Coefficients

Intercept:	0
Slope:	3.21

Error Coefficients

Standard Error:	4950000
Relative Standard Error:	5.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1868	0.566737	9.34	404839.0	3.033922	Y
2	IC 410-166660/2	0.467	1.353807	9.34	407300.0	2.898944	Y
3	IC 410-166660/3	1.868	5.631381	9.34	396443.0	3.014658	Y
4	IC 410-166660/4	7.472	24.733245	9.34	373949.0	3.310124	Y
5	ICISAV 410-166660/5	18.68	62.719759	9.34	364564.0	3.357589	Y
6	IC 410-166660/6	46.7	148.750819	9.34	310931.0	3.185242	Y
7	IC 410-166660/7	93.4	297.993089	9.34	336990.0	3.190504	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

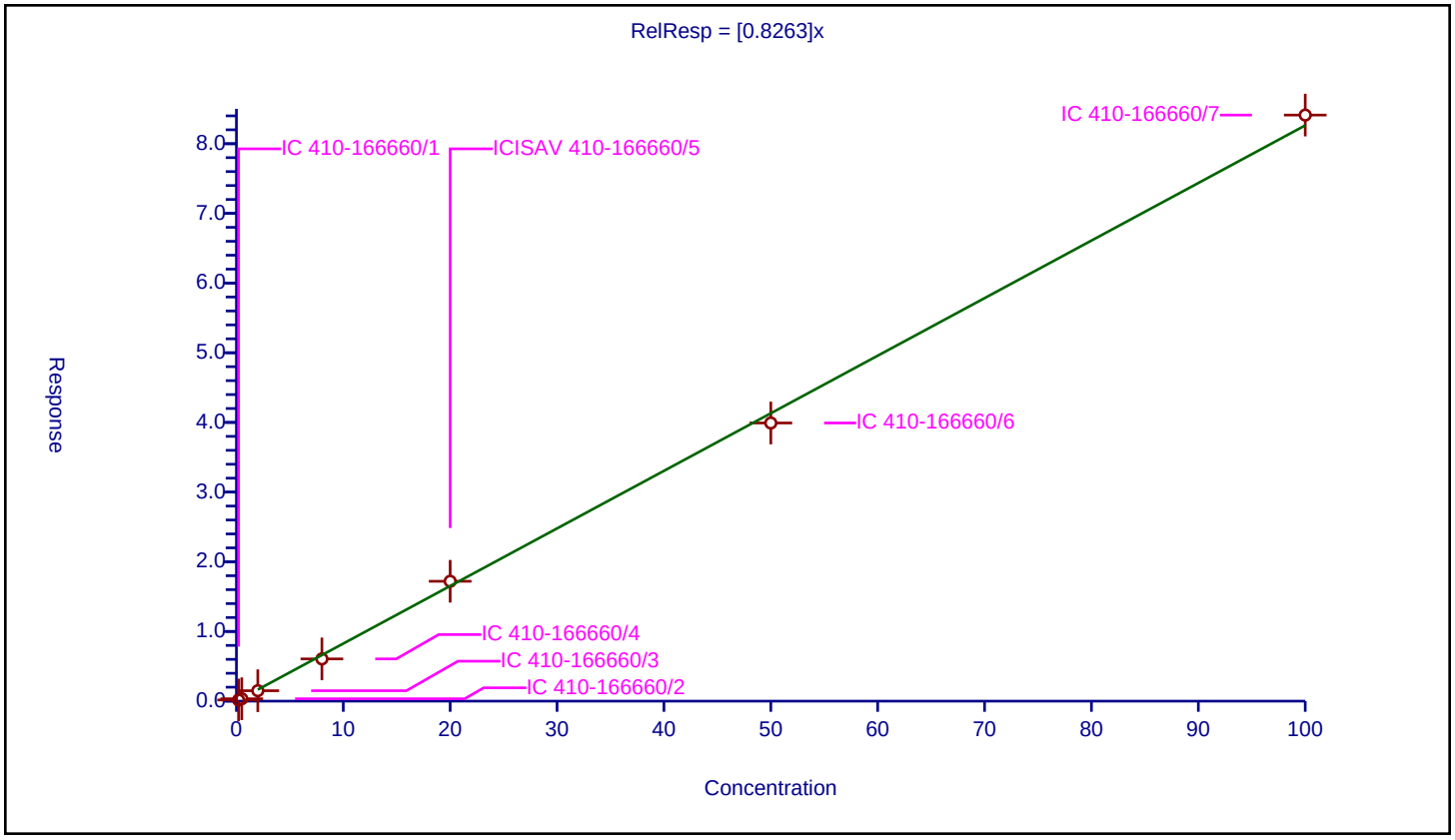
Curve Coefficients

Intercept:	0
Slope:	0.8263

Error Coefficients

Standard Error:	12700000
Relative Standard Error:	9.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.171314	10.0	3929916.0	0.85657	Y
2	IC 410-166660/2	0.5	0.343299	10.0	4025614.0	0.686598	Y
3	IC 410-166660/3	2.0	1.496194	10.0	3690303.0	0.748097	Y
4	IC 410-166660/4	8.0	6.060127	10.0	3751887.0	0.757516	Y
5	ICISAV 410-166660/5	20.0	17.202801	10.0	3476564.0	0.86014	Y
6	IC 410-166660/6	50.0	39.919955	10.0	3196715.0	0.798399	Y
7	IC 410-166660/7	100.0	84.112175	10.0	3288576.0	0.841122	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

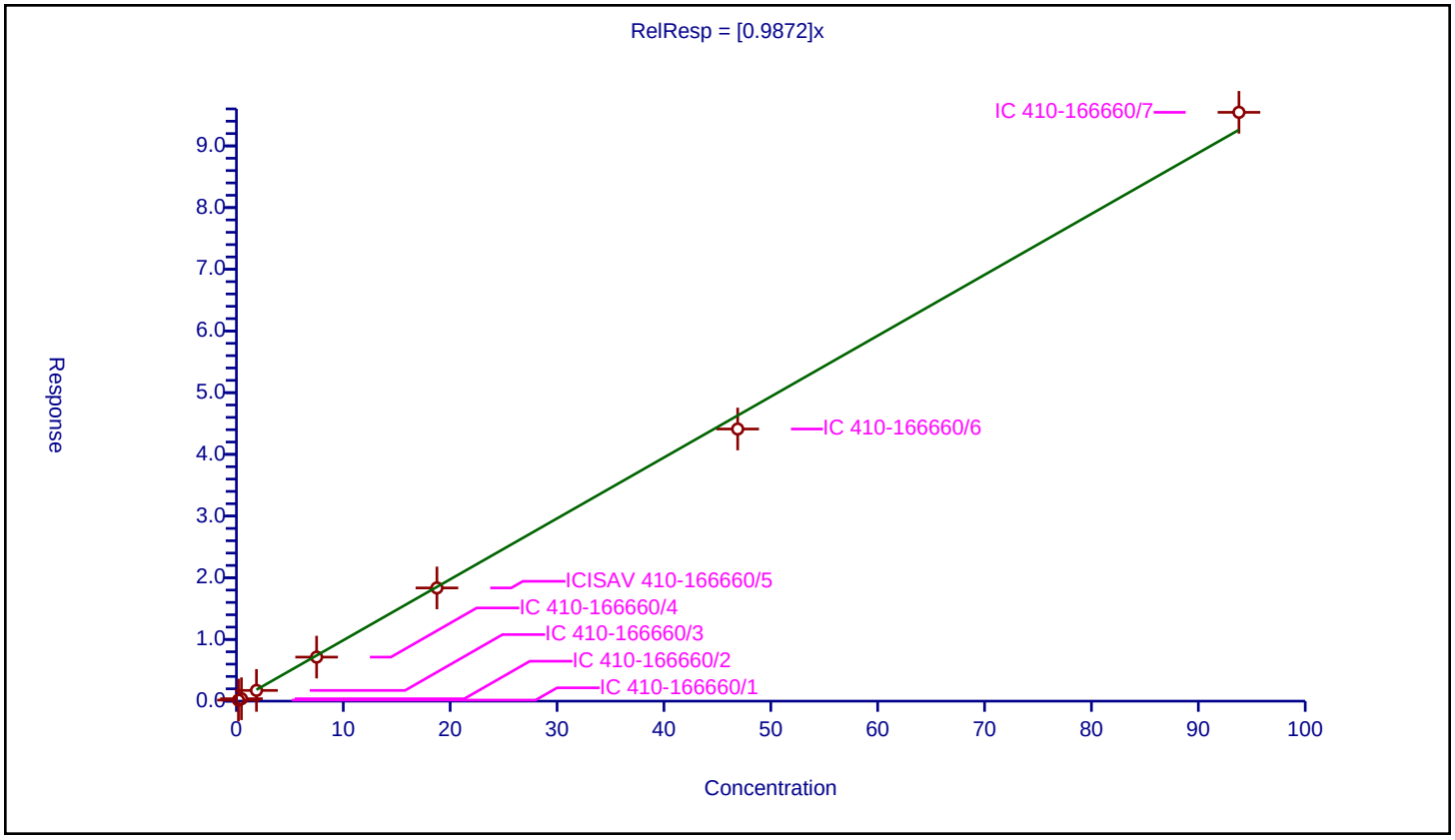
Curve Coefficients

Intercept:	0
Slope:	0.9872

Error Coefficients

Standard Error:	12700000
Relative Standard Error:	8.3
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1876	0.168551	9.36	3076699.0	0.898461	Y
2	IC 410-166660/2	0.469	0.390049	9.36	2973944.0	0.831662	Y
3	IC 410-166660/3	1.876	1.736951	9.36	2869818.0	0.92588	Y
4	IC 410-166660/4	7.504	7.136462	9.36	2923549.0	0.951021	Y
5	ICISAV 410-166660/5	18.76	18.351805	9.36	2881451.0	0.978241	Y
6	IC 410-166660/6	46.9	44.109257	9.36	2640569.0	0.940496	Y
7	IC 410-166660/7	93.8	95.441245	9.36	2739563.0	1.017497	Y



Calibration / PFO3OA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

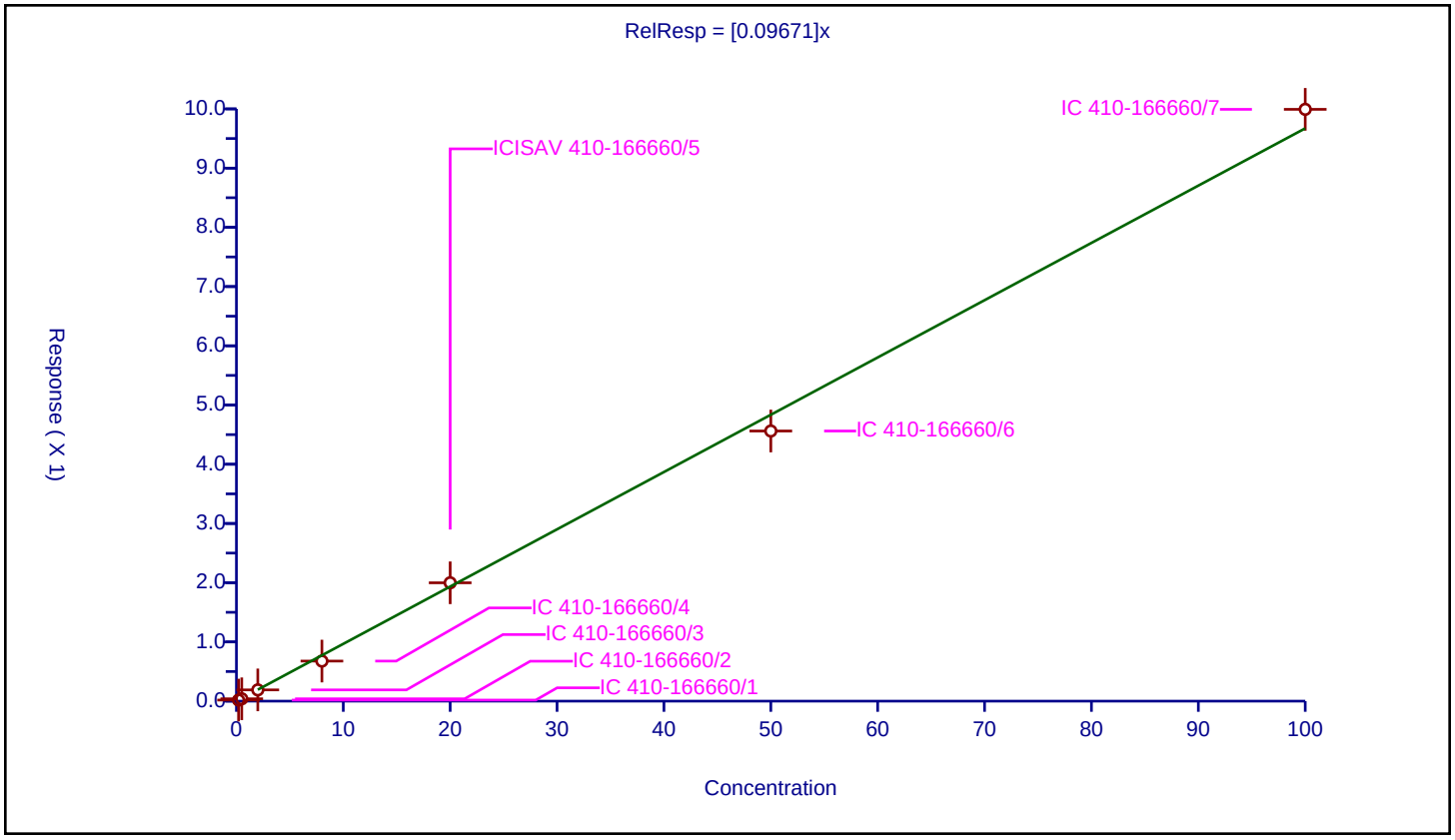
Curve Coefficients

Intercept:	0
Slope:	0.09671

Error Coefficients

Standard Error:	1080000
Relative Standard Error:	9.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.018156	10.0	2527007.0	0.090779	Y
2	IC 410-166660/2	0.5	0.039783	10.0	2554832.0	0.079567	Y
3	IC 410-166660/3	2.0	0.1899	10.0	2347448.0	0.09495	Y
4	IC 410-166660/4	8.0	0.67657	10.0	2424863.0	0.084571	Y
5	ICISAV 410-166660/5	20.0	1.99816	10.0	2358014.0	0.099908	Y
6	IC 410-166660/6	50.0	4.561313	10.0	2296319.0	0.091226	Y
7	IC 410-166660/7	100.0	9.992206	10.0	2386490.0	0.099922	Y



Calibration / Perfluoro(2-propoxypropanoic) acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

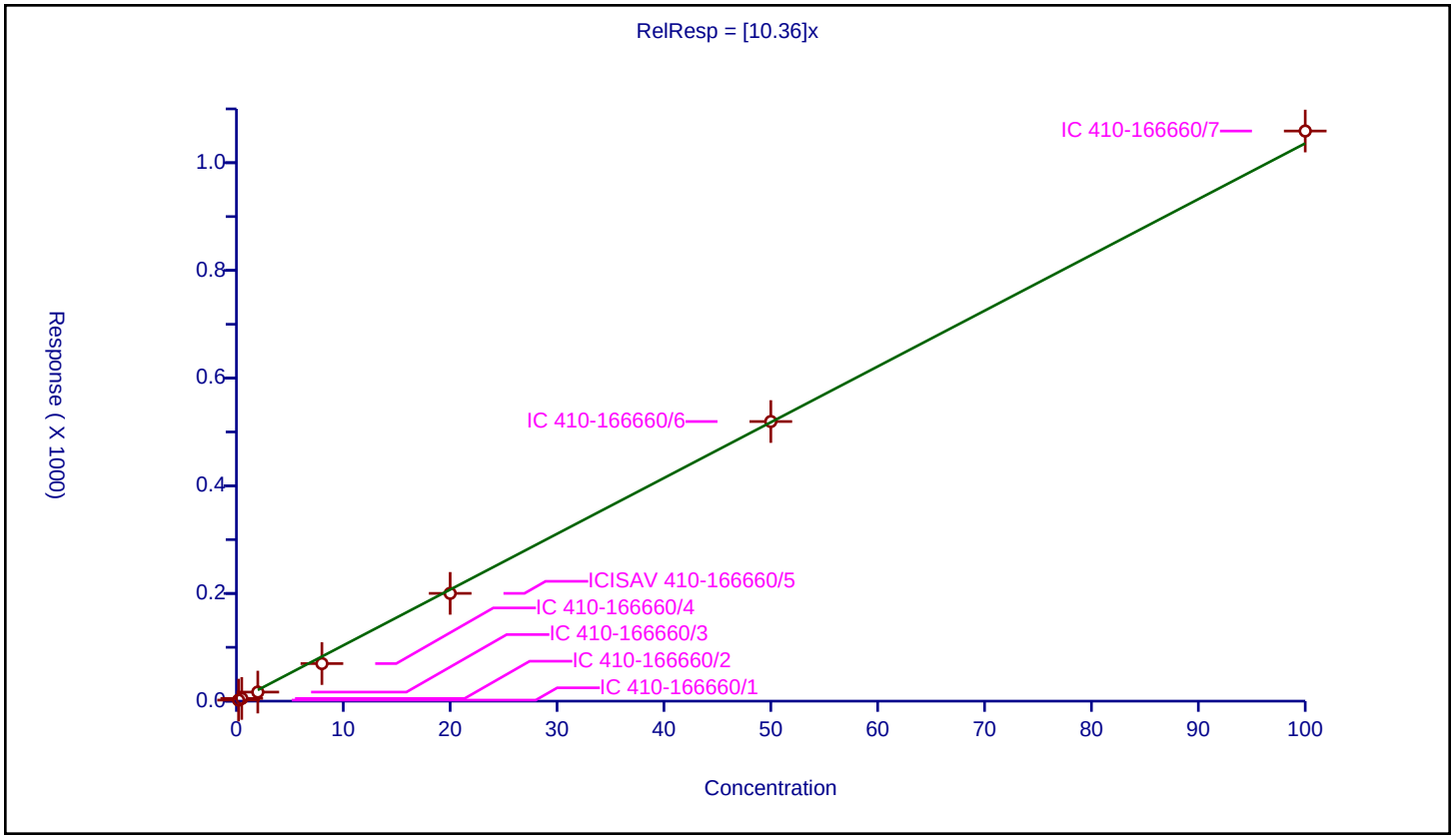
Curve Coefficients

Intercept:	0
Slope:	10.36

Error Coefficients

Standard Error:	2130000
Relative Standard Error:	10.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	1.937315	10.0	47380.0	9.686577	Y
2	IC 410-166660/2	0.5	5.004312	10.0	42901.0	10.008625	Y
3	IC 410-166660/3	2.0	16.844083	10.0	46313.0	8.422041	Y
4	IC 410-166660/4	8.0	69.752408	10.0	51294.0	8.719051	Y
5	ICISAV 410-166660/5	20.0	200.156487	10.0	46713.0	10.007824	Y
6	IC 410-166660/6	50.0	519.346884	10.0	40835.0	10.386938	Y
7	IC 410-166660/7	100.0	1058.86905	10.0	43910.0	10.588691	Y



Calibration / Hydro-PS Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

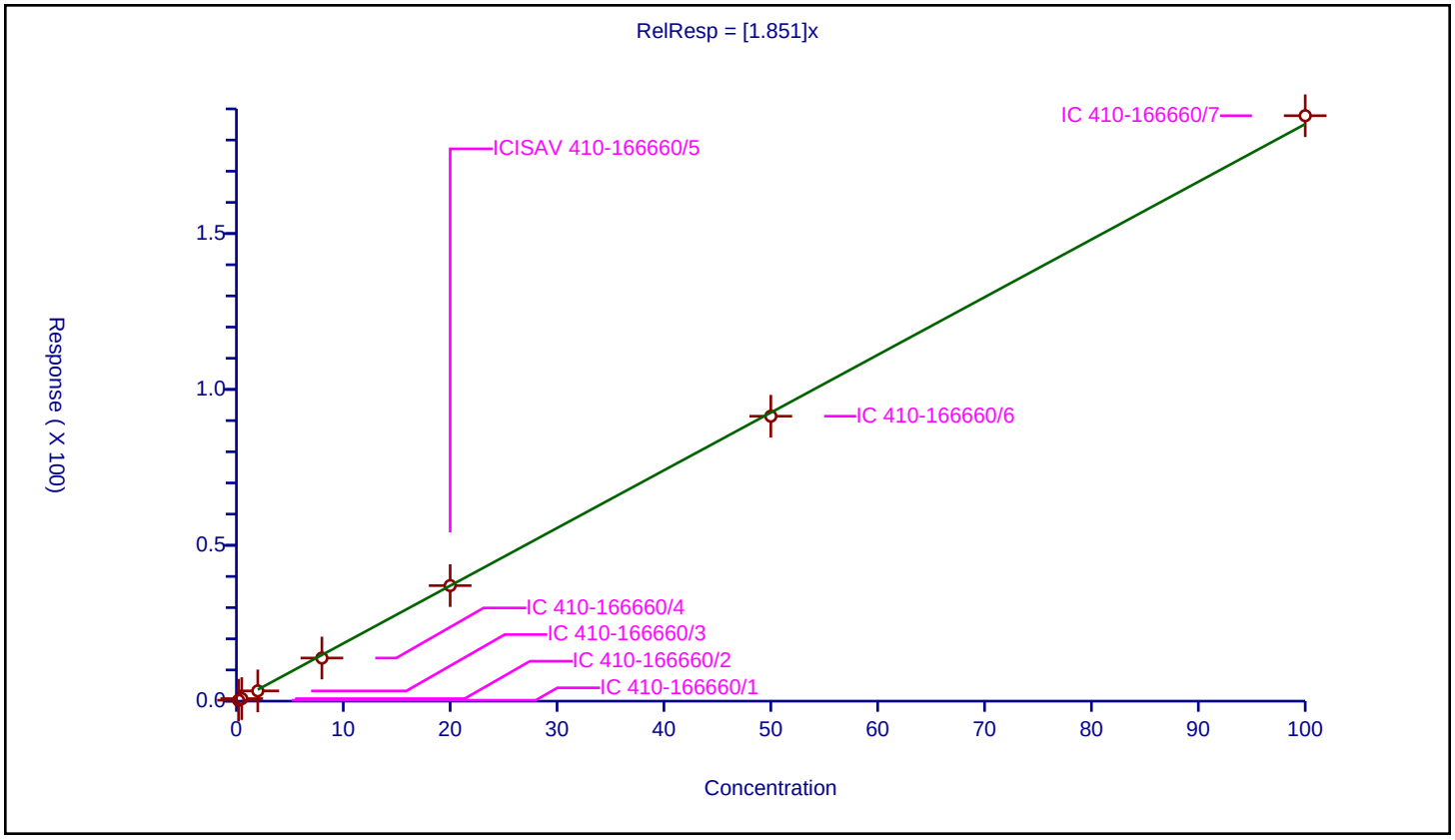
Curve Coefficients

Intercept:	0
Slope:	1.851

Error Coefficients

Standard Error:	25300000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.297879	9.36	3076699.0	1.489396	Y
2	IC 410-166660/2	0.5	0.807348	9.36	2973944.0	1.614696	Y
3	IC 410-166660/3	2.0	3.282923	9.36	2869818.0	1.641462	Y
4	IC 410-166660/4	8.0	13.826766	9.36	2923549.0	1.728346	Y
5	ICISAV 410-166660/5	20.0	37.071964	9.36	2881451.0	1.853598	Y
6	IC 410-166660/6	50.0	91.408385	9.36	2640569.0	1.828168	Y
7	IC 410-166660/7	100.0	187.815535	9.36	2739563.0	1.878155	Y



Calibration / Hydro-EVE Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

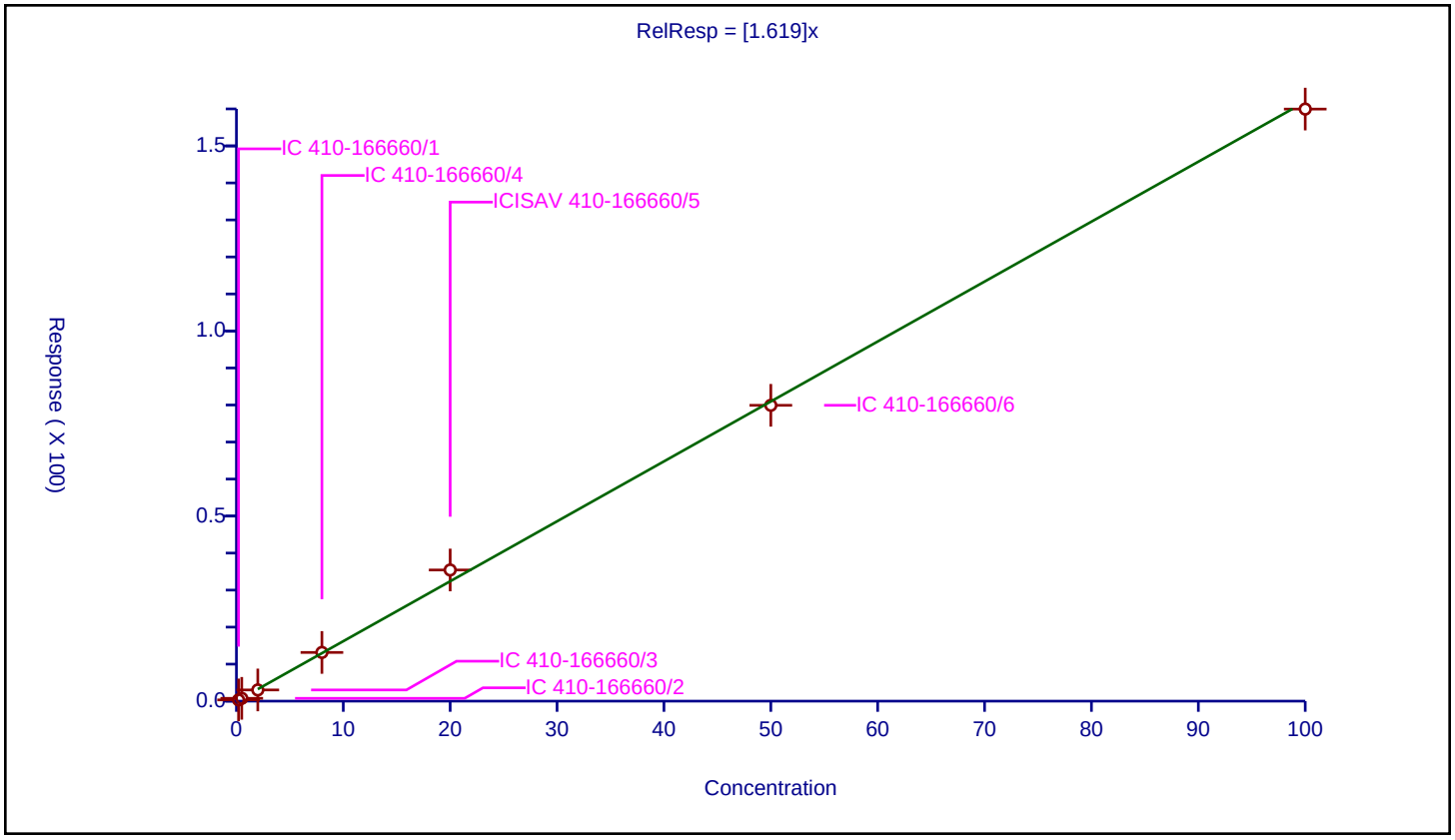
Curve Coefficients

Intercept:	0
Slope:	1.619

Error Coefficients

Standard Error:	17700000
Relative Standard Error:	5.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.33161	10.0	2527007.0	1.658048	Y
2	IC 410-166660/2	0.5	0.761835	10.0	2554832.0	1.52367	Y
3	IC 410-166660/3	2.0	3.028489	10.0	2347448.0	1.514244	Y
4	IC 410-166660/4	8.0	13.160125	10.0	2424863.0	1.645016	Y
5	ICISAV 410-166660/5	20.0	35.437029	10.0	2358014.0	1.771851	Y
6	IC 410-166660/6	50.0	79.921278	10.0	2296319.0	1.598426	Y
7	IC 410-166660/7	100.0	159.952721	10.0	2386490.0	1.599527	Y



Calibration / R-PSDCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

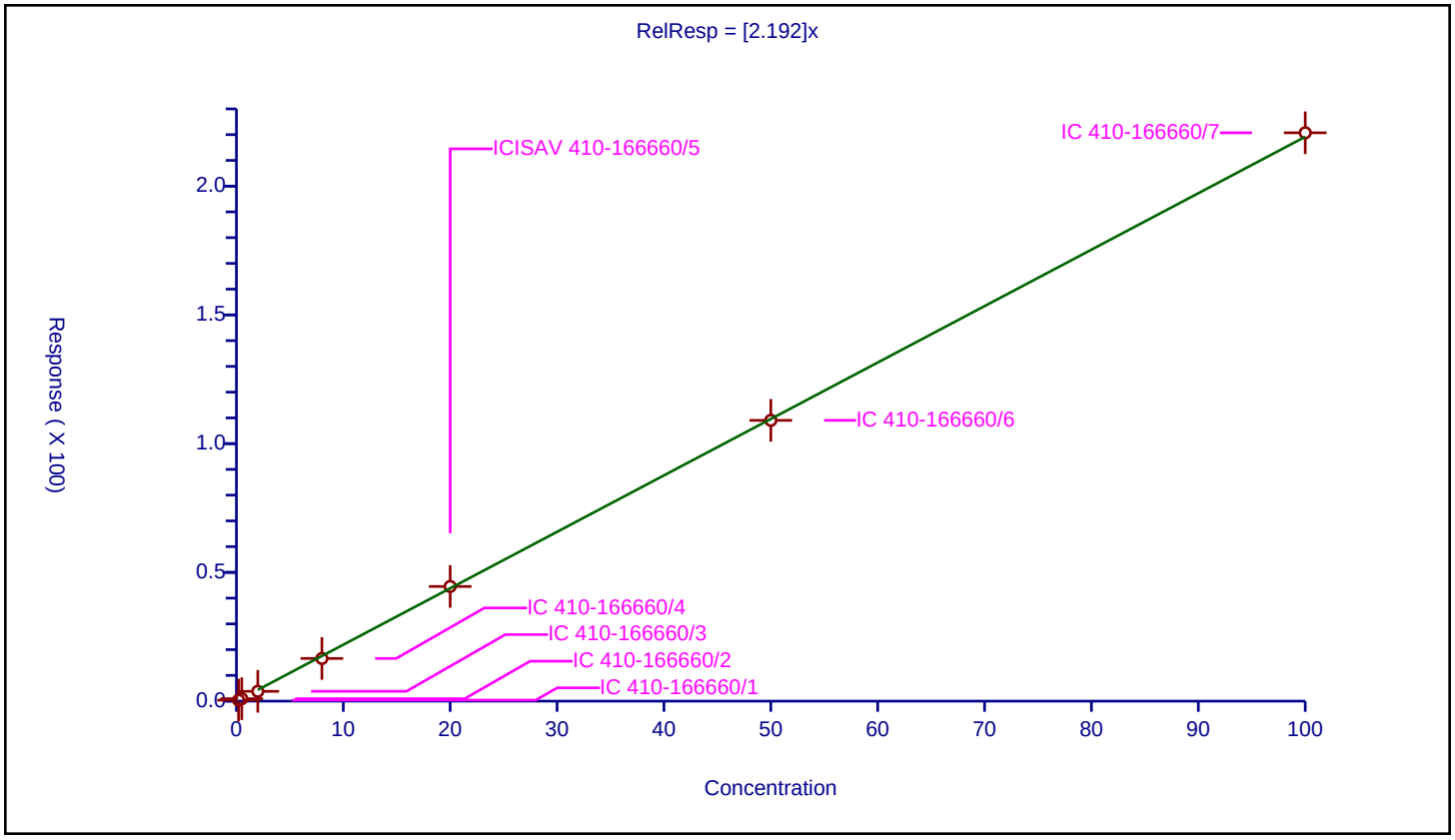
Curve Coefficients

Intercept:	0
Slope:	2.192

Error Coefficients

Standard Error:	29800000
Relative Standard Error:	9.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.393067	9.36	3076699.0	1.965336	Y
2	IC 410-166660/2	0.5	0.949727	9.36	2973944.0	1.899455	Y
3	IC 410-166660/3	2.0	3.813812	9.36	2869818.0	1.906906	Y
4	IC 410-166660/4	8.0	16.573668	9.36	2923549.0	2.071709	Y
5	ICISAV 410-166660/5	20.0	44.53233	9.36	2881451.0	2.226617	Y
6	IC 410-166660/6	50.0	109.039669	9.36	2640569.0	2.180793	Y
7	IC 410-166660/7	100.0	220.718136	9.36	2739563.0	2.207181	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

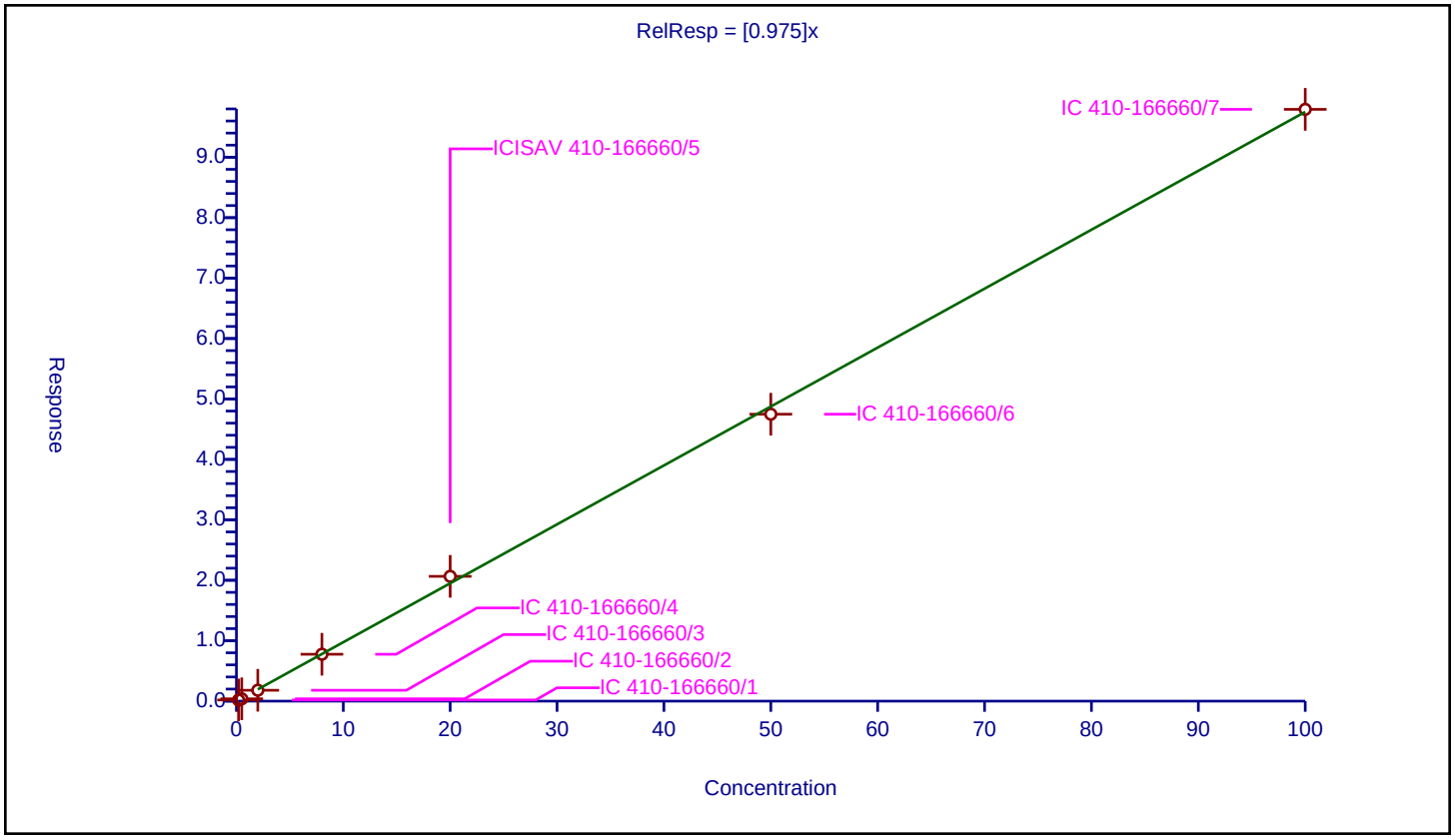
Curve Coefficients

Intercept:	0
Slope:	0.975

Error Coefficients

Standard Error:	14500000
Relative Standard Error:	9.6
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.193474	10.0	4076158.0	0.967369	Y
2	IC 410-166660/2	0.5	0.384491	10.0	4303302.0	0.768982	Y
3	IC 410-166660/3	2.0	1.801371	10.0	3929290.0	0.900686	Y
4	IC 410-166660/4	8.0	7.757579	10.0	3762679.0	0.969697	Y
5	ICISAV 410-166660/5	20.0	20.648939	10.0	3760832.0	1.032447	Y
6	IC 410-166660/6	50.0	47.479346	10.0	3223152.0	0.949587	Y
7	IC 410-166660/7	100.0	97.924123	10.0	3160284.0	0.979241	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

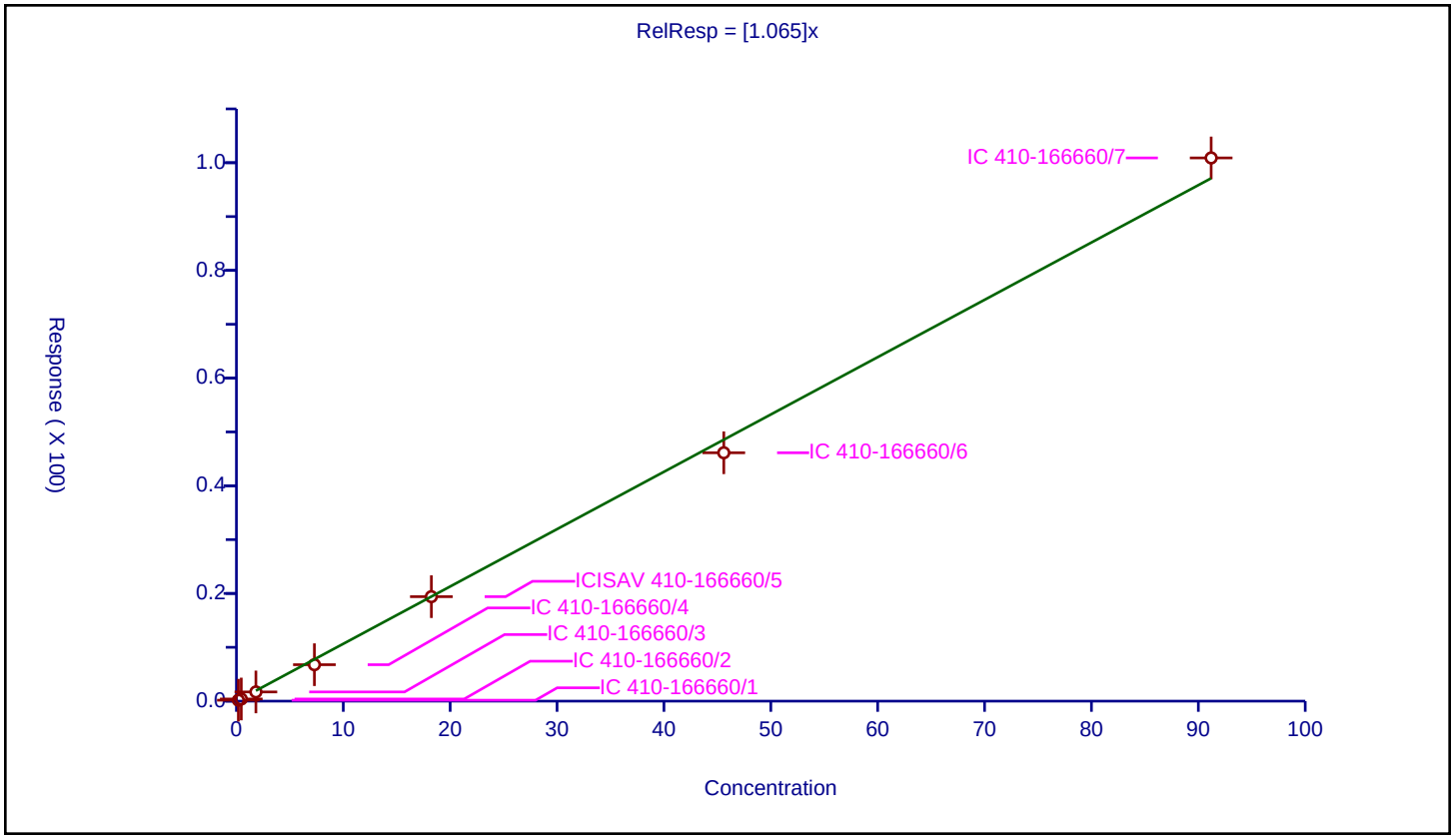
Curve Coefficients

Intercept:	0
Slope:	1.065

Error Coefficients

Standard Error:	11200000
Relative Standard Error:	11.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1824	0.175403	9.46	2561876.0	0.961637	Y
2	IC 410-166660/2	0.456	0.397358	9.46	2601439.0	0.8714	Y
3	IC 410-166660/3	1.824	1.710093	9.46	2468157.0	0.937551	Y
4	IC 410-166660/4	7.296	6.771617	9.46	2700670.0	0.928127	Y
5	ICISAV 410-166660/5	18.24	19.403277	9.46	2479274.0	1.063776	Y
6	IC 410-166660/6	45.6	46.133665	9.46	2272748.0	1.011703	Y
7	IC 410-166660/7	91.2	100.892409	9.46	2285787.0	1.106276	Y



Calibration / DONA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

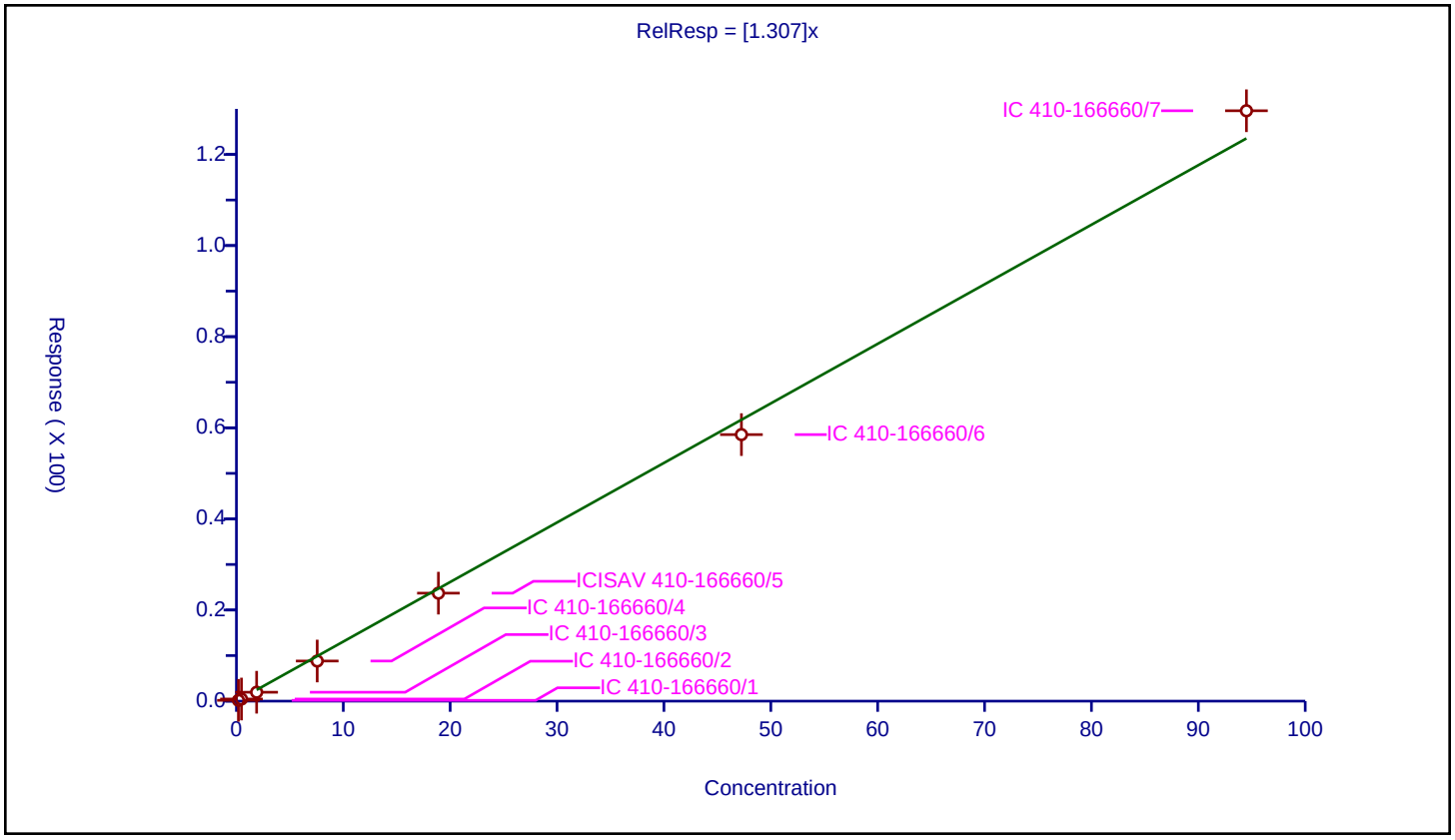
Curve Coefficients

Intercept:	0
Slope:	1.307

Error Coefficients

Standard Error:	18800000
Relative Standard Error:	18.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.189	0.178106	10.0	4076158.0	0.942362	Y
2	IC 410-166660/2	0.4725	0.466484	10.0	4303302.0	0.987267	Y
3	IC 410-166660/3	1.89	1.954043	10.0	3929290.0	1.033885	Y
4	IC 410-166660/4	7.56	8.806731	10.0	3762679.0	1.164911	Y
5	ICISAV 410-166660/5	18.9	23.705919	10.0	3760832.0	1.254281	Y
6	IC 410-166660/6	47.25	58.503499	10.0	3223152.0	1.238169	Y
7	IC 410-166660/7	94.5	129.58785	10.0	3160284.0	1.3713	Y



Calibration / PFECA G

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

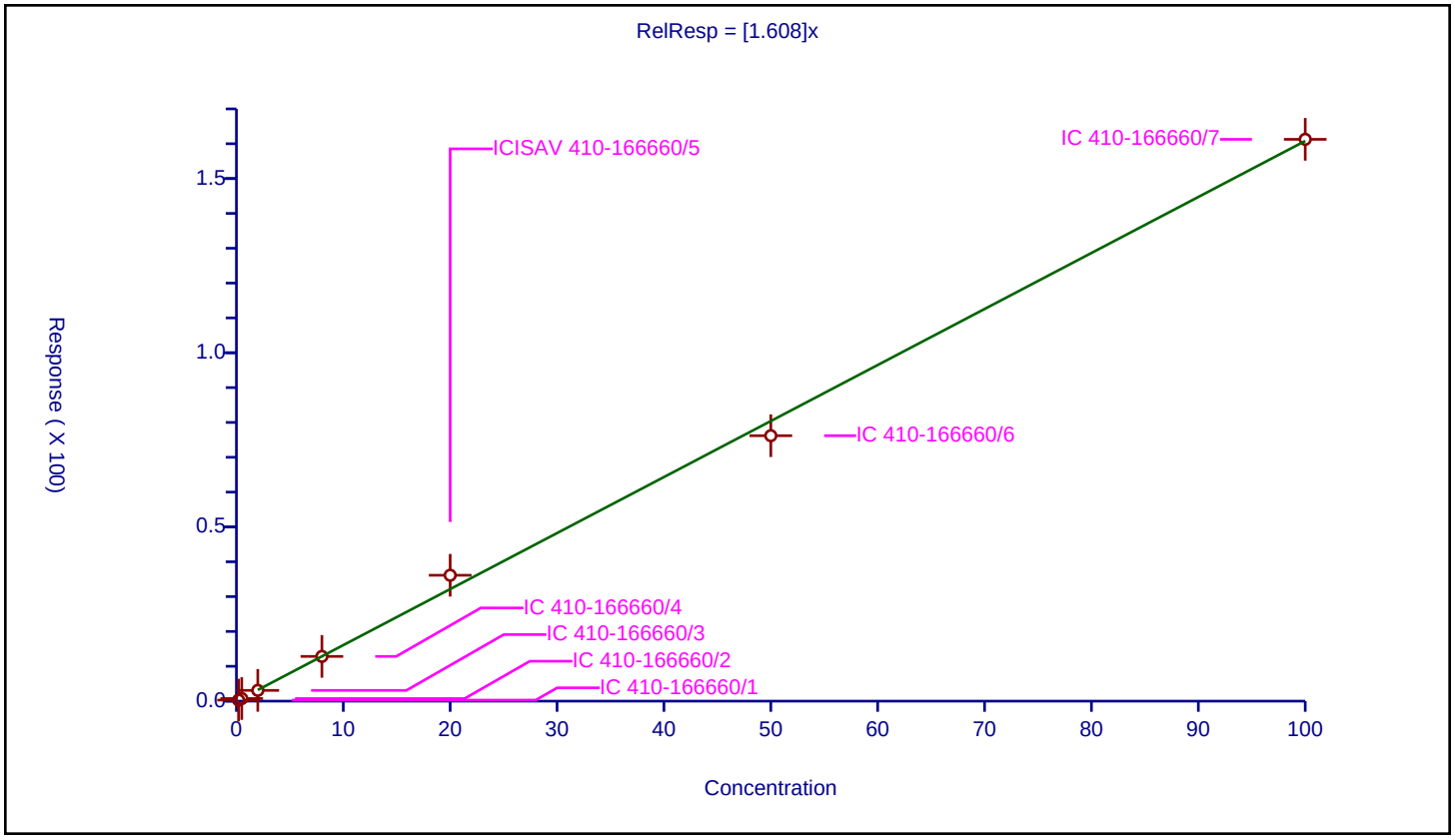
Curve Coefficients

Intercept:	0
Slope:	1.608

Error Coefficients

Standard Error:	17700000
Relative Standard Error:	6.9
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.302492	10.0	2527007.0	1.512461	Y
2	IC 410-166660/2	0.5	0.743885	10.0	2554832.0	1.487769	Y
3	IC 410-166660/3	2.0	3.0842	10.0	2347448.0	1.5421	Y
4	IC 410-166660/4	8.0	12.840424	10.0	2424863.0	1.605053	Y
5	ICISAV 410-166660/5	20.0	36.137309	10.0	2358014.0	1.806865	Y
6	IC 410-166660/6	50.0	76.194287	10.0	2296319.0	1.523886	Y
7	IC 410-166660/7	100.0	161.260232	10.0	2386490.0	1.612602	Y



Calibration / 5:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

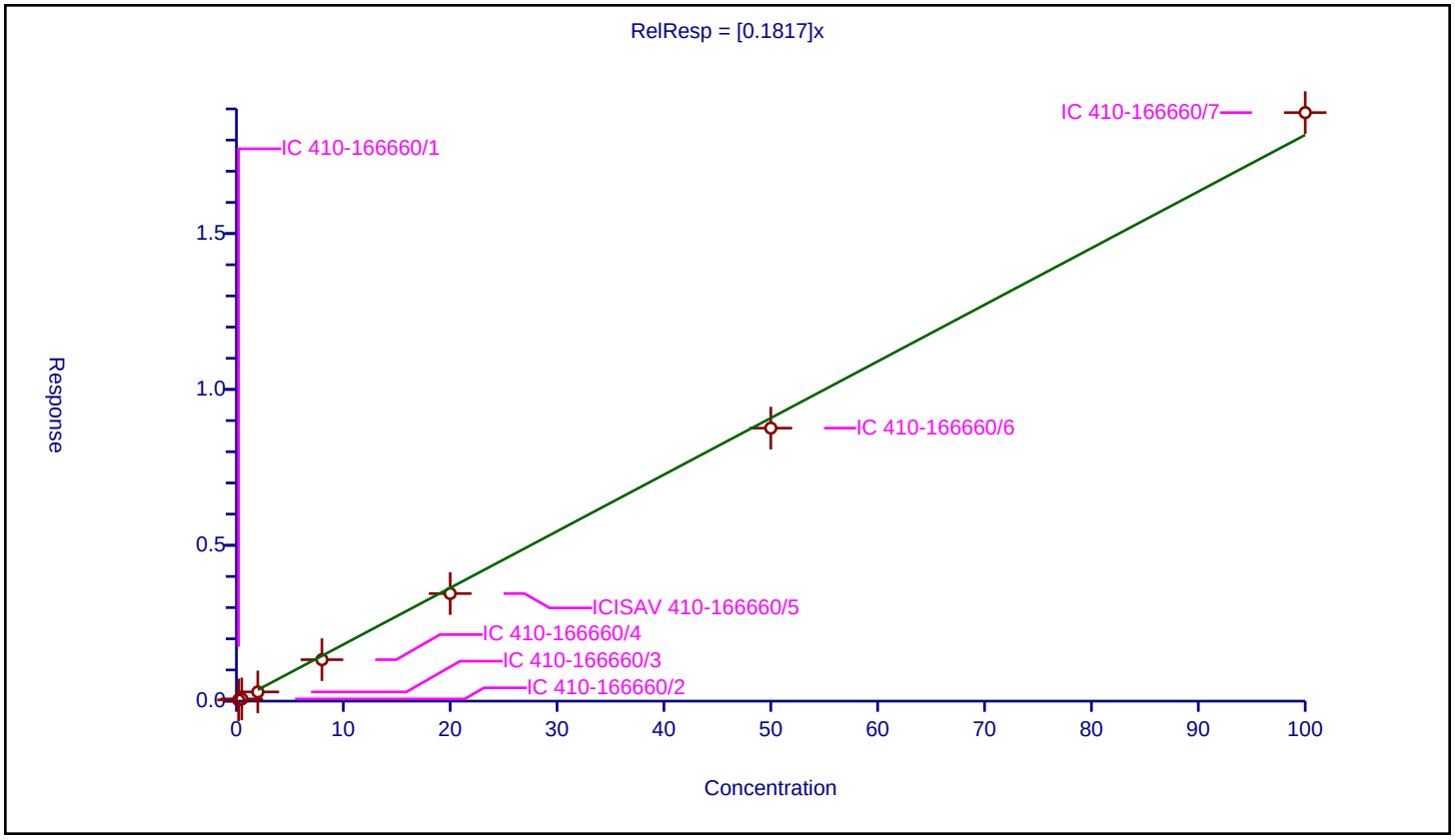
Curve Coefficients

Intercept:	0
Slope:	0.1817

Error Coefficients

Standard Error:	2750000
Relative Standard Error:	13.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.038715	10.0	4076158.0	0.193577	Y
2	IC 410-166660/2	0.5	0.070646	10.0	4303302.0	0.141292	Y
3	IC 410-166660/3	2.0	0.294934	10.0	3929290.0	0.147467	Y
4	IC 410-166660/4	8.0	1.330196	10.0	3762679.0	0.166274	Y
5	ICISAV 410-166660/5	20.0	3.451199	10.0	3760832.0	0.17256	Y
6	IC 410-166660/6	50.0	8.758749	10.0	3223152.0	0.175175	Y
7	IC 410-166660/7	100.0	18.88062	10.0	3160284.0	0.188806	Y



Calibration / 6:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

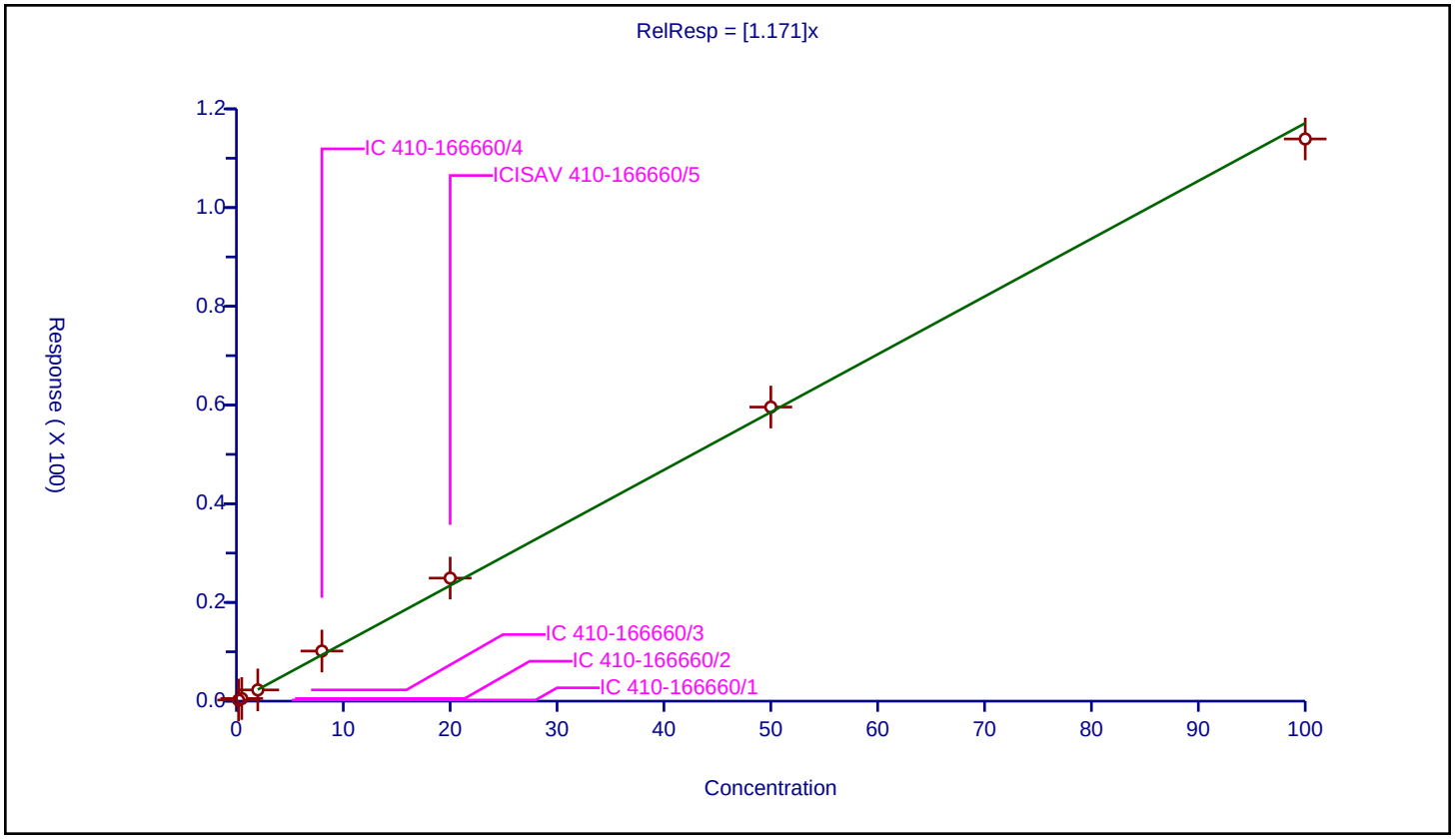
Curve Coefficients

Intercept:	0
Slope:	1.171

Error Coefficients

Standard Error:	12900000
Relative Standard Error:	6.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.227883	10.0	2855365.0	1.139417	Y
2	IC 410-166660/2	0.5	0.531278	10.0	2845571.0	1.062557	Y
3	IC 410-166660/3	2.0	2.273976	10.0	2614601.0	1.136988	Y
4	IC 410-166660/4	8.0	10.150955	10.0	2488548.0	1.268869	Y
5	ICISAV 410-166660/5	20.0	24.931275	10.0	2574320.0	1.246564	Y
6	IC 410-166660/6	50.0	59.587352	10.0	2296438.0	1.191747	Y
7	IC 410-166660/7	100.0	113.906651	10.0	2431167.0	1.139067	Y



Calibration / 6:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

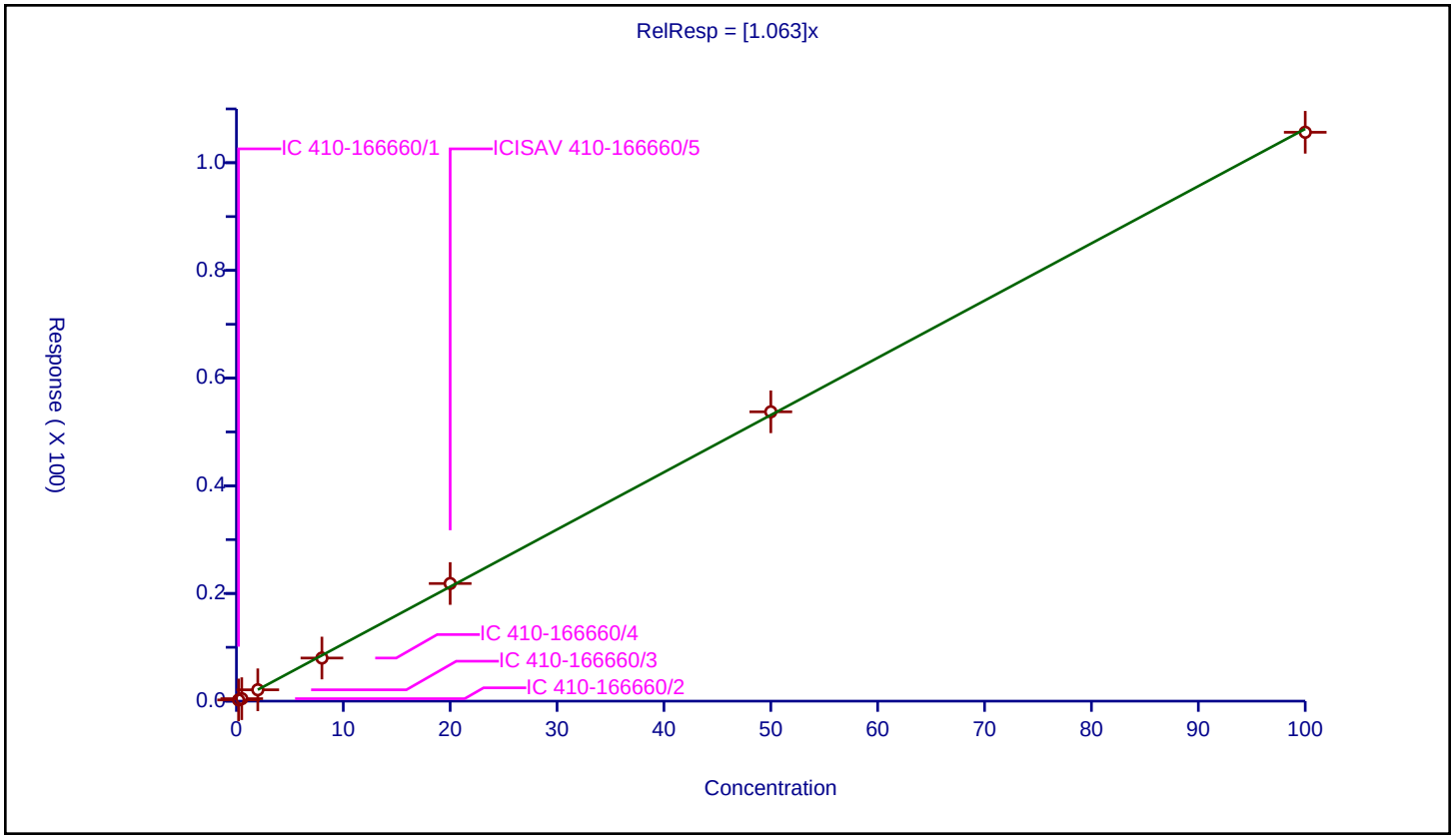
Curve Coefficients

Intercept:	0
Slope:	1.063

Error Coefficients

Standard Error:	509000
Relative Standard Error:	6.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.22285	10.0	131254.0	1.114252	Y
2	IC 410-166660/2	0.5	0.458033	10.0	126563.0	0.916066	Y
3	IC 410-166660/3	2.0	2.11107	10.0	115027.0	1.055535	Y
4	IC 410-166660/4	8.0	8.005124	10.0	120213.0	1.000641	Y
5	ICISAV 410-166660/5	20.0	21.847243	10.0	111144.0	1.092362	Y
6	IC 410-166660/6	50.0	53.741143	10.0	99785.0	1.074823	Y
7	IC 410-166660/7	100.0	105.658561	10.0	103544.0	1.056586	Y



Calibration / PFO4DA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

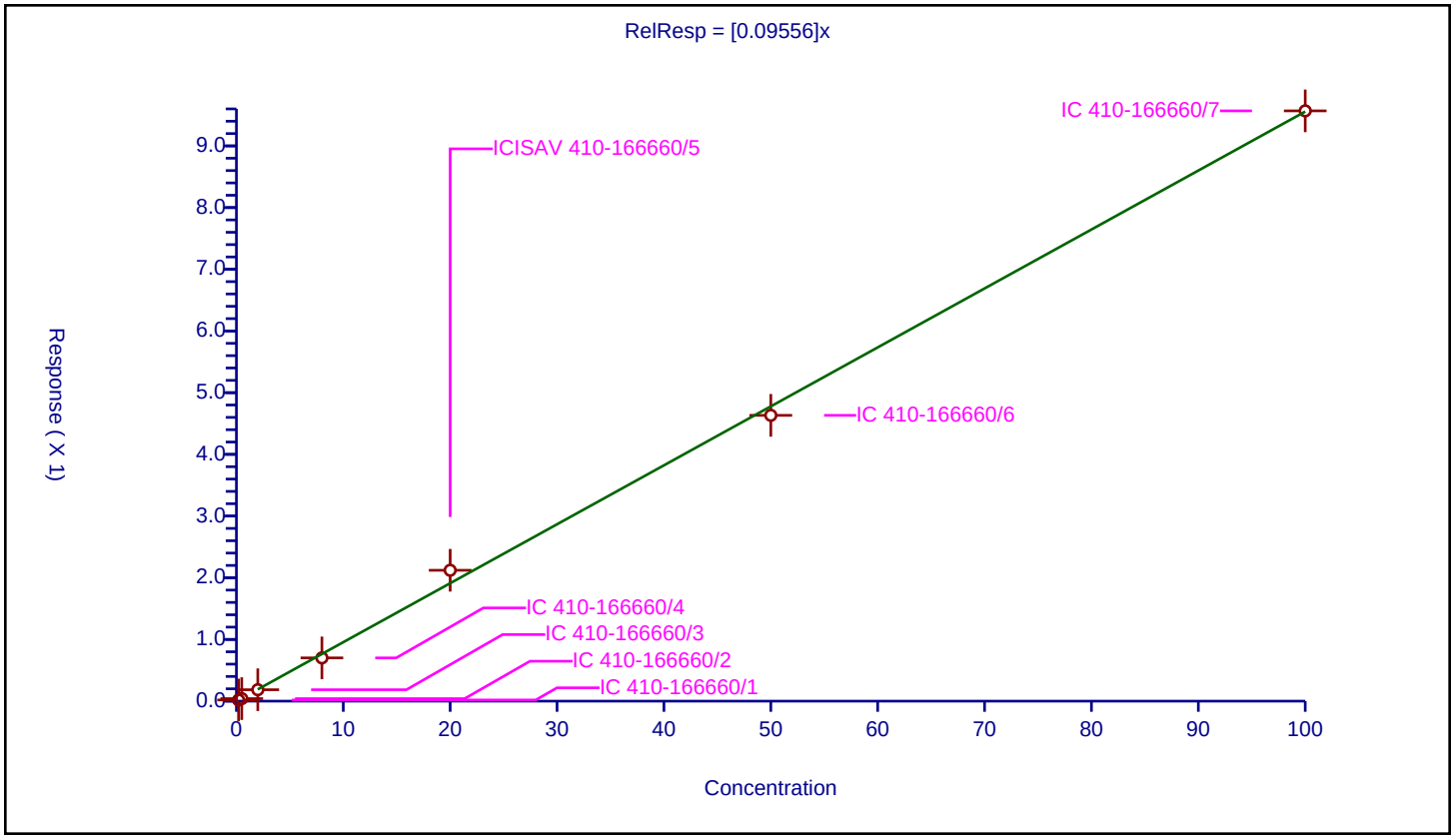
Curve Coefficients

Intercept:	0
Slope:	0.09556

Error Coefficients

Standard Error:	1050000
Relative Standard Error:	8.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.018888	10.0	2527007.0	0.09444	Y
2	IC 410-166660/2	0.5	0.040809	10.0	2554832.0	0.081618	Y
3	IC 410-166660/3	2.0	0.184941	10.0	2347448.0	0.092471	Y
4	IC 410-166660/4	8.0	0.701017	10.0	2424863.0	0.087627	Y
5	ICISAV 410-166660/5	20.0	2.121349	10.0	2358014.0	0.106067	Y
6	IC 410-166660/6	50.0	4.632658	10.0	2296319.0	0.092653	Y
7	IC 410-166660/7	100.0	9.568194	10.0	2386490.0	0.095682	Y



Calibration / PS Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

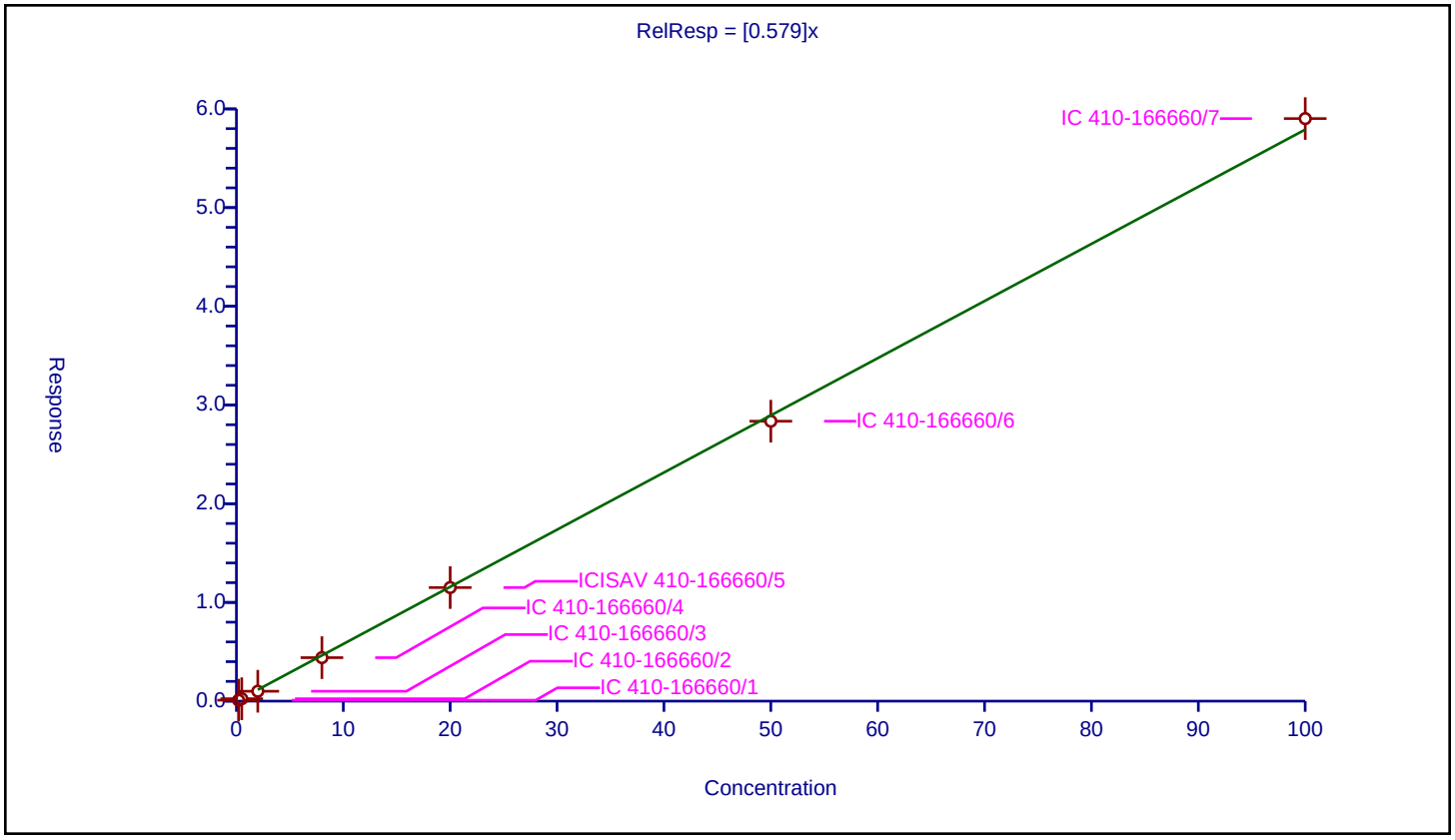
Curve Coefficients

Intercept:	0
Slope:	0.579

Error Coefficients

Standard Error:	7930000
Relative Standard Error:	11.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.094768	9.36	3076699.0	0.473841	Y
2	IC 410-166660/2	0.5	0.24486	9.36	2973944.0	0.489719	Y
3	IC 410-166660/3	2.0	1.003218	9.36	2869818.0	0.501609	Y
4	IC 410-166660/4	8.0	4.406231	9.36	2923549.0	0.550779	Y
5	ICISAV 410-166660/5	20.0	11.507818	9.36	2881451.0	0.575391	Y
6	IC 410-166660/6	50.0	28.359609	9.36	2640569.0	0.567192	Y
7	IC 410-166660/7	100.0	59.01669	9.36	2739563.0	0.590167	Y



Calibration / EVE Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

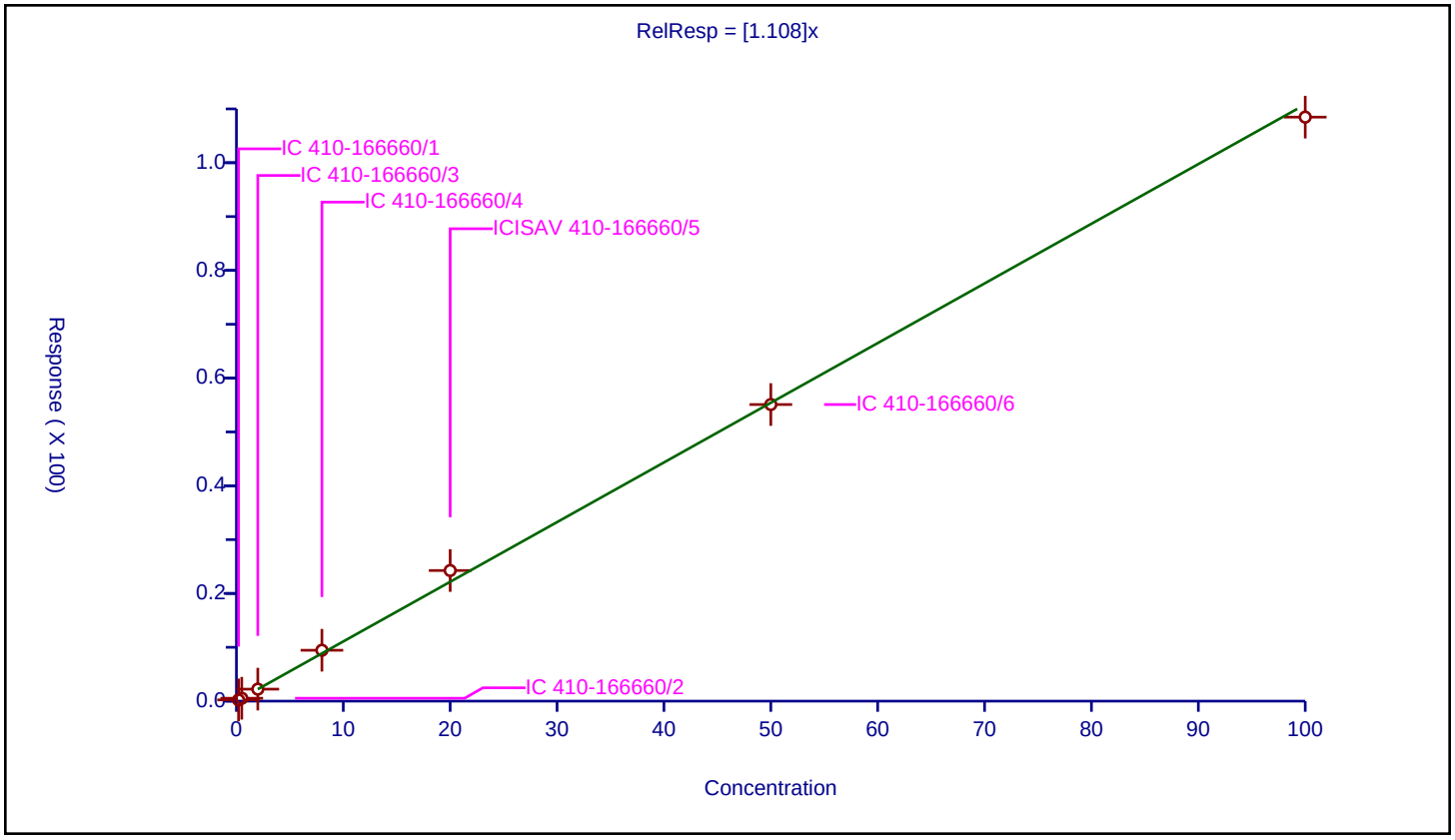
Curve Coefficients

Intercept:	0
Slope:	1.108

Error Coefficients

Standard Error:	12000000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.228642	10.0	2527007.0	1.14321	Y
2	IC 410-166660/2	0.5	0.536446	10.0	2554832.0	1.072892	Y
3	IC 410-166660/3	2.0	2.228301	10.0	2347448.0	1.11415	Y
4	IC 410-166660/4	8.0	9.450295	10.0	2424863.0	1.181287	Y
5	ICISAV 410-166660/5	20.0	24.260276	10.0	2358014.0	1.213014	Y
6	IC 410-166660/6	50.0	55.092219	10.0	2296319.0	1.101844	Y
7	IC 410-166660/7	100.0	108.472929	10.0	2386490.0	1.084729	Y



Calibration / PFECHS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

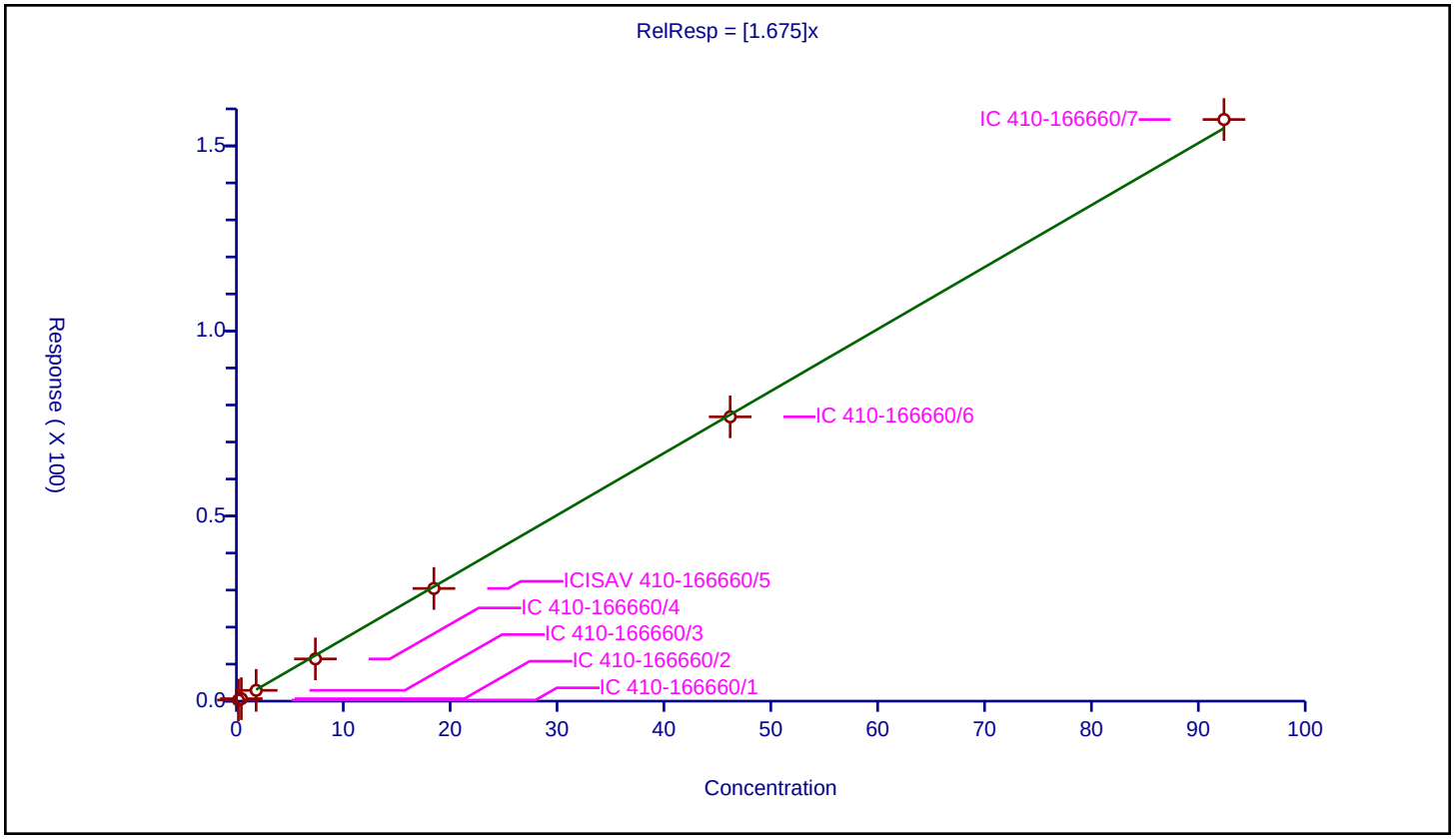
Curve Coefficients

Intercept:	0
Slope:	1.675

Error Coefficients

Standard Error:	17600000
Relative Standard Error:	7.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1848	0.296417	9.46	2561876.0	1.603986	Y
2	IC 410-166660/2	0.462	0.655383	9.46	2601439.0	1.418577	Y
3	IC 410-166660/3	1.848	2.919861	9.46	2468157.0	1.580011	Y
4	IC 410-166660/4	7.392	11.409779	9.46	2700670.0	1.543531	Y
5	ICISAV 410-166660/5	18.48	30.439145	9.46	2479274.0	1.64714	Y
6	IC 410-166660/6	46.2	76.806269	9.46	2272748.0	1.662473	Y
7	IC 410-166660/7	92.4	157.129478	9.46	2285787.0	1.700535	Y



Calibration / 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

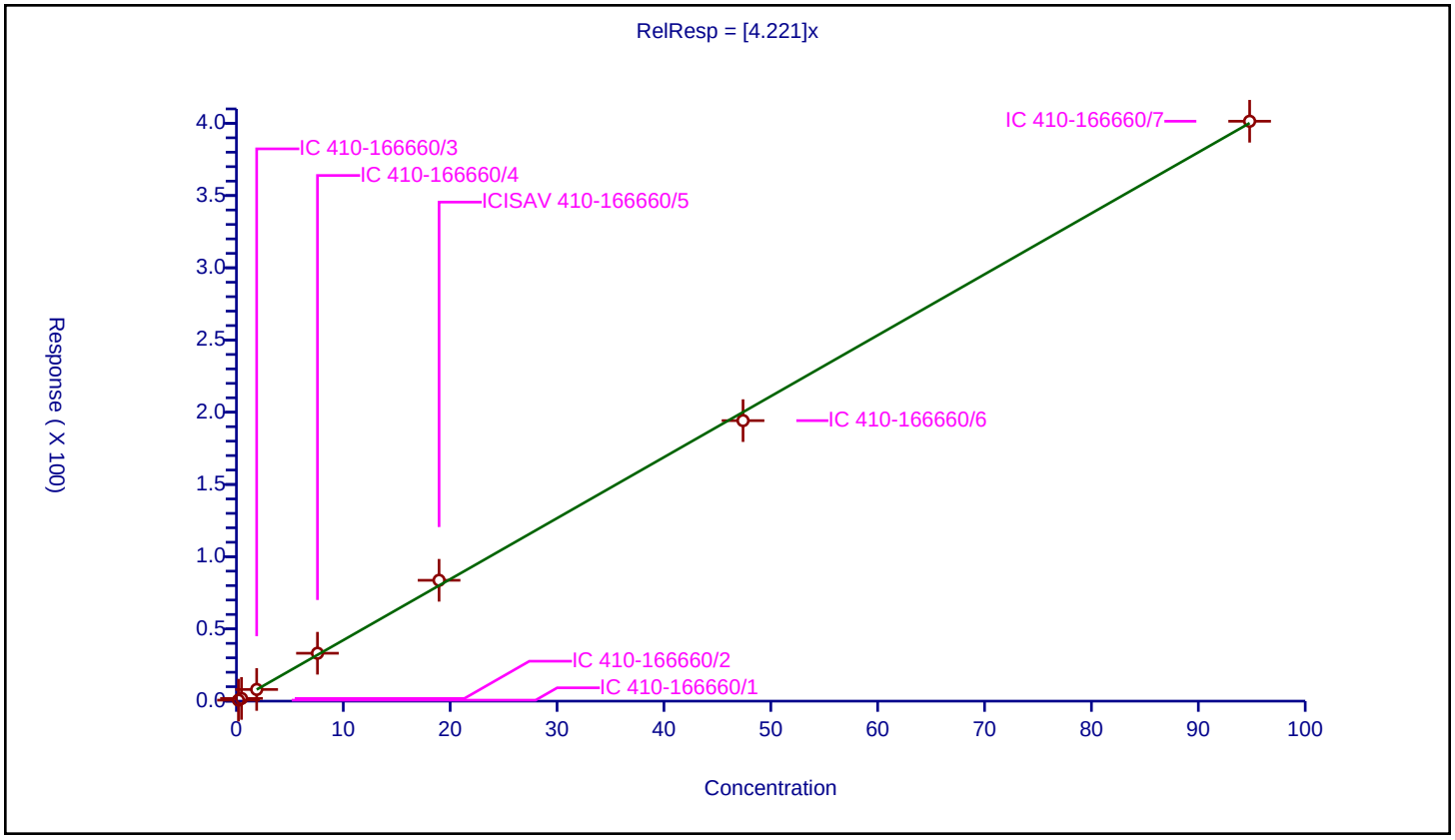
Curve Coefficients

Intercept:	0
Slope:	4.221

Error Coefficients

Standard Error:	2940000
Relative Standard Error:	6.9
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1896	0.686721	9.5	213816.0	3.621948	Y
2	IC 410-166660/2	0.474	1.879212	9.5	209664.0	3.964581	Y
3	IC 410-166660/3	1.896	8.083431	9.5	193411.0	4.263413	Y
4	IC 410-166660/4	7.584	33.167134	9.5	190595.0	4.373304	Y
5	ICISAV 410-166660/5	18.96	83.665948	9.5	181707.0	4.412761	Y
6	IC 410-166660/6	47.4	194.190743	9.5	161324.0	4.096851	Y
7	IC 410-166660/7	94.8	401.450533	9.5	145644.0	4.23471	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

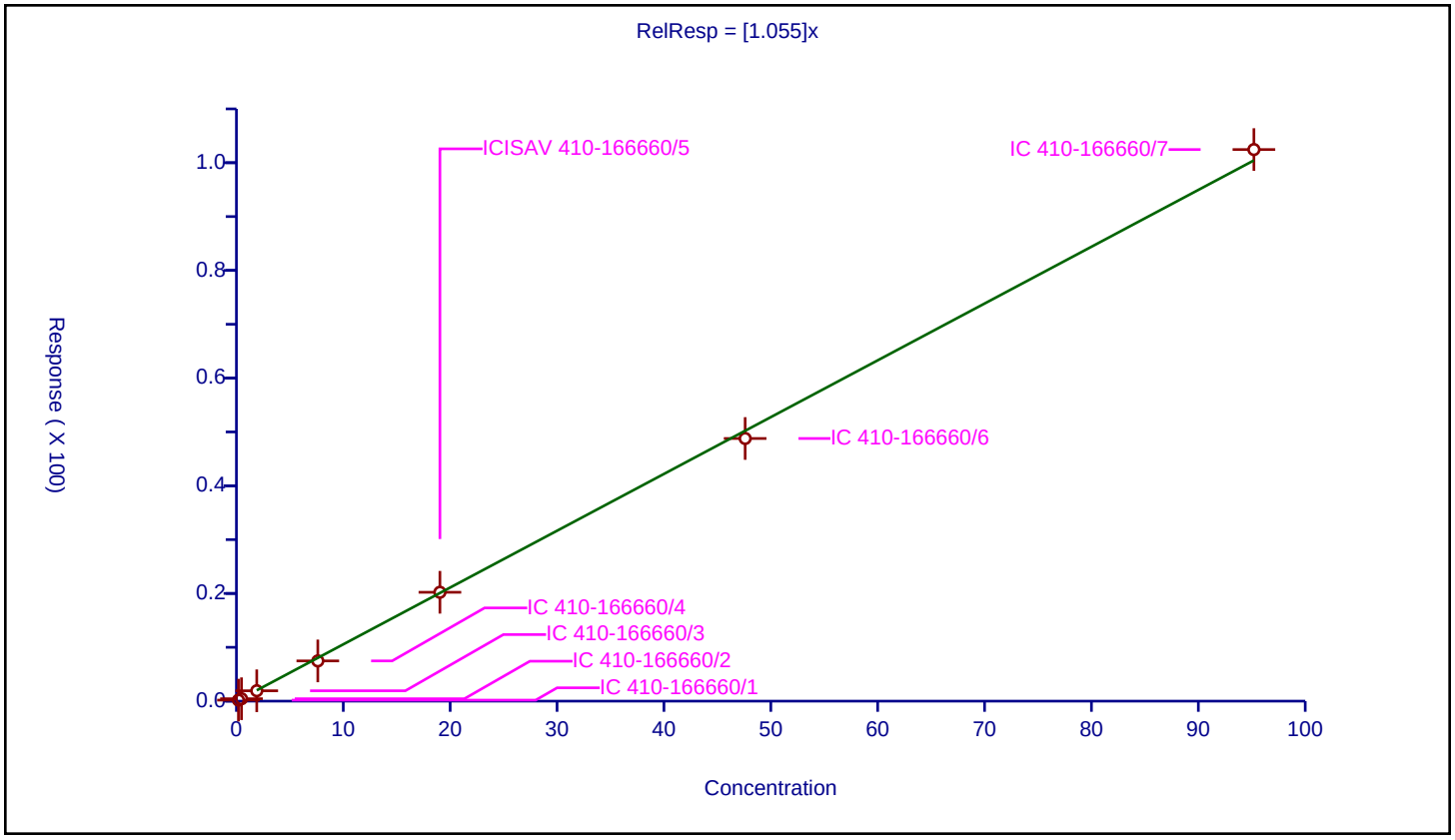
Curve Coefficients

Intercept:	0
Slope:	1.055

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	6.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1904	0.192381	9.46	2561876.0	1.010405	Y
2	IC 410-166660/2	0.476	0.447094	9.46	2601439.0	0.939273	Y
3	IC 410-166660/3	1.904	1.925095	9.46	2468157.0	1.011079	Y
4	IC 410-166660/4	7.616	7.47012	9.46	2700670.0	0.980846	Y
5	ICISAV 410-166660/5	19.04	20.220994	9.46	2479274.0	1.062027	Y
6	IC 410-166660/6	47.6	48.780602	9.46	2272748.0	1.024803	Y
7	IC 410-166660/7	95.2	102.443874	9.46	2285787.0	1.076091	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

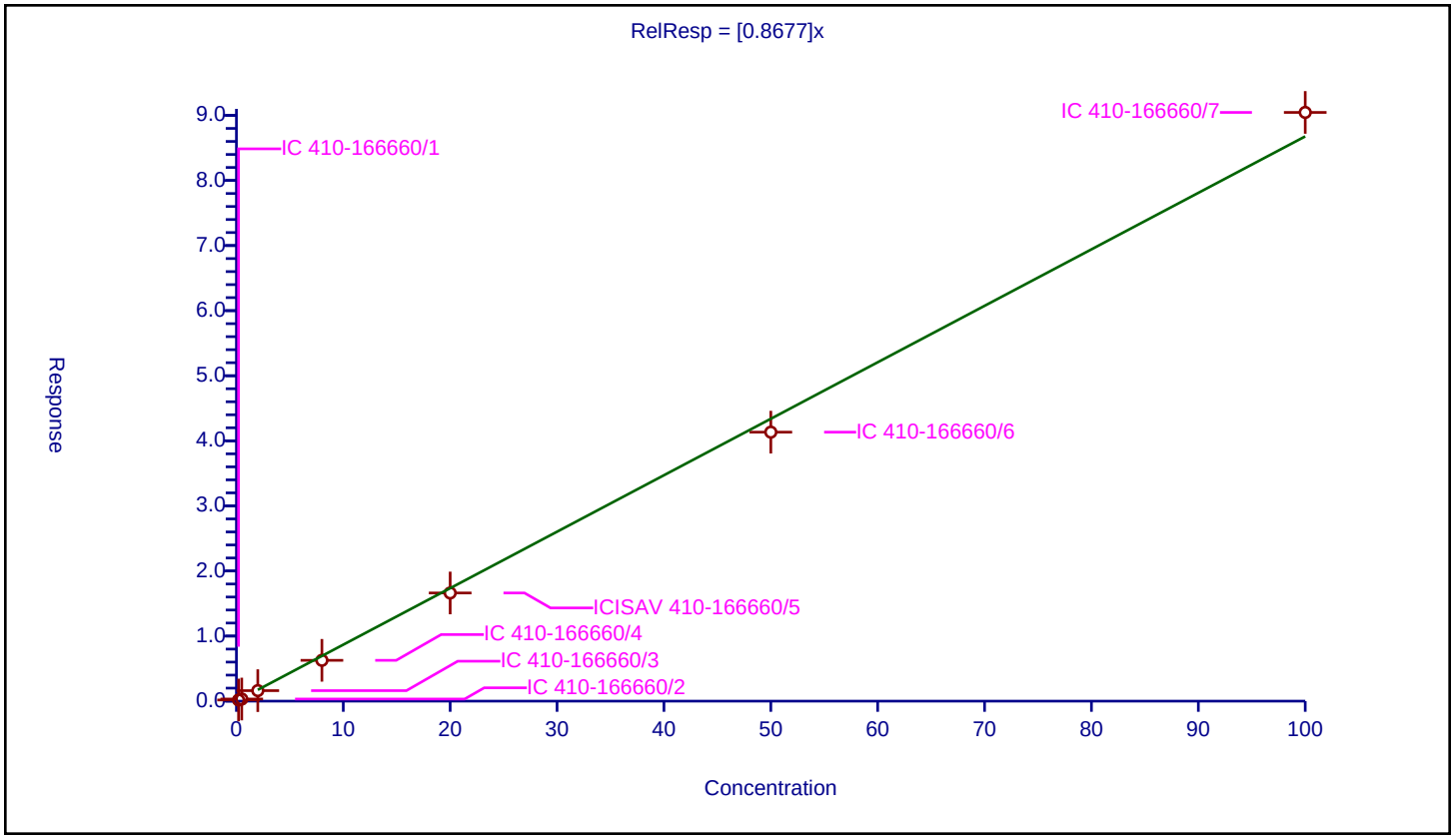
Curve Coefficients

Intercept:	0
Slope:	0.8677

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	11.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.178916	10.0	3652161.0	0.89458	Y
2	IC 410-166660/2	0.5	0.326758	10.0	3658366.0	0.653516	Y
3	IC 410-166660/3	2.0	1.615968	10.0	3220763.0	0.807984	Y
4	IC 410-166660/4	8.0	6.269688	10.0	3318771.0	0.783711	Y
5	ICISAV 410-166660/5	20.0	16.621315	10.0	3250602.0	0.831066	Y
6	IC 410-166660/6	50.0	41.33153	10.0	2874677.0	0.826631	Y
7	IC 410-166660/7	100.0	90.455557	10.0	2723762.0	0.904556	Y



Calibration / TAF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

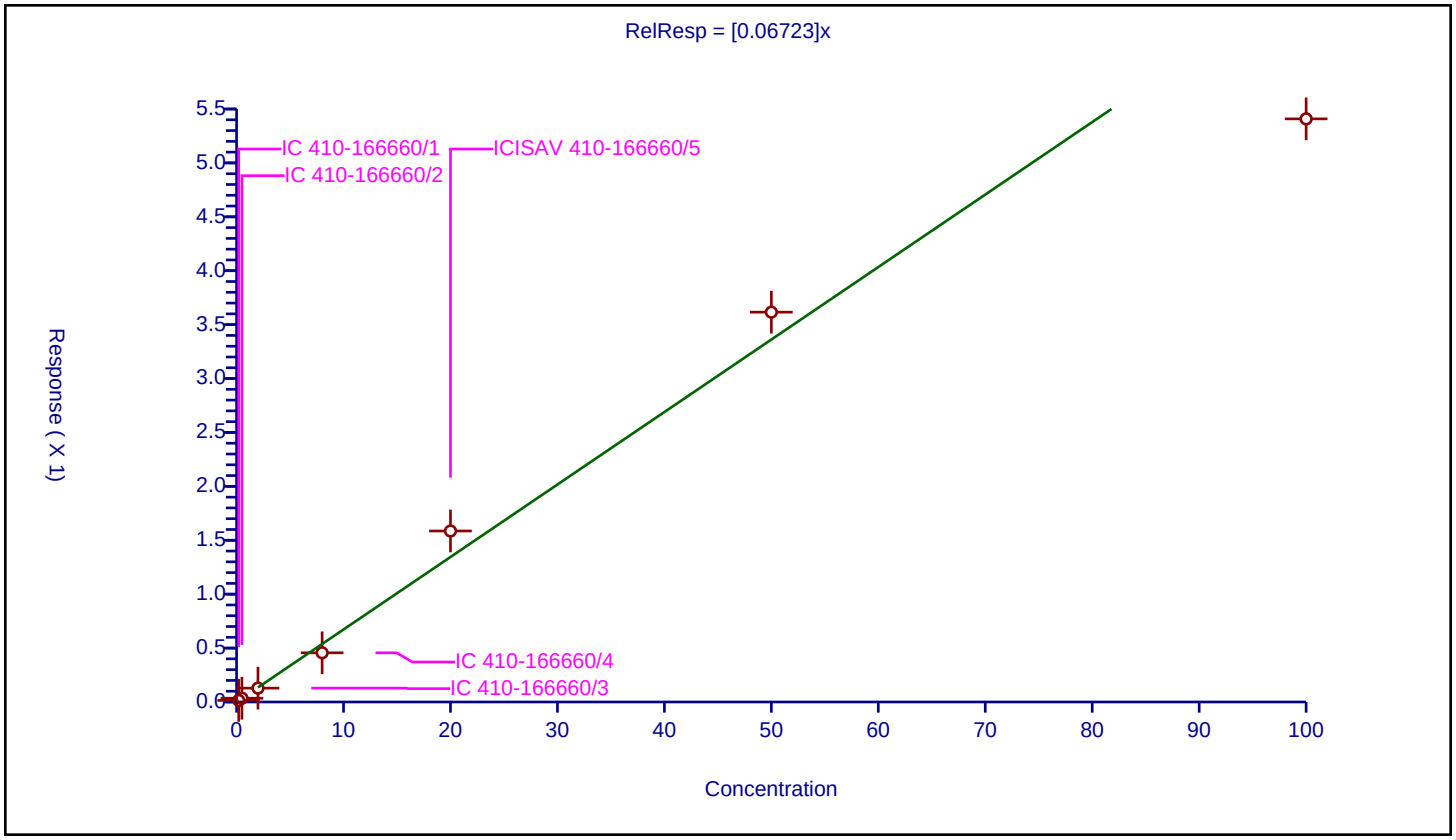
Curve Coefficients

Intercept:	0
Slope:	0.06723

Error Coefficients

Standard Error:	647000
Relative Standard Error:	13.7
Correlation Coefficient:	0.979
Coefficient of Determination (Adjusted):	0.977

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.014713	10.0	2527007.0	0.073565	Y
2	IC 410-166660/2	0.5	0.035067	10.0	2554832.0	0.070134	Y
3	IC 410-166660/3	2.0	0.128386	10.0	2347448.0	0.064193	Y
4	IC 410-166660/4	8.0	0.45631	10.0	2424863.0	0.057039	Y
5	ICISAV 410-166660/5	20.0	1.586047	10.0	2358014.0	0.079302	Y
6	IC 410-166660/6	50.0	3.615874	10.0	2296319.0	0.072317	Y
7	IC 410-166660/7	100.0	5.408512	10.0	2386490.0	0.054085	Y



Calibration / Perfluorooctanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

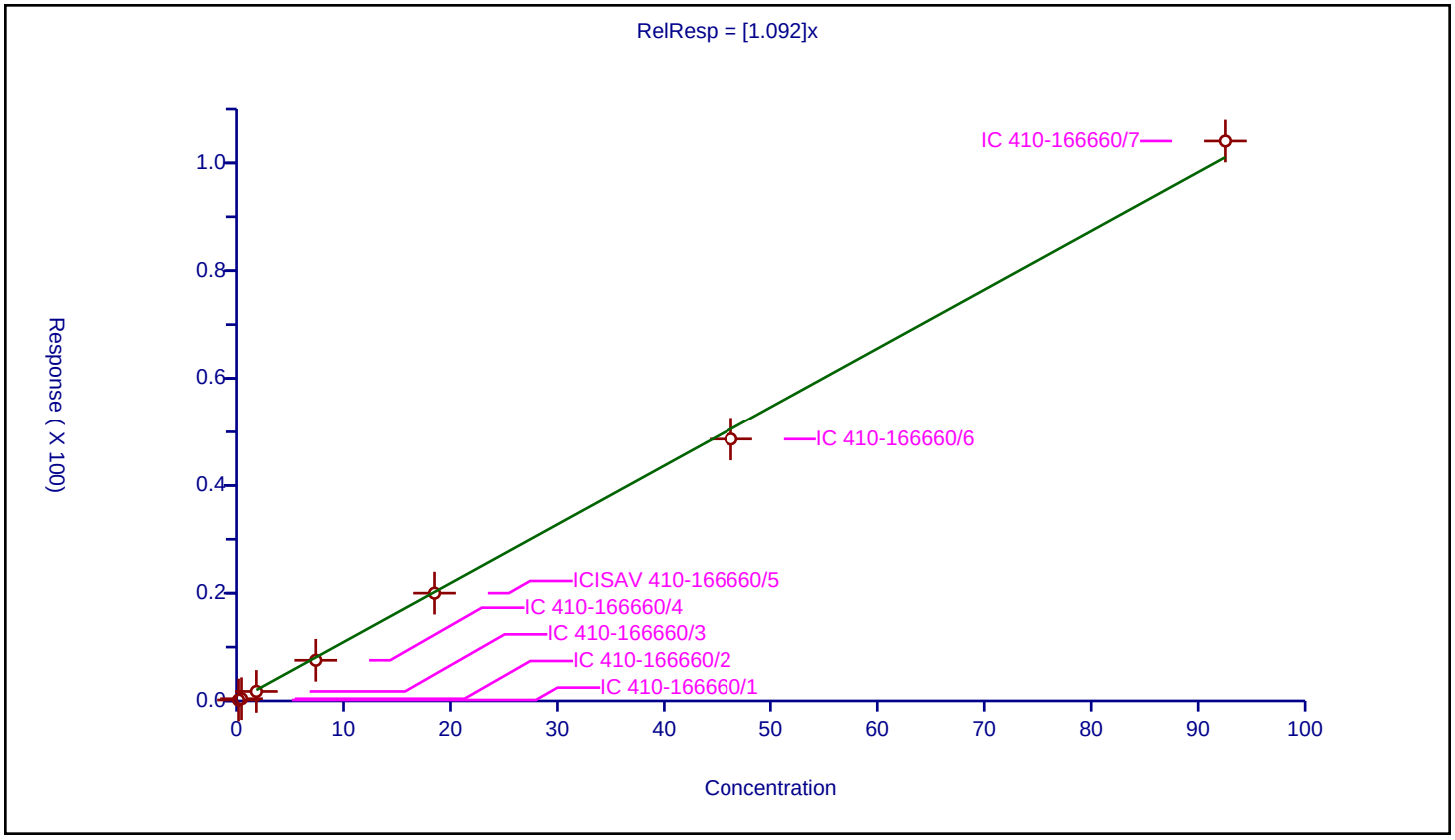
Curve Coefficients

Intercept:	0
Slope:	1.092

Error Coefficients

Standard Error:	13900000
Relative Standard Error:	10.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1851	0.180606	9.565	3154591.0	0.975723	Y
2	IC 410-166660/2	0.46275	0.415851	9.565	3061803.0	0.898652	Y
3	IC 410-166660/3	1.851	1.766861	9.565	2999446.0	0.954544	Y
4	IC 410-166660/4	7.404	7.549714	9.565	3084401.0	1.01968	Y
5	ICISAV 410-166660/5	18.51	20.006982	9.565	2958328.0	1.080874	Y
6	IC 410-166660/6	46.275	48.643496	9.565	2738757.0	1.051183	Y
7	IC 410-166660/7	92.55	104.079992	9.565	2776653.0	1.124581	Y



Calibration / Perfluorononanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

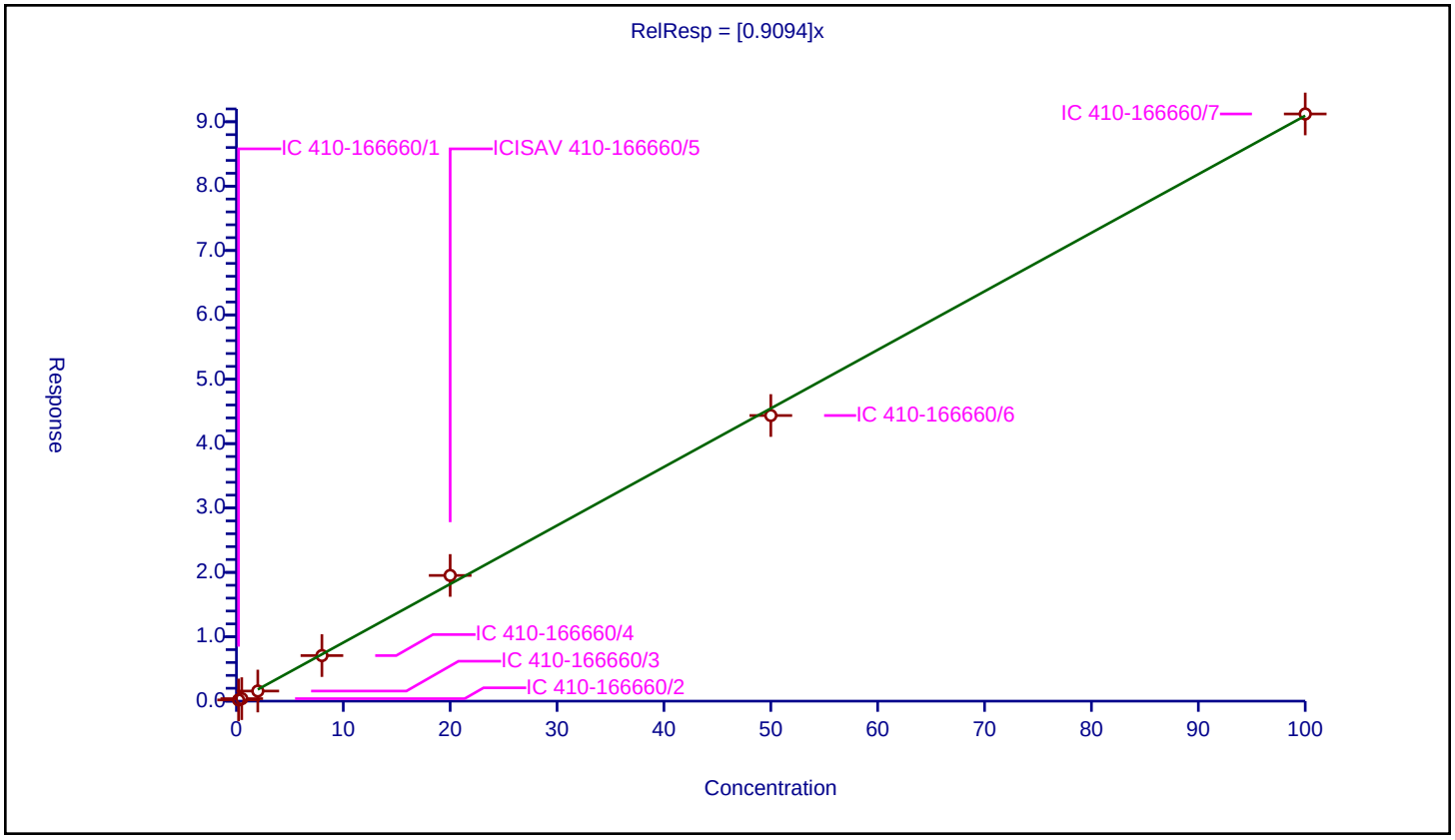
Curve Coefficients

Intercept:	0
Slope:	0.9094

Error Coefficients

Standard Error:	9680000
Relative Standard Error:	9.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.189422	10.0	2723068.0	0.947112	Y
2	IC 410-166660/2	0.5	0.386705	10.0	2665649.0	0.77341	Y
3	IC 410-166660/3	2.0	1.568814	10.0	2455690.0	0.784407	Y
4	IC 410-166660/4	8.0	7.075281	10.0	2528602.0	0.88441	Y
5	ICISAV 410-166660/5	20.0	19.524257	10.0	2421747.0	0.976213	Y
6	IC 410-166660/6	50.0	44.371546	10.0	2302684.0	0.887431	Y
7	IC 410-166660/7	100.0	91.214996	10.0	2280336.0	0.91215	Y



Calibration / 7:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

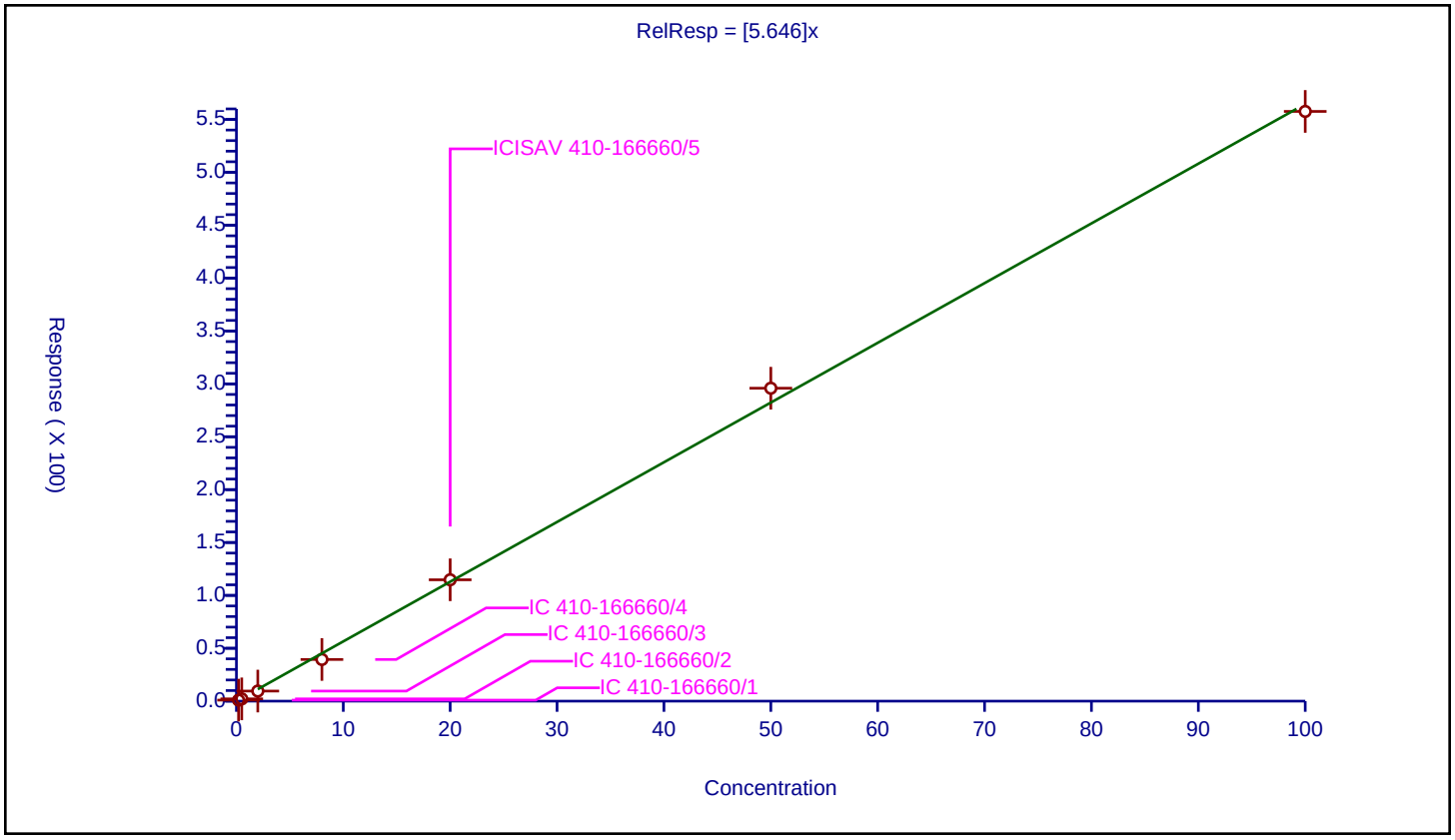
Curve Coefficients

Intercept:	0
Slope:	5.646

Error Coefficients

Standard Error:	2710000
Relative Standard Error:	14.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.977113	10.0	131254.0	4.885565	Y
2	IC 410-166660/2	0.5	2.145888	10.0	126563.0	4.291776	Y
3	IC 410-166660/3	2.0	9.53437	10.0	115027.0	4.767185	Y
4	IC 410-166660/4	8.0	39.389916	10.0	120213.0	4.92374	Y
5	ICISAV 410-166660/5	20.0	114.750864	10.0	111144.0	5.737543	Y
6	IC 410-166660/6	50.0	295.888059	10.0	99785.0	5.917761	Y
7	IC 410-166660/7	100.0	557.599958	10.0	103544.0	5.576	Y



Calibration / 8:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

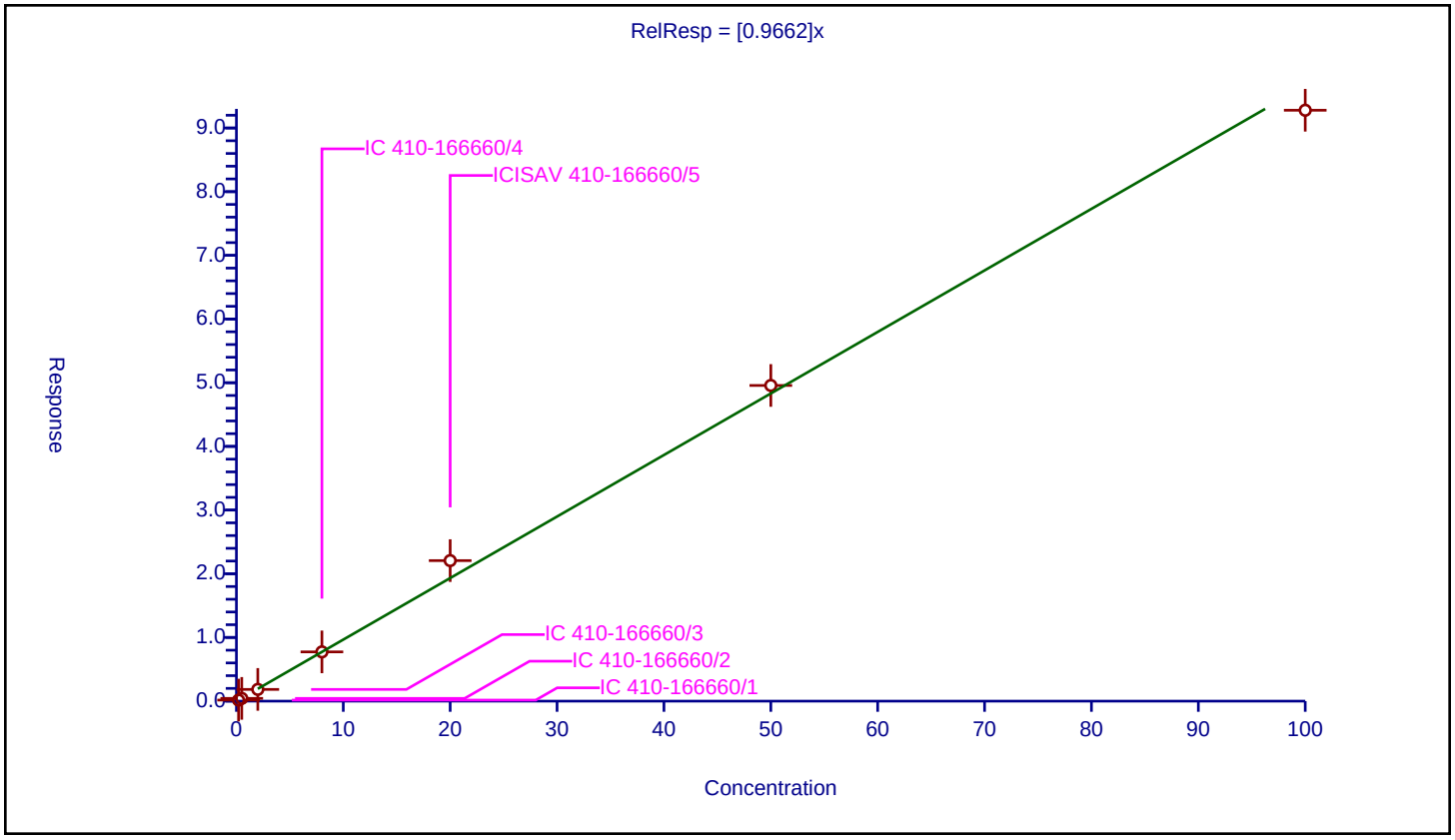
Curve Coefficients

Intercept:	0
Slope:	0.9662

Error Coefficients

Standard Error:	10500000
Relative Standard Error:	9.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.164597	10.0	2955767.0	0.822984	Y
2	IC 410-166660/2	0.5	0.432933	10.0	2879363.0	0.865865	Y
3	IC 410-166660/3	2.0	1.844152	10.0	2599509.0	0.922076	Y
4	IC 410-166660/4	8.0	7.734402	10.0	2609157.0	0.9668	Y
5	ICISAV 410-166660/5	20.0	22.066934	10.0	2437431.0	1.103347	Y
6	IC 410-166660/6	50.0	49.569864	10.0	2378133.0	0.991397	Y
7	IC 410-166660/7	100.0	92.785017	10.0	2387996.0	0.92785	Y



Calibration / 8:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

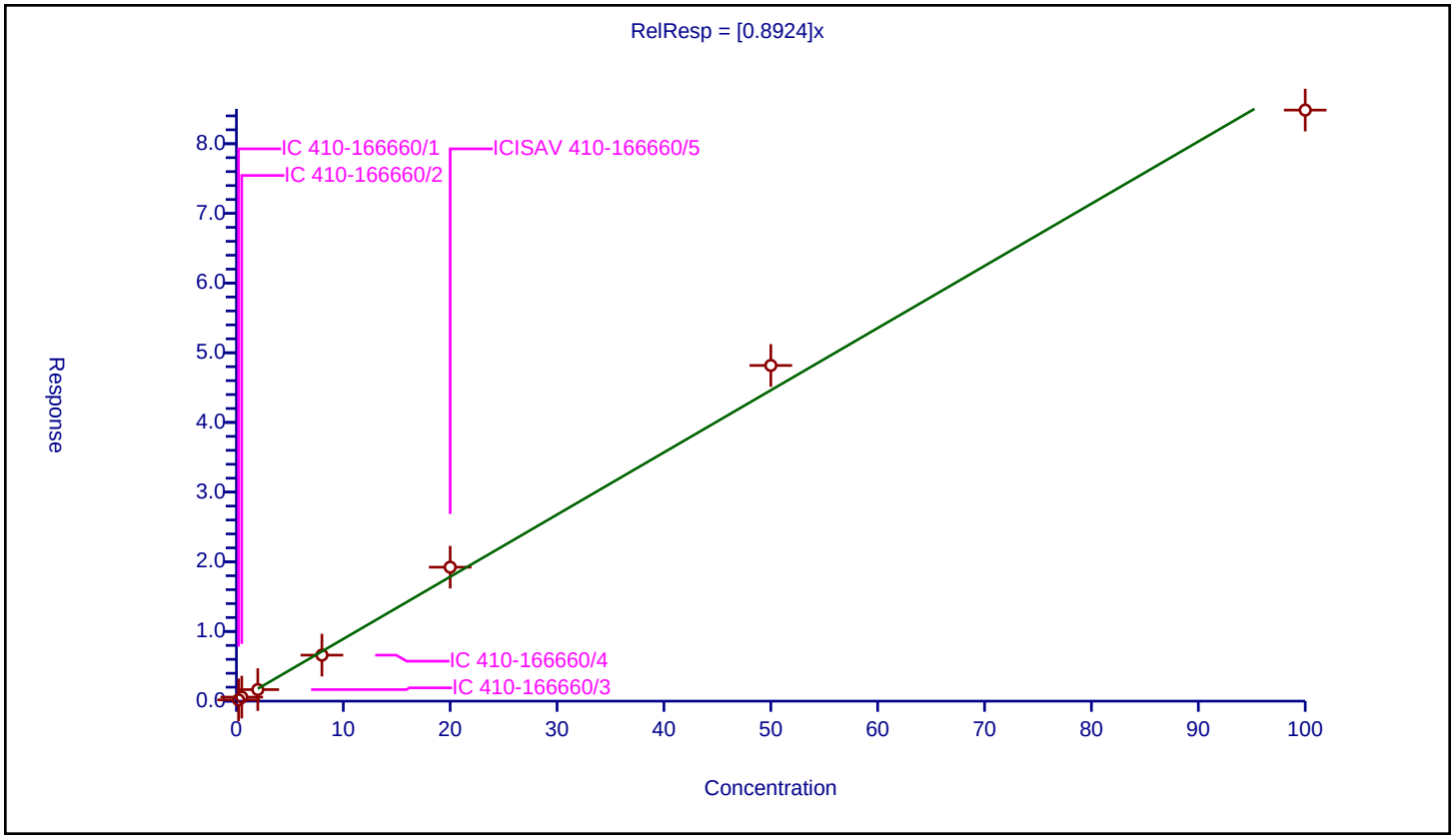
Curve Coefficients

Intercept:	0
Slope:	0.8924

Error Coefficients

Standard Error:	310000
Relative Standard Error:	13.6
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.182186	10.0	97428.0	0.910929	Y
2	IC 410-166660/2	0.5	0.576355	10.0	92096.0	1.15271	Y
3	IC 410-166660/3	2.0	1.658713	10.0	86754.0	0.829357	Y
4	IC 410-166660/4	8.0	6.604234	10.0	92153.0	0.825529	Y
5	ICISAV 410-166660/5	20.0	19.223733	10.0	80462.0	0.961187	Y
6	IC 410-166660/6	50.0	48.178818	10.0	73930.0	0.963576	Y
7	IC 410-166660/7	100.0	84.828675	10.0	76667.0	0.848287	Y



Calibration / 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

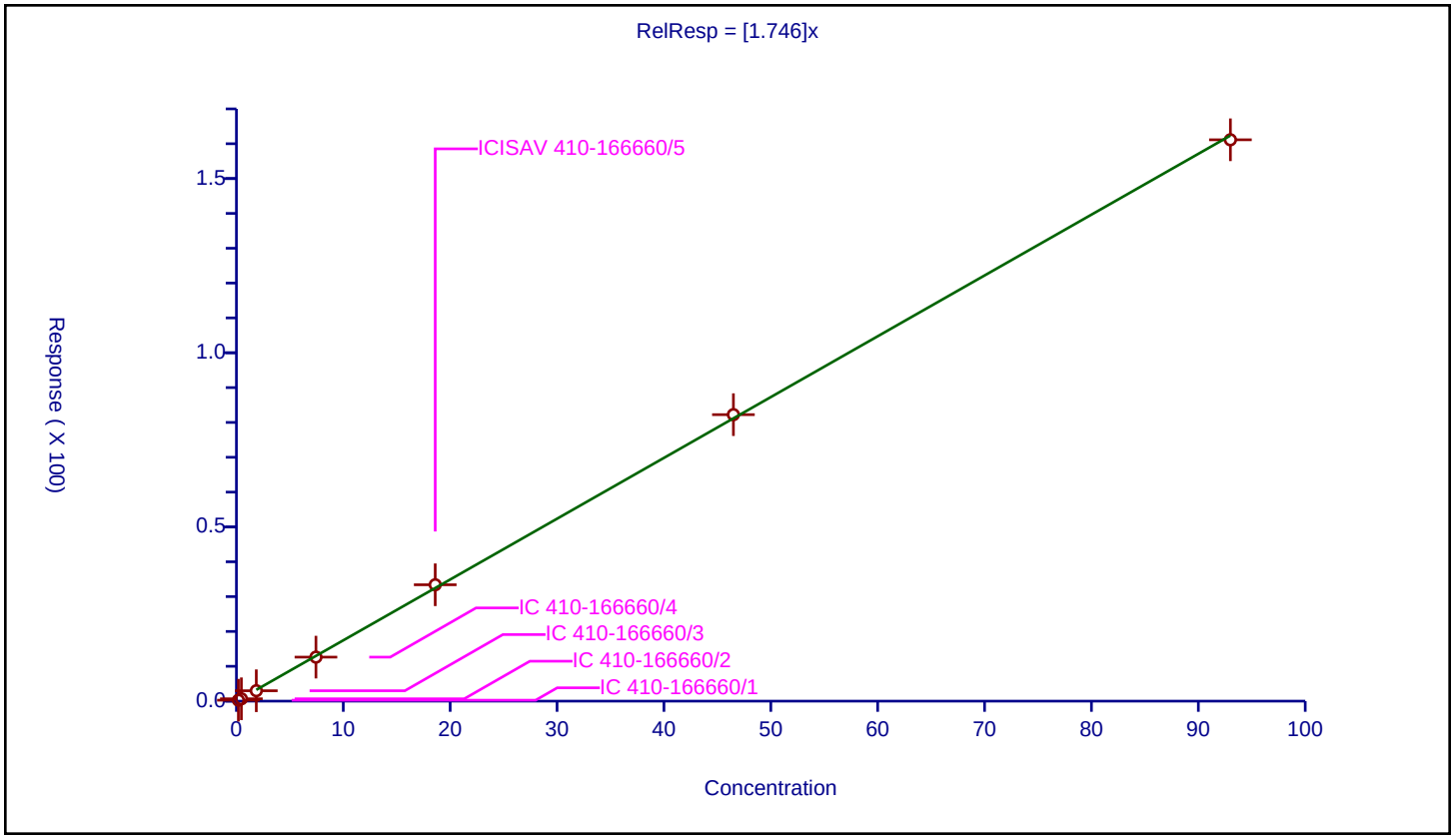
Curve Coefficients

Intercept:	0
Slope:	1.746

Error Coefficients

Standard Error:	21900000
Relative Standard Error:	10.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.186	0.272382	9.565	3154591.0	1.464417	Y
2	IC 410-166660/2	0.465	0.675672	9.565	3061803.0	1.453059	Y
3	IC 410-166660/3	1.86	2.984407	9.565	2999446.0	1.60452	Y
4	IC 410-166660/4	7.44	12.636693	9.565	3084401.0	1.69848	Y
5	ICISAV 410-166660/5	18.6	33.404008	9.565	2958328.0	1.795914	Y
6	IC 410-166660/6	46.5	82.23795	9.565	2738757.0	1.768558	Y
7	IC 410-166660/7	93.0	161.130521	9.565	2776653.0	1.732586	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

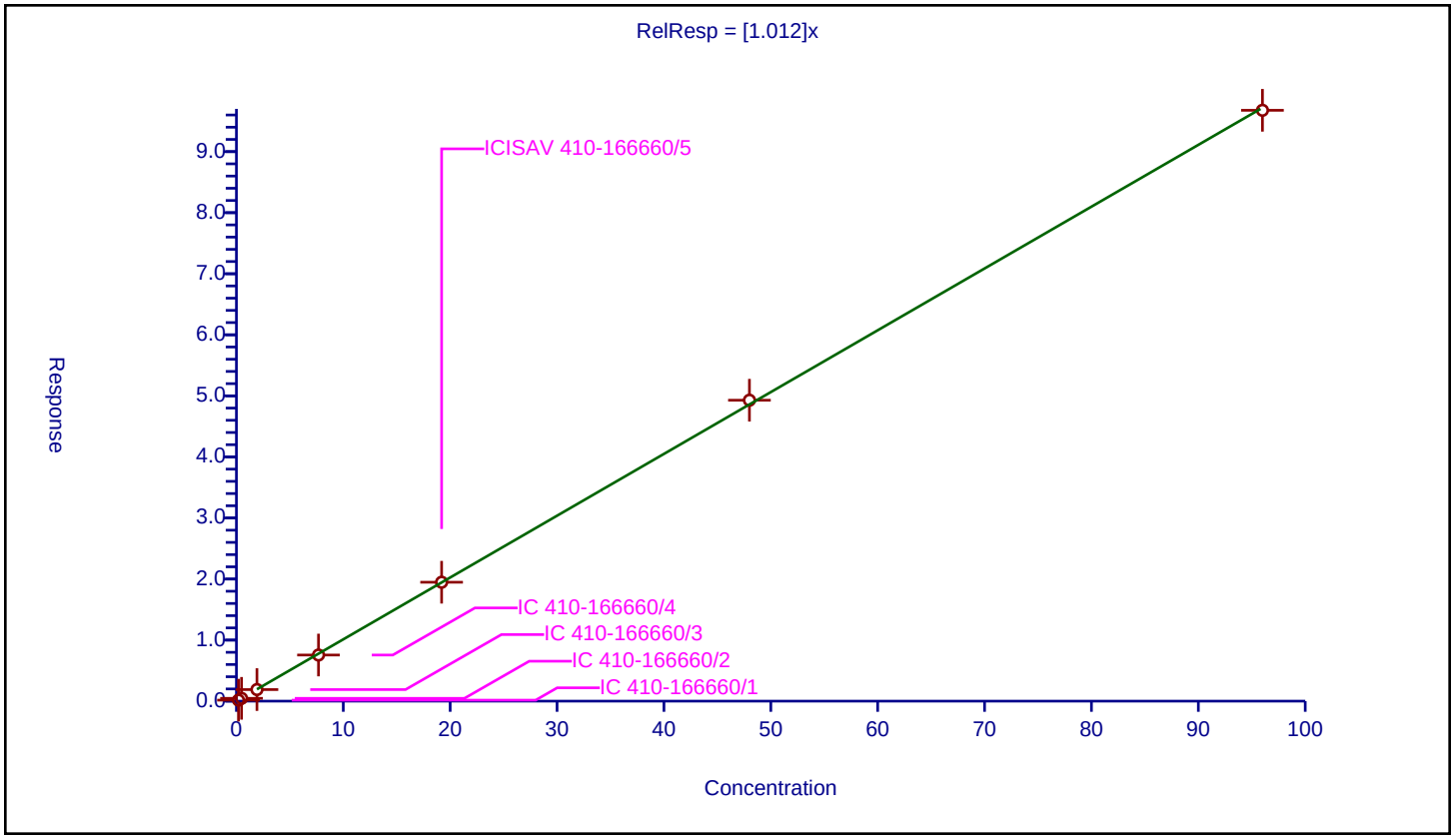
Curve Coefficients

Intercept:	0
Slope:	1.012

Error Coefficients

Standard Error:	13100000
Relative Standard Error:	6.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.192	0.164127	9.565	3154591.0	0.854828	Y
2	IC 410-166660/2	0.48	0.461839	9.565	3061803.0	0.962165	Y
3	IC 410-166660/3	1.92	1.897195	9.565	2999446.0	0.988122	Y
4	IC 410-166660/4	7.68	7.554847	9.565	3084401.0	0.983704	Y
5	ICISAV 410-166660/5	19.2	19.476688	9.565	2958328.0	1.014411	Y
6	IC 410-166660/6	48.0	49.284464	9.565	2738757.0	1.02676	Y
7	IC 410-166660/7	96.0	96.768074	9.565	2776653.0	1.008001	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

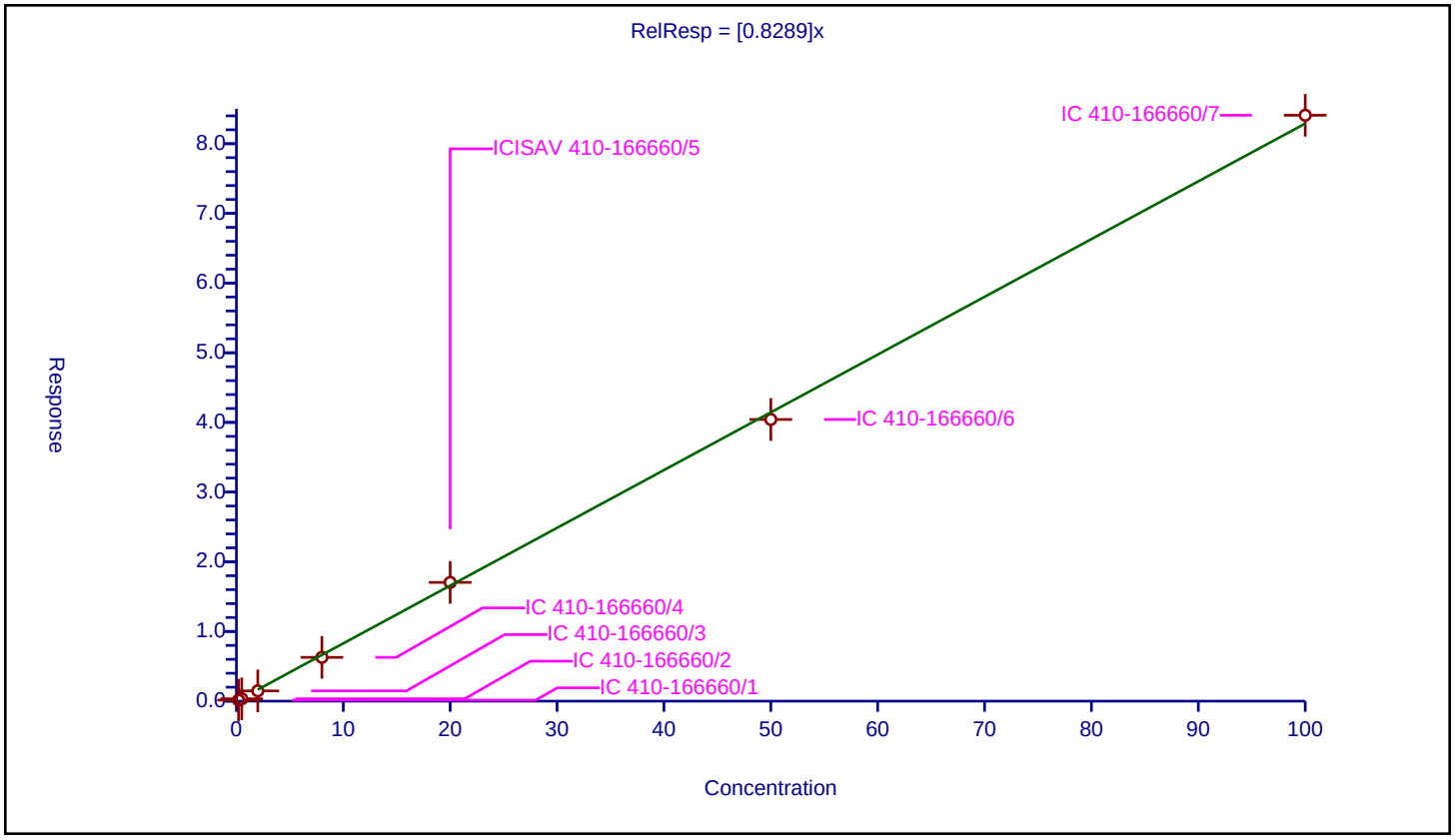
Curve Coefficients

Intercept:	0
Slope:	0.8289

Error Coefficients

Standard Error:	11600000
Relative Standard Error:	10.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.145311	10.0	4030946.0	0.726554	Y
2	IC 410-166660/2	0.5	0.337632	10.0	4103821.0	0.675263	Y
3	IC 410-166660/3	2.0	1.470888	10.0	3735859.0	0.735444	Y
4	IC 410-166660/4	8.0	6.281364	10.0	3732194.0	0.785171	Y
5	ICISAV 410-166660/5	20.0	17.039535	10.0	3453927.0	0.851977	Y
6	IC 410-166660/6	50.0	40.427089	10.0	3249114.0	0.808542	Y
7	IC 410-166660/7	100.0	84.087238	10.0	2914166.0	0.840872	Y



Calibration / 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

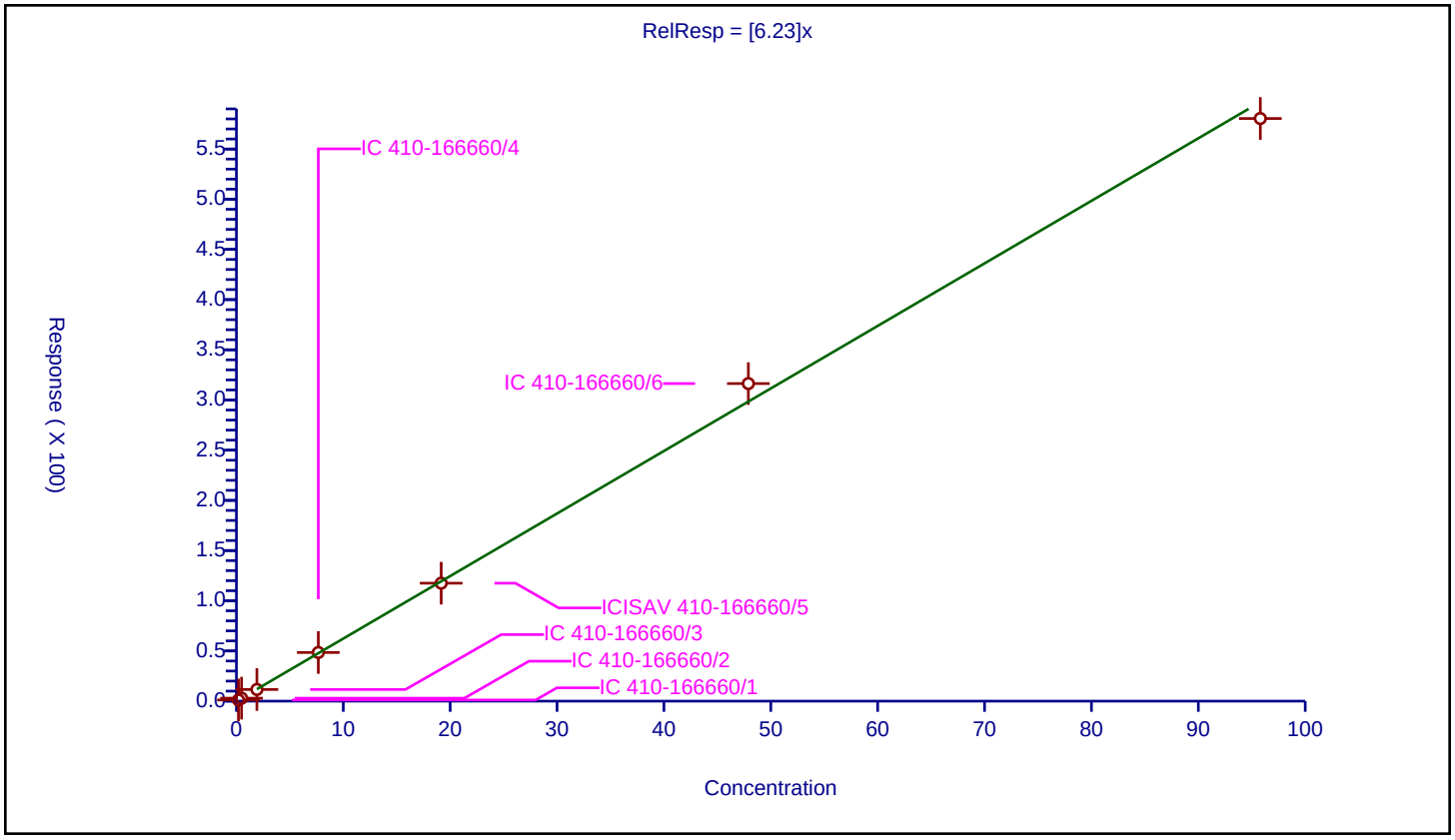
Curve Coefficients

Intercept:	0
Slope:	6.23

Error Coefficients

Standard Error:	3690000
Relative Standard Error:	3.5
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1916	1.143166	9.58	165032.0	5.966419	Y
2	IC 410-166660/2	0.479	2.965101	9.58	174741.0	6.19019	Y
3	IC 410-166660/3	1.916	11.61032	9.58	176282.0	6.059666	Y
4	IC 410-166660/4	7.664	48.473397	9.58	166306.0	6.324817	Y
5	ICISAV 410-166660/5	19.16	117.508344	9.58	165462.0	6.133003	Y
6	IC 410-166660/6	47.9	316.369781	9.58	129370.0	6.604797	Y
7	IC 410-166660/7	95.8	580.421097	9.58	126462.0	6.058675	Y



Calibration / Perfluorooctanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

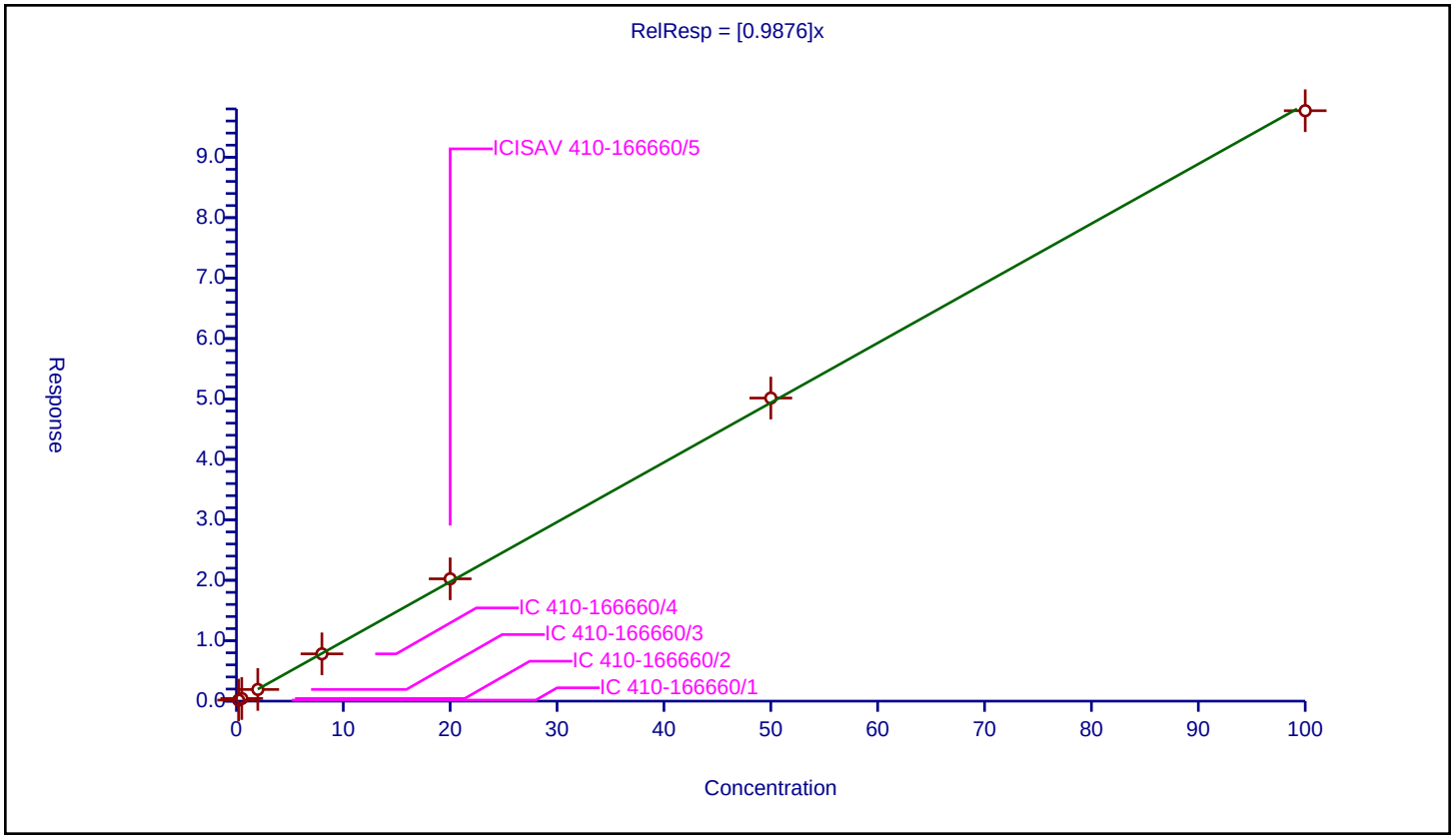
Curve Coefficients

Intercept:	0
Slope:	0.9876

Error Coefficients

Standard Error:	22300000
Relative Standard Error:	6.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.176083	10.0	5824285.0	0.880417	Y
2	IC 410-166660/2	0.5	0.435078	10.0	5803351.0	0.870156	Y
3	IC 410-166660/3	2.0	1.931487	10.0	5358161.0	0.965744	Y
4	IC 410-166660/4	8.0	7.825112	10.0	5551923.0	0.978139	Y
5	ICISAV 410-166660/5	20.0	20.239558	10.0	5328061.0	1.011978	Y
6	IC 410-166660/6	50.0	50.149297	10.0	4877914.0	1.002986	Y
7	IC 410-166660/7	100.0	97.702147	10.0	4866351.0	0.977021	Y



Calibration / N-methylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

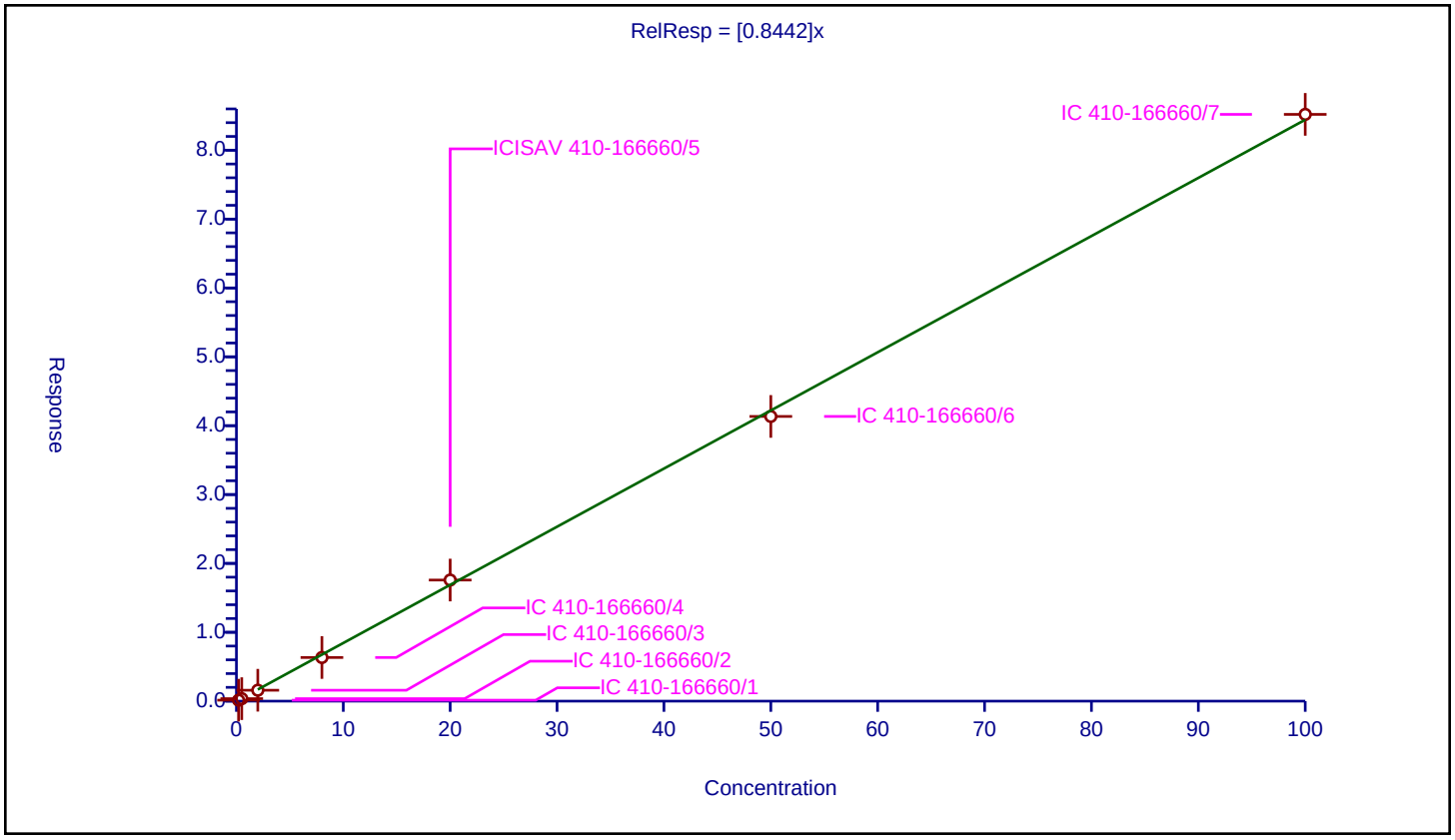
Curve Coefficients

Intercept:	0
Slope:	0.8442

Error Coefficients

Standard Error:	3520000
Relative Standard Error:	9.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.141092	10.0	1079579.0	0.70546	Y
2	IC 410-166660/2	0.5	0.361114	10.0	1038175.0	0.722229	Y
3	IC 410-166660/3	2.0	1.582632	10.0	966422.0	0.791316	Y
4	IC 410-166660/4	8.0	6.335306	10.0	1042772.0	0.791913	Y
5	ICISAV 410-166660/5	20.0	17.584939	10.0	968369.0	0.879247	Y
6	IC 410-166660/6	50.0	41.340901	10.0	896032.0	0.826818	Y
7	IC 410-166660/7	100.0	85.204076	10.0	888127.0	0.852041	Y



Calibration / Perfluorodecanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

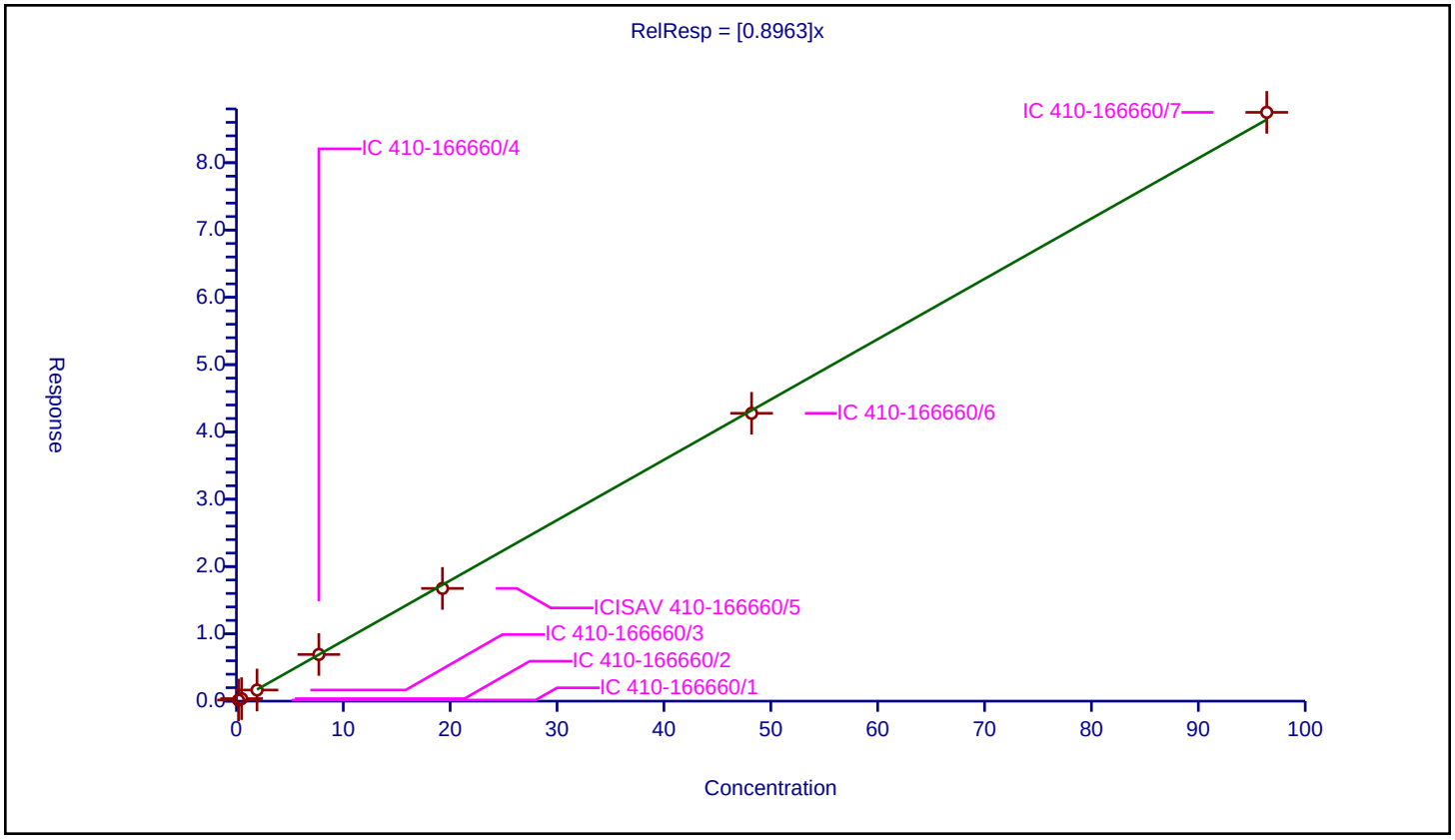
Curve Coefficients

Intercept:	0
Slope:	0.8963

Error Coefficients

Standard Error:	11700000
Relative Standard Error:	6.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1928	0.162823	9.565	3154591.0	0.844519	Y
2	IC 410-166660/2	0.482	0.374224	9.565	3061803.0	0.776399	Y
3	IC 410-166660/3	1.928	1.653482	9.565	2999446.0	0.857615	Y
4	IC 410-166660/4	7.712	6.935634	9.565	3084401.0	0.89933	Y
5	ICISAV 410-166660/5	19.28	16.751237	9.565	2958328.0	0.86884	Y
6	IC 410-166660/6	48.2	42.770565	9.565	2738757.0	0.887356	Y
7	IC 410-166660/7	96.4	87.486267	9.565	2776653.0	0.907534	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

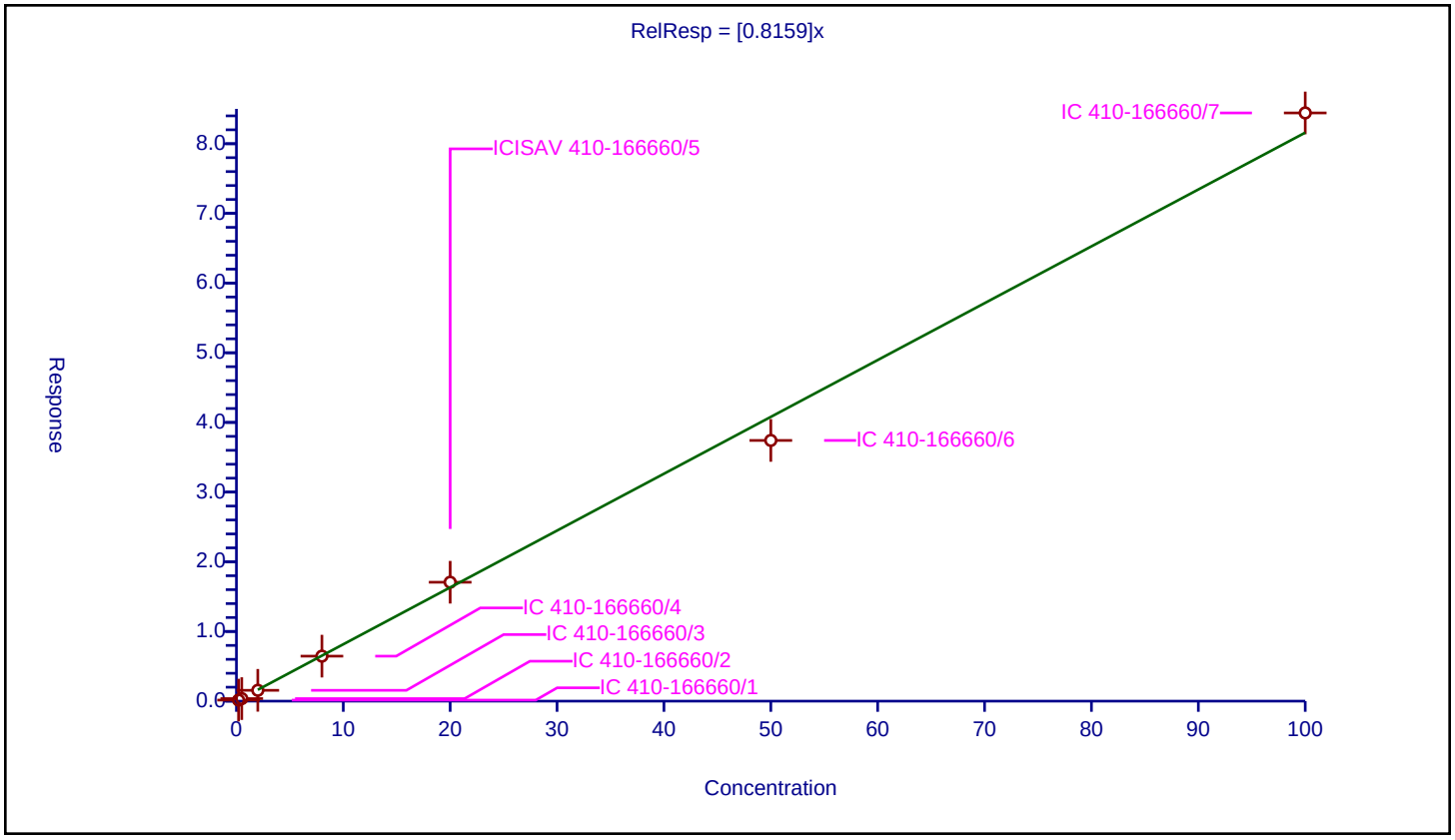
Curve Coefficients

Intercept:	0
Slope:	0.8159

Error Coefficients

Standard Error:	13900000
Relative Standard Error:	6.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.152498	10.0	4772001.0	0.762489	Y
2	IC 410-166660/2	0.5	0.366263	10.0	4665033.0	0.732526	Y
3	IC 410-166660/3	2.0	1.554118	10.0	4318295.0	0.777059	Y
4	IC 410-166660/4	8.0	6.459658	10.0	4470500.0	0.807457	Y
5	ICISAV 410-166660/5	20.0	17.064527	10.0	4066101.0	0.853226	Y
6	IC 410-166660/6	50.0	37.418822	10.0	4084333.0	0.748376	Y
7	IC 410-166660/7	100.0	84.417602	10.0	3506244.0	0.844176	Y



Calibration / N-ethylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

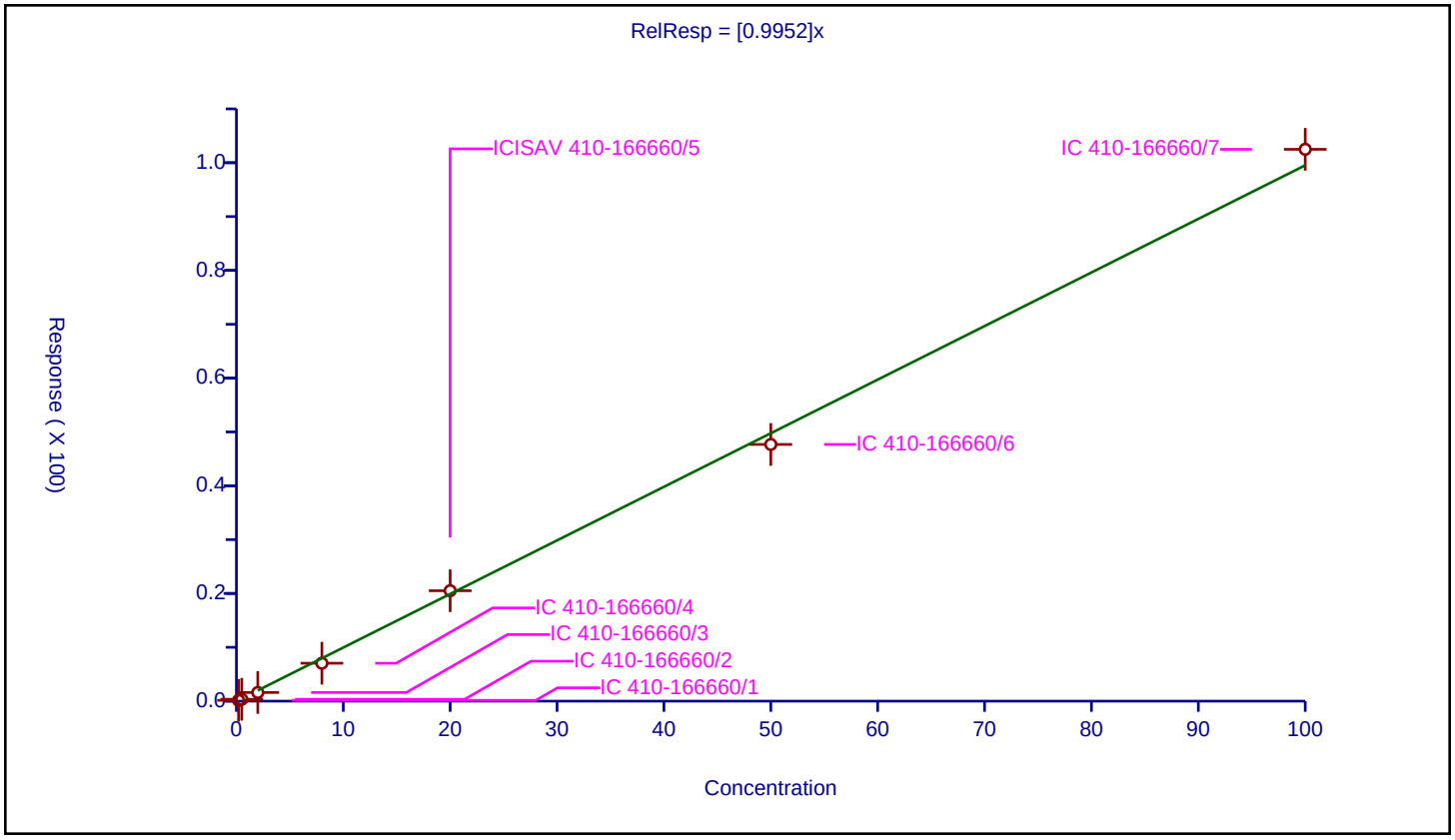
Curve Coefficients

Intercept:	0
Slope:	0.9952

Error Coefficients

Standard Error:	2920000
Relative Standard Error:	18.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.148924	10.0	862456.0	0.744618	Y
2	IC 410-166660/2	0.5	0.350216	10.0	870376.0	0.700433	Y
3	IC 410-166660/3	2.0	1.603209	10.0	811753.0	0.801605	Y
4	IC 410-166660/4	8.0	7.043605	10.0	812246.0	0.880451	Y
5	ICISAV 410-166660/5	20.0	20.506685	10.0	729290.0	1.025334	Y
6	IC 410-166660/6	50.0	47.679751	10.0	676893.0	0.953595	Y
7	IC 410-166660/7	100.0	102.492304	10.0	601588.0	1.024923	Y



Calibration / 10:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

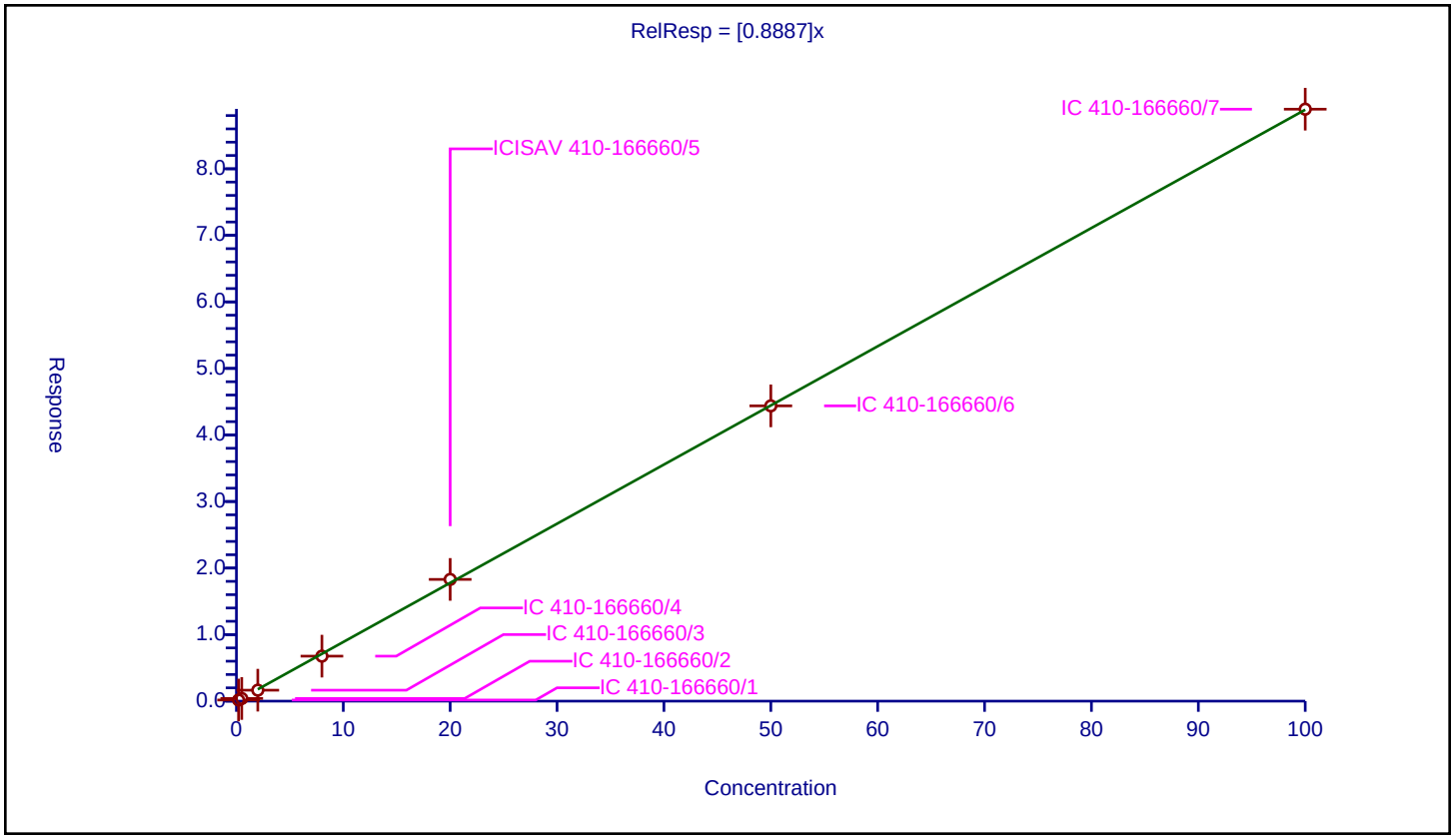
Curve Coefficients

Intercept:	0
Slope:	0.8887

Error Coefficients

Standard Error:	9590000
Relative Standard Error:	5.9
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.17138	10.0	3348063.0	0.856898	Y
2	IC 410-166660/2	0.5	0.39802	10.0	3307775.0	0.79604	Y
3	IC 410-166660/3	2.0	1.646222	10.0	3059314.0	0.823111	Y
4	IC 410-166660/4	8.0	6.761221	10.0	2968174.0	0.845153	Y
5	ICISAV 410-166660/5	20.0	18.292407	10.0	2736267.0	0.91462	Y
6	IC 410-166660/6	50.0	44.371538	10.0	2542794.0	0.887431	Y
7	IC 410-166660/7	100.0	88.95459	10.0	2236243.0	0.889546	Y



Calibration / 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

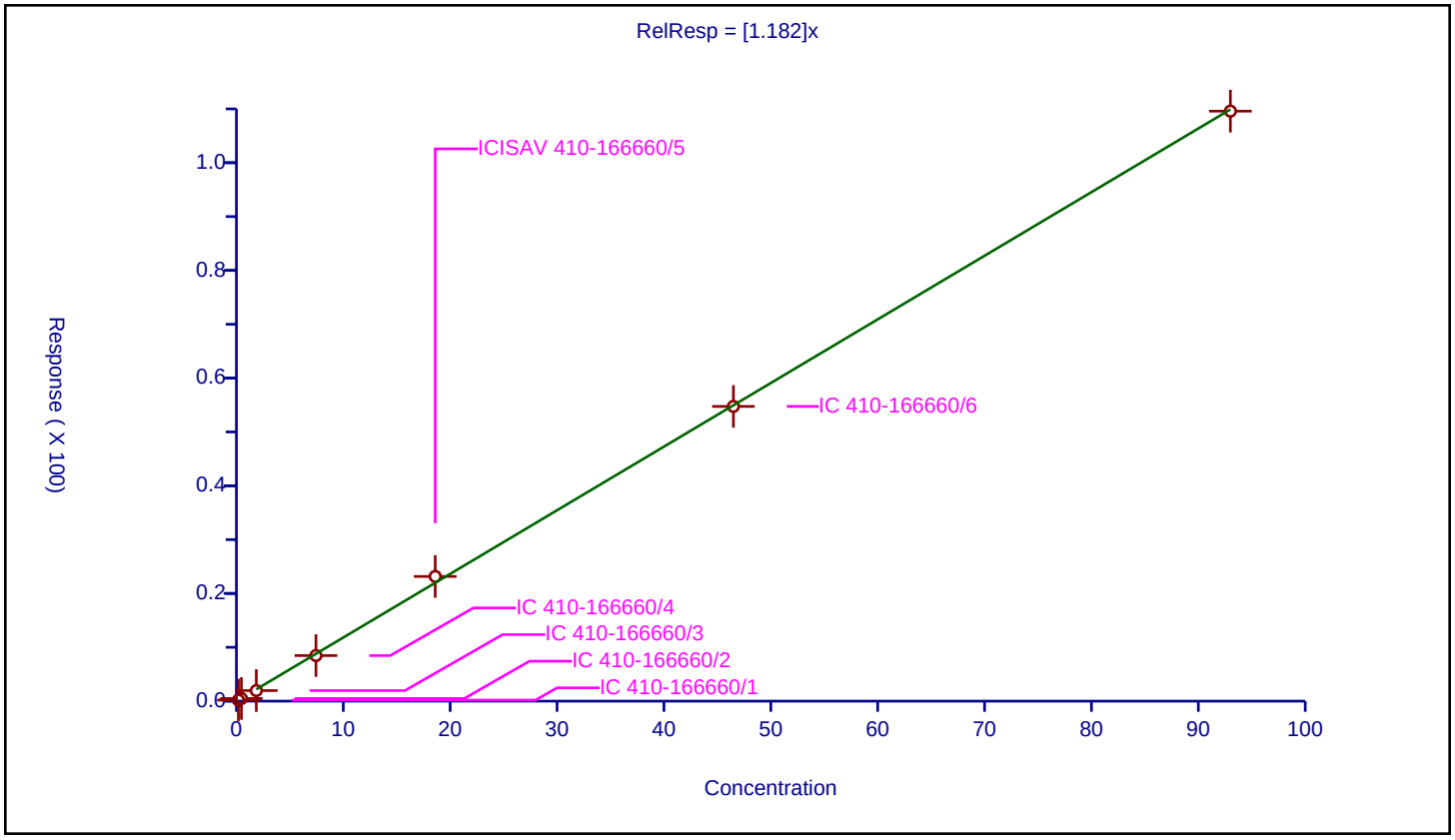
Curve Coefficients

Intercept:	0
Slope:	1.182

Error Coefficients

Standard Error:	14800000
Relative Standard Error:	8.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.186	0.195124	9.565	3154591.0	1.049054	Y
2	IC 410-166660/2	0.465	0.490077	9.565	3061803.0	1.053929	Y
3	IC 410-166660/3	1.86	1.96083	9.565	2999446.0	1.05421	Y
4	IC 410-166660/4	7.44	8.460771	9.565	3084401.0	1.1372	Y
5	ICISAV 410-166660/5	18.6	23.160201	9.565	2958328.0	1.245172	Y
6	IC 410-166660/6	46.5	54.740595	9.565	2738757.0	1.177217	Y
7	IC 410-166660/7	93.0	109.581184	9.565	2776653.0	1.178292	Y



Calibration / 10:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

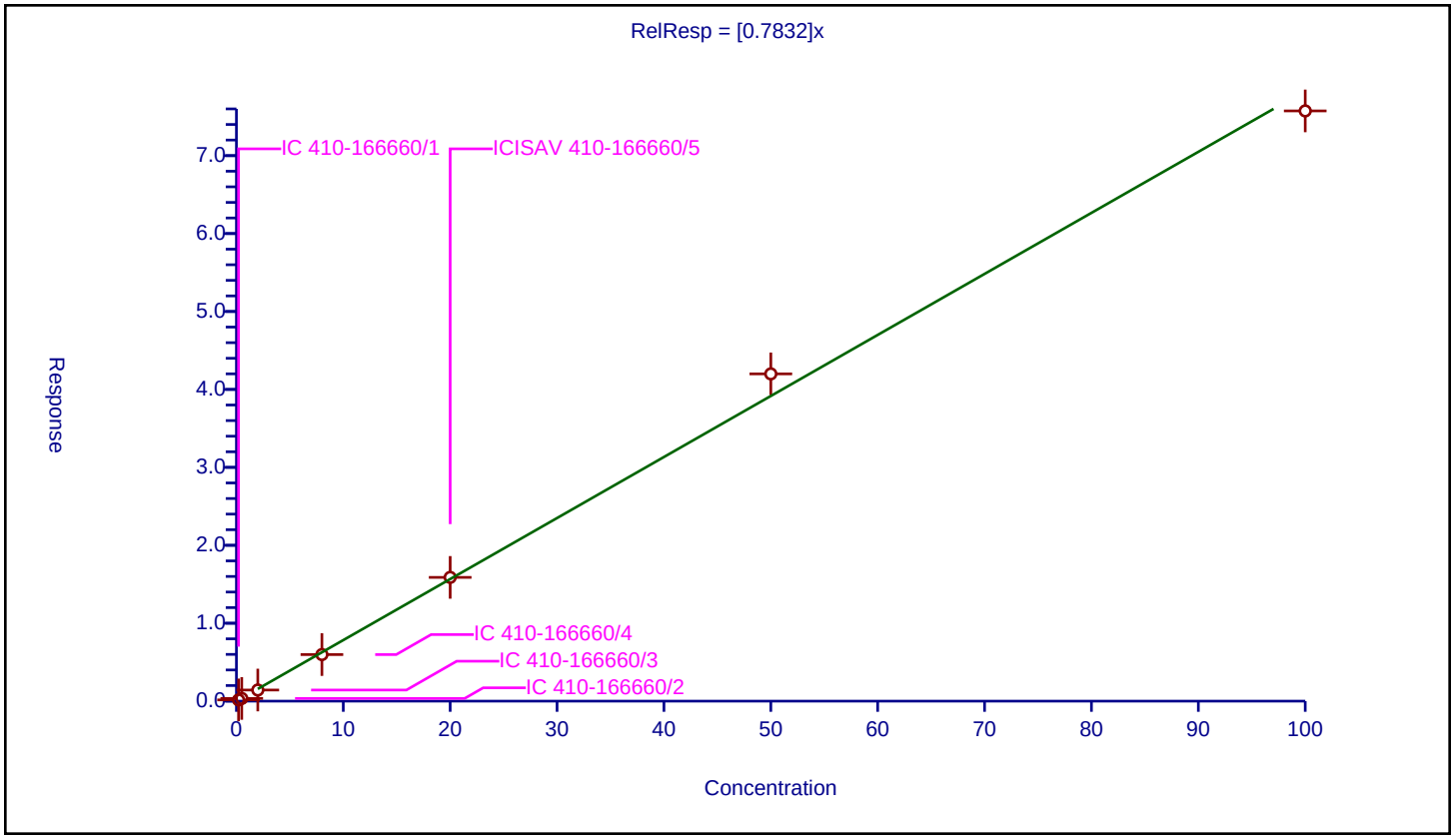
Curve Coefficients

Intercept:	0
Slope:	0.7832

Error Coefficients

Standard Error:	218000
Relative Standard Error:	7.0
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.157726	10.0	82041.0	0.78863	Y
2	IC 410-166660/2	0.5	0.34742	10.0	85142.0	0.694839	Y
3	IC 410-166660/3	2.0	1.427931	10.0	71376.0	0.713965	Y
4	IC 410-166660/4	8.0	5.97656	10.0	74148.0	0.74707	Y
5	ICISAV 410-166660/5	20.0	15.882262	10.0	71379.0	0.794113	Y
6	IC 410-166660/6	50.0	41.994924	10.0	62644.0	0.839898	Y
7	IC 410-166660/7	100.0	75.738795	10.0	59279.0	0.757388	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

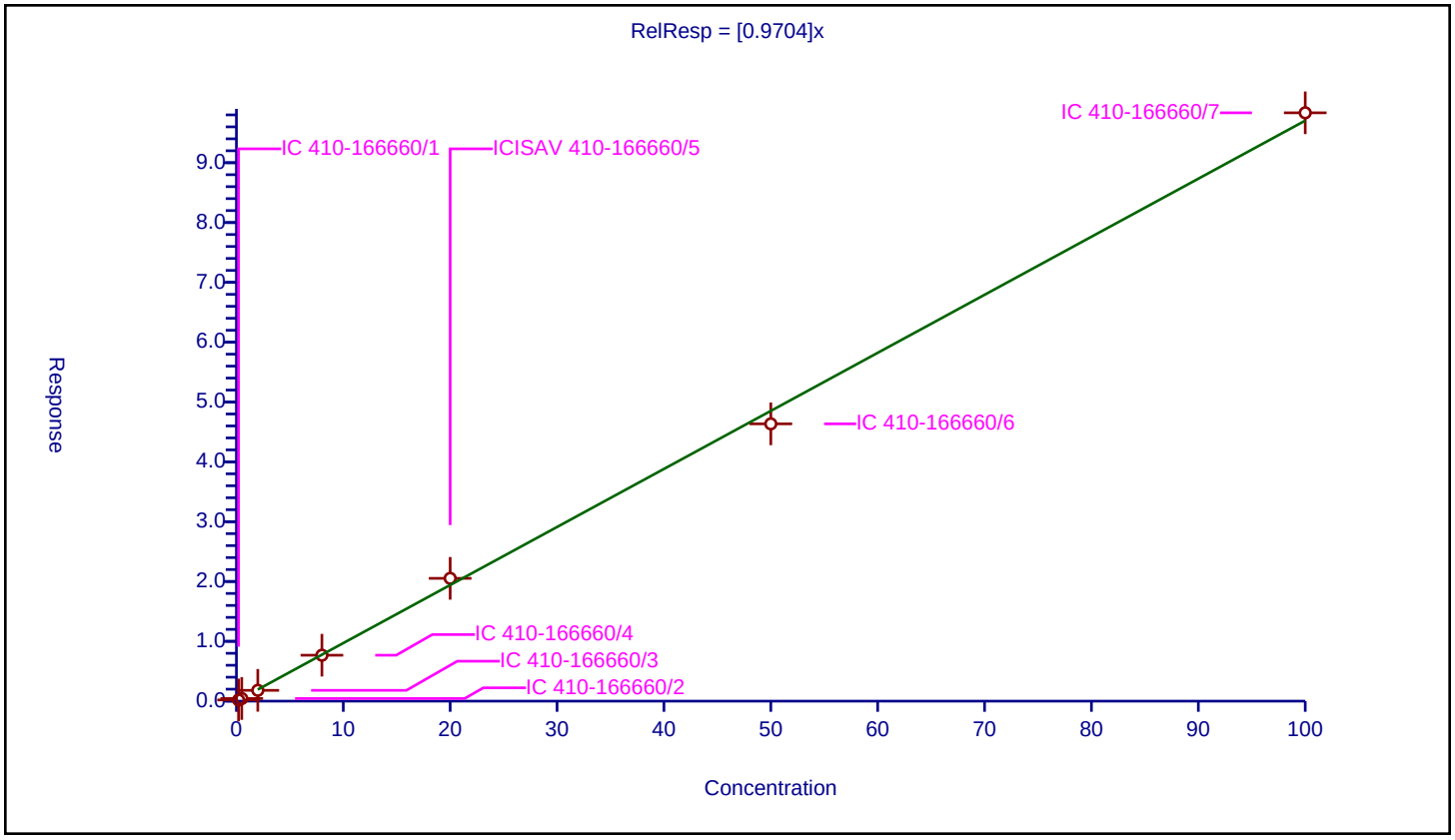
Curve Coefficients

Intercept:	0
Slope:	0.9704

Error Coefficients

Standard Error:	16500000
Relative Standard Error:	5.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.198509	10.0	4571791.0	0.992543	Y
2	IC 410-166660/2	0.5	0.437545	10.0	4557404.0	0.87509	Y
3	IC 410-166660/3	2.0	1.805814	10.0	4097791.0	0.902907	Y
4	IC 410-166660/4	8.0	7.675653	10.0	4240899.0	0.959457	Y
5	ICISAV 410-166660/5	20.0	20.528573	10.0	4034786.0	1.026429	Y
6	IC 410-166660/6	50.0	46.351988	10.0	3933304.0	0.92704	Y
7	IC 410-166660/7	100.0	98.34463	10.0	3542591.0	0.983446	Y



Calibration / 1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

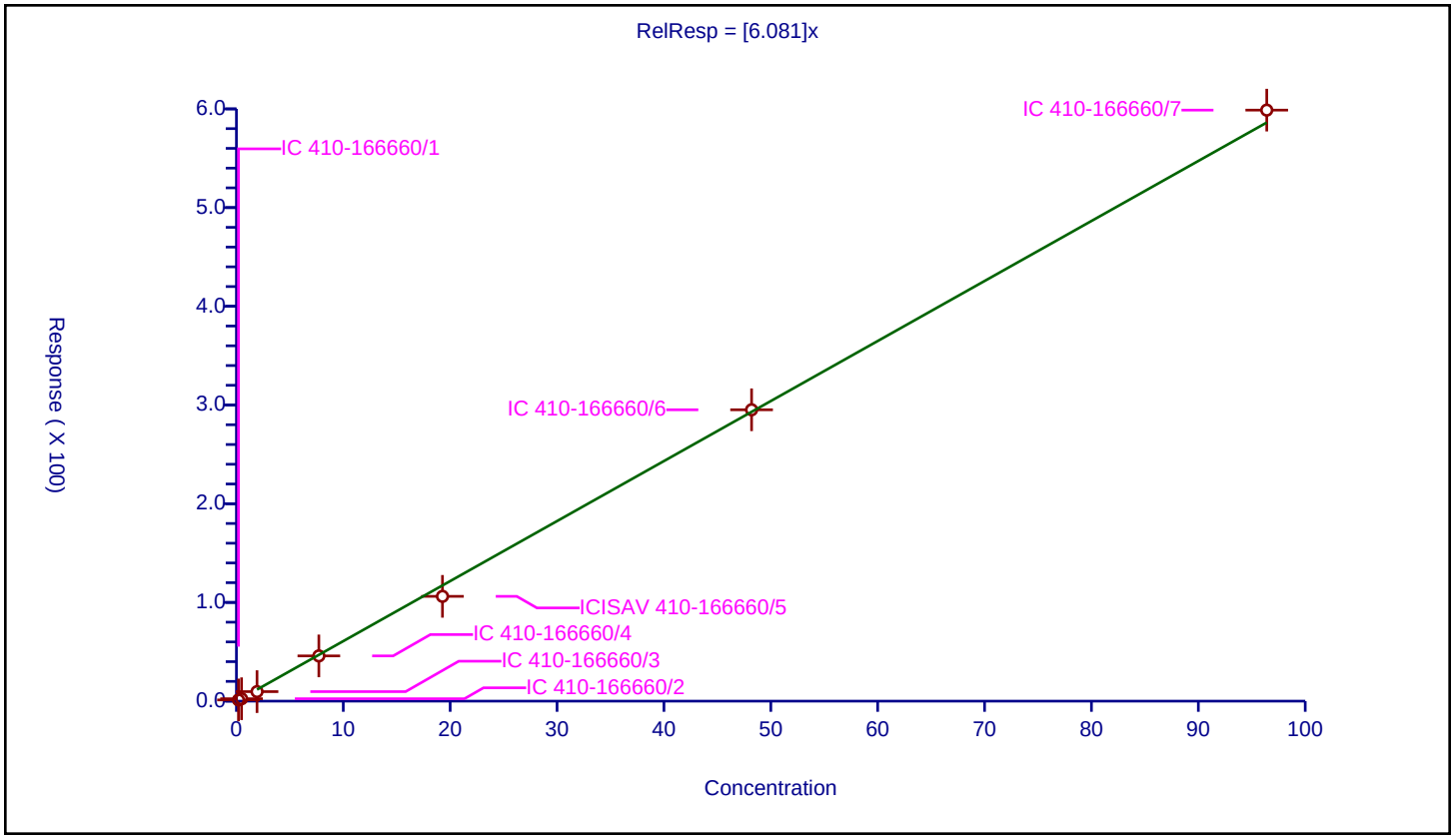
Curve Coefficients

Intercept:	0
Slope:	6.081

Error Coefficients

Standard Error:	3710000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1928	1.22815	9.58	165032.0	6.370073	Y
2	IC 410-166660/2	0.482	2.430457	9.58	174741.0	5.042443	Y
3	IC 410-166660/3	1.928	9.633095	9.58	176282.0	4.996418	Y
4	IC 410-166660/4	7.712	45.827557	9.58	166306.0	5.94237	Y
5	ICISAV 410-166660/5	19.28	106.151613	9.58	165462.0	5.505789	Y
6	IC 410-166660/6	48.2	295.172411	9.58	129370.0	6.123909	Y
7	IC 410-166660/7	96.4	598.75553	9.58	126462.0	6.211157	Y



Calibration / 2-(N-methylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

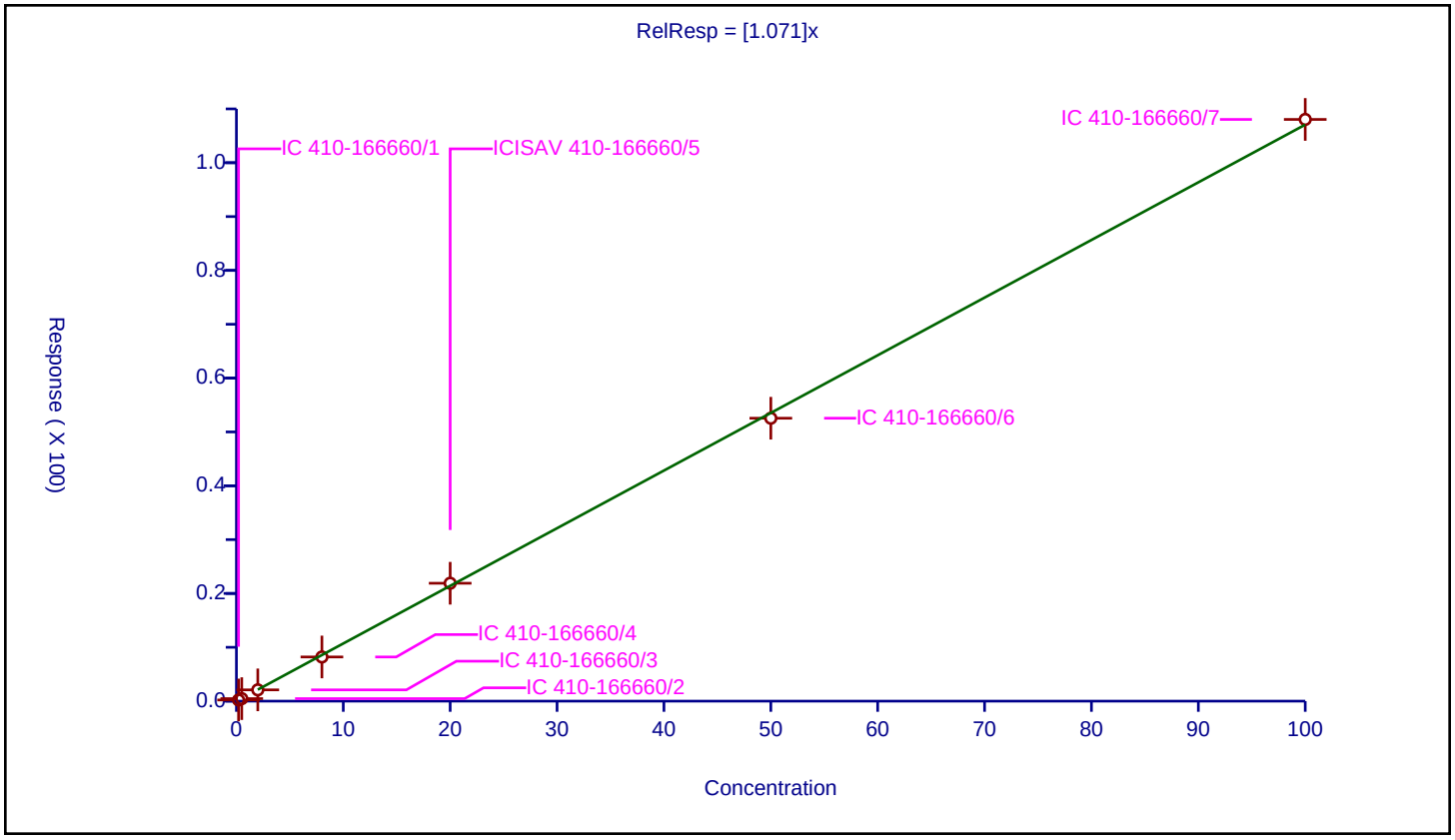
Curve Coefficients

Intercept:	0
Slope:	1.071

Error Coefficients

Standard Error:	1940000
Relative Standard Error:	5.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.21716	10.0	458418.0	1.085799	Y
2	IC 410-166660/2	0.5	0.465682	10.0	447279.0	0.931365	Y
3	IC 410-166660/3	2.0	2.096073	10.0	412395.0	1.048036	Y
4	IC 410-166660/4	8.0	8.203023	10.0	408614.0	1.025378	Y
5	ICISAV 410-166660/5	20.0	21.897141	10.0	383108.0	1.094857	Y
6	IC 410-166660/6	50.0	52.546056	10.0	369226.0	1.050921	Y
7	IC 410-166660/7	100.0	108.040421	10.0	392023.0	1.080404	Y



Calibration / NMeFOSA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

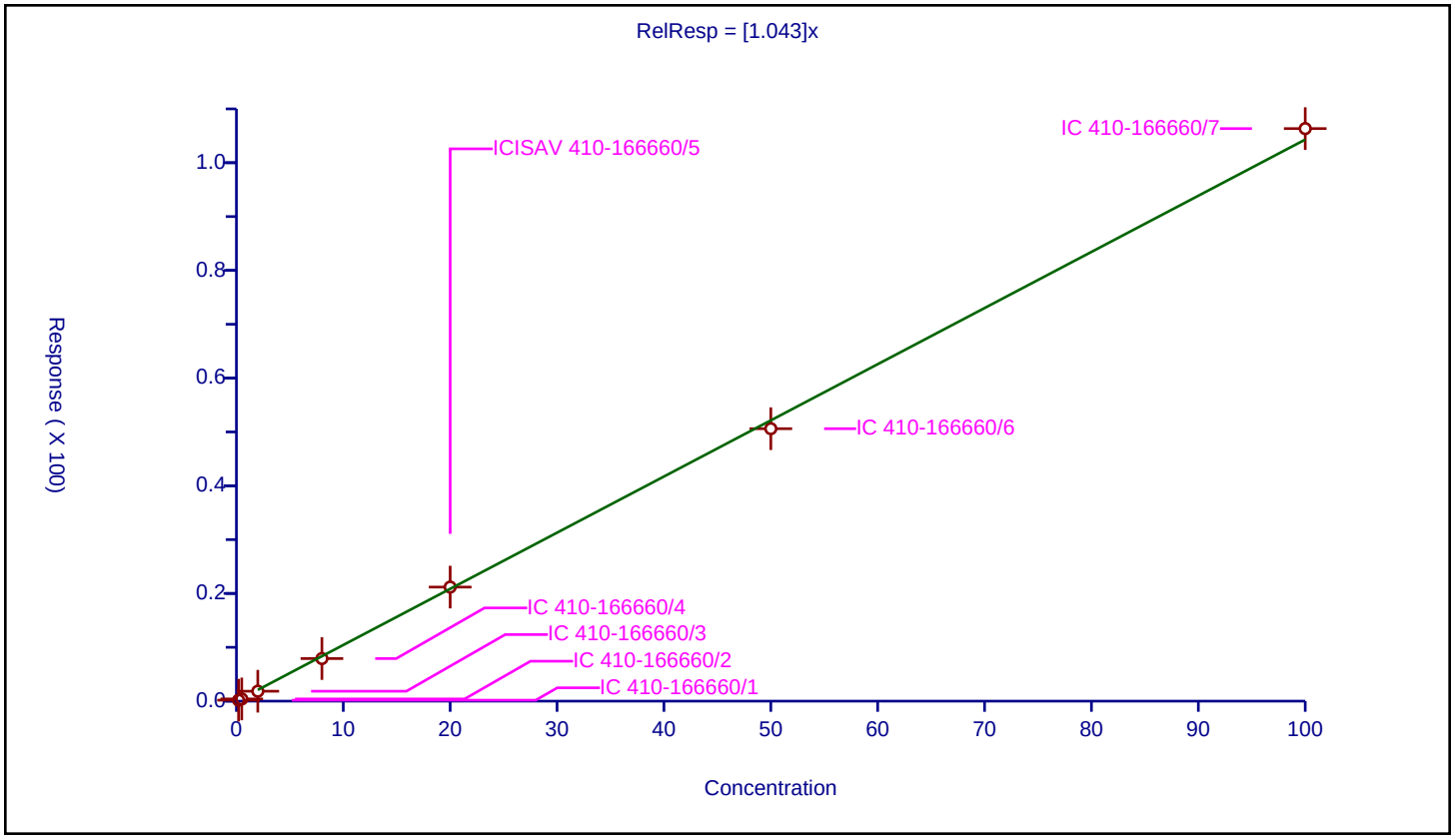
Curve Coefficients

Intercept:	0
Slope:	1.043

Error Coefficients

Standard Error:	2150000
Relative Standard Error:	11.5
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.182844	10.0	475925.0	0.91422	Y
2	IC 410-166660/2	0.5	0.409581	10.0	464133.0	0.819162	Y
3	IC 410-166660/3	2.0	1.840684	10.0	449333.0	0.920342	Y
4	IC 410-166660/4	8.0	7.907554	10.0	462129.0	0.988444	Y
5	ICISAV 410-166660/5	20.0	21.182989	10.0	432447.0	1.059149	Y
6	IC 410-166660/6	50.0	50.603699	10.0	413766.0	1.012074	Y
7	IC 410-166660/7	100.0	106.338015	10.0	444330.0	1.06338	Y



Calibration / Perfluorododecanesulfonic acid (PFDoS)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

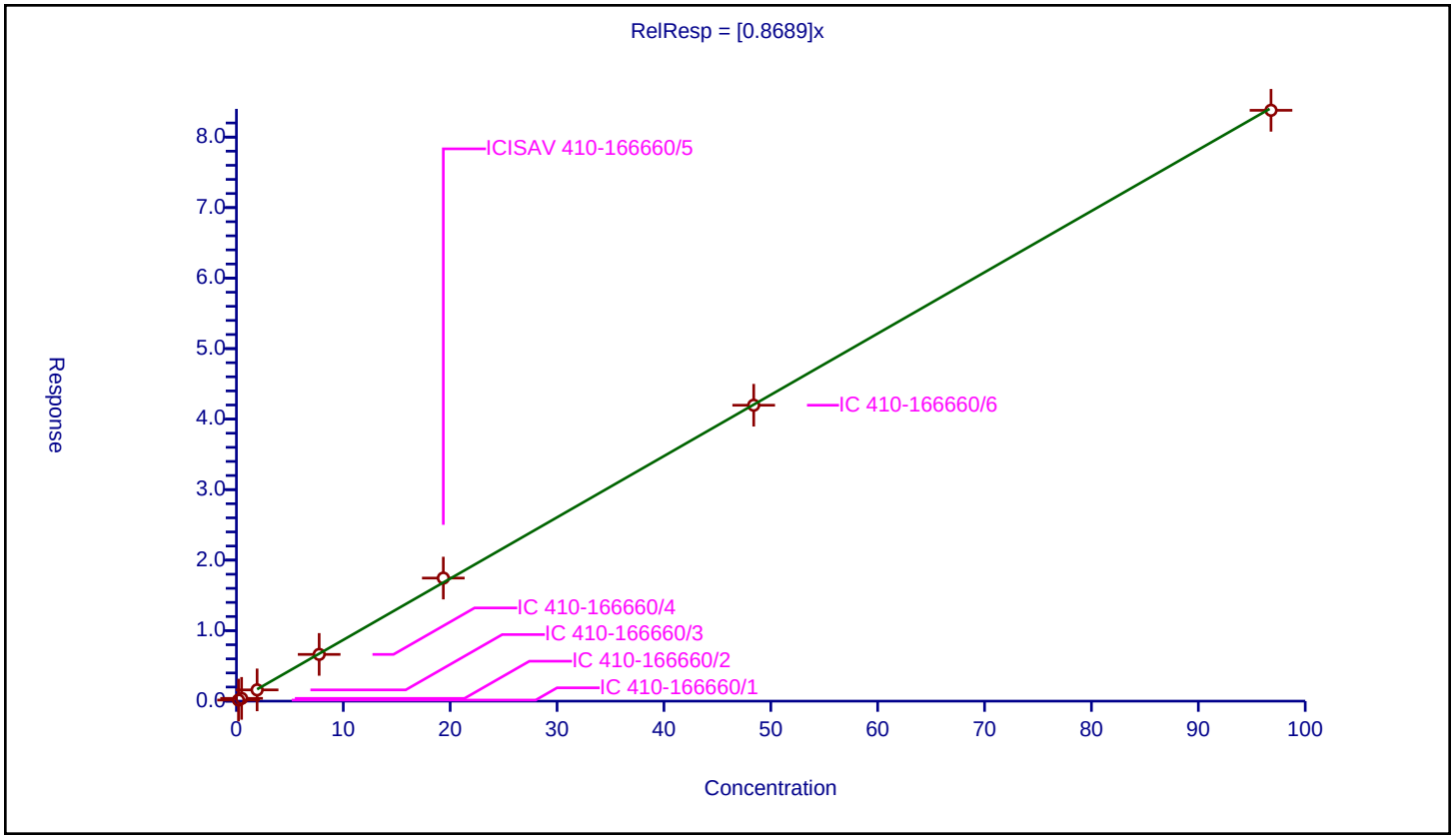
Curve Coefficients

Intercept:	0
Slope:	0.8689

Error Coefficients

Standard Error:	11300000
Relative Standard Error:	5.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1936	0.1542	9.565	3154591.0	0.796487	Y
2	IC 410-166660/2	0.484	0.389557	9.565	3061803.0	0.804869	Y
3	IC 410-166660/3	1.936	1.594633	9.565	2999446.0	0.823674	Y
4	IC 410-166660/4	7.744	6.627212	9.565	3084401.0	0.855787	Y
5	ICISAV 410-166660/5	19.36	17.455008	9.565	2958328.0	0.901602	Y
6	IC 410-166660/6	48.4	41.970865	9.565	2738757.0	0.867167	Y
7	IC 410-166660/7	96.8	83.800619	9.565	2776653.0	0.865709	Y



Calibration / 2-(N-ethylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

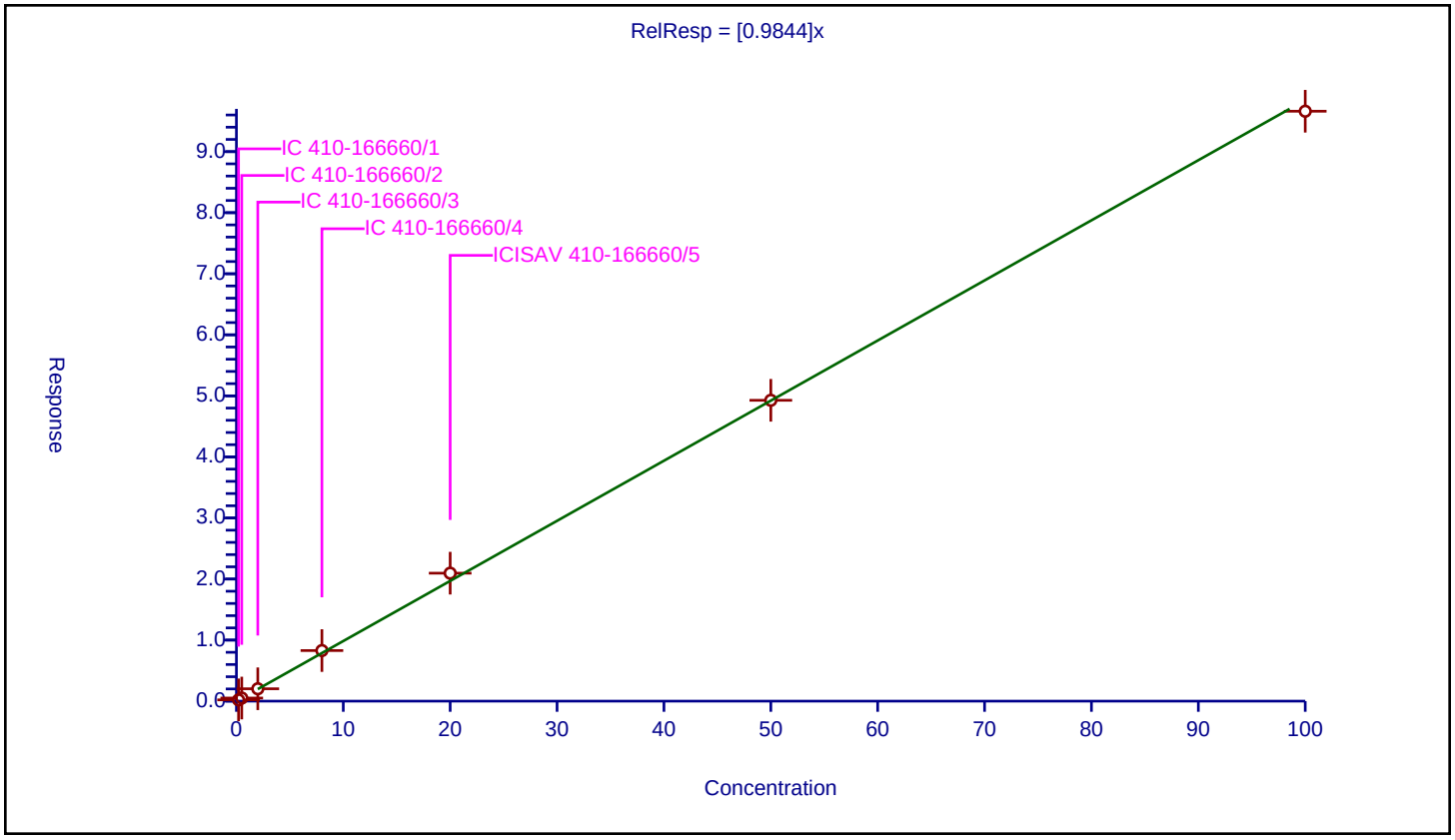
Curve Coefficients

Intercept:	0
Slope:	0.9844

Error Coefficients

Standard Error:	1980000
Relative Standard Error:	4.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.209061	10.0	508656.0	1.045304	Y
2	IC 410-166660/2	0.5	0.508955	10.0	481457.0	1.01791	Y
3	IC 410-166660/3	2.0	2.025147	10.0	446422.0	1.012573	Y
4	IC 410-166660/4	8.0	8.284612	10.0	454183.0	1.035577	Y
5	ICISAV 410-166660/5	20.0	20.959116	10.0	425986.0	1.047956	Y
6	IC 410-166660/6	50.0	49.271252	10.0	420269.0	0.985425	Y
7	IC 410-166660/7	100.0	96.615709	10.0	443505.0	0.966157	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

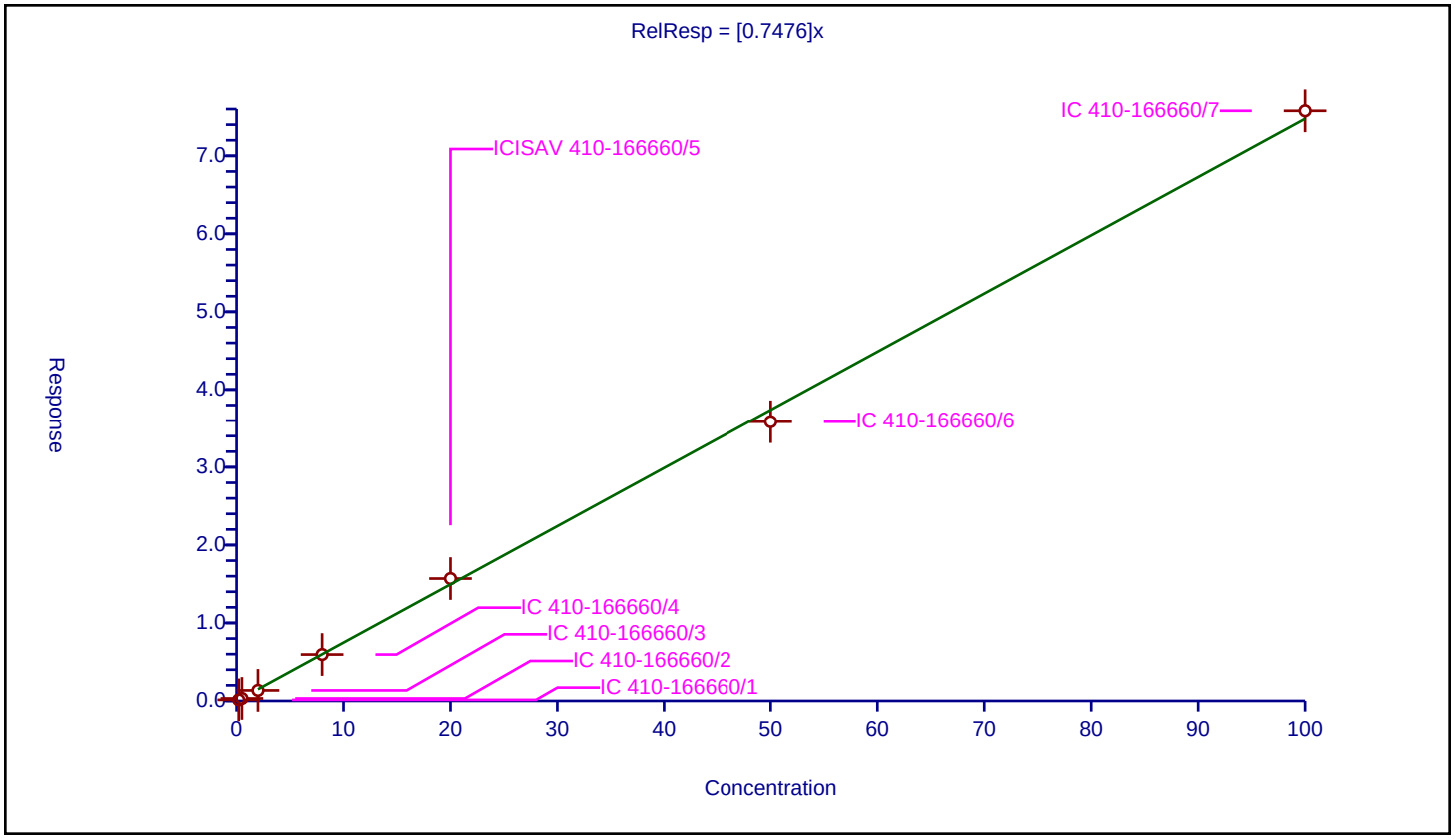
Curve Coefficients

Intercept:	0
Slope:	0.7476

Error Coefficients

Standard Error:	12700000
Relative Standard Error:	8.2
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.139261	10.0	4571791.0	0.696303	Y
2	IC 410-166660/2	0.5	0.318357	10.0	4557404.0	0.636713	Y
3	IC 410-166660/3	2.0	1.351655	10.0	4097791.0	0.675828	Y
4	IC 410-166660/4	8.0	5.948654	10.0	4240899.0	0.743582	Y
5	ICISAV 410-166660/5	20.0	15.696577	10.0	4034786.0	0.784829	Y
6	IC 410-166660/6	50.0	35.857834	10.0	3933304.0	0.717157	Y
7	IC 410-166660/7	100.0	75.77529	10.0	3542591.0	0.757753	Y



Calibration / N-ethylperfluoro-1-octanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

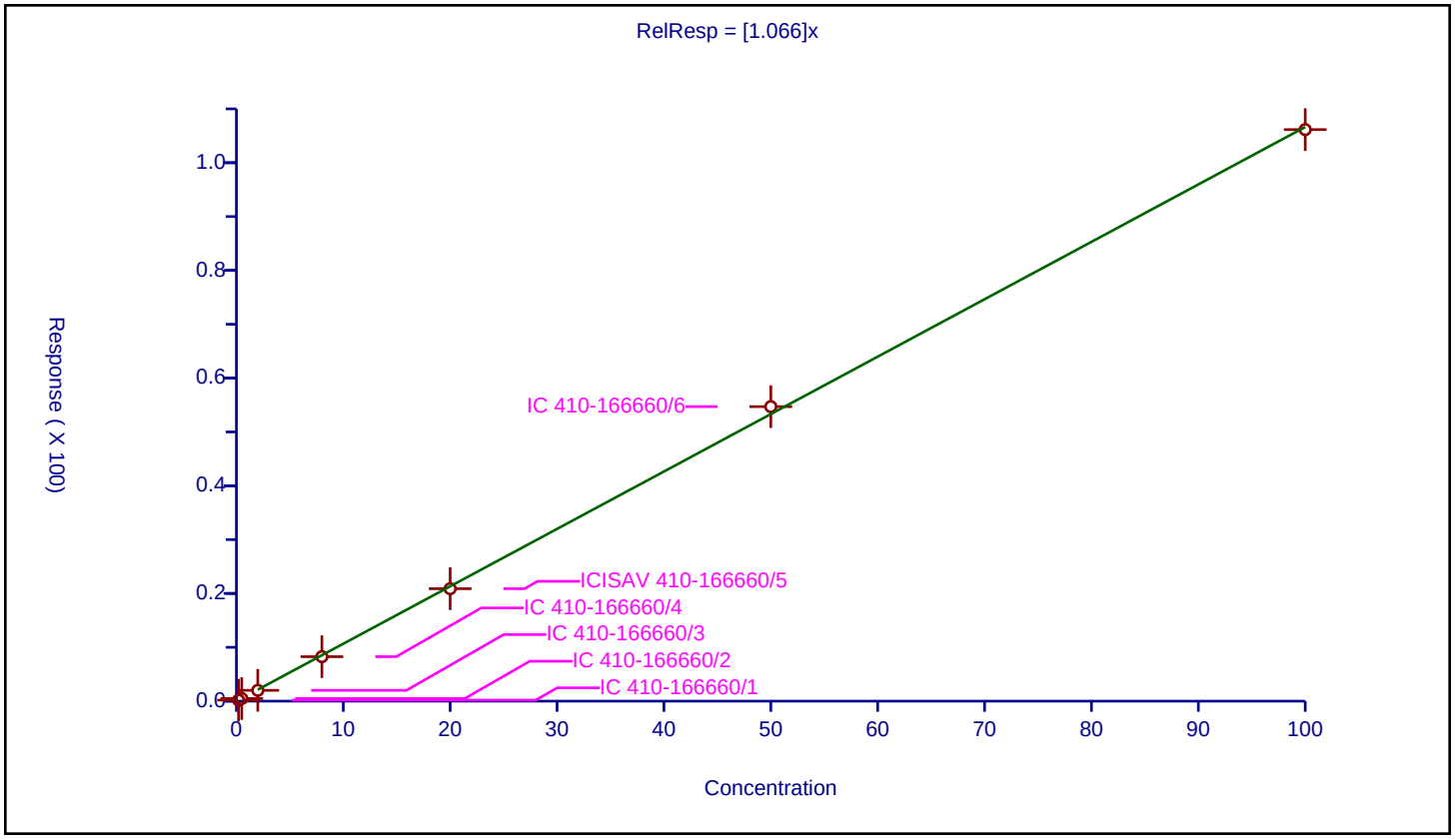
Curve Coefficients

Intercept:	0
Slope:	1.066

Error Coefficients

Standard Error:	1940000
Relative Standard Error:	6.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.188962	10.0	432944.0	0.94481	Y
2	IC 410-166660/2	0.5	0.482762	10.0	423252.0	0.965524	Y
3	IC 410-166660/3	2.0	2.008195	10.0	404403.0	1.004097	Y
4	IC 410-166660/4	8.0	8.260514	10.0	418250.0	1.032564	Y
5	ICISAV 410-166660/5	20.0	20.883375	10.0	417467.0	1.044169	Y
6	IC 410-166660/6	50.0	54.700989	10.0	365655.0	1.09402	Y
7	IC 410-166660/7	100.0	106.150776	10.0	395620.0	1.061508	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

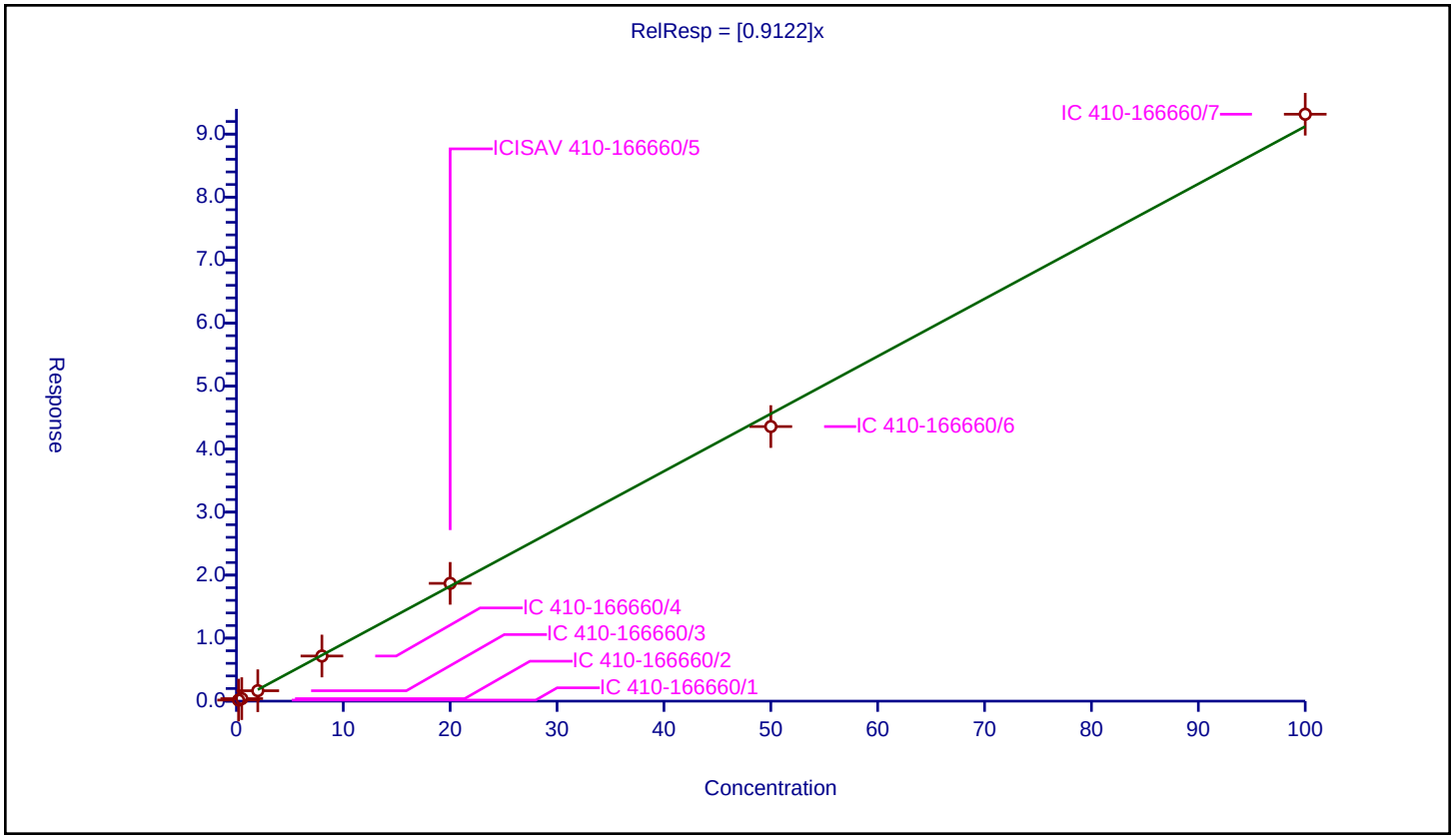
Curve Coefficients

Intercept:	0
Slope:	0.9122

Error Coefficients

Standard Error:	11700000
Relative Standard Error:	7.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.170305	10.0	3442462.0	0.851527	Y
2	IC 410-166660/2	0.5	0.400953	10.0	3551983.0	0.801907	Y
3	IC 410-166660/3	2.0	1.656663	10.0	3216218.0	0.828332	Y
4	IC 410-166660/4	8.0	7.162643	10.0	3220406.0	0.89533	Y
5	ICISAV 410-166660/5	20.0	18.695605	10.0	2960223.0	0.93478	Y
6	IC 410-166660/6	50.0	43.583172	10.0	2897695.0	0.871663	Y
7	IC 410-166660/7	100.0	93.156521	10.0	2678753.0	0.931565	Y



Calibration / Perfluorohexadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

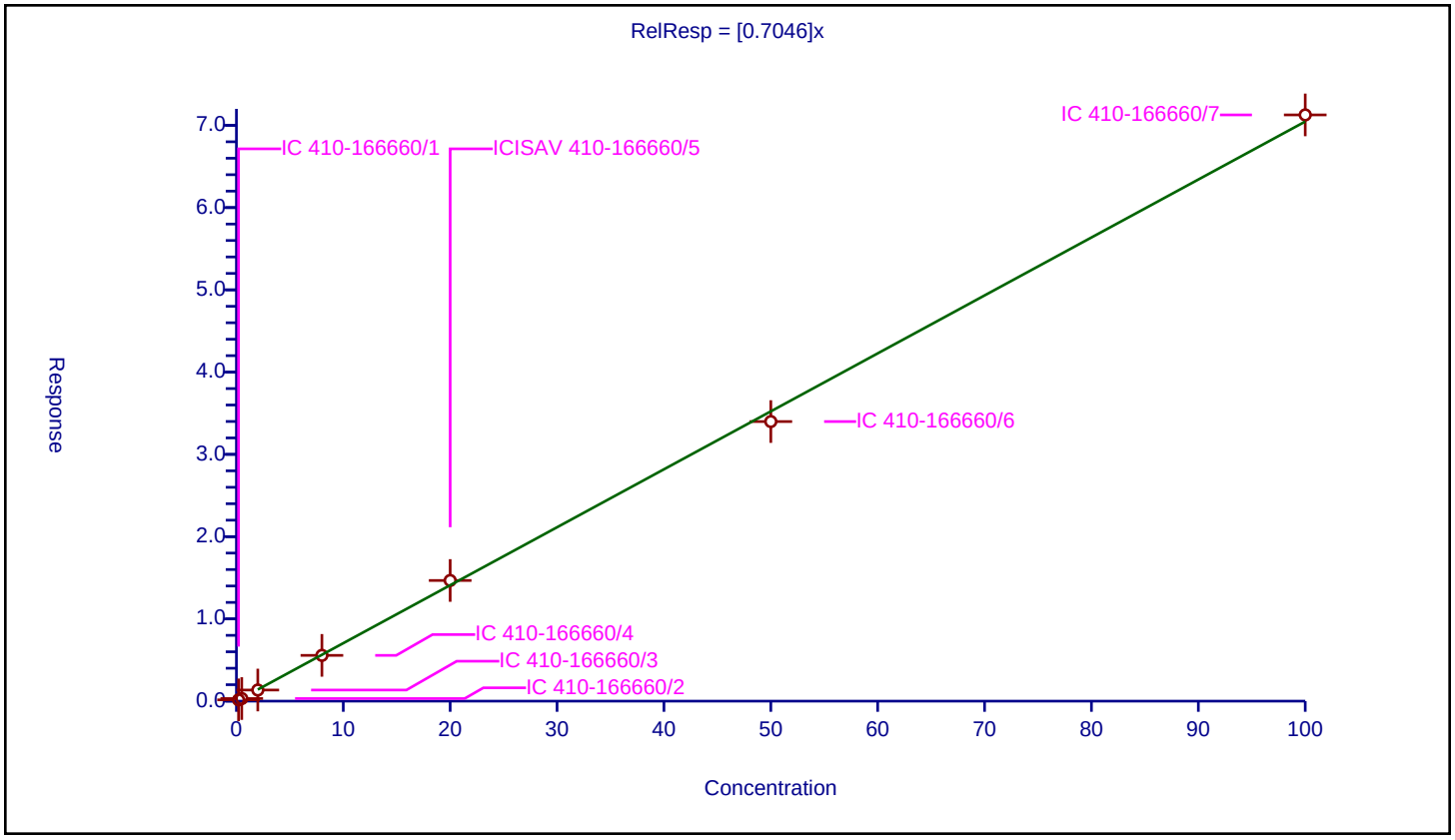
Curve Coefficients

Intercept:	0
Slope:	0.7046

Error Coefficients

Standard Error:	8980000
Relative Standard Error:	7.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.157931	10.0	3442462.0	0.789653	Y
2	IC 410-166660/2	0.5	0.314852	10.0	3551983.0	0.629705	Y
3	IC 410-166660/3	2.0	1.352259	10.0	3216218.0	0.67613	Y
4	IC 410-166660/4	8.0	5.56301	10.0	3220406.0	0.695376	Y
5	ICISAV 410-166660/5	20.0	14.670915	10.0	2960223.0	0.733546	Y
6	IC 410-166660/6	50.0	33.98944	10.0	2897695.0	0.679789	Y
7	IC 410-166660/7	100.0	71.269273	10.0	2678753.0	0.712693	Y



Calibration / Perfluorooctadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

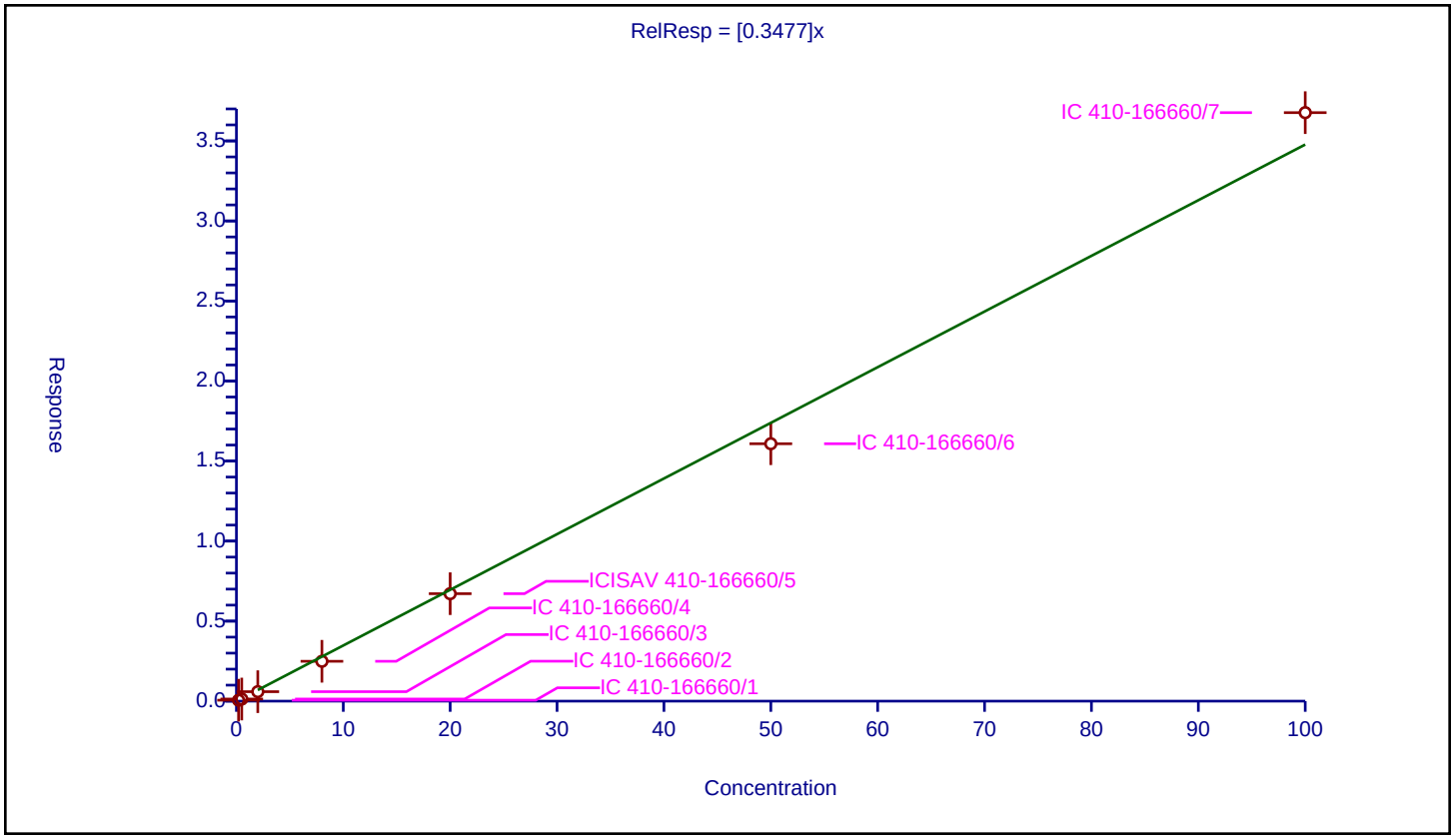
Curve Coefficients

Intercept:	0
Slope:	0.3477

Error Coefficients

Standard Error:	4530000
Relative Standard Error:	14.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.059033	10.0	3442462.0	0.295167	Y
2	IC 410-166660/2	0.5	0.132706	10.0	3551983.0	0.265412	Y
3	IC 410-166660/3	2.0	0.592127	10.0	3216218.0	0.296064	Y
4	IC 410-166660/4	8.0	2.489761	10.0	3220406.0	0.31122	Y
5	ICISAV 410-166660/5	20.0	6.712775	10.0	2960223.0	0.335639	Y
6	IC 410-166660/6	50.0	16.081358	10.0	2897695.0	0.321627	Y
7	IC 410-166660/7	100.0	36.765323	10.0	2678753.0	0.367653	Y



Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 31-Aug-2021 22:00:48 ALS Bottle#: 20010 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM
Misc. Info.: Plate: 1 Rack: 1 410-0038223-010
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 22:28:55 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1644

First Level Reviewer: polaskia Date: 31-Aug-2021 22:16:07
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.844	3.850	-0.006		1112513	5.00			3391	
D 7 13C4 PFBA										
217.00 > 172.00	3.844	3.844	0.0	1.000	2685564	10.8		108	141674	
D 17 13C5 PFPeA										
268.00 > 223.00	4.452	4.452	0.0	1.158	2909619	10.6		106	129089	
D 19 13C3 PFBS										
302.00 > 80.00	4.516	4.516	0.0	1.175	3246888	10.2		109	174233	
D 25 M2-4:2 FTS										
329.00 > 81.00	4.861	4.861	0.0	0.855	423445	10.1		108	18034	
$ 51 13C2 PFHxA										
315.00 > 270.00	4.901	4.897	0.004	0.862	3206277	10.2		102	111868	
D 27 13C5 PFHxA										
318.00 > 273.00	4.901	4.901	0.0	0.862	4171394	10.9		109	145858	
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.036	5.036	0.0	0.885	48936	10.1		101	3767	
D 38 13C4 PFHpA										
367.00 > 322.00	5.306	5.306	0.0	0.933	4134174	10.5		105	85453	
D 39 13C3 PFHxS										
402.00 > 80.00	5.306	5.306	0.0	0.933	2772260	10.0		106	93565	
D 44 13C-6:2 FTUCA										
359.00 > 294.00	5.409	5.409	0.0	0.951	2677762	9.79		97.9	89622	
D 46 13C-6:2 FTCA										
379.00 > 294.00	5.433	5.433	0.0	0.955	137574	11.3		113	8007	
D 52 M2-6:2 FTS										
429.00 > 81.00	5.668	5.668	0.0	0.997	221414	10.8		113	15984	
$ 35 13C4 PFOA										
417.00 > 372.00	5.687	5.686	0.001	1.000	3645052	10.3		103	99595	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.687	5.685	0.002	1.000	453313	1.41	Target=2.48		17729	M
413.00 > 169.00	5.687	5.685	0.002	1.000	194785		2.33(1.24-3.71)		32959	M
* 57 13C2 PFOA										
415.00 > 370.00	5.687	5.688	-0.001		1404456	5.00			61426	
D 55 13C8 PFOA										
421.00 > 376.00	5.687	5.687	0.0	1.000	3712232	10.9		109	90587	
* 61 13C4 PFOS										
503.00 > 80.00	6.016	6.014	0.002		1534378	4.78			69013	
D 60 13C8 PFOS										
507.00 > 80.00	6.016	6.016	0.0	1.000	3329685	10.3		108	62063	
D 63 13C9 PFNA										
472.00 > 427.00	6.034	6.034	0.0	1.003	2713181	10.5		105	121677	
D 66 13C-8:2 FTUCA										
459.00 > 394.00	6.148	6.148	0.0	0.969	2692126	10.0		100	106049	
D 68 13C-8:2 FTCA										
479.00 > 394.00	6.164	6.164	0.0	0.972	97914	11.1		111	7918	
* 74 13C2 PFDA										
515.00 > 470.00	6.345	6.339	0.005		1838378	5.00			78969	
D 75 13C6 PFDA										
519.00 > 474.00	6.345	6.345	0.0	1.000	4105540	11.1		111	176600	
D 76 M2-8:2 FTS										
529.00 > 81.00	6.345	6.345	0.0	1.000	185823	11.0		115	13271	
D 78 13C8 FOSA										
506.00 > 78.00	6.440	6.440	0.0	1.015	5796707	10.5		105	134583	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.491	6.491	0.0	1.023	1009146	9.96		99.6	68482	
D 83 13C7 PFUnA										
570.00 > 525.00	6.615	6.615	0.0	1.043	5201111	11.9		119	127885	
$ 70 13C2 PFUnA										
565.00 > 520.00	6.615	6.613	0.002	1.163	4501314	11.0		110	147747	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.627	6.627	0.0	1.044	848561	10.8		108	23644	
D 87 13C-10:2 FTUCA										
559.00 > 494.00	6.713	6.713	0.0	1.058	3241713	11.0		110	77354	
D 90 13C-10:2 FTCA										
579.00 > 494.00	6.737	6.737	0.0	1.062	87945	11.9		119	5603	
D 92 13C2-PFDoDA										
615.00 > 570.00	6.850	6.850	0.0	1.080	4623101	10.8		108	109256	
D 94 d7-N-MeFOSE-M										
623.00 > 59.00	6.870	6.870	0.0	1.083	437113	10.3		103	2864	
D 97 d3-NMePFOSA										
515.00 > 169.00	6.891	6.891	0.0	1.086	490297	10.6		106	7803	
D 99 d9-N-EtFOSE-M										
639.00 > 59.00	7.035	7.035	0.0	1.109	467135	9.96		99.6	3256	
D 102 d5-NEtPFOSA										
531.00 > 169.00	7.056	7.056	0.0	1.112	439247	10.4		104	10580	

Report Date: 31-Aug-2021 22:28:55 Chrom Revision: 2.3 03-Aug-2021 10:08:16
Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 105 13C2 PFTeDA										
715.00 > 670.00	7.247	7.247	0.0	1.142	3343928	10.4		104	84177	

QC Flag Legend

Processing Flags

Review Flags

M - Manually Integrated

Reagents:

PFC_LB_MOD_00024 Amount Added: 200.00 Units: uL

Report Date: 31-Aug-2021 22:28:55 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d

Injection Date: 31-Aug-2021 22:00:48 Instrument ID: 30727

Lims ID: WDM

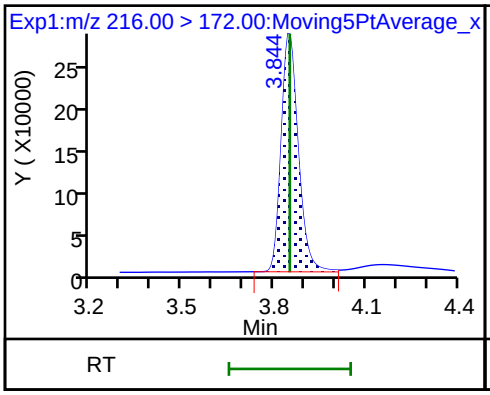
Client ID:

Operator ID: US19_USR_INS20264 ALS Bottle#: 20010 Worklist Smp#: 10

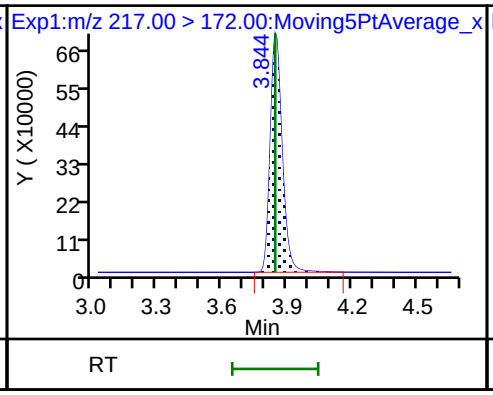
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

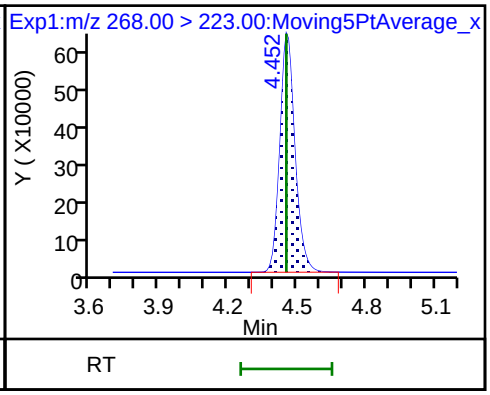
* 8 13C3-PFBA



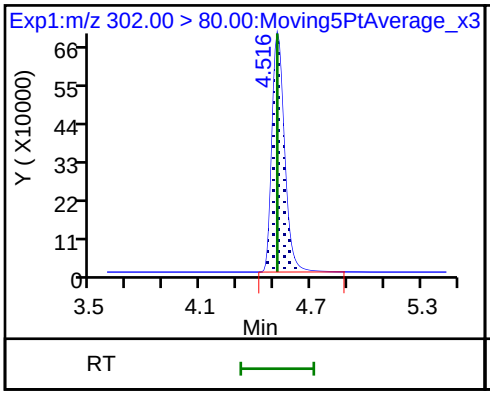
D 7 13C4 PFBA



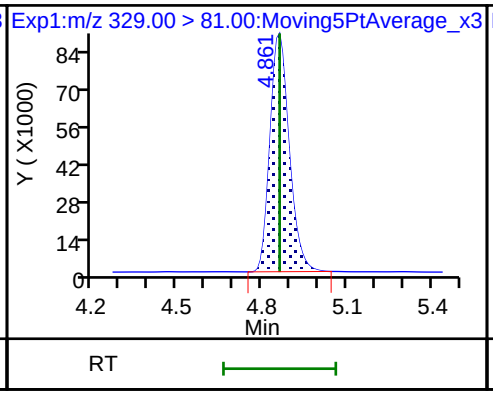
D 17 13C5 PFPeA



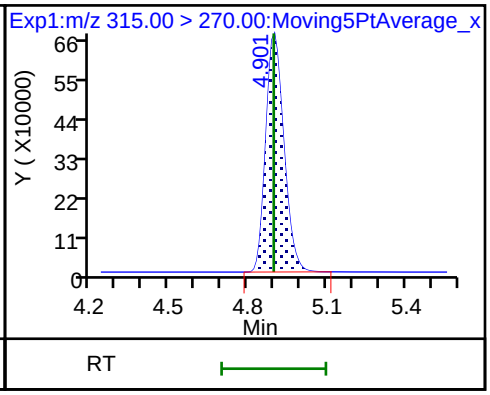
D 19 13C3 PFBS



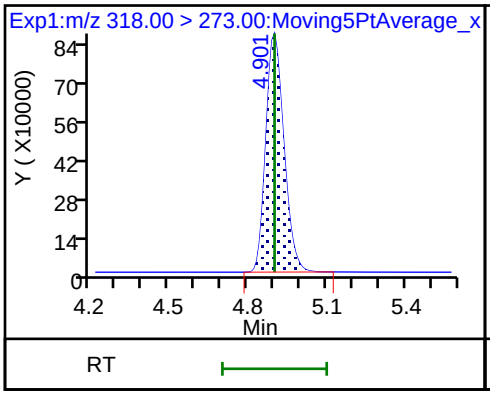
D 25 M2-4:2 FTS



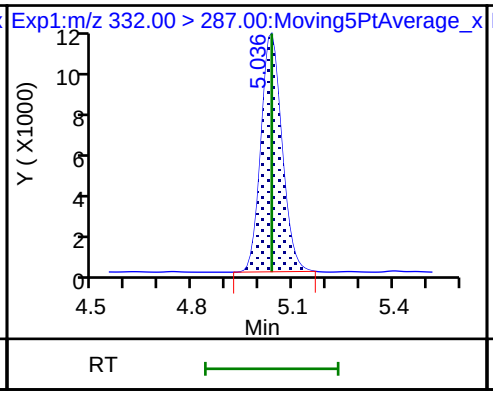
$ 51 13C2 PFHxA



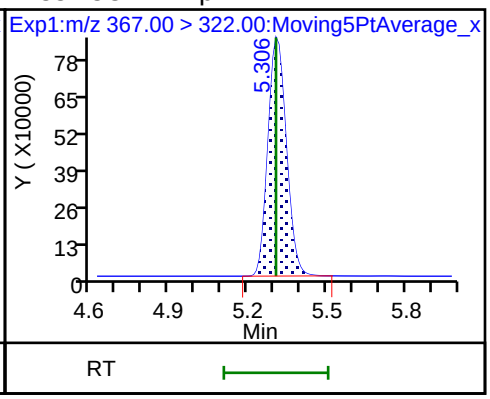
D 27 13C5 PFHxA



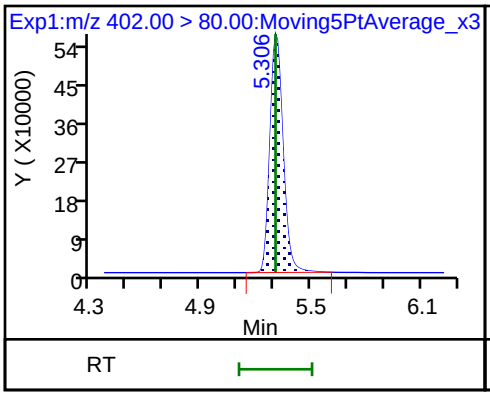
D 31 13C3 HFPO-DA



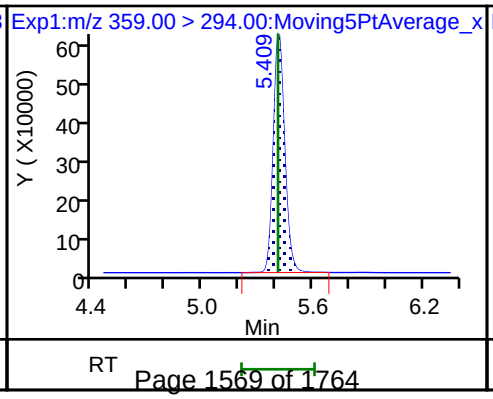
D 38 13C4 PFHpA



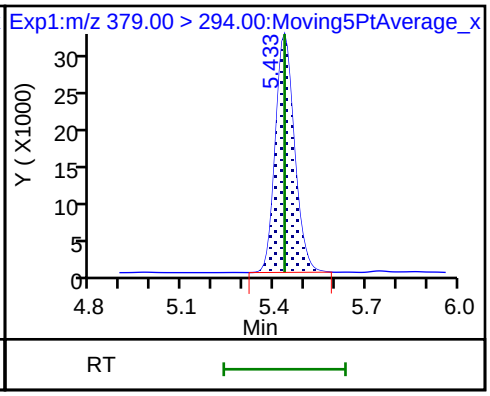
D 39 13C3 PFHxS



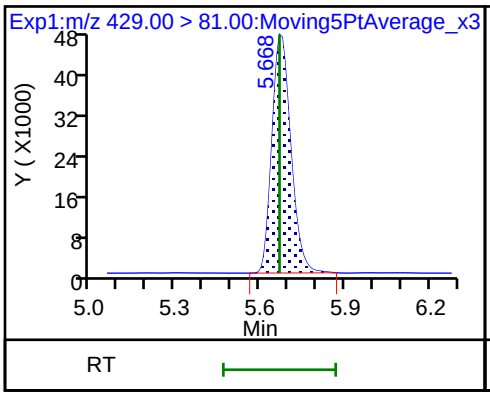
D 44 13C-6:2 FTUCA



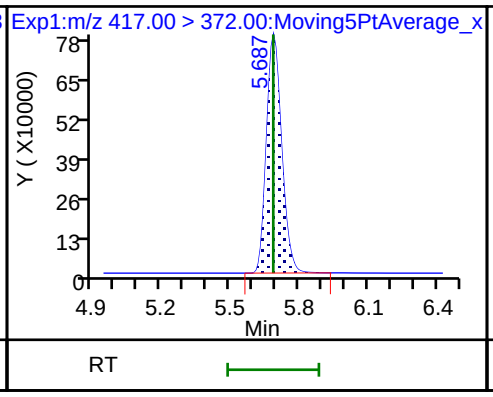
D 46 13C-6:2 FTCA



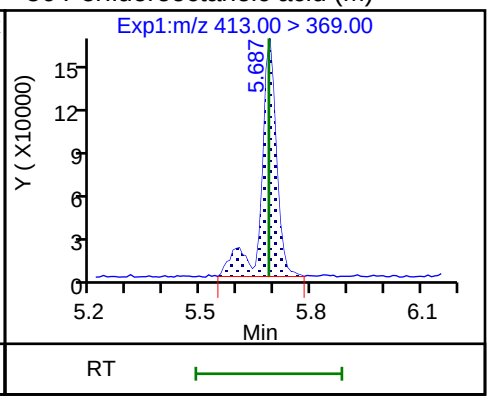
D 52 M2-6:2 FTS



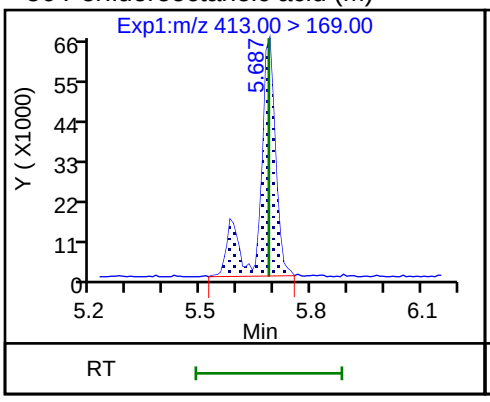
$ 35 13C4 PFOA



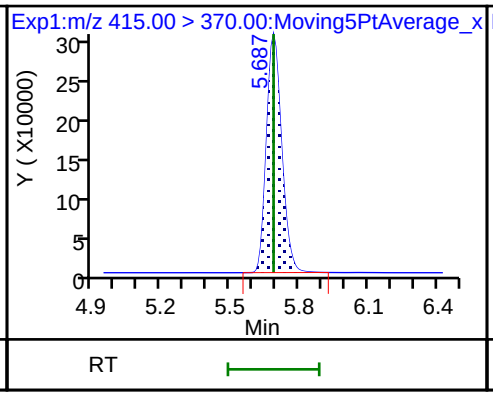
56 Perfluorooctanoic acid (M)



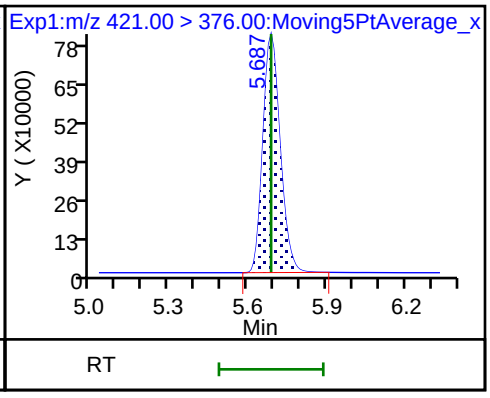
56 Perfluorooctanoic acid (M)



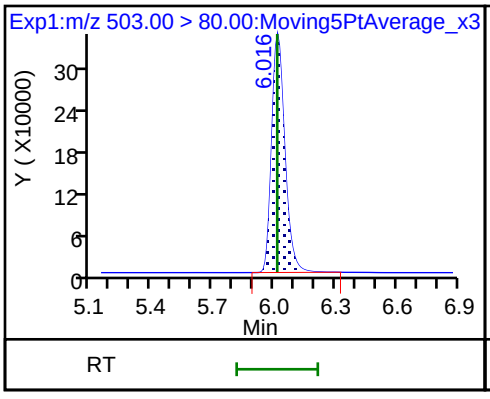
* 57 13C2 PFOA



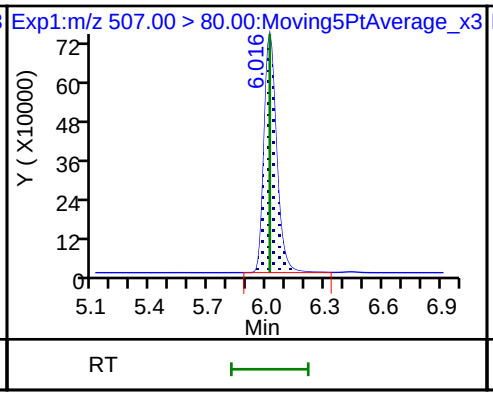
D 55 13C8 PFOA



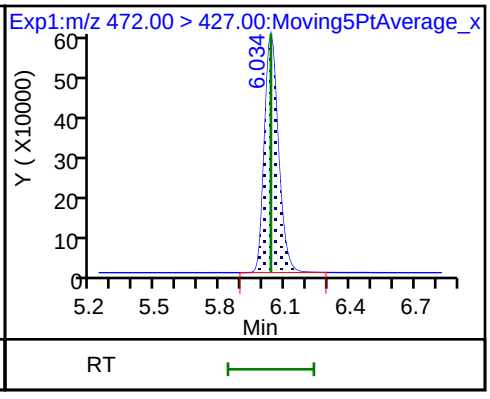
* 61 13C4 PFOS



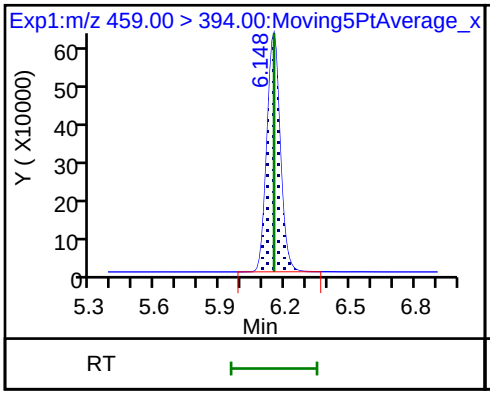
D 60 13C8 PFOS



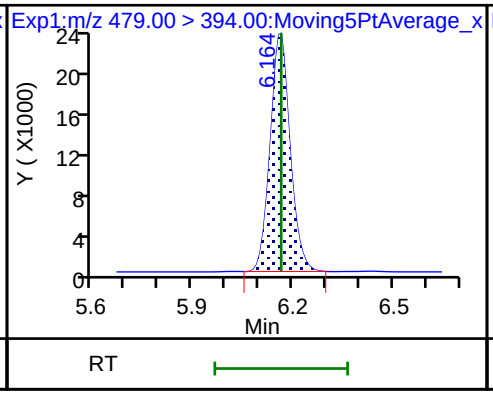
D 63 13C9 PFNA



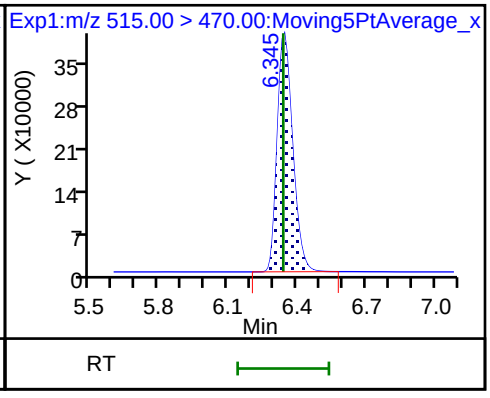
D 66 13C-8:2 FTUCA



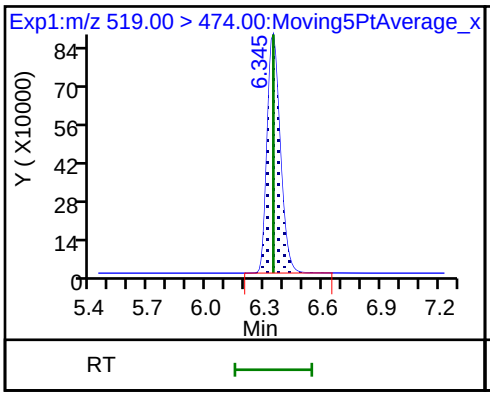
D 68 13C-8:2 FTCA



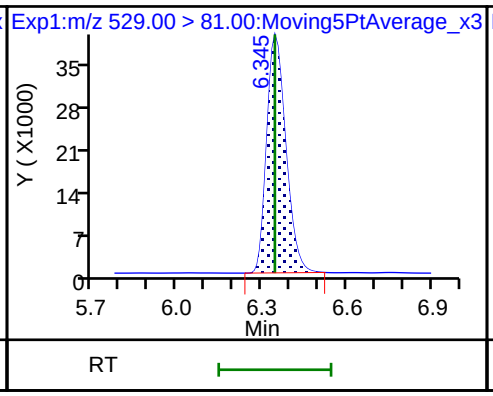
* 74 13C2 PFDA



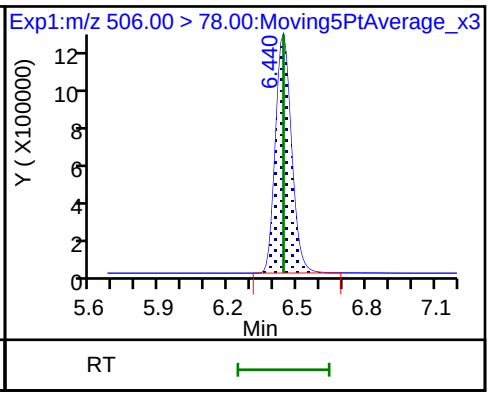
D 75 13C6 PFDA



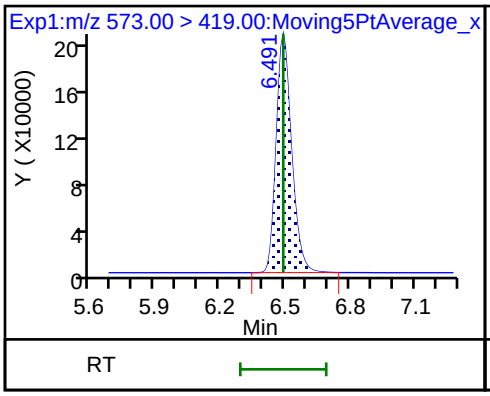
D 76 M2-8:2 FTS



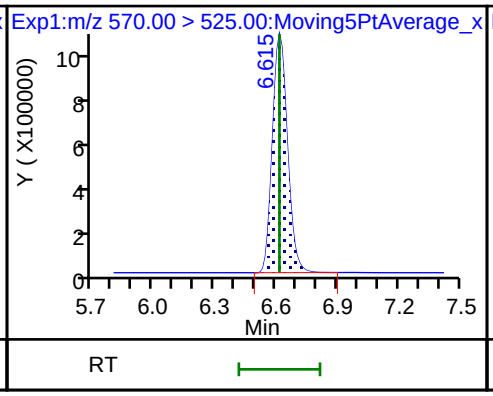
D 78 13C8 FOSA



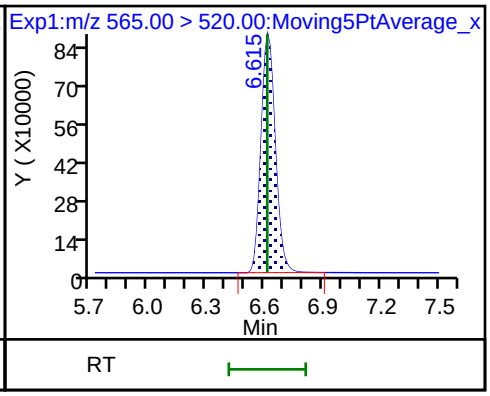
D 79 d3-NMeFOSAA



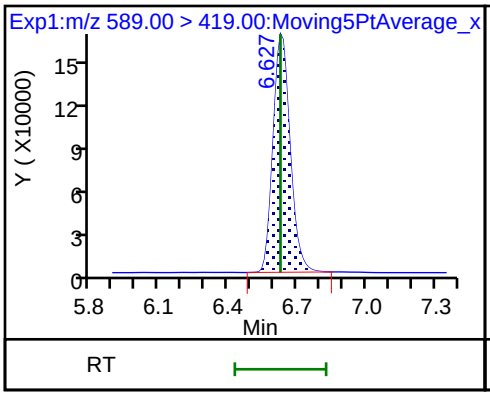
D 83 13C7 PFUnA



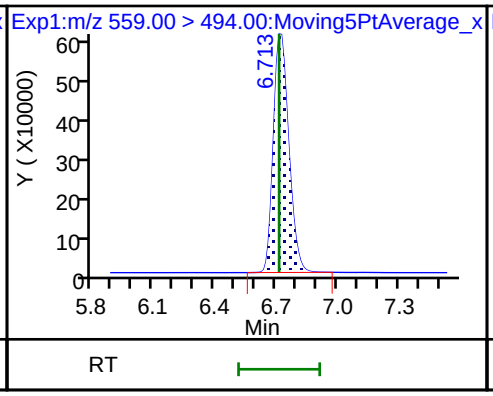
$ 70 13C2 PFUnA



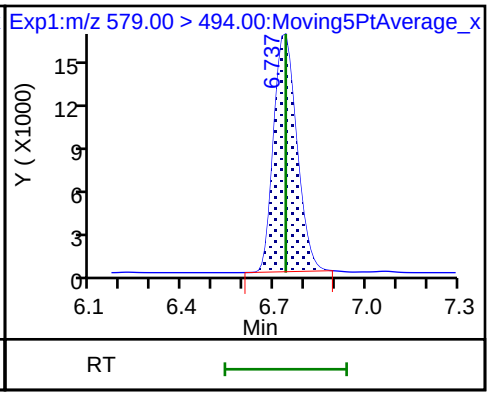
D 84 d5-NEtFOSAA



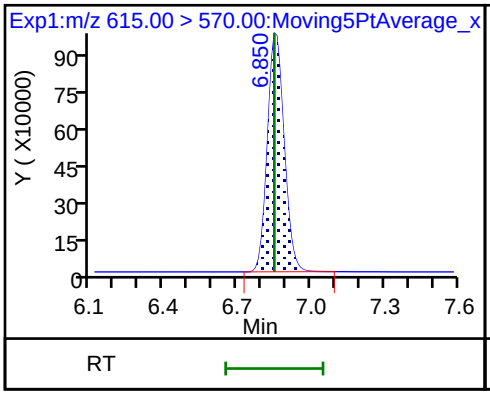
D 87 13C-10:2 FTUCA



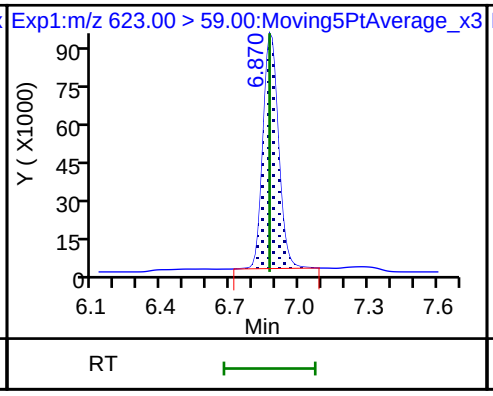
D 90 13C-10:2 FTCA



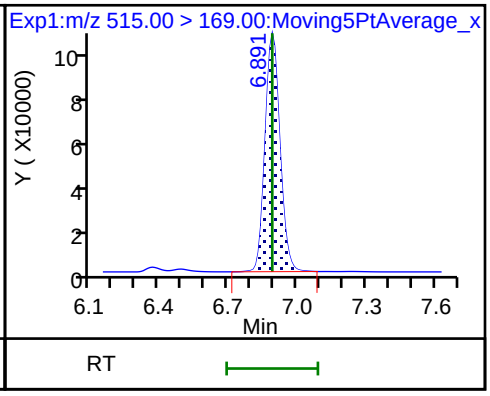
D 92 13C2-PFDoDA



D 94 d7-N-MeFOSE-M



D 97 d3-NMePFOSA



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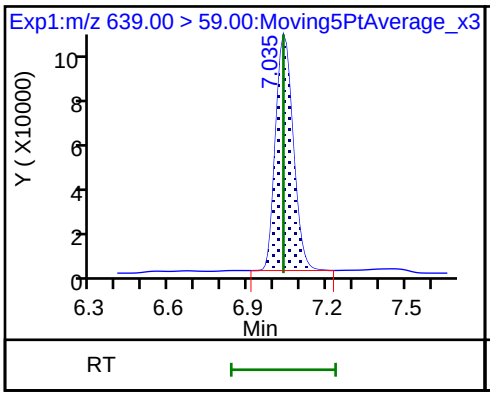
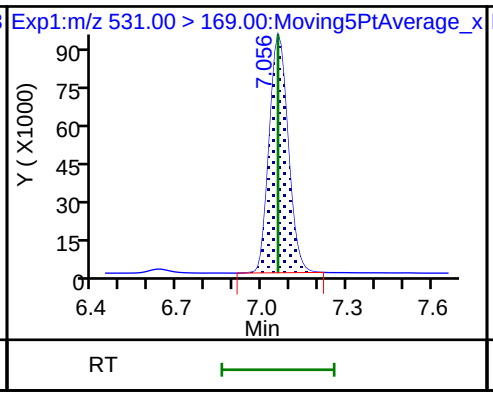


D 102 d5-NEtPFOSA



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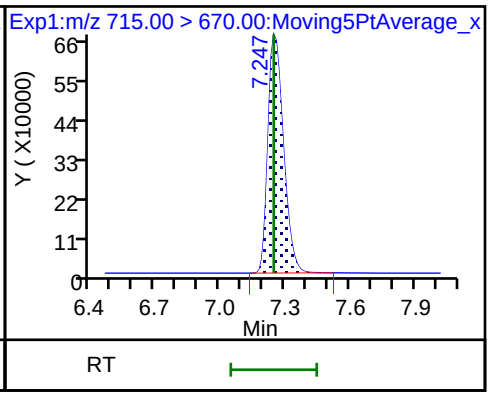

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: ICV 410-166660/9 Calibration Date: 08/31/2021 21:49

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31MCAL-21.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0675		1.77	2.00	-11.4	30.0
PPF Acid	LID1F		0.4072		1.81	2.00	-9.7	30.0
PFMOAA	LID1F		0.2169		1.72	2.00	-13.8	30.0
Perfluorobutanoic acid	LID1F		0.8307		1.88	2.00	-5.9	30.0
R-EVE	LID1F		0.0430		1.69	2.00	-15.7	30.0
R-PSDA	Q2ID		0.0138		2.10	2.00	5.0	30.0
Hydrolyzed PSDA	LID1F		0.0587		1.67	2.00	-16.3	30.0
PMPA	LID1F		0.2385		1.70	2.00	-15.2	30.0
Perfluoropropanesulfonic acid	LID1F		0.4775		1.66	1.83	-9.2	30.0
NVHOS	LID1F		0.2339		1.71	2.00	-14.3	30.0
PFECA F	LID1F		0.8321		1.86	2.00	-6.8	30.0
PFO2HxA	LID1F		0.1081		1.73	2.00	-13.6	30.0
3:3 FTCA	LID1F		0.0538		1.86	2.00	-6.9	30.0
Perfluoropentanoic acid	LID1F		0.8515		1.88	2.00	-5.8	30.0
Perfluorobutanesulfonic acid	LID1F		1.041		1.52	1.77	-13.9	30.0
PEPA	LID1F		0.1142		2.06	2.00	3.1	30.0
PFECA A	LID1F		0.7359		1.90	2.00	-5.2	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.035		1.62	1.78	-8.9	30.0
PFECA B	LID1F		0.6874		1.82	2.00	-9.2	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.146		1.83	1.87	-2.0	30.0
Perfluorohexanoic acid	LID1F		0.7115		1.72	2.00	-13.9	30.0
Perfluoropentanesulfonic acid	LID1F		0.8830		1.68	1.88	-10.6	30.0
PFO3OA	LID1F		0.0957		1.98	2.00	-1.0	30.0
HFPODA	LID1F		8.945		1.73	2.00	-13.6	30.0
Hydro-EVE Acid	LID1F		1.465		1.81	2.00	-9.5	30.0
R-PSDCA	LID1F		1.849		1.69	2.00	-15.6	30.0
Perfluoroheptanoic acid	LID1F		0.8691		1.78	2.00	-10.9	30.0
Perfluorohexanesulfonic acid	LID1F		0.9608		1.65	1.82	-9.8	30.0
Hydro-PS Acid	LID1F		1.585		1.71	2.00	-14.4	30.0
DONA	LID1F		1.067		1.54	1.89	-18.4	30.0
PFECA G	LID1F		1.481		1.84	2.00	-7.9	30.0
5:3 FTCA	LID1F		0.1578		1.74	2.00	-13.1	30.0
6:2 FTUCA	LID1F		1.173		2.00	2.00	0.2	30.0
6:2 FTCA	LID1F		0.9466		1.78	2.00	-10.9	30.0
PFO4DA	LID1F		0.0863		1.81	2.00	-9.7	30.0
PS Acid	LID1F		0.5045		1.74	2.00	-12.9	30.0
EVE Acid	LID1F		1.082		1.95	2.00	-2.4	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.541		1.70	1.85	-8.0	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: ICV 410-166660/9 Calibration Date: 08/31/2021 21:49

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31MCAL-21.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	LID1F		4.684		2.10	1.90	11.0	30.0
Perfluoroheptanesulfonic acid	LID1F		1.022		1.84	1.90	-3.1	30.0
Perfluorooctanoic acid	LID1F		0.7169		1.65	2.00	-17.4	30.0
TAF	AveID	0.0672	0.0572		1.70	2.00	-15.0	30.0
Perfluorooctanesulfonic acid	LID1F		0.8864		1.50	1.85	-18.8	30.0
Perfluorononanoic acid	LID1F		0.8284		1.82	2.00	-8.9	30.0
7:3 FTCA	LID1F		5.208		1.84	2.00	-7.8	30.0
8:2 FTUCA	LID1F		0.8931		1.85	2.00	-7.6	30.0
8:2 FTCA	LID1F		0.8746		1.96	2.00	-2.0	30.0
9Cl-PF3ONS	LID1F		1.538		1.64	1.86	-11.9	30.0
Perfluorononanesulfonic acid	LID1F		0.9528		1.81	1.92	-5.9	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.975		2.15	1.92	12.0	30.0
Perfluorodecanoic acid	LID1F		0.6672		1.61	2.00	-19.5	30.0
Perfluorooctanesulfonamide	LID1F		1.001		2.03	2.00	1.4	30.0
NMeFOSAA	LID1F		0.8210		1.94	2.00	-2.8	30.0
Perfluorodecanesulfonic acid	LID1F		0.8146		1.75	1.93	-9.1	30.0
Perfluoroundecanoic acid	LID1F		0.6917		1.70	2.00	-15.2	30.0
NEtFOSAA	LID1F		0.8779		1.76	2.00	-11.8	30.0
10:2 FTUCA	LID1F		0.8281		1.86	2.00	-6.8	30.0
11Cl-PF3OUdS	LID1F		1.046		1.65	1.86	-11.5	30.0
10:2 FTCA	LID1F		0.7780		1.99	2.00	-0.7	30.0
Perfluorododecanoic acid	LID1F		0.8867		1.83	2.00	-8.6	30.0
10:2 FTS	LID1F		5.469		1.73	1.93	-10.1	30.0
NMeFOSE	LID1F		1.051		1.96	2.00	-1.9	30.0
NMeFOSA	LID1F		0.9104		1.75	2.00	-12.7	30.0
Perfluorododecanesulfonic acid	LID1F		0.7803		1.74	1.94	-10.2	30.0
NEtFOSE	LID1F		1.065		2.16	2.00	8.2	30.0
NEtFOSA	LID1F		0.9755		1.83	2.00	-8.5	30.0
Perfluorotridecanoic acid	LID1F		0.7019		1.88	2.00	-6.1	30.0
Perfluorotetradecanoic acid	LID1F		0.8075		1.77	2.00	-11.5	30.0
Perfluorohexadecanoic acid	LID1F		0.6889		1.96	2.00	-2.2	30.0
Perfluorooctadecanoic acid	LID1F		0.3191		1.84	2.00	-8.2	30.0
13C4 PFBA	Ave	1.122	1.214		10.8	10.0	8.3	30.0
13C5 PFPeA	Ave	1.238	1.396		11.3	10.0	12.8	30.0
13C3 PFBS	Ave	1.425	1.519		9.98	9.36	6.6	30.0
M2-4:2 FTS	Ave	0.1492	0.1593		9.98	9.34	6.8	30.0
13C5 PFHxA	Ave	1.362	1.454		10.7	10.0	6.7	30.0
13C3 HFPO-DA	Ave	0.0172	0.0193		11.2	10.0	12.4	30.0
13C3 PFHxS	Ave	0.9877	1.014		9.71	9.46	2.7	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: ICV 410-166660/9 Calibration Date: 08/31/2021 21:49

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31MCAL-21.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.407	1.530		10.9	10.0	8.8	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	0.9734	1.024		10.5	10.0	5.2	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0433	0.0460		10.6	10.0	6.0	30.0
M2-6:2 FTS	Ave	0.0731	0.0759		9.86	9.50	3.8	30.0
13C8 PFOA	Ave	1.218	1.392		11.4	10.0	14.3	30.0
13C8 PFOS	Ave	1.008	1.084		10.3	9.57	7.6	30.0
13C9 PFNA	Ave	0.8060	0.8898		11.0	10.0	10.4	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.7298	0.7766		10.6	10.0	6.4	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0239	0.0249		10.4	10.0	4.1	30.0
13C6 PFDA	Ave	1.005	1.109		11.0	10.0	10.3	30.0
M2-8:2 FTS	Ave	0.0459	0.0441		9.21	9.58	-3.9	30.0
13C8 FOSA	Ave	1.506	1.438		9.55	10.0	-4.5	30.0
d3-NMeFOSAA	Ave	0.2754	0.2689		9.76	10.0	-2.4	30.0
13C7 PFUnA	Ave	1.193	1.283		10.8	10.0	7.5	30.0
d5-NEtFOSAA	Ave	0.2135	0.2075		9.72	10.0	-2.8	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	0.8027	0.7847		9.78	10.0	-2.2	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0201	0.0199		9.86	10.0	-1.4	30.0
13C2-PFDoDA	Ave	1.159	1.165		10.0	10.0	0.5	30.0
d7-N-MeFOSE-M	Ave	0.1150	0.1101		9.57	10.0	-4.3	30.0
d3-NMePFOSA	Ave	0.1263	0.1185		9.38	10.0	-6.2	30.0
d9-N-EtFOSE-M	Ave	0.1276	0.1188		9.31	10.0	-6.9	30.0
d5-NEtPFOSA	Ave	0.1148	0.1087		9.47	10.0	-5.3	30.0
13C2 PFTeDA	Ave	0.8777	0.8355		9.52	10.0	-4.8	30.0
13C2 PFHxA	Ave	1.114	1.189		10.7	10.0	6.8	30.0
13C4 PFOA	Ave	1.257	1.392		11.1	10.0	10.7	30.0
13C2 PFUnA	Ave	1.462	1.551		10.6	10.0	6.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-166713/5 Calibration Date: 08/31/2021 23:40

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-07.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0666		1.75	2.00	-12.6	30.0
PPF Acid	LID1F		0.4147		1.84	2.00	-8.1	30.0
PFMOAA	LID1F		0.2071		1.65	2.00	-17.7	30.0
Perfluorobutanoic acid	LID1F		0.8881		2.01	2.00	0.6	30.0
R-EVE	LID1F		0.0432		1.69	2.00	-15.3	30.0
R-PSDA	Q2ID		0.0127		1.94	2.00	-2.9	30.0
Hydrolyzed PSDA	LID1F		0.0546		1.56	2.00	-22.2	30.0
PMPA	LID1F		0.2363		1.68	2.00	-16.0	30.0
Perfluoropropanesulfonic acid	LID1F		0.4629		1.61	1.83	-11.9	30.0
NVHOS	LID1F		0.2393		1.75	2.00	-12.3	30.0
PFECA F	LID1F		0.8945		2.00	2.00	0.2	30.0
PFO2HxA	LID1F		0.1138		1.82	2.00	-9.1	30.0
3:3 FTCA	LID1F		0.0615		2.13	2.00	6.4	30.0
Perfluoropentanoic acid	LID1F		0.8825		1.95	2.00	-2.4	30.0
Perfluorobutanesulfonic acid	LID1F		1.205		1.76	1.77	-0.3	30.0
PEPA	LID1F		0.1098		1.98	2.00	-0.9	30.0
PFECA A	LID1F		0.7582		1.95	2.00	-2.3	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.327		1.78	1.78	-0.1	30.0
PFECA B	LID1F		0.7529		1.99	2.00	-0.6	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.198		1.86	1.87	-0.4	30.0
Perfluorohexanoic acid	LID1F		0.7319		1.77	2.00	-11.4	30.0
Perfluoropentanesulfonic acid	LID1F		0.9422		1.79	1.88	-4.6	30.0
PFO3OA	LID1F		0.0834		1.72	2.00	-13.8	30.0
HFPODA	LID1F		9.589		1.85	2.00	-7.4	30.0
Hydro-EVE Acid	LID1F		1.467		1.81	2.00	-9.4	30.0
R-PSDCA	LID1F		2.010		1.83	2.00	-8.3	30.0
Perfluoroheptanoic acid	LID1F		0.9110		1.87	2.00	-6.6	30.0
Perfluorohexanesulfonic acid	LID1F		0.8806		1.51	1.82	-17.3	30.0
Hydro-PS Acid	LID1F		1.702		1.84	2.00	-8.1	30.0
DONA	LID1F		1.100		1.59	1.89	-15.9	30.0
PFECA G	LID1F		1.560		1.94	2.00	-3.0	30.0
5:3 FTCA	LID1F		0.1705		1.88	2.00	-6.2	30.0
6:2 FTUCA	LID1F		1.193		2.04	2.00	1.9	30.0
6:2 FTCA	LID1F		1.126		2.12	2.00	5.9	30.0
PFO4DA	LID1F		0.0931		1.95	2.00	-2.6	30.0
PS Acid	LID1F		0.4872		1.68	2.00	-15.9	30.0
EVE Acid	LID1F		1.065		1.92	2.00	-3.9	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.539		1.70	1.85	-8.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-166713/5 Calibration Date: 08/31/2021 23:40

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-07.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	LID1F		4.150		1.86	1.90	-1.7	30.0
Perfluoroheptanesulfonic acid	LID1F		1.032		1.86	1.90	-2.2	30.0
Perfluorooctanoic acid	LID1F		0.7610		1.75	2.00	-12.3	30.0
TAF	AveID	0.0672	0.0559		1.66	2.00	-16.8	30.0
Perfluorooctanesulfonic acid	LID1F		0.9770		1.66	1.85	-10.5	30.0
Perfluorononanoic acid	LID1F		0.8699		1.91	2.00	-4.3	30.0
7:3 FTCA	LID1F		5.048		1.79	2.00	-10.6	30.0
8:2 FTUCA	LID1F		0.9212		1.91	2.00	-4.7	30.0
8:2 FTCA	LID1F		0.7959		1.78	2.00	-10.8	30.0
9Cl-PF3ONS	LID1F		1.667		1.78	1.86	-4.5	30.0
Perfluorononanesulfonic acid	LID1F		1.001		1.90	1.92	-1.1	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.913		2.13	1.92	11.0	30.0
Perfluorodecanoic acid	LID1F		0.7620		1.84	2.00	-8.1	30.0
Perfluorooctanesulfonamide	LID1F		0.9600		1.94	2.00	-2.8	30.0
NMeFOSAA	LID1F		0.8030		1.90	2.00	-4.9	30.0
Perfluorodecanesulfonic acid	LID1F		0.9134		1.96	1.93	1.9	30.0
Perfluoroundecanoic acid	LID1F		0.7739		1.90	2.00	-5.2	30.0
NEtFOSAA	LID1F		0.7897		1.59	2.00	-20.6	30.0
10:2 FTUCA	LID1F		0.8422		1.90	2.00	-5.2	30.0
11Cl-PF3OUdS	LID1F		1.102		1.73	1.86	-6.7	30.0
10:2 FTCA	LID1F		0.7457		1.90	2.00	-4.8	30.0
Perfluorododecanoic acid	LID1F		0.9381		1.93	2.00	-3.3	30.0
10:2 FTS	LID1F		6.069		1.92	1.93	-0.2	30.0
NMeFOSE	LID1F		1.046		1.95	2.00	-2.3	30.0
NMeFOSA	LID1F		0.9170		1.76	2.00	-12.1	30.0
Perfluorododecanesulfonic acid	LID1F		0.8483		1.89	1.94	-2.4	30.0
NEtFOSE	LID1F		0.9868		2.00	2.00	0.2	30.0
NEtFOSA	LID1F		0.997		1.87	2.00	-6.5	30.0
Perfluorotridecanoic acid	LID1F		0.6841		1.83	2.00	-8.5	30.0
Perfluorotetradecanoic acid	LID1F		0.8541		1.87	2.00	-6.4	30.0
Perfluorohexadecanoic acid	LID1F		0.7420		2.11	2.00	5.3	30.0
Perfluorooctadecanoic acid	LID1F		0.3309		1.90	2.00	-4.8	30.0
13C4 PFBA	Ave	1.122	1.134		10.1	10.0	1.1	30.0
13C5 PFPeA	Ave	1.238	1.262		10.2	10.0	1.9	30.0
13C3 PFBS	Ave	1.425	1.384		9.09	9.36	-2.9	30.0
M2-4:2 FTS	Ave	0.1492	0.1597		10.0	9.34	7.1	30.0
13C5 PFHxA	Ave	1.362	1.363		10.0	10.0	0.0	30.0
13C3 HFPO-DA	Ave	0.0172	0.0164		9.56	10.0	-4.4	30.0
13C3 PFHxS	Ave	0.9877	1.004		9.61	9.46	1.6	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-166713/5 Calibration Date: 08/31/2021 23:40

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-07.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.407	1.469		10.4	10.0	4.4	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	0.9734	1.007		10.3	10.0	3.5	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0433	0.0439		10.1	10.0	1.4	30.0
M2-6:2 FTS	Ave	0.0731	0.0807		10.5	9.50	10.3	30.0
13C8 PFOA	Ave	1.218	1.283		10.5	10.0	5.4	30.0
13C8 PFOS	Ave	1.008	1.008		9.56	9.57	-0.0	30.0
13C9 PFNA	Ave	0.8060	0.8071		10.0	10.0	0.1	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.7298	0.7504		10.3	10.0	2.8	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0239	0.0256		10.7	10.0	7.1	30.0
13C6 PFDA	Ave	1.005	1.033		10.3	10.0	2.8	30.0
M2-8:2 FTS	Ave	0.0459	0.0444		9.26	9.58	-3.3	30.0
13C8 FOSA	Ave	1.506	1.518		10.1	10.0	0.8	30.0
d3-NMeFOSAA	Ave	0.2754	0.2713		9.85	10.0	-1.5	30.0
13C7 PFUnA	Ave	1.193	1.223		10.2	10.0	2.5	30.0
d5-NEtFOSAA	Ave	0.2135	0.2371		11.1	10.0	11.1	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	0.8027	0.8316		10.4	10.0	3.6	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0201	0.0213		10.6	10.0	5.5	30.0
13C2-PFDoDA	Ave	1.159	1.156		9.98	10.0	-0.2	30.0
d7-N-MeFOSE-M	Ave	0.1150	0.1083		9.42	10.0	-5.8	30.0
d3-NMePFOSA	Ave	0.1263	0.1272		10.1	10.0	0.7	30.0
d9-N-EtFOSE-M	Ave	0.1276	0.1254		9.83	10.0	-1.7	30.0
d5-NEtPFOSA	Ave	0.1148	0.1181		10.3	10.0	2.9	30.0
13C2 PFTeDA	Ave	0.8777	0.7987		9.10	10.0	-9.0	30.0
13C2 PFHxA	Ave	1.114	1.149		10.3	10.0	3.1	30.0
13C4 PFOA	Ave	1.257	1.333		10.6	10.0	6.0	30.0
13C2 PFUnA	Ave	1.462	1.533		10.5	10.0	4.8	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-166713/18 Calibration Date: 09/01/2021 02:04

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0740		7.77	8.00	-2.9	30.0
PPF Acid	LID1F		0.4569		8.10	8.00	1.3	30.0
PFMOAA	LID1F		0.2371		7.54	8.00	-5.8	30.0
Perfluorobutanoic acid	LID1F		0.8973		8.13	8.00	1.7	30.0
R-EVE	LID1F		0.0452		7.09	8.00	-11.4	30.0
R-PSDA	Q2ID		0.0141		8.30	8.00	3.7	30.0
Hydrolyzed PSDA	LID1F		0.0591		6.73	8.00	-15.8	30.0
PMPA	LID1F		0.2723		7.75	8.00	-3.2	30.0
Perfluoropropanesulfonic acid	LID1F		0.5097		7.11	7.33	-3.0	30.0
NVHOS	LID1F		0.2550		7.48	8.00	-6.5	30.0
PFECA F	LID1F		0.9157		8.21	8.00	2.6	30.0
PFO2HxA	LID1F		0.1187		7.59	8.00	-5.1	30.0
3:3 FTCA	LID1F		0.0557		7.70	8.00	-3.7	30.0
Perfluoropentanoic acid	LID1F		0.8906		7.88	8.00	-1.5	30.0
Perfluorobutanesulfonic acid	LID1F		1.175		6.88	7.08	-2.8	30.0
PEPA	LID1F		0.1148		8.29	8.00	3.6	30.0
PFECA A	LID1F		0.7567		7.80	8.00	-2.5	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.230		6.90	7.12	-3.0	30.0
PFECA B	LID1F		0.7521		7.94	8.00	-0.7	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.209		7.47	7.47	-0.0	30.0
Perfluorohexanoic acid	LID1F		0.8007		7.75	8.00	-3.1	30.0
Perfluoropentanesulfonic acid	LID1F		0.9416		7.16	7.50	-4.6	30.0
PFO3OA	LID1F		0.1034		8.55	8.00	6.9	30.0
HFPODA	LID1F		9.476		7.32	8.00	-8.5	30.0
Hydro-PS Acid	LID1F		1.816		7.85	8.00	-1.9	30.0
Hydro-EVE Acid	LID1F		1.610		7.96	8.00	-0.6	30.0
R-PSDCA	LID1F		2.134		7.79	8.00	-2.6	30.0
Perfluoroheptanoic acid	LID1F		0.997		8.18	8.00	2.2	30.0
Perfluorohexanesulfonic acid	LID1F		1.023		7.01	7.30	-3.9	30.0
DONA	LID1F		1.312		7.59	7.56	0.4	30.0
PFECA G	LID1F		1.708		8.50	8.00	6.2	30.0
5:3 FTCA	LID1F		0.1781		7.84	8.00	-2.0	30.0
6:2 FTUCA	LID1F		1.215		8.30	8.00	3.7	30.0
6:2 FTCA	LID1F		0.9805		7.38	8.00	-7.7	30.0
PFO4DA	LID1F		0.1041		8.72	8.00	9.0	30.0
PS Acid	LID1F		0.5408		7.47	8.00	-6.6	30.0
EVE Acid	LID1F		1.160		8.37	8.00	4.7	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.637		7.23	7.39	-2.2	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-166713/18 Calibration Date: 09/01/2021 02:04

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	LID1F		4.332		7.78	7.58	2.6	30.0
Perfluoroheptanesulfonic acid	LID1F		1.097		7.92	7.62	4.0	30.0
Perfluorooctanoic acid	LID1F		0.7961		7.34	8.00	-8.3	30.0
TAF	AveID	0.0672	0.0783		9.32	8.00	16.5	30.0
Perfluorooctanesulfonic acid	LID1F		1.076		7.30	7.40	-1.4	30.0
Perfluorononanoic acid	LID1F		0.9198		8.09	8.00	1.1	30.0
7:3 FTCA	LID1F		5.198		7.37	8.00	-7.9	30.0
8:2 FTUCA	LID1F		0.9777		8.10	8.00	1.2	30.0
8:2 FTCA	LID1F		0.9237		8.28	8.00	3.5	30.0
9Cl-PF3ONS	LID1F		1.733		7.39	7.44	-0.7	30.0
Perfluorononanesulfonic acid	LID1F		1.011		7.67	7.68	-0.0	30.0
Perfluorodecanoic acid	LID1F		0.8047		7.77	8.00	-2.9	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.711		8.26	7.66	7.7	30.0
Perfluorooctanesulfonamide	LID1F		0.9752		7.90	8.00	-1.3	30.0
NMeFOSAA	LID1F		0.8938		8.47	8.00	5.9	30.0
Perfluorodecanesulfonic acid	LID1F		0.8909		7.67	7.71	-0.6	30.0
Perfluoroundecanoic acid	LID1F		0.7734		7.58	8.00	-5.2	30.0
NEtFOSAA	LID1F		0.9297		7.47	8.00	-6.6	30.0
10:2 FTUCA	LID1F		0.8752		7.88	8.00	-1.5	30.0
11Cl-PF3OUdS	LID1F		1.167		7.35	7.44	-1.2	30.0
10:2 FTCA	LID1F		0.7596		7.76	8.00	-3.0	30.0
Perfluorododecanoic acid	LID1F		1.029		8.48	8.00	6.0	30.0
10:2 FTS	LID1F		5.892		7.47	7.71	-3.1	30.0
NMeFOSE	LID1F		1.033		7.72	8.00	-3.5	30.0
NMeFOSA	LID1F		1.020		7.82	8.00	-2.2	30.0
Perfluorododecanesulfonic acid	LID1F		0.8921		7.95	7.74	2.7	30.0
NEtFOSE	LID1F		1.084		8.81	8.00	10.2	30.0
NEtFOSA	LID1F		1.091		8.18	8.00	2.3	30.0
Perfluorotridecanoic acid	LID1F		0.8161		8.73	8.00	9.2	30.0
Perfluorotetradecanoic acid	LID1F		0.8756		7.68	8.00	-4.0	30.0
Perfluorohexadecanoic acid	LID1F		0.7503		8.52	8.00	6.5	30.0
Perfluorooctadecanoic acid	LID1F		0.3459		7.96	8.00	-0.5	30.0
13C4 PFBA	Ave	1.122	1.128		10.1	10.0	0.6	30.0
13C5 PFPeA	Ave	1.238	1.300		10.5	10.0	4.9	30.0
13C3 PFBS	Ave	1.425	1.440		9.46	9.36	1.1	30.0
M2-4:2 FTS	Ave	0.1492	0.1439		9.01	9.34	-3.5	30.0
13C5 PFHxA	Ave	1.362	1.281		9.41	10.0	-5.9	30.0
13C3 HFPO-DA	Ave	0.0172	0.0180		10.5	10.0	4.5	30.0
13C3 PFHxS	Ave	0.9877	0.9241		8.85	9.46	-6.4	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51537-1

SDG No.:

Lab Sample ID: CCV 410-166713/18 Calibration Date: 09/01/2021 02:04

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.407	1.326		9.43	10.0	-5.7	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	0.9734	0.9503		9.76	10.0	-2.4	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0433	0.0439		10.1	10.0	1.2	30.0
M2-6:2 FTS	Ave	0.0731	0.0747		9.71	9.50	2.2	30.0
13C8 PFOA	Ave	1.218	1.182		9.70	10.0	-3.0	30.0
13C8 PFOS	Ave	1.008	0.9723		9.23	9.57	-3.5	30.0
13C9 PFNA	Ave	0.8060	0.7944		9.86	10.0	-1.4	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.7298	0.7255		9.94	10.0	-0.6	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0239	0.0238		9.94	10.0	-0.6	30.0
13C6 PFDA	Ave	1.005	0.9935		9.89	10.0	-1.1	30.0
M2-8:2 FTS	Ave	0.0459	0.0450		9.40	9.58	-1.9	30.0
13C8 FOSA	Ave	1.506	1.518		10.1	10.0	0.8	30.0
d3-NMeFOSAA	Ave	0.2754	0.2681		9.73	10.0	-2.7	30.0
13C7 PFUnA	Ave	1.193	1.217		10.2	10.0	2.0	30.0
d5-NEtFOSAA	Ave	0.2135	0.2153		10.1	10.0	0.9	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	0.8027	0.7991		9.96	10.0	-0.4	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0201	0.0195		9.68	10.0	-3.2	30.0
13C2-PFDoDA	Ave	1.159	1.078		9.31	10.0	-6.9	30.0
d7-N-MeFOSE-M	Ave	0.1150	0.1123		9.76	10.0	-2.4	30.0
d3-NMePFOSA	Ave	0.1263	0.1293		10.2	10.0	2.3	30.0
d9-N-EtFOSE-M	Ave	0.1276	0.1199		9.40	10.0	-6.0	30.0
d5-NEtPFOSA	Ave	0.1148	0.1081		9.42	10.0	-5.8	30.0
13C2 PFTeDA	Ave	0.8777	0.8176		9.32	10.0	-6.8	30.0
13C2 PFHxA	Ave	1.114	1.048		9.41	10.0	-5.9	30.0
13C4 PFOA	Ave	1.257	1.234		9.82	10.0	-1.8	30.0
13C2 PFUnA	Ave	1.462	1.359		9.29	10.0	-7.1	30.0

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-162732/1-A

Matrix: Water Lab File ID: 21AUG31-08.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 08/31/2021 23:51

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		2.0	0.50
375-85-9	Perfluoroheptanoic acid	ND		2.0	0.50
335-67-1	Perfluorooctanoic acid	ND		2.0	0.50
375-95-1	Perfluorononanoic acid	ND		2.0	0.50
335-76-2	Perfluorodecanoic acid	ND		2.0	0.50
72629-94-8	Perfluorotridecanoic acid	ND		2.0	0.50
376-06-7	Perfluorotetradecanoic acid	ND		2.0	0.50
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.50
355-46-4	Perfluorohexanesulfonic acid	ND		2.0	0.50
1763-23-1	Perfluorooctanesulfonic acid	0.531	J	2.0	0.50
2991-50-6	NEtFOSAA	ND		3.0	0.50
2355-31-9	NMeFOSAA	ND		2.0	0.60
307-55-1	Perfluorododecanoic acid	ND		2.0	0.50
13252-13-6	HFPODA	ND		3.0	0.50
756426-58-1	9Cl-PF3ONS	ND		2.0	0.50
763051-92-9	11Cl-PF3OUdS	ND		2.0	0.50
919005-14-4	DONA	ND		2.0	0.50
2058-94-8	Perfluoroundecanoic acid	ND		2.0	0.50

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-162732/1-A

Matrix: Water Lab File ID: 21AUG31-08.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 08/31/2021 23:51

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	82		31-142
STL01892	13C4 PFHpA	85		30-144
STL01052	13C8 PFOA	92		49-127
STL02578	13C9 PFNA	88		47-136
STL02579	13C6 PFDA	88		47-128
STL02703	13C2-PFDoDA	85		28-136
STL02116	13C2 PFTeDA	81		10-144
STL02337	13C3 PFBS	99		19-178
STL02581	13C3 PFHxS	77		32-145
STL01054	13C8 PFOS	84		49-126
STL02118	d3-NMeFOSAA	84		32-151
STL02117	d5-NEtFOSAA	90		37-164
STL02255	13C3 HFPO-DA	92		20-153
STL02580	13C7 PFUnA	90		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-167381/1-A

Matrix: Water Lab File ID: 21SEP03-15.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 250(mL) Date Analyzed: 09/03/2021 14:49

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	*Perfluorohexanoic acid*	*ND*		*2.0*	*0.50*
375-85-9	*Perfluoroheptanoic acid*	*ND*		*2.0*	*0.50*
335-67-1	*Perfluorooctanoic acid*	*ND*		*2.0*	*0.50*
375-95-1	*Perfluorononanoic acid*	*ND*		*2.0*	*0.50*
335-76-2	*Perfluorodecanoic acid*	*ND*		*2.0*	*0.50*
72629-94-8	*Perfluorotridecanoic acid*	*ND*		*2.0*	*0.50*
376-06-7	*Perfluorotetradecanoic acid*	*ND*		*2.0*	*0.50*
375-73-5	*Perfluorobutanesulfonic acid*	*ND*		*2.0*	*0.50*
355-46-4	*Perfluorohexanesulfonic acid*	*ND*		*2.0*	*0.50*
1763-23-1	*Perfluorooctanesulfonic acid*	*ND*		*2.0*	*0.50*
2991-50-6	*NEtFOSAA*	*ND*		*3.0*	*0.50*
2355-31-9	*NMeFOSAA*	*ND*		*2.0*	*0.60*
307-55-1	*Perfluorododecanoic acid*	*ND*		*2.0*	*0.50*
13252-13-6	*HFPODA*	*ND*		*3.0*	*0.50*
756426-58-1	*9Cl-PF3ONS*	*ND*		*2.0*	*0.50*
763051-92-9	*11Cl-PF3OUdS*	*ND*		*2.0*	*0.50*
919005-14-4	*DONA*	*ND*		*2.0*	*0.50*
2058-94-8	*Perfluoroundecanoic acid*	*ND*		*2.0*	*0.50*

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-167381/1-A

Matrix: Water Lab File ID: 21SEP03-15.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 250(mL) Date Analyzed: 09/03/2021 14:49

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	123		31-142
STL01892	13C4 PFHpA	122		30-144
STL01052	13C8 PFOA	122		49-127
STL02578	13C9 PFNA	116		47-136
STL02579	13C6 PFDA	117		47-128
STL02703	13C2-PFDoDA	108		28-136
STL02116	13C2 PFTeDA	112		10-144
STL02337	13C3 PFBS	118		19-178
STL02581	13C3 PFHxS	127		32-145
STL01054	13C8 PFOS	112		49-126
STL02118	d3-NMeFOSAA	119		32-151
STL02117	d5-NEtFOSAA	144		37-164
STL02255	13C3 HFPO-DA	99		20-153
STL02580	13C7 PFUnA	119		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-165786/8

Matrix: Water Lab File ID: 21AUG30MCAL-09.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 1(uL) Date Analyzed: 08/30/2021 07:48

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165786 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		0.50	0.13
375-85-9	Perfluoroheptanoic acid	ND		0.50	0.13
335-67-1	Perfluorooctanoic acid	ND		0.50	0.13
375-95-1	Perfluorononanoic acid	ND		0.50	0.13
335-76-2	Perfluorodecanoic acid	ND		0.50	0.13
72629-94-8	Perfluorotridecanoic acid	ND		0.50	0.13
376-06-7	Perfluorotetradecanoic acid	ND		0.50	0.13
375-73-5	Perfluorobutanesulfonic acid	ND		0.50	0.13
355-46-4	Perfluorohexanesulfonic acid	ND		0.50	0.13
1763-23-1	Perfluorooctanesulfonic acid	ND		0.50	0.13
2991-50-6	NEtFOSAA	ND		1.3	0.13
2355-31-9	NMeFOSAA	ND		0.50	0.15
307-55-1	Perfluorododecanoic acid	ND		0.50	0.13
13252-13-6	HFPODA	ND		0.75	0.13
756426-58-1	9Cl-PF3ONS	ND		0.50	0.13
763051-92-9	11Cl-PF3OUdS	ND		0.50	0.13
919005-14-4	DONA	ND		0.50	0.13
2058-94-8	Perfluoroundecanoic acid	ND		0.50	0.13

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-165786/8

Matrix: Water Lab File ID: 21AUG30MCAL-09.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 1(uL) Date Analyzed: 08/30/2021 07:48

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165786 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	108		31-142
STL01892	13C4 PFHpA	101		30-144
STL01052	13C8 PFOA	115		49-127
STL02578	13C9 PFNA	107		47-136
STL02579	13C6 PFDA	113		47-128
STL02703	13C2-PFDoDA	112		28-136
STL02116	13C2 PFTeDA	103		10-144
STL02337	13C3 PFBS	114		19-178
STL02581	13C3 PFHxS	103		32-145
STL01054	13C8 PFOS	103		49-126
STL02118	d3-NMeFOSAA	105		32-151
STL02117	d5-NEtFOSAA	122		37-164
STL02255	13C3 HFPO-DA	111		20-153
STL02580	13C7 PFUnA	114		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-166660/8

Matrix: Water Lab File ID: 21AUG31MCAL-20.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 0(mL) Date Analyzed: 08/31/2021 21:38

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166660 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		0.50	0.13
375-85-9	Perfluoroheptanoic acid	ND		0.50	0.13
335-67-1	Perfluorooctanoic acid	ND		0.50	0.13
375-95-1	Perfluorononanoic acid	ND		0.50	0.13
335-76-2	Perfluorodecanoic acid	ND		0.50	0.13
72629-94-8	Perfluorotridecanoic acid	ND		0.50	0.13
376-06-7	Perfluorotetradecanoic acid	0.144	J	0.50	0.13
375-73-5	Perfluorobutanesulfonic acid	ND		0.50	0.13
355-46-4	Perfluorohexanesulfonic acid	ND		0.50	0.13
1763-23-1	Perfluorooctanesulfonic acid	ND		0.50	0.13
2991-50-6	NEtFOSAA	0.361	J	1.3	0.13
2355-31-9	NMeFOSAA	0.278	J	0.50	0.15
307-55-1	Perfluorododecanoic acid	ND		0.50	0.13
13252-13-6	HFPODA	ND		0.75	0.13
756426-58-1	9Cl-PF3ONS	ND		0.50	0.13
763051-92-9	11Cl-PF3OUdS	ND		0.50	0.13
919005-14-4	DONA	ND		0.50	0.13
2058-94-8	Perfluoroundecanoic acid	ND		0.50	0.13

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-166660/8

Matrix: Water Lab File ID: 21AUG31MCAL-20.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 0(mL) Date Analyzed: 08/31/2021 21:38

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166660 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	108		31-142
STL01892	13C4 PFHpA	110		30-144
STL01052	13C8 PFOA	117		49-127
STL02578	13C9 PFNA	111		47-136
STL02579	13C6 PFDA	111		47-128
STL02703	13C2-PFDoDA	110		28-136
STL02116	13C2 PFTeDA	100		10-144
STL02337	13C3 PFBS	123		19-178
STL02581	13C3 PFHxS	100		32-145
STL01054	13C8 PFOS	110		49-126
STL02118	d3-NMeFOSAA	102		32-151
STL02117	d5-NEtFOSAA	113		37-164
STL02255	13C3 HFPO-DA	112		20-153
STL02580	13C7 PFUnA	114		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 410-162732/2-A

Matrix: Water Lab File ID: 21AUG31-09.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 09/01/2021 00:02

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	27.5		2.0	0.50
375-85-9	Perfluoroheptanoic acid	27.4		2.0	0.50
335-67-1	Perfluorooctanoic acid	25.6		2.0	0.50
375-95-1	Perfluorononanoic acid	28.4		2.0	0.50
335-76-2	Perfluorodecanoic acid	28.2		2.0	0.50
72629-94-8	Perfluorotridecanoic acid	30.0		2.0	0.50
376-06-7	Perfluorotetradecanoic acid	27.8		2.0	0.50
375-73-5	Perfluorobutanesulfonic acid	21.3		2.0	0.50
355-46-4	Perfluorohexanesulfonic acid	24.9		2.0	0.50
1763-23-1	Perfluorooctanesulfonic acid	25.8		2.0	0.50
2991-50-6	NEtFOSAA	26.0		3.0	0.50
2355-31-9	NMeFOSAA	27.0		2.0	0.60
307-55-1	Perfluorododecanoic acid	28.6		2.0	0.50
13252-13-6	HFPODA	24.6		3.0	0.50
756426-58-1	9Cl-PF3ONS	25.5		2.0	0.50
763051-92-9	11Cl-PF3OUdS	24.5		2.0	0.50
919005-14-4	DONA	24.0		2.0	0.50
2058-94-8	Perfluoroundecanoic acid	28.5		2.0	0.50

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 410-162732/2-A

Matrix: Water Lab File ID: 21AUG31-09.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 09/01/2021 00:02

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	87		31-142
STL01892	13C4 PFHpA	87		30-144
STL01052	13C8 PFOA	91		49-127
STL02578	13C9 PFNA	89		47-136
STL02579	13C6 PFDA	86		47-128
STL02703	13C2-PFDoDA	82		28-136
STL02116	13C2 PFTeDA	78		10-144
STL02337	13C3 PFBS	98		19-178
STL02581	13C3 PFHxS	82		32-145
STL01054	13C8 PFOS	88		49-126
STL02118	d3-NMeFOSAA	87		32-151
STL02117	d5-NEtFOSAA	85		37-164
STL02255	13C3 HFPO-DA	85		20-153
STL02580	13C7 PFUnA	90		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 410-167381/2-A

Matrix: Water Lab File ID: 21SEP03-16.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 250(mL) Date Analyzed: 09/03/2021 14:59

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	*Perfluorohexanoic acid*	*26.3*		*2.0*	*0.50*
375-85-9	*Perfluoroheptanoic acid*	*24.0*		*2.0*	*0.50*
335-67-1	*Perfluorooctanoic acid*	*24.7*		*2.0*	*0.50*
375-95-1	*Perfluorononanoic acid*	*25.1*		*2.0*	*0.50*
335-76-2	*Perfluorodecanoic acid*	*27.0*		*2.0*	*0.50*
72629-94-8	*Perfluorotridecanoic acid*	*26.0*		*2.0*	*0.50*
376-06-7	*Perfluorotetradecanoic acid*	*30.1*		*2.0*	*0.50*
375-73-5	*Perfluorobutanesulfonic acid*	*18.7*		*2.0*	*0.50*
355-46-4	*Perfluorohexanesulfonic acid*	*20.2*		*2.0*	*0.50*
1763-23-1	*Perfluorooctanesulfonic acid*	*21.8*		*2.0*	*0.50*
2991-50-6	*NEtFOSAA*	*23.6*		*3.0*	*0.50*
2355-31-9	*NMeFOSAA*	*25.8*		*2.0*	*0.60*
307-55-1	*Perfluorododecanoic acid*	*25.5*		*2.0*	*0.50*
13252-13-6	*HFPODA*	*22.7*		*3.0*	*0.50*
756426-58-1	*9Cl-PF3ONS*	*22.2*		*2.0*	*0.50*
763051-92-9	*11Cl-PF3OUdS*	*21.6*		*2.0*	*0.50*
919005-14-4	*DONA*	*26.4*		*2.0*	*0.50*
2058-94-8	*Perfluoroundecanoic acid*	*26.5*		*2.0*	*0.50*

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 410-167381/2-A

Matrix: Water Lab File ID: 21SEP03-16.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 250(mL) Date Analyzed: 09/03/2021 14:59

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	120		31-142
STL01892	13C4 PFHpA	118		30-144
STL01052	13C8 PFOA	117		49-127
STL02578	13C9 PFNA	122		47-136
STL02579	13C6 PFDA	120		47-128
STL02703	13C2-PFDoDA	126		28-136
STL02116	13C2 PFTeDA	113		10-144
STL02337	13C3 PFBS	125		19-178
STL02581	13C3 PFHxS	126		32-145
STL01054	13C8 PFOS	119		49-126
STL02118	d3-NMeFOSAA	136		32-151
STL02117	d5-NEtFOSAA	142		37-164
STL02255	13C3 HFPO-DA	118		20-153
STL02580	13C7 PFUnA	124		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 410-167381/3-A

Matrix: Water Lab File ID: 21SEP03-17.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 250(mL) Date Analyzed: 09/03/2021 15:10

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	*Perfluorohexanoic acid*	*27.6*		*2.0*	*0.50*
375-85-9	*Perfluoroheptanoic acid*	*24.3*		*2.0*	*0.50*
335-67-1	*Perfluorooctanoic acid*	*23.7*		*2.0*	*0.50*
375-95-1	*Perfluorononanoic acid*	*26.7*		*2.0*	*0.50*
335-76-2	*Perfluorodecanoic acid*	*24.2*		*2.0*	*0.50*
72629-94-8	*Perfluorotridecanoic acid*	*26.6*		*2.0*	*0.50*
376-06-7	*Perfluorotetradecanoic acid*	*27.1*		*2.0*	*0.50*
375-73-5	*Perfluorobutanesulfonic acid*	*20.2*		*2.0*	*0.50*
355-46-4	*Perfluorohexanesulfonic acid*	*21.7*		*2.0*	*0.50*
1763-23-1	*Perfluorooctanesulfonic acid*	*21.4*		*2.0*	*0.50*
2991-50-6	*NEtFOSAA*	*24.3*		*3.0*	*0.50*
2355-31-9	*NMeFOSAA*	*27.5*		*2.0*	*0.60*
307-55-1	*Perfluorododecanoic acid*	*25.1*		*2.0*	*0.50*
13252-13-6	*HFPODA*	*27.1*		*3.0*	*0.50*
756426-58-1	*9Cl-PF3ONS*	*23.2*		*2.0*	*0.50*
763051-92-9	*11Cl-PF3OUdS*	*22.6*		*2.0*	*0.50*
919005-14-4	*DONA*	*27.7*		*2.0*	*0.50*
2058-94-8	*Perfluoroundecanoic acid*	*27.9*		*2.0*	*0.50*

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 410-167381/3-A

Matrix: Water Lab File ID: 21SEP03-17.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 09/02/2021 10:30

Sample wt/vol: 250(mL) Date Analyzed: 09/03/2021 15:10

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 7(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 167868 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	121		31-142
STL01892	13C4 PFHpA	111		30-144
STL01052	13C8 PFOA	127		49-127
STL02578	13C9 PFNA	115		47-136
STL02579	13C6 PFDA	121		47-128
STL02703	13C2-PFDoDA	112		28-136
STL02116	13C2 PFTeDA	109		10-144
STL02337	13C3 PFBS	124		19-178
STL02581	13C3 PFHxS	118		32-145
STL01054	13C8 PFOS	117		49-126
STL02118	d3-NMeFOSAA	117		32-151
STL02117	d5-NEtFOSAA	130		37-164
STL02255	13C3 HFPO-DA	103		20-153
STL02580	13C7 PFUnA	110		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-12-GW-210813 MS Lab Sample ID: 410-51537-1 MS

Matrix: Water Lab File ID: 21AUG31-11.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 08:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 275.6(mL) Date Analyzed: 09/01/2021 00:24

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	26.3		1.8	0.45
375-85-9	Perfluoroheptanoic acid	25.9		1.8	0.45
335-67-1	Perfluorooctanoic acid	24.3		1.8	0.45
375-95-1	Perfluorononanoic acid	26.5		1.8	0.45
335-76-2	Perfluorodecanoic acid	25.5		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	29.6		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	25.4		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	19.7		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	23.5		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	23.4		1.8	0.45
2991-50-6	NEtFOSAA	23.0		2.7	0.45
2355-31-9	NMeFOSAA	23.8		1.8	0.54
307-55-1	Perfluorododecanoic acid	26.5		1.8	0.45
13252-13-6	HFPODA	27.7		2.7	0.45
756426-58-1	9Cl-PF3ONS	23.7		1.8	0.45
763051-92-9	11Cl-PF3OUdS	23.4		1.8	0.45
919005-14-4	DONA	22.6		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	25.8		1.8	0.45

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-12-GW-210813 MS Lab Sample ID: 410-51537-1 MS

Matrix: Water Lab File ID: 21AUG31-11.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 08:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 275.6(mL) Date Analyzed: 09/01/2021 00:24

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	84		31-142
STL01892	13C4 PFHpA	86		30-144
STL01052	13C8 PFOA	92		49-127
STL02578	13C9 PFNA	89		47-136
STL02579	13C6 PFDA	86		47-128
STL02703	13C2-PFDoDA	73		28-136
STL02116	13C2 PFTeDA	71		10-144
STL02337	13C3 PFBS	104		19-178
STL02581	13C3 PFHxS	84		32-145
STL01054	13C8 PFOS	87		49-126
STL02118	d3-NMeFOSAA	87		32-151
STL02117	d5-NEtFOSAA	86		37-164
STL02255	13C3 HFPO-DA	81		20-153
STL02580	13C7 PFUnA	85		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-12-GW-210813 MSD Lab Sample ID: 410-51537-1 MSD

Matrix: Water Lab File ID: 21AUG31-12.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 08:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 278(mL) Date Analyzed: 09/01/2021 00:35

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	26.2		1.8	0.45
375-85-9	Perfluoroheptanoic acid	24.7		1.8	0.45
335-67-1	Perfluorooctanoic acid	23.4		1.8	0.45
375-95-1	Perfluorononanoic acid	25.3		1.8	0.45
335-76-2	Perfluorodecanoic acid	25.7		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	28.3		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	25.1		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	19.4		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	23.8		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	23.0		1.8	0.45
2991-50-6	NEtFOSAA	22.6		2.7	0.45
2355-31-9	NMeFOSAA	24.9		1.8	0.54
307-55-1	Perfluorododecanoic acid	25.6		1.8	0.45
13252-13-6	HFPODA	24.9		2.7	0.45
756426-58-1	9Cl-PF3ONS	23.4		1.8	0.45
763051-92-9	11Cl-PF3OUdS	22.4		1.8	0.45
919005-14-4	DONA	22.1		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	25.1		1.8	0.45

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51537-1

SDG No.:

Client Sample ID: CMW-12-GW-210813 MSD Lab Sample ID: 410-51537-1 MSD

Matrix: Water Lab File ID: 21AUG31-12.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 08:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 278(mL) Date Analyzed: 09/01/2021 00:35

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	86		31-142
STL01892	13C4 PFHpA	88		30-144
STL01052	13C8 PFOA	93		49-127
STL02578	13C9 PFNA	92		47-136
STL02579	13C6 PFDA	89		47-128
STL02703	13C2-PFDoDA	75		28-136
STL02116	13C2 PFTeDA	75		10-144
STL02337	13C3 PFBS	113		19-178
STL02581	13C3 PFHxS	86		32-145
STL01054	13C8 PFOS	91		49-126
STL02118	d3-NMeFOSAA	86		32-151
STL02117	d5-NEtFOSAA	84		37-164
STL02255	13C3 HFPO-DA	87		20-153
STL02580	13C7 PFUnA	89		40-135

PFAS BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratories | Job No.: 410-51537-1

SDG No.:

Batch Number: 162732 | Batch Start Date: 08/20/21 07:20 | Batch Analyst: Barnhart, Toby B

Batch Method: 537 IDA | Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC_MS_MODWX 00079	PFC_SS_MODX 00126
MB 410-162732/1		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL		25 uL
LCS 410-162732/2		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL	40 uL	25 uL
410-51537-A-1	CMW-12-GW-210813	537 IDA, 537 IDA	T	309.42 g	28.13 g	281.3 mL	1 mL		25 uL
410-51537-A-1 MS	CMW-12-GW-210813	537 IDA, 537 IDA	T	304.67 g	29.03 g	275.6 mL	1 mL	40 uL	25 uL
410-51537-A-1 MSD	CMW-12-GW-210813	537 IDA, 537 IDA	T	307.24 g	29.22 g	278 mL	1 mL	40 uL	25 uL
410-51537-A-2	CMW-17-GW-210813	537 IDA, 537 IDA	T	276.18 g	29.16 g	247 mL	1 mL		25 uL
410-51537-A-3	CMW-56-GW-210813	537 IDA, 537 IDA	T	277.16 g	29.41 g	247.8 mL	1 mL		25 uL
410-51537-A-4	CMW-28-GW-210813	537 IDA, 537 IDA	T	297.02 g	29.70 g	267.3 mL	1 mL		25 uL
410-51537-A-5	BD-1-GW-210813	537 IDA, 537 IDA	T	306.96 g	29.46 g	277.5 mL	1 mL		25 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 410-162732/1		537 IDA, 537 IDA							
LCS 410-162732/2		537 IDA, 537 IDA							
410-51537-A-1	CMW-12-GW-210813	537 IDA, 537 IDA	T	Vacuum applied					
410-51537-A-1 MS	CMW-12-GW-210813	537 IDA, 537 IDA	T	Vacuum applied					
410-51537-A-1 MSD	CMW-12-GW-210813	537 IDA, 537 IDA	T	Vacuum applied					
410-51537-A-2	CMW-17-GW-210813	537 IDA, 537 IDA	T	discolored, particulate, centrifuged, full vacuum applied, limited sample					
410-51537-A-3	CMW-56-GW-210813	537 IDA, 537 IDA	T	discolored, particulate, centrifuged, vacuum applied, limited sample					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

PFAS BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratories | Job No.: 410-51537-1

SDG No.:

Batch Number: 162732 | Batch Start Date: 08/20/21 07:20 | Batch Analyst: Barnhart, Toby B

Batch Method: 537 IDA | Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
410-51537-A-4	CMW-28-GW-210813	537 IDA, 537 IDA	T	discolored, particulate, centrifuged, vacuum applied					
410-51537-A-5	BD-1-GW-210813	537 IDA, 537 IDA	T	vacuum applied					

Batch Notes	
Balance ID	B629764122
Collection Tube Witness	DC 20115
H2O ID	HouseA372
Manifold ID	16
Methanol ID	211800
Pipette/Syringe/Dispenser ID	PFAS 6,7
Solvent Lot #	4084708202133A, 4084708192133A
Solvent Name	.3% NH4OH in MeOH, 1:1 ACN:MeOH
SPE Cartridge Lot ID	6551874-01

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 410-162732
Analyst: Barnhart, Toby B
Batch Open: 8/20/2021 7:20:00AM
Method Code: 410-3535_PFC-410
Batch End: B410-162732

8/24

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~410-162732/1 N/A	N/A	300 g 50 g	250 mL 1 mL				N/A	N/A	N/A		MB 410-162732/1-A
2	LCS~410-162732/2 N/A	N/A	300 g 50 g	250 mL 1 mL				N/A	N/A	N/A		LCS 410-162732/2-A
3	410-51537-A-1 (PFC_IDA)	N/A (410-51537-1)	309.42 g 28.13 g	281.3 mL 1 mL				8/20/21	7_Days	2	Vacuum applied	410-51537-A-1-A
	410-51537-A-1~MS (PFC_IDA)	N/A (410-51537-1)	304.67 g 29.03 g	275.6 mL 1 mL				8/20/21	7_Days	2	Vacuum applied	410-51537-A-1-B MS
	410-51537-A-1~MSD (PFC_IDA)	N/A (410-51537-1)	307.24 g 29.22 g	278 mL 1 mL				8/20/21	7_Days	2	Vacuum applied	410-51537-A-1-C MSD
6	410-51537-A-2 (PFC_IDA)	N/A (410-51537-1)	276.18 g 29.16 g	247 mL 1 mL				8/20/21	7_Days	2	discolored, particulate, centrifuged, full vacuum applied, limited sample	410-51537-A-2-A
7	410-51537-A-3 (PFC_IDA)	N/A (410-51537-1)	277.16 g 29.41 g	247.8 mL 1 mL				8/20/21	7_Days	2	discolored, particulate, centrifuged, vacuum applied, limited sample	410-51537-A-3-A
8	410-51537-A-4 (PFC_IDA)	N/A (410-51537-1)	297.02 g 29.70 g	267.3 mL 1 mL				8/20/21	7_Days	2	discolored, particulate, centrifuged, vacuum applied	410-51537-A-4-A

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Printed: 8/20/2021

N-EVAP A 40°C EBG 20094 8/22/21
Reconstitution ETB 316954 8/22/21

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 410-162732 Analyst: Barnhart, Toby B Batch Open: 8/20/2021 7:20:00AM

Method Code: 410-3535_PFC-410 Batch End:

9	410-51537-A-5 (PFC_IDA)	N/A (410-51537-1)	306.96 g 29.46 g	277.5 mL 1 mL				8/20/21	7_Days	2	vacuum applied	
10	410-51558-A-1 (PFC_IDA)	N/A (410-51558-1)	272.56 g 28.13 g	244.4 mL 1 mL				8/20/21	7_Days	2	limited sample	
11	410-51558-A-2 (PFC_IDA)	N/A (410-51558-1)	268.90 g 28.36 g	240.5 mL 1 mL				8/20/21	7_Days	2	limited sample	
12	410-51558-A-3 (PFC_IDA)	N/A (410-51558-1)	275.18 g 27.28 g	247.9 mL 1 mL				8/20/21	7_Days	2	limited sample	
13	410-51558-A-4 (PFC_IDA)	N/A (410-51558-1)	308.16 g 28.02 g	280.1 mL 1 mL				8/20/21	7_Days	2		
14	410-51558-A-5 (PFC_IDA)	N/A (410-51558-1)	307.14 g 28.16 g	279 mL 1 mL				8/20/21	7_Days	2		
15	410-51558-A-6 (PFC_IDA)	N/A (410-51558-1)	304.41 g 28.08 g	276.3 mL 1 mL				8/20/21	7_Days	2		
16	410-51558-A-7 (PFC_IDA)	N/A (410-51558-1)	304.10 g 28.21 g	275.9 mL 1 mL				8/20/21	7_Days	2		
17	410-51558-A-8 (PFC_IDA)	N/A (410-51558-1)	308.16 g 27.89 g	280.3 mL 1 mL				8/20/21	7_Days	2		
18	410-51558-A-9 (PFC_IDA)	N/A (410-51558-1)	305.00 g 28.08 g	276.9 mL 1 mL				8/20/21	7_Days	2		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 410-162732 Analyst: Barnhart, Toby B Batch Open: 8/20/2021 7:20:00AM

Method Code: 410-3535_PFC-410 Batch End:

Batch Notes

pH Indicator ID	
Manifold ID	16
First Start time	
First End time	
SPE Cartridge Type	
SPE Cartridge Lot ID	6551874-01
SPE Disk Type	
Solid Phase Extraction Disk ID	
Balance ID	B629764122
Pipette/Syringe/Dispenser ID	PFAS 6,7
Na2SO4 ID	
Methanol ID	211800
Hexane ID	
Sodium Hydroxide ID	
H2O ID	HouseA372
Solvent Name	.3% NH4OH in MeOH, 1:1 ACN:MeOH
Solvent Lot #	4084708202133A, 4084708192133A
Rinse Solvent Name	
Rinse Solvent Lot	
Acid Name	
Acid ID	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 410-162732 Analyst: Barnhart, Toby B Batch Open: 8/20/2021 7:20:00AM

Method Code: 410-3535_PFC-410 Batch End:

Analyst ID - Reagent Drop	
Analyst ID - IS Reagent Drop	
Analyst ID - IS Reagent Drop Witness	
Collection Tube Witness	DC 20115
Batch Comment	

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 410-162732
Method Code: 410-3535_PFC-410

Analyst: Barnhart, Toby B

Batch Open: 8/20/2021 7:20:00AM
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 410-162732/1	PFC_SS_MODX_00126	25 uL	1 mL		
LCS 410-162732/2	PFC_MS_MODWX_00079	40 uL	1 mL		
LCS 410-162732/2	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-1	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-1 MS	PFC_MS_MODWX_00079	40 uL	1 mL		
410-51537-A-1 MS	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-1 MSD	PFC_MS_MODWX_00079	40 uL	1 mL		
410-51537-A-1 MSD	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-2	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-3	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-4	PFC_SS_MODX_00126	25 uL	1 mL		
410-51537-A-5	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-1	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-2	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-3	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-4	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-5	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-6	PFC_SS_MODX_00126	25 uL	1 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 410-162732 Analyst: Barnhart, Toby B Batch Open: 8/20/2021 7:20:00AM

Method Code: 410-3535_PFC-410 Batch End:

410-51558-A-7	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-8	PFC_SS_MODX_00126	25 uL	1 mL		
410-51558-A-9	PFC_SS_MODX_00126	25 uL	1 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:
Internal Standard	20uL	PFC-ISmod-00177

PFAS BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratories | Job No.: 410-51537-1

SDG No.:

Batch Number: 167381 | Batch Start Date: 09/02/21 10:30 | Batch Analyst: Hammen, Sarah

Batch Method: 537 IDA | Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC_MS_MODWX 00081	PFC_SS_MODX 00134
MB 410-167381/1		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL		25 uL
LCS 410-167381/2		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL	40 uL	25 uL
LCSD 410-167381/3		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL	40 uL	25 uL
410-51537-B-2	CMW-17-GW-210813	537 IDA, 537 IDA	T	274.29 g	29.31 g	245 mL	1 mL		25 uL
410-51537-B-4	CMW-28-GW-210813	537 IDA, 537 IDA	T	295.24 g	29.62 g	265.6 mL	1 mL		25 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 410-167381/1		537 IDA, 537 IDA							
LCS 410-167381/2		537 IDA, 537 IDA							
LCSD 410-167381/3		537 IDA, 537 IDA							
410-51537-B-2	CMW-17-GW-210813	537 IDA, 537 IDA	T	Discolored, particulate. Vacuum Was Applied. Limited Sample Given					
410-51537-B-4	CMW-28-GW-210813	537 IDA, 537 IDA	T	Discolored, particulate. Vacuum Was Applied					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

PFAS BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratories | Job No.: 410-51537-1

SDG No.:

Batch Number: 167381 | Batch Start Date: 09/02/21 10:30 | Batch Analyst: Hammen, Sarah

Batch Method: 537 IDA | Batch End Date:

Batch Notes	
Balance ID	C046502696
Collection Tube Witness	NF 33365
H2O ID	House A372
Manifold ID	7
Methanol ID	EB577-US
Pipette/Syringe/Dispenser ID	PFAS 6, 7
Analyst ID - IS Reagent Drop Witness	SR 40847
Solvent Lot #	3317609012133A, 1984309022133A
Solvent Name	.3% NH4OH in MeOH, 1:1 ACN:MeOH
SPE Cartridge Lot ID	6509790-03

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

B. SAMPLE DELIVERY GROUP 410-51558-1

ENVIRONMENTAL STANDARDS

ORGANIC ANALYSIS SUPPORT DOCUMENTATION

Client Name:	Chevron EMC	EnvStd Project Manager:	STZ
Site/Project Name:	Former Chevron Kenai DV	Reviewed by:	STZ
Job Number/Task/Subtask:	20219586.A000	Approved by:	THW
Laboratory/Location:	Eurofins Lancaster Laboratories	Completion Date:	10/2021
SDG:	410-51558-1	Validation Level:	Stage 4
Sample Collection Dates:	8/13/2021		

The following table indicates criteria that were examined, the identified problems, and support documentation attachments.

	Criteria Examined in Detail **Note:** All items examined have been included in the Support Document unless otherwise noted.							Problems Identified						
	Check (√) if Yes or Footnote Letter for Comments Below													
Parameter/ Method	PFAS*							PFAS*						
Condition upon Receipt	X													
Sample Preservation	X													
Holding Times	X													
Blank Analysis Results	X													
Surrogates	X													
Laboratory Control Sample	X													
Matrix Spike/Matrix Spike Duplicate														
Laboratory Duplicate														
Field Duplicate														
Sample Preparation	X													
Detection Limit/Sensitivity	X													
Mass Tuning	X													
GC Instrument Performance – Resolution Checks and DDT/Endrin Breakdown														
Initial Calibrations	X													
Continuing Calibrations	X													
Internal Standard Performance	X													
Retention Time Shifts	X													
Quantitation of Results	X													
Qualitative Identification: Targets	X													
Qualitative Identification: TICs														
Multiple Dilutions/Analyses														
Analytical Sequence	X													
GC Column Agreement	X													
Manual Integration	X													
Percent Solids														
Extract Cleanup Documentation, Checks, and Calibrations														
Deliverable was Complete	X													
Others:														

Comments: Qualitative Identification, Quantitation of Results, and Manual Integrations are not included in the Support Documentation unless a problem was identified.

* laboratory SOP.

Only Equipment Blank and Field Blank samples in this SDG.

Job Number: 410-51558-1

Job Description: CEMC Former Kenai Refinery

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

Job Narrative
410-51558-1

Receipt
The samples were received on 8/17/2021 10:32 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C

PFAS
Method PFC_IDA: Reporting limits were raised for the following samples: EB-1-W-2108 (410-51558-1), EB-2-W-2108 (410-51558-2) and EB-3-W-2108 (410-51558-3) due to limited sample volume.

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

Sample Summary

Client: ARCADIS U.S. Inc
Job ID: 410-51558-1
Project/Site: CEMC Former Kenai Refinery

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-51558-1	EB-1-W-2108	Water	08/13/21 07:25	08/17/21 10:32
410-51558-2	EB-2-W-2108	Water	08/13/21 07:30	08/17/21 10:32
410-51558-3	EB-3-W-2108	Water	08/13/21 10:50	08/17/21 10:32
410-51558-4	EB-4-W-2108	Water	08/13/21 10:55	08/17/21 10:32
410-51558-5	EB-5-W-2108	Water	08/13/21 12:30	08/17/21 10:32
410-51558-6	EB-6-W-2108	Water	08/13/21 12:35	08/17/21 10:32
410-51558-7	EB-7-W-2108	Water	08/13/21 14:40	08/17/21 10:32
410-51558-8	EB-8-W-2108	Water	08/13/21 14:45	08/17/21 10:32
410-51558-9	FB-W-2108	Water	08/13/21 16:40	08/17/21 10:32

Chevro[illegible] Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. #

410-51558 Chain of Custody

[illegible]ories Environmental use only
[illegible] Sample # _____

SCR #: _____

Client Information

Facility # WBS
CEMC Former Chevron Kenai Refinery

Site Address
55310 Chevron Road, Kenai, AK

Chevron PM: James Kiernan
Lead Consultant: Arcadis

Consultant/Office
11001 West 120th Ave., Broomfield, CO

Consultant Project Mgr.
Steve Rice

Sampler
Anthony Garcia

State where samples were collected: Alaska
For Compliance: Yes ☐ No ☐

Matrix

Soil ☐ Sediment ☐ | Water ☐ Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Oil ☐ Air ☐

Analyses Requested

Preservation and Filtration Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	TPH-GRO 8015 ☐ 8260 ☐	TPH-DRO without Silica Gel Cleanup ☐	TPH-DRO with Silica Gel Cleanup ☐	VPH ☐ EPH ☐ Method ___	Lead Total ☐ Diss. ☐ Method ___	18 PFAS Compounds (USEPA 537.1 Modified)			
EB-1-W-2108	8/13/21	0725	X		2									X			
EB-2-W-2108		0730			2									X			
EB-3-W-2108		1050			2									X			
EB-4-W-2108		1055			2									X			
EB-5-W-2108		1230			2									X			
EB-6-W-2108		1235			2									X			
EB-7-W-2108		1440			2									X			
EB-8-W-2108		1445			2									X			
FB-W-2108		1640			2									X			

Preservation Codes

H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 P = H_3PO_4
F = Field Filtered O = Other

☐ Results in Dry Weight

☐ J value reporting needed

☐ Must meet lowest detection limits possible for 8260 compounds

Remarks

Turnaround Time Requested (TAT) (please circle)

Standard | 5 day | 4 day | 72 hour | 48 hour | 24 hour

Data Package (circle if required)

Type I - Full | Type III | Type VI (Raw Data)

EDD (circle if required)

CVX-RTBU-FI_05 (default) | Other: _____

Relinquished by	Date	Time	Received by	Date	Time
[signature]	8/14/21	1865			

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature Upon Receipt 3.8 °C

Custody Seals Intact? Yes (6) No

DAB

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 410-51558-1

Login Number: 51558

List Source: Eurofins Lancaster Laboratories Env, LLC

List Number: 1

Creator: Bryan, Debra A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-1-W-2108 Lab Sample ID: 410-51558-1

Matrix: Water Lab File ID: 21AUG31-17.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 07:25

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 244.4(mL) Date Analyzed: 09/01/2021 01:31

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		2.0	0.51
375-85-9	Perfluoroheptanoic acid	ND		2.0	0.51
335-67-1	Perfluorooctanoic acid	ND		2.0	0.51
375-95-1	Perfluorononanoic acid	ND		2.0	0.51
335-76-2	Perfluorodecanoic acid	ND		2.0	0.51
72629-94-8	Perfluorotridecanoic acid	ND		2.0	0.51
376-06-7	Perfluorotetradecanoic acid	ND		2.0	0.51
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.51
355-46-4	Perfluorohexanesulfonic acid	ND		2.0	0.51
1763-23-1	Perfluorooctanesulfonic acid	ND		2.0	0.51
2991-50-6	NEtFOSAA	ND		3.1	0.51
2355-31-9	NMeFOSAA	ND		2.0	0.61
307-55-1	Perfluorododecanoic acid	ND		2.0	0.51
13252-13-6	HFPODA	ND		3.1	0.51
756426-58-1	9Cl-PF3ONS	ND		2.0	0.51
763051-92-9	11Cl-PF3OUdS	ND		2.0	0.51
919005-14-4	DONA	ND		2.0	0.51
2058-94-8	Perfluoroundecanoic acid	ND		2.0	0.51

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-17.d
Lims ID: 410-51558-A-1-A
Client ID: EB-1-W-2108
Sample Type: Client
Inject. Date: 01-Sep-2021 01:31:21 ALS Bottle#: 76 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-1-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-015
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:36:02
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.857	3.850	0.007		1332830	5.00			3838	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00	4.534	4.513	0.021	1.000	8399	0.0184	Target=3.39		107	
299.00 > 99.00	4.524	4.513	0.011	0.998	2767		3.04(1.69-5.08)		73.2	
D 19 13C3 PFBS										
302.00 > 80.00	4.534	4.520	0.014	1.175	3510542	9.24		99.4	187020	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.896				ND				
313.00 > 119.00		4.896								
D 27 13C5 PFHxA										
318.00 > 273.00	4.909	4.899	0.010	0.862	4047983	9.11		91.1	141698	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.043	5.033	0.010	0.885	49876	8.90		89.0	3733	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.306				ND				
363.00 > 169.00		5.306								
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.309				ND				
399.00 > 99.00		5.309								
D 38 13C4 PFHpA										
367.00 > 322.00	5.316	5.311	0.005	0.933	4204311	9.16		91.6	124510	
D 39 13C3 PFHxS										
402.00 > 80.00	5.326	5.311	0.015	0.935	2599999	8.07		85.3	88264	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.696	5.685	0.011	1.000	3793947	9.55		95.5	118406	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.696	5.685	0.011	1.000	30978	0.0941	Target=2.48		1346	M
413.00 > 169.00	5.686	5.685	0.001	0.998	9660		3.21(1.24-3.71)		1598	M
* 57 13C2 PFOA										
415.00 > 370.00	5.696	5.688	0.008		1630832	5.00			71168	
D 60 13C8 PFOS										
507.00 > 80.00	6.024	6.013	0.011	1.000	2977252	8.37		87.5	54648	
* 61 13C4 PFOS										
503.00 > 80.00	6.024	6.014	0.010		1687919	4.78			62308	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	6.024	6.015	0.009	1.000	23652	0.0695	Target=4.58		46.0	
499.00 > 99.00	6.024	6.015	0.009	1.000	6326		3.74(2.29-6.87)		12.5	
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.043	6.032	0.011	1.003	2631351	9.25		92.5	97494	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.353	6.337	0.016	1.000	36597	0.1156	Target=8.64		645	
513.00 > 169.00	6.343	6.337	0.006	0.998	3703		9.88(4.32-12.97)		175	
* 74 13C2 PFDA										
515.00 > 470.00	6.353	6.339	0.014		2075514	5.00			109692	
D 75 13C6 PFDA										
519.00 > 474.00	6.353	6.339	0.014	1.000	3819890	9.16		91.6	135578	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.500	6.487	0.013	1.023	974398	8.52		85.2	49023	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.626	6.611	0.015	1.043	4651847	9.39		93.9	102324	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.637	6.628	0.009	1.045	751223	8.48		84.8	21143	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.859	6.849	0.010	1.080	4161894	8.65		86.5	177311	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.259	7.244	0.015	1.143	2917142	8.01		80.1	64353	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-2-W-2108 Lab Sample ID: 410-51558-2

Matrix: Water Lab File ID: 21AUG31-18.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 07:30

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 240.5(mL) Date Analyzed: 09/01/2021 01:42

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		2.1	0.52
375-85-9	Perfluoroheptanoic acid	ND		2.1	0.52
335-67-1	Perfluorooctanoic acid	ND		2.1	0.52
375-95-1	Perfluorononanoic acid	ND		2.1	0.52
335-76-2	Perfluorodecanoic acid	ND		2.1	0.52
72629-94-8	Perfluorotridecanoic acid	ND		2.1	0.52
376-06-7	Perfluorotetradecanoic acid	ND		2.1	0.52
375-73-5	Perfluorobutanesulfonic acid	ND		2.1	0.52
355-46-4	Perfluorohexanesulfonic acid	ND		2.1	0.52
1763-23-1	Perfluorooctanesulfonic acid	ND		2.1	0.52
2991-50-6	NEtFOSAA	ND		3.1	0.52
2355-31-9	NMeFOSAA	ND		2.1	0.62
307-55-1	Perfluorododecanoic acid	ND		2.1	0.52
13252-13-6	HFPODA	ND		3.1	0.52
756426-58-1	9Cl-PF3ONS	ND		2.1	0.52
763051-92-9	11Cl-PF3OUdS	ND		2.1	0.52
919005-14-4	DONA	ND		2.1	0.52
2058-94-8	Perfluoroundecanoic acid	ND		2.1	0.52

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-18.d
Lims ID: 410-51558-A-2-A
Client ID: EB-2-W-2108
Sample Type: Client
Inject. Date: 01-Sep-2021 01:42:24 ALS Bottle#: 77 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-2-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-016
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:37:27
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.858	3.850	0.008		1325909	5.00			3826	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00	4.525	4.513	0.012	0.998	7723	0.0165	Target=3.39		95.1	
299.00 > 99.00	4.525	4.513	0.012	0.998	1789		4.32(1.69-5.08)		55.1	
D 19 13C3 PFBS										
302.00 > 80.00	4.535	4.520	0.015	1.175	3607859	9.55		103	154144	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.896				ND				
313.00 > 119.00		4.896								
D 27 13C5 PFHxA										
318.00 > 273.00	4.910	4.899	0.011	0.862	4113882	9.64		96.4	142251	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.044	5.033	0.011	0.885	56768	10.5		105	4342	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.306				ND				
363.00 > 169.00		5.306								
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.309				ND				
399.00 > 99.00		5.309								
D 38 13C4 PFHpA										
367.00 > 322.00	5.327	5.311	0.016	0.935	4418423	10.0		100	114666	
D 39 13C3 PFHxS										
402.00 > 80.00	5.327	5.311	0.016	0.935	2647898	8.56		90.5	107471	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.697	5.685	0.012	1.000	3956476	10.4		104	95356	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.697	5.685	0.012	1.000	30382	0.0885	Target=2.48		1285	M
413.00 > 169.00	5.697	5.685	0.012	1.000	10129		3.00(1.24-3.71)		1746	M
* 57 13C2 PFOA										
415.00 > 370.00	5.697	5.688	0.009		1566153	5.00			56766	
D 60 13C8 PFOS										
507.00 > 80.00	6.025	6.013	0.012	1.000	3100335	8.61		90.0	42784	
* 61 13C4 PFOS										
503.00 > 80.00	6.025	6.014	0.011		1708866	4.78			74871	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	6.016	6.015	0.001	0.998	21411	0.0605	Target=4.58		6409	
499.00 > 99.00	6.034	6.015	0.019	1.002	5041		4.25(2.29-6.87)		7.0	
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.044	6.032	0.012	1.003	2751210	9.55		95.5	121211	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										M
513.00 > 469.00	6.354	6.337	0.017	1.000	37479	0.1141	Target=8.64		808	
513.00 > 169.00	6.344	6.337	0.007	0.998	4904		7.64(4.32-12.97)		188	M
* 74 13C2 PFDA										
515.00 > 470.00	6.354	6.339	0.015		2091412	5.00			110734	
D 75 13C6 PFDA										
519.00 > 474.00	6.354	6.339	0.015	1.000	3964019	9.43		94.3	140097	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.500	6.487	0.013	1.023	1040383	9.03		90.3	52563	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.626	6.611	0.015	1.043	4700603	9.42		94.2	103263	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.638	6.628	0.010	1.045	801145	8.97		89.7	22238	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.870	6.849	0.021	1.081	4170363	8.60		86.0	178784	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.259	7.244	0.015	1.142	2867438	7.81		78.1	62391	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-3-W-2108 Lab Sample ID: 410-51558-3

Matrix: Water Lab File ID: 21AUG31-19.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 10:50

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 247.9(mL) Date Analyzed: 09/01/2021 01:53

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		2.0	0.50
375-85-9	Perfluoroheptanoic acid	ND		2.0	0.50
335-67-1	Perfluorooctanoic acid	ND		2.0	0.50
375-95-1	Perfluorononanoic acid	ND		2.0	0.50
335-76-2	Perfluorodecanoic acid	ND		2.0	0.50
72629-94-8	Perfluorotridecanoic acid	ND		2.0	0.50
376-06-7	Perfluorotetradecanoic acid	ND		2.0	0.50
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.50
355-46-4	Perfluorohexanesulfonic acid	ND		2.0	0.50
1763-23-1	Perfluorooctanesulfonic acid	ND		2.0	0.50
2991-50-6	NEtFOSAA	ND		3.0	0.50
2355-31-9	NMeFOSAA	ND		2.0	0.61
307-55-1	Perfluorododecanoic acid	ND		2.0	0.50
13252-13-6	HFPODA	ND		3.0	0.50
756426-58-1	9Cl-PF3ONS	ND		2.0	0.50
763051-92-9	11Cl-PF3OUdS	ND		2.0	0.50
919005-14-4	DONA	ND		2.0	0.50
2058-94-8	Perfluoroundecanoic acid	ND		2.0	0.50

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\21AUG31-19.d
Lims ID: 410-51558-A-3-A
Client ID: EB-3-W-2108
Sample Type: Client
Inject. Date: 01-Sep-2021 01:53:27 ALS Bottle#: 78 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-3-A
Misc. Info.: Plate: 1 Rack: 1 410-0038228-017
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38228.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 01-Sep-2021 07:40:03 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1674

First Level Reviewer: nieberdingm Date: 01-Sep-2021 07:39:46
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.860	3.850	0.010		1239841	5.00			3764	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.513				ND				
299.00 > 99.00		4.513								
D 19 13C3 PFBS										
302.00 > 80.00	4.537	4.520	0.017	1.176	3284809	9.29		99.9	232037	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.896				ND				
313.00 > 119.00		4.896								
D 27 13C5 PFHxA										
318.00 > 273.00	4.912	4.899	0.013	0.862	3675443	8.52		85.2	109940	
30 HFPO-DA										
329.00 > 285.00		5.031				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.046	5.033	0.013	0.886	49084	9.02		90.2	3790	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.306				ND				
363.00 > 169.00		5.306								
37 Perfluorohexanesulfonic acid										
399.00 > 80.00	5.329	5.309	0.019	1.000	7099	0.0264	Target=3.52		1872	
399.00 > 99.00	5.318	5.309	0.009	0.998	2713		2.62(1.76-5.27)		998	
D 38 13C4 PFHpA										
367.00 > 322.00	5.329	5.311	0.017	0.935	3867658	8.68		86.8	79787	
D 39 13C3 PFHxS										
402.00 > 80.00	5.329	5.311	0.017	0.935	2388767	7.64		80.7	68509	
40 DONA										
377.00 > 251.00		5.353				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 55 13C8 PFOA										
421.00 > 376.00	5.699	5.685	0.013	1.000	3526362	9.14		91.4	85503	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.699	5.685	0.013	1.000	23498	0.0768	Target=2.48		1196	M
413.00 > 169.00	5.689	5.685	0.004	0.998	9617		2.44(1.24-3.71)		1676	M
* 57 13C2 PFOA										
415.00 > 370.00	5.699	5.688	0.010		1583275	5.00			68934	
D 60 13C8 PFOS										
507.00 > 80.00	6.028	6.013	0.015	1.000	2830719	8.30		86.8	52160	
* 61 13C4 PFOS										
503.00 > 80.00	6.028	6.014	0.014		1618321	4.78			51123	
59 Perfluorooctanesulfonic acid										M
499.00 > 80.00	6.037	6.015	0.022	1.002	18357	0.0568	Target=4.58		2045	M
499.00 > 99.00	6.010	6.015	-0.005	0.997	2883		6.37(2.29-6.87)		630	M
62 Perfluorononanoic acid										
463.00 > 419.00		6.031				ND				
463.00 > 169.00		6.031								
D 63 13C9 PFNA										
472.00 > 427.00	6.047	6.032	0.015	1.003	2487338	9.12		91.2	92572	
69 9ClFOS										
531.00 > 351.00		6.188				ND				
72 Perfluorodecanoic acid										M
513.00 > 469.00	6.347	6.337	0.010	0.998	36255	0.1220	Target=8.64		654	
513.00 > 169.00	6.347	6.337	0.010	0.998	3685		9.84(4.32-12.97)		126	M
* 74 13C2 PFDA										
515.00 > 470.00	6.347	6.339	0.008		2018405	5.00			86325	
D 75 13C6 PFDA										
519.00 > 474.00	6.357	6.339	0.018	1.002	3583838	8.83		88.3	107681	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.503	6.487	0.016	1.025	962210	8.65		86.5	48259	
80 NMeFOSAA										
570.00 > 419.00		6.494				ND				
570.00 > 483.00		6.494								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.608				ND				
563.00 > 169.00		6.608								
D 83 13C7 PFUnA										
570.00 > 525.00	6.628	6.611	0.017	1.044	4349866	9.03		90.3	169983	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.640	6.628	0.012	1.046	719532	8.35		83.5	28127	
85 NEtFOSAA										
584.00 > 419.00		6.629				ND				
584.00 > 526.00		6.629								
88 11ClFOS										
631.00 > 451.00		6.718				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.846				ND				
613.00 > 169.00		6.846								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.861	6.849	0.012	1.081	3886226	8.31		83.1	119979	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.060				ND				
663.00 > 169.00		7.060								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.242				ND				
713.00 > 169.00		7.242								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.260	7.244	0.016	1.144	2798539	7.90		79.0	79583	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-4-W-2108 Lab Sample ID: 410-51558-4

Matrix: Water Lab File ID: 21AUG27_2-77.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 10:55

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 280.1(mL) Date Analyzed: 08/28/2021 09:05

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165601 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	ND		1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\21AUG27_2-77.d
Lims ID: 410-51558-A-4-A
Client ID: EB-4-W-2108
Sample Type: Client
Inject. Date: 28-Aug-2021 09:05:56 ALS Bottle#: 82 Worklist Smp#: 72
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-4-A
Misc. Info.: Plate: 1 Rack: 1 410-0038015-072
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 14:49:54 Calib Date: 25-Aug-2021 17:10:30
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210823-37510.b\21AUG25MCAL-10.d

Column 1 : Det: EXP1
Process Host: CTX1654

First Level Reviewer: whooleyd Date: 31-Aug-2021 14:46:59
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.816	3.834	-0.018		1335180	5.00			1982	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.486				ND				
299.00 > 99.00		4.486								
D 19 13C3 PFBS										
302.00 > 80.00	4.477	4.488	-0.011	1.173	3589595	9.37		101	96104	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.868				ND				
313.00 > 119.00		4.868								
D 27 13C5 PFHxA										
318.00 > 273.00	4.850	4.871	-0.021	0.862	3781585	8.67		86.7	115652	
30 HFPO-DA										
329.00 > 285.00		5.005				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	4.980	5.006	-0.026	0.885	47361	9.33		93.3	3453	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.280				ND				
363.00 > 169.00		5.280								
D 39 13C3 PFHxS										
402.00 > 80.00	5.263	5.282	-0.019	0.935	2528182	8.20		86.7	69434	
D 38 13C4 PFHpA										
367.00 > 322.00	5.252	5.282	-0.030	0.933	4199544	9.41		94.1	76831	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.282				ND				
399.00 > 99.00		5.282								
40 DONA										
377.00 > 251.00		5.327				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 57 13C2 PFOA										
415.00 > 370.00	5.628	5.659	-0.031		1626182	5.00			60699	
D 55 13C8 PFOA										
421.00 > 376.00	5.628	5.659	-0.031	1.000	3743516	9.47		94.7	105330	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.628	5.659	-0.031	1.000	24779	0.0758	Target=2.51		836	M
413.00 > 169.00	5.638	5.659	-0.021	1.002	6933		3.57(1.25-3.76)		1115	
D 60 13C8 PFOS										
507.00 > 80.00	5.961	5.983	-0.022	1.000	2990705	8.34		87.2	51052	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	5.961	5.983	-0.022	1.000	13056	0.0387	Target=4.69		4363	
499.00 > 99.00	5.944	5.983	-0.039	0.997	2982		4.38(2.34-7.03)		4.7	
* 61 13C4 PFOS										
503.00 > 80.00	5.961	5.985	-0.024		1724241	4.78			64395	
62 Perfluorononanoic acid										
463.00 > 419.00		5.998				ND				
463.00 > 169.00		5.998								
D 63 13C9 PFNA										
472.00 > 427.00	5.979	6.002	-0.023	1.003	2891160	9.43		94.3	83639	
69 9ClFOS										
531.00 > 351.00		6.159				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.279	6.305	-0.026	1.000	37161	0.1054	Target=8.03		979	
513.00 > 169.00	6.271	6.305	-0.034	0.999	3666		10.14(4.02-12.05)		153	
D 75 13C6 PFDA										
519.00 > 474.00	6.279	6.307	-0.028	1.000	4264341	8.95		89.5	142164	
* 74 13C2 PFDA										
515.00 > 470.00	6.279	6.307	-0.028		2332661	5.00			108922	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.428	6.450	-0.022	1.024	1706820	9.17		91.7	44112	
80 NMeFOSAA										
570.00 > 419.00		6.457				ND				
570.00 > 483.00		6.457								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.573				ND				
563.00 > 169.00		6.573								
D 83 13C7 PFUnA										
570.00 > 525.00	6.553	6.578	-0.025	1.044	5213364	8.98		89.8	102581	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.565	6.591	-0.026	1.045	1405331	9.79		97.9	38985	
85 NEtFOSAA										
584.00 > 419.00	6.565	6.594	-0.029	1.000	5090	0.0385	Target=1.35		1488	
584.00 > 526.00	6.565	6.594	-0.029	1.000	3735		1.36(0.67-2.02)		1488	
88 11ClFOS										
631.00 > 451.00		6.680				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.809				ND				
613.00 > 169.00		6.809								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.792	6.814	-0.022	1.082	4658216	8.42		84.2	115538	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.019				ND				
663.00 > 169.00		7.019								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.205				ND				
713.00 > 169.00		7.205								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.185	7.207	-0.022	1.144	3162409	8.23		82.3	91480	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-5-W-2108 Lab Sample ID: 410-51558-5

Matrix: Water Lab File ID: 21AUG27_2-78.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 12:30

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 279(mL) Date Analyzed: 08/28/2021 09:17

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165601 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	ND		1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\21AUG27_2-78.d
Lims ID: 410-51558-A-5-A
Client ID: EB-5-W-2108
Sample Type: Client
Inject. Date: 28-Aug-2021 09:17:02 ALS Bottle#: 83 Worklist Smp#: 73
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-5-A
Misc. Info.: Plate: 1 Rack: 1 410-0038015-073
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 14:49:54 Calib Date: 25-Aug-2021 17:10:30
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210823-37510.b\21AUG25MCAL-10.d

Column 1 : Det: EXP1
Process Host: CTX1654

First Level Reviewer: whooleyd Date: 31-Aug-2021 14:47:29
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.816	3.834	-0.018		1384509	5.00			1933	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.486				ND				
299.00 > 99.00		4.486								
D 19 13C3 PFBS										
302.00 > 80.00	4.478	4.488	-0.010	1.173	3706130	9.33		100	86824	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.868				ND				
313.00 > 119.00		4.868								
D 27 13C5 PFHxA										
318.00 > 273.00	4.851	4.871	-0.020	0.862	3910626	8.22		82.2	103921	
30 HFPO-DA										
329.00 > 285.00		5.005				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	4.982	5.006	-0.024	0.885	51623	9.32		93.2	3822	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.280				ND				
363.00 > 169.00		5.280								
D 39 13C3 PFHxS										
402.00 > 80.00	5.264	5.282	-0.018	0.935	2686399	7.99		84.5	74798	
D 38 13C4 PFHpA										
367.00 > 322.00	5.253	5.282	-0.029	0.933	4194871	8.62		86.2	83796	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.282				ND				
399.00 > 99.00		5.282								
40 DONA										
377.00 > 251.00		5.327				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 57 13C2 PFOA										
415.00 > 370.00	5.630	5.659	-0.029		1773405	5.00			79250	
D 55 13C8 PFOA										
421.00 > 376.00	5.630	5.659	-0.029	1.000	3910730	9.08		90.8	109056	
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.630	5.659	-0.029	1.000	26808	0.0785	Target=2.51		1050	M
413.00 > 169.00	5.621	5.659	-0.038	0.998	7598		3.53(1.25-3.76)		1301	
D 60 13C8 PFOS										
507.00 > 80.00	5.963	5.983	-0.020	1.000	3082255	8.34		87.3	43346	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	5.963	5.983	-0.020	1.000	9885	0.0284	Target=4.69		13.4	
499.00 > 99.00	5.954	5.983	-0.029	0.999	3499		2.83(2.34-7.03)		8.4	
* 61 13C4 PFOS										
503.00 > 80.00	5.963	5.985	-0.022		1776193	4.78			66883	
62 Perfluorononanoic acid										
463.00 > 419.00		5.998				ND				
463.00 > 169.00		5.998								
D 63 13C9 PFNA										
472.00 > 427.00	5.980	6.002	-0.022	1.003	2930700	9.28		92.8	75561	
69 9ClFOS										
531.00 > 351.00		6.159				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.280	6.305	-0.025	0.999	30856	0.0875	Target=8.03		555	
513.00 > 169.00	6.280	6.305	-0.025	0.999	2868		10.76(4.02-12.05)		123	
D 75 13C6 PFDA										
519.00 > 474.00	6.289	6.307	-0.018	1.000	4267535	8.95		89.5	140985	
* 74 13C2 PFDA										
515.00 > 470.00	6.289	6.307	-0.018		2336507	5.00			77189	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.428	6.450	-0.022	1.022	1760860	9.45		94.5	51377	
80 NMeFOSAA										
570.00 > 419.00		6.457				ND				
570.00 > 483.00		6.457								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.573				ND				
563.00 > 169.00		6.573								
D 83 13C7 PFUnA										
570.00 > 525.00	6.556	6.578	-0.022	1.042	5269235	9.06		90.6	103131	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.568	6.591	-0.023	1.044	1366937	9.51		95.1	37310	
85 NEtFOSAA										
584.00 > 419.00		6.594				ND				
584.00 > 526.00		6.594								
88 11ClFOS										
631.00 > 451.00		6.680				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.809				ND				
613.00 > 169.00		6.809								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.796	6.814	-0.018	1.081	4890487	8.82		88.2	138635	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.019				ND				
663.00 > 169.00		7.019								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.205				ND				
713.00 > 169.00		7.205								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.191	7.207	-0.016	1.143	3169683	8.23		82.3	103508	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-6-W-2108 Lab Sample ID: 410-51558-6

Matrix: Water Lab File ID: 21AUG27_2-79.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 12:35

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 276.3(mL) Date Analyzed: 08/28/2021 09:28

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165601 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	ND		1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\21AUG27_2-79.d
Lims ID: 410-51558-A-6-A
Client ID: EB-6-W-2108
Sample Type: Client
Inject. Date: 28-Aug-2021 09:28:05 ALS Bottle#: 84 Worklist Smp#: 74
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-6-A
Misc. Info.: Plate: 1 Rack: 1 410-0038015-074
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 14:49:54 Calib Date: 25-Aug-2021 17:10:30
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210823-37510.b\21AUG25MCAL-10.d

Column 1 : Det: EXP1
Process Host: CTX1654

First Level Reviewer: whooleyd Date: 31-Aug-2021 14:48:27
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.816	3.834	-0.018		1440346	5.00			2000	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.486				ND				
299.00 > 99.00		4.486								
D 19 13C3 PFBS										
302.00 > 80.00	4.477	4.488	-0.011	1.173	3830794	9.27		99.7	101817	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.868				ND				
313.00 > 119.00		4.868								
D 27 13C5 PFHxA										
318.00 > 273.00	4.850	4.871	-0.021	0.861	4205242	8.70		87.0	149872	
30 HFPO-DA										
329.00 > 285.00		5.005				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	4.980	5.006	-0.026	0.884	52900	9.41		94.1	3809	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.280				ND				
363.00 > 169.00		5.280								
D 39 13C3 PFHxS										
402.00 > 80.00	5.253	5.282	-0.029	0.933	2669227	7.82		82.6	73063	
D 38 13C4 PFHpA										
367.00 > 322.00	5.253	5.282	-0.029	0.933	4405963	8.91		89.1	88748	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.282				ND				
399.00 > 99.00		5.282								
40 DONA										
377.00 > 251.00		5.327				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 57 13C2 PFOA										
415.00 > 370.00	5.630	5.659	-0.029		1801200	5.00			67695	
D 55 13C8 PFOA										
421.00 > 376.00	5.630	5.659	-0.029	1.000	4134052	9.45		94.5	132918	
56 Perfluorooctanoic acid										
413.00 > 369.00	5.630	5.659	-0.029	1.000	26555	0.0736	Target=2.51		890	
413.00 > 169.00	5.630	5.659	-0.029	1.000	8139		3.26(1.25-3.76)		1501	
D 60 13C8 PFOS										
507.00 > 80.00	5.954	5.983	-0.029	1.000	3158955	8.81		92.1	53734	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	5.946	5.983	-0.037	0.999	12808	0.0360	Target=4.69		3545	
499.00 > 99.00	5.963	5.983	-0.020	1.001	3453		3.71(2.34-7.03)		7.3	
* 61 13C4 PFOS										
503.00 > 80.00	5.954	5.985	-0.031		1724440	4.78			47947	
62 Perfluorononanoic acid										
463.00 > 419.00		5.998				ND				
463.00 > 169.00		5.998								
D 63 13C9 PFNA										
472.00 > 427.00	5.972	6.002	-0.030	1.003	2908932	9.49		94.9	96005	
69 9ClFOS										
531.00 > 351.00		6.159				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.280	6.305	-0.025	1.000	40104	0.1143	Target=8.03		833	
513.00 > 169.00	6.272	6.305	-0.033	0.999	4553		8.81(4.02-12.05)		190	
D 75 13C6 PFDA										
519.00 > 474.00	6.280	6.307	-0.027	1.000	4244518	8.68		86.8	110217	
* 74 13C2 PFDA										
515.00 > 470.00	6.280	6.307	-0.027		2394133	5.00			80673	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.429	6.450	-0.021	1.024	1789328	9.37		93.7	52365	
80 NMeFOSAA										
570.00 > 419.00		6.457				ND				
570.00 > 483.00		6.457								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.573				ND				
563.00 > 169.00		6.573								
D 83 13C7 PFUnA										
570.00 > 525.00	6.544	6.578	-0.034	1.042	5573228	9.35		93.5	120687	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.568	6.591	-0.023	1.046	1466894	9.95		99.5	40037	
85 NEtFOSAA										
584.00 > 419.00		6.594				ND				
584.00 > 526.00		6.594								
88 11ClFOS										
631.00 > 451.00		6.680				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.809				ND				
613.00 > 169.00		6.809								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.785	6.814	-0.029	1.080	4793732	8.44		84.4	135094	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.019				ND				
663.00 > 169.00		7.019								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.205				ND				
713.00 > 169.00		7.205								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.180	7.207	-0.027	1.143	3264684	8.27		82.7	68303	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-7-W-2108 Lab Sample ID: 410-51558-7

Matrix: Water Lab File ID: 21AUG27_2-80.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 14:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 275.9(mL) Date Analyzed: 08/28/2021 09:39

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165601 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	ND		1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\21AUG27_2-80.d
Lims ID: 410-51558-A-7-A
Client ID: EB-7-W-2108
Sample Type: Client
Inject. Date: 28-Aug-2021 09:39:08 ALS Bottle#: 85 Worklist Smp#: 75
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-7-A
Misc. Info.: Plate: 1 Rack: 1 410-0038015-075
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 14:49:54 Calib Date: 25-Aug-2021 17:10:30
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210823-37510.b\21AUG25MCAL-10.d

Column 1 : Det: EXP1
Process Host: CTX1654

First Level Reviewer: whooleyd Date: 31-Aug-2021 14:48:45
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.810	3.834	-0.024		1374902	5.00			1908	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.486				ND				
299.00 > 99.00		4.486								
D 19 13C3 PFBS										
302.00 > 80.00	4.469	4.488	-0.019	1.173	3816580	9.67		104	89823	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.868				ND				
313.00 > 119.00		4.868								
D 27 13C5 PFHxA										
318.00 > 273.00	4.841	4.871	-0.030	0.861	4276071	9.17		91.7	131551	
30 HFPO-DA										
329.00 > 285.00		5.005				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	4.971	5.006	-0.035	0.884	54717	10.1		101	4019	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.280				ND				
363.00 > 169.00		5.280								
D 39 13C3 PFHxS										
402.00 > 80.00	5.253	5.282	-0.029	0.935	2733510	8.29		87.6	66307	
D 38 13C4 PFHpA										
367.00 > 322.00	5.253	5.282	-0.029	0.935	4293148	8.99		89.9	107018	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.282				ND				
399.00 > 99.00		5.282								
40 DONA										
377.00 > 251.00		5.327				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 57 13C2 PFOA										
415.00 > 370.00	5.621	5.659	-0.038		1739252	5.00			56105	
D 55 13C8 PFOA										
421.00 > 376.00	5.621	5.659	-0.038	1.000	4120876	9.75		97.5	104037	
56 Perfluorooctanoic acid										
413.00 > 369.00	5.621	5.659	-0.038	1.000	30869	0.0858	Target=2.51		772	
413.00 > 169.00	5.630	5.659	-0.029	1.002	9768		3.16(1.25-3.76)		1719	
D 60 13C8 PFOS										
507.00 > 80.00	5.954	5.983	-0.029	1.000	3138554	8.72		91.3	41167	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00	5.945	5.983	-0.038	0.999	20893	0.0590	Target=4.69		40.3	
499.00 > 99.00	5.945	5.983	-0.038	0.999	4731		4.42(2.34-7.03)		7.0	
* 61 13C4 PFOS										
503.00 > 80.00	5.954	5.985	-0.031		1729560	4.78			48142	
62 Perfluorononanoic acid										
463.00 > 419.00		5.998				ND				
463.00 > 169.00		5.998								
D 63 13C9 PFNA										
472.00 > 427.00	5.972	6.002	-0.030	1.003	2916813	9.49		94.9	111388	
69 9ClFOS										
531.00 > 351.00		6.159				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.272	6.305	-0.033	1.000	37952	0.1067	Target=8.03		731	
513.00 > 169.00	6.280	6.305	-0.025	1.001	4099		9.26(4.02-12.05)		192	
D 75 13C6 PFDA										
519.00 > 474.00	6.272	6.307	-0.035	1.000	4302980	9.35		93.5	112274	
* 74 13C2 PFDA										
515.00 > 470.00	6.272	6.307	-0.035		2254623	5.00			106330	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.418	6.450	-0.032	1.023	1710364	9.51		95.1	58335	
80 NMeFOSAA										
570.00 > 419.00		6.457				ND				
570.00 > 483.00		6.457								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.573				ND				
563.00 > 169.00		6.573								
D 83 13C7 PFUnA										
570.00 > 525.00	6.544	6.578	-0.034	1.043	5347452	9.53		95.3	131337	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.556	6.591	-0.035	1.045	1384173	9.97		99.7	37671	
85 NEtFOSAA										
584.00 > 419.00		6.594				ND				
584.00 > 526.00		6.594								
88 11ClFOS										
631.00 > 451.00		6.680				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.809				ND				
613.00 > 169.00		6.809								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.784	6.814	-0.030	1.082	4605948	8.61		86.1	90206	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.019				ND				
663.00 > 169.00		7.019								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.205				ND				
713.00 > 169.00		7.205								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.181	7.207	-0.026	1.145	3168057	8.53		85.3	103577	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: EB-8-W-2108 Lab Sample ID: 410-51558-8

Matrix: Water Lab File ID: 21AUG27_2-81.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 14:45

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 280.3(mL) Date Analyzed: 08/28/2021 09:50

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165601 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	ND		1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\21AUG27_2-81.d
Lims ID: 410-51558-A-8-A
Client ID: EB-8-W-2108
Sample Type: Client
Inject. Date: 28-Aug-2021 09:50:14 ALS Bottle#: 86 Worklist Smp#: 76
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-8-A
Misc. Info.: Plate: 1 Rack: 1 410-0038015-076
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 14:49:54 Calib Date: 25-Aug-2021 17:10:30
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210823-37510.b\21AUG25MCAL-10.d

Column 1 : Det: EXP1
Process Host: CTX1654

First Level Reviewer: whooleyd Date: 31-Aug-2021 14:49:01
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.810	3.834	-0.024		1400760	5.00			1951	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.486				ND				
299.00 > 99.00		4.486								
D 19 13C3 PFBS										
302.00 > 80.00	4.470	4.488	-0.018	1.173	3793054	9.44		101	133987	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.868				ND				
313.00 > 119.00		4.868								
D 27 13C5 PFHxA										
318.00 > 273.00	4.841	4.871	-0.030	0.861	4092103	8.43		84.3	109771	
30 HFPO-DA										
329.00 > 285.00		5.005				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	4.972	5.006	-0.034	0.885	56527	10.0		100	4202	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.280				ND				
363.00 > 169.00		5.280								
D 39 13C3 PFHxS										
402.00 > 80.00	5.253	5.282	-0.029	0.935	2728782	7.95		84.1	75985	
D 38 13C4 PFHpA										
367.00 > 322.00	5.253	5.282	-0.029	0.935	4245925	8.55		85.5	94880	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.282				ND				
399.00 > 99.00		5.282								
40 DONA										
377.00 > 251.00		5.327				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 57 13C2 PFOA										
415.00 > 370.00	5.621	5.659	-0.038		1809938	5.00			82150	
D 55 13C8 PFOA										
421.00 > 376.00	5.621	5.659	-0.038	1.000	4050411	9.21		92.1	114841	
56 Perfluorooctanoic acid										
413.00 > 369.00	5.630	5.659	-0.029	1.002	27873	0.0788	Target=2.51		852	
413.00 > 169.00	5.612	5.659	-0.047	0.998	8263		3.37(1.25-3.76)		1208	
D 60 13C8 PFOS										
507.00 > 80.00	5.954	5.983	-0.029	1.000	3069038	8.35		87.3	42611	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00		5.983				ND				
499.00 > 99.00		5.983								
* 61 13C4 PFOS										
503.00 > 80.00	5.954	5.985	-0.031		1767488	4.78			49622	
62 Perfluorononanoic acid										
463.00 > 419.00		5.998				ND				
463.00 > 169.00		5.998								
D 63 13C9 PFNA										
472.00 > 427.00	5.972	6.002	-0.030	1.003	2916114	9.28		92.8	111575	
69 9ClFOS										
531.00 > 351.00		6.159				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.272	6.305	-0.033	1.000	36623	0.1120	Target=8.03		699	
513.00 > 169.00	6.272	6.305	-0.033	1.000	3912		9.36(4.02-12.05)		150	
D 75 13C6 PFDA										
519.00 > 474.00	6.272	6.307	-0.035	1.000	3955257	8.57		85.7	83992	
* 74 13C2 PFDA										
515.00 > 470.00	6.272	6.307	-0.035		2260046	5.00			131977	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.418	6.450	-0.032	1.023	1672525	9.28		92.8	49381	
80 NMeFOSAA										
570.00 > 419.00		6.457				ND				
570.00 > 483.00		6.457								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.573				ND				
563.00 > 169.00		6.573								
D 83 13C7 PFUnA										
570.00 > 525.00	6.544	6.578	-0.034	1.043	5274773	9.38		93.8	172992	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.556	6.591	-0.035	1.045	1406245	10.1		101	53503	
85 NEtFOSAA										
584.00 > 419.00		6.594				ND				
584.00 > 526.00		6.594								
88 11ClFOS										
631.00 > 451.00		6.680				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.809				ND				
613.00 > 169.00		6.809								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.784	6.814	-0.030	1.082	4848339	9.04		90.4	95242	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.019				ND				
663.00 > 169.00		7.019								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.205				ND				
713.00 > 169.00		7.205								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.172	7.207	-0.035	1.144	3145386	8.44		84.4	89731	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: FB-W-2108 Lab Sample ID: 410-51558-9

Matrix: Water Lab File ID: 21AUG27_2-82.d

Analysis Method: 537 IDA Date Collected: 08/13/2021 16:40

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 276.9(mL) Date Analyzed: 08/28/2021 10:01

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 165601 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		1.8	0.45
375-85-9	Perfluoroheptanoic acid	ND		1.8	0.45
335-67-1	Perfluorooctanoic acid	ND		1.8	0.45
375-95-1	Perfluorononanoic acid	ND		1.8	0.45
335-76-2	Perfluorodecanoic acid	ND		1.8	0.45
72629-94-8	Perfluorotridecanoic acid	ND		1.8	0.45
376-06-7	Perfluorotetradecanoic acid	ND		1.8	0.45
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.45
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.45
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.45
2991-50-6	NEtFOSAA	ND		2.7	0.45
2355-31-9	NMeFOSAA	ND		1.8	0.54
307-55-1	Perfluorododecanoic acid	ND		1.8	0.45
13252-13-6	HFPODA	ND		2.7	0.45
756426-58-1	9Cl-PF3ONS	ND		1.8	0.45
763051-92-9	11Cl-PF3OUdS	ND		1.8	0.45
919005-14-4	DONA	ND		1.8	0.45
2058-94-8	Perfluoroundecanoic acid	ND		1.8	0.45

Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\21AUG27_2-82.d
Lims ID: 410-51558-A-9-A
Client ID: FB-W-2108
Sample Type: Client
Inject. Date: 28-Aug-2021 10:01:17 ALS Bottle#: 87 Worklist Smp#: 77
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 410-51558-A-9-A
Misc. Info.: Plate: 1 Rack: 1 410-0038015-077
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210827-38015.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 14:49:54 Calib Date: 25-Aug-2021 17:10:30
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210823-37510.b\21AUG25MCAL-10.d

Column 1 : Det: EXP1
Process Host: CTX1654

First Level Reviewer: whooleyd Date: 31-Aug-2021 14:49:21
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.817	3.834	-0.017		1397266	5.00			2024	
18 Perfluorobutanesulfonic acid										
299.00 > 80.00		4.486				ND				
299.00 > 99.00		4.486								
D 19 13C3 PFBS										
302.00 > 80.00	4.478	4.488	-0.010	1.173	3774017	9.41		101	100105	
26 Perfluorohexanoic acid										
313.00 > 269.00		4.868				ND				
313.00 > 119.00		4.868								
D 27 13C5 PFHxA										
318.00 > 273.00	4.851	4.871	-0.020	0.862	4019106	9.08		90.8	122413	
30 HFPO-DA										
329.00 > 285.00		5.005				ND				
D 31 13C3 HFPO-DA										
332.00 > 287.00	4.992	5.006	-0.014	0.887	49807	9.67		96.7	2735	
36 Perfluoroheptanoic acid										
363.00 > 319.00		5.280				ND				
363.00 > 169.00		5.280								
D 39 13C3 PFHxS										
402.00 > 80.00	5.263	5.282	-0.019	0.935	2613238	8.36		88.4	63659	
D 38 13C4 PFHpA										
367.00 > 322.00	5.263	5.282	-0.019	0.935	4043994	8.93		89.3	81764	
37 Perfluorohexanesulfonic acid										
399.00 > 80.00		5.282				ND				
399.00 > 99.00		5.282								
40 DONA										
377.00 > 251.00		5.327				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 57 13C2 PFOA										
415.00 > 370.00	5.630	5.659	-0.029		1649216	5.00			73137	
D 55 13C8 PFOA										
421.00 > 376.00	5.630	5.659	-0.029	1.000	3817327	9.53		95.3	121443	
56 Perfluorooctanoic acid										
413.00 > 369.00	5.604	5.659	-0.055	0.995	20945	0.0629	Target=2.51		239	
413.00 > 169.00	5.621	5.659	-0.038	0.998	9487		2.21(1.25-3.76)		1045	
D 60 13C8 PFOS										
507.00 > 80.00	5.963	5.983	-0.020	1.000	3173991	8.49		88.8	41935	
59 Perfluorooctanesulfonic acid										
499.00 > 80.00		5.983				ND				
499.00 > 99.00		5.983								
* 61 13C4 PFOS										
503.00 > 80.00	5.963	5.985	-0.022		1796863	4.78			50659	
62 Perfluorononanoic acid										
463.00 > 419.00		5.998				ND				
463.00 > 169.00		5.998								
D 63 13C9 PFNA										
472.00 > 427.00	5.980	6.002	-0.022	1.003	2872545	8.99		89.9	66510	
69 9ClFOS										
531.00 > 351.00		6.159				ND				
72 Perfluorodecanoic acid										
513.00 > 469.00	6.280	6.305	-0.025	1.000	31658	0.1017	Target=8.03		691	
513.00 > 169.00	6.271	6.305	-0.034	0.999	3951		8.01(4.02-12.05)		180	
D 75 13C6 PFDA										
519.00 > 474.00	6.280	6.307	-0.027	1.000	3767508	8.80		88.0	108773	
* 74 13C2 PFDA										
515.00 > 470.00	6.280	6.307	-0.027		2096582	5.00			81067	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.428	6.450	-0.022	1.024	1537143	9.19		91.9	79199	
80 NMeFOSAA										
570.00 > 419.00		6.457				ND				
570.00 > 483.00		6.457								
82 Perfluoroundecanoic acid										
563.00 > 519.00		6.573				ND				
563.00 > 169.00		6.573								
D 83 13C7 PFUnA										
570.00 > 525.00	6.556	6.578	-0.022	1.044	4899823	9.39		93.9	105979	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.567	6.591	-0.024	1.046	1182923	9.17		91.7	32337	
85 NEtFOSAA										
584.00 > 419.00		6.594				ND				
584.00 > 526.00		6.594								
88 11ClFOS										
631.00 > 451.00		6.680				ND				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
91 Perfluorododecanoic acid										
613.00 > 569.00		6.809				ND				
613.00 > 169.00		6.809								
D 92 13C2-PFDoDA										
615.00 > 570.00	6.796	6.814	-0.018	1.082	4427698	8.90		89.0	86957	
103 Perfluorotridecanoic acid										
663.00 > 619.00		7.019				ND				
663.00 > 169.00		7.019								
104 Perfluorotetradecanoic acid										
713.00 > 669.00		7.205				ND				
713.00 > 169.00		7.205								
D 105 13C2 PFTeDA										
715.00 > 670.00	7.181	7.207	-0.026	1.143	2904942	8.41		84.1	83004	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Reagents:

PFC_IS_MOD_00171 Amount Added: 20.00 Units: uL Run Reagent

FORM II
PFAS SURROGATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51558-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini C18 5 ID: 3 (mm)

Client Sample ID	Lab Sample ID	C3PFBS #	13C5PHA #	HFPODA #	C3PFHS #	C4PFHA #	C8PFOA #	C8PFOS #	C9PFNA #
EB-1-W-2108	410-51558-1	99	91	89	85	92	96	88	93
EB-2-W-2108	410-51558-2	103	96	105	90	100	104	90	96
EB-3-W-2108	410-51558-3	100	85	90	81	87	91	87	91
EB-4-W-2108	410-51558-4	101	87	93	87	94	95	87	94
EB-5-W-2108	410-51558-5	100	82	93	84	86	91	87	93
EB-6-W-2108	410-51558-6	100	87	94	83	89	94	92	95
EB-7-W-2108	410-51558-7	104	92	101	88	90	98	91	95
EB-8-W-2108	410-51558-8	101	84	100	84	85	92	87	93
FB-W-2108	410-51558-9	101	91	97	88	89	95	89	90
	MB 410-162732/1-A	99	82	92	77	85	92	84	88
	LCS 410-162732/2-A	98	87	85	82	87	91	88	89

	QC LIMITS
C3PFBS = 13C3 PFBS	19-178
13C5PHA = 13C5 PFHxA	31-142
HFPODA = 13C3 HFPO-DA	20-153
C3PFHS = 13C3 PFHxS	32-145
C4PFHA = 13C4 PFHpA	30-144
C8PFOA = 13C8 PFOA	49-127
C8PFOS = 13C8 PFOS	49-126
C9PFNA = 13C9 PFNA	47-136

Column to be used to flag recovery values

FORM II 537 IDA

FORM II
PFAS SURROGATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51558-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini C18 5 ID: 3 (mm)

Client Sample ID	Lab Sample ID	C6PFDA #	d3NMFOS #	13C7PUA #	d5NEFOS #	PFDoDA #	PFTDA #
EB-1-W-2108	410-51558-1	92	85	94	85	87	80
EB-2-W-2108	410-51558-2	94	90	94	90	86	78
EB-3-W-2108	410-51558-3	88	87	90	84	83	79
EB-4-W-2108	410-51558-4	90	92	90	98	84	82
EB-5-W-2108	410-51558-5	89	94	91	95	88	82
EB-6-W-2108	410-51558-6	87	94	94	100	84	83
EB-7-W-2108	410-51558-7	93	95	95	100	86	85
EB-8-W-2108	410-51558-8	86	93	94	101	90	84
FB-W-2108	410-51558-9	88	92	94	92	89	84
	MB 410-162732/1-A	88	84	90	90	85	81
	LCS 410-162732/2-A	86	87	90	85	82	78

	QC LIMITS
C6PFDA = 13C6 PFDA	47-128
d3NMFOS = d3-NMeFOSAA	32-151
13C7PUA = 13C7 PFUnA	40-135
d5NEFOS = d5-NEtFOSAA	37-164
PFDoDA = 13C2-PFDoDA	28-136
PFTDA = 13C2 PFTeDA	10-144

Column to be used to flag recovery values

FORM II 537 IDA

FORM III
PFAS LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51558-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 21AUG31-09.d

Lab ID: LCS 410-162732/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorohexanoic acid	25.6	27.5	108	66-137	
Perfluoroheptanoic acid	25.6	27.4	107	66-141	
Perfluorooctanoic acid	25.6	25.6	100	65-136	
Perfluorononanoic acid	25.6	28.4	111	65-140	
Perfluorodecanoic acid	25.6	28.2	110	63-137	
Perfluorotridecanoic acid	25.6	30.0	117	58-146	
Perfluorotetradecanoic acid	25.6	27.8	108	64-141	
Perfluorobutanesulfonic acid	22.7	21.3	94	65-132	
Perfluorohexanesulfonic acid	23.3	24.9	107	60-128	
Perfluorooctanesulfonic acid	23.7	25.8	109	51-126	
NEtFOSAA	25.6	26.0	102	54-134	
NMeFOSAA	25.6	27.0	106	58-143	
Perfluorododecanoic acid	25.6	28.6	112	63-140	
HFPODA	25.6	24.6	96	37-147	
9Cl-PF3ONS	23.8	25.5	107	52-135	
11Cl-PF3OUdS	23.8	24.5	103	45-134	
DONA	24.2	24.0	99	49-158	
13C5 PFHxA	40.0	34.9	87	31-142	
13C4 PFHpA	40.0	35.0	87	30-144	
13C8 PFOA	40.0	36.4	91	49-127	
13C9 PFNA	40.0	35.8	89	47-136	
13C6 PFDA	40.0	34.2	86	47-128	
13C2-PFDoDA	40.0	32.8	82	28-136	
13C2 PFTeDA	40.0	31.4	78	10-144	
13C3 PFBS	37.2	36.4	98	19-178	
13C3 PFHxS	37.8	31.2	82	32-145	
13C8 PFOS	38.2	33.8	88	49-126	
d3-NMeFOSAA	40.0	34.6	87	32-151	
d5-NEtFOSAA	40.0	34.0	85	37-164	
13C3 HFPO-DA	40.0	34.1	85	20-153	
13C7 PFUnA	40.0	35.9	90	40-135	
Perfluoroundecanoic acid	25.6	28.5	111	62-138	

Column to be used to flag recovery and RPD values

FORM III 537 IDA

FORM IV
PFAS METHOD BLANK SUMMARY

Lab Name: Eurofins Lancaster Laboratories En Job No.: 410-51558-1

SDG No.:

Lab File ID: 21AUG31-08.d Lab Sample ID: MB 410-162732/1-A

Matrix: Water Date Extracted: 08/20/2021 07:20

Instrument ID: 30727 Date Analyzed: 08/31/2021 23:51

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
EB-4-W-2108	410-51558-4	21AUG27_2-77.d	08/28/2021 09:05
EB-5-W-2108	410-51558-5	21AUG27_2-78.d	08/28/2021 09:17
EB-6-W-2108	410-51558-6	21AUG27_2-79.d	08/28/2021 09:28
EB-7-W-2108	410-51558-7	21AUG27_2-80.d	08/28/2021 09:39
EB-8-W-2108	410-51558-8	21AUG27_2-81.d	08/28/2021 09:50
FB-W-2108	410-51558-9	21AUG27_2-82.d	08/28/2021 10:01
	LCS 410-162732/2-A	21AUG31-09.d	09/01/2021 00:02
EB-1-W-2108	410-51558-1	21AUG31-17.d	09/01/2021 01:31
EB-2-W-2108	410-51558-2	21AUG31-18.d	09/01/2021 01:42
EB-3-W-2108	410-51558-3	21AUG31-19.d	09/01/2021 01:53

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Calibration Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/25/2021 17:10

Calibration ID: 30015

		13C3PFBA		13PFOA		PFOS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1263234	3.83	1528893	5.66	1629403	5.98
UPPER LIMIT		1894851	4.23	2293340	6.06	2444105	6.38
LOWER LIMIT		631617	3.43	764447	5.26	814702	5.58
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-163270/8		1137989	3.83	1491830	5.66	1454875	5.98
ICV 410-163270/9		1221905	3.83	1532558	5.65	1511587	5.98
CCV 410-165601/78		1214278	3.81	1545857	5.63	1645001	5.96
410-51558-4	EB-4-W-2108	1335180	3.82	1626182	5.63	1724241	5.96
410-51558-5	EB-5-W-2108	1384509	3.82	1773405	5.63	1776193	5.96
410-51558-6	EB-6-W-2108	1440346	3.82	1801200	5.63	1724440	5.95
410-51558-7	EB-7-W-2108	1374902	3.81	1739252	5.62	1729560	5.95
410-51558-8	EB-8-W-2108	1400760	3.81	1809938	5.62	1767488	5.95
410-51558-9	FB-W-2108	1397266	3.82	1649216	5.63	1796863	5.96
CCV 410-165601/79		1255662	3.82	1521062	5.63	1609219	5.96

13C3PFBA = 13C3-PFBA
13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Calibration Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/25/2021 17:10

Calibration ID: 30015

		PFDA					
		AREA #	RT #	#	RT #	#	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1986657	6.31				
UPPER LIMIT		2979986	6.71				
LOWER LIMIT		993329	5.91				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-163270/8		1945741	6.31				
ICV 410-163270/9		1981296	6.30				
CCV 410-165601/78		1975352	6.28				
410-51558-4	EB-4-W-2108	2332661	6.28				
410-51558-5	EB-5-W-2108	2336507	6.29				
410-51558-6	EB-6-W-2108	2394133	6.28				
410-51558-7	EB-7-W-2108	2254623	6.27				
410-51558-8	EB-8-W-2108	2260046	6.27				
410-51558-9	FB-W-2108	2096582	6.28				
CCV 410-165601/79		1933219	6.28				

PFDA = 13C2 PFDA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Calibration Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/31/2021 21:25

Calibration ID: 30126

		13C3PFBA		13PFOA		PFOS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1078159	3.85	1328898	5.69	1472576	6.01
UPPER LIMIT		1617239	4.25	1993347	6.09	2208864	6.41
LOWER LIMIT		539080	3.45	664449	5.29	736288	5.61
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-166660/8		1330158	3.86	1639620	5.70	1742962	6.02
ICV 410-166660/9		1103970	3.86	1341963	5.70	1413849	6.03
CCV 410-166713/5		1078468	3.86	1316177	5.70	1401886	6.03
MB 410-162732/1-A		1273767	3.87	1691555	5.70	1783723	6.03
LCS 410-162732/2-A		1234682	3.86	1601863	5.70	1692914	6.02
410-51558-1	EB-1-W-2108	1332830	3.86	1630832	5.70	1687919	6.02
410-51558-2	EB-2-W-2108	1325909	3.86	1566153	5.70	1708866	6.03
410-51558-3	EB-3-W-2108	1239841	3.86	1583275	5.70	1618321	6.03
CCV 410-166713/18		1076815	3.86	1417405	5.70	1542568	6.03

13C3PFBA = 13C3-PFBA
13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

FORM VIII
PFAS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Calibration Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3(mm) Calibration End Date: 08/31/2021 21:25

Calibration ID: 30126

		PFDA					
		AREA #	RT #	#	RT #	#	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1798089	6.34				
UPPER LIMIT		2697134	6.74				
LOWER LIMIT		899045	5.94				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 410-166660/8		2138580	6.34				
ICV 410-166660/9		1906304	6.35				
CCV 410-166713/5		1769832	6.35				
MB 410-162732/1-A		2121309	6.35				
LCS 410-162732/2-A		2129632	6.34				
410-51558-1	EB-1-W-2108	2075514	6.35				
410-51558-2	EB-2-W-2108	2091412	6.35				
410-51558-3	EB-3-W-2108	2018405	6.35				
CCV 410-166713/18		1845526	6.35				

PFDA = 13C2 PFDA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.4 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Start Date: 08/25/2021 16:04

Analysis Batch Number: 163270 End Date: 08/25/2021 17:43

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 410-163270/1		08/25/2021 16:04	1	21AUG25MCAL-04.d	Gemini C18 50mm 3(mm)
IC 410-163270/2		08/25/2021 16:15	1	21AUG25MCAL-05.d	Gemini C18 50mm 3(mm)
IC 410-163270/3		08/25/2021 16:26	1	21AUG25MCAL-06.d	Gemini C18 50mm 3(mm)
IC 410-163270/4		08/25/2021 16:37	1	21AUG25MCAL-07.d	Gemini C18 50mm 3(mm)
ICISAV 410-163270/5		08/25/2021 16:48	1	21AUG25MCAL-08.d	Gemini C18 50mm 3(mm)
IC 410-163270/6		08/25/2021 16:59	1	21AUG25MCAL-09.d	Gemini C18 50mm 3(mm)
IC 410-163270/7		08/25/2021 17:10	1	21AUG25MCAL-10.d	Gemini C18 50mm 3(mm)
ICB 410-163270/8		08/25/2021 17:21	1	21AUG25MCAL-11.d	Gemini C18 50mm 3(mm)
ICV 410-163270/9		08/25/2021 17:32	1	21AUG25MCAL-12.d	Gemini C18 50mm 3(mm)
WDM 410-163270/10		08/25/2021 17:43	1	21AUG25MCAL-13.d	Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Start Date: 08/27/2021 20:44

Analysis Batch Number: 165601 End Date: 08/28/2021 10:12

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 410-165601/2		08/27/2021 20:44	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/27/2021 20:55	1		Gemini C18 50mm 3(mm)
410-48188-A-29-B MDLV		08/27/2021 21:06	1		Gemini C18 50mm 3(mm)
CCV 410-165601/10		08/27/2021 22:12	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/27/2021 22:23	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/27/2021 22:35	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/27/2021 23:52	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 00:03	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 00:58	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 01:09	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 01:21	1		Gemini C18 50mm 3(mm)
CCV 410-165601/30		08/28/2021 01:54	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 02:05	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 02:16	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 02:27	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 02:38	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 02:49	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 03:00	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 03:11	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 03:22	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 03:33	1		Gemini C18 50mm 3(mm)
CCV 410-165601/57		08/28/2021 03:45	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 03:56	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 04:07	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 04:18	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 04:29	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 04:40	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 04:51	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 05:02	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 05:13	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 05:24	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 05:35	1		Gemini C18 50mm 3(mm)
CCV 410-165601/58		08/28/2021 05:46	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 05:57	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 06:08	1		Gemini C18 50mm 3(mm)
ZZZZZ		08/28/2021 06:19	1		Gemini C18 50mm 3(mm)
CCV 410-165601/59		08/28/2021 06:31	1		Gemini C18 50mm 3(mm)
CCV 410-165601/78		08/28/2021 08:54	1	21AUG27_2-76.d	Gemini C18 50mm 3(mm)
410-51558-4	EB-4-W-2108	08/28/2021 09:05	1	21AUG27_2-77.d	Gemini C18 50mm 3(mm)
410-51558-5	EB-5-W-2108	08/28/2021 09:17	1	21AUG27_2-78.d	Gemini C18 50mm 3(mm)
410-51558-6	EB-6-W-2108	08/28/2021 09:28	1	21AUG27_2-79.d	Gemini C18 50mm 3(mm)
410-51558-7	EB-7-W-2108	08/28/2021 09:39	1	21AUG27_2-80.d	Gemini C18 50mm 3(mm)
410-51558-8	EB-8-W-2108	08/28/2021 09:50	1	21AUG27_2-81.d	Gemini C18 50mm 3(mm)
410-51558-9	FB-W-2108	08/28/2021 10:01	1	21AUG27_2-82.d	Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Start Date: 08/27/2021 20:44

Analysis Batch Number: 165601 End Date: 08/28/2021 10:12

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 410-165601/79		08/28/2021 10:12	1	21AUG27_2-83.d	Gemini C18 50mm 3(mm)

537 IDA

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-163270/1	21AUG25MCAL-04.d
Level 2	IC 410-163270/2	21AUG25MCAL-05.d
Level 3	IC 410-163270/3	21AUG25MCAL-06.d
Level 4	IC 410-163270/4	21AUG25MCAL-07.d
Level 5	ICISAV 410-163270/5	21AUG25MCAL-08.d
Level 6	IC 410-163270/6	21AUG25MCAL-09.d
Level 7	IC 410-163270/7	21AUG25MCAL-10.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
MTP	0.0760 0.0898	0.0781 0.0984	0.0814	0.0850	0.0949	LID1 F		0.0948							0.9980		0.9900
PPF Acid	0.3094 0.3548	0.3023 0.3795	0.3072	0.3331	0.3763	LID1 F		0.3692							0.9980		0.9900
PFMOAA	0.1630 0.1822	0.1631 0.1997	0.1680	0.1722	0.1956	LID1 F		0.1927							0.9980		0.9900
R-EVE	0.0606 0.0670	0.0571 0.0755	0.0556	0.0623	0.0679	LID1 F		0.0714							0.9950		0.9900
R-PSDA	0.0157 0.0194	0.0160 0.0220	0.0171	0.0175	0.0193	LID1 F		0.0207							0.9940		0.9900
Perfluorobutanoic acid	0.8723 0.8796	0.7829 0.9057	0.8847	0.9005	0.9217	LID1 F		0.8994							1.0000		0.9900
Hydrolyzed PSDA	0.1035 0.1089	0.0897 0.1220	0.0945	0.1035	0.1123	LID1 F		0.1161							0.9960		0.9900
PMPA	0.2200 0.2807	0.2439 0.2863	0.2488	0.2658	0.2922	LID1 F		0.2839							0.9990		0.9900
Perfluoropropanesulfonic acid	0.4526 0.4887	0.4414 0.5036	0.4809	0.4792	0.5220	LID1 F		0.5000							0.9990		0.9900
NVHOS	0.2285 0.2555	0.2173 0.2638	0.2402	0.2529	0.2778	LID1 F		0.2621							0.9990		0.9900
PFECA F	0.8800 0.9139	0.8103 0.9124	0.9084	0.9085	0.9972	LID1 F		0.9216							0.9990		0.9900
PFO2HxA	0.1309 0.1205	0.1004 0.1328	0.1140	0.1282	0.1294	LID1 F		0.1285							0.9980		0.9900
Perfluoropentanoic acid	0.9772 0.8965	0.8523 0.9491	0.9204	0.9148	0.9516	LID1 F		0.9327							0.9990		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
3:3 FTCA	0.0596 0.0589	0.0584 0.0628	0.0623	0.0579	0.0633	LID1F		0.0615							0.9990		0.9900
Perfluorobutanesulfonic acid	1.0702 1.0970	0.9893 1.1839	1.0713	1.1636	1.2030	LID1F		1.1592							0.9990		0.9900
PEPA	0.0954 0.1022	0.1041 0.1045	0.0984	0.1051	0.1114	LID1F		0.1046							0.9990		0.9900
PFECA A	0.7235 0.7486	0.6644 0.7367	0.7061	0.7255	0.7621	LID1F		0.7417							1.0000		0.9900
Perfluoro (2-ethoxyethane) sulfonic acid	3.0151 3.0197	2.6280 3.0196	3.0049	3.0026	3.1392	LID1F		3.0309							1.0000		0.9900
PFECA B	0.6534 0.7258	0.6048 0.7486	0.7085	0.7104	0.7699	LID1F		0.7420							0.9990		0.9900
4:2 Fluorotelomer sulfonic acid	3.2832 3.1230	3.1403 3.1250	3.0584	3.1945	3.1875	LID1F		3.1339							1.0000		0.9900
Perfluorohexanoic acid	0.8955 0.7889	0.6765 0.8165	0.7227	0.7924	0.8171	LID1F		0.8065							1.0000		0.9900
Perfluoropentanesulfonic acid	0.8839 0.9327	0.8248 0.9633	0.9312	0.9120	0.9644	LID1F		0.9519							1.0000		0.9900
PFO3OA	0.0783 0.0890	0.0728 0.0875	0.0777	0.0813	0.0857	LID1F		0.0873							0.9990		0.9900
HFPODA	9.5519 11.340	8.2122 11.800	9.9408	10.629	10.985	LID1F		11.497							0.9990		0.9900
Hydro-EVE Acid	1.5694 1.6527	1.4511 1.6655	1.5254	1.6069	1.7557	LID1F		1.6671							0.9990		0.9900
R-PSDCA	1.7242 2.0539	1.7721 2.0547	1.8948	1.9717	2.1644	LID1F		2.0600							0.9990		0.9900
Perfluoroheptanoic acid	0.9688 0.9180	0.8727 0.9565	0.8962	0.9937	1.0577	LID1F		0.9578							0.9980		0.9900
Perfluorohexanesulfonic acid	0.9372 0.9975	0.8204 1.1107	0.9564	0.9699	1.0741	LID1F		1.0664							0.9970		0.9900
Hydro-PS Acid	1.5247 1.6865	1.4316 1.6815	1.5435	1.5851	1.7661	LID1F		1.6856							0.9990		0.9900
DONA	1.0937 1.2142	0.9751 1.3473	1.1149	1.2059	1.3208	LID1F		1.2974							0.9970		0.9900
PFECA G	1.4686 1.5986	1.3762 1.6487	1.5279	1.5982	1.7606	LID1F		1.6427							0.9990		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
5:3 FTCA	0.1963 0.2205	0.1854 0.2230	0.2035	0.2229	0.2207	LID1F		0.2217							1.0000		0.9900
6:2 FTUCA	1.2463 1.2171	1.1250 1.1283	1.1749	1.1845	1.2286	LID1F		1.1671							0.9990		0.9900
6:2 FTCA	1.1635 1.0713	0.9044 1.1190	0.9286	1.0570	1.0199	LID1F		1.0895							0.9990		0.9900
PFO4DA	0.0551 0.0877	0.0832 0.0751	0.0704	0.0841	0.0842	LID1F		0.0799							0.9950		0.9900
PS Acid	0.4676 0.5258	0.4514 0.5483	0.4650	0.5113	0.5683	LID1F		0.5414							0.9990		0.9900
EVE Acid	1.0526 1.1093	1.0371 1.1479	1.1118	1.1351	1.2558	LID1F		1.1478							0.9990		0.9900
Perfluoro-4-ethylcyclohexanesulfonic acid	1.6333 1.6636	1.3245 1.7973	1.6041	1.5863	1.6853	LID1F		1.7349							0.9980		0.9900
6:2 Fluorotelomer sulfonic acid	6.6218 4.0544	5.3455 4.1305	4.4338	4.5430	4.4674	AveID		4.7995				18.9		20.0			
Perfluoroheptanesulfonic acid	1.0752 1.0069	0.8478 1.0549	1.0366	0.9972	1.0555	LID1F		1.0384							0.9990		0.9900
Perfluorooctanoic acid	0.8346 0.8328	0.7076 0.9007	0.7520	0.8323	0.8670	LID1F		0.8729							0.9980		0.9900
TAF	0.0447 0.0525	0.0593 0.0596	0.0589	0.0551	0.0599	LID1F		0.0574							0.9970		0.9900
Perfluorooctanesulfonic acid	0.9586 1.0286	0.8910 1.1111	0.9196	1.0203	1.0814	LID1F		1.0781							0.9980		0.9900
Perfluorononanoic acid	0.7512 0.8783	0.7879 0.9237	0.7862	0.8815	0.8949	LID1F		0.9040							0.9990		0.9900
7:3 FTCA	4.4497 4.6140	3.6451 4.4795	3.8151	4.0999	4.3448	LID1F		4.4753							0.9990		0.9900
8:2 FTUCA	0.9694 0.9678	0.8061 0.9273	0.9148	0.9180	0.9955	LID1F		0.9452							0.9990		0.9900
8:2 FTCA	0.9798 0.9802	0.7795 0.9609	0.9672	0.9675	0.9215	LID1F		0.9618							1.0000		0.9900
9Cl-PF3ONS	1.5213 1.6296	1.3566 1.6996	1.4863	1.6974	1.8243	LID1F		1.6904							0.9990		0.9900
Perfluorononanesulfonic acid	0.8997 0.9511	0.8676 0.9613	0.9295	0.9800	0.9767	LID1F		0.9603							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid	0.7679 0.7741	0.6298 0.8558	0.7676	0.7880	0.8390	LID1F		0.8266							0.9980		0.9900
8:2 Fluorotelomer sulfonic acid	6.0921 6.0468	5.7383 6.2655	6.7703	6.3863	6.7318	LID1F		6.2659							0.9990		0.9900
Perfluorooctanesulfonamide	0.9813 0.9643	0.8996 1.0152	0.9656	0.9680	1.0164	LID1F		0.9983							0.9990		0.9900
NMeFOSAA	0.8467 0.7982	0.8188 0.8731	0.7776	0.8660	0.9075	LID1F		0.8546							0.9980		0.9900
Perfluorodecanesulfonic acid	0.7758 0.8403	0.7340 0.8530	0.8075	0.8466	0.8598	LID1F		0.8490							1.0000		0.9900
Perfluoroundecanoic acid	0.8037 0.7534	0.6987 0.8004	0.7457	0.8031	0.8094	LID1F		0.7876							0.9990		0.9900
NEtFOSAA	0.9782 0.9174	0.8288 0.9595	0.8303	0.9128	0.9407	LID1F		0.9419							0.9990		0.9900
10:2 FTUCA	0.8256 0.8697	0.7991 0.8504	0.8568	0.8618	0.8946	LID1F		0.8610							1.0000		0.9900
11Cl-PF3OUdS	1.0599 1.1846	0.9412 1.2097	1.0537	1.2416	1.2896	LID1F		1.2104							0.9990		0.9900
10:2 FTCA	0.9378 0.7982	0.6736 0.8065	0.6051	0.8020	0.7819	LID1F		0.7988							0.9990		0.9900
Perfluorododecanoic acid	0.9477 0.9528	0.8957 0.9540	0.9271	0.9686	1.0044	LID1F		0.9594							1.0000		0.9900
10:2 FTS	5.8735 6.3628	5.9341 6.7461	6.6582	6.3917	6.6062	LID1F		6.6047							0.9990		0.9900
NMeFOSE	1.3797 1.0027	0.8950 1.0315	1.0437	1.0544	1.0536	LID1F		1.0272							1.0000		0.9900
NMeFOSA	0.9351 0.9234	0.8194 0.9543	1.0678	1.0610	1.0071	LID1F		0.9572							0.9990		0.9900
Perfluorododecanesulfonic acid	0.8993 0.8660	0.7543 0.8993	0.8237	0.8924	0.8758	LID1F		0.8860							1.0000		0.9900
NEtFOSE	0.8940 0.9942	0.9869 0.9706	1.0152	1.0214	1.0048	LID1F		0.9836							1.0000		0.9900
NEtFOSA	0.8833 0.9679	0.9061 1.0329	1.0143	0.9528	1.0497	LID1F		1.0125							0.9990		0.9900
Perfluorotridecanoic acid	0.5734 0.6637	0.5914 0.6822	0.6217	0.6523	0.6982	LID1F		0.6765							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorotetradecanoic acid	0.8854 0.8361	0.7703 0.8897	0.8441	0.8699	0.9187	LID1F		0.8763							0.9990		0.9900
Perfluorohexadecanoic acid	0.7962 0.6641	0.6534 0.6615	0.7058	0.6637	0.7084	LID1F		0.6681							0.9990		0.9900
Perfluorooctadecanoic acid	0.3064 0.3256	0.2922 0.3364	0.3352	0.3167	0.3381	LID1F		0.3326							1.0000		0.9900
13C4 PFBA	1.0386 1.1303	1.1314 1.1023	1.1228	1.1004	1.1319	Ave		1.1082				3.0		20.0			
13C5 PFPeA	1.0600 1.1719	1.1201 1.0918	1.1680	1.1185	1.1911	Ave		1.1316				4.2		20.0			
13C3 PFBS	1.3156 1.4671	1.4768 1.4497	1.4389	1.4171	1.4787	Ave		1.4348				4.0		20.0			
M2-4:2 FTS	0.1615 0.1684	0.1738 0.1600	0.1709	0.1642	0.1709	Ave		0.1671				3.1		20.0			
13C5 PFHxA	1.2947 1.3755	1.4178 1.2901	1.3541	1.2867	1.3700	Ave		1.3413				3.8		20.0			
13C3 HFPO-DA	0.0149 0.0161	0.0158 0.0147	0.0161	0.0149	0.0168	Ave		0.0156				5.0		20.0			
13C3 PFHxS	0.8672 0.9839	1.0231 0.9089	0.9316	0.9536	0.9666	Ave		0.9478				5.4		20.0			
13C4 PFHpA	1.2796 1.3930	1.4815 1.2725	1.4364	1.3458	1.3973	Ave		1.3723				5.7		20.0			
13C2-2H-Perfluoro-2-octenoic acid	1.2498 1.3439	1.3983 1.2983	1.3917	1.3835	1.4088	Ave		1.3535				4.4		20.0			
13C2-2-Perfluorohexylethanoic acid	0.0717 0.0695	0.0773 0.0664	0.0755	0.0729	0.0759	Ave		0.0728				5.3		20.0			
M2-6:2 FTS	0.0857 0.0836	0.0923 0.0741	0.0881	0.0832	0.0866	Ave		0.0848				6.6		20.0			
13C8 PFOA	1.1749 1.2382	1.3013 1.1168	1.2446	1.1962	1.2320	Ave		1.2149				4.8		20.0			
13C8 PFOS	0.9151 1.0443	1.0067 0.9741	1.0464	0.9637	1.0132	Ave		0.9948				4.7		20.0			
13C9 PFNA	0.7556 0.8878	0.8538 0.8319	0.8936	0.8328	0.8944	Ave		0.8500				5.9		20.0			
13C2-2H-Perfluoro-2-decenoic acid	0.9147 1.0023	1.0154 1.0246	1.0359	0.9898	1.0066	Ave		0.9985				4.0		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2-2-Perfluorooctylethanoic acid	0.0367 0.0363	0.0388 0.0373	0.0388	0.0349	0.0384	Ave		0.0373				3.9		20.0			
13C6 PFDA	0.9265 1.0655	1.0522 1.0174	1.0263	1.0304	1.0282	Ave		1.0209				4.4		20.0			
M2-8:2 FTS	0.0525 0.0537	0.0558 0.0509	0.0547	0.0528	0.0519	Ave		0.0532				3.1		20.0			
13C8 FOSA	1.2956 1.5212	1.3723 1.5396	1.4774	1.4204	1.4703	Ave		1.4424				6.0		20.0			
d3-NMeFOSAA	0.3522 0.4353	0.3948 0.4291	0.4029	0.3824	0.3953	Ave		0.3989				7.0		20.0			
13C7 PFUnA	1.1166 1.2844	1.2849 1.2629	1.2825	1.2028	1.2792	Ave		1.2448				5.1		20.0			
d5-NEtFOSAA	0.2830 0.3172	0.3173 0.3130	0.3103	0.2991	0.3143	Ave		0.3077				4.1		20.0			
13C2-2H-Perfluoro-2-dodecenoic acid	1.0426 1.1094	1.1472 1.1075	1.1142	1.1118	1.1307	Ave		1.1090				2.9		20.0			
13C2-2-Perfluorodecylethanoic acid	0.0300 0.0331	0.0339 0.0327	0.0349	0.0335	0.0336	Ave		0.0331				4.6		20.0			
13C2-PFDoDA	1.0944 1.2635	1.1579 1.2367	1.1821	1.1694	1.1975	Ave		1.1859				4.6		20.0			
d7-N-MeFOSE-M	0.0880 0.1054	0.1020 0.1169	0.1012	0.0948	0.0992	Ave		0.1011				8.9		20.0			
d3-NMePFOSA	0.1001 0.1284	0.1157 0.1415	0.1119	0.1097	0.1190	Ave		0.1180				11.4		20.0			
d9-N-EtFOSE-M	0.0989 0.1193	0.1073 0.1286	0.1160	0.1082	0.1144	Ave		0.1132				8.4		20.0			
d5-NEtPFOSA	0.0924 0.1127	0.1066 0.1165	0.1031	0.1050	0.1030	Ave		0.1056				7.3		20.0			
13C2 PFTeDA	0.7346 0.8880	0.7960 0.9177	0.7989	0.8089	0.8240	Ave		0.8240				7.4		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-163270/1	21AUG25MCAL-04.d
Level 2	IC 410-163270/2	21AUG25MCAL-05.d
Level 3	IC 410-163270/3	21AUG25MCAL-06.d
Level 4	IC 410-163270/4	21AUG25MCAL-07.d
Level 5	ICISAV 410-163270/5	21AUG25MCAL-08.d
Level 6	IC 410-163270/6	21AUG25MCAL-09.d
Level 7	IC 410-163270/7	21AUG25MCAL-10.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
MTP		LID1F	4532 1236014	10615 2409873	48200	197046	533378	0.200 50.0	0.500 100	2.00	8.00	20.0
PPF Acid		LID1F	18461 4883442	41100 9294165	181930	771888	2115031	0.200 50.0	0.500 100	2.00	8.00	20.0
PFMOAA		LID1F	9725 2507873	22178 4891010	99525	399040	1099235	0.200 50.0	0.500 100	2.00	8.00	20.0
R-EVE		LID1F	3617 922003	7769 1848935	32940	144251	381880	0.200 50.0	0.500 100	2.00	8.00	20.0
R-PSDA		LID1F	1187 345745	2841 707315	12944	52175	141475	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanoic acid		LID1F	52044 12106164	106446 22180101	524033	2086747	5179731	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydrolyzed PSDA		LID1F	7826 1944885	15921 3929775	71741	308842	824377	0.200 50.0	0.500 100	2.00	8.00	20.0
PMPA		LID1F	13127 3863670	33155 7012005	147380	615843	1642334	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropropanesulfonic acid		LID1F	24736 6160473	54979 11296960	260919	1017107	2687479	0.183 45.8	0.458 91.6	1.83	7.33	18.3

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
NVHOS		LID1 F	17272 4564434	38567 8494572	182351	754599	2039641	0.200 50.0	0.500 100	2.00	8.00	20.0
PFECA F		LID1 F	52506 12577469	110177 22343315	538084	2105243	5604197	0.200 50.0	0.500 100	2.00	8.00	20.0
PFO2HxA		LID1 F	7812 1658303	13655 3252906	67527	297005	727166	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropentanoic acid		LID1 F	59511 12792064	114724 23021238	567092	2154600	5627896	0.200 50.0	0.500 100	2.00	8.00	20.0
3:3 FTCA		LID1 F	3630 840596	7862 1523021	38359	136424	374486	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanesulfonic acid		LID1 F	71591 17342990	155383 33744446	719675	3072825	7817005	0.177 44.3	0.443 88.5	1.77	7.08	17.7
PEPA		LID1 F	5692 1406225	14151 2559704	58303	243477	626149	0.200 50.0	0.500 100	2.00	8.00	20.0
PFECA A		LID1 F	54683 13372233	117916 23724722	535940	2165015	5595060	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoro (2-ethoxyethane) sulfonic acid		LID1 F	202826 48008652	415117 86551733	2029983	7974294	20512989	0.178 44.5	0.445 89.0	1.78	7.12	17.8
PFECA B		LID1 F	49384 12964884	107338 24109650	537775	2119957	5652932	0.200 50.0	0.500 100	2.00	8.00	20.0
4:2 Fluorotelomer sulfonic acid		LID1 F	34154 7086198	72171 12691621	317829	1252669	3123894	0.187 46.7	0.467 93.4	1.87	7.47	18.7
Perfluorohexanoic acid		LID1 F	79982 15656898	135801 28621156	637116	2606679	6873417	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluoropentanesulfonic acid		LID1 F	62667 15628766	137303 29101616	663003	2552838	6641897	0.188 46.9	0.469 93.8	1.88	7.50	18.8
PFO3OA		LID1 F	4671 1225537	9899 2143220	46046	188281	481722	0.200 50.0	0.500 100	2.00	8.00	20.0
HFPODA		LID1 F	9797 2628725	18326 4725370	104444	405077	1132600	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydro-EVE Acid		LID1 F	93642 22745699	197299 40787753	903505	3723572	9867295	0.200 50.0	0.500 100	2.00	8.00	20.0
R-PSDCA		LID1 F	130324 36689624	314521 66172828	1438251	5883750	15891379	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoroheptanoic acid		LID1 F	85520 18450873	183033 33072829	838035	3419235	9074521	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorohexanesulfonic acid		LID1 F	51132 12914483	108375 25015411	528984	2156592	5813892	0.182 45.6	0.456 91.2	1.82	7.30	18.2
Hydro-PS Acid		LID1 F	115246 30126793	254079 54152786	1171575	4729980	12966476	0.200 50.0	0.500 100	2.00	8.00	20.0
DONA		LID1 F	91233 23063153	193268 44024103	985227	3921131	10708910	0.189 47.3	0.473 94.5	1.89	7.56	18.9
PFECA G		LID1 F	87628 22000736	187118 40376534	905011	3703386	9894554	0.200 50.0	0.500 100	2.00	8.00	20.0
5:3 FTCA		LID1 F	17331 4432750	38883 7709412	190309	766972	1893658	0.200 50.0	0.500 100	2.00	8.00	20.0
6:2 FTUCA		LID1 F	107450 23599272	222697 39802962	1064503	4189611	10627170	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
6:2 FTCA		LID1F	5759 1075063	9894 2019959	45647	197109	475476	0.200 50.0	0.500 100	2.00	8.00	20.0
PFO4DA		LID1F	3285 1207118	11311 1839205	41670	194914	473266	0.200 50.0	0.500 100	2.00	8.00	20.0
PS Acid		LID1F	35340 9393127	80122 17658453	352975	1525613	4172529	0.200 50.0	0.500 100	2.00	8.00	20.0
EVE Acid		LID1F	62806 15267275	141005 28110994	658535	2630286	7057414	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoro-4-ethylcyclohexanesulfonic acid		LID1F	90282 21822143	177264 41010928	898936	3573676	9242010	0.185 46.2	0.462 92.4	1.85	7.39	18.5
6:2 Fluorotelomer sulfonic acid		AveID	37131 4638372	66186 7885572	241071	915988	2251504	0.190 47.4	0.474 94.8	1.90	7.58	19.0
Perfluoroheptanesulfonic acid		LID1F	61230 13608248	116911 24800624	598501	2314515	5963844	0.190 47.6	0.476 95.2	1.90	7.62	19.0
Perfluorooctanoic acid		LID1F	67646 14878832	130357 27332408	609338	2545204	6558212	0.200 50.0	0.500 100	2.00	8.00	20.0
TAF		LID1F	2668 722451	8061 1459765	34878	127597	336788	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorooctanesulfonic acid		LID1F	63379 16080401	132748 30672440	624761	2585591	6877797	0.185 46.3	0.463 92.6	1.85	7.40	18.5
Perfluorononanoic acid		LID1F	44306 12611812	107578 23531209	492786	2085953	5428634	0.200 50.0	0.500 100	2.00	8.00	20.0
7:3 FTCA		LID1F	22024 4630000	39876 8086009	187540	764572	2025446	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
8:2 FTUCA		LID1 F	82413 18001623	154359 30625916	792287	3062615	8148536	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 FTCA		LID1 F	3342 660804	5700 1155681	31383	113735	287635	0.200 50.0	0.500 100	2.00	8.00	20.0
9Cl-PF3ONS		LID1 F	101067 25600165	203091 47147320	1014637	4322583	11659132	0.186 46.5	0.465 93.0	1.86	7.44	18.6
Perfluorononanesulfonic acid		LID1 F	61700 15423393	134069 27526380	654984	2576092	6443810	0.192 48.0	0.480 96.0	1.92	7.68	19.2
Perfluorodecanoic acid		LID1 F	66119 15305712	124965 28066190	658736	2736773	7014976	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 Fluorotelomer sulfonic acid		LID1 F	28456 5768970	57802 9856227	296599	1088416	2723563	0.192 47.9	0.479 95.8	1.92	7.66	19.2
Perfluorooctanesulfonamide		LID1 F	118162 27222859	232791 50385975	1192782	4634461	12151763	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSAA		LID1 F	27717 6448427	60969 12077452	261994	1116191	2917489	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorodecanesulfonic acid		LID1 F	53424 13683313	113900 24528106	571409	2234709	5695739	0.193 48.2	0.482 96.4	1.93	7.71	19.3
Perfluoroundecanoic acid		LID1 F	83399 17958027	169287 32583155	799648	3255852	8419030	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSAA		LID1 F	25729 5400325	49588 9679587	215444	920255	2404551	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTUCA		LID1 F	80003 17906191	172880 30357418	798172	3229425	8225409	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
11Cl-PF3OUdS		LID1 F	70417 18608699	140909 33557937	719323	3161812	8242123	0.186 46.5	0.465 93.0	1.86	7.44	18.6
10:2 FTCA		LID1 F	2616 490144	4300 849195	17653	90690	213713	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanoic acid		LID1 F	96394 22343491	195573 38030387	916358	3818028	9780146	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTS		LID1 F	27607 6108480	60149 10678695	293512	1096156	2689472	0.193 48.2	0.482 96.4	1.93	7.71	19.3
NMeFOSE		LID1 F	11286 1960614	17214 3887959	88346	336750	850357	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSA		LID1 F	8696 2200469	17878 4351798	99896	392248	974416	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanesulfonic acid		LID1 F	62187 14160687	117536 25966654	585300	2365335	5826217	0.194 48.4	0.484 96.8	1.94	7.74	19.4
NEtFOSE		LID1 F	8215 2201461	19975 4023399	98444	372416	935080	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSA		LID1 F	7586 2024211	18222 3879892	87457	337287	879401	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotridecanoic acid		LID1 F	58316 15564162	129143 27194985	614483	2571122	6798683	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotetradecanoic acid		LID1 F	60448 13778628	115613 26317137	563823	2371878	6155588	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorohexadecanoic acid		LID1 F	54358 10944642	98074 19566127	471432	1809589	4746762	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorooctadecanoic acid		LID1F	20916 5365272	43855 9950949	223894	863571	2265644	0.200 50.0	0.500 100	2.00	8.00	20.0
13C4 PFBA	13C3 PFBA	Ave	2983304 2752533	2719274 2448949	2961561	2896587	2810011	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C5 PFPeA	13C3 PFBA	Ave	3044888 2853777	2692145 2425600	3080619	2944053	2957140	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFBS	13C3 PFBA	Ave	3537355 3344076	3322454 3014441	3552341	3491319	3436066	9.36 9.36	9.36 9.36	9.36	9.36	9.36
M2-4:2 FTS	13PFOA	Ave	520131 453805	459643 406133	519599	490160	490023	9.34 9.34	9.34 9.34	9.34	9.34	9.34
13C5 PFHxA	13PFOA	Ave	4465543 3969177	4014626 3505354	4407694	4112038	4205974	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 HFPO-DA	13PFOA	Ave	51283 46364	44631 40047	52533	47638	51554	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFHxS	13PFOA	Ave	2829518 2685979	2740474 2336198	2868715	2883076	2807229	9.46 9.46	9.46 9.46	9.46	9.46	9.46
13C4 PFHpA	13PFOA	Ave	4413685 4019856	4194874 3457633	4675631	4301027	4289880	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-octenoic acid	13PFOA	Ave	4310627 3878075	3959223 3527817	4530136	4421208	4325022	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorohexylethanoic acid	13PFOA	Ave	247479 200694	218791 180511	245787	233107	233090	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-6:2 FTS	13PFOA	Ave	280962 229292	248157 191312	272429	252566	252525	9.50 9.50	9.50 9.50	9.50	9.50	9.50

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C8 PFOA	13PFOA	Ave	4052430 3573243	3684537 3034554	4051210	3822697	3782323	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C8 PFOS	PFOS	Ave	3416397 3231412	3079437 2853060	3510518	3273885	3286610	9.57 9.57	9.57 9.57	9.57	9.57	9.57
13C9 PFNA	PFOS	Ave	2949166 2871887	2730626 2547525	3134171	2958093	3033101	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-decenoic acid	PFDA	Ave	4250529 3720215	3829562 3302650	4330486	4170452	4092535	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorooctylethanoic acid	PFDA	Ave	170545 134828	146243 120270	162235	146950	156062	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C6 PFDA	PFDA	Ave	4305347 3954665	3968209 3279367	4290747	4341342	4180605	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-8:2 FTS	PFDA	Ave	233549 190810	201462 157310	219043	213038	202291	9.58 9.58	9.58 9.58	9.58	9.58	9.58
13C8 FOSA	PFDA	Ave	6020544 5646326	5175637 4962930	6176581	5984688	5977894	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMeFOSAA	PFDA	Ave	1636748 1615824	1489138 1383311	1684530	1611050	1607406	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C7 PFUnA	PFDA	Ave	5188682 4767255	4846034 4070929	5361467	5067746	5200986	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtFOSAA	PFDA	Ave	1315165 1177279	1196667 1008807	1297366	1260221	1278053	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-dodecenoic acid	PFDA	Ave	4844921 4117803	4326697 3569847	4657955	4684230	4597055	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorodecylethanoic acid	PFDA	Ave	139469 122814	127665 105299	145862	141343	136654	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-PFDoDA	PFDA	Ave	5085484 4689877	4367013 3986328	4941916	4927124	4868816	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d7-N-MeFOSE-M	PFDA	Ave	408988 391073	384688 376909	423252	399217	403531	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMePFOSA	PFDA	Ave	464977	436386	467771	462110	483766	10.0	10.0	10.0	10.0	10.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
			476594	456041				10.0	10.0			
d9-N-EtFOSE-M	PFDA	Ave	459433 442862	404808 414529	484836	455773	465318	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtPFOSA	PFDA	Ave	429408 418289	402192 375625	431106	442494	418869	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2 PFTeDA	PFDA	Ave	3413667 3296036	3001943 2958044	3339919	3408348	3350255	10.0 10.0	10.0 10.0	10.0	10.0	10.0

Curve Type Legend

Ave = Average ISTD
AveID = Average isotope dilution
LID1F = Linear 1/Conc IsoDil FZ

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-163270/1	21AUG25MCAL-04.d
Level 2	IC 410-163270/2	21AUG25MCAL-05.d
Level 3	IC 410-163270/3	21AUG25MCAL-06.d
Level 4	IC 410-163270/4	21AUG25MCAL-07.d
Level 5	ICISAV 410-163270/5	21AUG25MCAL-08.d
Level 6	IC 410-163270/6	21AUG25MCAL-09.d
Level 7	IC 410-163270/7	21AUG25MCAL-10.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
MTP	-19.9 3.8	-17.6	-14.1	-10.3	0.1	-5.2	50 30	30	30	30	30	30
PPF Acid	-16.2 2.8	-18.1	-16.8	-9.8	1.9	-3.9	50 30	30	30	30	30	30
PFMOAA	-15.4 3.6	-15.4	-12.8	-10.6	1.5	-5.4	50 30	30	30	30	30	30
R-EVE	-15.1 5.7	-20.0	-22.2	-12.9	-4.9	-6.2	50 30	30	30	30	30	30
R-PSDA	-24.0 6.3	-22.5	-17.5	-15.4	-6.8	-6.3	50 30	30	30	30	30	30
Perfluorobutanoic acid	-3.0 0.7	-13.0	-1.6	0.1	2.5	-2.2	50 30	30	30	30	30	30
Hydrolyzed PSDA	-10.8 5.1	-22.7	-18.6	-10.8	-3.3	-6.2	50 30	30	30	30	30	30
PMPA	-22.5 0.8	-14.1	-12.4	-6.4	2.9	-1.1	50 30	30	30	30	30	30
Perfluoropropanesulfonic acid	-9.5 0.7	-11.7	-3.8	-4.2	4.4	-2.3	50 30	30	30	30	30	30
NVHOS	-12.8 0.6	-17.1	-8.3	-3.5	6.0	-2.5	50 30	30	30	30	30	30
PFECA F	-4.5 -1.0	-12.1	-1.4	-1.4	8.2	-0.8	50 30	30	30	30	30	30
PFO2HxA	1.9 3.3	-21.9	-11.3	-0.3	0.7	-6.3	50 30	30	30	30	30	30
Perfluoropentanoic acid	4.8 1.8	-8.6	-1.3	-1.9	2.0	-3.9	50 30	30	30	30	30	30
3:3 FTCA	-3.1 2.0	-5.1	1.2	-5.9	2.9	-4.3	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid	-7.7 2.1	-14.7	-7.6	0.4	3.8	-5.4	50 30	30	30	30	30	30
PEPA	-8.8 -0.1	-0.5	-5.9	0.5	6.5	-2.3	50 30	30	30	30	30	30
PFECA A	-2.5 -0.7	-10.4	-4.8	-2.2	2.7	0.9	50 30	30	30	30	30	30
Perfluoro (2-ethoxyethane) sulfonic acid	-0.5 -0.4	-13.3	-0.9	-0.9	3.6	-0.4	50 30	30	30	30	30	30
PFECA B	-11.9 0.9	-18.5	-4.5	-4.3	3.8	-2.2	50 30	30	30	30	30	30
4:2 Fluorotelomer sulfonic acid	4.8 -0.3	0.2	-2.4	1.9	1.7	-0.3	50 30	30	30	30	30	30
Perfluorohexanoic acid	11.0 1.2	-16.1	-10.4	-1.8	1.3	-2.2	50 30	30	30	30	30	30
Perfluoropentanesulfonic acid	-7.1 1.2	-13.4	-2.2	-4.2	1.3	-2.0	50 30	30	30	30	30	30
PFO3OA	-10.3 0.2	-16.6	-11.0	-6.9	-1.8	2.0	50 30	30	30	30	30	30
HFPODA	-16.9 2.6	-28.6	-13.5	-7.6	-4.5	-1.4	50 30	30	30	30	30	30
Hydro-EVE Acid	-5.9 -0.1	-13.0	-8.5	-3.6	5.3	-0.9	50 30	30	30	30	30	30
R-PSDCA	-16.3 -0.3	-14.0	-8.0	-4.3	5.1	-0.3	50 30	30	30	30	30	30
Perfluoroheptanoic acid	1.1 -0.1	-8.9	-6.4	3.7	10.4	-4.2	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid	-12.1 4.2	-23.1	-10.3	-9.0	0.7	-6.5	50 30	30	30	30	30	30
Hydro-PS Acid	-9.5 -0.2	-15.1	-8.4	-6.0	4.8	0.1	50 30	30	30	30	30	30
DONA	-15.7 3.8	-24.8	-14.1	-7.1	1.8	-6.4	50 30	30	30	30	30	30
PFECA G	-10.6 0.4	-16.2	-7.0	-2.7	7.2	-2.7	50 30	30	30	30	30	30
5:3 FTCA	-11.4 0.6	-16.4	-8.2	0.5	-0.4	-0.5	50 30	30	30	30	30	30
6:2 FTUCA	6.8 -3.3	-3.6	0.7	1.5	5.3	4.3	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
6:2 FTCA	6.8 2.7	-17.0	-14.8	-3.0	-6.4	-1.7	50 30	30	30	30	30	30
PFO4DA	-31.1 -6.1	4.1	-12.0	5.2	5.3	9.7	50 30	30	30	30	30	30
PS Acid	-13.6 1.3	-16.6	-14.1	-5.6	5.0	-2.9	50 30	30	30	30	30	30
EVE Acid	-8.3 0.0	-9.6	-3.1	-1.1	9.4	-3.3	50 30	30	30	30	30	30
Perfluoro-4-ethylcyclohexanesulfonic acid	-5.9 3.6	-23.7	-7.5	-8.6	-2.9	-4.1	50 30	30	30	30	30	30
6:2 Fluorotelomer sulfonic acid	38.0 -13.9	11.4	-7.6	-5.3	-6.9	-15.5	50 30	30	30	30	30	30
Perfluoroheptanesulfonic acid	3.5 1.6	-18.3	-0.2	-4.0	1.7	-3.0	50 30	30	30	30	30	30
Perfluorooctanoic acid	-4.4 3.2	-18.9	-13.8	-4.7	-0.7	-4.6	50 30	30	30	30	30	30
TAF	-22.2 3.8	3.2	2.5	-4.2	4.3	-8.6	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid	-11.1 3.1	-17.3	-14.7	-5.4	0.3	-4.6	50 30	30	30	30	30	30
Perfluorononanoic acid	-16.9 2.2	-12.8	-13.0	-2.5	-1.0	-2.8	50 30	30	30	30	30	30
7:3 FTCA	-0.6 0.1	-18.6	-14.8	-8.4	-2.9	3.1	50 30	30	30	30	30	30
8:2 FTUCA	2.6 -1.9	-14.7	-3.2	-2.9	5.3	2.4	50 30	30	30	30	30	30
8:2 FTCA	1.9 -0.1	-18.9	0.6	0.6	-4.2	1.9	50 30	30	30	30	30	30
9Cl-PF3ONS	-10.0 0.5	-19.7	-12.1	0.4	7.9	-3.6	50 30	30	30	30	30	30
Perfluorononanesulfonic acid	-6.3 0.1	-9.7	-3.2	2.0	1.7	-1.0	50 30	30	30	30	30	30
Perfluorodecanoic acid	-7.1 3.5	-23.8	-7.1	-4.7	1.5	-6.4	50 30	30	30	30	30	30
8:2 Fluorotelomer sulfonic acid	-2.8 0.0	-8.4	8.1	1.9	7.4	-3.5	50 30	30	30	30	30	30
Perfluorooctanesulfonamide	-1.7 1.7	-9.9	-3.3	-3.0	1.8	-3.4	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
NMeFOSAA	-0.9 2.2	-4.2	-9.0	1.3	6.2	-6.6	50 30	30	30	30	30	30
Perfluorodecanesulfonic acid	-8.6 0.5	-13.6	-4.9	-0.3	1.3	-1.0	50 30	30	30	30	30	30
Perfluoroundecanoic acid	2.0 1.6	-11.3	-5.3	2.0	2.8	-4.3	50 30	30	30	30	30	30
NEtFOSAA	3.8 1.9	-12.0	-11.9	-3.1	-0.1	-2.6	50 30	30	30	30	30	30
10:2 FTUCA	-4.1 -1.2	-7.2	-0.5	0.1	3.9	1.0	50 30	30	30	30	30	30
11Cl-PF3OUdS	-12.4 -0.1	-22.2	-12.9	2.6	6.5	-2.1	50 30	30	30	30	30	30
10:2 FTCA	17.4 1.0	-15.7	-24.2	0.4	-2.1	-0.1	50 30	30	30	30	30	30
Perfluorododecanoic acid	-1.2 -0.6	-6.6	-3.4	1.0	4.7	-0.7	50 30	30	30	30	30	30
10:2 FTS	-11.1 2.1	-10.2	0.8	-3.2	0.0	-3.7	50 30	30	30	30	30	30
NMeFOSE	34.3 0.4	-12.9	1.6	2.7	2.6	-2.4	50 30	30	30	30	30	30
NMeFOSA	-2.3 -0.3	-14.4	11.6	10.9	5.2	-3.5	50 30	30	30	30	30	30
Perfluorododecanesulfonic acid	1.5 1.5	-14.9	-7.0	0.7	-1.1	-2.3	50 30	30	30	30	30	30
NEtFOSE	-9.1 -1.3	0.3	3.2	3.8	2.2	1.1	50 30	30	30	30	30	30
NEtFOSA	-12.8 2.0	-10.5	0.2	-5.9	3.7	-4.4	50 30	30	30	30	30	30
Perfluorotridecanoic acid	-15.2 0.8	-12.6	-8.1	-3.6	3.2	-1.9	50 30	30	30	30	30	30
Perfluorotetradecanoic acid	1.0 1.5	-12.1	-3.7	-0.7	4.8	-4.6	50 30	30	30	30	30	30
Perfluorohexadecanoic acid	19.2 -1.0	-2.2	5.6	-0.7	6.0	-0.6	50 30	30	30	30	30	30
Perfluorooctadecanoic acid	-7.9 1.2	-12.1	0.8	-4.8	1.7	-2.1	50 30	30	30	30	30	30
13C4 PFBA	-6.3 -0.5	2.1	1.3	-0.7	2.1	2.0	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C5 PFPeA	-6.3 -3.5	-1.0	3.2	-1.2	5.3	3.6	50 30	30	30	30	30	30
13C3 PFBS	-8.3 1.0	2.9	0.3	-1.2	3.1	2.3	50 30	30	30	30	30	30
M2-4:2 FTS	-3.4 -4.2	4.0	2.3	-1.7	2.3	0.8	50 30	30	30	30	30	30
13C5 PFHxA	-3.5 -3.8	5.7	1.0	-4.1	2.1	2.5	50 30	30	30	30	30	30
13C3 HFPO-DA	-4.8 -5.6	1.0	3.4	-4.5	7.6	2.9	50 30	30	30	30	30	30
13C3 PFHxS	-8.5 -4.1	7.9	-1.7	0.6	2.0	3.8	50 30	30	30	30	30	30
13C4 PFHpA	-6.8 -7.3	8.0	4.7	-1.9	1.8	1.5	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-octenoic acid	-7.7 -4.1	3.3	2.8	2.2	4.1	-0.7	50 30	30	30	30	30	30
13C2-2-Perfluorohexylethanoic acid	-1.4 -8.7	6.2	3.8	0.2	4.3	-4.4	50 30	30	30	30	30	30
M2-6:2 FTS	1.1 -12.6	8.8	3.9	-1.9	2.1	-1.4	50 30	30	30	30	30	30
13C8 PFOA	-3.3 -8.1	7.1	2.4	-1.5	1.4	1.9	50 30	30	30	30	30	30
13C8 PFOS	-8.0 -2.1	1.2	5.2	-3.1	1.9	5.0	50 30	30	30	30	30	30
13C9 PFNA	-11.1 -2.1	0.4	5.1	-2.0	5.2	4.4	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-decenoic acid	-8.4 2.6	1.7	3.7	-0.9	0.8	0.4	50 30	30	30	30	30	30
13C2-2-Perfluorooctylethanoic acid	-1.6 0.0	3.9	4.0	-6.5	2.9	-2.6	50 30	30	30	30	30	30
13C6 PFDA	-9.2 -0.3	3.1	0.5	0.9	0.7	4.4	50 30	30	30	30	30	30
M2-8:2 FTS	-1.3 -4.2	4.9	2.9	-0.7	-2.3	0.9	50 30	30	30	30	30	30
13C8 FOSA	-10.2 6.7	-4.9	2.4	-1.5	1.9	5.5	50 30	30	30	30	30	30
d3-NMeFOSAA	-11.7 7.6	-1.0	1.0	-4.1	-0.9	9.1	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 163270

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/25/2021 16:04 Calibration End Date: 08/25/2021 17:10 Calibration ID: 30015

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C7 PFUnA	-10.3 1.5	3.2	3.0	-3.4	2.8	3.2	50 30	30	30	30	30	30
d5-NEtFOSAA	-8.0 1.7	3.1	0.8	-2.8	2.1	3.1	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-dodecenoic acid	-6.0 -0.1	3.4	0.5	0.2	1.9	0.0	50 30	30	30	30	30	30
13C2-2-Perfluorodecylethanoic acid	-9.3 -1.3	2.3	5.4	1.4	1.6	0.0	50 30	30	30	30	30	30
13C2-PFDoDA	-7.7 4.3	-2.4	-0.3	-1.4	1.0	6.5	50 30	30	30	30	30	30
d7-N-MeFOSE-M	-12.9 15.7	0.9	0.2	-6.3	-1.8	4.2	50 30	30	30	30	30	30
d3-NMePFOSA	-15.2 19.9	-2.0	-5.2	-7.1	0.8	8.8	50 30	30	30	30	30	30
d9-N-EtFOSE-M	-12.7 13.6	-5.2	2.4	-4.5	1.1	5.4	50 30	30	30	30	30	30
d5-NEtPFOSA	-12.5 10.3	1.0	-2.4	-0.6	-2.5	6.7	50 30	30	30	30	30	30
13C2 PFTeDA	-10.8 11.4	-3.4	-3.0	-1.8	0.0	7.8	50 30	30	30	30	30	30

Calibration / MTP

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

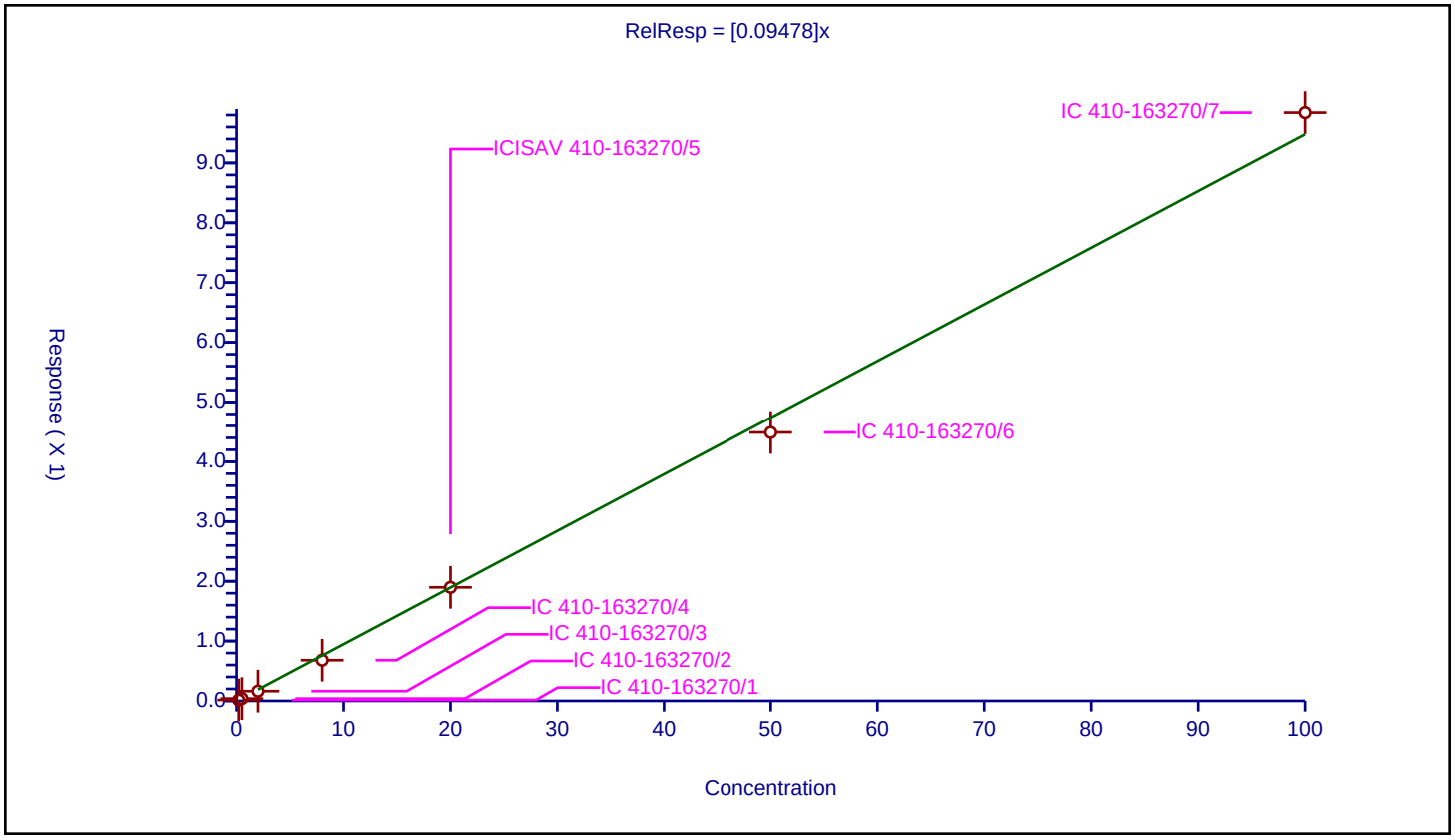
Curve Coefficients

Intercept:	0
Slope:	0.09478

Error Coefficients

Standard Error:	1130000
Relative Standard Error:	13.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.015191	10.0	2983304.0	0.075956	Y
2	IC 410-163270/2	0.5	0.039036	10.0	2719274.0	0.078072	Y
3	IC 410-163270/3	2.0	0.162752	10.0	2961561.0	0.081376	Y
4	IC 410-163270/4	8.0	0.68027	10.0	2896587.0	0.085034	Y
5	ICISAV 410-163270/5	20.0	1.898135	10.0	2810011.0	0.094907	Y
6	IC 410-163270/6	50.0	4.49046	10.0	2752533.0	0.089809	Y
7	IC 410-163270/7	100.0	9.840438	10.0	2448949.0	0.098404	Y



Calibration / PPF Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

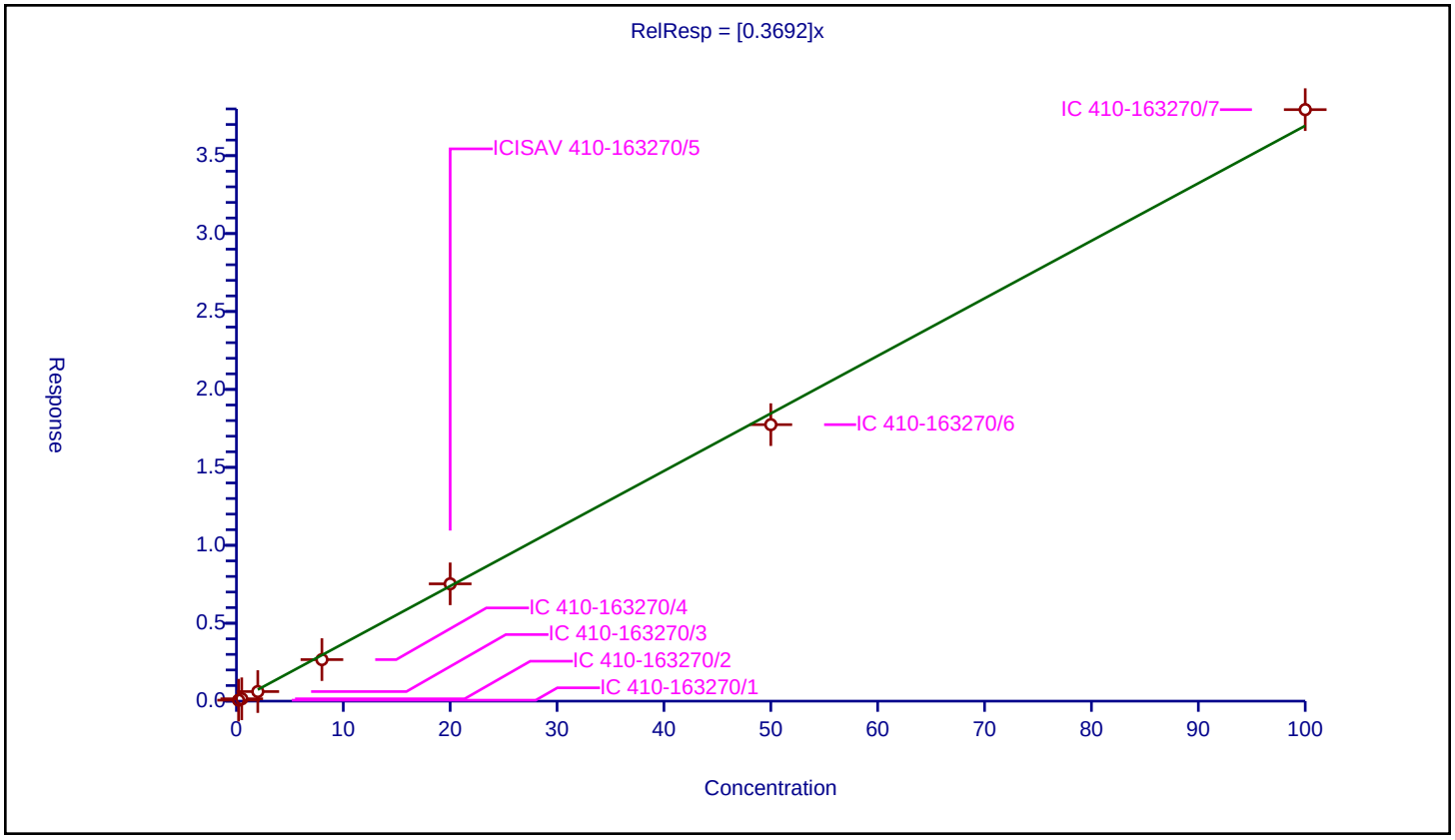
Curve Coefficients

Intercept:	0
Slope:	0.3692

Error Coefficients

Standard Error:	4380000
Relative Standard Error:	12.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.061881	10.0	2983304.0	0.309405	Y
2	IC 410-163270/2	0.5	0.151143	10.0	2719274.0	0.302287	Y
3	IC 410-163270/3	2.0	0.614304	10.0	2961561.0	0.307152	Y
4	IC 410-163270/4	8.0	2.664819	10.0	2896587.0	0.333102	Y
5	ICISAV 410-163270/5	20.0	7.526771	10.0	2810011.0	0.376339	Y
6	IC 410-163270/6	50.0	17.741629	10.0	2752533.0	0.354833	Y
7	IC 410-163270/7	100.0	37.951648	10.0	2448949.0	0.379516	Y



Calibration / PFMOAA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

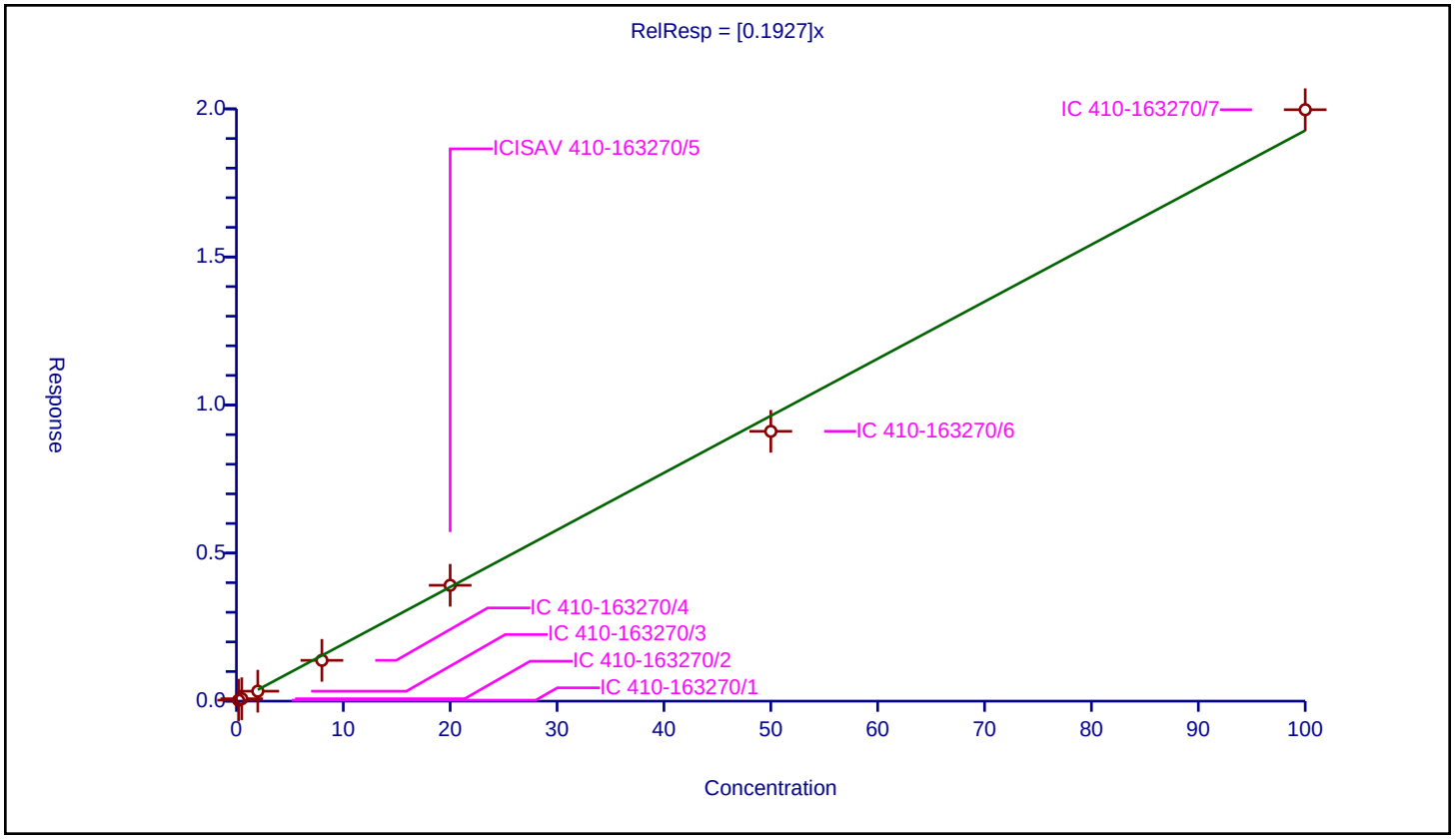
Curve Coefficients

Intercept:	0
Slope:	0.1927

Error Coefficients

Standard Error:	2290000
Relative Standard Error:	11.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.032598	10.0	2983304.0	0.16299	Y
2	IC 410-163270/2	0.5	0.081559	10.0	2719274.0	0.163117	Y
3	IC 410-163270/3	2.0	0.336056	10.0	2961561.0	0.168028	Y
4	IC 410-163270/4	8.0	1.377621	10.0	2896587.0	0.172203	Y
5	ICISAV 410-163270/5	20.0	3.911853	10.0	2810011.0	0.195593	Y
6	IC 410-163270/6	50.0	9.111146	10.0	2752533.0	0.182223	Y
7	IC 410-163270/7	100.0	19.971874	10.0	2448949.0	0.199719	Y



Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

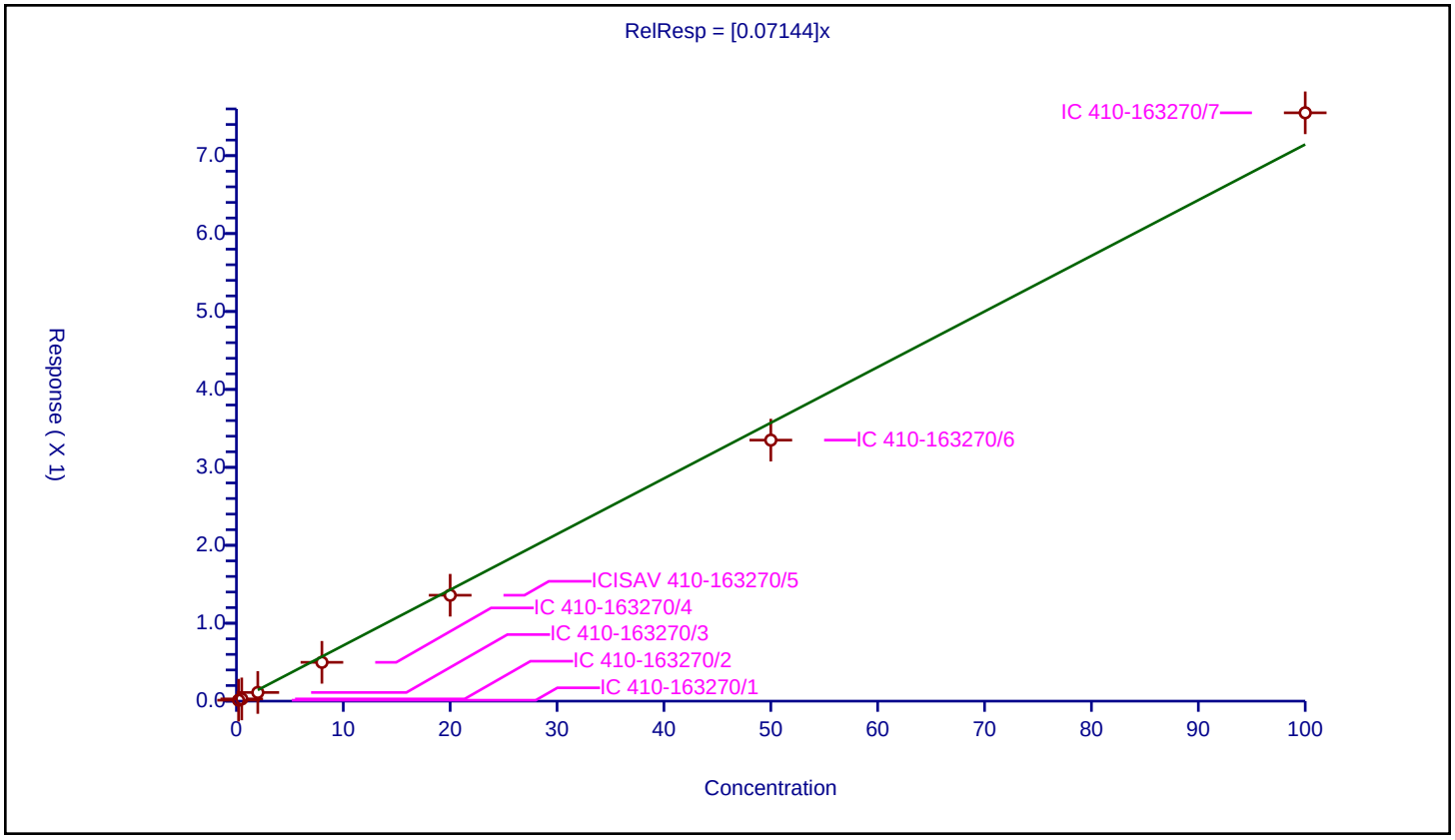
Curve Coefficients

Intercept:	0
Slope:	0.07144

Error Coefficients

Standard Error:	860000
Relative Standard Error:	15.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.012124	10.0	2983304.0	0.060621	Y
2	IC 410-163270/2	0.5	0.02857	10.0	2719274.0	0.05714	Y
3	IC 410-163270/3	2.0	0.111225	10.0	2961561.0	0.055613	Y
4	IC 410-163270/4	8.0	0.498003	10.0	2896587.0	0.06225	Y
5	ICISAV 410-163270/5	20.0	1.358998	10.0	2810011.0	0.06795	Y
6	IC 410-163270/6	50.0	3.349653	10.0	2752533.0	0.066993	Y
7	IC 410-163270/7	100.0	7.549912	10.0	2448949.0	0.075499	Y



Calibration / R-PSDA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

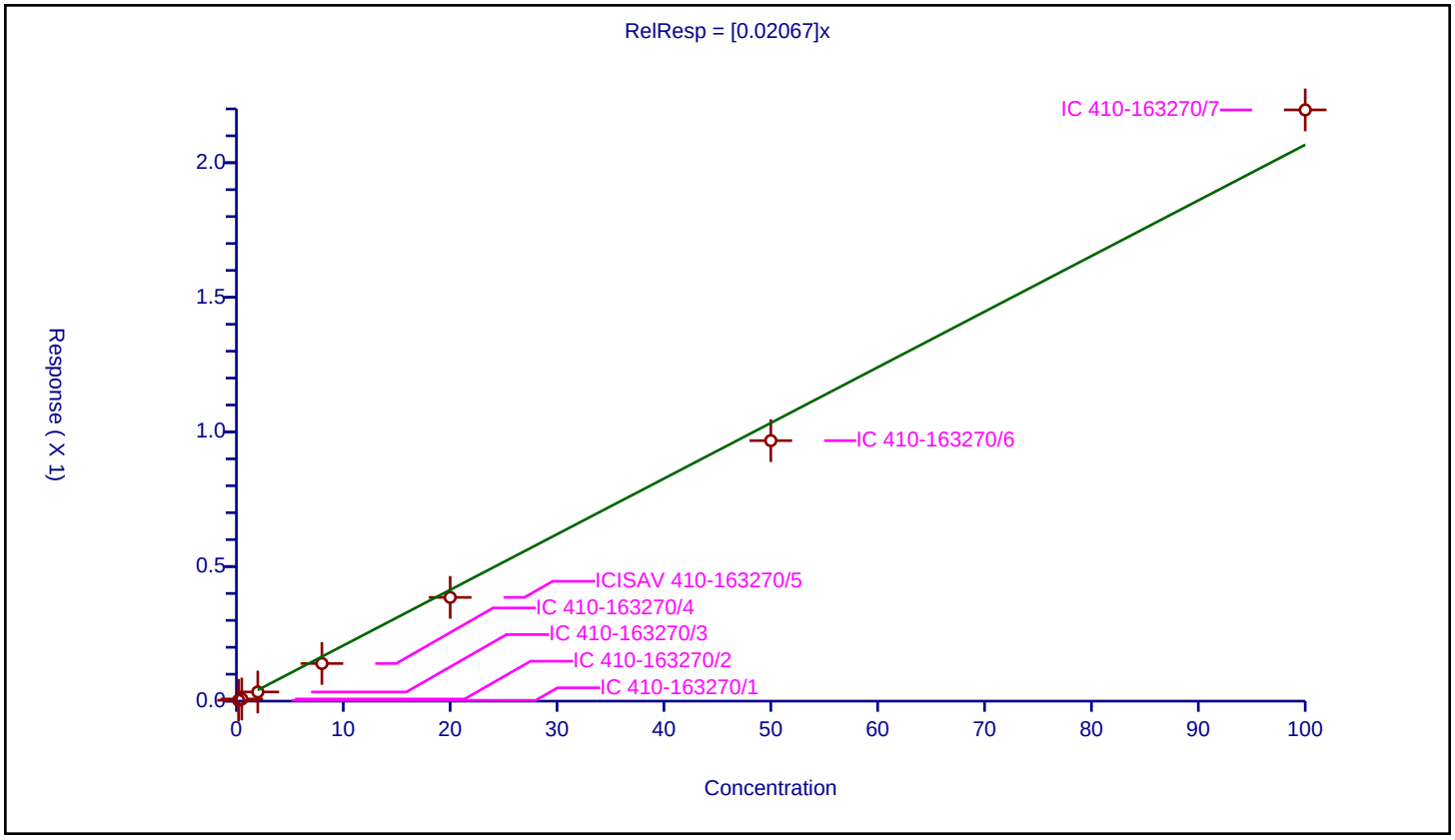
Curve Coefficients

Intercept:	0
Slope:	0.02067

Error Coefficients

Standard Error:	327000
Relative Standard Error:	17.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.003141	9.36	3537355.0	0.015704	Y
2	IC 410-163270/2	0.5	0.008004	9.36	3322454.0	0.016007	Y
3	IC 410-163270/3	2.0	0.034106	9.36	3552341.0	0.017053	Y
4	IC 410-163270/4	8.0	0.139878	9.36	3491319.0	0.017485	Y
5	ICISAV 410-163270/5	20.0	0.385384	9.36	3436066.0	0.019269	Y
6	IC 410-163270/6	50.0	0.967733	9.36	3344076.0	0.019355	Y
7	IC 410-163270/7	100.0	2.196251	9.36	3014441.0	0.021963	Y



Calibration / Perfluorobutanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

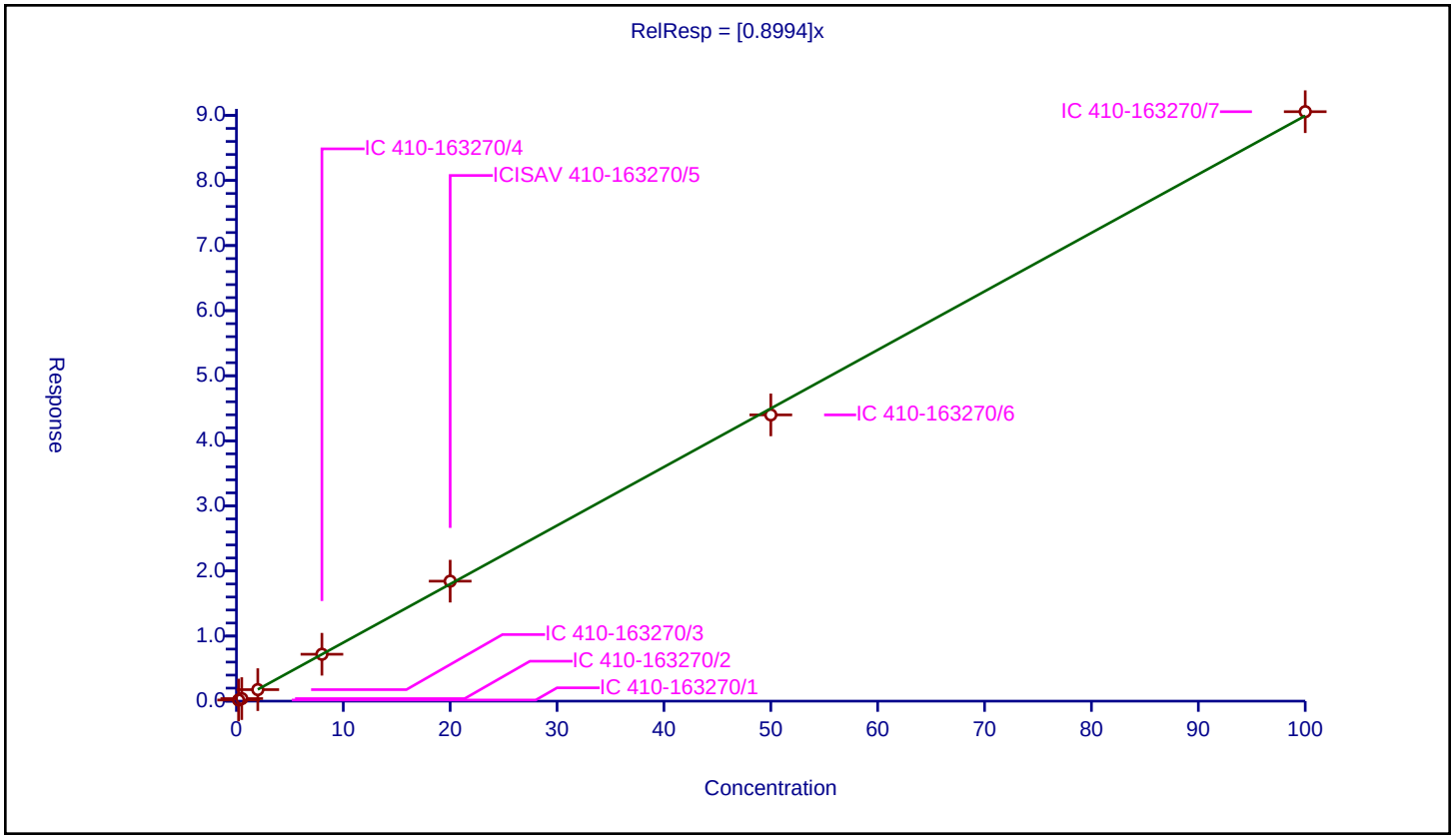
Curve Coefficients

Intercept:	0
Slope:	0.8994

Error Coefficients

Standard Error:	10600000
Relative Standard Error:	5.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.174451	10.0	2983304.0	0.872254	Y
2	IC 410-163270/2	0.5	0.39145	10.0	2719274.0	0.7829	Y
3	IC 410-163270/3	2.0	1.769449	10.0	2961561.0	0.884724	Y
4	IC 410-163270/4	8.0	7.204158	10.0	2896587.0	0.90052	Y
5	ICISAV 410-163270/5	20.0	18.433134	10.0	2810011.0	0.921657	Y
6	IC 410-163270/6	50.0	43.981903	10.0	2752533.0	0.879638	Y
7	IC 410-163270/7	100.0	90.569877	10.0	2448949.0	0.905699	Y



Calibration / Hydrolyzed PSDA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

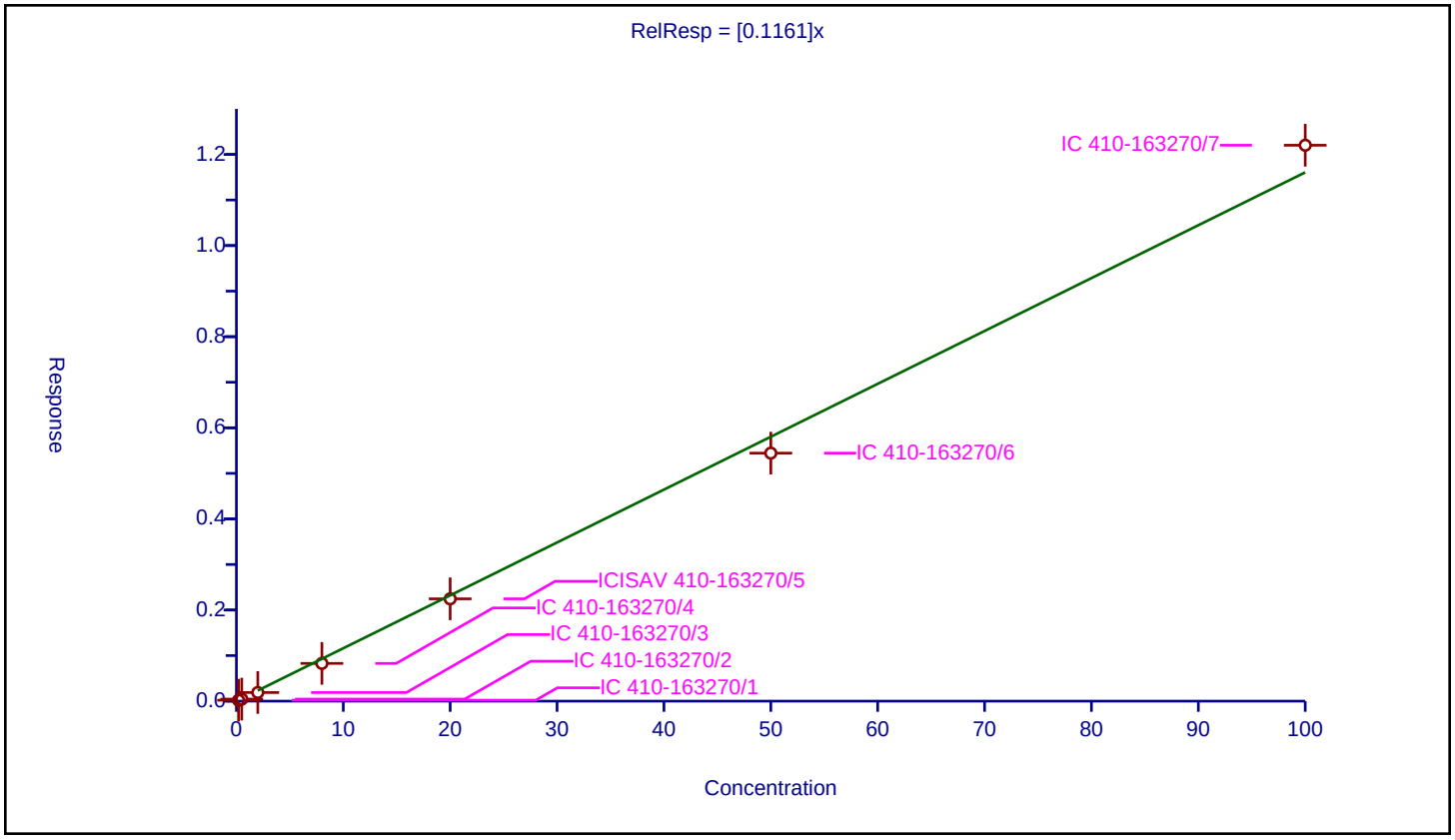
Curve Coefficients

Intercept:	0
Slope:	0.1161

Error Coefficients

Standard Error:	1830000
Relative Standard Error:	14.0
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.020708	9.36	3537355.0	0.10354	Y
2	IC 410-163270/2	0.5	0.044853	9.36	3322454.0	0.089705	Y
3	IC 410-163270/3	2.0	0.189029	9.36	3552341.0	0.094515	Y
4	IC 410-163270/4	8.0	0.827985	9.36	3491319.0	0.103498	Y
5	ICISAV 410-163270/5	20.0	2.24564	9.36	3436066.0	0.112282	Y
6	IC 410-163270/6	50.0	5.443693	9.36	3344076.0	0.108874	Y
7	IC 410-163270/7	100.0	12.202161	9.36	3014441.0	0.122022	Y



Calibration / PMPA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

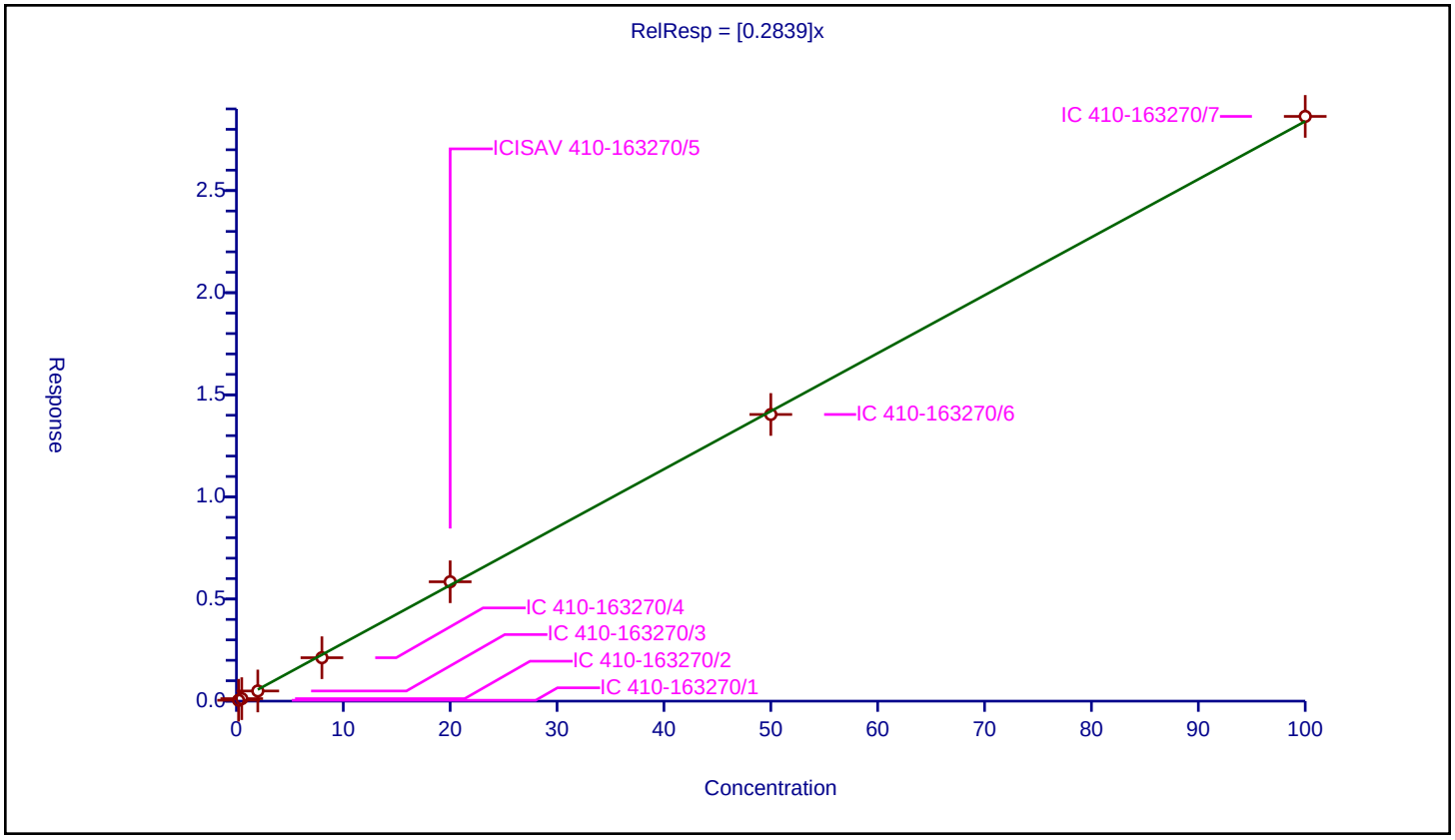
Curve Coefficients

Intercept:	0
Slope:	0.2839

Error Coefficients

Standard Error:	3350000
Relative Standard Error:	12.3
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.044002	10.0	2983304.0	0.220008	Y
2	IC 410-163270/2	0.5	0.121926	10.0	2719274.0	0.243852	Y
3	IC 410-163270/3	2.0	0.497643	10.0	2961561.0	0.248821	Y
4	IC 410-163270/4	8.0	2.126099	10.0	2896587.0	0.265762	Y
5	ICISAV 410-163270/5	20.0	5.844582	10.0	2810011.0	0.292229	Y
6	IC 410-163270/6	50.0	14.03678	10.0	2752533.0	0.280736	Y
7	IC 410-163270/7	100.0	28.632711	10.0	2448949.0	0.286327	Y



Calibration / PFPrS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

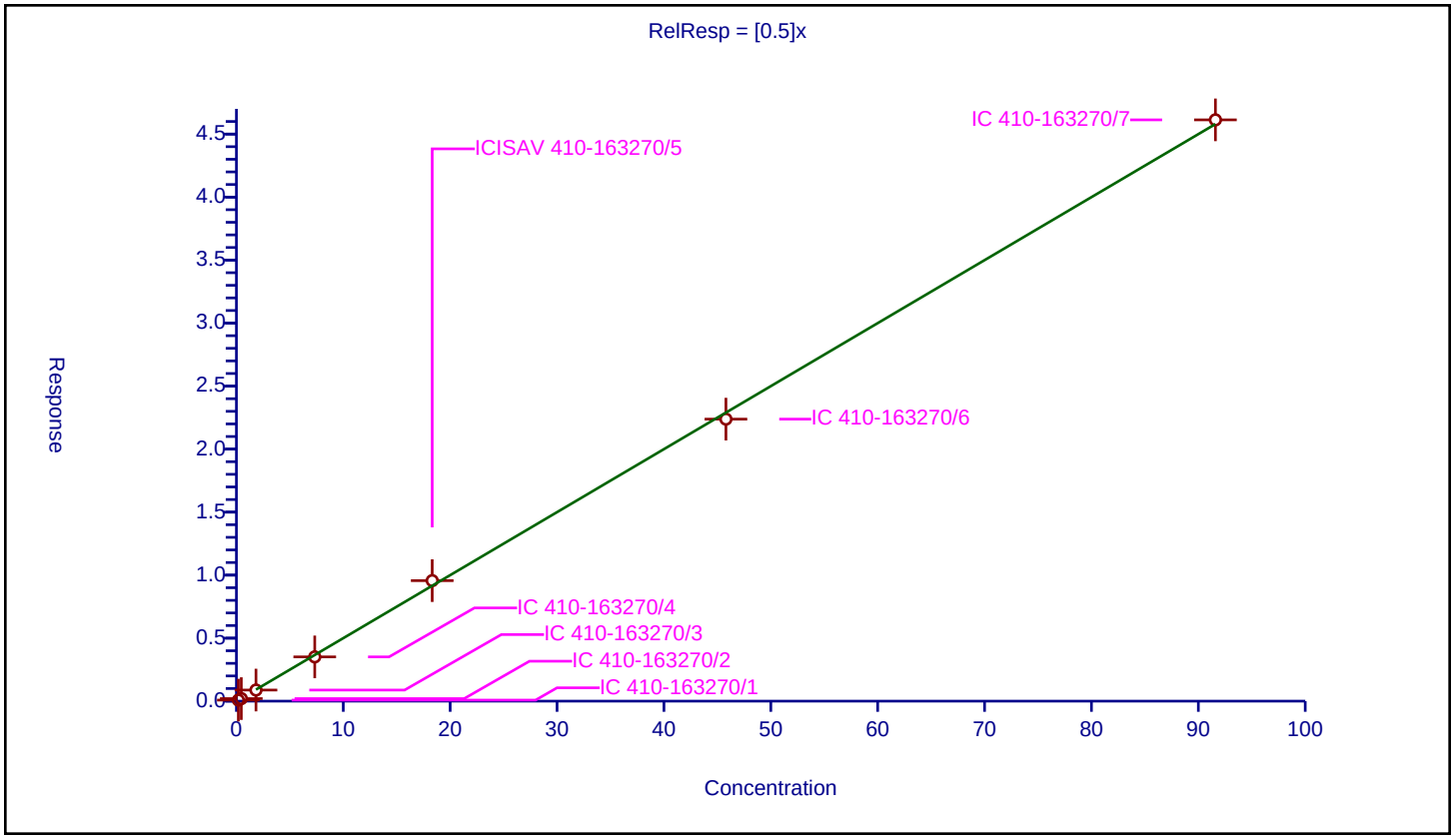
Curve Coefficients

Intercept:	0
Slope:	0.5

Error Coefficients

Standard Error:	5380000
Relative Standard Error:	6.9
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1832	0.082915	10.0	2983304.0	0.452592	Y
2	IC 410-163270/2	0.458	0.202183	10.0	2719274.0	0.441447	Y
3	IC 410-163270/3	1.832	0.881018	10.0	2961561.0	0.480905	Y
4	IC 410-163270/4	7.328	3.511398	10.0	2896587.0	0.479176	Y
5	ICISAV 410-163270/5	18.32	9.563945	10.0	2810011.0	0.522049	Y
6	IC 410-163270/6	45.8	22.381105	10.0	2752533.0	0.48867	Y
7	IC 410-163270/7	91.6	46.12983	10.0	2448949.0	0.503601	Y



Calibration / NVHOS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

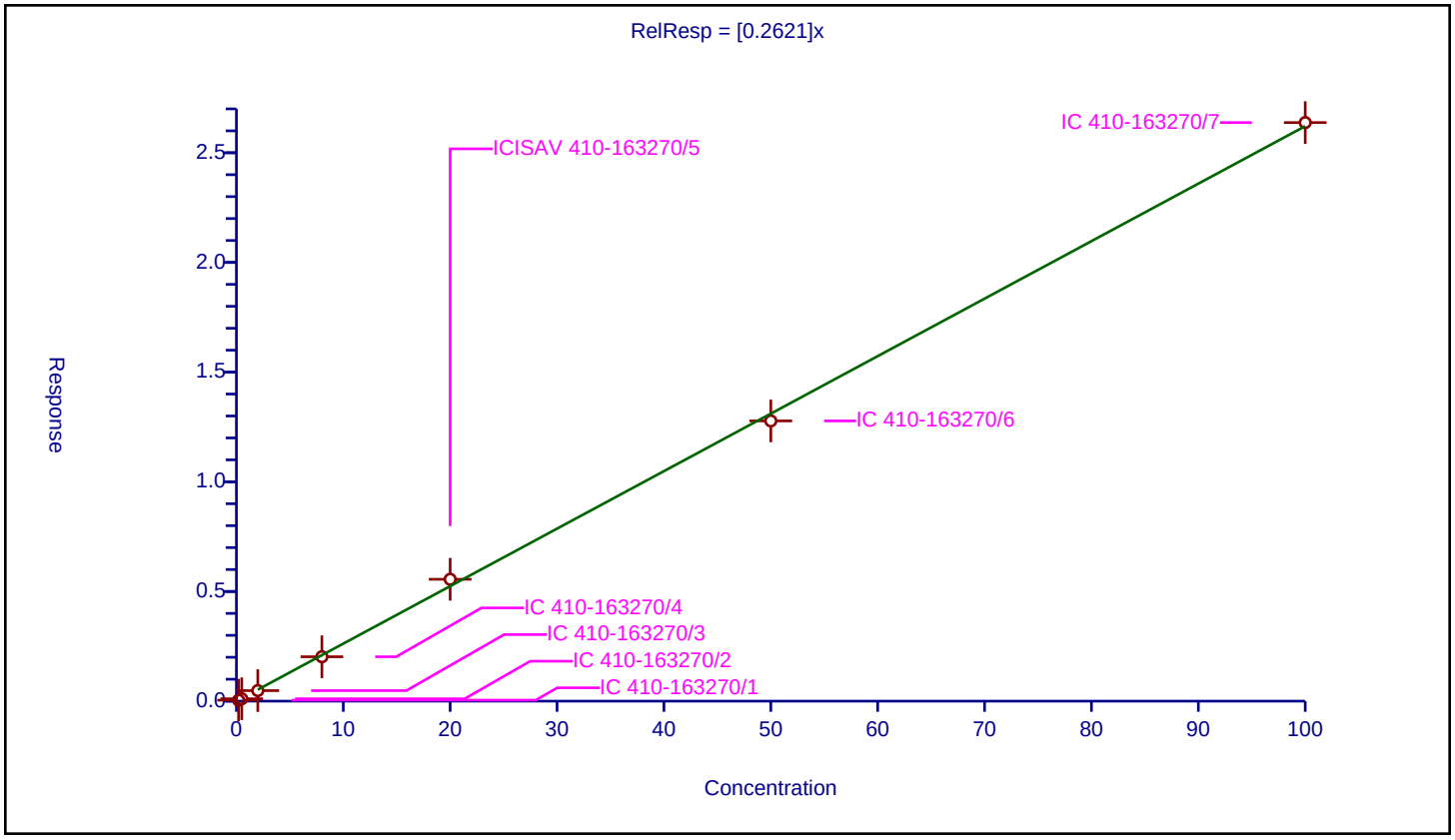
Curve Coefficients

Intercept:	0
Slope:	0.2621

Error Coefficients

Standard Error:	4040000
Relative Standard Error:	9.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.045702	9.36	3537355.0	0.228512	Y
2	IC 410-163270/2	0.5	0.108651	9.36	3322454.0	0.217302	Y
3	IC 410-163270/3	2.0	0.480473	9.36	3552341.0	0.240237	Y
4	IC 410-163270/4	8.0	2.023031	9.36	3491319.0	0.252879	Y
5	ICISAV 410-163270/5	20.0	5.556075	9.36	3436066.0	0.277804	Y
6	IC 410-163270/6	50.0	12.775757	9.36	3344076.0	0.255515	Y
7	IC 410-163270/7	100.0	26.376099	9.36	3014441.0	0.263761	Y



Calibration / PFECA F

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

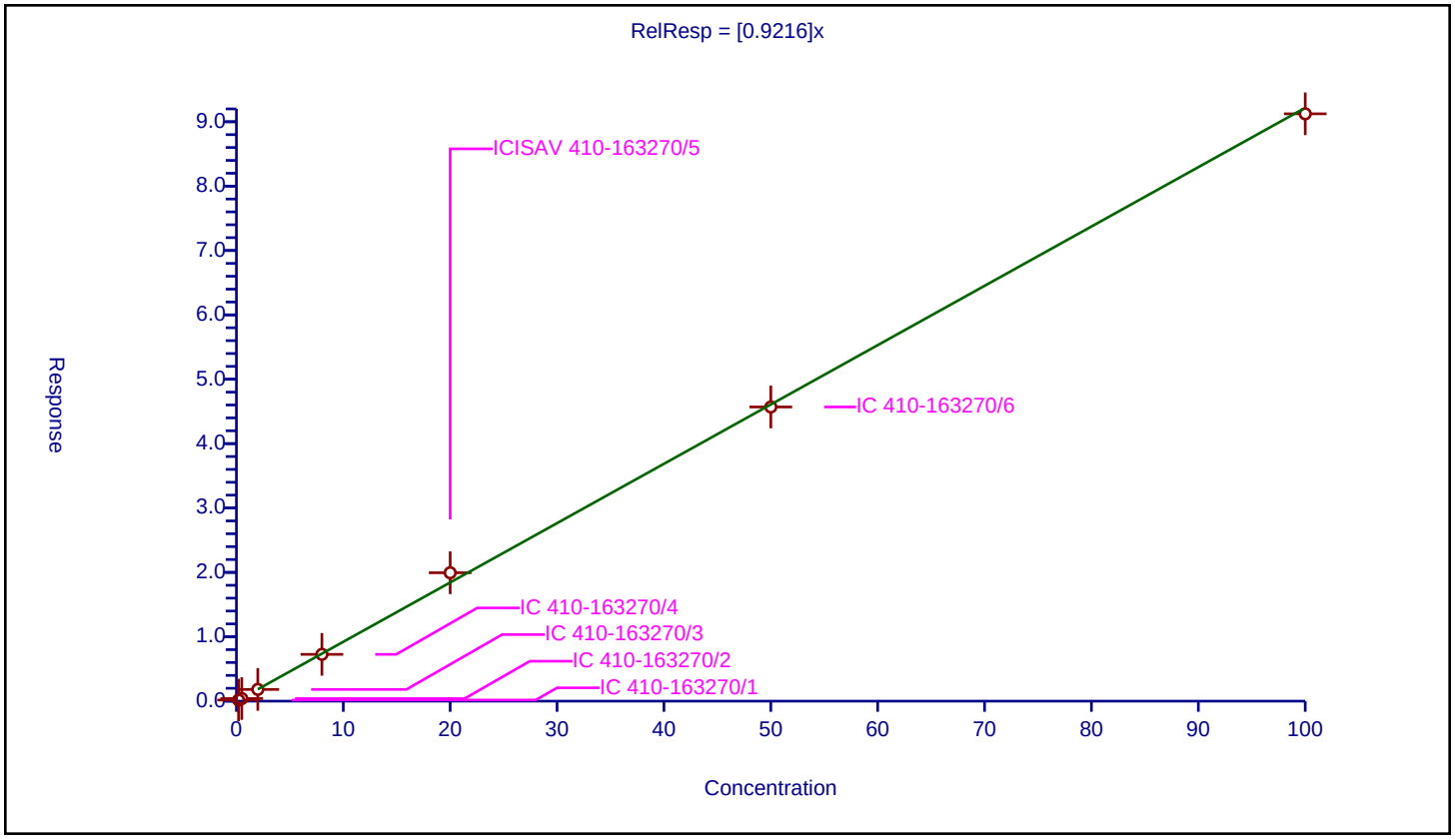
Curve Coefficients

Intercept:	0
Slope:	0.9216

Error Coefficients

Standard Error:	10800000
Relative Standard Error:	6.3
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.175999	10.0	2983304.0	0.879997	Y
2	IC 410-163270/2	0.5	0.405171	10.0	2719274.0	0.810341	Y
3	IC 410-163270/3	2.0	1.816893	10.0	2961561.0	0.908447	Y
4	IC 410-163270/4	8.0	7.268012	10.0	2896587.0	0.908502	Y
5	ICISAV 410-163270/5	20.0	19.943683	10.0	2810011.0	0.997184	Y
6	IC 410-163270/6	50.0	45.694162	10.0	2752533.0	0.913883	Y
7	IC 410-163270/7	100.0	91.236343	10.0	2448949.0	0.912363	Y



Calibration / PFO2HxA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

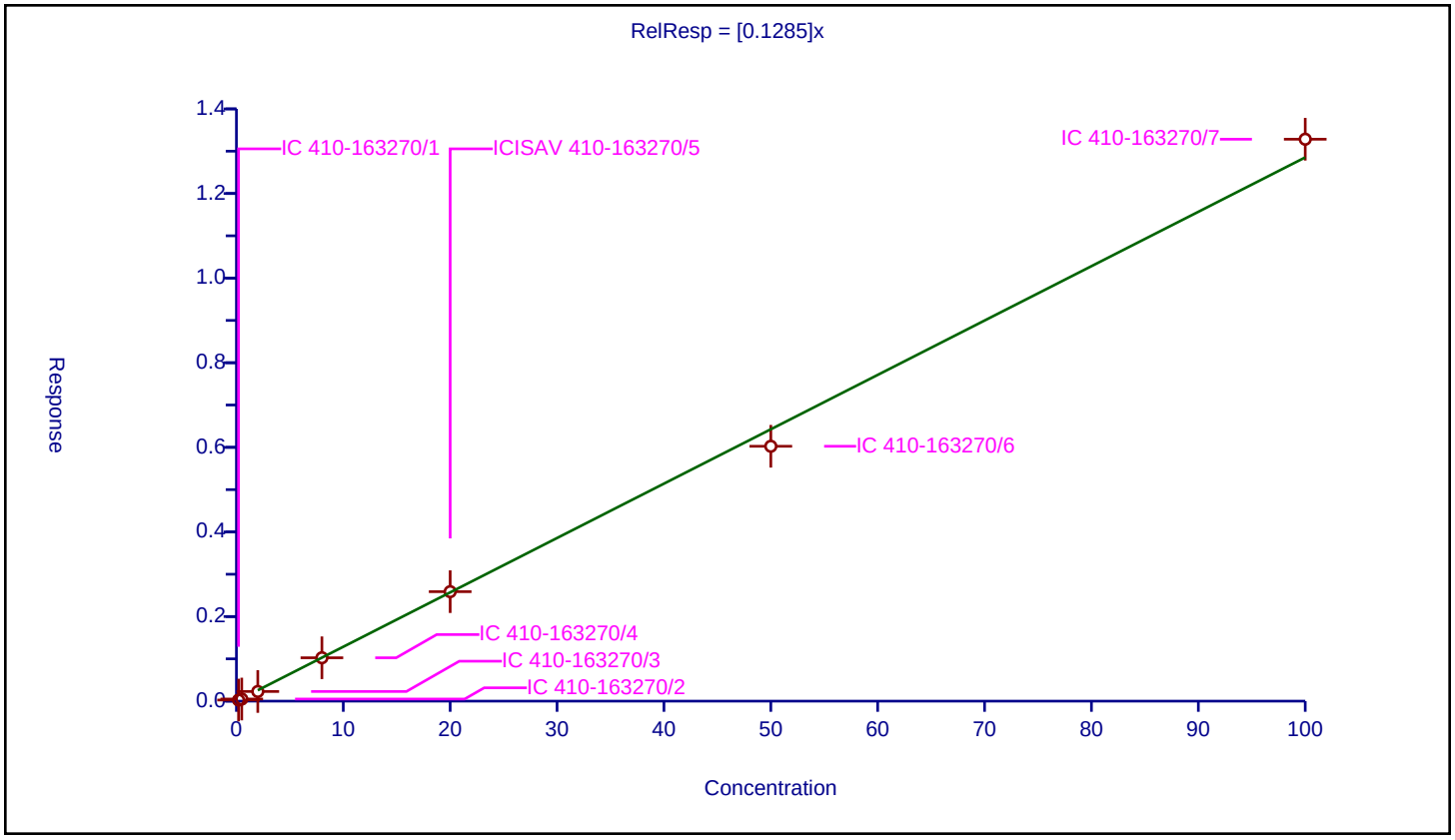
Curve Coefficients

Intercept:	0
Slope:	0.1285

Error Coefficients

Standard Error:	1520000
Relative Standard Error:	10.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.026186	10.0	2983304.0	0.130929	Y
2	IC 410-163270/2	0.5	0.050216	10.0	2719274.0	0.100431	Y
3	IC 410-163270/3	2.0	0.228012	10.0	2961561.0	0.114006	Y
4	IC 410-163270/4	8.0	1.025362	10.0	2896587.0	0.12817	Y
5	ICISAV 410-163270/5	20.0	2.587769	10.0	2810011.0	0.129388	Y
6	IC 410-163270/6	50.0	6.024643	10.0	2752533.0	0.120493	Y
7	IC 410-163270/7	100.0	13.282865	10.0	2448949.0	0.132829	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

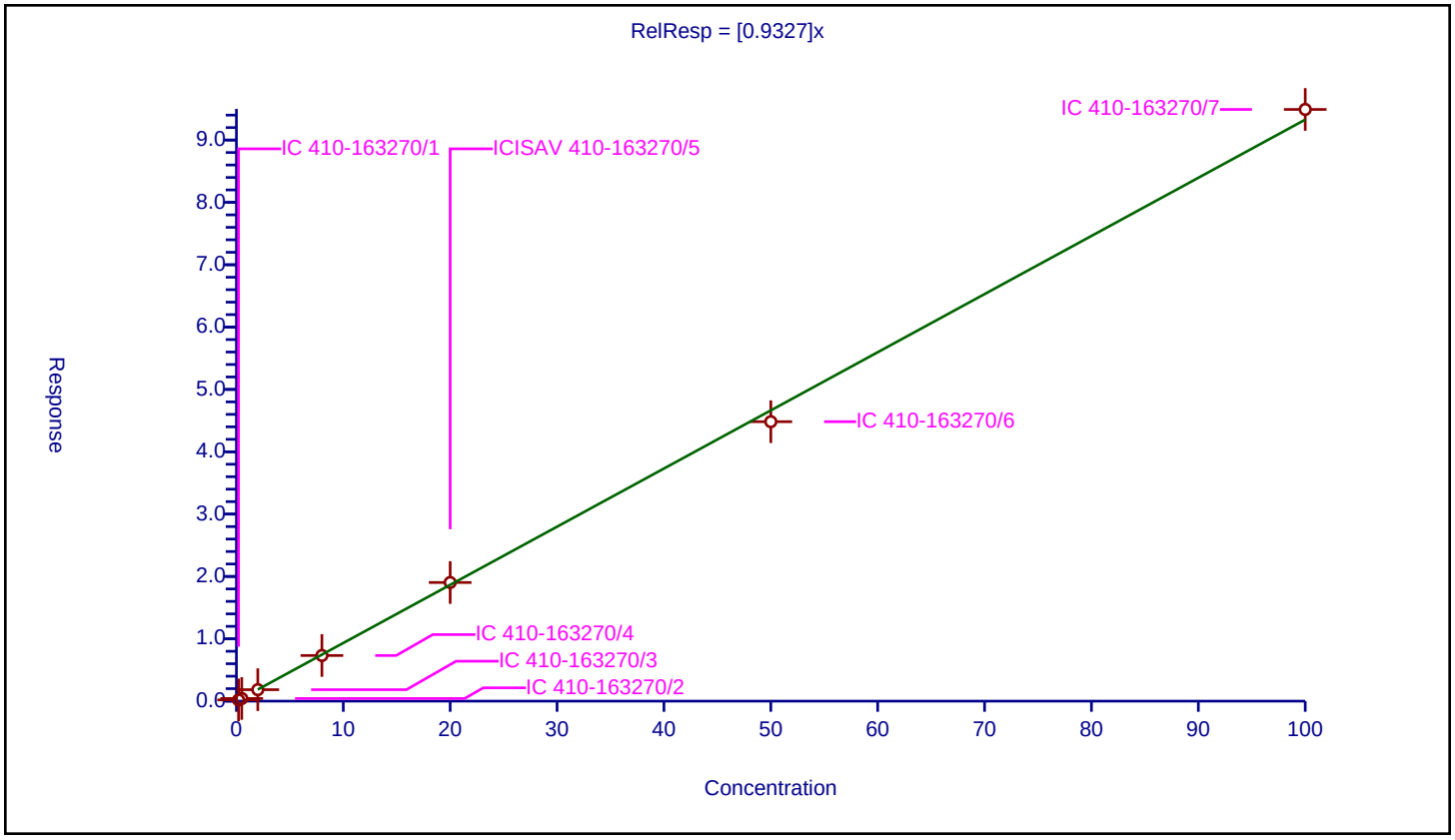
Curve Coefficients

Intercept:	0
Slope:	0.9327

Error Coefficients

Standard Error:	11000000
Relative Standard Error:	4.6
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.195446	10.0	3044888.0	0.977228	Y
2	IC 410-163270/2	0.5	0.426143	10.0	2692145.0	0.852287	Y
3	IC 410-163270/3	2.0	1.840838	10.0	3080619.0	0.920419	Y
4	IC 410-163270/4	8.0	7.318482	10.0	2944053.0	0.91481	Y
5	ICISAV 410-163270/5	20.0	19.031551	10.0	2957140.0	0.951578	Y
6	IC 410-163270/6	50.0	44.82503	10.0	2853777.0	0.896501	Y
7	IC 410-163270/7	100.0	94.909457	10.0	2425600.0	0.949095	Y



Calibration / 3:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

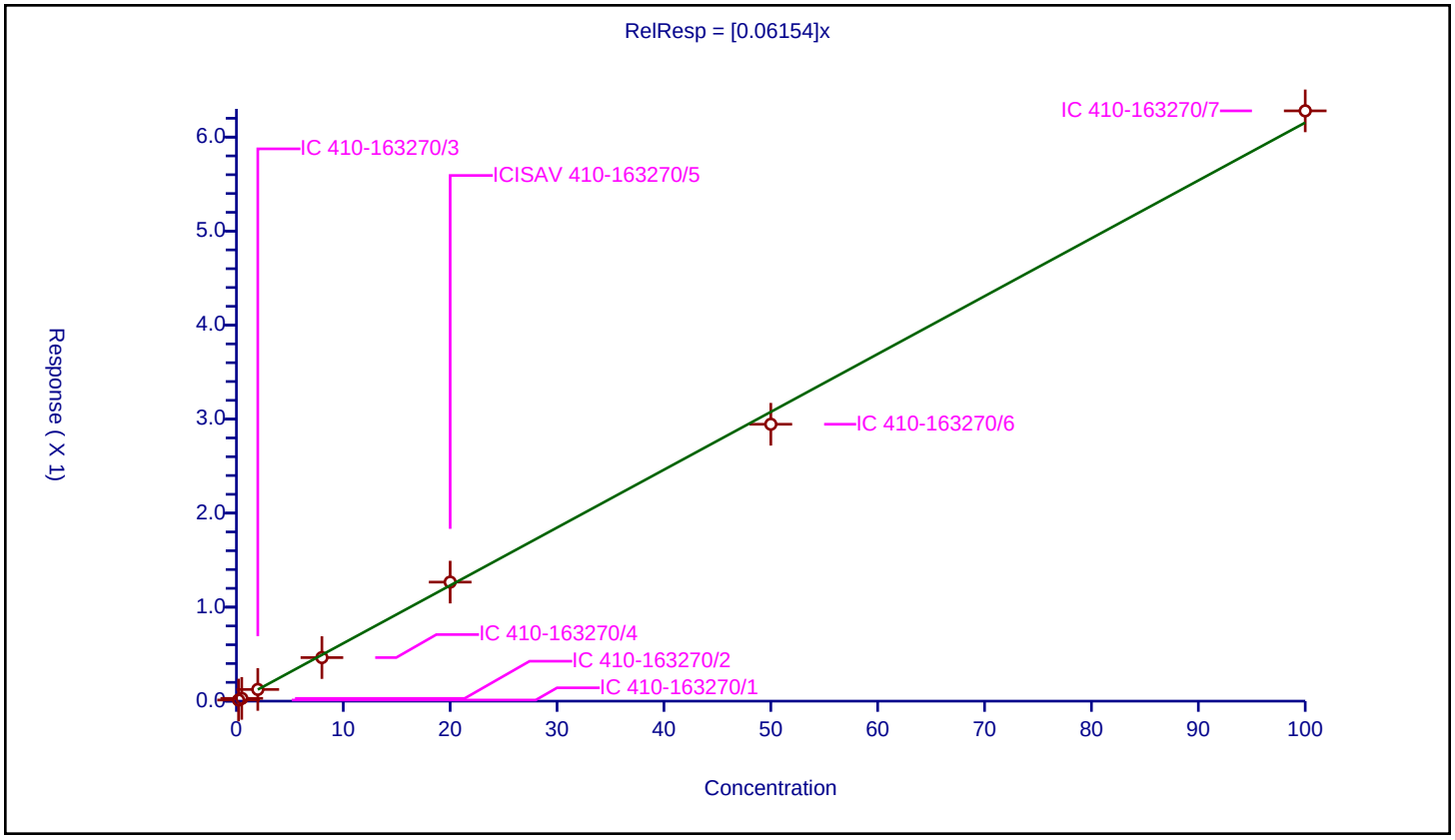
Curve Coefficients

Intercept:	0
Slope:	0.06154

Error Coefficients

Standard Error:	729000
Relative Standard Error:	4.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.011922	10.0	3044888.0	0.059608	Y
2	IC 410-163270/2	0.5	0.029203	10.0	2692145.0	0.058407	Y
3	IC 410-163270/3	2.0	0.124517	10.0	3080619.0	0.062259	Y
4	IC 410-163270/4	8.0	0.463388	10.0	2944053.0	0.057924	Y
5	ICISAV 410-163270/5	20.0	1.266379	10.0	2957140.0	0.063319	Y
6	IC 410-163270/6	50.0	2.945556	10.0	2853777.0	0.058911	Y
7	IC 410-163270/7	100.0	6.278945	10.0	2425600.0	0.062789	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

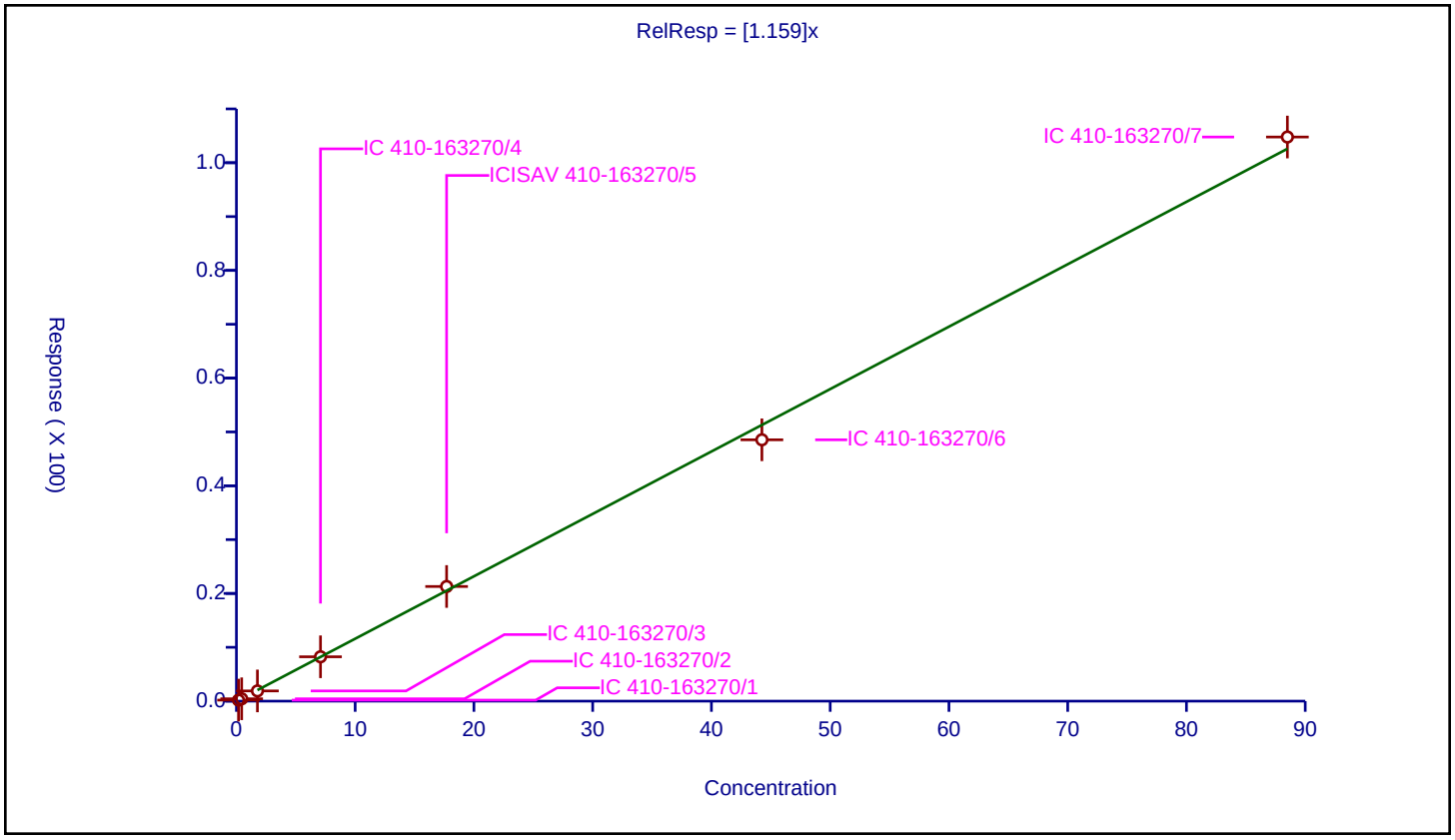
Curve Coefficients

Intercept:	0
Slope:	1.159

Error Coefficients

Standard Error:	15900000
Relative Standard Error:	7.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.177	0.189433	9.36	3537355.0	1.070243	Y
2	IC 410-163270/2	0.4425	0.437744	9.36	3322454.0	0.989252	Y
3	IC 410-163270/3	1.77	1.896259	9.36	3552341.0	1.071333	Y
4	IC 410-163270/4	7.08	8.238045	9.36	3491319.0	1.163566	Y
5	ICISAV 410-163270/5	17.7	21.293877	9.36	3436066.0	1.203044	Y
6	IC 410-163270/6	44.25	48.542673	9.36	3344076.0	1.09701	Y
7	IC 410-163270/7	88.5	104.778304	9.36	3014441.0	1.183936	Y



Calibration / PEPA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

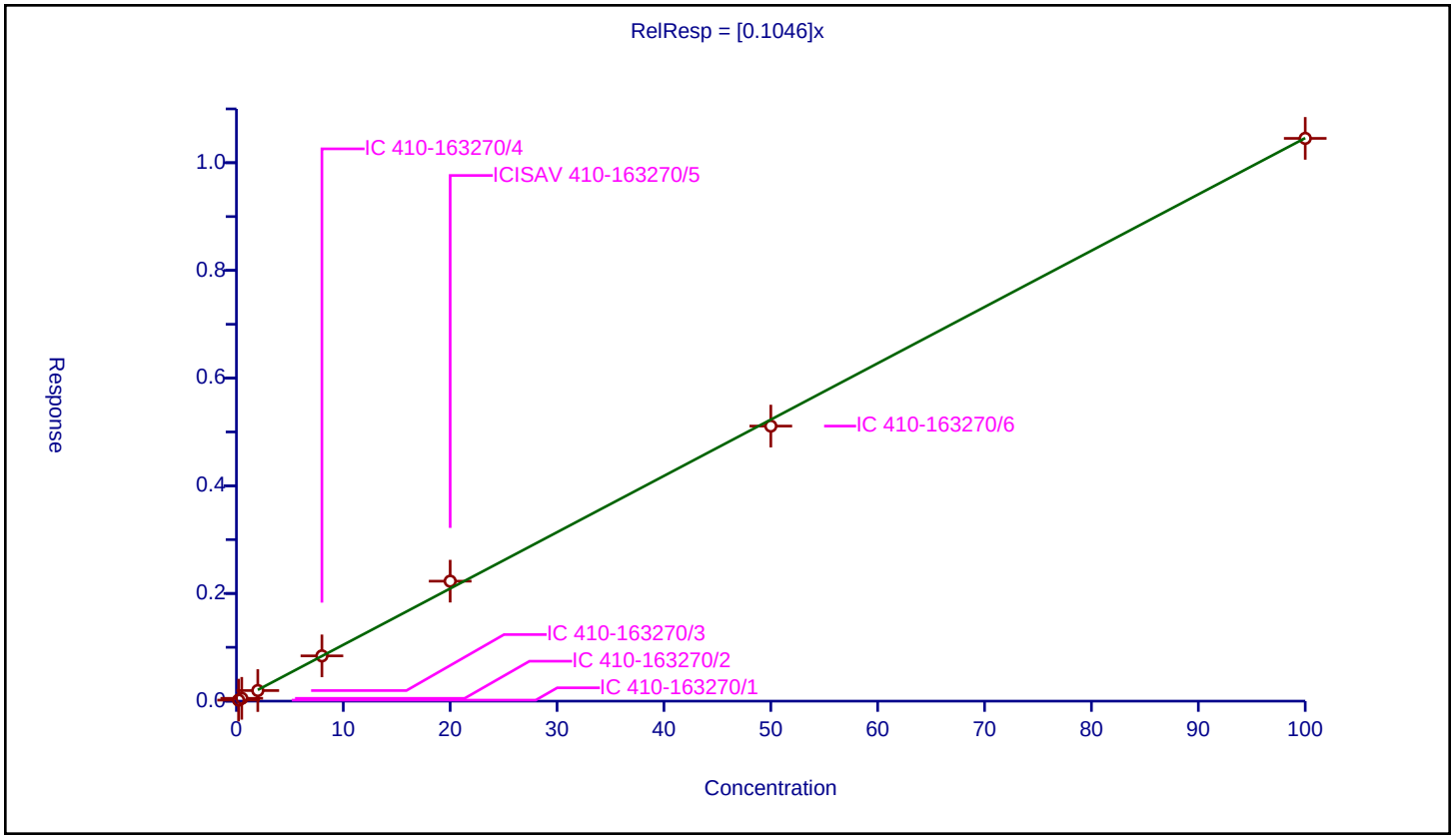
Curve Coefficients

Intercept:	0
Slope:	0.1046

Error Coefficients

Standard Error:	1220000
Relative Standard Error:	5.2
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.01908	10.0	2983304.0	0.095398	Y
2	IC 410-163270/2	0.5	0.05204	10.0	2719274.0	0.104079	Y
3	IC 410-163270/3	2.0	0.196866	10.0	2961561.0	0.098433	Y
4	IC 410-163270/4	8.0	0.840565	10.0	2896587.0	0.105071	Y
5	ICISAV 410-163270/5	20.0	2.22828	10.0	2810011.0	0.111414	Y
6	IC 410-163270/6	50.0	5.10884	10.0	2752533.0	0.102177	Y
7	IC 410-163270/7	100.0	10.452255	10.0	2448949.0	0.104523	Y



Calibration / PFECA A

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

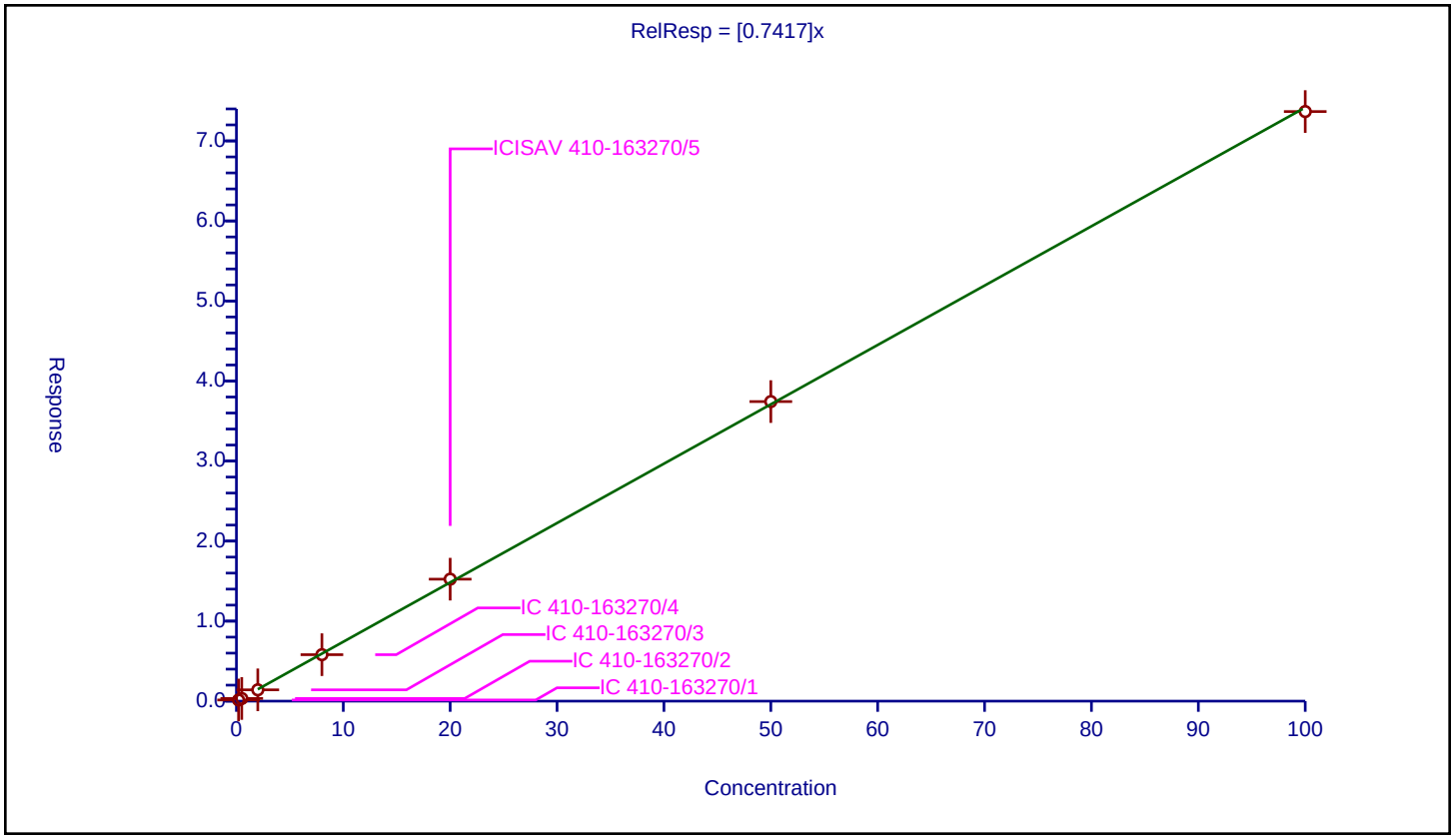
Curve Coefficients

Intercept:	0
Slope:	0.7417

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	5.0
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.144694	9.36	3537355.0	0.723468	Y
2	IC 410-163270/2	0.5	0.332192	9.36	3322454.0	0.664385	Y
3	IC 410-163270/3	2.0	1.412139	9.36	3552341.0	0.706069	Y
4	IC 410-163270/4	8.0	5.804265	9.36	3491319.0	0.725533	Y
5	ICISAV 410-163270/5	20.0	15.241198	9.36	3436066.0	0.76206	Y
6	IC 410-163270/6	50.0	37.428605	9.36	3344076.0	0.748572	Y
7	IC 410-163270/7	100.0	73.666527	9.36	3014441.0	0.736665	Y



Calibration / PES

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

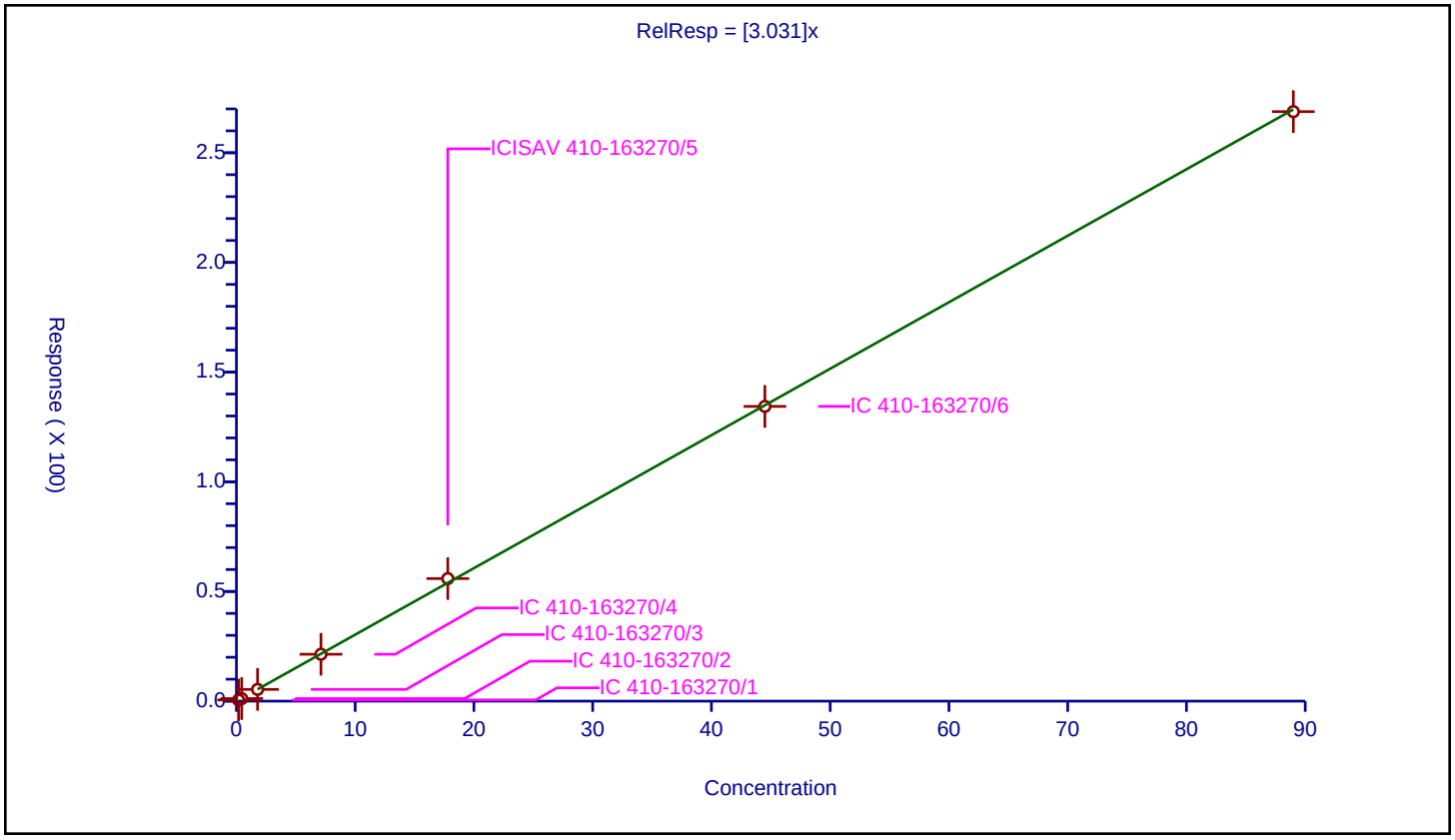
Curve Coefficients

Intercept:	0
Slope:	3.031

Error Coefficients

Standard Error:	41400000
Relative Standard Error:	5.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.178	0.536687	9.36	3537355.0	3.015094	Y
2	IC 410-163270/2	0.445	1.169465	9.36	3322454.0	2.628012	Y
3	IC 410-163270/3	1.78	5.348766	9.36	3552341.0	3.004925	Y
4	IC 410-163270/4	7.12	21.378565	9.36	3491319.0	3.002608	Y
5	ICISAV 410-163270/5	17.8	55.878315	9.36	3436066.0	3.139231	Y
6	IC 410-163270/6	44.5	134.37523	9.36	3344076.0	3.019668	Y
7	IC 410-163270/7	89.0	268.747745	9.36	3014441.0	3.019638	Y



Calibration / PFECA B

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

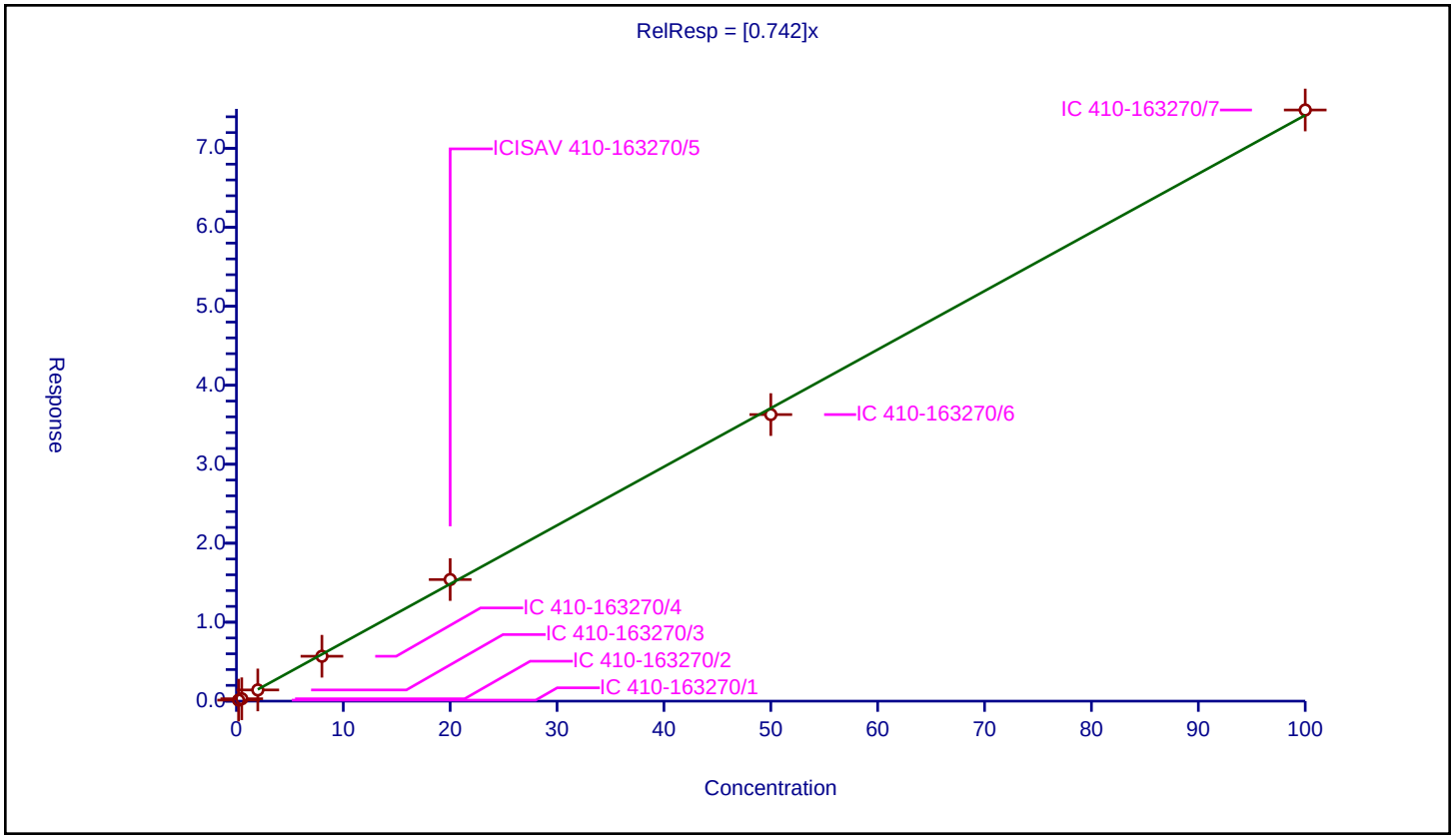
Curve Coefficients

Intercept:	0
Slope:	0.742

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	9.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.130672	9.36	3537355.0	0.653361	Y
2	IC 410-163270/2	0.5	0.302392	9.36	3322454.0	0.604784	Y
3	IC 410-163270/3	2.0	1.416974	9.36	3552341.0	0.708487	Y
4	IC 410-163270/4	8.0	5.683467	9.36	3491319.0	0.710433	Y
5	ICISAV 410-163270/5	20.0	15.398844	9.36	3436066.0	0.769942	Y
6	IC 410-163270/6	50.0	36.288444	9.36	3344076.0	0.725769	Y
7	IC 410-163270/7	100.0	74.861748	9.36	3014441.0	0.748617	Y



Calibration / 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

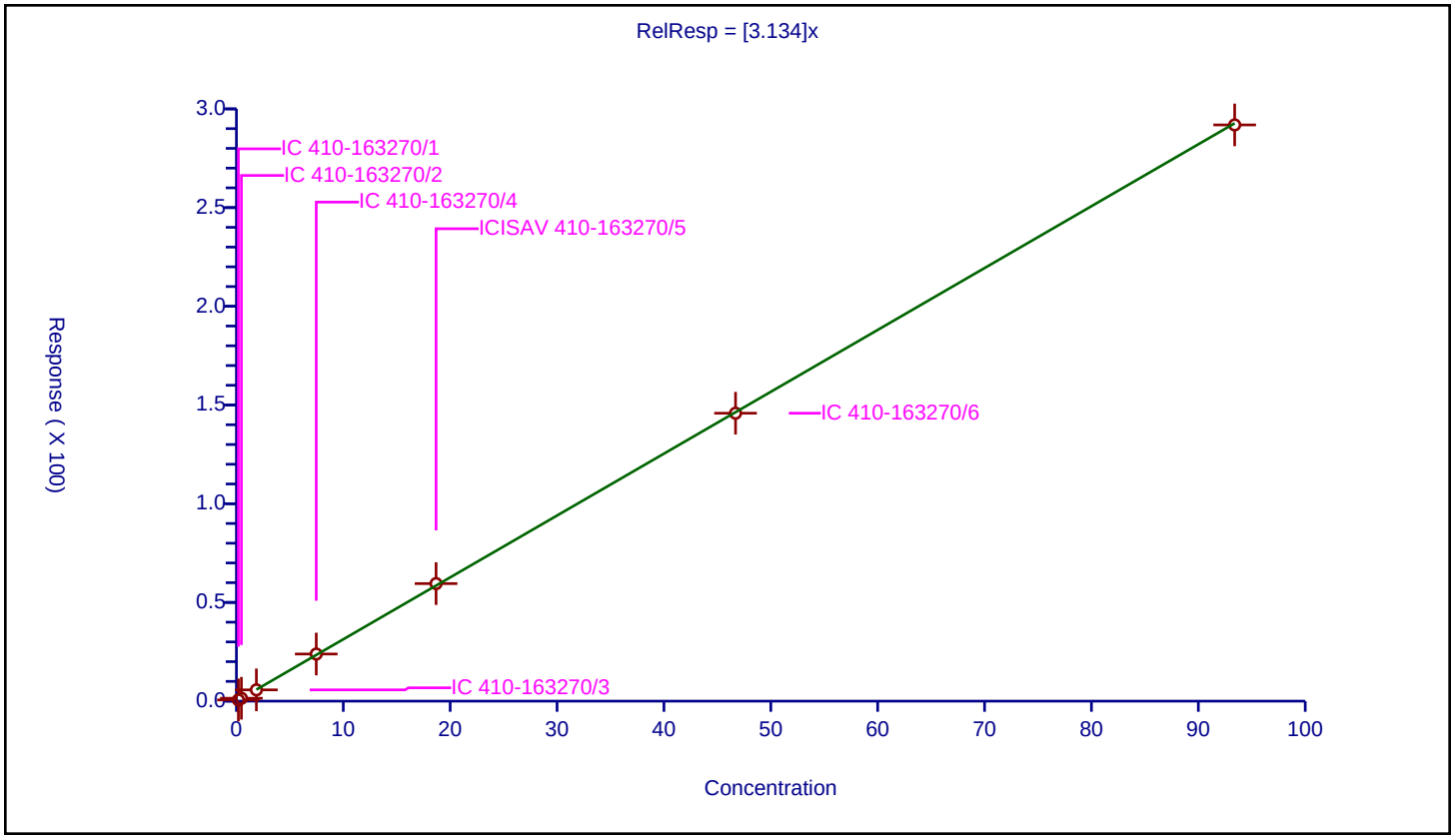
Curve Coefficients

Intercept:	0
Slope:	3.134

Error Coefficients

Standard Error:	6090000
Relative Standard Error:	2.4
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1868	0.613304	9.34	520131.0	3.283211	Y
2	IC 410-163270/2	0.467	1.466523	9.34	459643.0	3.140307	Y
3	IC 410-163270/3	1.868	5.713103	9.34	519599.0	3.058407	Y
4	IC 410-163270/4	7.472	23.869611	9.34	490160.0	3.194541	Y
5	ICISAV 410-163270/5	18.68	59.54245	9.34	490023.0	3.187497	Y
6	IC 410-163270/6	46.7	145.844778	9.34	453805.0	3.123015	Y
7	IC 410-163270/7	93.4	291.874189	9.34	406133.0	3.124991	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

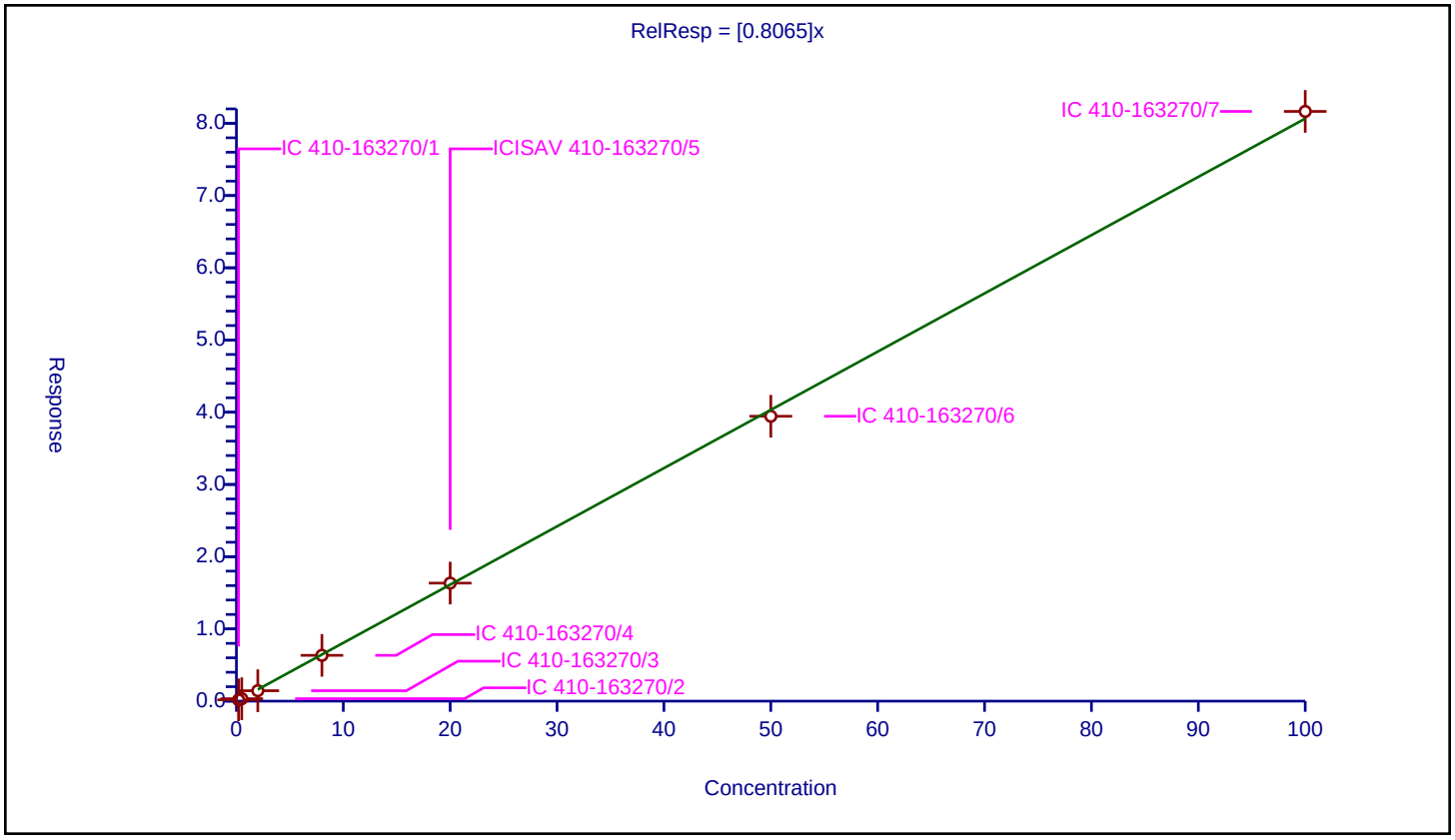
Curve Coefficients

Intercept:	0
Slope:	0.8065

Error Coefficients

Standard Error:	13700000
Relative Standard Error:	9.1
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.179109	10.0	4465543.0	0.895546	Y
2	IC 410-163270/2	0.5	0.338266	10.0	4014626.0	0.676531	Y
3	IC 410-163270/3	2.0	1.445463	10.0	4407694.0	0.722732	Y
4	IC 410-163270/4	8.0	6.339141	10.0	4112038.0	0.792393	Y
5	ICISAV 410-163270/5	20.0	16.342034	10.0	4205974.0	0.817102	Y
6	IC 410-163270/6	50.0	39.446208	10.0	3969177.0	0.788924	Y
7	IC 410-163270/7	100.0	81.649831	10.0	3505354.0	0.816498	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

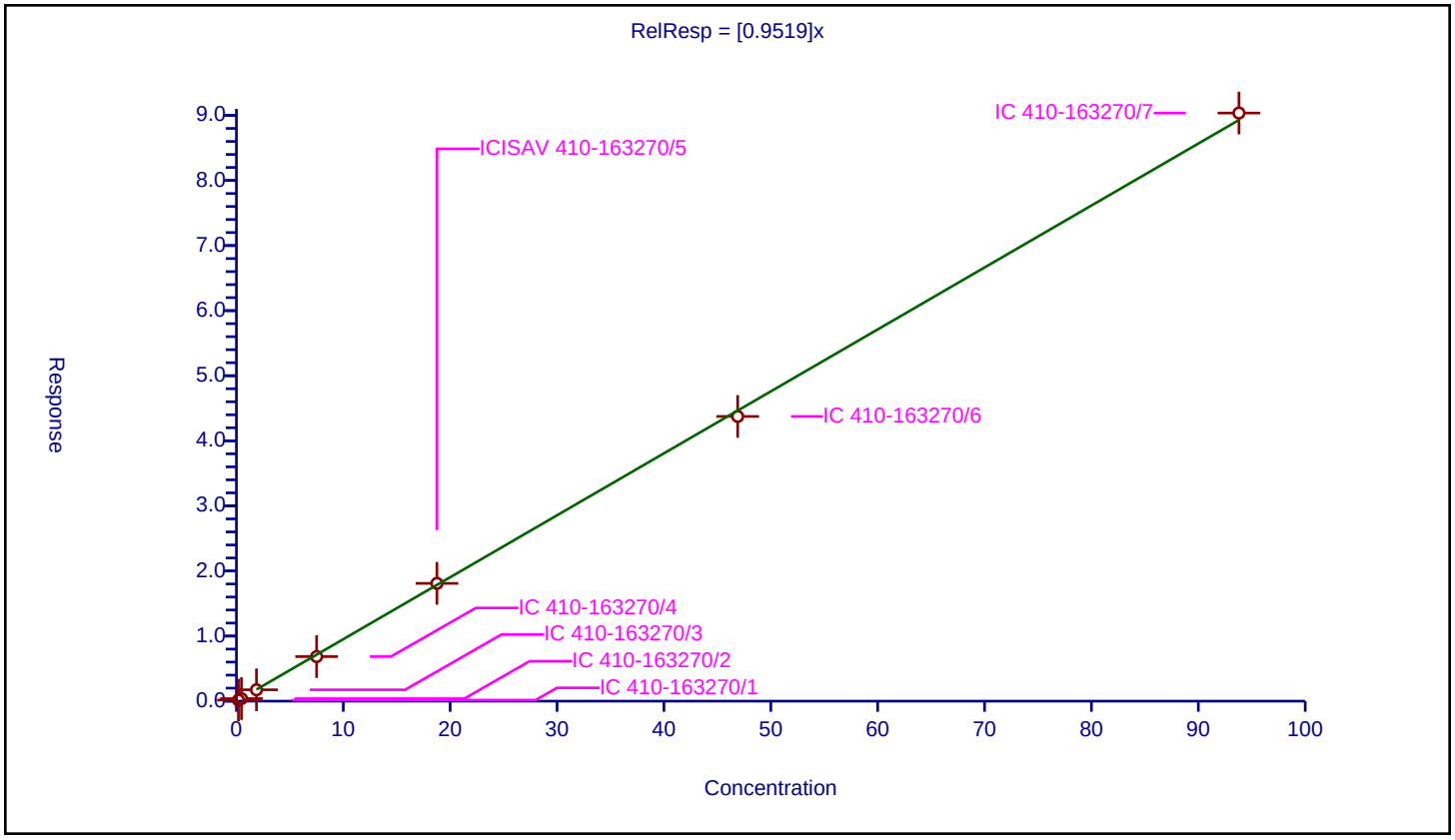
Curve Coefficients

Intercept:	0
Slope:	0.9519

Error Coefficients

Standard Error:	13800000
Relative Standard Error:	6.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1876	0.16582	9.36	3537355.0	0.8839	Y
2	IC 410-163270/2	0.469	0.386809	9.36	3322454.0	0.824753	Y
3	IC 410-163270/3	1.876	1.746935	9.36	3552341.0	0.931202	Y
4	IC 410-163270/4	7.504	6.843993	9.36	3491319.0	0.912046	Y
5	ICISAV 410-163270/5	18.76	18.092829	9.36	3436066.0	0.964437	Y
6	IC 410-163270/6	46.9	43.744595	9.36	3344076.0	0.932721	Y
7	IC 410-163270/7	93.8	90.362069	9.36	3014441.0	0.963348	Y



Calibration / PFO3OA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

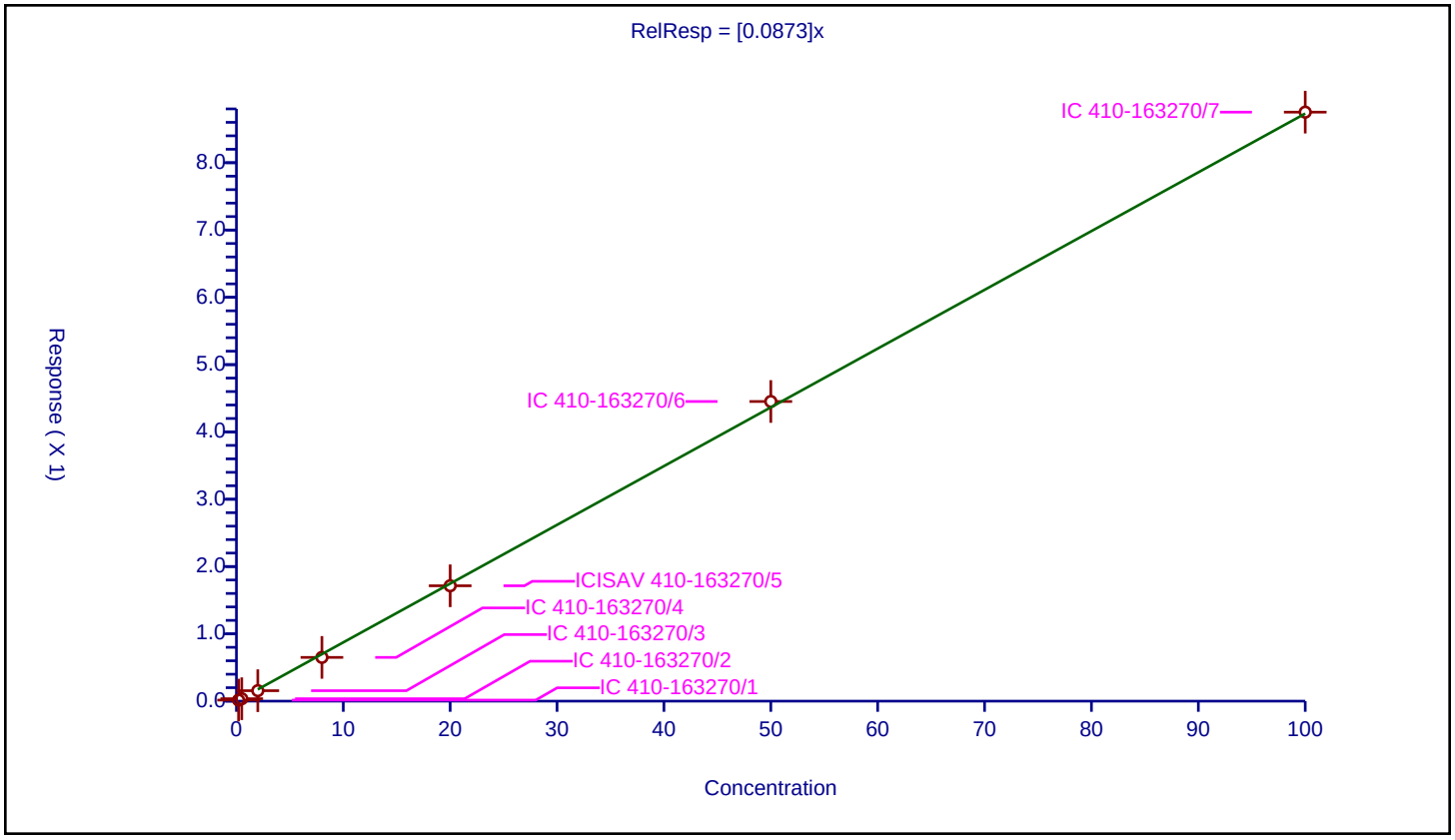
Curve Coefficients

Intercept:	0
Slope:	0.0873

Error Coefficients

Standard Error:	1030000
Relative Standard Error:	9.6
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.015657	10.0	2983304.0	0.078286	Y
2	IC 410-163270/2	0.5	0.036403	10.0	2719274.0	0.072806	Y
3	IC 410-163270/3	2.0	0.155479	10.0	2961561.0	0.077739	Y
4	IC 410-163270/4	8.0	0.65001	10.0	2896587.0	0.081251	Y
5	ICISAV 410-163270/5	20.0	1.714306	10.0	2810011.0	0.085715	Y
6	IC 410-163270/6	50.0	4.452397	10.0	2752533.0	0.089048	Y
7	IC 410-163270/7	100.0	8.751591	10.0	2448949.0	0.087516	Y



Calibration / Perfluoro(2-propoxypropanoic) acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

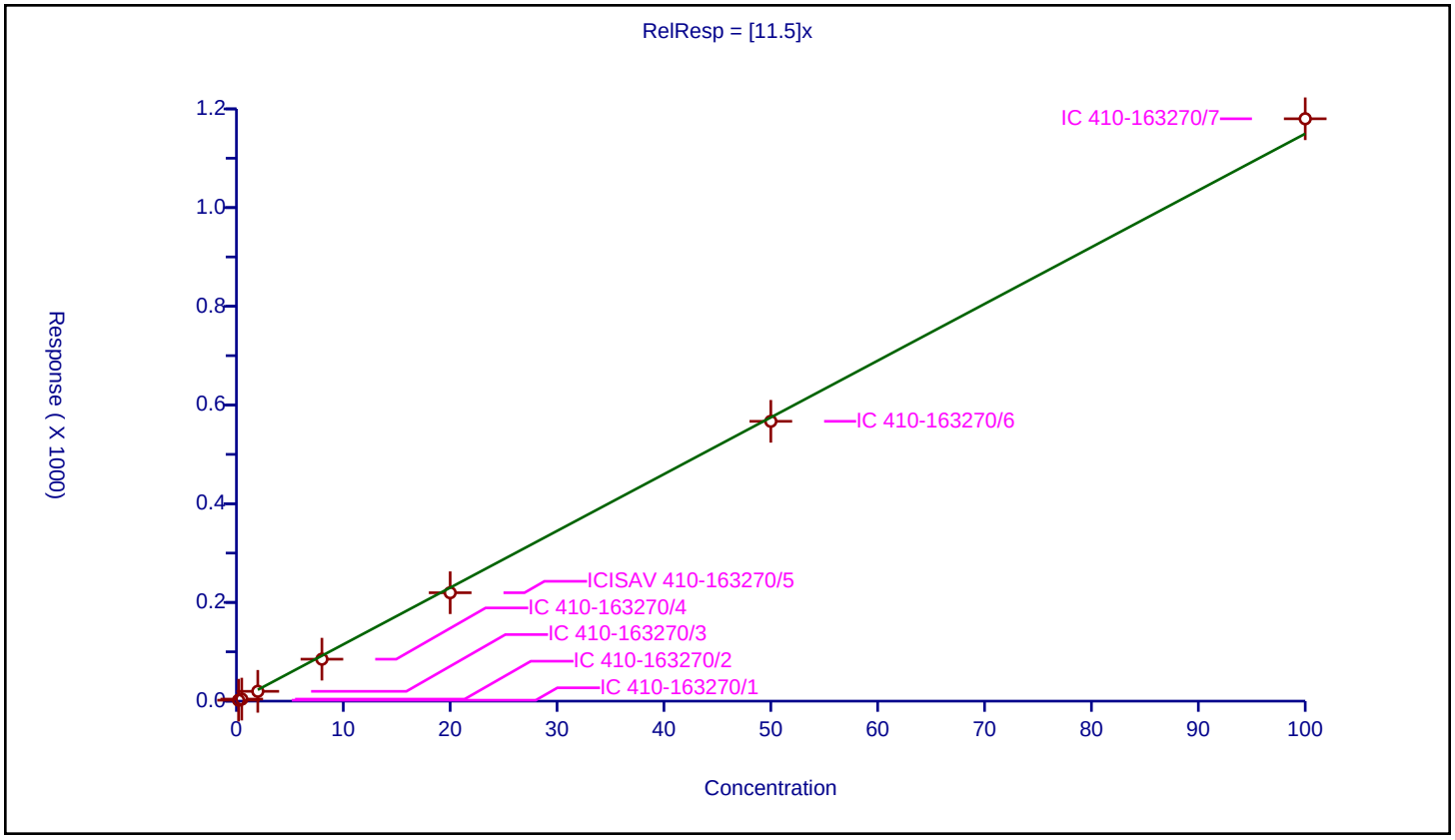
Curve Coefficients

Intercept:	0
Slope:	11.5

Error Coefficients

Standard Error:	2260000
Relative Standard Error:	15.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	1.91038	10.0	51283.0	9.551898	Y
2	IC 410-163270/2	0.5	4.106115	10.0	44631.0	8.212229	Y
3	IC 410-163270/3	2.0	19.881598	10.0	52533.0	9.940799	Y
4	IC 410-163270/4	8.0	85.032327	10.0	47638.0	10.629041	Y
5	ICISAV 410-163270/5	20.0	219.691973	10.0	51554.0	10.984599	Y
6	IC 410-163270/6	50.0	566.975455	10.0	46364.0	11.339509	Y
7	IC 410-163270/7	100.0	1179.956052	10.0	40047.0	11.799561	Y



Calibration / Hydro-PS Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

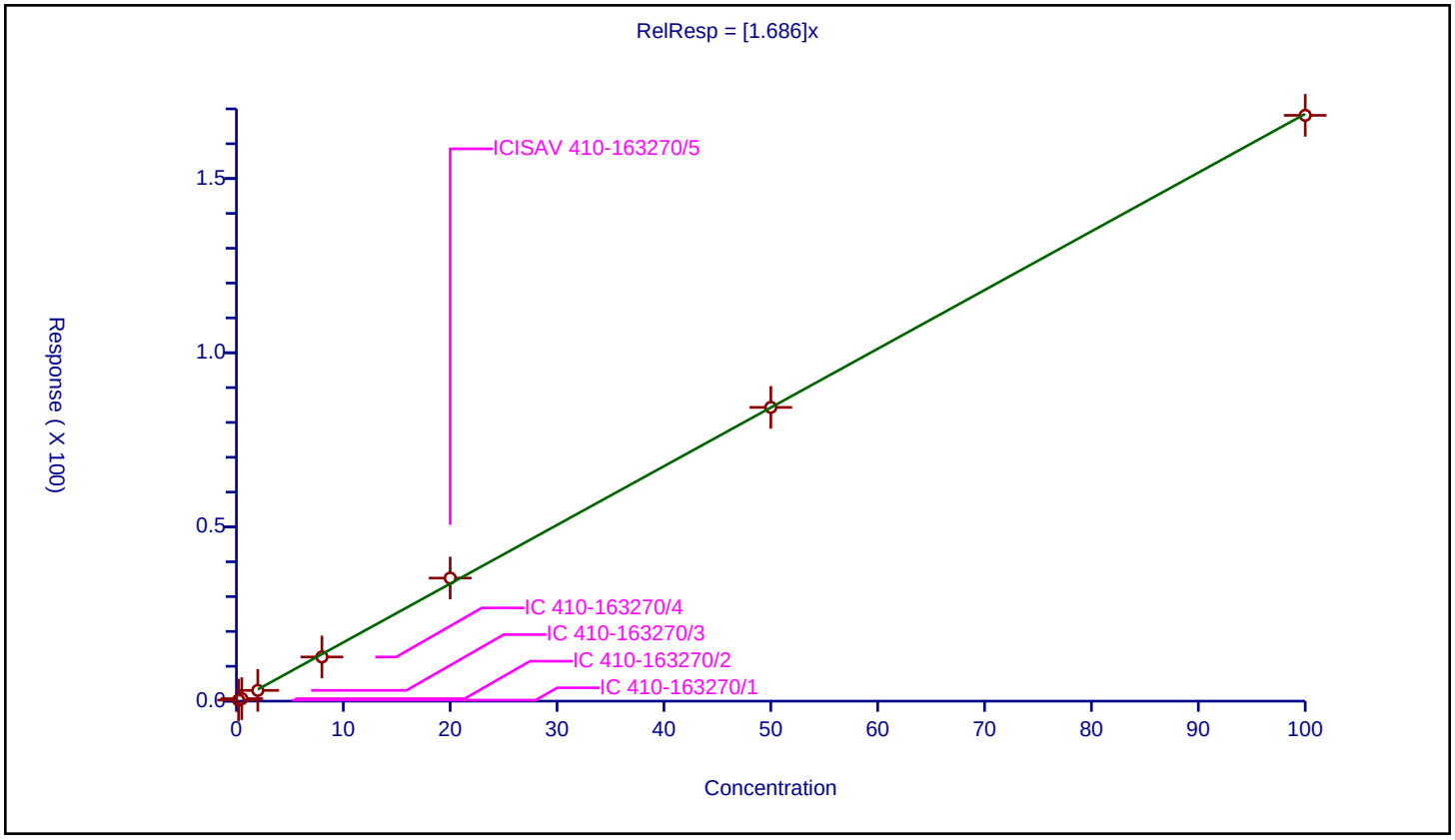
Curve Coefficients

Intercept:	0
Slope:	1.686

Error Coefficients

Standard Error:	25900000
Relative Standard Error:	8.6
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.304946	9.36	3537355.0	1.52473	Y
2	IC 410-163270/2	0.5	0.71579	9.36	3322454.0	1.43158	Y
3	IC 410-163270/3	2.0	3.086962	9.36	3552341.0	1.543481	Y
4	IC 410-163270/4	8.0	12.68077	9.36	3491319.0	1.585096	Y
5	ICISAV 410-163270/5	20.0	35.32127	9.36	3436066.0	1.766064	Y
6	IC 410-163270/6	50.0	84.324274	9.36	3344076.0	1.686485	Y
7	IC 410-163270/7	100.0	168.147287	9.36	3014441.0	1.681473	Y



Calibration / Hydro-EVE Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

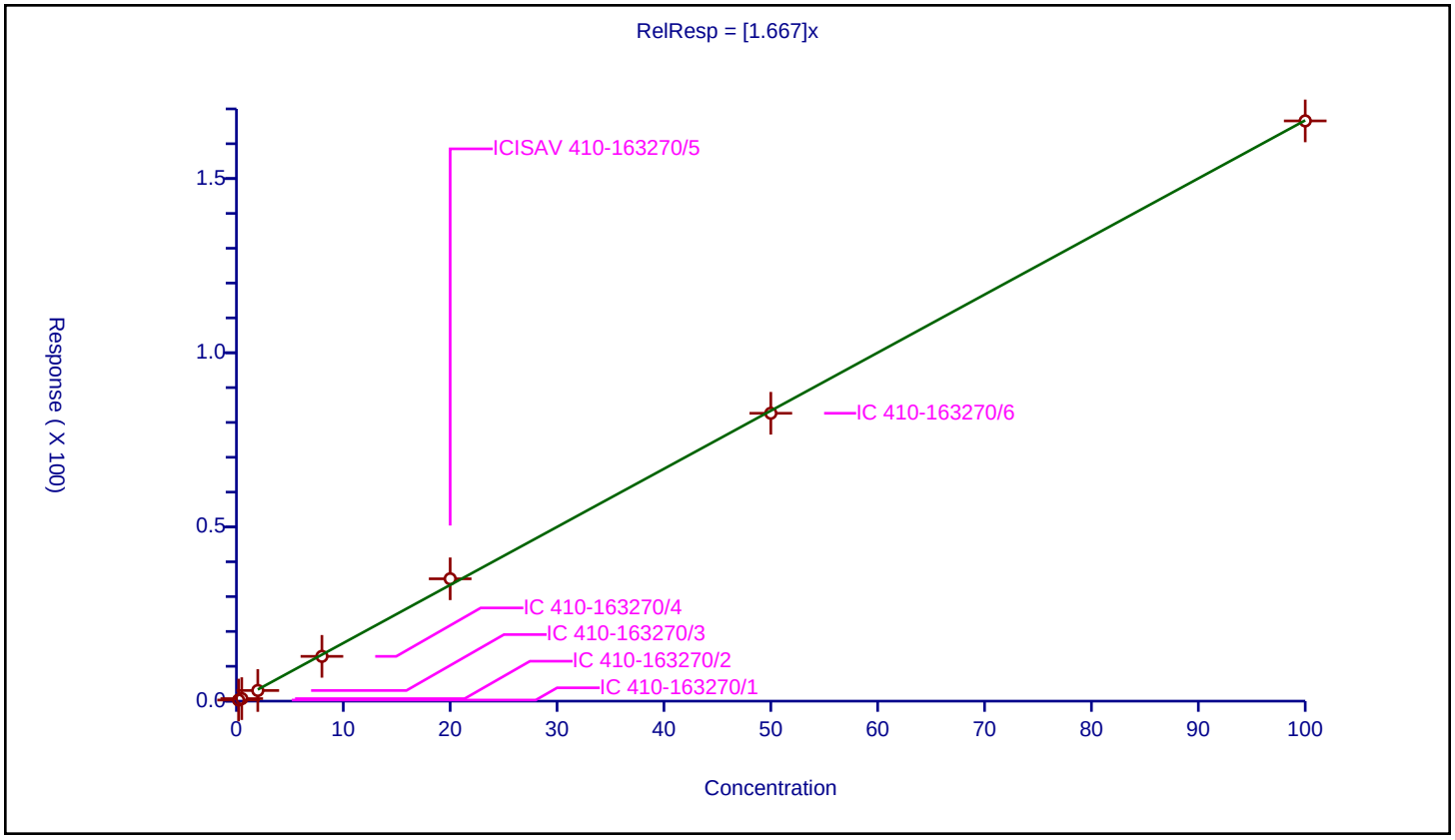
Curve Coefficients

Intercept:	0
Slope:	1.667

Error Coefficients

Standard Error:	19500000
Relative Standard Error:	7.3
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.313887	10.0	2983304.0	1.569434	Y
2	IC 410-163270/2	0.5	0.725558	10.0	2719274.0	1.451115	Y
3	IC 410-163270/3	2.0	3.050773	10.0	2961561.0	1.525386	Y
4	IC 410-163270/4	8.0	12.855032	10.0	2896587.0	1.606879	Y
5	ICISAV 410-163270/5	20.0	35.114791	10.0	2810011.0	1.75574	Y
6	IC 410-163270/6	50.0	82.635518	10.0	2752533.0	1.65271	Y
7	IC 410-163270/7	100.0	166.552072	10.0	2448949.0	1.665521	Y



Calibration / R-PSDCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

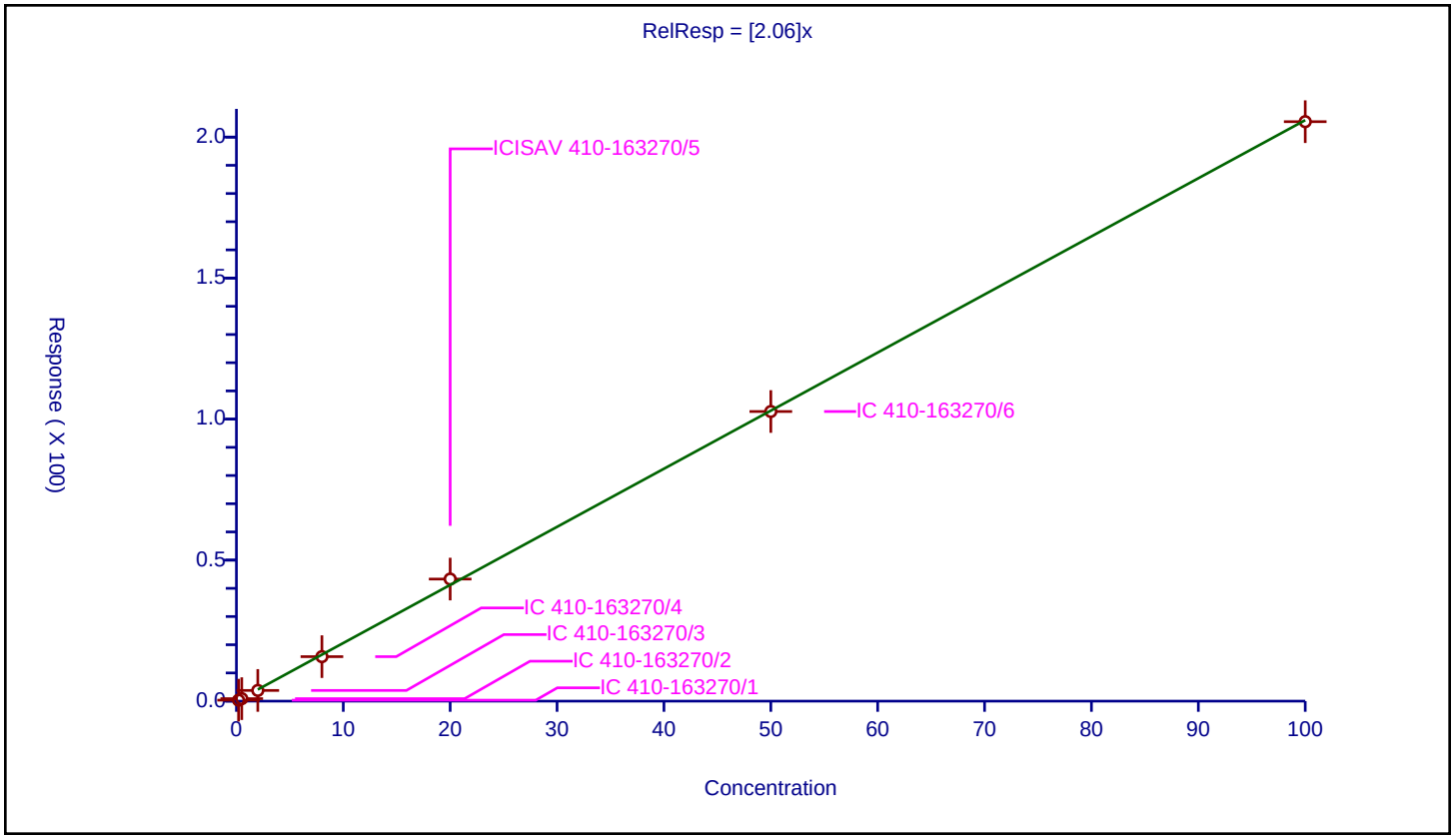
Curve Coefficients

Intercept:	0
Slope:	2.06

Error Coefficients

Standard Error:	31700000
Relative Standard Error:	9.7
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.344843	9.36	3537355.0	1.724216	Y
2	IC 410-163270/2	0.5	0.886067	9.36	3322454.0	1.772134	Y
3	IC 410-163270/3	2.0	3.789622	9.36	3552341.0	1.894811	Y
4	IC 410-163270/4	8.0	15.773952	9.36	3491319.0	1.971744	Y
5	ICISAV 410-163270/5	20.0	43.288839	9.36	3436066.0	2.164442	Y
6	IC 410-163270/6	50.0	102.693504	9.36	3344076.0	2.05387	Y
7	IC 410-163270/7	100.0	205.470159	9.36	3014441.0	2.054702	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

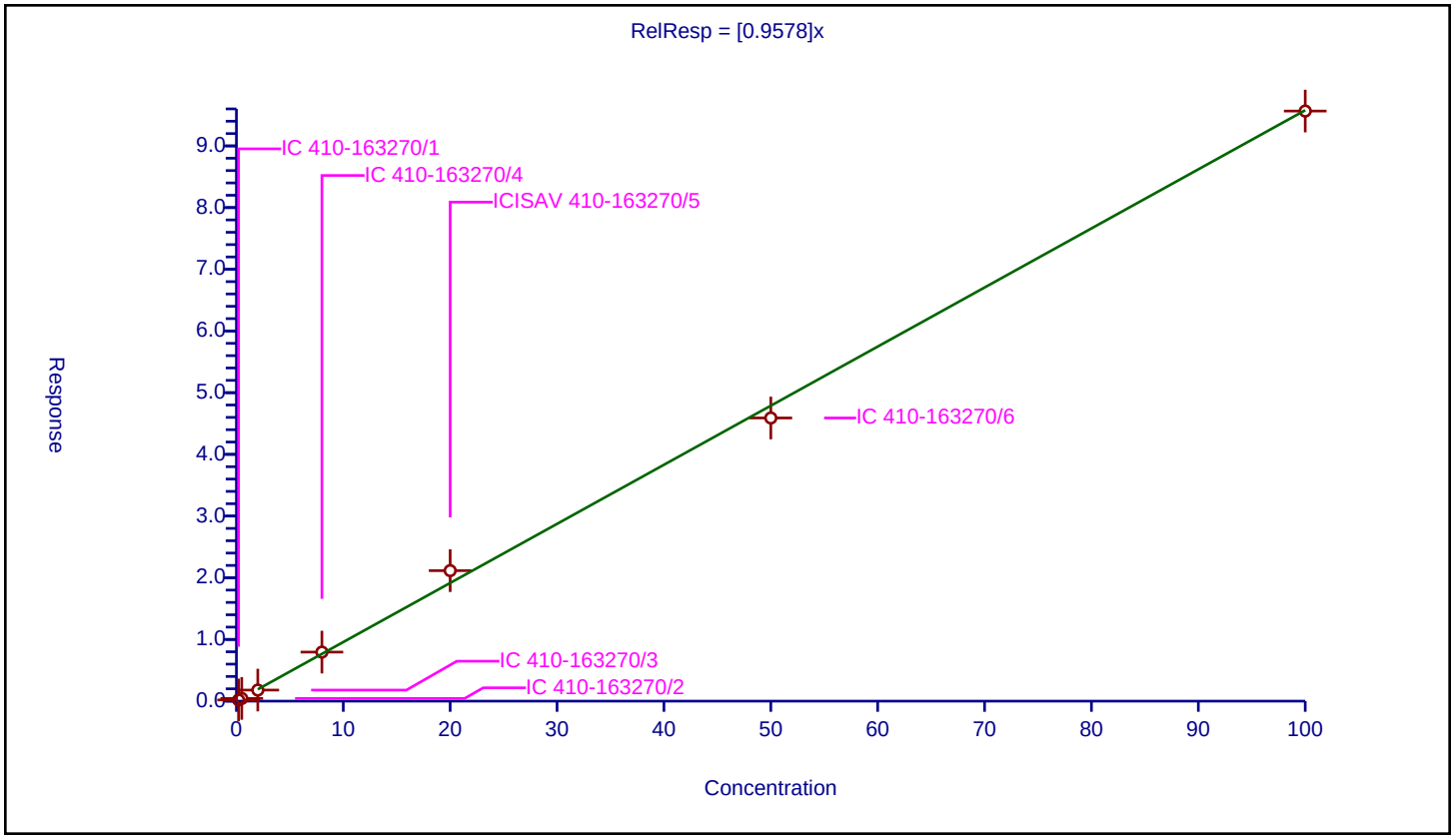
Curve Coefficients

Intercept:	0
Slope:	0.9578

Error Coefficients

Standard Error:	16000000
Relative Standard Error:	6.6
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.193761	10.0	4413685.0	0.968805	Y
2	IC 410-163270/2	0.5	0.436325	10.0	4194874.0	0.872651	Y
3	IC 410-163270/3	2.0	1.792346	10.0	4675631.0	0.896173	Y
4	IC 410-163270/4	8.0	7.949811	10.0	4301027.0	0.993726	Y
5	ICISAV 410-163270/5	20.0	21.153321	10.0	4289880.0	1.057666	Y
6	IC 410-163270/6	50.0	45.899338	10.0	4019856.0	0.917987	Y
7	IC 410-163270/7	100.0	95.651647	10.0	3457633.0	0.956516	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

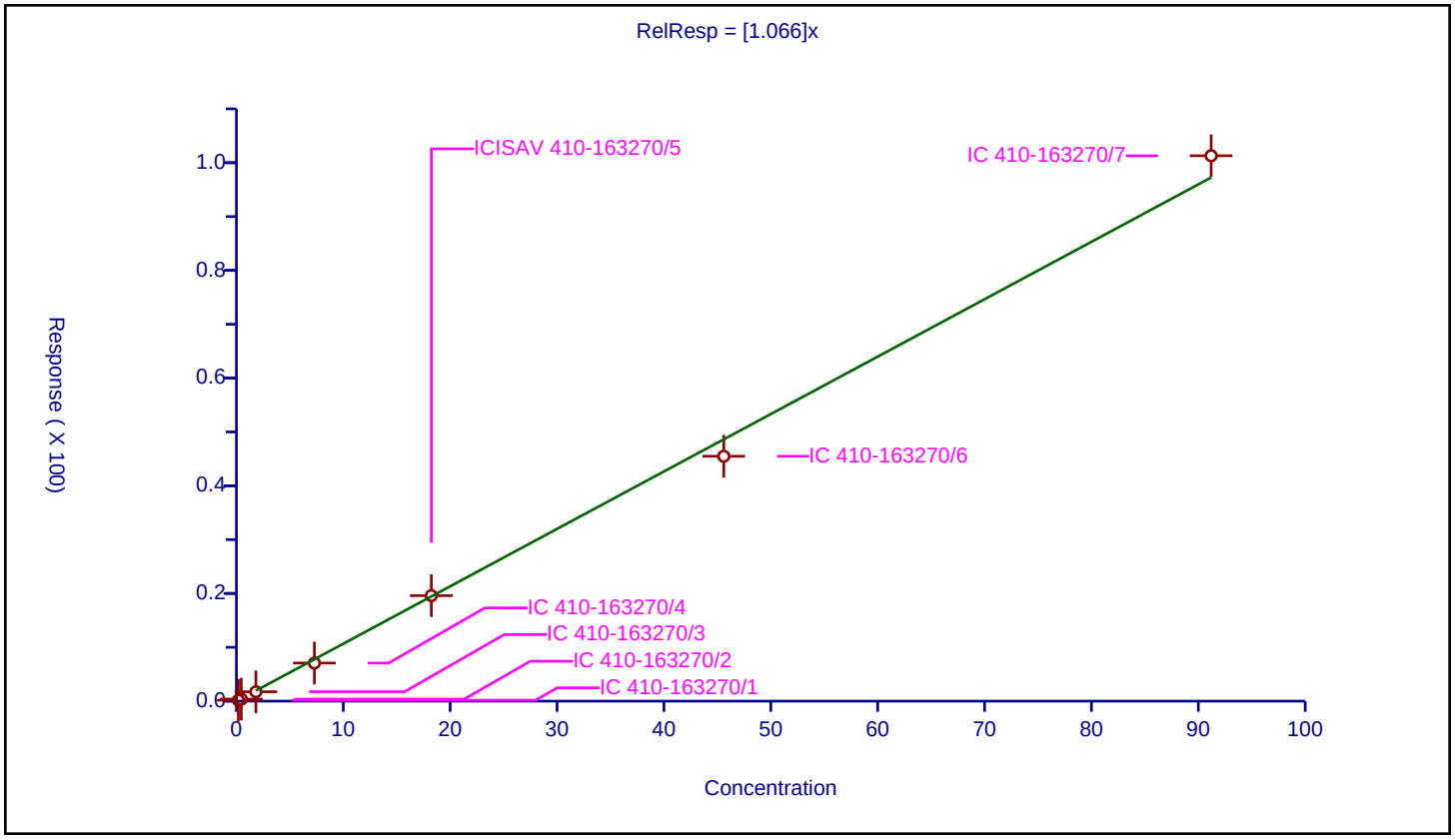
Curve Coefficients

Intercept:	0
Slope:	1.066

Error Coefficients

Standard Error:	11800000
Relative Standard Error:	12.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1824	0.170951	9.46	2829518.0	0.937231	Y
2	IC 410-163270/2	0.456	0.374106	9.46	2740474.0	0.820408	Y
3	IC 410-163270/3	1.824	1.744401	9.46	2868715.0	0.95636	Y
4	IC 410-163270/4	7.296	7.076248	9.46	2883076.0	0.96988	Y
5	ICISAV 410-163270/5	18.24	19.592067	9.46	2807229.0	1.074126	Y
6	IC 410-163270/6	45.6	45.484722	9.46	2685979.0	0.997472	Y
7	IC 410-163270/7	91.2	101.295262	9.46	2336198.0	1.110694	Y



Calibration / DONA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

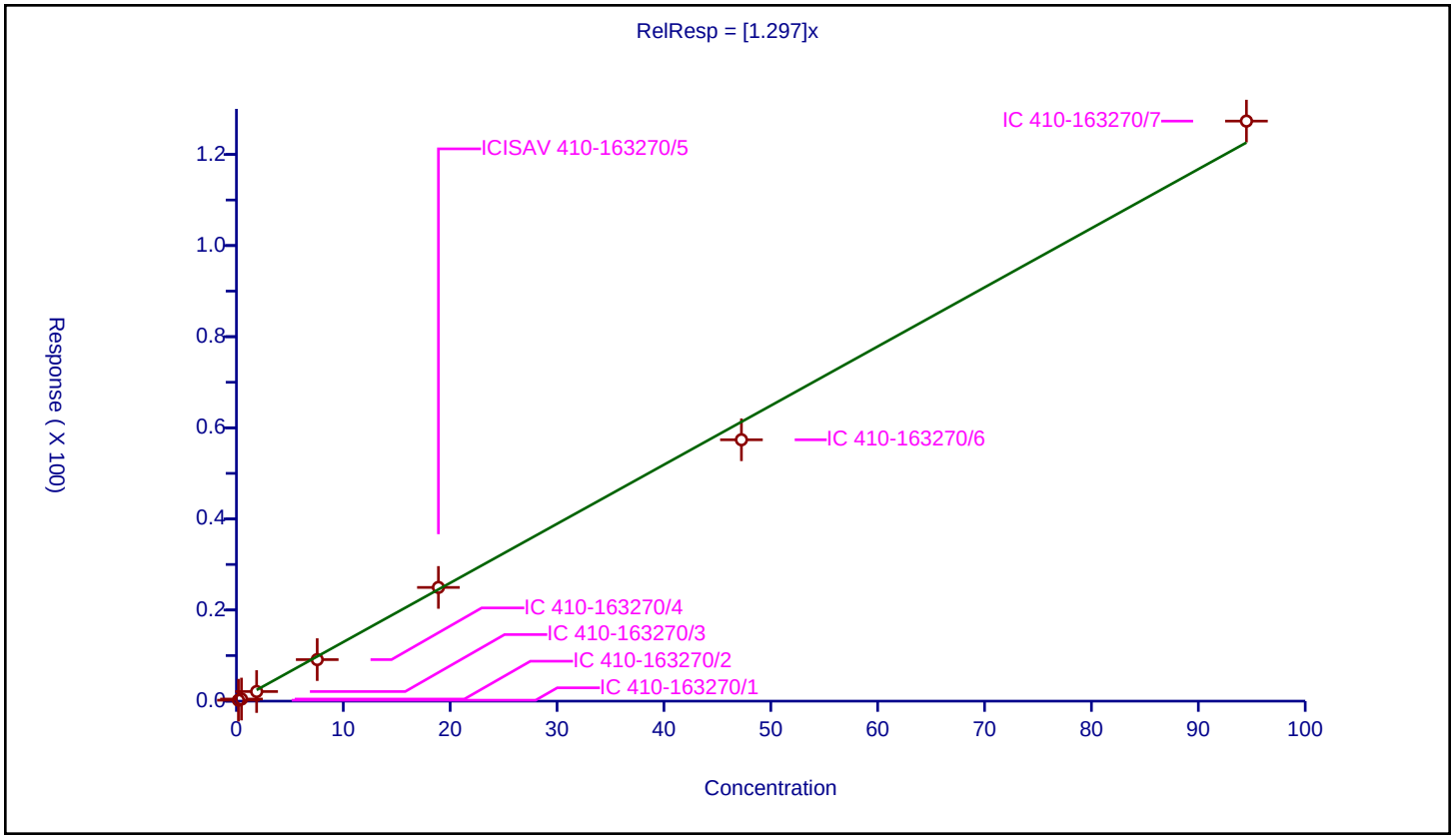
Curve Coefficients

Intercept:	0
Slope:	1.297

Error Coefficients

Standard Error:	20800000
Relative Standard Error:	14.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.189	0.206705	10.0	4413685.0	1.093676	Y
2	IC 410-163270/2	0.4725	0.460724	10.0	4194874.0	0.975078	Y
3	IC 410-163270/3	1.89	2.107153	10.0	4675631.0	1.114896	Y
4	IC 410-163270/4	7.56	9.116732	10.0	4301027.0	1.205917	Y
5	ICISAV 410-163270/5	18.9	24.963192	10.0	4289880.0	1.320804	Y
6	IC 410-163270/6	47.25	57.373083	10.0	4019856.0	1.214245	Y
7	IC 410-163270/7	94.5	127.324395	10.0	3457633.0	1.347348	Y



Calibration / PFECA G

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

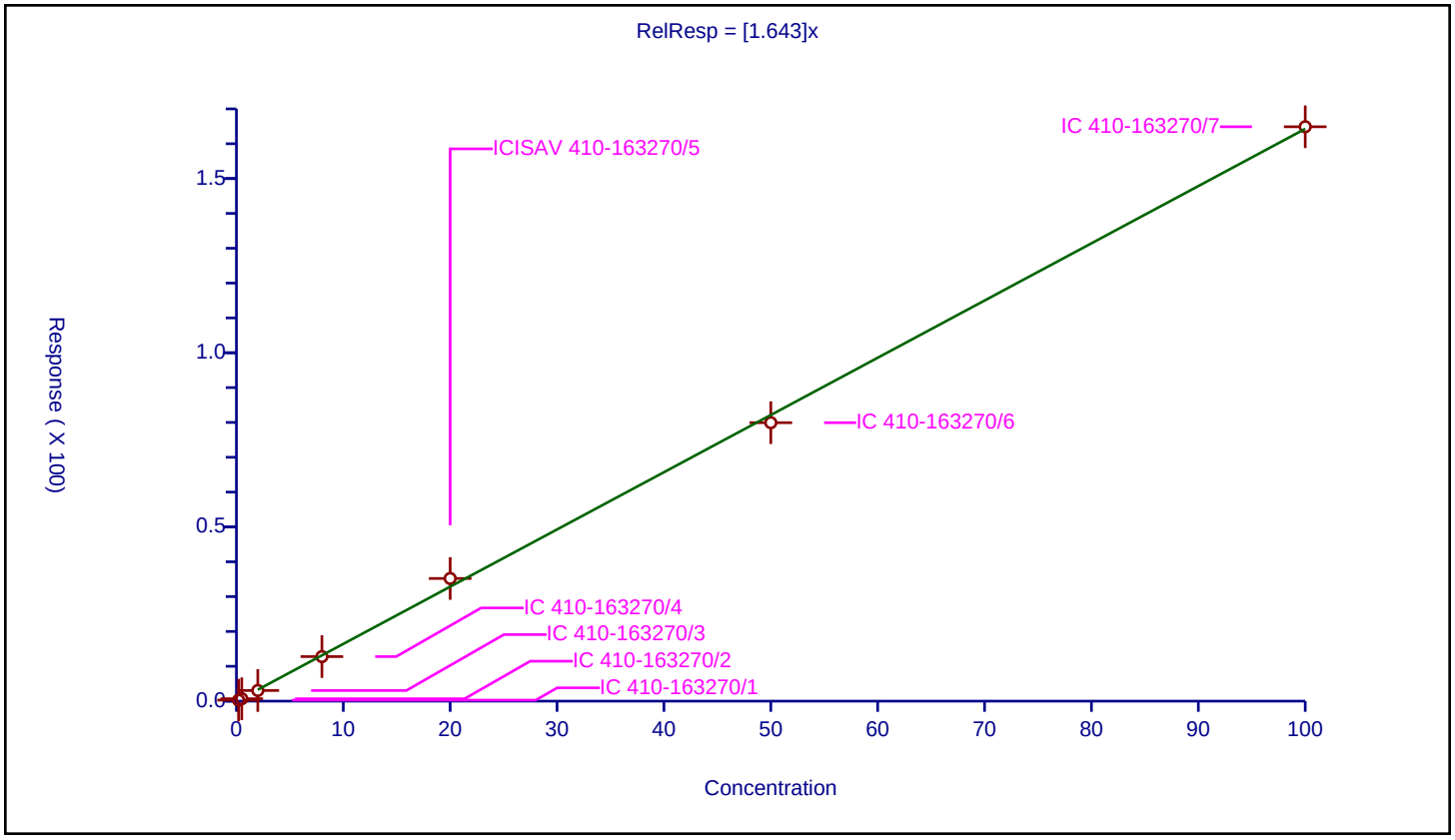
Curve Coefficients

Intercept:	0
Slope:	1.643

Error Coefficients

Standard Error:	19300000
Relative Standard Error:	9.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.293728	10.0	2983304.0	1.46864	Y
2	IC 410-163270/2	0.5	0.688117	10.0	2719274.0	1.376235	Y
3	IC 410-163270/3	2.0	3.055858	10.0	2961561.0	1.527929	Y
4	IC 410-163270/4	8.0	12.785344	10.0	2896587.0	1.598168	Y
5	ICISAV 410-163270/5	20.0	35.211798	10.0	2810011.0	1.76059	Y
6	IC 410-163270/6	50.0	79.929054	10.0	2752533.0	1.598581	Y
7	IC 410-163270/7	100.0	164.872907	10.0	2448949.0	1.648729	Y



Calibration / 5:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

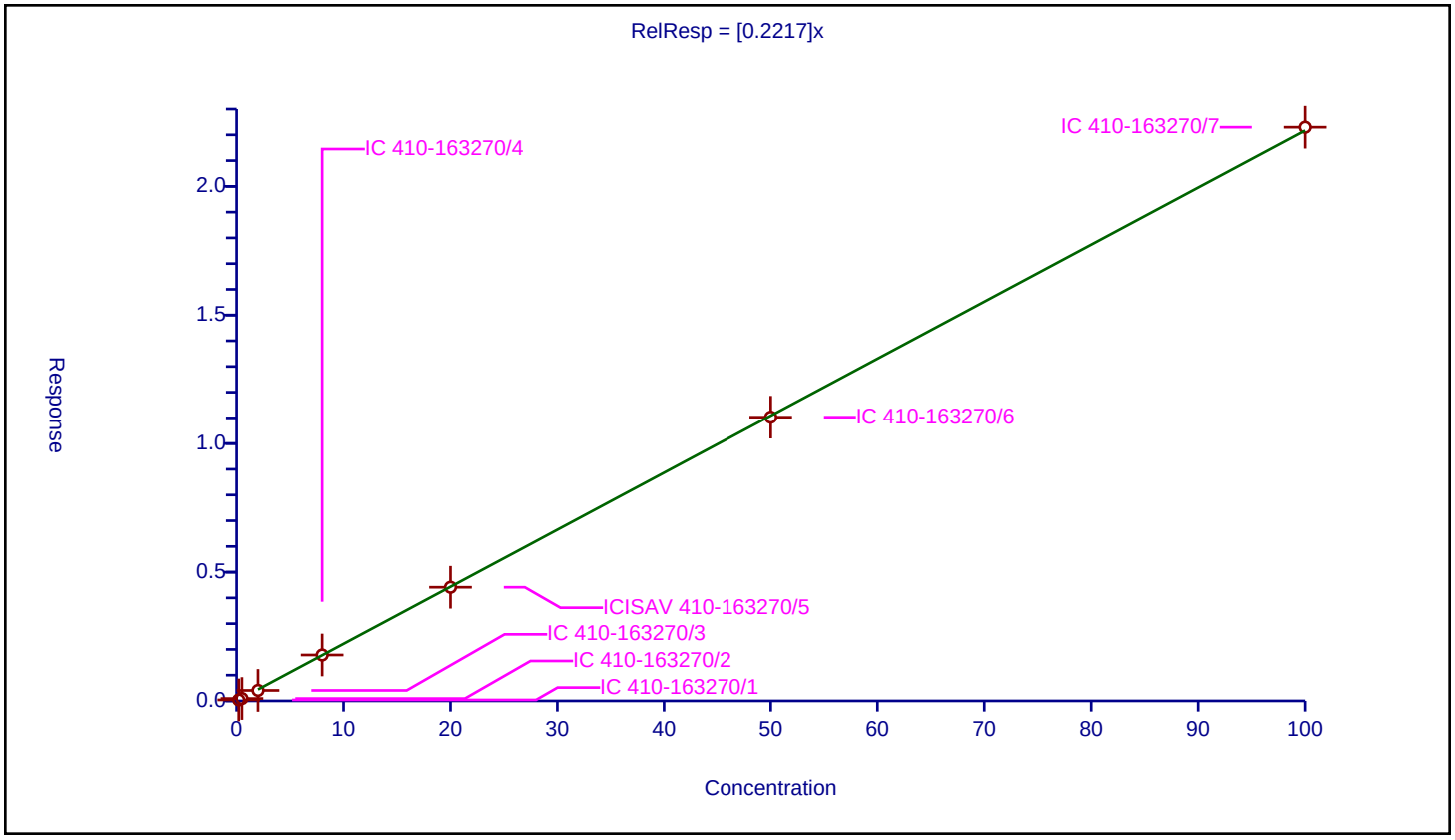
Curve Coefficients

Intercept:	0
Slope:	0.2217

Error Coefficients

Standard Error:	3730000
Relative Standard Error:	8.8
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.039267	10.0	4413685.0	0.196333	Y
2	IC 410-163270/2	0.5	0.092692	10.0	4194874.0	0.185383	Y
3	IC 410-163270/3	2.0	0.407023	10.0	4675631.0	0.203512	Y
4	IC 410-163270/4	8.0	1.78323	10.0	4301027.0	0.222904	Y
5	ICISAV 410-163270/5	20.0	4.414245	10.0	4289880.0	0.220712	Y
6	IC 410-163270/6	50.0	11.027136	10.0	4019856.0	0.220543	Y
7	IC 410-163270/7	100.0	22.296791	10.0	3457633.0	0.222968	Y



Calibration / 6:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

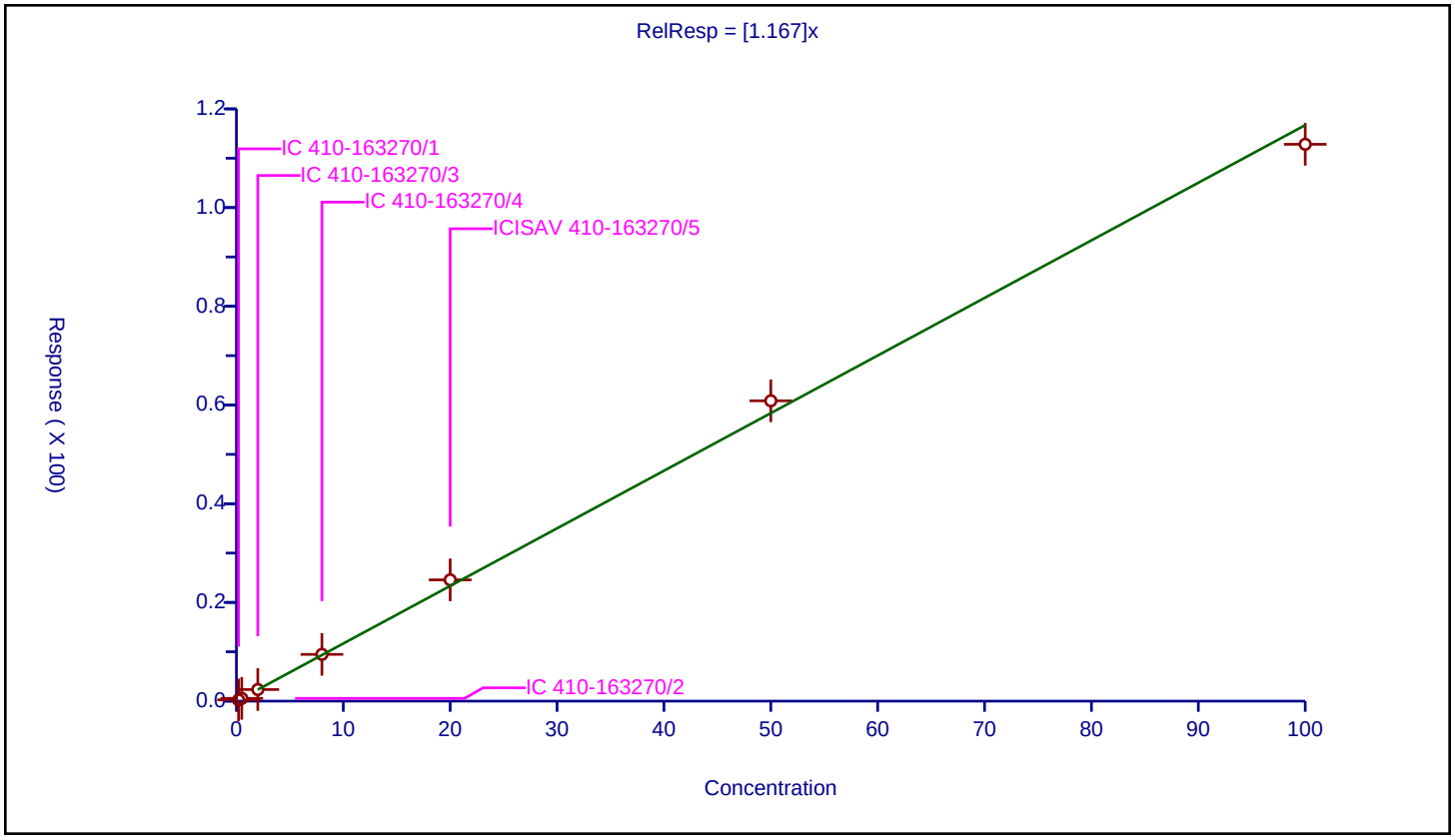
Curve Coefficients

Intercept:	0
Slope:	1.167

Error Coefficients

Standard Error:	19500000
Relative Standard Error:	4.5
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.249268	10.0	4310627.0	1.246338	Y
2	IC 410-163270/2	0.5	0.562477	10.0	3959223.0	1.124953	Y
3	IC 410-163270/3	2.0	2.349826	10.0	4530136.0	1.174913	Y
4	IC 410-163270/4	8.0	9.476168	10.0	4421208.0	1.184521	Y
5	ICISAV 410-163270/5	20.0	24.571366	10.0	4325022.0	1.228568	Y
6	IC 410-163270/6	50.0	60.853057	10.0	3878075.0	1.217061	Y
7	IC 410-163270/7	100.0	112.826039	10.0	3527817.0	1.12826	Y



Calibration / 6:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

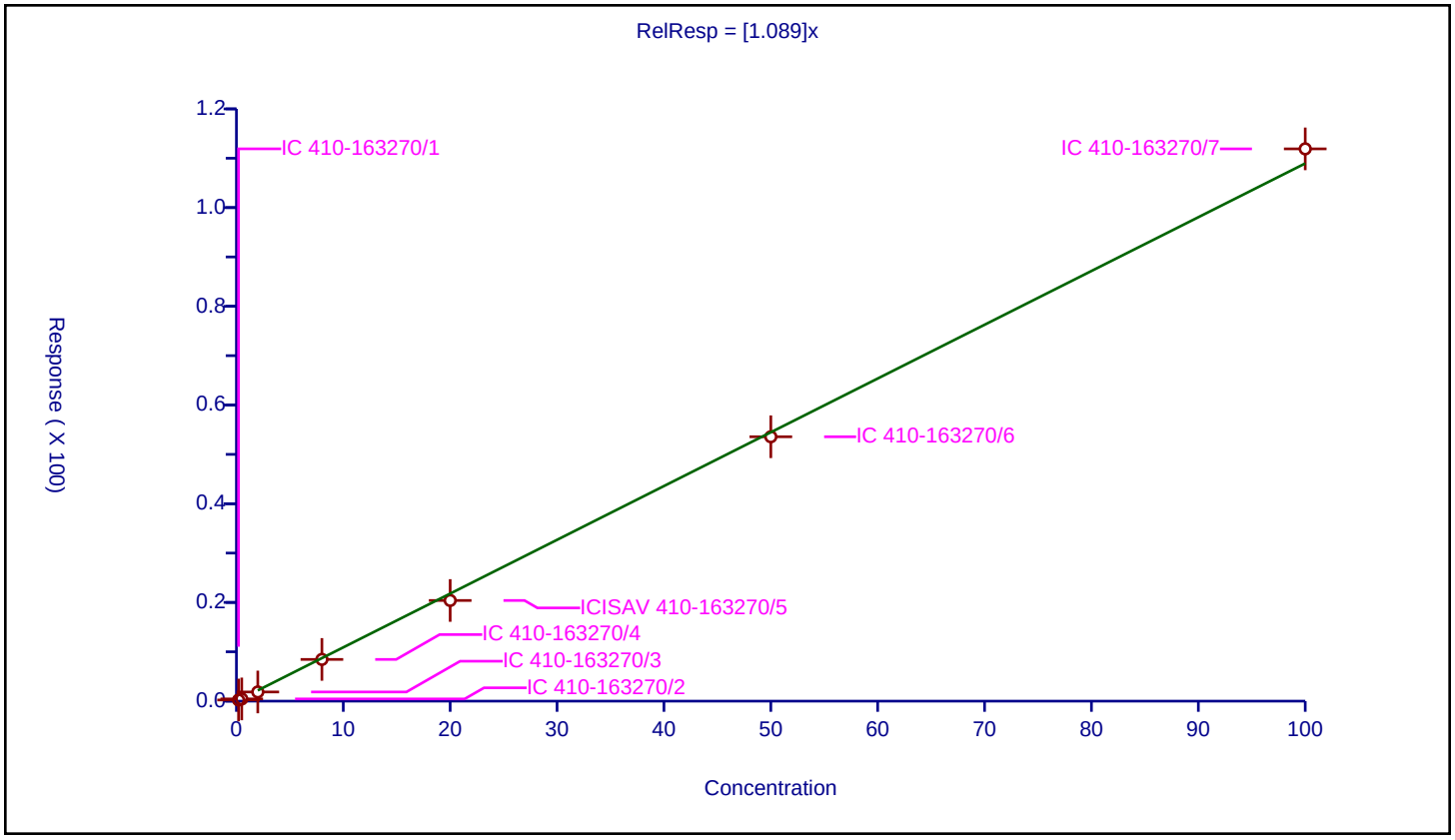
Curve Coefficients

Intercept:	0
Slope:	1.089

Error Coefficients

Standard Error:	958000
Relative Standard Error:	10.1
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.232707	10.0	247479.0	1.163533	Y
2	IC 410-163270/2	0.5	0.452212	10.0	218791.0	0.904425	Y
3	IC 410-163270/3	2.0	1.857177	10.0	245787.0	0.928589	Y
4	IC 410-163270/4	8.0	8.455731	10.0	233107.0	1.056966	Y
5	ICISAV 410-163270/5	20.0	20.398816	10.0	233090.0	1.019941	Y
6	IC 410-163270/6	50.0	53.567272	10.0	200694.0	1.071345	Y
7	IC 410-163270/7	100.0	111.902266	10.0	180511.0	1.119023	Y



Calibration / PFO4DA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

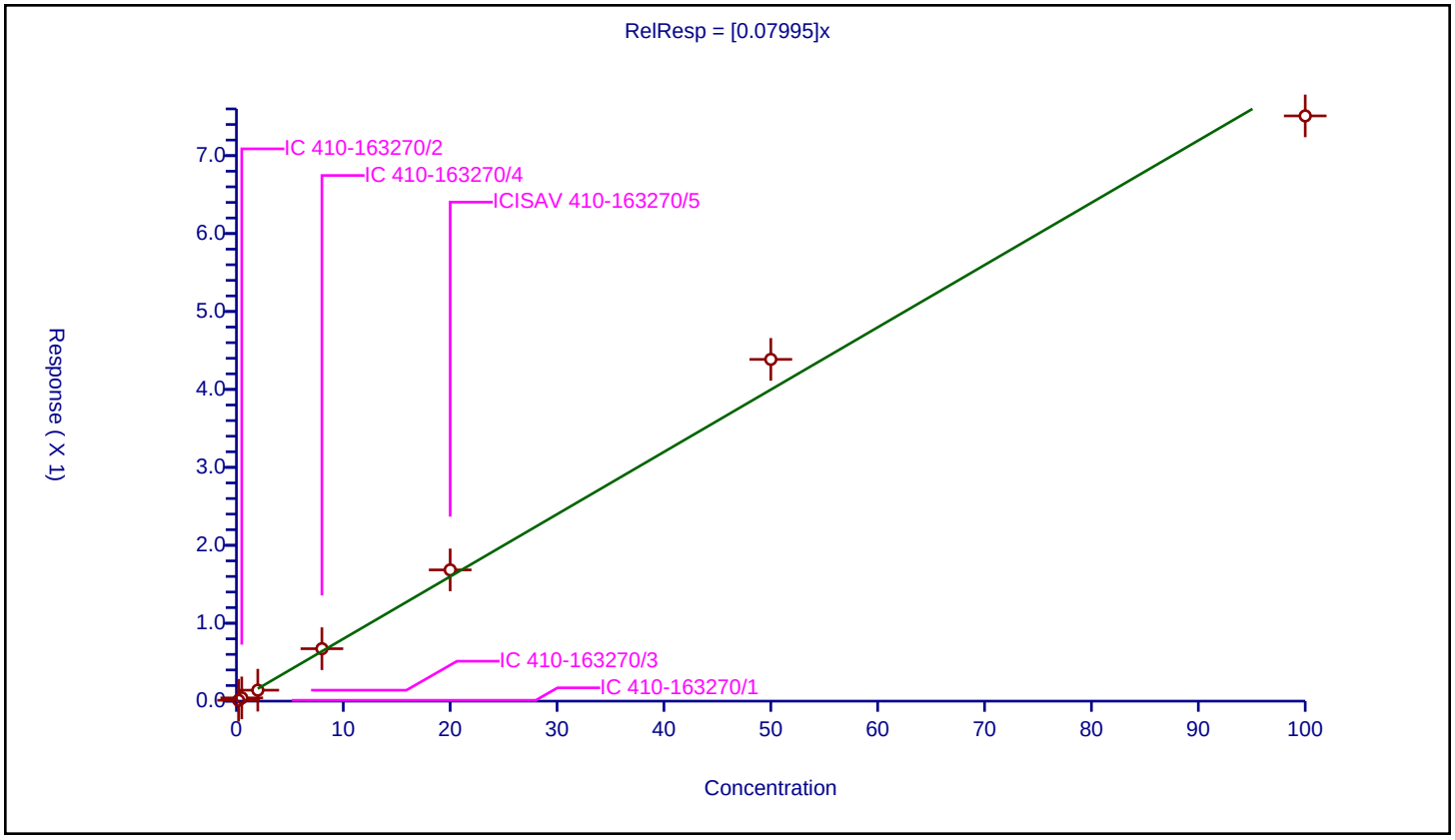
Curve Coefficients

Intercept:	0
Slope:	0.07995

Error Coefficients

Standard Error:	922000
Relative Standard Error:	14.8
Correlation Coefficient:	0.979
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.011011	10.0	2983304.0	0.055056	Y
2	IC 410-163270/2	0.5	0.041596	10.0	2719274.0	0.083191	Y
3	IC 410-163270/3	2.0	0.140703	10.0	2961561.0	0.070351	Y
4	IC 410-163270/4	8.0	0.672909	10.0	2896587.0	0.084114	Y
5	ICISAV 410-163270/5	20.0	1.684214	10.0	2810011.0	0.084211	Y
6	IC 410-163270/6	50.0	4.385481	10.0	2752533.0	0.08771	Y
7	IC 410-163270/7	100.0	7.510181	10.0	2448949.0	0.075102	Y



Calibration / PS Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

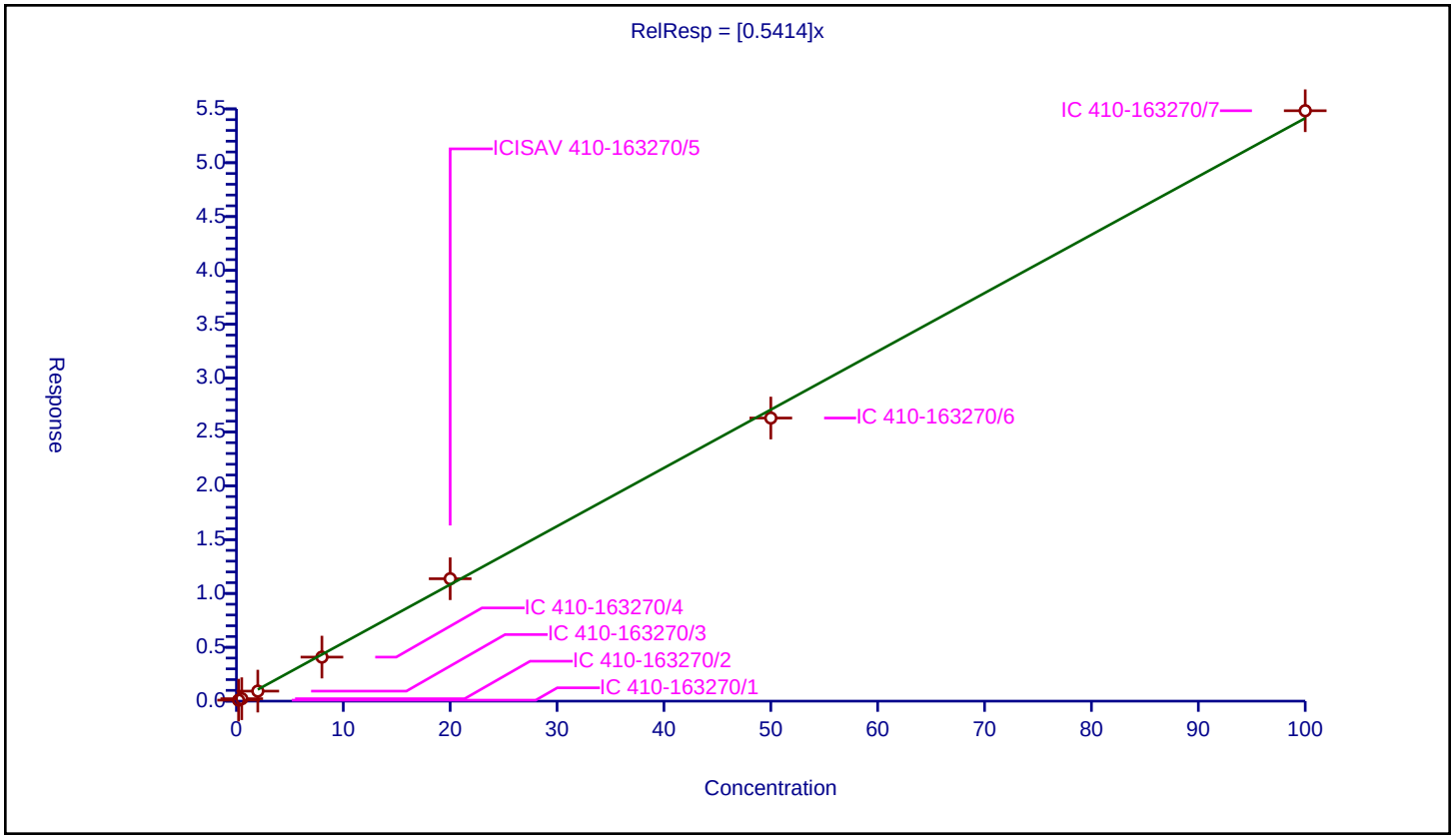
Curve Coefficients

Intercept:	0
Slope:	0.5414

Error Coefficients

Standard Error:	8370000
Relative Standard Error:	11.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.093511	9.36	3537355.0	0.467556	Y
2	IC 410-163270/2	0.5	0.225719	9.36	3322454.0	0.451439	Y
3	IC 410-163270/3	2.0	0.930048	9.36	3552341.0	0.465024	Y
4	IC 410-163270/4	8.0	4.09007	9.36	3491319.0	0.511259	Y
5	ICISAV 410-163270/5	20.0	11.366159	9.36	3436066.0	0.568308	Y
6	IC 410-163270/6	50.0	26.291169	9.36	3344076.0	0.525823	Y
7	IC 410-163270/7	100.0	54.830438	9.36	3014441.0	0.548304	Y



Calibration / EVE Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

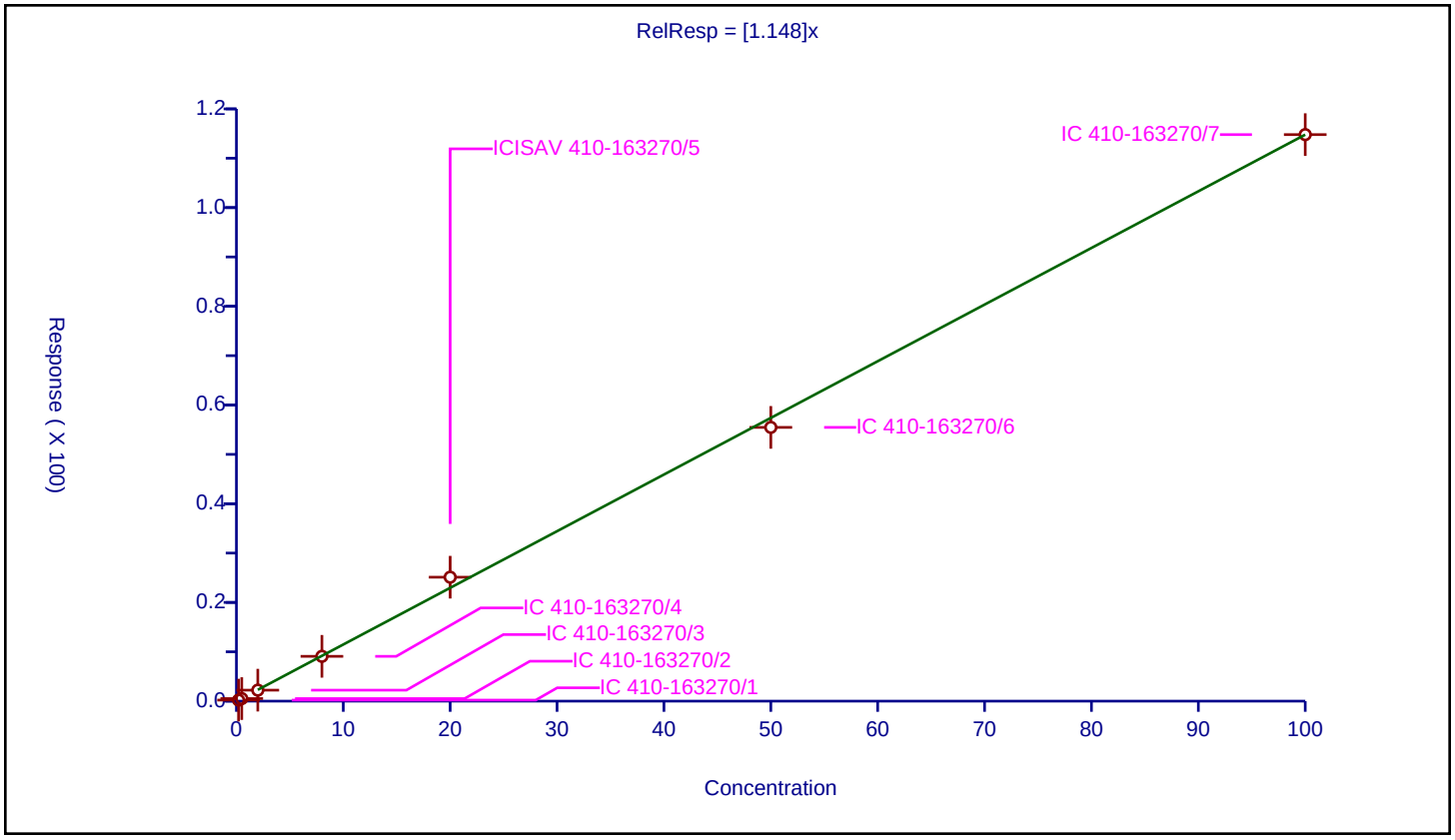
Curve Coefficients

Intercept:	0
Slope:	1.148

Error Coefficients

Standard Error:	13400000
Relative Standard Error:	6.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.210525	10.0	2983304.0	1.052625	Y
2	IC 410-163270/2	0.5	0.518539	10.0	2719274.0	1.037078	Y
3	IC 410-163270/3	2.0	2.223608	10.0	2961561.0	1.111804	Y
4	IC 410-163270/4	8.0	9.080639	10.0	2896587.0	1.13508	Y
5	ICISAV 410-163270/5	20.0	25.115254	10.0	2810011.0	1.255763	Y
6	IC 410-163270/6	50.0	55.466274	10.0	2752533.0	1.109325	Y
7	IC 410-163270/7	100.0	114.787993	10.0	2448949.0	1.14788	Y



Calibration / PFECHS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

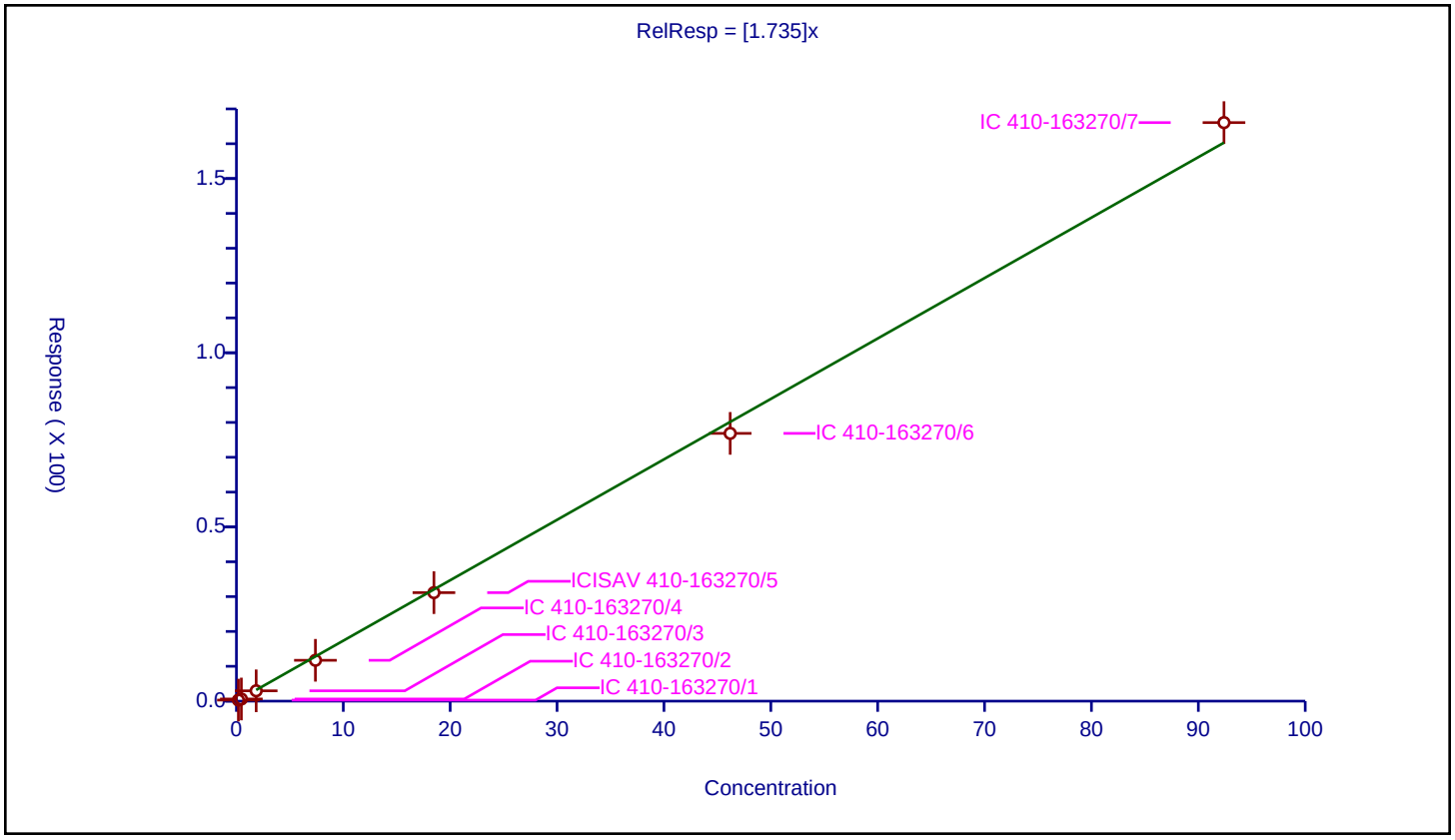
Curve Coefficients

Intercept:	0
Slope:	1.735

Error Coefficients

Standard Error:	19400000
Relative Standard Error:	11.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1848	0.301842	9.46	2829518.0	1.633345	Y
2	IC 410-163270/2	0.462	0.611908	9.46	2740474.0	1.324476	Y
3	IC 410-163270/3	1.848	2.964371	9.46	2868715.0	1.604097	Y
4	IC 410-163270/4	7.392	11.726009	9.46	2883076.0	1.586311	Y
5	ICISAV 410-163270/5	18.48	31.144383	9.46	2807229.0	1.685302	Y
6	IC 410-163270/6	46.2	76.857441	9.46	2685979.0	1.663581	Y
7	IC 410-163270/7	92.4	166.066138	9.46	2336198.0	1.797253	Y



Calibration / 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

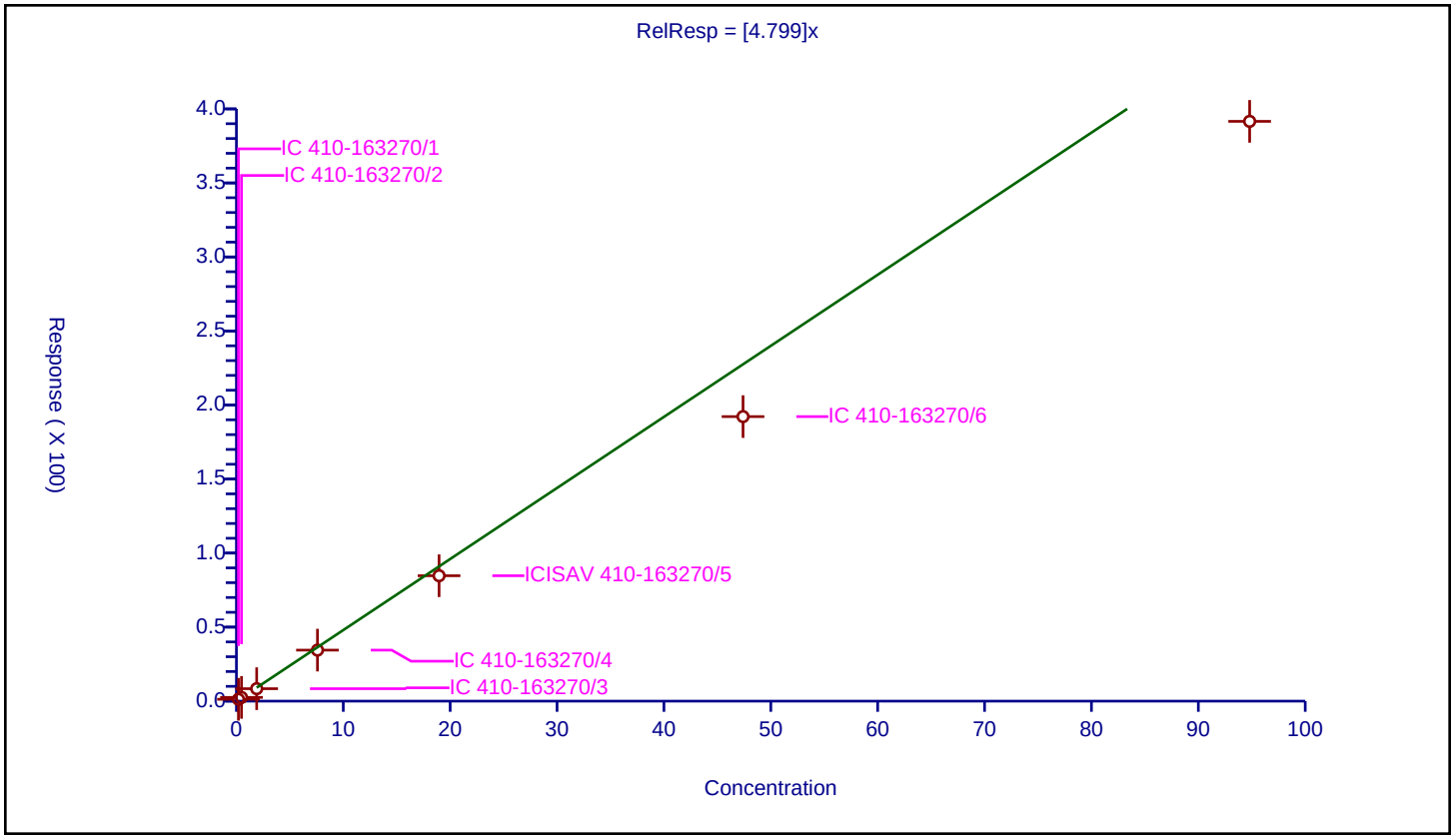
Curve Coefficients

Intercept:	0
Slope:	4.799

Error Coefficients

Standard Error:	3870000
Relative Standard Error:	18.9
Correlation Coefficient:	0.989
Coefficient of Determination (Adjusted):	0.946

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1896	1.255488	9.5	280962.0	6.621774	Y
2	IC 410-163270/2	0.474	2.533747	9.5	248157.0	5.345457	Y
3	IC 410-163270/3	1.896	8.4065	9.5	272429.0	4.433808	Y
4	IC 410-163270/4	7.584	34.453909	9.5	252566.0	4.542973	Y
5	ICISAV 410-163270/5	18.96	84.701665	9.5	252525.0	4.467387	Y
6	IC 410-163270/6	47.4	192.1765	9.5	229292.0	4.054357	Y
7	IC 410-163270/7	94.8	391.574674	9.5	191312.0	4.130535	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

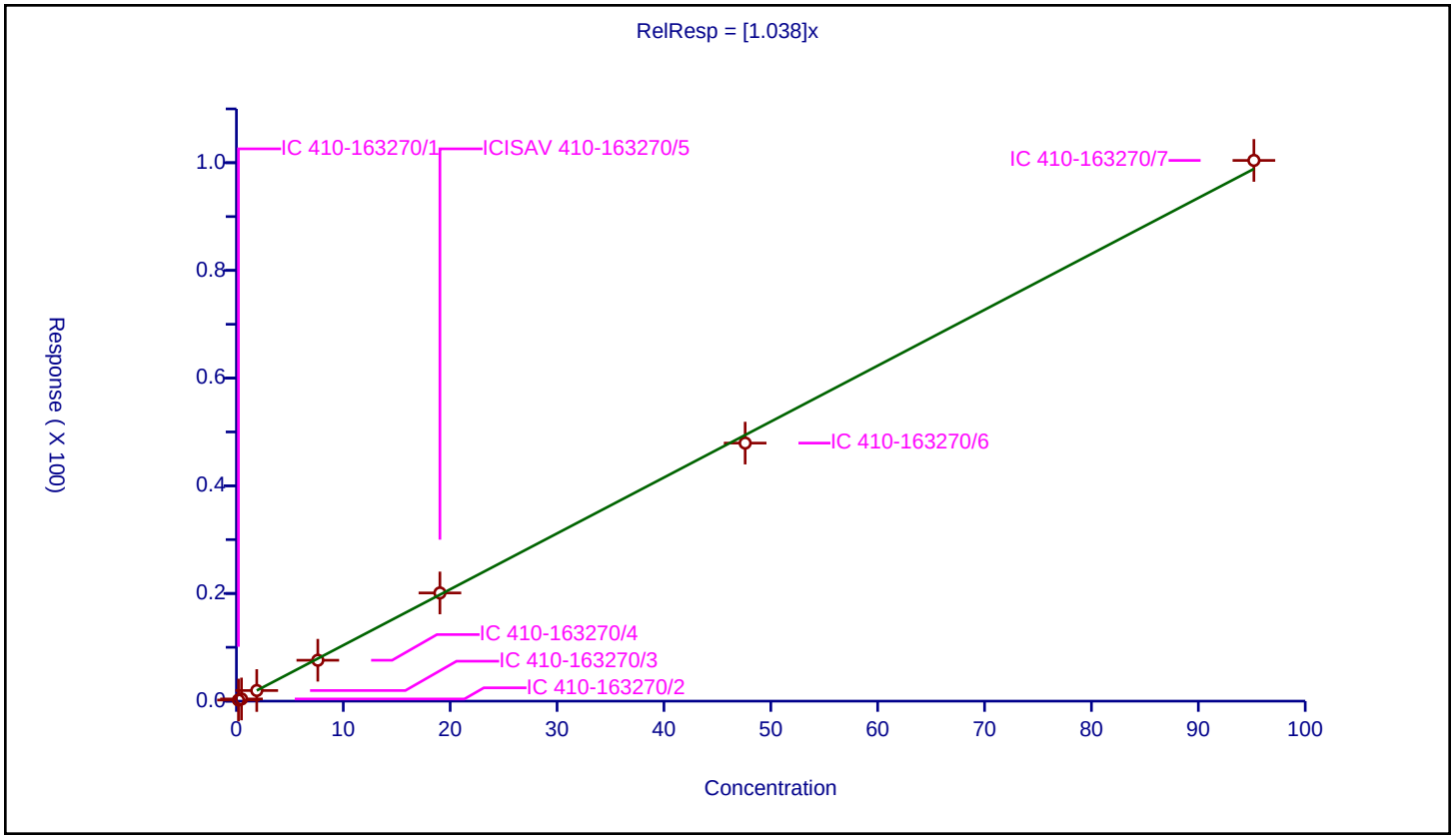
Curve Coefficients

Intercept:	0
Slope:	1.038

Error Coefficients

Standard Error:	11800000
Relative Standard Error:	8.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1904	0.204712	9.46	2829518.0	1.075167	Y
2	IC 410-163270/2	0.476	0.403572	9.46	2740474.0	0.84784	Y
3	IC 410-163270/3	1.904	1.973643	9.46	2868715.0	1.036577	Y
4	IC 410-163270/4	7.616	7.594428	9.46	2883076.0	0.997167	Y
5	ICISAV 410-163270/5	19.04	20.097386	9.46	2807229.0	1.055535	Y
6	IC 410-163270/6	47.6	47.928158	9.46	2685979.0	1.006894	Y
7	IC 410-163270/7	95.2	100.425522	9.46	2336198.0	1.05489	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

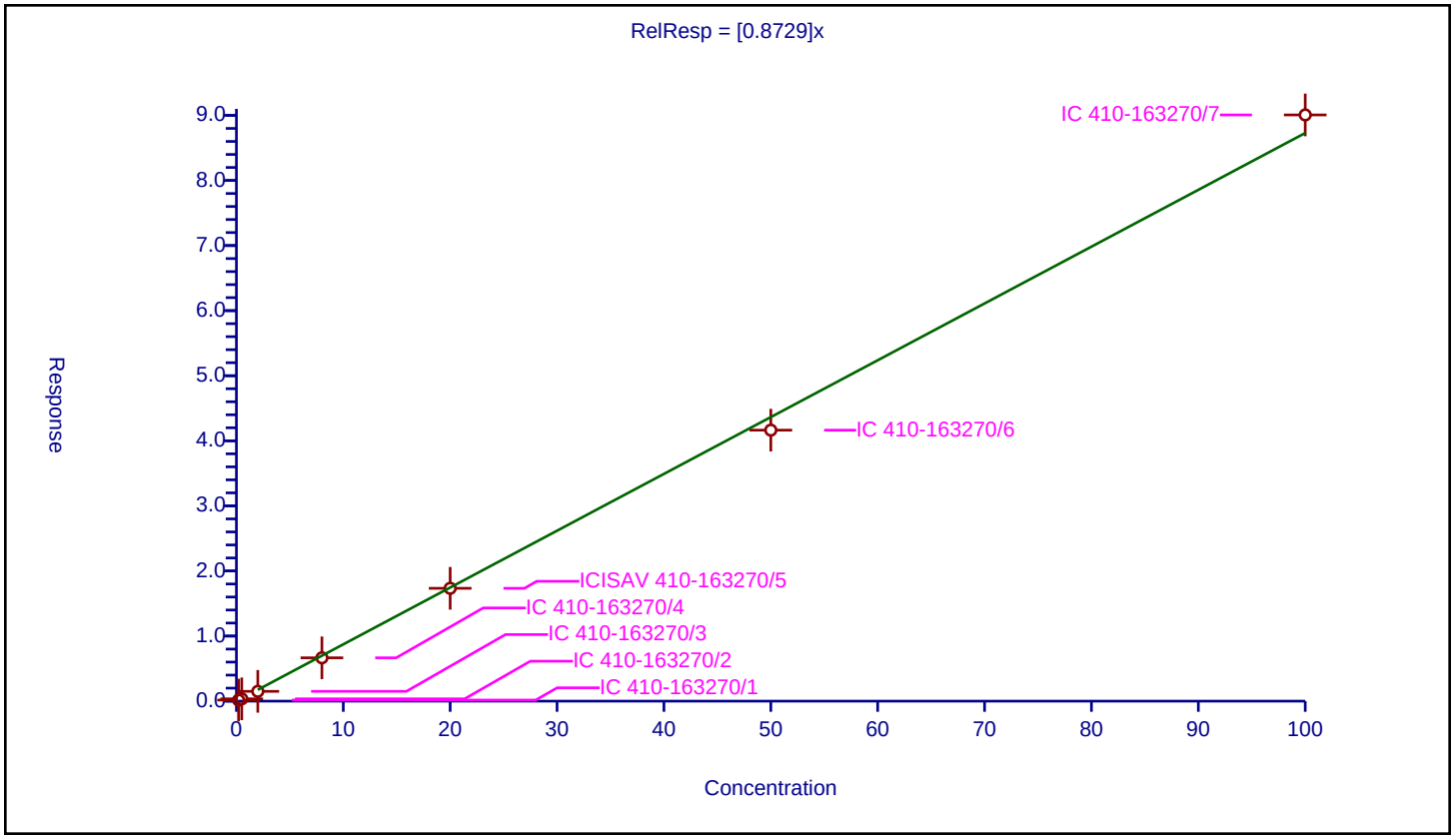
Curve Coefficients

Intercept:	0
Slope:	0.8729

Error Coefficients

Standard Error:	13000000
Relative Standard Error:	10.2
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.166927	10.0	4052430.0	0.834635	Y
2	IC 410-163270/2	0.5	0.353795	10.0	3684537.0	0.70759	Y
3	IC 410-163270/3	2.0	1.504089	10.0	4051210.0	0.752044	Y
4	IC 410-163270/4	8.0	6.658137	10.0	3822697.0	0.832267	Y
5	ICISAV 410-163270/5	20.0	17.339111	10.0	3782323.0	0.866956	Y
6	IC 410-163270/6	50.0	41.639575	10.0	3573243.0	0.832792	Y
7	IC 410-163270/7	100.0	90.070594	10.0	3034554.0	0.900706	Y



Calibration / TAF

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

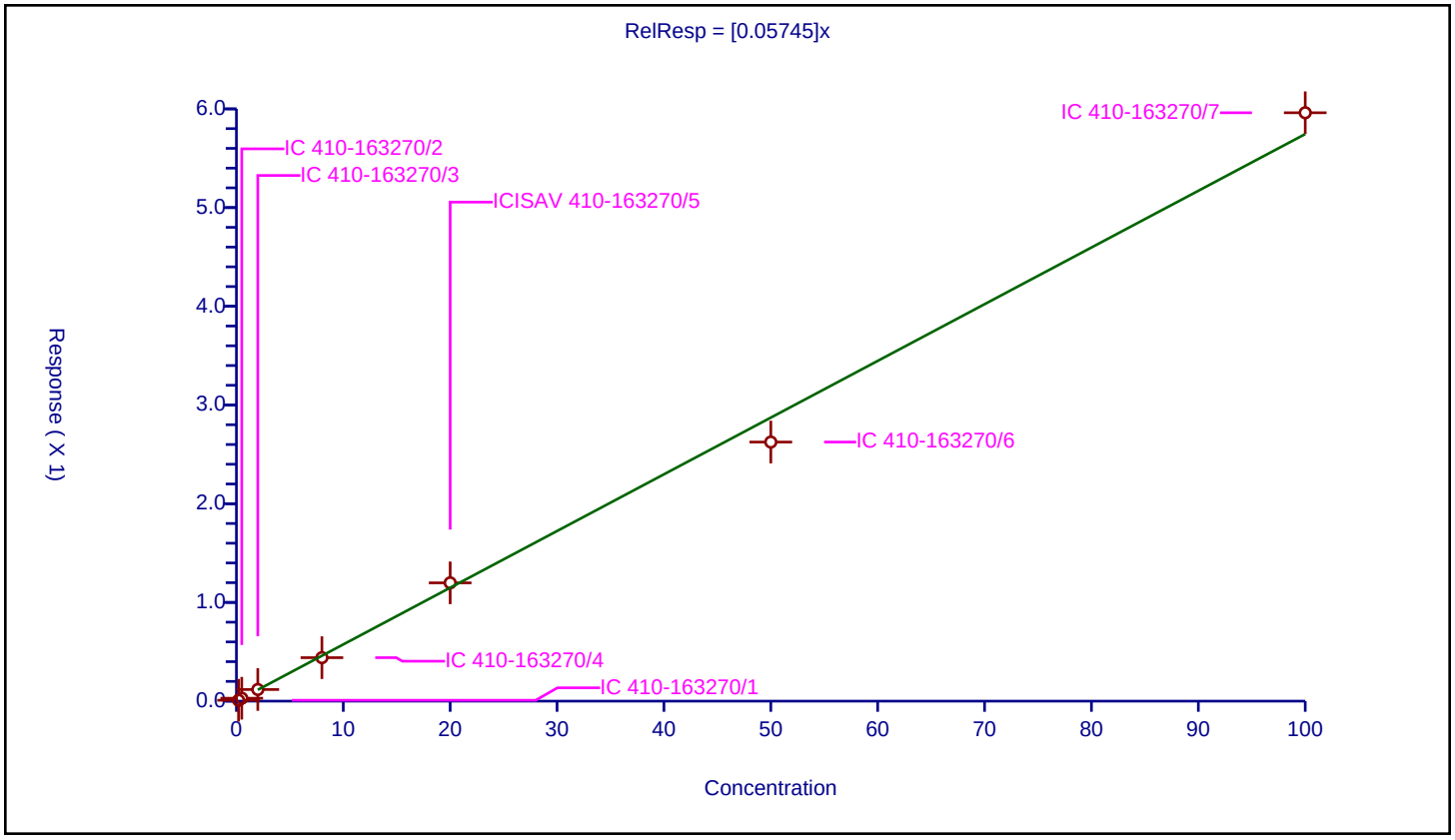
Curve Coefficients

Intercept:	0
Slope:	0.05745

Error Coefficients

Standard Error:	681000
Relative Standard Error:	10.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.008943	10.0	2983304.0	0.044716	Y
2	IC 410-163270/2	0.5	0.029644	10.0	2719274.0	0.059288	Y
3	IC 410-163270/3	2.0	0.117769	10.0	2961561.0	0.058884	Y
4	IC 410-163270/4	8.0	0.440508	10.0	2896587.0	0.055064	Y
5	ICISAV 410-163270/5	20.0	1.198529	10.0	2810011.0	0.059926	Y
6	IC 410-163270/6	50.0	2.624677	10.0	2752533.0	0.052494	Y
7	IC 410-163270/7	100.0	5.960782	10.0	2448949.0	0.059608	Y



Calibration / Perfluorooctanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

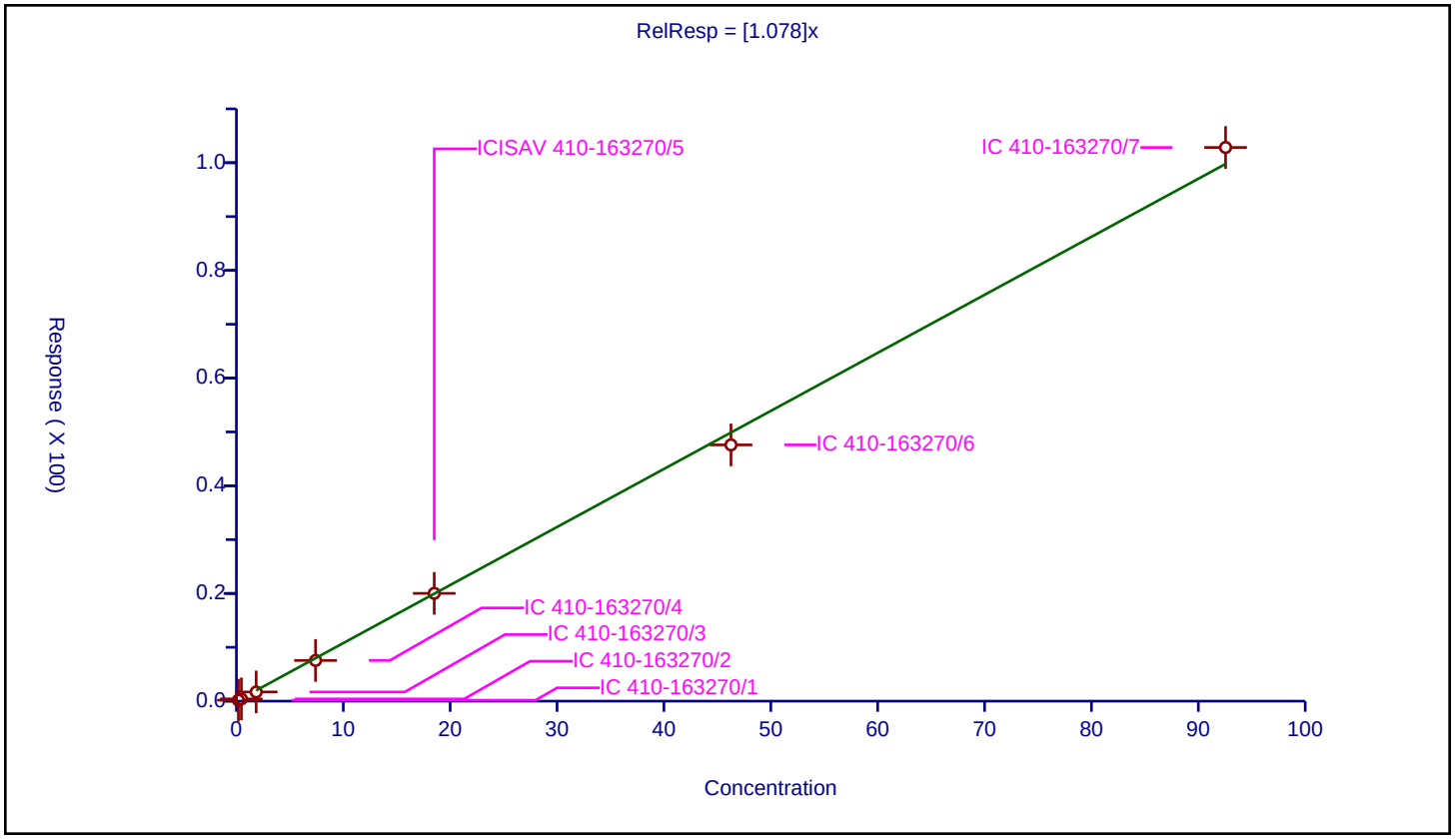
Curve Coefficients

Intercept:	0
Slope:	1.078

Error Coefficients

Standard Error:	14500000
Relative Standard Error:	10.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1851	0.177444	9.565	3416397.0	0.95864	Y
2	IC 410-163270/2	0.46275	0.412327	9.565	3079437.0	0.891036	Y
3	IC 410-163270/3	1.851	1.702267	9.565	3510518.0	0.919647	Y
4	IC 410-163270/4	7.404	7.554077	9.565	3273885.0	1.02027	Y
5	ICISAV 410-163270/5	18.51	20.016408	9.565	3286610.0	1.081383	Y
6	IC 410-163270/6	46.275	47.598089	9.565	3231412.0	1.028592	Y
7	IC 410-163270/7	92.55	102.830606	9.565	2853060.0	1.111082	Y



Calibration / Perfluorononanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

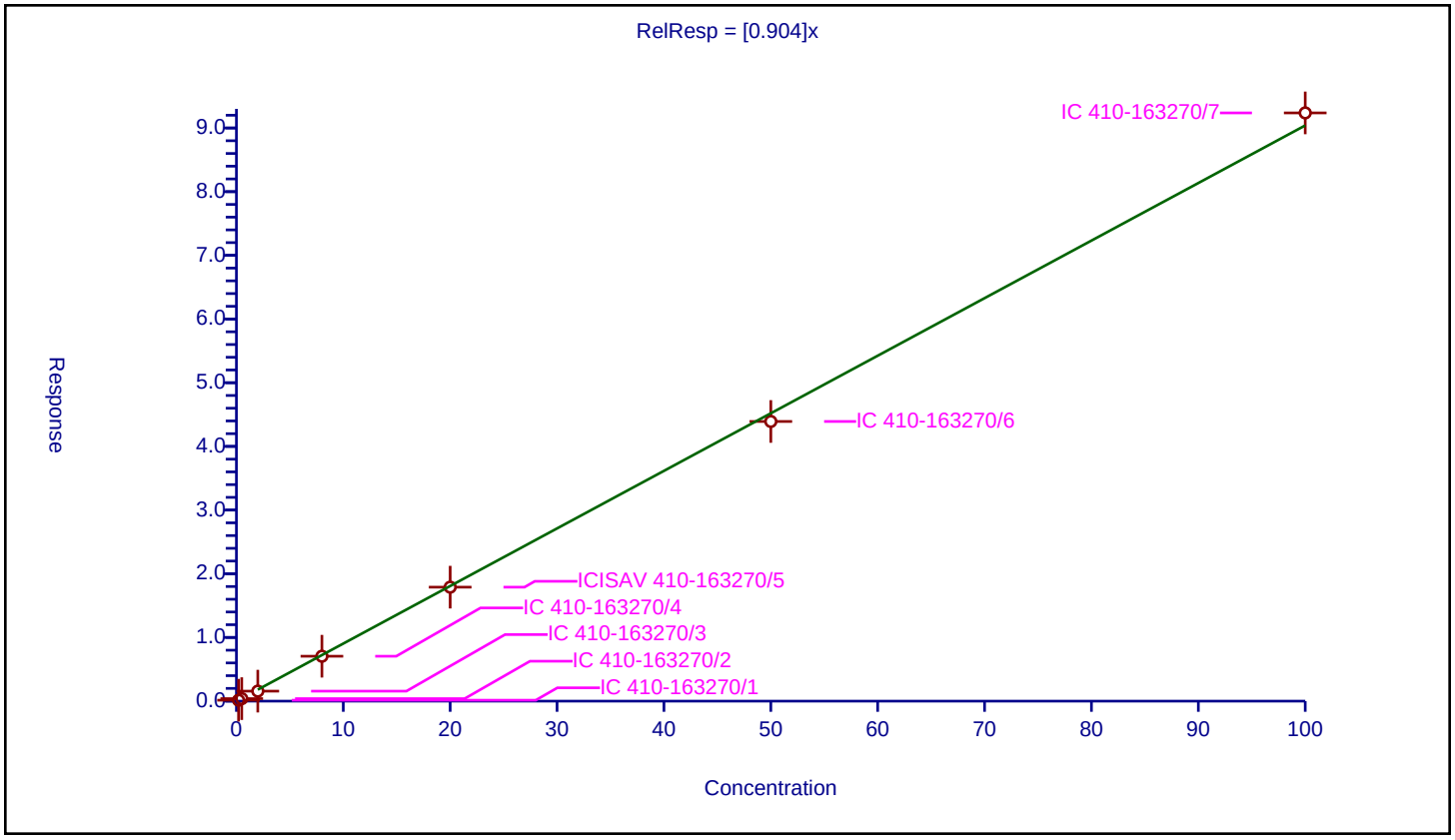
Curve Coefficients

Intercept:	0
Slope:	0.904

Error Coefficients

Standard Error:	11200000
Relative Standard Error:	10.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.150232	10.0	2949166.0	0.751162	Y
2	IC 410-163270/2	0.5	0.393968	10.0	2730626.0	0.787937	Y
3	IC 410-163270/3	2.0	1.572301	10.0	3134171.0	0.78615	Y
4	IC 410-163270/4	8.0	7.051682	10.0	2958093.0	0.88146	Y
5	ICISAV 410-163270/5	20.0	17.897966	10.0	3033101.0	0.894898	Y
6	IC 410-163270/6	50.0	43.914722	10.0	2871887.0	0.878294	Y
7	IC 410-163270/7	100.0	92.368903	10.0	2547525.0	0.923689	Y



Calibration / 7:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

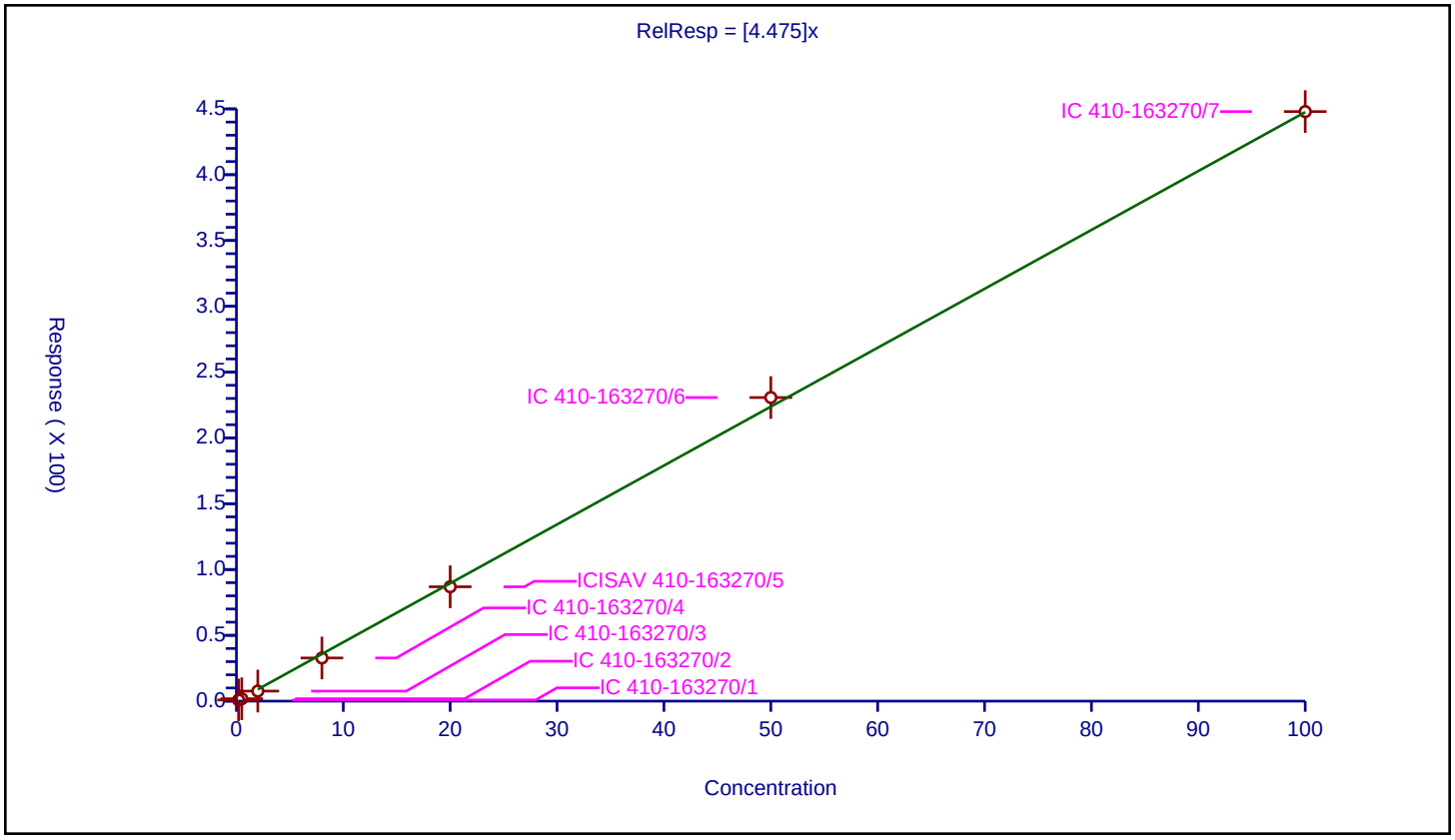
Curve Coefficients

Intercept:	0
Slope:	4.475

Error Coefficients

Standard Error:	3910000
Relative Standard Error:	10.4
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.889934	10.0	247479.0	4.44967	Y
2	IC 410-163270/2	0.5	1.822561	10.0	218791.0	3.645123	Y
3	IC 410-163270/3	2.0	7.630184	10.0	245787.0	3.815092	Y
4	IC 410-163270/4	8.0	32.799187	10.0	233107.0	4.099898	Y
5	ICISAV 410-163270/5	20.0	86.895448	10.0	233090.0	4.344772	Y
6	IC 410-163270/6	50.0	230.699473	10.0	200694.0	4.613989	Y
7	IC 410-163270/7	100.0	447.951039	10.0	180511.0	4.47951	Y



Calibration / 8:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

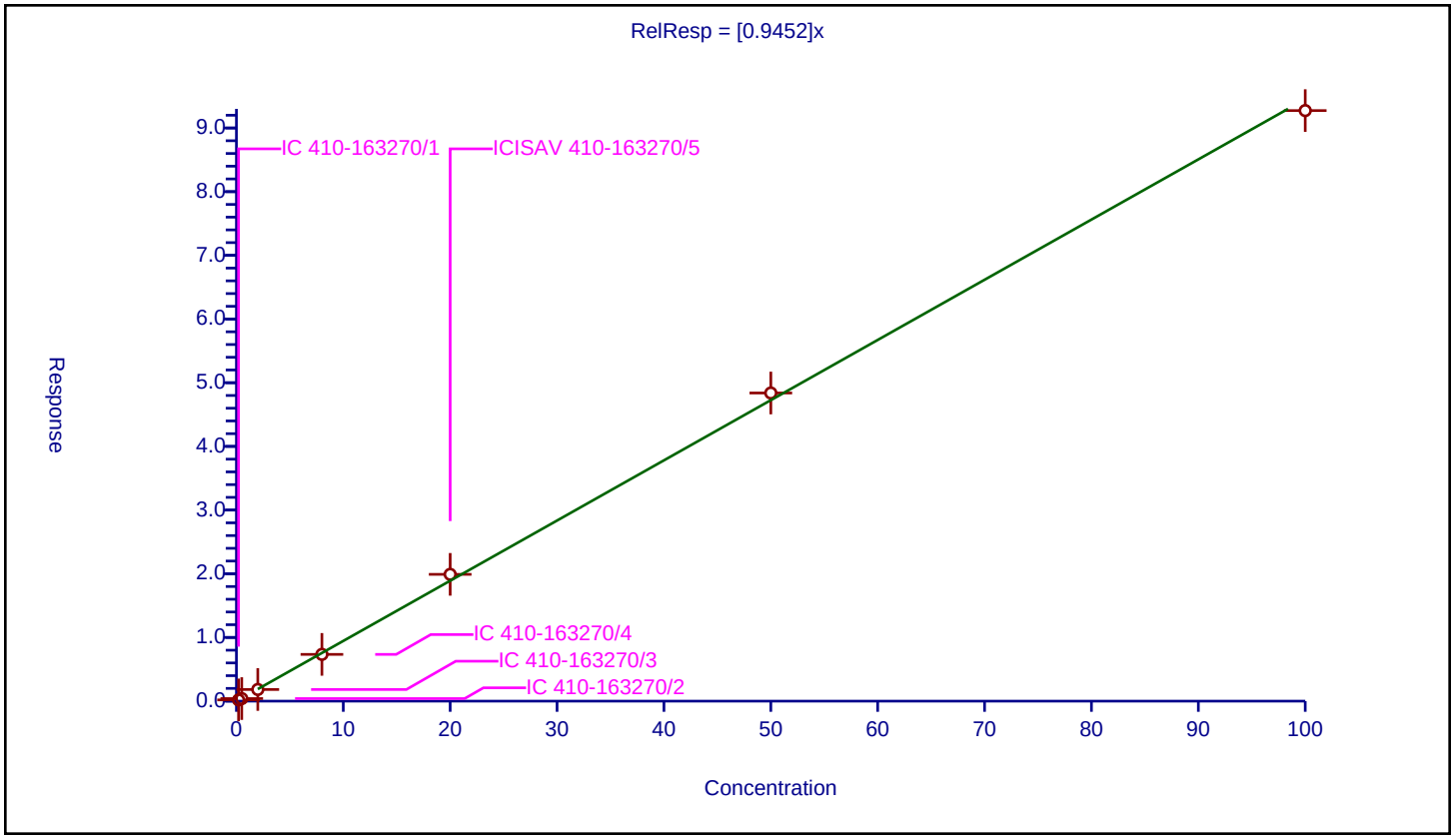
Curve Coefficients

Intercept:	0
Slope:	0.9452

Error Coefficients

Standard Error:	14900000
Relative Standard Error:	6.8
Correlation Coefficient:	0.991
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.193889	10.0	4250529.0	0.969444	Y
2	IC 410-163270/2	0.5	0.403072	10.0	3829562.0	0.806144	Y
3	IC 410-163270/3	2.0	1.829557	10.0	4330486.0	0.914778	Y
4	IC 410-163270/4	8.0	7.343604	10.0	4170452.0	0.917951	Y
5	ICISAV 410-163270/5	20.0	19.91073	10.0	4092535.0	0.995537	Y
6	IC 410-163270/6	50.0	48.388663	10.0	3720215.0	0.967773	Y
7	IC 410-163270/7	100.0	92.73134	10.0	3302650.0	0.927313	Y



Calibration / 8:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

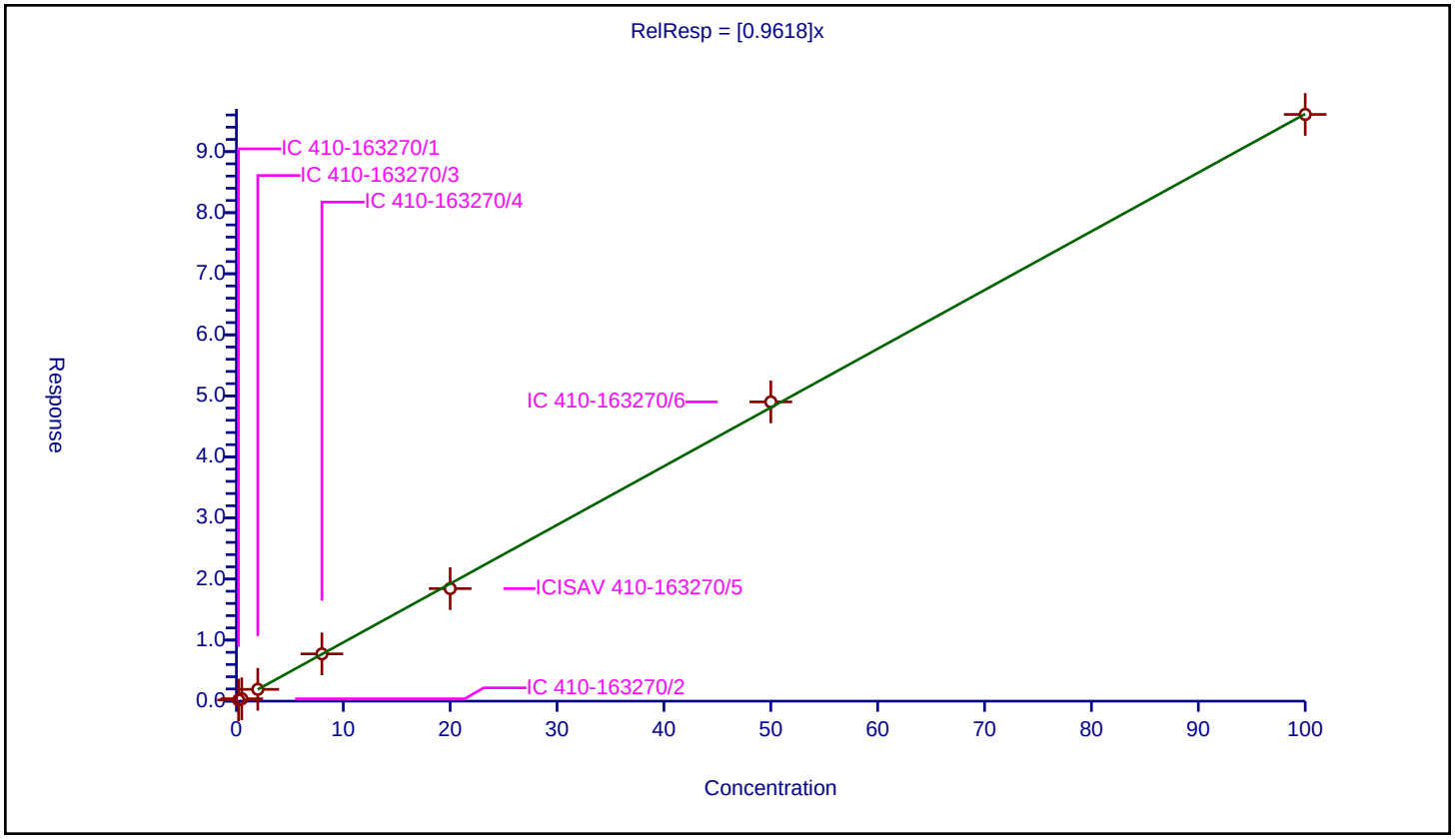
Curve Coefficients

Intercept:	0
Slope:	0.9618

Error Coefficients

Standard Error:	558000
Relative Standard Error:	8.0
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.19596	10.0	170545.0	0.9798	Y
2	IC 410-163270/2	0.5	0.389762	10.0	146243.0	0.779524	Y
3	IC 410-163270/3	2.0	1.934416	10.0	162235.0	0.967208	Y
4	IC 410-163270/4	8.0	7.739707	10.0	146950.0	0.967463	Y
5	ICISAV 410-163270/5	20.0	18.430816	10.0	156062.0	0.921541	Y
6	IC 410-163270/6	50.0	49.010888	10.0	134828.0	0.980218	Y
7	IC 410-163270/7	100.0	96.090546	10.0	120270.0	0.960905	Y



Calibration / 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

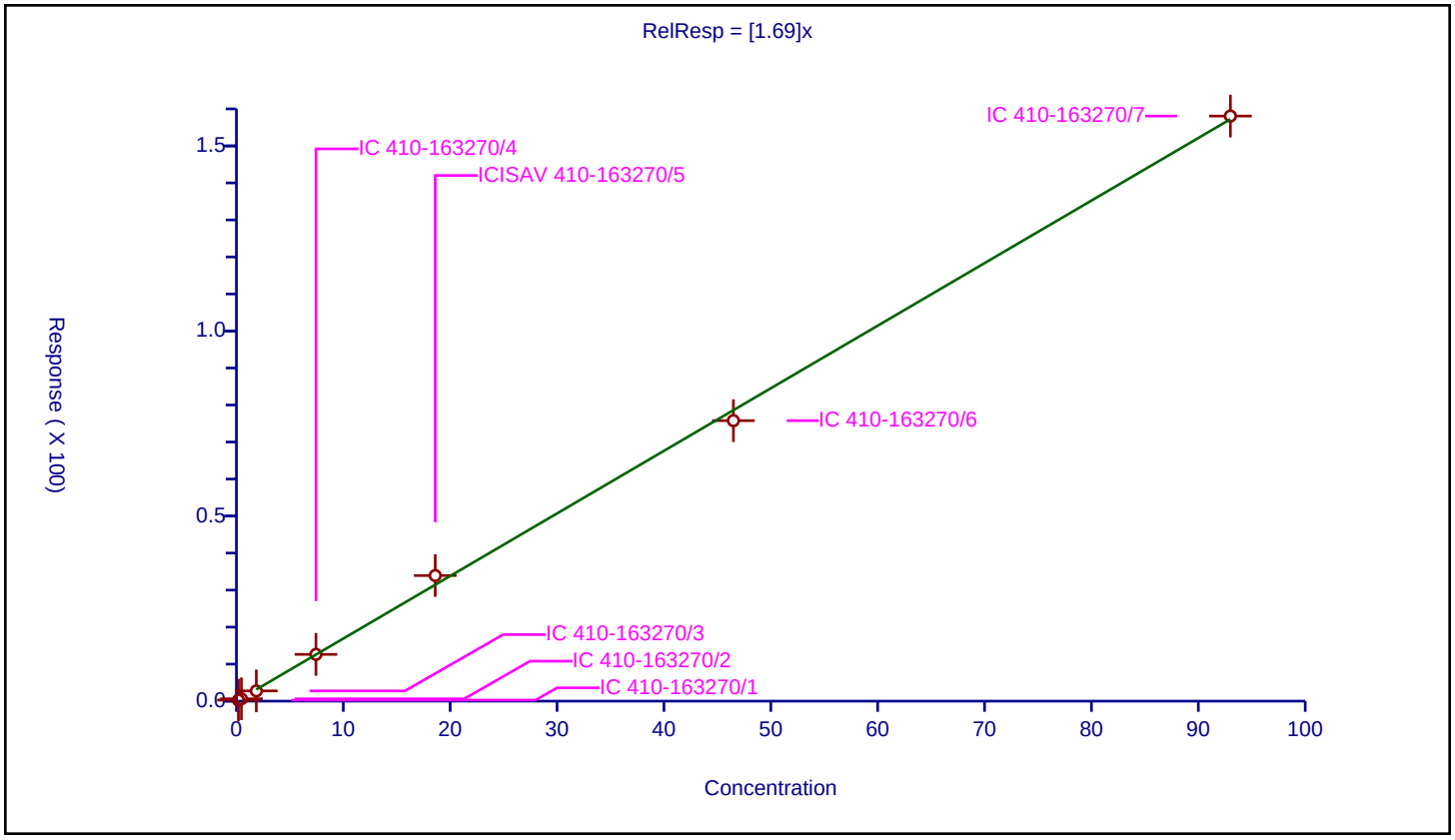
Curve Coefficients

Intercept:	0
Slope:	1.69

Error Coefficients

Standard Error:	22500000
Relative Standard Error:	10.9
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.186	0.282961	9.565	3416397.0	1.521294	Y
2	IC 410-163270/2	0.465	0.630818	9.565	3079437.0	1.356599	Y
3	IC 410-163270/3	1.86	2.76455	9.565	3510518.0	1.486317	Y
4	IC 410-163270/4	7.44	12.628882	9.565	3273885.0	1.69743	Y
5	ICISAV 410-163270/5	18.6	33.931497	9.565	3286610.0	1.824274	Y
6	IC 410-163270/6	46.5	75.776651	9.565	3231412.0	1.629605	Y
7	IC 410-163270/7	93.0	158.063313	9.565	2853060.0	1.699606	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

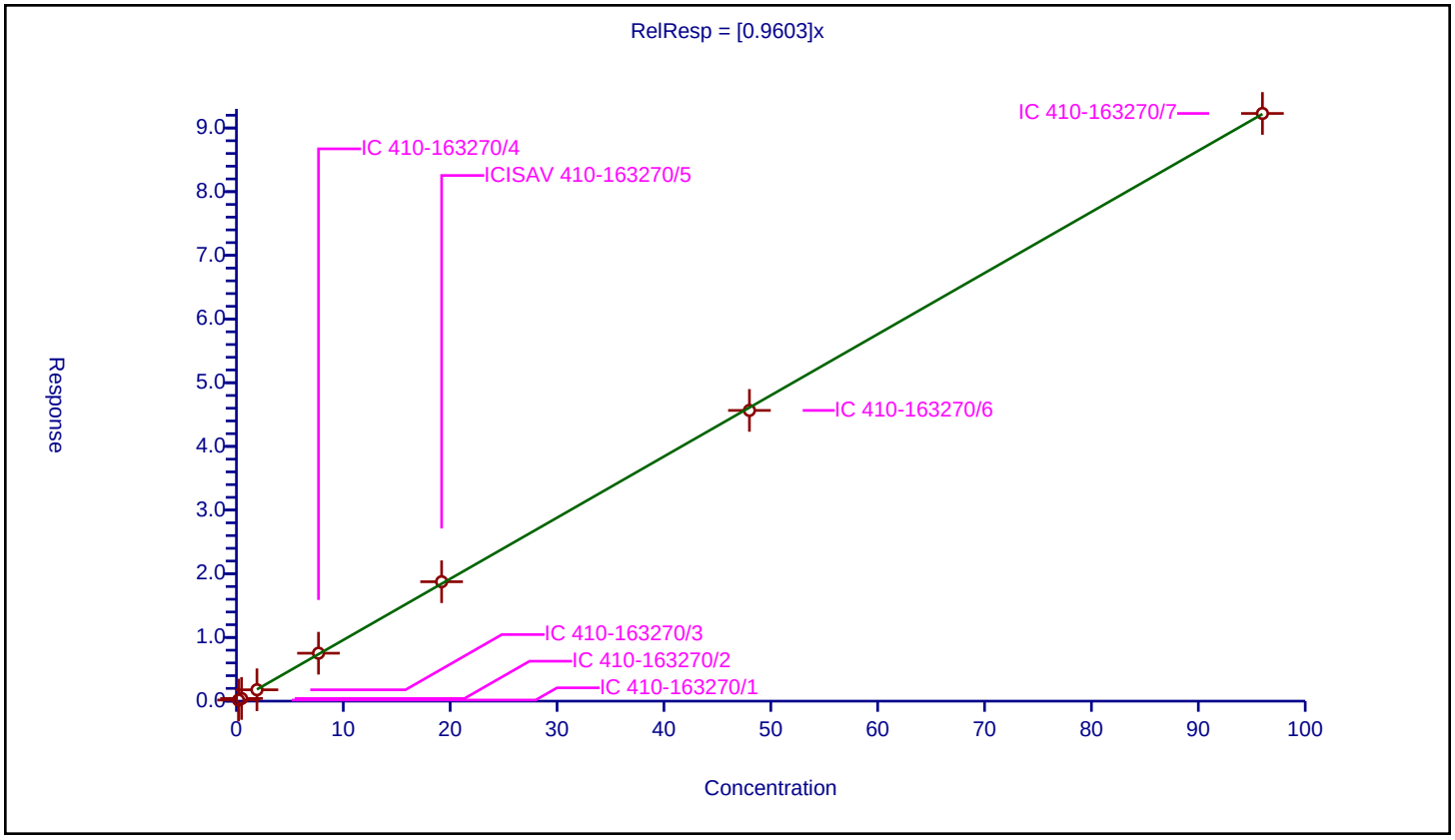
Curve Coefficients

Intercept:	0
Slope:	0.9603

Error Coefficients

Standard Error:	13200000
Relative Standard Error:	5.0
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.192	0.172744	9.565	3416397.0	0.899706	Y
2	IC 410-163270/2	0.48	0.41643	9.565	3079437.0	0.867563	Y
3	IC 410-163270/3	1.92	1.784615	9.565	3510518.0	0.929487	Y
4	IC 410-163270/4	7.68	7.526324	9.565	3273885.0	0.97999	Y
5	ICISAV 410-163270/5	19.2	18.753379	9.565	3286610.0	0.976738	Y
6	IC 410-163270/6	48.0	45.653341	9.565	3231412.0	0.951111	Y
7	IC 410-163270/7	96.0	92.283311	9.565	2853060.0	0.961284	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

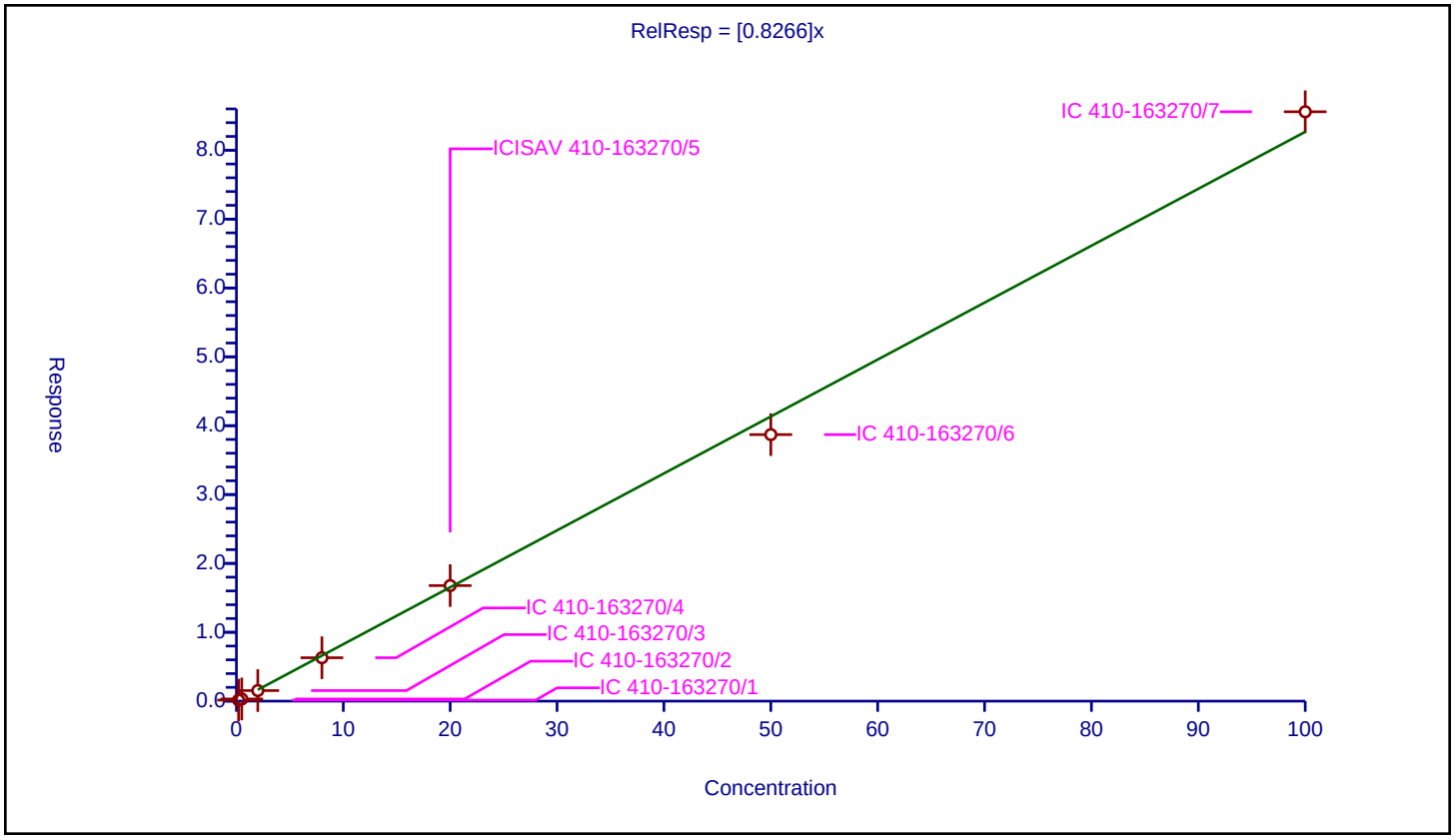
Curve Coefficients

Intercept:	0
Slope:	0.8266

Error Coefficients

Standard Error:	13400000
Relative Standard Error:	11.1
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.153574	10.0	4305347.0	0.767871	Y
2	IC 410-163270/2	0.5	0.314915	10.0	3968209.0	0.629831	Y
3	IC 410-163270/3	2.0	1.535248	10.0	4290747.0	0.767624	Y
4	IC 410-163270/4	8.0	6.303979	10.0	4341342.0	0.787997	Y
5	ICISAV 410-163270/5	20.0	16.779811	10.0	4180605.0	0.838991	Y
6	IC 410-163270/6	50.0	38.702929	10.0	3954665.0	0.774059	Y
7	IC 410-163270/7	100.0	85.584169	10.0	3279367.0	0.855842	Y



Calibration / 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

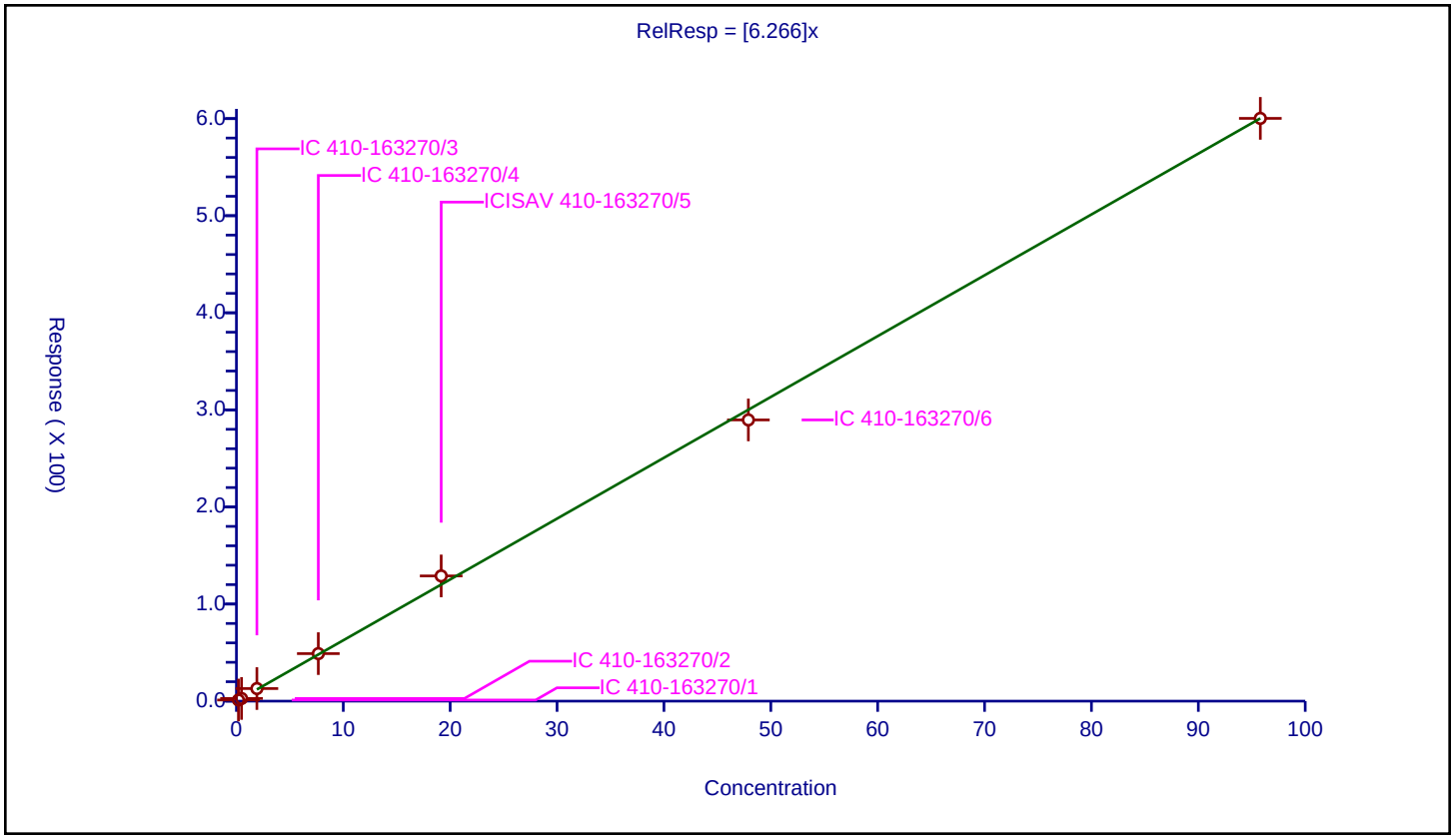
Curve Coefficients

Intercept:	0
Slope:	6.266

Error Coefficients

Standard Error:	4810000
Relative Standard Error:	6.0
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1916	1.167243	9.58	233549.0	6.092083	Y
2	IC 410-163270/2	0.479	2.748623	9.58	201462.0	5.738253	Y
3	IC 410-163270/3	1.916	12.971966	9.58	219043.0	6.770337	Y
4	IC 410-163270/4	7.664	48.944438	9.58	213038.0	6.386279	Y
5	ICISAV 410-163270/5	19.16	128.981188	9.58	202291.0	6.731795	Y
6	IC 410-163270/6	47.9	289.642747	9.58	190810.0	6.046821	Y
7	IC 410-163270/7	95.8	600.233009	9.58	157310.0	6.26548	Y



Calibration / Perfluorooctanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

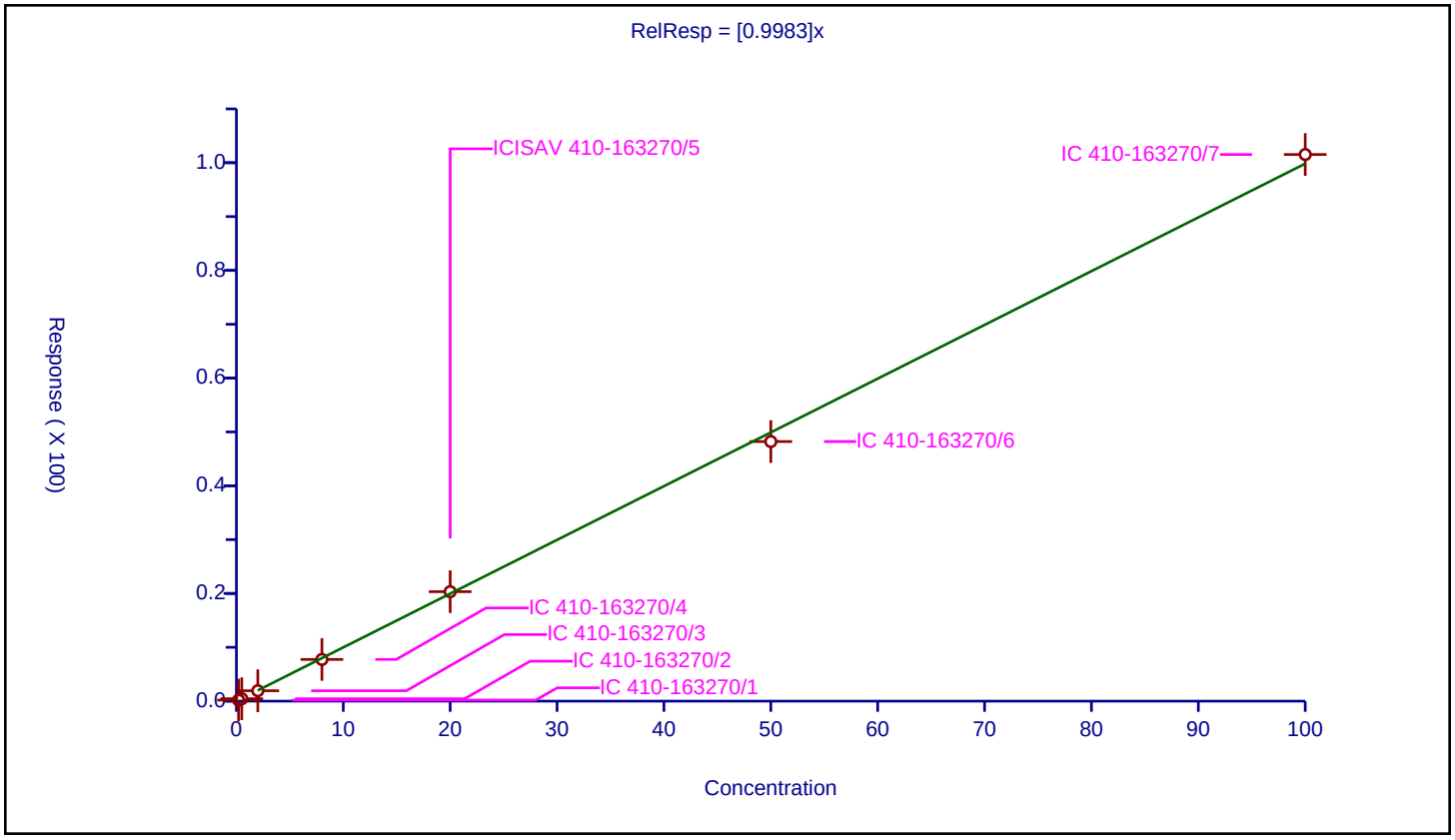
Curve Coefficients

Intercept:	0
Slope:	0.9983

Error Coefficients

Standard Error:	24000000
Relative Standard Error:	4.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.196265	10.0	6020544.0	0.981323	Y
2	IC 410-163270/2	0.5	0.449782	10.0	5175637.0	0.899565	Y
3	IC 410-163270/3	2.0	1.931136	10.0	6176581.0	0.965568	Y
4	IC 410-163270/4	8.0	7.743864	10.0	5984688.0	0.967983	Y
5	ICISAV 410-163270/5	20.0	20.327833	10.0	5977894.0	1.016392	Y
6	IC 410-163270/6	50.0	48.213403	10.0	5646326.0	0.964268	Y
7	IC 410-163270/7	100.0	101.524654	10.0	4962930.0	1.015247	Y



Calibration / N-methylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

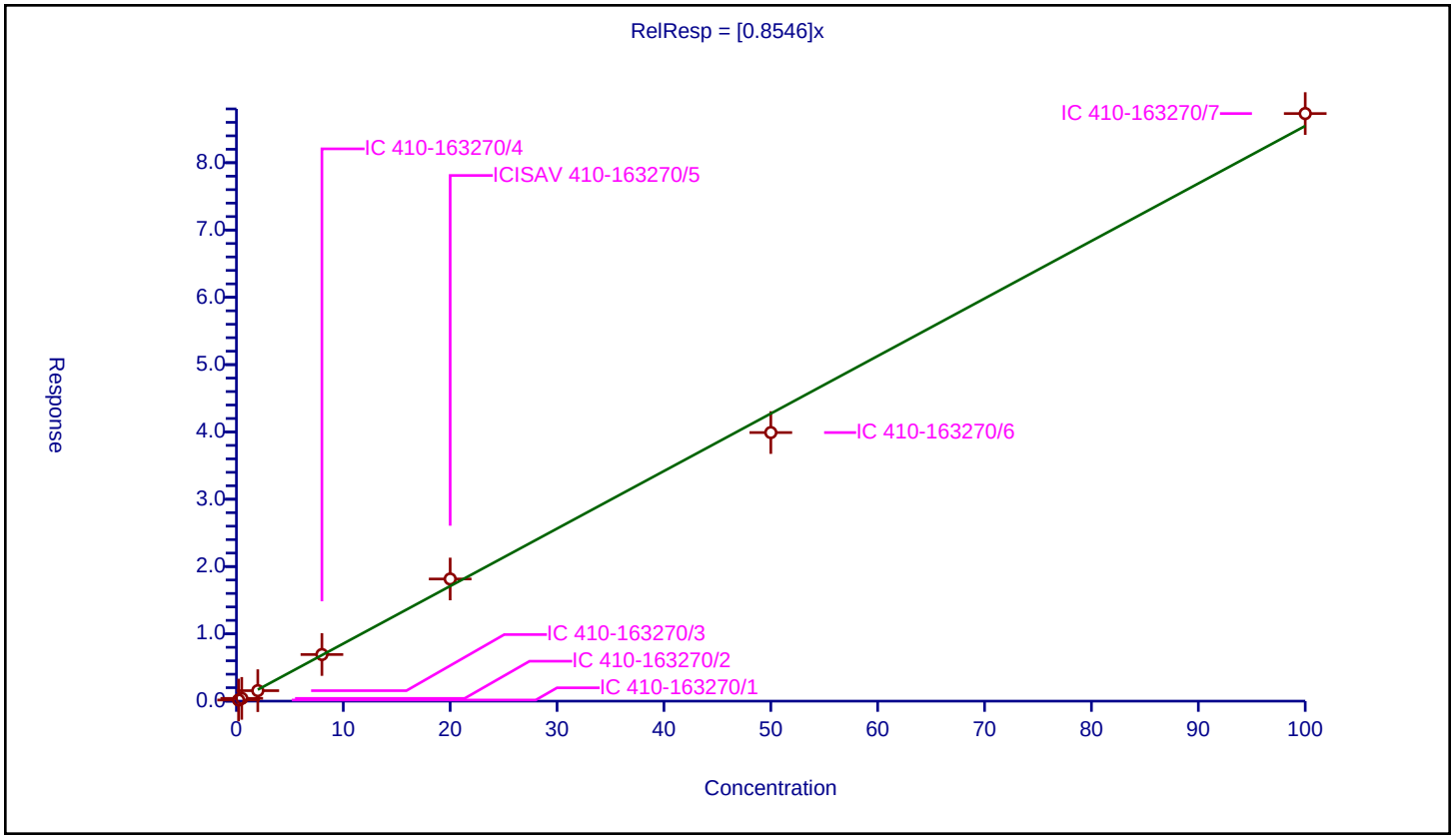
Curve Coefficients

Intercept:	0
Slope:	0.8546

Error Coefficients

Standard Error:	5730000
Relative Standard Error:	5.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.169342	10.0	1636748.0	0.846709	Y
2	IC 410-163270/2	0.5	0.409425	10.0	1489138.0	0.81885	Y
3	IC 410-163270/3	2.0	1.555294	10.0	1684530.0	0.777647	Y
4	IC 410-163270/4	8.0	6.928345	10.0	1611050.0	0.866043	Y
5	ICISAV 410-163270/5	20.0	18.150293	10.0	1607406.0	0.907515	Y
6	IC 410-163270/6	50.0	39.907979	10.0	1615824.0	0.79816	Y
7	IC 410-163270/7	100.0	87.308291	10.0	1383311.0	0.873083	Y



Calibration / Perfluorodecanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

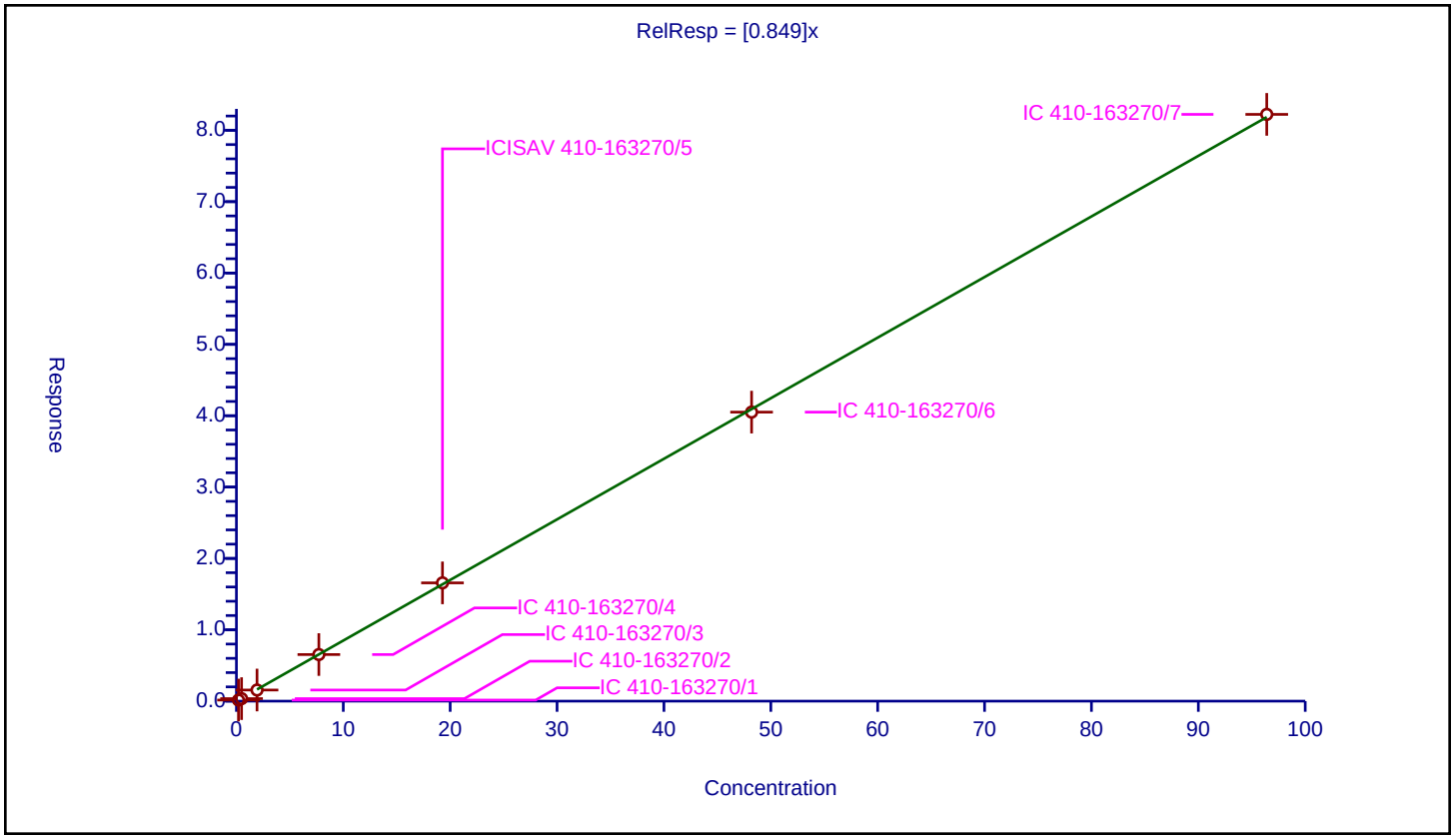
Curve Coefficients

Intercept:	0
Slope:	0.849

Error Coefficients

Standard Error:	11700000
Relative Standard Error:	6.9
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1928	0.149573	9.565	3416397.0	0.775793	Y
2	IC 410-163270/2	0.482	0.353783	9.565	3079437.0	0.73399	Y
3	IC 410-163270/3	1.928	1.5569	9.565	3510518.0	0.807521	Y
4	IC 410-163270/4	7.712	6.528938	9.565	3273885.0	0.846595	Y
5	ICISAV 410-163270/5	19.28	16.576273	9.565	3286610.0	0.859765	Y
6	IC 410-163270/6	48.2	40.502693	9.565	3231412.0	0.840305	Y
7	IC 410-163270/7	96.4	82.231476	9.565	2853060.0	0.853024	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

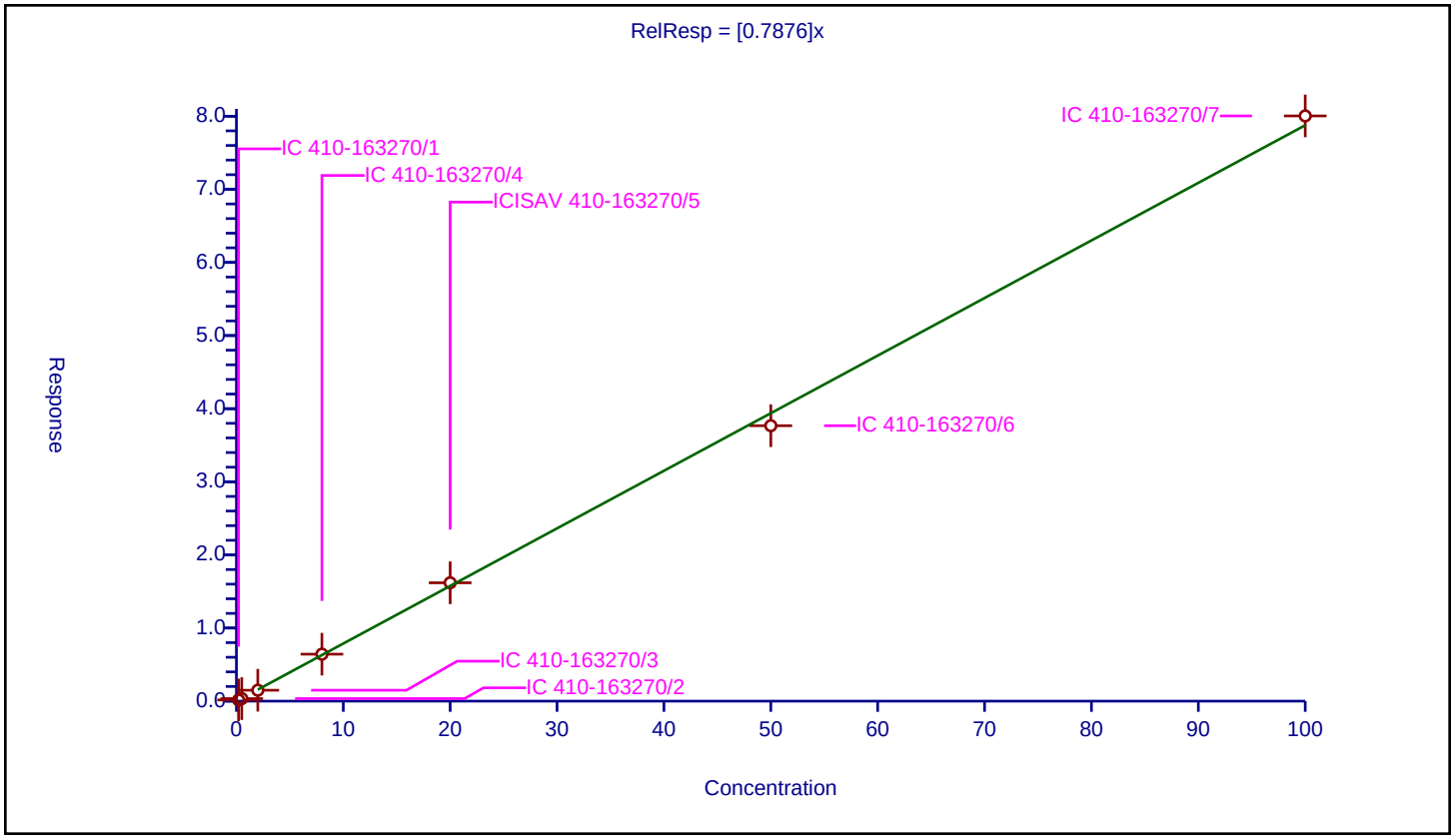
Curve Coefficients

Intercept:	0
Slope:	0.7876

Error Coefficients

Standard Error:	15600000
Relative Standard Error:	5.7
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.160733	10.0	5188682.0	0.803663	Y
2	IC 410-163270/2	0.5	0.349331	10.0	4846034.0	0.698662	Y
3	IC 410-163270/3	2.0	1.491472	10.0	5361467.0	0.745736	Y
4	IC 410-163270/4	8.0	6.424655	10.0	5067746.0	0.803082	Y
5	ICISAV 410-163270/5	20.0	16.187373	10.0	5200986.0	0.809369	Y
6	IC 410-163270/6	50.0	37.669533	10.0	4767255.0	0.753391	Y
7	IC 410-163270/7	100.0	80.038623	10.0	4070929.0	0.800386	Y



Calibration / N-ethylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

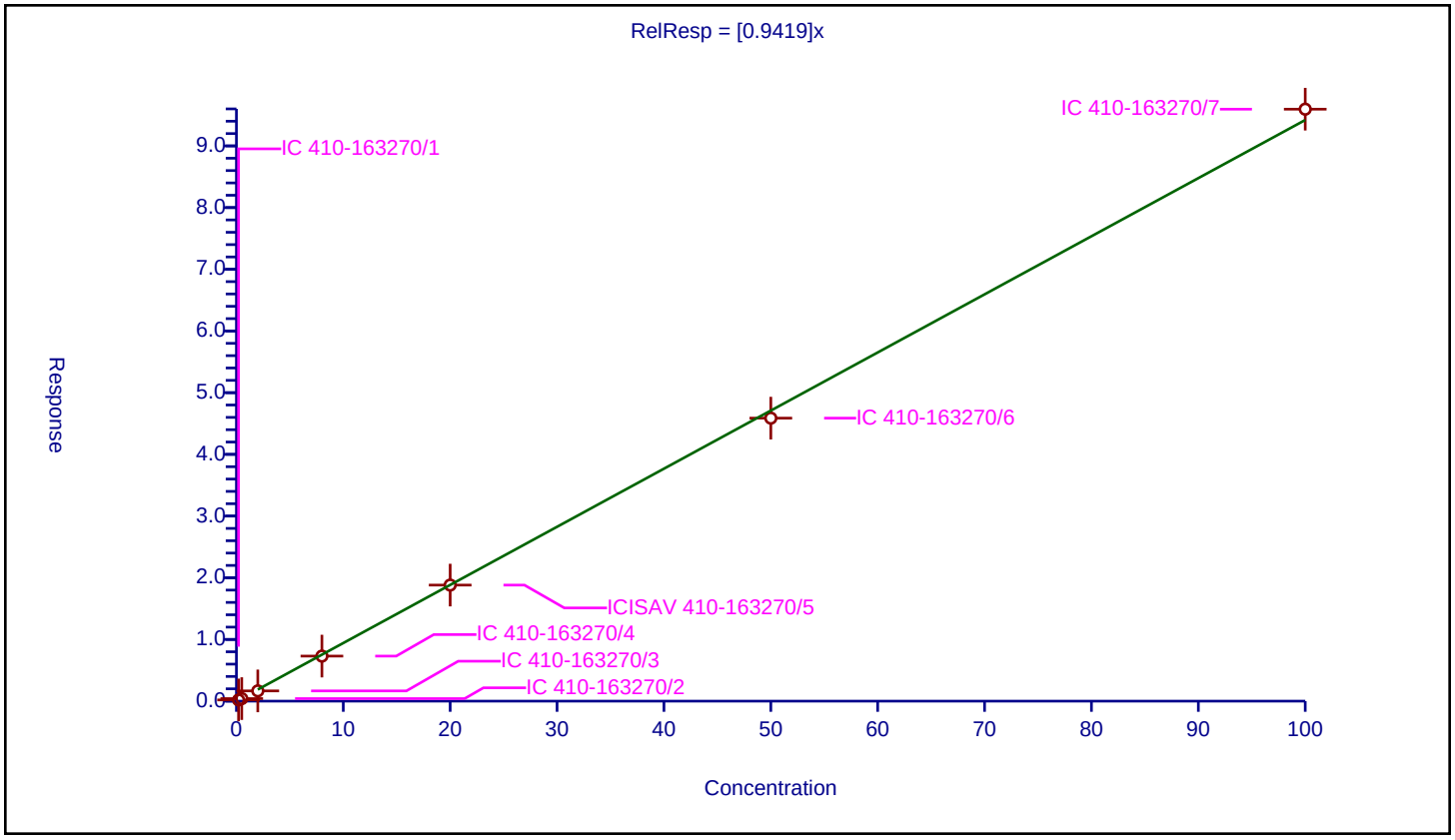
Curve Coefficients

Intercept:	0
Slope:	0.9419

Error Coefficients

Standard Error:	4650000
Relative Standard Error:	7.3
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.195633	10.0	1315165.0	0.978166	Y
2	IC 410-163270/2	0.5	0.414384	10.0	1196667.0	0.828769	Y
3	IC 410-163270/3	2.0	1.660626	10.0	1297366.0	0.830313	Y
4	IC 410-163270/4	8.0	7.30233	10.0	1260221.0	0.912791	Y
5	ICISAV 410-163270/5	20.0	18.814173	10.0	1278053.0	0.940709	Y
6	IC 410-163270/6	50.0	45.871242	10.0	1177279.0	0.917425	Y
7	IC 410-163270/7	100.0	95.950831	10.0	1008807.0	0.959508	Y



Calibration / 10:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

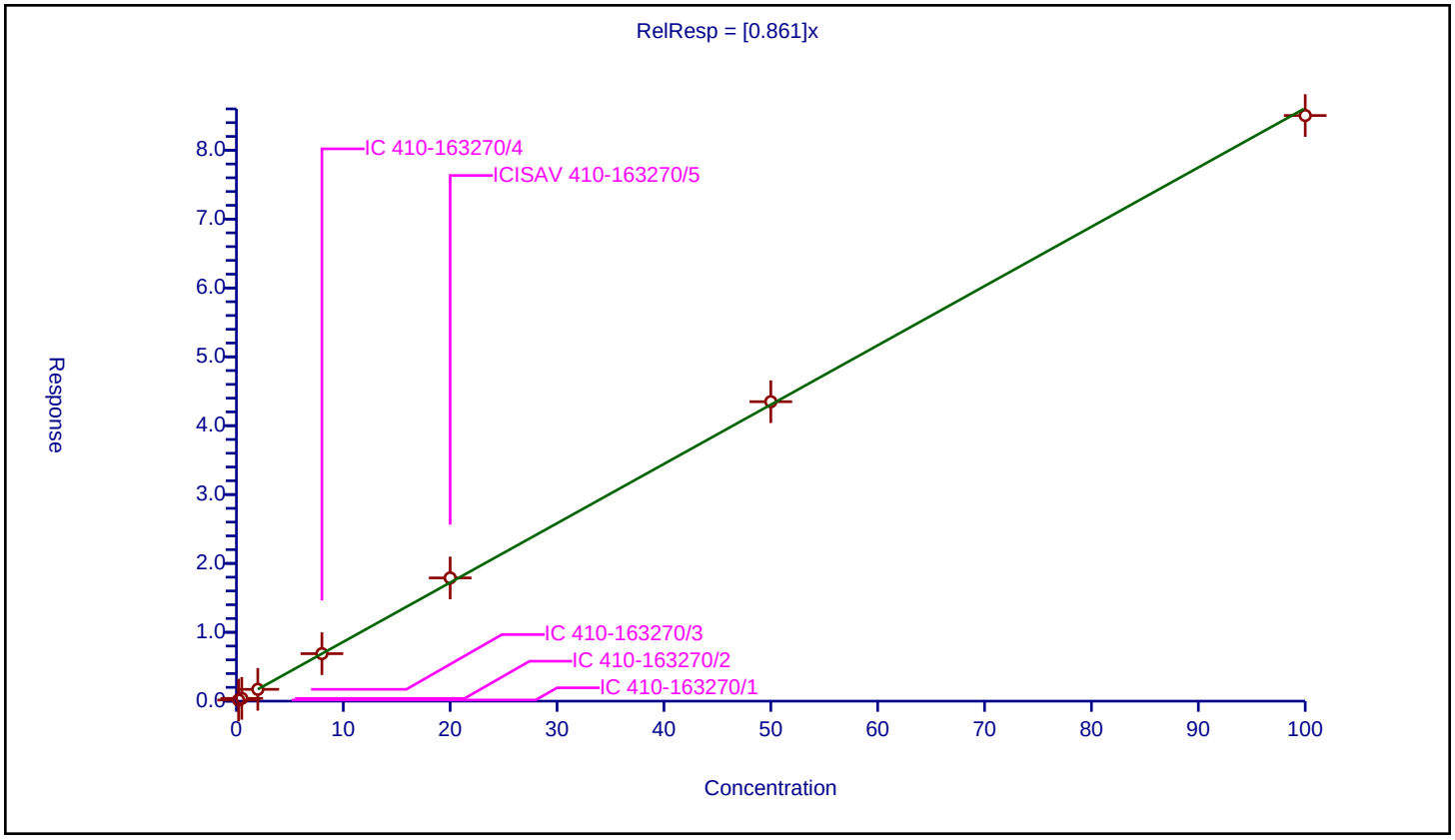
Curve Coefficients

Intercept:	0
Slope:	0.861

Error Coefficients

Standard Error:	14800000
Relative Standard Error:	3.8
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.165128	10.0	4844921.0	0.825638	Y
2	IC 410-163270/2	0.5	0.399566	10.0	4326697.0	0.799132	Y
3	IC 410-163270/3	2.0	1.713567	10.0	4657955.0	0.856784	Y
4	IC 410-163270/4	8.0	6.894249	10.0	4684230.0	0.861781	Y
5	ICISAV 410-163270/5	20.0	17.892779	10.0	4597055.0	0.894639	Y
6	IC 410-163270/6	50.0	43.484817	10.0	4117803.0	0.869696	Y
7	IC 410-163270/7	100.0	85.038429	10.0	3569847.0	0.850384	Y



Calibration / 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

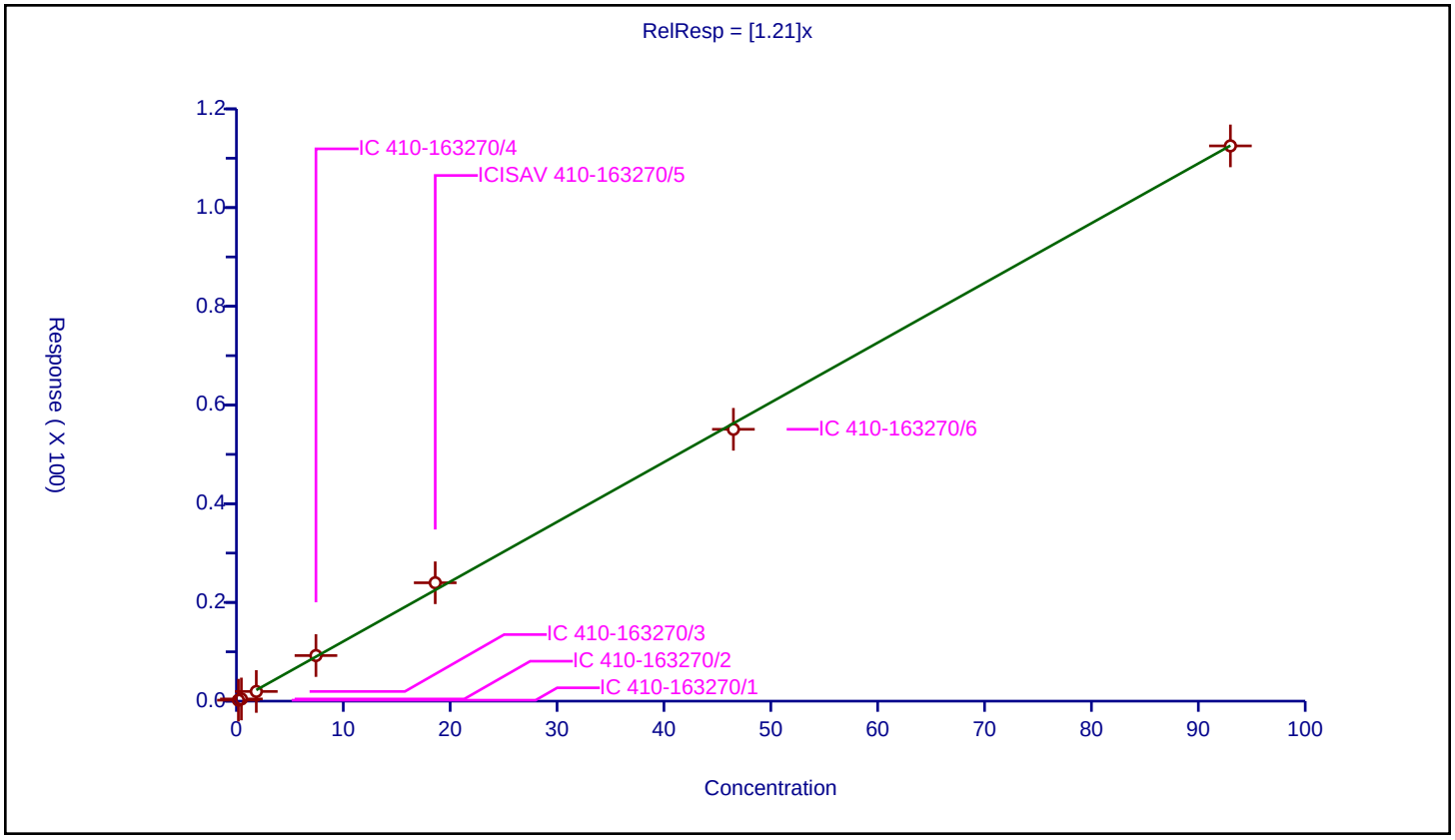
Curve Coefficients

Intercept:	0
Slope:	1.21

Error Coefficients

Standard Error:	16100000
Relative Standard Error:	12.0
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.186	0.197149	9.565	3416397.0	1.05994	Y
2	IC 410-163270/2	0.465	0.437676	9.565	3079437.0	0.941238	Y
3	IC 410-163270/3	1.86	1.959917	9.565	3510518.0	1.053719	Y
4	IC 410-163270/4	7.44	9.237567	9.565	3273885.0	1.241608	Y
5	ICISAV 410-163270/5	18.6	23.986998	9.565	3286610.0	1.289624	Y
6	IC 410-163270/6	46.5	55.081867	9.565	3231412.0	1.184556	Y
7	IC 410-163270/7	93.0	112.504352	9.565	2853060.0	1.209724	Y



Calibration / 10:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

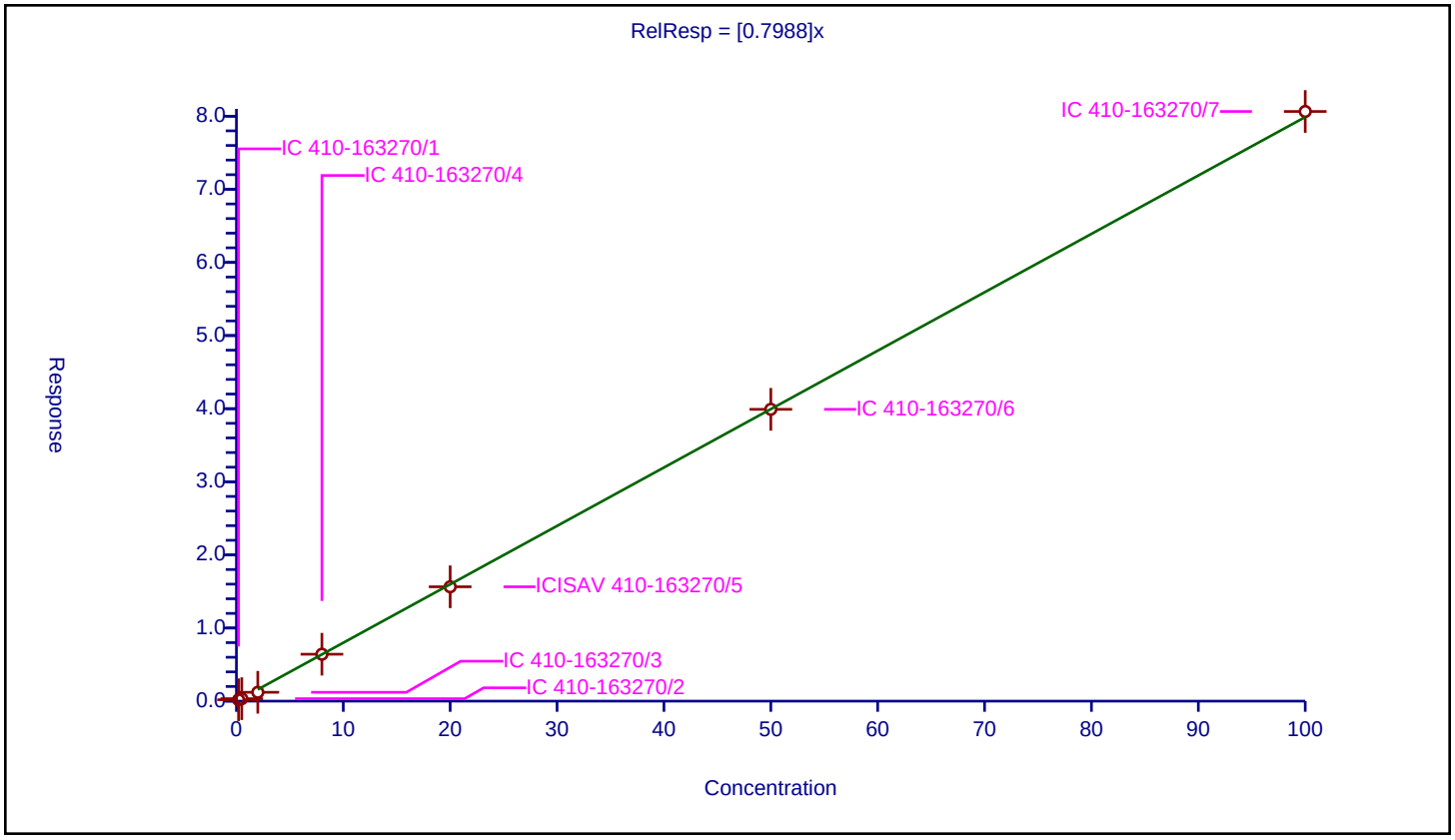
Curve Coefficients

Intercept:	0
Slope:	0.7988

Error Coefficients

Standard Error:	411000
Relative Standard Error:	13.8
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.187569	10.0	139469.0	0.937843	Y
2	IC 410-163270/2	0.5	0.336819	10.0	127665.0	0.673638	Y
3	IC 410-163270/3	2.0	1.210254	10.0	145862.0	0.605127	Y
4	IC 410-163270/4	8.0	6.416306	10.0	141343.0	0.802038	Y
5	ICISAV 410-163270/5	20.0	15.638986	10.0	136654.0	0.781949	Y
6	IC 410-163270/6	50.0	39.909457	10.0	122814.0	0.798189	Y
7	IC 410-163270/7	100.0	80.646065	10.0	105299.0	0.806461	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

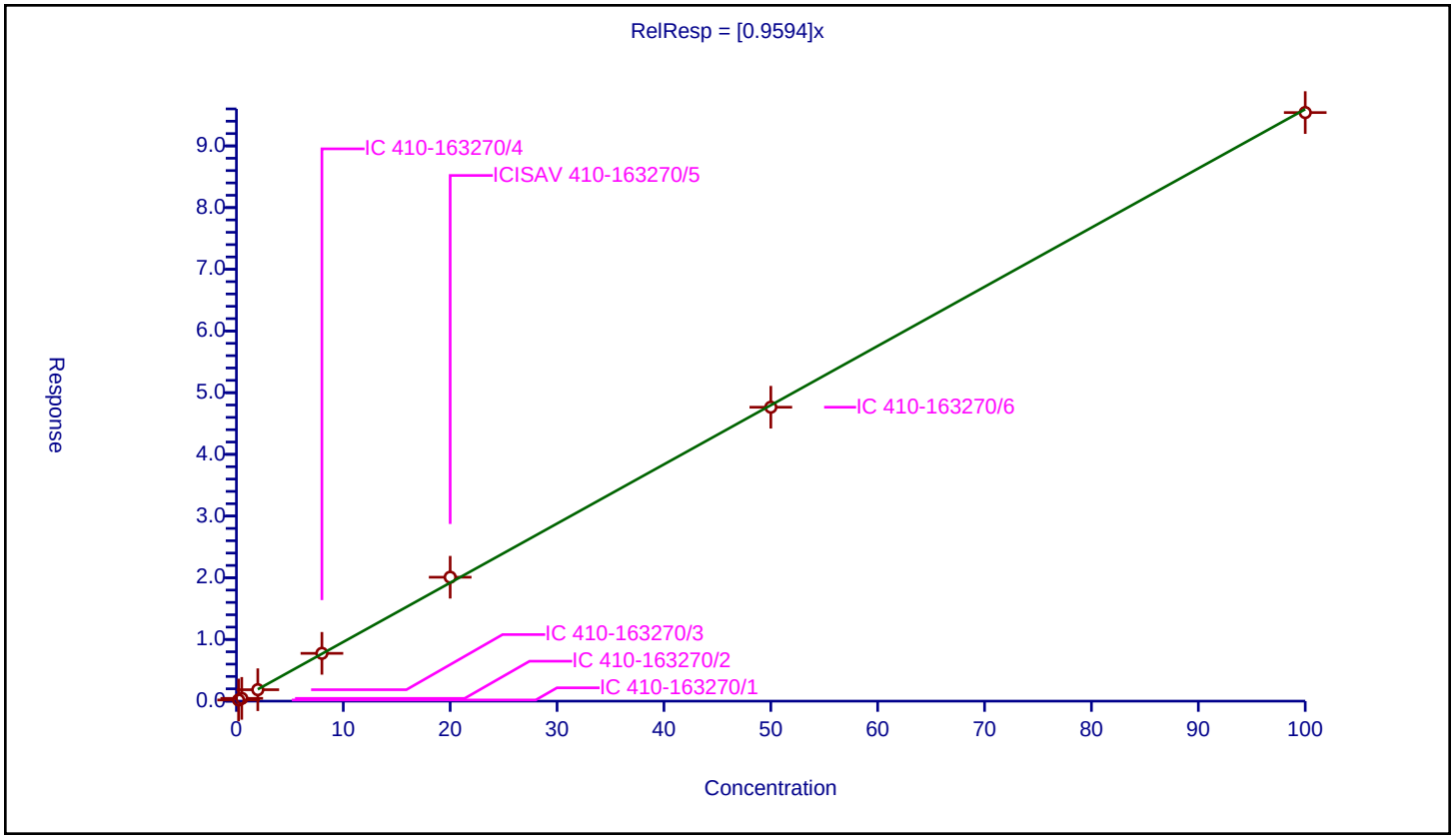
Curve Coefficients

Intercept:	0
Slope:	0.9594

Error Coefficients

Standard Error:	18500000
Relative Standard Error:	3.7
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.189547	10.0	5085484.0	0.947737	Y
2	IC 410-163270/2	0.5	0.447842	10.0	4367013.0	0.895683	Y
3	IC 410-163270/3	2.0	1.854257	10.0	4941916.0	0.927128	Y
4	IC 410-163270/4	8.0	7.748999	10.0	4927124.0	0.968625	Y
5	ICISAV 410-163270/5	20.0	20.087319	10.0	4868816.0	1.004366	Y
6	IC 410-163270/6	50.0	47.641955	10.0	4689877.0	0.952839	Y
7	IC 410-163270/7	100.0	95.402052	10.0	3986328.0	0.954021	Y



Calibration / 1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

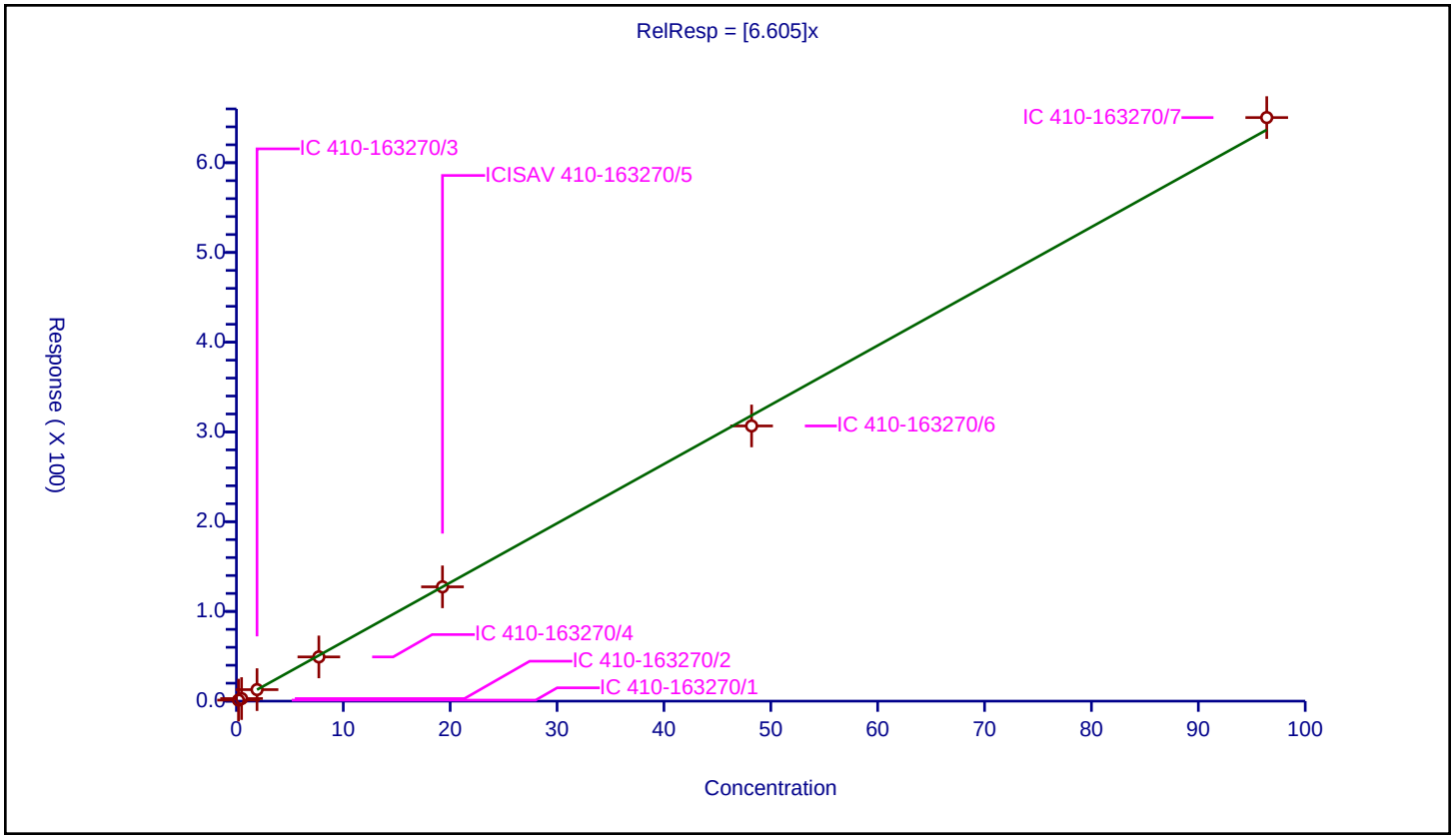
Curve Coefficients

Intercept:	0
Slope:	6.605

Error Coefficients

Standard Error:	5160000
Relative Standard Error:	6.5
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1928	1.132418	9.58	233549.0	5.873537	Y
2	IC 410-163270/2	0.482	2.860229	9.58	201462.0	5.934085	Y
3	IC 410-163270/3	1.928	12.836954	9.58	219043.0	6.658171	Y
4	IC 410-163270/4	7.712	49.292495	9.58	213038.0	6.391662	Y
5	ICISAV 410-163270/5	19.28	127.366723	9.58	202291.0	6.606158	Y
6	IC 410-163270/6	48.2	306.68853	9.58	190810.0	6.362833	Y
7	IC 410-163270/7	96.4	650.320374	9.58	157310.0	6.746062	Y



Calibration / 2-(N-methylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

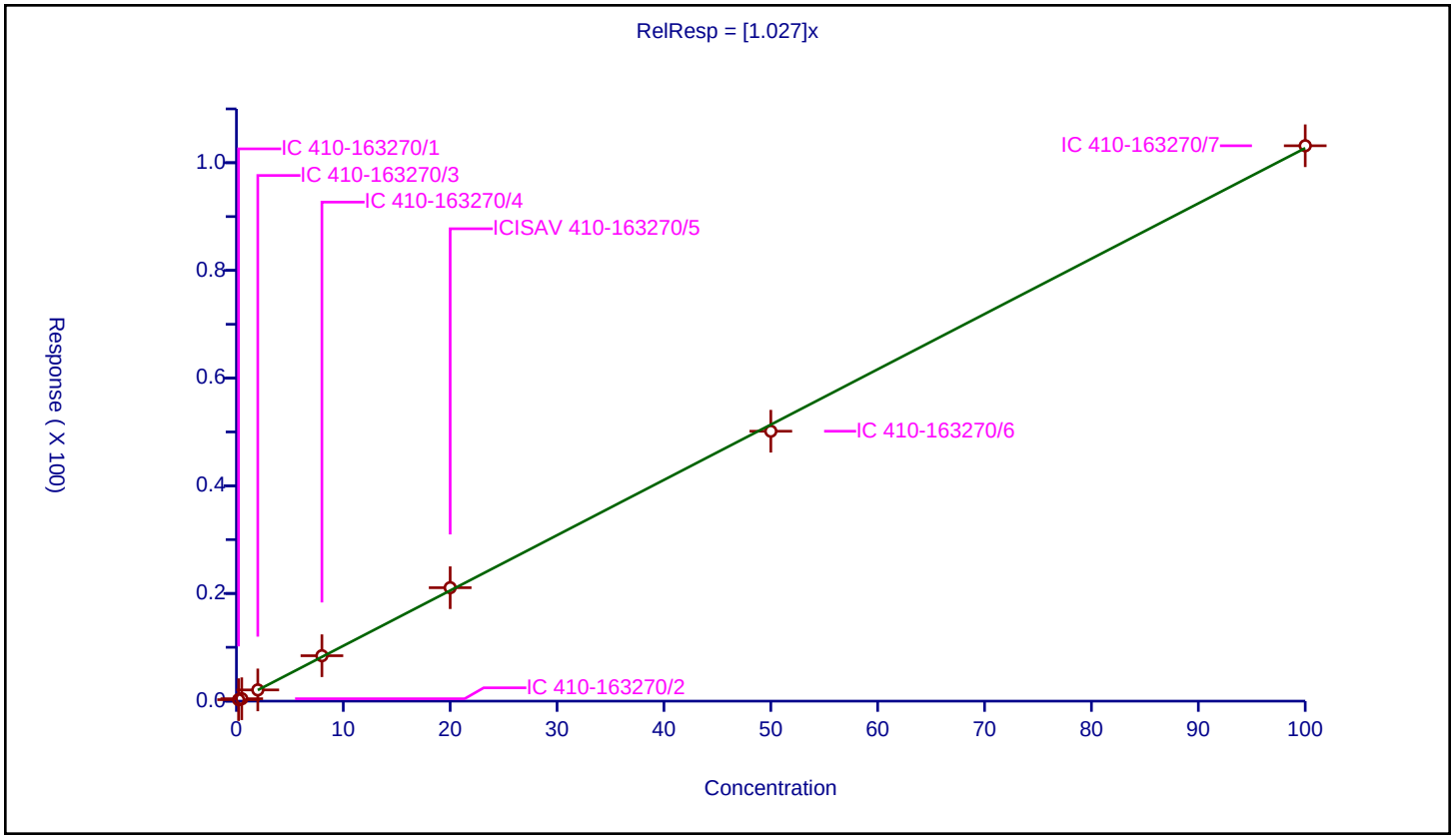
Curve Coefficients

Intercept:	0
Slope:	1.027

Error Coefficients

Standard Error:	1820000
Relative Standard Error:	15.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.275949	10.0	408988.0	1.379747	Y
2	IC 410-163270/2	0.5	0.44748	10.0	384688.0	0.894959	Y
3	IC 410-163270/3	2.0	2.087314	10.0	423252.0	1.043657	Y
4	IC 410-163270/4	8.0	8.435262	10.0	399217.0	1.054408	Y
5	ICISAV 410-163270/5	20.0	21.072904	10.0	403531.0	1.053645	Y
6	IC 410-163270/6	50.0	50.13422	10.0	391073.0	1.002684	Y
7	IC 410-163270/7	100.0	103.153785	10.0	376909.0	1.031538	Y



Calibration / NMeFOSA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

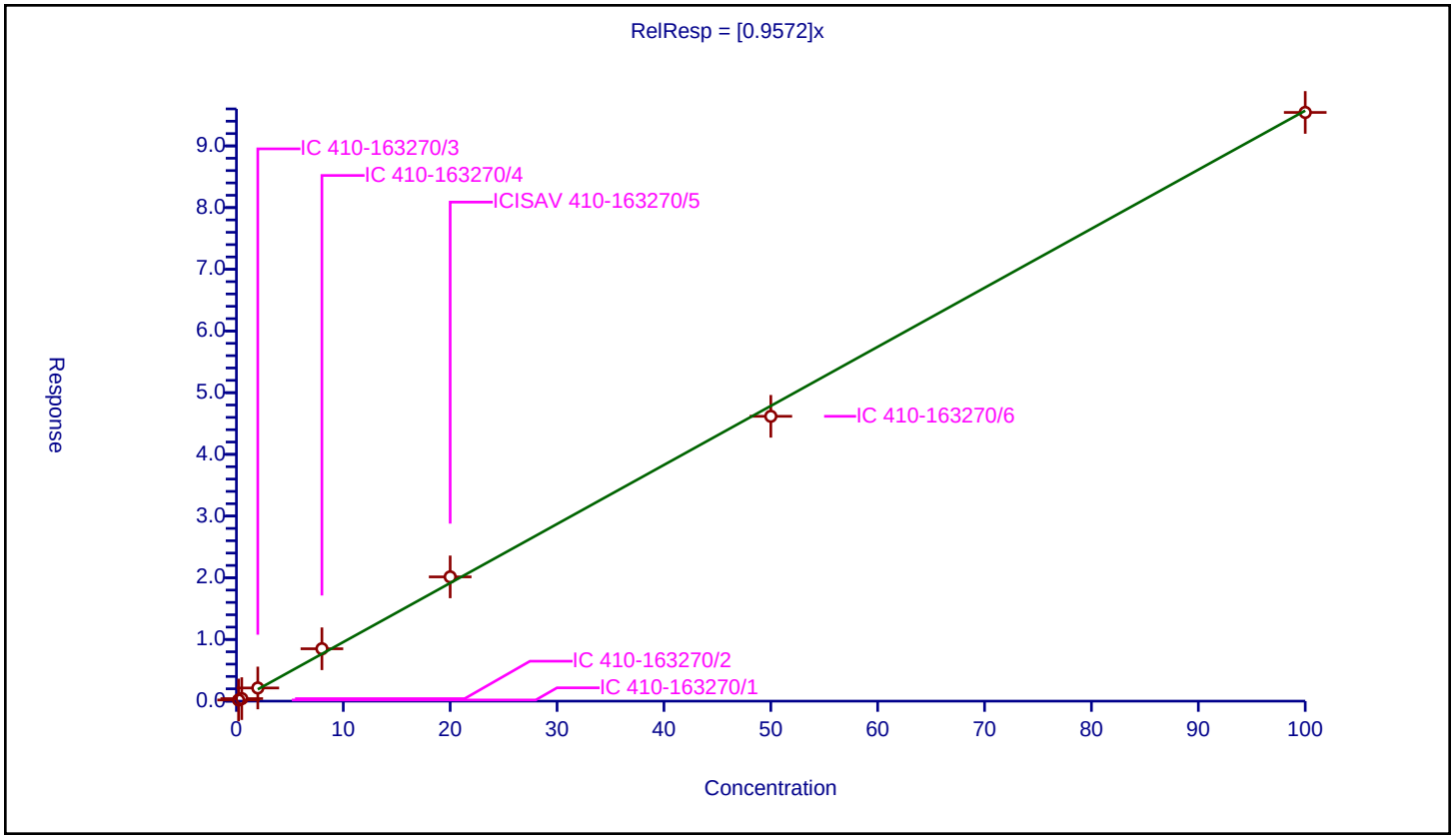
Curve Coefficients

Intercept:	0
Slope:	0.9572

Error Coefficients

Standard Error:	2040000
Relative Standard Error:	9.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.18702	10.0	464977.0	0.9351	Y
2	IC 410-163270/2	0.5	0.409683	10.0	436386.0	0.819366	Y
3	IC 410-163270/3	2.0	2.135575	10.0	467771.0	1.067787	Y
4	IC 410-163270/4	8.0	8.488195	10.0	462110.0	1.061024	Y
5	ICISAV 410-163270/5	20.0	20.1423	10.0	483766.0	1.007115	Y
6	IC 410-163270/6	50.0	46.170724	10.0	476594.0	0.923414	Y
7	IC 410-163270/7	100.0	95.425587	10.0	456041.0	0.954256	Y



Calibration / 2-(N-ethylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

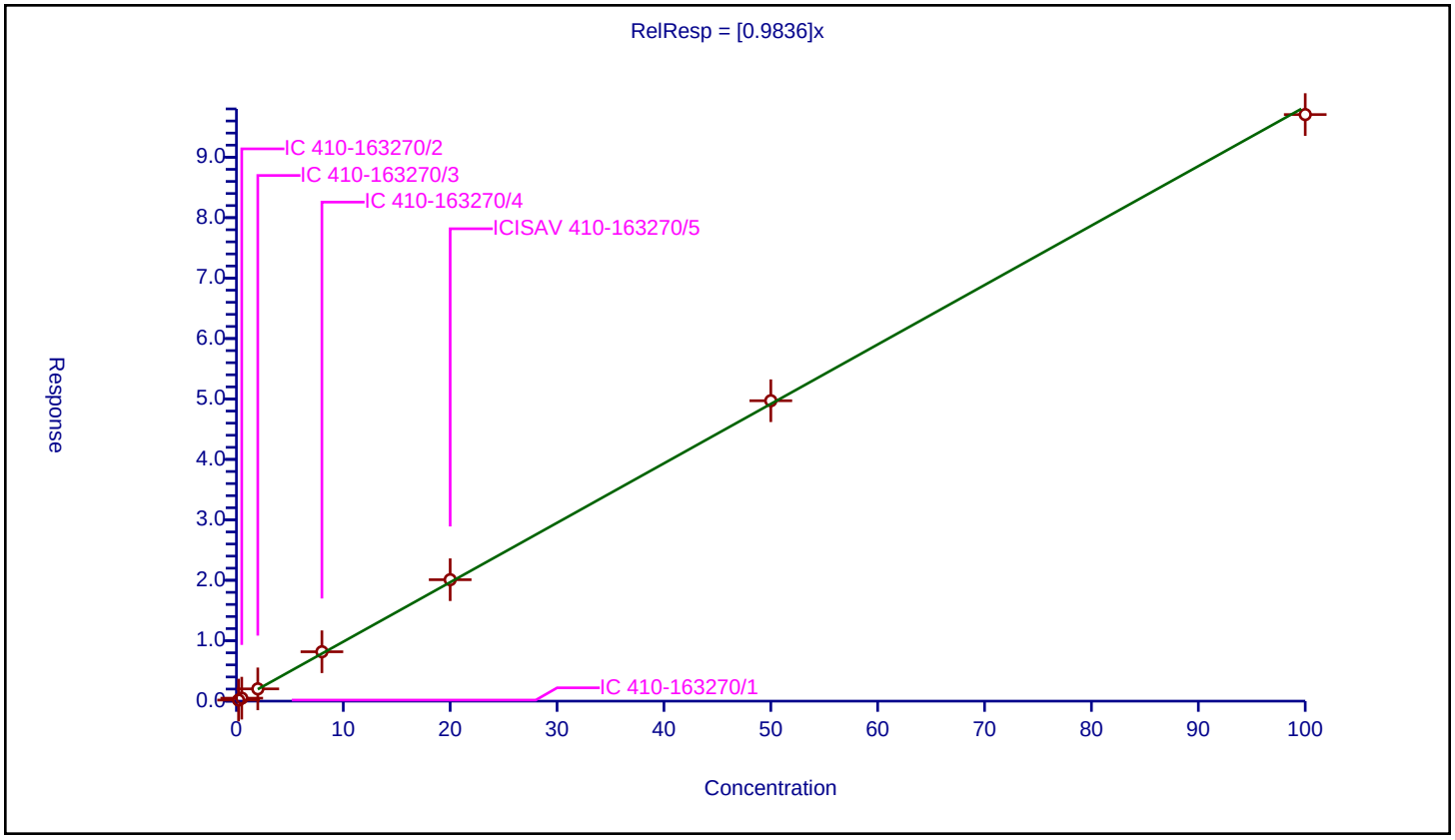
Curve Coefficients

Intercept:	0
Slope:	0.9836

Error Coefficients

Standard Error:	1920000
Relative Standard Error:	4.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.178807	10.0	459433.0	0.894037	Y
2	IC 410-163270/2	0.5	0.493444	10.0	404808.0	0.986888	Y
3	IC 410-163270/3	2.0	2.03046	10.0	484836.0	1.01523	Y
4	IC 410-163270/4	8.0	8.171085	10.0	455773.0	1.021386	Y
5	ICISAV 410-163270/5	20.0	20.095505	10.0	465318.0	1.004775	Y
6	IC 410-163270/6	50.0	49.709864	10.0	442862.0	0.994197	Y
7	IC 410-163270/7	100.0	97.05953	10.0	414529.0	0.970595	Y



Calibration / Perfluorododecanesulfonic acid (PFDoS)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

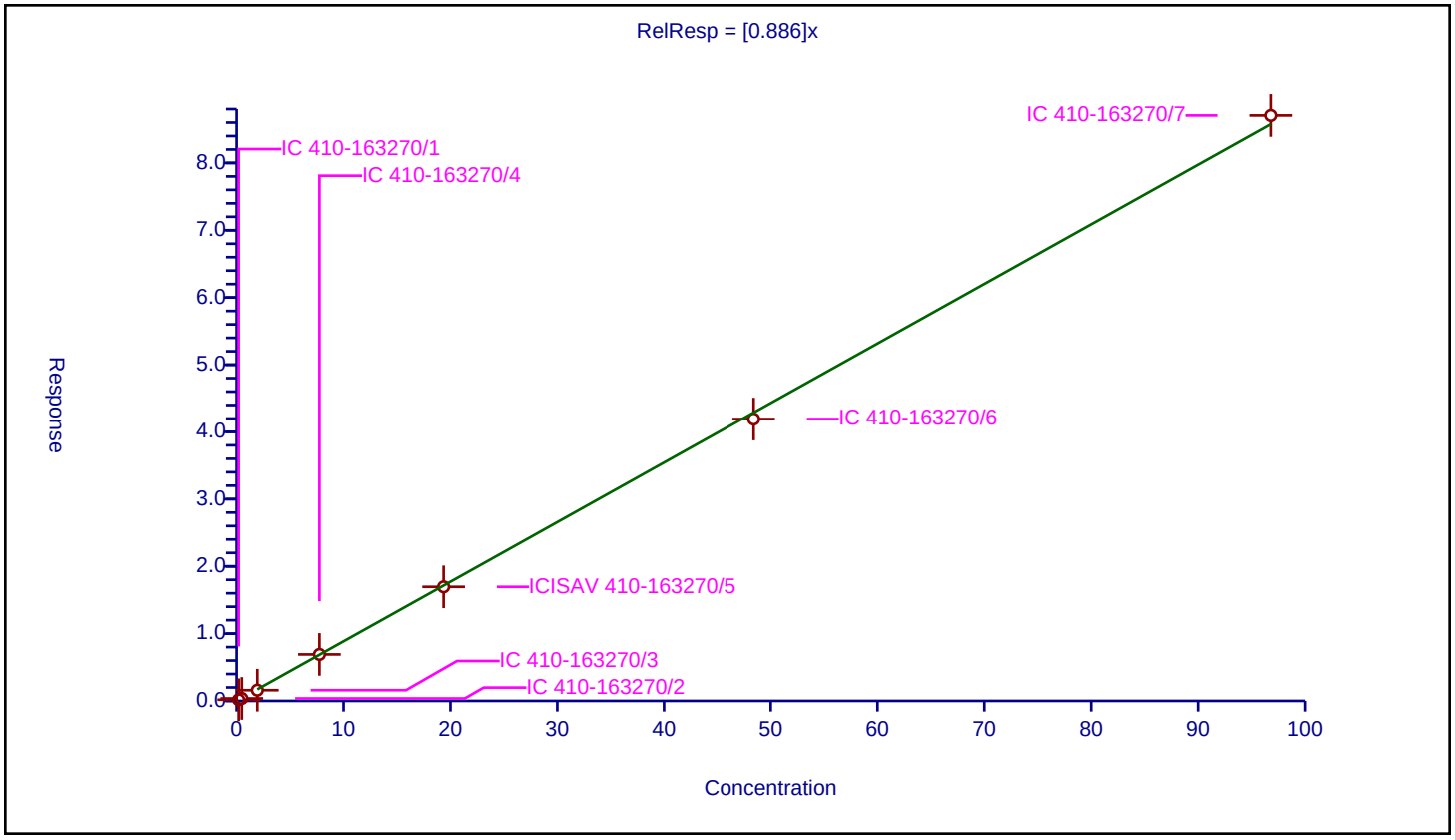
Curve Coefficients

Intercept:	0
Slope:	0.886

Error Coefficients

Standard Error:	12300000
Relative Standard Error:	6.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.1936	0.174107	9.565	3416397.0	0.899313	Y
2	IC 410-163270/2	0.484	0.365077	9.565	3079437.0	0.754291	Y
3	IC 410-163270/3	1.936	1.594749	9.565	3510518.0	0.823734	Y
4	IC 410-163270/4	7.744	6.910575	9.565	3273885.0	0.892378	Y
5	ICISAV 410-163270/5	19.36	16.956002	9.565	3286610.0	0.875827	Y
6	IC 410-163270/6	48.4	41.915723	9.565	3231412.0	0.866027	Y
7	IC 410-163270/7	96.8	87.054266	9.565	2853060.0	0.899321	Y



Calibration / N-ethylperfluoro-1-octanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

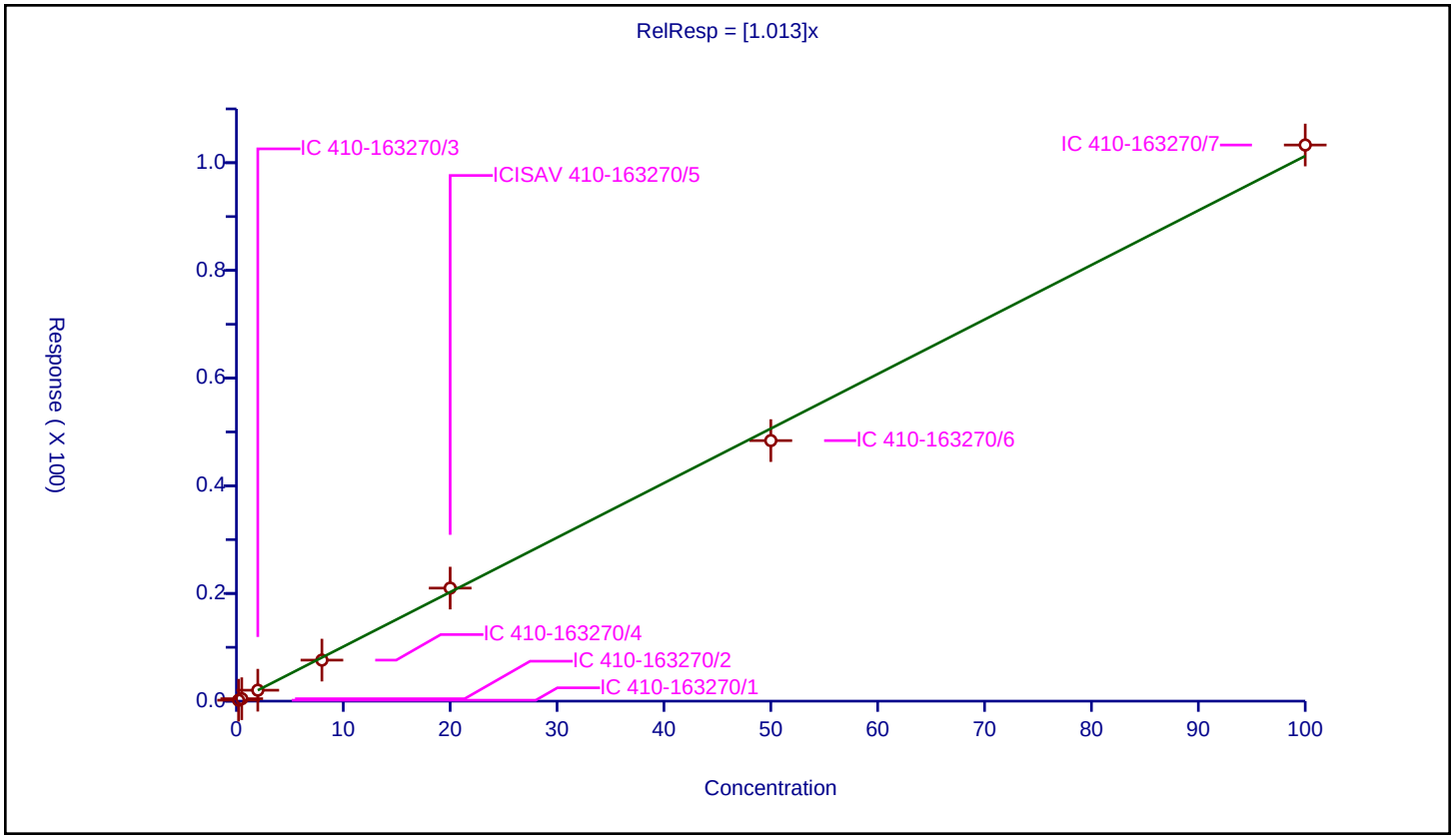
Curve Coefficients

Intercept:	0
Slope:	1.013

Error Coefficients

Standard Error:	1830000
Relative Standard Error:	7.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.176662	10.0	429408.0	0.883309	Y
2	IC 410-163270/2	0.5	0.453067	10.0	402192.0	0.906134	Y
3	IC 410-163270/3	2.0	2.028666	10.0	431106.0	1.014333	Y
4	IC 410-163270/4	8.0	7.622408	10.0	442494.0	0.952801	Y
5	ICISAV 410-163270/5	20.0	20.994655	10.0	418869.0	1.049733	Y
6	IC 410-163270/6	50.0	48.392642	10.0	418289.0	0.967853	Y
7	IC 410-163270/7	100.0	103.291634	10.0	375625.0	1.032916	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

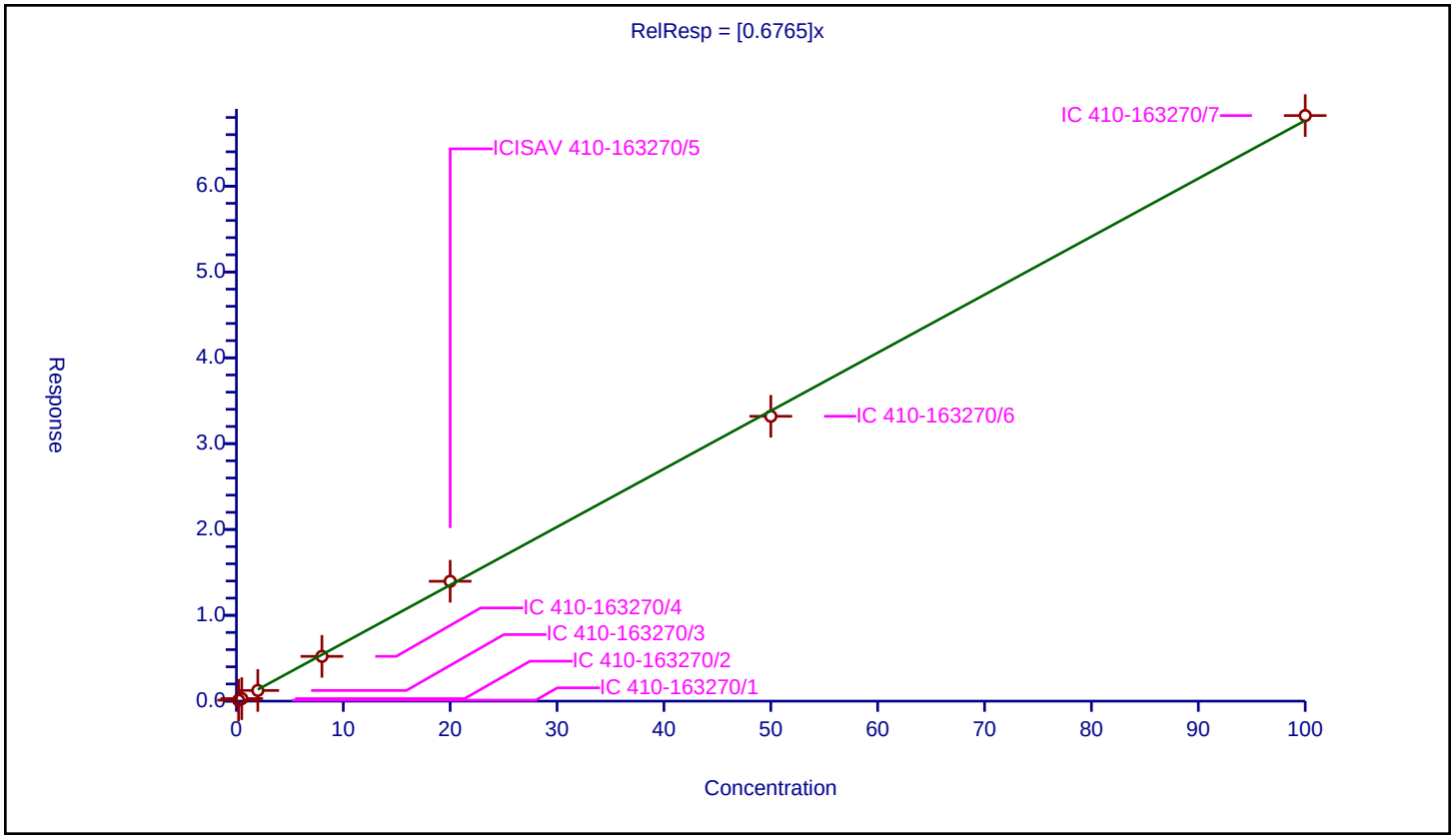
Curve Coefficients

Intercept:	0
Slope:	0.6765

Error Coefficients

Standard Error:	13100000
Relative Standard Error:	9.0
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.114671	10.0	5085484.0	0.573357	Y
2	IC 410-163270/2	0.5	0.295724	10.0	4367013.0	0.591448	Y
3	IC 410-163270/3	2.0	1.24341	10.0	4941916.0	0.621705	Y
4	IC 410-163270/4	8.0	5.218302	10.0	4927124.0	0.652288	Y
5	ICISAV 410-163270/5	20.0	13.96373	10.0	4868816.0	0.698186	Y
6	IC 410-163270/6	50.0	33.186717	10.0	4689877.0	0.663734	Y
7	IC 410-163270/7	100.0	68.220641	10.0	3986328.0	0.682206	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

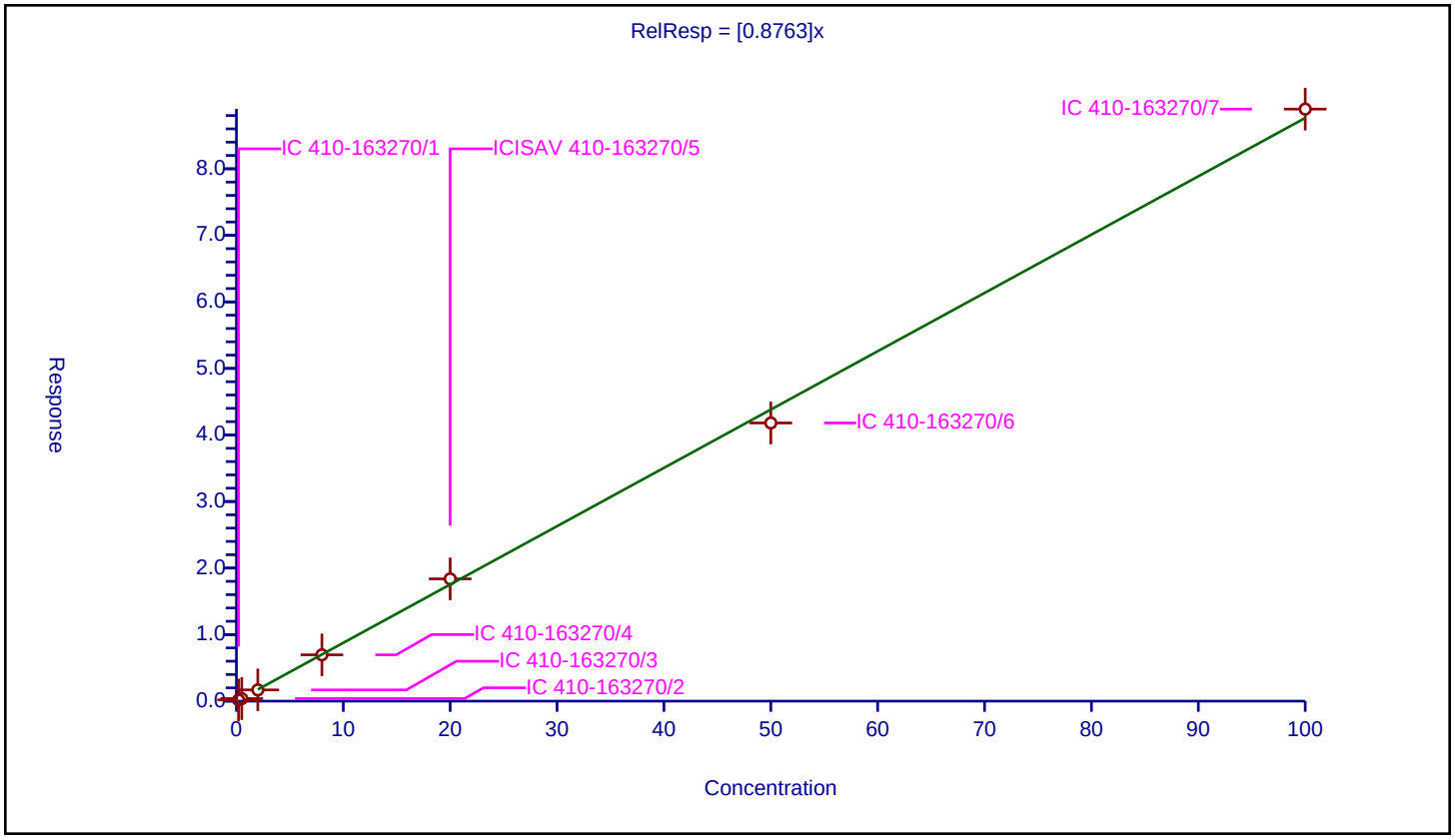
Curve Coefficients

Intercept:	0
Slope:	0.8763

Error Coefficients

Standard Error:	12400000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.177076	10.0	3413667.0	0.885382	Y
2	IC 410-163270/2	0.5	0.385127	10.0	3001943.0	0.770254	Y
3	IC 410-163270/3	2.0	1.688134	10.0	3339919.0	0.844067	Y
4	IC 410-163270/4	8.0	6.959025	10.0	3408348.0	0.869878	Y
5	ICISAV 410-163270/5	20.0	18.373491	10.0	3350255.0	0.918675	Y
6	IC 410-163270/6	50.0	41.803633	10.0	3296036.0	0.836073	Y
7	IC 410-163270/7	100.0	88.968038	10.0	2958044.0	0.88968	Y



Calibration / Perfluorohexadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

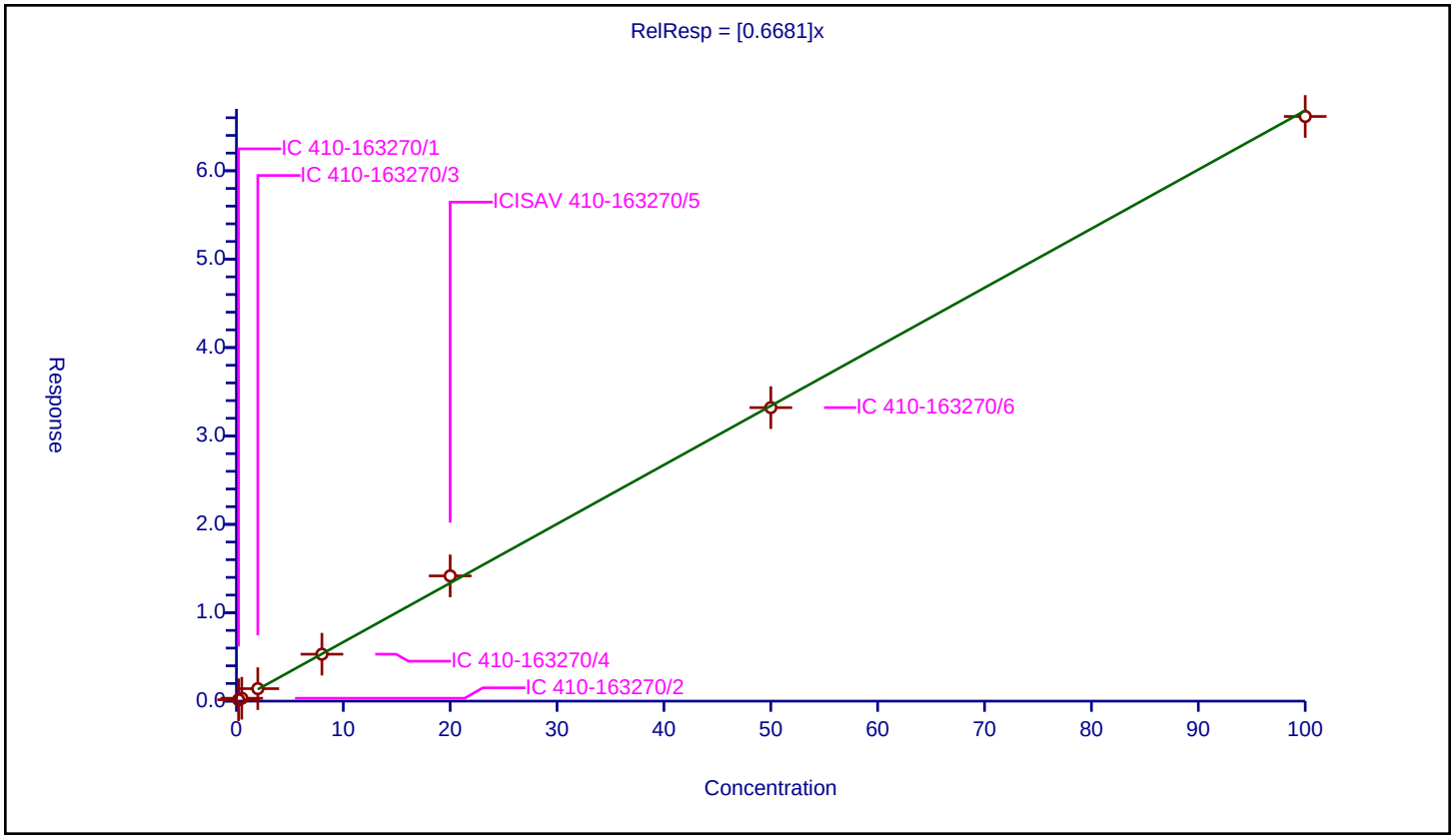
Curve Coefficients

Intercept:	0
Slope:	0.6681

Error Coefficients

Standard Error:	9390000
Relative Standard Error:	8.6
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.159236	10.0	3413667.0	0.796182	Y
2	IC 410-163270/2	0.5	0.326702	10.0	3001943.0	0.653403	Y
3	IC 410-163270/3	2.0	1.411507	10.0	3339919.0	0.705754	Y
4	IC 410-163270/4	8.0	5.309285	10.0	3408348.0	0.663661	Y
5	ICISAV 410-163270/5	20.0	14.16836	10.0	3350255.0	0.708418	Y
6	IC 410-163270/6	50.0	33.205469	10.0	3296036.0	0.664109	Y
7	IC 410-163270/7	100.0	66.14549	10.0	2958044.0	0.661455	Y



Calibration / Perfluorooctadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

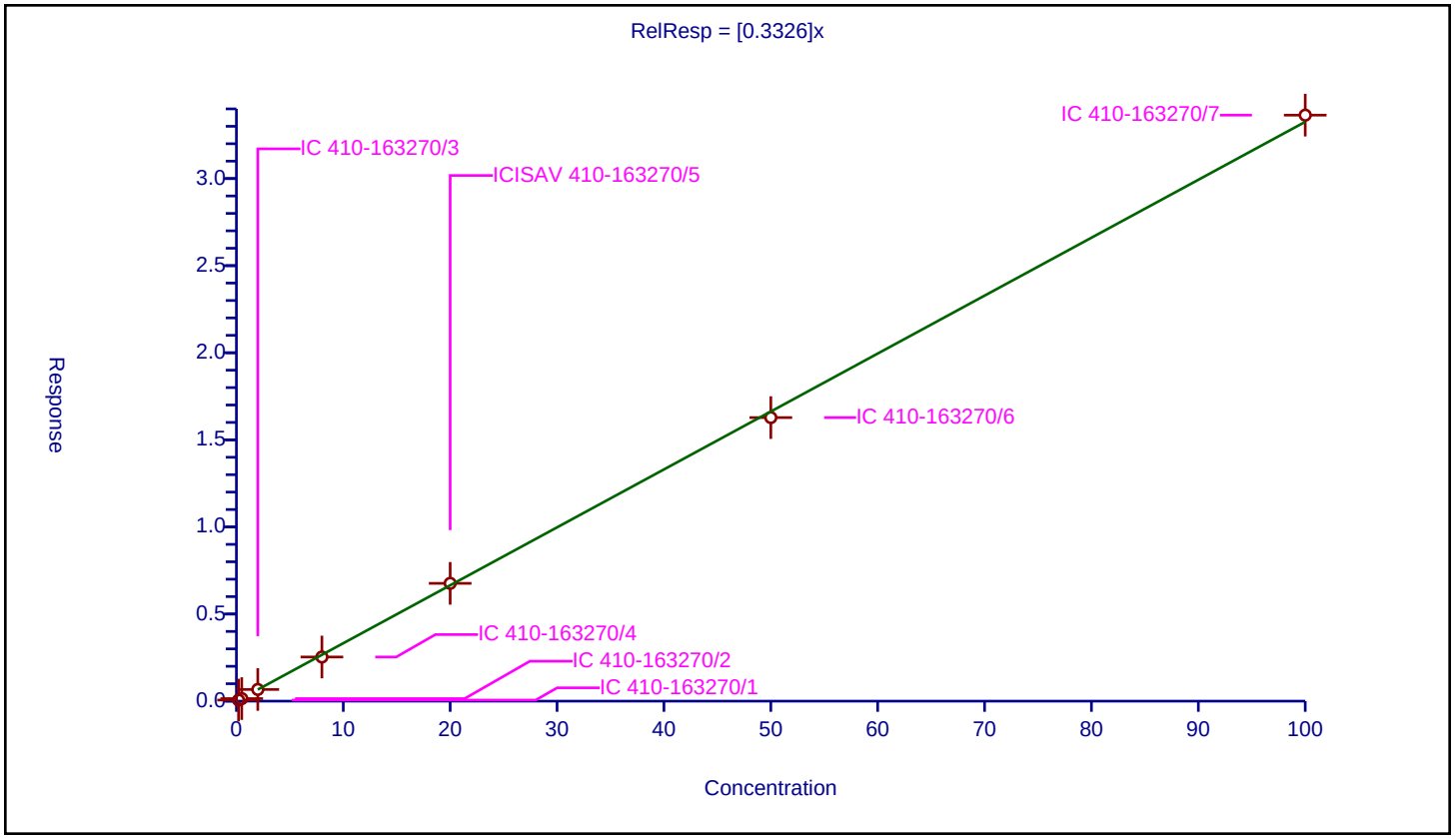
Curve Coefficients

Intercept:	0
Slope:	0.3326

Error Coefficients

Standard Error:	4720000
Relative Standard Error:	6.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-163270/1	0.2	0.061271	10.0	3413667.0	0.306357	Y
2	IC 410-163270/2	0.5	0.146089	10.0	3001943.0	0.292177	Y
3	IC 410-163270/3	2.0	0.670358	10.0	3339919.0	0.335179	Y
4	IC 410-163270/4	8.0	2.533694	10.0	3408348.0	0.316712	Y
5	ICISAV 410-163270/5	20.0	6.762602	10.0	3350255.0	0.33813	Y
6	IC 410-163270/6	50.0	16.277953	10.0	3296036.0	0.325559	Y
7	IC 410-163270/7	100.0	33.640301	10.0	2958044.0	0.336403	Y



Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 31-Aug-2021 22:00:48 ALS Bottle#: 20010 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM
Misc. Info.: Plate: 1 Rack: 1 410-0038223-010
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 22:28:55 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1644

First Level Reviewer: polaskia Date: 31-Aug-2021 22:16:07
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.844	3.850	-0.006		1112513	5.00			3391	
D 7 13C4 PFBA										
217.00 > 172.00	3.844	3.844	0.0	1.000	2685564	10.8		108	141674	
D 17 13C5 PFPeA										
268.00 > 223.00	4.452	4.452	0.0	1.158	2909619	10.6		106	129089	
D 19 13C3 PFBS										
302.00 > 80.00	4.516	4.516	0.0	1.175	3246888	10.2		109	174233	
D 25 M2-4:2 FTS										
329.00 > 81.00	4.861	4.861	0.0	0.855	423445	10.1		108	18034	
$ 51 13C2 PFHxA										
315.00 > 270.00	4.901	4.897	0.004	0.862	3206277	10.2		102	111868	
D 27 13C5 PFHxA										
318.00 > 273.00	4.901	4.901	0.0	0.862	4171394	10.9		109	145858	
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.036	5.036	0.0	0.885	48936	10.1		101	3767	
D 38 13C4 PFHpA										
367.00 > 322.00	5.306	5.306	0.0	0.933	4134174	10.5		105	85453	
D 39 13C3 PFHxS										
402.00 > 80.00	5.306	5.306	0.0	0.933	2772260	10.0		106	93565	
D 44 13C-6:2 FTUCA										
359.00 > 294.00	5.409	5.409	0.0	0.951	2677762	9.79		97.9	89622	
D 46 13C-6:2 FTCA										
379.00 > 294.00	5.433	5.433	0.0	0.955	137574	11.3		113	8007	
D 52 M2-6:2 FTS										
429.00 > 81.00	5.668	5.668	0.0	0.997	221414	10.8		113	15984	
$ 35 13C4 PFOA										
417.00 > 372.00	5.687	5.686	0.001	1.000	3645052	10.3		103	99595	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.687	5.685	0.002	1.000	453313	1.41	Target=2.48		17729	M
413.00 > 169.00	5.687	5.685	0.002	1.000	194785		2.33(1.24-3.71)		32959	M
* 57 13C2 PFOA										
415.00 > 370.00	5.687	5.688	-0.001		1404456	5.00			61426	
D 55 13C8 PFOA										
421.00 > 376.00	5.687	5.687	0.0	1.000	3712232	10.9		109	90587	
* 61 13C4 PFOS										
503.00 > 80.00	6.016	6.014	0.002		1534378	4.78			69013	
D 60 13C8 PFOS										
507.00 > 80.00	6.016	6.016	0.0	1.000	3329685	10.3		108	62063	
D 63 13C9 PFNA										
472.00 > 427.00	6.034	6.034	0.0	1.003	2713181	10.5		105	121677	
D 66 13C-8:2 FTUCA										
459.00 > 394.00	6.148	6.148	0.0	0.969	2692126	10.0		100	106049	
D 68 13C-8:2 FTCA										
479.00 > 394.00	6.164	6.164	0.0	0.972	97914	11.1		111	7918	
* 74 13C2 PFDA										
515.00 > 470.00	6.345	6.339	0.005		1838378	5.00			78969	
D 75 13C6 PFDA										
519.00 > 474.00	6.345	6.345	0.0	1.000	4105540	11.1		111	176600	
D 76 M2-8:2 FTS										
529.00 > 81.00	6.345	6.345	0.0	1.000	185823	11.0		115	13271	
D 78 13C8 FOSA										
506.00 > 78.00	6.440	6.440	0.0	1.015	5796707	10.5		105	134583	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.491	6.491	0.0	1.023	1009146	9.96		99.6	68482	
D 83 13C7 PFUnA										
570.00 > 525.00	6.615	6.615	0.0	1.043	5201111	11.9		119	127885	
$ 70 13C2 PFUnA										
565.00 > 520.00	6.615	6.613	0.002	1.163	4501314	11.0		110	147747	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.627	6.627	0.0	1.044	848561	10.8		108	23644	
D 87 13C-10:2 FTUCA										
559.00 > 494.00	6.713	6.713	0.0	1.058	3241713	11.0		110	77354	
D 90 13C-10:2 FTCA										
579.00 > 494.00	6.737	6.737	0.0	1.062	87945	11.9		119	5603	
D 92 13C2-PFDoDA										
615.00 > 570.00	6.850	6.850	0.0	1.080	4623101	10.8		108	109256	
D 94 d7-N-MeFOSE-M										
623.00 > 59.00	6.870	6.870	0.0	1.083	437113	10.3		103	2864	
D 97 d3-NMePFOSA										
515.00 > 169.00	6.891	6.891	0.0	1.086	490297	10.6		106	7803	
D 99 d9-N-EtFOSE-M										
639.00 > 59.00	7.035	7.035	0.0	1.109	467135	9.96		99.6	3256	
D 102 d5-NEtPFOSA										
531.00 > 169.00	7.056	7.056	0.0	1.112	439247	10.4		104	10580	

Report Date: 31-Aug-2021 22:28:55 Chrom Revision: 2.3 03-Aug-2021 10:08:16
Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 105 13C2 PFTeDA										
715.00 > 670.00	7.247	7.247	0.0	1.142	3343928	10.4		104	84177	

QC Flag Legend

Processing Flags

Review Flags

M - Manually Integrated

Reagents:

PFC_LB_MOD_00024 Amount Added: 200.00 Units: uL

Report Date: 31-Aug-2021 22:28:55 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d

Injection Date: 31-Aug-2021 22:00:48 Instrument ID: 30727

Lims ID: WDM

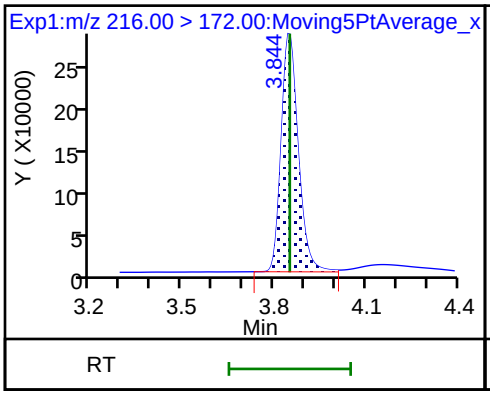
Client ID:

Operator ID: US19_USR_INS20264 ALS Bottle#: 20010 Worklist Smp#: 10

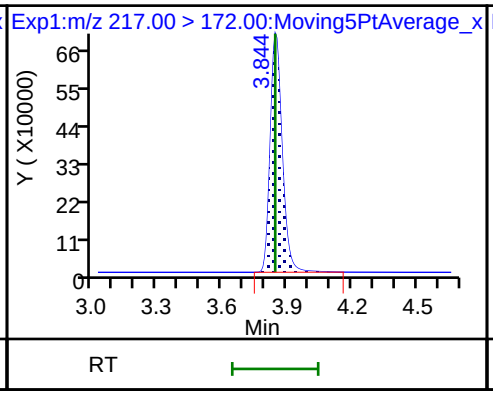
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

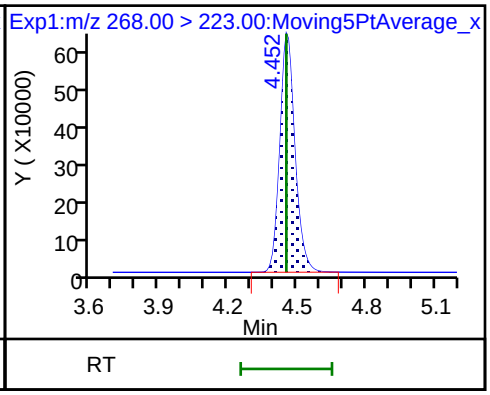
* 8 13C3-PFBA



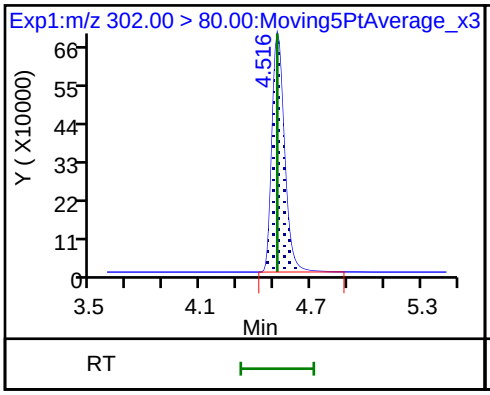
D 7 13C4 PFBA



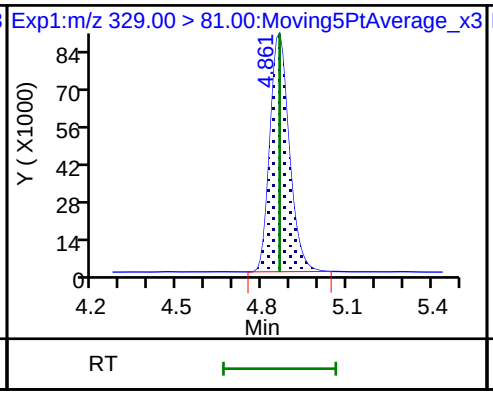
D 17 13C5 PFPeA



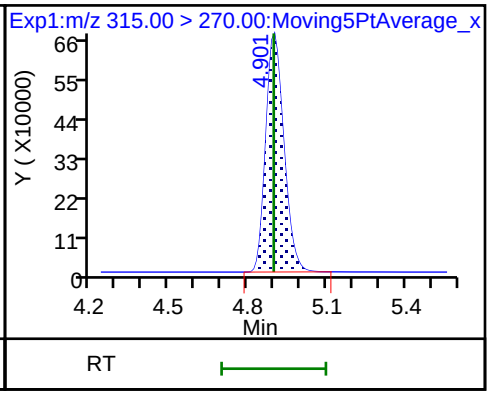
D 19 13C3 PFBS



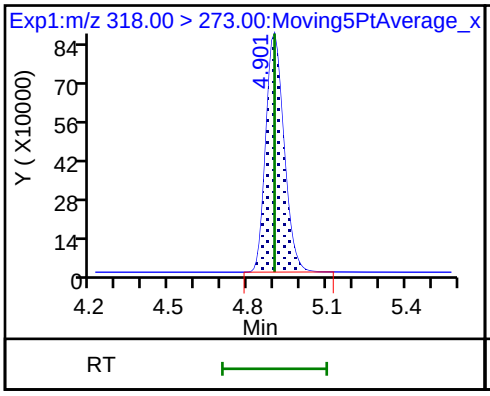
D 25 M2-4:2 FTS



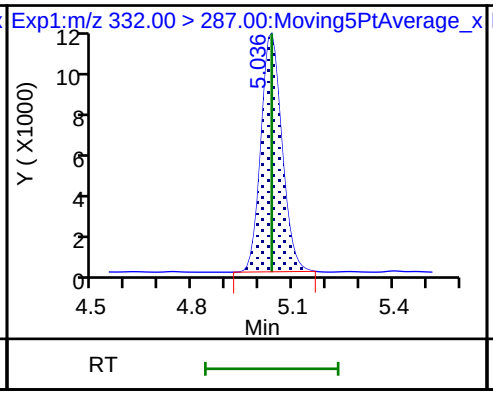
$ 51 13C2 PFHxA



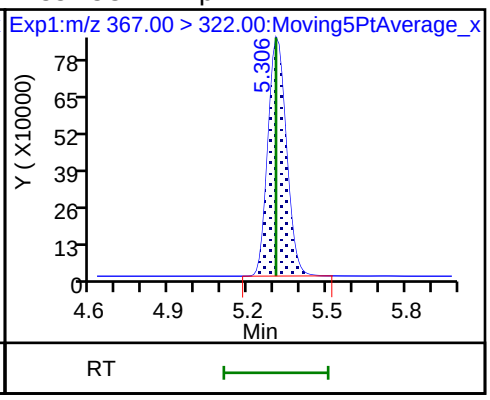
D 27 13C5 PFHxA



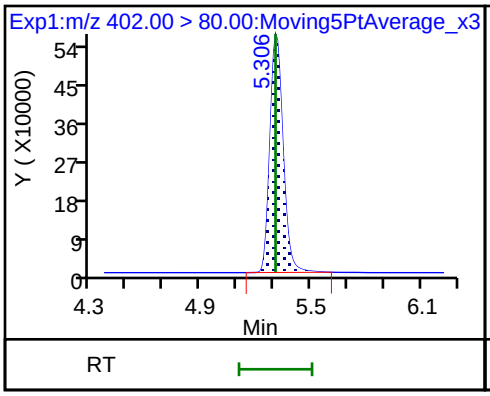
D 31 13C3 HFPO-DA



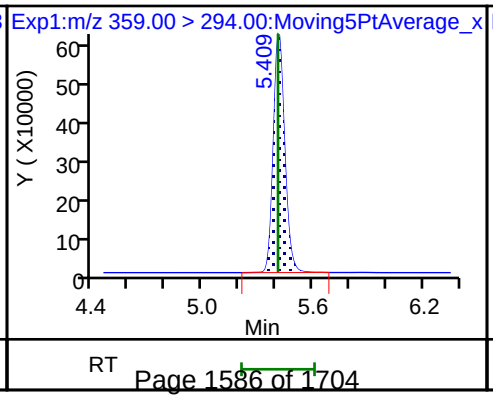
D 38 13C4 PFHpA



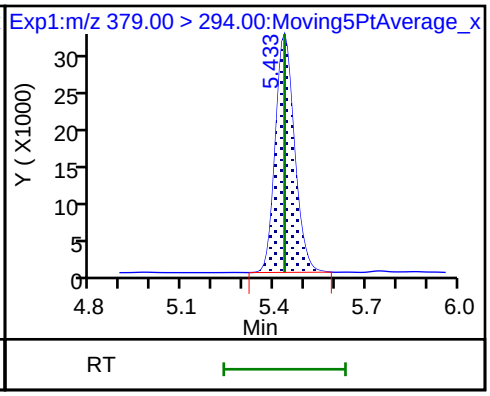
D 39 13C3 PFHxS



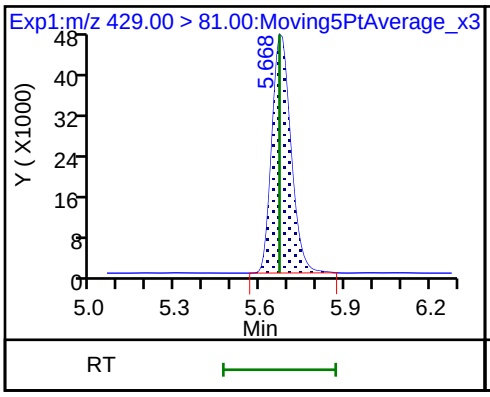
D 44 13C-6:2 FTUCA



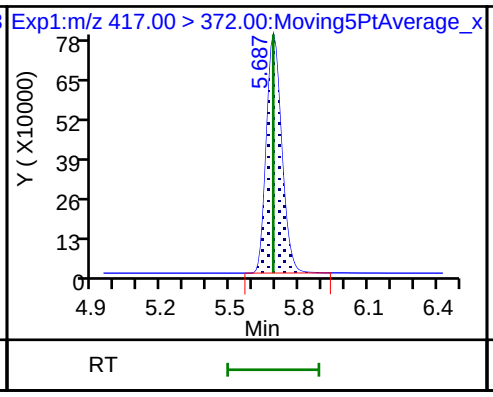
D 46 13C-6:2 FTCA



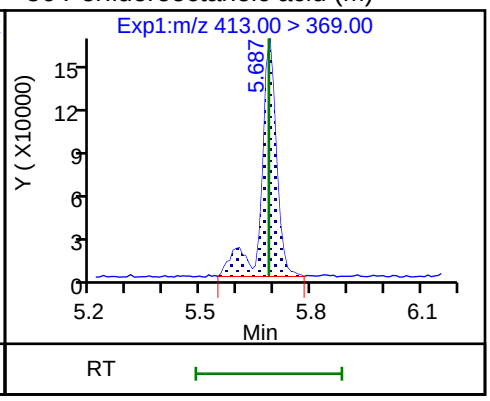
D 52 M2-6:2 FTS



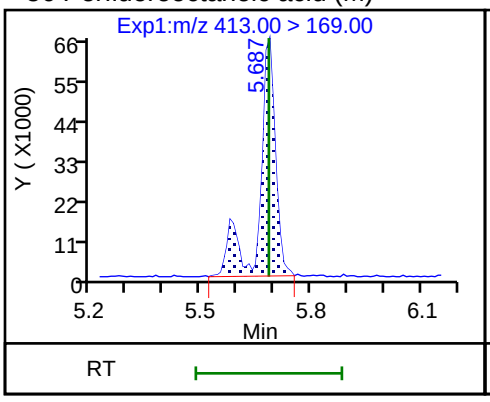
$ 35 13C4 PFOA



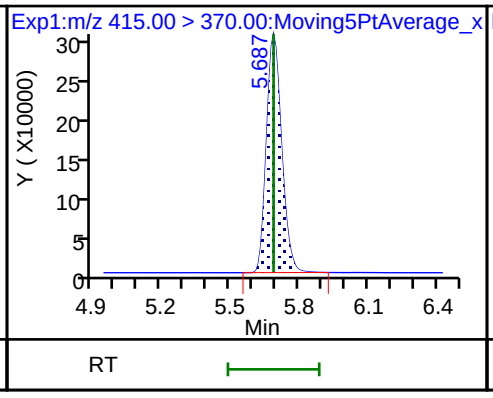
56 Perfluorooctanoic acid (M)



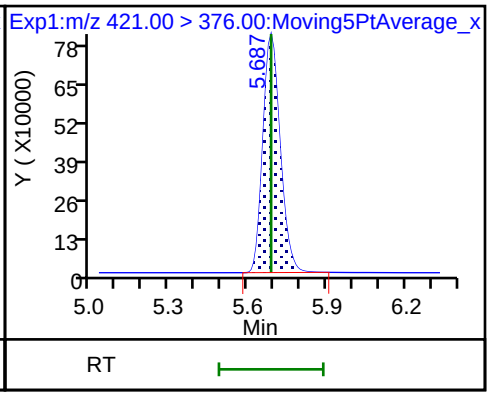
56 Perfluorooctanoic acid (M)



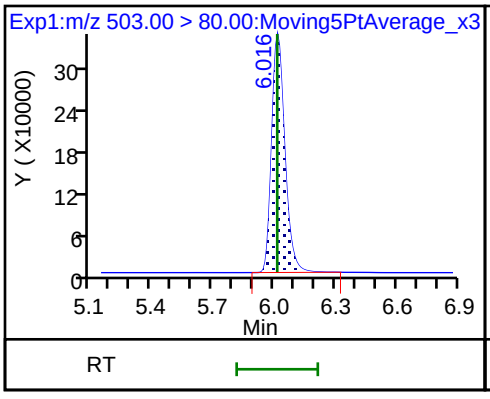
* 57 13C2 PFOA



D 55 13C8 PFOA



* 61 13C4 PFOS



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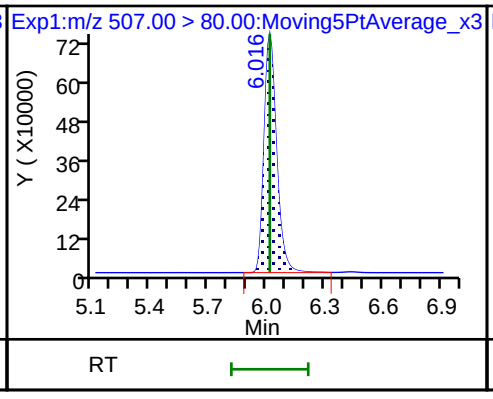
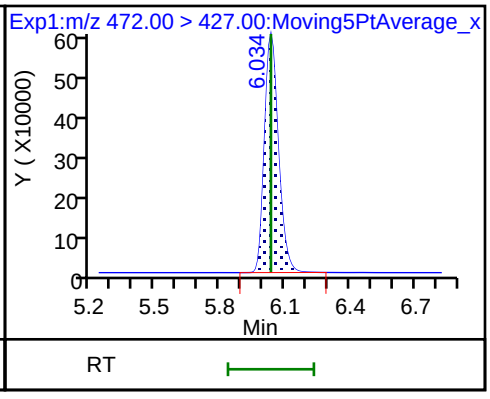
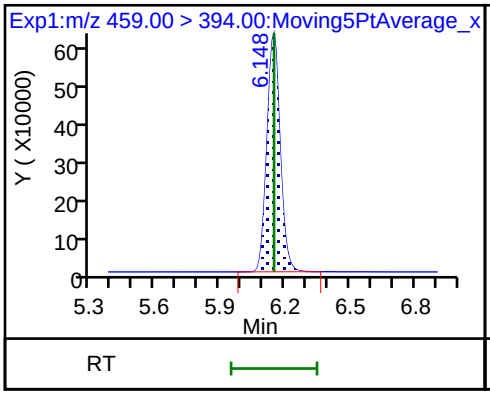


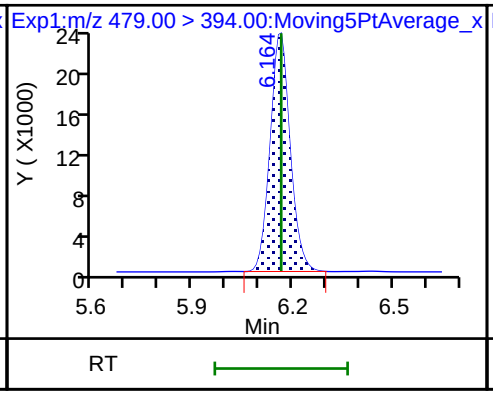
D 63 13C9 PFNA



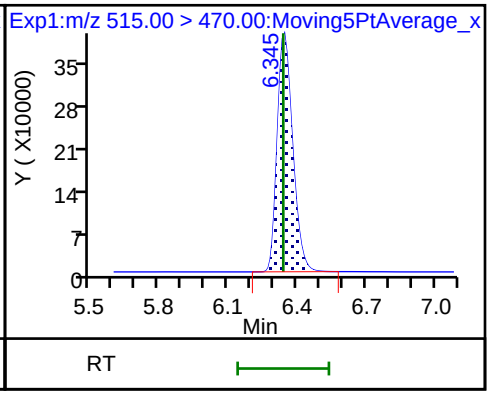
D 66 13C-8:2 FTUCA



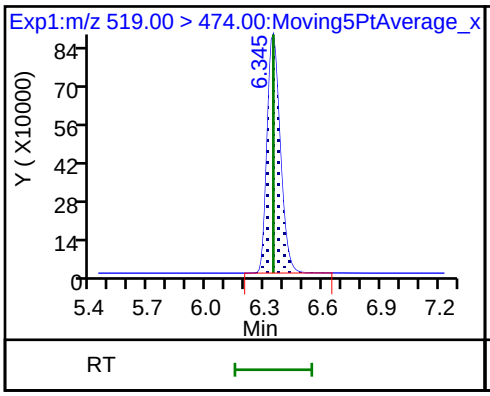
D 68 13C-8:2 FTCA



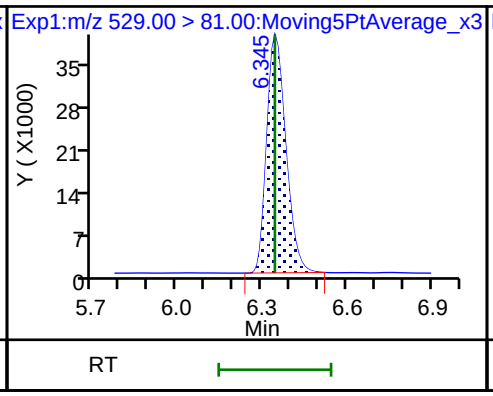
* 74 13C2 PFDA



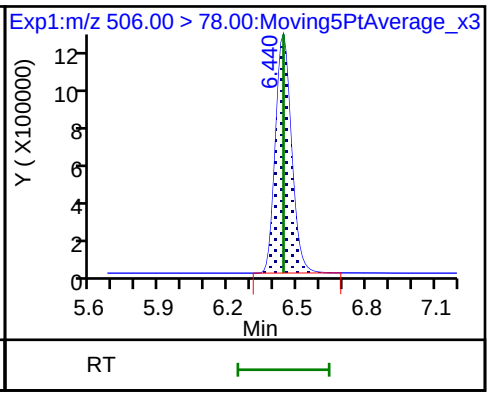
D 75 13C6 PFDA



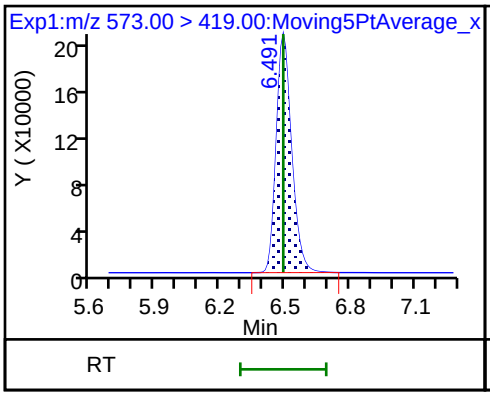
D 76 M2-8:2 FTS



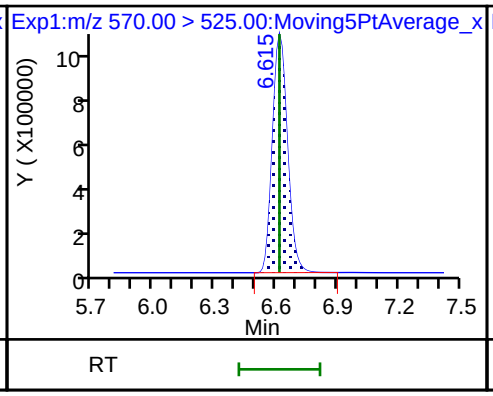
D 78 13C8 FOSA



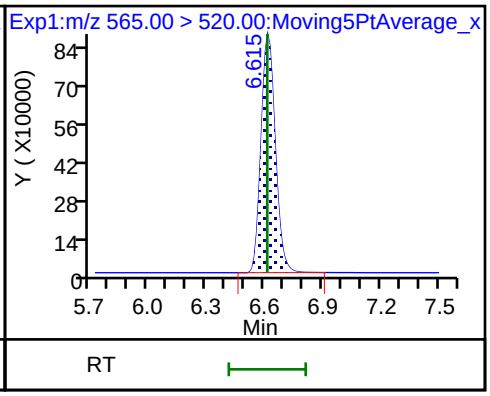
D 79 d3-NMeFOSAA



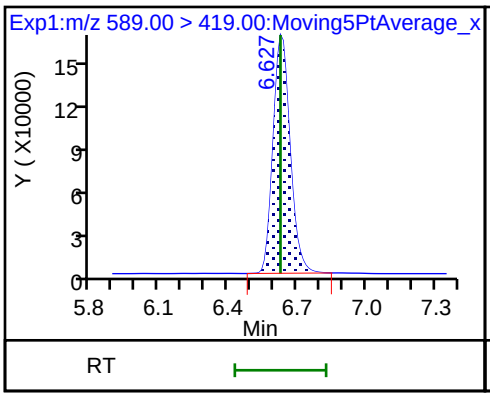
D 83 13C7 PFUnA



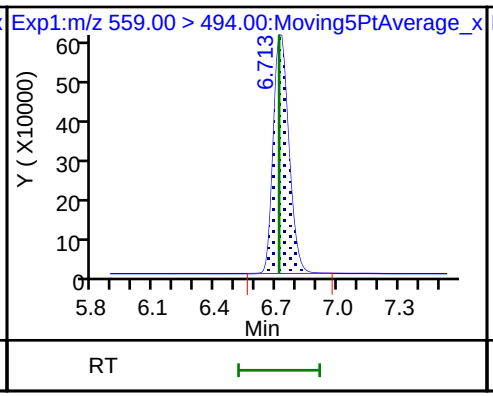
$ 70 13C2 PFUnA



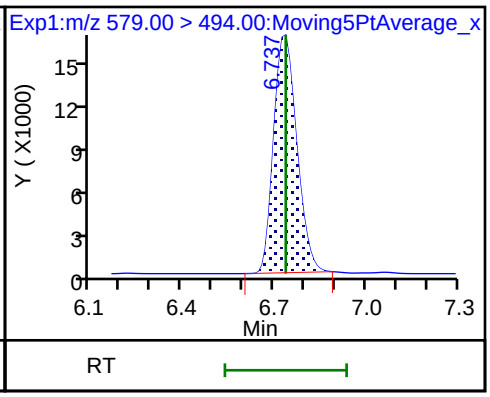
D 84 d5-NEtFOSAA



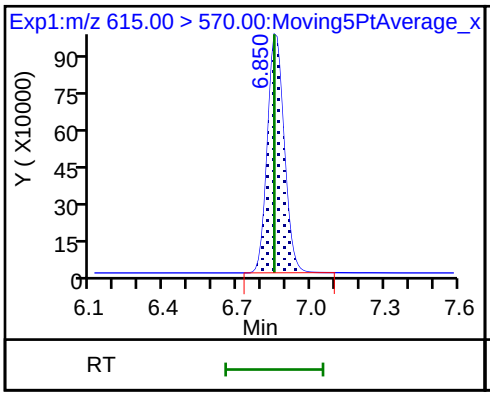
D 87 13C-10:2 FTUCA



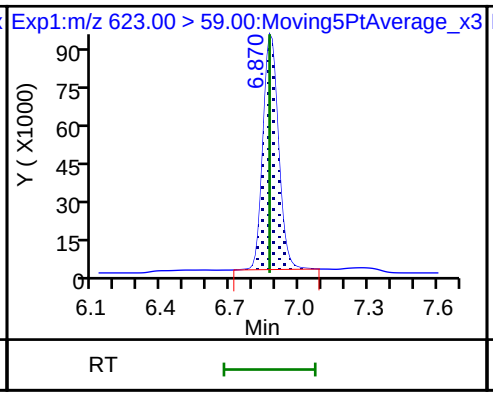
D 90 13C-10:2 FTCA



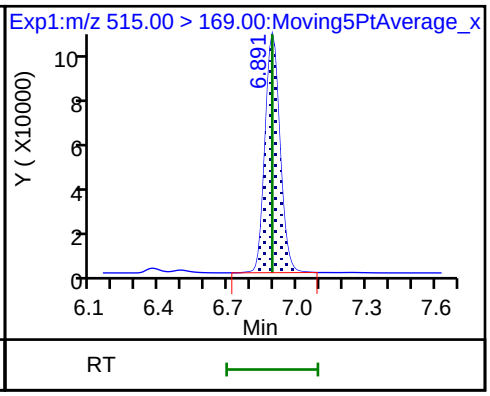
D 92 13C2-PFDoDA



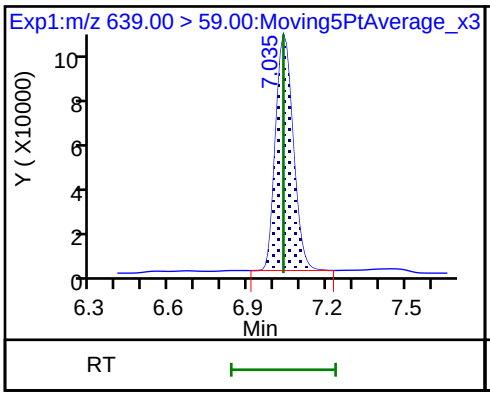
D 94 d7-N-MeFOSE-M



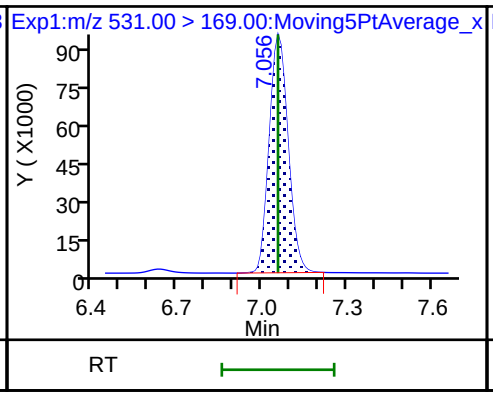
D 97 d3-NMePFOSA



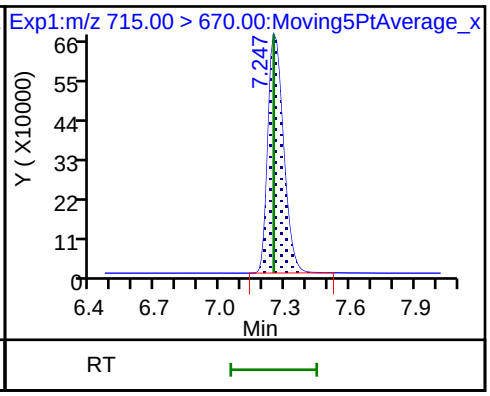
D 99 d9-N-EtFOSE-M



D 102 d5-NEtPFOSA



D 105 13C2 PFTeDA



FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: ICV 410-163270/9 Calibration Date: 08/25/2021 17:32

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG25MCAL-12.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0786		1.66	2.00	-17.1	30.0
PPF Acid	LID1F		0.3128		1.69	2.00	-15.3	30.0
PFMOAA	LID1F		0.1609		1.67	2.00	-16.5	30.0
R-EVE	LID1F		0.0572		1.60	2.00	-19.9	30.0
R-PSDA	LID1F		0.0167		1.62	2.00	-19.2	30.0
Perfluorobutanoic acid	LID1F		0.8520		1.89	2.00	-5.3	30.0
Hydrolyzed PSDA	LID1F		0.0928		1.60	2.00	-20.1	30.0
PMPA	LID1F		0.2415		1.70	2.00	-14.9	30.0
Perfluoropropanesulfonic acid	LID1F		0.4462		1.64	1.83	-10.7	30.0
NVHOS	LID1F		0.2335		1.78	2.00	-10.9	30.0
PFECA F	LID1F		0.8722		1.89	2.00	-5.4	30.0
PFO2HxA	LID1F		0.1169		1.82	2.00	-9.0	30.0
3:3 FTCA	LID1F		0.0527		1.71	2.00	-14.3	30.0
Perfluoropentanoic acid	LID1F		0.8742		1.87	2.00	-6.3	30.0
Perfluorobutanesulfonic acid	LID1F		1.053		1.61	1.77	-9.2	30.0
PEPA	LID1F		0.0979		1.87	2.00	-6.4	30.0
PFECA A	LID1F		0.6964		1.88	2.00	-6.1	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		2.818		1.65	1.78	-7.0	30.0
PFECA B	LID1F		0.6668		1.80	2.00	-10.1	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.151		1.88	1.87	0.5	30.0
Perfluorohexanoic acid	LID1F		0.7034		1.74	2.00	-12.8	30.0
Perfluoropentanesulfonic acid	LID1F		0.8672		1.71	1.88	-8.9	30.0
PFO3OA	LID1F		0.0778		1.78	2.00	-10.9	30.0
HFPODA	LID1F		8.917		1.55	2.00	-22.4	30.0
Hydro-EVE Acid	LID1F		1.427		1.71	2.00	-14.4	30.0
R-PSDCA	LID1F		1.730		1.68	2.00	-16.0	30.0
Perfluoroheptanoic acid	LID1F		0.8269		1.73	2.00	-13.7	30.0
Perfluorohexanesulfonic acid	LID1F		0.8742		1.50	1.82	-18.0	30.0
Hydro-PS Acid	LID1F		1.467		1.74	2.00	-13.0	30.0
DONA	LID1F		1.011		1.47	1.89	-22.0	30.0
PFECA G	LID1F		1.472		1.79	2.00	-10.4	30.0
5:3 FTCA	LID1F		0.1890		1.71	2.00	-14.7	30.0
6:2 FTUCA	LID1F		1.158		1.99	2.00	-0.7	30.0
6:2 FTCA	LID1F		1.039		1.91	2.00	-4.6	30.0
PFO4DA	LID1F		0.0836		2.09	2.00	4.6	30.0
PS Acid	LID1F		0.4390		1.62	2.00	-18.9	30.0
EVE Acid	LID1F		1.063		1.85	2.00	-7.4	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.472		1.57	1.85	-15.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: ICV 410-163270/9 Calibration Date: 08/25/2021 17:32

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG25MCAL-12.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	AveID	4.799	4.289		1.69	1.90	-10.6	30.0
Perfluoroheptanesulfonic acid	LID1F		0.9387		1.72	1.90	-9.6	30.0
Perfluorooctanoic acid	LID1F		0.6882		1.58	2.00	-21.2	30.0
TAF	LID1F		0.0514		1.79	2.00	-10.6	30.0
Perfluorooctanesulfonic acid	LID1F		0.9044		1.55	1.85	-16.1	30.0
Perfluorononanoic acid	LID1F		0.7903		1.75	2.00	-12.6	30.0
7:3 FTCA	LID1F		3.800		1.70	2.00	-15.1	30.0
8:2 FTUCA	LID1F		0.9240		1.96	2.00	-2.2	30.0
8:2 FTCA	LID1F		0.9656		2.01	2.00	0.4	30.0
9Cl-PF3ONS	LID1F		1.504		1.65	1.86	-11.1	30.0
Perfluorononanesulfonic acid	LID1F		0.9257		1.85	1.92	-3.6	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.092		1.86	1.92	-2.8	30.0
Perfluorodecanoic acid	LID1F		0.6765		1.64	2.00	-18.2	30.0
Perfluorooctanesulfonamide	LID1F		0.9269		1.86	2.00	-7.1	30.0
NMeFOSAA	LID1F		0.8861		2.07	2.00	3.7	30.0
Perfluorodecanesulfonic acid	LID1F		0.8497		1.93	1.93	0.0	30.0
Perfluoroundecanoic acid	LID1F		0.7399		1.88	2.00	-6.1	30.0
NEtFOSAA	LID1F		0.8495		1.80	2.00	-9.8	30.0
10:2 FTUCA	LID1F		0.8290		1.93	2.00	-3.7	30.0
10:2 FTCA	LID1F		0.6592		1.65	2.00	-17.5	30.0
11Cl-PF3OUdS	LID1F		1.075		1.65	1.86	-11.2	30.0
Perfluorododecanoic acid	LID1F		0.8954		1.87	2.00	-6.7	30.0
10:2 FTS	LID1F		6.176		1.80	1.93	-6.5	30.0
NMeFOSE	LID1F		1.089		2.12	2.00	6.0	30.0
NMeFOSA	LID1F		1.026		2.14	2.00	7.2	30.0
Perfluorododecanesulfonic acid	LID1F		0.8447		1.85	1.94	-4.7	30.0
NEtFOSE	LID1F		1.006		2.05	2.00	2.3	30.0
NEtFOSA	LID1F		1.014		2.00	2.00	0.2	30.0
Perfluorotridecanoic acid	LID1F		0.6171		1.82	2.00	-8.8	30.0
Perfluorotetradecanoic acid	LID1F		0.7942		1.81	2.00	-9.4	30.0
Perfluorohexadecanoic acid	LID1F		0.6959		2.08	2.00	4.2	30.0
Perfluorooctadecanoic acid	LID1F		0.3282		1.97	2.00	-1.3	30.0
13C4 PFBA	Ave	1.108	1.153		10.4	10.0	4.0	30.0
13C5 PFPeA	Ave	1.132	1.211		10.7	10.0	7.0	30.0
13C3 PFBS	Ave	1.435	1.501		9.79	9.36	4.6	30.0
M2-4:2 FTS	Ave	0.1671	0.1657		9.26	9.34	-0.9	30.0
13C5 PFHxA	Ave	1.341	1.352		10.1	10.0	0.8	30.0
13C3 HFPO-DA	Ave	0.0156	0.0162		10.4	10.0	3.9	30.0
13C3 PFHxS	Ave	0.9478	0.9544		9.53	9.46	0.7	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: ICV 410-163270/9 Calibration Date: 08/25/2021 17:32

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG25MCAL-12.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.372	1.440		10.5	10.0	4.9	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	1.353	1.328		9.81	10.0	-1.9	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0728	0.0743		10.2	10.0	2.1	30.0
M2-6:2 FTS	Ave	0.0848	0.0882		9.87	9.50	3.9	30.0
13C8 PFOA	Ave	1.215	1.279		10.5	10.0	5.3	30.0
13C8 PFOS	Ave	0.9948	1.056		10.2	9.57	6.2	30.0
13C9 PFNA	Ave	0.8500	0.9099		10.7	10.0	7.0	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.998	0.9707		9.72	10.0	-2.8	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0373	0.0369		9.89	10.0	-1.1	30.0
13C6 PFDA	Ave	1.021	1.040		10.2	10.0	1.9	30.0
M2-8:2 FTS	Ave	0.0532	0.0556		10.0	9.58	4.5	30.0
13C8 FOSA	Ave	1.442	1.424		9.87	10.0	-1.3	30.0
d3-NMeFOSAA	Ave	0.3989	0.3734		9.36	10.0	-6.4	30.0
13C7 PFUnA	Ave	1.245	1.271		10.2	10.0	2.1	30.0
d5-NEtFOSAA	Ave	0.3077	0.3127		10.2	10.0	1.6	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	1.109	1.108		9.99	10.0	-0.0	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0331	0.0333		10.1	10.0	0.5	30.0
13C2-PFDoDA	Ave	1.186	1.181		9.96	10.0	-0.4	30.0
d7-N-MeFOSE-M	Ave	0.1011	0.0925		9.15	10.0	-8.5	30.0
d3-NMePFOSA	Ave	0.1180	0.1080		9.15	10.0	-8.5	30.0
d9-N-EtFOSE-M	Ave	0.1132	0.1057		9.33	10.0	-6.7	30.0
d5-NEtPFOSA	Ave	0.1056	0.0999		9.46	10.0	-5.4	30.0
13C2 PFTeDA	Ave	0.8240	0.8099		9.83	10.0	-1.7	30.0
13C2 PFHxA	Ave	1.110	1.084		9.77	10.0	-2.3	30.0
13C4 PFOA	Ave	1.242	1.279		10.3	10.0	3.0	30.0
13C2 PFUnA	Ave	1.470	1.455		9.89	10.0	-1.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-165601/78 Calibration Date: 08/28/2021 08:54

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG27_2-76.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0992		8.38	8.00	4.7	30.0
PPF Acid	LID1F		0.4277		9.27	8.00	15.8	30.0
PFMOAA	LID1F		0.2192		9.10	8.00	13.7	30.0
Perfluorobutanoic acid	LID1F		0.8968		7.98	8.00	-0.3	30.0
R-EVE	LID1F		0.0527		5.91	8.00	-26.2	30.0
R-PSDA	LID1F		0.0118		4.55	8.00	-43.1*	30.0
Hydrolyzed PSDA	LID1F		0.0666		4.59	8.00	-42.6*	30.0
PMPA	LID1F		0.2519		7.10	8.00	-11.3	30.0
Perfluoropropanesulfonic acid	LID1F		0.4845		7.10	7.33	-3.1	30.0
NVHOS	LID1F		0.2511		7.66	8.00	-4.2	30.0
PFECA F	LID1F		0.9333		8.10	8.00	1.3	30.0
PFO2HxA	LID1F		0.1176		7.32	8.00	-8.5	30.0
3:3 FTCA	LID1F		0.0610		7.94	8.00	-0.8	30.0
Perfluoropentanoic acid	LID1F		0.9067		7.78	8.00	-2.8	30.0
Perfluorobutanesulfonic acid	LID1F		1.175		7.18	7.08	1.4	30.0
PEPA	LID1F		0.0976		7.46	8.00	-6.7	30.0
PFECA A	LID1F		0.6682		7.21	8.00	-9.9	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		2.928		6.88	7.12	-3.4	30.0
PFECA B	LID1F		0.7193		7.76	8.00	-3.1	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.352		7.99	7.47	7.0	30.0
Perfluorohexanoic acid	LID1F		0.7564		7.50	8.00	-6.2	30.0
Perfluoropentanesulfonic acid	LID1F		0.9092		7.17	7.50	-4.5	30.0
PFO3OA	LID1F		0.0836		7.66	8.00	-4.3	30.0
HFPODA	LID1F		9.405		6.54	8.00	-18.2	30.0
Hydro-EVE Acid	LID1F		1.574		7.55	8.00	-5.6	30.0
Hydro-PS Acid	LID1F		1.712		8.13	8.00	1.6	30.0
R-PSDCA	LID1F		2.013		7.82	8.00	-2.3	30.0
Perfluoroheptanoic acid	LID1F		0.9906		8.27	8.00	3.4	30.0
Perfluorohexanesulfonic acid	LID1F		1.004		6.87	7.30	-5.9	30.0
DONA	LID1F		1.215		7.08	7.56	-6.4	30.0
PFECA G	LID1F		1.566		7.63	8.00	-4.7	30.0
5:3 FTCA	LID1F		0.2178		7.86	8.00	-1.7	30.0
6:2 FTUCA	LID1F		1.215		8.33	8.00	4.1	30.0
6:2 FTCA	LID1F		1.015		7.46	8.00	-6.8	30.0
PFO4DA	LID1F		0.0722		7.22	8.00	-9.7	30.0
PS Acid	LID1F		0.4768		7.05	8.00	-11.9	30.0
EVE Acid	LID1F		1.056		7.36	8.00	-8.0	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.598		6.81	7.39	-7.9	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-165601/78 Calibration Date: 08/28/2021 08:54

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG27_2-76.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	AveID	4.799	4.279		6.76	7.58	-10.8	30.0
Perfluoroheptanesulfonic acid	LID1F		1.074		7.88	7.62	3.4	30.0
Perfluorooctanoic acid	LID1F		0.7741		7.09	8.00	-11.3	30.0
TAF	LID1F		0.0588		8.19	8.00	2.4	30.0
Perfluorooctanesulfonic acid	LID1F		1.014		6.96	7.40	-5.9	30.0
Perfluorononanoic acid	LID1F		0.8899		7.88	8.00	-1.6	30.0
7:3 FTCA	LID1F		4.406		7.88	8.00	-1.5	30.0
8:2 FTUCA	LID1F		0.9936		8.41	8.00	5.1	30.0
8:2 FTCA	LID1F		0.9362		7.79	8.00	-2.7	30.0
9Cl-PF3ONS	LID1F		1.554		6.84	7.44	-8.1	30.0
Perfluorononanesulfonic acid	LID1F		0.9598		7.68	7.68	-0.0	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.340		7.76	7.66	1.2	30.0
Perfluorodecanoic acid	LID1F		0.8021		7.76	8.00	-3.0	30.0
Perfluorooctanesulfonamide	LID1F		0.9844		7.89	8.00	-1.4	30.0
NMeFOSAA	LID1F		0.8880		8.31	8.00	3.9	30.0
Perfluorodecanesulfonic acid	LID1F		0.9273		8.42	7.71	9.2	30.0
Perfluoroundecanoic acid	LID1F		0.7824		7.95	8.00	-0.7	30.0
NEtFOSAA	LID1F		0.8791		7.47	8.00	-6.7	30.0
10:2 FTUCA	LID1F		0.8738		8.12	8.00	1.5	30.0
10:2 FTCA	LID1F		0.7816		7.83	8.00	-2.2	30.0
11Cl-PF3OUdS	LID1F		1.202		7.39	7.44	-0.7	30.0
Perfluorododecanoic acid	LID1F		0.9883		8.24	8.00	3.0	30.0
10:2 FTS	LID1F		6.637		7.75	7.71	0.5	30.0
NMeFOSE	LID1F		1.051		8.19	8.00	2.3	30.0
NMeFOSA	LID1F		1.005		8.40	8.00	5.0	30.0
Perfluorododecanesulfonic acid	LID1F		0.9054		7.91	7.74	2.2	30.0
NEtFOSE	LID1F		1.004		8.17	8.00	2.1	30.0
NEtFOSA	LID1F		1.029		8.13	8.00	1.6	30.0
Perfluorotridecanoic acid	LID1F		0.7775		9.19	8.00	14.9	30.0
Perfluorotetradecanoic acid	LID1F		0.8630		7.88	8.00	-1.5	30.0
Perfluorohexadecanoic acid	LID1F		0.7655		9.17	8.00	14.6	30.0
Perfluorooctadecanoic acid	LID1F		0.3405		8.19	8.00	2.4	30.0
13C4 PFBA	Ave	1.108	1.119		10.1	10.0	1.0	30.0
13C5 PFPeA	Ave	1.132	1.131		10.0	10.0	-0.0	30.0
13C3 PFBS	Ave	1.435	1.446		9.43	9.36	0.8	30.0
M2-4:2 FTS	Ave	0.1671	0.1496		8.36	9.34	-10.5	30.0
13C5 PFHxA	Ave	1.341	1.262		9.41	10.0	-5.9	30.0
13C3 HFPO-DA	Ave	0.0156	0.0146		9.32	10.0	-6.8	30.0
13C3 PFHxS	Ave	0.9478	0.9488		9.47	9.46	0.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-165601/78 Calibration Date: 08/28/2021 08:54

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG27_2-76.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.372	1.315		9.58	10.0	-4.2	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	1.353	1.329		9.82	10.0	-1.8	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0728	0.0737		10.1	10.0	1.3	30.0
M2-6:2 FTS	Ave	0.0848	0.0888		9.94	9.50	4.7	30.0
13C8 PFOA	Ave	1.215	1.219		10.0	10.0	0.4	30.0
13C8 PFOS	Ave	0.9948	1.012		9.73	9.57	1.7	30.0
13C9 PFNA	Ave	0.8500	0.8371		9.85	10.0	-1.5	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.998	1.080		10.8	10.0	8.2	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0373	0.0392		10.5	10.0	5.0	30.0
13C6 PFDA	Ave	1.021	1.014		9.93	10.0	-0.7	30.0
M2-8:2 FTS	Ave	0.0532	0.0559		10.1	9.58	5.1	30.0
13C8 FOSA	Ave	1.442	1.503		10.4	10.0	4.2	30.0
d3-NMeFOSAA	Ave	0.3989	0.4241		10.6	10.0	6.3	30.0
13C7 PFUnA	Ave	1.245	1.301		10.4	10.0	4.5	30.0
d5-NEtFOSAA	Ave	0.3077	0.3498		11.4	10.0	13.7	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	1.109	1.248		11.2	10.0	12.5	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0331	0.0378		11.4	10.0	14.1	30.0
13C2-PFDoDA	Ave	1.186	1.213		10.2	10.0	2.3	30.0
d7-N-MeFOSE-M	Ave	0.1011	0.1012		10.0	10.0	0.0	30.0
d3-NMePFOSA	Ave	0.1180	0.1253		10.6	10.0	6.2	30.0
d9-N-EtFOSE-M	Ave	0.1132	0.1110		9.80	10.0	-2.0	30.0
d5-NEtPFOSA	Ave	0.1056	0.1133		10.7	10.0	7.3	30.0
13C2 PFTeDA	Ave	0.8240	0.8408		10.2	10.0	2.0	30.0
13C2 PFHxA	Ave	1.110	0.9821		8.85	10.0	-11.5	30.0
13C4 PFOA	Ave	1.242	1.240		9.98	10.0	-0.2	30.0
13C2 PFUnA	Ave	1.470	1.450		9.86	10.0	-1.4	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-165601/79 Calibration Date: 08/28/2021 10:12

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG27_2-83.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.1197		25.3	20.0	26.3	30.0
PPF Acid	LID1F		0.4958		26.9	20.0	34.3*	30.0
PFMOAA	LID1F		0.2515		26.1	20.0	30.5*	30.0
Perfluorobutanoic acid	LID1F		0.9350		20.8	20.0	4.0	30.0
R-EVE	LID1F		0.0523		14.7	20.0	-26.7	30.0
R-PSDA	LID1F		0.0142		13.7	20.0	-31.5*	30.0
Hydrolyzed PSDA	LID1F		0.0805		13.9	20.0	-30.6*	30.0
PMPA	LID1F		0.2621		18.5	20.0	-7.7	30.0
Perfluoropropanesulfonic acid	LID1F		0.5033		18.4	18.3	0.7	30.0
NVHOS	LID1F		0.2801		21.4	20.0	6.8	30.0
PFECA F	LID1F		0.9514		20.6	20.0	3.2	30.0
PFO2HxA	LID1F		0.1241		19.3	20.0	-3.4	30.0
3:3 FTCA	LID1F		0.0664		21.6	20.0	7.9	30.0
Perfluoropentanoic acid	LID1F		0.9921		21.3	20.0	6.4	30.0
Perfluorobutanesulfonic acid	LID1F		1.194		18.2	17.7	3.0	30.0
PEPA	LID1F		0.0997		19.1	20.0	-4.7	30.0
PFECA A	LID1F		0.7994		21.6	20.0	7.8	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.327		19.5	17.8	9.8	30.0
PFECA B	LID1F		0.7943		21.4	20.0	7.0	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.281		19.6	18.7	4.7	30.0
Perfluorohexanoic acid	LID1F		0.8237		20.4	20.0	2.1	30.0
Perfluoropentanesulfonic acid	LID1F		0.998		19.7	18.8	4.8	30.0
PFO3OA	LID1F		0.0926		21.2	20.0	6.0	30.0
HFPODA	LID1F		9.412		16.4	20.0	-18.1	30.0
Hydro-PS Acid	LID1F		1.834		21.8	20.0	8.8	30.0
Hydro-EVE Acid	LID1F		1.668		20.0	20.0	0.0	30.0
R-PSDCA	LID1F		2.226		21.6	20.0	8.1	30.0
Perfluoroheptanoic acid	LID1F		0.9362		19.5	20.0	-2.3	30.0
Perfluorohexanesulfonic acid	LID1F		1.039		17.8	18.2	-2.6	30.0
DONA	LID1F		1.275		18.6	18.9	-1.8	30.0
PFECA G	LID1F		1.641		20.0	20.0	-0.0	30.0
5:3 FTCA	LID1F		0.2209		19.9	20.0	-0.4	30.0
6:2 FTUCA	LID1F		1.241		21.3	20.0	6.3	30.0
6:2 FTCA	LID1F		1.127		20.7	20.0	3.5	30.0
PFO4DA	LID1F		0.0822		20.6	20.0	2.8	30.0
PS Acid	LID1F		0.5257		19.4	20.0	-2.9	30.0
EVE Acid	LID1F		1.133		19.7	20.0	-1.3	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.720		18.3	18.5	-0.9	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-165601/79 Calibration Date: 08/28/2021 10:12

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG27_2-83.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	AveID	4.799	4.505		17.8	19.0	-6.1	30.0
Perfluoroheptanesulfonic acid	LID1F		1.070		19.6	19.0	3.0	30.0
Perfluorooctanoic acid	LID1F		0.8137		18.6	20.0	-6.8	30.0
TAF	LID1F		0.0578		20.1	20.0	0.6	30.0
Perfluorooctanesulfonic acid	LID1F		1.077		18.5	18.5	-0.1	30.0
Perfluorononanoic acid	LID1F		0.9552		21.1	20.0	5.7	30.0
7:3 FTCA	LID1F		4.863		21.7	20.0	8.7	30.0
8:2 FTUCA	LID1F		0.9932		21.0	20.0	5.1	30.0
8:2 FTCA	LID1F		1.020		21.2	20.0	6.0	30.0
9Cl-PF3ONS	LID1F		1.737		19.1	18.6	2.7	30.0
Perfluorononanesulfonic acid	LID1F		1.008		20.2	19.2	5.0	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.520		19.9	19.2	4.1	30.0
Perfluorodecanoic acid	LID1F		0.8387		20.3	20.0	1.5	30.0
Perfluorooctanesulfonamide	LID1F		1.009		20.2	20.0	1.1	30.0
NMeFOSAA	LID1F		0.8823		20.6	20.0	3.2	30.0
Perfluorodecanesulfonic acid	LID1F		0.9507		21.6	19.3	12.0	30.0
Perfluoroundecanoic acid	LID1F		0.8096		20.6	20.0	2.8	30.0
NEtFOSAA	LID1F		0.9362		19.9	20.0	-0.6	30.0
10:2 FTUCA	LID1F		0.8925		20.7	20.0	3.7	30.0
11Cl-PF3OUdS	LID1F		1.357		20.9	18.6	12.1	30.0
10:2 FTCA	LID1F		0.8513		21.3	20.0	6.6	30.0
Perfluorododecanoic acid	LID1F		1.031		21.5	20.0	7.5	30.0
10:2 FTS	LID1F		6.991		20.4	19.3	5.8	30.0
NMeFOSE	LID1F		1.048		20.4	20.0	2.0	30.0
NMeFOSA	LID1F		1.024		21.4	20.0	7.0	30.0
Perfluorododecanesulfonic acid	LID1F		0.9008		19.7	19.4	1.7	30.0
NEtFOSE	LID1F		0.9897		20.1	20.0	0.6	30.0
NEtFOSA	LID1F		1.053		20.8	20.0	4.0	30.0
Perfluorotridecanoic acid	LID1F		0.8127		24.0	20.0	20.1	30.0
Perfluorotetradecanoic acid	LID1F		0.9041		20.6	20.0	3.2	30.0
Perfluorohexadecanoic acid	LID1F		0.7189		21.5	20.0	7.6	30.0
Perfluorooctadecanoic acid	LID1F		0.3199		19.2	20.0	-3.8	30.0
13C4 PFBA	Ave	1.108	1.139		10.3	10.0	2.8	30.0
13C5 PFPeA	Ave	1.132	1.149		10.2	10.0	1.5	30.0
13C3 PFBS	Ave	1.435	1.404		9.16	9.36	-2.1	30.0
M2-4:2 FTS	Ave	0.1671	0.1666		9.31	9.34	-0.3	30.0
13C5 PFHxA	Ave	1.341	1.325		9.88	10.0	-1.2	30.0
13C3 HFPO-DA	Ave	0.0156	0.0164		10.5	10.0	5.1	30.0
13C4 PFHpA	Ave	1.372	1.387		10.1	10.0	1.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-165601/79 Calibration Date: 08/28/2021 10:12

Instrument ID: 30727 Calib Start Date: 08/25/2021 16:04

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/25/2021 17:10

Lab File ID: 21AUG27_2-83.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C3 PFHxS	Ave	0.9478	0.9709		9.69	9.46	2.4	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	1.353	1.382		10.2	10.0	2.1	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0728	0.0712		9.78	10.0	-2.2	30.0
M2-6:2 FTS	Ave	0.0848	0.0845		9.47	9.50	-0.3	30.0
13C8 PFOA	Ave	1.215	1.286		10.6	10.0	5.8	30.0
13C8 PFOS	Ave	0.9948	0.997		9.58	9.57	0.2	30.0
13C9 PFNA	Ave	0.8500	0.8517		10.0	10.0	0.2	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.998	1.141		11.4	10.0	14.3	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0373	0.0377		10.1	10.0	1.0	30.0
13C6 PFDA	Ave	1.021	1.059		10.4	10.0	3.7	30.0
M2-8:2 FTS	Ave	0.0532	0.0535		9.64	9.58	0.7	30.0
13C8 FOSA	Ave	1.442	1.567		10.9	10.0	8.6	30.0
d3-NMeFOSAA	Ave	0.3989	0.4403		11.0	10.0	10.4	30.0
13C7 PFUnA	Ave	1.245	1.333		10.7	10.0	7.1	30.0
d5-NEtFOSAA	Ave	0.3077	0.3557		11.6	10.0	15.6	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	1.109	1.217		11.0	10.0	9.7	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0331	0.0356		10.8	10.0	7.6	30.0
13C2-PFDoDA	Ave	1.186	1.224		10.3	10.0	3.2	30.0
d7-N-MeFOSE-M	Ave	0.1011	0.1059		10.5	10.0	4.7	30.0
d3-NMePFOSA	Ave	0.1180	0.1317		11.2	10.0	11.6	30.0
d9-N-EtFOSE-M	Ave	0.1132	0.1207		10.7	10.0	6.6	30.0
d5-NEtPFOSA	Ave	0.1056	0.1152		10.9	10.0	9.1	30.0
13C2 PFTeDA	Ave	0.8240	0.8812		10.7	10.0	6.9	30.0
13C2 PFHxA	Ave	1.110	1.098		9.89	10.0	-1.1	30.0
13C4 PFOA	Ave	1.242	1.294		10.4	10.0	4.2	30.0
13C2 PFUnA	Ave	1.470	1.511		10.3	10.0	2.8	30.0

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Start Date: 08/31/2021 19:29

Analysis Batch Number: 166660 End Date: 08/31/2021 22:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 410-166660/1		08/31/2021 19:29	1	21AUG31MCAL-09.d	Gemini C18 50mm 3(mm)
IC 410-166660/2		08/31/2021 19:40	1	21AUG31MCAL-10.d	Gemini C18 50mm 3(mm)
IC 410-166660/3		08/31/2021 19:51	1	21AUG31MCAL-11.d	Gemini C18 50mm 3(mm)
IC 410-166660/4		08/31/2021 20:02	1	21AUG31MCAL-12.d	Gemini C18 50mm 3(mm)
ICISAV 410-166660/5		08/31/2021 20:13	1	21AUG31MCAL-13.d	Gemini C18 50mm 3(mm)
IC 410-166660/6		08/31/2021 20:25	1	21AUG31MCAL-14.d	Gemini C18 50mm 3(mm)
IC 410-166660/7		08/31/2021 21:25	1	21AUG31MCAL-19.d	Gemini C18 50mm 3(mm)
ICB 410-166660/8		08/31/2021 21:38	1	21AUG31MCAL-20.d	Gemini C18 50mm 3(mm)
ICV 410-166660/9		08/31/2021 21:49	1	21AUG31MCAL-21.d	Gemini C18 50mm 3(mm)
WDM 410-166660/10		08/31/2021 22:00	1	21AUG31MCAL-22.d	Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Start Date: 08/31/2021 23:40

Analysis Batch Number: 166713 End Date: 09/01/2021 16:06

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 410-166713/5		08/31/2021 23:40	1	21AUG31-07.d	Gemini C18 50mm 3(mm)
MB 410-162732/1-A		08/31/2021 23:51	1	21AUG31-08.d	Gemini C18 50mm 3(mm)
LCS 410-162732/2-A		09/01/2021 00:02	1	21AUG31-09.d	Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 00:13	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 00:24	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 00:35	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 00:47	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 00:58	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 01:09	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 01:20	1		Gemini C18 50mm 3(mm)
410-51558-1	EB-1-W-2108	09/01/2021 01:31	1	21AUG31-17.d	Gemini C18 50mm 3(mm)
410-51558-2	EB-2-W-2108	09/01/2021 01:42	1	21AUG31-18.d	Gemini C18 50mm 3(mm)
410-51558-3	EB-3-W-2108	09/01/2021 01:53	1	21AUG31-19.d	Gemini C18 50mm 3(mm)
CCV 410-166713/18		09/01/2021 02:04	1	21AUG31-20.d	Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:15	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:26	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:37	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 02:48	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:00	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:11	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:22	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:33	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:44	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 03:55	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:06	1		Gemini C18 50mm 3(mm)
CCV 410-166713/30		09/01/2021 04:17	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:28	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:39	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 04:50	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:01	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:12	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:35	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:46	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 05:57	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:19	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:30	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:41	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 06:52	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:03	1		Gemini C18 50mm 3(mm)
CCV 410-166713/46		09/01/2021 07:14	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:25	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:36	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:48	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 07:59	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:10	1		Gemini C18 50mm 3(mm)

537 IDA

PFAS ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Instrument ID: 30727 Start Date: 08/31/2021 23:40

Analysis Batch Number: 166713 End Date: 09/01/2021 16:06

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		09/01/2021 08:21	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:32	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:43	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 08:54	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:16	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:27	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:38	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 09:49	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:01	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:12	1		Gemini C18 50mm 3(mm)
CCV 410-166713/63		09/01/2021 10:23	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:34	10		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:45	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 10:56	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 11:07	1		Gemini C18 50mm 3(mm)
CCV 410-166713/75		09/01/2021 12:14	1		Gemini C18 50mm 3(mm)
ZZZZZ		09/01/2021 14:37	10		Gemini C18 50mm 3(mm)
CCV 410-166713/78		09/01/2021 16:06	1		Gemini C18 50mm 3(mm)

537 IDA

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-166660/1	21AUG31MCAL-09.d
Level 2	IC 410-166660/2	21AUG31MCAL-10.d
Level 3	IC 410-166660/3	21AUG31MCAL-11.d
Level 4	IC 410-166660/4	21AUG31MCAL-12.d
Level 5	ICISAV 410-166660/5	21AUG31MCAL-13.d
Level 6	IC 410-166660/6	21AUG31MCAL-14.d
Level 7	IC 410-166660/7	21AUG31MCAL-19.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
MTP	0.0685 0.0709	0.0642 0.0782	0.0668	0.0718	0.0823	LID1 F		0.0762							0.9970		0.9900
PPF Acid	0.4347 0.4199	0.3884 0.4622	0.4033	0.4233	0.4907	LID1 F		0.4511							0.9970		0.9900
PFMOAA	0.2168 0.2227	0.2024 0.2683	0.2121	0.2162	0.2602	LID1 F		0.2516							0.9920		0.9900
Perfluorobutanoic acid	0.8716 0.8600	0.8212 0.8834	0.8944	0.9108	0.9237	LID1 F		0.8825							1.0000		0.9900
R-EVE	0.0574 0.0466	0.0432 0.0539	0.0434	0.0447	0.0506	LID1 F		0.0510							0.9950		0.9900
R-PSDA	0.0107 0.0149	0.0123 0.0184	0.0118	0.0143	0.0153	Q2ID	-0.001	0.0132	0.0000503						0.9970		0.9900
Hydrolyzed PSDA	0.0532 0.0692	0.0522 0.0727	0.0560	0.0616	0.0654	LID1 F		0.0702							0.9970		0.9900
PMPA	0.2361 0.2656	0.2437 0.2912	0.2555	0.2706	0.2787	LID1 F		0.2812							0.9980		0.9900
Perfluoropropanesulfonic acid	0.4750 0.5079	0.4219 0.5300	0.5053	0.5251	0.5540	LID1 F		0.5257							0.9990		0.9900
NVHOS	0.2191 0.2631	0.2283 0.2792	0.2397	0.2541	0.2774	LID1 F		0.2728							0.9990		0.9900
PFECA F	0.9361 0.8594	0.8399 0.8896	0.9315	0.9331	0.9712	LID1 F		0.8926							0.9990		0.9900
PFO2HxA	0.1584 0.1154	0.1278 0.1278	0.1215	0.1241	0.1365	LID1 F		0.1251							0.9970		0.9900
Perfluoropentanoic acid	0.9273 0.8911	0.8555 0.9051	0.9546	0.8587	0.9464	LID1 F		0.9042							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
3:3 FTCA	0.0515 0.0577	0.0443 0.0575	0.0550	0.0572	0.0609	LID1 F		0.0578							0.9990		0.9900
Perfluorobutanesulfonic acid	1.0910 1.1574	0.9705 1.2406	1.0948	1.2235	1.1915	LID1 F		1.2088							0.9990		0.9900
PEPA	0.1005 0.1063	0.0992 0.1100	0.1057	0.1113	0.1259	LID1 F		0.1107							0.9970		0.9900
PFECA A	0.7415 0.7459	0.6878 0.7888	0.7243	0.7588	0.8021	LID1 F		0.7761							0.9990		0.9900
Perfluoro (2-ethoxyethane) sulfonic acid	2.9022 3.2589	2.8404 3.3719	3.0772	3.1258	3.4377	LID1 F		3.3318							0.9990		0.9900
PFECA B	0.7187 0.7487	0.6306 0.7638	0.7059	0.7345	0.7654	LID1 F		0.7575							1.0000		0.9900
4:2 Fluorotelomer sulfonic acid	3.0339 3.1852	2.8989 3.1905	3.0147	3.3101	3.3576	LID1 F		3.2099							1.0000		0.9900
Perfluorohexanoic acid	0.8566 0.7984	0.6866 0.8411	0.7481	0.7575	0.8601	LID1 F		0.8263							0.9990		0.9900
Perfluoropentanesulfonic acid	0.8985 0.9405	0.8317 1.0175	0.9259	0.9510	0.9782	LID1 F		0.9872							0.9990		0.9900
PFO3OA	0.0908 0.0912	0.0796 0.0999	0.0949	0.0846	0.0999	LID1 F		0.0967							0.9980		0.9900
HFPODA	9.6866 10.387	10.009 10.589	8.4220	8.7191	10.008	LID1 F		10.359							0.9980		0.9900
Hydro-EVE Acid	1.6580 1.5984	1.5237 1.5995	1.5142	1.6450	1.7719	LID1 F		1.6192							0.9990		0.9900
R-PSDCA	1.9653 2.1808	1.8995 2.2072	1.9069	2.0717	2.2266	LID1 F		2.1916							1.0000		0.9900
Hydro-PS Acid	1.4894 1.8282	1.6147 1.8782	1.6415	1.7283	1.8536	LID1 F		1.8512							0.9990		0.9900
Perfluoroheptanoic acid	0.9674 0.9496	0.7690 0.9792	0.9007	0.9697	1.0324	LID1 F		0.9750							0.9990		0.9900
Perfluorohexanesulfonic acid	0.9616 1.0117	0.8714 1.1063	0.9376	0.9281	1.0638	LID1 F		1.0648							0.9970		0.9900
DONA	0.9424 1.2382	0.9873 1.3713	1.0339	1.1649	1.2543	LID1 F		1.3071							0.9960		0.9900
PFECA G	1.5125 1.5239	1.4878 1.6126	1.5421	1.6051	1.8069	LID1 F		1.6080							0.9970		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
5:3 FTCA	0.1936 0.1752	0.1413 0.1888	0.1475	0.1663	0.1726	LID1F		0.1817							0.9980		0.9900
6:2 FTUCA	1.1394 1.1917	1.0626 1.1391	1.1370	1.2689	1.2466	LID1F		1.1711							0.9990		0.9900
6:2 FTCA	1.1143 1.0748	0.9161 1.0566	1.0555	1.0006	1.0924	LID1F		1.0628							1.0000		0.9900
PFO4DA	0.0944 0.0927	0.0816 0.0957	0.0925	0.0876	0.1061	LID1F		0.0956							0.9980		0.9900
PS Acid	0.4738 0.5672	0.4897 0.5902	0.5016	0.5508	0.5754	LID1F		0.5790							0.9990		0.9900
EVE Acid	1.1432 1.1018	1.0729 1.0847	1.1142	1.1813	1.2130	LID1F		1.1083							0.9990		0.9900
Perfluoro-4-ethylcyclohexanesulfonic acid	1.6040 1.6625	1.4186 1.7005	1.5800	1.5435	1.6471	LID1F		1.6749							0.9990		0.9900
6:2 Fluorotelomer sulfonic acid	3.6219 4.0969	3.9646 4.2347	4.2634	4.3733	4.4128	LID1F		4.2213							0.9990		0.9900
Perfluoroheptanesulfonic acid	1.0104 1.0248	0.9393 1.0761	1.0111	0.9808	1.0620	LID1F		1.0550							0.9990		0.9900
Perfluorooctanoic acid	0.8946 0.8266	0.6535 0.9046	0.8080	0.7837	0.8311	LID1F		0.8677							0.9970		0.9900
TAF	0.0736 0.0723	0.0701 0.0541	0.0642	0.0570	0.0793	AveID		0.0672				13.7		20.0			
Perfluorooctanesulfonic acid	0.9757 1.0512	0.8987 1.1246	0.9545	1.0197	1.0809	LID1F		1.0921							0.9990		0.9900
Perfluorononanoic acid	0.9471 0.8874	0.7734 0.9121	0.7844	0.8844	0.9762	LID1F		0.9094							0.9990		0.9900
7:3 FTCA	4.8856 5.9178	4.2918 5.5760	4.7672	4.9237	5.7375	LID1F		5.6463							0.9980		0.9900
8:2 FTUCA	0.8230 0.9914	0.8659 0.9279	0.9221	0.9668	1.1033	LID1F		0.9662							0.9970		0.9900
8:2 FTCA	0.9109 0.9636	1.1527 0.8483	0.8294	0.8255	0.9612	LID1F		0.8924							0.9960		0.9900
9Cl-PF3ONS	1.4644 1.7686	1.4531 1.7326	1.6045	1.6985	1.7959	LID1F		1.7456							1.0000		0.9900
Perfluorononanesulfonic acid	0.8548 1.0268	0.9622 1.0080	0.9881	0.9837	1.0144	LID1F		1.0123							1.0000		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid	0.7266 0.8085	0.6753 0.8409	0.7354	0.7852	0.8520	LID1 F		0.8289							0.9990		0.9900
8:2 Fluorotelomer sulfonic acid	5.9664 6.6048	6.1902 6.0587	6.0597	6.3248	6.1330	LID1 F		6.2301							0.9980		0.9900
Perfluorooctanesulfonamide	0.8804 1.0030	0.8702 0.9770	0.9657	0.9781	1.0120	LID1 F		0.9876							1.0000		0.9900
NMeFOSAA	0.7055 0.8268	0.7222 0.8520	0.7913	0.7919	0.8792	LID1 F		0.8442							0.9990		0.9900
Perfluorodecanesulfonic acid	0.8445 0.8874	0.7764 0.9075	0.8576	0.8993	0.8688	LID1 F		0.8963							1.0000		0.9900
Perfluoroundecanoic acid	0.7625 0.7484	0.7325 0.8442	0.7771	0.8075	0.8532	LID1 F		0.8159							0.9970		0.9900
NEtFOSAA	0.7446 0.9536	0.7004 1.0249	0.8016	0.8805	1.0253	LID1 F		0.9952							0.9980		0.9900
10:2 FTUCA	0.8569 0.8874	0.7960 0.8895	0.8231	0.8452	0.9146	LID1 F		0.8887							1.0000		0.9900
11Cl-PF3OUdS	1.0491 1.1772	1.0539 1.1783	1.0542	1.1372	1.2452	LID1 F		1.1817							0.9990		0.9900
10:2 FTCA	0.7886 0.8399	0.6948 0.7574	0.7140	0.7471	0.7941	LID1 F		0.7832							0.9980		0.9900
Perfluorododecanoic acid	0.9925 0.9270	0.8751 0.9834	0.9029	0.9595	1.0264	LID1 F		0.9704							0.9990		0.9900
10:2 FTS	6.3701 6.1239	5.0424 6.2112	4.9964	5.9424	5.5058	LID1 F		6.0805							0.9980		0.9900
NMeFOSE	1.0858 1.0509	0.9314 1.0804	1.0480	1.0254	1.0949	LID1 F		1.0706							1.0000		0.9900
NMeFOSA	0.9142 1.0121	0.8192 1.0634	0.9203	0.9884	1.0591	LID1 F		1.0430							0.9990		0.9900
Perfluorododecanesulfonic acid	0.7965 0.8672	0.8049 0.8657	0.8237	0.8558	0.9016	LID1 F		0.8689							1.0000		0.9900
NEtFOSE	1.0453 0.9854	1.0179 0.9662	1.0126	1.0356	1.0480	LID1 F		0.9844							0.9990		0.9900
NEtFOSA	0.9448 1.0940	0.9655 1.0615	1.0041	1.0326	1.0442	LID1 F		1.0663							1.0000		0.9900
Perfluorotridecanoic acid	0.6963 0.7172	0.6367 0.7578	0.6758	0.7436	0.7848	LID1 F		0.7476							0.9990		0.9900

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorotetradecanoic acid	0.8515 0.8717	0.8019 0.9316	0.8283	0.8953	0.9348	LID1 F		0.9122							0.9990		0.9900
Perfluorohexadecanoic acid	0.7897 0.6798	0.6297 0.7127	0.6761	0.6954	0.7335	LID1 F		0.7046							0.9990		0.9900
Perfluorooctadecanoic acid	0.2952 0.3216	0.2654 0.3677	0.2961	0.3112	0.3356	LID1 F		0.3477							0.9950		0.9900
13C4 PFBA	1.0364 1.1633	1.1312 1.1612	1.1235	1.1000	1.1367	Ave		1.1218				3.9		20.0			
13C5 PFPeA	1.1491 1.2129	1.2965 1.2179	1.2607	1.2507	1.2802	Ave		1.2383				4.0		20.0			
13C3 PFBS	1.3481 1.4292	1.4068 1.4242	1.4674	1.4169	1.4840	Ave		1.4252				3.1		20.0			
M2-4:2 FTS	0.1499 0.1398	0.1550 0.1462	0.1601	0.1430	0.1501	Ave		0.1492				4.6		20.0			
13C5 PFHxA	1.3593 1.3429	1.4304 1.3330	1.3917	1.3403	1.3368	Ave		1.3621				2.7		20.0			
13C3 HFPO-DA	0.0164 0.0172	0.0152 0.0178	0.0175	0.0183	0.0180	Ave		0.0172				6.2		20.0			
13C3 PFHxS	0.9367 1.0092	0.9771 0.9794	0.9839	1.0199	1.0077	Ave		0.9877				2.8		20.0			
13C4 PFHpA	1.4099 1.3540	1.5291 1.2810	1.4818	1.3442	1.4461	Ave		1.4066				6.1		20.0			
13C2-2H-Perfluoro-2-octenoic acid	0.9876 0.9647	1.0111 0.9854	0.9860	0.8890	0.9898	Ave		0.9734				4.1		20.0			
13C2-2-Perfluorohexylethanoic acid	0.0454 0.0419	0.0450 0.0420	0.0434	0.0429	0.0427	Ave		0.0433				3.2		20.0			
M2-6:2 FTS	0.0778 0.0713	0.0784 0.0621	0.0768	0.0717	0.0735	Ave		0.0731				7.7		20.0			
13C8 PFOA	1.2632 1.2076	1.2999 1.1040	1.2146	1.1856	1.2499	Ave		1.2178				5.2		20.0			
13C8 PFOS	0.9877 0.9743	1.0089 1.0067	1.0497	0.9948	1.0343	Ave		1.0081				2.6		20.0			
13C9 PFNA	0.8155 0.7835	0.8402 0.7908	0.8220	0.7800	0.8098	Ave		0.8060				2.7		20.0			
13C2-2H-Perfluoro-2-decenoic acid	0.6688 0.7748	0.7341 0.8108	0.7213	0.7050	0.6940	Ave		0.7298				6.7		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2-2-Perfluorooctylethanoic acid	0.0220 0.0241	0.0235 0.0260	0.0241	0.0249	0.0229	Ave		0.0239				5.4		20.0			
13C6 PFDA	0.9120 1.0586	1.0462 0.9894	1.0366	1.0085	0.9835	Ave		1.0050				5.0		20.0			
M2-8:2 FTS	0.0390 0.0440	0.0465 0.0448	0.0511	0.0469	0.0492	Ave		0.0459				8.5		20.0			
13C8 FOSA	1.3178 1.5893	1.4795 1.6523	1.4867	1.5002	1.5171	Ave		1.5061				6.9		20.0			
d3-NMeFOSAA	0.2443 0.2919	0.2647 0.3015	0.2682	0.2818	0.2757	Ave		0.2754				6.8		20.0			
13C7 PFUnA	1.0797 1.3307	1.1893 1.1905	1.1982	1.2080	1.1578	Ave		1.1935				6.2		20.0			
d5-NEtFOSAA	0.1951 0.2205	0.2219 0.2043	0.2252	0.2195	0.2077	Ave		0.2135				5.2		20.0			
13C2-2H-Perfluoro-2-dodecenoic acid	0.7575 0.8285	0.8433 0.7593	0.8489	0.8021	0.7791	Ave		0.8027				4.8		20.0			
13C2-2-Perfluorodecylethanoic acid	0.0186 0.0204	0.0217 0.0201	0.0198	0.0200	0.0203	Ave		0.0201				4.6		20.0			
13C2-PFDoDA	1.0344 1.2815	1.1619 1.2028	1.1370	1.1460	1.1489	Ave		1.1589				6.4		20.0			
d7-N-MeFOSE-M	0.1037 0.1203	0.1140 0.1331	0.1144	0.1104	0.1091	Ave		0.1150				8.3		20.0			
d3-NMePFOSA	0.1077 0.1348	0.1183 0.1509	0.1247	0.1249	0.1231	Ave		0.1263				10.7		20.0			
d9-N-EtFOSE-M	0.1151 0.1369	0.1227 0.1506	0.1239	0.1227	0.1213	Ave		0.1276				9.5		20.0			
d5-NEtPFOSA	0.0980 0.1191	0.1079 0.1343	0.1122	0.1130	0.1189	Ave		0.1148				9.8		20.0			
13C2 PFTeDA	0.7789 0.9441	0.9055 0.9095	0.8924	0.8702	0.8429	Ave		0.8777				6.1		20.0			

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

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-166660/1	21AUG31MCAL-09.d
Level 2	IC 410-166660/2	21AUG31MCAL-10.d
Level 3	IC 410-166660/3	21AUG31MCAL-11.d
Level 4	IC 410-166660/4	21AUG31MCAL-12.d
Level 5	ICISAV 410-166660/5	21AUG31MCAL-13.d
Level 6	IC 410-166660/6	21AUG31MCAL-14.d
Level 7	IC 410-166660/7	21AUG31MCAL-19.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
MTP		LID1F	3464 814021	8206 1866474	31366	139316	388071	0.200 50.0	0.500 100	2.00	8.00	20.0
PPF Acid		LID1F	21969 4821098	49617 11031072	189335	821216	2314343	0.200 50.0	0.500 100	2.00	8.00	20.0
PFMOAA		LID1F	10957 2556493	25860 6403597	99583	419319	1227045	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanoic acid		LID1F	44050 9874538	104902 21081375	419890	1766901	4356238	0.200 50.0	0.500 100	2.00	8.00	20.0
R-EVE		LID1F	2903 535312	5523 1285827	20373	86619	238847	0.200 50.0	0.500 100	2.00	8.00	20.0
R-PSDA		Q2ID	706 210547	1957 539673	7254	35712	94135	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydrolyzed PSDA		LID1F	3496 976499	8294 2127750	34324	153892	402803	0.200 50.0	0.500 100	2.00	8.00	20.0
PMPA		LID1F	11933 3049483	31127 6948641	119942	524928	1314216	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropropanesulfonic acid		LID1F	21988 5341374	49369 11584906	217325	933113	2393065	0.183 45.8	0.458 91.6	1.83	7.33	18.3

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
NVHOS		LID1 F	14403 3711861	36272 8172105	147007	634916	1707821	0.200 50.0	0.500 100	2.00	8.00	20.0
PFECA F		LID1 F	47310 9867430	107286 21229483	437350	1810067	4580406	0.200 50.0	0.500 100	2.00	8.00	20.0
PFO2HxA		LID1 F	8006 1324877	16331 3048846	57054	240766	643794	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoropentanoic acid		LID1 F	51967 10667385	125248 22654873	502912	1894080	5026456	0.200 50.0	0.500 100	2.00	8.00	20.0
3:3 FTCA		LID1 F	2884 691124	6488 1438474	28979	126200	323610	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorobutanesulfonic acid		LID1 F	63474 14448038	136441 32134818	594164	2705712	6492105	0.177 44.3	0.443 88.5	1.77	7.08	17.7
PEPA		LID1 F	5078 1220994	12667 2625910	49612	216004	593734	0.200 50.0	0.500 100	2.00	8.00	20.0
PFECA A		LID1 F	48744 10521216	109261 23088559	444135	1896096	4938763	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoro (2-ethoxyethane) sulfonic acid		LID1 F	169808 40911862	401609 87836690	1679398	6951399	18837577	0.178 44.5	0.445 89.0	1.78	7.12	17.8
PFECA B		LID1 F	47247 10560164	100184 22356886	432851	1835217	4712566	0.200 50.0	0.500 100	2.00	8.00	20.0
4:2 Fluorotelomer sulfonic acid		LID1 F	24565 4951953	59037 10751680	239028	990254	2448112	0.187 46.7	0.467 93.4	1.87	7.47	18.7
Perfluorohexanoic acid		LID1 F	67325 12761272	138199 27660928	552141	2273691	5980664	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluoropentanesulfonic acid		LID1 F	55404 12443754	123930 27934541	532557	2229038	5649554	0.188 46.9	0.469 93.8	1.88	7.50	18.8
PFO3OA		LID1 F	4588 1047423	10164 2384630	44578	164059	471169	0.200 50.0	0.500 100	2.00	8.00	20.0
HFPODA		LID1 F	9179 2120753	21469 4649494	78010	357788	934991	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydro-EVE Acid		LID1 F	83798 18352475	194636 38172557	710922	3191150	8356101	0.200 50.0	0.500 100	2.00	8.00	20.0
R-PSDCA		LID1 F	129204 30761407	301756 64601628	1169332	5176702	13709159	0.200 50.0	0.500 100	2.00	8.00	20.0
Hydro-PS Acid		LID1 F	97915 25787409	256518 54971420	1006559	4318721	11412505	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoroheptanoic acid		LID1 F	78863 15303315	165458 30946804	707811	2918928	7765719	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorohexanesulfonic acid		LID1 F	47501 11083530	109271 24378283	446171	1933182	5085205	0.182 45.6	0.456 91.2	1.82	7.30	18.2
DONA		LID1 F	72599 18856567	200742 40953441	767800	3313690	8915398	0.189 47.3	0.473 94.5	1.89	7.56	18.9
PFECA G		LID1 F	76440 17496639	190050 38484593	724000	3113627	8521228	0.200 50.0	0.500 100	2.00	8.00	20.0
5:3 FTCA		LID1 F	15781 2823078	30401 5966812	115888	500510	1297938	0.200 50.0	0.500 100	2.00	8.00	20.0
6:2 FTUCA		LID1 F	65069 13683866	151179 27692609	594554	2526114	6418108	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
6:2 FTCA		LID1F	2925 536256	5797 1094031	24283	96232	242819	0.200 50.0	0.500 100	2.00	8.00	20.0
PFO4DA		LID1F	4773 1063806	10426 2283440	43414	169987	500217	0.200 50.0	0.500 100	2.00	8.00	20.0
PS Acid		LID1F	31151 8000588	77799 17273498	307591	1376264	3542651	0.200 50.0	0.500 100	2.00	8.00	20.0
EVE Acid		LID1F	57778 12650931	137053 25886956	523082	2291567	5720607	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluoro-4-ethylcyclohexanesulfonic acid		LID1F	80273 18452568	180226 37966651	761805	3257299	7977482	0.185 46.2	0.462 92.4	1.85	7.39	18.5
6:2 Fluorotelomer sulfonic acid		LID1F	15456 3297645	41474 6154617	164571	665420	1600283	0.190 47.4	0.474 94.8	1.90	7.58	19.0
Perfluoroheptanesulfonic acid		LID1F	52099 11719452	122948 24753158	502266	2132593	5299512	0.190 47.6	0.476 95.2	1.90	7.62	19.0
Perfluorooctanoic acid		LID1F	65343 11881480	119540 24637941	520465	2080766	5402928	0.200 50.0	0.500 100	2.00	8.00	20.0
TAF		AveID	3718 830320	8959 1290736	30138	110649	373992	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorooctanesulfonic acid		LID1F	59565 13928146	133116 30213698	554062	2434537	6187895	0.185 46.3	0.463 92.6	1.85	7.40	18.5
Perfluorononanoic acid		LID1F	51581 10217365	103082 20800084	385252	1789057	4728281	0.200 50.0	0.500 100	2.00	8.00	20.0
7:3 FTCA		LID1F	12825 2952519	27159 5773613	109671	473518	1275387	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
8:2 FTUCA		LID1 F	48651 11788373	124657 22157025	479389	2018027	5378663	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 FTCA		LID1 F	1775 356186	5308 650356	14390	60860	154678	0.200 50.0	0.500 100	2.00	8.00	20.0
9Cl-PF3ONS		LID1 F	89833 23547283	216286 46775070	935867	4074922	10331418	0.186 46.5	0.465 93.0	1.86	7.44	18.6
Perfluorononanesulfonic acid		LID1 F	54130 14111675	147837 28091099	594933	2436192	6023882	0.192 48.0	0.480 96.0	1.92	7.68	19.2
Perfluorodecanoic acid		LID1 F	58574 13135222	138558 24504417	549503	2344327	5885331	0.200 50.0	0.500 100	2.00	8.00	20.0
8:2 Fluorotelomer sulfonic acid		LID1 F	19693 4272313	54084 7661922	213642	841484	2029558	0.192 47.9	0.479 95.8	1.92	7.66	19.2
Perfluorooctanesulfonamide		LID1 F	102556 24462396	252491 47545294	1034922	4344442	10783760	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSAA		LID1 F	15232 3704277	37490 7567204	152949	660628	1702871	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorodecanesulfonic acid		LID1 F	53700 12246543	119791 25396655	518508	2236516	5180936	0.193 48.2	0.482 96.4	1.93	7.71	19.3
Perfluoroundecanoic acid		LID1 F	72772 15283093	170863 29598871	671114	2887790	6938609	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSAA		LID1 F	12844 3227409	30482 6165814	130141	572114	1495532	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTUCA		LID1 F	57379 11282768	131656 19892408	503631	2006848	5005291	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
11Cl-PF3OUdS		LID1 F	64353 15673935	156876 31810656	614888	2728323	7163144	0.186 46.5	0.465 93.0	1.86	7.44	18.6
10:2 FTCA		LID1 F	1294 263073	2958 448972	10192	44315	113366	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanoic acid		LID1 F	90754 18231646	199407 34839480	739985	3255167	8282840	0.200 50.0	0.500 100	2.00	8.00	20.0
10:2 FTS		LID1 F	21157 3986060	44332 7903948	177259	795553	1833409	0.193 48.2	0.482 96.4	1.93	7.71	19.3
NMeFOSE		LID1 F	9955 1940137	20829 4235433	86441	335187	838897	0.200 50.0	0.500 100	2.00	8.00	20.0
NMeFOSA		LID1 F	8702 2093809	19010 4724917	82708	365431	916052	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorododecanesulfonic acid		LID1 F	50856 12017564	124699 24326737	500054	2137060	5398603	0.194 48.4	0.484 96.8	1.94	7.74	19.4
NEtFOSE		LID1 F	10634 2070718	24504 4284955	90407	376273	892829	0.200 50.0	0.500 100	2.00	8.00	20.0
NEtFOSA		LID1 F	8181 2000169	20433 4199537	81212	345496	871812	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotridecanoic acid		LID1 F	63667 14103976	145088 26844086	553880	2522764	6333233	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorotetradecanoic acid		LID1 F	58627 12629074	142418 24954331	532819	2306662	5534316	0.200 50.0	0.500 100	2.00	8.00	20.0
Perfluorohexadecanoic acid		LID1 F	54367 9849103	111835 19091278	434916	1791515	4342918	0.200 50.0	0.500 100	2.00	8.00	20.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorooctadecanoic acid		LID1F	20322 4659887	47137 9848522	190441	801804	1987131	0.200 50.0	0.500 100	2.00	8.00	20.0
13C4 PFBA	13C3 PFBA	Ave	2527007 2296319	2554832 2386490	2347448	2424863	2358014	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C5 PFPeA	13C3 PFBA	Ave	2801920 2394273	2928104 2503037	2634138	2757248	2655697	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFBS	13C3 PFBA	Ave	3076699 2640569	2973944 2739563	2869818	2923549	2881451	9.36 9.36	9.36 9.36	9.36	9.36	9.36
M2-4:2 FTS	13PFOA	Ave	404839 310931	407300 336990	396443	373949	364564	9.34 9.34	9.34 9.34	9.34	9.34	9.34
13C5 PFHxA	13PFOA	Ave	3929916 3196715	4025614 3288576	3690303	3751887	3476564	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 HFPO-DA	13PFOA	Ave	47380 40835	42901 43910	46313	51294	46713	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C3 PFHxS	13PFOA	Ave	2561876 2272748	2601439 2285787	2468157	2700670	2479274	9.46 9.46	9.46 9.46	9.46	9.46	9.46
13C4 PFHpA	13PFOA	Ave	4076158 3223152	4303302 3160284	3929290	3762679	3760832	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-octenoic acid	13PFOA	Ave	2855365 2296438	2845571 2431167	2614601	2488548	2574320	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorohexylethanoic acid	13PFOA	Ave	131254 99785	126563 103544	115027	120213	111144	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-6:2 FTS	13PFOA	Ave	213816 161324	209664 145644	193411	190595	181707	9.50 9.50	9.50 9.50	9.50	9.50	9.50

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C8 PFOA	13PFOA	Ave	3652161 2874677	3658366 2723762	3220763	3318771	3250602	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C8 PFOS	PFOS	Ave	3154591 2738757	3061803 2776653	2999446	3084401	2958328	9.57 9.57	9.57 9.57	9.57	9.57	9.57
13C9 PFNA	PFOS	Ave	2723068 2302684	2665649 2280336	2455690	2528602	2421747	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-decenoic acid	PFDA	Ave	2955767 2378133	2879363 2387996	2599509	2609157	2437431	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorooctylethanoic acid	PFDA	Ave	97428 73930	92096 76667	86754	92153	80462	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C6 PFDA	PFDA	Ave	4030946 3249114	4103821 2914166	3735859	3732194	3453927	10.0 10.0	10.0 10.0	10.0	10.0	10.0
M2-8:2 FTS	PFDA	Ave	165032 129370	174741 126462	176282	166306	165462	9.58 9.58	9.58 9.58	9.58	9.58	9.58
13C8 FOSA	PFDA	Ave	5824285 4877914	5803351 4866351	5358161	5551923	5328061	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMeFOSAA	PFDA	Ave	1079579 896032	1038175 888127	966422	1042772	968369	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C7 PFUnA	PFDA	Ave	4772001 4084333	4665033 3506244	4318295	4470500	4066101	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtFOSAA	PFDA	Ave	862456 676893	870376 601588	811753	812246	729290	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2H-Perfluoro-2-dodecenoic acid	PFDA	Ave	3348063 2542794	3307775 2236243	3059314	2968174	2736267	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-2-Perfluorodecylethanoic acid	PFDA	Ave	82041 62644	85142 59279	71376	74148	71379	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2-PFDoDA	PFDA	Ave	4571791 3933304	4557404 3542591	4097791	4240899	4034786	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d7-N-MeFOSE-M	PFDA	Ave	458418 369226	447279 392023	412395	408614	383108	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d3-NMePFOSA	PFDA	Ave	475925	464133	449333	462129	432447	10.0	10.0	10.0	10.0	10.0

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

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
			413766	444330				10.0	10.0			
d9-N-EtFOSE-M	PFDA	Ave	508656 420269	481457 443505	446422	454183	425986	10.0 10.0	10.0 10.0	10.0	10.0	10.0
d5-NEtPFOSA	PFDA	Ave	432944 365655	423252 395620	404403	418250	417467	10.0 10.0	10.0 10.0	10.0	10.0	10.0
13C2 PFTeDA	PFDA	Ave	3442462 2897695	3551983 2678753	3216218	3220406	2960223	10.0 10.0	10.0 10.0	10.0	10.0	10.0

Curve Type Legend

Ave = Average ISTD
AveID = Average isotope dilution
LID1F = Linear 1/Conc IsoDil FZ
Q2ID = Quadratic 1/conc^2 IsoDil

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-166660/1	21AUG31MCAL-09.d
Level 2	IC 410-166660/2	21AUG31MCAL-10.d
Level 3	IC 410-166660/3	21AUG31MCAL-11.d
Level 4	IC 410-166660/4	21AUG31MCAL-12.d
Level 5	ICISAV 410-166660/5	21AUG31MCAL-13.d
Level 6	IC 410-166660/6	21AUG31MCAL-14.d
Level 7	IC 410-166660/7	21AUG31MCAL-19.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
MTP	-10.0 2.7	-15.7	-12.3	-5.7	8.0	-6.9	50 30	30	30	30	30	30
PPF Acid	-3.6 2.5	-13.9	-10.6	-6.1	8.8	-6.9	50 30	30	30	30	30	30
PFMOAA	-13.8 6.6	-19.5	-15.7	-14.1	3.4	-11.5	50 30	30	30	30	30	30
Perfluorobutanoic acid	-1.2 0.1	-6.9	1.3	3.2	4.7	-2.5	50 30	30	30	30	30	30
R-EVE	12.7 5.7	-15.2	-14.9	-12.4	-0.6	-8.5	50 30	30	30	30	30	30
R-PSDA	0.5 0.7	0.6	-9.4	5.0	6.9	-4.5	50 30	30	30	30	30	30
Hydrolyzed PSDA	-24.2 3.6	-25.6	-20.2	-12.2	-6.8	-1.4	50 30	30	30	30	30	30
PMPA	-16.0 3.5	-13.3	-9.2	-3.8	-0.9	-5.6	50 30	30	30	30	30	30
Perfluoropropanesulfonic acid	-9.6 0.8	-19.7	-3.9	-0.1	5.4	-3.4	50 30	30	30	30	30	30
NVHOS	-19.7 2.3	-16.3	-12.1	-6.9	1.7	-3.5	50 30	30	30	30	30	30
PFECA F	4.9 -0.3	-5.9	4.4	4.5	8.8	-3.7	50 30	30	30	30	30	30
PFO2HxA	26.6 2.1	2.2	-2.9	-0.8	9.1	-7.8	50 30	30	30	30	30	30
Perfluoropentanoic acid	2.6 0.1	-5.4	5.6	-5.0	4.7	-1.4	50 30	30	30	30	30	30
3:3 FTCA	-11.0 -0.6	-23.4	-4.9	-1.1	5.3	-0.2	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid	-9.8 2.6	-19.7	-9.4	1.2	-1.4	-4.3	50 30	30	30	30	30	30
PEPA	-9.3 -0.6	-10.5	-4.6	0.6	13.7	-4.0	50 30	30	30	30	30	30
PFECA A	-4.5 1.6	-11.4	-6.7	-2.2	3.4	-3.9	50 30	30	30	30	30	30
Perfluoro (2-ethoxyethane) sulfonic acid	-12.9 1.2	-14.7	-7.6	-6.2	3.2	-2.2	50 30	30	30	30	30	30
PFECA B	-5.1 0.8	-16.7	-6.8	-3.0	1.1	-1.2	50 30	30	30	30	30	30
4:2 Fluorotelomer sulfonic acid	-5.5 -0.6	-9.7	-6.1	3.1	4.6	-0.8	50 30	30	30	30	30	30
Perfluorohexanoic acid	3.7 1.8	-16.9	-9.5	-8.3	4.1	-3.4	50 30	30	30	30	30	30
Perfluoropentanesulfonic acid	-9.0 3.1	-15.8	-6.2	-3.7	-0.9	-4.7	50 30	30	30	30	30	30
PFO3OA	-6.1 3.3	-17.7	-1.8	-12.6	3.3	-5.7	50 30	30	30	30	30	30
HFPODA	-6.5 2.2	-3.4	-18.7	-15.8	-3.4	0.3	50 30	30	30	30	30	30
Hydro-EVE Acid	2.4 -1.2	-5.9	-6.5	1.6	9.4	-1.3	50 30	30	30	30	30	30
R-PSDCA	-10.3 0.7	-13.3	-13.0	-5.5	1.6	-0.5	50 30	30	30	30	30	30
Hydro-PS Acid	-19.5 1.5	-12.8	-11.3	-6.6	0.1	-1.2	50 30	30	30	30	30	30
Perfluoroheptanoic acid	-0.8 0.4	-21.1	-7.6	-0.5	5.9	-2.6	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid	-9.7 3.9	-18.2	-12.0	-12.8	-0.1	-5.0	50 30	30	30	30	30	30
DONA	-27.9 4.9	-24.5	-20.9	-10.9	-4.0	-5.3	50 30	30	30	30	30	30
PFECA G	-5.9 0.3	-7.5	-4.1	-0.2	12.4	-5.2	50 30	30	30	30	30	30
5:3 FTCA	6.6 3.9	-22.2	-18.8	-8.5	-5.0	-3.6	50 30	30	30	30	30	30
6:2 FTUCA	-2.7 -2.7	-9.3	-2.9	8.4	6.4	1.8	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
6:2 FTCA	4.8 -0.6	-13.8	-0.7	-5.8	2.8	1.1	50 30	30	30	30	30	30
PFO4DA	-1.2 0.1	-14.6	-3.2	-8.3	11.0	-3.0	50 30	30	30	30	30	30
PS Acid	-18.2 1.9	-15.4	-13.4	-4.9	-0.6	-2.0	50 30	30	30	30	30	30
EVE Acid	3.2 -2.1	-3.2	0.5	6.6	9.4	-0.6	50 30	30	30	30	30	30
Perfluoro-4-ethylcyclohexanesulfonic acid	-4.2 1.5	-15.3	-5.7	-7.8	-1.7	-0.7	50 30	30	30	30	30	30
6:2 Fluorotelomer sulfonic acid	-14.2 0.3	-6.1	1.0	3.6	4.5	-2.9	50 30	30	30	30	30	30
Perfluoroheptanesulfonic acid	-4.2 2.0	-11.0	-4.2	-7.0	0.7	-2.9	50 30	30	30	30	30	30
Perfluorooctanoic acid	3.1 4.2	-24.7	-6.9	-9.7	-4.2	-4.7	50 30	30	30	30	30	30
TAF	9.4 -19.6	4.3	-4.5	-15.2	18.0	7.6	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid	-10.7 3.0	-17.7	-12.6	-6.6	-1.0	-3.7	50 30	30	30	30	30	30
Perfluorononanoic acid	4.1 0.3	-15.0	-13.7	-2.7	7.3	-2.4	50 30	30	30	30	30	30
7:3 FTCA	-13.5 -1.2	-24.0	-15.6	-12.8	1.6	4.8	50 30	30	30	30	30	30
8:2 FTUCA	-14.8 -4.0	-10.4	-4.6	0.1	14.2	2.6	50 30	30	30	30	30	30
8:2 FTCA	2.1 -4.9	29.2	-7.1	-7.5	7.7	8.0	50 30	30	30	30	30	30
9Cl-PF3ONS	-16.1 -0.7	-16.8	-8.1	-2.7	2.9	1.3	50 30	30	30	30	30	30
Perfluorononanesulfonic acid	-15.6 -0.4	-5.0	-2.4	-2.8	0.2	1.4	50 30	30	30	30	30	30
Perfluorodecanoic acid	-12.4 1.4	-18.5	-11.3	-5.3	2.8	-2.5	50 30	30	30	30	30	30
8:2 Fluorotelomer sulfonic acid	-4.2 -2.8	-0.6	-2.7	1.5	-1.6	6.0	50 30	30	30	30	30	30
Perfluorooctanesulfonamide	-10.9 -1.1	-11.9	-2.2	-1.0	2.5	1.6	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
NMeFOSAA	-16.4 0.9	-14.4	-6.3	-6.2	4.1	-2.1	50 30	30	30	30	30	30
Perfluorodecanesulfonic acid	-5.8 1.3	-13.4	-4.3	0.3	-3.1	-1.0	50 30	30	30	30	30	30
Perfluoroundecanoic acid	-6.5 3.5	-10.2	-4.8	-1.0	4.6	-8.3	50 30	30	30	30	30	30
NEtFOSAA	-25.2 3.0	-29.6	-19.4	-11.5	3.0	-4.2	50 30	30	30	30	30	30
10:2 FTUCA	-3.6 0.1	-10.4	-7.4	-4.9	2.9	-0.1	50 30	30	30	30	30	30
11Cl-PF3OUdS	-11.2 -0.3	-10.8	-10.8	-3.8	5.4	-0.4	50 30	30	30	30	30	30
10:2 FTCA	0.7 -3.3	-11.3	-8.8	-4.6	1.4	7.2	50 30	30	30	30	30	30
Perfluorododecanoic acid	2.3 1.3	-9.8	-7.0	-1.1	5.8	-4.5	50 30	30	30	30	30	30
10:2 FTS	4.8 2.1	-17.1	-17.8	-2.3	-9.5	0.7	50 30	30	30	30	30	30
NMeFOSE	1.4 0.9	-13.0	-2.1	-4.2	2.3	-1.8	50 30	30	30	30	30	30
NMeFOSA	-12.3 2.0	-21.5	-11.8	-5.2	1.6	-3.0	50 30	30	30	30	30	30
Perfluorododecanesulfonic acid	-8.3 -0.4	-7.4	-5.2	-1.5	3.8	-0.2	50 30	30	30	30	30	30
NEtFOSE	6.2 -1.8	3.4	2.9	5.2	6.5	0.1	50 30	30	30	30	30	30
NEtFOSA	-11.4 -0.4	-9.4	-5.8	-3.2	-2.1	2.6	50 30	30	30	30	30	30
Perfluorotridecanoic acid	-6.9 1.4	-14.8	-9.6	-0.5	5.0	-4.1	50 30	30	30	30	30	30
Perfluorotetradecanoic acid	-6.6 2.1	-12.1	-9.2	-1.8	2.5	-4.4	50 30	30	30	30	30	30
Perfluorohexadecanoic acid	12.1 1.2	-10.6	-4.0	-1.3	4.1	-3.5	50 30	30	30	30	30	30
Perfluorooctadecanoic acid	-15.1 5.7	-23.7	-14.9	-10.5	-3.5	-7.5	50 30	30	30	30	30	30
13C4 PFBA	-7.6 3.5	0.8	0.2	-1.9	1.3	3.7	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C5 PFPeA	-7.2 -1.6	4.7	1.8	1.0	3.4	-2.0	50 30	30	30	30	30	30
13C3 PFBS	-5.4 -0.1	-1.3	3.0	-0.6	4.1	0.3	50 30	30	30	30	30	30
M2-4:2 FTS	0.5 -2.0	3.9	7.3	-4.1	0.6	-6.2	50 30	30	30	30	30	30
13C5 PFHxA	-0.2 -2.1	5.0	2.2	-1.6	-1.9	-1.4	50 30	30	30	30	30	30
13C3 HFPO-DA	-4.7 3.5	-11.3	1.6	6.6	4.5	-0.2	50 30	30	30	30	30	30
13C3 PFHxS	-5.2 -0.8	-1.1	-0.4	3.3	2.0	2.2	50 30	30	30	30	30	30
13C4 PFHpA	0.2 -8.9	8.7	5.3	-4.4	2.8	-3.7	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-octenoic acid	1.5 1.2	3.9	1.3	-8.7	1.7	-0.9	50 30	30	30	30	30	30
13C2-2-Perfluorohexylethanoic acid	4.8 -3.1	3.8	0.1	-0.9	-1.4	-3.3	50 30	30	30	30	30	30
M2-6:2 FTS	6.5 -15.0	7.3	5.0	-2.0	0.6	-2.4	50 30	30	30	30	30	30
13C8 PFOA	3.7 -9.3	6.7	-0.3	-2.6	2.6	-0.8	50 30	30	30	30	30	30
13C8 PFOS	-2.0 -0.1	0.1	4.1	-1.3	2.6	-3.3	50 30	30	30	30	30	30
13C9 PFNA	1.2 -1.9	4.2	2.0	-3.2	0.5	-2.8	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-decenoic acid	-8.4 11.1	0.6	-1.2	-3.4	-4.9	6.2	50 30	30	30	30	30	30
13C2-2-Perfluorooctylethanoic acid	-7.9 8.8	-1.9	0.6	4.1	-4.3	0.6	50 30	30	30	30	30	30
13C6 PFDA	-9.2 -1.5	4.1	3.1	0.4	-2.1	5.3	50 30	30	30	30	30	30
M2-8:2 FTS	-15.1 -2.4	1.3	11.2	2.2	7.1	-4.2	50 30	30	30	30	30	30
13C8 FOSA	-12.5 9.7	-1.8	-1.3	-0.4	0.7	5.5	50 30	30	30	30	30	30
d3-NMeFOSAA	-11.3 9.5	-3.9	-2.6	2.3	0.1	6.0	50 30	30	30	30	30	30

FORM VI
PFAS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Lancaster Laboratories Env, I Job No.: 410-51558-1 Analy Batch No.: 166660

SDG No.:

Instrument ID: 30727 GC Column: Gemini C18 5 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/31/2021 19:29 Calibration End Date: 08/31/2021 21:25 Calibration ID: 30126

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C7 PFUnA	-9.5 -0.3	-0.3	0.4	1.2	-3.0	11.5	50 30	30	30	30	30	30
d5-NEtFOSAA	-8.6 -4.3	4.0	5.5	2.8	-2.7	3.3	50 30	30	30	30	30	30
13C2-2H-Perfluoro-2-dodecenoic acid	-5.6 -5.4	5.1	5.8	-0.1	-2.9	3.2	50 30	30	30	30	30	30
13C2-2-Perfluorodecylethanoic acid	-7.8 -0.1	7.8	-1.7	-0.5	0.9	1.3	50 30	30	30	30	30	30
13C2-PFDoDA	-10.7 3.8	0.3	-1.9	-1.1	-0.9	10.6	50 30	30	30	30	30	30
d7-N-MeFOSE-M	-9.8 15.7	-0.9	-0.5	-4.0	-5.2	4.6	50 30	30	30	30	30	30
d3-NMePFOSA	-14.8 19.4	-6.3	-1.3	-1.2	-2.5	6.7	50 30	30	30	30	30	30
d9-N-EtFOSE-M	-9.8 18.0	-3.8	-2.9	-3.8	-4.9	7.3	50 30	30	30	30	30	30
d5-NEtPFOSA	-14.7 17.0	-6.0	-2.2	-1.5	3.6	3.8	50 30	30	30	30	30	30
13C2 PFTeDA	-11.3 3.6	3.2	1.7	-0.8	-4.0	7.6	50 30	30	30	30	30	30

Calibration / MTP

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

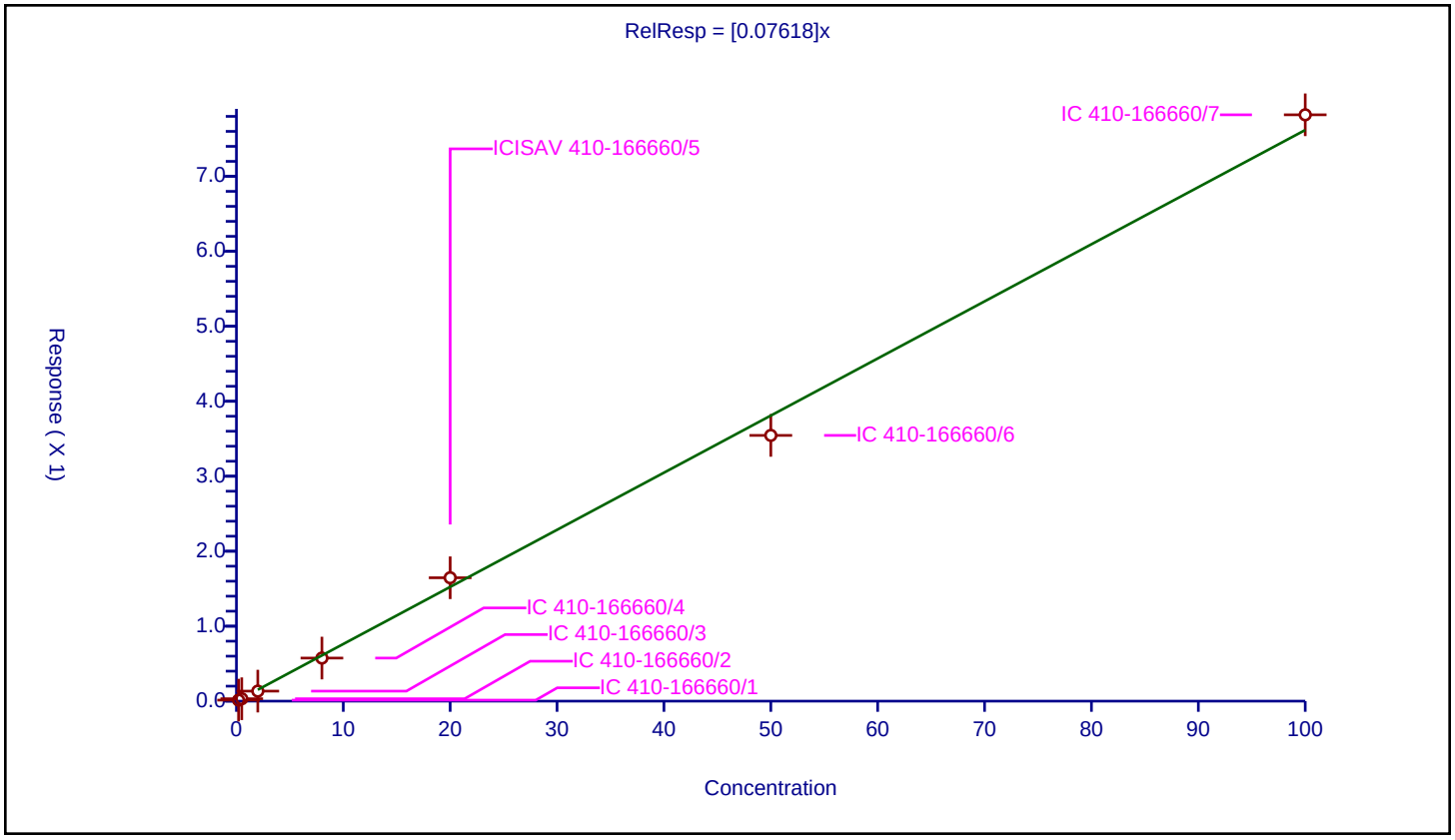
Curve Coefficients

Intercept:	0
Slope:	0.07618

Error Coefficients

Standard Error:	848000
Relative Standard Error:	10.4
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.013708	10.0	2527007.0	0.06854	Y
2	IC 410-166660/2	0.5	0.03212	10.0	2554832.0	0.064239	Y
3	IC 410-166660/3	2.0	0.133617	10.0	2347448.0	0.066809	Y
4	IC 410-166660/4	8.0	0.574531	10.0	2424863.0	0.071816	Y
5	ICISAV 410-166660/5	20.0	1.645754	10.0	2358014.0	0.082288	Y
6	IC 410-166660/6	50.0	3.544895	10.0	2296319.0	0.070898	Y
7	IC 410-166660/7	100.0	7.821001	10.0	2386490.0	0.07821	Y



Calibration / PPF Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

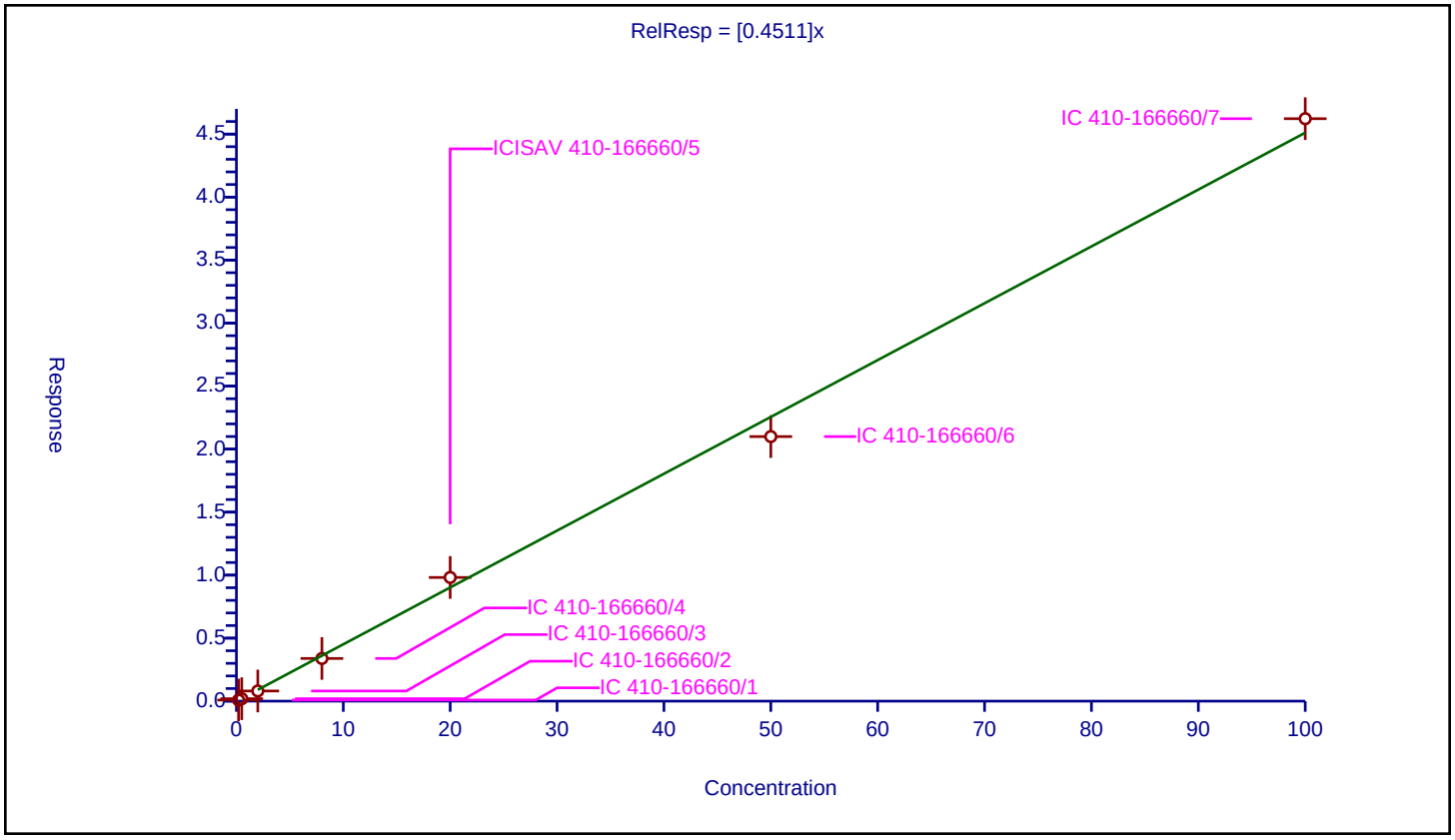
Curve Coefficients

Intercept:	0
Slope:	0.4511

Error Coefficients

Standard Error:	5020000
Relative Standard Error:	9.0
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.086937	10.0	2527007.0	0.434684	Y
2	IC 410-166660/2	0.5	0.194208	10.0	2554832.0	0.388417	Y
3	IC 410-166660/3	2.0	0.806557	10.0	2347448.0	0.403278	Y
4	IC 410-166660/4	8.0	3.386649	10.0	2424863.0	0.423331	Y
5	ICISAV 410-166660/5	20.0	9.814798	10.0	2358014.0	0.49074	Y
6	IC 410-166660/6	50.0	20.994897	10.0	2296319.0	0.419898	Y
7	IC 410-166660/7	100.0	46.222997	10.0	2386490.0	0.46223	Y



Calibration / PFMOAA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

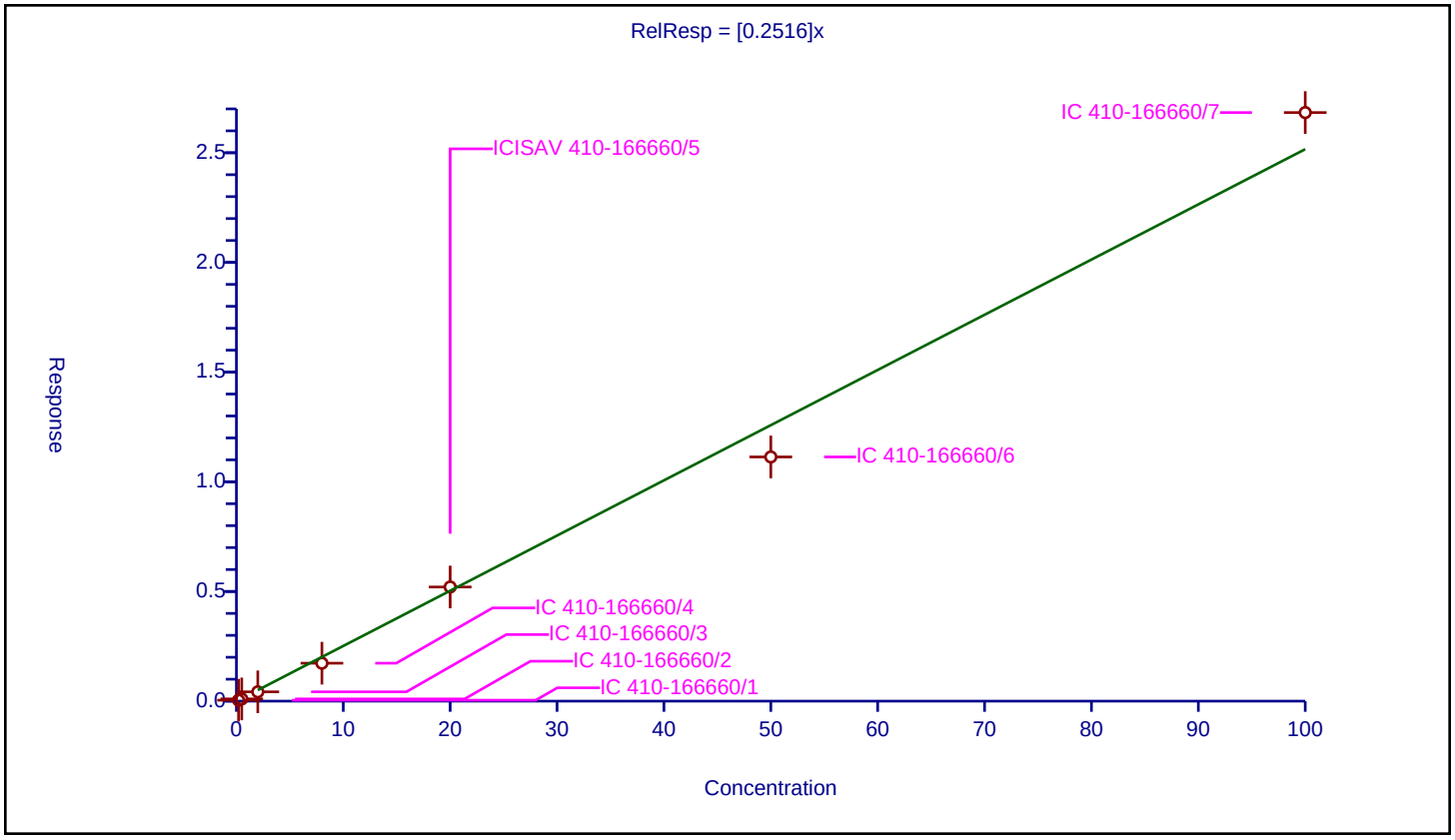
Curve Coefficients

Intercept:	0
Slope:	0.2516

Error Coefficients

Standard Error:	2860000
Relative Standard Error:	14.2
Correlation Coefficient:	0.990
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.04336	10.0	2527007.0	0.216798	Y
2	IC 410-166660/2	0.5	0.10122	10.0	2554832.0	0.20244	Y
3	IC 410-166660/3	2.0	0.424218	10.0	2347448.0	0.212109	Y
4	IC 410-166660/4	8.0	1.729248	10.0	2424863.0	0.216156	Y
5	ICISAV 410-166660/5	20.0	5.203722	10.0	2358014.0	0.260186	Y
6	IC 410-166660/6	50.0	11.133005	10.0	2296319.0	0.22266	Y
7	IC 410-166660/7	100.0	26.8327	10.0	2386490.0	0.268327	Y



Calibration / Perfluorobutanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

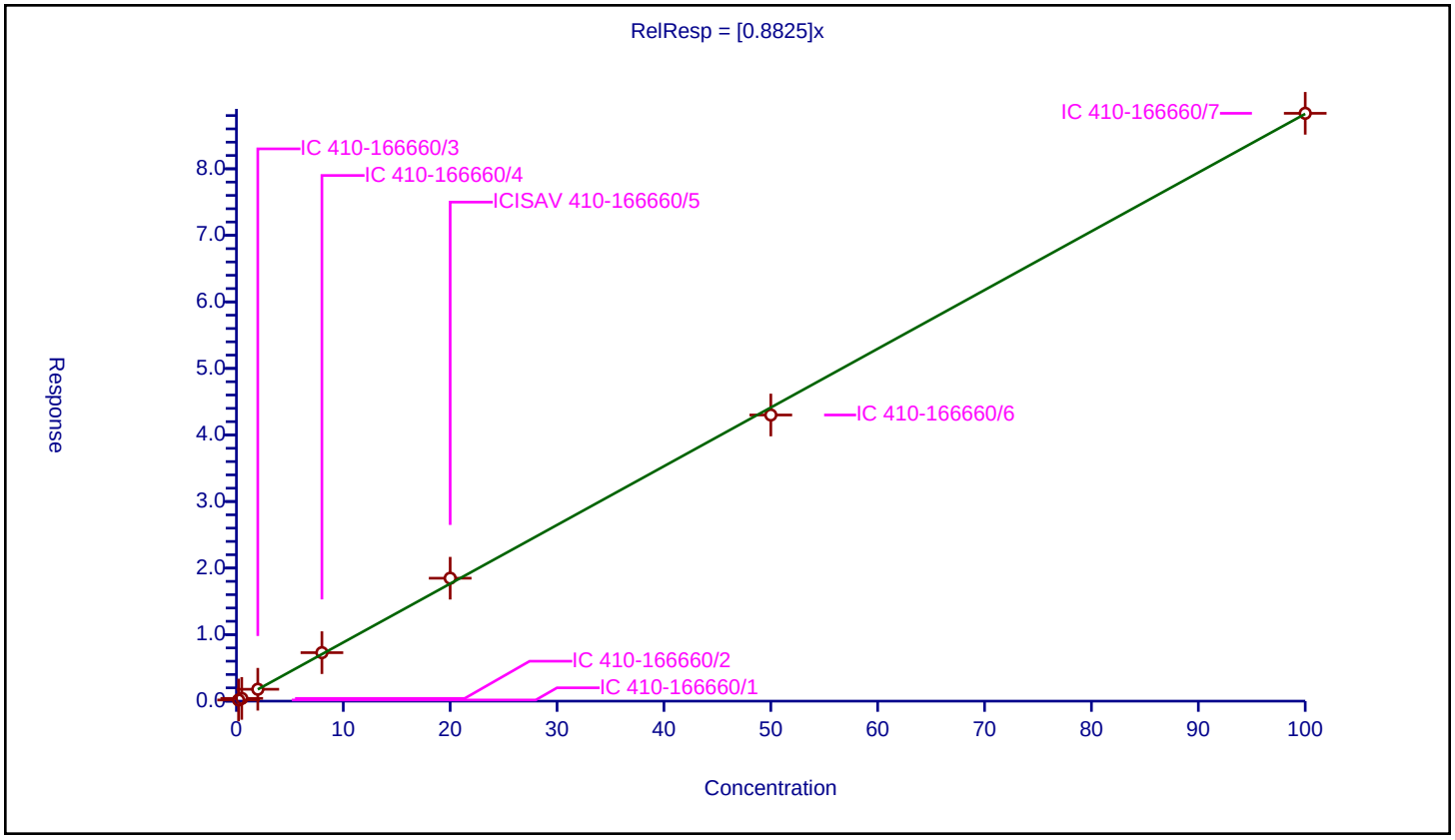
Curve Coefficients

Intercept:	0
Slope:	0.8825

Error Coefficients

Standard Error:	9700000
Relative Standard Error:	3.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.174317	10.0	2527007.0	0.871584	Y
2	IC 410-166660/2	0.5	0.410602	10.0	2554832.0	0.821205	Y
3	IC 410-166660/3	2.0	1.788708	10.0	2347448.0	0.894354	Y
4	IC 410-166660/4	8.0	7.286601	10.0	2424863.0	0.910825	Y
5	ICISAV 410-166660/5	20.0	18.474182	10.0	2358014.0	0.923709	Y
6	IC 410-166660/6	50.0	43.001595	10.0	2296319.0	0.860032	Y
7	IC 410-166660/7	100.0	88.336322	10.0	2386490.0	0.883363	Y



Calibration / R-EVE

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

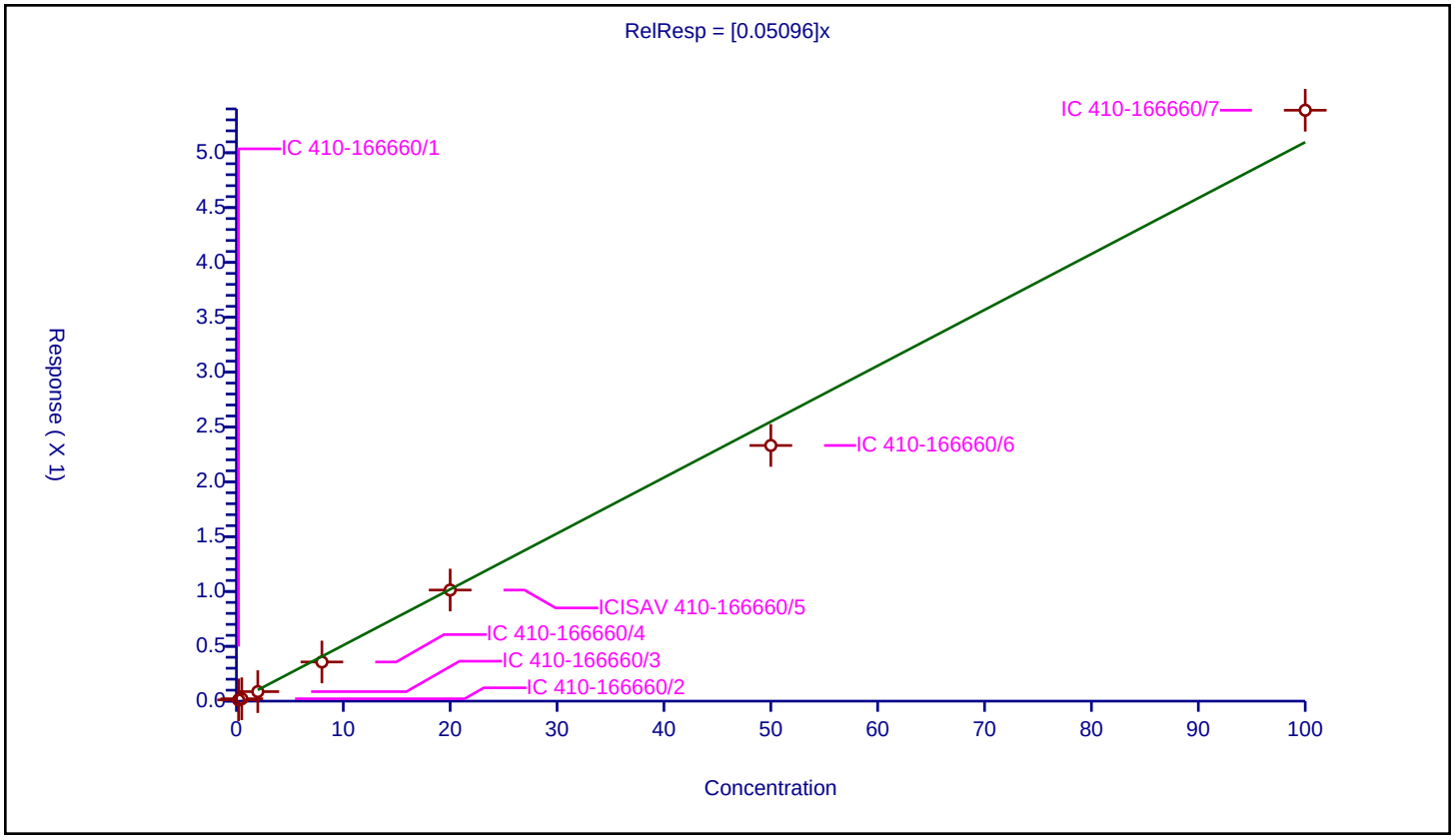
Curve Coefficients

Intercept:	0
Slope:	0.05096

Error Coefficients

Standard Error:	578000
Relative Standard Error:	12.0
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.011488	10.0	2527007.0	0.057439	Y
2	IC 410-166660/2	0.5	0.021618	10.0	2554832.0	0.043236	Y
3	IC 410-166660/3	2.0	0.086788	10.0	2347448.0	0.043394	Y
4	IC 410-166660/4	8.0	0.357212	10.0	2424863.0	0.044651	Y
5	ICISAV 410-166660/5	20.0	1.012916	10.0	2358014.0	0.050646	Y
6	IC 410-166660/6	50.0	2.331174	10.0	2296319.0	0.046623	Y
7	IC 410-166660/7	100.0	5.387942	10.0	2386490.0	0.053879	Y



Calibration / R-PSDA

Curve Type:	Quadratic
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

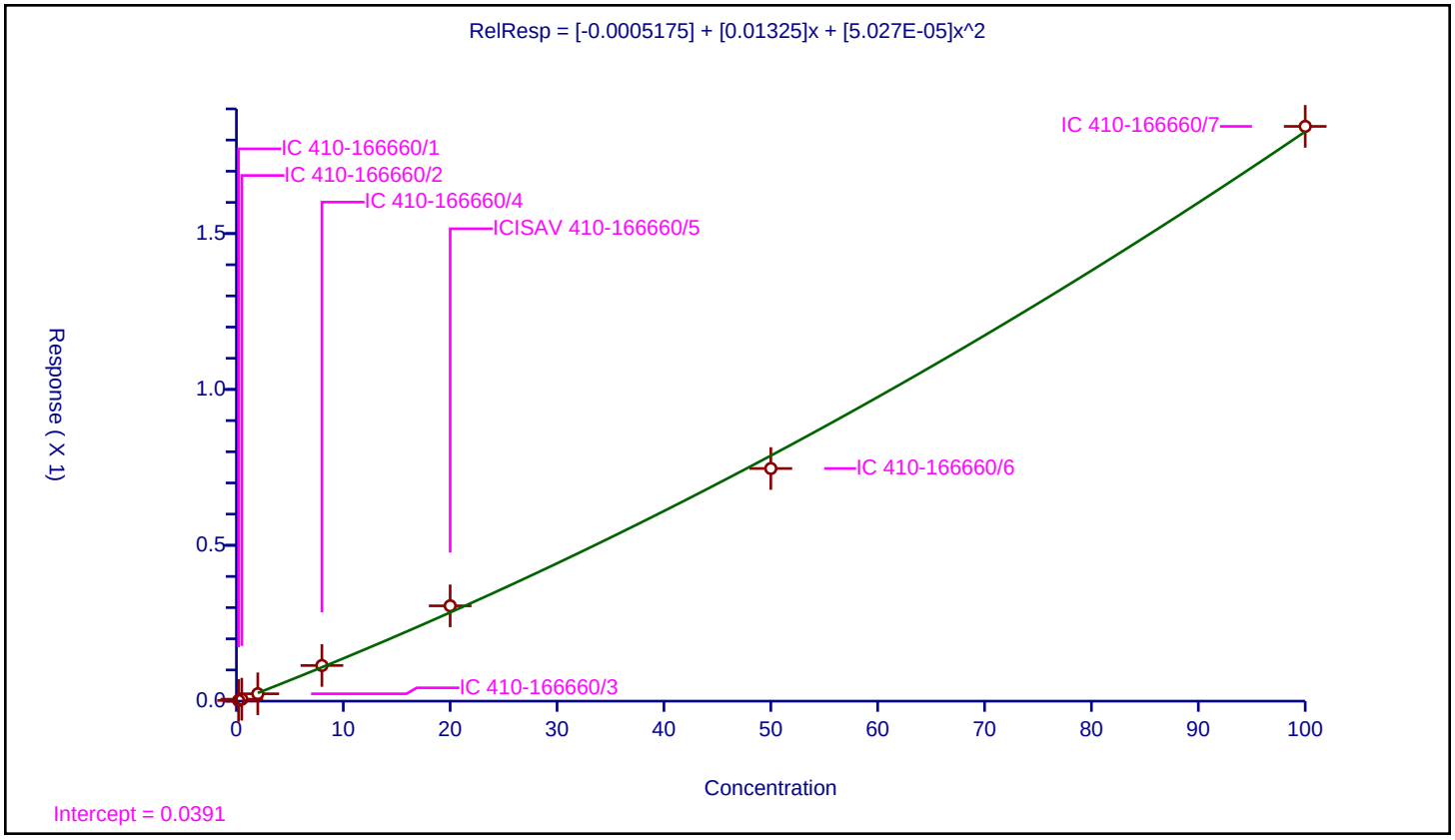
Curve Coefficients

Intercept:	-0.0005175
Slope:	0.01325
Second Order:	5.027E-05

Error Coefficients

Standard Error:	294000
Relative Standard Error:	6.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.002148	9.36	3076699.0	0.010739	Y
2	IC 410-166660/2	0.5	0.006159	9.36	2973944.0	0.012319	Y
3	IC 410-166660/3	2.0	0.023659	9.36	2869818.0	0.01183	Y
4	IC 410-166660/4	8.0	0.114335	9.36	2923549.0	0.014292	Y
5	ICISAV 410-166660/5	20.0	0.305785	9.36	2881451.0	0.015289	Y
6	IC 410-166660/6	50.0	0.746324	9.36	2640569.0	0.014926	Y
7	IC 410-166660/7	100.0	1.843849	9.36	2739563.0	0.018438	Y



Calibration / Hydrolyzed PSDA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

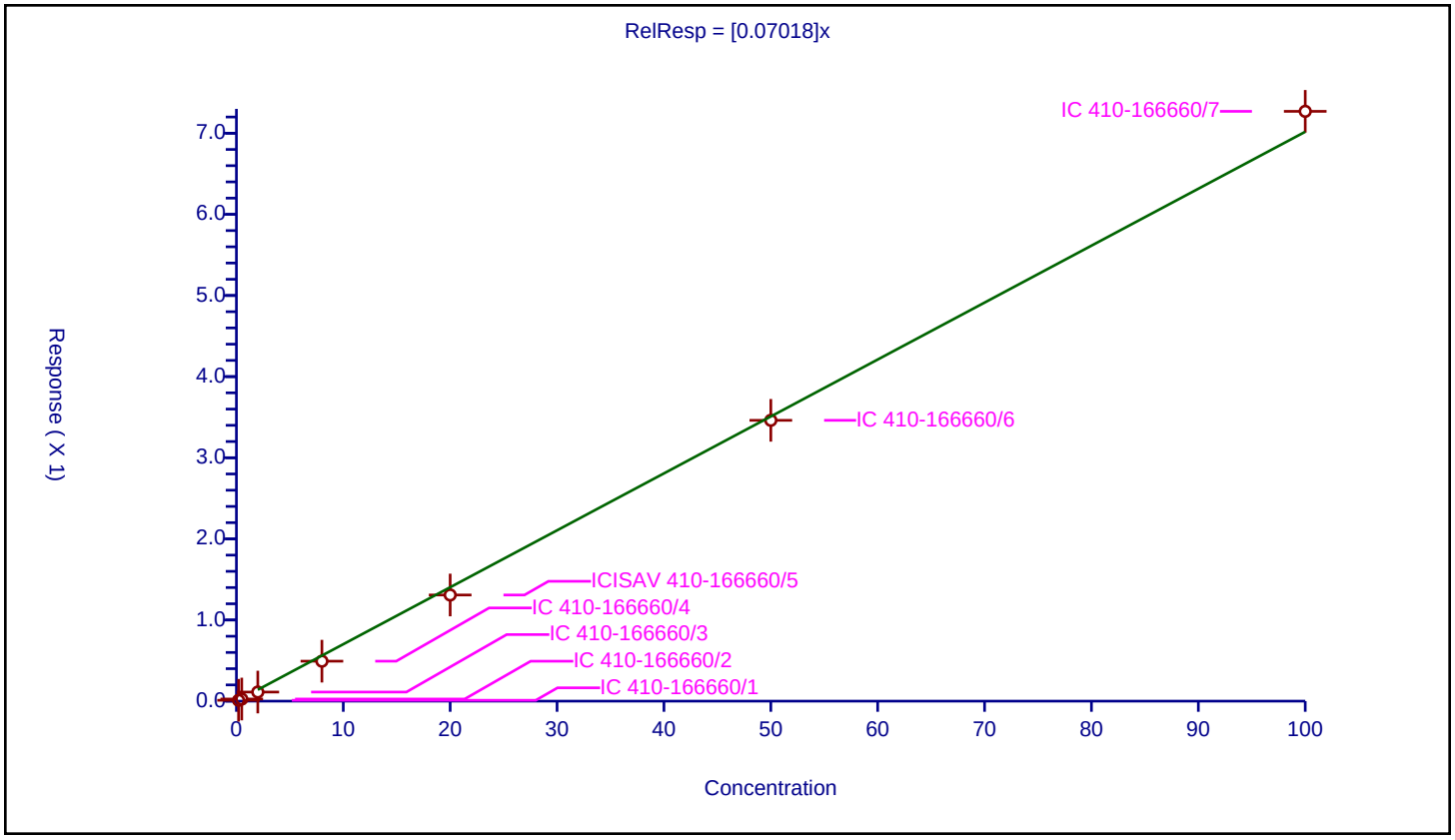
Curve Coefficients

Intercept:	0
Slope:	0.07018

Error Coefficients

Standard Error:	972000
Relative Standard Error:	17.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.010636	9.36	3076699.0	0.053178	Y
2	IC 410-166660/2	0.5	0.026104	9.36	2973944.0	0.052208	Y
3	IC 410-166660/3	2.0	0.111949	9.36	2869818.0	0.055974	Y
4	IC 410-166660/4	8.0	0.492699	9.36	2923549.0	0.061587	Y
5	ICISAV 410-166660/5	20.0	1.308451	9.36	2881451.0	0.065423	Y
6	IC 410-166660/6	50.0	3.461387	9.36	2640569.0	0.069228	Y
7	IC 410-166660/7	100.0	7.269678	9.36	2739563.0	0.072697	Y



Calibration / PMPA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

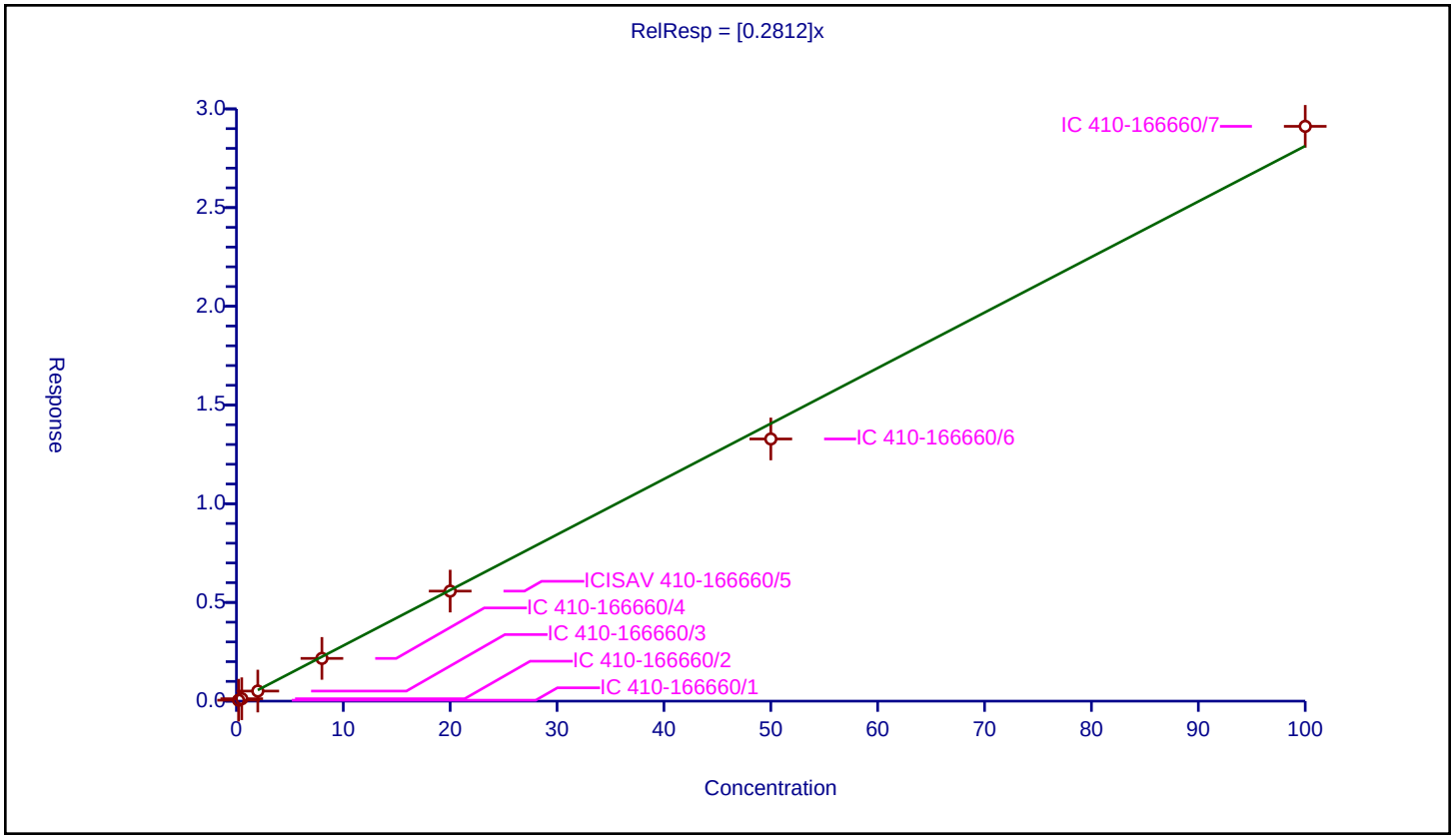
Curve Coefficients

Intercept:	0
Slope:	0.2812

Error Coefficients

Standard Error:	3150000
Relative Standard Error:	9.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.047222	10.0	2527007.0	0.236109	Y
2	IC 410-166660/2	0.5	0.121836	10.0	2554832.0	0.243672	Y
3	IC 410-166660/3	2.0	0.510946	10.0	2347448.0	0.255473	Y
4	IC 410-166660/4	8.0	2.164774	10.0	2424863.0	0.270597	Y
5	ICISAV 410-166660/5	20.0	5.573402	10.0	2358014.0	0.27867	Y
6	IC 410-166660/6	50.0	13.279875	10.0	2296319.0	0.265598	Y
7	IC 410-166660/7	100.0	29.116573	10.0	2386490.0	0.291166	Y



Calibration / PFPrS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

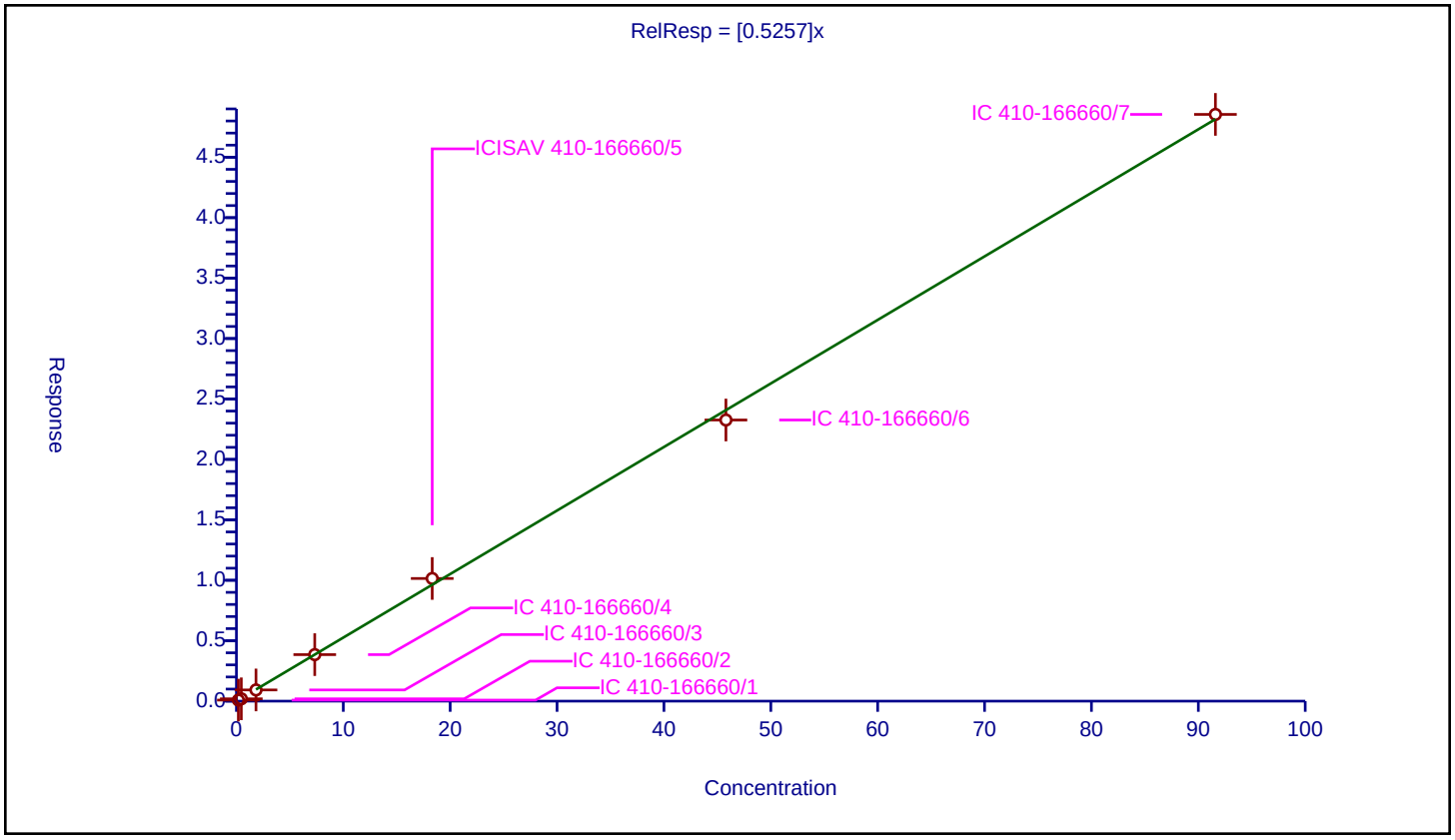
Curve Coefficients

Intercept:	0
Slope:	0.5257

Error Coefficients

Standard Error:	5310000
Relative Standard Error:	9.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1832	0.087012	10.0	2527007.0	0.474956	Y
2	IC 410-166660/2	0.458	0.193238	10.0	2554832.0	0.421916	Y
3	IC 410-166660/3	1.832	0.925793	10.0	2347448.0	0.505345	Y
4	IC 410-166660/4	7.328	3.848106	10.0	2424863.0	0.525124	Y
5	ICISAV 410-166660/5	18.32	10.148646	10.0	2358014.0	0.553965	Y
6	IC 410-166660/6	45.8	23.260592	10.0	2296319.0	0.507873	Y
7	IC 410-166660/7	91.6	48.543702	10.0	2386490.0	0.529953	Y



Calibration / NVHOS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

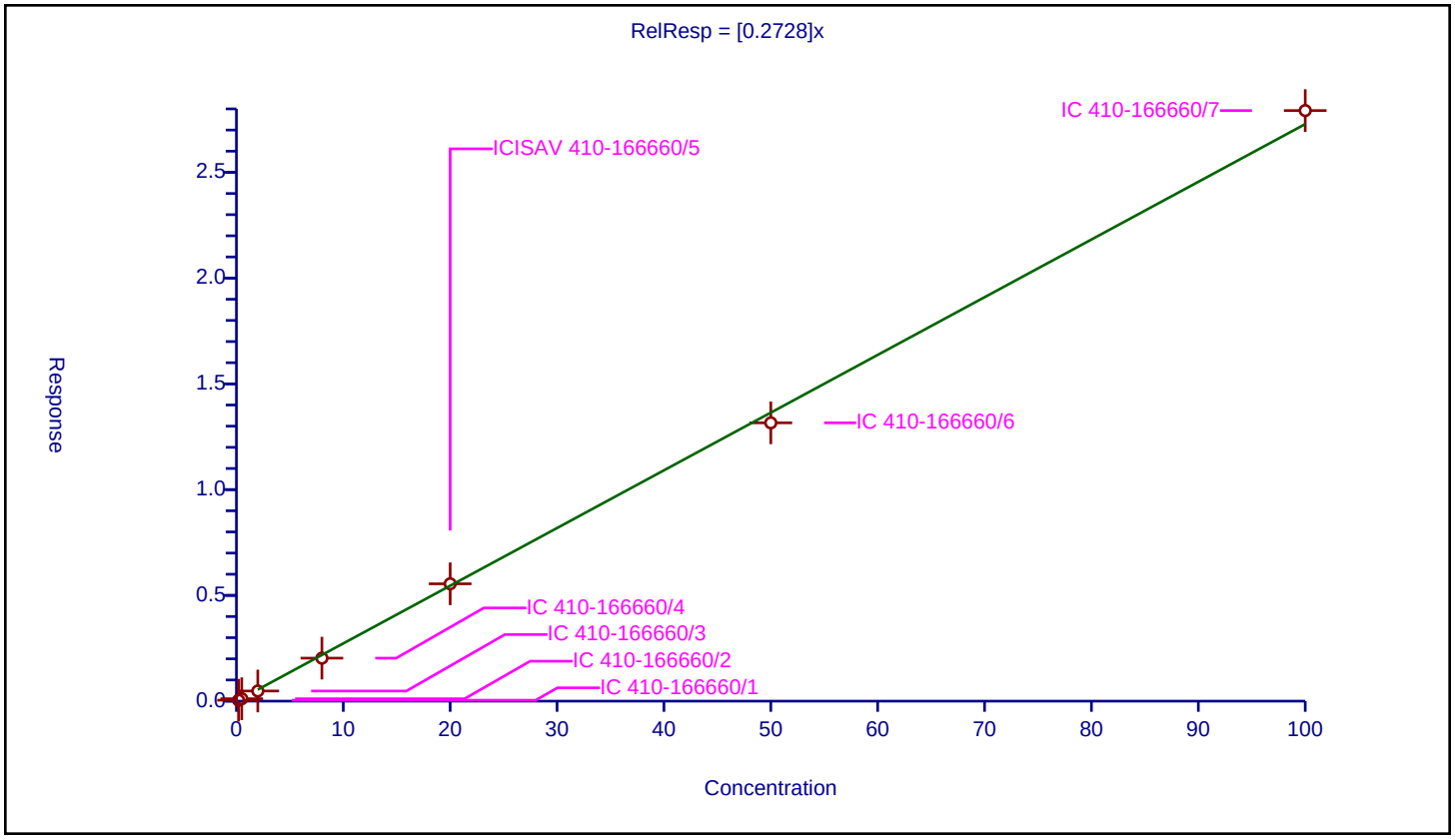
Curve Coefficients

Intercept:	0
Slope:	0.2728

Error Coefficients

Standard Error:	3740000
Relative Standard Error:	12.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.043817	9.36	3076699.0	0.219086	Y
2	IC 410-166660/2	0.5	0.11416	9.36	2973944.0	0.22832	Y
3	IC 410-166660/3	2.0	0.479468	9.36	2869818.0	0.239734	Y
4	IC 410-166660/4	8.0	2.03274	9.36	2923549.0	0.254092	Y
5	ICISAV 410-166660/5	20.0	5.547623	9.36	2881451.0	0.277381	Y
6	IC 410-166660/6	50.0	13.157399	9.36	2640569.0	0.263148	Y
7	IC 410-166660/7	100.0	27.920841	9.36	2739563.0	0.279208	Y



Calibration / PFECA F

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

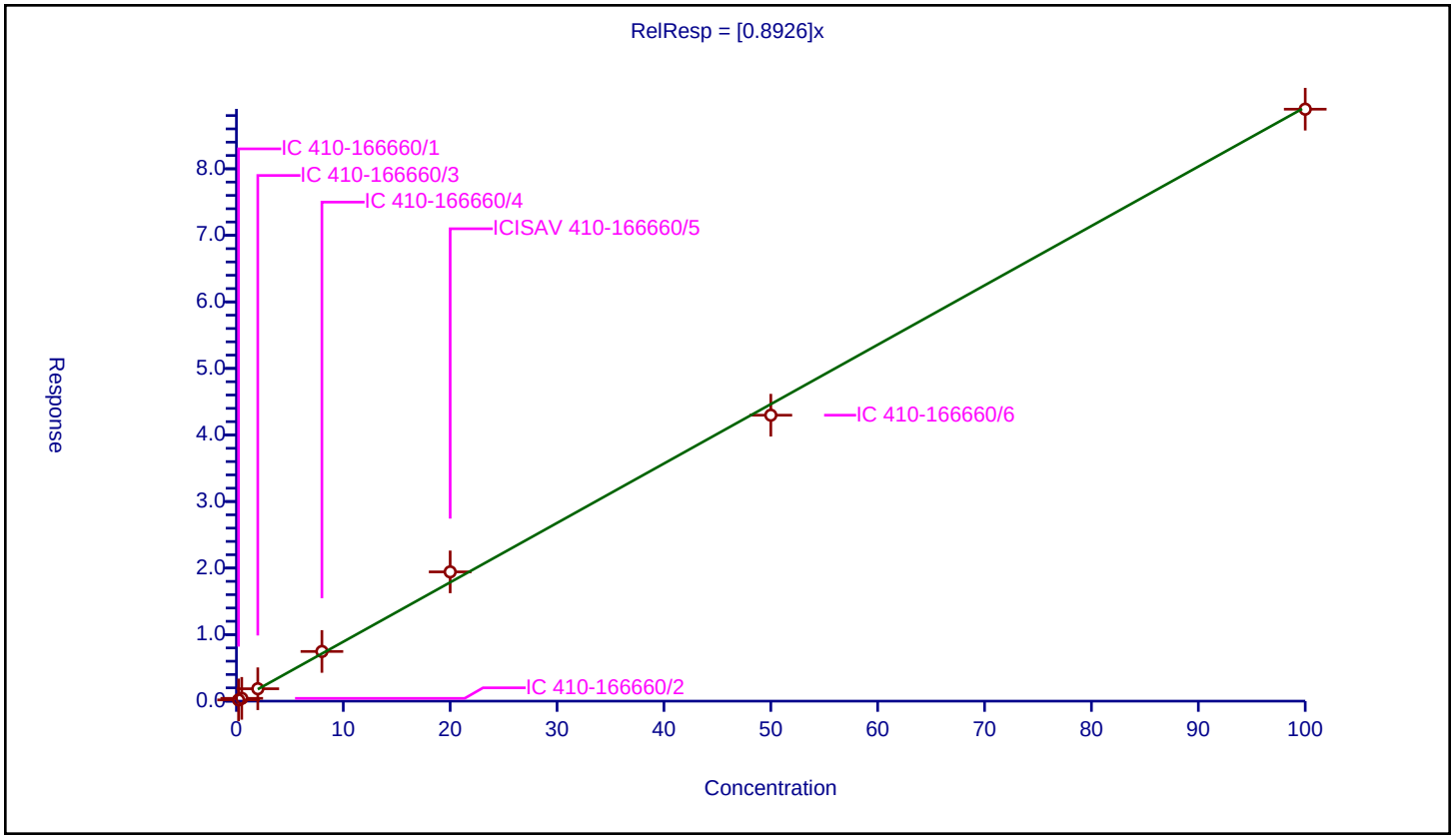
Curve Coefficients

Intercept:	0
Slope:	0.8926

Error Coefficients

Standard Error:	9770000
Relative Standard Error:	5.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.187218	10.0	2527007.0	0.936088	Y
2	IC 410-166660/2	0.5	0.419934	10.0	2554832.0	0.839867	Y
3	IC 410-166660/3	2.0	1.863087	10.0	2347448.0	0.931544	Y
4	IC 410-166660/4	8.0	7.464616	10.0	2424863.0	0.933077	Y
5	ICISAV 410-166660/5	20.0	19.424847	10.0	2358014.0	0.971242	Y
6	IC 410-166660/6	50.0	42.970641	10.0	2296319.0	0.859413	Y
7	IC 410-166660/7	100.0	88.956933	10.0	2386490.0	0.889569	Y



Calibration / PFO2HxA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

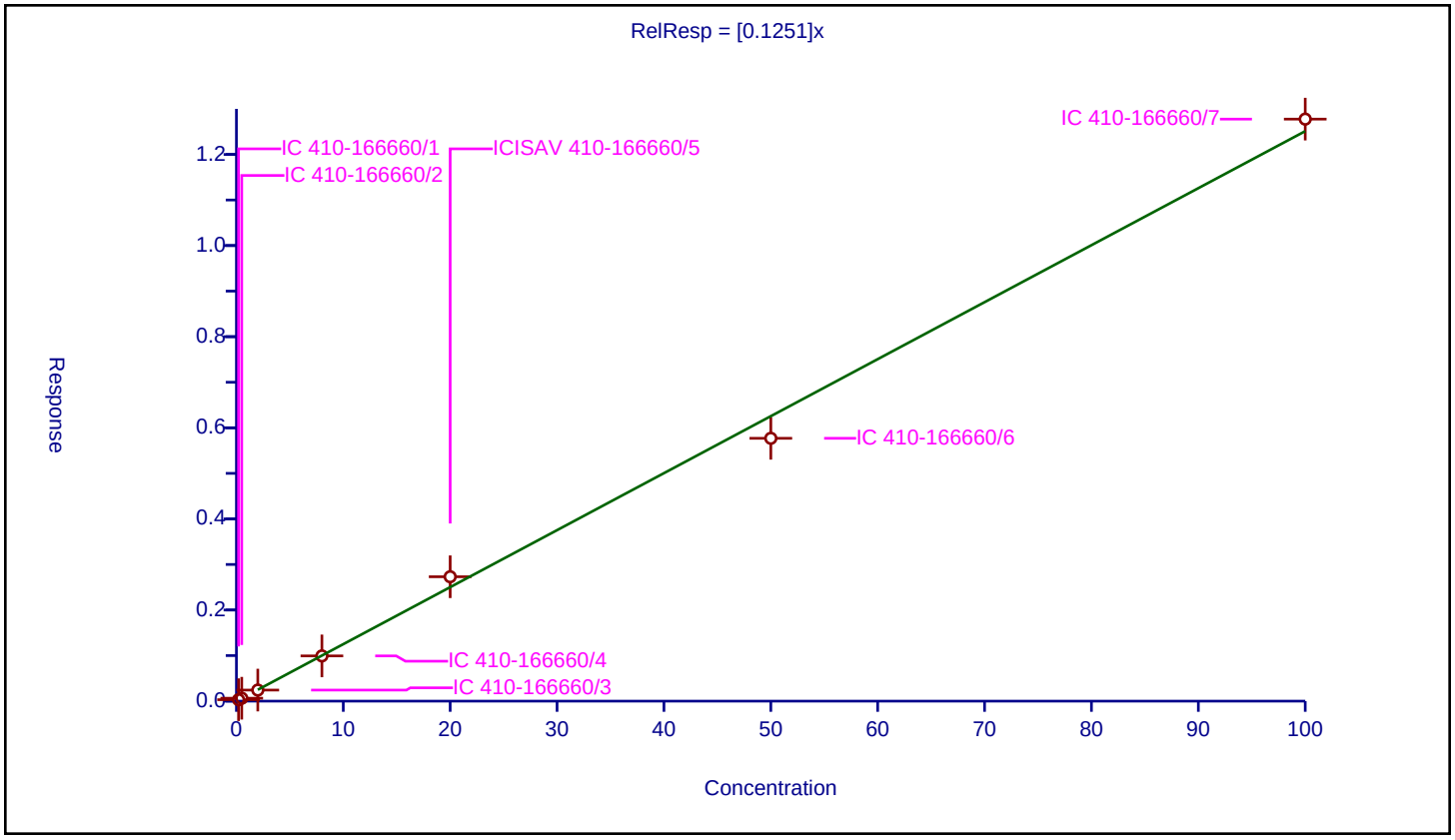
Curve Coefficients

Intercept:	0
Slope:	0.1251

Error Coefficients

Standard Error:	1390000
Relative Standard Error:	12.0
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.031682	10.0	2527007.0	0.158409	Y
2	IC 410-166660/2	0.5	0.063922	10.0	2554832.0	0.127844	Y
3	IC 410-166660/3	2.0	0.243047	10.0	2347448.0	0.121523	Y
4	IC 410-166660/4	8.0	0.992906	10.0	2424863.0	0.124113	Y
5	ICISAV 410-166660/5	20.0	2.730238	10.0	2358014.0	0.136512	Y
6	IC 410-166660/6	50.0	5.769569	10.0	2296319.0	0.115391	Y
7	IC 410-166660/7	100.0	12.77544	10.0	2386490.0	0.127754	Y



Calibration / 3:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

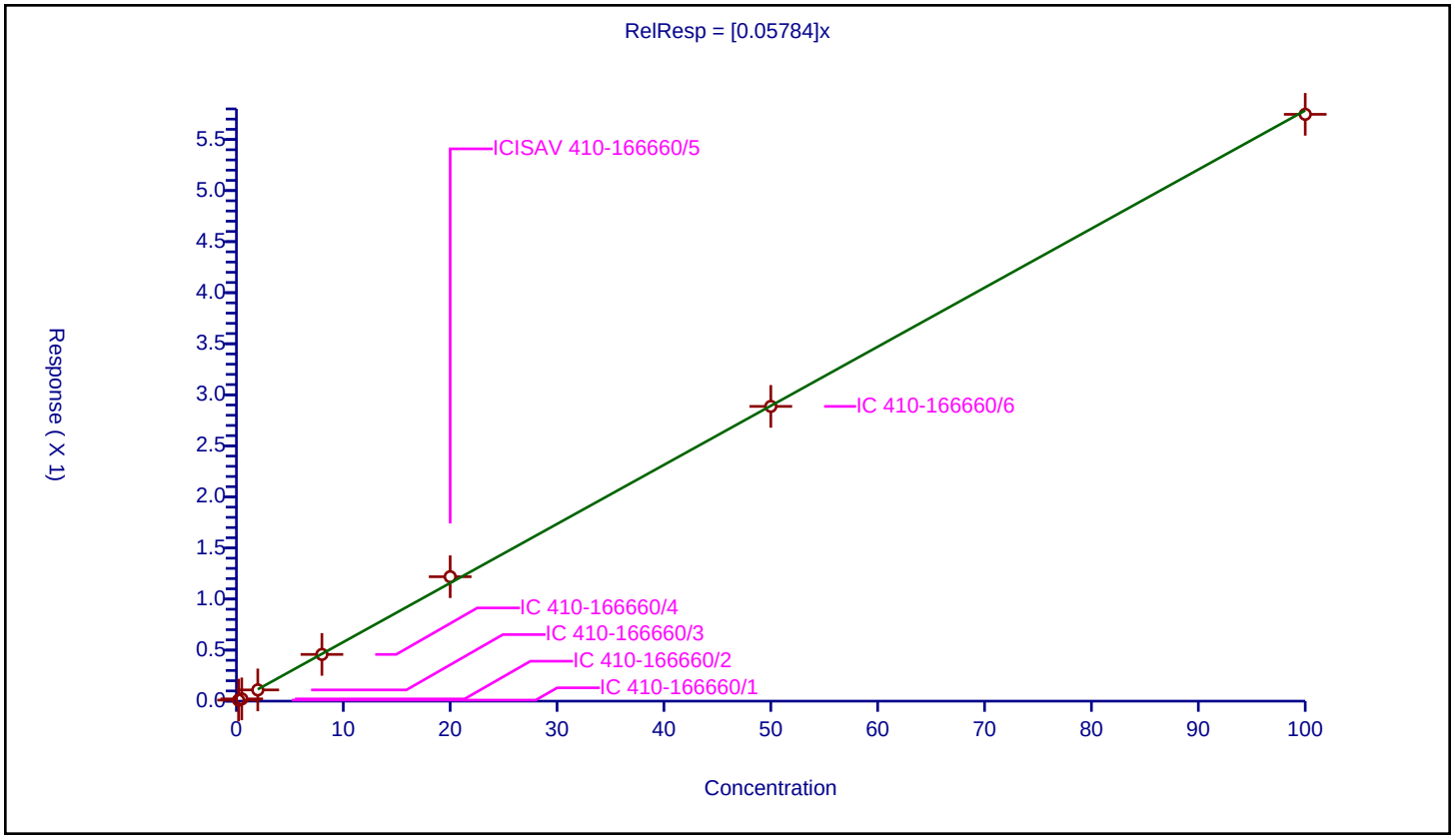
Curve Coefficients

Intercept:	0
Slope:	0.05784

Error Coefficients

Standard Error:	667000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.010293	10.0	2801920.0	0.051465	Y
2	IC 410-166660/2	0.5	0.022158	10.0	2928104.0	0.044315	Y
3	IC 410-166660/3	2.0	0.110013	10.0	2634138.0	0.055007	Y
4	IC 410-166660/4	8.0	0.457703	10.0	2757248.0	0.057213	Y
5	ICISAV 410-166660/5	20.0	1.21855	10.0	2655697.0	0.060928	Y
6	IC 410-166660/6	50.0	2.886571	10.0	2394273.0	0.057731	Y
7	IC 410-166660/7	100.0	5.746915	10.0	2503037.0	0.057469	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

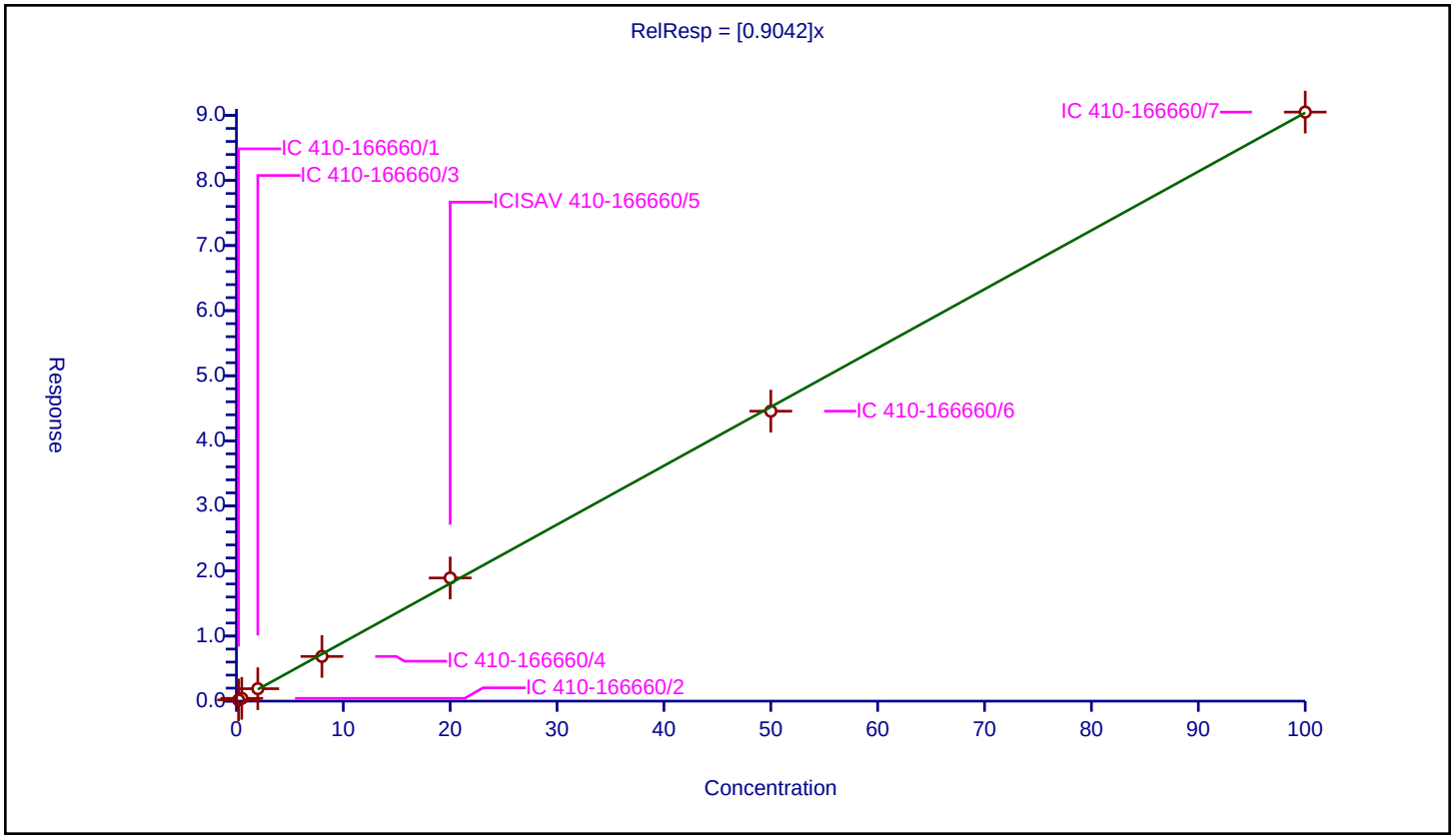
Curve Coefficients

Intercept:	0
Slope:	0.9042

Error Coefficients

Standard Error:	10500000
Relative Standard Error:	4.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.185469	10.0	2801920.0	0.927346	Y
2	IC 410-166660/2	0.5	0.427744	10.0	2928104.0	0.855489	Y
3	IC 410-166660/3	2.0	1.909209	10.0	2634138.0	0.954605	Y
4	IC 410-166660/4	8.0	6.869458	10.0	2757248.0	0.858682	Y
5	ICISAV 410-166660/5	20.0	18.927069	10.0	2655697.0	0.946353	Y
6	IC 410-166660/6	50.0	44.553754	10.0	2394273.0	0.891075	Y
7	IC 410-166660/7	100.0	90.509541	10.0	2503037.0	0.905095	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

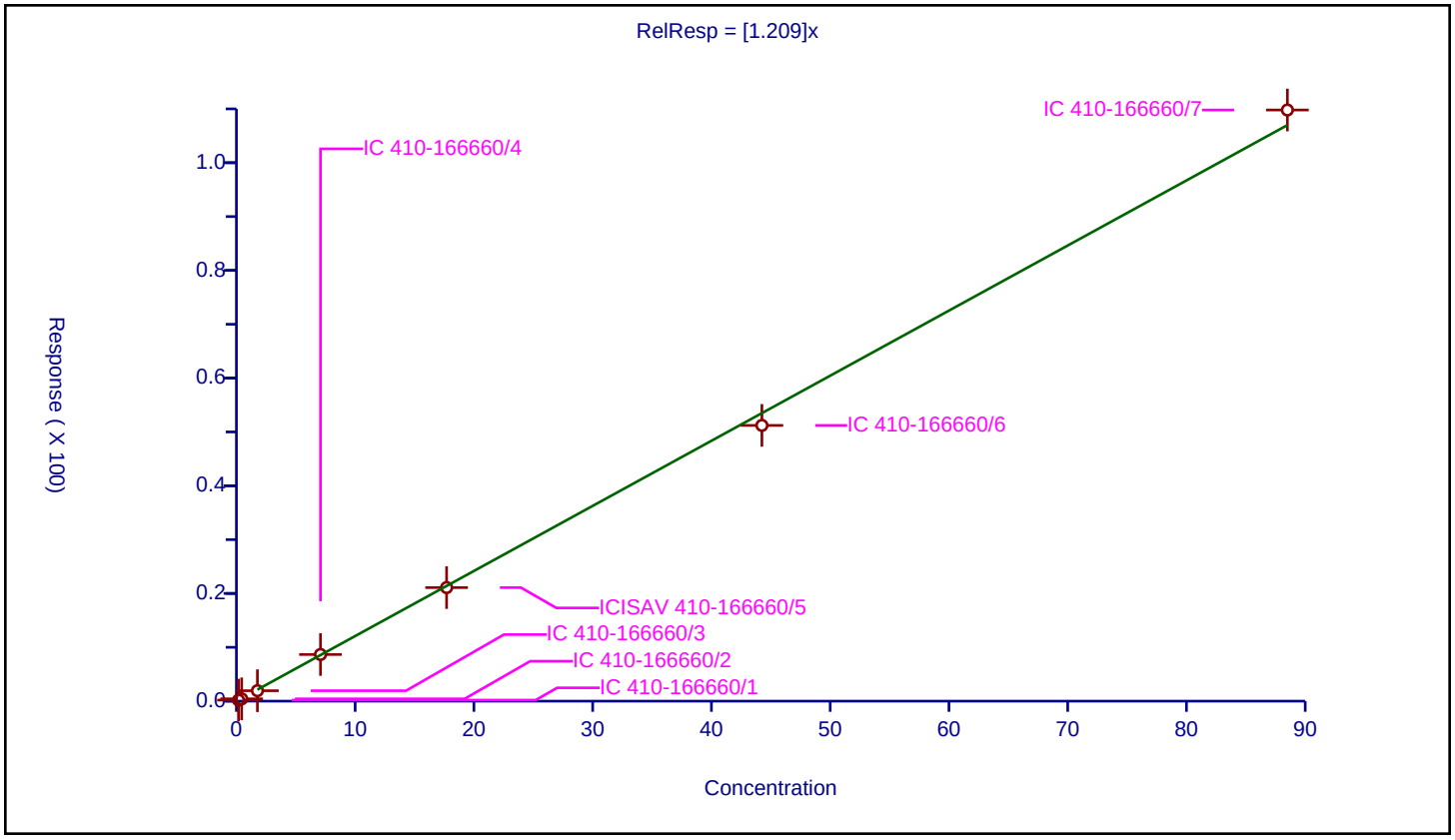
Curve Coefficients

Intercept:	0
Slope:	1.209

Error Coefficients

Standard Error:	14700000
Relative Standard Error:	10.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.177	0.193102	9.36	3076699.0	1.090972	Y
2	IC 410-166660/2	0.4425	0.429426	9.36	2973944.0	0.970453	Y
3	IC 410-166660/3	1.77	1.937884	9.36	2869818.0	1.09485	Y
4	IC 410-166660/4	7.08	8.662576	9.36	2923549.0	1.223528	Y
5	ICISAV 410-166660/5	17.7	21.088716	9.36	2881451.0	1.191453	Y
6	IC 410-166660/6	44.25	51.213824	9.36	2640569.0	1.157375	Y
7	IC 410-166660/7	88.5	109.791925	9.36	2739563.0	1.240587	Y



Calibration / PEPA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

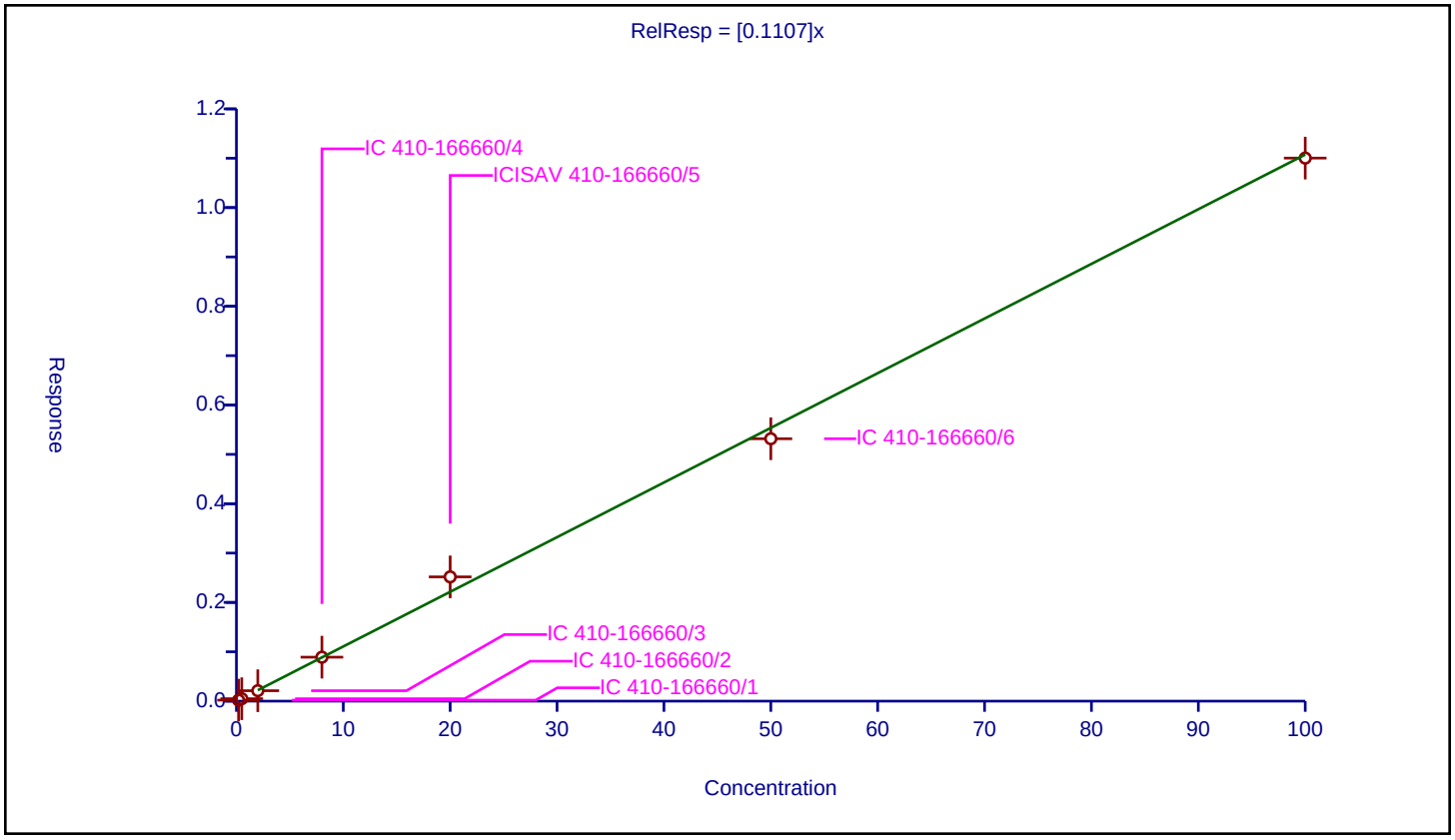
Curve Coefficients

Intercept:	0
Slope:	0.1107

Error Coefficients

Standard Error:	1210000
Relative Standard Error:	8.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.020095	10.0	2527007.0	0.100475	Y
2	IC 410-166660/2	0.5	0.049581	10.0	2554832.0	0.099161	Y
3	IC 410-166660/3	2.0	0.211344	10.0	2347448.0	0.105672	Y
4	IC 410-166660/4	8.0	0.890788	10.0	2424863.0	0.111349	Y
5	ICISAV 410-166660/5	20.0	2.517941	10.0	2358014.0	0.125897	Y
6	IC 410-166660/6	50.0	5.317179	10.0	2296319.0	0.106344	Y
7	IC 410-166660/7	100.0	11.003231	10.0	2386490.0	0.110032	Y



Calibration / PFECA A

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

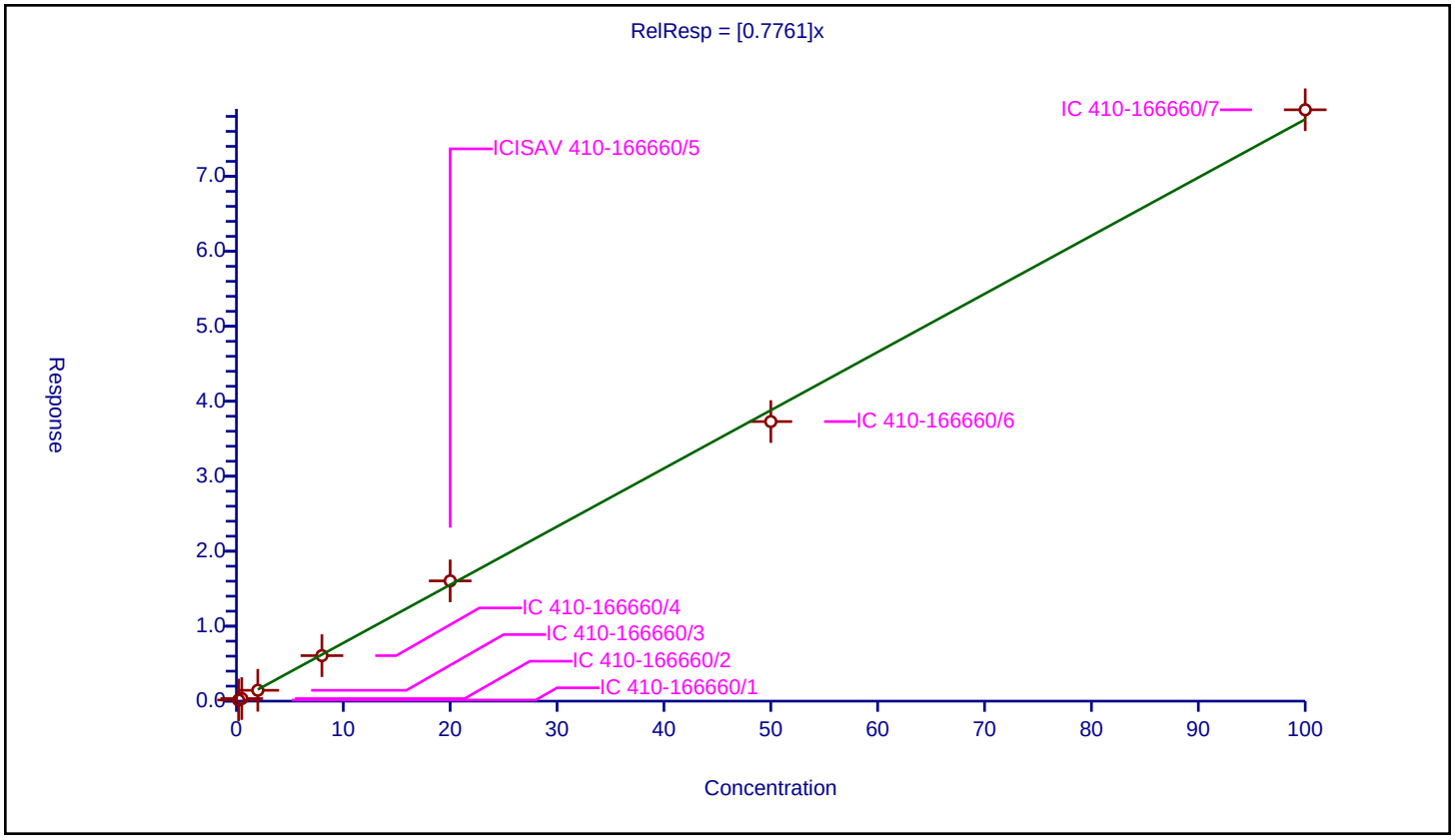
Curve Coefficients

Intercept:	0
Slope:	0.7761

Error Coefficients

Standard Error:	10600000
Relative Standard Error:	6.2
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.14829	9.36	3076699.0	0.74145	Y
2	IC 410-166660/2	0.5	0.343881	9.36	2973944.0	0.687762	Y
3	IC 410-166660/3	2.0	1.44856	9.36	2869818.0	0.72428	Y
4	IC 410-166660/4	8.0	6.070519	9.36	2923549.0	0.758815	Y
5	ICISAV 410-166660/5	20.0	16.042897	9.36	2881451.0	0.802145	Y
6	IC 410-166660/6	50.0	37.294455	9.36	2640569.0	0.745889	Y
7	IC 410-166660/7	100.0	78.884447	9.36	2739563.0	0.788844	Y



Calibration / PES

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

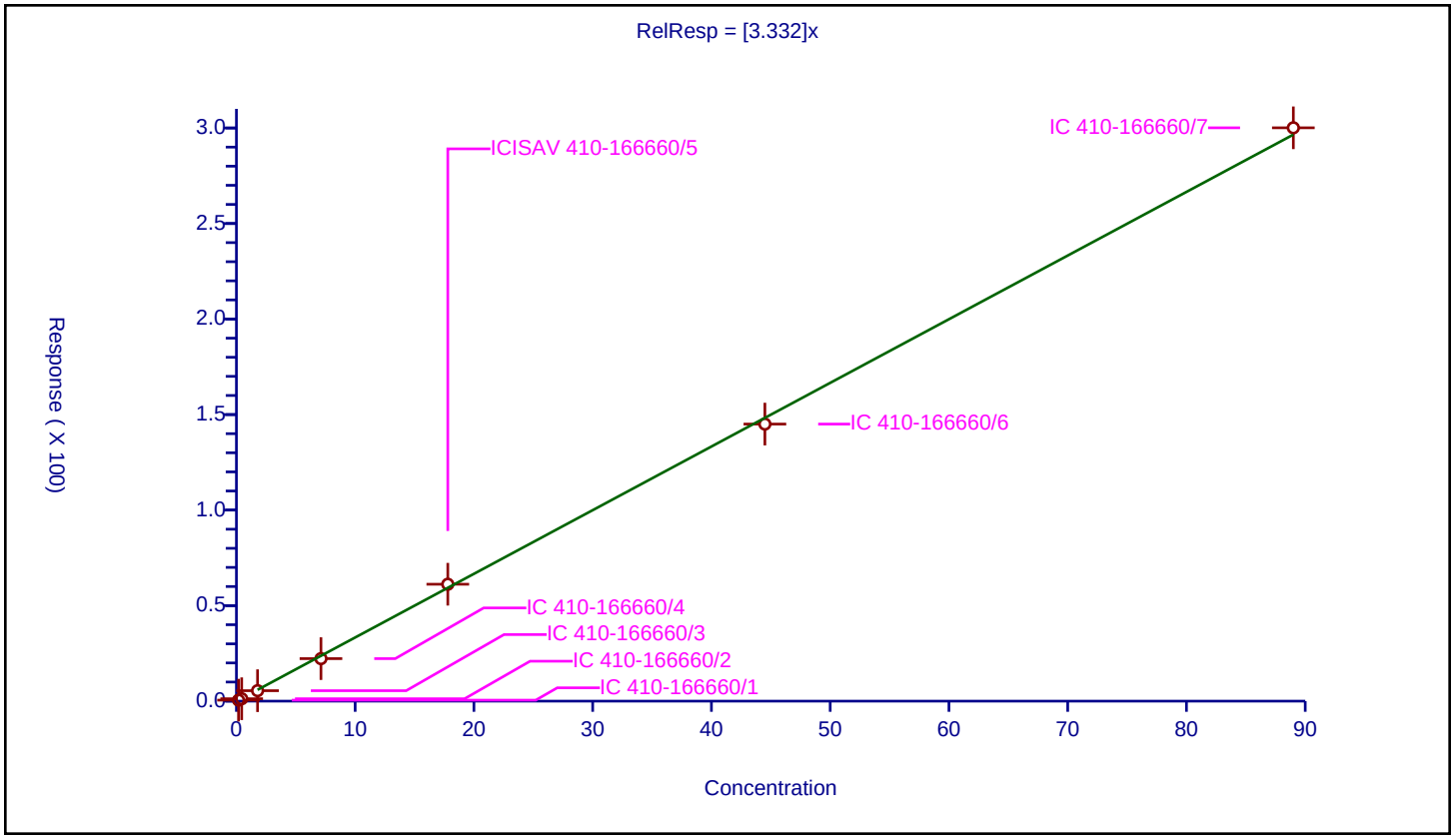
Curve Coefficients

Intercept:	0
Slope:	3.332

Error Coefficients

Standard Error:	40400000
Relative Standard Error:	9.1
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.178	0.516594	9.36	3076699.0	2.902211	Y
2	IC 410-166660/2	0.445	1.263998	9.36	2973944.0	2.840446	Y
3	IC 410-166660/3	1.78	5.477408	9.36	2869818.0	3.077196	Y
4	IC 410-166660/4	7.12	22.255517	9.36	2923549.0	3.125775	Y
5	ICISAV 410-166660/5	17.8	61.191296	9.36	2881451.0	3.437713	Y
6	IC 410-166660/6	44.5	145.019891	9.36	2640569.0	3.258874	Y
7	IC 410-166660/7	89.0	300.103125	9.36	2739563.0	3.371945	Y



Calibration / PFECA B

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

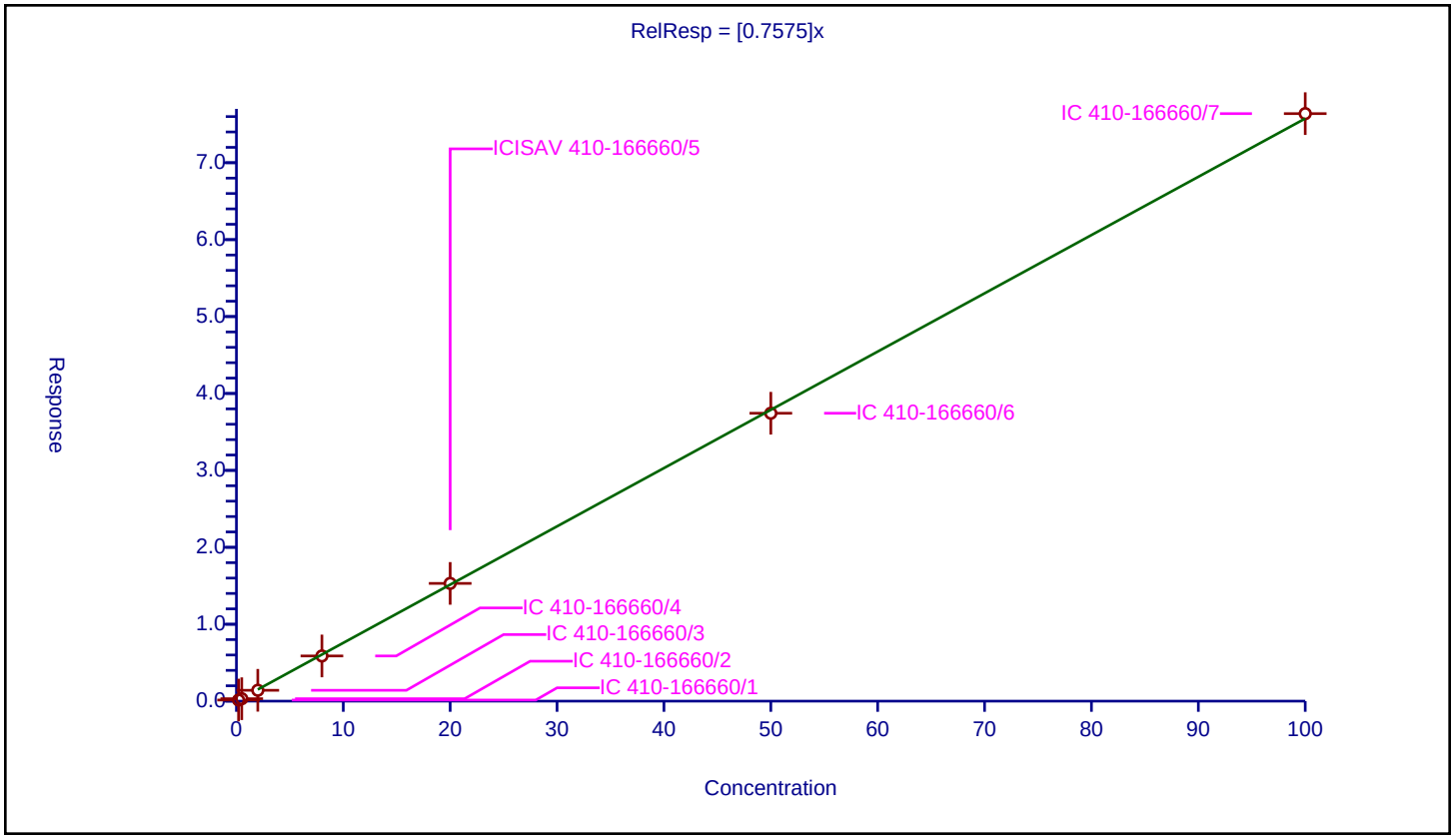
Curve Coefficients

Intercept:	0
Slope:	0.7575

Error Coefficients

Standard Error:	10300000
Relative Standard Error:	7.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.143736	9.36	3076699.0	0.718679	Y
2	IC 410-166660/2	0.5	0.315313	9.36	2973944.0	0.630625	Y
3	IC 410-166660/3	2.0	1.411757	9.36	2869818.0	0.705878	Y
4	IC 410-166660/4	8.0	5.875609	9.36	2923549.0	0.734451	Y
5	ICISAV 410-166660/5	20.0	15.308127	9.36	2881451.0	0.765406	Y
6	IC 410-166660/6	50.0	37.432514	9.36	2640569.0	0.74865	Y
7	IC 410-166660/7	100.0	76.384611	9.36	2739563.0	0.763846	Y



Calibration / 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

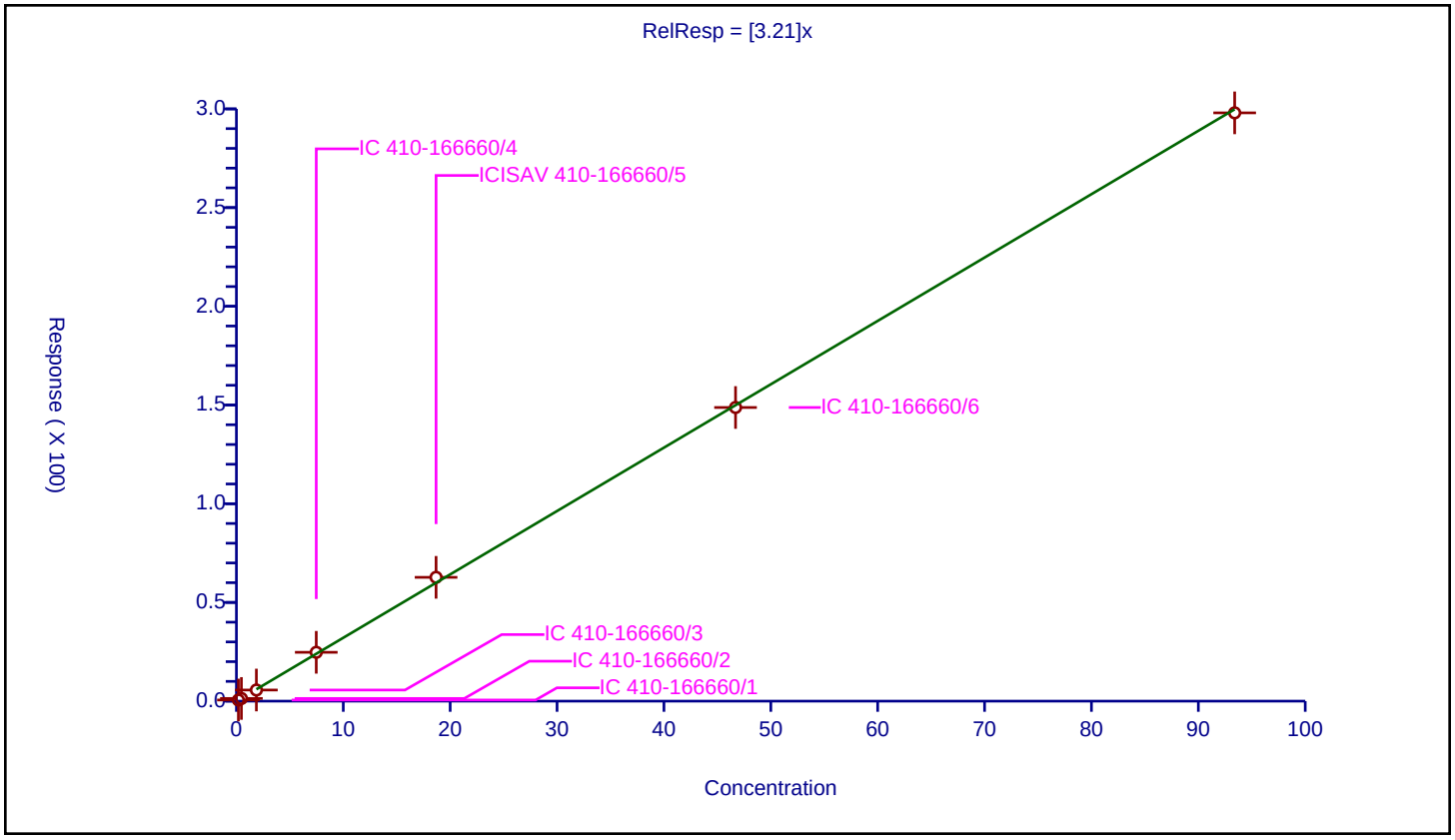
Curve Coefficients

Intercept:	0
Slope:	3.21

Error Coefficients

Standard Error:	4950000
Relative Standard Error:	5.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1868	0.566737	9.34	404839.0	3.033922	Y
2	IC 410-166660/2	0.467	1.353807	9.34	407300.0	2.898944	Y
3	IC 410-166660/3	1.868	5.631381	9.34	396443.0	3.014658	Y
4	IC 410-166660/4	7.472	24.733245	9.34	373949.0	3.310124	Y
5	ICISAV 410-166660/5	18.68	62.719759	9.34	364564.0	3.357589	Y
6	IC 410-166660/6	46.7	148.750819	9.34	310931.0	3.185242	Y
7	IC 410-166660/7	93.4	297.993089	9.34	336990.0	3.190504	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

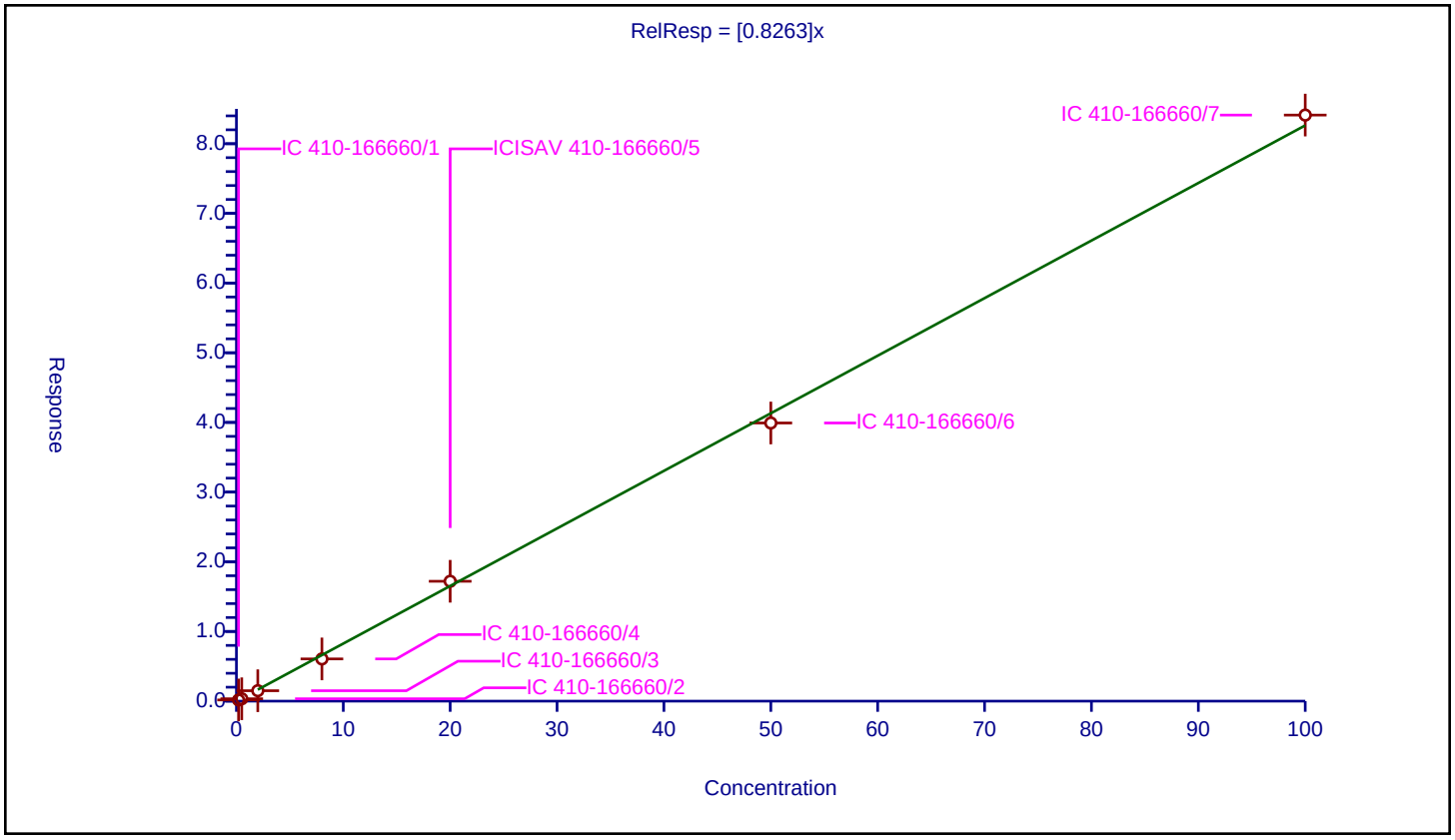
Curve Coefficients

Intercept:	0
Slope:	0.8263

Error Coefficients

Standard Error:	12700000
Relative Standard Error:	9.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.171314	10.0	3929916.0	0.85657	Y
2	IC 410-166660/2	0.5	0.343299	10.0	4025614.0	0.686598	Y
3	IC 410-166660/3	2.0	1.496194	10.0	3690303.0	0.748097	Y
4	IC 410-166660/4	8.0	6.060127	10.0	3751887.0	0.757516	Y
5	ICISAV 410-166660/5	20.0	17.202801	10.0	3476564.0	0.86014	Y
6	IC 410-166660/6	50.0	39.919955	10.0	3196715.0	0.798399	Y
7	IC 410-166660/7	100.0	84.112175	10.0	3288576.0	0.841122	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

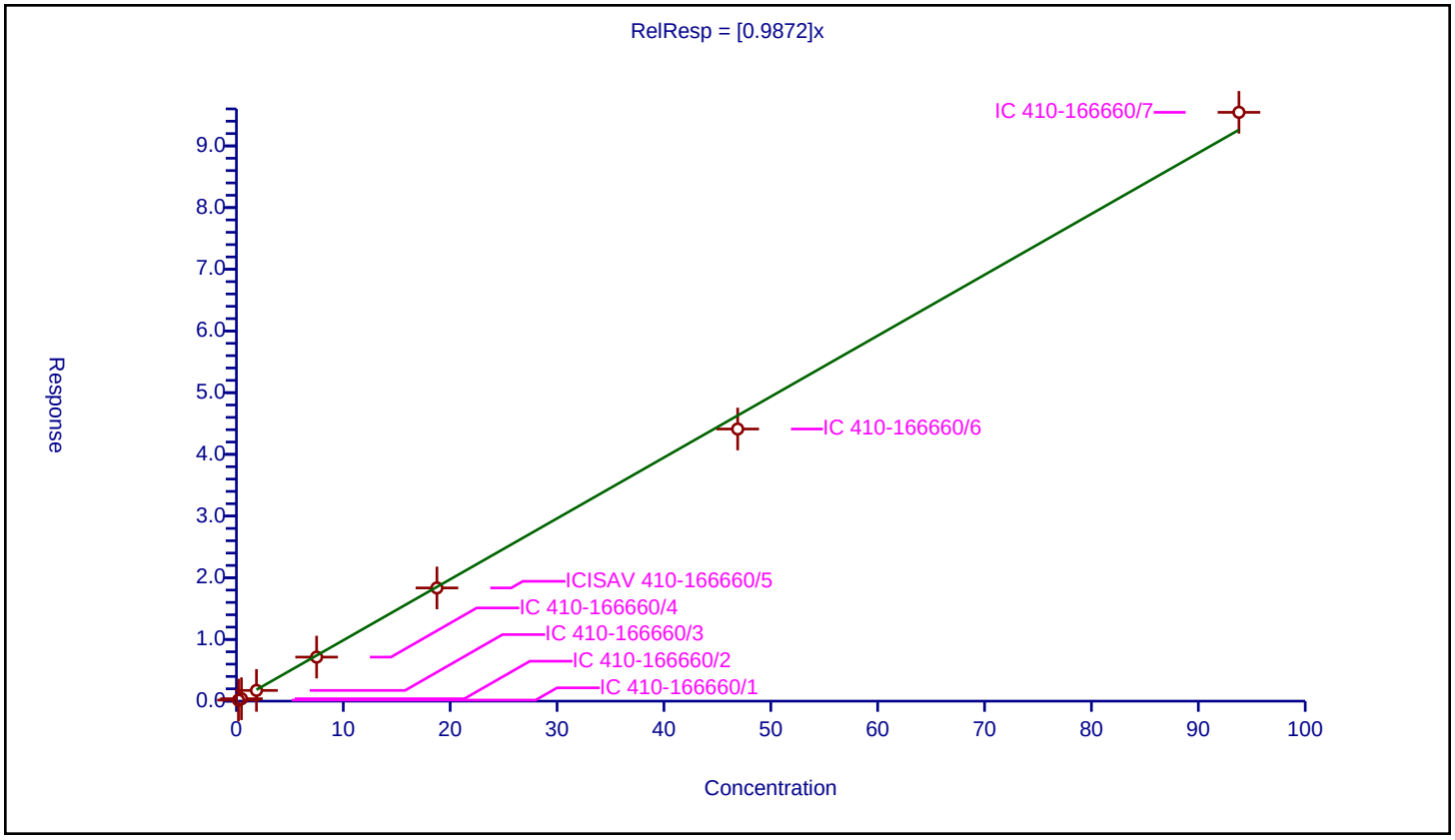
Curve Coefficients

Intercept:	0
Slope:	0.9872

Error Coefficients

Standard Error:	12700000
Relative Standard Error:	8.3
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1876	0.168551	9.36	3076699.0	0.898461	Y
2	IC 410-166660/2	0.469	0.390049	9.36	2973944.0	0.831662	Y
3	IC 410-166660/3	1.876	1.736951	9.36	2869818.0	0.92588	Y
4	IC 410-166660/4	7.504	7.136462	9.36	2923549.0	0.951021	Y
5	ICISAV 410-166660/5	18.76	18.351805	9.36	2881451.0	0.978241	Y
6	IC 410-166660/6	46.9	44.109257	9.36	2640569.0	0.940496	Y
7	IC 410-166660/7	93.8	95.441245	9.36	2739563.0	1.017497	Y



Calibration / PFO3OA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

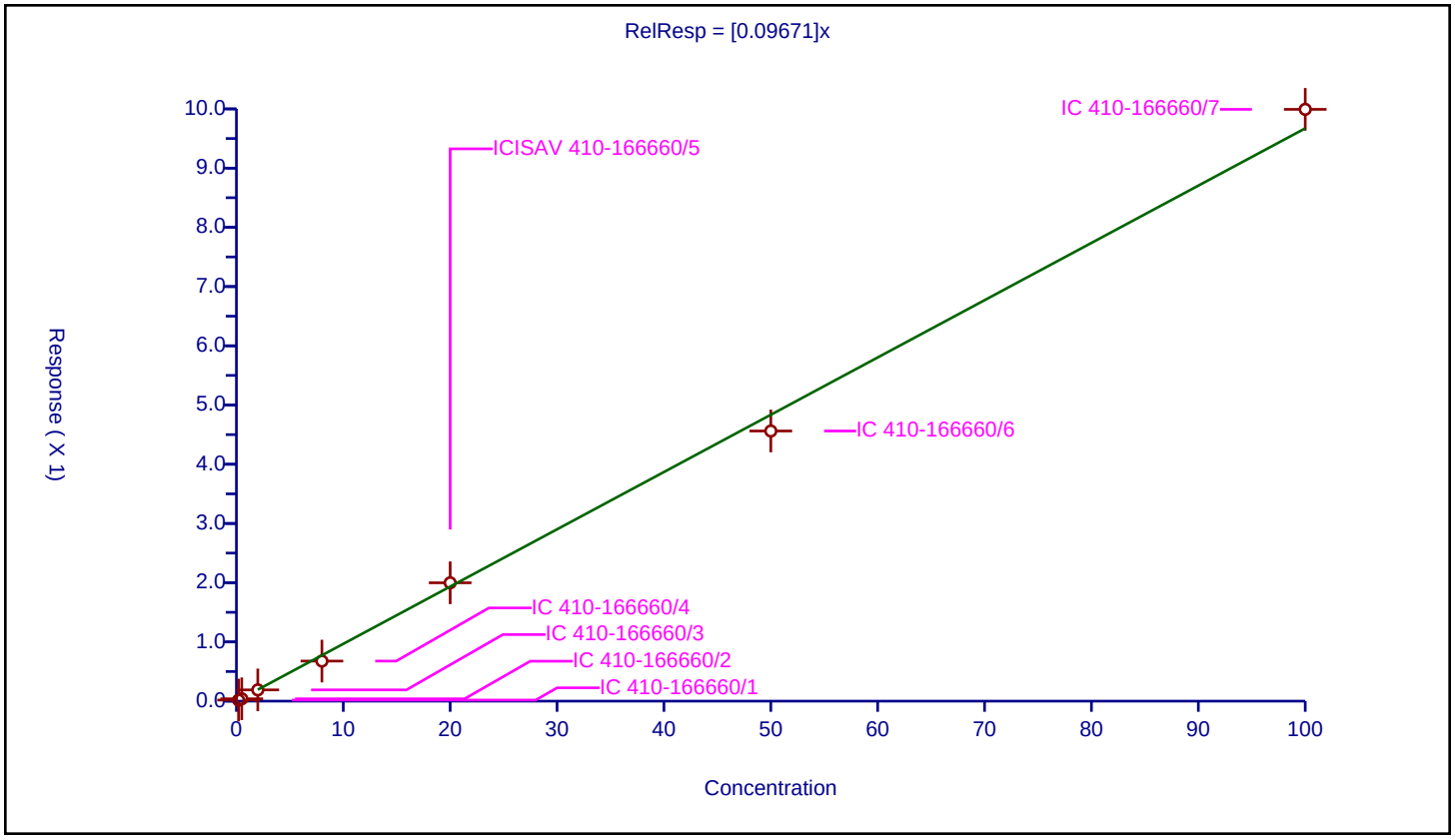
Curve Coefficients

Intercept:	0
Slope:	0.09671

Error Coefficients

Standard Error:	1080000
Relative Standard Error:	9.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.018156	10.0	2527007.0	0.090779	Y
2	IC 410-166660/2	0.5	0.039783	10.0	2554832.0	0.079567	Y
3	IC 410-166660/3	2.0	0.1899	10.0	2347448.0	0.09495	Y
4	IC 410-166660/4	8.0	0.67657	10.0	2424863.0	0.084571	Y
5	ICISAV 410-166660/5	20.0	1.99816	10.0	2358014.0	0.099908	Y
6	IC 410-166660/6	50.0	4.561313	10.0	2296319.0	0.091226	Y
7	IC 410-166660/7	100.0	9.992206	10.0	2386490.0	0.099922	Y



Calibration / Perfluoro(2-propoxypropanoic) acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

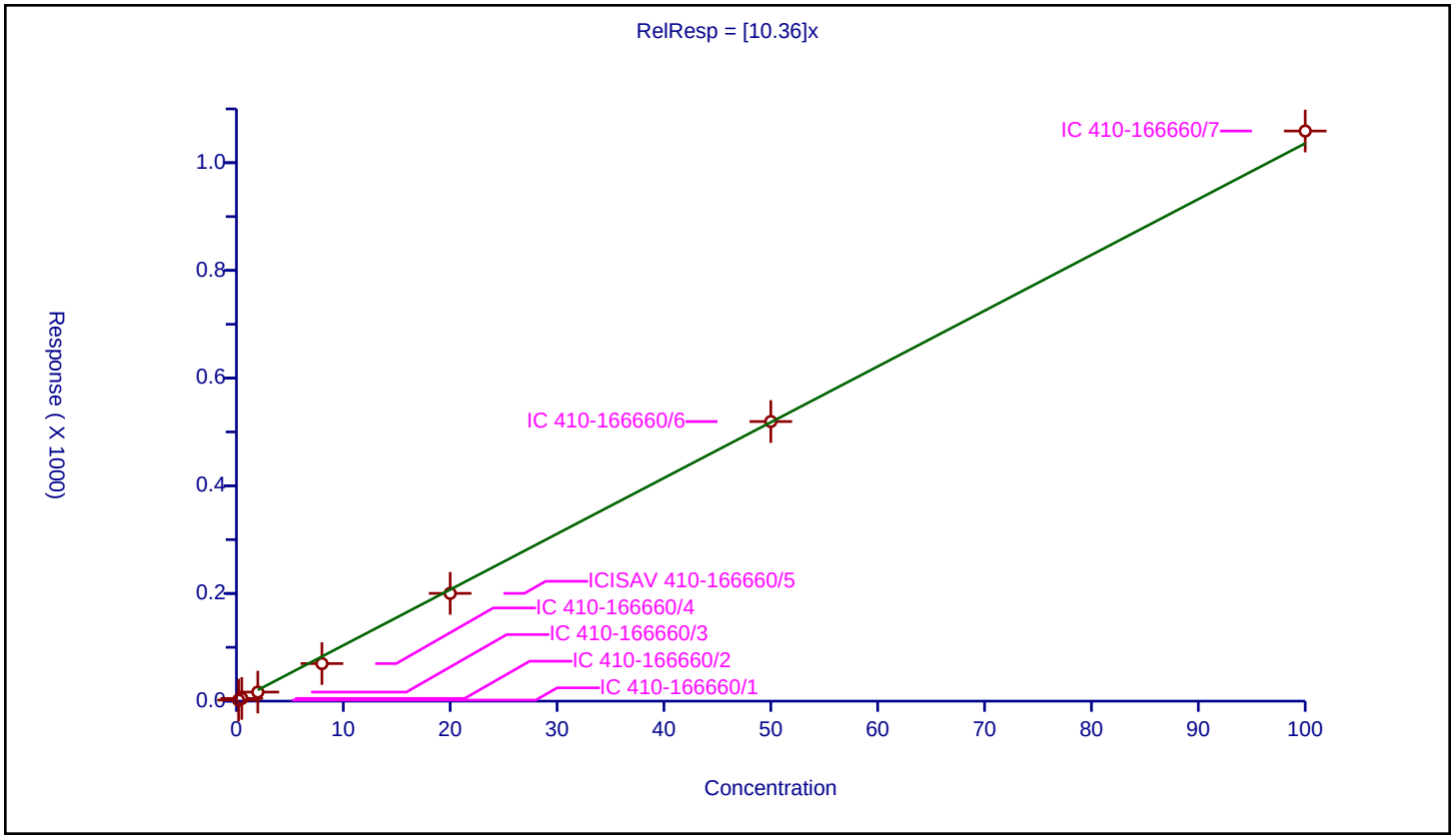
Curve Coefficients

Intercept:	0
Slope:	10.36

Error Coefficients

Standard Error:	2130000
Relative Standard Error:	10.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	1.937315	10.0	47380.0	9.686577	Y
2	IC 410-166660/2	0.5	5.004312	10.0	42901.0	10.008625	Y
3	IC 410-166660/3	2.0	16.844083	10.0	46313.0	8.422041	Y
4	IC 410-166660/4	8.0	69.752408	10.0	51294.0	8.719051	Y
5	ICISAV 410-166660/5	20.0	200.156487	10.0	46713.0	10.007824	Y
6	IC 410-166660/6	50.0	519.346884	10.0	40835.0	10.386938	Y
7	IC 410-166660/7	100.0	1058.86905	10.0	43910.0	10.588691	Y



Calibration / Hydro-PS Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

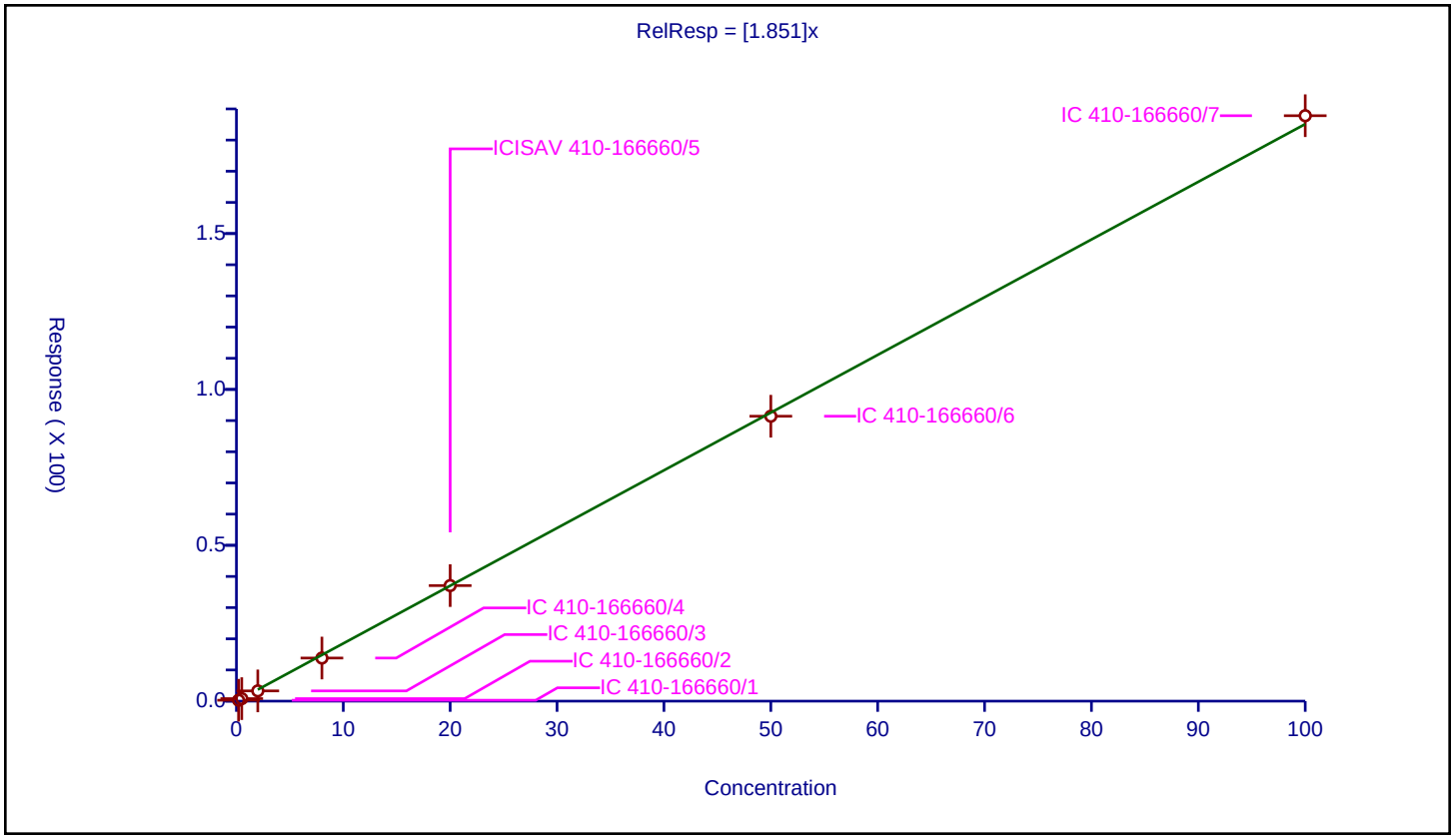
Curve Coefficients

Intercept:	0
Slope:	1.851

Error Coefficients

Standard Error:	25300000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.297879	9.36	3076699.0	1.489396	Y
2	IC 410-166660/2	0.5	0.807348	9.36	2973944.0	1.614696	Y
3	IC 410-166660/3	2.0	3.282923	9.36	2869818.0	1.641462	Y
4	IC 410-166660/4	8.0	13.826766	9.36	2923549.0	1.728346	Y
5	ICISAV 410-166660/5	20.0	37.071964	9.36	2881451.0	1.853598	Y
6	IC 410-166660/6	50.0	91.408385	9.36	2640569.0	1.828168	Y
7	IC 410-166660/7	100.0	187.815535	9.36	2739563.0	1.878155	Y



Calibration / Hydro-EVE Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

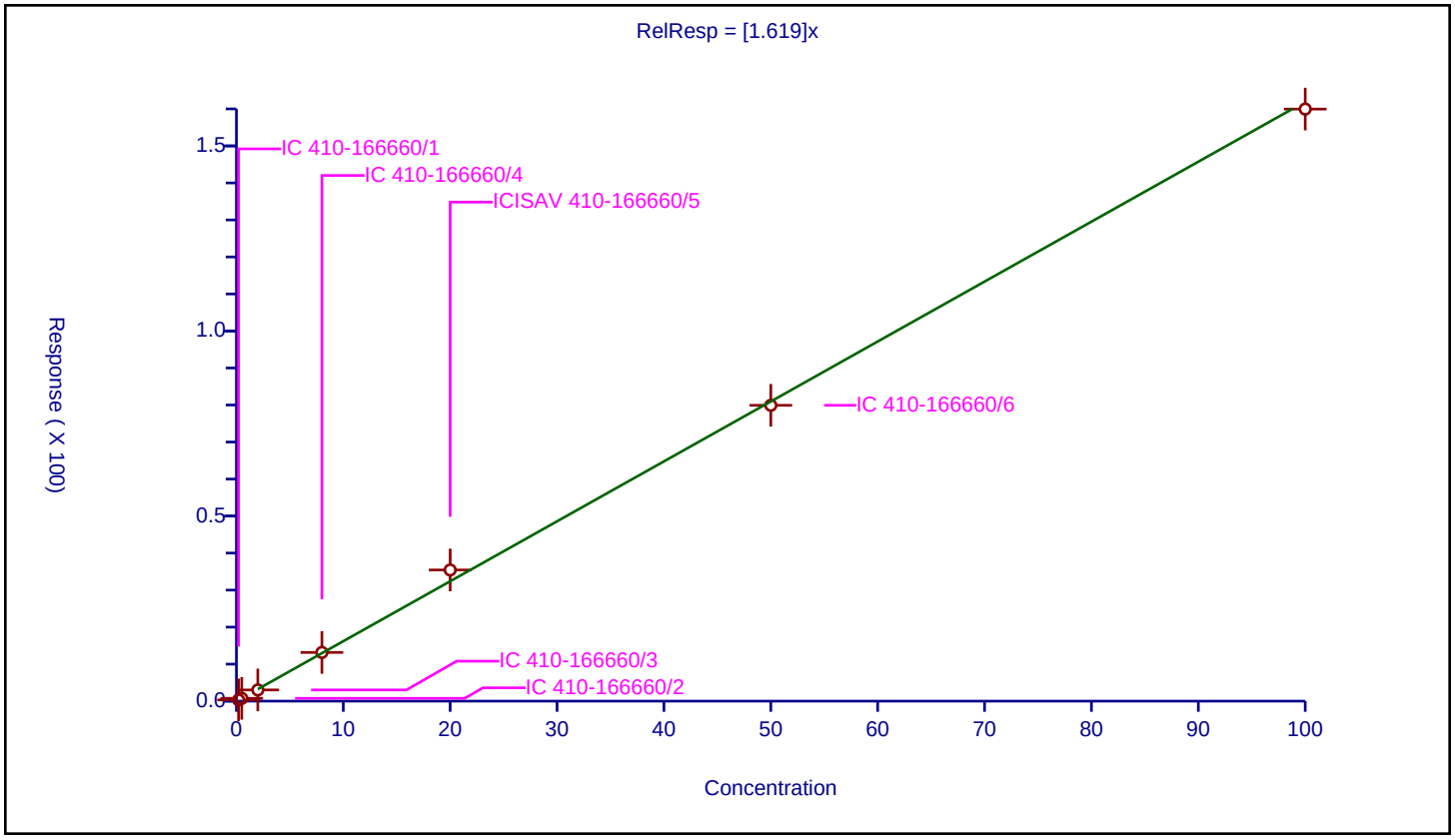
Curve Coefficients

Intercept:	0
Slope:	1.619

Error Coefficients

Standard Error:	17700000
Relative Standard Error:	5.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.33161	10.0	2527007.0	1.658048	Y
2	IC 410-166660/2	0.5	0.761835	10.0	2554832.0	1.52367	Y
3	IC 410-166660/3	2.0	3.028489	10.0	2347448.0	1.514244	Y
4	IC 410-166660/4	8.0	13.160125	10.0	2424863.0	1.645016	Y
5	ICISAV 410-166660/5	20.0	35.437029	10.0	2358014.0	1.771851	Y
6	IC 410-166660/6	50.0	79.921278	10.0	2296319.0	1.598426	Y
7	IC 410-166660/7	100.0	159.952721	10.0	2386490.0	1.599527	Y



Calibration / R-PSDCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

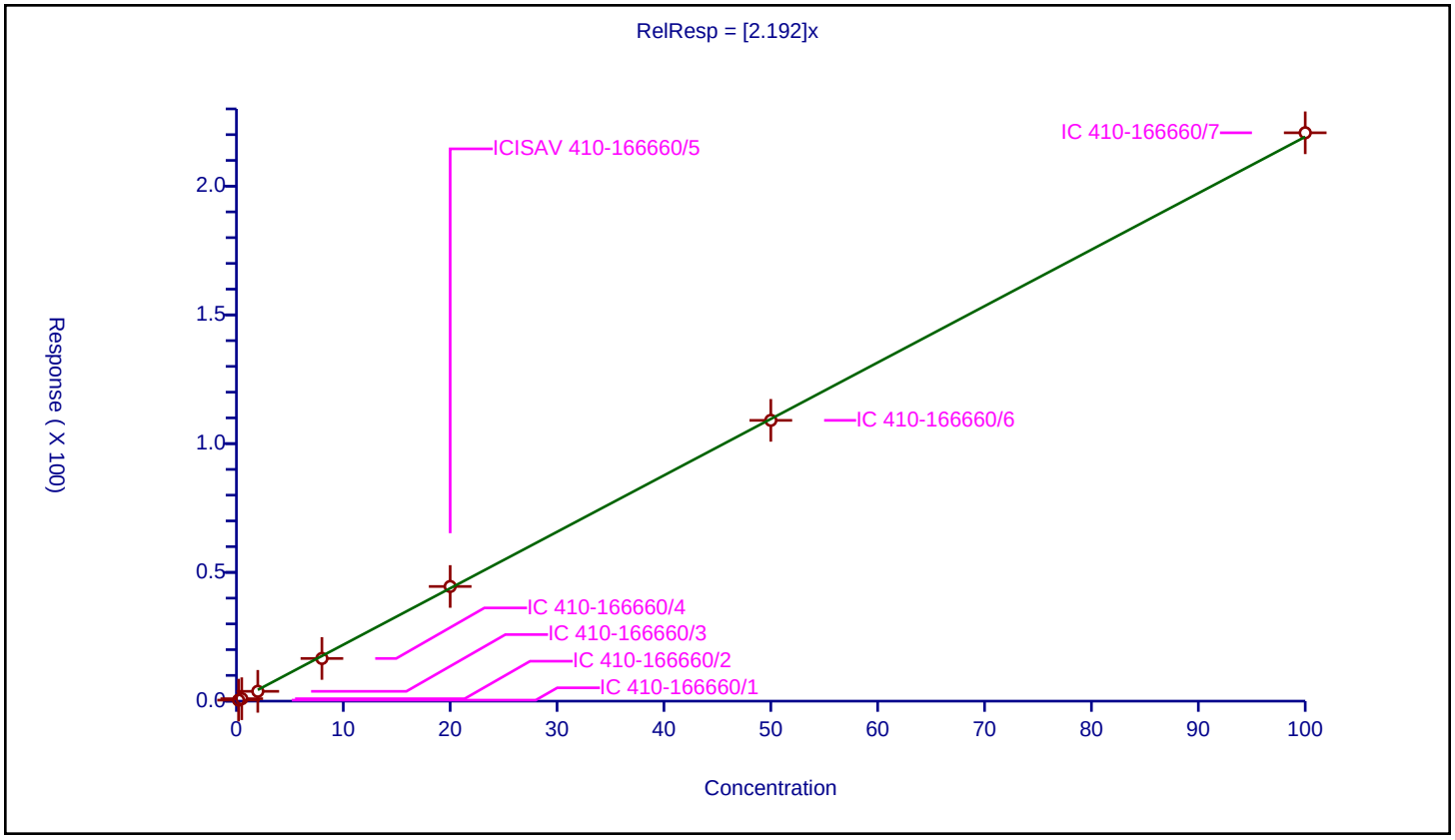
Curve Coefficients

Intercept:	0
Slope:	2.192

Error Coefficients

Standard Error:	29800000
Relative Standard Error:	9.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.393067	9.36	3076699.0	1.965336	Y
2	IC 410-166660/2	0.5	0.949727	9.36	2973944.0	1.899455	Y
3	IC 410-166660/3	2.0	3.813812	9.36	2869818.0	1.906906	Y
4	IC 410-166660/4	8.0	16.573668	9.36	2923549.0	2.071709	Y
5	ICISAV 410-166660/5	20.0	44.53233	9.36	2881451.0	2.226617	Y
6	IC 410-166660/6	50.0	109.039669	9.36	2640569.0	2.180793	Y
7	IC 410-166660/7	100.0	220.718136	9.36	2739563.0	2.207181	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

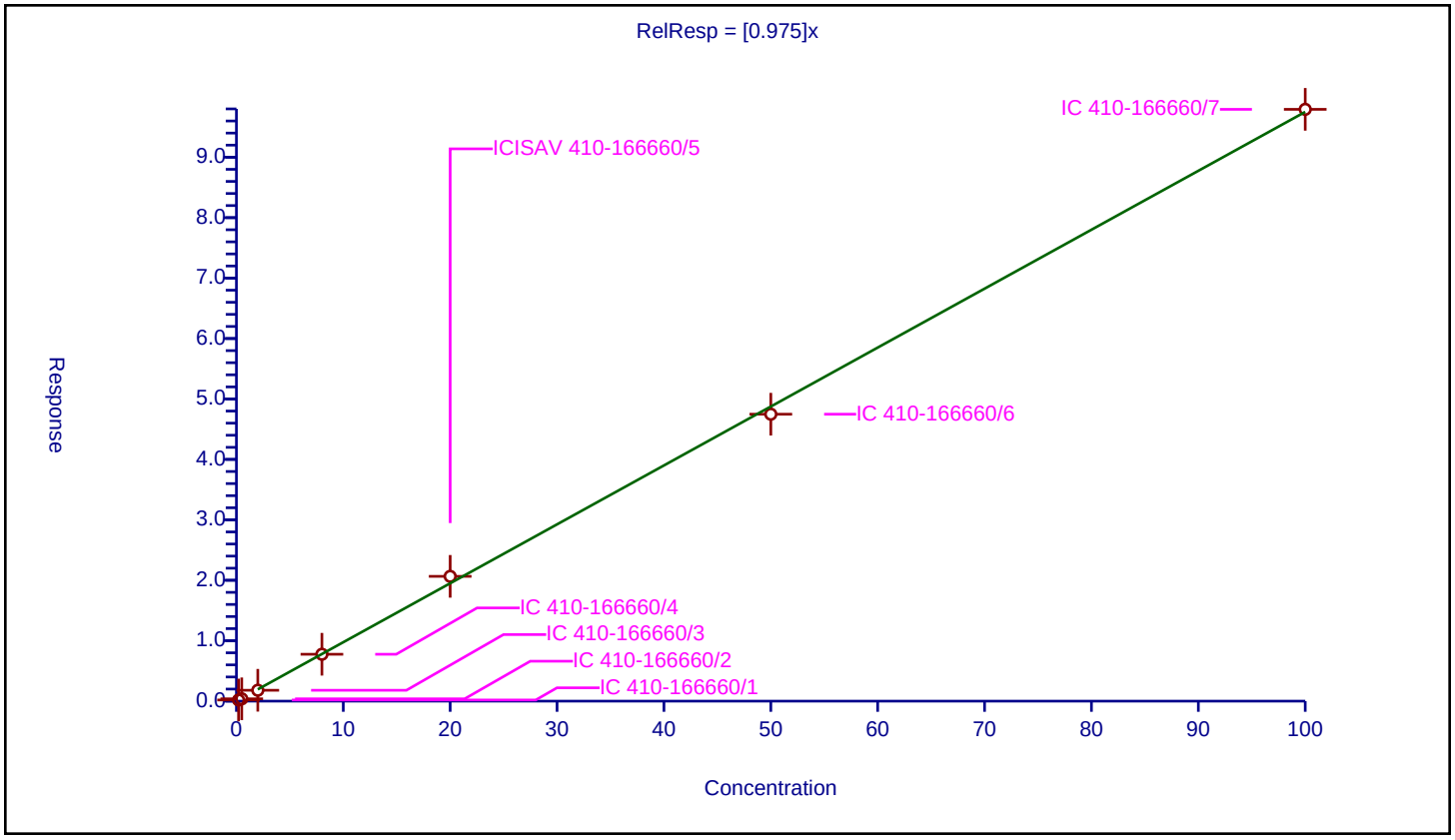
Curve Coefficients

Intercept:	0
Slope:	0.975

Error Coefficients

Standard Error:	14500000
Relative Standard Error:	9.6
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.193474	10.0	4076158.0	0.967369	Y
2	IC 410-166660/2	0.5	0.384491	10.0	4303302.0	0.768982	Y
3	IC 410-166660/3	2.0	1.801371	10.0	3929290.0	0.900686	Y
4	IC 410-166660/4	8.0	7.757579	10.0	3762679.0	0.969697	Y
5	ICISAV 410-166660/5	20.0	20.648939	10.0	3760832.0	1.032447	Y
6	IC 410-166660/6	50.0	47.479346	10.0	3223152.0	0.949587	Y
7	IC 410-166660/7	100.0	97.924123	10.0	3160284.0	0.979241	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

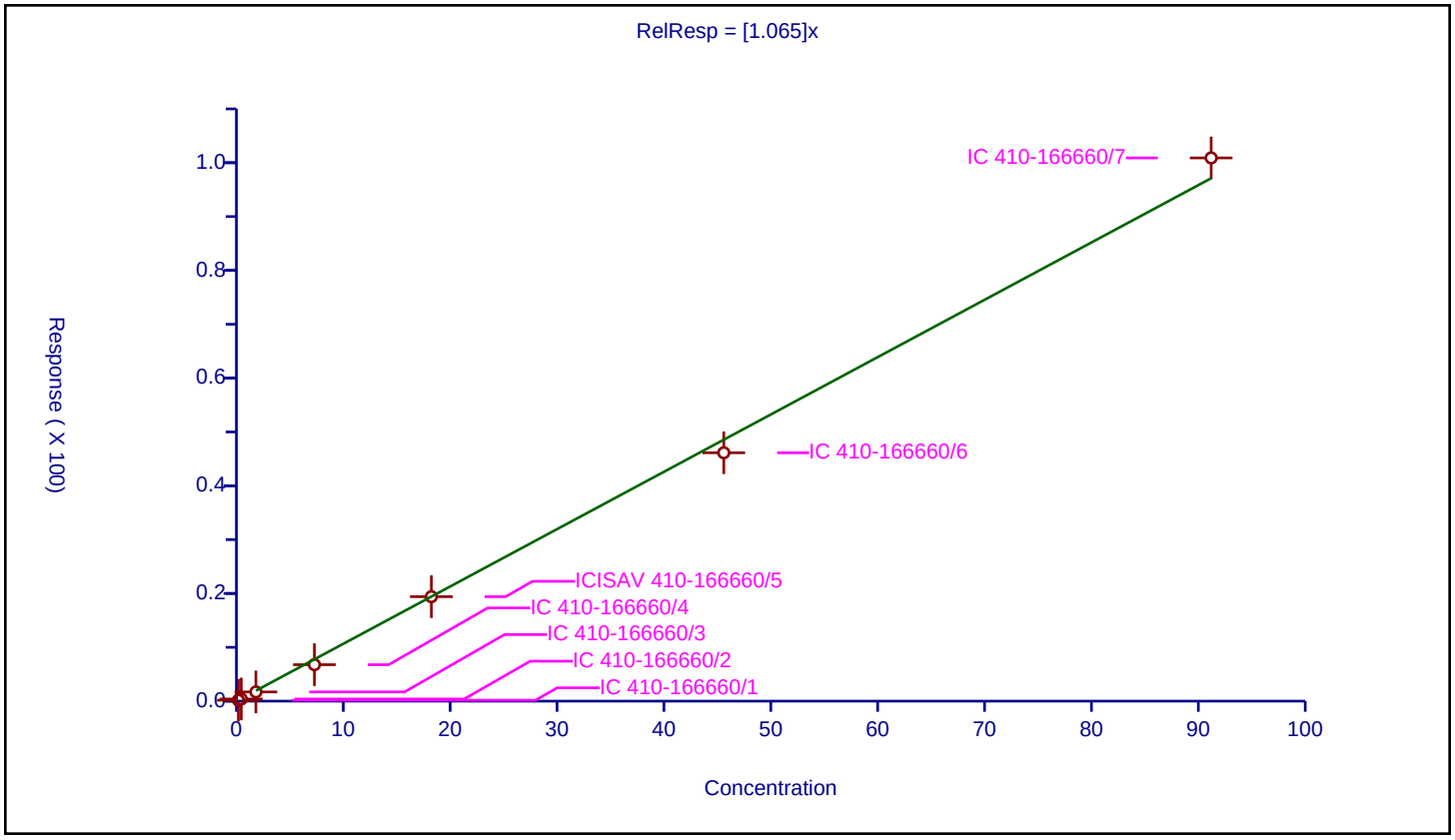
Curve Coefficients

Intercept:	0
Slope:	1.065

Error Coefficients

Standard Error:	11200000
Relative Standard Error:	11.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1824	0.175403	9.46	2561876.0	0.961637	Y
2	IC 410-166660/2	0.456	0.397358	9.46	2601439.0	0.8714	Y
3	IC 410-166660/3	1.824	1.710093	9.46	2468157.0	0.937551	Y
4	IC 410-166660/4	7.296	6.771617	9.46	2700670.0	0.928127	Y
5	ICISAV 410-166660/5	18.24	19.403277	9.46	2479274.0	1.063776	Y
6	IC 410-166660/6	45.6	46.133665	9.46	2272748.0	1.011703	Y
7	IC 410-166660/7	91.2	100.892409	9.46	2285787.0	1.106276	Y



Calibration / DONA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

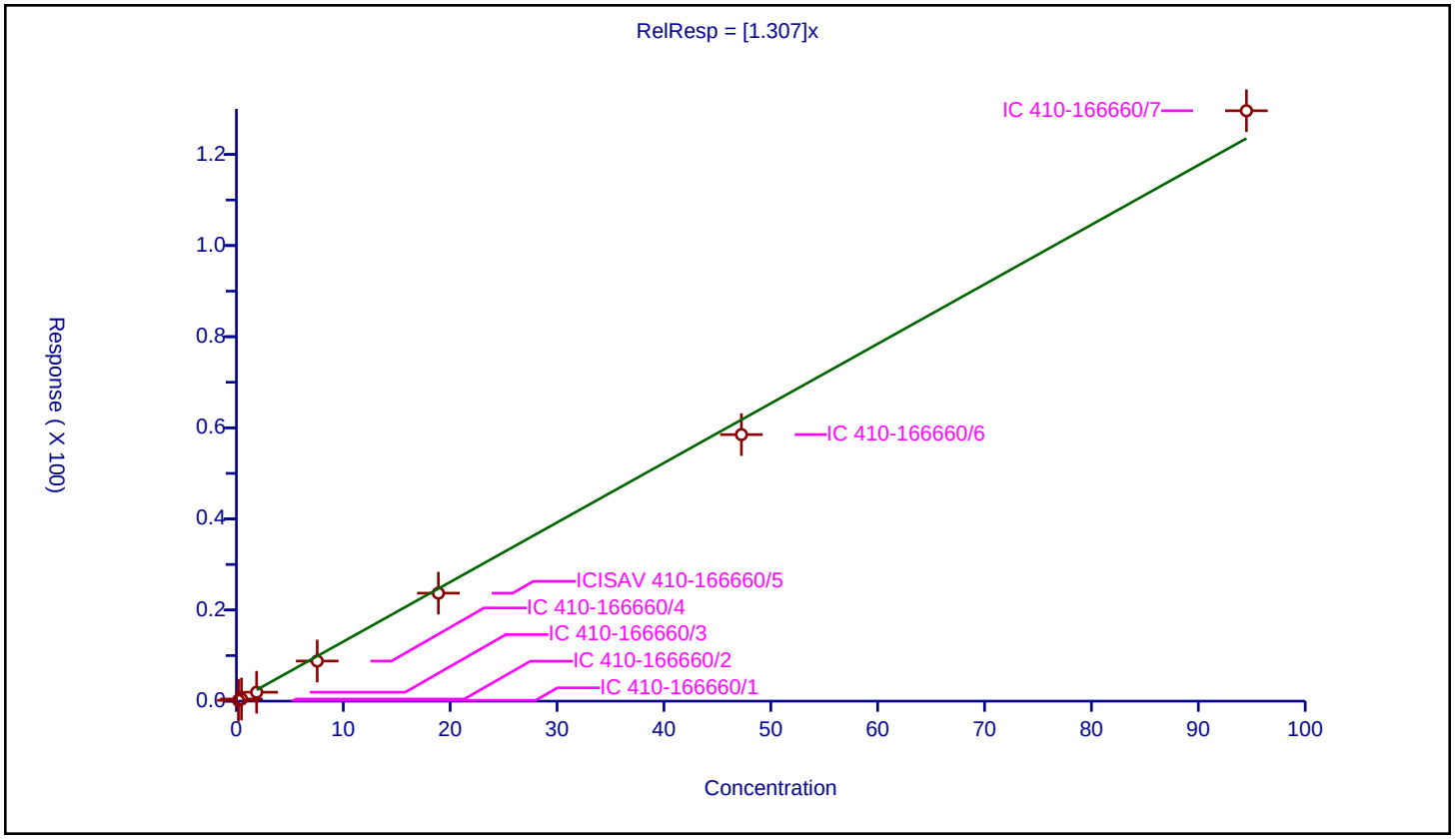
Curve Coefficients

Intercept:	0
Slope:	1.307

Error Coefficients

Standard Error:	18800000
Relative Standard Error:	18.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.189	0.178106	10.0	4076158.0	0.942362	Y
2	IC 410-166660/2	0.4725	0.466484	10.0	4303302.0	0.987267	Y
3	IC 410-166660/3	1.89	1.954043	10.0	3929290.0	1.033885	Y
4	IC 410-166660/4	7.56	8.806731	10.0	3762679.0	1.164911	Y
5	ICISAV 410-166660/5	18.9	23.705919	10.0	3760832.0	1.254281	Y
6	IC 410-166660/6	47.25	58.503499	10.0	3223152.0	1.238169	Y
7	IC 410-166660/7	94.5	129.58785	10.0	3160284.0	1.3713	Y



Calibration / PFECA G

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

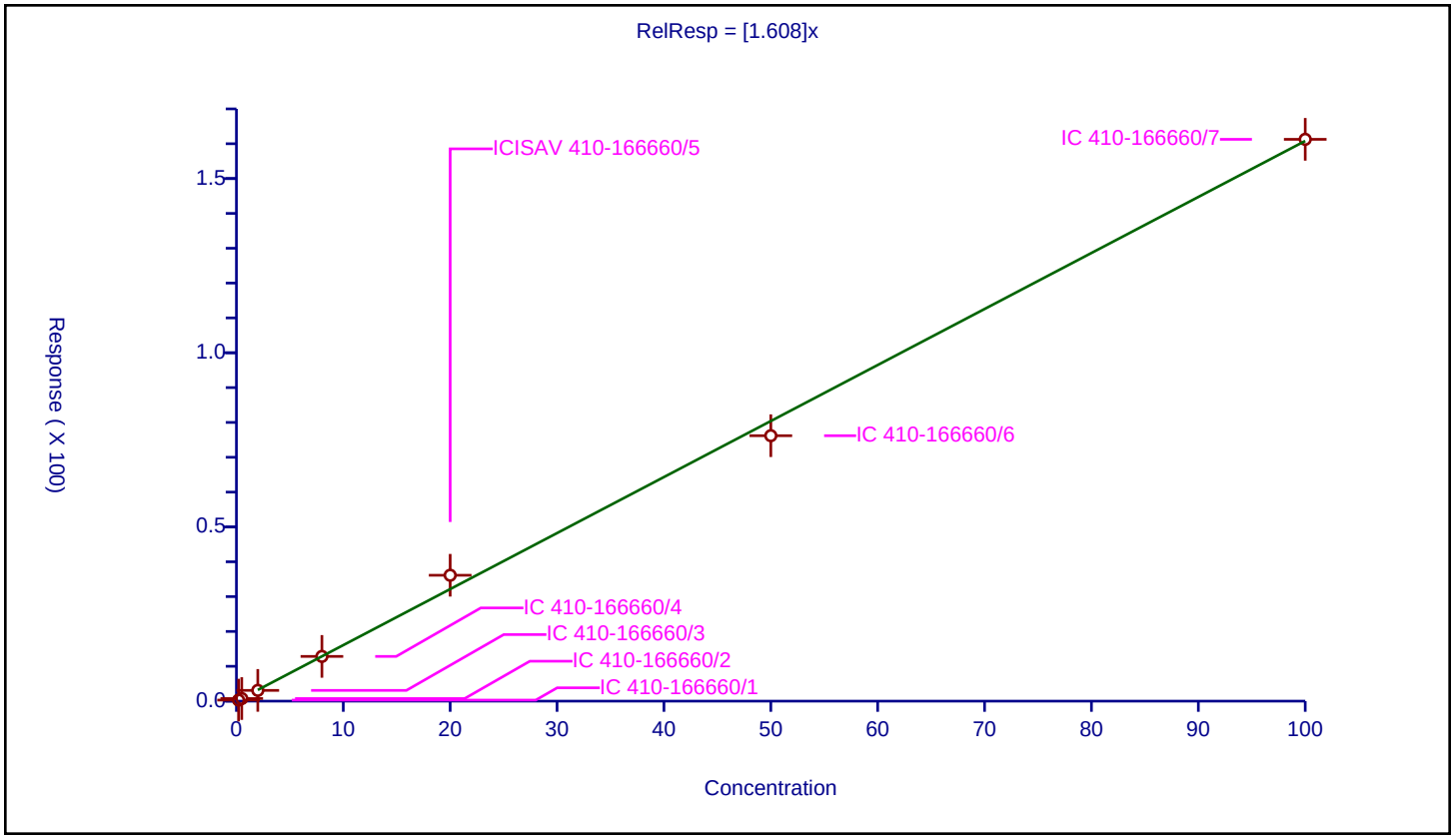
Curve Coefficients

Intercept:	0
Slope:	1.608

Error Coefficients

Standard Error:	17700000
Relative Standard Error:	6.9
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.302492	10.0	2527007.0	1.512461	Y
2	IC 410-166660/2	0.5	0.743885	10.0	2554832.0	1.487769	Y
3	IC 410-166660/3	2.0	3.0842	10.0	2347448.0	1.5421	Y
4	IC 410-166660/4	8.0	12.840424	10.0	2424863.0	1.605053	Y
5	ICISAV 410-166660/5	20.0	36.137309	10.0	2358014.0	1.806865	Y
6	IC 410-166660/6	50.0	76.194287	10.0	2296319.0	1.523886	Y
7	IC 410-166660/7	100.0	161.260232	10.0	2386490.0	1.612602	Y



Calibration / 5:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

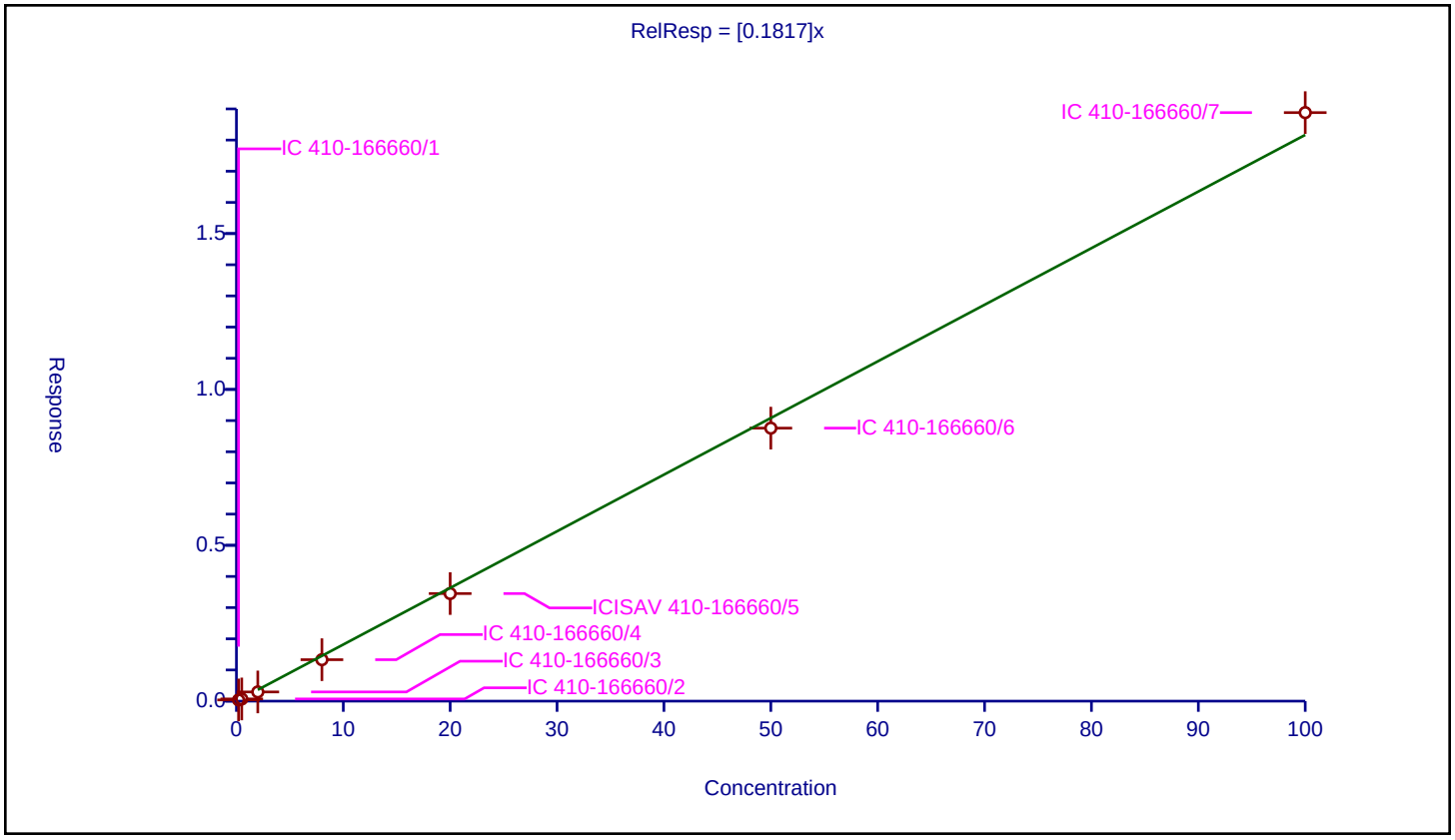
Curve Coefficients

Intercept:	0
Slope:	0.1817

Error Coefficients

Standard Error:	2750000
Relative Standard Error:	13.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.038715	10.0	4076158.0	0.193577	Y
2	IC 410-166660/2	0.5	0.070646	10.0	4303302.0	0.141292	Y
3	IC 410-166660/3	2.0	0.294934	10.0	3929290.0	0.147467	Y
4	IC 410-166660/4	8.0	1.330196	10.0	3762679.0	0.166274	Y
5	ICISAV 410-166660/5	20.0	3.451199	10.0	3760832.0	0.17256	Y
6	IC 410-166660/6	50.0	8.758749	10.0	3223152.0	0.175175	Y
7	IC 410-166660/7	100.0	18.88062	10.0	3160284.0	0.188806	Y



Calibration / 6:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

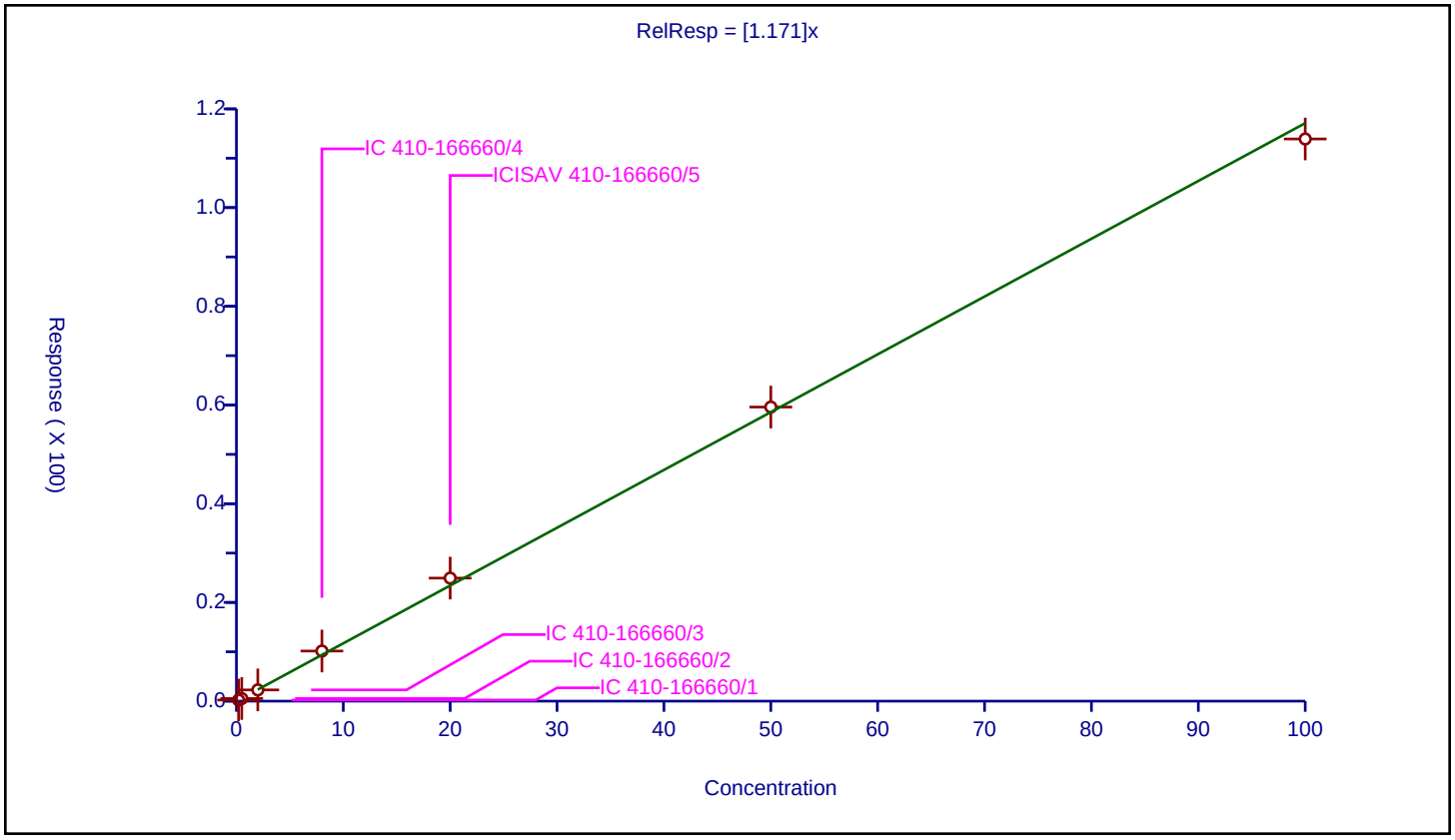
Curve Coefficients

Intercept:	0
Slope:	1.171

Error Coefficients

Standard Error:	12900000
Relative Standard Error:	6.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.227883	10.0	2855365.0	1.139417	Y
2	IC 410-166660/2	0.5	0.531278	10.0	2845571.0	1.062557	Y
3	IC 410-166660/3	2.0	2.273976	10.0	2614601.0	1.136988	Y
4	IC 410-166660/4	8.0	10.150955	10.0	2488548.0	1.268869	Y
5	ICISAV 410-166660/5	20.0	24.931275	10.0	2574320.0	1.246564	Y
6	IC 410-166660/6	50.0	59.587352	10.0	2296438.0	1.191747	Y
7	IC 410-166660/7	100.0	113.906651	10.0	2431167.0	1.139067	Y



Calibration / 6:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

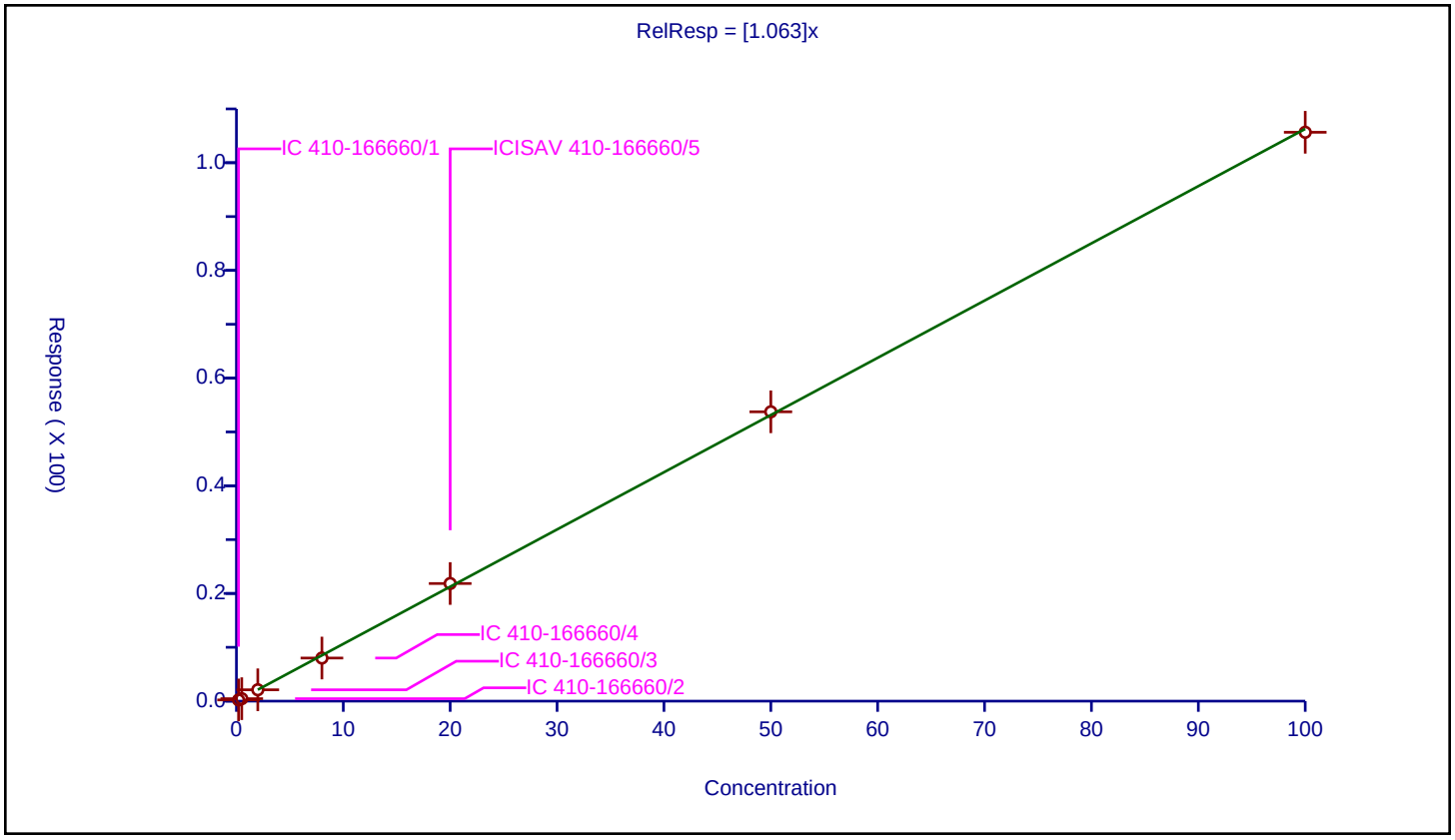
Curve Coefficients

Intercept:	0
Slope:	1.063

Error Coefficients

Standard Error:	509000
Relative Standard Error:	6.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.22285	10.0	131254.0	1.114252	Y
2	IC 410-166660/2	0.5	0.458033	10.0	126563.0	0.916066	Y
3	IC 410-166660/3	2.0	2.11107	10.0	115027.0	1.055535	Y
4	IC 410-166660/4	8.0	8.005124	10.0	120213.0	1.000641	Y
5	ICISAV 410-166660/5	20.0	21.847243	10.0	111144.0	1.092362	Y
6	IC 410-166660/6	50.0	53.741143	10.0	99785.0	1.074823	Y
7	IC 410-166660/7	100.0	105.658561	10.0	103544.0	1.056586	Y



Calibration / PFO4DA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

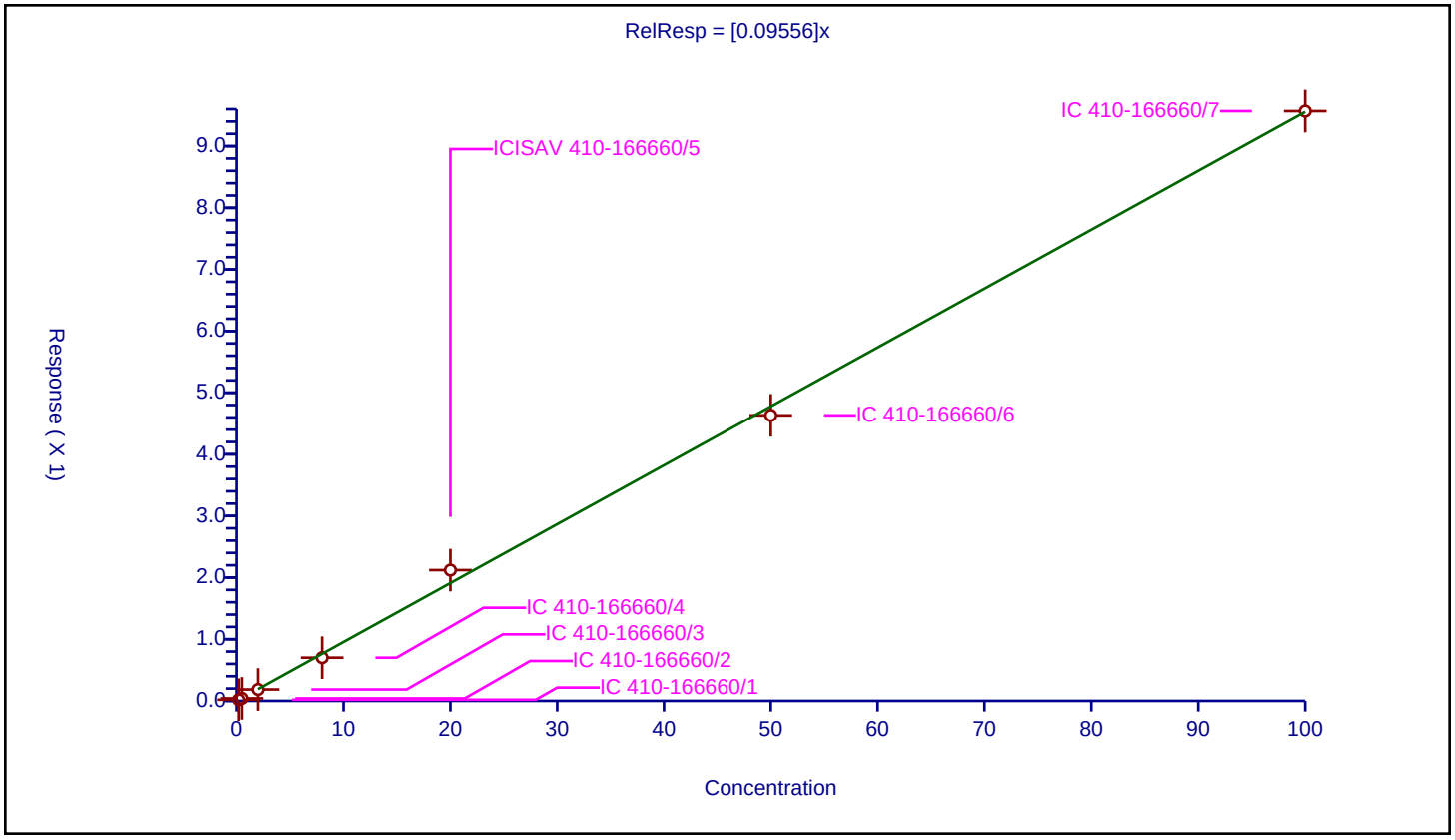
Curve Coefficients

Intercept:	0
Slope:	0.09556

Error Coefficients

Standard Error:	1050000
Relative Standard Error:	8.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.018888	10.0	2527007.0	0.09444	Y
2	IC 410-166660/2	0.5	0.040809	10.0	2554832.0	0.081618	Y
3	IC 410-166660/3	2.0	0.184941	10.0	2347448.0	0.092471	Y
4	IC 410-166660/4	8.0	0.701017	10.0	2424863.0	0.087627	Y
5	ICISAV 410-166660/5	20.0	2.121349	10.0	2358014.0	0.106067	Y
6	IC 410-166660/6	50.0	4.632658	10.0	2296319.0	0.092653	Y
7	IC 410-166660/7	100.0	9.568194	10.0	2386490.0	0.095682	Y



Calibration / PS Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

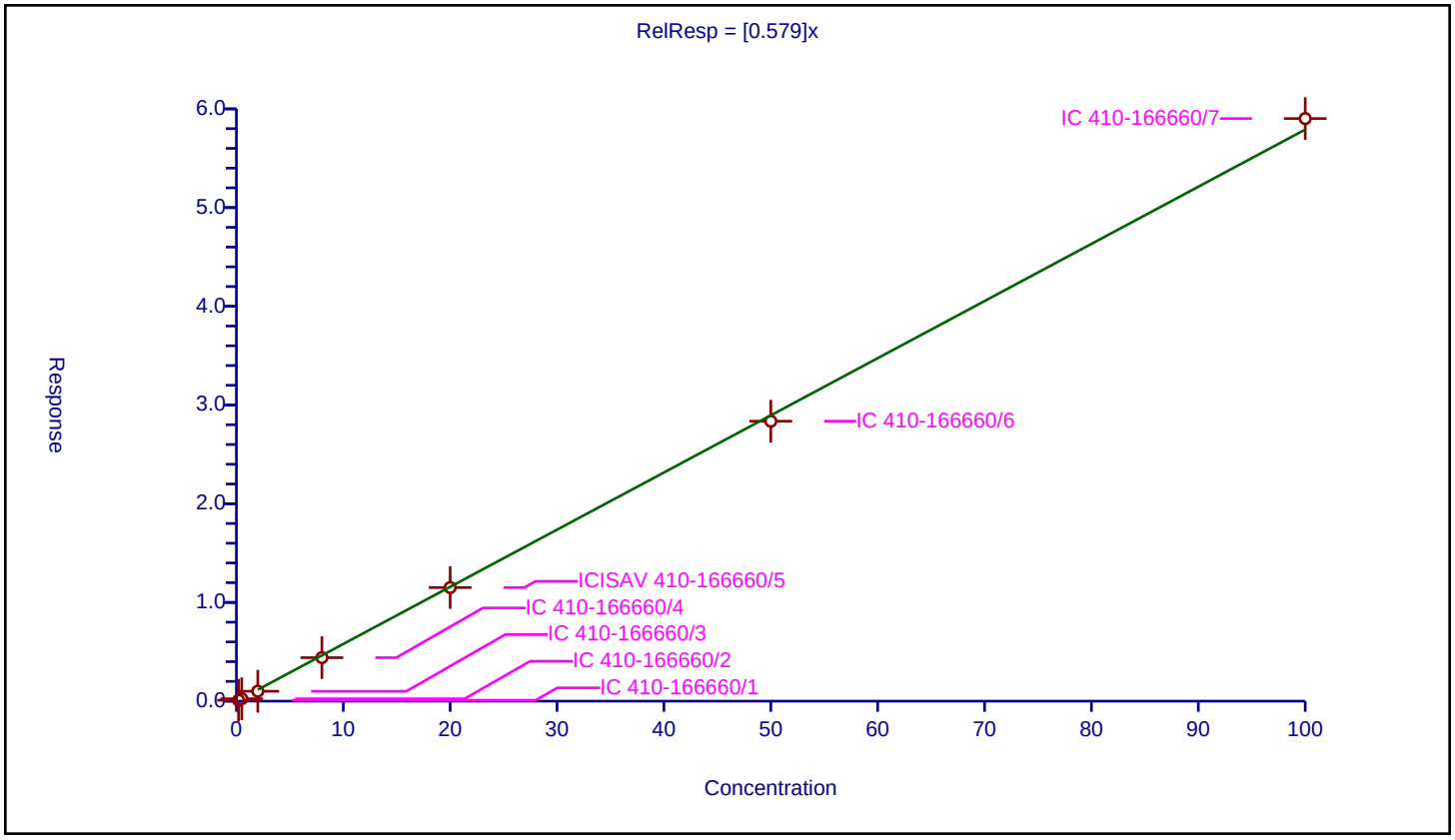
Curve Coefficients

Intercept:	0
Slope:	0.579

Error Coefficients

Standard Error:	7930000
Relative Standard Error:	11.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.094768	9.36	3076699.0	0.473841	Y
2	IC 410-166660/2	0.5	0.24486	9.36	2973944.0	0.489719	Y
3	IC 410-166660/3	2.0	1.003218	9.36	2869818.0	0.501609	Y
4	IC 410-166660/4	8.0	4.406231	9.36	2923549.0	0.550779	Y
5	ICISAV 410-166660/5	20.0	11.507818	9.36	2881451.0	0.575391	Y
6	IC 410-166660/6	50.0	28.359609	9.36	2640569.0	0.567192	Y
7	IC 410-166660/7	100.0	59.01669	9.36	2739563.0	0.590167	Y



Calibration / EVE Acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

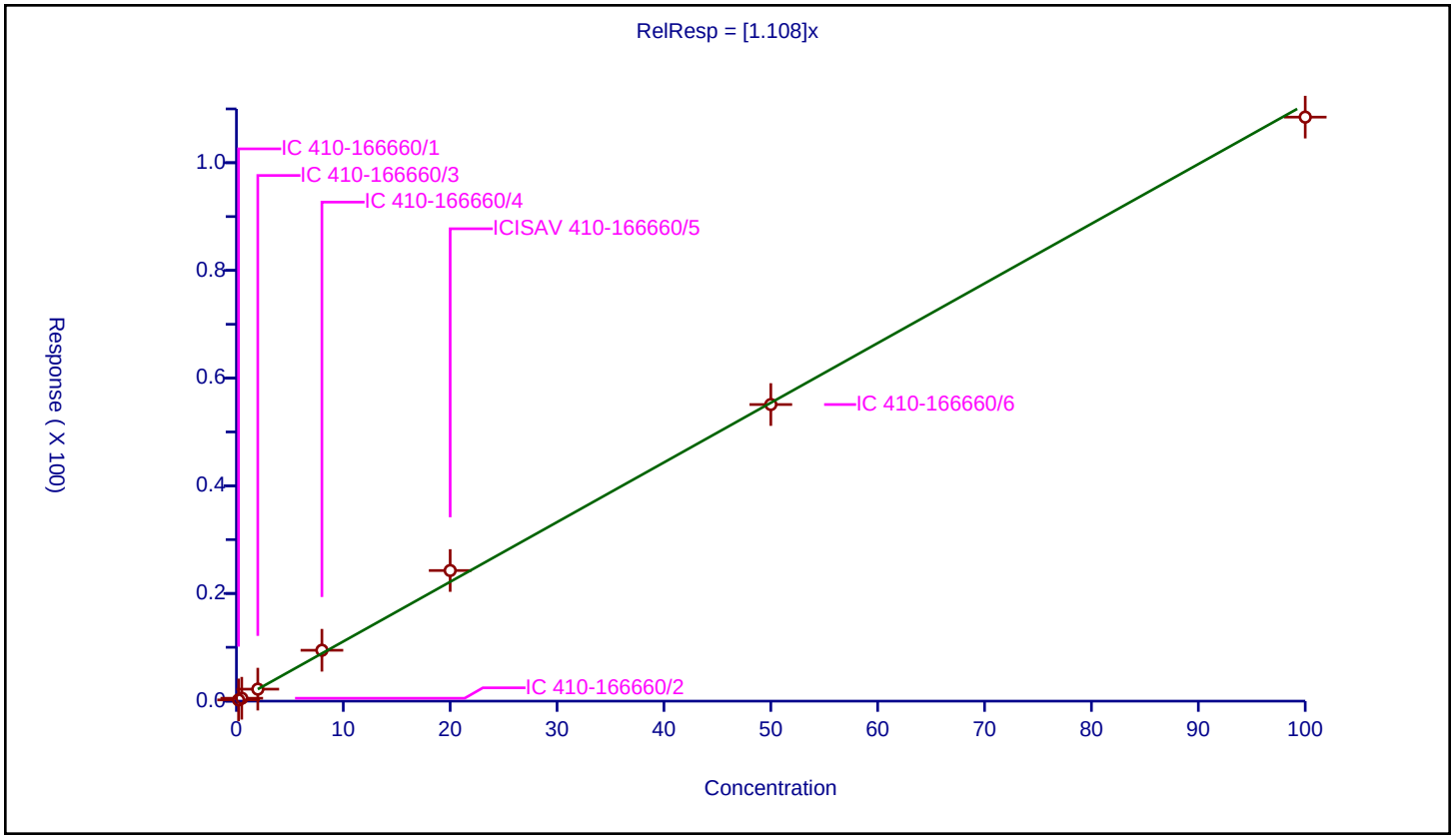
Curve Coefficients

Intercept:	0
Slope:	1.108

Error Coefficients

Standard Error:	12000000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.228642	10.0	2527007.0	1.14321	Y
2	IC 410-166660/2	0.5	0.536446	10.0	2554832.0	1.072892	Y
3	IC 410-166660/3	2.0	2.228301	10.0	2347448.0	1.11415	Y
4	IC 410-166660/4	8.0	9.450295	10.0	2424863.0	1.181287	Y
5	ICISAV 410-166660/5	20.0	24.260276	10.0	2358014.0	1.213014	Y
6	IC 410-166660/6	50.0	55.092219	10.0	2296319.0	1.101844	Y
7	IC 410-166660/7	100.0	108.472929	10.0	2386490.0	1.084729	Y



Calibration / PFECHS

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

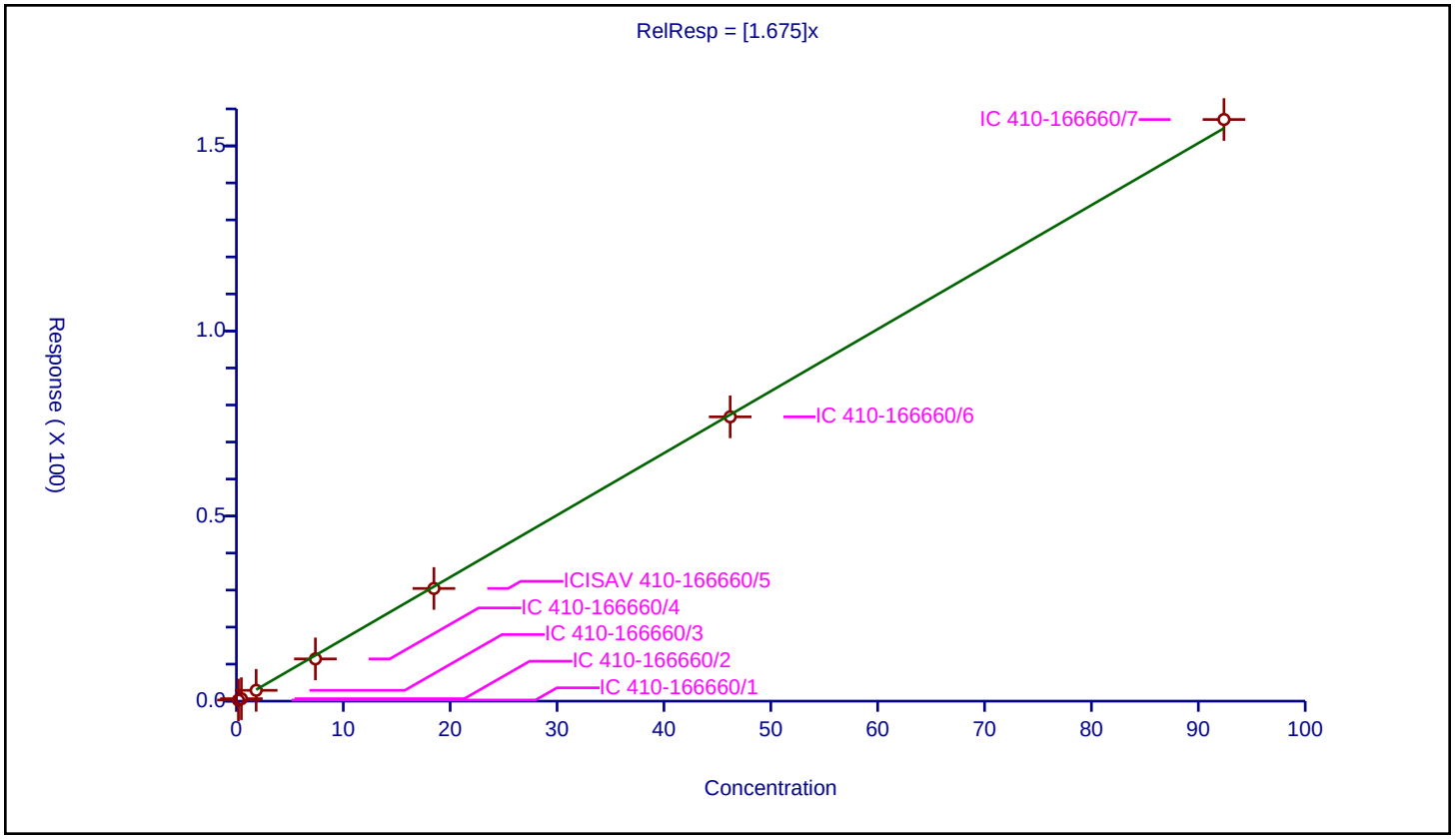
Curve Coefficients

Intercept:	0
Slope:	1.675

Error Coefficients

Standard Error:	17600000
Relative Standard Error:	7.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1848	0.296417	9.46	2561876.0	1.603986	Y
2	IC 410-166660/2	0.462	0.655383	9.46	2601439.0	1.418577	Y
3	IC 410-166660/3	1.848	2.919861	9.46	2468157.0	1.580011	Y
4	IC 410-166660/4	7.392	11.409779	9.46	2700670.0	1.543531	Y
5	ICISAV 410-166660/5	18.48	30.439145	9.46	2479274.0	1.64714	Y
6	IC 410-166660/6	46.2	76.806269	9.46	2272748.0	1.662473	Y
7	IC 410-166660/7	92.4	157.129478	9.46	2285787.0	1.700535	Y



Calibration / 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

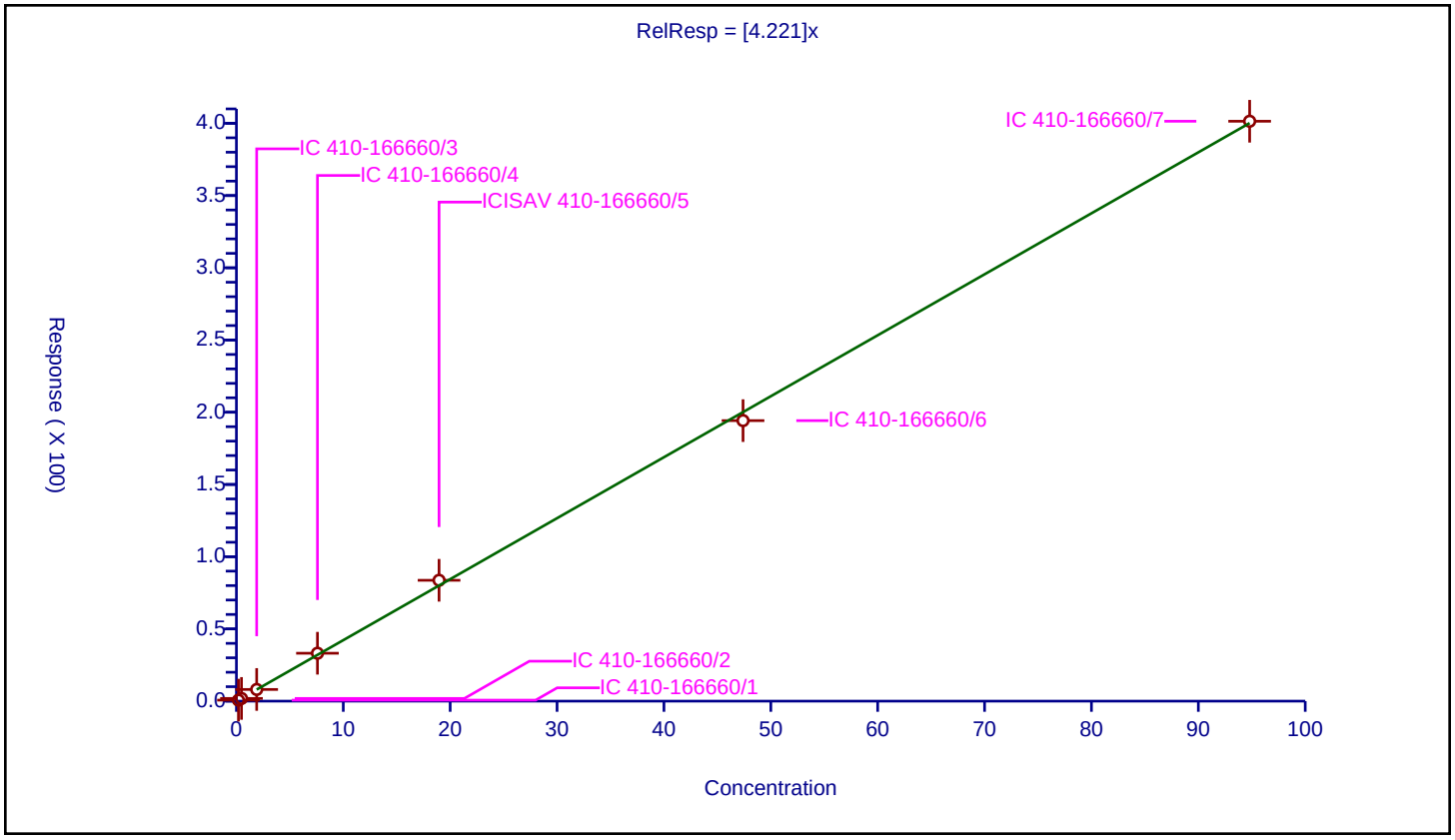
Curve Coefficients

Intercept:	0
Slope:	4.221

Error Coefficients

Standard Error:	2940000
Relative Standard Error:	6.9
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1896	0.686721	9.5	213816.0	3.621948	Y
2	IC 410-166660/2	0.474	1.879212	9.5	209664.0	3.964581	Y
3	IC 410-166660/3	1.896	8.083431	9.5	193411.0	4.263413	Y
4	IC 410-166660/4	7.584	33.167134	9.5	190595.0	4.373304	Y
5	ICISAV 410-166660/5	18.96	83.665948	9.5	181707.0	4.412761	Y
6	IC 410-166660/6	47.4	194.190743	9.5	161324.0	4.096851	Y
7	IC 410-166660/7	94.8	401.450533	9.5	145644.0	4.23471	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

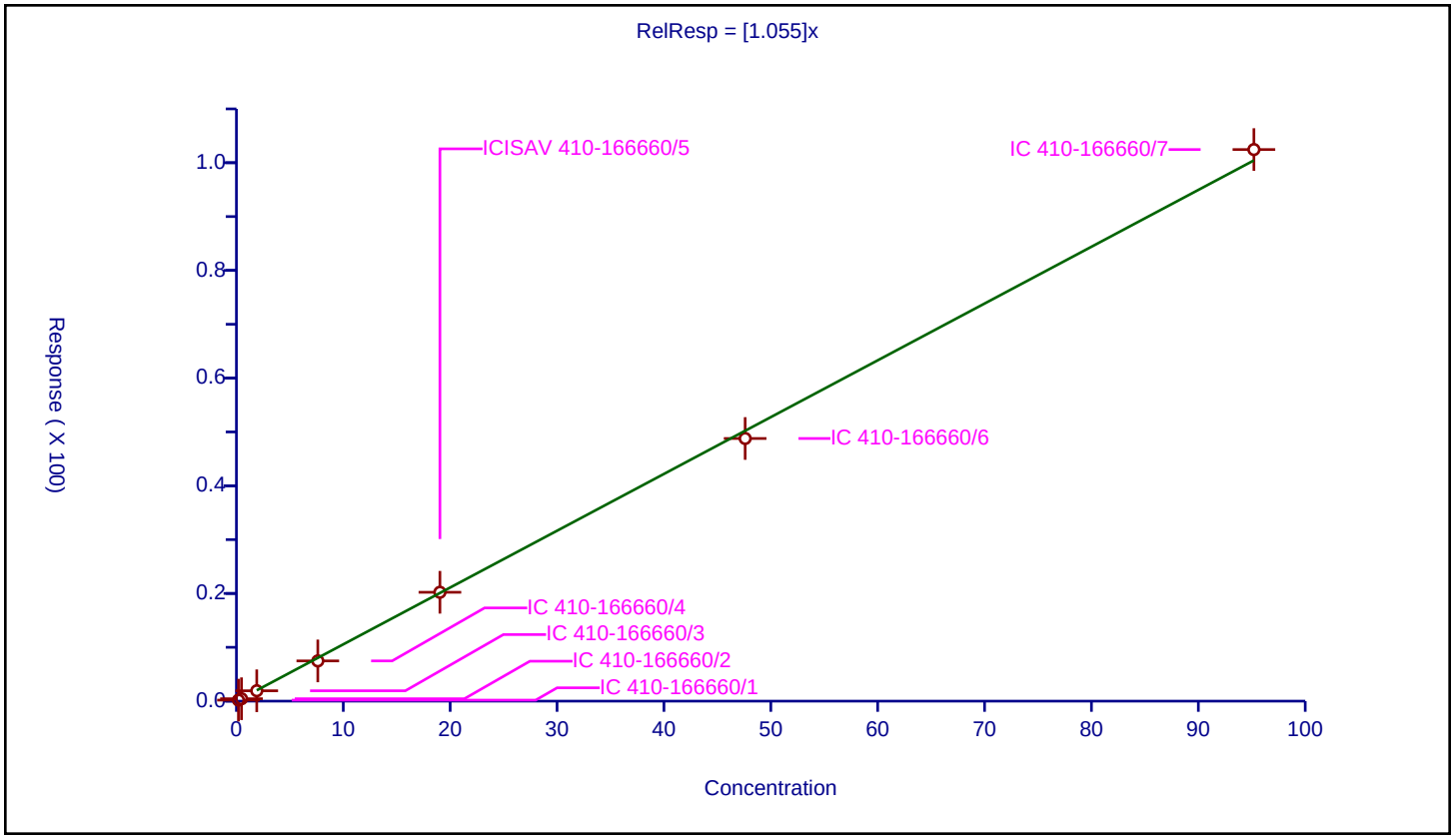
Curve Coefficients

Intercept:	0
Slope:	1.055

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	6.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1904	0.192381	9.46	2561876.0	1.010405	Y
2	IC 410-166660/2	0.476	0.447094	9.46	2601439.0	0.939273	Y
3	IC 410-166660/3	1.904	1.925095	9.46	2468157.0	1.011079	Y
4	IC 410-166660/4	7.616	7.47012	9.46	2700670.0	0.980846	Y
5	ICISAV 410-166660/5	19.04	20.220994	9.46	2479274.0	1.062027	Y
6	IC 410-166660/6	47.6	48.780602	9.46	2272748.0	1.024803	Y
7	IC 410-166660/7	95.2	102.443874	9.46	2285787.0	1.076091	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

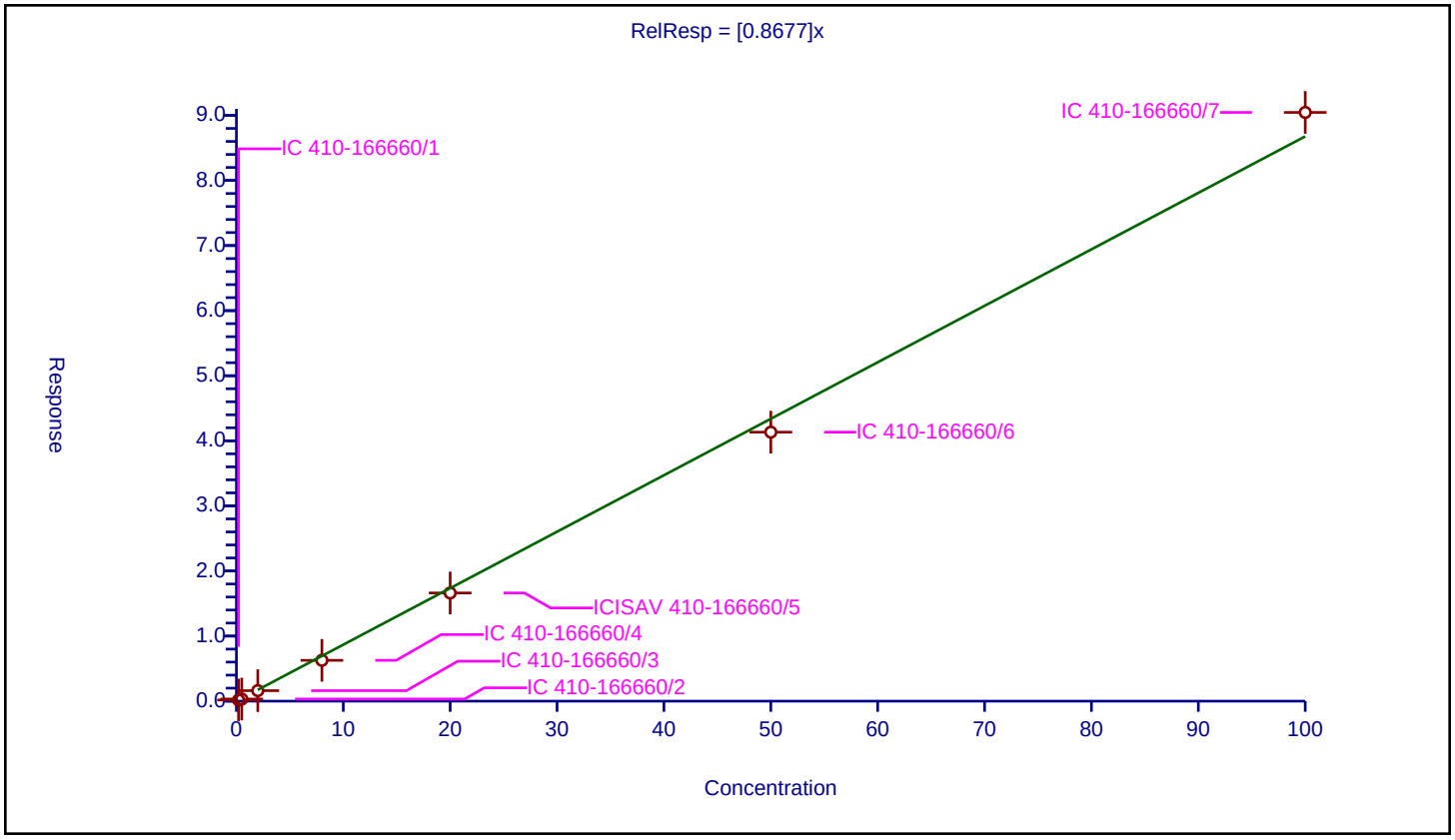
Curve Coefficients

Intercept:	0
Slope:	0.8677

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	11.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.178916	10.0	3652161.0	0.89458	Y
2	IC 410-166660/2	0.5	0.326758	10.0	3658366.0	0.653516	Y
3	IC 410-166660/3	2.0	1.615968	10.0	3220763.0	0.807984	Y
4	IC 410-166660/4	8.0	6.269688	10.0	3318771.0	0.783711	Y
5	ICISAV 410-166660/5	20.0	16.621315	10.0	3250602.0	0.831066	Y
6	IC 410-166660/6	50.0	41.33153	10.0	2874677.0	0.826631	Y
7	IC 410-166660/7	100.0	90.455557	10.0	2723762.0	0.904556	Y



Calibration / TAF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

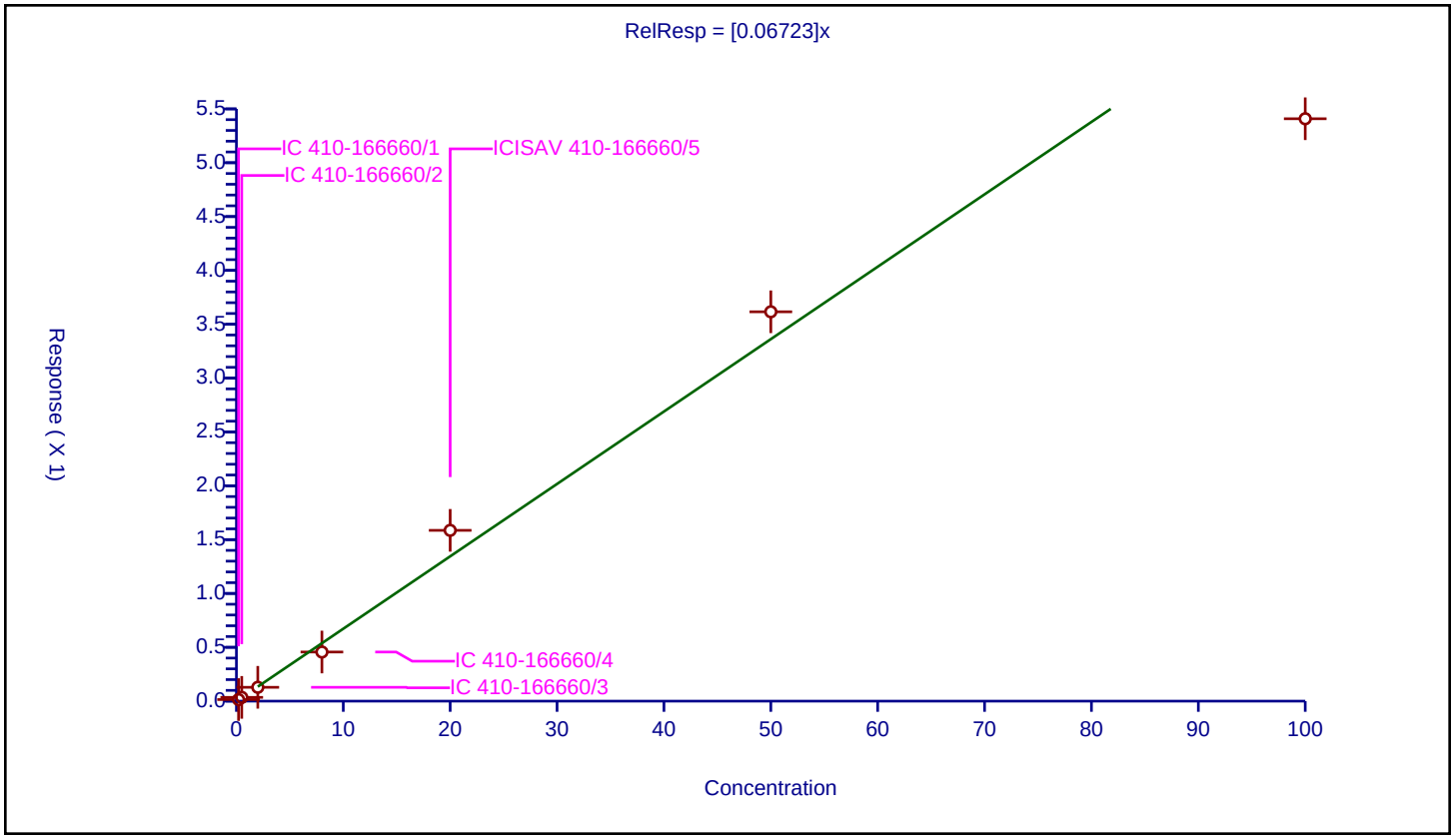
Curve Coefficients

Intercept:	0
Slope:	0.06723

Error Coefficients

Standard Error:	647000
Relative Standard Error:	13.7
Correlation Coefficient:	0.979
Coefficient of Determination (Adjusted):	0.977

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.014713	10.0	2527007.0	0.073565	Y
2	IC 410-166660/2	0.5	0.035067	10.0	2554832.0	0.070134	Y
3	IC 410-166660/3	2.0	0.128386	10.0	2347448.0	0.064193	Y
4	IC 410-166660/4	8.0	0.45631	10.0	2424863.0	0.057039	Y
5	ICISAV 410-166660/5	20.0	1.586047	10.0	2358014.0	0.079302	Y
6	IC 410-166660/6	50.0	3.615874	10.0	2296319.0	0.072317	Y
7	IC 410-166660/7	100.0	5.408512	10.0	2386490.0	0.054085	Y



Calibration / Perfluorooctanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

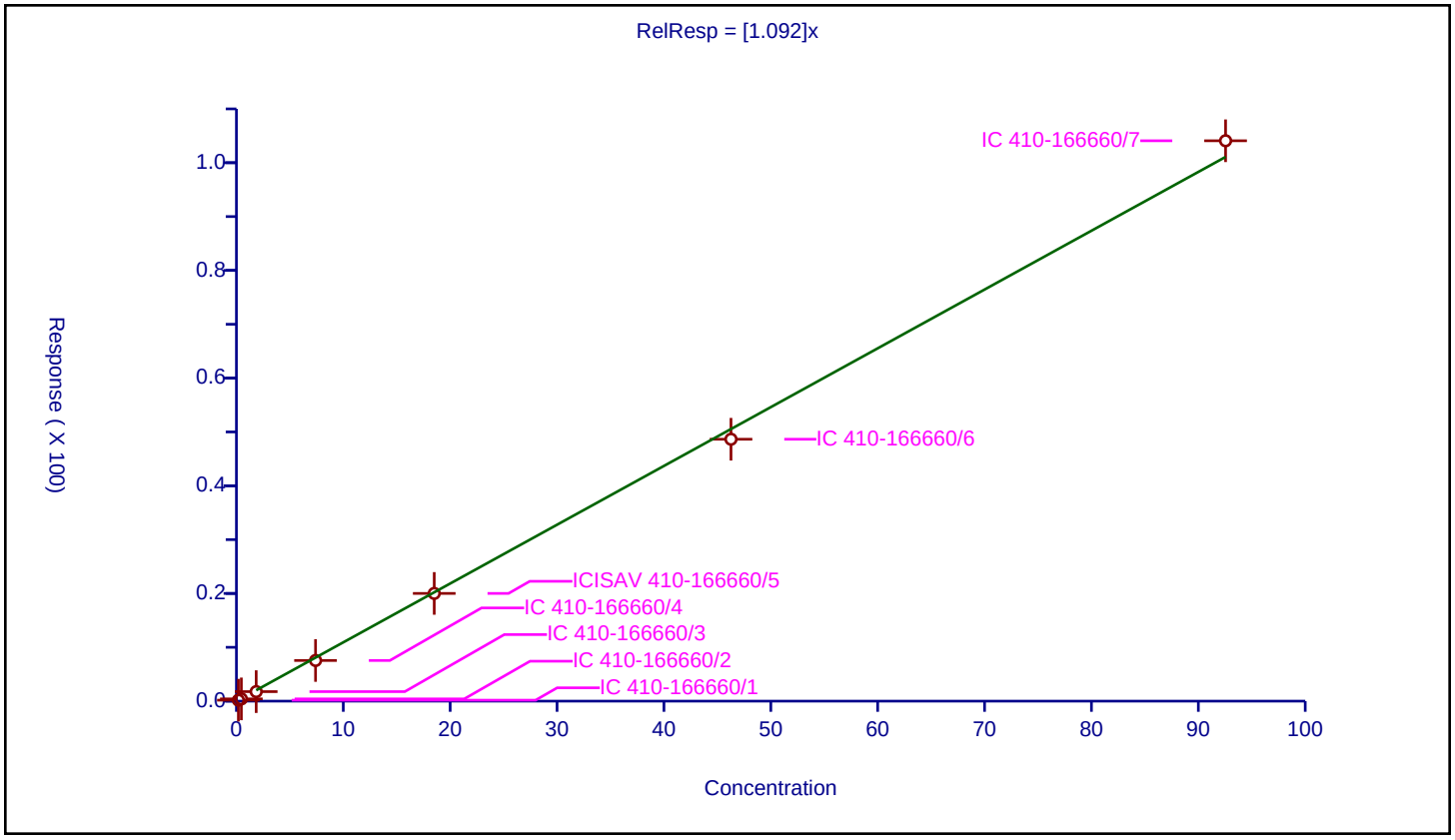
Curve Coefficients

Intercept:	0
Slope:	1.092

Error Coefficients

Standard Error:	13900000
Relative Standard Error:	10.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1851	0.180606	9.565	3154591.0	0.975723	Y
2	IC 410-166660/2	0.46275	0.415851	9.565	3061803.0	0.898652	Y
3	IC 410-166660/3	1.851	1.766861	9.565	2999446.0	0.954544	Y
4	IC 410-166660/4	7.404	7.549714	9.565	3084401.0	1.01968	Y
5	ICISAV 410-166660/5	18.51	20.006982	9.565	2958328.0	1.080874	Y
6	IC 410-166660/6	46.275	48.643496	9.565	2738757.0	1.051183	Y
7	IC 410-166660/7	92.55	104.079992	9.565	2776653.0	1.124581	Y



Calibration / Perfluorononanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

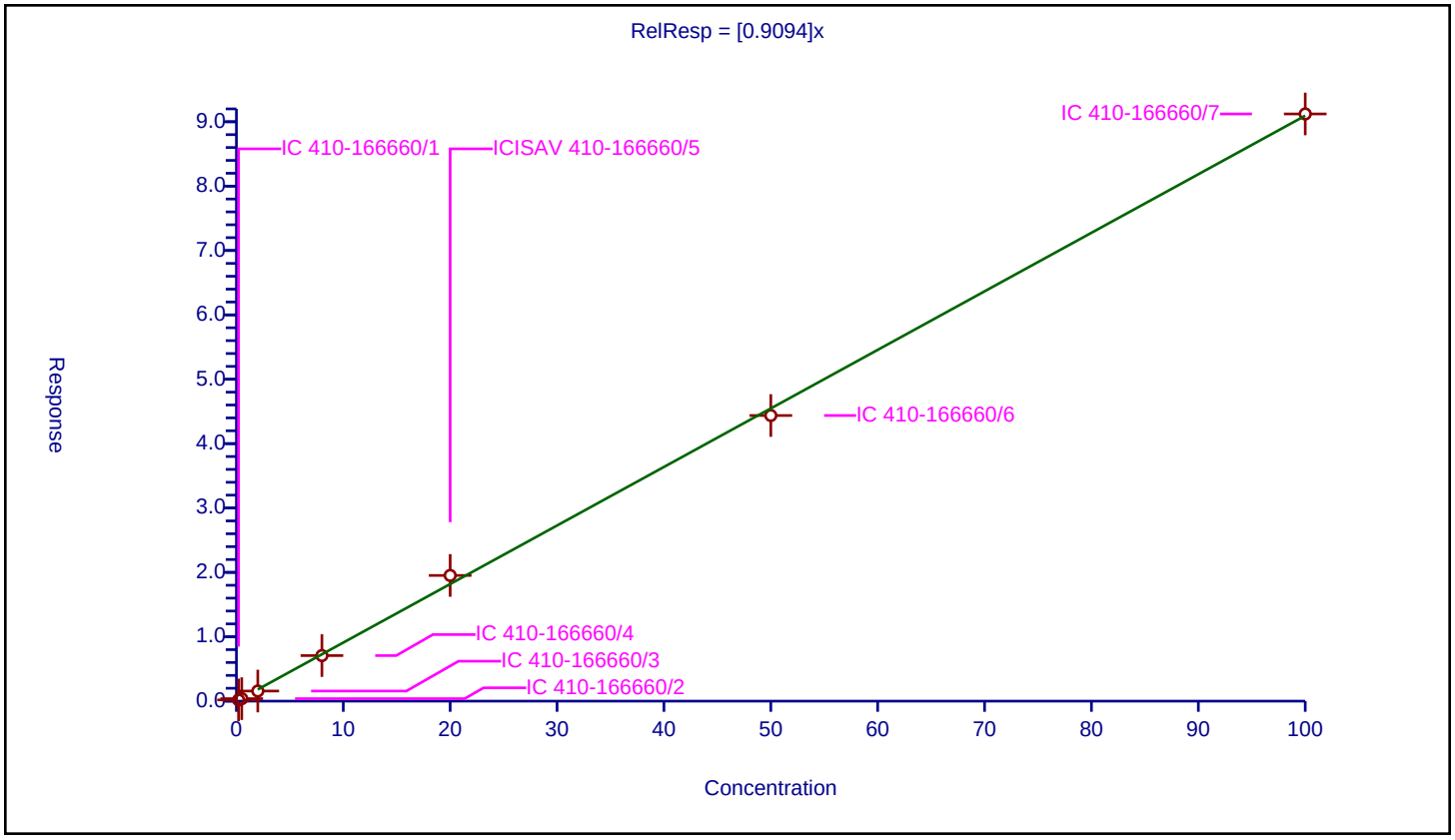
Curve Coefficients

Intercept:	0
Slope:	0.9094

Error Coefficients

Standard Error:	9680000
Relative Standard Error:	9.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.189422	10.0	2723068.0	0.947112	Y
2	IC 410-166660/2	0.5	0.386705	10.0	2665649.0	0.77341	Y
3	IC 410-166660/3	2.0	1.568814	10.0	2455690.0	0.784407	Y
4	IC 410-166660/4	8.0	7.075281	10.0	2528602.0	0.88441	Y
5	ICISAV 410-166660/5	20.0	19.524257	10.0	2421747.0	0.976213	Y
6	IC 410-166660/6	50.0	44.371546	10.0	2302684.0	0.887431	Y
7	IC 410-166660/7	100.0	91.214996	10.0	2280336.0	0.91215	Y



Calibration / 7:3 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

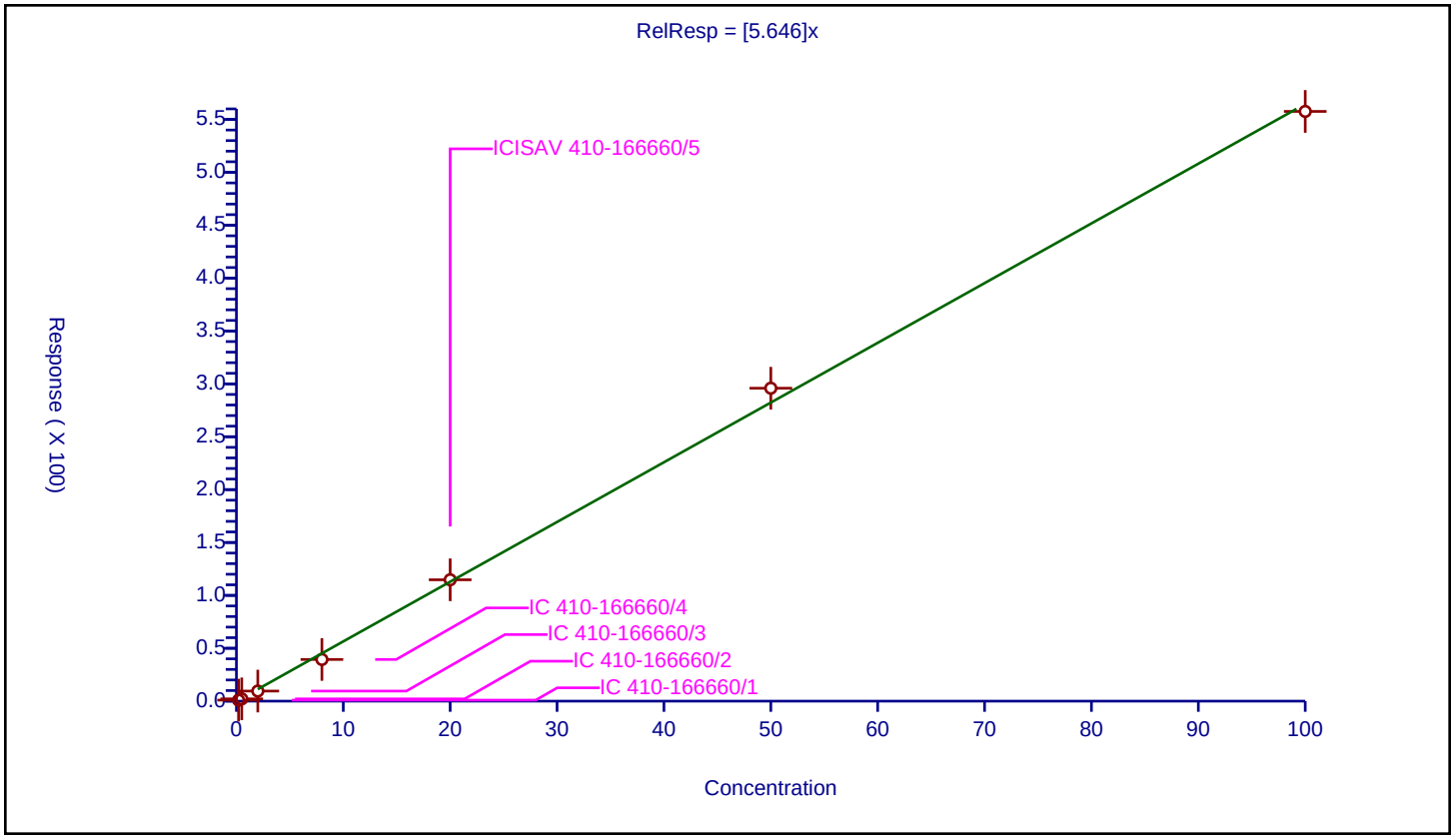
Curve Coefficients

Intercept:	0
Slope:	5.646

Error Coefficients

Standard Error:	2710000
Relative Standard Error:	14.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.977113	10.0	131254.0	4.885565	Y
2	IC 410-166660/2	0.5	2.145888	10.0	126563.0	4.291776	Y
3	IC 410-166660/3	2.0	9.53437	10.0	115027.0	4.767185	Y
4	IC 410-166660/4	8.0	39.389916	10.0	120213.0	4.92374	Y
5	ICISAV 410-166660/5	20.0	114.750864	10.0	111144.0	5.737543	Y
6	IC 410-166660/6	50.0	295.888059	10.0	99785.0	5.917761	Y
7	IC 410-166660/7	100.0	557.599958	10.0	103544.0	5.576	Y



Calibration / 8:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

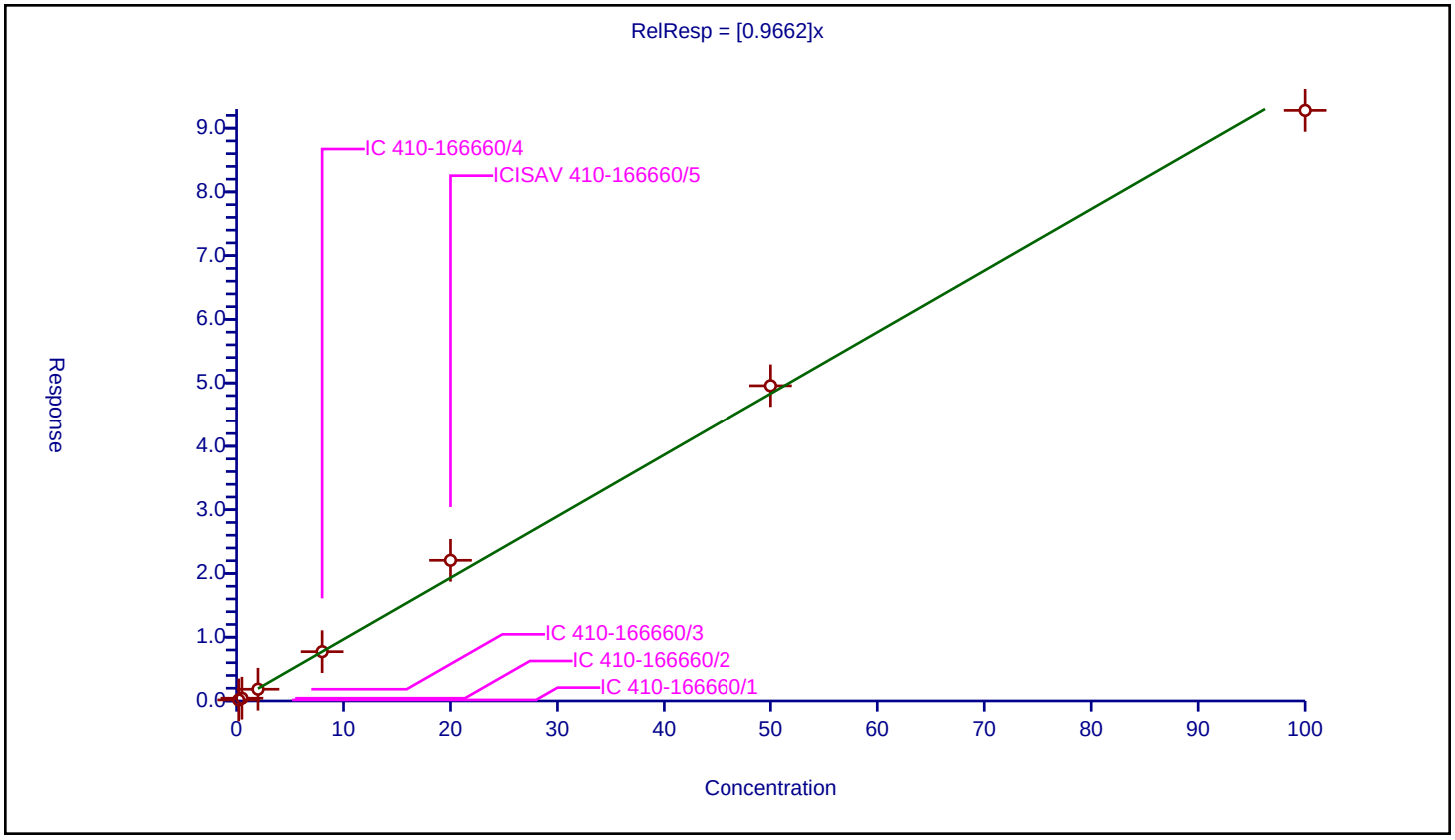
Curve Coefficients

Intercept:	0
Slope:	0.9662

Error Coefficients

Standard Error:	10500000
Relative Standard Error:	9.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.164597	10.0	2955767.0	0.822984	Y
2	IC 410-166660/2	0.5	0.432933	10.0	2879363.0	0.865865	Y
3	IC 410-166660/3	2.0	1.844152	10.0	2599509.0	0.922076	Y
4	IC 410-166660/4	8.0	7.734402	10.0	2609157.0	0.9668	Y
5	ICISAV 410-166660/5	20.0	22.066934	10.0	2437431.0	1.103347	Y
6	IC 410-166660/6	50.0	49.569864	10.0	2378133.0	0.991397	Y
7	IC 410-166660/7	100.0	92.785017	10.0	2387996.0	0.92785	Y



Calibration / 8:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

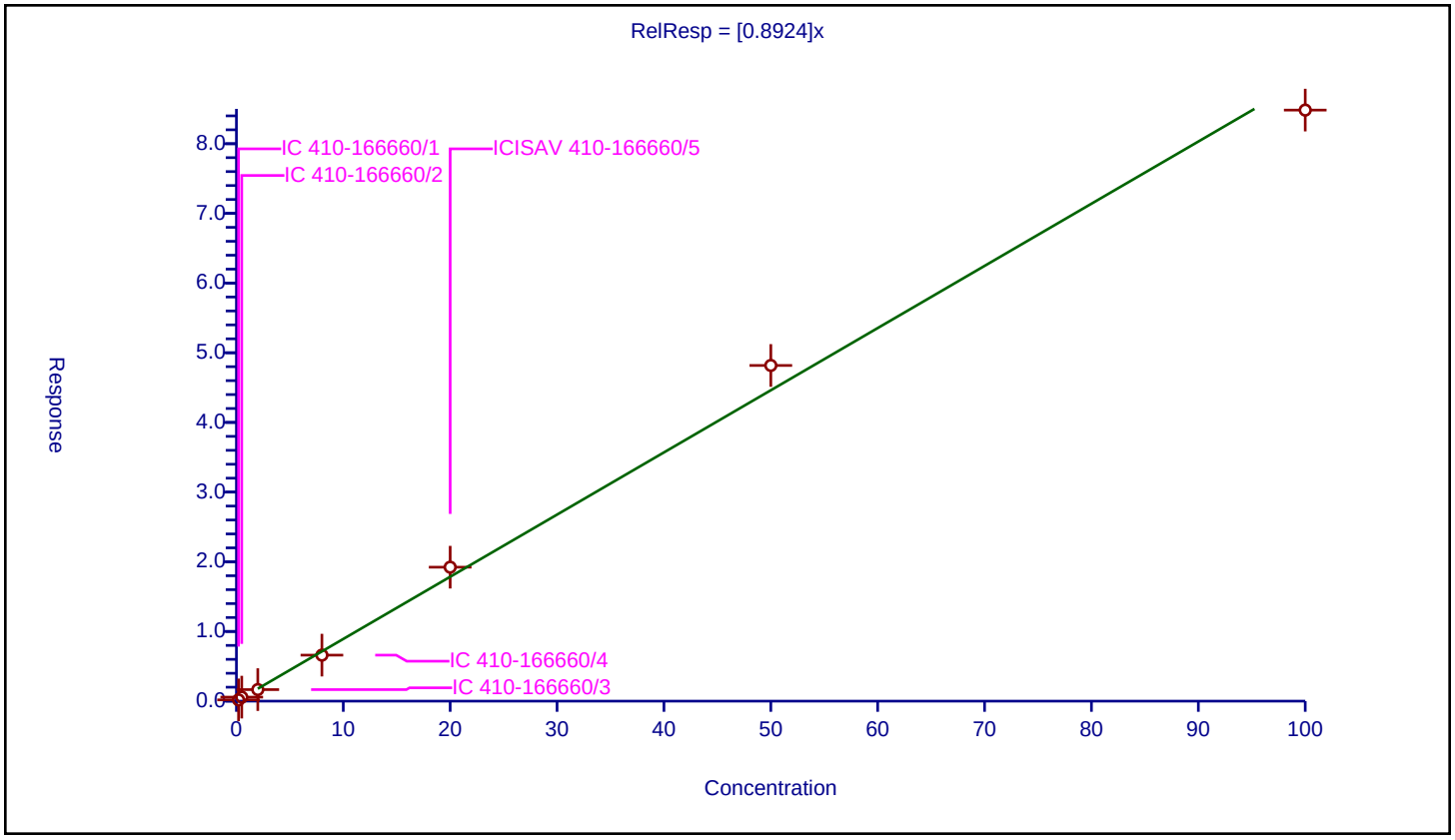
Curve Coefficients

Intercept:	0
Slope:	0.8924

Error Coefficients

Standard Error:	310000
Relative Standard Error:	13.6
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.182186	10.0	97428.0	0.910929	Y
2	IC 410-166660/2	0.5	0.576355	10.0	92096.0	1.15271	Y
3	IC 410-166660/3	2.0	1.658713	10.0	86754.0	0.829357	Y
4	IC 410-166660/4	8.0	6.604234	10.0	92153.0	0.825529	Y
5	ICISAV 410-166660/5	20.0	19.223733	10.0	80462.0	0.961187	Y
6	IC 410-166660/6	50.0	48.178818	10.0	73930.0	0.963576	Y
7	IC 410-166660/7	100.0	84.828675	10.0	76667.0	0.848287	Y



Calibration / 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

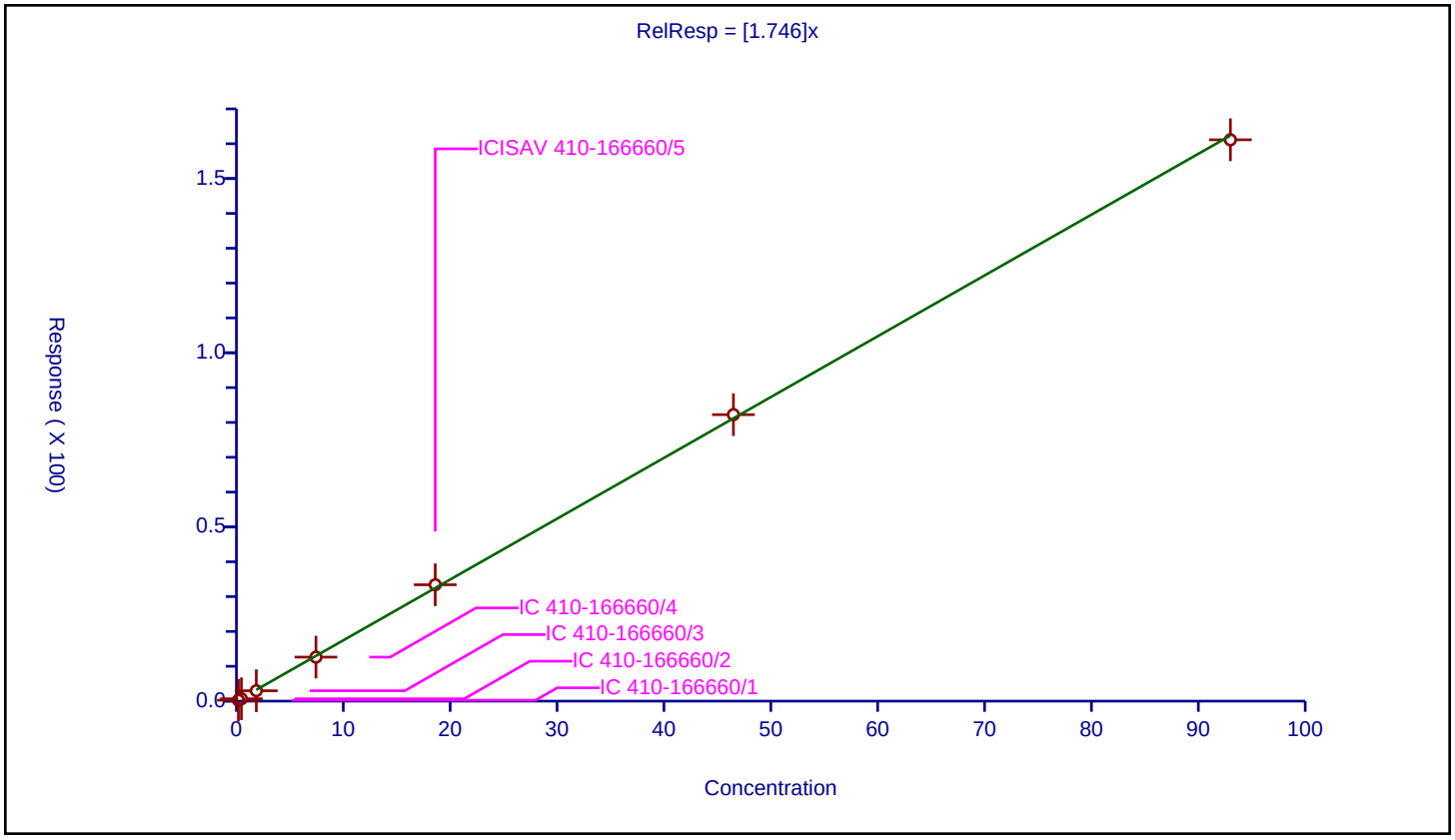
Curve Coefficients

Intercept:	0
Slope:	1.746

Error Coefficients

Standard Error:	21900000
Relative Standard Error:	10.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.186	0.272382	9.565	3154591.0	1.464417	Y
2	IC 410-166660/2	0.465	0.675672	9.565	3061803.0	1.453059	Y
3	IC 410-166660/3	1.86	2.984407	9.565	2999446.0	1.60452	Y
4	IC 410-166660/4	7.44	12.636693	9.565	3084401.0	1.69848	Y
5	ICISAV 410-166660/5	18.6	33.404008	9.565	2958328.0	1.795914	Y
6	IC 410-166660/6	46.5	82.23795	9.565	2738757.0	1.768558	Y
7	IC 410-166660/7	93.0	161.130521	9.565	2776653.0	1.732586	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

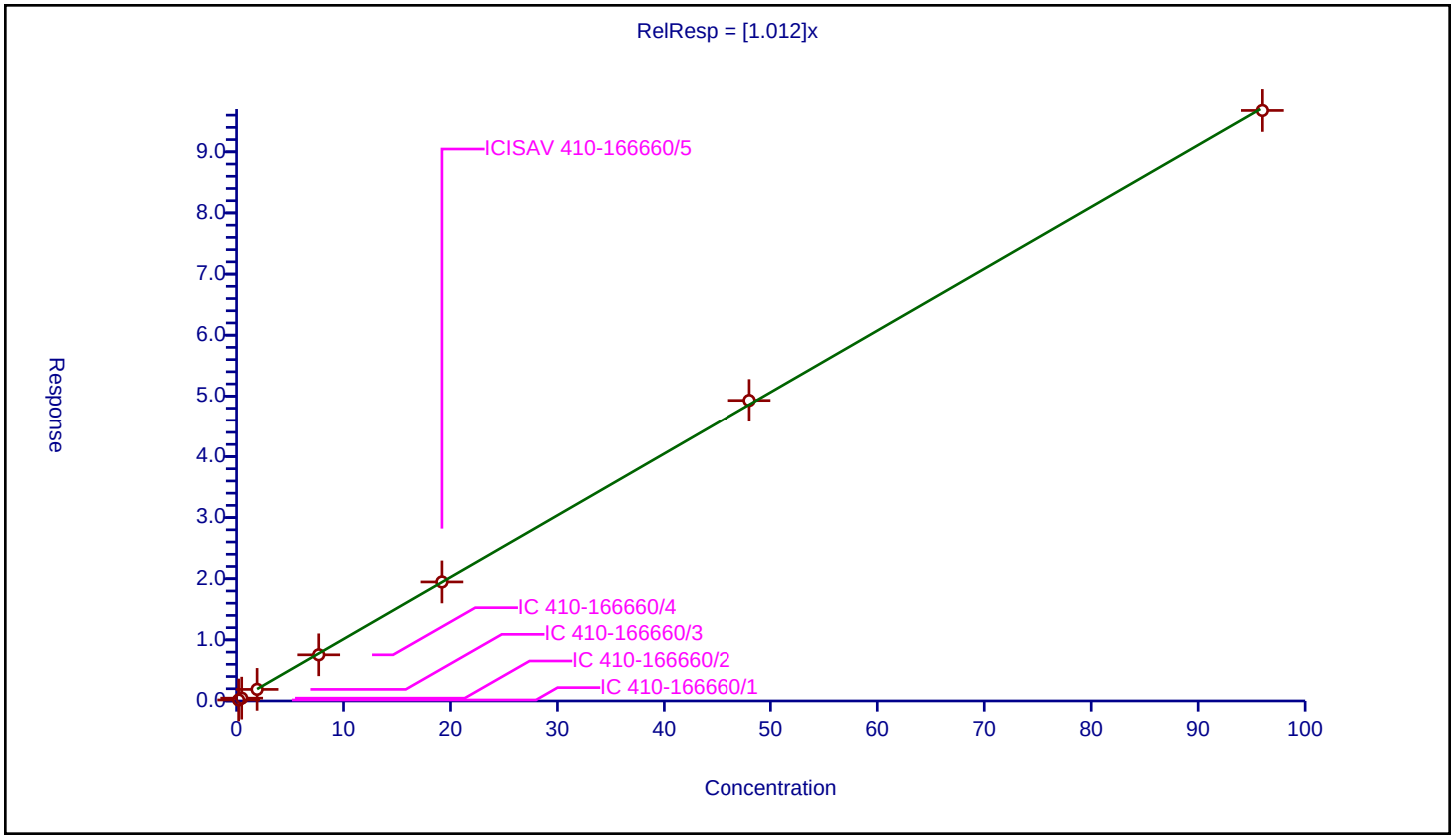
Curve Coefficients

Intercept:	0
Slope:	1.012

Error Coefficients

Standard Error:	13100000
Relative Standard Error:	6.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.192	0.164127	9.565	3154591.0	0.854828	Y
2	IC 410-166660/2	0.48	0.461839	9.565	3061803.0	0.962165	Y
3	IC 410-166660/3	1.92	1.897195	9.565	2999446.0	0.988122	Y
4	IC 410-166660/4	7.68	7.554847	9.565	3084401.0	0.983704	Y
5	ICISAV 410-166660/5	19.2	19.476688	9.565	2958328.0	1.014411	Y
6	IC 410-166660/6	48.0	49.284464	9.565	2738757.0	1.02676	Y
7	IC 410-166660/7	96.0	96.768074	9.565	2776653.0	1.008001	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

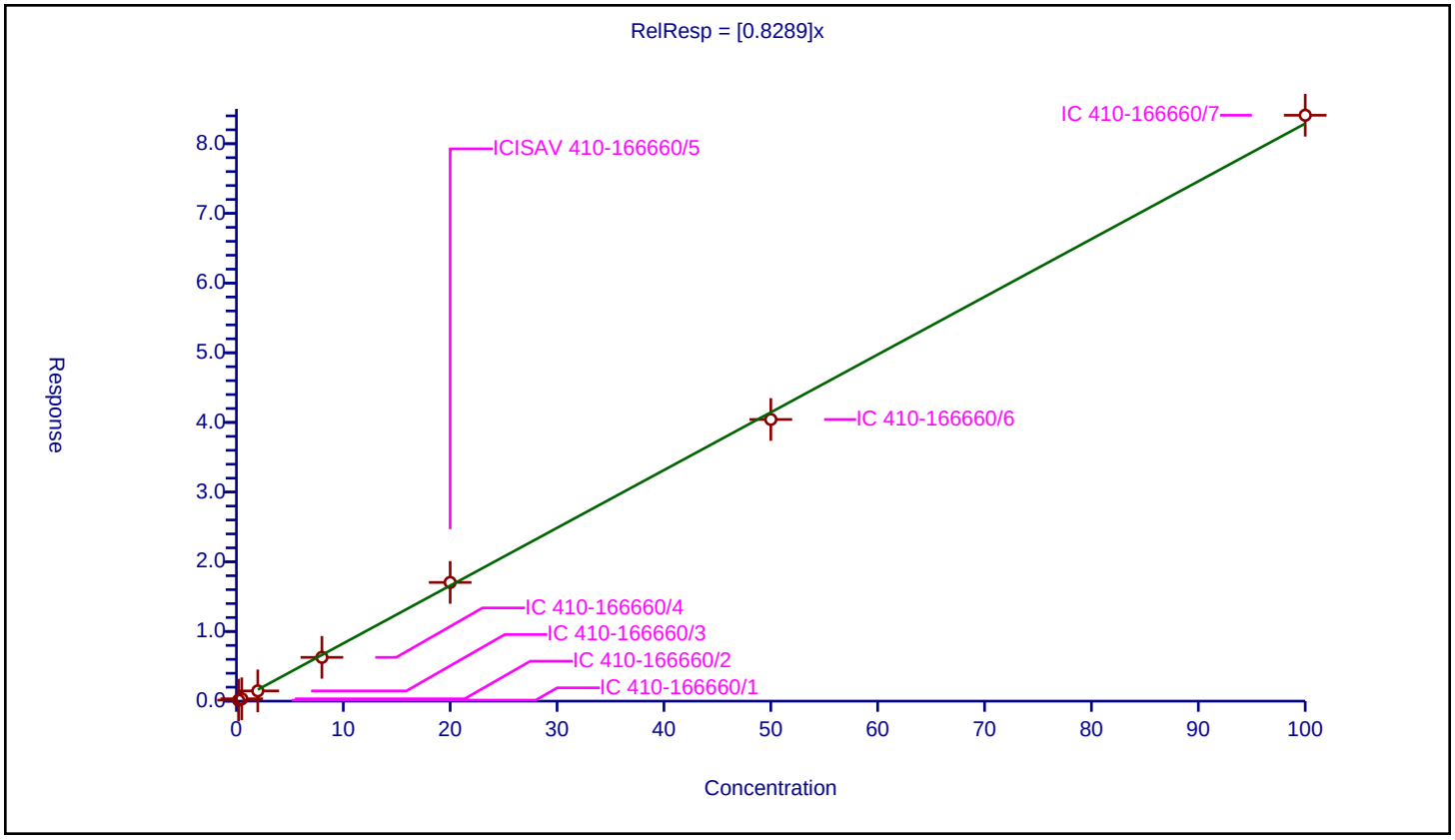
Curve Coefficients

Intercept:	0
Slope:	0.8289

Error Coefficients

Standard Error:	11600000
Relative Standard Error:	10.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.145311	10.0	4030946.0	0.726554	Y
2	IC 410-166660/2	0.5	0.337632	10.0	4103821.0	0.675263	Y
3	IC 410-166660/3	2.0	1.470888	10.0	3735859.0	0.735444	Y
4	IC 410-166660/4	8.0	6.281364	10.0	3732194.0	0.785171	Y
5	ICISAV 410-166660/5	20.0	17.039535	10.0	3453927.0	0.851977	Y
6	IC 410-166660/6	50.0	40.427089	10.0	3249114.0	0.808542	Y
7	IC 410-166660/7	100.0	84.087238	10.0	2914166.0	0.840872	Y



Calibration / 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

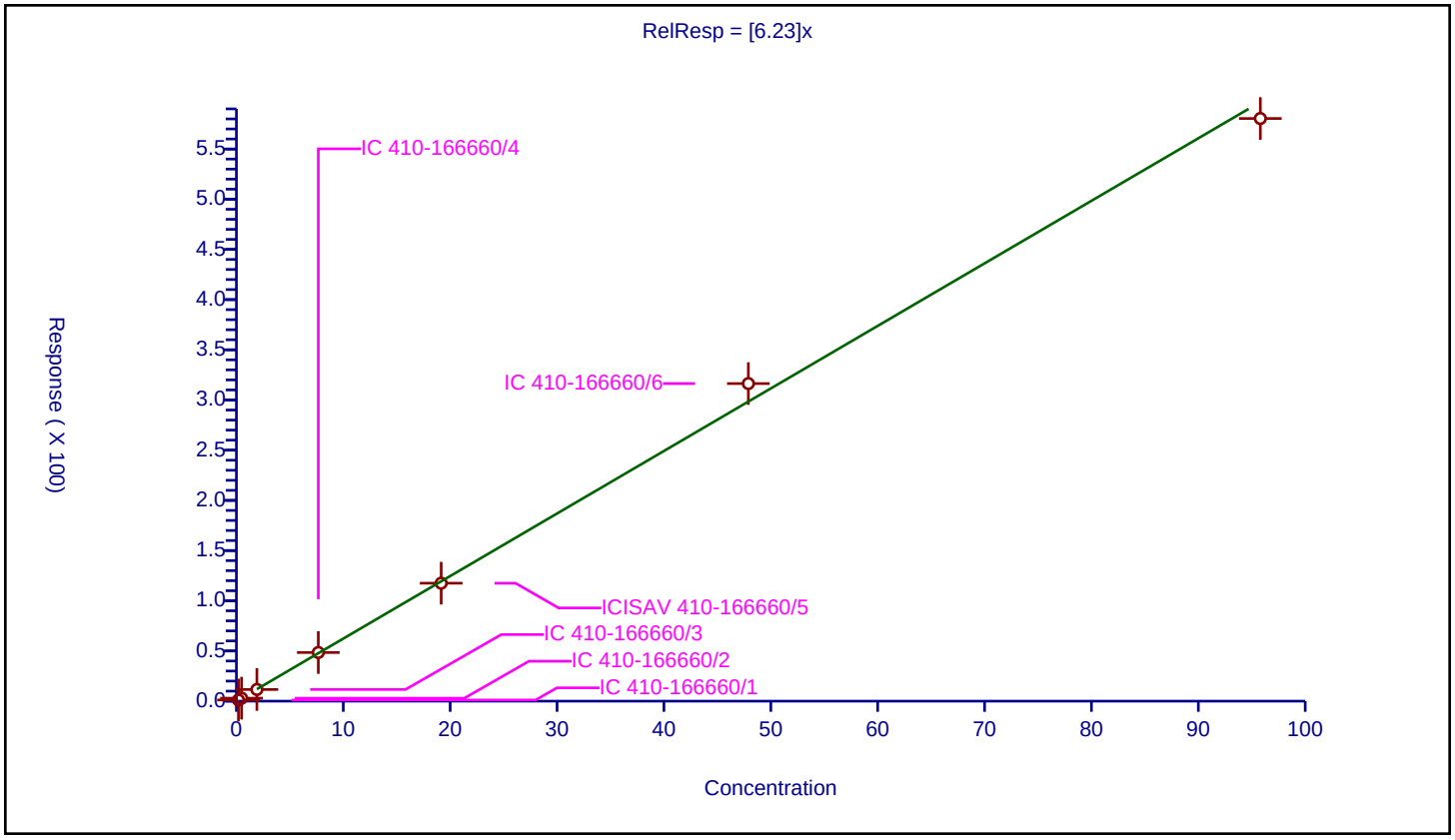
Curve Coefficients

Intercept:	0
Slope:	6.23

Error Coefficients

Standard Error:	3690000
Relative Standard Error:	3.5
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1916	1.143166	9.58	165032.0	5.966419	Y
2	IC 410-166660/2	0.479	2.965101	9.58	174741.0	6.19019	Y
3	IC 410-166660/3	1.916	11.61032	9.58	176282.0	6.059666	Y
4	IC 410-166660/4	7.664	48.473397	9.58	166306.0	6.324817	Y
5	ICISAV 410-166660/5	19.16	117.508344	9.58	165462.0	6.133003	Y
6	IC 410-166660/6	47.9	316.369781	9.58	129370.0	6.604797	Y
7	IC 410-166660/7	95.8	580.421097	9.58	126462.0	6.058675	Y



Calibration / Perfluorooctanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

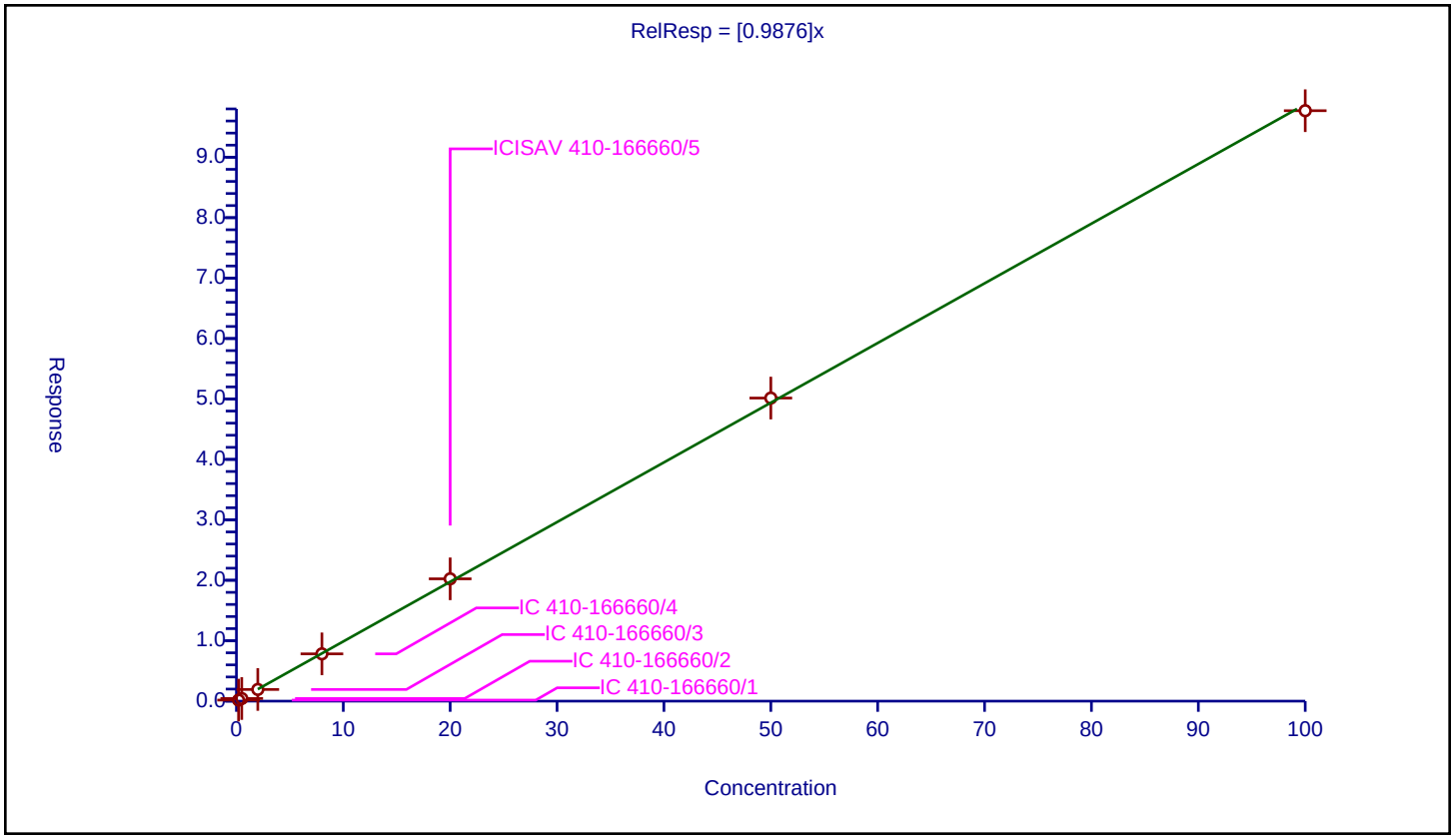
Curve Coefficients

Intercept:	0
Slope:	0.9876

Error Coefficients

Standard Error:	22300000
Relative Standard Error:	6.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.176083	10.0	5824285.0	0.880417	Y
2	IC 410-166660/2	0.5	0.435078	10.0	5803351.0	0.870156	Y
3	IC 410-166660/3	2.0	1.931487	10.0	5358161.0	0.965744	Y
4	IC 410-166660/4	8.0	7.825112	10.0	5551923.0	0.978139	Y
5	ICISAV 410-166660/5	20.0	20.239558	10.0	5328061.0	1.011978	Y
6	IC 410-166660/6	50.0	50.149297	10.0	4877914.0	1.002986	Y
7	IC 410-166660/7	100.0	97.702147	10.0	4866351.0	0.977021	Y



Calibration / N-methylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

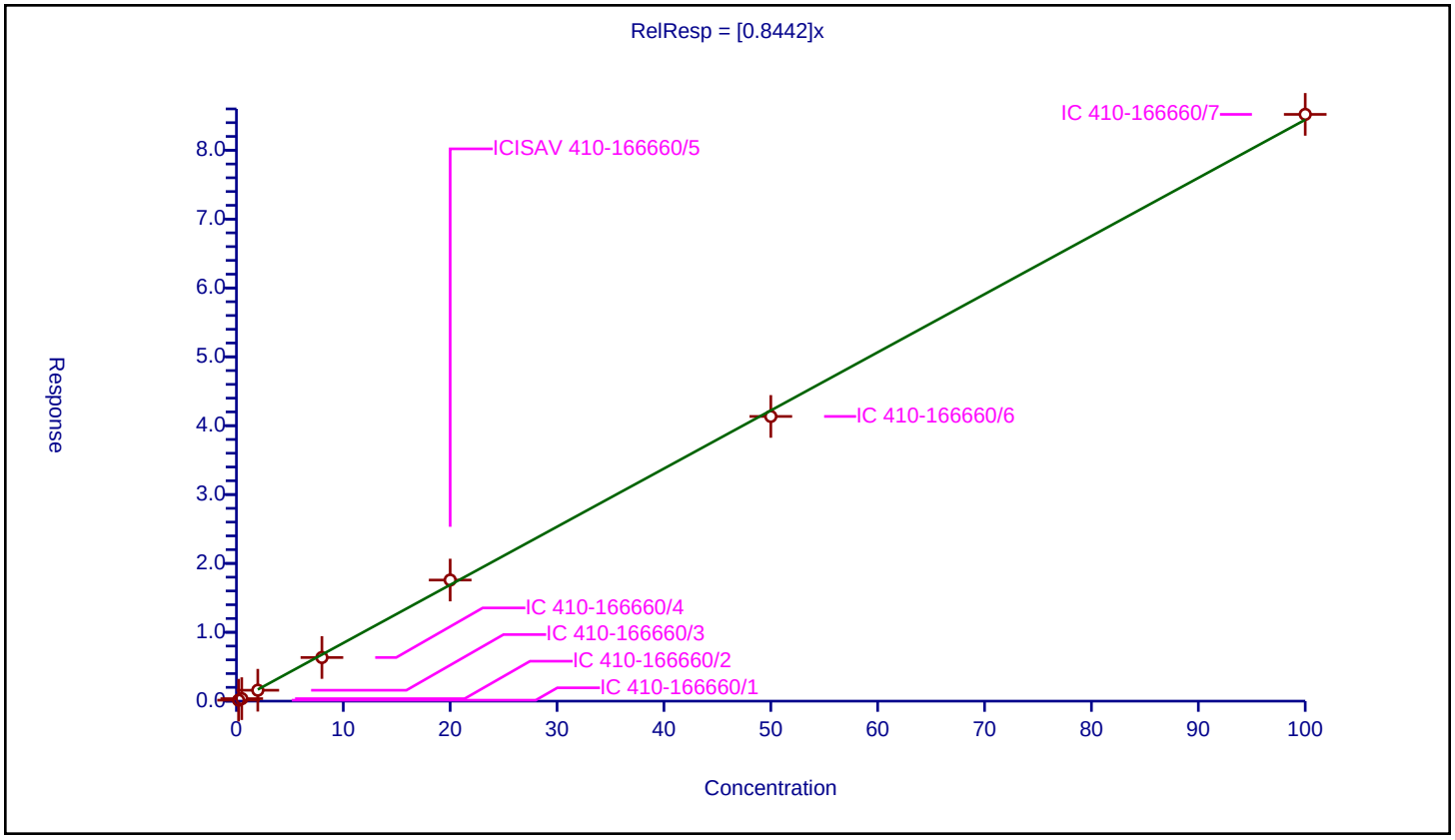
Curve Coefficients

Intercept:	0
Slope:	0.8442

Error Coefficients

Standard Error:	3520000
Relative Standard Error:	9.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.141092	10.0	1079579.0	0.70546	Y
2	IC 410-166660/2	0.5	0.361114	10.0	1038175.0	0.722229	Y
3	IC 410-166660/3	2.0	1.582632	10.0	966422.0	0.791316	Y
4	IC 410-166660/4	8.0	6.335306	10.0	1042772.0	0.791913	Y
5	ICISAV 410-166660/5	20.0	17.584939	10.0	968369.0	0.879247	Y
6	IC 410-166660/6	50.0	41.340901	10.0	896032.0	0.826818	Y
7	IC 410-166660/7	100.0	85.204076	10.0	888127.0	0.852041	Y



Calibration / Perfluorodecanesulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

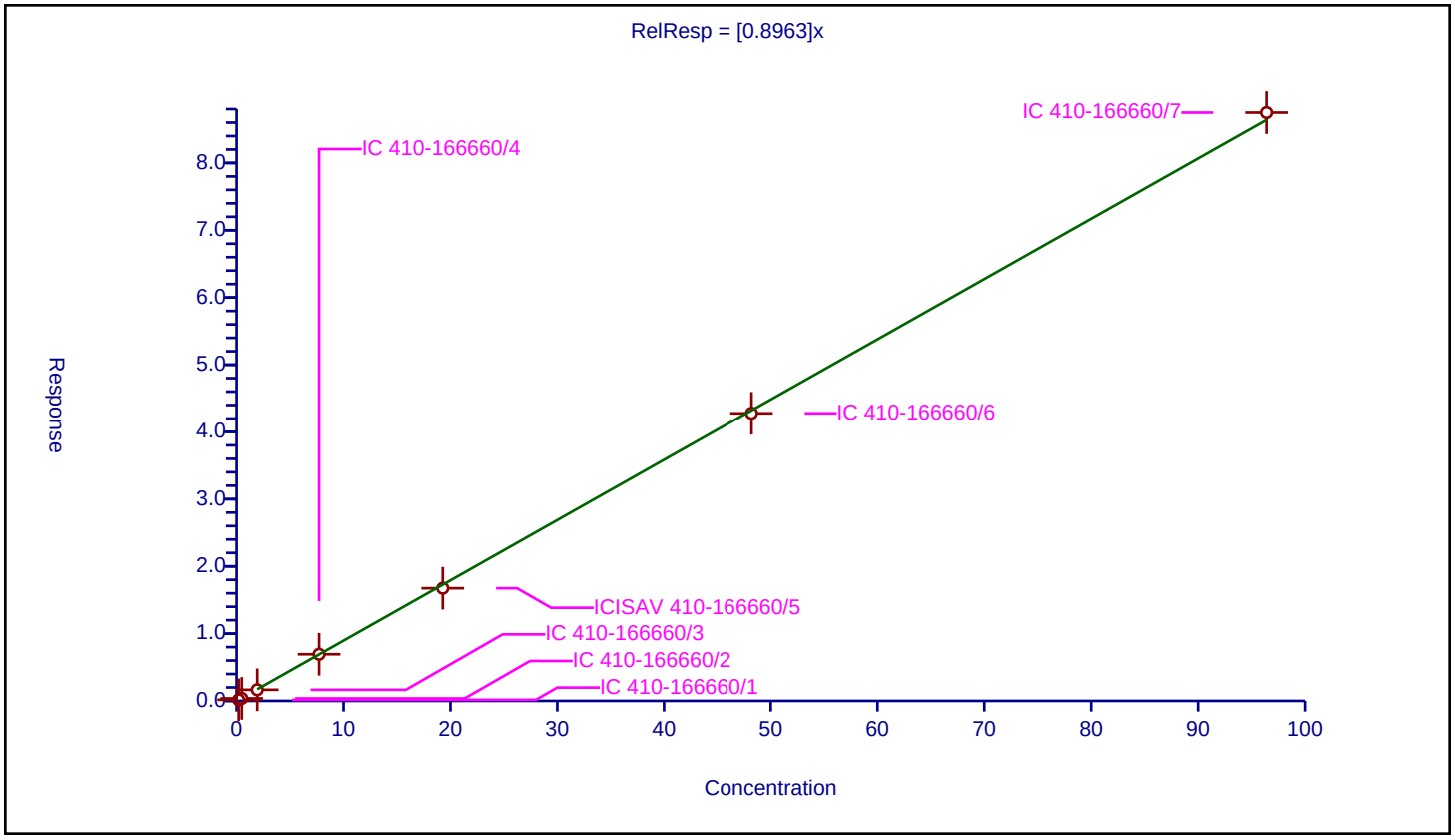
Curve Coefficients

Intercept:	0
Slope:	0.8963

Error Coefficients

Standard Error:	11700000
Relative Standard Error:	6.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1928	0.162823	9.565	3154591.0	0.844519	Y
2	IC 410-166660/2	0.482	0.374224	9.565	3061803.0	0.776399	Y
3	IC 410-166660/3	1.928	1.653482	9.565	2999446.0	0.857615	Y
4	IC 410-166660/4	7.712	6.935634	9.565	3084401.0	0.89933	Y
5	ICISAV 410-166660/5	19.28	16.751237	9.565	2958328.0	0.86884	Y
6	IC 410-166660/6	48.2	42.770565	9.565	2738757.0	0.887356	Y
7	IC 410-166660/7	96.4	87.486267	9.565	2776653.0	0.907534	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

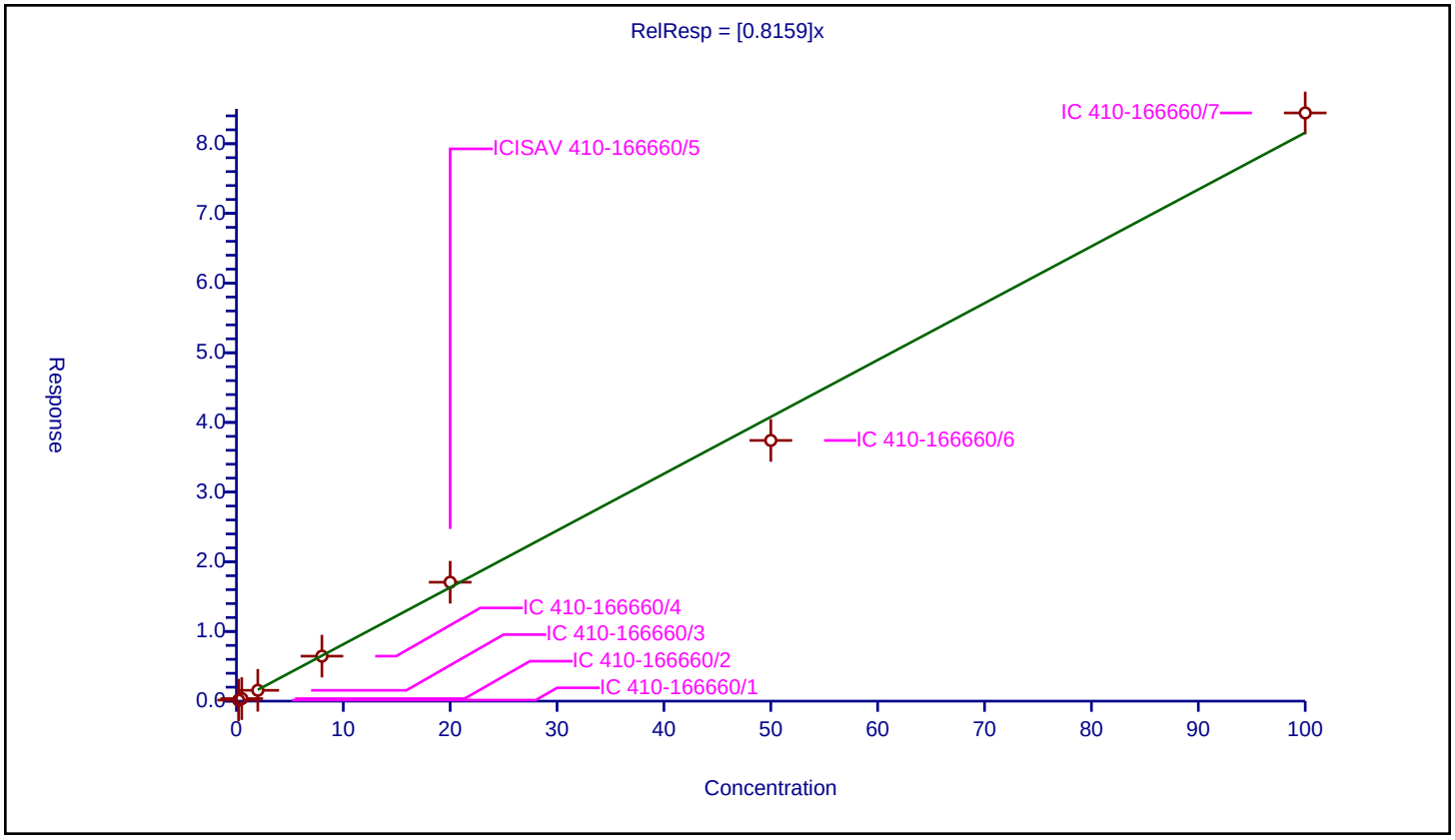
Curve Coefficients

Intercept:	0
Slope:	0.8159

Error Coefficients

Standard Error:	13900000
Relative Standard Error:	6.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.152498	10.0	4772001.0	0.762489	Y
2	IC 410-166660/2	0.5	0.366263	10.0	4665033.0	0.732526	Y
3	IC 410-166660/3	2.0	1.554118	10.0	4318295.0	0.777059	Y
4	IC 410-166660/4	8.0	6.459658	10.0	4470500.0	0.807457	Y
5	ICISAV 410-166660/5	20.0	17.064527	10.0	4066101.0	0.853226	Y
6	IC 410-166660/6	50.0	37.418822	10.0	4084333.0	0.748376	Y
7	IC 410-166660/7	100.0	84.417602	10.0	3506244.0	0.844176	Y



Calibration / N-ethylperfluorooctanesulfonamidoacetic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

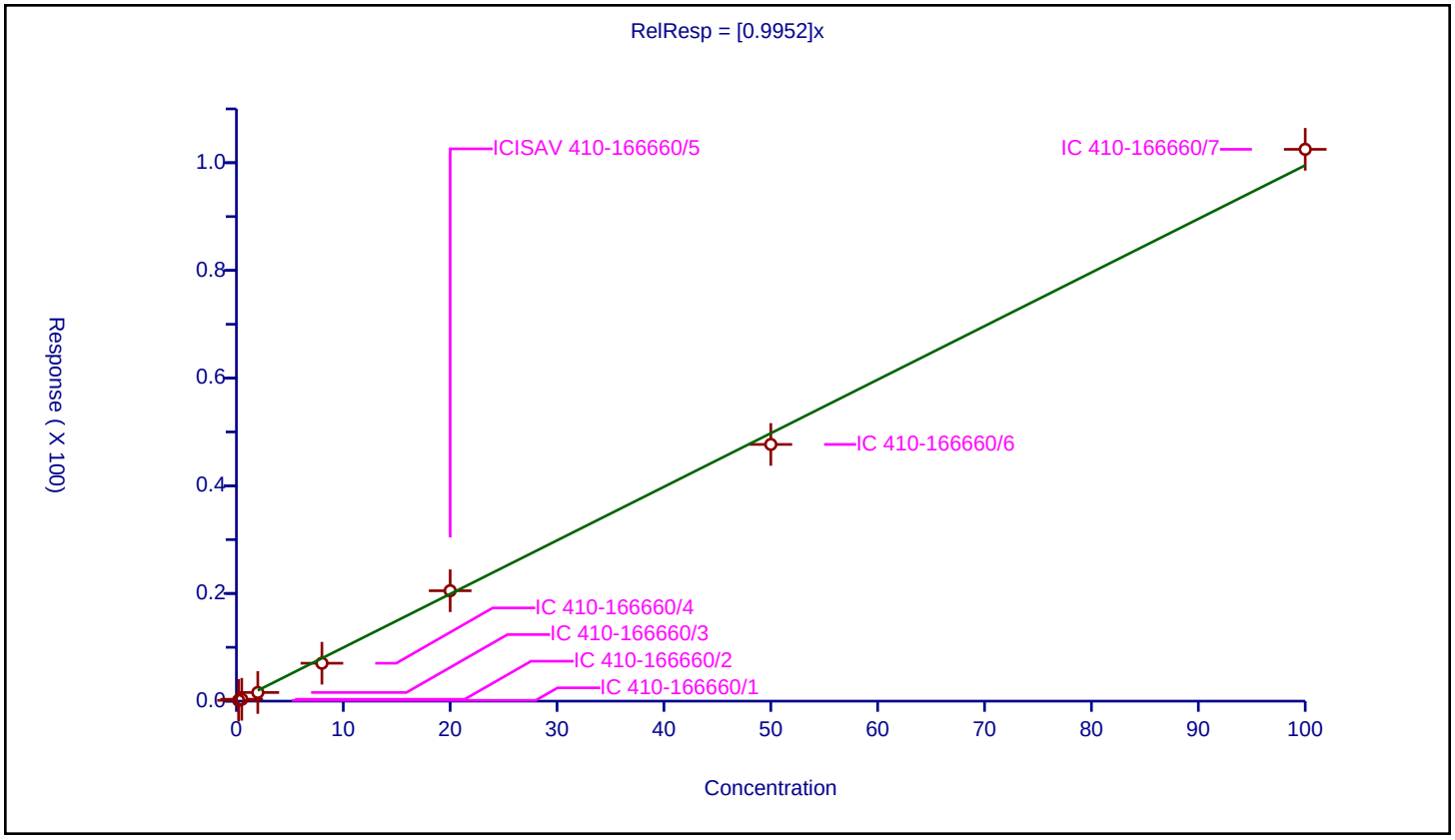
Curve Coefficients

Intercept:	0
Slope:	0.9952

Error Coefficients

Standard Error:	2920000
Relative Standard Error:	18.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.148924	10.0	862456.0	0.744618	Y
2	IC 410-166660/2	0.5	0.350216	10.0	870376.0	0.700433	Y
3	IC 410-166660/3	2.0	1.603209	10.0	811753.0	0.801605	Y
4	IC 410-166660/4	8.0	7.043605	10.0	812246.0	0.880451	Y
5	ICISAV 410-166660/5	20.0	20.506685	10.0	729290.0	1.025334	Y
6	IC 410-166660/6	50.0	47.679751	10.0	676893.0	0.953595	Y
7	IC 410-166660/7	100.0	102.492304	10.0	601588.0	1.024923	Y



Calibration / 10:2 FTUCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

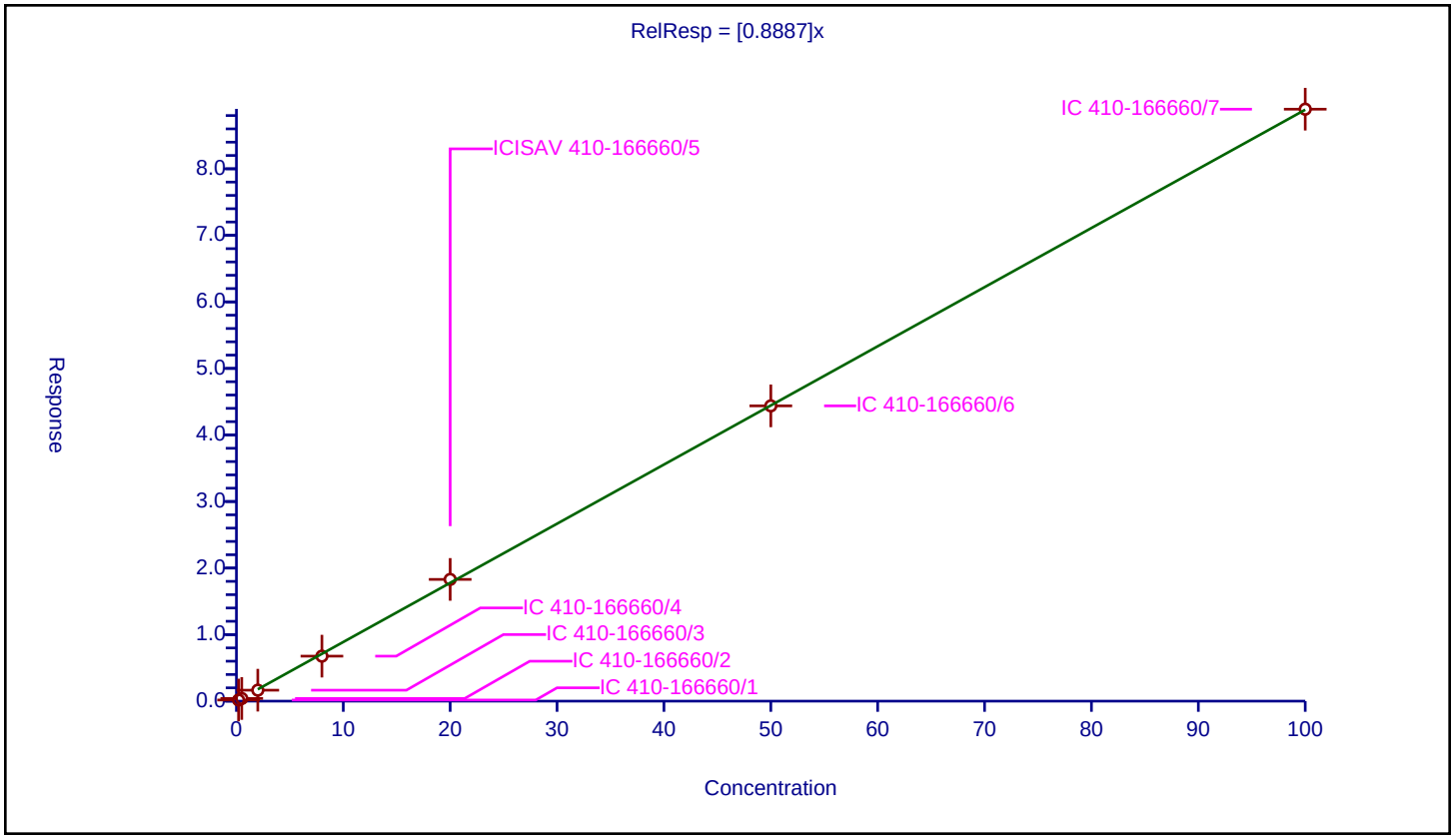
Curve Coefficients

Intercept:	0
Slope:	0.8887

Error Coefficients

Standard Error:	9590000
Relative Standard Error:	5.9
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.17138	10.0	3348063.0	0.856898	Y
2	IC 410-166660/2	0.5	0.39802	10.0	3307775.0	0.79604	Y
3	IC 410-166660/3	2.0	1.646222	10.0	3059314.0	0.823111	Y
4	IC 410-166660/4	8.0	6.761221	10.0	2968174.0	0.845153	Y
5	ICISAV 410-166660/5	20.0	18.292407	10.0	2736267.0	0.91462	Y
6	IC 410-166660/6	50.0	44.371538	10.0	2542794.0	0.887431	Y
7	IC 410-166660/7	100.0	88.95459	10.0	2236243.0	0.889546	Y



Calibration / 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

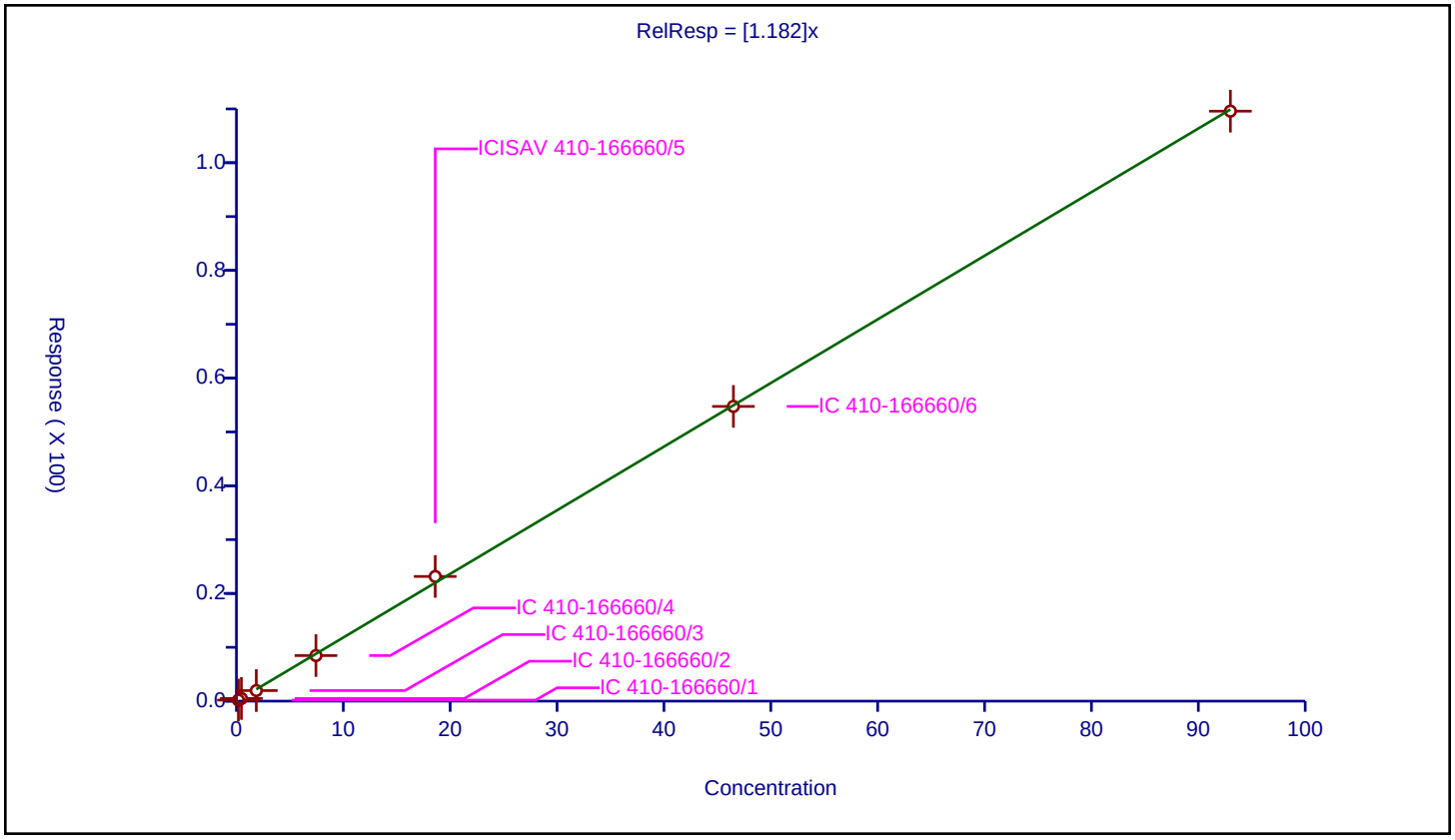
Curve Coefficients

Intercept:	0
Slope:	1.182

Error Coefficients

Standard Error:	14800000
Relative Standard Error:	8.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.186	0.195124	9.565	3154591.0	1.049054	Y
2	IC 410-166660/2	0.465	0.490077	9.565	3061803.0	1.053929	Y
3	IC 410-166660/3	1.86	1.96083	9.565	2999446.0	1.05421	Y
4	IC 410-166660/4	7.44	8.460771	9.565	3084401.0	1.1372	Y
5	ICISAV 410-166660/5	18.6	23.160201	9.565	2958328.0	1.245172	Y
6	IC 410-166660/6	46.5	54.740595	9.565	2738757.0	1.177217	Y
7	IC 410-166660/7	93.0	109.581184	9.565	2776653.0	1.178292	Y



Calibration / 10:2 FTCA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

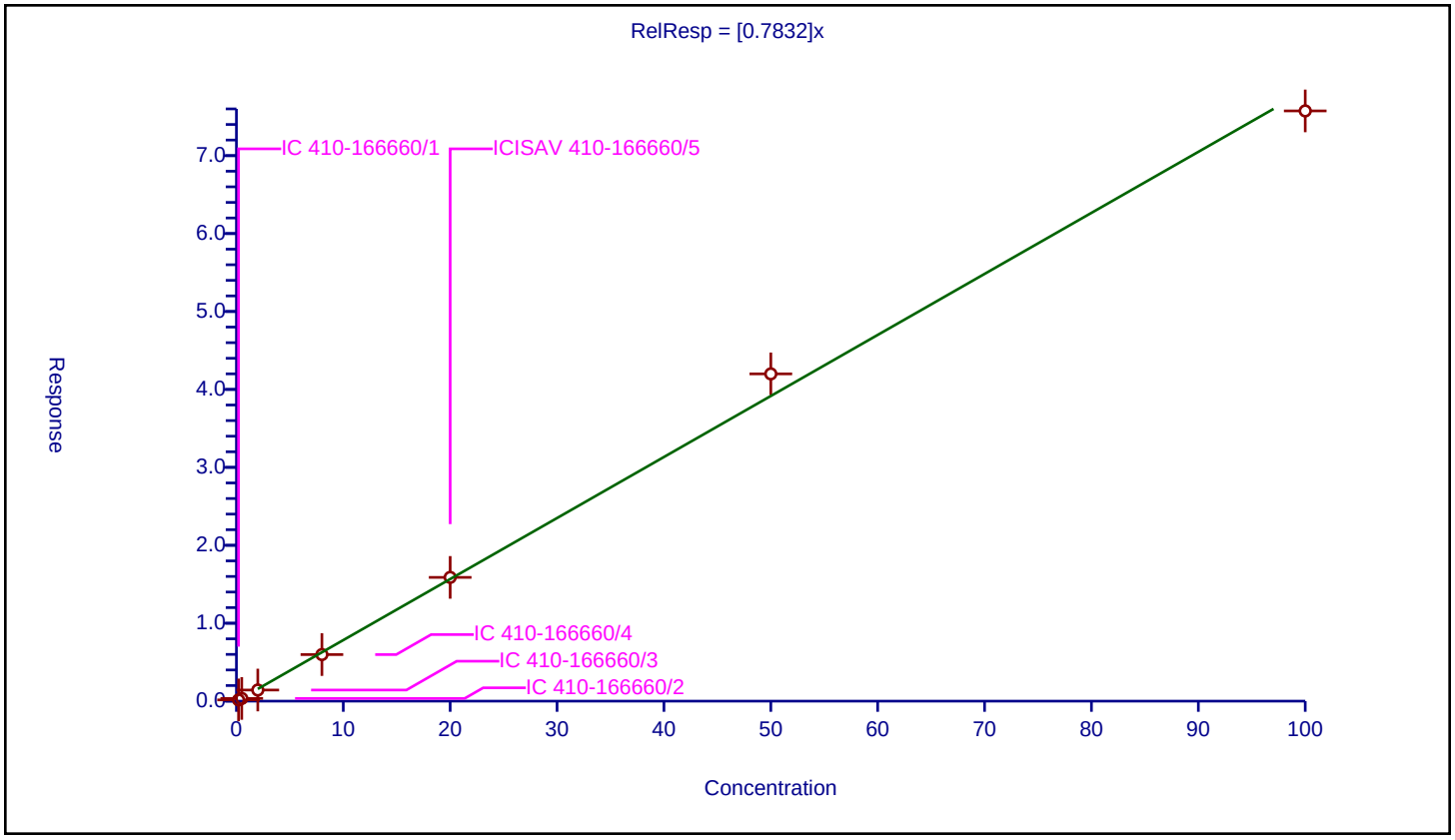
Curve Coefficients

Intercept:	0
Slope:	0.7832

Error Coefficients

Standard Error:	218000
Relative Standard Error:	7.0
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.157726	10.0	82041.0	0.78863	Y
2	IC 410-166660/2	0.5	0.34742	10.0	85142.0	0.694839	Y
3	IC 410-166660/3	2.0	1.427931	10.0	71376.0	0.713965	Y
4	IC 410-166660/4	8.0	5.97656	10.0	74148.0	0.74707	Y
5	ICISAV 410-166660/5	20.0	15.882262	10.0	71379.0	0.794113	Y
6	IC 410-166660/6	50.0	41.994924	10.0	62644.0	0.839898	Y
7	IC 410-166660/7	100.0	75.738795	10.0	59279.0	0.757388	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

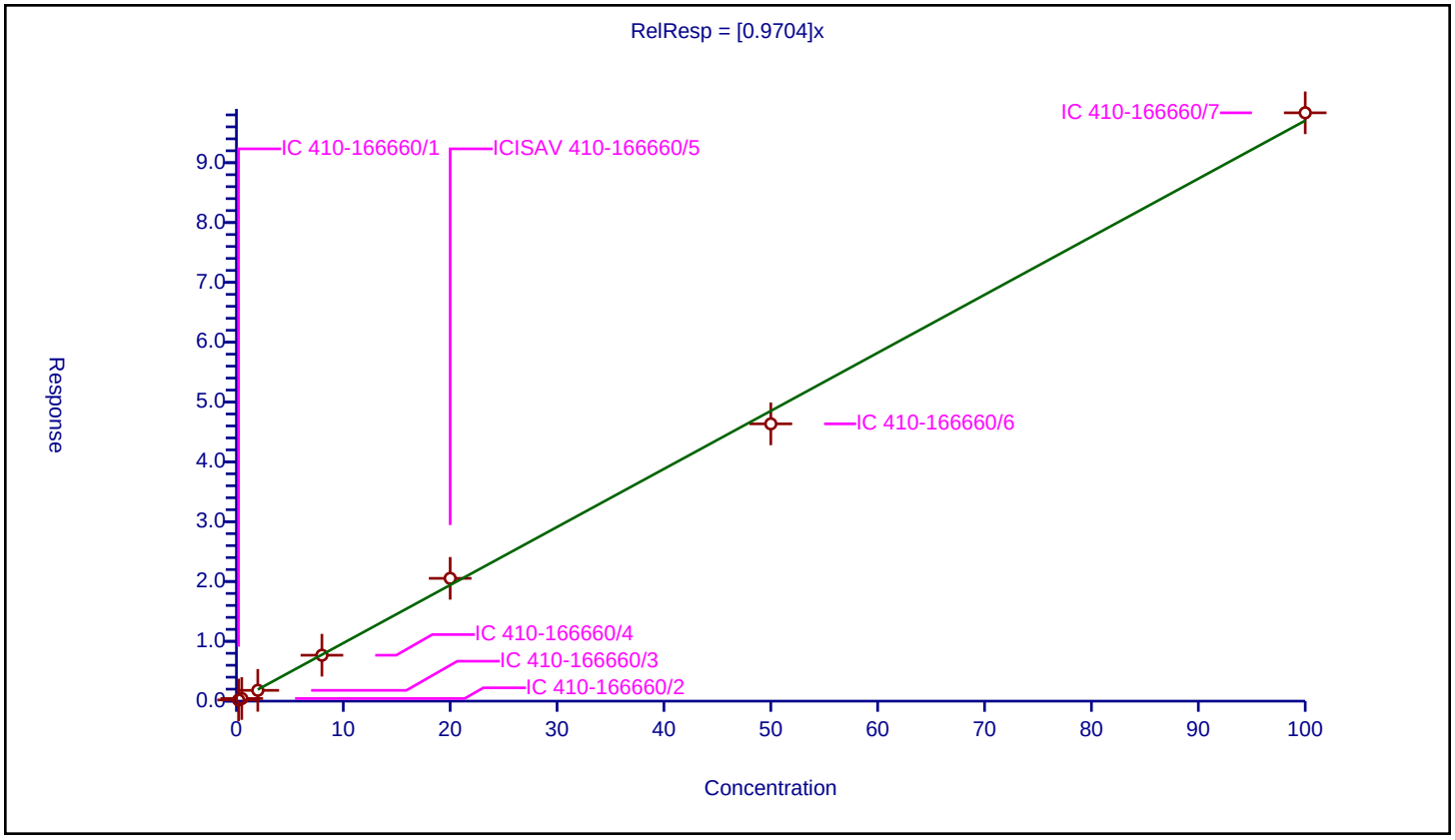
Curve Coefficients

Intercept:	0
Slope:	0.9704

Error Coefficients

Standard Error:	16500000
Relative Standard Error:	5.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.198509	10.0	4571791.0	0.992543	Y
2	IC 410-166660/2	0.5	0.437545	10.0	4557404.0	0.87509	Y
3	IC 410-166660/3	2.0	1.805814	10.0	4097791.0	0.902907	Y
4	IC 410-166660/4	8.0	7.675653	10.0	4240899.0	0.959457	Y
5	ICISAV 410-166660/5	20.0	20.528573	10.0	4034786.0	1.026429	Y
6	IC 410-166660/6	50.0	46.351988	10.0	3933304.0	0.92704	Y
7	IC 410-166660/7	100.0	98.34463	10.0	3542591.0	0.983446	Y



Calibration / 1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

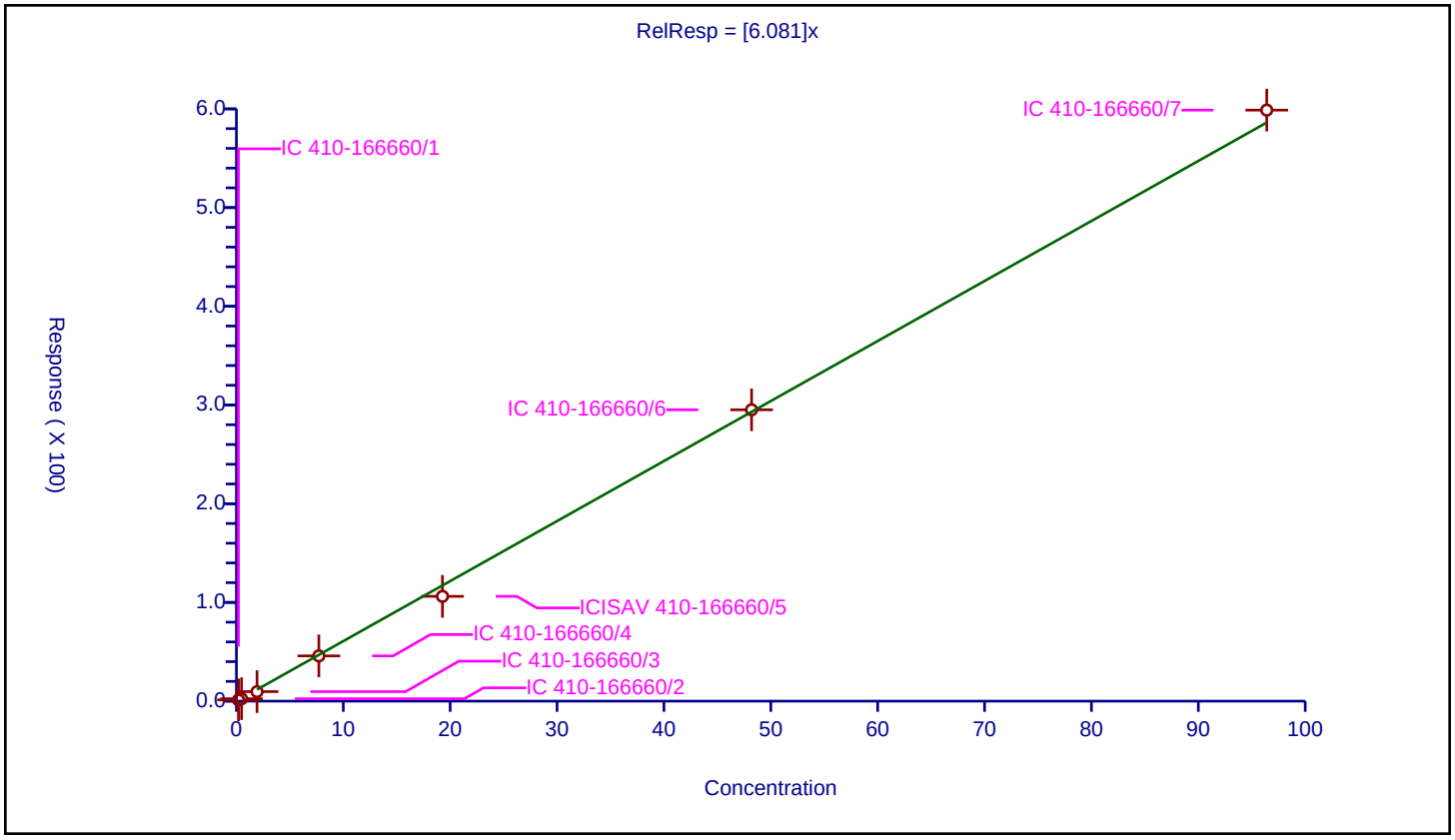
Curve Coefficients

Intercept:	0
Slope:	6.081

Error Coefficients

Standard Error:	3710000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1928	1.22815	9.58	165032.0	6.370073	Y
2	IC 410-166660/2	0.482	2.430457	9.58	174741.0	5.042443	Y
3	IC 410-166660/3	1.928	9.633095	9.58	176282.0	4.996418	Y
4	IC 410-166660/4	7.712	45.827557	9.58	166306.0	5.94237	Y
5	ICISAV 410-166660/5	19.28	106.151613	9.58	165462.0	5.505789	Y
6	IC 410-166660/6	48.2	295.172411	9.58	129370.0	6.123909	Y
7	IC 410-166660/7	96.4	598.75553	9.58	126462.0	6.211157	Y



Calibration / 2-(N-methylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

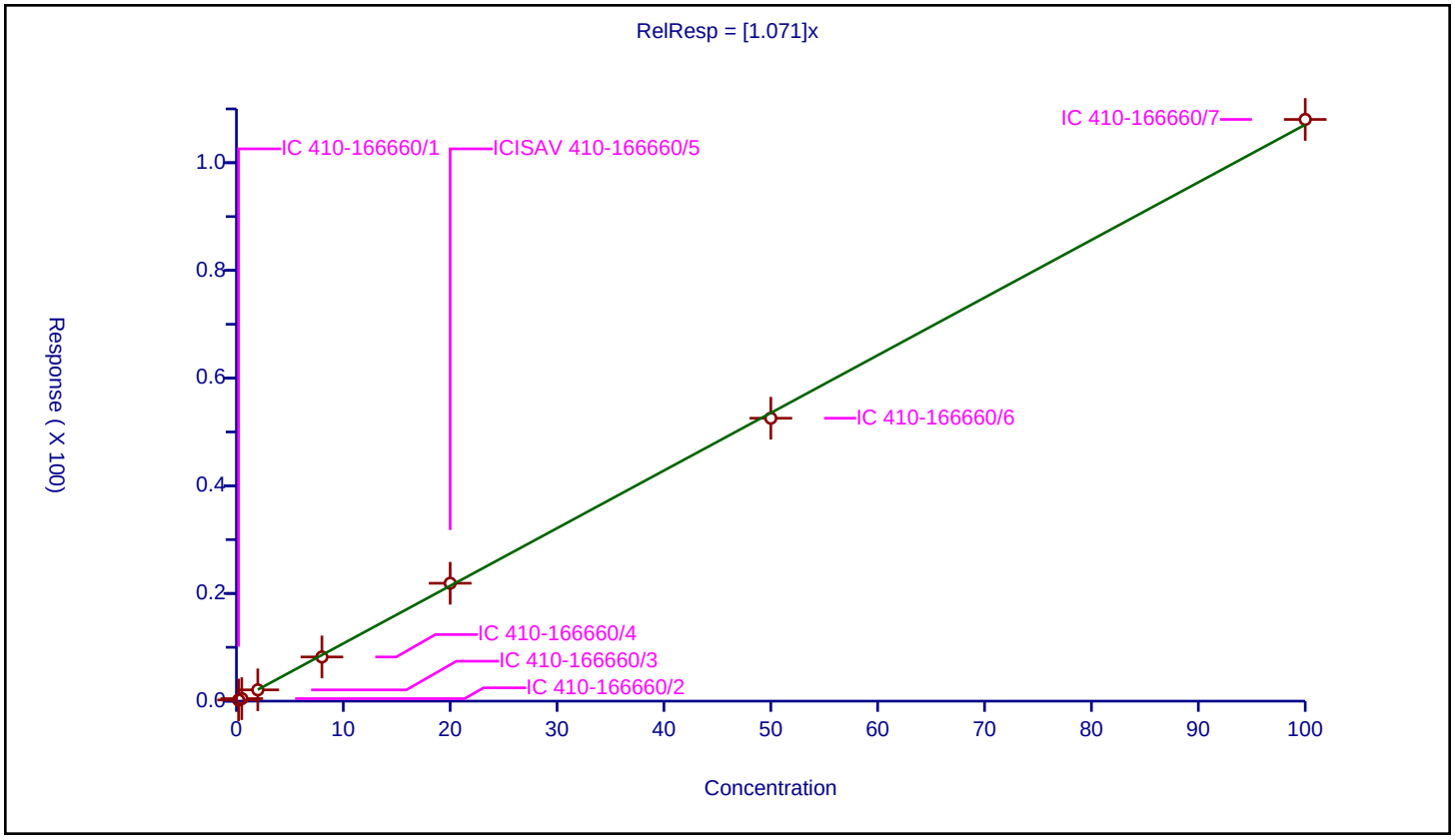
Curve Coefficients

Intercept:	0
Slope:	1.071

Error Coefficients

Standard Error:	1940000
Relative Standard Error:	5.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.21716	10.0	458418.0	1.085799	Y
2	IC 410-166660/2	0.5	0.465682	10.0	447279.0	0.931365	Y
3	IC 410-166660/3	2.0	2.096073	10.0	412395.0	1.048036	Y
4	IC 410-166660/4	8.0	8.203023	10.0	408614.0	1.025378	Y
5	ICISAV 410-166660/5	20.0	21.897141	10.0	383108.0	1.094857	Y
6	IC 410-166660/6	50.0	52.546056	10.0	369226.0	1.050921	Y
7	IC 410-166660/7	100.0	108.040421	10.0	392023.0	1.080404	Y



Calibration / NMeFOSA

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

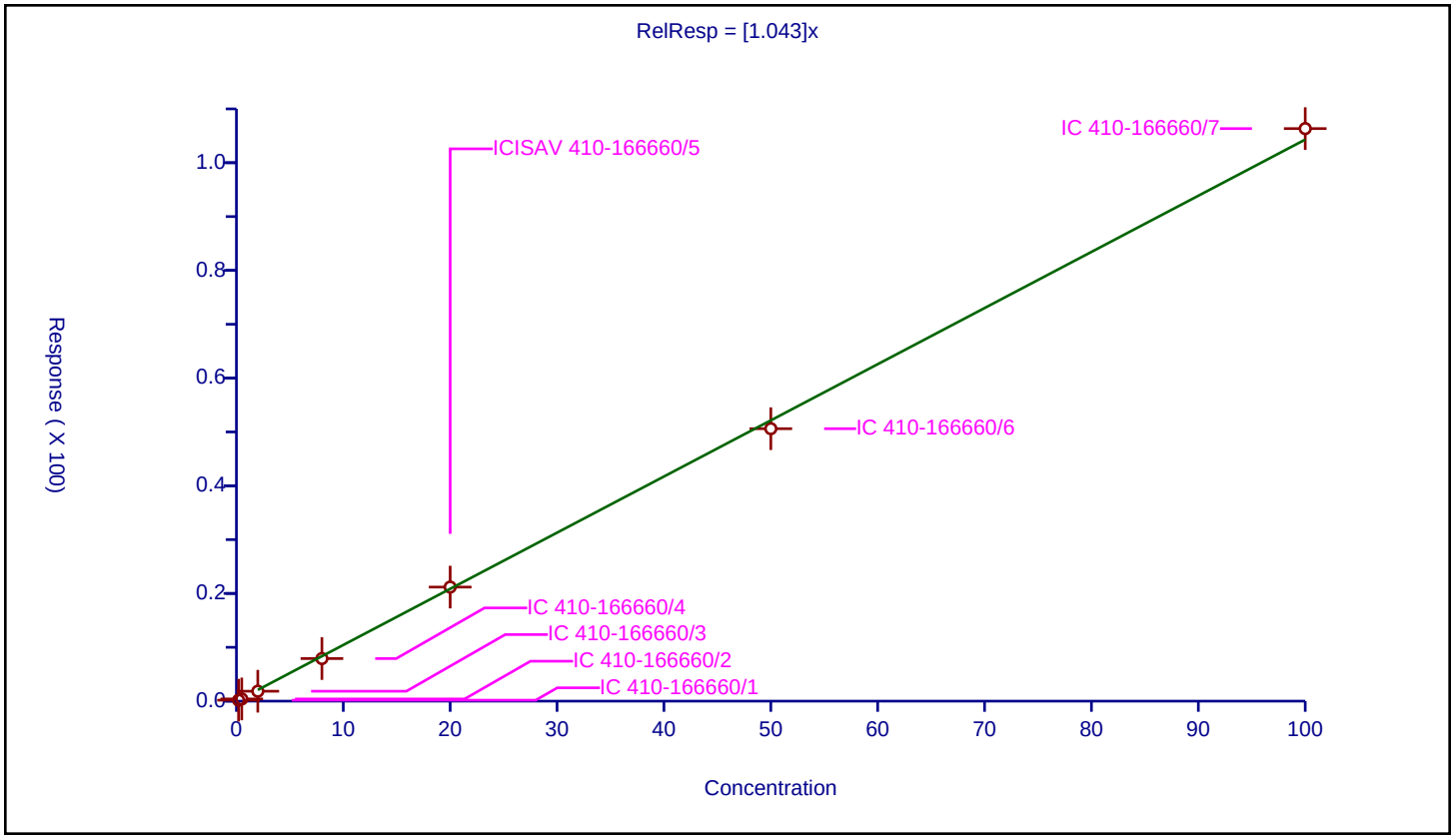
Curve Coefficients

Intercept:	0
Slope:	1.043

Error Coefficients

Standard Error:	2150000
Relative Standard Error:	11.5
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.182844	10.0	475925.0	0.91422	Y
2	IC 410-166660/2	0.5	0.409581	10.0	464133.0	0.819162	Y
3	IC 410-166660/3	2.0	1.840684	10.0	449333.0	0.920342	Y
4	IC 410-166660/4	8.0	7.907554	10.0	462129.0	0.988444	Y
5	ICISAV 410-166660/5	20.0	21.182989	10.0	432447.0	1.059149	Y
6	IC 410-166660/6	50.0	50.603699	10.0	413766.0	1.012074	Y
7	IC 410-166660/7	100.0	106.338015	10.0	444330.0	1.06338	Y



Calibration / Perfluorododecanesulfonic acid (PFDoS)

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

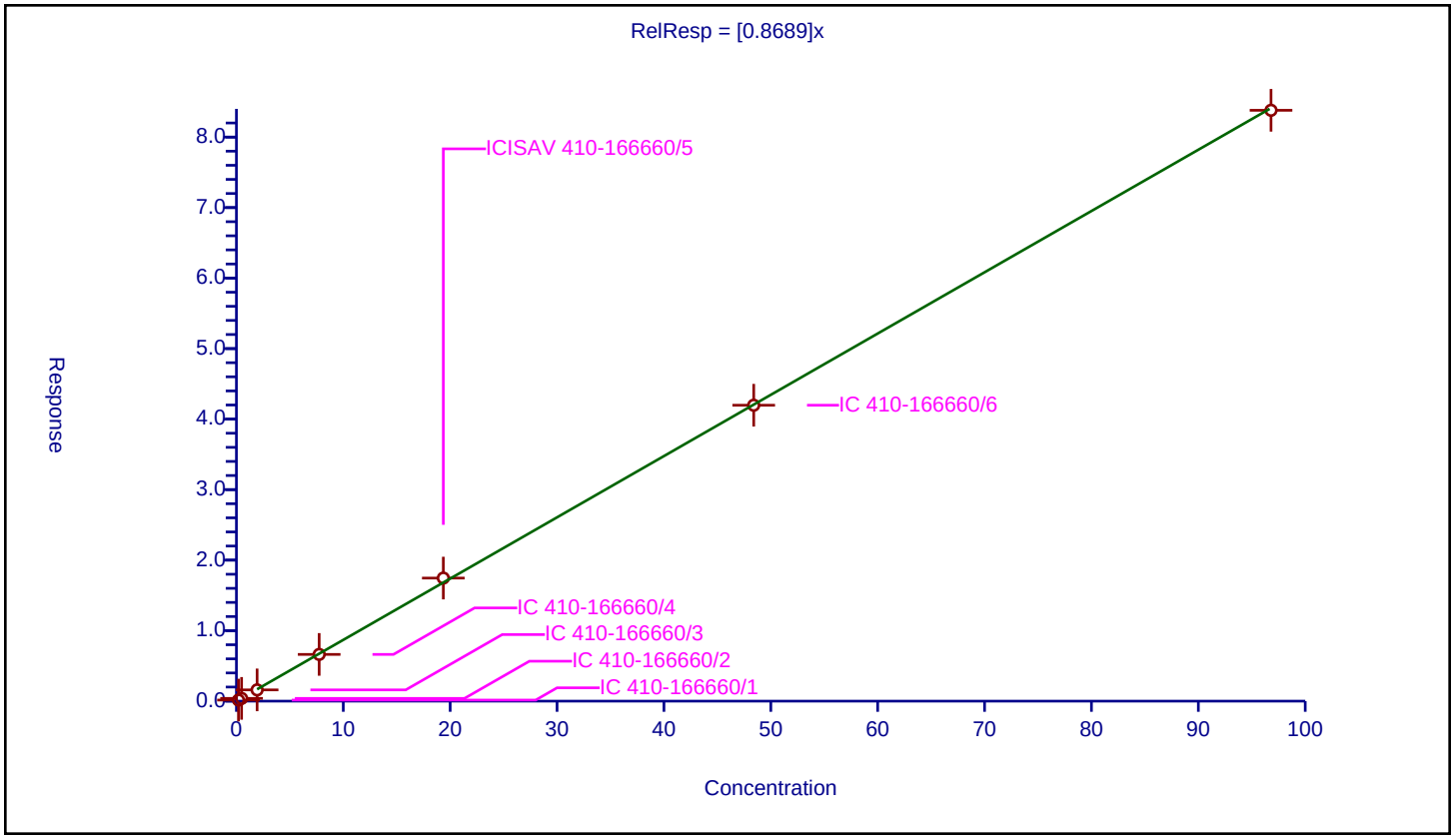
Curve Coefficients

Intercept:	0
Slope:	0.8689

Error Coefficients

Standard Error:	11300000
Relative Standard Error:	5.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.1936	0.1542	9.565	3154591.0	0.796487	Y
2	IC 410-166660/2	0.484	0.389557	9.565	3061803.0	0.804869	Y
3	IC 410-166660/3	1.936	1.594633	9.565	2999446.0	0.823674	Y
4	IC 410-166660/4	7.744	6.627212	9.565	3084401.0	0.855787	Y
5	ICISAV 410-166660/5	19.36	17.455008	9.565	2958328.0	0.901602	Y
6	IC 410-166660/6	48.4	41.970865	9.565	2738757.0	0.867167	Y
7	IC 410-166660/7	96.8	83.800619	9.565	2776653.0	0.865709	Y



Calibration / 2-(N-ethylperfluoro-1-octanesulfonamido) ethanol

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

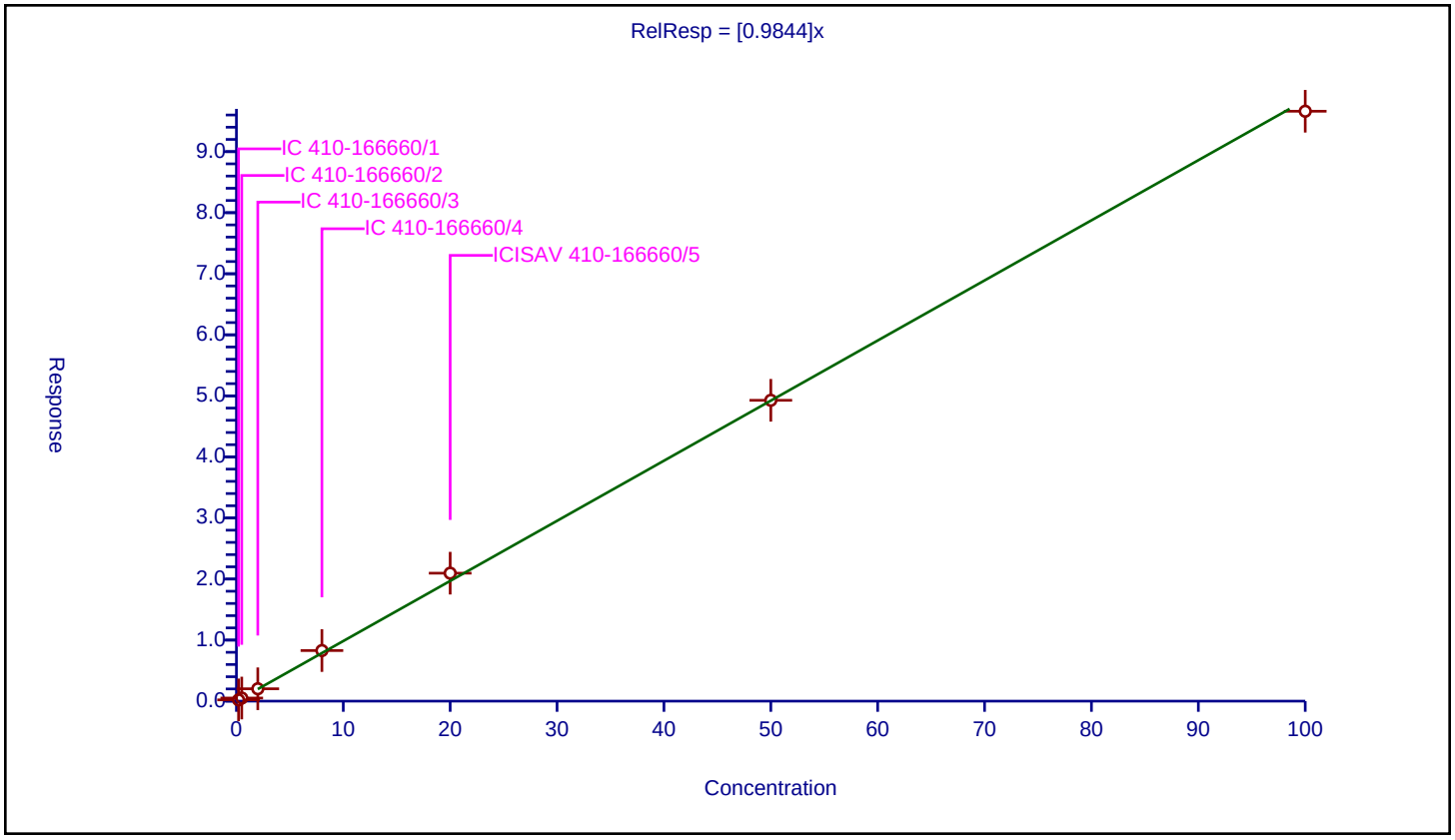
Curve Coefficients

Intercept:	0
Slope:	0.9844

Error Coefficients

Standard Error:	1980000
Relative Standard Error:	4.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.209061	10.0	508656.0	1.045304	Y
2	IC 410-166660/2	0.5	0.508955	10.0	481457.0	1.01791	Y
3	IC 410-166660/3	2.0	2.025147	10.0	446422.0	1.012573	Y
4	IC 410-166660/4	8.0	8.284612	10.0	454183.0	1.035577	Y
5	ICISAV 410-166660/5	20.0	20.959116	10.0	425986.0	1.047956	Y
6	IC 410-166660/6	50.0	49.271252	10.0	420269.0	0.985425	Y
7	IC 410-166660/7	100.0	96.615709	10.0	443505.0	0.966157	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

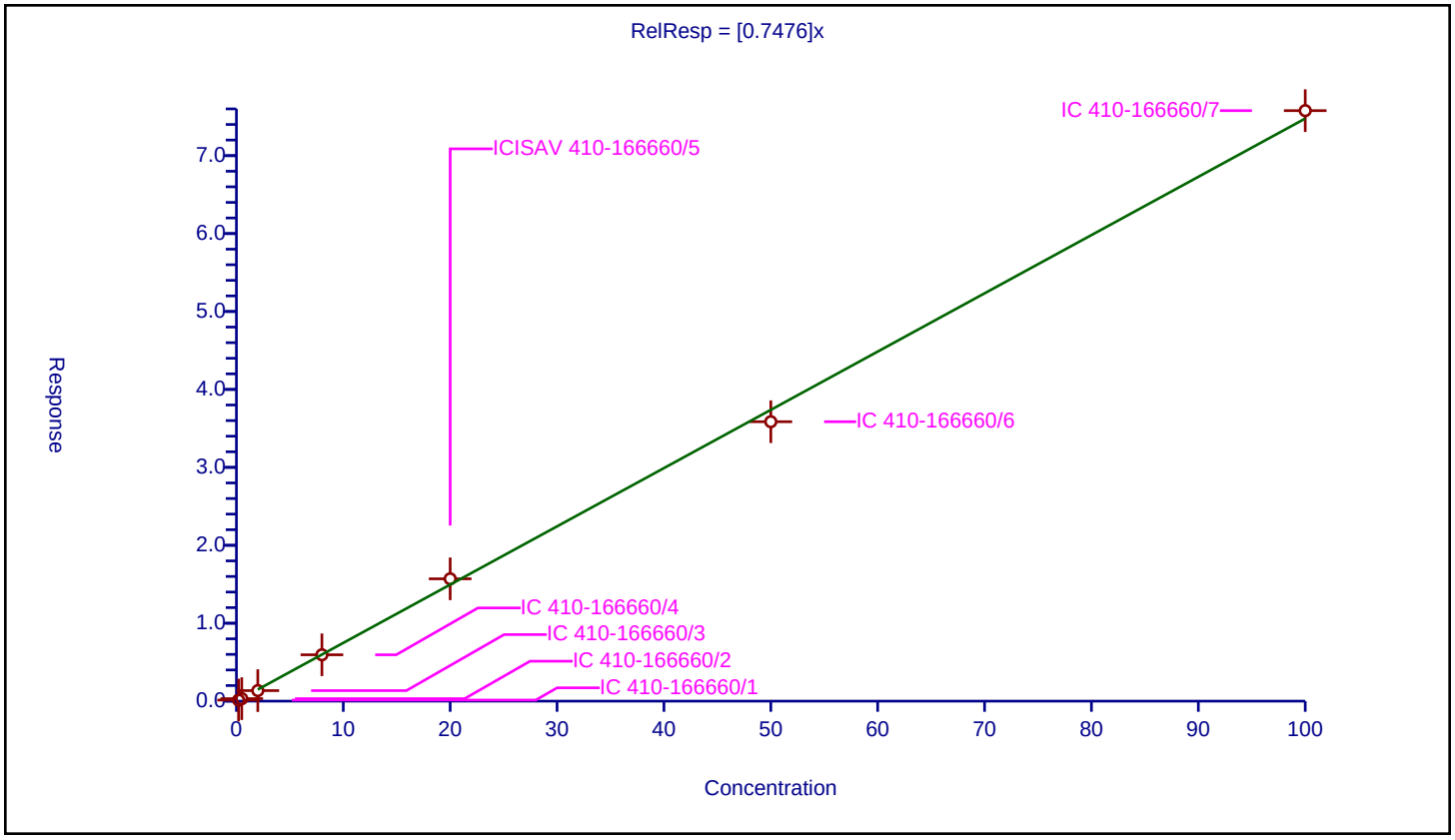
Curve Coefficients

Intercept:	0
Slope:	0.7476

Error Coefficients

Standard Error:	12700000
Relative Standard Error:	8.2
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.139261	10.0	4571791.0	0.696303	Y
2	IC 410-166660/2	0.5	0.318357	10.0	4557404.0	0.636713	Y
3	IC 410-166660/3	2.0	1.351655	10.0	4097791.0	0.675828	Y
4	IC 410-166660/4	8.0	5.948654	10.0	4240899.0	0.743582	Y
5	ICISAV 410-166660/5	20.0	15.696577	10.0	4034786.0	0.784829	Y
6	IC 410-166660/6	50.0	35.857834	10.0	3933304.0	0.717157	Y
7	IC 410-166660/7	100.0	75.77529	10.0	3542591.0	0.757753	Y



Calibration / N-ethylperfluoro-1-octanesulfonamide

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

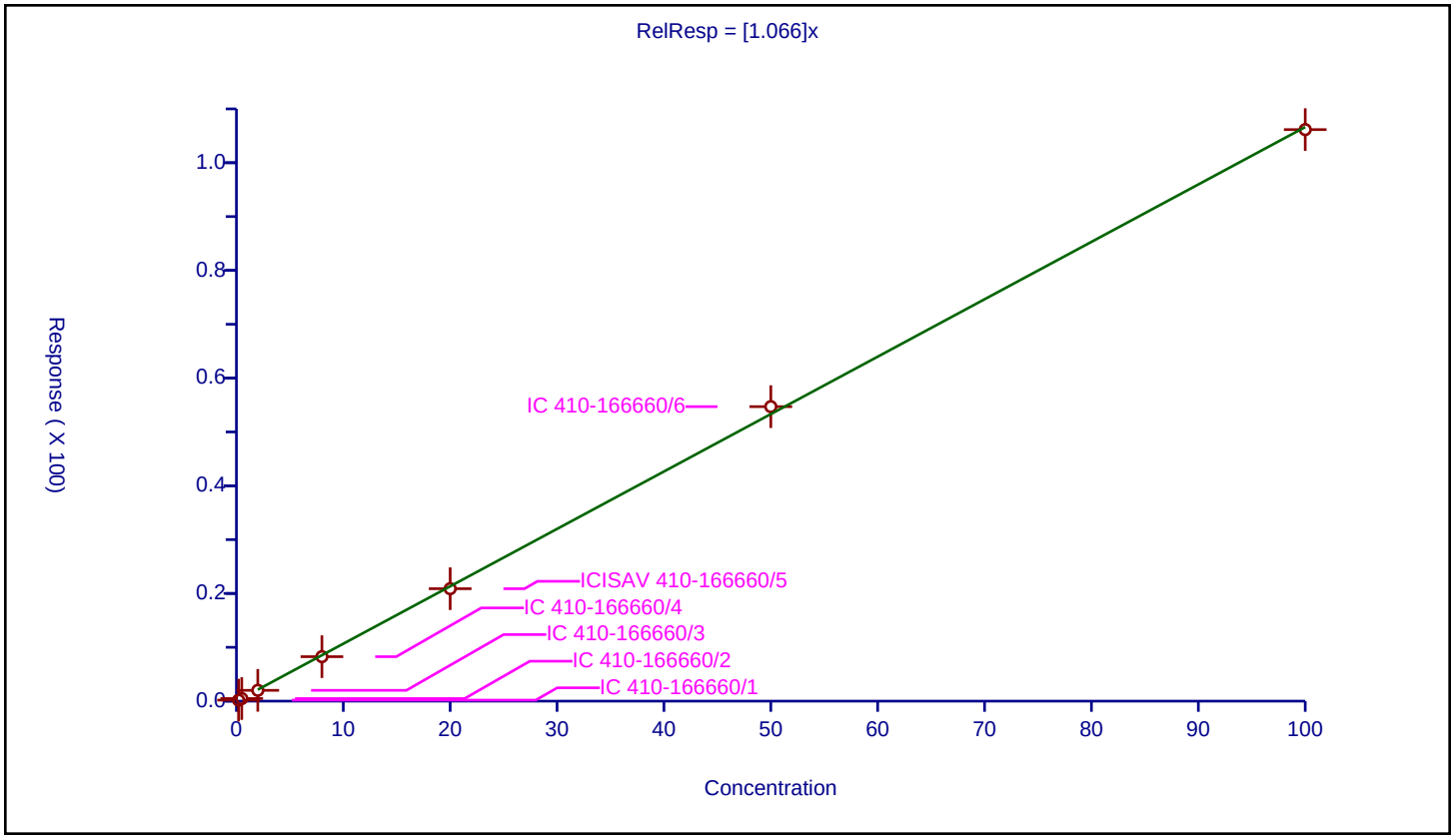
Curve Coefficients

Intercept:	0
Slope:	1.066

Error Coefficients

Standard Error:	1940000
Relative Standard Error:	6.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.188962	10.0	432944.0	0.94481	Y
2	IC 410-166660/2	0.5	0.482762	10.0	423252.0	0.965524	Y
3	IC 410-166660/3	2.0	2.008195	10.0	404403.0	1.004097	Y
4	IC 410-166660/4	8.0	8.260514	10.0	418250.0	1.032564	Y
5	ICISAV 410-166660/5	20.0	20.883375	10.0	417467.0	1.044169	Y
6	IC 410-166660/6	50.0	54.700989	10.0	365655.0	1.09402	Y
7	IC 410-166660/7	100.0	106.150776	10.0	395620.0	1.061508	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

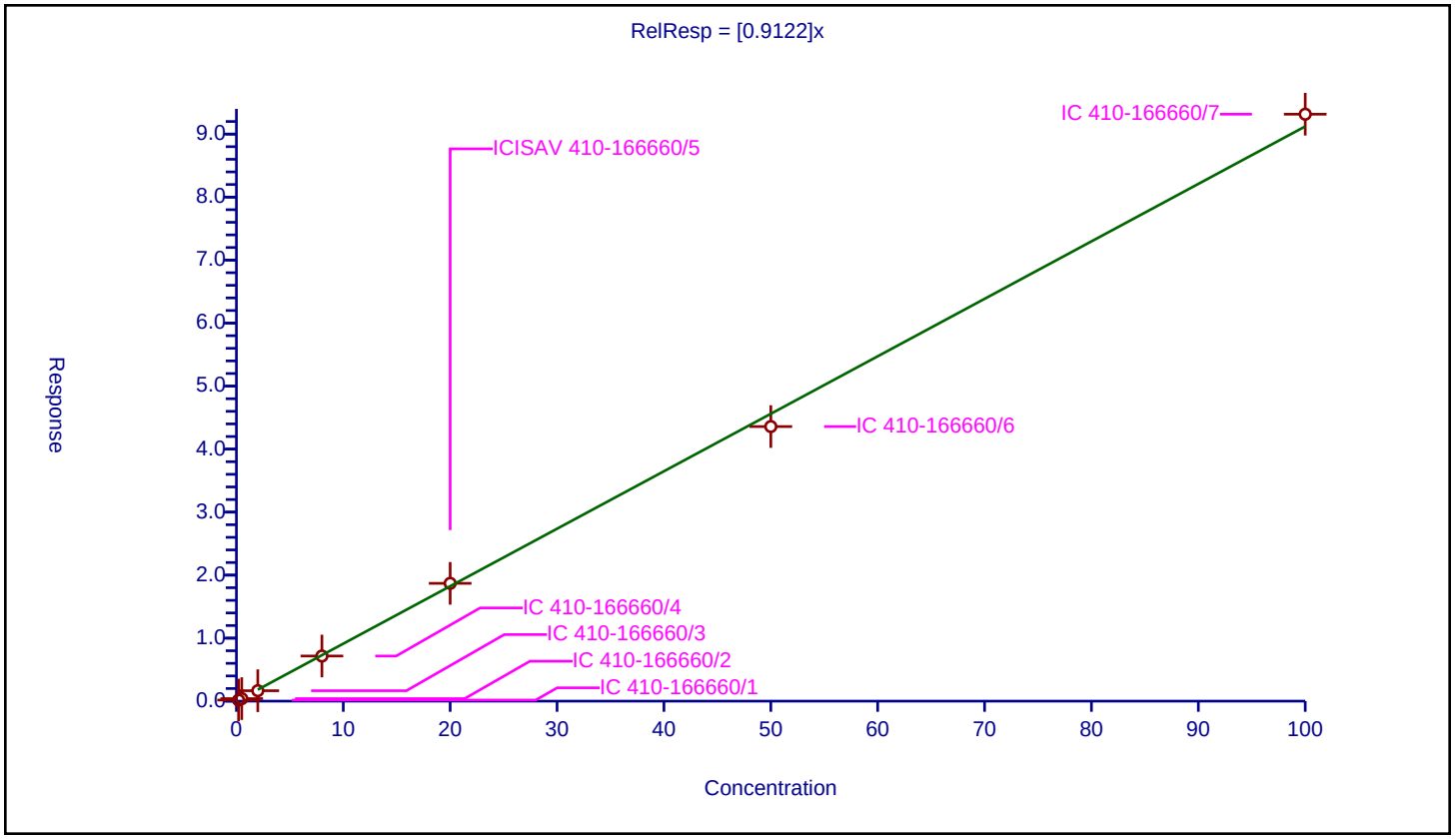
Curve Coefficients

Intercept:	0
Slope:	0.9122

Error Coefficients

Standard Error:	11700000
Relative Standard Error:	7.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.170305	10.0	3442462.0	0.851527	Y
2	IC 410-166660/2	0.5	0.400953	10.0	3551983.0	0.801907	Y
3	IC 410-166660/3	2.0	1.656663	10.0	3216218.0	0.828332	Y
4	IC 410-166660/4	8.0	7.162643	10.0	3220406.0	0.89533	Y
5	ICISAV 410-166660/5	20.0	18.695605	10.0	2960223.0	0.93478	Y
6	IC 410-166660/6	50.0	43.583172	10.0	2897695.0	0.871663	Y
7	IC 410-166660/7	100.0	93.156521	10.0	2678753.0	0.931565	Y



Calibration / Perfluorohexadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

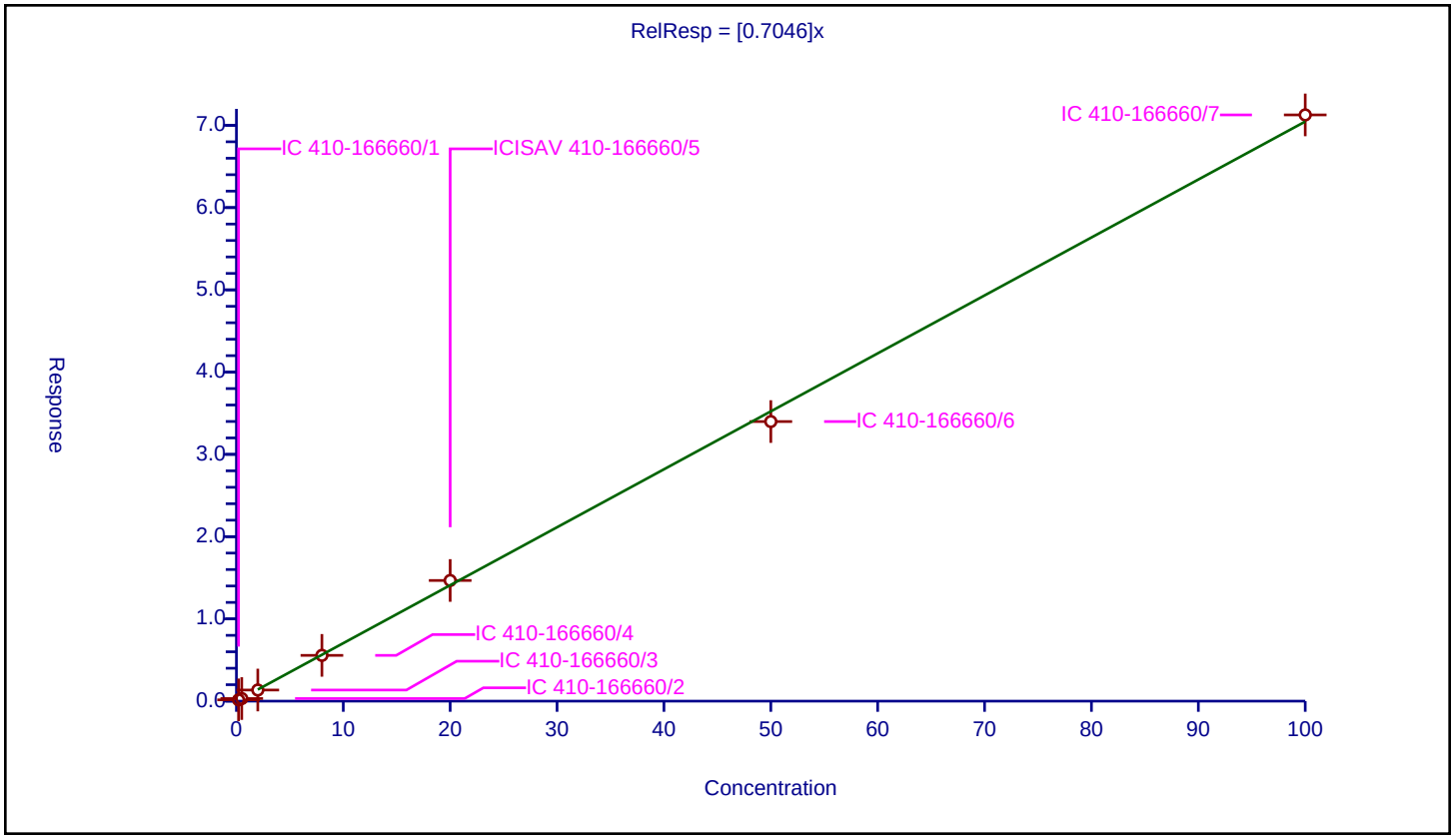
Curve Coefficients

Intercept:	0
Slope:	0.7046

Error Coefficients

Standard Error:	8980000
Relative Standard Error:	7.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.157931	10.0	3442462.0	0.789653	Y
2	IC 410-166660/2	0.5	0.314852	10.0	3551983.0	0.629705	Y
3	IC 410-166660/3	2.0	1.352259	10.0	3216218.0	0.67613	Y
4	IC 410-166660/4	8.0	5.56301	10.0	3220406.0	0.695376	Y
5	ICISAV 410-166660/5	20.0	14.670915	10.0	2960223.0	0.733546	Y
6	IC 410-166660/6	50.0	33.98944	10.0	2897695.0	0.679789	Y
7	IC 410-166660/7	100.0	71.269273	10.0	2678753.0	0.712693	Y



Calibration / Perfluorooctadecanoic acid

Curve Type:	Linear
Weighting:	Conc
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

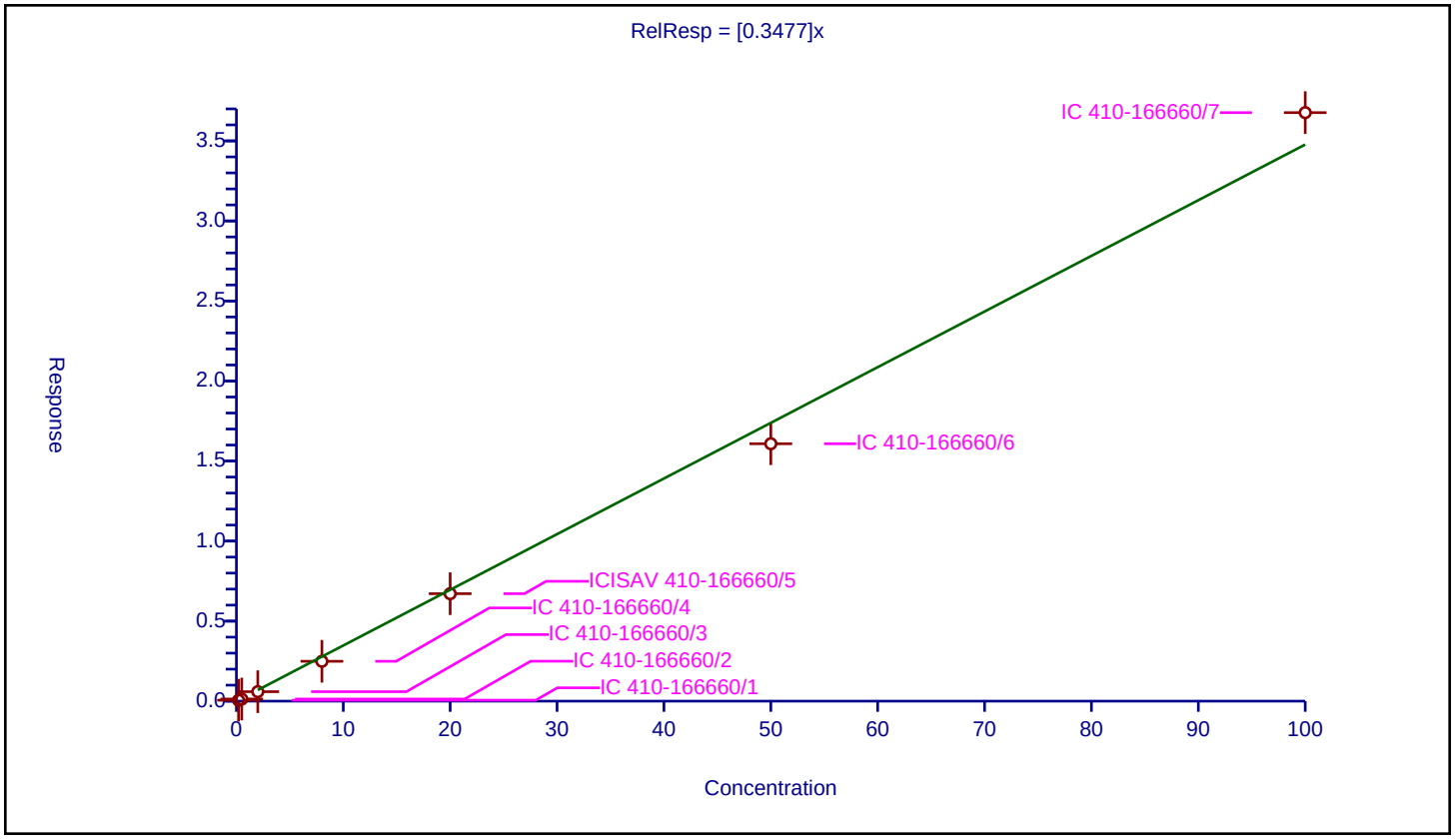
Curve Coefficients

Intercept:	0
Slope:	0.3477

Error Coefficients

Standard Error:	4530000
Relative Standard Error:	14.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 410-166660/1	0.2	0.059033	10.0	3442462.0	0.295167	Y
2	IC 410-166660/2	0.5	0.132706	10.0	3551983.0	0.265412	Y
3	IC 410-166660/3	2.0	0.592127	10.0	3216218.0	0.296064	Y
4	IC 410-166660/4	8.0	2.489761	10.0	3220406.0	0.31122	Y
5	ICISAV 410-166660/5	20.0	6.712775	10.0	2960223.0	0.335639	Y
6	IC 410-166660/6	50.0	16.081358	10.0	2897695.0	0.321627	Y
7	IC 410-166660/7	100.0	36.765323	10.0	2678753.0	0.367653	Y



Eurofins Lancaster Laboratories Env, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d
Lims ID: WDM
Client ID:
Sample Type: WDM
Inject. Date: 31-Aug-2021 22:00:48 ALS Bottle#: 20010 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: WDM
Misc. Info.: Plate: 1 Rack: 1 410-0038223-010
Operator ID: US19_USR_INS20264 Instrument ID: 30727

Method: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\PFAS_30727_XList.m
Limit Group: LC - PFC IDA
Last Update: 31-Aug-2021 22:28:55 Calib Date: 31-Aug-2021 21:25:55
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-19.d

Column 1 : Det: EXP1
Process Host: CTX1644

First Level Reviewer: polaskia Date: 31-Aug-2021 22:16:07
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 8 13C3-PFBA										
216.00 > 172.00	3.844	3.850	-0.006		1112513	5.00			3391	
D 7 13C4 PFBA										
217.00 > 172.00	3.844	3.844	0.0	1.000	2685564	10.8		108	141674	
D 17 13C5 PFPeA										
268.00 > 223.00	4.452	4.452	0.0	1.158	2909619	10.6		106	129089	
D 19 13C3 PFBS										
302.00 > 80.00	4.516	4.516	0.0	1.175	3246888	10.2		109	174233	
D 25 M2-4:2 FTS										
329.00 > 81.00	4.861	4.861	0.0	0.855	423445	10.1		108	18034	
$ 51 13C2 PFHxA										
315.00 > 270.00	4.901	4.897	0.004	0.862	3206277	10.2		102	111868	
D 27 13C5 PFHxA										
318.00 > 273.00	4.901	4.901	0.0	0.862	4171394	10.9		109	145858	
D 31 13C3 HFPO-DA										
332.00 > 287.00	5.036	5.036	0.0	0.885	48936	10.1		101	3767	
D 38 13C4 PFHpA										
367.00 > 322.00	5.306	5.306	0.0	0.933	4134174	10.5		105	85453	
D 39 13C3 PFHxS										
402.00 > 80.00	5.306	5.306	0.0	0.933	2772260	10.0		106	93565	
D 44 13C-6:2 FTUCA										
359.00 > 294.00	5.409	5.409	0.0	0.951	2677762	9.79		97.9	89622	
D 46 13C-6:2 FTCA										
379.00 > 294.00	5.433	5.433	0.0	0.955	137574	11.3		113	8007	
D 52 M2-6:2 FTS										
429.00 > 81.00	5.668	5.668	0.0	0.997	221414	10.8		113	15984	
$ 35 13C4 PFOA										
417.00 > 372.00	5.687	5.686	0.001	1.000	3645052	10.3		103	99595	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
56 Perfluorooctanoic acid										M
413.00 > 369.00	5.687	5.685	0.002	1.000	453313	1.41	Target=2.48		17729	M
413.00 > 169.00	5.687	5.685	0.002	1.000	194785		2.33(1.24-3.71)		32959	M
* 57 13C2 PFOA										
415.00 > 370.00	5.687	5.688	-0.001		1404456	5.00			61426	
D 55 13C8 PFOA										
421.00 > 376.00	5.687	5.687	0.0	1.000	3712232	10.9		109	90587	
* 61 13C4 PFOS										
503.00 > 80.00	6.016	6.014	0.002		1534378	4.78			69013	
D 60 13C8 PFOS										
507.00 > 80.00	6.016	6.016	0.0	1.000	3329685	10.3		108	62063	
D 63 13C9 PFNA										
472.00 > 427.00	6.034	6.034	0.0	1.003	2713181	10.5		105	121677	
D 66 13C-8:2 FTUCA										
459.00 > 394.00	6.148	6.148	0.0	0.969	2692126	10.0		100	106049	
D 68 13C-8:2 FTCA										
479.00 > 394.00	6.164	6.164	0.0	0.972	97914	11.1		111	7918	
* 74 13C2 PFDA										
515.00 > 470.00	6.345	6.339	0.005		1838378	5.00			78969	
D 75 13C6 PFDA										
519.00 > 474.00	6.345	6.345	0.0	1.000	4105540	11.1		111	176600	
D 76 M2-8:2 FTS										
529.00 > 81.00	6.345	6.345	0.0	1.000	185823	11.0		115	13271	
D 78 13C8 FOSA										
506.00 > 78.00	6.440	6.440	0.0	1.015	5796707	10.5		105	134583	
D 79 d3-NMeFOSAA										
573.00 > 419.00	6.491	6.491	0.0	1.023	1009146	9.96		99.6	68482	
D 83 13C7 PFUnA										
570.00 > 525.00	6.615	6.615	0.0	1.043	5201111	11.9		119	127885	
$ 70 13C2 PFUnA										
565.00 > 520.00	6.615	6.613	0.002	1.163	4501314	11.0		110	147747	
D 84 d5-NEtFOSAA										
589.00 > 419.00	6.627	6.627	0.0	1.044	848561	10.8		108	23644	
D 87 13C-10:2 FTUCA										
559.00 > 494.00	6.713	6.713	0.0	1.058	3241713	11.0		110	77354	
D 90 13C-10:2 FTCA										
579.00 > 494.00	6.737	6.737	0.0	1.062	87945	11.9		119	5603	
D 92 13C2-PFDoDA										
615.00 > 570.00	6.850	6.850	0.0	1.080	4623101	10.8		108	109256	
D 94 d7-N-MeFOSE-M										
623.00 > 59.00	6.870	6.870	0.0	1.083	437113	10.3		103	2864	
D 97 d3-NMePFOSA										
515.00 > 169.00	6.891	6.891	0.0	1.086	490297	10.6		106	7803	
D 99 d9-N-EtFOSE-M										
639.00 > 59.00	7.035	7.035	0.0	1.109	467135	9.96		99.6	3256	
D 102 d5-NEtPFOSA										
531.00 > 169.00	7.056	7.056	0.0	1.112	439247	10.4		104	10580	

Report Date: 31-Aug-2021 22:28:55 Chrom Revision: 2.3 03-Aug-2021 10:08:16
Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d
Ratio Calibration: Average of Initial Calibration

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 105 13C2 PFTeDA										
715.00 > 670.00	7.247	7.247	0.0	1.142	3343928	10.4		104	84177	

QC Flag Legend

Processing Flags

Review Flags

M - Manually Integrated

Reagents:

PFC_LB_MOD_00024 Amount Added: 200.00 Units: uL

Report Date: 31-Aug-2021 22:28:55 Chrom Revision: 2.3 03-Aug-2021 10:08:16

Eurofins Lancaster Laboratories Env, LLC

Data File: \\chromfs\Lancaster\ChromData\30727\20210831-38223.b\21AUG31MCAL-22.d

Injection Date: 31-Aug-2021 22:00:48 Instrument ID: 30727

Lims ID: WDM

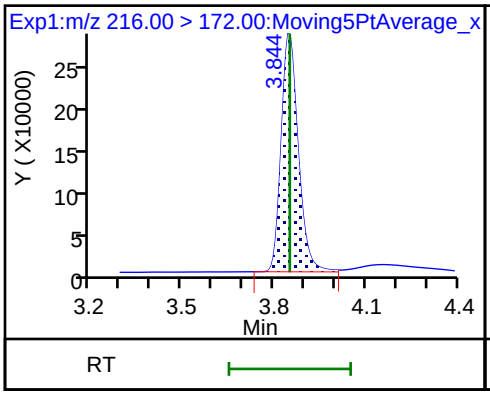
Client ID:

Operator ID: US19_USR_INS20264 ALS Bottle#: 20010 Worklist Smp#: 10

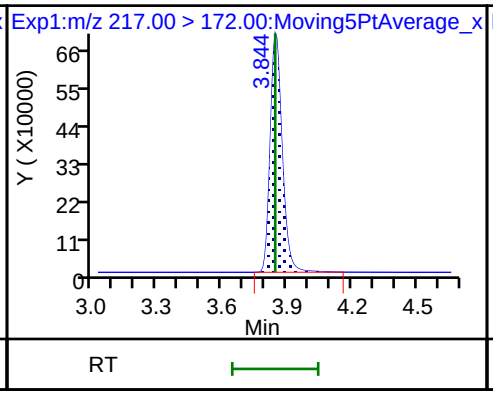
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFAS_30727_XList Limit Group: LC - PFC IDA

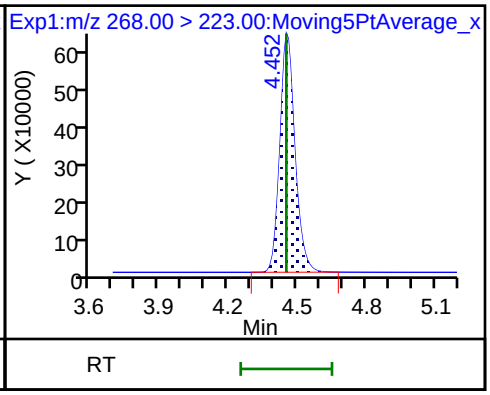
* 8 13C3-PFBA



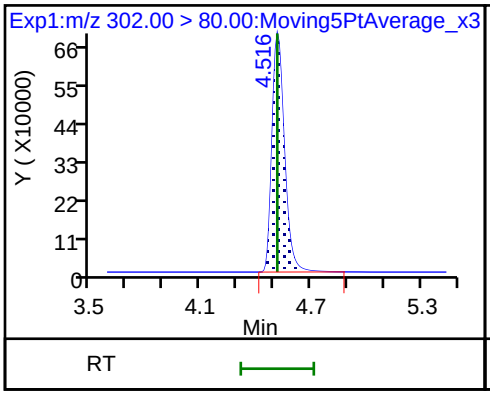
D 7 13C4 PFBA



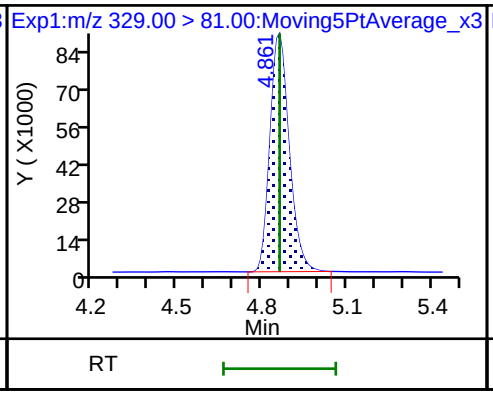
D 17 13C5 PFPeA



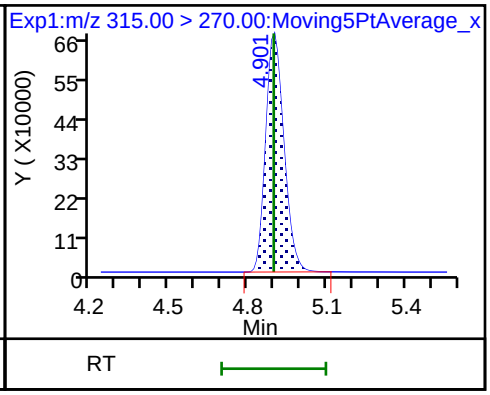
D 19 13C3 PFBS



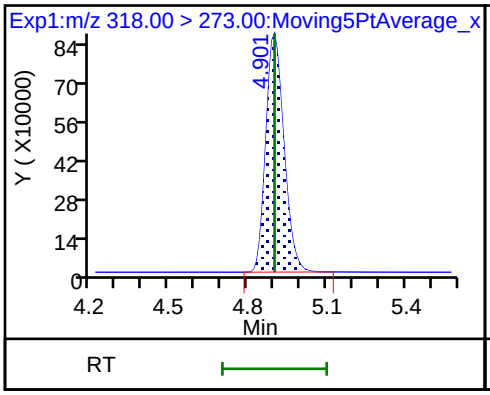
D 25 M2-4:2 FTS



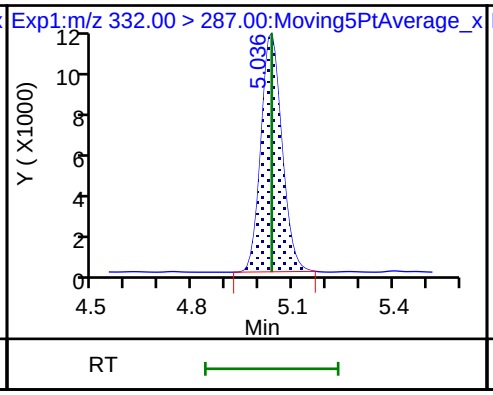
$ 51 13C2 PFHxA



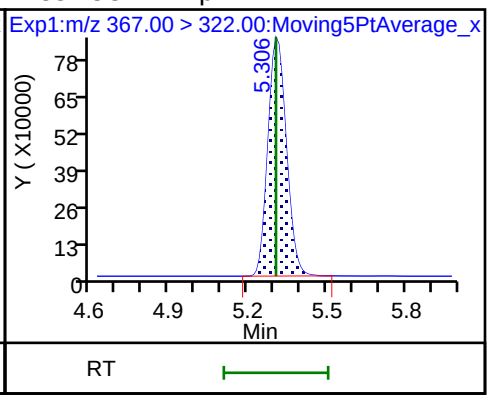
D 27 13C5 PFHxA



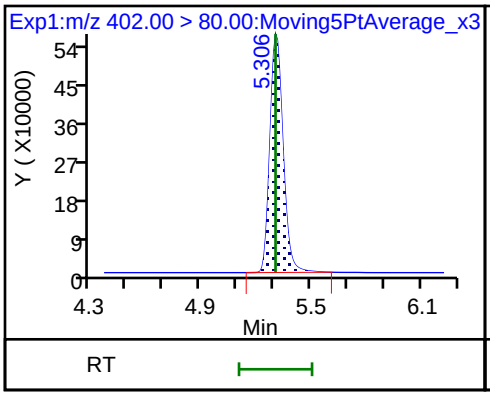
D 31 13C3 HFPO-DA



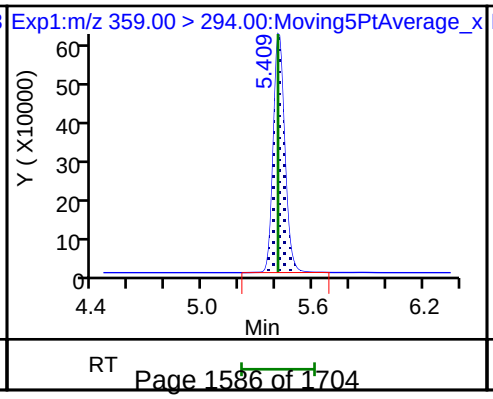
D 38 13C4 PFHpA



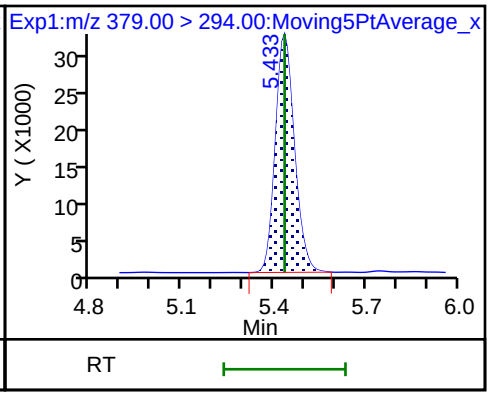
D 39 13C3 PFHxS



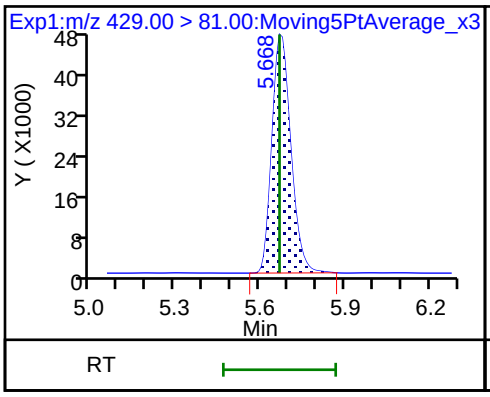
D 44 13C-6:2 FTUCA



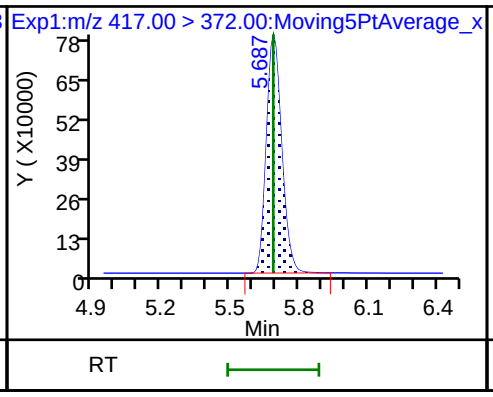
D 46 13C-6:2 FTCA



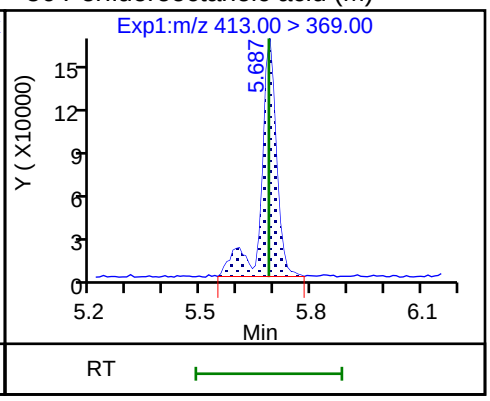
D 52 M2-6:2 FTS



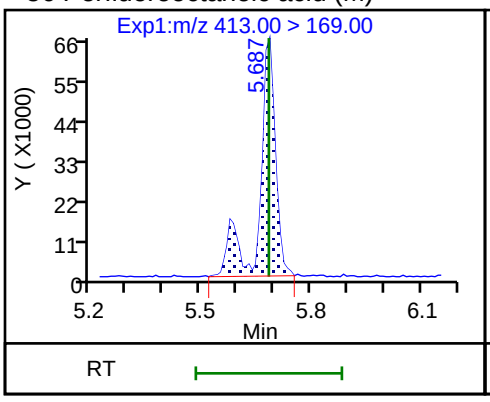
$ 35 13C4 PFOA



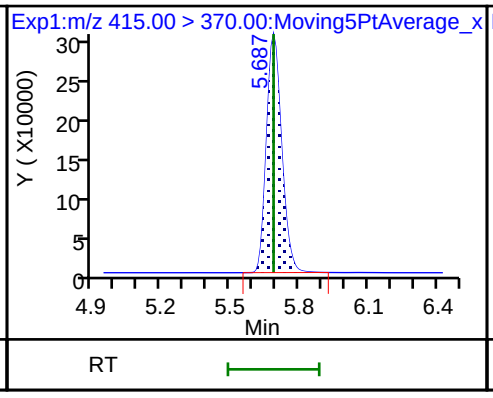
56 Perfluorooctanoic acid (M)



56 Perfluorooctanoic acid (M)



* 57 13C2 PFOA



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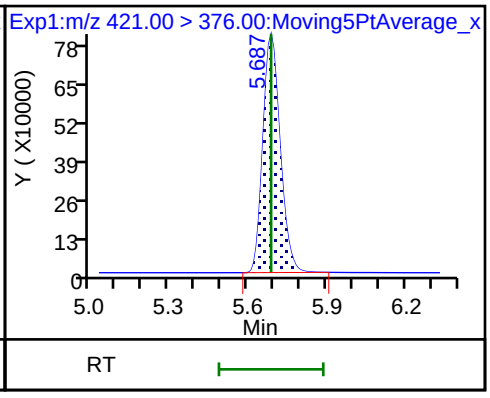
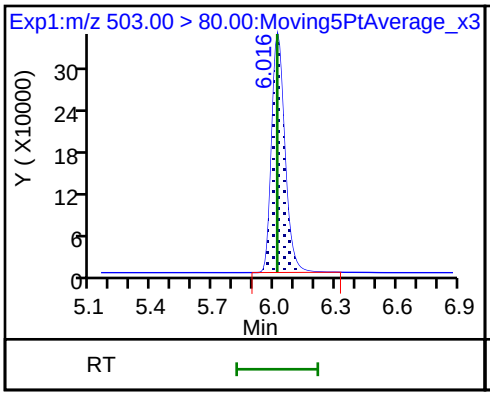
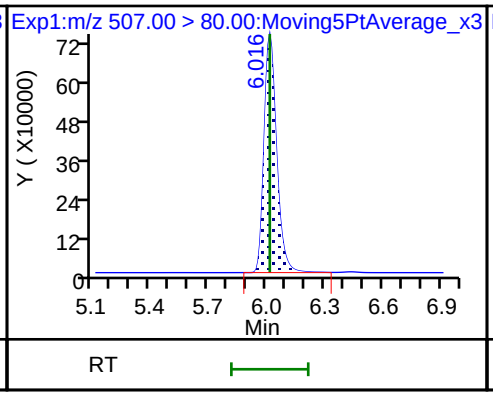


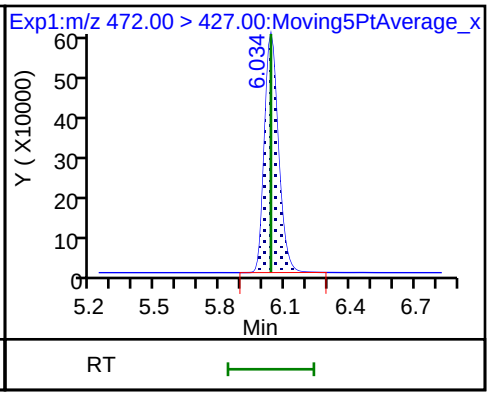
* 61 13C4 PFOS



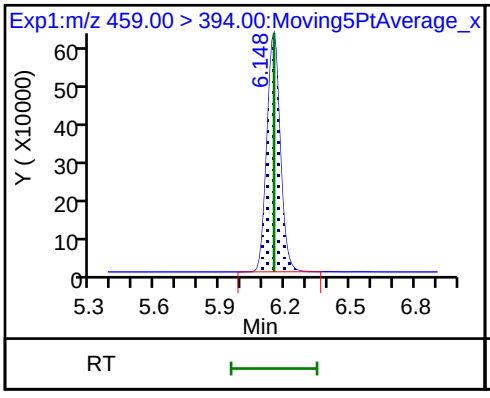
D 60 13C8 PFOS



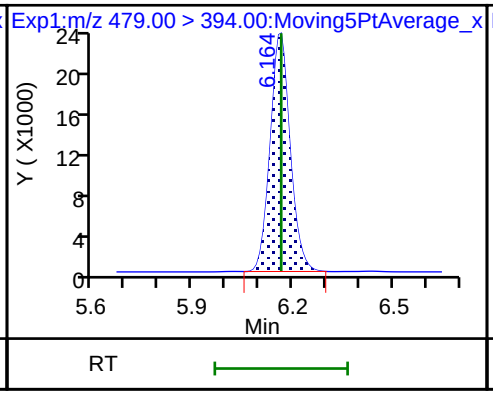
D 63 13C9 PFNA



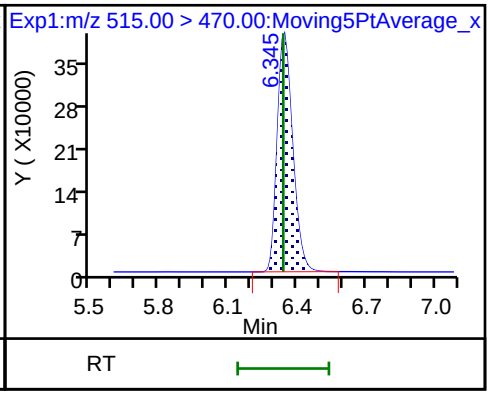
D 66 13C-8:2 FTUCA



D 68 13C-8:2 FTCA



* 74 13C2 PFDA



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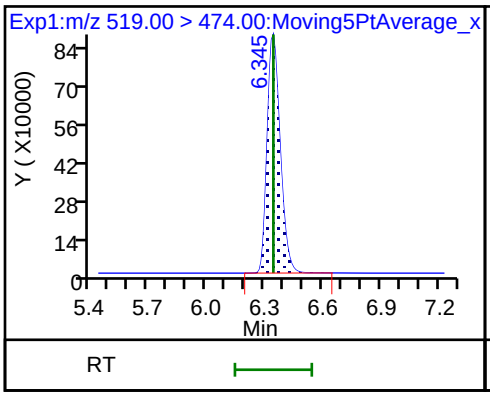
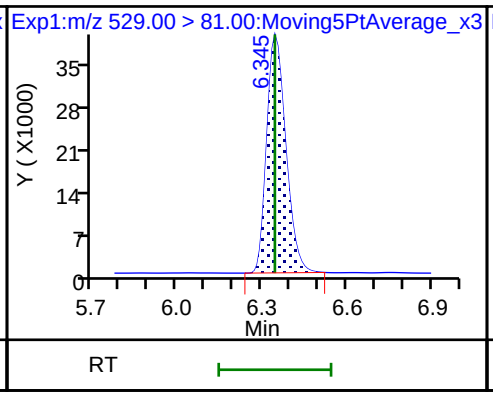


D 76 M2-8:2 FTS



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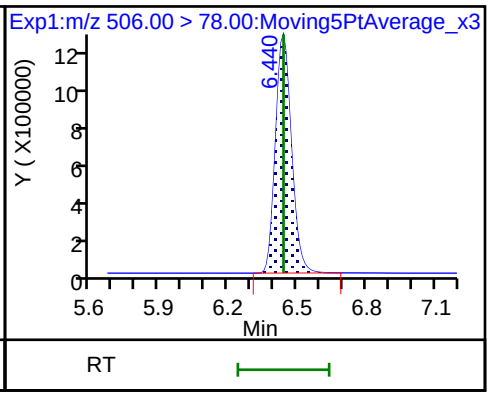

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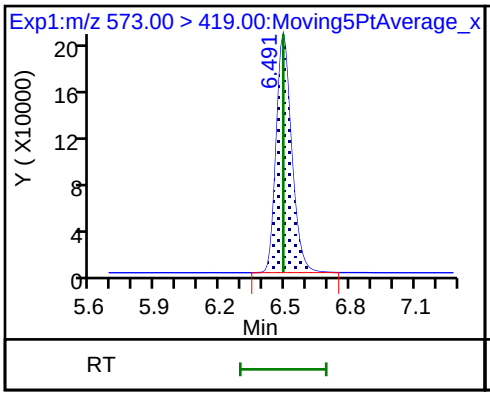

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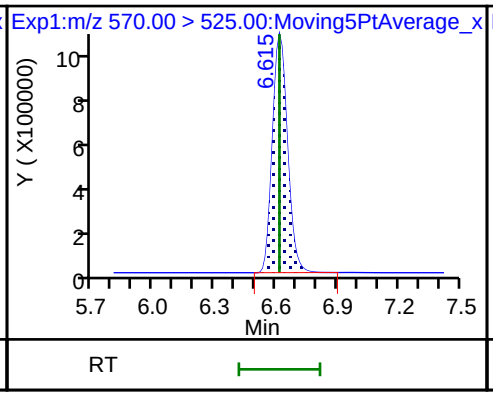
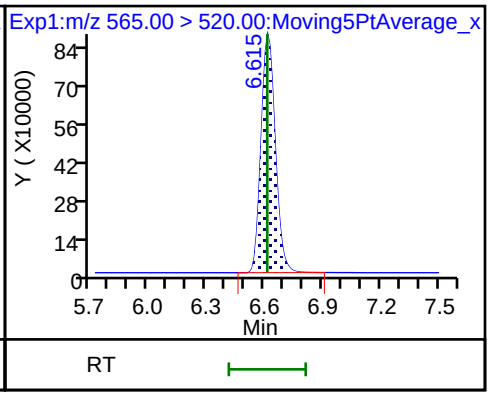
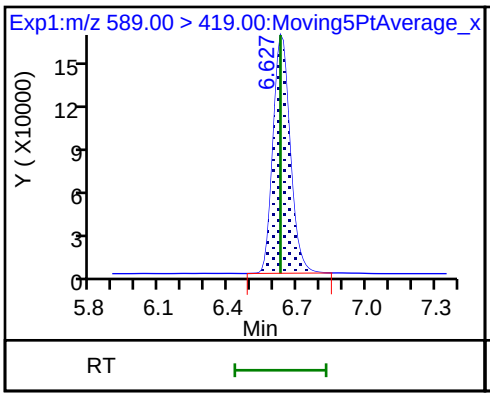


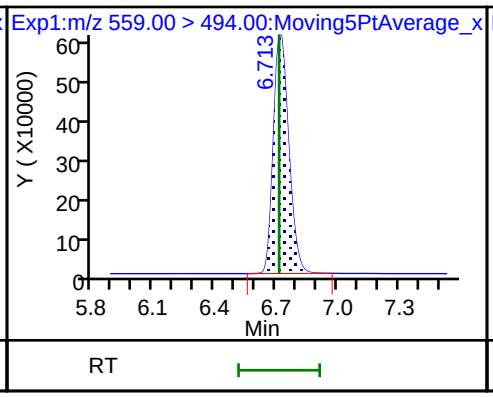
$ 70 13C2 PFUnA



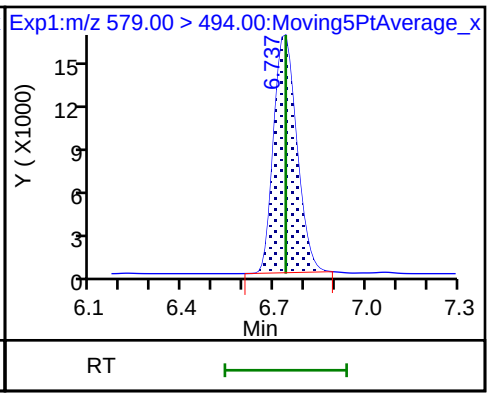
D 84 d5-NEtFOSAA



D 87 13C-10:2 FTUCA



D 90 13C-10:2 FTCA



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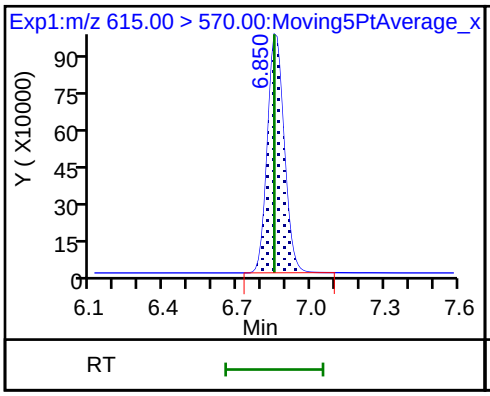
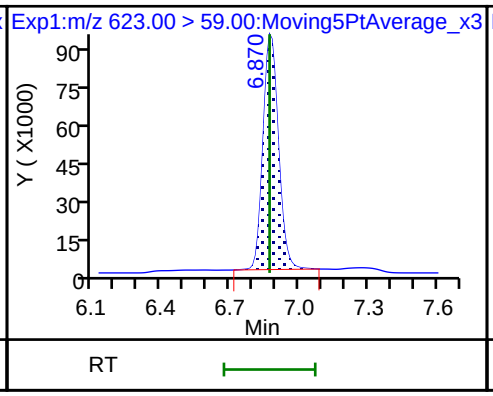
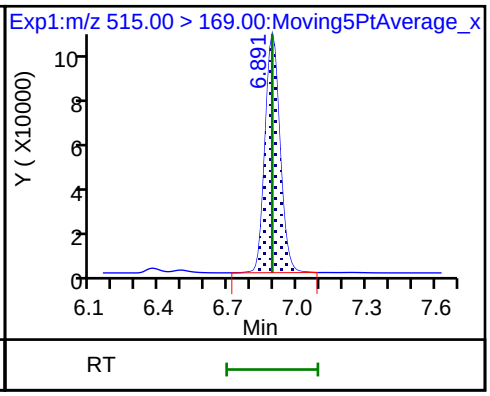


D 94 d7-N-MeFOSE-M



D 97 d3-NMePFOSA



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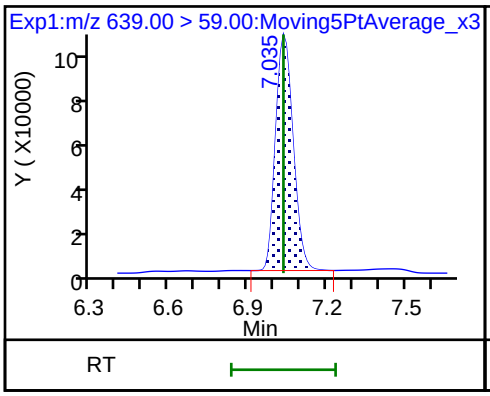

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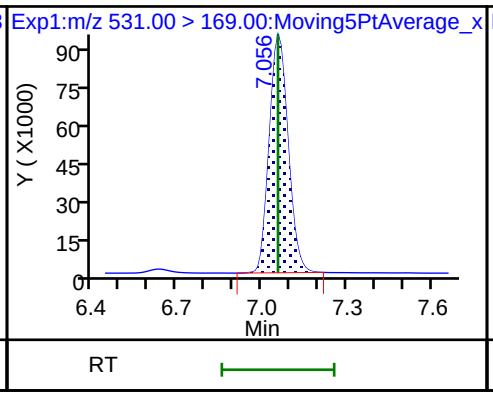

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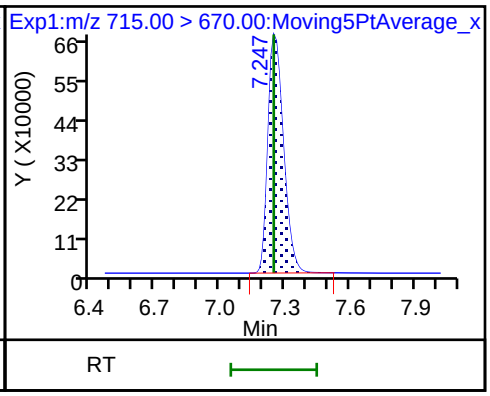

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: ICV 410-166660/9 Calibration Date: 08/31/2021 21:49

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31MCAL-21.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0675		1.77	2.00	-11.4	30.0
PPF Acid	LID1F		0.4072		1.81	2.00	-9.7	30.0
PFMOAA	LID1F		0.2169		1.72	2.00	-13.8	30.0
Perfluorobutanoic acid	LID1F		0.8307		1.88	2.00	-5.9	30.0
R-EVE	LID1F		0.0430		1.69	2.00	-15.7	30.0
R-PSDA	Q2ID		0.0138		2.10	2.00	5.0	30.0
Hydrolyzed PSDA	LID1F		0.0587		1.67	2.00	-16.3	30.0
PMPA	LID1F		0.2385		1.70	2.00	-15.2	30.0
Perfluoropropanesulfonic acid	LID1F		0.4775		1.66	1.83	-9.2	30.0
NVHOS	LID1F		0.2339		1.71	2.00	-14.3	30.0
PFECA F	LID1F		0.8321		1.86	2.00	-6.8	30.0
PFO2HxA	LID1F		0.1081		1.73	2.00	-13.6	30.0
3:3 FTCA	LID1F		0.0538		1.86	2.00	-6.9	30.0
Perfluoropentanoic acid	LID1F		0.8515		1.88	2.00	-5.8	30.0
Perfluorobutanesulfonic acid	LID1F		1.041		1.52	1.77	-13.9	30.0
PEPA	LID1F		0.1142		2.06	2.00	3.1	30.0
PFECA A	LID1F		0.7359		1.90	2.00	-5.2	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.035		1.62	1.78	-8.9	30.0
PFECA B	LID1F		0.6874		1.82	2.00	-9.2	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.146		1.83	1.87	-2.0	30.0
Perfluorohexanoic acid	LID1F		0.7115		1.72	2.00	-13.9	30.0
Perfluoropentanesulfonic acid	LID1F		0.8830		1.68	1.88	-10.6	30.0
PFO3OA	LID1F		0.0957		1.98	2.00	-1.0	30.0
HFPODA	LID1F		8.945		1.73	2.00	-13.6	30.0
Hydro-EVE Acid	LID1F		1.465		1.81	2.00	-9.5	30.0
R-PSDCA	LID1F		1.849		1.69	2.00	-15.6	30.0
Perfluoroheptanoic acid	LID1F		0.8691		1.78	2.00	-10.9	30.0
Perfluorohexanesulfonic acid	LID1F		0.9608		1.65	1.82	-9.8	30.0
Hydro-PS Acid	LID1F		1.585		1.71	2.00	-14.4	30.0
DONA	LID1F		1.067		1.54	1.89	-18.4	30.0
PFECA G	LID1F		1.481		1.84	2.00	-7.9	30.0
5:3 FTCA	LID1F		0.1578		1.74	2.00	-13.1	30.0
6:2 FTUCA	LID1F		1.173		2.00	2.00	0.2	30.0
6:2 FTCA	LID1F		0.9466		1.78	2.00	-10.9	30.0
PFO4DA	LID1F		0.0863		1.81	2.00	-9.7	30.0
PS Acid	LID1F		0.5045		1.74	2.00	-12.9	30.0
EVE Acid	LID1F		1.082		1.95	2.00	-2.4	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.541		1.70	1.85	-8.0	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: ICV 410-166660/9 Calibration Date: 08/31/2021 21:49

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31MCAL-21.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	LID1F		4.684		2.10	1.90	11.0	30.0
Perfluoroheptanesulfonic acid	LID1F		1.022		1.84	1.90	-3.1	30.0
Perfluorooctanoic acid	LID1F		0.7169		1.65	2.00	-17.4	30.0
TAF	AveID	0.0672	0.0572		1.70	2.00	-15.0	30.0
Perfluorooctanesulfonic acid	LID1F		0.8864		1.50	1.85	-18.8	30.0
Perfluorononanoic acid	LID1F		0.8284		1.82	2.00	-8.9	30.0
7:3 FTCA	LID1F		5.208		1.84	2.00	-7.8	30.0
8:2 FTUCA	LID1F		0.8931		1.85	2.00	-7.6	30.0
8:2 FTCA	LID1F		0.8746		1.96	2.00	-2.0	30.0
9Cl-PF3ONS	LID1F		1.538		1.64	1.86	-11.9	30.0
Perfluorononanesulfonic acid	LID1F		0.9528		1.81	1.92	-5.9	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.975		2.15	1.92	12.0	30.0
Perfluorodecanoic acid	LID1F		0.6672		1.61	2.00	-19.5	30.0
Perfluorooctanesulfonamide	LID1F		1.001		2.03	2.00	1.4	30.0
NMeFOSAA	LID1F		0.8210		1.94	2.00	-2.8	30.0
Perfluorodecanesulfonic acid	LID1F		0.8146		1.75	1.93	-9.1	30.0
Perfluoroundecanoic acid	LID1F		0.6917		1.70	2.00	-15.2	30.0
NEtFOSAA	LID1F		0.8779		1.76	2.00	-11.8	30.0
10:2 FTUCA	LID1F		0.8281		1.86	2.00	-6.8	30.0
11Cl-PF3OUdS	LID1F		1.046		1.65	1.86	-11.5	30.0
10:2 FTCA	LID1F		0.7780		1.99	2.00	-0.7	30.0
Perfluorododecanoic acid	LID1F		0.8867		1.83	2.00	-8.6	30.0
10:2 FTS	LID1F		5.469		1.73	1.93	-10.1	30.0
NMeFOSE	LID1F		1.051		1.96	2.00	-1.9	30.0
NMeFOSA	LID1F		0.9104		1.75	2.00	-12.7	30.0
Perfluorododecanesulfonic acid	LID1F		0.7803		1.74	1.94	-10.2	30.0
NEtFOSE	LID1F		1.065		2.16	2.00	8.2	30.0
NEtFOSA	LID1F		0.9755		1.83	2.00	-8.5	30.0
Perfluorotridecanoic acid	LID1F		0.7019		1.88	2.00	-6.1	30.0
Perfluorotetradecanoic acid	LID1F		0.8075		1.77	2.00	-11.5	30.0
Perfluorohexadecanoic acid	LID1F		0.6889		1.96	2.00	-2.2	30.0
Perfluorooctadecanoic acid	LID1F		0.3191		1.84	2.00	-8.2	30.0
13C4 PFBA	Ave	1.122	1.214		10.8	10.0	8.3	30.0
13C5 PFPeA	Ave	1.238	1.396		11.3	10.0	12.8	30.0
13C3 PFBS	Ave	1.425	1.519		9.98	9.36	6.6	30.0
M2-4:2 FTS	Ave	0.1492	0.1593		9.98	9.34	6.8	30.0
13C5 PFHxA	Ave	1.362	1.454		10.7	10.0	6.7	30.0
13C3 HFPO-DA	Ave	0.0172	0.0193		11.2	10.0	12.4	30.0
13C3 PFHxS	Ave	0.9877	1.014		9.71	9.46	2.7	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: ICV 410-166660/9 Calibration Date: 08/31/2021 21:49

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31MCAL-21.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.407	1.530		10.9	10.0	8.8	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	0.9734	1.024		10.5	10.0	5.2	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0433	0.0460		10.6	10.0	6.0	30.0
M2-6:2 FTS	Ave	0.0731	0.0759		9.86	9.50	3.8	30.0
13C8 PFOA	Ave	1.218	1.392		11.4	10.0	14.3	30.0
13C8 PFOS	Ave	1.008	1.084		10.3	9.57	7.6	30.0
13C9 PFNA	Ave	0.8060	0.8898		11.0	10.0	10.4	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.7298	0.7766		10.6	10.0	6.4	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0239	0.0249		10.4	10.0	4.1	30.0
13C6 PFDA	Ave	1.005	1.109		11.0	10.0	10.3	30.0
M2-8:2 FTS	Ave	0.0459	0.0441		9.21	9.58	-3.9	30.0
13C8 FOSA	Ave	1.506	1.438		9.55	10.0	-4.5	30.0
d3-NMeFOSAA	Ave	0.2754	0.2689		9.76	10.0	-2.4	30.0
13C7 PFUnA	Ave	1.193	1.283		10.8	10.0	7.5	30.0
d5-NEtFOSAA	Ave	0.2135	0.2075		9.72	10.0	-2.8	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	0.8027	0.7847		9.78	10.0	-2.2	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0201	0.0199		9.86	10.0	-1.4	30.0
13C2-PFDoDA	Ave	1.159	1.165		10.0	10.0	0.5	30.0
d7-N-MeFOSE-M	Ave	0.1150	0.1101		9.57	10.0	-4.3	30.0
d3-NMePFOSA	Ave	0.1263	0.1185		9.38	10.0	-6.2	30.0
d9-N-EtFOSE-M	Ave	0.1276	0.1188		9.31	10.0	-6.9	30.0
d5-NEtPFOSA	Ave	0.1148	0.1087		9.47	10.0	-5.3	30.0
13C2 PFTeDA	Ave	0.8777	0.8355		9.52	10.0	-4.8	30.0
13C2 PFHxA	Ave	1.114	1.189		10.7	10.0	6.8	30.0
13C4 PFOA	Ave	1.257	1.392		11.1	10.0	10.7	30.0
13C2 PFUnA	Ave	1.462	1.551		10.6	10.0	6.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-166713/5 Calibration Date: 08/31/2021 23:40

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-07.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0666		1.75	2.00	-12.6	30.0
PPF Acid	LID1F		0.4147		1.84	2.00	-8.1	30.0
PFMOAA	LID1F		0.2071		1.65	2.00	-17.7	30.0
Perfluorobutanoic acid	LID1F		0.8881		2.01	2.00	0.6	30.0
R-EVE	LID1F		0.0432		1.69	2.00	-15.3	30.0
R-PSDA	Q2ID		0.0127		1.94	2.00	-2.9	30.0
Hydrolyzed PSDA	LID1F		0.0546		1.56	2.00	-22.2	30.0
PMPA	LID1F		0.2363		1.68	2.00	-16.0	30.0
Perfluoropropanesulfonic acid	LID1F		0.4629		1.61	1.83	-11.9	30.0
NVHOS	LID1F		0.2393		1.75	2.00	-12.3	30.0
PFECA F	LID1F		0.8945		2.00	2.00	0.2	30.0
PFO2HxA	LID1F		0.1138		1.82	2.00	-9.1	30.0
3:3 FTCA	LID1F		0.0615		2.13	2.00	6.4	30.0
Perfluoropentanoic acid	LID1F		0.8825		1.95	2.00	-2.4	30.0
Perfluorobutanesulfonic acid	LID1F		1.205		1.76	1.77	-0.3	30.0
PEPA	LID1F		0.1098		1.98	2.00	-0.9	30.0
PFECA A	LID1F		0.7582		1.95	2.00	-2.3	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.327		1.78	1.78	-0.1	30.0
PFECA B	LID1F		0.7529		1.99	2.00	-0.6	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.198		1.86	1.87	-0.4	30.0
Perfluorohexanoic acid	LID1F		0.7319		1.77	2.00	-11.4	30.0
Perfluoropentanesulfonic acid	LID1F		0.9422		1.79	1.88	-4.6	30.0
PFO3OA	LID1F		0.0834		1.72	2.00	-13.8	30.0
HFPODA	LID1F		9.589		1.85	2.00	-7.4	30.0
Hydro-EVE Acid	LID1F		1.467		1.81	2.00	-9.4	30.0
R-PSDCA	LID1F		2.010		1.83	2.00	-8.3	30.0
Perfluoroheptanoic acid	LID1F		0.9110		1.87	2.00	-6.6	30.0
Perfluorohexanesulfonic acid	LID1F		0.8806		1.51	1.82	-17.3	30.0
Hydro-PS Acid	LID1F		1.702		1.84	2.00	-8.1	30.0
DONA	LID1F		1.100		1.59	1.89	-15.9	30.0
PFECA G	LID1F		1.560		1.94	2.00	-3.0	30.0
5:3 FTCA	LID1F		0.1705		1.88	2.00	-6.2	30.0
6:2 FTUCA	LID1F		1.193		2.04	2.00	1.9	30.0
6:2 FTCA	LID1F		1.126		2.12	2.00	5.9	30.0
PFO4DA	LID1F		0.0931		1.95	2.00	-2.6	30.0
PS Acid	LID1F		0.4872		1.68	2.00	-15.9	30.0
EVE Acid	LID1F		1.065		1.92	2.00	-3.9	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.539		1.70	1.85	-8.1	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-166713/5 Calibration Date: 08/31/2021 23:40

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-07.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	LID1F		4.150		1.86	1.90	-1.7	30.0
Perfluoroheptanesulfonic acid	LID1F		1.032		1.86	1.90	-2.2	30.0
Perfluorooctanoic acid	LID1F		0.7610		1.75	2.00	-12.3	30.0
TAF	AveID	0.0672	0.0559		1.66	2.00	-16.8	30.0
Perfluorooctanesulfonic acid	LID1F		0.9770		1.66	1.85	-10.5	30.0
Perfluorononanoic acid	LID1F		0.8699		1.91	2.00	-4.3	30.0
7:3 FTCA	LID1F		5.048		1.79	2.00	-10.6	30.0
8:2 FTUCA	LID1F		0.9212		1.91	2.00	-4.7	30.0
8:2 FTCA	LID1F		0.7959		1.78	2.00	-10.8	30.0
9Cl-PF3ONS	LID1F		1.667		1.78	1.86	-4.5	30.0
Perfluorononanesulfonic acid	LID1F		1.001		1.90	1.92	-1.1	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.913		2.13	1.92	11.0	30.0
Perfluorodecanoic acid	LID1F		0.7620		1.84	2.00	-8.1	30.0
Perfluorooctanesulfonamide	LID1F		0.9600		1.94	2.00	-2.8	30.0
NMeFOSAA	LID1F		0.8030		1.90	2.00	-4.9	30.0
Perfluorodecanesulfonic acid	LID1F		0.9134		1.96	1.93	1.9	30.0
Perfluoroundecanoic acid	LID1F		0.7739		1.90	2.00	-5.2	30.0
NEtFOSAA	LID1F		0.7897		1.59	2.00	-20.6	30.0
10:2 FTUCA	LID1F		0.8422		1.90	2.00	-5.2	30.0
11Cl-PF3OUdS	LID1F		1.102		1.73	1.86	-6.7	30.0
10:2 FTCA	LID1F		0.7457		1.90	2.00	-4.8	30.0
Perfluorododecanoic acid	LID1F		0.9381		1.93	2.00	-3.3	30.0
10:2 FTS	LID1F		6.069		1.92	1.93	-0.2	30.0
NMeFOSE	LID1F		1.046		1.95	2.00	-2.3	30.0
NMeFOSA	LID1F		0.9170		1.76	2.00	-12.1	30.0
Perfluorododecanesulfonic acid	LID1F		0.8483		1.89	1.94	-2.4	30.0
NEtFOSE	LID1F		0.9868		2.00	2.00	0.2	30.0
NEtFOSA	LID1F		0.997		1.87	2.00	-6.5	30.0
Perfluorotridecanoic acid	LID1F		0.6841		1.83	2.00	-8.5	30.0
Perfluorotetradecanoic acid	LID1F		0.8541		1.87	2.00	-6.4	30.0
Perfluorohexadecanoic acid	LID1F		0.7420		2.11	2.00	5.3	30.0
Perfluorooctadecanoic acid	LID1F		0.3309		1.90	2.00	-4.8	30.0
13C4 PFBA	Ave	1.122	1.134		10.1	10.0	1.1	30.0
13C5 PFPeA	Ave	1.238	1.262		10.2	10.0	1.9	30.0
13C3 PFBS	Ave	1.425	1.384		9.09	9.36	-2.9	30.0
M2-4:2 FTS	Ave	0.1492	0.1597		10.0	9.34	7.1	30.0
13C5 PFHxA	Ave	1.362	1.363		10.0	10.0	0.0	30.0
13C3 HFPO-DA	Ave	0.0172	0.0164		9.56	10.0	-4.4	30.0
13C3 PFHxS	Ave	0.9877	1.004		9.61	9.46	1.6	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-166713/5 Calibration Date: 08/31/2021 23:40

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-07.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.407	1.469		10.4	10.0	4.4	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	0.9734	1.007		10.3	10.0	3.5	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0433	0.0439		10.1	10.0	1.4	30.0
M2-6:2 FTS	Ave	0.0731	0.0807		10.5	9.50	10.3	30.0
13C8 PFOA	Ave	1.218	1.283		10.5	10.0	5.4	30.0
13C8 PFOS	Ave	1.008	1.008		9.56	9.57	-0.0	30.0
13C9 PFNA	Ave	0.8060	0.8071		10.0	10.0	0.1	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.7298	0.7504		10.3	10.0	2.8	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0239	0.0256		10.7	10.0	7.1	30.0
13C6 PFDA	Ave	1.005	1.033		10.3	10.0	2.8	30.0
M2-8:2 FTS	Ave	0.0459	0.0444		9.26	9.58	-3.3	30.0
13C8 FOSA	Ave	1.506	1.518		10.1	10.0	0.8	30.0
d3-NMeFOSAA	Ave	0.2754	0.2713		9.85	10.0	-1.5	30.0
13C7 PFUnA	Ave	1.193	1.223		10.2	10.0	2.5	30.0
d5-NEtFOSAA	Ave	0.2135	0.2371		11.1	10.0	11.1	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	0.8027	0.8316		10.4	10.0	3.6	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0201	0.0213		10.6	10.0	5.5	30.0
13C2-PFDoDA	Ave	1.159	1.156		9.98	10.0	-0.2	30.0
d7-N-MeFOSE-M	Ave	0.1150	0.1083		9.42	10.0	-5.8	30.0
d3-NMePFOSA	Ave	0.1263	0.1272		10.1	10.0	0.7	30.0
d9-N-EtFOSE-M	Ave	0.1276	0.1254		9.83	10.0	-1.7	30.0
d5-NEtPFOSA	Ave	0.1148	0.1181		10.3	10.0	2.9	30.0
13C2 PFTeDA	Ave	0.8777	0.7987		9.10	10.0	-9.0	30.0
13C2 PFHxA	Ave	1.114	1.149		10.3	10.0	3.1	30.0
13C4 PFOA	Ave	1.257	1.333		10.6	10.0	6.0	30.0
13C2 PFUnA	Ave	1.462	1.533		10.5	10.0	4.8	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-166713/18 Calibration Date: 09/01/2021 02:04

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
MTP	LID1F		0.0740		7.77	8.00	-2.9	30.0
PPF Acid	LID1F		0.4569		8.10	8.00	1.3	30.0
PFMOAA	LID1F		0.2371		7.54	8.00	-5.8	30.0
Perfluorobutanoic acid	LID1F		0.8973		8.13	8.00	1.7	30.0
R-EVE	LID1F		0.0452		7.09	8.00	-11.4	30.0
R-PSDA	Q2ID		0.0141		8.30	8.00	3.7	30.0
Hydrolyzed PSDA	LID1F		0.0591		6.73	8.00	-15.8	30.0
PMPA	LID1F		0.2723		7.75	8.00	-3.2	30.0
Perfluoropropanesulfonic acid	LID1F		0.5097		7.11	7.33	-3.0	30.0
NVHOS	LID1F		0.2550		7.48	8.00	-6.5	30.0
PFECA F	LID1F		0.9157		8.21	8.00	2.6	30.0
PFO2HxA	LID1F		0.1187		7.59	8.00	-5.1	30.0
3:3 FTCA	LID1F		0.0557		7.70	8.00	-3.7	30.0
Perfluoropentanoic acid	LID1F		0.8906		7.88	8.00	-1.5	30.0
Perfluorobutanesulfonic acid	LID1F		1.175		6.88	7.08	-2.8	30.0
PEPA	LID1F		0.1148		8.29	8.00	3.6	30.0
PFECA A	LID1F		0.7567		7.80	8.00	-2.5	30.0
Perfluoro (2-ethoxyethane) sulfonic acid	LID1F		3.230		6.90	7.12	-3.0	30.0
PFECA B	LID1F		0.7521		7.94	8.00	-0.7	30.0
4:2 Fluorotelomer sulfonic acid	LID1F		3.209		7.47	7.47	-0.0	30.0
Perfluorohexanoic acid	LID1F		0.8007		7.75	8.00	-3.1	30.0
Perfluoropentanesulfonic acid	LID1F		0.9416		7.16	7.50	-4.6	30.0
PFO3OA	LID1F		0.1034		8.55	8.00	6.9	30.0
HFPODA	LID1F		9.476		7.32	8.00	-8.5	30.0
Hydro-PS Acid	LID1F		1.816		7.85	8.00	-1.9	30.0
Hydro-EVE Acid	LID1F		1.610		7.96	8.00	-0.6	30.0
R-PSDCA	LID1F		2.134		7.79	8.00	-2.6	30.0
Perfluoroheptanoic acid	LID1F		0.997		8.18	8.00	2.2	30.0
Perfluorohexanesulfonic acid	LID1F		1.023		7.01	7.30	-3.9	30.0
DONA	LID1F		1.312		7.59	7.56	0.4	30.0
PFECA G	LID1F		1.708		8.50	8.00	6.2	30.0
5:3 FTCA	LID1F		0.1781		7.84	8.00	-2.0	30.0
6:2 FTUCA	LID1F		1.215		8.30	8.00	3.7	30.0
6:2 FTCA	LID1F		0.9805		7.38	8.00	-7.7	30.0
PFO4DA	LID1F		0.1041		8.72	8.00	9.0	30.0
PS Acid	LID1F		0.5408		7.47	8.00	-6.6	30.0
EVE Acid	LID1F		1.160		8.37	8.00	4.7	30.0
Perfluoro-4-ethylcyclohexane sulfonic acid	LID1F		1.637		7.23	7.39	-2.2	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-166713/18 Calibration Date: 09/01/2021 02:04

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2 Fluorotelomer sulfonic acid	LID1F		4.332		7.78	7.58	2.6	30.0
Perfluoroheptanesulfonic acid	LID1F		1.097		7.92	7.62	4.0	30.0
Perfluorooctanoic acid	LID1F		0.7961		7.34	8.00	-8.3	30.0
TAF	AveID	0.0672	0.0783		9.32	8.00	16.5	30.0
Perfluorooctanesulfonic acid	LID1F		1.076		7.30	7.40	-1.4	30.0
Perfluorononanoic acid	LID1F		0.9198		8.09	8.00	1.1	30.0
7:3 FTCA	LID1F		5.198		7.37	8.00	-7.9	30.0
8:2 FTUCA	LID1F		0.9777		8.10	8.00	1.2	30.0
8:2 FTCA	LID1F		0.9237		8.28	8.00	3.5	30.0
9Cl-PF3ONS	LID1F		1.733		7.39	7.44	-0.7	30.0
Perfluorononanesulfonic acid	LID1F		1.011		7.67	7.68	-0.0	30.0
Perfluorodecanoic acid	LID1F		0.8047		7.77	8.00	-2.9	30.0
8:2 Fluorotelomer sulfonic acid	LID1F		6.711		8.26	7.66	7.7	30.0
Perfluorooctanesulfonamide	LID1F		0.9752		7.90	8.00	-1.3	30.0
NMeFOSAA	LID1F		0.8938		8.47	8.00	5.9	30.0
Perfluorodecanesulfonic acid	LID1F		0.8909		7.67	7.71	-0.6	30.0
Perfluoroundecanoic acid	LID1F		0.7734		7.58	8.00	-5.2	30.0
NEtFOSAA	LID1F		0.9297		7.47	8.00	-6.6	30.0
10:2 FTUCA	LID1F		0.8752		7.88	8.00	-1.5	30.0
11Cl-PF3OUdS	LID1F		1.167		7.35	7.44	-1.2	30.0
10:2 FTCA	LID1F		0.7596		7.76	8.00	-3.0	30.0
Perfluorododecanoic acid	LID1F		1.029		8.48	8.00	6.0	30.0
10:2 FTS	LID1F		5.892		7.47	7.71	-3.1	30.0
NMeFOSE	LID1F		1.033		7.72	8.00	-3.5	30.0
NMeFOSA	LID1F		1.020		7.82	8.00	-2.2	30.0
Perfluorododecanesulfonic acid	LID1F		0.8921		7.95	7.74	2.7	30.0
NEtFOSE	LID1F		1.084		8.81	8.00	10.2	30.0
NEtFOSA	LID1F		1.091		8.18	8.00	2.3	30.0
Perfluorotridecanoic acid	LID1F		0.8161		8.73	8.00	9.2	30.0
Perfluorotetradecanoic acid	LID1F		0.8756		7.68	8.00	-4.0	30.0
Perfluorohexadecanoic acid	LID1F		0.7503		8.52	8.00	6.5	30.0
Perfluorooctadecanoic acid	LID1F		0.3459		7.96	8.00	-0.5	30.0
13C4 PFBA	Ave	1.122	1.128		10.1	10.0	0.6	30.0
13C5 PFPeA	Ave	1.238	1.300		10.5	10.0	4.9	30.0
13C3 PFBS	Ave	1.425	1.440		9.46	9.36	1.1	30.0
M2-4:2 FTS	Ave	0.1492	0.1439		9.01	9.34	-3.5	30.0
13C5 PFHxA	Ave	1.362	1.281		9.41	10.0	-5.9	30.0
13C3 HFPO-DA	Ave	0.0172	0.0180		10.5	10.0	4.5	30.0
13C3 PFHxS	Ave	0.9877	0.9241		8.85	9.46	-6.4	30.0

FORM VII
PFAS CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Env, LI Job No.: 410-51558-1

SDG No.:

Lab Sample ID: CCV 410-166713/18 Calibration Date: 09/01/2021 02:04

Instrument ID: 30727 Calib Start Date: 08/31/2021 19:29

GC Column: Gemini C18 50mm ID: 3.00(mm) Calib End Date: 08/31/2021 21:25

Lab File ID: 21AUG31-20.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFHpA	Ave	1.407	1.326		9.43	10.0	-5.7	30.0
13C2-2H-Perfluoro-2-octenoic acid	Ave	0.9734	0.9503		9.76	10.0	-2.4	30.0
13C2-2-Perfluorohexylethanoic acid	Ave	0.0433	0.0439		10.1	10.0	1.2	30.0
M2-6:2 FTS	Ave	0.0731	0.0747		9.71	9.50	2.2	30.0
13C8 PFOA	Ave	1.218	1.182		9.70	10.0	-3.0	30.0
13C8 PFOS	Ave	1.008	0.9723		9.23	9.57	-3.5	30.0
13C9 PFNA	Ave	0.8060	0.7944		9.86	10.0	-1.4	30.0
13C2-2H-Perfluoro-2-decenoic acid	Ave	0.7298	0.7255		9.94	10.0	-0.6	30.0
13C2-2-Perfluorooctylethanoic acid	Ave	0.0239	0.0238		9.94	10.0	-0.6	30.0
13C6 PFDA	Ave	1.005	0.9935		9.89	10.0	-1.1	30.0
M2-8:2 FTS	Ave	0.0459	0.0450		9.40	9.58	-1.9	30.0
13C8 FOSA	Ave	1.506	1.518		10.1	10.0	0.8	30.0
d3-NMeFOSAA	Ave	0.2754	0.2681		9.73	10.0	-2.7	30.0
13C7 PFUnA	Ave	1.193	1.217		10.2	10.0	2.0	30.0
d5-NEtFOSAA	Ave	0.2135	0.2153		10.1	10.0	0.9	30.0
13C2-2H-Perfluoro-2-dodecenoic acid	Ave	0.8027	0.7991		9.96	10.0	-0.4	30.0
13C2-2-Perfluorodecylethanoic acid	Ave	0.0201	0.0195		9.68	10.0	-3.2	30.0
13C2-PFDoDA	Ave	1.159	1.078		9.31	10.0	-6.9	30.0
d7-N-MeFOSE-M	Ave	0.1150	0.1123		9.76	10.0	-2.4	30.0
d3-NMePFOSA	Ave	0.1263	0.1293		10.2	10.0	2.3	30.0
d9-N-EtFOSE-M	Ave	0.1276	0.1199		9.40	10.0	-6.0	30.0
d5-NEtPFOSA	Ave	0.1148	0.1081		9.42	10.0	-5.8	30.0
13C2 PFTeDA	Ave	0.8777	0.8176		9.32	10.0	-6.8	30.0
13C2 PFHxA	Ave	1.114	1.048		9.41	10.0	-5.9	30.0
13C4 PFOA	Ave	1.257	1.234		9.82	10.0	-1.8	30.0
13C2 PFUnA	Ave	1.462	1.359		9.29	10.0	-7.1	30.0

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-162732/1-A

Matrix: Water Lab File ID: 21AUG31-08.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 08/31/2021 23:51

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		2.0	0.50
375-85-9	Perfluoroheptanoic acid	ND		2.0	0.50
335-67-1	Perfluorooctanoic acid	ND		2.0	0.50
375-95-1	Perfluorononanoic acid	ND		2.0	0.50
335-76-2	Perfluorodecanoic acid	ND		2.0	0.50
72629-94-8	Perfluorotridecanoic acid	ND		2.0	0.50
376-06-7	Perfluorotetradecanoic acid	ND		2.0	0.50
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.50
355-46-4	Perfluorohexanesulfonic acid	ND		2.0	0.50
1763-23-1	Perfluorooctanesulfonic acid	0.531	J	2.0	0.50
2991-50-6	NEtFOSAA	ND		3.0	0.50
2355-31-9	NMeFOSAA	ND		2.0	0.60
307-55-1	Perfluorododecanoic acid	ND		2.0	0.50
13252-13-6	HFPODA	ND		3.0	0.50
756426-58-1	9Cl-PF3ONS	ND		2.0	0.50
763051-92-9	11Cl-PF3OUdS	ND		2.0	0.50
919005-14-4	DONA	ND		2.0	0.50
2058-94-8	Perfluoroundecanoic acid	ND		2.0	0.50

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-162732/1-A

Matrix: Water Lab File ID: 21AUG31-08.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 08/31/2021 23:51

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	82		31-142
STL01892	13C4 PFHpA	85		30-144
STL01052	13C8 PFOA	92		49-127
STL02578	13C9 PFNA	88		47-136
STL02579	13C6 PFDA	88		47-128
STL02703	13C2-PFDoDA	85		28-136
STL02116	13C2 PFTeDA	81		10-144
STL02337	13C3 PFBS	99		19-178
STL02581	13C3 PFHxS	77		32-145
STL01054	13C8 PFOS	84		49-126
STL02118	d3-NMeFOSAA	84		32-151
STL02117	d5-NEtFOSAA	90		37-164
STL02255	13C3 HFPO-DA	92		20-153
STL02580	13C7 PFUnA	90		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-163270/8

Matrix: Water Lab File ID: 21AUG25MCAL-11.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 0(mL) Date Analyzed: 08/25/2021 17:21

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 163270 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		0.50	0.13
375-85-9	Perfluoroheptanoic acid	ND		0.50	0.13
335-67-1	Perfluorooctanoic acid	ND		0.50	0.13
375-95-1	Perfluorononanoic acid	ND		0.50	0.13
335-76-2	Perfluorodecanoic acid	ND		0.50	0.13
72629-94-8	Perfluorotridecanoic acid	ND		0.50	0.13
376-06-7	Perfluorotetradecanoic acid	0.158	J	0.50	0.13
375-73-5	Perfluorobutanesulfonic acid	ND		0.50	0.13
355-46-4	Perfluorohexanesulfonic acid	ND		0.50	0.13
1763-23-1	Perfluorooctanesulfonic acid	ND		0.50	0.13
2991-50-6	NEtFOSAA	0.457	J	1.3	0.13
2355-31-9	NMeFOSAA	0.324	J	0.50	0.15
307-55-1	Perfluorododecanoic acid	ND		0.50	0.13
13252-13-6	HFPODA	ND		0.75	0.13
756426-58-1	9Cl-PF3ONS	ND		0.50	0.13
763051-92-9	11Cl-PF3OUdS	ND		0.50	0.13
919005-14-4	DONA	ND		0.50	0.13
2058-94-8	Perfluoroundecanoic acid	ND		0.50	0.13

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-163270/8

Matrix: Water Lab File ID: 21AUG25MCAL-11.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 0(mL) Date Analyzed: 08/25/2021 17:21

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 163270 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	90		31-142
STL01892	13C4 PFHpA	97		30-144
STL01052	13C8 PFOA	99		49-127
STL02578	13C9 PFNA	102		47-136
STL02579	13C6 PFDA	92		47-128
STL02703	13C2-PFDoDA	91		28-136
STL02116	13C2 PFTeDA	84		10-144
STL02337	13C3 PFBS	110		19-178
STL02581	13C3 PFHxS	91		32-145
STL01054	13C8 PFOS	98		49-126
STL02118	d3-NMeFOSAA	91		32-151
STL02117	d5-NEtFOSAA	95		37-164
STL02255	13C3 HFPO-DA	104		20-153
STL02580	13C7 PFUnA	96		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-166660/8

Matrix: Water Lab File ID: 21AUG31MCAL-20.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 0(mL) Date Analyzed: 08/31/2021 21:38

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166660 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	ND		0.50	0.13
375-85-9	Perfluoroheptanoic acid	ND		0.50	0.13
335-67-1	Perfluorooctanoic acid	ND		0.50	0.13
375-95-1	Perfluorononanoic acid	ND		0.50	0.13
335-76-2	Perfluorodecanoic acid	ND		0.50	0.13
72629-94-8	Perfluorotridecanoic acid	ND		0.50	0.13
376-06-7	Perfluorotetradecanoic acid	0.144	J	0.50	0.13
375-73-5	Perfluorobutanesulfonic acid	ND		0.50	0.13
355-46-4	Perfluorohexanesulfonic acid	ND		0.50	0.13
1763-23-1	Perfluorooctanesulfonic acid	ND		0.50	0.13
2991-50-6	NEtFOSAA	0.361	J	1.3	0.13
2355-31-9	NMeFOSAA	0.278	J	0.50	0.15
307-55-1	Perfluorododecanoic acid	ND		0.50	0.13
13252-13-6	HFPODA	ND		0.75	0.13
756426-58-1	9Cl-PF3ONS	ND		0.50	0.13
763051-92-9	11Cl-PF3OUdS	ND		0.50	0.13
919005-14-4	DONA	ND		0.50	0.13
2058-94-8	Perfluoroundecanoic acid	ND		0.50	0.13

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: ICB 410-166660/8

Matrix: Water Lab File ID: 21AUG31MCAL-20.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 0(mL) Date Analyzed: 08/31/2021 21:38

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166660 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	108		31-142
STL01892	13C4 PFHpA	110		30-144
STL01052	13C8 PFOA	117		49-127
STL02578	13C9 PFNA	111		47-136
STL02579	13C6 PFDA	111		47-128
STL02703	13C2-PFDoDA	110		28-136
STL02116	13C2 PFTeDA	100		10-144
STL02337	13C3 PFBS	123		19-178
STL02581	13C3 PFHxS	100		32-145
STL01054	13C8 PFOS	110		49-126
STL02118	d3-NMeFOSAA	102		32-151
STL02117	d5-NEtFOSAA	113		37-164
STL02255	13C3 HFPO-DA	112		20-153
STL02580	13C7 PFUnA	114		40-135

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 410-162732/2-A

Matrix: Water Lab File ID: 21AUG31-09.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 09/01/2021 00:02

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
307-24-4	Perfluorohexanoic acid	27.5		2.0	0.50
375-85-9	Perfluoroheptanoic acid	27.4		2.0	0.50
335-67-1	Perfluorooctanoic acid	25.6		2.0	0.50
375-95-1	Perfluorononanoic acid	28.4		2.0	0.50
335-76-2	Perfluorodecanoic acid	28.2		2.0	0.50
72629-94-8	Perfluorotridecanoic acid	30.0		2.0	0.50
376-06-7	Perfluorotetradecanoic acid	27.8		2.0	0.50
375-73-5	Perfluorobutanesulfonic acid	21.3		2.0	0.50
355-46-4	Perfluorohexanesulfonic acid	24.9		2.0	0.50
1763-23-1	Perfluorooctanesulfonic acid	25.8		2.0	0.50
2991-50-6	NEtFOSAA	26.0		3.0	0.50
2355-31-9	NMeFOSAA	27.0		2.0	0.60
307-55-1	Perfluorododecanoic acid	28.6		2.0	0.50
13252-13-6	HFPODA	24.6		3.0	0.50
756426-58-1	9Cl-PF3ONS	25.5		2.0	0.50
763051-92-9	11Cl-PF3OUdS	24.5		2.0	0.50
919005-14-4	DONA	24.0		2.0	0.50
2058-94-8	Perfluoroundecanoic acid	28.5		2.0	0.50

FORM I
PFAS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Env, Job No.: 410-51558-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 410-162732/2-A

Matrix: Water Lab File ID: 21AUG31-09.d

Analysis Method: 537 IDA Date Collected:

Extraction Method: 537 IDA Date Extracted: 08/20/2021 07:20

Sample wt/vol: 250(mL) Date Analyzed: 09/01/2021 00:02

Con. Extract Vol.: 1(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 166713 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL02577	13C5 PFHxA	87		31-142
STL01892	13C4 PFHpA	87		30-144
STL01052	13C8 PFOA	91		49-127
STL02578	13C9 PFNA	89		47-136
STL02579	13C6 PFDA	86		47-128
STL02703	13C2-PFDoDA	82		28-136
STL02116	13C2 PFTeDA	78		10-144
STL02337	13C3 PFBS	98		19-178
STL02581	13C3 PFHxS	82		32-145
STL01054	13C8 PFOS	88		49-126
STL02118	d3-NMeFOSAA	87		32-151
STL02117	d5-NEtFOSAA	85		37-164
STL02255	13C3 HFPO-DA	85		20-153
STL02580	13C7 PFUnA	90		40-135

PFAS BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratories | Job No.: 410-51558-1

SDG No.:

Batch Number: 162732 | Batch Start Date: 08/20/21 07:20 | Batch Analyst: Barnhart, Toby B

Batch Method: 537 IDA | Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC_MS_MODWX 00079	PFC_SS_MODX 00126
MB 410-162732/1		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL		25 uL
LCS 410-162732/2		537 IDA, 537 IDA		300 g	50 g	250 mL	1 mL	40 uL	25 uL
410-51558-A-1	EB-1-W-2108	537 IDA, 537 IDA	T	272.56 g	28.13 g	244.4 mL	1 mL		25 uL
410-51558-A-2	EB-2-W-2108	537 IDA, 537 IDA	T	268.90 g	28.36 g	240.5 mL	1 mL		25 uL
410-51558-A-3	EB-3-W-2108	537 IDA, 537 IDA	T	275.18 g	27.28 g	247.9 mL	1 mL		25 uL
410-51558-A-4	EB-4-W-2108	537 IDA, 537 IDA	T	308.16 g	28.02 g	280.1 mL	1 mL		25 uL
410-51558-A-5	EB-5-W-2108	537 IDA, 537 IDA	T	307.14 g	28.16 g	279 mL	1 mL		25 uL
410-51558-A-6	EB-6-W-2108	537 IDA, 537 IDA	T	304.41 g	28.08 g	276.3 mL	1 mL		25 uL
410-51558-A-7	EB-7-W-2108	537 IDA, 537 IDA	T	304.10 g	28.21 g	275.9 mL	1 mL		25 uL
410-51558-A-8	EB-8-W-2108	537 IDA, 537 IDA	T	308.16 g	27.89 g	280.3 mL	1 mL		25 uL
410-51558-A-9	FB-W-2108	537 IDA, 537 IDA	T	305.00 g	28.08 g	276.9 mL	1 mL		25 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 410-162732/1		537 IDA, 537 IDA							
LCS 410-162732/2		537 IDA, 537 IDA							
410-51558-A-1	EB-1-W-2108	537 IDA, 537 IDA	T	limited sample					
410-51558-A-2	EB-2-W-2108	537 IDA, 537 IDA	T	limited sample					
410-51558-A-3	EB-3-W-2108	537 IDA, 537 IDA	T	limited sample					
410-51558-A-4	EB-4-W-2108	537 IDA, 537 IDA	T						
410-51558-A-5	EB-5-W-2108	537 IDA, 537 IDA	T						
410-51558-A-6	EB-6-W-2108	537 IDA, 537 IDA	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

PFAS BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratories Job No.: 410-51558-1

SDG No.:

Batch Number: 162732 Batch Start Date: 08/20/21 07:20 Batch Analyst: Barnhart, Toby B

Batch Method: 537 IDA Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
410-51558-A-7	EB-7-W-2108	537 IDA, 537 IDA	T						
410-51558-A-8	EB-8-W-2108	537 IDA, 537 IDA	T						
410-51558-A-9	FB-W-2108	537 IDA, 537 IDA	T						

Batch Notes	
Balance ID	B629764122
Collection Tube Witness	DC 20115
H2O ID	HouseA372
Manifold ID	16
Methanol ID	211800
Pipette/Syringe/Dispenser ID	PFAS 6,7
Solvent Lot #	4084708202133A, 4084708192133A
Solvent Name	.3% NH4OH in MeOH, 1:1 ACN:MeOH
SPE Cartridge Lot ID	6551874-01

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

APPENDIX C

PFAS SAMPLING STANDARD OPERATING PROCEDURE

memorandum

To: Trihydro Employees
PFAS Project Team:
Mr. Kyle McDonald, Assistant Project Scientist
Ms. Angel Roman, Project Engineer
Mr. Keith Edmonds, Assistant Staff Engineer
Ms. Cathelyne Powers, Staff Engineer
From: Ms. Julia Slusher, Associate Scientist
Date: May 23, 2024
Re: PFAS Sampling Standard Operating Procedure

1.0 INTRODUCTION

This standard operating procedure (SOP) establishes protocols for Trihydro employees and subcontractors to be followed when collecting samples for per- and polyfluoroalkyl substances (PFAS). This SOP includes general PFAS sampling procedures as well as procedures for specific activities including sampling of drinking water, groundwater, surface water/sediment, soils, and other media.

This PFAS SOP is divided into the following Sections:

1.0 Introduction

2.0 PFAS Sampling Training Requirements

3.0 General PFAS Sampling Procedures

4.0 Drinking Water and Supply Well Sampling

5.0 Groundwater Sampling

6.0 Surface Water and Sediment Sampling

7.0 Surface and Subsurface Soil Sampling

8.0 Other Sampling Matrices

9.0 PFAS Laboratory Requirements

10.0 References

Although PFAS sampling procedures are generally similar to conventional sampling, several aspects of sampling and analysis for PFAS are unique, and following these PFAS-specific procedures is critical. PFAS-specific procedures are necessary due to their high tendency for sample cross-contamination, which is related to the following characteristics:

- Extremely low environmental concentrations of interest
- Large numbers of individual analytes that may be present in environmental samples

- Potential presence in many standard sampling materials, especially in polytetrafluoroethylene (PTFE) products including Teflon
- Presence in everyday materials including food packaging and clothing
- Greater scrutiny of results than for other contaminants

The objective of this SOP is to establish general PFAS sampling procedures to guide PFAS sampling events across the company, provide defensible PFAS data, and remain consistent with current PFAS sampling guidance and best practices.

1.1 PFAS Background

Since the 1950s, PFAS have been incorporated into many consumer and industrial products. One of the many historical uses is in firefighting foams ("Aqueous Film Forming Foams," or AFFF). AFFF products may be used for fire suppression at facilities where Class B fires (i.e., those involving flammable liquids and gases) may be a concern, including airports, firefighting training areas, and other facilities where flammable hydrocarbons are present. PFAS have also been used for widespread industries including non-stick material (e.g., Teflon) manufacturing, metal plating, paper/fabric production, plastics, semiconductors, aerospace industries, and in processes such as mist/dust suppression. Environmental releases of PFAS compounds have resulted from their historical uses in AFFF and industrial processes.

In total, the chemical class of PFAS includes thousands of individual compounds. The most well-known and widely regulated of these compounds include perfluorooctanoic acid (PFOA) and perfluoroalkyl sulfonate (PFOS). PFAS exhibit unique chemical and physical properties, with important implications for sample collection PFAS function as surfactants (e.g., substances that decrease a liquid's surface tension), and are prone to accumulate at air/water interfaces, especially where foam may be formed. Because of this tendency to accumulate at interfaces, surface/stormwater sampling should avoid interfaces, if possible, to avoid high-biased sample data. In terms of sampling, PFAS are considered to be "sticky" in that they may temporarily sorb to sampling materials, which increases the risk of cross contamination if procedures described herein are not strictly observed.

The PFAS regulatory status has been evolving since the early 2010s, as additional occurrence and toxicology data are made available. The United States Environmental Protection Agency (EPA) has finalized drinking water maximum contaminant levels (MCLs) and many states have adopted water standards (drinking water, surface water, or groundwater) in the low-ppt range. A summary table of federal- and state-level PFAS standard values is provided by ITRC (2023), updated on a regular basis. **The extremely low concentrations of interest have important implications for PFAS sampling, including the need for careful attention to detail to avoid any risk of sample contamination.**

1.2 PFAS Sampling Guidance Documents

The SOP presented herein has been developed in consideration of select state-specific guidance documents as well as the Interstate Regulatory Guidance Council (ITRC). Additional guidance may need to be referenced for site-specific circumstances, for example, several states have published independent guidance documents (in addition to the California and Michigan documents noted herein). PFAS sampling and analytical guidance documents include the following:

- Per- and Polyfluoroalkyl Substances (PFAS) Sampling Guidelines for Non-Drinking Water published by the California State Water Quality Control Board (The Water Boards) Division of Water Quality in September 2020 (The Water Boards 2020).
- General PFAS Sampling Guidance published by the Michigan Department of Environmental Quality (MDEQ) in October 2018 (MDEQ 2018).
- ITRC's guidance document, *Technical Resources for Addressing Environmental Releases of Per- and Polyfluorinated Compounds (PFAS)*, Chapter 11, Sampling and Analytical Methods, provides detailed information on sampling protocols (ITRC 2023).

2.0 PFAS SAMPLING TRAINING REQUIREMENTS

Due to the need for specialized procedures used for PFAS sampling, only personnel who have completed Trihydro's training program should collect environmental samples for PFAS. Trihydro's PFAS sampling training program includes the following elements:

- Initial office-based training conducted by one or more members of the Trihydro PFAS technical team, including PFAS background, overview of this SOP, and discussion of unique aspects of PFAS sampling with a detailed discussion of the material compatibility table. Training should include discussion of procedures commensurate with sampling to be conducted. Office-based training will cover items in the checklist (Attachment A) and is anticipated to require 1 hour for drinking/waste-water sampling conducted above ground (e.g., from spigots) and 1-2 hours for environmental sampling including soils, sediment, surface water, groundwater. The office-based training is considered sufficient for personnel collecting tapwater/spigot sampling; personnel conducting environmental sampling (e.g., groundwater, surface water, soils, and sediment) must complete on-site training.
- On-site training will be led by an experienced PFAS sampler. Experienced PFAS samplers will use the Field Training Checklist included as Attachment B of this SOP to ensure that the applicable aspects of PFAS field techniques are discussed during the on-site training event.
- Annual refreshers will consist of office-based training/discussion to share information learned throughout the company during PFAS sampling events, updates in terms of standard methods, and to provide feedback on lessons learned.

3.0 GENERAL PFAS SAMPLING PROCEDURES

This section provides general information on PFAS sampling procedures, to be used for all PFAS sampling activities. In general, collection of PFAS samples follows similar procedures to those employed for conventional sampling; there are several key aspects of PFAS sampling that warrant additional attention. This SOP focuses on areas where PFAS sampling requires different considerations than conventional sampling procedures.

PFAS may be present in a wide variety of commercial products including common household items (e.g., food wrappers, Gore-Tex or other waterproof fabrics, stain-resistant fabrics, cosmetics, sunscreens, and moisturizing lotions). Table 1 presents a list of sampling materials that are prohibited or acceptable, following The California Water Boards 2020, MDEQ 2018, and ITRC 2023 guidance. **It is very important that PFAS-compatible materials are used and that sampling procedures follow protocols to minimize risk of cross contamination.** This section provides guidance on how to manage sampling to minimize risks of PFAS contamination (i.e., introduction of PFAS from materials used) or cross-contamination (i.e., transfer of PFAS between sample locations). PFAS sampling procedures for specific media types are provided in subsequent sections.

While planning for PFAS sampling, the following guidelines should be kept in mind:

- Plan ahead to ensure materials and procedures can be properly vetted for PFAS compatibility
- For PFAS field sampling, include extra time, such that the field crew does not have to rush
- Simplify procedures and minimize clutter to reduce cross-contamination risks

3.1 Clothing and Personal Care Products

The sample collection team should be aware of clothing compatibility (per Table 1) with PFAS sampling. PFAS are present in waterproof and stainproof fabrics, and may be present in new clothing, regardless of whether clothing is considered “waterproof”. Clothing worn during PFAS sampling should meet the following criteria:

- All clothing should be well-laundered, i.e., washed at least six times after purchase.
- Before sampling, clothing should be laundered without fabric softener or dryer sheets.
- For clothing and jackets worn during PFAS sampling, cotton or synthetic fabrics are acceptable, if the fabrics are not treated to be water/stain resistant (and all clothing regardless of material must be well laundered).
- Clothing containing Gore-Tex (or similar waterproofing) should not be present at the field site; if traveling, such clothing should not be packed next to clothing that will be worn for sampling.

- Waterproof clothing made with polyurethane, polyvinyl chloride (PVC), wax-coated fabrics, rubber, or neoprene (e.g., *Helly Hansen Storm Waterproof Rain Jacket*, with a shell made of PVC) is acceptable.
- Do not use unnecessary personal care products on the day of sampling (e.g., nail polish, cologne/perfume, lotions); wash hands with soap and water after applying personal care products on the day of sampling.

3.2 PFAS Sampling Health and Safety Considerations

In some circumstances, personal protective equipment (PPE) requirements may create conflicts with the PFAS sampling compatible materials shown in Table 1. Such conflicts should be identified during the planning/work-plan development process so they can be managed. **Do not sacrifice PPE requirements for PFAS sample collection.** Through planning, a solution can generally be found. For example, waterproof steel-toed workboots may be covered by overshoes made of PVC or similar PFAS-compatible materials. Sunblock, insect repellant, and/or related materials should be applied ahead of time and hands washed with soap and water after these are applied. Reflective vests are acceptable, if not treated for water- or stain-proofing, but should be well-laundered.

Potential health-and-safety/PFAS conflicts and resolutions should be documented in field notes. **The sampler should be conscientious about potential pathways between these products and the sample, and look for ways to eliminate these pathways.**

3.3 Sampling Equipment and Materials

PFAS are potentially present in many common sampling materials; these materials should be avoided during PFAS sampling to minimize PFAS contamination risks. Table 1 provides a summary of materials that are compatible/incompatible with PFAS sampling. Many common sampling materials are not compatible with PFAS, thus it is important that the sampling team is familiar with this table.

Materials that are useful to have on-site for PFAS sampling include the following:

- Polyethylene (PE) sheeting (and scissors to cut the sheeting)
- Packing tape to attach sheeting to sample preparation surfaces (optional)
- Sample staging table (optional)
- Nitrile gloves - excess quantity for frequent changing of gloves
- Zipper-lock (Ziploc or similar) bags - excess quantity for sample containers, double-bagged ice, and separating/containing sampling equipment
- Untreated paper towels - excess quantity for general use

- Waste containers (e.g., contractor bags) to ensure that waste materials may be removed from the sample processing area immediately after being generated, thus avoiding unnecessary clutter
- Loose leaf paper, pre-printed for recording sample log information
- PFAS-compatible pens, such as a Uni-ball™ Power Tank RT retractable ballpoint pen

If decontamination is required, purchase PFAS-free water from the laboratory along with the sample container order. PFAS-free water may be expected to cost approximately $20 per liter. If a large volume (e.g., multiple gallons) of decontamination water is required, a local water source may be used only if tested and verified to be 'PFAS-free' ahead of time.

3.4 Sampling Containers

Sampling containers provided by the laboratory for PFAS analysis consist of polypropylene or high-density polyethylene (HDPE). Glass containers are never suitable for PFAS analysis of water samples, as PFAS can adsorb onto glass; glass containers are not ideal for soil sampling, but may be used if nothing else is available. Teflon-lined lids are not acceptable for PFAS sampling. Before sampling, confirm PFAS compatibility, including sample-container composition with the selected analytical laboratory. For water sampling, required volumes may range from 250 to 1000 mL, depending on the analytical method. Some methods allow for smaller volumes but the detection limits may increase, inversely proportional to the reduction in sample volume. Volume requirements may vary per laboratory requirements; confirm with laboratory before sampling. Requirements for preservatives (Trizma buffer or ammonium acetate) are discussed in Section 9.3.

3.5 Sampling Area Preparation

To minimize the potential for contamination/cross-contamination, designate separate sampling and preparation spaces within the work area. For PFAS sampling of all media types, the following area preparation steps can facilitate successful PFAS sampling:

- Remove unnecessary materials from the sampling area. This includes materials that are part of the sampling event but are not needed for sample collection (e.g., field notes).
- Under certain circumstances (e.g., residential water sampling), a zipper-lock) bag may be used to transport/store sampling containers and sampling materials. These materials must be disposed of after a single use and are not to be used at multiple locations.
- Consider using disposable PE sheeting to set up a workspace for sampling equipment. For small, localized sample collection (e.g., from a spigot) use PE sheeting or untreated paper towels to setup a workspace.
- For certain types of sampling, a portable/collapsible table may be used, with PE sheeting used to cover the table. Packaging tape is acceptable to secure PE sheeting, as long as the tape is applied beneath the table surface and does not contact sample containers during processing. The top of a

cooler may also be used for equipment storage, if covered by PE/untreated paper towels or thoroughly decontaminated.

- Have an excess quantity of nitrile gloves accessible; gloves are to be changed frequently, including as a last step before sample collection. **Gloves should be moved from the box into a clean zipper-lock bag until use and should not be carried in a pocket, or in a similar uncontrolled manner.** Avoid handling of the nitrile glove box after donning clean nitrile gloves.
- Make sure personnel that are not equipped for PFAS sampling remain outside of the immediate sampling area (at least 6 feet away).

Preparing sample containers and coolers before the event:

- Always wear clean nitrile gloves while handling sample containers and PFAS-free water containers, even when organizing before the sampling event.
- Preparing bottle sets before the sampling event is helpful to minimize handling of containers required in the field. Preparation might include grouping of bottle sets in zipper-lock bags. Sample container labels may be filled out (with all information except sample time) and applied ahead of time. Zipper-lock bags can be labeled using an Ultra-Fine point Sharpie or Uni-ball Power Tank RT Retractable Ballpoint Pen.
- Ensure that sample containers are controlled through the entire preparation process. They may be in a cooler, placed in zipper-lock bags, or placed on PE sheeting. Sample containers should be stored in a liner-bag or zipper-lock bag within the cooler. Do not place sample containers on ‘uncontrolled’ surfaces, such as the exposed lid of a cooler, the tailgate of a truck, or a carpeted floor, unless the surface is decontaminated or covered with PE sheeting or clean, untreated paper towels.
- Prepare separate coolers for clean/empty sample containers and filled containers such that clean/empty and filled containers are not mixed in a single cooler.

3.6 Sample Collection and Handling

PFAS are sticky, in that they tend to adhere to solid surfaces, and therefore may be transferred from source to sample during the handling process. The following presents a list of sampling dos and don’ts that mitigate this cross-contamination risk.

Do	Don't
Change gloves frequently, including immediately before sampling. Transfer clean gloves from the box into a clean zipper-lock bag.	Touch anything besides sample containers with final pair of nitrile gloves.
Keep sample containers controlled through the entire sampling process, and keep containers closed/sealed until filling with a sample.	Put sample containers or sampling equipment on the ground or in contact with any surface that cannot be shown to be free of PFAS.
Have at least two coolers, one for unused sampling containers and one for the PFAS samples.	Put PFAS samples in a cooler with unused sampling containers.
Practice good housekeeping by keeping sample collection area clean and free of used paper towels, gloves, sampled media (soil and water).	Bring items into the sample collection area that are not necessary to the process of sample collection (notebooks, work plans, food/drink containers, etc.). Water bottles for hydration are allowable at the sampling site, but should be kept in the car and out of the sampling/staging area.
When sampling liquids, fill the container to the shoulder. Some headspace is preferred.	Field filter the PFAS sample. If filtration is required, notify the laboratory.
Collect PFAS samples first, then other samples. This minimizes contact of PFAS samples with the handling of other sampling containers.	Intermingle PFAS and non-PFAS sample containers.
Remove excess sample media (soil, sediment or water) to the extent practicable from the exterior of sample containers to minimize cross contamination in cooler and at laboratory.	Rinse reusable sampling equipment with regular tap water. Instead, after a thorough decontamination, rinse with PFAS free water.

3.7 Sample Shipment

PFAS samples also have unique requirements for packaging and shipment. Additional considerations for PFAS sample shipment include use of additional zipper-lock bags to mitigate cross-contamination potential during sample handling or during shipment. All sample sets should be packaged in separate zipper-lock bags; the two (or more) containers filled for each sample set can be placed in a single sealed bag. If high PFAS concentrations are expected, samples containers may be double-bagged to minimize cross-contamination risk in the cooler (under such circumstances a trip blank should be included, as described in Section 8.4). PFAS samples are shipped to the analytical laboratory in a cooler, via expedited delivery or overnight shipping if possible, following similar protocols used for conventional sampling. Finally, as with conventional sampling, the samples must be received by the laboratory at 4±2 degrees Celsius (°C) or as required by the sample method specified in the work plan. For cooling of samples during shipment, use water-based ice instead of gel ice (e.g., Blue Ice). Under circumstances where gel ice may be needed, make sure the gel ice is double bagged in zipper-lock bags and/or properly decontaminated, with an equipment blank collected. Even water-based ice is a potential PFAS source

within the coolers, therefore the ice must be double-bagged in zipper-lock (or similar) bags. Clean nitrile gloves should be worn while handling ice, and should be changed prior to handling sample containers.

Additional considerations for PFAS sampling in specific matrices (drinking water, groundwater, surface water/sediment, and other media types) are provided in the following sections:

- Section 4 Drinking Water and Supply Well Sampling
- Section 5 Groundwater Sampling
- Section 6 Surface Water and Sediment Sampling
- Section 7 Surface and Subsurface Soil Sampling
- Section 8 Other Sampling Matrices

3.8 Decontamination

- To reduce/minimize investigation-derived waste (IDW) a spray-bottle method of decontamination may be used where adequate. Zepp brand spray bottles are recommended.
- Decontamination should use a phosphate-based detergent, such as Alconox or Liquinox. Note that Simple Green has not been confirmed to be PFAS free, and is therefore not approved for PFAS sampling decontamination at this time.
- PFAS-free water (lab supplied is preferable) should be used for a final rinse. If a large volume of decontamination water is needed, a local water source may be used, but the water source should be tested and verified as being PFAS-free. Best practice is to use lab-supplied PFAS-free water for a final rinse.
- Equipment blanks should be collected from non-dedicated equipment that contacts the sampled media to validate decontamination procedures.
- Decontaminated equipment may be stored in fresh zipper-lock bags, in decontaminated equipment cases, on HDPE sheeting, or similar, until immediately prior to sampling, to minimize risk of contamination. Decontaminated equipment should not be wrapped in aluminum foil.
- Additional decontamination considerations for sampling of different media types are provided in Sections 4 through 7.

3.9 Investigation Derived Waste

IDW may include purge water, soils, disposable tubing from groundwater sampling, purge water from spigot/sample port sampling, spent PPE, or other solid waste generated during the collection of PFAS samples. Although PFAS compounds are new analytes for many facilities where sampling is conducted, the chemistry of purged groundwater will be similar to that of water generated during regular sampling

events. Therefore, depending on local, state, or site-specific requirements, all IDW water may be handled following normal site-sampling procedures. Other solid waste will be discarded in an appropriate on-site container, following standard site procedures for solid waste. Potential PFAS-impacted IDW will need to be profiled and managed in accordance with local, state, federal or client requirements.

As of July 8, 2024, hazardous substance designations for PFOA and PFOS will be final.

3.10 Field Documentation

In general, field documentation for PFAS sampling should include similar information to that recorded for conventional (non-PFAS) sampling (e.g., sample matrix, methodology, location, date/time, containers, preservatives, and deviations from SOP/work plan). Loose-leaf paper is preferred for recording sample information, as Write-in-the Rain (or similar) field books are prohibited from the sampling area. Field notes collected during PFAS sampling should be thorough and detailed, such that sampling methods can be repeated or explained at a later time; however, notes should avoid speculation. An example field documentation form used for PFAS sampling is provided in Attachment C.

3.11 Site Data Management

Due to the prolific nature of PFAS, its status as an emerging contaminant, and the high degree of uncertainty surrounding environmental liability associated with PFAS, many PFAS sites are the subject of potential or ongoing litigation. As such, additional care should be used when managing site data. This may include various best practices that should be discussed with the client prior to initiating sampling activities, including:

- Determining what documentation to collect for sample procedures to verify that samples are representative of site conditions.
- Determining if existing judicial orders are present which may direct sample activities, notifications, or document retention and production requirements.
- Being thorough, yet careful to only record data observations (as opposed to including qualitative speculation, judgement, or opinion) when producing field notes, sample logs, sample figures, and other documentation.
- Determining whom may receive/respond to inquiries from members of the public.
- Discussing with field staff and project managers what information can and cannot be disclosed about site activities.
- Evaluating potential conflicts of interest and making staffing and project selection determinations accordingly.

4.0 DRINKING WATER AND SUPPLY WELL SAMPLING

This section provides PFAS sampling considerations for drinking water and supply well matrices. This section is not intended to teach water sampling fundamentals, but rather to provide instruction on differences in procedures and considerations specific to PFAS sampling. Procedures discussed in this section are additional considerations to the general PFAS sampling guidelines provided in Section 3. Due to the potential sensitivity to low-level detections in drinking water samples, drinking water and supply well sampling should be undertaken with the utmost consideration of contamination risk, materials used, and planning of sampling procedure.

4.1 Equipment/Materials

In addition to the general and decontamination supplies listed in Sections 3.3 and 3.8, respectively, additional sample materials and supplies may include:

- Purge water collection buckets (optional), in the event that purge water needs to be contained, or a sample tap is located in a vault or other undrained location.
- A garden hose (optional) may be used to direct purge water from an exterior spigot, if needed to direct drainage to a suitable location; however, the hose must be removed prior to sampling such that a sample is collected directly from the spigot.

4.2 Sampling Procedures

Sample collection for PFAS should generally follow these procedures. During most steps, samplers should don new (unused) nitrile gloves, even if it is not expressly identified below. New gloves should always be donned before handling sample containers, at any time.

- Using appropriate pen or ultra-fine Sharpie, fill out sample labels with all information except sample time and apply labels to sample containers. Pre-labeled sample containers may be stored in labeled zipper-lock bags prior to sampling (one container set per bag, typically 2 containers per sample for drinking water).
- Prepare a clean workspace for the sample staging area, using a decontaminated surface, clean PE sheeting, or untreated paper towels.
- Prepare the sampling area, removing moveable/unnecessary materials from the sampling area, including unnecessary hoses, aerators, filters, or other attachments/extensions of the tap (as noted, a hose may be in place during purging from an exterior spigot, only if needed to direct purge water, but must be removed prior to sampling).
- Don new nitrile gloves, changing as needed. Identify the sample port and open to allow purging and stabilization of the water flow for at least 3 minutes (purge time may vary based on project objectives) at a moderate to high flow.

- After purging is complete, reduce the discharge rate to a slow stream (generally less than 1 liter per minute) to minimize potential sample aeration.
- Don new nitrile gloves and collect the sample, filling each sample container to the shoulder.
- After closing sample containers, remove excess water from sample container surface with a fresh, untreated paper towel (excess water can facilitate cross-contamination) and place sample containers inside a new zipper-lock bag. Double bag samples if they come from an area with known or suspected elevated PFAS levels.
- Place the samples in a cooler with ice, separate from any cooler with empty sample bottles.
- After sample handling is complete, close the sample spigot.

4.3 Decontamination and IDW Management

The need for decontamination of reusable sampling equipment is not anticipated for water sampling from spigots. If reusable equipment such as a portable table for sample staging is used, which cannot be covered with PE sheeting, decontaminate using Alconox or similar and PFAS-free water.

Use a plastic contractor's bag (or similar) to contain solid IDW, including PE sheeting, nitrile gloves, zipper-lock baggies, and other sampling materials, to minimize risks of cross contamination.

4.4 Other Notes

- If a hose is used to direct water during purging, it must be removed prior to sampling.
- If Teflon tape is visible at the sample port locations where water exists the port, document on the field forms. Although PFAS are associated with Teflon tape production, experience to date suggests that it isn't a significant source of PFAS contamination in samples collected; nevertheless, its presence should be noted.

Domestic water may flow through a pressure tank or treatment system (e.g., water softener) before being discharged from a tap. For domestic wells, depending on sampling objectives, it may be necessary to collect water samples pre-treatment, post-treatment, or both. Pre-treatment sampling may be best if sampling is being conducted to evaluate local source-water impacts, but post-treatment may be best if sampling is conducted to evaluate drinking water exposure.

5.0 GROUNDWATER SAMPLING

This section provides PFAS sampling considerations for groundwater. This section assumes general understanding of basic groundwater sampling procedures and is not intended to teach groundwater sampling fundamentals, but rather to provide instruction on differences in procedures and considerations specific to PFAS sampling. Trihydro's preferred groundwater sampling method for PFAS is either low-

flow or no-purge sampling, using materials and methods described in this section to minimize the risk of false positives due to contamination or induced mobilization of PFAS. If no-purge sampling is not feasible, or is not accepted by regulatory agencies, low-flow sampling is recommended. Use of bailers or high-volume purging methods should generally be avoided, unless required due to deep groundwater or other location-specific needs. Regardless of sampling method, sampling materials should be screened for PFAS compatibility. Additional considerations for sampling materials associated with these methods are provided in this section. The procedures discussed in this section build on the general PFAS sampling guidelines provided in Section 3.

5.1 Equipment/Materials

In addition to the general and decontamination supplies listed in Sections 3.3 and 3.8, respectively, additional sample materials and supplies required for PFAS sampling via no-purge sampling, low-flow sampling, bailer sampling, and submersible pump sampling are described below. As noted, low-flow or no-purge methods are preferred.

No-purge sampling (preferred). No-purge sampling may be conducted using HydraSleeves, passive diffusion samplers, or other passive samplers Passive diffusion samplers are also available for PFAS sampling. When evaluating HydraSleeves (or similar no-purge sampling devices), important considerations include site hydrogeology, water column thickness, and deployment time. No-purge sampling techniques rely on groundwater flow through a well to provide representative formation water; low-permeability formations may not be amenable to no-purge sampling, if formation water is essentially stagnant near the monitoring well. Wells with limited water-column thickness (e.g., less than 5 feet) may require special considerations for HydraSleeve deployment. Minimum deployment times (i.e., time between deployment in the well and collection for sampling) for HydraSleeves typically range from 48 hours to 2 weeks, depending on project work plan criteria and groundwater flow rates; there is no maximum deployment time.

When ordering HydraSleeves (or similar no-purge sampling devices), communicate with the vendor that they are to be used for PFAS sampling, and materials must be constructed of HDPE or similar PFAS-compatible material. The sleeves are available in 1-liter, 2-inch well diameter size ('Super/SkinnySleeve 1-Liter', part number PFCHDSS-1L) and 2-liter, 2-inch well diameter size ('Super/SkinnySleeve 2-Liter', part number PFCHDSS-2L). For groundwater sampling in 4-inch wells, the HydraSleeve sampler may be deployed with a 4- to 2-inch reducer and spring clip, which is available from the vendor. PFAS-compatible rope (e.g., cotton or nylon) must be used for HydraSleeve deployment; it is recommended (but not required) to procure the PFAS-compatible rope from the HydraSleeve vendor. Non-disposable components (dedicated materials) associated with the HydraSleeves (i.e., reducer, spring clip, and weight) should be dedicated to each well.

Deployment of no-purge sampling equipment can generally follow manufacturer's instructions but should also follow the general PFAS sampling approach described herein. HydraSleeves (and similar no-purge

sampling devices) must be deployed within the screened interval of a well, typically near the middle of the screened portion of the saturated zone. Well construction (screen interval) and depth-to-water information is required to calculate HydraSleeve deployment depths.

Low-flow sampling (preferred). Low-flow sampling involves well-purging at a limited flow rate (e.g., <500 mL/min) until parameters stabilize (EPA 1996). A peristaltic pump is recommended for PFAS sampling, if water depth can accommodate a peristaltic pump, to reduce/eliminate the need for equipment decontamination between sampling locations. If needed (e.g., for water too deep for a peristaltic pump), bladder pumps or electric submersible pumps may be used. Dedicated pumps are preferred, otherwise PFAS-compatible decontamination procedures must be completed between locations. For a bladder pump, the pump body should be constructed of stainless steel (or other PFAS compatible material), and the bladder and O-rings must be constructed of PE or similar PFAS-compatible materials, and be replaced between sample locations. If an electric submersible pump is selected, evaluate that the pump is free of PTFE and other fluoropolymer fittings. Additional considerations for low-flow PFAS sampling are as follows:

- For a rental pump used for PFAS sampling, verify with the vendor that the pump is designed and constructed to be PFAS compatible.
- Downhole tubing should be either disposable or dedicated to a single location, and constructed of HDPE or a similar PFAS-compatible material; tubing constructed of Teflon, PTFE, or similar fluoropolymers cannot be used.
- Standard silicone tubing may be used for a peristaltic pump, but the tubing should be replaced between sample locations.
- A flow-through cell with a multi-parameter meter may be used to track parameters stabilization during low-flow purging. The flow-through cell must be removed from the flow path before sample containers are filled.

Bailer sampling. Samples can also be collected via bailer, though it is generally not preferred due to sample agitation and potential mixing with the air-water interface. Bailer materials are available that are compatible with PFAS sampling, such as HDPE. PFAS-compatible rope (e.g., cotton or nylon) must be used for bailer sampling. When used for PFAS sampling, bailers should be gently lowered across the water surface to minimize turbidity, and should be lowered sufficiently below the water surface such that the sample represents formation water rather than interfacial water.

Submersible pump sampling. Low-flow sampling via an electric submersible pump is an acceptable alternative, particularly for wells that are too deep for peristaltic pump sampling. High-flow purging with a submersible pump is generally not recommended for PFAS sampling, due to potential for PFAS contamination by pump components, cross-contamination between wells, and the possibility of mobilizing PFAS in a non-representative manner (e.g., via air bubbles) during high-volume purging.

However, submersible pumps may be the only practical sampling device for deep wells. When practicable, use dedicated pump systems to eliminate cross contamination. The purge-water flow rate should be kept low, to eliminate or minimize entrained air bubbles in the water stream while purging and sampling.

Additional groundwater sampling considerations.

- Sampling materials should never be placed directly on the ground. Use a clean surface or PE sheeting for work space.
- If turbidity is noted, do not field-filter samples as filtration may affect PFAS concentrations. The laboratory should be informed of highly turbid samples; under certain circumstances, the laboratory may use centrifugation to prepare the sample for analysis.
- Fluid level or interface probes may be used to monitor water levels before/during sampling. PFAS-compatible decontamination procedures must be followed between locations. Unless necessary, measurement of in-well total depth is not recommended during PFAS sampling to minimize cross-contamination risks.
- PFAS-compatible rope/twine (typically cotton or nylon) may be used for securing HydraSleeves, submersible pumps, or bailers.
- Equipment that contacts water within the well (e.g., pumping equipment and water meters) should not contain or be coated with Teflon, unless the Teflon is internal to the equipment and does not contact the external environment. Often, equipment suppliers will label products as "PFAS Testing Approved" or "PFAS-free." It is highly recommended that equipment and supplies be identified as PFAS-free. If unsure whether a product is suitable for collecting a PFAS sample, contact the supplier and/or collect an equipment blank.
- For wells with existing/dedicated pumps, the pump information should be reviewed for PFAS compatibility. If compatibility is uncertain, it is recommended to remove the pump and use an alternative means to collect a groundwater sample.

5.2 Sampling Procedures

Sample collection for PFAS should generally follow these procedures. During most steps, samplers should don new nitrile gloves, even if it is not expressly identified below. New gloves should always be donned before handling sample containers, at any time.

- Decontaminate reusable equipment that will contact groundwater prior to use. Gauge depth to water and determine targeted pump-intake or screened interval for sampling.
- Using appropriate pen or ultra-fine Sharpie, fill out sample labels with all information except sample time (which can be added after the sample is collected and the lid replaced) and apply labels to

sample containers. Pre-labeled sample containers may be stored in labeled zipper-lock bags prior to sampling (one container set per bag, typically 2 or 3 containers per sample for groundwater).

- Prepare a clean workspace for the sample staging area, using a decontaminated surface, clean PE sheeting, or untreated paper towels.
- Prepare the sample collection area, removing any moveable/unnecessary materials from the sampling area. Deploy PE sheeting as needed for staging of sampling materials, providing workspace to keep materials off the ground.
- Lower the pump, intake tubing, bailer, or passive sampler to the desired sample interval. Importantly, the sample interval should be several feet below the groundwater-air interface to ensure the collection of a representative groundwater sample and avoid sampling of PFAS accumulated at the interface.
- If low-flow purging is performed, connect the water quality meter to the flow path and initiate purging. Collect purge-water in a dedicated container (e.g., plastic 5-gallon bucket) and make sure that water does not splash or come into contact with the sample staging area and sample bottles. Record parameters at regular intervals, in accordance with standard practice for low-flow purging. After groundwater parameters have stabilized, disconnect the water quality meter before sampling.
- Collect the sample - don new nitrile gloves and fill the sample containers without touching other equipment or surfaces, including the sample tubing.
- Having two personnel for sampling is preferable, one person to handle the sample device (e.g., HydraSleeve) and pour, and the other person to manage the sample containers, without needing to set down the sampling device and containers and risk potential contamination.
- After sample containers are filled and closed, use clean, untreated paper towels to remove excess water from the exterior of the sample containers (excess water poses a cross-contamination risk during sample handling). Immediately place sealed sample containers in zipper-lock bags, and place the bags in a sample cooler. Best practice is to have at least two dedicated coolers, one for clean sample bottles, and one for collected samples, to further minimize risk of cross-contamination during sample collection and handling.

5.3 Equipment Decontamination

Ideally, sampling should use disposable or dedicated equipment that does not require decontamination. Rental equipment should be treated as potentially contaminated, and be decontaminated before initial use. If a bladder pump is utilized, the bladder should be changed between sample locations and the pump body thoroughly decontaminated. Reusable equipment, including a pump or water-level meter, should be decontaminated using a Alconox, Liquinox, or Citrinox wash and a final, triple-rinse using laboratory-supplied water that is certified PFAS-free. Note that Simple Green has not been confirmed to be PFAS free, and is therefore not approved for PFAS sampling decontamination at this time. As noted previously, spray bottles are preferable to bucket-immersion for a final rinse, to reduce risk for cross-contamination.

5.4 Other Notes

If existing sample tubing is present in the well, unless the tubing composition is known, it should be assumed to be PFAS-containing (e.g., Teflon). In this case, it is highly recommended that the tubing be removed from the well, and at least one well volume of water purged from the well prior to sampling. Greater fluid volumes can be removed from the well if deemed necessary, however removal of at least one well volume is required before sampling.

Samples should not be collected from wells with measurable light non-aqueous phase liquids (LNAPL), due to the tendency of PFAS to accumulate at oil/water interfaces (e.g., Brusseau 2018). Similarly, PFAS will also preferentially tend to accumulate at air-water interfaces. To ensure representative sample collection, do not collect groundwater samples directly from the groundwater-air interface, where practicable.

6.0 SURFACE WATER AND SEDIMENT SAMPLING

This section provides PFAS sampling considerations for surface water and sediments. This section assumes general understanding of basic surface water and sediment sampling procedures and is not intended to teach surface water and sediment sampling fundamentals, but rather to provide instruction on differences in procedures and considerations specific to PFAS sampling. The procedures discussed in this section build on the general PFAS sampling guidelines provided in Section 3.

6.1 Equipment/Materials

In addition to the general and decontamination supplies listed in Sections 3.3 and 3.8, respectively, additional sample materials and supplies may include:

- Waders constructed of rubber, PVC, or similar materials that have not been treated with waterproof coating (Table 1)
- Transfer containers, such as beakers or dippers, and extension rods
- Stainless-steel sample spoons, sample augers, or sample core barrels
- Disposable sample spoons constructed of PFAS-compatible material
- Single-use PVC or acetate sediment sampler liners
- HDPE core-liner caps (preferred) or low-density polyethylene (LDPE) liner caps (if HDPE are not available)
- Self-retracting utility knife with hook blades (decontaminated)
- Hacksaw with uncoated blade (decontaminated)
- Wrist- or elbow-length nitrile or PVC gloves for sediment sampling beneath shallow surface water

6.2 Surface Water Sampling Procedures

Where surface water and sediment samples are to be co-located, surface water samples should be collected first, to minimize potential for suspended sediment in the water sample. Surface-water samples should be collected below the surface and avoid water from the surface film, to avoid sample bias due to PFAS accumulation at air-water interfaces. During most steps, samplers should don new nitrile gloves, even if it is not expressly identified below. New nitrile gloves should always be donned before handling sample containers, at any time. Sample collection for PFAS should generally be conducted in accordance with the following procedures:

1. Before use, decontaminate reusable equipment that will contact surface water or sediment.
2. Using appropriate pen or ultra-fine Sharpie, fill out sample labels with all information except sample time (which can be added after the sample is collected and the lid replaced) and apply labels to sample containers. Pre-labeled sample containers may be stored in labeled zipper-lock bags prior to sampling (one container set per bag, typically 2 or 3 containers per sample for surface water).
3. Prepare a clean workspace for the sample staging area, using a decontaminated surface, clean PE sheeting, or untreated paper towels.
4. Select a location where a sample can be collected from a depth of at least 10 centimeters (cm) (4 inches) above the sediment bed, at least 10 cm below the surface-water level, and as close to the center of the channel as practicable.
5. Where surface water can be collected by hand, samplers should approach the sample location from downstream.
6. Keep the lid in place until the sample container is submerged to the target sample depth, to avoid collecting water from the surface.
7. Orient the sample container upstream; remove the cap to fill the container. The container should be filled to the shoulder, some headspace is preferred, if practical while filling underwater.
8. Replace the cap while the container is still submerged and close tightly before bringing the container above the water's surface.
9. Remove excess water from the outside of the sample container with a clean, untreated paper towel, add sample time to label, and immediately place inside a clean zipper-lock bag, and place in the sample cooler.

Use of a transfer container is not recommended for PFAS sampling, but under certain circumstances may be required. A transfer container may be needed where sample locations are not directly accessible, such that extension rods or dippers are needed, or if sample containers require preservation and cannot be submerged. Transfer containers may be used under such circumstances, but must be clean and constructed of PFAS-compatible materials.

6.3 Sediment Sampling Procedures

Surface water sampling should be completed before sediment sampling. Spoons or scoops may be used to sample shallow sediments, however these methods may not be ideal due to agitation of the sample, mixing and washing during collection, and the inability to accurately determine sediment interval. For deeper/depth-discrete sampling, the preferred sediment sample collection method is to use a sediment sample auger (or similar). General sample collection procedures are as follows:

1. Before use, decontaminate reusable equipment that will contact surface water or sediment.
2. Using appropriate pen or ultra-fine Sharpie, fill out sample labels with all information except sample time (which can be added after the sample is collected and the lid replaced) and apply labels to sample containers. Pre-labeled sample containers may be stored in labeled zipper-lock bags prior to sampling (one container set per bag).
3. Prepare a clean workspace for the sample staging area, using a decontaminated surface, clean PE sheeting, or similar.
4. If sediment sampling beneath shallow surface water using a spoon/scoop, don wrist-length nitrile or PVC gloves to avoid contact between skin and surface water, reducing risk potential for cross-contamination.
5. Approach the desired sediment sampling location from downstream if using waders. Sample should be collected from the midpoint of the channel, where practicable.
6. Drive the sediment sampler into the sediment. It is best to ‘overshoot’ the target sample depth, so that organics and debris overlying the sediment can be discarded, allowing collection of a representative sample.
7. Remove the sediment sampler, and place the sediment on a PE-lined sample table. Be sure to note the orientation (top and bottom) of the sediment interval.
    - If using a sediment sampler with an acetate liner:
        - The liner can be opened using the self-retracting or hook-blade knife, to identify the desired sample interval. Change gloves after handling the knife. Discard organic material and debris on the surface, and transfer target sample intervals to HDPE sample containers. The samples can be transferred using a decontaminated stainless-steel scoop, disposable scoop, or nitrile gloves. Use a fresh scoop and change nitrile gloves if collecting samples from more than one interval.
        - Alternatively, the liner can be cut into segments, capped with a liner cap, and placed into zipper-lock bags for shipping to the analytical laboratory. Remove excess silt and debris from the exterior of the liners before cutting. Place each liner section in its own separate bag.

- If using a sediment sampler without a liner:
  - Place the sampler on a clean, PE-lined table. Identify the desired sample interval. Do not allow organic material and debris on the surface to be entrained in the sample. Transfer target sample intervals to HDPE sample containers. The samples can be transferred using a decontaminated stainless-steel scoop, disposable scoop, or nitrile gloves. Use a new scoop and change nitrile gloves if collecting samples from more than one interval. Fill the sample container and replace the cap.

8. Clean the outside of the sample container with a untreated paper towel, add the sample time to the label, and place the filled sample container into a zipper-lock bag and then directly into the sample cooler.

6.4 Equipment Decontamination

Ideally, sampling should use disposable or dedicated equipment that does not require decontamination. Rental equipment should be treated as potentially contaminated, and be decontaminated before first use. Reusable equipment, including a sediment sample spoon or hand-auger, should be decontaminated using a Alconox, Liquinox, or Citrinox wash and a triple-rinse using laboratory-supplied water that is certified PFAS-free. Note that Simple Green has not been confirmed to be PFAS free, and is therefore not approved for PFAS sampling decontamination at this time.

7.0 SURFACE AND SUBSURFACE SOIL SAMPLING

This section provides sampling considerations for surface and subsurface soils. This section assumes general understanding of basic soil sampling procedures and is not intended to teach soil sampling fundamentals, but rather to provide instruction on differences in procedures and considerations specific to PFAS sampling. Surface soil sampling may be conducted using hand tools or drill equipment. Generally, standard soil sampling and/or drilling equipment is compatible with PFAS sampling, with certain considerations noted in this section. When subcontracting a driller for soil sampling, it is important to communicate PFAS requirements early in the process, so they are able to prepare and plan accordingly. Procedures discussed in this section build on the general PFAS sampling guidelines provided in Section 3.

7.1 Equipment/Materials

In addition to the general and decontamination supplies listed in Sections 3.3 and 3.8, respectively, additional sample materials and supplies may include:

1. Disposable PVC, HDPE, or acetate liners
2. HDPE liner caps (preferred) or LDPE liner caps (if HDPE are not available) as needed
3. Self-retracting utility knife with uncoated hook blades or uncoated razor blades

4. Hacksaw with uncoated blade
5. Stainless-steel hand auger, trowel, or shovel
6. Polyethylene or polyvinyl brush to remove particles during decontamination

Equipment that contacts soil should not contain or be coated with Teflon (or other PFAS incompatible material) unless the Teflon is internal to the equipment and does not contact the external environment. If uncertain, contact the supplier and/or an equipment blank may be collected.

7.2 Sampling Procedures

Surface and subsurface soil samples may be collected to delineate surficial and vertical extent of impacts where PFAS are potentially or known to be released to land/soil. Overall, sampling procedures used for PFAS are similar to those used for conventional soil sampling, with certain material limitations and precautions against cross-contamination as noted herein. Surface and shallow soil samples can be collected using a decontaminated stainless-steel hand auger, trowel, or shovel; a disposable plastic scoop may also be used. If soil samples are to be composited and or homogenized, a decontaminated stainless-steel bowl should be used. Compositing and homogenization should not be performed inside zipper-lock bags. If sampling from a hand auger, the sample material may be removed from the auger into a decontaminated stainless-steel bowl. Soil samples collected using a trowel or shovel may be transferred directly into the sample container using a disposable scoop, decontaminated spoon, or a new nitrile glove. Care should be taken to ensure the samples avoid contact with uncontrolled surfaces such as the ground, contaminated equipment, cooler-top, or tailgate.

Several methods are available for PFAS-related subsurface soil sampling, including hand-auger, direct-push, hollow-stem auger/split-spoon sampler, or continuous core collection via sonic drill rig or other drill method. Direct push and split spoon samplers, which generate cores in acetate, HDPE, or PVC liners, are preferred due to the minimization of sample contact with drilling equipment, as well as minimization of agitation. For accurate assessment of subsurface PFAS impacts, collection of cores with minimal disturbance is preferred. Drilling methods that produce loose cuttings such as those obtained by auger and rotary drilling processes should not be used for PFAS sampling, if possible. Additional considerations for drilling are provided below.

After collection, soil core liners may be cut open using a decontaminated stainless-steel cutting device, such as a retractable-blade utility knife. Soil core samples may be transferred to a decontaminated stainless-steel bowl for consolidation and subsampling, or samples may be collected directly from the core liners and transferred to laboratory-provided HDPE or polypropylene sample bottles. Soil samples should be transferred from the core liners using disposable scoops, decontaminated spoons, or new nitrile gloves. If other analytical suites are to be collected (e.g., metals, volatile organic compounds), collect the PFAS samples first and secure the PFAS samples in coolers before collecting other analytical suites to prevent container cross-contamination. Do not touch other sample containers, which may have

Teflon/PTFE-containing septa or lids, prior to collecting the PFAS sample. Place PFAS samples in separate bags or separate coolers from other analytical samples for shipping. When collecting samples, the sample container cap should never be placed directly on the ground during sampling; sample container caps/lids should be held, or only placed on surfaces that are known to be PFAS-free. Once collected, soil sample containers should be sealed in zipper-lock bags (one container set per bag) in the sample cooler with double-bagged ice to begin the cooling process in accordance with the procedures in Section 3.7. Double bagging sample containers is highly recommended, especially where high PFAS concentrations may be present.

Alternatively, soil core samples may remain in the PVC, HDPE, or acetate liners for shipping to the analytical laboratory. Full soil cores inside the sample liners should be cut crosswise into the target sample intervals using a decontaminated, untreated hook blade knife or hacksaw. The core-liner segments can be capped on both ends using HDPE liner caps. LDPE liner caps may be used if HDPE caps are unavailable; however, PFAS compounds may adsorb to LDPE liner caps. Bulk soil on the exterior of each core-liner segments should be removed using clean, untreated paper towels and each core segment should be placed in a zipper-lock bag (core segments should be double-bagged if elevated PFAS concentrations are suspected). The capped/bagged core segments can then be placed in a sample cooler with double-bagged ice.

7.3 Drilling Procedures

Subsurface soil sampling necessarily involves the use of non-dedicated equipment such as drill rods, core barrels, split spoons, augers, trowels, shovels, and other drilling related equipment. These equipment can be a potential source of cross contamination both from boring to boring as well as between vertical intervals within a single boring. Lubricants used during drilling should not be labeled as containing PTFE or other fluoropolymer. Thorough decontamination of the exterior and interior surfaces of drill rods, core barrels, and other drill rig tooling should be conducted between every boring location. Due to the size and quantity of drilling equipment, it may not be practical to use laboratory supplied PFAS-free water for decontamination purposes. Therefore, a source of clean decontamination water (e.g., local tap water) may be identified and confirmed as PFAS-free via laboratory analysis prior to the field event.

Beyond drilling equipment, there are additional contamination/cross-contamination risks inherent to the drilling process. Drillers handle drilling equipment manually when advancing the drilling tooling. Work gloves, boots, and clothing worn by the drillers can pose a contamination risk. Clothing requirements discussed in Section 3 should be communicated to drill crews in advance of the field event. Drill crews should avoid wearing waterproof, water resistant, or stain proof clothing. Nitrile gloves should be worn outside work gloves and changed often when handling drill tooling. Work boot overshoes, PVC coveralls, and other mitigation measures may be considered to limit contamination risks. However, personnel safety is paramount and should not be sacrificed for contamination mitigation. Contamination risks can also be mitigated using procedural measures such as ensuring that drillers do not touch the internal surfaces of drilling equipment (e.g., inside of core barrels) or other surfaces which might come in

direct contact with the soil sample. For this reason, it is recommended that PFAS considerations be communicated with the drilling contractor and also included in a kickoff meeting, held with the drill crew in advance of the event where detailed procedures and contamination mitigation best practices are discussed. Selection of a drilling contractor with PFAS-specific experience is also recommended.

7.4 Equipment Decontamination

Where possible, sampling should use disposable or dedicated equipment that does not require decontamination. Decontamination of soil-drilling and soil-sampling equipment (cores, grab samples) can be conducted via pressure-washing or using Alconox, Liquinox, and Citranox solutions (see Table 1). Equipment should be scrubbed with a plastic brush and rinsed thoroughly in tap water to wash away debris or material on exposed surfaces. Replace decontamination solution if sediment has accumulated or between locations where high PFAS concentrations may be expected. As a final decontamination step, triple rinse equipment in laboratory-supplied PFAS-free water. Use a spray bottle for the PFAS-free water rinse, to avoid contaminating decon rinse water. PVC or acetate liners should be discarded and not decontaminated between sampling sites.

8.0 OTHER SAMPLING MATRICES

PFAS sampling may be required in other matrices, such as sludge/biosolids, air, non-aqueous phase liquids (NAPLs), asphalt, concrete, and plant or animal tissues. This SOP does not include protocols for these matrices. The general PFAS sampling guidelines should be followed, and a laboratory consulted for specific guidelines on sample requirements. Consult a member of Trihydro's PFAS sampling team for assistance.

9.0 PFAS LABORATORY REQUIREMENTS

This section includes procedures and considerations for initial laboratory communications, PFAS analytical methods, container preservation requirements, and sample quality control/quality analysis (QA/QC) requirements.

9.1 Laboratory Communication

Communication is recommended with the selected analytical laboratory before sampling, or during pre-project communications with candidate analytical laboratories, to confirm the following:

1. Does the laboratory have the necessary accreditation?
2. Can the laboratory meet the required reporting limits for all PFAS analytes?
3. Do the laboratory-specific methods (e.g., 537-MOD) use isotope dilution for quantification?
4. Can the laboratory accommodate project-specific needs, such as high concentrations or unusual matrices?

5. Can the laboratory provide certified PFAS-free water for decontamination and QA/QC samples?
6. Can the laboratory meet the required turnaround time? What is the current backlog for PFAS samples?

9.2 Analytical Methods

As noted above, PFAS includes thousands of compounds; conventional analytical methods target a relatively small number of these compounds, typically up to 40. Some methods are available that provide data on the broader presence of PFAS. This section describes the target-list methods as well as available methods for "total" PFAS. Substantial research is being conducted into PFAS analytical methods and the options for available analytical methods will likely continue to evolve. Check with Trihydro's PFAS team for updates on available analytical methods.

9.2.1 Target-list Analytical Methods

As of February 2024, the EPA has finalized the following PFAS analytical methods:

1. **Method 533** (drinking water, 24 analytes)*: Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry*. December 2019.
2. **Method 537.1** (drinking water, 18 analytes): *Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)*. March 2020.
3. **Method 1633** (groundwater, surface water, wastewater, landfill leachate, soil, biosolids, sediment, and others; 40 analytes): *Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC/MS/MS*. January 2024.
4. **Method 8327** (non-drinking water aqueous samples, 24 analytes): *Per- and Polyfluoroalkyl Substances (PFAS) by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)*. July 2021 (not widely used).

In addition, ASTM has published method D8421, *Standard Test Method for Determination of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Matrices by Co-solvation followed by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS)*. June 2022.

In addition to these methods, many laboratories still offer independent methods, often referred to as 'modified 537' or '537-MOD'. Until recently, these laboratory-specific methods were the best available options for non-drinking water samples. The EPA has now finalized the analytical method for environmental samples (Method 1633), and this method is becoming adopted as the default method for regulatory-driven sampling. The 537-MOD methods may still be used under certain circumstances.

These methods are generally less expensive than Method 1633, offer flexible analyte lists, and may be more amenable to rapid turn-around-time for screening-level samples.

The specific analyte list is an important consideration for PFAS site investigation. PFAS analytes associated with the above methods are shown on Table 2. Unless a USEPA method is referenced for a compound list, a list of target PFAS analytes should be attached to the chain of custody (COC) form. State-issued sampling orders may require other PFAS or non-PFAS analytes.

9.2.1 "Total" PFAS Analytical Methods

Methods are available that provide information on broader presence of PFAS, beyond the target-list PFAS included in the methods provided above. These analyses (herein referred to as "Total PFAS" methods, although they do not necessarily quantify all PFAS present in a given sample) results may be useful in circumstances where an understanding of total PFAS mass may support decisions or remediation evaluation. These methods may provide a single result that represents Total PFAS, or (in the case of TOP Assay) multiple values that provide additional insights. Brief descriptions of two commercially available "Total PFAS" methods are provided; consult Trihydro's PFAS team for additional information.

- **Method 1621** (aqueous matrices, "total" PFAS). *Determination of Adsorbable Organic Fluorine (AOF) in Aqueous Matrices by Combustion Ion Chromatography (CIC)*. January 2024. Method 1621 provides a single value representing total PFAS in an aqueous sample.
- **TOP Assay**. The TOP (Total Oxidizable Precursor) Assay involves collecting two identical (replicate) samples. One sample is subjected to a chemical oxidation process that converts much of the non-target PFAS mass (precursors) into target-list PFAS. Both samples are then analyzed, and the difference between pre- and post-oxidation samples provides an indication of total PFAS mass presence, as well as the terminal compounds that may be formed via transformation of the precursors.

9.3 Use of Preservative

For drinking water samples, each 250 mL sample bottle may be required to contain a preservative. EPA Method 537.1 a small amount (1.25 g) of Trizma and Method 533 requires 1 g/L ammonium acetate, both of which are included to remove free chlorine from chlorinated drinking water (USEPA 2015). Before sampling drinking water for PFAS analysis, confirm the need for the Trizma or ammonium acetate with the selected analytical laboratory. For groundwater samples or other water matrices, preservation is not required.

The Trizma and ammonium acetate buffers are required for samples analyzed via EPA Method 537.1 and EPA Method 533, respectively. The buffer is required regardless of whether the water being sampled is chlorinated.

9.4 Field Quality Assurance and Quality Control Samples

Field quality-assurance / quality-control (QA/QC) samples are imperative for PFAS analysis. Five different types of QA/QC samples may be collected during the sampling event as described below. Each type of QA/QC sample listed below is provided a "Required" or "Optional" label. QA/QC sampling needs may be determined in a Quality Assurance Project Plan (QAPP).

Field Blanks (Required): Field blanks (or field reagent blanks) are collected to verify that the sampling environment and site-required PPE worn during the sampling event do not contaminate samples. At a minimum, one field blank should be collected for each site, with each sampling event that involves collecting an aqueous sample. Field blanks are analyzed for the same list of PFAS constituents as analyzed for associated field samples. The field blank is collected by pouring PFAS-free reagent water received from the laboratory into an empty, clean sample container at the sampling site. Generally, two laboratory-provided sample containers are filled for each field-blank sample.

Equipment Blanks (Required): Equipment blanks will be prepared and submitted for laboratory analysis to verify that equipment decontamination procedures are effective, and to verify that sampling equipment is PFAS-free and not causing contamination. Equipment blanks are analyzed for the same PFAS constituents as required for the field samples. Minimally, equipment blanks should be collected for sampling equipment that may contact the sample matrix, such as HDPE core liners, bailers, pump tubing, using PFAS-free water provided by the laboratory. Equipment blanks should be collected at a rate of at least 1 per event per piece of equipment used for sampling. Equipment blanks are not required for tapwater sampling, where sample containers are filled directly from source water.

Blind Duplicates (Recommended): Blind Duplicate samples can be collected to evaluate reproducibility of analytical techniques and the homogeneity of sample matrices. Duplicate samples are submitted for the same PFAS analyses that are required for the field samples. Duplicate samples will be collected at a frequency of 10%, or one for every 10 samples for aqueous sampling matrices. If less than 10 samples are collected during a particular sampling event, one blind duplicate sample will be collected. The duplicate sample will be "blind" to the laboratory, therefore will have a coded identity on its label and on the COC; sample collection time should also be omitted on the COC, but recorded in field notes. The actual sampling location and identification will be recorded on the sampling log.

Trip Blanks (Optional): Trip blanks are laboratory-prepared bottles containing PFAS-free water that travel from the laboratory to the site, and then transported back to the laboratory with the samples in the sample coolers. A set of trip blanks can accompany each cooler that contains PFAS samples. Trip blanks should be supplied by the laboratory and will accompany the sample containers throughout the sampling event. Trip blanks may be requested from the laboratory for a sampling event, with instructions that they will only be analyzed by the laboratory for PFAS if instructed to do so by the Trihydro PM; these samples should otherwise be held once received by the laboratory. Trip blanks are generally not required for

PFAS samples but may be helpful to identify sources of contamination during shipping/handling, should they occur.

Matrix Spikes/Matrix Spike Duplicates (MS/MSD) (Optional): MS/MSDs can be prepared and analyzed by the laboratory for each matrix sampled. MS/MSDs are samples in which known quantities of specific PFAS compounds are added before extraction and analyses. The recoveries for spiked compounds can be used to assess how well the method for analysis recovers target compounds. MS/MSD samples are submitted for the same PFAS analyses that are required for the field samples. MS/MSD samples are typically collected where called for by a project-specific quality assurance project plan (QAPP).

10.0 REFERENCES

Brusseau ML. 2018. Assessing the potential contributions of additional retention processes to PFAS retardation in the subsurface. Sci Total Environ. February 1, 2018; 613-614:176-185.

California Office of Environmental Health Hazard Assessment (OEHHA). 2021. Notification Levels for Chemicals in Drinking Water. oehha.ca.gov. 2021. Available from: https://oehha.ca.gov/water/notification-levels-chemicals-drinking-water.

California State Water Quality Control Board (The Water Boards), Division of Water Quality. 2020a. Per- and Polyfluoroalkyl Substances (PFAS) Sampling Guidelines for Non-Drinking Water. September 2020. Available from: https://www.waterboards.ca.gov/pfas/docs/sept_2020_pfas_sampling_guidelines.pdf.

California State Water Resources Control Board. 2021. WQ 2021-0006-DWQ Water Code Sections 13267 and 13383 Order for the Determination of the Presence of Per- and Polyfluoroalkyl Substances at Bulk Fuel Storage Terminals and Refineries. March 12, 2021.

EPA. 1996. Puls, R.W. and M.J. Barcelona. Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. EPA/540/S-95/504. April 1996.

Interstate Technology Regulatory Council (ITRC). 2023. ITRC's guidance document, Technical Resources for Addressing Environmental Releases of Per- and Polyfluorinated Compounds (PFAS), Chapter 11, Sampling and Analytical Methods, Updated September 2023. Available from: https://pfas-1.itrcweb.org/11-sampling-and-analytical-methods/.

Michigan Department of Environmental Quality (MDEQ). 2018. General PFAS Sampling Guidance. Revised October 16, 2018. Available from: https://www.michigan.gov/documents/pfasresponse/General_PFAS_Sampling_Guidance_634597_7.pdf.

United States Environmental Protection Agency (USEPA). 2015. Method 537. Determination of selected perfluorinated alkyl acids in drinking water by solid phase extraction and liquid chromatography/tandem mass spectrometry (LC/MS/MS). Revised October 7, 2015. Available from: https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=198984&simpleSearch=1&searchAll=EPA%2F600%2FR-08%2F092.

USEPA. 2018. Method 537.1. Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). Version 1.0. November 2018. Available from: file:///C:/Users/kmcdonald/Downloads/METHOD%20537_1_FINAL%20(1).PDF.

USEPA. 2019. Method 533. Determination of Per- and Polyfluoroalkyl Substances in Drinking Water by Isotope Dilution Anion Exchange Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). December 2019. Available from: https://www.epa.gov/sites/default/files/2019-12/documents/method-533-815b19020.pdf.

USEPA. 2021. Method 8327. Per- and Polyfluoroalkyl Substances (PFAS) By Liquid Chromatography/Tandem mass Spectrometry (LC/MS/MS). Revision 0. July 2021. Available from: https://www.epa.gov/system/files/documents/2021-07/8327.pdf.

USEPA 2024. Method 1621. Determination of Adsorbable Organic Fluorine (AOF) in Aqueous Matrices by Combustion Ion Chromatography (CIC). January 2024. Available from: https://www.epa.gov/system/files/documents/2024-01/method-1621-for-web-posting.pdf.

USEPA. 2024. Method 1633. Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS. January 2024. Available from: https://www.epa.gov/system/files/documents/2024-01/method-1633-final-for-web-posting.pdf.

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TABLES

TABLE 1. PFAS SAMPLING ITEMS[1]
SOP FOR CHARACTERIZATION OF PFAS AT BULK FUEL STORAGE TERMINALS AND REFINERIES

Prohibited Items/Materials	Staging Area/Indirect Use[1]	Sampling Area/Direct Sampling Use
Sampling Equipment		
• Polytetrafluoroethylene (PTFE), including Teflon® and Hostaflon®-containing materials (tubing, bailers, tape, and plumbing paste), and other fluoropolymers • Low-density polyethylene (LDPE) sample containers • Aluminum foil	• Polyethylene sheeting • Portable sample table • Extra gloves • Zipper-lock bags for ice and transport of sample containers (not for direct sample contact) • Coolers • Decontamination equipment	PFAS-compatible sampling materials: • HDPE/polypropylene[2] • Stainless steel • Nylon or cotton • Polyvinyl chloride (PVC) • Acetate liners • Silicone tubing • Natural rubber
Sample Labeling and Field Documentation		
• Waterproof field books • Plastic clipboards, binders, spiral hard cover notebooks • Post-It Notes • Regular/thick size markers (Fine-Point Sharpie®)	• Loose paper (non-waterproof) • Ballpoint pens (e.g., Uniball® Power Tank) • Ultra-fine point Sharpie® • Aluminum field clipboards or with Masonite®; Rite-in-the-Rain is acceptable in staging area if gloves are changed after note taking.	NA
Clothing and Personal Protective Equipment (PPE) used by Field Personnel[3]		
• New (unlaundered) clothing; clothing laundered using fabric softener • New cotton clothing or synthetic water-resistant/ waterproof clothing or dirt/stain-resistant treated clothing, clothing containing GORE-TEX™, Scotchgard™, and RUCO® • Boots with waterproof treatment[2], such as GORE-TEX™ • Clothes chemically treated for insect resistance and ultraviolet protection • Coated Tyvek®	• Synthetic or cotton clothing that has been well-laundered clothing, defined as clothing that has been washed 6 or more times after purchase • Waterproof clothing made with polyurethane, PVC, wax-coated fabrics, rubber, or neoprene • Boots made with polyurethane and/or PVC • Powderless nitrile gloves	

TABLE 1. PFAS SAMPLING ITEMS[1]
SOP FOR CHARACTERIZATION OF PFAS AT BULK FUEL STORAGE TERMINALS AND REFINERIES

Prohibited Items/Materials	Staging Area/Indirect Use[1]	Sampling Area/Direct Sampling Use
Personal Care Products, Sun/Biological Protection		
Cosmetics, moisturizers, fragrances, hand cream, or other related products as part of personal cleaning showering routine on the day of sampling, and 24 hours prior to sampling.	**To be applied ahead of time, off-site or well away from sampling area:** **Sunscreens** - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are "free" or "natural" -- **Insect Repellents** - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics -- **Sunscreen and insect repellent** - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion	Only present on sampler if previously applied off-site or well away from sampling/staging areas.
Sample Containers		
• LDPE or glass containers • Teflon®-lined caps	• HDPE or polypropylene • Unlined polypropylene caps	
Rain Events		
Waterproof or water-resistant rain gear	Gazebo tent that is only touched or moved before and following sampling activities	
Equipment Decontamination		
• Decon 90® • Simple Green® • Water from an on-site well	• Alconox®, Liquinox®, or Citranox® • Laboratory supplied PFAS-free water • Commercially available deionized water if verified to be PFAS-free • Potable water from municipal drinking-water supply if known to be PFAS-free	NA

TABLE 1. PFAS SAMPLING ITEMS[1]
SOP FOR CHARACTERIZATION OF PFAS AT BULK FUEL STORAGE TERMINALS AND REFINERIES

Prohibited Items/Materials	Staging Area/Indirect Use[1]	Sampling Area/Direct Sampling Use
Food Considerations		
All food and drink, with exceptions noted herein. Note that fast-food and prepackaged food containers may contain PFAS.	Bottled water and hydration drinks (i.e., Gatorade® and Powerade®) to be brought and consumed only in the staging area	NA

[1] Staging Area/Indirect Use restrictions apply to the entire sample collection and processing area, including vehicles used by sampling personnel. Sampling personnel includes all personnel who:

- Are directly involved in the collection, handling, and/or processing of samples before the samples leave the site.
- Handle any part of equipment that directly contacts surface water or stormwater.
- Are within 2 to 3 meters (i.e., 6 to 9 feet) of the borehole during soil sampling.

Personnel are not included as sampling personnel if they remain at least 2 to 3 meters away from sample-collection areas before and during sampling.

[2] Boots with waterproofing may be worn under limited conditions, such as during groundwater sampling where potential contact pathways (direct or indirect) can be controlled

TABLE 2. COMPARISON OF PFAS ANALYTES REPORTED BY VARIOUS ANALYTICAL METHODS

Target Analyte Name	Abbreviation	CAS Number	Method 1633	Method 533	Method 537.1	Method 8327
Perfluoroalkyl carboxylic acids						
Perfluorobutanoic acid	PFBA	375-22-4	X	X	--	X
Perfluoropentanoic acid	PFPeA	2706-90-3	X	X	--	X
Perfluorohexanoic acid	PFHxA	307-24-4	X	X	X	X
Perfluoroheptanoic acid	PFHpA	375-85-9	X	X	X	X
Perfluorooctanoic acid	PFOA	335-67-1	X	X	X	X
Perfluorononanoic acid	PFNA	375-95-1	X	X	X	X
Perfluorodecanoic acid	PFDA	335-76-2	X	X	X	X
Perfluoroundecanoic acid	PFUnA	2058-94-8	X	X	X	X
Perfluorododecanoic acid	PFDoA	307-55-1	X	X	X	X
Perfluorotridecanoic acid	PFTrDA	72629-94-8	X	--	X	X
Perfluorotetradecanoic acid	PFTeDA	376-06-7	X	--	X	X
Perfluoroalkyl sulfonic acids						
Perfluorobutanesulfonic acid	PFBS	375-73-5	X	X	X	X
Perfluoropentansulfonic acid	PFPeS	2706-91-4	X	X	--	X
Perfluorohexanesulfonic acid	PFHxS	355-46-4	X	X	X	X
Perfluoroheptanesulfonic acid	PFHpS	375-92-8	X	X	--	X
Perfluorooctanesulfonic acid	PFOS	1763-23-1	X	X	X	X
Perfluorononanesulfonic acid	PFNS	68259-12-1	X	--	--	X
Perfluorodecanesulfonic acid	PFDS	335-77-3	X	--	--	X
Perfluorododecanesulfonic acid	PFDoS	79780-39-5	X	--	--	--
Fluorotelomer sulfonic acids						
1*H*,1*H*, 2*H*, 2*H*-Perfluorohexane sulfonic acid	4:2FTS	757124-72-4	X	X	--	X
1*H*,1*H*, 2*H*, 2*H*-Perfluorooctane sulfonic acid	6:2FTS	27619-97-2	X	X	--	X
1*H*,1*H*, 2*H*, 2*H*-Perfluorodecane sulfonic acid	8:2FTS	39108-34-4	X	X	--	X
Perfluorooctane sulfonamides						
Perfluorooctanesulfonamide	PFOSA	754-91-6	X	--	--	X
N-methyl perfluorooctanesulfonamide	NMeFOSA	31506-32-8	X	--	--	--
N-ethyl perfluorooctanesulfonamide	NEtFOSA	4151-50-2	X	--	--	--
Perfluorooctane sulfonamidoacetic acids						
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9	X	--	X	X
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6	X	--	X	X
Perfluorooctane sulfonamide ethanols						
N-methyl perfluorooctanesulfonamidoethanol	NMeFOSE	24448-09-7	X	--	--	--
N-ethyl perfluorooctanesulfonamidoethanol	NEtFOSE	1691-99-2	X	--	--	--

Cross Reference Acid/Anion

Target Analyte Name	CAS Number
Perfluoroalkyl carboxylic anions	
Perfluorobutanoate	45048-62-2
Perfluoropentanoate	45167-47-3
Perfluorohexanoate	92612-52-7
Perflluoroheptanoate	120885-29-2
Pefluorooctanoate	45285-51-6
Perfluorononanoate	72007-68-2
Perfluorodecanoate	73829-36-4
Perfluoroundecanoate	196859-54-8
Perfluorododecanoate	171978-95-3
Perfluorotridecanoate	862374-87-6
Perfluorotetradecanoate	365971-87-5
Perfluoroalkyl sulfonic Anions	
Perfluorobutane sulfonate	45187-15-3
Perfluoropentane sulfonate	175905-36-9
Perfluorohexane sulfonate	108427-53-8
Perfluoroheptane sulfonate	146689-46-5
Perfluorooctane sulfonate	45298-90-6
Perfluorononane sulfonate	474511-07-4
Perfluorodecane sulfonate	126105-34-8
Perfluorododecane sulfonate	343629-43-6

TABLE 2. COMPARISON OF PFAS ANALYTES REPORTED BY VARIOUS ANALYTICAL METHODS

Target Analyte Name	Abbreviation	CAS Number	Method 1633	Method 533	Method 537.1	Method 8327
Per- and Polyfluoroether carboxylic acids						
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6	X	X	X	--
4,8-Dioxa-3*H*-perfluorononanoic acid	ADONA	919005-14-4	X	X	X	--
Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1	X	X	--	--
Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5	X	X	--	--
Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6	X	X	--	--
Ether sulfonic acids						
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	756426-58-1	X	X	X	--
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9	X	X	X	--
Perfluoro(2-ethoxyethane)sulfonic acid	PFEESA	113507-82-7	X	X	--	--
Fluorotelomer carboxylic acids						
3-Perfluoropropyl propanoic acid	3:3FTCA	356-02-5	X	--	--	--
2H,2H,3H,3H-Perfluorooctanoic acid	5:3FTCA	914637-49-3	X	--	--	--
3-Perfluoroheptyl propanoic acid	7:3FTCA	812-70-4	X	--	--	--
		Total Analyte Count	**40**	**25**	**18**	**24**

Target Analyte Name	CAS Number
[redacted]	

ATTACHMENT A

OFFICE TRAINING CHECKLIST

ATTACHMENT A. OFFICE TRAINING CHECKLIST
PFAS SAMPLING STANDARD OPERATING PROCEDURES
TRAINING PROGRAM
TRIHYDRO CORPORATION

(development/review in progress)

1. PFAS Overview – basic information to understand rationale for PFAS sampling approaches and to address basis questions
    a. Chemistry
    b. PFAS uses/environmental sources
    c. Regulatory status
2. Unique elements of PFAS sampling
    a. Hundreds/thousands of compounds
    b. Presence in common materials
    c. Highly scrutinized results
3. Standard Operating Procedures Overview
    a. Table of Contents overview/key elements
    b. Material compatibility table
    c. General PFAS sampling steps
4. Project Sampling Discussion
    a. Types of sampling
    b. Additional training needs
    c. Project specific preparation needs/focus on relevant SOP sections

ATTACHMENT B

FIELD TRAINING CHECKLIST

ATTACHMENT B. FIELD TRAINING CHECKLIST
PFAS SAMPLING STANDARD OPERATING PROCEDURES
TRAINING PROGRAM
TRIHYDRO CORPORATION

1. Allowable materials
    a. Clothing/PPE
    b. Gloves
    c. Paper towels
    d. Buckets
    e. Sampling Materials
    f. Pens/Sharpies
    g. Field Notes
2. Prohibited Materials
    a. Area Inspection
    b. Clothing/PPE
    c. Food wrappers
    d. Paper towels (avoid blue shop towels)
    e. Reference to SOP Table 1
3. Site Preparation and Area Management
    a. Staging Area
    b. Sampling Area
    c. Personnel
    d. Coolers
    e. Housekeeping
4. Hands
    a. Awareness
    b. Changing gloves
5. Sampling considerations
    a. Groundwater pumps, tubing, supplies
    b. Soil Sampling: drilling and hand-auger
6. Sample Container Management
    a. Pre-collection
    b. During collection
    c. Post-collection
7. Decontamination
    a. Plastic brush
    b. Spray bottles

ATTACHMENT C

EXAMPLE FIELD SAMPLING DOCUMENTATION FORM

ATTACHMENT C. EXAMPLE FIELD SAMPLING DOCUMENTATION FORM

Client / Project # :

Monitoring Well ID ____________ Sample Date/Time: ____________
Analysis: 537.1 / 1633 / Other ____________ QC samples: ____________
Sample Depth: ____________ Sample Recovery: ____________
Sample Description: ____________

Boring / Sample ID ____________ Sample Date/Time: ____________
Analysis: 537.1 / 1633 / Other ____________ QC samples: ____________
Sample Depth: ____________ Sample Recovery: ____________
Sample Description: ____________

Boring / Sample ID ____________ Sample Date/Time: ____________
Analysis: 537.1 / 1633 / Other ____________ QC samples: ____________
Sample Depth: ____________ Sample Recovery: ____________
Sample Description: ____________

Boring / Sample ID ____________ Sample Date/Time: ____________
Analysis: 537.1 / 1633 / Other ____________ QC samples: ____________
Sample Depth: ____________ Sample Recovery: ____________
Sample Description: ____________

Boring / Sample ID ____________ Sample Date/Time: ____________
Analysis: 537.1 / 1633 / Other ____________ QC samples: ____________
Sample Depth: ____________ Sample Recovery: ____________
Sample Description: ____________

Sampling Equipment: ____________
Field Personnel:

Trihydro

APPENDIX D

FIELD FORMS

Trihydro Corporation
1252 Commerce Drive
Laramie, WY 82070

SURFACE SOIL
FIELD DATA LOG SHEET - SAMPLING

DATE _____

PROGRAM NAME _____
SITE NAME / NUMBER _____
SAMPLE MATRIX _____
SAMPLER'S SIGNATURE _____

SURFACE SOIL DATA

LOCATION I.D. _____
SAMPLE I.D. _____
DUPLICATE I.D. _____
SAMPLE TIME _____
DUP TIME _____

SAMPLING METHOD _____
MS/MSD (Y/N) _____

Time (hhmm)	Activity	Depth (in)	Color	Description (Sand, Silt, Clay, Moisture, etc.)
	Arrived	-	-	-
	Observe			
	Sample			

Comments:

KENAI GROUNDWATER SAMPLING FIELD FORM

WELL ID:

Trihydro CORPORATION

Date:		Water Quality Meter (make/model/serial number):	
Project Name:	Former Chevron Kenai Refinery	Sampling Device (make/model/serial number):	Dedicated: Yes / No
Project Number:		General Weather Conditions:	
Site Location:	Kenai, Alaska	Air Temperature:	
Field Personnel:		Recorded by:	

Casing Diameter (Inches)	Liters per Foot (LPF)
2	0.617
4	2.470
6	5.56

Tubing Type: Poly / NA / Other:

Depth to Product: NA ft

Depth to Water: ft

Total Depth: NA ft

Decontamination: Dedicated Tubing / Decontaminated Pump / Bailer

Casing Diameter: 2" / 4" / 6"

Water Column: ft

Casing Volume: L

Time	Depth to Water (feet)	Purge Rate (L/min)	Purge Volume (L)	Temperature (°C)	pH	ORP (mV)	Conductivity (mS/cm)	Turbidity (NTU)	DO (mg/L)	TDS (g/L)	Salinity ppt
Stabilization Criteria (only applicable to wells purged prior to sampling)				±10%	±0.2	±20%	±3%	±10% or less than 5 NTU's	±10%	--	NA
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											

Additional Field Sample Parameters Analyzed in Field with Equipment/Test Kits

Analyzed with:	○ (1) DR2400 HACH Spectrophotometer	○ (2) HACH Fe^{2+} Powder Pillow	● (3) YSI 556	○ (4) Other:

(1) Nitrate (mg/L)	(1) Nitrite (mg/L)	(2) Ferrous Iron (mg/L)	(3) TDS (g/L)	(4) Other

Sample Description (Clarity / Color / Odor):	Clarity:	Color:	Odor:
QA/QC Samples Collected (BD / MS-MSD):	○ Blind Duplicate	○ Matrix Spike Sample	

Sample Collection Information (Include Duplicates and Matrix Spike Samples)

Date	Time	Field Sample ID

Comments:

Lithology Log Sheet 1 of ___

Project Name	Project Number	Borehole ID	
Drilling Company	Driller	Ground Elevation	Total Drilled Depth __ feet-bgs
Drilling Equipment	Drilling Method	Borehole Diameter	Date/Time Drilling Started	Date/Time Stopped
Type of Sampling Device		Water Level (bgs) __ feet-bgs Final	
PID/FID (make, model, serial no.)		Geologist	Checked by/Date
12		Weather Conditions (temp., clear, rain, wind)	

Depth	Interval	Recovery	Blow Counts	Description (USCS, Munsell color, grain size, SECONDARY, PRIMARY, tertiary, (stiffness of clay or density of sand), (moisture), detail (sorting, angularity, minerology, bedding, plasticity, consistency, etc.)	Water Content	% Gravel	% Sand	% Fines	PID (ppm)	Remarks (Include all sample types & depth, odor, etc.)
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Trihydro CORPORATION

BOREHOLE ID

Lithology Log (continued) Sheet 2 of _____.

Depth	Interval	Recovery	Blow Counts	Description (USCS, Munsell color, grain size, SECONDARY, PRIMARY, tertiary, (stiffness of clay or density of sand), (moisture), detail (sorting, angularity, minerology, bedding, plasticity, consistency, etc.)	Water Content	% Gravel	% Sand	% Fines	PID (ppm)	Remarks (Include all sample types & depth, odor, etc.)
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										