"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","375-22-4","PFBA","10.600000","ng/L","N",".14","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","307-24-4","PFHxA",".500000","ng/L","U",".19","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","375-85-9","PFHpA",".500000","ng/L","U",".16","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","335-67-1","PFOA","1.830000","ng/L","J",".18","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","375-95-1","PFNA","1.000000","ng/L","U",".26","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","335-76-2","PFDA",".500000","ng/L","U",".16","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","2058-94-8","PFUnA","1.000000","ng/L","U",".29","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","307-55-1","PFDoA",".500000","ng/L","U",".18","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","72629-94-8","PFTrDA",".500000","ng/L","U",".15","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","376-06-7","PFTeDA","1.000000","ng/L","U",".25","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","2355-31-9","NMeFOSAA","2.000000","ng/L","U",".56","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","2.00",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","2991-50-6","NEtFOSAA","1.000000","ng/L","U",".49","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","375-73-5","PFBS",".500000","ng/L","U",".13","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","355-46-4","PFHxS",".400000","ng/L","U",".11","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".40",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","1763-23-1","PFOS",".500000","ng/L","U",".19","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2105","13C4-PFBA",".730000","ng/L","","-99.00","NA","","SIS","73.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2217","13C5-PFHxA",".770000","ng/L","","-99.00","NA","","SIS","77.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2218","13C4-PFHpA",".730000","ng/L","","-99.00","NA","","SIS","73.00","","-99.00","NA","YES","1.000000","",".250000",".0005

00",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2219","13C8-PFOA",".740000","ng/L","","-99.00","NA","","SIS","74.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2221","13C9-PFNA",".750000","ng/L","","-99.00","NA","","SIS","75.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2222","13C6-PFDA",".640000","ng/L","","-99.00","NA","","SIS","64.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2223","13C7-PFUnA",".710000","ng/L","","-99.00","NA","","SIS","71.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2112","13C2-PFDoA",".650000","ng/L","","-99.00","NA","","SIS","65.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2224","13C2-PFTeDA",".720000","ng/L","","-99.00","NA","","SIS","72.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-1838","d3-MeFOSAA",".670000","ng/L","","-99.00","NA","","SIS","67.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-1839","d5-EtFOSAA",".670000","ng/L","","-99.00","NA","","SIS","67.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2226","13C3-PFBS",".660000","ng/L","","-99.00","NA","","SIS","70.00","","-99.00","NA","YES",".930000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2227","13C3-PFHxS",".700000","ng/L","","-99.00","NA","","SIS","74.00","","-99.00","NA","YES",".950000","",".250000",".000500",".50",""
"CS196PB-FS","SOP 5-369","Initial","CS196PB-FS","BNO","BDO-2228","13C8-PFOS",".670000","ng/L","","-99.00","NA","","SIS","71.00","","-99.00","NA","YES",".960000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","375-22-4","PFBA","30.670000","ng/L","B",".14","MDL","","T","153.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","307-24-4","PFHxA","23.790000","ng/L","",".19","MDL","","T","118.00","","5.00","LOQ","YES","20.200000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","375-85-9","PFHpA","20.930000","ng/L","",".16","MDL","","T","105.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","335-67-1","PFOA","24.250000","ng/L","",".18","MDL","","T","121.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","375-95-1","PFNA","26.000000","ng/L","",".26","MDL","","T","130.00","","5.00","LOQ","YES","20.000000","",".250000",".000500","1.00",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","335-76-2","PFDA","19.430000","ng/L","",".16","MDL","","T","97.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","2058-94-8","PFUnA","23.560000","ng/L","",".29","MDL","","T","118.00","","5.00","LOQ","YES","20.000000","",".250000",".

000500","1.00",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","307-55-1","PFDoA","26.270000","ng/L","",".18","MDL","","T","131.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","72629-94-8","PFTrDA","21.990000","ng/L","",".15","MDL","","T","110.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","376-06-7","PFTeDA","25.350000","ng/L","",".25","MDL","","T","127.00","","5.00","LOQ","YES","20.000000","",".250000",".000500","1.00",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","2355-31-9","NMeFOSAA","26.310000","ng/L","",".56","MDL","","T","132.00","","5.00","LOQ","YES","20.000000","",".250000",".000500","2.00",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","2991-50-6","NEtFOSAA","24.130000","ng/L","",".49","MDL","","T","121.00","","5.00","LOQ","YES","20.000000","",".250000",".000500","1.00",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","375-73-5","PFBS","24.250000","ng/L","",".13","MDL","","T","120.00","","5.00","LOQ","YES","20.200000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","355-46-4","PFHxS","24.980000","ng/L","",".11","MDL","","T","124.00","","5.00","LOQ","YES","20.200000","",".250000",".000500",".40",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","1763-23-1","PFOS","20.330000","ng/L","",".19","MDL","","T","102.00","","5.00","LOQ","YES","20.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2105","13C4-PFBA",".680000","ng/L","","-99.00","NA","","SIS","68.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2217","13C5-PFHxA",".720000","ng/L","","-99.00","NA","","SIS","72.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2218","13C4-PFHpA",".790000","ng/L","","-99.00","NA","","SIS","79.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2219","13C8-PFOA",".660000","ng/L","","-99.00","NA","","SIS","66.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2221","13C9-PFNA",".620000","ng/L","","-99.00","NA","","SIS","62.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2222","13C6-PFDA",".800000","ng/L","","-99.00","NA","","SIS","80.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2223","13C7-PFUnA",".700000","ng/L","","-99.00","NA","","SIS","70.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2112","13C2-PFDoA",".650000","ng/L","","-99.00","NA","","SIS","65.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2224","13C2-PFTeDA",".640000","ng/L","","-99.00","NA","","SIS","64.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-1838","d3-MeFOSAA",".560000","ng/L","","-99.00","NA","","SIS","56.00","","-99.00","NA","YES","1.000000","",".250000",".0

00500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-1839","d5-EtFOSAA",".610000","ng/L","","-99.00","NA","","SIS","61.00","","-99.00","NA","YES","1.000000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2226","13C3-PFBS",".700000","ng/L","","-99.00","NA","","SIS","75.00","","-99.00","NA","YES",".930000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2227","13C3-PFHxS",".700000","ng/L","","-99.00","NA","","SIS","73.00","","-99.00","NA","YES",".950000","",".250000",".000500",".50",""
"CS197LCS-FS","SOP 5-369","Initial","CS197LCS-FS","BNO","BDO-2228","13C8-PFOS",".780000","ng/L","","-99.00","NA","","SIS","82.00","","-99.00","NA","YES",".960000","",".250000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","375-22-4","PFBA",".450000","ng/L","U",".13","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","307-24-4","PFHxA",".450000","ng/L","U",".17","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","375-85-9","PFHpA",".450000","ng/L","U",".15","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","335-67-1","PFOA","1.480000","ng/L","J",".16","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","375-95-1","PFNA",".910000","ng/L","U",".24","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".91",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","335-76-2","PFDA",".160000","ng/L","J",".15","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","2058-94-8","PFUnA",".360000","ng/L","J",".26","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".91",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","307-55-1","PFDoA",".540000","ng/L","J",".16","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","72629-94-8","PFTrDA",".820000","ng/L","J",".14","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","376-06-7","PFTeDA",".990000","ng/L","J",".23","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".91",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","2355-31-9","NMeFOSAA","1.820000","ng/L","U",".51","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500","1.82",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","2991-50-6","NEtFOSAA",".910000","ng/L","U",".45","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".91",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","375-73-5","PFBS",".450000","ng/L","U",".12","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","355-46-4","PFHxS",".360000","ng/L","U",".10","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500

",".36",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","1763-23-1","PFOS",".450000","ng/L","U",".17","MDL","","T","","","4.55","LOQ","YES","-99.000000","",".275000",".000500",".45",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2105","13C4-PFBA",".670000","ng/L","","-99.00","NA","","SIS","74.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2217","13C5-PFHxA",".730000","ng/L","","-99.00","NA","","SIS","80.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2218","13C4-PFHpA",".800000","ng/L","","-99.00","NA","","SIS","88.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2219","13C8-PFOA",".690000","ng/L","","-99.00","NA","","SIS","76.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2221","13C9-PFNA",".740000","ng/L","","-99.00","NA","","SIS","82.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2222","13C6-PFDA",".710000","ng/L","","-99.00","NA","","SIS","78.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2223","13C7-PFUnA",".760000","ng/L","","-99.00","NA","","SIS","84.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2112","13C2-PFDoA",".590000","ng/L","","-99.00","NA","","SIS","65.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2224","13C2-PFTeDA",".590000","ng/L","","-99.00","NA","","SIS","65.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-1838","d3-MeFOSAA",".570000","ng/L","","-99.00","NA","","SIS","63.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-1839","d5-EtFOSAA",".640000","ng/L","","-99.00","NA","","SIS","71.00","","-99.00","NA","YES",".910000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2226","13C3-PFBS",".700000","ng/L","","-99.00","NA","","SIS","83.00","","-99.00","NA","YES",".850000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2227","13C3-PFHxS",".690000","ng/L","","-99.00","NA","","SIS","80.00","","-99.00","NA","YES",".860000","",".275000",".000500",".50",""
"NASB-BLL15-FRB-01-110118","SOP 5-369","Initial","J9159-FS","BNO","BDO-2228","13C8-PFOS",".610000","ng/L","","-99.00","NA","","SIS","70.00","","-99.00","NA","YES",".870000","",".275000",".000500",".50",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","CS196PB-FS","","WATER","CS196PB-FS","MB","","-99.000000","SOP 5-369","Gen Prep","Initial","11/14/2018 10:58","11/20/2018 15:23","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0671","18-0671","DP-18-0357","DP-18-0357","18-0671","11/14/2018 10:58","11/26/2018 16:11",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","CS196PB-FS","","WATER","CS196PB-FS","MB","","-99.000000","SOP 5-369","Gen Prep","Initial","11/14/2018 10:58","11/21/2018 19:30","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0671","18-0671","DP-18-0357","DP-18-0357","18-0671","11/14/2018 10:58","11/26/2018 16:11",""

"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","CS197LCS-FS","","WATER","CS197LCS-FS","LCS","","-99.000000","SOP 5-369","Gen Prep","Initial","11/14/2018 10:58","11/20/2018 15:34","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0671","18-0671","DP-18-0357","DP-18-0357","18-0671","11/14/2018 10:58","11/26/2018 16:11",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","CS197LCS-FS","","WATER","CS197LCS-FS","LCS","","-99.000000","SOP 5-369","Gen Prep","Initial","11/14/2018 10:58","11/21/2018 19:41","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0671","18-0671","DP-18-0357","DP-18-0357","18-0671","11/14/2018 10:58","11/26/2018 16:11",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","NASB-BLL15-FRB-01-110118","11/01/2018 08:00","GW","J9159-FS","NM","SHP-181102-01",".800000","SOP 5-369","Gen Prep","Initial","11/14/2018 10:58","11/20/2018 15:44","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0671","18-0671","DP-18-0357","DP-18-0357","18-0671","11/02/2018 10:30","11/26/2018 16:11",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","NASB-BLL15-FRB-01-110118","11/01/2018 08:00","GW","J9159-FS","NM","SHP-181102-01",".800000","SOP 5-369","Gen Prep","Initial","11/14/2018 10:58","11/21/2018 19:52","BNO","COA","NA","T","1.000","NA","NA","","100.000000","18-0671","18-0671","DP-18-0357","DP-18-0357","18-0671","11/02/2018 10:30","11/26/2018 16:11",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **J. ORIENT** **DATE:** **DECEMBER 11, 2018**

FROM: **MICHELLE L. WOEBER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)**
FORMER NAVAL AIR STATION (NAS) BRUNSWICK, BRUNSWICK, ME
CTO WE21 PFC ASSESSMENT
SAMPLE DELIVERY GROUPS (SDGs) 18-0652 & 18-0671

SAMPLES: SDG 18-0652

5/Aqueous/PFAS

NASB-BLL15-DUP-01-110118
NASB-BLL15-MW-01-110118
NASB-BLL15-MW-02-110118
NASB-BLL15-MW-03-110118
NASB-BLL15-MW-04-110118

SDG 18-0671

1/Aqueous/PFAS

NASB-BLL15-FRB-01-110118

Overview

The sample set for former NAS Brunswick, SDGs 18-0652 & 18-0671 consisted of five (5) aqueous environmental samples and one (1) Field Reagent Blank (FRB). All six (6) aqueous samples were analyzed for Polyfluoroalkyl Substances (PFAS). One field duplicate pair was included in these Sample Delivery Groups (SDGs): NASB-BLL15-DUP-01-110118/NASB-BLL15-MW-04-110118.

The samples were collected by Tetra Tech, Inc. on November 1, 2018 and analyzed by Battelle Laboratories. The analyses were conducted in compliance with Department of Defense (DoD)/Department of Energy (DOE) Quality Systems Manual (QSM) for Environmental Laboratories version 5.1 PFAS using LC/MS/MS Appendix B Table B-15 (July 2017). The data was evaluated based on the following parameters:

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

* • Compound Identification
* • Compound Quantitation
* • Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B, and Appendix C contains the documentation to support the findings as discussed in this data validation report. An EPA Region 1 tier II validation was performed on the data in these SDGs. The text of this report has been formulated to address only those areas affecting data quality.

PFAS

The following compounds were detected (< 1/2 LOQ) in the laboratory method blank and FRB at the following maximum concentration affecting all samples:

Analyte	Maximum Concentration (ng/L)	Action Level Limit of Quantitation (LOQ) > or <
Perfluorobutanoic acid (PFBA) (1)	2.28	< LOQ
Perfluoroheptanoic Acid (PFHpA) (1)	0.19	< LOQ
Perfluorohexanoic Acid (PFHxA) (1)	0.4	< LOQ
Pentadecafluorooctanoic Acid (PFOA) (2)	1.48	< LOQ
Perfluorodecanoic Acid (PFDA) (2)	0.16	< LOQ
Perfluorododecanoic Acid (PFDoA) (2)	0.54	< LOQ
Perfluorotetradecanoic Acid (PFTeA) (2)	0.99	< LOQ
Perfluorotridecanoic Acid (PFTrDA) (2)	0.82	< LOQ
Perfluoroundecanoic Acid (PFUnA) (2)	0.36	< LOQ

(1) - Maximum concentration detected in the laboratory method blank in SDG 18-0652 affecting all environmental samples.
(2) - Maximum concentration detected in the FRB affecting all environmental samples.

The detected results reported for these compounds below the LOQ but above the Limit of Detection (LOD) were qualified as non-detected, (U). The FRB was not qualified for laboratory blank contamination in SDG 18-0671.

The extraction internal standard, 13C4-PFBA, had Percent Recoveries (%Rs) below the 50% quality control limit in samples NASB-BLL15-DUP-01-110118, NASB-BLL15-MW-01-110118, NASB-BLL15-MW-03-110118, and NASB-BLL15-MW-04-110118. The detected and non-detected results reported for PFBA in these samples were qualified as estimated, (J) and (UJ), respectively.

NOTES

The Laboratory Control Sample (LCS) analysis performed in SDG 18-0671 had %Rs for PFBA and perfluorononanoic acid (PFNA) above the upper quality control limits. No action was taken because results for these compounds in the associated FRB were non-detects.

Two analytes were detected in the procedural blank which was associated with FRB. PFBA was detected at a concentration greater than the LOQ and PFOA at a concentration less than 1/2 the LOQ. Because the FRB is a field quality control blank, the FRB was not qualified for lab method blank contamination. PFBA was not detected in the FRB. The preparation batch for the FRB and the blank was 18-0671. The preparation date for batch 18-0671 was on 11/14/18 which was 6 days after the enviornmental samples were prepared.

Detected results reported below the LOQ but above the Detection Limit (DL) were qualified as estimated, (J). Non-detected results are reported to the Limit of Detection (LOD).

EXECUTIVE SUMMARY

Laboratory Performance: Contaminants were detected in the laboratory method/preparation blanks. One extraction internal standard %Rs were low in several samples. One LCS had high %Rs.

Other Factors Affecting Data Quality: The FRB had contained contaminants. Detected results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), National Functional Guidelines for Organic Data Validation (January 2017), and the Department of Defense (DoD) and Department of Energy (DOE) document entitled, "Quality Systems Manual (QSM) for Environmental Laboratories" version 5.1 (2017). The text of this report has been formulated to address only those areas affecting data quality.

Michelle L. Woeber
_____
Tetra Tech, Inc.
Michelle L. Woeber
Environmental Chemist

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

Attachments:

Appendix A - Qualified Analytical Results
Appendix B - Results as reported by the Laboratory
Appendix C - Support Documentation

Data Qualifier Definitions

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

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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

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

PROJ_NO: 08005-WE21	NSAMPLE	NASB-BLL15-DUP-01-110118			NASB-BLL15-MW-01-110118			NASB-BLL15-MW-02-110118			NASB-BLL15-MW-03-110118		
SDG: 18-0652	LAB_ID	J9158-FS			J9154-FS			J9155-FS			J9156-FS		
FRACTION: PFAS	SAMP_DATE	11/1/2018			11/1/2018			11/1/2018			11/1/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	NASB-BLL15-MW-04-110118											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.89	U		0.94	U		0.91	U		0.86	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1.79	U		1.89	U		1.82	U		1.72	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		8.94			9.52			3.08	U	B	2.88	U	B
PERFLUOROBUTANESULFONIC ACID (PFBS)		1.39	J	P	6.43			1.08	J	P	0.42	J	P
PERFLUOROBUTANOIC ACID (PFBA)		0.45	UJ	N	5.78	J	N	2.08	U	A	0.43	UJ	N
PERFLUORODECANOIC ACID (PFDA)		0.45	U		0.47	U		0.45	U		0.43	U	
PERFLUORODODECANOIC ACID (PFDOA)		0.45	U		0.47	U		0.45	U		0.43	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1.57	U	A	2.52	U	A	0.45	U		0.43	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		6.43			40.3			8.44			3.99	J	P
PERFLUOROHEXANOIC ACID (PFHXA)		2.71	U	A	6.29			1.1	U	A	0.5	U	A
PERFLUORONONANOIC ACID (PFNA)		0.25	J	P	0.94	U		0.91	U		0.86	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		52.45			8.83			7.63			4.5		
PERFLUOROTETRADECANOIC ACID (PFTEA)		0.89	U		0.94	U		0.91	U		0.86	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.45	U		0.47	U		0.45	U		0.43	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.89	U		0.94	U		0.91	U		0.86	U	

PROJ_NO: 08005-WE21	NSAMPLE	NASB-BLL15-MW-04-110118		
SDG: 18-0652	LAB_ID	J9157-FS		
FRACTION: PFAS	SAMP_DATE	11/1/2018		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.89	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1.79	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		9.07		
PERFLUOROBUTANESULFONIC ACID (PFBS)		1.76	J	P
PERFLUOROBUTANOIC ACID (PFBA)		0.45	UJ	N
PERFLUORODECANOIC ACID (PFDA)		0.45	U	
PERFLUORODODECANOIC ACID (PFDOA)		0.45	U	
PERFLUOROHEPTANOIC ACID (PFHPA)		1.64	U	A
PERFLUOROHEXANESULFONIC ACID (PFHXS)		6.37		
PERFLUOROHEXANOIC ACID (PFHXA)		3.04	U	A
PERFLUORONONANOIC ACID (PFNA)		0.38	J	P
PERFLUOROOCTANESULFONIC ACID (PFOS)		59.36		
PERFLUOROTETRADECANOIC ACID (PFTEA)		0.89	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.45	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		0.89	U	

PROJ_NO: 08005-WE21	NSAMPLE	NASB-BLL15-FRB-01-110118		
SDG: 18-0671	LAB_ID	J9159-FS		
FRACTION: PFAS	SAMP_DATE	11/1/2018		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA)		0.91	U	
N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA)		1.82	U	
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1.48	J	P
PERFLUOROBUTANESULFONIC ACID (PFBS)		0.45	U	
PERFLUOROBUTANOIC ACID (PFBA)		0.45	U	
PERFLUORODECANOIC ACID (PFDA)		0.16	J	P
PERFLUORODODECANOIC ACID (PFDOA)		0.54	J	P
PERFLUOROHEPTANOIC ACID (PFHPA)		0.45	U	
PERFLUOROHEXANESULFONIC ACID (PFHXS)		0.36	U	
PERFLUOROHEXANOIC ACID (PFHXA)		0.45	U	
PERFLUORONONANOIC ACID (PFNA)		0.91	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		0.45	U	
PERFLUOROTETRADECANOIC ACID (PFTEA)		0.99	J	P
PERFLUOROTRIDECANOIC ACID (PFTRIA)		0.82	J	P
PERFLUOROUNDECANOIC ACID (PFUNA)		0.36	J	P

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-01-110118			
Battelle ID		J9154-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.265			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	5.78 B	0.13	0.47	4.72
PFHxA	307-24-4	6.29	0.18	0.47	4.72
PFHpA	375-85-9	2.52 J	0.15	0.47	4.72
PFOA	335-67-1	9.52 B	0.17	0.47	4.72
PFNA	375-95-1	0.94 U	0.25	0.94	4.72
PFDA	335-76-2	0.47 U	0.15	0.47	4.72
PFUnA	2058-94-8	0.94 U	0.27	0.94	4.72
PFDoA	307-55-1	0.47 U	0.17	0.47	4.72
PFTrDA	72629-94-8	0.47 U	0.14	0.47	4.72
PFTeDA	376-06-7	0.94 U	0.24	0.94	4.72
NMeFOSAA	2355-31-9	1.89 U	0.53	1.89	4.72
NEtFOSAA	2991-50-6	0.94 U	0.46	0.94	4.72
PFBS	375-73-5	6.43	0.12	0.47	4.72
PFHxS	355-46-4	40.30	0.10	0.38	4.72
PFOS	1763-23-1	8.83	0.18	0.47	4.72

Surrogate Recoveries (%)

13C4-PFBA	36 N	
13C5-PFHxA	88	
13C4-PFHpA	113	
13C8-PFOA	97	
13C9-PFNA	92	
13C6-PFDA	95	
13C7-PFUnA	90	
13C2-PFDoA	90	
13C2-PFTeDA	78	
d3-MeFOSAA	120	
d5-EtFOSAA	114	
13C3-PFBS	90	
13C3-PFHxS	130	
13C8-PFOS	107	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-02-110118				
Battelle ID		J9155-FS				
Sample Type		SA				
Collection Date		11/01/2018				
Extraction Date		11/08/2018				
Analysis Date		11/12/2018				
Analytical Instrument		Sciex 5500 LC/MS/MS				
% Moisture		NA				
Matrix		GW				
Sample Size		0.275				
Size Unit-Basis		L				
Units		ng/L		MDL	LOD	LOQ
PFBA	375-22-4	2.08	J	0.13	0.45	4.55
PFHxA	307-24-4	1.10	J	0.17	0.45	4.55
PFHpA	375-85-9	0.45	U	0.15	0.45	4.55
PFOA	335-67-1	3.08	J	0.16	0.45	4.55
PFNA	375-95-1	0.91	U	0.24	0.91	4.55
PFDA	335-76-2	0.45	U	0.15	0.45	4.55
PFUnA	2058-94-8	0.91	U	0.26	0.91	4.55
PFDoA	307-55-1	0.45	U	0.16	0.45	4.55
PFTrDA	72629-94-8	0.45	U	0.14	0.45	4.55
PFTeDA	376-06-7	0.91	U	0.23	0.91	4.55
NMeFOSAA	2355-31-9	1.82	U	0.51	1.82	4.55
NEtFOSAA	2991-50-6	0.91	U	0.45	0.91	4.55
PFBS	375-73-5	1.08	J	0.12	0.45	4.55
PFHxS	355-46-4	8.44		0.10	0.36	4.55
PFOS	1763-23-1	7.63		0.17	0.45	4.55

Surrogate Recoveries (%)

13C4-PFBA	51
13C5-PFHxA	98
13C4-PFHpA	101
13C8-PFOA	84
13C9-PFNA	71
13C6-PFDA	78
13C7-PFUnA	84
13C2-PFDoA	74
13C2-PFTeDA	63
d3-MeFOSAA	66
d5-EtFOSAA	63
13C3-PFBS	118
13C3-PFHxS	107
13C8-PFOS	93

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-03-110118			
Battelle ID		J9156-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.290			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.43 U	0.12	0.43	4.31
PFHxA	307-24-4	0.50 J	0.16	0.43	4.31
PFHpA	375-85-9	0.43 U	0.14	0.43	4.31
PFOA	335-67-1	2.88 J	0.16	0.43	4.31
PFNA	375-95-1	0.86 U	0.22	0.86	4.31
PFDA	335-76-2	0.43 U	0.14	0.43	4.31
PFUnA	2058-94-8	0.86 U	0.25	0.86	4.31
PFDoA	307-55-1	0.43 U	0.16	0.43	4.31
PFTrDA	72629-94-8	0.43 U	0.13	0.43	4.31
PFTeDA	376-06-7	0.86 U	0.22	0.86	4.31
NMeFOSAA	2355-31-9	1.72 U	0.48	1.72	4.31
NEtFOSAA	2991-50-6	0.86 U	0.42	0.86	4.31
PFBS	375-73-5	0.42 J	0.11	0.43	4.31
PFHxS	355-46-4	3.99 J	0.09	0.34	4.31
PFOS	1763-23-1	4.50	0.16	0.43	4.31

Surrogate Recoveries (%)

13C4-PFBA	29 N	
13C5-PFHxA	94	
13C4-PFHpA	115	
13C8-PFOA	100	
13C9-PFNA	90	
13C6-PFDA	92	
13C7-PFUnA	93	
13C2-PFDoA	78	
13C2-PFTeDA	63	
d3-MeFOSAA	93	
d5-EtFOSAA	87	
13C3-PFBS	100	
13C3-PFHxS	114	
13C8-PFOS	92	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-04-110118				
Battelle ID		J9157-FS				
Sample Type		SA				
Collection Date		11/01/2018				
Extraction Date		11/08/2018				
Analysis Date		11/12/2018				
Analytical Instrument		Sciex 5500 LC/MS/MS				
% Moisture		NA				
Matrix		GW				
Sample Size		0.280				
Size Unit-Basis		L				
Units		ng/L		MDL	LOD	LOQ
PFBA	375-22-4	0.45	U	0.13	0.45	4.46
PFHxA	307-24-4	3.04	J	0.17	0.45	4.46
PFHpA	375-85-9	1.64	J	0.14	0.45	4.46
PFOA	335-67-1	9.07	B	0.16	0.45	4.46
PFNA	375-95-1	0.38	J	0.23	0.89	4.46
PFDA	335-76-2	0.45	U	0.14	0.45	4.46
PFUnA	2058-94-8	0.89	U	0.26	0.89	4.46
PFDoA	307-55-1	0.45	U	0.16	0.45	4.46
PFTrDA	72629-94-8	0.45	U	0.13	0.45	4.46
PFTeDA	376-06-7	0.89	U	0.22	0.89	4.46
NMeFOSAA	2355-31-9	1.79	U	0.50	1.79	4.46
NEtFOSAA	2991-50-6	0.89	U	0.44	0.89	4.46
PFBS	375-73-5	1.76	J	0.12	0.45	4.46
PFHxS	355-46-4	6.37		0.10	0.36	4.46
PFOS	1763-23-1	59.36		0.17	0.45	4.46

Surrogate Recoveries (%)

13C4-PFBA	33	N
13C5-PFHxA	95	
13C4-PFHpA	105	
13C8-PFOA	91	
13C9-PFNA	70	
13C6-PFDA	78	
13C7-PFUnA	80	
13C2-PFDoA	71	
13C2-PFTeDA	52	
d3-MeFOSAA	99	
d5-EtFOSAA	93	
13C3-PFBS	97	
13C3-PFHxS	102	
13C8-PFOS	84	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-DUP-01-110118			
Battelle ID		J9158-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.280			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.45 U	0.13	0.45	4.46
PFHxA	307-24-4	2.71 J	0.17	0.45	4.46
PFHpA	375-85-9	1.57 J	0.14	0.45	4.46
PFOA	335-67-1	8.94 B	0.16	0.45	4.46
PFNA	375-95-1	0.25 J	0.23	0.89	4.46
PFDA	335-76-2	0.45 U	0.14	0.45	4.46
PFUnA	2058-94-8	0.89 U	0.26	0.89	4.46
PFDoA	307-55-1	0.45 U	0.16	0.45	4.46
PFTrDA	72629-94-8	0.45 U	0.13	0.45	4.46
PFTeDA	376-06-7	0.89 U	0.22	0.89	4.46
NMeFOSAA	2355-31-9	1.79 U	0.50	1.79	4.46
NEtFOSAA	2991-50-6	0.89 U	0.44	0.89	4.46
PFBS	375-73-5	1.39 J	0.12	0.45	4.46
PFHxS	355-46-4	6.43	0.10	0.36	4.46
PFOS	1763-23-1	52.45	0.17	0.45	4.46
Surrogate Recoveries (%)					
13C4-PFBA		32 N			
13C5-PFHxA		111			
13C4-PFHpA		113			
13C8-PFOA		92			
13C9-PFNA		82			
13C6-PFDA		88			
13C7-PFUnA		96			
13C2-PFDoA		83			
13C2-PFTeDA		77			
d3-MeFOSAA		110			
d5-EtFOSAA		94			
13C3-PFBS		114			
13C3-PFHxS		110			
13C8-PFOS		101			

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-FRB-01-110118				
Battelle ID		J9159-FS				
Sample Type		SA				
Collection Date		11/01/2018				
Extraction Date		11/14/2018				
Analysis Date		11/20/2018				
Analytical Instrument		Sciex 5500 and Sciex 6500+				
% Moisture		NA				
Matrix		GW				
Sample Size		0.275				
Size Unit-Basis		L				
Units		ng/L		MDL	LOD	LOQ
PFBA	375-22-4	0.45	U	0.13	0.45	4.55
PFHxA	307-24-4	0.45	U	0.17	0.45	4.55
PFHpA	375-85-9	0.45	U	0.15	0.45	4.55
PFOA	335-67-1	1.48	J	0.16	0.45	4.55
PFNA	375-95-1	0.91	U	0.24	0.91	4.55
PFDA	335-76-2	0.16	J	0.15	0.45	4.55
PFUnA	2058-94-8	0.36	J	0.26	0.91	4.55
PFDoA	307-55-1	0.54	J	0.16	0.45	4.55
PFTrDA	72629-94-8	0.82	J	0.14	0.45	4.55
PFTeDA	376-06-7	0.99	J	0.23	0.91	4.55
NMeFOSAA	2355-31-9	1.82	U	0.51	1.82	4.55
NEtFOSAA	2991-50-6	0.91	U	0.45	0.91	4.55
PFBS	375-73-5	0.45	U	0.12	0.45	4.55
PFHxS	355-46-4	0.36	U	0.10	0.36	4.55
PFOS	1763-23-1	0.45	U	0.17	0.45	4.55

Surrogate Recoveries (%)

13C4-PFBA	74
13C5-PFHxA	80
13C4-PFHpA	88
13C8-PFOA	76
13C9-PFNA	82
13C6-PFDA	78
13C7-PFUnA	84
13C2-PFDoA	65
13C2-PFTeDA	65
d3-MeFOSAA	63
d5-EtFOSAA	71
13C3-PFBS	83
13C3-PFHxS	80
13C8-PFOS	70

APPENDIX C

SUPPORT DOCUMENTATION

NAS BRUNSWICK
SDG 18-0652

PFAS Concentration = *$[(PA - b)/m] * C_{IS} * PIV * DF/S$*

Where:

PA	Area of target analyte/ area of internal standard
b	y Intercept from calibration curve
C_{IS}	Concentration of internal standard (ng/L)
m	Slope of calibration
DF	Dilution factor
S	Sample Size
PIV	Pre-injection volume (L)

Target Analyte	PFOS
Sample ID	NASB-BLL15-MW-04-110118
Laboratory Sample ID	J9157-FS
Sample Size (L)	0.28
Dilution Factor	1
PIV (L)	0.001
PFOS Area	6751577.51
IS Area	25678.2
IS Amount (ng/L)	239.25
Calibration Curve	y = 3.77369 x + 0.78197
Concentration (ng/L)	59.36

(((207917.31/20153.38)+0.36483)/4.76291)*239.25*0.001*1/0.270

BATTELLE

Summary Quant Report

Sample Name	J9157-FS(0)	**Injection Vial**	9
Sample ID	NASB-BLL15-MW-04-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:11:52	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/L)	Signal/Noise Ratio	Modified
PFBS_1	298.9 / 80.0	1.54	155525.40	493.873141	79.1	true
PFBS_2	298.9 / 99.0	1.54	40902.94	419.068428	78.5	false
PFHxA_1	313.0 / 269.0	1.87	241415.56	851.143750	30.4	true
PFHxA_2	313.0 / 119.0	1.86	15783.83	723.646739	34.4	true
PFHpA_1	363.0 / 319.0	2.27	137256.82	457.899485	46.0	false
PFHpA_2	363.0 / 169.0	2.25	4158.12	645.441981	35.1	true
PFHxS_1	399.0 / 80.0	2.30	721653.09	1784.997921	207.0	false
PFHxS_2	399.0 / 99.0	2.30	191495.76	1660.538835	312.1	false
PFOA_1	413.0 / 369.0	2.68	819681.45	2539.267075	176.2	false
PFOA_2	413.0 / 169.0	2.68	44185.90	2134.571417	158.1	false
PFNA_1	463.0 / 419.0	3.08	33962.49	106.658505	49.0	false
PFNA_2	463.0 / 219.0	3.08	15424.03	188.536228	74.0	false
PFOS_1	499.0 / 80.0	3.06	6751577.51	16620.050006	327.7	false
PFOS_2	499.0 / 99.0	3.08	1039342.58	14777.114982	696.2	false
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	true
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	true
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	true
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	true
PFDoA_1	613.0 / 569.0	4.05	3564.85	< 0	41.2	false
PFDoA_2	613.0 / 319.0	3.98	730.61	< 0	13.1	false
PFTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	true
PFTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	true
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	true
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	true
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	true
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	true
PFBA	213.0 / 169.0	N/A	N/A	N/A	N/A	true

BATTELLE

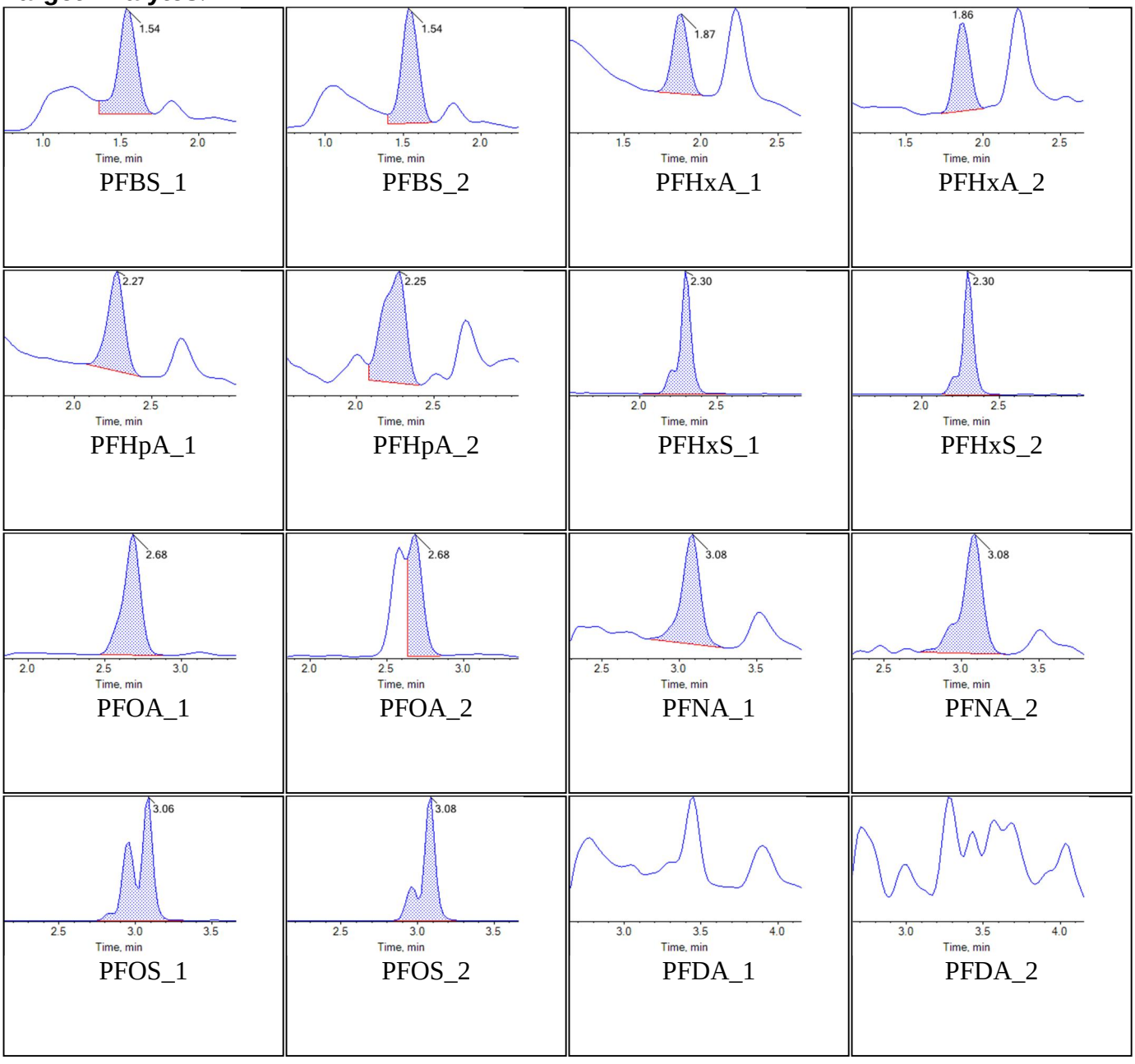
Chromatogram Report

Created with Analyst Reporter
Printed: 21/11/2018 2:56:36 PM

Sample Name	J9157-FS(0)	**Injection Vial**	9
Sample ID	NASB-BLL15-MW-04-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:11:52	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Chromatograms

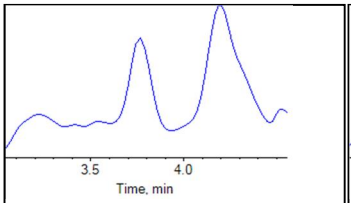
Target Analytes:



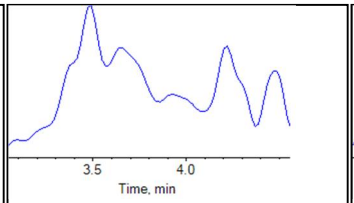
BATTELLE

Chromatogram Report

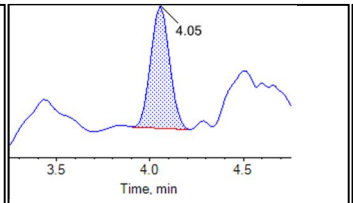
Created with Analyst Reporter
Printed: 21/11/2018 2:56:36 PM



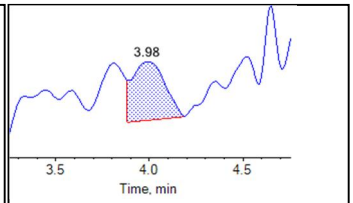
PFUnA_1



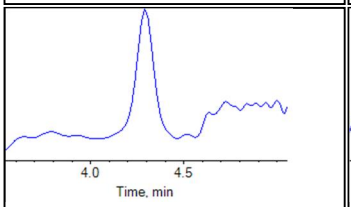
PFUnA_2



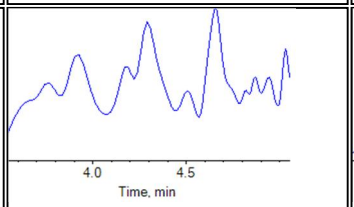
PFDoA_1



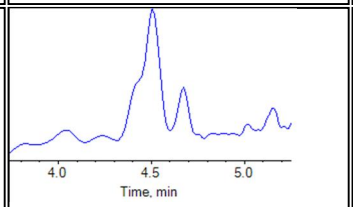
PFDoA_2



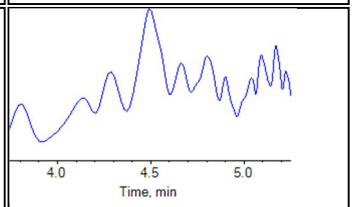
PFTrDA_1



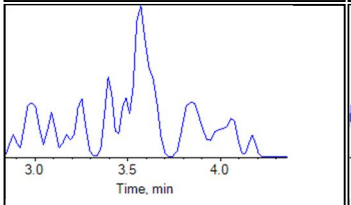
PFTrDA_2



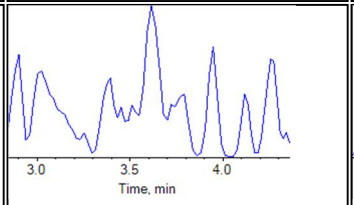
PFTeDA_1



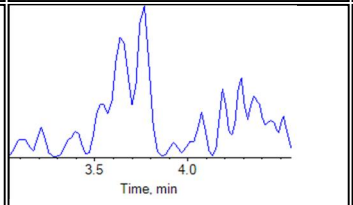
PFTeDA_2



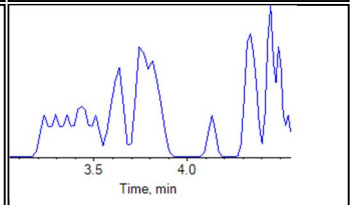
NMeFOSAA_1



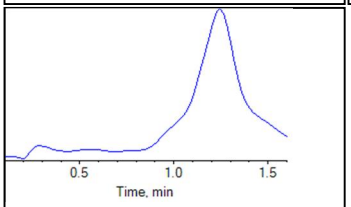
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



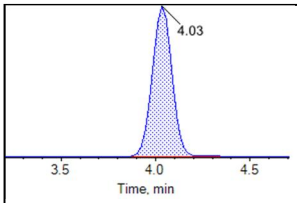
PFBA

Internal Standards:

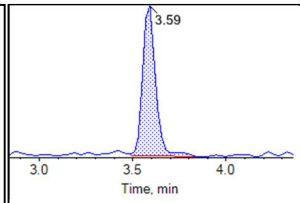
BATTELLE

Chromatogram Report

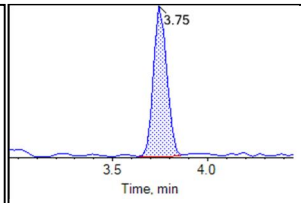
Created with Analyst Reporter
Printed: 21/11/2018 2:56:36 PM



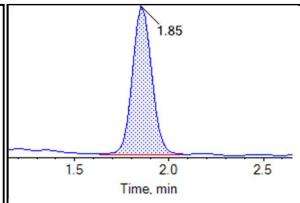
13C2-PFDoA



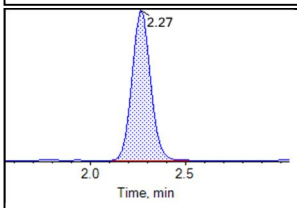
d3-MeFOSAA



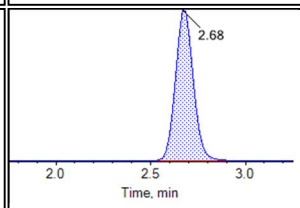
d5-EtFOSAA



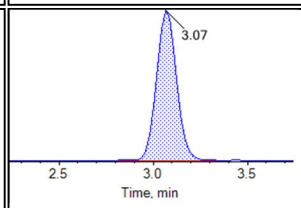
13C5-PFHxA



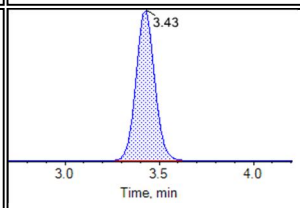
13C4-PFHpA



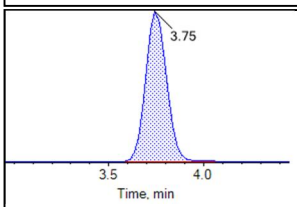
13C8-PFOA



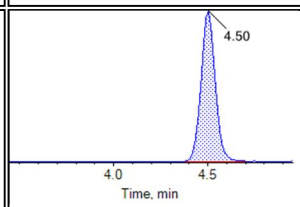
13C9-PFNA



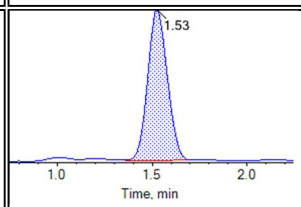
13C6-PFDA



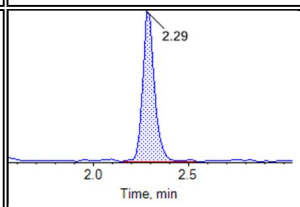
13C7-PFUnA



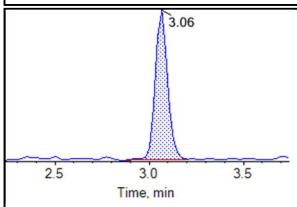
13C2-PFTeDA



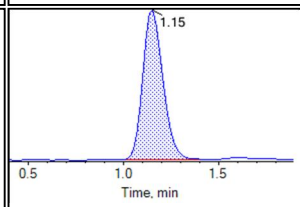
13C3-PFBS



13C3-PFHxS



13C8-PFOS



13C4-PFBA

NAS BRUNSWICK
SDG 18-0652

Surrgoate Concentration = $[(PA)/m] * C_{IS}$

Where:

PA	Area of target analyte/area of internal standard
C_{IS}	Concentration of internal standard (ng/L)
m	Slope of calibration
Surrogate spike amount	250

Surrogate	13C4-PFBA
Sample ID	NASB-BLL15-MW-01-110118
Laboratory Sample ID	J9154-FS
13C4-PFBA Area	18384.86
IS Area	32067.34
IS Amount (ng/L)	250
Calibration Curve	y = 1.60441 x

Concentration (ng/L) 89.34

((18384.86/32067.34)/1.60441)*250

Surrgoate Recovery (%)	***Reported Recovery (%)***
((89.34/250)*100)	
35.7	36

NAS BRUNSWICK
SDG 18-0652

LABORATORY CONTROL SAMPLE

	Result (ng/L)	Target (ng/L)	Calculation	Recovery (%)	Reported Recovery (%)
PFBA	17.88	20	17.88/20*100	89.4	89

ICC RECOVERY (%)	Result (ng/L)	Target (ng/L)	Calculation	Recovery (%)	Reported Recovery (%)
PFBA	934.648432	1000	934.648432/1000*100	93.46	93.46

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

NASB-BLL15-MW-03-110118

PFBA (0.43 U - nondetected)	Result (ng/L)	Target (ng/L)	Calculation	Recovery (%)	Reported Recovery (%)	RPD (%)	Reported RPD (%)
MS	35.53	28.3	35.53/28.3*100	125.55	126		
MSD	24.48	25.86	24.48/25.86*100	94.66	95	28.05	28.1

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 30%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2xRL
PENTADECAFLUOROOCTANOIC ACID (PFOA)	9.07	8.94	4.46	1.44	FALSE	TRUE	TRUE	FALSE
PERFLUOROBUTANESULFONIC ACID (PFBS)	1.76	1.39	4.46	23.49	FALSE	FALSE	FALSE	FALSE
PERFLUOROHEXANESULFONIC ACID (PFHXS)	6.37	6.43	4.46	0.94	FALSE	FALSE	FALSE	FALSE
PERFLUORONONANOIC ACID (PFNA)	0.38	0.25	4.46	41.27	TRUE	FALSE	FALSE	FALSE
PERFLUOROOCTANESULFONIC ACID (PFOS)	59.36	52.45	4.46	12.36	FALSE	TRUE	TRUE	FALSE

SDG 18-0652

NASB-BLL15-DUP-01-110118/NASB-BLL15-MW-04-110118

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Chain of Custody Record 214519

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: JEFFORMENT	Site Contact: DAN GILSON	Date: 11/1	COC No:
Company Name: TETRA TECH NUS	Tel/Fax: 412-921-7080	Lab Contact: DAN THORN	Carrier: FEDEX	1 of 1 COCs
Address: 5 INDUSTRIAL WAY	Analysis Turnaround Time			Sampler:
City/State/Zip: SALEM/NH/03079	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 774-278-8197	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: NASB WE-21				Job / SDG No.:
Site: IOT 15				
PO #				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PFAS	Sample Specific Notes:
NASB-BLL15-MW-01-110118	11/1	1115	G	GW	2	N	N	X	J9154
NASB-BLL15-MW-02-110118	11/1	1110	G	GW	2	N	N	X	J9155
NASB-BLL15-MW-03-110118	11/1	1000	G	GW	6	N	N	X	RUN MS/MSD J9156
NASB-BLL15-MW-04-110118	11/1	1005	G	GW	2	N	N	X	J9157
NASB-BLL15-DUP-01-110118	11/1	0000	G	GW	2	N	N	X	J9158
NASB-BLL15-FRB-01-110118	11/1	0800	G	GW	2	N	N	X	J9159

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	[illegible]	11/1 1400	William Mendelsohn	Battelle	10:30 11/2/18
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Custody Seal
One Cooler
Temp Blank
0.8°C
Therm 1
WTM 10:30 AM

ORIGIN ID:BMLA (603) 328-1558
FRONT DESK
TETRA TECH, INC
5 INDUSTRIAL WAY
SUITE 2B
SALEM, NH 03079
UNITED STATES US

SHIP DATE: 30OCT18
ACTWGT: 20.00 LB
CAD: 106152846/INET4040
DIMS: 20x14x15 IN

BILL SENDER

TO JON THORN
BATTELLE
141 LONGWATER DR
SUITE 202
NORWELL MA 02061
(781) 681-5588 REF: WE-21
INV:
PO: DEPT:

552J138E7/DCA5

FedEx Express

J1821108150luv

WED - 31 OCT 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7736 0152 4134

01 XPUA

02061
MA-US BOS

FedEx Ship Manager - Print Your Label(s)

10/30/2018

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

https://www.fedex.com/shipping/shipAction.handle?method=doContinue

1/1

Project:	CTO-WE21: Former Naval Air Station, Brunswick, Maine
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	GW
Data Set:	DP-18-0345
Analytical SOP:	5-369
Method Reference:	PFAS to QSM 5.1 Table B-15

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
11/1/2018	11/2/2018	0.8
Corrective Actions	Sample ID NASB-BLL15-FRB-01-110118 is listed as NASB-BLL15-GW-FB01-110118 on the bottle. Sample was logged in to match the COC.	
Sample Storage	The water samples were stored refrigerated until extraction.	
Related samples	The FRB sample is extracted in SDG 18-0671.	

	METHOD SUMMARIES
Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with 0.4% NH_3 in methanol. Extracts were and concentrated to dryness under nitrogen with a water bath set between 35 °C and 45 °C, reconstituted with 80:20 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	Samples 57 and 58 clogged the SPE cartridge filter during extraction. The filter was popped and left inside the SPE cartridge for the full extraction procedure.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on Sciex 5500 LC-MS/MS. The ion ratio for PFOS in sample J9154-FS (NASB-BLL15-MW-01-110118) was above 50% RPD. PFHxS and PFOS, were detected, were found as a mixture of both linear and branched isomers. The value reported is a combined total of the isomers detected.

Holding Times	Extraction Date(s)	Analysis Date(s)
	11/8/2018	11/7 and 12/2018

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ ½ the LOQ Samples >10x PB	Five exceedances noted.
	PFBA was detected in the LCS and sample J9154-FS (NASB-BLL15-MW-01-110118) at a concentration less than 10x the amount detected in the blank (2.28 ng/L). PFOA was detected in samples J9154-FS (NASB-BLL15-MW-01-110118), J9157-FS (NASB-BLL15-MW-04-110118), and J9158-FS (NASB-BLL15-DUP-01-110118) at a concentration less than 10x the amount detected in the blank (1.38 ng/L). All five are B qualified. Both PFBA and PFOA are pass criteria for the blank at less than ½ the LOQ.

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

Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A MS/MSD was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery and <30% RPD	No exceedances noted.
	No comments.

Extracted Internal Standard Analytes	Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
50-150% of true value	Six exceedances noted.
	13C4-PFBA fails low in all field samples, except J9155-FS (NASB-BLL15-MW-02-110118) but passes in the QC samples (PB and LCS). Samples were re-aliquoted and re-run to verify results. Results appear to be due to matrix. The second analysis is included in the unused data section.

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

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

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

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
+/- 30% of true value	No exceedances noted.
	No comments.

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

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project Number: 100122108-CTOWE21
Preparation Batch: 18-0652
Data Set: DP-18-0345
Test Code: Master_369

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	5	In Samples CS101LCS and J9154 PFBA was detected ten times lower than that of the PB. In samples J9154, J9157 and J9158 PFOA was detected ten times lower than that of the PB. The blank was rerun with the similar results and that data can be found in the unused data section of this package. DMS 11/21/2018
Laboratory Control Sample	0	None
Matrix Spike / Matrix Spike Duplicate Recovery	0	None
Matrix Spike / Matrix Spike Duplicate Precision	0	None
Extracted Internal Standard Analytes (Surrogates)	6	13C4-PFBA falls below passing criteria in samples J9154, J9156, J9156MS, J9156MSD, J9157 and J9158. A fresh aliquot of these samples was taken and run with similar results. There also was a lot of flaky material in the bottom of the reconstituted extract. This precipitated matrix could be causing the suppression of the SIS. DMS 11/21/2018
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	CTO-WE21: Former Naval Air Station, B	**Data Set Number:**	DP-18-0345
Project Number:	100122108-CTOWE21	**Prep Batch Number:**	18-0652
Entered By:	Denise Schumitz	**Entered On:**	11/21/2018
Test Code (Matrix Type):	Master_369(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE). DMS 11/21/2018

KC66 is not being used for NEtFOSAA in the BASE method. There is no impact on the data once this point is removed from the calibration curve.
DMS 11/21/2018

When adding samples to the sequence on 11/12/2018 the samples were inadvertently typed into the wrong sequence (data file), AC_1092018_5-369. The samples should have been added to 11122018_5-369, however the time stamp shows that the instrument did collect the sample data in sequential order that the data is being reported.
DMS 11/21/2018

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.11.21 15:28:56 -05'00'

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highers concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the Limit of Quantitation (LOQ)
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported

Sample Summary

Client: Tetra Tech, Inc.
SDG: 18-0652
Project/Site: Former Naval Air Station, Brunswick, Maine
CTO: WE21

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Receipt Date
CS100PB-FS	Procedural Blank	WATER	11/8/2018	11/8/2018
CS101LCS-FS	Laboratory Control Sample	WATER	11/8/2018	11/8/2018
J9154-FS	NASB-BLL15-MW-01-110118	GW	11/1/2018	11/2/2018
J9155-FS	NASB-BLL15-MW-02-110118	GW	11/1/2018	11/2/2018
J9156-FS	NASB-BLL15-MW-03-110118	GW	11/1/2018	11/2/2018
J9156MS-FS	NASB-BLL15-MW-03-110118	GW	11/1/2018	11/2/2018
J9156MSD-FS	NASB-BLL15-MW-03-110118	GW	11/1/2018	11/2/2018
J9157-FS	NASB-BLL15-MW-04-110118	GW	11/1/2018	11/2/2018
J9158-FS	NASB-BLL15-DUP-01-110118	GW	11/1/2018	11/2/2018

Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

Sample ID:	J9154-FS(0)
Client Sample ID:	NASB-BLL15-MW-01-110118
Sample Size:	0.265
Units:	L
Dilution Factor:	1.000
PIV (L):	0.001
Target Analyte:	PFHxS
MRM Transition:	399.0 / 80.0
Data file:	AC_11062018_5-369.wiff and AC_11092018_5-369.wiff
Result table:	18-0652
Area:	5,254,440.98
IS Name:	13C3-PFHxS
IS Area:	34,103.51
IS Amount (ng/L):	236.5
y-intercept:	0.01616
slope:	3.41195

$$\text{Concentration} = \frac{[(5254440.98/34103.51) - 0.01616]}{3.41195} * 236.5 * 0.001 * 1 / 0.265$$

ng/L = 40.30

*Final concentration may vary based on rounding.

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batch: 18-0652
Data Set: DP-18-0345

		CS100PB-FS (Procedural Blank)	CS101LCS-FS (Laboratory Control Sample)	J9156MS-FS (NASB-BLL15-MW-03-110118)	J9156MSD-FS (NASB-BLL15-MW-03-110118)	J9154-FS (NASB-BLL15-MW-01-110118)	J9155-FS (NASB-BLL15-MW-02-110118)	J9156-FS (NASB-BLL15-MW-03-110118)	J9157-FS (NASB-BLL15-MW-04-110118)
PFBA	375-22-4	L	L	L	L	L	L	L	L
PFHxA	307-24-4	L	L	L	L	L	L	L	L
PFHpA	375-85-9	L	L	L	L	L	L	L	L
PFOA	335-67-1	L	L	L	L	L	L	L	L
PFNA	375-95-1	-	L	L	L	-	-	-	L
PFDA	335-76-2	-	L	L	L	-	-	-	-
PFUnA	2058-94-8	-	L	L	L	-	-	-	-
PFDoA	307-55-1	-	L	L	L	-	-	-	-
PFTrDA	72629-94-8	-	L	L	L	-	-	-	-
PFTeDA	376-06-7	-	L	L	L	-	-	-	-
NMeFOSAA	2355-31-9	-	L	L	L	-	-	-	-
NEtFOSAA	2991-50-6	-	L	L	L	-	-	-	-
PFBS	375-73-5	-	L	L	L	L	L	L	L
PFHxS	355-46-4	-	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br
PFOS	1763-23-1	-	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br	L/Br

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

BATTE
It can

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batcl
Data Set: DP-18-

	J9158-FS (NASB-BLL15-DUP-01-110118)
PFBA	L
PFHxA	L
PFHpA	L
PFOA	L
PFNA	L
PFDA	-
PFUnA	-
PFDoA	-
PFTrDA	-
PFTeDA	-
NMeFOSAA	-
NEtFOSAA	-
PFBS	L
PFHxS	L/Br
PFOS	L/Br

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

BATTELLE
It can be done

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

Analyte	CAS No.	Average (ng/L)	ST DEV	2 Sigma	n
PFBA	375-22-4	12.25	1.95	3.90	14
PFPeA	2706-90-3	10.58	1.50	3.00	10
PFHxA	307-24-4	9.93	1.26	2.52	42
PFHpA	375-85-9	9.45	1.52	3.04	42
PFOA	335-67-1	10.21	1.45	2.90	44
PFNA	375-95-1	9.74	1.18	2.36	42
PFDA	335-76-2	9.91	1.28	2.56	42
PFUnA	2058-94-8	9.87	1.26	2.52	42
PFDoA	307-55-1	10.75	1.25	2.50	42
PFTrDA	72629-94-8	11.18	1.48	2.96	42
PFTeDA	376-06-7	10.71	1.84	3.68	42
NMeFOSAA	2355-31-9	10.37	1.87	3.74	42
NEtFOSAA	2991-50-6	9.66	1.50	3.00	42
PFOSA	754-91-6	9.72	0.93	1.86	5
PFBS	375-73-5	10.07	1.41	2.82	43
PFPeS	2706-91-4	9.59	0.96	1.92	6
PFHxS	355-46-4	9.81	1.45	2.90	42
PFHpS	375-92-8	10.79	1.05	2.10	11
PFOS	1763-23-1	10.04	1.32	2.64	42
PFNS	68259-12-1	9.50	1.02	2.04	5
PFDS	335-77-3	10.11	1.77	3.54	10
4:2FTS	414911-30-1	10.81	1.37	2.74	10
6:2FTS	27619-97-2	12.34	2.80	5.60	10
8:2FTS	39108-34-4	11.96	2.44	4.88	10

BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

Analytical SOP 5-369
Extraction SOP 5-370

PFAS by LC-MS/MS Compliant with QSM 5.1 Compliant Table B-15

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)
PFBA	375-22-4	0.14	0.5	5.0
PFPeA	2706-90-3	0.31	1.0	5.0
PFHxA	307-24-4	0.19	0.5	5.0
PFHpA	375-85-9	0.16	0.5	5.0
PFOA	335-67-1	0.18	0.5	5.0
PFNA	375-95-1	0.26	1.0	5.0
PFDA	335-76-2	0.16	0.5	5.0
PFUnA	2058-94-8	0.29	1.0	5.0
PFDoA	307-55-1	0.18	0.5	5.0
PFTrDA	72629-94-8	0.15	0.5	5.0
PFTeDA	376-06-7	0.25	1.0	5.0
NMeFOSAA	2355-31-9	0.56	2.0	5.0
NEtFOSAA	2991-50-6	0.49	1.0	5.0
PFOSA	754-91-6	TBD	TBD	TBD
PFBS	375-73-5	0.13	0.5	5.0
PFPeS	BDO-2114	0.67	2.5	5.0
PFHxS	355-46-4	0.11	0.4	5.0
PFHpS	375-99-6	0.20	0.5	5.0
PFOS	1763-23-1	0.19	0.5	5.0
PFNS	98789-57-2	0.46	1.0	5.0
PFDS	2806-15-7	0.17	0.5	5.0
4:2FTS	BDO-2205	0.14	0.5	5.0
6:2FTS	27619-97-2	1.36	2.5	5.0
8:2FTS	39108-34-4	0.22	0.5	5.0

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

ID 596 04/18

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/7/18 10:16	13C3-PFBA	60,336.98	30,168.49	90,505.47

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/7/18 9:32	13C3-PFBA	58,780.28	30,168.49	90,505.47	
KC67	L2	11/7/18 9:43	13C3-PFBA	67,717.11	30,168.49	90,505.47	
KC68	L3	11/7/18 9:54	13C3-PFBA	64,026.91	30,168.49	90,505.47	
KC69	L4	11/7/18 10:05	13C3-PFBA	69,866.24	30,168.49	90,505.47	
KC70	L5	11/7/18 10:16	13C3-PFBA	60,336.98	30,168.49	90,505.47	
KC71	L6	11/7/18 10:27	13C3-PFBA	60,511.18	30,168.49	90,505.47	
KC72	L7	11/7/18 10:37	13C3-PFBA	57,812.92	30,168.49	90,505.47	
KC73 IB	Instrument Blank	11/7/18 10:48	13C3-PFBA	49,652.14	30,168.49	90,505.47	
KC74 ICC	ICC	11/7/18 10:59	13C3-PFBA	59,672.50	30,168.49	90,505.47	
KC68 ISC	Instrument Sensitivity Check	11/12/18 9:55	13C3-PFBA	63,866.47	30,168.49	90,505.47	
KC73 IB	Instrument Blank	11/12/18 10:06	13C3-PFBA	61,443.37	30,168.49	90,505.47	
KC69 CCV	CCV	11/12/18 17:33	13C3-PFBA	62,570.05	30,168.49	90,505.47	
CS100PB-FS(0)	Procedural Blank	11/12/18 17:55	13C3-PFBA	72,585.54	30,168.49	90,505.47	
CS101LCS-FS(0)	Laboratory Control Sample	11/12/18 18:06	13C3-PFBA	72,633.58	30,168.49	90,505.47	
J9154-FS(0)	NASB-BLL15-MW-01-110118	11/12/18 18:17	13C3-PFBA	32,067.34	30,168.49	90,505.47	
J9155-FS(0)	NASB-BLL15-MW-02-110118	11/12/18 18:28	13C3-PFBA	53,091.47	30,168.49	90,505.47	
J9156-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:39	13C3-PFBA	42,838.86	30,168.49	90,505.47	
J9156MS-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:50	13C3-PFBA	39,557.20	30,168.49	90,505.47	
J9156MSD-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 19:00	13C3-PFBA	32,935.57	30,168.49	90,505.47	
J9157-FS(0)	NASB-BLL15-MW-04-110118	11/12/18 19:11	13C3-PFBA	62,980.62	30,168.49	90,505.47	
J9158-FS(0)	NASB-BLL15-DUP-01-110118	11/12/18 19:22	13C3-PFBA	71,902.88	30,168.49	90,505.47	
KC70 CCV	CCV	11/12/18 19:33	13C3-PFBA	58,734.76	30,168.49	90,505.47	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/7/18 10:16	13C2-PFOA	86,336.51	43,168.26	129,504.77

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/7/18 9:32	13C2-PFOA	84,066.25	43,168.26	129,504.77	
KC67	L2	11/7/18 9:43	13C2-PFOA	102,845.91	43,168.26	129,504.77	
KC68	L3	11/7/18 9:54	13C2-PFOA	88,326.90	43,168.26	129,504.77	
KC69	L4	11/7/18 10:05	13C2-PFOA	98,613.47	43,168.26	129,504.77	
KC70	L5	11/7/18 10:16	13C2-PFOA	86,336.51	43,168.26	129,504.77	
KC71	L6	11/7/18 10:27	13C2-PFOA	86,292.83	43,168.26	129,504.77	
KC72	L7	11/7/18 10:37	13C2-PFOA	79,431.22	43,168.26	129,504.77	
KC73 IB	Instrument Blank	11/7/18 10:48	13C2-PFOA	76,405.00	43,168.26	129,504.77	
KC74 ICC	ICC	11/7/18 10:59	13C2-PFOA	89,647.95	43,168.26	129,504.77	
KC68 ISC	Instrument Sensitivity Check	11/12/18 9:55	13C2-PFOA	85,421.07	43,168.26	129,504.77	
KC73 IB	Instrument Blank	11/12/18 10:06	13C2-PFOA	88,895.91	43,168.26	129,504.77	
KC69 CCV	CCV	11/12/18 17:33	13C2-PFOA	87,406.83	43,168.26	129,504.77	
CS100PB-FS(0)	Procedural Blank	11/12/18 17:55	13C2-PFOA	105,077.34	43,168.26	129,504.77	
CS101LCS-FS(0)	Laboratory Control Sample	11/12/18 18:06	13C2-PFOA	87,290.87	43,168.26	129,504.77	
J9154-FS(0)	NASB-BLL15-MW-01-110118	11/12/18 18:17	13C2-PFOA	97,549.32	43,168.26	129,504.77	
J9155-FS(0)	NASB-BLL15-MW-02-110118	11/12/18 18:28	13C2-PFOA	98,396.58	43,168.26	129,504.77	
J9156-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:39	13C2-PFOA	92,012.47	43,168.26	129,504.77	
J9156MS-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:50	13C2-PFOA	92,781.70	43,168.26	129,504.77	
J9156MSD-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 19:00	13C2-PFOA	95,858.56	43,168.26	129,504.77	
J9157-FS(0)	NASB-BLL15-MW-04-110118	11/12/18 19:11	13C2-PFOA	87,265.41	43,168.26	129,504.77	
J9158-FS(0)	NASB-BLL15-DUP-01-110118	11/12/18 19:22	13C2-PFOA	95,202.77	43,168.26	129,504.77	
KC70 CCV	CCV	11/12/18 19:33	13C2-PFOA	79,982.56	43,168.26	129,504.77	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/7/18 10:16	13C2-PFDA	106,885.53	53,442.77	160,328.30

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/7/18 9:32	13C2-PFDA	111,551.59	53,442.77	160,328.30	
KC67	L2	11/7/18 9:43	13C2-PFDA	127,695.35	53,442.77	160,328.30	
KC68	L3	11/7/18 9:54	13C2-PFDA	108,381.80	53,442.77	160,328.30	
KC69	L4	11/7/18 10:05	13C2-PFDA	115,243.56	53,442.77	160,328.30	
KC70	L5	11/7/18 10:16	13C2-PFDA	106,885.53	53,442.77	160,328.30	
KC71	L6	11/7/18 10:27	13C2-PFDA	104,669.01	53,442.77	160,328.30	
KC72	L7	11/7/18 10:37	13C2-PFDA	96,837.15	53,442.77	160,328.30	
KC73 IB	Instrument Blank	11/7/18 10:48	13C2-PFDA	96,195.08	53,442.77	160,328.30	
KC74 ICC	ICC	11/7/18 10:59	13C2-PFDA	104,715.91	53,442.77	160,328.30	
KC68 ISC	Instrument Sensitivity Check	11/12/18 9:55	13C2-PFDA	107,046.13	53,442.77	160,328.30	
KC73 IB	Instrument Blank	11/12/18 10:06	13C2-PFDA	112,455.02	53,442.77	160,328.30	
KC69 CCV	CCV	11/12/18 17:33	13C2-PFDA	102,621.91	53,442.77	160,328.30	
CS100PB-FS(0)	Procedural Blank	11/12/18 17:55	13C2-PFDA	120,370.00	53,442.77	160,328.30	
CS101LCS-FS(0)	Laboratory Control Sample	11/12/18 18:06	13C2-PFDA	108,290.79	53,442.77	160,328.30	
J9154-FS(0)	NASB-BLL15-MW-01-110118	11/12/18 18:17	13C2-PFDA	119,486.38	53,442.77	160,328.30	
J9155-FS(0)	NASB-BLL15-MW-02-110118	11/12/18 18:28	13C2-PFDA	108,997.89	53,442.77	160,328.30	
J9156-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:39	13C2-PFDA	110,057.47	53,442.77	160,328.30	
J9156MS-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:50	13C2-PFDA	109,564.20	53,442.77	160,328.30	
J9156MSD-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 19:00	13C2-PFDA	120,494.36	53,442.77	160,328.30	
J9157-FS(0)	NASB-BLL15-MW-04-110118	11/12/18 19:11	13C2-PFDA	105,365.93	53,442.77	160,328.30	
J9158-FS(0)	NASB-BLL15-DUP-01-110118	11/12/18 19:22	13C2-PFDA	110,040.66	53,442.77	160,328.30	
KC70 CCV	CCV	11/12/18 19:33	13C2-PFDA	100,345.97	53,442.77	160,328.30	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/7/18 10:16	13C4-PFOS	29,961.71	14,980.86	44,942.57

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/7/18 9:32	13C4-PFOS	32,925.77	14,980.86	44,942.57	
KC67	L2	11/7/18 9:43	13C4-PFOS	33,688.74	14,980.86	44,942.57	
KC68	L3	11/7/18 9:54	13C4-PFOS	32,467.35	14,980.86	44,942.57	
KC69	L4	11/7/18 10:05	13C4-PFOS	28,821.29	14,980.86	44,942.57	
KC70	L5	11/7/18 10:16	13C4-PFOS	29,961.71	14,980.86	44,942.57	
KC71	L6	11/7/18 10:27	13C4-PFOS	30,157.99	14,980.86	44,942.57	
KC72	L7	11/7/18 10:37	13C4-PFOS	29,093.03	14,980.86	44,942.57	
KC73 IB	Instrument Blank	11/7/18 10:48	13C4-PFOS	29,417.61	14,980.86	44,942.57	
KC74 ICC	ICC	11/7/18 10:59	13C4-PFOS	33,717.81	14,980.86	44,942.57	
KC68 ISC	Instrument Sensitivity Check	11/12/18 9:55	13C4-PFOS	28,321.56	14,980.86	44,942.57	
KC73 IB	Instrument Blank	11/12/18 10:06	13C4-PFOS	31,859.08	14,980.86	44,942.57	
KC69 CCV	CCV	11/12/18 17:33	13C4-PFOS	30,525.88	14,980.86	44,942.57	
CS100PB-FS(0)	Procedural Blank	11/12/18 17:55	13C4-PFOS	37,746.28	14,980.86	44,942.57	
CS101LCS-FS(0)	Laboratory Control Sample	11/12/18 18:06	13C4-PFOS	31,104.10	14,980.86	44,942.57	
J9154-FS(0)	NASB-BLL15-MW-01-110118	11/12/18 18:17	13C4-PFOS	28,431.16	14,980.86	44,942.57	
J9155-FS(0)	NASB-BLL15-MW-02-110118	11/12/18 18:28	13C4-PFOS	31,310.52	14,980.86	44,942.57	
J9156-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:39	13C4-PFOS	29,101.80	14,980.86	44,942.57	
J9156MS-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 18:50	13C4-PFOS	29,974.14	14,980.86	44,942.57	
J9156MSD-FS(0)	NASB-BLL15-MW-03-110118	11/12/18 19:00	13C4-PFOS	31,854.36	14,980.86	44,942.57	
J9157-FS(0)	NASB-BLL15-MW-04-110118	11/12/18 19:11	13C4-PFOS	29,218.00	14,980.86	44,942.57	
J9158-FS(0)	NASB-BLL15-DUP-01-110118	11/12/18 19:22	13C4-PFOS	30,584.96	14,980.86	44,942.57	
KC70 CCV	CCV	11/12/18 19:33	13C4-PFOS	27,656.88	14,980.86	44,942.57	

Mass Spectral Acquisition Rate Report

Sample Name	KC72	**Injection Vial**	18
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 10:37:57 AM	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.57	39	>10
PFBS_2	298.9 / 99.0	1.57	43	>10
PFHxA_1	313.0 / 269.0	1.90	26	>10
PFHxA_2	313.0 / 119.0	1.90	28	>10
PFHpA_1	363.0 / 319.0	2.32	31	>10
PFHpA_2	363.0 / 169.0	2.32	23	>10
PFHxS_1	399.0 / 80.0	2.34	39	>10
PFHxS_2	399.0 / 99.0	2.34	32	>10
PFOA_1	413.0 / 369.0	2.73	38	>10
PFOA_2	413.0 / 169.0	2.73	35	>10
PFNA_1	463.0 / 419.0	3.14	31	>10
PFNA_2	463.0 / 219.0	3.14	36	>10
PFOS_1	499.0 / 80.0	3.13	40	>10
PFOS_2	499.0 / 99.0	3.13	34	>10
PFDA_1	513.0 / 469.0	3.50	31	>10
PFDA_2	513.0 / 219.0	3.50	34	>10
PFUnA_1	563.0 / 519.0	3.83	35	>10
PFUnA_2	563.0 / 269.0	3.83	39	>10
PFDoA_1	613.0 / 569.0	4.11	42	>10
PFDoA_2	613.0 / 319.0	4.11	42	>10
PFTrDA_1	663.0 / 619.0	4.36	72	>10
PFTrDA_2	663.0 / 169.0	4.36	50	>10
PFTeDA_1	713.0 / 669.0	4.58	88	>10
PFTeDA_2	713.0 / 169.0	4.58	81	>10
NMeFOSAA_1	570.0 / 419.0	3.65	28	>10
NMeFOSAA_2	570.0 / 512.0	3.65	34	>10
NEtFOSAA_1	584.0 / 419.0	3.82	33	>10
NEtFOSAA_2	584.0 / 483.0	3.82	17	>10
PFBA	213.0 / 169.0	1.17	45	>10

Sample Name	KC72	**Injection Vial**	18
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 10:37:57 AM	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFDoA	615.0 / 570.0	4.10	32	>10
d3-MeFOSAA	573.0 / 419.0	3.65	32	>10
d5-EtFOSAA	589.0 / 419.0	3.81	22	>10
13C5-PFHxA	318.0 / 273.0	1.89	25	>10
13C4-PFHpA	367.0 / 322.0	2.31	29	>10
13C8-PFOA	421.0 / 376.0	2.73	43	>10
13C9-PFNA	472.0 / 427.0	3.12	29	>10
13C6-PFDA	519.0 / 474.0	3.48	40	>10
13C7-PFUnA	570.0 / 525.0	3.81	29	>10
13C2-PFTeDA	715.0 / 670.0	4.58	54	>10
13C3-PFBS	302.0 / 99.0	1.55	25	>10
13C3-PFHxS	402.0 / 99.0	2.33	22	>10
13C8-PFOS	507.0 / 99.0	3.12	27	>10
13C4-PFBA	217.0 / 172.0	1.17	36	>10

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

EPA 537 MOD DoD QSM 5.1 compliant with Table B-15 requirements

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFBA	375-22-4	Target	213.0 / 169.0	NA
PFPeA	2706-90-3	Target	263.0 / 219.0	NA
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFOSA	754-91-6	Target	498.0 / 78.0	498.0 / 83.0
PFBS	375-73-5	Target	299.0 / 80.0	299.0 / 99.0
PFPeS	BDO-2114	Target	349.0 / 99.0	249.0 / 80.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFHpS	375-99-6	Target	449.0 / 80.0	449.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
PFNS	98789-57-2	Target	549.0 / 99.0	549.0 / 80.0
PFDS	2806-15-7	Target	599.0 / 80.0	599.0 / 99.0
4:2FTS	BDO-2205	Target	327.0 / 307.0	327.0 / 80.0
6:2FTS	27619-97-2	Target	427.0 / 407.0	427.0 / 81.0
8:2FTS	39108-34-4	Target	527.0 / 507.0	527.0 / 487.0
13C4-PFBA	BDO-2105	SIS[1]	217.0 / 172.0	NA
13C5-PFPeA	BDO-2216	SIS[1]	268.0 / 223.0	NA
13C5-PFHxA	BDO-2217	SIS[1]	318.0 / 273.0	NA

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
13C4-PFHpA	BDO-2218	SIS[1]	367.0 / 322.0	NA
13C8-PFOA	BDO-2219	SIS[1]	421.0 / 376.0	NA
13C9-PFNA	BDO-2221	SIS[1]	472.0 / 427.0	NA
13C6-PFDA	BDO-2222	SIS[1]	519.0 / 474.0	NA
13C7-PFUnA	BDO-2223	SIS[1]	570.0 / 525.0	NA
13C2-PFDoA	BDO-2112	SIS[1]	615.0 / 570.0	NA
13C2-PFTeDA	BDO-2224	SIS[1]	715.0 / 670.0	NA
d3-MeFOSAA	BDO-1838	SIS[1]	573.0 / 419.0	NA
d5-EtFOSAA	BDO-1839	SIS[1]	589.0 / 419.0	NA
13C8-FOSA	BDO-2225	SIS[1]	506.0 / 78.0	NA
13C3-PFBS	BDO-2226	SIS[1]	302.0 / 99.0	NA
13C3-PFHxS	BDO-2227	SIS[1]	402.0 / 99.0	NA
13C8-PFOS	BDO-2228	SIS[1]	507.0 / 99.0	NA
13C2-4:2FTS	BDO-2229	SIS[1]	329.0 / 81.0	NA
13C2-6:2FTS	BDO-2230	SIS[1]	429.0 / 81.0	NA
13C2-8:2FTS	BDO-2220	SIS[1]	529.0 / 81.0	NA
13C3-PFBA	BDO-2231	IS[2]	216.0 / 172.0	NA
13C2-PFOA	BDO-2107	IS[2]	415.0 / 370.0	NA
13C2-PFDA	BDO-2110	IS[2]	515.0 / 470.0	NA
13C4-PFOS	BDO-2121	IS[2]	503.0 / 99.0	NA

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

BATTELLE

Non-Potable Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
25	1	1	0.250	0.1
50	1	1	0.250	0.2
100	1	1	0.250	0.4
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
10,000	1	1	0.250	40.0
20,000	1	1	0.250	80.0

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

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

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-01-110118			
Battelle ID		J9154-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.265			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	5.78 B	0.13	0.47	4.72
PFHxA	307-24-4	6.29	0.18	0.47	4.72
PFHpA	375-85-9	2.52 J	0.15	0.47	4.72
PFOA	335-67-1	9.52 B	0.17	0.47	4.72
PFNA	375-95-1	0.94 U	0.25	0.94	4.72
PFDA	335-76-2	0.47 U	0.15	0.47	4.72
PFUnA	2058-94-8	0.94 U	0.27	0.94	4.72
PFDoA	307-55-1	0.47 U	0.17	0.47	4.72
PFTrDA	72629-94-8	0.47 U	0.14	0.47	4.72
PFTeDA	376-06-7	0.94 U	0.24	0.94	4.72
NMeFOSAA	2355-31-9	1.89 U	0.53	1.89	4.72
NEtFOSAA	2991-50-6	0.94 U	0.46	0.94	4.72
PFBS	375-73-5	6.43	0.12	0.47	4.72
PFHxS	355-46-4	40.30	0.10	0.38	4.72
PFOS	1763-23-1	8.83	0.18	0.47	4.72
Surrogate Recoveries (%)					
13C4-PFBA		36 N			
13C5-PFHxA		88			
13C4-PFHpA		113			
13C8-PFOA		97			
13C9-PFNA		92			
13C6-PFDA		95			
13C7-PFUnA		90			
13C2-PFDoA		90			
13C2-PFTeDA		78			
d3-MeFOSAA		120			
d5-EtFOSAA		114			
13C3-PFBS		90			
13C3-PFHxS		130			
13C8-PFOS		107			

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-03-110118			
Battelle ID		J9156-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.290			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.43 U	0.12	0.43	4.31
PFHxA	307-24-4	0.50 J	0.16	0.43	4.31
PFHpA	375-85-9	0.43 U	0.14	0.43	4.31
PFOA	335-67-1	2.88 J	0.16	0.43	4.31
PFNA	375-95-1	0.86 U	0.22	0.86	4.31
PFDA	335-76-2	0.43 U	0.14	0.43	4.31
PFUnA	2058-94-8	0.86 U	0.25	0.86	4.31
PFDoA	307-55-1	0.43 U	0.16	0.43	4.31
PFTrDA	72629-94-8	0.43 U	0.13	0.43	4.31
PFTeDA	376-06-7	0.86 U	0.22	0.86	4.31
NMeFOSAA	2355-31-9	1.72 U	0.48	1.72	4.31
NEtFOSAA	2991-50-6	0.86 U	0.42	0.86	4.31
PFBS	375-73-5	0.42 J	0.11	0.43	4.31
PFHxS	355-46-4	3.99 J	0.09	0.34	4.31
PFOS	1763-23-1	4.50	0.16	0.43	4.31

Surrogate Recoveries (%)

13C4-PFBA	29 N
13C5-PFHxA	94
13C4-PFHpA	115
13C8-PFOA	100
13C9-PFNA	90
13C6-PFDA	92
13C7-PFUnA	93
13C2-PFDoA	78
13C2-PFTeDA	63
d3-MeFOSAA	93
d5-EtFOSAA	87
13C3-PFBS	100
13C3-PFHxS	114
13C8-PFOS	92

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-04-110118			
Battelle ID		J9157-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.280			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.45 U	0.13	0.45	4.46
PFHxA	307-24-4	3.04 J	0.17	0.45	4.46
PFHpA	375-85-9	1.64 J	0.14	0.45	4.46
PFOA	335-67-1	9.07 B	0.16	0.45	4.46
PFNA	375-95-1	0.38 J	0.23	0.89	4.46
PFDA	335-76-2	0.45 U	0.14	0.45	4.46
PFUnA	2058-94-8	0.89 U	0.26	0.89	4.46
PFDoA	307-55-1	0.45 U	0.16	0.45	4.46
PFTrDA	72629-94-8	0.45 U	0.13	0.45	4.46
PFTeDA	376-06-7	0.89 U	0.22	0.89	4.46
NMeFOSAA	2355-31-9	1.79 U	0.50	1.79	4.46
NEtFOSAA	2991-50-6	0.89 U	0.44	0.89	4.46
PFBS	375-73-5	1.76 J	0.12	0.45	4.46
PFHxS	355-46-4	6.37	0.10	0.36	4.46
PFOS	1763-23-1	59.36	0.17	0.45	4.46

Surrogate Recoveries (%)

13C4-PFBA	33 N
13C5-PFHxA	95
13C4-PFHpA	105
13C8-PFOA	91
13C9-PFNA	70
13C6-PFDA	78
13C7-PFUnA	80
13C2-PFDoA	71
13C2-PFTeDA	52
d3-MeFOSAA	99
d5-EtFOSAA	93
13C3-PFBS	97
13C3-PFHxS	102
13C8-PFOS	84

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-DUP-01-110118			
Battelle ID		J9158-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		GW			
Sample Size		0.280			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.45 U	0.13	0.45	4.46
PFHxA	307-24-4	2.71 J	0.17	0.45	4.46
PFHpA	375-85-9	1.57 J	0.14	0.45	4.46
PFOA	335-67-1	8.94 B	0.16	0.45	4.46
PFNA	375-95-1	0.25 J	0.23	0.89	4.46
PFDA	335-76-2	0.45 U	0.14	0.45	4.46
PFUnA	2058-94-8	0.89 U	0.26	0.89	4.46
PFDoA	307-55-1	0.45 U	0.16	0.45	4.46
PFTrDA	72629-94-8	0.45 U	0.13	0.45	4.46
PFTeDA	376-06-7	0.89 U	0.22	0.89	4.46
NMeFOSAA	2355-31-9	1.79 U	0.50	1.79	4.46
NEtFOSAA	2991-50-6	0.89 U	0.44	0.89	4.46
PFBS	375-73-5	1.39 J	0.12	0.45	4.46
PFHxS	355-46-4	6.43	0.10	0.36	4.46
PFOS	1763-23-1	52.45	0.17	0.45	4.46

Surrogate Recoveries (%)

13C4-PFBA	32 N	
13C5-PFHxA	111	
13C4-PFHpA	113	
13C8-PFOA	92	
13C9-PFNA	82	
13C6-PFDA	88	
13C7-PFUnA	96	
13C2-PFDoA	83	
13C2-PFTeDA	77	
d3-MeFOSAA	110	
d5-EtFOSAA	94	
13C3-PFBS	114	
13C3-PFHxS	110	
13C8-PFOS	101	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		KC73 IB			
Battelle ID		KC73 IB_11/07/2018			
Sample Type		IB			
Collection Date		NA			
Extraction Date		NA			
Analysis Date		11/07/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		Water			
Sample Size		0.250			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.50 U	0.14	0.50	5.00
PFHxA	307-24-4	0.50 U	0.19	0.50	5.00
PFHpA	375-85-9	0.50 U	0.16	0.50	5.00
PFOA	335-67-1	0.50 U	0.18	0.50	5.00
PFNA	375-95-1	1.00 U	0.26	1.00	5.00
PFDA	335-76-2	0.50 U	0.16	0.50	5.00
PFUnA	2058-94-8	1.00 U	0.29	1.00	5.00
PFDoA	307-55-1	0.50 U	0.18	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	1.00 U	0.25	1.00	5.00
NMeFOSAA	2355-31-9	2.00 U	0.56	2.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.49	1.00	5.00
PFBS	375-73-5	0.50 U	0.13	0.50	5.00
PFHxS	355-46-4	0.11 J	0.11	0.40	5.00
PFOS	1763-23-1	0.50 U	0.19	0.50	5.00
Surrogate Recoveries (%)					
13C4-PFBA		102			
13C5-PFHxA		87			
13C4-PFHpA		100			
13C8-PFOA		98			
13C9-PFNA		95			
13C6-PFDA		102			
13C7-PFUnA		89			
13C2-PFDoA		95			
13C2-PFTeDA		92			
d3-MeFOSAA		98			
d5-EtFOSAA		104			
13C3-PFBS		84			
13C3-PFHxS		97			
13C8-PFOS		93			

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		KC73 IB			
Battelle ID		KC73 IB_11/12/2018			
Sample Type		IB			
Collection Date		NA			
Extraction Date		NA			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		Water			
Sample Size		0.250			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.50 U	0.14	0.50	5.00
PFHxA	307-24-4	0.50 U	0.19	0.50	5.00
PFHpA	375-85-9	0.50 U	0.16	0.50	5.00
PFOA	335-67-1	0.50 U	0.18	0.50	5.00
PFNA	375-95-1	1.00 U	0.26	1.00	5.00
PFDA	335-76-2	0.50 U	0.16	0.50	5.00
PFUnA	2058-94-8	1.00 U	0.29	1.00	5.00
PFDoA	307-55-1	0.50 U	0.18	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	1.00 U	0.25	1.00	5.00
NMeFOSAA	2355-31-9	2.00 U	0.56	2.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.49	1.00	5.00
PFBS	375-73-5	0.50 U	0.13	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	0.50 U	0.19	0.50	5.00

Surrogate Recoveries (%)

13C4-PFBA	95
13C5-PFHxA	95
13C4-PFHpA	88
13C8-PFOA	95
13C9-PFNA	86
13C6-PFDA	94
13C7-PFUnA	95
13C2-PFDoA	94
13C2-PFTeDA	105
d3-MeFOSAA	113
d5-EtFOSAA	113
13C3-PFBS	84
13C3-PFHxS	86
13C8-PFOS	92

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		Procedural Blank			
Battelle ID		CS100PB-FS			
Sample Type		PB			
Collection Date		11/08/2018			
Extraction Date		11/08/2018			
Analysis Date		11/12/2018			
Analytical Instrument		Sciex 5500 LC/MS/MS			
% Moisture		NA			
Matrix		WATER			
Sample Size		0.250			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	2.28 J	0.14	0.50	5.00
PFHxA	307-24-4	0.40 J	0.19	0.50	5.00
PFHpA	375-85-9	0.19 J	0.16	0.50	5.00
PFOA	335-67-1	1.38 J	0.18	0.50	5.00
PFNA	375-95-1	1.00 U	0.26	1.00	5.00
PFDA	335-76-2	0.50 U	0.16	0.50	5.00
PFUnA	2058-94-8	1.00 U	0.29	1.00	5.00
PFDoA	307-55-1	0.50 U	0.18	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	1.00 U	0.25	1.00	5.00
NMeFOSAA	2355-31-9	2.00 U	0.56	2.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.49	1.00	5.00
PFBS	375-73-5	0.50 U	0.13	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	0.50 U	0.19	0.50	5.00

Surrogate Recoveries (%)

13C4-PFBA	95
13C5-PFHxA	87
13C4-PFHpA	92
13C8-PFOA	105
13C9-PFNA	92
13C6-PFDA	99
13C7-PFUnA	105
13C2-PFDoA	101
13C2-PFTeDA	97
d3-MeFOSAA	114
d5-EtFOSAA	103
13C3-PFBS	100
13C3-PFHxS	88
13C8-PFOS	99

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-FRB-01-110118			
Battelle ID		J9159-FS			
Sample Type		SA			
Collection Date		11/01/2018			
Extraction Date		11/14/2018			
Analysis Date		11/20/2018			
Analytical Instrument		Sciex 5500 and Sciex 6500+			
% Moisture		NA			
Matrix		GW			
Sample Size		0.275			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.45 U	0.13	0.45	4.55
PFHxA	307-24-4	0.45 U	0.17	0.45	4.55
PFHpA	375-85-9	0.45 U	0.15	0.45	4.55
PFOA	335-67-1	1.48 J	0.16	0.45	4.55
PFNA	375-95-1	0.91 U	0.24	0.91	4.55
PFDA	335-76-2	0.16 J	0.15	0.45	4.55
PFUnA	2058-94-8	0.36 J	0.26	0.91	4.55
PFDoA	307-55-1	0.54 J	0.16	0.45	4.55
PFTrDA	72629-94-8	0.82 J	0.14	0.45	4.55
PFTeDA	376-06-7	0.99 J	0.23	0.91	4.55
NMeFOSAA	2355-31-9	1.82 U	0.51	1.82	4.55
NEtFOSAA	2991-50-6	0.91 U	0.45	0.91	4.55
PFBS	375-73-5	0.45 U	0.12	0.45	4.55
PFHxS	355-46-4	0.36 U	0.10	0.36	4.55
PFOS	1763-23-1	0.45 U	0.17	0.45	4.55

Surrogate Recoveries (%)

13C4-PFBA	74
13C5-PFHxA	80
13C4-PFHpA	88
13C8-PFOA	76
13C9-PFNA	82
13C6-PFDA	78
13C7-PFUnA	84
13C2-PFDoA	65
13C2-PFTeDA	65
d3-MeFOSAA	63
d5-EtFOSAA	71
13C3-PFBS	83
13C3-PFHxS	80
13C8-PFOS	70

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		Laboratory Control Sample					
Battelle ID		CS101LCS-FS					
Sample Type		LCS					
Collection Date		11/08/2018					
Extraction Date		11/08/2018					
Analysis Date		11/12/2018					
Analytical Instrument		Sciex 5500 LC/MS/MS					
% Moisture		NA					
Matrix		WATER					
Sample Size		0.250					
Size Unit-Basis		L				Control Limits	
Units		ng/L	Target	Recovery	Qual	Lower	Upper
PFBA	375-22-4	17.88 B	20.00	89		61	139
PFHxA	307-24-4	16.96	20.20	84		51	137
PFHpA	375-85-9	15.55	20.00	78		48	136
PFOA	335-67-1	15.38	20.00	77		49	141
PFNA	375-95-1	16.65	20.00	83		58	122
PFDA	335-76-2	15.78	20.00	79		59	135
PFUnA	2058-94-8	14.74	20.00	74		64	134
PFDoA	307-55-1	17.44	20.00	87		75	131
PFTrDA	72629-94-8	16.98	20.00	85		42	148
PFTeDA	376-06-7	15.91	20.00	80		42	158
NMeFOSAA	2355-31-9	17.48	20.00	87		50	146
NEtFOSAA	2991-50-6	15.03	20.00	75		51	131
PFBS	375-73-5	15.17	20.20	75		56	134
PFHxS	355-46-4	15.57	20.20	77		52	128
PFOS	1763-23-1	19.49	20.00	97		40	144

Surrogate Recoveries (%)

13C4-PFBA	94
13C5-PFHxA	106
13C4-PFHpA	110
13C8-PFOA	126
13C9-PFNA	111
13C6-PFDA	110
13C7-PFUnA	118
13C2-PFDoA	104
13C2-PFTeDA	106
d3-MeFOSAA	125
d5-EtFOSAA	132
13C3-PFBS	134
13C3-PFHxS	108
13C8-PFOS	104

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-03-110118		NASB-BLL15-MW-03-110118					
Battelle ID		J9156-FS		J9156MS-FS					
Sample Type		SA		MS					
Collection Date		11/01/2018		11/01/2018					
Extraction Date		11/08/2018		11/08/2018					
Analysis Date		11/12/2018		11/12/2018					
Analytical Instrument		Sciex 5500 LC/MS/MS		Sciex 5500 LC/MS/MS					
% Moisture		NA		NA					
Matrix		GW		GW					
Sample Size		0.290		0.265					
Size Unit-Basis		L		L				Control Limits	
Units		ng/L		ng/L	Target	Recovery	Qual	Lower	Upper
PFBA	375-22-4	0.43	U	35.53	28.30	126		61	139
PFHxA	307-24-4	0.50	J	27.12	28.58	93		51	137
PFHpA	375-85-9	0.43	U	23.22	28.30	82		48	136
PFOA	335-67-1	2.88	J	26.71	28.30	84		49	141
PFNA	375-95-1	0.86	U	30.59	28.30	108		58	122
PFDA	335-76-2	0.43	U	22.44	28.30	79		59	135
PFUnA	2058-94-8	0.86	U	23.05	28.30	81		64	134
PFDoA	307-55-1	0.43	U	24.02	28.30	85		75	131
PFTrDA	72629-94-8	0.43	U	27.50	28.30	97		42	148
PFTeDA	376-06-7	0.86	U	23.74	28.30	84		42	158
NMeFOSAA	2355-31-9	1.72	U	24.46	28.30	86		50	146
NEtFOSAA	2991-50-6	0.86	U	28.47	28.30	101		51	131
PFBS	375-73-5	0.42	J	25.51	28.58	88		56	134
PFHxS	355-46-4	3.99	J	28.66	28.58	86		52	128
PFOS	1763-23-1	4.50		31.92	28.30	97		40	144
Surrogate Recoveries (%)									
13C4-PFBA		29	N	31	N				
13C5-PFHxA		94		84					
13C4-PFHpA		115		104					
13C8-PFOA		100		87					
13C9-PFNA		90		70					
13C6-PFDA		92		79					
13C7-PFUnA		93		83					
13C2-PFDoA		78		74					
13C2-PFTeDA		63		60					
d3-MeFOSAA		93		82					
d5-EtFOSAA		87		68					
13C3-PFBS		100		78					
13C3-PFHxS		114		100					
13C8-PFOS		92		85					

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		NASB-BLL15-MW-03-110118								
Battelle ID		J9156MSD-FS								
Sample Type		MSD								
Collection Date		11/01/2018								
Extraction Date		11/08/2018								
Analysis Date		11/12/2018								
Analytical Instrument		Sciex 5500 LC/MS/MS								
% Moisture		NA								
Matrix		GW								
Sample Size		0.290								
Size Unit-Basis		L				Control Limits				RPD
Units		ng/L	Target	Recovery	Qual	Lower	Upper	RPD	Qual	Limit
PFBA	375-22-4	24.48	25.86	95		61	139	28.1		≤ 30
PFHxA	307-24-4	24.47	26.12	92		51	137	1.1		≤ 30
PFHpA	375-85-9	21.07	25.86	81		48	136	1.2		≤ 30
PFOA	335-67-1	22.77	25.86	77		49	141	8.7		≤ 30
PFNA	375-95-1	24.11	25.86	93		58	122	14.9		≤ 30
PFDA	335-76-2	21.80	25.86	84		59	135	6.1		≤ 30
PFUnA	2058-94-8	22.92	25.86	89		64	134	9.4		≤ 30
PFDoA	307-55-1	21.28	25.86	82		75	131	3.6		≤ 30
PFTrDA	72629-94-8	27.81	25.86	108		42	148	10.7		≤ 30
PFTeDA	376-06-7	24.53	25.86	95		42	158	12.3		≤ 30
NMeFOSAA	2355-31-9	22.58	25.86	87		50	146	1.2		≤ 30
NEtFOSAA	2991-50-6	28.70	25.86	111		51	131	9.4		≤ 30
PFBS	375-73-5	22.04	26.12	83		56	134	5.8		≤ 30
PFHxS	355-46-4	25.31	26.12	82		52	128	4.8		≤ 30
PFOS	1763-23-1	29.96	25.86	98		40	144	1.0		≤ 30

Surrogate Recoveries (%)

13C4-PFBA	38	N
13C5-PFHxA	91	
13C4-PFHpA	113	
13C8-PFOA	98	
13C9-PFNA	86	
13C6-PFDA	79	
13C7-PFUnA	73	
13C2-PFDoA	78	
13C2-PFTeDA	59	
d3-MeFOSAA	90	
d5-EtFOSAA	63	
13C3-PFBS	82	
13C3-PFHxS	103	
13C8-PFOS	86	

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	12-June-2018

Request ID:	9749
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

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

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

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

Comments: Suspected issue with pulse gas manifold. TRAP testing in POSITIVE mode couldn't be finished because of pulse gas issue. The same issue will be taken care in separate service call.

Performed By: Kaustubh Dhayagude **Date:** 12-June-2018

Approved By :_____ **Date:** _____

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

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

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.6	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.3	Read Only
☑ CAD Medium	2.7	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

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

☑ No degradation or Sensitivity drop

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

☑ No degradation or Sensitivity drop

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

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

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	4.01 e6	Read Only	0.6998	Read Only
Q1 500.380	2.81 e7	Read Only	0.7038	Read Only
Q1 906.673	4.21 e7	Read Only	0.7071	Read Only

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

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	5.45 e6	Read Only	0.6873	Read Only
Q3 500.380	2.69 e7	Read Only	0.7591	Read Only
Q3 906.673	4.50 e7	Read Only	0.7843	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☐ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__28.87%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	4.26 e7	Read Only	0.7011	Read Only
MS/MS 195.1	1.23 e7	Read Only	0.7069	Read Only

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

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.42 e7	Read Only	0.7686	Read Only

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

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.24 e7	Read Only	0.7243	Read Only

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

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.31 e6	Read Only	0.6746	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

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

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

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

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

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

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

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

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.7	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.3	Read Only
☑ CAD Medium	2.7	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

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

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.04 e6	≥1.2^{e}6	0.6737	0.6 to 0.8
Q1 500.380	1.60 e7	≥9.0^{e}6	0.6961	0.6 to 0.8
Q1 906.673	2.84 e7	≥1.4^{e}7	0.7179	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7465	0.6 to 0.8

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

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	5.02 e6	≥1.2^{e}6	0.6719	0.6 to 0.8
Q3 500.380	1.72 e7	≥9.0^{e}6	0.7443	0.6 to 0.8
Q3 906.673	3.00 e7	≥1.4^{e}7	0.7504	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.46 e8	≥6.8^{e}7	0.7202	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 21.10% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.78 e7	N/A	0.6888	Read Only
MS/MS 195.1	1.22 e7	N/A	0.7003	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

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

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.35 e7	≥1.0^{e}7	0.7486	0.6 to 0.8
Q1 933.636	1000	50	7.52 e7	≥4.0^{e}7	0.7206	0.6 to 0.8

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

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	2.15 e7	≥8.0^{e}6	0.7492	0.6 to 0.8
Q3 933.636	1000	50	8.33 e7	≥4.0^{e}7	0.7299	0.6 to 0.8

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

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

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

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.54 e6	≥7.2 ^{e}6	0.1473	<0.35
ER 922.010	0.05	4.96 e7	≥2.8 ^{e}6	0.2434	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05		≥2.4 ^{e}7		<0.65
ER 922.010	0.05		≥6.8 ^{e}7		<0.65

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

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.81 e8	≥4.4 ^{e}7	0.1862	<0.35
ER 601.978	0.05	1.70 e8	≥5.6 ^{e}7	0.1809	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	5.72 e8	≥1.2 ^{e}8	0.5102	<0.65
ER 601.978	0.05	4.52 e8	≥1.6 ^{e}8	0.6187	<0.65

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

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

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.0 e6	≥2.0 e6	> 7.0 e6	≥6.4 e6

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

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	Yes	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	Yes	Fragment Intensity	> 2.0 e6	≥1.6x $10^{e}6$

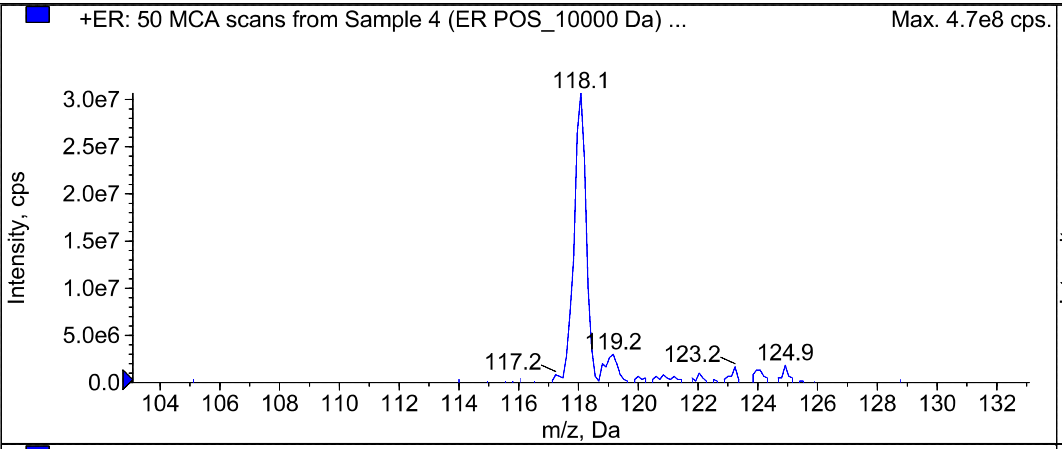
REVIEW:

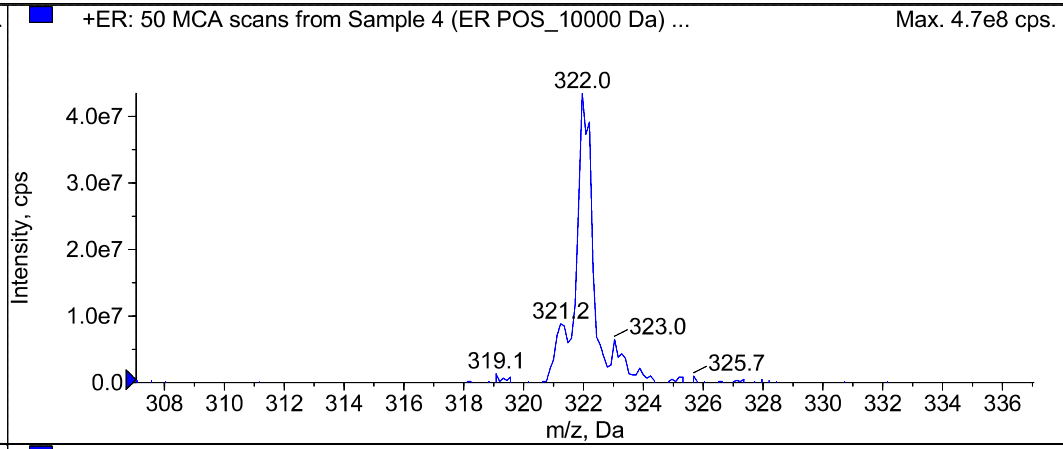
☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if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

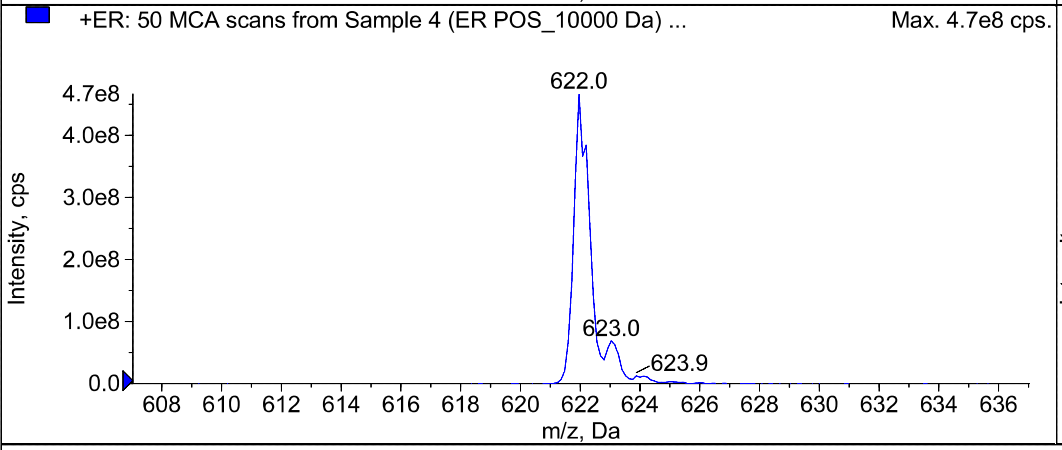
END OF PREVENTIVE MAINTENANCE CHECKLIST

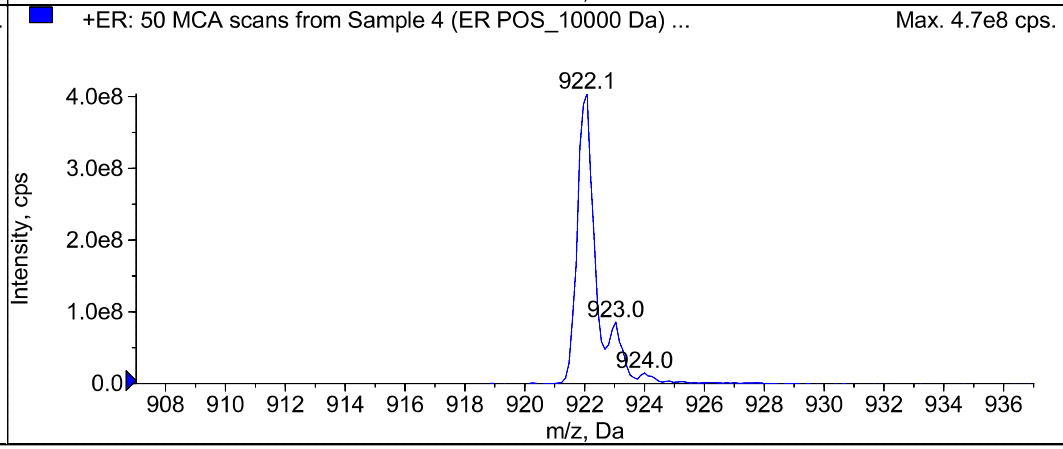
Document history:

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









Peak List for " +ER: 50 MCA scans from Sample 4 (ER POS_10000 Da) of TRAP ER with NEW Pulse Manifold.wiff (Turbo Spray)"

	Target Mass (Da)	Found At (Da)	Intensity (cps)	Width (Da)	Mass Shift (Da)
1	118.0870	118.0702	3.0667e7	0.4146	0.0168
2	322.0490	322.0509	4.3500e7	0.4945	-1.9159e-3
3	622.0290	622.0370	4.6717e8	0.5757	-8.0044e-3
4	922.0100	922.0101	4.0400e8	0.5732	-1.4148e-4

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	Project No.(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine	100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

This Batch Contains The Following Samples:	
CS100PB-FS	J9156MSD-FS
CS101LCS-FS	J9157-FS
J9154-FS	J9158-FS
J9155-FS	
J9156-FS	
J9156MS-FS	

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

Approved By:	Date	Initials
Denise Schumitz	11/14/2018	DMS

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine	100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID	Description
CS100PB-FS	Procedural Blank
CS101LCS-FS	Laboratory Control Sample
J9154-FS	NASB-BLL15-MW-01-110118
J9155-FS	NASB-BLL15-MW-02-110118
J9156-FS	NASB-BLL15-MW-03-110118
J9156MS-FS	Matrix Spike of NASB-BLL15-MW-03-110118
J9156MSD-FS	Matrix Spike Duplicate of NASB-BLL15-MW-03-110118
J9157-FS	NASB-BLL15-MW-04-110118
J9158-FS	NASB-BLL15-DUP-01-110118

Samples Assigned By: Jonathan Thorn Date : November 2, 2018

Comments:

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE CUSTODY LOG

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

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Requested On/By:	11/08/2018 KB	**Purpose:**	Sample Preparation
Relinquished On/By:	11/08/2018 MDS	**Last Activity:**	Return

Accepted On/By:	11/08/2018 KB	**Returned On/To:**	11/08/2018 MDS
Stored In Facility:	Sample Preparation	**Returned To Facility:**	Custody: NA
Stored Until	11/08/2018		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	J9154	1	C	Consumed	NA
2	J9155	1	C	Consumed	NA
3	J9156	1	C	Consumed	NA
4	J9157	NA	C	Consumed	NA
5	J9158	NA	C	Consumed	NA

Total Samples 5 * "C" = Consumed Container

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

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

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CS100PB-FS	Procedural Blank	250.0	NA	--	11/08/18 KB
CS101LCS-FS	Laboratory Control Sample	250.0	NA	--	11/08/18 KB
J9154-FS	NASB-BLL15-MW-01-110118	265.0	1	C	11/08/18 KB
J9155-FS	NASB-BLL15-MW-02-110118	275.0	1	C	11/08/18 KB
J9156-FS	NASB-BLL15-MW-03-110118	290.0	1	C	11/08/18 KB
J9156MS-FS	Matrix Spike	265.0	NA	C	11/08/18 KB
J9156MSD-FS	Matrix Spike Duplicate	290.0	NA	C	11/08/18 KB
J9157-FS	NASB-BLL15-MW-04-110118	280.0	NA	C	11/08/18 KB
J9158-FS	NASB-BLL15-DUP-01-110118	280.0	NA	C	11/08/18 KB

Comments:

Samples Assigned By Jonathan Thorn Date : November 2, 2018

* - "C" = Sample is Consumed

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)
100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CS100PB-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
CS101LCS-FS	KB82	LCS/MS	1	100	11/08/18 KB	DMS	NA
CS101LCS-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9154-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9155-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9156-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9156MS-FS	KB82	LCS/MS	1	150	11/08/18 KB	DMS	NA
J9156MS-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9156MSD-FS	KB82	LCS/MS	1	150	11/08/18 KB	DMS	NA
J9156MSD-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9157-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA
J9158-FS	KC19	SIS	1	50	11/08/18 KB	DMS	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KB82	Pipette	B814657482
KB82	Pipette	B814659662
KC19	Pipette	B814659662

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)
100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CS100PB-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
CS101LCS-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9154-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9155-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9156-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9156MS-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9156MSD-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9157-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK
J9158-FS(0)	950	50	KC52	50	1	1000	1.000	11/12/18 KB	AEK

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KC52	Pipette	B814659662

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

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

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)
100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CS100PB-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
CS101LCS-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9154-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9155-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9156-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9156MS-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9156MSD-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9157-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB
J9158-FS	0	--	11/8/2018 11:05:00 AM	NA		NA	NA	1.000	1.000	11/08/18 KB

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

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

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

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Nov 12 2018 2:32PM KB	**Received On/By:**	Nov 12 2018 3:17PM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CS100PB-FS(0)	1000	1	Intact	NA
2	CS101LCS-FS(0)	1000	1	Intact	NA
3	J9154-FS(0)	1000	1	Intact	NA
4	J9155-FS(0)	1000	1	Intact	NA
5	J9156-FS(0)	1000	1	Intact	NA
6	J9156MS-FS(0)	1000	1	Intact	NA
7	J9156MSD-FS(0)	1000	1	Intact	NA
8	J9157-FS(0)	1000	1	Intact	NA
9	J9158-FS(0)	1000	1	Intact	NA

Total Extracts: 9

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Nov 14 2018 11:17AM DMS	**Received On/By:**	Nov 14 2018 11:17AM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CS100PB-FS(0)	1000	1	Intact	NA

Total Extracts: 1

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE SPECIFIC COMMENTS

Project Title(s)

CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)

100122108-CTOWE21

18-0652

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID:	Comment:	Date/Initials:
CS100PB-FS	Extraction started 11:05am , extraction block 1, ended at 12:09pm	11/08/18 KB
CS101LCS-FS	Extraction started 11:05am , extraction block 1, ended at 12:02pm	11/08/18 KB
J9154-FS	Extraction started 11:05am , extraction block 1, ended at 12:24pm	11/08/18 KB
J9155-FS	Extraction started 11:05am , extraction block 1, ended at 12:39pm	11/08/18 KB
J9156-FS	Extraction started 11:05am , extraction block 1, ended at 12:34pm	11/08/18 KB
J9156MS-FS	Extraction started 11:05am , extraction block 1, ended at 12:32pm	11/08/18 KB
J9156MSD-FS	Extraction started 11:05am , extraction block 1, ended at 12:43pm	11/08/18 KB
J9157-FS	Extraction started 11:05am , extraction block 1, ended at 1:08pm. Sample contained some dirt which slightly clogged the filter, slowing down the extraction.	11/08/18 KB
J9158-FS	Extraction started 11:05am , extraction block 1, ended at 12:54pm. Sample contained some dirt which slightly clogged the filter, slowing down the extraction.	11/08/18 KB

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 16/11/2018 11:16:39 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
11	MeOH		11/7/2018 9:21:56 AM	5-0369.dam	AC_11062018_5-369.wiff
12	KC66	L1	11/7/2018 9:32:49 AM	5-0369.dam	AC_11062018_5-369.wiff
13	KC67	L2	11/7/2018 9:43:41 AM	5-0369.dam	AC_11062018_5-369.wiff
14	KC68	L3	11/7/2018 9:54:32 AM	5-0369.dam	AC_11062018_5-369.wiff
15	KC69	L4	11/7/2018 10:05:24 AM	5-0369.dam	AC_11062018_5-369.wiff
16	KC70	L5	11/7/2018 10:16:15 AM	5-0369.dam	AC_11062018_5-369.wiff
17	KC71	L6	11/7/2018 10:27:06 AM	5-0369.dam	AC_11062018_5-369.wiff
18	KC72	L7	11/7/2018 10:37:57 AM	5-0369.dam	AC_11062018_5-369.wiff
19	KC73 IB	Instrument Blank	11/7/2018 10:48:49 AM	5-0369.dam	AC_11062018_5-369.wiff
20	KC74 ICC	ICC	11/7/2018 10:59:42 AM	5-0369.dam	AC_11062018_5-369.wiff
21	KC75 Branch		11/7/2018 11:10:34 AM	5-0369.dam	AC_11062018_5-369.wiff
22	MeOH		11/7/2018 11:21:26 AM	5-0369.dam	AC_11062018_5-369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 21/11/2018 2:26:52 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	KC68 ISC	Instrument Sensitivity Check	11/12/2018 9:55:29 AM	5-0369.dam	AC_11122018_5-369.wiff
2	KC73 IB	Instrument Blank	11/12/2018 10:06:22 AM	5-0369.dam	AC_11122018_5-369.wiff
~~3~~	~~MeOH~~		~~11/12/2018 10:17:15 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~19~~	~~J9126-FS-D(3)~~		~~11/12/2018 10:28:07 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~20~~	~~J9126-FS-D(5)~~		~~11/12/2018 10:38:59 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~21~~	~~J9126-FS-D(7)~~		~~11/12/2018 10:49:53 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~22~~	~~J9126-FS-D(9)~~		~~11/12/2018 11:00:45 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~23~~	~~J9144-FS(0)~~		~~11/12/2018 11:11:37 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~24~~	~~J9117-FS(0)~~		~~11/12/2018 11:22:29 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~25~~	~~J9118-FS(0)~~		~~11/12/2018 11:33:21 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~26~~	~~J9119-FS(0)~~		~~11/12/2018 11:44:13 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~27~~	~~MeOH~~		~~11/12/2018 11:55:05 AM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~28~~	~~KC70-CCV~~	~~CCV~~	~~11/12/2018 12:05:58 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~27~~	~~MeOH~~		~~11/12/2018 12:16:51 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~29~~	~~J9120-FS(0)~~		~~11/12/2018 12:27:43 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~31~~	~~J9126-FS(0)~~		~~11/12/2018 12:38:35 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~30~~	~~MeOH~~		~~11/12/2018 12:49:28 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~33~~	~~J9122-FS(0)~~		~~11/12/2018 1:00:19 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~32~~	~~MeOH~~		~~11/12/2018 1:11:12 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~35~~	~~J9121-FS(0)~~		~~11/12/2018 1:22:04 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~34~~	~~MeOH~~		~~11/12/2018 1:32:56 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~8~~	~~MeOH~~		~~11/12/2018 1:45:41 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~8~~	~~MeOH~~		~~11/12/2018 1:56:33 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~36~~	~~KC69-CCV~~	~~CCV~~	~~11/12/2018 2:07:27 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~45~~	~~MeOH~~		~~11/12/2018 2:18:19 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~37~~	~~CS02PB-FS(3)~~		~~11/12/2018 2:29:10 PM~~	~~5-0369.dam~~	~~AC_11122018_5-369.wiff~~
~~38~~	~~CS030LCS-FS(3)~~		~~11/12/2018 2:40:02~~	~~5-0369.dam~~	~~AC_11122018_5-~~

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 21/11/2018 2:26:52 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
			PM		369.wiff
39	J8928-FS(3)		11/12/2018 2:50:56 PM	5-0369.dam	AC_11122018_5-369.wiff
40	J8929-FS(3)		11/12/2018 3:01:48 PM	5-0369.dam	AC_11122018_5-369.wiff
41	J9104-FS(0)		11/12/2018 3:12:40 PM	5-0369.dam	AC_11122018_5-369.wiff
42	J9108-FS(0)		11/12/2018 3:23:33 PM	5-0369.dam	AC_11122018_5-369.wiff
43	J9099-FS-D(3)		11/12/2018 3:34:25 PM	5-0369.dam	AC_11122018_5-369.wiff
44	KC70-CCV	CCV	11/12/2018 3:45:17 PM	5-0369.dam	AC_11122018_5-369.wiff
45	MeOH		11/12/2018 3:56:10 PM	5-0369.dam	AC_11122018_5-369.wiff
46	CS027PB-FS(0)		11/12/2018 4:07:01 PM	5-0369.dam	AC_11122018_5-369.wiff
47	CS028LCS-FS(0)		11/12/2018 4:17:54 PM	5-0369.dam	AC_11122018_5-369.wiff
48	J8927-FS(0)		11/12/2018 4:28:47 PM	5-0369.dam	AC_11122018_5-369.wiff
49	J9049-FS-D(5)		11/12/2018 4:39:39 PM	5-0369.dam	AC_11122018_5-369.wiff
50	J9059-FS-D(3)		11/12/2018 4:50:32 PM	5-0369.dam	AC_11122018_5-369.wiff
51	J9060-FS-D(5)		11/12/2018 5:01:23 PM	5-0369.dam	AC_11122018_5-369.wiff
52	J9061-FS-D(9)		11/12/2018 5:12:15 PM	5-0369.dam	AC_11122018_5-369.wiff
53	J9062-FS-D(7)		11/12/2018 5:23:07 PM	5-0369.dam	AC_11122018_5-369.wiff
54	KC69 CCV	CCV	11/12/2018 5:33:59 PM	5-0369.dam	AC_11122018_5-369.wiff
1	MeOH		11/12/2018 5:44:52 PM	5-0369.dam	AC_11092018_5-369.wiff
2	CS100PB-FS(0)	Procedural Blank	11/12/2018 5:55:45 PM	5-0369.dam	AC_11092018_5-369.wiff
3	CS101LCS-FS(0)	Laboratory Control Sample	11/12/2018 6:06:38 PM	5-0369.dam	AC_11092018_5-369.wiff
4	J9154-FS(0)	NASB-BLL15-MW-01-110118	11/12/2018 6:17:30 PM	5-0369.dam	AC_11092018_5-369.wiff
5	J9155-FS(0)	NASB-BLL15-MW-02-110118	11/12/2018 6:28:23 PM	5-0369.dam	AC_11092018_5-369.wiff
6	J9156-FS(0)	NASB-BLL15-MW-03-110118	11/12/2018 6:39:15 PM	5-0369.dam	AC_11092018_5-369.wiff
7	J9156MS-FS(0)	NASB-BLL15-MW-03-110118	11/12/2018 6:50:07 PM	5-0369.dam	AC_11092018_5-369.wiff
8	J9156MSD-FS(0)	NASB-BLL15-MW-03-110118	11/12/2018 7:00:59 PM	5-0369.dam	AC_11092018_5-369.wiff
9	J9157-FS(0)	NASB-BLL15-MW-04-110118	11/12/2018 7:11:52 PM	5-0369.dam	AC_11092018_5-369.wiff
10	J9158-FS(0)	NASB-BLL15-DUP-01-110118	11/12/2018 7:22:43 PM	5-0369.dam	AC_11092018_5-369.wiff

1

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 21/11/2018 2:26:52 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
11	KC70 CCV	CCV	11/12/2018 7:33:36 PM	5-0369.dam	~~AC_11092018_5-369.wiff~~

1

1 - When adding samples to the run they were typed onto the wrong sequence it should have been AC_11122018_5-369. The time stamp for each sample is showing that it was run in the correct order. DMS 11/21/2018

All crossed out injections are not related to SDG 18-0652. JRT 11/26/2018

BATTELLE

	Isotope Dilution Calibration Curve Concentrations (ng/L)						
	KC66	KC67	KC68	KC69	KC70	KC71	KC72
PFBA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFPeA	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHxA	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHpA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFNA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFUnA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDoA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFTrDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFTeDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
NMeFOSAA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
NEtFOSAA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOSA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFBS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFPeS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFHxS (Branched)	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHpS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOS (Branched)	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFNS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
4:2FTS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
6:2FTS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
8:2FTS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
	Surrogates / Extracted Internal Standards						
13C4-PFBA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C5-PFPeA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C5-PFHxA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C4-PFHpA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C8-PFOA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C9-PFNA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C6-PFDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C7-PFUnA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFDoA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFTeDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
d3-MeFOSAA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
d5-EtFOSAA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C8-FOSA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C3-PFBS	232.25	232.25	232.25	232.25	232.25	232.25	232.25
13C3-PFHxS	236.50	236.50	236.50	236.50	236.50	236.50	236.50
13C8-PFOS	239.25	239.25	239.25	239.25	239.25	239.25	239.25
13C2-4:2FTS	233.75	233.75	233.75	233.75	233.75	233.75	233.75
13C2-6:2FTS	237.25	237.25	237.25	237.25	237.25	237.25	237.25
13C2-8:2FTS	239.50	239.50	239.50	239.50	239.50	239.50	239.50
	Internal Standards						
13C3-PFBA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFOA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C4-PFOS	239.25	239.25	239.25	239.25	239.25	239.25	239.25

	ICC
	KC74
PFBA	1,000.00
PFPeA	1,000.00
PFHxA	1,010.00
PFHpA	1,000.00
PFOA	1,000.00
PFNA	1,000.00
PFDA	1,000.00
PFUnA	1,000.00
PFDoA	1,000.00
PFTrDA	1,000.00
PFTeDA	1,000.00
NMeFOSAA	1,000.00
NEtFOSAA	1,000.00
PFOSA	1,000.00
PFBS	1,010.00
PFPeS	1,000.00
PFHxS	1,010.00
PFHpS	1,000.00
PFOS	1,000.00
PFDS	1,010.00
PFNS	1,010.00
4:2FTS	1,000.00
6:2FTS	1,000.00
8:2FTS	1,010.00
13C4-PFBA	250.00
13C5-PFPeA	250.00
13C5-PFHxA	250.00
13C4-PFHpA	250.00
13C8-PFOA	250.00
13C9-PFNA	250.00
13C6-PFDA	250.00
13C7-PFUnA	250.00
13C2-PFDoA	250.00
13C2-PFTeDA	250.00
d3-MeFOSAA	250.00
d5-EtFOSAA	250.00
13C8-FOSA	250.00
13C3-PFBS	232.25
13C3-PFHxS	236.50
13C8-PFOS	239.25
13C2-4:2FTS	233.75
13C2-6:2FTS	237.25
13C2-8:2FTS	239.50
13C3-PFBA	250.00
13C2-PFOA	250.00
13C2-PFDA	250.00
13C4-PFOS	239.25

BATTELLE

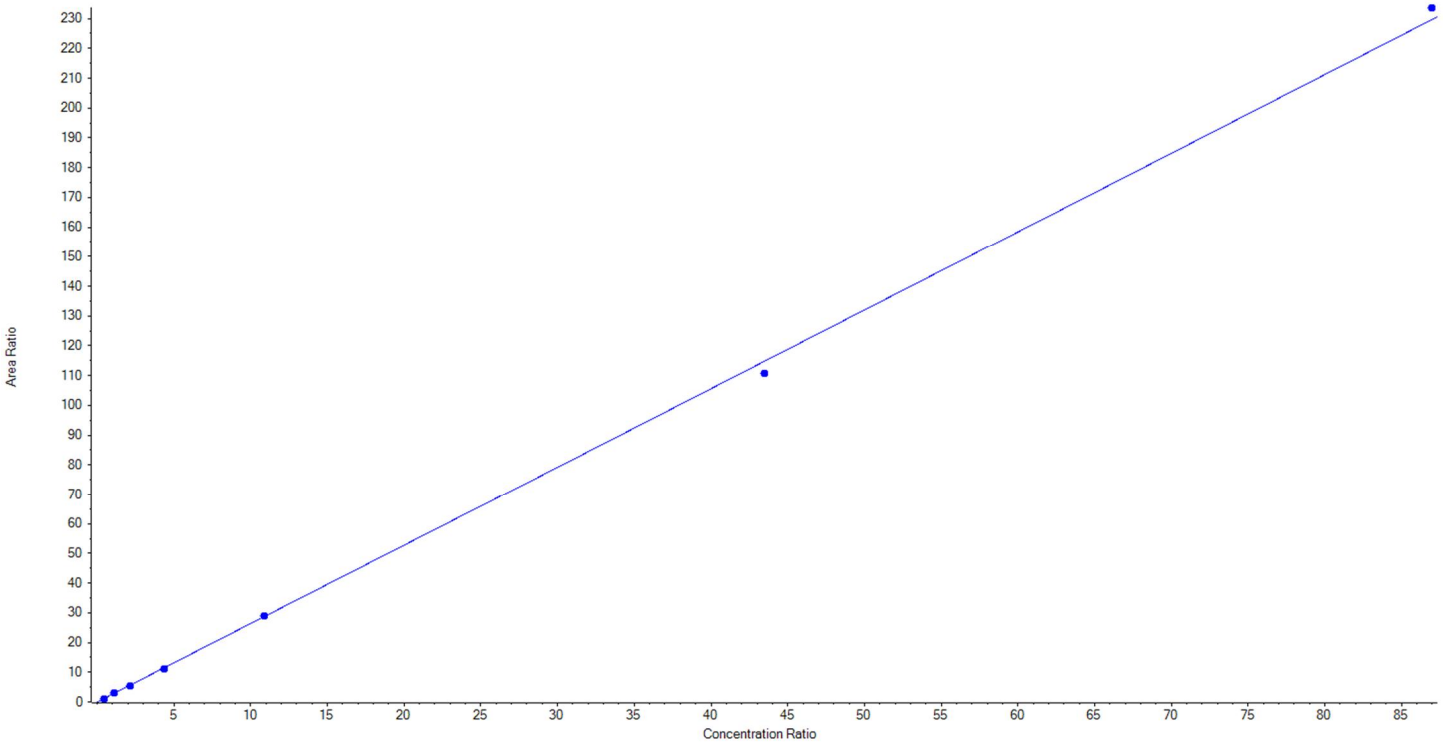
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFBS_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0652
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 2.64037 x + -0.02990 (r = 0.99964) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	101.00	99.254148	98.3
13	KC67	L2	True	252.50	276.752750	109.6
14	KC68	L3	True	505.00	487.632465	96.6
15	KC69	L4	True	1010.00	967.506674	95.8
16	KC70	L5	True	2525.00	2562.531257	101.5
17	KC71	L6	True	10100.00	9753.445484	96.6
18	KC72	L7	True	20200.00	20546.377221	101.7



BATTELLE

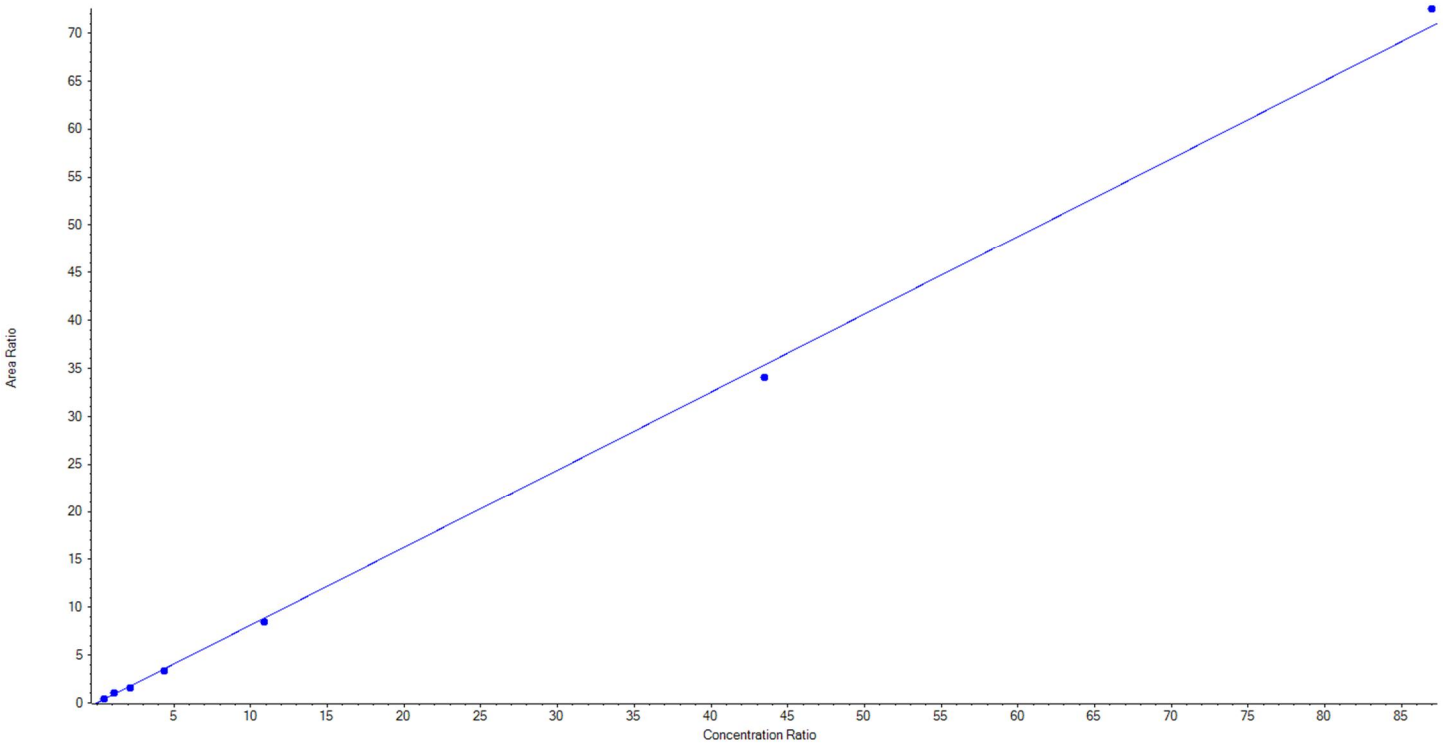
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFBS_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0652
Internal Standard	13C3-PFBS	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.81304 x + 0.00176 (r = 0.99929) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	101.00	104.609228	103.6
13	KC67	L2	True	252.50	295.386280	117.0
14	KC68	L3	True	505.00	449.367006	89.0
15	KC69	L4	True	1010.00	961.478769	95.2
16	KC70	L5	True	2525.00	2431.977399	96.3
17	KC71	L6	True	10100.00	9736.495915	96.4
18	KC72	L7	True	20200.00	20714.185403	102.6



BATTELLE

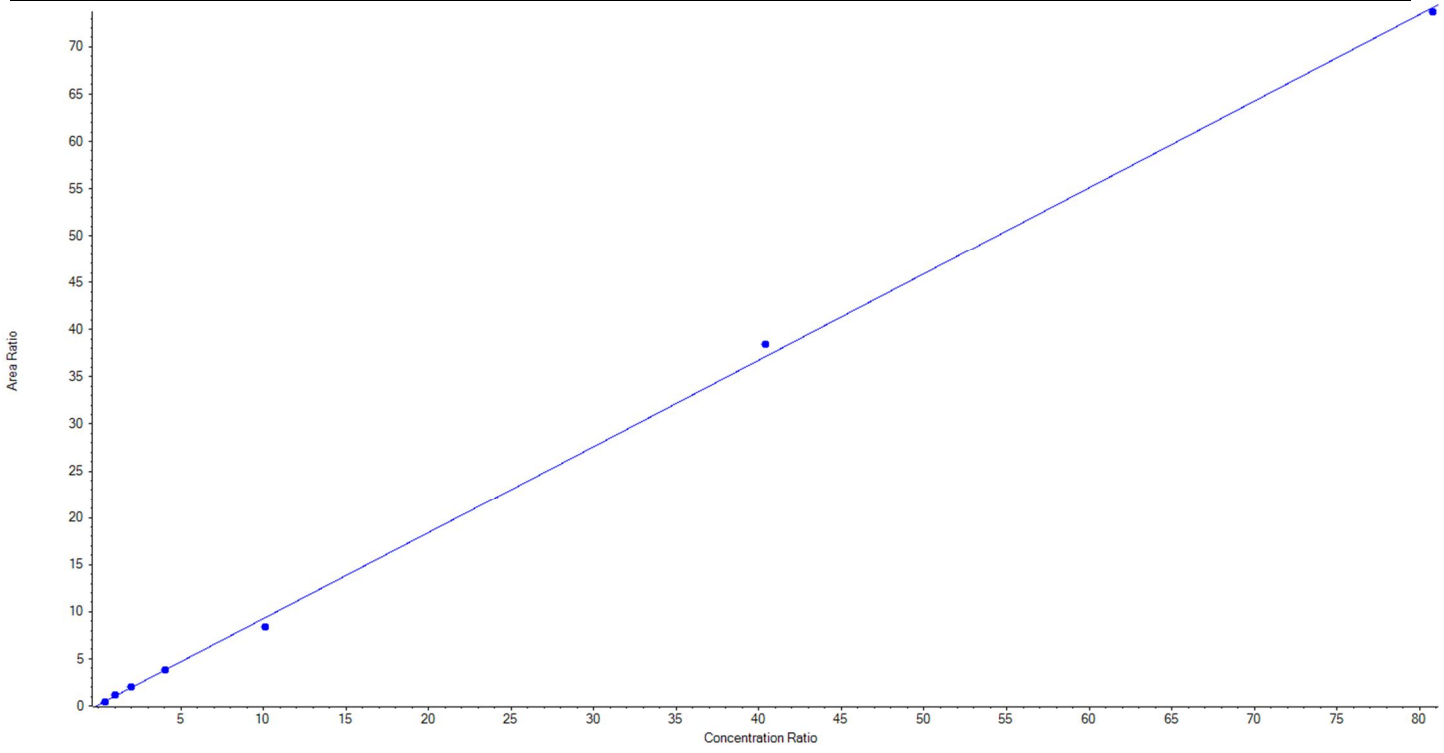
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFHxA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0652
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.91654 x + 0.10310 (r = 0.99925) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	101.00	91.785376	90.9
13	KC67	L2	True	252.50	289.479366	114.7
14	KC68	L3	True	505.00	508.733890	100.7
15	KC69	L4	True	1010.00	1025.584221	101.5
16	KC70	L5	True	2525.00	2256.916514	89.4
17	KC71	L6	True	10100.00	10447.202686	103.4
18	KC72	L7	True	20200.00	20073.797947	99.4



BATTELLE

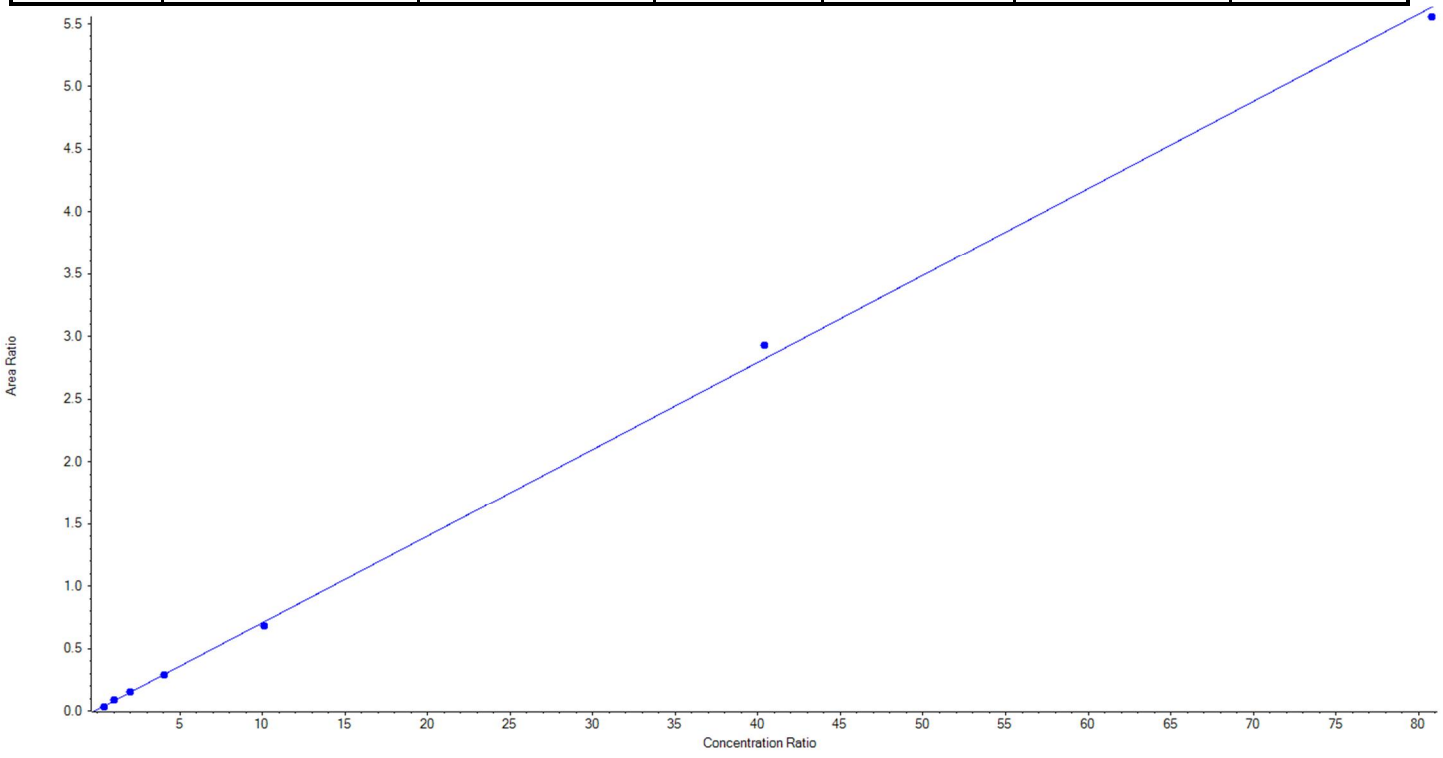
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFHxA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0652
Internal Standard	13C5-PFHxA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.06960 x + 0.00929 (r = 0.99946) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	101.00	86.832947	86.0
13	KC67	L2	True	252.50	295.670074	117.1
14	KC68	L3	True	505.00	510.775019	101.1
15	KC69	L4	True	1010.00	991.330359	98.2
16	KC70	L5	True	2525.00	2403.988502	95.2
17	KC71	L6	True	10100.00	10485.385577	103.8
18	KC72	L7	True	20200.00	19919.517521	98.6



BATTELLE

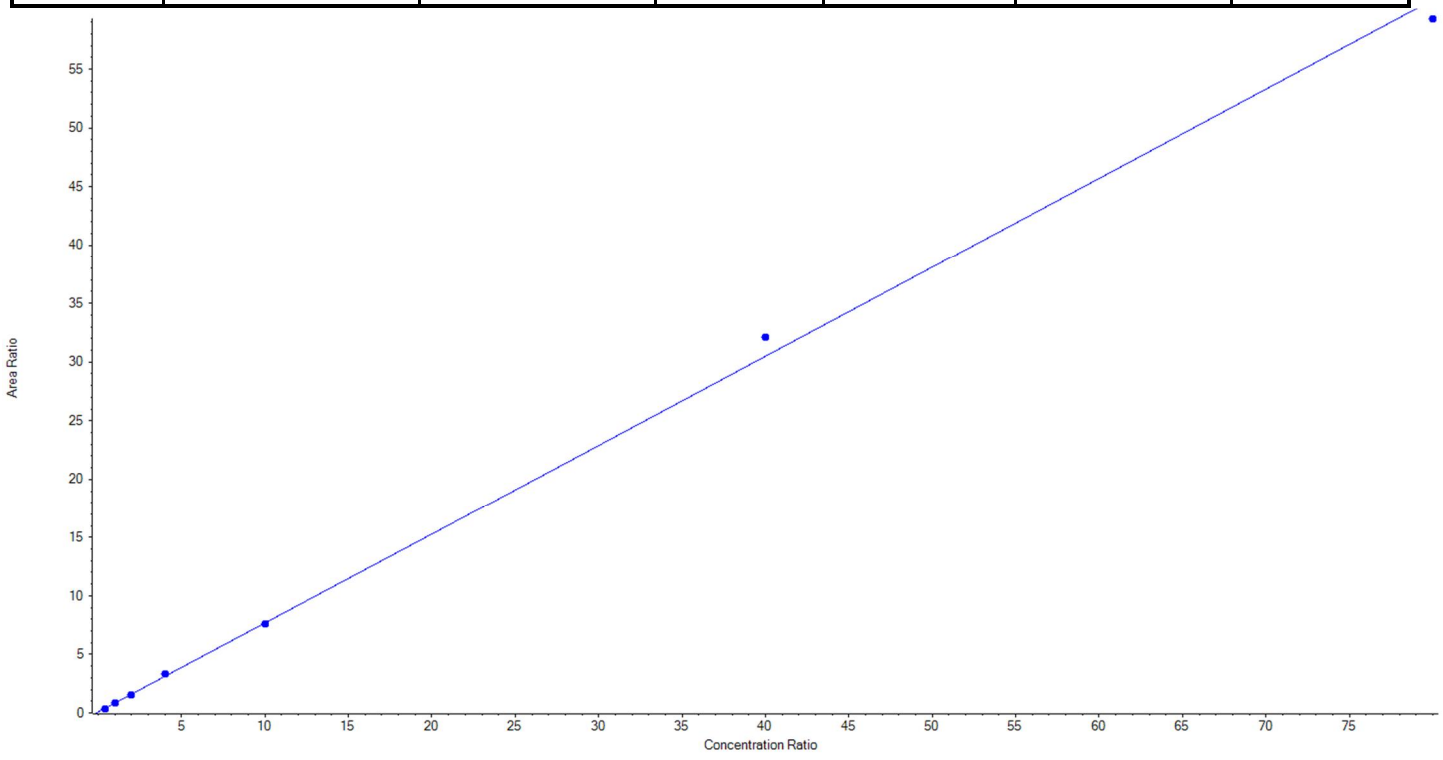
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFHpA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0652
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.76020 x + 0.08507 (r = 0.99924) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	92.746714	92.8
13	KC67	L2	True	250.00	259.668781	103.9
14	KC68	L3	True	500.00	480.259162	96.1
15	KC69	L4	True	1000.00	1060.993309	106.1
16	KC70	L5	True	2500.00	2466.376875	98.7
17	KC71	L6	True	10000.00	10525.951972	105.3
18	KC72	L7	True	20000.00	19464.003187	97.3



BATTELLE

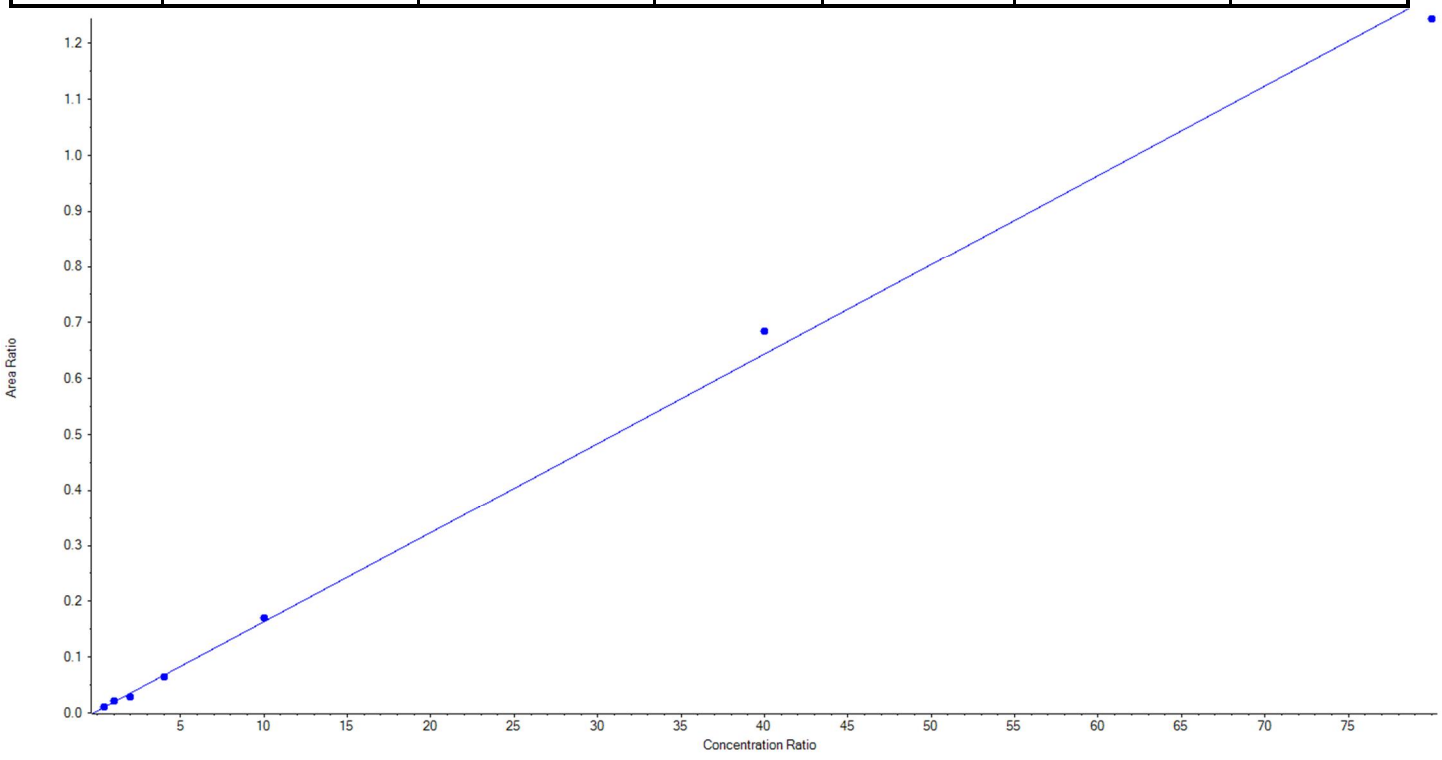
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFHpA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0652
Internal Standard	13C4-PFHpA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.01601 x + 0.00344 (r = 0.99858) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	104.106088	104.1
13	KC67	L2	True	250.00	281.822464	112.7
14	KC68	L3	True	500.00	407.259102	81.5
15	KC69	L4	True	1000.00	945.323579	94.5
16	KC70	L5	True	2500.00	2597.138140	103.9
17	KC71	L6	True	10000.00	10644.693795	106.5
18	KC72	L7	True	20000.00	19369.656831	96.9



BATTELLE

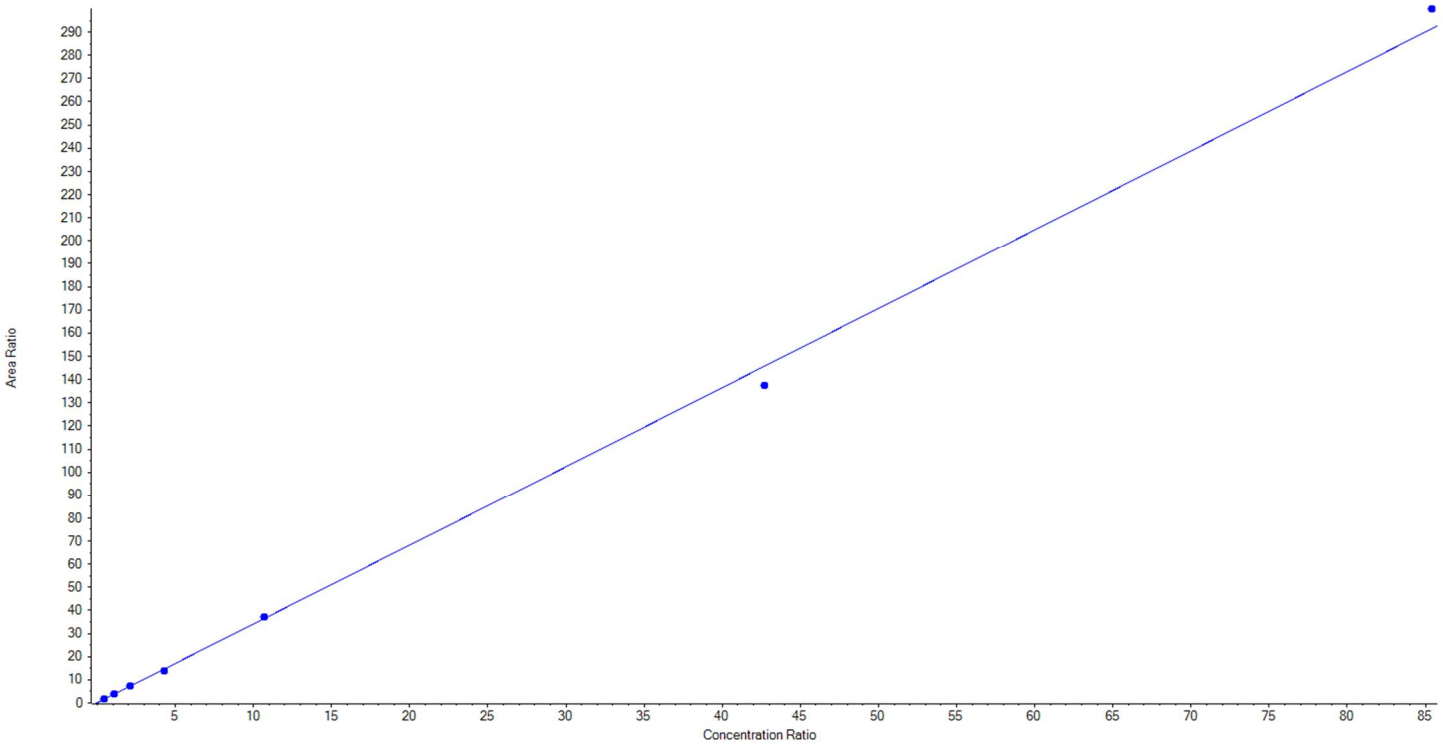
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFHxS_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0652
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 3.41195 x + 0.01616 (r = 0.99912) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	101.00	104.253305	103.2
13	KC67	L2	True	252.50	265.196957	105.0
14	KC68	L3	True	505.00	501.843046	99.4
15	KC69	L4	True	1010.00	945.684197	93.6
16	KC70	L5	True	2525.00	2564.175091	101.6
17	KC71	L6	True	10100.00	9520.428465	94.3
18	KC72	L7	True	20200.00	20791.918939	102.9



BATTELLE

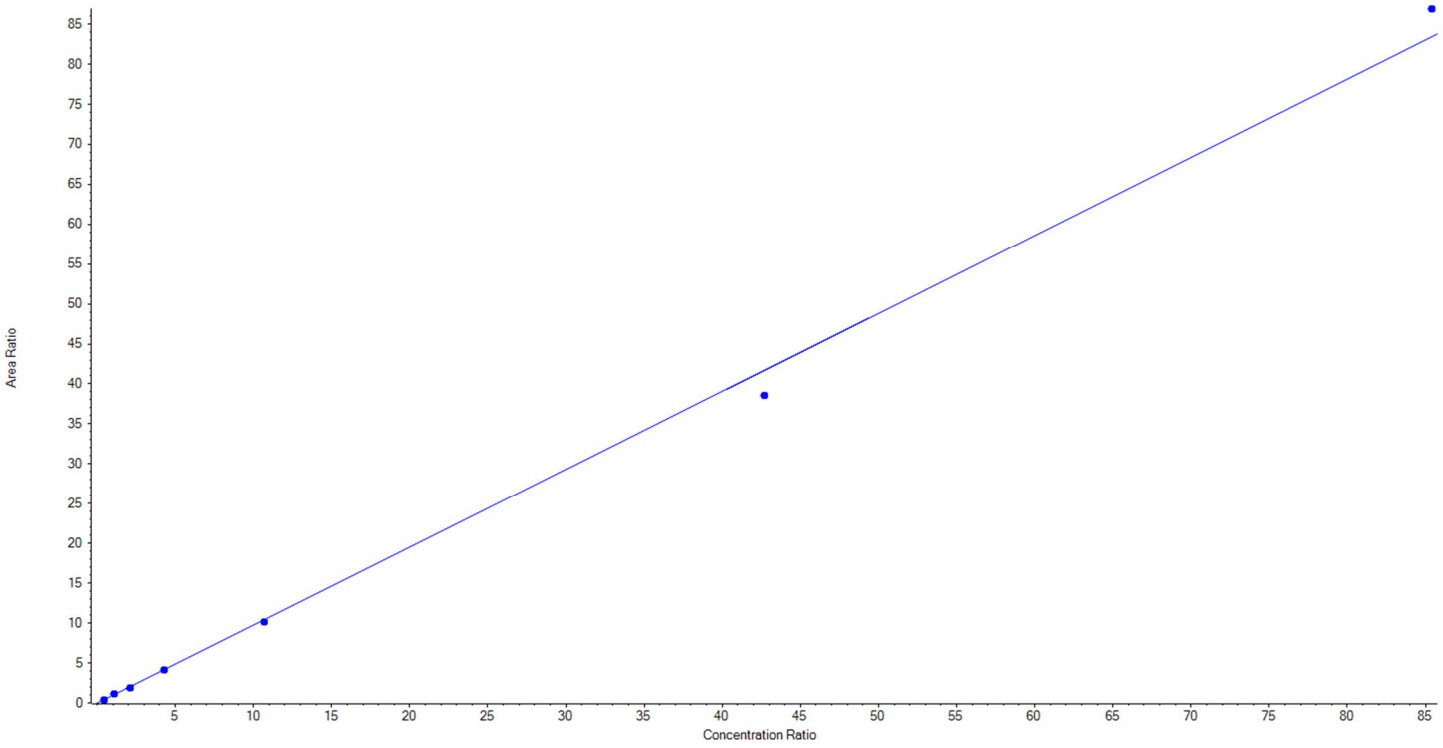
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFHxS_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0652
Internal Standard	13C3-PFHxS	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.97676 x + -0.02038 (r = 0.99844) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	101.00	105.700972	104.7
13	KC67	L2	True	252.50	280.569142	111.1
14	KC68	L3	True	505.00	461.276446	91.3
15	KC69	L4	True	1010.00	998.567975	98.9
16	KC70	L5	True	2525.00	2456.369460	97.3
17	KC71	L6	True	10100.00	9349.885193	92.6
18	KC72	L7	True	20200.00	21041.130810	104.2



BATTELLE

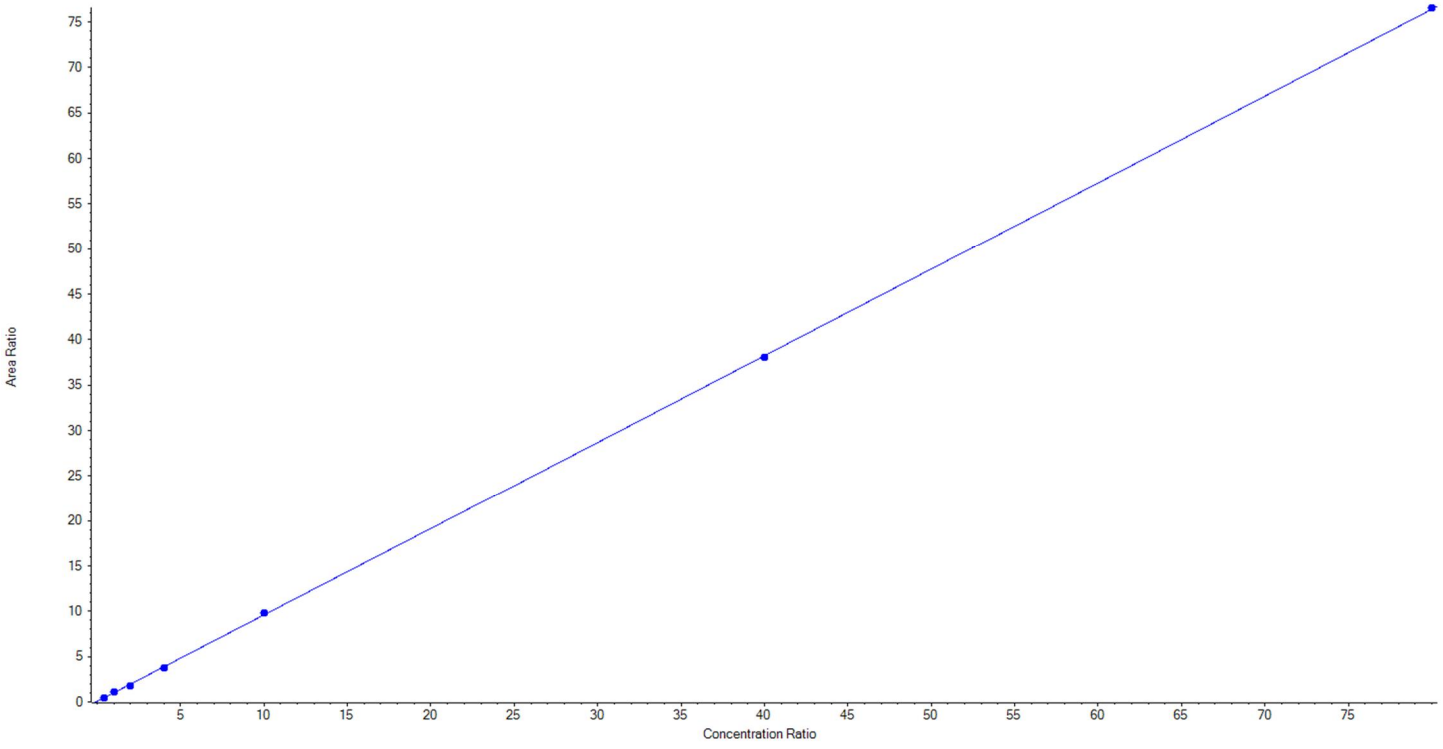
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFOA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0652
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.95407 x + 0.05984 (r = 0.99983) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	101.227619	101.2
13	KC67	L2	True	250.00	275.648643	110.3
14	KC68	L3	True	500.00	444.209513	88.8
15	KC69	L4	True	1000.00	976.764804	97.7
16	KC70	L5	True	2500.00	2555.639527	102.2
17	KC71	L6	True	10000.00	9957.282055	99.6
18	KC72	L7	True	20000.00	20039.227839	100.2



BATTELLE

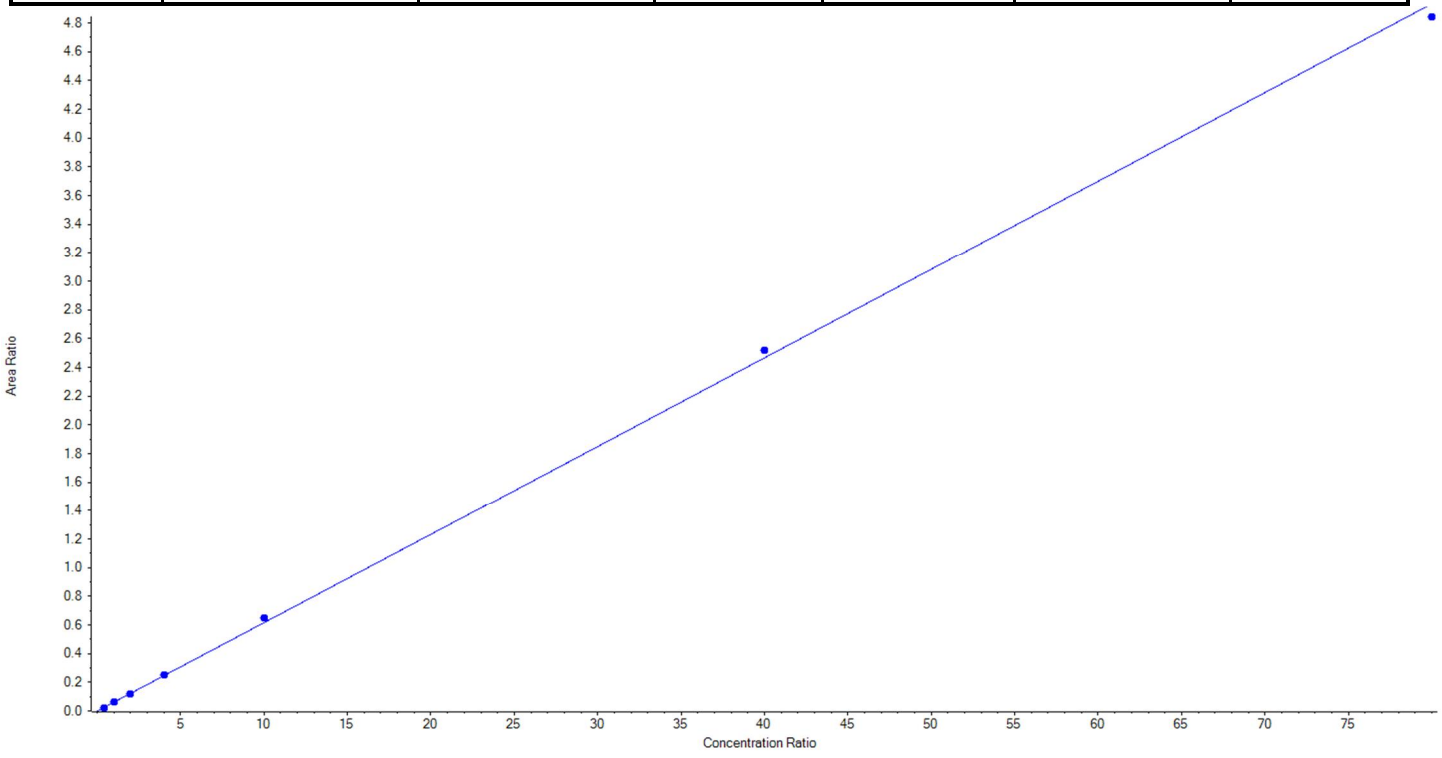
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFOA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0652
Internal Standard	13C8-PFOA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.06167 x + -9.30221e-4 (r = 0.99966) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	89.661531	89.7
13	KC67	L2	True	250.00	261.200913	104.5
14	KC68	L3	True	500.00	494.190235	98.8
15	KC69	L4	True	1000.00	1009.670556	101.0
16	KC70	L5	True	2500.00	2641.760392	105.7
17	KC71	L6	True	10000.00	10223.000786	102.2
18	KC72	L7	True	20000.00	19630.515588	98.2



BATTELLE

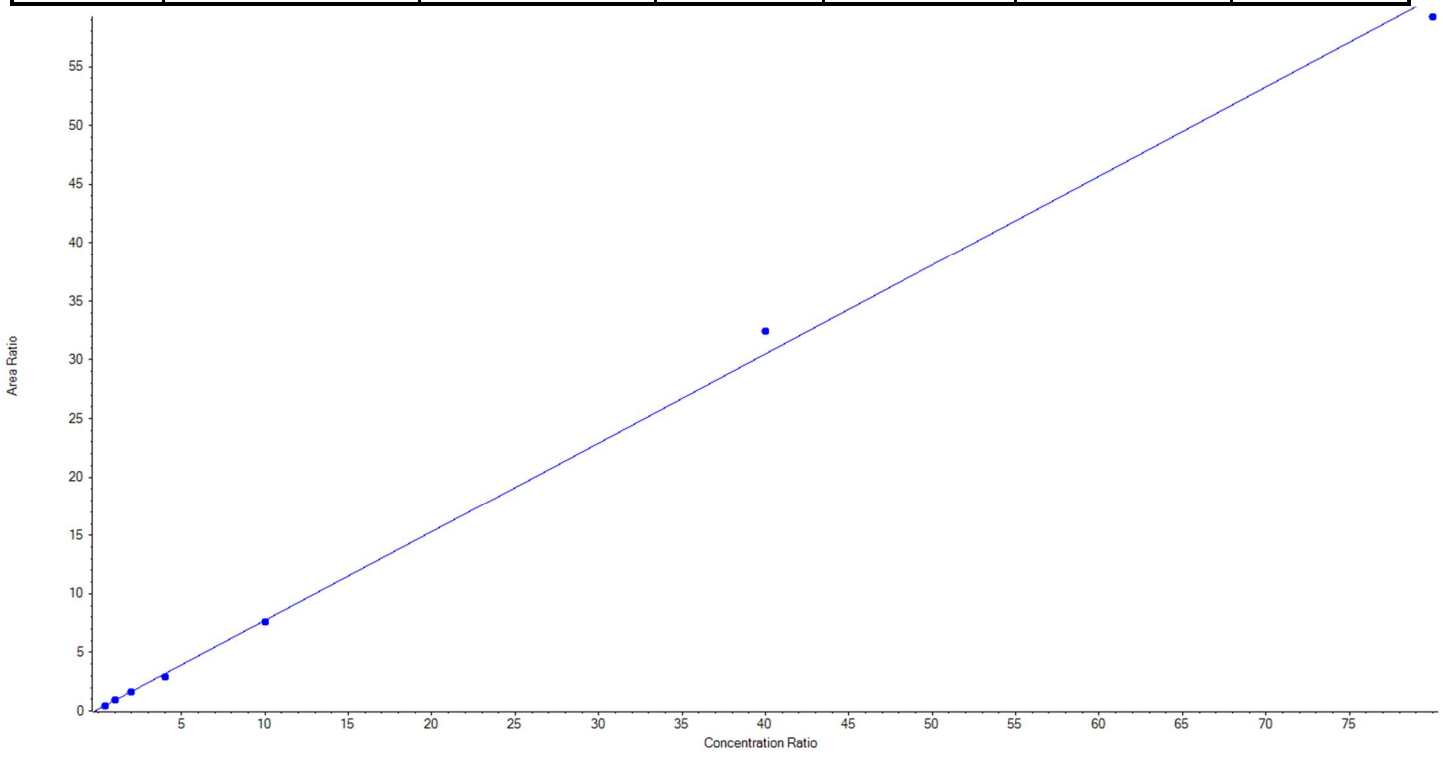
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFNA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0652
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.75910 x + 0.13866 (r = 0.99893) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	95.960001	96.0
13	KC67	L2	True	250.00	276.855061	110.7
14	KC68	L3	True	500.00	499.516141	99.9
15	KC69	L4	True	1000.00	911.618322	91.2
16	KC70	L5	True	2500.00	2462.440024	98.5
17	KC71	L6	True	10000.00	10643.452267	106.4
18	KC72	L7	True	20000.00	19460.158184	97.3



BATTELLE

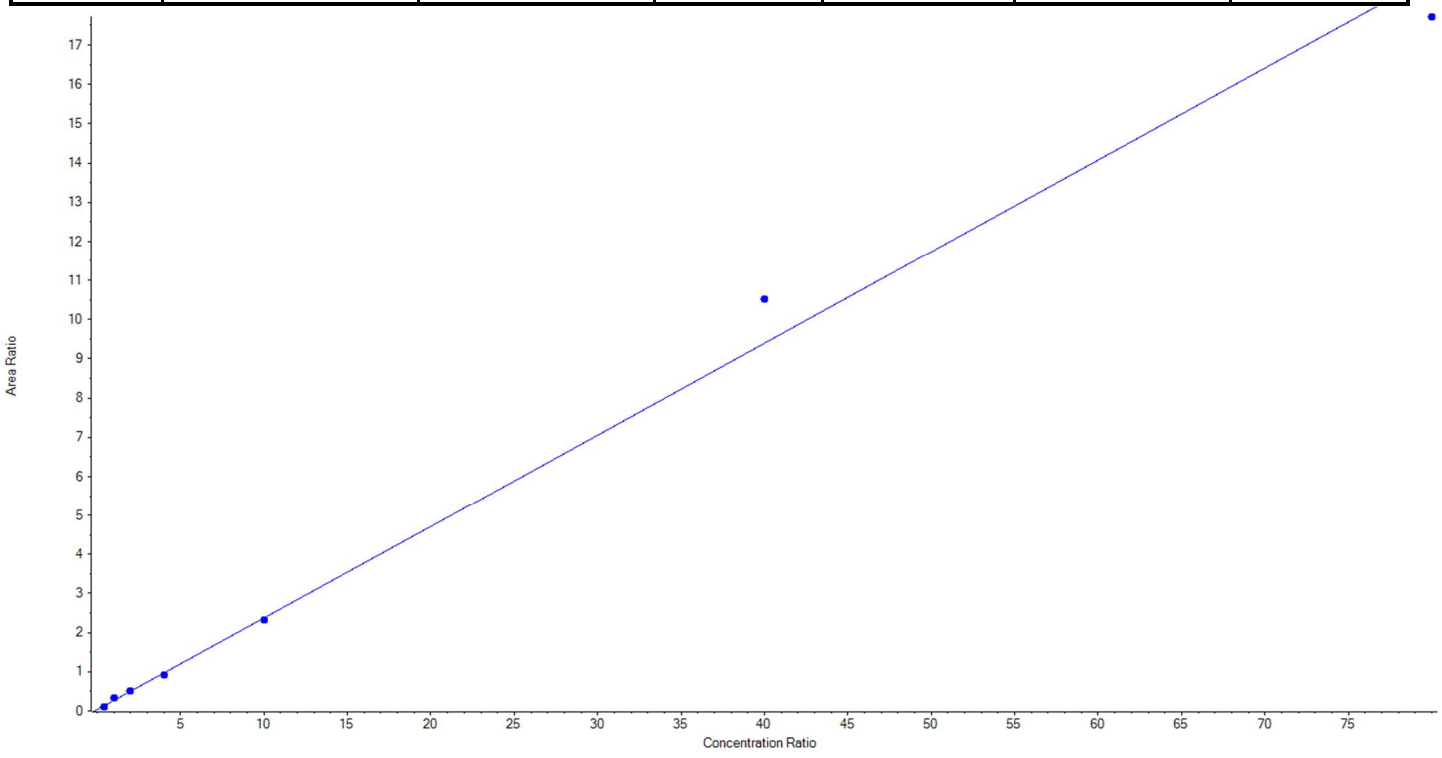
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFNA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0652
Internal Standard	13C9-PFNA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.23401 x + 0.03357 (r = 0.99635) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	75.886943	75.9
13	KC67	L2	True	250.00	315.547033	126.2
14	KC68	L3	True	500.00	498.005987	99.6
15	KC69	L4	True	1000.00	945.601392	94.6
16	KC70	L5	True	2500.00	2434.316411	97.4
17	KC71	L6	True	10000.00	11191.407985	111.9
18	KC72	L7	True	20000.00	18889.234250	94.5



BATTELLE

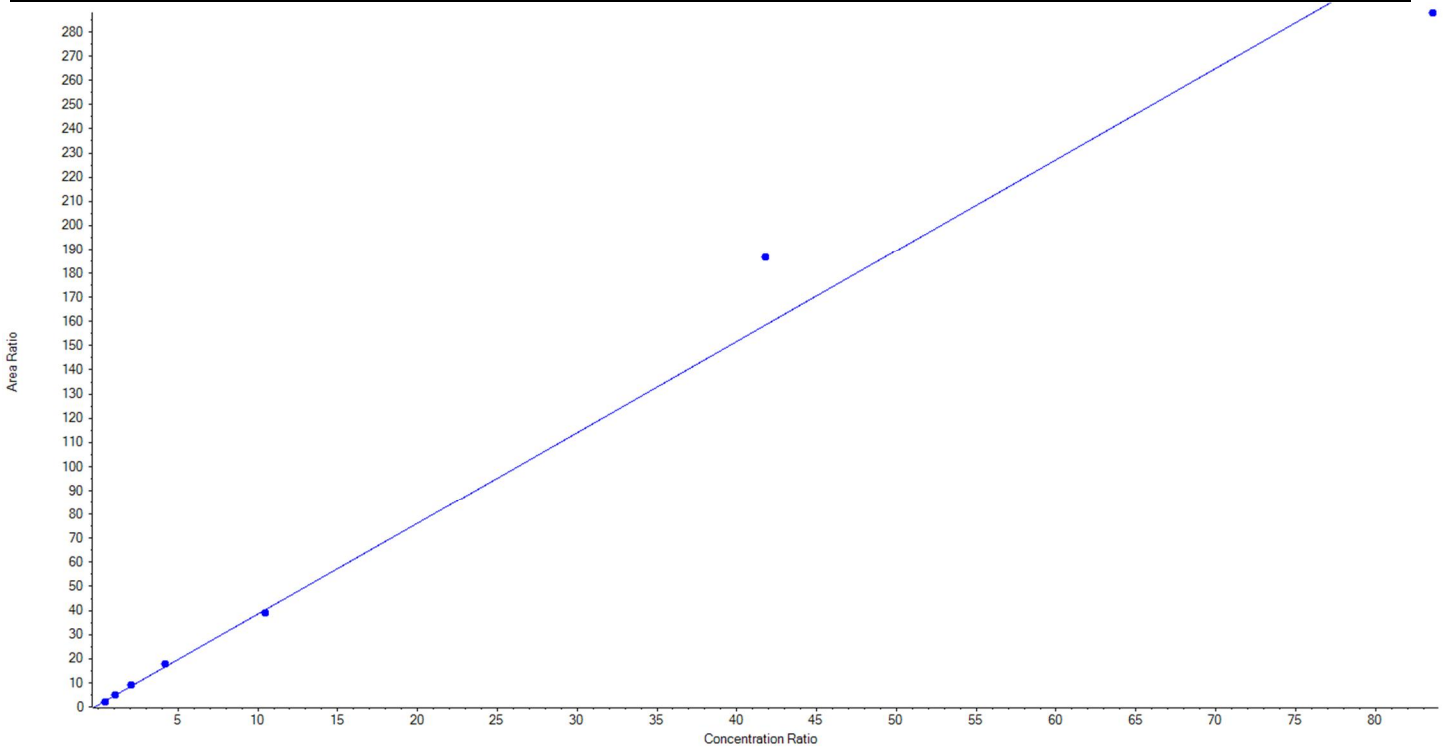
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFOS_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0652
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 3.77369 x + 0.78197 (r = 0.99224) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	76.205430	76.2
13	KC67	L2	True	250.00	256.658249	102.7
14	KC68	L3	True	500.00	540.434375	108.1
15	KC69	L4	True	1000.00	1073.838129	107.4
16	KC70	L5	True	2500.00	2421.320597	96.9
17	KC71	L6	True	10000.00	11780.008526	117.8
18	KC72	L7	True	20000.00	18201.534695	91.0



BATTELLE

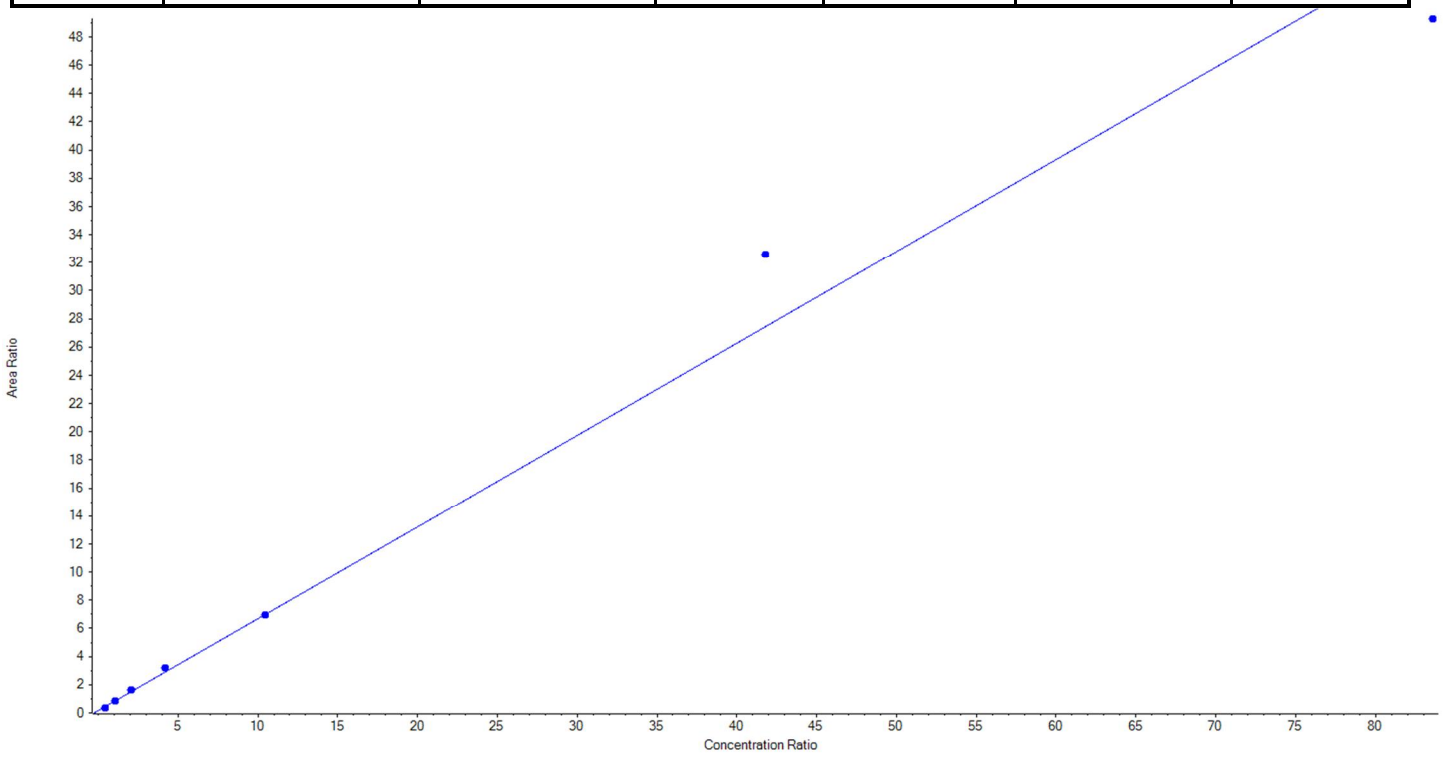
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFOS_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0652
Internal Standard	13C8-PFOS	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.65276 x + 0.15867 (r = 0.99092) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	71.437567	71.4
13	KC67	L2	True	250.00	246.898827	98.8
14	KC68	L3	True	500.00	552.832649	110.6
15	KC69	L4	True	1000.00	1111.227192	111.1
16	KC70	L5	True	2500.00	2481.483270	99.3
17	KC71	L6	True	10000.00	11884.744062	118.9
18	KC72	L7	True	20000.00	18001.376434	90.0



BATTELLE

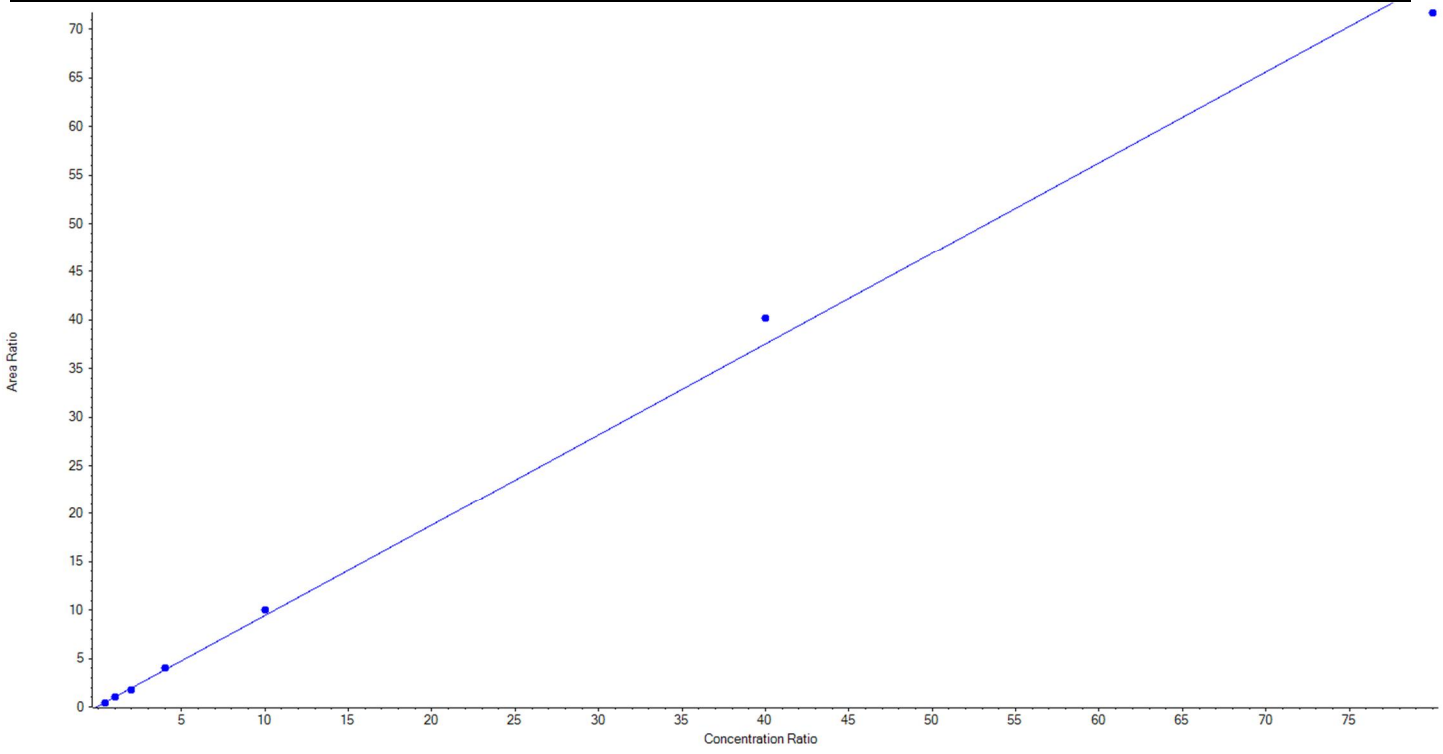
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFDA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0652
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.93608 x + 0.08620 (r = 0.99829) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	89.174702	89.2
13	KC67	L2	True	250.00	266.010880	106.4
14	KC68	L3	True	500.00	455.431734	91.1
15	KC69	L4	True	1000.00	1040.073636	104.0
16	KC70	L5	True	2500.00	2664.696102	106.6
17	KC71	L6	True	10000.00	10713.265468	107.1
18	KC72	L7	True	20000.00	19121.347479	95.6



BATTELLE

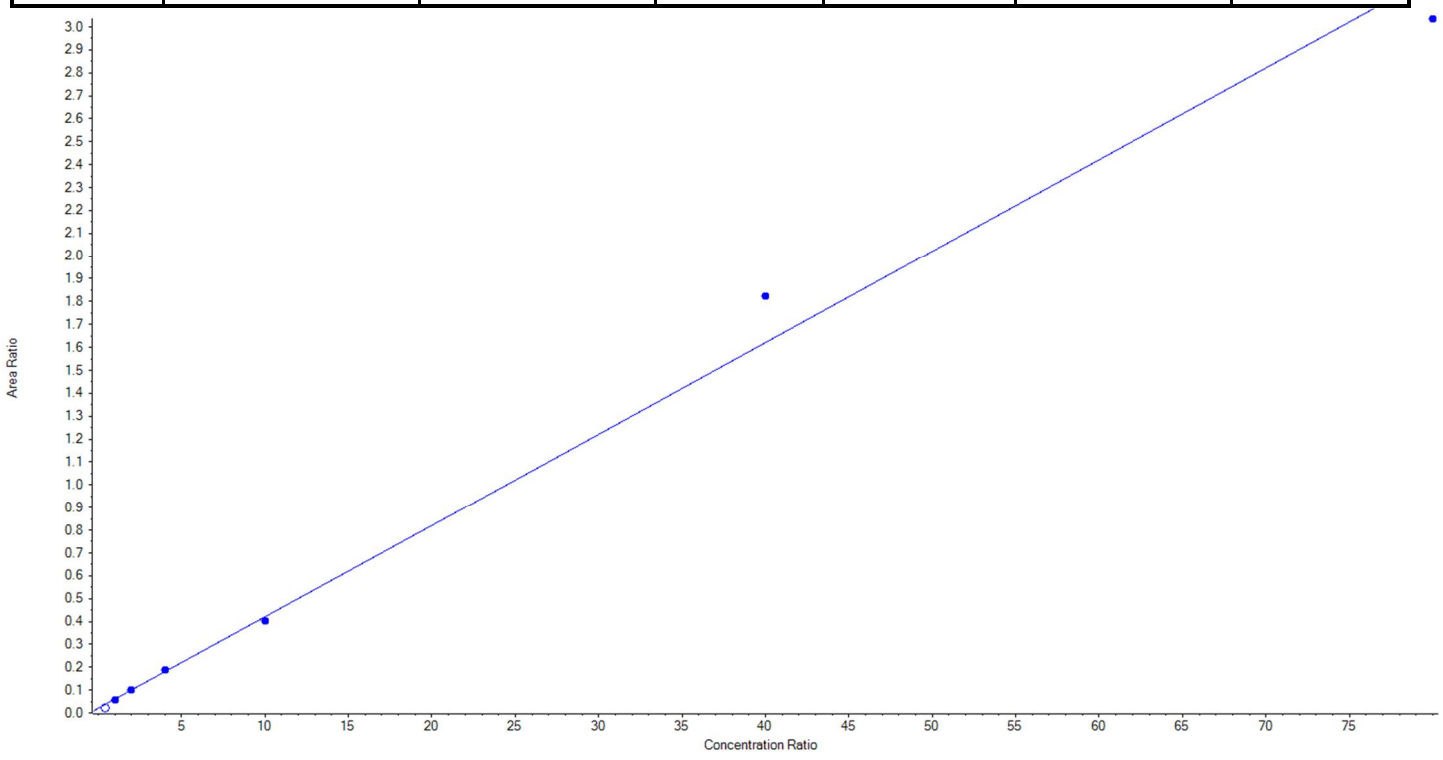
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFDA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0652
Internal Standard	13C6-PFDA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04001 x + 0.02035 (r = 0.99605) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	False	100.00	4.116121	4.1
13	KC67	L2	True	250.00	237.838582	95.1
14	KC68	L3	True	500.00	493.966524	98.8
15	KC69	L4	True	1000.00	1039.458501	104.0
16	KC70	L5	True	2500.00	2383.668629	95.4
17	KC71	L6	True	10000.00	11260.665706	112.6
18	KC72	L7	True	20000.00	18834.402059	94.2



BATTELLE

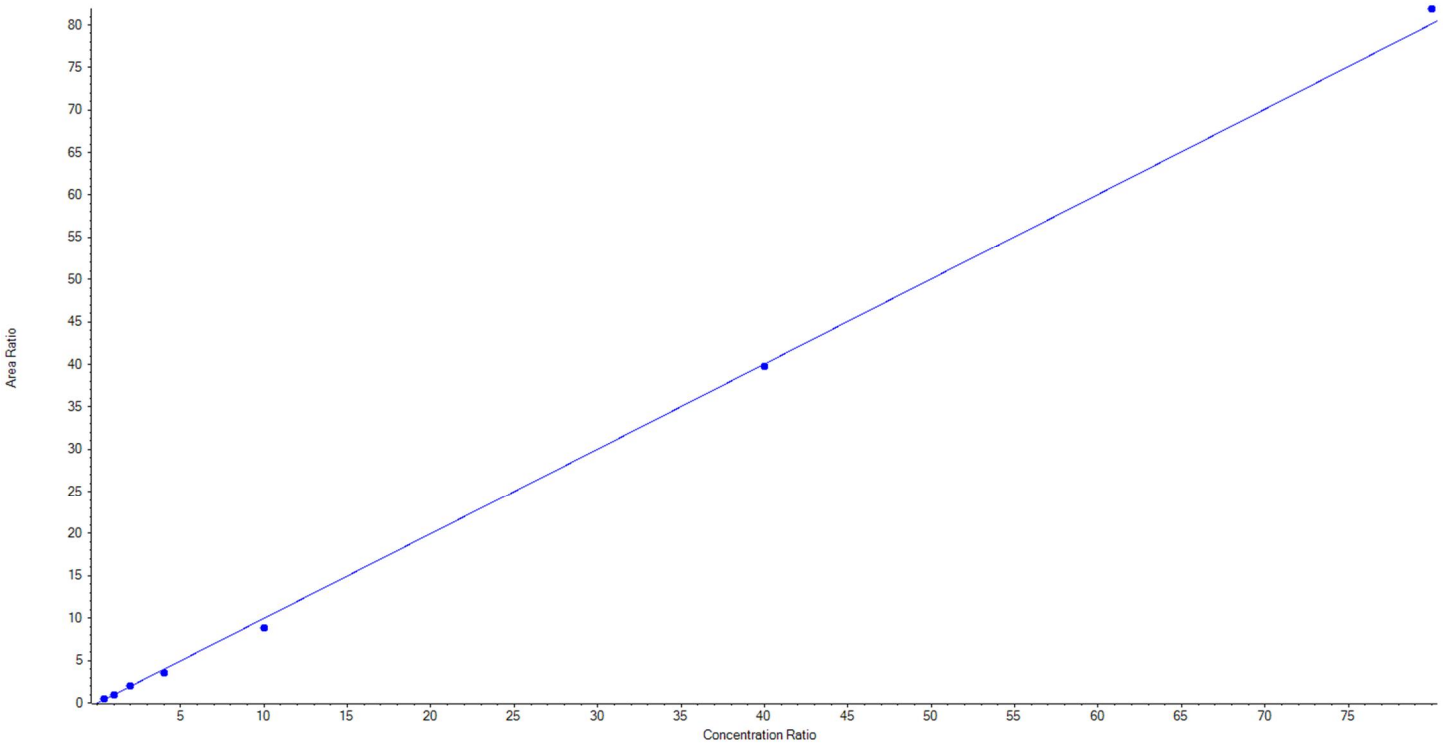
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFUnA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0652
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.00215 x + -0.04350 (r = 0.99903) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	121.053183	121.1
13	KC67	L2	True	250.00	248.553340	99.4
14	KC68	L3	True	500.00	504.844362	101.0
15	KC69	L4	True	1000.00	885.851250	88.6
16	KC70	L5	True	2500.00	2208.959528	88.4
17	KC71	L6	True	10000.00	9941.882253	99.4
18	KC72	L7	True	20000.00	20438.856084	102.2



BATTELLE

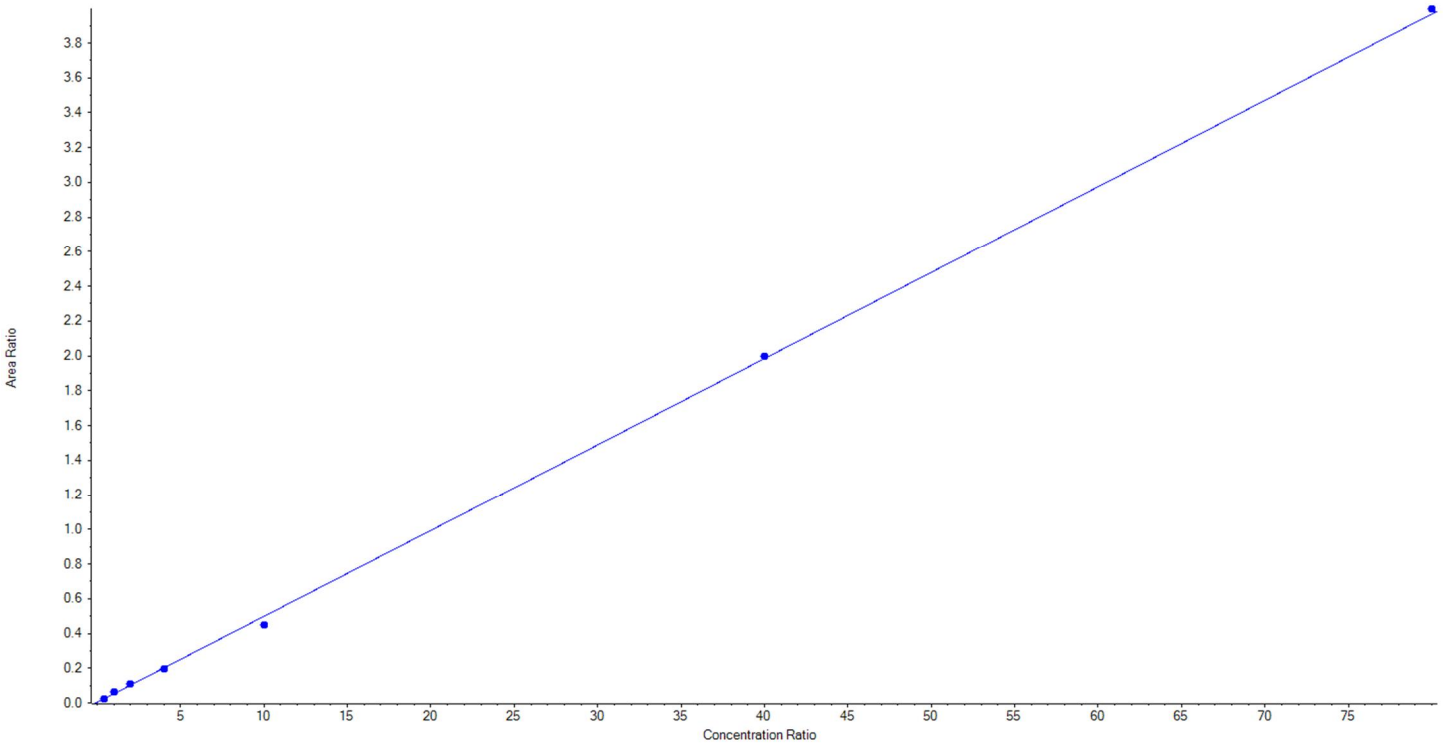
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFUnA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0652
Internal Standard	13C7-PFUnA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04954 x + 0.00310 (r = 0.99938) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	87.422506	87.4
13	KC67	L2	True	250.00	293.144462	117.3
14	KC68	L3	True	500.00	529.868374	106.0
15	KC69	L4	True	1000.00	982.756236	98.3
16	KC70	L5	True	2500.00	2241.055556	89.6
17	KC71	L6	True	10000.00	10069.884869	100.7
18	KC72	L7	True	20000.00	20145.867997	100.7



BATTELLE

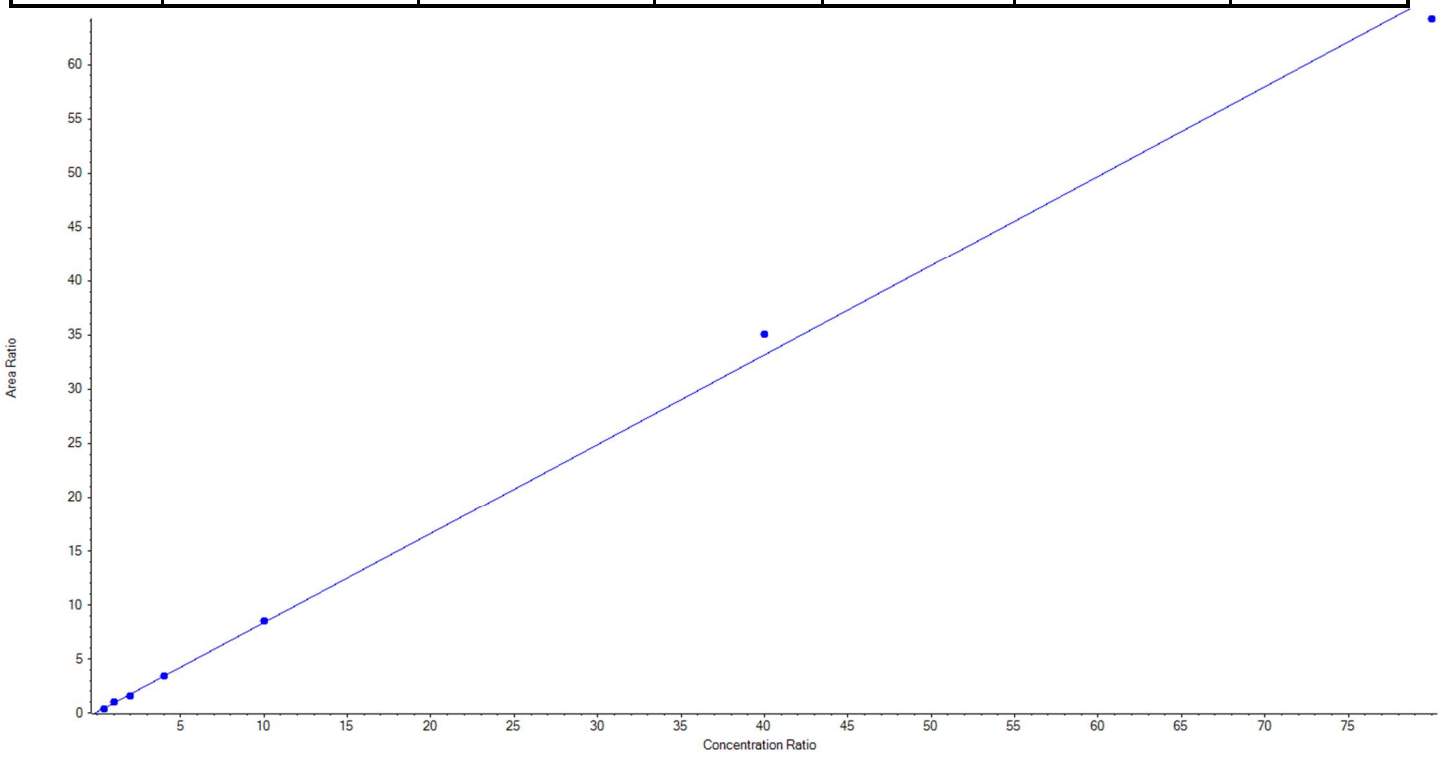
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFDoA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0652
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.82686 x + 0.09179 (r = 0.99904) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	88.395885	88.4
13	KC67	L2	True	250.00	284.051806	113.6
14	KC68	L3	True	500.00	461.401236	92.3
15	KC69	L4	True	1000.00	1009.535144	101.0
16	KC70	L5	True	2500.00	2554.300150	102.2
17	KC71	L6	True	10000.00	10563.209297	105.6
18	KC72	L7	True	20000.00	19389.106482	97.0



BATTELLE

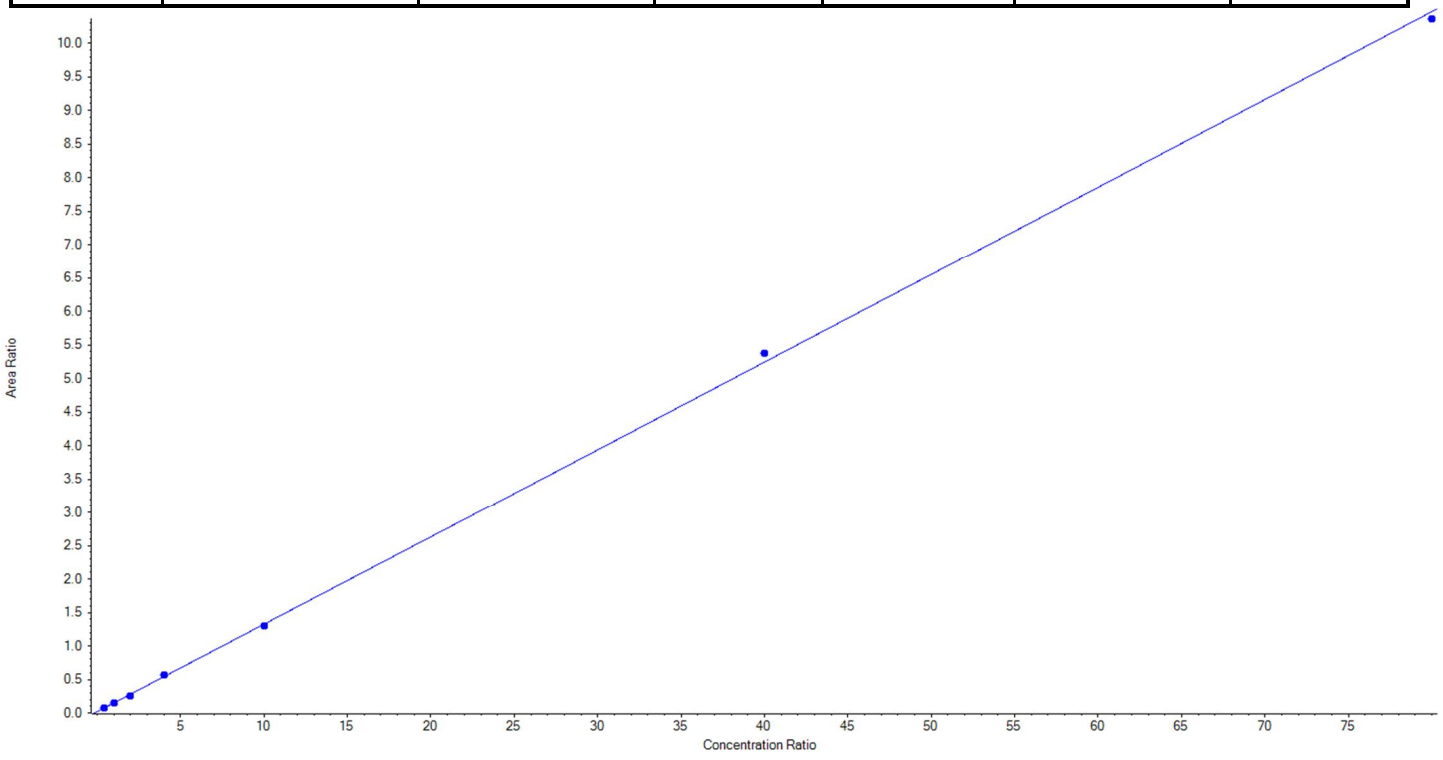
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFDoA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0652
Internal Standard	13C2-PFDoA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.13064 x + 0.01832 (r = 0.99976) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	103.115456	103.1
13	KC67	L2	True	250.00	254.210543	101.7
14	KC68	L3	True	500.00	453.606058	90.7
15	KC69	L4	True	1000.00	1048.070308	104.8
16	KC70	L5	True	2500.00	2457.732735	98.3
17	KC71	L6	True	10000.00	10239.289965	102.4
18	KC72	L7	True	20000.00	19793.974934	99.0



BATTELLE

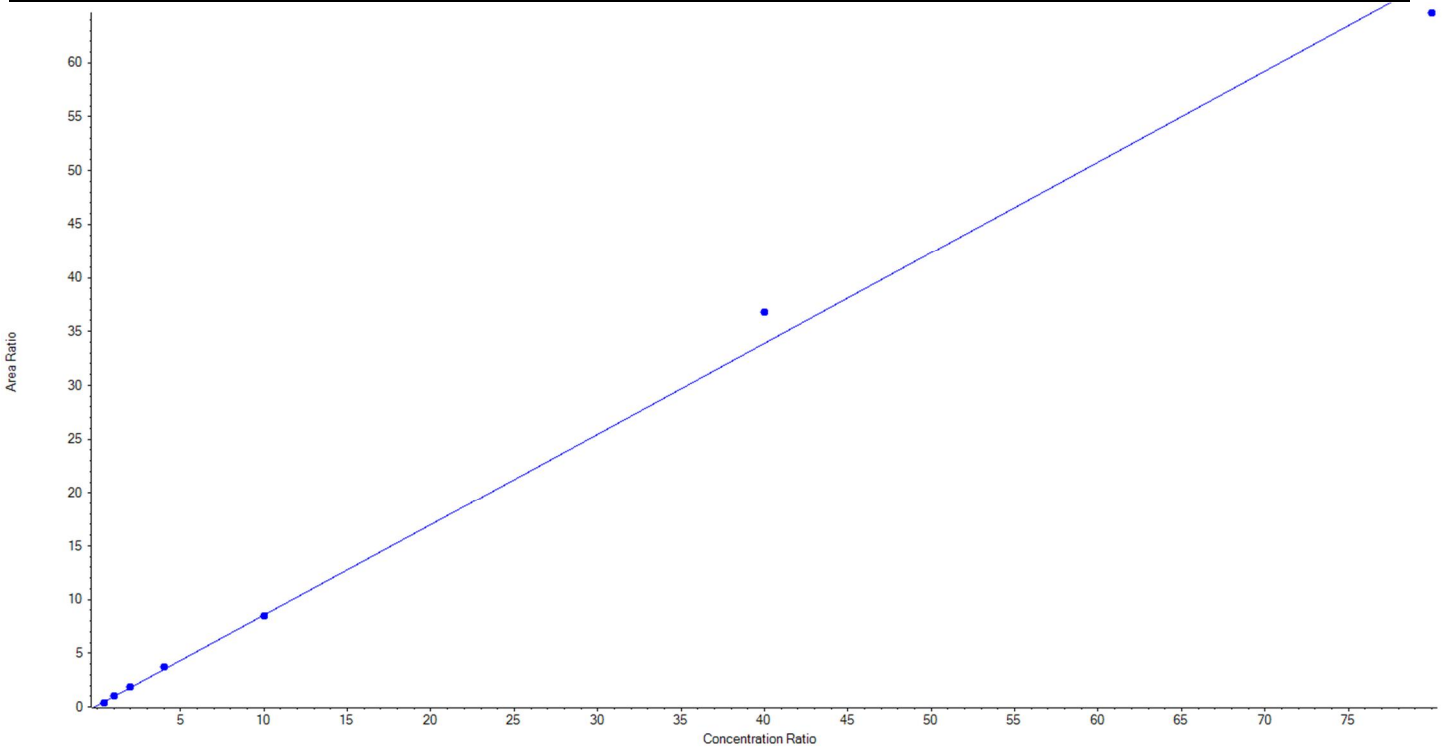
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFTrDA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0652
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.84470 x + 0.10645 (r = 0.99808) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	81.782770	81.8
13	KC67	L2	True	250.00	266.797082	106.7
14	KC68	L3	True	500.00	510.105538	102.0
15	KC69	L4	True	1000.00	1063.296369	106.3
16	KC70	L5	True	2500.00	2478.719293	99.2
17	KC71	L6	True	10000.00	10850.477257	108.5
18	KC72	L7	True	20000.00	19098.821691	95.5



BATTELLE

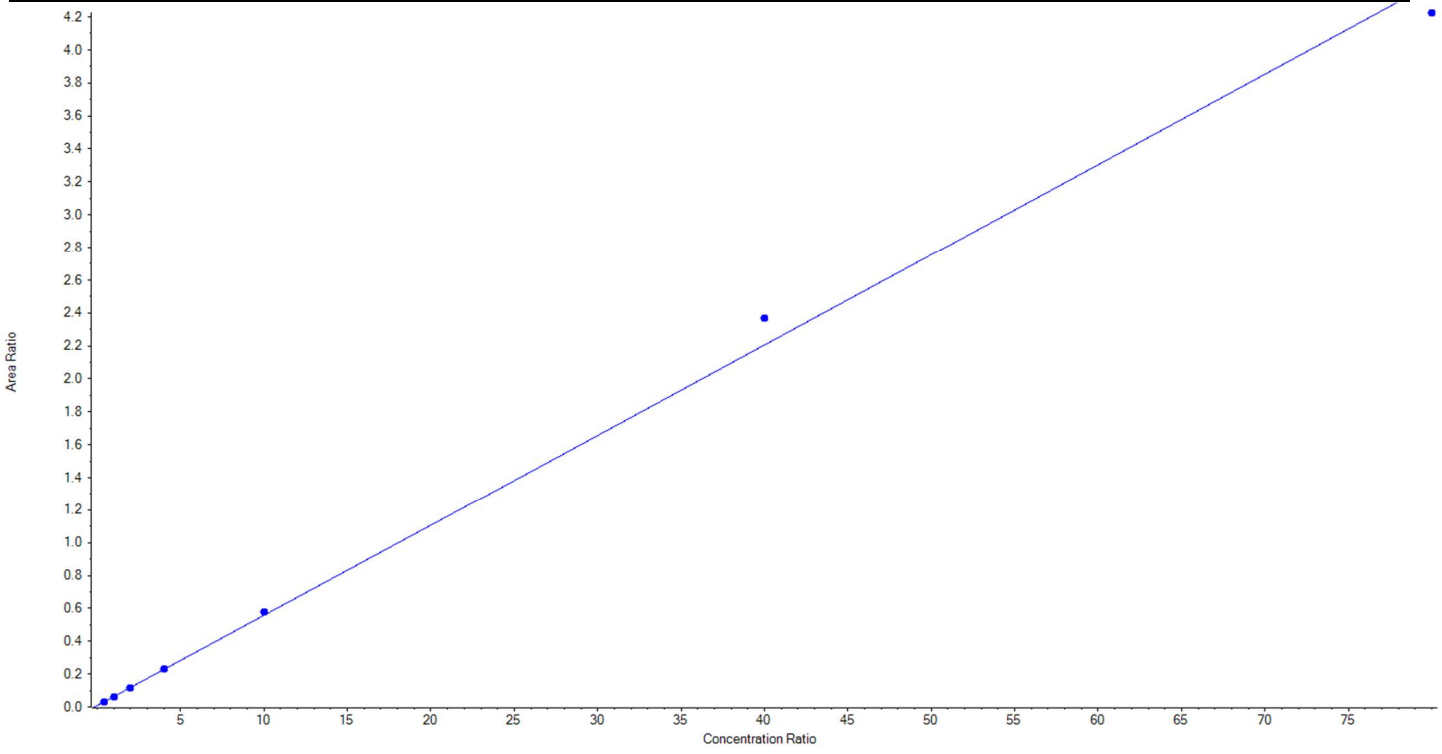
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFTrDA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0652
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05492 x + 0.00870 (r = 0.99859) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	94.895090	94.9
13	KC67	L2	True	250.00	248.876881	99.6
14	KC68	L3	True	500.00	489.700366	97.9
15	KC69	L4	True	1000.00	1008.433950	100.8
16	KC70	L5	True	2500.00	2588.329760	103.5
17	KC71	L6	True	10000.00	10727.735805	107.3
18	KC72	L7	True	20000.00	19192.028149	96.0



BATTELLE

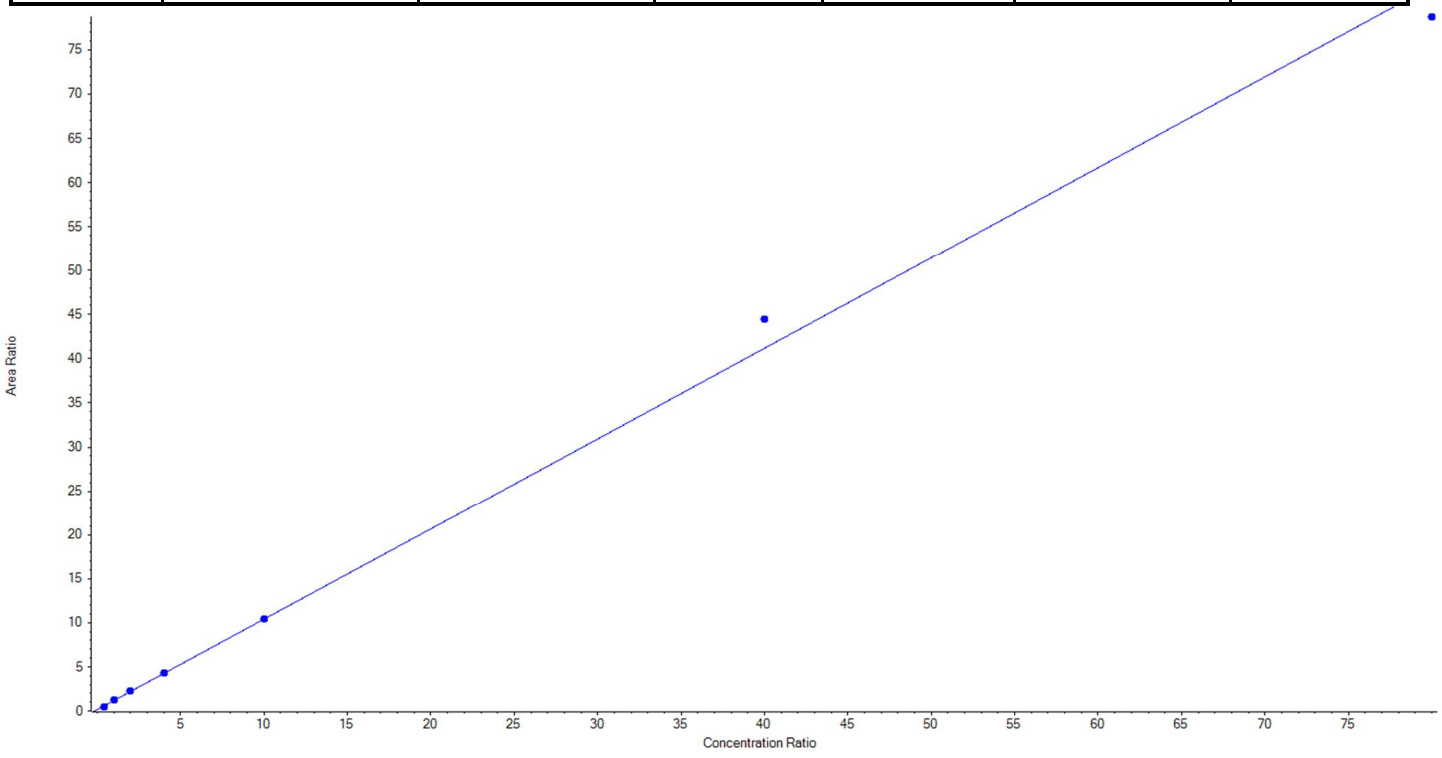
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFTeDA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0652
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.02547 x + 0.15468 (r = 0.99834) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	83.916189	83.9
13	KC67	L2	True	250.00	266.878016	106.8
14	KC68	L3	True	500.00	516.263577	103.3
15	KC69	L4	True	1000.00	1019.190373	101.9
16	KC70	L5	True	2500.00	2509.504448	100.4
17	KC71	L6	True	10000.00	10801.887403	108.0
18	KC72	L7	True	20000.00	19152.359993	95.8



BATTELLE

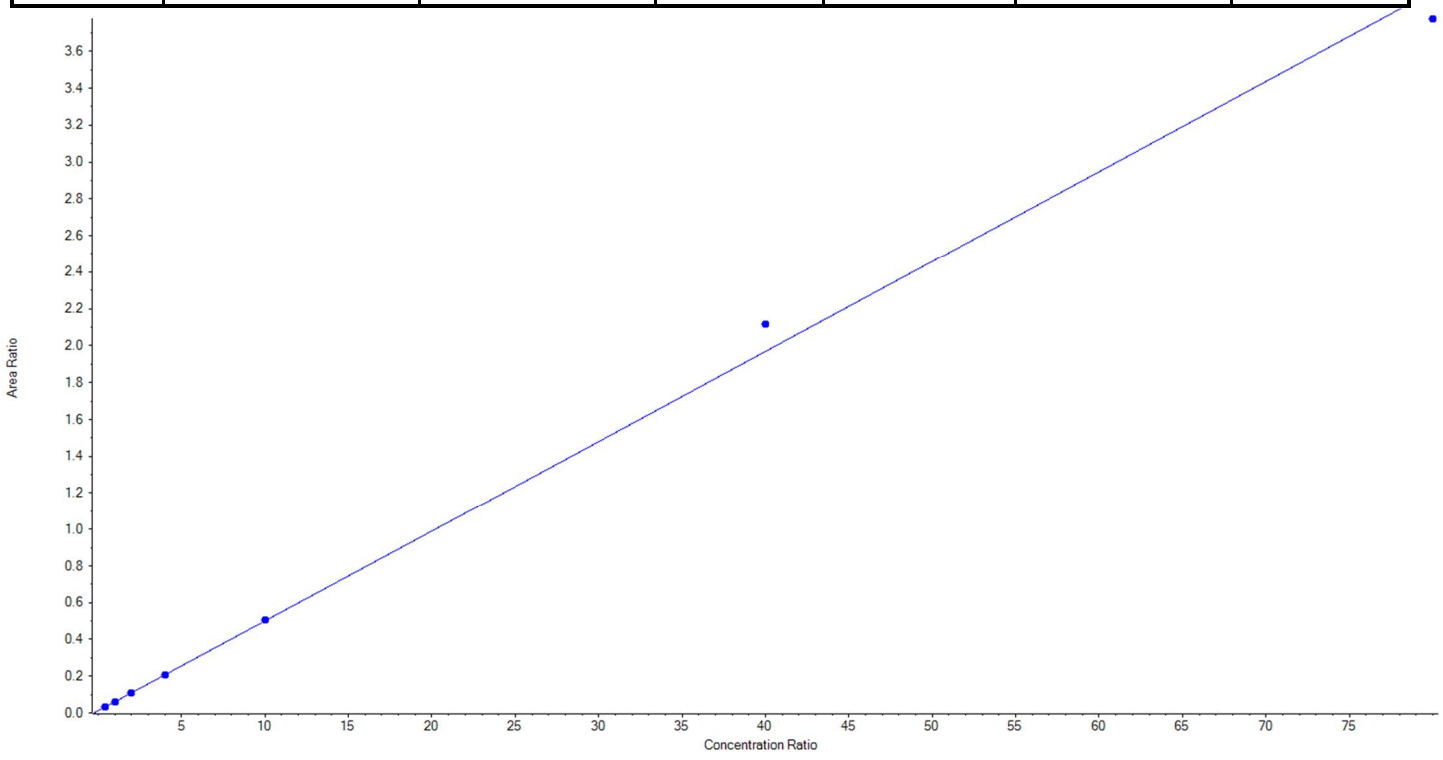
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFTeDA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0652
Internal Standard	13C2-PFTeDA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.04893 x + 0.01155 (r = 0.99859) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	95.751773	95.8
13	KC67	L2	True	250.00	259.055516	103.6
14	KC68	L3	True	500.00	486.598845	97.3
15	KC69	L4	True	1000.00	985.026194	98.5
16	KC70	L5	True	2500.00	2524.404202	101.0
17	KC71	L6	True	10000.00	10766.329362	107.7
18	KC72	L7	True	20000.00	19232.834108	96.2



BATTELLE

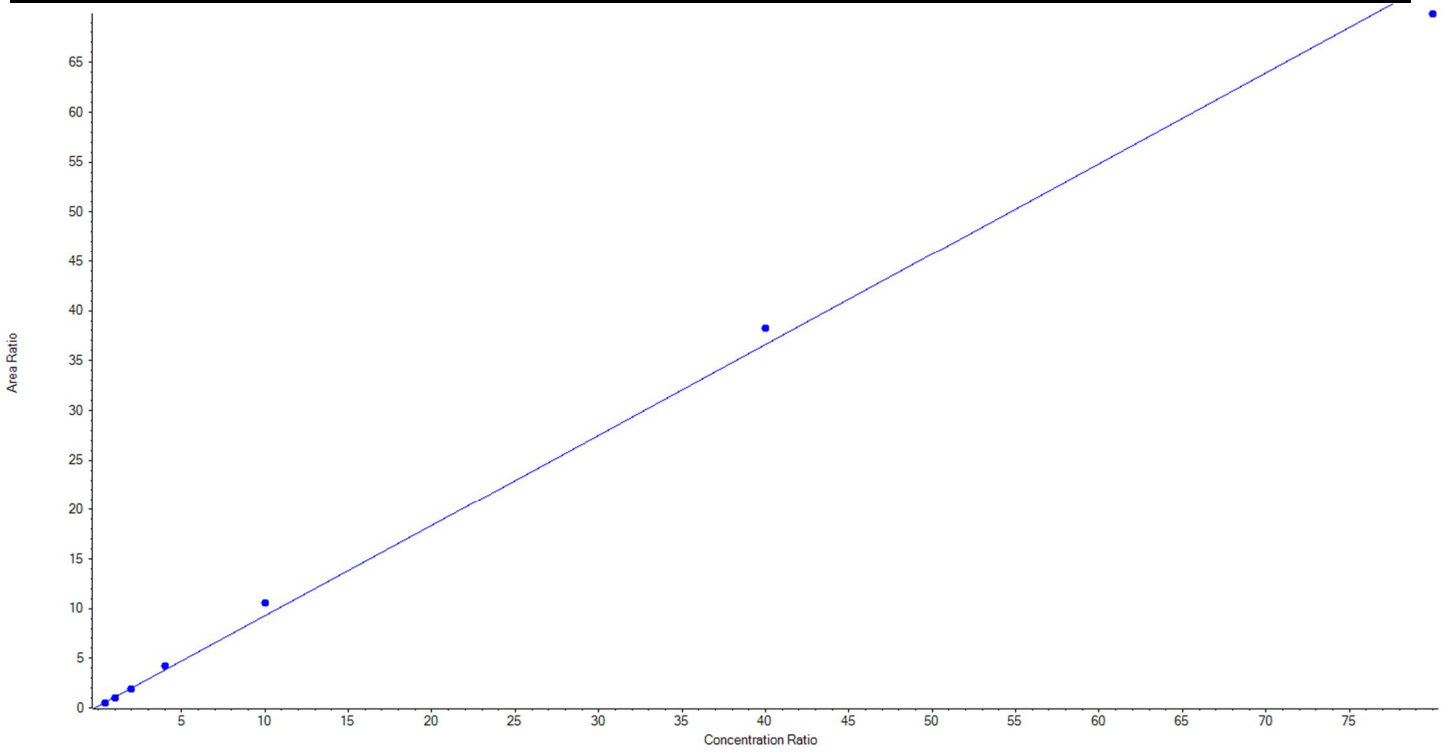
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	NMeFOSAA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0652
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.91100 x + 0.17315 (r = 0.99794) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	80.509813	80.5
13	KC67	L2	True	250.00	240.779287	96.3
14	KC68	L3	True	500.00	481.531491	96.3
15	KC69	L4	True	1000.00	1123.094618	112.3
16	KC70	L5	True	2500.00	2864.591702	114.6
17	KC71	L6	True	10000.00	10436.315629	104.4
18	KC72	L7	True	20000.00	19123.177459	95.6



BATTELLE

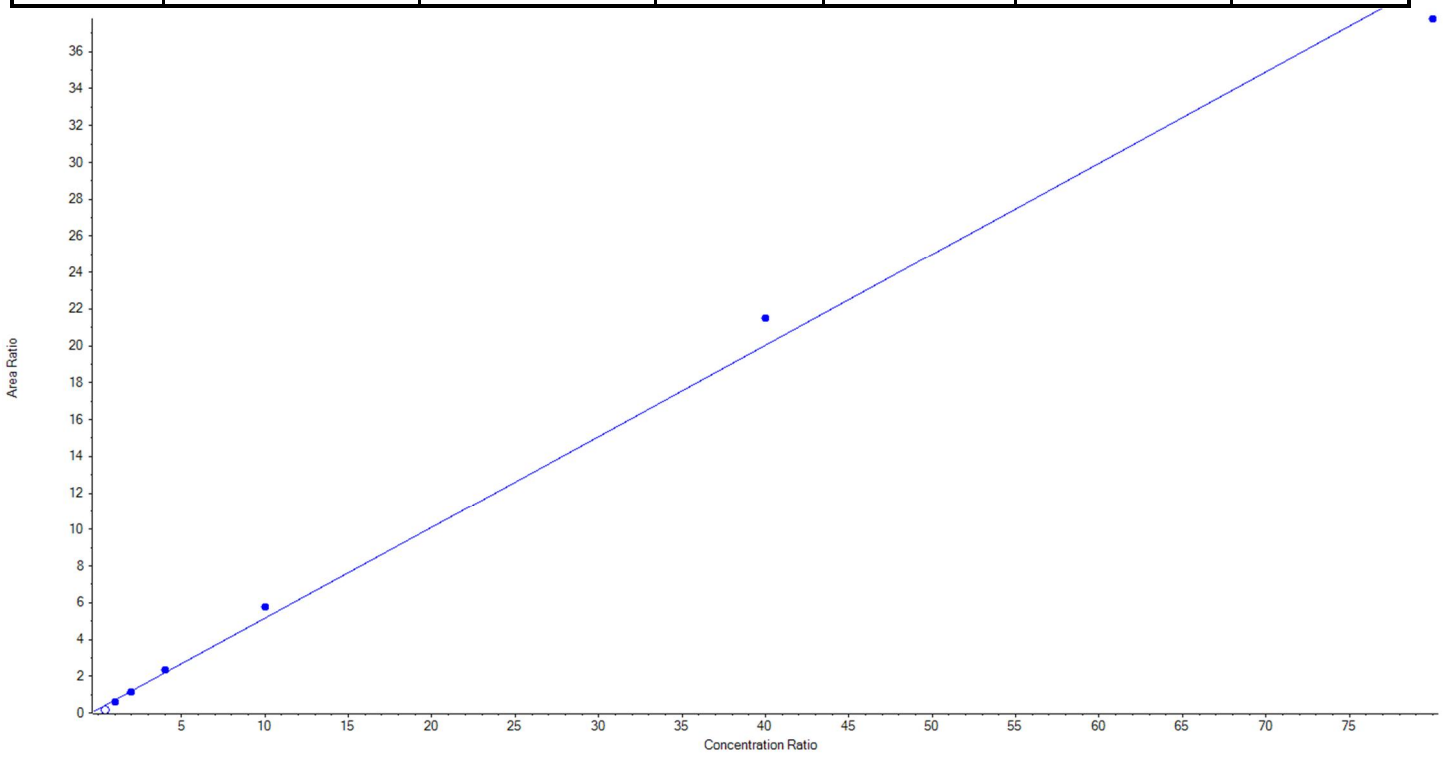
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	NMeFOSAA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0652
Internal Standard	d3-MeFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.49579 x + 0.20225 (r = 0.99728) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	False	100.00	< 0	N/A
13	KC67	L2	True	250.00	207.927864	83.2
14	KC68	L3	True	500.00	473.844189	94.8
15	KC69	L4	True	1000.00	1079.641840	108.0
16	KC70	L5	True	2500.00	2798.371078	111.9
17	KC71	L6	True	10000.00	10741.982836	107.4
18	KC72	L7	True	20000.00	18948.232193	94.7



BATTELLE

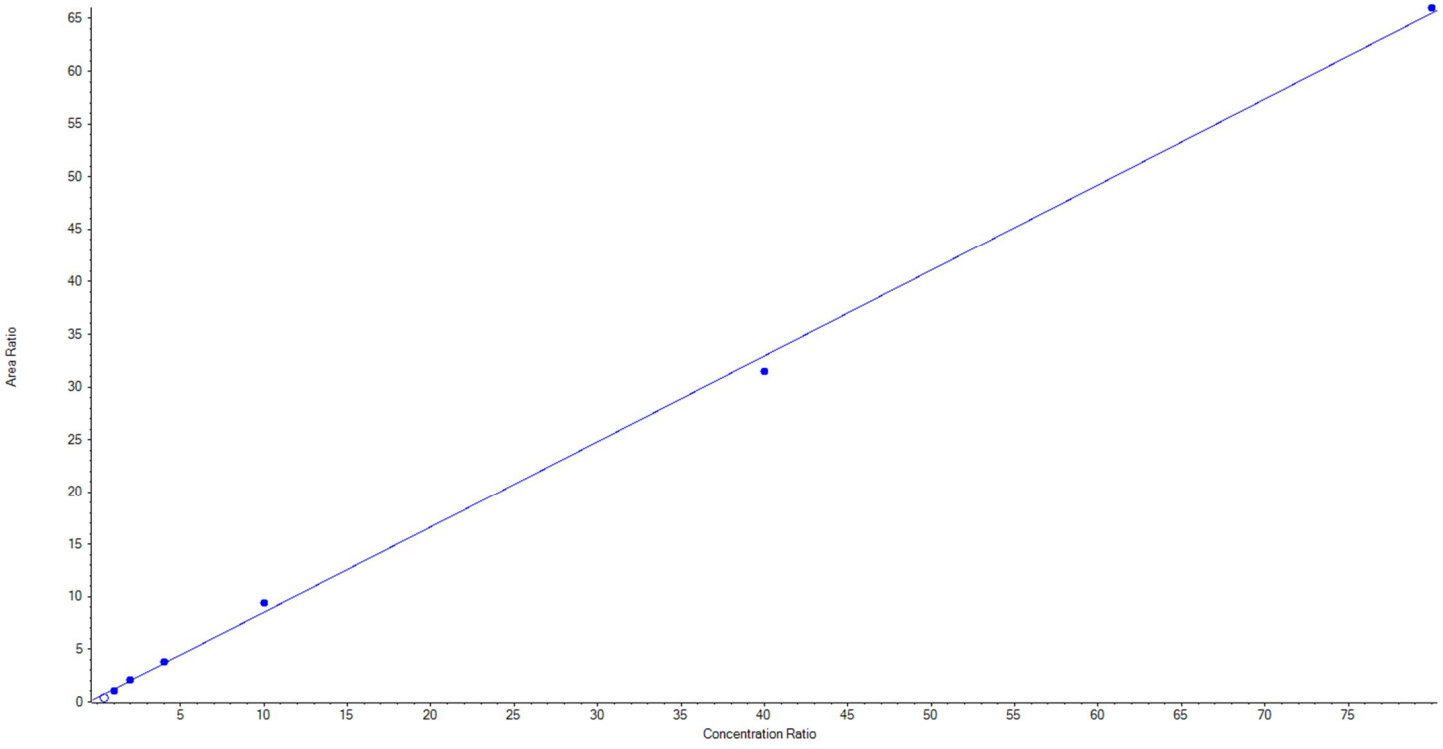
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	NEtFOSAA_1	**Data File**	AC_11062018_5-369.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0652
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.81399 x + 0.38998 (r = 0.99895) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	False	100.00	< 0	N/A
13	KC67	L2	True	250.00	205.407742	82.2
14	KC68	L3	True	500.00	529.652763	105.9
15	KC69	L4	True	1000.00	1050.019155	105.0
16	KC70	L5	True	2500.00	2766.827802	110.7
17	KC71	L6	True	10000.00	9548.172064	95.5
18	KC72	L7	True	20000.00	20149.920474	100.8



BATTELLE

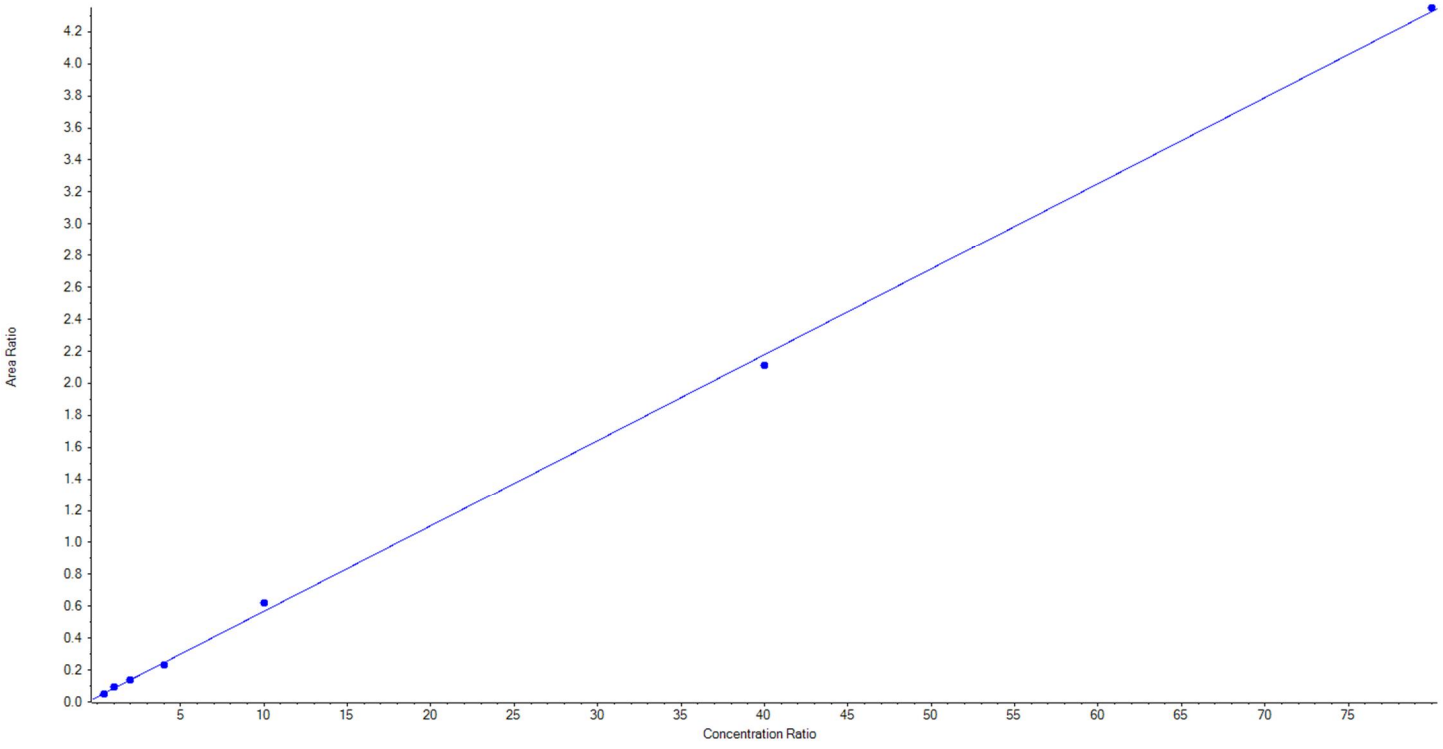
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	NEtFOSAA_2	**Data File**	AC_11062018_5-369.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0652
Internal Standard	d5-EtFOSAA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 0.05369 x + 0.03118 (r = 0.99923) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	81.040060	81.0
13	KC67	L2	True	250.00	298.903353	119.6
14	KC68	L3	True	500.00	491.431973	98.3
15	KC69	L4	True	1000.00	942.205122	94.2
16	KC70	L5	True	2500.00	2735.406350	109.4
17	KC71	L6	True	10000.00	9694.074525	96.9
18	KC72	L7	True	20000.00	20106.938617	100.5



BATTELLE

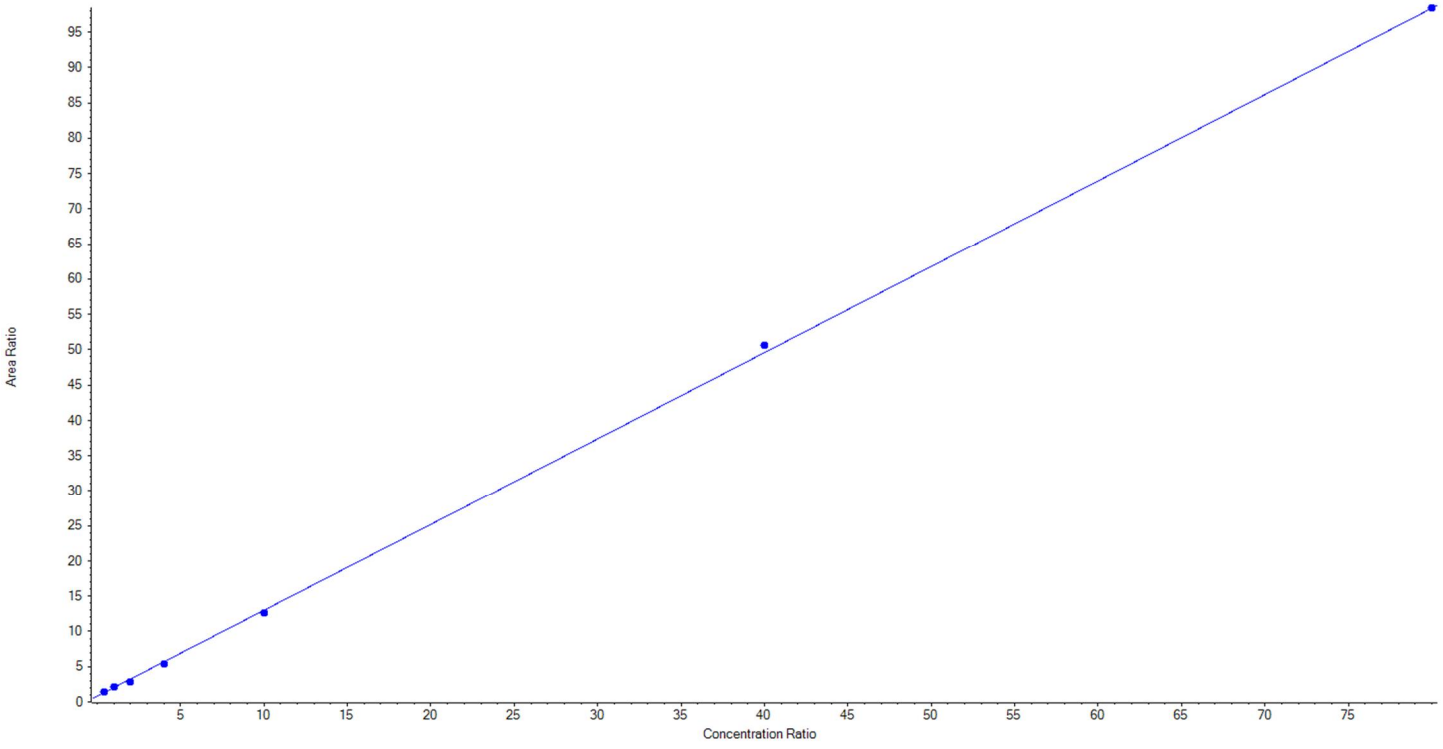
Calibration Summary Report

Created with Analyst Reporter
Printed: 21/11/2018 2:40:59 PM

Analyte Name	PFBA	**Data File**	AC_11062018_5-369.wiff
MRM Transition	213.0 / 169.0	**Result Table**	18-0652
Internal Standard	13C4-PFBA	**Instrument Name**	QTRAP 5500
Acquisition Date	11/7/2018 9:21:56 AM	**Acquisition Method**	5-0369.dam

Regression Equation: y = 1.21939 x + 0.80867 (r = 0.99951) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
12	KC66	L1	True	100.00	117.819436	117.8
13	KC67	L2	True	250.00	268.605251	107.4
14	KC68	L3	True	500.00	418.233560	83.7
15	KC69	L4	True	1000.00	927.489698	92.8
16	KC70	L5	True	2500.00	2407.003235	96.3
17	KC71	L6	True	10000.00	10201.681675	102.0
18	KC72	L7	True	20000.00	20009.167145	100.1



BATTELLE

	Isotope Dilution Calibration Curve Concentrations (ng/L)						
	KC66	KC67	KC68	KC69	KC70	KC71	KC72
PFBA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFPeA	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHxA	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHpA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFNA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFUnA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDoA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFTrDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFTeDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
NMeFOSAA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
NEtFOSAA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOSA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFBS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFPeS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFHxS (Branched)	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHpS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOS (Branched)	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFNS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
4:2FTS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
6:2FTS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
8:2FTS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
	Surrogates / Extracted Internal Standards						
13C4-PFBA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C5-PFPeA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C5-PFHxA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C4-PFHpA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C8-PFOA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C9-PFNA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C6-PFDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C7-PFUnA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFDoA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFTeDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
d3-MeFOSAA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
d5-EtFOSAA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C8-FOSA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C3-PFBS	232.25	232.25	232.25	232.25	232.25	232.25	232.25
13C3-PFHxS	236.50	236.50	236.50	236.50	236.50	236.50	236.50
13C8-PFOS	239.25	239.25	239.25	239.25	239.25	239.25	239.25
13C2-4:2FTS	233.75	233.75	233.75	233.75	233.75	233.75	233.75
13C2-6:2FTS	237.25	237.25	237.25	237.25	237.25	237.25	237.25
13C2-8:2FTS	239.50	239.50	239.50	239.50	239.50	239.50	239.50
	Internal Standards						
13C3-PFBA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFOA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C4-PFOS	239.25	239.25	239.25	239.25	239.25	239.25	239.25

	ICC
	KC74
PFBA	1,000.00
PFPeA	1,000.00
PFHxA	1,010.00
PFHpA	1,000.00
PFOA	1,000.00
PFNA	1,000.00
PFDA	1,000.00
PFUnA	1,000.00
PFDoA	1,000.00
PFTrDA	1,000.00
PFTeDA	1,000.00
NMeFOSAA	1,000.00
NEtFOSAA	1,000.00
PFOSA	1,000.00
PFBS	1,010.00
PFPeS	1,000.00
PFHxS	1,010.00
PFHpS	1,000.00
PFOS	1,000.00
PFDS	1,010.00
PFNS	1,010.00
4:2FTS	1,000.00
6:2FTS	1,000.00
8:2FTS	1,010.00
13C4-PFBA	250.00
13C5-PFPeA	250.00
13C5-PFHxA	250.00
13C4-PFHpA	250.00
13C8-PFOA	250.00
13C9-PFNA	250.00
13C6-PFDA	250.00
13C7-PFUnA	250.00
13C2-PFDoA	250.00
13C2-PFTeDA	250.00
d3-MeFOSAA	250.00
d5-EtFOSAA	250.00
13C8-FOSA	250.00
13C3-PFBS	232.25
13C3-PFHxS	236.50
13C8-PFOS	239.25
13C2-4:2FTS	233.75
13C2-6:2FTS	237.25
13C2-8:2FTS	239.50
13C3-PFBA	250.00
13C2-PFOA	250.00
13C2-PFDA	250.00
13C4-PFOS	239.25

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:42:39 PM

Sample Name	KC66	**Injection Vial**	12
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T09:32:49	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.59	PFBS			
PFBS_2	298.9 / 99.0	1.59	PFBS	0.330	0.310	ü
PFHxA_1	313.0 / 269.0	1.93	PFHxA			
PFHxA_2	313.0 / 119.0	1.92	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.35	PFHpA			
PFHpA_2	363.0 / 169.0	2.35	PFHpA	0.030	0.022	ü
PFHxS_1	399.0 / 80.0	2.37	PFHxS			
PFHxS_2	399.0 / 99.0	2.37	PFHxS	0.270	0.282	ü
PFOA_1	413.0 / 369.0	2.77	PFOA			
PFOA_2	413.0 / 169.0	2.78	PFOA	0.050	0.062	ü
PFNA_1	463.0 / 419.0	3.17	PFNA			
PFNA_2	463.0 / 219.0	3.17	PFNA	0.240	0.303	ü
PFOS_1	499.0 / 80.0	3.17	PFOS			
PFOS_2	499.0 / 99.0	3.17	PFOS	0.180	0.176	ü
PFDA_1	513.0 / 469.0	3.54	PFDA			
PFDA_2	513.0 / 219.0	3.54	PFDA	0.050	0.047	ü
PFUnA_1	563.0 / 519.0	3.87	PFUnA			
PFUnA_2	563.0 / 269.0	3.87	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.16	PFDoA			
PFDoA_2	613.0 / 319.0	4.16	PFDoA	0.190	0.161	ü
PFTrDA_1	663.0 / 619.0	4.42	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.41	PFTrDA	0.080	0.066	ü
PFTeDA_1	713.0 / 669.0	4.64	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.64	PFTeDA	0.060	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.70	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.70	NMeFOSAA	0.380	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.86	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.87	NEtFOSAA	0.130	0.078	
PFBA	213.0 / 169.0	1.18				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:42:43 PM

Sample Name	KC67	**Injection Vial**	13
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T09:43:41	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.59	PFBS			
PFBS_2	298.9 / 99.0	1.59	PFBS	0.330	0.310	ü
PFHxA_1	313.0 / 269.0	1.92	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.34	PFHpA			
PFHpA_2	363.0 / 169.0	2.33	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.36	PFHxS			
PFHxS_2	399.0 / 99.0	2.36	PFHxS	0.300	0.282	ü
PFOA_1	413.0 / 369.0	2.76	PFOA			
PFOA_2	413.0 / 169.0	2.76	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.16	PFNA			
PFNA_2	463.0 / 219.0	3.16	PFNA	0.340	0.303	ü
PFOS_1	499.0 / 80.0	3.16	PFOS			
PFOS_2	499.0 / 99.0	3.16	PFOS	0.170	0.176	ü
PFDA_1	513.0 / 469.0	3.52	PFDA			
PFDA_2	513.0 / 219.0	3.52	PFDA	0.050	0.047	ü
PFUnA_1	563.0 / 519.0	3.86	PFUnA			
PFUnA_2	563.0 / 269.0	3.85	PFUnA	0.060	0.053	ü
PFDoA_1	613.0 / 569.0	4.15	PFDoA			
PFDoA_2	613.0 / 319.0	4.14	PFDoA	0.150	0.161	ü
PFTrDA_1	663.0 / 619.0	4.40	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.40	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.63	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.62	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.68	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.68	NMeFOSAA	0.590	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.85	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.85	NEtFOSAA	0.090	0.078	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:42:47 PM

Sample Name	KC68	**Injection Vial**	14
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T09:54:32	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.58	PFBS			
PFBS_2	298.9 / 99.0	1.58	PFBS	0.290	0.310	ü
PFHxA_1	313.0 / 269.0	1.91	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.33	PFHpA			
PFHpA_2	363.0 / 169.0	2.33	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.35	PFHxS			
PFHxS_2	399.0 / 99.0	2.35	PFHxS	0.260	0.282	ü
PFOA_1	413.0 / 369.0	2.75	PFOA			
PFOA_2	413.0 / 169.0	2.75	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.15	PFNA			
PFNA_2	463.0 / 219.0	3.15	PFNA	0.300	0.303	ü
PFOS_1	499.0 / 80.0	3.15	PFOS			
PFOS_2	499.0 / 99.0	3.15	PFOS	0.180	0.176	ü
PFDA_1	513.0 / 469.0	3.51	PFDA			
PFDA_2	513.0 / 219.0	3.51	PFDA	0.060	0.047	ü
PFUnA_1	563.0 / 519.0	3.85	PFUnA			
PFUnA_2	563.0 / 269.0	3.85	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.13	PFDoA			
PFDoA_2	613.0 / 319.0	4.13	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.39	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.39	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.61	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.61	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.68	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.67	NMeFOSAA	0.590	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.84	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.84	NEtFOSAA	0.060	0.078	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:42:51 PM

Sample Name	KC69	**Injection Vial**	15
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:05:24	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.58	PFBS			
PFBS_2	298.9 / 99.0	1.58	PFBS	0.310	0.310	ü
PFHxA_1	313.0 / 269.0	1.91	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	PFHxA	0.070	0.077	ü
PFHpA_1	363.0 / 319.0	2.33	PFHpA			
PFHpA_2	363.0 / 169.0	2.32	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.35	PFHxS			
PFHxS_2	399.0 / 99.0	2.35	PFHxS	0.300	0.282	ü
PFOA_1	413.0 / 369.0	2.75	PFOA			
PFOA_2	413.0 / 169.0	2.74	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.15	PFNA			
PFNA_2	463.0 / 219.0	3.14	PFNA	0.320	0.303	ü
PFOS_1	499.0 / 80.0	3.14	PFOS			
PFOS_2	499.0 / 99.0	3.14	PFOS	0.180	0.176	ü
PFDA_1	513.0 / 469.0	3.51	PFDA			
PFDA_2	513.0 / 219.0	3.51	PFDA	0.050	0.047	ü
PFUnA_1	563.0 / 519.0	3.84	PFUnA			
PFUnA_2	563.0 / 269.0	3.84	PFUnA	0.060	0.053	ü
PFDoA_1	613.0 / 569.0	4.13	PFDoA			
PFDoA_2	613.0 / 319.0	4.12	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.38	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.38	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.60	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.60	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.66	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.66	NMeFOSAA	0.550	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.83	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.83	NEtFOSAA	0.060	0.078	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:42:55 PM

Sample Name	KC70	**Injection Vial**	16
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:16:15	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.58	PFBS			
PFBS_2	298.9 / 99.0	1.58	PFBS	0.290	0.310	ü
PFHxA_1	313.0 / 269.0	1.91	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.32	PFHpA			
PFHpA_2	363.0 / 169.0	2.32	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.35	PFHxS			
PFHxS_2	399.0 / 99.0	2.35	PFHxS	0.270	0.282	ü
PFOA_1	413.0 / 369.0	2.74	PFOA			
PFOA_2	413.0 / 169.0	2.74	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.14	PFNA			
PFNA_2	463.0 / 219.0	3.14	PFNA	0.300	0.303	ü
PFOS_1	499.0 / 80.0	3.14	PFOS			
PFOS_2	499.0 / 99.0	3.14	PFOS	0.180	0.176	ü
PFDA_1	513.0 / 469.0	3.50	PFDA			
PFDA_2	513.0 / 219.0	3.50	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.83	PFUnA			
PFUnA_2	563.0 / 269.0	3.83	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.12	PFDoA			
PFDoA_2	613.0 / 319.0	4.12	PFDoA	0.150	0.161	ü
PFTrDA_1	663.0 / 619.0	4.37	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.37	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.59	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.59	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.66	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.66	NMeFOSAA	0.540	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.83	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.82	NEtFOSAA	0.070	0.078	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:42:59 PM

Sample Name	KC71	**Injection Vial**	17
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:27:06	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.58	PFBS			
PFBS_2	298.9 / 99.0	1.58	PFBS	0.310	0.310	ü
PFHxA_1	313.0 / 269.0	1.91	PFHxA			
PFHxA_2	313.0 / 119.0	1.91	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.32	PFHpA			
PFHpA_2	363.0 / 169.0	2.32	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.34	PFHxS			
PFHxS_2	399.0 / 99.0	2.34	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.74	PFOA			
PFOA_2	413.0 / 169.0	2.74	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.14	PFNA			
PFNA_2	463.0 / 219.0	3.14	PFNA	0.320	0.303	ü
PFOS_1	499.0 / 80.0	3.13	PFOS			
PFOS_2	499.0 / 99.0	3.13	PFOS	0.170	0.176	ü
PFDA_1	513.0 / 469.0	3.50	PFDA			
PFDA_2	513.0 / 219.0	3.50	PFDA	0.050	0.047	ü
PFUnA_1	563.0 / 519.0	3.83	PFUnA			
PFUnA_2	563.0 / 269.0	3.83	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.11	PFDoA			
PFDoA_2	613.0 / 319.0	4.11	PFDoA	0.150	0.161	ü
PFTrDA_1	663.0 / 619.0	4.37	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.37	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.59	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.59	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.66	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.66	NMeFOSAA	0.560	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.82	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.82	NEtFOSAA	0.070	0.078	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:43:03 PM

Sample Name	KC72	**Injection Vial**	18
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:37:57	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.57	PFBS			
PFBS_2	298.9 / 99.0	1.57	PFBS	0.310	0.310	ü
PFHxA_1	313.0 / 269.0	1.90	PFHxA			
PFHxA_2	313.0 / 119.0	1.90	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.32	PFHpA			
PFHpA_2	363.0 / 169.0	2.32	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.34	PFHxS			
PFHxS_2	399.0 / 99.0	2.34	PFHxS	0.290	0.282	ü
PFOA_1	413.0 / 369.0	2.73	PFOA			
PFOA_2	413.0 / 169.0	2.73	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.14	PFNA			
PFNA_2	463.0 / 219.0	3.14	PFNA	0.300	0.303	ü
PFOS_1	499.0 / 80.0	3.13	PFOS			
PFOS_2	499.0 / 99.0	3.13	PFOS	0.170	0.176	ü
PFDA_1	513.0 / 469.0	3.50	PFDA			
PFDA_2	513.0 / 219.0	3.50	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.83	PFUnA			
PFUnA_2	563.0 / 269.0	3.83	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.11	PFDoA			
PFDoA_2	613.0 / 319.0	4.11	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.36	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.36	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.58	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.58	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.65	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.65	NMeFOSAA	0.540	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.82	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.82	NEtFOSAA	0.070	0.078	ü
PFBA	213.0 / 169.0	1.17				

Sample Name	KC74 ICC	**Injection Vial**	20
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:59:42	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.57	985.657132	1010.00	97.59
PFBS_2	298.9 / 99.0	1.57	967.900235	1010.00	95.83
PFHxA_1	313.0 / 269.0	1.90	936.741191	1010.00	92.75
PFHxA_2	313.0 / 119.0	1.90	846.085477	1010.00	83.77
PFHpA_1	363.0 / 319.0	2.31	966.982362	1000.00	96.70
PFHpA_2	363.0 / 169.0	2.31	1023.155557	1000.00	102.32
PFHxS_1	399.0 / 80.0	2.33	1028.703659	1010.00	101.85
PFHxS_2	399.0 / 99.0	2.33	1029.712714	1010.00	101.95
PFOA_1	413.0 / 369.0	2.73	918.648556	1000.00	91.86
PFOA_2	413.0 / 169.0	2.73	855.214451	1000.00	85.52
PFNA_1	463.0 / 419.0	3.13	1040.339836	1000.00	104.03
PFNA_2	463.0 / 219.0	3.13	1103.887217	1000.00	110.39
PFOS_1	499.0 / 80.0	3.12	999.198415	1000.00	99.92
PFOS_2	499.0 / 99.0	3.12	942.462562	1000.00	94.25
PFDA_1	513.0 / 469.0	3.49	1042.262467	1000.00	104.23
PFDA_2	513.0 / 219.0	3.48	808.019577	1000.00	80.80
PFUnA_1	563.0 / 519.0	3.82	956.944687	1000.00	95.69
PFUnA_2	563.0 / 269.0	3.81	949.260172	1000.00	94.93
PFDoA_1	613.0 / 569.0	4.10	997.936913	1000.00	99.79
PFDoA_2	613.0 / 319.0	4.10	1041.596286	1000.00	104.16
PFTrDA_1	663.0 / 619.0	4.35	1037.504407	1000.00	103.75
PFTrDA_2	663.0 / 169.0	4.35	1066.628102	1000.00	106.66
PFTeDA_1	713.0 / 669.0	4.57	993.285971	1000.00	99.33
PFTeDA_2	713.0 / 169.0	4.57	969.594006	1000.00	96.96
NMeFOSAA_1	570.0 / 419.0	3.64	971.895726	1000.00	97.19
NMeFOSAA_2	570.0 / 512.0	3.64	872.117255	1000.00	87.21
NEtFOSAA_1	584.0 / 419.0	3.81	945.882870	1000.00	94.59
NEtFOSAA_2	584.0 / 483.0	3.81	701.811220	1000.00	70.18
PFBA	213.0 / 169.0	1.16	934.648432	1000.00	93.46

Sample Name	KC68 ISC	**Injection Vial**	1
Sample ID	Instrument Sensitivity Check	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T09:55:29	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.60	476.432877	505.00	94.34
PFBS_2	298.9 / 99.0	1.60	474.557019	505.00	93.97
PFHxA_1	313.0 / 269.0	1.94	477.699102	505.00	94.59
PFHxA_2	313.0 / 119.0	1.94	480.173251	505.00	95.08
PFHpA_1	363.0 / 319.0	2.37	517.509974	500.00	103.50
PFHpA_2	363.0 / 169.0	2.36	539.002987	500.00	107.80
PFHxS_1	399.0 / 80.0	2.39	461.231282	505.00	91.33
PFHxS_2	399.0 / 99.0	2.39	497.147260	505.00	98.45
PFOA_1	413.0 / 369.0	2.79	437.167381	500.00	87.43
PFOA_2	413.0 / 169.0	2.79	452.627878	500.00	90.53
PFNA_1	463.0 / 419.0	3.19	505.007632	500.00	101.00
PFNA_2	463.0 / 219.0	3.19	503.509856	500.00	100.70
PFOS_1	499.0 / 80.0	3.19	503.272745	500.00	100.65
PFOS_2	499.0 / 99.0	3.19	538.815584	500.00	107.76
PFDA_1	513.0 / 469.0	3.56	532.916758	500.00	106.58
PFDA_2	513.0 / 219.0	3.56	509.185008	500.00	101.84
PFUnA_1	563.0 / 519.0	3.89	503.080185	500.00	100.62
PFUnA_2	563.0 / 269.0	3.89	579.847575	500.00	115.97
PFDoA_1	613.0 / 569.0	4.18	534.003828	500.00	106.80
PFDoA_2	613.0 / 319.0	4.18	537.502784	500.00	107.50
PFTrDA_1	663.0 / 619.0	4.44	467.415643	500.00	93.48
PFTrDA_2	663.0 / 169.0	4.44	452.493593	500.00	90.50
PFTeDA_1	713.0 / 669.0	4.67	505.842577	500.00	101.17
PFTeDA_2	713.0 / 169.0	4.67	456.637026	500.00	91.33
NMeFOSAA_1	570.0 / 419.0	3.72	564.444221	500.00	112.89
NMeFOSAA_2	570.0 / 512.0	3.72	451.777889	500.00	90.36
NEtFOSAA_1	584.0 / 419.0	3.89	456.102147	500.00	91.22
NEtFOSAA_2	584.0 / 483.0	3.88	407.532891	500.00	81.51
PFBA	213.0 / 169.0	1.18	469.618092	500.00	93.92

Sample Name	KC69 CCV	**Injection Vial**	54
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T17:33:59	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.55	957.017348	1010.00	94.75
PFBS_2	298.9 / 99.0	1.54	911.563008	1010.00	90.25
PFHxA_1	313.0 / 269.0	1.87	1031.567707	1010.00	102.14
PFHxA_2	313.0 / 119.0	1.87	1128.941254	1010.00	111.78
PFHpA_1	363.0 / 319.0	2.28	966.143435	1000.00	96.61
PFHpA_2	363.0 / 169.0	2.28	897.683026	1000.00	89.77
PFHxS_1	399.0 / 80.0	2.30	903.796333	1010.00	89.48
PFHxS_2	399.0 / 99.0	2.30	882.944056	1010.00	87.42
PFOA_1	413.0 / 369.0	2.69	945.436764	1000.00	94.54
PFOA_2	413.0 / 169.0	2.69	888.369761	1000.00	88.84
PFNA_1	463.0 / 419.0	3.09	1021.542598	1000.00	102.15
PFNA_2	463.0 / 219.0	3.09	996.704475	1000.00	99.67
PFOS_1	499.0 / 80.0	3.08	1057.739404	1000.00	105.77
PFOS_2	499.0 / 99.0	3.08	1110.945710	1000.00	111.09
PFDA_1	513.0 / 469.0	3.44	979.519296	1000.00	97.95
PFDA_2	513.0 / 219.0	3.44	870.336553	1000.00	87.03
PFUnA_1	563.0 / 519.0	3.77	1039.517234	1000.00	103.95
PFUnA_2	563.0 / 269.0	3.77	1092.870827	1000.00	109.29
PFDoA_1	613.0 / 569.0	4.05	1105.956309	1000.00	110.60
PFDoA_2	613.0 / 319.0	4.05	1097.282117	1000.00	109.73
PFTrDA_1	663.0 / 619.0	4.29	1080.257970	1000.00	108.03
PFTrDA_2	663.0 / 169.0	4.29	1223.506942	1000.00	122.35
PFTeDA_1	713.0 / 669.0	4.51	1045.576600	1000.00	104.56
PFTeDA_2	713.0 / 169.0	4.51	1075.715018	1000.00	107.57
NMeFOSAA_1	570.0 / 419.0	3.60	1014.741056	1000.00	101.47
NMeFOSAA_2	570.0 / 512.0	3.60	1154.273267	1000.00	115.43
NEtFOSAA_1	584.0 / 419.0	3.76	851.850247	1000.00	85.19
NEtFOSAA_2	584.0 / 483.0	3.76	733.902069	1000.00	73.39
PFBA	213.0 / 169.0	1.14	914.424384	1000.00	91.44

Sample Name	KC70 CCV	**Injection Vial**	11
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:33:36	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.54	2677.700884	2525.00	106.05
PFBS_2	298.9 / 99.0	1.54	2489.404669	2525.00	98.59
PFHxA_1	313.0 / 269.0	1.87	2418.294193	2525.00	95.77
PFHxA_2	313.0 / 119.0	1.86	2515.370589	2525.00	99.62
PFHpA_1	363.0 / 319.0	2.28	2605.520263	2500.00	104.22
PFHpA_2	363.0 / 169.0	2.28	2650.981575	2500.00	106.04
PFHxS_1	399.0 / 80.0	2.30	2243.731225	2525.00	88.86
PFHxS_2	399.0 / 99.0	2.30	2220.523402	2525.00	87.94
PFOA_1	413.0 / 369.0	2.69	2205.349346	2500.00	88.21
PFOA_2	413.0 / 169.0	2.68	2288.550515	2500.00	91.54
PFNA_1	463.0 / 419.0	3.08	2702.092152	2500.00	108.08
PFNA_2	463.0 / 219.0	3.08	2623.853204	2500.00	104.95
PFOS_1	499.0 / 80.0	3.08	2742.109521	2500.00	109.68
PFOS_2	499.0 / 99.0	3.08	2775.730415	2500.00	111.03
PFDA_1	513.0 / 469.0	3.44	2625.354805	2500.00	105.01
PFDA_2	513.0 / 219.0	3.43	2632.505463	2500.00	105.30
PFUnA_1	563.0 / 519.0	3.76	2322.144052	2500.00	92.89
PFUnA_2	563.0 / 269.0	3.76	2473.757628	2500.00	98.95
PFDoA_1	613.0 / 569.0	4.04	2671.432624	2500.00	106.86
PFDoA_2	613.0 / 319.0	4.04	2642.557699	2500.00	105.70
PFTrDA_1	663.0 / 619.0	4.29	2587.051297	2500.00	103.48
PFTrDA_2	663.0 / 169.0	4.29	2575.939975	2500.00	103.04
PFTeDA_1	713.0 / 669.0	4.50	2530.690979	2500.00	101.23
PFTeDA_2	713.0 / 169.0	4.50	2651.286652	2500.00	106.05
NMeFOSAA_1	570.0 / 419.0	3.59	2444.491042	2500.00	97.78
NMeFOSAA_2	570.0 / 512.0	3.59	2332.395630	2500.00	93.30
NEtFOSAA_1	584.0 / 419.0	3.75	2776.766890	2500.00	111.07
NEtFOSAA_2	584.0 / 483.0	3.75	3102.644747	2500.00	124.11
PFBA	213.0 / 169.0	1.14	2890.642127	2500.00	115.63

Sample Name	KC74 ICC	**Injection Vial**	20
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:59:42	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	4.09	237.727951	250.00	95.09
d3-MeFOSAA	573.0 / 419.0	3.64	230.660071	250.00	92.26
d5-EtFOSAA	589.0 / 419.0	3.80	245.335713	250.00	98.13
13C5-PFHxA	318.0 / 273.0	1.89	240.076906	250.00	96.03
13C4-PFHpA	367.0 / 322.0	2.30	228.021670	250.00	91.21
13C8-PFOA	421.0 / 376.0	2.72	251.099690	250.00	100.44
13C9-PFNA	472.0 / 427.0	3.11	236.580685	250.00	94.63
13C6-PFDA	519.0 / 474.0	3.47	243.285788	250.00	97.31
13C7-PFUnA	570.0 / 525.0	3.80	246.324399	250.00	98.53
13C2-PFTeDA	715.0 / 670.0	4.57	236.803010	250.00	94.72
13C3-PFBS	302.0 / 99.0	1.55	212.697277	232.25	91.58
13C3-PFHxS	402.0 / 99.0	2.33	194.886838	236.50	82.40
13C8-PFOS	507.0 / 99.0	3.11	224.315680	239.50	93.66
13C4-PFBA	217.0 / 172.0	1.16	256.649850	250.00	102.66

Sample Name	KC68 ISC	**Injection Vial**	1
Sample ID	Instrument Sensitivity check	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T09:55:29	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	4.17	264.135033	250.00	105.65
d3-MeFOSAA	573.0 / 419.0	3.72	315.320086	250.00	126.13
d5-EtFOSAA	589.0 / 419.0	3.88	308.340213	250.00	123.34
13C5-PFHxA	318.0 / 273.0	1.93	260.333379	250.00	104.13
13C4-PFHpA	367.0 / 322.0	2.36	240.528408	250.00	96.21
13C8-PFOA	421.0 / 376.0	2.78	278.861342	250.00	111.54
13C9-PFNA	472.0 / 427.0	3.18	241.826407	250.00	96.73
13C6-PFDA	519.0 / 474.0	3.55	243.269461	250.00	97.31
13C7-PFUnA	570.0 / 525.0	3.88	261.589238	250.00	104.64
13C2-PFTeDA	715.0 / 670.0	4.67	291.605184	250.00	116.64
13C3-PFBS	302.0 / 99.0	1.59	227.439316	232.25	97.93
13C3-PFHxS	402.0 / 99.0	2.38	259.654273	236.50	109.79
13C8-PFOS	507.0 / 99.0	3.18	254.113517	239.50	106.10
13C4-PFBA	217.0 / 172.0	1.18	232.649243	250.00	93.06

Sample Name	KC69 CCV	**Injection Vial**	54
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T17:33:59	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	4.04	243.548219	250.00	97.42
d3-MeFOSAA	573.0 / 419.0	3.59	262.300070	250.00	104.92
d5-EtFOSAA	589.0 / 419.0	3.75	319.128805	250.00	127.65
13C5-PFHxA	318.0 / 273.0	1.85	235.276246	250.00	94.11
13C4-PFHpA	367.0 / 322.0	2.27	233.896927	250.00	93.56
13C8-PFOA	421.0 / 376.0	2.68	274.187292	250.00	109.67
13C9-PFNA	472.0 / 427.0	3.07	253.519634	250.00	101.41
13C6-PFDA	519.0 / 474.0	3.43	254.567880	250.00	101.83
13C7-PFUnA	570.0 / 525.0	3.75	263.416294	250.00	105.37
13C2-PFTeDA	715.0 / 670.0	4.50	251.096534	250.00	100.44
13C3-PFBS	302.0 / 99.0	1.53	268.954199	232.25	115.80
13C3-PFHxS	402.0 / 99.0	2.29	253.684117	236.50	107.27
13C8-PFOS	507.0 / 99.0	3.07	244.340198	239.50	102.02
13C4-PFBA	217.0 / 172.0	1.15	243.691902	250.00	97.48

Sample Name	KC70 CCV	**Injection Vial**	11
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:33:36	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	4.03	245.763900	250.00	98.31
d3-MeFOSAA	573.0 / 419.0	3.59	323.271642	250.00	129.31
d5-EtFOSAA	589.0 / 419.0	3.75	292.299027	250.00	116.92
13C5-PFHxA	318.0 / 273.0	1.85	242.452161	250.00	96.98
13C4-PFHpA	367.0 / 322.0	2.26	232.833113	250.00	93.13
13C8-PFOA	421.0 / 376.0	2.67	283.274879	250.00	113.31
13C9-PFNA	472.0 / 427.0	3.07	249.903502	250.00	99.96
13C6-PFDA	519.0 / 474.0	3.42	229.944915	250.00	91.98
13C7-PFUnA	570.0 / 525.0	3.74	262.124760	250.00	104.85
13C2-PFTeDA	715.0 / 670.0	4.50	263.817902	250.00	105.53
13C3-PFBS	302.0 / 99.0	1.53	244.396494	232.25	105.23
13C3-PFHxS	402.0 / 99.0	2.29	255.286259	236.50	107.94
13C8-PFOS	507.0 / 99.0	3.07	250.680365	239.50	104.67
13C4-PFBA	217.0 / 172.0	1.15	249.062331	250.00	99.62

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:46:10 PM

Sample Name	KC74 ICC	**Injection Vial**	20
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:59:42	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.57	PFBS			
PFBS_2	298.9 / 99.0	1.57	PFBS	0.300	0.310	ü
PFHxA_1	313.0 / 269.0	1.90	PFHxA			
PFHxA_2	313.0 / 119.0	1.90	PFHxA	0.070	0.077	ü
PFHpA_1	363.0 / 319.0	2.31	PFHpA			
PFHpA_2	363.0 / 169.0	2.31	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.33	PFHxS			
PFHxS_2	399.0 / 99.0	2.33	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.73	PFOA			
PFOA_2	413.0 / 169.0	2.73	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.13	PFNA			
PFNA_2	463.0 / 219.0	3.13	PFNA	0.320	0.303	ü
PFOS_1	499.0 / 80.0	3.12	PFOS			
PFOS_2	499.0 / 99.0	3.12	PFOS	0.170	0.176	ü
PFDA_1	513.0 / 469.0	3.49	PFDA			
PFDA_2	513.0 / 219.0	3.48	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.82	PFUnA			
PFUnA_2	563.0 / 269.0	3.81	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.10	PFDoA			
PFDoA_2	613.0 / 319.0	4.10	PFDoA	0.170	0.161	ü
PFTrDA_1	663.0 / 619.0	4.35	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.35	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.57	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.57	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.64	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.64	NMeFOSAA	0.520	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.81	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.81	NEtFOSAA	0.050	0.078	ü
PFBA	213.0 / 169.0	1.16				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:46:14 PM

Sample Name	KC68 ISC	**Injection Vial**	1
Sample ID	Instrument Sensitivity Check	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T09:55:29	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.60	PFBS			
PFBS_2	298.9 / 99.0	1.60	PFBS	0.310	0.310	ü
PFHxA_1	313.0 / 269.0	1.94	PFHxA			
PFHxA_2	313.0 / 119.0	1.94	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.37	PFHpA			
PFHpA_2	363.0 / 169.0	2.36	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.39	PFHxS			
PFHxS_2	399.0 / 99.0	2.39	PFHxS	0.300	0.282	ü
PFOA_1	413.0 / 369.0	2.79	PFOA			
PFOA_2	413.0 / 169.0	2.79	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.19	PFNA			
PFNA_2	463.0 / 219.0	3.19	PFNA	0.300	0.303	ü
PFOS_1	499.0 / 80.0	3.19	PFOS			
PFOS_2	499.0 / 99.0	3.19	PFOS	0.190	0.176	ü
PFDA_1	513.0 / 469.0	3.56	PFDA			
PFDA_2	513.0 / 219.0	3.56	PFDA	0.050	0.047	ü
PFUnA_1	563.0 / 519.0	3.89	PFUnA			
PFUnA_2	563.0 / 269.0	3.89	PFUnA	0.060	0.053	ü
PFDoA_1	613.0 / 569.0	4.18	PFDoA			
PFDoA_2	613.0 / 319.0	4.18	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.44	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.44	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.67	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.67	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.72	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.72	NMeFOSAA	0.490	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.89	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.88	NEtFOSAA	0.060	0.078	ü
PFBA	213.0 / 169.0	1.18				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:46:18 PM

Sample Name	KC69 CCV	**Injection Vial**	54
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T17:33:59	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.55	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.290	0.310	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.87	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.09	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.300	0.303	ü
PFOS_1	499.0 / 80.0	3.08	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.180	0.176	ü
PFDA_1	513.0 / 469.0	3.44	PFDA			
PFDA_2	513.0 / 219.0	3.44	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.77	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.05	PFDoA			
PFDoA_2	613.0 / 319.0	4.05	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.29	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.29	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.51	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.51	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.60	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.60	NMeFOSAA	0.640	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.76	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.76	NEtFOSAA	0.060	0.078	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:46:23 PM

Sample Name	KC70 CCV	**Injection Vial**	11
Sample ID	CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:33:36	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.290	0.310	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.68	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.08	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.300	0.303	ü
PFOS_1	499.0 / 80.0	3.08	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.180	0.176	ü
PFDA_1	513.0 / 469.0	3.44	PFDA			
PFDA_2	513.0 / 219.0	3.43	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.76	PFUnA			
PFUnA_2	563.0 / 269.0	3.76	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.04	PFDoA			
PFDoA_2	613.0 / 319.0	4.04	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.29	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.29	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.50	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.50	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.59	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.59	NMeFOSAA	0.530	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.75	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.75	NEtFOSAA	0.070	0.078	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:51:36 PM

Sample Name	KC73 IB	**Injection Vial**	19
Sample ID	Instrument Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-07T10:48:49	**Data File**	AC_11062018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.58	PFBS			
PFBS_2	298.9 / 99.0	1.58	PFBS	0.610	0.310	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.077	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	2.34	PFHxS			
PFHxS_2	399.0 / 99.0	2.35	PFHxS	0.260	0.282	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.062	ü
PFNA_1	463.0 / 419.0	3.13	PFNA			
PFNA_2	463.0 / 219.0	3.13	PFNA	0.440	0.303	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	4.11	PFDoA			
PFDoA_2	613.0 / 319.0	4.11	PFDoA	0.190	0.161	ü
PFTrDA_1	663.0 / 619.0	4.36	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.37	PFTrDA	0.080	0.066	ü
PFTeDA_1	713.0 / 669.0	4.58	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.58	PFTeDA	0.070	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.65	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.64	NMeFOSAA	0.880	0.562	
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:51:40 PM

Sample Name	KC73 IB	**Injection Vial**	2
Sample ID	Instrument Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T10:06:22	**Data File**	AC_11122018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.310	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.077	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.282	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.062	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.303	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	N/A				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:51:44 PM

Sample Name	CS100PB-FS(0)	**Injection Vial**	2
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T17:55:45	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.230	0.310	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.100	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.050	0.022	
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.340	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.09	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.400	0.303	ü
PFOS_1	499.0 / 80.0	3.06	PFOS			
PFOS_2	499.0 / 99.0	3.09	PFOS	0.140	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:51:49 PM

Sample Name	CS101LCS-FS(0)	**Injection Vial**	3
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T18:06:38	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.300	0.310	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.87	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.290	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.09	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.340	0.303	ü
PFOS_1	499.0 / 80.0	3.08	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.190	0.176	ü
PFDA_1	513.0 / 469.0	3.44	PFDA			
PFDA_2	513.0 / 219.0	3.44	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.77	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.05	PFDoA			
PFDoA_2	613.0 / 319.0	4.05	PFDoA	0.160	0.161	ü
PFTrDA_1	663.0 / 619.0	4.29	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.29	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.51	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.51	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.60	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.59	NMeFOSAA	0.570	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.76	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.76	NEtFOSAA	0.060	0.078	ü
PFBA	213.0 / 169.0	1.15				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:51:53 PM

Sample Name	J9154-FS(0)	**Injection Vial**	4
Sample ID	NASB-BLL15-MW-01-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T18:17:30	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.280	0.310	ü
PFHxA_1	313.0 / 269.0	1.86	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.26	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.67	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.08	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.320	0.303	ü
PFOS_1	499.0 / 80.0	2.95	PFOS			
PFOS_2	499.0 / 99.0	2.97	PFOS	0.080	0.176	
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:51:57 PM

Sample Name	J9155-FS(0)	**Injection Vial**	5
Sample ID	NASB-BLL15-MW-02-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T18:28:23	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.270	0.310	ü
PFHxA_1	313.0 / 269.0	1.86	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.300	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.67	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.09	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.280	0.303	ü
PFOS_1	499.0 / 80.0	2.95	PFOS			
PFOS_2	499.0 / 99.0	3.01	PFOS	0.120	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:52:02 PM

Sample Name	J9156-FS(0)	**Injection Vial**	6
Sample ID	NASB-BLL15-MW-03-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T18:39:15	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.50	PFBS			
PFBS_2	298.9 / 99.0	1.50	PFBS	0.230	0.310	ü
PFHxA_1	313.0 / 269.0	1.84	PFHxA			
PFHxA_2	313.0 / 119.0	1.83	PFHxA	0.100	0.077	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.022	ü
PFHxS_1	399.0 / 80.0	2.29	PFHxS			
PFHxS_2	399.0 / 99.0	2.29	PFHxS	0.270	0.282	ü
PFOA_1	413.0 / 369.0	2.68	PFOA			
PFOA_2	413.0 / 169.0	2.68	PFOA	0.060	0.062	ü
PFNA_1	463.0 / 419.0	3.08	PFNA			
PFNA_2	463.0 / 219.0	3.07	PFNA	0.340	0.303	ü
PFOS_1	499.0 / 80.0	2.95	PFOS			
PFOS_2	499.0 / 99.0	2.98	PFOS	0.100	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	N/A				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:52:06 PM

Sample Name	J9156MS-FS(0)	**Injection Vial**	7
Sample ID	NASB-BLL15-MW-03-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T18:50:07	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.55	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.280	0.310	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.87	PFHxA	0.080	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.290	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.09	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.320	0.303	ü
PFOS_1	499.0 / 80.0	3.08	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.160	0.176	ü
PFDA_1	513.0 / 469.0	3.44	PFDA			
PFDA_2	513.0 / 219.0	3.44	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.76	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.05	PFDoA			
PFDoA_2	613.0 / 319.0	4.05	PFDoA	0.170	0.161	ü
PFTrDA_1	663.0 / 619.0	4.29	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.29	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.51	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.51	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.59	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.60	NMeFOSAA	0.570	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.76	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.76	NEtFOSAA	0.060	0.078	ü
PFBA	213.0 / 169.0	1.15				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:52:13 PM

Sample Name	J9156MSD-FS(0)	**Injection Vial**	8
Sample ID	NASB-BLL15-MW-03-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:00:59	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.290	0.310	ü
PFHxA_1	313.0 / 269.0	1.86	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.070	0.077	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.070	0.062	ü
PFNA_1	463.0 / 419.0	3.08	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.330	0.303	ü
PFOS_1	499.0 / 80.0	3.07	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.170	0.176	ü
PFDA_1	513.0 / 469.0	3.44	PFDA			
PFDA_2	513.0 / 219.0	3.44	PFDA	0.040	0.047	ü
PFUnA_1	563.0 / 519.0	3.76	PFUnA			
PFUnA_2	563.0 / 269.0	3.76	PFUnA	0.050	0.053	ü
PFDoA_1	613.0 / 569.0	4.05	PFDoA			
PFDoA_2	613.0 / 319.0	4.05	PFDoA	0.170	0.161	ü
PFTrDA_1	663.0 / 619.0	4.29	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.29	PFTrDA	0.070	0.066	ü
PFTeDA_1	713.0 / 669.0	4.51	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.50	PFTeDA	0.050	0.050	ü
NMeFOSAA_1	570.0 / 419.0	3.59	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.59	NMeFOSAA	0.580	0.562	ü
NEtFOSAA_1	584.0 / 419.0	3.76	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.76	NEtFOSAA	0.070	0.078	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:52:17 PM

Sample Name	J9157-FS(0)	**Injection Vial**	9
Sample ID	NASB-BLL15-MW-04-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:11:52	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.260	0.310	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.070	0.077	ü
PFHpA_1	363.0 / 319.0	2.27	PFHpA			
PFHpA_2	363.0 / 169.0	2.25	PFHpA	0.030	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.270	0.282	ü
PFOA_1	413.0 / 369.0	2.68	PFOA			
PFOA_2	413.0 / 169.0	2.68	PFOA	0.050	0.062	ü
PFNA_1	463.0 / 419.0	3.08	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.450	0.303	ü
PFOS_1	499.0 / 80.0	3.06	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.150	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	4.05	PFDoA			
PFDoA_2	613.0 / 319.0	3.98	PFDoA	0.200	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	N/A				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 21/11/2018 2:52:20 PM

Sample Name	J9158-FS(0)	**Injection Vial**	10
Sample ID	NASB-BLL15-DUP-01-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-12T19:22:43	**Data File**	AC_11092018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0652
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.54	PFBS			
PFBS_2	298.9 / 99.0	1.54	PFBS	0.260	0.310	ü
PFHxA_1	313.0 / 269.0	1.86	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.070	0.077	ü
PFHpA_1	363.0 / 319.0	2.27	PFHpA			
PFHpA_2	363.0 / 169.0	2.23	PFHpA	0.020	0.022	ü
PFHxS_1	399.0 / 80.0	2.30	PFHxS			
PFHxS_2	399.0 / 99.0	2.30	PFHxS	0.280	0.282	ü
PFOA_1	413.0 / 369.0	2.68	PFOA			
PFOA_2	413.0 / 169.0	2.67	PFOA	0.050	0.062	ü
PFNA_1	463.0 / 419.0	3.08	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.390	0.303	ü
PFOS_1	499.0 / 80.0	3.05	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.150	0.176	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.047	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.053	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.161	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.050	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.562	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.078	ü
PFBA	213.0 / 169.0	N/A				

QA/QC Summary
Batch 18-0671

Project:	CTO-WE21: Former Naval Air Station, Brunswick, Maine
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	GW
Data Set:	DP-18-0357
Analytical SOP:	5-369
Method Reference:	PFAS to QSM 5.1 Table B-15

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
11/1/2018	11/2/2018	0.8
Corrective Actions	Sample ID NASB-BLL15-FRB-01-110118 is listed as NASB-BLL15-GW-FB01-110118 on the bottle. Sample was logged in to match the COC.	
Sample Storage	The water samples were stored refrigerated until extraction.	
Related samples	The field samples are extracted in SDG 18-0652.	

	METHOD SUMMARIES
Sample Preparation	Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with 0.4% NH_3 in methanol. Extracts were and concentrated to dryness under nitrogen with a water bath set between 35 °C and 45 °C, reconstituted with 80:20 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis.
Prep comments	A small amount of the LCS sample was spilled during extraction (~ 1-mL of water).
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations.
Analysis Comments	Samples analyzed on Sciex 5500 LC-MS/MS and the Sciex 6500+ LC/MS/MS. Only PFDoA, NEtFOSAA, 13C2-PFDoA, and d5-EtFOSAA are reported from the methods run on the Sciex 5500 (quant methods 18-0671A and 18-0671A_SIS) PFHxS and PFOS in the LCS fortification solution are a mixture of linear and branched isomers. The value reported is a combined total of the isomers detected.

Holding Times	Extraction Date(s)	Analysis Date(s)
	11/14/2018	11/20 and 21/2018

QA/QC Summary
Batch 18-0671

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ ½ the LOQ Samples >10x PB	Two exceedances noted.
	PFBA was detected in the PB above ½ the LOQ, the sample was re-run with Quant Method 18-0671A verifying the concentration detected, this issue is isolated to the procedural blank. Note that the FRB sample is non-detect for PFBA. The concentration of PFBA detected in the LCS is less than 10x the amount detected in the PB, the sample was re-run with Quant Method 18-0671A verifying the concentration detected. The result is B qualified.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery	Two exceedances noted.
	PFBA and PFNA are both over-recovered in the LCS sample. The sample was re-aliquoted and re-run to verify the original results. The second run, Quant Method 18-0671A, was used to report PFDoA and NEtFOSAA. Result was over-recovered and not detected in the FRB sample. Where the results are not-detected in the FRB sample and over-recovered in the LCS (indicating a bias high for sample results), no further corrective action is taken.

Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A MS/MSD was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery and <30% RPD	MS/MSD not prepared with the FRB sample.
	No comments.

Extracted Internal Standard Analytes	Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
50-150% of true value	No exceedances noted.
	No comments.

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
+/- 50% of the area of the L5 calibration point.	No exceedances noted.
	13C2-PFOA was above criteria for the Procedural Blank in the initial run. The re-run of the sample with Quant Method 18-0671A_SIS was acceptable. All results for surrogates quantified vs. this internal standard, and natives quantified vs. the labelled surrogates, are reported from the second run. This impacts the labelled and native PFHxA, PFHpA, PFOA, and PFNA.

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

QA/QC Summary
Batch 18-0671

Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
+/- 30% of true value	No exceedances noted.
	Note that NEtFOSAA in Quant Method 18-0671A fails low for the secondary transition, however, no data is reported using the secondary transition.

Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
+/- 30% of true value	No exceedances noted.
	No comments.

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

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project Number: 100122108-CTOWE21
Preparation Batch: 18-0671
Data Set: DP-18-0357
Test Code: Master_369

QC Parameter:	Exceed:	Justification:
Procedural Blank	1	PFBA was detected in the PB above ½ the LOQ, the sample was re-run with Quant Method 18-0671A verifying the concentration detected, this issue is isolated to the procedural blank. Note that the FRB sample is non-detect for PFBA.
PB Measurement Quality Objective	1	The concentration of PFBA detected in the LCS is less than 10x the amount detected in the PB, the sample was re-run with Quant Method 18-0671A verifying the concentration detected. The result is B qualified.
Laboratory Control Sample	2	PFBA and PFNA are both over-recovered in the LCS sample. The sample was re-aliquoted and re-run to verify the original results. The second run, Quant Method 18-0671A, was used to report PFDoA and NEtFOSAA. Result was over-recovered and not detected in the FRB sample.
Matrix Spike / Matrix Spike Duplicate Recovery	NA	NA
Matrix Spike / Matrix Spike Duplicate Precision	NA	NA
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM

Project Title:	CTO-WE21: Former Naval Air Station, B	**Data Set Number:**	DP-18-0357
Project Number:	100122108-CTOWE21	**Prep Batch Number:**	18-0671
Entered By:	Jonathan Thorn	**Entered On:**	11/26/2018
Test Code (Matrix Type):	Master_369(L)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE). JRT 11/26/2018

Quant methods 18-0671 and 18-0671_SIS quantified by Denise Schumitz. Quant methods 18-0671A and 18-0671A_SIS quantified by Jonathan Thorn. JRT 11/26/2018

KC72 is not being used for PFDOA in method 18-0671. There is no impact on the data once this point is removed from the calibration. CRD 11/26/2018

KC66 is not being used for NetFOSAA in method 18-0671. There is no impact on the data once this point is removed from the calibration. CRD 11/26/2018

KC66 is not being used for PFBA in method 18-0671A. There is no impact on the data once this point is removed from the calibration. CRD 11/26/2018

Task Leader Approval:

SupervisorApproval:

PM Approval:

Digitally signed by Jonathan Thorn
Date: 2018.11.26 13:34:17 -05'00'

BATTELLE
It can be done

Glossary of Data Qualifiers

Flag:	Application:
B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highers concentration level in the calibration
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the Limit of Quantitation (LOQ)
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported

Sample Summary

Client: Tetra Tech, Inc.
SDG: 18-0671
Project/Site: Former Naval Air Station, Brunswick, Maine
CTO: WE21

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Receipt Date
CS196PB-FS	Procedural Blank	WATER	11/14/2018	11/14/2018
CS197LCS-FS	Laboratory Control Sample	WATER	11/14/2018	11/14/2018
J9159-FS	NASB-BLL15-FRB-01-110118	GW	11/1/2018	11/2/2018

Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

Sample ID:	J9159-FS(0)
Client Sample ID:	NASB-BLL15-FRB-01-110118
Sample Size:	0.275
Units:	L
Dilution Factor:	1.000
PIV (L):	0.001
Target Analyte:	PFDA
MRM Transition:	513.0 / 469.0
Data file:	AE_11202018_5-369.wiff
Result table:	18-0671
Area:	19,317.39
IS Name:	13C6-PFDA
IS Area:	97,163.08
IS Amount (ng/L):	250
y-intercept:	0.02635
slope:	0.98519

$$\text{Concentration} = \frac{[(19317.39/97163.08) - 0.02635]}{0.98519} * 250 * 0.001 * 1 / 0.275$$

ng/L = 0.16

*Final concentration may vary based on rounding.

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batch: 18-0671
Data Set: DP-18-0357

		CS196PB-FS (Procedural Blank)	CS197LCS-FS (Laboratory Control Sample)	J9159-FS (NASB-BLL15-FRB-01-110118)
PFBA	375-22-4	L	L	-
PFHxA	307-24-4	-	L	-
PFHpA	375-85-9	-	L	-
PFOA	335-67-1	-	L	-
PFNA	375-95-1	-	L	-
PFDA	335-76-2	-	L	-
PFUnA	2058-94-8	-	L	-
PFDoA	307-55-1	-	L	-
PFTrDA	72629-94-8	-	L	-
PFTeDA	376-06-7	-	L	-
NMeFOSAA	2355-31-9	-	L	-
NEtFOSAA	2991-50-6	-	L	-
PFBS	375-73-5	-	L	-
PFHxS	355-46-4	-	L/Br	-
PFOS	1763-23-1	-	L/Br	-

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

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/20/18 14:10	13C3-PFBA	99,415.96	49,707.98	149,123.94

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/20/18 13:28	13C3-PFBA	90,139.58	49,707.98	149,123.94	
KC67	L2	11/20/18 13:39	13C3-PFBA	93,267.36	49,707.98	149,123.94	
KC68	L3	11/20/18 13:49	13C3-PFBA	92,214.77	49,707.98	149,123.94	
KC69	L4	11/20/18 14:00	13C3-PFBA	95,609.59	49,707.98	149,123.94	
KC70	L5	11/20/18 14:10	13C3-PFBA	99,415.96	49,707.98	149,123.94	
KC71	L6	11/20/18 14:21	13C3-PFBA	88,316.87	49,707.98	149,123.94	
KC72	L7	11/20/18 14:31	13C3-PFBA	82,393.87	49,707.98	149,123.94	
KC73 IB	Instrument Blank	11/20/18 14:41	13C3-PFBA	100,002.41	49,707.98	149,123.94	
KC74 ICC	ICC	11/20/18 14:52	13C3-PFBA	101,354.26	49,707.98	149,123.94	
CS196PB-FS(0)	Procedural Blank	11/20/18 15:23	13C3-PFBA	121,018.81	49,707.98	149,123.94	
CS197LCS-FS(0)	Laboratory Control Sample	11/20/18 15:34	13C3-PFBA	114,067.51	49,707.98	149,123.94	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/20/18 15:44	13C3-PFBA	122,852.31	49,707.98	149,123.94	
KC69 CCV	KC69 CCV	11/20/18 15:55	13C3-PFBA	97,886.30	49,707.98	149,123.94	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/20/18 14:10	13C2-PFOA	75,964.55	37,982.28	113,946.83

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/20/18 13:28	13C2-PFOA	70,811.67	37,982.28	113,946.83	
KC67	L2	11/20/18 13:39	13C2-PFOA	80,470.22	37,982.28	113,946.83	
KC68	L3	11/20/18 13:49	13C2-PFOA	75,543.91	37,982.28	113,946.83	
KC69	L4	11/20/18 14:00	13C2-PFOA	77,578.73	37,982.28	113,946.83	
KC70	L5	11/20/18 14:10	13C2-PFOA	75,964.55	37,982.28	113,946.83	
KC71	L6	11/20/18 14:21	13C2-PFOA	74,727.73	37,982.28	113,946.83	
KC72	L7	11/20/18 14:31	13C2-PFOA	69,168.83	37,982.28	113,946.83	
KC73 IB	Instrument Blank	11/20/18 14:41	13C2-PFOA	89,684.47	37,982.28	113,946.83	
KC74 ICC	ICC	11/20/18 14:52	13C2-PFOA	86,657.04	37,982.28	113,946.83	
CS196PB-FS(0)	Procedural Blank	11/20/18 15:23	13C2-PFOA	120,242.43	37,982.28	113,946.83	N
CS197LCS-FS(0)	Laboratory Control Sample	11/20/18 15:34	13C2-PFOA	93,538.72	37,982.28	113,946.83	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/20/18 15:44	13C2-PFOA	104,771.18	37,982.28	113,946.83	
KC69 CCV	KC69 CCV	11/20/18 15:55	13C2-PFOA	78,068.23	37,982.28	113,946.83	

See Narrative regarding CS196PB-FS(0) JRT 11/26/2018

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/20/18 14:10	13C2-PFDA	103,187.00	51,593.50	154,780.50

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/20/18 13:28	13C2-PFDA	81,771.93	51,593.50	154,780.50	
KC67	L2	11/20/18 13:39	13C2-PFDA	96,629.54	51,593.50	154,780.50	
KC68	L3	11/20/18 13:49	13C2-PFDA	94,875.23	51,593.50	154,780.50	
KC69	L4	11/20/18 14:00	13C2-PFDA	83,384.51	51,593.50	154,780.50	
KC70	L5	11/20/18 14:10	13C2-PFDA	103,187.00	51,593.50	154,780.50	
KC71	L6	11/20/18 14:21	13C2-PFDA	99,932.71	51,593.50	154,780.50	
KC72	L7	11/20/18 14:31	13C2-PFDA	98,768.79	51,593.50	154,780.50	
KC73 IB	Instrument Blank	11/20/18 14:41	13C2-PFDA	106,596.72	51,593.50	154,780.50	
KC74 ICC	ICC	11/20/18 14:52	13C2-PFDA	104,426.75	51,593.50	154,780.50	
CS196PB-FS(0)	Procedural Blank	11/20/18 15:23	13C2-PFDA	122,602.12	51,593.50	154,780.50	
CS197LCS-FS(0)	Laboratory Control Sample	11/20/18 15:34	13C2-PFDA	105,148.82	51,593.50	154,780.50	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/20/18 15:44	13C2-PFDA	122,012.22	51,593.50	154,780.50	
KC69 CCV	KC69 CCV	11/20/18 15:55	13C2-PFDA	93,122.52	51,593.50	154,780.50	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/20/18 14:10	13C4-PFOS	31,674.41	15,837.21	47,511.62

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/20/18 13:28	13C4-PFOS	30,469.85	15,837.21	47,511.62	
KC67	L2	11/20/18 13:39	13C4-PFOS	33,079.75	15,837.21	47,511.62	
KC68	L3	11/20/18 13:49	13C4-PFOS	27,956.71	15,837.21	47,511.62	
KC69	L4	11/20/18 14:00	13C4-PFOS	33,450.66	15,837.21	47,511.62	
KC70	L5	11/20/18 14:10	13C4-PFOS	31,674.41	15,837.21	47,511.62	
KC71	L6	11/20/18 14:21	13C4-PFOS	33,289.26	15,837.21	47,511.62	
KC72	L7	11/20/18 14:31	13C4-PFOS	37,236.46	15,837.21	47,511.62	
KC73 IB	Instrument Blank	11/20/18 14:41	13C4-PFOS	31,951.54	15,837.21	47,511.62	
KC74 ICC	ICC	11/20/18 14:52	13C4-PFOS	35,297.49	15,837.21	47,511.62	
CS196PB-FS(0)	Procedural Blank	11/20/18 15:23	13C4-PFOS	44,110.25	15,837.21	47,511.62	
CS197LCS-FS(0)	Laboratory Control Sample	11/20/18 15:34	13C4-PFOS	42,224.93	15,837.21	47,511.62	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/20/18 15:44	13C4-PFOS	44,330.50	15,837.21	47,511.62	
KC69 CCV	KC69 CCV	11/20/18 15:55	13C4-PFOS	36,882.76	15,837.21	47,511.62	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/21/18 18:14	13C3-PFBA	55,634.24	27,817.12	83,451.36

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/21/18 17:30	13C3-PFBA	50,724.48	27,817.12	83,451.36	
KC67	L2	11/21/18 17:41	13C3-PFBA	54,735.19	27,817.12	83,451.36	
KC68	L3	11/21/18 17:52	13C3-PFBA	52,954.27	27,817.12	83,451.36	
KC69	L4	11/21/18 18:03	13C3-PFBA	53,720.16	27,817.12	83,451.36	
KC70	L5	11/21/18 18:14	13C3-PFBA	55,634.24	27,817.12	83,451.36	
KC71	L6	11/21/18 18:25	13C3-PFBA	55,634.19	27,817.12	83,451.36	
KC72	L7	11/21/18 18:35	13C3-PFBA	57,442.92	27,817.12	83,451.36	
KC73 IB	Instrument blank	11/21/18 18:46	13C3-PFBA	61,494.74	27,817.12	83,451.36	
KC74 ICC	ICC	11/21/18 18:57	13C3-PFBA	58,687.35	27,817.12	83,451.36	
CS196PB-FS(0)	Procedural Blank	11/21/18 19:30	13C3-PFBA	71,339.79	27,817.12	83,451.36	
CS197LCS-FS(0)	Laboratory Control Sample	11/21/18 19:41	13C3-PFBA	78,175.05	27,817.12	83,451.36	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/21/18 19:52	13C3-PFBA	77,368.70	27,817.12	83,451.36	
KC70 CCV	KC70 CCV	11/21/18 20:24	13C3-PFBA	55,666.05	27,817.12	83,451.36	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/21/18 18:14	13C2-PFOA	91,047.48	45,523.74	136,571.22

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/21/18 17:30	13C2-PFOA	98,017.35	45,523.74	136,571.22	
KC67	L2	11/21/18 17:41	13C2-PFOA	97,445.83	45,523.74	136,571.22	
KC68	L3	11/21/18 17:52	13C2-PFOA	87,780.57	45,523.74	136,571.22	
KC69	L4	11/21/18 18:03	13C2-PFOA	88,909.88	45,523.74	136,571.22	
KC70	L5	11/21/18 18:14	13C2-PFOA	91,047.48	45,523.74	136,571.22	
KC71	L6	11/21/18 18:25	13C2-PFOA	79,565.82	45,523.74	136,571.22	
KC72	L7	11/21/18 18:35	13C2-PFOA	82,742.15	45,523.74	136,571.22	
KC73 IB	Instrument blank	11/21/18 18:46	13C2-PFOA	95,246.18	45,523.74	136,571.22	
KC74 ICC	ICC	11/21/18 18:57	13C2-PFOA	89,368.50	45,523.74	136,571.22	
CS196PB-FS(0)	Procedural Blank	11/21/18 19:30	13C2-PFOA	94,896.28	45,523.74	136,571.22	
CS197LCS-FS(0)	Laboratory Control Sample	11/21/18 19:41	13C2-PFOA	100,438.06	45,523.74	136,571.22	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/21/18 19:52	13C2-PFOA	111,955.83	45,523.74	136,571.22	
KC70 CCV	KC70 CCV	11/21/18 20:24	13C2-PFOA	83,969.03	45,523.74	136,571.22	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/21/18 18:14	13C2-PFDA	102,200.38	51,100.19	153,300.57

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/21/18 17:30	13C2-PFDA	119,662.17	51,100.19	153,300.57	
KC67	L2	11/21/18 17:41	13C2-PFDA	110,902.44	51,100.19	153,300.57	
KC68	L3	11/21/18 17:52	13C2-PFDA	104,442.66	51,100.19	153,300.57	
KC69	L4	11/21/18 18:03	13C2-PFDA	99,143.75	51,100.19	153,300.57	
KC70	L5	11/21/18 18:14	13C2-PFDA	102,200.38	51,100.19	153,300.57	
KC71	L6	11/21/18 18:25	13C2-PFDA	94,912.50	51,100.19	153,300.57	
KC72	L7	11/21/18 18:35	13C2-PFDA	99,452.96	51,100.19	153,300.57	
KC73 IB	Instrument blank	11/21/18 18:46	13C2-PFDA	113,338.13	51,100.19	153,300.57	
KC74 ICC	ICC	11/21/18 18:57	13C2-PFDA	101,424.20	51,100.19	153,300.57	
CS196PB-FS(0)	Procedural Blank	11/21/18 19:30	13C2-PFDA	113,605.23	51,100.19	153,300.57	
CS197LCS-FS(0)	Laboratory Control Sample	11/21/18 19:41	13C2-PFDA	118,831.25	51,100.19	153,300.57	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/21/18 19:52	13C2-PFDA	119,356.78	51,100.19	153,300.57	
KC70 CCV	KC70 CCV	11/21/18 20:24	13C2-PFDA	98,610.36	51,100.19	153,300.57	

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper
KC70	L5	11/21/18 18:14	13C4-PFOS	31,303.11	15,651.56	46,954.67

Sample Name	Sample ID	Analysis Date	Analyte	Area	Lower	Upper	Qualifier
KC66	L1	11/21/18 17:30	13C4-PFOS	36,067.09	15,651.56	46,954.67	
KC67	L2	11/21/18 17:41	13C4-PFOS	39,042.23	15,651.56	46,954.67	
KC68	L3	11/21/18 17:52	13C4-PFOS	33,496.50	15,651.56	46,954.67	
KC69	L4	11/21/18 18:03	13C4-PFOS	28,877.93	15,651.56	46,954.67	
KC70	L5	11/21/18 18:14	13C4-PFOS	31,303.11	15,651.56	46,954.67	
KC71	L6	11/21/18 18:25	13C4-PFOS	28,836.46	15,651.56	46,954.67	
KC72	L7	11/21/18 18:35	13C4-PFOS	28,959.35	15,651.56	46,954.67	
KC73 IB	Instrument blank	11/21/18 18:46	13C4-PFOS	35,871.46	15,651.56	46,954.67	
KC74 ICC	ICC	11/21/18 18:57	13C4-PFOS	31,264.01	15,651.56	46,954.67	
CS196PB-FS(0)	Procedural Blank	11/21/18 19:30	13C4-PFOS	36,798.80	15,651.56	46,954.67	
CS197LCS-FS(0)	Laboratory Control Sample	11/21/18 19:41	13C4-PFOS	38,993.29	15,651.56	46,954.67	
J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/21/18 19:52	13C4-PFOS	37,923.90	15,651.56	46,954.67	
KC70 CCV	KC70 CCV	11/21/18 20:24	13C4-PFOS	29,554.92	15,651.56	46,954.67	

BATTELLE

Mass Spectral Acquisition Rate Report

Sample Name	KC72	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 2:31:28 PM	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.17	53	>10
PFBS_2	298.9 / 99.0	1.16	64	>10
PFHxA_1	313.0 / 269.0	1.39	22	>10
PFHxA_2	313.0 / 119.0	1.39	21	>10
PFHpA_1	363.0 / 319.0	1.66	47	>10
PFHpA_2	363.0 / 169.0	1.66	30	>10
PFHxS_1	399.0 / 80.0	1.66	34	>10
PFHxS_2	399.0 / 99.0	1.66	39	>10
PFOA_1	413.0 / 369.0	1.97	42	>10
PFOA_2	413.0 / 169.0	1.97	46	>10
PFNA_1	463.0 / 419.0	2.31	50	>10
PFNA_2	463.0 / 219.0	2.31	48	>10
PFOS_1	499.0 / 80.0	2.30	56	>10
PFOS_2	499.0 / 99.0	2.30	39	>10
PFDA_1	513.0 / 469.0	2.66	55	>10
PFDA_2	513.0 / 219.0	2.66	43	>10
PFUnA_1	563.0 / 519.0	2.99	49	>10
PFUnA_2	563.0 / 269.0	2.99	50	>10
PFDoA_1	613.0 / 569.0	3.30	59	>10
PFDoA_2	613.0 / 319.0	3.30	61	>10
PFTrDA_1	663.0 / 619.0	3.57	61	>10
PFTrDA_2	663.0 / 169.0	3.57	56	>10
PFTeDA_1	713.0 / 669.0	3.82	73	>10
PFTeDA_2	713.0 / 169.0	3.82	60	>10
NMeFOSAA_1	570.0 / 419.0	2.81	35	>10
NMeFOSAA_2	570.0 / 512.0	2.81	53	>10
NEtFOSAA_1	584.0 / 419.0	2.98	36	>10
NEtFOSAA_2	584.0 / 483.0	2.98	41	>10
PFBA	213.0 / 169.0	0.92	56	>10

Sample Name	KC72	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 2:31:28 PM	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C4-PFBA	217.0 / 172.0	0.93	50	>10
13C2-PFDoA	615.0 / 570.0	3.29	36	>10
d3-MeFOSAA	573.0 / 419.0	2.81	23	>10
d5-EtFOSAA	589.0 / 419.0	2.98	30	>10
13C5-PFHxA	318.0 / 273.0	1.38	38	>10
13C4-PFHpA	367.0 / 322.0	1.65	34	>10
13C8-PFOA	421.0 / 376.0	1.96	43	>10
13C9-PFNA	472.0 / 427.0	2.30	42	>10
13C6-PFDA	519.0 / 474.0	2.64	57	>10
13C7-PFUnA	570.0 / 525.0	2.98	33	>10
13C2-PFTeDA	715.0 / 670.0	3.81	27	>10
13C3-PFBS	302.0 / 99.0	1.15	48	>10
13C3-PFHxS	402.0 / 99.0	1.66	27	>10
13C8-PFOS	507.0 / 99.0	2.29	19	>10

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 26/11/2018 11:23:01 AM

Sample Name	KC72	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	11/21/2018 6:35:58 PM	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS_1	298.9 / 80.0	1.56	42	>10
PFBS_2	298.9 / 99.0	1.56	35	>10
PFHxA_1	313.0 / 269.0	1.88	23	>10
PFHxA_2	313.0 / 119.0	1.88	23	>10
PFHpA_1	363.0 / 319.0	2.29	28	>10
PFHpA_2	363.0 / 169.0	2.29	25	>10
PFHxS_1	399.0 / 80.0	2.32	37	>10
PFHxS_2	399.0 / 99.0	2.32	39	>10
PFOA_1	413.0 / 369.0	2.71	32	>10
PFOA_2	413.0 / 169.0	2.71	31	>10
PFNA_1	463.0 / 419.0	3.10	28	>10
PFNA_2	463.0 / 219.0	3.10	36	>10
PFOS_1	499.0 / 80.0	3.10	40	>10
PFOS_2	499.0 / 99.0	3.10	35	>10
PFDA_1	513.0 / 469.0	3.46	29	>10
PFDA_2	513.0 / 219.0	3.46	33	>10
PFUnA_1	563.0 / 519.0	3.79	29	>10
PFUnA_2	563.0 / 269.0	3.78	38	>10
PFDoA_1	613.0 / 569.0	4.07	34	>10
PFDoA_2	613.0 / 319.0	4.07	35	>10
PFTrDA_1	663.0 / 619.0	4.31	41	>10
PFTrDA_2	663.0 / 169.0	4.31	48	>10
PFTeDA_1	713.0 / 669.0	4.53	77	>10
PFTeDA_2	713.0 / 169.0	4.53	70	>10
NMeFOSAA_1	570.0 / 419.0	3.61	24	>10
NMeFOSAA_2	570.0 / 512.0	3.61	27	>10
NEtFOSAA_1	584.0 / 419.0	3.78	36	>10
NEtFOSAA_2	584.0 / 483.0	3.78	19	>10
PFBA	213.0 / 169.0	1.15	44	>10

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 26/11/2018 10:48:26 AM

Sample Name	KC72	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	11/21/2018 6:35:58 PM	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C4-PFBA	217.0 / 172.0	1.15	36	>10
13C2-PFDoA	615.0 / 570.0	4.06	25	>10
d3-MeFOSAA	573.0 / 419.0	3.61	27	>10
d5-EtFOSAA	589.0 / 419.0	3.77	18	>10
13C5-PFHxA	318.0 / 273.0	1.87	35	>10
13C4-PFHpA	367.0 / 322.0	2.28	32	>10
13C8-PFOA	421.0 / 376.0	2.69	31	>10
13C9-PFNA	472.0 / 427.0	3.09	36	>10
13C6-PFDA	519.0 / 474.0	3.45	35	>10
13C7-PFUnA	570.0 / 525.0	3.77	25	>10
13C2-PFTeDA	715.0 / 670.0	4.52	43	>10
13C3-PFBS	302.0 / 99.0	1.54	29	>10
13C3-PFHxS	402.0 / 99.0	2.30	25	>10
13C8-PFOS	507.0 / 99.0	3.09	22	>10

BATTELLE
It can be done

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

Analyte	CAS No.	Average (ng/L)	ST DEV	2 Sigma	n
PFBA	375-22-4	12.25	1.95	3.90	14
PFPeA	2706-90-3	10.58	1.50	3.00	10
PFHxA	307-24-4	9.93	1.26	2.52	42
PFHpA	375-85-9	9.45	1.52	3.04	42
PFOA	335-67-1	10.21	1.45	2.90	44
PFNA	375-95-1	9.74	1.18	2.36	42
PFDA	335-76-2	9.91	1.28	2.56	42
PFUnA	2058-94-8	9.87	1.26	2.52	42
PFDoA	307-55-1	10.75	1.25	2.50	42
PFTrDA	72629-94-8	11.18	1.48	2.96	42
PFTeDA	376-06-7	10.71	1.84	3.68	42
NMeFOSAA	2355-31-9	10.37	1.87	3.74	42
NEtFOSAA	2991-50-6	9.66	1.50	3.00	42
PFOSA	754-91-6	9.72	0.93	1.86	5
PFBS	375-73-5	10.07	1.41	2.82	43
PFPeS	2706-91-4	9.59	0.96	1.92	6
PFHxS	355-46-4	9.81	1.45	2.90	42
PFHpS	375-92-8	10.79	1.05	2.10	11
PFOS	1763-23-1	10.04	1.32	2.64	42
PFNS	68259-12-1	9.50	1.02	2.04	5
PFDS	335-77-3	10.11	1.77	3.54	10
4:2FTS	414911-30-1	10.81	1.37	2.74	10
6:2FTS	27619-97-2	12.34	2.80	5.60	10
8:2FTS	39108-34-4	11.96	2.44	4.88	10

BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

Analytical SOP 5-369
Extraction SOP 5-370

PFAS by LC-MS/MS Compliant with QSM 5.1 Compliant Table B-15

Analyte	CAS No.	MDL (ng/L)	LOD (ng/L)	LOQ (ng/L)
PFBA	375-22-4	0.14	0.5	5.0
PFPeA	2706-90-3	0.31	1.0	5.0
PFHxA	307-24-4	0.19	0.5	5.0
PFHpA	375-85-9	0.16	0.5	5.0
PFOA	335-67-1	0.18	0.5	5.0
PFNA	375-95-1	0.26	1.0	5.0
PFDA	335-76-2	0.16	0.5	5.0
PFUnA	2058-94-8	0.29	1.0	5.0
PFDoA	307-55-1	0.18	0.5	5.0
PFTrDA	72629-94-8	0.15	0.5	5.0
PFTeDA	376-06-7	0.25	1.0	5.0
NMeFOSAA	2355-31-9	0.56	2.0	5.0
NEtFOSAA	2991-50-6	0.49	1.0	5.0
PFOSA	754-91-6	TBD	TBD	TBD
PFBS	375-73-5	0.13	0.5	5.0
PFPeS	BDO-2114	0.67	2.5	5.0
PFHxS	355-46-4	0.11	0.4	5.0
PFHpS	375-99-6	0.20	0.5	5.0
PFOS	1763-23-1	0.19	0.5	5.0
PFNS	98789-57-2	0.46	1.0	5.0
PFDS	2806-15-7	0.17	0.5	5.0
4:2FTS	BDO-2205	0.14	0.5	5.0
6:2FTS	27619-97-2	1.36	2.5	5.0
8:2FTS	39108-34-4	0.22	0.5	5.0

Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation

ID 596 04/18

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

EPA 537 MOD DoD QSM 5.1 compliant with Table B-15 requirements

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFBA	375-22-4	Target	213.0 / 169.0	NA
PFPeA	2706-90-3	Target	263.0 / 219.0	NA
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
PFOSA	754-91-6	Target	498.0 / 78.0	498.0 / 83.0
PFBS	375-73-5	Target	299.0 / 80.0	299.0 / 99.0
PFPeS	BDO-2114	Target	349.0 / 99.0	249.0 / 80.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFHpS	375-99-6	Target	449.0 / 80.0	449.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
PFNS	98789-57-2	Target	549.0 / 99.0	549.0 / 80.0
PFDS	2806-15-7	Target	599.0 / 80.0	599.0 / 99.0
4:2FTS	BDO-2205	Target	327.0 / 307.0	327.0 / 80.0
6:2FTS	27619-97-2	Target	427.0 / 407.0	427.0 / 81.0
8:2FTS	39108-34-4	Target	527.0 / 507.0	527.0 / 487.0
13C4-PFBA	BDO-2105	SIS[1]	217.0 / 172.0	NA
13C5-PFPeA	BDO-2216	SIS[1]	268.0 / 223.0	NA
13C5-PFHxA	BDO-2217	SIS[1]	318.0 / 273.0	NA

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
13C4-PFHpA	BDO-2218	SIS[1]	367.0 / 322.0	NA
13C8-PFOA	BDO-2219	SIS[1]	421.0 / 376.0	NA
13C9-PFNA	BDO-2221	SIS[1]	472.0 / 427.0	NA
13C6-PFDA	BDO-2222	SIS[1]	519.0 / 474.0	NA
13C7-PFUnA	BDO-2223	SIS[1]	570.0 / 525.0	NA
13C2-PFDoA	BDO-2112	SIS[1]	615.0 / 570.0	NA
13C2-PFTeDA	BDO-2224	SIS[1]	715.0 / 670.0	NA
d3-MeFOSAA	BDO-1838	SIS[1]	573.0 / 419.0	NA
d5-EtFOSAA	BDO-1839	SIS[1]	589.0 / 419.0	NA
13C8-FOSA	BDO-2225	SIS[1]	506.0 / 78.0	NA
13C3-PFBS	BDO-2226	SIS[1]	302.0 / 99.0	NA
13C3-PFHxS	BDO-2227	SIS[1]	402.0 / 99.0	NA
13C8-PFOS	BDO-2228	SIS[1]	507.0 / 99.0	NA
13C2-4:2FTS	BDO-2229	SIS[1]	329.0 / 81.0	NA
13C2-6:2FTS	BDO-2230	SIS[1]	429.0 / 81.0	NA
13C2-8:2FTS	BDO-2220	SIS[1]	529.0 / 81.0	NA
13C3-PFBA	BDO-2231	IS[2]	216.0 / 172.0	NA
13C2-PFOA	BDO-2107	IS[2]	415.0 / 370.0	NA
13C2-PFDA	BDO-2110	IS[2]	515.0 / 470.0	NA
13C4-PFOS	BDO-2121	IS[2]	503.0 / 99.0	NA

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

BATTELLE

Non-Potable Water Calibration to Sample Equivalents

ICAL (ng/L)	PIV (mL)	DF[1]	Sample Size (L)	Sample Equivalent (ng/L)[2]
25	1	1	0.250	0.1
50	1	1	0.250	0.2
100	1	1	0.250	0.4
250	1	1	0.250	1.0
500	1	1	0.250	2.0
1,000	1	1	0.250	4.0
2,500	1	1	0.250	10.0
10,000	1	1	0.250	40.0
20,000	1	1	0.250	80.0

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

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

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		KC73 IB			
Battelle ID		KC73 IB_11/20/2018			
Sample Type		IB			
Collection Date		NA			
Extraction Date		NA			
Analysis Date		11/20/2018			
Analytical Instrument		Sciex 6500+			
% Moisture		NA			
Matrix		Water			
Sample Size		0.250			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	0.50 U	0.14	0.50	5.00
PFHxA	307-24-4	0.50 U	0.19	0.50	5.00
PFHpA	375-85-9	0.50 U	0.16	0.50	5.00
PFOA	335-67-1	0.50 U	0.18	0.50	5.00
PFNA	375-95-1	1.00 U	0.26	1.00	5.00
PFDA	335-76-2	0.50 U	0.16	0.50	5.00
PFUnA	2058-94-8	1.00 U	0.29	1.00	5.00
PFDoA	307-55-1	0.50 U	0.18	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	1.00 U	0.25	1.00	5.00
NMeFOSAA	2355-31-9	2.00 U	0.56	2.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.49	1.00	5.00
PFBS	375-73-5	0.50 U	0.13	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	0.50 U	0.19	0.50	5.00

Surrogate Recoveries (%)

13C4-PFBA	97
13C5-PFHxA	89
13C4-PFHpA	90
13C8-PFOA	96
13C9-PFNA	90
13C6-PFDA	95
13C7-PFUnA	108
13C2-PFDoA	89
13C2-PFTeDA	111
d3-MeFOSAA	111
d5-EtFOSAA	100
13C3-PFBS	100
13C3-PFHxS	107
13C8-PFOS	105

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		KC73 IB				
Battelle ID		KC73 IB_11/21/2018				
Sample Type		IB				
Collection Date		NA				
Extraction Date		NA				
Analysis Date		11/21/2018				
Analytical Instrument		Sciex 5500				
% Moisture		NA				
Matrix		Water				
Sample Size		0.250				
Size Unit-Basis		L				
Units		ng/L		MDL	LOD	LOQ
PFBA	375-22-4	0.50	U	0.14	0.50	5.00
PFHxA	307-24-4	0.50	U	0.19	0.50	5.00
PFHpA	375-85-9	0.50	U	0.16	0.50	5.00
PFOA	335-67-1	0.50	U	0.18	0.50	5.00
PFNA	375-95-1	1.00	U	0.26	1.00	5.00
PFDA	335-76-2	0.50	U	0.16	0.50	5.00
PFUnA	2058-94-8	1.00	U	0.29	1.00	5.00
PFDoA	307-55-1	0.50	U	0.18	0.50	5.00
PFTrDA	72629-94-8	0.50	U	0.15	0.50	5.00
PFTeDA	376-06-7	1.00	U	0.25	1.00	5.00
NMeFOSAA	2355-31-9	2.00	U	0.56	2.00	5.00
NEtFOSAA	2991-50-6	1.00	U	0.49	1.00	5.00
PFBS	375-73-5	0.50	U	0.13	0.50	5.00
PFHxS	355-46-4	0.40	U	0.11	0.40	5.00
PFOS	1763-23-1	0.50	U	0.19	0.50	5.00

Surrogate Recoveries (%)

13C4-PFBA	95
13C5-PFHxA	90
13C4-PFHpA	101
13C8-PFOA	97
13C9-PFNA	97
13C6-PFDA	96
13C7-PFUnA	94
13C2-PFDoA	91
13C2-PFTeDA	92
d3-MeFOSAA	88
d5-EtFOSAA	96
13C3-PFBS	90
13C3-PFHxS	90
13C8-PFOS	109

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		Procedural Blank			
Battelle ID		CS196PB-FS			
Sample Type		PB			
Collection Date		11/14/2018			
Extraction Date		11/14/2018			
Analysis Date		11/20/2018			
Analytical Instrument		Sciex 5500 and Sciex 6500+			
% Moisture		NA			
Matrix		WATER			
Sample Size		0.250			
Size Unit-Basis		L			
Units		ng/L	MDL	LOD	LOQ
PFBA	375-22-4	10.60 N	0.14	0.50	5.00
PFHxA	307-24-4	0.50 U	0.19	0.50	5.00
PFHpA	375-85-9	0.50 U	0.16	0.50	5.00
PFOA	335-67-1	1.83 J	0.18	0.50	5.00
PFNA	375-95-1	1.00 U	0.26	1.00	5.00
PFDA	335-76-2	0.50 U	0.16	0.50	5.00
PFUnA	2058-94-8	1.00 U	0.29	1.00	5.00
PFDoA	307-55-1	0.50 U	0.18	0.50	5.00
PFTrDA	72629-94-8	0.50 U	0.15	0.50	5.00
PFTeDA	376-06-7	1.00 U	0.25	1.00	5.00
NMeFOSAA	2355-31-9	2.00 U	0.56	2.00	5.00
NEtFOSAA	2991-50-6	1.00 U	0.49	1.00	5.00
PFBS	375-73-5	0.50 U	0.13	0.50	5.00
PFHxS	355-46-4	0.40 U	0.11	0.40	5.00
PFOS	1763-23-1	0.50 U	0.19	0.50	5.00

Surrogate Recoveries (%)

13C4-PFBA	73
13C5-PFHxA	77
13C4-PFHpA	73
13C8-PFOA	74
13C9-PFNA	75
13C6-PFDA	64
13C7-PFUnA	71
13C2-PFDoA	65
13C2-PFTeDA	72
d3-MeFOSAA	67
d5-EtFOSAA	67
13C3-PFBS	70
13C3-PFHxS	74
13C8-PFOS	71

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

Client ID		Laboratory Control Sample					
Battelle ID		CS197LCS-FS					
Sample Type		LCS					
Collection Date		11/14/2018					
Extraction Date		11/14/2018					
Analysis Date		11/20/2018					
Analytical Instrument		Sciex 5500 and Sciex 6500+					
% Moisture		NA					
Matrix		WATER					
Sample Size		0.250					
Size Unit-Basis		L				Control Limits	
Units		ng/L	Target	Recovery	Qual	Lower	Upper
PFBA	375-22-4	30.67 B	20.00	153	N	61	139
PFHxA	307-24-4	23.79	20.20	118		51	137
PFHpA	375-85-9	20.93	20.00	105		48	136
PFOA	335-67-1	24.25	20.00	121		49	141
PFNA	375-95-1	26.00	20.00	130	N	58	122
PFDA	335-76-2	19.43	20.00	97		59	135
PFUnA	2058-94-8	23.56	20.00	118		64	134
PFDoA	307-55-1	26.27	20.00	131		75	131
PFTrDA	72629-94-8	21.99	20.00	110		42	148
PFTeDA	376-06-7	25.35	20.00	127		42	158
NMeFOSAA	2355-31-9	26.31	20.00	132		50	146
NEtFOSAA	2991-50-6	24.13	20.00	121		51	131
PFBS	375-73-5	24.25	20.20	120		56	134
PFHxS	355-46-4	24.98	20.20	124		52	128
PFOS	1763-23-1	20.33	20.00	102		40	144

Surrogate Recoveries (%)

13C4-PFBA	68
13C5-PFHxA	72
13C4-PFHpA	79
13C8-PFOA	66
13C9-PFNA	62
13C6-PFDA	80
13C7-PFUnA	70
13C2-PFDoA	65
13C2-PFTeDA	64
d3-MeFOSAA	56
d5-EtFOSAA	61
13C3-PFBS	75
13C3-PFHxS	73
13C8-PFOS	82

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500
Preventive Maintenance Checklist

Preventive Maintenance Date:	12-June-2018

Request ID:	9749
Company Name:	Battelle Memorial Institute
Instrument ID:	X60666
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU23051004

☑ **PASS** ☐ **FAIL**

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

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

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

Comments: Suspected issue with pulse gas manifold. TRAP testing in POSITIVE mode couldn't be finished because of pulse gas issue. The same issue will be taken care in separate service call.

Performed By: Kaustubh Dhayagude **Date:** 12-June-2018

Approved By :_____ **Date:** _____

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

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

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.6	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.3	Read Only
☑ CAD Medium	2.7	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

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

☑ No degradation or Sensitivity drop

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

☑ No degradation or Sensitivity drop

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

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

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	4.01 e6	Read Only	0.6998	Read Only
Q1 500.380	2.81 e7	Read Only	0.7038	Read Only
Q1 906.673	4.21 e7	Read Only	0.7071	Read Only

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

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	5.45 e6	Read Only	0.6873	Read Only
Q3 500.380	2.69 e7	Read Only	0.7591	Read Only
Q3 906.673	4.50 e7	Read Only	0.7843	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

☐ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__28.87%__ (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	4.26 e7	Read Only	0.7011	Read Only
MS/MS 195.1	1.23 e7	Read Only	0.7069	Read Only

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

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.42 e7	Read Only	0.7686	Read Only

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

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	2.24 e7	Read Only	0.7243	Read Only

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

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.31 e6	Read Only	0.6746	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

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

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

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

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

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

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

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

CAD Settings	Vacuum Reading (x 10^{-5} Torr)	Acceptance Criteria
☑ CAD 0	0.7	0.4 to 1.1 x10^{-5} Torr
☑ CAD Low	1.3	Read Only
☑ CAD Medium	2.7	Read Only
☑ CAD High	3.7	Read Only
☑ CAD 12	3.7	2.4 to 4.5 x10^{-5} Torr

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

Mass	Q1 Intensity		Q1 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	5.04 e6	≥1.2^{e}6	0.6737	0.6 to 0.8
Q1 500.380	1.60 e7	≥9.0^{e}6	0.6961	0.6 to 0.8
Q1 906.673	2.84 e7	≥1.4^{e}7	0.7179	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	1.33 e8	≥6.8^{e}7	0.7465	0.6 to 0.8

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

Mass	Q3 Intensity		Q3 Width	Width Specs
	Value	Spec	Value	
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	5.02 e6	≥1.2^{e}6	0.6719	0.6 to 0.8
Q3 500.380	1.72 e7	≥9.0^{e}6	0.7443	0.6 to 0.8
Q3 906.673	3.00 e7	≥1.4^{e}7	0.7504	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	1.46 e8	≥6.8^{e}7	0.7202	0.6 to 0.8

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 21.10% (≥ 10.0%)

Mass	MSMS Intensity		Width	Width Specs
	Value	Spec	Value	
Q1 609.3	5.78 e7	N/A	0.6888	Read Only
MS/MS 195.1	1.22 e7	N/A	0.7003	Read Only

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

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

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.35 e7	≥1.0^{e}7	0.7486	0.6 to 0.8
Q1 933.636	1000	50	7.52 e7	≥4.0^{e}7	0.7206	0.6 to 0.8

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

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	2.15 e7	≥8.0^{e}6	0.7492	0.6 to 0.8
Q3 933.636	1000	50	8.33 e7	≥4.0^{e}7	0.7299	0.6 to 0.8

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

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	3.33 e6	Read Only	0.6387	Read Only

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

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	8.54 e6	≥7.2 ^{e}6	0.1473	<0.35
ER 922.010	0.05	4.96 e7	≥2.8 ^{e}6	0.2434	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05		≥2.4 ^{e}7		<0.65
ER 922.010	0.05		≥6.8 ^{e}7		<0.65

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

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	1.81 e8	≥4.4 ^{e}7	0.1862	<0.35
ER 601.978	0.05	1.70 e8	≥5.6 ^{e}7	0.1809	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	5.72 e8	≥1.2 ^{e}8	0.5102	<0.65
ER 601.978	0.05	4.52 e8	≥1.6 ^{e}8	0.6187	<0.65

Zef Scientific Inc.

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

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

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	> 3.0 e6	≥2.0 e6	> 7.0 e6	≥6.4 e6

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

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	Yes	Contains only 397.2	N/A	N/A
☐ 236 OR ☑ 365	1000	Yes	Fragment Intensity	> 2.0 e6	≥1.6x $10^{e}6$

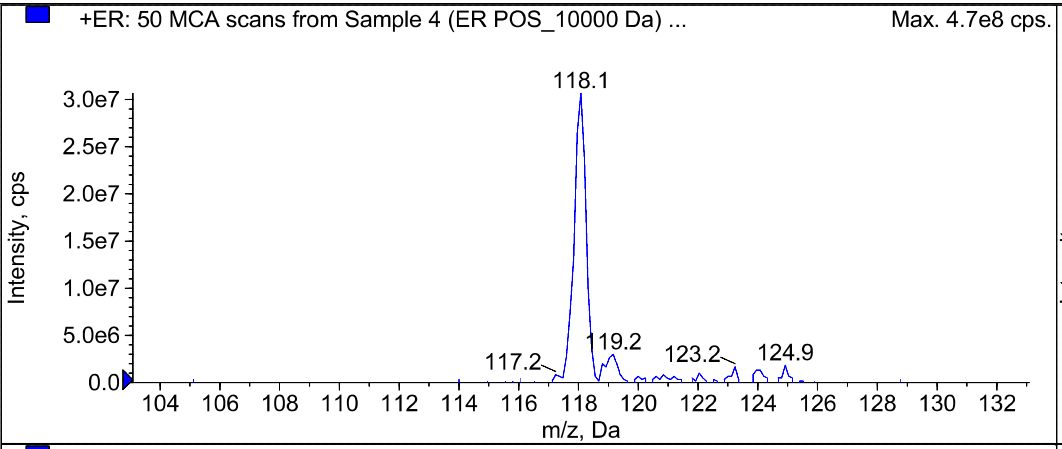
REVIEW:

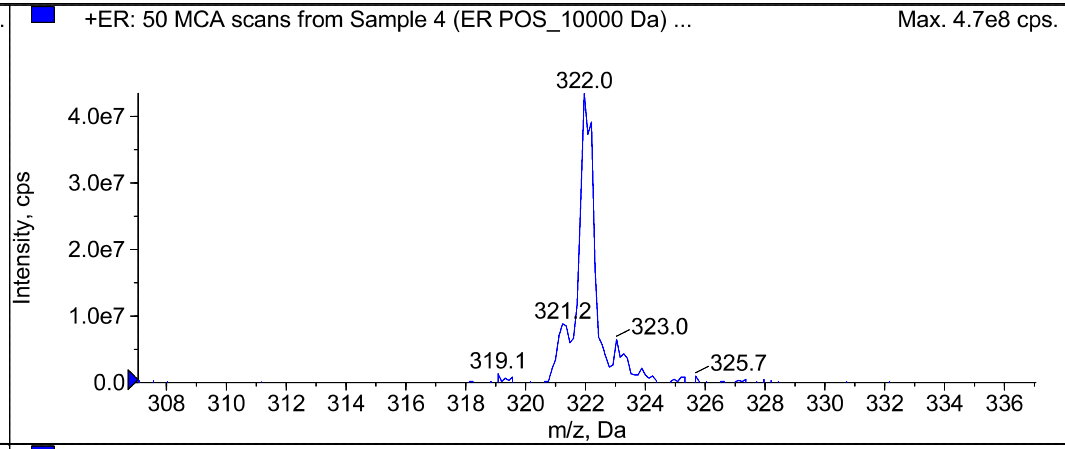
☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if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

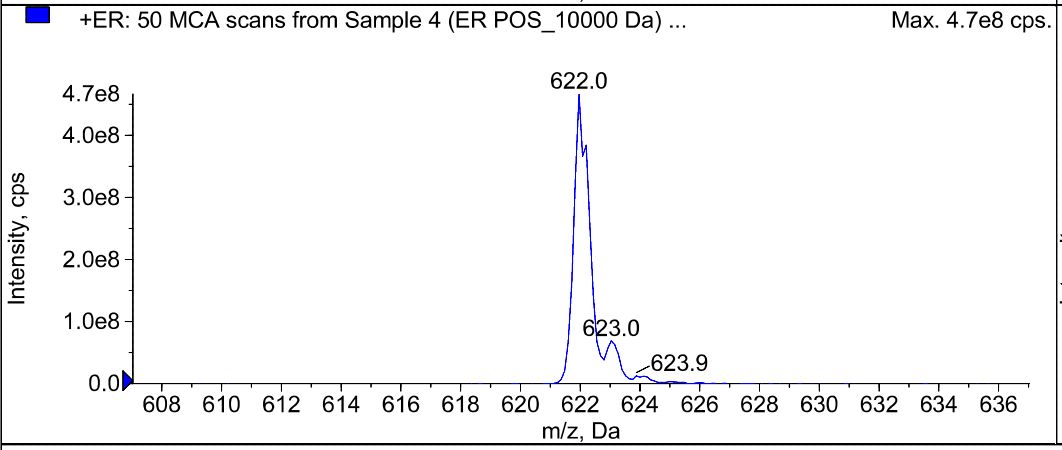
END OF PREVENTIVE MAINTENANCE CHECKLIST

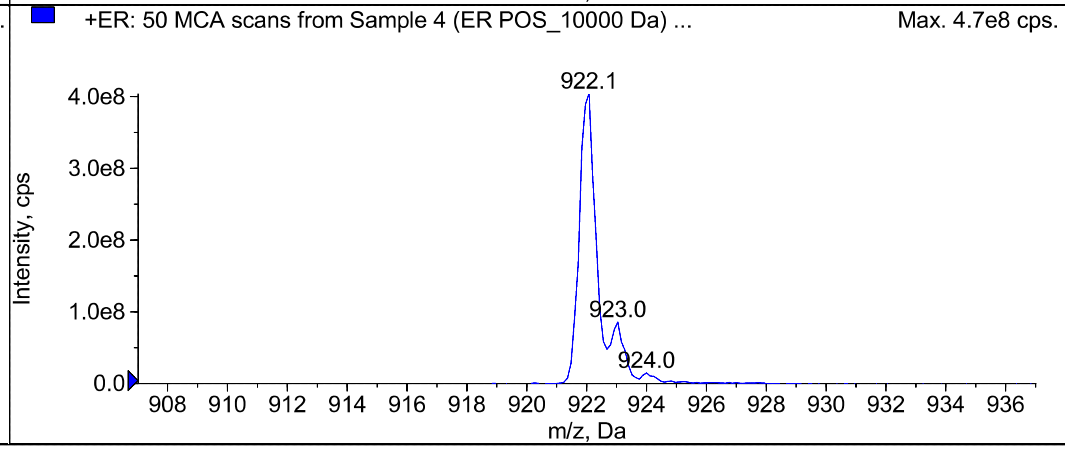
Document history:

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









Peak List for " +ER: 50 MCA scans from Sample 4 (ER POS_10000 Da) of TRAP ER with NEW Pulse Manifold.wiff (Turbo Spray)"

	Target Mass (Da)	Found At (Da)	Intensity (cps)	Width (Da)	Mass Shift (Da)
1	118.0870	118.0702	3.0667e7	0.4146	0.0168
2	322.0490	322.0509	4.3500e7	0.4945	-1.9159e-3
3	622.0290	622.0370	4.6717e8	0.5757	-8.0044e-3
4	922.0100	922.0101	4.0400e8	0.5732	-1.4148e-4

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)	Project No.(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine	100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

This Batch Contains The Following Samples:
CS196PB-FS
CS197LCS-FS
J9159-FS

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Kevin Bailey

Approved By:	Date	Initials
Denise Schumitz	11/20/2018	DMS

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)	**Project No.(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine	100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID	Description
CS196PB-FS	Procedural Blank
CS197LCS-FS	Laboratory Control Sample
J9159-FS	NASB-BLL15-FRB-01-110118

Samples Assigned By: Jonathan Thorn Date : November 13, 2018

Comments:

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE CUSTODY LOG

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

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Requested On/By:	11/14/2018 KB	**Purpose:**	Sample Preparation
Relinquished On/By:	11/14/2018 MDS	**Last Activity:**	Transfer

Accepted On/By:	11/14/2018 KB	**Returned On/To:**	
Stored In Facility:	Sample Preparation	**Returned To Facility:**	
Stored Until			
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	J9159	1	C	Consumed	NA

Total Samples 1 * "C" = Consumed Container

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
LIQUID SAMPLE ID FORM

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

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
CS196PB-FS	Procedural Blank	250.0	NA	--	11/14/18 KB
CS197LCS-FS	Laboratory Control Sample	250.0	NA	--	11/14/18 KB
J9159-FS	NASB-BLL15-FRB-01-110118	275.0	1	C	11/15/18 KB

Comments:

Samples Assigned By Jonathan Thorn Date : November 13, 2018

* - "C" = Sample is Consumed

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)
100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
CS196PB-FS	KC98	SIS	1	50	11/14/18 KB	AEK	NA
CS197LCS-FS	KB82	LCS/MS	1	100	11/14/18 KB	AEK	NA
CS197LCS-FS	KC98	SIS	1	50	11/14/18 KB	AEK	NA
J9159-FS	KC98	SIS	1	50	11/14/18 KB	AEK	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KB82	Pipette	B814659662
KC98	Pipette	B814659662

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)

CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)

100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
CS196PB-FS(0)	950	50	KC52	50	1	1000	1.000	11/15/18 LMG	RDL
CS197LCS-FS(0)	950	50	KC52	50	1	1000	1.000	11/15/18 LMG	RDL
J9159-FS(0)	950	50	KC52	50	1	1000	1.000	11/15/18 LMG	RDL

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
KC52	Pipette	B814659662

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

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

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)
100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
CS196PB-FS	0	--	11/14/2018 10:58:00 AM	NA		NA	NA	1.000	1.000	11/14/18 KB
CS197LCS-FS	0	--	11/14/2018 10:58:00 AM	NA		NA	NA	1.000	1.000	11/14/18 KB
J9159-FS	0	--	11/14/2018 10:58:00 AM	NA		NA	NA	1.000	1.000	11/14/18 KB

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

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)

CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)

100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Purpose:	LC-MS/MS TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Nov 15 2018 4:42PM LMG	**Received On/By:**	Nov 15 2018 4:53PM DMS
Relinquished From:	Sample Preparation: NA	**Received Location:**	LC Laboratory: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	CS196PB-FS(0)	1000	1	Intact	NA
2	CS197LCS-FS(0)	1000	1	Intact	NA
3	J9159-FS(0)	1000	1	Intact	NA

Total Extracts: 3

BATTELLE
It can be done

BATTELLE - NORWELL OPERATIONS
SAMPLE SPECIFIC COMMENTS

Project Title(s)

CTO-WE21: Former Naval Air Station, Brunswick, Maine

Project No.(s)

100122108-CTOWE21

18-0671

CTO-WE21: Former Naval Air Station, Brunswick, Maine

GW

Sample ID:	Comment:	Date/Initials:
CS196PB-FS	Extraction started 10:58am, extraction block 1, ended 11:48am	11/14/18 KB
CS197LCS-FS	Extraction started 10:58am, extraction block 1, ended 11:57am A small amount of smaple (~1mL) spilled during extraction.	11/14/18 KB
J9159-FS	Extraction started 10:58am, extraction block 1, ended 12:00pm	11/14/18 KB

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 26/11/2018 11:30:25 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
1	MeOH	Methanol	11/20/2018 1:18:18 PM	5-369.dam	AE_11202018_5-369.wiff
2	KC66	L1	11/20/2018 1:28:46 PM	5-369.dam	AE_11202018_5-369.wiff
3	KC67	L2	11/20/2018 1:39:14 PM	5-369.dam	AE_11202018_5-369.wiff
4	KC68	L3	11/20/2018 1:49:41 PM	5-369.dam	AE_11202018_5-369.wiff
5	KC69	L4	11/20/2018 2:00:08 PM	5-369.dam	AE_11202018_5-369.wiff
6	KC70	L5	11/20/2018 2:10:35 PM	5-369.dam	AE_11202018_5-369.wiff
7	KC71	L6	11/20/2018 2:21:02 PM	5-369.dam	AE_11202018_5-369.wiff
8	KC72	L7	11/20/2018 2:31:28 PM	5-369.dam	AE_11202018_5-369.wiff
9	KC73 IB	Instrument Blank	11/20/2018 2:41:55 PM	5-369.dam	AE_11202018_5-369.wiff
10	KC74 ICC	ICC	11/20/2018 2:52:23 PM	5-369.dam	AE_11202018_5-369.wiff
11	KC75 Branch	Branched Standard	11/20/2018 3:02:52 PM	5-369.dam	AE_11202018_5-369.wiff
12	MeOH	Methanol	11/20/2018 3:13:19 PM	5-369.dam	AE_11202018_5-369.wiff
13	CS196PB-FS(0)	Procedural Blank	11/20/2018 3:23:46 PM	5-369.dam	AE_11202018_5-369.wiff
14	CS197LCS-FS(0)	Laboratory Control Sample	11/20/2018 3:34:13 PM	5-369.dam	AE_11202018_5-369.wiff
15	J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/20/2018 3:44:40 PM	5-369.dam	AE_11202018_5-369.wiff
16	KC69 CCV	KC69 CCV	11/20/2018 3:55:07 PM	5-369.dam	AE_11202018_5-369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 26/11/2018 9:07:12 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
8	CONDITIONER	Column Conditioner	11/21/2018 4:58:08 PM	5-0369.dam	AC_11212018_5-369.wiff
1	MeOH	Methanol	11/21/2018 5:09:00 PM	5-0369.dam	AC_11212018_5-369.wiff
1	MeOH	Methanol	11/21/2018 5:19:52 PM	5-0369.dam	AC_11212018_5-369.wiff
2	KC66	L1	11/21/2018 5:30:46 PM	5-0369.dam	AC_11212018_5-369.wiff
3	KC67	L2	11/21/2018 5:41:38 PM	5-0369.dam	AC_11212018_5-369.wiff
4	KC68	L3	11/21/2018 5:52:32 PM	5-0369.dam	AC_11212018_5-369.wiff
5	KC69	L4	11/21/2018 6:03:23 PM	5-0369.dam	AC_11212018_5-369.wiff
6	KC70	L5	11/21/2018 6:14:15 PM	5-0369.dam	AC_11212018_5-369.wiff
7	KC71	L6	11/21/2018 6:25:07 PM	5-0369.dam	AC_11212018_5-369.wiff
8	KC72	L7	11/21/2018 6:35:58 PM	5-0369.dam	AC_11212018_5-369.wiff
9	KC73 IB	Instrument blank	11/21/2018 6:46:49 PM	5-0369.dam	AC_11212018_5-369.wiff
10	KC74 ICC	ICC	11/21/2018 6:57:42 PM	5-0369.dam	AC_11212018_5-369.wiff
11	KC75 Branch	Branched standard	11/21/2018 7:08:34 PM	5-0369.dam	AC_11212018_5-369.wiff
12	MeOH	Methanol	11/21/2018 7:19:26 PM	5-0369.dam	AC_11212018_5-369.wiff
13	CS196PB-FS(0)	Procedural Blank	11/21/2018 7:30:17 PM	5-0369.dam	AC_11212018_5-369.wiff
14	CS197LCS-FS(0)	Laboratory Control Sample	11/21/2018 7:41:10 PM	5-0369.dam	AC_11212018_5-369.wiff
15	J9159-FS(0)	NASB-BLL15-FRB-01-110118	11/21/2018 7:52:01 PM	5-0369.dam	AC_11212018_5-369.wiff
~~16~~	~~KD94 CHK 1~~	~~KD94 Standard Check~~	~~11/21/2018 8:02:52 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~17~~	~~KD94 CHK 2~~	~~KD94 Standard Check~~	~~11/21/2018 8:13:44 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
18	KC70 CCV	KC70 CCV	11/21/2018 8:24:37 PM	5-0369.dam	AC_11212018_5-369.wiff
19	MeOH	Methanol	11/21/2018 8:35:28 PM	5-0369.dam	AC_11212018_5-369.wiff
~~20~~	~~CS235PB-FS(0)~~		~~11/21/2018 8:46:21 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~21~~	~~CS236LCS-FS(0)~~		~~11/21/2018 8:57:13 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~22~~	~~J9409-FS(0)~~		~~11/21/2018 9:08:05 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~23~~	~~J9410-FS(0)~~		~~11/21/2018 9:18:57 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~24~~	~~J9411-FS(0)~~		~~11/21/2018 9:29:49 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~25~~	~~J9411-FS-D(3)~~		~~11/21/2018 9:40:40~~	~~5-0369.dam~~	~~AC_11212018_5-~~

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 26/11/2018 9:07:12 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
			PM		369.wiff
26	KC69 CCV	KC69 CCV	11/21/2018 9:51:32 PM	5-0369.dam	AC_11212018_5-369.wiff
27	MeOH	Methanol	11/21/2018 10:02:23 PM	5-0369.dam	AC_11212018_5-369.wiff
28	CS243PB-FS(0)		11/21/2018 10:13:14 PM	5-0369.dam	AC_11212018_5-369.wiff
29	CS244LCS-FS(0)		11/21/2018 10:24:08 PM	5-0369.dam	AC_11212018_5-369.wiff
30	J9420-FS(0)		11/21/2018 10:35:01 PM	5-0369.dam	AC_11212018_5-369.wiff
31	J9414-FS(0)		11/21/2018 10:45:53 PM	5-0369.dam	AC_11212018_5-369.wiff
32	J9414-FS-D(3)		11/21/2018 10:56:43 PM	5-0369.dam	AC_11212018_5-369.wiff
33	J9414-FS-D(5)		11/21/2018 11:07:35 PM	5-0369.dam	AC_11212018_5-369.wiff
34	J9414-FS-D(7)		11/21/2018 11:18:26 PM	5-0369.dam	AC_11212018_5-369.wiff
35	J9415MS-FS(0)		11/21/2018 11:29:18 PM	5-0369.dam	AC_11212018_5-369.wiff
36	J9415MS-FS-D(3)		11/21/2018 11:40:09 PM	5-0369.dam	AC_11212018_5-369.wiff
37	J9415MS-FS-D(5)		11/21/2018 11:51:01 PM	5-0369.dam	AC_11212018_5-369.wiff
38	KC70 CCV	KC70 CCV	11/22/2018 12:01:53 AM	5-0369.dam	AC_11212018_5-369.wiff
39	MeOH	Methanol	11/22/2018 12:12:46 AM	5-0369.dam	AC_11212018_5-369.wiff
40	J9415MS-FS-D(7)		11/22/2018 12:23:39 AM	5-0369.dam	AC_11212018_5-369.wiff
41	J9416MSD-FS(0)		11/22/2018 12:34:31 AM	5-0369.dam	AC_11212018_5-369.wiff
42	J9416MSD-FS-D(3)		11/22/2018 12:45:22 AM	5-0369.dam	AC_11212018_5-369.wiff
43	J9416MSD-FS-D(5)		11/22/2018 12:56:15 AM	5-0369.dam	AC_11212018_5-369.wiff
44	J9416MSD-FS-D(7)		11/22/2018 1:07:07 AM	5-0369.dam	AC_11212018_5-369.wiff
45	J9417-FS(0)		11/22/2018 1:17:59 AM	5-0369.dam	AC_11212018_5-369.wiff
46	J9417-FS-D(3)		11/22/2018 1:28:51 AM	5-0369.dam	AC_11212018_5-369.wiff
47	J9417-FS-D(5)		11/22/2018 1:39:43 AM	5-0369.dam	AC_11212018_5-369.wiff
48	J9417-FS-D(7)		11/22/2018 1:50:35 AM	5-0369.dam	AC_11212018_5-369.wiff
49	KC69 CCV	KC69 CCV	11/22/2018 2:01:26 AM	5-0369.dam	AC_11212018_5-369.wiff
50	MeOH	Methanol	11/22/2018 2:12:18 AM	5-0369.dam	AC_11212018_5-369.wiff
51	CS241PB-FS(0)		11/22/2018 2:23:09 AM	5-0369.dam	AC_11212018_5-369.wiff

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 26/11/2018 9:07:12 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
52	CS242LCS-FS(0)		11/22/2018 2:34:01 AM	5-0369.dam	AC_11212018_5-369.wiff
53	J9419-FS(0)		11/22/2018 2:44:55 AM	5-0369.dam	AC_11212018_5-369.wiff
54	J9412-FS(0)		11/22/2018 2:55:46 AM	5-0369.dam	AC_11212018_5-369.wiff
1	J9412-FS-D(3)		11/22/2018 3:06:39 AM	5-0369.dam	AC_11212018_5-369.wiff
2	J9412-FS-D(5)		11/22/2018 3:17:32 AM	5-0369.dam	AC_11212018_5-369.wiff
3	J9412-FS-D(7)		11/22/2018 3:28:25 AM	5-0369.dam	AC_11212018_5-369.wiff
4	J9412-FS-D(9)		11/22/2018 3:39:18 AM	5-0369.dam	AC_11212018_5-369.wiff
5	J9413-FS(0)		11/22/2018 3:50:10 AM	5-0369.dam	AC_11212018_5-369.wiff
6	J9413-FS-D(3)		11/22/2018 4:01:03 AM	5-0369.dam	AC_11212018_5-369.wiff
7	KC70 CCV	KC70 CCV	11/22/2018 4:11:56 AM	5-0369.dam	AC_11212018_5-369.wiff
8	MeOH	Methanol	11/22/2018 4:22:48 AM	5-0369.dam	AC_11212018_5-369.wiff
9	J9413-FS-D(5)		11/22/2018 4:33:41 AM	5-0369.dam	AC_11212018_5-369.wiff
10	J9413-FS-D(7)		11/22/2018 4:44:33 AM	5-0369.dam	AC_11212018_5-369.wiff
11	J9413-FS-D(9)		11/22/2018 4:55:27 AM	5-0369.dam	AC_11212018_5-369.wiff
12	J9418-FS(0)		11/22/2018 5:06:20 AM	5-0369.dam	AC_11212018_5-369.wiff
13	J9418-FS-D(3)		11/22/2018 5:17:12 AM	5-0369.dam	AC_11212018_5-369.wiff
14	J9418-FS-D(5)		11/22/2018 5:28:04 AM	5-0369.dam	AC_11212018_5-369.wiff
15	J9418-FS-D(7)		11/22/2018 5:38:59 AM	5-0369.dam	AC_11212018_5-369.wiff
16	J9421-FS(0)		11/22/2018 5:49:52 AM	5-0369.dam	AC_11212018_5-369.wiff
17	J9421-FS-D(3)		11/22/2018 6:00:44 AM	5-0369.dam	AC_11212018_5-369.wiff
18	J9421-FS-D(5)		11/22/2018 6:11:37 AM	5-0369.dam	AC_11212018_5-369.wiff
7	KC70 CCV	KC70 CCV	11/22/2018 8:26:25 PM	5-0369.dam	AC_11212018_5-369.wiff
8	MeOH	Methanol	11/22/2018 8:38:10 PM	5-0369.dam	AC_11212018_5-369.wiff
9	J9413-FS-D(5)		11/22/2018 8:49:02 PM	5-0369.dam	AC_11212018_5-369.wiff
10	J9413-FS-D(7)		11/22/2018 8:59:54 PM	5-0369.dam	AC_11212018_5-369.wiff
11	J9413-FS-D(9)		11/22/2018 9:10:48 PM	5-0369.dam	AC_11212018_5-369.wiff
12	J9418-FS(0)		11/22/2018 9:21:38	5-0369.dam	AC_11212018_5-

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 26/11/2018 9:07:12 AM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
			~~PM~~		369.wiff
~~13~~	~~J9418-FS-D(3)~~		~~11/22/2018 9:32:31 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~14~~	~~J9418-FS-D(5)~~		~~11/22/2018 9:43:24 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~15~~	~~J9418-FS-D(7)~~		~~11/22/2018 9:54:17 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~16~~	~~J9421-FS(0)~~		~~11/22/2018 10:05:09 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~17~~	~~J9421-FS-D(3)~~		~~11/22/2018 10:16:02 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~
~~18~~	~~J9421-FS-D(5)~~		~~11/22/2018 10:26:54 PM~~	~~5-0369.dam~~	~~AC_11212018_5-369.wiff~~

Crossed out injections are not related to SDG 18-0671. JRT 11/26/2018

BATTELLE

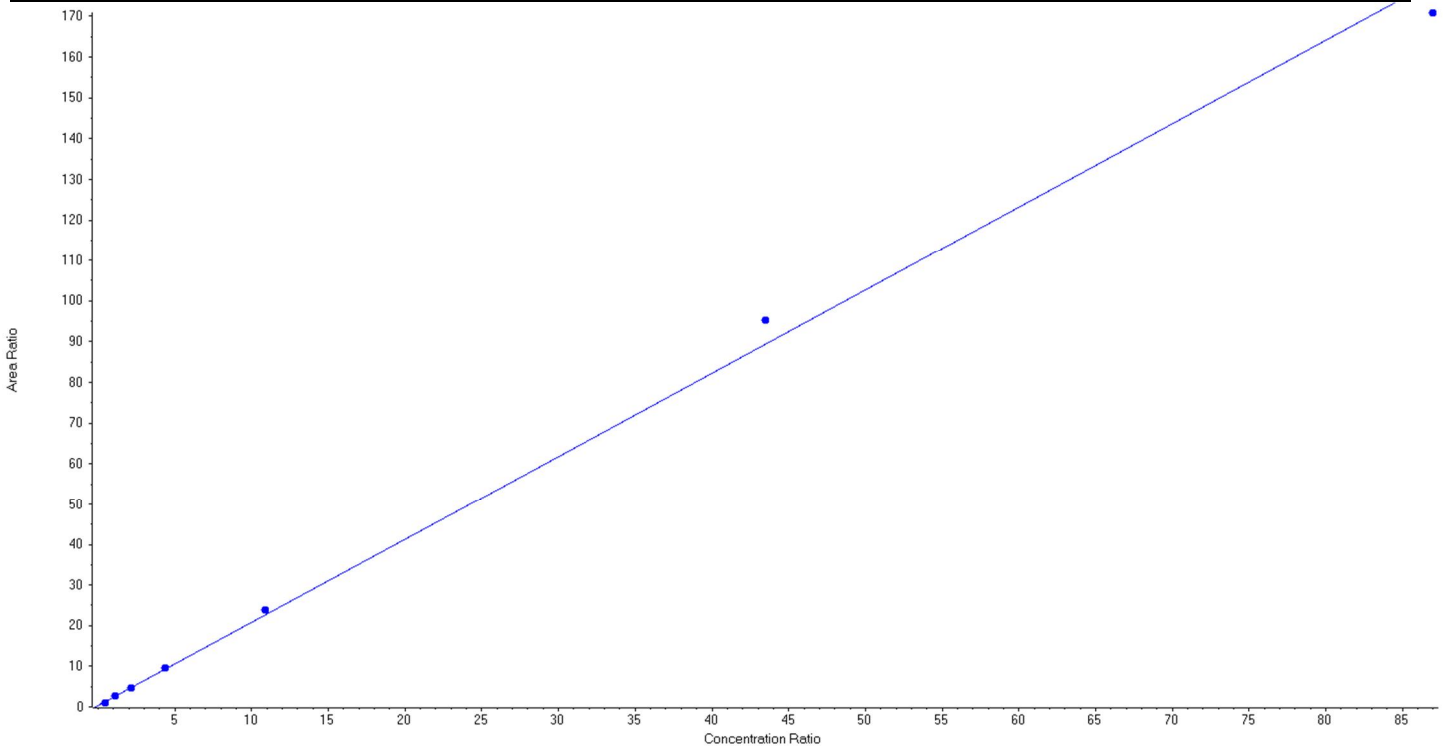
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFBS_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	298.9 / 80.0	**Result Table**	18-0671
Internal Standard	13C3-PFBS	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 2.04715 x + 0.35083 (r = 0.99847) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	101.00	83.888501	83.1
3	KC67	L2	True	252.50	270.237015	107.0
4	KC68	L3	True	505.00	488.243260	96.7
5	KC69	L4	True	1010.00	1060.701202	105.0
6	KC70	L5	True	2525.00	2670.123231	105.8
7	KC71	L6	True	10100.00	10778.291612	106.7
8	KC72	L7	True	20200.00	19342.015180	95.8



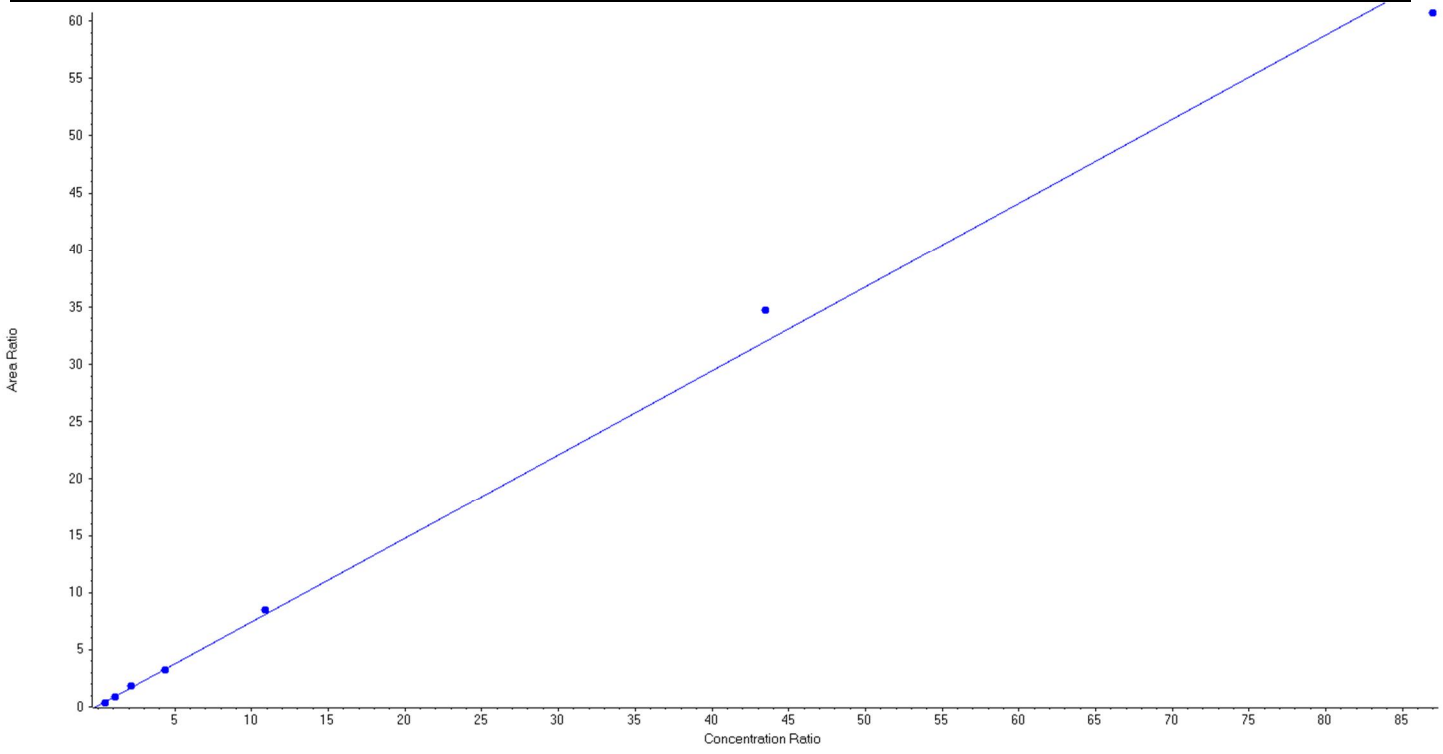
BATTELLE

Calibration Summary Report

Analyte Name	PFBS_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	298.9 / 99.0	**Result Table**	18-0671
Internal Standard	13C3-PFBS	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.73346 x + 0.10062 (r = 0.99785) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	101.00	84.131991	83.3
3	KC67	L2	True	252.50	253.815568	100.5
4	KC68	L3	True	505.00	550.295368	109.0
5	KC69	L4	True	1010.00	993.747945	98.4
6	KC70	L5	True	2525.00	2658.621353	105.3
7	KC71	L6	True	10100.00	10959.724160	108.5
8	KC72	L7	True	20200.00	19193.163616	95.0



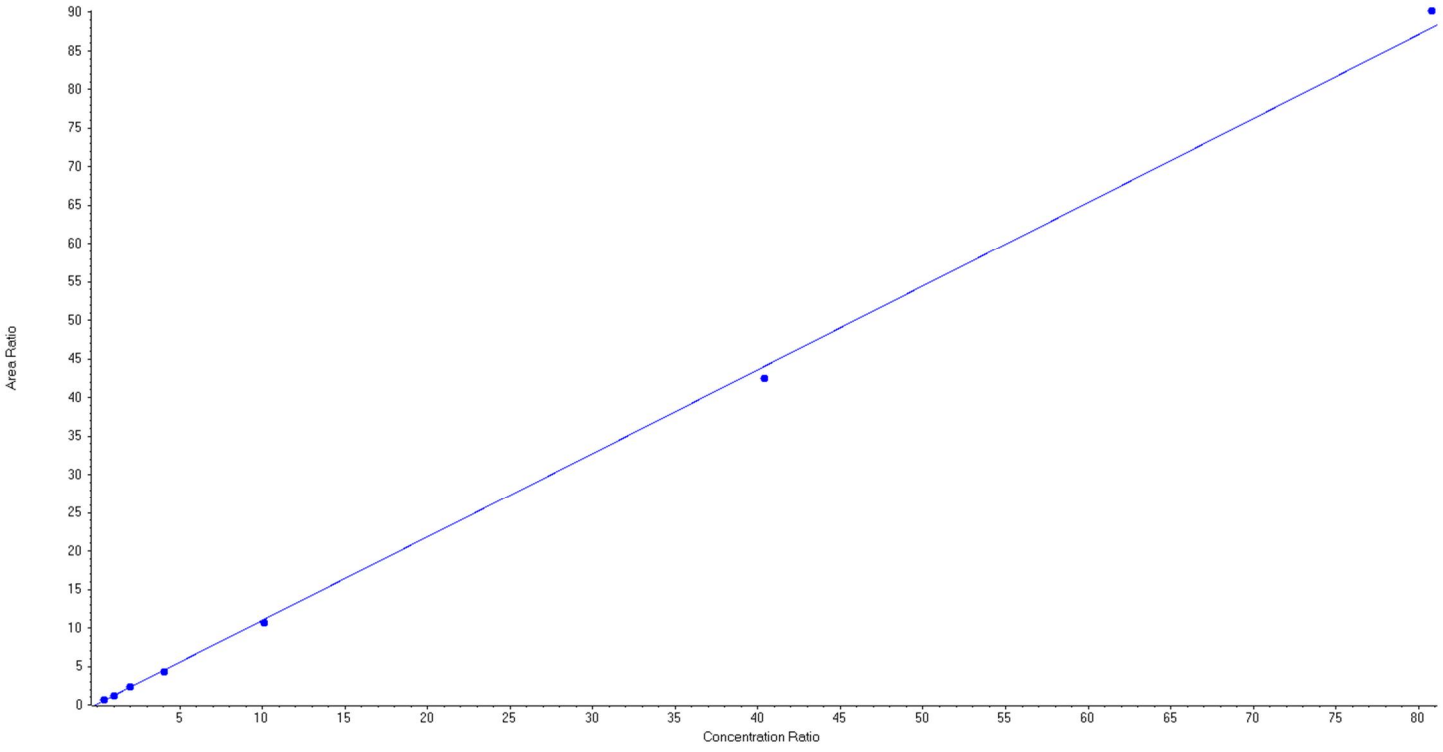
BATTELLE

Calibration Summary Report

Analyte Name	PFHxA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	313.0 / 269.0	**Result Table**	18-0671
Internal Standard	13C5-PFHxA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 1.08766 x + 0.11357 (r = 0.99947) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	101.00	111.966062	110.9
3	KC67	L2	True	252.50	252.768448	100.1
4	KC68	L3	True	505.00	504.738360	100.0
5	KC69	L4	True	1010.00	954.533503	94.5
6	KC70	L5	True	2525.00	2411.573100	95.5
7	KC71	L6	True	10100.00	9754.602075	96.6
8	KC72	L7	True	20200.00	20703.318453	102.5



BATTELLE

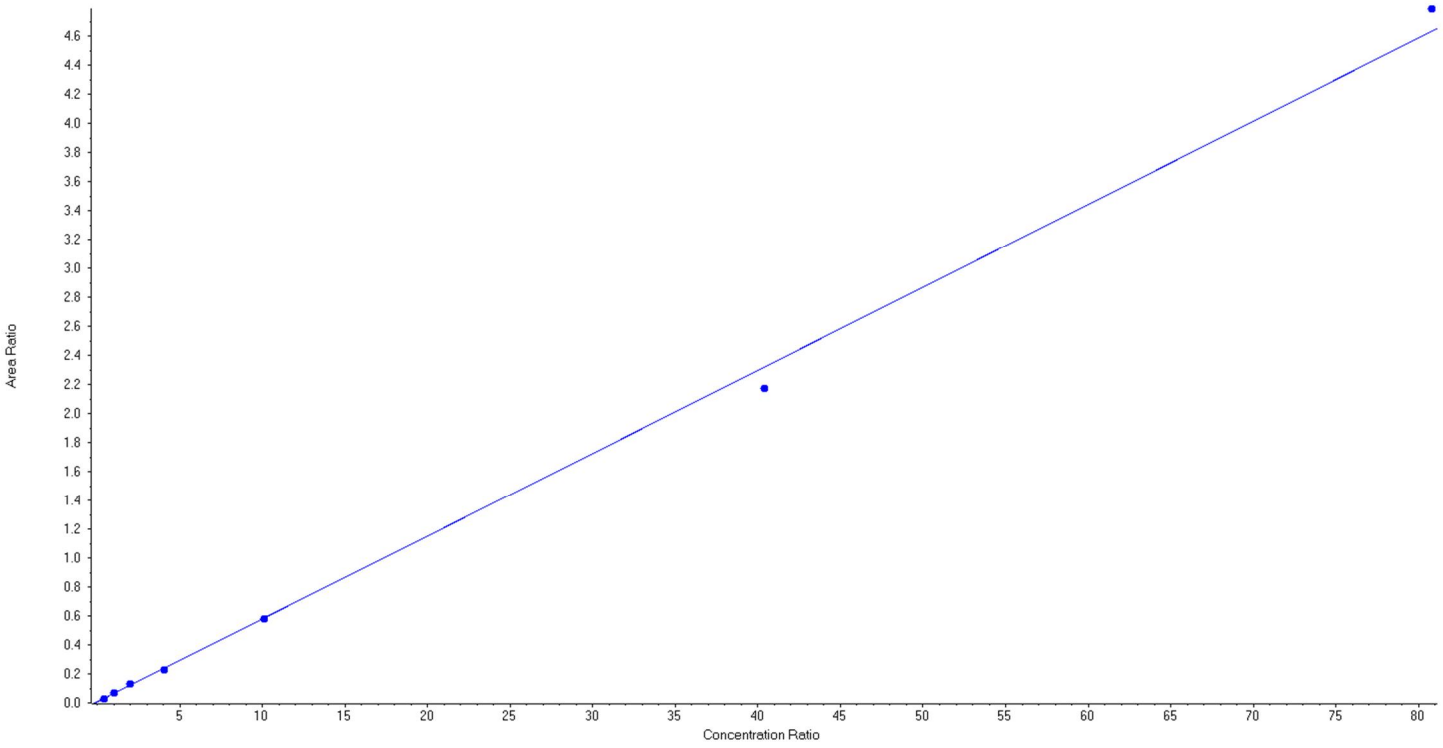
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFHxA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	313.0 / 119.0	**Result Table**	18-0671
Internal Standard	13C5-PFHxA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.05726 x + 0.00706 (r = 0.99897) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	101.00	102.244402	101.2
3	KC67	L2	True	252.50	259.034596	102.6
4	KC68	L3	True	505.00	526.971544	104.4
5	KC69	L4	True	1010.00	962.897418	95.3
6	KC70	L5	True	2525.00	2512.672710	99.5
7	KC71	L6	True	10100.00	9460.480884	93.7
8	KC72	L7	True	20200.00	20869.198446	103.3



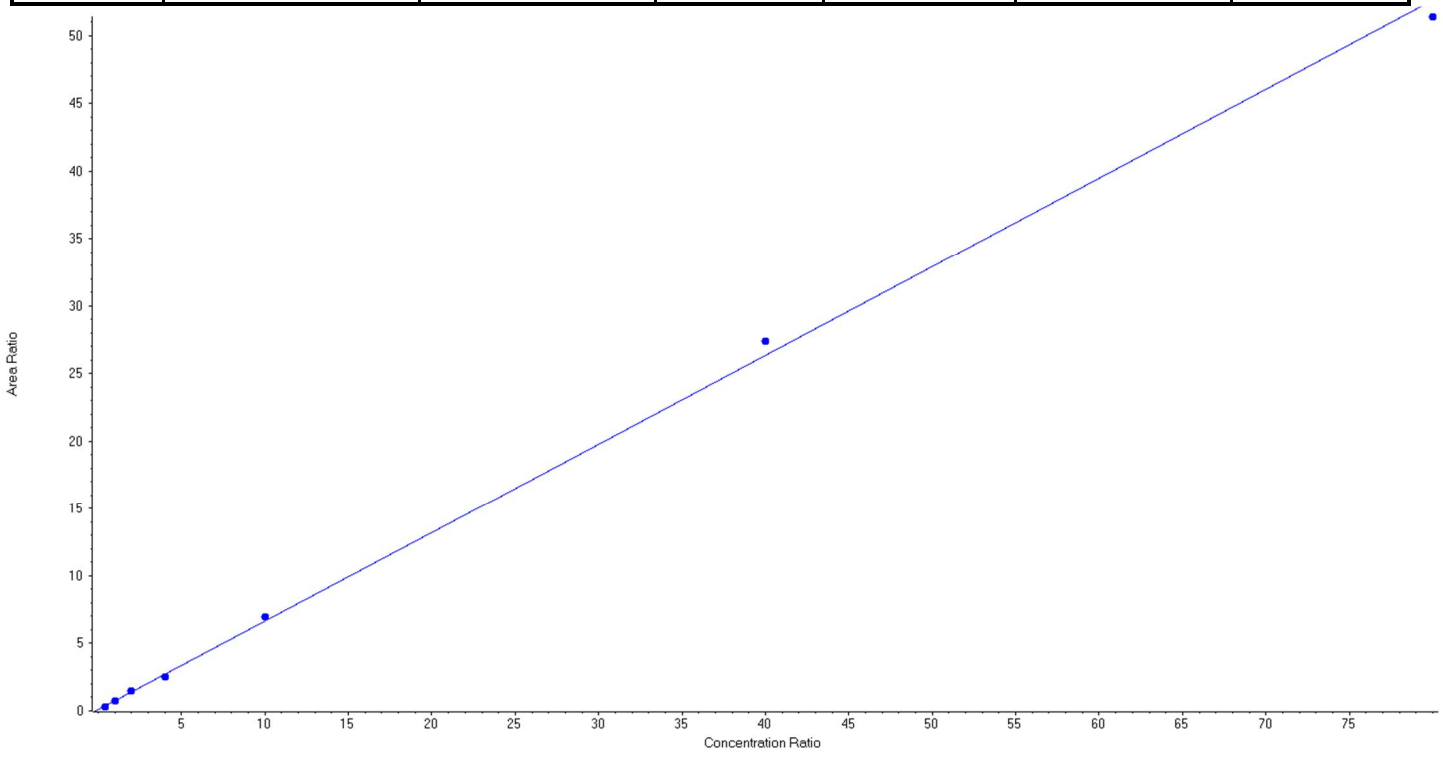
BATTELLE

Calibration Summary Report

Analyte Name	PFHpA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	363.0 / 319.0	**Result Table**	18-0671
Internal Standard	13C4-PFHpA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.65675 x + 0.09062 (r = 0.99934) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	89.411524	89.4
3	KC67	L2	True	250.00	260.939063	104.4
4	KC68	L3	True	500.00	537.306077	107.5
5	KC69	L4	True	1000.00	925.168891	92.5
6	KC70	L5	True	2500.00	2617.443698	104.7
7	KC71	L6	True	10000.00	10387.668909	103.9
8	KC72	L7	True	20000.00	19532.061838	97.7



BATTELLE

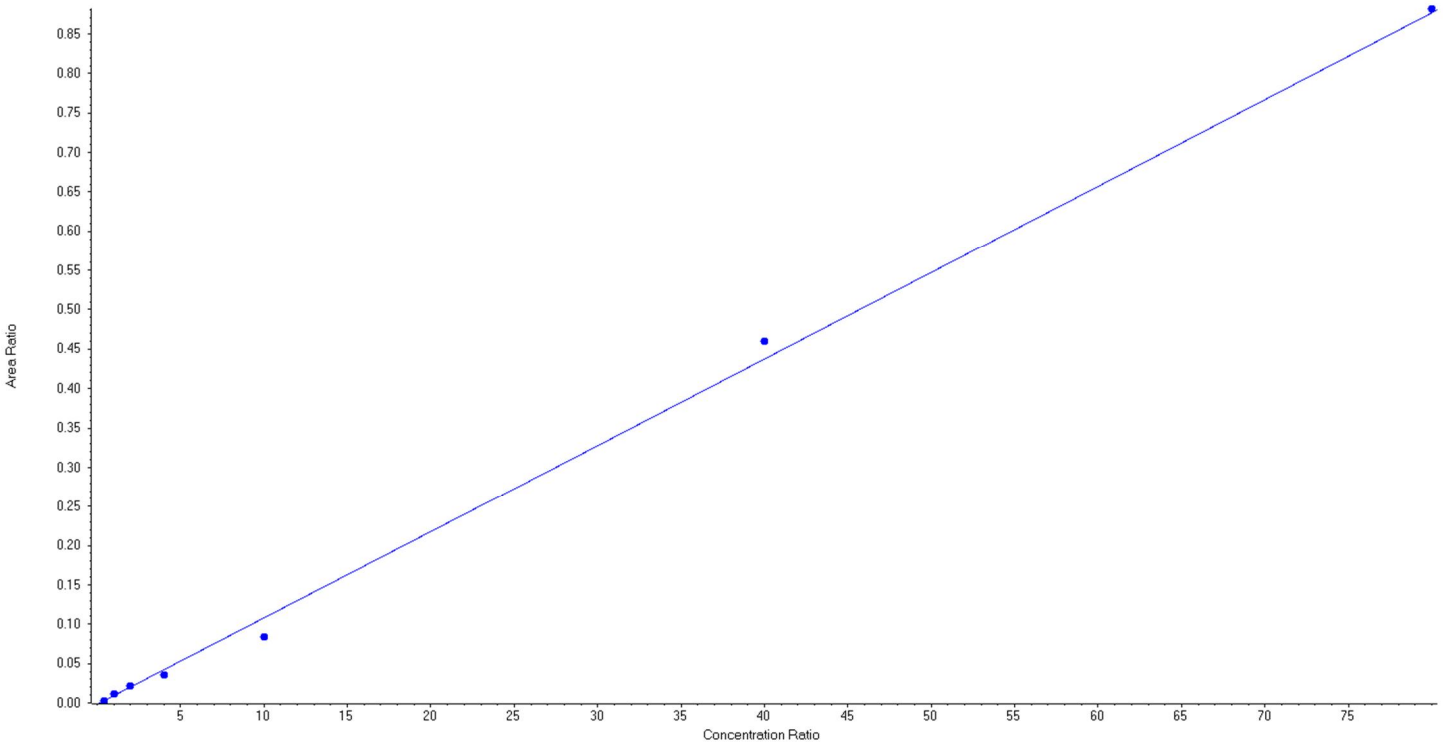
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFHpA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	363.0 / 169.0	**Result Table**	18-0671
Internal Standard	13C4-PFHpA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.01098 x + -0.00176 (r = 0.99717) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	108.219549	108.2
3	KC67	L2	True	250.00	291.350425	116.5
4	KC68	L3	True	500.00	534.909412	107.0
5	KC69	L4	True	1000.00	845.427912	84.5
6	KC70	L5	True	2500.00	1952.835703	78.1
7	KC71	L6	True	10000.00	10503.178904	105.0
8	KC72	L7	True	20000.00	20114.078096	100.6



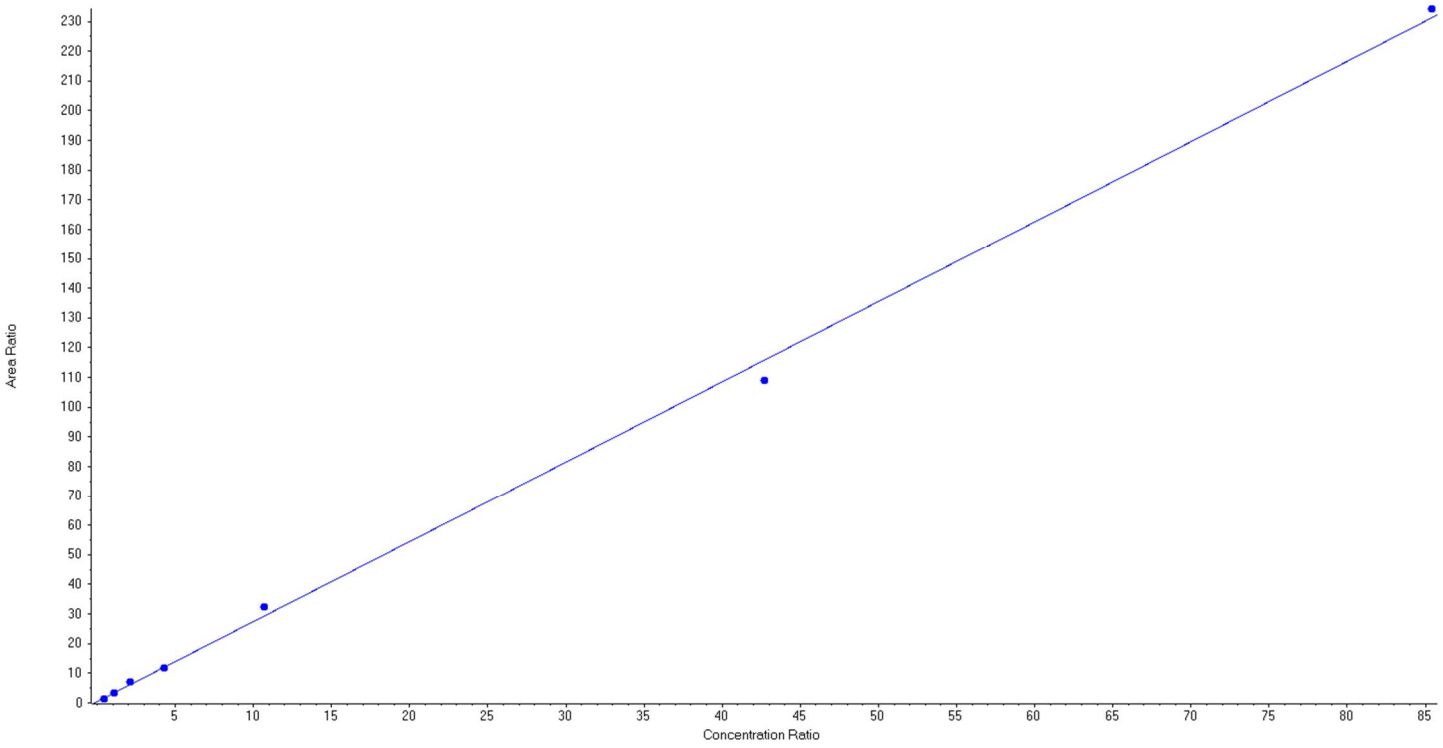
BATTELLE

Calibration Summary Report

Analyte Name	PFHxS_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	399.0 / 80.0	**Result Table**	18-0671
Internal Standard	13C3-PFHxS	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 2.70232 x + 0.43513 (r = 0.99857) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	101.00	74.553352	73.8
3	KC67	L2	True	252.50	259.013978	102.6
4	KC68	L3	True	505.00	593.954679	117.6
5	KC69	L4	True	1010.00	1008.429121	99.8
6	KC70	L5	True	2525.00	2798.079709	110.8
7	KC71	L6	True	10100.00	9497.334890	94.0
8	KC72	L7	True	20200.00	20462.134270	101.3



BATTELLE

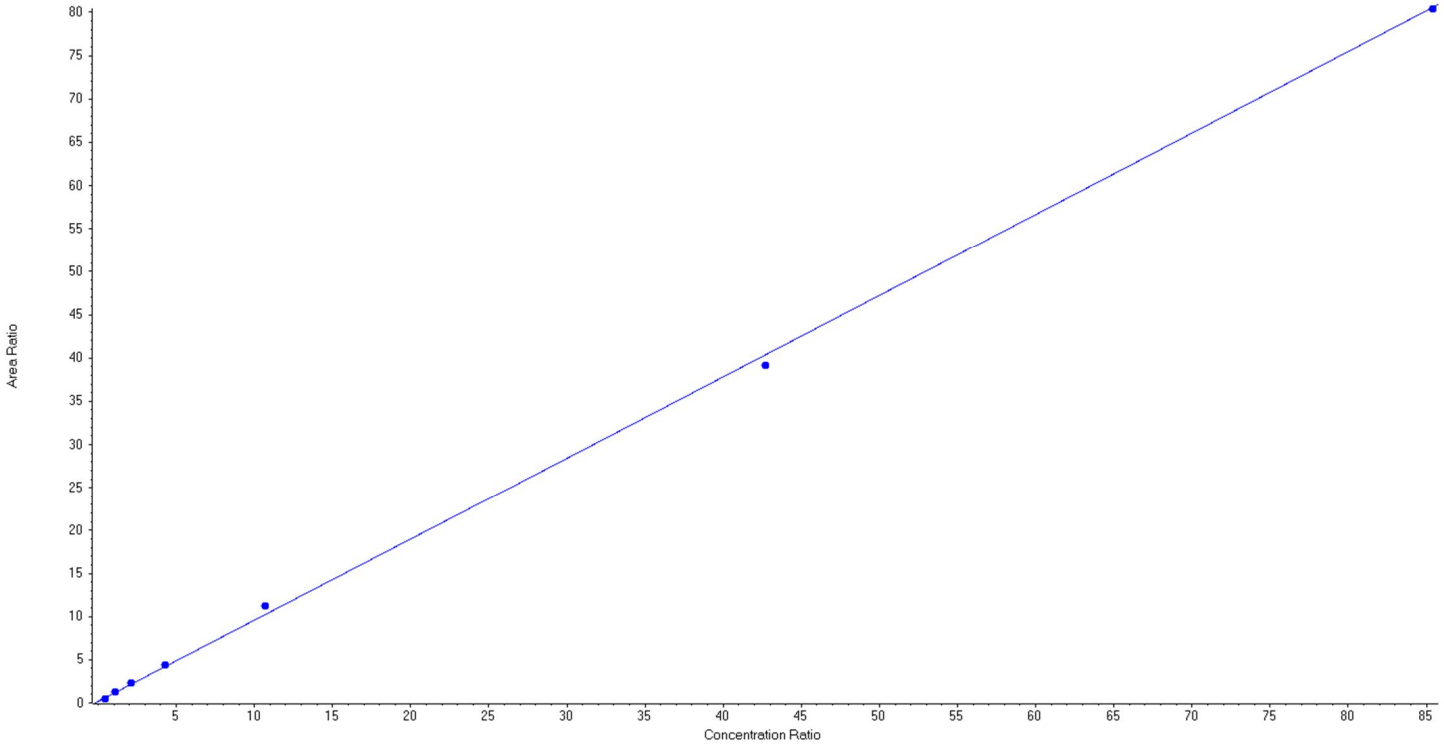
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFHxS_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	399.0 / 99.0	**Result Table**	18-0671
Internal Standard	13C3-PFHxS	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.94118 x + 0.17518 (r = 0.99922) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	101.00	72.514577	71.8
3	KC67	L2	True	252.50	275.052980	108.9
4	KC68	L3	True	505.00	536.460449	106.2
5	KC69	L4	True	1010.00	1073.028977	106.2
6	KC70	L5	True	2525.00	2776.171079	110.0
7	KC71	L6	True	10100.00	9804.208025	97.1
8	KC72	L7	True	20200.00	20156.063912	99.8



BATTELLE

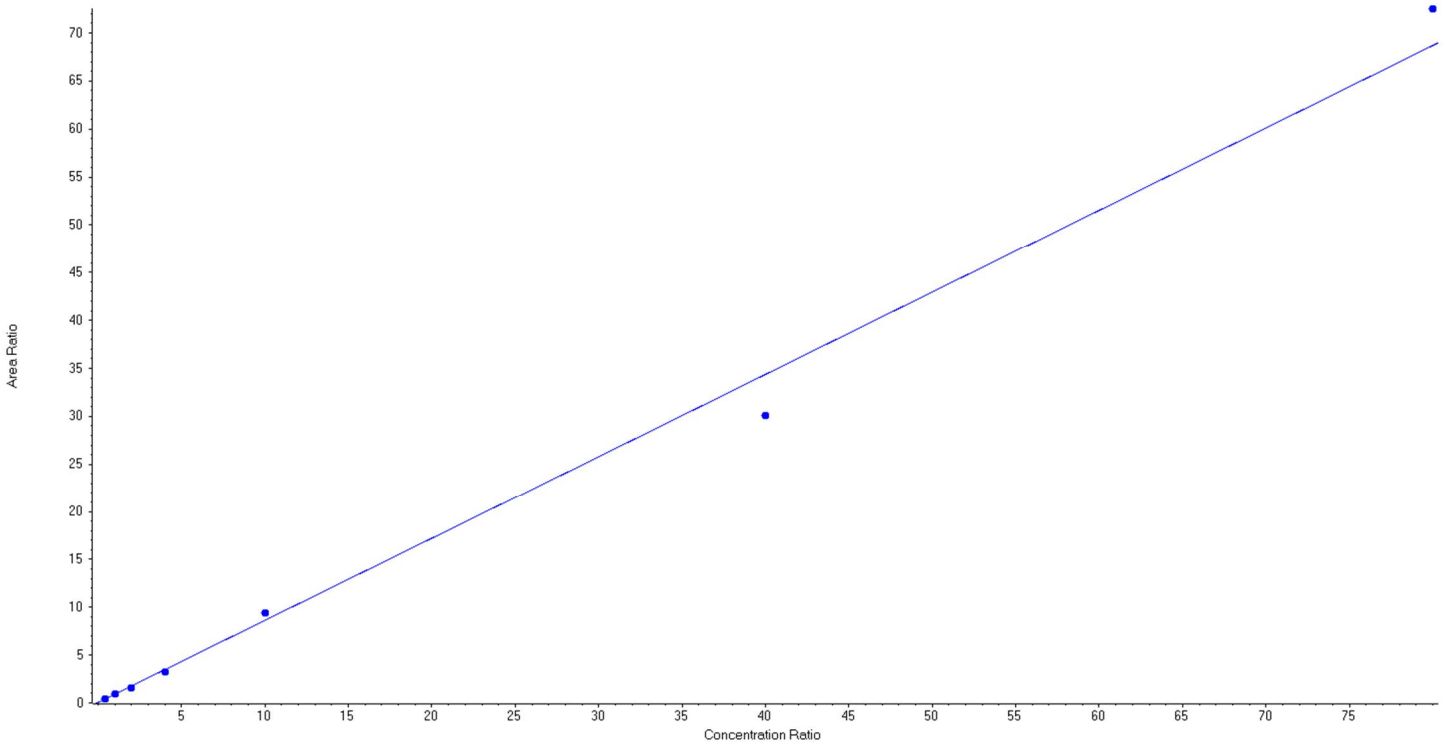
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFOA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	413.0 / 369.0	**Result Table**	18-0671
Internal Standard	13C8-PFOA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.85805 x + 0.05261 (r = 0.99610) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	112.254171	112.3
3	KC67	L2	True	250.00	253.270036	101.3
4	KC68	L3	True	500.00	450.277930	90.1
5	KC69	L4	True	1000.00	941.583067	94.2
6	KC70	L5	True	2500.00	2728.227263	109.1
7	KC71	L6	True	10000.00	8754.578738	87.6
8	KC72	L7	True	20000.00	21109.808795	105.6



BATTELLE

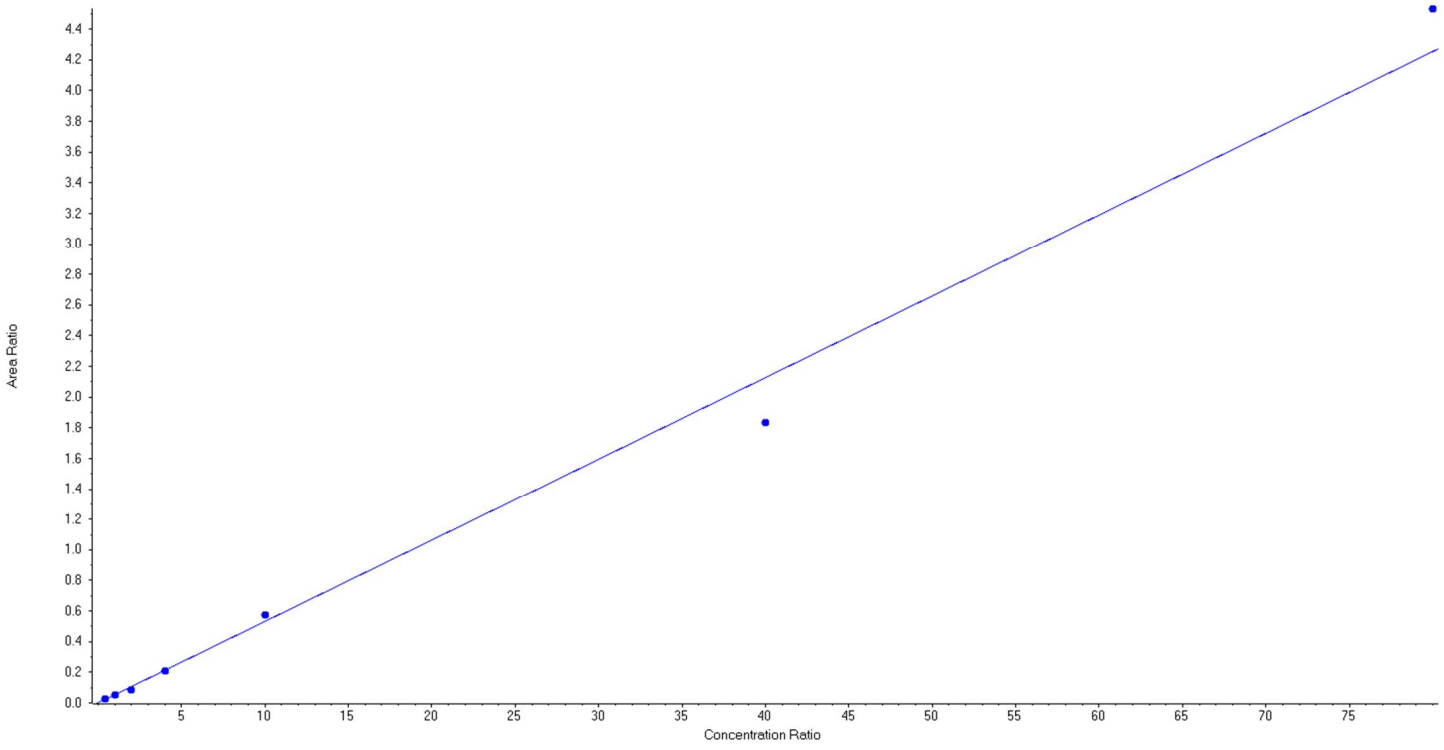
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFOA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	413.0 / 169.0	**Result Table**	18-0671
Internal Standard	13C8-PFOA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.05318 x + 7.57035e-4 (r = 0.99492) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	128.976264	129.0
3	KC67	L2	True	250.00	234.259600	93.7
4	KC68	L3	True	500.00	395.618926	79.1
5	KC69	L4	True	1000.00	977.850077	97.8
6	KC70	L5	True	2500.00	2693.200847	107.7
7	KC71	L6	True	10000.00	8616.519630	86.2
8	KC72	L7	True	20000.00	21303.574656	106.5



BATTELLE

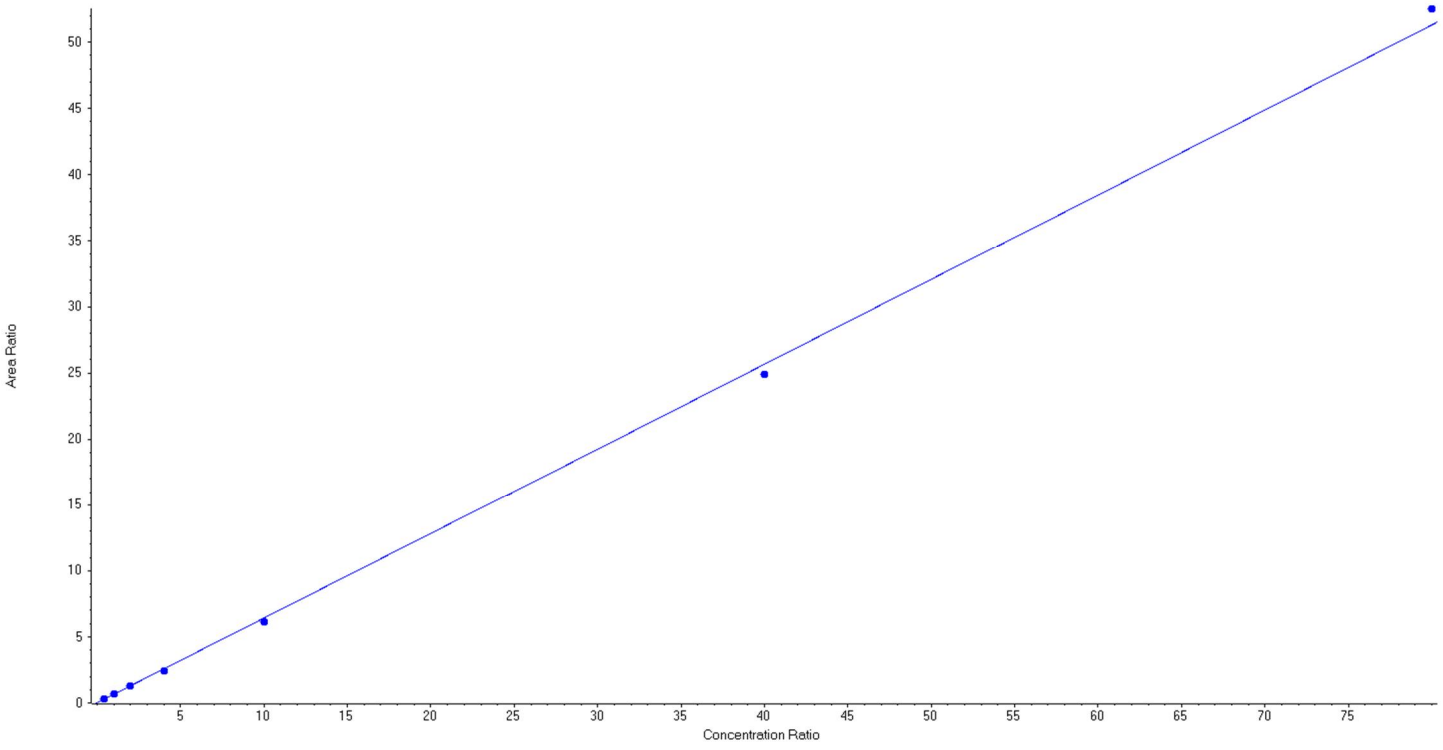
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFNA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	463.0 / 419.0	**Result Table**	18-0671
Internal Standard	13C9-PFNA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.64110 x + 0.01434 (r = 0.99947) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	105.502831	105.5
3	KC67	L2	True	250.00	273.411552	109.4
4	KC68	L3	True	500.00	487.917428	97.6
5	KC69	L4	True	1000.00	931.551703	93.2
6	KC70	L5	True	2500.00	2374.448280	95.0
7	KC71	L6	True	10000.00	9706.024056	97.1
8	KC72	L7	True	20000.00	20471.144150	102.4



BATTELLE

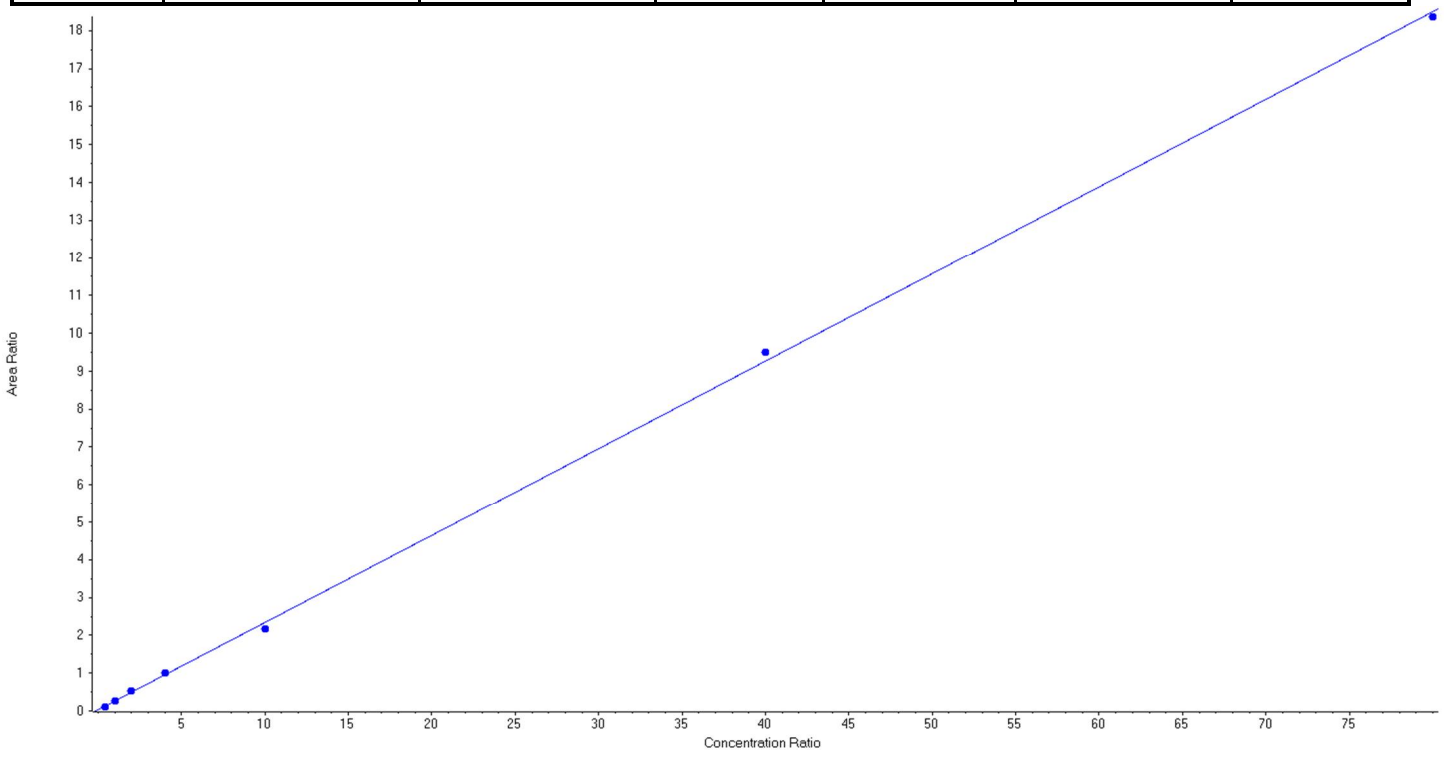
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFNA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	463.0 / 219.0	**Result Table**	18-0671
Internal Standard	13C9-PFNA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.23087 x + 0.03213 (r = 0.99953) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	90.761554	90.8
3	KC67	L2	True	250.00	253.266259	101.3
4	KC68	L3	True	500.00	545.991142	109.2
5	KC69	L4	True	1000.00	1046.329875	104.6
6	KC70	L5	True	2500.00	2307.347739	92.3
7	KC71	L6	True	10000.00	10255.059884	102.6
8	KC72	L7	True	20000.00	19851.243546	99.3



BATTELLE

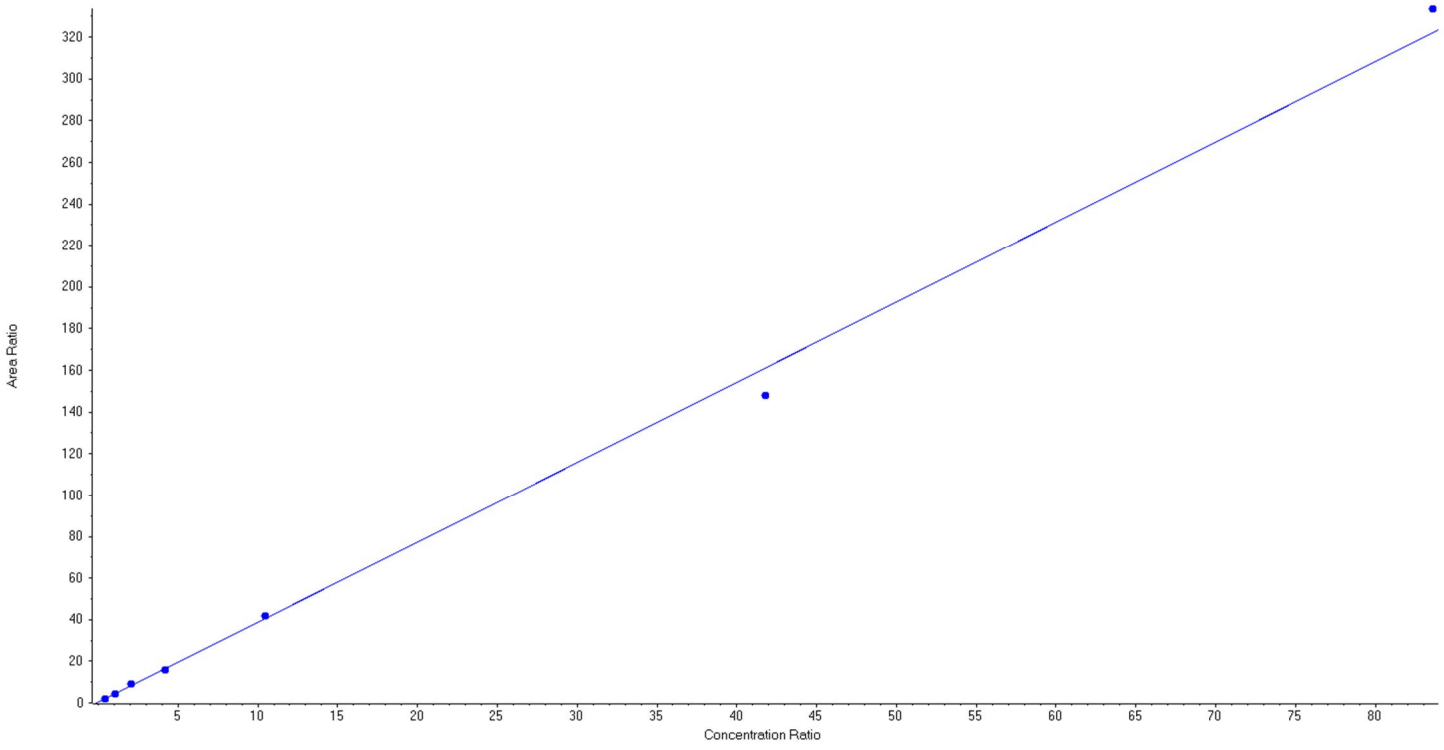
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFOS_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	499.0 / 80.0	**Result Table**	18-0671
Internal Standard	13C8-PFOS	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 3.85029 x + 0.28470 (r = 0.99841) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	93.512875	93.5
3	KC67	L2	True	250.00	251.710223	100.7
4	KC68	L3	True	500.00	552.882307	110.6
5	KC69	L4	True	1000.00	961.052881	96.1
6	KC70	L5	True	2500.00	2591.416569	103.7
7	KC71	L6	True	10000.00	9193.499467	91.9
8	KC72	L7	True	20000.00	20705.925676	103.5



BATTELLE

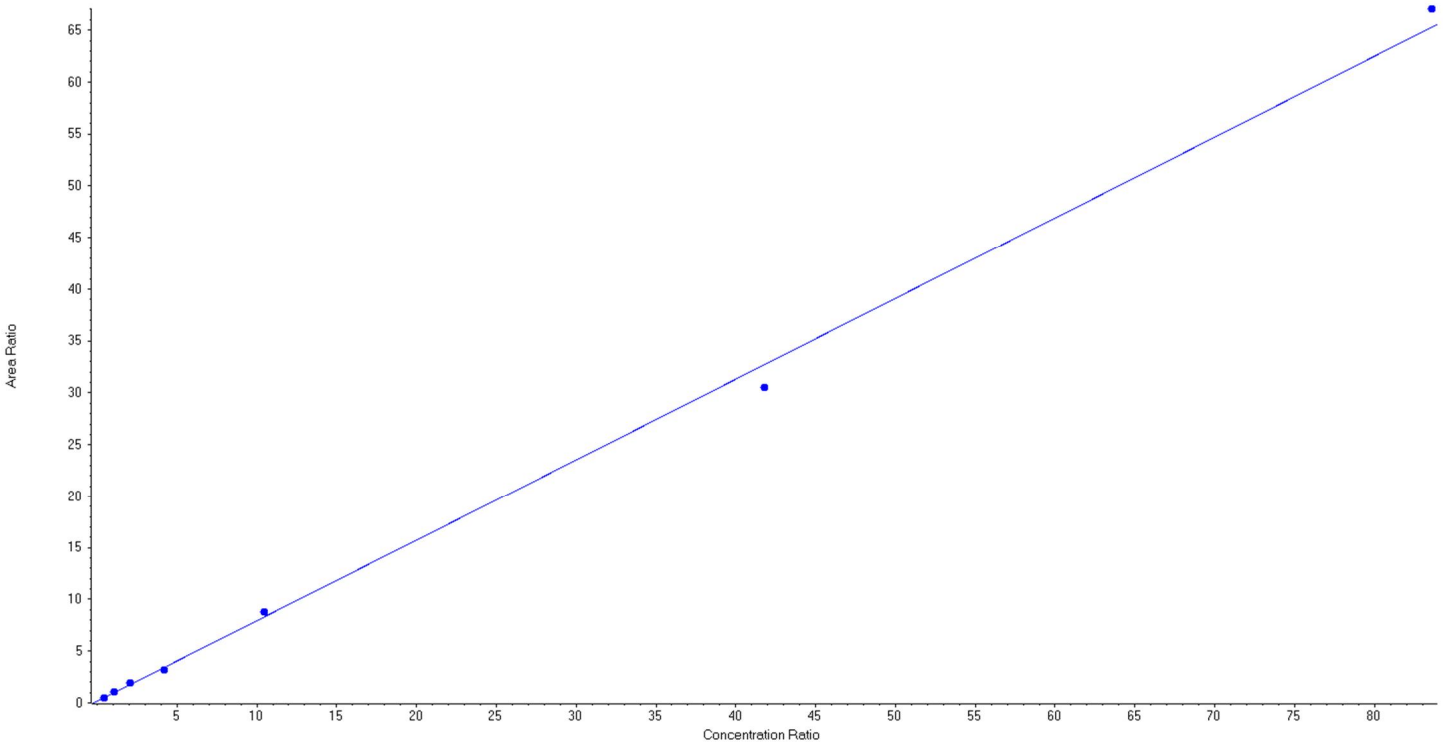
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFOS_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	499.0 / 99.0	**Result Table**	18-0671
Internal Standard	13C8-PFOS	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.77926 x + 0.15286 (r = 0.99867) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	87.966472	88.0
3	KC67	L2	True	250.00	266.574385	106.6
4	KC68	L3	True	500.00	549.553215	109.9
5	KC69	L4	True	1000.00	932.090704	93.2
6	KC70	L5	True	2500.00	2661.248055	106.5
7	KC71	L6	True	10000.00	9314.260569	93.1
8	KC72	L7	True	20000.00	20538.306601	102.7



BATTELLE

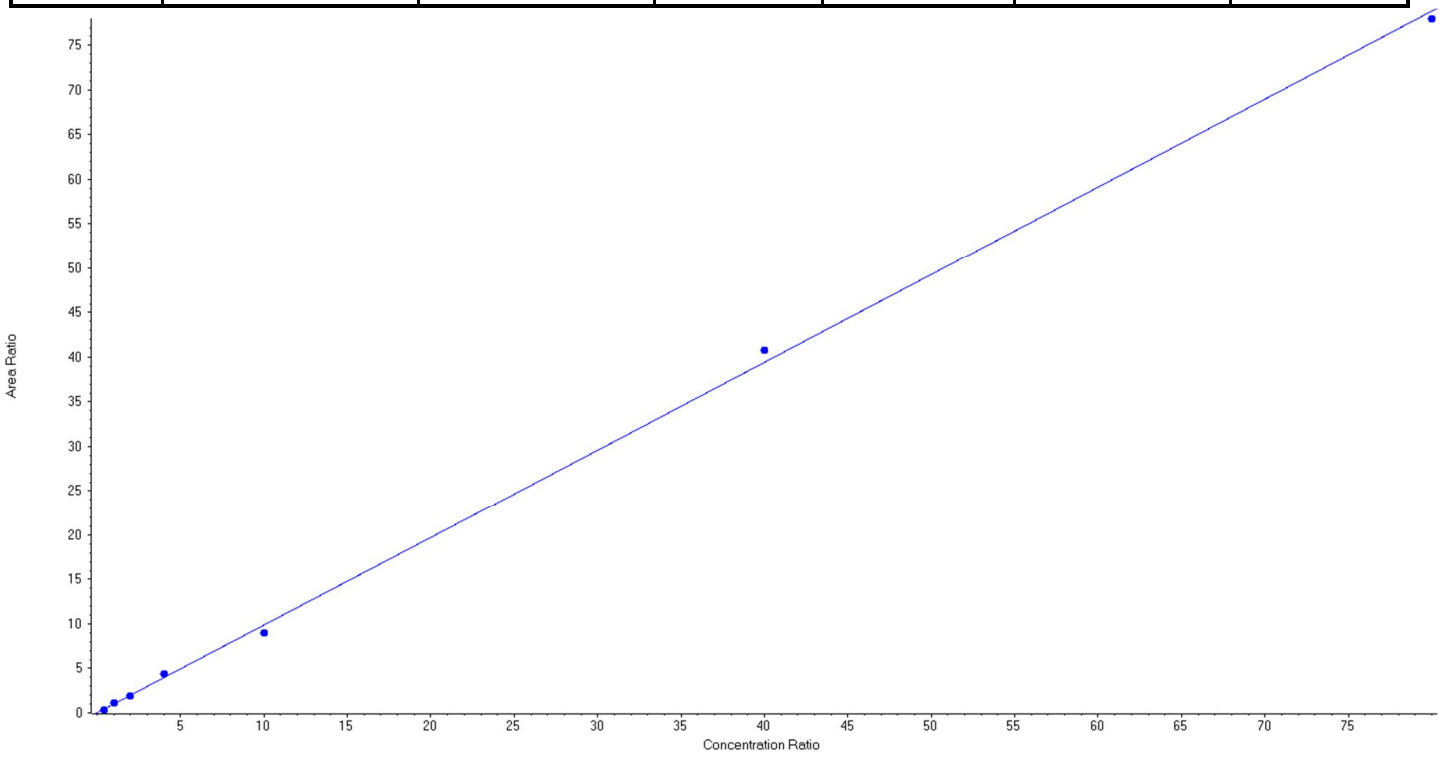
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFDA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	513.0 / 469.0	**Result Table**	18-0671
Internal Standard	13C6-PFDA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.98519 x + 0.02635 (r = 0.99916) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	90.951035	91.0
3	KC67	L2	True	250.00	265.476496	106.2
4	KC68	L3	True	500.00	490.962288	98.2
5	KC69	L4	True	1000.00	1118.872339	111.9
6	KC70	L5	True	2500.00	2260.957663	90.4
7	KC71	L6	True	10000.00	10345.293600	103.5
8	KC72	L7	True	20000.00	19777.486579	98.9



BATTELLE

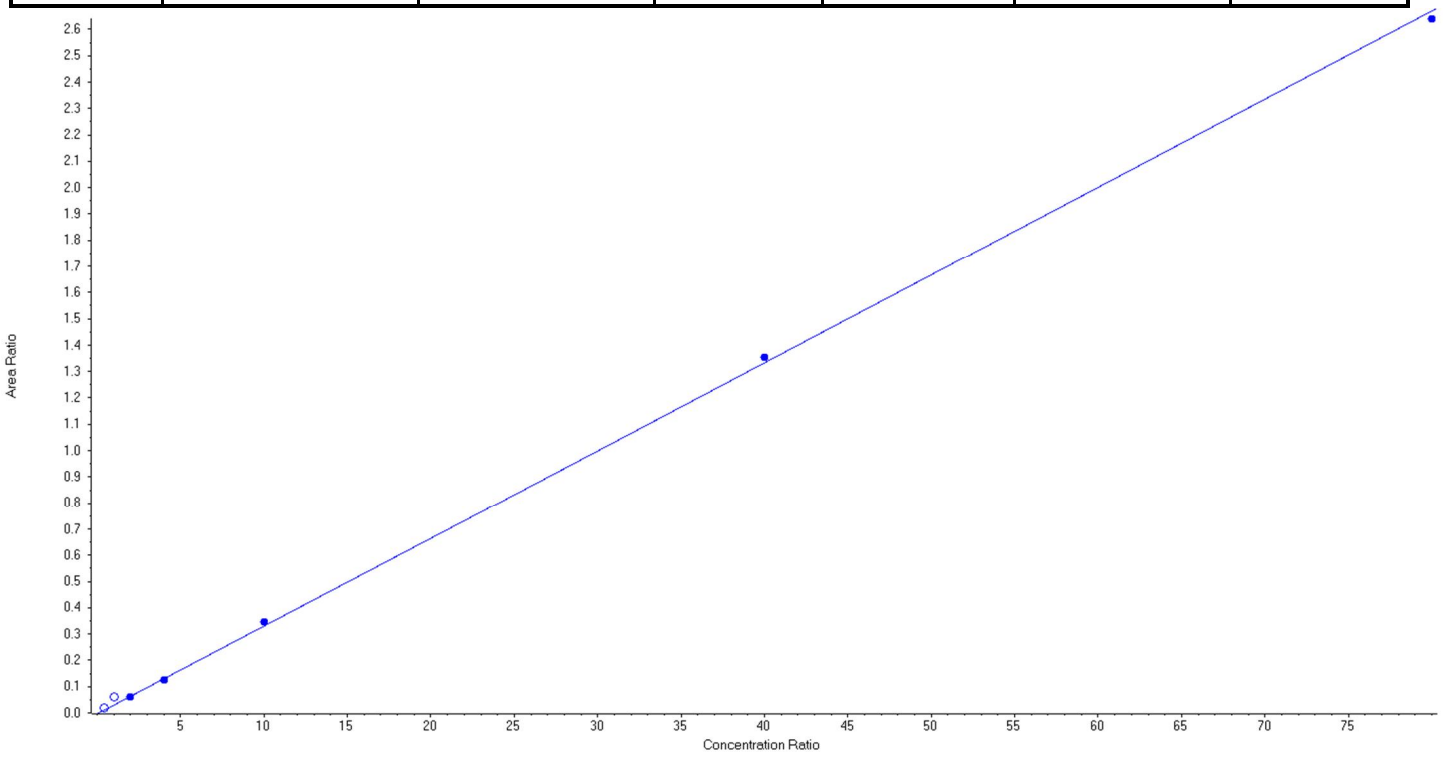
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFDA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	513.0 / 219.0	**Result Table**	18-0671
Internal Standard	13C6-PFDA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.03342 x + -0.00379 (r = 0.99981) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	False	100.00	160.703621	160.7
3	KC67	L2	False	250.00	480.428663	192.2
4	KC68	L3	True	500.00	491.131033	98.2
5	KC69	L4	True	1000.00	971.513799	97.2
6	KC70	L5	True	2500.00	2604.033680	104.2
7	KC71	L6	True	10000.00	10158.891781	101.6
8	KC72	L7	True	20000.00	19774.429708	98.9



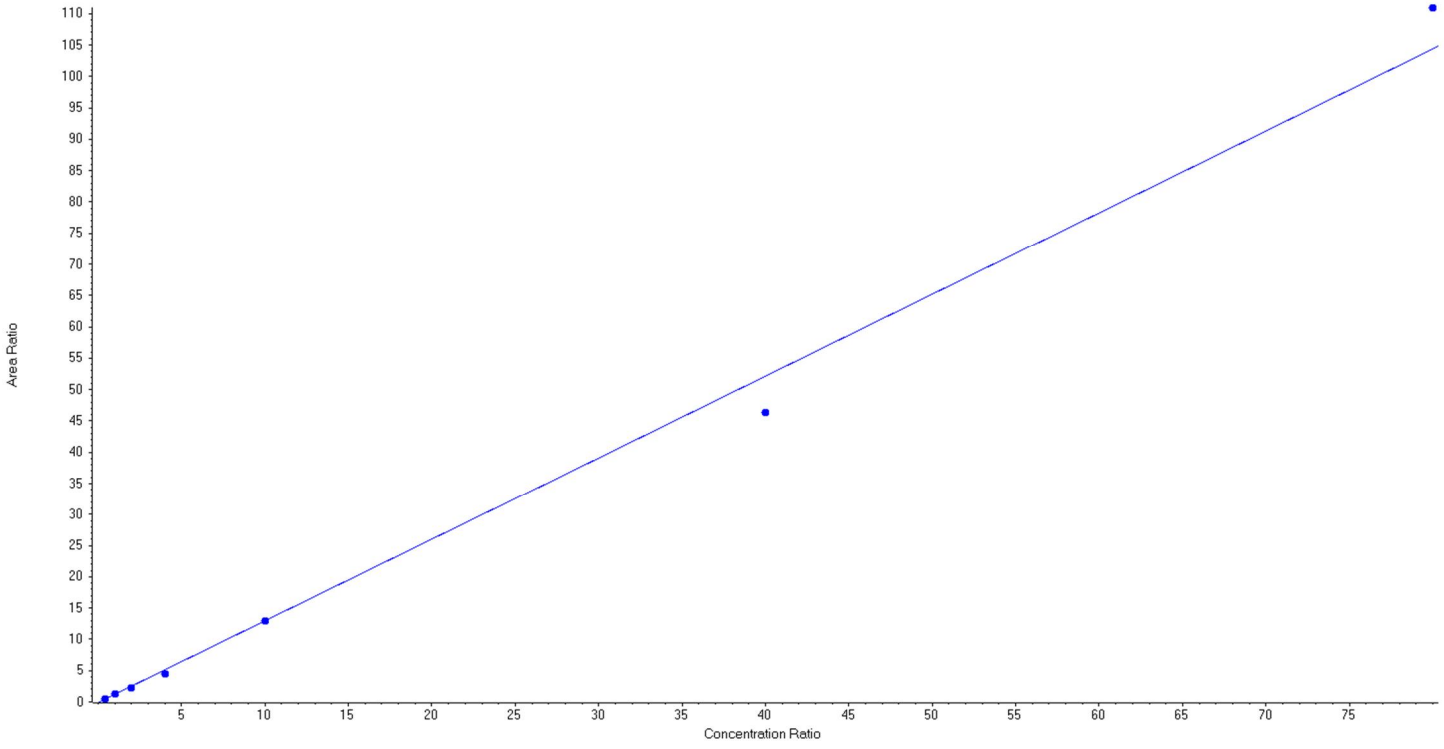
BATTELLE

Calibration Summary Report

Analyte Name	PFUnA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	563.0 / 519.0	**Result Table**	18-0671
Internal Standard	13C7-PFUnA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 1.30581 x + -0.08824 (r = 0.99639) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	121.085413	121.1
3	KC67	L2	True	250.00	268.754931	107.5
4	KC68	L3	True	500.00	448.964362	89.8
5	KC69	L4	True	1000.00	864.430186	86.4
6	KC70	L5	True	2500.00	2498.777111	100.0
7	KC71	L6	True	10000.00	8897.139847	89.0
8	KC72	L7	True	20000.00	21250.848150	106.3



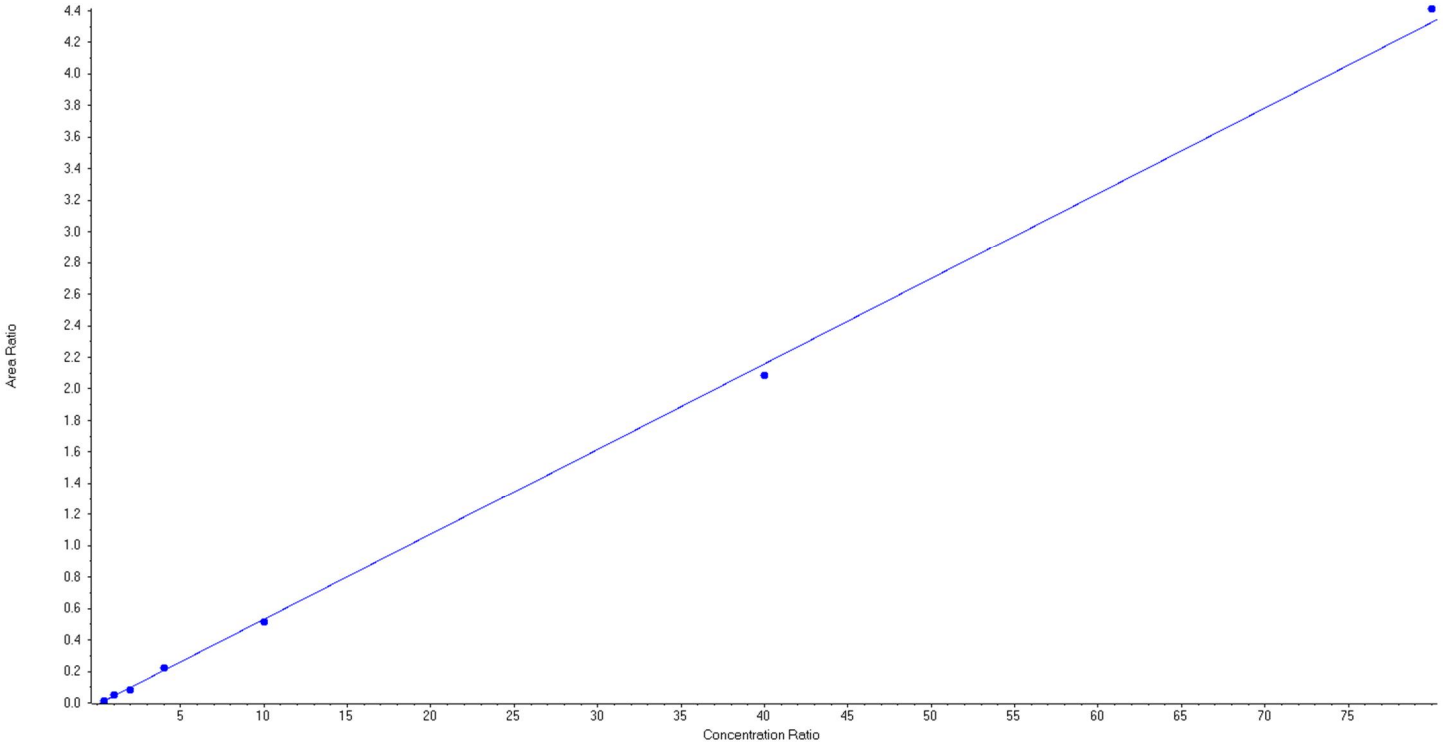
BATTELLE

Calibration Summary Report

Analyte Name	PFUnA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	563.0 / 269.0	**Result Table**	18-0671
Internal Standard	13C7-PFUnA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.05422 x + -0.01025 (r = 0.99938) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	103.827779	103.8
3	KC67	L2	True	250.00	270.012970	108.0
4	KC68	L3	True	500.00	427.814458	85.6
5	KC69	L4	True	1000.00	1071.859294	107.2
6	KC70	L5	True	2500.00	2420.702883	96.8
7	KC71	L6	True	10000.00	9662.236857	96.6
8	KC72	L7	True	20000.00	20393.545761	102.0



BATTELLE

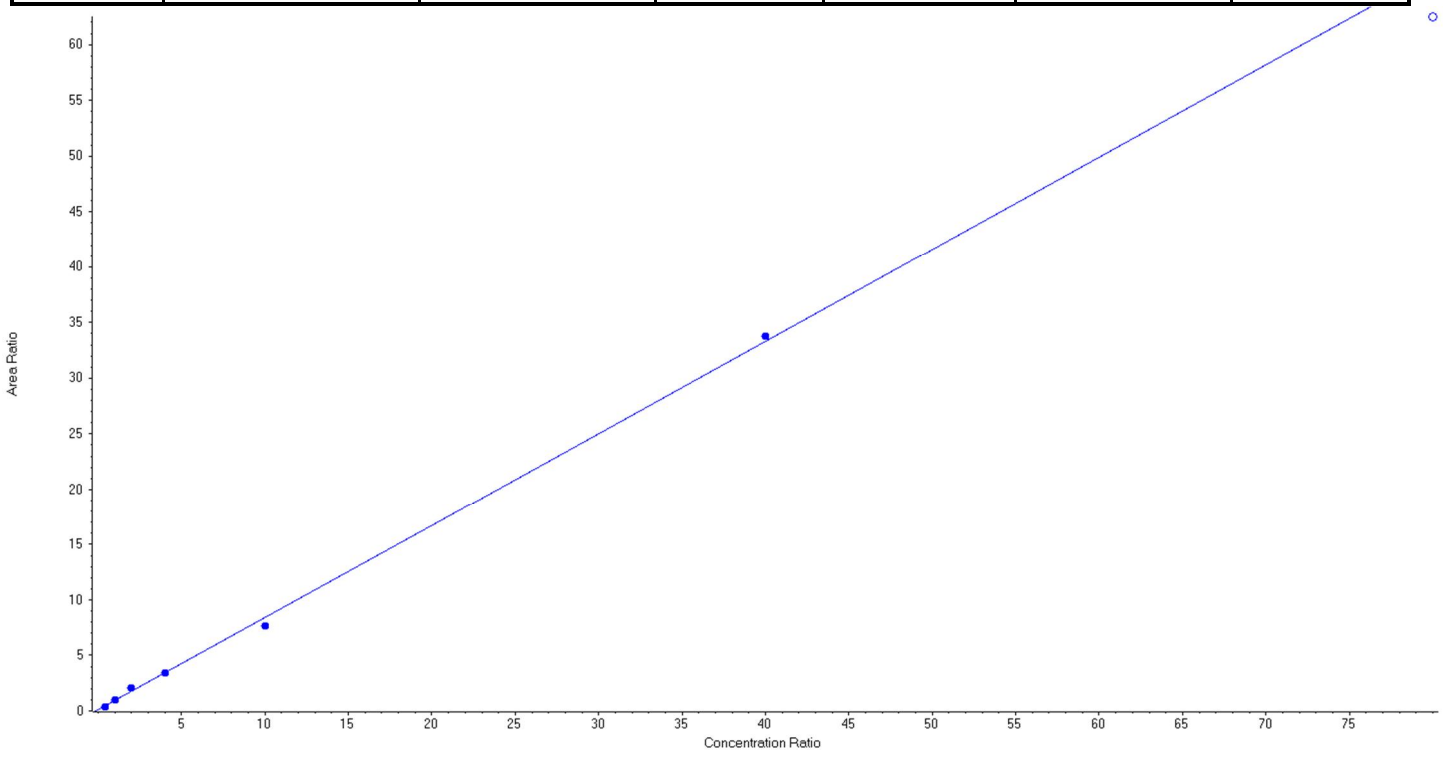
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFDoA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	613.0 / 569.0	**Result Table**	18-0671
Internal Standard	13C2-PFDoA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.82964 x + 0.12164 (r = 0.99810) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	82.589955	82.6
3	KC67	L2	True	250.00	264.262487	105.7
4	KC68	L3	True	500.00	600.431145	120.1
5	KC69	L4	True	1000.00	993.811414	99.4
6	KC70	L5	True	2500.00	2271.621006	90.9
7	KC71	L6	True	10000.00	10137.283994	101.4
8	KC72	L7	False	20000.00	18794.025409	94.0



BATTELLE

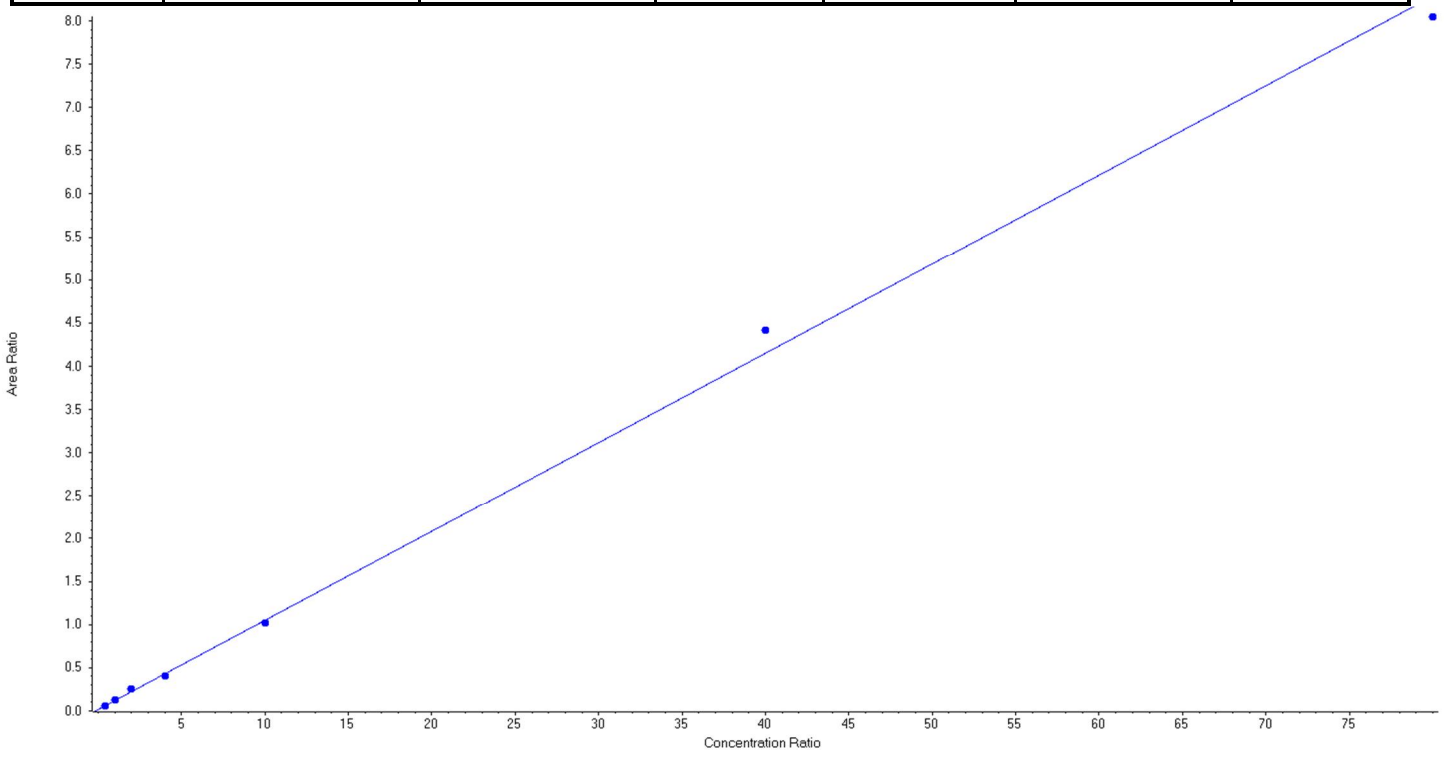
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFDoA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	613.0 / 319.0	**Result Table**	18-0671
Internal Standard	13C2-PFDoA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.10333 x + 0.01723 (r = 0.99886) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	87.948847	88.0
3	KC67	L2	True	250.00	260.132844	104.1
4	KC68	L3	True	500.00	561.638373	112.3
5	KC69	L4	True	1000.00	952.220600	95.2
6	KC70	L5	True	2500.00	2422.577787	96.9
7	KC71	L6	True	10000.00	10643.552317	106.4
8	KC72	L7	True	20000.00	19421.929231	97.1



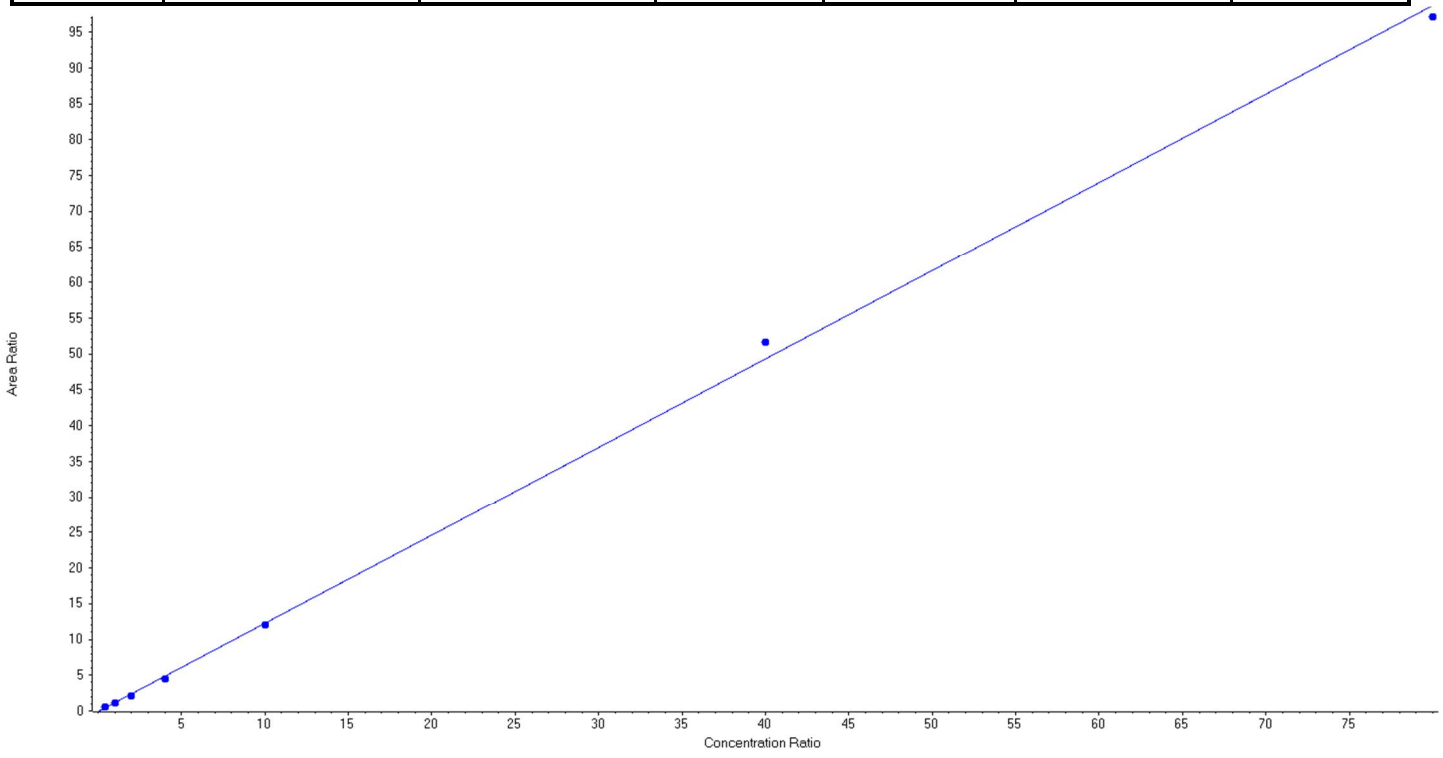
BATTELLE

Calibration Summary Report

Analyte Name	PFTrDA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	663.0 / 619.0	**Result Table**	18-0671
Internal Standard	13C2-PFTeDA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 1.23494 x + -0.07826 (r = 0.99934) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	117.417720	117.4
3	KC67	L2	True	250.00	248.014044	99.2
4	KC68	L3	True	500.00	440.944292	88.2
5	KC69	L4	True	1000.00	936.300682	93.6
6	KC70	L5	True	2500.00	2462.604914	98.5
7	KC71	L6	True	10000.00	10465.989454	104.7
8	KC72	L7	True	20000.00	19678.728894	98.4



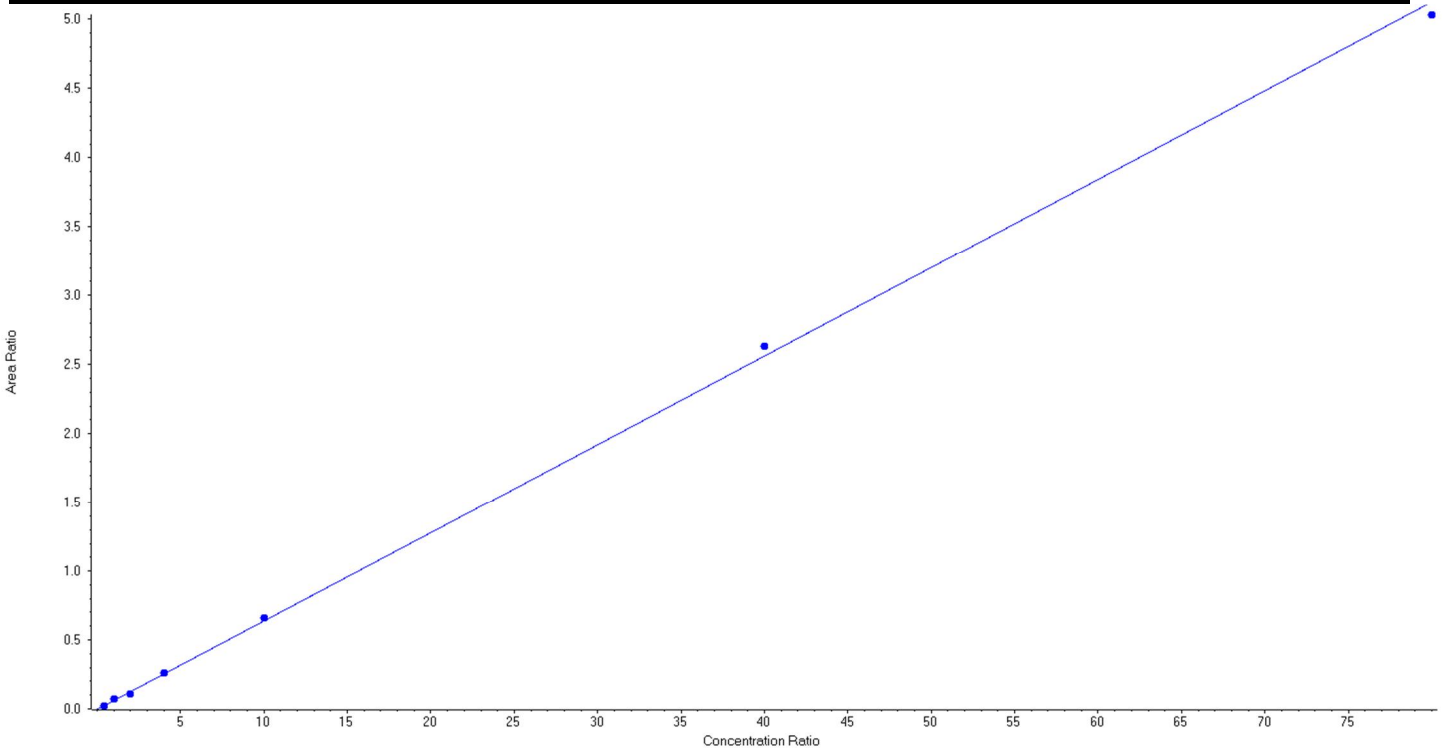
BATTELLE

Calibration Summary Report

Analyte Name	PFTrDA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	663.0 / 169.0	**Result Table**	18-0671
Internal Standard	13C2-PFTeDA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.06411 x + -0.00321 (r = 0.99941) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	88.902121	88.9
3	KC67	L2	True	250.00	291.019332	116.4
4	KC68	L3	True	500.00	428.975299	85.8
5	KC69	L4	True	1000.00	1041.563432	104.2
6	KC70	L5	True	2500.00	2597.315130	103.9
7	KC71	L6	True	10000.00	10267.003010	102.7
8	KC72	L7	True	20000.00	19635.221677	98.2



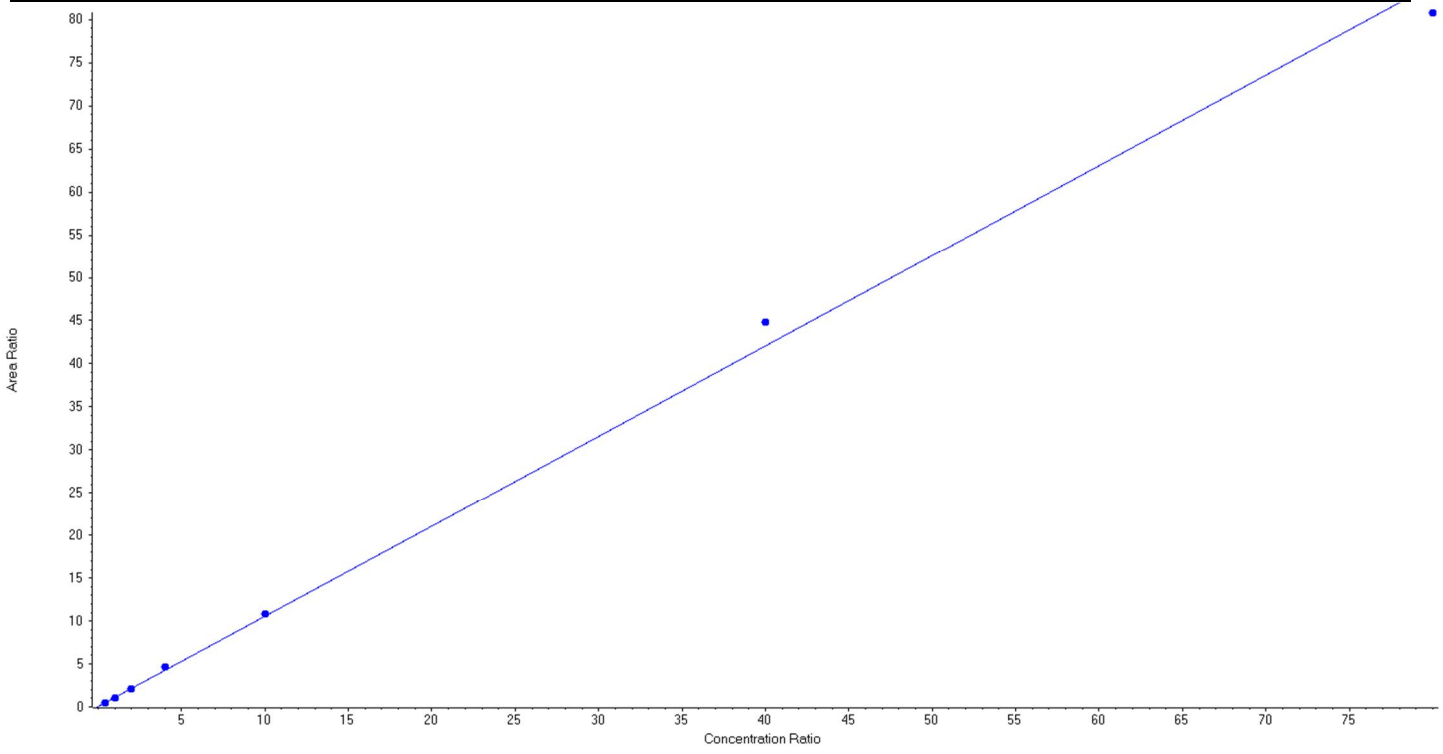
BATTELLE

Calibration Summary Report

Analyte Name	PFTeDA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	713.0 / 669.0	**Result Table**	18-0671
Internal Standard	13C2-PFTeDA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 1.05035 x + 0.05480 (r = 0.99863) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	90.597160	90.6
3	KC67	L2	True	250.00	244.830096	97.9
4	KC68	L3	True	500.00	478.965374	95.8
5	KC69	L4	True	1000.00	1102.327101	110.2
6	KC70	L5	True	2500.00	2573.229328	102.9
7	KC71	L6	True	10000.00	10643.117780	106.4
8	KC72	L7	True	20000.00	19216.933162	96.1



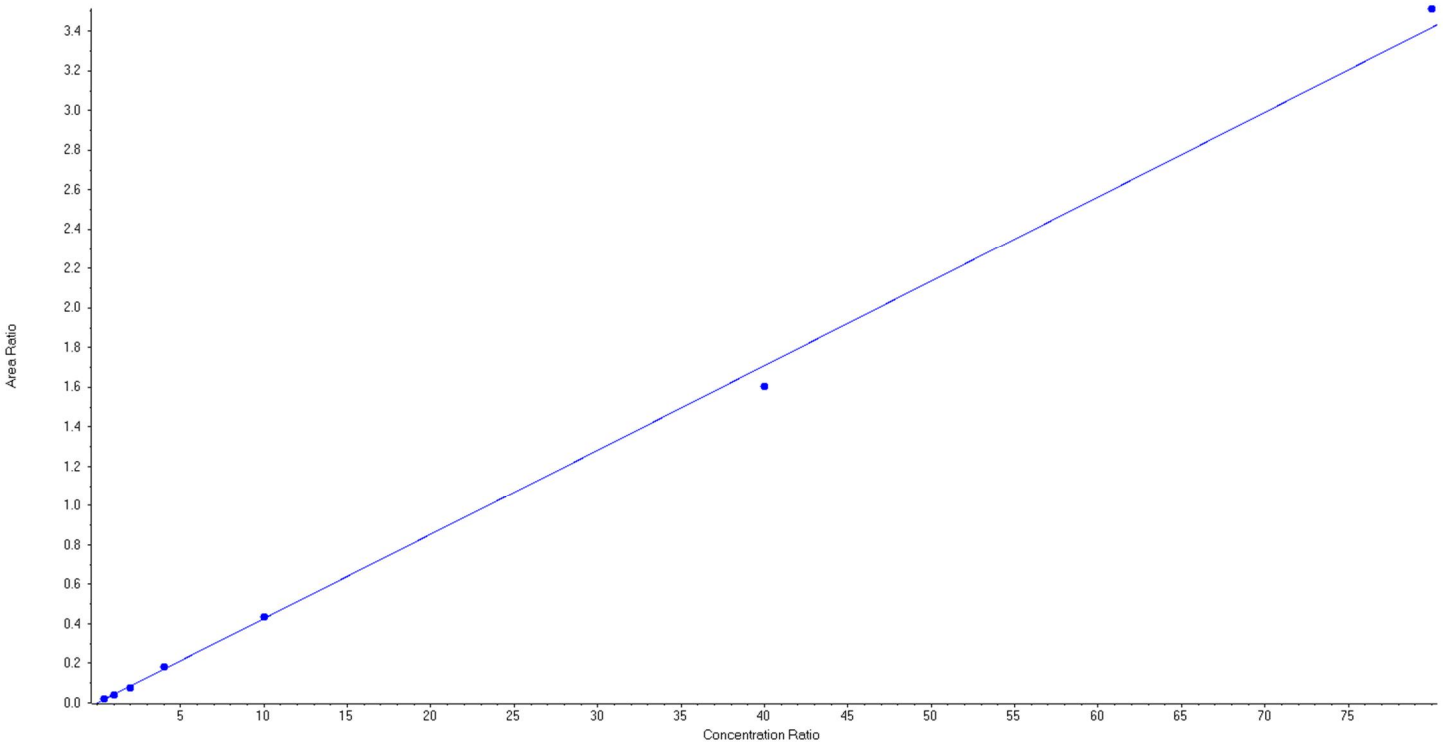
BATTELLE

Calibration Summary Report

Analyte Name	PFTeDA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	713.0 / 169.0	**Result Table**	18-0671
Internal Standard	13C2-PFTeDA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.04274 x + -2.82718e-4 (r = 0.99899) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	111.343508	111.3
3	KC67	L2	True	250.00	236.800068	94.7
4	KC68	L3	True	500.00	444.880035	89.0
5	KC69	L4	True	1000.00	1063.843896	106.4
6	KC70	L5	True	2500.00	2546.153323	101.9
7	KC71	L6	True	10000.00	9399.007918	94.0
8	KC72	L7	True	20000.00	20547.971253	102.7



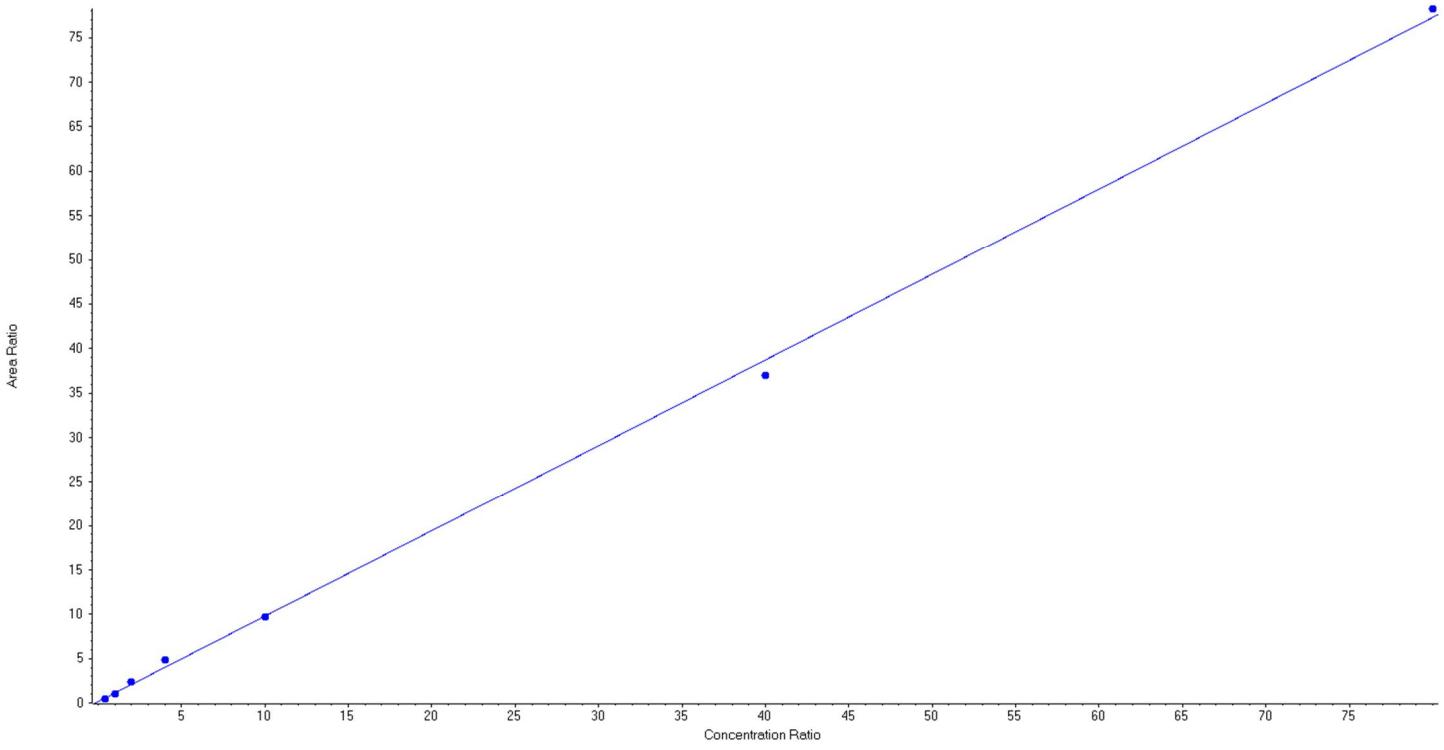
BATTELLE

Calibration Summary Report

Analyte Name	NMeFOSAA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	570.0 / 419.0	**Result Table**	18-0671
Internal Standard	d3-MeFOSAA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.96431 x + 0.14927 (r = 0.99865) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	81.263158	81.3
3	KC67	L2	True	250.00	219.644380	87.9
4	KC68	L3	True	500.00	569.603109	113.9
5	KC69	L4	True	1000.00	1209.520728	121.0
6	KC70	L5	True	2500.00	2484.629367	99.4
7	KC71	L6	True	10000.00	9538.904935	95.4
8	KC72	L7	True	20000.00	20246.434323	101.2



BATTELLE

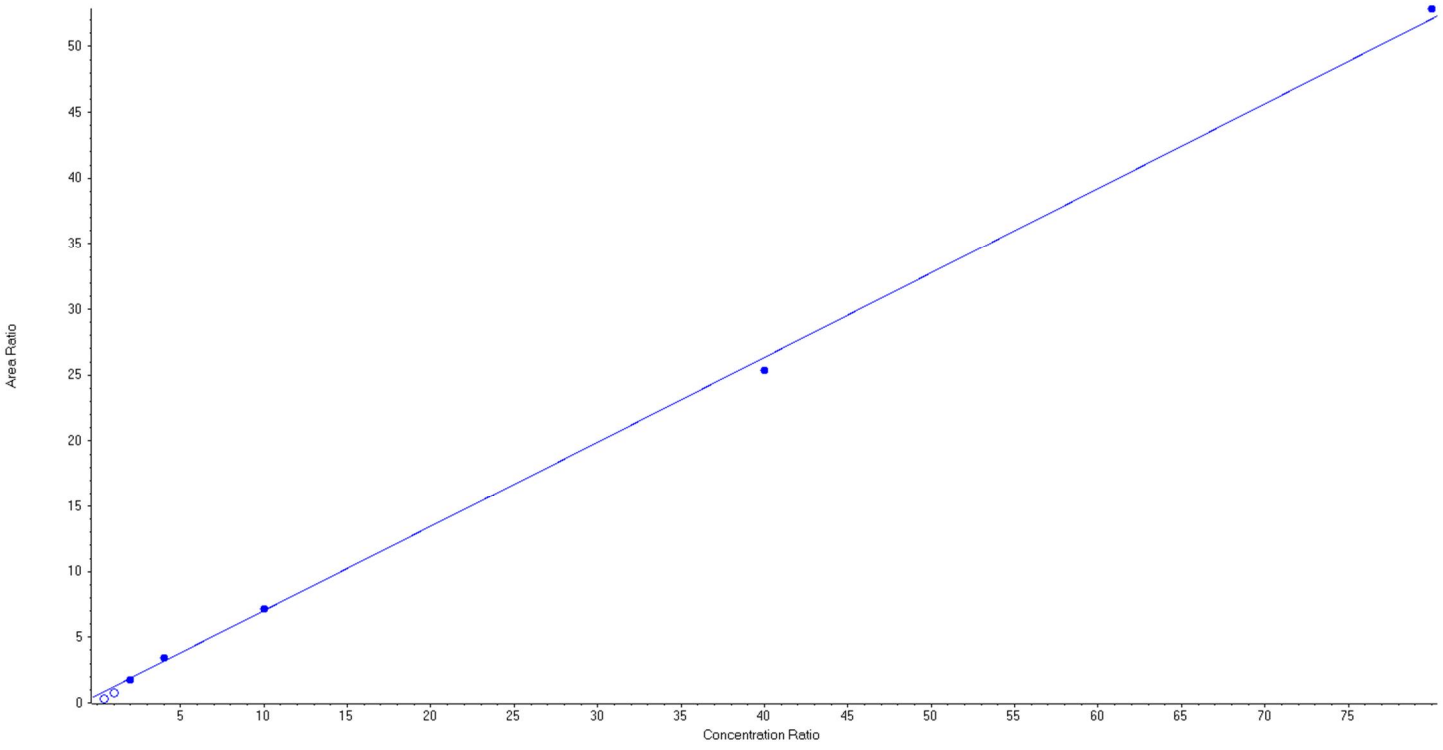
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	NMeFOSAA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	570.0 / 512.0	**Result Table**	18-0671
Internal Standard	d3-MeFOSAA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.64372 x + 0.59544 (r = 0.99929) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	False	100.00	< 0	N/A
3	KC67	L2	False	250.00	54.886728	22.0
4	KC68	L3	True	500.00	448.529185	89.7
5	KC69	L4	True	1000.00	1110.793913	111.1
6	KC70	L5	True	2500.00	2542.679695	101.7
7	KC71	L6	True	10000.00	9603.519560	96.0
8	KC72	L7	True	20000.00	20294.477647	101.5



BATTELLE

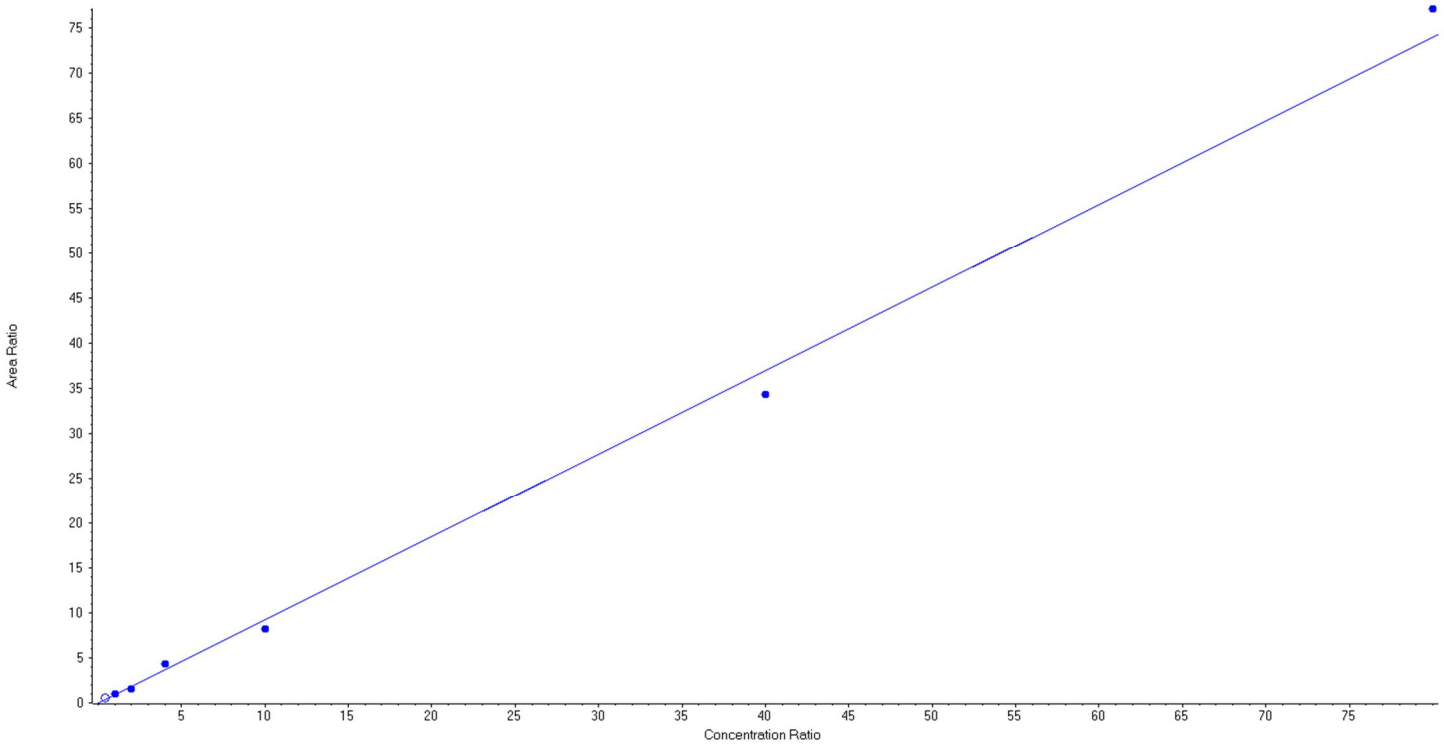
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	NEtFOSAA_1	**Data File**	AE_11202018_5-369.wiff
MRM Transition	584.0 / 419.0	**Result Table**	18-0671
Internal Standard	d5-EtFOSAA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.92470 x + -0.00522 (r = 0.99716) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	False	100.00	160.939422	160.9
3	KC67	L2	True	250.00	277.339194	110.9
4	KC68	L3	True	500.00	424.144256	84.8
5	KC69	L4	True	1000.00	1185.760697	118.6
6	KC70	L5	True	2500.00	2209.993807	88.4
7	KC71	L6	True	10000.00	9299.167791	93.0
8	KC72	L7	True	20000.00	20853.594255	104.3



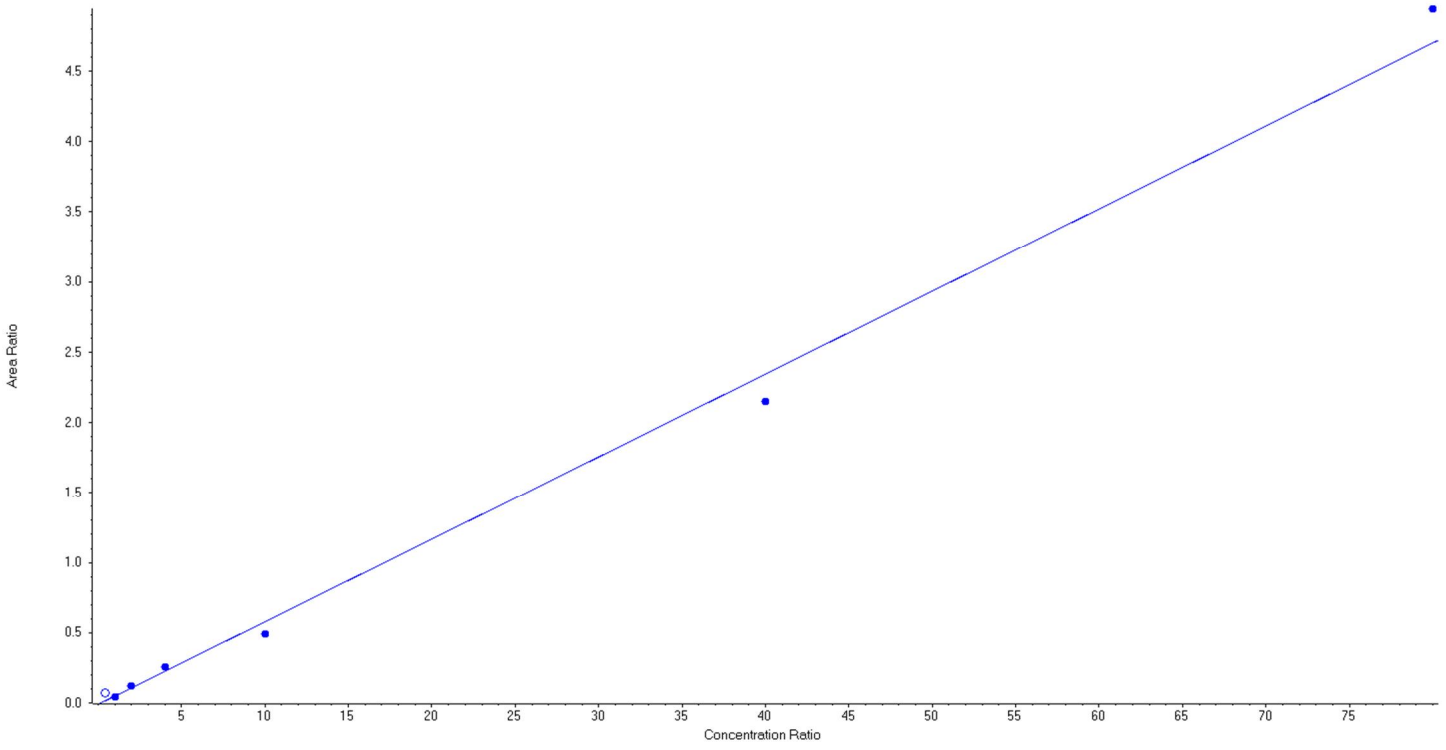
BATTELLE

Calibration Summary Report

Analyte Name	NEtFOSAA_2	**Data File**	AE_11202018_5-369.wiff
MRM Transition	584.0 / 483.0	**Result Table**	18-0671
Internal Standard	d5-EtFOSAA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.05888 x + -0.01006 (r = 0.99650) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	False	100.00	352.296408	352.3
3	KC67	L2	True	250.00	230.826195	92.3
4	KC68	L3	True	500.00	558.097335	111.6
5	KC69	L4	True	1000.00	1143.319809	114.3
6	KC70	L5	True	2500.00	2122.329262	84.9
7	KC71	L6	True	10000.00	9169.553365	91.7
8	KC72	L7	True	20000.00	21025.874035	105.1



BATTELLE

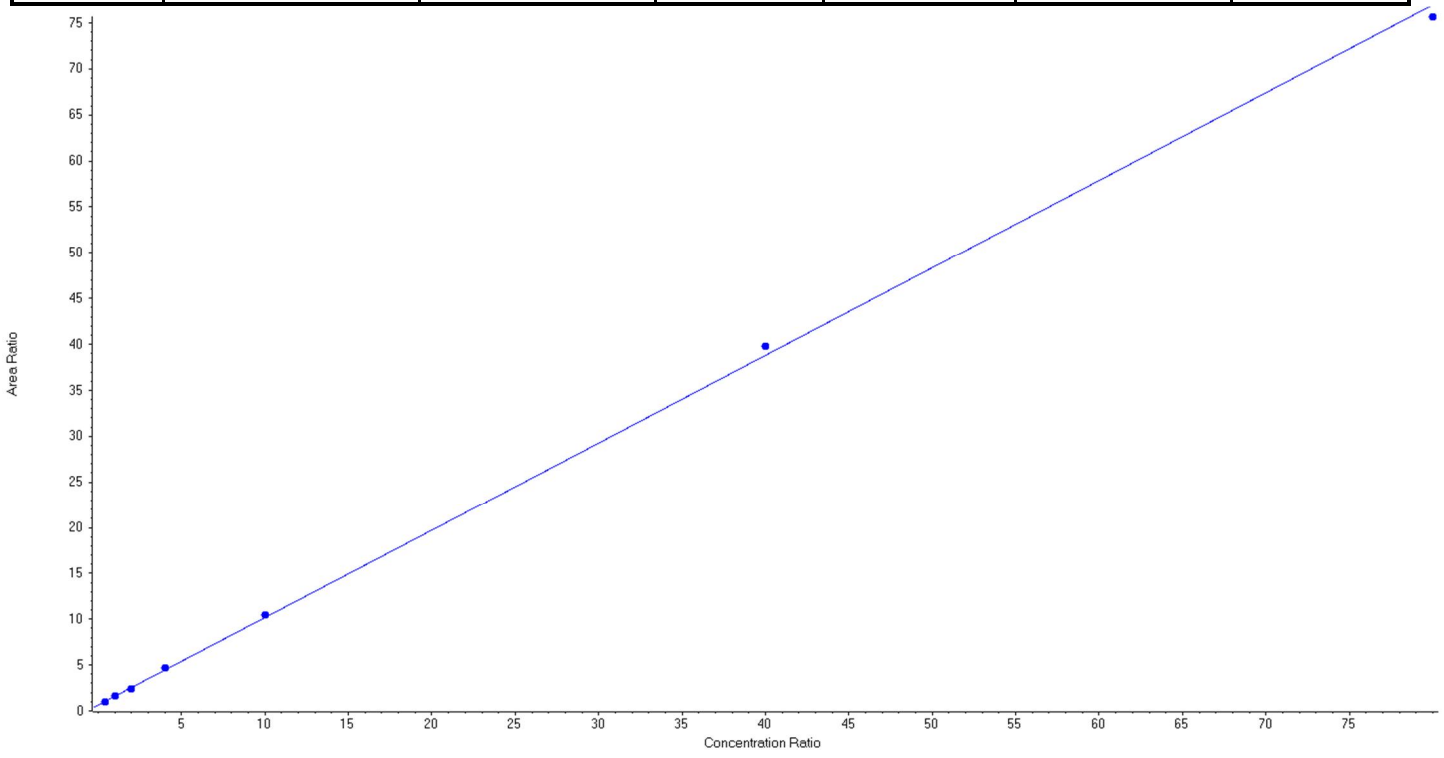
Calibration Summary Report

Created with Analyst Reporter
Printed: 26/11/2018 11:59:18 AM

Analyte Name	PFBA	**Data File**	AE_11202018_5-369.wiff
MRM Transition	213.0 / 169.0	**Result Table**	18-0671
Internal Standard	13C4-PFBA	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	11/20/2018 1:18:18 PM	**Acquisition Method**	5-369.dam

Regression Equation: y = 0.95396 x + 0.64287 (r = 0.99964) (weighting: 1 / x)

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/L)	Calculated Conc. (ng/L)	Recovery (%)
2	KC66	L1	True	100.00	94.982677	95.0
3	KC67	L2	True	250.00	265.062999	106.0
4	KC68	L3	True	500.00	453.607474	90.7
5	KC69	L4	True	1000.00	1048.757555	104.9
6	KC70	L5	True	2500.00	2560.056734	102.4
7	KC71	L6	True	10000.00	10270.988248	102.7
8	KC72	L7	True	20000.00	19656.544312	98.3



BATTELLE

	Isotope Dilution Calibration Curve Concentrations (ng/L)						
	KC66	KC67	KC68	KC69	KC70	KC71	KC72
PFBA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFPeA	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHxA	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHpA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFNA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFUnA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDoA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFTrDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFTeDA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
NMeFOSAA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
NEtFOSAA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOSA	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFBS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFPeS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFHxS (Branched)	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFHpS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFOS (Branched)	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
PFDS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
PFNS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
4:2FTS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
6:2FTS	100.00	250.00	500.00	1,000.00	2,500.00	10,000.00	20,000.00
8:2FTS	101.00	252.50	505.00	1,010.00	2,525.00	10,100.00	20,200.00
	Surrogates / Extracted Internal Standards						
13C4-PFBA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C5-PFPeA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C5-PFHxA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C4-PFHpA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C8-PFOA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C9-PFNA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C6-PFDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C7-PFUnA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFDoA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFTeDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
d3-MeFOSAA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
d5-EtFOSAA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C8-FOSA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C3-PFBS	232.25	232.25	232.25	232.25	232.25	232.25	232.25
13C3-PFHxS	236.50	236.50	236.50	236.50	236.50	236.50	236.50
13C8-PFOS	239.25	239.25	239.25	239.25	239.25	239.25	239.25
13C2-4:2FTS	233.75	233.75	233.75	233.75	233.75	233.75	233.75
13C2-6:2FTS	237.25	237.25	237.25	237.25	237.25	237.25	237.25
13C2-8:2FTS	239.50	239.50	239.50	239.50	239.50	239.50	239.50
	Internal Standards						
13C3-PFBA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFOA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C2-PFDA	250.00	250.00	250.00	250.00	250.00	250.00	250.00
13C4-PFOS	239.25	239.25	239.25	239.25	239.25	239.25	239.25

	ICC
	KC74
PFBA	1,000.00
PFPeA	1,000.00
PFHxA	1,010.00
PFHpA	1,000.00
PFOA	1,000.00
PFNA	1,000.00
PFDA	1,000.00
PFUnA	1,000.00
PFDoA	1,000.00
PFTrDA	1,000.00
PFTeDA	1,000.00
NMeFOSAA	1,000.00
NEtFOSAA	1,000.00
PFOSA	1,000.00
PFBS	1,010.00
PFPeS	1,000.00
PFHxS	1,010.00
PFHpS	1,000.00
PFOS	1,000.00
PFDS	1,010.00
PFNS	1,010.00
4:2FTS	1,000.00
6:2FTS	1,000.00
8:2FTS	1,010.00
13C4-PFBA	250.00
13C5-PFPeA	250.00
13C5-PFHxA	250.00
13C4-PFHpA	250.00
13C8-PFOA	250.00
13C9-PFNA	250.00
13C6-PFDA	250.00
13C7-PFUnA	250.00
13C2-PFDoA	250.00
13C2-PFTeDA	250.00
d3-MeFOSAA	250.00
d5-EtFOSAA	250.00
13C8-FOSA	250.00
13C3-PFBS	232.25
13C3-PFHxS	236.50
13C8-PFOS	239.25
13C2-4:2FTS	233.75
13C2-6:2FTS	237.25
13C2-8:2FTS	239.50
13C3-PFBA	250.00
13C2-PFOA	250.00
13C2-PFDA	250.00
13C4-PFOS	239.25

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 12:01:05 PM

Sample Name	KC66	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T13:28:46	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.17	PFBS	0.340	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.65	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.360	0.354	ü
PFOA_1	413.0 / 369.0	1.96	PFOA			
PFOA_2	413.0 / 169.0	1.95	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.30	PFNA			
PFNA_2	463.0 / 219.0	2.30	PFNA	0.410	0.386	ü
PFOS_1	499.0 / 80.0	2.29	PFOS			
PFOS_2	499.0 / 99.0	2.28	PFOS	0.250	0.216	ü
PFDA_1	513.0 / 469.0	2.64	PFDA			
PFDA_2	513.0 / 219.0	2.64	PFDA	0.050	0.033	ü
PFUnA_1	563.0 / 519.0	2.98	PFUnA			
PFUnA_2	563.0 / 269.0	2.98	PFUnA	0.020	0.039	ü
PFDoA_1	613.0 / 569.0	3.29	PFDoA			
PFDoA_2	613.0 / 319.0	3.28	PFDoA	0.140	0.127	ü
PFTrDA_1	663.0 / 619.0	3.56	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.57	PFTrDA	0.040	0.053	ü
PFTeDA_1	713.0 / 669.0	3.82	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.83	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.80	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.79	NMeFOSAA	0.740	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.97	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.96	NEtFOSAA	0.120	0.061	
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC67	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T13:39:14	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.17	PFBS	0.330	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.370	0.354	ü
PFOA_1	413.0 / 369.0	1.97	PFOA			
PFOA_2	413.0 / 169.0	1.97	PFOA	0.050	0.060	ü
PFNA_1	463.0 / 419.0	2.31	PFNA			
PFNA_2	463.0 / 219.0	2.31	PFNA	0.370	0.386	ü
PFOS_1	499.0 / 80.0	2.29	PFOS			
PFOS_2	499.0 / 99.0	2.30	PFOS	0.240	0.216	ü
PFDA_1	513.0 / 469.0	2.65	PFDA			
PFDA_2	513.0 / 219.0	2.64	PFDA	0.060	0.033	
PFUnA_1	563.0 / 519.0	2.99	PFUnA			
PFUnA_2	563.0 / 269.0	2.99	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.29	PFDoA			
PFDoA_2	613.0 / 319.0	3.29	PFDoA	0.120	0.127	ü
PFTrDA_1	663.0 / 619.0	3.57	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.57	PFTrDA	0.060	0.053	ü
PFTeDA_1	713.0 / 669.0	3.82	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.82	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.80	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.80	NMeFOSAA	0.740	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.97	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.97	NEtFOSAA	0.040	0.061	ü
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC68	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T13:49:41	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.17	PFBS	0.390	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.060	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.320	0.354	ü
PFOA_1	413.0 / 369.0	1.96	PFOA			
PFOA_2	413.0 / 169.0	1.95	PFOA	0.050	0.060	ü
PFNA_1	463.0 / 419.0	2.30	PFNA			
PFNA_2	463.0 / 219.0	2.30	PFNA	0.420	0.386	ü
PFOS_1	499.0 / 80.0	2.29	PFOS			
PFOS_2	499.0 / 99.0	2.29	PFOS	0.210	0.216	ü
PFDA_1	513.0 / 469.0	2.64	PFDA			
PFDA_2	513.0 / 219.0	2.64	PFDA	0.030	0.033	ü
PFUnA_1	563.0 / 519.0	2.98	PFUnA			
PFUnA_2	563.0 / 269.0	2.98	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.29	PFDoA			
PFDoA_2	613.0 / 319.0	3.28	PFDoA	0.120	0.127	ü
PFTrDA_1	663.0 / 619.0	3.56	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.56	PFTrDA	0.050	0.053	ü
PFTeDA_1	713.0 / 669.0	3.81	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.81	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.80	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.80	NMeFOSAA	0.750	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.97	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.96	NEtFOSAA	0.080	0.061	ü
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC69	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:00:08	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.17	PFBS	0.330	0.353	ü
PFHxA_1	313.0 / 269.0	1.40	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.67	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.67	PFHxS			
PFHxS_2	399.0 / 99.0	1.67	PFHxS	0.370	0.354	ü
PFOA_1	413.0 / 369.0	1.97	PFOA			
PFOA_2	413.0 / 169.0	1.97	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.32	PFNA			
PFNA_2	463.0 / 219.0	2.31	PFNA	0.420	0.386	ü
PFOS_1	499.0 / 80.0	2.30	PFOS			
PFOS_2	499.0 / 99.0	2.30	PFOS	0.200	0.216	ü
PFDA_1	513.0 / 469.0	2.65	PFDA			
PFDA_2	513.0 / 219.0	2.66	PFDA	0.030	0.033	ü
PFUnA_1	563.0 / 519.0	2.99	PFUnA			
PFUnA_2	563.0 / 269.0	3.00	PFUnA	0.050	0.039	ü
PFDoA_1	613.0 / 569.0	3.30	PFDoA			
PFDoA_2	613.0 / 319.0	3.30	PFDoA	0.120	0.127	ü
PFTrDA_1	663.0 / 619.0	3.57	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.57	PFTrDA	0.060	0.053	ü
PFTeDA_1	713.0 / 669.0	3.82	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.82	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.81	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.81	NMeFOSAA	0.720	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.98	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.98	NEtFOSAA	0.060	0.061	ü
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC70	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:10:35	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.17	PFBS	0.360	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.350	0.354	ü
PFOA_1	413.0 / 369.0	1.96	PFOA			
PFOA_2	413.0 / 169.0	1.96	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.30	PFNA			
PFNA_2	463.0 / 219.0	2.30	PFNA	0.350	0.386	ü
PFOS_1	499.0 / 80.0	2.29	PFOS			
PFOS_2	499.0 / 99.0	2.29	PFOS	0.210	0.216	ü
PFDA_1	513.0 / 469.0	2.64	PFDA			
PFDA_2	513.0 / 219.0	2.64	PFDA	0.040	0.033	ü
PFUnA_1	563.0 / 519.0	2.98	PFUnA			
PFUnA_2	563.0 / 269.0	2.98	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.28	PFDoA			
PFDoA_2	613.0 / 319.0	3.28	PFDoA	0.130	0.127	ü
PFTrDA_1	663.0 / 619.0	3.56	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.56	PFTrDA	0.050	0.053	ü
PFTeDA_1	713.0 / 669.0	3.81	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.81	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.80	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.80	NMeFOSAA	0.730	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.97	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.97	NEtFOSAA	0.060	0.061	ü
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC71	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:21:02	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.17	PFBS	0.360	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.020	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.360	0.354	ü
PFOA_1	413.0 / 369.0	1.96	PFOA			
PFOA_2	413.0 / 169.0	1.96	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.30	PFNA			
PFNA_2	463.0 / 219.0	2.30	PFNA	0.380	0.386	ü
PFOS_1	499.0 / 80.0	2.29	PFOS			
PFOS_2	499.0 / 99.0	2.29	PFOS	0.210	0.216	ü
PFDA_1	513.0 / 469.0	2.64	PFDA			
PFDA_2	513.0 / 219.0	2.64	PFDA	0.030	0.033	ü
PFUnA_1	563.0 / 519.0	2.98	PFUnA			
PFUnA_2	563.0 / 269.0	2.97	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.28	PFDoA			
PFDoA_2	613.0 / 319.0	3.28	PFDoA	0.130	0.127	ü
PFTrDA_1	663.0 / 619.0	3.56	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.56	PFTrDA	0.050	0.053	ü
PFTeDA_1	713.0 / 669.0	3.81	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.81	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.80	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.79	NMeFOSAA	0.690	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.97	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.97	NEtFOSAA	0.060	0.061	ü
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC72	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:31:28	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.17	PFBS			
PFBS_2	298.9 / 99.0	1.16	PFBS	0.360	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.020	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.340	0.354	ü
PFOA_1	413.0 / 369.0	1.97	PFOA			
PFOA_2	413.0 / 169.0	1.97	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.31	PFNA			
PFNA_2	463.0 / 219.0	2.31	PFNA	0.350	0.386	ü
PFOS_1	499.0 / 80.0	2.30	PFOS			
PFOS_2	499.0 / 99.0	2.30	PFOS	0.200	0.216	ü
PFDA_1	513.0 / 469.0	2.66	PFDA			
PFDA_2	513.0 / 219.0	2.66	PFDA	0.030	0.033	ü
PFUnA_1	563.0 / 519.0	2.99	PFUnA			
PFUnA_2	563.0 / 269.0	2.99	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.30	PFDoA			
PFDoA_2	613.0 / 319.0	3.30	PFDoA	0.130	0.127	ü
PFTrDA_1	663.0 / 619.0	3.57	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.57	PFTrDA	0.050	0.053	ü
PFTeDA_1	713.0 / 669.0	3.82	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.82	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.81	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.81	NMeFOSAA	0.680	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.98	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.98	NEtFOSAA	0.060	0.061	ü
PFBA	213.0 / 169.0	0.92				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC66	**Injection Vial**	2
Sample ID	L1	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T17:30:46	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.55	PFBS			
PFBS_2	298.9 / 99.0	1.55	PFBS	0.342	0.308	ü
PFHxA_1	313.0 / 269.0	1.85	PFHxA			
PFHxA_2	313.0 / 119.0	1.85	PFHxA	0.092	0.078	ü
PFHpA_1	363.0 / 319.0	2.27	PFHpA			
PFHpA_2	363.0 / 169.0	2.28	PFHpA	0.024	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.307	0.287	ü
PFOA_1	413.0 / 369.0	2.69	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.103	0.068	
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.331	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.224	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.45	PFDA	0.046	0.041	ü
PFUnA_1	563.0 / 519.0	3.79	PFUnA			
PFUnA_2	563.0 / 269.0	3.79	PFUnA	0.060	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.07	PFDoA	0.145	0.160	ü
PFTrDA_1	663.0 / 619.0	4.32	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.32	PFTrDA	0.072	0.066	ü
PFTeDA_1	713.0 / 669.0	4.54	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.54	PFTeDA	0.044	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.62	NMeFOSAA	0.592	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.79	NEtFOSAA	0.095	0.073	ü
PFBA	213.0 / 169.0	1.09				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC67	**Injection Vial**	3
Sample ID	L2	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T17:41:38	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.55	PFBS			
PFBS_2	298.9 / 99.0	1.55	PFBS	0.341	0.308	ü
PFHxA_1	313.0 / 269.0	1.86	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.072	0.078	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.27	PFHpA	0.019	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.289	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.065	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.296	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.186	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.46	PFDA	0.044	0.041	ü
PFUnA_1	563.0 / 519.0	3.79	PFUnA			
PFUnA_2	563.0 / 269.0	3.79	PFUnA	0.054	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.07	PFDoA	0.153	0.160	ü
PFTrDA_1	663.0 / 619.0	4.32	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.32	PFTrDA	0.060	0.066	ü
PFTeDA_1	713.0 / 669.0	4.54	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.54	PFTeDA	0.051	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.62	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.62	NMeFOSAA	0.477	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.78	NEtFOSAA	0.094	0.073	ü
PFBA	213.0 / 169.0	1.10				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC68	**Injection Vial**	4
Sample ID	L3	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T17:52:32	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.55	PFBS	0.303	0.308	ü
PFHxA_1	313.0 / 269.0	1.86	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.076	0.078	ü
PFHpA_1	363.0 / 319.0	2.28	PFHpA			
PFHpA_2	363.0 / 169.0	2.27	PFHpA	0.018	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.279	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.69	PFOA	0.066	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.323	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.180	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.46	PFDA	0.039	0.041	ü
PFUnA_1	563.0 / 519.0	3.79	PFUnA			
PFUnA_2	563.0 / 269.0	3.79	PFUnA	0.048	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.07	PFDoA	0.168	0.160	ü
PFTrDA_1	663.0 / 619.0	4.32	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.32	PFTrDA	0.066	0.066	ü
PFTeDA_1	713.0 / 669.0	4.54	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.54	PFTeDA	0.048	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.529	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.77	NEtFOSAA	0.091	0.073	ü
PFBA	213.0 / 169.0	1.12				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC69	**Injection Vial**	5
Sample ID	L4	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:03:23	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.289	0.308	ü
PFHxA_1	313.0 / 269.0	1.87	PFHxA			
PFHxA_2	313.0 / 119.0	1.87	PFHxA	0.073	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.29	PFHpA	0.020	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.283	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.058	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.322	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.191	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.46	PFDA	0.036	0.041	ü
PFUnA_1	563.0 / 519.0	3.79	PFUnA			
PFUnA_2	563.0 / 269.0	3.79	PFUnA	0.046	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.07	PFDoA	0.155	0.160	ü
PFTrDA_1	663.0 / 619.0	4.32	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.31	PFTrDA	0.066	0.066	ü
PFTeDA_1	713.0 / 669.0	4.53	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.53	PFTeDA	0.048	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.62	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.62	NMeFOSAA	0.592	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.78	NEtFOSAA	0.052	0.073	ü
PFBA	213.0 / 169.0	1.14				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 11:12:44 AM

Sample Name	KC70	**Injection Vial**	6
Sample ID	L5	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:14:15	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.280	0.308	ü
PFHxA_1	313.0 / 269.0	1.88	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	0.080	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.29	PFHpA	0.018	0.019	ü
PFHxS_1	399.0 / 80.0	2.32	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	PFHxS	0.276	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.060	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.289	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.179	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.46	PFDA	0.042	0.041	ü
PFUnA_1	563.0 / 519.0	3.78	PFUnA			
PFUnA_2	563.0 / 269.0	3.78	PFUnA	0.050	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.06	PFDoA	0.171	0.160	ü
PFTrDA_1	663.0 / 619.0	4.31	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.31	PFTrDA	0.065	0.066	ü
PFTeDA_1	713.0 / 669.0	4.53	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.53	PFTeDA	0.049	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.528	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.77	NEtFOSAA	0.058	0.073	ü
PFBA	213.0 / 169.0	1.15				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC71	**Injection Vial**	7
Sample ID	L6	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:25:07	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.301	0.308	ü
PFHxA_1	313.0 / 269.0	1.88	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	0.075	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.29	PFHpA	0.018	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.292	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.062	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.314	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.173	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.46	PFDA	0.042	0.041	ü
PFUnA_1	563.0 / 519.0	3.78	PFUnA			
PFUnA_2	563.0 / 269.0	3.78	PFUnA	0.048	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.06	PFDoA	0.160	0.160	ü
PFTrDA_1	663.0 / 619.0	4.31	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.31	PFTrDA	0.068	0.066	ü
PFTeDA_1	713.0 / 669.0	4.53	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.53	PFTeDA	0.047	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.542	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.78	NEtFOSAA	0.058	0.073	ü
PFBA	213.0 / 169.0	1.15				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 11:12:53 AM

Sample Name	KC72	**Injection Vial**	8
Sample ID	L7	**Injection Volume**	10.00
Sample Type	Standard	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:35:58	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.298	0.308	ü
PFHxA_1	313.0 / 269.0	1.88	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	0.075	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.29	PFHpA	0.019	0.019	ü
PFHxS_1	399.0 / 80.0	2.32	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	PFHxS	0.281	0.287	ü
PFOA_1	413.0 / 369.0	2.71	PFOA			
PFOA_2	413.0 / 169.0	2.71	PFOA	0.064	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.309	0.312	ü
PFOS_1	499.0 / 80.0	3.10	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.168	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	3.46	PFDA	0.040	0.041	ü
PFUnA_1	563.0 / 519.0	3.79	PFUnA			
PFUnA_2	563.0 / 269.0	3.78	PFUnA	0.048	0.050	ü
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.07	PFDoA	0.166	0.160	ü
PFTrDA_1	663.0 / 619.0	4.31	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.31	PFTrDA	0.062	0.066	ü
PFTeDA_1	713.0 / 669.0	4.53	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.53	PFTeDA	0.049	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.531	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.78	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.78	NEtFOSAA	0.062	0.073	ü
PFBA	213.0 / 169.0	1.15				

Sample Name	KC74 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:52:23	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.16	960.475468	1010.00	95.10
PFBS_2	298.9 / 99.0	1.16	942.331514	1010.00	93.30
PFHxA_1	313.0 / 269.0	1.39	912.532514	1010.00	90.35
PFHxA_2	313.0 / 119.0	1.39	932.542017	1010.00	92.33
PFHpA_1	363.0 / 319.0	1.67	903.163105	1000.00	90.32
PFHpA_2	363.0 / 169.0	1.67	818.637623	1000.00	81.86
PFHxS_1	399.0 / 80.0	1.67	998.721551	1010.00	98.88
PFHxS_2	399.0 / 99.0	1.67	1001.364617	1010.00	99.15
PFOA_1	413.0 / 369.0	1.98	965.629743	1000.00	96.56
PFOA_2	413.0 / 169.0	1.98	1012.445376	1000.00	101.24
PFNA_1	463.0 / 419.0	2.33	1014.109413	1000.00	101.41
PFNA_2	463.0 / 219.0	2.32	938.409819	1000.00	93.84
PFOS_1	499.0 / 80.0	2.31	920.228778	1000.00	92.02
PFOS_2	499.0 / 99.0	2.31	902.003990	1000.00	90.20
PFDA_1	513.0 / 469.0	2.66	914.855068	1000.00	91.49
PFDA_2	513.0 / 219.0	2.67	1073.163865	1000.00	107.32
PFUnA_1	563.0 / 519.0	3.00	990.321430	1000.00	99.03
PFUnA_2	563.0 / 269.0	3.01	1091.453516	1000.00	109.15
PFDoA_1	613.0 / 569.0	3.30	890.284304	1000.00	89.03
PFDoA_2	613.0 / 319.0	3.30	898.969156	1000.00	89.90
PFTrDA_1	663.0 / 619.0	3.58	792.478247	1000.00	79.25
PFTrDA_2	663.0 / 169.0	3.58	826.760715	1000.00	82.68
PFTeDA_1	713.0 / 669.0	3.82	932.726745	1000.00	93.27
PFTeDA_2	713.0 / 169.0	3.82	758.977527	1000.00	75.90
NMeFOSAA_1	570.0 / 419.0	2.82	1065.918840	1000.00	106.59
NMeFOSAA_2	570.0 / 512.0	2.82	922.123263	1000.00	92.21
NEtFOSAA_1	584.0 / 419.0	2.99	980.521978	1000.00	98.05
NEtFOSAA_2	584.0 / 483.0	2.99	779.135102	1000.00	77.91
PFBA	213.0 / 169.0	0.92	985.255399	1000.00	98.53

Sample Name	KC69 CCV	**Injection Vial**	16
Sample ID	KC69 CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T15:55:07	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.16	1128.253991	1010.00	111.71
PFBS_2	298.9 / 99.0	1.16	1151.722518	1010.00	114.03
PFHxA_1	313.0 / 269.0	1.39	924.958137	1010.00	91.58
PFHxA_2	313.0 / 119.0	1.39	894.495303	1010.00	88.56
PFHpA_1	363.0 / 319.0	1.67	925.678733	1000.00	92.57
PFHpA_2	363.0 / 169.0	1.67	814.147437	1000.00	81.41
PFHxS_1	399.0 / 80.0	1.66	1037.455675	1010.00	102.72
PFHxS_2	399.0 / 99.0	1.66	1067.565969	1010.00	105.70
PFOA_1	413.0 / 369.0	1.98	818.303861	1000.00	81.83
PFOA_2	413.0 / 169.0	1.98	931.685237	1000.00	93.17
PFNA_1	463.0 / 419.0	2.32	1061.511691	1000.00	106.15
PFNA_2	463.0 / 219.0	2.32	897.364448	1000.00	89.74
PFOS_1	499.0 / 80.0	2.30	1102.390964	1000.00	110.24
PFOS_2	499.0 / 99.0	2.31	1062.828064	1000.00	106.28
PFDA_1	513.0 / 469.0	2.65	957.265268	1000.00	95.73
PFDA_2	513.0 / 219.0	2.65	1083.939640	1000.00	108.39
PFUnA_1	563.0 / 519.0	2.99	844.159659	1000.00	84.42
PFUnA_2	563.0 / 269.0	2.99	1030.365925	1000.00	103.04
PFDoA_1	613.0 / 569.0	3.29	899.190001	1000.00	89.92
PFDoA_2	613.0 / 319.0	3.30	894.802096	1000.00	89.48
PFTrDA_1	663.0 / 619.0	3.57	939.883179	1000.00	93.99
PFTrDA_2	663.0 / 169.0	3.57	920.892954	1000.00	92.09
PFTeDA_1	713.0 / 669.0	3.82	990.982771	1000.00	99.10
PFTeDA_2	713.0 / 169.0	3.81	1048.878146	1000.00	104.89
NMeFOSAA_1	570.0 / 419.0	2.81	954.092271	1000.00	95.41
NMeFOSAA_2	570.0 / 512.0	2.81	876.866569	1000.00	87.69
NEtFOSAA_1	584.0 / 419.0	2.98	878.328007	1000.00	87.83
NEtFOSAA_2	584.0 / 483.0	2.98	988.646217	1000.00	98.86
PFBA	213.0 / 169.0	0.92	977.624453	1000.00	97.76

Sample Name	KC74 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:52:23	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C4-PFBA	217.0 / 172.0	0.93	244.971526	250.00	97.99
13C2-PFDoA	615.0 / 570.0	3.29	288.053559	250.00	115.22
d3-MeFOSAA	573.0 / 419.0	2.82	228.635536	250.00	91.45
d5-EtFOSAA	589.0 / 419.0	2.99	279.395322	250.00	111.76
13C5-PFHxA	318.0 / 273.0	1.38	240.522381	250.00	96.21
13C4-PFHpA	367.0 / 322.0	1.66	255.723440	250.00	102.29
13C8-PFOA	421.0 / 376.0	1.96	236.160848	250.00	94.46
13C9-PFNA	472.0 / 427.0	2.31	242.076522	250.00	96.83
13C6-PFDA	519.0 / 474.0	2.65	248.348547	250.00	99.34
13C7-PFUnA	570.0 / 525.0	2.99	234.973280	250.00	93.99
13C2-PFTeDA	715.0 / 670.0	3.82	278.293490	250.00	111.32
13C3-PFBS	302.0 / 99.0	1.15	226.992708	232.25	97.74
13C3-PFHxS	402.0 / 99.0	1.66	237.044281	236.50	100.23
13C8-PFOS	507.0 / 99.0	2.31	239.316954	239.25	100.03

Sample Name	KC69 CCV	**Injection Vial**	16
Sample ID	KC69 CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T15:55:07	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C4-PFBA	217.0 / 172.0	0.93	251.825345	250.00	100.73
13C2-PFDoA	615.0 / 570.0	3.29	293.064495	250.00	117.23
d3-MeFOSAA	573.0 / 419.0	2.81	216.623994	250.00	86.65
d5-EtFOSAA	589.0 / 419.0	2.98	240.257675	250.00	96.10
13C5-PFHxA	318.0 / 273.0	1.38	284.649412	250.00	113.86
13C4-PFHpA	367.0 / 322.0	1.65	290.431354	250.00	116.17
13C8-PFOA	421.0 / 376.0	1.96	270.093456	250.00	108.04
13C9-PFNA	472.0 / 427.0	2.30	255.944471	250.00	102.38
13C6-PFDA	519.0 / 474.0	2.65	280.978156	250.00	112.39
13C7-PFUnA	570.0 / 525.0	2.98	273.807693	250.00	109.52
13C2-PFTeDA	715.0 / 670.0	3.80	278.136000	250.00	111.25
13C3-PFBS	302.0 / 99.0	1.15	204.873377	232.25	88.21
13C3-PFHxS	402.0 / 99.0	1.66	241.851782	236.50	102.26
13C8-PFOS	507.0 / 99.0	2.30	221.463374	239.25	92.57

BATTELLE

QC Summary Report

Sample Name	KC74 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:57:42	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.56	949.452	1010.000	94.01
PFBS_2	298.9 / 99.0	1.56	978.509	1010.000	96.88
PFHxA_1	313.0 / 269.0	1.88	991.320	1010.000	98.15
PFHxA_2	313.0 / 119.0	1.88	919.187	1010.000	91.01
PFHpA_1	363.0 / 319.0	2.29	927.874	1000.000	92.79
PFHpA_2	363.0 / 169.0	2.29	1148.253	1000.000	114.83
PFHxS_1	399.0 / 80.0	2.31	1063.706	1010.000	105.32
PFHxS_2	399.0 / 99.0	2.31	1096.694	1010.000	108.58
PFOA_1	413.0 / 369.0	2.70	949.572	1000.000	94.96
PFOA_2	413.0 / 169.0	2.70	848.667	1000.000	84.87
PFNA_1	463.0 / 419.0	3.10	949.985	1000.000	95.00
PFNA_2	463.0 / 219.0	3.10	997.821	1000.000	99.78
PFOS_1	499.0 / 80.0	3.09	978.882	1000.000	97.89
PFOS_2	499.0 / 99.0	3.09	997.010	1000.000	99.70
PFDA_1	513.0 / 469.0	3.45	969.808	1000.000	96.98
PFDA_2	513.0 / 219.0	3.45	1007.361	1000.000	100.74
PFUnA_1	563.0 / 519.0	3.78	966.270	1000.000	96.63
PFUnA_2	563.0 / 269.0	3.77	1069.275	1000.000	106.93
PFDoA_1	613.0 / 569.0	4.06	1095.915	1000.000	109.59
PFDoA_2	613.0 / 319.0	4.06	1067.666	1000.000	106.77
PFTrDA_1	663.0 / 619.0	4.31	1001.864	1000.000	100.19
PFTrDA_2	663.0 / 169.0	4.31	1031.188	1000.000	103.12
PFTeDA_1	713.0 / 669.0	4.53	984.894	1000.000	98.49
PFTeDA_2	713.0 / 169.0	4.52	1043.360	1000.000	104.34
NMeFOSAA_1	570.0 / 419.0	3.61	1065.871	1000.000	106.59
NMeFOSAA_2	570.0 / 512.0	3.61	1133.615	1000.000	113.36
NEtFOSAA_1	584.0 / 419.0	3.77	836.594	1000.000	83.66
NEtFOSAA_2	584.0 / 483.0	3.77	690.316	1000.000	69.03 (1)
PFBA	213.0 / 169.0	1.15	1090.099	1000.000	109.01

(1) NEtFOSAA fails low in the ICC for the secondary transition, however, no data is reported from the secondary transition. JRT 11/26/2018

Sample Name	KC70 CCV	**Injection Vial**	18
Sample ID	KC70 CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T20:24:37	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
PFBS_1	298.9 / 80.0	1.56	2415.307	2525.000	95.66
PFBS_2	298.9 / 99.0	1.56	2465.160	2525.000	97.63
PFHxA_1	313.0 / 269.0	1.88	2463.418	2525.000	97.56
PFHxA_2	313.0 / 119.0	1.88	2587.400	2525.000	102.47
PFHpA_1	363.0 / 319.0	2.29	2495.519	2500.000	99.82
PFHpA_2	363.0 / 169.0	2.30	2817.037	2500.000	112.68
PFHxS_1	399.0 / 80.0	2.31	2588.783	2525.000	102.53
PFHxS_2	399.0 / 99.0	2.31	2664.789	2525.000	105.54
PFOA_1	413.0 / 369.0	2.70	2417.656	2500.000	96.71
PFOA_2	413.0 / 169.0	2.70	2335.294	2500.000	93.41
PFNA_1	463.0 / 419.0	3.10	2565.841	2500.000	102.63
PFNA_2	463.0 / 219.0	3.10	2764.549	2500.000	110.58
PFOS_1	499.0 / 80.0	3.09	2518.142	2500.000	100.73
PFOS_2	499.0 / 99.0	3.09	2497.601	2500.000	99.90
PFDA_1	513.0 / 469.0	3.45	2635.256	2500.000	105.41
PFDA_2	513.0 / 219.0	3.45	2646.230	2500.000	105.85
PFUnA_1	563.0 / 519.0	3.78	2414.150	2500.000	96.57
PFUnA_2	563.0 / 269.0	3.77	2391.483	2500.000	95.66
PFDoA_1	613.0 / 569.0	4.06	2673.453	2500.000	106.94
PFDoA_2	613.0 / 319.0	4.06	2661.099	2500.000	106.44
PFTrDA_1	663.0 / 619.0	4.30	2652.096	2500.000	106.08
PFTrDA_2	663.0 / 169.0	4.30	2819.508	2500.000	112.78
PFTeDA_1	713.0 / 669.0	4.52	2676.099	2500.000	107.04
PFTeDA_2	713.0 / 169.0	4.52	2758.981	2500.000	110.36
NMeFOSAA_1	570.0 / 419.0	3.61	2762.014	2500.000	110.48
NMeFOSAA_2	570.0 / 512.0	3.61	2819.237	2500.000	112.77
NEtFOSAA_1	584.0 / 419.0	3.77	2109.109	2500.000	84.36
NEtFOSAA_2	584.0 / 483.0	3.77	2005.679	2500.000	80.23
PFBA	213.0 / 169.0	1.16	2472.093	2500.000	98.88

Sample Name	KC74 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:57:42	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C4-PFBA	217.0 / 172.0	1.15	227.400	250.000	90.96
13C2-PFDoA	615.0 / 570.0	4.05	224.269	250.000	89.71
d3-MeFOSAA	573.0 / 419.0	3.60	230.860	250.000	92.34
d5-EtFOSAA	589.0 / 419.0	3.76	269.310	250.000	107.72
13C5-PFHxA	318.0 / 273.0	1.87	225.470	250.000	90.19
13C4-PFHpA	367.0 / 322.0	2.28	237.594	250.000	95.04
13C8-PFOA	421.0 / 376.0	2.69	245.122	250.000	98.05
13C9-PFNA	472.0 / 427.0	3.08	237.106	250.000	94.84
13C6-PFDA	519.0 / 474.0	3.44	245.415	250.000	98.17
13C7-PFUnA	570.0 / 525.0	3.76	236.907	250.000	94.76
13C2-PFTeDA	715.0 / 670.0	4.52	239.656	250.000	95.86
13C3-PFBS	302.0 / 99.0	1.54	218.741	232.250	94.18
13C3-PFHxS	402.0 / 99.0	2.30	208.327	236.500	88.09
13C8-PFOS	507.0 / 99.0	3.08	236.699	239.250	98.93

Sample Name	KC70 CCV	**Injection Vial**	18
Sample ID	KC70 CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T20:24:37	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/L)	Target Conc. (ng/L)	Recovery (%)
13C4-PFBA	217.0 / 172.0	1.16	248.790	250.000	99.52
13C2-PFDoA	615.0 / 570.0	4.05	244.113	250.000	97.65
d3-MeFOSAA	573.0 / 419.0	3.60	265.462	250.000	106.18
d5-EtFOSAA	589.0 / 419.0	3.76	324.004	250.000	129.60
13C5-PFHxA	318.0 / 273.0	1.87	257.781	250.000	103.11
13C4-PFHpA	367.0 / 322.0	2.28	263.493	250.000	105.40
13C8-PFOA	421.0 / 376.0	2.69	267.445	250.000	106.98
13C9-PFNA	472.0 / 427.0	3.08	256.102	250.000	102.44
13C6-PFDA	519.0 / 474.0	3.44	253.726	250.000	101.49
13C7-PFUnA	570.0 / 525.0	3.76	263.484	250.000	105.39
13C2-PFTeDA	715.0 / 670.0	4.51	244.713	250.000	97.89
13C3-PFBS	302.0 / 99.0	1.54	240.434	232.250	103.52
13C3-PFHxS	402.0 / 99.0	2.31	232.375	236.500	98.26
13C8-PFOS	507.0 / 99.0	3.08	253.275	239.250	105.86

BATTELLE

Summary Ion Ratio Report

Sample Name	KC74 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:52:23	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.16	PFBS			
PFBS_2	298.9 / 99.0	1.16	PFBS	0.350	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.67	PFHpA			
PFHpA_2	363.0 / 169.0	1.67	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.67	PFHxS			
PFHxS_2	399.0 / 99.0	1.67	PFHxS	0.350	0.354	ü
PFOA_1	413.0 / 369.0	1.98	PFOA			
PFOA_2	413.0 / 169.0	1.98	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.33	PFNA			
PFNA_2	463.0 / 219.0	2.32	PFNA	0.340	0.386	ü
PFOS_1	499.0 / 80.0	2.31	PFOS			
PFOS_2	499.0 / 99.0	2.31	PFOS	0.200	0.216	ü
PFDA_1	513.0 / 469.0	2.66	PFDA			
PFDA_2	513.0 / 219.0	2.67	PFDA	0.040	0.033	ü
PFUnA_1	563.0 / 519.0	3.00	PFUnA			
PFUnA_2	563.0 / 269.0	3.01	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.30	PFDoA			
PFDoA_2	613.0 / 319.0	3.30	PFDoA	0.130	0.127	ü
PFTrDA_1	663.0 / 619.0	3.58	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.58	PFTrDA	0.050	0.053	ü
PFTeDA_1	713.0 / 669.0	3.82	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.82	PFTeDA	0.030	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.82	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.82	NMeFOSAA	0.700	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.99	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.99	NEtFOSAA	0.050	0.061	ü
PFBA	213.0 / 169.0	0.92				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 12:04:55 PM

Sample Name	KC69 CCV	**Injection Vial**	16
Sample ID	KC69 CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T15:55:07	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.16	PFBS			
PFBS_2	298.9 / 99.0	1.16	PFBS	0.360	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.67	PFHpA			
PFHpA_2	363.0 / 169.0	1.67	PFHpA	0.010	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.360	0.354	ü
PFOA_1	413.0 / 369.0	1.98	PFOA			
PFOA_2	413.0 / 169.0	1.98	PFOA	0.070	0.060	ü
PFNA_1	463.0 / 419.0	2.32	PFNA			
PFNA_2	463.0 / 219.0	2.32	PFNA	0.310	0.386	ü
PFOS_1	499.0 / 80.0	2.30	PFOS			
PFOS_2	499.0 / 99.0	2.31	PFOS	0.200	0.216	ü
PFDA_1	513.0 / 469.0	2.65	PFDA			
PFDA_2	513.0 / 219.0	2.65	PFDA	0.040	0.033	ü
PFUnA_1	563.0 / 519.0	2.99	PFUnA			
PFUnA_2	563.0 / 269.0	2.99	PFUnA	0.050	0.039	ü
PFDoA_1	613.0 / 569.0	3.29	PFDoA			
PFDoA_2	613.0 / 319.0	3.30	PFDoA	0.120	0.127	ü
PFTrDA_1	663.0 / 619.0	3.57	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.57	PFTrDA	0.050	0.053	ü
PFTeDA_1	713.0 / 669.0	3.82	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.81	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.81	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.81	NMeFOSAA	0.750	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.98	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.98	NEtFOSAA	0.070	0.061	ü
PFBA	213.0 / 169.0	0.92				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC74 ICC	**Injection Vial**	10
Sample ID	ICC	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:57:42	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.311	0.308	ü
PFHxA_1	313.0 / 269.0	1.88	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	0.071	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.29	PFHpA	0.023	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.294	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.059	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.325	0.312	ü
PFOS_1	499.0 / 80.0	3.09	PFOS			
PFOS_2	499.0 / 99.0	3.09	PFOS	0.180	0.186	ü
PFDA_1	513.0 / 469.0	3.45	PFDA			
PFDA_2	513.0 / 219.0	3.45	PFDA	0.042	0.041	ü
PFUnA_1	563.0 / 519.0	3.78	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.054	0.050	ü
PFDoA_1	613.0 / 569.0	4.06	PFDoA			
PFDoA_2	613.0 / 319.0	4.06	PFDoA	0.158	0.160	ü
PFTrDA_1	663.0 / 619.0	4.31	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.31	PFTrDA	0.067	0.066	ü
PFTeDA_1	713.0 / 669.0	4.53	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.52	PFTeDA	0.051	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.570	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.77	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.77	NEtFOSAA	0.056	0.073	ü
PFBA	213.0 / 169.0	1.15				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC70 CCV	**Injection Vial**	18
Sample ID	KC70 CCV	**Injection Volume**	10.00
Sample Type	Quality Control	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T20:24:37	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.305	0.308	ü
PFHxA_1	313.0 / 269.0	1.88	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	0.079	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.30	PFHpA	0.021	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.292	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.061	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.333	0.312	ü
PFOS_1	499.0 / 80.0	3.09	PFOS			
PFOS_2	499.0 / 99.0	3.09	PFOS	0.172	0.186	ü
PFDA_1	513.0 / 469.0	3.45	PFDA			
PFDA_2	513.0 / 219.0	3.45	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.78	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.048	0.050	ü
PFDoA_1	613.0 / 569.0	4.06	PFDoA			
PFDoA_2	613.0 / 319.0	4.06	PFDoA	0.163	0.160	ü
PFTrDA_1	663.0 / 619.0	4.30	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.30	PFTrDA	0.068	0.066	ü
PFTeDA_1	713.0 / 669.0	4.52	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.52	PFTeDA	0.050	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.547	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.77	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.77	NEtFOSAA	0.060	0.073	ü
PFBA	213.0 / 169.0	1.16				

BATTELLE

Summary Ion Ratio Report

Sample Name	KC73 IB	**Injection Vial**	9
Sample ID	Instrument Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T14:41:55	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.353	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.053	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.014	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.354	ü
PFOA_1	413.0 / 369.0	N/A	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.060	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.386	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.216	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.033	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.039	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.127	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.053	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.039	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.712	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.061	ü
PFBA	213.0 / 169.0	0.93				

BATTELLE

Summary Ion Ratio Report

Sample Name	CS196PB-FS(0)	**Injection Vial**	13
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T15:23:46	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.353	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.053	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.014	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.354	ü
PFOA_1	413.0 / 369.0	1.98	PFOA			
PFOA_2	413.0 / 169.0	1.97	PFOA	0.070	0.060	ü
PFNA_1	463.0 / 419.0	N/A	PFNA			
PFNA_2	463.0 / 219.0	N/A	PFNA	N/A	0.386	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.216	ü
PFDA_1	513.0 / 469.0	N/A	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.033	ü
PFUnA_1	563.0 / 519.0	N/A	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.039	ü
PFDoA_1	613.0 / 569.0	N/A	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.127	ü
PFTrDA_1	663.0 / 619.0	N/A	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.053	ü
PFTeDA_1	713.0 / 669.0	N/A	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.039	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.712	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.061	ü
PFBA	213.0 / 169.0	0.92				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 12:07:53 PM

Sample Name	CS197LCS-FS(0)	**Injection Vial**	14
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T15:34:13	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.16	PFBS			
PFBS_2	298.9 / 99.0	1.16	PFBS	0.350	0.353	ü
PFHxA_1	313.0 / 269.0	1.39	PFHxA			
PFHxA_2	313.0 / 119.0	1.39	PFHxA	0.050	0.053	ü
PFHpA_1	363.0 / 319.0	1.66	PFHpA			
PFHpA_2	363.0 / 169.0	1.66	PFHpA	0.020	0.014	ü
PFHxS_1	399.0 / 80.0	1.66	PFHxS			
PFHxS_2	399.0 / 99.0	1.66	PFHxS	0.360	0.354	ü
PFOA_1	413.0 / 369.0	1.97	PFOA			
PFOA_2	413.0 / 169.0	1.97	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.31	PFNA			
PFNA_2	463.0 / 219.0	2.31	PFNA	0.340	0.386	ü
PFOS_1	499.0 / 80.0	2.30	PFOS			
PFOS_2	499.0 / 99.0	2.30	PFOS	0.200	0.216	ü
PFDA_1	513.0 / 469.0	2.65	PFDA			
PFDA_2	513.0 / 219.0	2.65	PFDA	0.030	0.033	ü
PFUnA_1	563.0 / 519.0	2.98	PFUnA			
PFUnA_2	563.0 / 269.0	2.98	PFUnA	0.050	0.039	ü
PFDoA_1	613.0 / 569.0	3.28	PFDoA			
PFDoA_2	613.0 / 319.0	3.29	PFDoA	0.110	0.127	ü
PFTrDA_1	663.0 / 619.0	3.56	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.56	PFTrDA	0.060	0.053	ü
PFTeDA_1	713.0 / 669.0	3.81	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.81	PFTeDA	0.040	0.039	ü
NMeFOSAA_1	570.0 / 419.0	2.80	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	2.80	NMeFOSAA	0.750	0.712	ü
NEtFOSAA_1	584.0 / 419.0	2.97	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	2.97	NEtFOSAA	0.060	0.061	ü
PFBA	213.0 / 169.0	0.92				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 12:07:58 PM

Sample Name	J9159-FS(0)	**Injection Vial**	15
Sample ID	NASB-BLL15-FRB-01-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	Triple Quad 6500+ Low Mass
Acquisition Date	2018-11-20T15:44:40	**Data File**	AE_11202018_5-369.wiff
Acquisition Method	5-369.dam	**Result Table**	18-0671
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.353	ü
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	PFHxA	N/A	0.053	ü
PFHpA_1	363.0 / 319.0	N/A	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.014	ü
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.354	ü
PFOA_1	413.0 / 369.0	1.95	PFOA			
PFOA_2	413.0 / 169.0	1.96	PFOA	0.060	0.060	ü
PFNA_1	463.0 / 419.0	2.30	PFNA			
PFNA_2	463.0 / 219.0	2.29	PFNA	0.500	0.386	ü
PFOS_1	499.0 / 80.0	N/A	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.216	ü
PFDA_1	513.0 / 469.0	2.63	PFDA			
PFDA_2	513.0 / 219.0	2.61	PFDA	0.020	0.033	ü
PFUnA_1	563.0 / 519.0	2.98	PFUnA			
PFUnA_2	563.0 / 269.0	2.97	PFUnA	0.040	0.039	ü
PFDoA_1	613.0 / 569.0	3.28	PFDoA			
PFDoA_2	613.0 / 319.0	3.28	PFDoA	0.140	0.127	ü
PFTrDA_1	663.0 / 619.0	3.55	PFTrDA			
PFTrDA_2	663.0 / 169.0	3.55	PFTrDA	0.070	0.053	ü
PFTeDA_1	713.0 / 669.0	3.80	PFTeDA			
PFTeDA_2	713.0 / 169.0	3.80	PFTeDA	0.030	0.039	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.712	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.061	ü
PFBA	213.0 / 169.0	N/A				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 2:07:30 PM

Sample Name	KC73 IB	**Injection Vial**	9
Sample ID	Instrument blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T18:46:49	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.58	PFBS			
PFBS_2	298.9 / 99.0	N/A	PFBS	N/A	0.308	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	1.92	PFHxA	N/A	0.078	
PFHpA_1	363.0 / 319.0	2.31	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.019	
PFHxS_1	399.0 / 80.0	2.33	PFHxS			
PFHxS_2	399.0 / 99.0	2.32	PFHxS	0.220	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	N/A	PFOA	N/A	0.068	
PFNA_1	463.0 / 419.0	3.11	PFNA			
PFNA_2	463.0 / 219.0	3.10	PFNA	0.201	0.312	ü
PFOS_1	499.0 / 80.0	3.08	PFOS			
PFOS_2	499.0 / 99.0	3.10	PFOS	0.126	0.186	ü
PFDA_1	513.0 / 469.0	3.46	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	
PFUnA_1	563.0 / 519.0	3.78	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.050	
PFDoA_1	613.0 / 569.0	4.07	PFDoA			
PFDoA_2	613.0 / 319.0	4.07	PFDoA	0.259	0.160	
PFTrDA_1	663.0 / 619.0	4.32	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.33	PFTrDA	0.143	0.066	
PFTeDA_1	713.0 / 669.0	4.53	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.54	PFTeDA	0.041	0.048	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.542	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.073	ü
PFBA	213.0 / 169.0	1.17				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 2:07:35 PM

Sample Name	CS196PB-FS(0)	**Injection Vial**	13
Sample ID	Procedural Blank	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T19:30:17	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.53	PFBS	1.677	0.308	
PFHxA_1	313.0 / 269.0	N/A	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	N/A	0.078	
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.019	
PFHxS_1	399.0 / 80.0	N/A	PFHxS			
PFHxS_2	399.0 / 99.0	2.29	PFHxS	N/A	0.287	
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.049	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.08	PFNA	0.519	0.312	
PFOS_1	499.0 / 80.0	3.03	PFOS			
PFOS_2	499.0 / 99.0	N/A	PFOS	N/A	0.186	
PFDA_1	513.0 / 469.0	3.45	PFDA			
PFDA_2	513.0 / 219.0	N/A	PFDA	N/A	0.041	
PFUnA_1	563.0 / 519.0	3.78	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	PFUnA	N/A	0.050	
PFDoA_1	613.0 / 569.0	4.06	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	PFDoA	N/A	0.160	
PFTrDA_1	663.0 / 619.0	4.30	PFTrDA			
PFTrDA_2	663.0 / 169.0	N/A	PFTrDA	N/A	0.066	
PFTeDA_1	713.0 / 669.0	4.52	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	PFTeDA	N/A	0.048	
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.542	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.68	NEtFOSAA	N/A	0.073	
PFBA	213.0 / 169.0	1.16				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 2:07:39 PM

Sample Name	CS197LCS-FS(0)	**Injection Vial**	14
Sample ID	Laboratory Control Sample	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T19:41:10	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.56	PFBS	0.303	0.308	ü
PFHxA_1	313.0 / 269.0	1.88	PFHxA			
PFHxA_2	313.0 / 119.0	1.88	PFHxA	0.075	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	2.29	PFHpA	0.020	0.019	ü
PFHxS_1	399.0 / 80.0	2.31	PFHxS			
PFHxS_2	399.0 / 99.0	2.31	PFHxS	0.269	0.287	ü
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.062	0.068	ü
PFNA_1	463.0 / 419.0	3.09	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.308	0.312	ü
PFOS_1	499.0 / 80.0	3.09	PFOS			
PFOS_2	499.0 / 99.0	3.09	PFOS	0.175	0.186	ü
PFDA_1	513.0 / 469.0	3.45	PFDA			
PFDA_2	513.0 / 219.0	3.45	PFDA	0.041	0.041	ü
PFUnA_1	563.0 / 519.0	3.77	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.051	0.050	ü
PFDoA_1	613.0 / 569.0	4.06	PFDoA			
PFDoA_2	613.0 / 319.0	4.06	PFDoA	0.159	0.160	ü
PFTrDA_1	663.0 / 619.0	4.31	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.30	PFTrDA	0.063	0.066	ü
PFTeDA_1	713.0 / 669.0	4.52	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.52	PFTeDA	0.049	0.048	ü
NMeFOSAA_1	570.0 / 419.0	3.61	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.61	NMeFOSAA	0.548	0.542	ü
NEtFOSAA_1	584.0 / 419.0	3.77	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	3.77	NEtFOSAA	0.068	0.073	ü
PFBA	213.0 / 169.0	1.16				

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 26/11/2018 2:07:44 PM

Sample Name	J9159-FS(0)	**Injection Vial**	15
Sample ID	NASB-BLL15-FRB-01-110118	**Injection Volume**	10.00
Sample Type	Unknown	**Instrument Name**	QTRAP 5500
Acquisition Date	2018-11-21T19:52:01	**Data File**	AC_11212018_5-369.wiff
Acquisition Method	5-0369.dam	**Result Table**	18-0671A
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Ratio Group	Calculated Ion ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.56	PFBS			
PFBS_2	298.9 / 99.0	1.53	PFBS	1.217	0.308	
PFHxA_1	313.0 / 269.0	1.89	PFHxA			
PFHxA_2	313.0 / 119.0	1.86	PFHxA	0.060	0.078	ü
PFHpA_1	363.0 / 319.0	2.29	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	PFHpA	N/A	0.019	
PFHxS_1	399.0 / 80.0	2.34	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	PFHxS	N/A	0.287	
PFOA_1	413.0 / 369.0	2.70	PFOA			
PFOA_2	413.0 / 169.0	2.70	PFOA	0.062	0.068	ü
PFNA_1	463.0 / 419.0	3.10	PFNA			
PFNA_2	463.0 / 219.0	3.09	PFNA	0.214	0.312	ü
PFOS_1	499.0 / 80.0	3.07	PFOS			
PFOS_2	499.0 / 99.0	3.08	PFOS	0.138	0.186	ü
PFDA_1	513.0 / 469.0	3.45	PFDA			
PFDA_2	513.0 / 219.0	3.45	PFDA	0.083	0.041	
PFUnA_1	563.0 / 519.0	3.77	PFUnA			
PFUnA_2	563.0 / 269.0	3.77	PFUnA	0.105	0.050	
PFDoA_1	613.0 / 569.0	4.06	PFDoA			
PFDoA_2	613.0 / 319.0	4.06	PFDoA	0.162	0.160	ü
PFTrDA_1	663.0 / 619.0	4.30	PFTrDA			
PFTrDA_2	663.0 / 169.0	4.30	PFTrDA	0.065	0.066	ü
PFTeDA_1	713.0 / 669.0	4.52	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.52	PFTeDA	0.045	0.048	ü
NMeFOSAA_1	570.0 / 419.0	N/A	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	NMeFOSAA	N/A	0.542	ü
NEtFOSAA_1	584.0 / 419.0	N/A	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	NEtFOSAA	N/A	0.073	ü
PFBA	213.0 / 169.0	1.16				

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	BRUNSWICK_NAS	18-0671							N6247016D9008	WE21	TETRA TECH, INC.	NASB-BLL15-FRB-01-110118	Water for QC samples	Field Reagent Blank	1-Nov-18	PFAS_QSM5.1	Perfluoroalkyl Compounds