

National Grid
Syracuse, New York

Remedial Design Work Plan

Operable Unit 2
Hudson (Water Street) Site
Hudson, New York

April 2014



Certification Statement:

I, Mark O. Gravelding, certify that I am currently a NYS registered professional engineer and that this Remedial Design Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).


Mark O. Gravelding, P.E. Date 4/14/14
Vice President

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Acronyms and Abbreviations

ARC	Area for Remedial Consideration
ARCADIS	ARCADIS U.S., Inc.
ASTM	American Society for Testing and Materials
ATL	Atlantic Testing Laboratories
bss	below sediment surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CCR	Construction Completion Report
CPT	cone penetrometer test
CSIR	Comprehensive Sediment Investigation Report
cy	cubic yards
DOT	Department of Transportation
El.	elevation
HASP	Health and Safety Plan
MGP	manufactured gas plant
MLW	mean low water
NAPL	non-aqueous phase liquid
NMFS	National Marine Fisheries Service
Northstar	Northstar Environmental & Marine Services
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbon
pcf	pounds per cubic foot
PDI	pre-design investigation
PID	photoionization detector
QA	quality assurance

QC	quality control
RA	remedial action
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RD Report	Remedial Design Report
RD Work Plan	Remedial Design Work Plan
ROD	Record of Decision
RQD	rock quality designation
Sanborn	Sanborn Map and Publishing Company
SAV	submerged aquatic vegetation
SMP	Site Management Plan
SPME	solid phase microextraction
SPT	standard penetration testing
TAMS	TAMS Consultants, Inc.
TarGOST [®]	Tar-Specific Green Optical Screening Tool
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
WOE	weight-of-evidence

1. Introduction

1.1 Purpose

This *Remedial Design Work Plan* (RD Work Plan) has been prepared to present the results of the Pre-Design Investigation activities completed in 2013, and to describe the activities necessary to complete the remedial design (RD) and subsequent remedial action (RA) pursuant to the remedy selected in the New York State Department of Environmental Conservation's (NYSDEC's) Operable Unit 2 (OU2) Record of Decision (ROD; NYSDEC 2012) for the former National Grid Hudson Water Street manufactured gas plant (MGP) site (the Site) in Hudson, New York (Figure 1). This RD Work Plan has been developed based on the NYSDEC's ROD (NYSDEC 2012) and on the procedures outlined in the DER-10/Technical Guidance for Site Investigation and Remediation (NYSDEC 2010).

The remaining sections of this RD Work Plan present an overview of the proposed RA activities, including administrative activities, such as permitting, construction quality assurance/quality control (QA/QC), and reporting, and provide a schedule for implementing the RD activities.

1.2 Site Background

This section provides a brief summary of the site background and history, as well as the current land uses at the Site.

1.2.1 Site Location and Description

The Site is located in, and along the east bank of, the Hudson River. It includes property where the former MGP was located on Water Street in Hudson, Columbia County, New York, and sediments within a portion of the Hudson River. The Site consists of two operable units, OU1 and OU2, as illustrated on Figure 2.

OU1 is defined as the onsite source area including Embayment #1. Remediation activities for OU1 were completed from April 2004 to September 2005 in accordance with the Final Remedial Design – Contract No. 1 – General (BBL 2003a). The OU1 remediation activities consisted of excavation and off-site disposal of approximately 8,800 cubic yards (cy) of soil from the former gas holder area and former tar tank area of the former MGP; excavation and off-site disposal of approximately 8,600 cy of sediment and soil from Embayment #1 and the surrounding shoreline; and restoration of the Embayment #2 shoreline and the north wall of a building on the City of Hudson property. As described in the Final

Engineering Report for the OU1 activities, a permanent sheet pile wall was installed around the sediment removal area and along the western alignment of Embayment #1 (i.e., the mouth of the embayment; ARCADIS U.S., Inc. [ARCADIS] 2008b). This steel sheet pile wall was left in-place to provide additional protection against the potential lateral subsurface migration of impacted material from surrounding properties (e.g., the former oil terminal) into Embayment #1.

OU2 is defined as a portion of the Hudson River adjacent to the Site extending approximately 1,700 feet along the shoreline from the west end of Ferry Street to the Holcim Ltd. property, and approximately 300 feet offshore into the eastern edge of the shipping channel (Figure 2). OU2 includes Embayment #2, Embayment #3, and Embayment #4, and is the subject of this RD Work Plan.

1.2.2 Site History and Current Use

The City of Hudson, New York was settled in the 1700s and became a center for whale oil processing and candle manufacturing. In the 1850s, whale oil street lamps were replaced with manufactured gas lamps (Bradbury 1908). For more than 100 years, the eastern upland area adjacent to the Site has been used for industrial and commercial purposes. Beginning in the late 1800s, iron and steel works, fuel storage, and metal manufacturing facilities operated near the shoreline of the Site (Beers 1873), and the byproducts of these industries were used as fill material for the shoreline areas. The majority of the upland area along the shoreline in the vicinity of the Site was filled with several feet of ash, cinders, brick, clay, sand, and gravel. Railroad spurs were also constructed in the vicinity of the four Embayments (see Figure 2) for loading and unloading materials manufactured in the vicinity of the Site. Coal yards and oil tanks were also located along the shoreline of the Site (Sanborn Map and Publishing Company [Sanborn] 1949). MGP operations in this area were active from 1853 until 1949, when natural gas replaced the need for manufactured gas. Subsequent to 1949, industrial and commercial operations at or near the Site have included a motor freight building, an auto scrap yard, and a lumberyard storage area (Sanborn 1961).

Currently, the land immediately adjacent to the Site is used by the public as a park (Henry Hudson Riverfront Park owned by the City of Hudson [City Park]), and land to the east and south of the Site is used for industrial purposes by New York Central Lines and Holcim Ltd. (Figure 2). A commuter rail station is located to the east of the Site, across Water Street. The Site is located within the northwestern portion of the City of Hudson, which contains several active industrial facilities, railroads, streets, and parking lots. A stormwater outfall

that provides drainage for a majority of the northwestern portion of the City of Hudson discharges to Embayment #3 (Figure 2).

The Hudson River in the vicinity of the Site is used as a navigable waterway and for recreational purposes. A large island called Middle Ground Flats divides the river off-shore from the Site. The shipping channel is located east of the island and is maintained by the United States Army Corps of Engineers. A barge docking area is located south of Embayment #4 and adjacent to the Holcim Ltd. property. Hudson Cruises, Inc., operates guided boat tours from a dock located just north of Embayment #1 (Spirit of Hudson Dock Area, Figure 2), and a private marina and public boat launch are located to the north of the City Park. A fiber optic line owned by Mid-Hudson Cablevision Inc. (Mid-Hudson Cable) crosses the Hudson River within OU2 (Figure 2). A fish consumption advisory issued by the New York State Department of Health (NYSDOH; NYSDOH 2014) is currently in effect for fish caught from the Hudson River in the vicinity of the Site due to non-site-related contaminants.

1.3 Summary of Previous Investigations and Delineation

This section summarizes the sediment investigations performed within the OU2 area prior to 2013, and the resulting development of the Area for Remedial Consideration (ARC).

1.3.1 Summary of Remedial Investigations Prior to 2013

Sediment investigation activities were conducted from 1995 to 2009 to characterize the nature and extent of contamination at the Site. The investigation results establish the existing OU2 data set and are summarized below and in Table 1. Historical sediment sample and/or core locations are illustrated on Figure 3. Figure 4 illustrates the historical sediment sample and/or core locations benthic survey sample locations, bioavailability study sample locations, Tar-Specific Green Optical Screening Tool (TarGOST[®]) boring locations, and 2007-2009 OU2 sediment monitoring program locations used to delineate the extent of non-aqueous phase liquid (NAPL). Figure 5 illustrates the bioavailability study sample locations and the associated area of potential sediment toxicity.

The following sections summarize the physical/geotechnical data previously collected at or relevant to OU2, the sediment chemistry data, the distribution of observed NAPL impacts, and the bioavailability and toxicity of the sediments.

1.3.1.1 Summary of Physical/Geotechnical Data

The physical characterization of OU2 sediments is based on the results of the 2002 geophysical surveys and geochronological sediment dating and the field observations and descriptions of sediment cores and sediment samples collected from 1995 to 2009 (BBL 1996; BBL 1997; BBL 2000; TAMS Consultants, Inc. [TAMS] 2000; BBL 2002; BBL 2003b; RETEC 2007; ARCADIS 2008a; ARCADIS 2010). A summary of investigation activities including details of the physical/geotechnical data set is provided in Table 1. A detailed physical characterization of OU2 is provided in Section 3.1 of the Comprehensive Sediment Investigation Report (CSIR; ARCADIS 2010) and is summarized below.

A total of seven sediment cores were collected from OU2 for radioisotope sediment dating. Based on results from the geochronological sampling, sedimentation in the Embayments is estimated at a rate of 0.5 to 1.1 inches/year (ARCADIS 2010). In the river channel, the rate of sedimentation remains uncertain.

In-situ vane shear testing was performed at 10 core locations using American Society for Testing and Materials (ASTM) Method D2573 at various depths between 0 and 14 feet (ARCADIS 2010). Shear strength was found to increase with depth and distance from the shoreline and proximity to the shipping channel. This increase in strength indicates a higher level of sediment stability in the river.

A total of 36 sediment samples were collected from 13 locations for grain-size analysis (from depths between 0 and 8 feet below sediment surface [bss]; BBL 1996; BBL 1997; BBL 2000; BBL 2003b; ARCADIS 2010). The results of grain size analyses show that, in general, finer sediments (fine sand to medium silt and clay) are observed in the Embayments and in the shipping channel portion of the investigation area (where water depths are more than 40 feet deep). Coarser sediments (fine to coarse sands and gravels with shells, wood, and anthropogenic materials such as slag, cinders, coal, brick, and other fill materials) are most frequently observed in the surface layer (0 to 0.5 foot bss) and near-surface layers (0.5 to 2 feet bss) at water depths between 14 and 40 feet in the Hudson River channel slope, while finer materials (fine sand, silt, and clay) are generally found in the deeper sediments of these areas.

1.3.1.2 Chemical Data Summary

Samples were collected for chemical analyses from a total of 160 OU2 sediment sample locations (including co-located sample locations) between 1995 and 2009 (BBL 1996; BBL 1997; BBL 2000; TAMS 2000; BBL 2002; BBL 2003b; RETEC 2007; ARCADIS 2008a;

ARCADIS 2010). Historical sediment sample locations are illustrated on Figure 4, and sample parameters are provided in Table 1. The detailed analytical results from the previous sediment sampling events were presented in the CSIR (ARCADIS 2010). Evaluation of these sediment analytical results indicated that polycyclic aromatic hydrocarbons (PAHs) are the primary constituents present in OU2 sediments. Other than PAHs, benzene, toluene, ethylbenzene, and xylene (BTEX) are the only other constituents observed in OU2 sediments that are potentially site-related. Further, because higher BTEX concentrations correlate with higher PAH concentrations in OU2 sediment samples, the overall distribution of site-related constituents can be described using the PAH results. The distributions of other constituents within the OU2 sediments are independent of PAH distribution; therefore, the other constituents do not appear to be attributable to the former MGP operations at the Site.

In general, higher PAH concentrations correlate with sediment containing NAPLs (see Section 1.3.1.3 below). PAH concentrations generally decrease to the north, west, and south of the NAPL-impacted area. At several locations to the south and north of the NAPL-impacted area, PAH concentrations are similar to background concentrations. A forensic PAH analysis presented in the CSIR concluded that, compositionally, PAHs transition from site-related to background just south and just north of the NAPL-impacted sediment area (ARCADIS 2010).

1.3.1.3 Summary of Non-Aqueous Phase Liquid Distribution

The extent of NAPL was delineated during previous investigation activities as described in the CSIR (ARCADIS 2010). NAPL was observed in sediments in the eastern portion of the river channel along the slope adjacent to Embayment #1, and potentially in a small portion of the shipping channel at T-13. NAPL was not observed in Embayment #2, except near the mouth of this embayment at the MPE2-1 location (Figure 4). NAPL was not observed in the sediments in Embayment #3 and Embayment #4. Deeper NAPL impacts were observed along the shoreline; the depth to NAPL decreases closer to the shipping channel as the shoreline slopes steeply toward the shipping channel. The approximate horizontal extent of NAPL in sediments, as determined by the previous investigations, is depicted on Figure 4.

1.3.1.4 Summary of Sediment Bioavailability and Toxicity Evaluation

A sediment benthic toxicity evaluation was performed using 41 sediment samples (32 site samples and 9 reference location samples) as part of the 2009 sediment investigation (ARCADIS 2010). The evaluation was based on *H. azteca* toxicity testing and analysis for sediment ammonia, grain size, percent solids, and pH. A weight-of-evidence (WOE)

assessment was included as part of the CSIR (ARCADIS 2010). The WOE assessment showed that only seven sample locations (HD-142, HD-143, HD-146, HD-147, HD-148, HD131, and HD138) were observed to have both pore water PAH concentrations greater than the site-specific threshold and significant reduction in *H. azteca* survival, and were subsequently determined to pose a potential risk to benthic macroinvertebrates at the Site (Figure 5). These samples are generally within a localized region adjacent to Embayment #1, and within an additional localized region down-river and adjacent to Embayment #2. The two areas of potential sediment toxicity are depicted on Figure 5.

1.3.2 Development of ARC Extent

The ARC was defined by using a combination of analytical results and field observations from the remedial investigations performed prior to 2013, as follows:

1. Plotting the locations where NAPLs and potentially toxic sediment were observed in surface and/or subsurface sediments.
2. Determining the next closest sampling locations where NAPLs/potentially toxic sediments were not observed (considering also whether the sample extended deep enough to encounter potential NAPL impacts).
3. Drawing a conservative outermost extent of the NAPL/potentially toxic sediment area by connecting the sample locations described in Step 2 above.

This evaluation resulted in a conservative estimate of a 1.1-acre ARC (Figure 6).

1.4 Remedial Action Objectives and Description of Selected Remedy

As identified in the ROD (NYSDEC 2012), the Remedial Action Objectives (RAOs) for OU2 are as follows:

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.
- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of ambient water quality criteria.
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.

- Restore sediments to pre-release/background conditions to the extent feasible.

A Feasibility Study for OU2 was developed to present and evaluate potential remedial alternatives to address the sediments at the Site and achieve the above-listed RAOs for OU2 (ARCADIS 2011). Based in part on the evaluation presented therein, Remedial Alternative 7: Excavation of Sediments within the ARC to Full Depth of NAPL (up to 15 feet) with Treatment/Disposal of Excavated Sediments and Backfill of the Excavated Area was selected in the ROD. Specifically, the elements of the selected remedy include the following:

- A RD program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedy. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and management of such program, per DER-31/Green Remediation (NYSDEC 2011).
- Installation and maintenance of appropriate engineering controls around the ARC during remediation, as feasible, to control and contain re-suspended sediments and mobile NAPL that may be generated as a result of dredging activities.
- Removal of debris and shoreline rip-rap within the ARC for off-site disposal or, in the case of the rip-rap, reuse as feasible.
- Removal of up to 9,000 cy of NAPL-saturated and potentially toxic sediment within the ARC to depths up to 15 feet bss. Removal of sediment (if any) that causes sheens on surface water in areas south of and outside the ARC.
- Management, including dewatering and if necessary pre-treatment, of the dredged sediment in preparation for off-site treatment and/or disposal at a permitted facility. Installation of a temporary containment structure with an air handling and treatment system over the sediment staging and processing area.
- Installation of a temporary water treatment system to treat water removed from the dredged sediment.
- Restoration of the river bed and banks to the original bathymetry and, to the extent possible, with material similar to the existing substrate.
- Post-remediation monitoring of remedy effectiveness and restoration success.

As stated in the ROD, implementation of this alternative will comply with the NYSDEC's Standards, Criteria, and Guidance (SCG) to the extent practicable (NYSDEC 2012). Specifically, the source areas of contamination, ecological impacts and demonstrated toxic sediments will be addressed through dredging, treatment, and disposal of the impacted sediments in the ARC. In addition, the impacted sediments will be permanently removed from the Site, resulting in compliance with SCGs, notably addressing sheen producing sediments which are a contravention of Water Quality standards. For reference, and as required by DER-10, the chemical-specific SCGs, action-specific SCGs, and location-specific SCGs for the Site are summarized in Tables 2 through 4.

1.5 Summary of 2013 Pre-Design Investigation

Pre-Design Investigation (PDI) activities were undertaken to support the engineering design of the selected remedy. The PDI Work Plan (ARCADIS 2013) was submitted to the NYSDEC on January 23, 2013. ARCADIS received comments from the NYSDEC Department of Fish, Wildlife & Marine Resources on April 24, 2013. ARCADIS submitted a follow-up response to the NYSDEC on June 10, 2013. The NYSDEC approved the PDI Work Plan on June 26, 2013, with changes as detailed in the above correspondence. The objective of the 2013 PDI activities was to allow for further characterization of the sediments and delineation within the ARC, characterization of the sediments to the south of the ARC, and assessment of the geotechnical properties of the sediments adjacent to and within the ARC. Specifically, the general objectives of the PDI included the following:

- Perform a desktop review and physical survey (with divers) of the submerged aquatic vegetation (SAV) near the ARC. In addition, utilize the diver survey to determine the substrate of the sediments within and near the ARC, and identify large debris located in and around the ARC.
- Advance environmental borings to confirm the horizontal extent of the ARC and refine the vertical extent of the sediment removal limits within the ARC. If any sheen is observed during performance of boring activities, collect samples of sheen for characterization.
- Advance geotechnical borings to determine the geotechnical characteristics of the sediments within and near the ARC.
- Collect material to support future treatability/processing testing (if required).

The PDI activities were performed between August 7, 2013 and September 17, 2013, and are described below.

1.5.1 Submerged Aquatic Vegetation Survey

As part of the PDI, a SAV evaluation was conducted that consisted of a desktop review of existing SAV information, followed by a diver survey. The preliminary desktop review of existing information identified that the growing zone of SAV in the Hudson River is often constrained to narrow fringing beds along the sub-tidal slope, a sufficient distance from the shoreline to avoid ice scour (Nieder et al. 2004) yet shallow enough to maintain adequate light penetration (Koch 2001). Specifically, while various entities have verified SAV beds in other areas of the upper (tidal) Hudson River, SAV has not been observed in the ARC during previous sampling events (ARCADIS 2010).

A diver survey of the ARC was performed by ARCADIS on August 7, 2013. The results of the diver survey indicate that the substrate within and along the front of Embayments #1 and #2 is soft silt (a few feet to a few inches) over rock. With increasing distance from the shoreline, the substrate is entirely rock and gravel with most substrate covered in zebra mussels. In front of Embayments #1 and #2, a tongue of the soft silt extends out and covers the rock substrate. This is likely caused by the surge created by the wakes of large ships passing through the navigation channel adjacent to the Site causing finer grained sediments to move into/out of the embayments. During the diver survey, ARCADIS divers observed the surge into/out of the embayments, and could also feel the movement while underwater.

The desktop review of existing SAV mapping information indicated that SAV was present in areas of the Hudson River near the Site. The regional SAV mapping was used to identify what species were growing in what water depths in areas surrounding the Site. Along the eastern shoreline of the Hudson, *Trapa natans* (water chestnut) and *Myriophyllum spicatum* (Eurasian water milfoil) were observed growing in a cove downstream of the Holcim property. Both of these species are considered to be invasive and undesirable. Upon visual observation, the SAV bed in this area was irregular at best, and growth occurred in depths of water between 4 to 5 feet (at high tide). The shoreline upstream of the Site was predominantly steep and rocky, and supported the boat docking and marina operations. No SAV was previously mapped or observed during the reconnaissance in this area upstream of the Site. The only place water depths of 4 to 5 feet exist onsite are along the inner ends of Embayments #1 and #2 – where *T. natans* and *M. spicatum* were observed during the diver survey. Water depths in the ARC exceed these growing zones of 4 to 5 foot water depths (at high tide) by at least 3 to 4 times. As such, SAV would not be expected to grow within the boundaries of the ARC. This assumption was confirmed during the diver survey, as no SAV was observed in the ARC.

What appears to be a remnant bulkhead feature runs the length of the waterfront – immediately offshore of the peninsula between Embayments # 1 and #2 and continues along the shore-side of the Hudson River Cruise boat docks. Due to poor underwater visibility, it was difficult to determine the configuration of the structure, but there appeared to be two parallel timber-pile walls with 3 to 4 feet of void space between them. Various pieces of timber-piles and driftwood/logs were caught in the void space. The lack of visibility and entrapment hazards associated with that void space precluded any further investigation of the timber-pile wall. The feature appeared to be consistent over the entire length of the Site waterfront except in front of Embayment #1, and appeared to be in various states of degradation.

1.5.2 Environmental Borings

Environmental drilling activities were conducted by Atlantic Testing Laboratories (ATL) under the direct supervision of ARCADIS between August 28, 2013 and September 17, 2013. Drilling was conducted with a CME-850X drill rig situated on the deck of a 70-foot CL-105 Lift Boat provided by Northstar Environmental & Marine Services (Northstar). Four-inch inside diameter steel casing was advanced into the sediment at each location for water quality considerations and drilling rod stability. Two-inch and 3-inch split spoon samplers were used to conduct continuous sampling at each boring location. Soil was visually characterized and screened with a photoionization detector (PID). The geologic composition, recovery, PID screening results, and the presence of visible NAPL, coating, staining, sheens, and odors were documented per the NYSDEC Field Descriptions of Samples for Former MGP Sites. Each boring was backfilled to grade with a bentonite/cement grout.

Five borings (EB-1, EB-6, EB-11, EB-13, and EB-18) were advanced within the ARC in an effort to refine the horizontal extent of the ARC boundary. A sample from each of these borings was collected and submitted for analysis of PAHs in porewater by solid phase microextraction (SPME). Twelve borings (EB-2 to EB-5, EB-7 to EB-10, EB-10A, EB-10B, EB-12, and EB-19) were advanced to refine the depths of the proposed dredge polygons. Four borings (EB-14 to EB-17) were advanced in an area to the south of the ARC to either confirm or refute the presence of sheen-producing sediments. Samples of the surface water sheen generated during advancement of borings EB-14 to EB-17 were collected and submitted for analysis of forensic PAHs and forensic total petroleum hydrocarbons (TPH).

The results of the borings designed to refine the horizontal extent of the ARC boundary are presented in Table 5 below. The environmental boring logs are presented in Appendix A.

Table 5: Summary of 2013 Environmental Boring Results – Delineation of Horizontal Extent

Boring ID	Termination Depth (feet bss)	Observations and Results
EB-1	8.0	No visual impacts; potential toxicity per SPME results
EB-6	4.0	Viscous tar-like NAPL from 0.4-0.5 feet bss (and trace blebs); potential toxicity per SPME results
EB-11	4.0	Faint MGP-like odor from 2-4 feet bss; potential toxicity per SPME results
EB-13	2.0	No visual impacts; potential toxicity per SPME results
EB-18	3.0	Trace sheen from 0.0-0.3 feet bss; potential toxicity per SPME results

The SPME data report and table of calculated toxicity unit values is presented in Appendix B. Based on the field observations for these borings and the associated laboratory analyses, the boundary of the ARC will remain unchanged from what was presented in the ROD.

The results of the borings designed to refine the depths of the proposed dredge polygons are presented in Table 6 below.

Table 6: Summary of 2013 Environmental Boring Results – Delineation of Vertical Extent

Boring ID	Termination Depth (feet bss)	Observations and Results
EB-2	8.0	Little viscous tar-like NAPL from 2.0-2.3 feet bss
EB-3	Not applicable	Could not be advanced due to location of cruise ship docks
EB-4	Not applicable	Could not be advanced due to location of cruise ship docks
EB-5	15.0	Little sheen on split spoon at 2 feet bss; trace sheen from 4-6 feet bss; little NAPL blebs throughout 6-7 feet bss (and sheen); little NAPL blebs in slough around sample at 8.5 feet bss

Boring ID	Termination Depth (feet bss)	Observations and Results
EB-7	8.0	Little sheen and MGP-like odor at 1 foot bss; trace NAPL bleb in water from 4-6 feet bss; little NAPL blebs throughout 6.0-6.5 feet bss
EB-8	8.0	Trace NAPL blebs from 1.7-2.3 feet bss; 1 inch by 1 inch coal piece with trace NAPL blebs at 7 feet bss
EB-9	14.0	Little NAPL blebs and sheen from 4.0-4.3 feet bss (possibly from above); little NAPL blebs throughout 8.0-8.7 feet bss with MGP-like odor; NAPL blebs throughout 8.7-9.4 feet bss with little NAPL stain; trace to little NAPL blebs throughout from 9.4-10.0 feet bss
EB-10	14.0	Trace sheen from 2-4 feet bss; trace sheen from 6-8 feet bss (possibly from above)
EB-10A	13.0	Little NAPL blebs throughout 8.0-8.5 feet bss
EB-10B	13.0	Little sheen from 2-3 feet bss
EB-12	5.0	Little viscous tar-like NAPL from 0.5-1.0 feet bss; little blebs and MGP-like odor from 0-2 feet bss
EB-19	6.0	Trace sheen from 2-4 feet bss (1/2-inch diameter); slight MGP-like odor from 4-6 feet bss

The observations of NAPL depths inside the ARC boundary will be used during the RD to refine the dredge depths.

The results of the borings advanced in the area to the south of the ARC to either confirm or refute the presence of sheen-producing sediments are presented in Table 7 below.

Table 7: Summary of 2013 Environmental Boring Results – Area South of ARC

Boring ID	Termination Depth (feet bss)	Observations and Results
EB-14	2.0	Little sheen and trace NAPL blebs from 0.0-0.25 feet; trace sheen observed on surface water; surface water sheen sample collected
EB-15	2.0	Trace sheen observed on surface water; surface water sheen

Boring ID	Termination Depth (feet bss)	Observations and Results
		sample collected
EB-16	2.0	Trace sheen observed on surface water; surface water sheen sample collected
EB-17	2.0	Trace sheen observed on surface water; surface water sheen sample collected

As a result of the observations of surface water sheen at EB-14 to EB-17, a sample of the sheen was collected at each location with a sheen net for analysis of forensic PAHs and forensic TPH. The results of the analyses and the details of the forensic evaluation are presented in Appendix C. In summary, the evaluation of the TPH and PAH compositional characteristics of the four sheen samples indicate that the content of all the sheen samples is exclusively petroleum, and specifically a lubrication-type heavy oil.

Samples for future laboratory bench-scale treatability testing were also collected during PDI activities. During installation of the environmental borings, approximately 20 gallons of representative sediment, from within the limits of the ARC, was collected, homogenized, and placed in 5-gallon buckets. The samples were saturated with river water, sealed, and shipped to the ARCADIS treatability laboratory located in Durham, North Carolina for storage at ambient temperature. If determined to be necessary to support the RD, the details of any future treatability testing will be provided in a subsequent work plan.

Waste characterization samples were also collected to determine treatment and/or disposal requirements for sediment removed during implementation of the selected remedy. Two composite sediment samples were collected from the ARC: one from the northern half of the dredging area, and one from the southern half of the dredging area. Sample analyses included the following: TPH, total volatile organic compounds, total semivolatile organic compounds, total polychlorinated biphenyls, total metals, total cyanide, percent sulfur, and British Thermal Units. The results of the waste characterization analyses are presented in Appendix D, and will be evaluated during the RD per the steps outlined in Section 3.2.5.3 below.

1.5.3 Geotechnical Borings

For the purpose of collecting additional information to support development of the RD, additional geotechnical soil investigation was performed in September 2013. Geotechnical

soil investigations to support the dredging design within the ARC were conducted as part of the PDI, including:

- Installation of five geotechnical soil borings
- Standard penetration testing (SPT) and geotechnical soil sampling (i.e., split spoons and Shelby tubes)
- Installation of four cone penetrometer tests (CPTs)
- Geotechnical laboratory analyses

The in-water geotechnical drilling was completed between August 18, 2013 and September 17, 2013 by ATL under direct supervision of ARCADIS. The geotechnical drilling was conducted with a CME-850X drill rig mounted on the deck of the Northstar Lift Boat. Two geotechnical borings were completed to split spoon refusal on top of apparent weathered rock, and three geotechnical borings were terminated 5 to 10 feet into apparent competent rock. Borings were sampled using SPT using a 3-inch-diameter by 2-foot-long split spoon sampler, known as a modified California spoon, and an automatic hammer. Rock coring was performed using a 2-inch-diameter NX core barrel in borings GT-3 through GT-5. SPT was performed continuously in the upper 10 feet of sediment and every 5 feet thereafter to the top of bedrock. SPT was performed in general accordance with ASTM D3550. Four CPTs were performed to refusal to collect continuous geotechnical data, including tip resistance and side resistance to determine geologic material. SPT and CPT locations are presented on Figure 6. Due to the presence of docks at the marina and docked Hudson River Cruise tour boats, several PDI locations were adjusted in the field.

The geotechnical boring logs and laboratory testing results are presented in Appendix E. The elevations of the geotechnical field activities are summarized in Table 8 below.

Table 8: Summary of 2013 Geotechnical Boring Elevations

Boring ID	Water Surface ¹	Water Depth (feet)	Sediment Surface Elevation ²	SPT Refusal ³ Elevation ²	Top of Rock Competent Elevation ²	Termination Elevation ²
GT-1	3.7	12.3	-6.4	-95.5	-95.5	-95.5
GT-2	2.4	38.0	-33.4	-109.7	-118.4	-118.4

Boring ID	Water Surface ¹	Water Depth (feet)	Sediment Surface Elevation ²	SPT Refusal ³ Elevation ²	Top of Rock Competent Elevation ²	Termination Elevation ²
GT-3	4.0	42.5	-36.3	-98.3	-101.3	-111.3
GT-4	4.4	35.5	-28.9	-108.9	-116.9	-121.9
GT-5	3.0	14.0	-8.8	-90.8	-91.8	-101.8
CPT-1	1.2	11.2	-7.8	-	-	-87.3
CPT-2	1.4	35.0	-31.4	-	-	-101.4
CPT-2A	1.4	39.0	-35.4	-	-	-91.9
CPT-3	3.8	39.8	-33.8	-	-	-86.8
CPT-4	1.4	21.5	-17.9	-	-	-89.0

1. Presented in feet from Mean Low Water (MLW)
2. Elevations in North American Vertical Datum of 1988 (NAVD88)
3. SPT refusal was determined to be 50 blow counts for less than 6 inches of penetration.

Borings GT-1 through GT-5 have similar lithology based on visual classifications performed in the field and laboratory testing analyses performed on selected samples. In addition to split spoon samples, seven relatively undisturbed Shelby tube samples were collected for laboratory testing in general accordance with ASTM D1587. The laboratory tests performed on selected sediment samples collected from split spoon samples and Shelby tube samples are summarized in Table 9 below.

Table 9: Summary of 2013 Geotechnical Analysis Performed

Geotechnical Analysis	Number of Samples Analyzed
Particle Size Distribution Analyses (ASTM D422)	12
Particle Size Distribution with Hydrometer Analyses (ASTM D422)	7
Moisture Content Analyses (ASTM D2216)	24
Atterberg Limit Test Analyses, Liquid Limit, Plastic Limit, Plasticity Index of Soils (ASTM D4318)	17
Percent Organic Tests (ASTM D2974)	3
Consolidated-Undrained Triaxial Compression Tests (ASTM D4767);	2

Geotechnical Analysis	Number of Samples Analyzed
Unconsolidated-Undrained Triaxial Compression Tests (ASTM D2859)	4
One-Dimensional Consolidation Properties of Soils using Incremental Loading (ASTM D2435)	2
Specific Gravity of Soil Solids by Water Pycnometer (ASTM D854)	5

Based on the visual field characterization and the laboratory testing, the sediment layers encountered generally consist of soft sediment at the surface underlain by sand and gravel which grades into a fine grained clay and silt layer, with till and bedrock below.

Specifically, very soft clay and silt material was encountered in the surface layers at locations GT-1 and GT-5. At locations GT-2, and GT-3, sand and gravel with shells with various amounts of fine material was encountered at the sediment surface, and at location GT-4, medium to fine sand with organics was encountered at the sediment surface.

A significant gray, brown, and greenish black loose sand and gravel layer was encountered in GT-1 underlying the soft sediment surface materials. Underlying the sediment surface materials at GT-2 and GT-3, greenish gray and black loose to medium dense silty fine sands were encountered. Underlying the sediment surface materials at GT-4, olive gray clayey fine sand with trace to some gravel was observed. Moisture contents in the sand and gravel layer ranged from 21.6% to 29.4%, and organic contents ranged from 0.7% to 3.1%.

At locations GT-1 through GT-4, the sand and gravel layer with various amounts of fine materials graded into a clayey sand layer and eventually into a silt and clay layer at elevations ranging from elevation (El.) -35.8 feet NAVD88 near the shoreline (GT-1) to El. - 50.8 feet NAVD88 within the shipping channel (GT-3). GT-5, located near the shoreline, did not encounter the sand and gravel layer, and generally encountered the silt and clay layer throughout the boring until refusal on top of a till layer.

The clay and silt layer was observed to generally be greenish black, greenish gray, or gray and typically very soft to firm material. The clay and silt layer was observed to vary between generally low plasticity and medium plasticity material with various amounts of sand throughout the layer. This layer extended to the till layer ranging from approximately El. - 88.8 feet NAVD88 near the shoreline to El. -109.8 feet NAVD88 near the shipping channel.

Particle size distribution analyses indicated at least 81% of the material from the clay and silt layer passed the #200 sieve (fine material), and Atterberg limit analysis indicated low to medium plasticity silts and clays. Moisture contents ranged from 17.4% to 48.7%. Six Shelby tube samples were tested within the clay and silt layer for specific gravity, consolidated-undrained triaxial compression test, unconsolidated-undrained triaxial compression test, and one-dimensional consolidation test. Specific gravity averaged 2.77. Results of the testing listed in Table 9 (above) indicate a dry unit weight ranging from 70.2 pounds per cubic foot (pcf) to 86.8 pcf, and averaging 82.5 pcf and an undrained shear strength of the silt/clay layer ranging from 3.5 pounds per square inch (psi) to 55.9 psi.

Underlying the silt and clay layer, glacial till was encountered at all five locations, consisting of primarily sand and gravel. At borings GT-1 through GT-5, SPT refusal was encountered within the till layer at elevations ranging between El. -90.8 feet NAVD88 near the shoreline (GT-5) and El. -108.8 feet NAVD near the shipping channel (GT-2). Apparent weathered rock was encountered below the till layer. Rock coring was performed at borings GT-3 through GT-5. ATL indicated that the weathered rock alternated between softer zones and harder zones before encountering apparent competent rock. Ten feet of rock coring was attempted in GT-3 from El. -101.3 NAVD88 to El. -111.3 feet NAVD88 and at GT-5 from El. -91.8 feet NAVD88 to El. -101.8 feet NAVD88. Five feet of rock coring was attempted at GT-4 from -116.8 feet NAVD88 to -121.6 feet NAVD88. Recovery ranged from 0 inches to 16 inches, and the rock quality designation (RQD) ranged from 0 to 10.8%. RQD indicates a rough measure of the degree of jointing or fracture in a rock mass, measured as a percentage of the drill core in lengths of 4 inches or greater. The sum of these core pieces longer than 4 inches divided by the total length of the core run represents the RQD percentage. RQD is used to determine rock mass quality; RQD less than 25% represents very poor quality rock. The relative strength of the rock core recovered was field tested to be R0-R1, very weak to weak. Overall, the rock core recovered was highly weathered and highly fractured.

CPT soundings were performed by ATL using a 10-centimeter electronic piezocone that was pushed from the sediment surface at locations CPT-1 through CPT-4. CPT-2 was terminated early due to loss of equipment but was reattempted at CPT-2A. CPT tests record tip resistance, friction (side) resistance, and pore water pressures continuously. Based on the data recorded during CPT soundings, geologic units can be correlated and identified. The geologic units identified during testing are shown on the CPT logs provided by ATL (Appendix E). Generally, the CPT results align similarly to what was sampled and tested for in the SPT borings. Sediment surface elevation in the CPT logs ranged from El. -17.8 feet NAVD88 to El. -42.4 feet NAVD88. As shown in the CPT logs, the upper 15 to 25 feet of sediment contains higher clay content, and underlying that material clayey silt and

silty clay material with various amounts of sand are present. CPT refusal was assumed to be on the till layer encountered in the SPT. Termination elevations range from El. -86.8 feet NAVD88 to -112.4 feet NAVD88.

1.5.4 Summary of 2013 Pre-Design Investigation

The additional data collected during the 2013 PDI activities allowed for further characterization of the sediments and delineation within the ARC, characterization of the sediments to the south of the ARC, and an assessment of the geotechnical properties of the sediments adjacent to and within the ARC, and the general objectives of the PDI, as outlined above, were met. The results discussed above will be used during the RD, as follows:

- No SAV was identified in the ARC.
- An old bulkhead was observed to run the length of the Site waterfront, including within the ARC, but not immediately in front of Embayment #1.
- The horizontal extent of the ARC was confirmed, and will remain unchanged from what was presented in the ROD. The vertical extent of the sediment removal limits within the ARC will be further refined during the RD.
- Sheen samples collected from the area to the south of the ARC were characterized and the content was determined to petroleum-based, specifically a lubrication-type heavy oil.
- The geotechnical characteristics of the sediments within and near the ARC were determined, and will be further assessed during the RD.
- Material was collected to support future treatability/processing testing (if required).

2. Remedial Design Activities

The RD activities will consist of the development of a Draft Remedial Design Report (RD Report) and finalization of the Draft RD Report based on input from NYSDEC. The RD Report will provide a comprehensive account of design activities and necessary evaluations, modeling, and supporting information to effectively implement the selected remedy. A description of the design process and the remaining design documents are discussed in the following subsections. The preliminary schedule for the activities related to the RD process is discussed in Section 5.

2.1 Draft Remedial Design Report

Upon the NYSDEC's approval of this RD Work Plan, ARCADIS will initiate development of the Draft RD Report. To do so, an evaluation of the data collected during previous remedial investigations (1995 to 2009), and during the 2013 PDI activities, will be performed, and based on those findings a detailed design will be developed to implement the ROD-specified remedy. The design will include details related to the remedial action activities listed in Sections 3 and 4 below and the construction schedule and sequencing of such activities, as well as the design of appropriate engineering controls and temporary facilities (and appurtenances, including safety controls) necessary to support the RA. The monitoring activities anticipated to be performed during implementation of the selected remedy (i.e., water, air, health and safety) will also be detailed in the Draft RD Report. The preliminary lists of anticipated Design Drawings, Technical Specifications, and Supporting Plans to be included with the Draft RD Report are provided in Appendices F, G, and H, respectively, of this RD Work Plan.

The Draft RD Report will represent an approximately 70 percent complete RD, and NYSDEC comments on this RD Work Plan will be incorporated within the Draft RD Report, as appropriate. The purpose of the Draft RD Report will be to allow the NYSDEC to comment on the RD so the Final RD Report can be refined to include any guidance provided by the NYSDEC, and as such to facilitate approval of the Final RD Report.

2.2 Final Remedial Design Report

The Final RD Report will address NYSDEC comments on the Draft RD Report and will be provided to the NYSDEC for final review and approval. The Final RD Report will be certified by a Professional Engineer registered in the State of New York that has had overall responsibility for preparation of the RD.

3. Remedial Action Activities

This section presents a description of the anticipated administrative and construction activities required for implementing the RA at the Site that will serve as foundation for the RD described in Section 2.

3.1 Contractor Procurement

Following NYSDEC approval of the Final RD Report, contractor pre-qualification and preparation of contractor bid documents will be initiated.

Each potential bidder will be required to attend the pre-bid meeting and site walk to review site conditions and discuss the scope of the RA. Prospective contractors will prepare and submit bids to National Grid for review and evaluation. Following review of the bids, the RA contractor will be selected.

3.2 Remedial Construction Elements

This section presents an overview of the major components of the RA construction activities to be performed at the Site.

3.2.1 Mobilization

Prior to initiation of the RA activities, the selected RA contractor will mobilize to the project area. The following mobilization activities are anticipated for this RA:

- Verifying the existing project area conditions and identifying the location of all aboveground and subsurface utilities (e.g., fiber optic cable, electric, gas, water, sewer, telephone), equipment, and structures (as necessary to complete the RA). These activities may include a project area bathymetric survey, if appropriate.
- Mobilizing personnel, equipment, and materials to the project area.
- Coordinating with the City of Hudson, United States Coast Guard, local police and fire departments, Hudson River Cruises, adjacent property owners, and others as necessary.

3.2.2 Work Area Preparation and Controls

Coincident with mobilization, the selected RA contractor will begin preparation and control activities for the Work Area (i.e., the OU2 portion of the Site and the associated support areas). The following preparation and control activities are anticipated for this RA:

- Installing and maintaining security and traffic control for upland areas.
- Identifying and protecting utilities.
- Constructing and maintaining appropriate on-shore staging and material handling areas.
- Installing and maintaining erosion and sedimentation control measures (e.g., turbidity curtains, sheeting, etc.).

The main components of these activities are discussed in more detail below.

3.2.2.1 Work Area Security and Traffic Control

Appropriate temporary fencing and other barriers, as necessary, will be installed and maintained to restrict access to active work areas of the Site and to protect monitoring and construction equipment. A visitor sign-in and sign-out protocol will be implemented at the construction office trailer for the Work Area to monitor all non-worker traffic within work areas, and if necessary, security guards will be retained to monitor work areas and equipment during non-working hours. Daily Safety Meetings, or “tailgate meetings”, will be conducted by the selected RA contractor to discuss routine safety issues and potential hazards that may be encountered during the planned daily activities. Additional meetings will be conducted as necessary, and if work area conditions change.

In addition, traffic control (e.g., signage, flag person) will be provided (and maintained), as necessary, where construction activities may interfere with normal vehicle or pedestrian traffic in the vicinity of the work area.

The approximate locations of temporary fencing and/or other barriers and signage/barriers will be described in the forthcoming design document, and will be shown on the appropriate Design Drawings. It is anticipated that a Maintenance and Protection of Traffic Plan will be developed as part of the RD Report, and will include procedures related to the use and protection of roadways, as appropriate.

3.2.2.2 Identification and Relocation of Utilities

Aboveground and underground utilities that could be affected by the construction activities will be identified prior to initiating any intrusive subsurface activities (e.g., soil disturbance for staging area construction, sediment removal, etc.). Certain utilities are known to be present within and adjacent to OU2. Underground utilities near the work area include fiber optic cable, and potential gas, storm sewer, water, and electric lines, and aboveground utilities include overhead power lines. The selected RA contractor will be responsible for coordinating with Dig Safely New York to determine the locations of all utilities at the start of work and for coordinating with the owners of the utilities regarding the protection/relocation/termination of any utilities, as required.

3.2.2.3 Staging Area and Materials Handling Areas

Areas suitable for use as material and equipment staging areas to facilitate removal and restoration activities will be identified in the RD Report. The use of any areas will be subject to National Grid's ability to obtain permission to access such areas from the respective property owners.

The areas identified for use as temporary staging and/or material handling areas will be cleared and grubbed, as appropriate, to facilitate construction. Access roads will be developed to connect the temporary staging and/or material handling areas to the river and to public roads, as required. Support facilities (e.g., RA contractor offices and sanitary facilities) will be established, and additional areas will be identified for various activities necessary to perform the RA (e.g., staging construction equipment, water treatment, materials preparation, water access).

It is currently anticipated that if temporary stockpiling of sediment will occur, a temporary open-span enclosed containment structure with a negative pressure air handling and treatment system will be installed over the sediment staging and processing area. Temporary stockpiling areas for the sediment will likely be constructed within the containment structure. The stockpile areas would be bermed and lined, and would be graded and sloped to collect any liquid that drains from the removed sediment.

Separate areas outside of the containment structure (if used) would be constructed for storage of imported materials, equipment, a temporary water treatment facility, and stabilizing agents. These areas are anticipated to be bermed to mitigate the potential for surface-water run-on/runoff and to contain any spills associated with the temporary water treatment system.

3.2.2.4 *Environmental Controls*

Prior to construction, environmental control measures will be installed by the selected RA contractor. Such control measures and devices include but are not limited to erosion and sedimentation controls (e.g., silt fence, hay bales), resuspension controls (e.g., sheeting, turbidity curtains, etc.), and absorbent booms. Environmental control devices will be monitored and maintained as necessary throughout the project. These devices will be modified, as needed, based on work area conditions and planned work activities. The selected RA contractor will also be required to take appropriate measures (e.g., absorbent booms, pads, skimmers) to control sheens on the water surface, if any, on a regular basis. Following the completion of restoration activities, all temporary erosion and sedimentation control measures will be removed and disposed of offsite.

3.2.2.5 *Monitoring*

Starting approximately one week prior to construction and continuing during construction, National Grid will monitor environmental conditions in the adjacent Hudson River to verify that there are no adverse impacts to the river associated with construction activities. Specifically, turbidity levels will be monitored outside of the work area turbidity controls at two locations in the Hudson River, upstream and downstream of the work area, allowing for a direct assessment of the potential contribution of the construction activities to the environmental conditions in the river.

The selected RA contractor will install/establish community and work zone air monitoring locations, as required, prior to initiating any intrusive and/or potential dust or odor-generating activities. The community air monitoring program will be the responsibility of the selected RA contractor; however, it will be implemented by a third party subcontractor (under contract with the RA contractor) experienced with remediation projects.

The selected RA contractor will be required to prepare and submit a project -specific Health and Safety Plan (HASP) for use by the RA contractor's onsite personnel during the remedial construction activities to provide a mechanism for establishing safe working conditions at the Work Area. The HASP will be prepared in accordance with all applicable rules and regulations, including Parts 1910 and 1926 of Title 29 of the Code of Federal Regulations (29 CFR 1910 and 29 CFR 1926), and will be certified by a Certified Industrial Hygienist. The RA contractor will be required to take all necessary precautions for the health and safety of all RA contractor employees in compliance with all applicable provisions of federal, state, and local health/safety laws and the provisions associated with the HASP. The RA contractor will assume sole responsibility for the accuracy and content of its HASP.

3.2.3 Debris and Rip-Rap Removal

Existing rip-rap and surface debris along the shoreline of the Hudson River, within the ARC, will be removed to facilitate sediment removal activities. The rip-rap will be temporarily stockpiled in a designated staging area for reuse during restoration activities.

Prior to sediment removal, it is anticipated that a debris survey will be performed in the area to be dredged, and surface obstructions identified during such survey will be removed. The bulkhead discovered during PDI activities will also be further investigated at this time, and an evaluation will be performed as to whether the bulkhead will require removal prior to or during dredging activities. Remaining subsurface debris will be removed during the dredging activities as it is encountered. Removed debris will be transported to the staging area for processing.

3.2.4 Sediment Removal and Backfill

Sediment will generally be removed to depths ranging from 2 to 15 feet bss, and from an overall area of approximately 1.1 acres. During the RD, it will be evaluated whether temporary excavation support (i.e., bracing, sheeting, etc.) will be utilized to isolate the sediment removal area and provide turbidity and sheen control. It is currently anticipated that removal of approximately 9,000 cy of sediment will be performed in the wet using mechanical dredging equipment, however final remedial technologies will be selected during the RD. Dredged sediment will be transported to a staging area for processing for eventual transport offsite for treatment/disposal. Following completion of removal activities, clean backfill will be placed over the dredged area such that the river bottom is restored to the approximate pre-removal elevation and composition.

3.2.5 Material Handling and Disposition

This section describes the various material handling and disposition activities associated with the dredged materials and associated wastes expected to be generated during the OU2 remedial activities. Such activities will be performed in a manner that minimizes the potential for inadvertent releases to the environment and/or unsafe conditions for onsite and offsite personnel.

3.2.5.1 Onsite Handling and Temporary Staging

In general, the transportation of materials between the Hudson River and the temporary staging area(s) will be considered "onsite". Potential transportation routes are currently

being developed, and will be finalized as part of the RD. The specific methods of handling removed sediments and debris will be developed in consideration of: (a) the nature and characteristics of the removed materials; (b) onsite processes needed to prepare the materials for temporary staging and subsequent disposition (e.g., dewatering of materials containing excessive water); and (c) the overall sequence and schedule of the removal actions. Based on these considerations, several handling-related activities will be performed between the time that the debris and sediments are removed from the river and the time they are transported offsite for final disposition.

Debris removed from the river bottom will be placed onto a barge for transport to shore. To the extent practicable, all debris removed from the river bottom will be raised to the surface through and suspended over the removal area, which will likely be surrounded by a temporary excavation support (i.e., bracing, sheeting, etc.) or silt curtain system, with absorbent booms. Prior to placement on the barge, debris will be allowed to dewater by gravity into the river. Debris will be off-loaded from the barge and placed into lined vehicles for transport for temporary stockpiling. As necessary, certain debris items may be placed on near-shore lined and bermed staging areas, to be cut to size to facilitate transport/disposal.

If sediments are removed mechanically, it is anticipated that, similar to the debris removal activities, they initially be allowed to dewater over the water within the removal limits (i.e., from the excavator bucket suspended over the removal area), prior to being directly loaded into sealed vehicles for transport to the temporary staging area. If sediments are removed hydraulically, removed material will be pumped to the temporary staging area for further processing. The specific elements of the onsite handling procedures for removed sediment will be determined during the RD.

3.2.5.2 Water Handling and Treatment

A temporary onsite water treatment system will be installed to treat liquid waste streams generated during the remedial activities (i.e., surface water that collects in the upland work areas and staging area(s), fluids from sediment dewatering, and decontamination fluids that collect in the decontamination area). The specific elements of the temporary water treatment system will be determined during the RD. The temporary onsite water treatment system will be provided, constructed, and operated by the selected RA contractor. It is anticipated that treated water will be discharged to the Hudson River under the requirements of a State Pollution Discharge Elimination System permit- equivalent.

3.2.5.3 Waste Characterization

A screening evaluation of the two samples collected during the PDI activities from the sediments subject to removal was performed to assess whether the excavated sediments would constitute characteristic hazardous waste subject to regulation under the Resource Conservation and Recovery Act (RCRA). This screening evaluation consisted of comparing the analytical data for the sediments subject to excavation to a value equal to 20 times the Toxicity Characteristic Leaching Procedure (TCLP) regulatory limit for each constituent for which such a regulatory limit exists. Based on this screening evaluation, the sediments subject to removal do not constitute characteristic hazardous waste subject to regulation under RCRA. Additional TCLP waste characterization sampling may be conducted.

The results of both the soil and sediment TCLP analyses (if conducted) will be reviewed with representatives of the selected offsite disposal facility(ies) to be sufficiently characterized prior to off-site transport and treatment and/or disposal.

3.2.5.4 Reuse of Rip-Rap

Rip-rap removed to facilitate the sediment removal activities will be reused within the Work Area during restoration activities. Rip-rap for reuse will be stockpiled separately from materials segregated for offsite transportation.

3.2.5.5 Offsite Treatment and/or Disposal

Over-the-road transport of waste materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations. Dump trailers leaving the work area will be lined to reduce the potential for spillage during transportation, manifested, and placarded in accordance with federal and state requirements using waste manifests or bills of lading. The selected RA contractor will be required to comply with all offsite transportation and disposal requirements, and to implement the following procedures associated with the transport of excavated materials from the Work Area to the treatment and/or disposal facilities:

- Employ qualified personnel trained per U.S. Department of Transportation (DOT) requirements for handling and shipping hazardous materials, with such training to include general safety, emergency response, exposure protection, accident prevention, preparation of shipping papers, and securing loads.

- Employ drivers that have a Commercial Driver's License with a Hazardous Materials Endorsement.
- Utilize trucks that are DOT-inspected.
- Include detailed provisions for responding to transportation emergencies such as spills, releases, or other incidents in its HASP, Operations Plan, and Contingency Plan.
- Maintain records of the number of loads of materials sent to the disposal facilities on a daily basis.
- Confirm that the materials are suitable for transport (i.e., no free liquids).

The transport of excavated materials from the Work Area to the treatment and/or disposal facilities will be conducted in accordance with the following guidelines:

- After a safety check of the truck, the truck bed will be lined with polyethylene sheeting. Processed sediment will then be placed in the truck and the load will be covered.
- An appropriate waste manifest or bill of lading will be prepared and completed by National Grid (or its authorized representative), and the selected RA contractor will be responsible for compliance with all offsite transportation and disposal requirements.

3.2.6 Restoration and Demobilization Activities

Following the completion of RA activities, areas disturbed as a result of construction will be restored to pre-existing conditions to the extent practicable. Demobilization of equipment and personnel will follow. The following activities are anticipated to be performed:

- Importing and placing select fill materials to restore the river bed and banks to the original bathymetry;
- Importing, placing, and compacting select fill materials to disturbed upland areas to the original topography;
- Restoring shorelines affected due to debris removal or other construction-related activities;
- Re-vegetating upland areas disturbed as a result of construction activities;

- Restoring surface features disturbed, damaged, or destroyed as the result of RA activities;
- Properly disposing of excess project materials, supplies, and work-derived waste materials;
- Disconnecting any temporary utilities;
- Removing erosion and sedimentation control measures;
- Decontamination of equipment and other project materials associated with RA activities; and
- Demobilizing unused materials, equipment, and personnel from the Work Area and from the Site.

To the extent possible, restoration will be completed with materials similar to the existing substrate. A Restoration Plan will be developed during the design phase and will meet the requirements of Article 15 of the New York State Environmental Law and 6 New York Codes, Rules, and Regulations Part 608.

3.3 Post-Remedial Action Administrative Activities

A Construction Completion Report (CCR), including Record Drawings and Site Management Plan (SMP), will be prepared and submitted to the NYSDEC. These documents are explained in the following sections.

3.3.1 Construction Completion Report

Subsequent to the completion of the RA activities, a CCR will be prepared and submitted to the NYSDEC for review and approval. The purpose of the CCR will be to document the RA activities for the OU2 area and note any deviations from the Final RD Report. The CCR will be prepared under the direction of, and certified by a Professional Engineer licensed in the State of New York directly involved in the RA activities, and will contain the following information:

- A summary of the RA activities performed;

- Record Drawings documenting the removal limits and final configuration of installed restoration features;
- Copies of permits, regulatory documents, and approvals, and relevant project correspondence, as appropriate;
- A description of any deviations from or modifications to the NYSDEC-approved Final RD Report;
- Copies of waste manifests, bills of lading, and/or certificates of treatment/disposal, as appropriate;
- QA/QC testing results; and
- Representative project photographs taken during the RA.

3.3.2 Site Management Plan

Subsequent to the completion of the RA activities for the Site, a SMP for OU2 will be prepared and submitted to the NYSDEC. Due to the extent of the removal activities, no post-remediation monitoring is anticipated and no institutional or engineering controls will be required. The SMP may include the following components:

- The objectives of the SMP;
- Site background and summary of the RA;
- Reporting and certification requirements; and
- A schedule for completion of the SMP activities.

Additional support documents may accompany the SMP, depending on the program requirements and design. Such documents may include, but are not limited to, Quality Assurance Project Plan, Standard Operating Procedures, Field Forms, and a HASP.

4. Permits and Other Authorizations

Certain federal, state, and local permits and other authorizations will be required for the implementation of the RA. Alternately, the substantive permit requirement approvals will be achieved in lieu of actual permits. These permits and other authorizations are summarized in Table 9, based on a preliminary review of pertinent local, state, and federal regulations.

The selected RA contractor must meet the requirements of applicable environmental permits and/or regulations, and all other permits that may be required under local jurisdictions. These permits may include, but are not necessarily limited to, those related to work within the public roadways, work within public waterways, and zoning regulations.

The Indiana bat (*Myotis sodalis*; endangered), the Northern Long-eared bat (*Myotis septentrionalis*; *proposed endangered*), the bog turtle (*Glyptemys muhlenbergii*; threatened), and the New England cottontail (*Sylvilagus transitionalis*; candidate) are included on the U.S. Fish and Wildlife Service list of Federally Listed Endangered and Threatened Species and Candidate Species in New York for Columbia County (U.S. Fish and Wildlife Service 2014), and will need to be considered during the permit authorization process. The National Marine Fisheries Service (NMFS) lists the Shortnose sturgeon and Atlantic sturgeon as endangered throughout their habitat in the Hudson River Bight. As a result it is possible that as part of the permit authorization process, in consideration of a fish protection period, work in the river will be prohibited or limited to between April 1 and September 30.

It is anticipated that initiation of preliminary permitting and RA contractor procurement activities will coincide with the submittal of the Draft RD Report (see Section 5). All appropriate permits must be maintained and a copy must be at the Site throughout the duration of the project.

5. Schedule

It is anticipated that the Draft RD Report will be submitted to the NYSDEC in the summer of 2014, and initiation of preliminary permitting and RA contractor procurement (i.e., contractor pre-qualification) activities will coincide with the submittal. During review of the Draft RD Report by the NYSDEC, National Grid will also initiate development of the Final RD Report. As discussed in Section 4.1, comments provided by the NYSDEC on the Draft RD Report will be incorporated into the Final RD Report. Assuming limited comments by NYSDEC, it is anticipated that the Final RD Report will be submitted to the NYSDEC in the early winter of 2014. Following NYSDEC approval of the Final RD Report, RA activities will continue (i.e., preparation of contractor bid documents, submittal of permit applications, etc.). A preliminary schedule for the activities related to the RD process is presented on Figure 7.

6. References

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Tables

Table 1
Summary of Remedial Investigation Activities Prior to 2013
Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Title	Time Period	Location	Analytical Scope	Other Scope	Reference
Phase I Investigation	November 1995	20 sediment borings: Eighteen sediment borings (SD-1 through SD-18) for Embayment #1 and two background sediment borings (SD-19 and SD-20) approximately 1 mile upstream of the site.	VOCs, SVOCs, PCBs, TPH, TOC, inorganics, RCRA characteristics, diesel fuel, kerosene, lube oil, gasoline, heating value, percent sulfur	N/A	<i>Site Investigation Data Report</i> ; BBL 1996
Phase II Investigation	August and September 1996	12 sediment borings (SD-21 through SD-32): three within Embayment #2 and nine in the Hudson River downstream of Embayment #2.	VOCs, SVOCs, PCBs, TPH, TOC, geotechnical parameters, RCRA characteristics, lead-210, cesium-137, beryllium-7	N/A	<i>Phase II Site Investigation Report</i> ; BBL 1997
Phase III Investigation	March and April 1998	14 sediment borings (SD-33 to SD-46) in the Hudson River near the eastern shore south of the site and across the shipping channel along the western shore of the Hudson River	BTEX, PAHs, inorganics	N/A	<i>Sediment Investigation Report</i> ; BBL 2000
1998 Hudson Petroleum Corp. Site Investigation	1998	5 surface sediment samples at Hudson Petroleum Corporation property north of the site	VOCs, SVOCs, TPH, inorganics	N/A	<i>Draft Site Investigation/Remedial Alternatives Report Hudson Petroleum Corp. Site</i> ; C&A 1998
2000 Sediment Investigation	August 2000	12 sediment samples: Nine sediment samples (XSD-1 to XSD-6) within Embayment #3 and three sediment samples (XSD-7 to XSD-9) within Embayment #4	VOCs, SVOCs, PCBs, inorganics, pesticides, inorganics	N/A	<i>Draft Site Assessment Report, Conrail Site, Hudson, New York</i> ; TAMS 2000
Embayment #2 Investigation	2001	8 sediment borings within Embayment #2 (SD-58 to SD-65)	BTEX, PAHs, PCBs, RCRA metals, TOC	N/A	<i>Embayment #2 Investigation Report</i> ; BBL 2002
2002 Sediment Investigation	April to June 2002	45 sediment borings: 14 previously sampled locations and 22 new locations [SD-66 to SD-88]	PAHs, TOC, geotechnical parameters	Geophysical survey, in-situ vane shear testing, geochronological sampling, benthic macroinvertebrate survey	<i>Comprehensive Sediment Investigation Report</i> ; BBL 2003
2003-2006 PAH Bioavailability and Sediment Toxicity Investigation Activities	2003 to 2006	26 sediment locations within OU2	PAHs (total extractable and porewater)	Toxicity testing (17 locations in OU2)	<i>Characterization of the Bioavailability and Toxicity of PAHs in Aquatic Sediments near the Hudson MGP Site, Hudson, New York</i> ; RETEC 2007
2007 Supplemental Sediment Sampling Activities	October 2007	7 sediment borings (SD-87R, SD-91 through SD-96)	PAHs, forensic PAHs, TOC	N/A	<i>2007 Supplemental Sediment Sampling Letter Report</i> ; ARCADIS BBL 2008
2007-2009 OU2 Sediment Monitoring Program	2007, 2008, 2009	16 sediment monitoring locations for Embayment #1; 3 sediment monitoring locations for Embayment #2	PAH ₁₆ S (9 locations); forensic PAHs and TPH (10 locations); NAPL TPH and PAH (2 locations)	N/A	<i>Revised Comprehensive Sediment Investigation Report</i> ; ARCADIS 2011
2009 Supplemental Sediment Investigation	October 2009	62 surface sediment samples: 53 from the Hudson River adjacent to the site and nine reference location samples north, west, and south of the site; 22 TarGOST™ sediment borings; 5 NAPL confirmation borings	Porewater NOAA PAHs and PAH ₁₆ S; Bulk Sediment NOAA PAHs, PAH ₁₆ S, TOC, SOC, ammonia, pH	Grainsize; PAH bioavailability and benthic macroinvertebrate survey (41 locations); TarGOST™ survey (22 locations)	<i>Revised Comprehensive Sediment Investigation Report</i> ; ARCADIS 2011

Notes:

VOC = Volatile organic compound

TOC = Total organic carbon

PCB = Polychlorinated biphenyl

NAPL = Non-aqueous phase liquid

NOAA PAHs = 34 National Oceanic and Atmospheric Administration PAHs

TPH = Total petroleum hydrocarbons

SVOC = Semivolatile organic compound

PAH₁₆ = 16 priority pollutant PAHs

RCRA = Resource Conservation and Recovery Act hazardous waste characteristics (ignitability, corrosivity, reactivity, toxicity)

OU = Operable Unit

BTEX = Benzene, toluene, ethylbenzene, and total xylene

PAHs = Polycyclic aromatic hydrocarbons

SOC = soot organic carbon

OU = Operable Unit

Table 2
Summary of Federal and State Chemical-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Federal				
Clean Water Act (CWA) - Ambient Water Quality Criteria	40 CFR Part 131; EPA 440/5-86/001 "Quality Criteria for Water - 1986", superseded by "National Recommended Water Quality Criteria: 2009"	S	Criteria for protection of aquatic life and/or human health depending on designated water use.	Applicable to the evaluation of potential impacts to the Hudson River from Site-related constituents.
CWA Section 136	40 CFR 136	G	Identifies guidelines for test procedures for the analysis of pollutants.	Applicable to the evaluation of potential impacts to the Hudson River from site-related constituents.
CWA Section 404	33 USC Chapter 26 Subchapter 4 Section 1341-1346	S	Regulates discharges to surface waters, indirect discharges of water to POTWs, and discharge of dredged or fill material into waters of the U.S. (including wetlands).	Applicable for remedial activities that include dredging or capping and/or the treatment of water generated during excavation and dewatering activities.
RCRA-Regulated Levels for Toxicity Characteristic Leaching Procedure (TCLP) Constituents	40 CFR Part 261.24	S	These regulations specify the TCLP constituent levels for identification of hazardous wastes that exhibit the characteristic of toxicity.	Dredged materials may be sampled and analyzed for TCLP constituents prior to disposal to determine if the materials are hazardous based on the characteristic of toxicity.
Universal Treatment Standards/Land Disposal Restrictions (UTS/LDRs)	40 CFR Part 268.48	S	Identifies hazardous wastes for which land disposal is restricted and provides a set of numerical constituent concentration criteria at which hazardous waste is restricted from land disposal (without treatment).	Applicable if waste is determined to be hazardous and off-site land disposal is contemplated.

Table 2
Summary of Federal and State Chemical-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
New York State				
NYSDEC Guidance on the Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants ("MGPs")	TAGM 4061 (2002) (Division of Environmental Remediation [DER]-4)	G	Outlines the criteria for conditionally excluding coal tar waste and impacted soils/sediment (destined for thermal treatment) from the hazardous waste requirements of 6 NYCRR Parts 370 - 374 and 376; includes waste from former MGPs exhibiting the hazardous characteristic of toxicity for benzene (D018).	This guidance will be used as appropriate in the management of MGP-impacted sediment and coal tar waste generated during the remedial activities.
"Contained-In Criteria" for Environmental Media; Soil Action Levels	TAGM 3028 (1997)	G	Establishes health-based "contained-in" levels for environmental media and debris.	This guidance will be used as appropriate in the management of waste generated during the remedial activities.

Table 2
Summary of Federal and State Chemical-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Technical Guidance for Screening Contaminated Sediments	Division of Fish, Wildlife, and Marine Resources (January 1999).	G	Describes the methodology for establishing numeric sediment cleanup standards. It also provides guidance when evaluating risk management options for contaminated sediment and when determining final contaminant concentrations that will be achieved through remedial efforts.	As specifically stated, "Once it has been determined that a sediment criterion is exceeded, more information is required to determine if remediation is necessary and what actual risks to the environment are present. The volume and location of sediment exceeding a criterion, which levels or protection are exceeded, the persistence of the contaminant, the uncertainty about the criteria, and the results of more detailed, site-specific sediment tests all play a role in making decisions about how, and how much sediment to cleanup in order to eliminate or minimize adverse effects." Consistent with this guidance, Site-specific bioavailability and toxicity assessments were used in determining the sediment remediation area (i.e. the ARC) and a Site-specific SPME pore water TU34 threshold of 5.4.

Table 2
Summary of Federal and State Chemical-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
NYSDEC Ambient Water Quality Standards and Guidance Values	Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 (6/98, addended 4/00 and 6/04)	G	Provides a compilation of ambient water quality standards and guidance values for toxic and non-conventional pollutants for use in the NYSDEC programs.	To be considered in evaluating surface water quality.
Identification and Listing of Hazardous Wastes	6 NYCRR Part 371	S	Outlines criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 371, 373, and 376.	Applicable for determining if materials generated during implementation of remedial activities are hazardous wastes.
New York State Surface Water and Groundwater Quality Standards	6 NYCRR Part 703	S	Establishes quality standards for surface water and groundwater.	Potentially applicable for assessing water quality at the site during remedial activities.

Notes:

CFR = Code of Federal Regulations

EPA = United States Environmental Protection Agency

NYCRR = Official Compilation of Codes, Rules and Regulations of the State of New York

NYSDEC = New York State Department of Environmental Conservation

POTW = publicly owned treatment works

SCGs = Standards, criteria, and guidance

USC = United States Code

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Federal				
Occupational Safety and Health Administration (OSHA) - General Industry Standards	29 CFR Part 1910	S	These regulations consist of occupational safety and health standards which have been found to be national consensus standards or established Federal standards; including worker exposure limits (e.g., 8-hour time-weighted average and ceiling concentrations) for various compounds, and associated training requirements for workers at hazardous waste operations.	Proper respiratory equipment will be worn if it is not possible to maintain the work atmosphere below required concentrations. Appropriate training requirements will be met for remedial workers.
OSHA - Safety and Health Standards	29 CFR Part 1926	S	These regulations provide general construction safety and health standards. These regulations specify the type of safety equipment to be utilized and procedures to be followed during site remediation.	Appropriate safety equipment will be on-site and appropriate procedures will be followed during remedial activities.
OSHA - Record-keeping, Reporting and Related Regulations	29 CFR Part 1904	S	These regulations outline record-keeping and reporting requirements for an employer under OSHA.	These regulations apply to the company(s) contracted to install, operate and maintain remedial actions at hazardous waste sites.
RCRA - Preparedness and Prevention	40 CFR Part 264.30 - 264.37	S	These regulations outline requirements for safety equipment and spill control when treating, handling and/or storing hazardous wastes.	Safety and communication equipment will be installed at the Site as necessary. Local authorities will be familiarized with the Site.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
RCRA - Contingency Plan and Emergency Procedures	40 CFR Part 264.50 - 264.56	S	Provides requirements for outlining emergency procedures to be used following explosions, fires, etc. when storing hazardous wastes.	Emergency and contingency plans will be developed during remedial design. Copies of the plan will be kept on-site.
Clean Water Act (CWA) - Discharge to Waters of the U.S., General Pretreatment Regulations for Existing and new Sources of Pollution and Guidelines for Specification of Disposal Sites for Dredged or Fill Material	40 CFR Parts 403, and 230 Section 404 (b) (1); 33 USC 1341-1346	S	Establishes site-specific pollutant limitations and performance standards which are designed to protect surface water quality. Types of discharges regulated under CWA include: indirect discharge to a POTW, and discharge of dredged or fill material into U.S. waters.	Applicable to remedial activities within and/or adjacent to the Hudson River.
CWA Section 401	33 USC 1341	S	Requires that 401 Water Quality Certification permit be provided to federal permitting agency (USACE) for any activity including, but not limited to, the construction or operation of facilities which may result in any discharge into jurisdictional waters of the U.S..	Applicable to remedial activities within and/or adjacent to the Hudson River.
90 Day Accumulation Rule for Hazardous Waste	40 CFR Part 262.34	S	Allows generators of hazardous waste to store hazardous waste at the generation site for up to 90 days in tanks, containers and containment buildings without having to obtain a RCRA hazardous waste permit.	Potentially applicable to remedial alternatives that involve the storing of hazardous materials on-site.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Rivers and Harbors Act, Sections 9 & 10	33 USC 401 and 403; 33 CFR Parts 320- 330	S	Prohibits unauthorized obstruction or alteration of navigable waters of the U.S. (dredging, fill, cofferdams, piers, etc.). Requirements for permits affecting navigable waters of the U.S.	Potentially applicable to remedial activities within and/or adjacent to the Hudson River.
RCRA - Closure Performance Standard	40 CFR Part 264.111	S	This regulation establishes performance standards required for closing hazardous waste facilities, including: minimizing the need for further maintenance; controlling, minimizing or eliminating post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products; and decontaminating or disposing of contaminated equipment, structures and soils.	Decontamination actions and facilities will be constructed for remedial activities and disassembled after completion.
Standards Applicable to Transporters of Hazardous Waste - RCRA Sections 3002 and 3003	40 CFR Parts 262 and 263	S	Establishes the responsibility of off-site transporters of hazardous waste in the handling, transportation and management of the waste. Requires manifesting, recordkeeping and immediate action in the event of a discharge.	These requirements will be applicable to any company(s) contracted to transport hazardous material from the Site.
United States Department of Transportation (USDOT) Rules for Transportation of Hazardous Materials	49 CFR Parts 107 and 171.1 - 172.558	S	Outlines procedures for the packaging, labeling, manifesting and transporting of hazardous materials.	These requirements will be applicable to any company(s) contracted to transport hazardous material from the Site.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Clean Air Act-National Ambient Air Quality Standards	40 CFR Part 60	S	Establishes ambient air quality standards for protection of public health.	Remedial operations will be performed in a manner that minimizes the production of certain air emissions.
USEPA-Administered Permit Program: The Hazardous Waste Permit Program	RCRA Section 3005; 40 CFR Part 270 and 124	S	Covers the basic permitting, application, monitoring and reporting requirements for off-site hazardous waste management facilities.	Any off-site facility accepting hazardous waste from the Site must be properly permitted. Implementation of the Site remedy will include consideration of these requirements.
Land Disposal Restrictions	40 CFR Part 268	S	Restricts land disposal of hazardous wastes that exceed specific criteria. Establishes Universal Treatment Standards (UTSs) to which hazardous waste must be treated prior to land disposal.	Excavated materials that display the characteristic of hazardous waste or that are de-characterized after generation must be treated to 90% constituent concentration reduction capped at 10 times the UTS.
CERCLA-National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	42 U.S.C. Section 9605; 33 U.S.C. 1321 (d); 40 CFR Part 300	S	Provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.	Potentially applicable to remedial activities that include (but are not limited to) the dredging and disposal or capping of waste material from the Site.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
RCRA Subtitle C	42 U.S.C. Section 6901 et seq.; 40 CFR Part 268	S	Restricts land disposal of hazardous wastes that exceed specific criteria. Establishes UTSS to which hazardous wastes must be treated prior to land disposal.	Potentially applicable to remedial activities that include the dredging and disposal or capping of waste material from the Site.
New York State				
Use and Protection of Waters Program	6 NYCRR Part 608	S	Protection of waters permit program regulates: 1) any disturbance of the bed or banks of a protected stream or water course; 2) construction and maintenance of dams; and 3) excavation or fill in navigable waters of the State.	A permit will be required for the excavation and/or placement of fill associated with the remediation of MGP-impacted sediment in the Hudson River.
Guidelines for the Control of Toxic Ambient Air Contaminants	Division of Air Resources (DAR)-1 (Air Guide 1)	G	Provides guidance for the control of toxic ambient air contaminants in New York State and outlines the procedures for evaluating sources of air pollution.	This guidance may be applicable for remedial alternatives that result in certain air emissions.
Air Resources - Prevention and Control of Air Contamination and Air Pollution, Air Quality Classifications and Standards	6 NYCRR Parts 200, 201, 256, 257, and 269	S	Provides methods to prevent and control air contamination and establishes air quality standards, general classifications, and air quality classifications specific to Columbia County.	These regulations may be applicable for remedial alternatives that result in certain air emissions.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Discharges to Public Waters	New York State Environmental Conservation Law, Section 71-3503	S	Provides that a person who deposits gas tar, or the refuse of a gas house or gas factory, or offal, refuse, or any other noxious, offensive, or poisonous substances into any public waters, or into any sewer or stream running or entering into such public waters, is guilty of a misdemeanor.	During the remedial activities, MGP-impacted materials will not be deposited into public waters or sewers.
New York Hazardous Waste Management System - General	6 NYCRR Part 370	S	Provides definitions of terms and general instructions for the Part 370 series of hazardous waste management.	Hazardous waste is to be managed according to this regulation.
Identification and Listing of Hazardous Wastes	6 NYCRR Part 371	S	Outlines criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 370-373 and 376.	Applicable for determining if solid waste generated during implementation of remedial activities are hazardous wastes. These regulations do not set cleanup standards, but are considered when developing remedial alternatives.
Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities	6 NYCRR Part 372	S	Provides guidelines relating to the use of the manifest system and its recordkeeping requirements. It applies to generators, transporters and treatment, storage or disposal facilities in New York State.	This regulation will be applicable to any company(s) contracted to transport or manage hazardous material generated at the Site.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
New York Regulations for Transportation of Hazardous Waste	6 NYCRR Part 372.3 a-d	S	Outlines procedures for the packaging, labeling, manifesting and transporting of hazardous waste.	These requirements will be applicable to any company(s) contracted to transport hazardous waste from the site.
Waste Transporter Permits	6 NYCRR Part 364	S	Governs the collection, transport and delivery of regulated waste within New York State.	Properly permitted haulers will be used for any waste materials transported off-site.
NYSDEC Technical and Administrative Guidance Memorandums (TAGMs)	NYSDEC TAGMs	G	TAGMs are NYSDEC guidance that are to be considered during the remedial process.	Appropriate TAGMs will be considered during the remedial process.
NYSDEC Technical Guidance for Site Investigation and Remediation	Division of Environmental Remediation (DER)-10 (2010)	G	Outlines the minimum technical activities DEC accepts for remedial projects administered under DER.	This guidance is applicable for various stages of the remediation process (e.g., remedy selection, remedial design, remedial action).
New York Regulations for Hazardous Waste Management Facilities	6 NYCRR Part 373.1.1 - 373.1.8	S	Provides requirements and procedures for obtaining a permit to operate a hazardous waste treatment, storage and disposal facility. Also lists contents and conditions of permits.	Any off-site facility accepting waste from the site must be properly permitted.
Management of Soil and Sediment Contaminated With Coal Tar From Former Manufactured Gas Plants	NYSDEC Program Policy	G	Purpose of the guidance is to facilitate the permanent treatment of soil contaminated with coal tar from former MGPs.	Policy will be considered for D018 hazardous and non-hazardous material removed during removal activities.
Land Disposal Restrictions	6 NYCRR Part 376	S	Restricts land disposal of hazardous wastes that exceed specific criteria.	New York defers to USEPA for UTS/LDR regulations.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
NYSDEC Guidance on the Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants	TAGM 4061(2002) (DER-4)	G	Outlines the criteria for conditionally excluding coal tar waste and impacted soils/sediment from former MGPs which exhibit the hazardous characteristic of toxicity for benzene (D018) from the hazardous waste requirements of 6 NYCRR Parts 370 - 374 and 376 when destined for thermal treatment.	This guidance will be considered, as appropriate, in the management of MGP-impacted sediment and coal tar waste generated during the remedial activities.
National Pollutant Discharge Elimination System (NPDES) Program Requirements, administered under New York State Pollution Discharge Elimination System (SPDES)	40 CFR Parts 122 Subpart B and 125; CWA Sections 301, 303, and 307 (Administered under 6 NYCRR 750-758)	S	Establishes permitting requirements for point source discharges; regulates discharge of water into navigable waters including the quantity and quality of discharge.	Removal activities may involve treatment/disposal of water. If so, water generated at the site will be managed in accordance with NYSDEC SPDES permit requirements.
Remedial Program	6 NYCRR 375.1.8	S	Provides general actions to be considered during the remedial process.	This guidance is applicable for various stages of the remediation process (e.g., remedy selection, remedial design, remedial action).
Presumptive/Proven Remedial Technologies	DER-15 (2007)	G	Provides brief descriptions of generally accepted presumptive/proven (presumptive) remedial technologies suitable for implementing and complying with 6 NYCRR Section 375.1.8.	This guidance is applicable for the remedy selection process and remedial design process.

Table 3
Summary of Federal and State Action-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Notes:

CFR = Code of Federal Regulations

EPA = United States Environmental Protection Agency

MGP = Manufactured Gas Plant

NYCRR = Official Compilation of Codes, Rules and Regulations of the State of New York

NYSDEC = New York State Department of Environmental Conservation

POTW = publicly owned treatment works

SCGs = Standards, criteria, and guidance

USACE = United States Army Corps of Engineers

USC = United States Code

Table 4
Summary of Federal and State Location-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Federal				
National Environmental Policy Act Executive Orders 11988 and 11990	40 CFR 6.302; 40 CFR Part 6, Appendix A	S	Requires federal agencies, where possible, to avoid or minimize adverse impact of federal actions upon wetlands/floodplains and enhance natural values of such. Establishes the “no-net-loss” of waters/wetland area and/or function policy.	To be considered if remedial activities are conducted within the floodplain.
CWA Section 470	33 USC 1344, Section 404; 33 CFR Parts 320-330; 40 CFR Part 230	S	Discharge of dredge or fill materials into waters of the U.S., including wetlands, are regulated by the USACE.	Potentially applicable to remedial activities within and/or adjacent to the Hudson River.
Fish and Wildlife Coordination Act	16 USC 661; 40 CFR 6.302	S	Actions must be taken to protect fish or wildlife when diverting, channeling or otherwise modifying a stream or river.	Potentially applicable to remedial activities within and/or adjacent to the Hudson River. Fish protection period is April 1 to September 30.
Historical and Archaeological Data Preservation Act	16 USC 469a-1	S	Provides for the preservation of historical and archaeological data that might otherwise be lost as a result of alteration of the terrain.	The National Register of Historic Places website indicated no records present for historical sites in the immediate vicinity of the site.
National Historic Preservation Act	16 USC 470; 36 CFR Part 65; 36 CFR Part 800	S	Requirements for the preservation of historic properties.	The National Register of Historic Places website indicated six historic sites are present within 1 mile of the site.

Table 4
Summary of Federal and State Location-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Rivers and Harbors Act	33 USC 401/403	S	Prohibits unauthorized obstruction or alteration of navigable waters of the U.S. (dredging, fill, cofferdams, piers, etc.). Requirement for permits affecting navigable waters of the U.S.	Potentially applicable to remedial activities within and/or adjacent to the Hudson River.
Hazardous Waste Facility Located on a Floodplain	40 CFR Part 264.18(b)	S	Requirements for a treatment, storage and disposal (TSD) facility built within a 100-year floodplain.	Hazardous waste TSD activities (if any) will be designed to comply with applicable requirements cited in this regulation.
Endangered Species Act	16 USC 1531 et seq.; 50 CFR Part 200; 50 CFR Part 402	S	Requires federal agencies to confirm that the continued existence of any endangered or threatened species and their habitat will not be jeopardized by a site action.	The Atlantic Sturgeon (candidate), Short-nose Sturgeon (endangered), the Indiana bat (endangered), the New England cottontail rabbit (candidate), and the bog turtle (threatened) are on the USFWS list of Threatened, Endangered, Sensitive Species for Columbia County.
Floodplains Management and Wetlands Protection	40 CFR 6 Appendix A	S	Activities taking place within floodplains and/or wetlands must be conducted to avoid adverse impacts and preserve beneficial value. Procedures for floodplain management and wetlands protection provided.	To be considered if remedial activities are conducted within the floodplain.

Table 4
Summary of Federal and State Location-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
New York State				
New York State Floodplain Management Development Permits	6 NYCRR Part 500	S	Provides conditions necessitating NYSDEC permits and provides definitions and procedures for activities conducted within floodplains.	Potentially applicable to remedial activities within and/or adjacent to the Hudson River.
New York State Tidal Wetlands Land Use Regulations	6 NYCRR Part 661	S	Establish regulations that allow only those uses of tidal wetlands and areas adjacent thereto that are compatible with the preservation, protection and enhancement of the present and potential values of tidal wetlands.	Potentially applicable if remedial activities are conducted where waters are shallower than 6 feet at mean low tide.
New York State Parks, Recreation, and Historic Preservation Law	New York Executive Law Article 14	S	Requirements for the preservation of historic properties.	The National Register of Historic Places website indicated no records present for historical sites in the immediate vicinity of the MGP site.
Use and Protection of Waters Program	6 NYCRR Part 608	S	Protection of waters permit program regulates: 1) any disturbance of the bed or banks of a protected stream or water course; 2) construction and maintenance of dams; and 3) excavation or fill in navigable waters of the state.	Potentially applicable to remedial activities within and/or adjacent to the Hudson River. Applicable to remedial activities that would increase the river bed elevation.

Table 4
Summary of Federal and State Location-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Regulation	Citation	Potential Standard (S) or Guidance (G)	Summary of Requirements	Applicability to the Remedial Design/Remedial Action
Endangered & Threatened Species of Fish and Wildlife	6 NYCRR Part 182	S	Identifies endangered and threatened species of fish and wildlife in New York.	The shortnosed sturgeon (endangered) is on the List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State.
New York State Coastal Management Program	Significant Fish and Wildlife Habitat Policies 7 and 8	S	Requires that a Consistency Determination be obtained for activities proposed within Significant Fish and Wildlife Habitats	The Hudson River adjacent to the Site is not designated as a Significant Fish and Wildlife Habitat.
Local				
Local Building Permits	N/A	S	Local authorities may require a building permit for any permanent or semi-permanent structure, such as an on-site water treatment system building or a retaining wall.	Substantive provisions are potentially applicable to remedial activities that require construction of permanent or semi-permanent structures.
Codes and Regulations for Sewers	City of Hudson's Code Part II Chapter 240	S	Local coordination with the City of Hudson Department of Municipal Utilities would be required to coordinate water release from the site into the POTW, if applicable.	Removal activities may involve treatment/disposal of water. If so, potential coordination with the City of Hudson may be required.
City Code and Charter	City of Hudson Local Waterfront Revitalization Program (LWRP) – Draft Generic Environmental Impact Statement (DGEIS)	S	Requires that a Coastal Consistency Review be obtained for activities proposed within LWRP, and may require that an EIS be prepared under SEQRA.	Site is located within an area that is included in a LWRP and will require a Coastal Consistency Review through the New York Department of State.

Table 4
Summary of Federal and State Location-Specific Standards, Criteria, and Guidance

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Notes:

CFR = Code of Federal Regulations

ECL = Environmental Conservation Law

EIS = Environmental Impact Statement

MGP = Manufactured Gas Plant

NYCRR = Official Compilation of Codes, Rules and Regulations of the State of New York

NYSDEC = New York State Department of Environmental Conservation

POTW = publicly owned treatment works

SCGs = Standards, criteria, and guidance

SEQRA = State Environmental Quality Review Act

USACE = United States Army Corps of Engineers

USC = United States Code

USFWS = United States Fish and Wildlife Service

Table 10
Permits and Review Requirements Summary Table

Remedial Design Work Plan for Operable Unit 2
National Grid – Hudson (Water Street) Site, Hudson, New York

Regulation/Law	Description Summary	Applicability
Local Requirements		
Hudson Code of Ordinances	Regulates several types of activities that may be applicable to the Remedial Action (RA), including truck traffic and zoning.	Mobilization, material handling and disposal, and demobilization programs applicable to these regulations may require permits to be obtained from City of Hudson.
City of Hudson, Waterfront Revitalization Program	A program instituted by the City of Hudson to reconnect the Hudson River and the waterfront land to the City by restoring the functionality of the City's waterfront.	The RA area is located within the Local Waterfront Revitalization Area Boundary. Therefore a project review by the City of Hudson is required for consistency with the Waterfront Revitalization Program.
New York State Requirements		
State Air Pollution Control Law, ECL Article 19/6NYCRR Parts 201 and 212	The State Air Pollution Control Law and 6 NYCRR Parts 201 and 212 regulate the permitting programs and substantive requirements of the Clean Air Act (CAA), as well as additional regulations and permitting requirements on "minor" sources. The New York State Department of Health requires a Community Air Monitoring Plan (CAMP).	The State Air Pollution Control Law permitting requirements on "minor" sources onsite (i.e., during site preparation, import and handling of clean backfill material) are applicable to the RA. A CAMP is required for the implementation of the RA.
New York State Department of State, Coastal Management Program	The New York State Coastal Zone An application will be Management Program provides a set of statewide policies enforceable on all State and Federal agencies which manage resources and coordinate actions along the State's coastal zone.	A project review form will be submitted to the New York State Department of State to determine if the project is consistent with the Coastal Zone Management Program.
Public Lands Law, Article 6, Section 75	Article 6, Section 75 of the Public Lands Law requires that applications of use of underwater land owned by the state be submitted to the New York Office of General Services.	An application will be sent to the New York State Office of General Services for permission to "use" state lands under water.
New York State Protection of Waters Program, Environmental Conservation Law (ECL) Article 15, Title 5/6 the New York Codes, Rules, and Regulations (5/6 NYCRR) Part 608	The State Protection of Waters Program regulates activities below the ordinary high water elevation of regulated waters through a permit program administered by the New York State Department of Environmental Conservation (NYSDEC).	A Protection of Waters permit application will be submitted to the NYSDEC for the RA work in the Hudson River.
State Environmental Quality Review Act (SEQRA), 6 NYCRR Part 617	In New York State, most projects or activities requiring a state or local government permit require an environmental quality review before a permit can be issued.	The NYSDEC permit application will include site-specific review and the completion of an Environmental Assessment Form under SEQRA.

Table 10
Permits and Review Requirements Summary Table

Remedial Design Work Plan for Operable Unit 2
National Grid – Hudson (Water Street) Site, Hudson, New York

Regulation/Law	Description Summary	Applicability
State Pollutant Discharge Elimination System (SPDES), ECL Article 17, Titles 7 and 8	Discharges of stormwater during the construction and operation of the support facilities during remedial activities require a State Pollutant Discharge Elimination System permit administered by the NYSDEC SPDES program. A General Permit is available for this work.	The RA will be required to meet the substantive requirements of a SPDES Permit.
Federal Requirements		
Clean Water Act (CWA) Section 404	The discharge of fill into regulated waters of the United States requires a permit from the United States Army Corps of Engineers (USACE). Under the federal regulatory program, Nationwide Permit (NWP) #38 authorizes specific activities to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Court ordered remedial actions or related settlements are also authorized by this NWP.	Since the RA is being implemented under a Record of Decision (ROD) agreement with NYSDEC, a Pre-Construction Notification will be submitted to the USACE for the authorization of the sediment removal and backfill under NWP #38.
Section 10 of the Rivers and Harbors Act	Section 10 of the Rivers and Harbor Act requires a permit from USACE for work in navigable waters of the United States. The Hudson River is a navigable water.	Since the RA is being implemented under a ROD agreement with NYSDEC, a Pre-Construction Notification will be submitted to the USACE for the authorization of the work in a Navigable Water under NWP #38.
Clean Water Act, 33 USC Part 1250 et seq.	Section 402 of the CWA requires a permit for discharges of stormwater during construction and operation of facilities.	The State Pollutant Discharge Elimination System permit obtained through the NYSDEC SPDES program satisfies the federal requirement.
Clean Water Act Section 401, Water Quality Certification (WQC)	Section 401 of the CWA requires the State to provide Water Quality Certification for activities authorized under NWP #38.	An application for WQC will be submitted to NYSDEC as part of the NWP #38 authorization process.
Clean Air Act (CAA), 42 USC Part 7401 et seq.	The State Air Pollution Control Law and 6 NYCRR Part 201 regulate the permitting programs and substantive requirements of the CAA. Therefore the CAA requirements are satisfied by complying with the NYS requirements.	Conformance with the State Air Pollution Control Law applicability.

Table 10
Permits and Review Requirements Summary Table

Remedial Design Work Plan for Operable Unit 2
National Grid – Hudson (Water Street) Site, Hudson, New York

Regulation/Law	Description Summary	Applicability
Section 7 of the Endangered Species Act (ESA) and Fish and Wildlife Coordination Act of 2002	Section 7 of the ESA charges Federal agencies to aid in the conservation of listed species by ensuring that the activities they permit are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats.	Under Section 7, consultation will be initiated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (NMFS) to determine if the project may affect a listed endangered or threatened species. The Indiana bat (endangered), the New England cottontail rabbit (candidate), and the bog turtle (threatened) are on the U.S. Fish and Wildlife Service list of Federally Listed Endangered and Threatened Species and Candidate Species in New York for Columbia County. The Atlantic and Shortnose sturgeon are listed by the NMFS as endangered throughout their range.
Section 106 of the National Historic Preservation Act (NHPA)	Section 106 of the NHPA charges Federal agencies to aid in the protection of historic and cultural resources by ensuring that the activities they permit are not likely to impact these resources.	Under Section 106, consultation will be initiated with the State Historic Preservation Office to determine if the project may affect historic or cultural resources.

Notes:

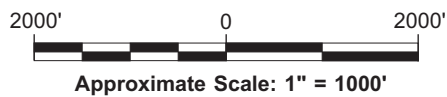
The following federal regulations and guidance may also be applicable to the activities associated with implementing the RA:

- Emergency Planning and Community Right-to-Know Act, 40 CFR 302, 350, 355, 370
- Occupational Safety and Health Administration Standards, 29 CFR 1910 and 1926
- United States Department of Transportation, Transportation Requirements, 49 CFR
- Marine Safety, United States Coast Guard Regulations
- American Society for Testing and Materials, D3740 (Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction) and E329 (Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection)
- International Organization for Standardization, ISO 9000 Quality Management Systems
- American National Standards Institute, ANSI/ASQC E4-1994

Figures



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., HUDSON NORTH, NY, 2013, AND HUDSON SOUTH, NY, 2013.



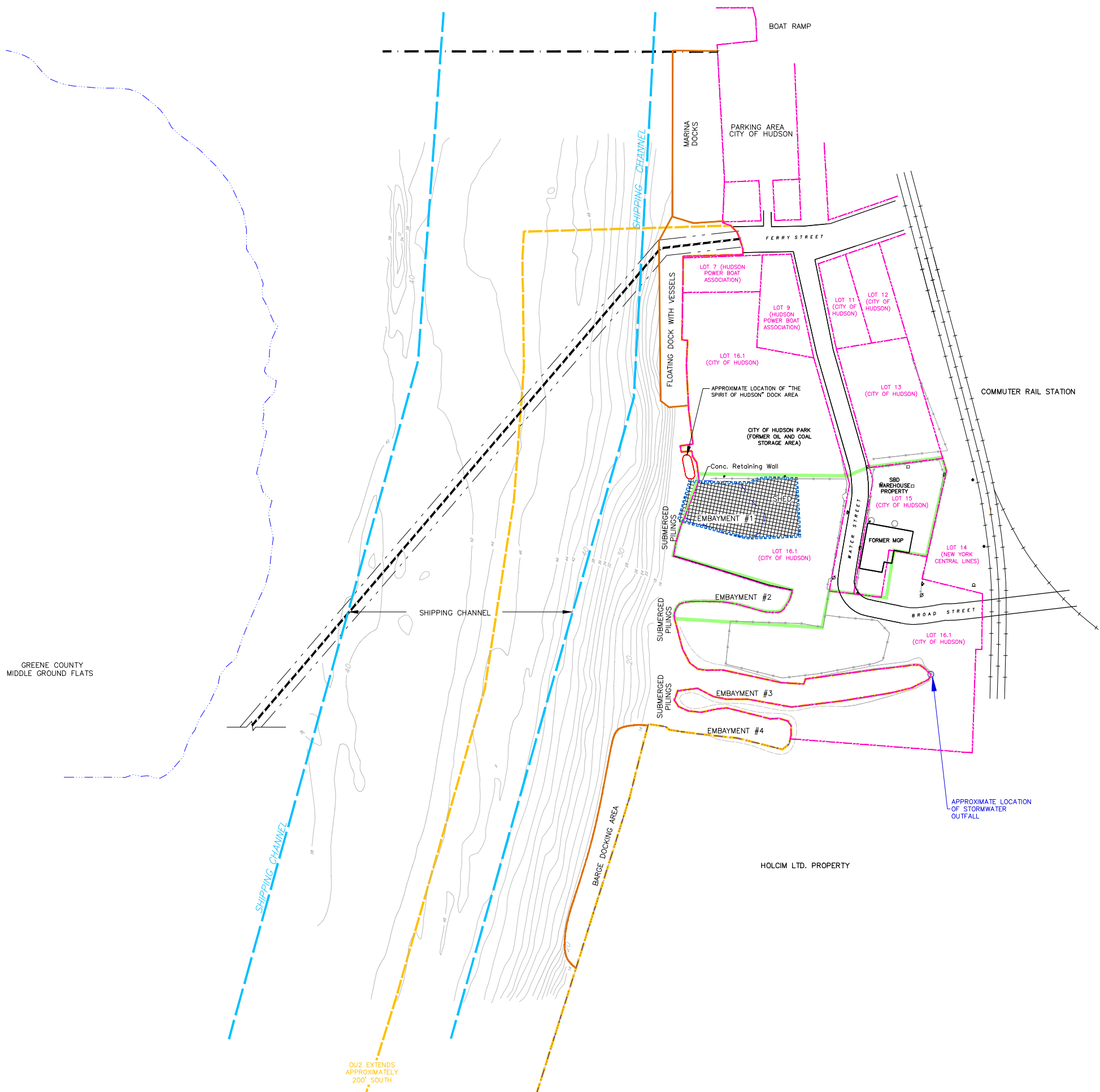
NATIONAL GRID
HUDSON (WATER STREET) SITE, HUDSON, NEW YORK
REMEDIAL DESIGN WORK PLAN FOR OPERABLE UNIT 2

SITE LOCATION MAP

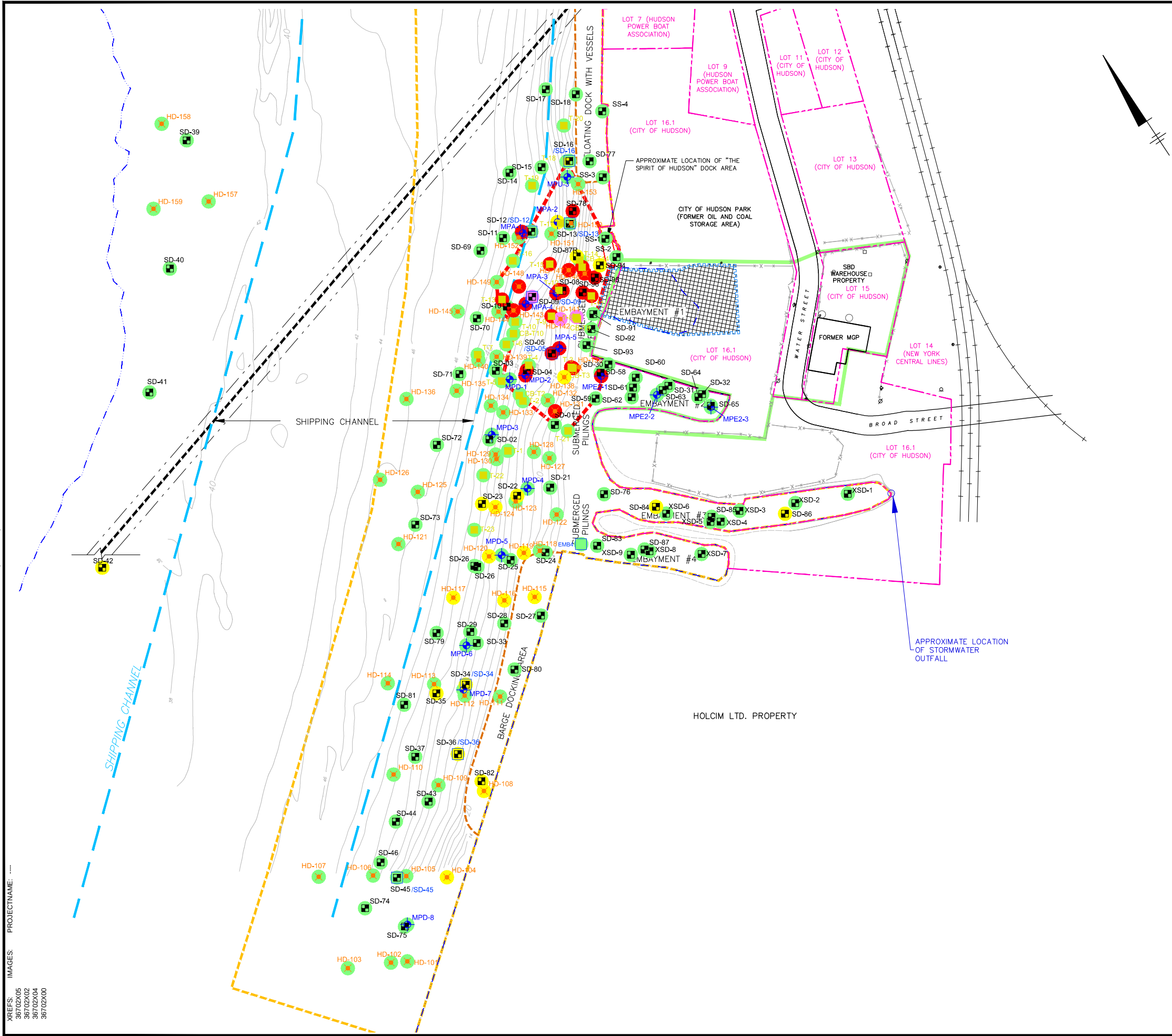


FIGURE
1

CITY:SYRACUSE NY DIV:GROUP:ENV/141 DB:G.Stowell, A.Schilling, R.BASSETT LD: PIC:JAMES NUSS PM:ARTHUR WEEKS TM:ARTHUR WEEKS LY:RON="OFF=REF" G:ENV/CAD/SYRACUSE/ACT/180/038702/0002/0004/DWG/OU2/36702B04.DWG LAYOUT: 2. SAVED: 4/9/2014 8:12 PM ACADVER: 18.15 (LMS TECH) PAGES:SETUP: --- PLOTSTYLETABLE: PLT/FULLCTB PLOTTED: 4/9/2014 8:13 PM BY: BASSETT, RICHARD



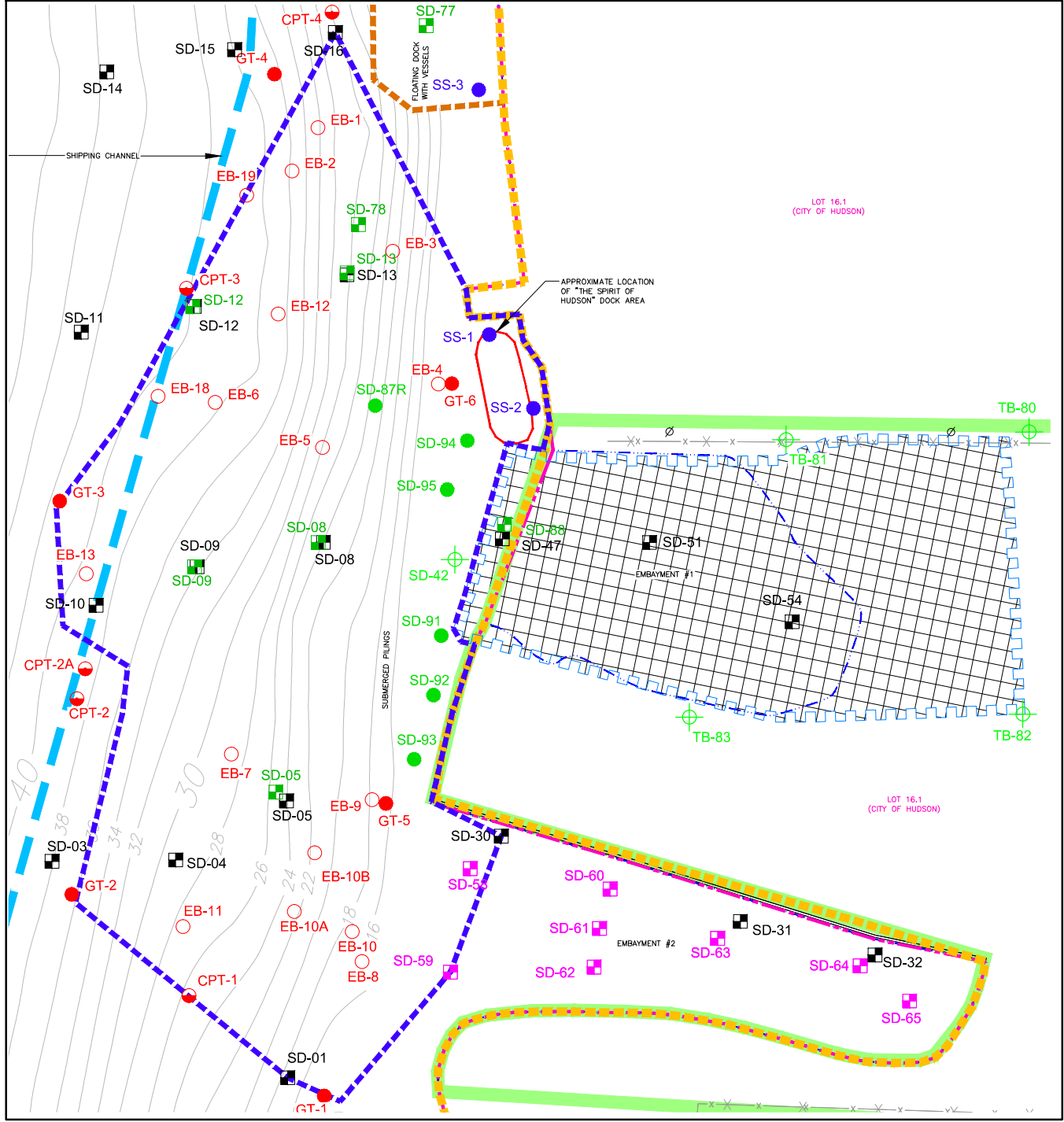




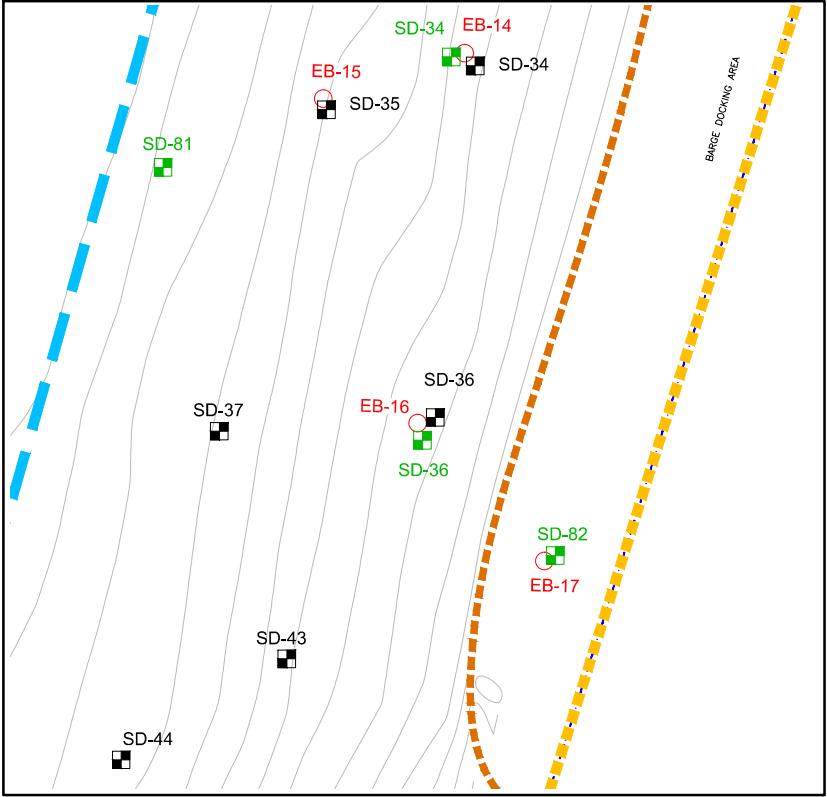
NOTES:

1. BASE MAP FROM TOPOGRAPHIC SURVEY BY BOSK ASSOCIATES, DRAWING FILE HUDSONDL.DWG, DATED 3/24/95. 2. THE RIVER SHORELINE WAS SURVEYED BY ARCADIS USING SURVEY-GRADE GPS EQUIPMENT IN DECEMBER 1995, AUGUST 1996, MARCH 1998, SPRING 2002, AND OCTOBER 2009.
2. OU2 IS IDENTIFIED BY NYSDEC AS A PORTION OF THE HUDSON RIVER ADJACENT TO THE SITE INCLUDING SEDIMENTS IN EMBAYMENTS #2, #3, AND #4.
3. PROPERTY BOUNDARIES AND ADDITIONAL SHORELINE INFORMATION WERE OBTAINED FROM CITY OF HUDSON TAX MAP, 1009.11, DATED MARCH 1987. THE HUDSON RIVER, INCLUDING THE BED OF THE HUDSON RIVER, IS OWNED BY THE STATE OF NEW YORK.
4. APPROXIMATE LOCATION OF BURIED FIBER OPTIC CABLES SCANNED FROM SHEET 2 OF 2 "PLAN & PROFILE HUDSON RIVER CROSSING BETWEEN HUDSON AND ATHENS, COLUMBIA AND GREEN COUNTIES, NEW YORK" BARRETT, BONACCI, HYMAN AND VANWEELE, P.C., 175 A COMMERCE DRIVE, HAUPPAUGE, NEW YORK, OCTOBER 13, 1993. RECEIVED FROM DAVID FINGER, CHIEF ENGINEER, MID-HUDSON CABLE, CATSKILL, NEW YORK.
5. BATHYMETRIC SURVEY CONDUCTED BY OCEAN SURVEYS INC., ON APRIL 26, 2002.
6. AS DESCRIBED IN THE FINAL ENGINEERING REPORT - REMEDIAL ACTION IMPLEMENTATION OF OPERABLE UNIT 1, A PERMANENT SHEETPILE WALL WAS INSTALLED AROUND THE SEDIMENT REMOVAL AREA AND ALONG THE WESTERN ALIGNMENT OF EMBAYMENT #1. THIS STEEL SHEET PILE WALL WAS LEFT IN PLACE TO PROVIDE ADDITIONAL PROTECTION AGAINST THE POTENTIAL LATERAL SUBSURFACE MIGRATION OF IMPACTED MATERIAL FROM SURROUNDING PROPERTIES INTO EMBAYMENT #1. THE SHEETPILE WALL AT THE MOUTH OF EMBAYMENT #1 WAS CUT OFF AT THE MUDLINE FOLLOWING COMPLETION OF THE OU1 REMEDIATION.
7. SEDIMENT SAMPLE LOCATIONS WERE SURVEYED BY ARCADIS USING SURVEY-GRADE GPS EQUIPMENT IN DECEMBER 1995, AUGUST 1996, MARCH 1998, SPRING 2002, AND OCTOBER 2009.

CITY: SYRACUSE DIV/GROUP: ENV/CAD DB: E KRAHMER, R BASSETT LD: PIC: J NUSS PM: A WEEKS TM: A WEEKS LTR: ON=*, OFF=REF*
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AREA 1



AREA 2

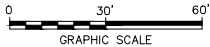
(APPROXIMATELY 400 FEET SOUTH OF AREA 1)

LEGEND:

- GEOTECHNICAL BORING (PRIOR TO 2013)
- IN-WATER ENVIRONMENTAL BORING
- IN-WATER GEOTECHNICAL SOUNDING
- IN-WATER GEOTECHNICAL BORING
- 1995/1996 SEDIMENT CORE AND/OR SAMPLE LOCATION
- 1998 C & A SEDIMENT SAMPLING LOCATION
- 2001 SEDIMENT SAMPLE LOCATION
- 2002 SEDIMENT SAMPLE LOCATION
- 2007 SUPPLEMENTAL SEDIMENT CORE AND/OR SAMPLE LOCATION
- BOUNDARY OF OPERABLE UNIT 1
- APPROXIMATE EXTENT OF OPERABLE UNIT 2
- APPROXIMATE PROPERTY LINE
- CHAIN-LINK FENCE
- AMTRAK RAIL LINES
- BATHYMETRIC CONTOUR (2-FOOT INTERVAL)
- AREAS NOT ACCESSIBLE BY BATHYMETRIC SURVEY BOAT
- APPROXIMATE BOUNDARY OF THE SHIPPING CHANNEL
- EMBAYMENT #1 REMEDIATED AREA
- AS-BUILT SHEETPILE (SEE NOTE #5)
- AREA FOR REMEDIAL CONSIDERATION

NOTES:

1. BASE MAP FROM TOPOGRAPHIC SURVEY BY BOSK ASSOCIATES, DRAWING FILE HUDSONDL.DWG, DATED 3/24/95. 2. THE RIVER SHORELINE WAS SURVEYED BY ARCADIS USING SURVEY-GRADE GPS EQUIPMENT IN DECEMBER 1995, AUGUST 1996, MARCH 1998, SPRING 2002, AND OCTOBER 2009.
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3. PROPERTY BOUNDARIES AND ADDITIONAL SHORELINE INFORMATION WERE OBTAINED FROM CITY OF HUDSON TAX MAP, 1009.11, DATED MARCH 1987. THE HUDSON RIVER, INCLUDING THE BED OF THE HUDSON RIVER, IS OWNED BY THE STATE OF NEW YORK.
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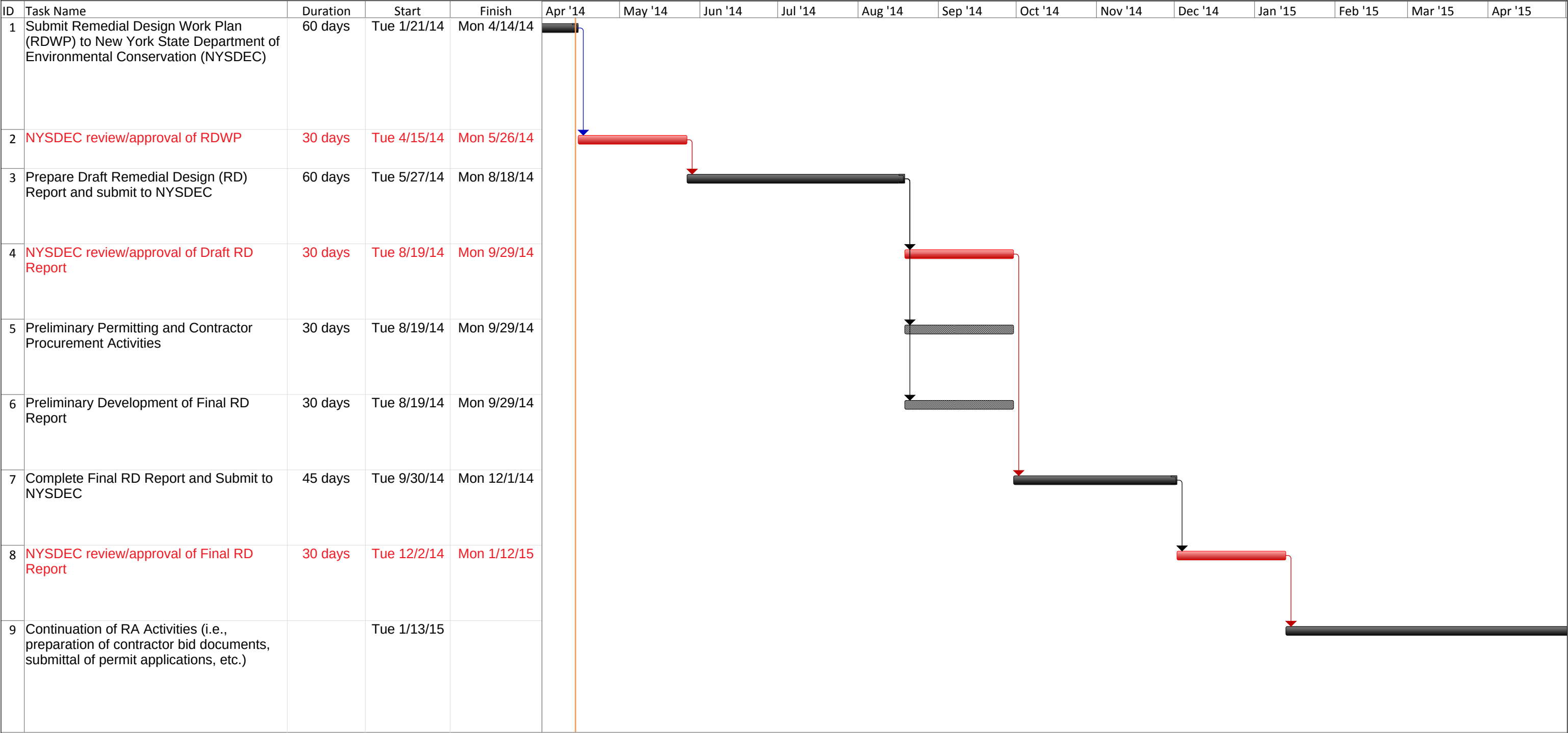
NATIONAL GRID
HUDSON (WATER STREET) SITE, HUDSON, NEW YORK
REMEDIAL DESIGN WORK PLAN FOR
OPERABLE UNIT 2

AREA OF 2013 PRE-DESIGN
INVESTIGATIONS AND FINAL AREA FOR
REMEDIAL CONSIDERATION



National Grid
Hudson (Water Street) Site, Hudson, New York
Remedial Design Work Plan for Operable Unit 2

Figure 7: Preliminary Project Schedule



Appendices



Appendix A

Environmental Boring Logs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
				NR	NA	WOH	0		No recovery, very soft Silt on spoon.
				1.0	0.0	WOH	0		Grey and brown fine to medium SAND, little Silt, Organics (shells), fine to medium Gravel, nonplastic, slow dilatancy. Little viscous tar-like NAPL at 2'-2.3' bss.
				1.2	0.0	WOH	5		SAA, no NAPL.
				2.0	0.0	WOH	8		SAA.
						WOH			Grey fine SAND, little medium Sand, trace fine Gravel, nonplastic, slow dilatancy.
									End of boring at 8.0 ft bss.



ARCADIS

Infrastructure, environment, buildings

Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; DOW = depth of water.

Date Start/Finish: 8/30/13 Drilling Company: ATL Driller's Name: B. Perry, T. Weston Drilling Method: Hollow Stem Auger Sampling Method: 3" x 2' Split Spoon	Northing: 1247089.68 Easting: 681588.23 Penetration Depth: 15.0' bss Water Depth: 24.6' DOW Descriptions By: M. Eriksson	Boring ID: EB-5 Client: National Grid Location: Hudson Water Street Hudson, NY

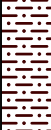
DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
				NR/NR	NA	WOH	0		No recovery, very soft SILT on spoon. Attempted again with no recovery.
						WOH			
						WOH			
						WOH			
				NR/NR	NA	WOH	0		Little sheen on sediment on spoon (2.0 - 4.0).
						WOH			
						WOH			
				0.3	1.7	WOH	0		Grey SILT, nonplastic, slow dilatancy, very soft, trace sheen. Attempted again with no recovery.
						WOH			
-5	-5					1			
				1.8	32.7	7	28		Grey SILT and fine SAND, little fine to medium Gravel, subangular, nonplastic, slow dilatancy.
						14			Little NAPL blebs throughout, sheen (6.0 - 6.8).
						14			Grey fine to medium SAND, little fine GRAVEL, Silt, nonplastic, slow dilatancy.
				1.5	17.2	WOH	3		Little NAPL blebs in slough around sample (8.0 - 10.0).
						WOH			
						3			
						4			
-10	-10			2.0	9.8	WOH	0		Grey silty SAND, little Organics (shells, roots), fine Gravel, nonplastic, slow dilatancy.
						WOH			
						WOH			
				2.0	0.0	WOH	0		
						WOH			
						WOH			
						2			
				1.0	0.0	WOH	NA		
						2			
-15	-15								End of boring at 15.0 ft bss.

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; DOW = depth of water.

Date Start/Finish: 8/29/13 Drilling Company: ATL Driller's Name: B. Perry, T. Weston Drilling Method: Hollow Stem Auger Sampling Method: 3" x 2' Split Spoon	Northing: 1246910.86 Easting: 681488.48 Penetration Depth: 8.0' bss Water Depth: 22.7' DOW Descriptions By: M. Eriksson	Boring ID: EB-8 Client: National Grid Location: Hudson Water Street Hudson, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
0	0			2.0	0.0	4	6		Grey silty SAND, fine Gravel, little Organics (shells, roots), nonplastic, slow dilatancy.
						4			
						2			Increasing sand content and stiffness with depth.
						0			
				2.0	4.7	WOH	14		Trace NAPL blebs from 1.7 - 2.3 ft bss.
						7			
						7			
				2.0	0.0	NA			
-5	-5					NA			
						NA			
				1.0	0.0	NA			
						NA			
						NA			1"x1" coal with trace NAPL blebs.
						NA			
-10	-10								End of boring at 8.0 ft bss.
-15	-15								

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; DOW = depth of water.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
				NR/NR	NA	WOH	0		No recovery after two attempts, very soft sediment.
						WOH			
						WOH			
						WOH			
				NR/NR	NA	WOH	0		No recovery.
						WOH			
						WOH			
						WOH			
-5	-5			NR/0.3	189.4	WOH	0		Grey SILT, Organics (shell fragments on outside of spoon), very soft, little NAPL blebs and sheen (4.0 - 4.3), possibly from above.
						WOH			
						WOH			
				NR/NR	NA	WOH	0		No recovery, grey soft Silt on spoon.
						WOH			
						WOH			
						WOH			
				2.0	211.7	1	2		Grey fine SAND, some fine to medium Gravel, angular, little Silt, Organics (shells), nonplastic, slow dilatancy. Little NAPL blebs throughout, MGP-like odor (8.0 - 8.7).
						2			Grey sandy SILT, little Organics (roots), trace Clay. NAPL blebs throughout sample (8.7 - 9.4), little NAPL stain.
						WOH			
-10	-10			1.5	126.2	2	2		Grey SILT, little fine Sand, Organics (roots, shells), trace Clay, nonplastic, slow dilatancy. Trace to little NAPL blebs throughout (9.4 - 10.0). Stiffness increases with depth (10.0 -13.0).
						1			
						1			
						2			
				1.7	70.2	3	3		
						1			
						2			
						1			
-15	-15								End of boring at 14.0 ft bss.



ARCADIS
Infrastructure, environment, buildings

Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; DOW = depth of water.

Date Start/Finish: 8/29/13 Drilling Company: ATL Driller's Name: B. Perry, T. Weston Drilling Method: Hollow Stem Auger Sampling Method: 3" x 2' and 2" x 2' Split Spoon	Northing: 1246922.97 Easting: 681491.88 Penetration Depth: 14.0' bss Water Depth: 13.6' DOW Descriptions By: M. Eriksson	Boring ID: EB-10 Client: National Grid Location: Hudson Water Street Hudson, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
				NR	NA	WOH	0		No recovery, very soft sediment.
				0.5	0.0	WOH	0		Grey and brown fine to coarse SAND and GRAVEL, little Organics (shells), Silt, Slag, nonplastic, slow dilatancy, very soft, loose. Trace sheen.
				NR/NR	NA	WOH	0		No recovery, very soft. Re-attempt after moving a few inches, no recovery on second attempt, very soft.
				1.7	0.0	WOH	0		Grey SILT, little fine Sand, Organics (shells), fine to medium Gravel, little to trace Clay, nonplastic, slow dilatancy. Trace sheen, possibly from above.
				1.4	0.0	WOH	1		Grey fine SAND, little fine Gravel, Organics (shells), nonplastic, slow dilatancy.
				2.0	0.0	WOH	2		
				0.6	0.0	WOH	2		
									End of boring at 14.0 ft bss.

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; DOW = depth of water.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
				1.0	0.0	2	4		Grey and brown fine SAND, some Silt, little Organics (shells), fine Gravel, nonplastic, slow dilatancy.
						2			Little viscous tar-like NAPL at 0.5'-1.0' bss, little blebs, MGP-like odor.
						2			
				2.0	17.2	2			
						3	5		Grey fine SAND, trace Organics (roots), nonplastic, slow dilatancy.
						3			
						2			
				1.0	0.0	1			
						3	NA		
						3			
5	5								End of boring at 5.0 ft bss.
									</

Date Start/Finish: 9/10/13 Drilling Company: ATL Driller's Name: M. Childs, T. Weston Drilling Method: Hollow Stem Auger Sampling Method: 3" x 2' Split Spoon	Northing: 1247142.73 Easting: 681544.99 Penetration Depth: 3.0' bss Water Depth: 37.1' DOW Descriptions By: M. Eriksson	Boring ID: EB-18 Client: National Grid Location: Hudson Water Street Hudson, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Blow Counts	N - Value	Geologic Column	Stratigraphic Description
0	0			NA	NA	NA	NA		Grey and brown fine to medium SAND and fine to coarse subangular GRAVEL. Trace sheen (0 - 0.3) ft bss.
1	1					NA			
2	2					NA			
3	3					NA			
4	4			NA	NA	NA	NA		SAA, no sheen.
5	5								End of boring at 3.0 ft bss.
10	10								
15	15								

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; DOW = depth of water.



Appendix B

Solid Phase Microextraction Data
Report and Table of Calculated
Toxicity Unit Values

TABLE B-1
Calculated Toxicity Unit Values

National Grid Hudson (Water Street) Site
Hudson, NY

Sample ID: Date Sampled:	FCV	Units	EB-1(0-1) 9/9/2013		EB-6(0-1.4) 8/29/2013		EB-11(0-1) 8/30/2013		EB-13(0-1) 8/28/2013		EB-18(0-1.5) 9/10/2013	
			Result	IWTU _{FCV}	Result	IWTU _{FCV}	Result	IWTU _{FCV}	Result	IWTU _{FCV}	Result	IWTU _{FCV}
Polycyclic Aromatic Hydrocarbons												
Naphthalene	193.5	ug/L	1.6	0.0083	2,140	11	88.9 [164]	0.65	2850	15	1640	8.5
2-Methylnaphthalene	72.16	ug/L	5.6	0.078	621	8.6	160 [211]	2.6	517	7.2	403	5.6
1-Methylnaphthalene	75.37	ug/L	8.1	0.11	420	5.6	135 [164]	2.0	342	4.5	314	4.2
C2-Naphthalenes	30.24	ug/L	37.8	1.3	376	12	199 [239]	7.2	367	12	305	10
C3-Naphthalenes	11.1	ug/L	37.7	3.4	192	17	124 [149]	12	199	18	161	15
C4-Naphthalenes	4.048	ug/L	17.7	4.4	6.6	1.6	49.5 [59.8]	14	71.5	18	60.6	15
Acenaphthylene	306.9	ug/L	1.4	0.0046	17.3	0.056	7.0 [8.2]	0.025	24.0	0.078	15.9	0.052
Acenaphthene	55.85	ug/L	18.0	0.32	453	8.1	116 [122]	2.1	348	6.2	333	6.0
Fluorene	39.3	ug/L	7.5	0.19	250	6.4	83.2 [91.2]	2.2	190	4.8	170	4.3
C1-Fluorenes	13.99	ug/L	8.6	0.61	50.1	3.6	43.5 [50.7]	3.4	53.0	3.8	46.8	3.3
C2-Fluorenes	5.305	ug/L	4.5	0.85	21.4	4.0	20.2 [22.2]	4.0	21.8	4.1	18.3	3.4
C3-Fluorenes	1.916	ug/L	1.3	0.68	4.0	2.1	2.9 [3.5]	1.7	3.7	1.9	3.8	2.0
Phenanthrene	19.13	ug/L	10.2	0.53	416	22	67 [75.8]	3.7	196	10	204	11
Anthracene	20.73	ug/L	2.1	0.10	41.5	2.0	14 [16.4]	0.73	36.0	1.7	37.7	1.8
C1-Phenanthrenes/Anthracenes	7.436	ug/L	4.8	0.65	35.2	4.7	19.9 [23.9]	2.9	35.3	4.7	31.8	4.3
C2-Phenanthrenes/Anthracenes	3.199	ug/L	3.2	1.0	16.6	5.2	10.6 [12.4]	3.6	16.7	5.2	14.4	4.5
C3-Phenanthrenes/Anthracenes	1.256	ug/L	1.3	1.0	9.0	7.2	4.6 [6.2]	4.3	8.3	6.6	7.3	5.8
C4-Phenanthrenes/Anthracenes	0.5594	ug/L	1.0 U	ND	3.6	6.4	1.7 [2.1]	3.4	3.1	5.5	3.1	5.5
Fluoranthene	7.109	ug/L	1.3	0.18	25.5	3.6	6.2 [7.1]	0.94	21.7	3.1	21.1	3.0
Pyrene	10.11	ug/L	1.3	0.13	17.1	1.7	4.4 [5]	0.46	14.1	1.4	14.2	1.4
C1-Fluoranthenes/Pyrenes	4.887	ug/L	0.61	0.12	5.6	1.1	2.6 [3.2]	0.59	5.5	1.1	5	1.0
Benzo(a)anthracene	2.227	ug/L	0.057	0.026	0.97	0.44	0.24 [0.31]	0.12	0.87	0.39	0.81	0.36
Chrysene	2.042	ug/L	0.059	0.029	0.75	0.37	0.21 [0.25]	0.11	0.65	0.32	0.61	0.30
C1-Benzo(a)anthracenes/Chrysenes	0.8557	ug/L	0.035	0.041	0.35	0.41	0.12 [0.14]	0.15	0.30	0.35	0.27	0.32
C2-Benzo(a)anthracenes/Chrysenes	0.4827	ug/L	0.014 U	ND	0.014 U	ND	0.014 U [0.014 U]	ND	0.014 U	ND	0.014 U	ND
C3-Benzo(a)anthracenes/Chrysenes	0.1675	ug/L	0.017 U	ND	0.017 U	ND	0.017 U [0.017 U]	ND	0.017 U	ND	0.017 U	ND
C4-Benzo(a)anthracenes/Chrysenes	0.07062	ug/L	0.024 U	ND	0.024 U	ND	0.024 U [0.024 U]	ND	0.024 U	ND	0.024 U	ND
Benzo(b)fluoranthene	0.6774	ug/L	0.024 U	ND	0.066	0.097	0.024 U [0.024 U]	ND	0.053	0.078	0.041	0.061
Benzo(k)fluoranthene	0.6415	ug/L	0.024 U	ND	0.11	0.17	0.024 U [0.024 U]	ND	0.071	0.11	0.056	0.087
Benzo(e)pyrene	0.9008	ug/L	0.024 U	ND	0.049	0.054	0.024 U [0.024 U]	ND	0.031	0.034	0.024	0.027
Benzo(a)pyrene	0.9573	ug/L	0.024 U	ND	0.098	0.10	0.024 U [0.024 U]	ND	0.065	0.068	0.054	0.056
Perylene	0.9008	ug/L	0.024 U	ND	0.024 U	ND	0.024 U [0.024 U]	ND	0.024 U	ND	0.024 U	ND
Indeno(1,2,3-cd)pyrene	0.275	ug/L	0.024 U	ND	0.024 U	ND	0.024 U [0.024 U]	ND	0.024 U	ND	0.024 U	ND
Dibenzo(a,h)anthracene	0.2825	ug/L	0.024 U	ND	0.024 U	ND	0.024 U [0.024 U]	ND	0.024 U	ND	0.024 U	ND
Benzo(g,h,i)perylene	0.4391	ug/L	0.024 U	ND	0.024 U	ND	0.024 U [0.024 U]	ND	0.024 U	ND	0.024 U	ND
ΣIWTU_{FCV}			16		136		73		136		116	

Abbreviations:

[] = duplicate

FCV = final chronic value

IWTU_{FCV} = Interstitial Water Toxic Unit calculated by dividing the dissolved interstitial water concentration by the final chronic value (FCV)

ND = non-detect

U = constituent not detected at the reporting limit indicated

ug/L = microgram(s) per liter

Notes:

- Toxicity units for interstitial water (pore water) obtained from the following guidance: U.S. EPA. 2003. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. U.S. Environmental Protection Agency, Office of Research and Development, Washington, DC. EPA/600/R-02/013. Non-detects excluded from the IWTU_{FCV} summation.
- Duplicates were processed as follows: If both the parent and duplicate were detected, the average was calculated. If both the parent and duplicate were not detected, the minimum reporting limit was selected. If either the parent or duplicate was detected and the other was not detected, the detected result was selected.

October 28, 2013

Adam Etringer
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065

**RE: PAHs in Pore Water by Solid Phase Microextraction (SPME) Results: Project
Hudson Water Street
SDG #: AQ130831, AQ130912 (MC24019, MC24285)**

Dear Adam:

Enclosed please find the final report for the PAHs in pore water by solid phase microextraction (SPME) results for samples from the Hudson Water Street site. The samples were analyzed using ASTM Method D7363-13.

The results are included in the laboratory report generated by Accutest Laboratories of New England. I have reviewed their results and confirmed the findings.

Note that as per the changes incorporated into ASTM Method D7363-13, the concentrations of the alkylated PAH ranges were calculated using the relative response factors from NIST SRM 1991 analyzed with the sample batch.

Please let me know if you have any questions or need additional services.

Sincerely,



David M. Mauro
President, Senior Scientist



10/25/13

Technical Report for

META Environmental, Inc.

Arcadis, National Grid, Water Street, Hudson, NY

Accutest Job Number: MC24019

Sampling Dates: 08/28/13 - 08/30/13

Report to:

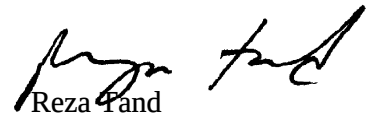
META Environmental, Inc.
49 Clarendon St.
Watertown, MA 02472
dmauro@metaenv.com

ATTN: Dave Mauro

Total number of pages in report: **322**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Reza Fand
Lab Director

Client Service contact: Matthew Morrell 508-481-6200

Certifications: MA (M-MA136, SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.

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Sample Summary

META Environmental, Inc.

Job No: MC24019

Arcadis, National Grid, Water Street, Hudson, NY

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC24019-1	08/28/13	15:00 MWE	08/31/13	SO	Sediment	EB-13(0-1)
MC24019-2	08/29/13	15:00 MWE	08/31/13	SO	Sediment	EB-6(0-1.4)
MC24019-3	08/30/13	07:45 MWE	08/31/13	SO	Sediment	EB-11(0-1)
MC24019-4	08/30/13	00:00 MWE	08/31/13	SO	Sediment	DUP-1-SPME

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: META Environmental, Inc.

Job No MC24019

Site: Arcadis, National Grid, Water Street, Hudson, NY

Report Date 10/25/2013 2:46:39 PM

4 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on between 08/28/2013 and 08/30/2013 and were received at Accutest on 08/31/2013 properly preserved, at 2.4 Deg. C and intact. These Samples received an Accutest job number of MC24019. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method D7363-11/8272

Matrix: AQ	Batch ID: MSS1482

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC24019-3DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ	Batch ID: MSS1483

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24019-4DUP were used as the QC samples indicated.

Matrix: AQ	Batch ID: MSS1490

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24019-1DUP were used as the QC samples indicated.

Matrix: AQ	Batch ID: MSS1491

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24019-1DUP were used as the QC samples indicated.

Matrix: AQ	Batch ID: MSS1492

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24019-2DUP were used as the QC samples indicated.

Matrix: AQ	Batch ID: MSS1493

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC24019-2DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM21 2540 B MOD.**Matrix:** SO**Batch ID:** GN44183

- Sample(s) JB44644-5TDUP were used as the QC samples for Solids, Percent.

Matrix: SO**Batch ID:** GN44262

- Sample(s) MC24207-5DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (MC24019).

Summary of Hits

Job Number: MC24019
Account: META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Collected: 08/28/13 thru 08/30/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

MC24019-1 EB-13(0-1)

Naphthalene	2850	8.0	ug/l	D7363-11/8272
2-Methylnaphthalene	517	4.0	ug/l	D7363-11/8272
1-Methylnaphthalene	342	4.0	ug/l	D7363-11/8272
C2-Naphthalenes	367	0.56	ug/l	D7363-11/8272
C3-Naphthalenes	199	0.91	ug/l	D7363-11/8272
C4-Naphthalenes	71.5	1.1	ug/l	D7363-11/8272
Acenaphthylene	24.0	0.20	ug/l	D7363-11/8272
Acenaphthene	348	2.0	ug/l	D7363-11/8272
Fluorene	190	1.2	ug/l	D7363-11/8272
C1-Fluorenes	53.0	0.16	ug/l	D7363-11/8272
C2-Fluorenes	21.8	0.20	ug/l	D7363-11/8272
C3-Fluorenes	3.7	0.34	ug/l	D7363-11/8272
Phenanthrene	196	1.2	ug/l	D7363-11/8272
Anthracene	36.0	0.12	ug/l	D7363-11/8272
C1-Phenanthrenes/Anthracenes	35.3	0.21	ug/l	D7363-11/8272
C2-Phenanthrenes/Anthracenes	16.7	0.38	ug/l	D7363-11/8272
C3-Phenanthrenes/Anthracenes	8.3	0.41	ug/l	D7363-11/8272
C4-Phenanthrenes/Anthracenes	3.1	1.0	ug/l	D7363-11/8272
Fluoranthene	21.7	0.040	ug/l	D7363-11/8272
Pyrene	14.1	0.040	ug/l	D7363-11/8272
C1-Fluoranthenes/Pyrenes	5.5	0.078	ug/l	D7363-11/8272
Benzo(a)anthracene	0.87	0.0040	ug/l	D7363-11/8272
Chrysene	0.65	0.0040	ug/l	D7363-11/8272
C1-Benzo(a)anthracenes/Chrysenes	0.30	0.0065	ug/l	D7363-11/8272
Benzo(b)fluoranthene	0.053	0.024	ug/l	D7363-11/8272
Benzo(k)fluoranthene	0.071	0.024	ug/l	D7363-11/8272
Benzo(e)pyrene	0.031	0.024	ug/l	D7363-11/8272
Benzo(a)pyrene	0.065	0.024	ug/l	D7363-11/8272

MC24019-2 EB-6(0-1.4)

Naphthalene	2140	8.0	ug/l	D7363-11/8272
2-Methylnaphthalene	621	4.0	ug/l	D7363-11/8272
1-Methylnaphthalene	420	4.0	ug/l	D7363-11/8272
C2-Naphthalenes	376	0.56	ug/l	D7363-11/8272
C3-Naphthalenes	192	0.91	ug/l	D7363-11/8272
C4-Naphthalenes	6.6	1.1	ug/l	D7363-11/8272
Acenaphthylene	17.3	0.20	ug/l	D7363-11/8272
Acenaphthene	453	2.0	ug/l	D7363-11/8272
Fluorene	250	1.2	ug/l	D7363-11/8272
C1-Fluorenes	50.1	0.16	ug/l	D7363-11/8272
C2-Fluorenes	21.4	0.20	ug/l	D7363-11/8272
C3-Fluorenes	4.0	0.34	ug/l	D7363-11/8272

Summary of Hits

Job Number: MC24019
Account: META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Collected: 08/28/13 thru 08/30/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Phenanthrene		416	1.2		ug/l	D7363-11/8272
Anthracene		41.5	0.12		ug/l	D7363-11/8272
C1-Phenanthrenes/Anthracenes		35.2	0.21		ug/l	D7363-11/8272
C2-Phenanthrenes/Anthracenes		16.6	0.38		ug/l	D7363-11/8272
C3-Phenanthrenes/Anthracenes		9.0	0.41		ug/l	D7363-11/8272
C4-Phenanthrenes/Anthracenes		3.6	1.0		ug/l	D7363-11/8272
Fluoranthene		25.5	0.040		ug/l	D7363-11/8272
Pyrene		17.1	0.040		ug/l	D7363-11/8272
C1-Fluoranthenes/Pyrenes		5.6	0.078		ug/l	D7363-11/8272
Benzo(a)anthracene		0.97	0.0040		ug/l	D7363-11/8272
Chrysene		0.75	0.0040		ug/l	D7363-11/8272
C1-Benzo(a)anthracenes/Chrysenes		0.35	0.0065		ug/l	D7363-11/8272
Benzo(b)fluoranthene		0.066	0.024		ug/l	D7363-11/8272
Benzo(k)fluoranthene		0.11	0.024		ug/l	D7363-11/8272
Benzo(e)pyrene		0.049	0.024		ug/l	D7363-11/8272
Benzo(a)pyrene		0.098	0.024		ug/l	D7363-11/8272

MC24019-3 EB-11(0-1)

Naphthalene	88.9	0.80	ug/l	D7363-11/8272
2-Methylnaphthalene	160	0.40	ug/l	D7363-11/8272
1-Methylnaphthalene	135	0.40	ug/l	D7363-11/8272
C2-Naphthalenes	199	0.56	ug/l	D7363-11/8272
C3-Naphthalenes	124	0.91	ug/l	D7363-11/8272
C4-Naphthalenes	49.5	1.1	ug/l	D7363-11/8272
Acenaphthylene	7.0	0.20	ug/l	D7363-11/8272
Acenaphthene	116	0.20	ug/l	D7363-11/8272
Fluorene	83.2	0.12	ug/l	D7363-11/8272
C1-Fluorenes	43.5	0.16	ug/l	D7363-11/8272
C2-Fluorenes	20.2	0.20	ug/l	D7363-11/8272
C3-Fluorenes	2.9	0.34	ug/l	D7363-11/8272
Phenanthrene	67.0	0.12	ug/l	D7363-11/8272
Anthracene	14.0	0.12	ug/l	D7363-11/8272
C1-Phenanthrenes/Anthracenes	19.9	0.21	ug/l	D7363-11/8272
C2-Phenanthrenes/Anthracenes	10.6	0.38	ug/l	D7363-11/8272
C3-Phenanthrenes/Anthracenes	4.6	0.41	ug/l	D7363-11/8272
C4-Phenanthrenes/Anthracenes	1.7	1.0	ug/l	D7363-11/8272
Fluoranthene	6.2	0.040	ug/l	D7363-11/8272
Pyrene	4.4	0.040	ug/l	D7363-11/8272
C1-Fluoranthenes/Pyrenes	2.6	0.078	ug/l	D7363-11/8272
Benzo(a)anthracene	0.24	0.0040	ug/l	D7363-11/8272
Chrysene	0.21	0.0040	ug/l	D7363-11/8272
C1-Benzo(a)anthracenes/Chrysenes	0.12	0.0065	ug/l	D7363-11/8272

Summary of Hits

Job Number: MC24019
Account: META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Collected: 08/28/13 thru 08/30/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
MC24019-4 DUP-1-SPME						
Naphthalene		164	0.80		ug/l	D7363-11/8272
2-Methylnaphthalene		211	0.40		ug/l	D7363-11/8272
1-Methylnaphthalene		164	0.40		ug/l	D7363-11/8272
C2-Naphthalenes		239	0.56		ug/l	D7363-11/8272
C3-Naphthalenes		149	0.91		ug/l	D7363-11/8272
C4-Naphthalenes		59.8	1.1		ug/l	D7363-11/8272
Acenaphthylene		8.2	0.20		ug/l	D7363-11/8272
Acenaphthene		122	0.20		ug/l	D7363-11/8272
Fluorene		91.2	0.12		ug/l	D7363-11/8272
C1-Fluorenes		50.7	0.16		ug/l	D7363-11/8272
C2-Fluorenes		22.2	0.20		ug/l	D7363-11/8272
C3-Fluorenes		3.5	0.34		ug/l	D7363-11/8272
Phenanthrene		75.8	0.12		ug/l	D7363-11/8272
Anthracene		16.4	0.12		ug/l	D7363-11/8272
C1-Phenanthrenes/Anthracenes		23.9	0.21		ug/l	D7363-11/8272
C2-Phenanthrenes/Anthracenes		12.4	0.38		ug/l	D7363-11/8272
C3-Phenanthrenes/Anthracenes		6.2	0.41		ug/l	D7363-11/8272
C4-Phenanthrenes/Anthracenes		2.1	1.0		ug/l	D7363-11/8272
Fluoranthene		7.1	0.040		ug/l	D7363-11/8272
Pyrene		5.0	0.040		ug/l	D7363-11/8272
C1-Fluoranthenes/Pyrenes		3.2	0.078		ug/l	D7363-11/8272
Benzo(a)anthracene		0.31	0.0040		ug/l	D7363-11/8272
Chrysene		0.25	0.0040		ug/l	D7363-11/8272
C1-Benzo(a)anthracenes/Chrysenes		0.14	0.0065		ug/l	D7363-11/8272

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 2

Client Sample ID:	EB-13(0-1)	Date Sampled:	08/28/13
Lab Sample ID:	MC24019-1	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S33619.D	1	09/20/13	RP	n/a	n/a	MSS1490
Run #2	S33623.D	10	09/20/13	RP	n/a	n/a	MSS1491

	Equilibration Volume
Run #1	1.5 ml
Run #2	1.5 ml

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	2850 ^a	8.0	ug/l	
91-57-6	2-Methylnaphthalene	517 ^a	4.0	ug/l	
90-12-0	1-Methylnaphthalene	342 ^a	4.0	ug/l	
	C2-Naphthalenes	367	0.56	ug/l	
	C3-Naphthalenes	199	0.91	ug/l	
	C4-Naphthalenes	71.5	1.1	ug/l	
208-96-8	Acenaphthylene	24.0	0.20	ug/l	
83-32-9	Acenaphthene	348 ^a	2.0	ug/l	
86-73-7	Fluorene	190 ^a	1.2	ug/l	
	C1-Fluorenes	53.0	0.16	ug/l	
	C2-Fluorenes	21.8	0.20	ug/l	
	C3-Fluorenes	3.7	0.34	ug/l	
85-01-8	Phenanthrene	196 ^a	1.2	ug/l	
120-12-7	Anthracene	36.0	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	35.3	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	16.7	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	8.3	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	3.1	1.0	ug/l	
206-44-0	Fluoranthene	21.7	0.040	ug/l	
129-00-0	Pyrene	14.1	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	5.5	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.87	0.0040	ug/l	
218-01-9	Chrysene	0.65	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.30	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.053	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	0.071	0.024	ug/l	
192-97-2	Benzo(e)pyrene	0.031	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.065	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-13(0-1)	Date Sampled:	08/28/13
Lab Sample ID:	MC24019-1	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	EB-6(0-1.4)	Date Sampled:	08/29/13
Lab Sample ID:	MC24019-2	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	78.6
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S33627.D	1	09/20/13	RP	n/a	n/a	MSS1492
Run #2	S33631.D	10	09/21/13	RP	n/a	n/a	MSS1493

	Equilibration Volume
Run #1	1.5 ml
Run #2	1.5 ml

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	2140 ^a	8.0	ug/l	
91-57-6	2-Methylnaphthalene	621 ^a	4.0	ug/l	
90-12-0	1-Methylnaphthalene	420 ^a	4.0	ug/l	
	C2-Naphthalenes	376	0.56	ug/l	
	C3-Naphthalenes	192	0.91	ug/l	
	C4-Naphthalenes	6.6	1.1	ug/l	
208-96-8	Acenaphthylene	17.3	0.20	ug/l	
83-32-9	Acenaphthene	453 ^a	2.0	ug/l	
86-73-7	Fluorene	250 ^a	1.2	ug/l	
	C1-Fluorenes	50.1	0.16	ug/l	
	C2-Fluorenes	21.4	0.20	ug/l	
	C3-Fluorenes	4.0	0.34	ug/l	
85-01-8	Phenanthrene	416 ^a	1.2	ug/l	
120-12-7	Anthracene	41.5	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	35.2	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	16.6	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	9.0	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	3.6	1.0	ug/l	
206-44-0	Fluoranthene	25.5	0.040	ug/l	
129-00-0	Pyrene	17.1	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	5.6	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.97	0.0040	ug/l	
218-01-9	Chrysene	0.75	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.35	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.066	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	0.11	0.024	ug/l	
192-97-2	Benzo(e)pyrene	0.049	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.098	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-6(0-1.4)	Date Sampled:	08/29/13
Lab Sample ID:	MC24019-2	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	78.6
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	EB-11(0-1)	Date Sampled:	08/30/13
Lab Sample ID:	MC24019-3	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	76.6
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S33570.D	1	09/13/13	RP	n/a	n/a	MSS1482
Run #2							

	Equilibration Volume
Run #1	1.5 ml
Run #2	

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	88.9	0.80	ug/l	
91-57-6	2-Methylnaphthalene	160	0.40	ug/l	
90-12-0	1-Methylnaphthalene	135	0.40	ug/l	
	C2-Naphthalenes	199	0.56	ug/l	
	C3-Naphthalenes	124	0.91	ug/l	
	C4-Naphthalenes	49.5	1.1	ug/l	
208-96-8	Acenaphthylene	7.0	0.20	ug/l	
83-32-9	Acenaphthene	116	0.20	ug/l	
86-73-7	Fluorene	83.2	0.12	ug/l	
	C1-Fluorenes	43.5	0.16	ug/l	
	C2-Fluorenes	20.2	0.20	ug/l	
	C3-Fluorenes	2.9	0.34	ug/l	
85-01-8	Phenanthrene	67.0	0.12	ug/l	
120-12-7	Anthracene	14.0	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	19.9	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	10.6	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	4.6	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	1.7	1.0	ug/l	
206-44-0	Fluoranthene	6.2	0.040	ug/l	
129-00-0	Pyrene	4.4	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	2.6	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.24	0.0040	ug/l	
218-01-9	Chrysene	0.21	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.12	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-11(0-1)	Date Sampled:	08/30/13
Lab Sample ID:	MC24019-3	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	76.6
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	DUP-1-SPME	Date Sampled:	08/30/13
Lab Sample ID:	MC24019-4	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	73.5
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S33574.D	1	09/14/13	RP	n/a	n/a	MSS1483
Run #2							

	Equilibration Volume
Run #1	1.5 ml
Run #2	

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	164	0.80	ug/l	
91-57-6	2-Methylnaphthalene	211	0.40	ug/l	
90-12-0	1-Methylnaphthalene	164	0.40	ug/l	
	C2-Naphthalenes	239	0.56	ug/l	
	C3-Naphthalenes	149	0.91	ug/l	
	C4-Naphthalenes	59.8	1.1	ug/l	
208-96-8	Acenaphthylene	8.2	0.20	ug/l	
83-32-9	Acenaphthene	122	0.20	ug/l	
86-73-7	Fluorene	91.2	0.12	ug/l	
	C1-Fluorenes	50.7	0.16	ug/l	
	C2-Fluorenes	22.2	0.20	ug/l	
	C3-Fluorenes	3.5	0.34	ug/l	
85-01-8	Phenanthrene	75.8	0.12	ug/l	
120-12-7	Anthracene	16.4	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	23.9	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	12.4	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	6.2	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	2.1	1.0	ug/l	
206-44-0	Fluoranthene	7.1	0.040	ug/l	
129-00-0	Pyrene	5.0	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	3.2	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.31	0.0040	ug/l	
218-01-9	Chrysene	0.25	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.14	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-1-SPME	Date Sampled:	08/30/13
Lab Sample ID:	MC24019-4	Date Received:	08/31/13
Matrix:	SO - Sediment	Percent Solids:	73.5
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

[illegible]

MC24019: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC24019 **Client:** ARCADIS **Immediate Client Services Action Required:** No
Date / Time Received: 8/31/2013 **Delivery Method:** **Client Service Action Required at Login:** No
Project: NATIONAL GRID HUDSON **No. Coolers:** 1 **Airbill #'s:**

Cooler Security **Y or N** **Y or N**
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK ☒ ☐

Cooler Temperature **Y or N**
1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation **Y** **or** **N** **N/A**
1. Trip Blank present / cooler: ☐ ☐ ☒
2. Trip Blank listed on COC: ☐ ☐ ☒
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☐ ☐ ☒

Sample Integrity - Documentation **Y or N**
1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition **Y or N**
1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions **Y** **or** **N** **N/A**
1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume recvd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments

Internal Sample Tracking Chronicle

META Environmental, Inc.

Job No: MC24019

Arcadis, National Grid, Water Street, Hudson, NY

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC24019-1 Collected: 28-AUG-13 15:00 By: MWE Received: 31-AUG-13 By: EB-13(0-1)						
MC24019-1	SM21 2540 B MOD.	04-SEP-13	BF			%SOL
MC24019-1	D7363-11/8272	20-SEP-13 17:01	RP			B7363SIMPAH
MC24019-1	D7363-11/8272	20-SEP-13 20:08	RP			B7363SIMPAH
MC24019-2 Collected: 29-AUG-13 15:00 By: MWE Received: 31-AUG-13 By: EB-6(0-1.4)						
MC24019-2	SM21 2540 B MOD.	11-SEP-13	MC			%SOL
MC24019-2	D7363-11/8272	20-SEP-13 23:25	RP			B7363SIMPAH
MC24019-2	D7363-11/8272	21-SEP-13 02:40	RP			B7363SIMPAH
MC24019-3 Collected: 30-AUG-13 07:45 By: MWE Received: 31-AUG-13 By: EB-11(0-1)						
MC24019-3	SM21 2540 B MOD.	11-SEP-13	MC			%SOL
MC24019-3	D7363-11/8272	13-SEP-13 23:25	RP			B7363SIMPAH
MC24019-4 Collected: 30-AUG-13 00:00 By: MWE Received: 31-AUG-13 By: DUP-1-SPME						
MC24019-4	SM21 2540 B MOD.	11-SEP-13	MC			%SOL
MC24019-4	D7363-11/8272	14-SEP-13 02:40	RP			B7363SIMPAH

Accutest Internal Chain of Custody

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Received: 08/31/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC24019-1.1	Walk In Ref #5	Ruben Parrilla	09/19/13 16:41	Retrieve from Storage
MC24019-1.1	Ruben Parrilla	Walk In Ref #5	09/19/13 17:11	Return to Storage
MC24019-1.2	Walk In Ref #5	Ruben Parrilla	09/12/13 11:58	Retrieve from Storage
MC24019-1.2	Ruben Parrilla	Walk In Ref #5	09/12/13 16:34	Return to Storage
MC24019-2.1	Walk In Ref #5	Mehdi Abdolrahim	09/11/13 08:28	Retrieve from Storage
MC24019-2.1	Mehdi Abdolrahim	Walk In Ref #5	09/11/13 11:25	Return to Storage
MC24019-2.1	Walk In Ref #5	Ruben Parrilla	09/19/13 16:41	Retrieve from Storage
MC24019-2.1	Ruben Parrilla	Walk In Ref #5	09/19/13 17:11	Return to Storage
MC24019-2.2	Walk In Ref #5	Ruben Parrilla	09/12/13 11:58	Retrieve from Storage
MC24019-2.2	Ruben Parrilla	Walk In Ref #5	09/12/13 16:34	Return to Storage
MC24019-3.1	Walk In Ref #5	Mehdi Abdolrahim	09/11/13 10:08	Retrieve from Storage
MC24019-3.1	Mehdi Abdolrahim	Walk In Ref #5	09/11/13 11:25	Return to Storage
MC24019-3.2	Walk In Ref #5	Ruben Parrilla	09/12/13 11:58	Retrieve from Storage
MC24019-3.2	Ruben Parrilla	Walk In Ref #5	09/12/13 16:34	Return to Storage
MC24019-4.1	Walk In Ref #5	Mehdi Abdolrahim	09/11/13 10:08	Retrieve from Storage
MC24019-4.1	Mehdi Abdolrahim	Walk In Ref #5	09/11/13 11:25	Return to Storage
MC24019-4.2	Walk In Ref #5	Ruben Parrilla	09/12/13 11:58	Retrieve from Storage
MC24019-4.2	Ruben Parrilla	Walk In Ref #5	09/12/13 16:34	Return to Storage

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

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Job Number: MC24019

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB25	S33569.D	1	09/13/13	RP	n/a	n/a	MSS1482

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24019-3

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	0.72	0.80	ug/l	J
91-57-6	2-Methylnaphthalene	ND	0.40	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.40	ug/l	
	C2-Naphthalenes	ND	0.56	ug/l	
	C3-Naphthalenes	ND	0.91	ug/l	
	C4-Naphthalenes	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	0.20	ug/l	
83-32-9	Acenaphthene	ND	0.20	ug/l	
86-73-7	Fluorene	ND	0.12	ug/l	
	C1-Fluorenes	ND	0.16	ug/l	
	C2-Fluorenes	ND	0.20	ug/l	
	C3-Fluorenes	ND	0.34	ug/l	
85-01-8	Phenanthrene	ND	0.12	ug/l	
120-12-7	Anthracene	ND	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	ND	0.040	ug/l	
129-00-0	Pyrene	ND	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.078	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0040	ug/l	
218-01-9	Chrysene	ND	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

6.1.1

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Method Blank Summary

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Job Number: MC24019

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB26	S33573.D	1	09/14/13	RP	n/a	n/a	MSS1483

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24019-4

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	ND	0.80	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.40	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.40	ug/l	
	C2-Naphthalenes	ND	0.56	ug/l	
	C3-Naphthalenes	ND	0.91	ug/l	
	C4-Naphthalenes	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	0.20	ug/l	
83-32-9	Acenaphthene	ND	0.20	ug/l	
86-73-7	Fluorene	ND	0.12	ug/l	
	C1-Fluorenes	ND	0.16	ug/l	
	C2-Fluorenes	ND	0.20	ug/l	
	C3-Fluorenes	ND	0.34	ug/l	
85-01-8	Phenanthrene	ND	0.12	ug/l	
120-12-7	Anthracene	ND	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	ND	0.040	ug/l	
129-00-0	Pyrene	ND	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.078	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0040	ug/l	
218-01-9	Chrysene	0.0013	0.0040	ug/l	J
	C1-Benzo(a)anthracenes/Chrys	ND	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

6.1.2

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Method Blank Summary

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Job Number: MC24019

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB33	S33618.D	1	09/20/13	RP	n/a	n/a	MSS1490

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24019-1

CAS No.	Compound	Result	RL	Units	Q
	C2-Naphthalenes	ND	0.56	ug/l	
	C3-Naphthalenes	ND	0.91	ug/l	
	C4-Naphthalenes	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	0.20	ug/l	
	C1-Fluorenes	ND	0.16	ug/l	
	C2-Fluorenes	ND	0.20	ug/l	
	C3-Fluorenes	ND	0.34	ug/l	
120-12-7	Anthracene	ND	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	ND	0.040	ug/l	
129-00-0	Pyrene	ND	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.078	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0040	ug/l	
218-01-9	Chrysene	0.0019	0.0040	ug/l	J
	C1-Benzo(a)anthracenes/Chrys	ND	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

6.1.3

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Method Blank Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB34	S33622.D	1	09/20/13	RP	n/a	n/a	MSS1491

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-1

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	0.58	0.80	ug/l	J
91-57-6	2-Methylnaphthalene	ND	0.40	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.40	ug/l	
83-32-9	Acenaphthene	ND	0.20	ug/l	
86-73-7	Fluorene	ND	0.12	ug/l	
85-01-8	Phenanthrene	ND	0.12	ug/l	

6.1.4

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Method Blank Summary

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Job Number: MC24019

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB35	S33626.D	1	09/20/13	RP	n/a	n/a	MSS1492

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24019-2

CAS No.	Compound	Result	RL	Units	Q
	C2-Naphthalenes	ND	0.56	ug/l	
	C3-Naphthalenes	ND	0.91	ug/l	
	C4-Naphthalenes	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	0.20	ug/l	
	C1-Fluorenes	ND	0.16	ug/l	
	C2-Fluorenes	ND	0.20	ug/l	
	C3-Fluorenes	ND	0.34	ug/l	
120-12-7	Anthracene	ND	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	ND	0.040	ug/l	
129-00-0	Pyrene	ND	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.078	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0040	ug/l	
218-01-9	Chrysene	ND	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

6.1.5

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Method Blank Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB36	S33630.D	1	09/21/13	RP	n/a	n/a	MSS1493

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-2

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	0.41	0.80	ug/l	J
91-57-6	2-Methylnaphthalene	ND	0.40	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.40	ug/l	
83-32-9	Acenaphthene	ND	0.20	ug/l	
86-73-7	Fluorene	ND	0.12	ug/l	
85-01-8	Phenanthrene	0.040	0.12	ug/l	J

6.1.6

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Duplicate Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24019-3DUP	S33571.D	1	09/14/13	RP	n/a	n/a	MSS1482
MC24019-3	S33570.D	1	09/13/13	RP	n/a	n/a	MSS1482

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-3

CAS No.	Compound	MC24019-3 ug/l	DUP Q ug/l	Q	RPD	Limits
91-20-3	Naphthalene	88.9	91.2	3		201
91-57-6	2-Methylnaphthalene	160	163	2		201
90-12-0	1-Methylnaphthalene	135	139	3		201
	C2-Naphthalenes	199	201	1		201
	C3-Naphthalenes	124	125	1		201
	C4-Naphthalenes	49.5	51.0	3		201
208-96-8	Acenaphthylene	7.0	7.5	7		201
83-32-9	Acenaphthene	116	118	2		201
86-73-7	Fluorene	83.2	86.3	4		201
	C1-Fluorenes	43.5	45.7	5		201
	C2-Fluorenes	20.2	21.1	4		201
	C3-Fluorenes	2.9	3.5	19		201
85-01-8	Phenanthrene	67.0	68.3	2		201
120-12-7	Anthracene	14.0	14.4	3		201
	C1-Phenanthrenes/Anthracene	19.9	20.6	3		201
	C2-Phenanthrenes/Anthracene	10.6	11.6	9		201
	C3-Phenanthrenes/Anthracene	4.6	4.6	0		201
	C4-Phenanthrenes/Anthracene	1.7	1.7	0		201
206-44-0	Fluoranthene	6.2	6.4	3		201
129-00-0	Pyrene	4.4	4.5	2		201
	C1-Fluoranthenes/Pyrenes	2.6	2.7	4		201
56-55-3	Benzo(a)anthracene	0.24	0.26	8		201
218-01-9	Chrysene	0.21	0.22	5		201
	C1-Benzo(a)anthracenes/Chrys	0.12	0.11	9		201
	C2-Benzo(a)anthracenes/Chrys	ND	ND	nc		201
	C3-Benzo(a)anthracenes/Chrys	ND	ND	nc		201
	C4-Benzo(a)anthracenes/Chrys	ND	ND	nc		201
205-99-2	Benzo(b)fluoranthene	0.010	0.013	J	26	201
207-08-9	Benzo(k)fluoranthene	0.017	0.020	J	16	201
192-97-2	Benzo(e)pyrene	0.010	0.012	J	18	201
50-32-8	Benzo(a)pyrene	0.012	0.014	J	15	201
198-55-0	Perylene	0.0093	0.011	J	17	201
193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	nc		201
53-70-3	Dibenzo(a,h)anthracene	ND	ND	nc		201
191-24-2	Benzo(g,h,i)perylene	ND	ND	nc		201

* = Outside of Control Limits.

Duplicate Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24019-4DUP	S33575.D	1	09/14/13	RP	n/a	n/a	MSS1483
MC24019-4	S33574.D	1	09/14/13	RP	n/a	n/a	MSS1483

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-4

CAS No.	Compound	MC24019-4 ug/l	DUP Q ug/l	Q	RPD	Limits
91-20-3	Naphthalene	164	163	1		201
91-57-6	2-Methylnaphthalene	211	213	1		201
90-12-0	1-Methylnaphthalene	164	165	1		201
	C2-Naphthalenes	239	225	6		201
	C3-Naphthalenes	149	138	8		201
	C4-Naphthalenes	59.8	56.1	6		201
208-96-8	Acenaphthylene	8.2	8.5	4		201
83-32-9	Acenaphthene	122	124	2		201
86-73-7	Fluorene	91.2	92.7	2		201
	C1-Fluorenes	50.7	50.3	1		201
	C2-Fluorenes	22.2	23.6	6		201
	C3-Fluorenes	3.5	3.5	0		201
85-01-8	Phenanthrene	75.8	75.6	0		201
120-12-7	Anthracene	16.4	16.5	1		201
	C1-Phenanthrenes/Anthracene	23.9	23.8	0		201
	C2-Phenanthrenes/Anthracene	12.4	13.3	7		201
	C3-Phenanthrenes/Anthracene	6.2	5.9	5		201
	C4-Phenanthrenes/Anthracene	2.1	2.1	0		201
206-44-0	Fluoranthene	7.1	7.1	0		201
129-00-0	Pyrene	5.0	5.0	0		201
	C1-Fluoranthenes/Pyrenes	3.2	3.2	0		201
56-55-3	Benzo(a)anthracene	0.31	0.30	3		201
218-01-9	Chrysene	0.25	0.25	0		201
	C1-Benzo(a)anthracenes/Chrys	0.14	0.14	0		201
	C2-Benzo(a)anthracenes/Chrys	ND	ND	nc		201
	C3-Benzo(a)anthracenes/Chrys	ND	ND	nc		201
	C4-Benzo(a)anthracenes/Chrys	ND	ND	nc		201
205-99-2	Benzo(b)fluoranthene	0.013	0.015	J	14	201
207-08-9	Benzo(k)fluoranthene	0.020	0.019	J	5	201
192-97-2	Benzo(e)pyrene	0.011	0.012	J	9	201
50-32-8	Benzo(a)pyrene	0.017	0.018	J	6	201
198-55-0	Perylene	0.0086	0.0097	J	12	201
193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND	nc		201
53-70-3	Dibenzo(a,h)anthracene	ND	ND	nc		201
191-24-2	Benzo(g,h,i)perylene	ND	ND	nc		201

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24019-1DUP	S33620.D	1	09/20/13	RP	n/a	n/a	MSS1490
MC24019-1	S33619.D	1	09/20/13	RP	n/a	n/a	MSS1490

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-1

CAS No.	Compound	MC24019-1 ug/l	DUP Q ug/l	Q	RPD	Limits
	C2-Naphthalenes	367	307		18	201
	C3-Naphthalenes	199	160		22	201
	C4-Naphthalenes	71.5	56.2		24	201
208-96-8	Acenaphthylene	24.0	22.5		6	201
	C1-Fluorenes	53.0	50.8		4	201
	C2-Fluorenes	21.8	18.3		17	201
	C3-Fluorenes	3.7	3.3		11	201
120-12-7	Anthracene	36.0	31.2		14	201
	C1-Phenanthrenes/Anthracene	35.3	29.2		19	201
	C2-Phenanthrenes/Anthracene	16.7	13.4		22	201
	C3-Phenanthrenes/Anthracene	8.3	6.6		23	201
	C4-Phenanthrenes/Anthracene	3.1	2.8		10	201
206-44-0	Fluoranthene	21.7	18.7		15	201
129-00-0	Pyrene	14.1	12.2		14	201
	C1-Fluoranthenes/Pyrenes	5.5	4.7		16	201
56-55-3	Benzo(a)anthracene	0.87	0.72		19	201
218-01-9	Chrysene	0.65	0.56		15	201
	C1-Benzo(a)anthracenes/Chrys	0.30	0.26		14	201
	C2-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C3-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C4-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
205-99-2	Benzo(b)fluoranthene	0.053	0.038		33	201
207-08-9	Benzo(k)fluoranthene	0.071	0.060		17	201
192-97-2	Benzo(e)pyrene	0.031	0.029		7	201
50-32-8	Benzo(a)pyrene	0.065	0.054		18	201
198-55-0	Perylene	0.014	0.013	J	7	201
193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND		nc	201
53-70-3	Dibenzo(a,h)anthracene	ND	ND		nc	201
191-24-2	Benzo(g,h,i)perylene	ND	ND		nc	201

* = Outside of Control Limits.

Duplicate Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24019-1DUP	S33624.D	10	09/20/13	RP	n/a	n/a	MSS1491
MC24019-1	S33623.D	10	09/20/13	RP	n/a	n/a	MSS1491

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-1

CAS No.	Compound	MC24019-1		Q	RPD	Limits
		ug/l	DUP ug/l			
91-20-3	Naphthalene	2850	3010		5	201
91-57-6	2-Methylnaphthalene	517	547		6	201
90-12-0	1-Methylnaphthalene	342	355		4	201
83-32-9	Acenaphthene	348	368		6	201
86-73-7	Fluorene	190	199		5	201
85-01-8	Phenanthrene	196	208		6	201

* = Outside of Control Limits.

Duplicate Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24019-2DUP	S33628.D	1	09/21/13	RP	n/a	n/a	MSS1492
MC24019-2	S33627.D	1	09/20/13	RP	n/a	n/a	MSS1492

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-2

CAS No.	Compound	MC24019-2 ug/l	DUP Q ug/l	Q	RPD	Limits
	C2-Naphthalenes	376	358		5	201
	C3-Naphthalenes	192	182		5	201
	C4-Naphthalenes	6.6	68.1		165	201
208-96-8	Acenaphthylene	17.3	17.4		1	201
	C1-Fluorenes	50.1	52.0		4	201
	C2-Fluorenes	21.4	21.6		1	201
	C3-Fluorenes	4.0	4.2		5	201
120-12-7	Anthracene	41.5	42.0		1	201
	C1-Phenanthrenes/Anthracene	35.2	36.1		3	201
	C2-Phenanthrenes/Anthracene	16.6	17.2		4	201
	C3-Phenanthrenes/Anthracene	9.0	9.7		7	201
	C4-Phenanthrenes/Anthracene	3.6	4.3		18	201
206-44-0	Fluoranthene	25.5	25.9		2	201
129-00-0	Pyrene	17.1	17.4		2	201
	C1-Fluoranthenes/Pyrenes	5.6	5.8		4	201
56-55-3	Benzo(a)anthracene	0.97	0.99		2	201
218-01-9	Chrysene	0.75	0.76		1	201
	C1-Benzo(a)anthracenes/Chrys	0.35	0.36		3	201
	C2-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C3-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C4-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
205-99-2	Benzo(b)fluoranthene	0.066	0.069		4	201
207-08-9	Benzo(k)fluoranthene	0.11	0.11		0	201
192-97-2	Benzo(e)pyrene	0.049	0.048		2	201
50-32-8	Benzo(a)pyrene	0.098	0.099		1	201
198-55-0	Perylene	0.022	0.023	J	4	201
193-39-5	Indeno(1,2,3-cd)pyrene	0.0097	0.010	J	3	201
53-70-3	Dibenzo(a,h)anthracene	ND	ND		nc	201
191-24-2	Benzo(g,h,i)perylene	0.0082	0.0092	J	11	201

* = Outside of Control Limits.

Duplicate Summary

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Job Number: MC24019**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24019-2DUP	S33632.D	10	09/21/13	RP	n/a	n/a	MSS1493
MC24019-2	S33631.D	10	09/21/13	RP	n/a	n/a	MSS1493

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24019-2

CAS No.	Compound	MC24019-2 DUP		Q	RPD	Limits
		ug/l	Q ug/l			
91-20-3	Naphthalene	2140	2150	0		201
91-57-6	2-Methylnaphthalene	621	630	1		201
90-12-0	1-Methylnaphthalene	420	419	0		201
83-32-9	Acenaphthene	453	458	1		201
86-73-7	Fluorene	250	256	2		201
85-01-8	Phenanthrene	416	421	1		201

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std: MSS1480-CC1465
Lab File ID: S33559.D
Instrument ID: GCMSS
Injection Date: 09/13/13
Injection Time: 14:51
Method: D7363-11/8272

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	41415	13.89	26267	15.03	18622	15.23	12579	17.09	12086	18.08	33772	20.02
Upper Limit ^a	82830	14.39	52534	15.53	37244	15.73	25158	17.59	24172	18.58	67544	20.52
Lower Limit ^b	20708	13.39	13134	14.53	9311	14.73	6290	16.59	6043	17.58	16886	19.52

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB25	62350	13.88	42563	15.02	30040	15.23	19885	17.09	19067	18.08	50276	20.02
MC24019-3	37866	13.88	24219	15.02	19733	15.22	15005	17.09	12058	18.08	32661	20.02
MC24019-3DUP	34594	13.88	22001	15.02	17808	15.22	13492	17.09	10819	18.07	30309	20.02
MS29817-MB26	55111	13.88	36557	15.02	25557	15.22	17451	17.09	17501	18.08	46658	20.02
MC24019-4	38213	13.88	24905	15.02	20175	15.22	15562	17.09	12985	18.07	33543	20.02
MC24019-4DUP	39632	13.88	24798	15.02	20410	15.22	15330	17.09	12833	18.08	33490	20.02

IS 1 = Naphthalene-d8
IS 2 = 2-Methylnaphthalene-d10
IS 3 = 1-Methylnaphthalene-d10
IS 4 = Acenaphthene-d10
IS 5 = Fluorene-d10
IS 6 = Phenanthrene-d10

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std:	MSS1480-CC1465	Injection Date:	09/13/13
Lab File ID:	S33559.D	Injection Time:	14:51
Instrument ID:	GCMSS	Method:	D7363-11/8272

	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	38832	20.12	22188	22.45	20078	22.92	8155	25.34	10891	25.43	7763	27.89
Upper Limit ^a	77664	20.62	44376	22.95	40156	23.42	16310	25.84	21782	25.93	15526	28.39
Lower Limit ^b	19416	19.62	11094	21.95	10039	22.42	4078	24.84	5446	24.93	3882	27.39

Lab Sample ID	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB25	37703	20.12	27650	22.45	23621	22.92	6427	25.34	10531	25.43	6818	27.89
MC24019-3	36354	20.12	22228	22.45	20916	22.92	9307	25.34	11532	25.42	9085	27.89
MC24019-3DUP	33560	20.12	21760	22.45	20320	22.92	9108	25.34	11254	25.43	8812	27.89
MS29817-MB26	33039	20.12	27234	22.45	22927	22.92	6312	25.34	11243	25.43	7218	27.89
MC24019-4	38174	20.12	22445	22.45	20887	22.92	8969	25.34	11157	25.42	8783	27.89
MC24019-4DUP	37915	20.12	22345	22.45	20759	22.92	9181	25.34	11331	25.42	9179	27.89

IS 7 = Anthracene-d10
IS 8 = Fluoranthene-d10
IS 9 = Pyrene-d10
IS 10 = Benzo(a)anthracene-d12
IS 11 = Chrysene-d12
IS 12 = Benzo(b)fluoranthene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std:	MSS1480-CC1465	Injection Date:	09/13/13
Lab File ID:	S33559.D	Injection Time:	14:51
Instrument ID:	GCMSS	Method:	D7363-11/8272

	IS 13 AREA	RT	IS 14 AREA	RT	IS 15 AREA	RT
Check Std	8384	27.96	5130	28.80	4456	29.02
Upper Limit ^a	16768	28.46	10260	29.30	8912	29.52
Lower Limit ^b	4192	27.46	2565	28.30	2228	28.52

Lab Sample ID	IS 13 AREA	RT	IS 14 AREA	RT	IS 15 AREA	RT
MS29817-MB25	7020	27.96	2950	28.80	2825	29.02
MC24019-3	9186	27.96	6075	28.80	4871	29.02
MC24019-3DUP	9127	27.96	5758	28.80	4657	29.02
MS29817-MB26	7283	27.96	2763	28.80	2714	29.02
MC24019-4	8954	27.96	5878	28.79	4742	29.02
MC24019-4DUP	9618	27.96	6191	28.80	5054	29.02

IS 13 = Benzo(k)fluoranthene-d12

IS 14 = Benzo(a)pyrene-d12

IS 15 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std:	MSS1490-ICC1490	Injection Date:	09/20/13
Lab File ID:	S33616A.D	Injection Time:	14:27
Instrument ID:	GCMSS	Method:	D7363-11/8272

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	56095	13.88	38403	15.02	27230	15.22	18665	17.09	16984	18.07	45361	20.01
Upper Limit ^a	112190	14.38	76806	15.52	54460	15.72	37330	17.59	33968	18.57	90722	20.51
Lower Limit ^b	28048	13.38	19202	14.52	13615	14.72	9333	16.59	8492	17.57	22681	19.51

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB33	67994	13.88	45570	15.02	31227	15.22	20179	17.09	19775	18.07	53822	20.01
MC24019-1	34206	13.89	24094	15.02	19772	15.22	15759	17.09	13637	18.08	34997	20.02
MC24019-1DUP	35207	13.88	23860	15.02	19795	15.22	16099	17.09	14085	18.07	36869	20.02
MS29817-MB34	64597	13.88	45095	15.02	30769	15.22	20959	17.09	20389	18.07	56030	20.01
MC24019-1	47631	13.88	31794	15.02	24369	15.22	17461	17.09	15370	18.07	41355	20.01
MC24019-1DUP	49776	13.88	32946	15.02	25445	15.22	17680	17.08	15483	18.07	39686	20.01
MS29817-MB35	67709	13.88	44343	15.02	30361	15.22	21212	17.08	21663	18.07	59692	20.01
MC24019-2	39521	13.88	27030	15.02	22416	15.22	17559	17.09	14178	18.07	35729	20.01
MC24019-2DUP	44020	13.88	29757	15.02	24583	15.22	18446	17.09	14242	18.07	34826	20.01
MS29817-MB36	68651	13.88	47744	15.02	33532	15.22	23240	17.08	22610	18.07	59975	20.01
MC24019-2	49578	13.88	31822	15.02	24924	15.22	18263	17.08	15591	18.07	39563	20.01
MC24019-2DUP	40930	13.88	24963	15.02	19725	15.22	14799	17.08	12973	18.07	35849	20.01
MS29817-MB37	73266	13.88	50329	15.02	35069	15.22	23617	17.08	22618	18.07	58957	20.01
MC24285-2	37840	13.88	24314	15.02	20600	15.22	16269	17.08	13775	18.07	34861	20.01
MC24285-2DUP	29191	13.88	18749*	15.02	15971	15.22	13417	17.08	11592	18.07	30949	20.01
MS29817-MB38	72573	13.88	48437	15.02	33822	15.22	22316	17.08	21713	18.07	56531	20.01
MC24285-2	57984	13.88	37076	15.02	28545	15.22	19230	17.08	16360	18.07	40754	20.01
MC24285-2DUP	48025	13.88	30754	15.02	23870	15.22	17434	17.08	15432	18.07	39538	20.01

IS 1 = Naphthalene-d8
IS 2 = 2-Methylnaphthalene-d10
IS 3 = 1-Methylnaphthalene-d10
IS 4 = Acenaphthene-d10
IS 5 = Fluorene-d10
IS 6 = Phenanthrene-d10

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std:	MSS1490-ICC1490	Injection Date:	09/20/13
Lab File ID:	S33616A.D	Injection Time:	14:27
Instrument ID:	GCMSS	Method:	D7363-11/8272

	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	52494	20.12	26868	22.44	23991	22.92	8896	25.33	12197	25.42	8354	27.88
Upper Limit ^a	104988	20.62	53736	22.94	47982	23.42	17792	25.83	24394	25.92	16708	28.38
Lower Limit ^b	26247	19.62	13434	21.94	11996	22.42	4448	24.83	6099	24.92	4177	27.38

Lab Sample ID	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB33	39157	20.12	31062	22.44	25948	22.92	6659	25.33	12263	25.42	7930	27.88
MC24019-1	42242	20.12	24039	22.45	22693	22.92	10055	25.34	12367	25.42	9225	27.88
MC24019-1DUP	44104	20.12	25213	22.44	23864	22.91	10814	25.33	13079	25.42	9352	27.88
MS29817-MB34	54335	20.12	31454	22.44	27070	22.91	7925	25.33	12077	25.42	7680	27.88
MC24019-1	47303	20.12	27415	22.44	25028	22.91	10996	25.33	13690	25.42	10581	27.88
MC24019-1DUP	44155	20.12	25406	22.44	23339	22.91	10044	25.33	12675	25.41	9856	27.88
MS29817-MB35	47652	20.12	33880	22.44	28504	22.91	8135	25.33	13220	25.42	8932	27.88
MC24019-2	41176	20.12	24756	22.44	23454	22.91	11192	25.33	13365	25.41	10121	27.88
MC24019-2DUP	40818	20.12	24268	22.44	23064	22.91	11314	25.33	13287	25.41	10135	27.88
MS29817-MB36	48985	20.12	33113	22.44	28305	22.91	8321	25.33	13545	25.42	8400	27.88
MC24019-2	43987	20.12	24521	22.44	22717	22.91	10601	25.33	13086	25.41	10356	27.88
MC24019-2DUP	39814	20.12	22481	22.44	21053	22.91	9830	25.33	12320	25.42	9773	27.88
MS29817-MB37	47161	20.12	31704	22.44	27366	22.91	8214	25.33	13653	25.42	8763	27.88
MC24285-2	40067	20.12	24468	22.44	22756	22.91	11167	25.33	13602	25.41	11067	27.88
MC24285-2DUP	35517	20.12	22508	22.44	21435	22.91	10728	25.33	12696	25.41	10691	27.88
MS29817-MB38	41811	20.12	31706	22.44	26754	22.91	8493	25.33	14203	25.42	9640	27.88
MC24285-2	43105	20.12	24171	22.44	22370	22.91	10068	25.33	13265	25.41	10385	27.88
MC24285-2DUP	41241	20.12	23078	22.44	21158	22.91	8760	25.33	11551	25.41	8672	27.88

IS 7 = Anthracene-d10
IS 8 = Fluoranthene-d10
IS 9 = Pyrene-d10
IS 10 = Benzo(a)anthracene-d12
IS 11 = Chrysene-d12
IS 12 = Benzo(b)fluoranthene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

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Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std: MSS1490-ICC1490	Injection Date: 09/20/13
Lab File ID: S33616A.D	Injection Time: 14:27
Instrument ID: GCMSS	Method: D7363-11/8272

	IS 13		IS 14		IS 15	
	AREA	RT	AREA	RT	AREA	RT
Check Std	8937	27.95	5467	28.78	4618	29.01
Upper Limit ^a	17874	28.45	10934	29.28	9236	29.51
Lower Limit ^b	4469	27.45	2734	28.28	2309	28.51

Lab Sample ID	IS 13		IS 14		IS 15	
	AREA	RT	AREA	RT	AREA	RT
MS29817-MB33	8081	27.95	2811	28.79	2827	29.01
MC24019-1	9951	27.95	6299	28.79	5206	29.02
MC24019-1DUP	10013	27.95	6440	28.78	5394	29.01
MS29817-MB34	7695	27.95	4003	28.78	3715	29.01
MC24019-1	11120	27.95	7067	28.78	5812	29.01
MC24019-1DUP	10296	27.95	6439	28.79	5374	29.00
MS29817-MB35	8582	27.95	3566	28.79	3601	29.01
MC24019-2	10563	27.95	6771	28.78	5524	29.00
MC24019-2DUP	10432	27.95	7129	28.78	5791	29.00
MS29817-MB36	8609	27.95	3685	28.78	3575	29.01
MC24019-2	10525	27.95	6973	28.78	5832	29.00
MC24019-2DUP	10223	27.95	6458	28.78	5640	29.00
MS29817-MB37	8501	27.95	3729	28.78	3688	29.00
MC24285-2	11178	27.95	7446	28.78	6178	29.00
MC24285-2DUP	10820	27.95	7415	28.78	5908	29.00
MS29817-MB38	9177	27.95	3850	28.79	3905	29.00
MC24285-2	10675	27.95	6656	28.78	5640	29.00
MC24285-2DUP	8817	27.95	5627	28.78	4756	29.00

IS 13 = Benzo(k)fluoranthene-d12

IS 14 = Benzo(a)pyrene-d12

IS 15 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Initial Calibration Summary

Page 1 of 2

Job Number: MC24019

Sample: MSS1465-ICC1465

Account: METAMAW META Environmental, Inc.

Lab FileID: S33448.D

Project: Arcadis, National Grid, Water Street, Hudson, NY

Response Factor Report MSS

Method : S:\1\methods\S130906-SPMEPAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Calibration Files

1 =S33445.D 2 =S33446.D 3 =S33447.D 4 =S33448.D
 5 =S33449.D 6 =S33450.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1) I	Naphthalene-d8	-----ISTD-----							
2) J1	Naphthalene	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
3) J2	C1-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
4) J2	C2-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
5) J2	C3-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
6) J2	C4-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
7) I	2-Methylnaphthalene-d	-----ISTD-----							
8)	2-Methylnaphthalene	1.325	1.295	1.304	1.270	1.188	1.386	1.295	5.06
9) I	1-Methylnaphthalene-d	-----ISTD-----							
10)	1-Methylnaphthalene	1.423	1.361	1.380	1.349	1.249	1.445	1.368	5.02
11) I	Acenaphthene-d10	-----ISTD-----							
12)	Acenaphthylene	1.018	0.964	0.983	0.952	0.921	1.220	1.009	10.69
13)	Acenaphthene	1.359	1.312	1.307	1.251	1.175	1.380	1.297	5.77
14) I	Fluorene-d10	-----ISTD-----							
15) J1	Fluorene	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
16) J2	C1-Fluorenes	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
17) J2	C2-Fluorenes	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
18) J2	C3-Fluorenes	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
19) I	Phenanthrene-d10	-----ISTD-----							
20) J1	Phenanthrene	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
21) J2	C1-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
22) J2	C2-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
23) J2	C3-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
24) J2	C4-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
25) I	Anthracene-d10	-----ISTD-----							
26)	Anthracene	1.265	1.186	1.264	1.282	1.262	1.516	1.296	8.71
27) I	Fluoranthene-d10	-----ISTD-----							
28)	Fluoranthene	1.496	1.373	1.386	1.377	1.298	1.511	1.407	5.78
29) I	Pyrene-d10	-----ISTD-----							
30) J1	Pyrene	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
31) J2	C1-Fluoranthenes/py	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
32) J2	C2-Fluoranthenes/py	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
33) J2	C3-Fluoranthenes/py	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
34) I	Benz(a)anthracene-d12	-----ISTD-----							
35)	Benz(a)anthracene	1.637	1.504	1.447	1.370	1.324	1.632	1.486	8.79
36) I	Chrysene-d12	-----ISTD-----							

Initial Calibration Summary

Page 2 of 2

Job Number: MC24019

Sample: MSS1465-ICC1465

Account: METAMAW META Environmental, Inc.

Lab FileID: S33448.D

Project: Arcadis, National Grid, Water Street, Hudson, NY

37)	J1	Chrysene	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
38)	J2	C1-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
39)	J2	C2-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
40)	J2	C3-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
41)	J2	C4-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
42)	I	Benzo(b)fluoranthene-	-----ISTD-----							
43)		Benzo(b)fluoranthen	1.457	1.331	1.399	1.399	1.249	1.419	1.375	5.40
44)	I	Benzo(k)fluoranthene-	-----ISTD-----							
45)		Benzo(k)fluoranthen	1.229	1.097	1.242	1.183	1.101	1.232	1.181	5.61
46)	I	Benzo(a)pyrene-d12	-----ISTD-----							
47)		Benzo(e)pyrene	2.315	2.384	2.377	2.187	1.881	1.819	2.160	11.63
48)		Benzo(a)pyrene	1.246	1.150	1.154	1.170	1.202	1.301	1.204	4.93
49)	I	Perylene-d12	-----ISTD-----							
50)		Perylene	1.426	1.456	1.374	1.350	1.314		1.384	4.13
51)		Indeno(1,2,3-cd)pyr	2.224	2.617	2.876	2.654	2.612		2.597	9.05
52)		Dibenz(a,h)anthrace	1.779	1.937	2.020	1.714	1.657		1.822	8.39
53)		Benzo(g,h,i)perylen	2.334	2.618	2.643	2.213	1.989		2.359	11.74

(#)= Out of Range

S130906-SPMEPAH.M

Tue Sep 17 20:58:03 2013

6.4.1
6

Initial Calibration Verification

Page 1 of 1

Job Number: MC24019**Sample:** MSS1465-ICV1465**Account:** METAMAW META Environmental, Inc.**Lab FileID:** S33453.D**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Alkylated PAH Homologue Relative Response Factor Calculations

Data File Name S33453.D
Data File Path S:\1\data\S130906\
Operator jamesr1
Date Acquired 9/7/2013 12:41
Acq. Method File S:\1\methods\S130906-SPMEPAH.M
Sample Name SRM 1991
Misc Info
Vial Number 31
Instrument Name MSS
Number of Compounds 53.

Refer to Raw Data PDF

6.4.2

6

Continuing Calibration Summary

Page 1 of 2

Job Number: MC24019
 Account: METAMAW META Environmental, Inc.
 Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MSS1480-CC1465
 Lab FileID: S33559.D

Evaluate Continuing Calibration Report

Data File : S:\1\data\S130913\S33559.D Vial: 8
 Acq On : 13 Sep 2013 2:51 pm Operator: RUBENP
 Sample : cc1465-4,mss1466-4 Inst : MSS
 Misc : ms29817,mss1480,1.5,,,1.5 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : S:\1\methods\S130906-SPMEPAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Mon Sep 09 11:44:11 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Naphthalene-d8	1.000	1.000	0.0	83	0.00	13.89
2 J1	Naphthalene	1.230	1.069	13.1	75	0.00	13.92
3 J2	C1-Naphthalenes		-----NA-----				
4 J2	C2-Naphthalenes		-----NA-----				
5 J2	C3-Naphthalenes		-----NA-----				
6 J2	C4-Naphthalenes		-----NA-----				
7 I	2-Methylnaphthalene-d10	1.000	1.000	0.0	76	0.00	15.03
8	2-Methylnaphthalene	1.295	1.159	10.5	69	0.00	15.09
9 I	1-Methylnaphthalene-d10	1.000	1.000	0.0	66	0.00	15.23
10	1-Methylnaphthalene	1.368	1.225	10.5	60	0.00	15.30
11 I	Acenaphthene-d10	1.000	1.000	0.0	65	0.00	17.09
12	Acenaphthylene	1.009	1.025	-1.6	70	0.00	16.81
13	Acenaphthene	1.297	1.165	10.2	60	0.00	17.15
14 I	Fluorene-d10	1.000	1.000	0.0	75	0.00	18.08
15 J1	Fluorene	1.394	1.300	6.7	71	0.00	18.14
16 J2	C1-Fluorenes		-----NA-----				
17 J2	C2-Fluorenes		-----NA-----				
18 J2	C3-Fluorenes		-----NA-----				
19 I	Phenanthrene-d10	1.000	1.000	0.0	79	0.00	20.02
20 J1	Phenanthrene	1.318	1.234	6.4	77	-0.01	20.07
21 J2	C1-Phenanthrenes/anthrace		-----NA-----				
22 J2	C2-Phenanthrenes/anthrace		-----NA-----				
23 J2	C3-Phenanthrenes/anthrace		-----NA-----				
24 J2	C4-Phenanthrenes/anthrace		-----NA-----				
25 I	Anthracene-d10	1.000	1.000	0.0	104	0.00	20.12
26	Anthracene	1.296	1.268	2.2	103	0.00	20.16
27 I	Fluoranthene-d10	1.000	1.000	0.0	81	-0.01	22.45
28	Fluoranthene	1.407	1.341	4.7	79	0.00	22.49
29 I	Pyrene-d10	1.000	1.000	0.0	82	0.00	22.92
30 J1	Pyrene	1.632	1.561	4.4	80	0.00	22.96
31 J2	C1-Fluoranthenes/pyrenes		-----NA-----				
32 J2	C2-Fluoranthenes/pyrenes		-----NA-----				
33 J2	C3-Fluoranthenes/pyrenes		-----NA-----				

Continuing Calibration Summary

Page 2 of 2

Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MSS1480-CC1465
Lab FileID: S33559.D

34	I	Benz(a)anthracene-d12	1.000	1.000	0.0	88	-0.01	25.34
35		Benz(a)anthracene	1.486	1.327	10.7	85	-0.01	25.39
36	I	Chrysene-d12	1.000	1.000	0.0	77	0.00	25.43
37	J1	Chrysene	1.208	1.155	4.4	78	-0.01	25.48
38	J2	C1-Benz(a)anthracenes/chr			-----NA-----			
39	J2	C2-Benz(a)anthracenes/chr			-----NA-----			
40	J2	C3-Benz(a)anthracenes/chr			-----NA-----			
41	J2	C4-Benz(a)anthracenes/chr			-----NA-----			
42	I	Benzo(b)fluoranthene-d12	1.000	1.000	0.0	67	-0.01	27.89
43		Benzo(b)fluoranthene	1.375	1.327	3.5	64	-0.02	27.95
44	I	Benzo(k)fluoranthene-d12	1.000	1.000	0.0	69	-0.01	27.96
45		Benzo(k)fluoranthene	1.181	1.165	1.4	68	-0.01	28.01
46	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	84	-0.01	28.80
47		Benzo(e)pyrene	2.160	1.699	21.3	66	-0.02	28.72
48		Benzo(a)pyrene	1.204	1.143	5.1	83	-0.01	28.86
49	I	Perylene-d12	1.000	1.000	0.0	84	-0.01	29.02
50		Perylene	1.384	1.287	7.0	80	-0.01	29.09
51		Indeno(1,2,3-cd)pyrene	2.597	2.137	17.7	67	-0.02	32.59
52		Dibenz(a,h)anthracene	1.822	1.866	-2.4	91	-0.02	32.58
53		Benzo(g,h,i)perylene	2.359	1.897	19.6	72	-0.02	33.65

(#) = Out of Range
 S33448.D S130906-SPMEPAH.M

SPCC's out = 0 CCC's out = 0
 Fri Sep 20 09:12:51 2013

6.4.3

6

Initial Calibration Summary

Page 1 of 2

Job Number: MC24019

Sample: MSS1490-ICC1490

Account: METAMAW META Environmental, Inc.

Lab FileID: S33616A.D

Project: Arcadis, National Grid, Water Street, Hudson, NY

Response Factor Report MSS

Method : S:\1\methods\S13...SPMEPAH-CCQ-13.M (RTE Integrator)

Title : PAHs & Alkylated PAHs by GC/MS/SIM

Last Update : Thu Oct 24 16:19:38 2013

Response via : Initial Calibration

Calibration Files

1 =S33615.D 2 =S33616.D = =

	Compound	1	2		Avg	%RSD
1) I	Naphthalene-d8	-----ISTD-----				
2) J1	Naphthalene	1.069	1.223		1.146	9.51
3) J2	C1-Naphthalenes	1.069	1.223		1.146	9.51
4) J2	C2-Naphthalenes	2.112	2.416		2.264	9.51
5) J2	C3-Naphthalenes	1.434	1.640		1.537	9.51
6) J2	C3-Naphthalenes (Fd10	1.434	1.640		1.537	9.51
7) J2	C4-Naphthalenes	0.702	0.803		0.752	9.51
8) I	2-Methylnaphthalene-d	-----ISTD-----				
9)	2-Methylnaphthalene	1.128	1.297		1.212	9.87
10) I	1-Methylnaphthalene-d	-----ISTD-----				
11)	1-Methylnaphthalene	1.196	1.390		1.293	10.58
12) I	Acenaphthene-d10	-----ISTD-----				
13)	Acenaphthylene	1.051	1.258		1.155	12.67
14)	Acenaphthene	1.141	1.326		1.233	10.57
15) I	Fluorene-d10	-----ISTD-----				
16) J1	Fluorene	1.243	1.471		1.357	11.87
17) J2	C1-Fluorenes	1.055	1.249		1.152	11.87
18) J2	C2-Fluorenes	0.806	0.953		0.880	11.87
19) J2	C3-Fluorenes	0.751	0.889		0.820	11.87
20) I	Phenanthrene-d10	-----ISTD-----				
21) J1	Phenanthrene	1.153	1.367		1.260	12.01
22) J2	C1-Phenanthrenes/anth	1.274	1.510		1.392	12.01
23) J2	C2-Phenanthrenes/anth	0.474	0.562		0.518	12.01
24) J2	C3-Phenanthrenes/anth	0.199	0.236		0.217	12.01
25) J2	C4-Phenanthrenes/anth	0.090	0.107		0.098	12.01
26) I	Anthracene-d10	-----ISTD-----				
27)	Anthracene	1.145	1.387		1.266	13.57
28) I	Fluoranthene-d10	-----ISTD-----				
29)	Fluoranthene	1.217	1.475		1.346	13.58
30) I	Pyrene-d10	-----ISTD-----				
31) J1	Pyrene	1.420	1.711		1.565	13.17
32) J2	C1-Fluoranthenes/pyre	0.916	1.104		1.010	13.17
33) J2	C2-Fluoranthenes/pyre	1.420	1.711		1.565	13.17
34) J2	C3-Fluoranthenes/pyre	1.420	1.711		1.565	13.17
35) I	Benz(a)anthracene-d12	-----ISTD-----				
36)	Benz(a)anthracene	1.216	1.474		1.345	13.58

6.4.4

6

Initial Calibration Summary

Page 2 of 2

Job Number: MC24019

Sample: MSS1490-ICC1490

Account: METAMAW META Environmental, Inc.

Lab FileID: S33616A.D

Project: Arcadis, National Grid, Water Street, Hudson, NY

37)	I	Chrysene-d12	-----ISTD-----		
38)	J1	Chrysene	1.052 1.238	1.145	11.50
39)	J2	C1-Benz(a)anthracenes	0.617 0.726	0.671	11.50
40)	J2	C2-Benz(a)anthracenes	0.478 0.563	0.520	11.50
41)	J2	C3-Benz(a)anthracenes	0.242 0.285	0.263	11.50
42)	J2	C4-Benz(a)anthracenes	0.179 0.211	0.195	11.50
43)	I	Benzo(b)fluoranthene-	-----ISTD-----		
44)		Benzo(b)fluoranthene	1.245 1.432	1.339	9.87
45)	I	Benzo(k)fluoranthene-	-----ISTD-----		
46)		Benzo(k)fluoranthene	1.042 1.299	1.170	15.51
47)	I	Benzo(a)pyrene-d12	-----ISTD-----		
48)		Benzo(e)pyrene	1.946 1.899	1.923	1.71
49)		Benzo(a)pyrene	1.028 1.212	1.120	11.61
50)	I	Perylene-d12	-----ISTD-----		
51)		Perylene	1.251 1.470	1.360	11.34
52)		Indeno(1,2,3-cd)pyren	2.377 2.235	2.306	4.37
53)		Dibenz(a,h)anthracene	2.156 1.762	1.959	14.23
54)		Benzo(g,h,i)perylene	2.072 2.022	2.047	1.73

(#) = Out of Range

S130920-SPMEPAH-CCQ-13.M

Fri Oct 25 16:37:20 2013

6.4.4

6

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33619.D
 Acq On : 20 Sep 2013 5:01 pm
 Operator : RUBENP
 Sample : mc24019-1
 Misc : ms29817,mss1490,,,,,
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 24 16:37:33 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) Naphthalene-d8	13.885	136	34206	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	24094	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	19772	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	15759	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	13637	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.021	188	34997	5.00	ng/mL	0.00
26) Anthracene-d10	20.117	188	42242	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	24039	1.67	ng/mL	0.00
30) Pyrene-d10	22.919	212	22693	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	10055	0.50	ng/mL	0.00
37) Chrysene-d12	25.418	240	12367	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	9225	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	9951	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.791	264	6299	0.33	ng/mL	-0.01
50) Perylene-d12	29.016	264	5206	0.33	ng/mL	-0.01

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.918	128	4720759	4010.219	ng/mL	100
3) C1-Naphthalenes	15.089	142	1802396m	1531.110	ng/mL	
4) C2-Naphthalenes	16.401	156	854263m	367.366	ng/mL	
5) C3-Naphthalenes	17.456	170	314373m	199.126	ng/mL	
7) C4-Naphthalenes	18.868	184	55211m	71.463	ng/mL	
9) 2-Methylnaphthalene	15.089	142	1166585	667.062	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	634763	414.569	ng/mL	100
13) Acenaphthylene	16.801	152	52395	23.980	ng/mL#	100
14) Acenaphthene	17.154	154	936029	401.155	ng/mL	98
16) Fluorene	18.138	166	754488m	203.799	ng/mL	
17) C1-Fluorenes	19.227	180	166559m	53.014	ng/mL	
18) C2-Fluorenes	20.245	194	52350m	21.824	ng/mL	
19) C3-Fluorenes	21.091	208	8256m	3.691	ng/mL	
21) Phenanthrene	20.072	178	1809843	205.231	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.084	192	343642m	35.266	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	60521m	16.700	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	12689m	8.346	ng/mL	
25) C4-Phenanthrenes/anthr...	23.530	234	2148m	3.126	ng/mL	
27) Anthracene	20.155	178	385161	36.009	ng/mL	100
29) Fluoranthene	22.483	202	420604	21.710	ng/mL#	80
31) Pyrene	22.954	202	300617	14.133	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.618	216	75003m	5.465	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.442	230	11453m	0.538	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.425	244	2070m	0.097	ng/mL	
36) Benz(a)anthracene	25.378	228	23549	0.871	ng/mL	97
38) Chrysene	25.472	228	18300	0.646	ng/mL	99
39) C1-Benz(a)anthracenes/...	26.300	242	5047m	0.304	ng/mL	
44) Benzo(b)fluoranthene	27.952	252	1967	0.053	ng/mL#	67
46) Benzo(k)fluoranthene	28.003	252	2486	0.071	ng/mL#	60
48) Benzo(e)pyrene	28.712	252	1128	0.031	ng/mL#	68
49) Benzo(a)pyrene	28.858	252	1382	0.065	ng/mL#	63
51) Perylene	29.083	252	289	0.014	ng/mL#	41

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
Data File : S33619.D
Acq On : 20 Sep 2013 5:01 pm
Operator : RUBENP
Sample : mc24019-1
Misc : ms29817,mss1490,,,,,
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 24 16:37:33 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) Indeno(1,2,3-cd)pyrene	32.588	276	226	0.006	ng/mL#	64
53) Dibenz(a,h)anthracene	32.562	278	106	0.003	ng/mL#	1
54) Benzo(g,h,i)perylene	33.651	276	183	0.006	ng/mL#	84

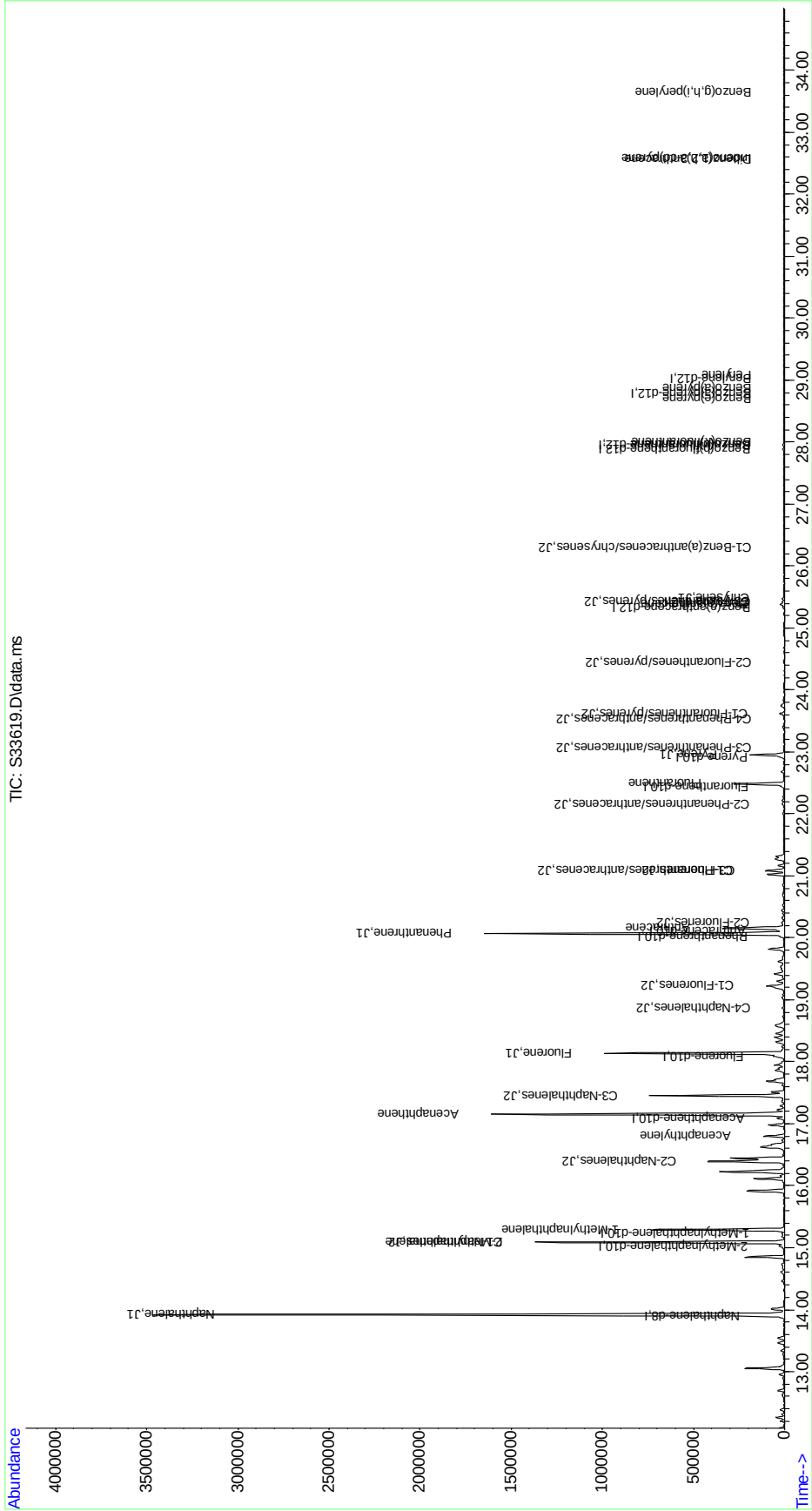
(#) = qualifier out of range (m) = manual integration (+) = signals summed

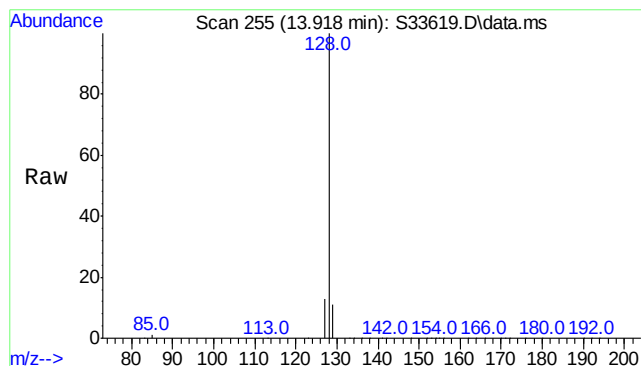
7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130920\
Data File : S33619.D
Acq On : 20 Sep 2013 5:01 pm
Operator : RUBENP
Sample : mc24019-1
Misc : ms29817,mss1490,,,,,
ALS Vial : 6 Sample Multiplier: 1

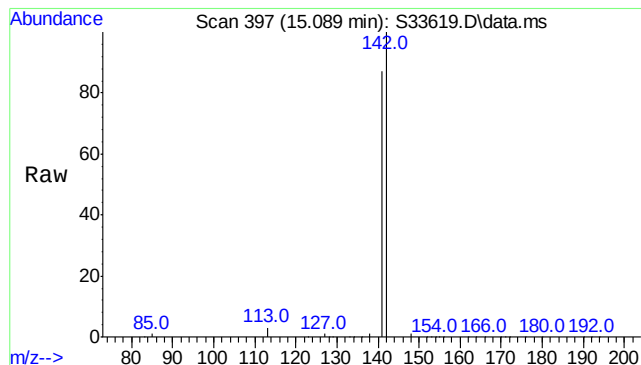
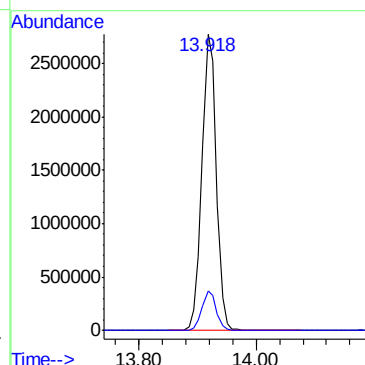
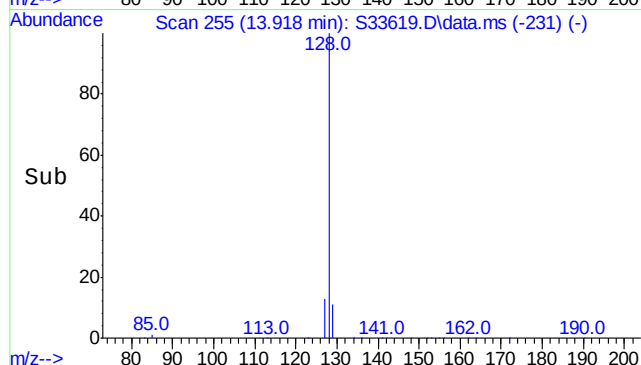
Quant Time: Oct 24 16:37:33 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





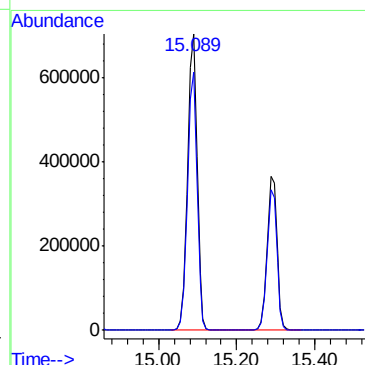
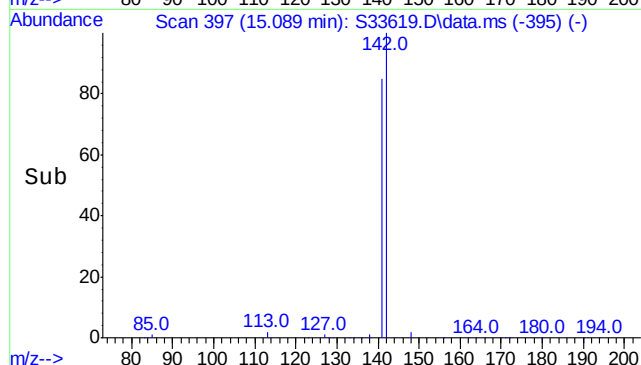
#2
Naphthalene
Concen: 4010.219 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. 0.000 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

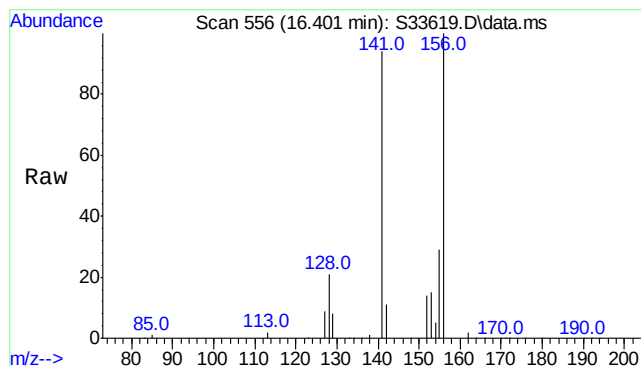
Tgt Ion:128 Resp: 4720759
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



#3
C1-Naphthalenes
Concen: 1531.110 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. -0.033 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

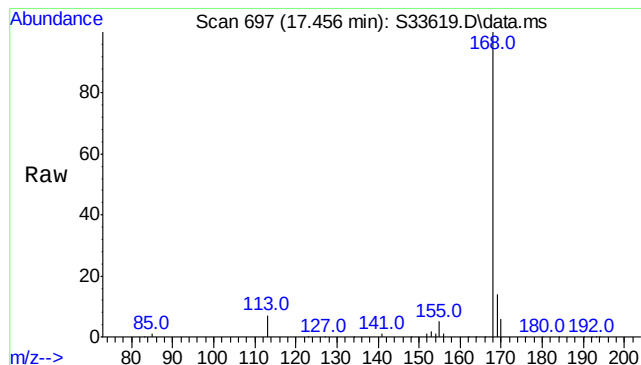
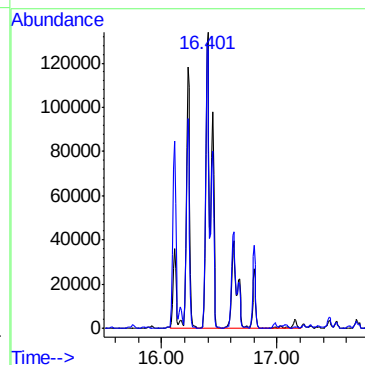
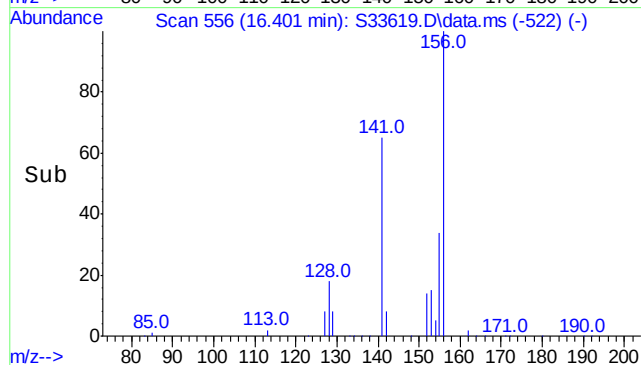
Tgt Ion:142 Resp: 1802396
Ion Ratio Lower Upper
142 100
141 32.0 71.0 106.6#





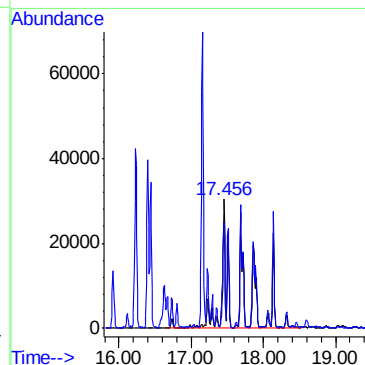
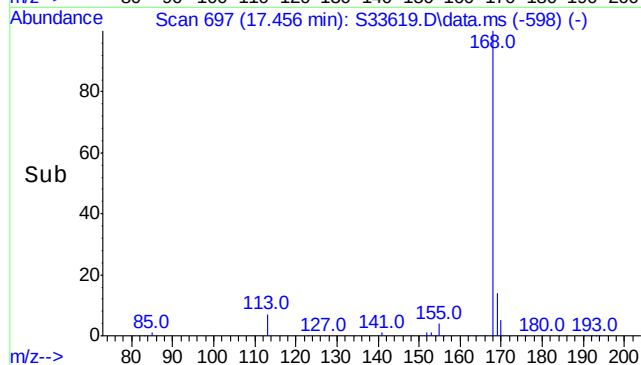
#4
C2-Naphthalenes
Concen: 367.366 ng/mL m
RT: 16.401 min Scan# 556
Delta R.T. -0.056 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

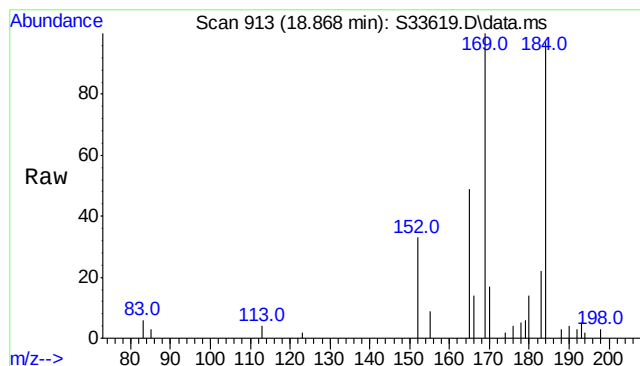
Tgt Ion:156 Resp: 854263
Ion Ratio Lower Upper
156 100
141 12.9 79.0 118.4#



#5
C3-Naphthalenes
Concen: 199.126 ng/mL m
RT: 17.456 min Scan# 697
Delta R.T. -0.203 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

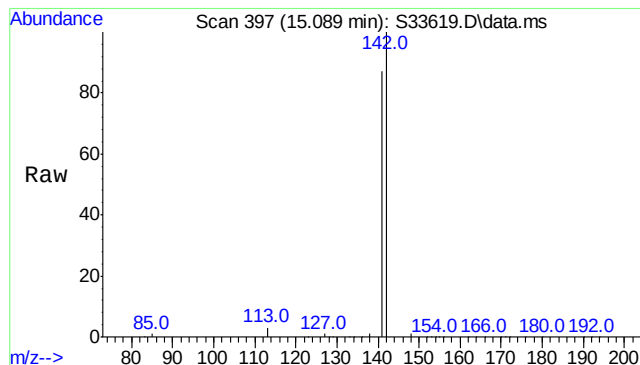
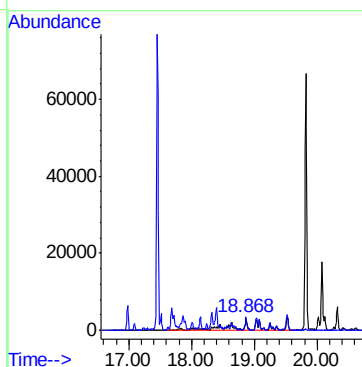
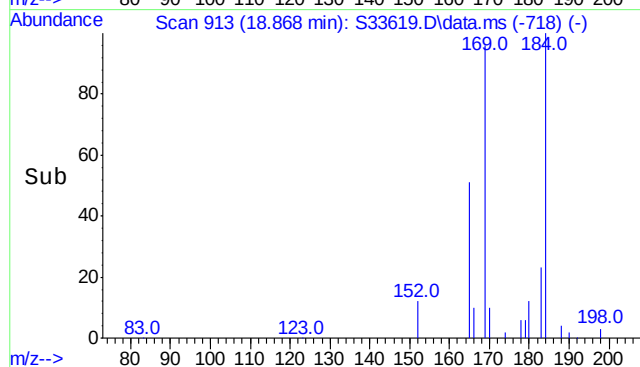
Tgt Ion:170 Resp: 314373
Ion Ratio Lower Upper
170 100
155 16.9 80.7 121.1#





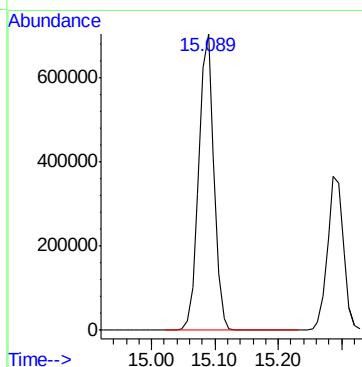
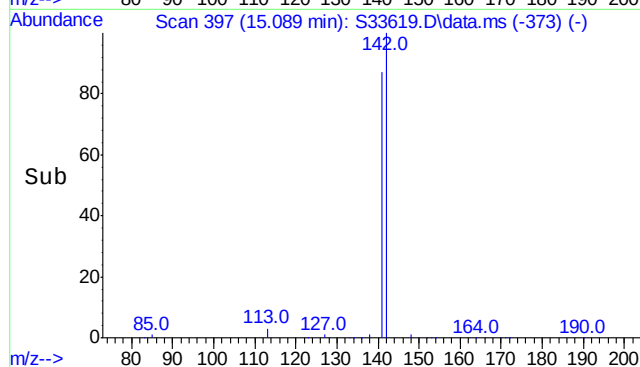
#7
C4-Naphthalenes
Concen: 71.463 ng/mL m
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

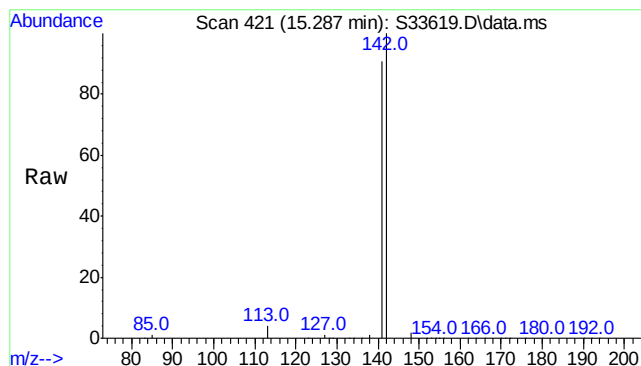
Tgt Ion:184 Resp: 55211
Ion Ratio Lower Upper
184 100
169 12.6 80.1 120.1#



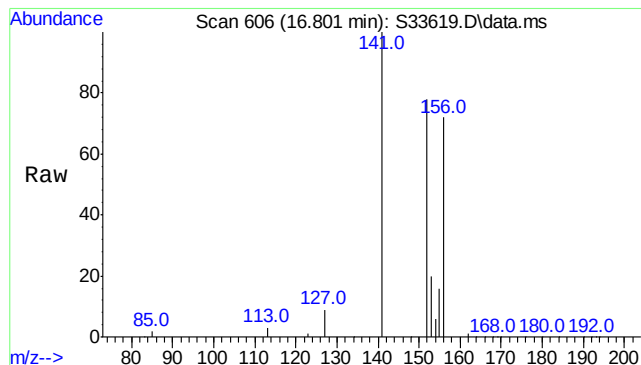
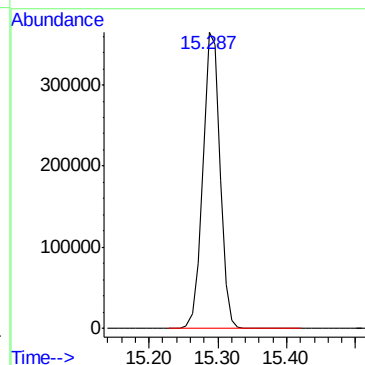
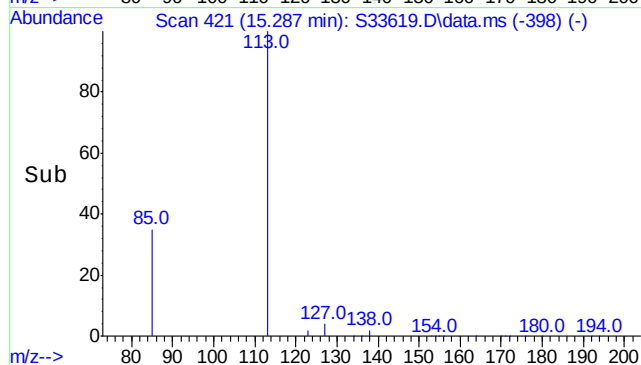
#9
2-Methylnaphthalene
Concen: 667.062 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

Tgt Ion:142 Resp: 1166585

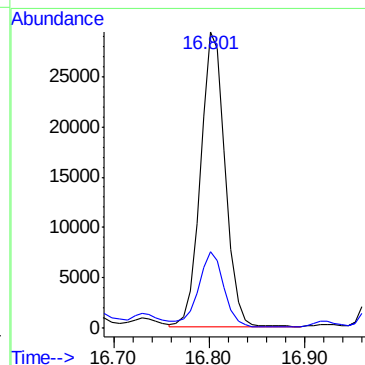
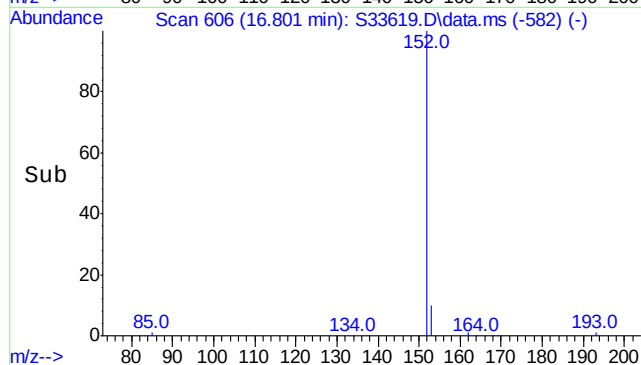


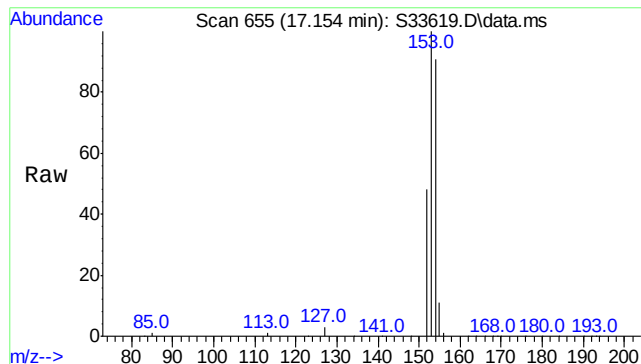


#11
1-Methylnaphthalene
Concen: 414.569 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm
Tgt Ion:142 Resp: 634763



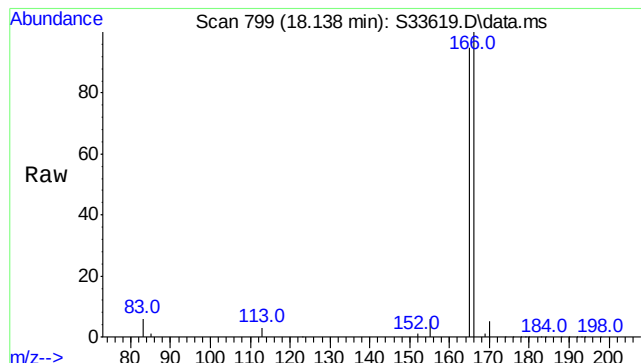
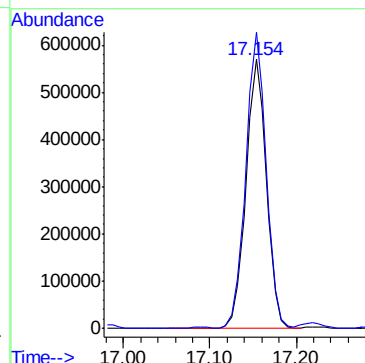
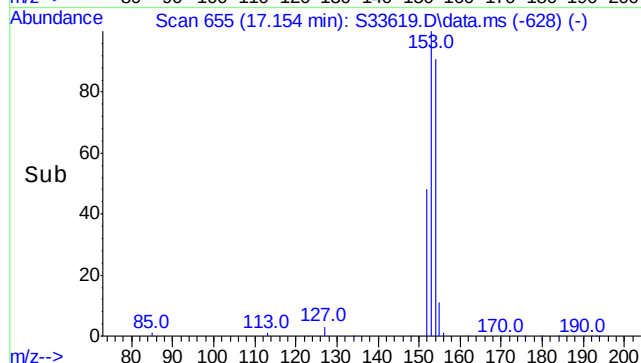
#13
Acenaphthylene
Concen: 23.980 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm
Tgt Ion:152 Resp: 52395
Ion Ratio Lower Upper
152 100
153 26.3 0.0 0.0#





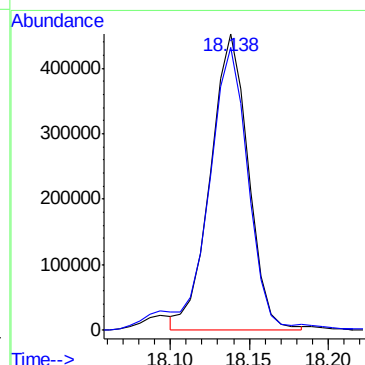
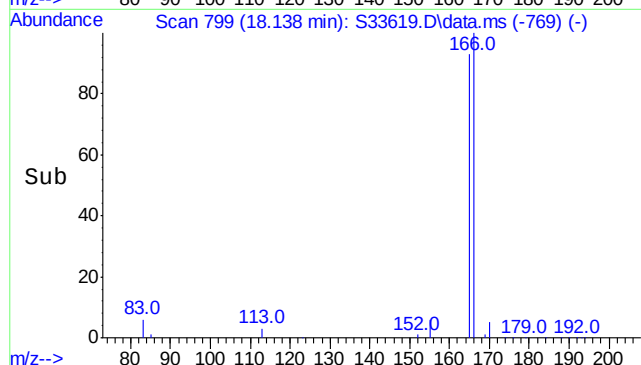
#14
Acenaphthene
Concen: 401.155 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

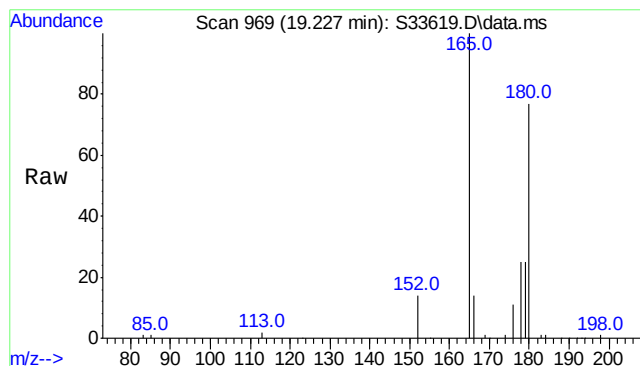
Tgt Ion:154 Resp: 936029
Ion Ratio Lower Upper
154 100
153 109.8 86.6 129.8



#16
Fluorene
Concen: 203.799 ng/mL m
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

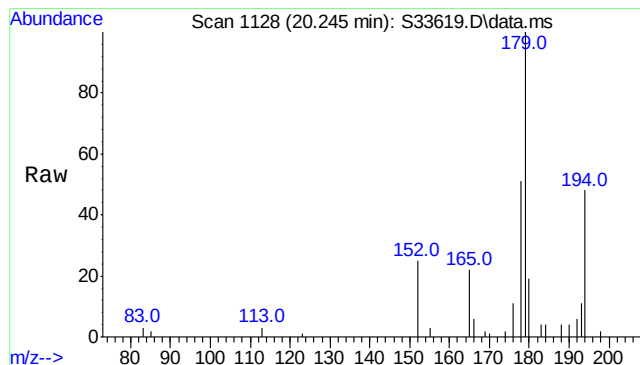
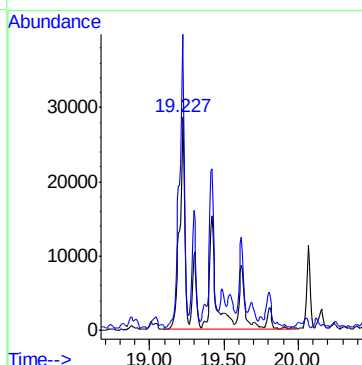
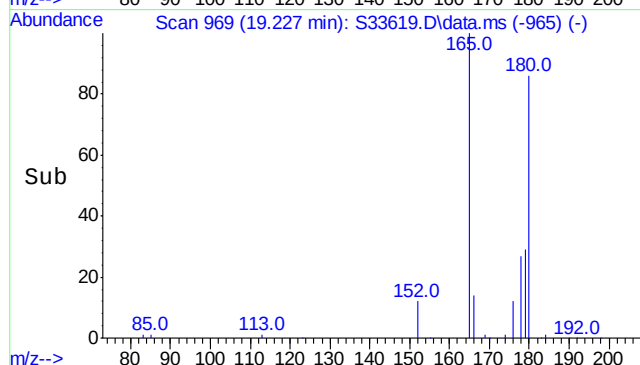
Tgt Ion:166 Resp: 754488
Ion Ratio Lower Upper
166 100
165 102.6 76.4 114.6





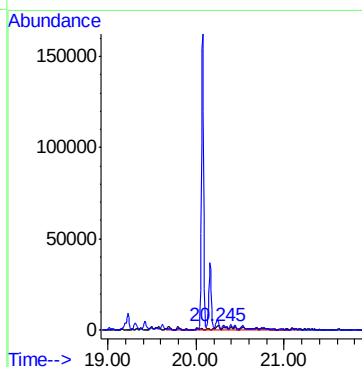
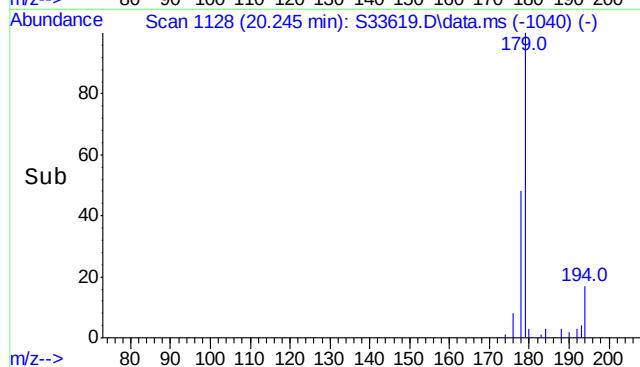
#17
C1-Fluorenes
Concen: 53.014 ng/mL m
RT: 19.227 min Scan# 969
Delta R.T. -0.085 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

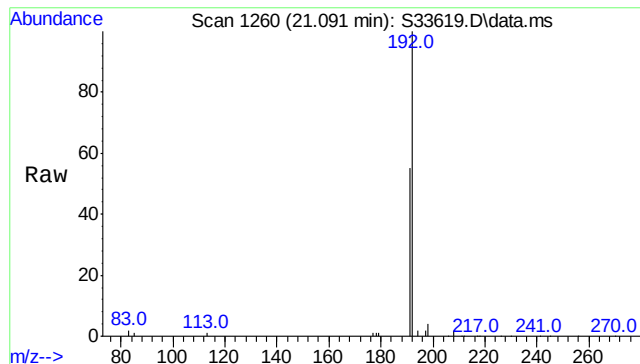
Tgt Ion:180 Resp: 166559
Ion Ratio Lower Upper
180 100
165 15.6 111.1 166.7#



#18
C2-Fluorenes
Concen: 21.824 ng/mL m
RT: 20.245 min Scan# 1128
Delta R.T. -0.069 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

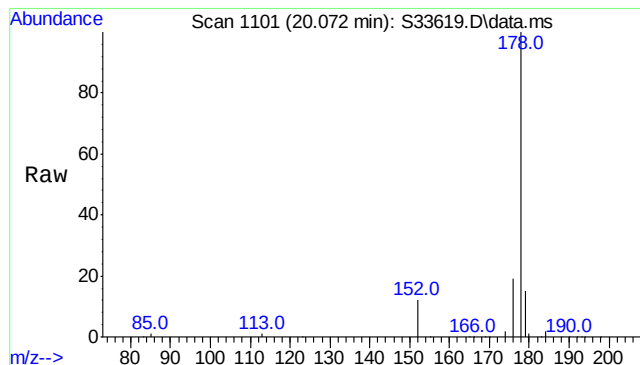
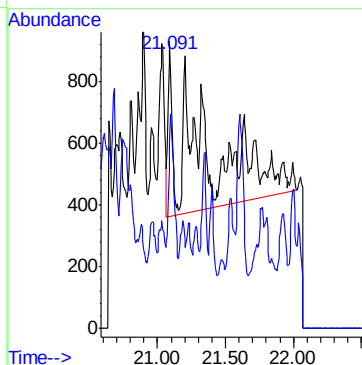
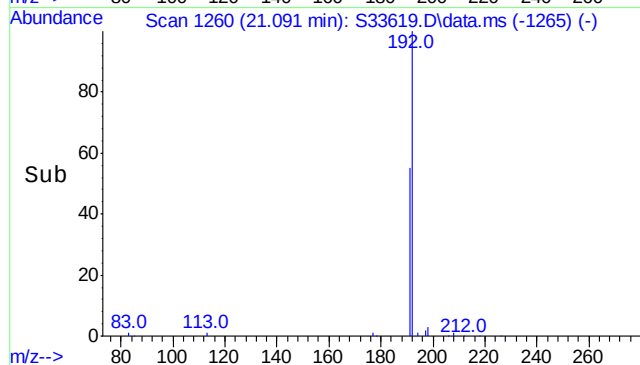
Tgt Ion:194 Resp: 52350
Ion Ratio Lower Upper
194 100
179 7.1 131.8 197.6#





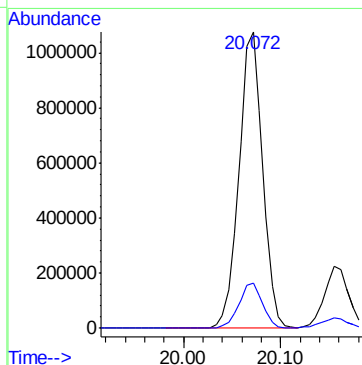
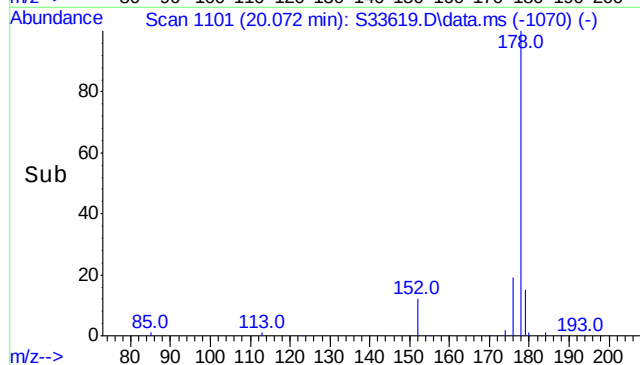
#19
C3-Fluorenes
Concen: 3.691 ng/mL m
RT: 21.091 min Scan# 1260
Delta R.T. -0.261 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

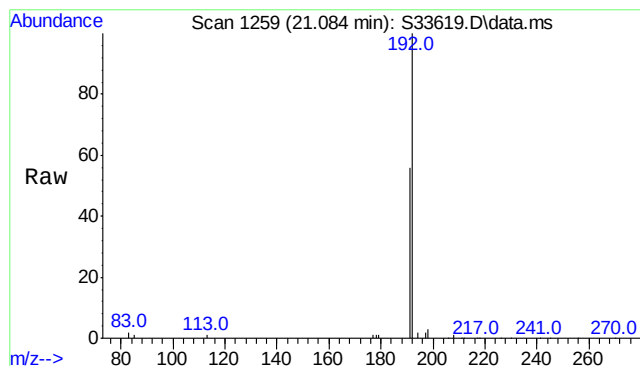
Tgt Ion:208 Resp: 8256
Ion Ratio Lower Upper
208 100
178 0.0 43.4 65.2#



#21
Phenanthrene
Concen: 205.231 ng/mL
RT: 20.072 min Scan# 1101
Delta R.T. -0.000 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

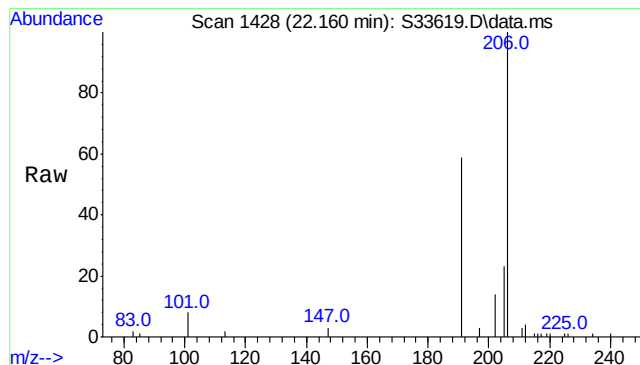
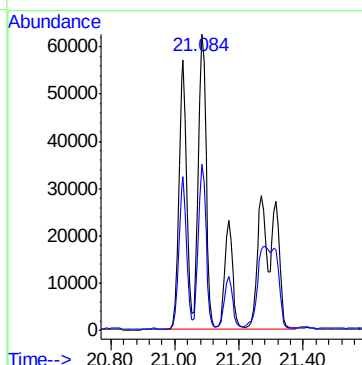
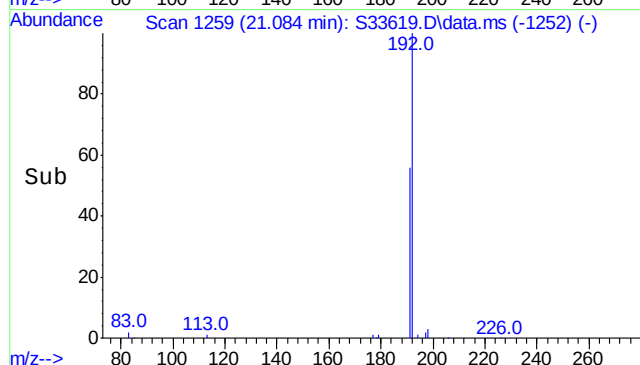
Tgt Ion:178 Resp: 1809843
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6





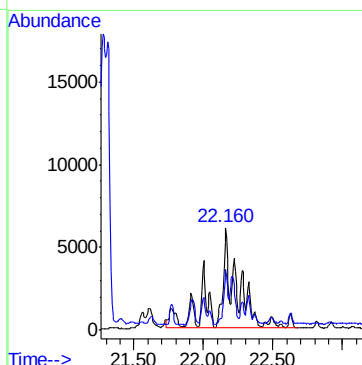
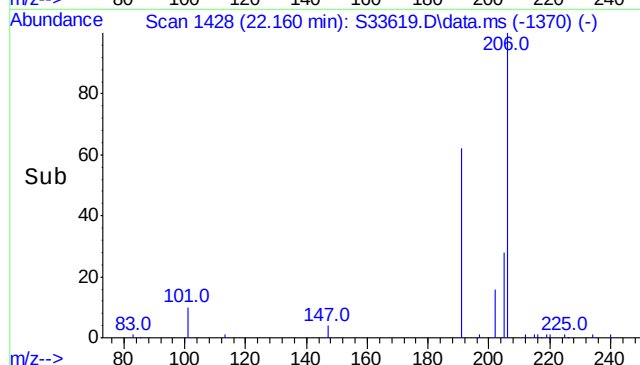
#22
C1-Phenanthrenes/anthracenes
Concen: 35.266 ng/mL m
RT: 21.084 min Scan# 1259
Delta R.T. -0.069 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

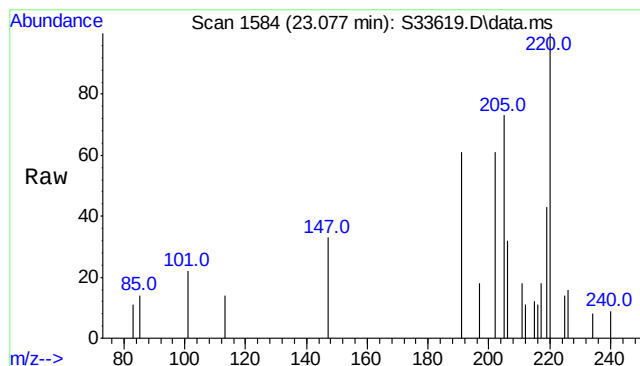
Tgt Ion:192 Resp: 343642
Ion Ratio Lower Upper
192 100
191 5.1 45.1 67.7#



#23
C2-Phenanthrenes/anthracenes
Concen: 16.700 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

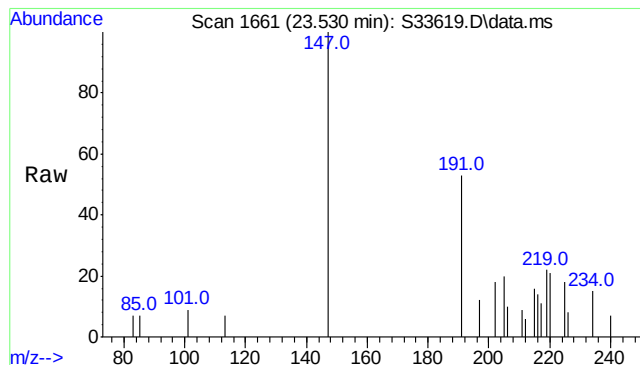
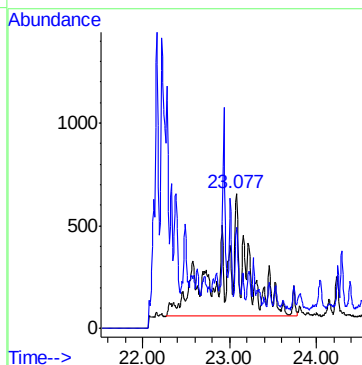
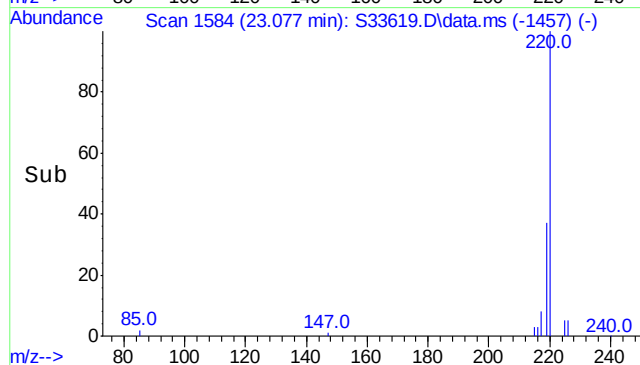
Tgt Ion:206 Resp: 60521
Ion Ratio Lower Upper
206 100
191 11.9 45.1 67.7#





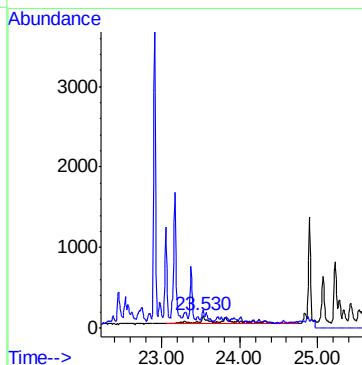
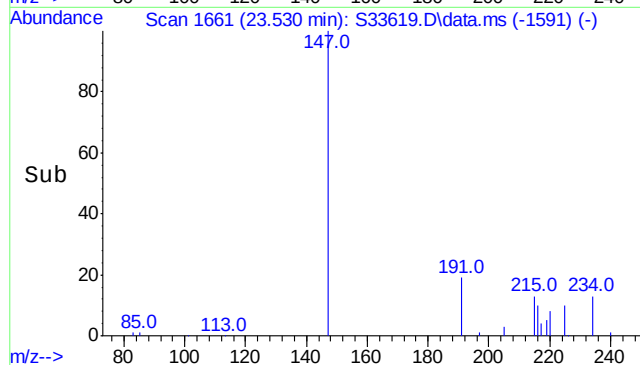
#24
C3-Phenanthrenes/anthracenes
Concen: 8.346 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

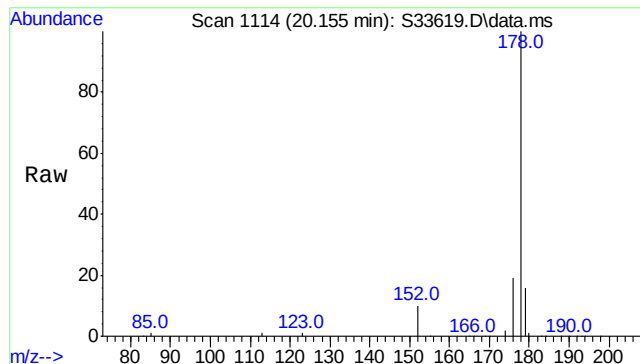
Tgt Ion:220 Resp: 12689
Ion Ratio Lower Upper
220 100
205 6.0 45.1 67.7#



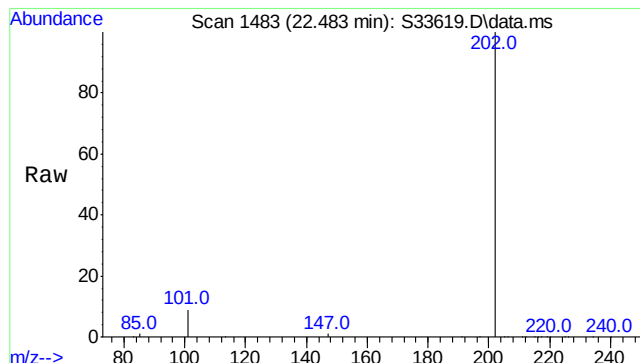
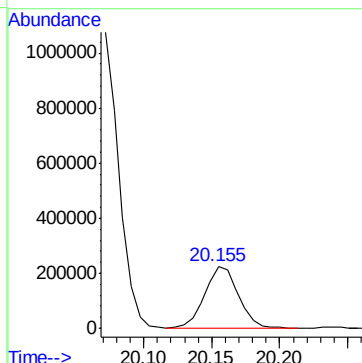
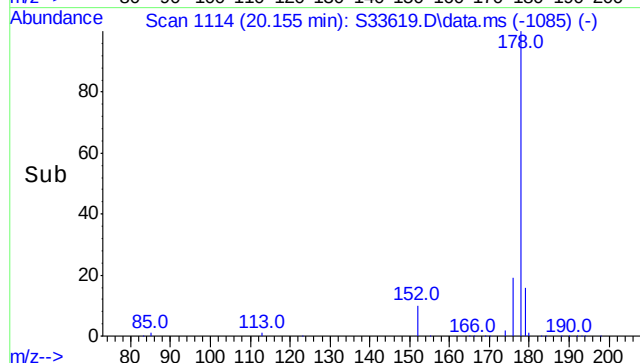
#25
C4-Phenanthrenes/anthracenes
Concen: 3.126 ng/mL m
RT: 23.530 min Scan# 1661
Delta R.T. -0.699 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

Tgt Ion:234 Resp: 2148
Ion Ratio Lower Upper
234 100
219 2.5 53.0 79.6#

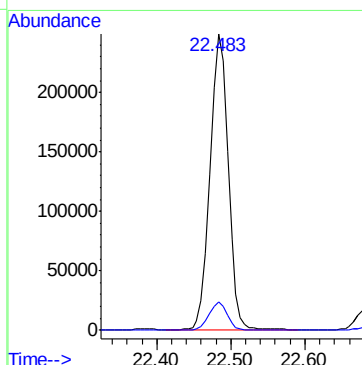
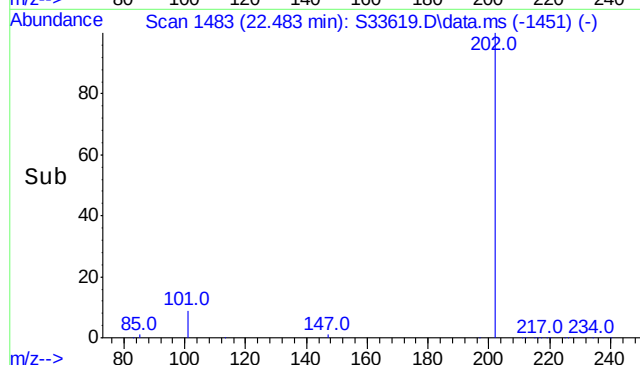


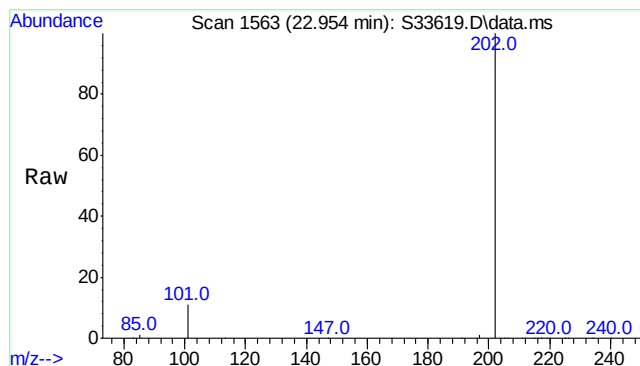


#27
 Anthracene
 Concen: 36.009 ng/mL
 RT: 20.155 min Scan# 1114
 Delta R.T. -0.013 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm
 Tgt Ion:178 Resp: 385161



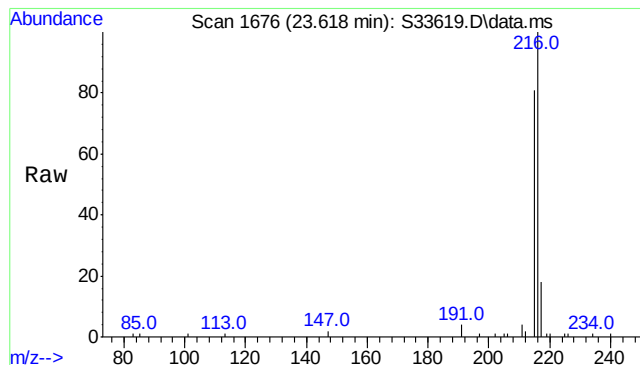
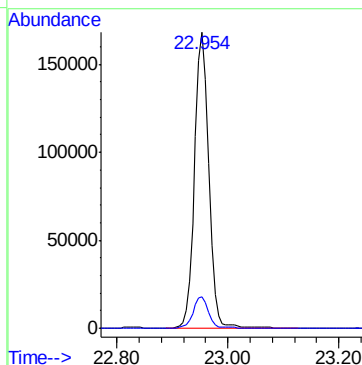
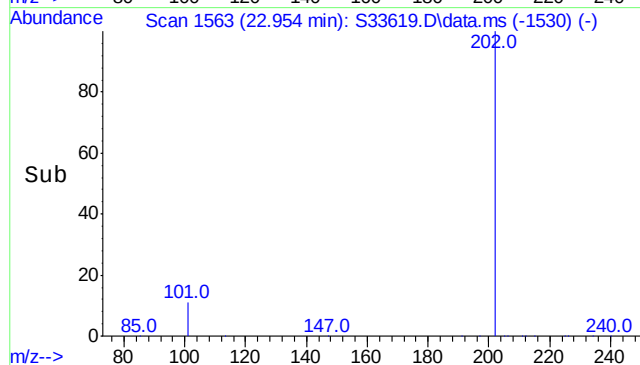
#29
 Fluoranthene
 Concen: 21.710 ng/mL
 RT: 22.483 min Scan# 1483
 Delta R.T. -0.012 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm
 Tgt Ion:202 Resp: 420604
 Ion Ratio Lower Upper
 202 100
 101 9.3 14.3 21.5#





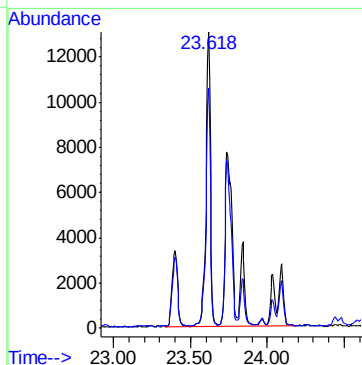
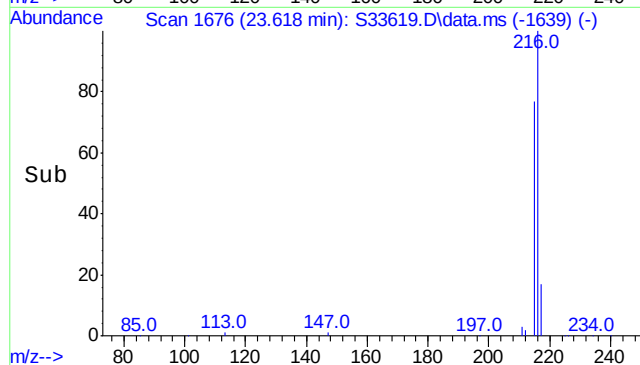
#31
 Pyrene
 Concen: 14.133 ng/mL
 RT: 22.954 min Scan# 1563
 Delta R.T. -0.006 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

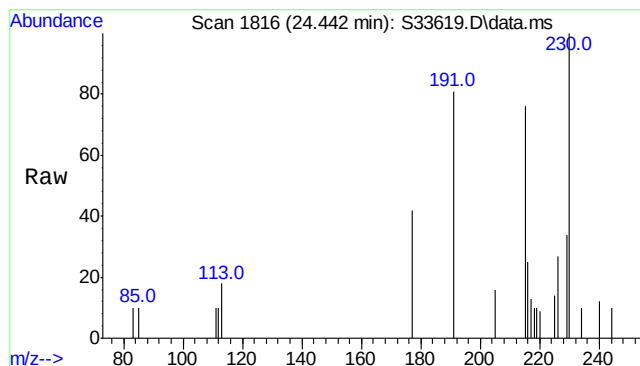
Tgt Ion	Ratio	Lower	Upper
202	100		
101	11.3	16.6	24.8#



#32
 C1-Fluoranthenes/pyrenes
 Concen: 5.465 ng/mL m
 RT: 23.618 min Scan# 1676
 Delta R.T. -0.064 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

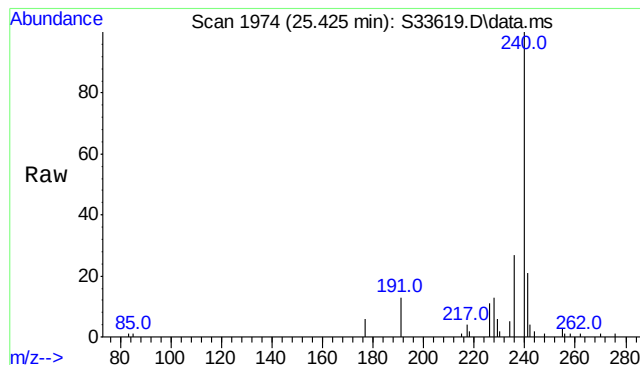
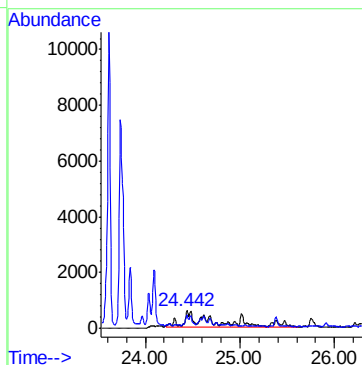
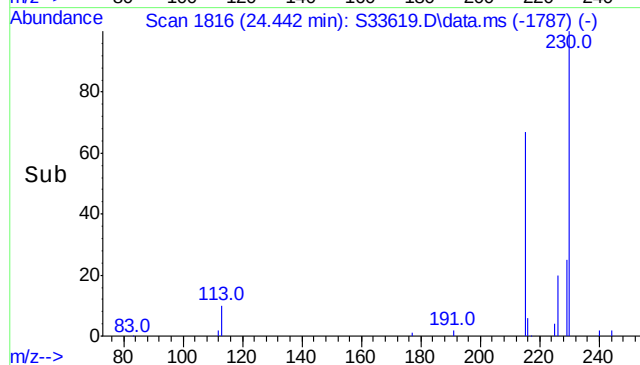
Tgt Ion	Ratio	Lower	Upper
216	100		
215	28.4	67.0	100.6#





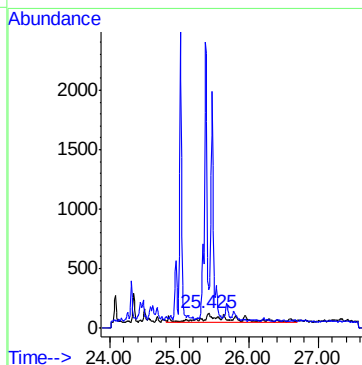
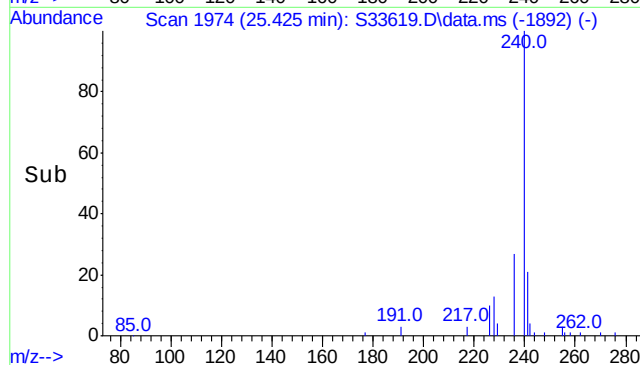
#33
C2-Fluoranthenes/pyrenes
Concen: 0.538 ng/mL m
RT: 24.442 min Scan# 1816
Delta R.T. -0.069 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

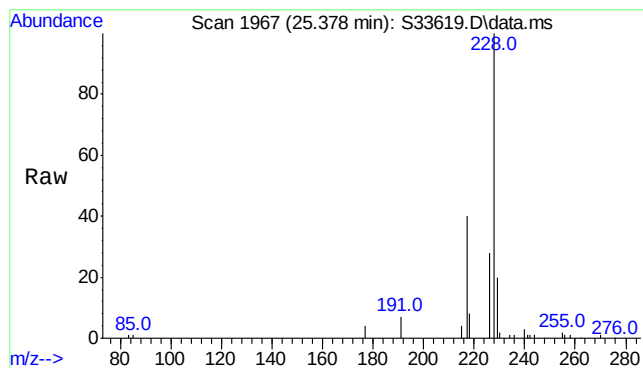
Tgt Ion:230 Resp: 11453
Ion Ratio Lower Upper
230 100
215 6.1 51.4 77.2#



#34
C3-Fluoranthenes/pyrenes
Concen: 0.097 ng/mL m
RT: 25.425 min Scan# 1974
Delta R.T. -0.065 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

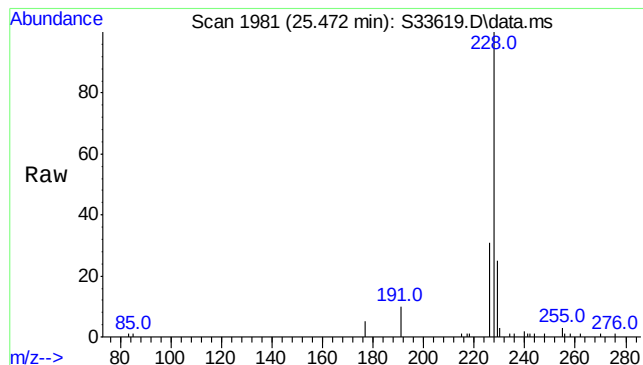
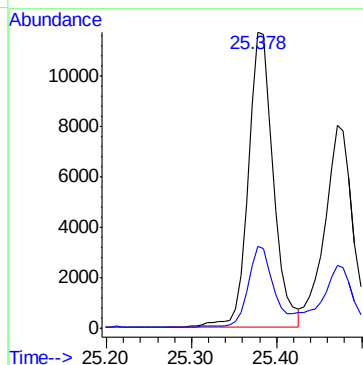
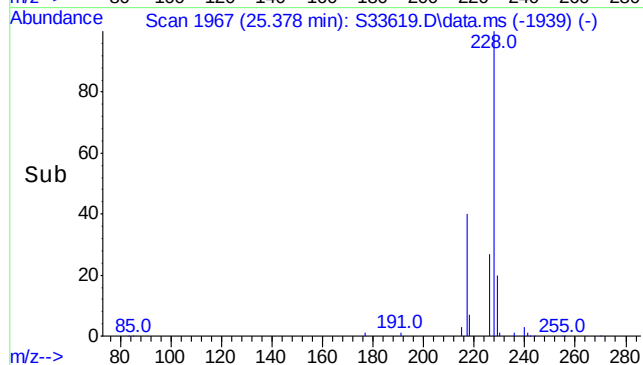
Tgt Ion:244 Resp: 2070
Ion Ratio Lower Upper
244 100
229 32.2 112.3 168.5#





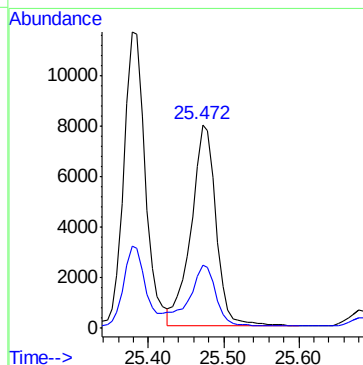
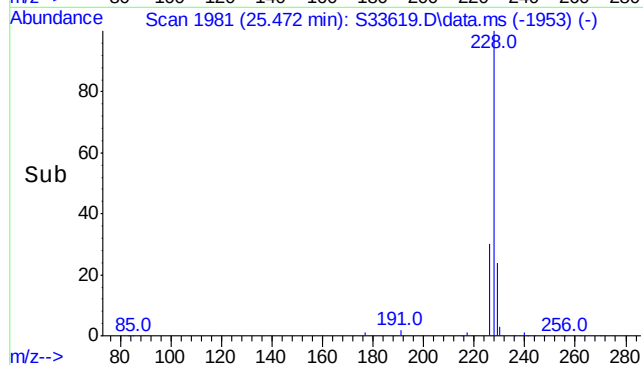
#36
Benz(a)anthracene
Concen: 0.871 ng/mL
RT: 25.378 min Scan# 1967
Delta R.T. -0.014 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

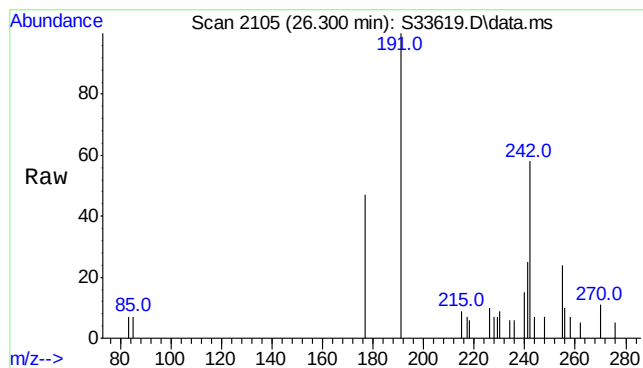
Tgt Ion:228 Resp: 23549
Ion Ratio Lower Upper
228 100
226 27.8 23.7 35.5



#38
Chrysene
Concen: 0.646 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

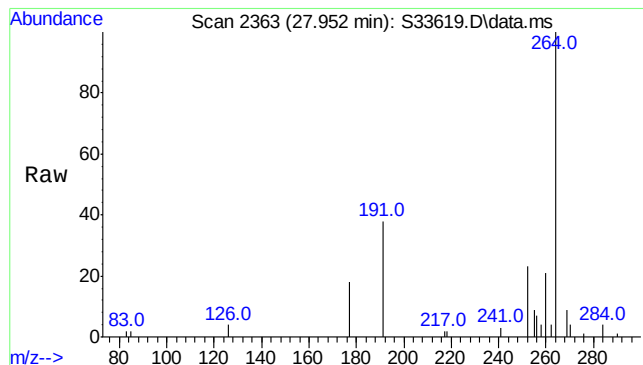
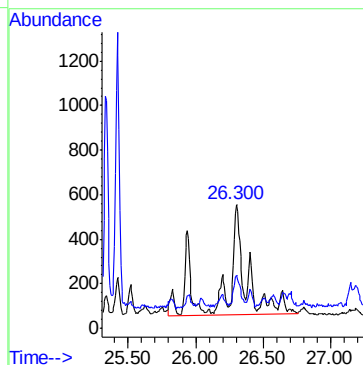
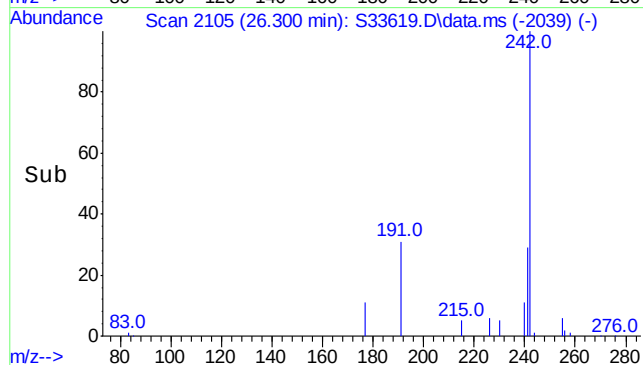
Tgt Ion:228 Resp: 18300
Ion Ratio Lower Upper
228 100
226 31.7 26.0 39.0





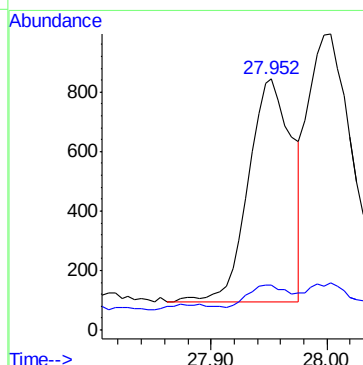
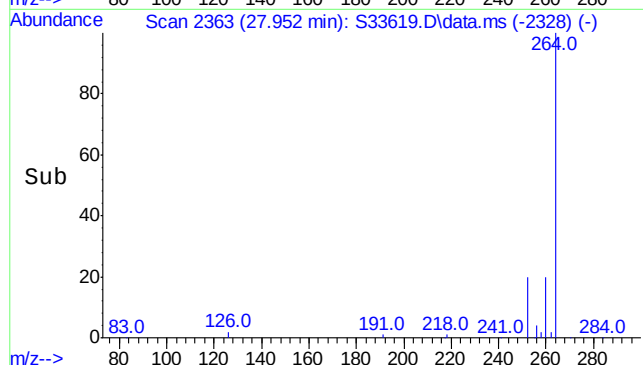
#39
 C1-Benz(a)anthracenes/chrysenes
 Concen: 0.304 ng/mL m
 RT: 26.300 min Scan# 2105
 Delta R.T. -0.058 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

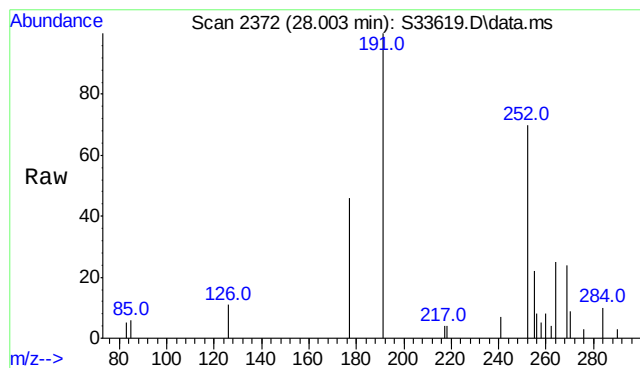
Tgt Ion	Ratio	Lower	Upper
242	100		
241	9.7	27.2	40.8#



#44
 Benzo(b)fluoranthene
 Concen: 0.053 ng/mL
 RT: 27.952 min Scan# 2363
 Delta R.T. -0.006 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

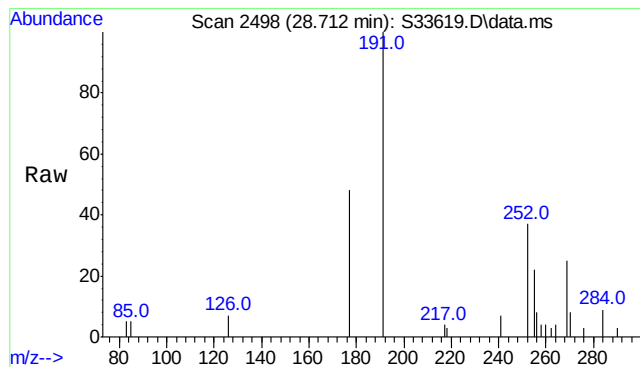
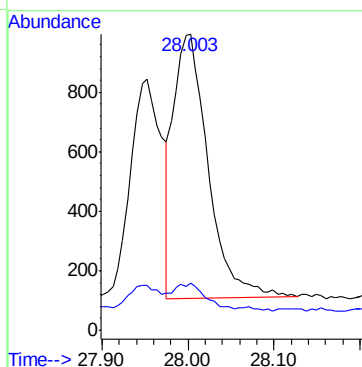
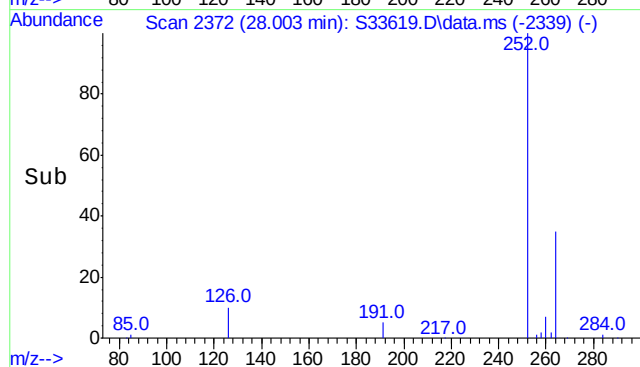
Tgt Ion	Ratio	Lower	Upper
252	100		
126	10.9	23.0	34.4#





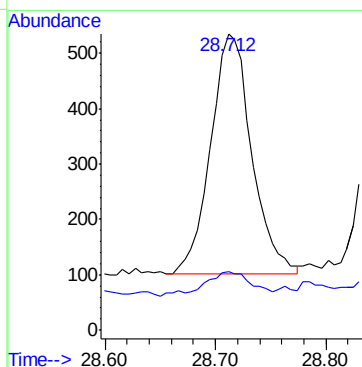
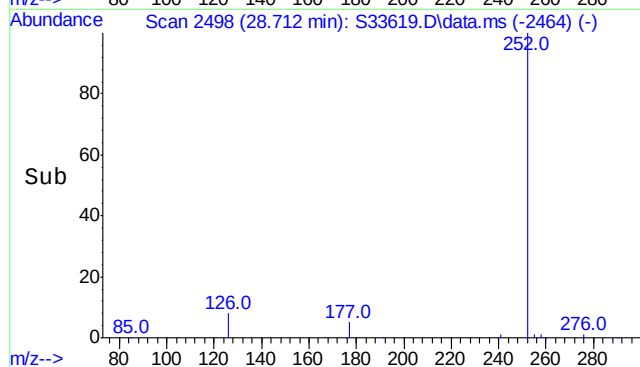
#46
Benzo(k)fluoranthene
Concen: 0.071 ng/mL
RT: 28.003 min Scan# 2372
Delta R.T. -0.017 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

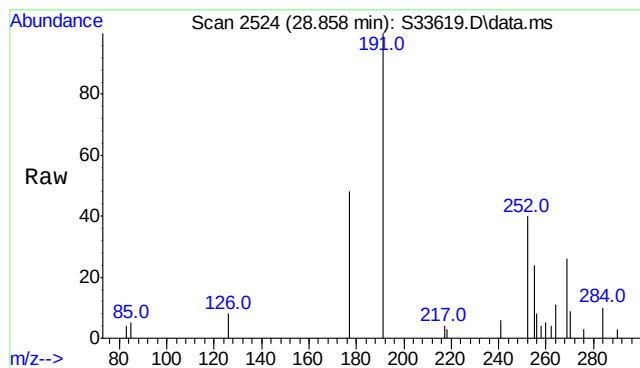
Tgt Ion:252 Resp: 2486
Ion Ratio Lower Upper
252 100
126 8.8 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.031 ng/mL
RT: 28.712 min Scan# 2498
Delta R.T. -0.011 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

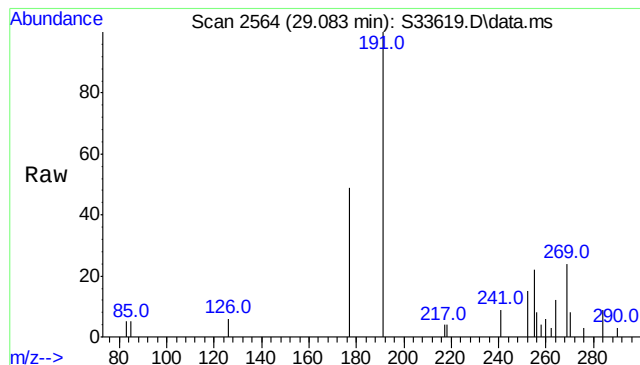
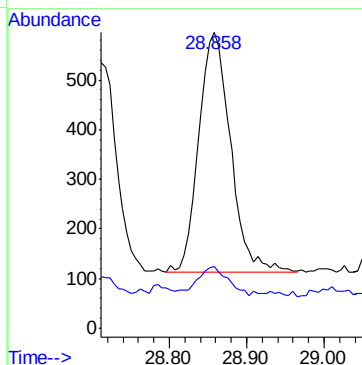
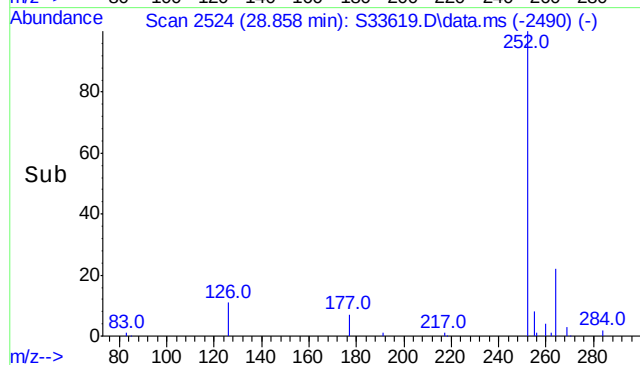
Tgt Ion:252 Resp: 1128
Ion Ratio Lower Upper
252 100
126 11.3 22.6 34.0#





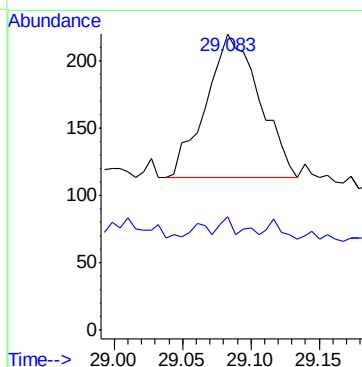
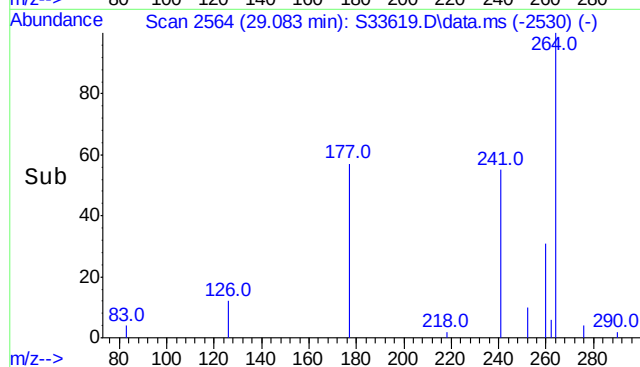
#49
Benzo(a)pyrene
Concen: 0.065 ng/mL
RT: 28.858 min Scan# 2524
Delta R.T. -0.011 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

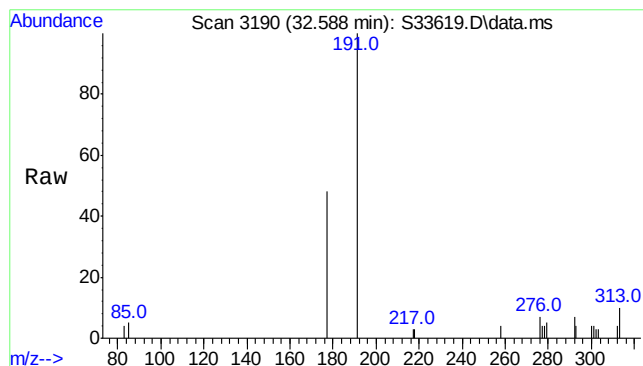
Tgt Ion:252 Resp: 1382
Ion Ratio Lower Upper
252 100
126 10.9 25.1 37.7#



#51
Perylene
Concen: 0.014 ng/mL
RT: 29.083 min Scan# 2564
Delta R.T. -0.011 min
Lab File: S33619.D
Acq: 20 Sep 2013 5:01 pm

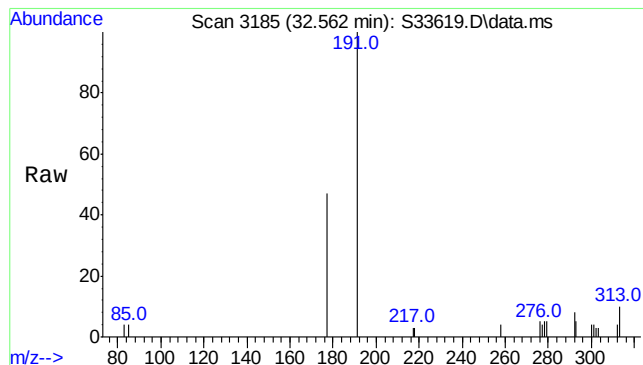
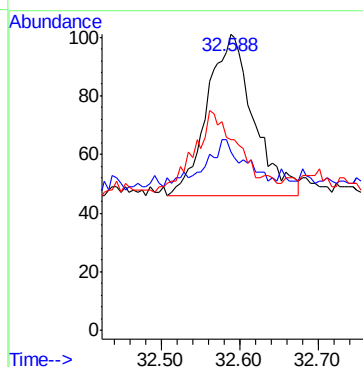
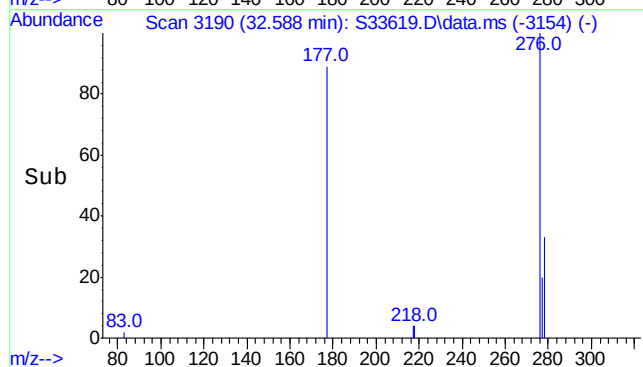
Tgt Ion:252 Resp: 289
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#





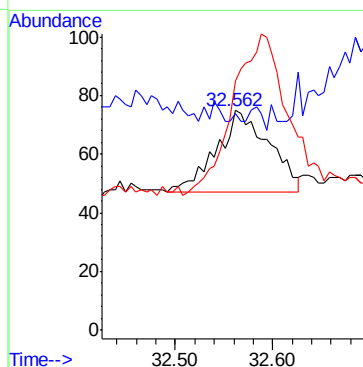
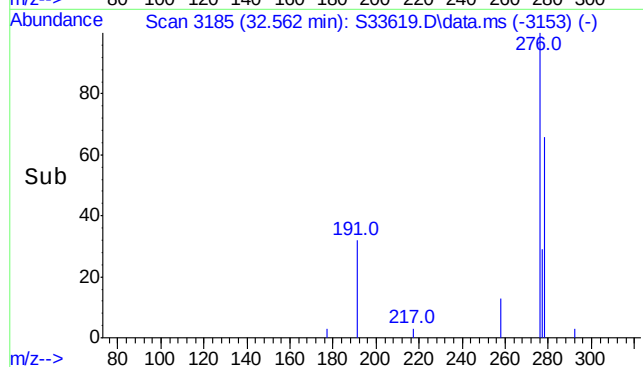
#52
 Indeno(1,2,3-cd)pyrene
 Concen: 0.006 ng/mL
 RT: 32.588 min Scan# 3190
 Delta R.T. -0.006 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

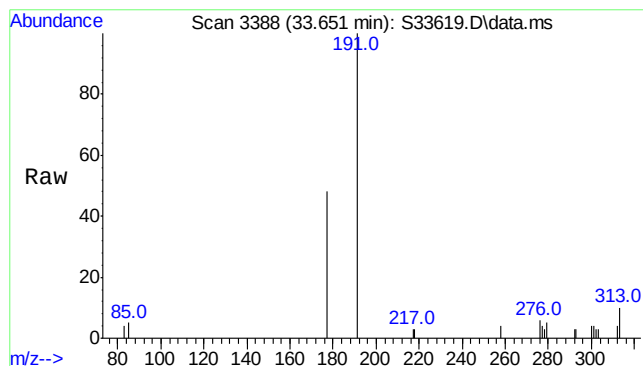
Tgt Ion	Ratio	Lower	Upper
276	100		
277	16.8	21.3	31.9#
278	0.0	21.8	32.8#



#53
 Dibenz(a,h)anthracene
 Concen: 0.003 ng/mL
 RT: 32.562 min Scan# 3185
 Delta R.T. -0.026 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

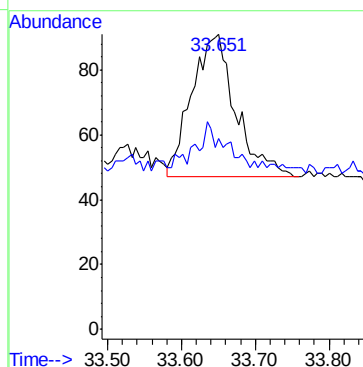
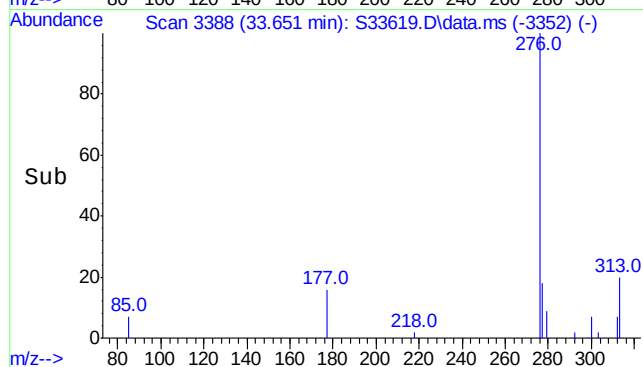
Tgt Ion	Ratio	Lower	Upper
278	100		
279	0.0	32.2	48.4#
276	0.0	242.1	363.1#





#54
 Benzo(g,h,i)perylene
 Concen: 0.006 ng/mL
 RT: 33.651 min Scan# 3388
 Delta R.T. -0.005 min
 Lab File: S33619.D
 Acq: 20 Sep 2013 5:01 pm

Tgt Ion: 276 Resp: 183
 Ion Ratio Lower Upper
 276 100
 277 17.5 20.3 30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33623.D
 Acq On : 20 Sep 2013 8:08 pm
 Operator : RUBENP
 Sample : mc24019-1
 Misc : ms29817,mss1491,,,10
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 24 17:18:04 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

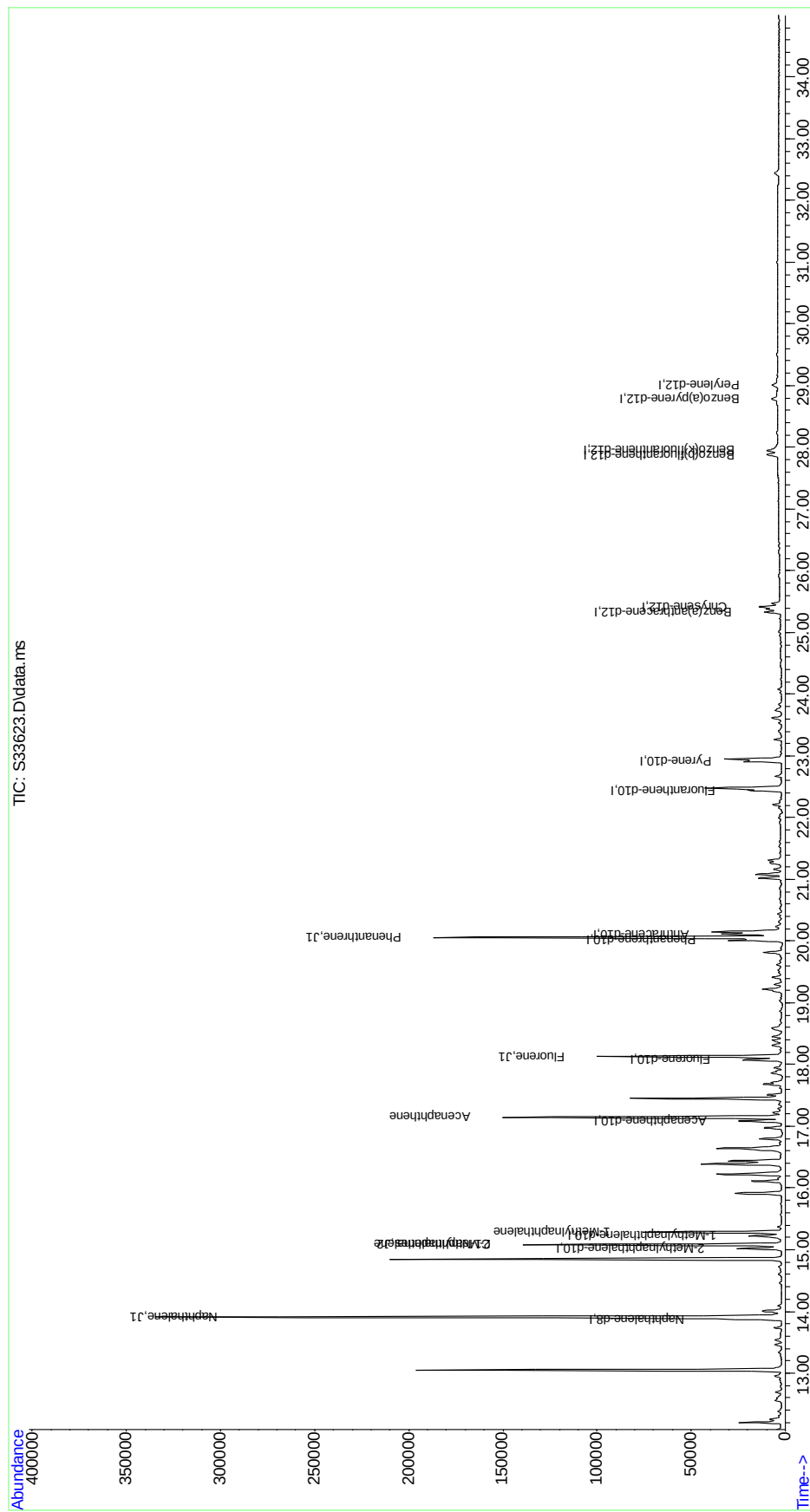
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	47631	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	31794	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	24369	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	17461	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	15370	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	41355	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	47303	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	27415	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	25028	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	10996	0.50	ng/mL	-0.01
37) Chrysene-d12	25.419	240	13690	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.879	264	10581	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	11120	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	7067	0.33	ng/mL	-0.02
50) Perylene-d12	29.010	264	5812	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.910	128	467851	285.415	ng/mL	Qvalue 100
3) C1-Naphthalenes	15.081	142	183973m	112.234	ng/mL	
9) 2-Methylnaphthalene	15.081	142	119256	51.677	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	64585	34.224	ng/mL	100
14) Acenaphthene	17.147	154	89938	34.788	ng/mL	98
16) Fluorene	18.132	166	79221m	18.986	ng/mL	
21) Phenanthrene	20.059	178	204443	19.619	ng/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

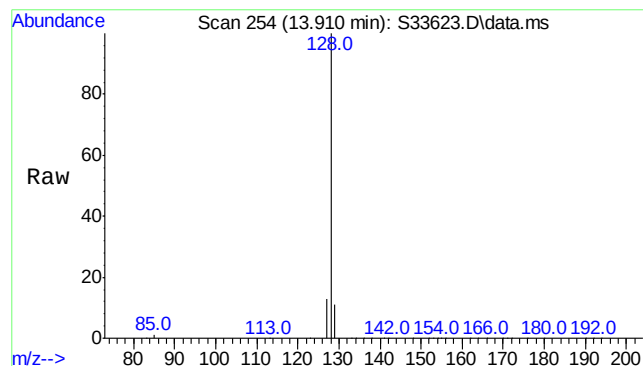
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Data Path : Z:\data\S130920\
Data File : S33623.D
Acq On : 20 Sep 2013 8:08 pm
Operator : RUBENP
Sample : mc24019-1
Misc : ms29817,mss1491,,,,10
ALS Vial : 10 Sample Multiplier: 1
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Quant Time: Oct 24 17:18:04 2013
Quant Method : S:\methods\SJ30920-SPMEPAH-CCQ-13.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration



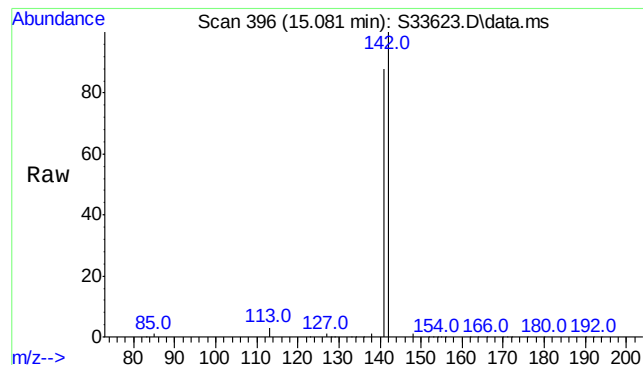
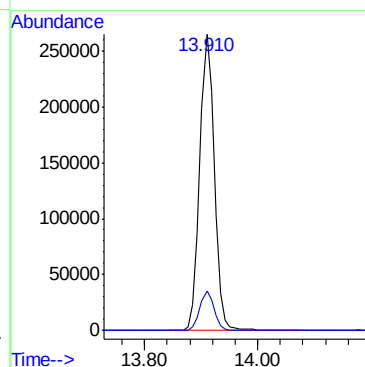
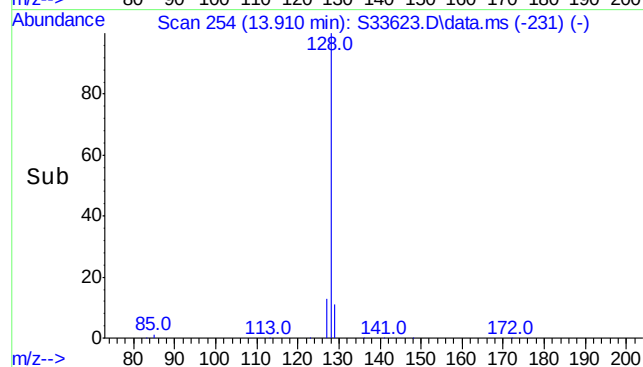
30920-SPMEPAH-CCQ-13.M Fri Oct 25 10:48:36 2013

Page: 2



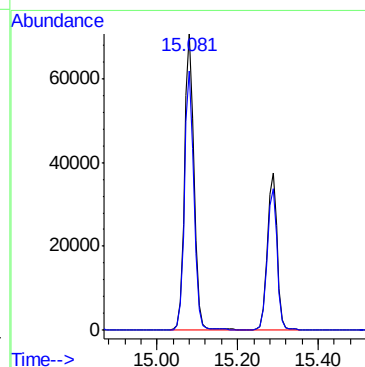
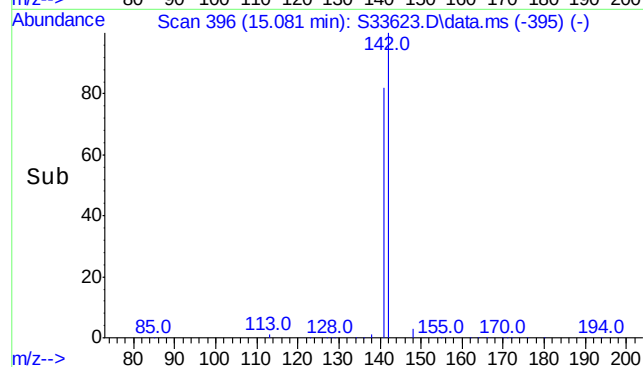
#2
Naphthalene
Concen: 285.415 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33623.D
Acq: 20 Sep 2013 8:08 pm

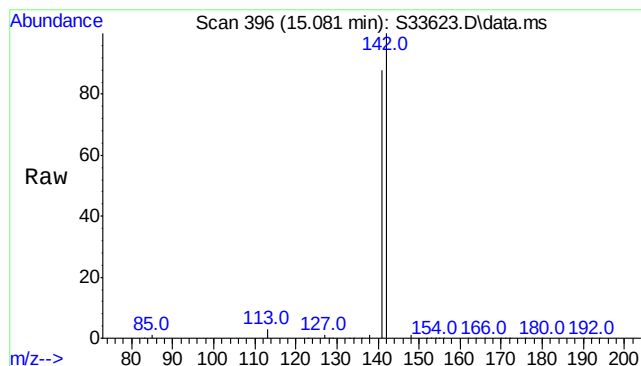
Tgt Ion:128 Resp: 467851
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



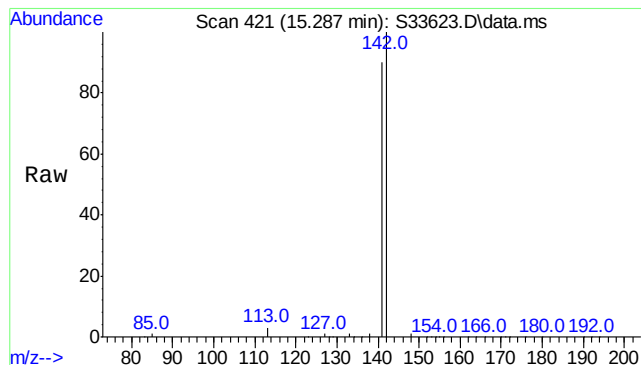
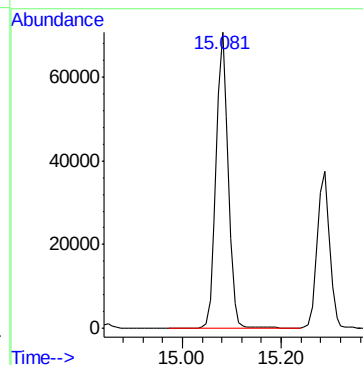
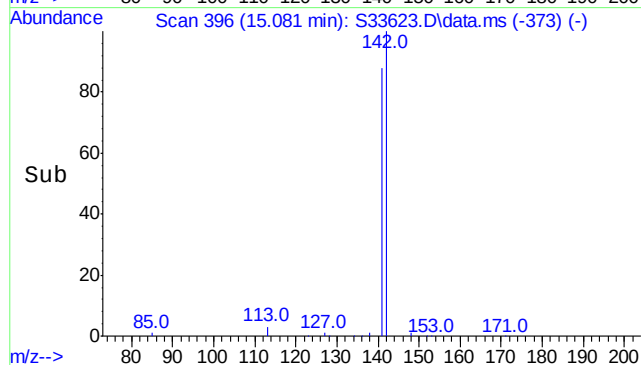
#3
C1-Naphthalenes
Concen: 112.234 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33623.D
Acq: 20 Sep 2013 8:08 pm

Tgt Ion:142 Resp: 183973
Ion Ratio Lower Upper
142 100
141 31.8 71.0 106.6#

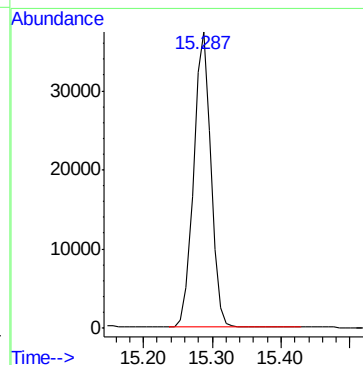
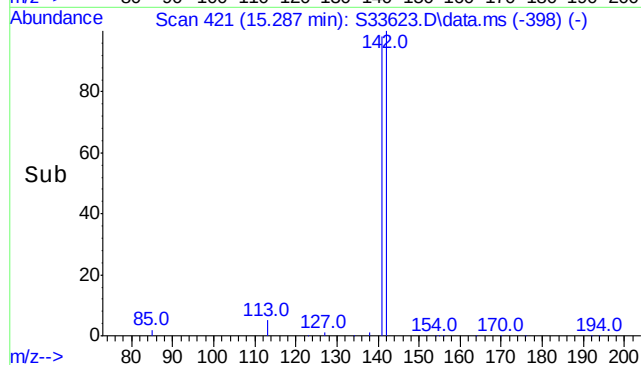


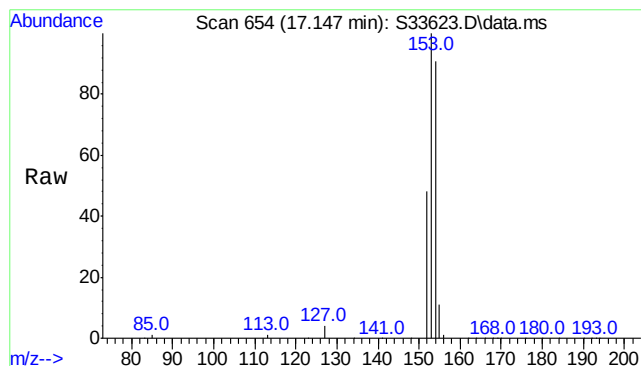


#9
2-Methylnaphthalene
Concen: 51.677 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33623.D
Acq: 20 Sep 2013 8:08 pm
Tgt Ion:142 Resp: 119256



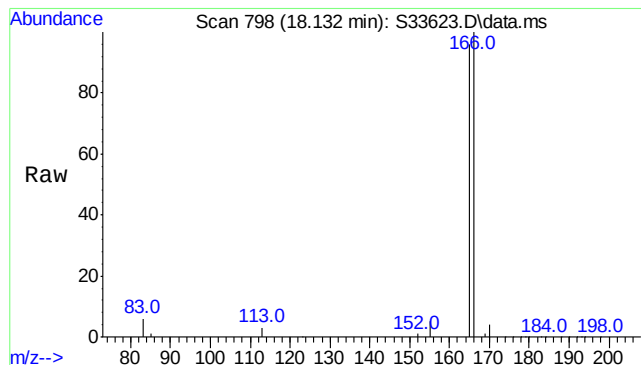
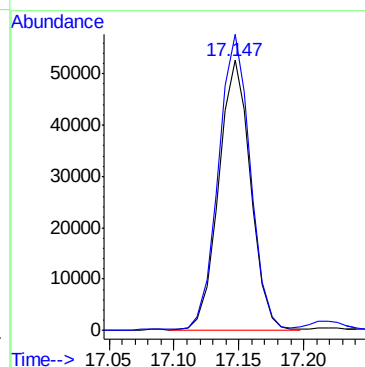
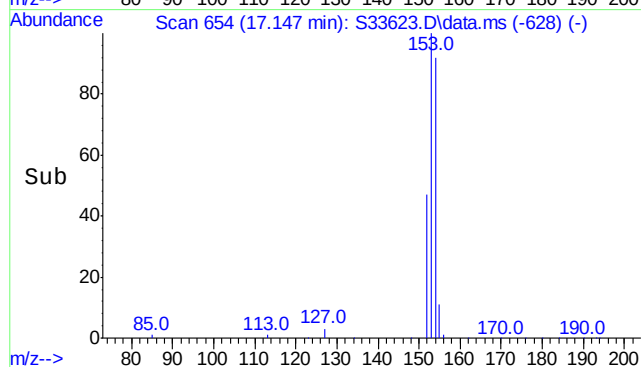
#11
1-Methylnaphthalene
Concen: 34.224 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33623.D
Acq: 20 Sep 2013 8:08 pm
Tgt Ion:142 Resp: 64585





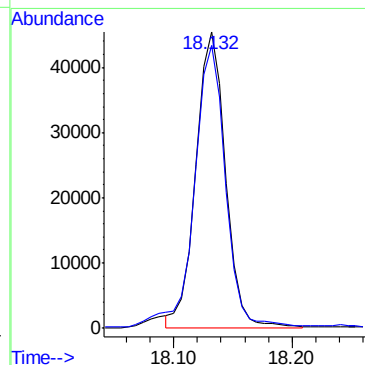
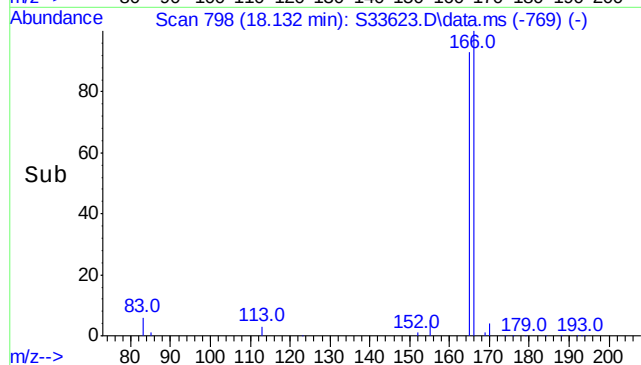
#14
Acenaphthene
Concen: 34.788 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33623.D
Acq: 20 Sep 2013 8:08 pm

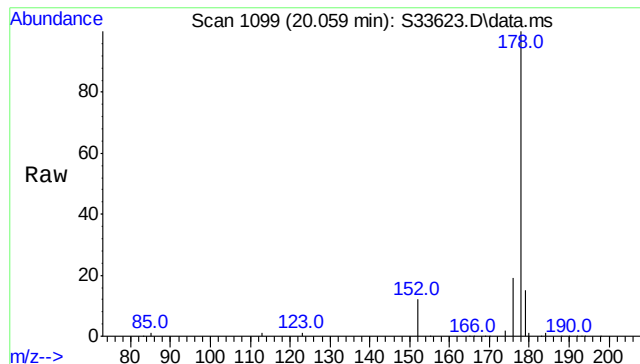
Tgt Ion:154 Resp: 89938
Ion Ratio Lower Upper
154 100
153 109.8 86.6 129.8



#16
Fluorene
Concen: 18.986 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33623.D
Acq: 20 Sep 2013 8:08 pm

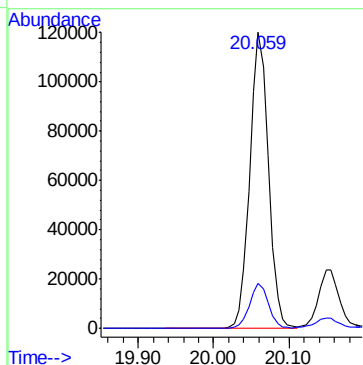
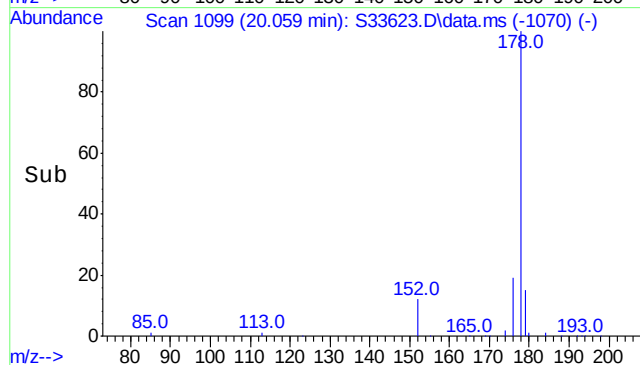
Tgt Ion:166 Resp: 79221
Ion Ratio Lower Upper
166 100
165 100.3 76.4 114.6





#21
 Phenanthrene
 Concen: 19.619 ng/mL
 RT: 20.059 min Scan# 1099
 Delta R.T. -0.013 min
 Lab File: S33623.D
 Acq: 20 Sep 2013 8:08 pm

Tgt Ion	Ratio	Lower	Upper
178	100		
179	15.2	12.4	18.6



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33627.D
 Acq On : 20 Sep 2013 11:25 pm
 Operator : RUBENP
 Sample : mc24019-2
 Misc : ms29817,mss1492,,,,,
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 24 17:31:43 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	39521	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	27030	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	22416	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	17559	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	14178m	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	35729	5.00	ng/mL	-0.01
26) Anthracene-d10	20.116	188	41176	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	24756	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	23454	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	11192	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	13365	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	10121	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10563	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	6771	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5524	0.33	ng/mL	-0.02

Target Compounds					Qvalue
2) Naphthalene	13.918	128	3975212	2922.745	ng/mL 100
3) C1-Naphthalenes	15.081	142	2245267m	1650.816	ng/mL
4) C2-Naphthalenes	16.392	156	1010234m	376.014	ng/mL
5) C3-Naphthalenes	17.449	170	350101m	191.933	ng/mL
7) C4-Naphthalenes	18.868	184	5916	6.628	ng/mL 87
9) 2-Methylnaphthalene	15.081	142	1435740	731.793	ng/mL 100
11) 1-Methylnaphthalene	15.287	142	806445	464.571	ng/mL 100
13) Acenaphthylene	16.801	152	42127	17.304	ng/mL# 100
14) Acenaphthene	17.154	154	1114220	428.571	ng/mL 99
16) Fluorene	18.132	166	775391m	201.454	ng/mL
17) C1-Fluorenes	19.220	180	163802m	50.147	ng/mL
18) C2-Fluorenes	20.245	194	53373m	21.401	ng/mL
19) C3-Fluorenes	21.199	208	9234m	3.970	ng/mL
21) Phenanthrene	20.065	178	2256813	250.673	ng/mL 99
22) C1-Phenanthrenes/anthr...	21.084	192	350064m	35.189	ng/mL
23) C2-Phenanthrenes/anthr...	22.160	206	61331m	16.577	ng/mL
24) C3-Phenanthrenes/anthr...	23.071	220	14028m	9.037	ng/mL
25) C4-Phenanthrenes/anthr...	23.812	234	2527m	3.602	ng/mL
27) Anthracene	20.155	178	433149	41.544	ng/mL 100
29) Fluoranthene	22.483	202	508236	25.474	ng/mL# 80
31) Pyrene	22.948	202	376686	17.135	ng/mL# 79
32) C1-Fluoranthenes/pyrenes	23.612	216	79536m	5.608	ng/mL
33) C2-Fluoranthenes/pyrenes	25.011	230	13471m	0.613	ng/mL
34) C3-Fluoranthenes/pyrenes	25.412	244	2707m	0.123	ng/mL
36) Benz(a)anthracene	25.378	228	29302	0.973	ng/mL 97
38) Chrysene	25.472	228	23021	0.752	ng/mL 96
39) C1-Benz(a)anthracenes/...	26.293	242	6269m	0.349	ng/mL
44) Benzo(b)fluoranthene	27.941	252	2689	0.066	ng/mL# 71
46) Benzo(k)fluoranthene	27.992	252	3967	0.107	ng/mL# 59
48) Benzo(e)pyrene	28.706	252	1899	0.049	ng/mL# 66
49) Benzo(a)pyrene	28.847	252	2235	0.098	ng/mL# 64
51) Perylene	29.077	252	490	0.022	ng/mL# 41

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
Data File : S33627.D
Acq On : 20 Sep 2013 11:25 pm
Operator : RUBENP
Sample : mc24019-2
Misc : ms29817,mss1492,,,,
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 24 17:31:43 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) Indeno(1,2,3-cd)pyrene	32.561	276	371	0.010	ng/mL#	72
53) Dibenz(a,h)anthracene	32.540	278	114m	0.004	ng/mL	
54) Benzo(g,h,i)perylene	33.624	276	278	0.008	ng/mL	100

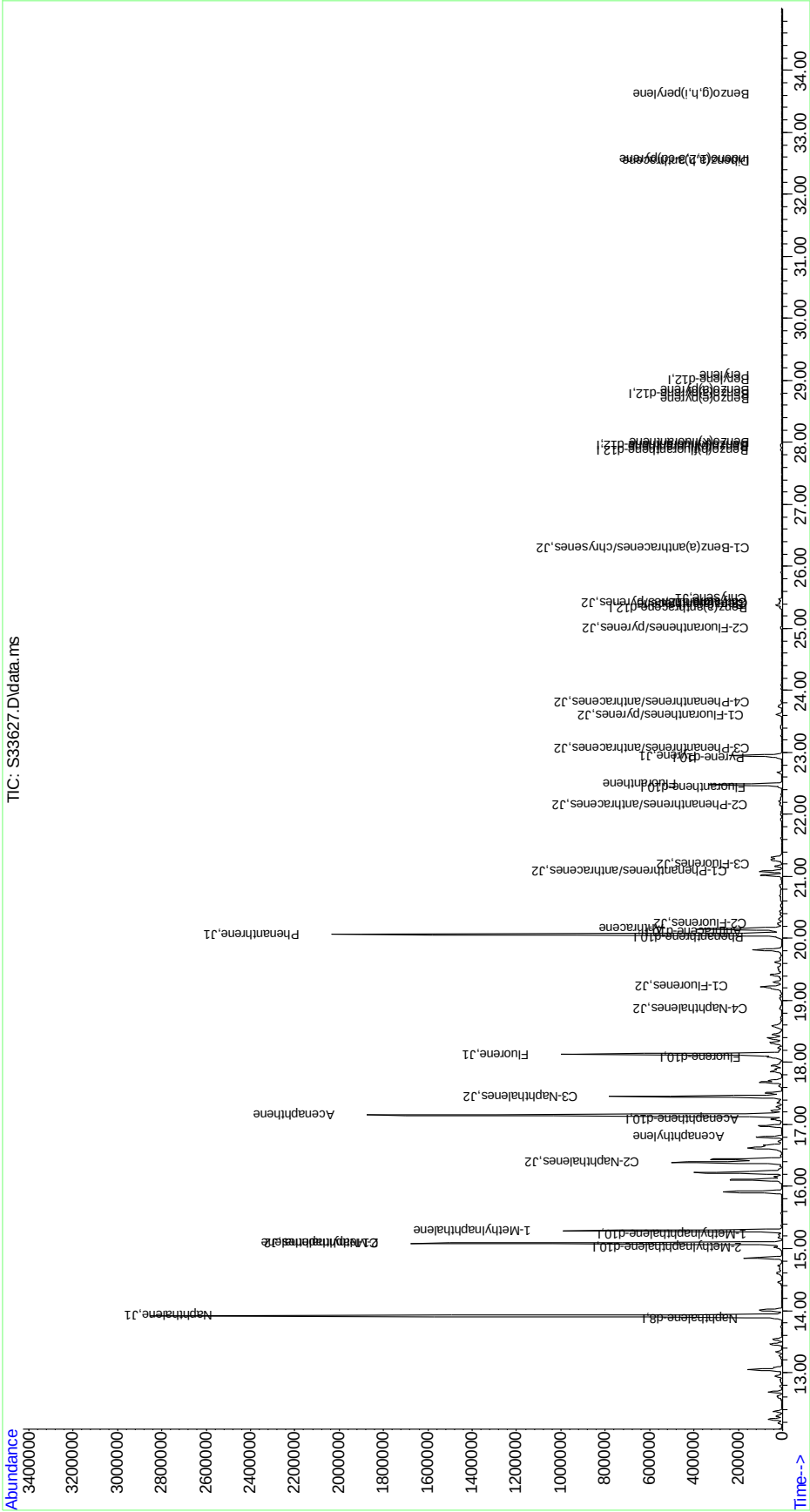
(#) = qualifier out of range (m) = manual integration (+) = signals summed

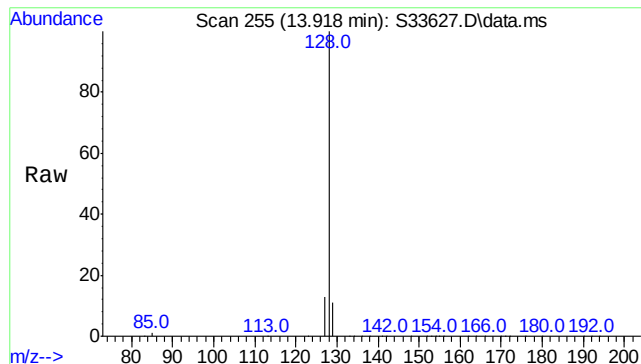
7.1.3
7

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130920\
Data File : S33627.D
Acq On : 20 Sep 2013 11:25 pm
Operator : RUBENP
Sample : mc24019-2
Misc : ms29817,mss1492,,,,
ALS Vial : 14 Sample Multiplier: 1

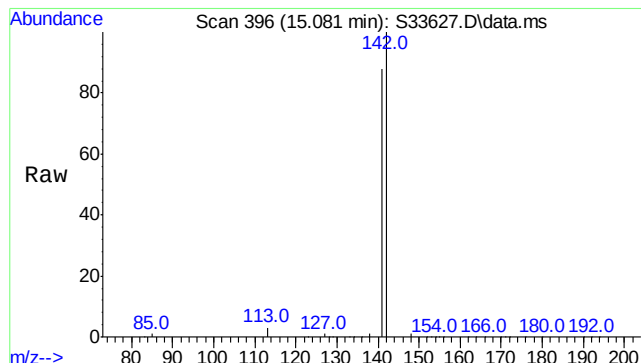
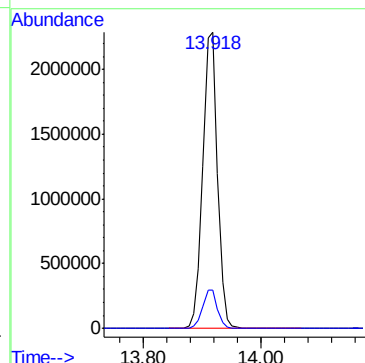
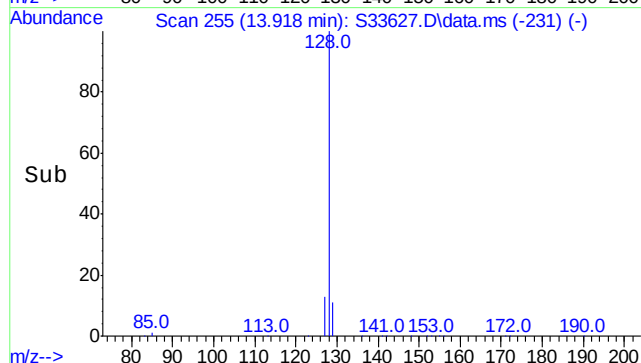
Quant Time: Oct 24 17:31:43 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





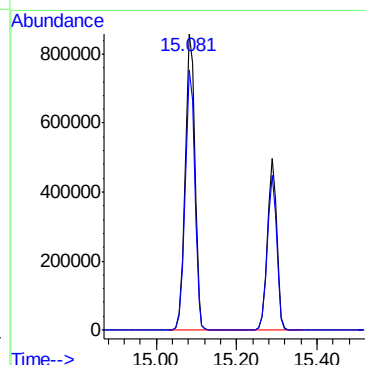
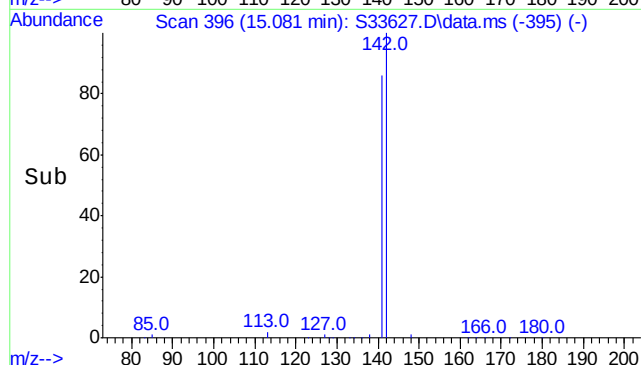
#2
Naphthalene
Concen: 2922.745 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. -0.000 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

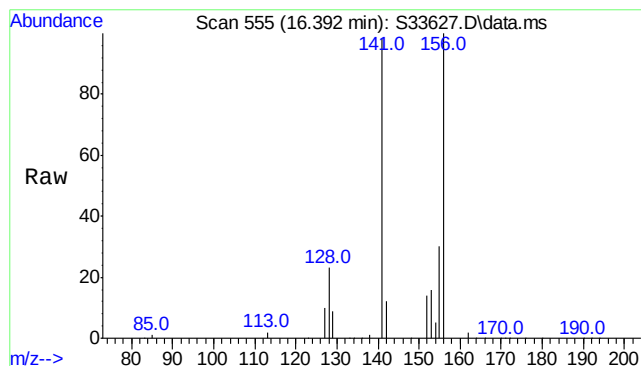
Tgt Ion:128 Resp: 3975212
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



#3
C1-Naphthalenes
Concen: 1650.816 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

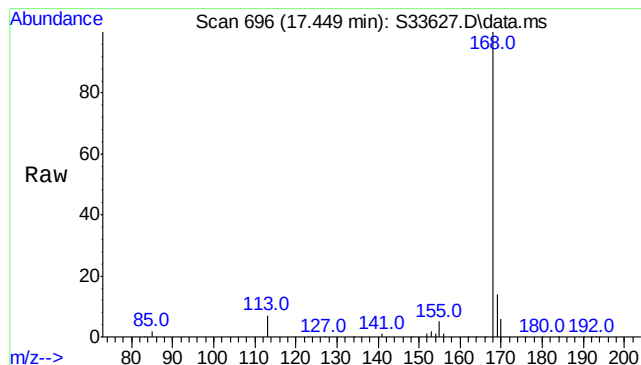
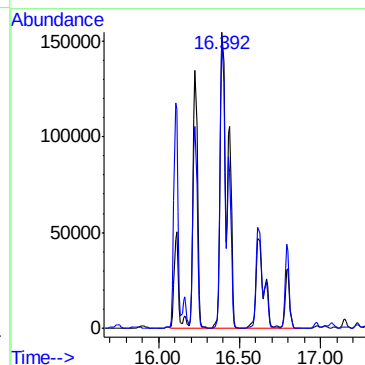
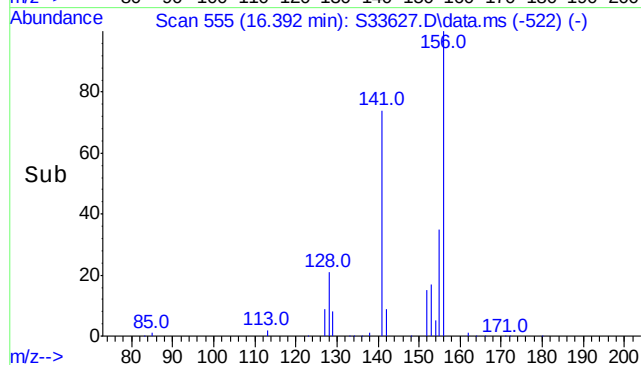
Tgt Ion:142 Resp: 2245267
Ion Ratio Lower Upper
142 100
141 32.6 71.0 106.6#





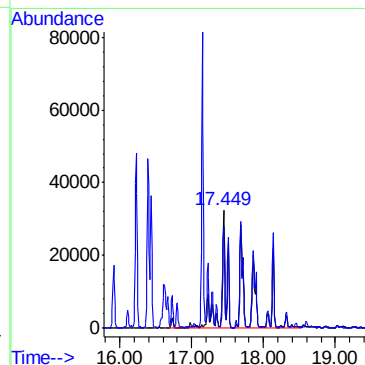
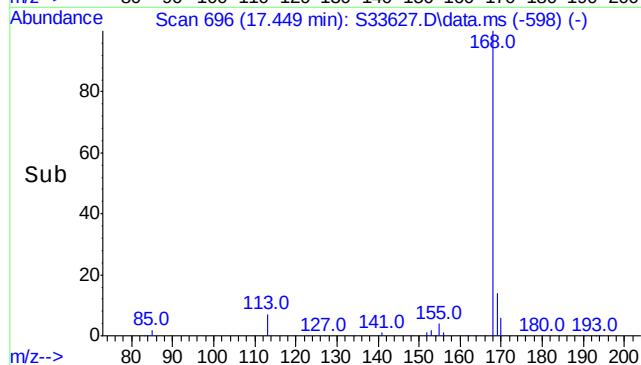
#4
C2-Naphthalenes
Concen: 376.014 ng/mL m
RT: 16.392 min Scan# 555
Delta R.T. -0.065 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

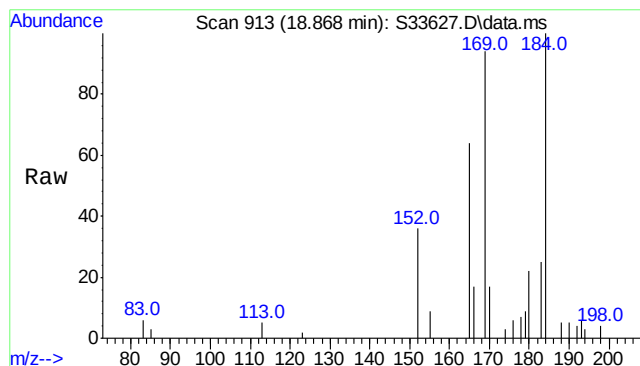
Tgt Ion:156 Resp: 1010234
Ion Ratio Lower Upper
156 100
141 13.9 79.0 118.4#



#5
C3-Naphthalenes
Concen: 191.933 ng/mL m
RT: 17.449 min Scan# 696
Delta R.T. -0.210 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

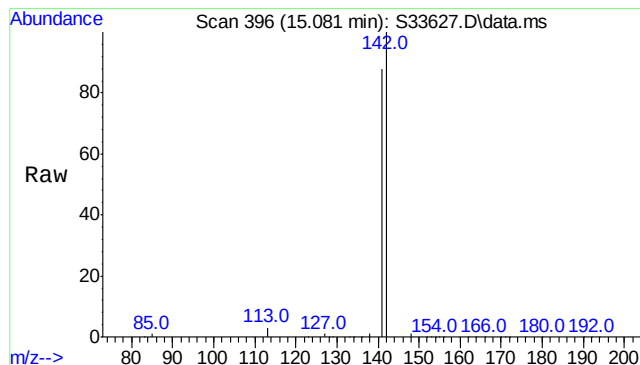
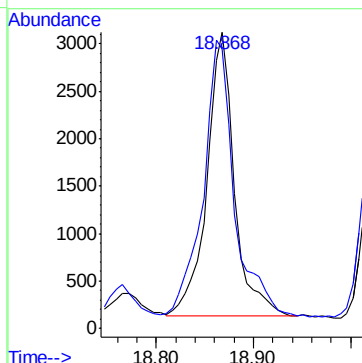
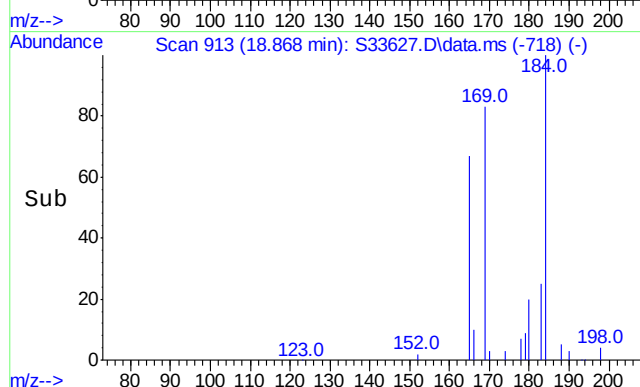
Tgt Ion:170 Resp: 350101
Ion Ratio Lower Upper
170 100
155 14.8 80.7 121.1#





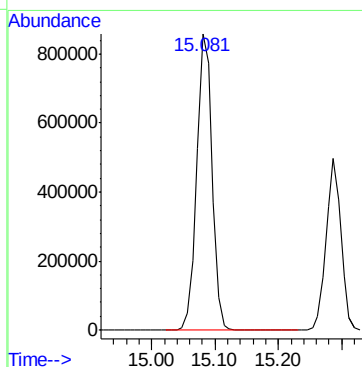
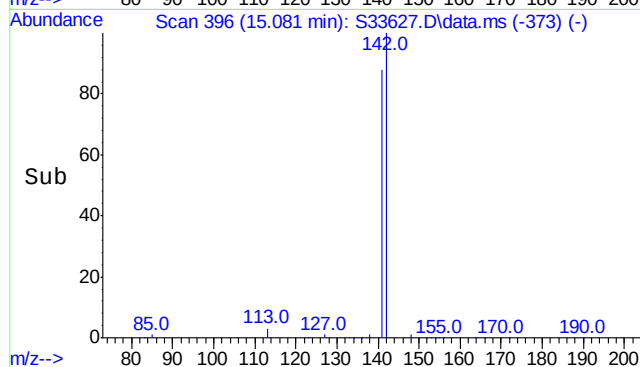
#7
C4-Naphthalenes
Concen: 6.628 ng/mL
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

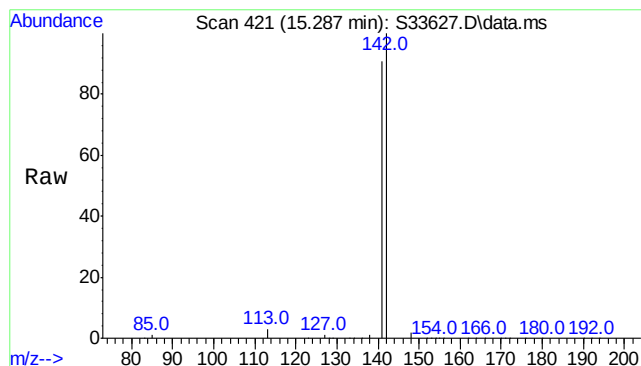
Tgt Ion:184 Resp: 5916
Ion Ratio Lower Upper
184 100
169 112.6 80.1 120.1



#9
2-Methylnaphthalene
Concen: 731.793 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

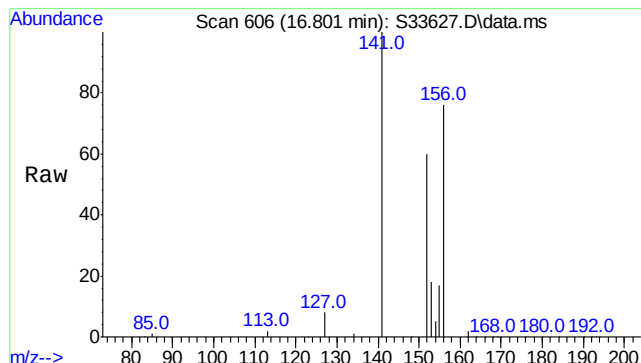
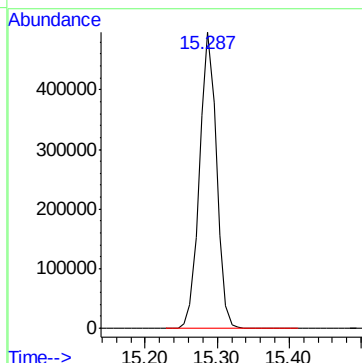
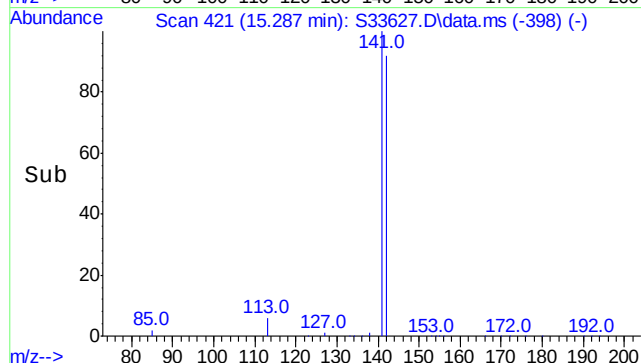
Tgt Ion:142 Resp: 1435740





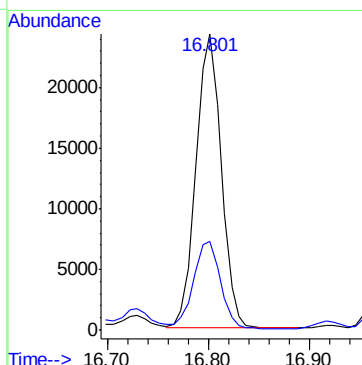
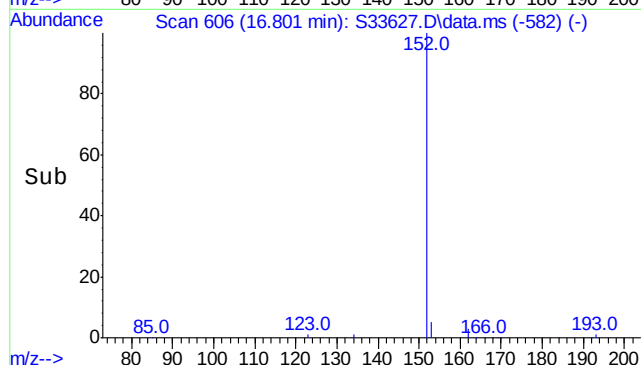
#11
1-Methylnaphthalene
Concen: 464.571 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

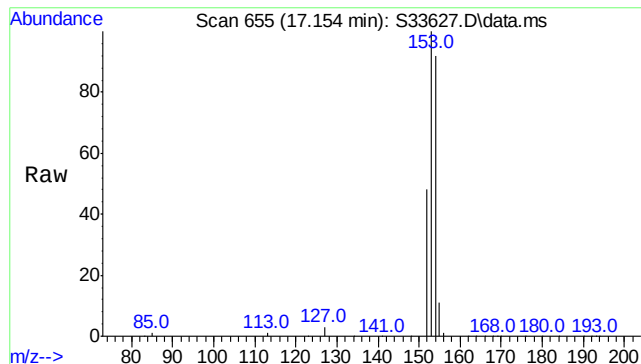
Tgt Ion:142 Resp: 806445



#13
Acenaphthylene
Concen: 17.304 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

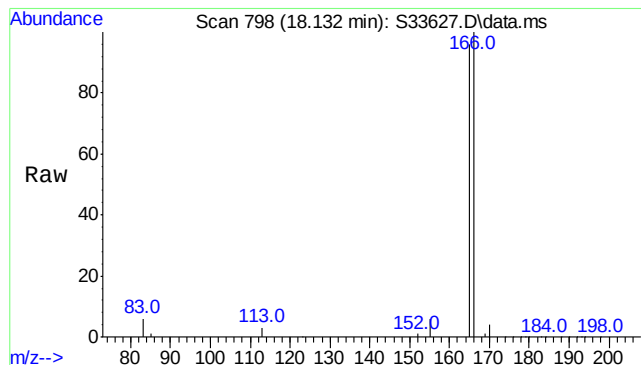
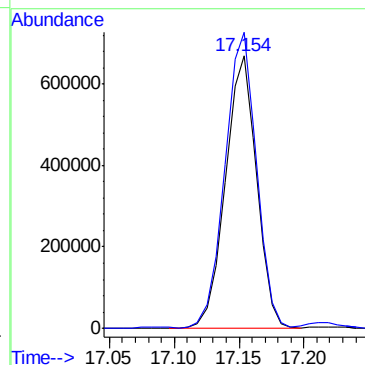
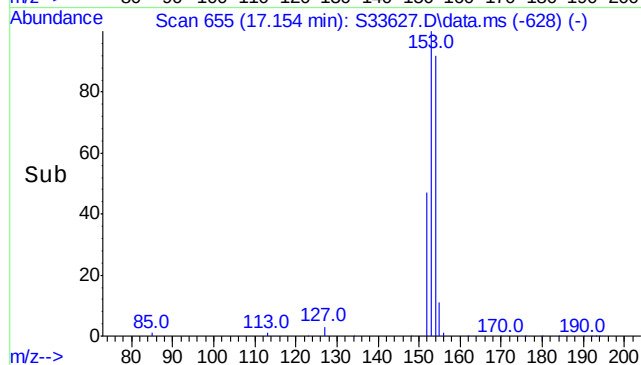
Tgt Ion:152 Resp: 42127
Ion Ratio Lower Upper
152 100
153 31.7 0.0 0.0#





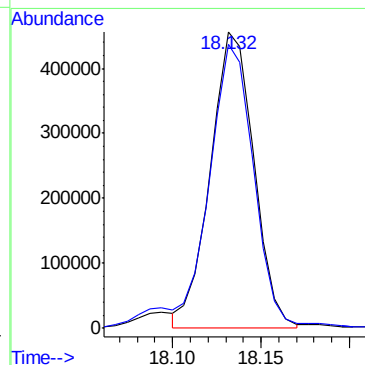
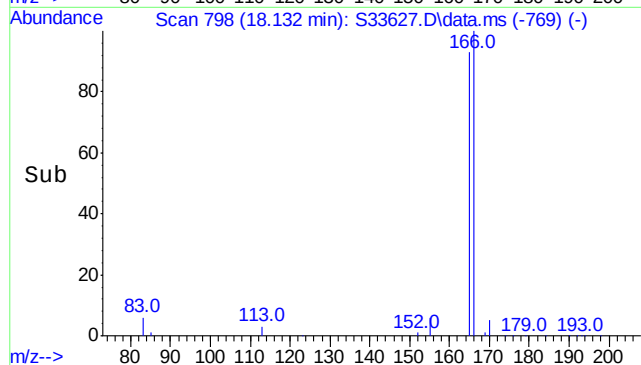
#14
 Acenaphthene
 Concen: 428.571 ng/mL
 RT: 17.154 min Scan# 655
 Delta R.T. -0.007 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm

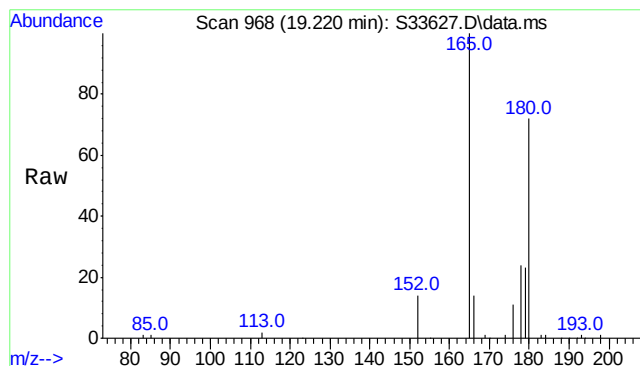
Tgt Ion:154 Resp: 1114220
 Ion Ratio Lower Upper
 154 100
 153 109.6 86.6 129.8



#16
 Fluorene
 Concen: 201.454 ng/mL m
 RT: 18.132 min Scan# 798
 Delta R.T. -0.013 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm

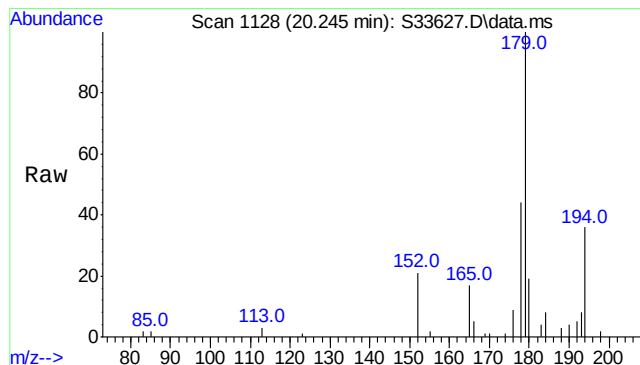
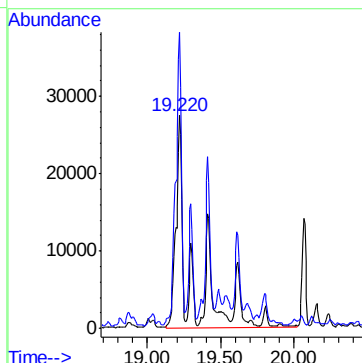
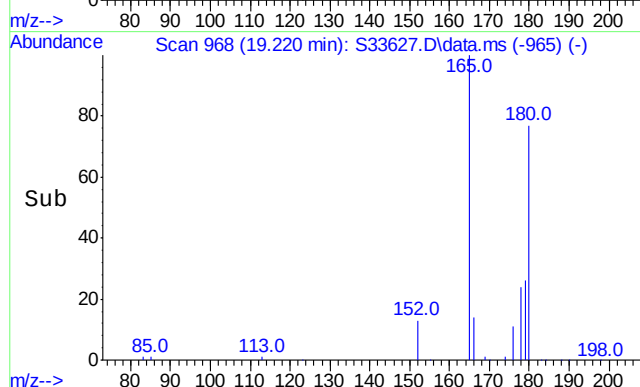
Tgt Ion:166 Resp: 775391
 Ion Ratio Lower Upper
 166 100
 165 103.6 76.4 114.6





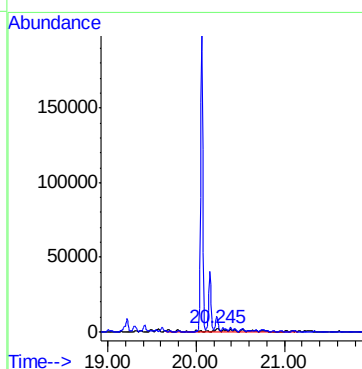
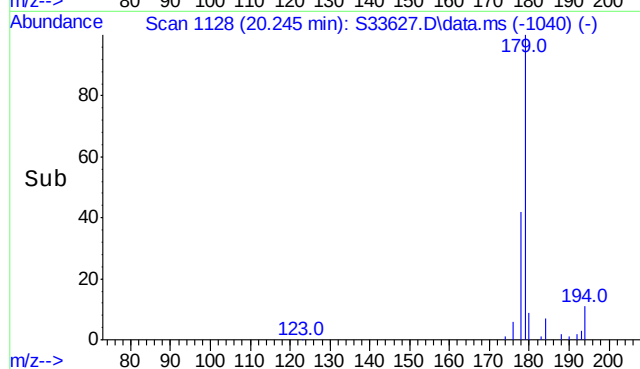
#17
C1-Fluorenes
Concen: 50.147 ng/mL m
RT: 19.220 min Scan# 968
Delta R.T. -0.092 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

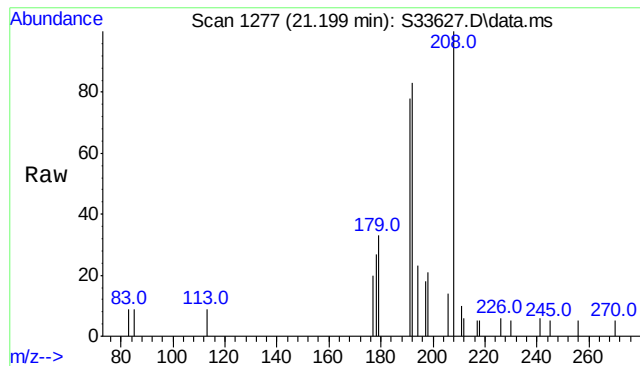
Tgt Ion:180 Resp: 163802
Ion Ratio Lower Upper
180 100
165 16.2 111.1 166.7#



#18
C2-Fluorenes
Concen: 21.401 ng/mL m
RT: 20.245 min Scan# 1128
Delta R.T. -0.069 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

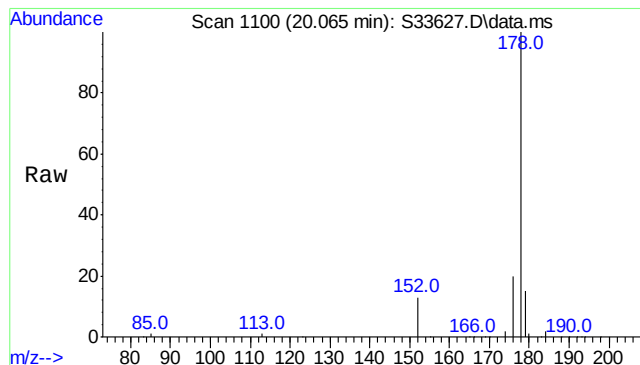
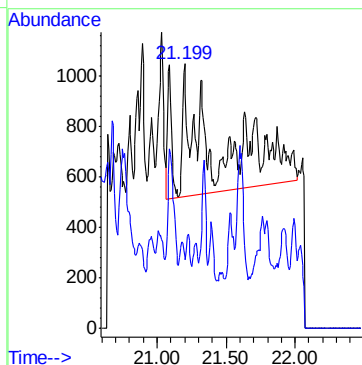
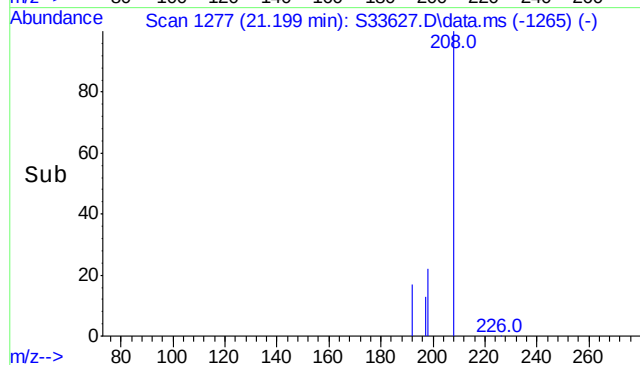
Tgt Ion:194 Resp: 53373
Ion Ratio Lower Upper
194 100
179 6.7 131.8 197.6#





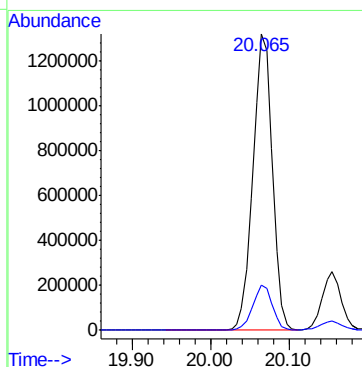
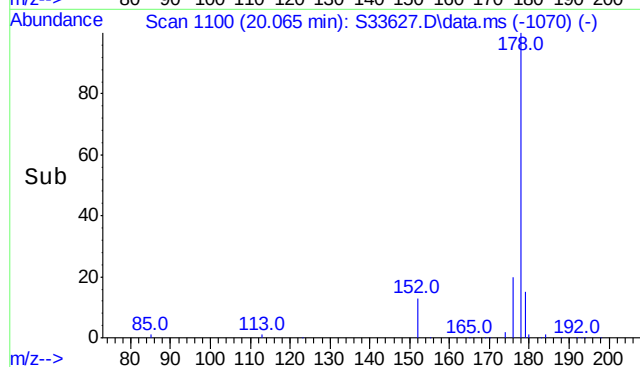
#19
C3-Fluorenes
Concen: 3.970 ng/mL m
RT: 21.199 min Scan# 1277
Delta R.T. -0.153 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

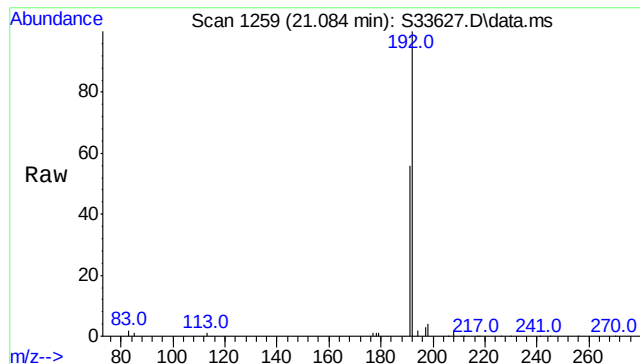
Tgt Ion:208 Resp: 9234
Ion Ratio Lower Upper
208 100
178 0.0 43.4 65.2#



#21
Phenanthrene
Concen: 250.673 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

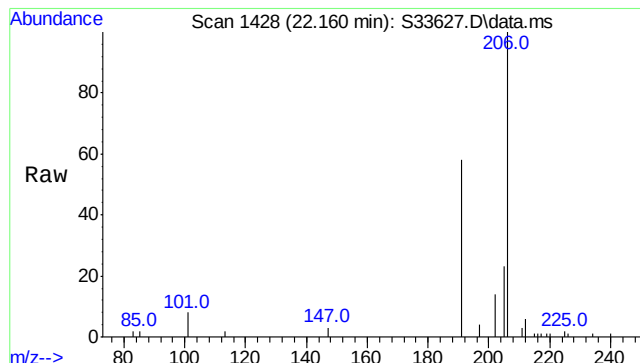
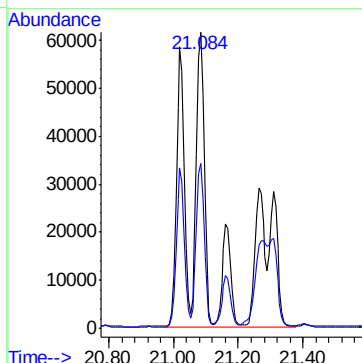
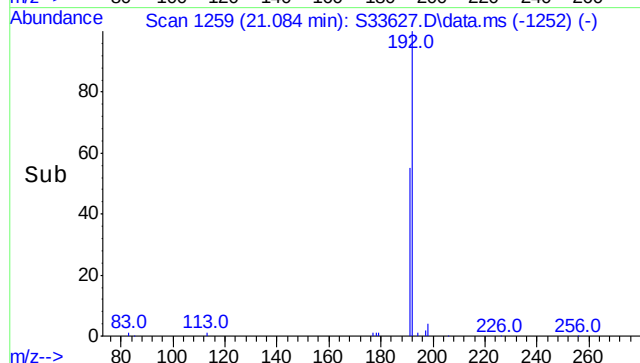
Tgt Ion:178 Resp: 2256813
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6





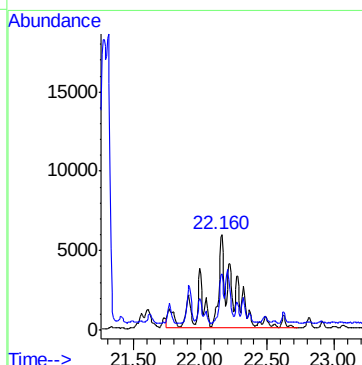
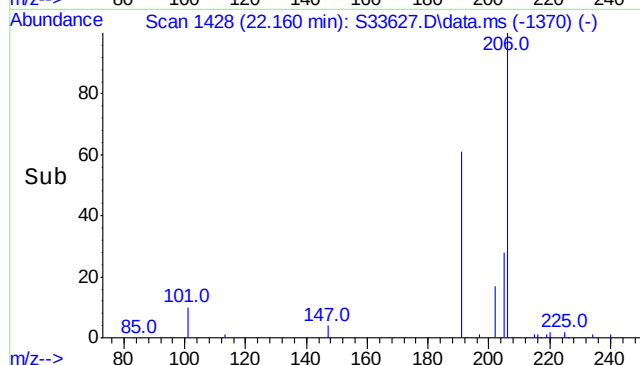
#22
C1-Phenanthrenes/anthracenes
Concen: 35.189 ng/mL m
RT: 21.084 min Scan# 1259
Delta R.T. -0.069 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

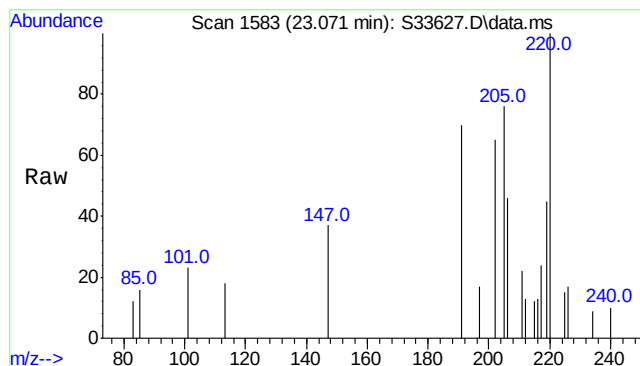
Tgt Ion:192 Resp: 350064
Ion Ratio Lower Upper
192 100
191 5.1 45.1 67.7#



#23
C2-Phenanthrenes/anthracenes
Concen: 16.577 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

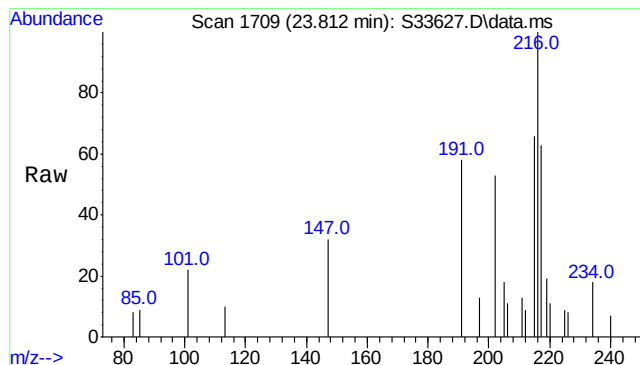
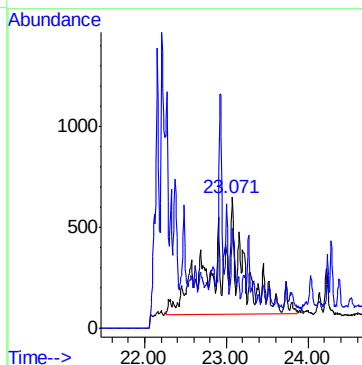
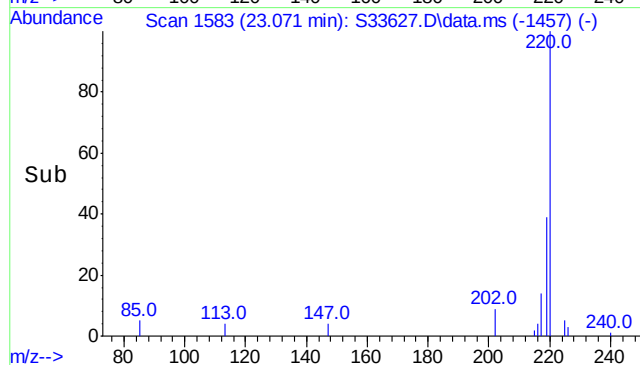
Tgt Ion:206 Resp: 61331
Ion Ratio Lower Upper
206 100
191 11.2 45.1 67.7#





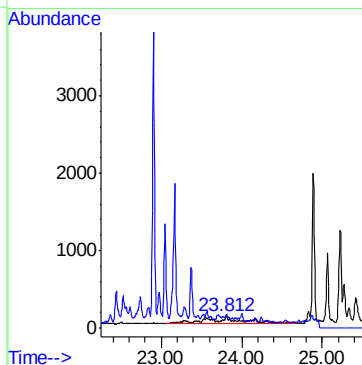
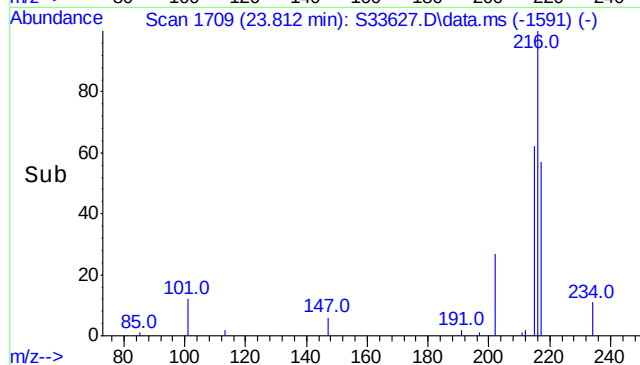
#24
C3-Phenanthrenes/anthracenes
Concen: 9.037 ng/mL m
RT: 23.071 min Scan# 1583
Delta R.T. -0.070 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

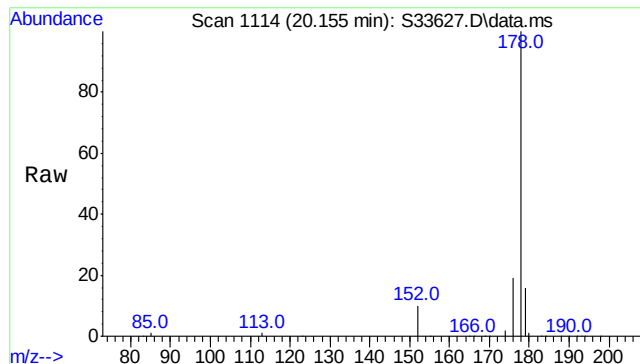
Tgt Ion:220 Resp: 14028
Ion Ratio Lower Upper
220 100
205 1.6 45.1 67.7#



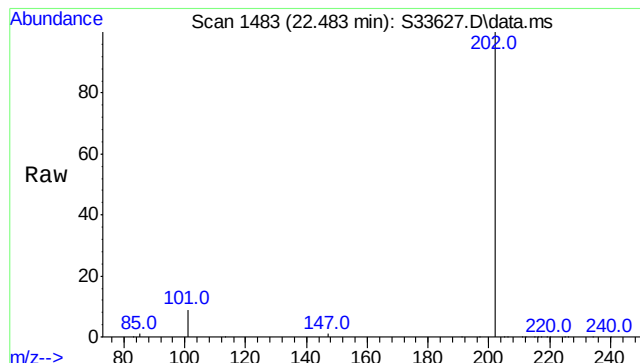
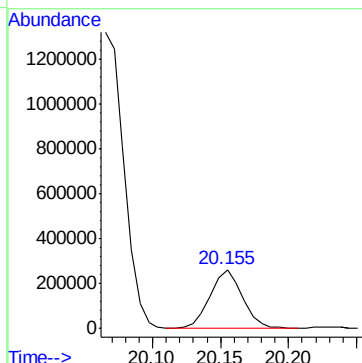
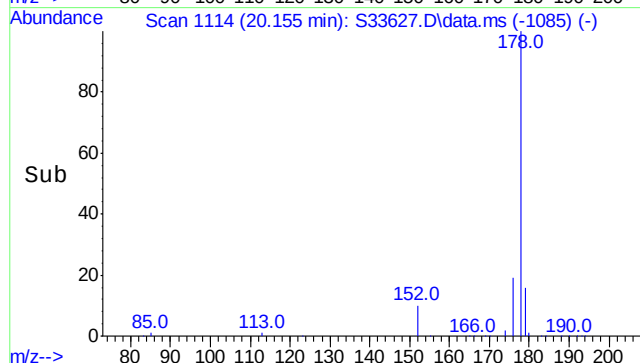
#25
C4-Phenanthrenes/anthracenes
Concen: 3.602 ng/mL m
RT: 23.812 min Scan# 1709
Delta R.T. -0.417 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

Tgt Ion:234 Resp: 2527
Ion Ratio Lower Upper
234 100
219 3.5 53.0 79.6#

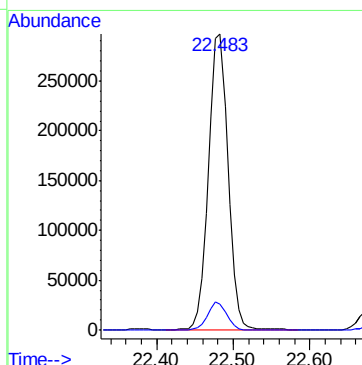
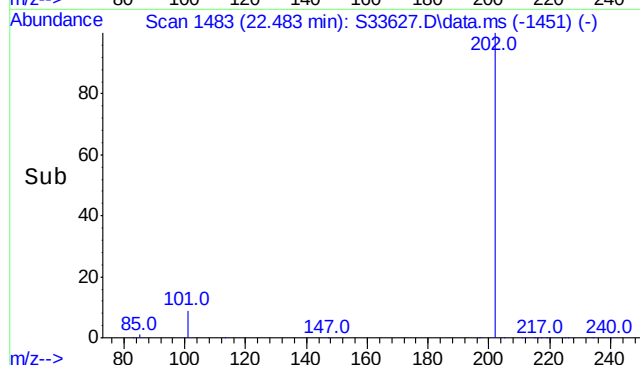


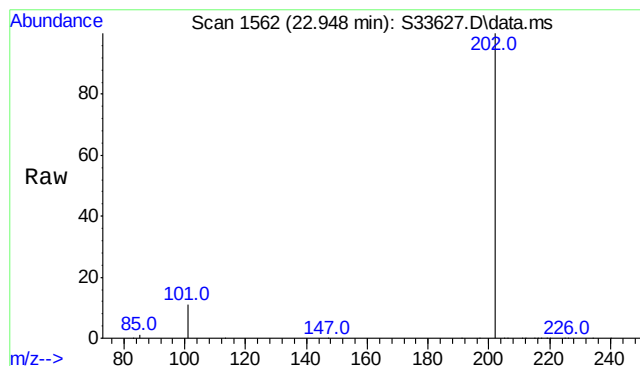


#27
 Anthracene
 Concen: 41.544 ng/mL
 RT: 20.155 min Scan# 1114
 Delta R.T. -0.013 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm
 Tgt Ion:178 Resp: 433149



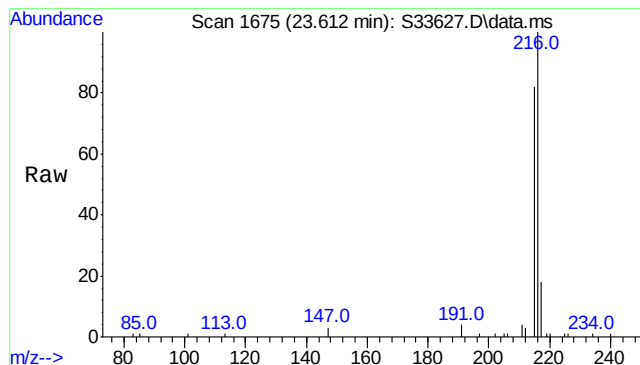
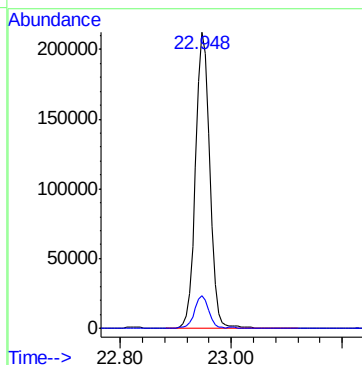
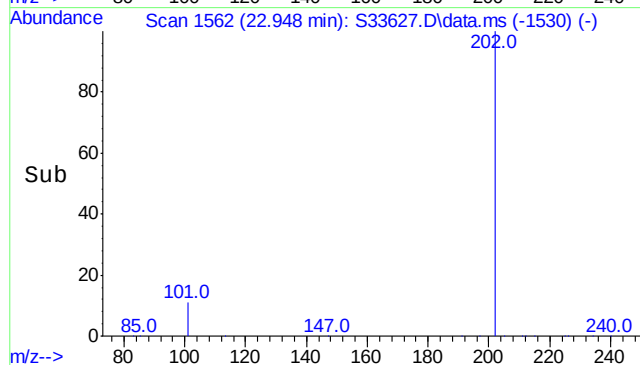
#29
 Fluoranthene
 Concen: 25.474 ng/mL
 RT: 22.483 min Scan# 1483
 Delta R.T. -0.012 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm
 Tgt Ion:202 Resp: 508236
 Ion Ratio Lower Upper
 202 100
 101 9.2 14.3 21.5#





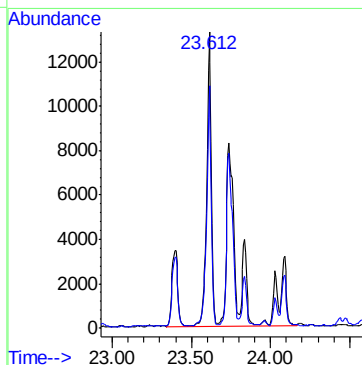
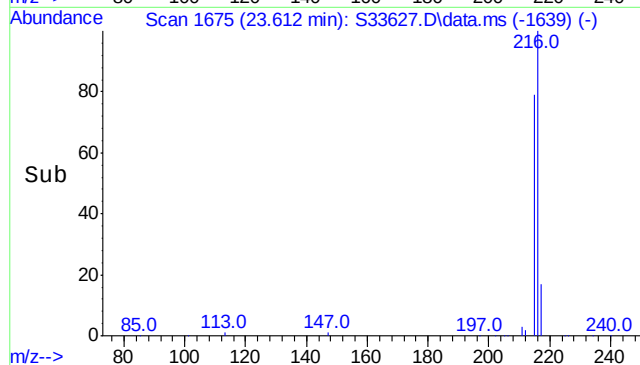
#31
Pyrene
Concen: 17.135 ng/mL
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

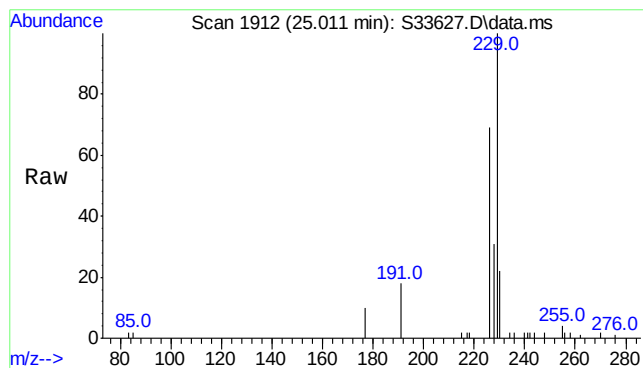
Tgt Ion:202 Resp: 376686
Ion Ratio Lower Upper
202 100
101 11.1 16.6 24.8#



#32
C1-Fluoranthenes/pyrenes
Concen: 5.608 ng/mL m
RT: 23.612 min Scan# 1675
Delta R.T. -0.070 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

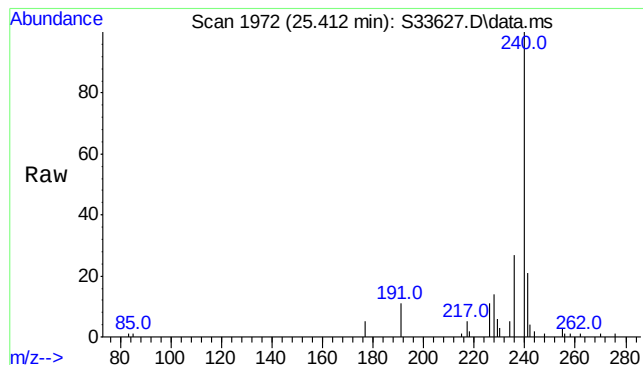
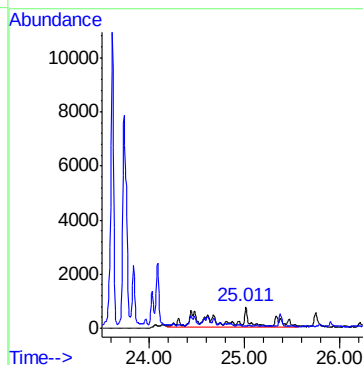
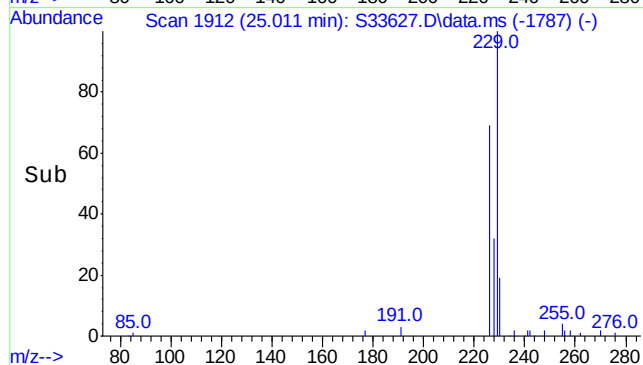
Tgt Ion:216 Resp: 79536
Ion Ratio Lower Upper
216 100
215 28.1 67.0 100.6#





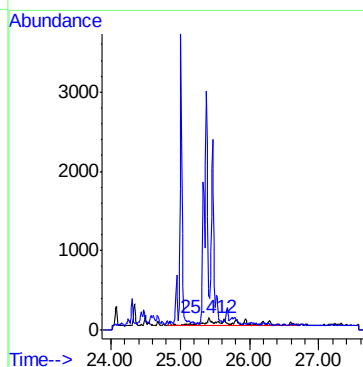
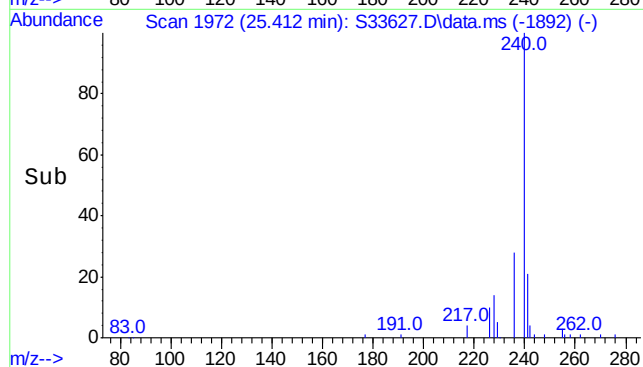
#33
C2-Fluoranthenes/pyrenes
Concen: 0.613 ng/mL m
RT: 25.011 min Scan# 1912
Delta R.T. 0.500 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

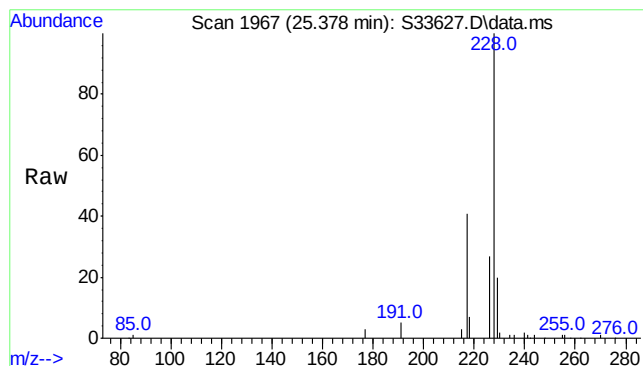
Tgt Ion:230 Resp: 13471
Ion Ratio Lower Upper
230 100
215 4.6 51.4 77.2#



#34
C3-Fluoranthenes/pyrenes
Concen: 0.123 ng/mL m
RT: 25.412 min Scan# 1972
Delta R.T. -0.078 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

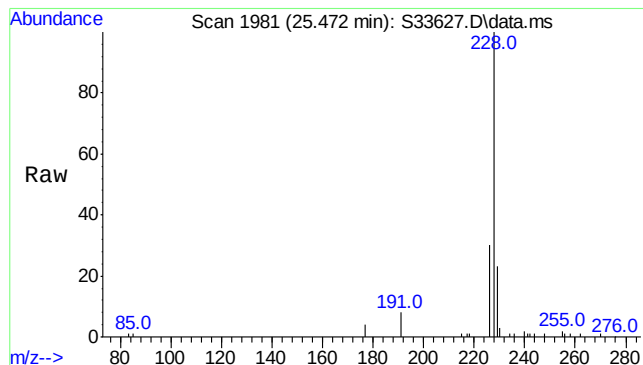
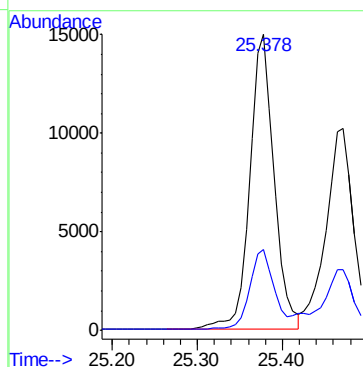
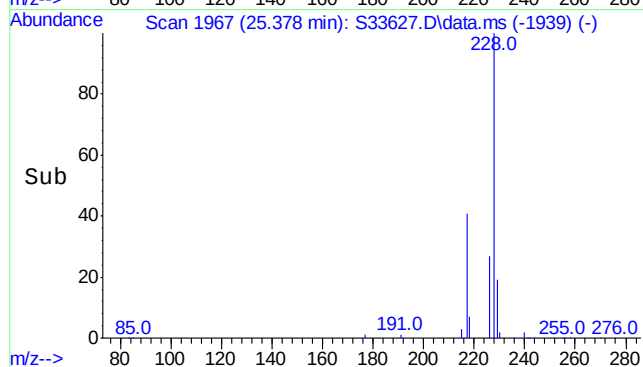
Tgt Ion:244 Resp: 2707
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#





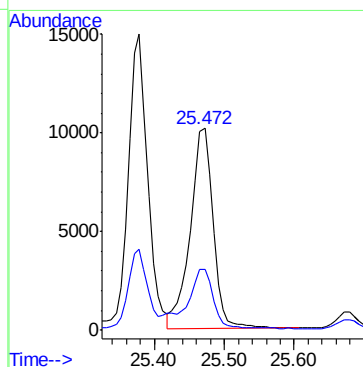
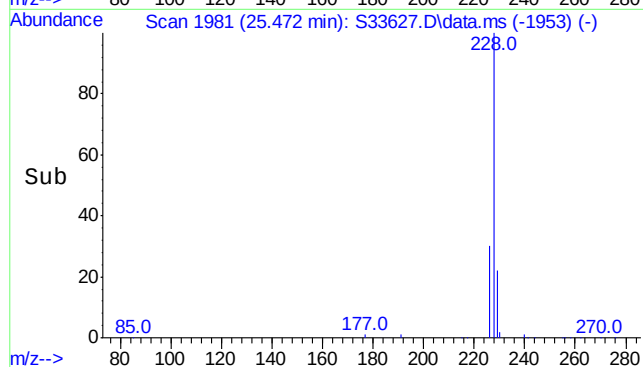
#36
Benz(a)anthracene
Concen: 0.973 ng/mL
RT: 25.378 min Scan# 1967
Delta R.T. -0.014 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

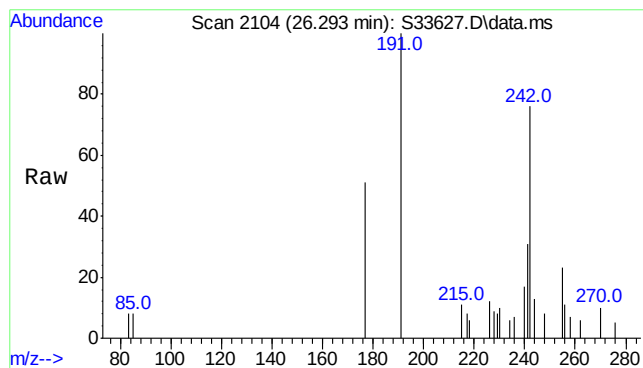
Tgt Ion:228 Resp: 29302
Ion Ratio Lower Upper
228 100
226 27.7 23.7 35.5



#38
Chrysene
Concen: 0.752 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

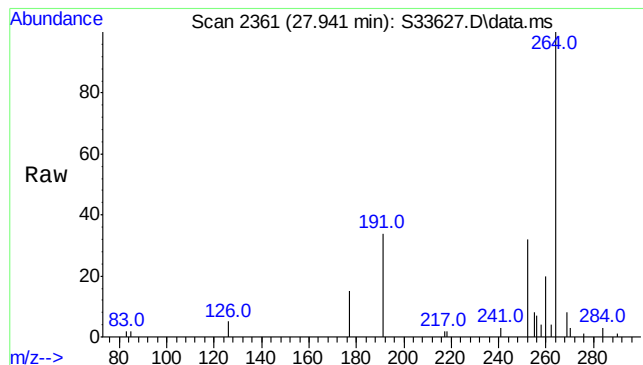
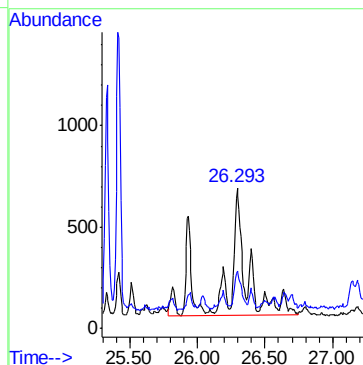
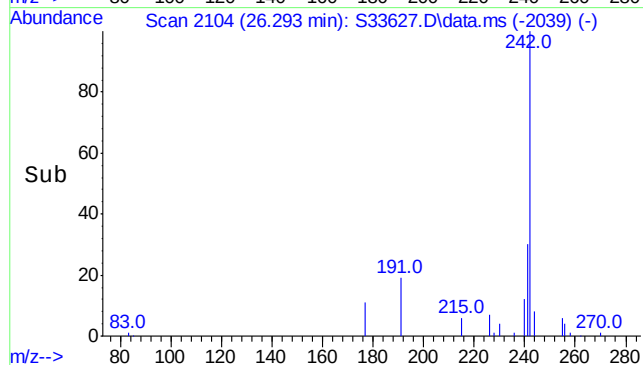
Tgt Ion:228 Resp: 23021
Ion Ratio Lower Upper
228 100
226 30.1 26.0 39.0





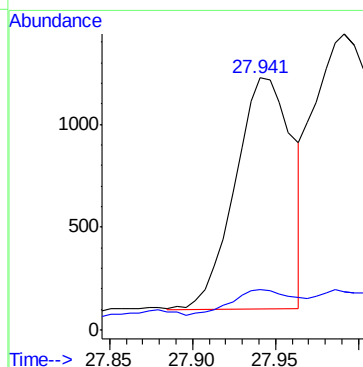
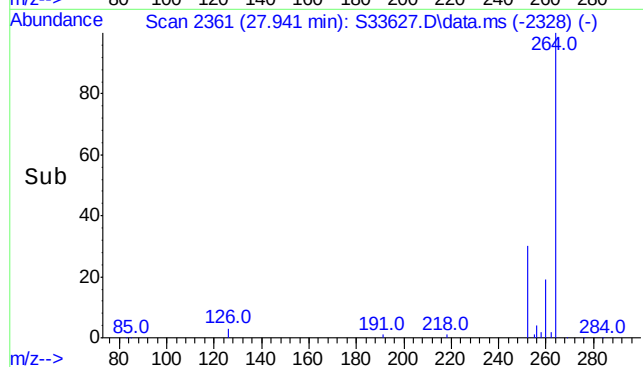
#39
C1-Benz(a)anthracenes/chrysenes
Concen: 0.349 ng/mL m
RT: 26.293 min Scan# 2104
Delta R.T. -0.065 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

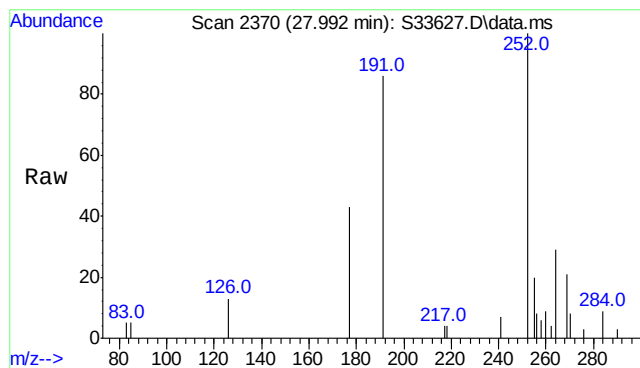
Tgt Ion:242 Resp: 6269
Ion Ratio Lower Upper
242 100
241 9.3 27.2 40.8#



#44
Benzo(b)fluoranthene
Concen: 0.066 ng/mL
RT: 27.941 min Scan# 2361
Delta R.T. -0.017 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

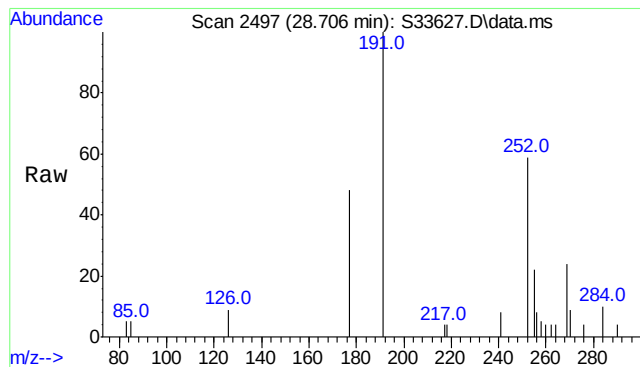
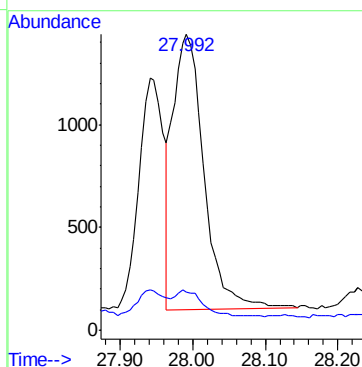
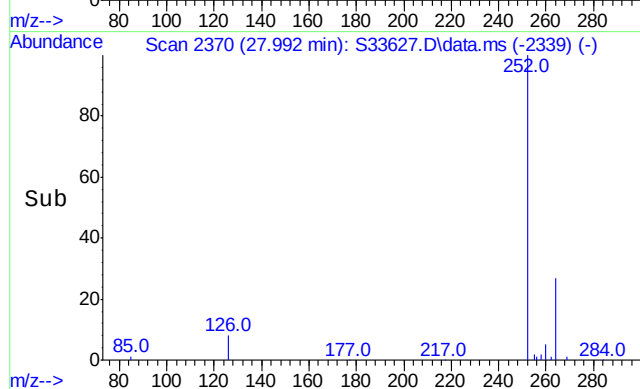
Tgt Ion:252 Resp: 2689
Ion Ratio Lower Upper
252 100
126 13.3 23.0 34.4#





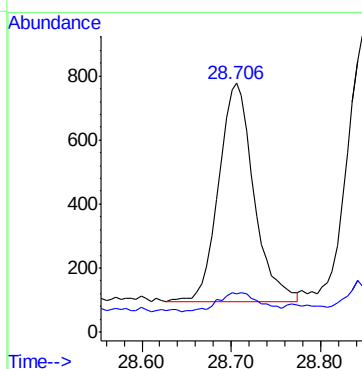
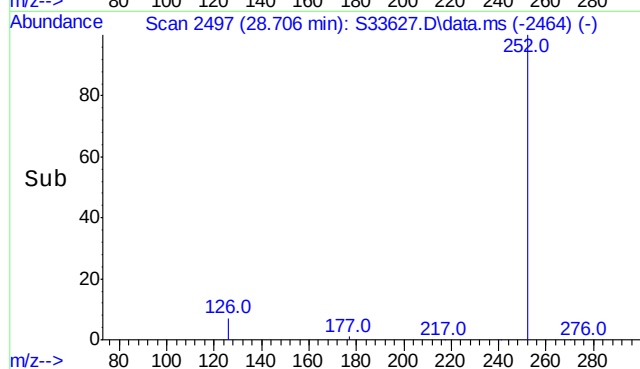
#46
Benzo(k)fluoranthene
Concen: 0.107 ng/mL
RT: 27.992 min Scan# 2370
Delta R.T. -0.028 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

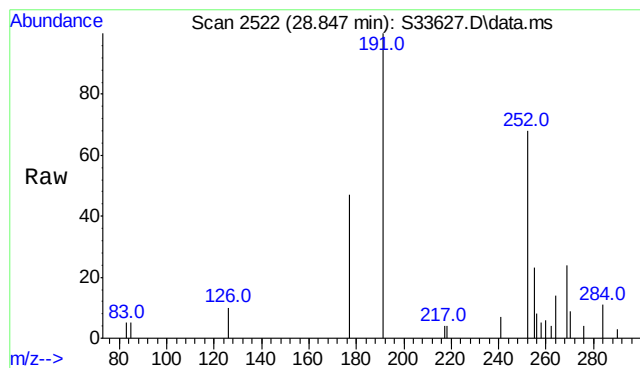
Tgt Ion:252 Resp: 3967
Ion Ratio Lower Upper
252 100
126 8.1 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.049 ng/mL
RT: 28.706 min Scan# 2497
Delta R.T. -0.017 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

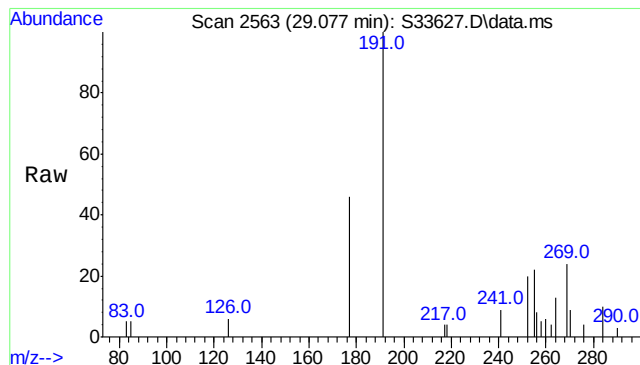
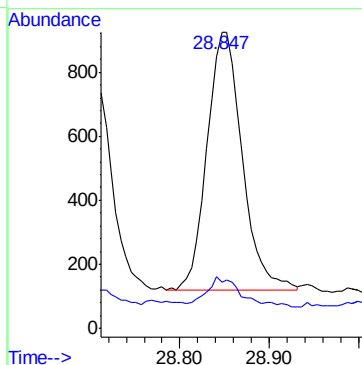
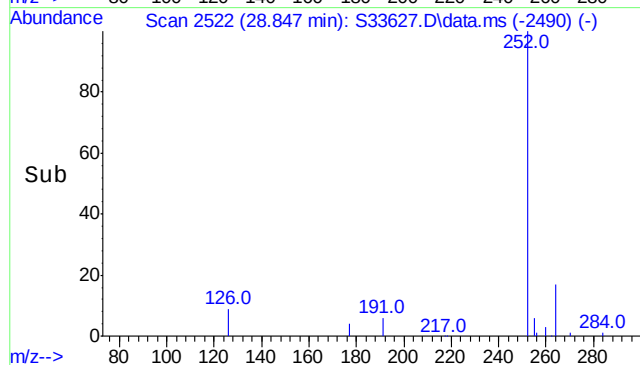
Tgt Ion:252 Resp: 1899
Ion Ratio Lower Upper
252 100
126 10.5 22.6 34.0#





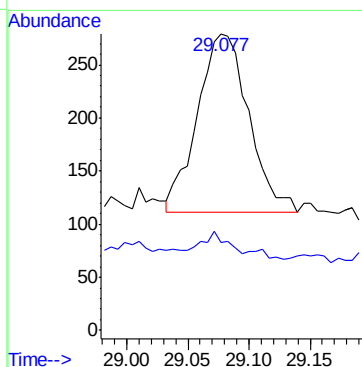
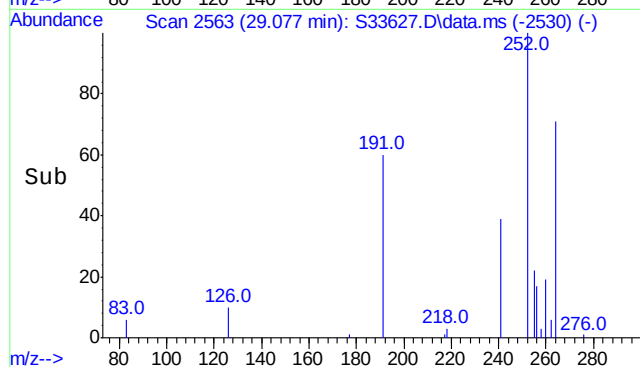
#49
Benzo(a)pyrene
Concen: 0.098 ng/mL
RT: 28.847 min Scan# 2522
Delta R.T. -0.022 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

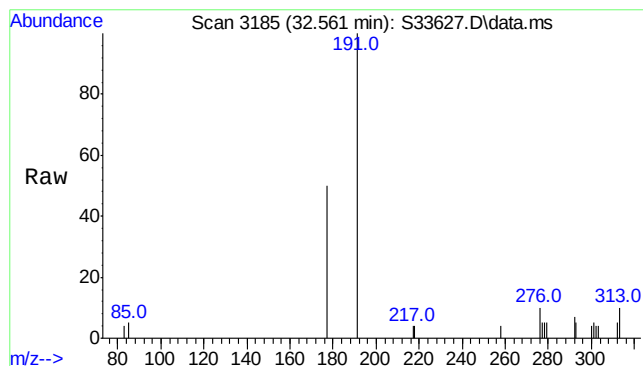
Tgt Ion:252 Resp: 2235
Ion Ratio Lower Upper
252 100
126 11.3 25.1 37.7#



#51
Perylene
Concen: 0.022 ng/mL
RT: 29.077 min Scan# 2563
Delta R.T. -0.017 min
Lab File: S33627.D
Acq: 20 Sep 2013 11:25 pm

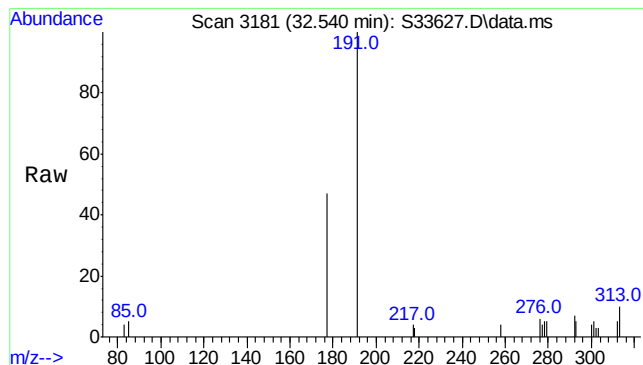
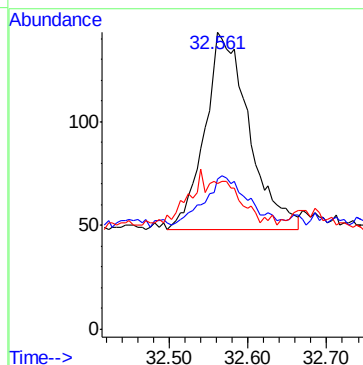
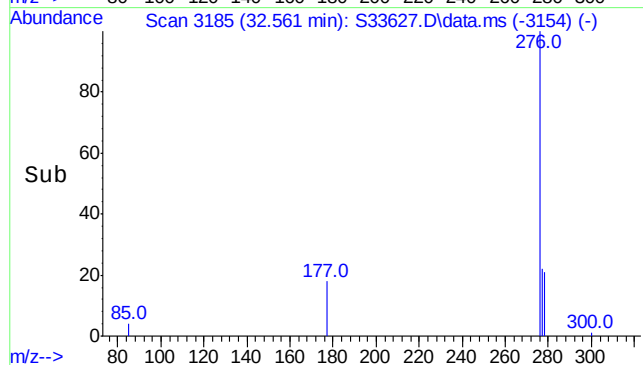
Tgt Ion:252 Resp: 490
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#





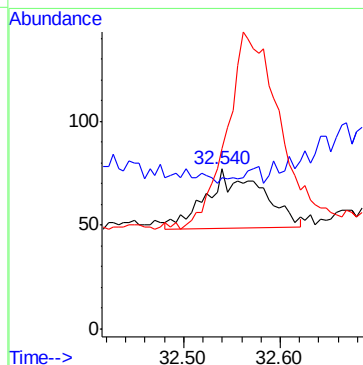
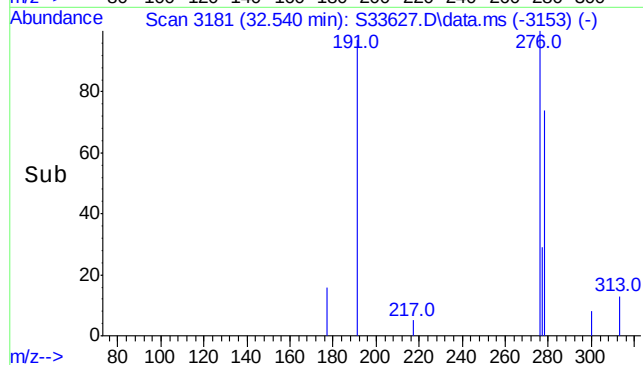
#52
 Indeno(1,2,3-cd)pyrene
 Concen: 0.010 ng/mL
 RT: 32.561 min Scan# 3185
 Delta R.T. -0.033 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm

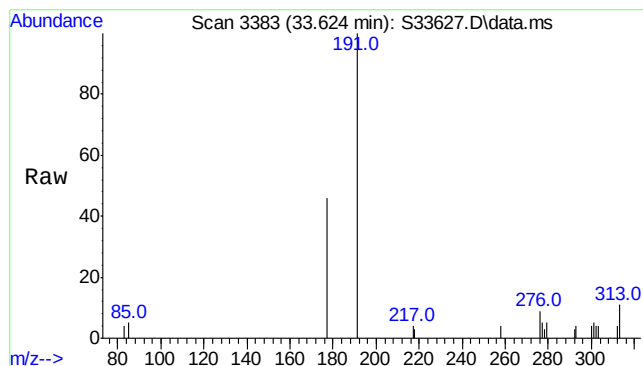
Tgt Ion	Ratio	Lower	Upper
276	100		
277	24.8	21.3	31.9
278	0.0	21.8	32.8#



#53
 Dibenzo(a,h)anthracene
 Concen: 0.004 ng/mL m
 RT: 32.540 min Scan# 3181
 Delta R.T. -0.048 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm

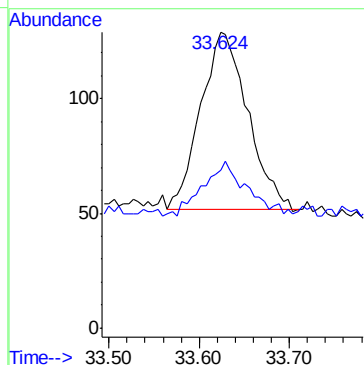
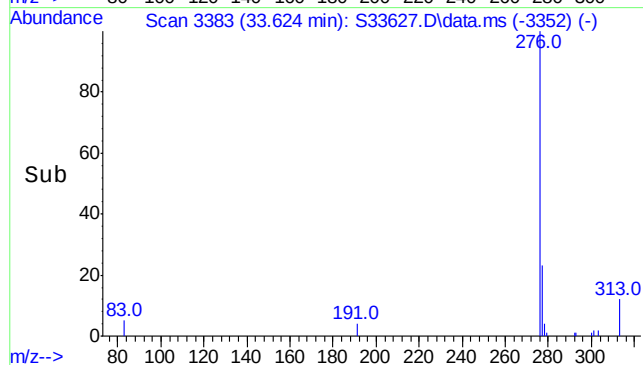
Tgt Ion	Ratio	Lower	Upper
278	100		
279	0.0	32.2	48.4#
276	0.0	242.1	363.1#





#54
 Benzo(g,h,i)perylene
 Concen: 0.008 ng/mL
 RT: 33.624 min Scan# 3383
 Delta R.T. -0.032 min
 Lab File: S33627.D
 Acq: 20 Sep 2013 11:25 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
277	25.5	20.3	30.5



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33631.D
 Acq On : 21 Sep 2013 2:40 am
 Operator : RUBENP
 Sample : mc24019-2
 Misc : ms29817,mss1493,,,,10
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Oct 24 17:43:35 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

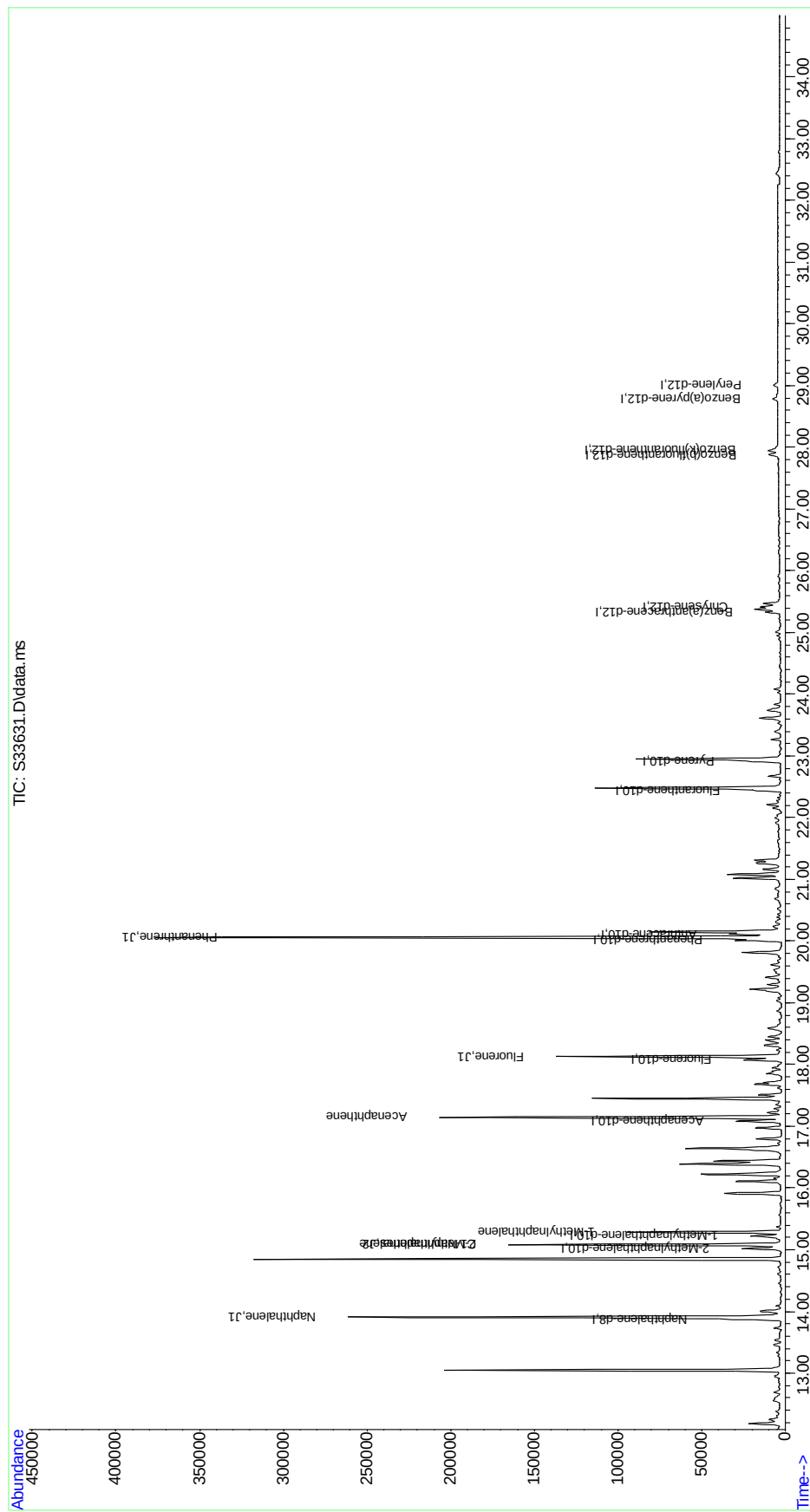
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	49578	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	31822	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	24924	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	18263	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	15591	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	39563	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	43987	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	24521	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	22717	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	10601	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	13086	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	10356	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10525	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	6973	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5832	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.910	128	364593	213.687	ng/mL	Qvalue 100
3) C1-Naphthalenes	15.081	142	225524m	132.179	ng/mL	
9) 2-Methylnaphthalene	15.081	142	143412	62.089	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	81115	42.026	ng/mL	100
14) Acenaphthene	17.147	154	122536	45.315	ng/mL	98
16) Fluorene	18.132	166	105840m	25.006	ng/mL	
21) Phenanthrene	20.059	178	414404	41.569	ng/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

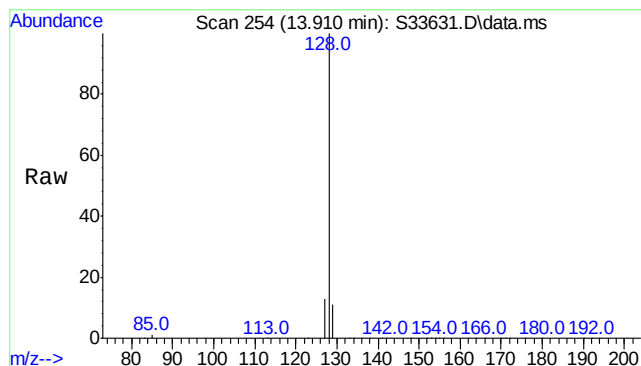
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Data Path : Z:\data\S130920\
Data File : S33631.D
Acq On : 21 Sep 2013 2:40 am
Operator : RUBENP
Sample : mc24019-2
Misc : ms29817,mss1493,,,,10
ALS Vial : 18 Sample Multiplier: 1
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Quant Time: Oct 24 17:43:35 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration



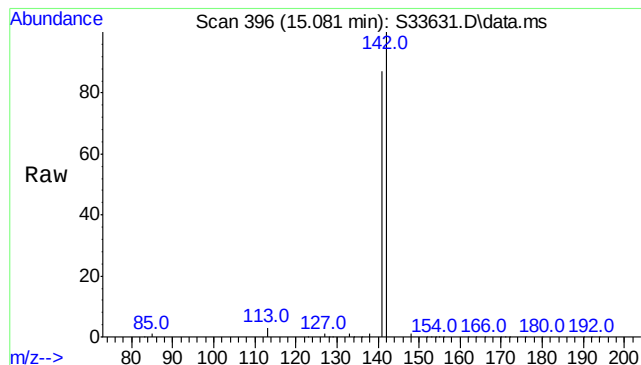
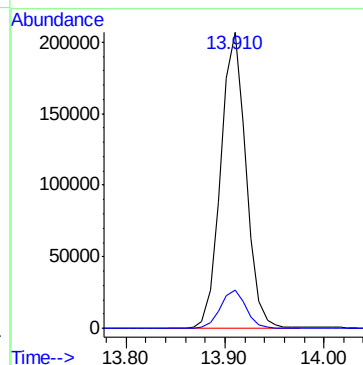
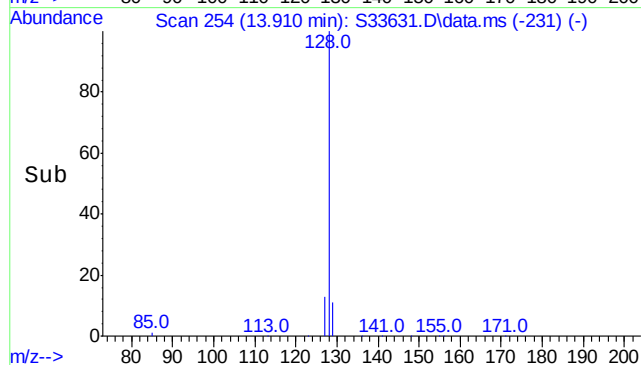
30920-SPMEPAH-CCQ-13.M Fri Oct 25 10:49:12 2013

Page: 2



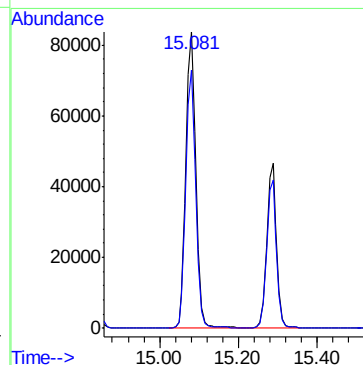
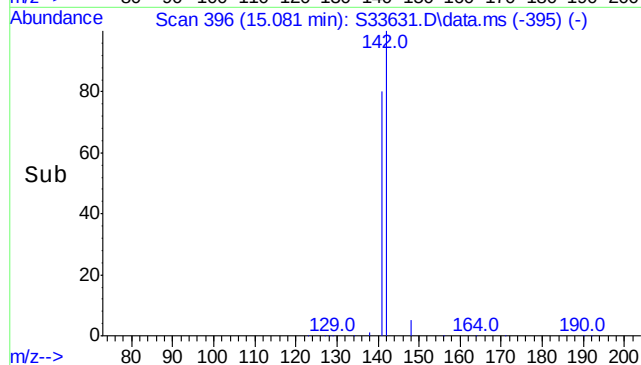
#2
Naphthalene
Concen: 213.687 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33631.D
Acq: 21 Sep 2013 2:40 am

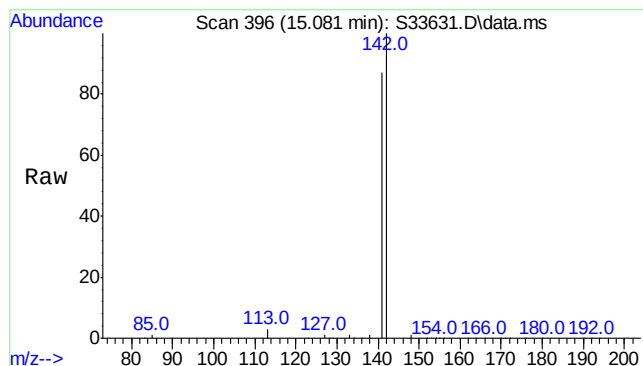
Tgt Ion:128 Resp: 364593
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



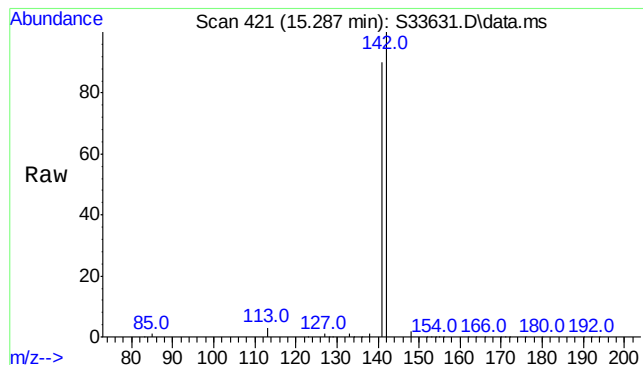
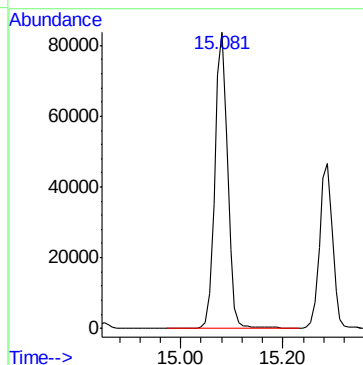
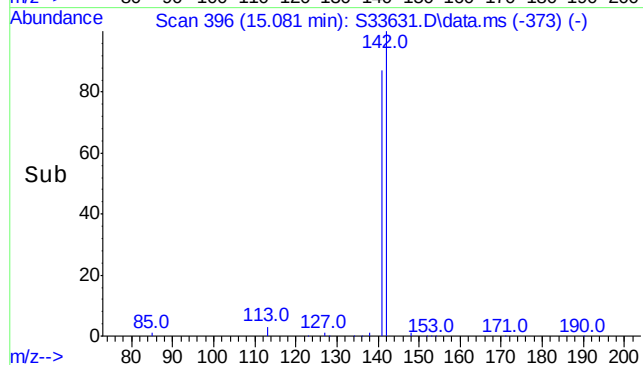
#3
C1-Naphthalenes
Concen: 132.179 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33631.D
Acq: 21 Sep 2013 2:40 am

Tgt Ion:142 Resp: 225524
Ion Ratio Lower Upper
142 100
141 32.6 71.0 106.6#

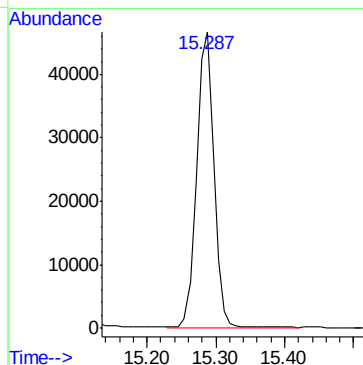
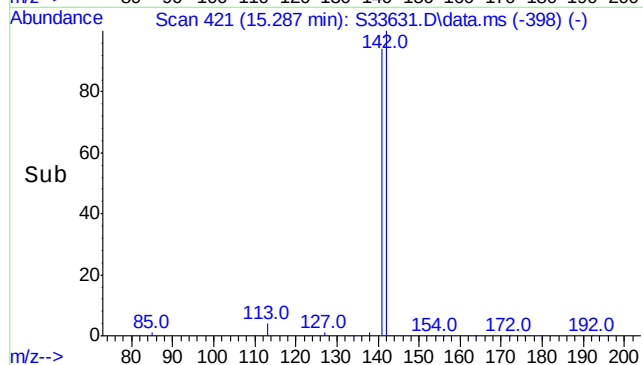


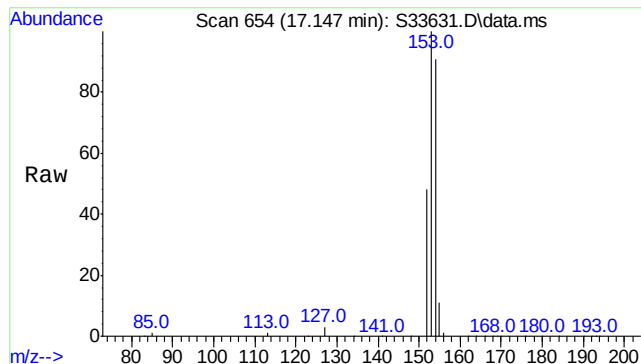


#9
2-Methylnaphthalene
Concen: 62.089 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33631.D
Acq: 21 Sep 2013 2:40 am
Tgt Ion:142 Resp: 143412



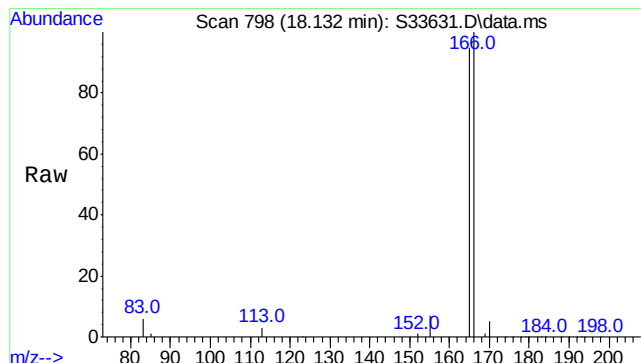
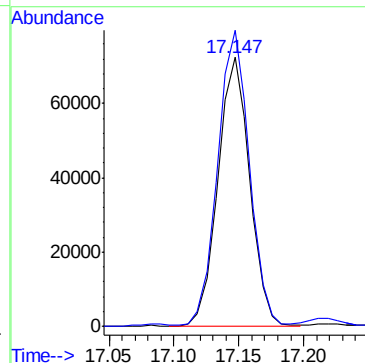
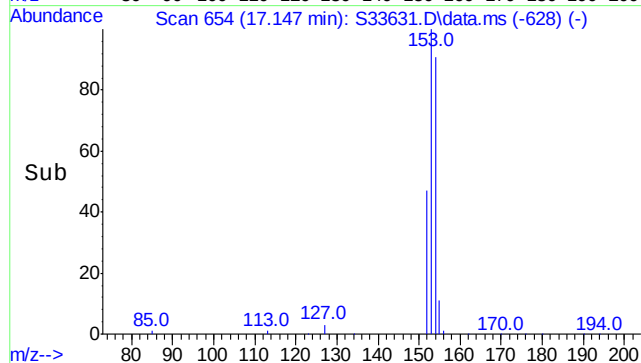
#11
1-Methylnaphthalene
Concen: 42.026 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33631.D
Acq: 21 Sep 2013 2:40 am
Tgt Ion:142 Resp: 81115





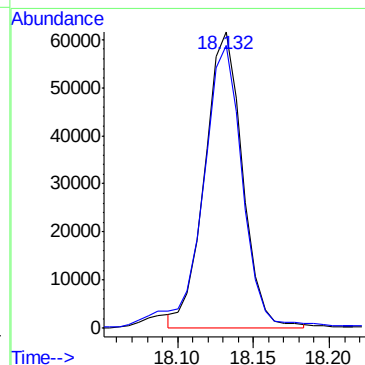
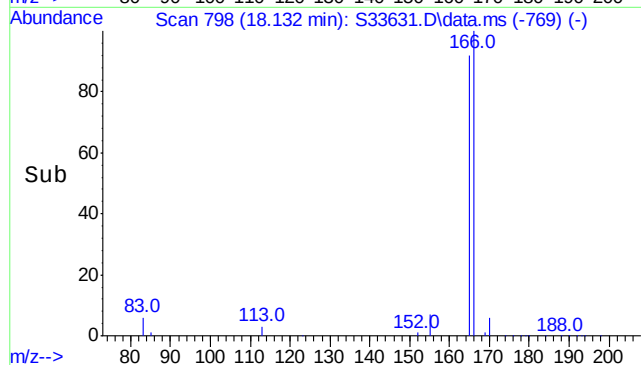
#14
Acenaphthene
Concen: 45.315 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33631.D
Acq: 21 Sep 2013 2:40 am

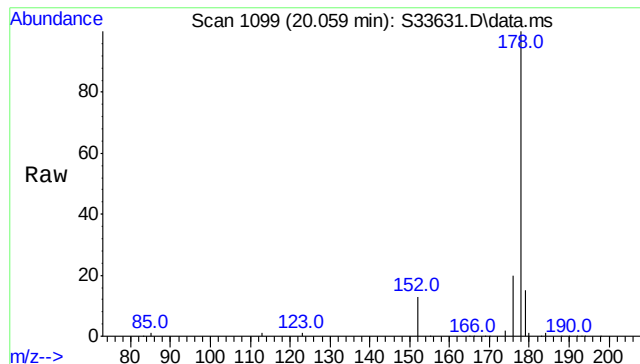
Tgt Ion:154 Resp: 122536
Ion Ratio Lower Upper
154 100
153 110.0 86.6 129.8



#16
Fluorene
Concen: 25.006 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33631.D
Acq: 21 Sep 2013 2:40 am

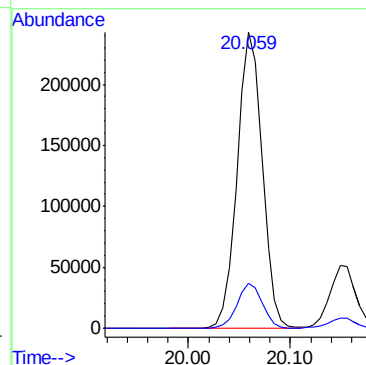
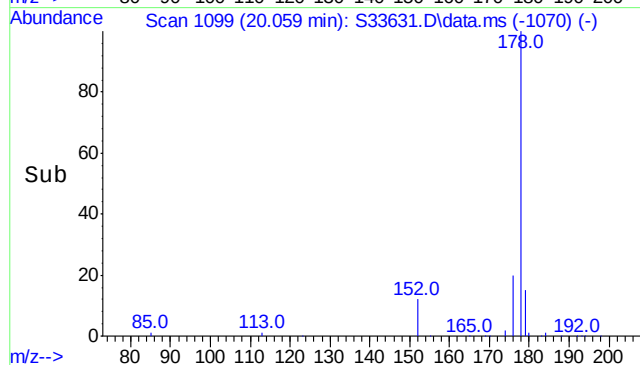
Tgt Ion:166 Resp: 105840
Ion Ratio Lower Upper
166 100
165 101.3 76.4 114.6





#21
 Phenanthrene
 Concen: 41.569 ng/mL
 RT: 20.059 min Scan# 1099
 Delta R.T. -0.013 min
 Lab File: S33631.D
 Acq: 21 Sep 2013 2:40 am

Tgt Ion:178 Resp: 414404
 Ion Ratio Lower Upper
 178 100
 179 15.2 12.4 18.6



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
 Data File : S33570.D
 Acq On : 13 Sep 2013 11:25 pm
 Operator : RUBENP
 Sample : mc24019-3
 Misc : ms29817,mss1482,1.5,,,1.5,1
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 16 12:22:25 2013
 Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:36:05 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	37866	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	24219	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	19733	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	15005	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	12058	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.020	188	32661	5.00	ng/mL	0.00
26) Anthracene-d10	20.116	188	36354	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	22228	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	20916	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	9307	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	11532	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.890	264	9085	0.33	ng/mL	0.00
45) Benzo(k)fluoranthene-d12	27.958	264	9186	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.796	264	6075	0.33	ng/mL	0.00
50) Perylene-d12	29.015	264	4871	0.33	ng/mL	-0.01

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.910	128	113799	88.944	ng/mL	100
3) C1-Naphthalenes	15.081	142	483726m	378.073	ng/mL	
4) C2-Naphthalenes	16.400	156	503690m	199.293	ng/mL	
5) C3-Naphthalenes	17.686	170	218932m	127.589	ng/mL	
6) C3-Naphthalenes (Fd10)	18.061	170	5890	3.433	µg/mL#	100
7) C4-Naphthalenes	18.868	184	41557m	49.490	ng/mL	
9) 2-Methylnaphthalene	15.081	142	279588	160.085	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	203602	134.974	ng/mL	100
13) Acenaphthylene	16.801	152	13555	7.022	ng/mL#	100
14) Acenaphthene	17.154	154	254045	115.626	ng/mL	99
16) Fluorene	18.138	166	270214m	83.191	ng/mL	
17) C1-Fluorenes	19.227	180	119938m	43.510	ng/mL	
18) C2-Fluorenes	20.251	194	42515m	20.201	ng/mL	
19) C3-Fluorenes	21.321	208	5637m	2.872	ng/mL	
21) Phenanthrene	20.065	178	558664	66.968	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.026	192	183247m	19.879	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	36483m	10.642	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	6572m	4.569	ng/mL	
25) C4-Phenanthrenes/anthr...	23.536	234	1078m	1.658	ng/mL	
27) Anthracene	20.155	178	133587	14.020	ng/mL	100
29) Fluoranthene	22.483	202	114868	6.208	ng/mL#	81
31) Pyrene	22.954	202	88717	4.363	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.618	216	33841m	2.580	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.442	230	5162m	0.254	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.418	244	950m	0.047	ng/mL	
36) Benz(a)anthracene	25.385	228	6146m	0.238	ng/mL	
38) Chrysene	25.478	228	5751	0.209	ng/mL	99
39) C1-Benz(a)anthracenes/...	26.306	242	1857m	0.115	ng/mL	
44) Benzo(b)fluoranthene	27.958	252	385	0.010	ng/mL#	77
46) Benzo(k)fluoranthene	28.003	252	562	0.017	ng/mL#	44
48) Benzo(e)pyrene	28.717	252	323	0.010	ng/mL#	72
49) Benzo(a)pyrene	28.858	252	246	0.012	ng/mL#	67

Quantitation Report (QT Reviewed)

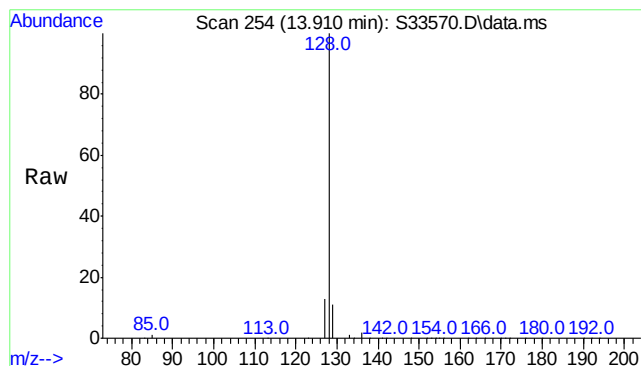
Data Path : Z:\1\data\S130913\
Data File : S33570.D
Acq On : 13 Sep 2013 11:25 pm
Operator : RUBENP
Sample : mc24019-3
Misc : ms29817,mss1482,1.5,,,1.5,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 16 12:22:25 2013
Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Fri Oct 11 11:36:05 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) Perylene	29.089	252	185	0.009	ng/mL#	41
52) Indeno(1,2,3-cd)pyrene	32.594	276	33	0.001	ng/mL#	48
53) Dibenz(a,h)anthracene	32.594	278	29m	0.001	ng/mL	
54) Benzo(g,h,i)perylene	33.656	276	40m	0.001	ng/mL	

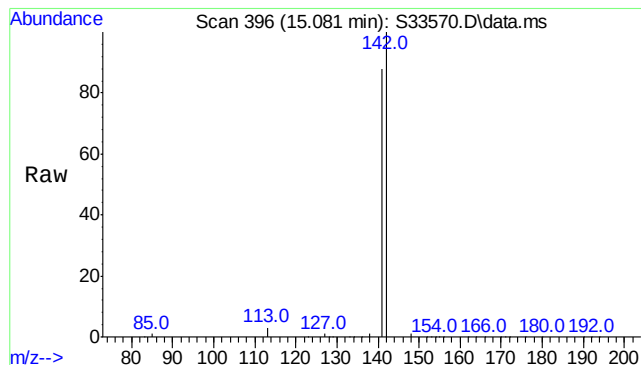
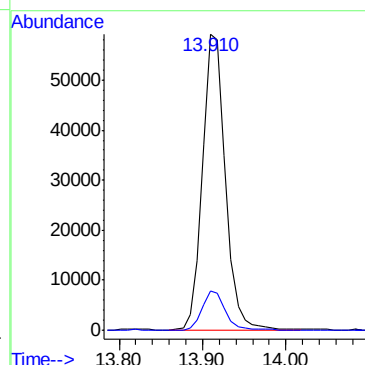
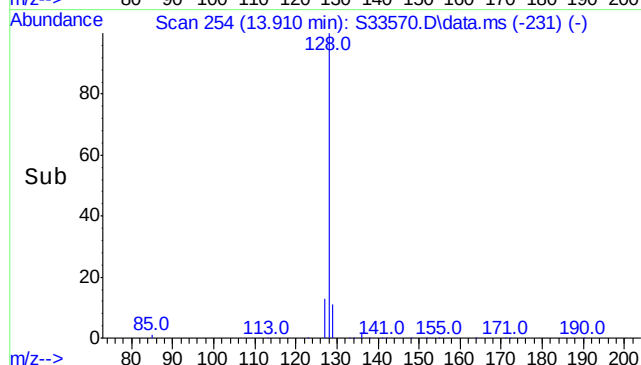
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.1.5
7



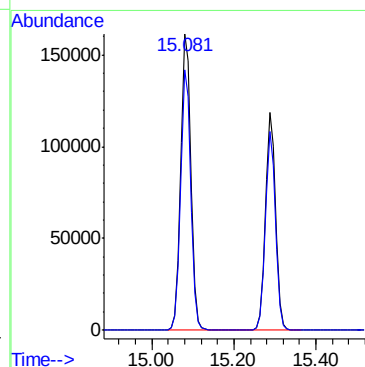
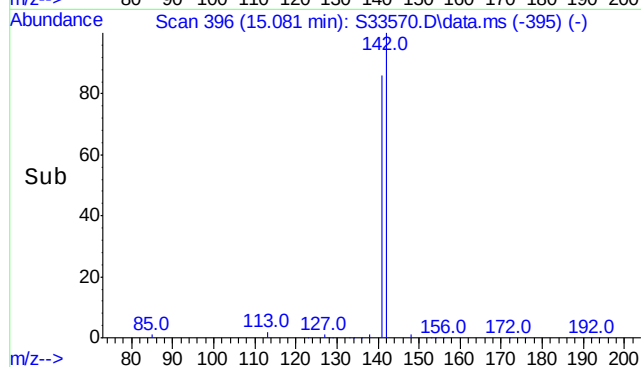
#2
Naphthalene
Concen: 88.944 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

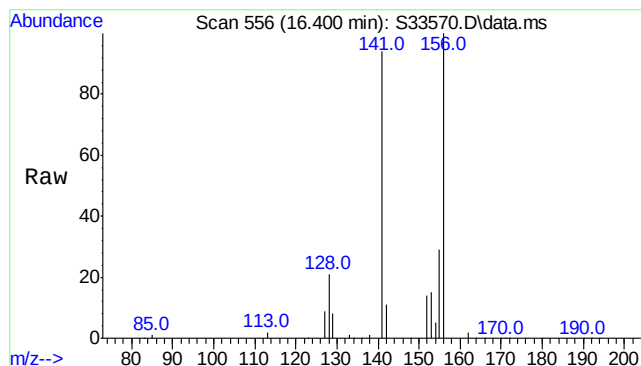
Tgt Ion:128 Resp: 113799
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



#3
C1-Naphthalenes
Concen: 378.073 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

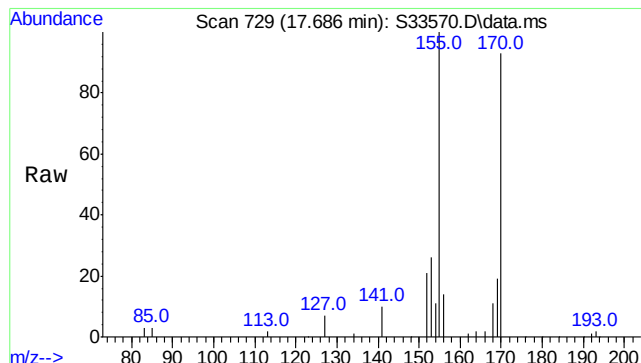
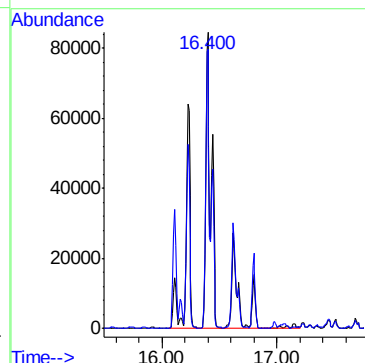
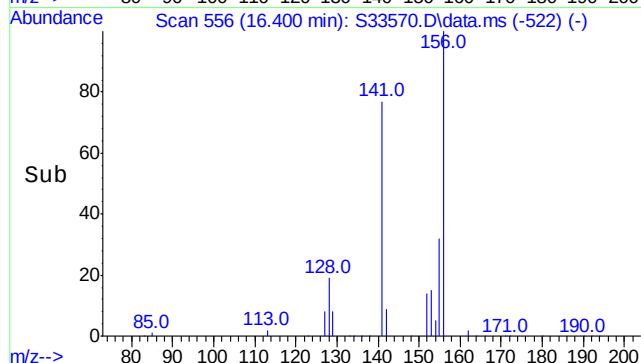
Tgt Ion:142 Resp: 483726
Ion Ratio Lower Upper
142 100
141 38.1 71.0 106.6#





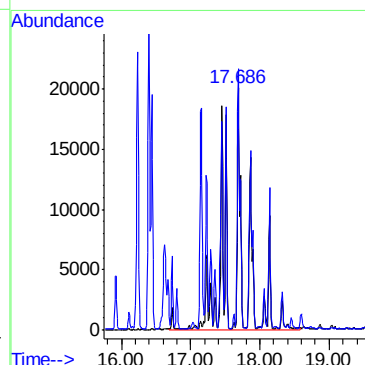
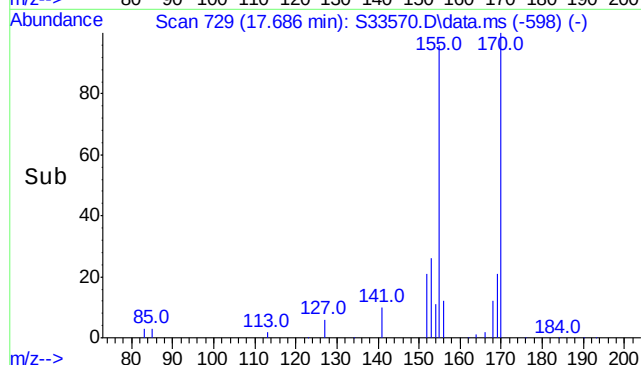
#4
C2-Naphthalenes
Concen: 199.293 ng/mL m
RT: 16.400 min Scan# 556
Delta R.T. -0.057 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

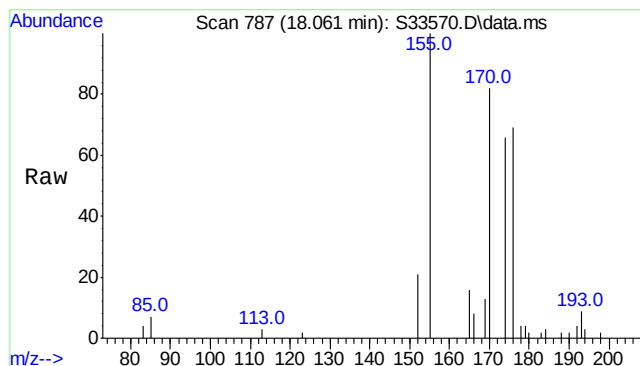
Tgt Ion:156 Resp: 503690
Ion Ratio Lower Upper
156 100
141 12.6 79.0 118.4#



#5
C3-Naphthalenes
Concen: 127.589 ng/mL m
RT: 17.686 min Scan# 729
Delta R.T. 0.027 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

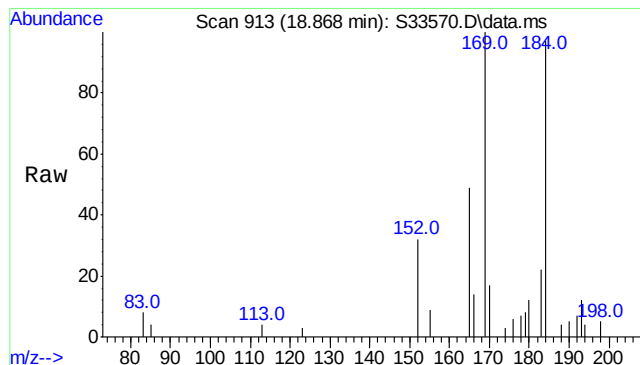
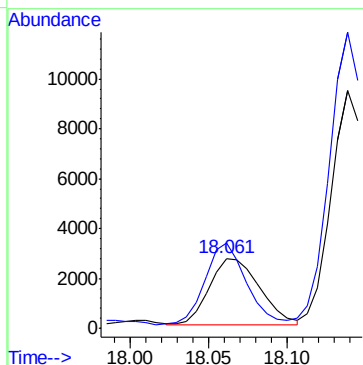
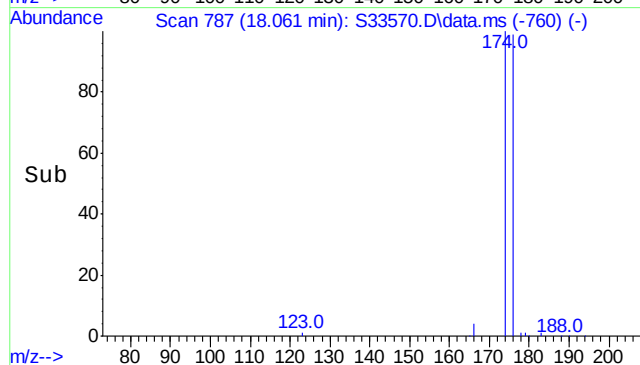
Tgt Ion:170 Resp: 218932
Ion Ratio Lower Upper
170 100
155 17.5 80.7 121.1#





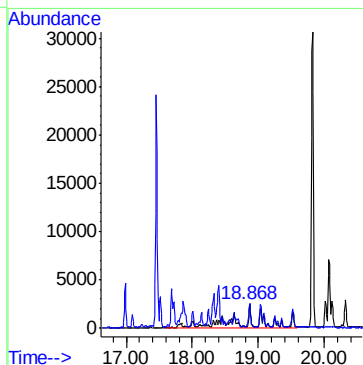
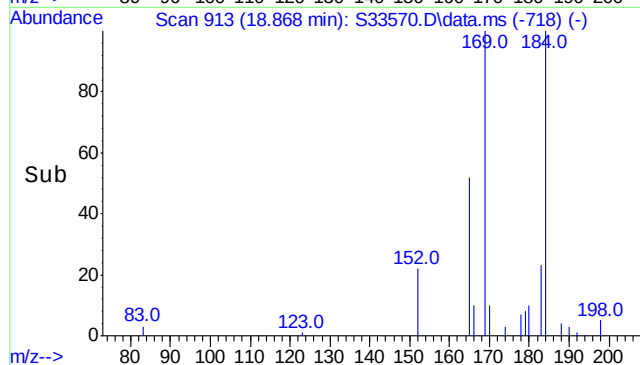
#6
C3-Naphthalenes (Fd10)
Concen: 3.433 µg/mL
RT: 18.061 min Scan# 787
Delta R.T. -0.026 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

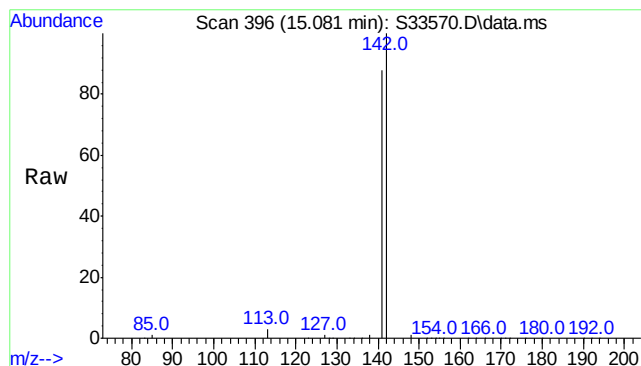
Tgt Ion:170 Resp: 5890
Ion Ratio Lower Upper
170 100
155 99.5 0.0 0.0#



#7
C4-Naphthalenes
Concen: 49.490 ng/mL m
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

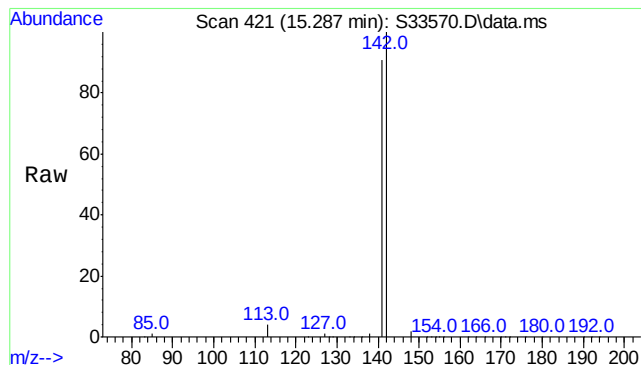
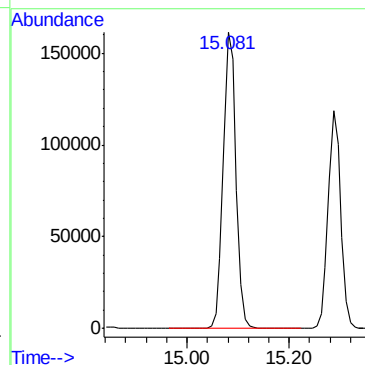
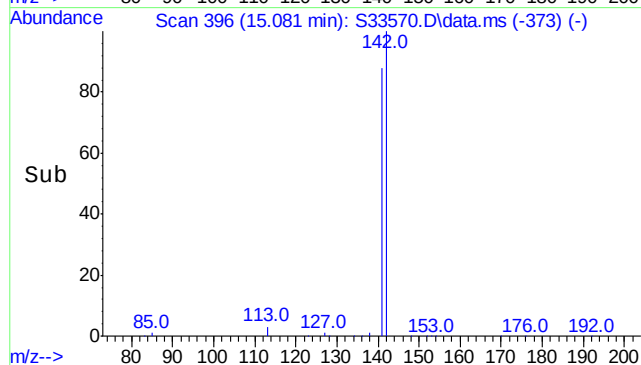
Tgt Ion:184 Resp: 41557
Ion Ratio Lower Upper
184 100
169 12.8 80.1 120.1#





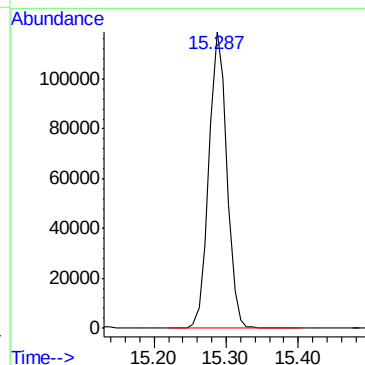
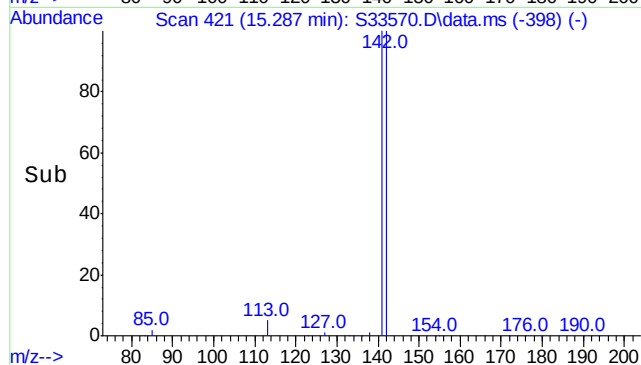
#9
2-Methylnaphthalene
Concen: 160.085 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

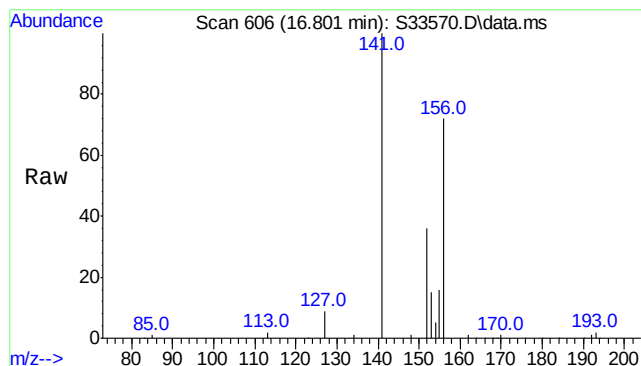
Tgt Ion:142 Resp: 279588



#11
1-Methylnaphthalene
Concen: 134.974 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

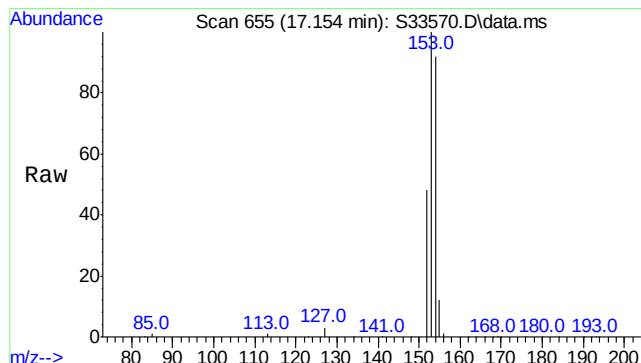
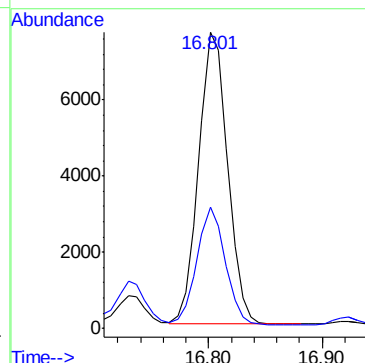
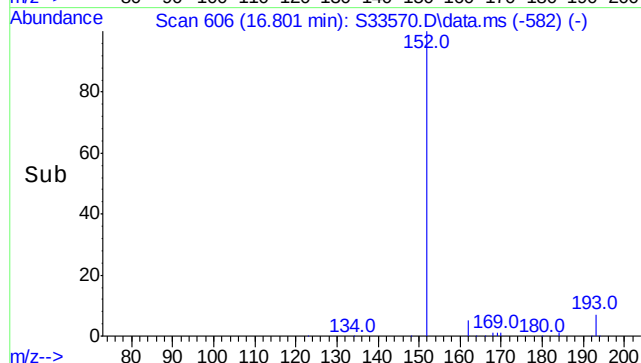
Tgt Ion:142 Resp: 203602





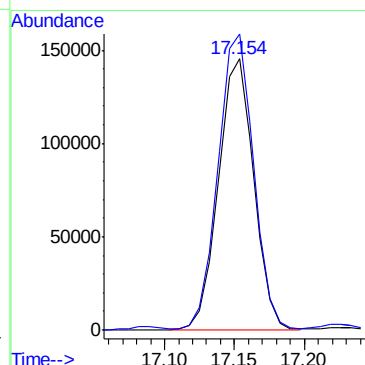
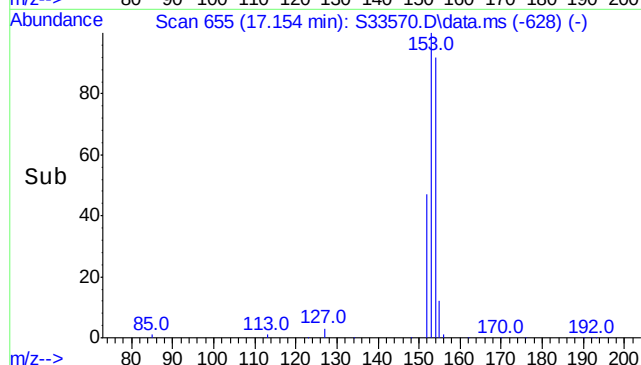
#13
Acenaphthylene
Concen: 7.022 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

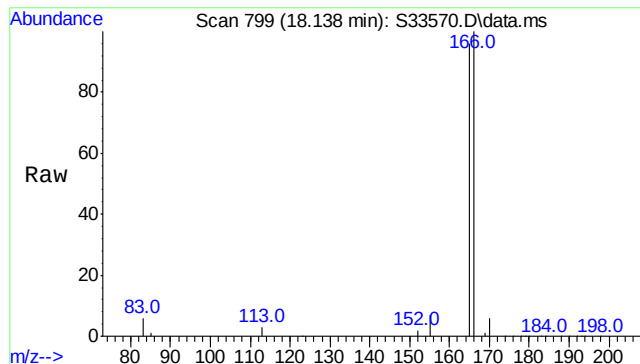
Tgt Ion:152 Resp: 13555
Ion Ratio Lower Upper
152 100
153 39.6 0.0 0.0#



#14
Acenaphthene
Concen: 115.626 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

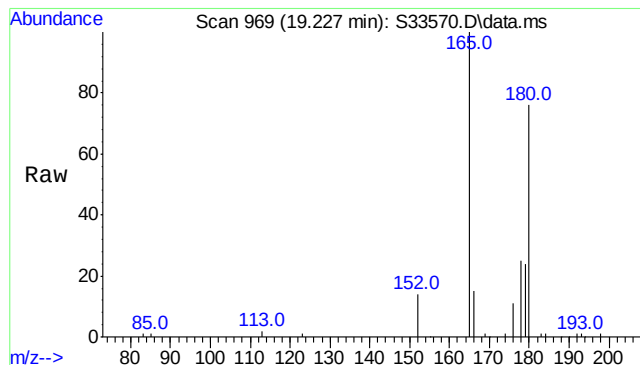
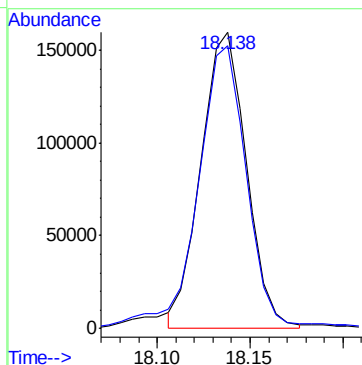
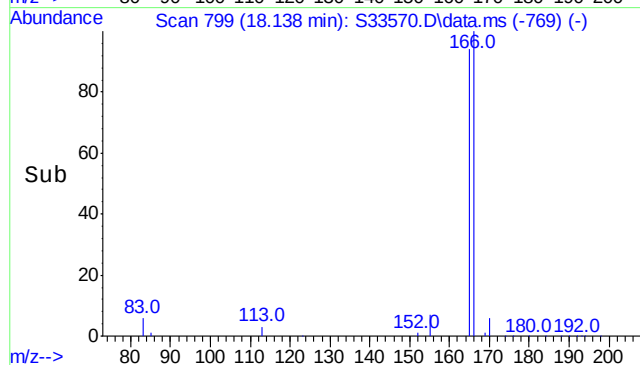
Tgt Ion:154 Resp: 254045
Ion Ratio Lower Upper
154 100
153 109.6 86.6 129.8





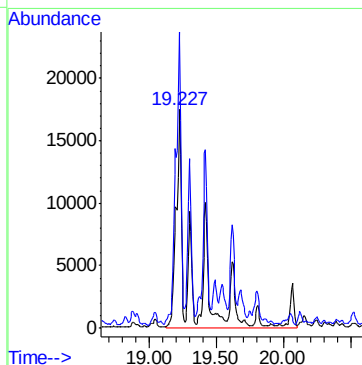
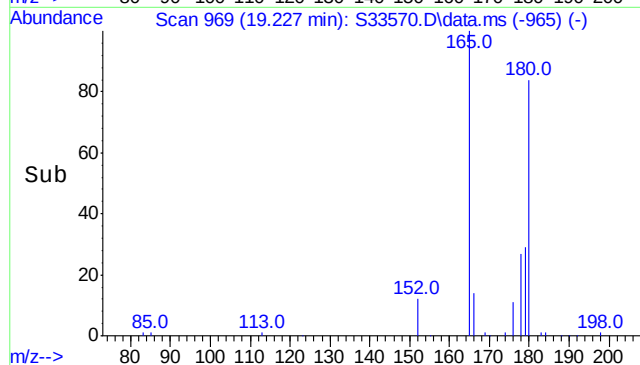
#16
 Fluorene
 Concen: 83.191 ng/mL m
 RT: 18.138 min Scan# 799
 Delta R.T. -0.007 min
 Lab File: S33570.D
 Acq: 13 Sep 2013 11:25 pm

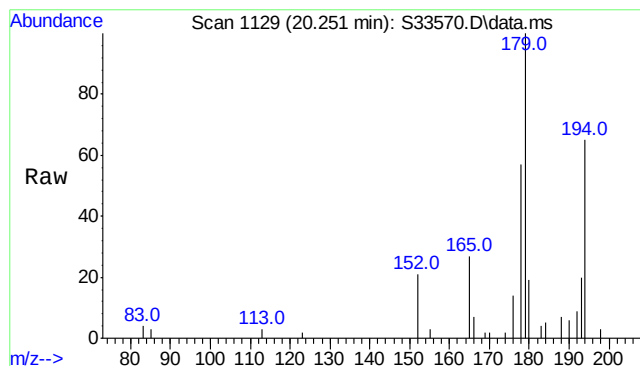
Tgt Ion:166 Resp: 270214
 Ion Ratio Lower Upper
 166 100
 165 103.4 76.4 114.6



#17
 C1-Fluorenes
 Concen: 43.510 ng/mL m
 RT: 19.227 min Scan# 969
 Delta R.T. -0.085 min
 Lab File: S33570.D
 Acq: 13 Sep 2013 11:25 pm

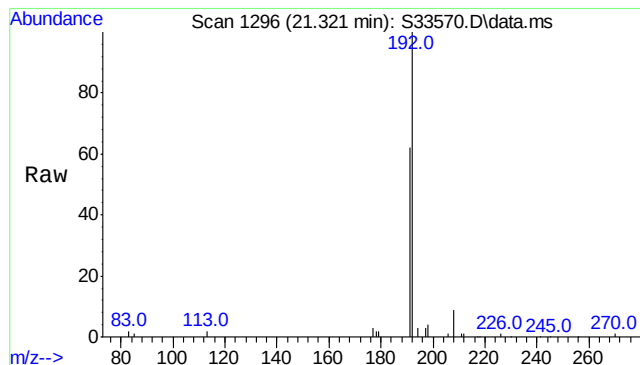
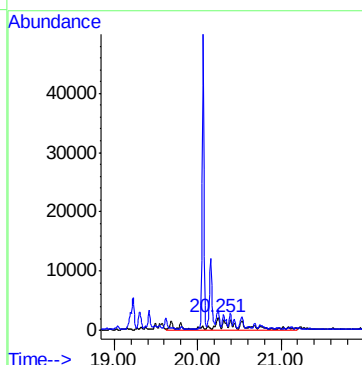
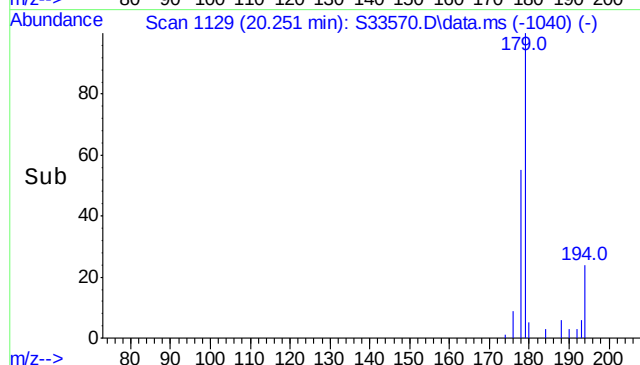
Tgt Ion:180 Resp: 119938
 Ion Ratio Lower Upper
 180 100
 165 18.8 111.1 166.7#





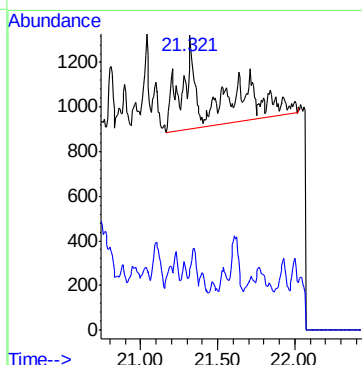
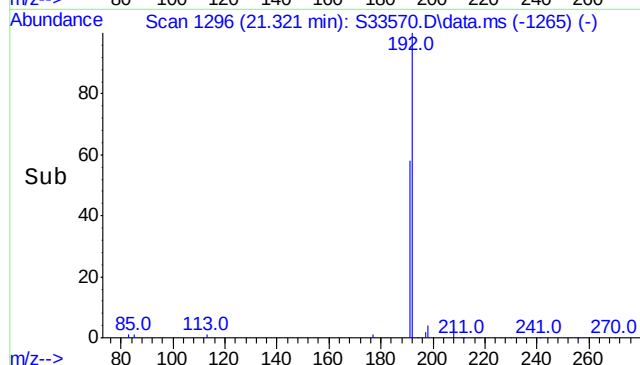
#18
C2-Fluorenes
Concen: 20.201 ng/mL m
RT: 20.251 min Scan# 1129
Delta R.T. -0.063 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

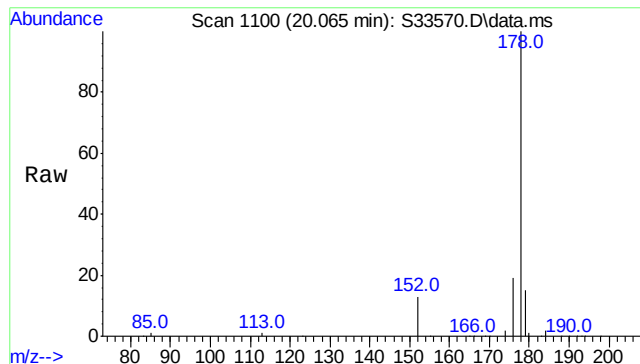
Tgt Ion:194 Resp: 42515
Ion Ratio Lower Upper
194 100
179 8.6 131.8 197.6#



#19
C3-Fluorenes
Concen: 2.872 ng/mL m
RT: 21.321 min Scan# 1296
Delta R.T. -0.031 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

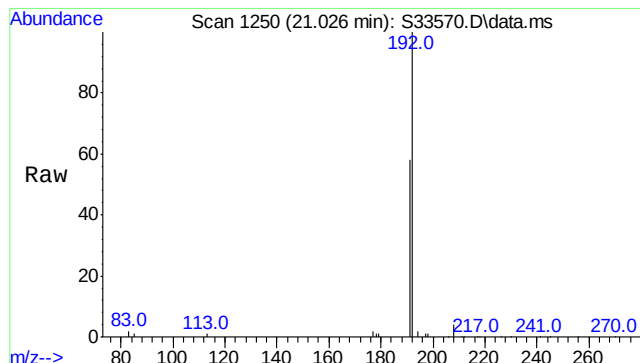
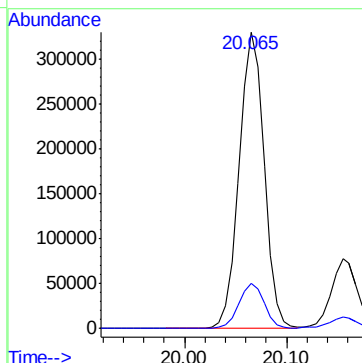
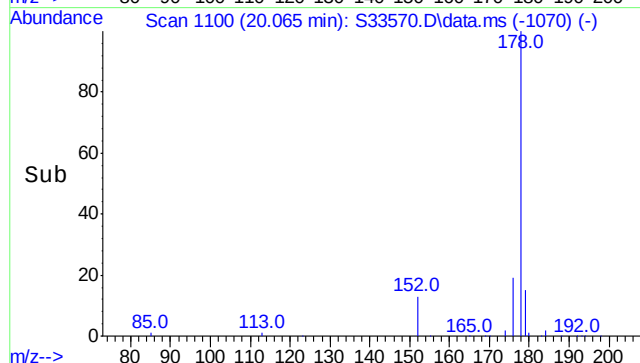
Tgt Ion:208 Resp: 5637
Ion Ratio Lower Upper
208 100
178 3.6 43.4 65.2#





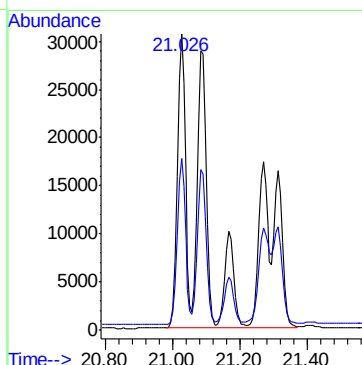
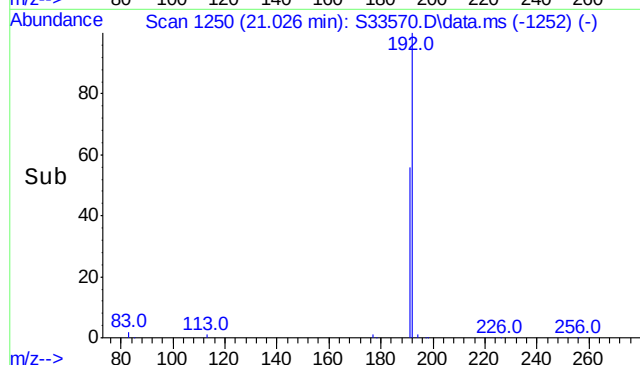
#21
Phenanthrene
Concen: 66.968 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

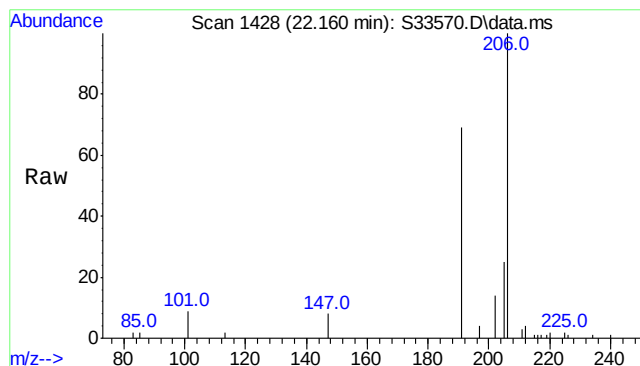
Tgt Ion:178 Resp: 558664
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6



#22
C1-Phenanthrenes/anthracenes
Concen: 19.879 ng/mL m
RT: 21.026 min Scan# 1250
Delta R.T. -0.127 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

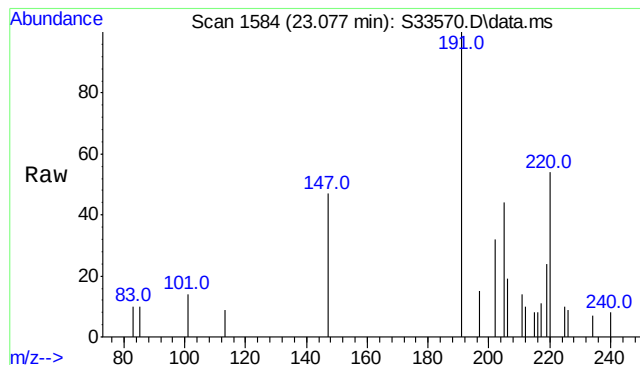
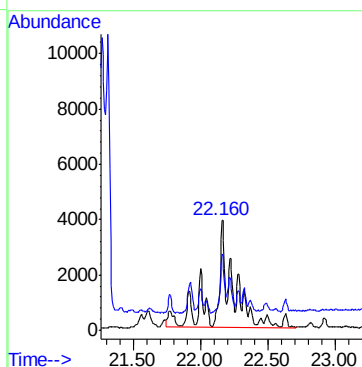
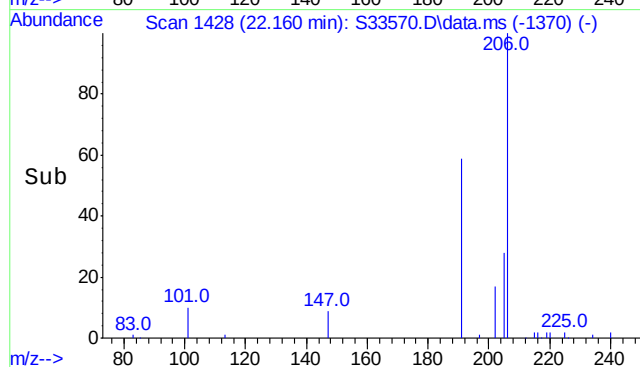
Tgt Ion:192 Resp: 183247
Ion Ratio Lower Upper
192 100
191 4.6 45.1 67.7#





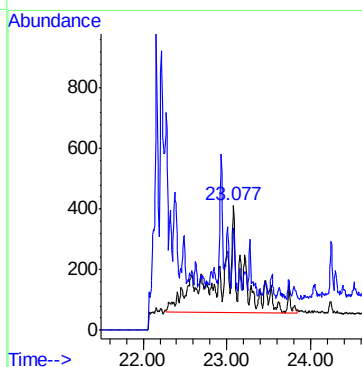
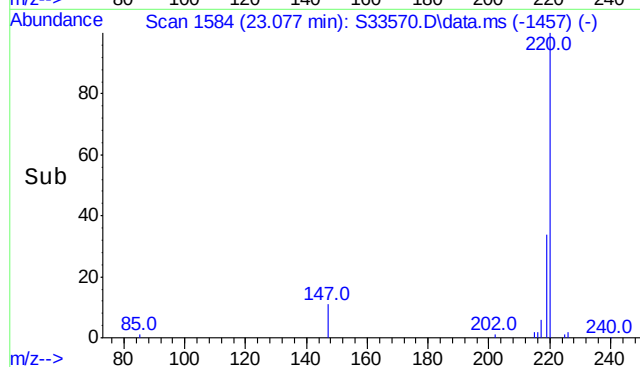
#23
C2-Phenanthrenes/anthracenes
Concen: 10.642 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

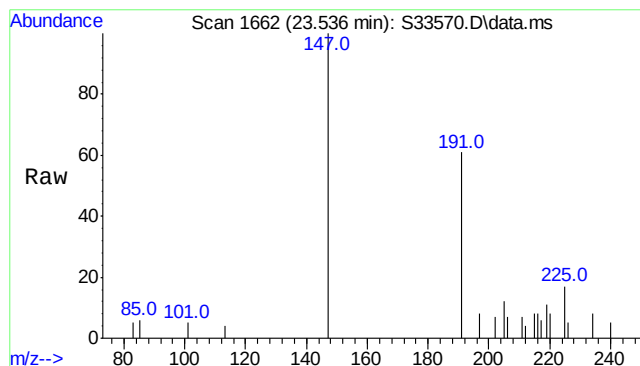
Tgt Ion:206 Resp: 36483
Ion Ratio Lower Upper
206 100
191 7.8 45.1 67.7#



#24
C3-Phenanthrenes/anthracenes
Concen: 4.569 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

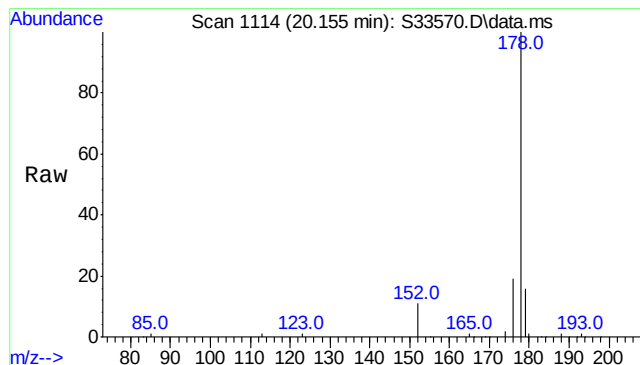
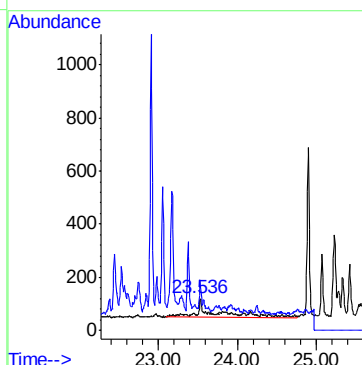
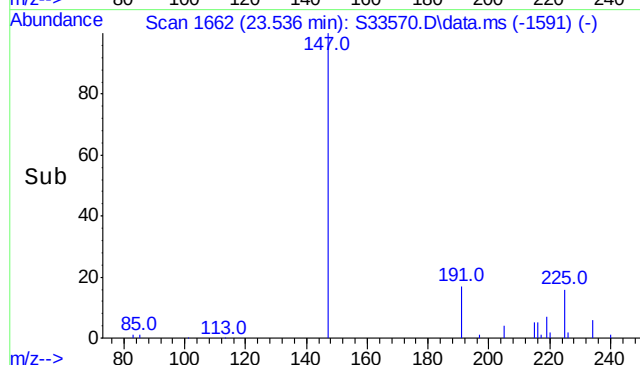
Tgt Ion:220 Resp: 6572
Ion Ratio Lower Upper
220 100
205 6.5 45.1 67.7#





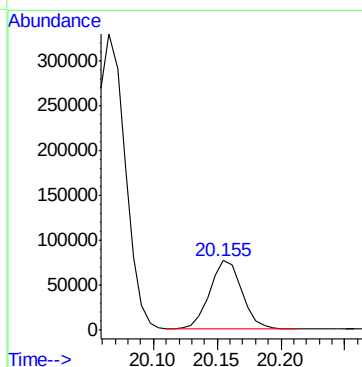
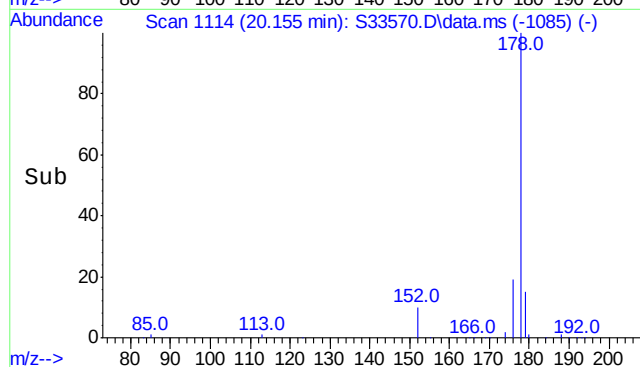
#25
C4-Phenanthrenes/anthracenes
Concen: 1.658 ng/mL m
RT: 23.536 min Scan# 1662
Delta R.T. -0.693 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

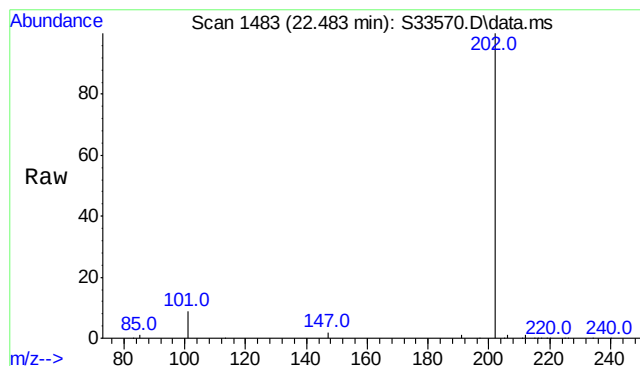
Tgt Ion:234 Resp: 1078
Ion Ratio Lower Upper
234 100
219 2.9 53.0 79.6#



#27
Anthracene
Concen: 14.020 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

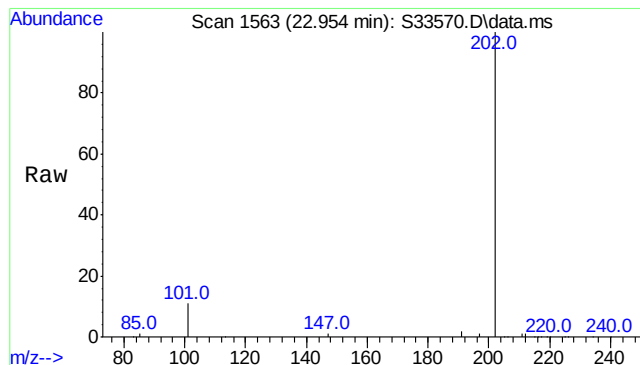
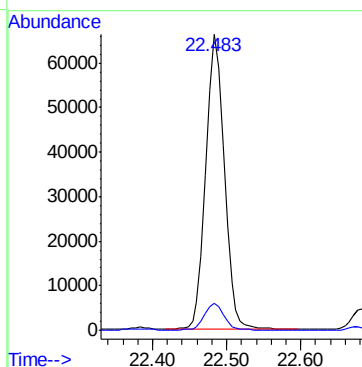
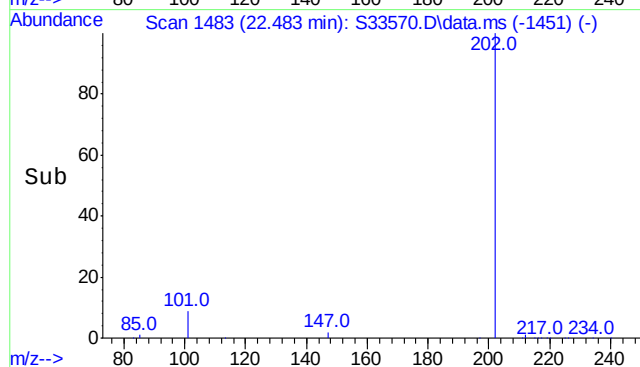
Tgt Ion:178 Resp: 133587





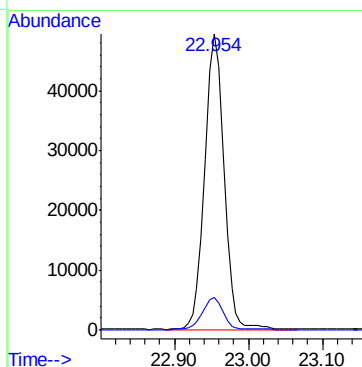
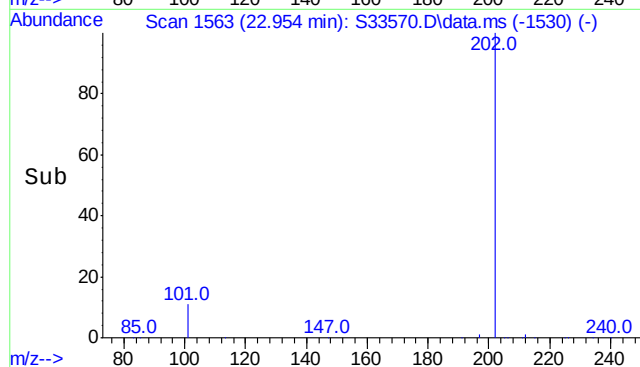
#29
 Fluoranthene
 Concen: 6.208 ng/mL
 RT: 22.483 min Scan# 1483
 Delta R.T. -0.012 min
 Lab File: S33570.D
 Acq: 13 Sep 2013 11:25 pm

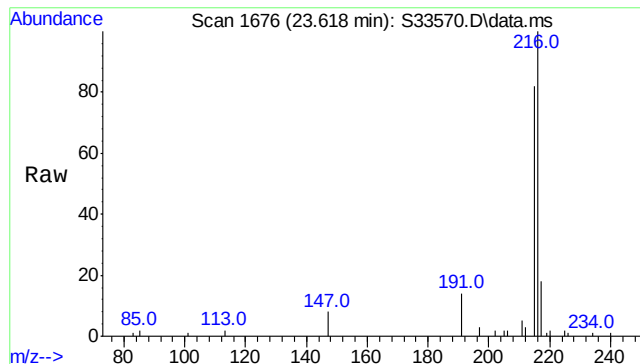
Tgt Ion	Ratio	Lower	Upper
202	100		
101	9.3	14.3	21.5#



#31
 Pyrene
 Concen: 4.363 ng/mL
 RT: 22.954 min Scan# 1563
 Delta R.T. -0.006 min
 Lab File: S33570.D
 Acq: 13 Sep 2013 11:25 pm

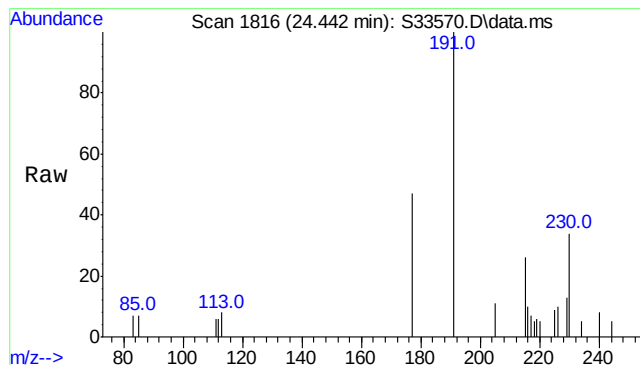
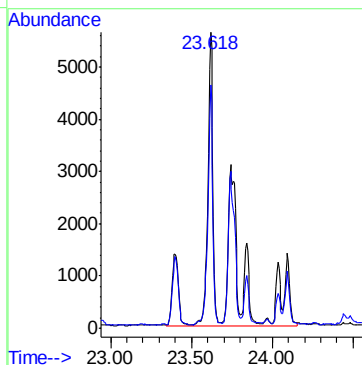
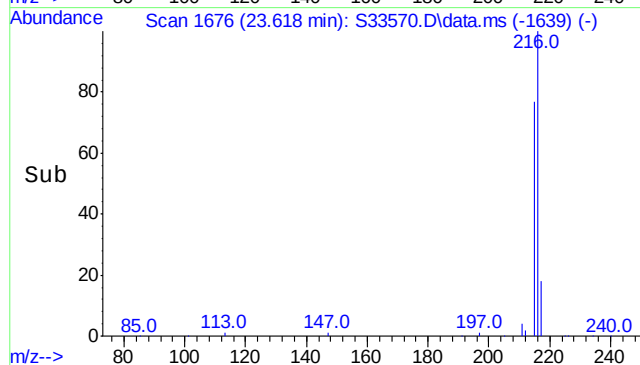
Tgt Ion	Ratio	Lower	Upper
202	100		
101	11.5	16.6	24.8#





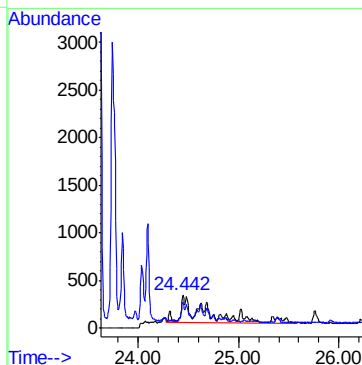
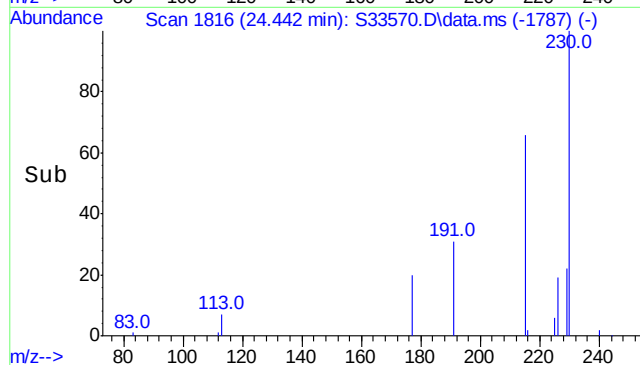
#32
C1-Fluoranthenes/pyrenes
Concen: 2.580 ng/mL m
RT: 23.618 min Scan# 1676
Delta R.T. -0.064 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

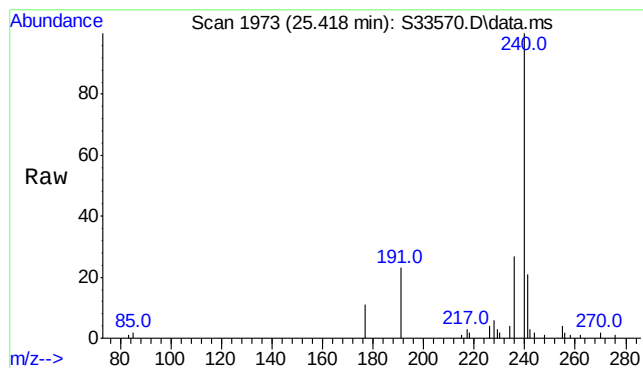
Tgt Ion:216 Resp: 33841
Ion Ratio Lower Upper
216 100
215 28.5 67.0 100.6#



#33
C2-Fluoranthenes/pyrenes
Concen: 0.254 ng/mL m
RT: 24.442 min Scan# 1816
Delta R.T. -0.069 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

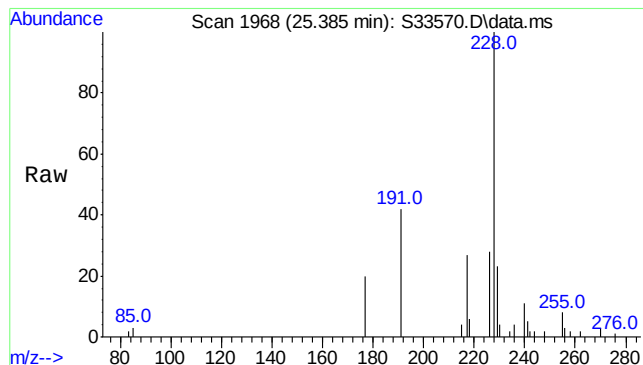
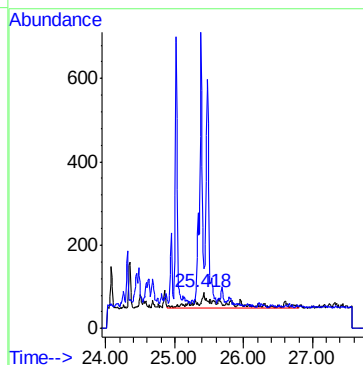
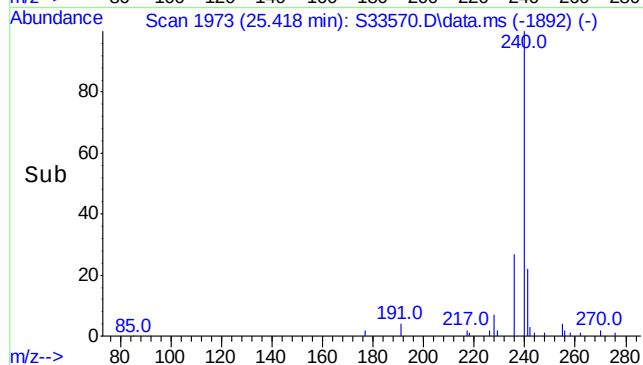
Tgt Ion:230 Resp: 5162
Ion Ratio Lower Upper
230 100
215 7.1 51.4 77.2#





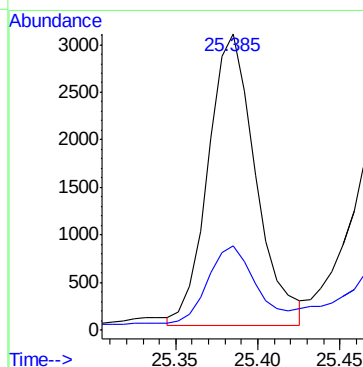
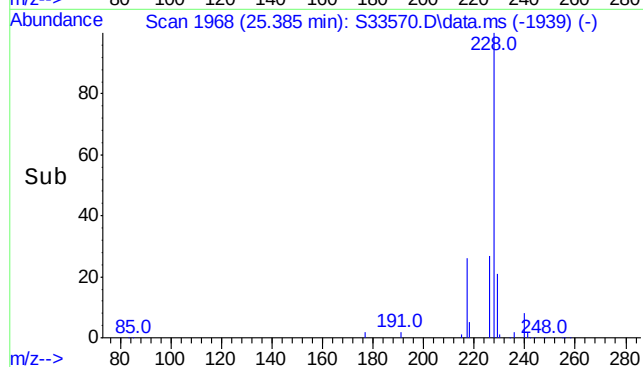
#34
C3-Fluoranthenes/pyrenes
Concen: 0.047 ng/mL m
RT: 25.418 min Scan# 1973
Delta R.T. -0.072 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

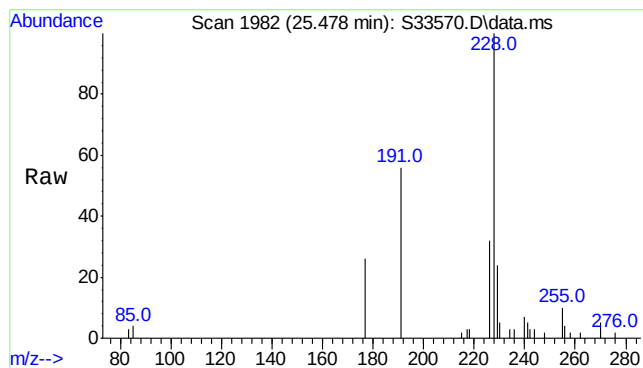
Tgt Ion:244 Resp: 950
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#



#36
Benz(a)anthracene
Concen: 0.238 ng/mL m
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

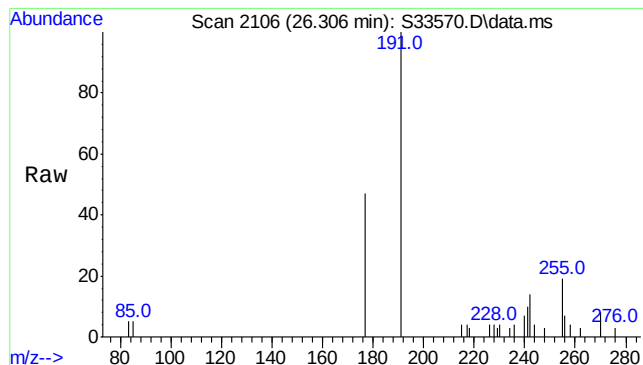
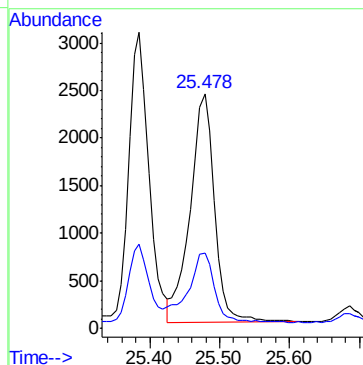
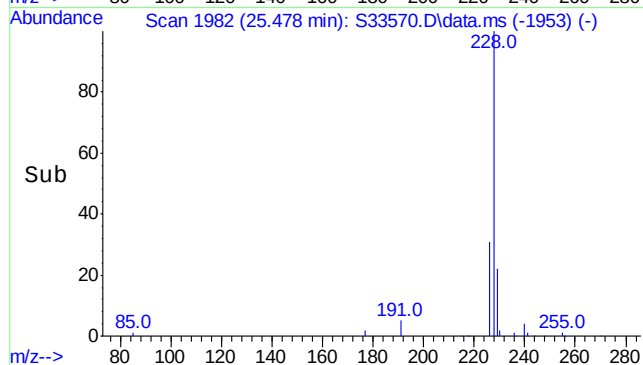
Tgt Ion:228 Resp: 6146
Ion Ratio Lower Upper
228 100
226 27.7 23.7 35.5





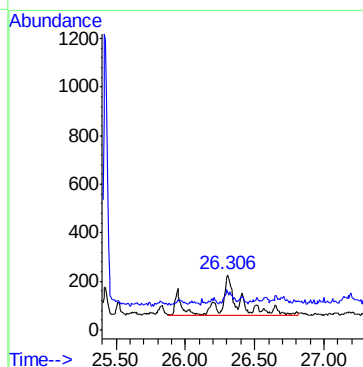
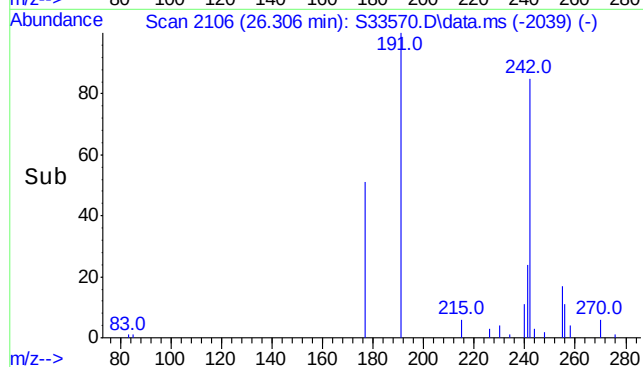
#38
 Chrysene
 Concen: 0.209 ng/mL
 RT: 25.478 min Scan# 1982
 Delta R.T. -0.007 min
 Lab File: S33570.D
 Acq: 13 Sep 2013 11:25 pm

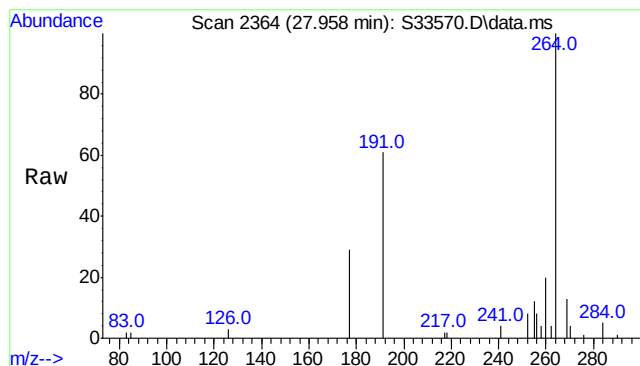
Tgt Ion:228 Resp: 5751
 Ion Ratio Lower Upper
 228 100
 226 33.1 26.0 39.0



#39
 C1-Benz(a)anthracenes/chrysenes
 Concen: 0.115 ng/mL m
 RT: 26.306 min Scan# 2106
 Delta R.T. -0.052 min
 Lab File: S33570.D
 Acq: 13 Sep 2013 11:25 pm

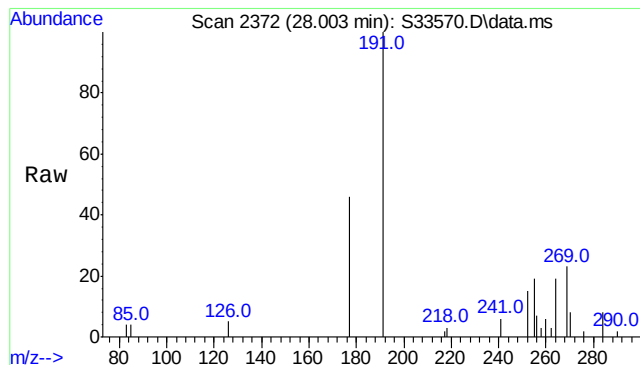
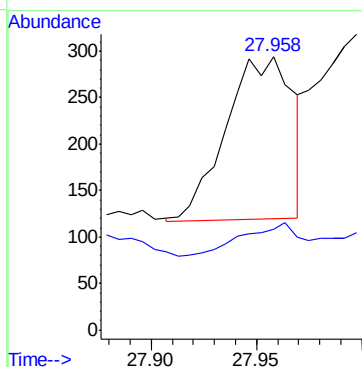
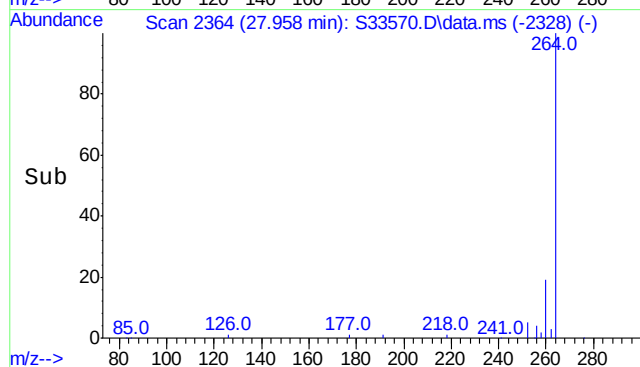
Tgt Ion:242 Resp: 1857
 Ion Ratio Lower Upper
 242 100
 241 11.1 27.2 40.8#





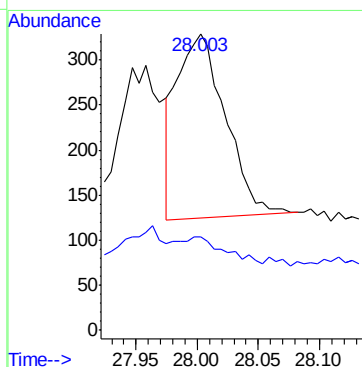
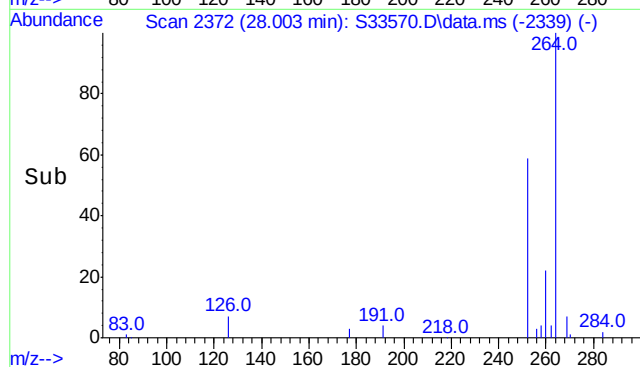
#44
Benzo(b)fluoranthene
Concen: 0.010 ng/mL
RT: 27.958 min Scan# 2364
Delta R.T. -0.000 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

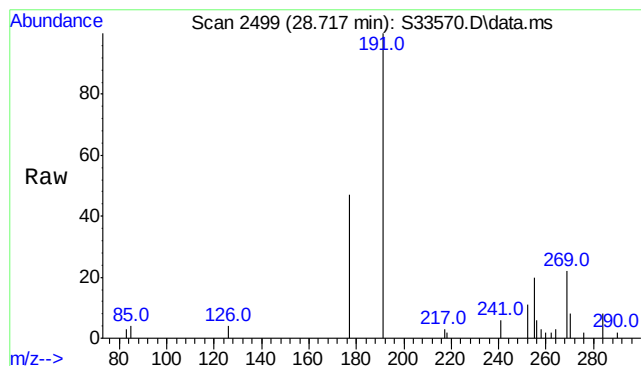
Tgt Ion:252 Resp: 385
Ion Ratio Lower Upper
252 100
126 16.6 23.0 34.4#



#46
Benzo(k)fluoranthene
Concen: 0.017 ng/mL
RT: 28.003 min Scan# 2372
Delta R.T. -0.017 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

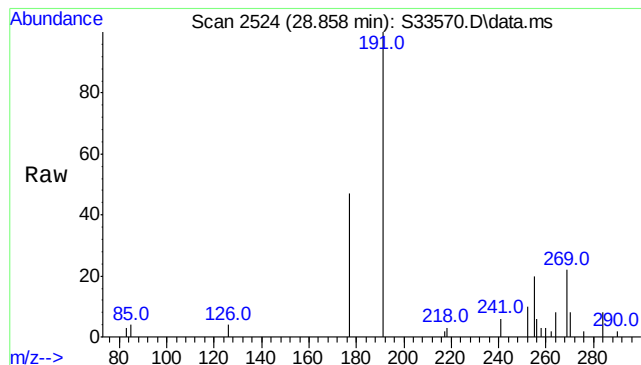
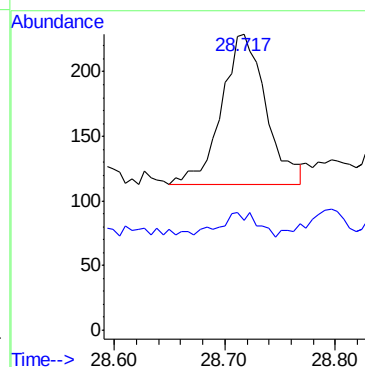
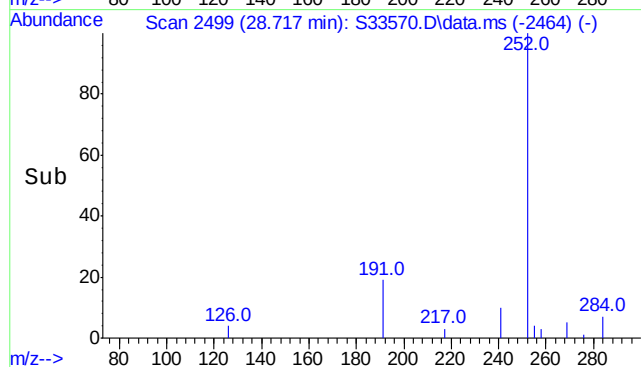
Tgt Ion:252 Resp: 562
Ion Ratio Lower Upper
252 100
126 0.0 24.4 36.6#





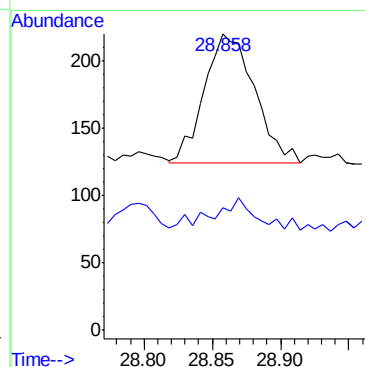
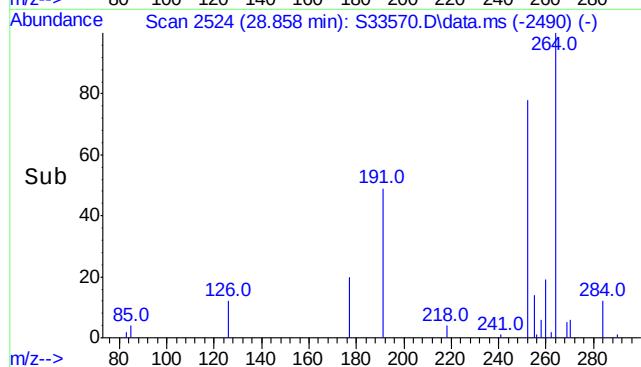
#48
Benzo(e)pyrene
Concen: 0.010 ng/mL
RT: 28.717 min Scan# 2499
Delta R.T. -0.006 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

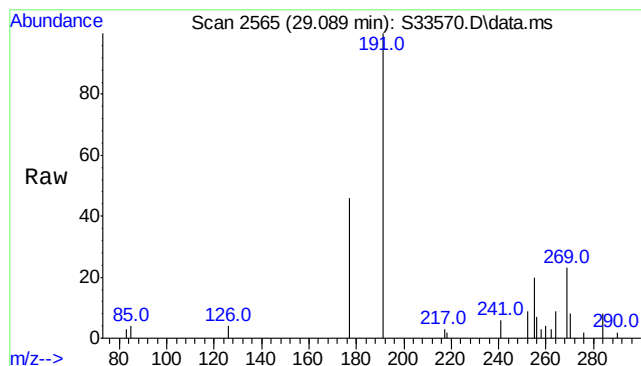
Tgt Ion:252 Resp: 323
Ion Ratio Lower Upper
252 100
126 13.6 22.6 34.0#



#49
Benzo(a)pyrene
Concen: 0.012 ng/mL
RT: 28.858 min Scan# 2524
Delta R.T. -0.011 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

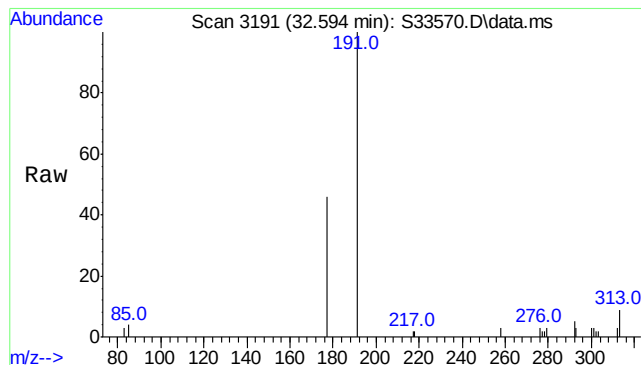
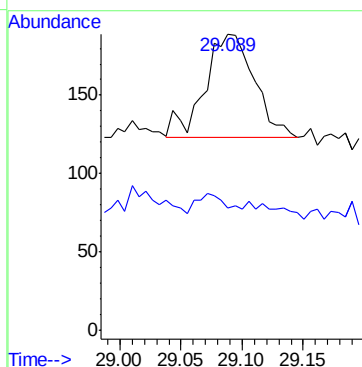
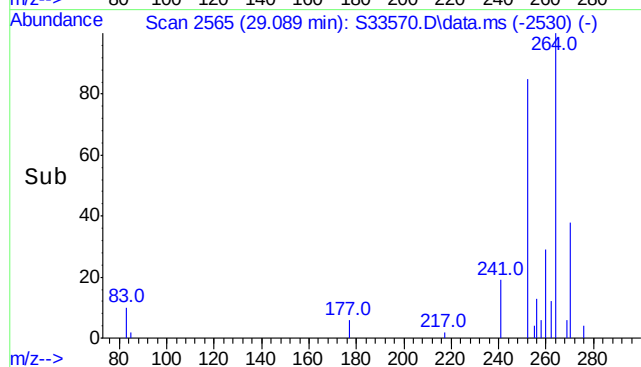
Tgt Ion:252 Resp: 246
Ion Ratio Lower Upper
252 100
126 13.4 25.1 37.7#





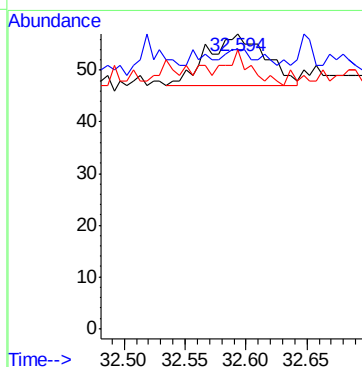
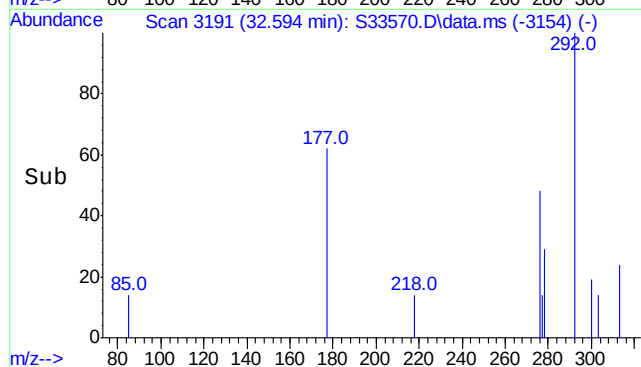
#51
Perylene
Concen: 0.009 ng/mL
RT: 29.089 min Scan# 2565
Delta R.T. -0.005 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

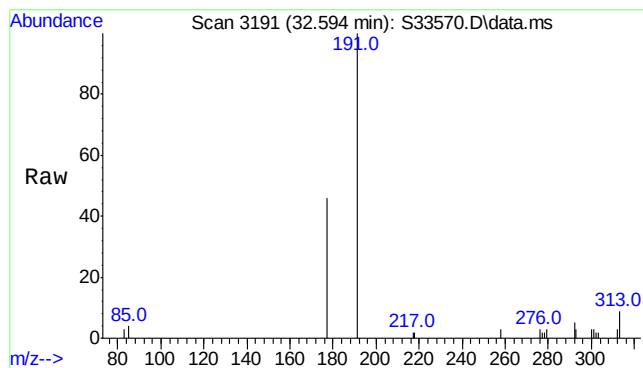
Tgt Ion:252 Resp: 185
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#



#52
Indeno(1,2,3-cd)pyrene
Concen: 0.001 ng/mL
RT: 32.594 min Scan# 3191
Delta R.T. -0.000 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

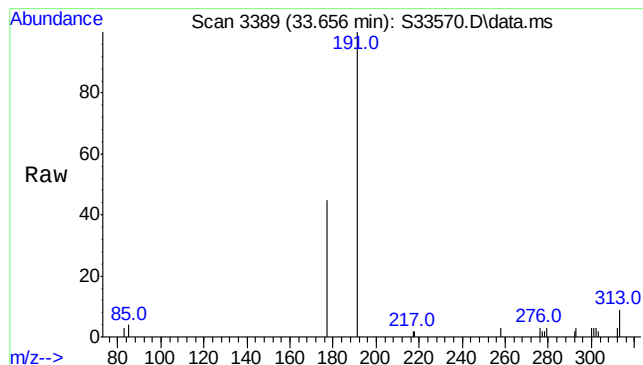
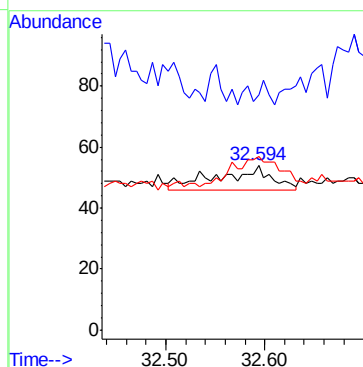
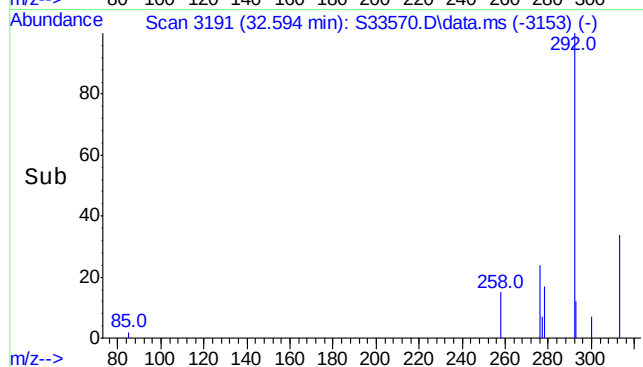
Tgt Ion:276 Resp: 33
Ion Ratio Lower Upper
276 100
277 0.0 21.3 31.9#
278 0.0 21.8 32.8#





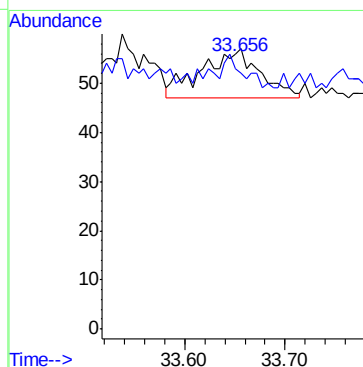
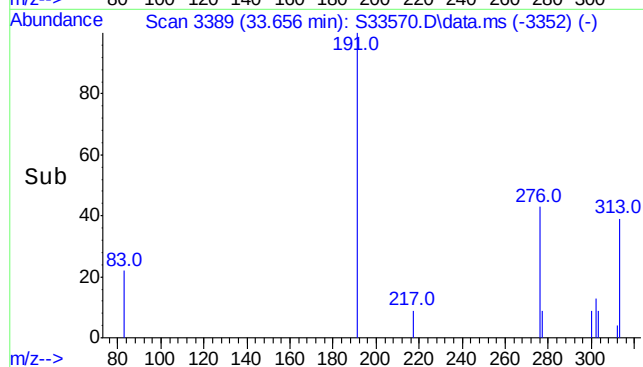
#53
Dibenz(a,h)anthracene
Concen: 0.001 ng/mL m
RT: 32.594 min Scan# 3191
Delta R.T. 0.006 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

Tgt Ion:278 Resp: 29
Ion Ratio Lower Upper
278 100
279 0.0 32.2 48.4#
276 0.0 242.1 363.1#



#54
Benzo(g,h,i)perylene
Concen: 0.001 ng/mL m
RT: 33.656 min Scan# 3389
Delta R.T. -0.000 min
Lab File: S33570.D
Acq: 13 Sep 2013 11:25 pm

Tgt Ion:276 Resp: 40
Ion Ratio Lower Upper
276 100
277 0.0 20.3 30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
 Data File : S33574.D
 Acq On : 14 Sep 2013 2:40 am
 Operator : RUBENP
 Sample : mc24019-4
 Misc : ms29817,mss1483,1.5,,,1.5,1
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 16 12:28:41 2013
 Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:36:05 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	38213	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	24905	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	20175	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	15562	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	12985	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.020	188	33543	5.00	ng/mL	0.00
26) Anthracene-d10	20.116	188	38174	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	22445	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	20887	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	8969	0.50	ng/mL	0.00
37) Chrysene-d12	25.418	240	11157	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.890	264	8783	0.33	ng/mL	0.00
45) Benzo(k)fluoranthene-d12	27.958	264	8954	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.790	264	5878	0.33	ng/mL	-0.01
50) Perylene-d12	29.015	264	4742	0.33	ng/mL	-0.01

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.910	128	211302	163.651	ng/mL	100
3) C1-Naphthalenes	15.081	142	631884m	489.387	ng/mL	
4) C2-Naphthalenes	16.401	156	608505m	238.578	ng/mL	
5) C3-Naphthalenes	17.686	170	265228m	153.166	ng/mL	
6) C3-Naphthalenes (Fd10)	18.061	170	6836	3.948	µg/mL#	100
7) C4-Naphthalenes	18.868	184	50644m	59.764	ng/mL	
9) 2-Methylnaphthalene	15.081	142	378177	210.570	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	253118	164.124	ng/mL	100
13) Acenaphthylene	16.801	152	16343	8.163	ng/mL#	100
14) Acenaphthene	17.154	154	277496	121.779	ng/mL	98
16) Fluorene	18.138	166	319159m	91.245	ng/mL	
17) C1-Fluorenes	19.227	180	150502m	50.700	ng/mL	
18) C2-Fluorenes	20.251	194	50323m	22.204	ng/mL	
19) C3-Fluorenes	21.328	208	7500m	3.549	ng/mL	
21) Phenanthrene	20.065	178	649837	75.849	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.026	192	226464m	23.922	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	43717m	12.416	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	9110m	6.167	ng/mL	
25) C4-Phenanthrenes/anthr...	23.530	234	1411m	2.114	ng/mL	
27) Anthracene	20.155	178	163914	16.383	ng/mL	100
29) Fluoranthene	22.483	202	131985	7.064	ng/mL#	81
31) Pyrene	22.954	202	101080	4.978	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.618	216	41992m	3.205	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.447	230	6686m	0.329	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.412	244	1219m	0.060	ng/mL	
36) Benz(a)anthracene	25.385	228	7580	0.305	ng/mL	96
38) Chrysene	25.478	228	6662	0.250	ng/mL	99
39) C1-Benz(a)anthracenes/...	26.293	242	2232m	0.143	ng/mL	
44) Benzo(b)fluoranthene	27.952	252	474	0.013	ng/mL#	69
46) Benzo(k)fluoranthene	28.003	252	633	0.020	ng/mL#	44
48) Benzo(e)pyrene	28.712	252	349	0.011	ng/mL#	46
49) Benzo(a)pyrene	28.852	252	341	0.017	ng/mL#	43

Quantitation Report (QT Reviewed)

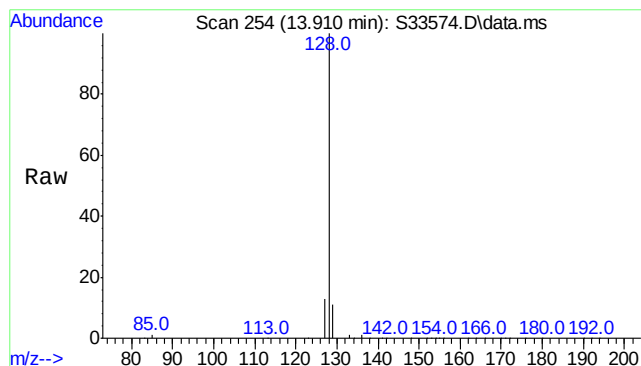
Data Path : Z:\1\data\S130913\
Data File : S33574.D
Acq On : 14 Sep 2013 2:40 am
Operator : RUBENP
Sample : mc24019-4
Misc : ms29817,mss1483,1.5,,,1.5,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 16 12:28:41 2013
Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Fri Oct 11 11:36:05 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) Perylene	29.083	252	167	0.009	ng/mL#	41
52) Indeno(1,2,3-cd)pyrene	32.588	276	49	0.001	ng/mL#	48
53) Dibenz(a,h)anthracene	32.567	278	21m	0.001	ng/mL	
54) Benzo(g,h,i)perylene	33.640	276	32	0.001	ng/mL#	50

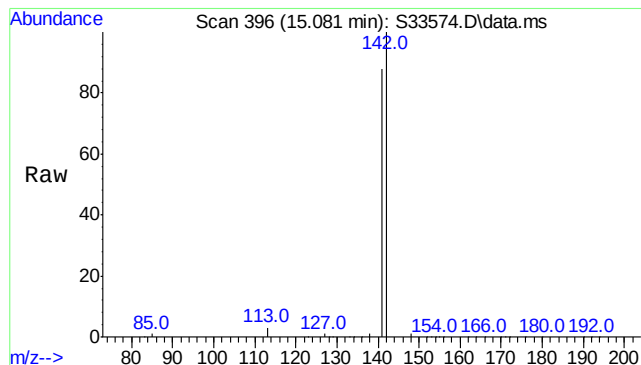
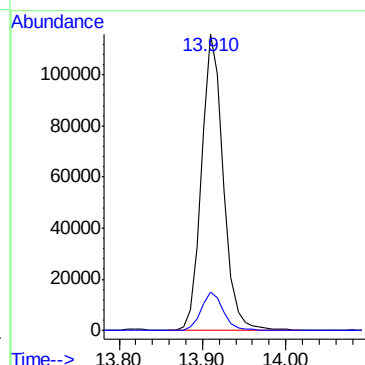
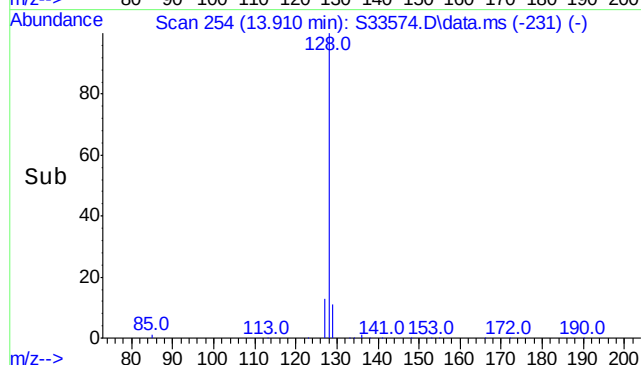
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.1.6
7



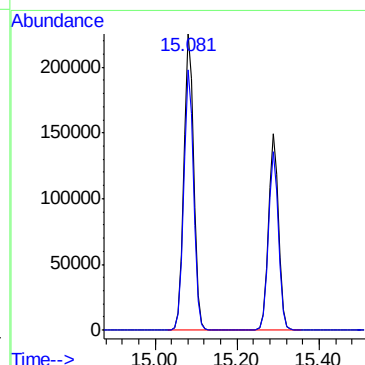
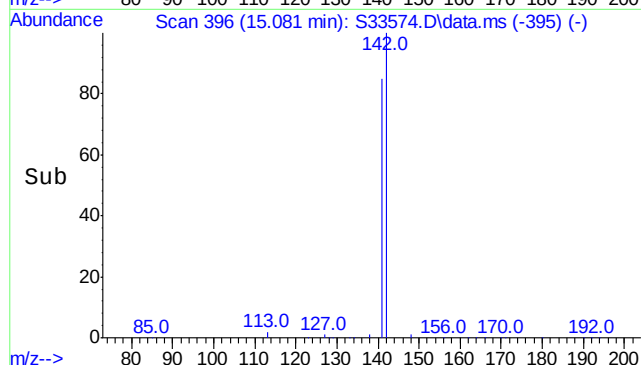
#2
Naphthalene
Concen: 163.651 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

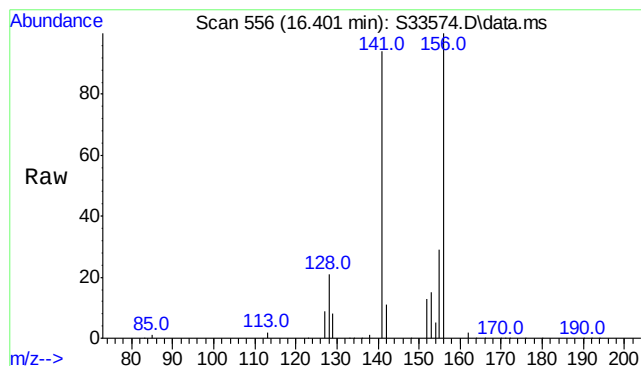
Tgt Ion	Ratio	Lower	Upper
128	100		
127	13.1	10.6	15.8



#3
C1-Naphthalenes
Concen: 489.387 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

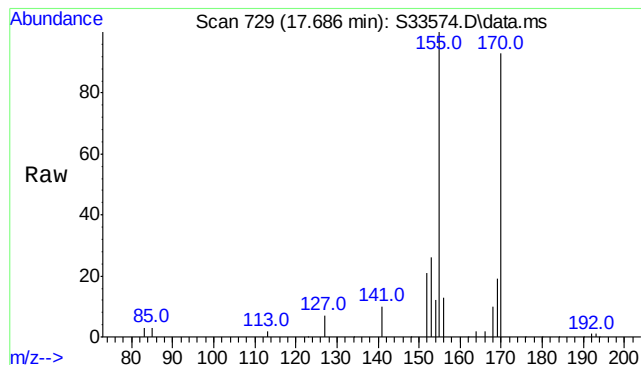
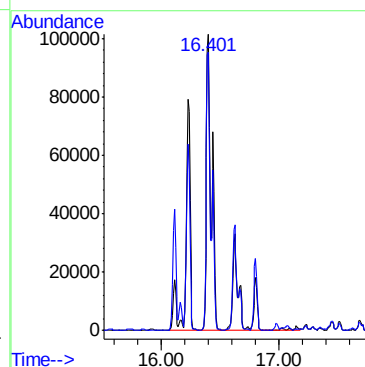
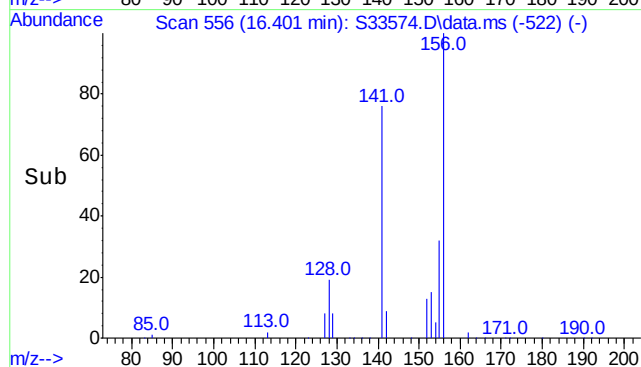
Tgt Ion	Ratio	Lower	Upper
142	100		
141	36.4	71.0	106.6#





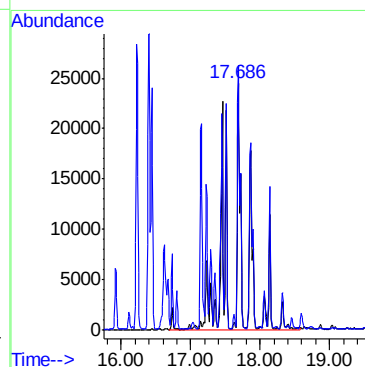
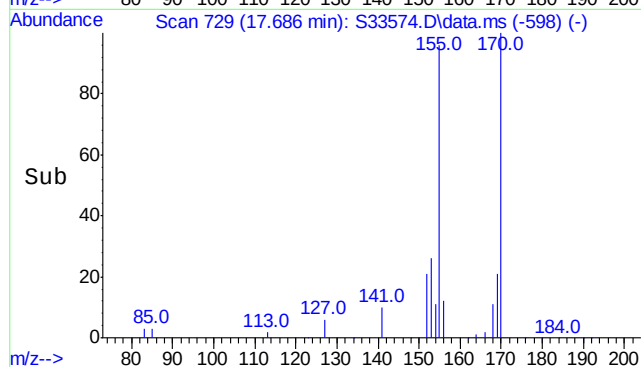
#4
C2-Naphthalenes
Concen: 238.578 ng/mL m
RT: 16.401 min Scan# 556
Delta R.T. -0.056 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

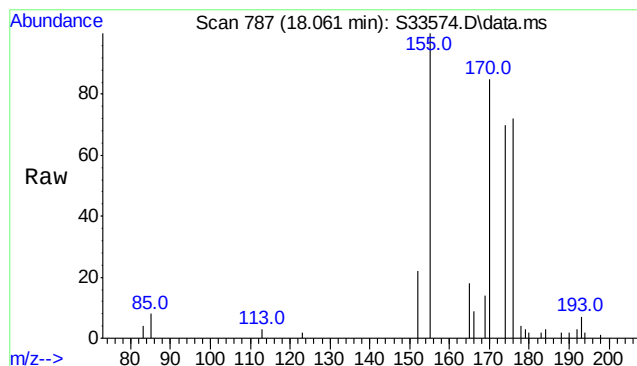
Tgt Ion:156 Resp: 608505
Ion Ratio Lower Upper
156 100
141 33.6 79.0 118.4#



#5
C3-Naphthalenes
Concen: 153.166 ng/mL m
RT: 17.686 min Scan# 729
Delta R.T. 0.027 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

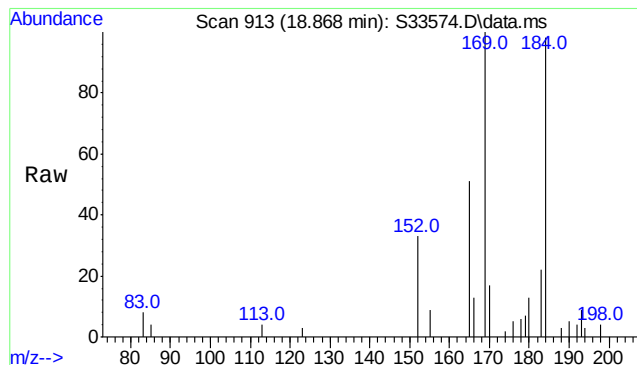
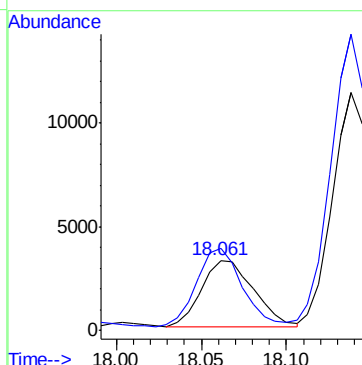
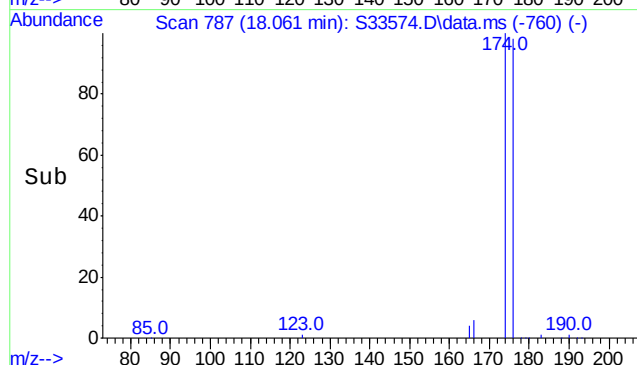
Tgt Ion:170 Resp: 265228
Ion Ratio Lower Upper
170 100
155 17.9 80.7 121.1#





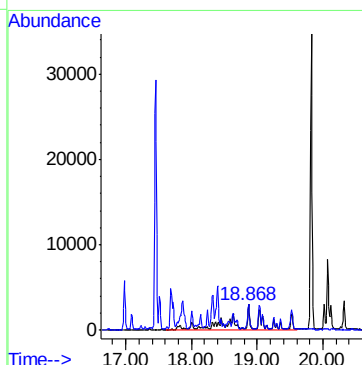
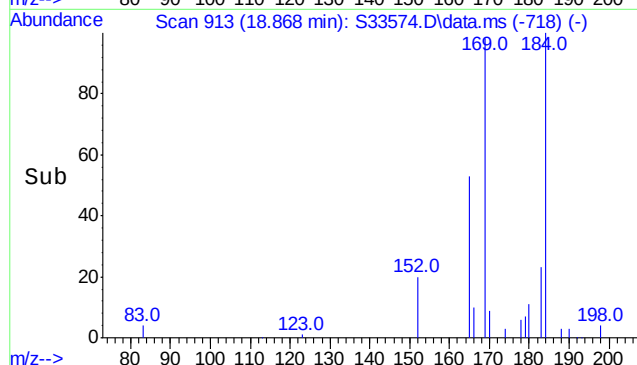
#6
C3-Naphthalenes (Fd10)
Concen: 3.948 µg/mL
RT: 18.061 min Scan# 787
Delta R.T. -0.026 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

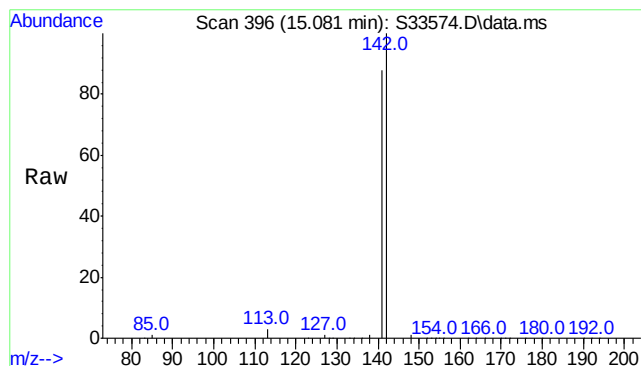
Tgt Ion:170 Resp: 6836
Ion Ratio Lower Upper
170 100
155 102.5 0.0 0.0#



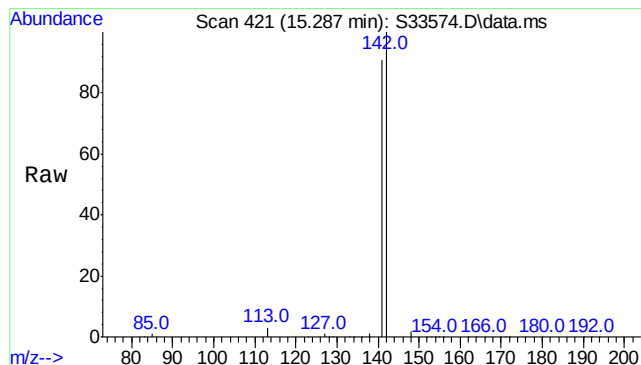
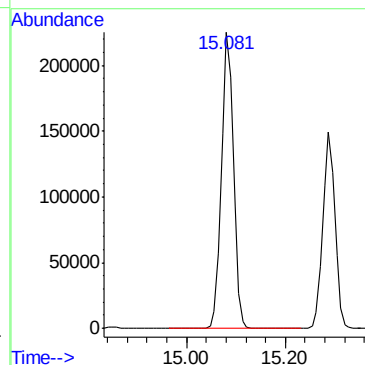
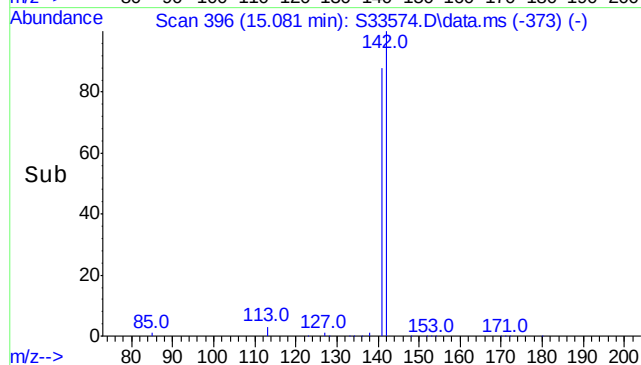
#7
C4-Naphthalenes
Concen: 59.764 ng/mL m
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

Tgt Ion:184 Resp: 50644
Ion Ratio Lower Upper
184 100
169 12.6 80.1 120.1#

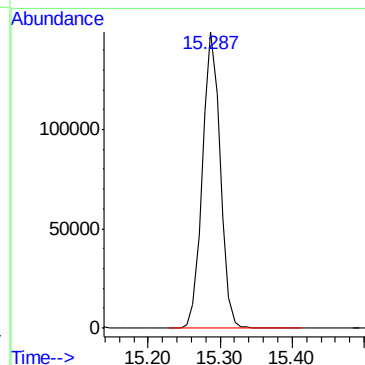
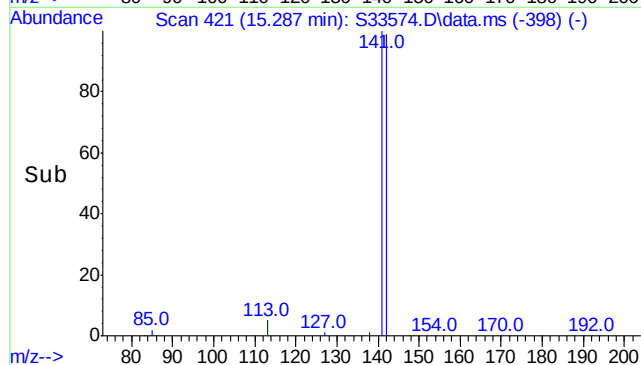


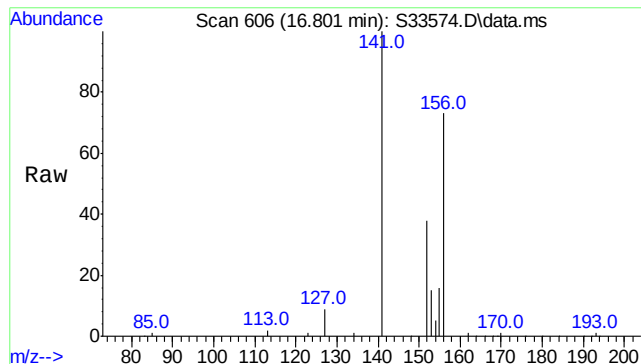


#9
 2-Methylnaphthalene
 Concen: 210.570 ng/mL
 RT: 15.081 min Scan# 396
 Delta R.T. -0.008 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am
 Tgt Ion:142 Resp: 378177



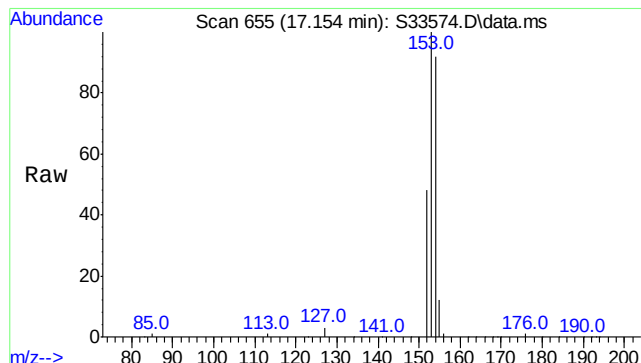
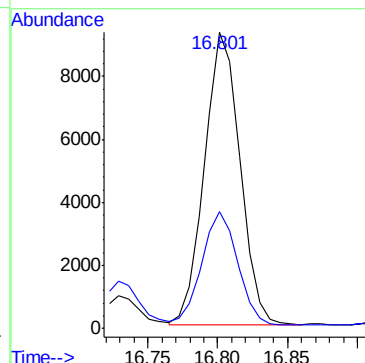
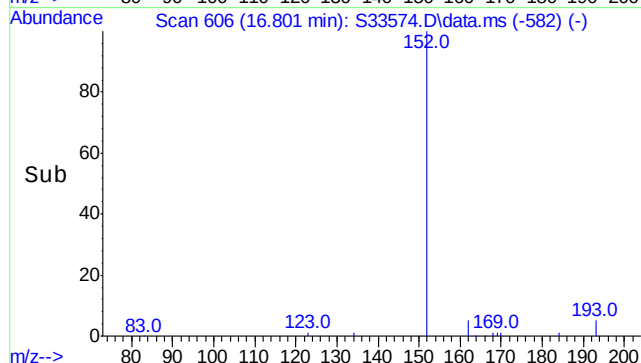
#11
 1-Methylnaphthalene
 Concen: 164.124 ng/mL
 RT: 15.287 min Scan# 421
 Delta R.T. -0.008 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am
 Tgt Ion:142 Resp: 253118





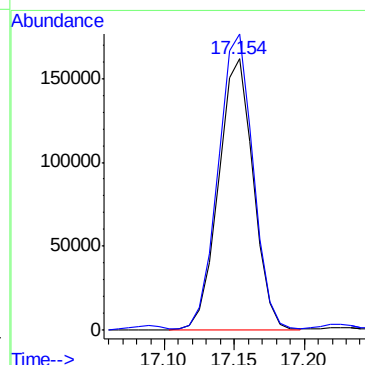
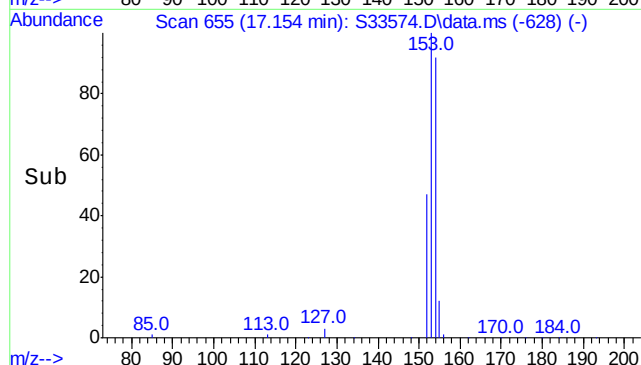
#13
 Acenaphthylene
 Concen: 8.163 ng/mL
 RT: 16.801 min Scan# 606
 Delta R.T. -0.015 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

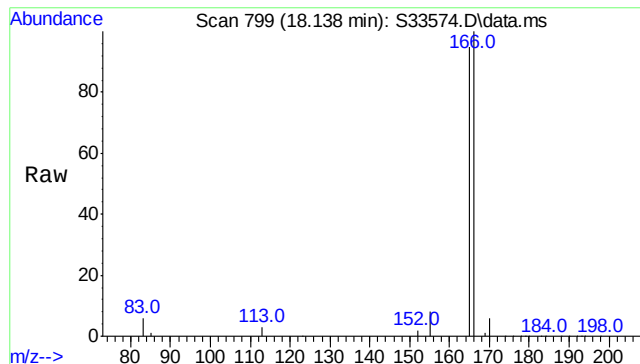
Tgt Ion:152 Resp: 16343
 Ion Ratio Lower Upper
 152 100
 153 39.5 0.0 0.0#



#14
 Acenaphthene
 Concen: 121.779 ng/mL
 RT: 17.154 min Scan# 655
 Delta R.T. -0.007 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

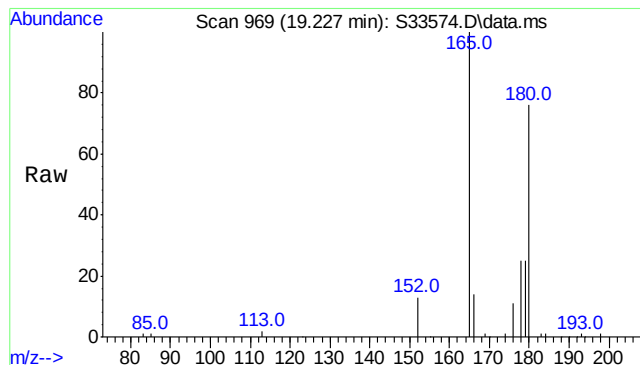
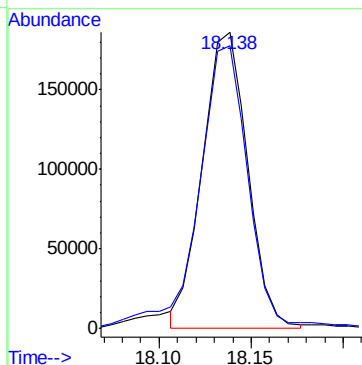
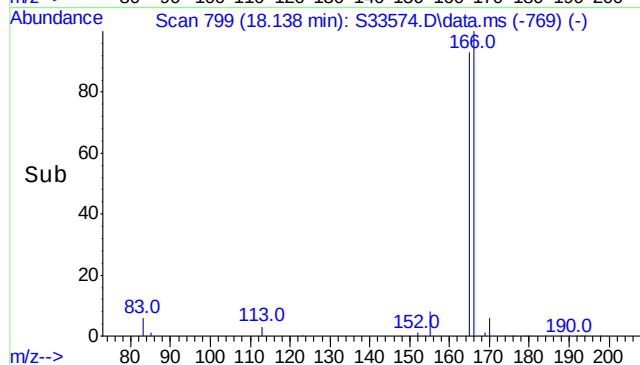
Tgt Ion:154 Resp: 277496
 Ion Ratio Lower Upper
 154 100
 153 109.8 86.6 129.8





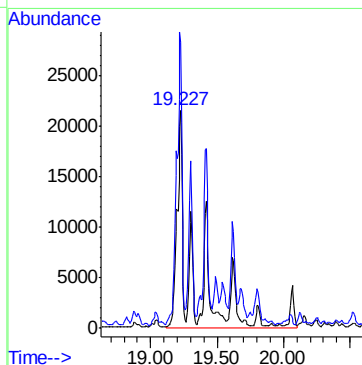
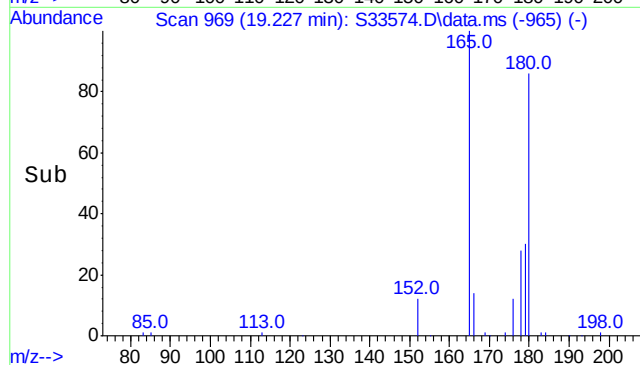
#16
 Fluorene
 Concen: 91.245 ng/mL m
 RT: 18.138 min Scan# 799
 Delta R.T. -0.007 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

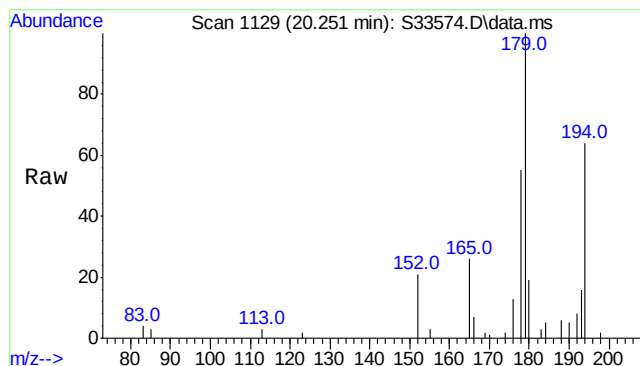
Tgt Ion:166 Resp: 319159
 Ion Ratio Lower Upper
 166 100
 165 104.2 76.4 114.6



#17
 C1-Fluorenes
 Concen: 50.700 ng/mL m
 RT: 19.227 min Scan# 969
 Delta R.T. -0.085 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

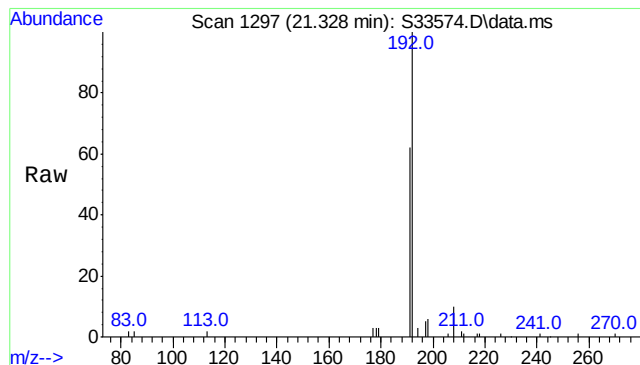
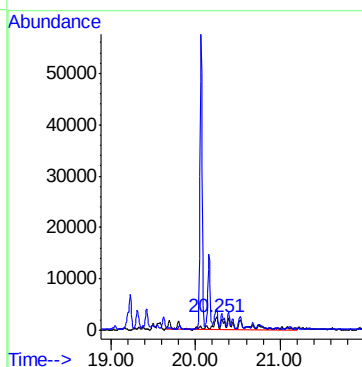
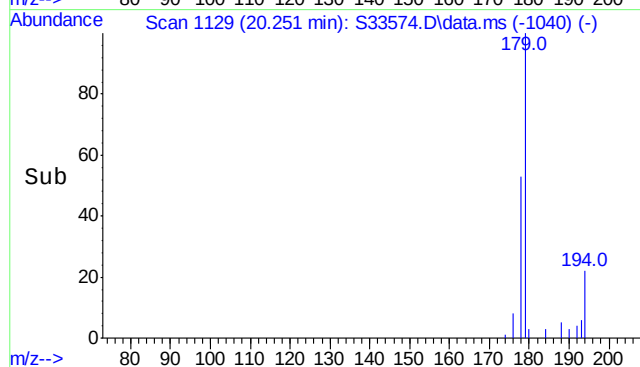
Tgt Ion:180 Resp: 150502
 Ion Ratio Lower Upper
 180 100
 165 18.4 111.1 166.7#





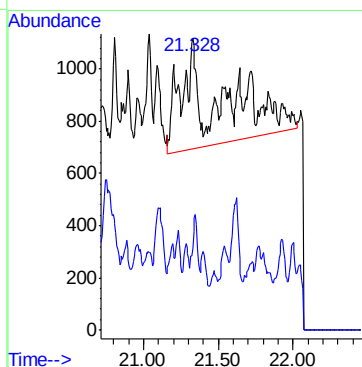
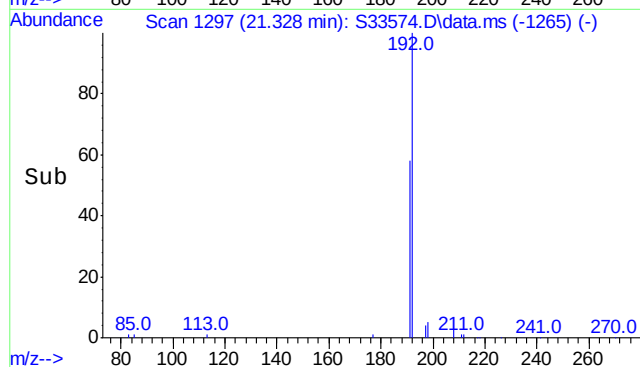
#18
C2-Fluorenes
Concen: 22.204 ng/mL m
RT: 20.251 min Scan# 1129
Delta R.T. -0.063 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

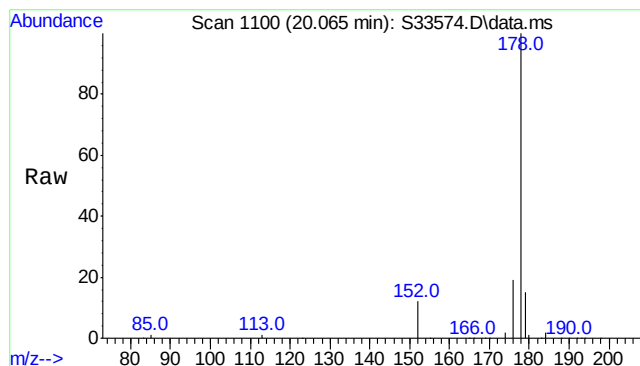
Tgt Ion:194 Resp: 50323
Ion Ratio Lower Upper
194 100
179 9.1 131.8 197.6#



#19
C3-Fluorenes
Concen: 3.549 ng/mL m
RT: 21.328 min Scan# 1297
Delta R.T. -0.024 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

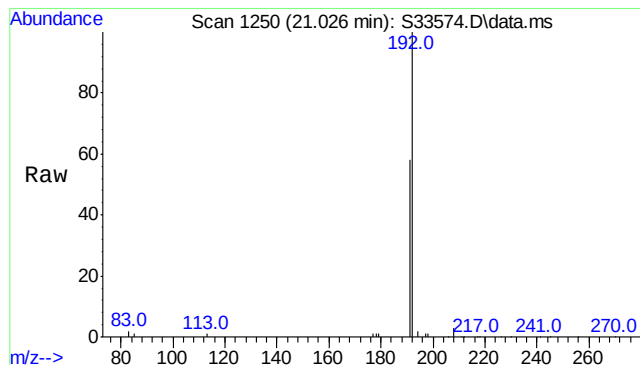
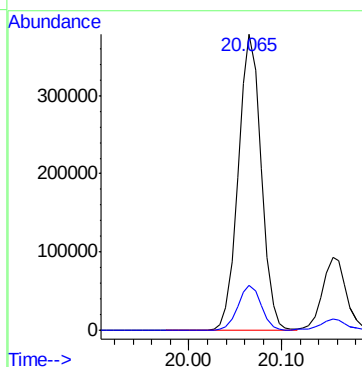
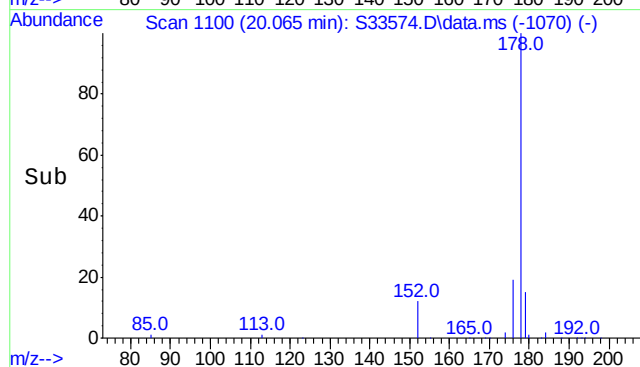
Tgt Ion:208 Resp: 7500
Ion Ratio Lower Upper
208 100
178 5.8 43.4 65.2#





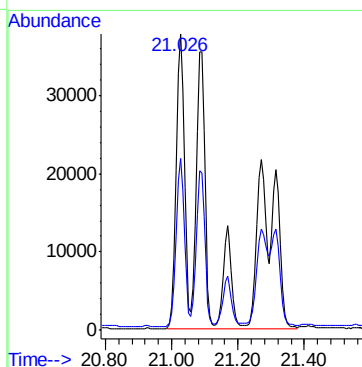
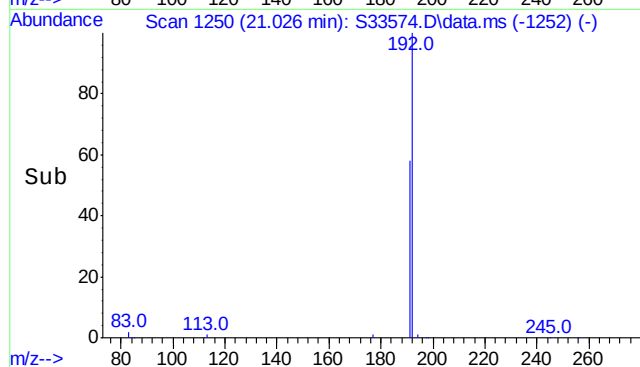
#21
Phenanthrene
Concen: 75.849 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

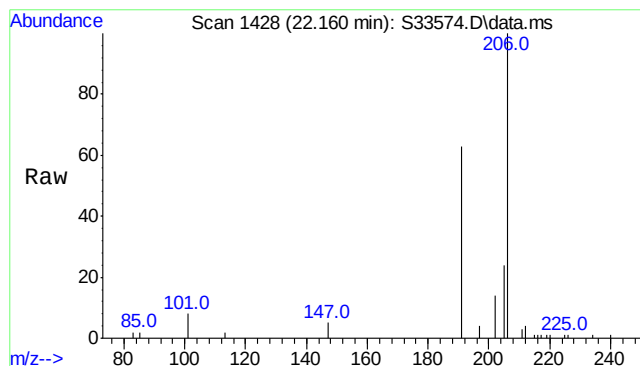
Tgt Ion:178 Resp: 649837
Ion Ratio Lower Upper
178 100
179 15.3 12.4 18.6



#22
C1-Phenanthrenes/anthracenes
Concen: 23.922 ng/mL m
RT: 21.026 min Scan# 1250
Delta R.T. -0.127 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

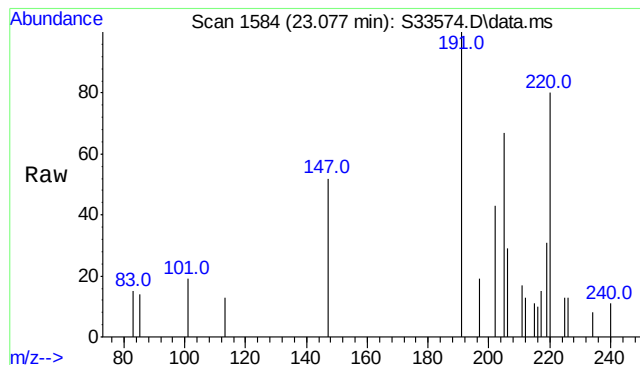
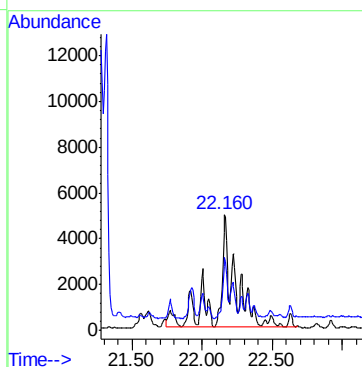
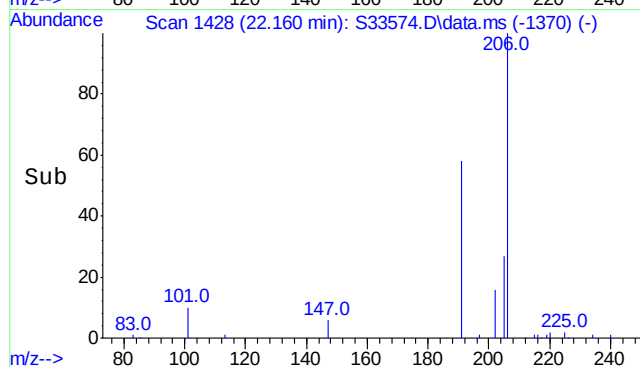
Tgt Ion:192 Resp: 226464
Ion Ratio Lower Upper
192 100
191 4.8 45.1 67.7#





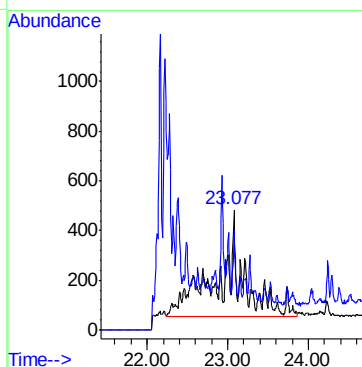
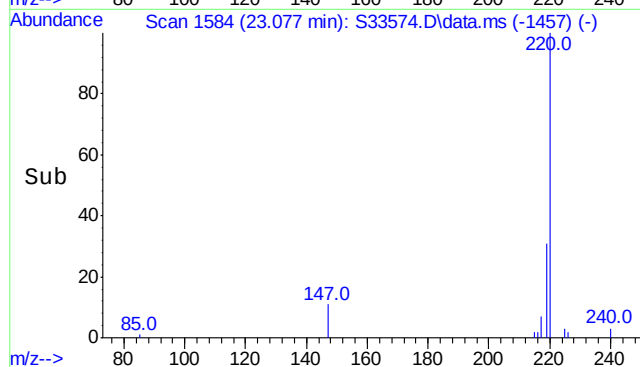
#23
C2-Phenanthrenes/anthracenes
Concen: 12.416 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

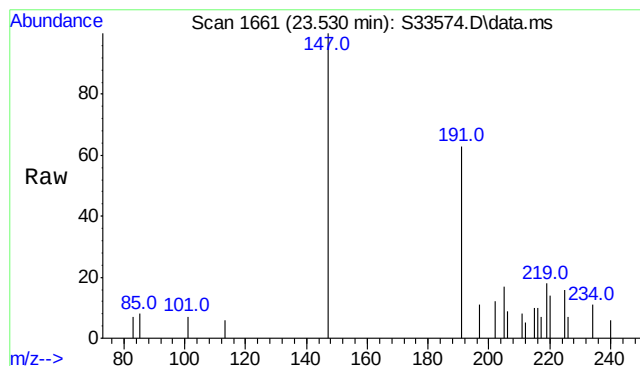
Tgt Ion:206 Resp: 43717
Ion Ratio Lower Upper
206 100
191 8.0 45.1 67.7#



#24
C3-Phenanthrenes/anthracenes
Concen: 6.167 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

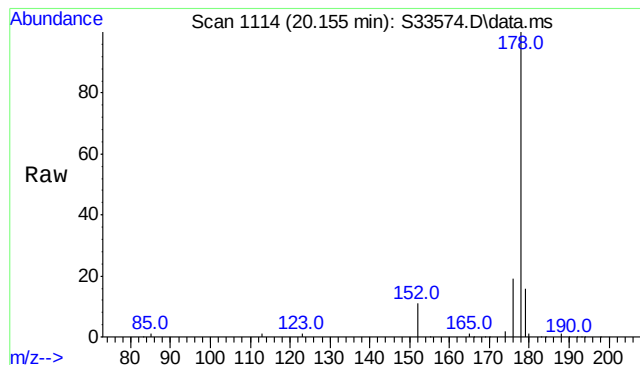
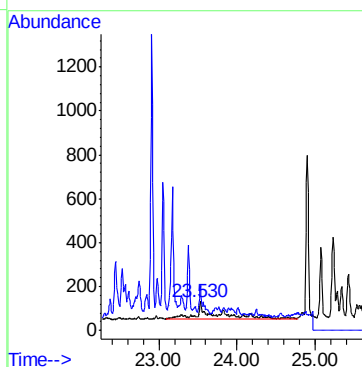
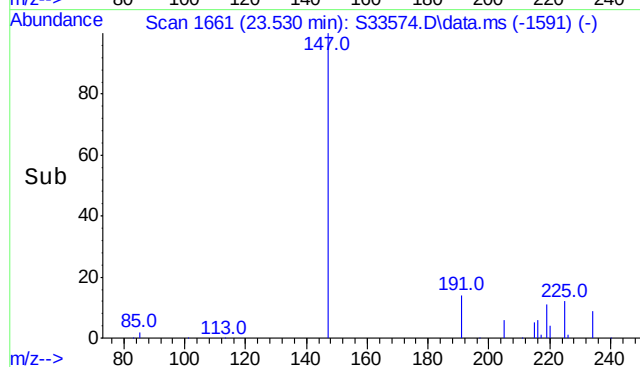
Tgt Ion:220 Resp: 9110
Ion Ratio Lower Upper
220 100
205 5.6 45.1 67.7#





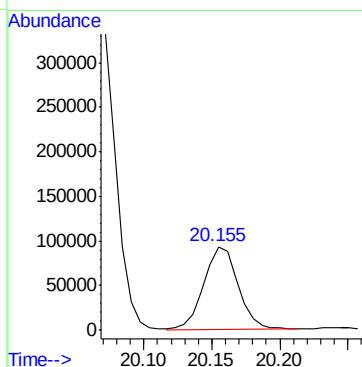
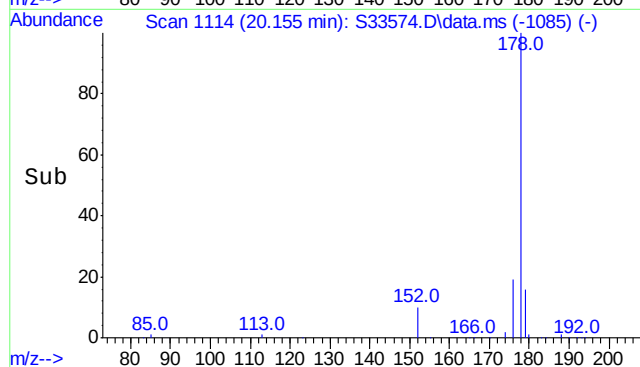
#25
C4-Phenanthrenes/anthracenes
Concen: 2.114 ng/mL m
RT: 23.530 min Scan# 1661
Delta R.T. -0.699 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

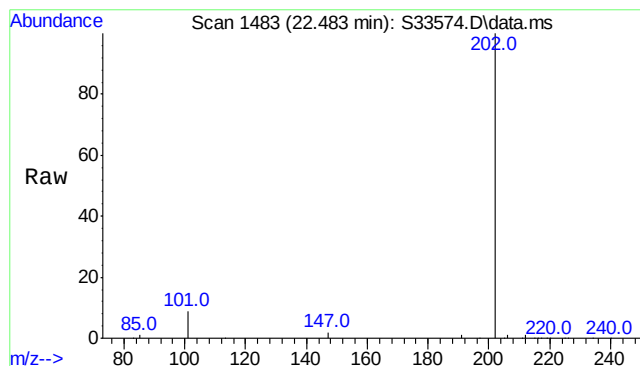
Tgt Ion:234 Resp: 1411
Ion Ratio Lower Upper
234 100
219 0.0 53.0 79.6#



#27
Anthracene
Concen: 16.383 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

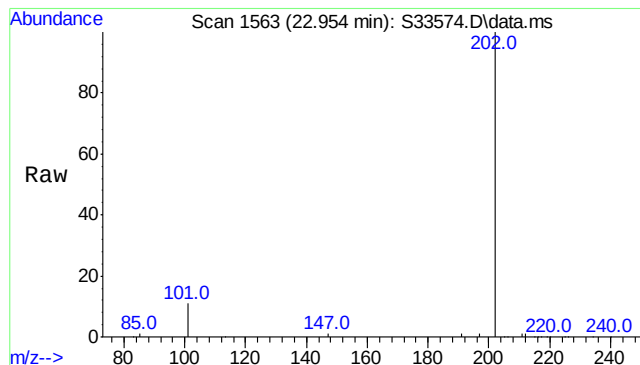
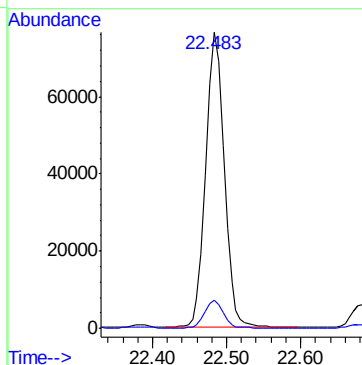
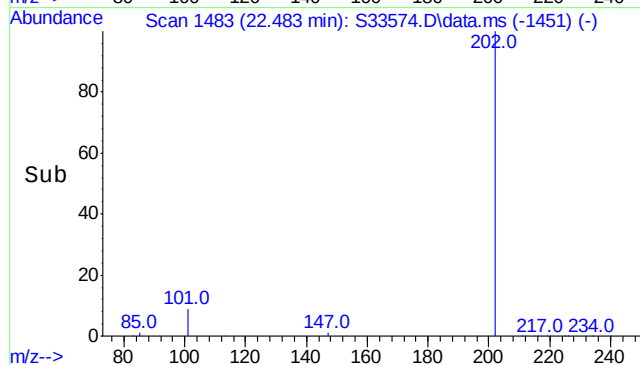
Tgt Ion:178 Resp: 163914





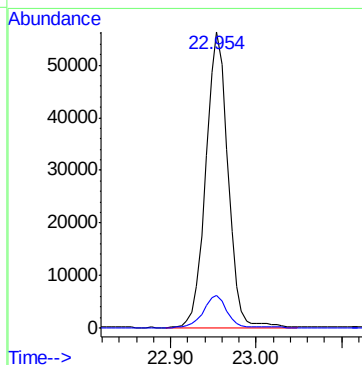
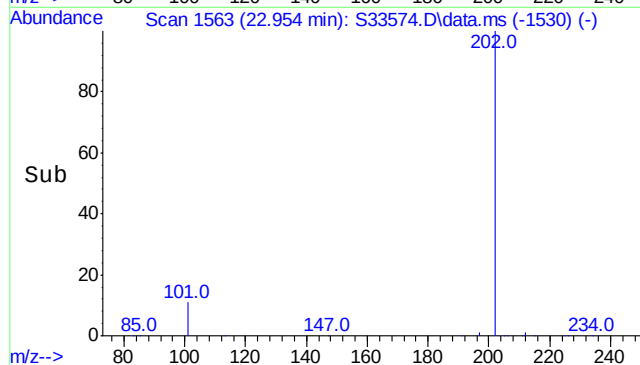
#29
 Fluoranthene
 Concen: 7.064 ng/mL
 RT: 22.483 min Scan# 1483
 Delta R.T. -0.012 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

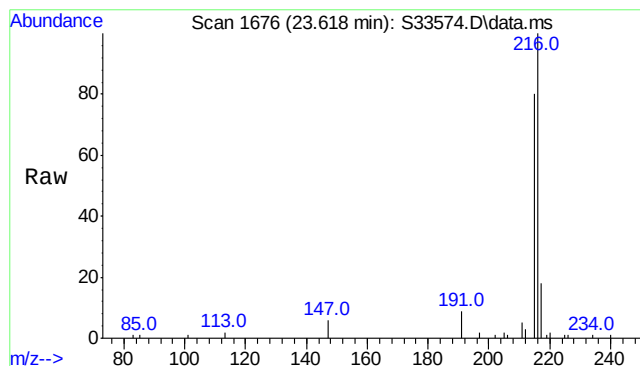
Tgt Ion:202 Resp: 131985
 Ion Ratio Lower Upper
 202 100
 101 9.4 14.3 21.5#



#31
 Pyrene
 Concen: 4.978 ng/mL
 RT: 22.954 min Scan# 1563
 Delta R.T. -0.006 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

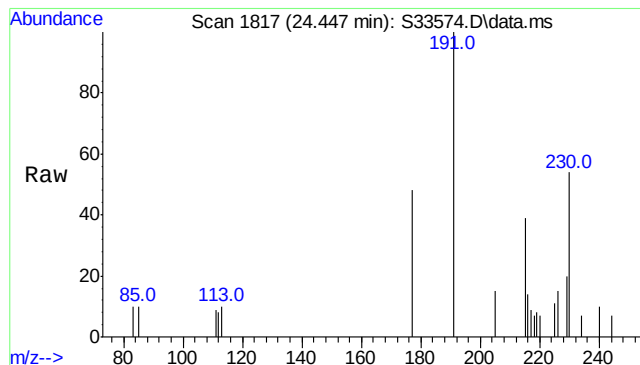
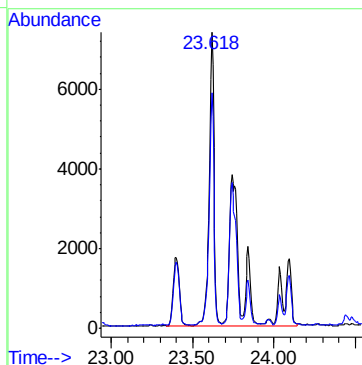
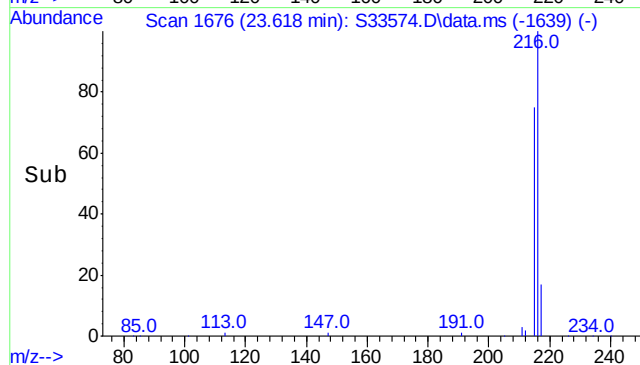
Tgt Ion:202 Resp: 101080
 Ion Ratio Lower Upper
 202 100
 101 11.5 16.6 24.8#





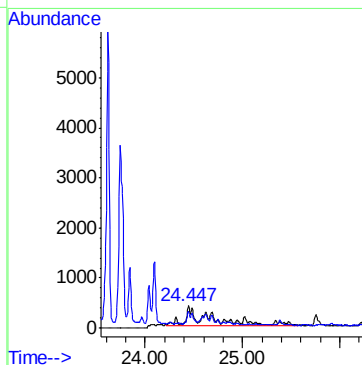
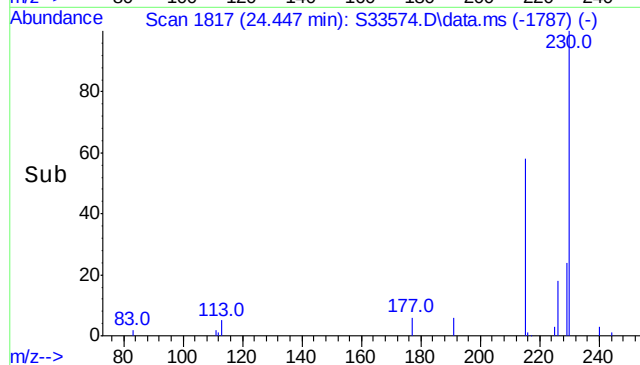
#32
C1-Fluoranthenes/pyrenes
Concen: 3.205 ng/mL m
RT: 23.618 min Scan# 1676
Delta R.T. -0.064 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

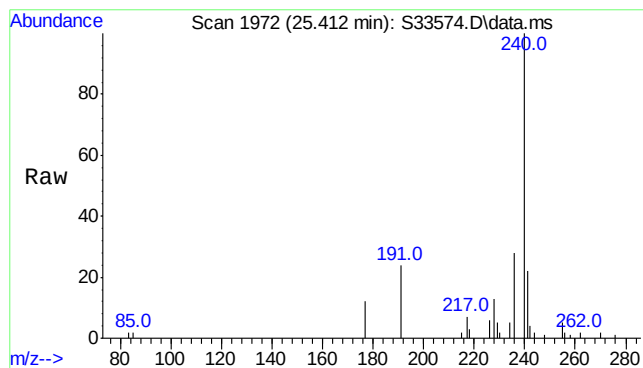
Tgt Ion:216 Resp: 41992
Ion Ratio Lower Upper
216 100
215 28.5 67.0 100.6#



#33
C2-Fluoranthenes/pyrenes
Concen: 0.329 ng/mL m
RT: 24.447 min Scan# 1817
Delta R.T. -0.064 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

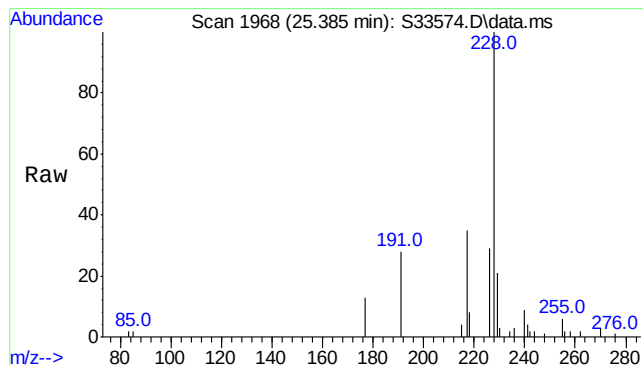
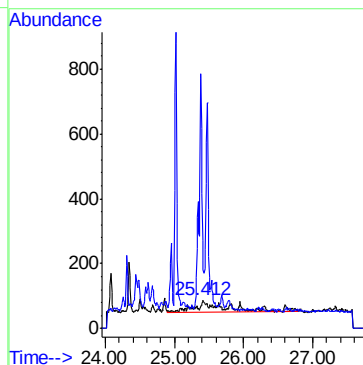
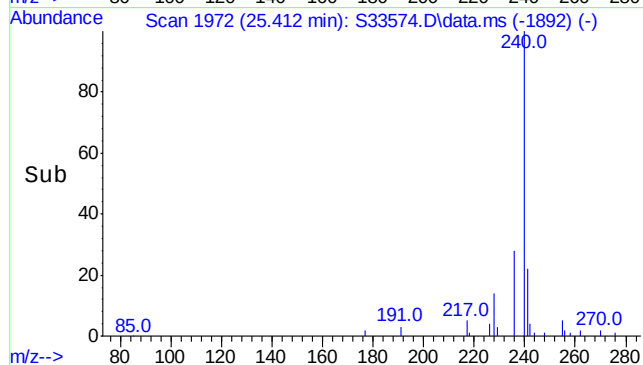
Tgt Ion:230 Resp: 6686
Ion Ratio Lower Upper
230 100
215 6.3 51.4 77.2#





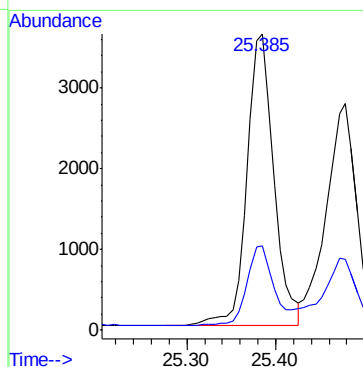
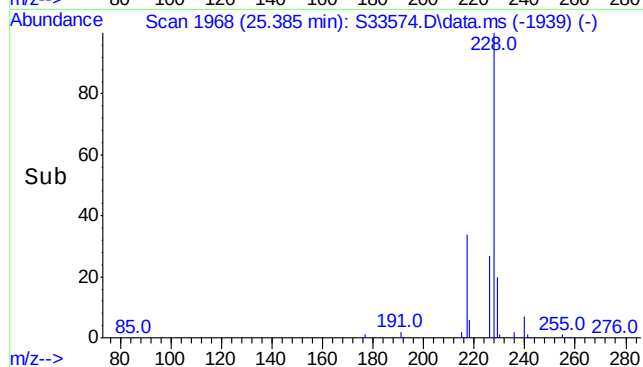
#34
C3-Fluoranthenes/pyrenes
Concen: 0.060 ng/mL m
RT: 25.412 min Scan# 1972
Delta R.T. -0.078 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

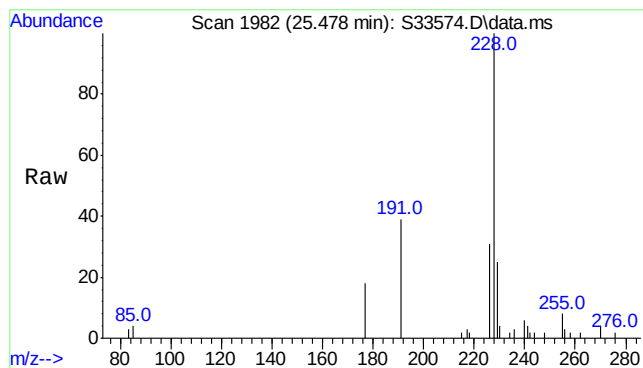
Tgt Ion:244 Resp: 1219
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#



#36
Benz(a)anthracene
Concen: 0.305 ng/mL
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

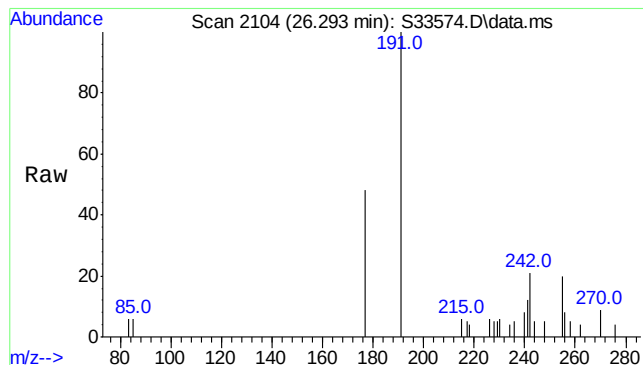
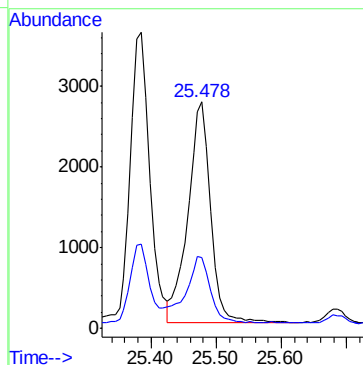
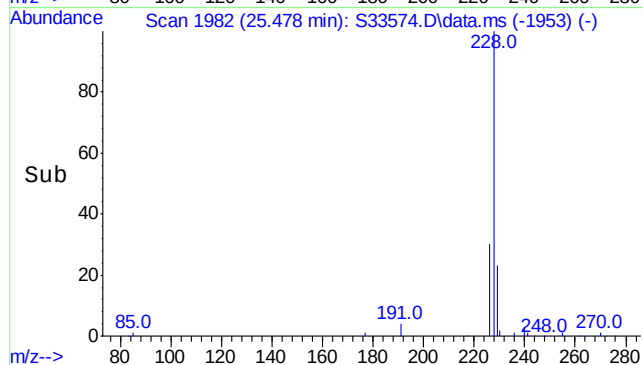
Tgt Ion:228 Resp: 7580
Ion Ratio Lower Upper
228 100
226 27.6 23.7 35.5





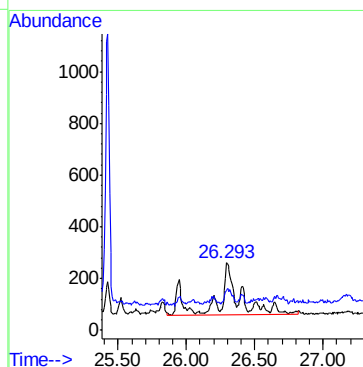
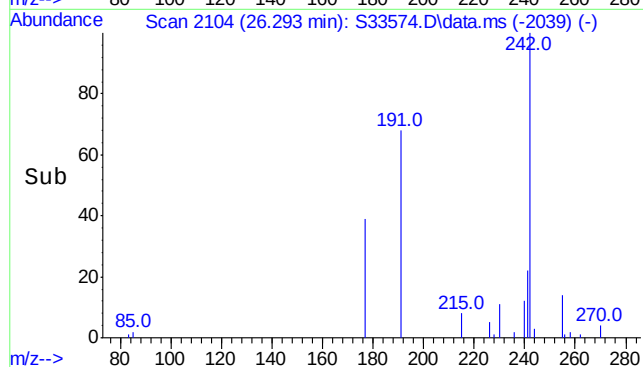
#38
 Chrysene
 Concen: 0.250 ng/mL
 RT: 25.478 min Scan# 1982
 Delta R.T. -0.007 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

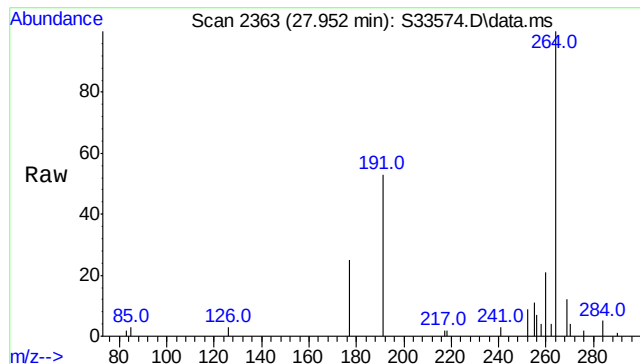
Tgt Ion:228 Resp: 6662
 Ion Ratio Lower Upper
 228 100
 226 31.9 26.0 39.0



#39
 C1-Benz(a)anthracenes/chrysenes
 Concen: 0.143 ng/mL m
 RT: 26.293 min Scan# 2104
 Delta R.T. -0.065 min
 Lab File: S33574.D
 Acq: 14 Sep 2013 2:40 am

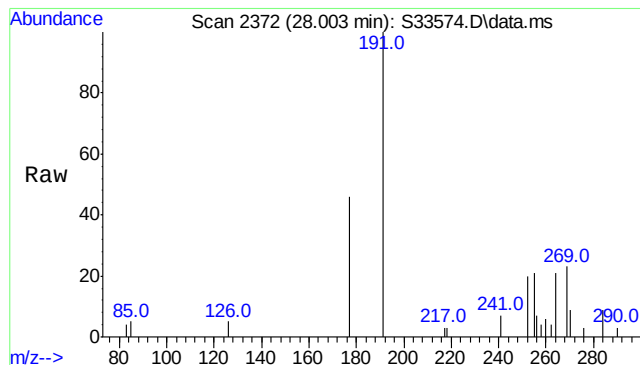
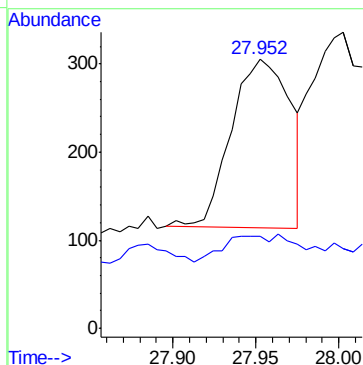
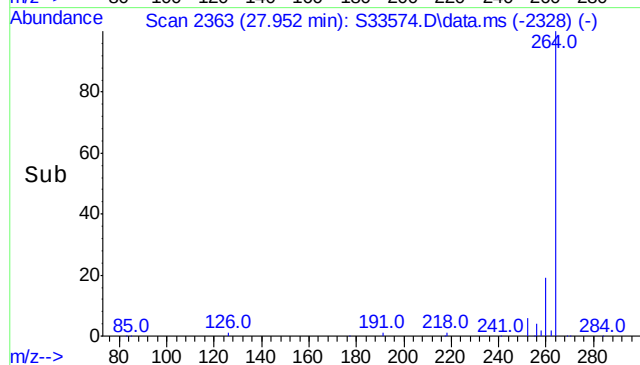
Tgt Ion:242 Resp: 2232
 Ion Ratio Lower Upper
 242 100
 241 9.5 27.2 40.8#





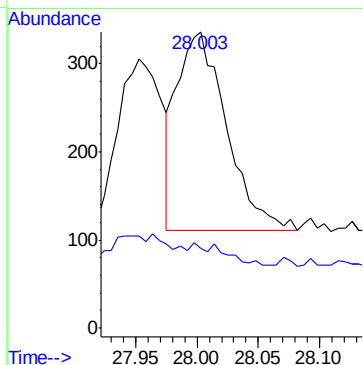
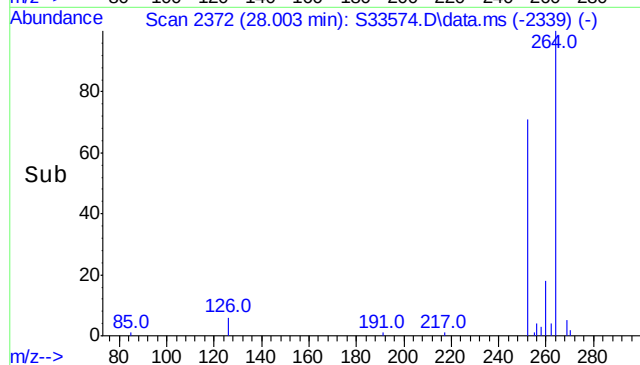
#44
Benzo(b)fluoranthene
Concen: 0.013 ng/mL
RT: 27.952 min Scan# 2363
Delta R.T. -0.006 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

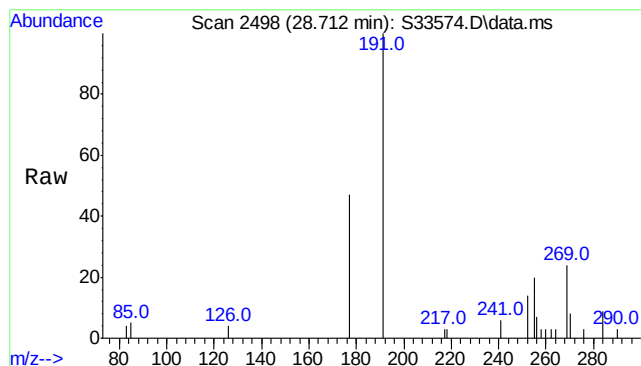
Tgt Ion:252 Resp: 474
Ion Ratio Lower Upper
252 100
126 12.2 23.0 34.4#



#46
Benzo(k)fluoranthene
Concen: 0.020 ng/mL
RT: 28.003 min Scan# 2372
Delta R.T. -0.017 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

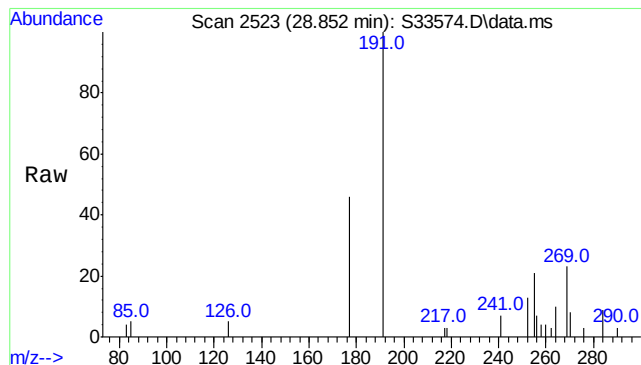
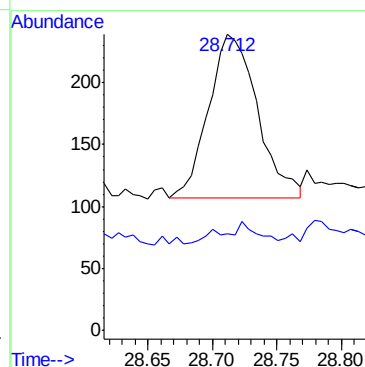
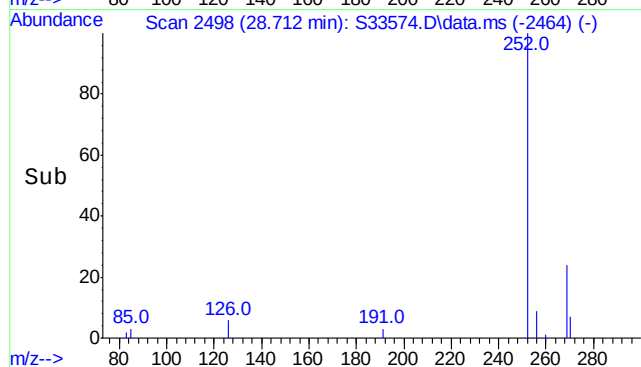
Tgt Ion:252 Resp: 633
Ion Ratio Lower Upper
252 100
126 0.0 24.4 36.6#





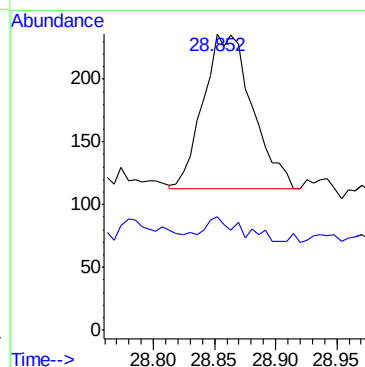
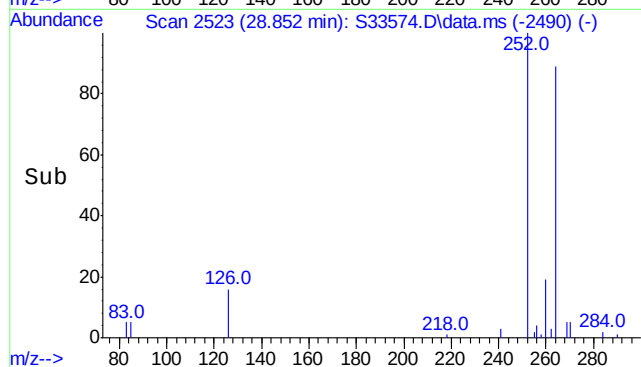
#48
Benzo(e)pyrene
Concen: 0.011 ng/mL
RT: 28.712 min Scan# 2498
Delta R.T. -0.011 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

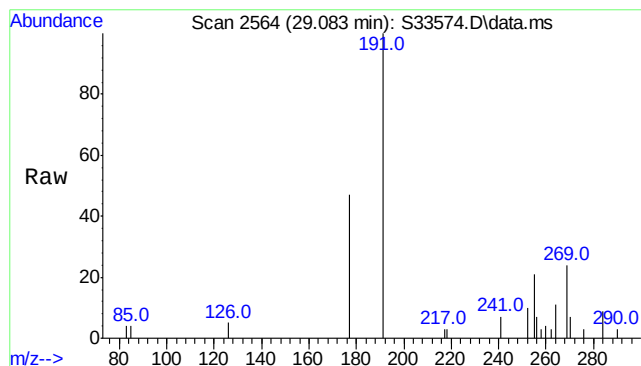
Tgt Ion:252 Resp: 349
Ion Ratio Lower Upper
252 100
126 0.0 22.6 34.0#



#49
Benzo(a)pyrene
Concen: 0.017 ng/mL
RT: 28.852 min Scan# 2523
Delta R.T. -0.017 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

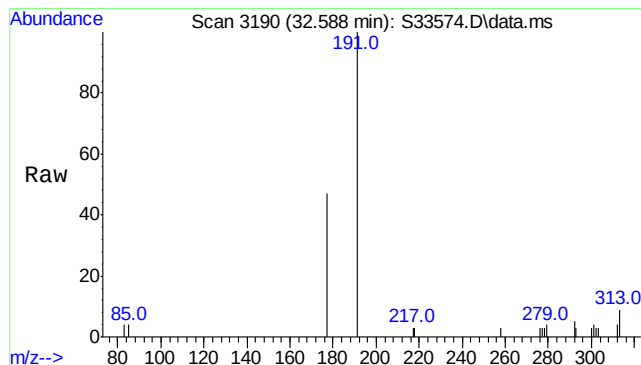
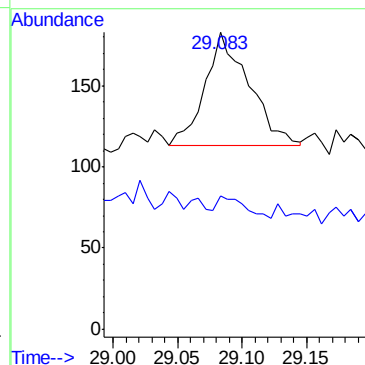
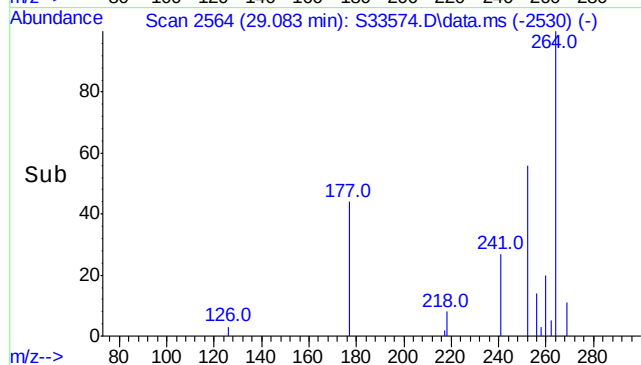
Tgt Ion:252 Resp: 341
Ion Ratio Lower Upper
252 100
126 0.0 25.1 37.7#





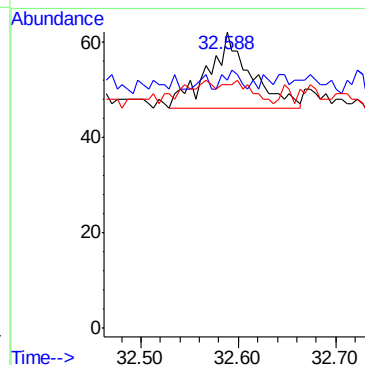
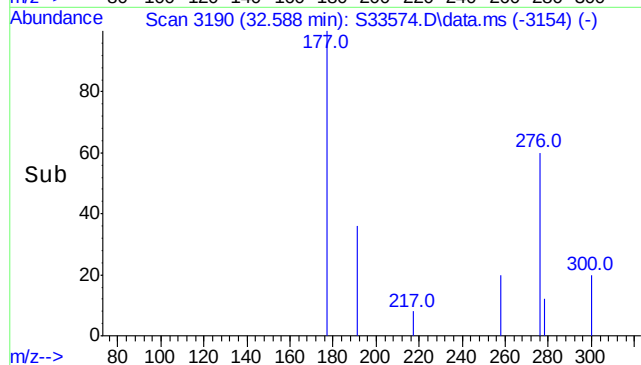
#51
Perylene
Concen: 0.009 ng/mL
RT: 29.083 min Scan# 2564
Delta R.T. -0.011 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

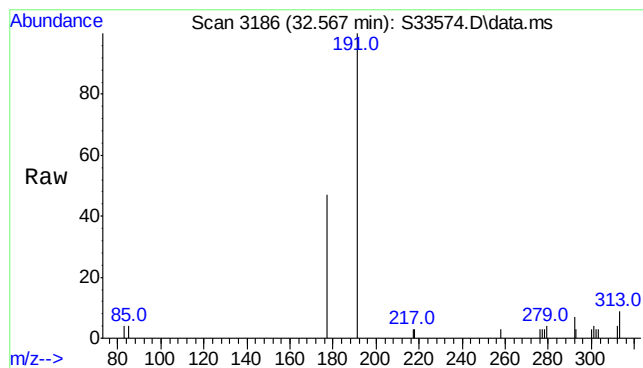
Tgt Ion:252 Resp: 167
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#



#52
Indeno(1,2,3-cd)pyrene
Concen: 0.001 ng/mL
RT: 32.588 min Scan# 3190
Delta R.T. -0.006 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

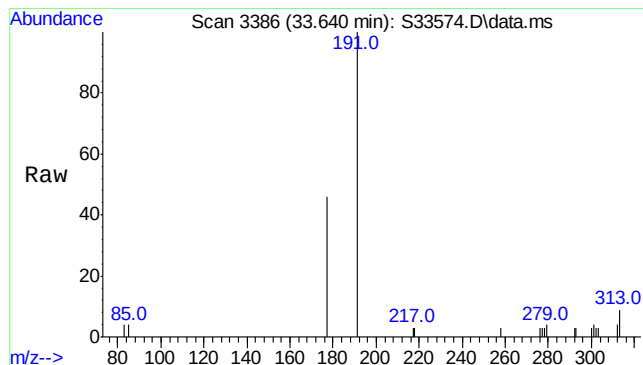
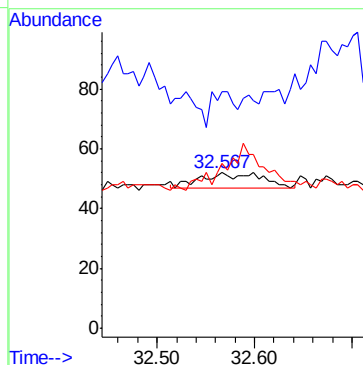
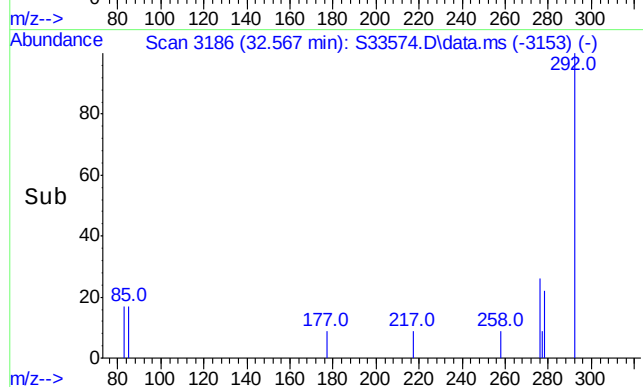
Tgt Ion:276 Resp: 49
Ion Ratio Lower Upper
276 100
277 0.0 21.3 31.9#
278 0.0 21.8 32.8#





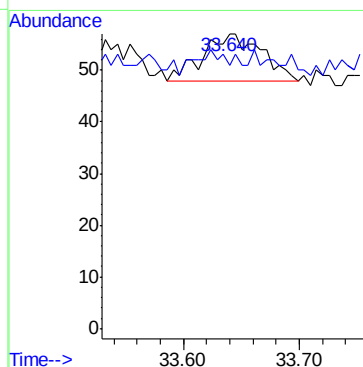
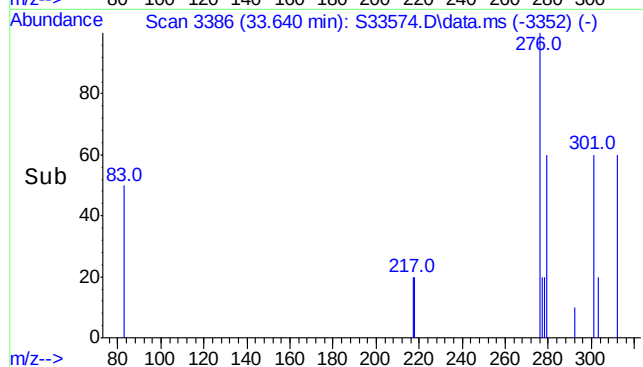
#53
Dibenz(a,h)anthracene
Concen: 0.001 ng/mL m
RT: 32.567 min Scan# 3186
Delta R.T. -0.021 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

Tgt Ion:278 Resp: 21
Ion Ratio Lower Upper
278 100
279 0.0 32.2 48.4#
276 0.0 242.1 363.1#



#54
Benzo(g,h,i)perylene
Concen: 0.001 ng/mL
RT: 33.640 min Scan# 3386
Delta R.T. -0.016 min
Lab File: S33574.D
Acq: 14 Sep 2013 2:40 am

Tgt Ion:276 Resp: 32
Ion Ratio Lower Upper
276 100
277 0.0 20.3 30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
 Data File : S33569.D
 Acq On : 13 Sep 2013 10:38 pm
 Operator : RUBENP
 Sample : ms29817-mb25
 Misc : ms29817,mss1482,1.5,,,1.5,1
 ALS Vial : 18 Sample Multiplier: 1

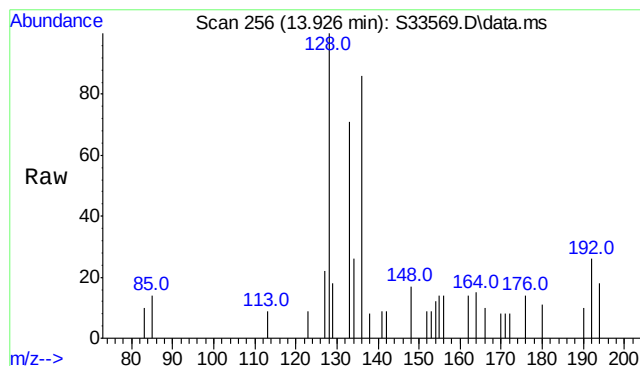
Quant Time: Oct 16 12:17:00 2013
 Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:36:05 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	62350	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	42563	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.229	152	30040	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	19885	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	19067	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.020	188	50276	5.00	ng/mL	0.00
26) Anthracene-d10	20.123	188	37703	5.00	ng/mL	0.00
28) Fluoranthene-d10	22.448	212	27650	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	23621	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	6427	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	10531	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.890	264	6818	0.33	ng/mL	0.00
45) Benzo(k)fluoranthene-d12	27.958	264	7020	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.796	264	2950	0.33	ng/mL	0.00
50) Perylene-d12	29.021	264	2825	0.33	ng/mL	0.00
Target Compounds						
2) Naphthalene	13.926	128	1507m	0.715	ng/mL	Qvalue
3) C1-Naphthalenes	15.089	142	454m	0.215	ng/mL	
6) C3-Naphthalenes (Fd10)	18.081	170	2530	0.895	µg/mL#	100
9) 2-Methylnaphthalene	15.089	142	225	0.073	ng/mL	100
11) 1-Methylnaphthalene	15.295	142	134	0.058	ng/mL	100
14) Acenaphthene	17.154	154	100	0.034	ng/mL#	48
16) Fluorene	18.138	166	87	0.017	ng/mL	86
21) Phenanthrene	20.065	178	461	0.036	ng/mL#	73
27) Anthracene	20.161	178	90	0.009	ng/mL	100
29) Fluoranthene	22.483	202	154m	0.007	ng/mL	
31) Pyrene	22.954	202	117m	0.005	ng/mL	
38) Chrysene	25.478	228	30m	0.001	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

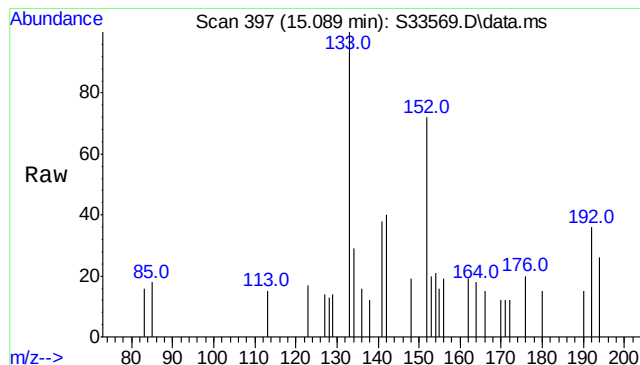
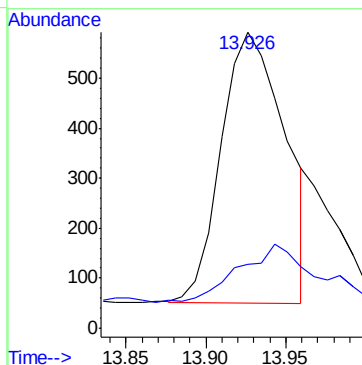
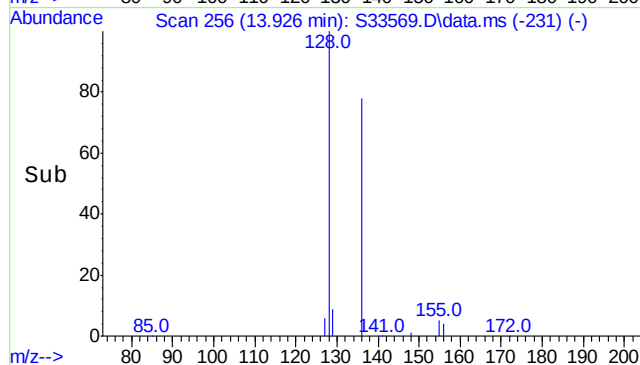
7.2.1

7



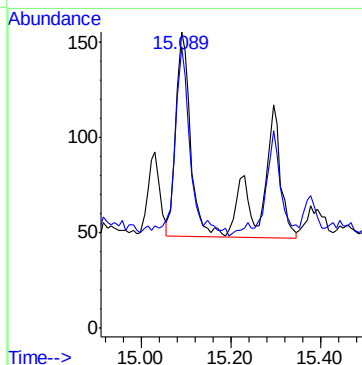
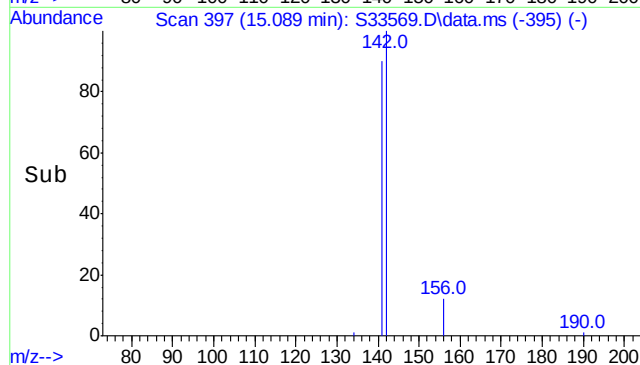
#2
Naphthalene
Concen: 0.715 ng/mL m
RT: 13.926 min Scan# 256
Delta R.T. 0.008 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

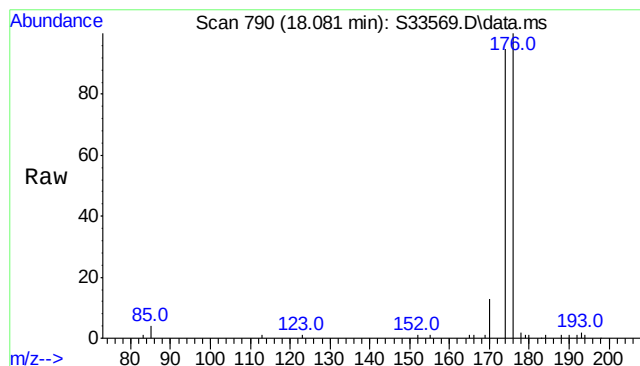
Tgt Ion	Ratio	Lower	Upper
128	100		
127	26.2	10.6	15.8#



#3
C1-Naphthalenes
Concen: 0.215 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. -0.033 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

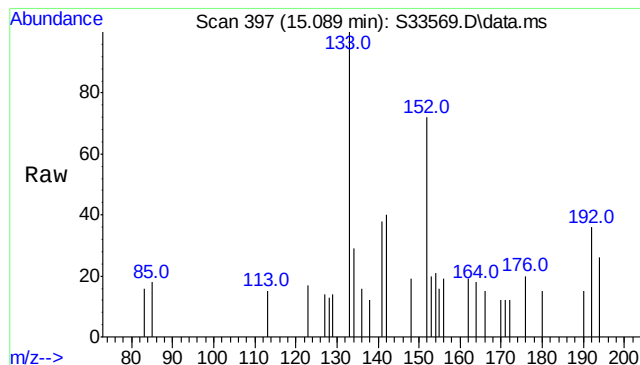
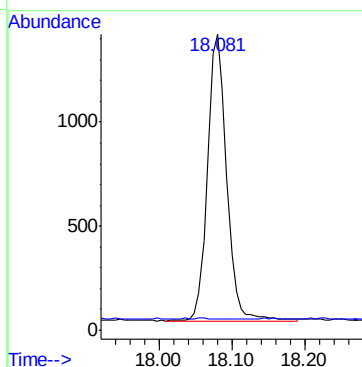
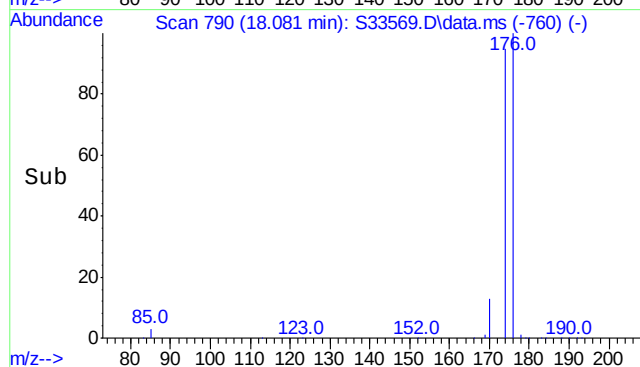
Tgt Ion	Ratio	Lower	Upper
142	100		
141	21.4	71.0	106.6#





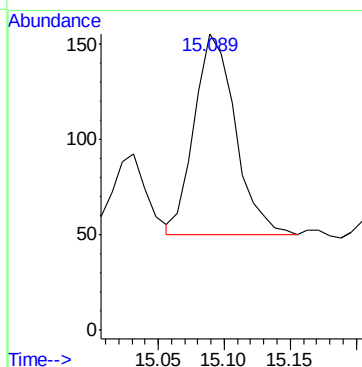
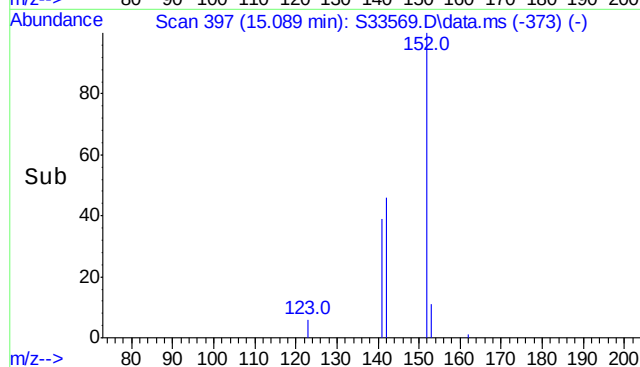
#6
C3-Naphthalenes (Fd10)
Concen: 0.895 µg/mL
RT: 18.081 min Scan# 790
Delta R.T. -0.006 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

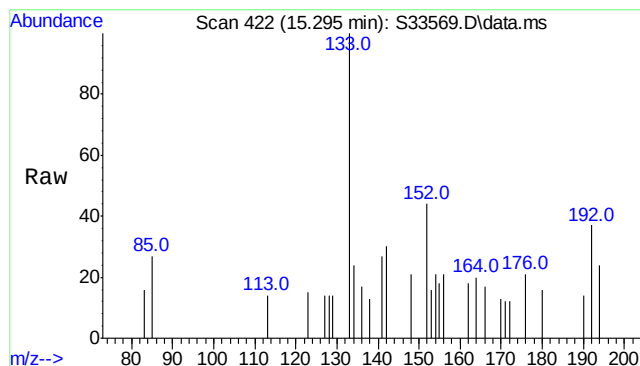
Tgt Ion	Ratio	Lower	Upper
170	100		
155	0.0	0.0	0.0



#9
2-Methylnaphthalene
Concen: 0.073 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

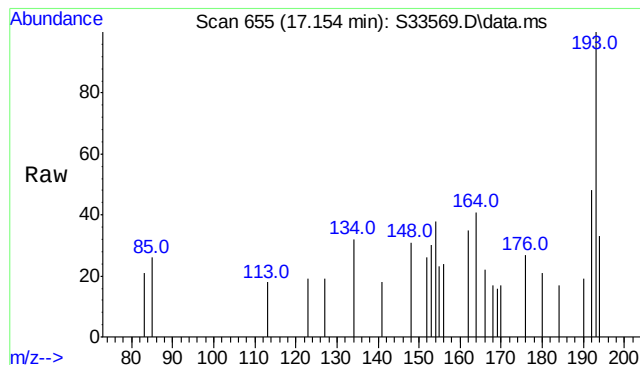
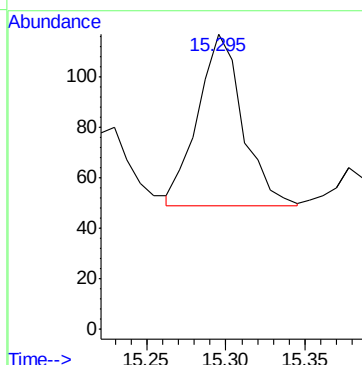
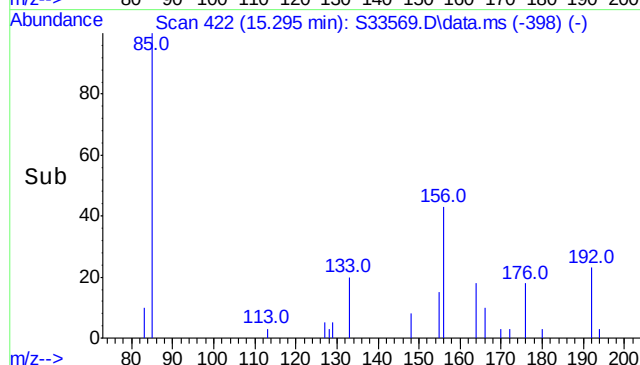
Tgt Ion	Ratio
142	225





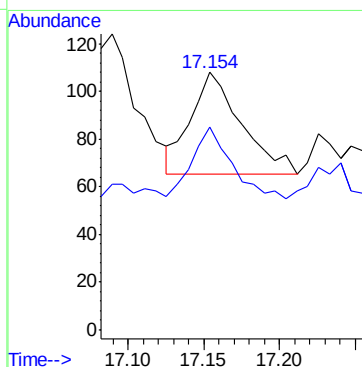
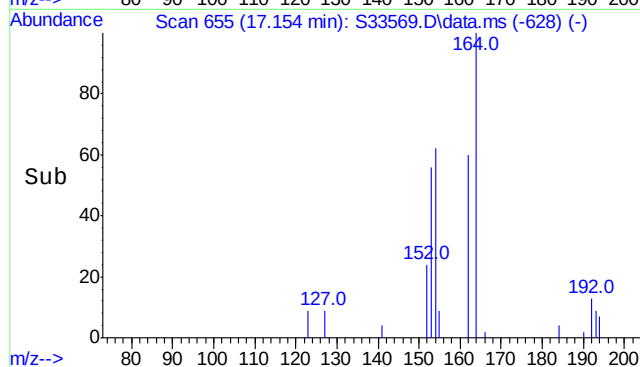
#11
1-Methylnaphthalene
Concen: 0.058 ng/mL
RT: 15.295 min Scan# 422
Delta R.T. 0.000 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

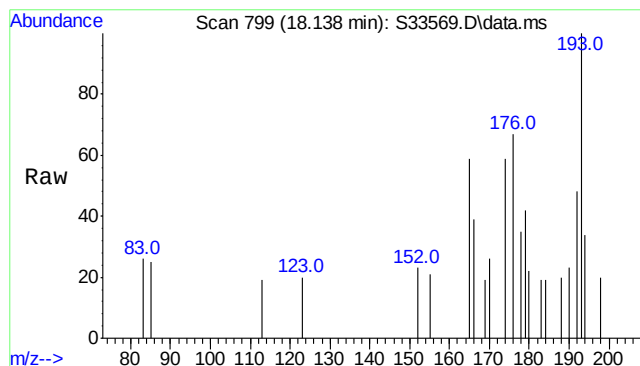
Tgt Ion:142 Resp: 134



#14
Acenaphthene
Concen: 0.034 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

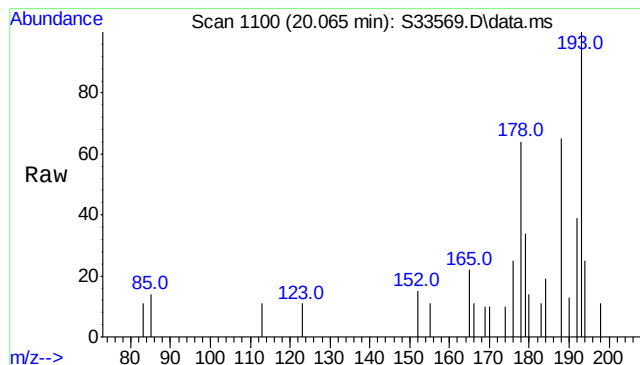
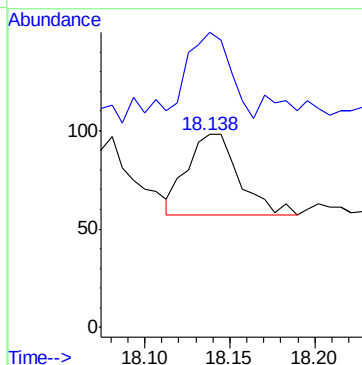
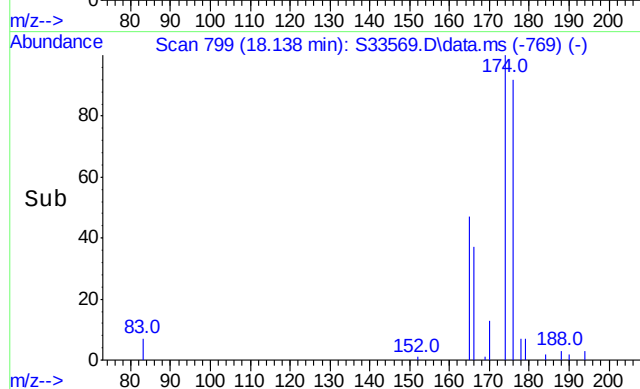
Tgt Ion:154 Resp: 100
Ion Ratio Lower Upper
154 100
153 54.0 86.6 129.8#





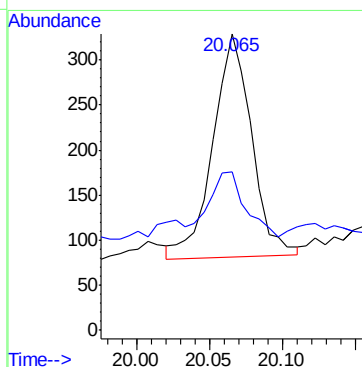
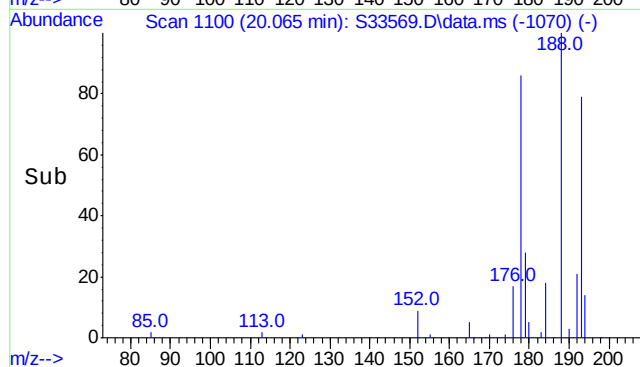
#16
Fluorene
Concen: 0.017 ng/mL
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

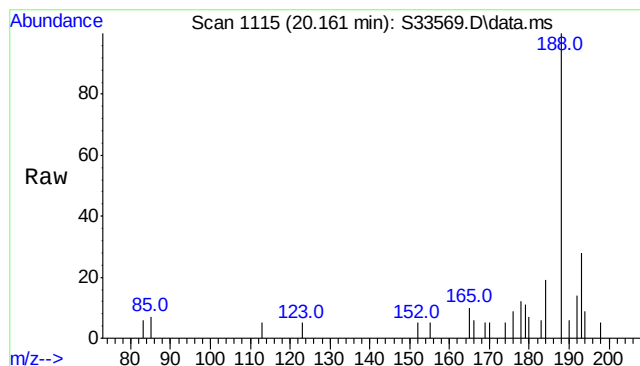
Tgt Ion:166 Resp: 87
Ion Ratio Lower Upper
166 100
165 109.2 76.4 114.6



#21
Phenanthrene
Concen: 0.036 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

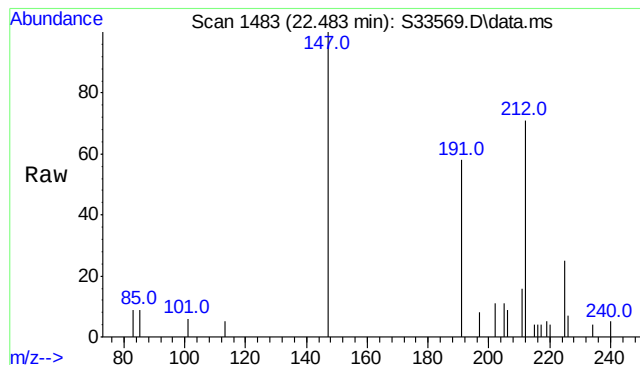
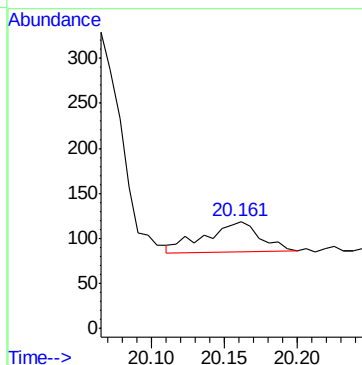
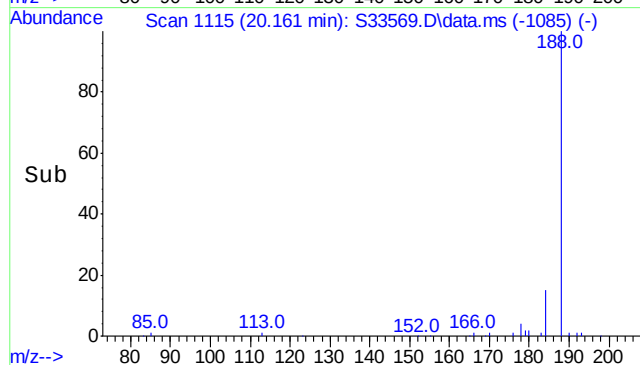
Tgt Ion:178 Resp: 461
Ion Ratio Lower Upper
178 100
179 26.9 12.4 18.6#





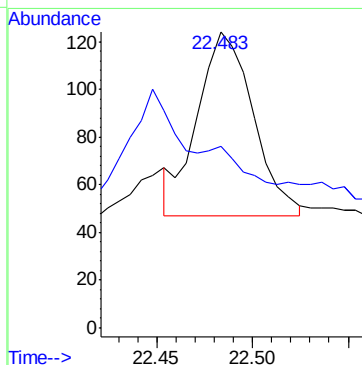
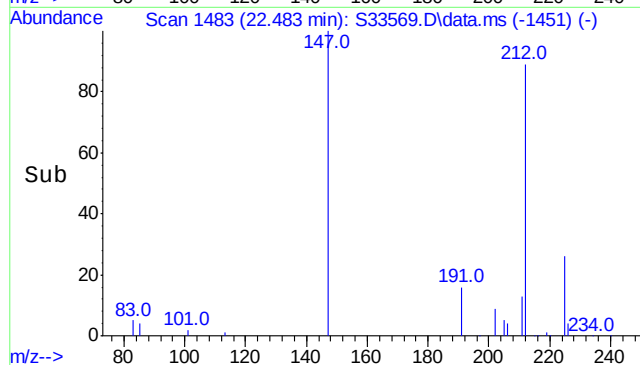
#27
Anthracene
Concen: 0.009 ng/mL
RT: 20.161 min Scan# 1115
Delta R.T. -0.007 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

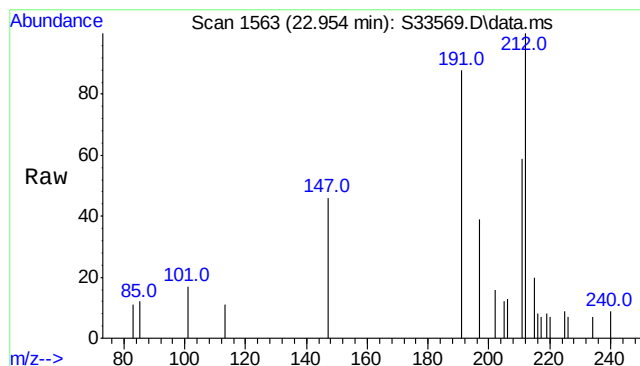
Tgt Ion:178 Resp: 90



#29
Fluoranthene
Concen: 0.007 ng/mL m
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

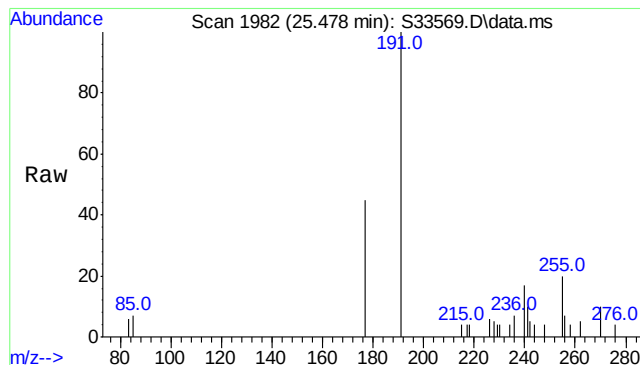
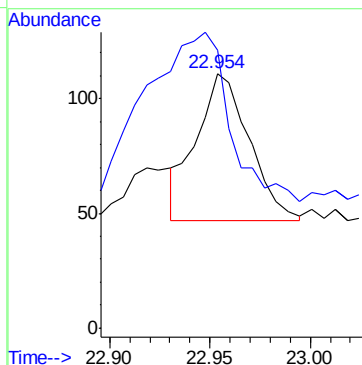
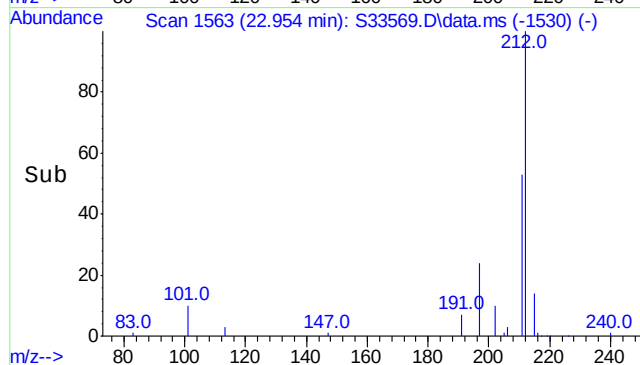
Tgt Ion:202 Resp: 154
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





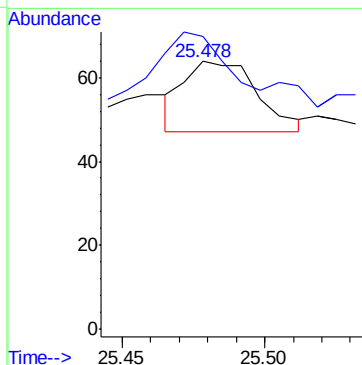
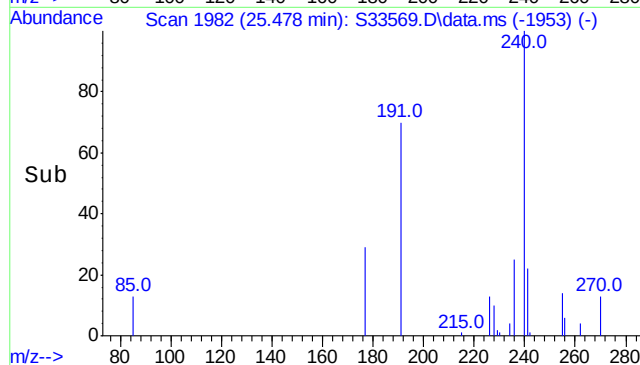
#31
Pyrene
Concen: 0.005 ng/mL m
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

Tgt Ion:202 Resp: 117
Ion Ratio Lower Upper
202 100
101 188.9 16.6 24.8#



#38
Chrysene
Concen: 0.001 ng/mL m
RT: 25.478 min Scan# 1982
Delta R.T. -0.007 min
Lab File: S33569.D
Acq: 13 Sep 2013 10:38 pm

Tgt Ion:228 Resp: 30
Ion Ratio Lower Upper
228 100
226 126.7 26.0 39.0#



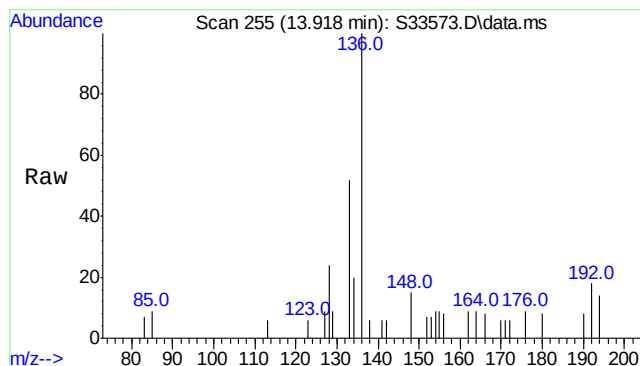
Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
 Data File : S33573.D
 Acq On : 14 Sep 2013 1:51 am
 Operator : RUBENP
 Sample : ms29817-mb26
 Misc : ms29817,mss1483,1.5,,,1.5,1
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 16 12:26:31 2013
 Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:36:05 2013
 Response via : Initial Calibration

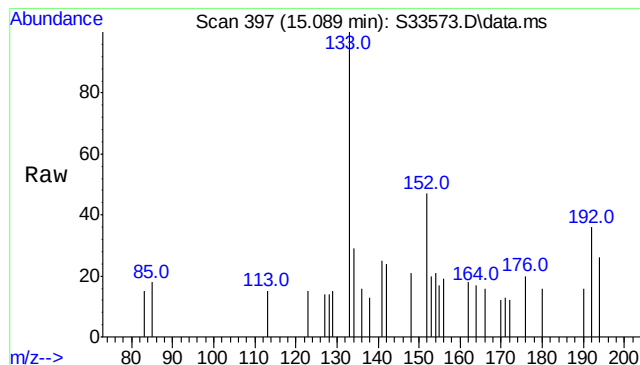
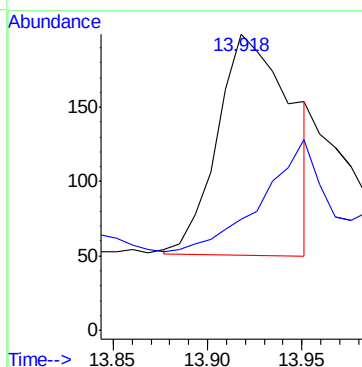
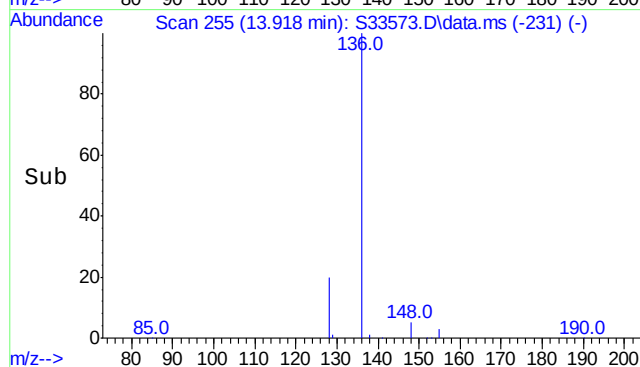
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	55111	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	36557	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	25557	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	17451	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	17501	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.020	188	46658	5.00	ng/mL	0.00
26) Anthracene-d10	20.123	188	33039	5.00	ng/mL	0.00
28) Fluoranthene-d10	22.448	212	27234	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	22927	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	6312	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	11243	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.890	264	7218	0.33	ng/mL	0.00
45) Benzo(k)fluoranthene-d12	27.964	264	7283	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.796	264	2763	0.33	ng/mL	0.00
50) Perylene-d12	29.015	264	2714	0.33	ng/mL	-0.01
Target Compounds						
2) Naphthalene	13.918	128	404m	0.217	ng/mL	Qvalue
3) C1-Naphthalenes	15.089	142	229m	0.123	ng/mL	
6) C3-Naphthalenes (Fd10)	18.081	170	2321	0.929	µg/mL#	100
9) 2-Methylnaphthalene	15.089	142	102	0.039	ng/mL	100
11) 1-Methylnaphthalene	15.295	142	55	0.028	ng/mL	100
13) Acenaphthylene	16.808	152	45	0.020	ng/mL#	100
16) Fluorene	18.138	166	75	0.016	ng/mL#	72
21) Phenanthrene	20.065	178	342	0.029	ng/mL#	27
27) Anthracene	20.161	178	42	0.005	ng/mL	100
29) Fluoranthene	22.483	202	105m	0.005	ng/mL	
31) Pyrene	22.954	202	95m	0.004	ng/mL	
38) Chrysene	25.478	228	36	0.001	ng/mL#	1
46) Benzo(k)fluoranthene	27.997	252	73	0.003	ng/mL#	44

(#) = qualifier out of range (m) = manual integration (+) = signals summed



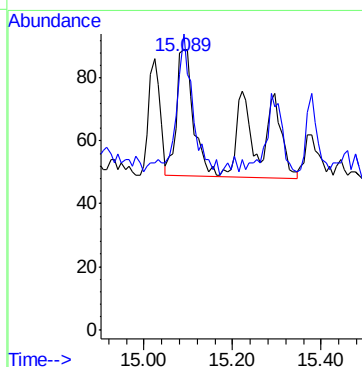
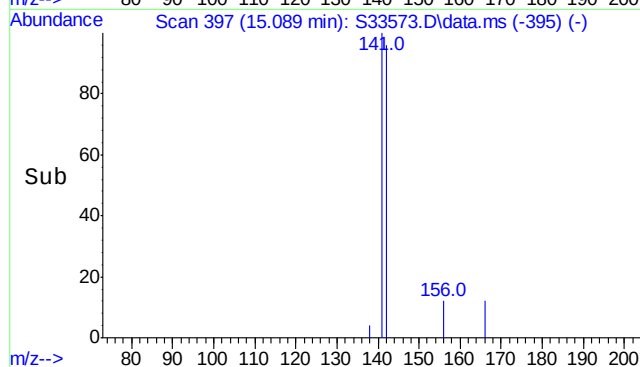
#2
Naphthalene
Concen: 0.217 ng/mL m
RT: 13.918 min Scan# 255
Delta R.T. -0.000 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

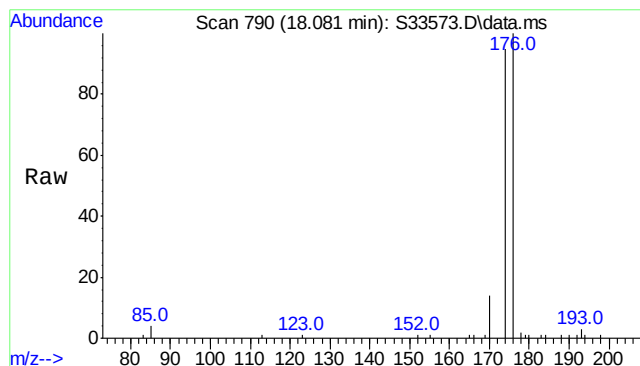
Tgt Ion:128 Resp: 404
Ion Ratio Lower Upper
128 100
127 0.0 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.123 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. -0.033 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

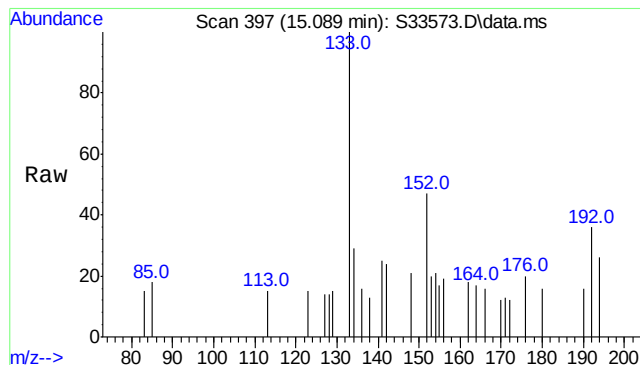
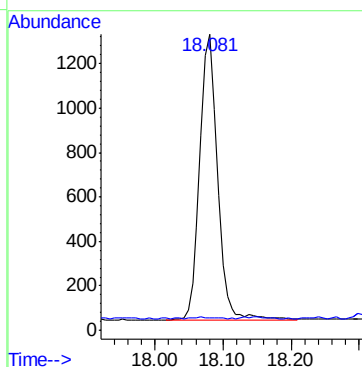
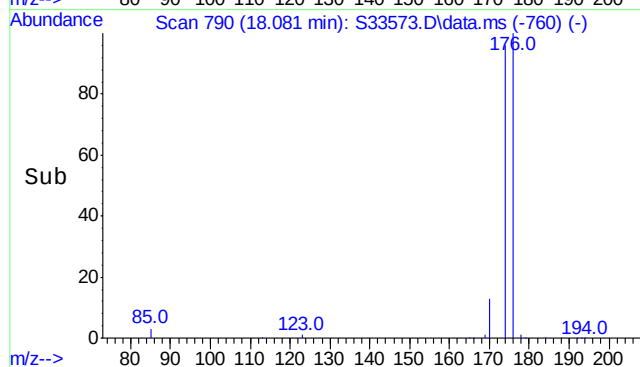
Tgt Ion:142 Resp: 229
Ion Ratio Lower Upper
142 100
141 34.5 71.0 106.6#





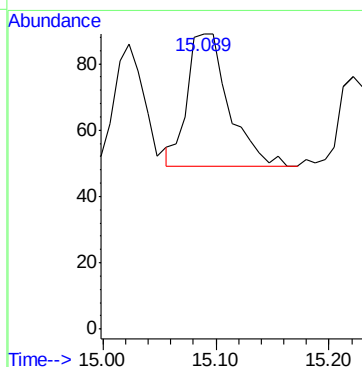
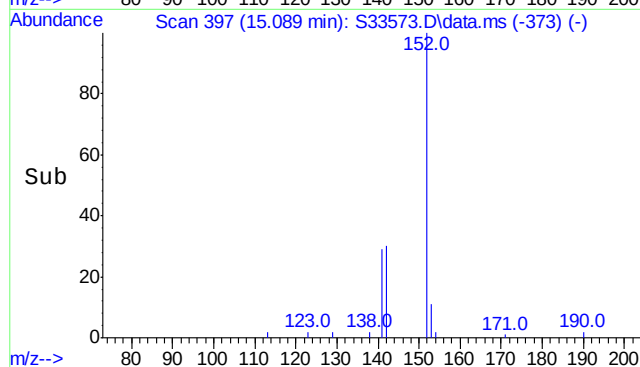
#6
C3-Naphthalenes (Fd10)
Concen: 0.929 µg/mL
RT: 18.081 min Scan# 790
Delta R.T. -0.006 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

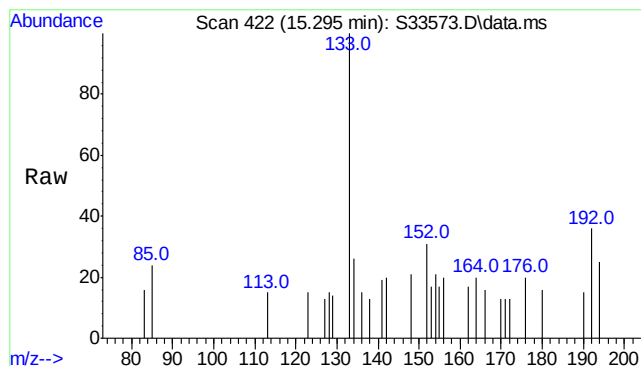
Tgt Ion:170 Resp: 2321
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0



#9
2-Methylnaphthalene
Concen: 0.039 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

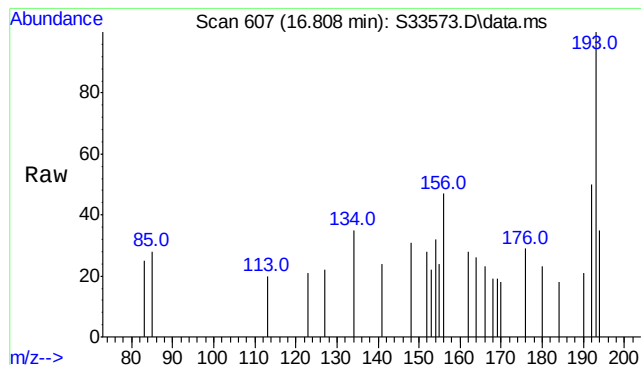
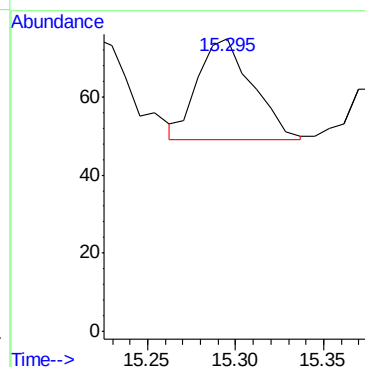
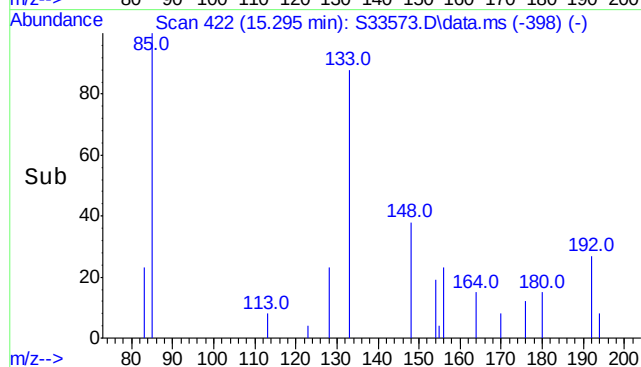
Tgt Ion:142 Resp: 102





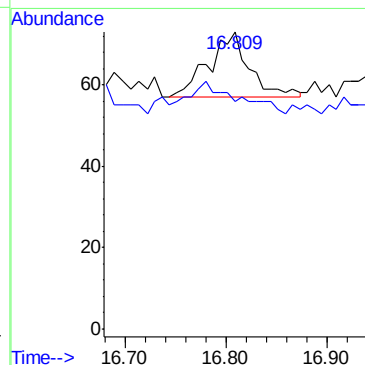
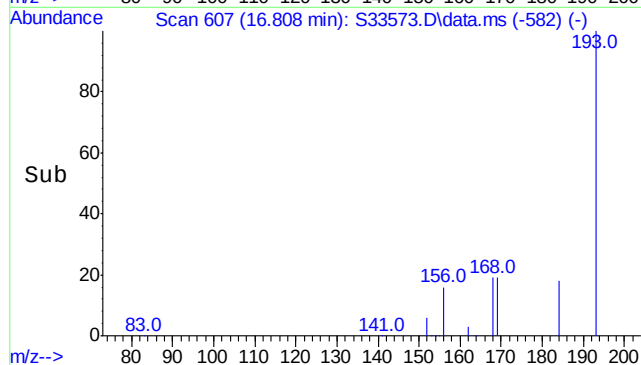
#11
1-Methylnaphthalene
Concen: 0.028 ng/mL
RT: 15.295 min Scan# 422
Delta R.T. 0.000 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

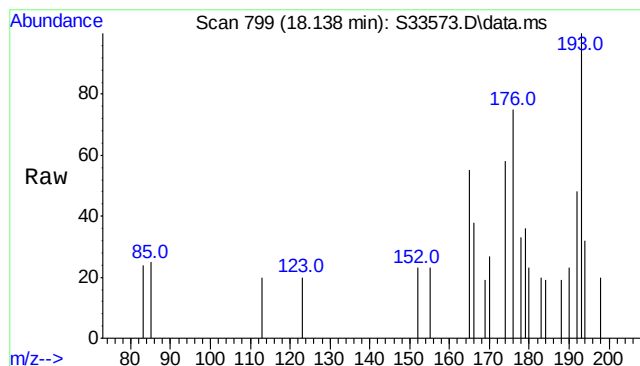
Tgt Ion:142 Resp: 55



#13
Acenaphthylene
Concen: 0.020 ng/mL
RT: 16.808 min Scan# 607
Delta R.T. -0.008 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

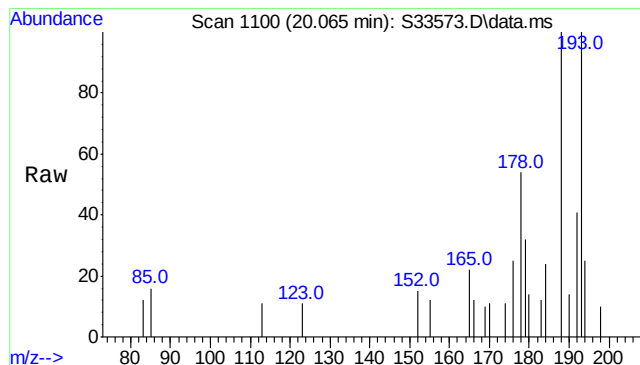
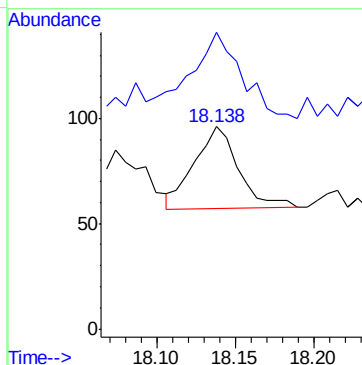
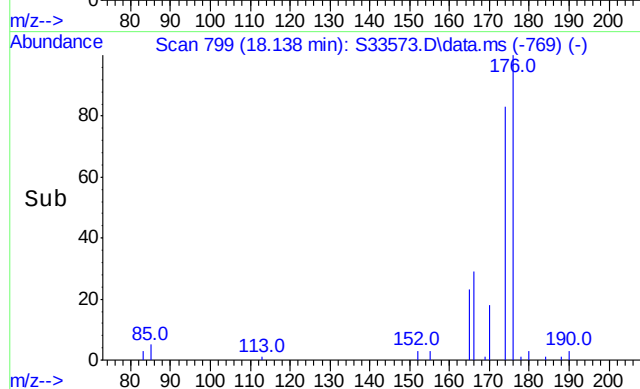
Tgt Ion:152 Resp: 45
Ion Ratio Lower Upper
152 100
153 0.0 0.0 0.0





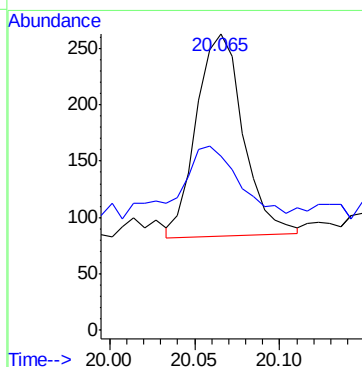
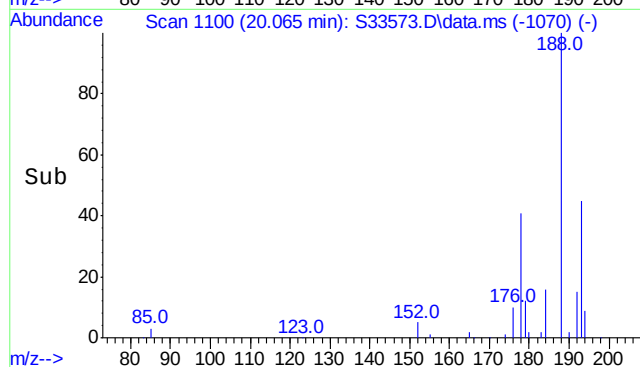
#16
Fluorene
Concen: 0.016 ng/mL
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

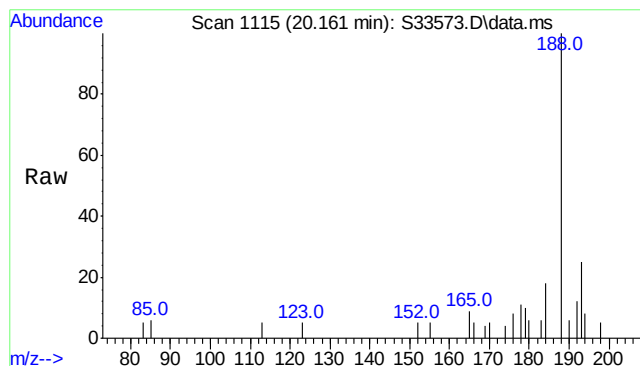
Tgt Ion:166 Resp: 75
Ion Ratio Lower Upper
166 100
165 122.7 76.4 114.6#



#21
Phenanthrene
Concen: 0.029 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

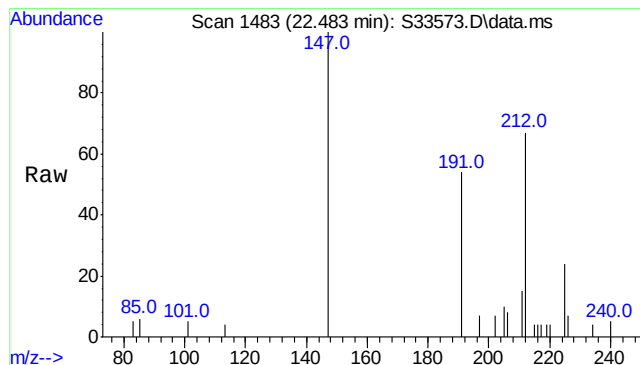
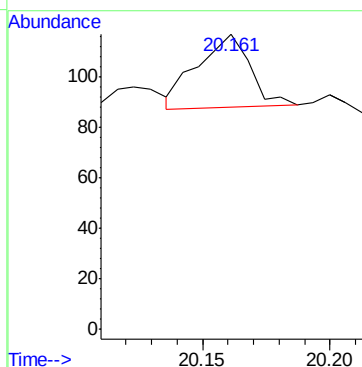
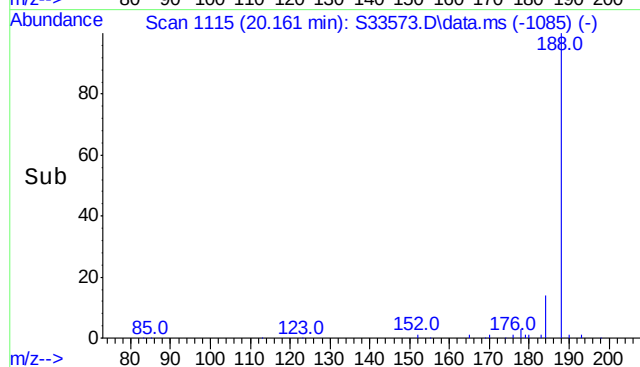
Tgt Ion:178 Resp: 342
Ion Ratio Lower Upper
178 100
179 46.2 12.4 18.6#





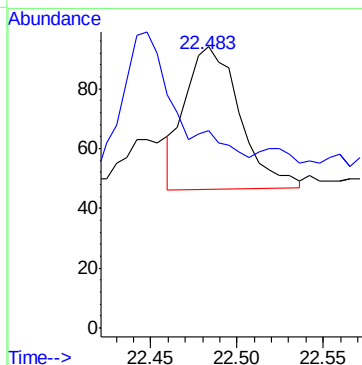
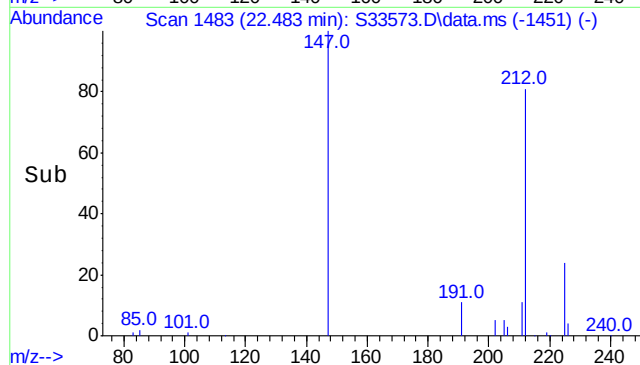
#27
Anthracene
Concen: 0.005 ng/mL
RT: 20.161 min Scan# 1115
Delta R.T. -0.007 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

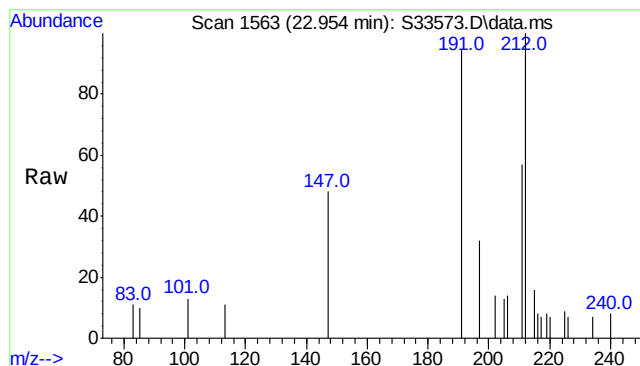
Tgt Ion:178 Resp: 42



#29
Fluoranthene
Concen: 0.005 ng/mL m
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

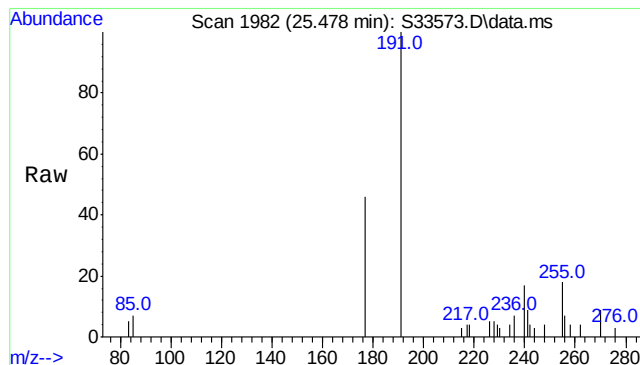
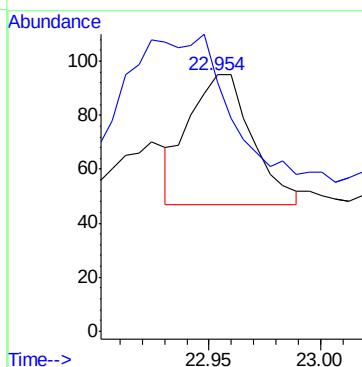
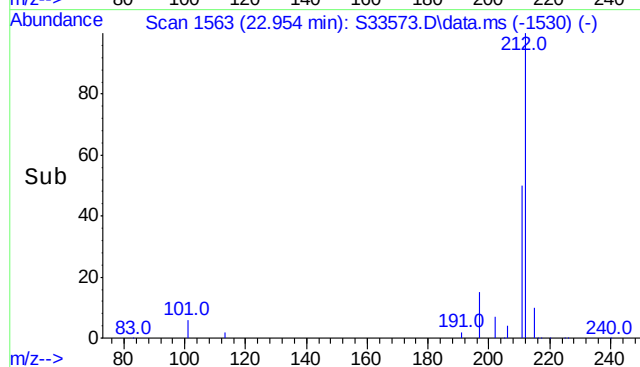
Tgt Ion:202 Resp: 105
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





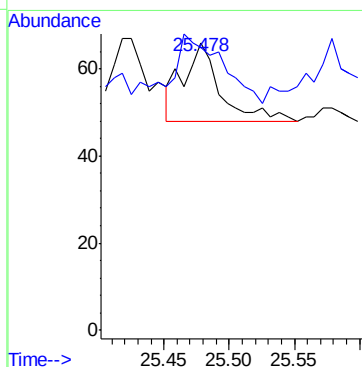
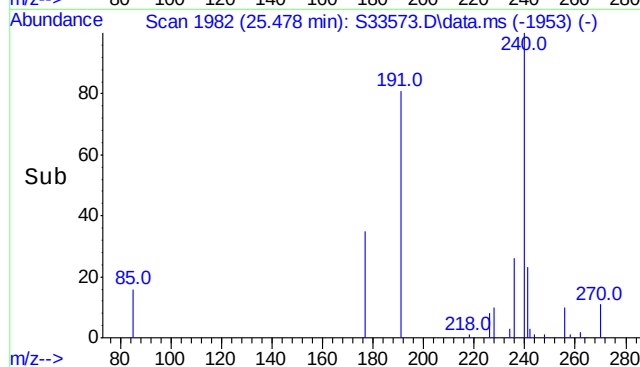
#31
Pyrene
Concen: 0.004 ng/mL m
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

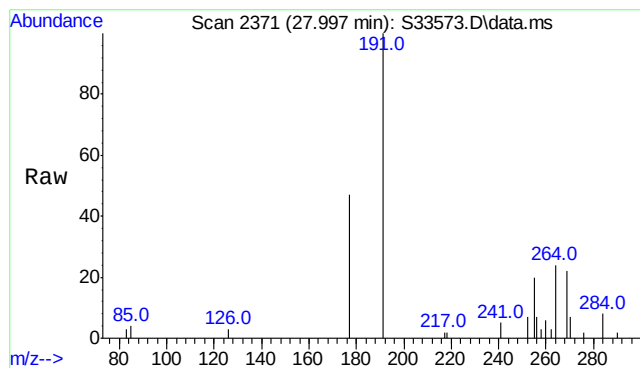
Tgt Ion:202 Resp: 95
Ion Ratio Lower Upper
202 100
101 198.9 16.6 24.8#



#38
Chrysene
Concen: 0.001 ng/mL
RT: 25.478 min Scan# 1982
Delta R.T. -0.007 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

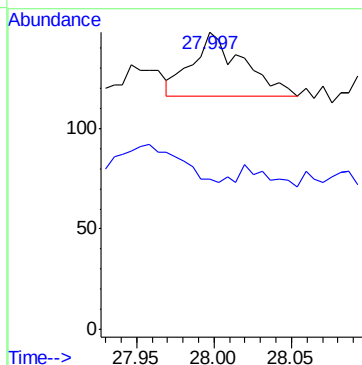
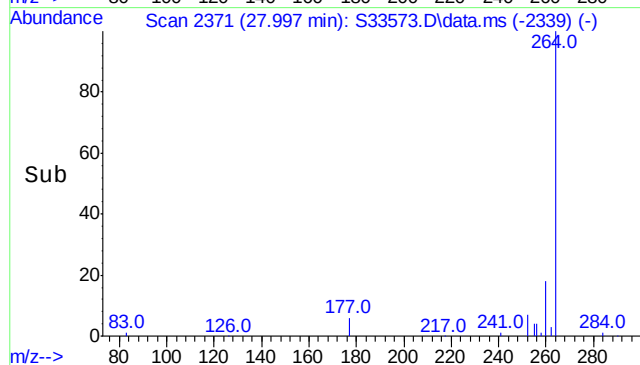
Tgt Ion:228 Resp: 36
Ion Ratio Lower Upper
228 100
226 102.8 26.0 39.0#





#46
Benzo(k)fluoranthene
Concen: 0.003 ng/mL
RT: 27.997 min Scan# 2371
Delta R.T. -0.023 min
Lab File: S33573.D
Acq: 14 Sep 2013 1:51 am

Tgt Ion: 252 Resp: 73
Ion Ratio Lower Upper
252 100
126 0.0 24.4 36.6#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33618.D
 Acq On : 20 Sep 2013 4:00 pm
 Operator : RUBENP
 Sample : ms29817-mb33
 Misc : ms29817,mss1490,,,,,
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 24 16:35:14 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

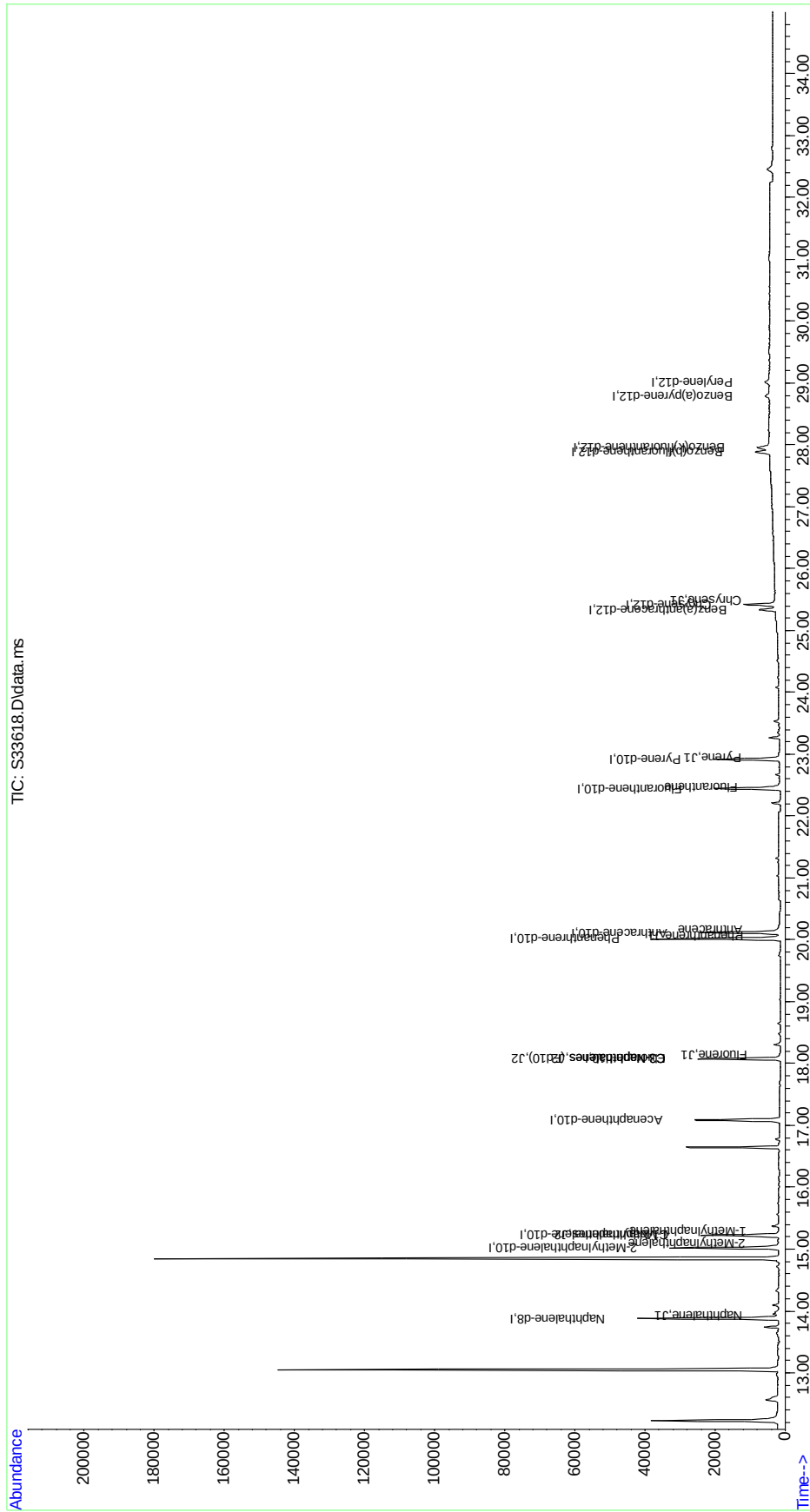
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	67994	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	45570	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	31227	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	20179	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	19775	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	53822	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	39157m	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	31062	1.67	ng/mL	-0.01
30) Pyrene-d10	22.919	212	25948	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.332	240	6659	0.50	ng/mL	-0.01
37) Chrysene-d12	25.418	240	12263	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	7930	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	8081	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.791	264	2811	0.33	ng/mL	-0.01
50) Perylene-d12	29.010	264	2827	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.918	128	193m	0.082	ng/mL	
3) C1-Naphthalenes	15.221	142	135m	0.058	ng/mL	
5) C3-Naphthalenes	18.074	170	2609	0.831	ng/mL#	1
6) C3-Naphthalenes (Fd10)	18.074	170	2609	0.831	µg/mL#	100
9) 2-Methylnaphthalene	15.081	142	33	0.010	ng/mL	100
11) 1-Methylnaphthalene	15.295	142	28m	0.012	ng/mL	
16) Fluorene	18.138	166	39	0.007	ng/mL#	77
21) Phenanthrene	20.059	178	207	0.015	ng/mL#	41
27) Anthracene	20.155	178	78m	0.008	ng/mL	
29) Fluoranthene	22.477	202	94m	0.004	ng/mL	
31) Pyrene	22.948	202	116	0.005	ng/mL#	1
38) Chrysene	25.472	228	53	0.002	ng/mL#	1

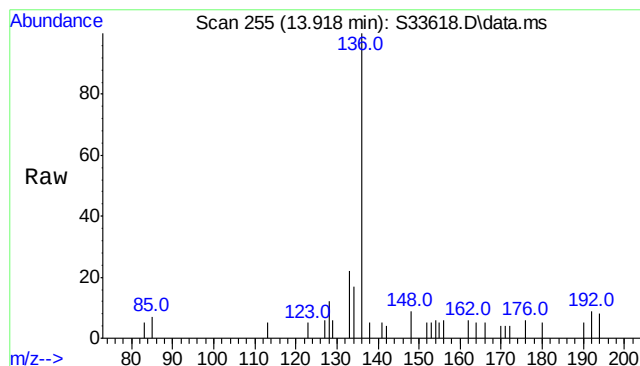
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130920\
Data File : S33618.D
Acq On : 20 Sep 2013 4:00 pm
Operator : RUBENP
Sample : ms29817-mb33
Misc : ms29817,mss1490,,,,,
ALS Vial : 5 Sample Multiplier: 1

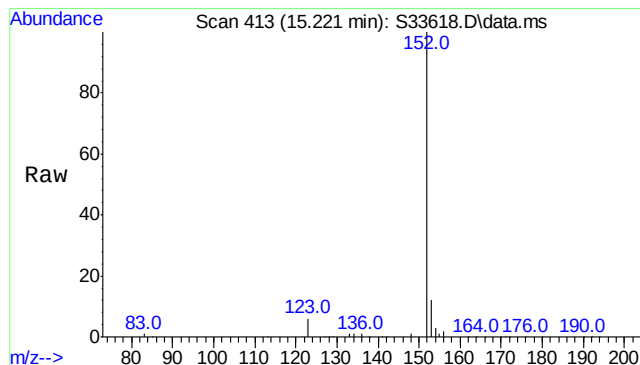
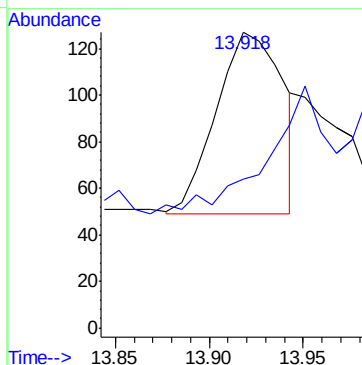
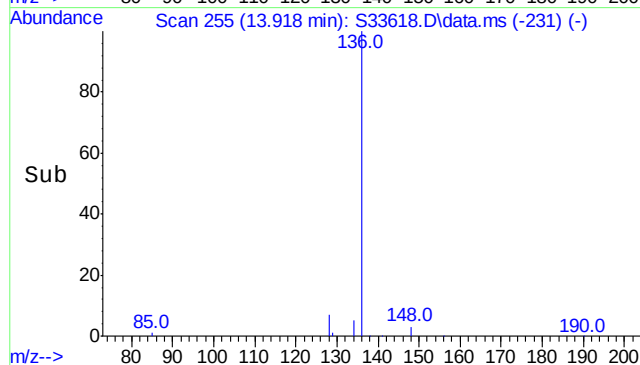
Quant Time: Oct 24 16:35:14 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





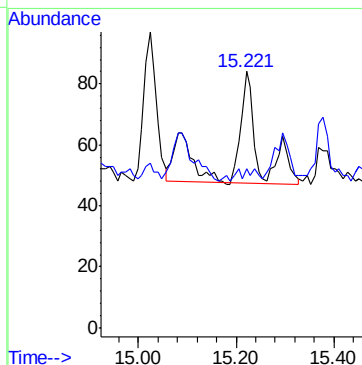
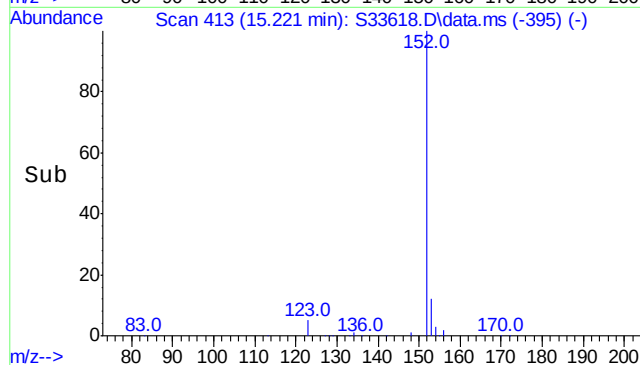
#2
Naphthalene
Concen: 0.082 ng/mL m
RT: 13.918 min Scan# 255
Delta R.T. 0.000 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

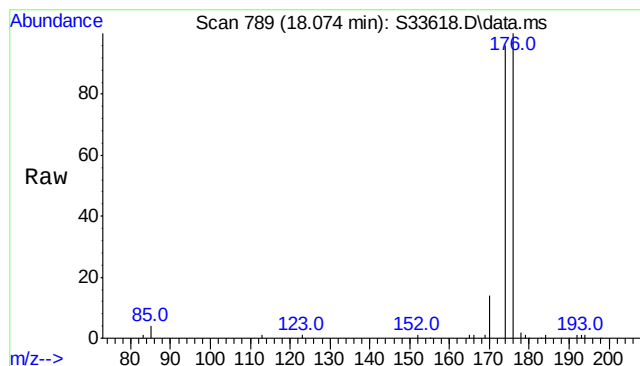
Tgt Ion:128 Resp: 193
Ion Ratio Lower Upper
128 100
127 0.0 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.058 ng/mL m
RT: 15.221 min Scan# 413
Delta R.T. 0.099 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

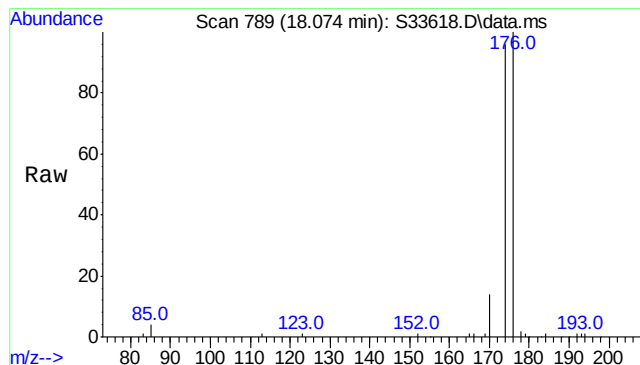
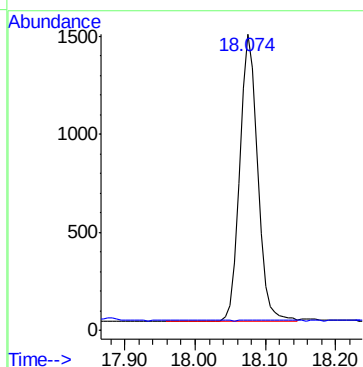
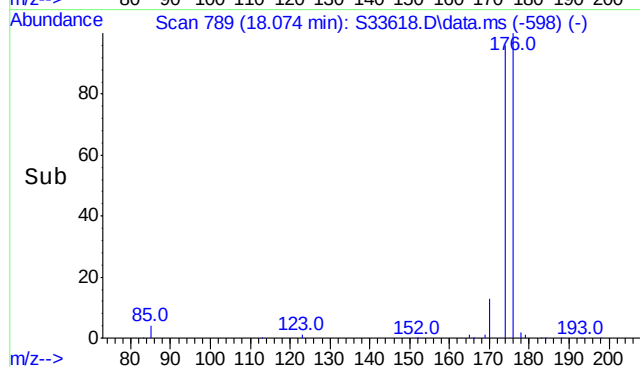
Tgt Ion:142 Resp: 135
Ion Ratio Lower Upper
142 100
141 0.0 71.0 106.6#





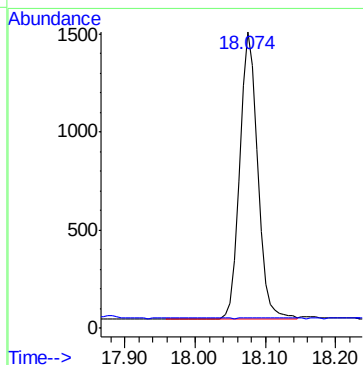
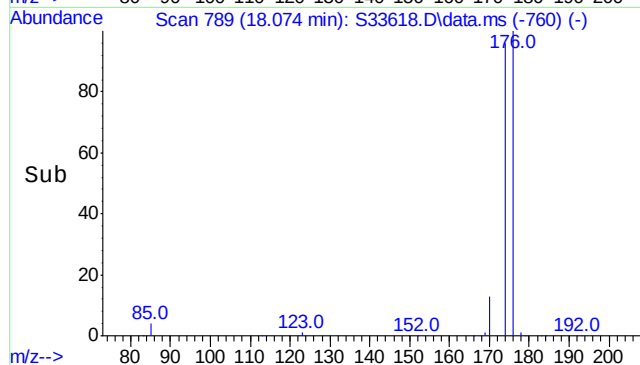
#5
C3-Naphthalenes
Concen: 0.831 ng/mL
RT: 18.074 min Scan# 789
Delta R.T. 0.415 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

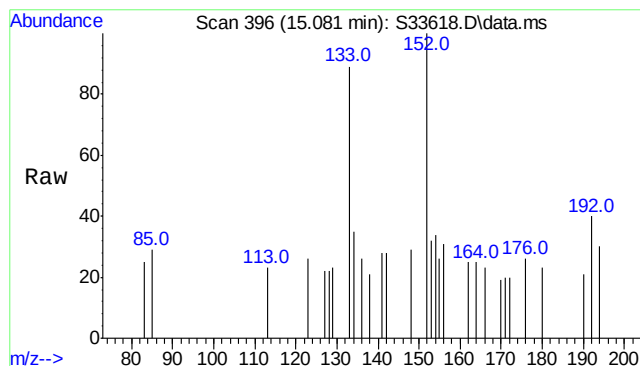
Tgt Ion:	170	Resp:	2609
Ion Ratio	Lower	Upper	
170	100		
155	0.0	80.7	121.1#



#6
C3-Naphthalenes (Fd10)
Concen: 0.831 µg/mL
RT: 18.074 min Scan# 789
Delta R.T. -0.013 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

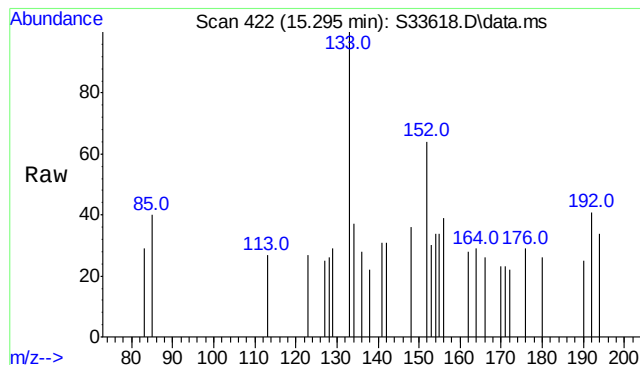
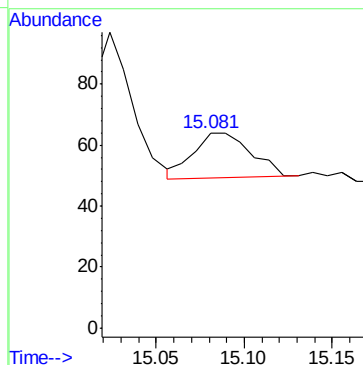
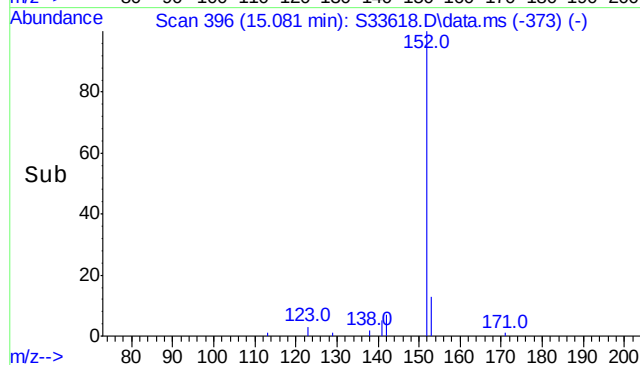
Tgt Ion:	170	Resp:	2609
Ion Ratio	Lower	Upper	
170	100		
155	0.0	0.0	0.0





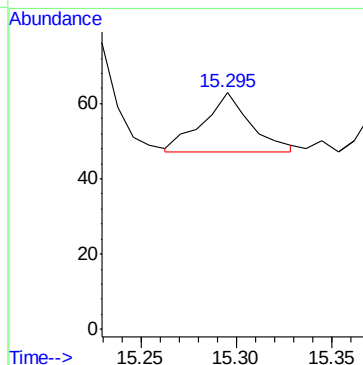
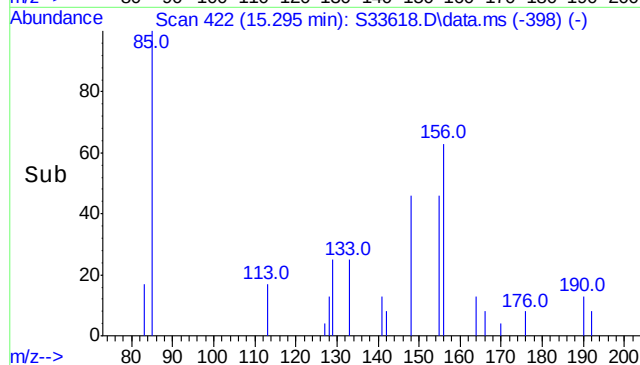
#9
2-Methylnaphthalene
Concen: 0.010 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

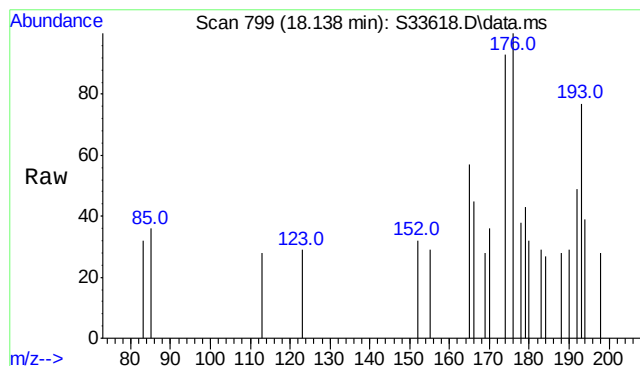
Tgt Ion:142 Resp: 33



#11
1-Methylnaphthalene
Concen: 0.012 ng/mL m
RT: 15.295 min Scan# 422
Delta R.T. 0.000 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

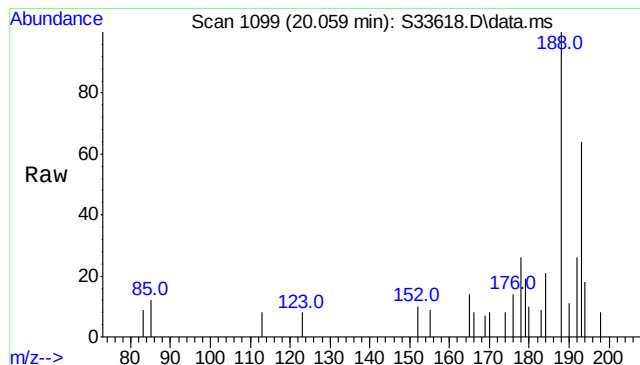
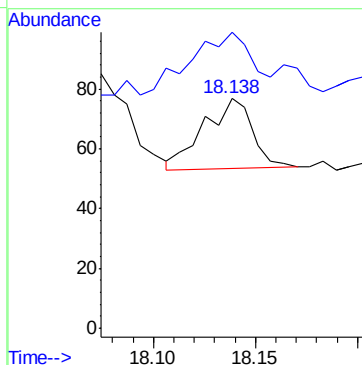
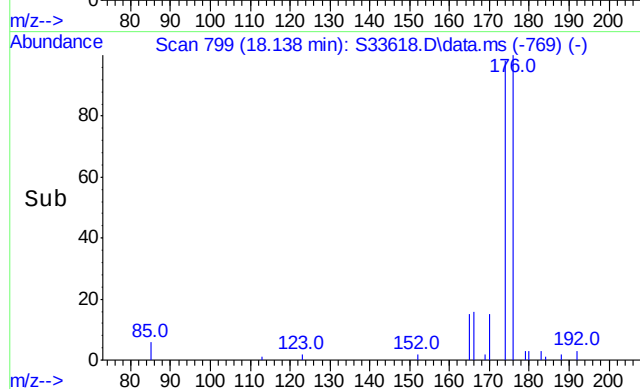
Tgt Ion:142 Resp: 28





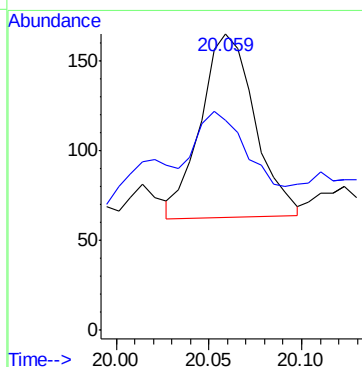
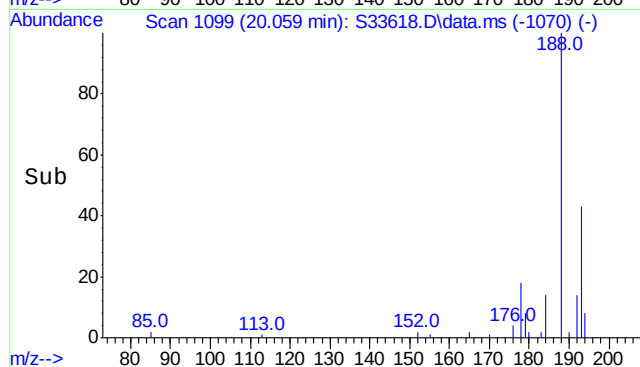
#16
Fluorene
Concen: 0.007 ng/mL
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

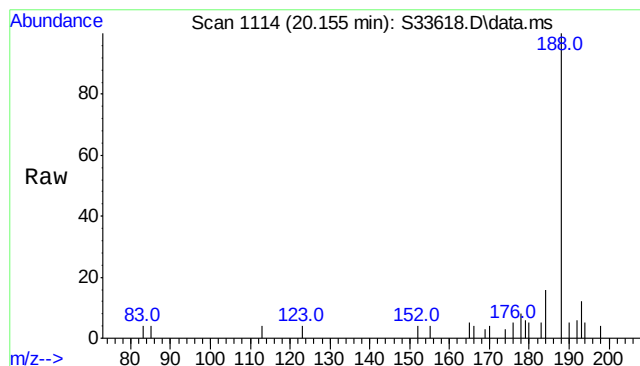
Tgt Ion:166 Resp: 39
Ion Ratio Lower Upper
166 100
165 117.9 76.4 114.6#



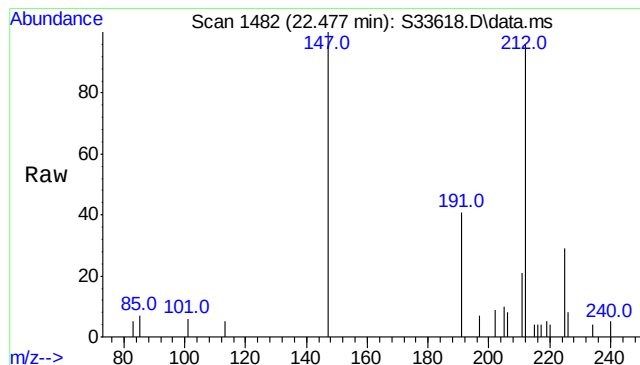
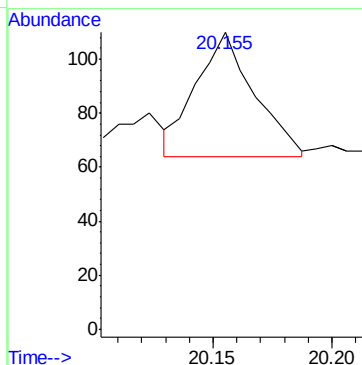
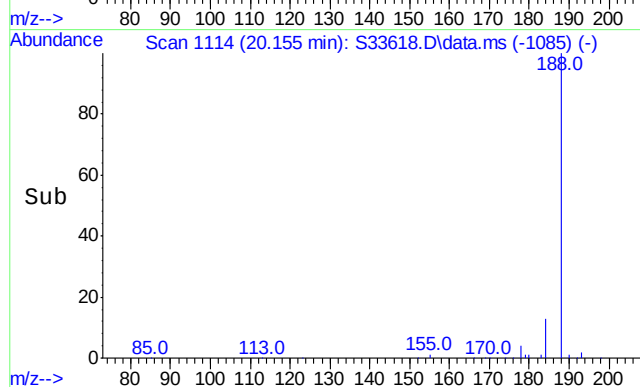
#21
Phenanthrene
Concen: 0.015 ng/mL
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

Tgt Ion:178 Resp: 207
Ion Ratio Lower Upper
178 100
179 40.1 12.4 18.6#

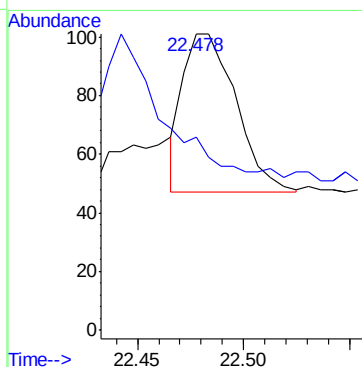
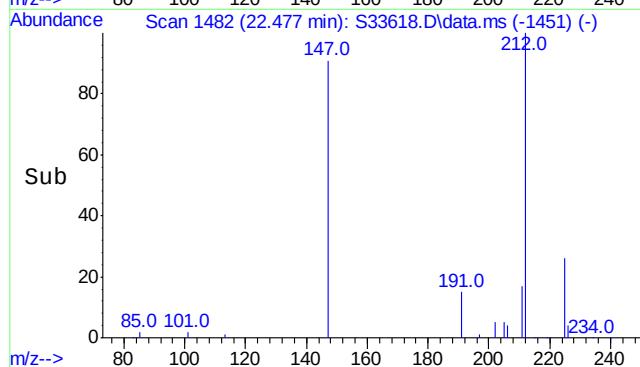


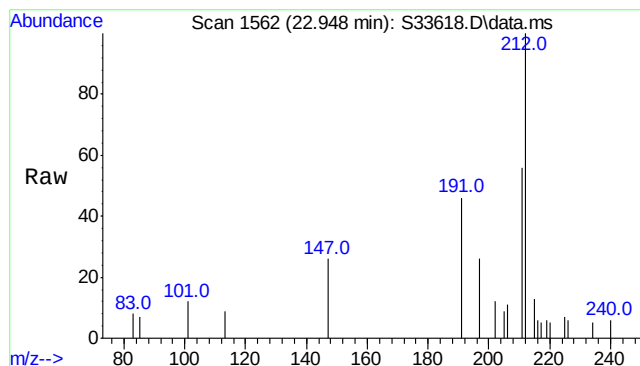


#27
Anthracene
Concen: 0.008 ng/mL m
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm
Tgt Ion:178 Resp: 78



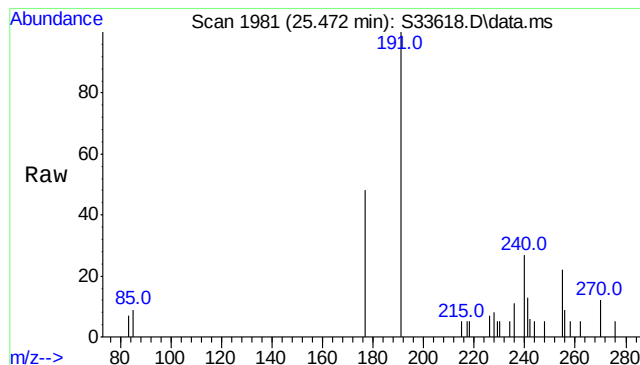
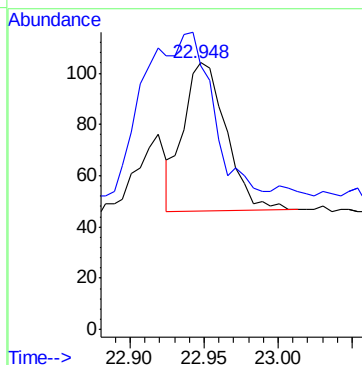
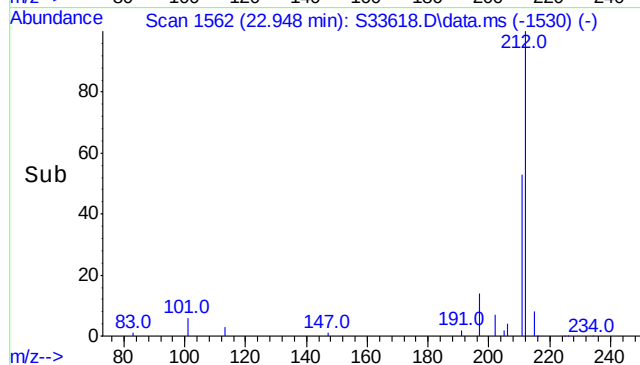
#29
Fluoranthene
Concen: 0.004 ng/mL m
RT: 22.477 min Scan# 1482
Delta R.T. -0.018 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm
Tgt Ion:202 Resp: 94
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





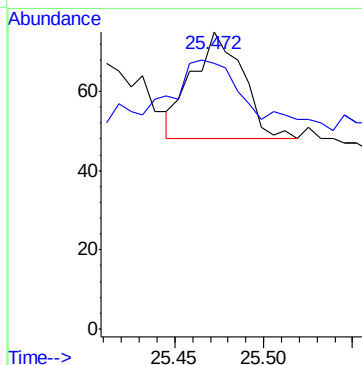
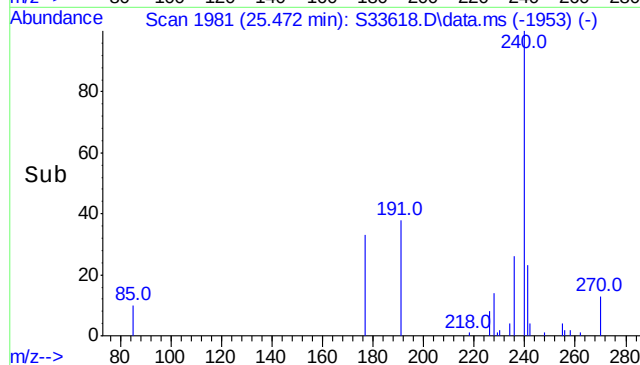
#31
Pyrene
Concen: 0.005 ng/mL
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

Tgt Ion:202 Resp: 116
Ion Ratio Lower Upper
202 100
101 188.8 16.6 24.8#



#38
Chrysene
Concen: 0.002 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33618.D
Acq: 20 Sep 2013 4:00 pm

Tgt Ion:228 Resp: 53
Ion Ratio Lower Upper
228 100
226 109.4 26.0 39.0#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33622.D
 Acq On : 20 Sep 2013 7:21 pm
 Operator : RUBENP
 Sample : ms29817-mb34
 Misc : ms29817,mss1491,,,,,
 ALS Vial : 9 Sample Multiplier: 1

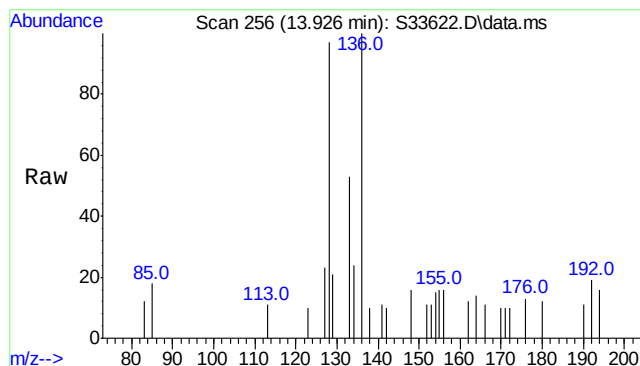
Quant Time: Oct 24 16:49:59 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	64597	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	45095	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	30769	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	20959	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	20389	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	56030	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	54335	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	31454	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	27070	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	7925	0.50	ng/mL	-0.01
37) Chrysene-d12	25.418	240	12077	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	7680	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.947	264	7695	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	4003	0.33	ng/mL	-0.02
50) Perylene-d12	29.010	264	3715	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.926	128	1289m	0.580	ng/mL	Qvalue
3) C1-Naphthalenes	15.089	142	330m	0.148	ng/mL	
5) C3-Naphthalenes	18.074	170	2693	0.903	ng/mL#	1
6) C3-Naphthalenes (Fd10)	18.074	170	2693	0.903	µg/mL#	100
9) 2-Methylnaphthalene	15.089	142	176	0.054	ng/mL	100
11) 1-Methylnaphthalene	15.295	142	82	0.034	ng/mL	100
13) Acenaphthylene	16.801	152	53	0.018	ng/mL#	100
14) Acenaphthene	17.147	154	55	0.018	ng/mL	83
16) Fluorene	18.132	166	76	0.014	ng/mL#	54
21) Phenanthrene	20.059	178	376m	0.027	ng/mL	
27) Anthracene	20.155	178	96	0.007	ng/mL	100
29) Fluoranthene	22.477	202	169m	0.007	ng/mL	
31) Pyrene	22.948	202	128m	0.005	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

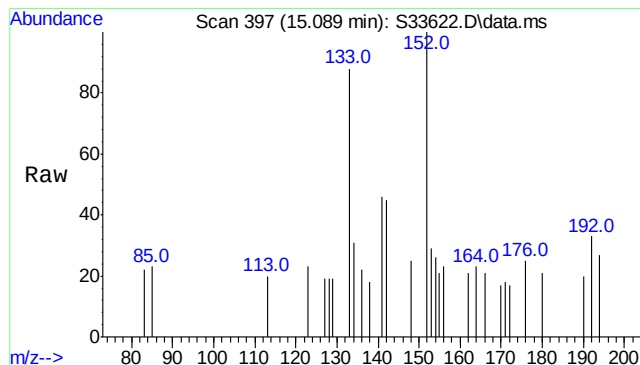
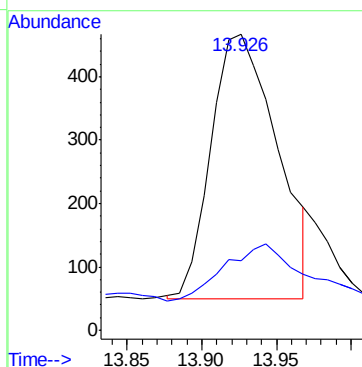
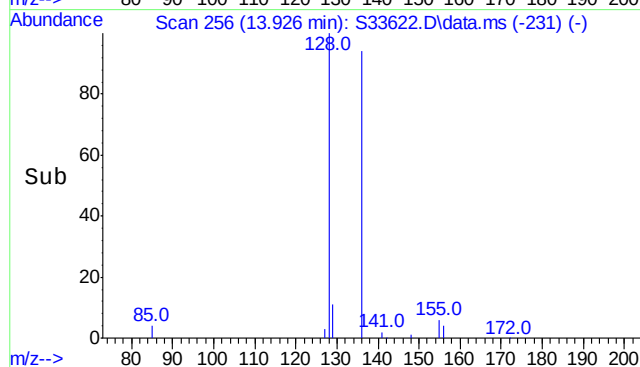
7.2.4

7



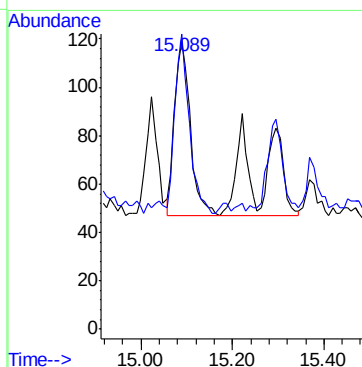
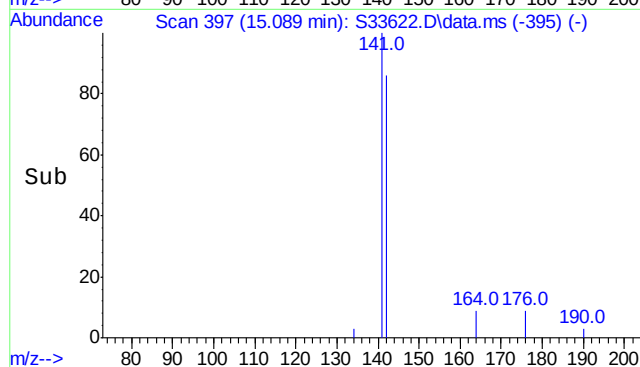
#2
Naphthalene
Concen: 0.580 ng/mL m
RT: 13.926 min Scan# 256
Delta R.T. 0.008 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

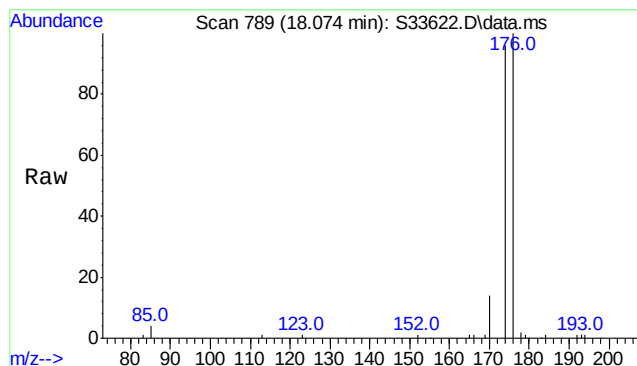
Tgt Ion:128 Resp: 1289
Ion Ratio Lower Upper
128 100
127 27.5 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.148 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. -0.033 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

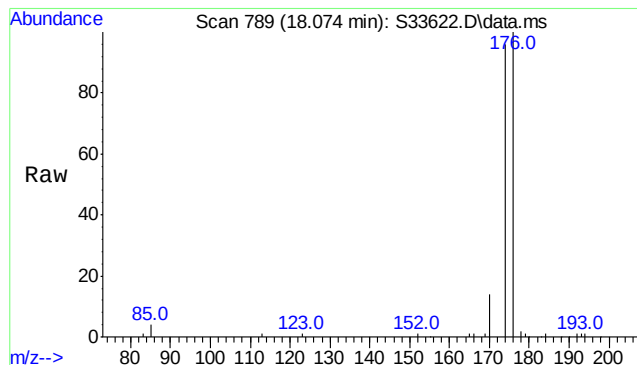
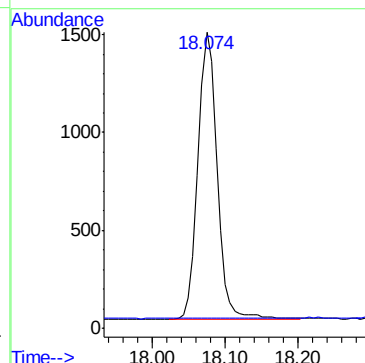
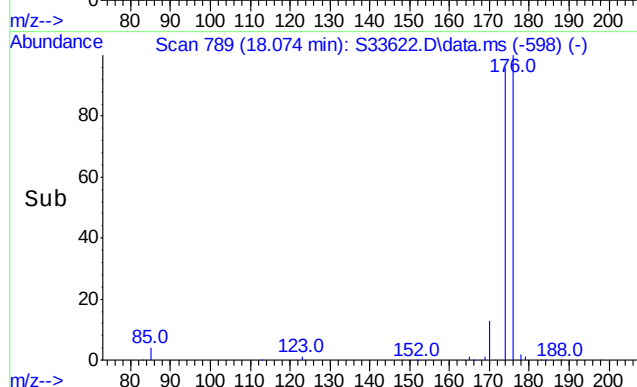
Tgt Ion:142 Resp: 330
Ion Ratio Lower Upper
142 100
141 23.6 71.0 106.6#





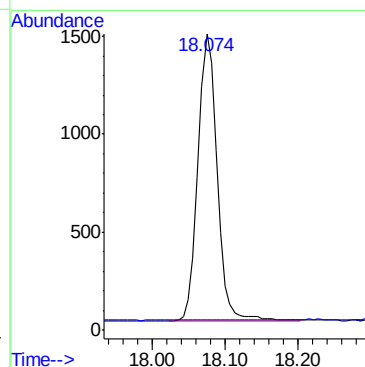
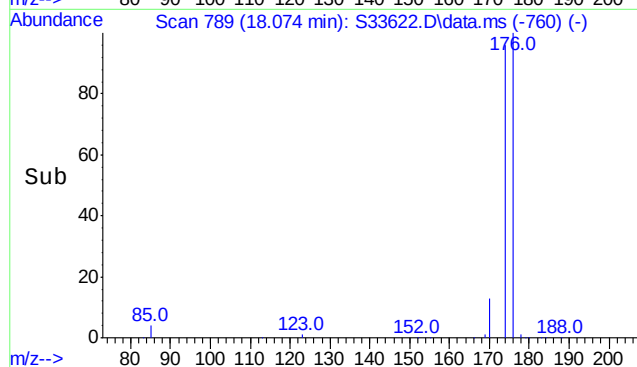
#5
C3-Naphthalenes
Concen: 0.903 ng/mL
RT: 18.074 min Scan# 789
Delta R.T. 0.415 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

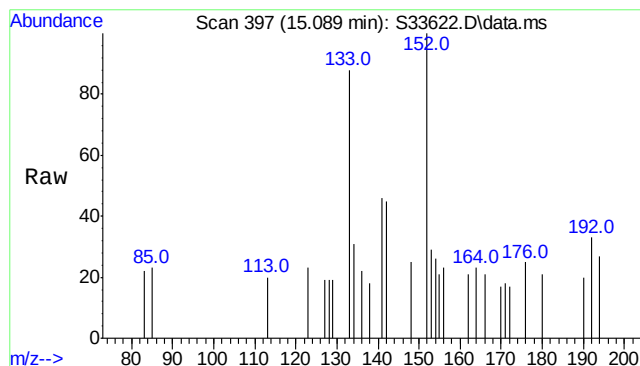
Tgt Ion:170 Resp: 2693
Ion Ratio Lower Upper
170 100
155 0.0 80.7 121.1#



#6
C3-Naphthalenes (Fd10)
Concen: 0.903 µg/mL
RT: 18.074 min Scan# 789
Delta R.T. -0.013 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

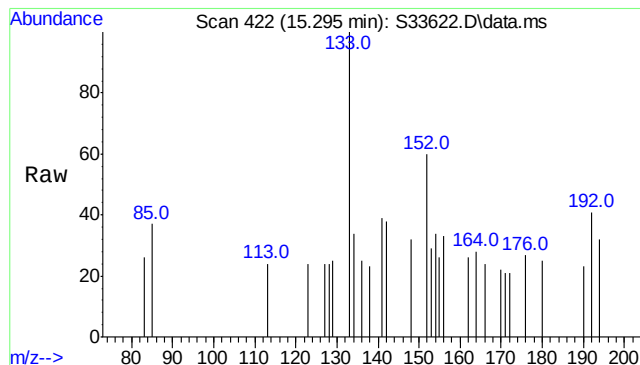
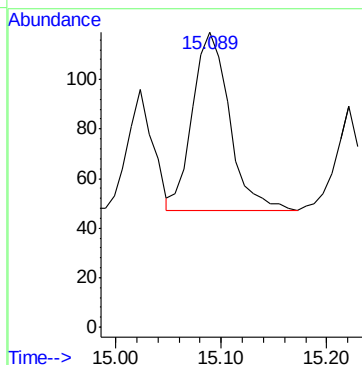
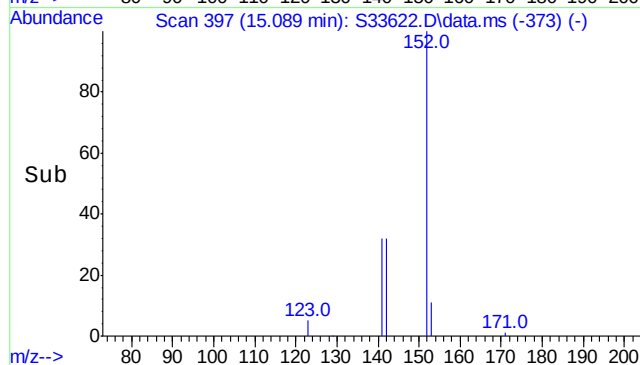
Tgt Ion:170 Resp: 2693
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0





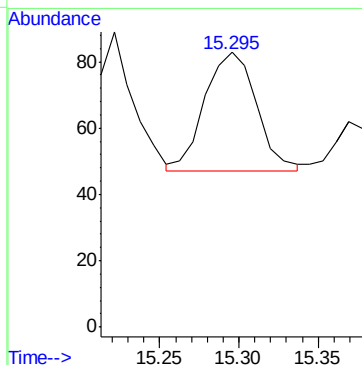
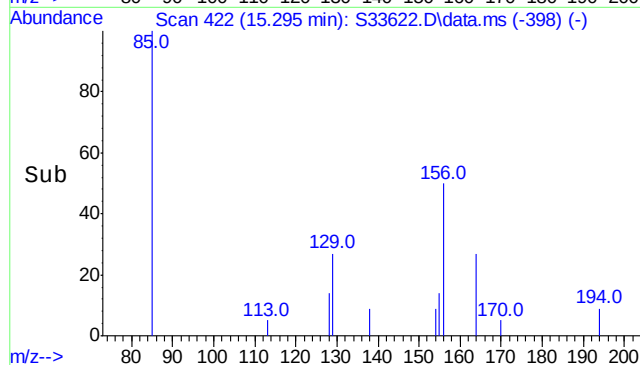
#9
2-Methylnaphthalene
Concen: 0.054 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

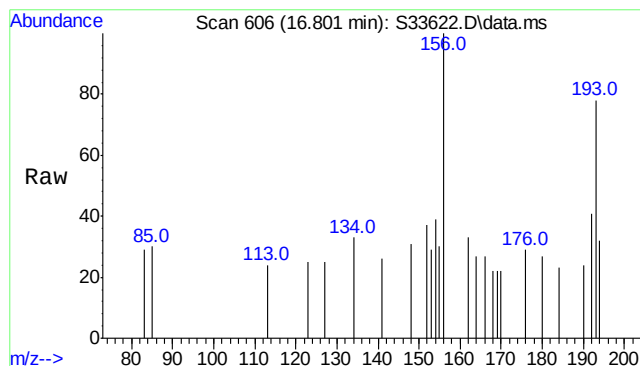
Tgt Ion:142 Resp: 176



#11
1-Methylnaphthalene
Concen: 0.034 ng/mL
RT: 15.295 min Scan# 422
Delta R.T. 0.000 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

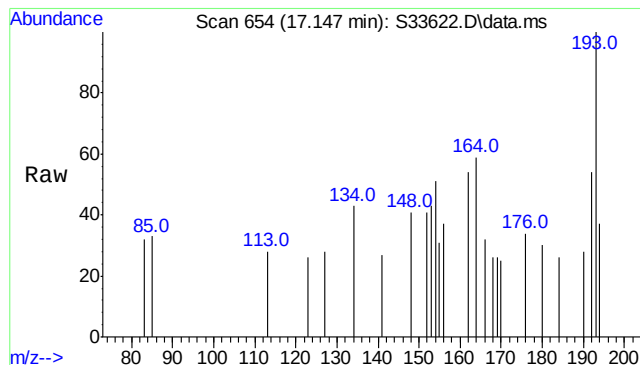
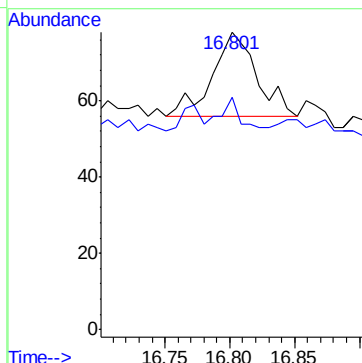
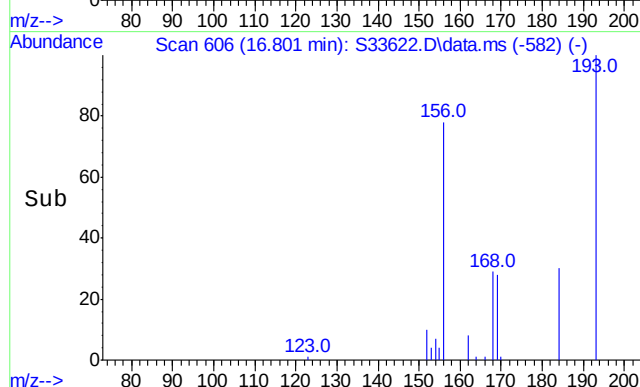
Tgt Ion:142 Resp: 82





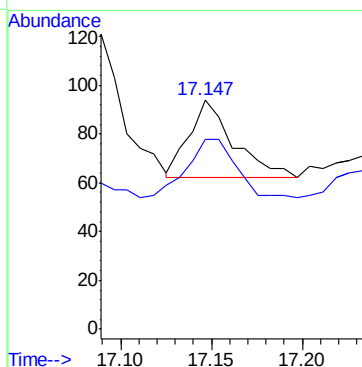
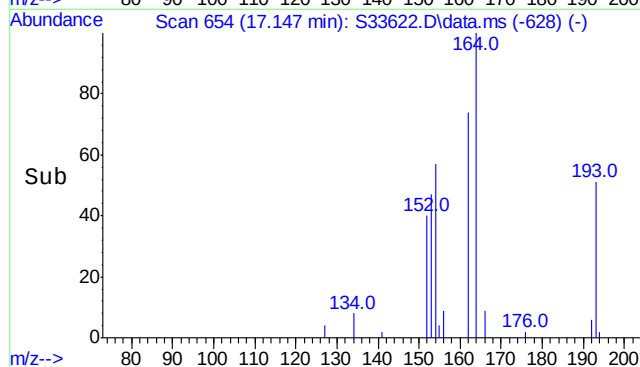
#13
Acenaphthylene
Concen: 0.018 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

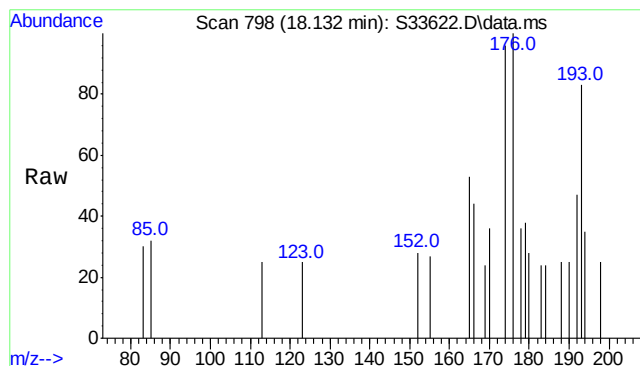
Tgt Ion	Ratio	Lower	Upper
152	100		
153	0.0	0.0	0.0



#14
Acenaphthene
Concen: 0.018 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

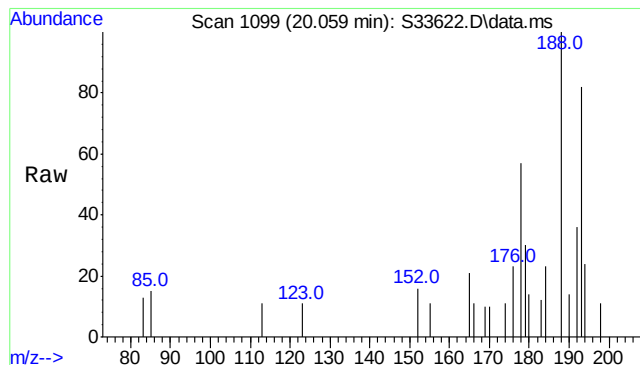
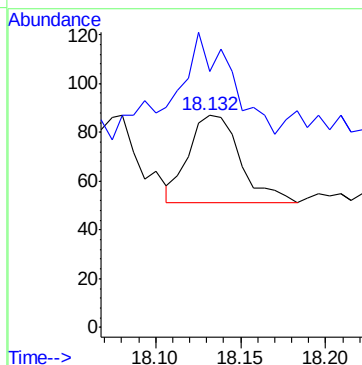
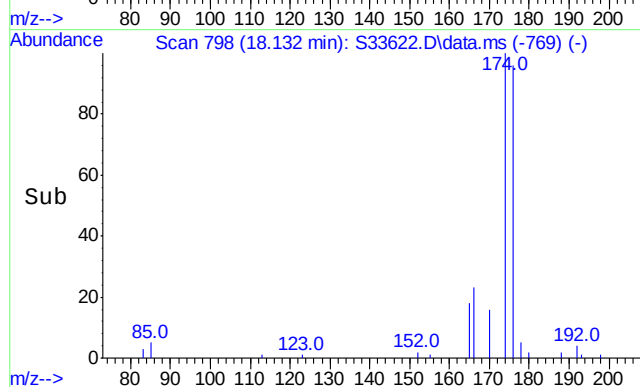
Tgt Ion	Ratio	Lower	Upper
154	100		
153	90.9	86.6	129.8





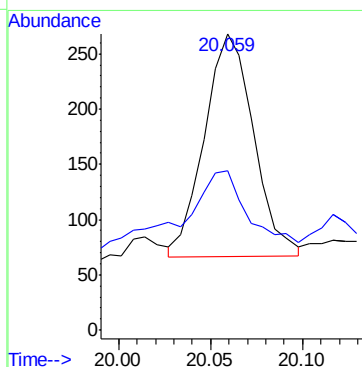
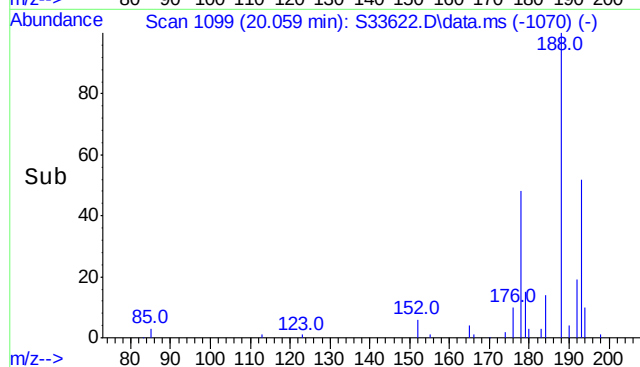
#16
Fluorene
Concen: 0.014 ng/mL
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

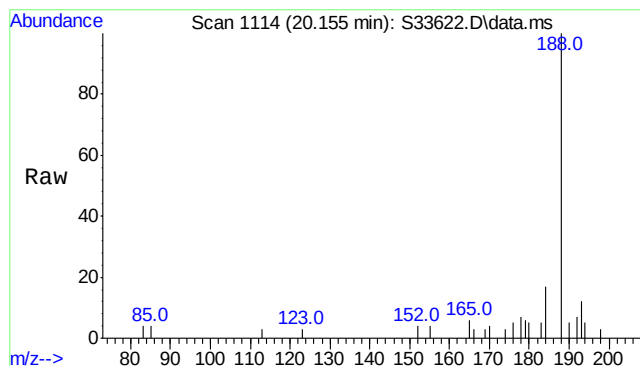
Tgt Ion:166 Resp: 76
Ion Ratio Lower Upper
166 100
165 140.8 76.4 114.6#



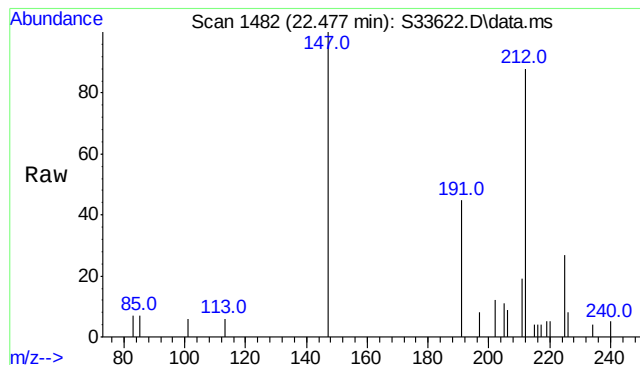
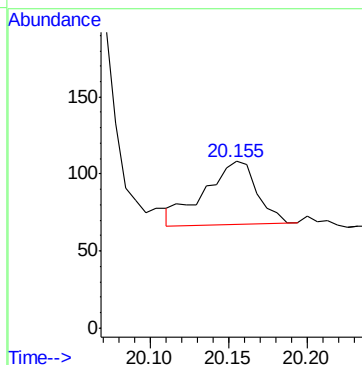
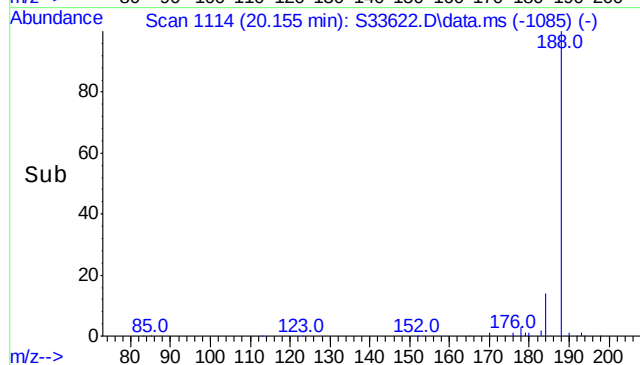
#21
Phenanthrene
Concen: 0.027 ng/mL m
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

Tgt Ion:178 Resp: 376
Ion Ratio Lower Upper
178 100
179 47.6 12.4 18.6#

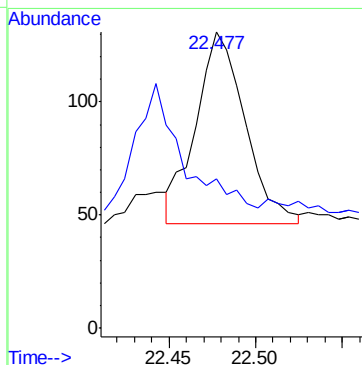
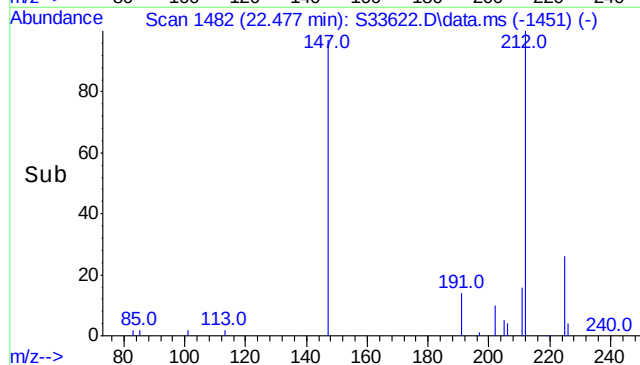


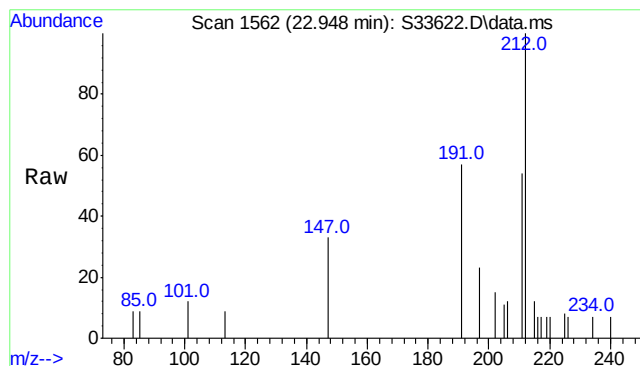


#27
Anthracene
Concen: 0.007 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm
Tgt Ion:178 Resp: 96



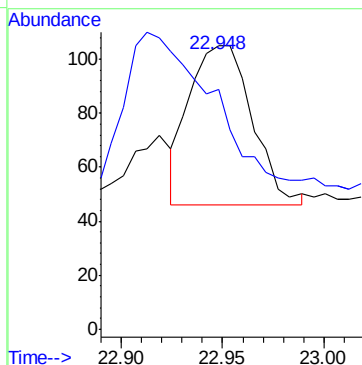
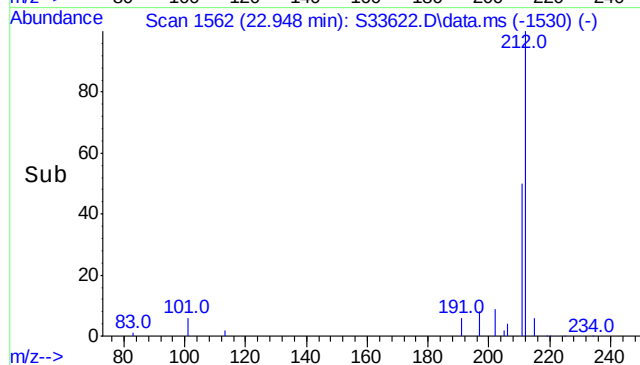
#29
Fluoranthene
Concen: 0.007 ng/mL m
RT: 22.477 min Scan# 1482
Delta R.T. -0.018 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm
Tgt Ion:202 Resp: 169
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





#31
Pyrene
Concen: 0.005 ng/mL m
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33622.D
Acq: 20 Sep 2013 7:21 pm

Tgt Ion: 202 Resp: 128
Ion Ratio Lower Upper
202 100
101 0.0 16.6 24.8#



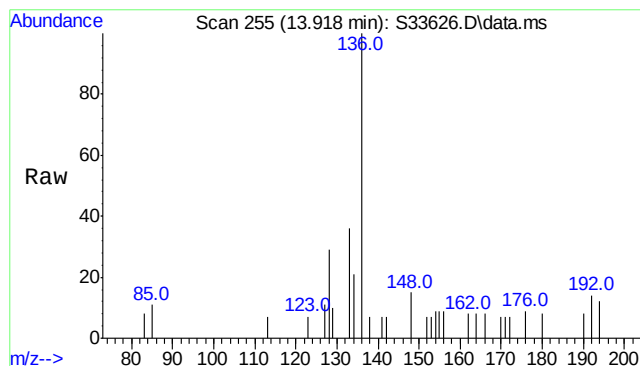
Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33626.D
 Acq On : 20 Sep 2013 10:38 pm
 Operator : RUBENP
 Sample : ms29817-mb35
 Misc : ms29817,mss1492,,,,
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 24 17:28:52 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

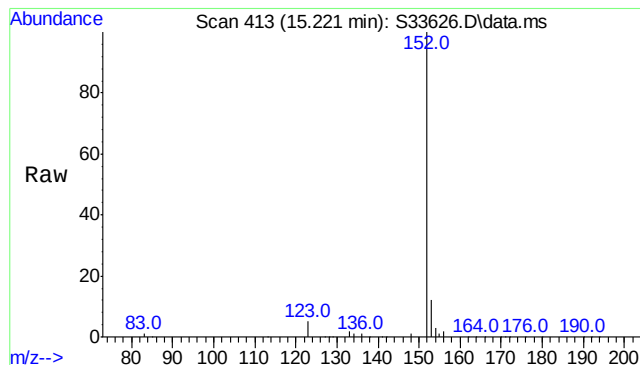
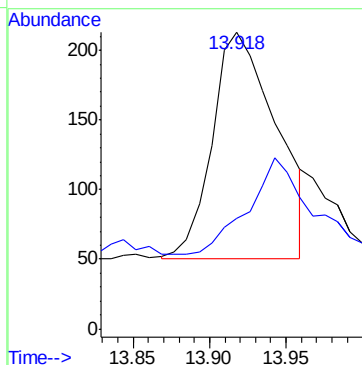
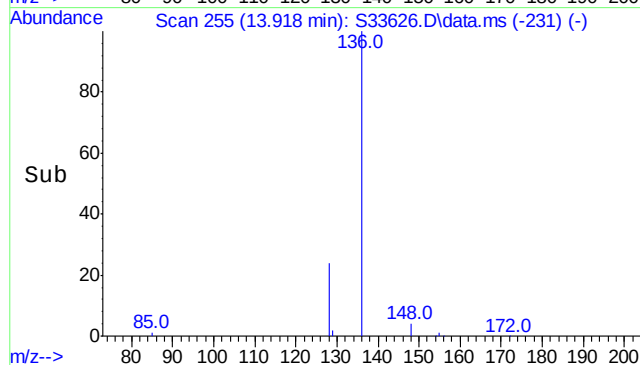
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	67709	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	44343	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	30361	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	21212	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	21663	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	59692	5.00	ng/mL	-0.01
26) Anthracene-d10	20.116	188	47652	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	33880	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	28504	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.331	240	8135	0.50	ng/mL	-0.01
37) Chrysene-d12	25.418	240	13220	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	8932	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	8582	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.790	264	3566	0.33	ng/mL	-0.01
50) Perylene-d12	29.010	264	3601	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.918	128	478m	0.205	ng/mL	Qvalue
3) C1-Naphthalenes	15.221	142	127m	0.055	ng/mL	
6) C3-Naphthalenes (Fd10)	18.074	170	2881	0.922	µg/mL#	100
9) 2-Methylnaphthalene	15.081	142	54m	0.017	ng/mL	
11) 1-Methylnaphthalene	15.295	142	31	0.013	ng/mL	100
16) Fluorene	18.138	166	40	0.007	ng/mL#	36
21) Phenanthrene	20.059	178	258m	0.017	ng/mL	
29) Fluoranthene	22.477	202	93m	0.003	ng/mL	
31) Pyrene	22.948	202	92	0.003	ng/mL#	56

(#) = qualifier out of range (m) = manual integration (+) = signals summed



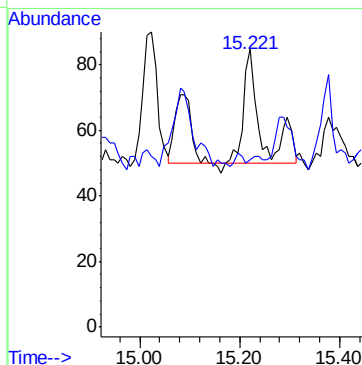
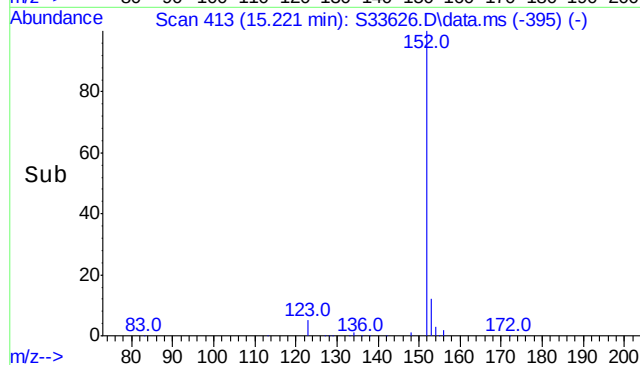
#2
Naphthalene
Concen: 0.205 ng/mL m
RT: 13.918 min Scan# 255
Delta R.T. -0.000 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

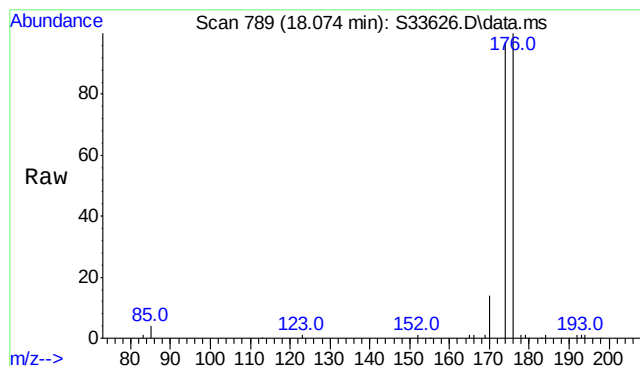
Tgt Ion:128 Resp: 478
Ion Ratio Lower Upper
128 100
127 0.0 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.055 ng/mL m
RT: 15.221 min Scan# 413
Delta R.T. 0.099 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

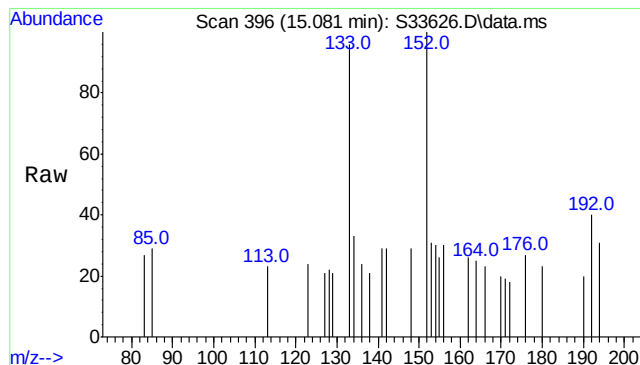
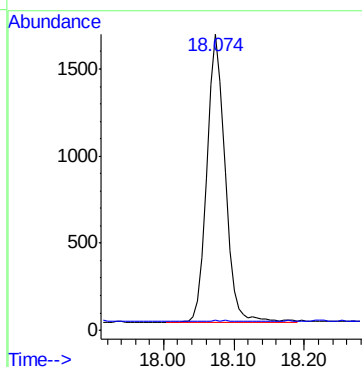
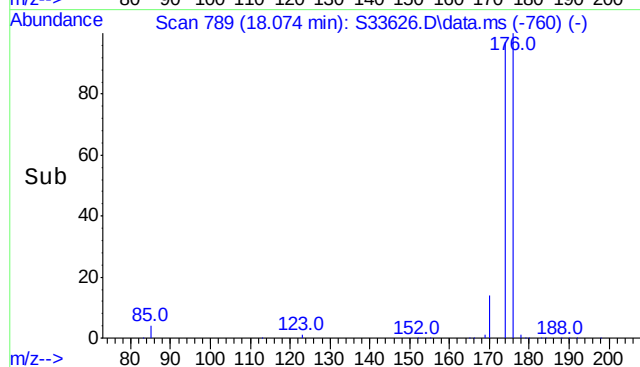
Tgt Ion:142 Resp: 127
Ion Ratio Lower Upper
142 100
141 0.0 71.0 106.6#





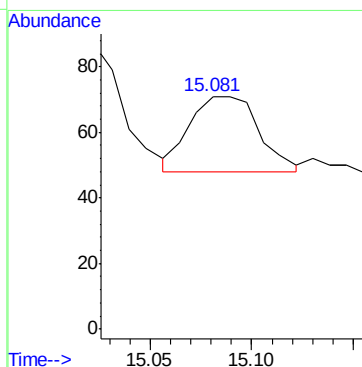
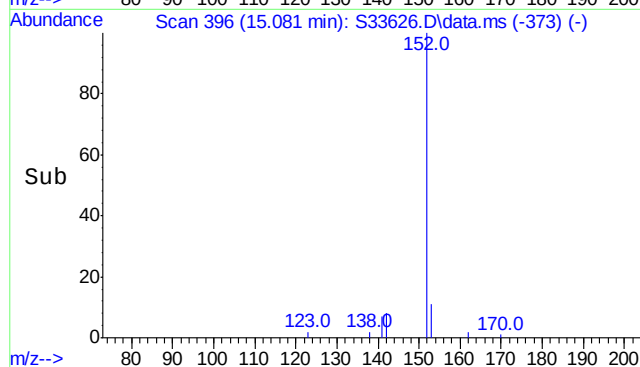
#6
C3-Naphthalenes (Fd10)
Concen: 0.922 µg/mL
RT: 18.074 min Scan# 789
Delta R.T. -0.013 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

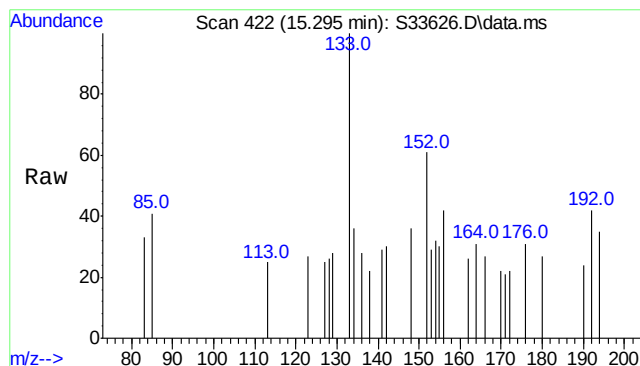
Tgt Ion:170 Resp: 2881
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0



#9
2-Methylnaphthalene
Concen: 0.017 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

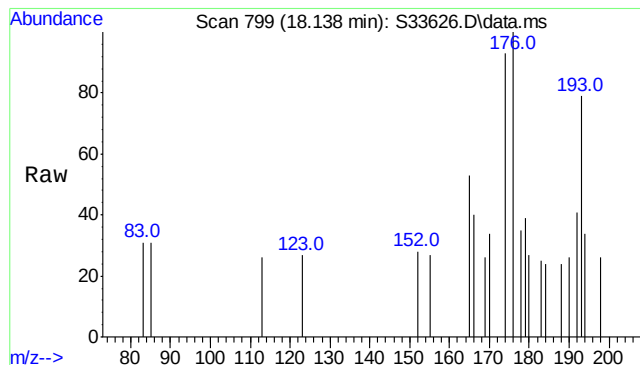
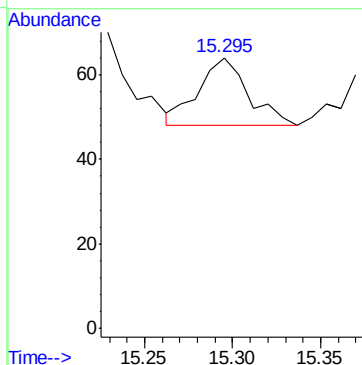
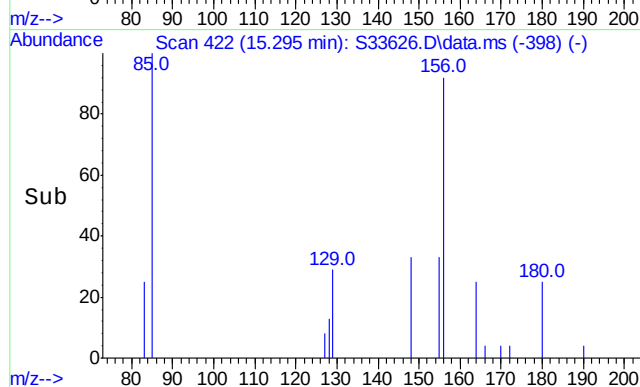
Tgt Ion:142 Resp: 54





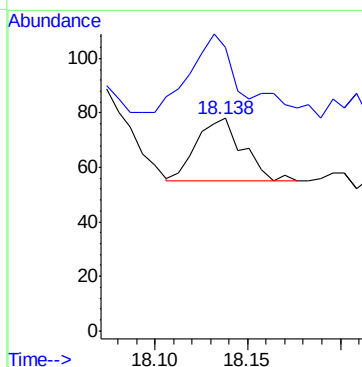
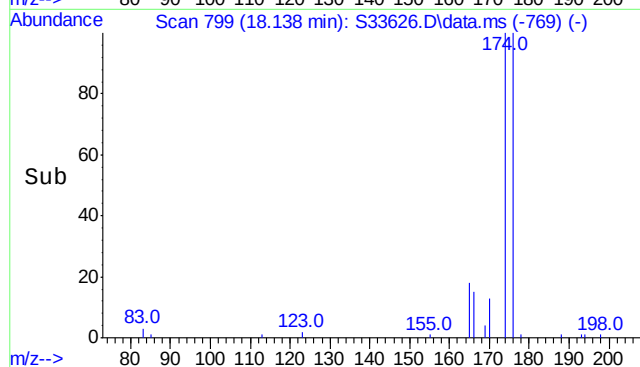
#11
1-Methylnaphthalene
Concen: 0.013 ng/mL
RT: 15.295 min Scan# 422
Delta R.T. 0.000 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

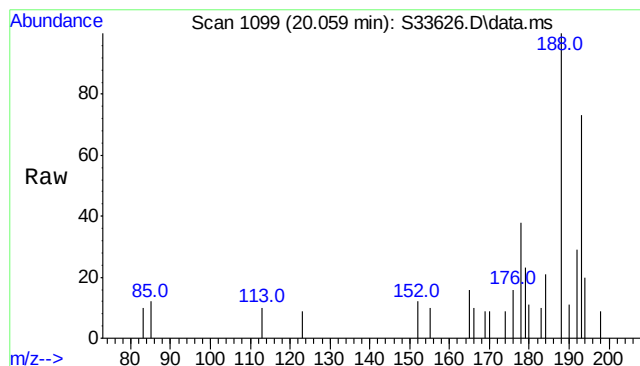
Tgt Ion:142 Resp: 31



#16
Fluorene
Concen: 0.007 ng/mL
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

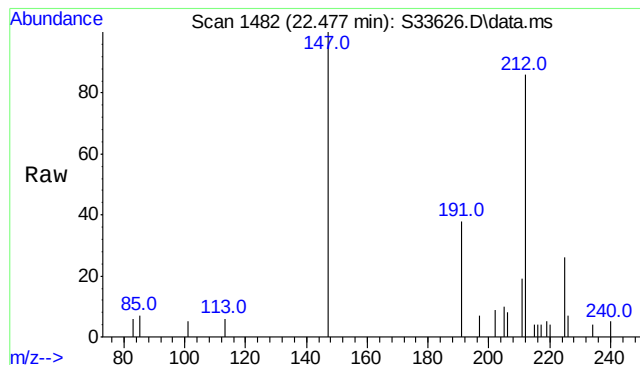
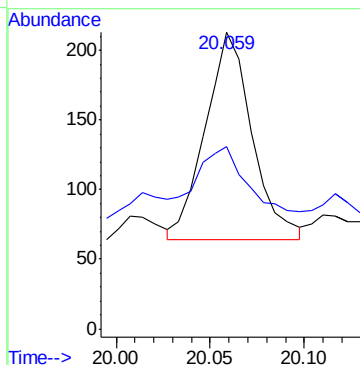
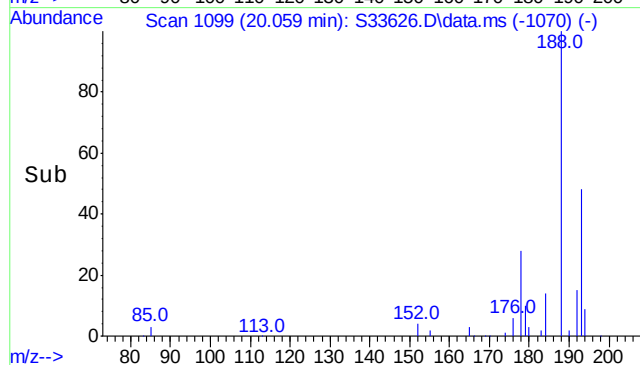
Tgt Ion:166 Resp: 40
Ion Ratio Lower Upper
166 100
165 157.5 76.4 114.6#





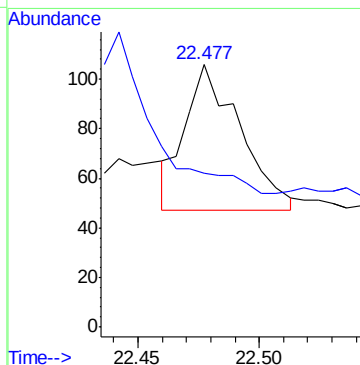
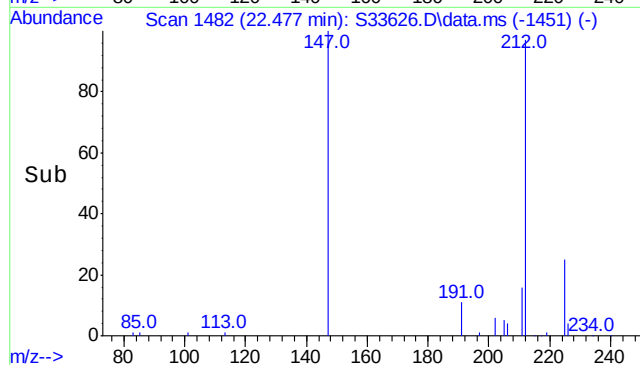
#21
Phenanthrene
Concen: 0.017 ng/mL m
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

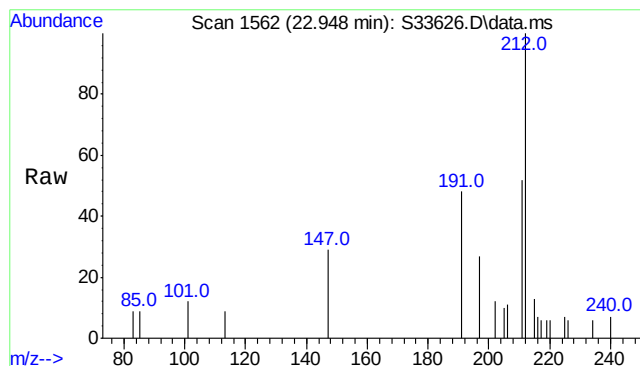
Tgt Ion:178 Resp: 258
Ion Ratio Lower Upper
178 100
179 0.0 12.4 18.6#



#29
Fluoranthene
Concen: 0.003 ng/mL m
RT: 22.477 min Scan# 1482
Delta R.T. -0.018 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

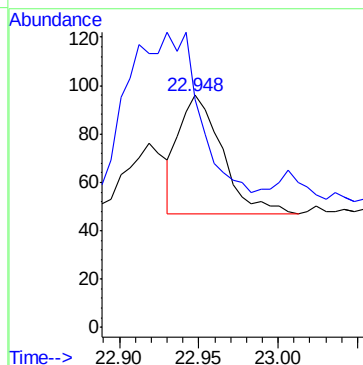
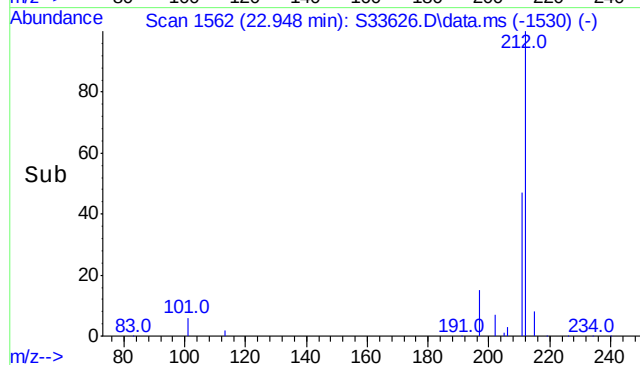
Tgt Ion:202 Resp: 93
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





#31
Pyrene
Concen: 0.003 ng/mL
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33626.D
Acq: 20 Sep 2013 10:38 pm

Tgt Ion	Ratio	Lower	Upper
202	100		
101	0.0	16.6	24.8#



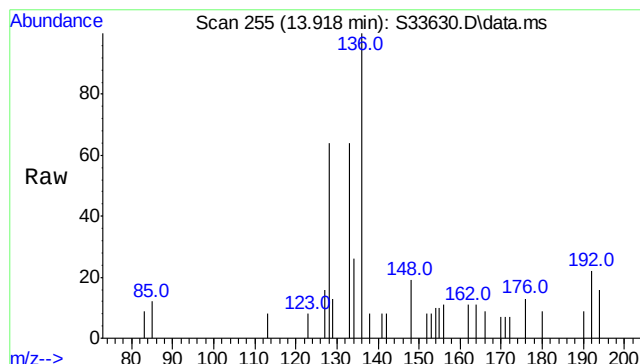
Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33630.D
 Acq On : 21 Sep 2013 1:51 am
 Operator : RUBENP
 Sample : ms29817-mb36
 Misc : ms29817,mss1493,,,,
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: Oct 24 17:42:09 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

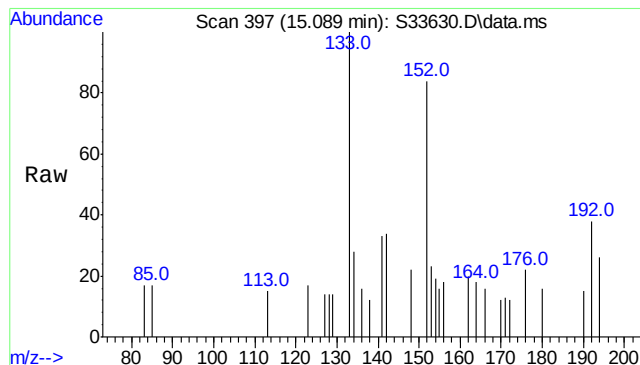
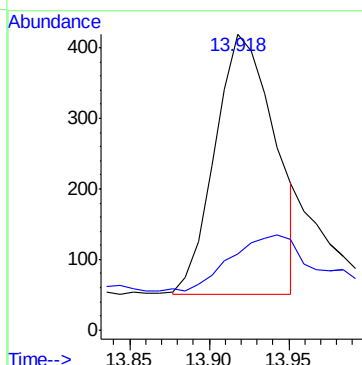
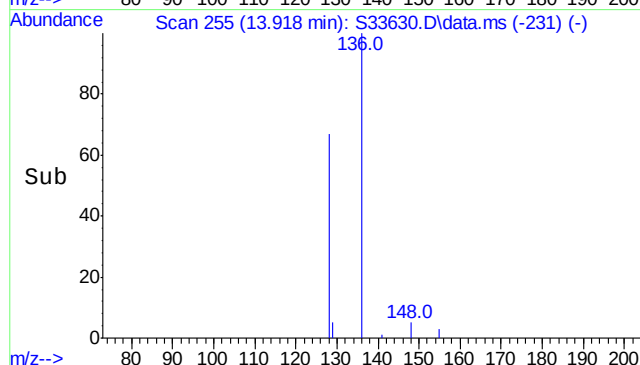
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	68651	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	47744	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	33532	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	23240	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	22610	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	59975	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	48985	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	33113	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	28305	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	8321	0.50	ng/mL	-0.01
37) Chrysene-d12	25.418	240	13545	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.879	264	8400	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	8609	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	3685	0.33	ng/mL	-0.02
50) Perylene-d12	29.010	264	3575	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.918	128	960m	0.406	ng/mL	Qvalue
3) C1-Naphthalenes	15.089	142	165m	0.070	ng/mL	
6) C3-Naphthalenes (Fd10)	18.074	170	3023	0.954	µg/mL#	100
9) 2-Methylnaphthalene	15.089	142	169	0.049	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	92	0.035	ng/mL	100
14) Acenaphthene	17.147	154	69	0.020	ng/mL	95
16) Fluorene	18.132	166	89	0.014	ng/mL	84
21) Phenanthrene	20.059	178	611m	0.040	ng/mL	
27) Anthracene	20.149	178	92m	0.007	ng/mL	
29) Fluoranthene	22.477	202	235m	0.009	ng/mL	
31) Pyrene	22.948	202	173m	0.007	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



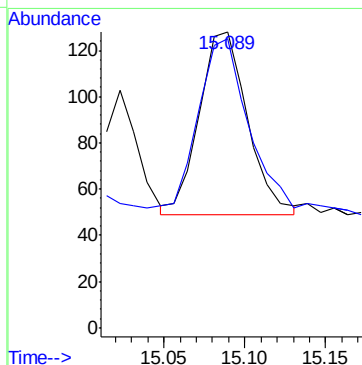
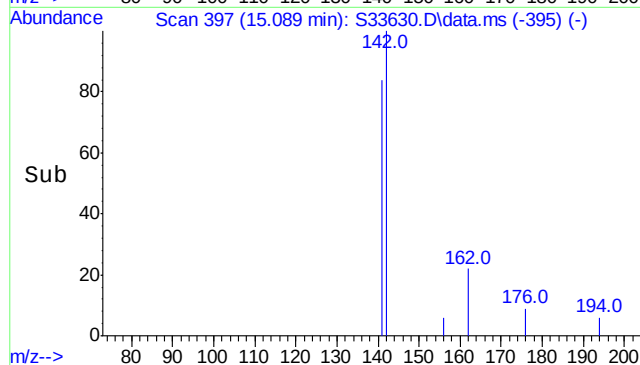
#2
Naphthalene
Concen: 0.406 ng/mL m
RT: 13.918 min Scan# 255
Delta R.T. 0.000 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

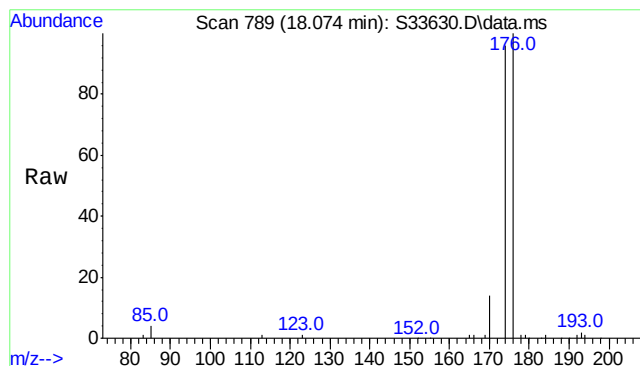
Tgt Ion:128 Resp: 960
Ion Ratio Lower Upper
128 100
127 0.0 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.070 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. -0.033 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

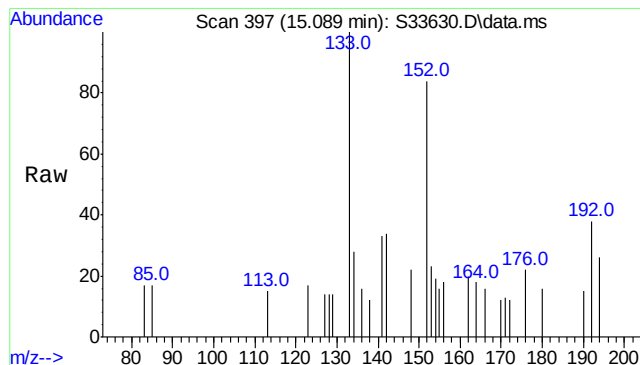
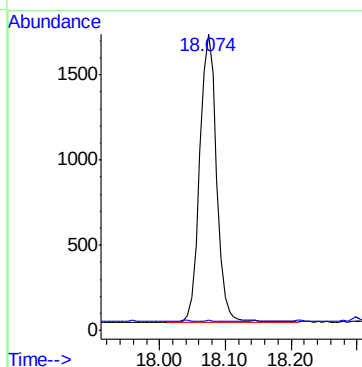
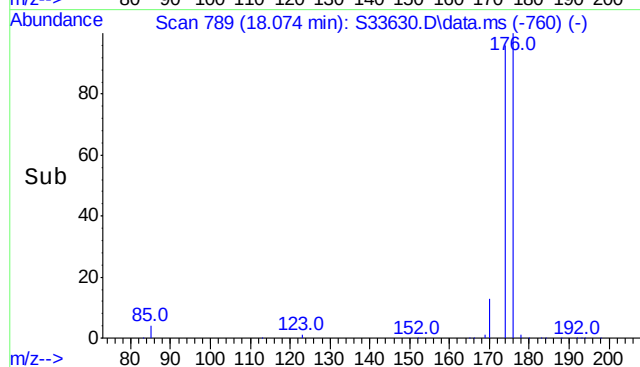
Tgt Ion:142 Resp: 165
Ion Ratio Lower Upper
142 100
141 0.0 71.0 106.6#





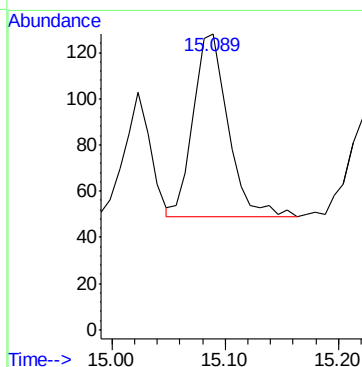
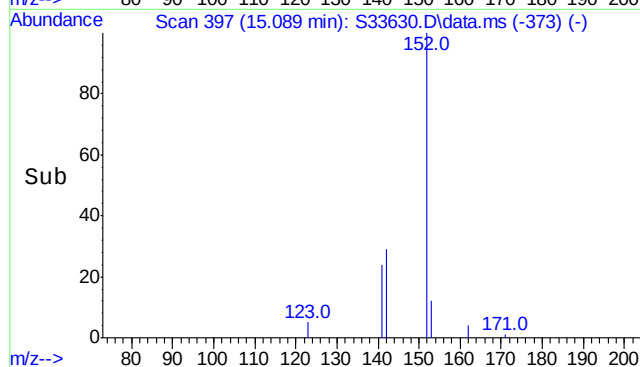
#6
C3-Naphthalenes (Fd10)
Concen: 0.954 µg/mL
RT: 18.074 min Scan# 789
Delta R.T. -0.013 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

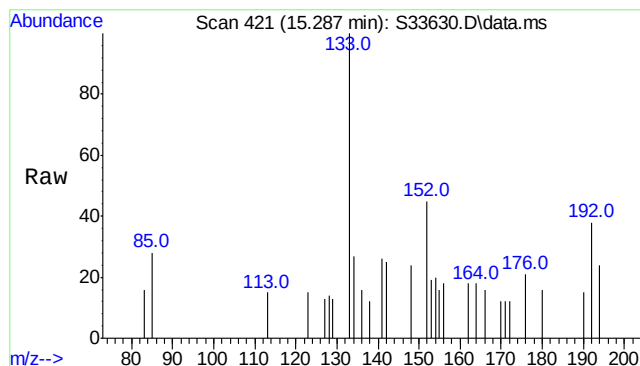
Tgt Ion:170 Resp: 3023
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0



#9
2-Methylnaphthalene
Concen: 0.049 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

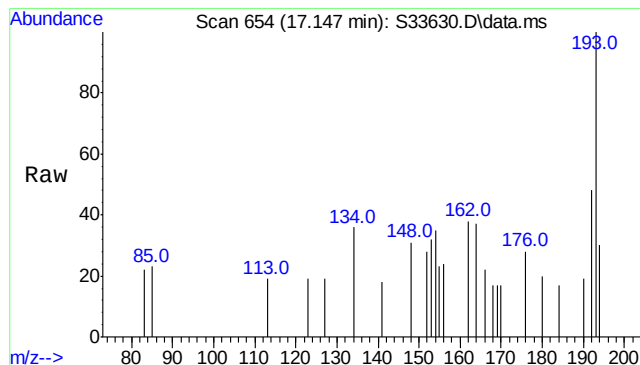
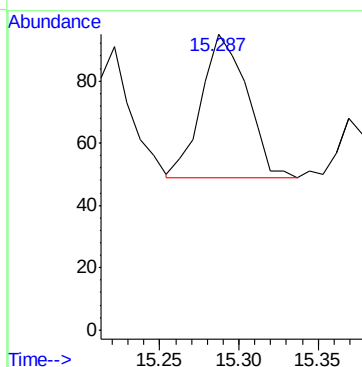
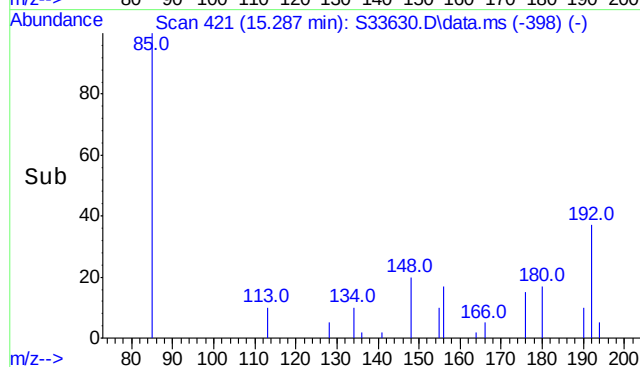
Tgt Ion:142 Resp: 169





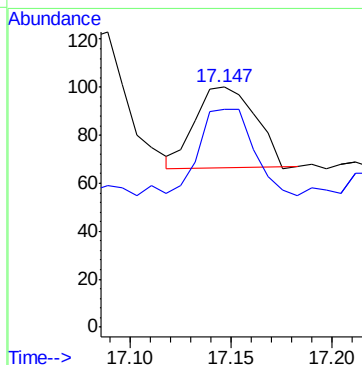
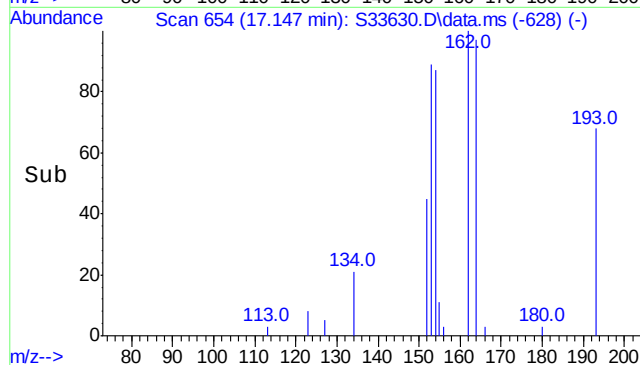
#11
1-Methylnaphthalene
Concen: 0.035 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

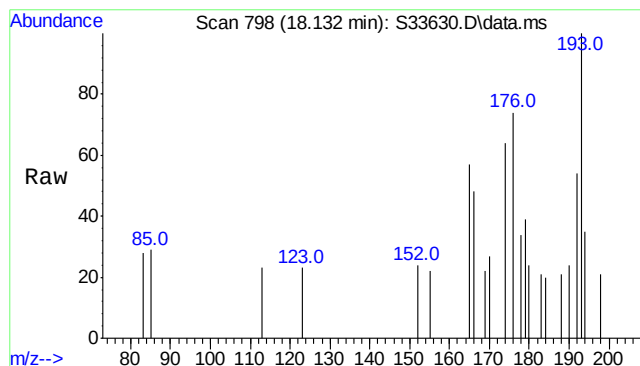
Tgt Ion:142 Resp: 92



#14
Acenaphthene
Concen: 0.020 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

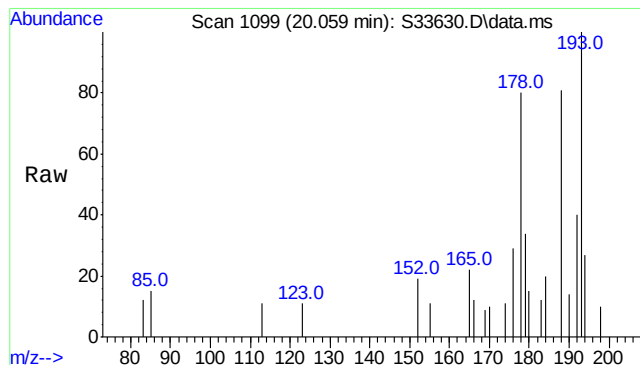
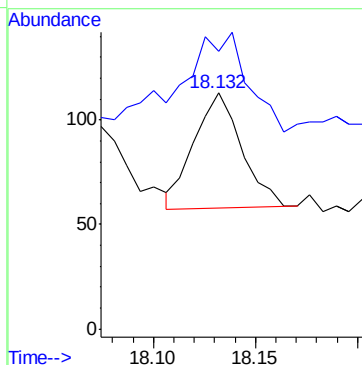
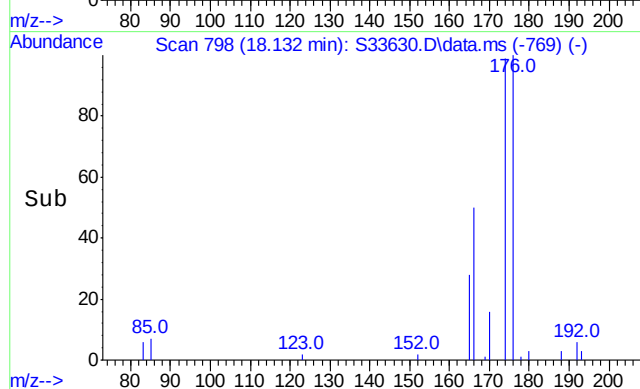
Tgt Ion:154 Resp: 69
Ion Ratio Lower Upper
154 100
153 102.9 86.6 129.8





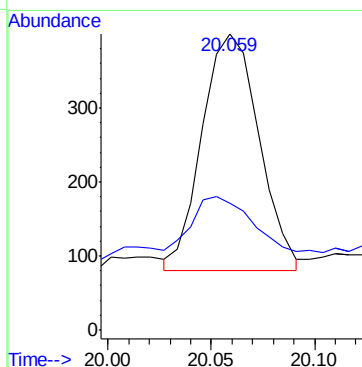
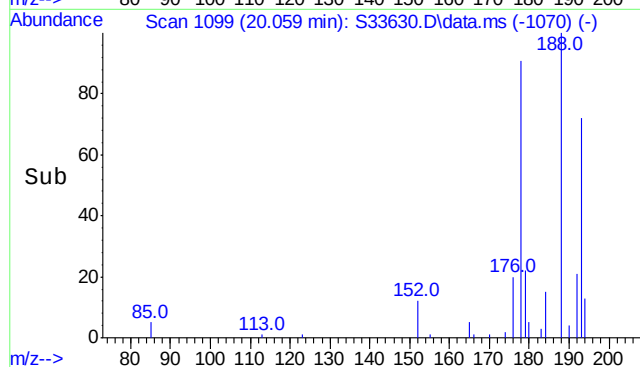
#16
Fluorene
Concen: 0.014 ng/mL
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

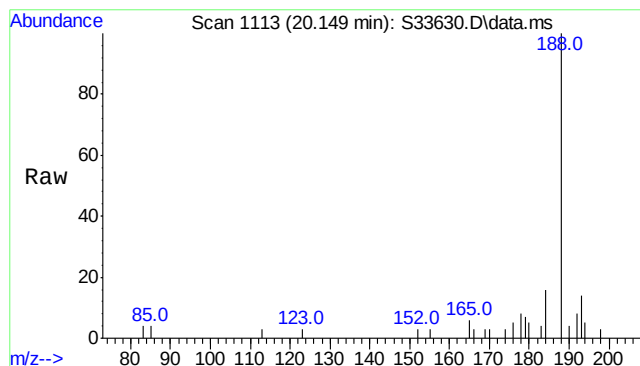
Tgt Ion:166 Resp: 89
Ion Ratio Lower Upper
166 100
165 111.2 76.4 114.6



#21
Phenanthrene
Concen: 0.040 ng/mL m
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

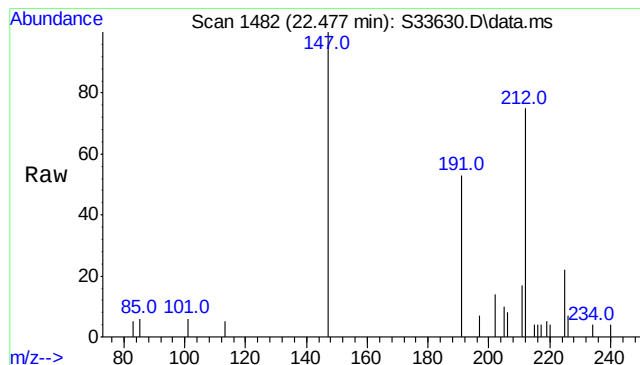
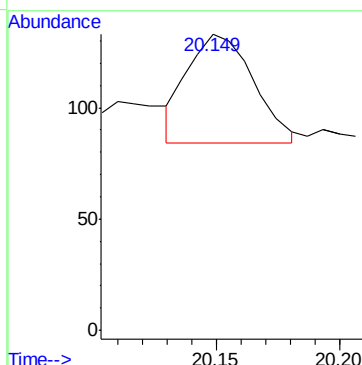
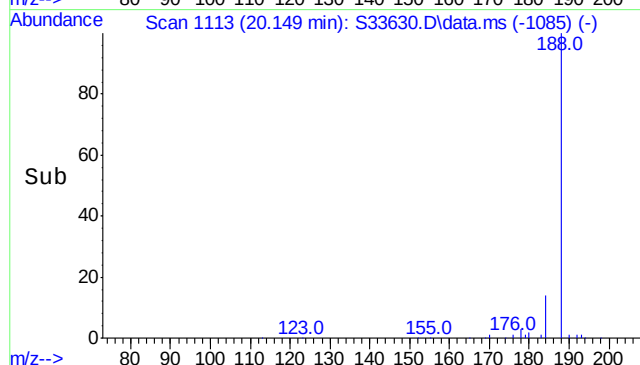
Tgt Ion:178 Resp: 611
Ion Ratio Lower Upper
178 100
179 30.6 12.4 18.6#





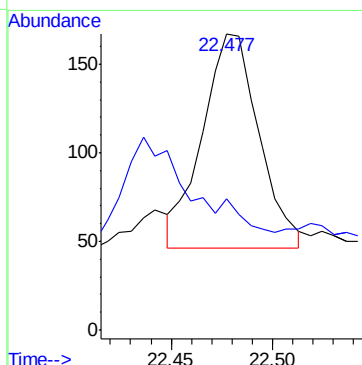
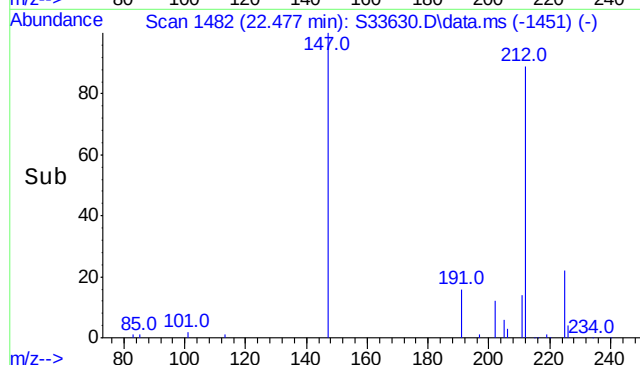
#27
Anthracene
Concen: 0.007 ng/mL m
RT: 20.149 min Scan# 1113
Delta R.T. -0.019 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

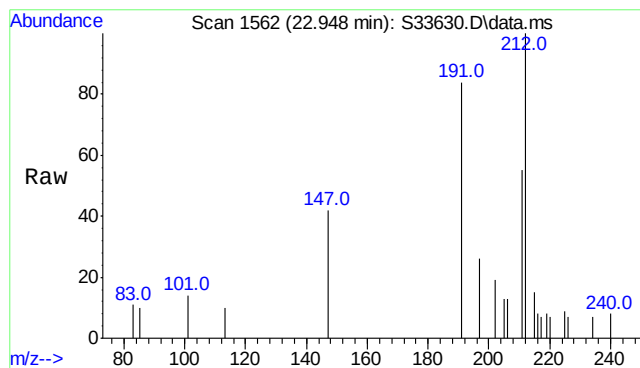
Tgt Ion:178 Resp: 92



#29
Fluoranthene
Concen: 0.009 ng/mL m
RT: 22.477 min Scan# 1482
Delta R.T. -0.018 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

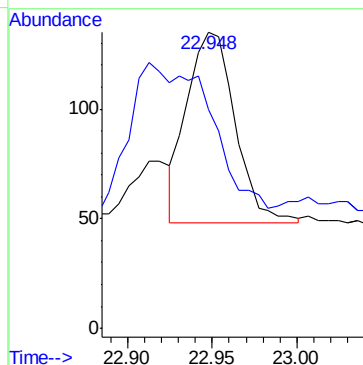
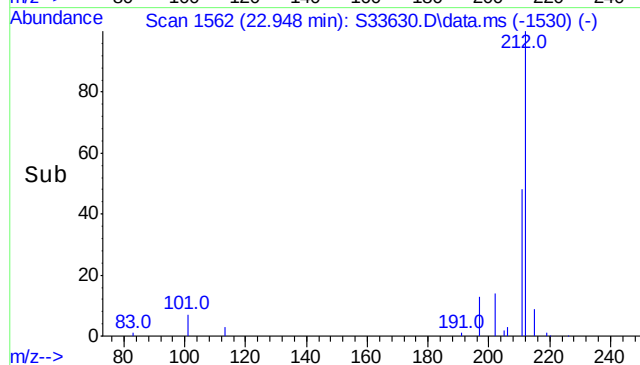
Tgt Ion:202 Resp: 235
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





#31
Pyrene
Concen: 0.007 ng/mL m
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33630.D
Acq: 21 Sep 2013 1:51 am

Tgt Ion: 202 Resp: 173
Ion Ratio Lower Upper
202 100
101 0.0 16.6 24.8#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
 Data File : S33571.D
 Acq On : 14 Sep 2013 12:13 am
 Operator : RUBENP
 Sample : mc24019-3dup
 Misc : ms29817,mss1482,1.5,,,1.5,1
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 16 12:24:38 2013
 Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:36:05 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	34594	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	22001	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	17808	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	13492	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	10819	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.021	188	30309	5.00	ng/mL	0.00
26) Anthracene-d10	20.117	188	33560	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	21760	1.67	ng/mL	0.00
30) Pyrene-d10	22.919	212	20320	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	9108	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	11254	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.891	264	8812	0.33	ng/mL	0.00
45) Benzo(k)fluoranthene-d12	27.958	264	9127	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.796	264	5758	0.33	ng/mL	0.00
50) Perylene-d12	29.016	264	4657	0.33	ng/mL	-0.01

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.910	128	106624	91.218	ng/mL	100
3) C1-Naphthalenes	15.081	142	446980m	382.396	ng/mL	
4) C2-Naphthalenes	16.401	156	463821m	200.876	ng/mL	
5) C3-Naphthalenes	17.686	170	202146m	128.949	ng/mL	
6) C3-Naphthalenes (Fd10)	18.062	170	5452	3.478	µg/mL#	100
7) C4-Naphthalenes	18.868	184	39100m	50.968	ng/mL	
9) 2-Methylnaphthalene	15.081	142	257842	162.517	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	188569	138.522	ng/mL	100
13) Acenaphthylene	16.801	152	13039	7.512	ng/mL#	100
14) Acenaphthene	17.154	154	233774	118.332	ng/mL	98
16) Fluorene	18.132	166	251479m	86.289	ng/mL	
17) C1-Fluorenes	19.227	180	112906m	45.650	ng/mL	
18) C2-Fluorenes	20.251	194	39814m	21.084	ng/mL	
19) C3-Fluorenes	21.321	208	6105m	3.467	ng/mL	
21) Phenanthrene	20.065	178	528929	68.324	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.026	192	176506m	20.634	ng/mL	
23) C2-Phenanthrenes/anthr...	22.166	206	37049m	11.645	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	6078m	4.554	ng/mL	
25) C4-Phenanthrenes/anthr...	23.530	234	1054m	1.747	ng/mL	
27) Anthracene	20.155	178	126239	14.352	ng/mL	100
29) Fluoranthene	22.483	202	115186	6.359	ng/mL#	81
31) Pyrene	22.954	202	88718	4.491	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.618	216	34028m	2.670	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.448	230	5314m	0.269	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.425	244	903m	0.046	ng/mL	
36) Benz(a)anthracene	25.385	228	6482	0.257	ng/mL	96
38) Chrysene	25.479	228	5835	0.217	ng/mL	99
39) C1-Benz(a)anthracenes/...	26.307	242	1800m	0.114	ng/mL	
44) Benzo(b)fluoranthene	27.952	252	472	0.013	ng/mL	97
46) Benzo(k)fluoranthene	27.997	252	640m	0.020	ng/mL	
48) Benzo(e)pyrene	28.723	252	369	0.012	ng/mL#	46
49) Benzo(a)pyrene	28.864	252	285	0.014	ng/mL#	43

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
Data File : S33571.D
Acq On : 14 Sep 2013 12:13 am
Operator : RUBENP
Sample : mc24019-3dup
Misc : ms29817,mss1482,1.5,,,1.5,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 16 12:24:38 2013
Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Fri Oct 11 11:36:05 2013
Response via : Initial Calibration

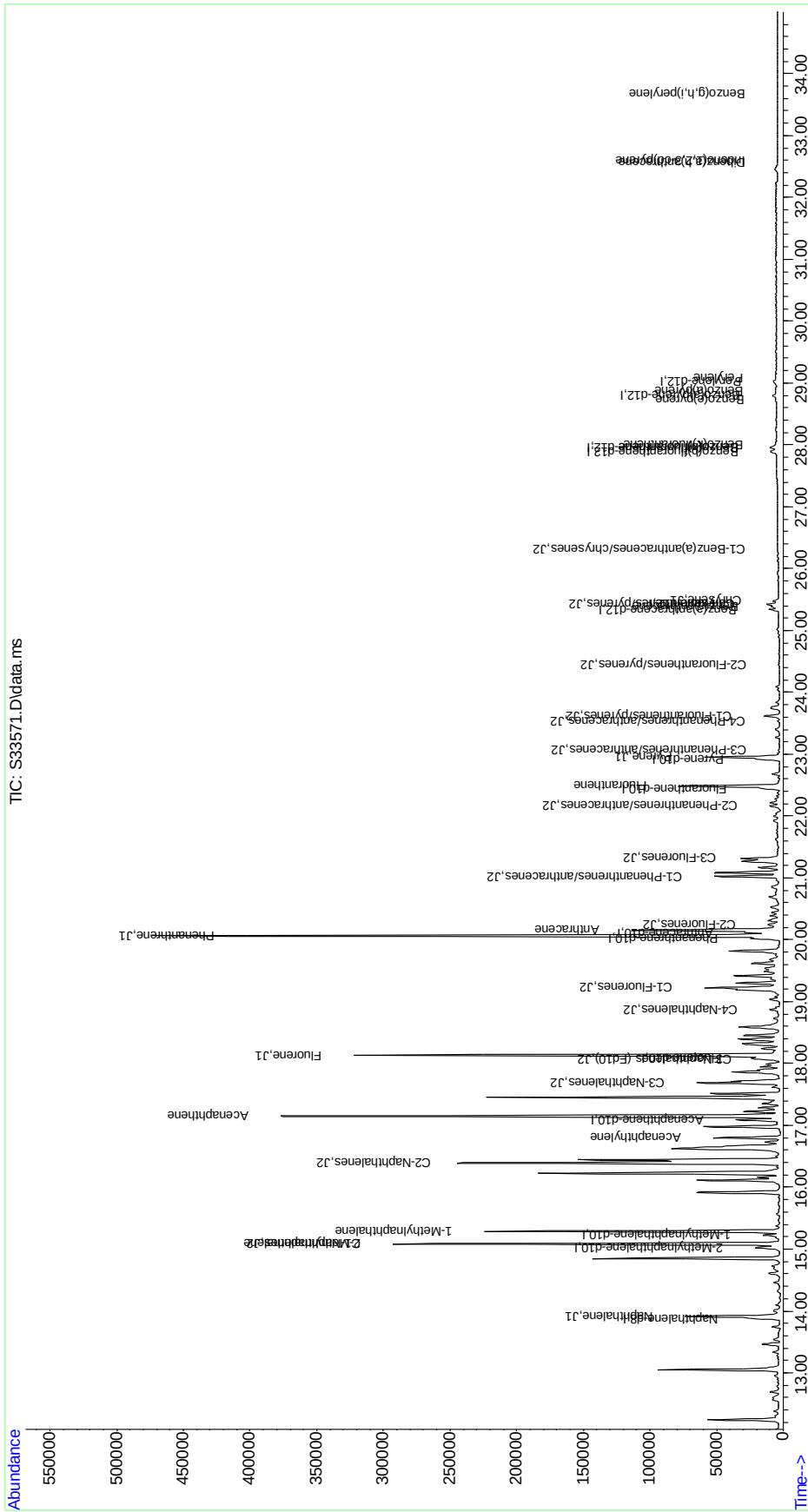
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) Perylene	29.083	252	215	0.011	ng/mL#	41
52) Indeno(1,2,3-cd)pyrene	32.599	276	40	0.001	ng/mL#	48
53) Dibenz(a,h)anthracene	32.572	278	34m	0.001	ng/mL	
54) Benzo(g,h,i)perylene	33.661	276	47m	0.002	ng/mL	

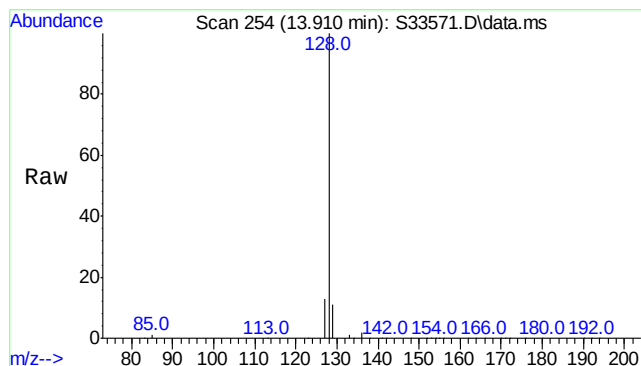
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130913\
Data File : S33571.D
Acq On : 14 Sep 2013 12:13 am
Operator : RUBENP
Sample : mc24019-3dup
Misc : ms29817,mss1482,1.5,,,1.5,1
ALS Vial : 20 Sample Multiplier: 1

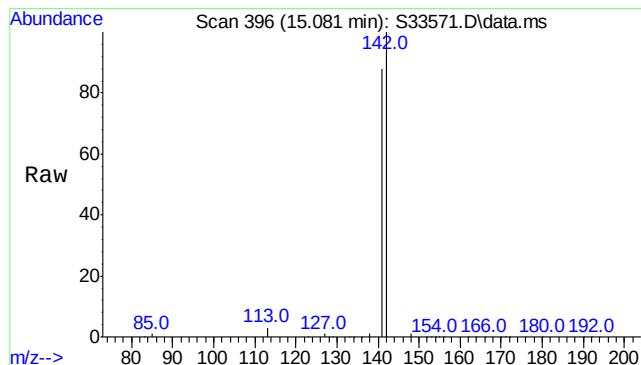
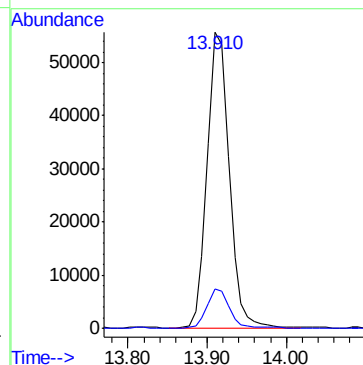
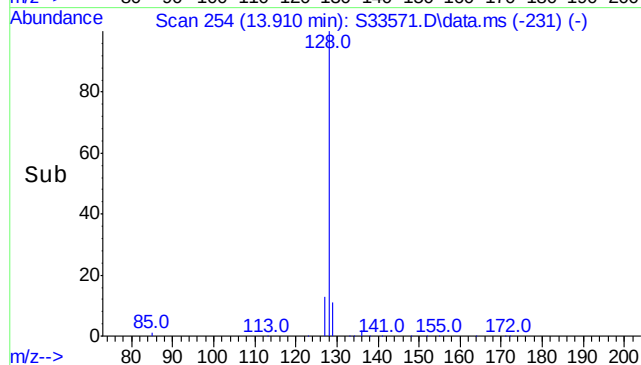
Quant Time: Oct 16 12:24:38 2013
Quant Method : S:\methods\S130913-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Fri Oct 11 11:36:05 2013
Response via : Initial Calibration





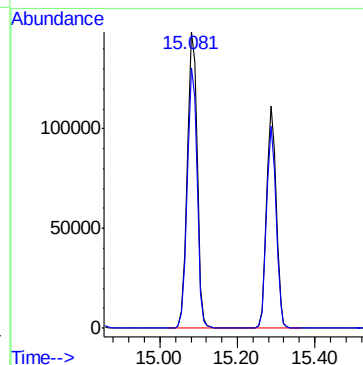
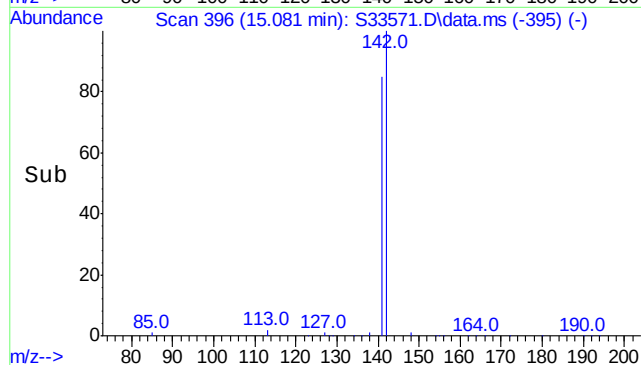
#2
Naphthalene
Concen: 91.218 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

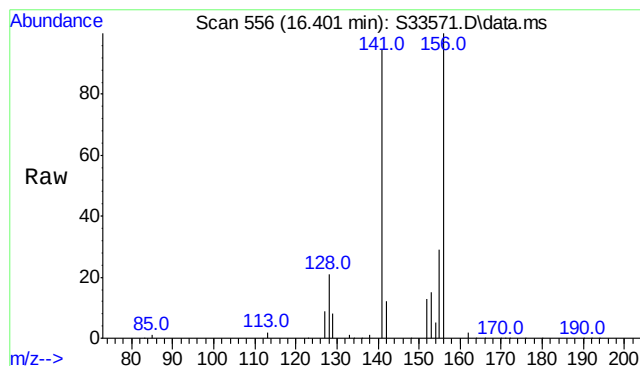
Tgt Ion:128 Resp: 106624
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



#3
C1-Naphthalenes
Concen: 382.396 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

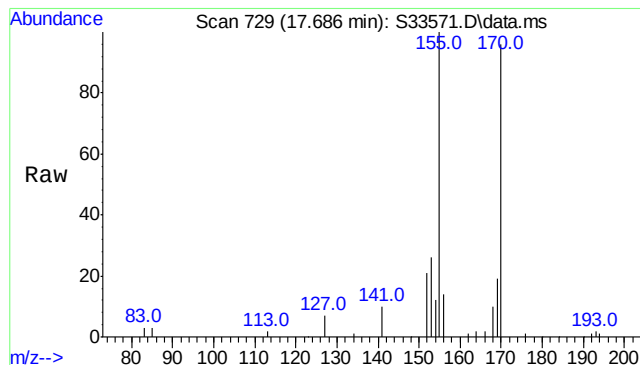
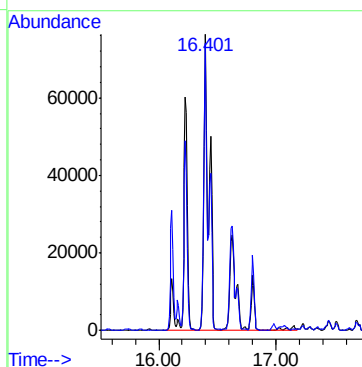
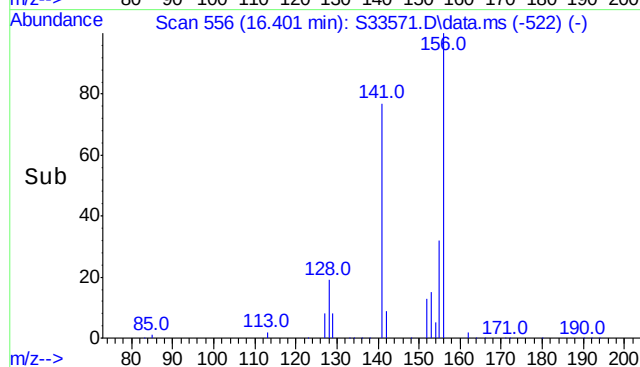
Tgt Ion:142 Resp: 446980
Ion Ratio Lower Upper
142 100
141 38.3 71.0 106.6#





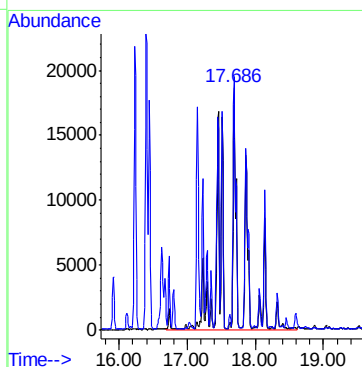
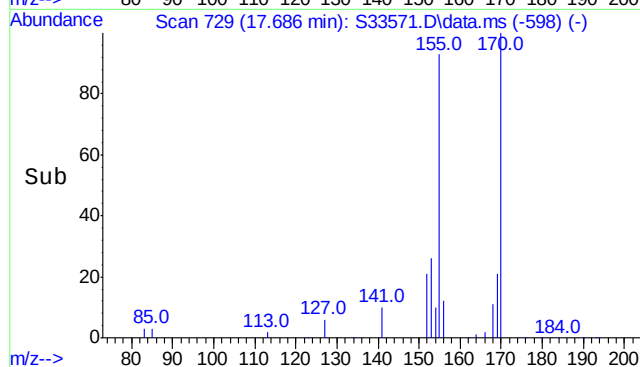
#4
C2-Naphthalenes
Concen: 200.876 ng/mL m
RT: 16.401 min Scan# 556
Delta R.T. -0.056 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

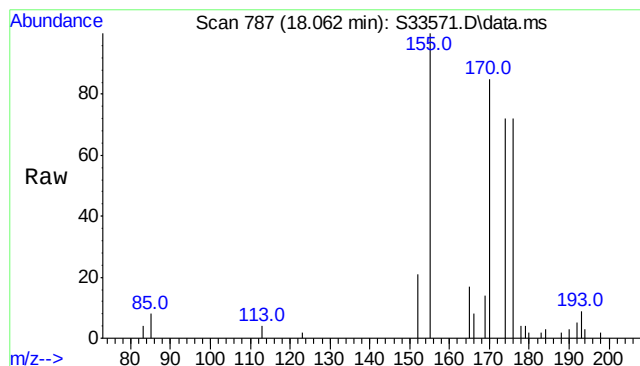
Tgt Ion:156 Resp: 463821
Ion Ratio Lower Upper
156 100
141 12.2 79.0 118.4#



#5
C3-Naphthalenes
Concen: 128.949 ng/mL m
RT: 17.686 min Scan# 729
Delta R.T. 0.027 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

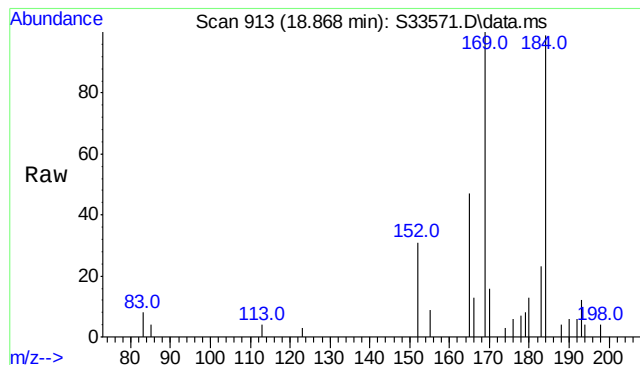
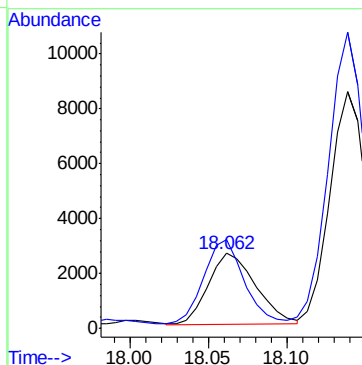
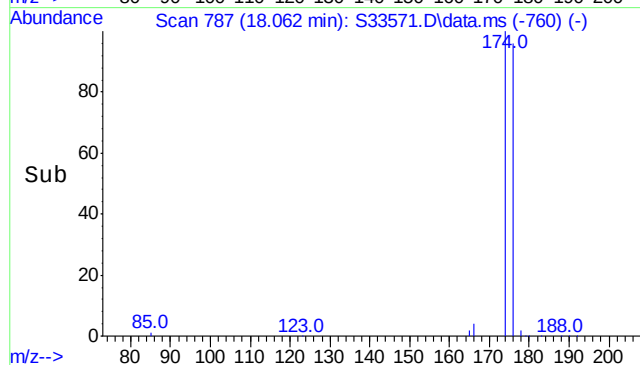
Tgt Ion:170 Resp: 202146
Ion Ratio Lower Upper
170 100
155 17.7 80.7 121.1#





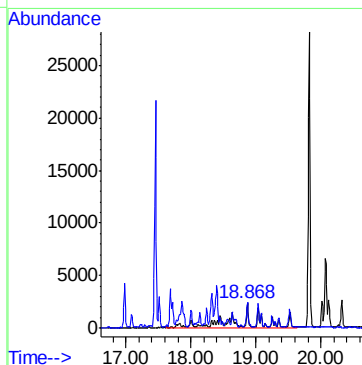
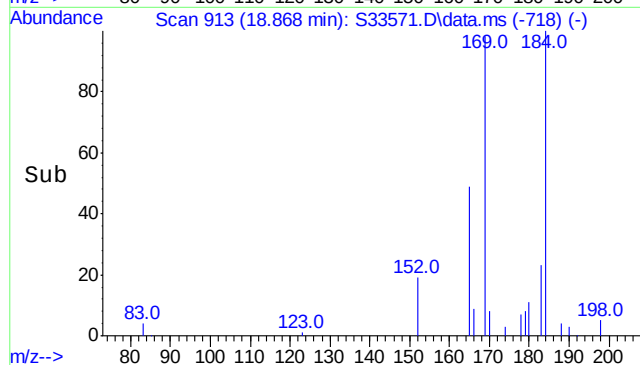
#6
C3-Naphthalenes (Fd10)
Concen: 3.478 µg/mL
RT: 18.062 min Scan# 787
Delta R.T. -0.025 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

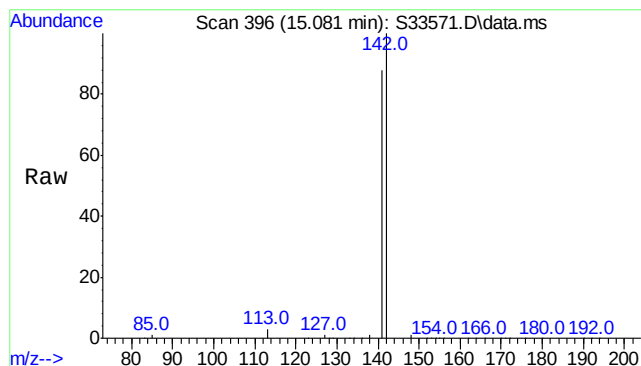
Tgt Ion:170 Resp: 5452
Ion Ratio Lower Upper
170 100
155 100.6 0.0 0.0#



#7
C4-Naphthalenes
Concen: 50.968 ng/mL m
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

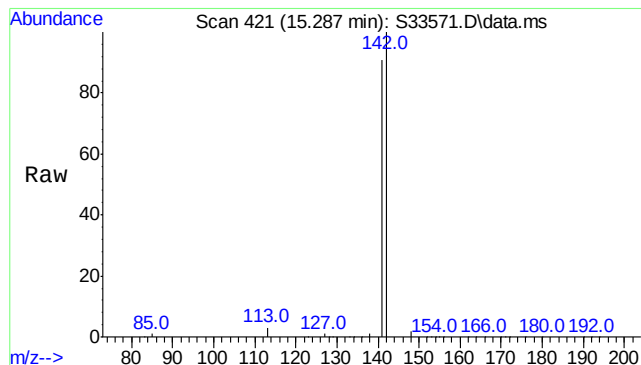
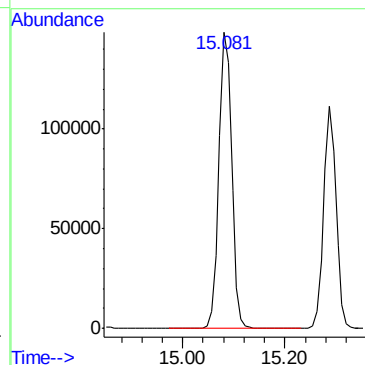
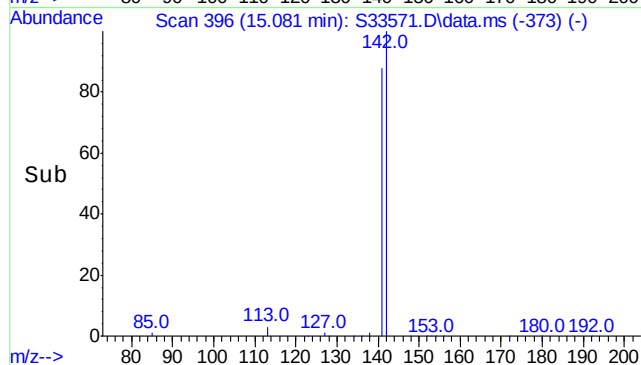
Tgt Ion:184 Resp: 39100
Ion Ratio Lower Upper
184 100
169 12.7 80.1 120.1#





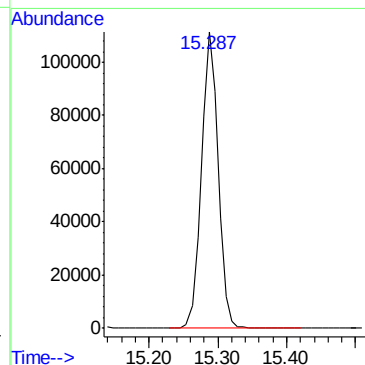
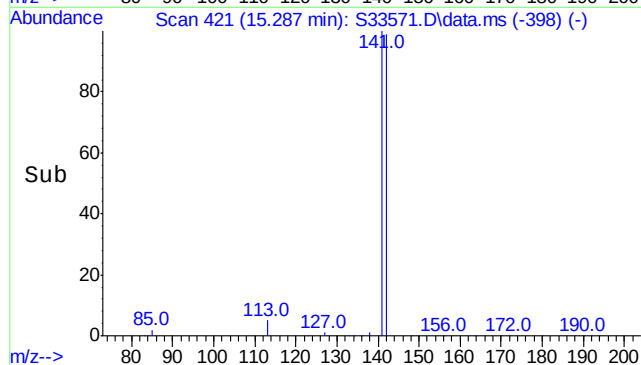
#9
2-Methylnaphthalene
Concen: 162.517 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

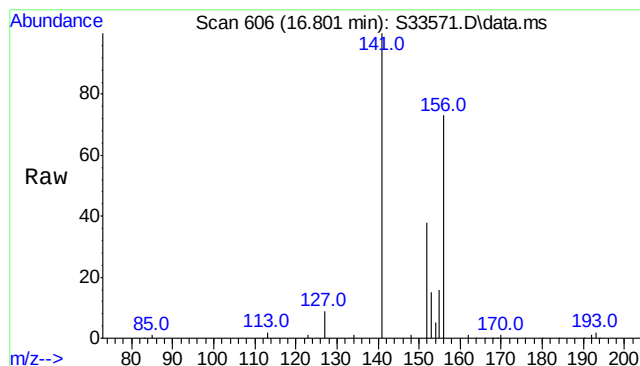
Tgt Ion:142 Resp: 257842



#11
1-Methylnaphthalene
Concen: 138.522 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

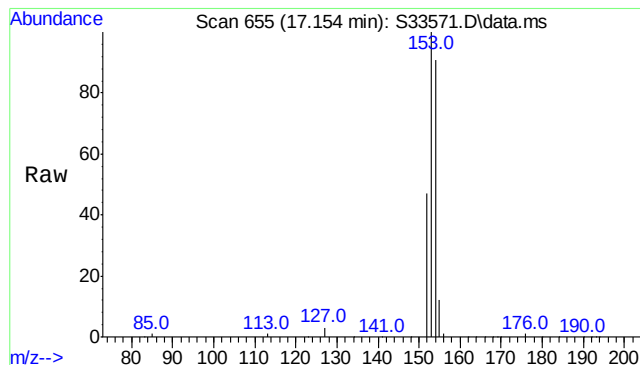
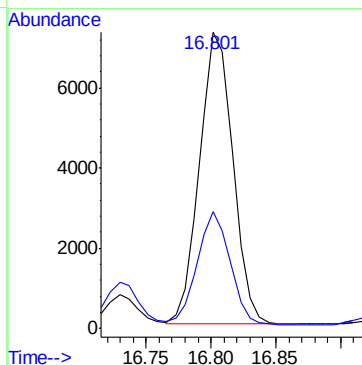
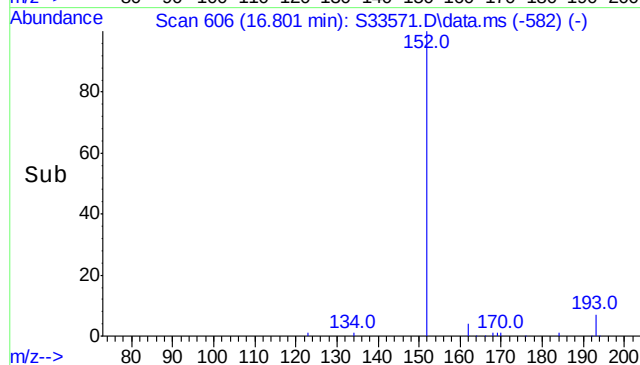
Tgt Ion:142 Resp: 188569





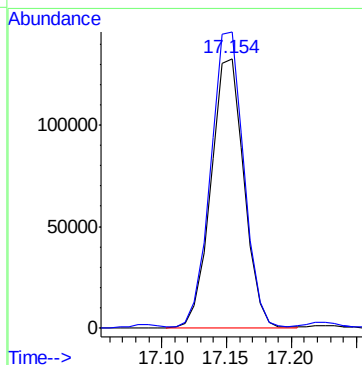
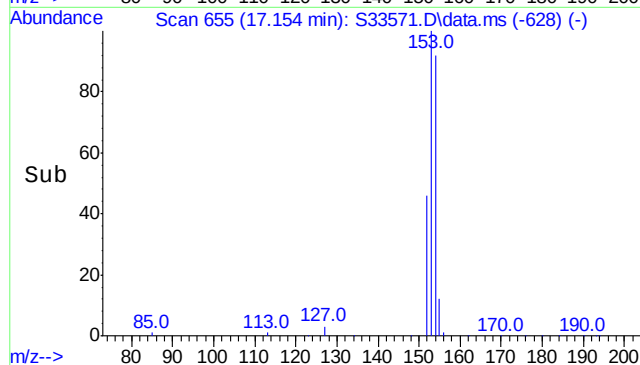
#13
Acenaphthylene
Concen: 7.512 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

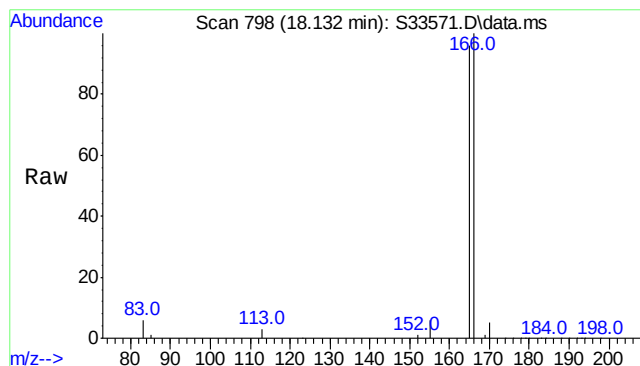
Tgt Ion	Ratio	Lower	Upper
152	100		
153	38.2	0.0	0.0#



#14
Acenaphthene
Concen: 118.332 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

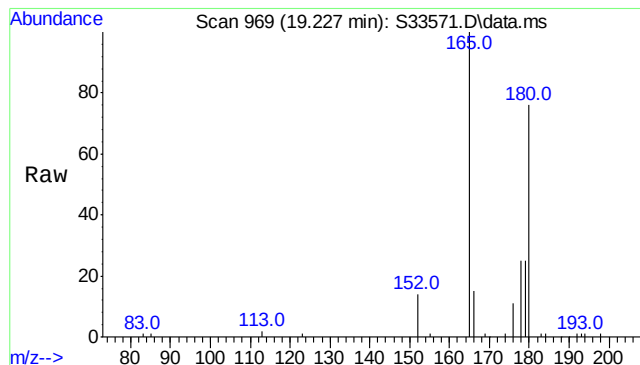
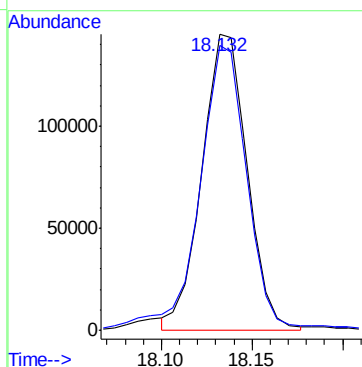
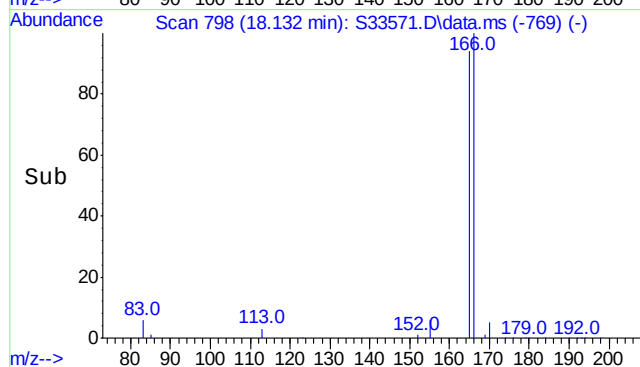
Tgt Ion	Ratio	Lower	Upper
154	100		
153	110.1	86.6	129.8





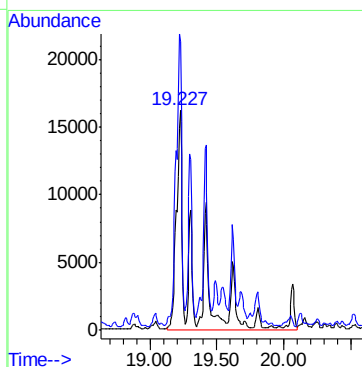
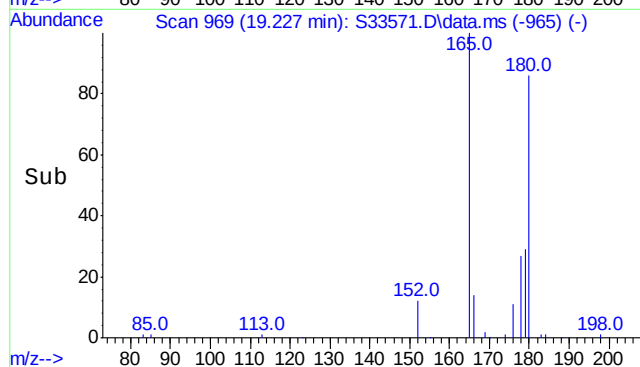
#16
Fluorene
Concen: 86.289 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

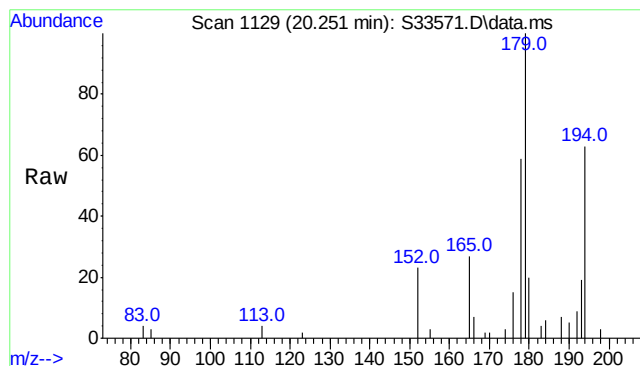
Tgt Ion:166 Resp: 251479
Ion Ratio Lower Upper
166 100
165 102.4 76.4 114.6



#17
C1-Fluorenes
Concen: 45.650 ng/mL m
RT: 19.227 min Scan# 969
Delta R.T. -0.085 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

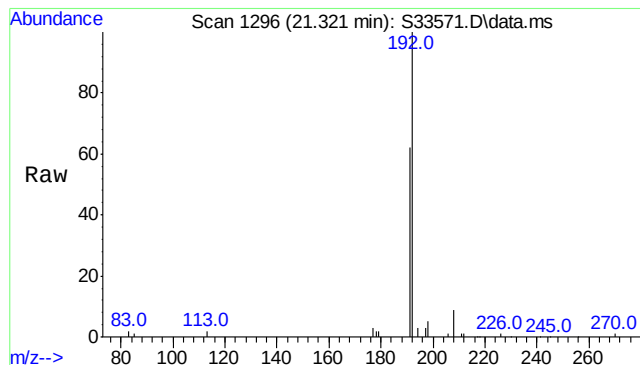
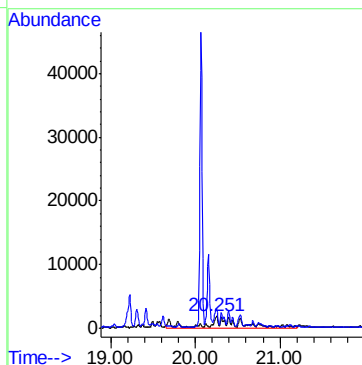
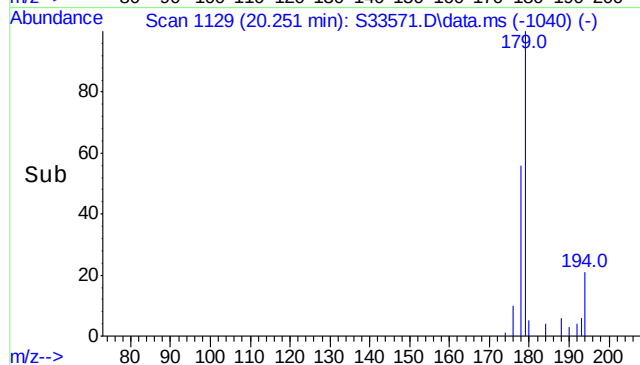
Tgt Ion:180 Resp: 112906
Ion Ratio Lower Upper
180 100
165 18.8 111.1 166.7#





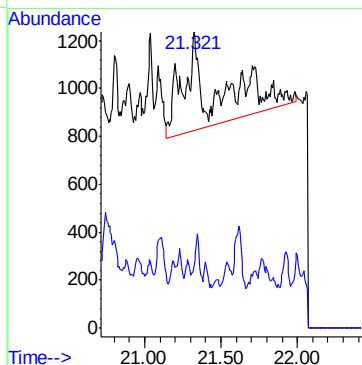
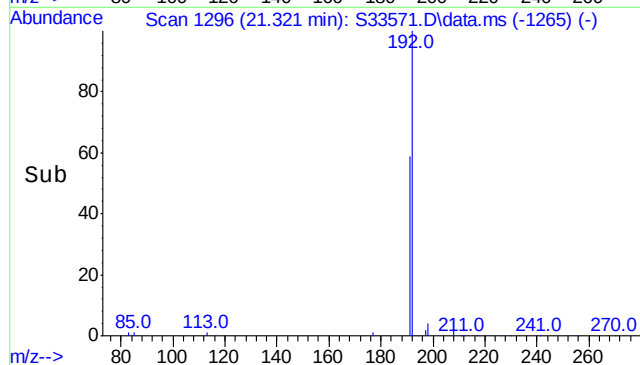
#18
C2-Fluorenes
Concen: 21.084 ng/mL m
RT: 20.251 min Scan# 1129
Delta R.T. -0.063 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

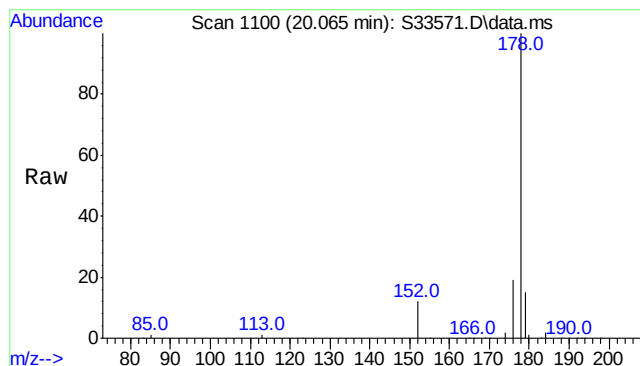
Tgt Ion:194 Resp: 39814
Ion Ratio Lower Upper
194 100
179 8.7 131.8 197.6#



#19
C3-Fluorenes
Concen: 3.467 ng/mL m
RT: 21.321 min Scan# 1296
Delta R.T. -0.031 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

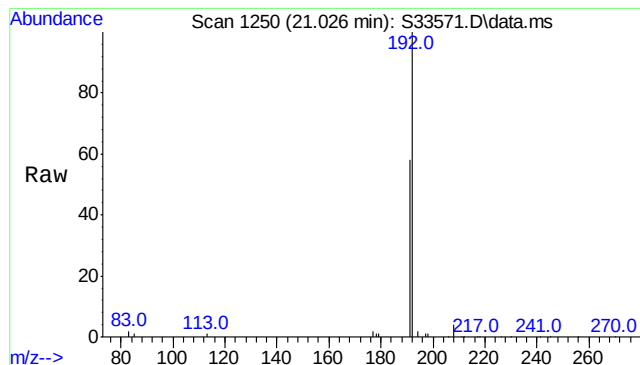
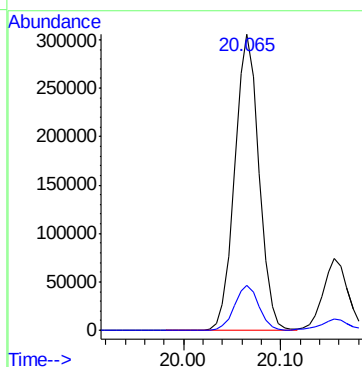
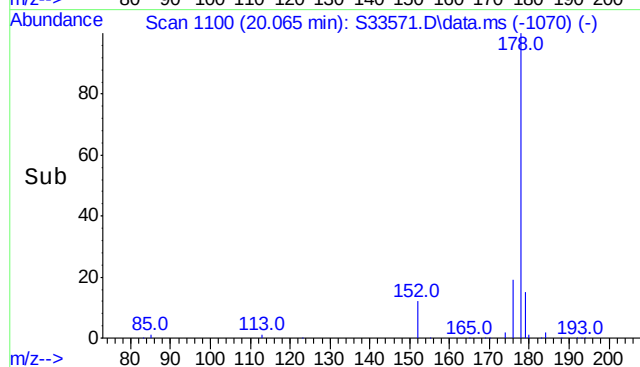
Tgt Ion:208 Resp: 6105
Ion Ratio Lower Upper
208 100
178 2.7 43.4 65.2#





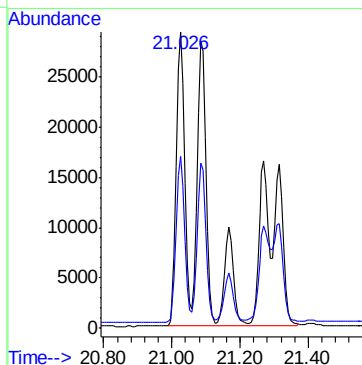
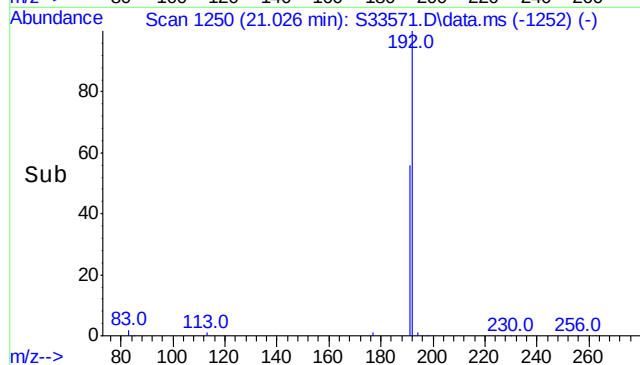
#21
Phenanthrene
Concen: 68.324 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

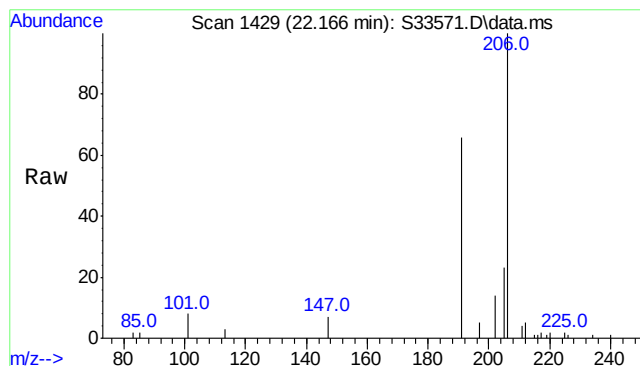
Tgt Ion:178 Resp: 528929
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6



#22
C1-Phenanthrenes/anthracenes
Concen: 20.634 ng/mL m
RT: 21.026 min Scan# 1250
Delta R.T. -0.127 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

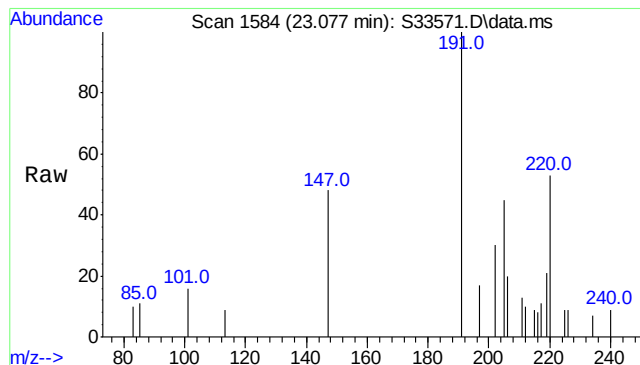
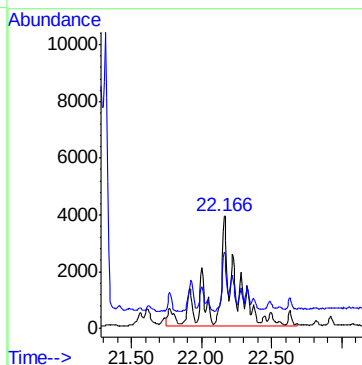
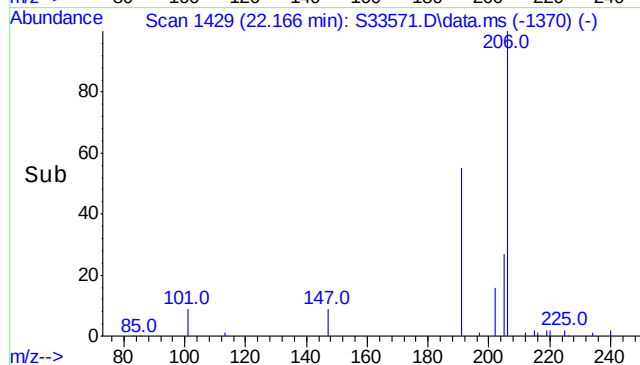
Tgt Ion:192 Resp: 176506
Ion Ratio Lower Upper
192 100
191 4.6 45.1 67.7#





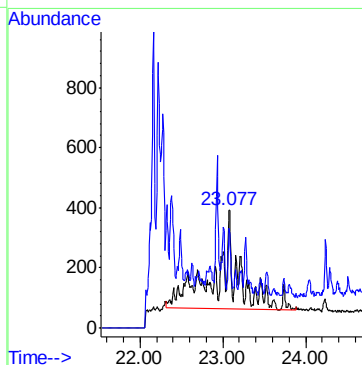
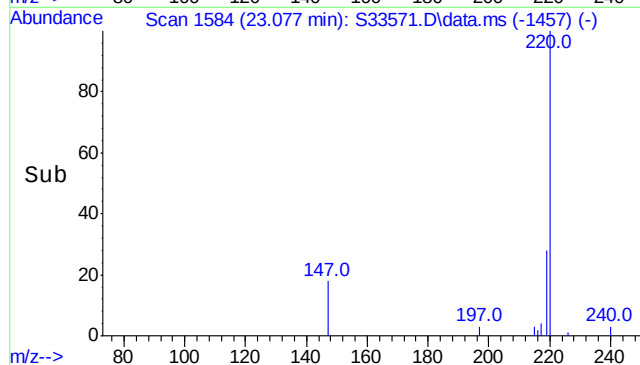
#23
C2-Phenanthrenes/anthracenes
Concen: 11.645 ng/mL m
RT: 22.166 min Scan# 1429
Delta R.T. -0.057 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

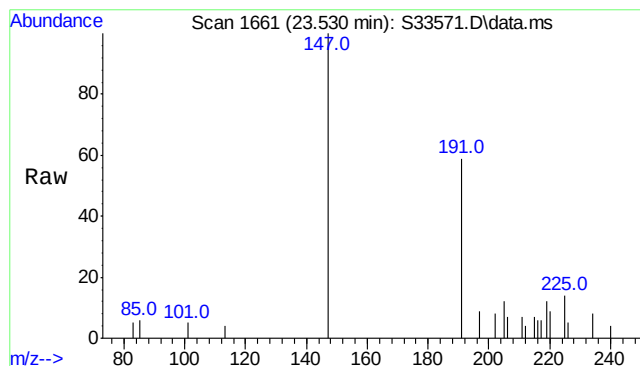
Tgt Ion:206 Resp: 37049
Ion Ratio Lower Upper
206 100
191 7.5 45.1 67.7#



#24
C3-Phenanthrenes/anthracenes
Concen: 4.554 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

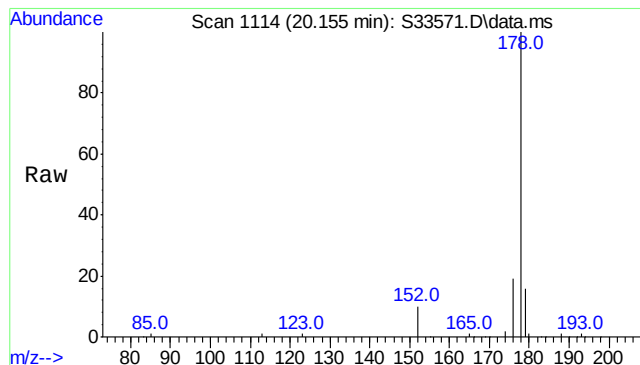
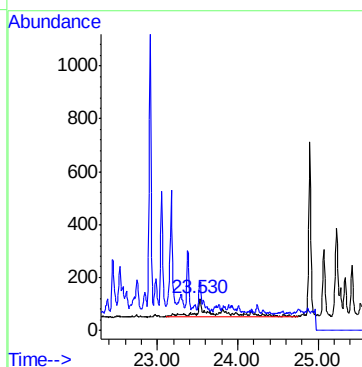
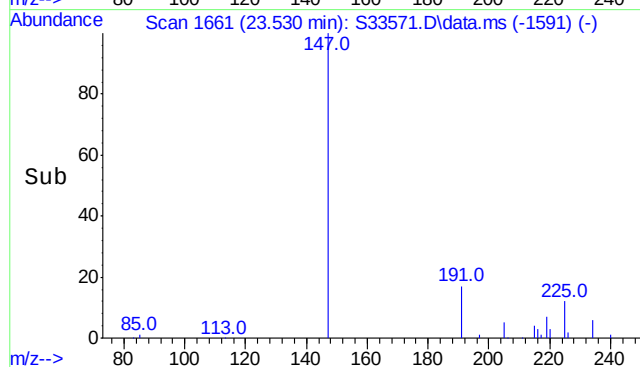
Tgt Ion:220 Resp: 6078
Ion Ratio Lower Upper
220 100
205 6.8 45.1 67.7#





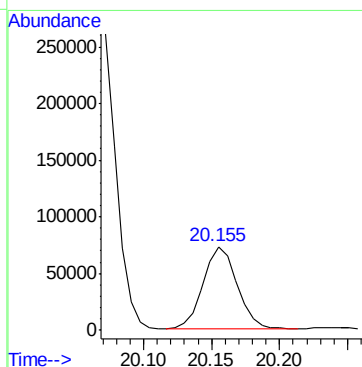
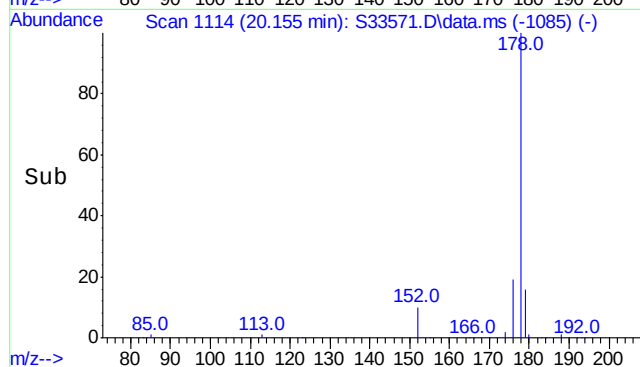
#25
C4-Phenanthrenes/anthracenes
Concen: 1.747 ng/mL m
RT: 23.530 min Scan# 1661
Delta R.T. -0.699 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

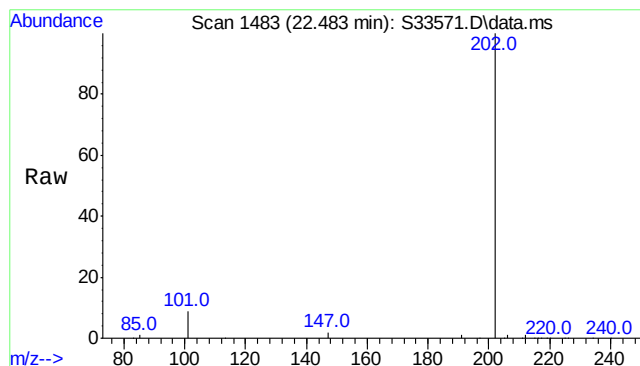
Tgt Ion:234 Resp: 1054
Ion Ratio Lower Upper
234 100
219 0.0 53.0 79.6#



#27
Anthracene
Concen: 14.352 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

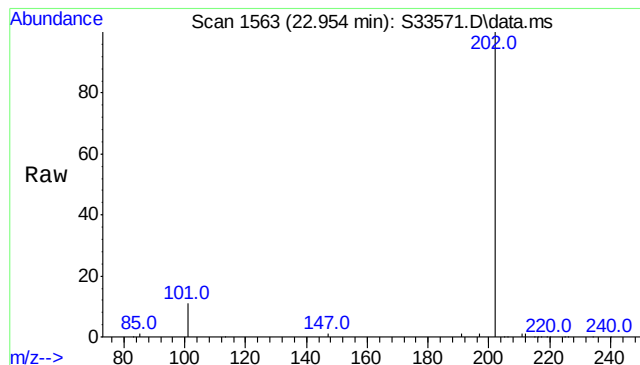
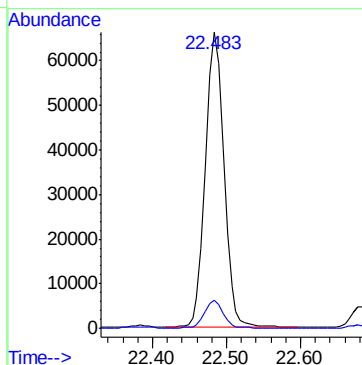
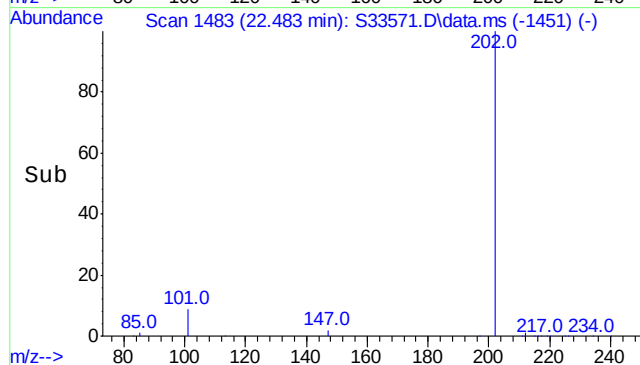
Tgt Ion:178 Resp: 126239





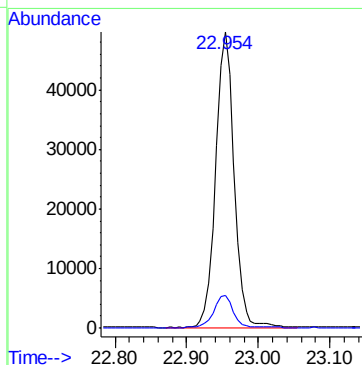
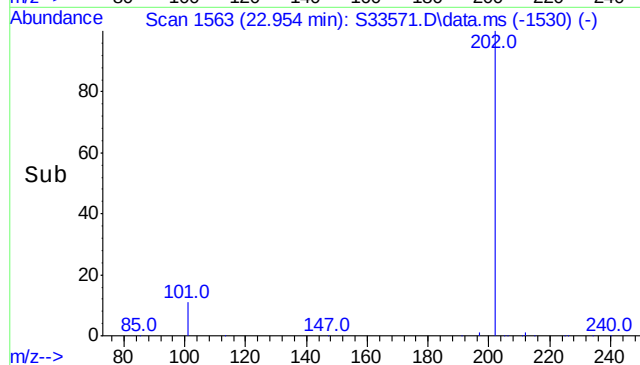
#29
Fluoranthene
Concen: 6.359 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

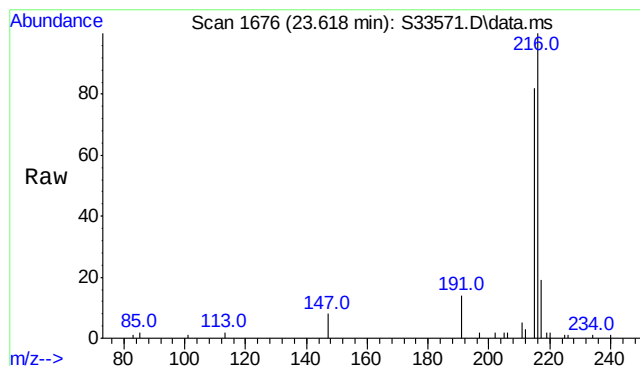
Tgt Ion:202 Resp: 115186
Ion Ratio Lower Upper
202 100
101 9.4 14.3 21.5#



#31
Pyrene
Concen: 4.491 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

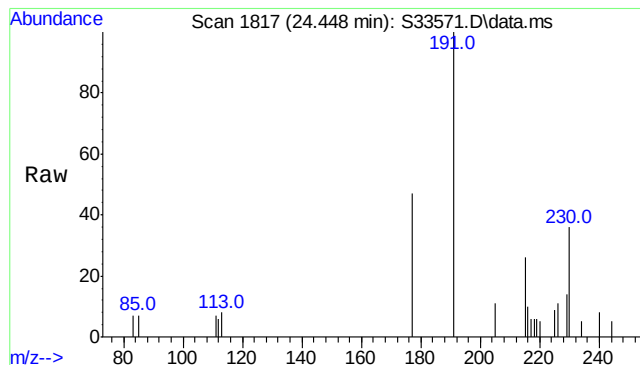
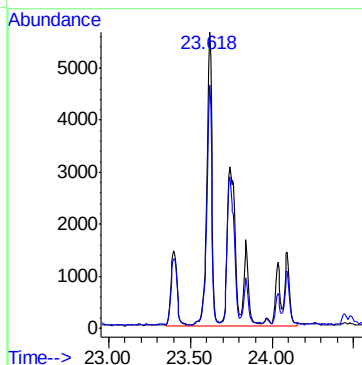
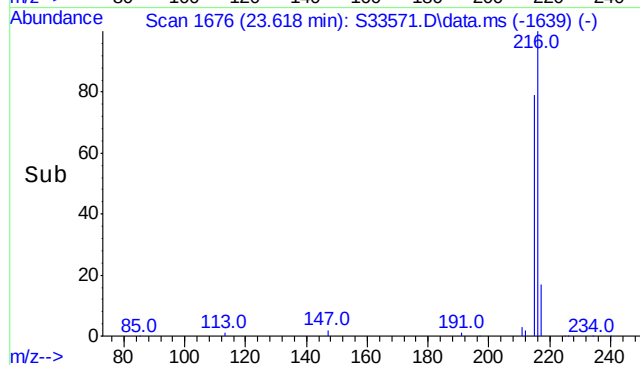
Tgt Ion:202 Resp: 88718
Ion Ratio Lower Upper
202 100
101 11.6 16.6 24.8#





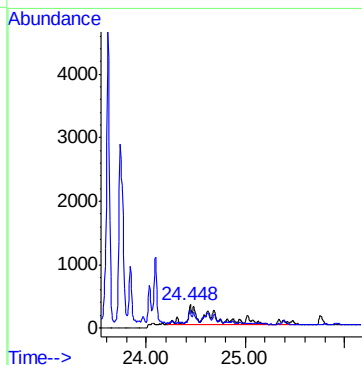
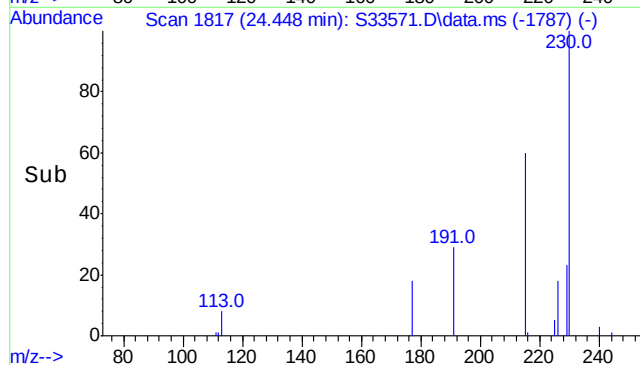
#32
C1-Fluoranthenes/pyrenes
Concen: 2.670 ng/mL m
RT: 23.618 min Scan# 1676
Delta R.T. -0.064 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

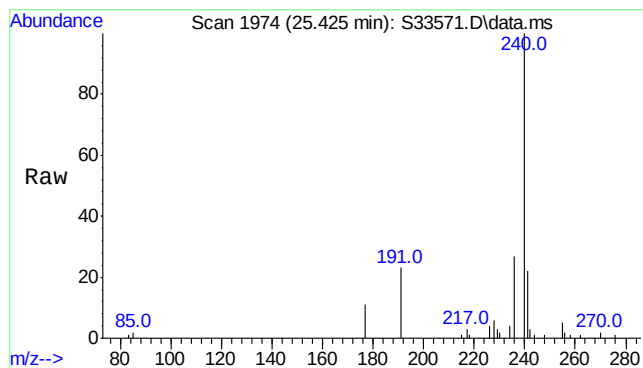
Tgt Ion:216 Resp: 34028
Ion Ratio Lower Upper
216 100
215 28.3 67.0 100.6#



#33
C2-Fluoranthenes/pyrenes
Concen: 0.269 ng/mL m
RT: 24.448 min Scan# 1817
Delta R.T. -0.063 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

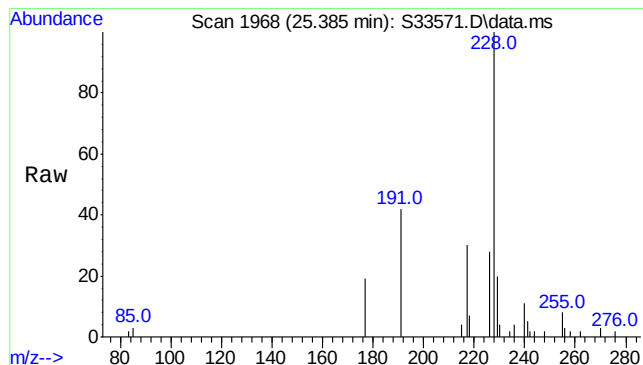
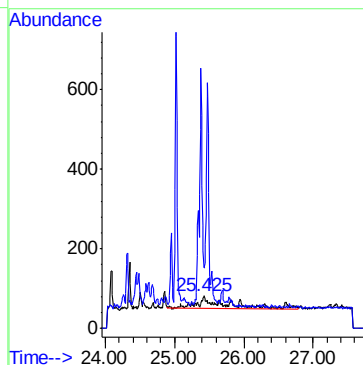
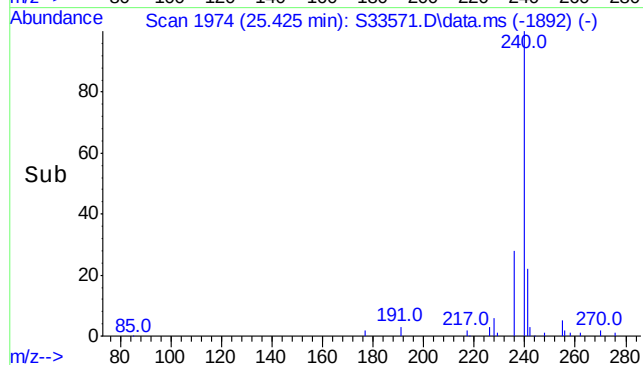
Tgt Ion:230 Resp: 5314
Ion Ratio Lower Upper
230 100
215 7.0 51.4 77.2#





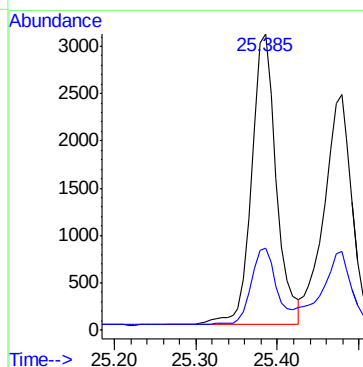
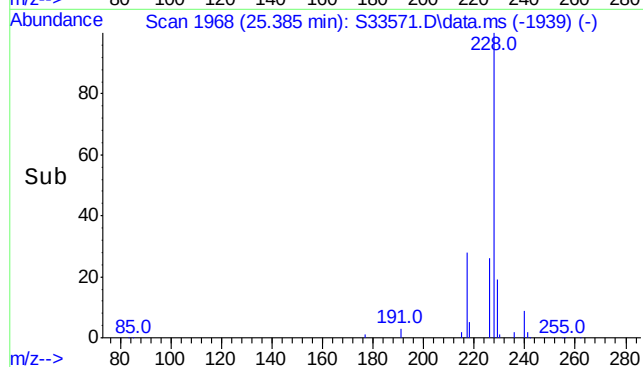
#34
C3-Fluoranthenes/pyrenes
Concen: 0.046 ng/mL m
RT: 25.425 min Scan# 1974
Delta R.T. -0.065 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

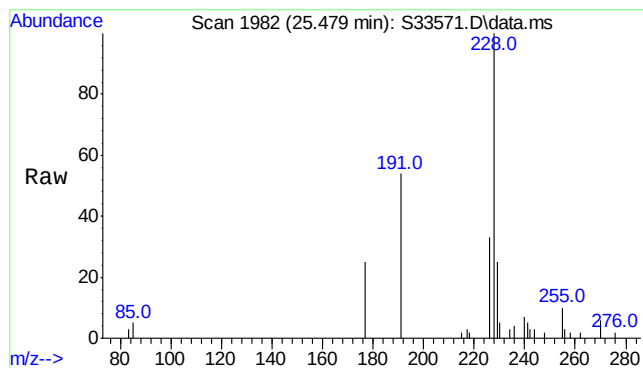
Tgt Ion:244 Resp: 903
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#



#36
Benz(a)anthracene
Concen: 0.257 ng/mL
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

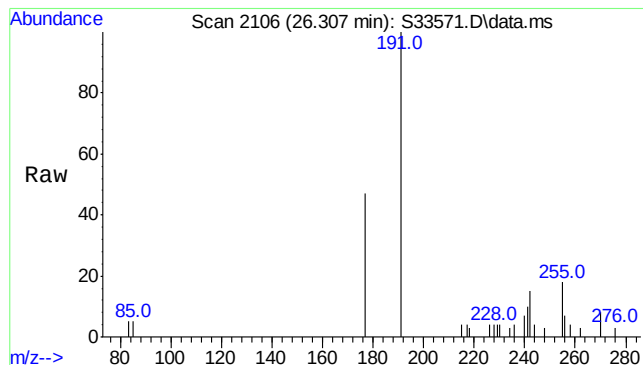
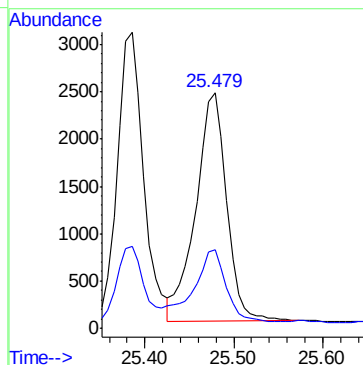
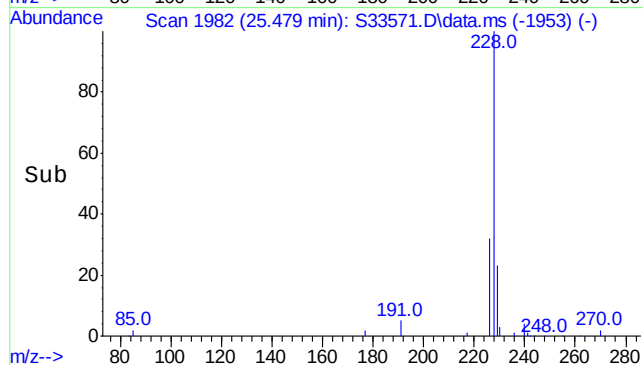
Tgt Ion:228 Resp: 6482
Ion Ratio Lower Upper
228 100
226 27.3 23.7 35.5





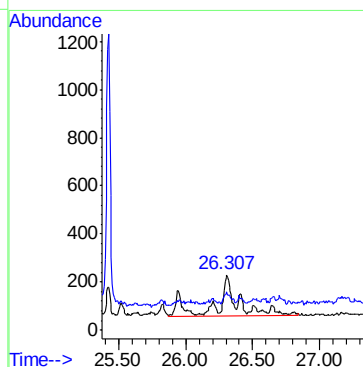
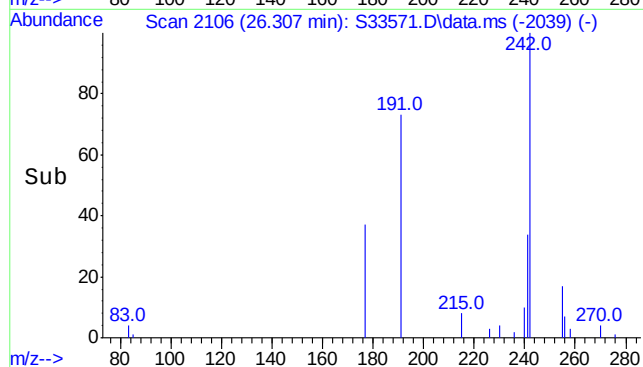
#38
Chrysene
Concen: 0.217 ng/mL
RT: 25.479 min Scan# 1982
Delta R.T. -0.006 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

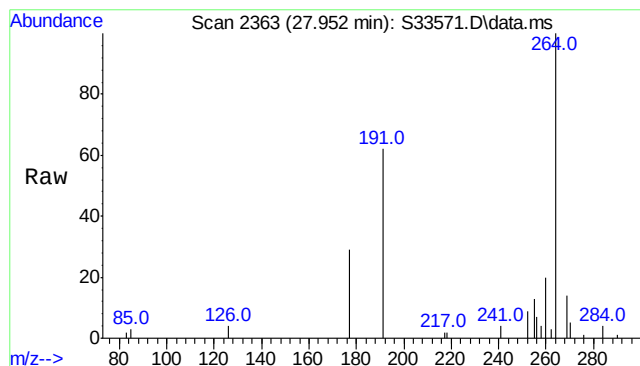
Tgt Ion:228 Resp: 5835
Ion Ratio Lower Upper
228 100
226 31.8 26.0 39.0



#39
C1-Benz(a)anthracenes/chrysenes
Concen: 0.114 ng/mL m
RT: 26.307 min Scan# 2106
Delta R.T. -0.051 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

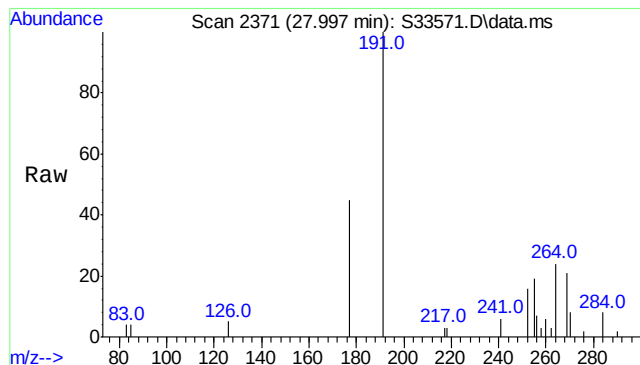
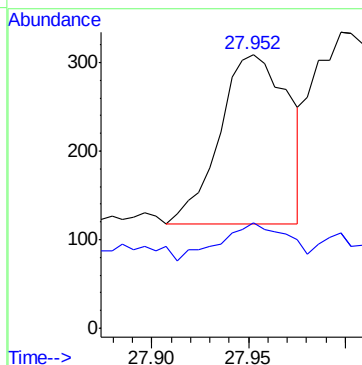
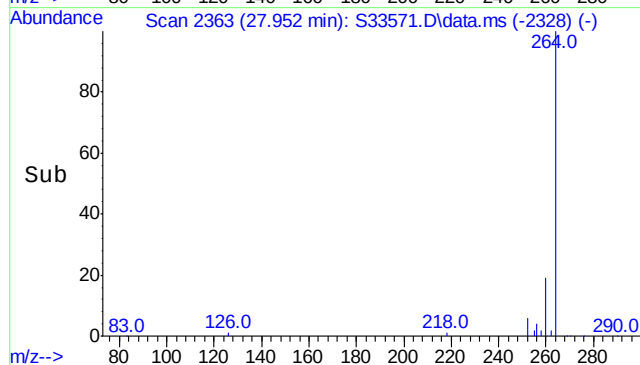
Tgt Ion:242 Resp: 1800
Ion Ratio Lower Upper
242 100
241 9.7 27.2 40.8#





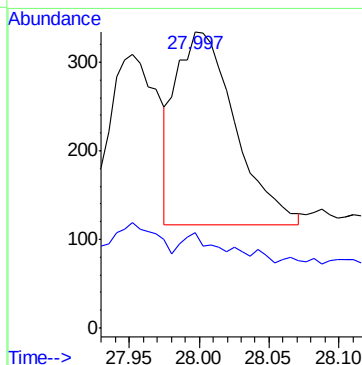
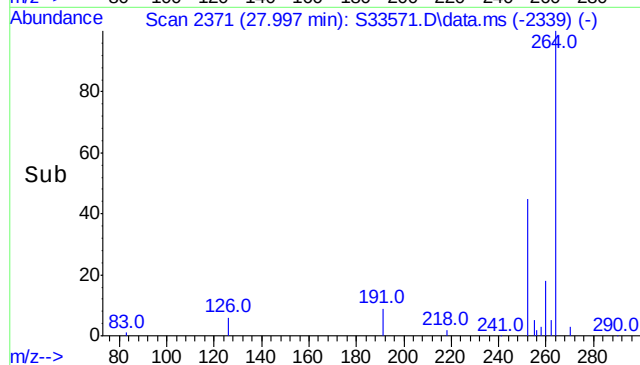
#44
Benzo(b)fluoranthene
Concen: 0.013 ng/mL
RT: 27.952 min Scan# 2363
Delta R.T. -0.006 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

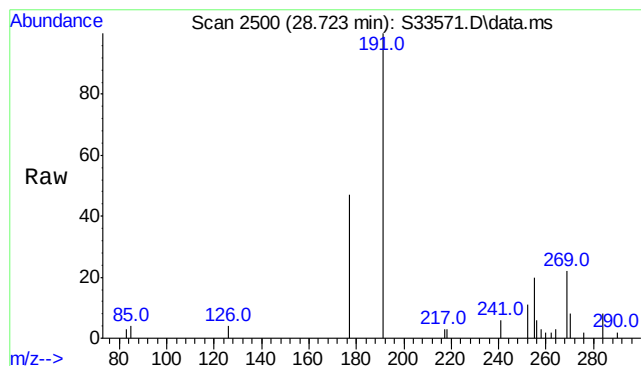
Tgt Ion:252 Resp: 472
Ion Ratio Lower Upper
252 100
126 26.9 23.0 34.4



#46
Benzo(k)fluoranthene
Concen: 0.020 ng/mL m
RT: 27.997 min Scan# 2371
Delta R.T. -0.023 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

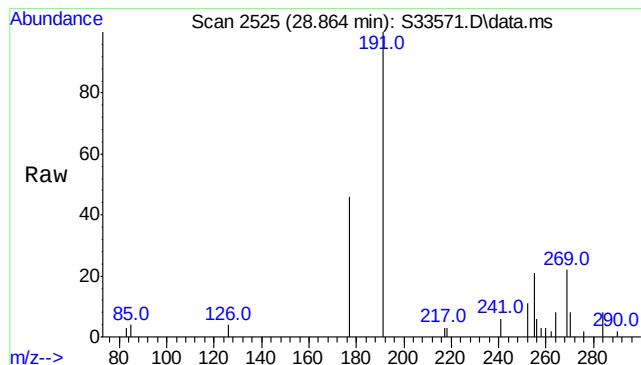
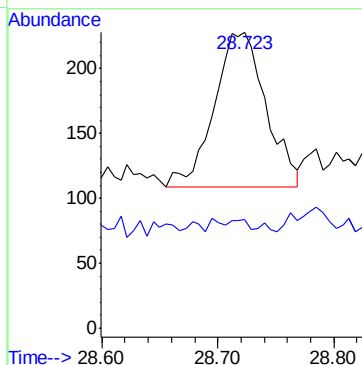
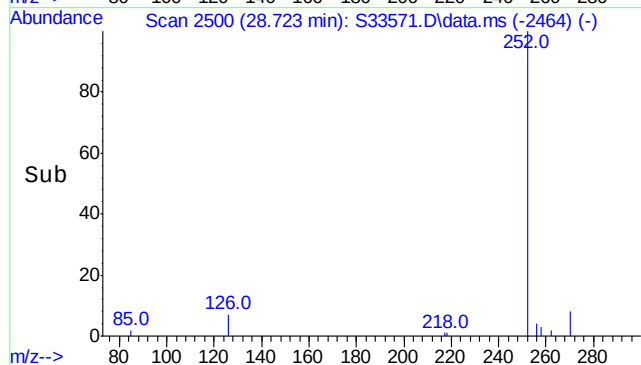
Tgt Ion:252 Resp: 640
Ion Ratio Lower Upper
252 100
126 19.8 24.4 36.6#





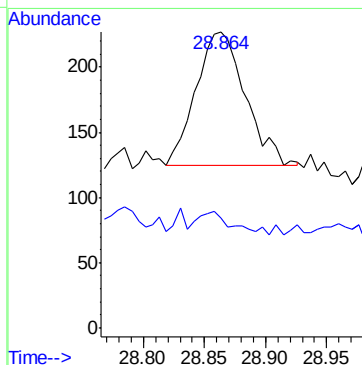
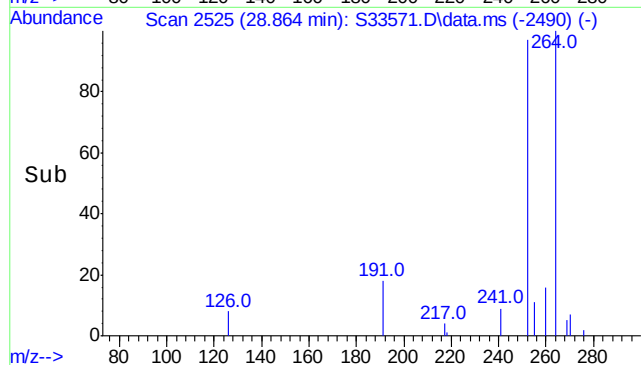
#48
Benzo(e)pyrene
Concen: 0.012 ng/mL
RT: 28.723 min Scan# 2500
Delta R.T. 0.000 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

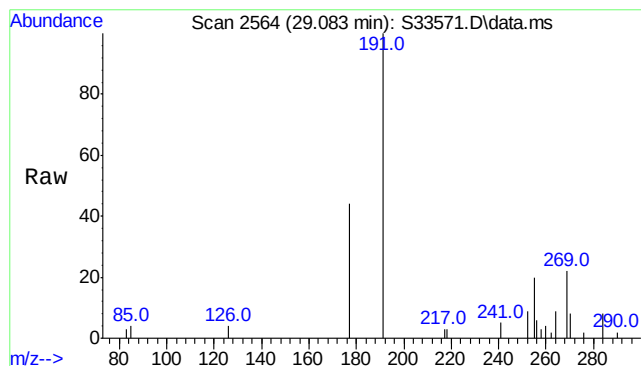
Tgt Ion:252 Resp: 369
Ion Ratio Lower Upper
252 100
126 0.0 22.6 34.0#



#49
Benzo(a)pyrene
Concen: 0.014 ng/mL
RT: 28.864 min Scan# 2525
Delta R.T. -0.005 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

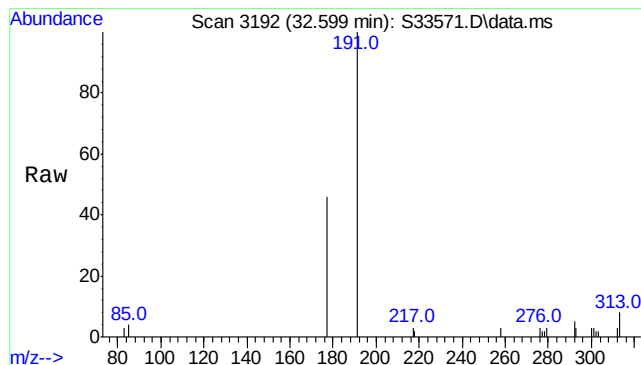
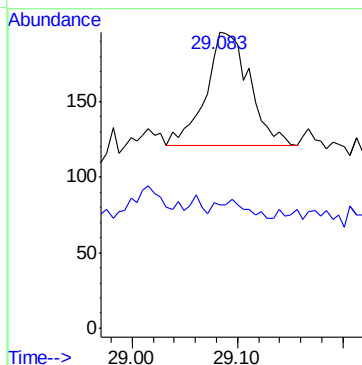
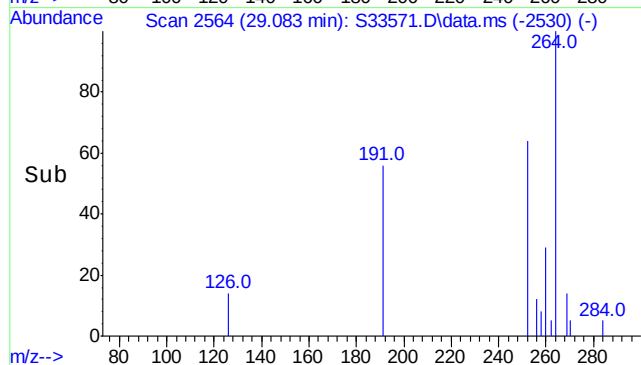
Tgt Ion:252 Resp: 285
Ion Ratio Lower Upper
252 100
126 0.0 25.1 37.7#





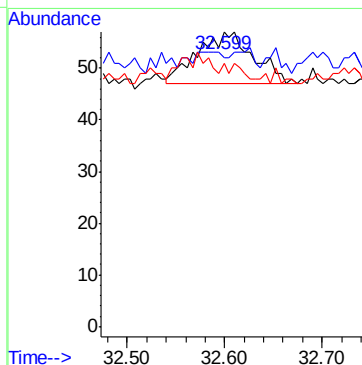
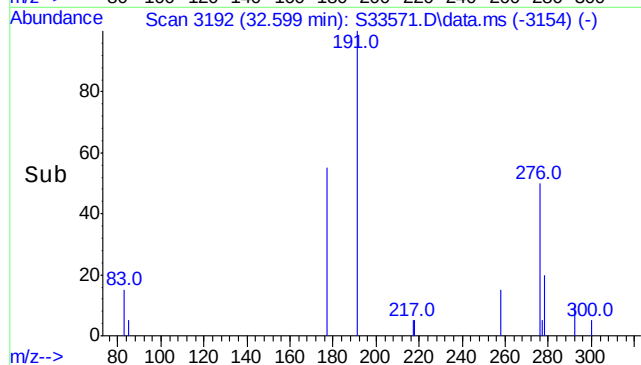
#51
Perylene
Concen: 0.011 ng/mL
RT: 29.083 min Scan# 2564
Delta R.T. -0.011 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

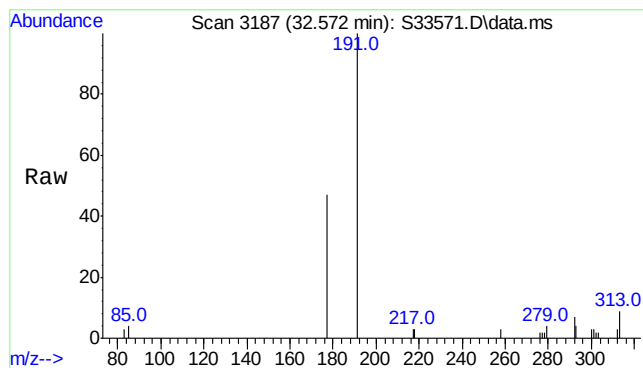
Tgt Ion:252 Resp: 215
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#



#52
Indeno(1,2,3-cd)pyrene
Concen: 0.001 ng/mL
RT: 32.599 min Scan# 3192
Delta R.T. 0.005 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

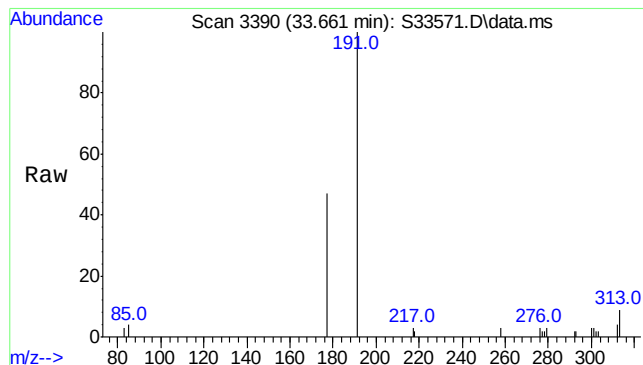
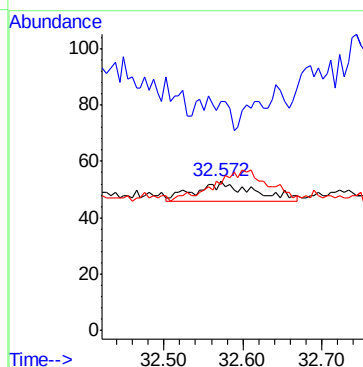
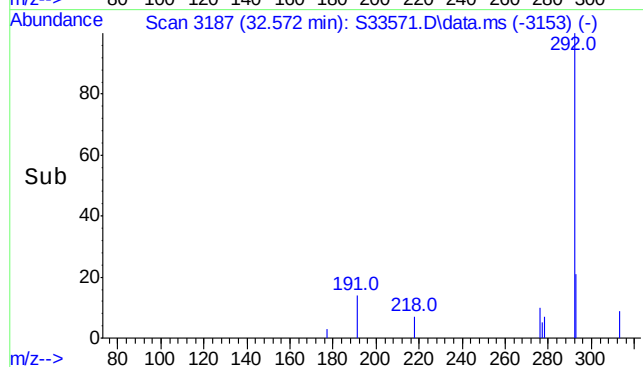
Tgt Ion:276 Resp: 40
Ion Ratio Lower Upper
276 100
277 0.0 21.3 31.9#
278 0.0 21.8 32.8#





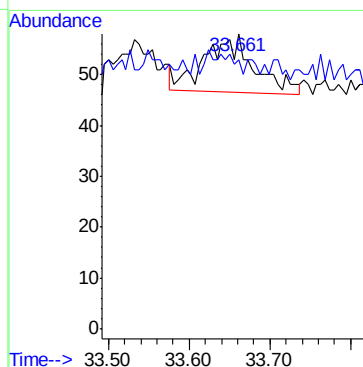
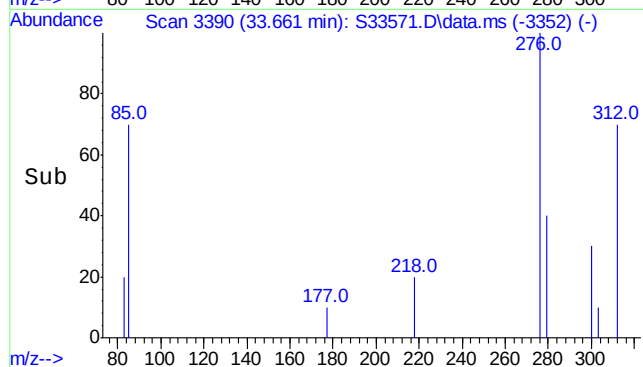
#53
Dibenz(a,h)anthracene
Concen: 0.001 ng/mL m
RT: 32.572 min Scan# 3187
Delta R.T. -0.016 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

Tgt Ion:	278	Resp:	34
Ion Ratio	Lower	Upper	
278	100		
279	0.0	32.2	48.4#
276	0.0	242.1	363.1#



#54
Benzo(g,h,i)perylene
Concen: 0.002 ng/mL m
RT: 33.661 min Scan# 3390
Delta R.T. 0.005 min
Lab File: S33571.D
Acq: 14 Sep 2013 12:13 am

Tgt Ion:	276	Resp:	47
Ion Ratio	Lower	Upper	
276	100		
277	0.0	20.3	30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
 Data File : S33575.D
 Acq On : 14 Sep 2013 3:31 am
 Operator : RUBENP
 Sample : mc24019-4dup
 Misc : ms29817,mss1483,1.5,,,1.5,1
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 16 12:30:30 2013
 Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:36:05 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	39632	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	24798	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	20410	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	15330	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	12833	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.020	188	33490	5.00	ng/mL	0.00
26) Anthracene-d10	20.116	188	37915	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	22345	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	20759	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	9181	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	11331	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.890	264	9179	0.33	ng/mL	0.00
45) Benzo(k)fluoranthene-d12	27.958	264	9618	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.796	264	6191	0.33	ng/mL	0.00
50) Perylene-d12	29.021	264	5054	0.33	ng/mL	0.00

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.910	128	218055	162.834	ng/mL	100
3) C1-Naphthalenes	15.081	142	640143m	478.032	ng/mL	
4) C2-Naphthalenes	16.400	156	593996m	224.551	ng/mL	
5) C3-Naphthalenes	17.686	170	254123m	141.498	ng/mL	
6) C3-Naphthalenes (Fd10)	18.061	170	6615	3.683	µg/mL#	100
7) C4-Naphthalenes	18.868	184	49345m	56.146	ng/mL	
9) 2-Methylnaphthalene	15.081	142	381121	213.125	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	257835	165.257	ng/mL	100
13) Acenaphthylene	16.801	152	16680	8.458	ng/mL#	100
14) Acenaphthene	17.154	154	277262	123.518	ng/mL	98
16) Fluorene	18.138	166	320436m	92.695	ng/mL	
17) C1-Fluorenes	19.227	180	147577m	50.304	ng/mL	
18) C2-Fluorenes	20.251	194	52913m	23.623	ng/mL	
19) C3-Fluorenes	21.328	208	7346m	3.517	ng/mL	
21) Phenanthrene	20.065	178	646491	75.578	ng/mL	100
22) C1-Phenanthrenes/anthr...	21.026	192	224681m	23.771	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	46764m	13.303	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	8639m	5.858	ng/mL	
25) C4-Phenanthrenes/anthr...	23.536	234	1408m	2.112	ng/mL	
27) Anthracene	20.155	178	164011	16.505	ng/mL	100
29) Fluoranthene	22.483	202	132173	7.106	ng/mL#	81
31) Pyrene	22.954	202	101191	5.014	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.618	216	42146m	3.237	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.447	230	6854m	0.340	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.418	244	1255m	0.062	ng/mL	
36) Benz(a)anthracene	25.385	228	7677	0.302	ng/mL	97
38) Chrysene	25.478	228	6672	0.247	ng/mL	99
39) C1-Benz(a)anthracenes/...	26.306	242	2143m	0.135	ng/mL	
44) Benzo(b)fluoranthene	27.952	252	578	0.015	ng/mL#	68
46) Benzo(k)fluoranthene	27.997	252	662	0.019	ng/mL#	44
48) Benzo(e)pyrene	28.717	252	377	0.012	ng/mL#	67
49) Benzo(a)pyrene	28.869	252	385	0.018	ng/mL#	68

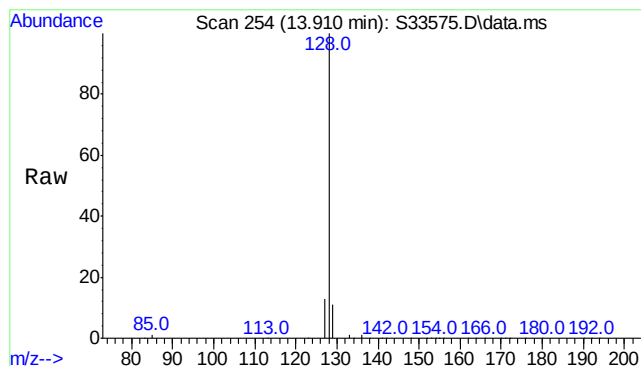
Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130913\
Data File : S33575.D
Acq On : 14 Sep 2013 3:31 am
Operator : RUBENP
Sample : mc24019-4dup
Misc : ms29817,mss1483,1.5,,,1.5,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 16 12:30:30 2013
Quant Method : S:\1\methods\S130913-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Fri Oct 11 11:36:05 2013
Response via : Initial Calibration

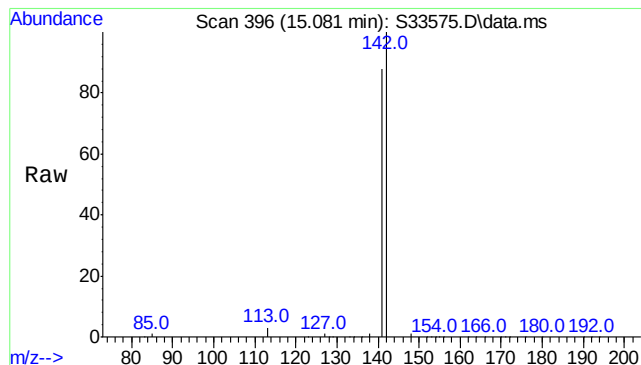
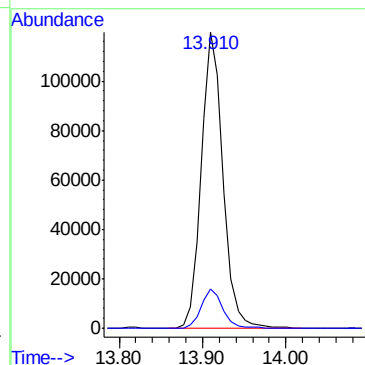
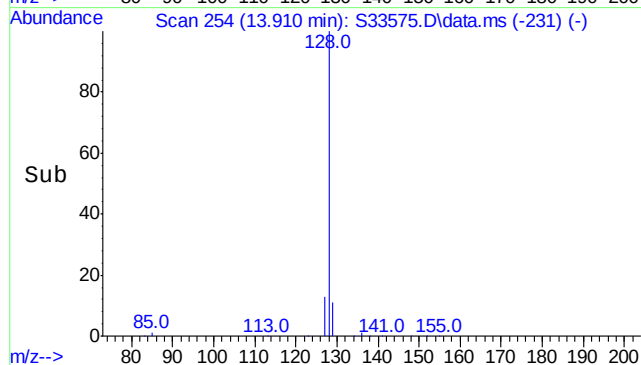
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) Perylene	29.094	252	199	0.010	ng/mL#	41
52) Indeno(1,2,3-cd)pyrene	32.604	276	46m	0.001	ng/mL	
53) Dibenz(a,h)anthracene	32.572	278	36m	0.001	ng/mL	
54) Benzo(g,h,i)perylene	33.656	276	42m	0.001	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed



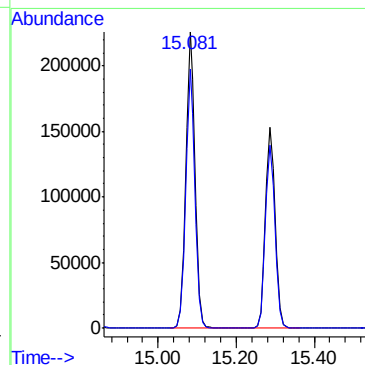
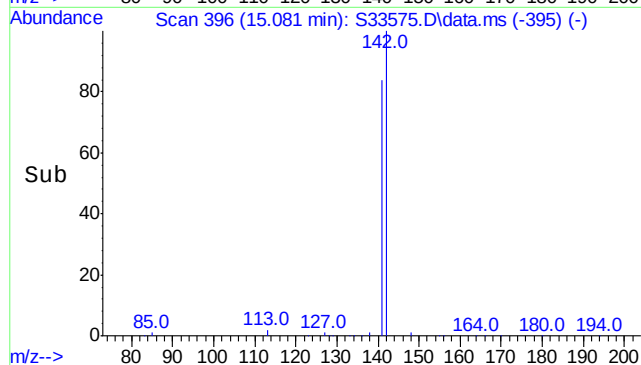
#2
Naphthalene
Concen: 162.834 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

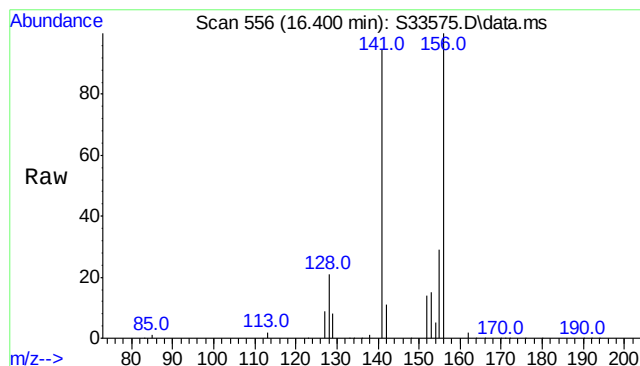
Tgt Ion:128 Resp: 218055
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



#3
C1-Naphthalenes
Concen: 478.032 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

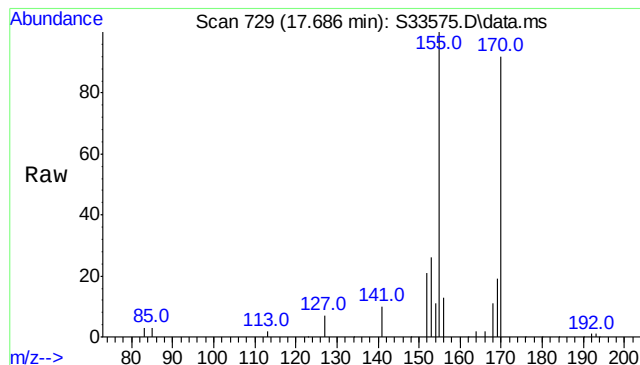
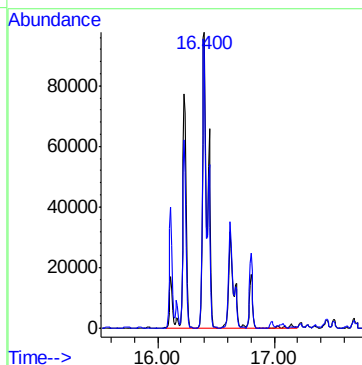
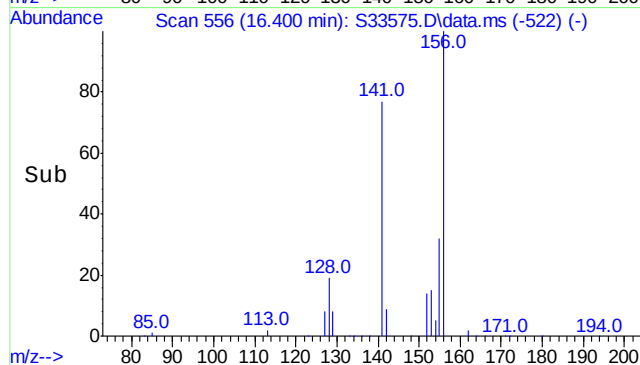
Tgt Ion:142 Resp: 640143
Ion Ratio Lower Upper
142 100
141 36.6 71.0 106.6#





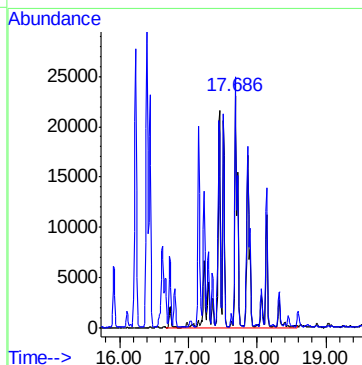
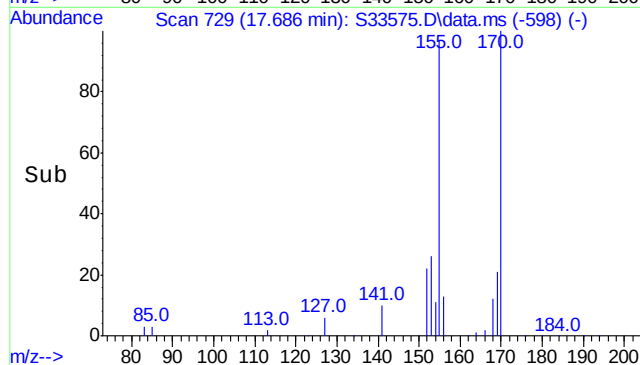
#4
C2-Naphthalenes
Concen: 224.551 ng/mL m
RT: 16.400 min Scan# 556
Delta R.T. -0.057 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

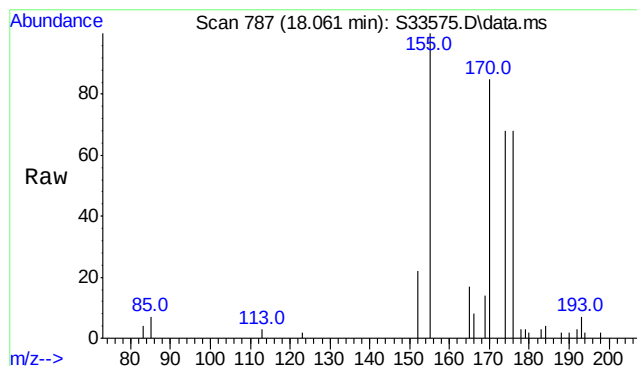
Tgt Ion:156 Resp: 593996
Ion Ratio Lower Upper
156 100
141 12.6 79.0 118.4#



#5
C3-Naphthalenes
Concen: 141.498 ng/mL m
RT: 17.686 min Scan# 729
Delta R.T. 0.027 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

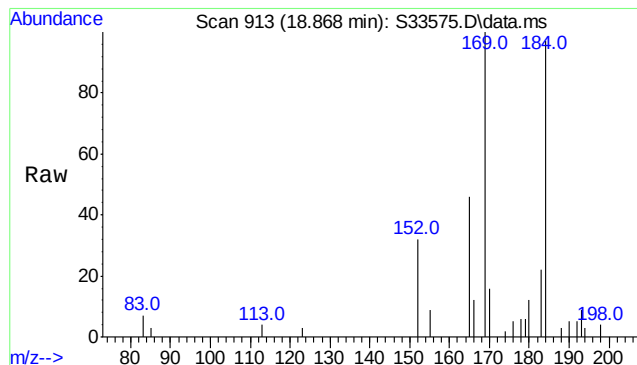
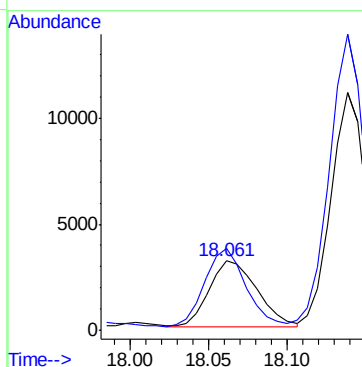
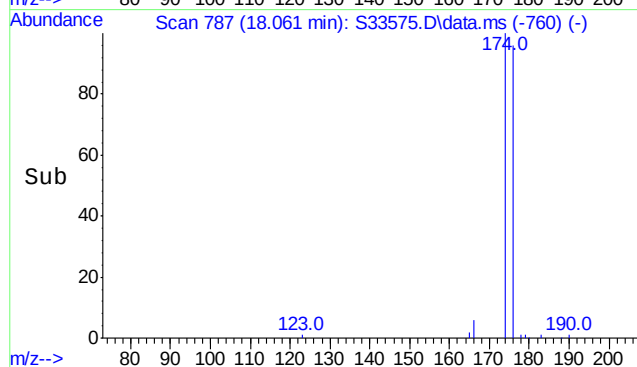
Tgt Ion:170 Resp: 254123
Ion Ratio Lower Upper
170 100
155 17.6 80.7 121.1#





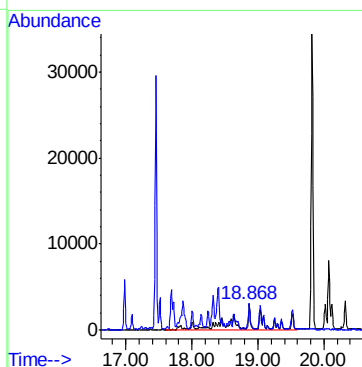
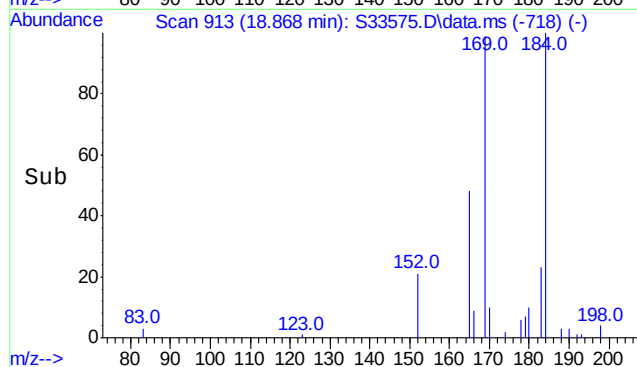
#6
 C3-Naphthalenes (Fd10)
 Concen: 3.683 µg/mL
 RT: 18.061 min Scan# 787
 Delta R.T. -0.026 min
 Lab File: S33575.D
 Acq: 14 Sep 2013 3:31 am

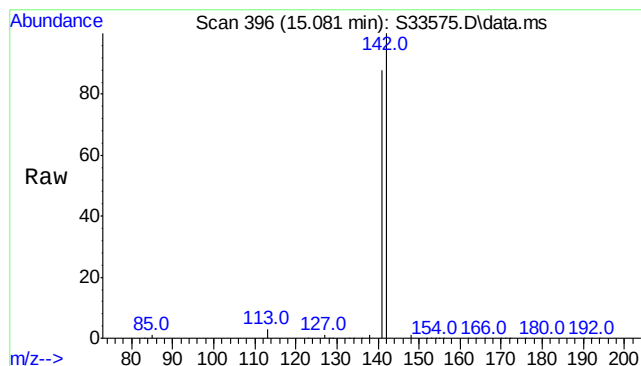
Tgt Ion:170 Resp: 6615
 Ion Ratio Lower Upper
 170 100
 155 101.4 0.0 0.0#



#7
 C4-Naphthalenes
 Concen: 56.146 ng/mL m
 RT: 18.868 min Scan# 913
 Delta R.T. -0.063 min
 Lab File: S33575.D
 Acq: 14 Sep 2013 3:31 am

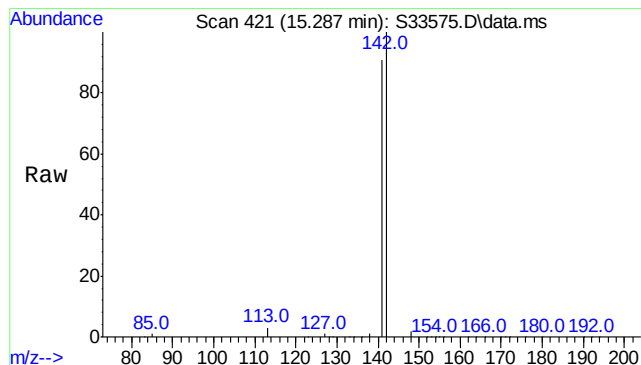
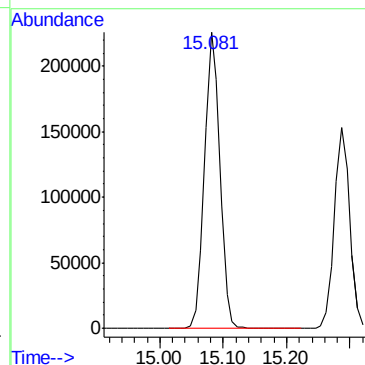
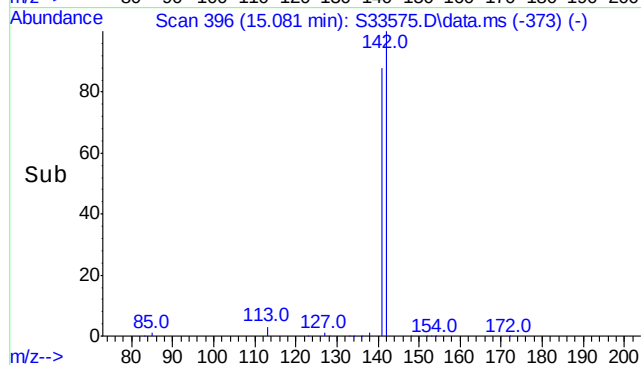
Tgt Ion:184 Resp: 49345
 Ion Ratio Lower Upper
 184 100
 169 12.6 80.1 120.1#





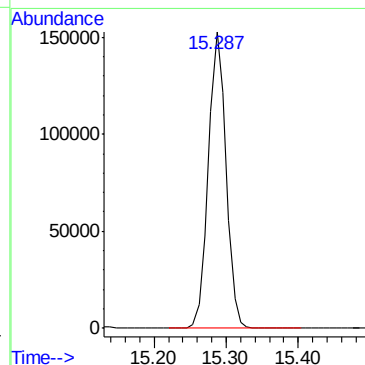
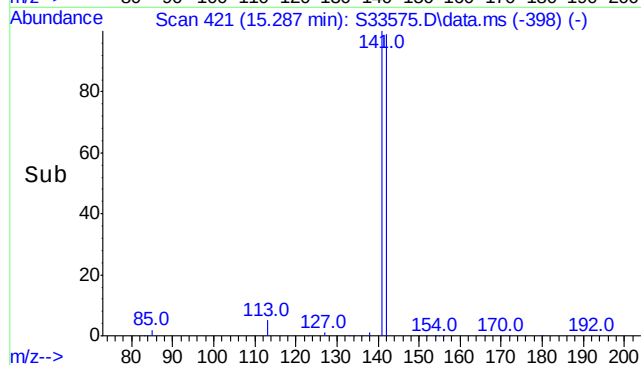
#9
2-Methylnaphthalene
Concen: 213.125 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

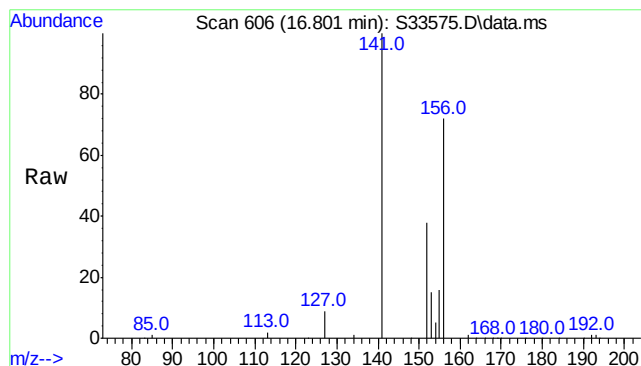
Tgt Ion:142 Resp: 381121



#11
1-Methylnaphthalene
Concen: 165.257 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

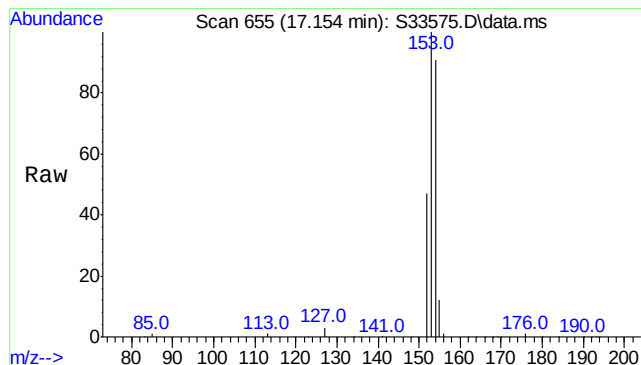
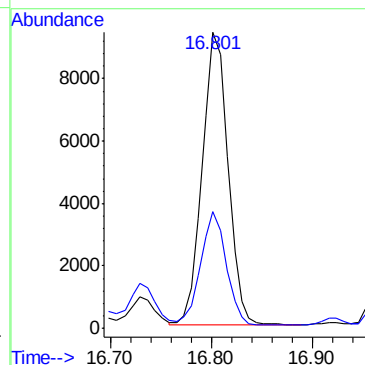
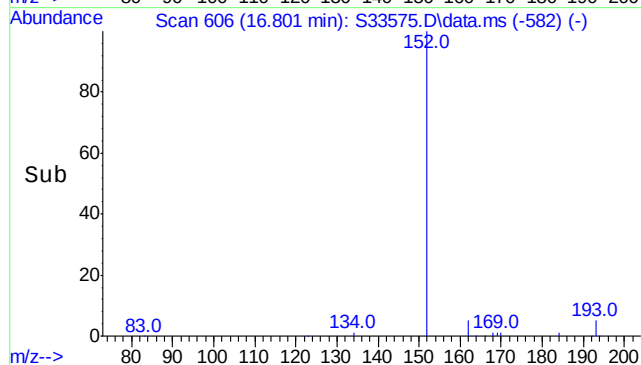
Tgt Ion:142 Resp: 257835





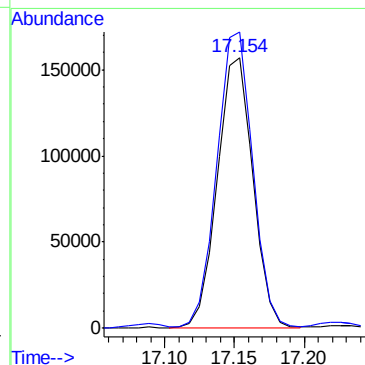
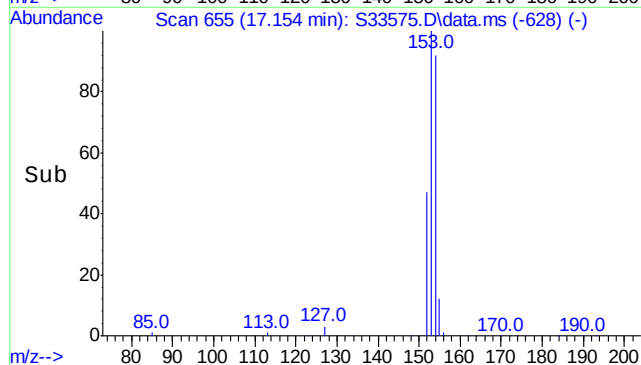
#13
Acenaphthylene
Concen: 8.458 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

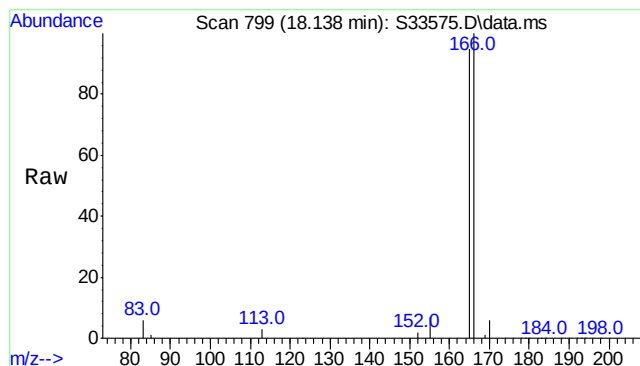
Tgt Ion	Ratio	Lower	Upper
152	100		
153	38.3	0.0	0.0#



#14
Acenaphthene
Concen: 123.518 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

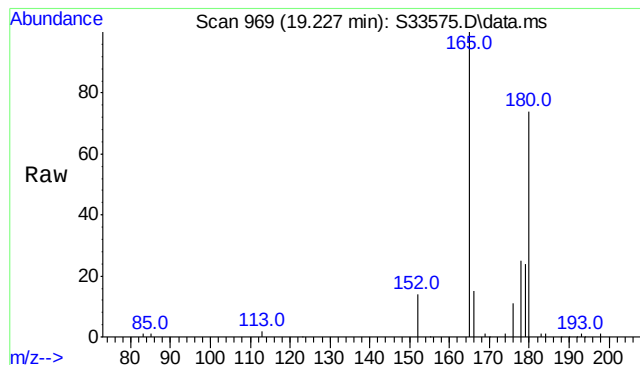
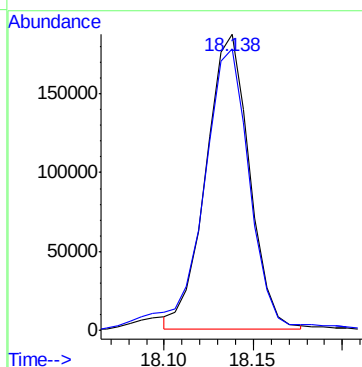
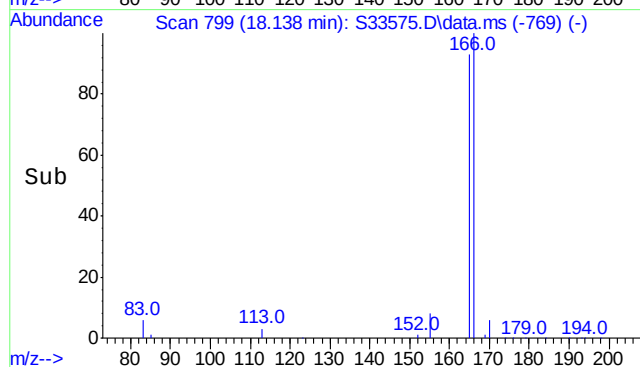
Tgt Ion	Ratio	Lower	Upper
154	100		
153	109.9	86.6	129.8





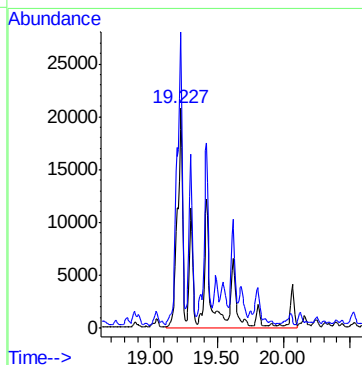
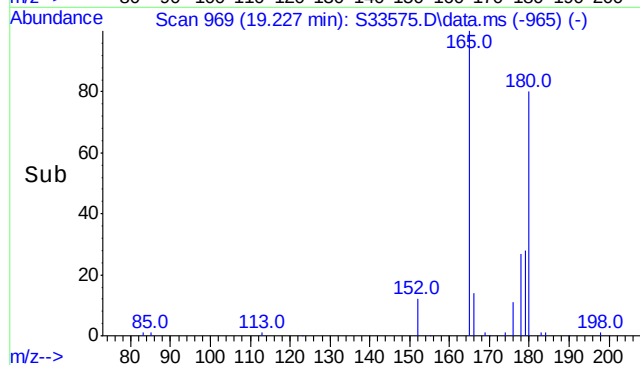
#16
Fluorene
Concen: 92.695 ng/mL m
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

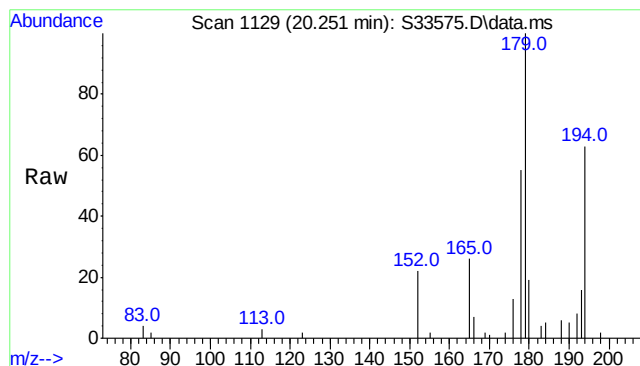
Tgt Ion:166 Resp: 320436
Ion Ratio Lower Upper
166 100
165 103.4 76.4 114.6



#17
C1-Fluorenes
Concen: 50.304 ng/mL m
RT: 19.227 min Scan# 969
Delta R.T. -0.085 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

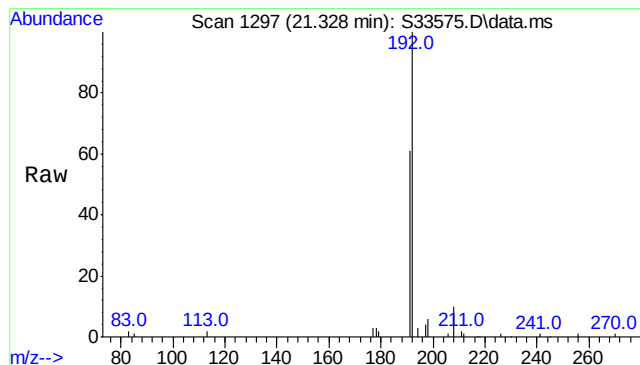
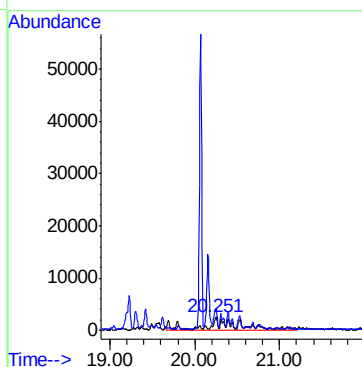
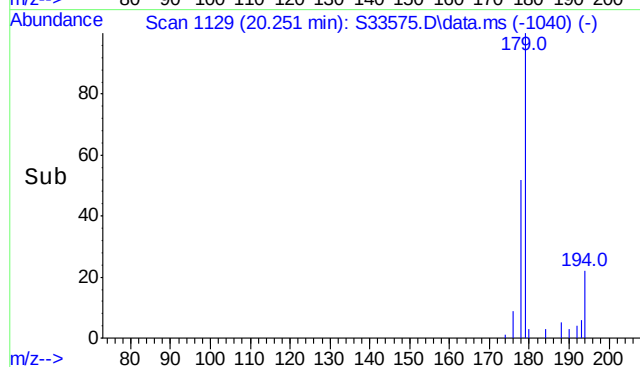
Tgt Ion:180 Resp: 147577
Ion Ratio Lower Upper
180 100
165 18.5 111.1 166.7#





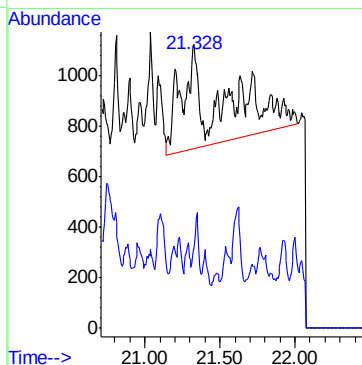
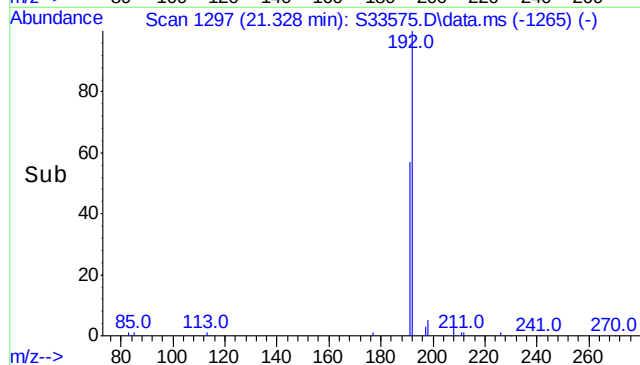
#18
C2-Fluorenes
Concen: 23.623 ng/mL m
RT: 20.251 min Scan# 1129
Delta R.T. -0.063 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

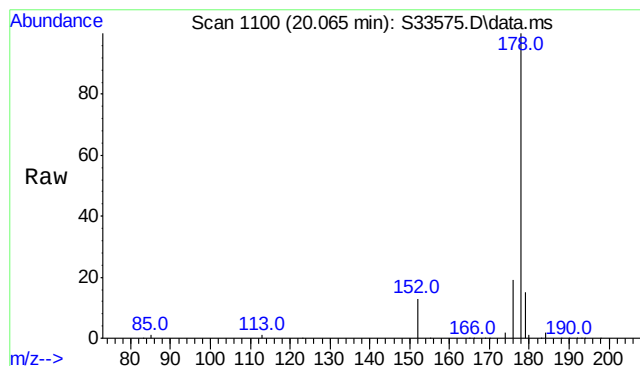
Tgt Ion:194 Resp: 52913
Ion Ratio Lower Upper
194 100
179 8.4 131.8 197.6#



#19
C3-Fluorenes
Concen: 3.517 ng/mL m
RT: 21.328 min Scan# 1297
Delta R.T. -0.024 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

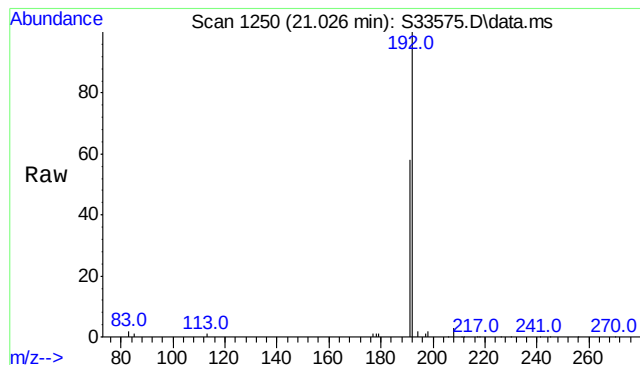
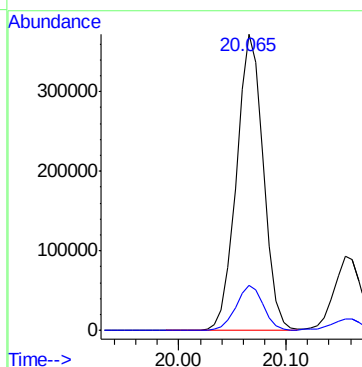
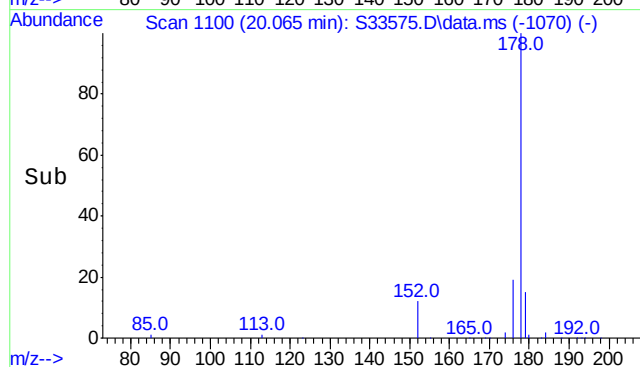
Tgt Ion:208 Resp: 7346
Ion Ratio Lower Upper
208 100
178 6.3 43.4 65.2#





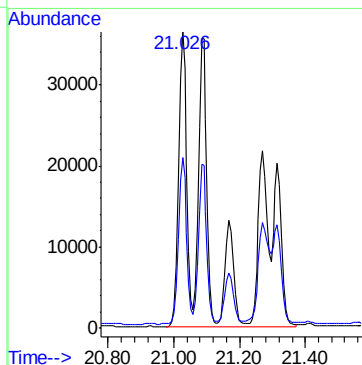
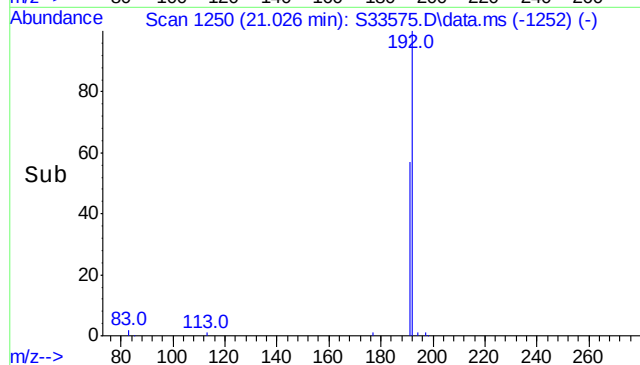
#21
 Phenanthrene
 Concen: 75.578 ng/mL
 RT: 20.065 min Scan# 1100
 Delta R.T. -0.007 min
 Lab File: S33575.D
 Acq: 14 Sep 2013 3:31 am

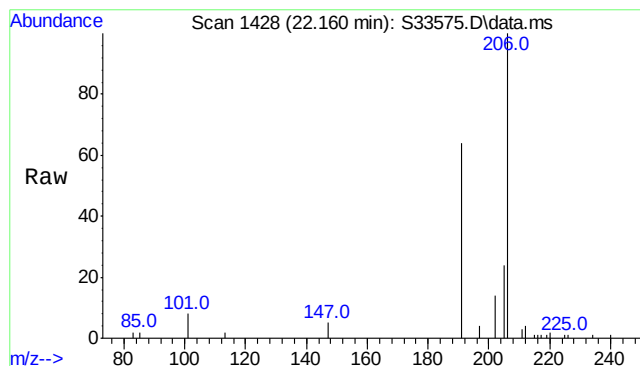
Tgt Ion:178 Resp: 646491
 Ion Ratio Lower Upper
 178 100
 179 15.3 12.4 18.6



#22
 C1-Phenanthrenes/anthracenes
 Concen: 23.771 ng/mL m
 RT: 21.026 min Scan# 1250
 Delta R.T. -0.127 min
 Lab File: S33575.D
 Acq: 14 Sep 2013 3:31 am

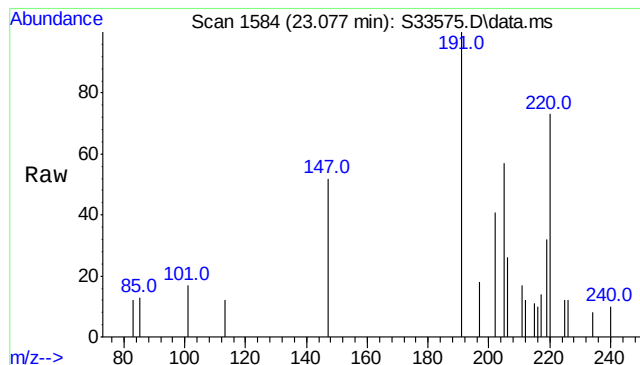
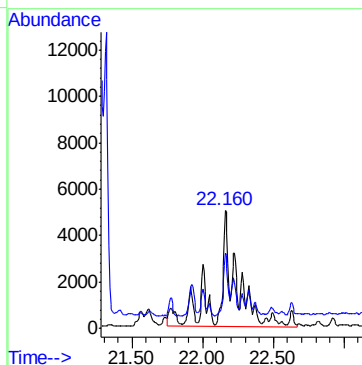
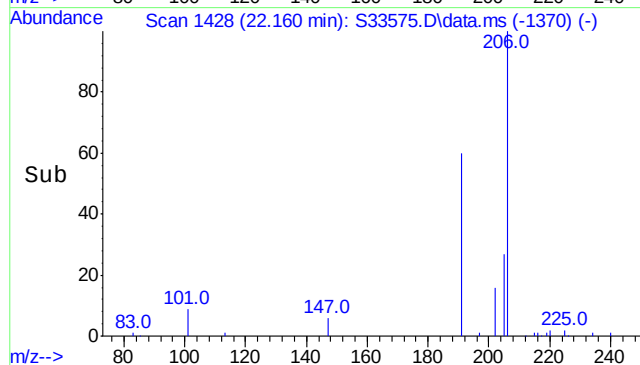
Tgt Ion:192 Resp: 224681
 Ion Ratio Lower Upper
 192 100
 191 4.8 45.1 67.7#





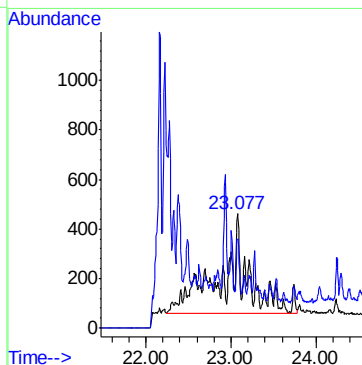
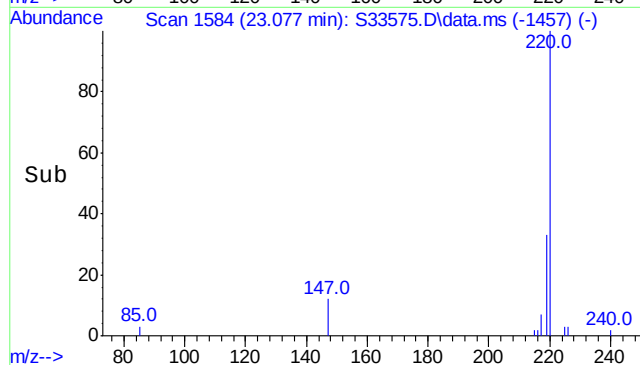
#23
C2-Phenanthrenes/anthracenes
Concen: 13.303 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

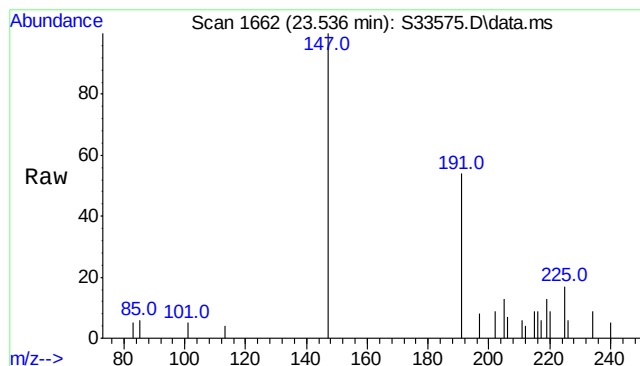
Tgt Ion:206 Resp: 46764
Ion Ratio Lower Upper
206 100
191 7.7 45.1 67.7#



#24
C3-Phenanthrenes/anthracenes
Concen: 5.858 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

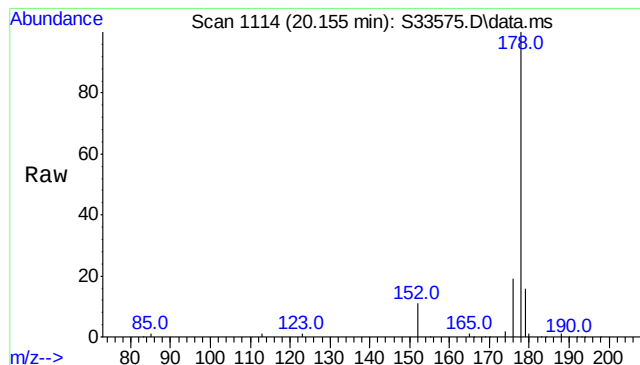
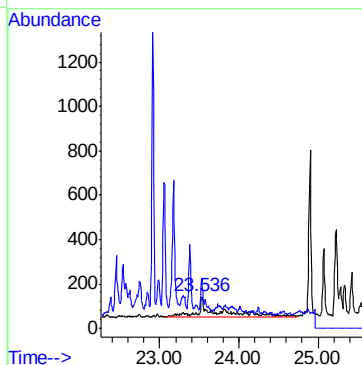
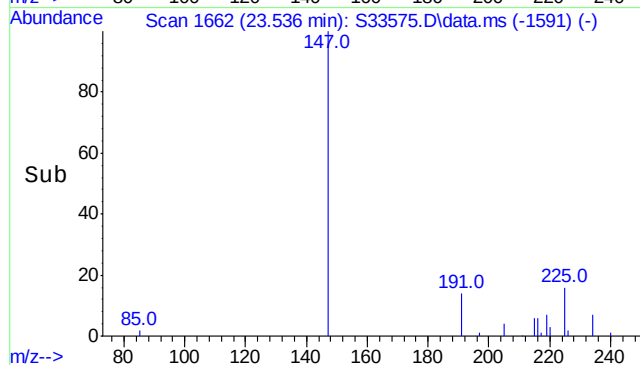
Tgt Ion:220 Resp: 8639
Ion Ratio Lower Upper
220 100
205 5.8 45.1 67.7#





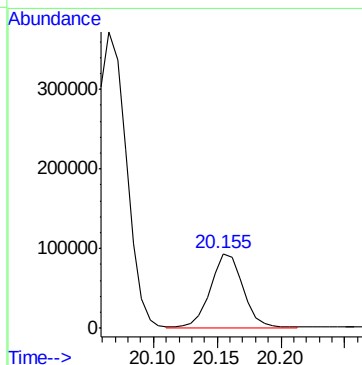
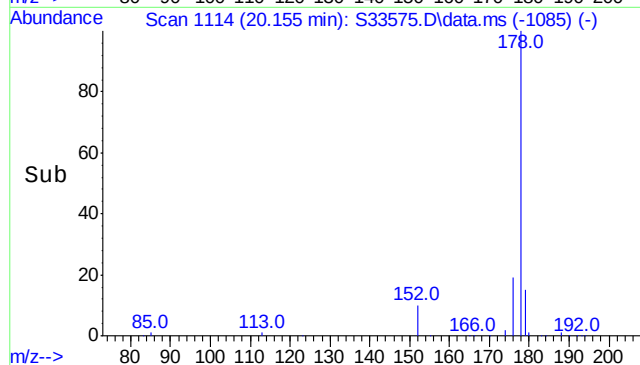
#25
C4-Phenanthrenes/anthracenes
Concen: 2.112 ng/mL m
RT: 23.536 min Scan# 1662
Delta R.T. -0.693 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

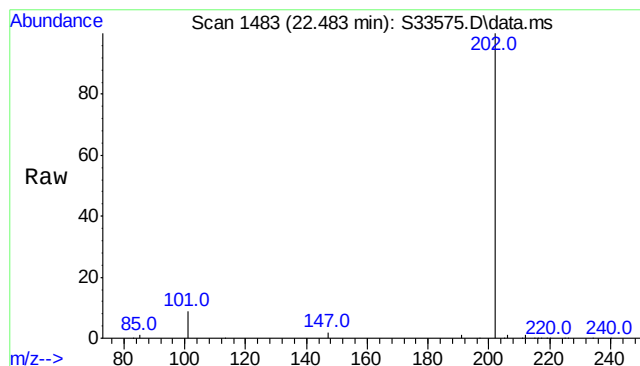
Tgt Ion:234 Resp: 1408
Ion Ratio Lower Upper
234 100
219 0.0 53.0 79.6#



#27
Anthracene
Concen: 16.505 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

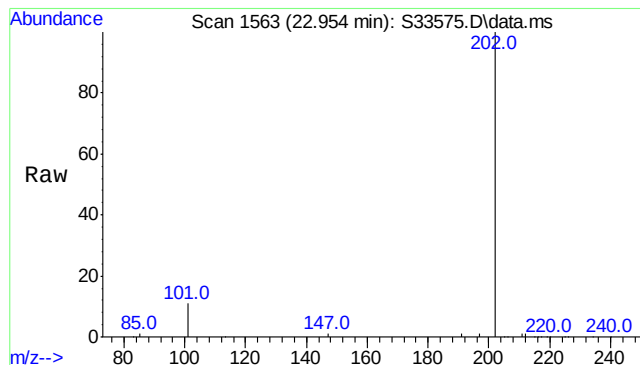
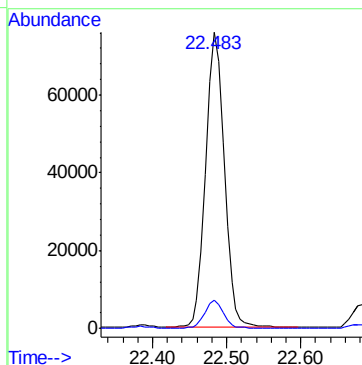
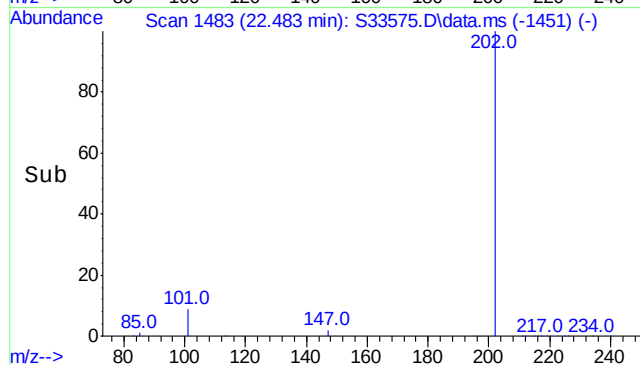
Tgt Ion:178 Resp: 164011





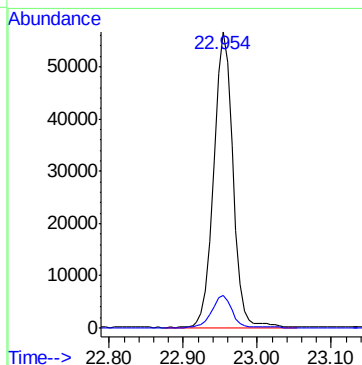
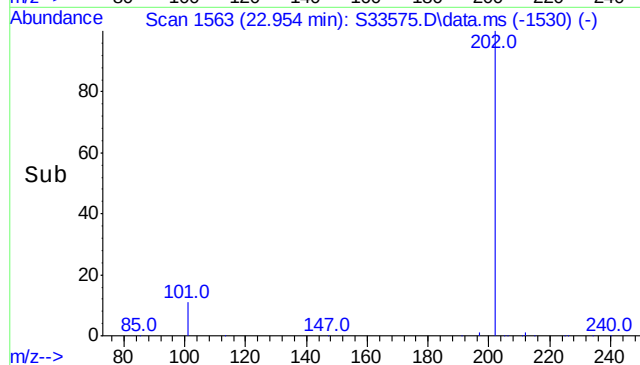
#29
Fluoranthene
Concen: 7.106 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

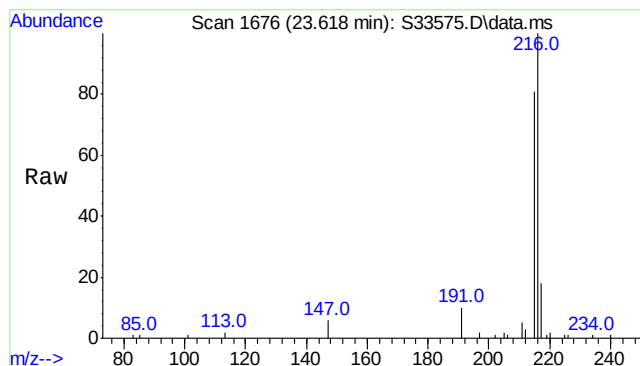
Tgt Ion:202 Resp: 132173
Ion Ratio Lower Upper
202 100
101 9.4 14.3 21.5#



#31
Pyrene
Concen: 5.014 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

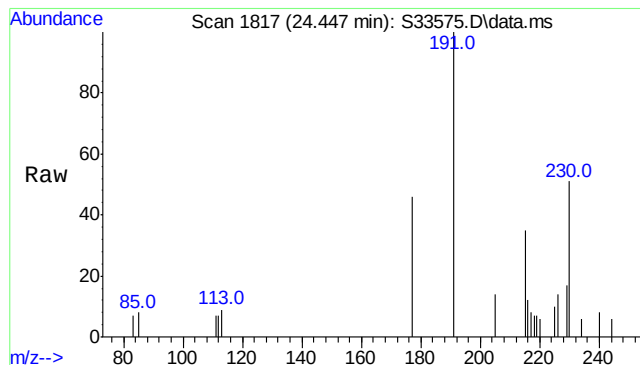
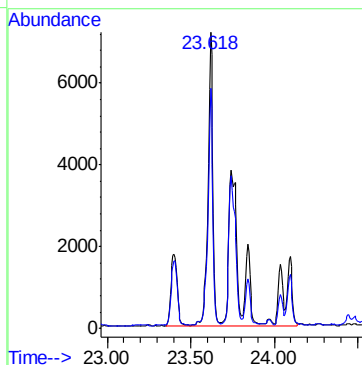
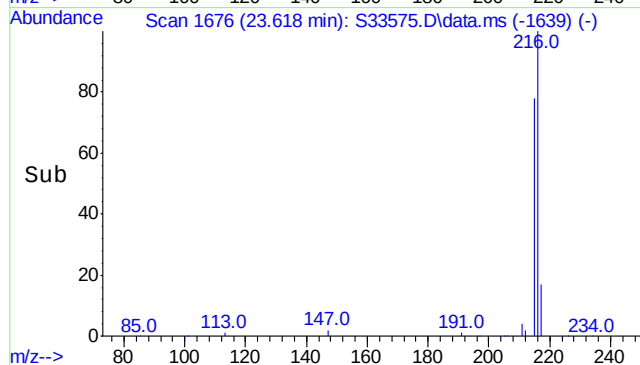
Tgt Ion:202 Resp: 101191
Ion Ratio Lower Upper
202 100
101 11.4 16.6 24.8#





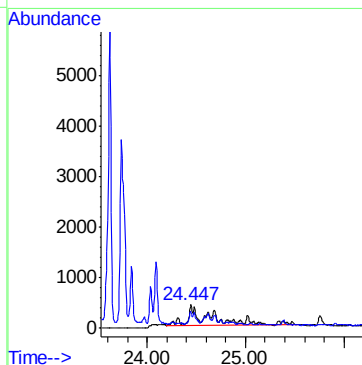
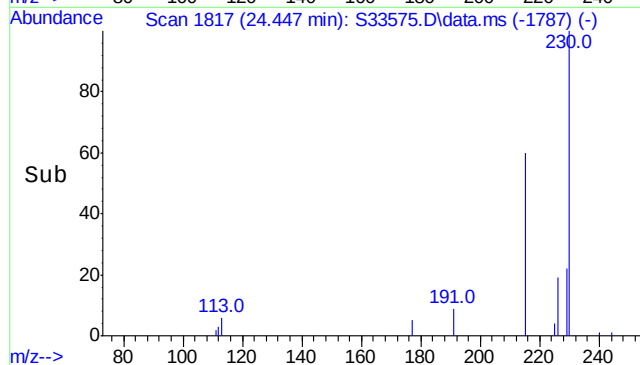
#32
C1-Fluoranthenes/pyrenes
Concen: 3.237 ng/mL m
RT: 23.618 min Scan# 1676
Delta R.T. -0.064 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

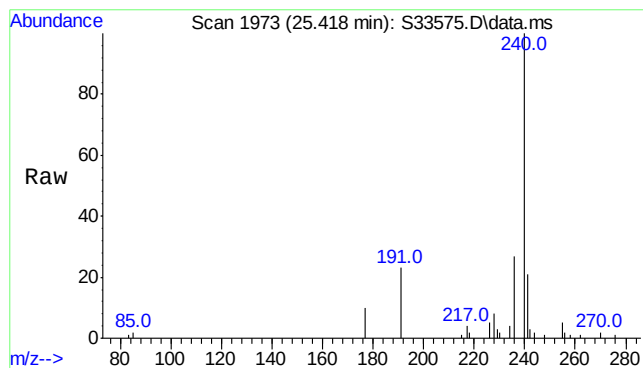
Tgt Ion:216 Resp: 42146
Ion Ratio Lower Upper
216 100
215 28.5 67.0 100.6#



#33
C2-Fluoranthenes/pyrenes
Concen: 0.340 ng/mL m
RT: 24.447 min Scan# 1817
Delta R.T. -0.064 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

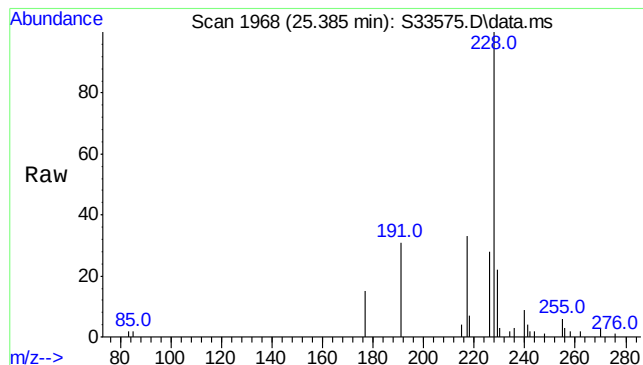
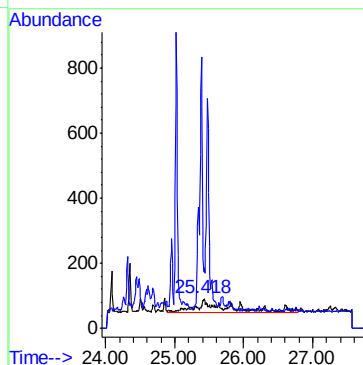
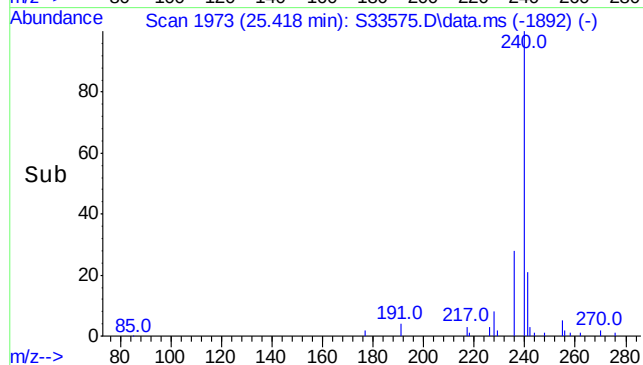
Tgt Ion:230 Resp: 6854
Ion Ratio Lower Upper
230 100
215 6.5 51.4 77.2#





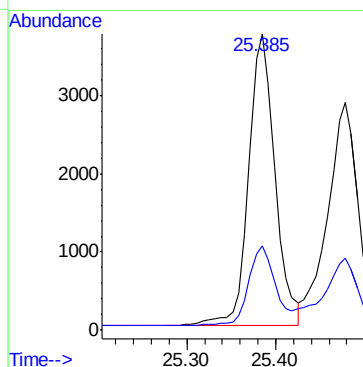
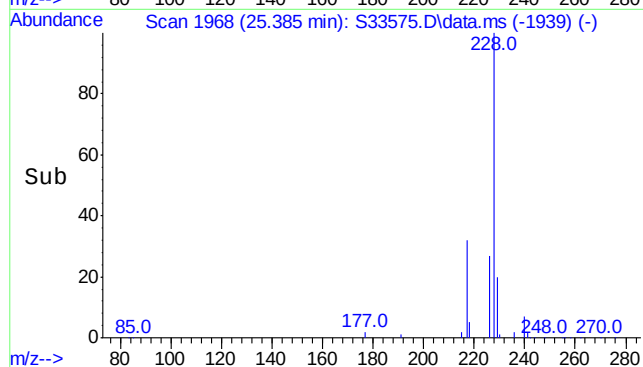
#34
C3-Fluoranthenes/pyrenes
Concen: 0.062 ng/mL m
RT: 25.418 min Scan# 1973
Delta R.T. -0.072 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

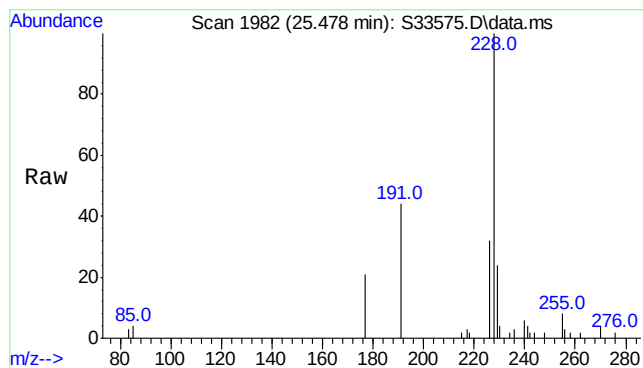
Tgt Ion:244 Resp: 1255
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#



#36
Benz(a)anthracene
Concen: 0.302 ng/mL
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

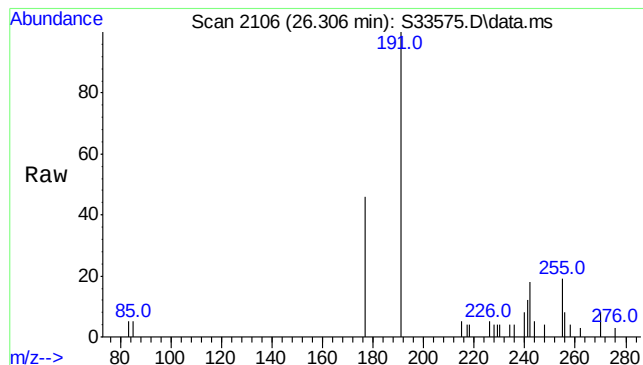
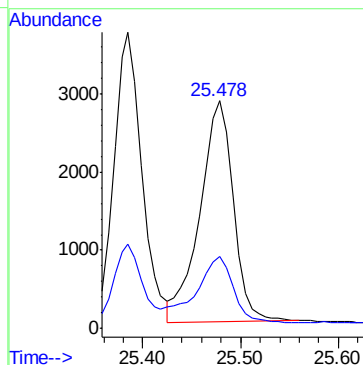
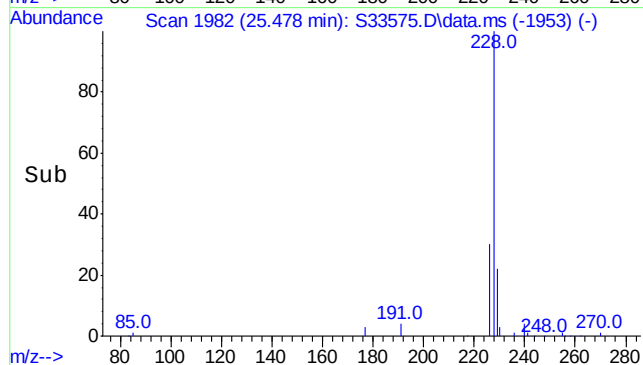
Tgt Ion:228 Resp: 7677
Ion Ratio Lower Upper
228 100
226 27.7 23.7 35.5





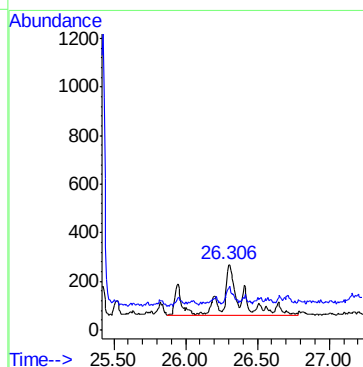
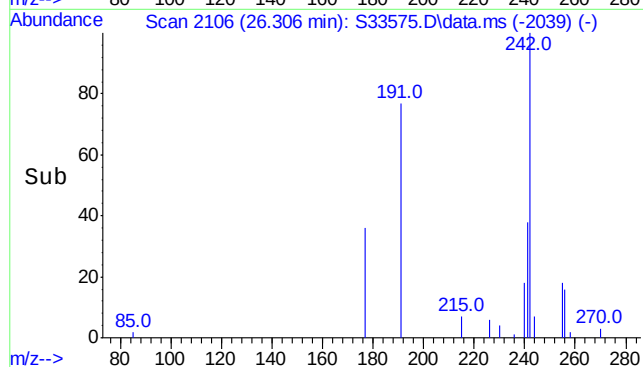
#38
 Chrysene
 Concen: 0.247 ng/mL
 RT: 25.478 min Scan# 1982
 Delta R.T. -0.007 min
 Lab File: S33575.D
 Acq: 14 Sep 2013 3:31 am

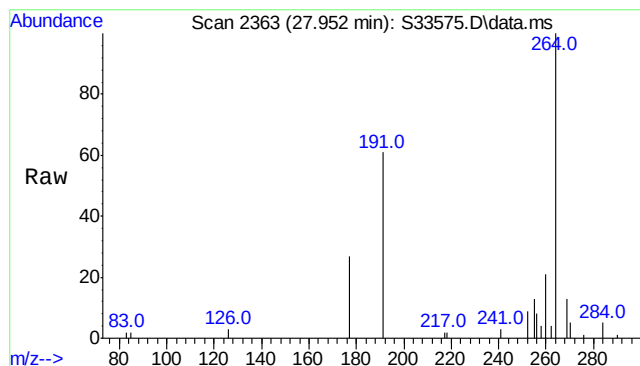
Tgt Ion:228 Resp: 6672
 Ion Ratio Lower Upper
 228 100
 226 33.1 26.0 39.0



#39
 C1-Benz(a)anthracenes/chrysenes
 Concen: 0.135 ng/mL m
 RT: 26.306 min Scan# 2106
 Delta R.T. -0.052 min
 Lab File: S33575.D
 Acq: 14 Sep 2013 3:31 am

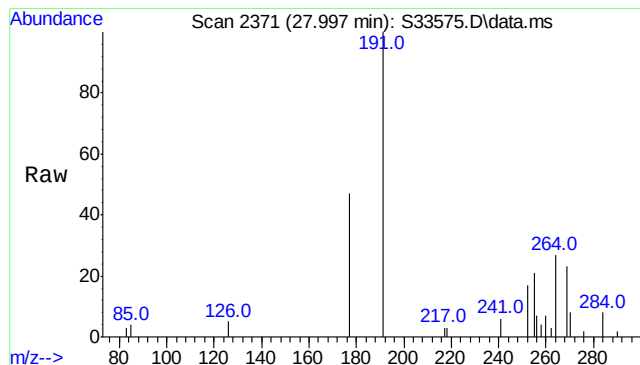
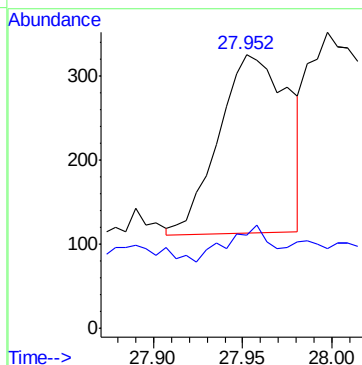
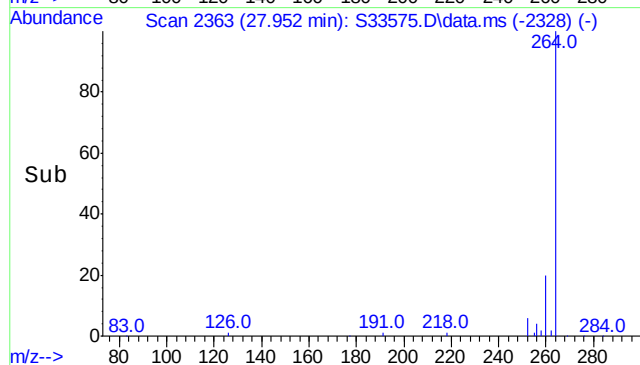
Tgt Ion:242 Resp: 2143
 Ion Ratio Lower Upper
 242 100
 241 3.8 27.2 40.8#





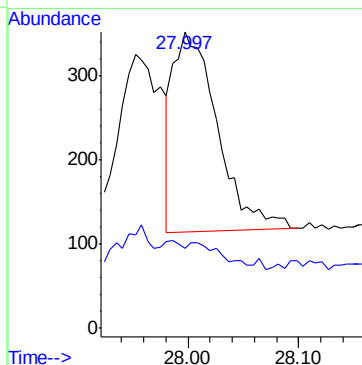
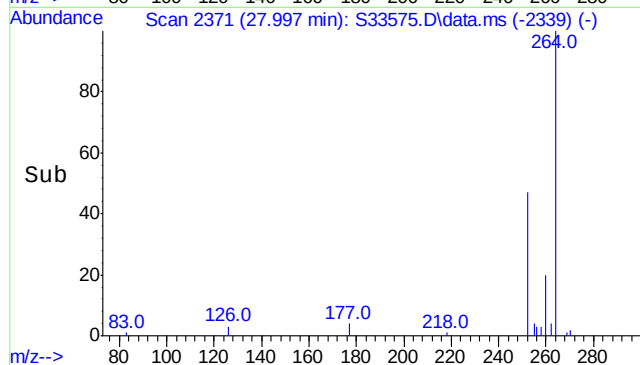
#44
Benzo(b)fluoranthene
Concen: 0.015 ng/mL
RT: 27.952 min Scan# 2363
Delta R.T. -0.006 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

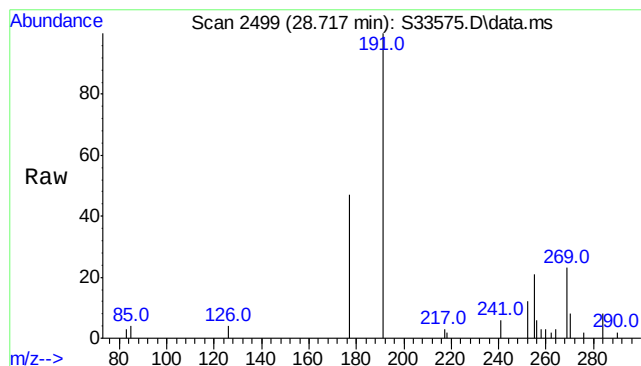
Tgt Ion:252 Resp: 578
Ion Ratio Lower Upper
252 100
126 11.6 23.0 34.4#



#46
Benzo(k)fluoranthene
Concen: 0.019 ng/mL
RT: 27.997 min Scan# 2371
Delta R.T. -0.023 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

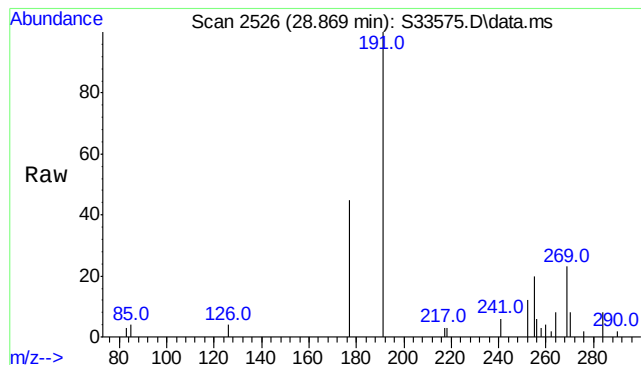
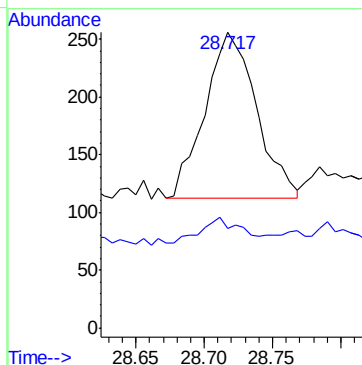
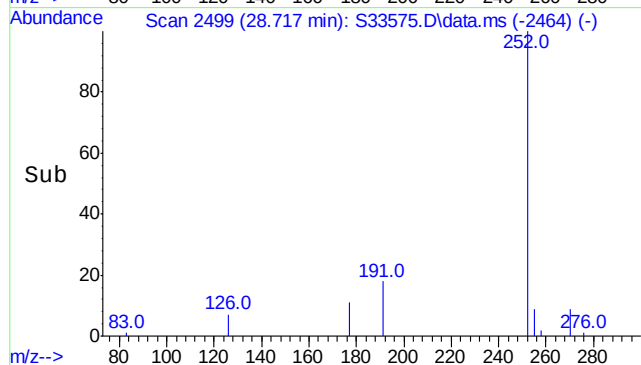
Tgt Ion:252 Resp: 662
Ion Ratio Lower Upper
252 100
126 0.0 24.4 36.6#





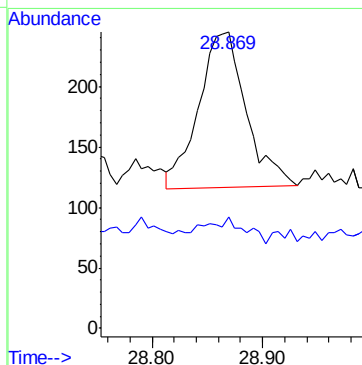
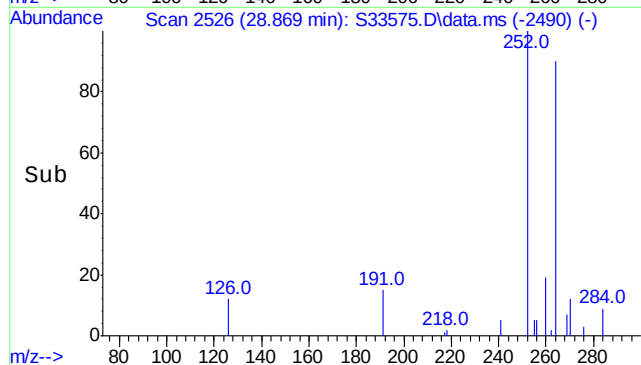
#48
Benzo(e)pyrene
Concen: 0.012 ng/mL
RT: 28.717 min Scan# 2499
Delta R.T. -0.006 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

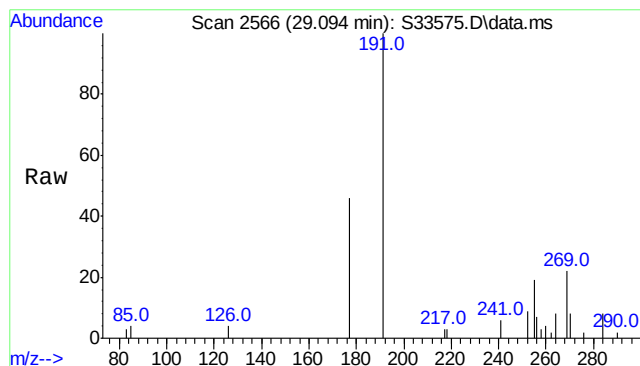
Tgt Ion:252 Resp: 377
Ion Ratio Lower Upper
252 100
126 10.9 22.6 34.0#



#49
Benzo(a)pyrene
Concen: 0.018 ng/mL
RT: 28.869 min Scan# 2526
Delta R.T. 0.000 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

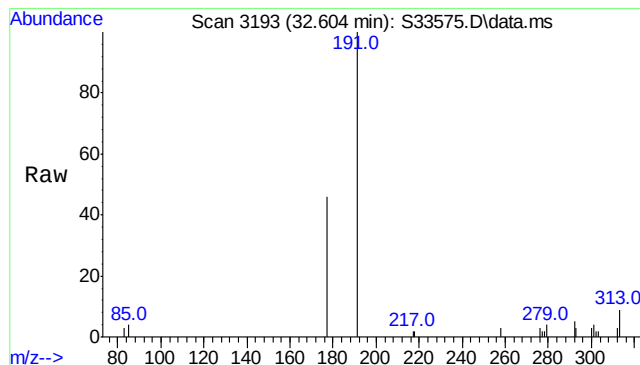
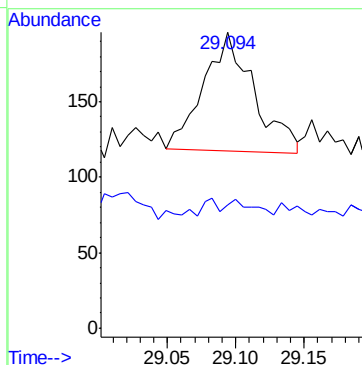
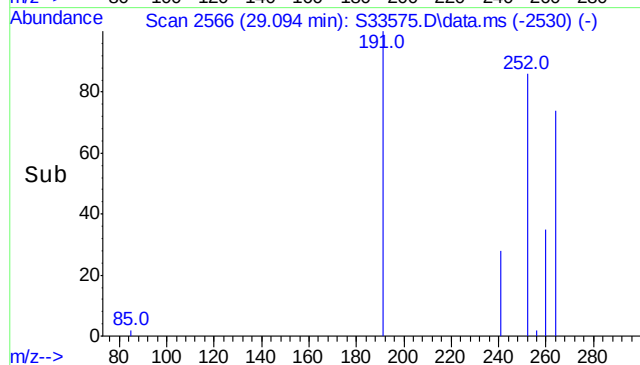
Tgt Ion:252 Resp: 385
Ion Ratio Lower Upper
252 100
126 13.8 25.1 37.7#





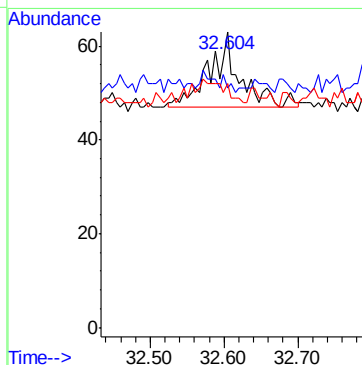
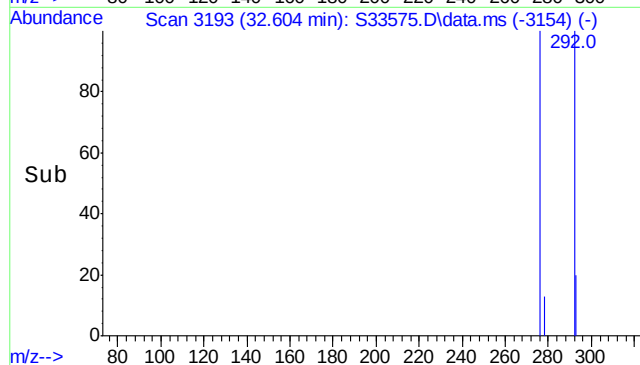
#51
Perylene
Concen: 0.010 ng/mL
RT: 29.094 min Scan# 2566
Delta R.T. 0.000 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

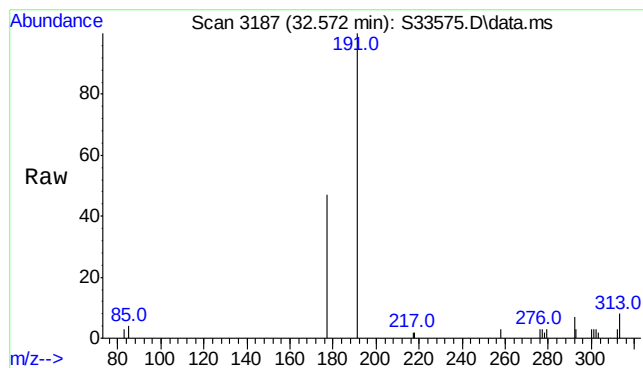
Tgt Ion: 252 Resp: 199
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#



#52
Indeno(1,2,3-cd)pyrene
Concen: 0.001 ng/mL m
RT: 32.604 min Scan# 3193
Delta R.T. 0.010 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

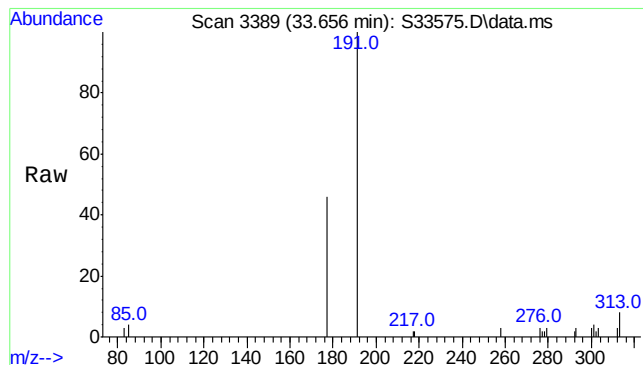
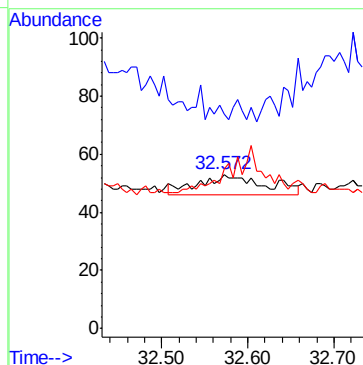
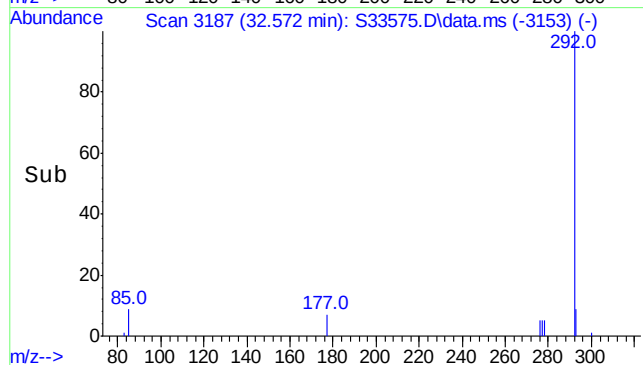
Tgt Ion: 276 Resp: 46
Ion Ratio Lower Upper
276 100
277 0.0 21.3 31.9#
278 0.0 21.8 32.8#





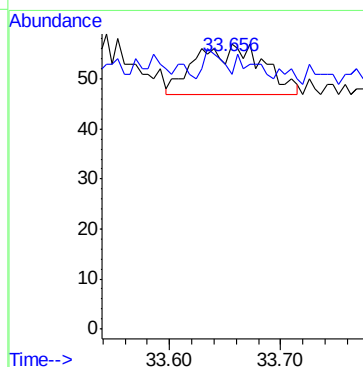
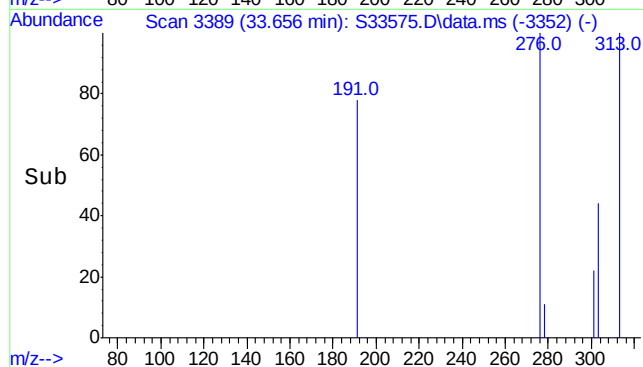
#53
Dibenz(a,h)anthracene
Concen: 0.001 ng/mL m
RT: 32.572 min Scan# 3187
Delta R.T. -0.016 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

Tgt Ion:	278	Resp:	36
Ion Ratio	Lower	Upper	
278	100		
279	0.0	32.2	48.4#
276	0.0	242.1	363.1#



#54
Benzo(g,h,i)perylene
Concen: 0.001 ng/mL m
RT: 33.656 min Scan# 3389
Delta R.T. -0.000 min
Lab File: S33575.D
Acq: 14 Sep 2013 3:31 am

Tgt Ion:	276	Resp:	42
Ion Ratio	Lower	Upper	
276	100		
277	0.0	20.3	30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33620.D
 Acq On : 20 Sep 2013 5:48 pm
 Operator : RUBENP
 Sample : mc24019-1dup
 Misc : ms29817,mss1490,,,,,
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 24 16:45:29 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	35207	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	23860	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	19795	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	16099	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	14085	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.020	188	36869	5.00	ng/mL	0.00
26) Anthracene-d10	20.116	188	44104	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	25213	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	23864	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	10814	0.50	ng/mL	-0.01
37) Chrysene-d12	25.418	240	13079	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	9352	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.947	264	10013	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	6440	0.33	ng/mL	-0.02
50) Perylene-d12	29.010	264	5394	0.33	ng/mL	-0.02

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.918	128	4016346	3314.825	ng/mL	100
3) C1-Naphthalenes	15.081	142	1510037m	1246.284	ng/mL	
4) C2-Naphthalenes	16.392	156	733816m	306.597	ng/mL	
5) C3-Naphthalenes	17.449	170	260773m	160.479	ng/mL	
7) C4-Naphthalenes	19.521	184	44659m	56.161	ng/mL	
9) 2-Methylnaphthalene	15.081	142	971076	560.714	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	539043	351.644	ng/mL	100
13) Acenaphthylene	16.801	152	50228	22.503	ng/mL#	100
14) Acenaphthene	17.154	154	818933	343.559	ng/mL	98
16) Fluorene	18.132	166	665428m	174.026	ng/mL	
17) C1-Fluorenes	19.220	180	164709m	50.757	ng/mL	
18) C2-Fluorenes	20.245	194	45438m	18.340	ng/mL	
19) C3-Fluorenes	21.199	208	7512m	3.251	ng/mL	
21) Phenanthrene	20.065	178	1632419	175.712	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.084	192	300199m	29.243	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	51131m	13.392	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	10604m	6.620	ng/mL	
25) C4-Phenanthrenes/anthr...	23.530	234	2055m	2.839	ng/mL	
27) Anthracene	20.155	178	347946	31.157	ng/mL	100
29) Fluoranthene	22.483	202	379621	18.682	ng/mL#	81
31) Pyrene	22.954	202	271776	12.150	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.612	216	67909m	4.706	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.442	230	10290m	0.460	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.418	244	1758m	0.079	ng/mL	
36) Benz(a)anthracene	25.378	228	21044	0.723	ng/mL	96
38) Chrysene	25.472	228	16643	0.556	ng/mL	96
39) C1-Benz(a)anthracenes/...	26.300	242	4520m	0.257	ng/mL	
44) Benzo(b)fluoranthene	27.947	252	1445	0.038	ng/mL#	72
46) Benzo(k)fluoranthene	27.997	252	2125	0.060	ng/mL#	60
48) Benzo(e)pyrene	28.706	252	1075	0.029	ng/mL#	64
49) Benzo(a)pyrene	28.852	252	1170	0.054	ng/mL#	63
51) Perylene	29.083	252	296	0.013	ng/mL#	57

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
Data File : S33620.D
Acq On : 20 Sep 2013 5:48 pm
Operator : RUBENP
Sample : mc24019-1dup
Misc : ms29817,mss1490,,,,,
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 24 16:45:29 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

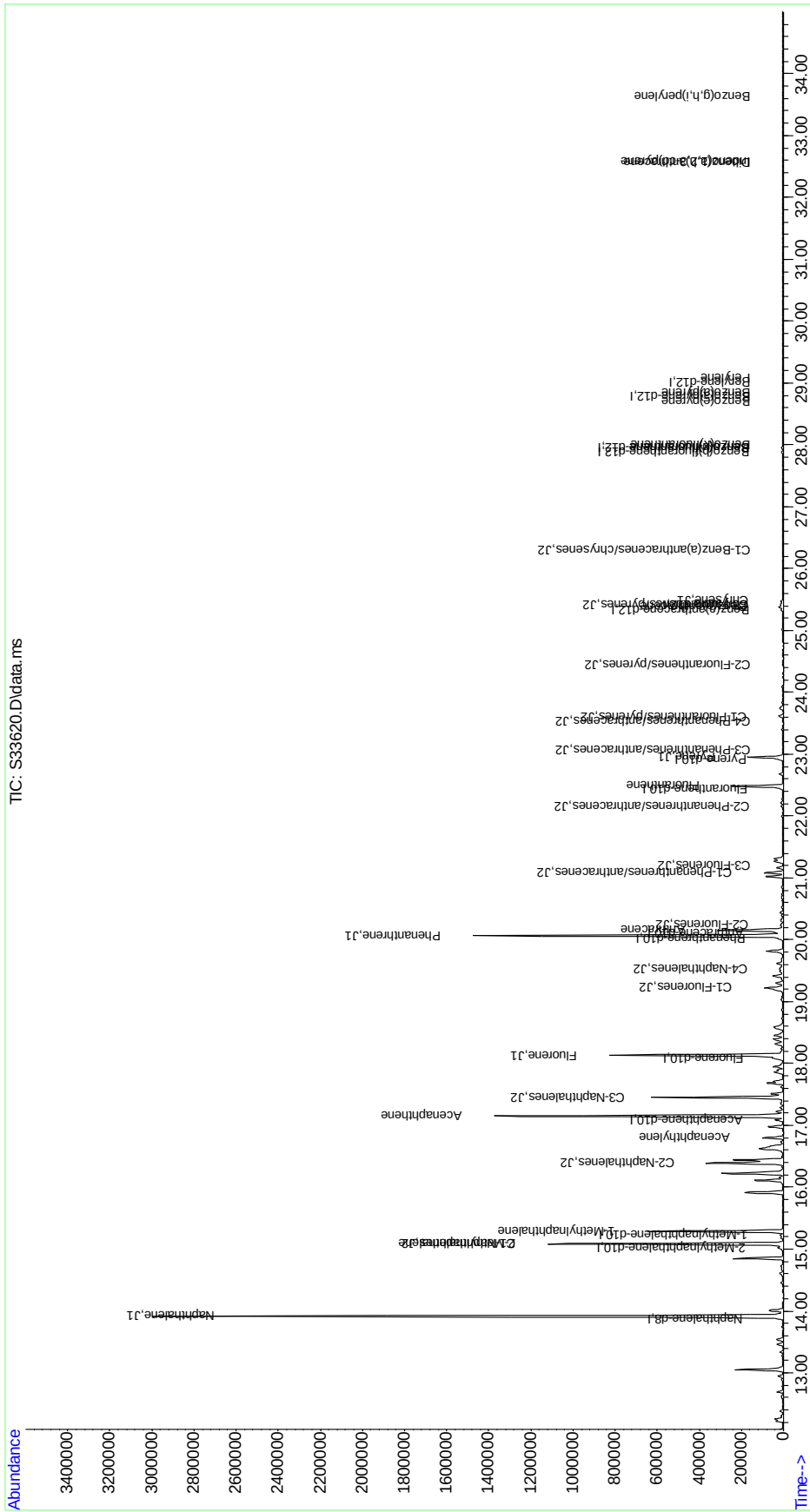
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) Indeno(1,2,3-cd)pyrene	32.577	276	154	0.004	ng/mL#	70
53) Dibenz(a,h)anthracene	32.572	278	71	0.002	ng/mL#	54
54) Benzo(g,h,i)perylene	33.640	276	112	0.003	ng/mL#	50

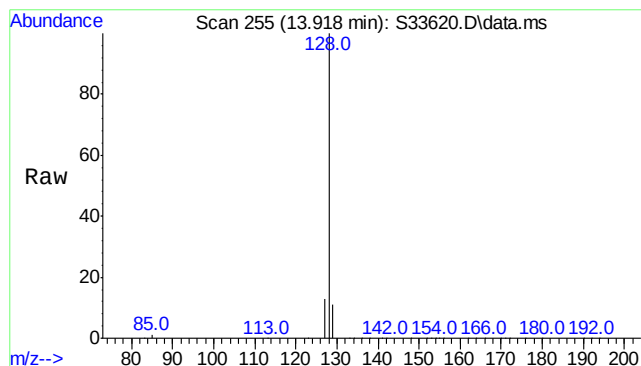
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130920\
Data File : S33620.D
Acq On : 20 Sep 2013 5:48 pm
Operator : RUBENP
Sample : mc24019-1dup
Misc : ms29817,mss1490,,,,,
ALS Vial : 7 Sample Multiplier: 1

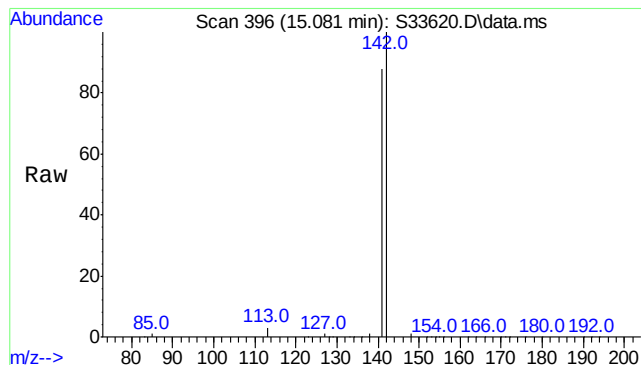
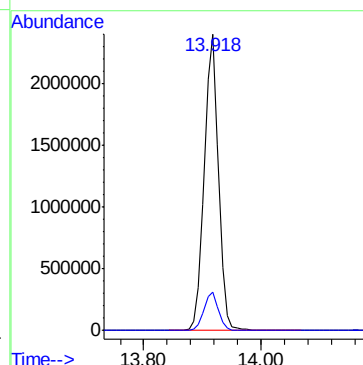
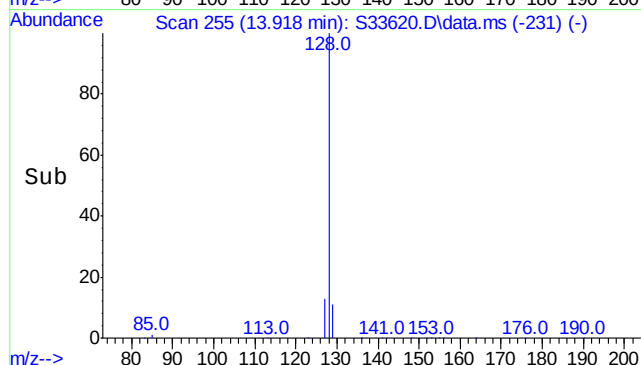
Quant Time: Oct 24 16:45:29 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





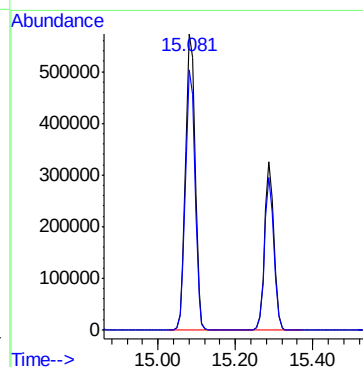
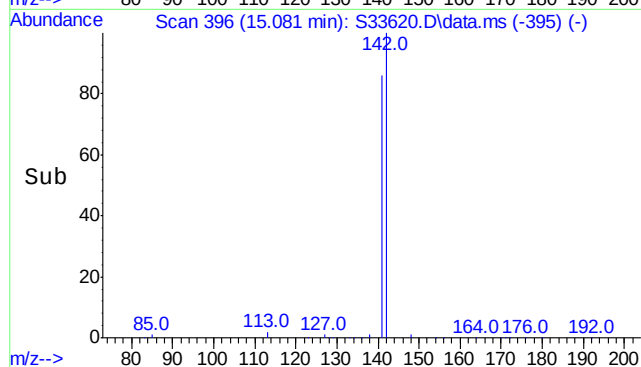
#2
Naphthalene
Concen: 3314.825 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. -0.000 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

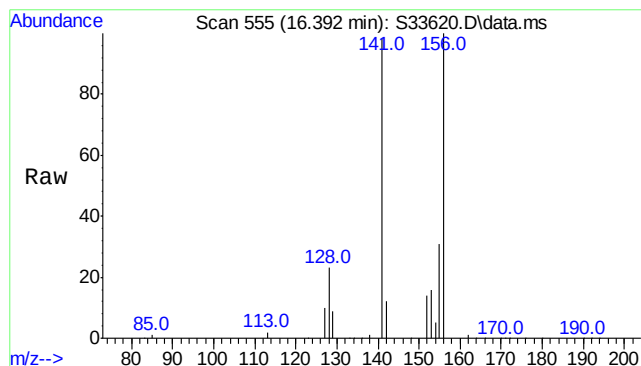
Tgt Ion:128 Resp: 4016346
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



#3
C1-Naphthalenes
Concen: 1246.284 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

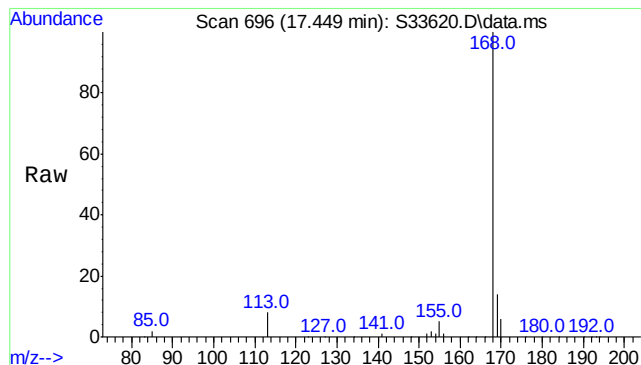
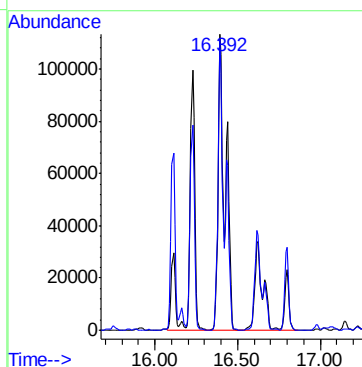
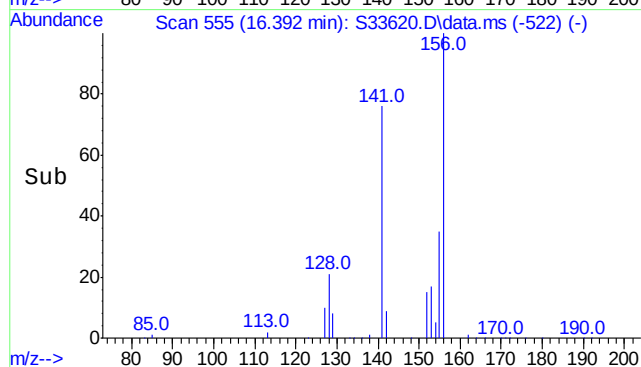
Tgt Ion:142 Resp: 1510037
Ion Ratio Lower Upper
142 100
141 32.4 71.0 106.6#





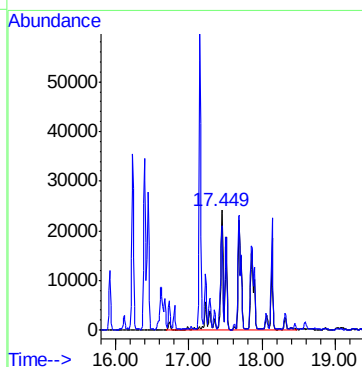
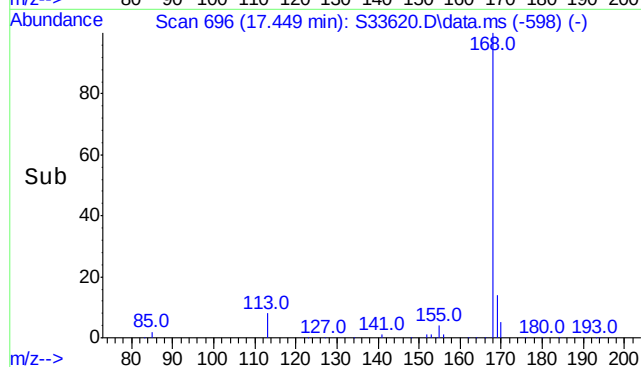
#4
C2-Naphthalenes
Concen: 306.597 ng/mL m
RT: 16.392 min Scan# 555
Delta R.T. -0.065 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

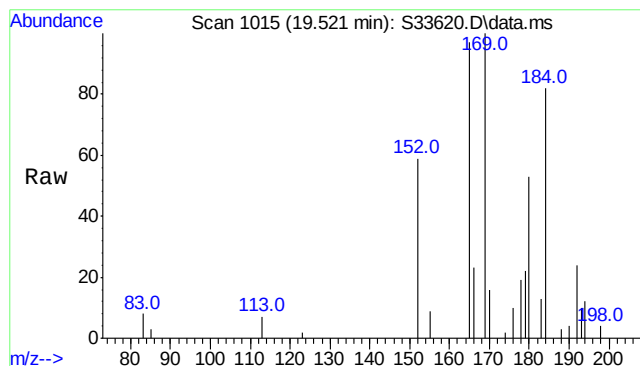
Tgt Ion:156 Resp: 733816
Ion Ratio Lower Upper
156 100
141 14.5 79.0 118.4#



#5
C3-Naphthalenes
Concen: 160.479 ng/mL m
RT: 17.449 min Scan# 696
Delta R.T. -0.210 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

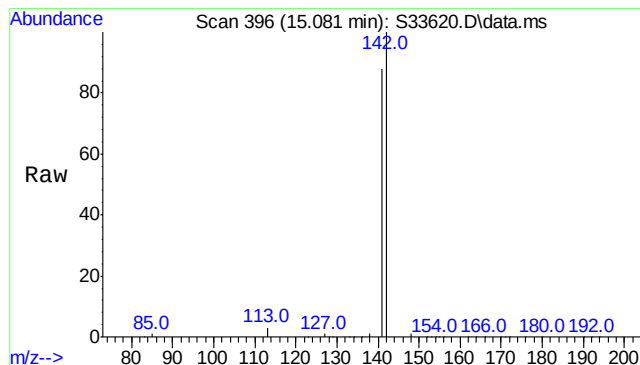
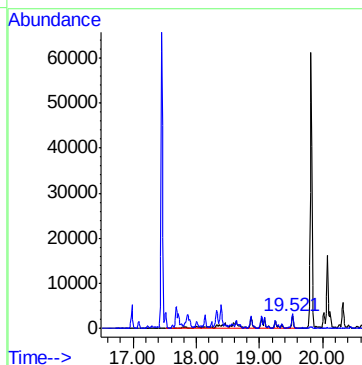
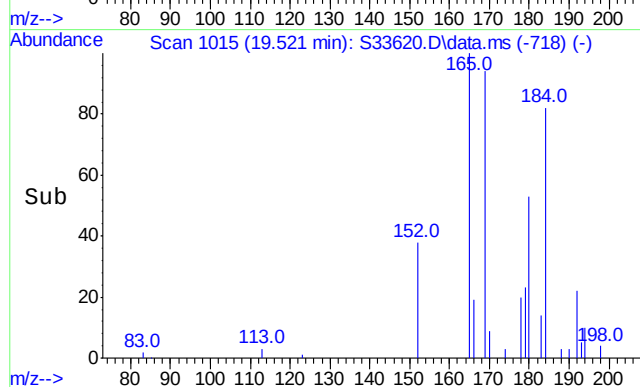
Tgt Ion:170 Resp: 260773
Ion Ratio Lower Upper
170 100
155 15.4 80.7 121.1#





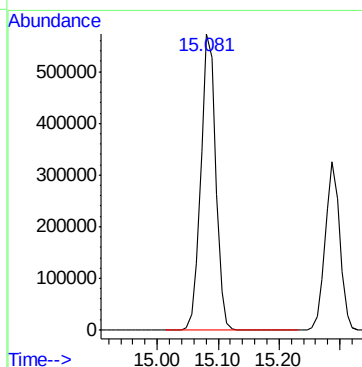
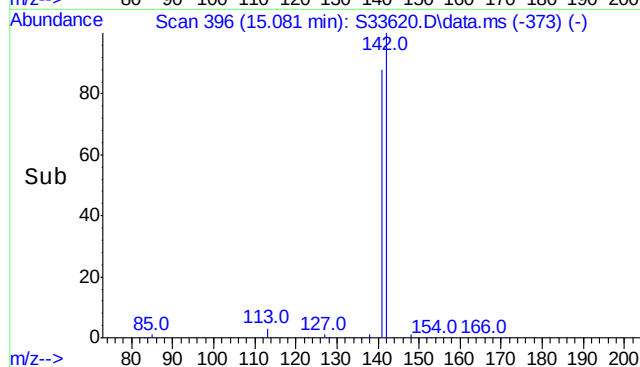
#7
C4-Naphthalenes
Concen: 56.161 ng/mL m
RT: 19.521 min Scan# 1015
Delta R.T. 0.590 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

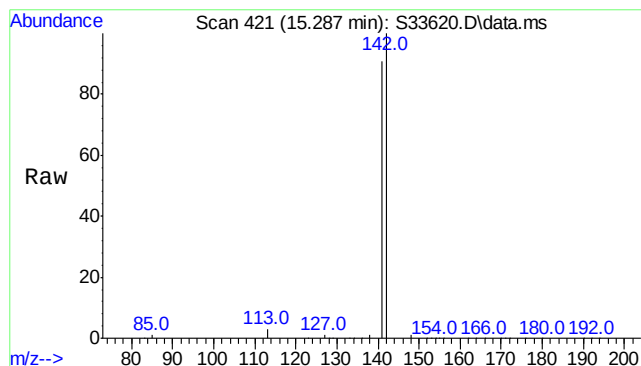
Tgt Ion:184 Resp: 44659
Ion Ratio Lower Upper
184 100
169 12.5 80.1 120.1#



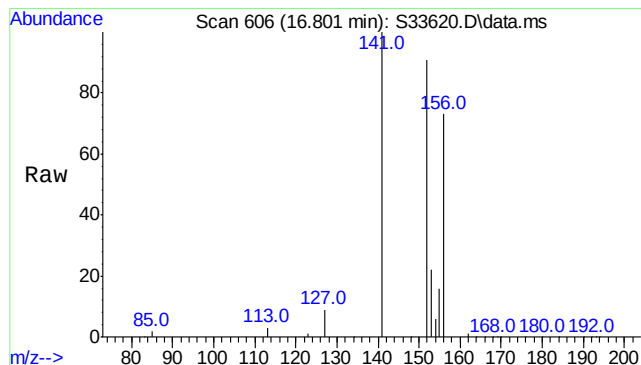
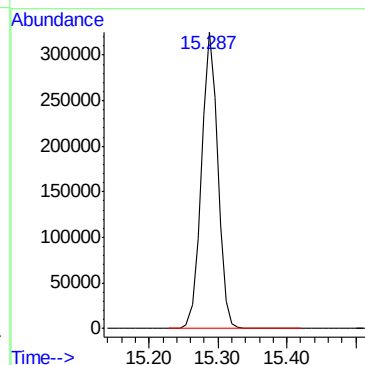
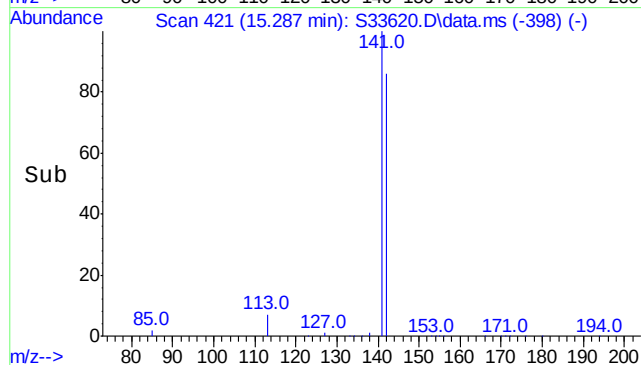
#9
2-Methylnaphthalene
Concen: 560.714 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

Tgt Ion:142 Resp: 971076

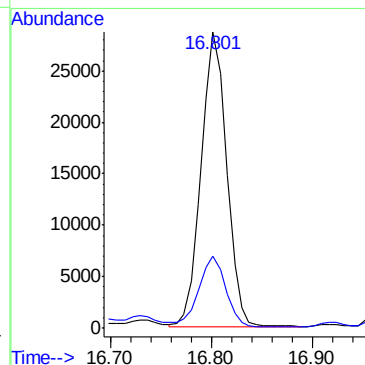
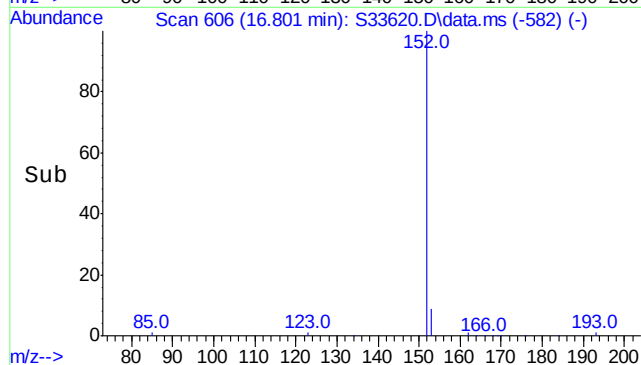


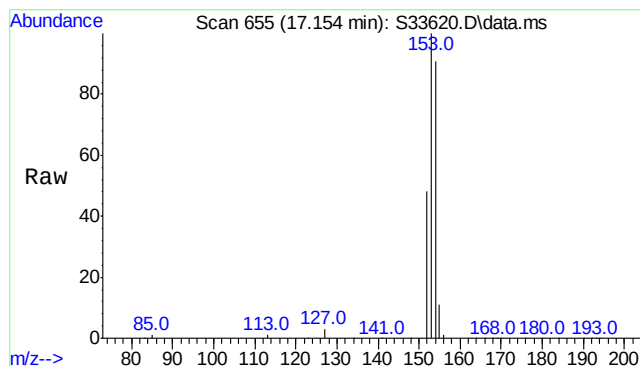


#11
1-Methylnaphthalene
Concen: 351.644 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm
Tgt Ion:142 Resp: 539043



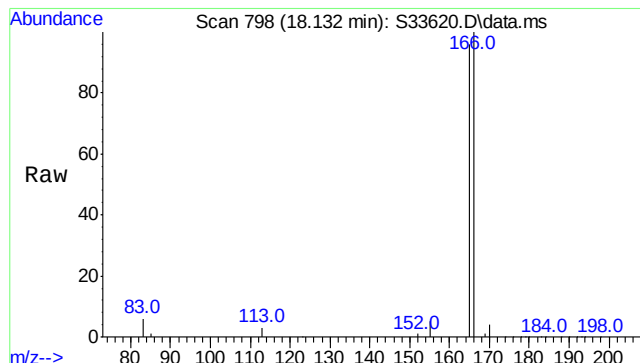
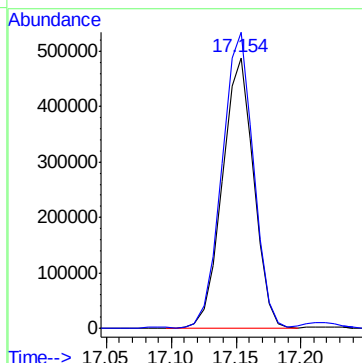
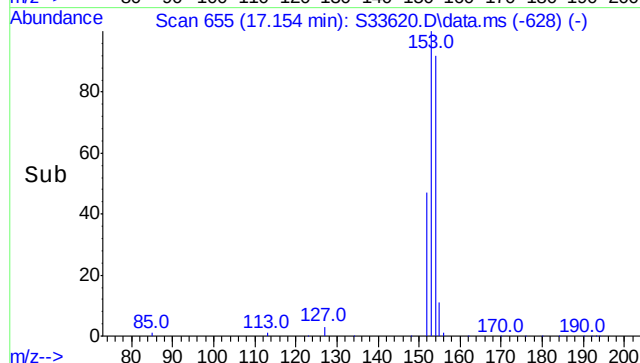
#13
Acenaphthylene
Concen: 22.503 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm
Tgt Ion:152 Resp: 50228
Ion Ratio Lower Upper
152 100
153 25.6 0.0 0.0#





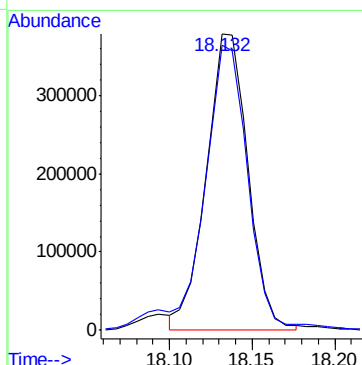
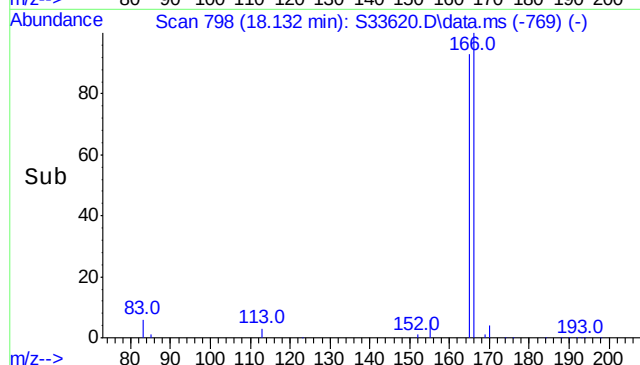
#14
Acenaphthene
Concen: 343.559 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

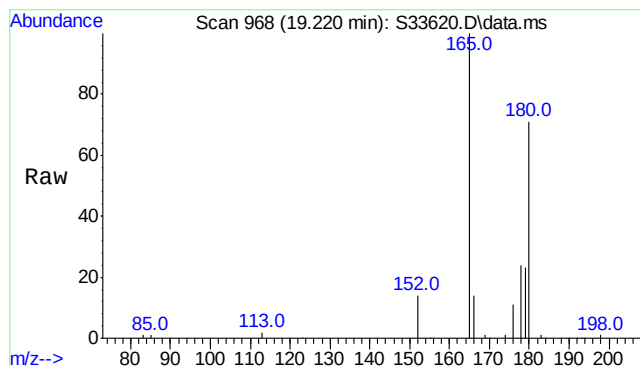
Tgt Ion:154 Resp: 818933
Ion Ratio Lower Upper
154 100
153 109.9 86.6 129.8



#16
Fluorene
Concen: 174.026 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

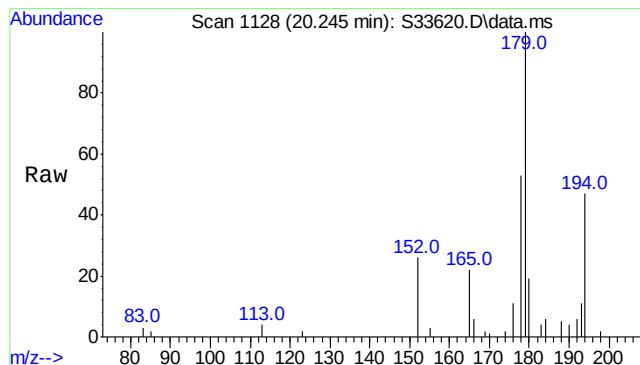
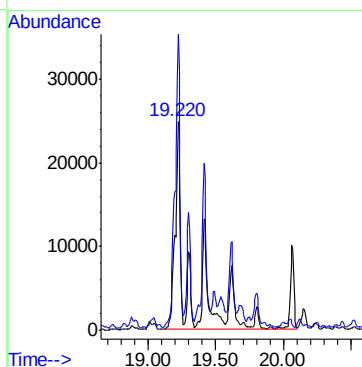
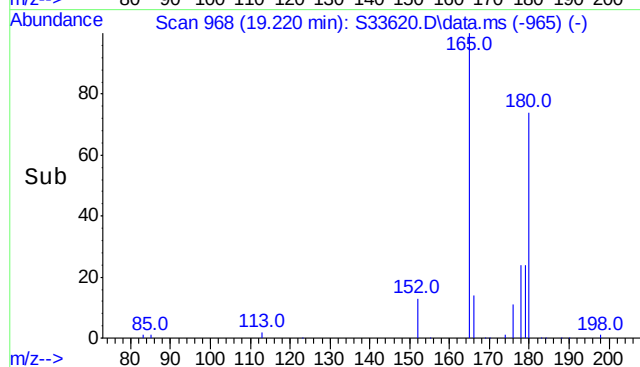
Tgt Ion:166 Resp: 665428
Ion Ratio Lower Upper
166 100
165 103.3 76.4 114.6





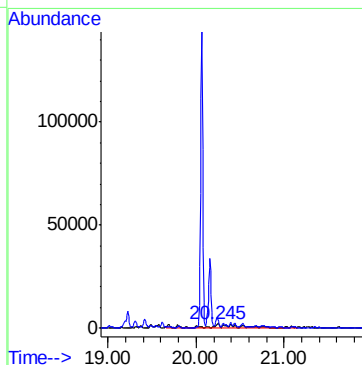
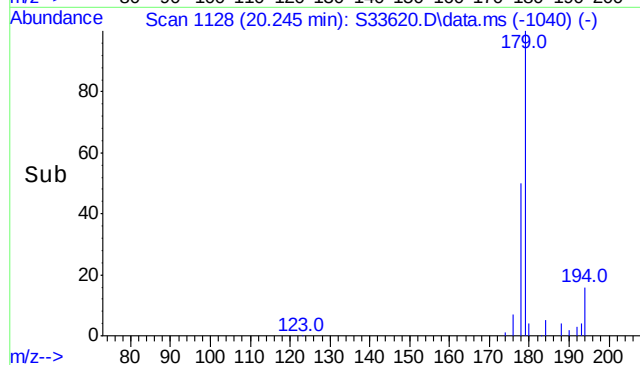
#17
C1-Fluorenes
Concen: 50.757 ng/mL m
RT: 19.220 min Scan# 968
Delta R.T. -0.092 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

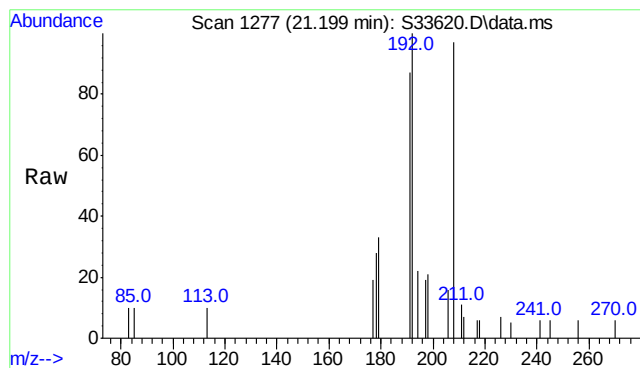
Tgt Ion:180 Resp: 164709
Ion Ratio Lower Upper
180 100
165 13.8 111.1 166.7#



#18
C2-Fluorenes
Concen: 18.340 ng/mL m
RT: 20.245 min Scan# 1128
Delta R.T. -0.069 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

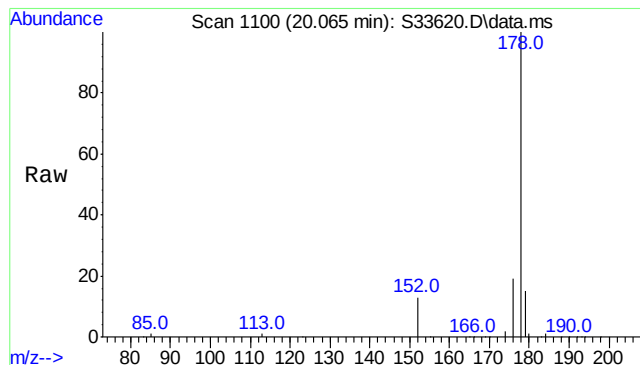
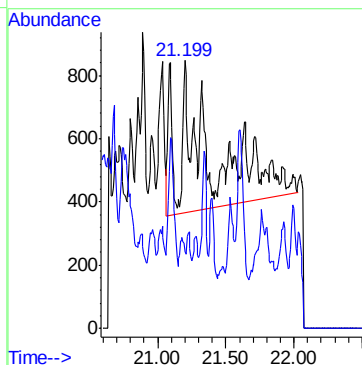
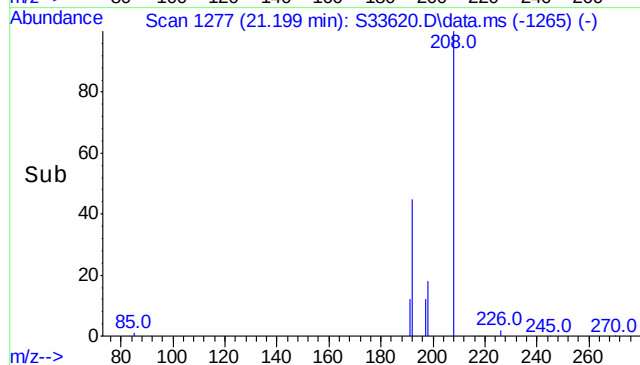
Tgt Ion:194 Resp: 45438
Ion Ratio Lower Upper
194 100
179 6.4 131.8 197.6#





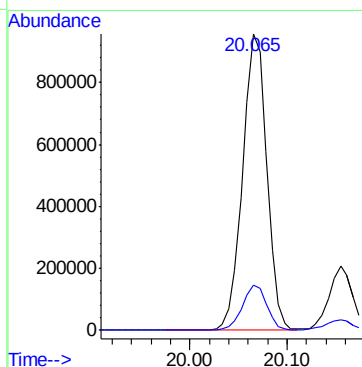
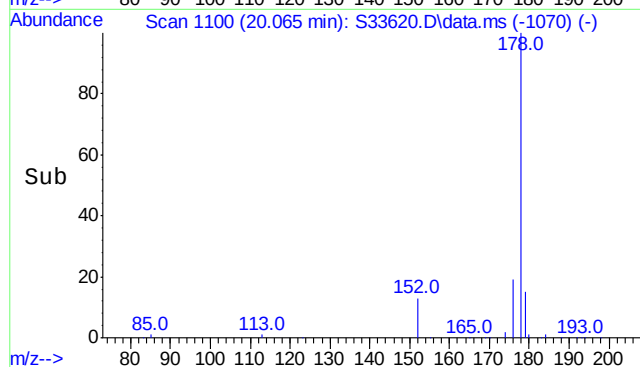
#19
C3-Fluorenes
Concen: 3.251 ng/mL m
RT: 21.199 min Scan# 1277
Delta R.T. -0.153 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

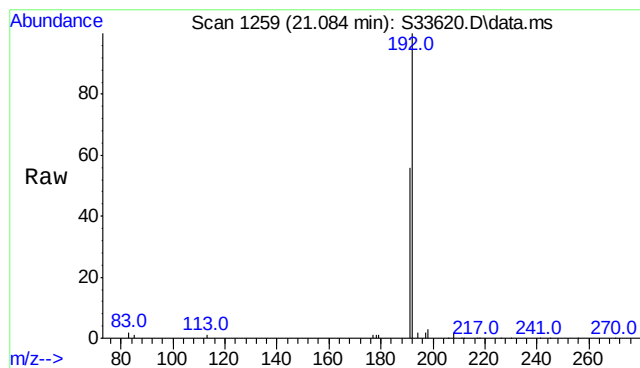
Tgt Ion:208 Resp: 7512
Ion Ratio Lower Upper
208 100
178 7.6 43.4 65.2#



#21
Phenanthrene
Concen: 175.712 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

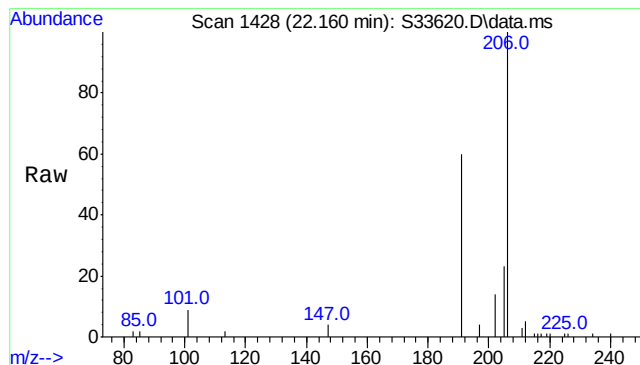
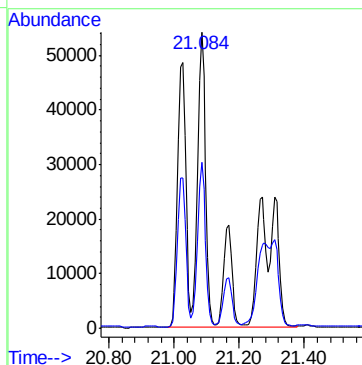
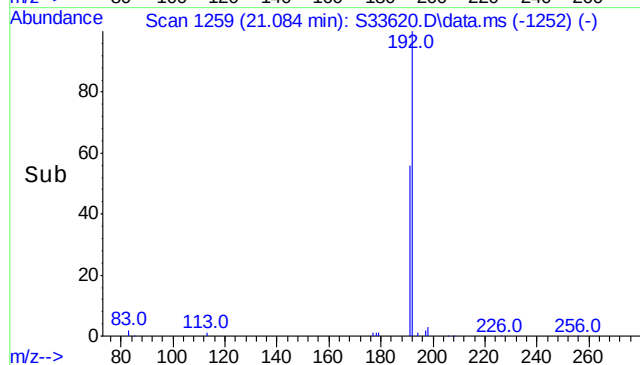
Tgt Ion:178 Resp: 1632419
Ion Ratio Lower Upper
178 100
179 15.1 12.4 18.6





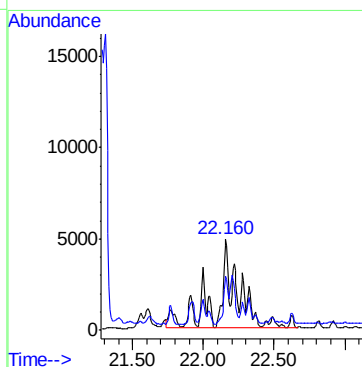
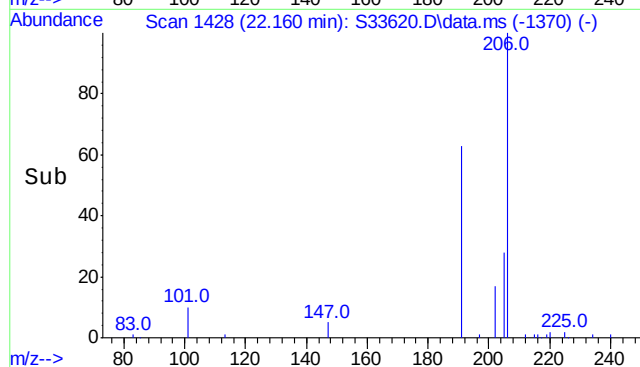
#22
C1-Phenanthrenes/anthracenes
Concen: 29.243 ng/mL m
RT: 21.084 min Scan# 1259
Delta R.T. -0.069 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

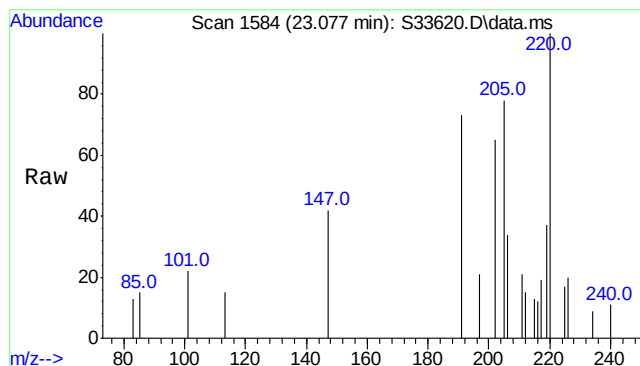
Tgt Ion:192 Resp: 300199
Ion Ratio Lower Upper
192 100
191 5.0 45.1 67.7#



#23
C2-Phenanthrenes/anthracenes
Concen: 13.392 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

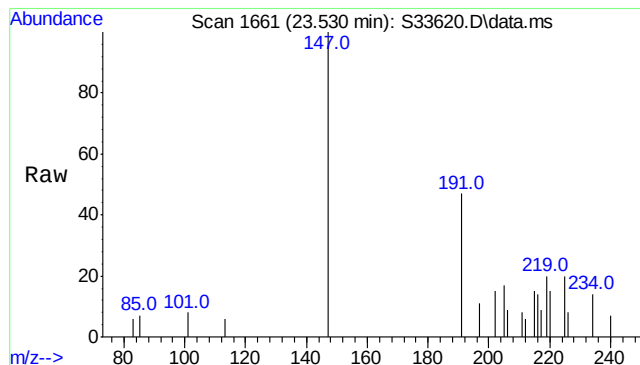
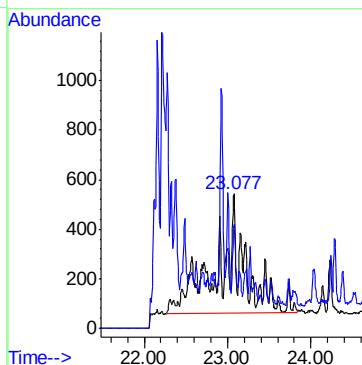
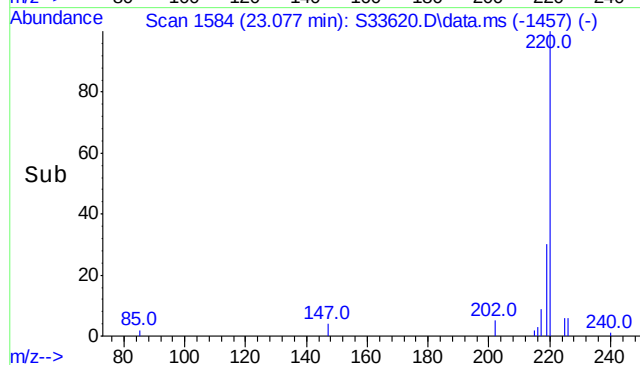
Tgt Ion:206 Resp: 51131
Ion Ratio Lower Upper
206 100
191 11.2 45.1 67.7#





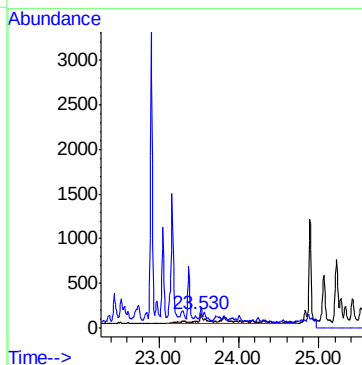
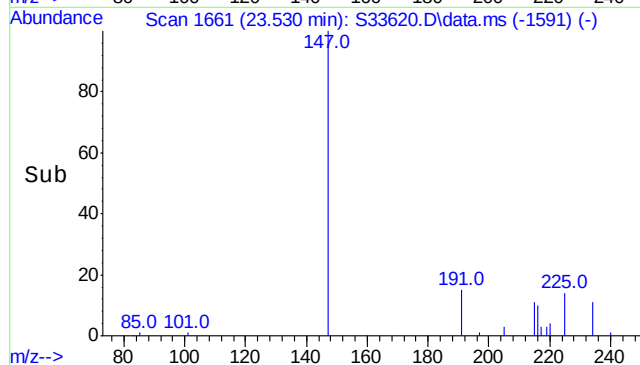
#24
C3-Phenanthrenes/anthracenes
Concen: 6.620 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

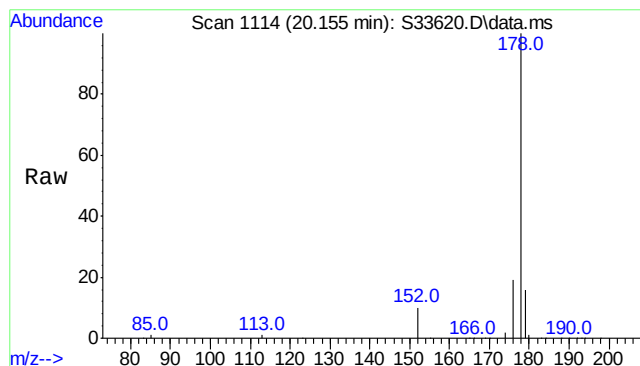
Tgt Ion:	220	Resp:	10604
Ion Ratio	Lower	Upper	
220	100		
205	2.0	45.1	67.7#



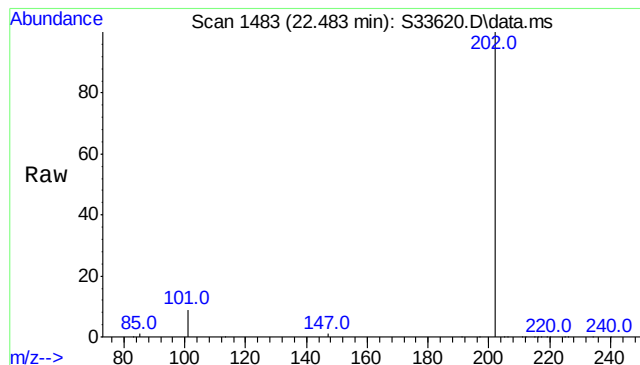
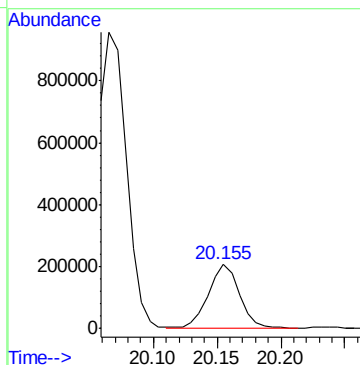
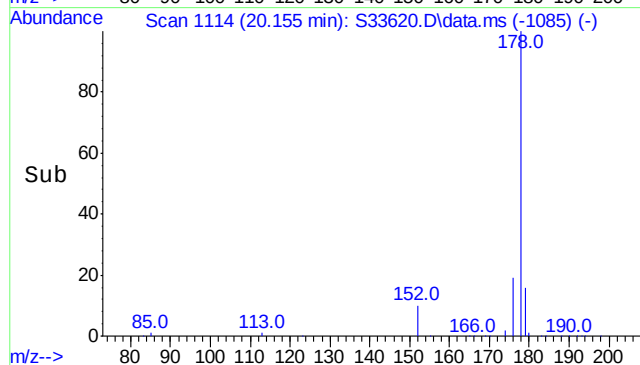
#25
C4-Phenanthrenes/anthracenes
Concen: 2.839 ng/mL m
RT: 23.530 min Scan# 1661
Delta R.T. -0.699 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

Tgt Ion:	234	Resp:	2055
Ion Ratio	Lower	Upper	
234	100		
219	1.9	53.0	79.6#

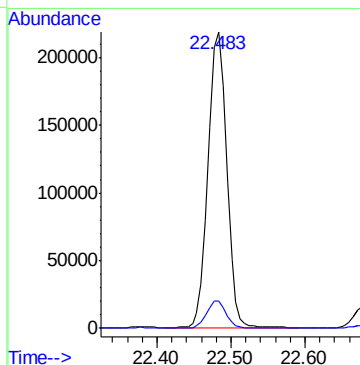
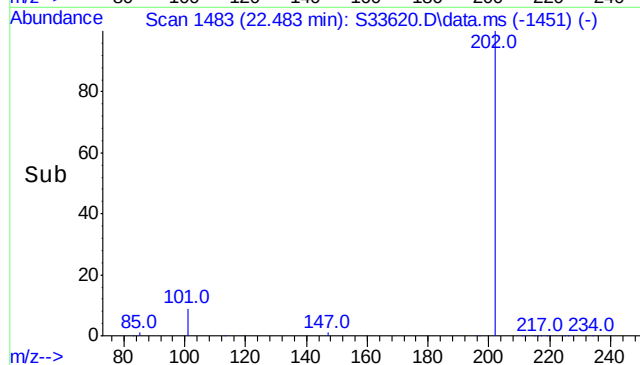


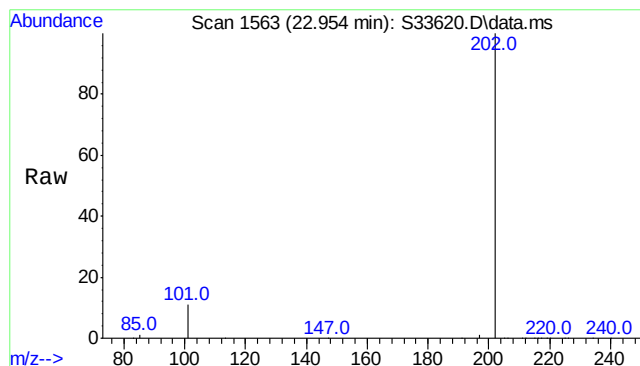


#27
Anthracene
Concen: 31.157 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm
Tgt Ion:178 Resp: 347946



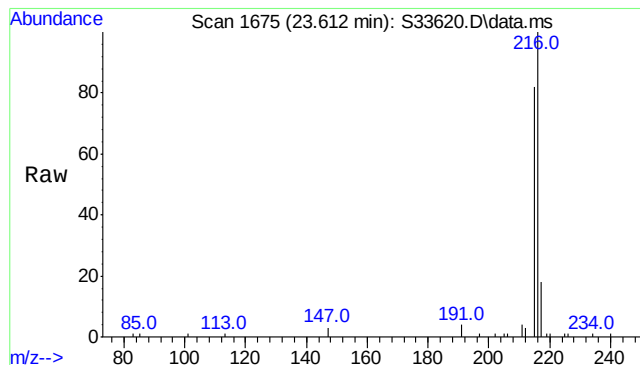
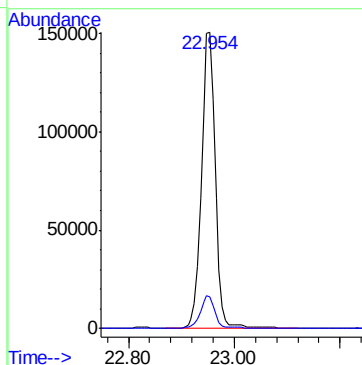
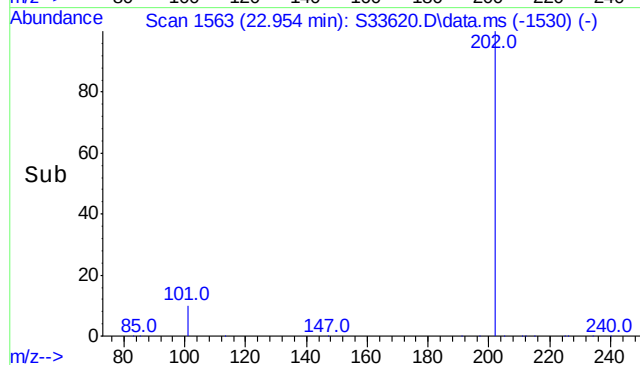
#29
Fluoranthene
Concen: 18.682 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm
Tgt Ion:202 Resp: 379621
Ion Ratio Lower Upper
202 100
101 9.3 14.3 21.5#





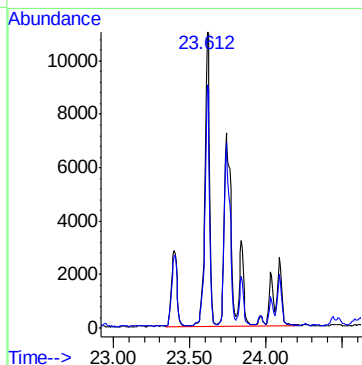
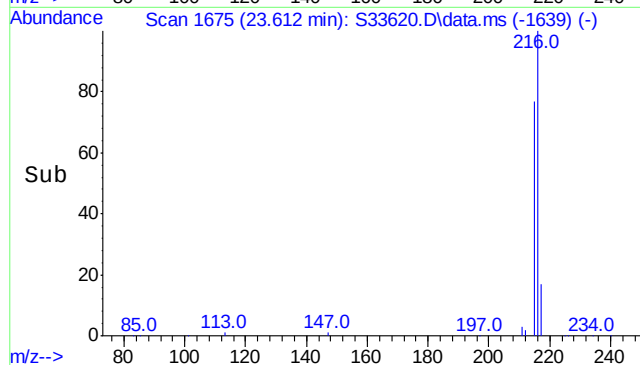
#31
Pyrene
Concen: 12.150 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

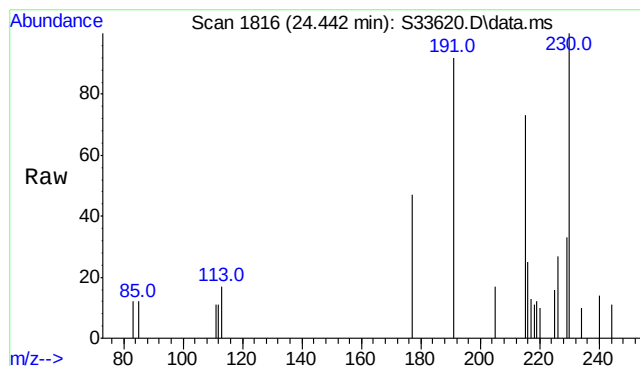
Tgt Ion:202 Resp: 271776
Ion Ratio Lower Upper
202 100
101 11.2 16.6 24.8#



#32
C1-Fluoranthenes/pyrenes
Concen: 4.706 ng/mL m
RT: 23.612 min Scan# 1675
Delta R.T. -0.070 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

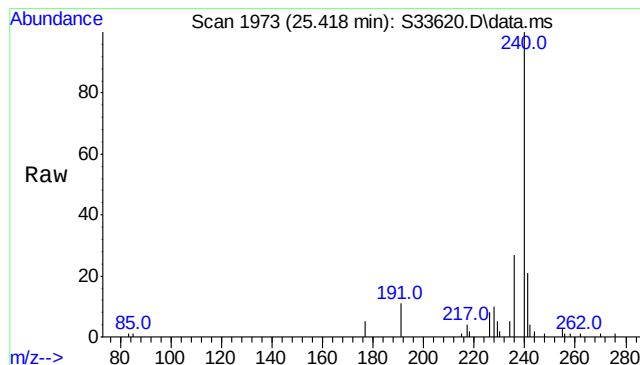
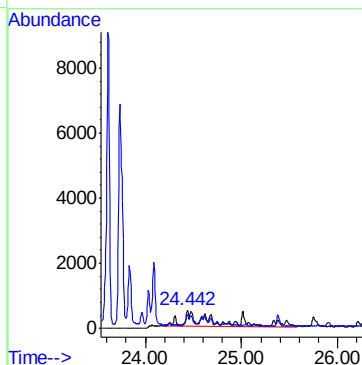
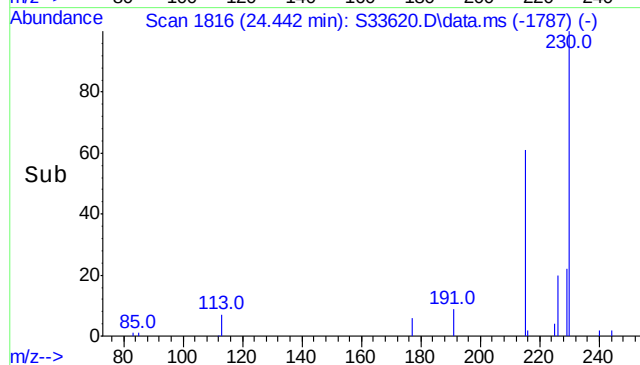
Tgt Ion:216 Resp: 67909
Ion Ratio Lower Upper
216 100
215 28.0 67.0 100.6#





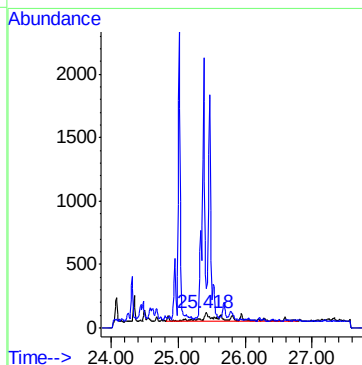
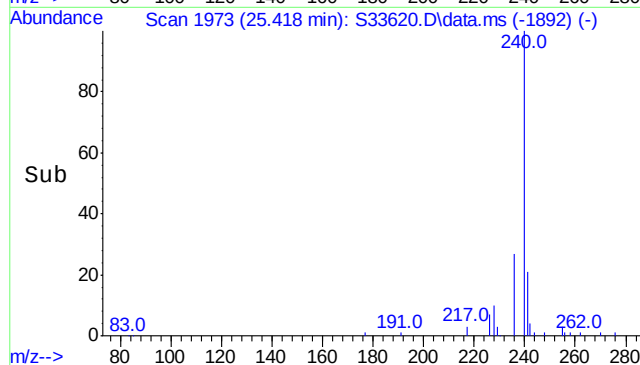
#33
C2-Fluoranthenes/pyrenes
Concen: 0.460 ng/mL m
RT: 24.442 min Scan# 1816
Delta R.T. -0.069 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

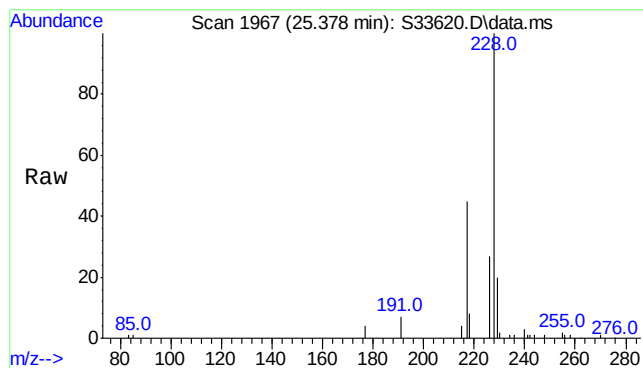
Tgt Ion:230 Resp: 10290
Ion Ratio Lower Upper
230 100
215 5.2 51.4 77.2#



#34
C3-Fluoranthenes/pyrenes
Concen: 0.079 ng/mL m
RT: 25.418 min Scan# 1973
Delta R.T. -0.072 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

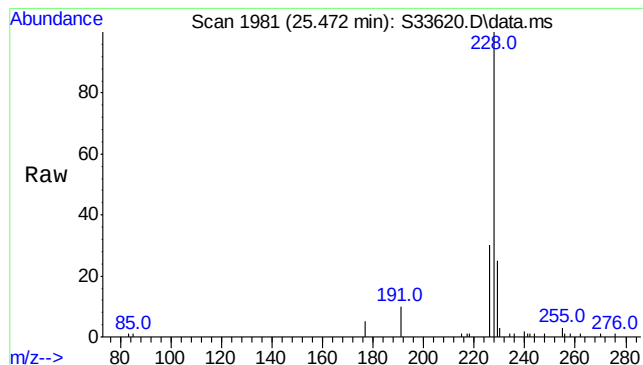
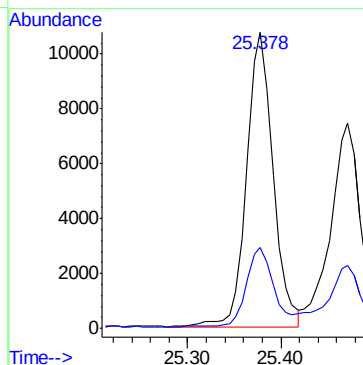
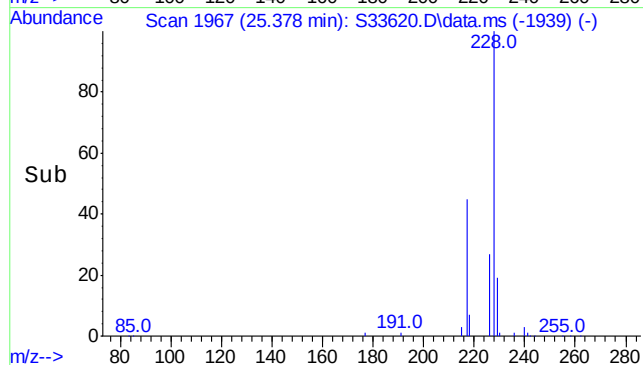
Tgt Ion:244 Resp: 1758
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#





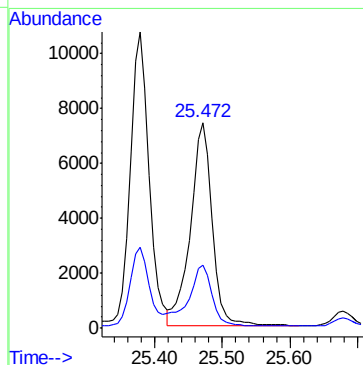
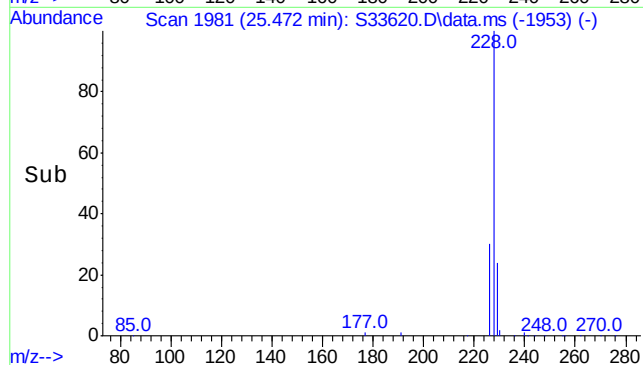
#36
Benz(a)anthracene
Concen: 0.723 ng/mL
RT: 25.378 min Scan# 1967
Delta R.T. -0.014 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

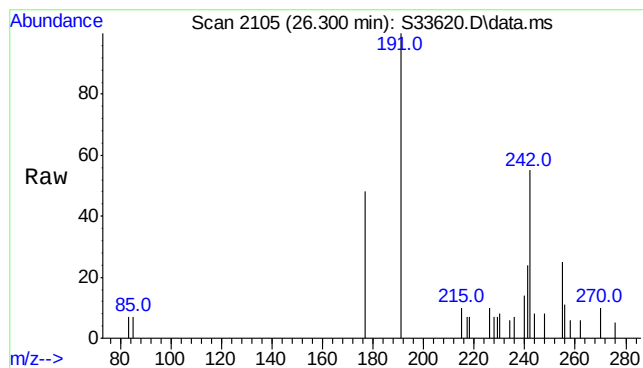
Tgt Ion:228 Resp: 21044
Ion Ratio Lower Upper
228 100
226 27.5 23.7 35.5



#38
Chrysene
Concen: 0.556 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

Tgt Ion:228 Resp: 16643
Ion Ratio Lower Upper
228 100
226 30.2 26.0 39.0





#39

C1-Benz(a)anthracenes/chrysenes

Concen: 0.257 ng/mL m

RT: 26.300 min Scan# 2105

Delta R.T. -0.058 min

Lab File: S33620.D

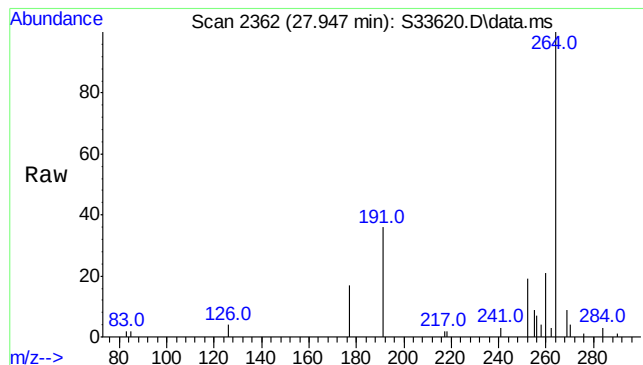
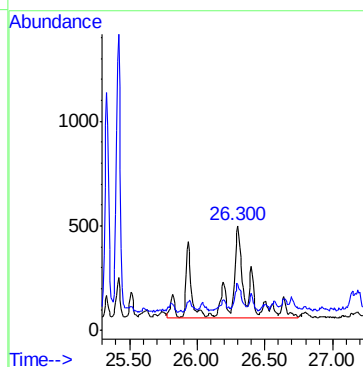
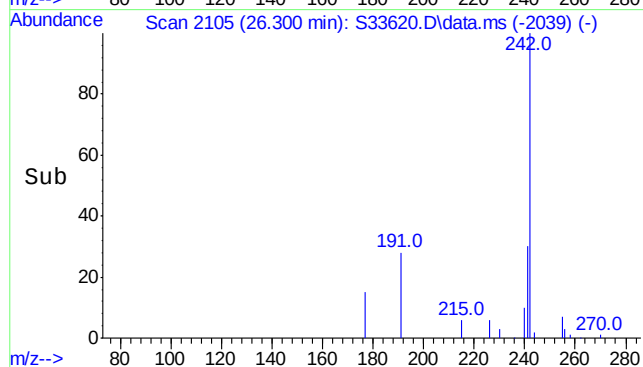
Acq: 20 Sep 2013 5:48 pm

Tgt Ion:242 Resp: 4520

Ion Ratio Lower Upper

242 100

241 9.6 27.2 40.8#



#44

Benzo(b)fluoranthene

Concen: 0.038 ng/mL

RT: 27.947 min Scan# 2362

Delta R.T. -0.011 min

Lab File: S33620.D

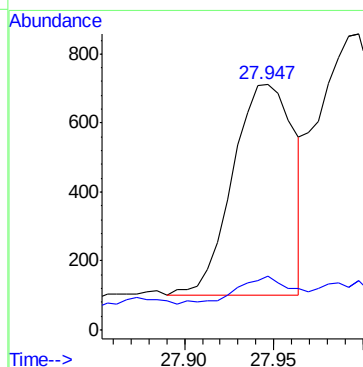
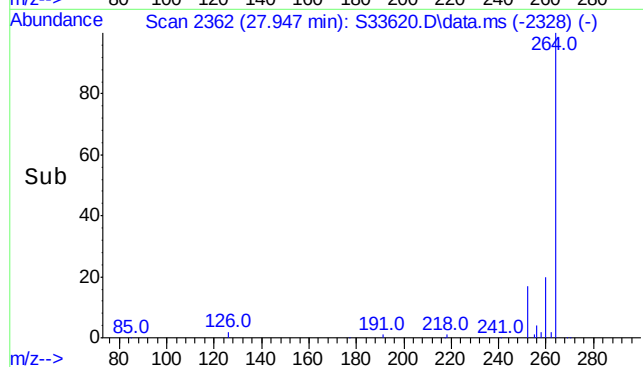
Acq: 20 Sep 2013 5:48 pm

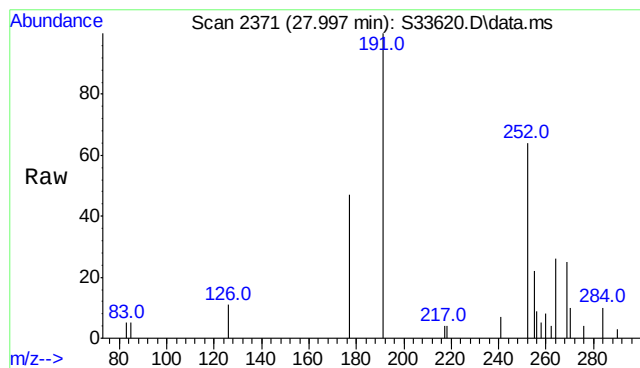
Tgt Ion:252 Resp: 1445

Ion Ratio Lower Upper

252 100

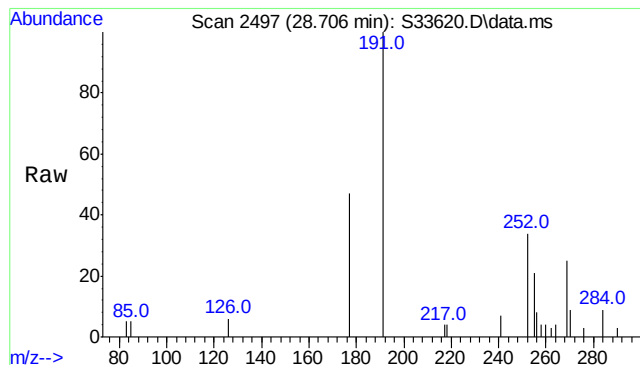
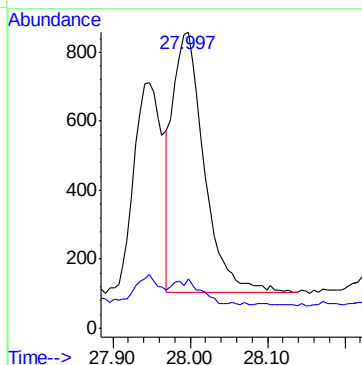
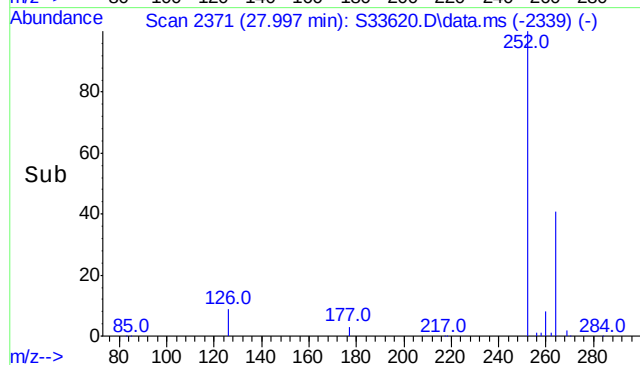
126 13.8 23.0 34.4#





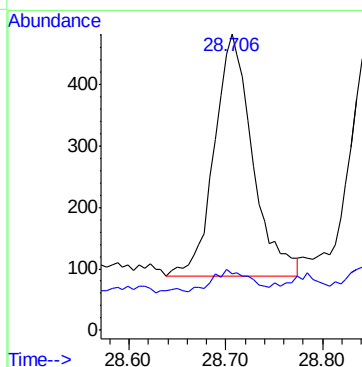
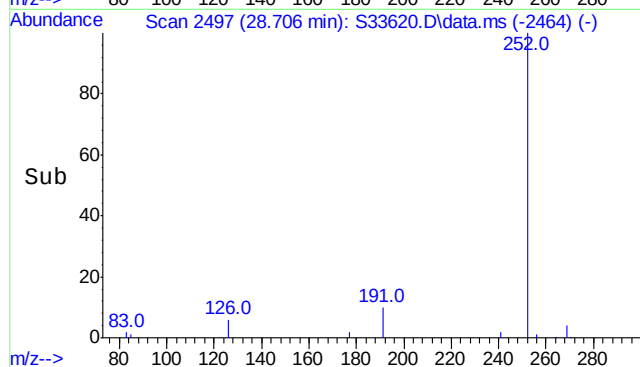
#46
Benzo(k)fluoranthene
Concen: 0.060 ng/mL
RT: 27.997 min Scan# 2371
Delta R.T. -0.023 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

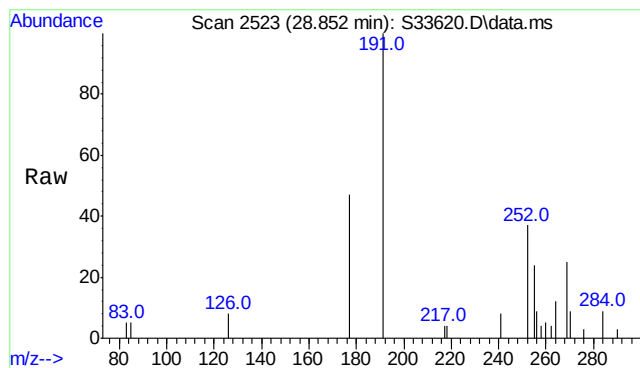
Tgt Ion:	252	Resp:	2125
Ion Ratio	Lower	Upper	
252	100		
126	8.4	24.4	36.6#



#48
Benzo(e)pyrene
Concen: 0.029 ng/mL
RT: 28.706 min Scan# 2497
Delta R.T. -0.017 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

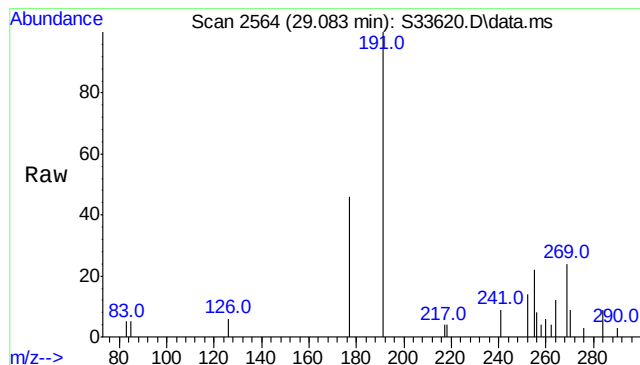
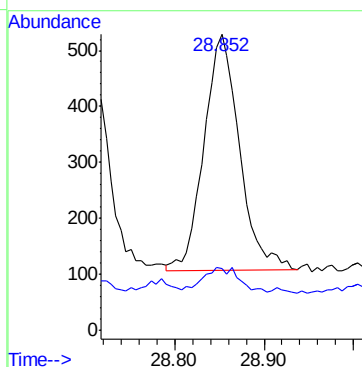
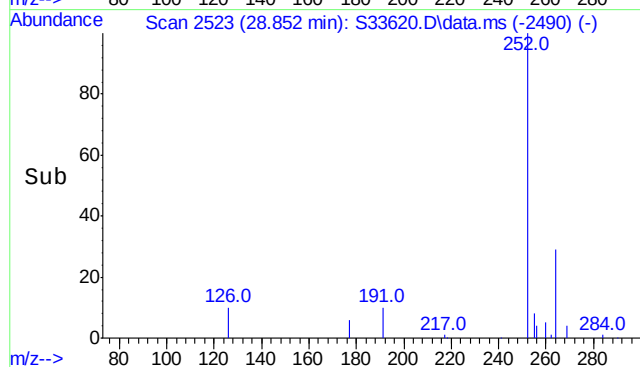
Tgt Ion:	252	Resp:	1075
Ion Ratio	Lower	Upper	
252	100		
126	9.2	22.6	34.0#





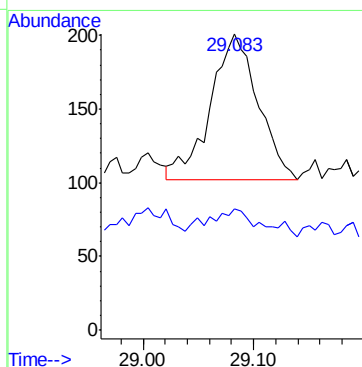
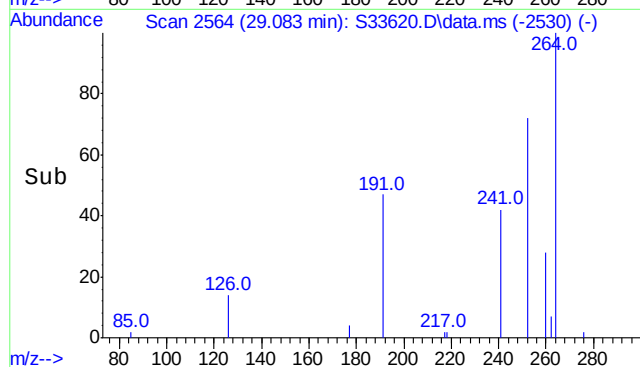
#49
Benzo(a)pyrene
Concen: 0.054 ng/mL
RT: 28.852 min Scan# 2523
Delta R.T. -0.017 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

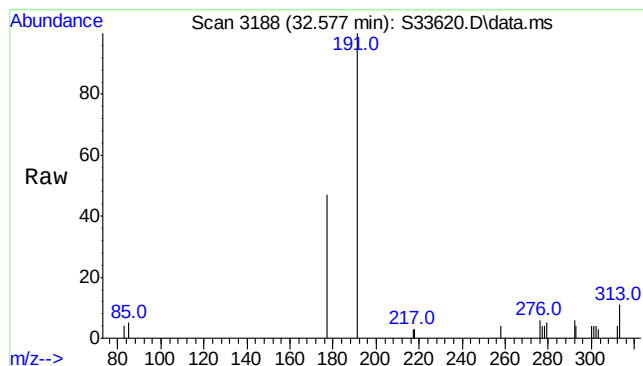
Tgt Ion:252 Resp: 1170
Ion Ratio Lower Upper
252 100
126 10.8 25.1 37.7#



#51
Perylene
Concen: 0.013 ng/mL
RT: 29.083 min Scan# 2564
Delta R.T. -0.011 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

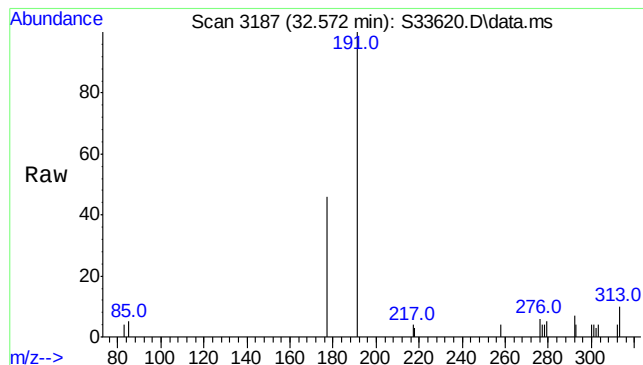
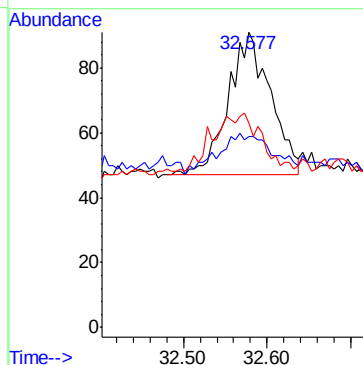
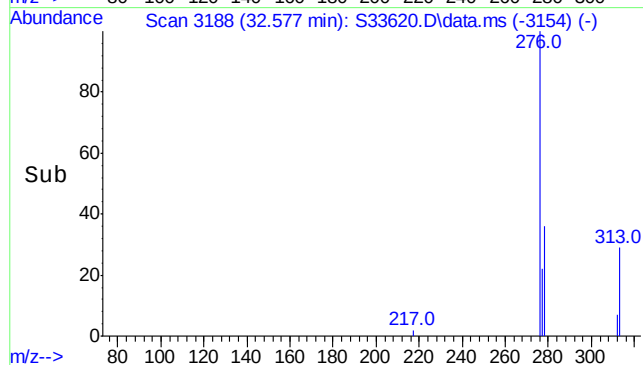
Tgt Ion:252 Resp: 296
Ion Ratio Lower Upper
252 100
126 8.8 26.6 40.0#





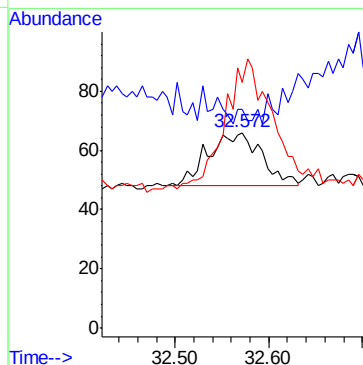
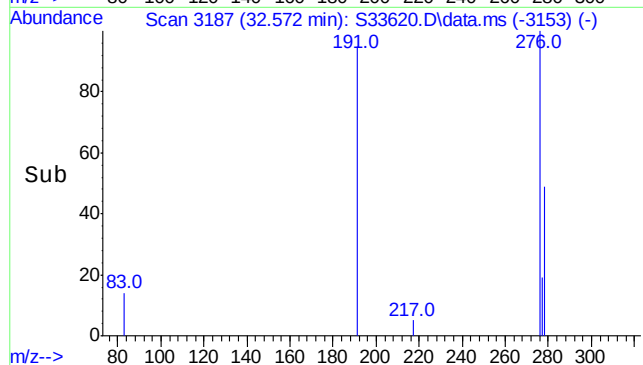
#52
Indeno(1,2,3-cd)pyrene
Concen: 0.004 ng/mL
RT: 32.577 min Scan# 3188
Delta R.T. -0.017 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

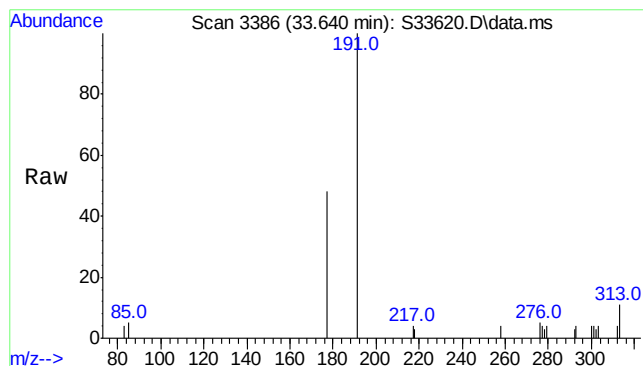
Tgt Ion	Ratio	Lower	Upper
276	100		
277	38.3	21.3	31.9#
278	46.1	21.8	32.8#



#53
Dibenz(a,h)anthracene
Concen: 0.002 ng/mL
RT: 32.572 min Scan# 3187
Delta R.T. -0.016 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

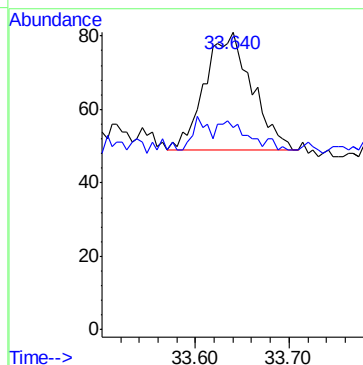
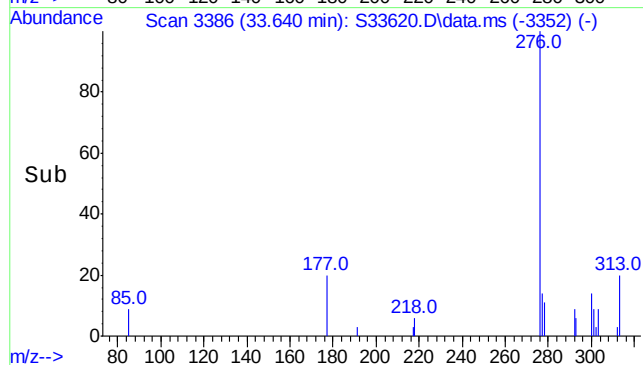
Tgt Ion	Ratio	Lower	Upper
278	100		
279	0.0	32.2	48.4#
276	216.9	242.1	363.1#





#54
Benzo(g,h,i)perylene
Concen: 0.003 ng/mL
RT: 33.640 min Scan# 3386
Delta R.T. -0.016 min
Lab File: S33620.D
Acq: 20 Sep 2013 5:48 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
277	0.0	20.3	30.5



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33624.D
 Acq On : 20 Sep 2013 8:55 pm
 Operator : RUBENP
 Sample : mc24019-1dup
 Misc : ms29817,mss1491,,,,10
 ALS Vial : 11 Sample Multiplier: 1

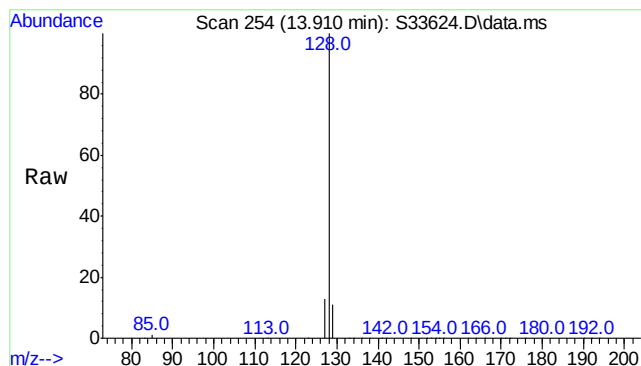
Quant Time: Oct 24 17:19:17 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	49776	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	32946	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	25445	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	17680	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	15483	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	39686	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	44155	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	25406	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	23339	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	10044	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	12675	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	9856	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10296	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	6439	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5374	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.910	128	515389	300.866	ng/mL	100
3) C1-Naphthalenes	15.081	142	200069m	116.793	ng/mL	
9) 2-Methylnaphthalene	15.081	142	130829	54.709	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	70004	35.527	ng/mL	100
14) Acenaphthene	17.147	154	96413	36.830	ng/mL	98
16) Fluorene	18.132	166	83618m	19.894	ng/mL	
21) Phenanthrene	20.059	178	207837	20.783	ng/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

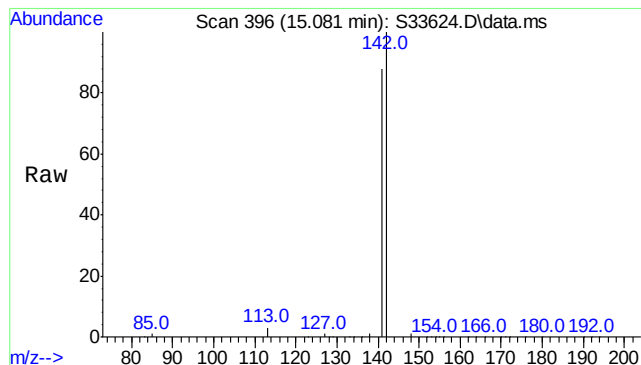
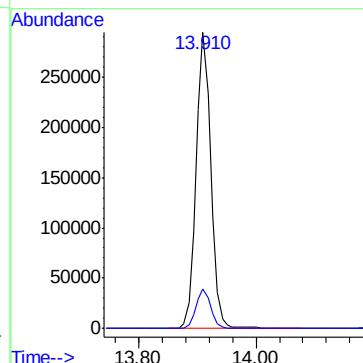
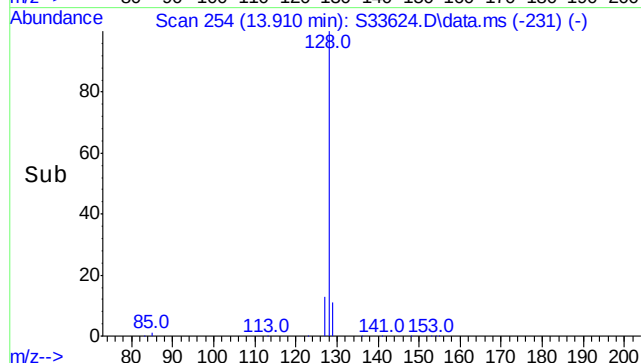
7.34

7



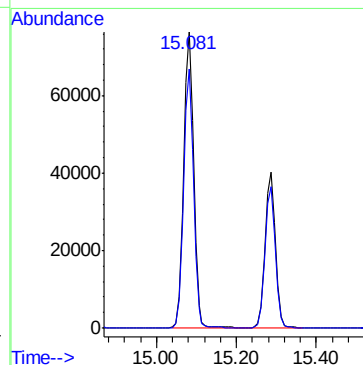
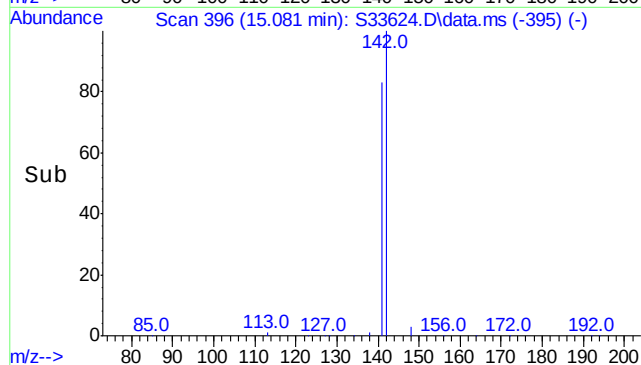
#2
Naphthalene
Concen: 300.866 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm

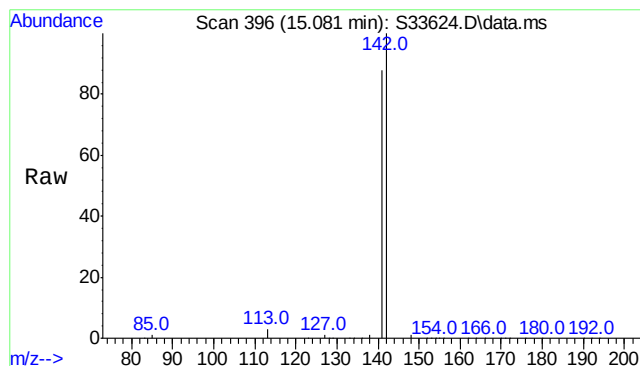
Tgt Ion:128 Resp: 515389
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



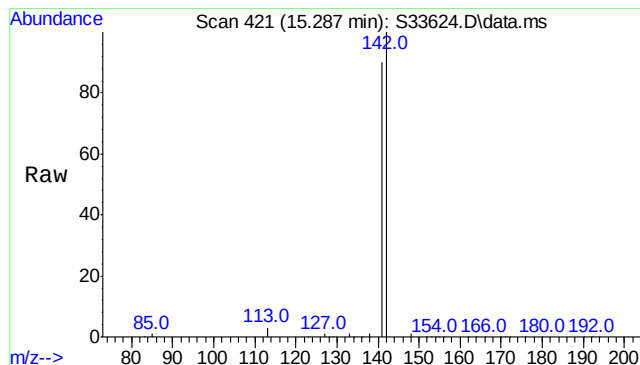
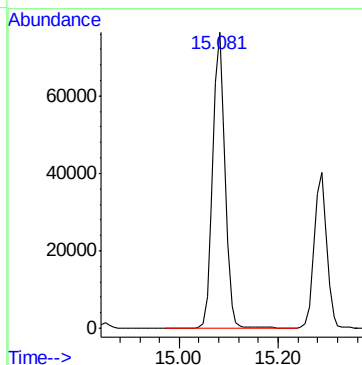
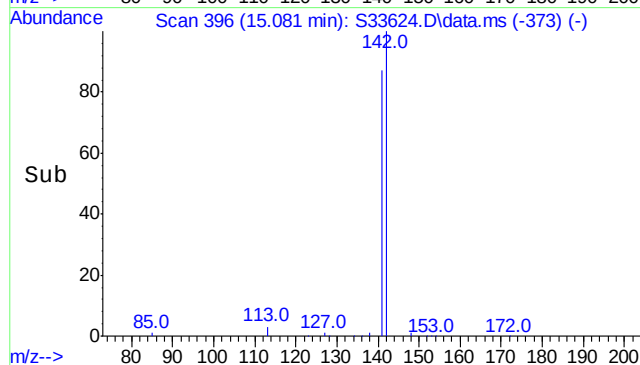
#3
C1-Naphthalenes
Concen: 116.793 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm

Tgt Ion:142 Resp: 200069
Ion Ratio Lower Upper
142 100
141 31.8 71.0 106.6#

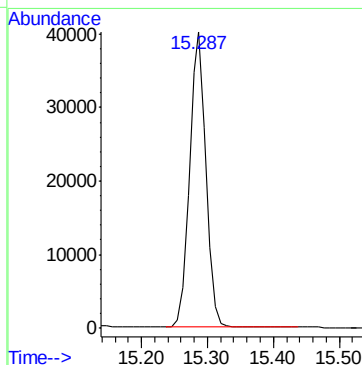
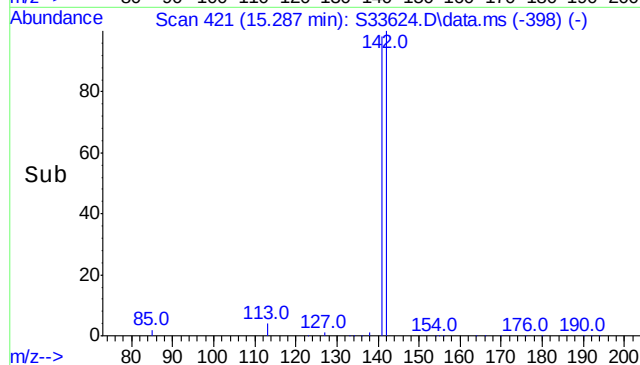


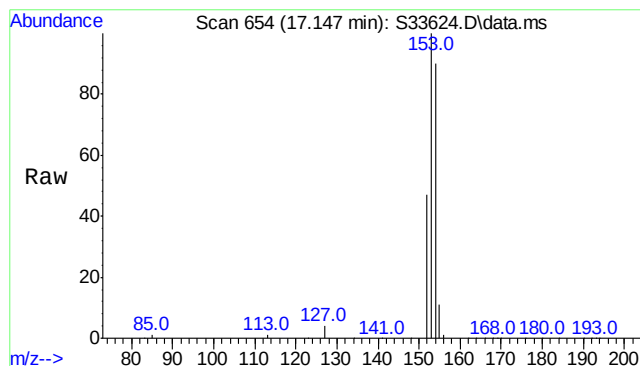


#9
2-Methylnaphthalene
Concen: 54.709 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm
Tgt Ion:142 Resp: 130829



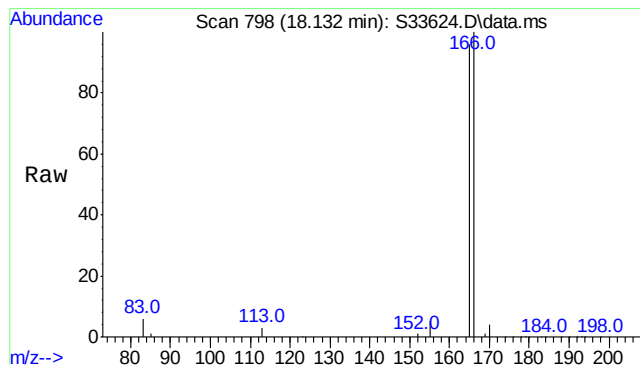
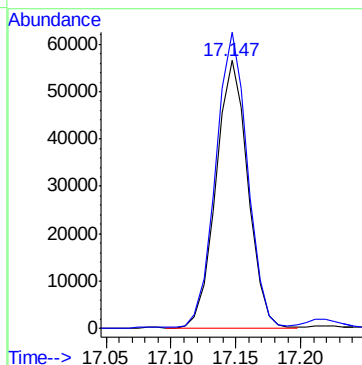
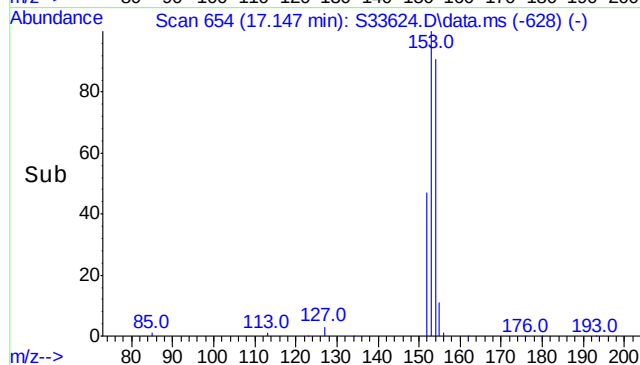
#11
1-Methylnaphthalene
Concen: 35.527 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm
Tgt Ion:142 Resp: 70004





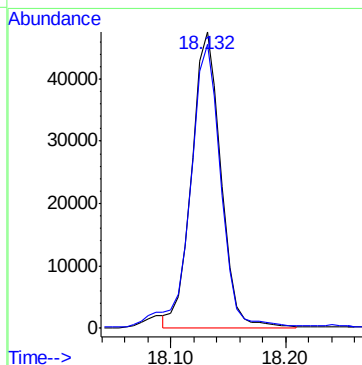
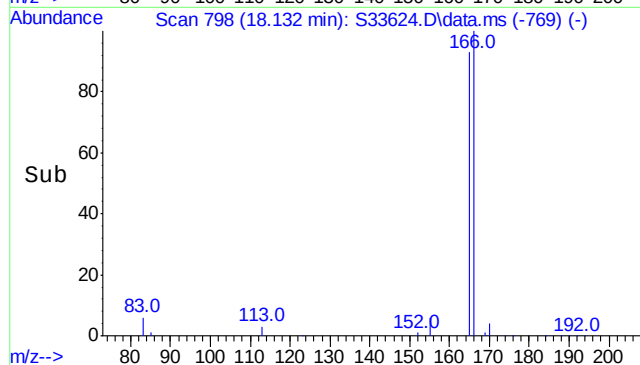
#14
Acenaphthene
Concen: 36.830 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm

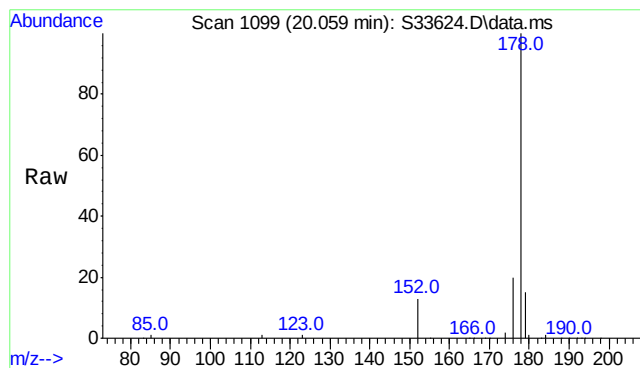
Tgt Ion:154 Resp: 96413
Ion Ratio Lower Upper
154 100
153 110.0 86.6 129.8



#16
Fluorene
Concen: 19.894 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm

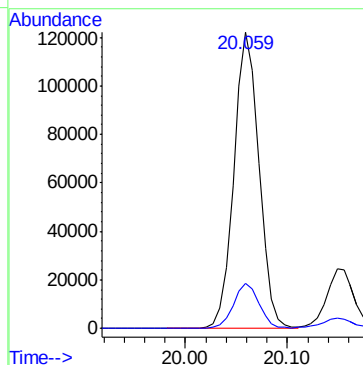
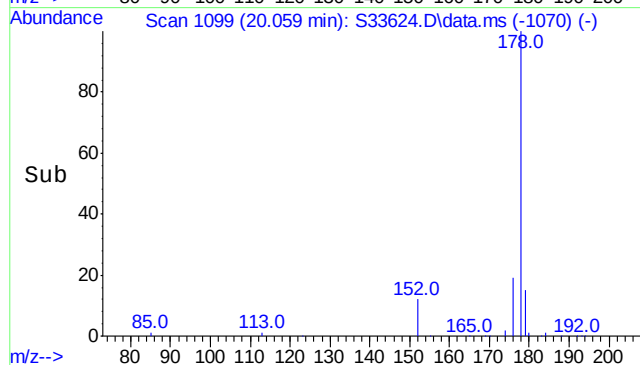
Tgt Ion:166 Resp: 83618
Ion Ratio Lower Upper
166 100
165 100.7 76.4 114.6





#21
Phenanthrene
Concen: 20.783 ng/mL
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33624.D
Acq: 20 Sep 2013 8:55 pm

Tgt Ion	Ratio	Lower	Upper
178	100		
179	15.2	12.4	18.6



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33628.D
 Acq On : 21 Sep 2013 12:13 am
 Operator : RUBENP
 Sample : mc24019-2dup
 Misc : ms29817,mss1492,,,,
 ALS Vial : 15 Sample Multiplier: 1

Quant Time: Oct 24 17:34:09 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	44020	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	29757	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	24583	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	18446	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	14242m	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	34826	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	40818	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	24268	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	23064	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	11314	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	13287	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	10135	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10432	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	7129	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5791	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.918	128	4585531	3026.900	ng/mL	Qvalue 100
3) C1-Naphthalenes	15.081	142	2514230m	1659.638	ng/mL	
4) C2-Naphthalenes	16.392	156	1069892m	357.520	ng/mL	
5) C3-Naphthalenes	17.449	170	369518m	181.874	ng/mL	
7) C4-Naphthalenes	18.868	184	67699m	68.091	ng/mL	
9) 2-Methylnaphthalene	15.081	142	1610813	745.787	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	899927	472.724	ng/mL	100
13) Acenaphthylene	16.801	152	44617	17.446	ng/mL#	100
14) Acenaphthene	17.154	154	1186132	434.292	ng/mL	99
16) Fluorene	18.132	166	798144m	206.433	ng/mL	
17) C1-Fluorenes	19.220	180	170499m	51.962	ng/mL	
18) C2-Fluorenes	20.245	194	54005m	21.557	ng/mL	
19) C3-Fluorenes	21.084	208	9754m	4.175	ng/mL	
21) Phenanthrene	20.065	178	2245652	255.900	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.084	192	350429m	36.139	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	61955m	17.179	ng/mL	
24) C3-Phenanthrenes/anthr...	23.071	220	14723m	9.731	ng/mL	
25) C4-Phenanthrenes/anthr...	23.812	234	2924m	4.276	ng/mL	
27) Anthracene	20.155	178	434571	42.046	ng/mL	100
29) Fluoranthene	22.483	202	506717	25.908	ng/mL#	80
31) Pyrene	22.948	202	375676	17.378	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.612	216	81021m	5.809	ng/mL	
33) C2-Fluoranthenes/pyrenes	25.011	230	14149m	0.654	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.418	244	3032m	0.140	ng/mL	
36) Benz(a)anthracene	25.378	228	30114	0.989	ng/mL	96
38) Chrysene	25.472	228	23015	0.757	ng/mL	97
39) C1-Benz(a)anthracenes/...	26.293	242	6352m	0.356	ng/mL	
44) Benzo(b)fluoranthene	27.941	252	2814	0.069	ng/mL#	67
46) Benzo(k)fluoranthene	27.992	252	3967	0.108	ng/mL#	61
48) Benzo(e)pyrene	28.706	252	1961	0.048	ng/mL#	65
49) Benzo(a)pyrene	28.847	252	2370	0.099	ng/mL#	61
51) Perylene	29.077	252	545	0.023	ng/mL#	41

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
Data File : S33628.D
Acq On : 21 Sep 2013 12:13 am
Operator : RUBENP
Sample : mc24019-2dup
Misc : ms29817,mss1492,,,,
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Oct 24 17:34:09 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

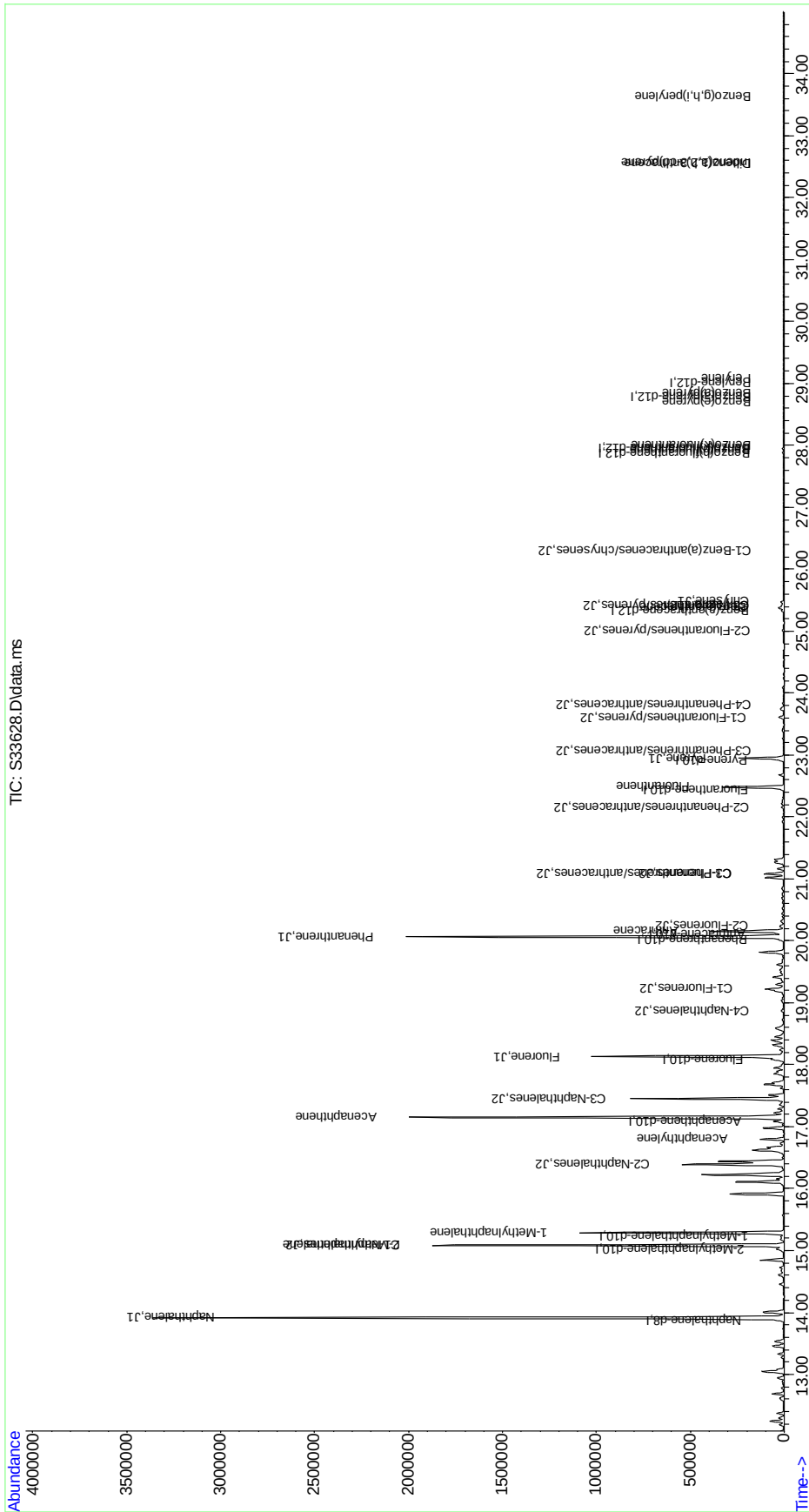
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) Indeno(1,2,3-cd)pyrene	32.572	276	417	0.010	ng/mL	94
53) Dibenz(a,h)anthracene	32.556	278	101	0.003	ng/mL#	43
54) Benzo(g,h,i)perylene	33.629	276	329	0.009	ng/mL	98

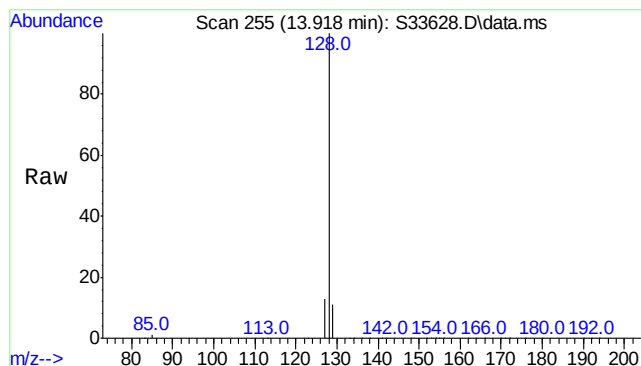
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
Data File : S33628.D
Acq On : 21 Sep 2013 12:13 am
Operator : RUBENP
Sample : mc24019-2dup
Misc : ms29817,mss1492,,,,,
ALS Vial : 15 Sample Multiplier: 1

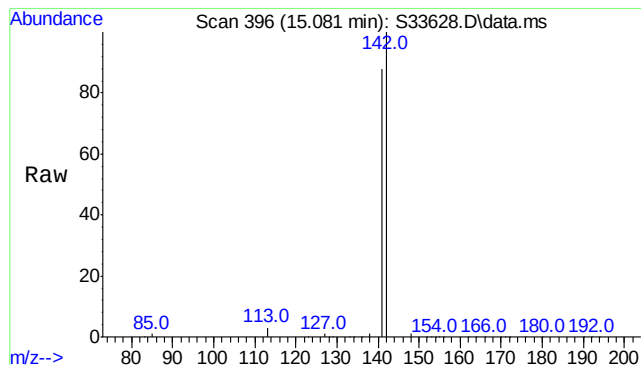
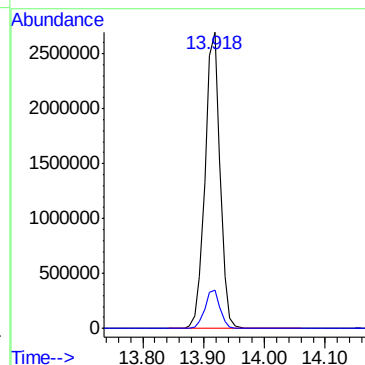
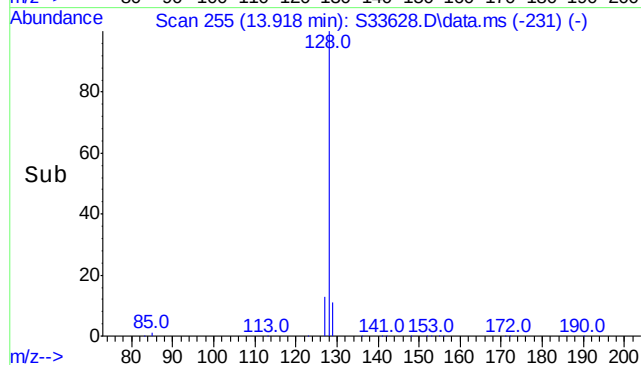
Quant Time: Oct 24 17:34:09 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





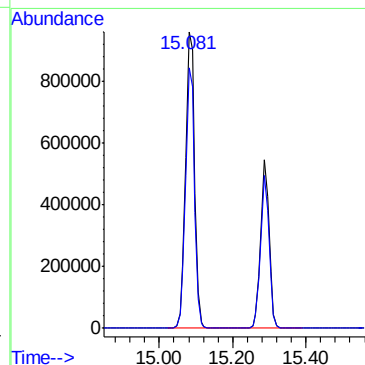
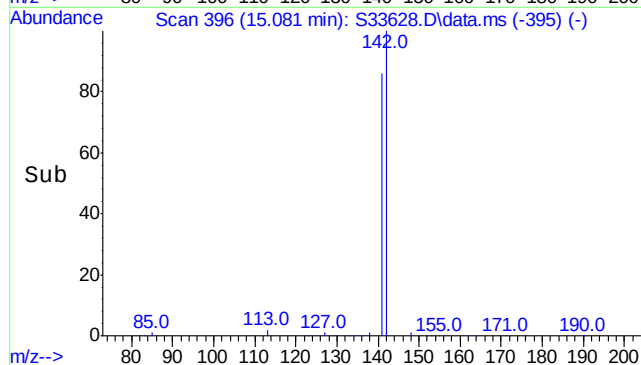
#2
Naphthalene
Concen: 3026.900 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. 0.000 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

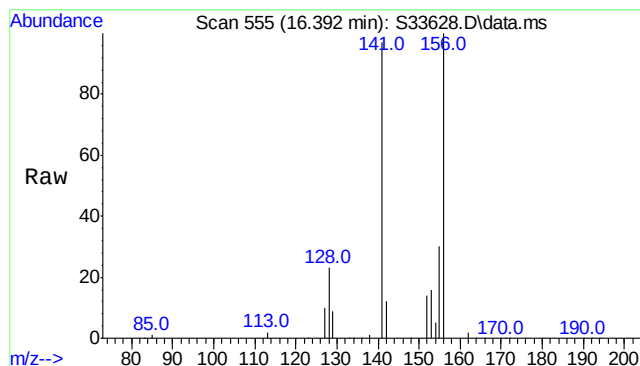
Tgt Ion:128 Resp: 4585531
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



#3
C1-Naphthalenes
Concen: 1659.638 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

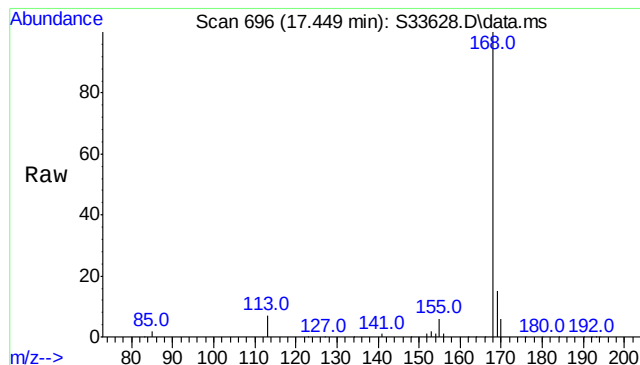
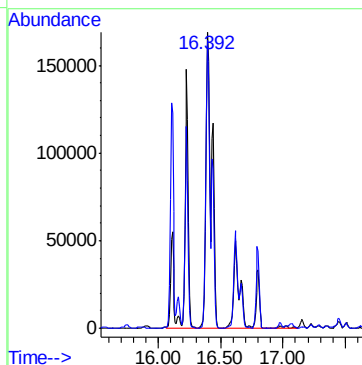
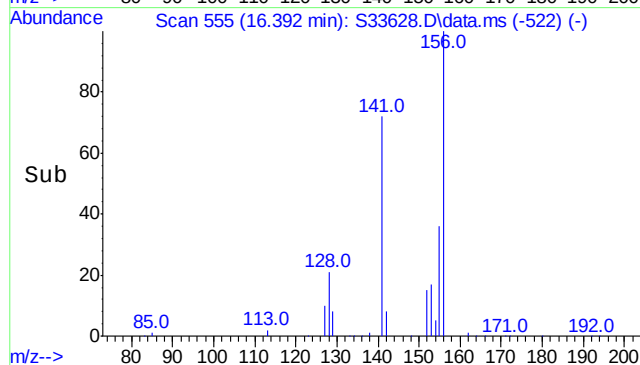
Tgt Ion:142 Resp: 2514230
Ion Ratio Lower Upper
142 100
141 32.5 71.0 106.6#





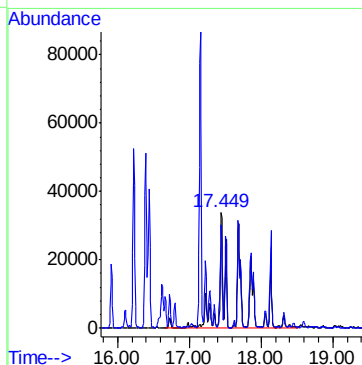
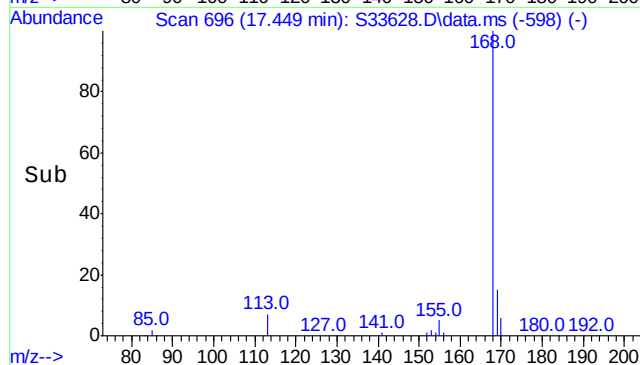
#4
C2-Naphthalenes
Concen: 357.520 ng/mL m
RT: 16.392 min Scan# 555
Delta R.T. -0.065 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

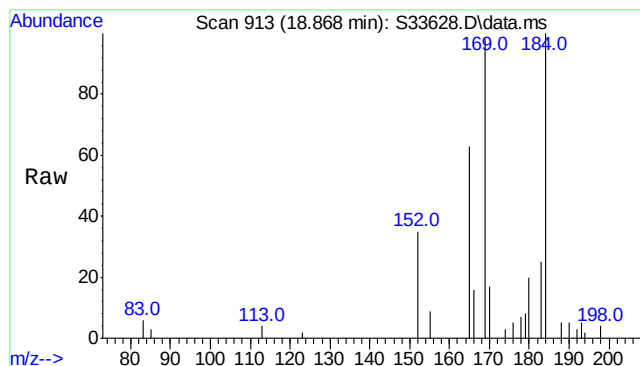
Tgt Ion:156 Resp: 1069892
Ion Ratio Lower Upper
156 100
141 14.4 79.0 118.4#



#5
C3-Naphthalenes
Concen: 181.874 ng/mL m
RT: 17.449 min Scan# 696
Delta R.T. -0.210 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

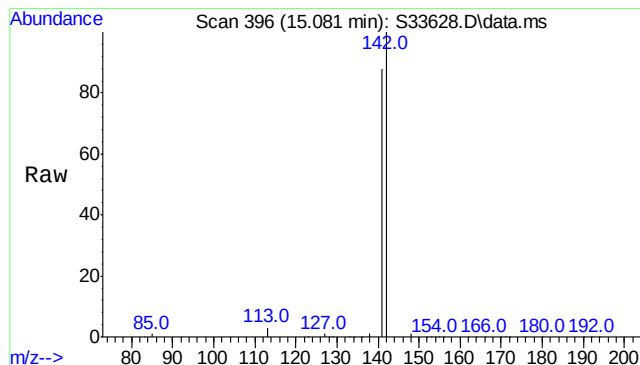
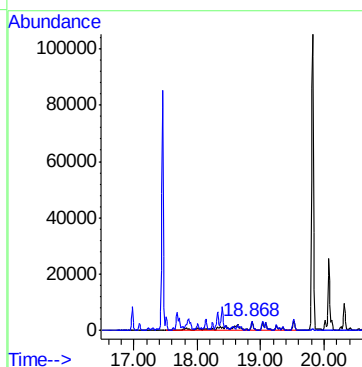
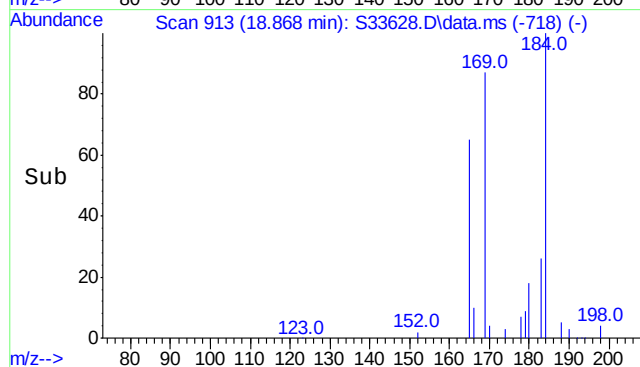
Tgt Ion:170 Resp: 369518
Ion Ratio Lower Upper
170 100
155 14.8 80.7 121.1#





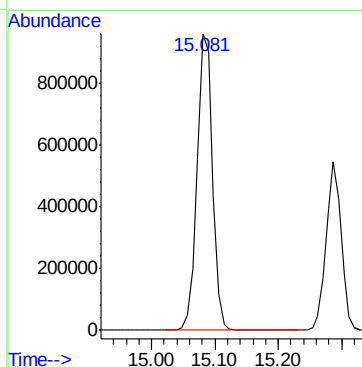
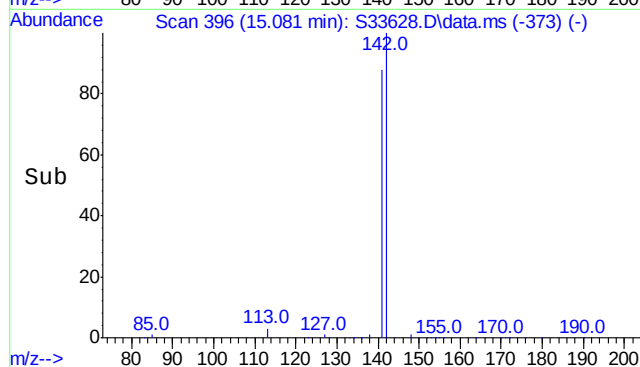
#7
C4-Naphthalenes
Concen: 68.091 ng/mL m
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

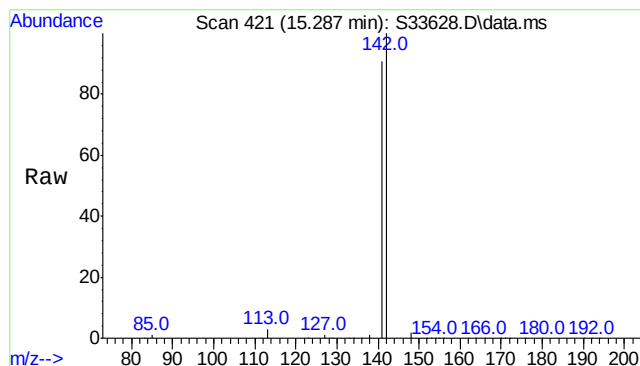
Tgt Ion:184 Resp: 67699
Ion Ratio Lower Upper
184 100
169 10.5 80.1 120.1#



#9
2-Methylnaphthalene
Concen: 745.787 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

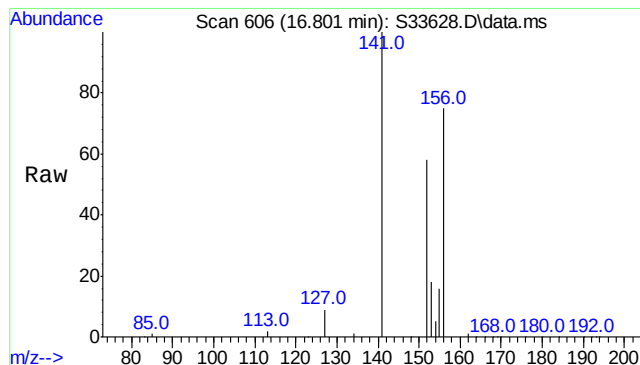
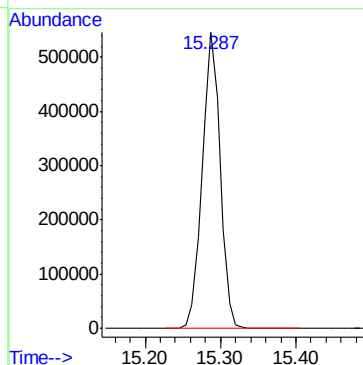
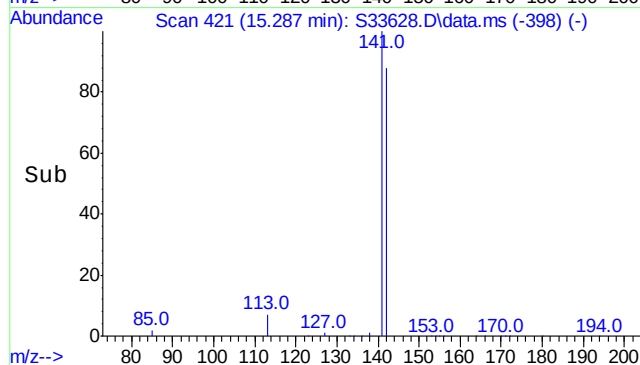
Tgt Ion:142 Resp: 1610813





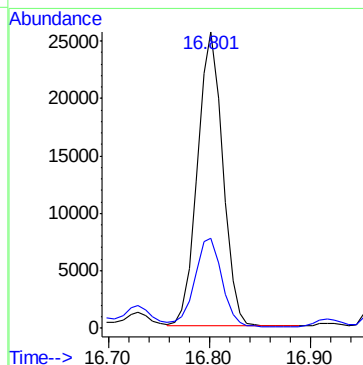
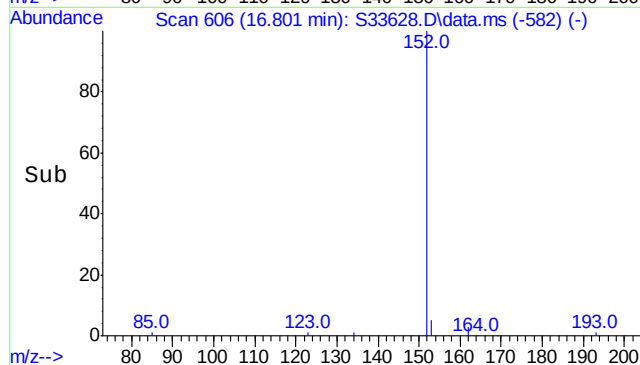
#11
1-Methylnaphthalene
Concen: 472.724 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

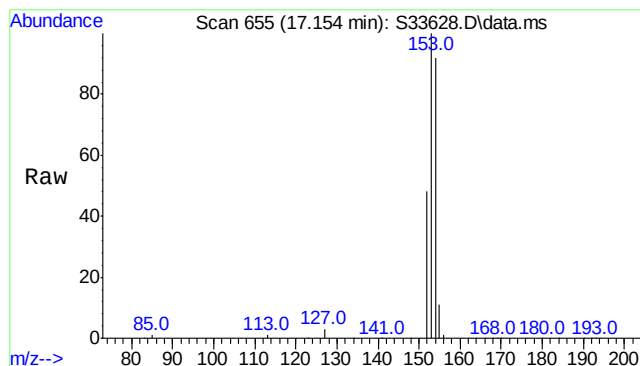
Tgt Ion:142 Resp: 899927



#13
Acenaphthylene
Concen: 17.446 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

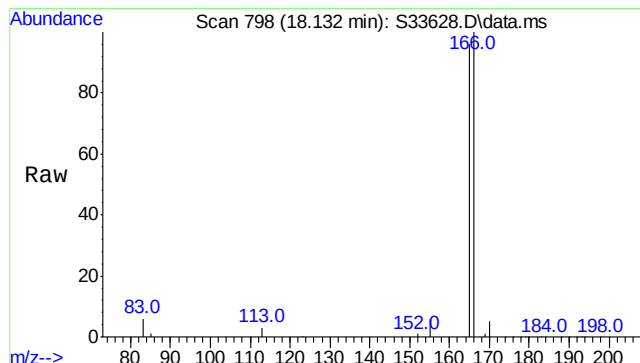
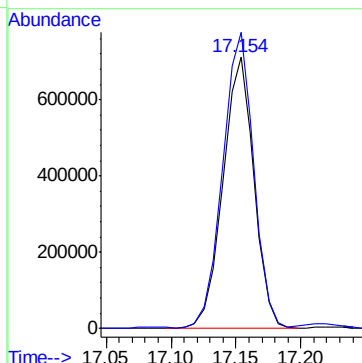
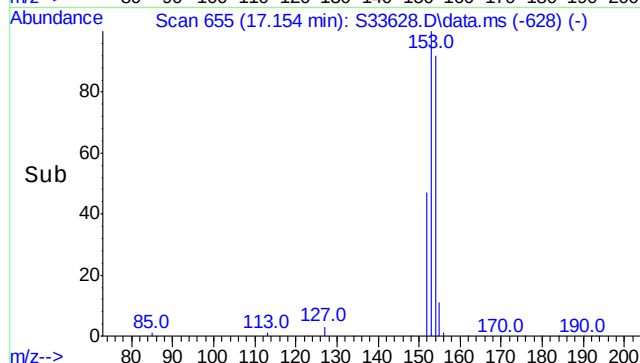
Tgt Ion:152 Resp: 44617
Ion Ratio Lower Upper
152 100
153 32.1 0.0 0.0#





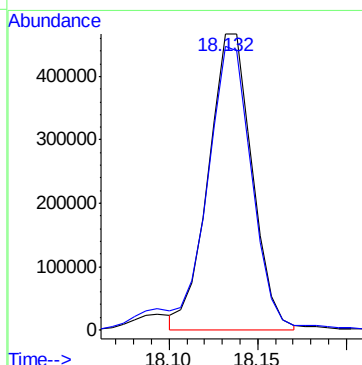
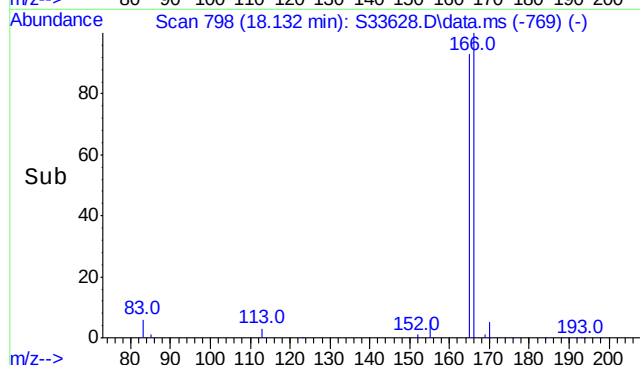
#14
Acenaphthene
Concen: 434.292 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

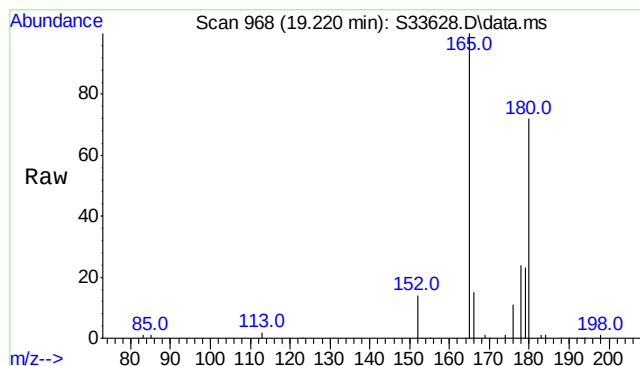
Tgt Ion:154 Resp: 1186132
Ion Ratio Lower Upper
154 100
153 109.6 86.6 129.8



#16
Fluorene
Concen: 206.433 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

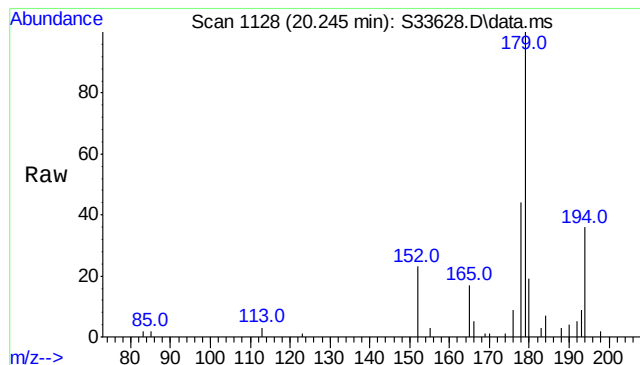
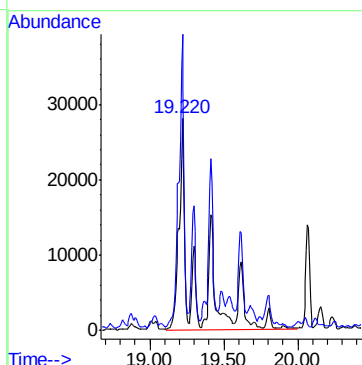
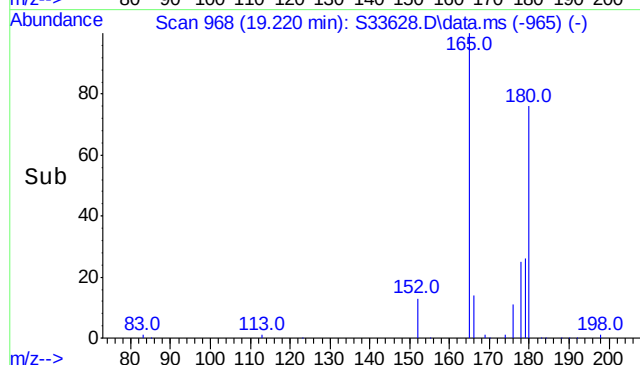
Tgt Ion:166 Resp: 798144
Ion Ratio Lower Upper
166 100
165 104.1 76.4 114.6





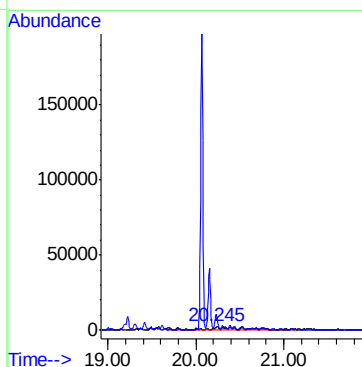
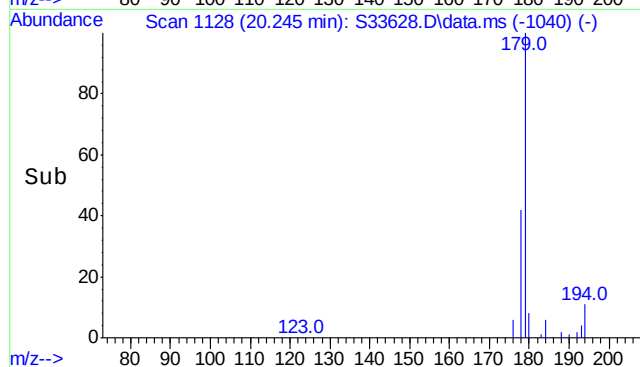
#17
C1-Fluorenes
Concen: 51.962 ng/mL m
RT: 19.220 min Scan# 968
Delta R.T. -0.092 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

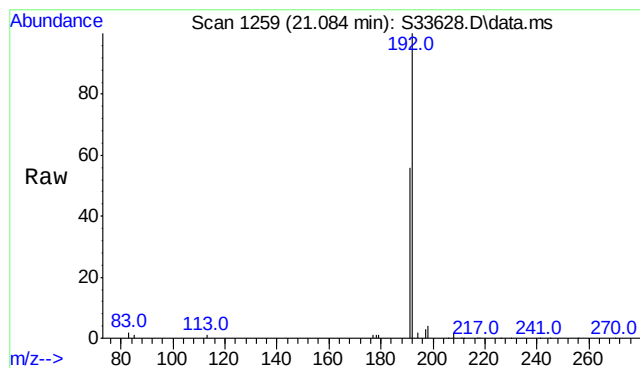
Tgt Ion:180 Resp: 170499
Ion Ratio Lower Upper
180 100
165 15.9 111.1 166.7#



#18
C2-Fluorenes
Concen: 21.557 ng/mL m
RT: 20.245 min Scan# 1128
Delta R.T. -0.069 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

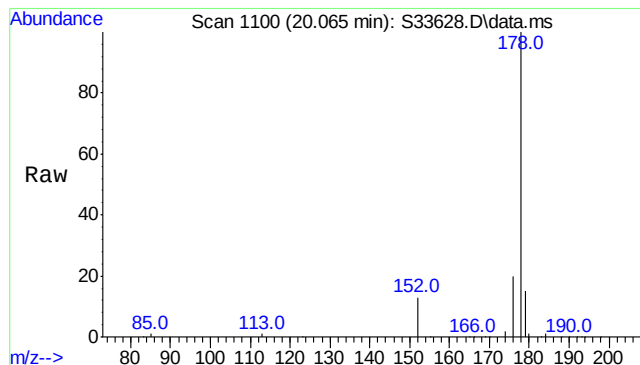
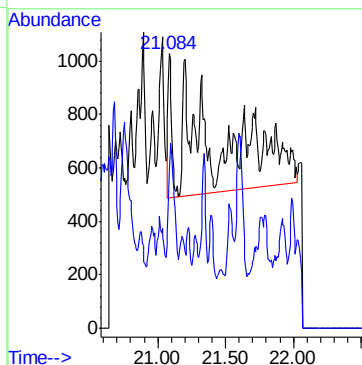
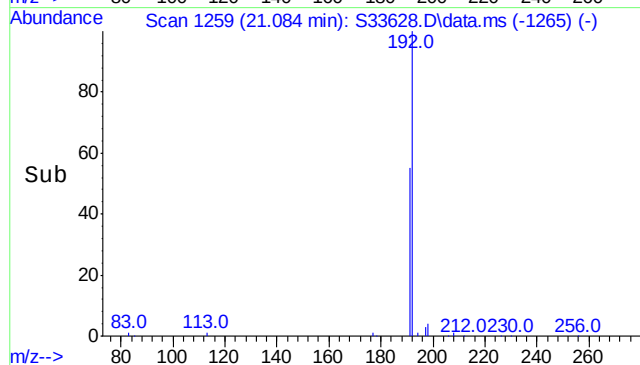
Tgt Ion:194 Resp: 54005
Ion Ratio Lower Upper
194 100
179 6.6 131.8 197.6#





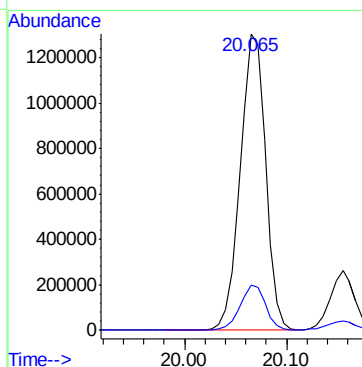
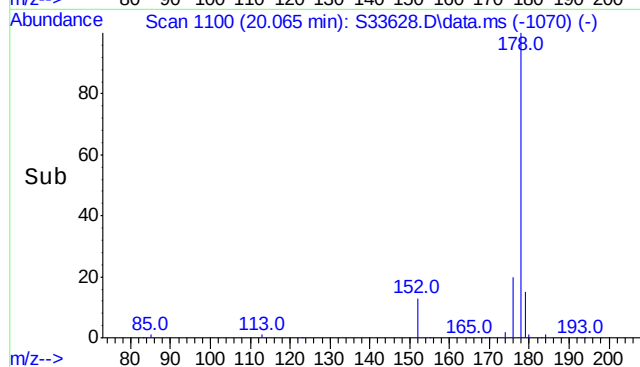
#19
C3-Fluorenes
Concen: 4.175 ng/mL m
RT: 21.084 min Scan# 1259
Delta R.T. -0.268 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

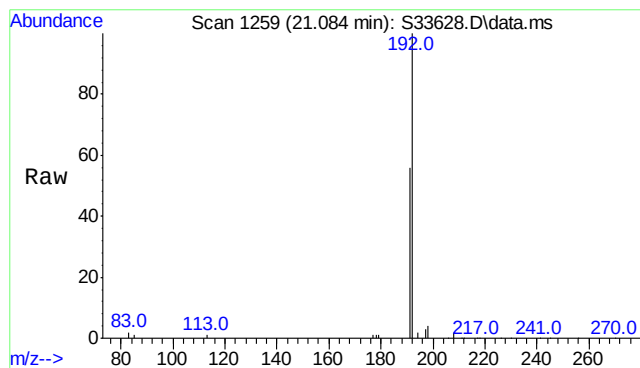
Tgt Ion:208 Resp: 9754
Ion Ratio Lower Upper
208 100
178 7.3 43.4 65.2#



#21
Phenanthrene
Concen: 255.900 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

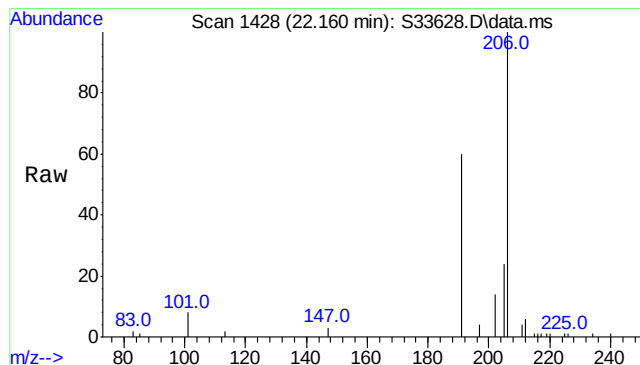
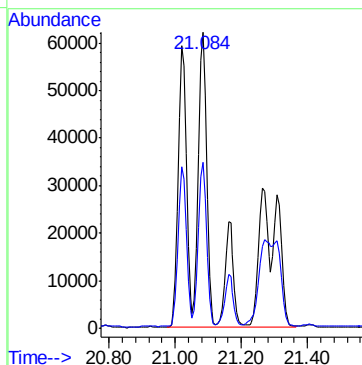
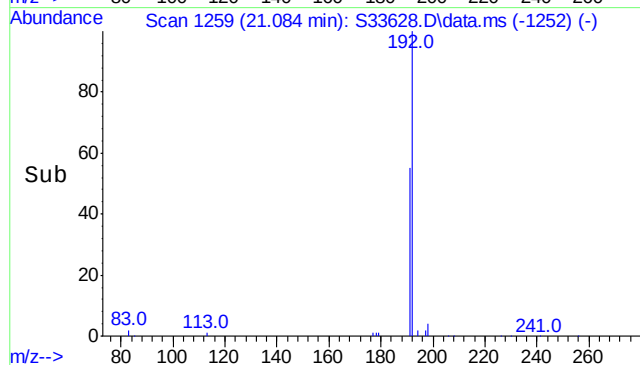
Tgt Ion:178 Resp: 2245652
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6





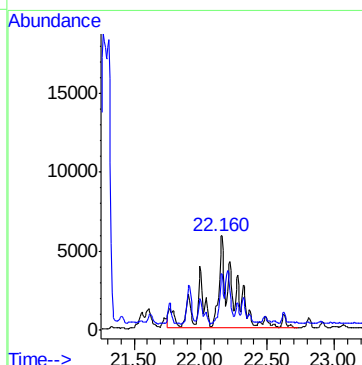
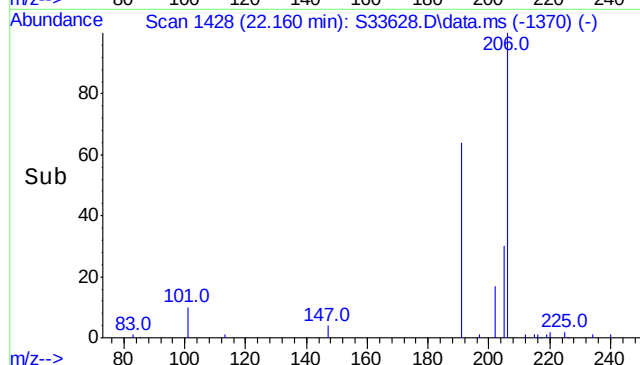
#22
C1-Phenanthrenes/anthracenes
Concen: 36.139 ng/mL m
RT: 21.084 min Scan# 1259
Delta R.T. -0.069 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

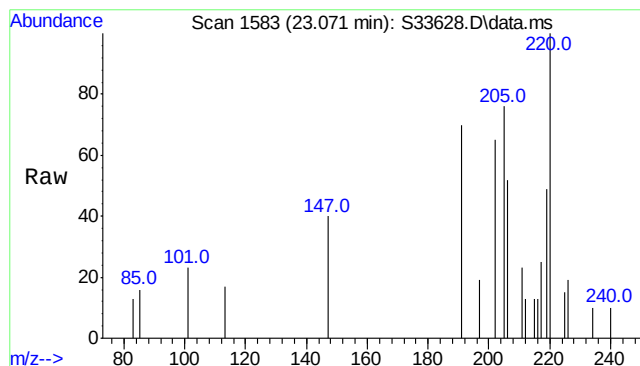
Tgt Ion:192 Resp: 350429
Ion Ratio Lower Upper
192 100
191 5.2 45.1 67.7#



#23
C2-Phenanthrenes/anthracenes
Concen: 17.179 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

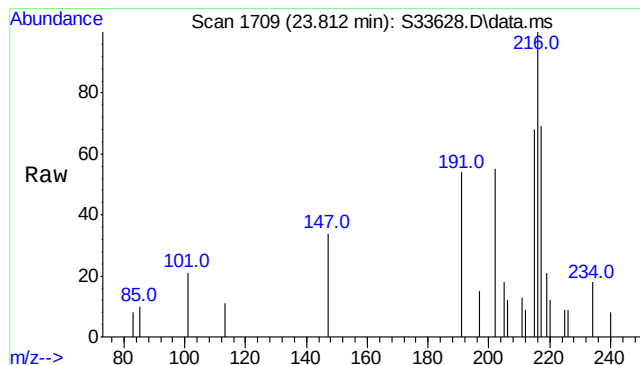
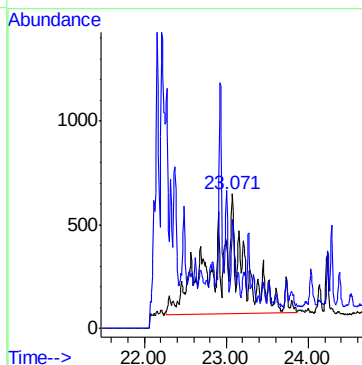
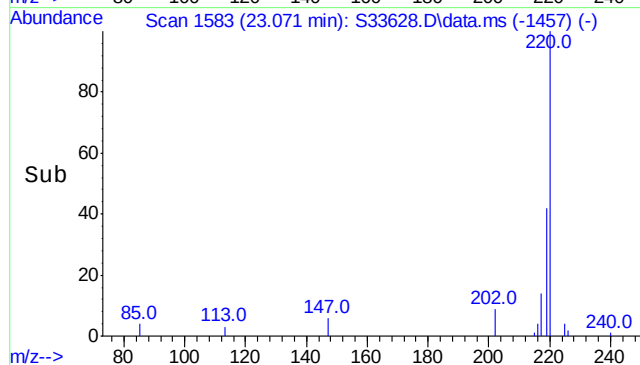
Tgt Ion:206 Resp: 61955
Ion Ratio Lower Upper
206 100
191 11.3 45.1 67.7#





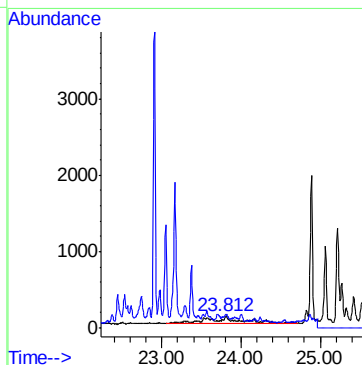
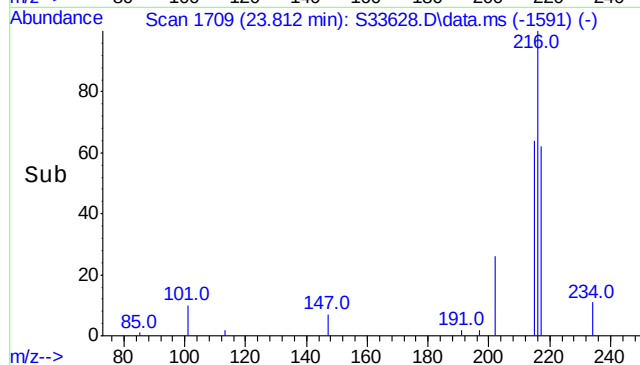
#24
C3-Phenanthrenes/anthracenes
Concen: 9.731 ng/mL m
RT: 23.071 min Scan# 1583
Delta R.T. -0.070 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

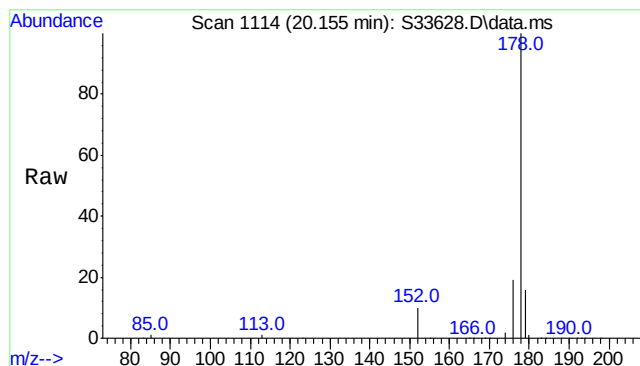
Tgt Ion:220	Resp:	14723
Ion Ratio	Lower	Upper
220	100	
205	2.3	45.1 67.7#



#25
C4-Phenanthrenes/anthracenes
Concen: 4.276 ng/mL m
RT: 23.812 min Scan# 1709
Delta R.T. -0.417 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

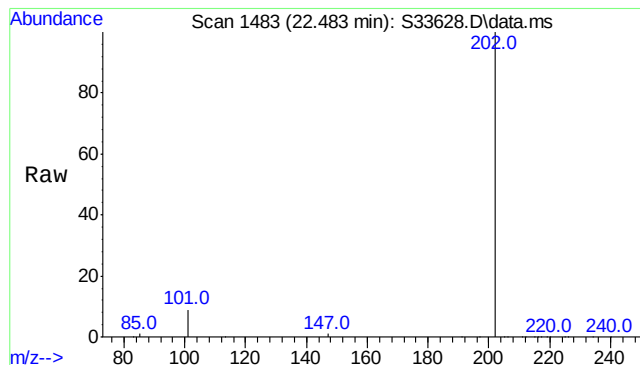
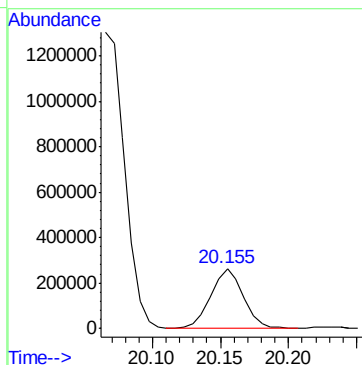
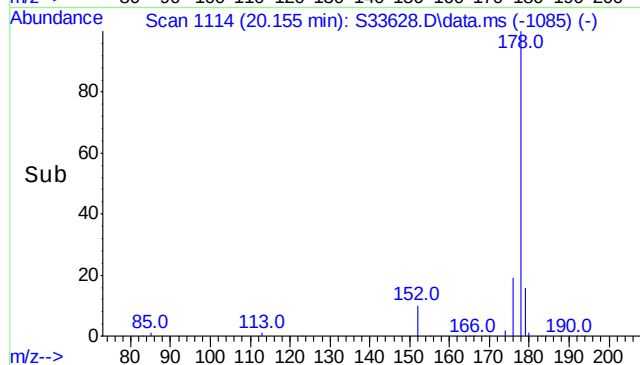
Tgt Ion:234	Resp:	2924
Ion Ratio	Lower	Upper
234	100	
219	2.8	53.0 79.6#





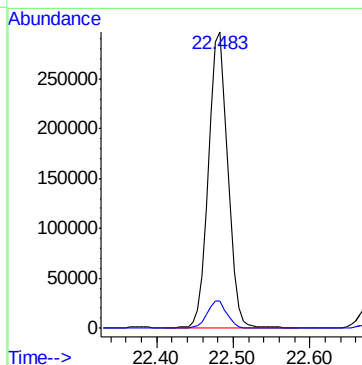
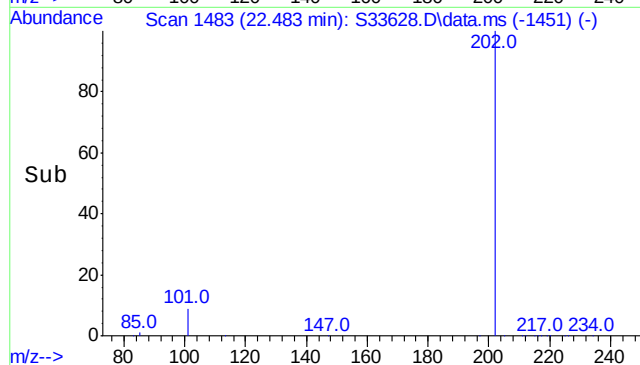
#27
Anthracene
Concen: 42.046 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

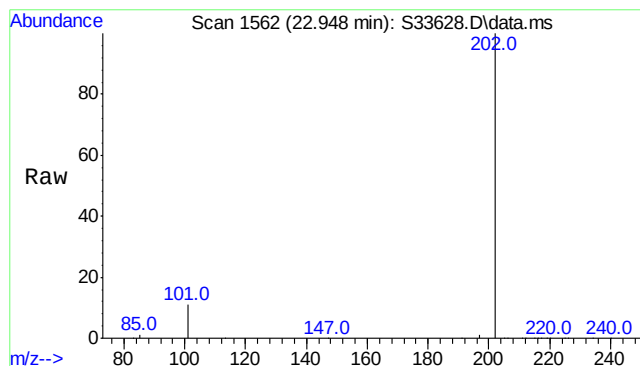
Tgt Ion:178 Resp: 434571



#29
Fluoranthene
Concen: 25.908 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

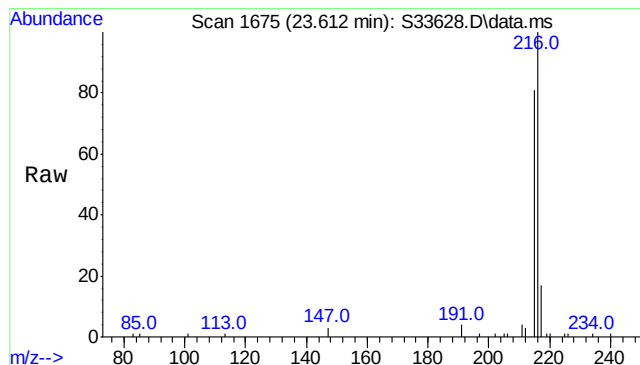
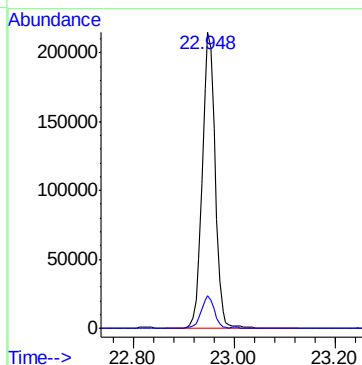
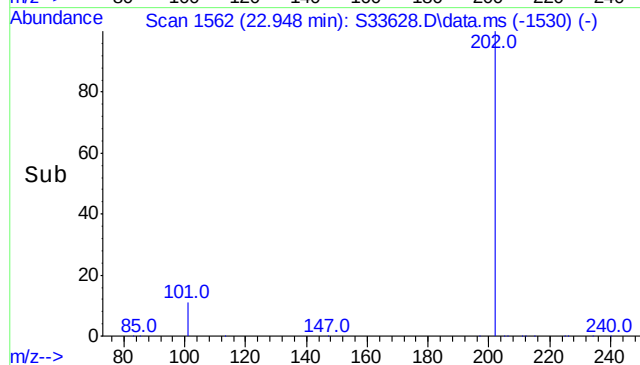
Tgt Ion:202 Resp: 506717
Ion Ratio Lower Upper
202 100
101 9.2 14.3 21.5#





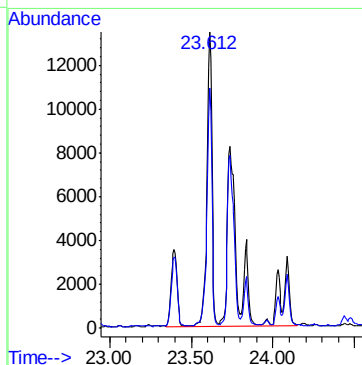
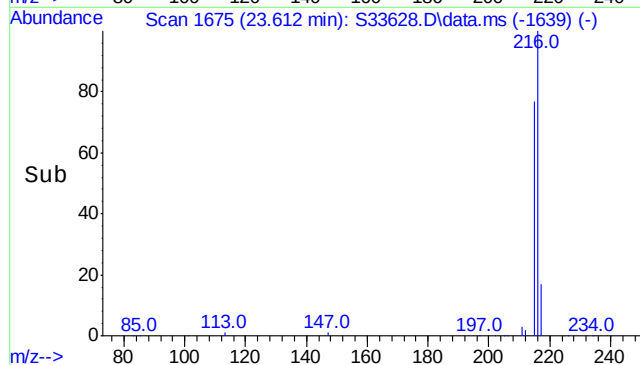
#31
Pyrene
Concen: 17.378 ng/mL
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

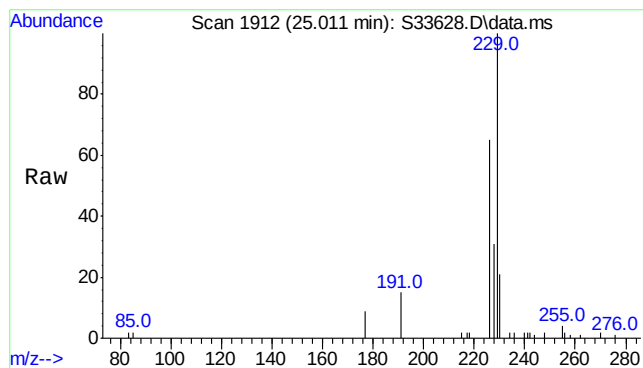
Tgt Ion:202 Resp: 375676
Ion Ratio Lower Upper
202 100
101 11.2 16.6 24.8#



#32
C1-Fluoranthenes/pyrenes
Concen: 5.809 ng/mL m
RT: 23.612 min Scan# 1675
Delta R.T. -0.070 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

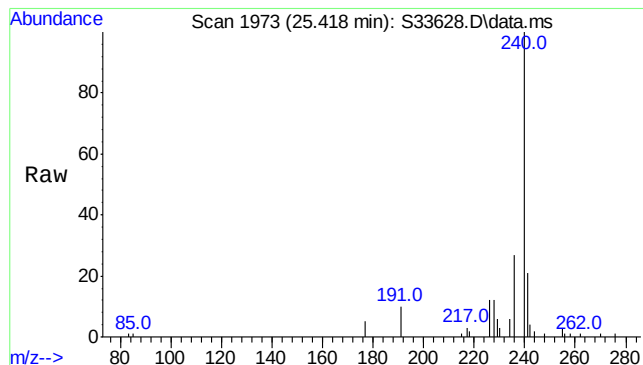
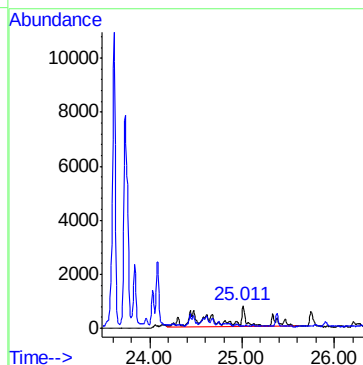
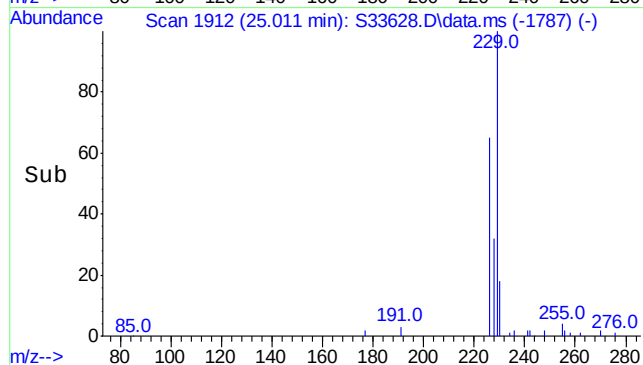
Tgt Ion:216 Resp: 81021
Ion Ratio Lower Upper
216 100
215 28.1 67.0 100.6#





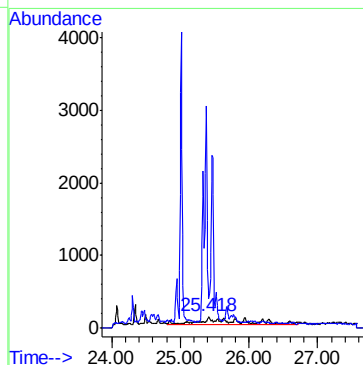
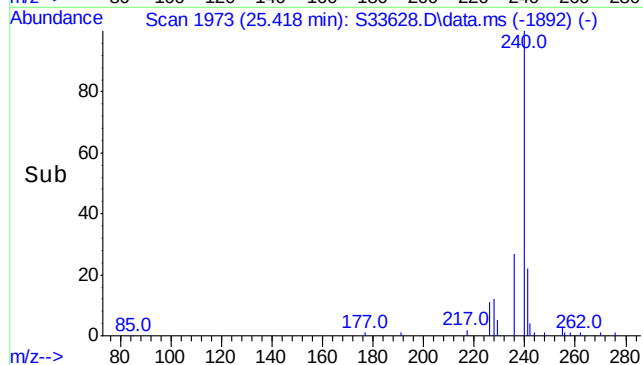
#33
C2-Fluoranthenes/pyrenes
Concen: 0.654 ng/mL m
RT: 25.011 min Scan# 1912
Delta R.T. 0.500 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

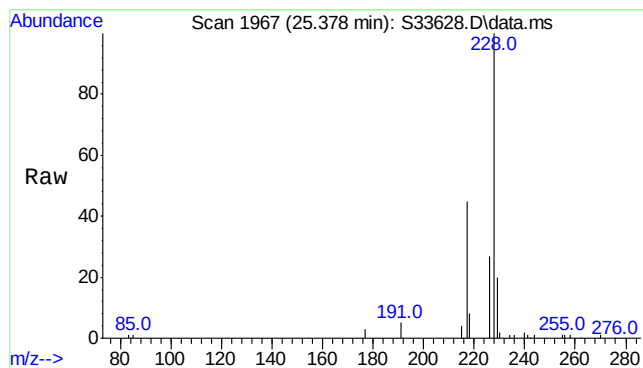
Tgt Ion:	230	Resp:	14149
Ion Ratio	Lower	Upper	
230	100		
215	4.4	51.4	77.2#



#34
C3-Fluoranthenes/pyrenes
Concen: 0.140 ng/mL m
RT: 25.418 min Scan# 1973
Delta R.T. -0.071 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

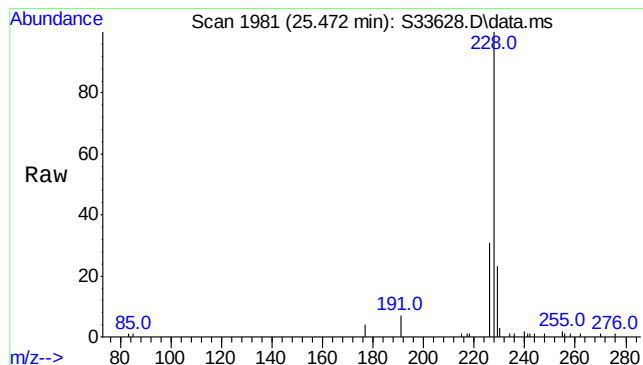
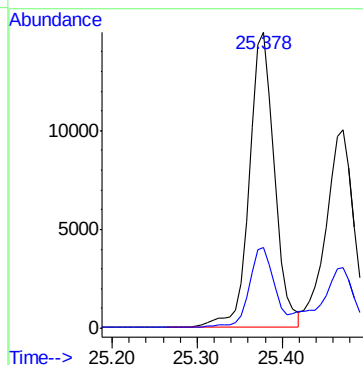
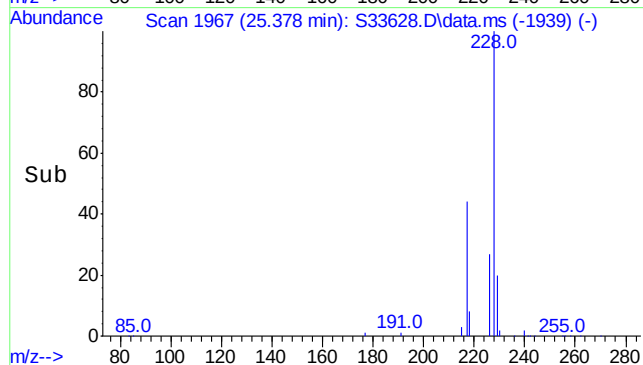
Tgt Ion:	244	Resp:	3032
Ion Ratio	Lower	Upper	
244	100		
229	24.8	112.3	168.5#





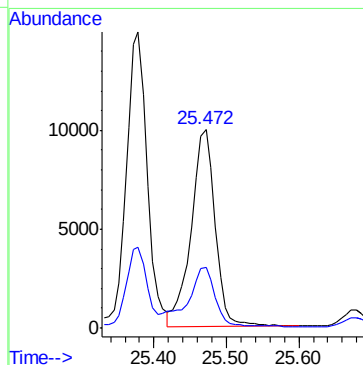
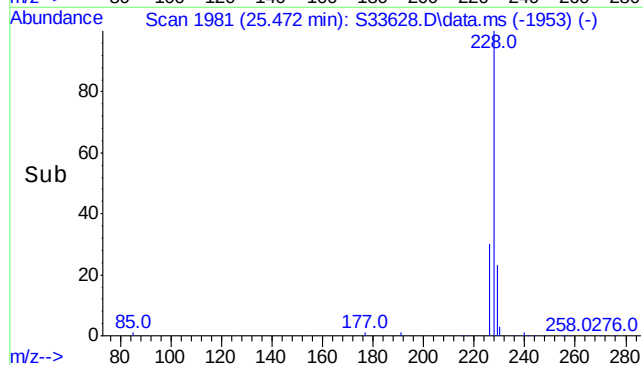
#36
Benz(a)anthracene
Concen: 0.989 ng/mL
RT: 25.378 min Scan# 1967
Delta R.T. -0.014 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

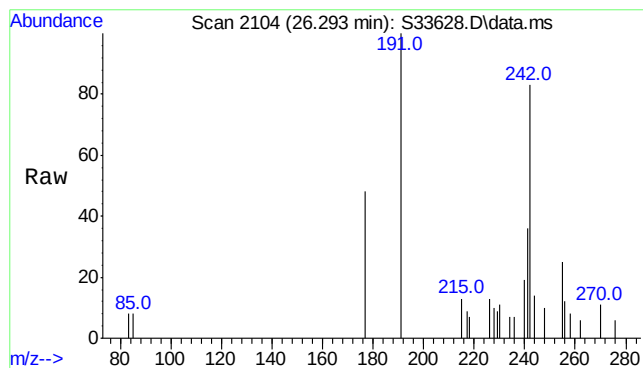
Tgt Ion:228 Resp: 30114
Ion Ratio Lower Upper
228 100
226 27.6 23.7 35.5



#38
Chrysene
Concen: 0.757 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

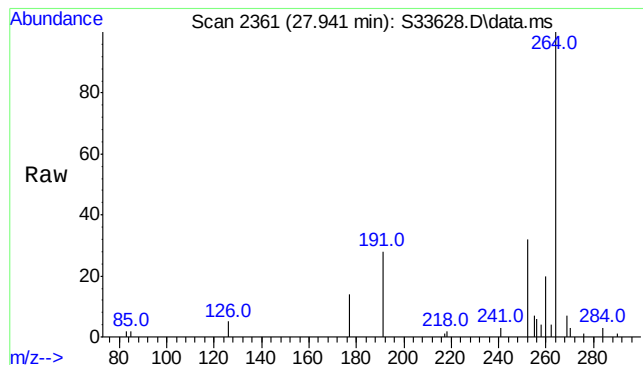
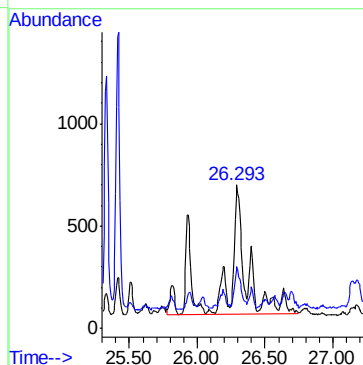
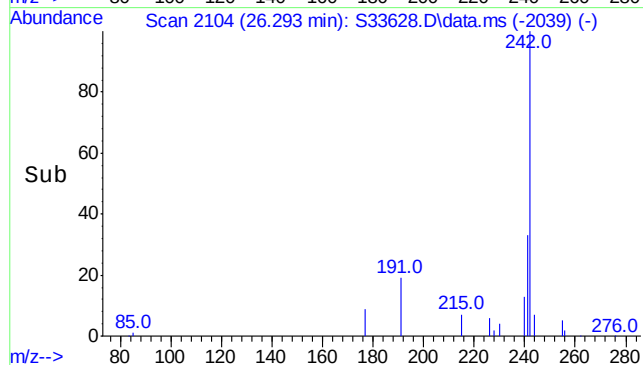
Tgt Ion:228 Resp: 23015
Ion Ratio Lower Upper
228 100
226 34.4 26.0 39.0





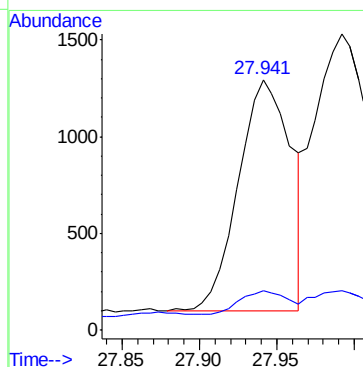
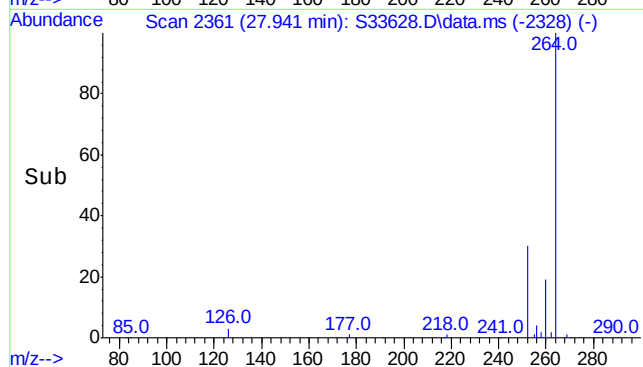
#39
C1-Benz(a)anthracenes/chrysenes
Concen: 0.356 ng/mL m
RT: 26.293 min Scan# 2104
Delta R.T. -0.065 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

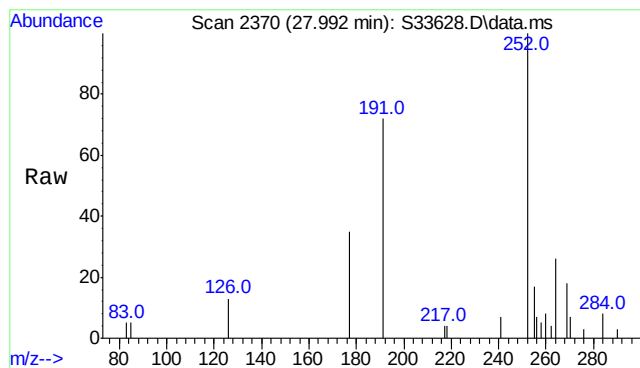
Tgt Ion:	242	Resp:	6352
Ion Ratio	Lower	Upper	
242	100		
241	9.7	27.2	40.8#



#44
Benzo(b)fluoranthene
Concen: 0.069 ng/mL
RT: 27.941 min Scan# 2361
Delta R.T. -0.017 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

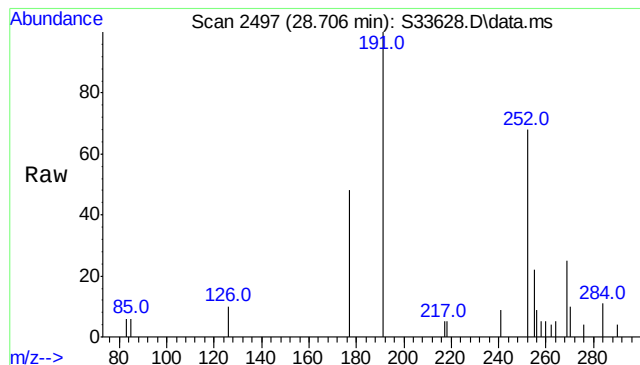
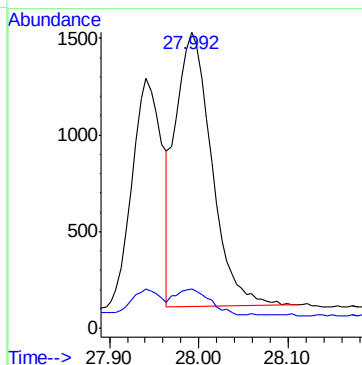
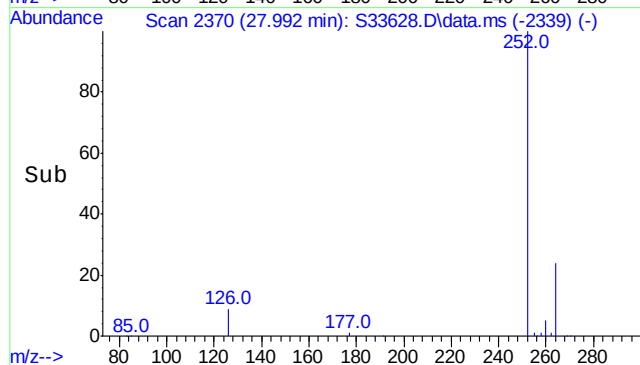
Tgt Ion:	252	Resp:	2814
Ion Ratio	Lower	Upper	
252	100		
126	10.9	23.0	34.4#





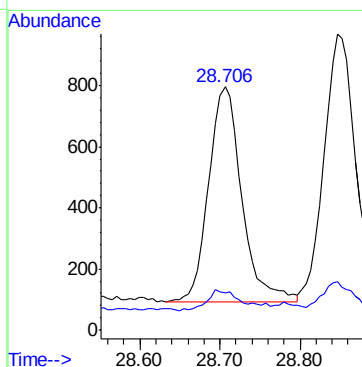
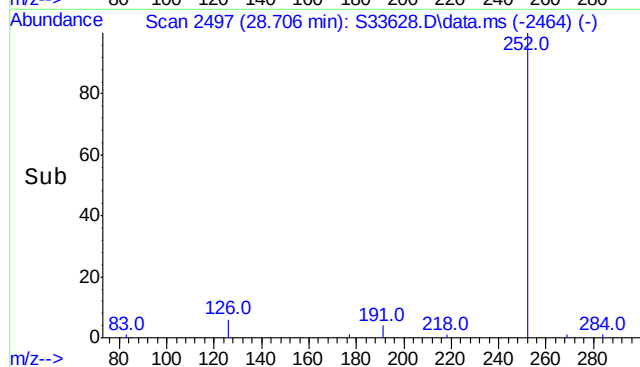
#46
Benzo(k)fluoranthene
Concen: 0.108 ng/mL
RT: 27.992 min Scan# 2370
Delta R.T. -0.028 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

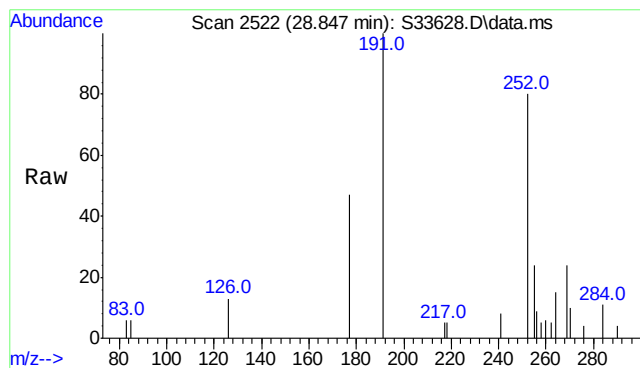
Tgt Ion:252 Resp: 3967
Ion Ratio Lower Upper
252 100
126 9.0 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.048 ng/mL
RT: 28.706 min Scan# 2497
Delta R.T. -0.017 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

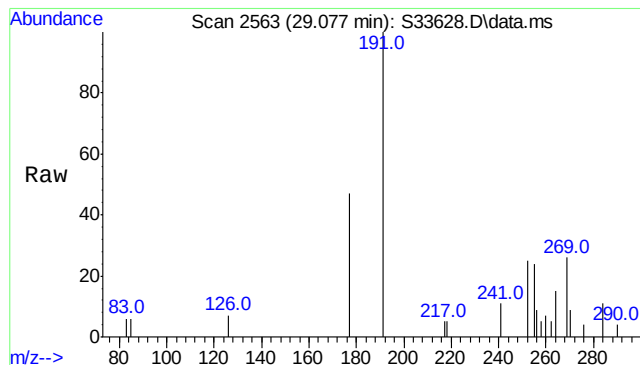
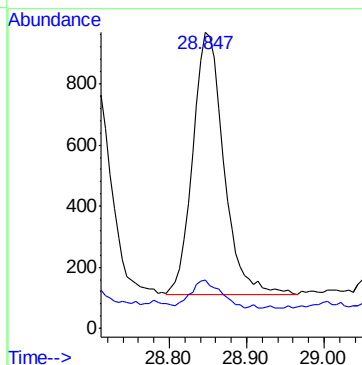
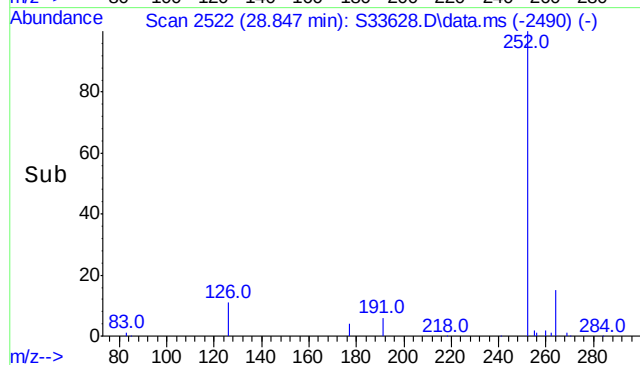
Tgt Ion:252 Resp: 1961
Ion Ratio Lower Upper
252 100
126 9.6 22.6 34.0#





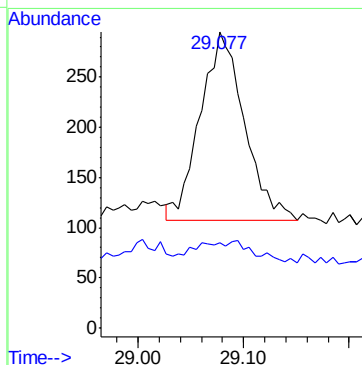
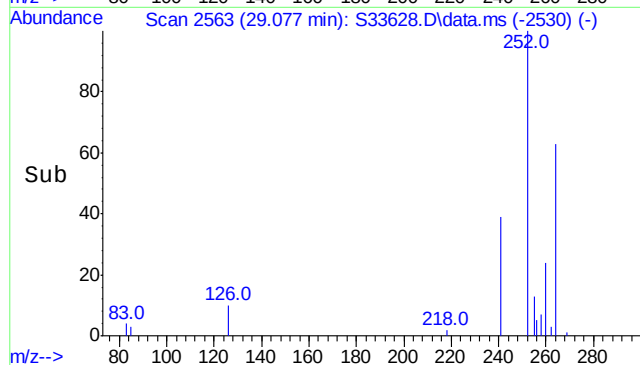
#49
Benzo(a)pyrene
Concen: 0.099 ng/mL
RT: 28.847 min Scan# 2522
Delta R.T. -0.022 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

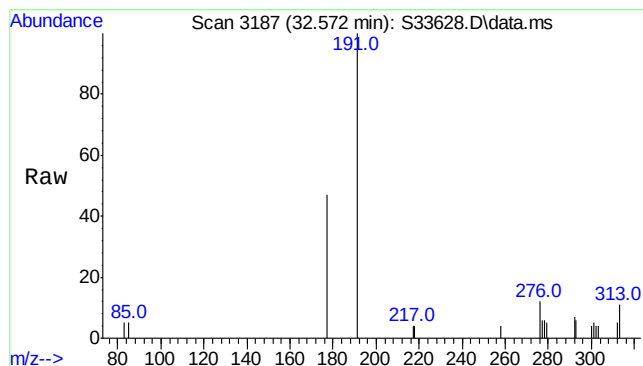
Tgt Ion	Ratio	Lower	Upper
252	100		
126	10.0	25.1	37.7#



#51
Perylene
Concen: 0.023 ng/mL
RT: 29.077 min Scan# 2563
Delta R.T. -0.017 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

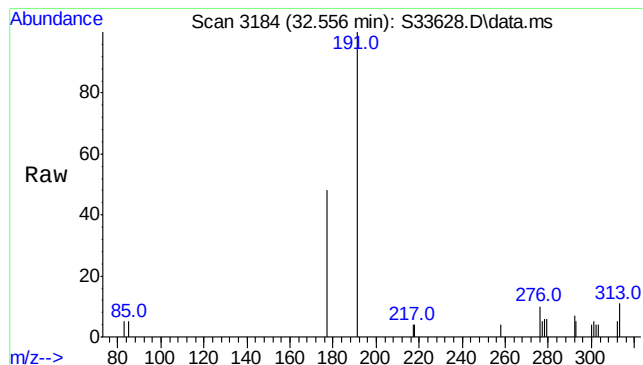
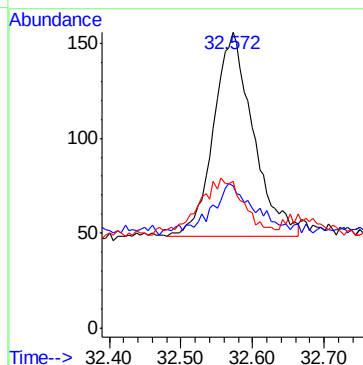
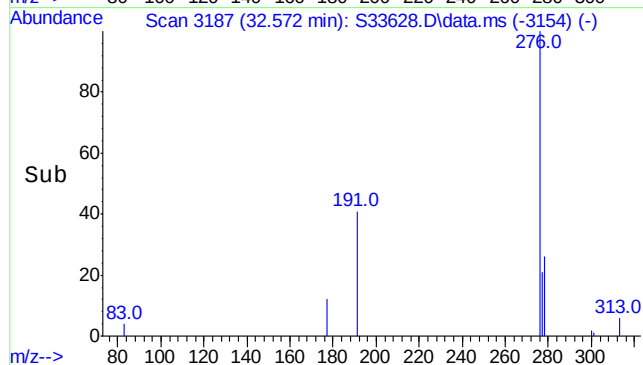
Tgt Ion	Ratio	Lower	Upper
252	100		
126	0.0	26.6	40.0#





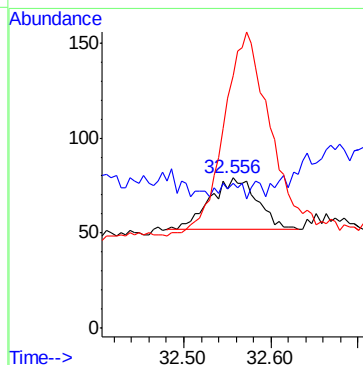
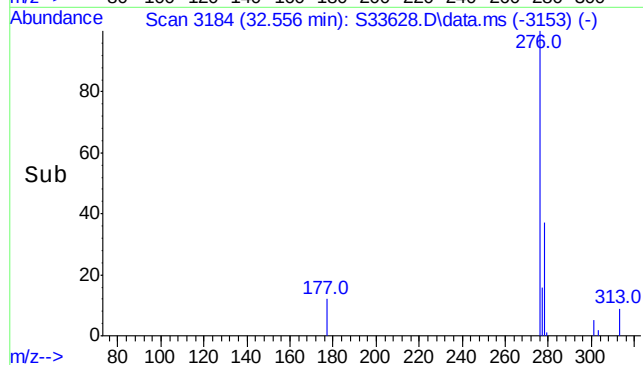
#52
Indeno(1,2,3-cd)pyrene
Concen: 0.010 ng/mL
RT: 32.572 min Scan# 3187
Delta R.T. -0.022 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

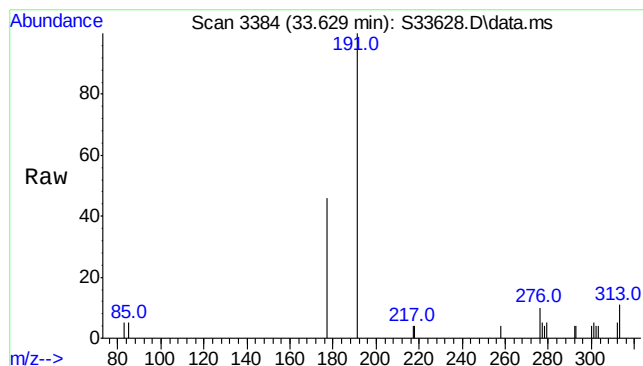
Tgt Ion:	276	Resp:	417
Ion Ratio	Lower	Upper	
276	100		
277	23.0	21.3	31.9
278	24.2	21.8	32.8



#53
Dibenz(a,h)anthracene
Concen: 0.003 ng/mL
RT: 32.556 min Scan# 3184
Delta R.T. -0.032 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

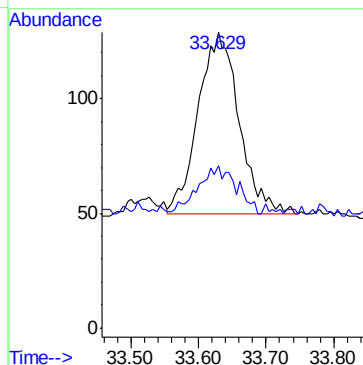
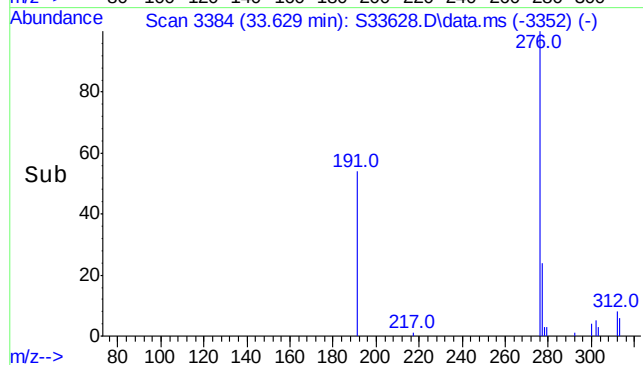
Tgt Ion:	278	Resp:	101
Ion Ratio	Lower	Upper	
278	100		
279	0.0	32.2	48.4#
276	412.9	242.1	363.1#





#54
Benzo(g,h,i)perylene
Concen: 0.009 ng/mL
RT: 33.629 min Scan# 3384
Delta R.T. -0.027 min
Lab File: S33628.D
Acq: 21 Sep 2013 12:13 am

Tgt Ion	Ratio	Lower	Upper
276	100		
277	24.3	20.3	30.5



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33632.D
 Acq On : 21 Sep 2013 3:29 am
 Operator : RUBENP
 Sample : mc24019-2dup
 Misc : ms29817,mss1493,,,,10
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 24 17:44:44 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

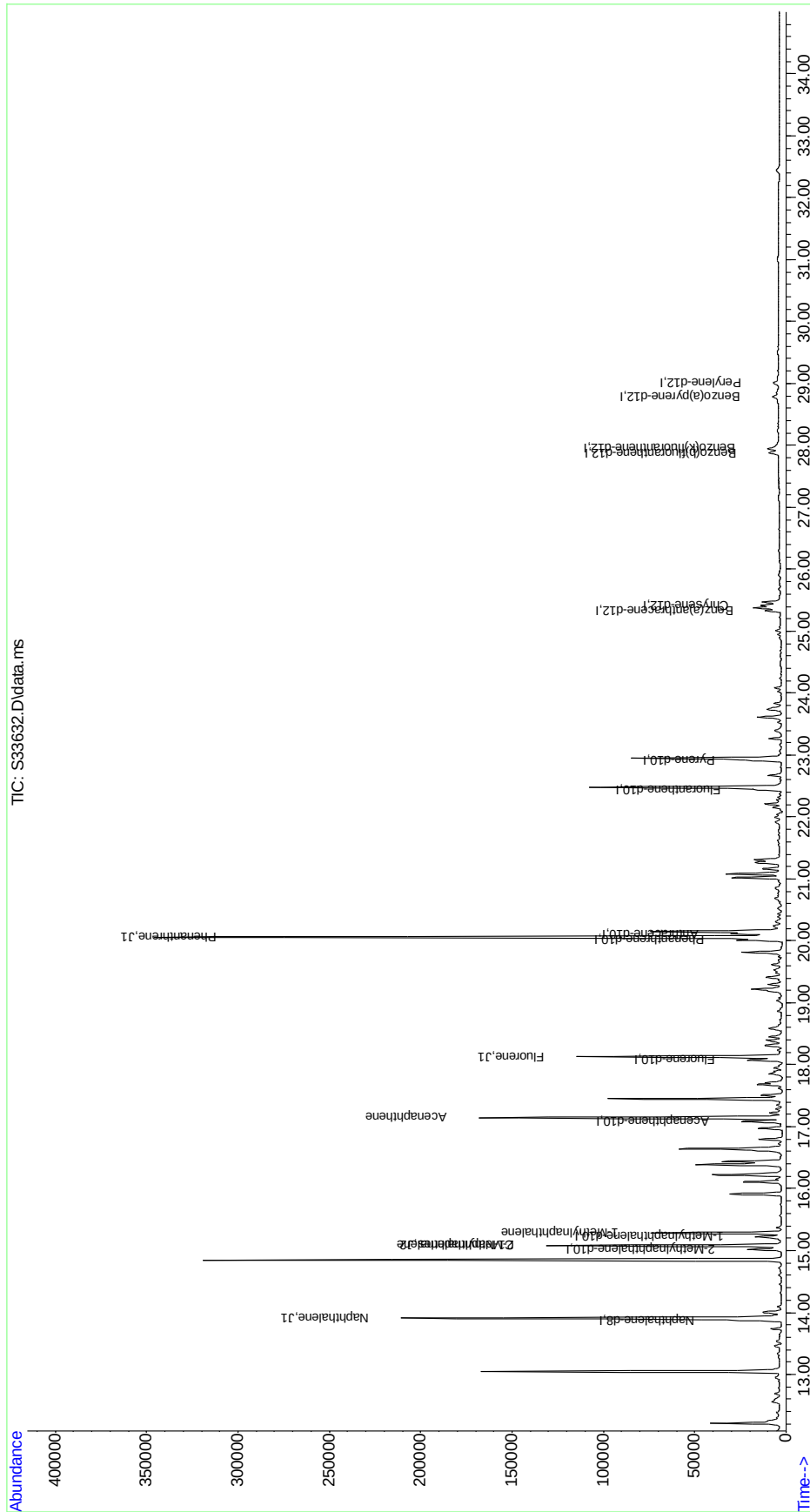
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	40930	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	24963	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	19725	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	14799	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	12973	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	35849	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	39814	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	22481	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	21053	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	9830	0.50	ng/mL	-0.01
37) Chrysene-d12	25.419	240	12320	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.879	264	9773	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10223	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	6458	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5640	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.910	128	302972	215.090	ng/mL	100
3) C1-Naphthalenes	15.081	142	178313m	126.590	ng/mL	
9) 2-Methylnaphthalene	15.081	142	114157	63.003	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	64066	41.942	ng/mL	100
14) Acenaphthene	17.147	154	100433	45.835	ng/mL	98
16) Fluorene	18.132	166	90262m	25.629	ng/mL	
21) Phenanthrene	20.059	178	380024	42.069	ng/mL	99

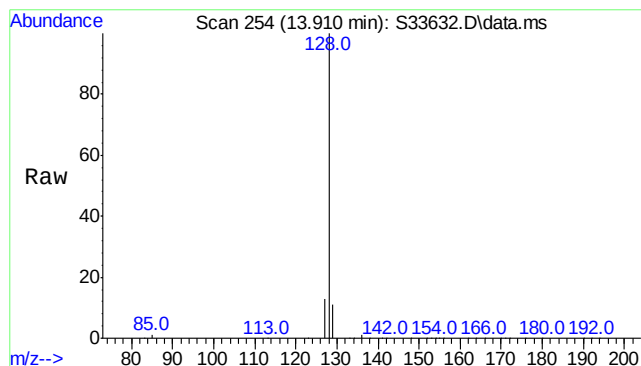
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130920\
Data File : S33632.D
Acq On : 21 Sep 2013 3:29 am
Operator : RUBENP
Sample : mc24019-2dup
Misc : ms29817,mss1493,,,,,10
ALS Vial : 19 Sample Multiplier: 1

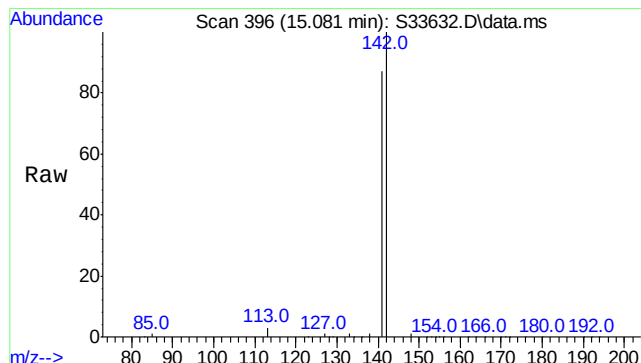
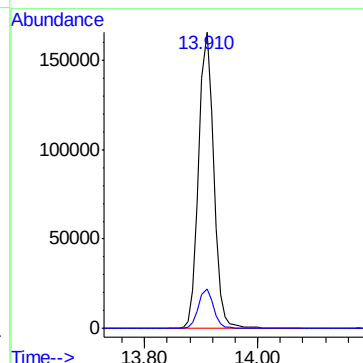
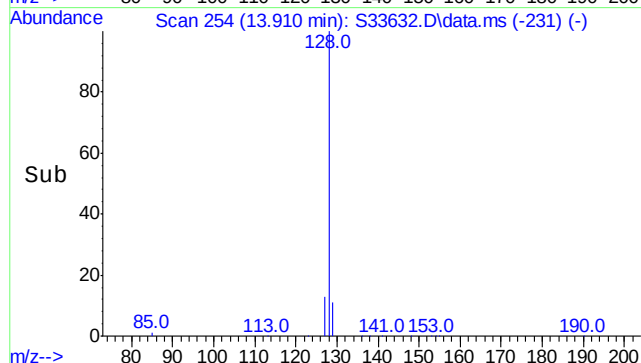
Quant Time: Oct 24 17:44:44 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





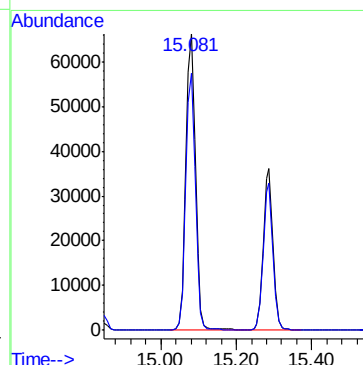
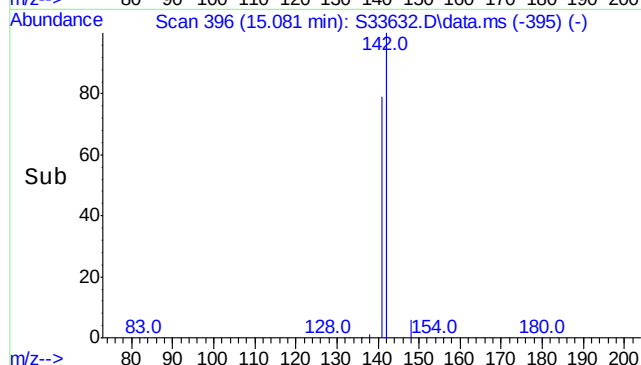
#2
Naphthalene
Concen: 215.090 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

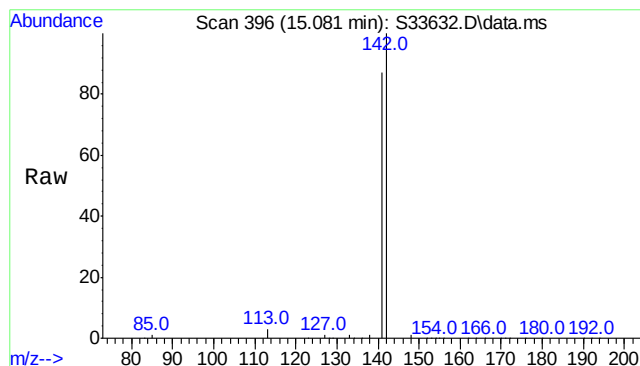
Tgt Ion:128 Resp: 302972
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



#3
C1-Naphthalenes
Concen: 126.590 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

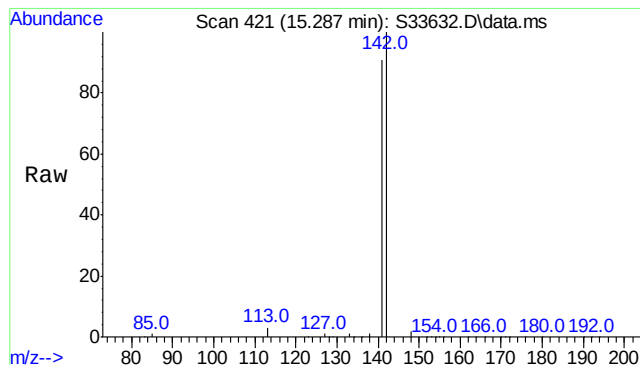
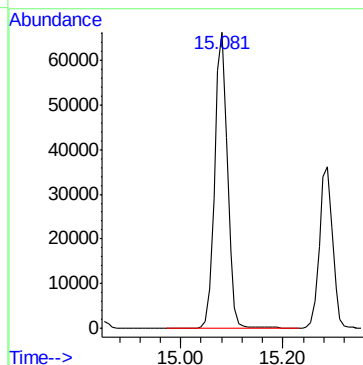
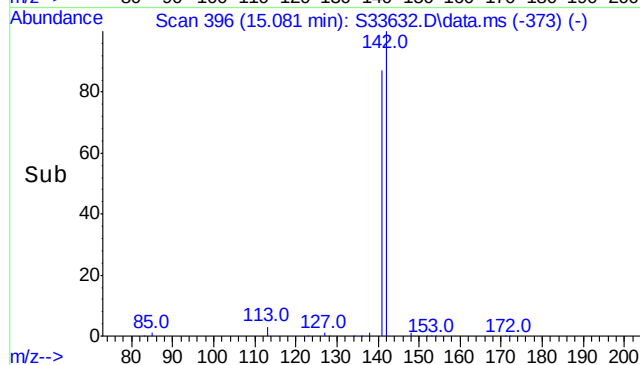
Tgt Ion:142 Resp: 178313
Ion Ratio Lower Upper
142 100
141 32.6 71.0 106.6#





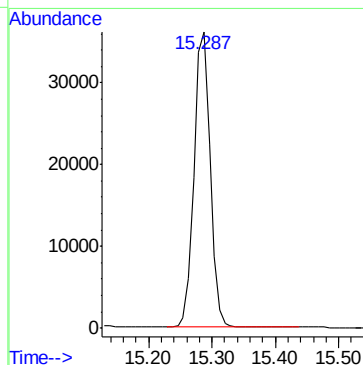
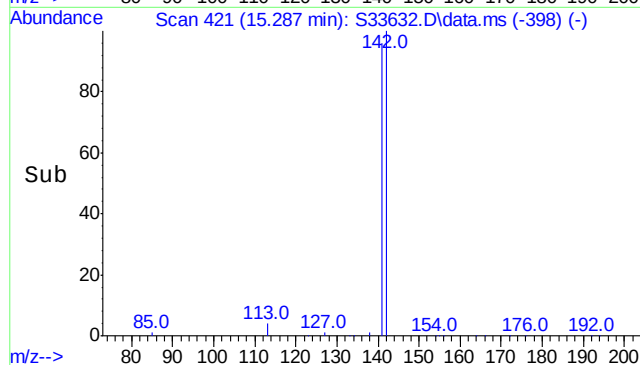
#9
2-Methylnaphthalene
Concen: 63.003 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

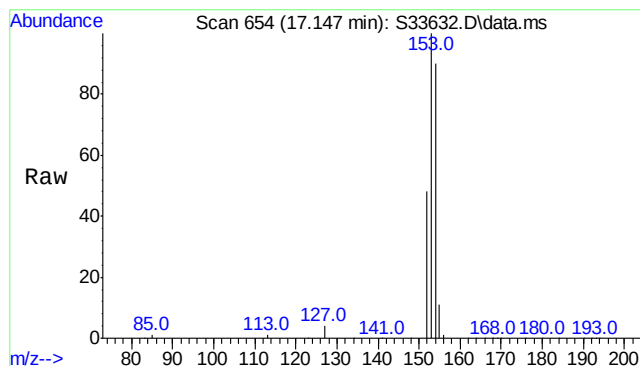
Tgt Ion:142 Resp: 114157



#11
1-Methylnaphthalene
Concen: 41.942 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

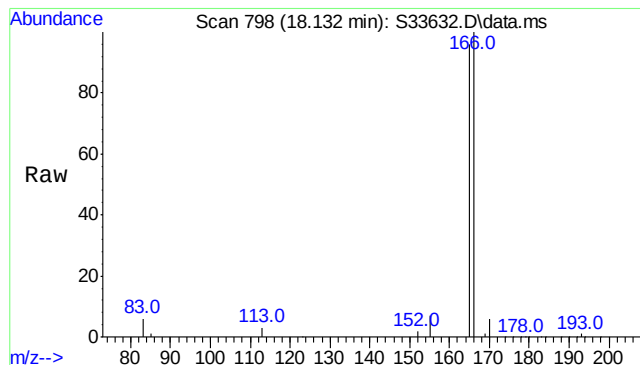
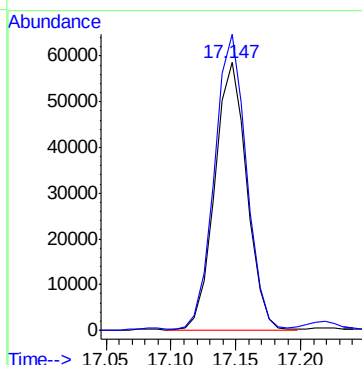
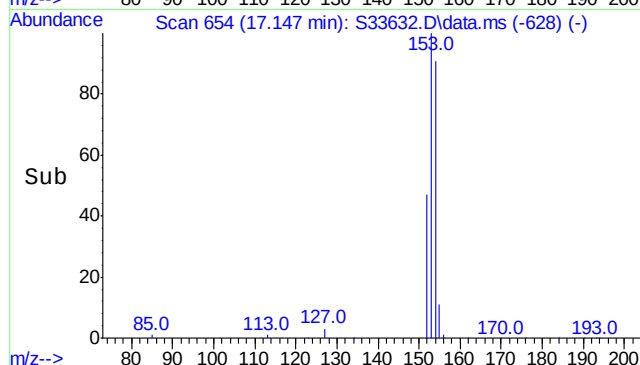
Tgt Ion:142 Resp: 64066





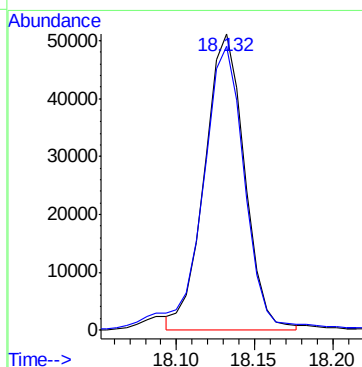
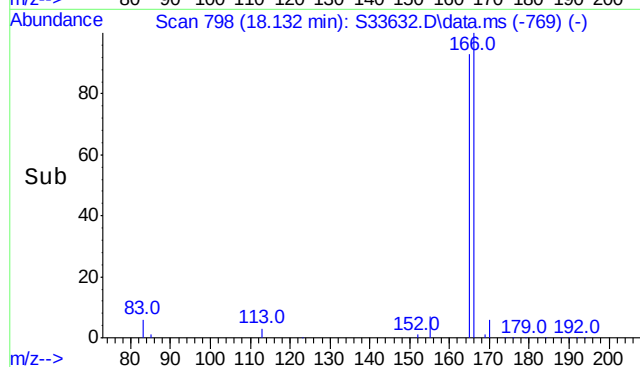
#14
Acenaphthene
Concen: 45.835 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

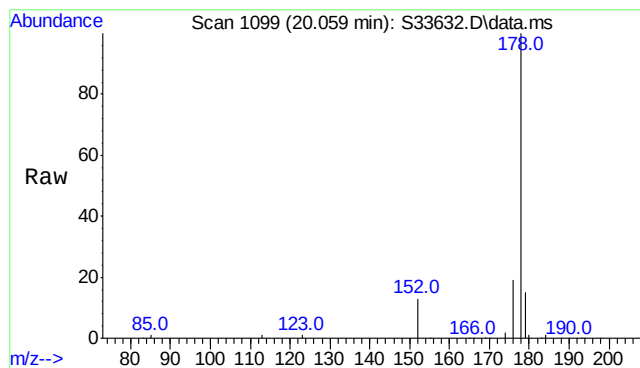
Tgt Ion:154 Resp: 100433
Ion Ratio Lower Upper
154 100
153 110.1 86.6 129.8



#16
Fluorene
Concen: 25.629 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

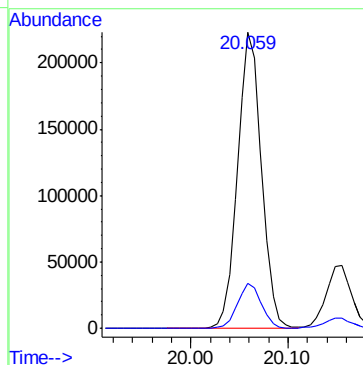
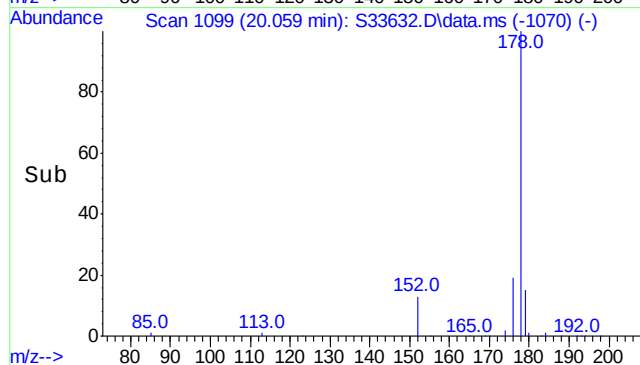
Tgt Ion:166 Resp: 90262
Ion Ratio Lower Upper
166 100
165 101.6 76.4 114.6





#21
Phenanthrene
Concen: 42.069 ng/mL
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33632.D
Acq: 21 Sep 2013 3:29 am

Tgt Ion:178 Resp: 380024
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
Data File : S33445.D
Acq On : 7 Sep 2013 6:27 am
Operator : jamesr1
Sample : IC1465-1,MSS1466-1
Misc : MS29817,MSS1465,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Sep 09 11:32:39 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Sep 05 12:14:01 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	38822	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	26647	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	21689	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.103	164	15510	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	13570	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	37659	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	31779	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	24929	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	22580	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	8631	0.50	ng/mL	0.00
36) Chrysene-d12	25.438	240	12946	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	10449	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	10679	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.813	264	5503	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	5178	0.33	ng/mL	0.00

Target Compounds	Qvalue

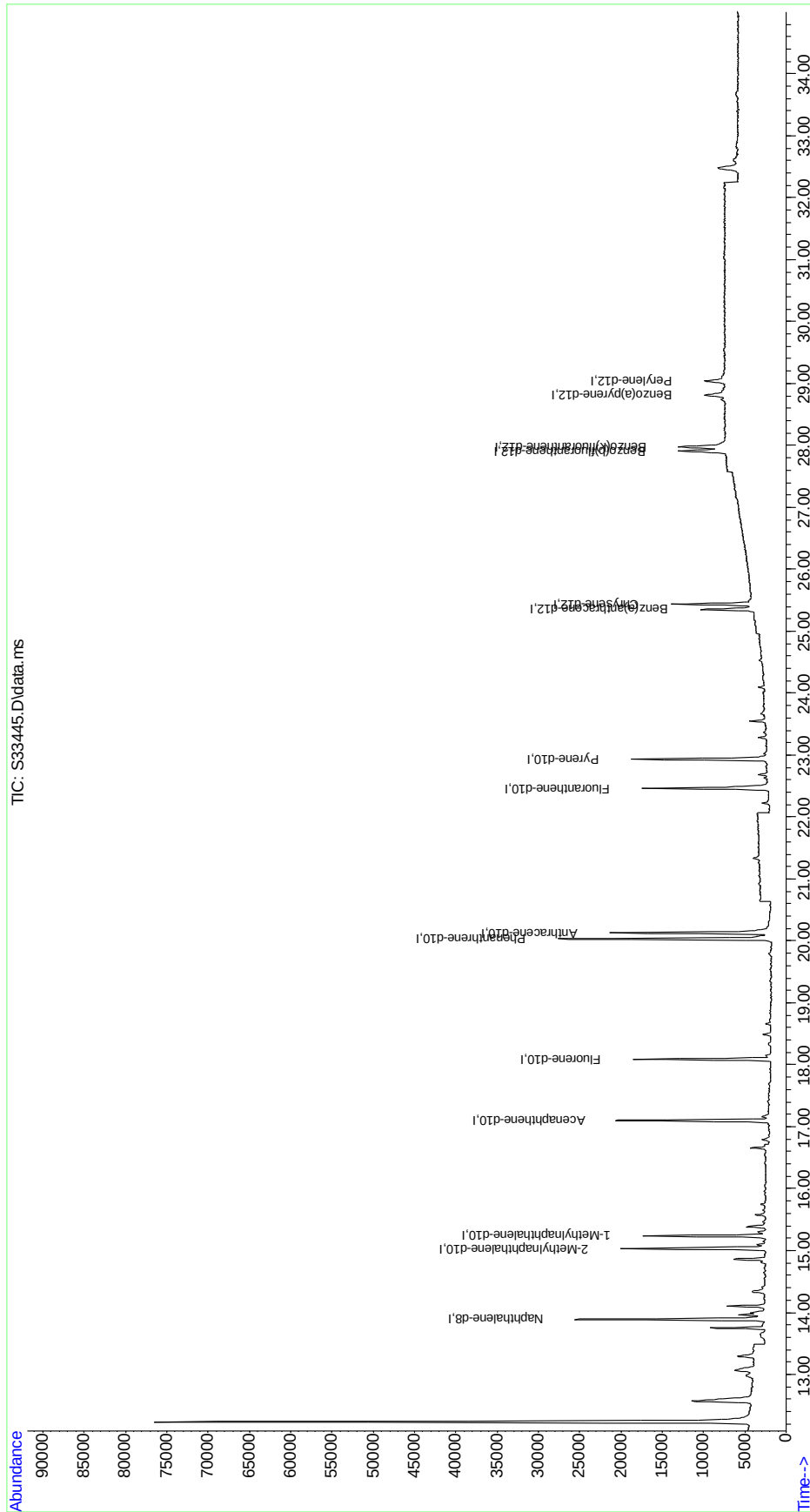
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.4.1

7

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33445.D
Acq On : 7 Sep 2013 6:27 am
Operator : jamesr1
Sample : IC1465-1, MSS1466-1
Misc : MS29817, MSS1465,,,1
ALS Vial : 23 Sample Multiplier: 1
Quant Time: Sep 09 11:32:39 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Thu Sep 05 12:14:01 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33446.D
 Acq On : 7 Sep 2013 7:14 am
 Operator : jamesr1
 Sample : IC1465-2,MSS1466-2
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 09 11:34:52 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:53:53 2013
 Response via : Initial Calibration

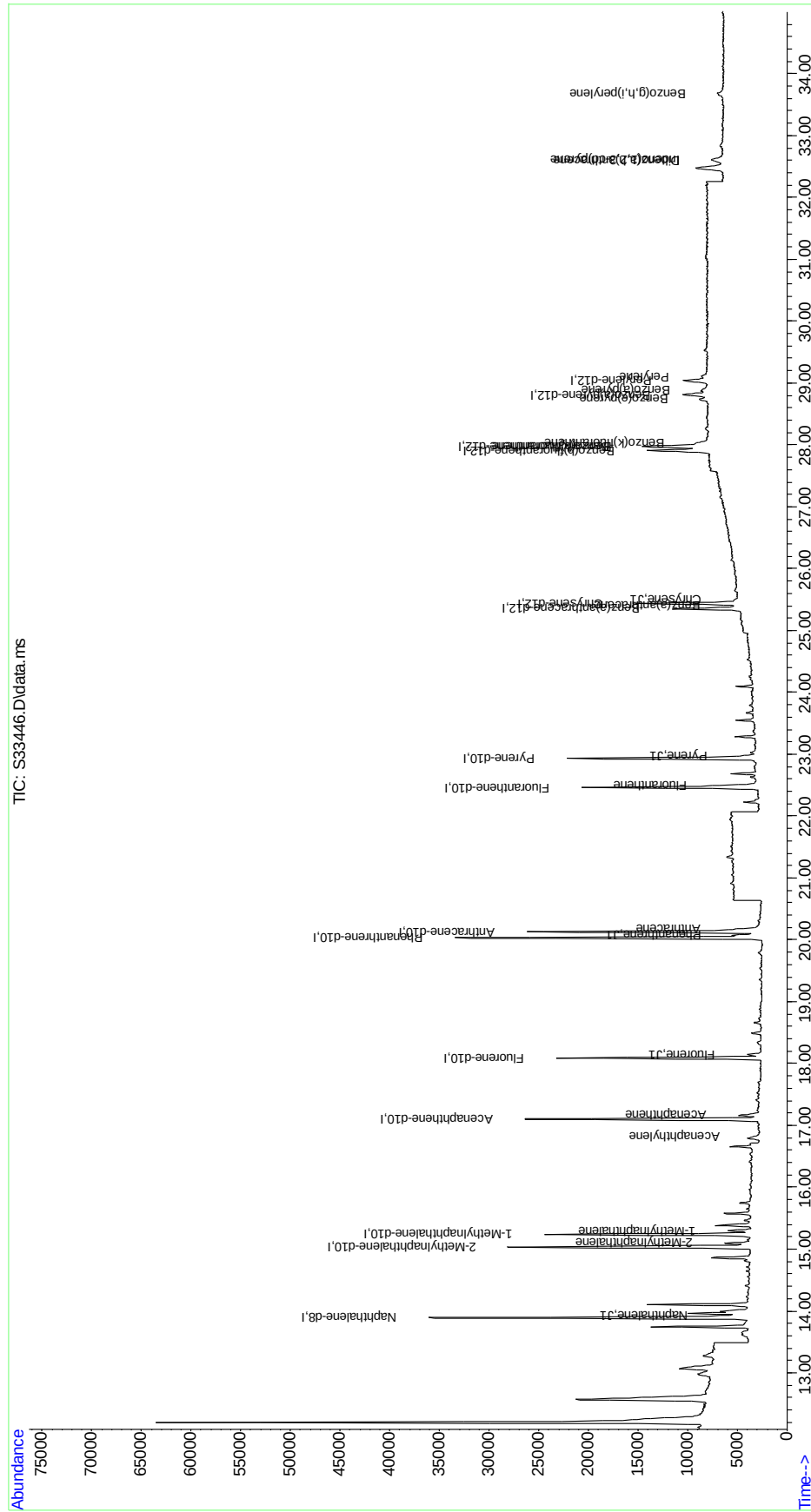
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.893	136	53583	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.040	152	37418	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	29881	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.104	164	19970	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	16842	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	45113	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	37459	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	29075	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	25826	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9057	0.50	ng/mL	0.00
36) Chrysene-d12	25.439	240	13557	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11471	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	11670	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.807	264	5621	0.33	ng/mL	0.00
49) Perylene-d12	29.032	264	5132m	0.33	ng/mL	0.00
Target Compounds						
2) Naphthalene	13.926	128	3202m	1.447	ng/mL	Qvalue
8) 2-Methylnaphthalene	15.098	142	2322	0.782	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	1948	0.765	ng/mL	100
12) Acenaphthylene	16.816	152	924	0.379	ng/mL#	89
13) Acenaphthene	17.161	154	1258	0.386	ng/mL	97
15) Fluorene	18.145	166	1098	0.223	ng/mL	97
20) Phenanthrene	20.078	178	2903m	0.224	ng/mL	
26) Anthracene	20.168	178	2132	0.225	ng/mL	100
28) Fluoranthene	22.495	202	1913	0.073	ng/mL#	86
30) Pyrene	22.972	202	1990	0.072	ng/mL#	83
35) Benz(a)anthracene	25.405	228	218m	0.007	ng/mL	
37) Chrysene	25.492	228	275	0.007	ng/mL#	83
43) Benzo(b)fluoranthene	27.969	252	2200	0.044	ng/mL	95
45) Benzo(k)fluoranthene	28.031	252	1846	0.043	ng/mL	99
47) Benzo(e)pyrene	28.734	252	1932	0.049	ng/mL	99
48) Benzo(a)pyrene	28.875	252	932	0.044	ng/mL	98
50) Perylene	29.106	252	1077m	0.049	ng/mL	
51) Indeno(1,2,3-cd)pyrene	32.615	276	1936m	0.056	ng/mL	
52) Dibenz(a,h)anthracene	32.599	278	1433	0.052	ng/mL#	1
53) Benzo(g,h,i)perylene	33.672	276	1937m	0.058	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33446.D
Acq On : 7 Sep 2013 7:14 am
Operator : jamesr1
Sample : IC1465-2, MSS1466-2
Misc : MS29817, MSS1465,,,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 09 11:34:52 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 10:53:53 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33447.D
 Acq On : 7 Sep 2013 8:00 am
 Operator : jamesr1
 Sample : IC1465-3,MSS1466-3
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Sep 09 10:57:30 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:55:51 2013
 Response via : Initial Calibration

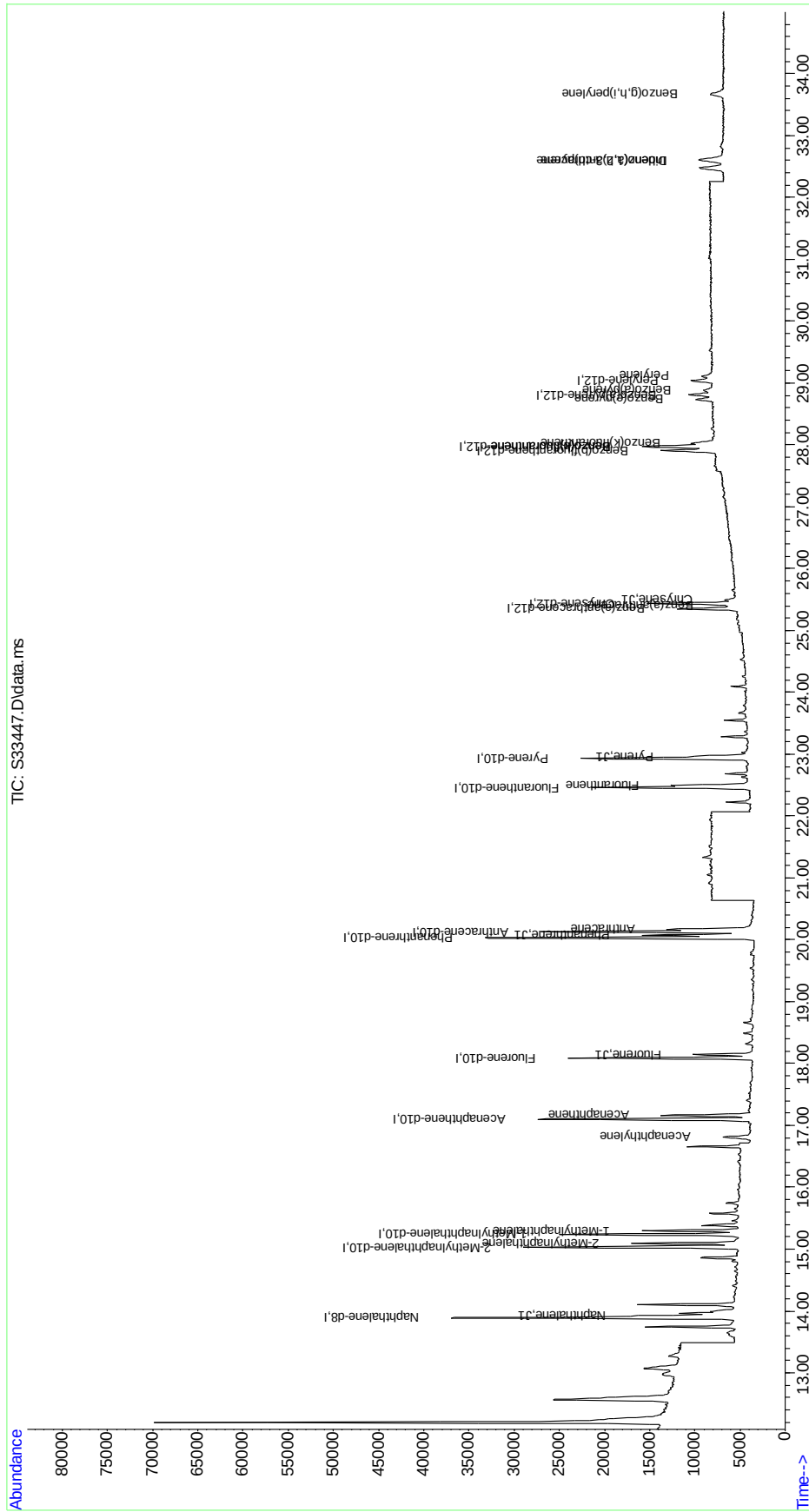
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	51633	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	35090	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	28366	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	19197	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	16511	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	44099	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	36379	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	28173	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	25023	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	8830	0.50	ng/mL	0.00
36) Chrysene-d12	25.439	240	12960	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11044	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	11267	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.807	264	5399	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	4968	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	15412	7.590	ng/mL#	93
8) 2-Methylnaphthalene	15.089	142	10961	3.981	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	9378	3.967	ng/mL	100
12) Acenaphthylene	16.816	152	4529	1.984	ng/mL	98
13) Acenaphthene	17.161	154	6024	1.958	ng/mL	98
15) Fluorene	18.145	166	5512	1.183	ng/mL	98
20) Phenanthrene	20.078	178	13790	1.126	ng/mL	98
26) Anthracene	20.168	178	11038	1.238	ng/mL	100
28) Fluoranthene	22.495	202	9351	0.386	ng/mL	97
30) Pyrene	22.966	202	9623	0.379	ng/mL	96
35) Benz(a)anthracene	25.398	228	1022m	0.037	ng/mL	
37) Chrysene	25.492	228	1271	0.037	ng/mL	93
43) Benzo(b)fluoranthene	27.969	252	5566	0.120	ng/mL	100
45) Benzo(k)fluoranthene	28.031	252	5043	0.128	ng/mL	98
47) Benzo(e)pyrene	28.734	252	4624	0.121	ng/mL	99
48) Benzo(a)pyrene	28.881	252	2245	0.116	ng/mL	95
50) Perylene	29.111	252	2459	0.118	ng/mL	94
51) Indeno(1,2,3-cd)pyrene	32.604	276	5149m	0.143	ng/mL	
52) Dibenz(a,h)anthracene	32.599	278	3617	0.131	ng/mL	98
53) Benzo(g,h,i)perylene	33.667	276	4732	0.136	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33447.D
Acq On : 7 Sep 2013 8:00 am
Operator : jamesr1
Sample : IC1465-3, MSS1466-3
Misc : MS29817, MSS1465,,,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Sep 09 10:57:30 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 10:55:51 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33448.D
 Acq On : 7 Sep 2013 8:47 am
 Operator : jamesr1
 Sample : ICC1465-4,MSS1466-4
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Sep 09 10:58:54 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:57:37 2013
 Response via : Initial Calibration

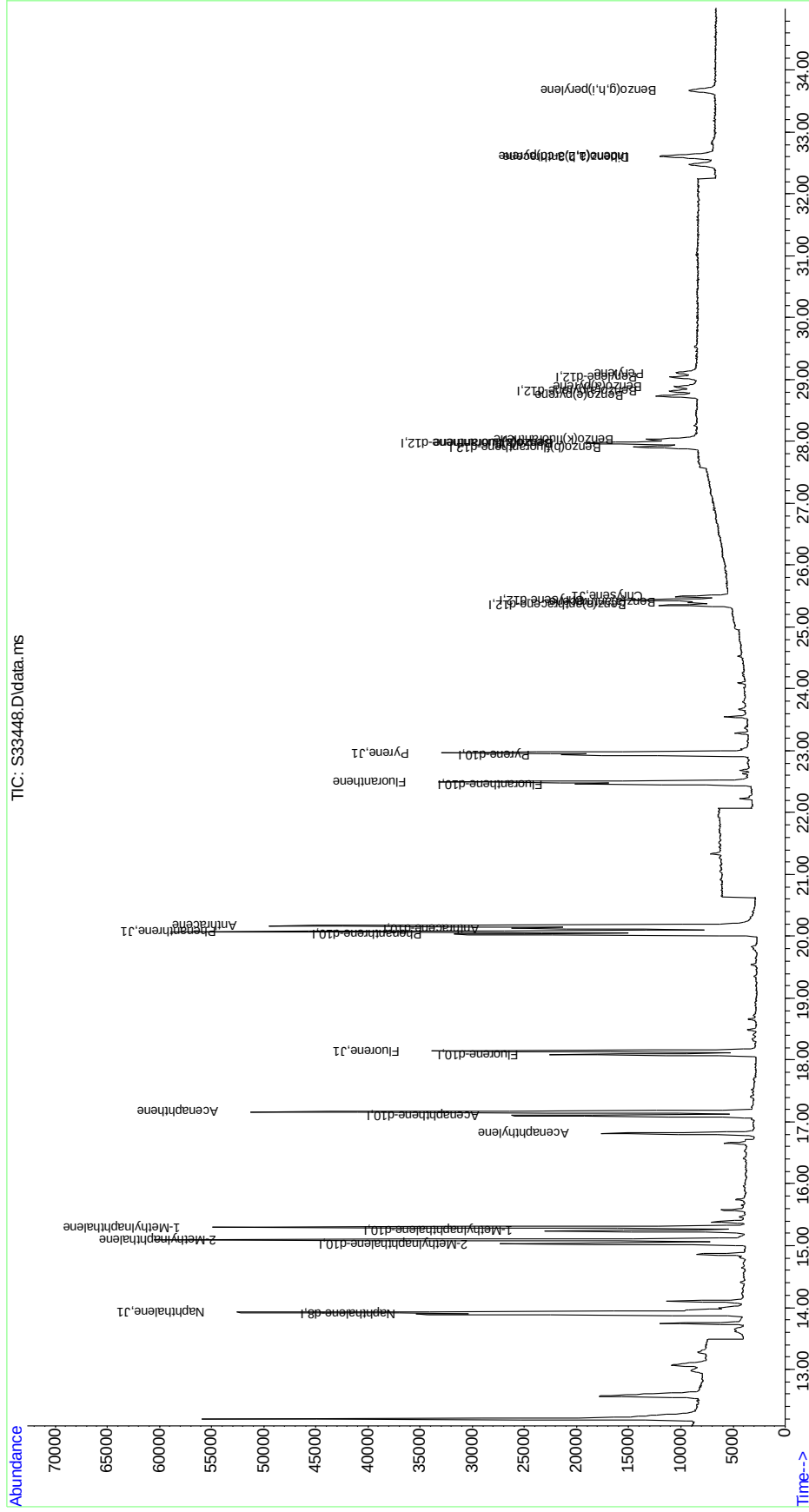
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	50005	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	34668	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	28140	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.103	164	19431	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	16098	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	42657	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	37300	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	27344	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	24566	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9302	0.50	ng/mL	0.00
36) Chrysene-d12	25.438	240	14077	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11566	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	12072	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.813	264	6073	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	5327	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	71132	36.830	ng/mL	98
8) 2-Methylnaphthalene	15.089	142	52749	19.421	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	45467	19.442	ng/mL	100
12) Acenaphthylene	16.816	152	22208	9.636	ng/mL	100
13) Acenaphthene	17.161	154	29193	9.439	ng/mL	99
15) Fluorene	18.145	166	26567	5.875	ng/mL	100
20) Phenanthrene	20.078	178	64791	5.583	ng/mL	100
26) Anthracene	20.168	178	57400	6.213	ng/mL	100
28) Fluoranthene	22.495	202	45095	1.942	ng/mL	100
30) Pyrene	22.965	202	46808	1.913	ng/mL	99
35) Benz(a)anthracene	25.398	228	5099	0.179	ng/mL	98
37) Chrysene	25.492	228	6457	0.178	ng/mL	100
43) Benzo(b)fluoranthene	27.969	252	11659	0.241	ng/mL	98
45) Benzo(k)fluoranthene	28.031	252	10296	0.239	ng/mL	99
47) Benzo(e)pyrene	28.734	252	9571	0.223	ng/mL	99
48) Benzo(a)pyrene	28.880	252	5123	0.237	ng/mL	96
50) Perylene	29.105	252	5182	0.233	ng/mL	97
51) Indeno(1,2,3-cd)pyrene	32.610	276	10190m	0.249	ng/mL	
52) Dibenz(a,h)anthracene	32.604	278	6579	0.216	ng/mL	90
53) Benzo(g,h,i)perylene	33.672	276	8495	0.218	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33448.D
Acq On : 7 Sep 2013 8:47 am
Operator : jamesr1
Sample : ICC1465-4, MSS1466-4
Misc : MS29817, MSS1465,,,1
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Sep 09 10:58:54 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 10:57:37 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33449.D
 Acq On : 7 Sep 2013 9:34 am
 Operator : jamesr1
 Sample : IC1465-5,MSS1466-5
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Sep 09 11:44:06 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:59:02 2013
 Response via : Initial Calibration

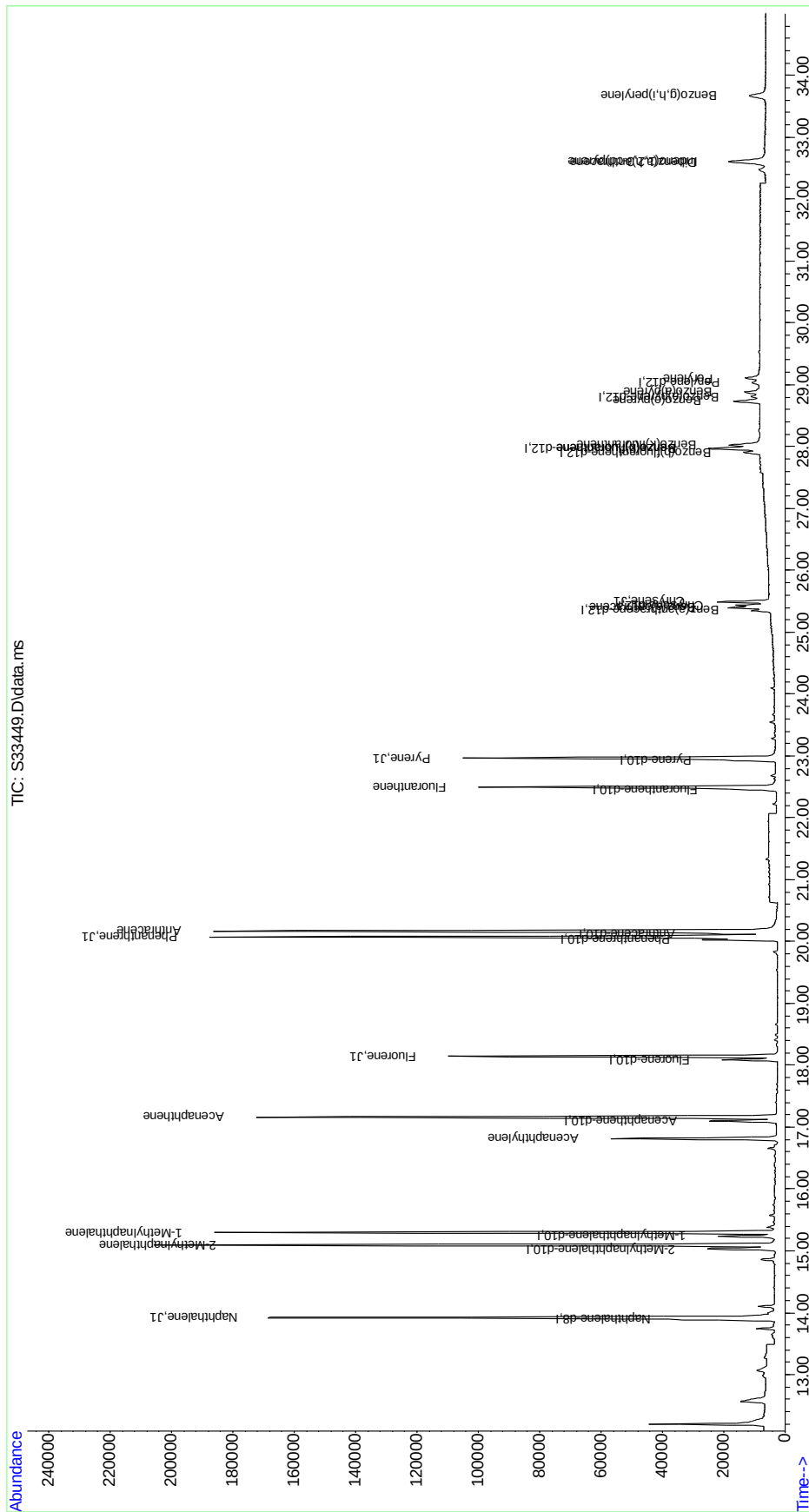
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	46931	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	32611	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	26763	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	18207	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	14547	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.027	188	36819	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	35207	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	23964	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	22044	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	8621	0.50	ng/mL	0.00
36) Chrysene-d12	25.432	240	13163	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.902	264	10744	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.969	264	11287	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.807	264	6033	0.33	ng/mL	0.00
49) Perylene-d12	29.032	264	4907m	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	244775	137.848	ng/mL	99
8) 2-Methylnaphthalene	15.089	142	185530	73.147	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	160167	72.517	ng/mL	100
12) Acenaphthylene	16.816	152	80520	37.630	ng/mL	100
13) Acenaphthene	17.161	154	102715	35.948	ng/mL	100
15) Fluorene	18.145	166	89800	22.090	ng/mL	100
20) Phenanthrene	20.078	178	210311	21.367	ng/mL	100
26) Anthracene	20.168	178	213321	24.248	ng/mL	100
28) Fluoranthene	22.495	202	148987	7.374	ng/mL	100
30) Pyrene	22.966	202	158478	7.296	ng/mL	99
35) Benz(a)anthracene	25.398	228	18268	0.711	ng/mL	99
37) Chrysene	25.492	228	22230	0.674	ng/mL	100
43) Benzo(b)fluoranthene	27.969	252	24181	0.537	ng/mL	97
45) Benzo(k)fluoranthene	28.025	252	22398	0.556	ng/mL	97
47) Benzo(e)pyrene	28.734	252	20446	0.487	ng/mL	97
48) Benzo(a)pyrene	28.875	252	13070m	0.611	ng/mL	
50) Perylene	29.106	252	11617	0.572	ng/mL	95
51) Indeno(1,2,3-cd)pyrene	32.610	276	23093m	0.606	ng/mL	
52) Dibenz(a,h)anthracene	32.599	278	14652	0.535	ng/mL	87
53) Benzo(g,h,i)perylene	33.672	276	17588	0.502	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
 Data File : S33449.D
 Acq On : 7 Sep 2013 9:34 am
 Operator : jamesr1
 Sample : IC1465-5, MSS1466-5
 Misc : MS29817, MSS1465,,,1
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Sep 09 11:44:06 2013
 Quant Method : S:\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:59:02 2013
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33450.D
 Acq On : 7 Sep 2013 10:20 am
 Operator : jamesr1
 Sample : IC1465-6,MSS1466-6
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Sep 09 11:24:48 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:00:22 2013
 Response via : Initial Calibration

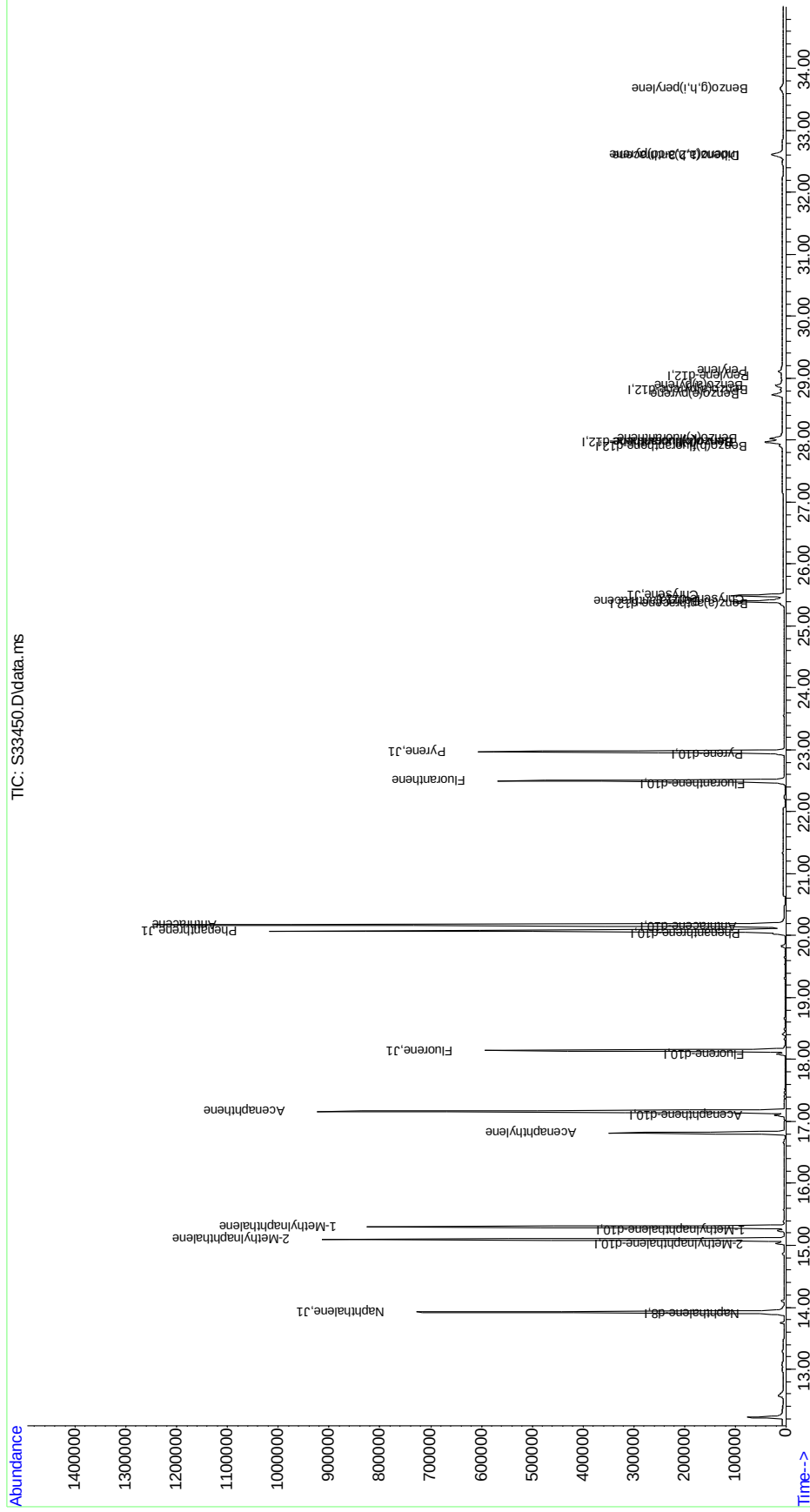
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	35280	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.032	152	24580	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	21508	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	16696	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	13640	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.034	188	35382	5.00	ng/mL	0.00
25) Anthracene-d10	20.136	188	39006	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	23790	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	22780	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9706	0.50	ng/mL	0.00
36) Chrysene-d12	25.439	240	13472	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11379	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	11750	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.813	264	6872	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	4209m	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	1066139	821.437	ng/mL	100
8) 2-Methylnaphthalene	15.098	142	816063	434.303	ng/mL	100
10) 1-Methylnaphthalene	15.304	142	744625	427.504	ng/mL	100
12) Acenaphthylene	16.816	152	488984	252.188	ng/mL	100
13) Acenaphthene	17.161	154	553260	215.518	ng/mL	100
15) Fluorene	18.145	166	488173	130.142	ng/mL	99
20) Phenanthrene	20.078	178	1162310	125.641	ng/mL	100
26) Anthracene	20.174	178	1418818	145.267	ng/mL	100
28) Fluoranthene	22.501	202	861028	43.611	ng/mL	100
30) Pyrene	22.972	202	934056	42.359	ng/mL	99
35) Benz(a)anthracene	25.399	228	126706	4.481	ng/mL	98
37) Chrysene	25.492	228	127478	3.899	ng/mL	100
43) Benzo(b)fluoranthene	27.969	252	58203	1.246	ng/mL	99
45) Benzo(k)fluoranthene	28.026	252	52158	1.263	ng/mL	97
47) Benzo(e)pyrene	28.734	252	45057	0.980	ng/mL	97
48) Benzo(a)pyrene	28.881	252	32212	1.341	ng/mL	98
50) Perylene	29.111	252	15950	0.926	ng/mL	98
51) Indeno(1,2,3-cd)pyrene	32.610	276	49980m	1.531	ng/mL	
52) Dibenz(a,h)anthracene	32.605	278	17552	0.766	ng/mL#	1
53) Benzo(g,h,i)perylene	33.672	276	20419	0.704	ng/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33450.D
Acq On : 7 Sep 2013 10:20 am
Operator : jamesr1
Sample : IC1465-6, MSS1466-6
Misc : MS29817, MSS1465,,,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Sep 09 11:24:48 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 11:00:22 2013
Response via : Initial Calibration



Data Path : S:\1\data\S130906\
 Data File : S33453.D
 Acq On : 7 Sep 2013 12:41 pm
 Operator : jamesr1
 Sample : ICV1465-4,SRM 1991
 Misc : MS29817,MSS1465,,,,,
 ALS Vial : 31 Sample Multiplier: 1

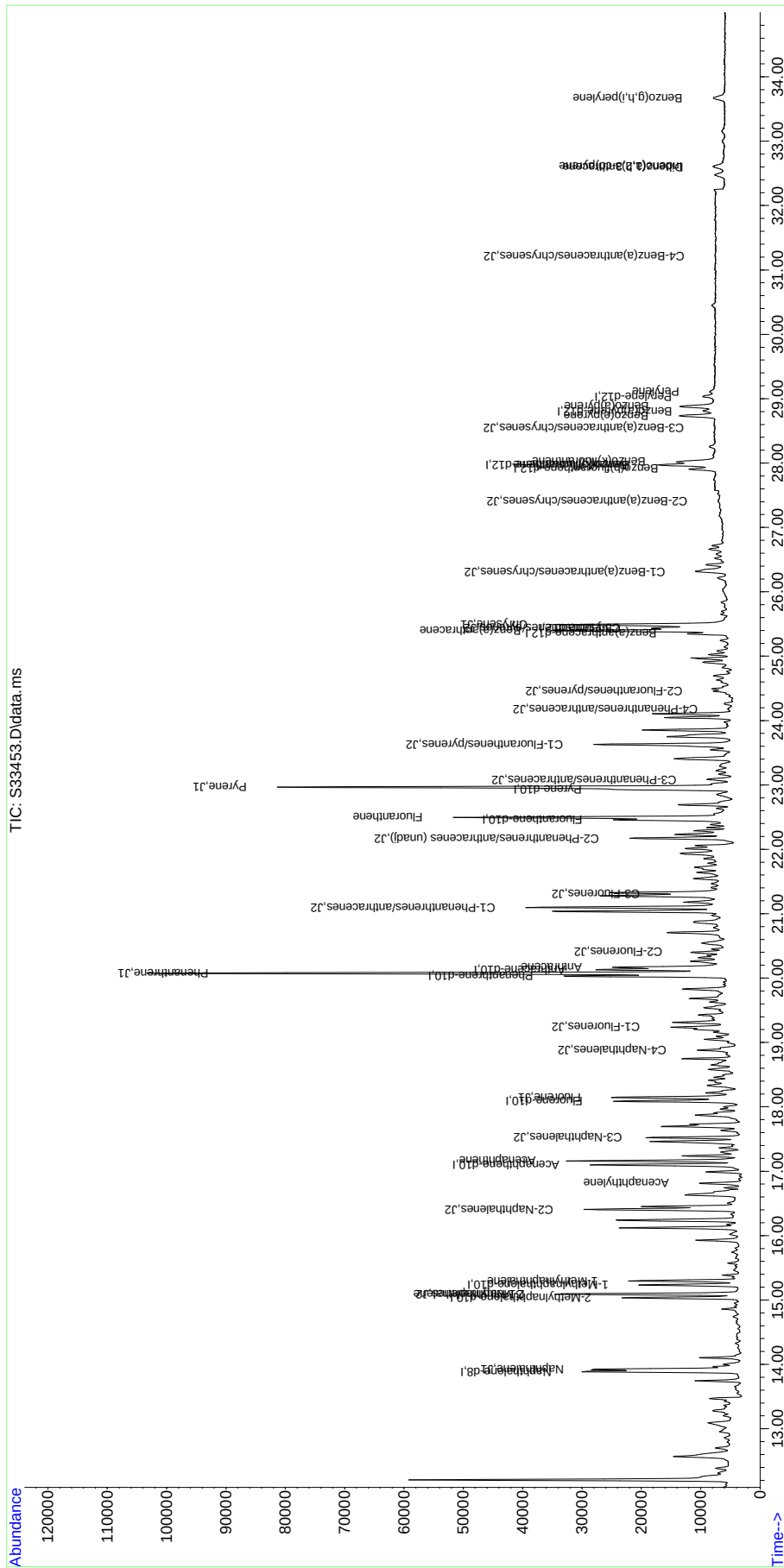
Quant Time: Sep 25 16:02:38 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	41695	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.032	152	28979	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	24412	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	18286	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	15486	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	40452	5.00	ng/mL	0.00
25) Anthracene-d10	20.130	188	31511	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	27415	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	24053	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9053	0.50	ng/mL	0.00
36) Chrysene-d12	25.432	240	12543	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	8403	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	8395	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.808	264	4293	0.33	ng/mL	0.00
49) Perylene-d12	29.033	264	3974	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	36139	23.466	ng/mL	97
3) C1-Naphthalenes	15.089	142	44695m	29.021	ng/mL	
4) C2-Naphthalenes	16.409	156	58359m	37.893	ng/mL	
5) C3-Naphthalenes	17.528	170	54903m	35.649	ng/mL	
6) C4-Naphthalenes	18.881	184	30816m	20.009	ng/mL	
8) 2-Methylnaphthalene	15.089	142	28395	12.637	ng/mL	100
10) 1-Methylnaphthalene	15.296	142	16192	8.098	ng/mL	100
12) Acenaphthylene	16.816	152	3904	1.762	ng/mL#	75
13) Acenaphthene	17.161	154	17391	6.106	ng/mL	99
15) Fluorene	18.145	166	14264m	3.303	ng/mL	
16) C1-Fluorenes	19.240	180	17912m	4.148	ng/mL	
17) C2-Fluorenes	20.405	194	17509m	4.054	ng/mL	
18) C3-Fluorenes	21.302	208	11701m	2.709	ng/mL	
20) Phenanthrene	20.078	178	113085	10.609	ng/mL	100
21) C1-Phenanthrenes/anthr...	21.097	192	110599m	10.376	ng/mL	
22) C2-Phenanthrenes/anthr...	22.172	206	59719m	5.602	ng/mL	
23) C3-Phenanthrenes/anthr...	23.083	220	24334m	2.283	ng/mL	
24) C4-Phenanthrenes/anthr...	24.183	234	7424m	0.696	ng/mL	
26) Anthracene	20.168	178	21752	2.663	ng/mL	100
28) Fluoranthene	22.495	202	69217	2.997	ng/mL	99
30) Pyrene	22.966	202	117617	5.002	ng/mL	98
31) C1-Fluoranthenes/pyrenes	23.630	216	88182m	3.751	ng/mL	
32) C2-Fluoranthenes/pyrenes	24.459	230	29570m	1.258	ng/mL	
33) C3-Fluoranthenes/pyrenes	25.432	244	8141m	0.346	ng/mL	
35) Benz(a)anthracene	25.399	228	38240	1.422	ng/mL	99
37) Chrysene	25.492	228	41267	1.361	ng/mL	90
38) C1-Benz(a)anthracenes/...	26.313	242	28245m	0.932	ng/mL	
39) C2-Benz(a)anthracenes/...	27.409	256	6250m	0.206	ng/mL	
40) C3-Benz(a)anthracenes/...	28.543	270	3544m	0.117	ng/mL	
41) C4-Benz(a)anthracenes/...	31.215	284	1319m	0.044	ng/mL	
43) Benzo(b)fluoranthene	27.969	252	12207	0.352	ng/mL	99
45) Benzo(k)fluoranthene	28.020	252	15524	0.521	ng/mL	95
47) Benzo(e)pyrene	28.734	252	14342	0.515	ng/mL	98
48) Benzo(a)pyrene	28.881	252	14537	0.937	ng/mL	97
50) Perylene	29.111	252	2057	0.125	ng/mL#	91
51) Indeno(1,2,3-cd)pyrene	32.610	276	4988	0.161	ng/mL#	71
52) Dibenzo(a,h)anthracene	32.599	278	1487	0.068	ng/mL#	1
53) Benzo(g,h,i)perylene	33.667	276	6281	0.223	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33453.D
Acq On : 7 Sep 2013 12:41 pm
Operator : jamesr1
Sample : ICV1465-4, SRM 1991
Misc : MS29817, MSS1465
ALS Vial : 31 Sample Multiplier: 1
Quant Time: Sep 25 16:02:38 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



S:\1\data\S130906\S33453.D

Alkylated PAH Homologue Relative Response Factor Calculations

Data File Name **S33453.D**
 Data File Path **S:\1\data\S130906**
 Operator **jamesr1**
 Date Acquired **9/7/2013 12:41**
 Acq. Method File **S:\1\methods\S130906-SPMEPAH.M**
 Sample Name **SRM**
 Misc Info
 Vial Number **31**
 Instrument Name **MSS**
 Number of Compounds **53**

Name	Level 4 Concentration (µg/mL)	SRM Concentration (µg/mL)	SRM Area Counts	Certified Reference Value (mg/kg)	Density Corrected Reference Value (µg/mL)	RRF	RRF Corrected Level 4 Concentration (µg/mL)
Naphthalene-d8	33.3	33.30	41695				
Naphthalene	40.1	23.47	36139	26	34.6		
C2-Naphthalenes	40.1	37.89	58359	21.3	28.3	1.971	20.3
C3-Naphthalenes	40.1	35.65	54903	29.5	39.2	1.339	29.9
C4-Naphthalenes	40.1	20.01	30816	33.8	45.0	0.656	61.1
Fluorene-d10	5	5.00	15486				
Fluorene	6	3.30	14264	3.8	5.05		
C1-Fluorenes	6	4.15	17912	5.62	7.47	0.849	7.07
C2-Fluorenes	6	4.05	17509	7.2	9.58	0.648	9.26
C3-Fluorenes	6	2.71	11701	5.16	6.86	0.604	9.93
Phenanthrene-d10	5	5.00	40452				
Phenanthrene	6	10.61	113085	12.1	16.1		
C1-Phenanthrenes/anthracenes	6	10.38	110599	10.7	14.2	1.106	5.43
C2-Phenanthrenes/anthracenes (unadj)	6	5.60	59719	15.5	20.6	0.412	14.6
C3-Phenanthrenes/anthracenes	6	2.28	24334	15.1	20.1	0.172	34.8
C4-Phenanthrenes/anthracenes	6	0.70	7424	10.2	13.6	0.078	77.0
Pyrene-d10	1.67	1.67	24053				
Pyrene	2	5.00	117617	5.91	7.86		
C1-Fluoranthenes/pyrenes	2	3.75	88182	6.86	9.12	0.646	3.10
Chrysene-d12	0.5	0.50	12543				
Chrysene	0.2	1.36	41267	1.32	1.76		
C1-Benz(a)anthracenes/chrysenes	0.2	0.93	28245	1.54	2.05	0.587	0.341
C2-Benz(a)anthracenes/chrysenes	0.2	0.21	6250	0.44	0.585	0.454	0.440
C3-Benz(a)anthracenes/chrysenes	0.2	0.12	3544	NA	NA	0.230	0.870
C4-Benz(a)anthracenes/chrysenes	0.2	0.04	1319	NA	NA	0.170	1.176

BOLD - Certified Mass Fractions

Normal - Reference Mass Fractions

Italics - Relative Response Factor based on Hawthorne, et al. 2005.

Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130913\
 Data File : S33559.D
 Acq On : 13 Sep 2013 2:51 pm
 Operator : RUBENP
 Sample : cc1465-4,mss1466-4
 Misc : ms29817,mss1480,1.5,,,1.5
 ALS Vial : 8 Sample Multiplier: 1

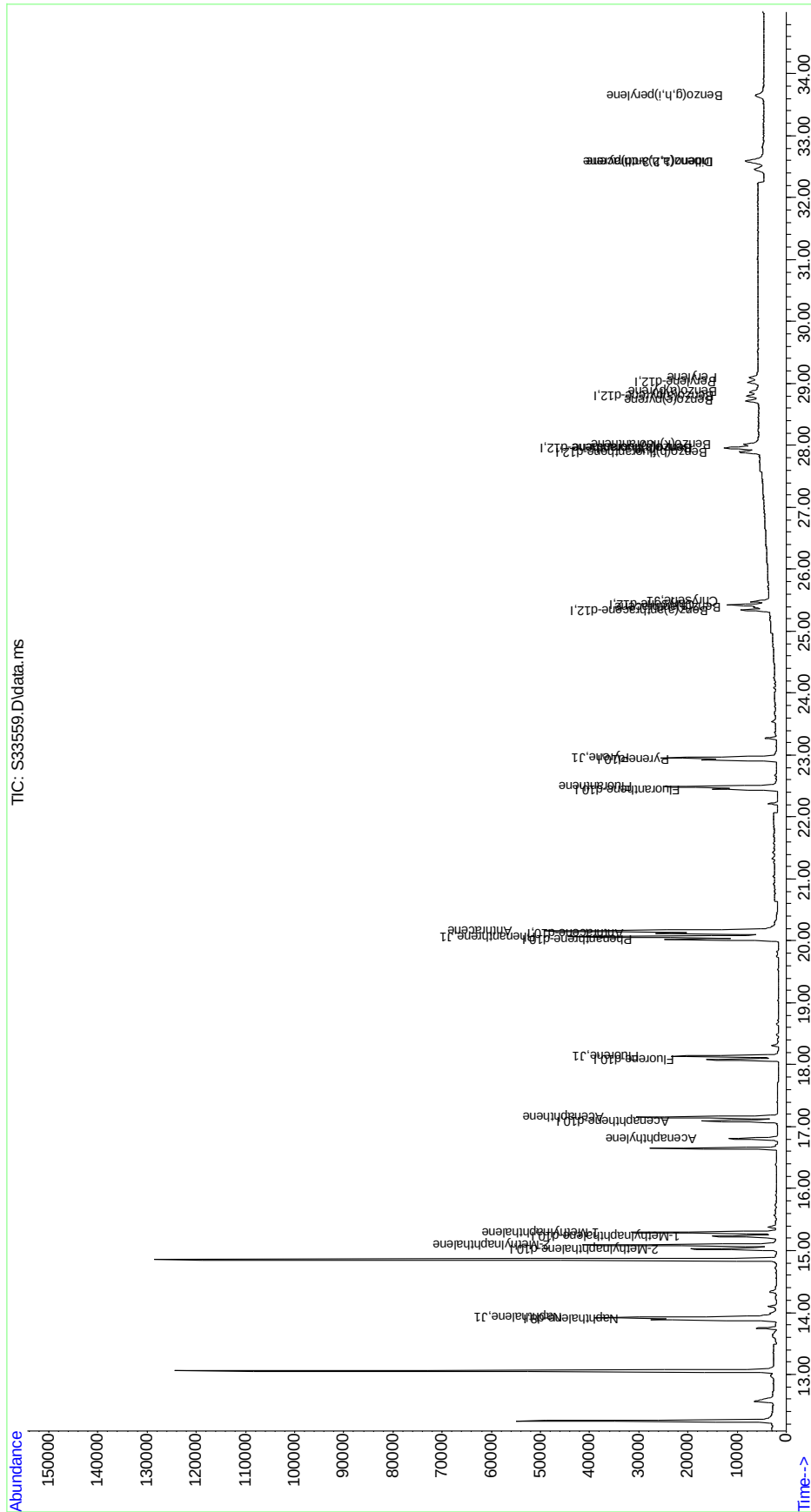
Quant Time: Sep 13 15:30:25 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	41415	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	26267	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.229	152	18622	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.089	164	12579	8.33	ng/mL	0.00
14) Fluorene-d10	18.081	176	12086	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.021	188	33772	5.00	ng/mL	0.00
25) Anthracene-d10	20.123	188	38832	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.448	212	22188	1.67	ng/mL	-0.01
29) Pyrene-d10	22.924	212	20078	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.338	240	8155	0.50	ng/mL	-0.01
36) Chrysene-d12	25.425	240	10891	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.891	264	7763	0.33	ng/mL	-0.01
44) Benzo(k)fluoranthene-d12	27.958	264	8384	0.33	ng/mL	-0.01
46) Benzo(a)pyrene-d12	28.796	264	5130m	0.33	ng/mL	-0.01
49) Perylene-d12	29.021	264	4456	0.33	ng/mL	-0.01
Target Compounds						
					Qvalue	
2) Naphthalene	13.918	128	53301	34.843	ng/mL	99
8) 2-Methylnaphthalene	15.089	142	36456	17.900	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	27319	17.910	ng/mL	100
12) Acenaphthylene	16.809	152	15474	10.151	ng/mL	99
13) Acenaphthene	17.154	154	17589	8.978	ng/mL	99
15) Fluorene	18.138	166	18852	5.593	ng/mL	100
20) Phenanthrene	20.065	178	50005	5.619	ng/mL	100
26) Anthracene	20.161	178	59101	5.872	ng/mL	100
28) Fluoranthene	22.489	202	35629	1.906	ng/mL	99
30) Pyrene	22.960	202	37545	1.913	ng/mL	100
35) Benz(a)anthracene	25.385	228	4328	0.179	ng/mL	100
37) Chrysene	25.479	228	5030	0.191	ng/mL	99
43) Benzo(b)fluoranthene	27.952	252	7425	0.232	ng/mL	100
45) Benzo(k)fluoranthene	28.014	252	7040	0.237	ng/mL	96
47) Benzo(e)pyrene	28.717	252	6281	0.189	ng/mL	96
48) Benzo(a)pyrene	28.864	252	4227	0.228	ng/mL	97
50) Perylene	29.094	252	4132	0.223	ng/mL	96
51) Indeno(1,2,3-cd)pyrene	32.588	276	6862	0.197	ng/mL#	74
52) Dibenz(a,h)anthracene	32.583	278	5994	0.246	ng/mL#	79
53) Benzo(g,h,i)perylene	33.651	276	6092	0.193	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130913\
Data File : S33559.D
Acq On : 13 Sep 2013 2:51 pm
Operator : RUBENP
Sample : cc1465-4,mss1466-4
Misc : ms29817,mss1480,1.5,,,1.5
ALS Vial : 8 Sample Multiplier: 1
Quant Time: Sep 13 15:30:25 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130920\
 Data File : S33615a.D
 Acq On : 20 Sep 2013 1:40 pm
 Operator : RUBENP
 Sample : ic1490-4,mss1466-4
 Misc : ms29817,mss1490,,,,,
 ALS Vial : 2 Sample Multiplier: 1

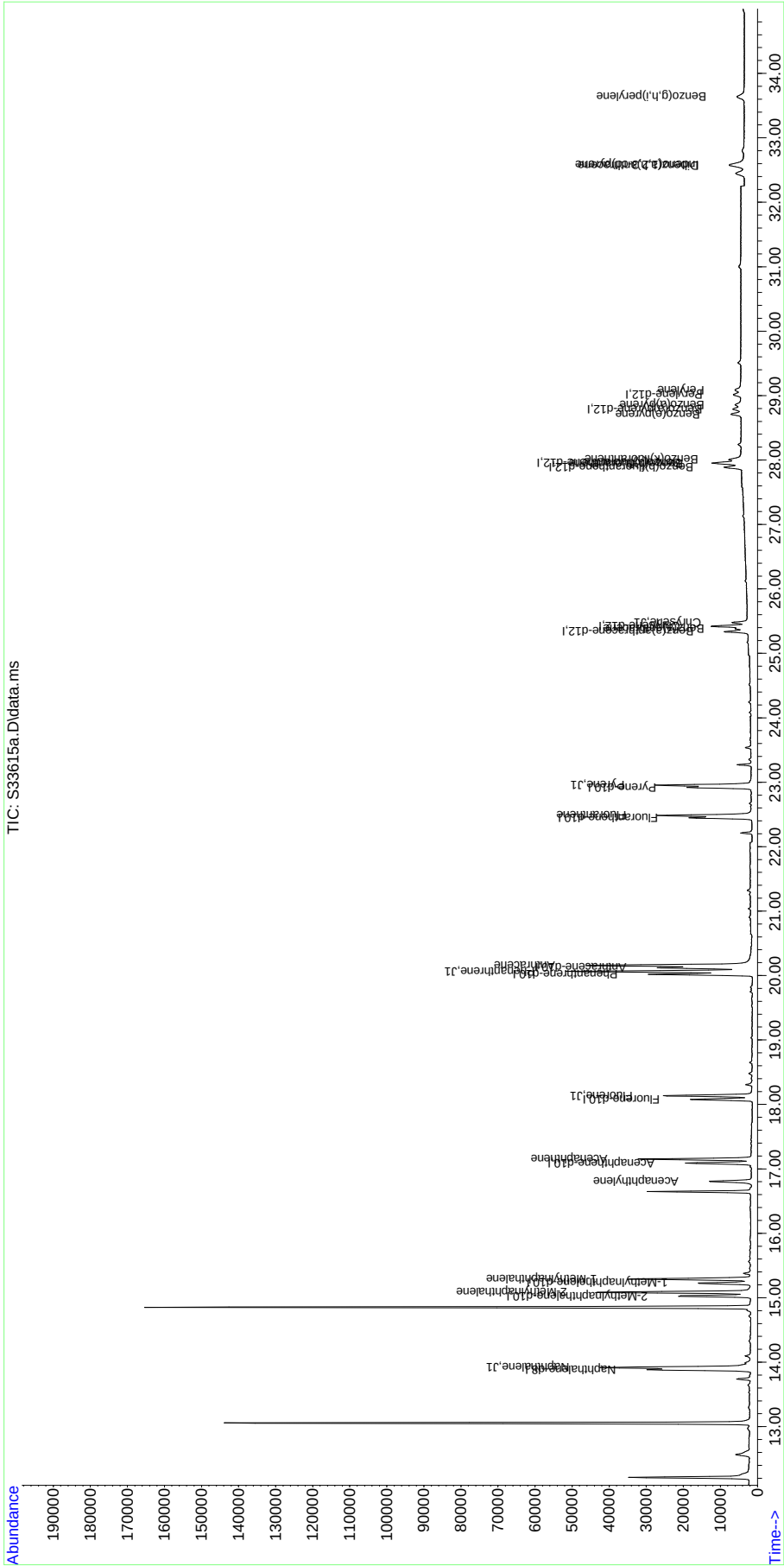
Quant Time: Sep 20 14:30:32 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	45095	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.023	152	29392	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.229	152	20696	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.089	164	14245	8.33	ng/mL	0.00
14) Fluorene-d10	18.081	176	13928	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.020	188	41159	5.00	ng/mL	0.00
25) Anthracene-d10	20.123	188	40291	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.448	212	26778	1.67	ng/mL	-0.01
29) Pyrene-d10	22.918	212	23263	1.67	ng/mL	-0.01
34) Benz(a)anthracene-d12	25.338	240	8713	0.50	ng/mL	-0.01
36) Chrysene-d12	25.418	240	12763	0.50	ng/mL	-0.01
42) Benzo(b)fluoranthene-d12	27.890	264	8732	0.33	ng/mL	-0.01
44) Benzo(k)fluoranthene-d12	27.952	264	9496	0.33	ng/mL	-0.02
46) Benzo(a)pyrene-d12	28.785	264	4727	0.33	ng/mL	-0.02
49) Perylene-d12	29.015	264	4390	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.918	128	58048	34.850	ng/mL	99
8) 2-Methylnaphthalene	15.089	142	39689	17.415	ng/mL	100
10) 1-Methylnaphthalene	15.287	142	29655	17.493	ng/mL	100
12) Acenaphthylene	16.808	152	17981	10.416	ng/mL	100
13) Acenaphthene	17.154	154	19515	8.796	ng/mL	100
15) Fluorene	18.138	166	20782	5.350	ng/mL	100
20) Phenanthrene	20.065	178	56942	5.250	ng/mL	99
26) Anthracene	20.155	178	55341	5.299	ng/mL	100
28) Fluoranthene	22.483	202	39018	1.730	ng/mL	99
30) Pyrene	22.954	202	39548	1.739	ng/mL	100
35) Benz(a)anthracene	25.385	228	4238	0.164	ng/mL	100
37) Chrysene	25.478	228	5369	0.174	ng/mL	100
43) Benzo(b)fluoranthene	27.947	252	7838	0.217	ng/mL	96
45) Benzo(k)fluoranthene	28.008	252	7130	0.212	ng/mL	95
47) Benzo(e)pyrene	28.712	252	6629	0.216	ng/mL	95
48) Benzo(a)pyrene	28.858	252	3502	0.205	ng/mL	96
50) Perylene	29.089	252	3959	0.217	ng/mL	96
51) Indeno(1,2,3-cd)pyrene	32.583	276	7522	0.220	ng/mL#	71
52) Dibenz(a,h)anthracene	32.572	278	6821	0.284	ng/mL#	77
53) Benzo(g,h,i)perylene	33.640	276	6556	0.211	ng/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : S:\1\data\S130920\
Data File : S33615a.D
Acq On : 20 Sep 2013 1:40 pm
Operator : RUBENP
Sample : IC1490-4, mss1466-4
Misc : ms29817, mss1490,,,,,
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Sep 20 14:30:32 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Manual Integrations
APPROVED
(compounds with "m" flag)

James Roush
10/25/13 14:31

Data Path : S:\1\data\S130920\
Data File : S33616a.D
Acq On : 20 Sep 2013 2:27 pm
Operator : RUBENP
Sample : icc1490-4,mss1466-4
Misc : ms29817,mss1490,,,,,
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 23 09:28:33 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	56095	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.023	152	38403	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.221	152	27230	16.70	ng/mL	-0.02
11) Acenaphthene-d10	17.089	164	18665	8.33	ng/mL	0.00
14) Fluorene-d10	18.074	176	16984	5.00	ng/mL	-0.01
19) Phenanthrene-d10	20.014	188	45361	5.00	ng/mL	-0.01
25) Anthracene-d10	20.117	188	52494	5.00	ng/mL	-0.01
27) Fluoranthene-d10	22.442	212	26868	1.67	ng/mL	-0.02
29) Pyrene-d10	22.918	212	23991	1.67	ng/mL	-0.01
34) Benz(a)anthracene-d12	25.332	240	8896	0.50	ng/mL	-0.02
36) Chrysene-d12	25.418	240	12197	0.50	ng/mL	-0.01
42) Benzo(b)fluoranthene-d12	27.885	264	8354	0.33	ng/mL	-0.02
44) Benzo(k)fluoranthene-d12	27.952	264	8937	0.33	ng/mL	-0.02
46) Benzo(a)pyrene-d12	28.785	264	5467	0.33	ng/mL	-0.02
49) Perylene-d12	29.010	264	4618	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.910	128	82617	39.873	ng/mL	99
8) 2-Methylnaphthalene	15.081	142	59641	20.029	ng/mL	100
10) 1-Methylnaphthalene	15.287	142	45330	20.323	ng/mL	100
12) Acenaphthylene	16.801	152	28196m	12.466	ng/mL	
13) Acenaphthene	17.147	154	29702	10.217	ng/mL	99
15) Fluorene	18.132	166	29987	6.331	ng/mL	100
20) Phenanthrene	20.059	178	74406	6.225	ng/mL	100
26) Anthracene	20.155	178	87402	6.424	ng/mL	100
28) Fluoranthene	22.483	202	47465	2.097	ng/mL	98
30) Pyrene	22.954	202	49164	2.096	ng/mL	100
35) Benz(a)anthracene	25.378	228	5246	0.198	ng/mL	100
37) Chrysene	25.472	228	6039	0.205	ng/mL	99
43) Benzo(b)fluoranthene	27.947	252	8624	0.250	ng/mL	98
45) Benzo(k)fluoranthene	28.003	252	8364	0.264	ng/mL	95
47) Benzo(e)pyrene	28.706	252	7484	0.211	ng/mL	96
48) Benzo(a)pyrene	28.858	252	4775	0.242	ng/mL	96
50) Perylene	29.083	252	4891	0.255	ng/mL#	92
51) Indeno(1,2,3-cd)pyrene	32.578	276	7438	0.207	ng/mL#	82
52) Dibenzo(a,h)anthracene	32.567	278	5863	0.232	ng/mL	88
53) Benzo(g,h,i)perylene	33.624	276	6730	0.206	ng/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

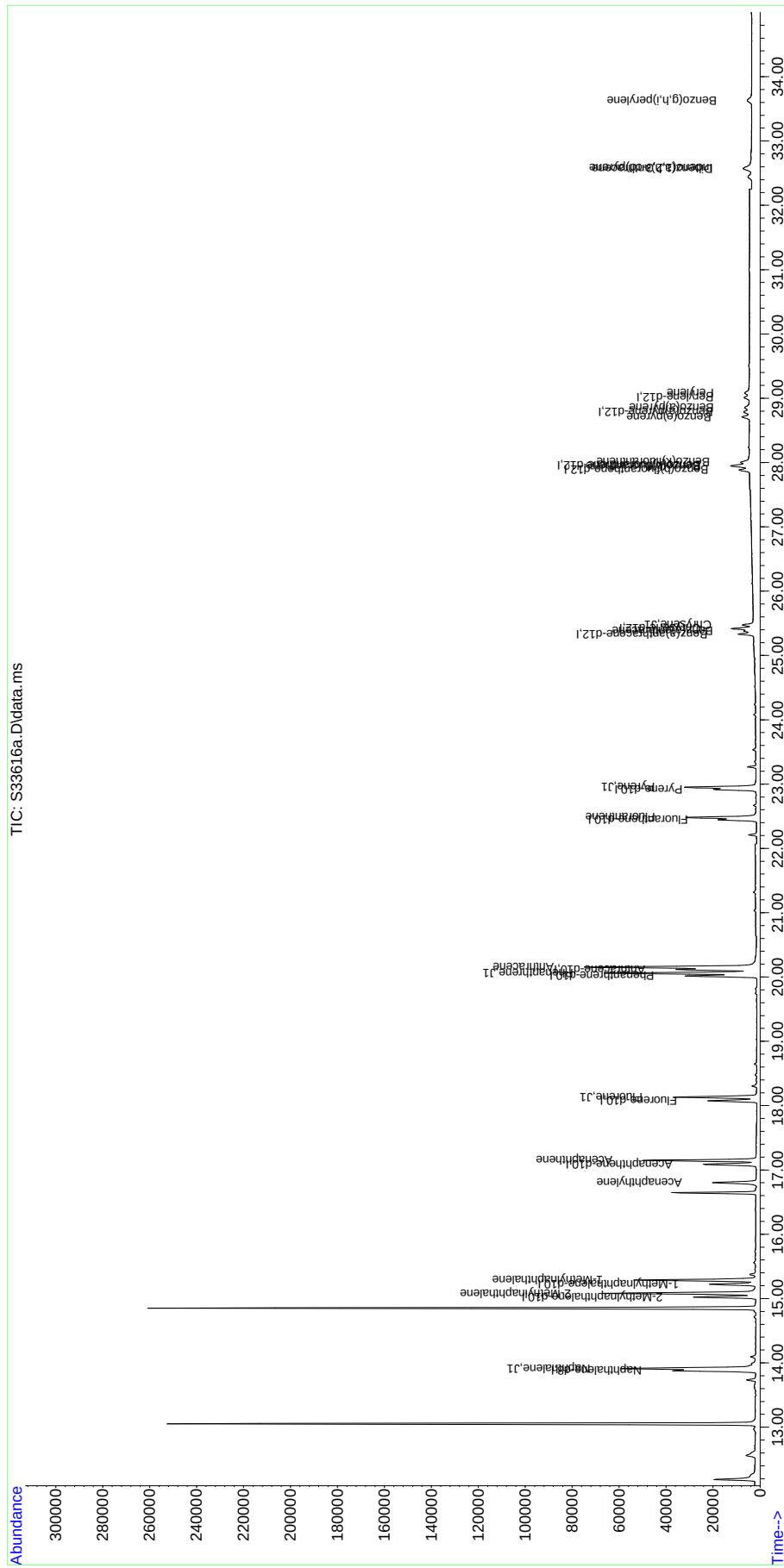
7.4.10

7

Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130920\
Data File : S33616a.D
Acq On : 20 Sep 2013 2:27 pm
Operator : RUBENP
Sample : ICC1490-4, mss1466-4
Misc : ms29817, mss1490,,,,,
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 23 09:28:33 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



GCMS Analysis Log - Extractables

Run Date: 9/16/13Analyst Signature: [Signature]

Standard Data

Lot #	Description	Conc
MSS13039	INTERNAL STANDARD	Various
MSS1466-1	ICAL LV1	
-2	ICAL LV2	
-3	ICAL LV3	
-4	ICAL LV4	
-5	ICAL LV5	
-6	ICAL LV6	
MSS1467	SPME SRM 1991	

Column Information: Front ZB5MSi 60M
Rear

Sequence File:

Quantitation Methods: S130906-SPMEPAH.MInstrument Run Batches: MS29817 / MSS1465Inj. Vol: NAData Acquisition Methods: SAPAHSPME.MInj. Vol: NA

Sequence verified:

ICAL verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33422.D	Fiber GC take	NA	SPME	AQ	NA	NA	
2	23.D	Blank						
2	24.D							
3	25.D							
4	26.D							
5	27.D							
6	28.D							
7	29.D							
8	30.D							
9	31.D							
10	32.D							
11	33.D							
12	34.D							
13	35.D							
14	36.D							
15	37.D							
16	38.D							
17	39.D							
18	40.D							
19	41.D							
20	42.D							
21	43.D	DI Blank	MSS1465					Spiked w/ internal std.
22	44.D	DI Blank						
23	45.D	ICAL LV1, MSS1466-1						
24	46.D	ICAL LV2, MSS1466-2						
25	47.D	ICAL LV3, MSS1466-3						
26	48.D	ICAL LV4, MSS1466-4						
27	49.D	ICAL LV5, MSS1466-5						
28	50.D	ICAL LV6, MSS1466-6						Spiked w/ internal std.
29	51.D	Blank						
30	52.D	Blank						
31	53.D	ICAL LV1, SPME SRM 1991						

MS002-04

Date: 8/29/06

Dilution Solvent: NALot: NAReview: 9

GCMS Analysis Log - Extractables

Run Date:

Analyst Signature:

Standard Data

Lot #	Description	Conc
MSS13939	Internal standard	Various
MSS14061	ICAL LV1	
↓ -2	ICAL LV2	
↓ -3	ICAL LV3	
↓ -4	ICAL LV4	
↓ -5	ICAL LV5	
↓ -6	ICAL LV6	
MSS1467	SPIKE SRM 1991	✓

Column Information: Front ZB5MSi 60m
Rear

Sequence File: 5130906

Quantitation Methods: 3130906-SPMEFATHLM

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPHASPMI.M

Ini. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

[illegible]

Date: 8/29/06 Dilution Solvent:

Lot:

Review:

10

GCMS Analysis Log - Extractables

Run Date:

Analyst Signature:

Standard Data

[illegible]

Column Information: Front ZB5Msi 60m
Rear

Sequence File: 8130913

Quantitation Methods: S130906:- SPME/PAH.M

5130905 - СПМЕРПАН - ССР - 13.М

Instrument Run Batches: MS29817

Data Acquisition Methods: SADIAH SPME Inj. Vol: NA

ICAL verified:

Sequence verified:

CAL verified:		Sequence verified:						
Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33552.D	Fiber bake	NA	SPME	AQ	NA	NA	
2	53	CC1466-4						
3	54	CC1466-4						
4	55	Blank						
5	56	Blank						
6	57	CC1466-4						
7	58	CC1465-4, MSS1460-4	MSS1480					
7	58a	IC1480-4, MSS1460-4						Duplicate analysis
8	59	CC1465-4, MSS1460-4						
8	59a	IC1480-4, MSS1460-4						Duplicate analysis
9	60	Blank						
10	61	MS29817-MB23						
11	62	MC24019-1						Sample needs dilution
12	63	↓ -1DUP						↓
13	64	Blank	MSS1481					
14	65	MS29817-MB24						
15	66	MC24019-2						Sample needs dilution
16	67	↓ -2DUP						↓
17	68	Blank	MSS1482					
18	69	MS29817-MB25						
19	70	MC24019-3						
20	71	↓ -3DUP						
21	72	Blank	MSS1483					
22	73	MS29817-MB26						
23	74	MC24019-4						
24	75	↓ -4DUP						
25	76	Blank						
26	77	Blank						
27	78	D1 Acetone						
	79							

MS002-04

Date: 8/29/06 Dilution Solvent:

Lot:

Review:

17

GCMS Analysis Log - Extractables

Run Date:

10/7/13 9/13/13

Analyst Signature:

Standard Data

Lot #	Description	Conc
MSS1483	Internal standard	Various
MSS1466	Mid check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130913

Quantitation Methods: S130906-SPMEPAH.M
S130913-SPMEPAH-CCQ-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SADAHSPME.M Inj. Vol: NA
Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33552.D	Fiber bake	NA	SPME	AQ	NA	NA	
2	53	CC1466-4						
3	54	CC1466-4						
4	55	Blank						
5	56	Blank						
6	57	CC1466-4						
7	58	CC1466-4, MSS1466-4	MSS1480					
7	58g	IC1480-4, MSS1466-4						Duplicate analysis
8	59	CC1466-4, MSS1466-4						
8	59g	IC1480-4, MSS1466-4						Duplicate analysis
9	60	Blank						
10	61	MS29817-MB23						
11	62	MC24019-1						Sample needs dilution
12	63	↓ -1DP	↓					↓
13	64	Blank	MSS1481					
14	65	MS29817-MB24						
15	66	MC24019-2						Sample needs dilution
16	67	↓ -2DP	↓					↓
17	68	Blank	MSS1482					
18	69	MS29817-MB25						
19	70	MC24019-3						
20	71	↓ -3DP	↓					
21	72	Blank	MSS1483					
22	73	MS29817-MB26						
23	74	MC24019-4						
24	75	↓ -4DP	↓					
25	76	Blank						
26	77	Blank						
27	78	DI Acetone						

MS002-04

Date: 8/29/06 Dilution Solvent:

N/A

Lot:

N/A

Review:

17

GCMS Analysis Log - Extractables

Run Date:

10/7/13 9/13/13

Analyst Signature:

Standard Data

Lot #	Description	Conc
MSS1493	Internal standard	Various
MSS1466	Mid check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130913

Quantitation Methods: S130906-SPMEPAH.M
S130913-SPMEPAH-CCQ-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SADAHSPME.M
Inj. Vol: NA
Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33552.D	Fiber bake	NA	SPME	AQ	NA	NA	
2	53	CC1466-4						
3	54	CC1466-4						
4	55	Blank						
5	56	Blank						
6	57	CC1466-4						
7	58	CC1466-4, MSS1466-4	MSS1480					
7	58g	IC1480-4, MSS1466-4						Duplicate analysis
8	59	CC1466-4, MSS1466-4						
8	59g	IC1480-4, MSS1466-4						Duplicate analysis
9	60	Blank						
10	61	MS29817-MB23						
11	62	MC24019-1						Sample needs dilution
12	63	↓ -1DP	↓					↓
13	64	Blank	MSS1481					
14	65	MS29817-MB24						
15	66	MC24019-2						Sample needs dilution
16	67	↓ -2DP	↓					↓
17	68	Blank	MSS1482					
18	69	MS29817-MB25						
19	70	MC24019-3						
20	71	↓ -3DP	↓					
21	72	Blank	MSS1483					
22	73	MS29817-MB26						
23	74	MC24019-4						
24	75	↓ -4DP	↓					
25	76	Blank						
26	77	Blank						
27	78	DI Acetone						

MS002-04

Date: 8/29/06 Dilution Solvent:

N/A

Lot:

N/A

Review:

17

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature:

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPME PAH.M

S130920-SPME PAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	CC1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	CC1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

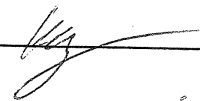
Review:

20

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature: 

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPMEPAH.M

S130920-SPMEPAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	CC1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	CC1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

Review:

20

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature: [Signature]

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPME PAH.M

S130920-SPME PAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	CC1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	CC1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

Review:

20

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature: [Signature]

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPMEPAH.M

S130920-SPMEPAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	CC1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	CC1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

Review:

20

General Chemistry

QC Data Summaries

∞

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 1

Job Number: MC24019
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MC24019-1 **Analyzed:** 04-SEP-13 by BF **Method:** SM21 2540 B MOD.
ClientID: EB-13(0-1)

Wet Weight (Total)	44.985	g
Tare Weight	27.692	g
Dry Weight (Total)	41.403	g
Solids, Percent	79.3	%

Sample: MC24019-2 **Analyzed:** 11-SEP-13 by MC **Method:** SM21 2540 B MOD.
ClientID: EB-6(0-1.4)

Wet Weight (Total)	30.08	g
Tare Weight	21.704	g
Dry Weight (Total)	28.289	g
Solids, Percent	78.6	%

Sample: MC24019-3 **Analyzed:** 11-SEP-13 by MC **Method:** SM21 2540 B MOD.
ClientID: EB-11(0-1)

Wet Weight (Total)	26.495	g
Tare Weight	18.447	g
Dry Weight (Total)	24.608	g
Solids, Percent	76.6	%

Sample: MC24019-4 **Analyzed:** 11-SEP-13 by MC **Method:** SM21 2540 B MOD.
ClientID: DUP-1-SPME

Wet Weight (Total)	44.556	g
Tare Weight	28.381	g
Dry Weight (Total)	40.271	g
Solids, Percent	73.5	%

8.1
8



10/25/13

Technical Report for

META Environmental, Inc.

Arcadis, National Grid, Water Street, Hudson, NY

Accutest Job Number: MC24285

Sampling Dates: 09/09/13 - 09/10/13

Report to:

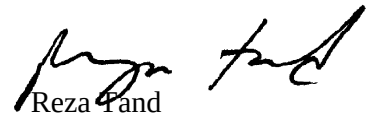
META Environmental, Inc.
49 Clarendon St.
Watertown, MA 02472
dmauro@metaenv.com

ATTN: Dave Mauro

Total number of pages in report: **215**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Reza Fand
Lab Director

Client Service contact: Matthew Morrell 508-481-6200

Certifications: MA (M-MA136, SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.

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Sample Summary

META Environmental, Inc.

Job No: MC24285

Arcadis, National Grid, Water Street, Hudson, NY

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC24285-1	09/09/13	13:30 ME	09/12/13	SO	Sediment	EB-1(0-1)
MC24285-1D	09/09/13	13:30 ME	09/12/13	SO	Soil Dup/MSD	EB-1(0-1)
MC24285-1S	09/09/13	13:30 ME	09/12/13	SO	Soil Matrix Spike	EB-1(0-1)
MC24285-2	09/10/13	17:00 ME	09/12/13	SO	Sediment	EB-18(0-1.5)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: META Environmental, Inc.

Job No MC24285

Site: Arcadis, National Grid, Water Street, Hudson, NY

Report Date 10/25/2013 2:33:51 PM

2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on between 09/09/2013 and 09/10/2013 and were received at Accutest on 09/12/2013 properly preserved, at 1.3 Deg. C and intact. These Samples received an Accutest job number of MC24285. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method D7363-11/8272

Matrix: AQ

Batch ID: MSS1484

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24285-1DUP, MC24285-1MS, MC24285-1MSD, MC24285-1MSMSD were used as the QC samples indicated.
- MC24285-1MS/MSD for Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene: Outside default control limits. Statistical evaluation of MS/MSD not defined in ASTM D7363-13.
- MC24285-1MS for Acenaphthene, Phenanthrene: Outside default control limits. Statistical evaluation of MS/MSD not defined in ASTM D7363-13.

Matrix: AQ

Batch ID: MSS1494

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24285-2DUP were used as the QC samples indicated.

Matrix: AQ

Batch ID: MSS1495

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC24285-2DUP were used as the QC samples indicated.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO

Batch ID: GN44358

- Sample(s) MC24285-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report (MC24285).

Summary of Hits

Job Number: MC24285
Account: META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Collected: 09/09/13 thru 09/10/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

MC24285-1 EB-1(0-1)

Naphthalene	1.6	0.80	ug/l	D7363-11/8272
2-Methylnaphthalene	5.6	0.40	ug/l	D7363-11/8272
1-Methylnaphthalene	8.1	0.40	ug/l	D7363-11/8272
C2-Naphthalenes	37.8	0.56	ug/l	D7363-11/8272
C3-Naphthalenes	37.7	0.91	ug/l	D7363-11/8272
C4-Naphthalenes	17.7	1.1	ug/l	D7363-11/8272
Acenaphthylene	1.4	0.20	ug/l	D7363-11/8272
Acenaphthene	18.0	0.20	ug/l	D7363-11/8272
Fluorene	7.5	0.12	ug/l	D7363-11/8272
C1-Fluorenes	8.6	0.16	ug/l	D7363-11/8272
C2-Fluorenes	4.5	0.20	ug/l	D7363-11/8272
C3-Fluorenes	1.3	0.34	ug/l	D7363-11/8272
Phenanthrene	10.2	0.12	ug/l	D7363-11/8272
Anthracene	2.1	0.12	ug/l	D7363-11/8272
C1-Phenanthrenes/Anthracenes	4.8	0.21	ug/l	D7363-11/8272
C2-Phenanthrenes/Anthracenes	3.2	0.38	ug/l	D7363-11/8272
C3-Phenanthrenes/Anthracenes	1.3	0.41	ug/l	D7363-11/8272
Fluoranthene	1.3	0.040	ug/l	D7363-11/8272
Pyrene	1.3	0.040	ug/l	D7363-11/8272
C1-Fluoranthenes/Pyrenes	0.61	0.078	ug/l	D7363-11/8272
Benzo(a)anthracene	0.057	0.0040	ug/l	D7363-11/8272
Chrysene	0.059	0.0040	ug/l	D7363-11/8272
C1-Benzo(a)anthracenes/Chrysenes	0.035	0.0065	ug/l	D7363-11/8272

MC24285-2 EB-18(0-1.5)

Naphthalene	1640	8.0	ug/l	D7363-11/8272
2-Methylnaphthalene	403	4.0	ug/l	D7363-11/8272
1-Methylnaphthalene	314	4.0	ug/l	D7363-11/8272
C2-Naphthalenes	305	0.56	ug/l	D7363-11/8272
C3-Naphthalenes	161	0.91	ug/l	D7363-11/8272
C4-Naphthalenes	60.6	1.1	ug/l	D7363-11/8272
Acenaphthylene	15.9	0.20	ug/l	D7363-11/8272
Acenaphthene	333	2.0	ug/l	D7363-11/8272
Fluorene	170	1.2	ug/l	D7363-11/8272
C1-Fluorenes	46.8	0.16	ug/l	D7363-11/8272
C2-Fluorenes	18.3	0.20	ug/l	D7363-11/8272
C3-Fluorenes	3.8	0.34	ug/l	D7363-11/8272
Phenanthrene	204	1.2	ug/l	D7363-11/8272
Anthracene	37.7	0.12	ug/l	D7363-11/8272
C1-Phenanthrenes/Anthracenes	31.8	0.21	ug/l	D7363-11/8272
C2-Phenanthrenes/Anthracenes	14.4	0.38	ug/l	D7363-11/8272
C3-Phenanthrenes/Anthracenes	7.3	0.41	ug/l	D7363-11/8272

Summary of Hits

Job Number: MC24285
Account: META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Collected: 09/09/13 thru 09/10/13



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
C4-Phenanthrenes/Anthracenes		3.1	1.0		ug/l	D7363-11/8272
Fluoranthene		21.1	0.040		ug/l	D7363-11/8272
Pyrene		14.2	0.040		ug/l	D7363-11/8272
C1-Fluoranthenes/Pyrenes		5.0	0.078		ug/l	D7363-11/8272
Benzo(a)anthracene		0.81	0.0040		ug/l	D7363-11/8272
Chrysene		0.61	0.0040		ug/l	D7363-11/8272
C1-Benzo(a)anthracenes/Chrysenes		0.27	0.0065		ug/l	D7363-11/8272
Benzo(b)fluoranthene		0.041	0.024		ug/l	D7363-11/8272
Benzo(k)fluoranthene		0.056	0.024		ug/l	D7363-11/8272
Benzo(e)pyrene		0.024	0.024		ug/l	D7363-11/8272
Benzo(a)pyrene		0.054	0.024		ug/l	D7363-11/8272

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 2

Client Sample ID:	EB-1(0-1)	Date Sampled:	09/09/13
Lab Sample ID:	MC24285-1	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	78.3
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S33584.D	1	09/16/13	RP	n/a	n/a	MSS1484
Run #2							

	Equilibration Volume
Run #1	1.5 ml
Run #2	

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	1.6	0.80	ug/l	
91-57-6	2-Methylnaphthalene	5.6	0.40	ug/l	
90-12-0	1-Methylnaphthalene	8.1	0.40	ug/l	
	C2-Naphthalenes	37.8	0.56	ug/l	
	C3-Naphthalenes	37.7	0.91	ug/l	
	C4-Naphthalenes	17.7	1.1	ug/l	
208-96-8	Acenaphthylene	1.4	0.20	ug/l	
83-32-9	Acenaphthene	18.0	0.20	ug/l	
86-73-7	Fluorene	7.5	0.12	ug/l	
	C1-Fluorenes	8.6	0.16	ug/l	
	C2-Fluorenes	4.5	0.20	ug/l	
	C3-Fluorenes	1.3	0.34	ug/l	
85-01-8	Phenanthrene	10.2	0.12	ug/l	
120-12-7	Anthracene	2.1	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	4.8	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	3.2	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	1.3	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	1.3	0.040	ug/l	
129-00-0	Pyrene	1.3	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	0.61	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.057	0.0040	ug/l	
218-01-9	Chrysene	0.059	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.035	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-1(0-1)	Date Sampled:	09/09/13
Lab Sample ID:	MC24285-1	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	78.3
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 2

Client Sample ID:	EB-18(0-1.5)	Date Sampled:	09/10/13
Lab Sample ID:	MC24285-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	77.6
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S33635.D	1	09/21/13	RP	n/a	n/a	MSS1494
Run #2	S33639.D	10	09/21/13	RP	n/a	n/a	MSS1495

	Equilibration Volume
Run #1	1.5 ml
Run #2	1.5 ml

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	1640 ^a	8.0	ug/l	
91-57-6	2-Methylnaphthalene	403 ^a	4.0	ug/l	
90-12-0	1-Methylnaphthalene	314 ^a	4.0	ug/l	
	C2-Naphthalenes	305	0.56	ug/l	
	C3-Naphthalenes	161	0.91	ug/l	
	C4-Naphthalenes	60.6	1.1	ug/l	
208-96-8	Acenaphthylene	15.9	0.20	ug/l	
83-32-9	Acenaphthene	333 ^a	2.0	ug/l	
86-73-7	Fluorene	170 ^a	1.2	ug/l	
	C1-Fluorenes	46.8	0.16	ug/l	
	C2-Fluorenes	18.3	0.20	ug/l	
	C3-Fluorenes	3.8	0.34	ug/l	
85-01-8	Phenanthrene	204 ^a	1.2	ug/l	
120-12-7	Anthracene	37.7	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	31.8	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	14.4	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	7.3	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	3.1	1.0	ug/l	
206-44-0	Fluoranthene	21.1	0.040	ug/l	
129-00-0	Pyrene	14.2	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	5.0	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.81	0.0040	ug/l	
218-01-9	Chrysene	0.61	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	0.27	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.041	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	0.056	0.024	ug/l	
192-97-2	Benzo(e)pyrene	0.024	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.054	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	EB-18(0-1.5)	Date Sampled:	09/10/13
Lab Sample ID:	MC24285-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	77.6
Method:	D7363-11/8272		
Project:	Arcadis, National Grid, Water Street, Hudson, NY		

Alkyl PAHs

CAS No.	Compound	Result	RL	Units	Q
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

Client / Reporting Information Company Name: <u>Arcoadis</u> Street Address: <u>855 Route 146, Suite 210</u> City: <u>Utica Park, NY 12065</u> Project Contact: <u>Adam Ebinget</u> Phone #: <u>518-250-7314</u> Sample(s) Name(s): <u>Narcus Eriksson</u> Phone #: <u>315-217-5182</u>		Project Information Project Name: <u>Nat. Grid-Hudson - Winter St.</u> Street: <u>Winter St.</u> City: <u>Hudson</u> Project #: <u>BOC36702</u> Client PO#: <u>Adam Ebinget</u> Project Manager: <u>Adam Ebinget</u>		Requested Analysis (see TEST CODE sheet) Matrix Codes: <u>DW - Drinking Water</u> <u>GW - Ground Water</u> <u>WW - Water</u> <u>SW - Surface Water</u> <u>SO - Soil</u> <u>SL - Sludge</u> <u>SED - Sediment</u> <u>OI - Oil</u> <u>LIQ - Other Liquid</u> <u>AIR - Air</u> <u>SOL - Other Solid</u> <u>WP - Wipe</u> <u>FB - Field Blank</u> <u>EB - Equipment Blank</u> <u>RB - Rinse Blank</u> <u>TB - Trip Blank</u>	
Field ID / Point of Collection Field ID: <u>EB-1 (0-1)</u> <u>EB-18 (0-1.5)</u>		Collection MEQ/ID Vial #: <u>99-13</u> Date: <u>13-30</u> Time: <u>17:00</u> Sampled by: <u>MWE</u> Matrix: <u>Sed</u> # of bottles: <u>4</u> HCl: <u>X</u> NaOH: <u>X</u> HNO3: <u>X</u> H2SO4: <u>X</u> NONE: <u>X</u> DI Water: <u>X</u> MEQH: <u>X</u> ENCORE: <u>X</u> Brackets: <u>X</u>		Number of preserved bottles SYME	
Turnaround Time (Business days) ☐ Std. 10 Business Days ☐ Std. 5 Business Days (By Contract only) ☐ 5 Day RUSH ☐ 3 Day EMERGENCY ☐ 2 Day EMERGENCY ☐ 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink		Approved By (Accutest PM): / Date: _____ _____ _____ _____		Data Deliverable Information ☐ Commercial "A" (Level 1) ☐ Commercial "B" (Level 2) ☐ FULLT1 (Level 3+4) ☐ CT RCP ☐ MA MCP ☐ NYASP Category A ☐ NYASP Category B ☐ State Forms ☐ EDD Format ☐ Other _____ Commercial "A" = Results Only Commercial "B" = Results + QC Summary	
Comments / Special Instructions <u>12E,</u>					
Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished by Sampler: <u>1</u> <u>[Signature]</u> Relinquished by Sampler: <u>3</u> Relinquished by: <u>5</u>	Date Time: <u>9-11-13/17:00</u> Date Time: Date Time: Date Time:	Received By: <u>1</u> <u>FX</u> Received By: <u>3</u> Received By: <u>5</u>	Relinquished By: <u>2</u> <u>FX</u> Relinquished By: <u>4</u> Custody Seal # ☐ Intact ☐ Not intact Preserved where applicable ☐	Date Time: <u>9/13/13 9:30</u> Date Time: Date Time: Date Time:	Received By: <u>2</u> <u>[Signature]</u> Received By: <u>4</u> On Ice ☐ Cooler Temp. <u>8-1.3°</u>

SYRACUSE SC

MC24285: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC24285 **Client:** ARCADIS **Immediate Client Services Action Required:** No
Date / Time Received: 9/12/2013 **Delivery Method:** **Client Service Action Required at Login:** No
Project: NAT. GRID-HUDSON **No. Coolers:** 1 **Airbill #'s:**

Cooler Security **Y or N**
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK ☒ ☐

Cooler Temperature **Y or N**
1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation **Y** **or** **N** **N/A**
1. Trip Blank present / cooler: ☐ ☐ ☒
2. Trip Blank listed on COC: ☐ ☐ ☒
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☐ ☐ ☒

Sample Integrity - Documentation **Y** **or** **N**
1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition **Y** **or** **N**
1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions **Y** **or** **N** **N/A**
1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume recvd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments

Internal Sample Tracking Chronicle

META Environmental, Inc.

Job No: MC24285

Arcadis, National Grid, Water Street, Hudson, NY

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
MC24285-1 Collected: 09-SEP-13 13:30 By: ME Received: 12-SEP-13 By: EB-1(0-1)						
MC24285-1	D7363-11/8272	16-SEP-13 16:09	RP			B7363SIMPAH
MC24285-1	SM21 2540 B MOD.	18-SEP-13	HS			%SOL
MC24285-2 Collected: 10-SEP-13 17:00 By: ME Received: 12-SEP-13 By: EB-18(0-1.5)						
MC24285-2	SM21 2540 B MOD.	18-SEP-13	HS			%SOL
MC24285-2	D7363-11/8272	21-SEP-13 05:54	RP			B7363SIMPAH
MC24285-2	D7363-11/8272	21-SEP-13 09:01	RP			B7363SIMPAH

Accutest Internal Chain of Custody

Page 1 of 1

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY
Received: 09/12/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
MC24285-1.1	Walk In Ref #9	Ruben Parrilla	09/13/13 10:21	Retrieve from Storage
MC24285-1.1	Ruben Parrilla	Walk In Ref #9	09/13/13 15:01	Return to Storage
MC24285-1.1	Walk In Ref #9	Hamid Siamak	09/18/13 14:01	Retrieve from Storage
MC24285-1.1	Hamid Siamak	Walk In Ref #9	09/19/13 08:46	Return to Storage
MC24285-1.2	Walk In Ref #9	Ruben Parrilla	09/13/13 10:21	Retrieve from Storage
MC24285-1.2	Ruben Parrilla	Walk In Ref #9	09/13/13 15:01	Return to Storage
MC24285-2.1	Walk In Ref #9	Ruben Parrilla	09/13/13 10:21	Retrieve from Storage
MC24285-2.1	Ruben Parrilla	Walk In Ref #9	09/13/13 15:01	Return to Storage
MC24285-2.1	Walk In Ref #9	Hamid Siamak	09/18/13 14:01	Retrieve from Storage
MC24285-2.1	Hamid Siamak	Walk In Ref #9	09/19/13 08:46	Return to Storage
MC24285-2.2	Walk In Ref #9	Ruben Parrilla	09/19/13 16:42	Retrieve from Storage
MC24285-2.2	Ruben Parrilla	Walk In Ref #9	09/19/13 17:11	Return to Storage

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Page 1 of 1

Job Number: MC24285

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB27	S33583.D	1	09/16/13	RP	n/a	n/a	MSS1484

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24285-1

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	ND	0.80	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.40	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.40	ug/l	
	C2-Naphthalenes	ND	0.56	ug/l	
	C3-Naphthalenes	ND	0.91	ug/l	
	C4-Naphthalenes	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	0.20	ug/l	
83-32-9	Acenaphthene	ND	0.20	ug/l	
86-73-7	Fluorene	ND	0.12	ug/l	
	C1-Fluorenes	ND	0.16	ug/l	
	C2-Fluorenes	ND	0.20	ug/l	
	C3-Fluorenes	ND	0.34	ug/l	
85-01-8	Phenanthrene	ND	0.12	ug/l	
120-12-7	Anthracene	ND	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	ND	0.040	ug/l	
129-00-0	Pyrene	ND	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.078	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.0040	ug/l	
218-01-9	Chrysene	ND	0.0040	ug/l	
	C1-Benzo(a)anthracenes/Chrys	ND	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

6.1.1

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Method Blank Summary

Page 1 of 1

Job Number: MC24285

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB37	S33634.D	1	09/21/13	RP	n/a	n/a	MSS1494

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24285-2

CAS No.	Compound	Result	RL	Units	Q
	C2-Naphthalenes	ND	0.56	ug/l	
	C3-Naphthalenes	ND	0.91	ug/l	
	C4-Naphthalenes	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	0.20	ug/l	
	C1-Fluorenes	ND	0.16	ug/l	
	C2-Fluorenes	ND	0.20	ug/l	
	C3-Fluorenes	ND	0.34	ug/l	
120-12-7	Anthracene	ND	0.12	ug/l	
	C1-Phenanthrenes/Anthracene	ND	0.21	ug/l	
	C2-Phenanthrenes/Anthracene	ND	0.38	ug/l	
	C3-Phenanthrenes/Anthracene	ND	0.41	ug/l	
	C4-Phenanthrenes/Anthracene	ND	1.0	ug/l	
206-44-0	Fluoranthene	ND	0.040	ug/l	
129-00-0	Pyrene	ND	0.040	ug/l	
	C1-Fluoranthenes/Pyrenes	ND	0.078	ug/l	
56-55-3	Benzo(a)anthracene	0.0019	0.0040	ug/l	J
218-01-9	Chrysene	0.0015	0.0040	ug/l	J
	C1-Benzo(a)anthracenes/Chrys	ND	0.0065	ug/l	
	C2-Benzo(a)anthracenes/Chrys	ND	0.014	ug/l	
	C3-Benzo(a)anthracenes/Chrys	ND	0.017	ug/l	
	C4-Benzo(a)anthracenes/Chrys	ND	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.024	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.024	ug/l	
192-97-2	Benzo(e)pyrene	ND	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.024	ug/l	
198-55-0	Perylene	ND	0.024	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.024	ug/l	

Method Blank Summary

Page 1 of 1

Job Number: MC24285**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MS29817-MB38	S33638.D	1	09/21/13	RP	n/a	n/a	MSS1495

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24285-2

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	0.34	0.80	ug/l	J
91-57-6	2-Methylnaphthalene	ND	0.40	ug/l	
90-12-0	1-Methylnaphthalene	ND	0.40	ug/l	
83-32-9	Acenaphthene	ND	0.20	ug/l	
86-73-7	Fluorene	ND	0.12	ug/l	
85-01-8	Phenanthrene	ND	0.12	ug/l	

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 2

Job Number: MC24285

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24285-1MS	S33588.D	1	09/16/13	RP	n/a	n/a	MSS1484
MC24285-1MSD	S33589.D	1	09/16/13	RP	n/a	n/a	MSS1484
MC24285-1	S33584.D	1	09/16/13	RP	n/a	n/a	MSS1484

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24285-1

CAS No.	Compound	MC24285-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
91-20-3	Naphthalene	1.6	40.1	27.1	64	30.1	71	10	50-150/30 ^a
91-57-6	2-Methylnaphthalene	5.6	20	17.5	60	19.0	67	8	50-150/30 ^a
90-12-0	1-Methylnaphthalene	8.1	20	20.2	61	21.9	69	8	50-150/30 ^a
	C2-Naphthalenes	37.8		ND		ND		nc	50-150/30 ^a
	C3-Naphthalenes	37.7		ND		ND		nc	50-150/30 ^a
	C4-Naphthalenes	17.7		ND		ND		nc	50-150/30 ^a
208-96-8	Acenaphthylene	1.4	10	8.6	72	9.5	81	10	50-150/30 ^a
83-32-9	Acenaphthene	18.0	10	21.9	39* ^b	24.1	61	10	50-150/30 ^a
86-73-7	Fluorene	7.5	6	10.8	55	11.9	73	10	50-150/30 ^a
	C1-Fluorenes	8.6		ND		ND		nc	50-150/30 ^a
	C2-Fluorenes	4.5		ND		ND		nc	50-150/30 ^a
	C3-Fluorenes	1.3		ND		ND		nc	50-150/30 ^a
85-01-8	Phenanthrene	10.2	6	12.1	32* ^b	13.5	55	11	50-150/30 ^a
120-12-7	Anthracene	2.1	6	6.1	67	6.6	75	8	50-150/30 ^a
	C1-Phenanthrenes/Anthracene	4.8		ND		ND		nc	50-150/30 ^a
	C2-Phenanthrenes/Anthracene	3.2		ND		ND		nc	50-150/30 ^a
	C3-Phenanthrenes/Anthracene	1.3		ND		ND		nc	50-150/30 ^a
	C4-Phenanthrenes/Anthracene	0.74		ND		ND		nc	50-150/30 ^a
206-44-0	Fluoranthene	1.3	2	2.3	50	2.6	65	12	50-150/30 ^a
129-00-0	Pyrene	1.3	2	2.3	50	2.6	65	12	50-150/30 ^a
	C1-Fluoranthenes/Pyrenes	0.61		ND		ND		nc	50-150/30 ^a
56-55-3	Benzo(a)anthracene	0.057	0.2	0.11	27* ^b	0.13	37* ^b	17	50-150/30 ^a
218-01-9	Chrysene	0.059	0.2	0.11	26* ^b	0.13	36* ^b	17	50-150/30 ^a
	C1-Benzo(a)anthracenes/Chrys	0.035		ND		ND		nc	50-150/30 ^a
	C2-Benzo(a)anthracenes/Chrys	ND		ND		ND		nc	50-150/30 ^a
	C3-Benzo(a)anthracenes/Chrys	ND		ND		ND		nc	50-150/30 ^a
	C4-Benzo(a)anthracenes/Chrys	ND		ND		ND		nc	50-150/30 ^a
205-99-2	Benzo(b)fluoranthene	ND	0.24	0.033	14* ^b	0.041	17* ^b	22	50-150/30 ^a
207-08-9	Benzo(k)fluoranthene	ND	0.24	0.028	12* ^b	0.034	14* ^b	19	50-150/30 ^a
192-97-2	Benzo(e)pyrene	ND	0.24	0.030	13* ^b	0.039	16* ^b	26	50-150/30 ^a
50-32-8	Benzo(a)pyrene	ND	0.24	0.025	10* ^b	0.031	13* ^b	21	50-150/30 ^a
198-55-0	Perylene	ND	0.24	0.036	15* ^b	0.045	19* ^b	22	50-150/30 ^a
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.24	ND	0* ^b	0.0083	3* ^b	200	50-150/30 ^a
53-70-3	Dibenzo(a,h)anthracene	ND	0.24	ND	0* ^b	0.0086	4* ^b	200	50-150/30 ^a
191-24-2	Benzo(g,h,i)perylene	ND	0.24	ND	0* ^b	0.0086	4* ^b	200	50-150/30 ^a

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

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Job Number: MC24285

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24285-1MS	S33588.D	1	09/16/13	RP	n/a	n/a	MSS1484
MC24285-1MSD	S33589.D	1	09/16/13	RP	n/a	n/a	MSS1484
MC24285-1	S33584.D	1	09/16/13	RP	n/a	n/a	MSS1484

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24285-1

(a) Advisory control limits.

(b) Outside default control limits. Statistical evaluation of MS/MSD not defined in ASTM D7363-13.

* = Outside of Control Limits.

Duplicate Summary

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Job Number: MC24285**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24285-1DUP	S33585.D	1	09/16/13	RP	n/a	n/a	MSS1484
MC24285-1	S33584.D	1	09/16/13	RP	n/a	n/a	MSS1484

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24285-1

CAS No.	Compound	MC24285-1 ug/l	DUP Q ug/l	Q	RPD	Limits
91-20-3	Naphthalene	1.6	1.6		0	201
91-57-6	2-Methylnaphthalene	5.6	5.6		0	201
90-12-0	1-Methylnaphthalene	8.1	8.1		0	201
	C2-Naphthalenes	37.8	38.8		3	201
	C3-Naphthalenes	37.7	38.0		1	201
	C4-Naphthalenes	17.7	17.2		3	201
208-96-8	Acenaphthylene	1.4	1.3		7	201
83-32-9	Acenaphthene	18.0	17.7		2	201
86-73-7	Fluorene	7.5	7.6		1	201
	C1-Fluorenes	8.6	9.3		8	201
	C2-Fluorenes	4.5	4.7		4	201
	C3-Fluorenes	1.3	1.3		0	201
85-01-8	Phenanthrene	10.2	10.2		0	201
120-12-7	Anthracene	2.1	2.1		0	201
	C1-Phenanthrenes/Anthracene	4.8	4.7		2	201
	C2-Phenanthrenes/Anthracene	3.2	3.3		3	201
	C3-Phenanthrenes/Anthracene	1.3	1.1		17	201
	C4-Phenanthrenes/Anthracene	0.74	0.59	J	23	201
206-44-0	Fluoranthene	1.3	1.3		0	201
129-00-0	Pyrene	1.3	1.3		0	201
	C1-Fluoranthenes/Pyrenes	0.61	0.62		2	201
56-55-3	Benzo(a)anthracene	0.057	0.054		5	201
218-01-9	Chrysene	0.059	0.057		3	201
	C1-Benzo(a)anthracenes/Chrys	0.035	0.038		8	201
	C2-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C3-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C4-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
205-99-2	Benzo(b)fluoranthene	ND	ND		nc	201
207-08-9	Benzo(k)fluoranthene	ND	ND		nc	201
192-97-2	Benzo(e)pyrene	ND	ND		nc	201
50-32-8	Benzo(a)pyrene	ND	ND		nc	201
198-55-0	Perylene	ND	0.0086	J	200	201
193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND		nc	201
53-70-3	Dibenzo(a,h)anthracene	ND	ND		nc	201
191-24-2	Benzo(g,h,i)perylene	ND	ND		nc	201

* = Outside of Control Limits.

Duplicate Summary

Job Number: MC24285

Account: METAMAW META Environmental, Inc.

Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24285-2DUP	S33636.D	1	09/21/13	RP	n/a	n/a	MSS1494
MC24285-2	S33635.D	1	09/21/13	RP	n/a	n/a	MSS1494

The QC reported here applies to the following samples:

Method: D7363-11/8272

MC24285-2

CAS No.	Compound	MC24285-2 ug/l	DUP Q ug/l	Q	RPD	Limits
	C2-Naphthalenes	305	319		4	201
	C3-Naphthalenes	161	183		13	201
	C4-Naphthalenes	60.6	71.2		16	201
208-96-8	Acenaphthylene	15.9	18.1		13	201
	C1-Fluorenes	46.8	51.3		9	201
	C2-Fluorenes	18.3	21.0		14	201
	C3-Fluorenes	3.8	3.8		0	201
120-12-7	Anthracene	37.7	39.5		5	201
	C1-Phenanthrenes/Anthracene	31.8	34.3		8	201
	C2-Phenanthrenes/Anthracene	14.4	16.2		12	201
	C3-Phenanthrenes/Anthracene	7.3	8.7		18	201
	C4-Phenanthrenes/Anthracene	3.1	3.5		12	201
206-44-0	Fluoranthene	21.1	22.4		6	201
129-00-0	Pyrene	14.2	14.8		4	201
	C1-Fluoranthenes/Pyrenes	5.0	5.3		6	201
56-55-3	Benzo(a)anthracene	0.81	0.84		4	201
218-01-9	Chrysene	0.61	0.64		5	201
	C1-Benzo(a)anthracenes/Chrys	0.27	0.29		7	201
	C2-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C3-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
	C4-Benzo(a)anthracenes/Chrys	ND	ND		nc	201
205-99-2	Benzo(b)fluoranthene	0.041	0.041		0	201
207-08-9	Benzo(k)fluoranthene	0.056	0.061		9	201
192-97-2	Benzo(e)pyrene	0.024	0.024		0	201
50-32-8	Benzo(a)pyrene	0.054	0.057		5	201
198-55-0	Perylene	0.0088	0.011	J	22	201
193-39-5	Indeno(1,2,3-cd)pyrene	ND	ND		nc	201
53-70-3	Dibenzo(a,h)anthracene	ND	ND		nc	201
191-24-2	Benzo(g,h,i)perylene	ND	ND		nc	201

* = Outside of Control Limits.

Duplicate Summary

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Job Number: MC24285**Account:** METAMAW META Environmental, Inc.**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC24285-2DUP	S33640.D	10	09/21/13	RP	n/a	n/a	MSS1495
MC24285-2	S33639.D	10	09/21/13	RP	n/a	n/a	MSS1495

The QC reported here applies to the following samples:**Method:** D7363-11/8272

MC24285-2

CAS No.	Compound	MC24285-2 DUP		Q	RPD	Limits
		ug/l	Q ug/l			
91-20-3	Naphthalene	1640	1600	2		201
91-57-6	2-Methylnaphthalene	403	393	3		201
90-12-0	1-Methylnaphthalene	314	309	2		201
83-32-9	Acenaphthene	333	326	2		201
86-73-7	Fluorene	170	174	2		201
85-01-8	Phenanthrene	204	202	1		201

* = Outside of Control Limits.

Volatile Internal Standard Area Summary

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Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std:	MSS1484-CC1465	Injection Date:	09/16/13
Lab File ID:	S33581.D	Injection Time:	13:49
Instrument ID:	GCMSS	Method:	D7363-11/8272

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	48635	13.88	32278	15.02	23023	15.22	15490	17.09	14413	18.08	39381	20.02
Upper Limit ^a	97270	14.38	64556	15.52	46046	15.72	30980	17.59	28826	18.58	78762	20.52
Lower Limit ^b	24318	13.38	16139	14.52	11512	14.72	7745	16.59	7207	17.58	19691	19.52

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB27	64791	13.88	45825	15.02	32101	15.22	21012	17.09	20300	18.08	53955	20.02
MC24285-1	49219	13.88	31688	15.02	22860	15.23	16317	17.09	15534	18.08	42210	20.02
MC24285-1DUP	51511	13.88	33838	15.02	24852	15.22	18004	17.09	16687	18.08	43666	20.02
MC24285-1MS	49215	13.88	31316	15.02	23295	15.22	16710	17.09	15468	18.07	41380	20.02
MC24285-1MSD	55519	13.88	36605	15.02	27003	15.22	17859	17.09	15765	18.07	39847	20.02
MS29817-MB30	72055	13.88	49812	15.02	34438	15.22	22669	17.09	21602	18.07	56342	20.01
MC23817-9	70382	13.88	48820	15.02	34201	15.22	22704	17.09	21080	18.07	53830	20.01
MC23817-9DUP	64573	13.88	43043	15.02	30024	15.22	20033	17.09	19094	18.07	50778	20.01

IS 1 = Naphthalene-d8
IS 2 = 2-Methylnaphthalene-d10
IS 3 = 1-Methylnaphthalene-d10
IS 4 = Acenaphthene-d10
IS 5 = Fluorene-d10
IS 6 = Phenanthrene-d10

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 2 of 3

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std: MSS1484-CC1465	Injection Date: 09/16/13
Lab File ID: S33581.D	Injection Time: 13:49
Instrument ID: GCMSS	Method: D7363-11/8272

	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	39088	20.12	24782	22.45	22082	22.92	8186	25.34	11975	25.42	8614	27.88
Upper Limit ^a	78176	20.62	49564	22.95	44164	23.42	16372	25.84	23950	25.92	17228	28.38
Lower Limit ^b	19544	19.62	12391	21.95	11041	22.42	4093	24.84	5988	24.92	4307	27.38

Lab Sample ID	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB27	41128	20.12	29654	22.45	25317	22.92	6812	25.34	11726	25.43	8046	27.88
MC24285-1	49641	20.12	26483	22.45	23771	22.92	9057	25.34	11741	25.42	9095	27.88
MC24285-1DUP	51423	20.12	27329	22.45	24696	22.92	10438	25.34	13134	25.43	10426	27.88
MC24285-1MS	45848	20.12	26284	22.45	23654	22.92	9742	25.34	12762	25.42	9854	27.88
MC24285-1MSD	44507	20.12	24756	22.45	22287	22.92	9047	25.34	12021	25.42	8908	27.88
MS29817-MB30	47251	20.12	30501	22.45	25922	22.92	7629	25.33	11968	25.42	8189	27.88
MC23817-9	58806	20.12	30043	22.45	26785	22.92	9806	25.33	12810	25.42	8988	27.88
MC23817-9DUP	56384	20.12	29768	22.44	26695	22.92	10223	25.33	13120	25.42	9422	27.88

IS 7 = Anthracene-d10
IS 8 = Fluoranthene-d10
IS 9 = Pyrene-d10
IS 10 = Benzo(a)anthracene-d12
IS 11 = Chrysene-d12
IS 12 = Benzo(b)fluoranthene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 3 of 3

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std: MSS1484-CC1465	Injection Date: 09/16/13
Lab File ID: S33581.D	Injection Time: 13:49
Instrument ID: GCMSS	Method: D7363-11/8272

	IS 13		IS 14		IS 15	
	AREA	RT	AREA	RT	AREA	RT
Check Std	8746	27.96	4701	28.79	4242	29.02
Upper Limit ^a	17492	28.46	9402	29.29	8484	29.52
Lower Limit ^b	4373	27.46	2351	28.29	2121	28.52

Lab Sample ID	IS 13		IS 14		IS 15	
	AREA	RT	AREA	RT	AREA	RT
MS29817-MB27	7888	27.95	3253	28.79	3199	29.02
MC24285-1	9371	27.95	6127	28.79	4931	29.02
MC24285-1DUP	10728	27.96	7007	28.79	5818	29.02
MC24285-1MS	10636	27.95	6243	28.79	5117	29.02
MC24285-1MSD	9698	27.95	5600	28.79	4685	29.02
MS29817-MB30	8379	27.95	3811	28.79	3586	29.02
MC23817-9	9419	27.95	5736	28.78	5006	29.01
MC23817-9DUP	9547	27.95	6316	28.79	5341	29.01

IS 13 = Benzo(k)fluoranthene-d12

IS 14 = Benzo(a)pyrene-d12

IS 15 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 1 of 3

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std: MSS1490-ICC1490
Lab File ID: S33616A.D
Instrument ID: GCMSS
Injection Date: 09/20/13
Injection Time: 14:27
Method: D7363-11/8272

	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	56095	13.88	38403	15.02	27230	15.22	18665	17.09	16984	18.07	45361	20.01
Upper Limit ^a	112190	14.38	76806	15.52	54460	15.72	37330	17.59	33968	18.57	90722	20.51
Lower Limit ^b	28048	13.38	19202	14.52	13615	14.72	9333	16.59	8492	17.57	22681	19.51

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB33	67994	13.88	45570	15.02	31227	15.22	20179	17.09	19775	18.07	53822	20.01
MC24019-1	34206	13.89	24094	15.02	19772	15.22	15759	17.09	13637	18.08	34997	20.02
MC24019-1DUP	35207	13.88	23860	15.02	19795	15.22	16099	17.09	14085	18.07	36869	20.02
MS29817-MB34	64597	13.88	45095	15.02	30769	15.22	20959	17.09	20389	18.07	56030	20.01
MC24019-1	47631	13.88	31794	15.02	24369	15.22	17461	17.09	15370	18.07	41355	20.01
MC24019-1DUP	49776	13.88	32946	15.02	25445	15.22	17680	17.08	15483	18.07	39686	20.01
MS29817-MB35	67709	13.88	44343	15.02	30361	15.22	21212	17.08	21663	18.07	59692	20.01
MC24019-2	39521	13.88	27030	15.02	22416	15.22	17559	17.09	14178	18.07	35729	20.01
MC24019-2DUP	44020	13.88	29757	15.02	24583	15.22	18446	17.09	14242	18.07	34826	20.01
MS29817-MB36	68651	13.88	47744	15.02	33532	15.22	23240	17.08	22610	18.07	59975	20.01
MC24019-2	49578	13.88	31822	15.02	24924	15.22	18263	17.08	15591	18.07	39563	20.01
MC24019-2DUP	40930	13.88	24963	15.02	19725	15.22	14799	17.08	12973	18.07	35849	20.01
MS29817-MB37	73266	13.88	50329	15.02	35069	15.22	23617	17.08	22618	18.07	58957	20.01
MC24285-2	37840	13.88	24314	15.02	20600	15.22	16269	17.08	13775	18.07	34861	20.01
MC24285-2DUP	29191	13.88	18749*	15.02	15971	15.22	13417	17.08	11592	18.07	30949	20.01
MS29817-MB38	72573	13.88	48437	15.02	33822	15.22	22316	17.08	21713	18.07	56531	20.01
MC24285-2	57984	13.88	37076	15.02	28545	15.22	19230	17.08	16360	18.07	40754	20.01
MC24285-2DUP	48025	13.88	30754	15.02	23870	15.22	17434	17.08	15432	18.07	39538	20.01

IS 1 = Naphthalene-d8
IS 2 = 2-Methylnaphthalene-d10
IS 3 = 1-Methylnaphthalene-d10
IS 4 = Acenaphthene-d10
IS 5 = Fluorene-d10
IS 6 = Phenanthrene-d10

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 2 of 3

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std: MSS1490-ICC1490
Lab File ID: S33616A.D
Instrument ID: GCMSS
Injection Date: 09/20/13
Injection Time: 14:27
Method: D7363-11/8272

	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
Check Std	52494	20.12	26868	22.44	23991	22.92	8896	25.33	12197	25.42	8354	27.88
Upper Limit ^a	104988	20.62	53736	22.94	47982	23.42	17792	25.83	24394	25.92	16708	28.38
Lower Limit ^b	26247	19.62	13434	21.94	11996	22.42	4448	24.83	6099	24.92	4177	27.38

Lab Sample ID	IS 7		IS 8		IS 9		IS 10		IS 11		IS 12	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT
MS29817-MB33	39157	20.12	31062	22.44	25948	22.92	6659	25.33	12263	25.42	7930	27.88
MC24019-1	42242	20.12	24039	22.45	22693	22.92	10055	25.34	12367	25.42	9225	27.88
MC24019-1DUP	44104	20.12	25213	22.44	23864	22.91	10814	25.33	13079	25.42	9352	27.88
MS29817-MB34	54335	20.12	31454	22.44	27070	22.91	7925	25.33	12077	25.42	7680	27.88
MC24019-1	47303	20.12	27415	22.44	25028	22.91	10996	25.33	13690	25.42	10581	27.88
MC24019-1DUP	44155	20.12	25406	22.44	23339	22.91	10044	25.33	12675	25.41	9856	27.88
MS29817-MB35	47652	20.12	33880	22.44	28504	22.91	8135	25.33	13220	25.42	8932	27.88
MC24019-2	41176	20.12	24756	22.44	23454	22.91	11192	25.33	13365	25.41	10121	27.88
MC24019-2DUP	40818	20.12	24268	22.44	23064	22.91	11314	25.33	13287	25.41	10135	27.88
MS29817-MB36	48985	20.12	33113	22.44	28305	22.91	8321	25.33	13545	25.42	8400	27.88
MC24019-2	43987	20.12	24521	22.44	22717	22.91	10601	25.33	13086	25.41	10356	27.88
MC24019-2DUP	39814	20.12	22481	22.44	21053	22.91	9830	25.33	12320	25.42	9773	27.88
MS29817-MB37	47161	20.12	31704	22.44	27366	22.91	8214	25.33	13653	25.42	8763	27.88
MC24285-2	40067	20.12	24468	22.44	22756	22.91	11167	25.33	13602	25.41	11067	27.88
MC24285-2DUP	35517	20.12	22508	22.44	21435	22.91	10728	25.33	12696	25.41	10691	27.88
MS29817-MB38	41811	20.12	31706	22.44	26754	22.91	8493	25.33	14203	25.42	9640	27.88
MC24285-2	43105	20.12	24171	22.44	22370	22.91	10068	25.33	13265	25.41	10385	27.88
MC24285-2DUP	41241	20.12	23078	22.44	21158	22.91	8760	25.33	11551	25.41	8672	27.88

IS 7 = Anthracene-d10
IS 8 = Fluoranthene-d10
IS 9 = Pyrene-d10
IS 10 = Benzo(a)anthracene-d12
IS 11 = Chrysene-d12
IS 12 = Benzo(b)fluoranthene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 3 of 3

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Check Std:	MSS1490-ICC1490	Injection Date:	09/20/13
Lab File ID:	S33616A.D	Injection Time:	14:27
Instrument ID:	GCMSS	Method:	D7363-11/8272

	IS 13		IS 14		IS 15	
	AREA	RT	AREA	RT	AREA	RT
Check Std	8937	27.95	5467	28.78	4618	29.01
Upper Limit ^a	17874	28.45	10934	29.28	9236	29.51
Lower Limit ^b	4469	27.45	2734	28.28	2309	28.51

Lab Sample ID	IS 13		IS 14		IS 15	
	AREA	RT	AREA	RT	AREA	RT
MS29817-MB33	8081	27.95	2811	28.79	2827	29.01
MC24019-1	9951	27.95	6299	28.79	5206	29.02
MC24019-1DUP	10013	27.95	6440	28.78	5394	29.01
MS29817-MB34	7695	27.95	4003	28.78	3715	29.01
MC24019-1	11120	27.95	7067	28.78	5812	29.01
MC24019-1DUP	10296	27.95	6439	28.79	5374	29.00
MS29817-MB35	8582	27.95	3566	28.79	3601	29.01
MC24019-2	10563	27.95	6771	28.78	5524	29.00
MC24019-2DUP	10432	27.95	7129	28.78	5791	29.00
MS29817-MB36	8609	27.95	3685	28.78	3575	29.01
MC24019-2	10525	27.95	6973	28.78	5832	29.00
MC24019-2DUP	10223	27.95	6458	28.78	5640	29.00
MS29817-MB37	8501	27.95	3729	28.78	3688	29.00
MC24285-2	11178	27.95	7446	28.78	6178	29.00
MC24285-2DUP	10820	27.95	7415	28.78	5908	29.00
MS29817-MB38	9177	27.95	3850	28.79	3905	29.00
MC24285-2	10675	27.95	6656	28.78	5640	29.00
MC24285-2DUP	8817	27.95	5627	28.78	4756	29.00

IS 13 = Benzo(k)fluoranthene-d12

IS 14 = Benzo(a)pyrene-d12

IS 15 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Initial Calibration Summary

Page 1 of 2

Job Number: MC24285

Sample: MSS1465-ICC1465

Account: METAMAW META Environmental, Inc.

Lab FileID: S33448.D

Project: Arcadis, National Grid, Water Street, Hudson, NY

Response Factor Report MSS

Method : S:\1\methods\S130906-SPMEPAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Calibration Files

1 =S33445.D 2 =S33446.D 3 =S33447.D 4 =S33448.D
 5 =S33449.D 6 =S33450.D

	Compound	1	2	3	4	5	6	Avg	%RSD
1) I	Naphthalene-d8	-----ISTD-----							
2) J1	Naphthalene	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
3) J2	C1-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
4) J2	C2-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
5) J2	C3-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
6) J2	C4-Naphthalenes	1.375	1.244	1.239	1.181	1.086	1.255	1.230	7.74
7) I	2-Methylnaphthalene-d	-----ISTD-----							
8)	2-Methylnaphthalene	1.325	1.295	1.304	1.270	1.188	1.386	1.295	5.06
9) I	1-Methylnaphthalene-d	-----ISTD-----							
10)	1-Methylnaphthalene	1.423	1.361	1.380	1.349	1.249	1.445	1.368	5.02
11) I	Acenaphthene-d10	-----ISTD-----							
12)	Acenaphthylene	1.018	0.964	0.983	0.952	0.921	1.220	1.009	10.69
13)	Acenaphthene	1.359	1.312	1.307	1.251	1.175	1.380	1.297	5.77
14) I	Fluorene-d10	-----ISTD-----							
15) J1	Fluorene	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
16) J2	C1-Fluorenes	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
17) J2	C2-Fluorenes	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
18) J2	C3-Fluorenes	1.465	1.358	1.391	1.375	1.286	1.491	1.394	5.34
19) I	Phenanthrene-d10	-----ISTD-----							
20) J1	Phenanthrene	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
21) J2	C1-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
22) J2	C2-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
23) J2	C3-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
24) J2	C4-Phenanthrenes/an	1.437	1.341	1.303	1.266	1.190	1.369	1.318	6.50
25) I	Anthracene-d10	-----ISTD-----							
26)	Anthracene	1.265	1.186	1.264	1.282	1.262	1.516	1.296	8.71
27) I	Fluoranthene-d10	-----ISTD-----							
28)	Fluoranthene	1.496	1.373	1.386	1.377	1.298	1.511	1.407	5.78
29) I	Pyrene-d10	-----ISTD-----							
30) J1	Pyrene	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
31) J2	C1-Fluoranthenes/py	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
32) J2	C2-Fluoranthenes/py	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
33) J2	C3-Fluoranthenes/py	1.777	1.609	1.606	1.591	1.501	1.712	1.632	5.97
34) I	Benz(a)anthracene-d12	-----ISTD-----							
35)	Benz(a)anthracene	1.637	1.504	1.447	1.370	1.324	1.632	1.486	8.79
36) I	Chrysene-d12	-----ISTD-----							

Initial Calibration Summary

Page 2 of 2

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MSS1465-ICC1465
Lab FileID: S33448.D

37)	J1	Chrysene	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
38)	J2	C1-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
39)	J2	C2-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
40)	J2	C3-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
41)	J2	C4-Benz(a)anthracen	1.371	1.268	1.226	1.147	1.056	1.183	1.208	8.92
42)	I	Benzo(b)fluoranthene-	-----ISTD-----							
43)		Benzo(b)fluoranthen	1.457	1.331	1.399	1.399	1.249	1.419	1.375	5.40
44)	I	Benzo(k)fluoranthene-	-----ISTD-----							
45)		Benzo(k)fluoranthen	1.229	1.097	1.242	1.183	1.101	1.232	1.181	5.61
46)	I	Benzo(a)pyrene-d12	-----ISTD-----							
47)		Benzo(e)pyrene	2.315	2.384	2.377	2.187	1.881	1.819	2.160	11.63
48)		Benzo(a)pyrene	1.246	1.150	1.154	1.170	1.202	1.301	1.204	4.93
49)	I	Perylene-d12	-----ISTD-----							
50)		Perylene	1.426	1.456	1.374	1.350	1.314		1.384	4.13
51)		Indeno(1,2,3-cd)pyr	2.224	2.617	2.876	2.654	2.612		2.597	9.05
52)		Dibenz(a,h)anthrace	1.779	1.937	2.020	1.714	1.657		1.822	8.39
53)		Benzo(g,h,i)perylen	2.334	2.618	2.643	2.213	1.989		2.359	11.74

(#) = Out of Range

S130906-SPMEPAH.M

Tue Sep 17 20:58:03 2013

6.5.1

6

Initial Calibration Verification

Page 1 of 1

Job Number: MC24285**Sample:** MSS1465-ICV1465**Account:** METAMAW META Environmental, Inc.**Lab FileID:** S33453.D**Project:** Arcadis, National Grid, Water Street, Hudson, NY

Alkylated PAH Homologue Relative Response Factor Calculations

Data File Name S33453.D
Data File Path S:\1\data\S130906\
Operator jamesr1
Date Acquired 9/7/2013 12:41
Acq. Method File S:\1\methods\S130906-SPMEPAH.M
Sample Name SRM 1991
Misc Info
Vial Number 31
Instrument Name MSS
Number of Compounds 53.

Refer to Raw Data PDF

6.5.2

6

Continuing Calibration Summary

Page 1 of 2

Job Number: MC24285
 Account: METAMAW META Environmental, Inc.
 Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MSS1484-CC1465
 Lab FileID: S33581.D

Evaluate Continuing Calibration Report

Data File : S:\1\data\S130916\S33581.D Vial: 3
 Acq On : 16 Sep 2013 1:49 pm Operator: RUBENP
 Sample : CC1465-4,mss1466-4 Inst : MSS
 Misc : ms29817,mss1484,1.5,,,1.5,1 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : S:\1\methods\S130906-SPMEPAH.M (RTE Integrator)
 Title : PAHs & Alkylated PAHs by GC/MS/SIM
 Last Update : Mon Sep 09 11:44:11 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Naphthalene-d8	1.000	1.000	0.0	97	0.00	13.88
2 J1	Naphthalene	1.230	1.170	4.9	96	0.00	13.92
3 J2	C1-Naphthalenes			-----NA-----			
4 J2	C2-Naphthalenes			-----NA-----			
5 J2	C3-Naphthalenes			-----NA-----			
6 J2	C4-Naphthalenes			-----NA-----			
7 I	2-Methylnaphthalene-d10	1.000	1.000	0.0	93	0.00	15.02
8	2-Methylnaphthalene	1.295	1.227	5.3	90	0.00	15.08
9 I	1-Methylnaphthalene-d10	1.000	1.000	0.0	82	-0.02	15.22
10	1-Methylnaphthalene	1.368	1.302	4.8	79	0.00	15.29
11 I	Acenaphthene-d10	1.000	1.000	0.0	80	0.00	17.09
12	Acenaphthylene	1.009	1.078	-6.8	90	-0.01	16.80
13	Acenaphthene	1.297	1.230	5.2	78	0.00	17.15
14 I	Fluorene-d10	1.000	1.000	0.0	90	0.00	18.08
15 J1	Fluorene	1.394	1.366	2.0	89	0.00	18.14
16 J2	C1-Fluorenes			-----NA-----			
17 J2	C2-Fluorenes			-----NA-----			
18 J2	C3-Fluorenes			-----NA-----			
19 I	Phenanthrene-d10	1.000	1.000	0.0	92	0.00	20.02
20 J1	Phenanthrene	1.318	1.271	3.6	93	-0.01	20.07
21 J2	C1-Phenanthrenes/anthrace			-----NA-----			
22 J2	C2-Phenanthrenes/anthrace			-----NA-----			
23 J2	C3-Phenanthrenes/anthrace			-----NA-----			
24 J2	C4-Phenanthrenes/anthrace			-----NA-----			
25 I	Anthracene-d10	1.000	1.000	0.0	105	-0.01	20.12
26	Anthracene	1.296	1.295	0.1	106	-0.01	20.16
27 I	Fluoranthene-d10	1.000	1.000	0.0	91	-0.01	22.45
28	Fluoranthene	1.407	1.387	1.4	91	-0.01	22.48
29 I	Pyrene-d10	1.000	1.000	0.0	90	-0.01	22.92
30 J1	Pyrene	1.632	1.625	0.4	92	-0.01	22.95
31 J2	C1-Fluoranthenes/pyrenes			-----NA-----			
32 J2	C2-Fluoranthenes/pyrenes			-----NA-----			
33 J2	C3-Fluoranthenes/pyrenes			-----NA-----			

Continuing Calibration Summary

Page 2 of 2

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MSS1484-CC1465
Lab FileID: S33581.D

34	I	Benz(a)anthracene-d12	1.000	1.000	0.0	88	-0.01	25.34
35		Benz(a)anthracene	1.486	1.432	3.6	92	-0.02	25.38
36	I	Chrysene-d12	1.000	1.000	0.0	85	-0.01	25.42
37	J1	Chrysene	1.208	1.194	1.2	89	-0.01	25.48
38	J2	C1-Benz(a)anthracenes/chr			-----NA-----			
39	J2	C2-Benz(a)anthracenes/chr			-----NA-----			
40	J2	C3-Benz(a)anthracenes/chr			-----NA-----			
41	J2	C4-Benz(a)anthracenes/chr			-----NA-----			
42	I	Benzo(b)fluoranthene-d12	1.000	1.000	0.0	74	-0.02	27.88
43		Benzo(b)fluoranthene	1.375	1.391	-1.2	74	-0.02	27.95
44	I	Benzo(k)fluoranthene-d12	1.000	1.000	0.0	72	-0.01	27.96
45		Benzo(k)fluoranthene	1.181	1.259	-6.6	77	-0.02	28.01
46	I	Benzo(a)pyrene-d12	1.000	1.000	0.0	77	-0.02	28.79
47		Benzo(e)pyrene	2.160	2.080	3.7	74	-0.02	28.71
48		Benzo(a)pyrene	1.204	1.151	4.4	76	-0.02	28.86
49	I	Perylene-d12	1.000	1.000	0.0	80	-0.02	29.02
50		Perylene	1.384	1.441	-4.1	85	-0.02	29.09
51		Indeno(1,2,3-cd)pyrene	2.597	2.528	2.7	76	-0.03	32.58
52		Dibenz(a,h)anthracene	1.822	2.128	-16.8	99	-0.03	32.57
53		Benzo(g,h,i)perylene	2.359	2.169	8.1	78	-0.04	33.63

(#) = Out of Range
 S33448.D S130906-SPMEPAH.M

SPCC's out = 0 CCC's out = 0
 Wed Sep 18 09:23:51 2013

6.5.3

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Initial Calibration Summary

Page 1 of 2

Job Number: MC24285

Sample: MSS1490-ICC1490

Account: METAMAW META Environmental, Inc.

Lab FileID: S33616A.D

Project: Arcadis, National Grid, Water Street, Hudson, NY

Response Factor Report MSS

Method : S:\1\methods\S13...SPMEPAH-CCQ-13.M (RTE Integrator)

Title : PAHs & Alkylated PAHs by GC/MS/SIM

Last Update : Thu Oct 24 16:19:38 2013

Response via : Initial Calibration

Calibration Files

1 =S33615.D 2 =S33616.D =

	Compound	1	2	Avg	%RSD
1) I	Naphthalene-d8	-----ISTD-----			
2) J1	Naphthalene	1.069	1.223	1.146	9.51
3) J2	C1-Naphthalenes	1.069	1.223	1.146	9.51
4) J2	C2-Naphthalenes	2.112	2.416	2.264	9.51
5) J2	C3-Naphthalenes	1.434	1.640	1.537	9.51
6) J2	C3-Naphthalenes (Fd10	1.434	1.640	1.537	9.51
7) J2	C4-Naphthalenes	0.702	0.803	0.752	9.51
8) I	2-Methylnaphthalene-d	-----ISTD-----			
9)	2-Methylnaphthalene	1.128	1.297	1.212	9.87
10) I	1-Methylnaphthalene-d	-----ISTD-----			
11)	1-Methylnaphthalene	1.196	1.390	1.293	10.58
12) I	Acenaphthene-d10	-----ISTD-----			
13)	Acenaphthylene	1.051	1.258	1.155	12.67
14)	Acenaphthene	1.141	1.326	1.233	10.57
15) I	Fluorene-d10	-----ISTD-----			
16) J1	Fluorene	1.243	1.471	1.357	11.87
17) J2	C1-Fluorenes	1.055	1.249	1.152	11.87
18) J2	C2-Fluorenes	0.806	0.953	0.880	11.87
19) J2	C3-Fluorenes	0.751	0.889	0.820	11.87
20) I	Phenanthrene-d10	-----ISTD-----			
21) J1	Phenanthrene	1.153	1.367	1.260	12.01
22) J2	C1-Phenanthrenes/anth	1.274	1.510	1.392	12.01
23) J2	C2-Phenanthrenes/anth	0.474	0.562	0.518	12.01
24) J2	C3-Phenanthrenes/anth	0.199	0.236	0.217	12.01
25) J2	C4-Phenanthrenes/anth	0.090	0.107	0.098	12.01
26) I	Anthracene-d10	-----ISTD-----			
27)	Anthracene	1.145	1.387	1.266	13.57
28) I	Fluoranthene-d10	-----ISTD-----			
29)	Fluoranthene	1.217	1.475	1.346	13.58
30) I	Pyrene-d10	-----ISTD-----			
31) J1	Pyrene	1.420	1.711	1.565	13.17
32) J2	C1-Fluoranthenes/pyre	0.916	1.104	1.010	13.17
33) J2	C2-Fluoranthenes/pyre	1.420	1.711	1.565	13.17
34) J2	C3-Fluoranthenes/pyre	1.420	1.711	1.565	13.17
35) I	Benz(a)anthracene-d12	-----ISTD-----			
36)	Benz(a)anthracene	1.216	1.474	1.345	13.58

6.5.4

6

Initial Calibration Summary

Page 2 of 2

Job Number: MC24285**Sample:** MSS1490-ICC1490**Account:** METAMAW META Environmental, Inc.**Lab FileID:** S33616A.D**Project:** Arcadis, National Grid, Water Street, Hudson, NY

37)	I	Chrysene-d12	-----ISTD-----		
38)	J1	Chrysene	1.052 1.238	1.145	11.50
39)	J2	C1-Benz(a)anthracenes	0.617 0.726	0.671	11.50
40)	J2	C2-Benz(a)anthracenes	0.478 0.563	0.520	11.50
41)	J2	C3-Benz(a)anthracenes	0.242 0.285	0.263	11.50
42)	J2	C4-Benz(a)anthracenes	0.179 0.211	0.195	11.50
43)	I	Benzo(b)fluoranthene-	-----ISTD-----		
44)		Benzo(b)fluoranthene	1.245 1.432	1.339	9.87
45)	I	Benzo(k)fluoranthene-	-----ISTD-----		
46)		Benzo(k)fluoranthene	1.042 1.299	1.170	15.51
47)	I	Benzo(a)pyrene-d12	-----ISTD-----		
48)		Benzo(e)pyrene	1.946 1.899	1.923	1.71
49)		Benzo(a)pyrene	1.028 1.212	1.120	11.61
50)	I	Perylene-d12	-----ISTD-----		
51)		Perylene	1.251 1.470	1.360	11.34
52)		Indeno(1,2,3-cd)pyren	2.377 2.235	2.306	4.37
53)		Dibenz(a,h)anthracene	2.156 1.762	1.959	14.23
54)		Benzo(g,h,i)perylene	2.072 2.022	2.047	1.73

(#) = Out of Range

S130920-SPMEPAH-CCQ-13.M

Fri Oct 25 16:37:20 2013

6.5.4

6

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130916\
 Data File : S33584.D
 Acq On : 16 Sep 2013 4:09 pm
 Operator : RUBENP
 Sample : mc24285-1
 Misc : ms29817,mss1484,1.5,,,1.5,1
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 16 12:38:15 2013
 Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:37:34 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	49219	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	31688	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.229	152	22860	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	16317	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	15534	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.020	188	42210	5.00	ng/mL	0.00
26) Anthracene-d10	20.116	188	49641	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	26483	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	23771	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	9057	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	11741	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.885	264	9095	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	9371	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.790	264	6127	0.33	ng/mL	-0.01
50) Perylene-d12	29.015	264	4931	0.33	ng/mL	-0.01

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.918	128	2770	1.557	ng/mL#	89
3) C1-Naphthalenes	15.287	142	28702m	16.128	ng/mL	
4) C2-Naphthalenes	16.400	156	132902m	37.806	ng/mL	
5) C3-Naphthalenes	17.513	170	94627m	39.648	ng/mL	
6) C3-Naphthalenes (Fd10)	18.068	170	4567	1.914	µg/mL#	100
7) C4-Naphthalenes	18.868	184	20668m	17.696	ng/mL	
9) 2-Methylnaphthalene	15.081	142	13453	5.594	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	15036	8.149	ng/mL	100
13) Acenaphthylene	16.801	152	3044	1.396	ng/mL#	100
14) Acenaphthene	17.154	154	44822	17.964	ng/mL	98
16) Fluorene	18.138	166	33384m	7.548	ng/mL	
17) C1-Fluorenes	19.227	180	32093m	8.551	ng/mL	
18) C2-Fluorenes	20.309	194	12793m	4.464	ng/mL	
19) C3-Fluorenes	21.328	208	3571m	1.336	ng/mL	
21) Phenanthrene	20.065	178	114403	10.207	ng/mL	100
22) C1-Phenanthrenes/anthr...	21.026	192	59286m	4.787	ng/mL	
23) C2-Phenanthrenes/anthr...	22.166	206	14872m	3.229	ng/mL	
24) C3-Phenanthrenes/anthr...	23.083	220	2484m	1.285	ng/mL	
25) C4-Phenanthrenes/anthr...	23.530	234	647m	0.741	ng/mL	
27) Anthracene	20.155	178	27690	2.077	ng/mL	100
29) Fluoranthene	22.483	202	29446	1.295	ng/mL#	81
31) Pyrene	22.954	202	31926	1.339	ng/mL#	81
32) C1-Fluoranthenes/pyrenes	23.618	216	9339m	0.607	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.447	230	1592m	0.067	ng/mL	
36) Benz(a)anthracene	25.385	228	1519	0.057	ng/mL	91
38) Chrysene	25.478	228	1706	0.059	ng/mL	98
39) C1-Benz(a)anthracenes/...	26.313	242	594m	0.035	ng/mL	
44) Benzo(b)fluoranthene	27.952	252	132	0.003	ng/mL	97
46) Benzo(k)fluoranthene	27.997	252	234m	0.006	ng/mL	
48) Benzo(e)pyrene	28.717	252	116	0.003	ng/mL#	46
49) Benzo(a)pyrene	28.858	252	115	0.005	ng/mL	91
51) Perylene	29.083	252	167	0.008	ng/mL#	41

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130916\
Data File : S33584.D
Acq On : 16 Sep 2013 4:09 pm
Operator : RUBENP
Sample : mc24285-1
Misc : ms29817,mss1484,1.5,,,1.5,1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 16 12:38:15 2013
Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Fri Oct 11 11:37:34 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

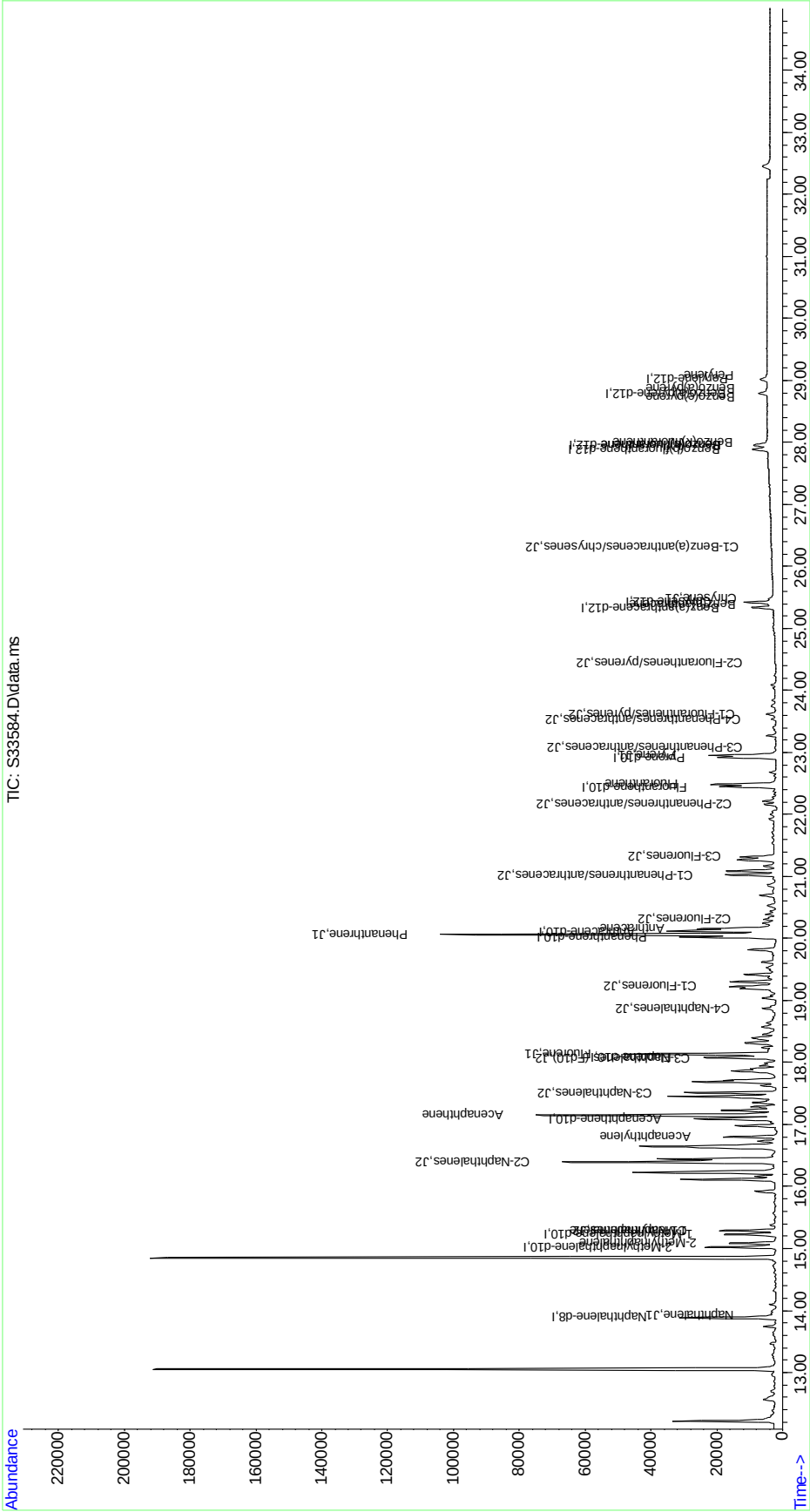
(#) = qualifier out of range (m) = manual integration (+) = signals summed

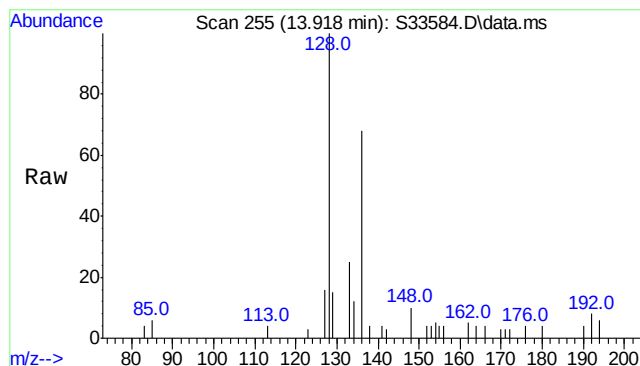
7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130916\
Data File : S33584.D
Acq On : 16 Sep 2013 4:09 pm
Operator : RUBENP
Sample : mc24285-1
Misc : ms29817,ms1484,1.5,,,1.5,1
ALS Vial : 6 Sample Multiplier: 1

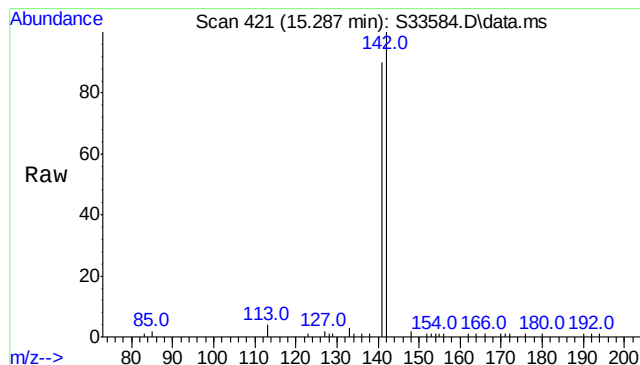
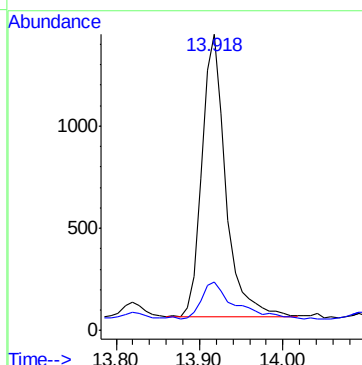
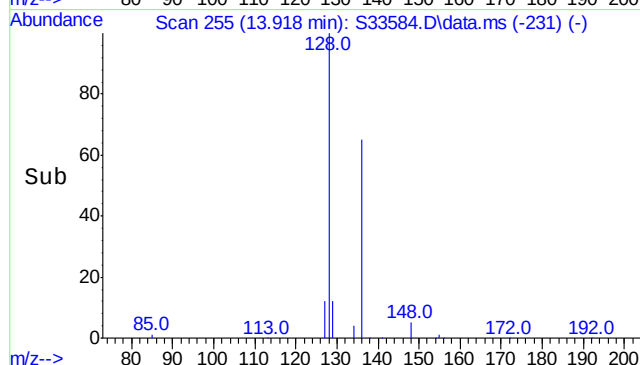
Quant Time: Oct 16 12:38:15 2013
Quant Method : S:\methods\S130916-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Fri Oct 11 11:37:34 2013
Response via : Initial Calibration





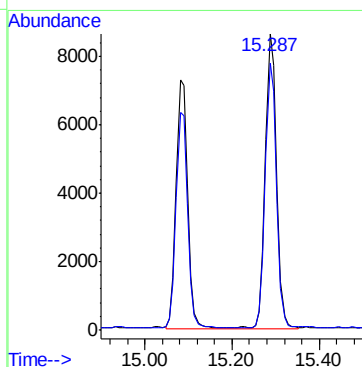
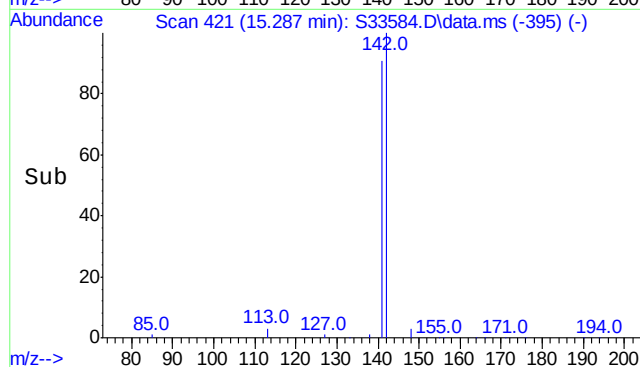
#2
Naphthalene
Concen: 1.557 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. -0.000 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

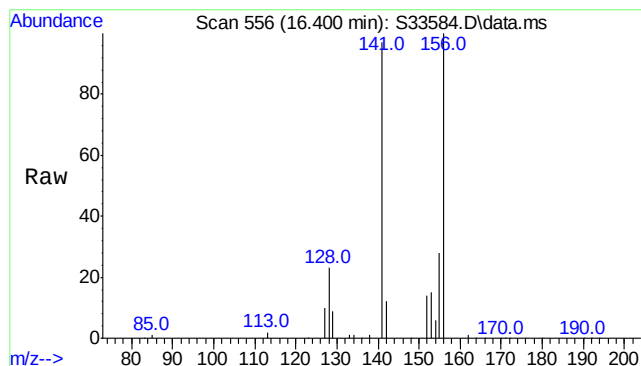
Tgt Ion:128 Resp: 2770
Ion Ratio Lower Upper
128 100
127 17.7 10.6 15.8#



#3
C1-Naphthalenes
Concen: 16.128 ng/mL m
RT: 15.287 min Scan# 421
Delta R.T. 0.165 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

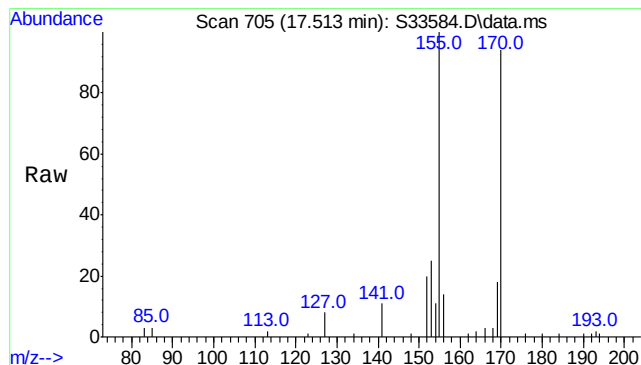
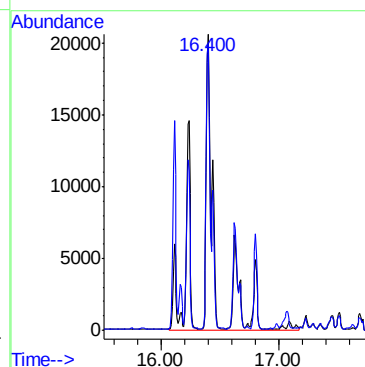
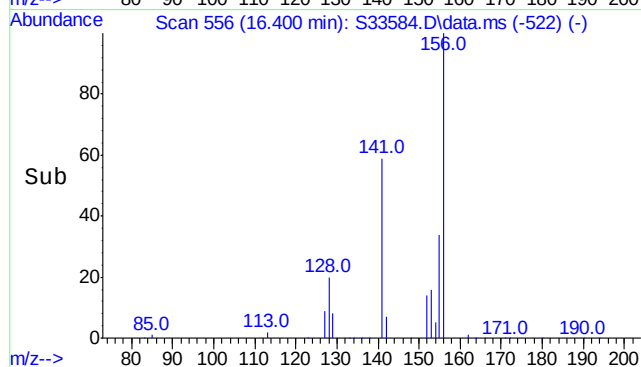
Tgt Ion:142 Resp: 28702
Ion Ratio Lower Upper
142 100
141 47.6 71.0 106.6#





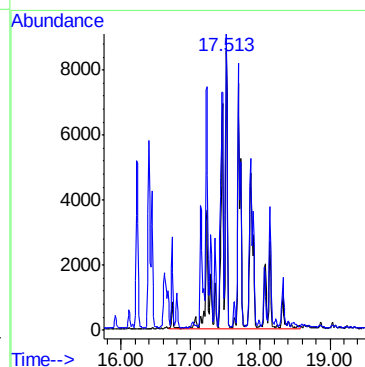
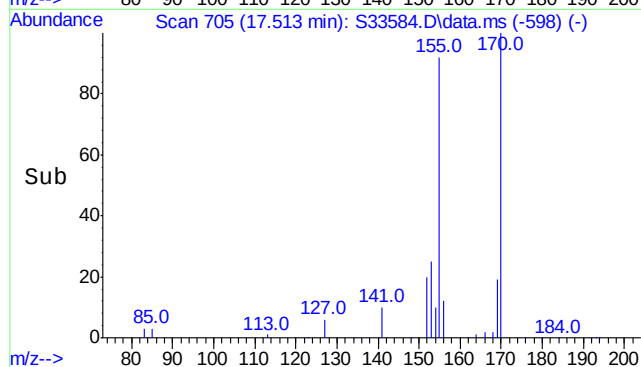
#4
C2-Naphthalenes
Concen: 37.806 ng/mL m
RT: 16.400 min Scan# 556
Delta R.T. -0.057 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

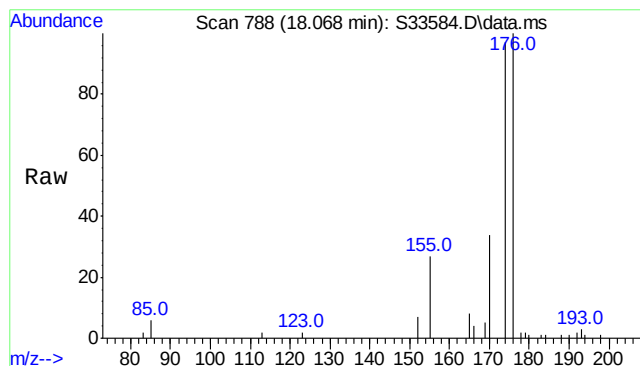
Tgt Ion:156 Resp: 132902
Ion Ratio Lower Upper
156 100
141 10.5 79.0 118.4#



#5
C3-Naphthalenes
Concen: 39.648 ng/mL m
RT: 17.513 min Scan# 705
Delta R.T. -0.146 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

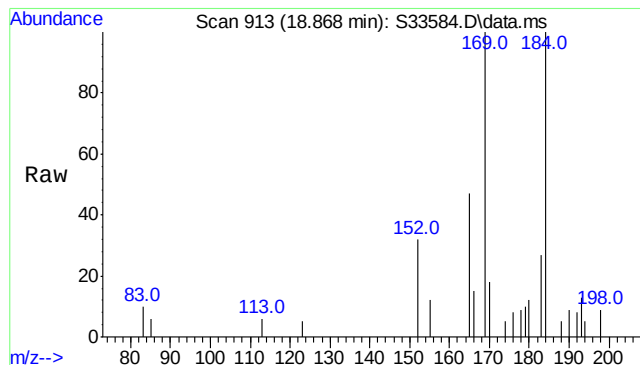
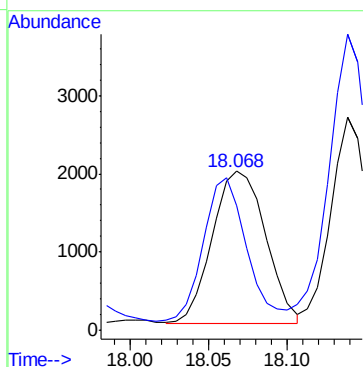
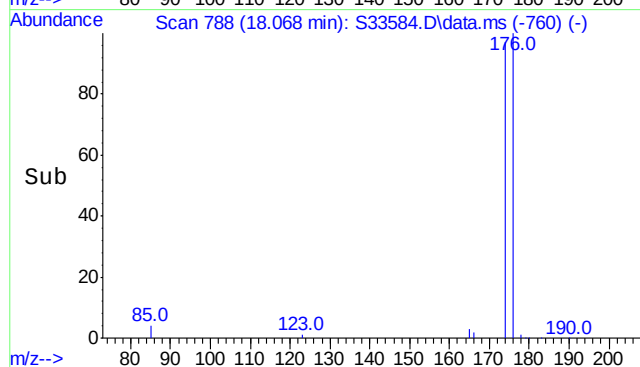
Tgt Ion:170 Resp: 94627
Ion Ratio Lower Upper
170 100
155 15.6 80.7 121.1#





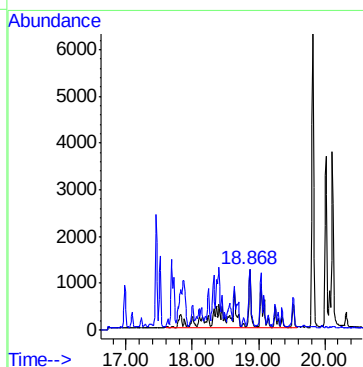
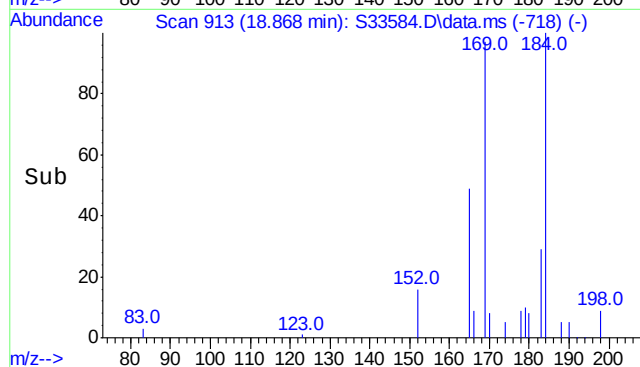
#6
C3-Naphthalenes (Fd10)
Concen: 1.914 µg/mL
RT: 18.068 min Scan# 788
Delta R.T. -0.019 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

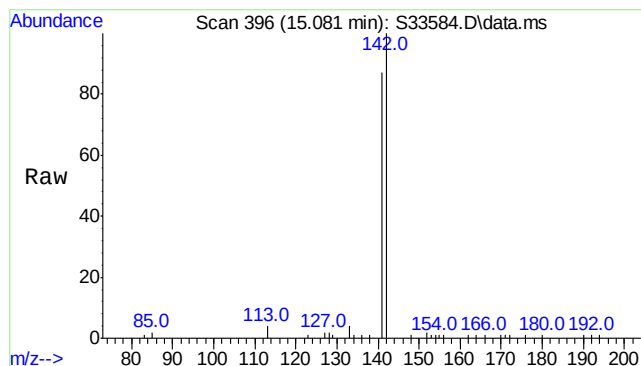
Tgt Ion:170 Resp: 4567
Ion Ratio Lower Upper
170 100
155 76.6 0.0 0.0#



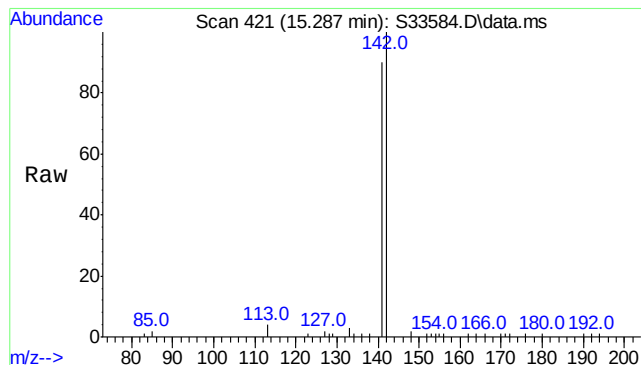
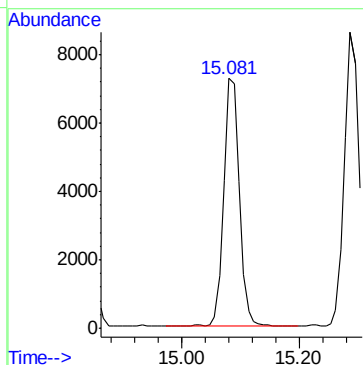
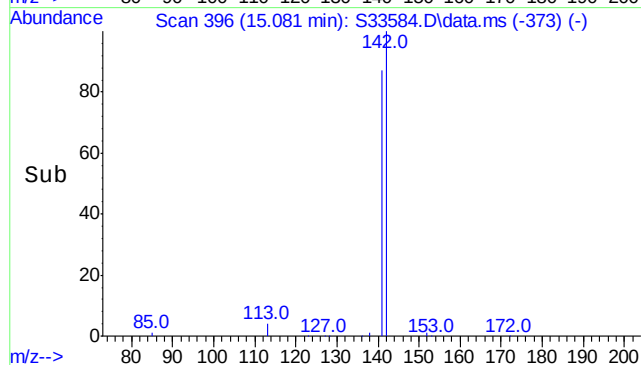
#7
C4-Naphthalenes
Concen: 17.696 ng/mL m
RT: 18.868 min Scan# 913
Delta R.T. -0.063 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

Tgt Ion:184 Resp: 20668
Ion Ratio Lower Upper
184 100
169 13.4 80.1 120.1#

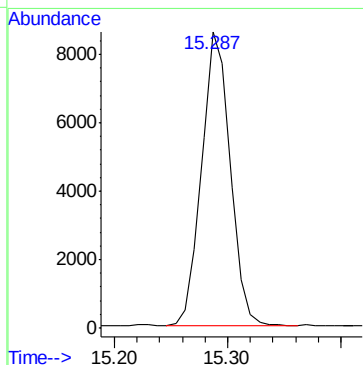
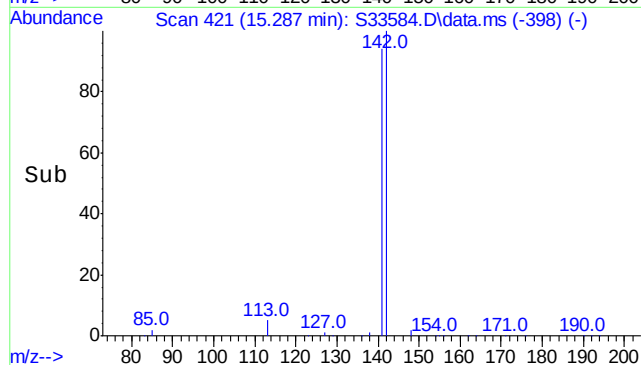


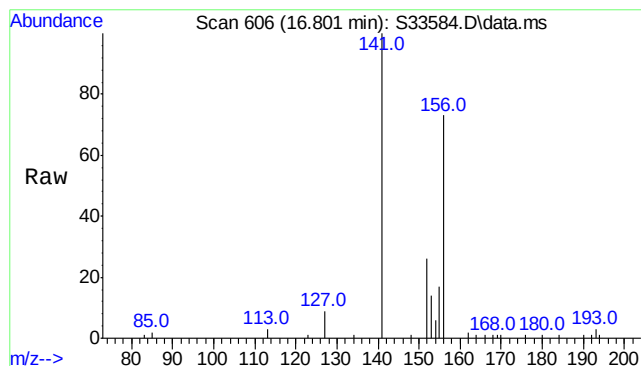


#9
 2-Methylnaphthalene
 Concen: 5.594 ng/mL
 RT: 15.081 min Scan# 396
 Delta R.T. -0.008 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm
 Tgt Ion:142 Resp: 13453



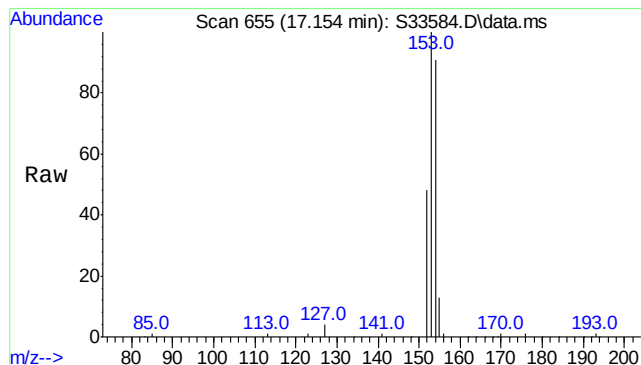
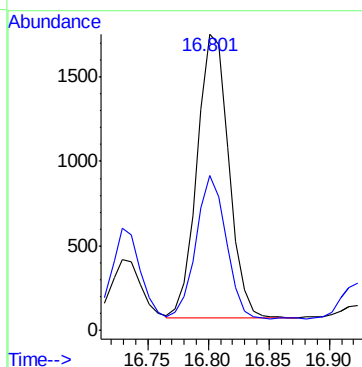
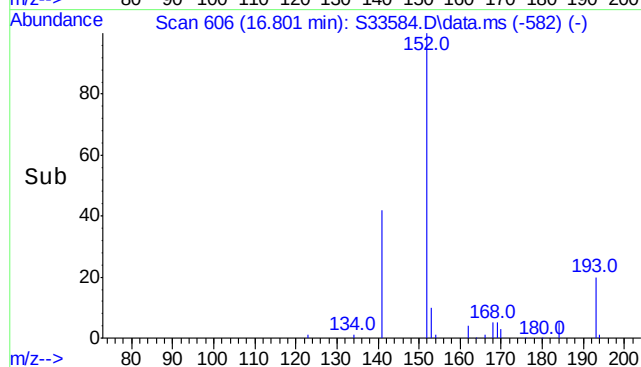
#11
 1-Methylnaphthalene
 Concen: 8.149 ng/mL
 RT: 15.287 min Scan# 421
 Delta R.T. -0.008 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm
 Tgt Ion:142 Resp: 15036





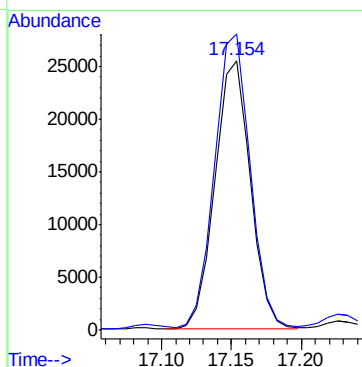
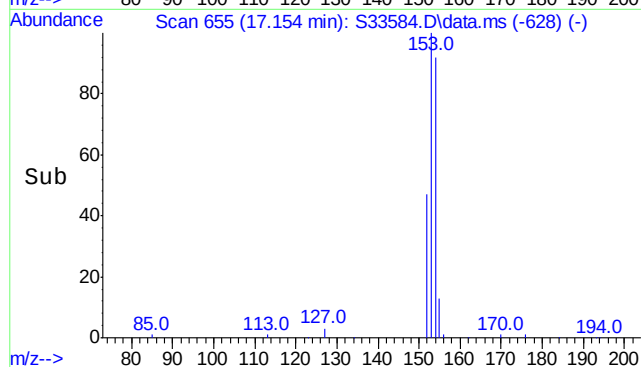
#13
 Acenaphthylene
 Concen: 1.396 ng/mL
 RT: 16.801 min Scan# 606
 Delta R.T. -0.015 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

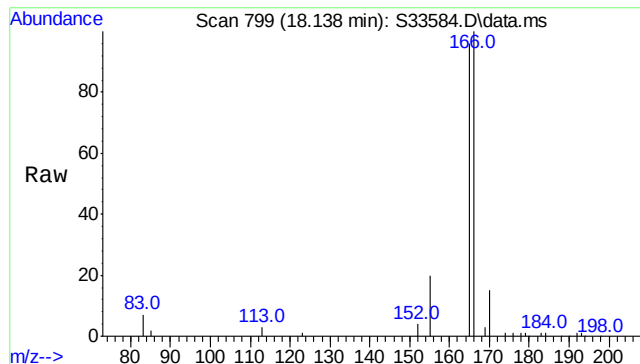
Tgt Ion:152 Resp: 3044
 Ion Ratio Lower Upper
 152 100
 153 48.2 0.0 0.0#



#14
 Acenaphthene
 Concen: 17.964 ng/mL
 RT: 17.154 min Scan# 655
 Delta R.T. -0.007 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

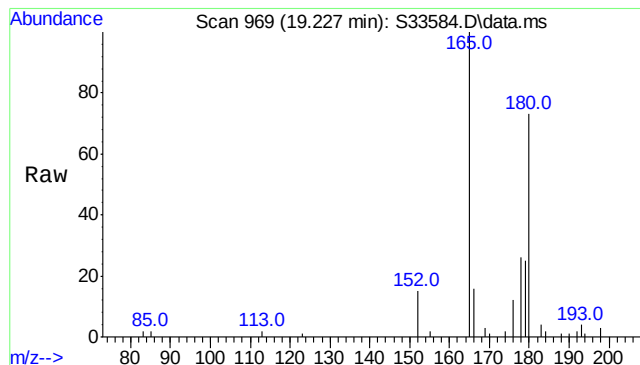
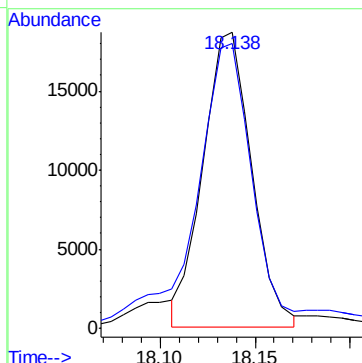
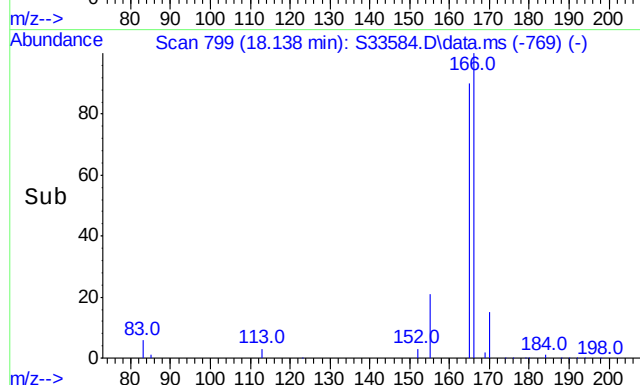
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 Ion Ratio Lower Upper
 154 100
 153 110.4 86.6 129.8





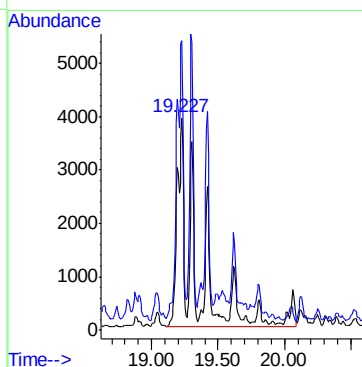
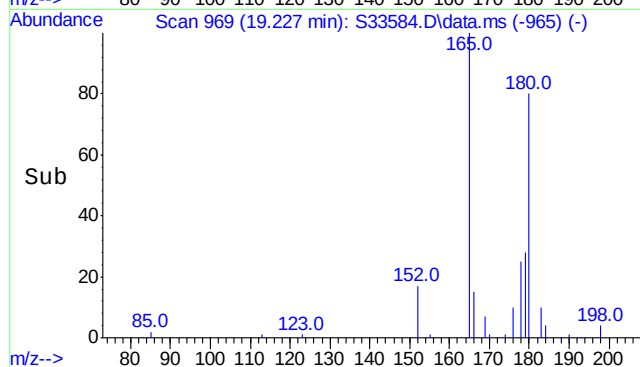
#16
 Fluorene
 Concen: 7.548 ng/mL m
 RT: 18.138 min Scan# 799
 Delta R.T. -0.007 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

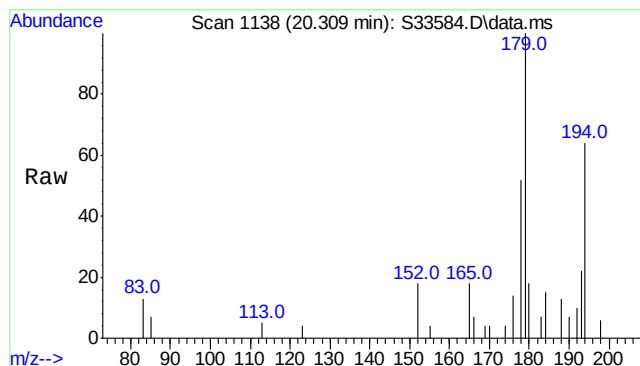
Tgt Ion:166 Resp: 33384
 Ion Ratio Lower Upper
 166 100
 165 110.8 76.4 114.6



#17
 C1-Fluorenes
 Concen: 8.551 ng/mL m
 RT: 19.227 min Scan# 969
 Delta R.T. -0.085 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

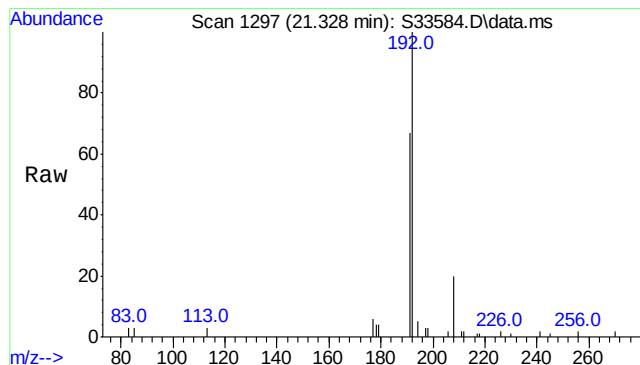
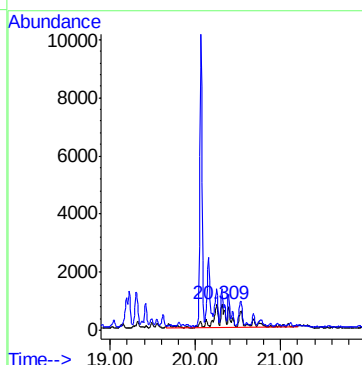
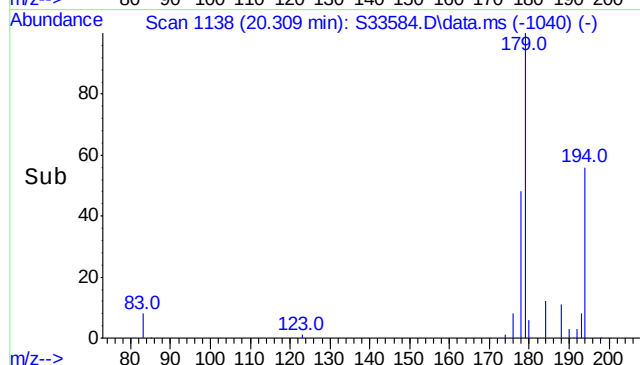
Tgt Ion:180 Resp: 32093
 Ion Ratio Lower Upper
 180 100
 165 28.0 111.1 166.7#





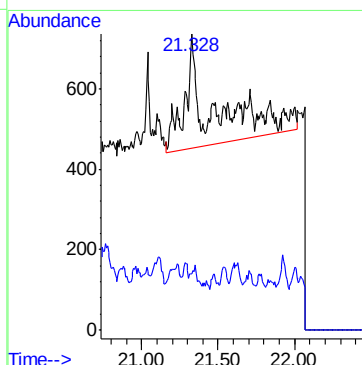
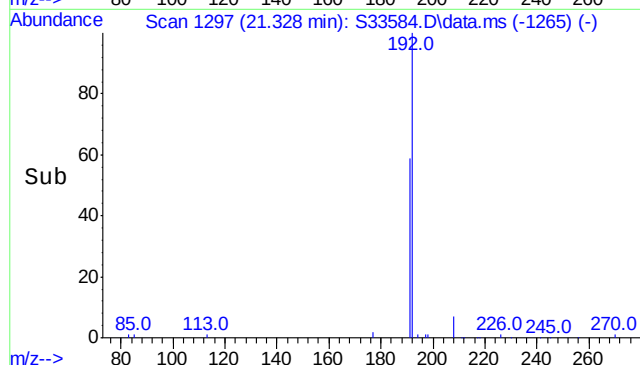
#18
C2-Fluorenes
Concen: 4.464 ng/mL m
RT: 20.309 min Scan# 1138
Delta R.T. -0.005 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

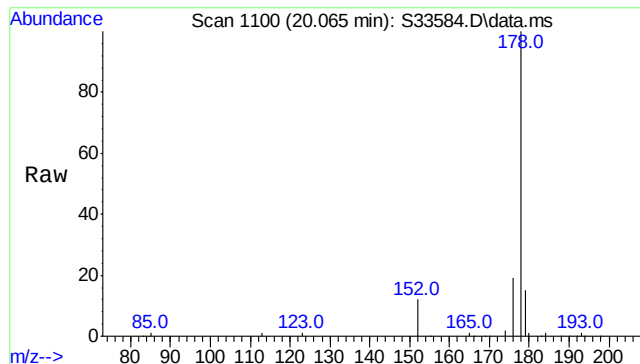
Tgt Ion:194 Resp: 12793
Ion Ratio Lower Upper
194 100
179 24.0 131.8 197.6#



#19
C3-Fluorenes
Concen: 1.336 ng/mL m
RT: 21.328 min Scan# 1297
Delta R.T. -0.024 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

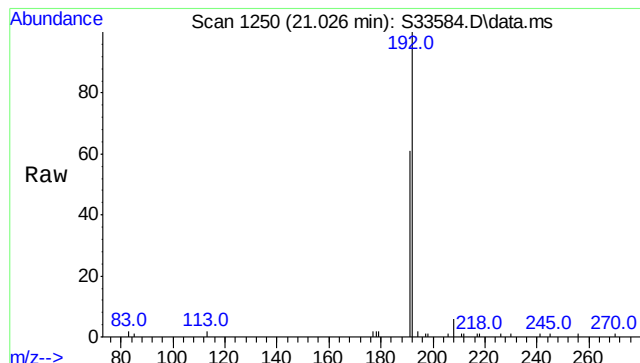
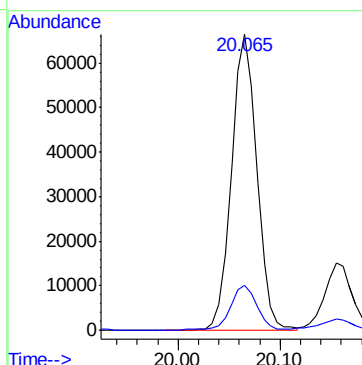
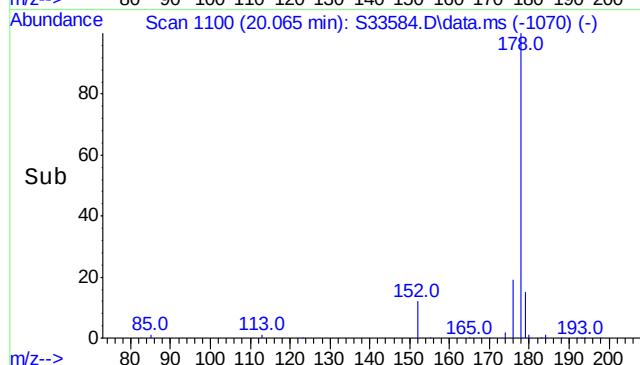
Tgt Ion:208 Resp: 3571
Ion Ratio Lower Upper
208 100
178 3.1 43.4 65.2#





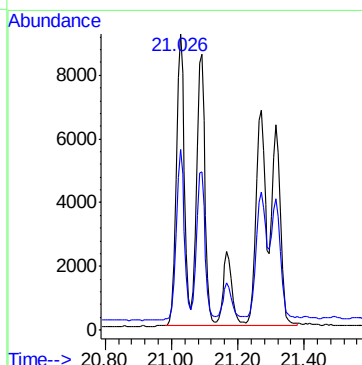
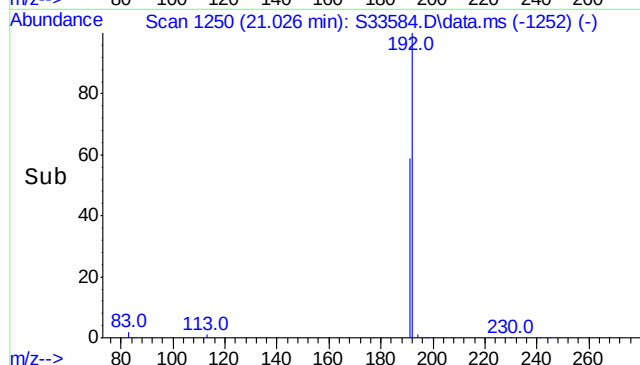
#21
Phenanthrene
Concen: 10.207 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

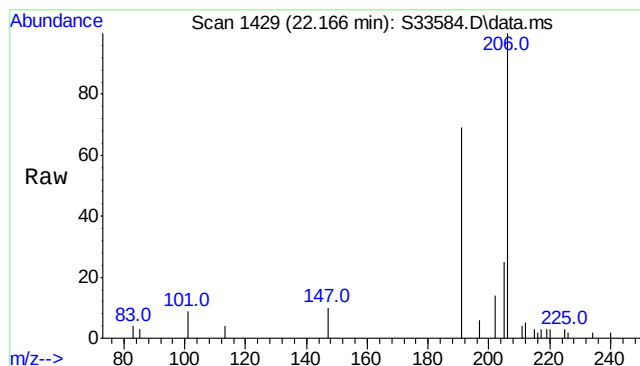
Tgt Ion:178 Resp: 114403
Ion Ratio Lower Upper
178 100
179 15.4 12.4 18.6



#22
C1-Phenanthrenes/anthracenes
Concen: 4.787 ng/mL m
RT: 21.026 min Scan# 1250
Delta R.T. -0.127 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

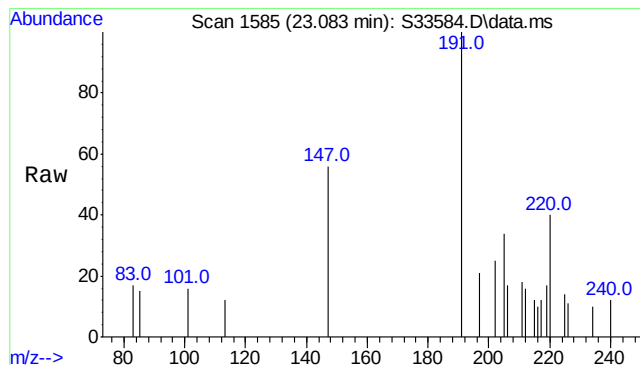
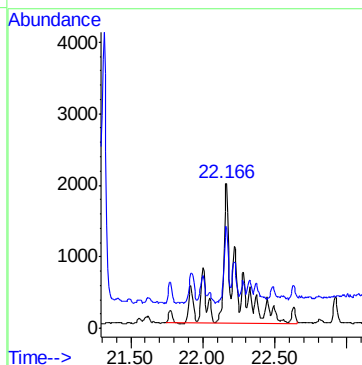
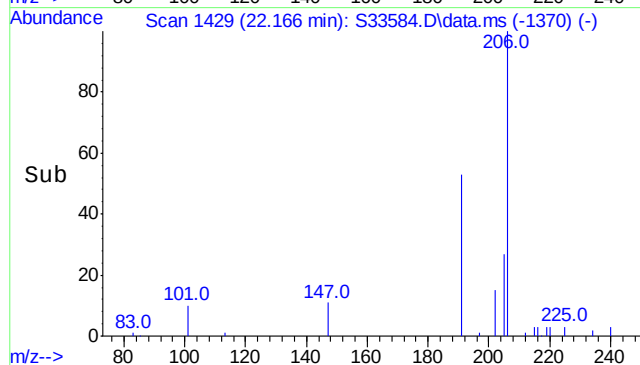
Tgt Ion:192 Resp: 59286
Ion Ratio Lower Upper
192 100
191 3.2 45.1 67.7#





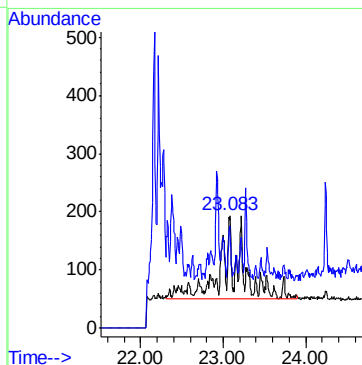
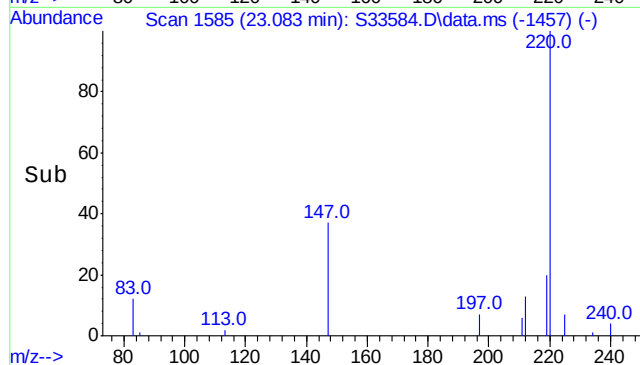
#23
 C2-Phenanthrenes/anthracenes
 Concen: 3.229 ng/mL m
 RT: 22.166 min Scan# 1429
 Delta R.T. -0.057 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

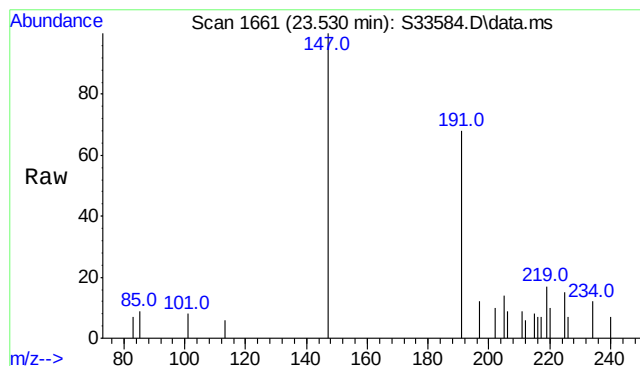
Tgt Ion	Ratio	Lower	Upper
206	100		
191	7.3	45.1	67.7#



#24
 C3-Phenanthrenes/anthracenes
 Concen: 1.285 ng/mL m
 RT: 23.083 min Scan# 1585
 Delta R.T. -0.058 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

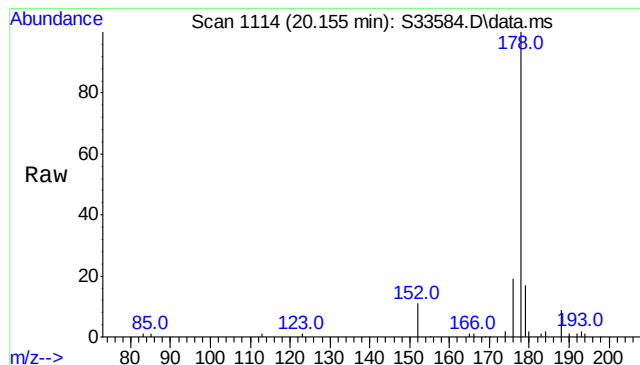
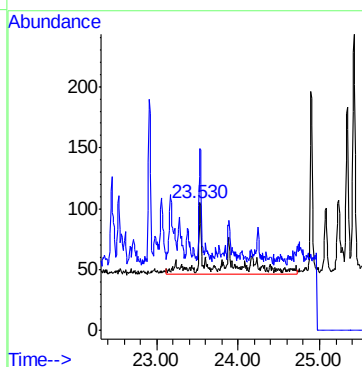
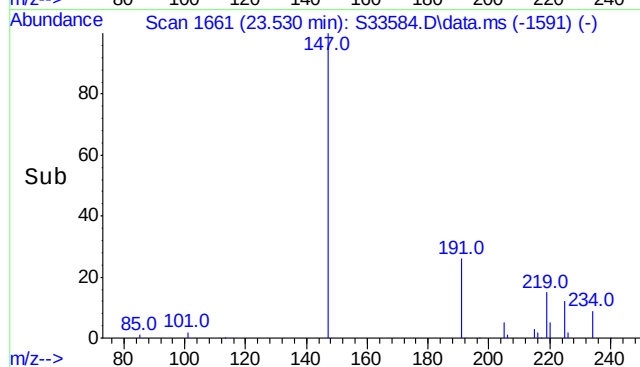
Tgt Ion	Ratio	Lower	Upper
220	100		
205	7.4	45.1	67.7#





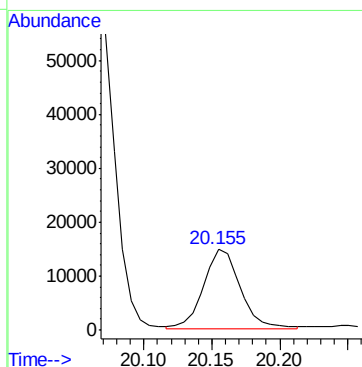
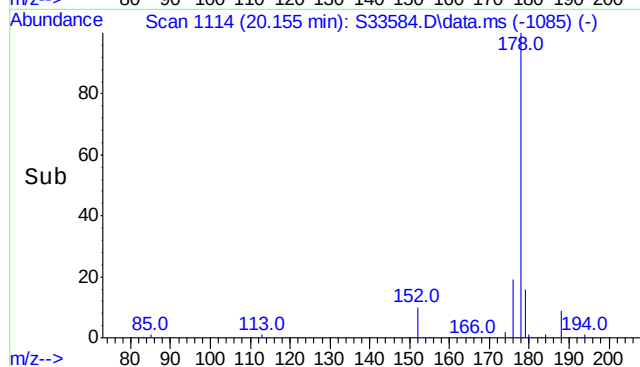
#25
C4-Phenanthrenes/anthracenes
Concen: 0.741 ng/mL m
RT: 23.530 min Scan# 1661
Delta R.T. -0.699 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

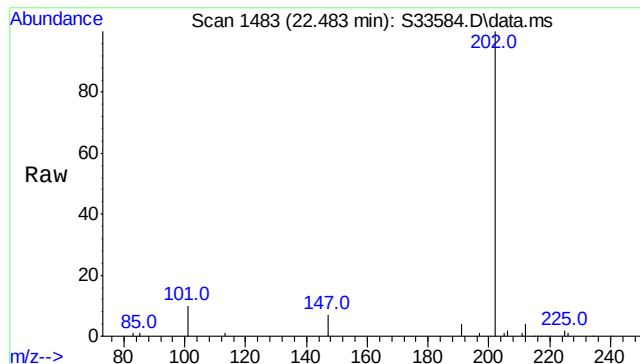
Tgt Ion:234 Resp: 647
Ion Ratio Lower Upper
234 100
219 0.0 53.0 79.6#



#27
Anthracene
Concen: 2.077 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

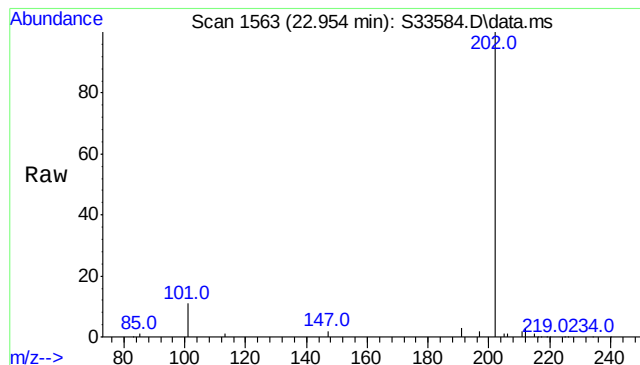
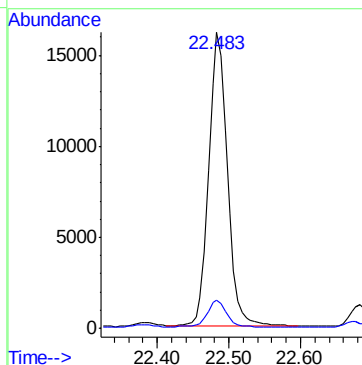
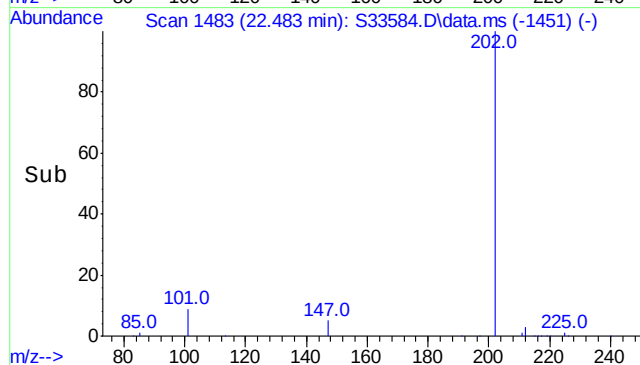
Tgt Ion:178 Resp: 27690





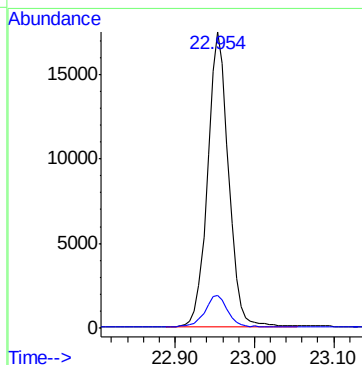
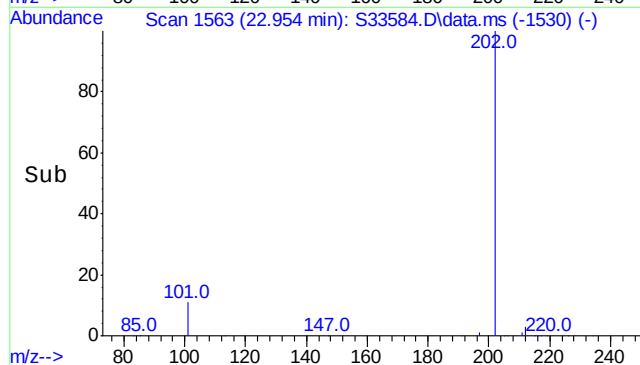
#29
 Fluoranthene
 Concen: 1.295 ng/mL
 RT: 22.483 min Scan# 1483
 Delta R.T. -0.012 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

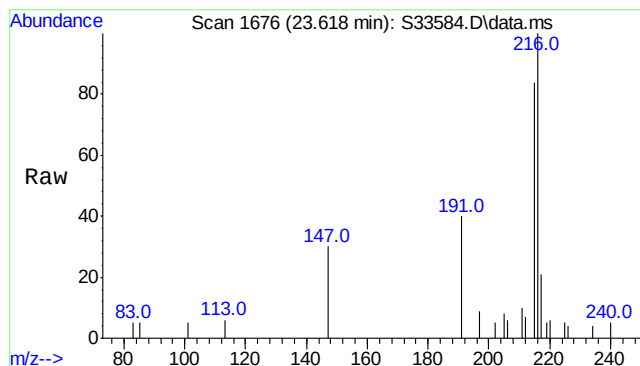
Tgt Ion	Ratio	Lower	Upper
202	100		
101	9.6	14.3	21.5#



#31
 Pyrene
 Concen: 1.339 ng/mL
 RT: 22.954 min Scan# 1563
 Delta R.T. -0.006 min
 Lab File: S33584.D
 Acq: 16 Sep 2013 4:09 pm

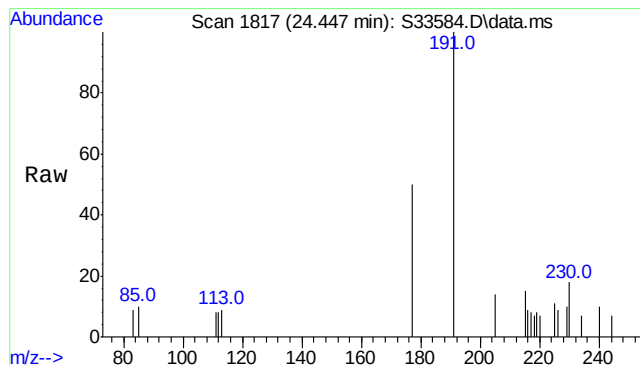
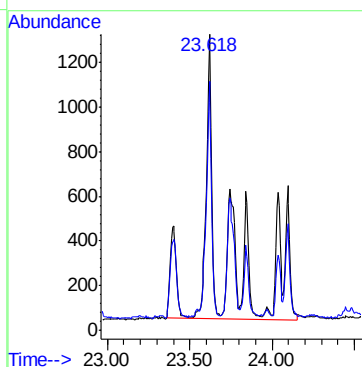
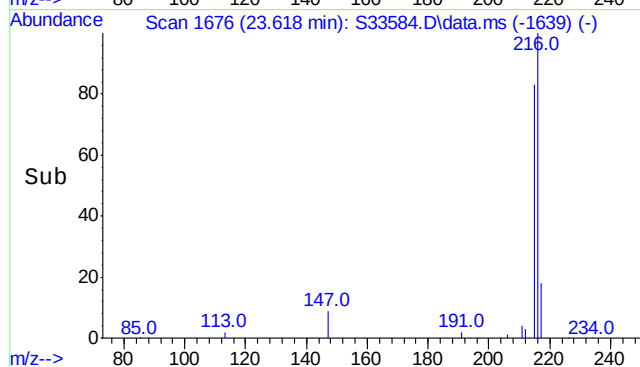
Tgt Ion	Ratio	Lower	Upper
202	100		
101	11.9	16.6	24.8#





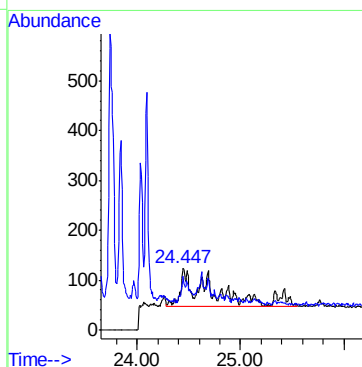
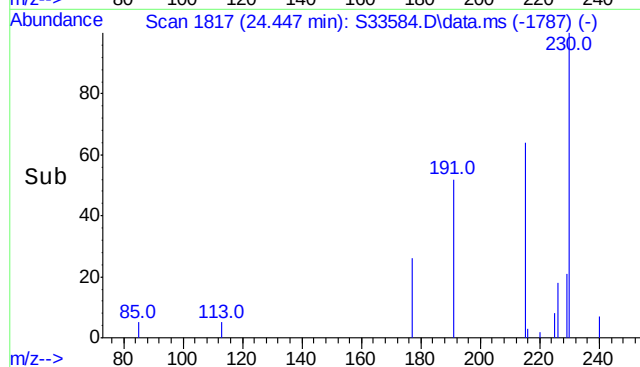
#32
C1-Fluoranthenes/pyrenes
Concen: 0.607 ng/mL m
RT: 23.618 min Scan# 1676
Delta R.T. -0.064 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

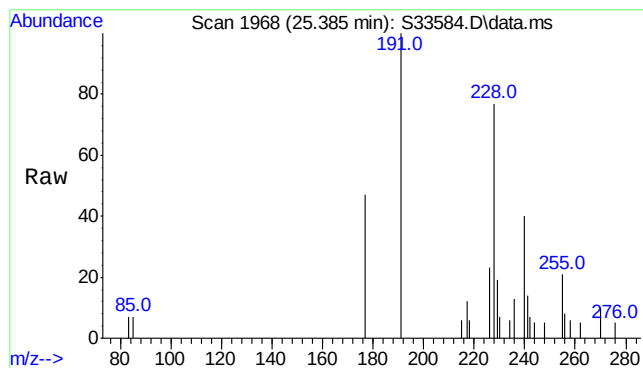
Tgt Ion:216 Resp: 9339
Ion Ratio Lower Upper
216 100
215 26.0 67.0 100.6#



#33
C2-Fluoranthenes/pyrenes
Concen: 0.067 ng/mL m
RT: 24.447 min Scan# 1817
Delta R.T. -0.064 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

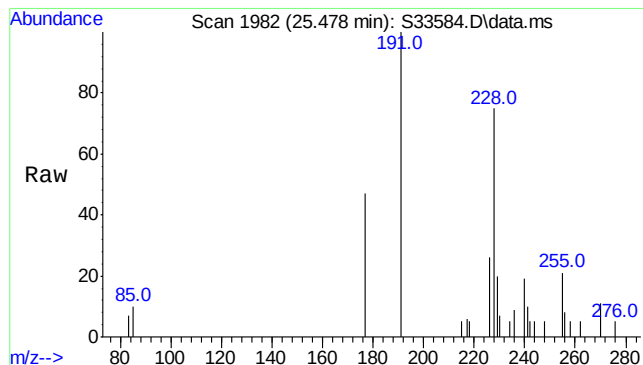
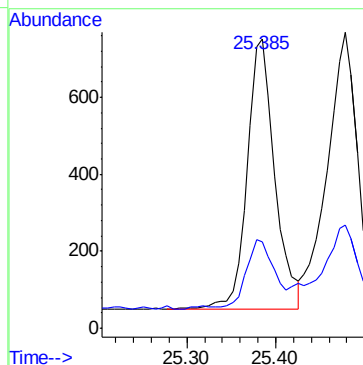
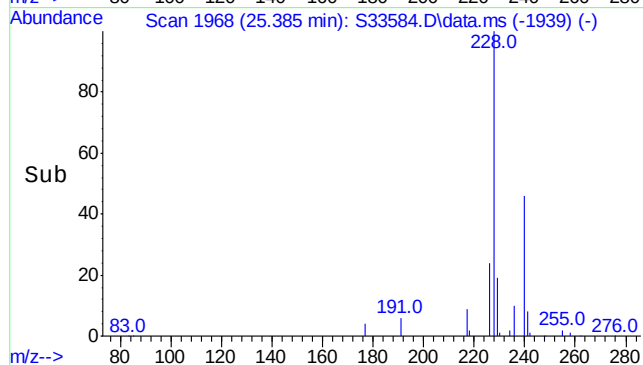
Tgt Ion:230 Resp: 1592
Ion Ratio Lower Upper
230 100
215 4.8 51.4 77.2#





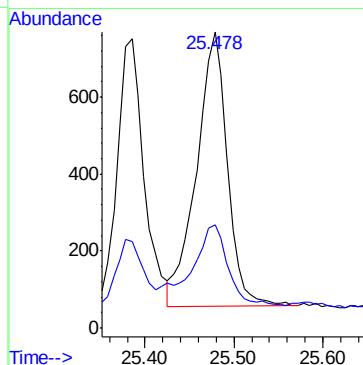
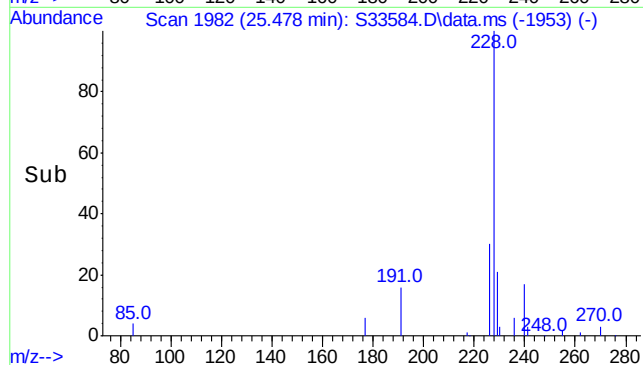
#36
Benz(a)anthracene
Concen: 0.057 ng/mL
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

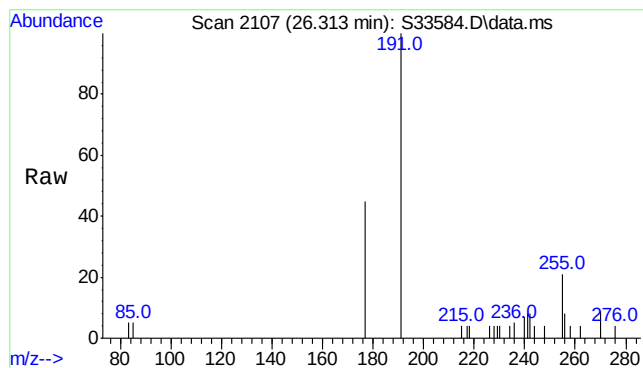
Tgt Ion:228 Resp: 1519
Ion Ratio Lower Upper
228 100
226 24.6 23.7 35.5



#38
Chrysene
Concen: 0.059 ng/mL
RT: 25.478 min Scan# 1982
Delta R.T. -0.007 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

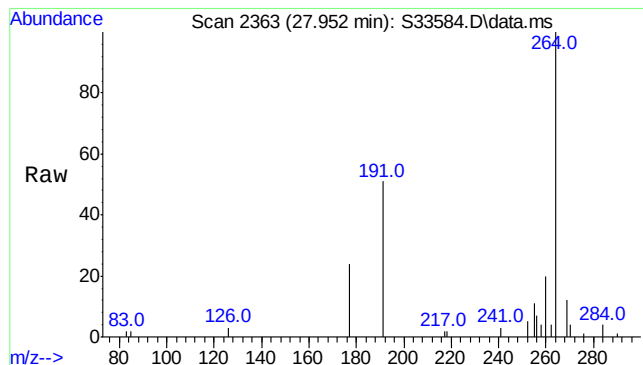
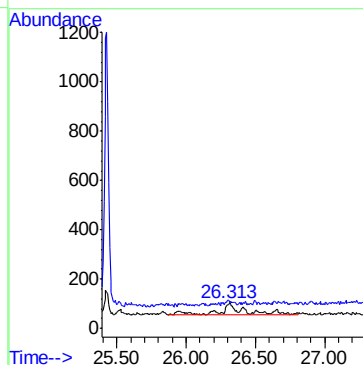
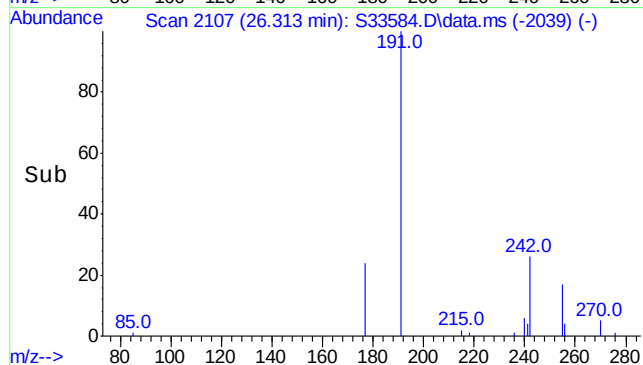
Tgt Ion:228 Resp: 1706
Ion Ratio Lower Upper
228 100
226 33.6 26.0 39.0





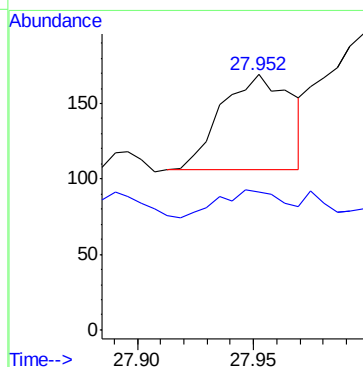
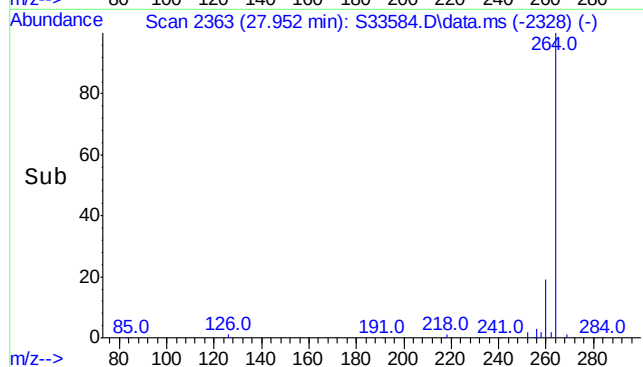
#39
C1-Benz(a)anthracenes/chrysenes
Concen: 0.035 ng/mL m
RT: 26.313 min Scan# 2107
Delta R.T. -0.045 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

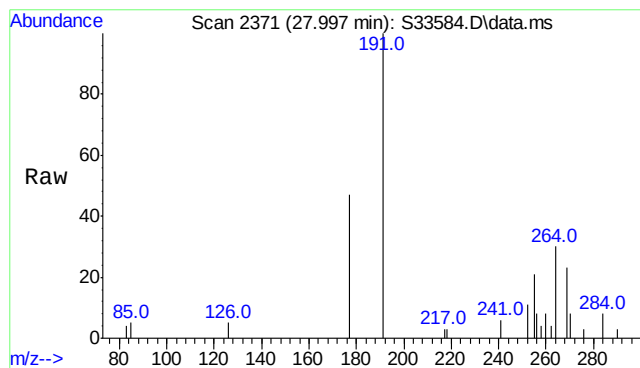
Tgt Ion:242 Resp: 594
Ion Ratio Lower Upper
242 100
241 7.4 27.2 40.8#



#44
Benzo(b)fluoranthene
Concen: 0.003 ng/mL
RT: 27.952 min Scan# 2363
Delta R.T. -0.006 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

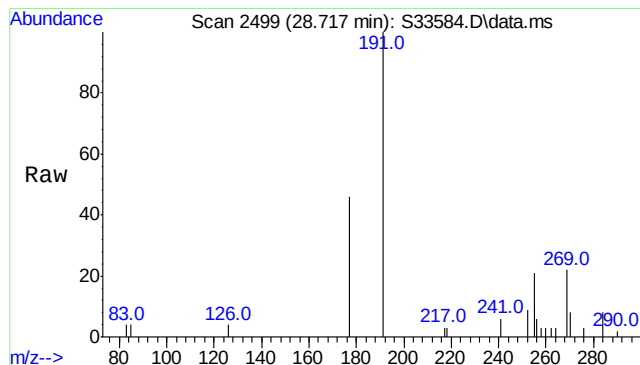
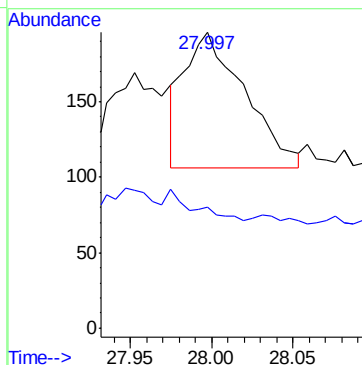
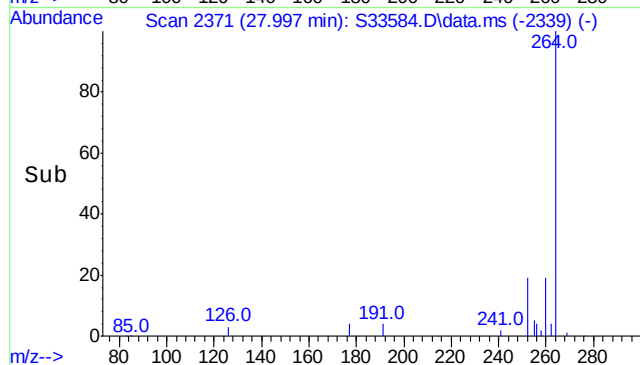
Tgt Ion:252 Resp: 132
Ion Ratio Lower Upper
252 100
126 27.3 23.0 34.4





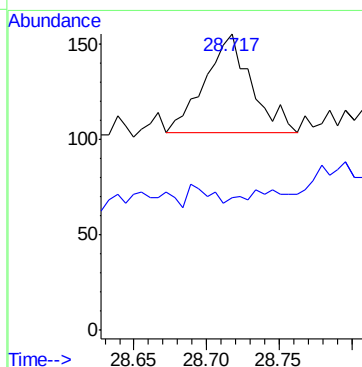
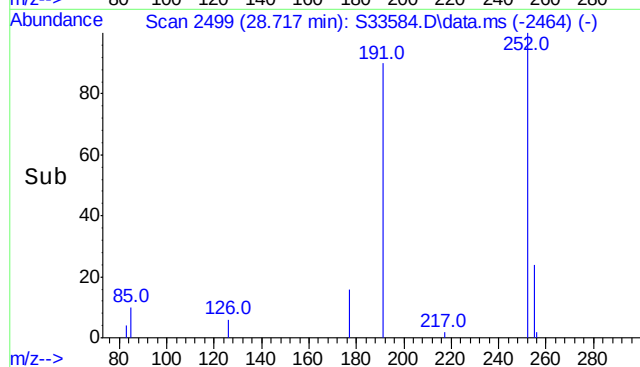
#46
Benzo(k)fluoranthene
Concen: 0.006 ng/mL m
RT: 27.997 min Scan# 2371
Delta R.T. -0.023 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

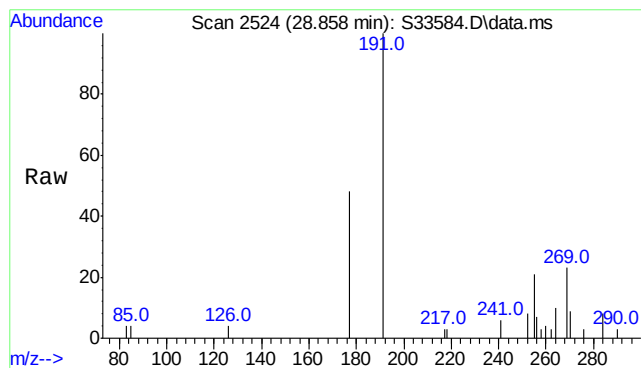
Tgt Ion:252 Resp: 234
Ion Ratio Lower Upper
252 100
126 15.4 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.003 ng/mL
RT: 28.717 min Scan# 2499
Delta R.T. -0.006 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

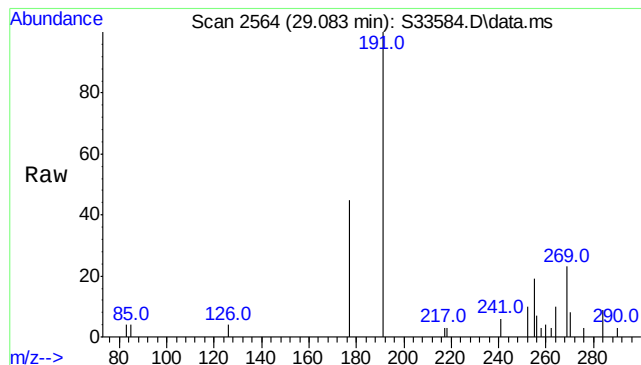
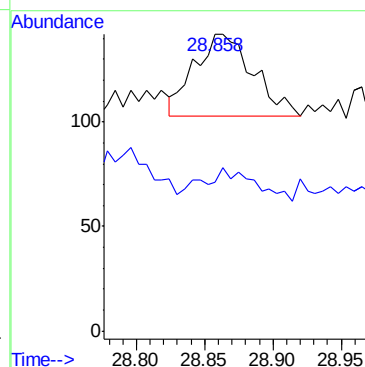
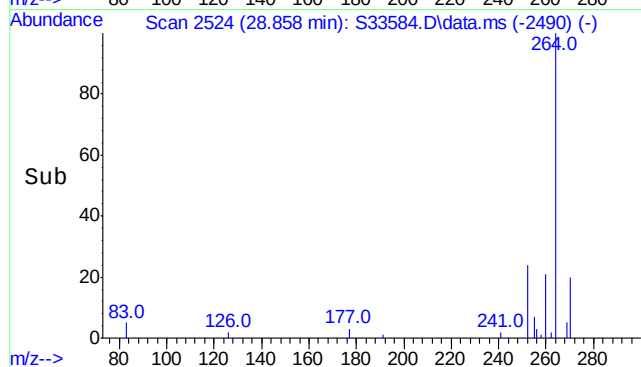
Tgt Ion:252 Resp: 116
Ion Ratio Lower Upper
252 100
126 0.0 22.6 34.0#





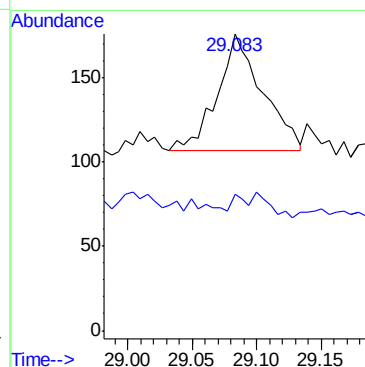
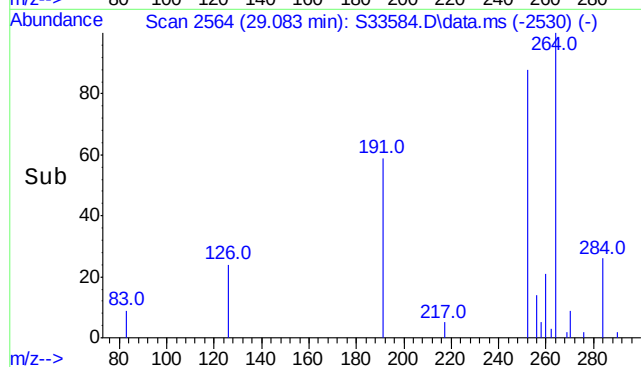
#49
Benzo(a)pyrene
Concen: 0.005 ng/mL
RT: 28.858 min Scan# 2524
Delta R.T. -0.011 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

Tgt Ion:252 Resp: 115
Ion Ratio Lower Upper
252 100
126 36.5 25.1 37.7



#51
Perylene
Concen: 0.008 ng/mL
RT: 29.083 min Scan# 2564
Delta R.T. -0.011 min
Lab File: S33584.D
Acq: 16 Sep 2013 4:09 pm

Tgt Ion:252 Resp: 167
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33635.D
 Acq On : 21 Sep 2013 5:54 am
 Operator : RUBENP
 Sample : mc24285-2
 Misc : ms29817,mss1494,,,,
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 24 17:55:05 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	37840	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	24314	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	20600	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	16269	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	13775	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	34861	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	40067	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	24468	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	22756	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	11167	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	13602	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	11067	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	11178	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.779	264	7446	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	6178	0.33	ng/mL	-0.02

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.910	128	2773860	2130.060	ng/mL	100
3) C1-Naphthalenes	15.081	142	1483978m	1139.554	ng/mL	
4) C2-Naphthalenes	16.392	156	784490m	304.963	ng/mL	
5) C3-Naphthalenes	17.449	170	281051m	160.923	ng/mL	
7) C4-Naphthalenes	19.521	184	51829m	60.642	ng/mL	
9) 2-Methylnaphthalene	15.081	142	886900	502.547	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	595527	373.310	ng/mL	100
13) Acenaphthylene	16.801	152	35854	15.895	ng/mL#	100
14) Acenaphthene	17.147	154	910046	377.793	ng/mL	98
16) Fluorene	18.132	166	691229m	184.842	ng/mL	
17) C1-Fluorenes	19.220	180	148661m	46.843	ng/mL	
18) C2-Fluorenes	20.245	194	44459m	18.348	ng/mL	
19) C3-Fluorenes	21.315	208	8546m	3.782	ng/mL	
21) Phenanthrene	20.065	178	1896663	215.915	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.084	192	308892m	31.823	ng/mL	
23) C2-Phenanthrenes/anthr...	22.154	206	51998m	14.404	ng/mL	
24) C3-Phenanthrenes/anthr...	23.071	220	11056m	7.300	ng/mL	
25) C4-Phenanthrenes/anthr...	23.812	234	2095m	3.061	ng/mL	
27) Anthracene	20.155	178	382388	37.691	ng/mL	100
29) Fluoranthene	22.477	202	415305	21.061	ng/mL#	80
31) Pyrene	22.948	202	302130	14.165	ng/mL#	79
32) C1-Fluoranthenes/pyrenes	23.612	216	68503m	4.978	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.436	230	10638m	0.499	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.412	244	2293m	0.108	ng/mL	
36) Benz(a)anthracene	25.372	228	24294	0.809	ng/mL	97
38) Chrysene	25.472	228	18896	0.607	ng/mL	97
39) C1-Benz(a)anthracenes/...	26.293	242	4972m	0.272	ng/mL	
44) Benzo(b)fluoranthene	27.941	252	1802	0.040	ng/mL#	69
46) Benzo(k)fluoranthene	27.992	252	2185	0.056	ng/mL#	62
48) Benzo(e)pyrene	28.701	252	1020	0.024	ng/mL#	66
49) Benzo(a)pyrene	28.847	252	1361	0.054	ng/mL#	59
51) Perylene	29.077	252	222	0.009	ng/mL#	41

Quantitation Report (QT Reviewed)

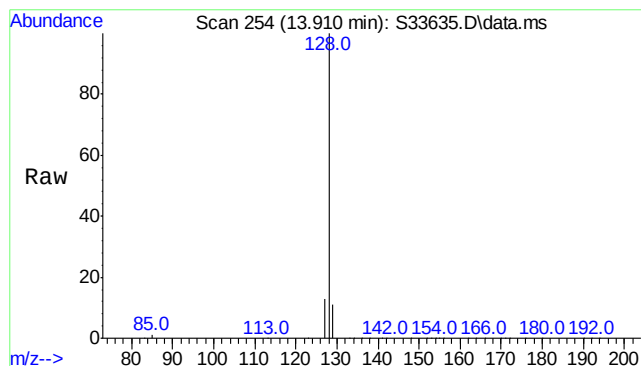
Data Path : Z:\1\data\S130920\
Data File : S33635.D
Acq On : 21 Sep 2013 5:54 am
Operator : RUBENP
Sample : mc24285-2
Misc : ms29817,mss1494,,,,
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 24 17:55:05 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) Indeno(1,2,3-cd)pyrene	32.572	276	153	0.004	ng/mL#	73
54) Benzo(g,h,i)perylene	33.634	276	104m	0.003	ng/mL	

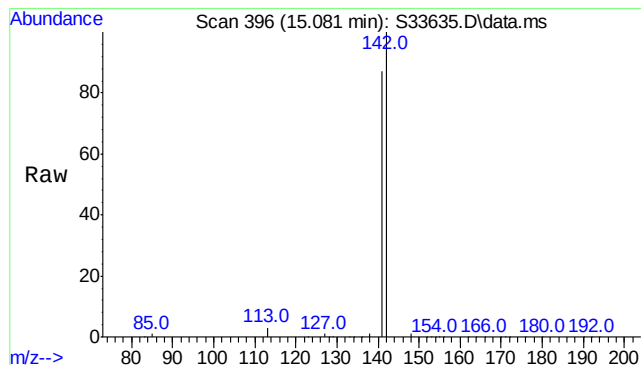
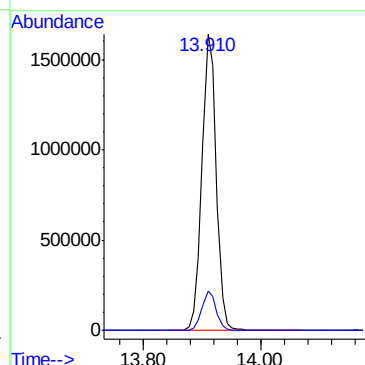
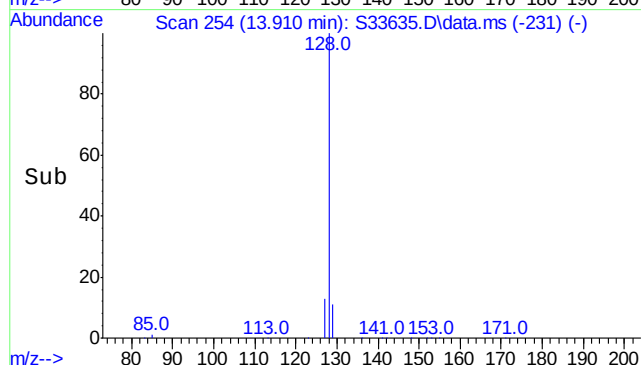
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.1.2
7



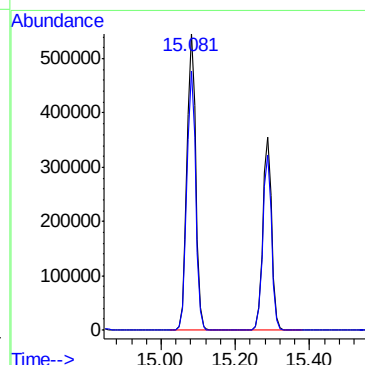
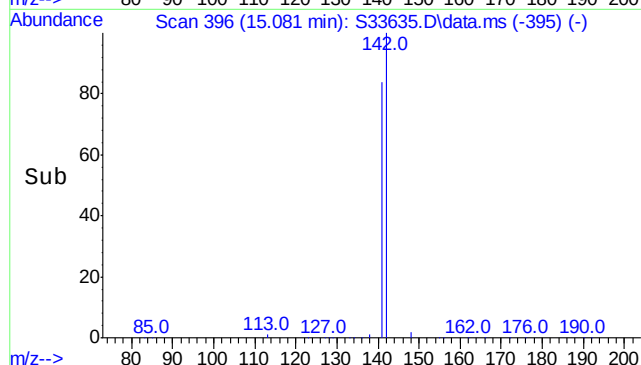
#2
Naphthalene
Concen: 2130.060 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

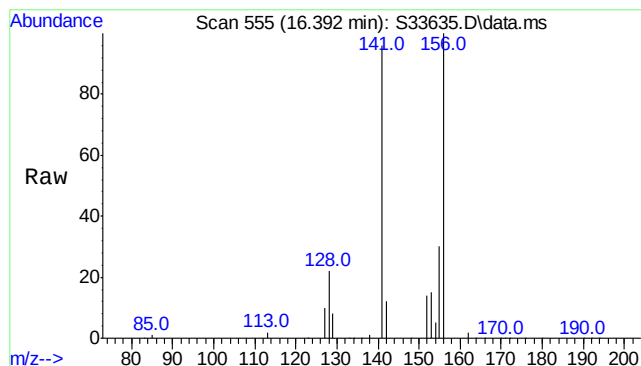
Tgt Ion:128 Resp: 2773860
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



#3
C1-Naphthalenes
Concen: 1139.554 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

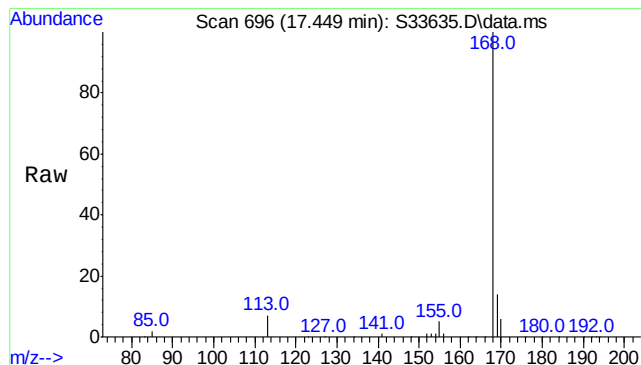
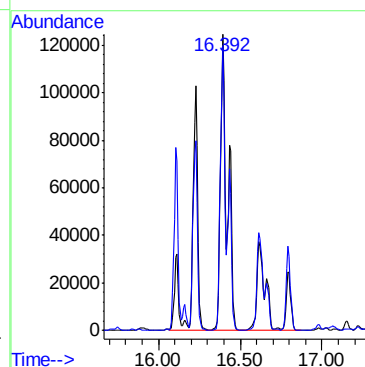
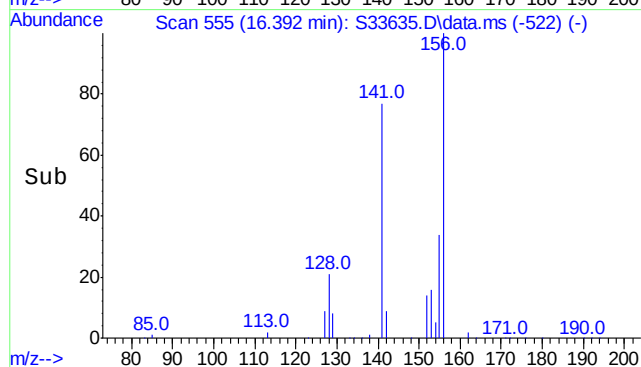
Tgt Ion:142 Resp: 1483978
Ion Ratio Lower Upper
142 100
141 36.4 71.0 106.6#





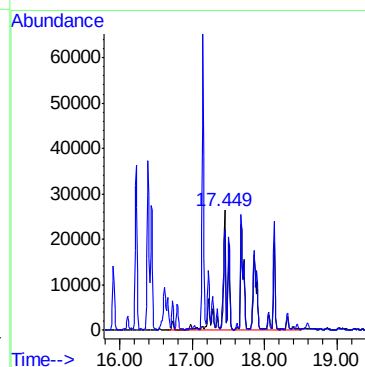
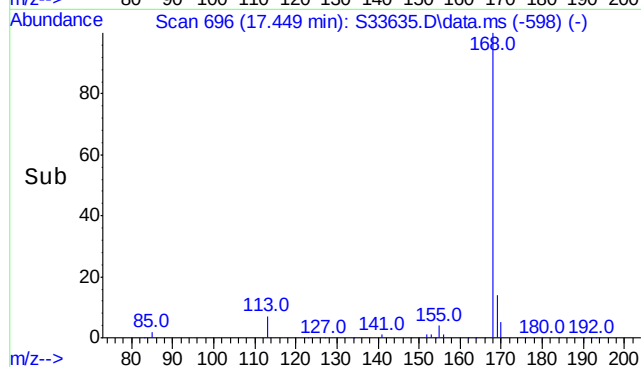
#4
C2-Naphthalenes
Concen: 304.963 ng/mL m
RT: 16.392 min Scan# 555
Delta R.T. -0.065 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

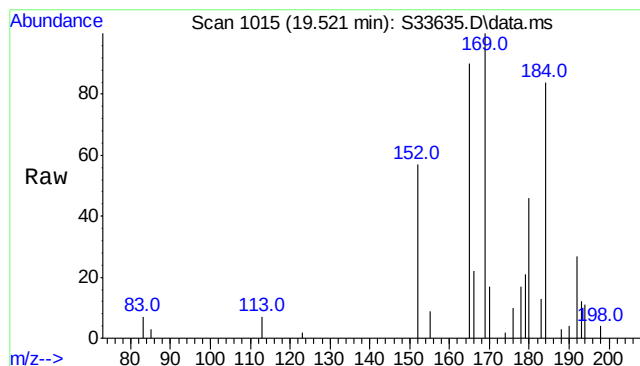
Tgt Ion:156 Resp: 784490
Ion Ratio Lower Upper
156 100
141 13.2 79.0 118.4#



#5
C3-Naphthalenes
Concen: 160.923 ng/mL m
RT: 17.449 min Scan# 696
Delta R.T. -0.210 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

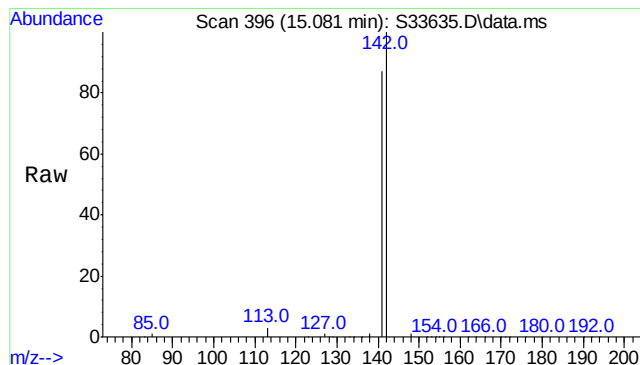
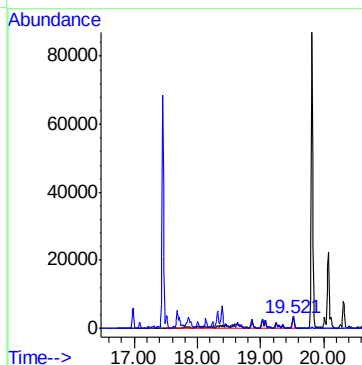
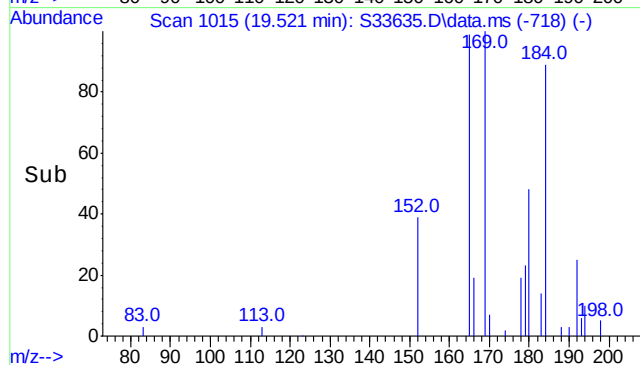
Tgt Ion:170 Resp: 281051
Ion Ratio Lower Upper
170 100
155 15.6 80.7 121.1#





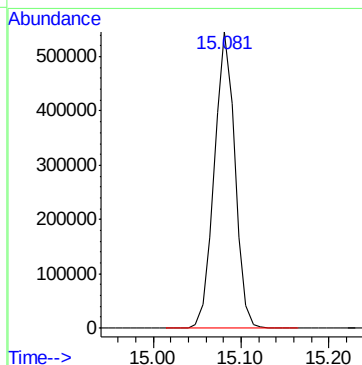
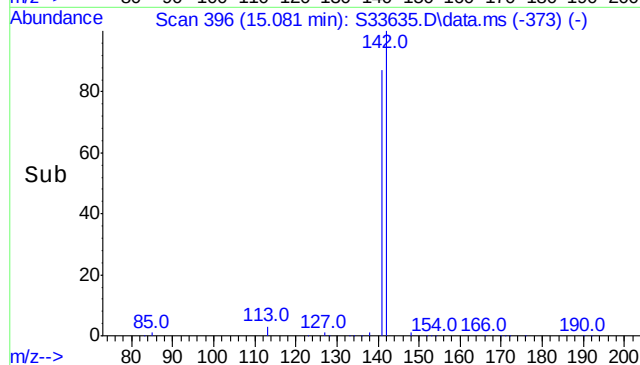
#7
C4-Naphthalenes
Concen: 60.642 ng/mL m
RT: 19.521 min Scan# 1015
Delta R.T. 0.590 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

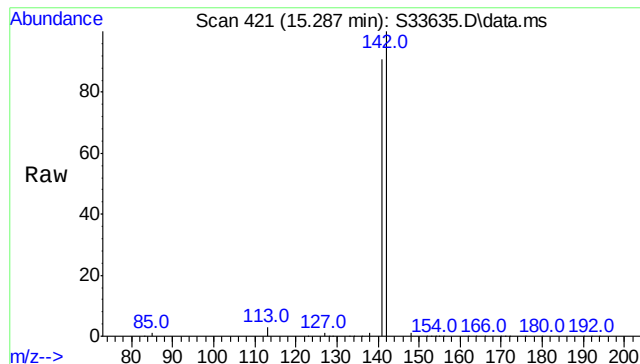
Tgt Ion:184 Resp: 51829
Ion Ratio Lower Upper
184 100
169 11.0 80.1 120.1#



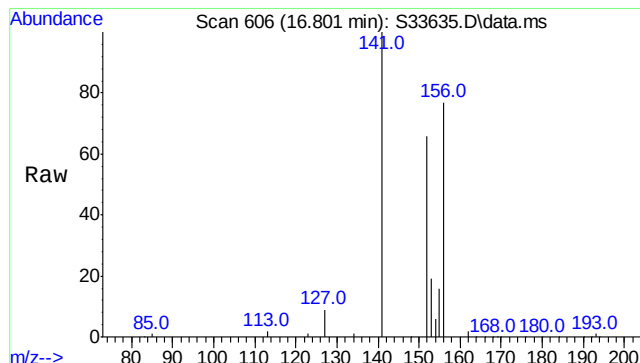
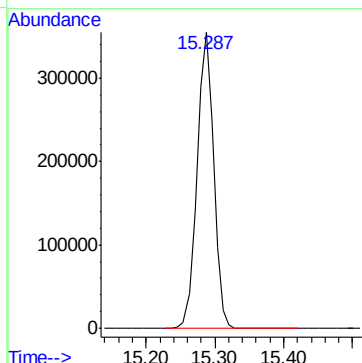
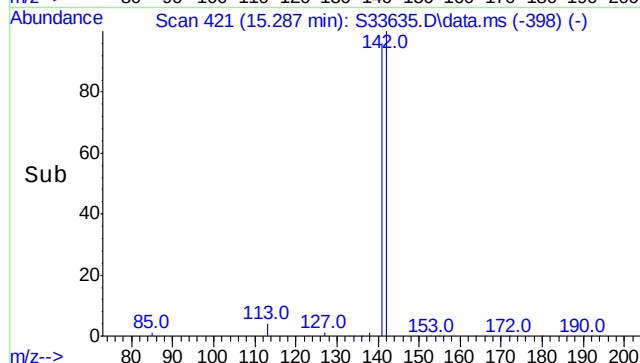
#9
2-Methylnaphthalene
Concen: 502.547 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

Tgt Ion:142 Resp: 886900

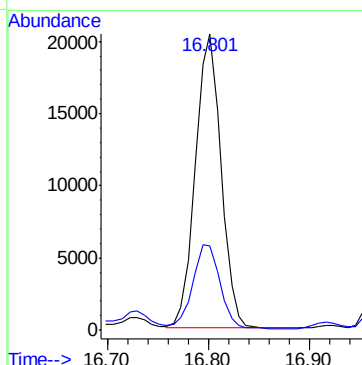
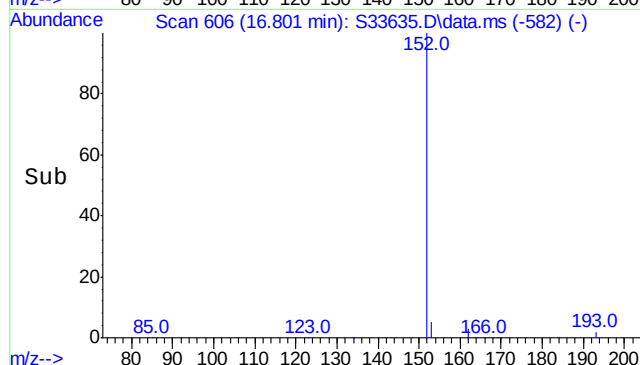


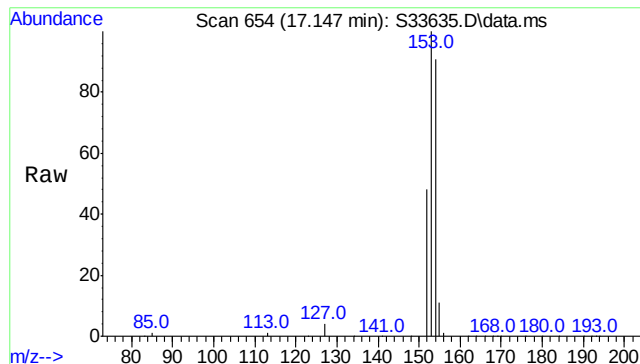


#11
1-Methylnaphthalene
Concen: 373.310 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am
Tgt Ion:142 Resp: 595527



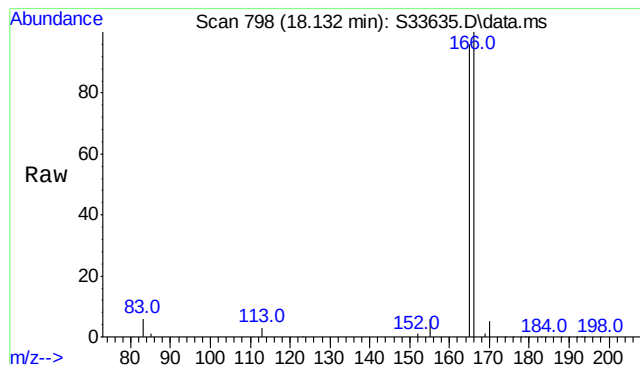
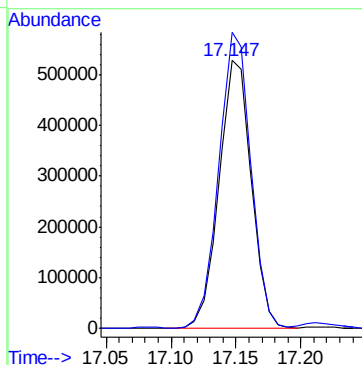
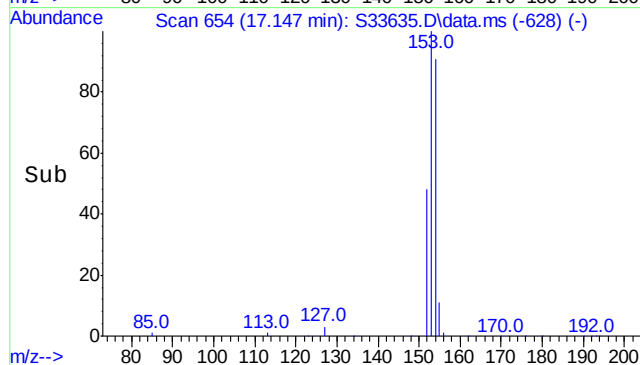
#13
Acenaphthylene
Concen: 15.895 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am
Tgt Ion:152 Resp: 35854
Ion Ratio Lower Upper
152 100
153 30.3 0.0 0.0#





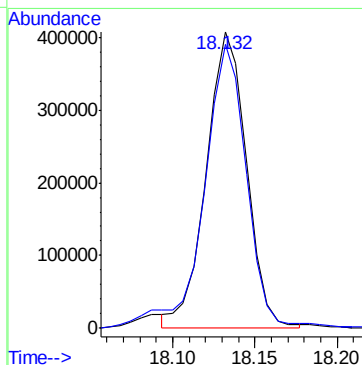
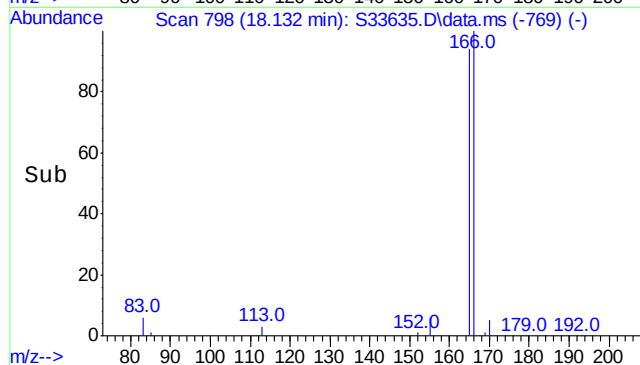
#14
Acenaphthene
Concen: 377.793 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

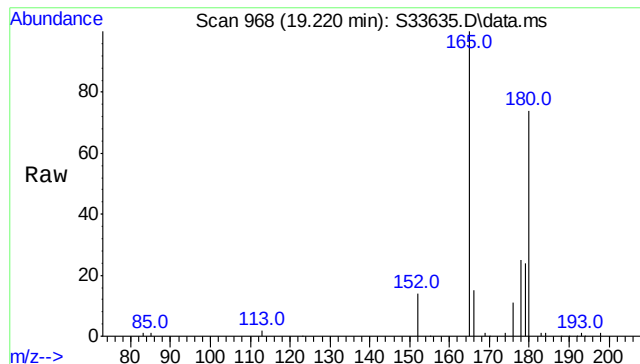
Tgt Ion:154 Resp: 910046
Ion Ratio Lower Upper
154 100
153 109.9 86.6 129.8



#16
Fluorene
Concen: 184.842 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

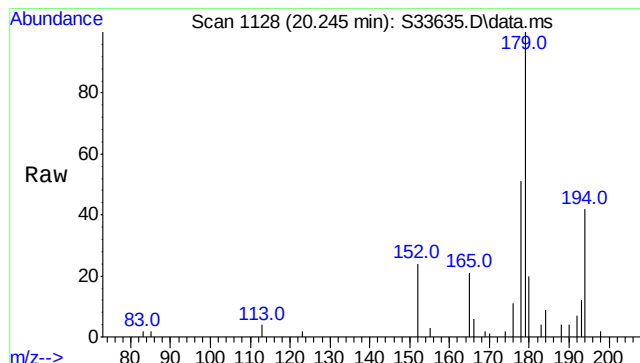
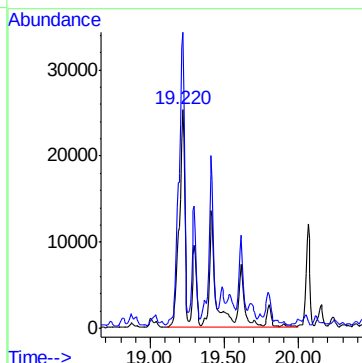
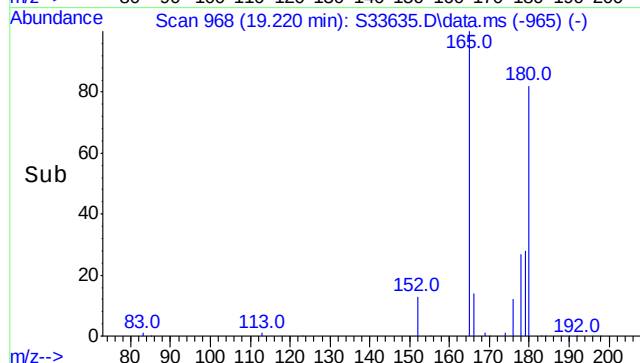
Tgt Ion:166 Resp: 691229
Ion Ratio Lower Upper
166 100
165 101.8 76.4 114.6





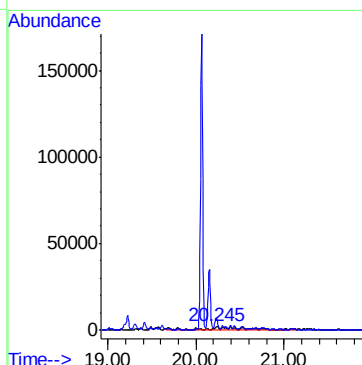
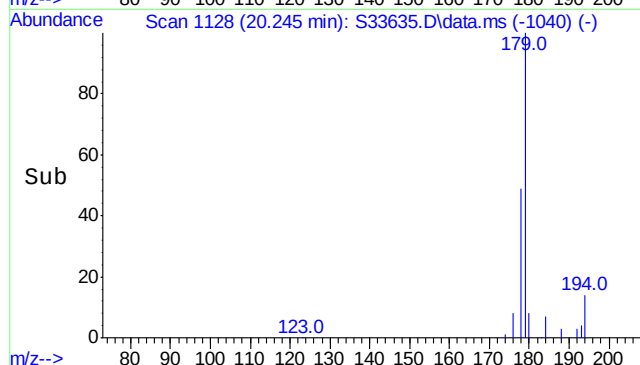
#17
C1-Fluorenes
Concen: 46.843 ng/mL m
RT: 19.220 min Scan# 968
Delta R.T. -0.092 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

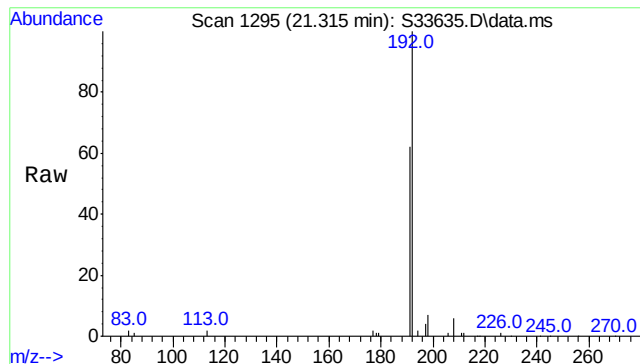
Tgt Ion:180 Resp: 148661
Ion Ratio Lower Upper
180 100
165 15.8 111.1 166.7#



#18
C2-Fluorenes
Concen: 18.348 ng/mL m
RT: 20.245 min Scan# 1128
Delta R.T. -0.069 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

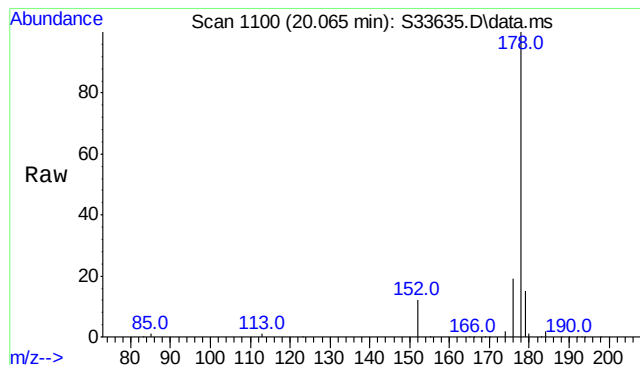
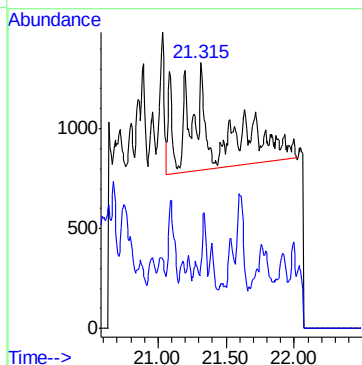
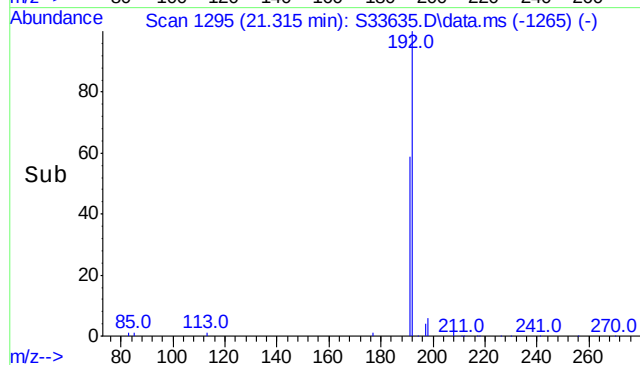
Tgt Ion:194 Resp: 44459
Ion Ratio Lower Upper
194 100
179 7.1 131.8 197.6#





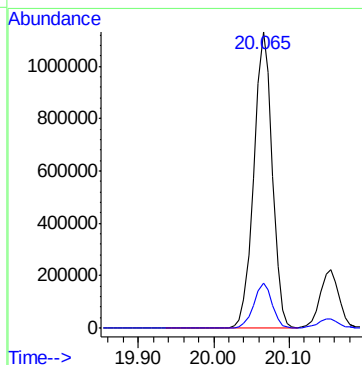
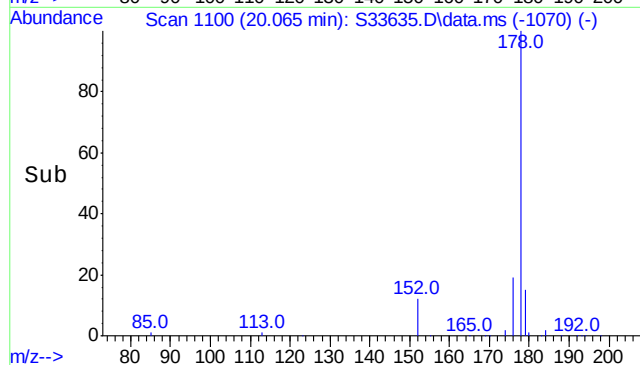
#19
C3-Fluorenes
Concen: 3.782 ng/mL m
RT: 21.315 min Scan# 1295
Delta R.T. -0.037 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

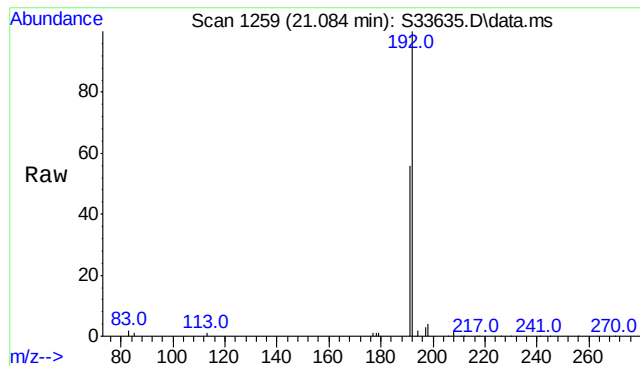
Tgt Ion:208 Resp: 8546
Ion Ratio Lower Upper
208 100
178 0.0 43.4 65.2#



#21
Phenanthrene
Concen: 215.915 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

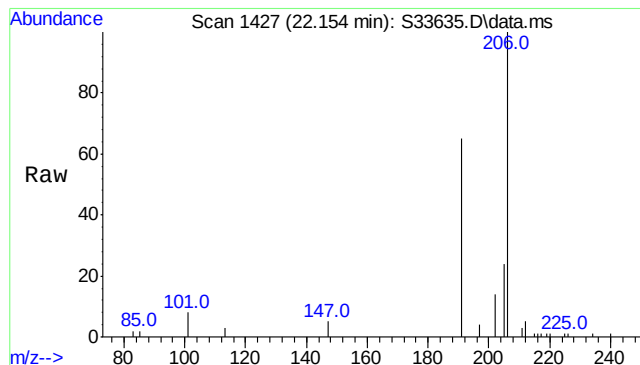
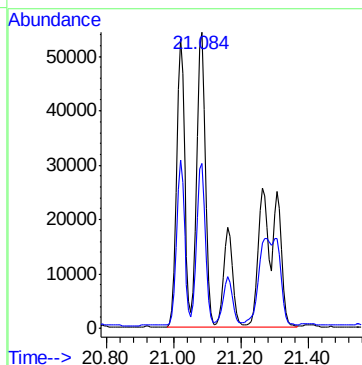
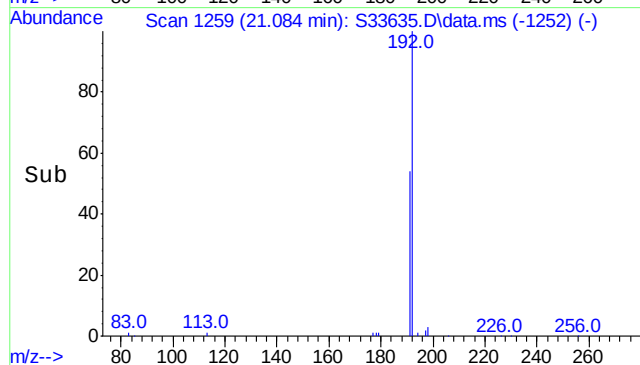
Tgt Ion:178 Resp: 1896663
Ion Ratio Lower Upper
178 100
179 15.2 12.4 18.6





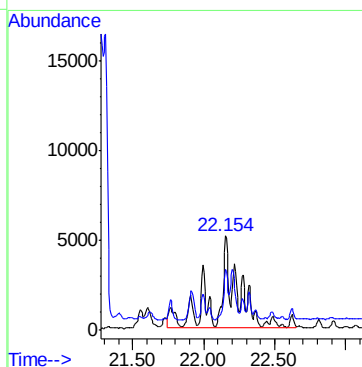
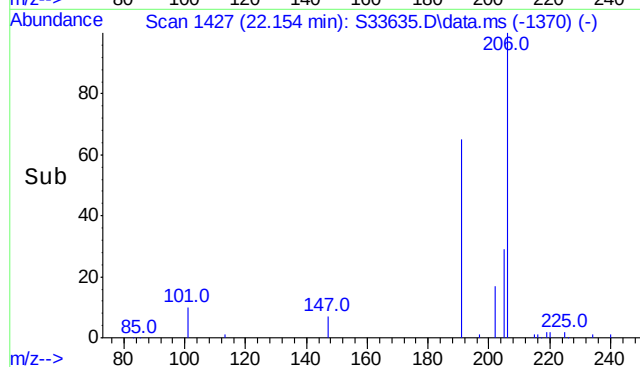
#22
 C1-Phenanthrenes/anthracenes
 Concen: 31.823 ng/mL m
 RT: 21.084 min Scan# 1259
 Delta R.T. -0.069 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

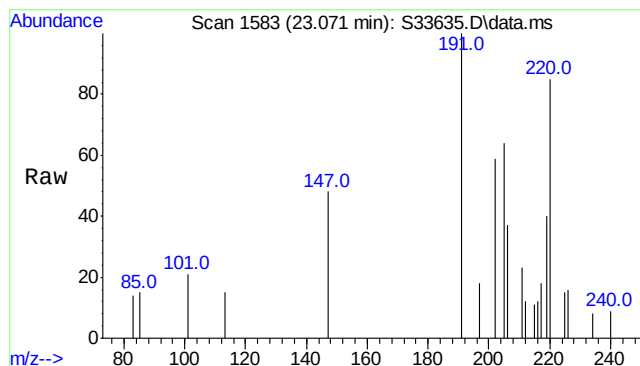
Tgt Ion:192 Resp: 308892
 Ion Ratio Lower Upper
 192 100
 191 4.8 45.1 67.7#



#23
 C2-Phenanthrenes/anthracenes
 Concen: 14.404 ng/mL m
 RT: 22.154 min Scan# 1427
 Delta R.T. -0.069 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

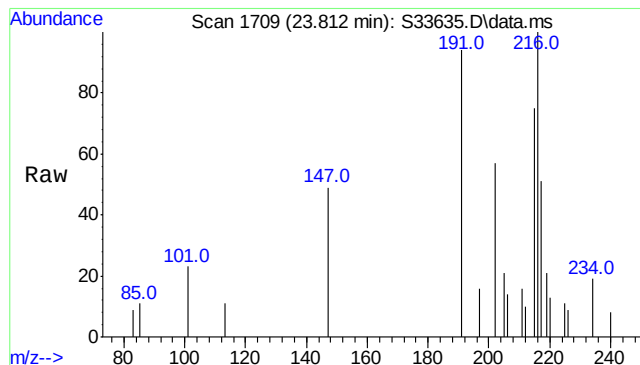
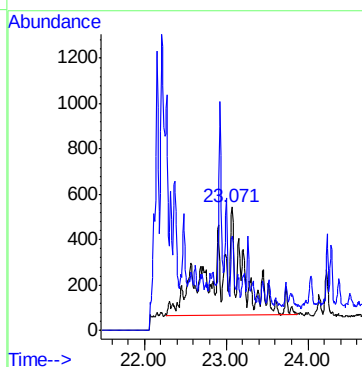
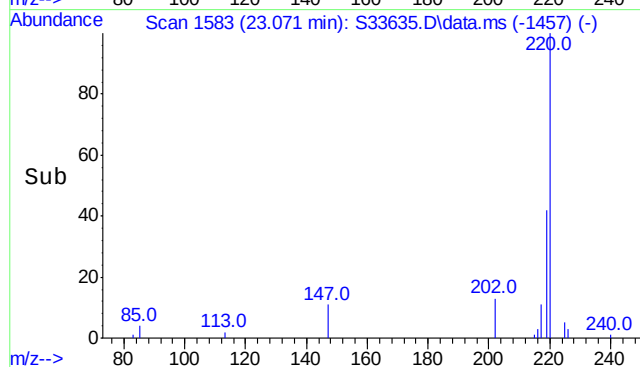
Tgt Ion:206 Resp: 51998
 Ion Ratio Lower Upper
 206 100
 191 11.9 45.1 67.7#





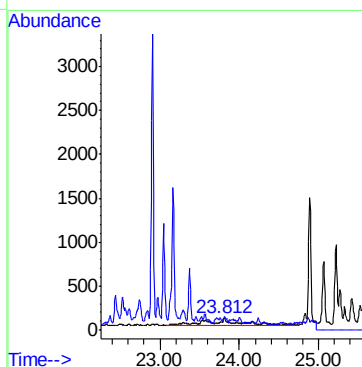
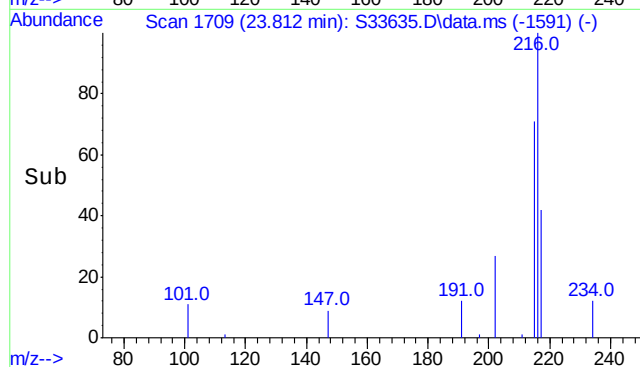
#24
C3-Phenanthrenes/anthracenes
Concen: 7.300 ng/mL m
RT: 23.071 min Scan# 1583
Delta R.T. -0.070 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

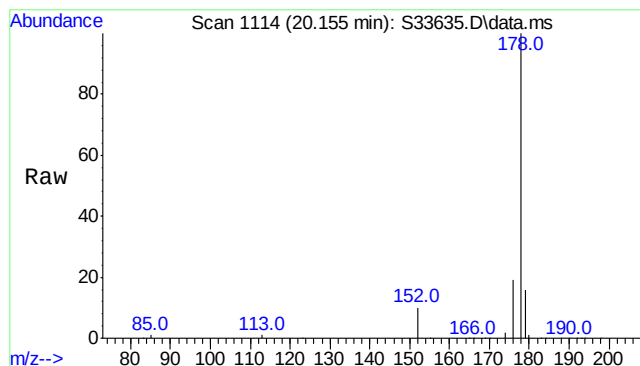
Tgt Ion:220 Resp: 11056
Ion Ratio Lower Upper
220 100
205 5.9 45.1 67.7#



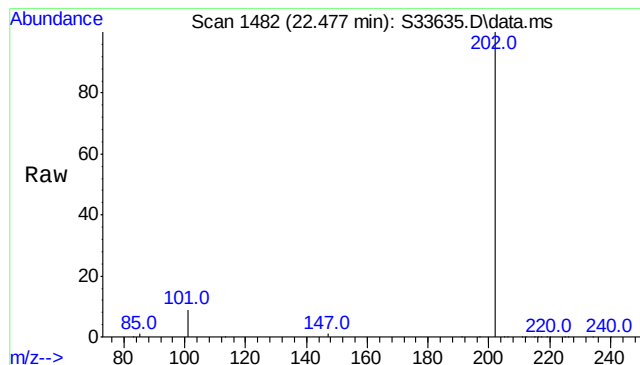
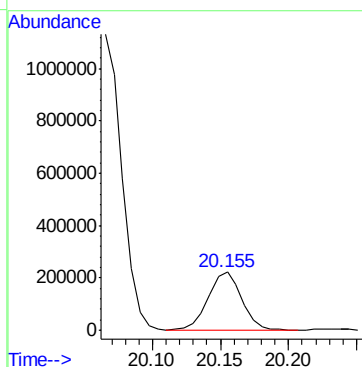
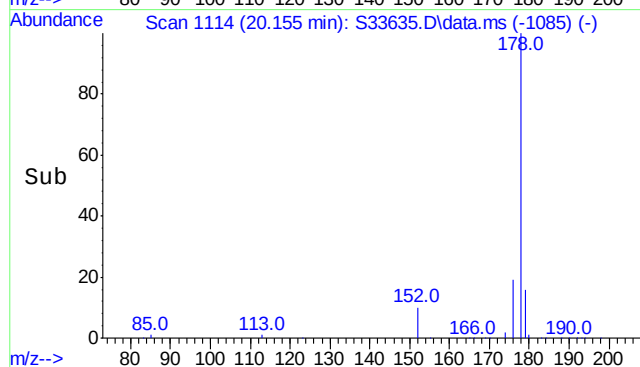
#25
C4-Phenanthrenes/anthracenes
Concen: 3.061 ng/mL m
RT: 23.812 min Scan# 1709
Delta R.T. -0.417 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

Tgt Ion:234 Resp: 2095
Ion Ratio Lower Upper
234 100
219 1.7 53.0 79.6#

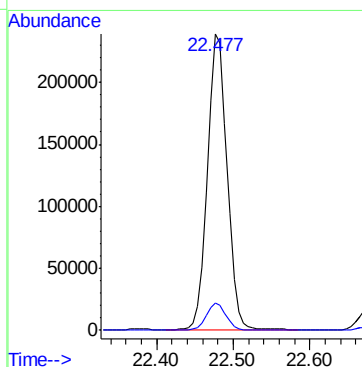
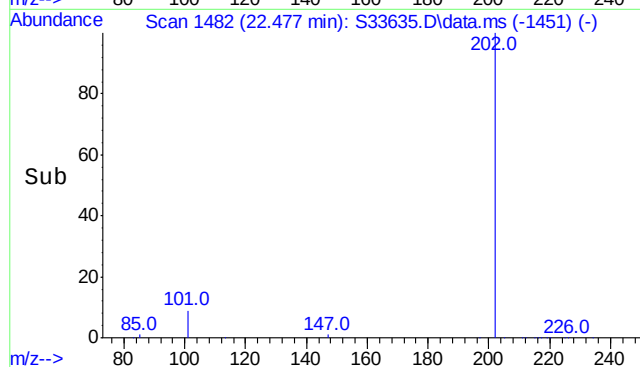


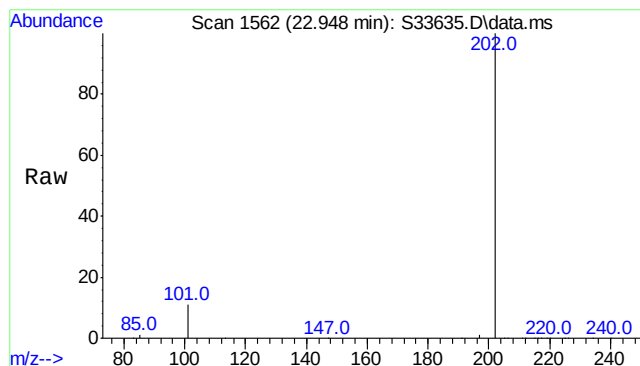


#27
 Anthracene
 Concen: 37.691 ng/mL
 RT: 20.155 min Scan# 1114
 Delta R.T. -0.013 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am
 Tgt Ion:178 Resp: 382388



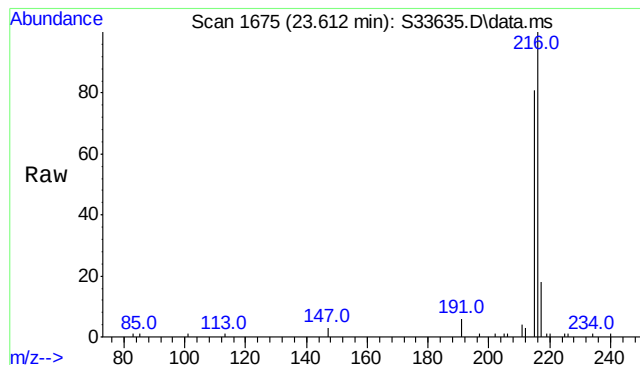
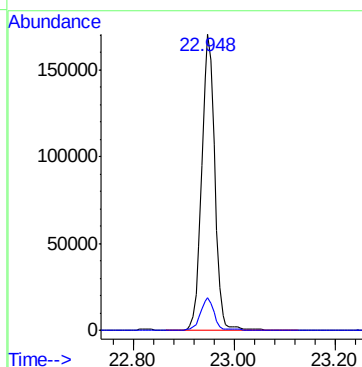
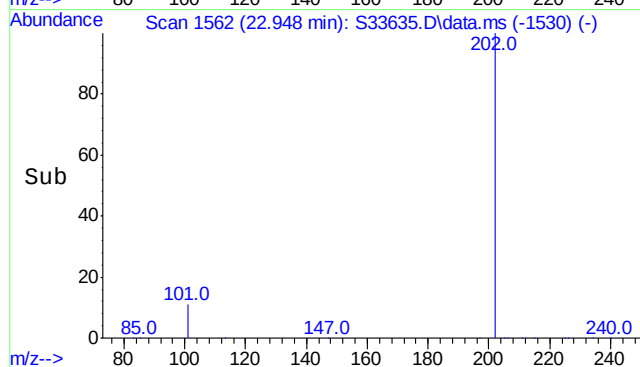
#29
 Fluoranthene
 Concen: 21.061 ng/mL
 RT: 22.477 min Scan# 1482
 Delta R.T. -0.018 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am
 Tgt Ion:202 Resp: 415305
 Ion Ratio Lower Upper
 202 100
 101 9.2 14.3 21.5#





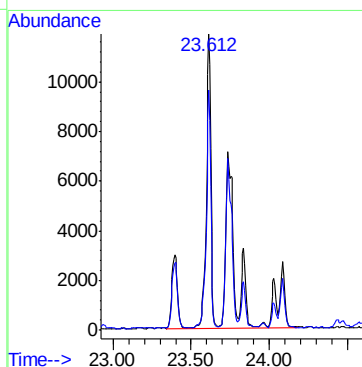
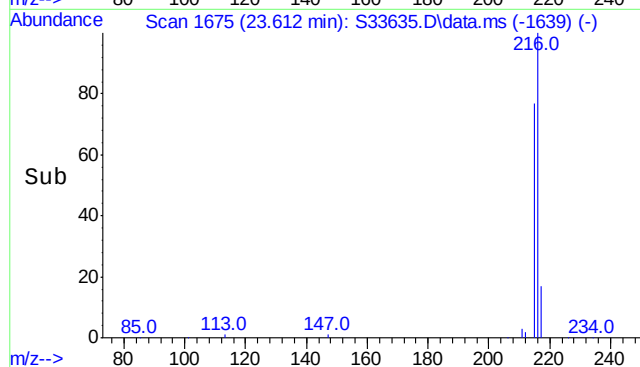
#31
 Pyrene
 Concen: 14.165 ng/mL
 RT: 22.948 min Scan# 1562
 Delta R.T. -0.012 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

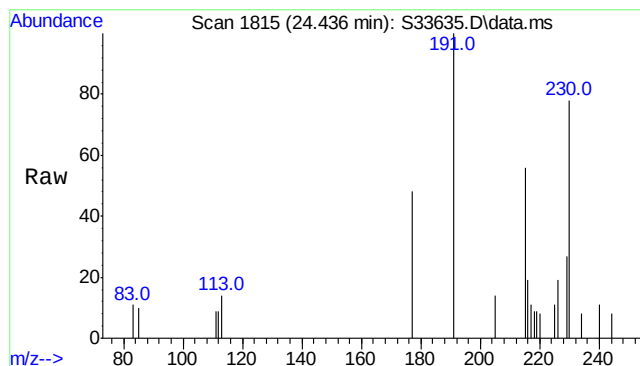
Tgt Ion	Ratio	Lower	Upper
202	100		
101	11.1	16.6	24.8#



#32
 C1-Fluoranthenes/pyrenes
 Concen: 4.978 ng/mL m
 RT: 23.612 min Scan# 1675
 Delta R.T. -0.070 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

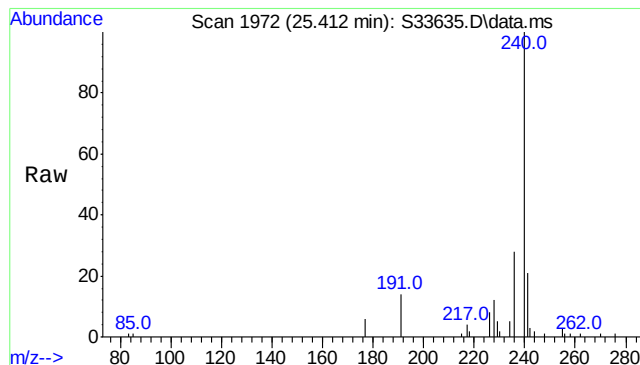
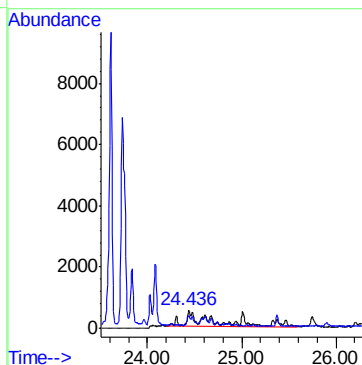
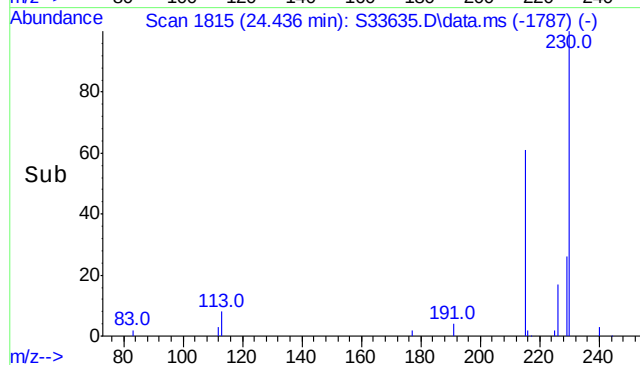
Tgt Ion	Ratio	Lower	Upper
216	100		
215	28.3	67.0	100.6#





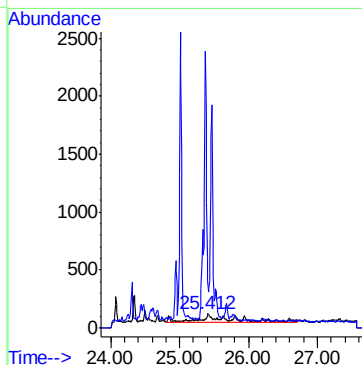
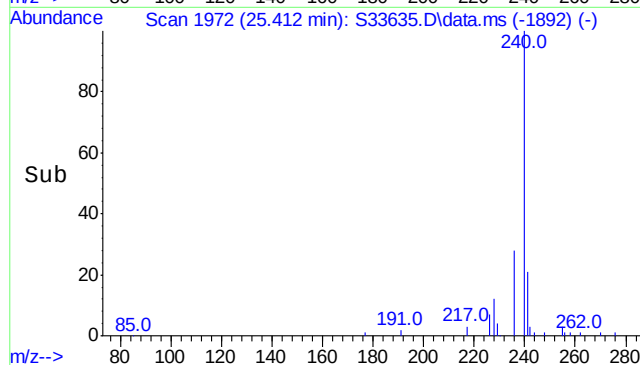
#33
C2-Fluoranthenes/pyrenes
Concen: 0.499 ng/mL m
RT: 24.436 min Scan# 1815
Delta R.T. -0.075 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

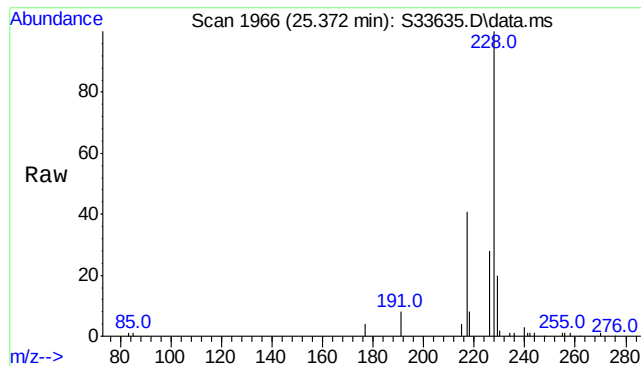
Tgt Ion:230 Resp: 10638
Ion Ratio Lower Upper
230 100
215 5.2 51.4 77.2#



#34
C3-Fluoranthenes/pyrenes
Concen: 0.108 ng/mL m
RT: 25.412 min Scan# 1972
Delta R.T. -0.078 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

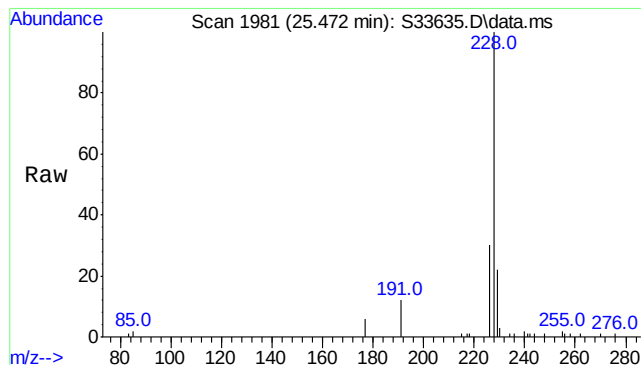
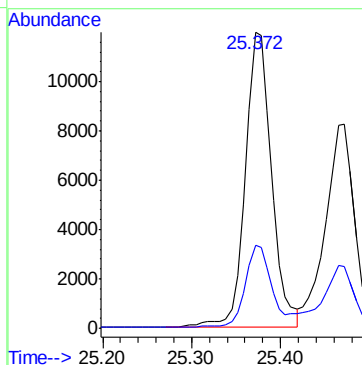
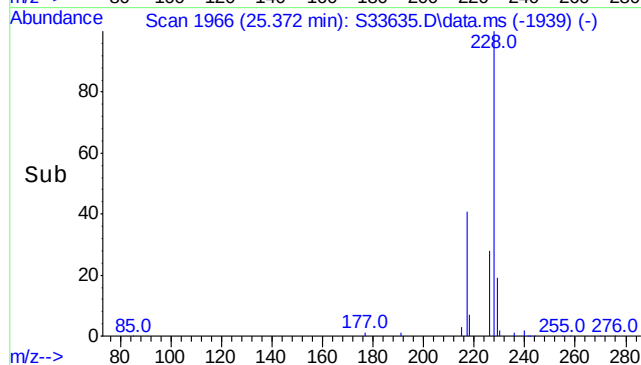
Tgt Ion:244 Resp: 2293
Ion Ratio Lower Upper
244 100
229 0.0 112.3 168.5#





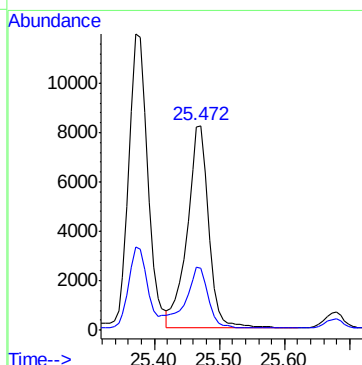
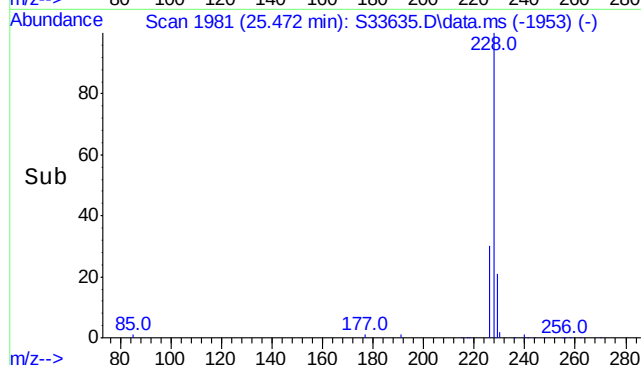
#36
Benz(a)anthracene
Concen: 0.809 ng/mL
RT: 25.372 min Scan# 1966
Delta R.T. -0.020 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

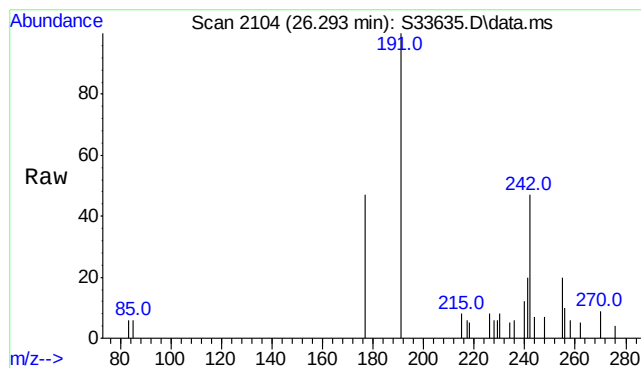
Tgt Ion:228 Resp: 24294
Ion Ratio Lower Upper
228 100
226 27.7 23.7 35.5



#38
Chrysene
Concen: 0.607 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

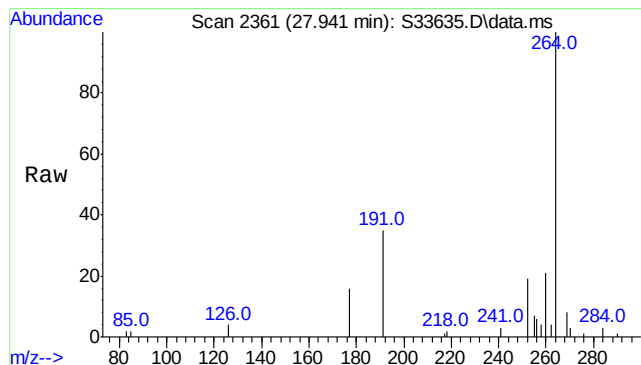
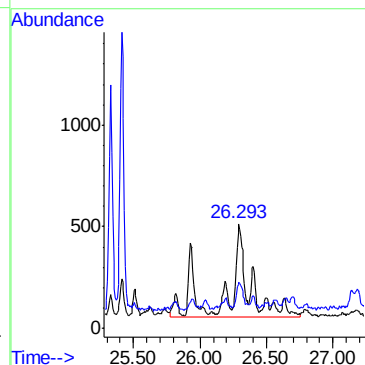
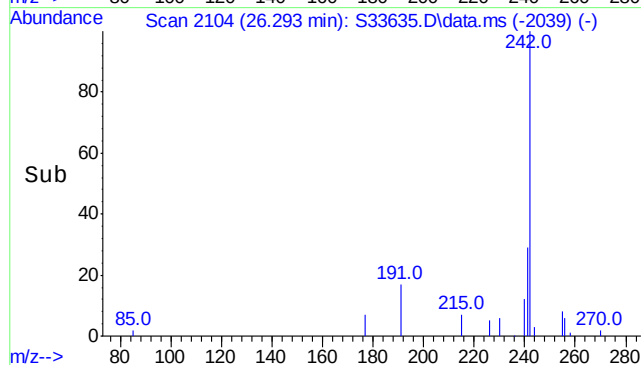
Tgt Ion:228 Resp: 18896
Ion Ratio Lower Upper
228 100
226 30.8 26.0 39.0





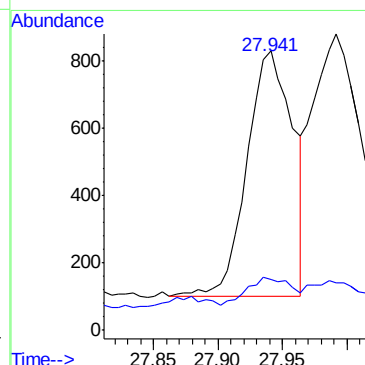
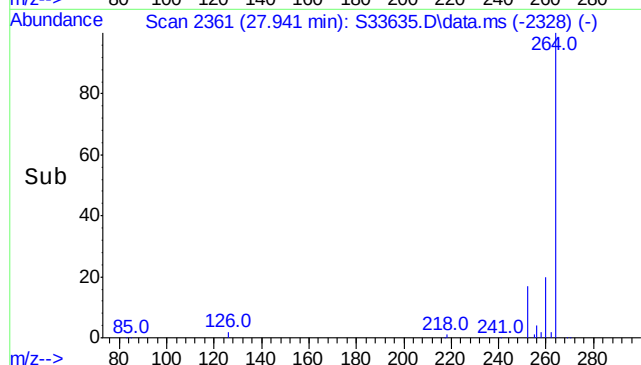
#39
 C1-Benz(a)anthracenes/chrysenes
 Concen: 0.272 ng/mL m
 RT: 26.293 min Scan# 2104
 Delta R.T. -0.065 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

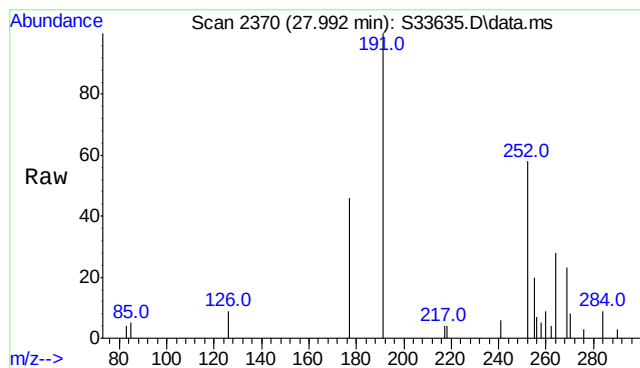
Tgt Ion:242 Resp: 4972
 Ion Ratio Lower Upper
 242 100
 241 8.7 27.2 40.8#



#44
 Benzo(b)fluoranthene
 Concen: 0.040 ng/mL
 RT: 27.941 min Scan# 2361
 Delta R.T. -0.017 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

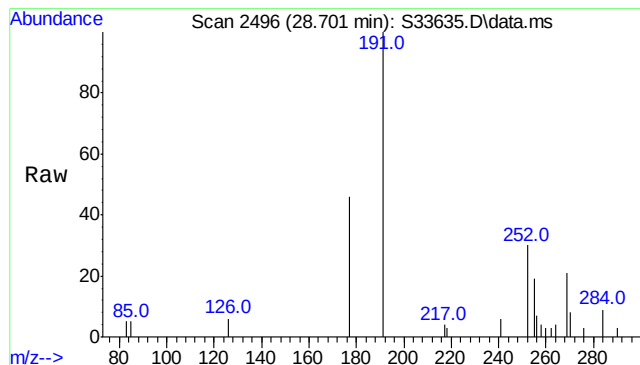
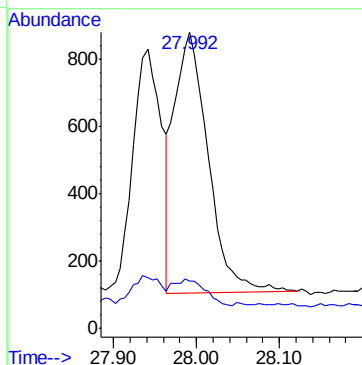
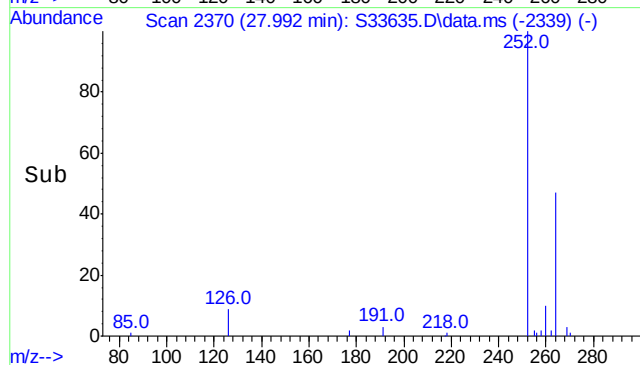
Tgt Ion:252 Resp: 1802
 Ion Ratio Lower Upper
 252 100
 126 12.0 23.0 34.4#





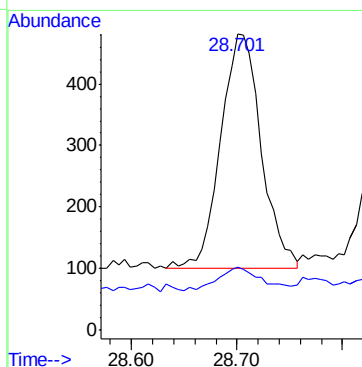
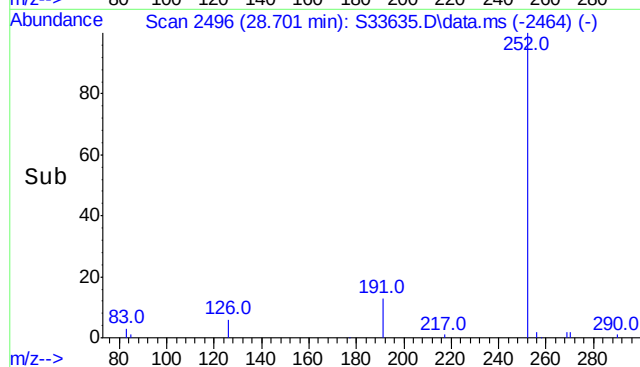
#46
Benzo(k)fluoranthene
Concen: 0.056 ng/mL
RT: 27.992 min Scan# 2370
Delta R.T. -0.028 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

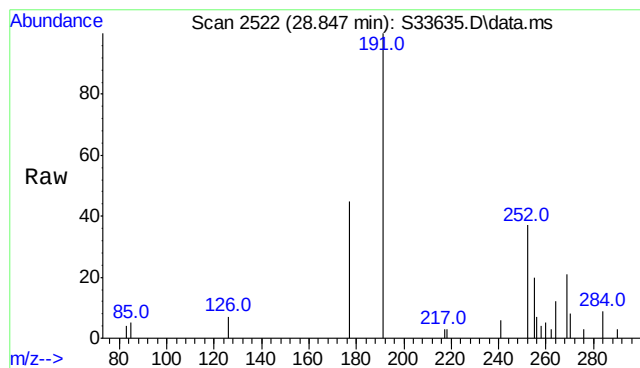
Tgt Ion:252 Resp: 2185
Ion Ratio Lower Upper
252 100
126 9.6 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.024 ng/mL
RT: 28.701 min Scan# 2496
Delta R.T. -0.022 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

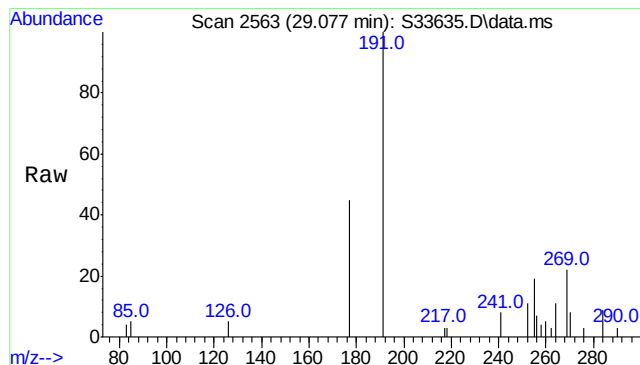
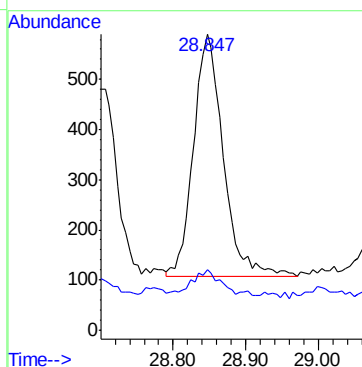
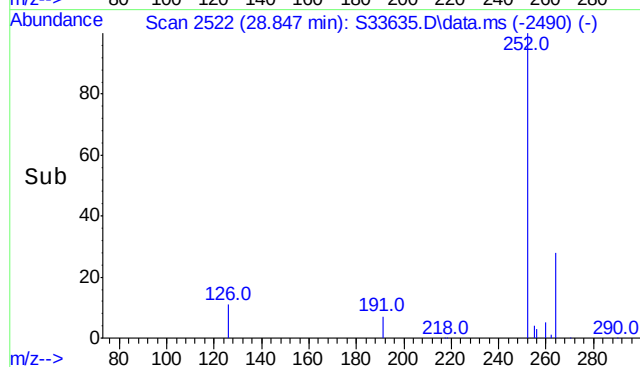
Tgt Ion:252 Resp: 1020
Ion Ratio Lower Upper
252 100
126 10.3 22.6 34.0#





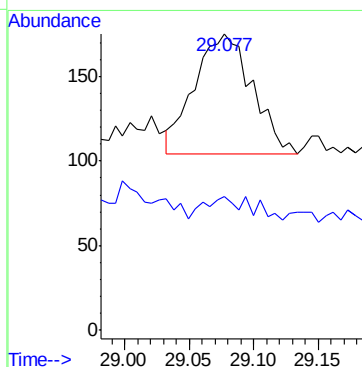
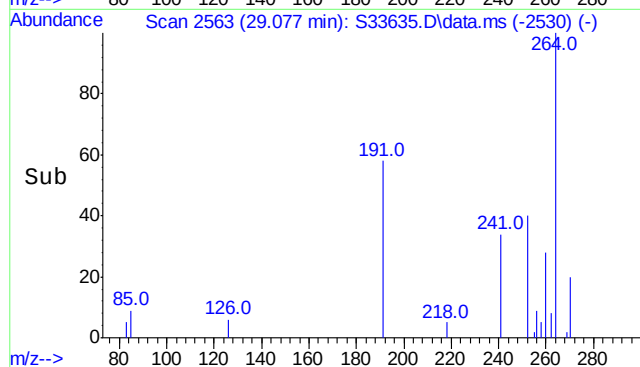
#49
Benzo(a)pyrene
Concen: 0.054 ng/mL
RT: 28.847 min Scan# 2522
Delta R.T. -0.022 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

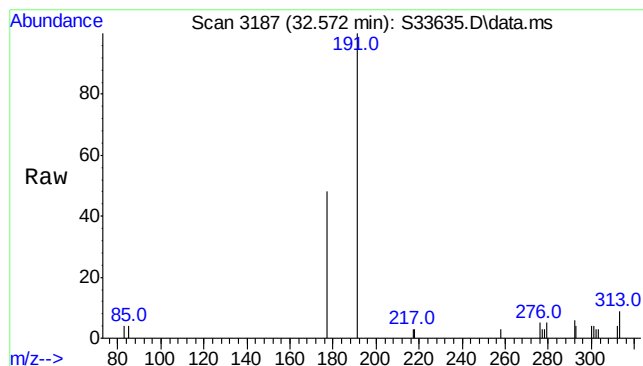
Tgt Ion:252 Resp: 1361
Ion Ratio Lower Upper
252 100
126 8.7 25.1 37.7#



#51
Perylene
Concen: 0.009 ng/mL
RT: 29.077 min Scan# 2563
Delta R.T. -0.017 min
Lab File: S33635.D
Acq: 21 Sep 2013 5:54 am

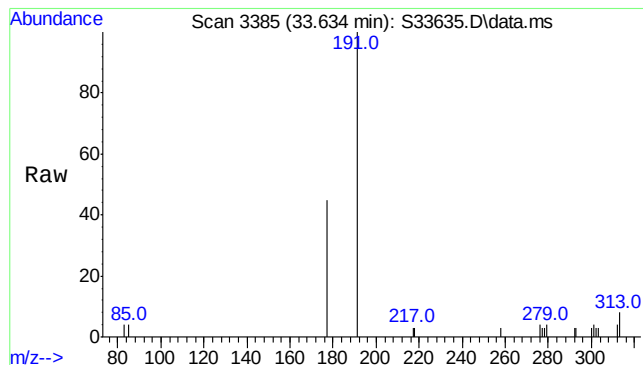
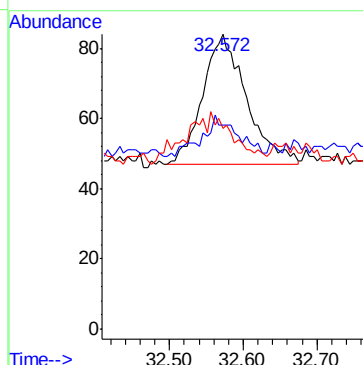
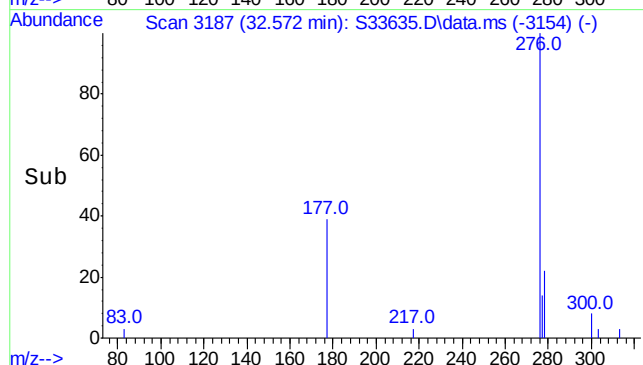
Tgt Ion:252 Resp: 222
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#





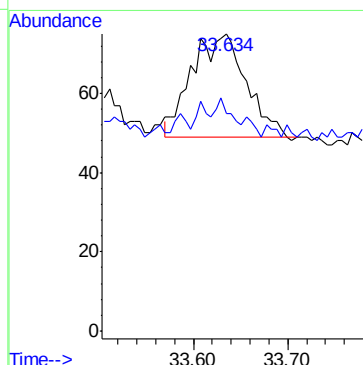
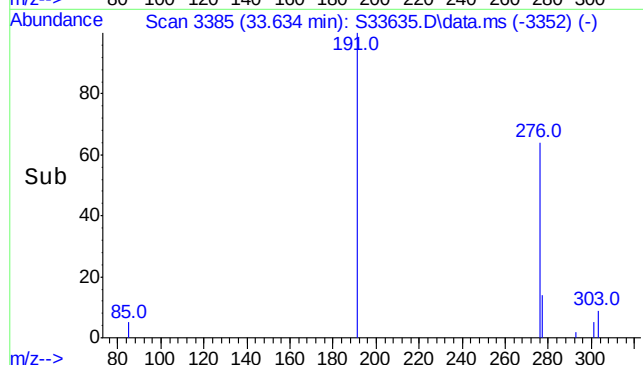
#52
 Indeno(1,2,3-cd)pyrene
 Concen: 0.004 ng/mL
 RT: 32.572 min Scan# 3187
 Delta R.T. -0.022 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

Tgt Ion	Ratio	Lower	Upper
276	100		
277	26.1	21.3	31.9
278	0.0	21.8	32.8#



#54
 Benzo(g,h,i)perylene
 Concen: 0.003 ng/mL m
 RT: 33.634 min Scan# 3385
 Delta R.T. -0.022 min
 Lab File: S33635.D
 Acq: 21 Sep 2013 5:54 am

Tgt Ion	Ratio	Lower	Upper
276	100		
277	0.0	20.3	30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33639.D
 Acq On : 21 Sep 2013 9:01 am
 Operator : RUBENP
 Sample : mc24285-2
 Misc : ms29817,mss1495,,,,,10
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Oct 24 18:00:46 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

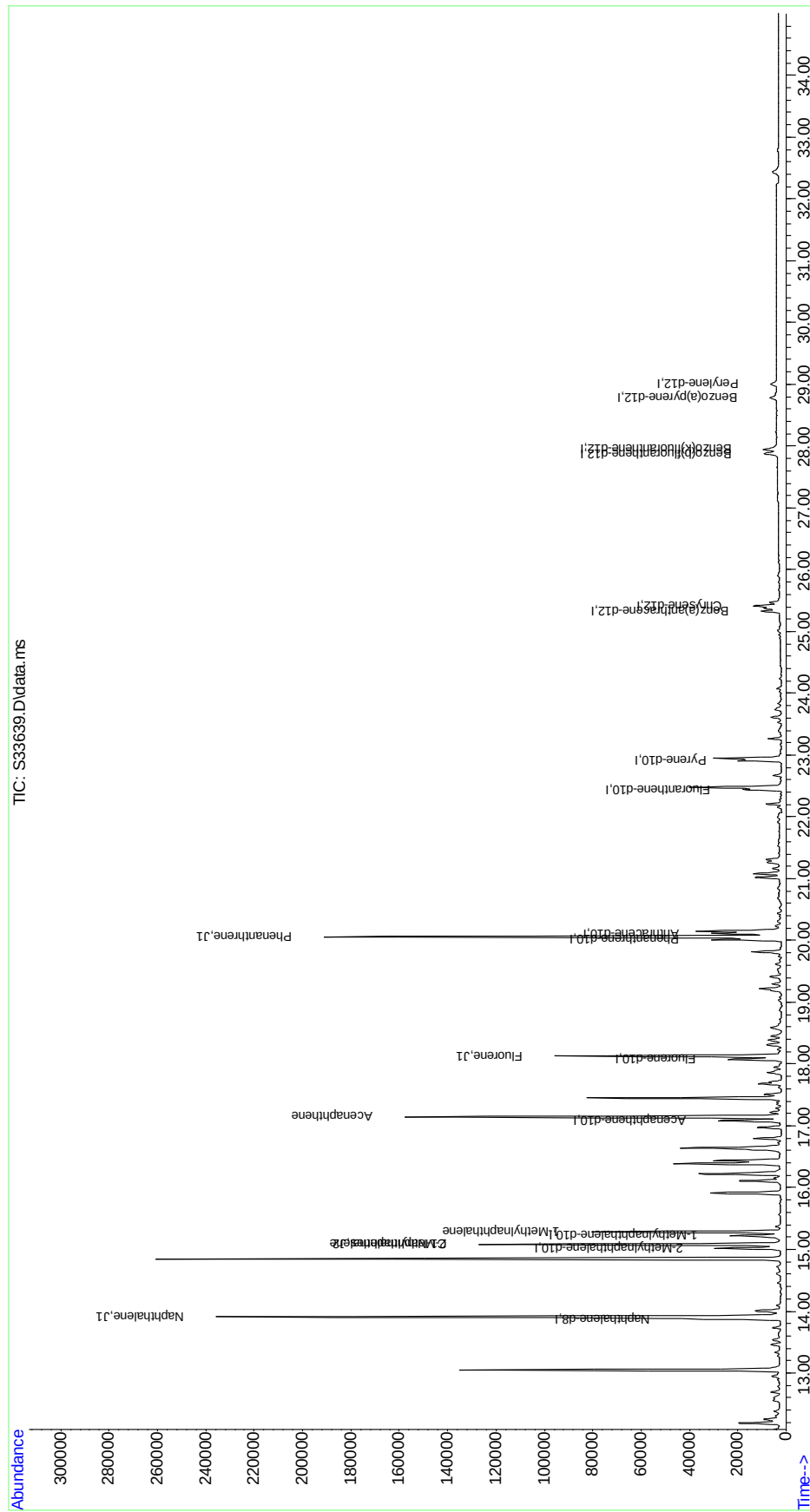
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	57984	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	37076	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	28545	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	19230	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	16360	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	40754	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	43105	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	24171	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	22370	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	10068	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	13265	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	10385	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10675	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.779	264	6656	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5640	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.910	128	327106	163.923	ng/mL	100
3) C1-Naphthalenes	15.081	142	177627m	89.014	ng/mL	
9) 2-Methylnaphthalene	15.081	142	108372	40.270	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	69302	31.351	ng/mL	100
14) Acenaphthene	17.147	154	94699	33.260	ng/mL	98
16) Fluorene	18.132	166	75290m	16.952	ng/mL	
21) Phenanthrene	20.059	178	209424	20.393	ng/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

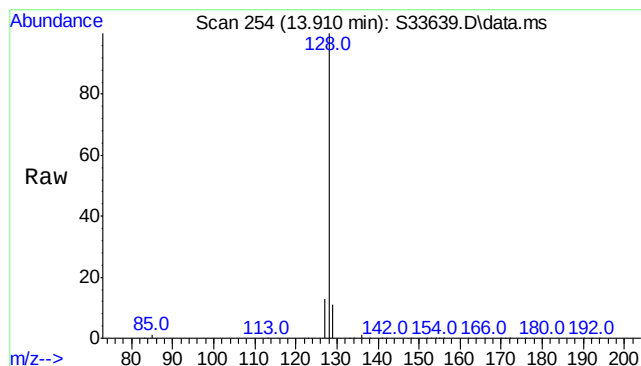
Quantitation Report (QT Reviewed)

```
Data Path : Z:\data\S130920\
Data File : S33639.D
Acq On : 21 Sep 2013 9:01 am
Operator : RUBENP
Sample : mc24285-2
Misc : ms29817.mss1495,,,,10
ALS Vial : 26 Sample Multiplier: 1
```

Quant Time: Oct 24 18:00:46 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

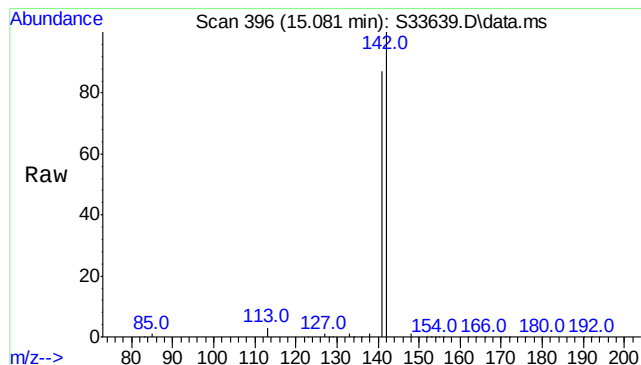
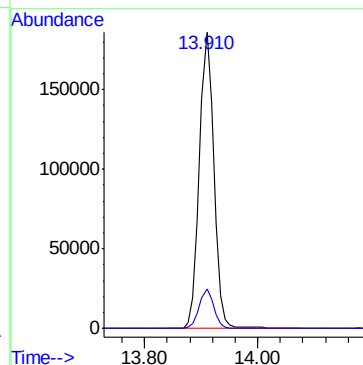
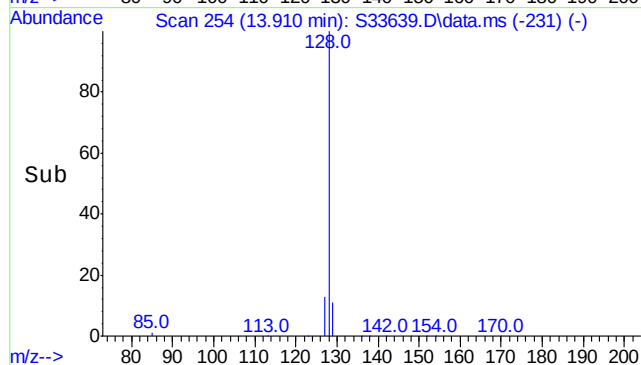


30920-SPMEPAH-CCQ-13.M Fri Oct 25 10:50:23 2013



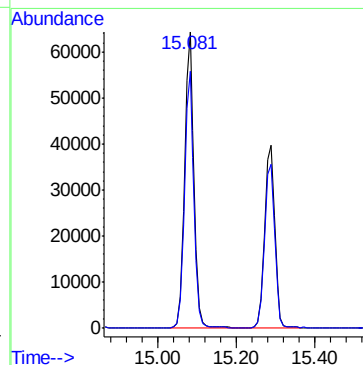
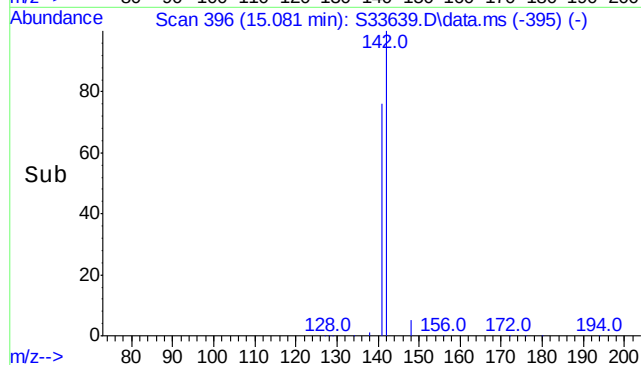
#2
Naphthalene
Concen: 163.923 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33639.D
Acq: 21 Sep 2013 9:01 am

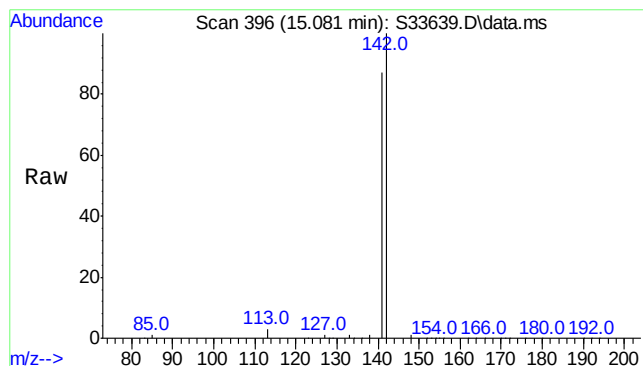
Tgt Ion:128 Resp: 327106
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



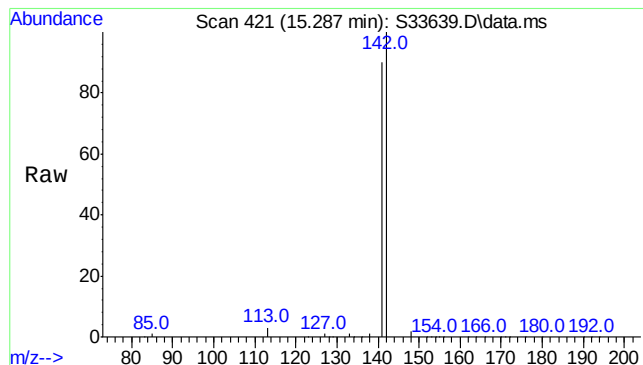
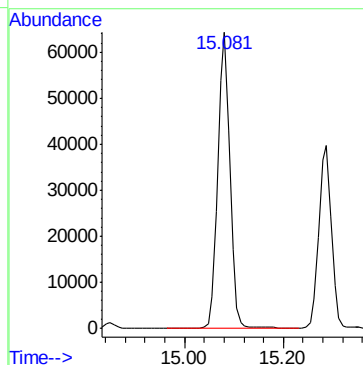
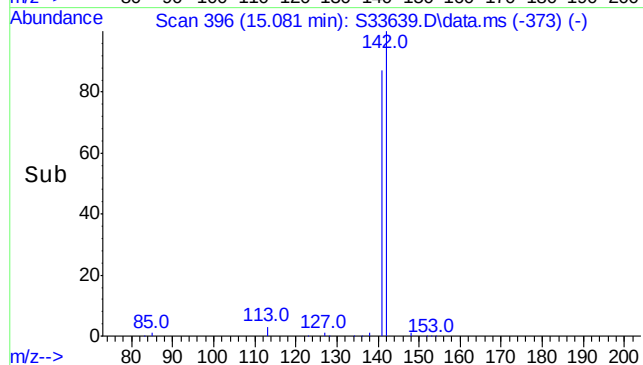
#3
C1-Naphthalenes
Concen: 89.014 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33639.D
Acq: 21 Sep 2013 9:01 am

Tgt Ion:142 Resp: 177627
Ion Ratio Lower Upper
142 100
141 35.3 71.0 106.6#

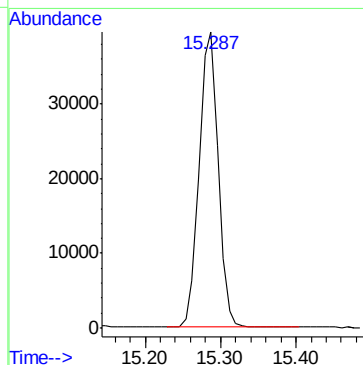
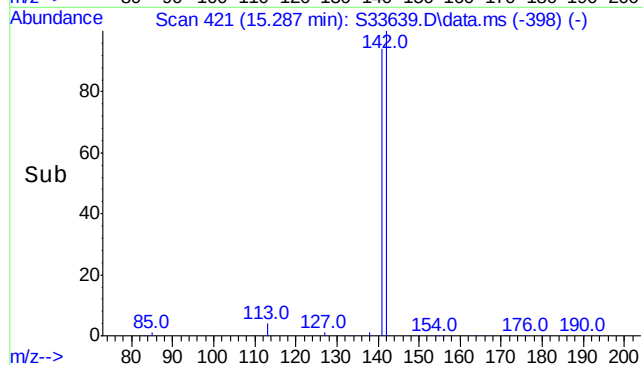


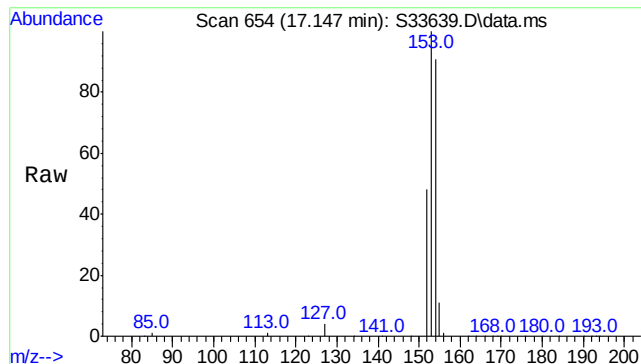


#9
2-Methylnaphthalene
Concen: 40.270 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33639.D
Acq: 21 Sep 2013 9:01 am
Tgt Ion:142 Resp: 108372



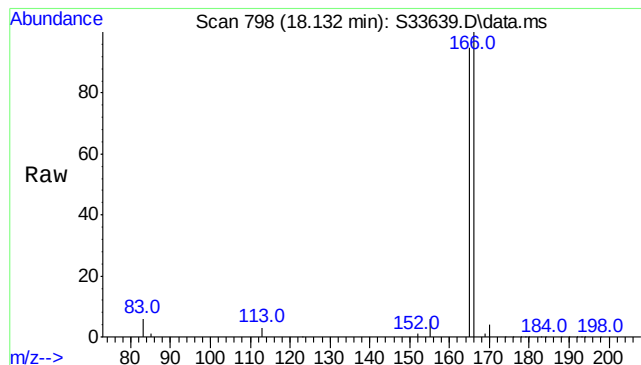
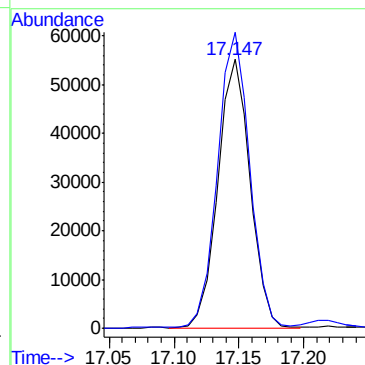
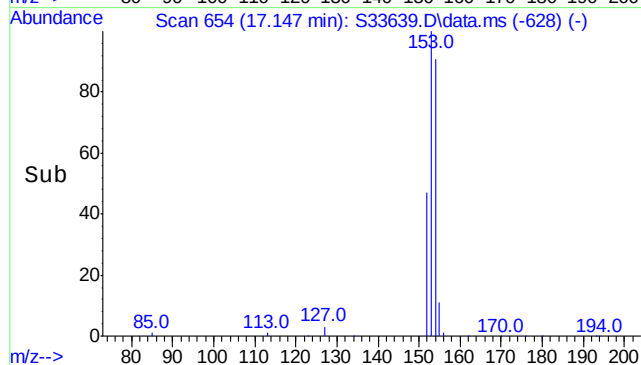
#11
1-Methylnaphthalene
Concen: 31.351 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33639.D
Acq: 21 Sep 2013 9:01 am
Tgt Ion:142 Resp: 69302





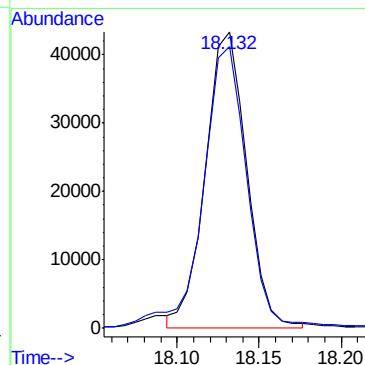
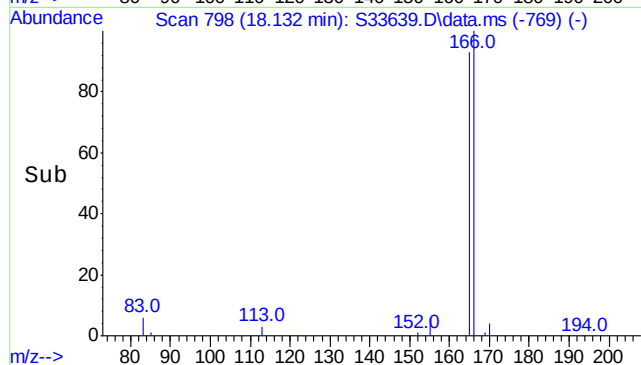
#14
Acenaphthene
Concen: 33.260 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33639.D
Acq: 21 Sep 2013 9:01 am

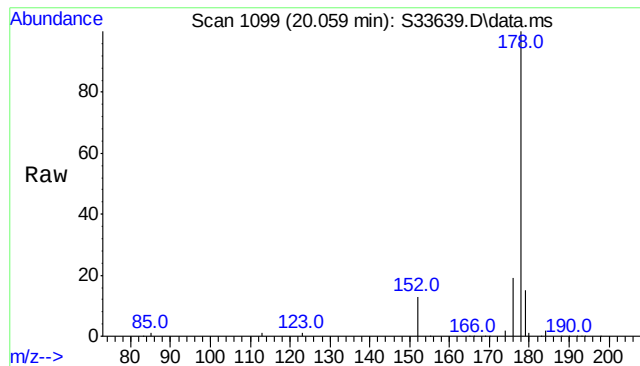
Tgt Ion:154 Resp: 94699
Ion Ratio Lower Upper
154 100
153 110.0 86.6 129.8



#16
Fluorene
Concen: 16.952 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33639.D
Acq: 21 Sep 2013 9:01 am

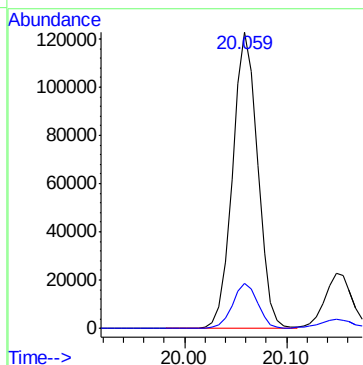
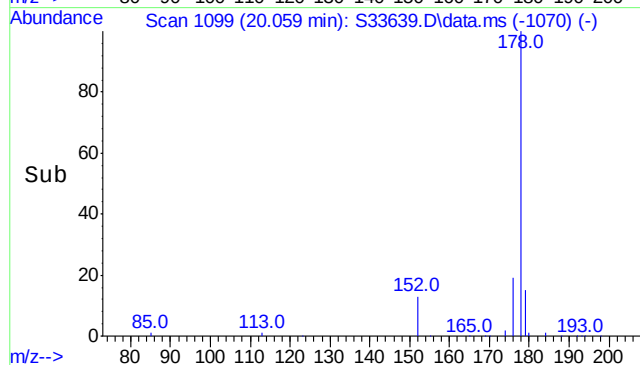
Tgt Ion:166 Resp: 75290
Ion Ratio Lower Upper
166 100
165 101.0 76.4 114.6





#21
 Phenanthrene
 Concen: 20.393 ng/mL
 RT: 20.059 min Scan# 1099
 Delta R.T. -0.013 min
 Lab File: S33639.D
 Acq: 21 Sep 2013 9:01 am

Tgt Ion:178 Resp: 209424
 Ion Ratio Lower Upper
 178 100
 179 15.2 12.4 18.6



James Roush
10/16/13 16:54

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130916\
 Data File : S33583.D
 Acq On : 16 Sep 2013 3:23 pm
 Operator : RUBENP
 Sample : ms29817-mb27
 Misc : ms29817,mss1484,1.5,,,1.5,1
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 16 12:36:08 2013
 Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:37:34 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	64791	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	45825	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	32101	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	21012	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	20300	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.021	188	53955	5.00	ng/mL	0.00
26) Anthracene-d10	20.117	188	41128	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	29654	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	25317	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	6812	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	11726	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.885	264	8046	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	7888	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.790	264	3253	0.33	ng/mL	-0.01
50) Perylene-d12	29.015	264	3199	0.33	ng/mL	-0.01
Target Compounds						
2) Naphthalene	13.926	128	230m	0.098	ng/mL	Qvalue
5) C3-Naphthalenes	18.081	170	2738	0.871	ng/mL#	1
6) C3-Naphthalenes (Fd10)	18.081	170	2738	0.871	µg/mL#	100
9) 2-Methylnaphthalene	15.089	142	48	0.014	ng/mL	100
16) Fluorene	18.138	166	31	0.005	ng/mL#	56
21) Phenanthrene	20.065	178	161	0.011	ng/mL#	1
27) Anthracene	20.155	178	46	0.004	ng/mL	100
29) Fluoranthene	22.489	202	60	0.002	ng/mL#	59
31) Pyrene	22.954	202	49	0.002	ng/mL#	56
38) Chrysene	25.472	228	34	0.001	ng/mL#	1
46) Benzo(k)fluoranthene	28.009	252	61	0.002	ng/mL#	44

(#) = qualifier out of range (m) = manual integration (+) = signals summed

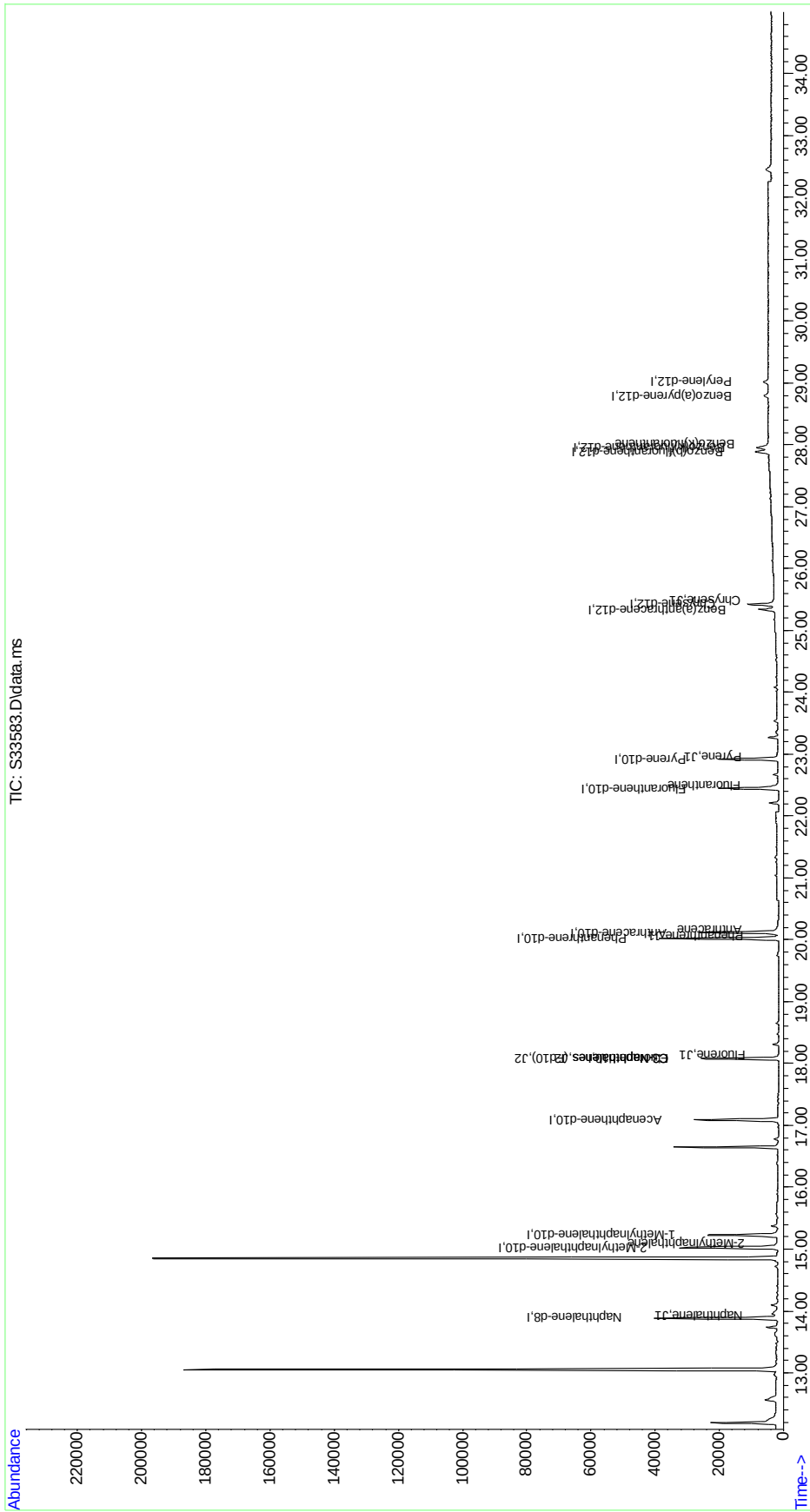
7.2.1

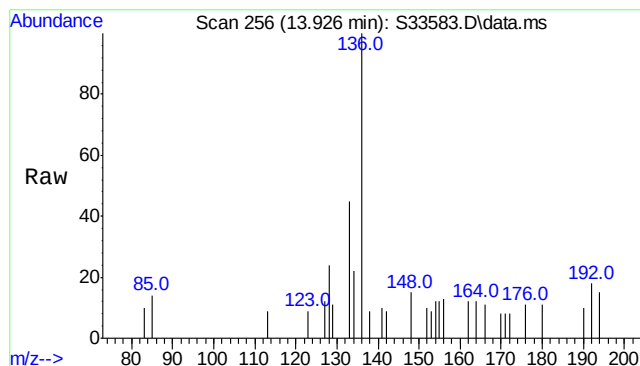
7

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130916\
Data File : S33583.D
Acq On : 16 Sep 2013 3:23 pm
Operator : RUBENP
Sample : ms29817-mb27
Misc : ms29817,mss1484,1.5,,,1.5,1
ALS Vial : 5 Sample Multiplier: 1

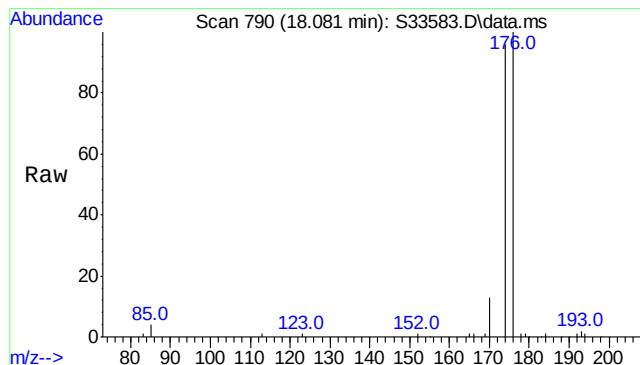
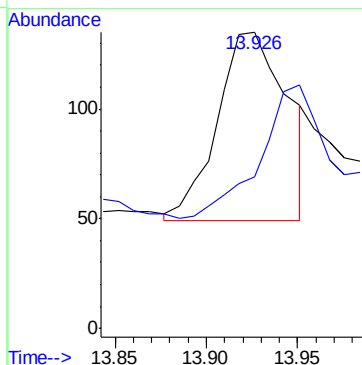
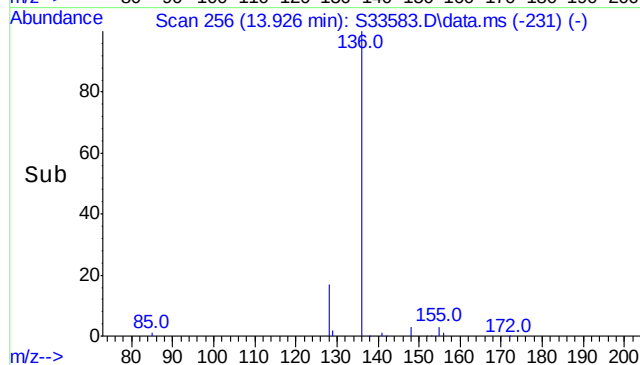
Quant Time: Oct 16 12:36:08 2013
Quant Method : S:\methods\S130916-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Fri Oct 11 11:37:34 2013
Response via : Initial Calibration





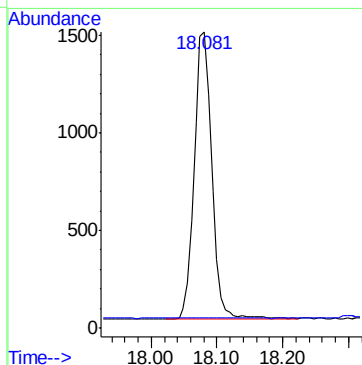
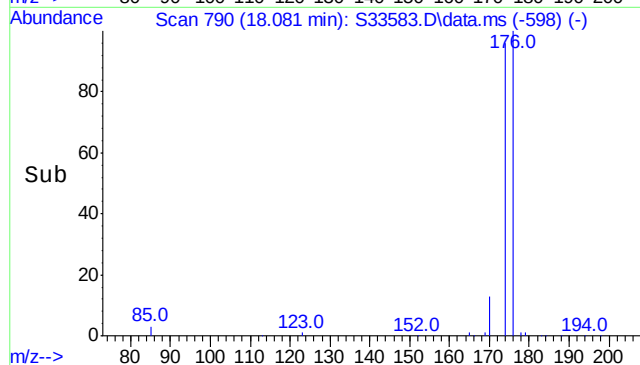
#2
Naphthalene
Concen: 0.098 ng/mL m
RT: 13.926 min Scan# 256
Delta R.T. 0.008 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

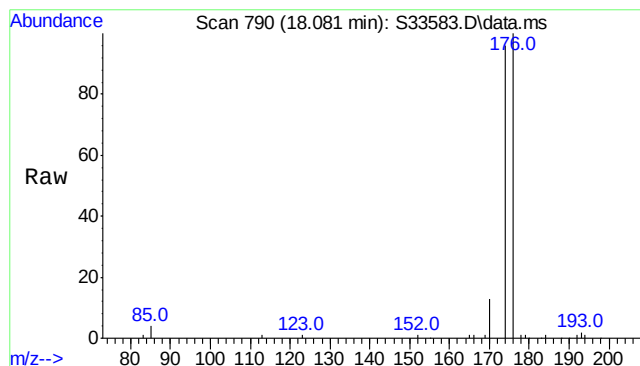
Tgt Ion:128 Resp: 230
Ion Ratio Lower Upper
128 100
127 0.0 10.6 15.8#



#5
C3-Naphthalenes
Concen: 0.871 ng/mL
RT: 18.081 min Scan# 790
Delta R.T. 0.422 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

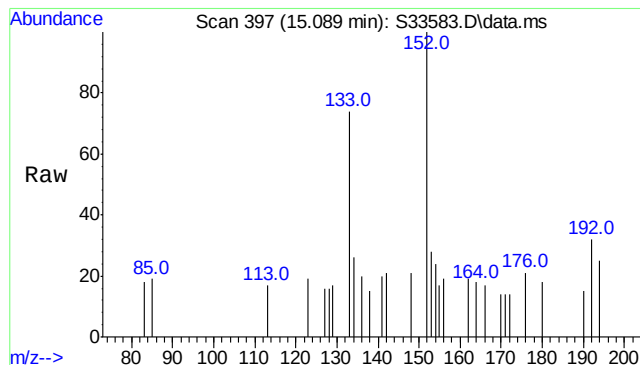
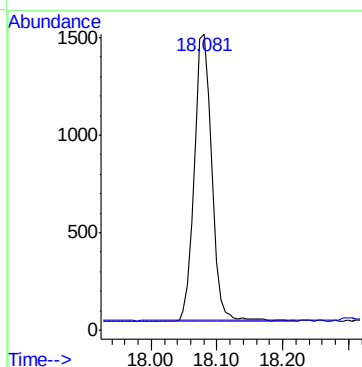
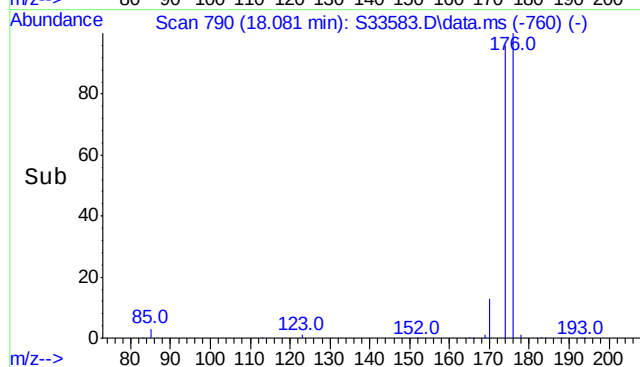
Tgt Ion:170 Resp: 2738
Ion Ratio Lower Upper
170 100
155 0.0 80.7 121.1#





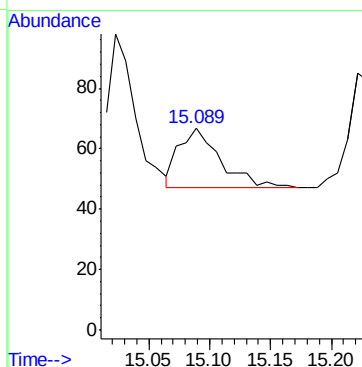
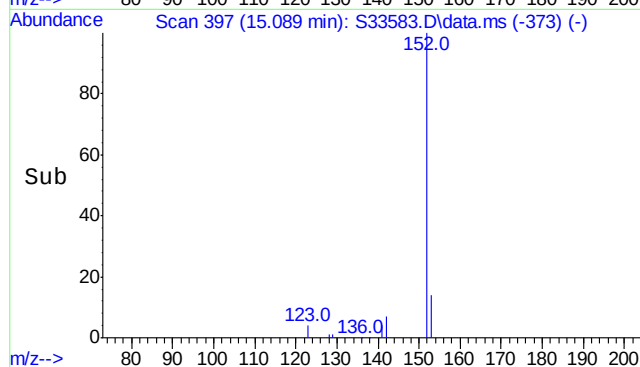
#6
C3-Naphthalenes (Fd10)
Concen: 0.871 µg/mL
RT: 18.081 min Scan# 790
Delta R.T. -0.006 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

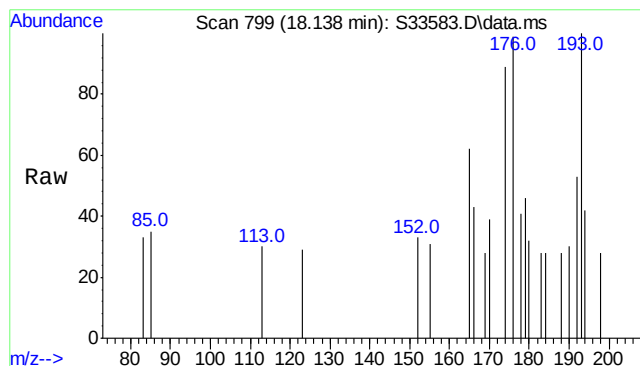
Tgt Ion:170 Resp: 2738
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0



#9
2-Methylnaphthalene
Concen: 0.014 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

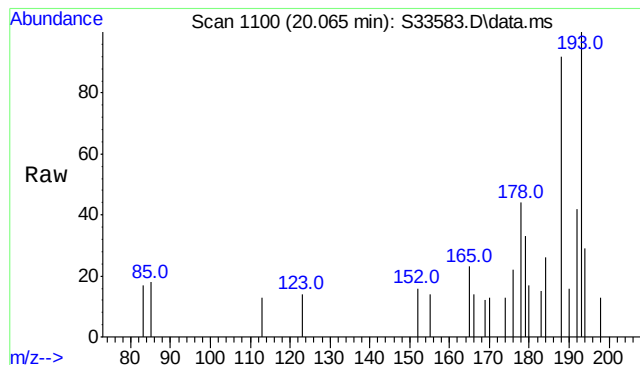
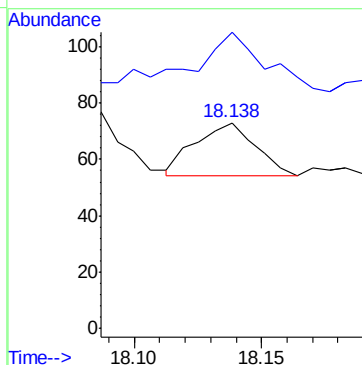
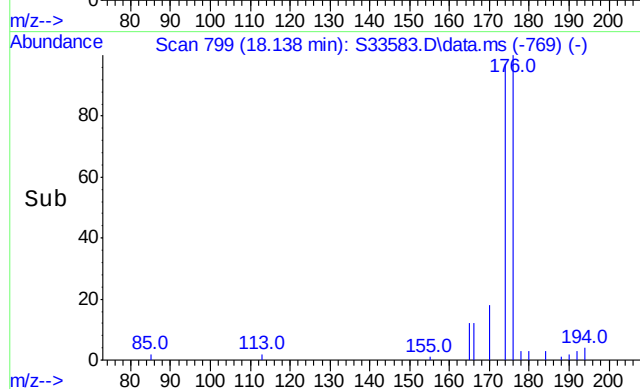
Tgt Ion:142 Resp: 48





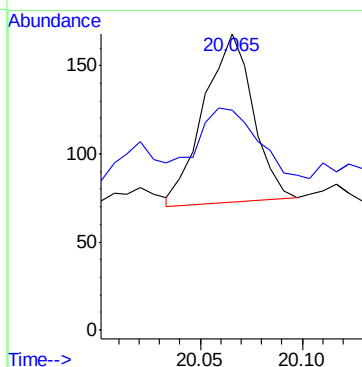
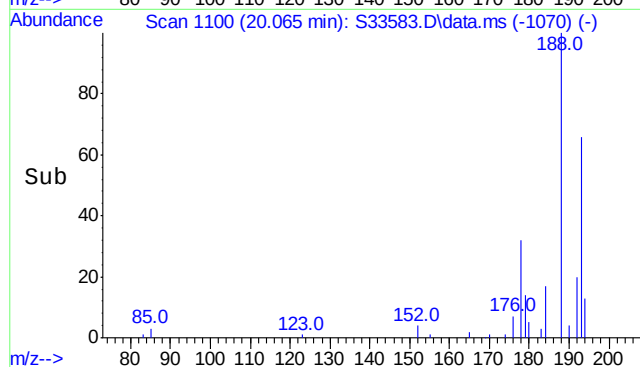
#16
Fluorene
Concen: 0.005 ng/mL
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

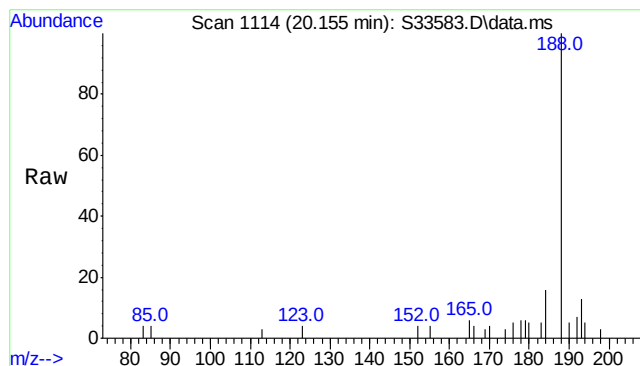
Tgt Ion:166 Resp: 31
Ion Ratio Lower Upper
166 100
165 138.7 76.4 114.6#



#21
Phenanthrene
Concen: 0.011 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

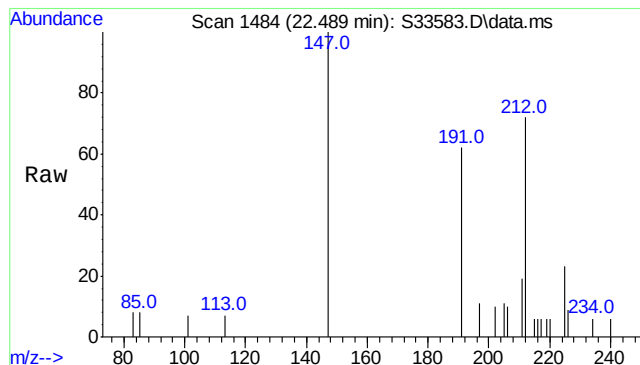
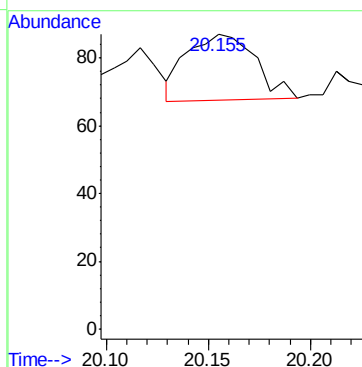
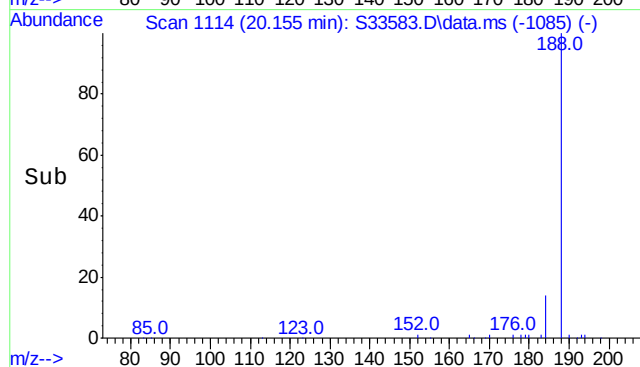
Tgt Ion:178 Resp: 161
Ion Ratio Lower Upper
178 100
179 62.7 12.4 18.6#





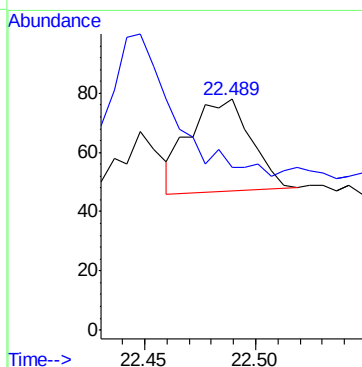
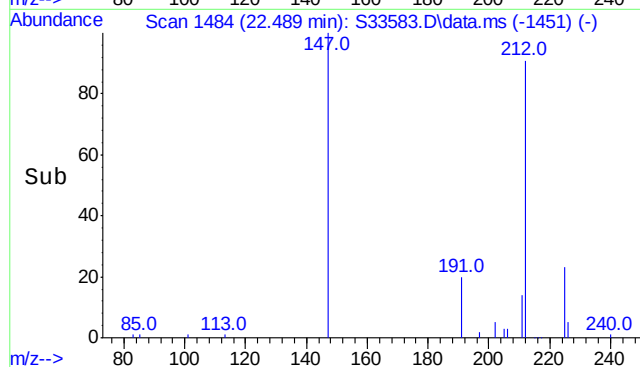
#27
Anthracene
Concen: 0.004 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

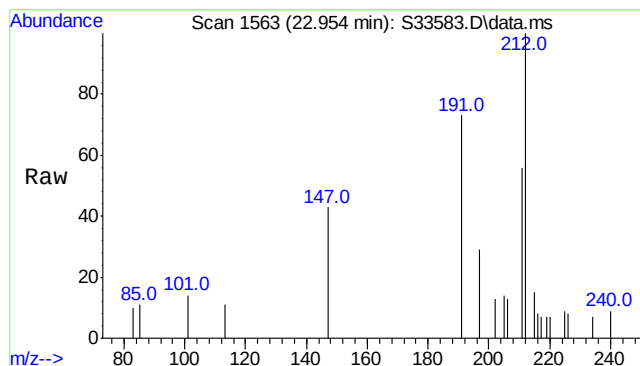
Tgt Ion:178 Resp: 46



#29
Fluoranthene
Concen: 0.002 ng/mL
RT: 22.489 min Scan# 1484
Delta R.T. -0.006 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

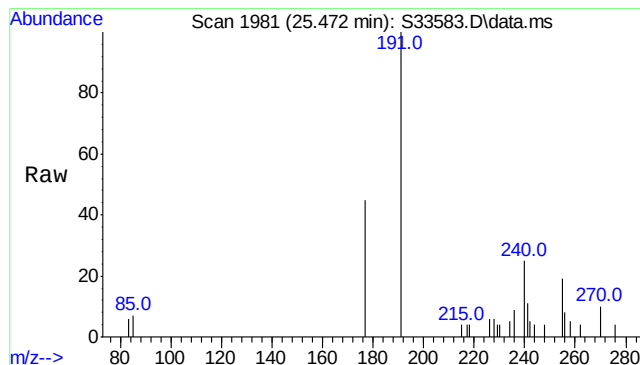
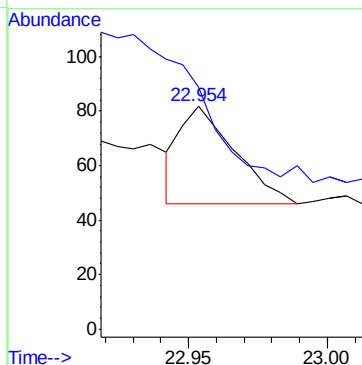
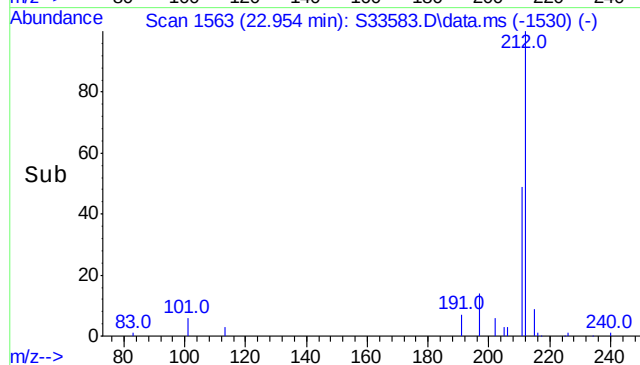
Tgt Ion:202 Resp: 60
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





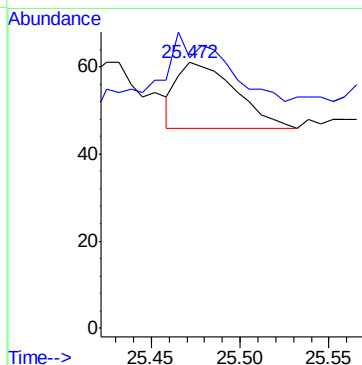
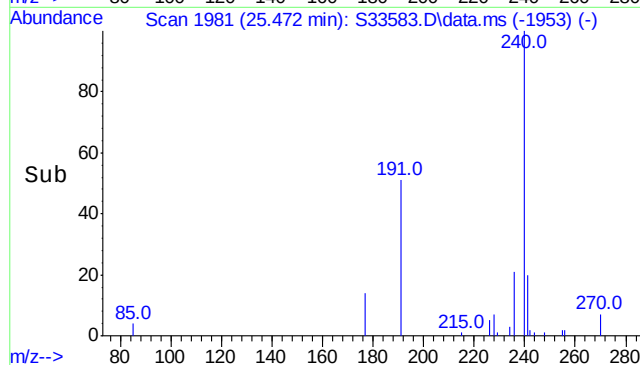
#31
Pyrene
Concen: 0.002 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

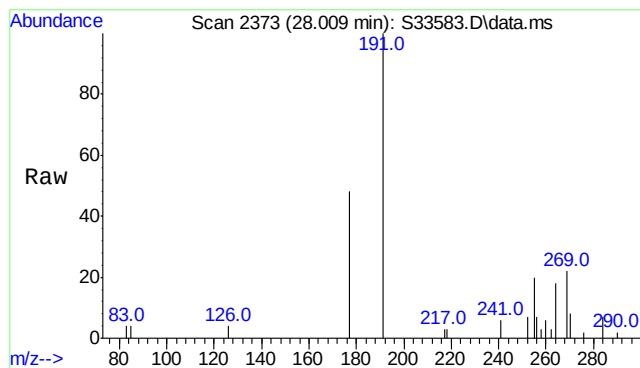
Tgt Ion:202 Resp: 49
Ion Ratio Lower Upper
202 100
101 0.0 16.6 24.8#



#38
Chrysene
Concen: 0.001 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

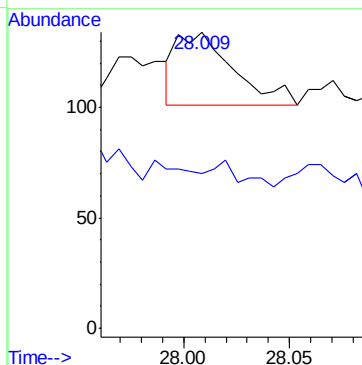
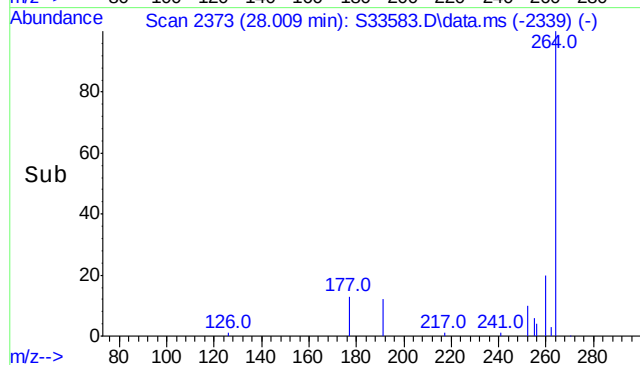
Tgt Ion:228 Resp: 34
Ion Ratio Lower Upper
228 100
226 111.8 26.0 39.0#





#46
Benzo(k)fluoranthene
Concen: 0.002 ng/mL
RT: 28.009 min Scan# 2373
Delta R.T. -0.011 min
Lab File: S33583.D
Acq: 16 Sep 2013 3:23 pm

Tgt Ion: 252 Resp: 61
Ion Ratio Lower Upper
252 100
126 0.0 24.4 36.6#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33634.D
 Acq On : 21 Sep 2013 5:07 am
 Operator : RUBENP
 Sample : ms29817-mb37
 Misc : ms29817,mss1494,,,,
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 24 17:46:42 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

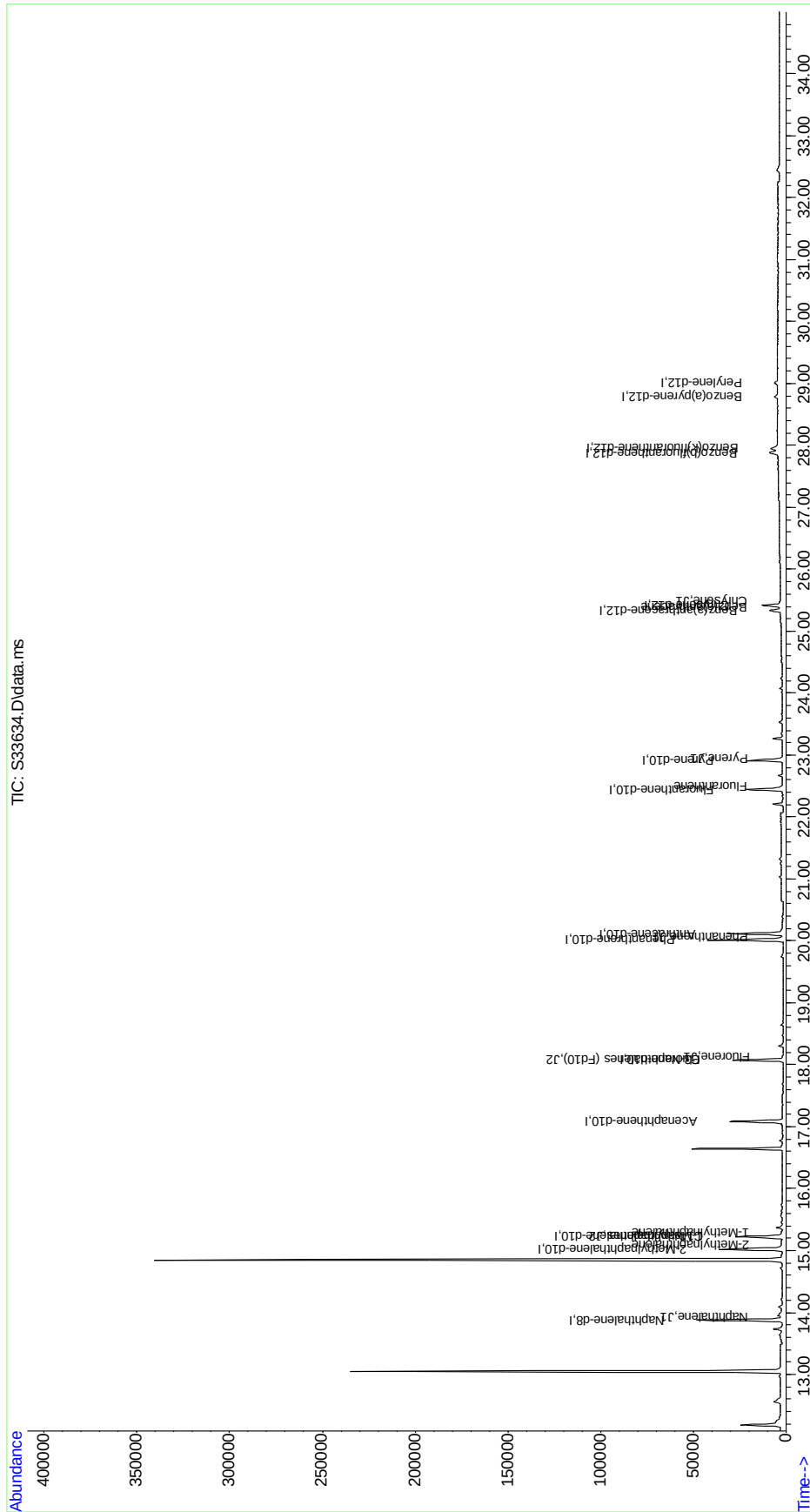
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	73266	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	50329	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	35069	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	23617	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	22618	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	58957	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	47161	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	31704	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	27366	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	8214	0.50	ng/mL	-0.01
37) Chrysene-d12	25.418	240	13653	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.879	264	8763	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	8501	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.779	264	3729	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	3688	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.918	128	500m	0.198	ng/mL	Qvalue
3) C1-Naphthalenes	15.221	142	160m	0.063	ng/mL	
6) C3-Naphthalenes (Fd10)	18.074	170	2965m	0.877	µg/mL	
9) 2-Methylnaphthalene	15.089	142	63m	0.017	ng/mL	
11) 1-Methylnaphthalene	15.287	142	37	0.014	ng/mL	100
16) Fluorene	18.132	166	63	0.010	ng/mL	95
21) Phenanthrene	20.059	178	410m	0.028	ng/mL	
29) Fluoranthene	22.483	202	171m	0.007	ng/mL	
31) Pyrene	22.948	202	130m	0.005	ng/mL	
36) Benz(a)anthracene	25.385	228	41m	0.002	ng/mL	
38) Chrysene	25.472	228	47	0.002	ng/mL#	1

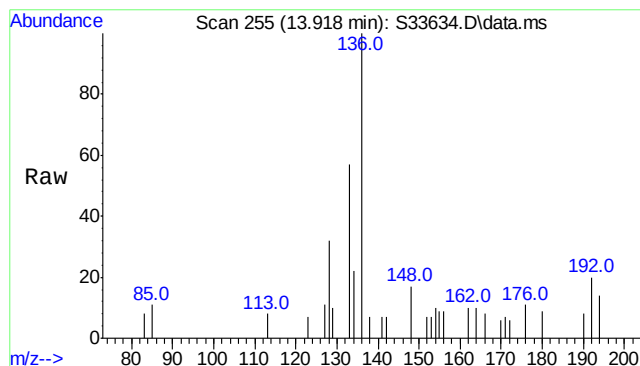
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : Z:\data\S130920\
Data File : S33634.D
Acq On : 21 Sep 2013 5:07 am
Operator : RUBENP
Sample : ms29817-mb37
Misc : ms29817,mss1494,,,,
ALS Vial : 21 Sample Multiplier: 1

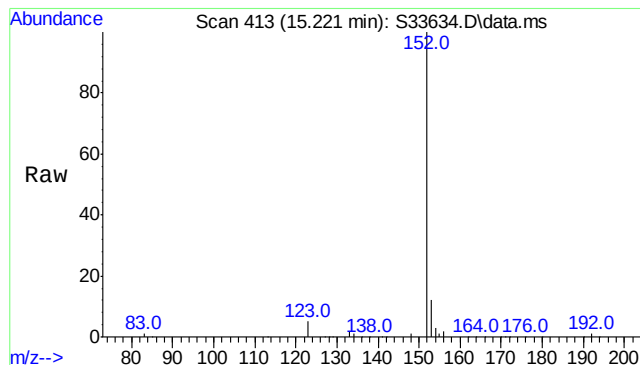
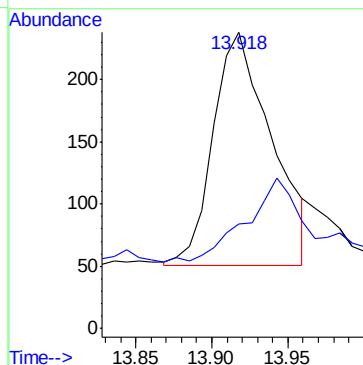
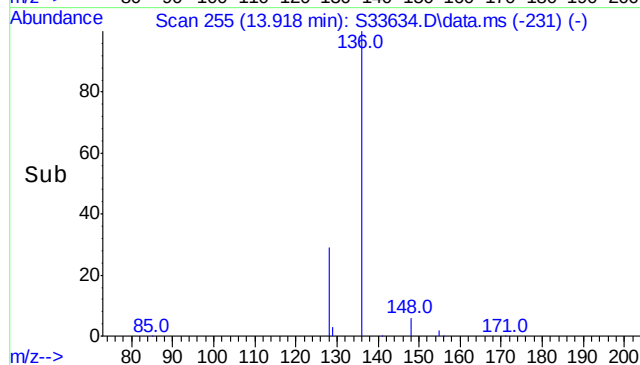
Quant Time: Oct 24 17:46:42 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





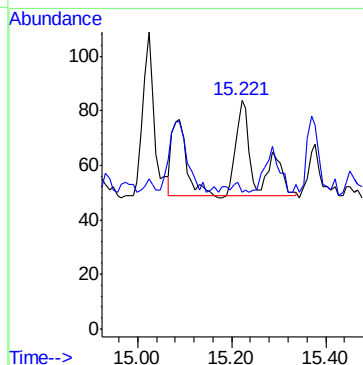
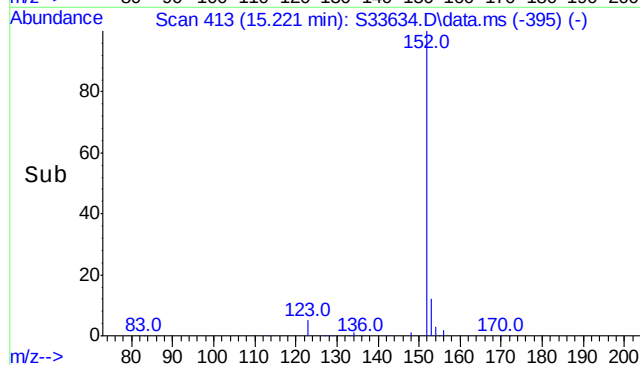
#2
Naphthalene
Concen: 0.198 ng/mL m
RT: 13.918 min Scan# 255
Delta R.T. 0.000 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

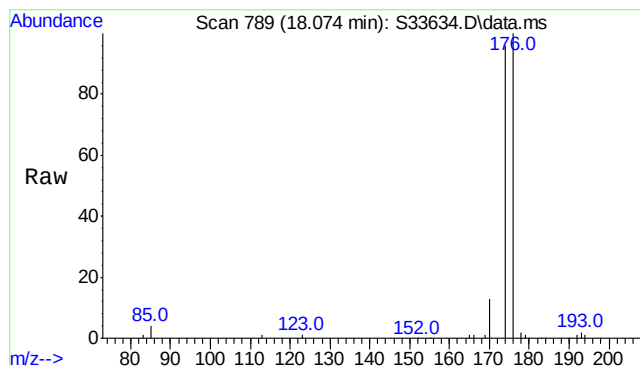
Tgt Ion:128 Resp: 500
Ion Ratio Lower Upper
128 100
127 0.0 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.063 ng/mL m
RT: 15.221 min Scan# 413
Delta R.T. 0.099 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

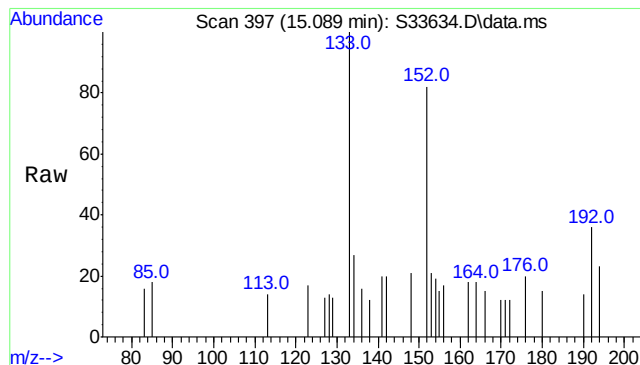
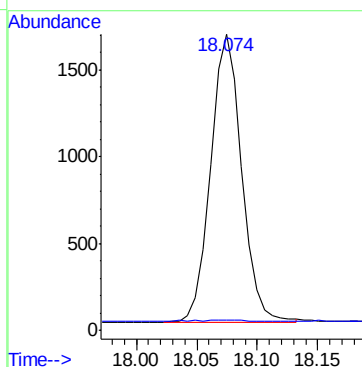
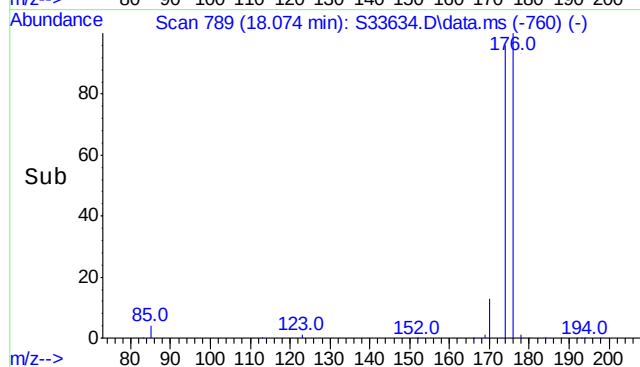
Tgt Ion:142 Resp: 160
Ion Ratio Lower Upper
142 100
141 21.9 71.0 106.6#





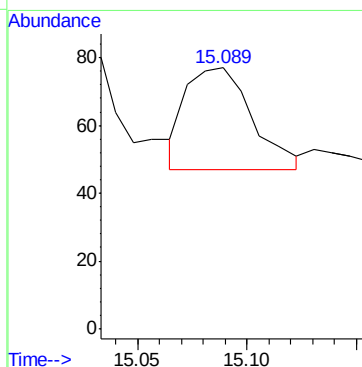
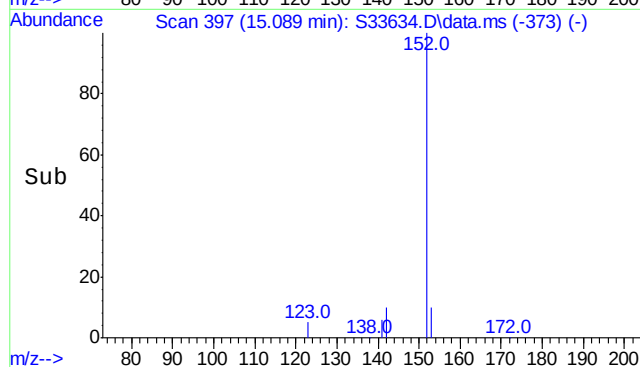
#6
C3-Naphthalenes (Fd10)
Concen: 0.877 µg/mL m
RT: 18.074 min Scan# 789
Delta R.T. -0.013 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

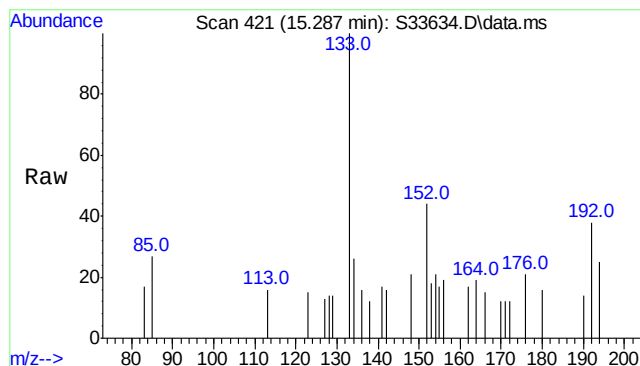
Tgt Ion:170 Resp: 2965
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0



#9
2-Methylnaphthalene
Concen: 0.017 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

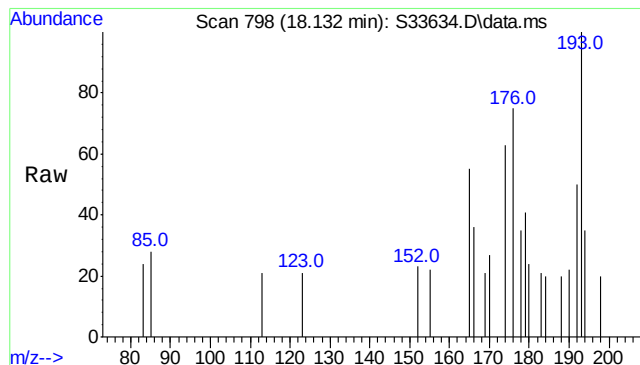
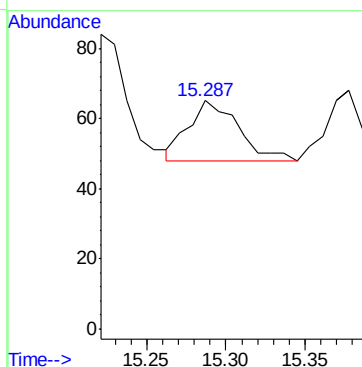
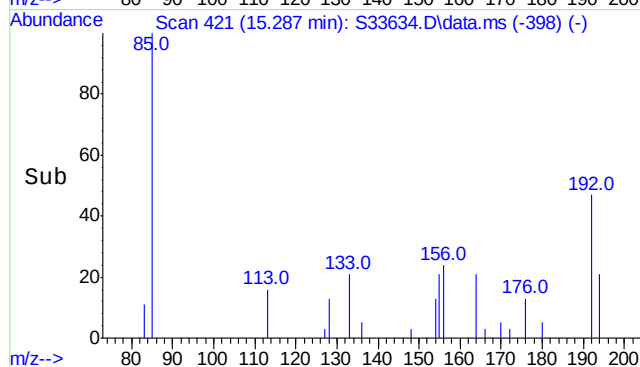
Tgt Ion:142 Resp: 63





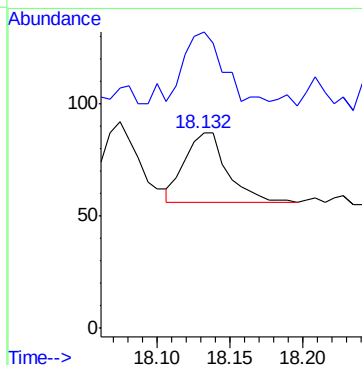
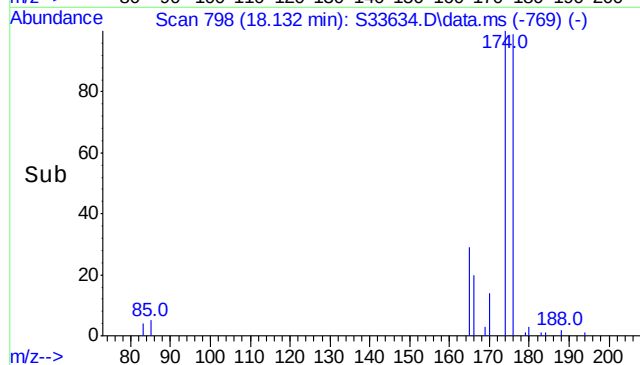
#11
1-Methylnaphthalene
Concen: 0.014 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

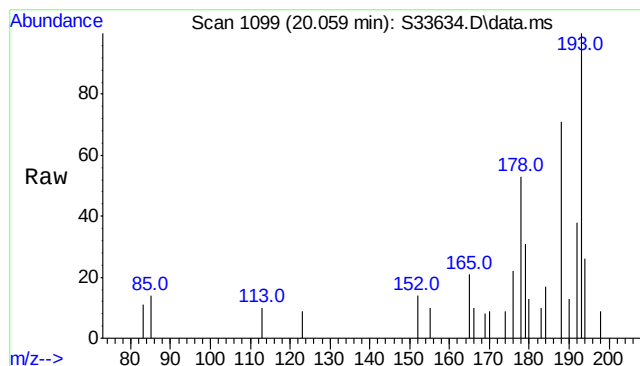
Tgt Ion:142 Resp: 37



#16
Fluorene
Concen: 0.010 ng/mL
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

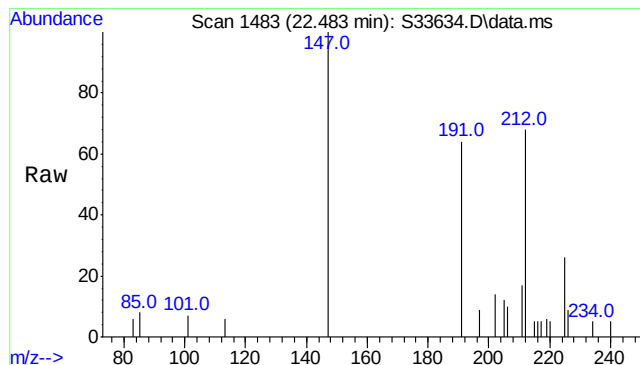
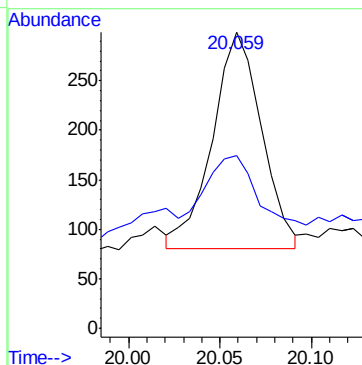
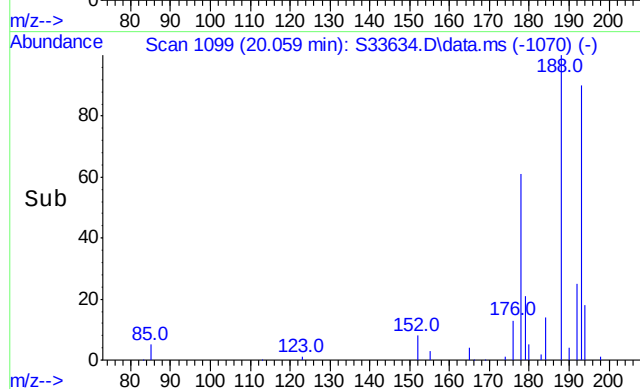
Tgt Ion:166 Resp: 63
Ion Ratio Lower Upper
166 100
165 100.0 76.4 114.6





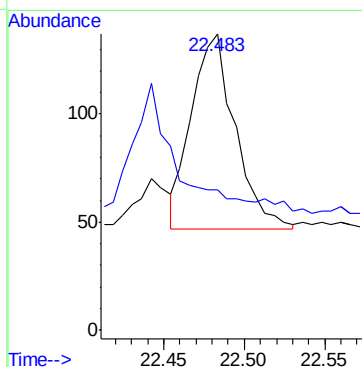
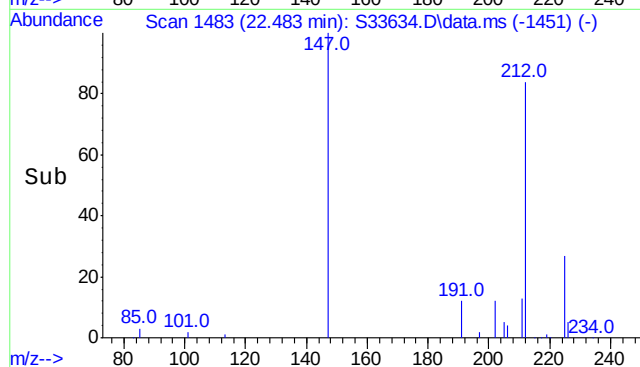
#21
Phenanthrene
Concen: 0.028 ng/mL m
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

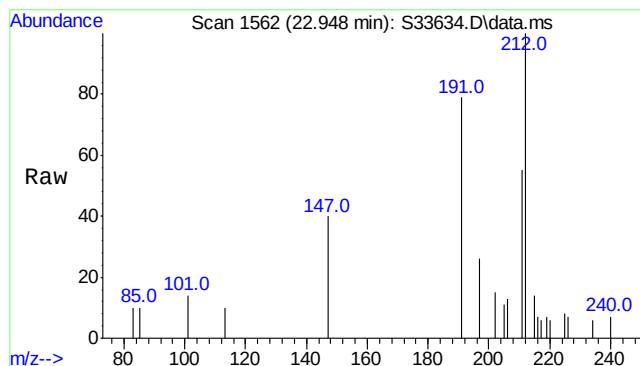
Tgt Ion:178 Resp: 410
Ion Ratio Lower Upper
178 100
179 34.9 12.4 18.6#



#29
Fluoranthene
Concen: 0.007 ng/mL m
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

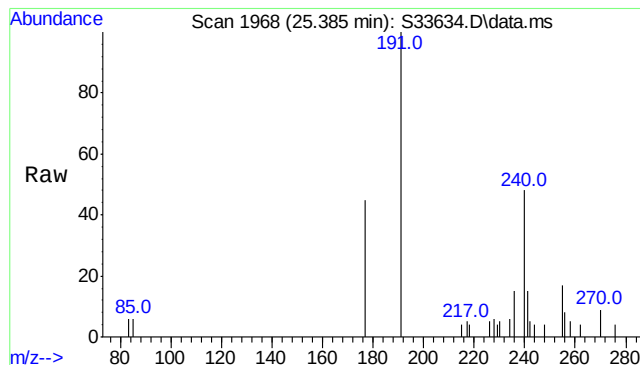
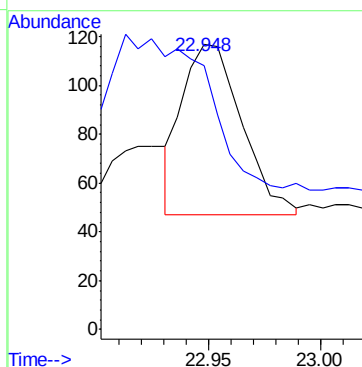
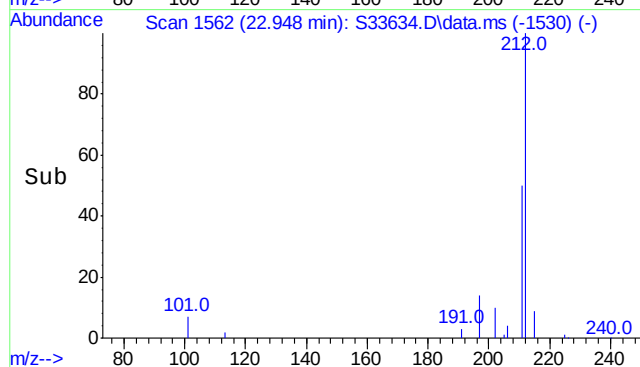
Tgt Ion:202 Resp: 171
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





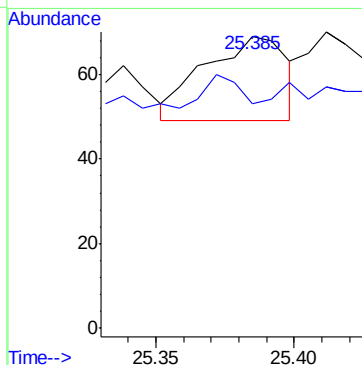
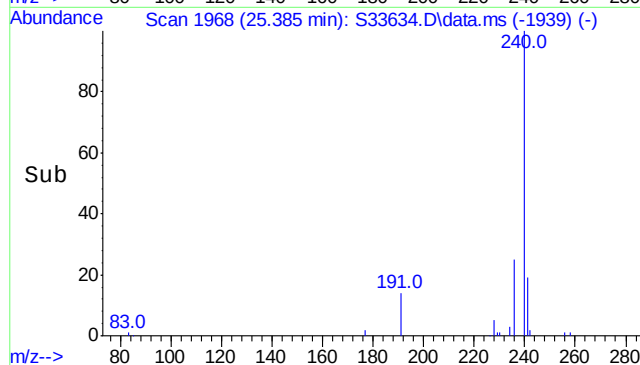
#31
Pyrene
Concen: 0.005 ng/mL m
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

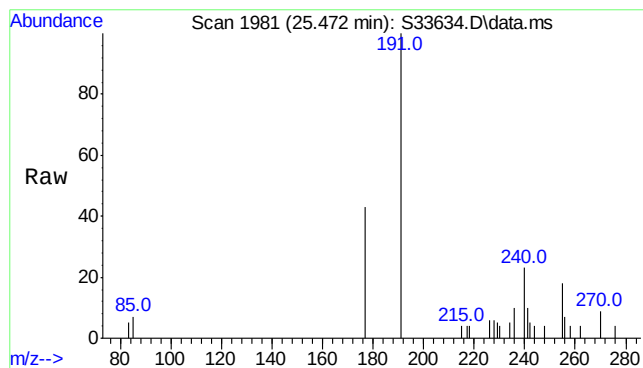
Tgt Ion:202 Resp: 130
Ion Ratio Lower Upper
202 100
101 0.0 16.6 24.8#



#36
Benz(a)anthracene
Concen: 0.002 ng/mL m
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

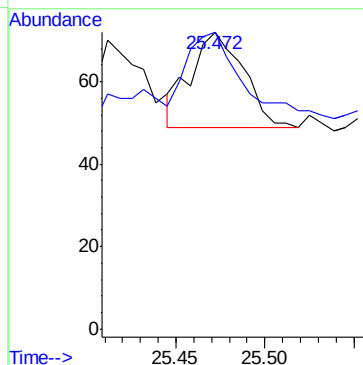
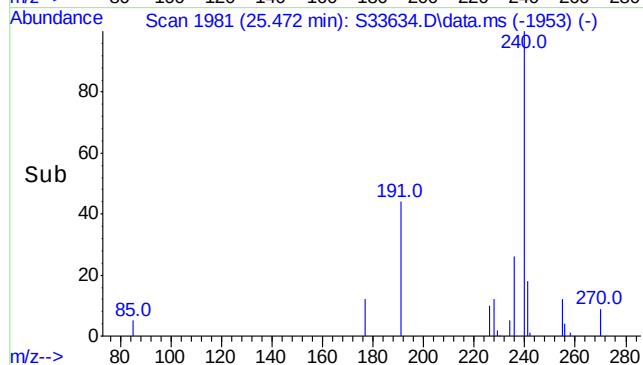
Tgt Ion:228 Resp: 41
Ion Ratio Lower Upper
228 100
226 0.0 23.7 35.5#





#38
Chrysene
Concen: 0.002 ng/mL
RT: 25.472 min Scan# 1981
Delta R.T. -0.013 min
Lab File: S33634.D
Acq: 21 Sep 2013 5:07 am

Tgt Ion: 228 Resp: 47
Ion Ratio Lower Upper
228 100
226 97.9 26.0 39.0#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33638.D
 Acq On : 21 Sep 2013 8:14 am
 Operator : RUBENP
 Sample : ms29817-mb38
 Misc : ms29817,mss1495,,,,,
 ALS Vial : 25 Sample Multiplier: 1

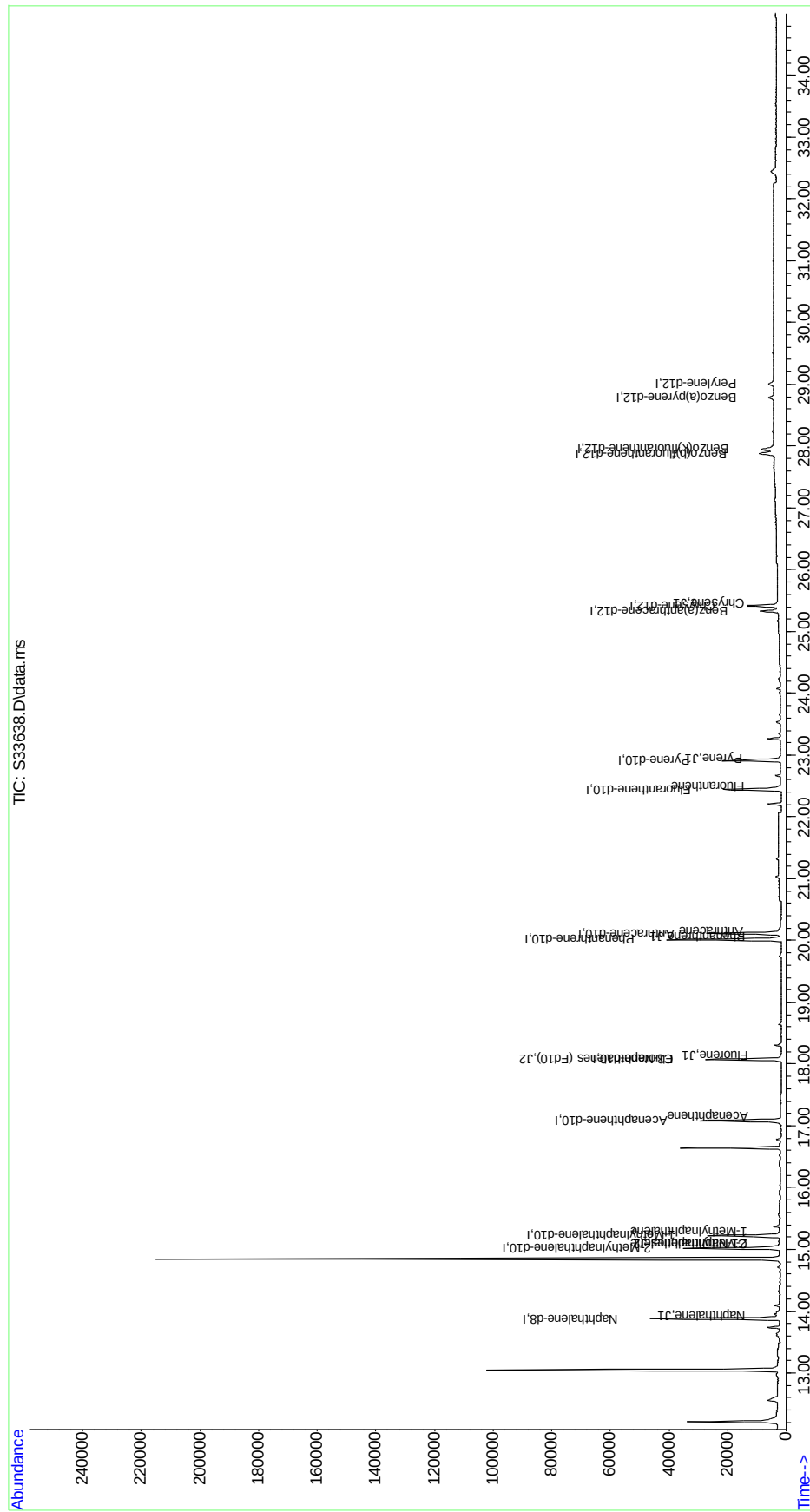
Quant Time: Oct 24 17:59:04 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	72573	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	48437	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	33822	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	22316	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	21713	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	56531	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	41811	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	31706	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	26754	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	8493	0.50	ng/mL	-0.01
37) Chrysene-d12	25.419	240	14203	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.879	264	9640	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	9177m	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.785	264	3850	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	3905	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	846m	0.339	ng/mL	
3) C1-Naphthalenes	15.089	142	290m	0.116	ng/mL	
6) C3-Naphthalenes (Fd10)	18.074	170	2889	0.862	µg/mL#	100
9) 2-Methylnaphthalene	15.089	142	120	0.034	ng/mL	100
11) 1-Methylnaphthalene	15.296	142	74	0.028	ng/mL	100
14) Acenaphthene	17.154	154	63	0.019	ng/mL#	79
16) Fluorene	18.138	166	70	0.012	ng/mL#	47
21) Phenanthrene	20.059	178	453m	0.032	ng/mL	
27) Anthracene	20.149	178	87m	0.008	ng/mL	
29) Fluoranthene	22.483	202	194m	0.008	ng/mL	
31) Pyrene	22.942	202	153m	0.006	ng/mL	
38) Chrysene	25.465	228	44	0.001	ng/mL#	1

(#) = qualifier out of range (m) = manual integration (+) = signals summed

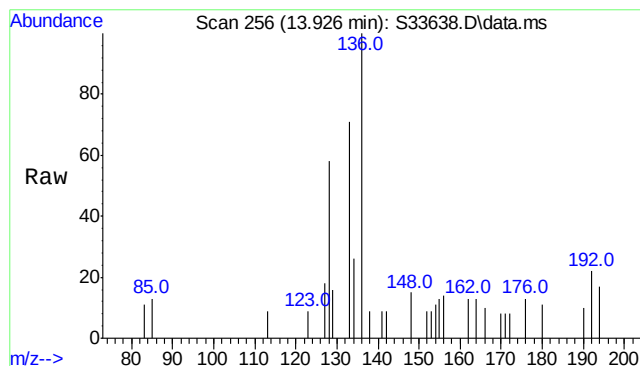
Data Path : Z:\data\S130920\
Data File : S33638.D
Acq On : 21 Sep 2013 8:14 am
Operator : RUBENP
Sample : ms29817-mb38
Misc : ms29817.mss1495,,,
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Oct 24 17:59:04 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration



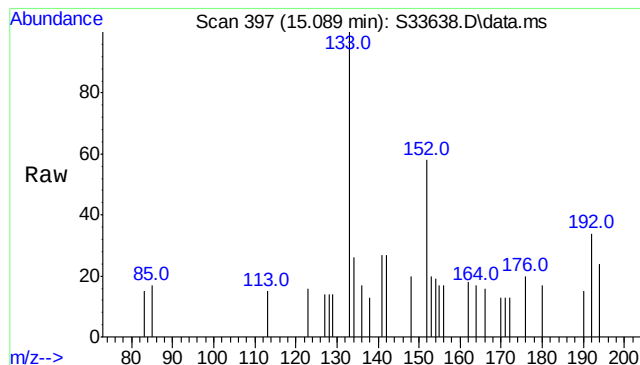
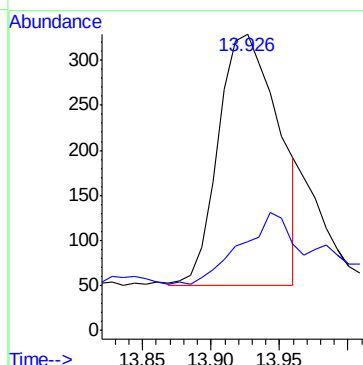
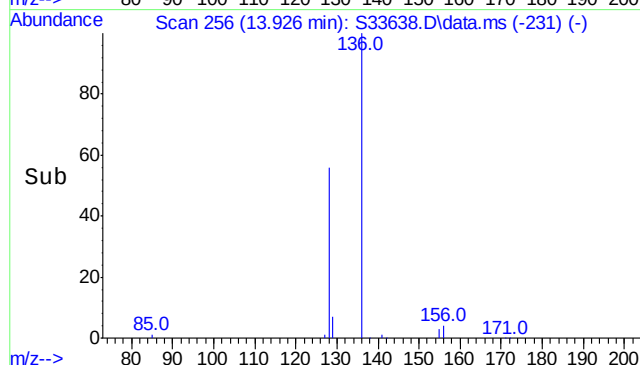
30920-SPMEPAH-CCQ-13.M Fri Oct 25 10:50:18 2013

Page: 2



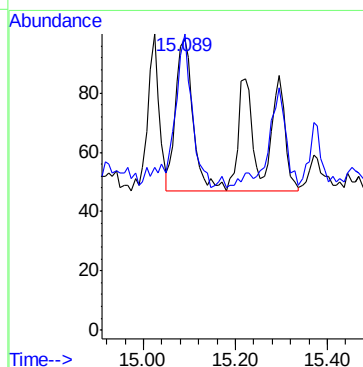
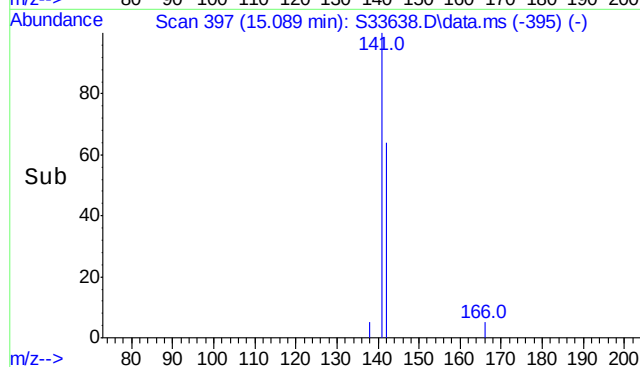
#2
Naphthalene
Concen: 0.339 ng/mL m
RT: 13.926 min Scan# 256
Delta R.T. 0.008 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

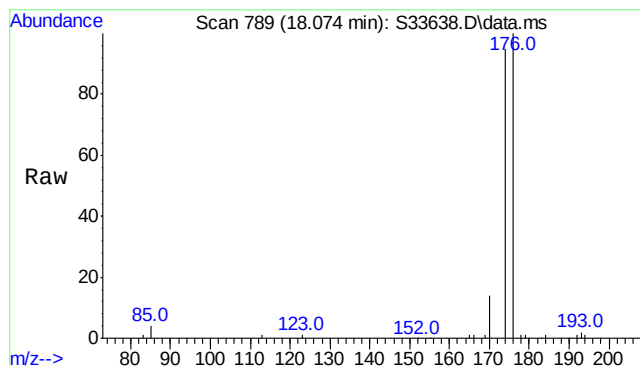
Tgt Ion:128 Resp: 846
Ion Ratio Lower Upper
128 100
127 25.1 10.6 15.8#



#3
C1-Naphthalenes
Concen: 0.116 ng/mL m
RT: 15.089 min Scan# 397
Delta R.T. -0.033 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

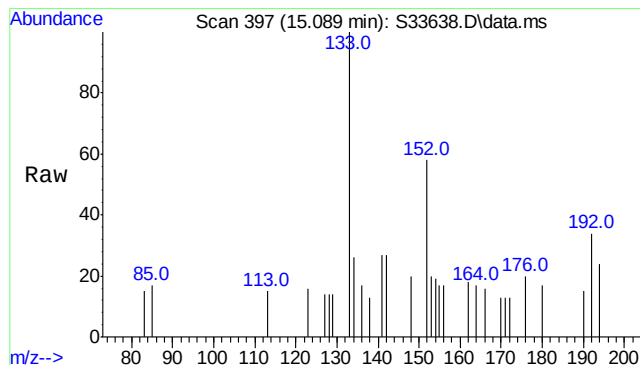
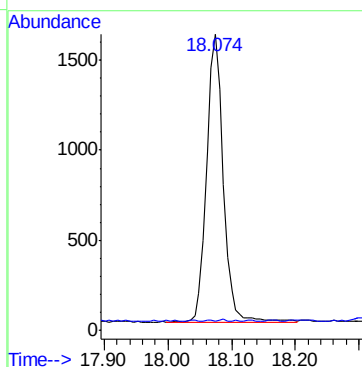
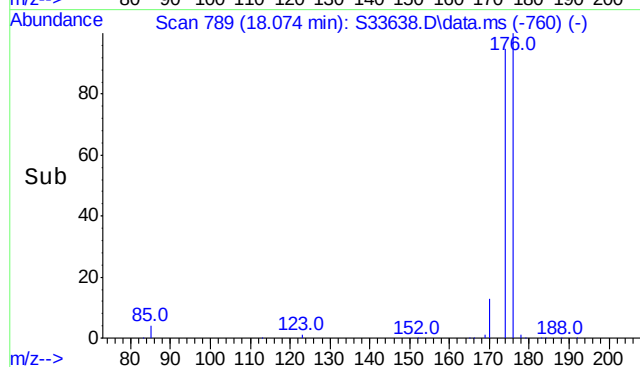
Tgt Ion:142 Resp: 290
Ion Ratio Lower Upper
142 100
141 26.2 71.0 106.6#





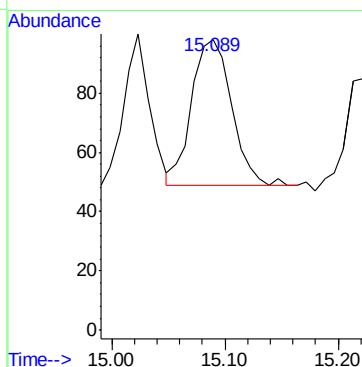
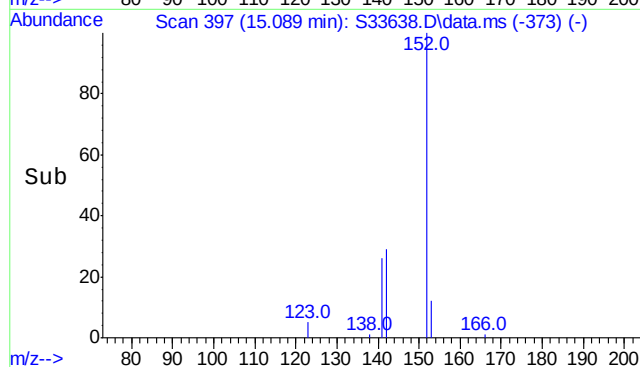
#6
C3-Naphthalenes (Fd10)
Concen: 0.862 µg/mL
RT: 18.074 min Scan# 789
Delta R.T. -0.013 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

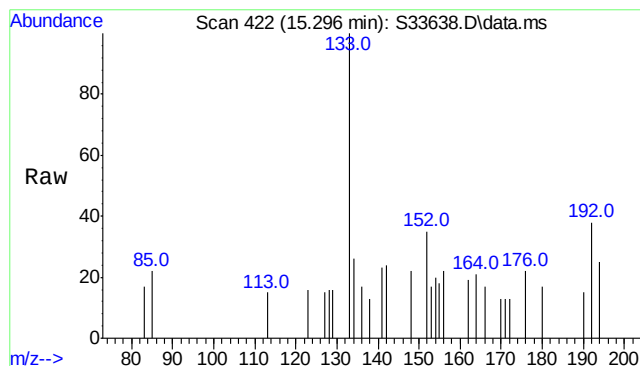
Tgt Ion:170 Resp: 2889
Ion Ratio Lower Upper
170 100
155 0.0 0.0 0.0



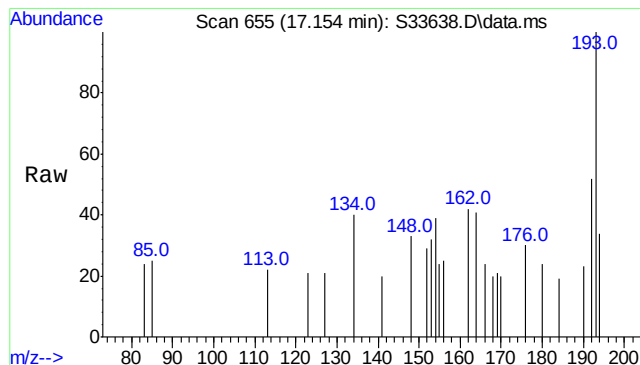
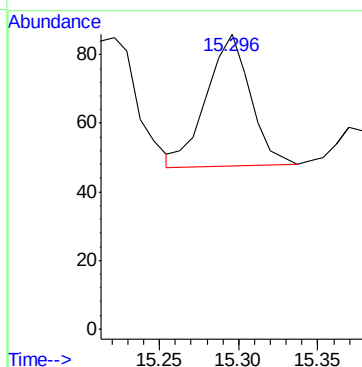
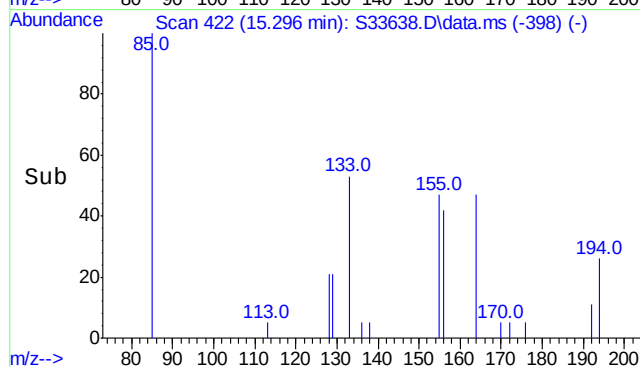
#9
2-Methylnaphthalene
Concen: 0.034 ng/mL
RT: 15.089 min Scan# 397
Delta R.T. 0.000 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

Tgt Ion:142 Resp: 120

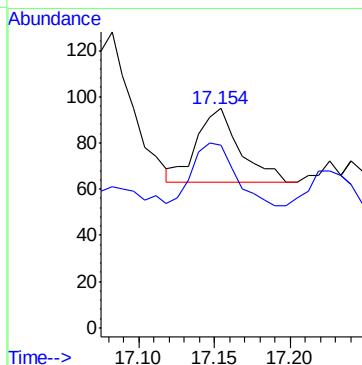
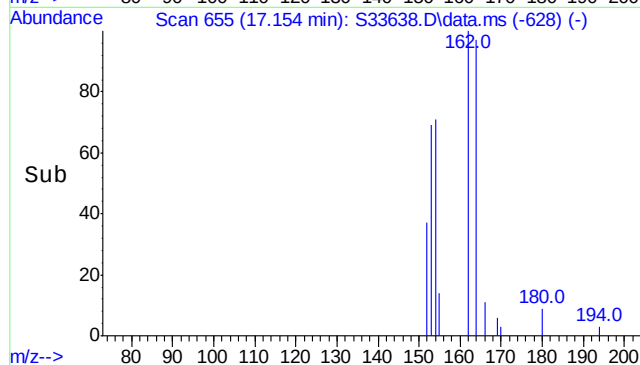


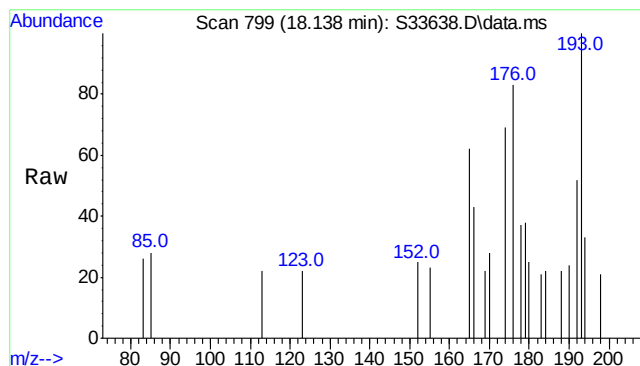


#11
1-Methylnaphthalene
Concen: 0.028 ng/mL
RT: 15.296 min Scan# 422
Delta R.T. 0.001 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am
Tgt Ion:142 Resp: 74



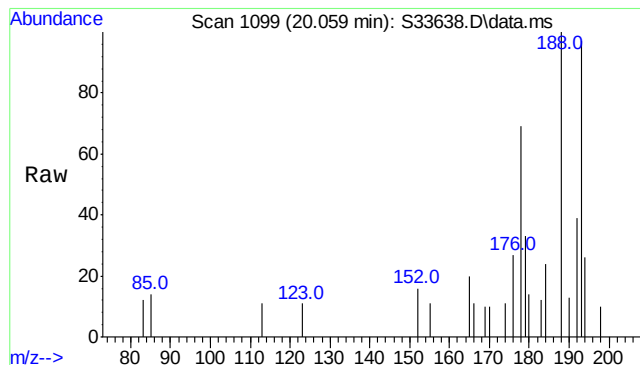
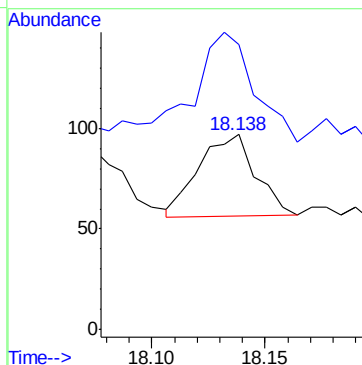
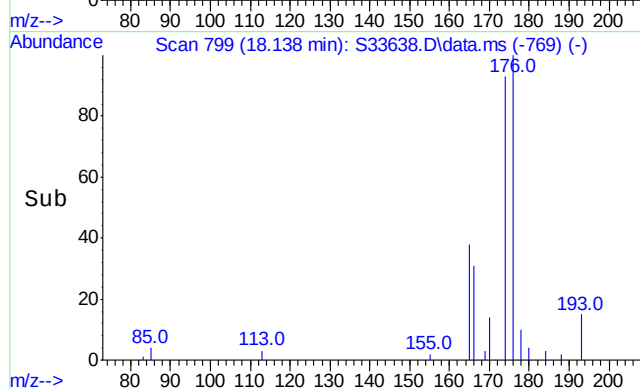
#14
Acenaphthene
Concen: 0.019 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am
Tgt Ion:154 Resp: 63
Ion Ratio Lower Upper
154 100
153 85.7 86.6 129.8#





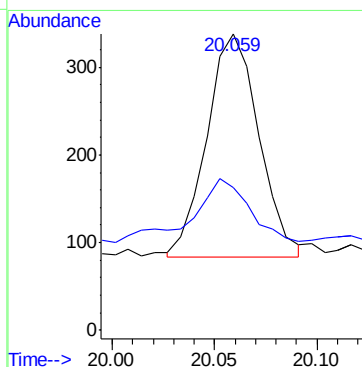
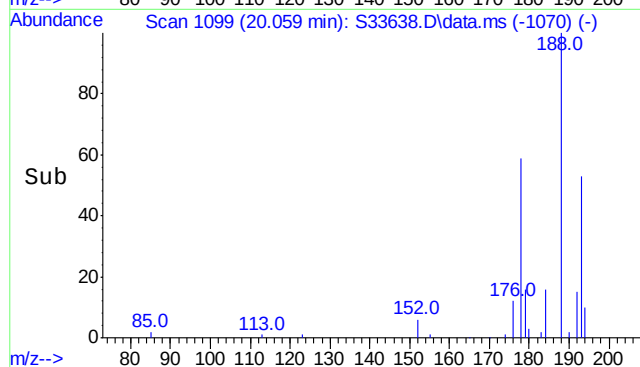
#16
Fluorene
Concen: 0.012 ng/mL
RT: 18.138 min Scan# 799
Delta R.T. -0.007 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

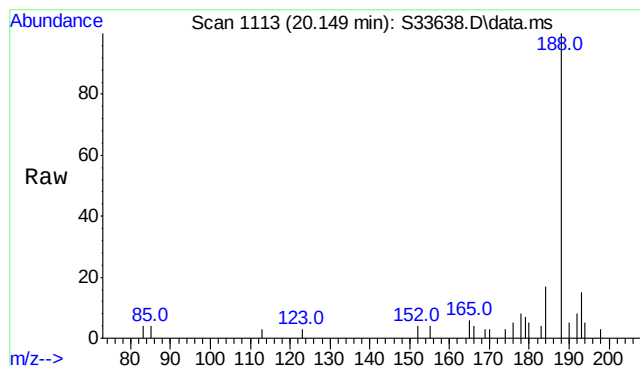
Tgt Ion:166 Resp: 70
Ion Ratio Lower Upper
166 100
165 147.1 76.4 114.6#



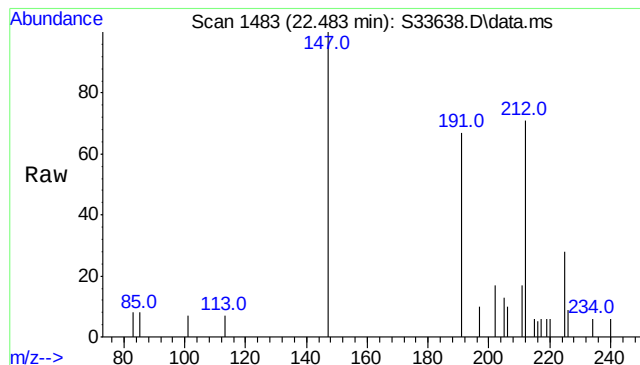
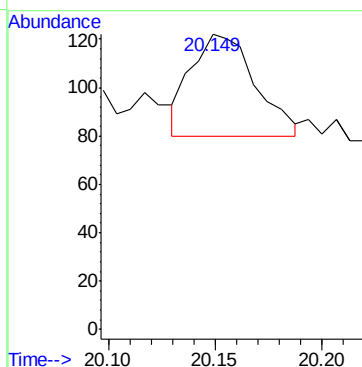
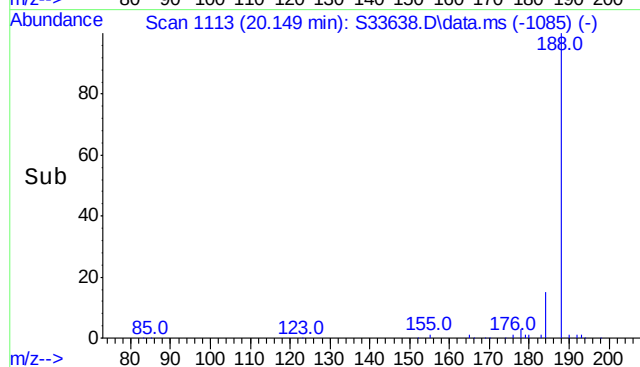
#21
Phenanthrene
Concen: 0.032 ng/mL m
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

Tgt Ion:178 Resp: 453
Ion Ratio Lower Upper
178 100
179 50.6 12.4 18.6#

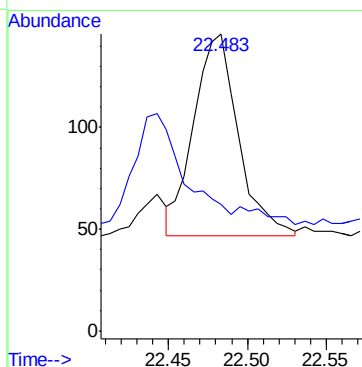
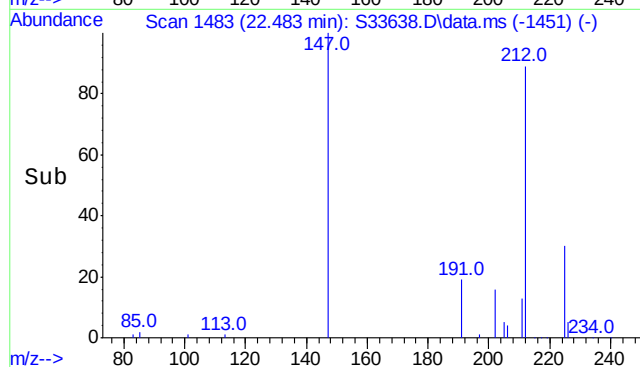


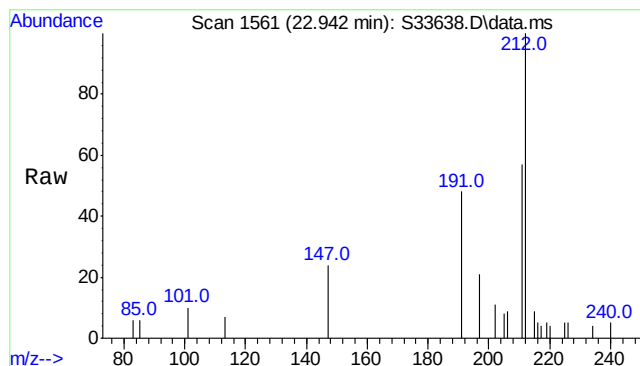


#27
Anthracene
Concen: 0.008 ng/mL m
RT: 20.149 min Scan# 1113
Delta R.T. -0.019 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am
Tgt Ion:178 Resp: 87



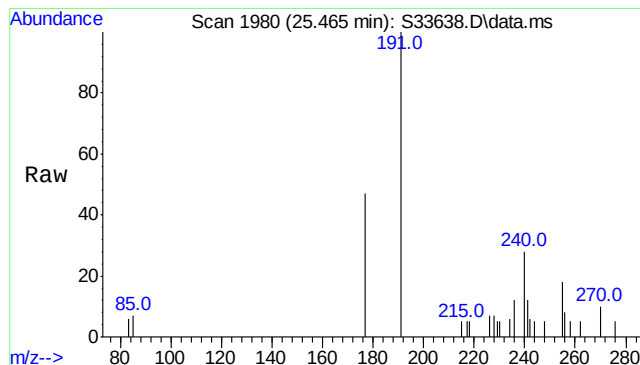
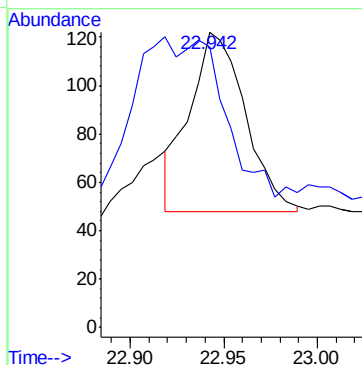
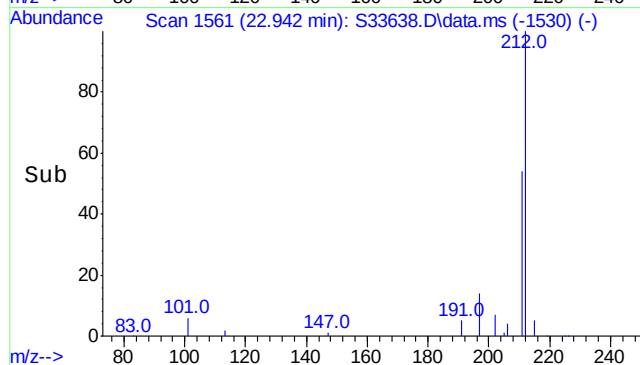
#29
Fluoranthene
Concen: 0.008 ng/mL m
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am
Tgt Ion:202 Resp: 194
Ion Ratio Lower Upper
202 100
101 0.0 14.3 21.5#





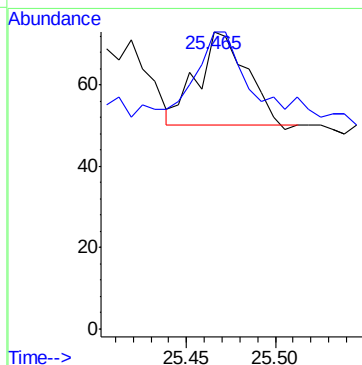
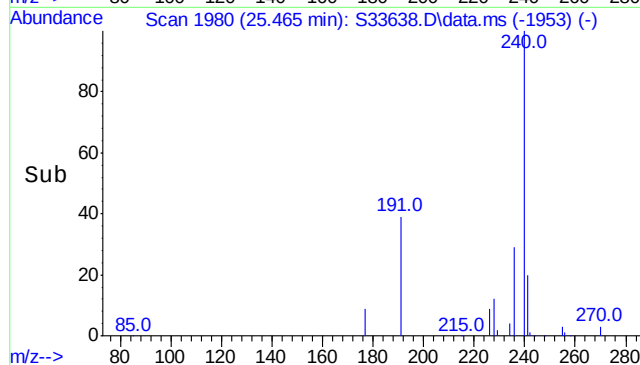
#31
Pyrene
Concen: 0.006 ng/mL m
RT: 22.942 min Scan# 1561
Delta R.T. -0.018 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

Tgt Ion:202 Resp: 153
Ion Ratio Lower Upper
202 100
101 0.0 16.6 24.8#



#38
Chrysene
Concen: 0.001 ng/mL
RT: 25.465 min Scan# 1980
Delta R.T. -0.020 min
Lab File: S33638.D
Acq: 21 Sep 2013 8:14 am

Tgt Ion:228 Resp: 44
Ion Ratio Lower Upper
228 100
226 125.0 26.0 39.0#



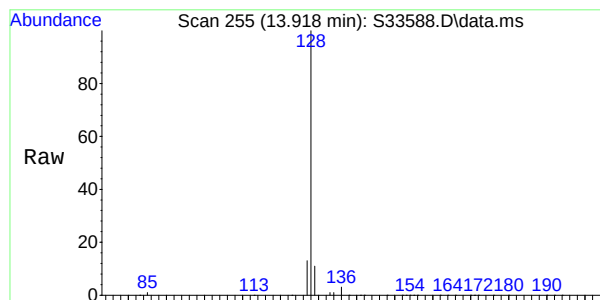
Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130916\
 Data File : S33588.D
 Acq On : 16 Sep 2013 7:16 pm
 Operator : RUBENP
 Sample : mc24285-1ms
 Misc : ms29817,mss1485,1.5,,,1.5,1
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 16 16:57:25 2013
 Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:37:34 2013
 Response via : Initial Calibration

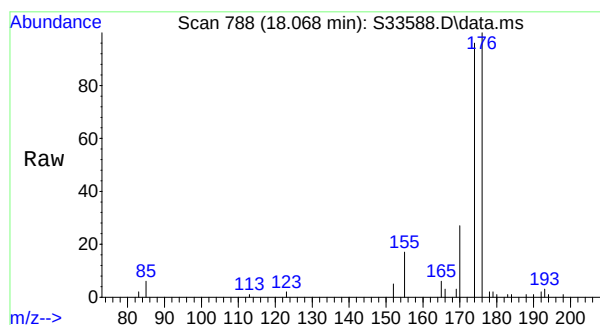
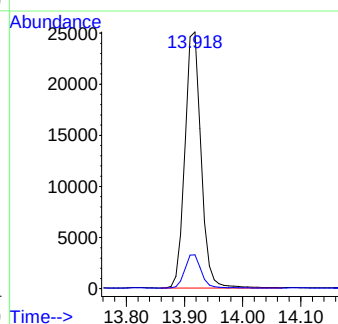
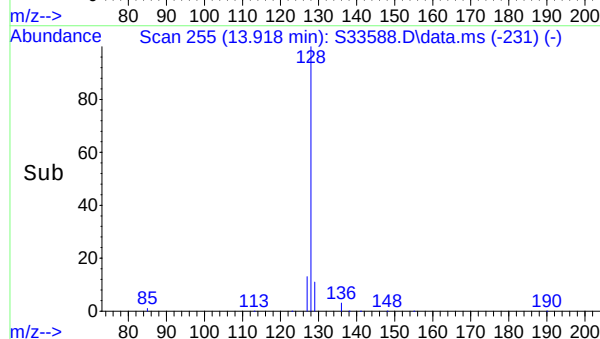
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	49215	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	31316	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	23295	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	16710	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	15468	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.021	188	41380	5.00	ng/mL	0.00
26) Anthracene-d10	20.117	188	45848	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	26284	1.67	ng/mL	0.00
30) Pyrene-d10	22.919	212	23654	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	9742	0.50	ng/mL	0.00
37) Chrysene-d12	25.418	240	12762	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	9854	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	10636	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.791	264	6243	0.33	ng/mL	-0.01
50) Perylene-d12	29.016	264	5117	0.33	ng/mL	-0.01
Target Compounds						
					Qvalue	
2) Naphthalene	13.918	128	48190	27.081	ng/mL	100
6) C3-Naphthalenes (Fd10)	18.068	170	3844	1.611	µg/mL#	100
9) 2-Methylnaphthalene	15.081	142	41652	17.525	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	37898	20.156	ng/mL	100
13) Acenaphthylene	16.801	152	19174	8.583	ng/mL#	100
14) Acenaphthene	17.147	154	55891	21.873	ng/mL	98
16) Fluorene	18.132	166	47751	10.843	ng/mL	96
21) Phenanthrene	20.065	178	133334	12.135	ng/mL	99
27) Anthracene	20.155	178	75463	6.130	ng/mL	100
29) Fluoranthene	22.483	202	51516	2.282	ng/mL#	81
31) Pyrene	22.954	202	54303	2.289	ng/mL#	80
36) Benz(a)anthracene	25.378	228	3140	0.110	ng/mL	96
38) Chrysene	25.479	228	3551	0.112	ng/mL	96
44) Benzo(b)fluoranthene	27.952	252	1388	0.033	ng/mL#	72
46) Benzo(k)fluoranthene	28.003	252	1160	0.028	ng/mL#	59
48) Benzo(e)pyrene	28.712	252	1170	0.030	ng/mL#	67
49) Benzo(a)pyrene	28.852	252	576	0.025	ng/mL#	60
51) Perylene	29.089	252	813	0.036	ng/mL#	68
52) Indeno(1,2,3-cd)pyrene	32.583	276	295	0.007	ng/mL#	41
53) Dibenz(a,h)anthracene	32.567	278	247	0.008	ng/mL#	10
54) Benzo(g,h,i)perylene	33.634	276	241	0.007	ng/mL#	70

(#) = qualifier out of range (m) = manual integration (+) = signals summed



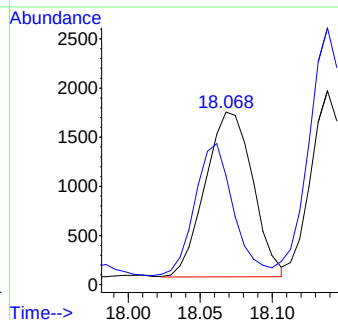
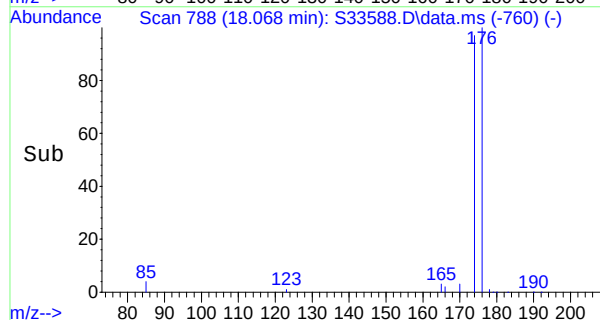
#2
Naphthalene
Concen: 27.081 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. 0.000 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

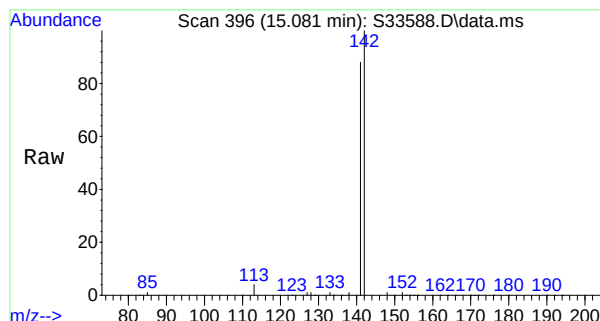
Tgt Ion:128 Resp: 48190
Ion Ratio Lower Upper
128 100
127 13.3 10.6 15.8



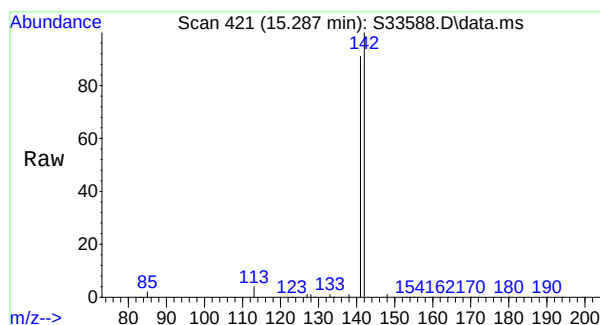
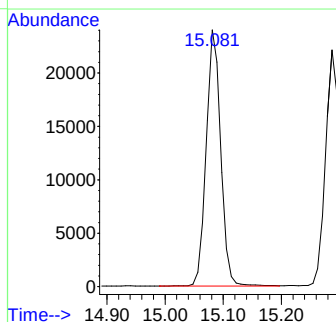
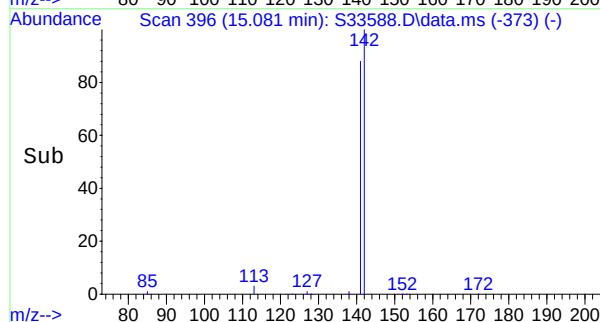
#6
C3-Naphthalenes (Fd10)
Concen: 1.611 µg/mL
RT: 18.068 min Scan# 788
Delta R.T. -0.019 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

Tgt Ion:170 Resp: 3844
Ion Ratio Lower Upper
170 100
155 65.2 0.0 0.0#

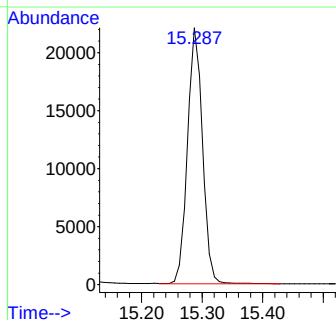
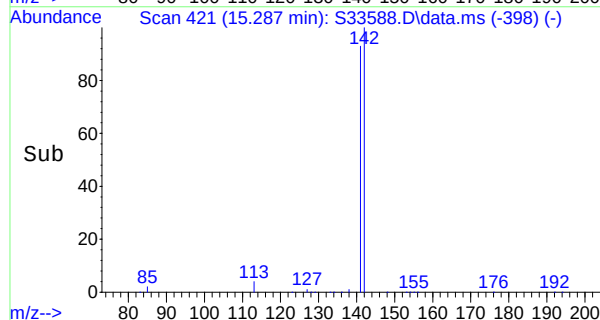


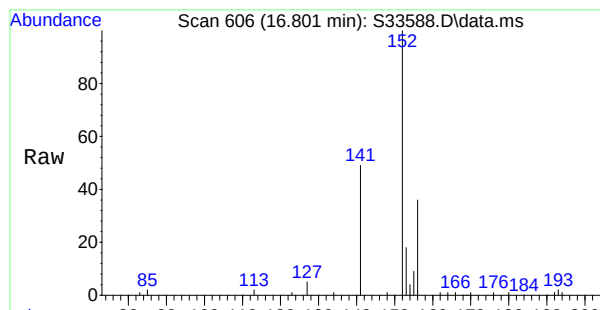


#9
2-Methylnaphthalene
Concen: 17.525 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm
Tgt Ion:142 Resp: 41652



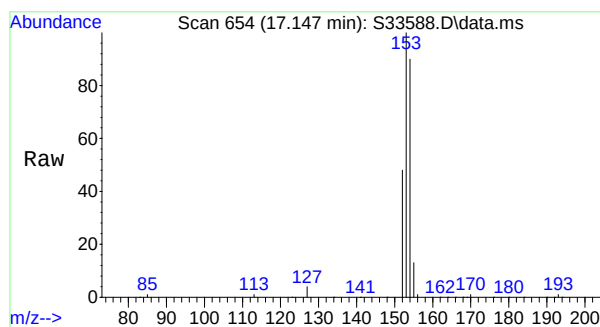
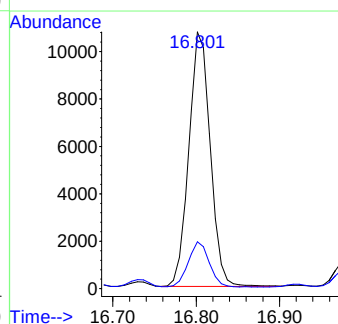
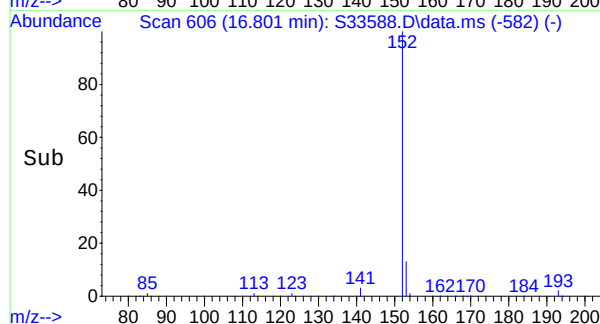
#11
1-Methylnaphthalene
Concen: 20.156 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm
Tgt Ion:142 Resp: 37898





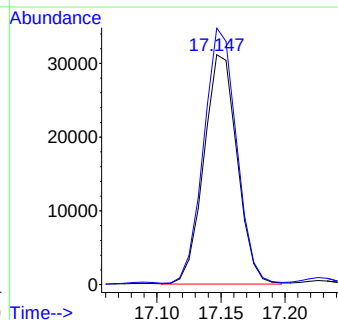
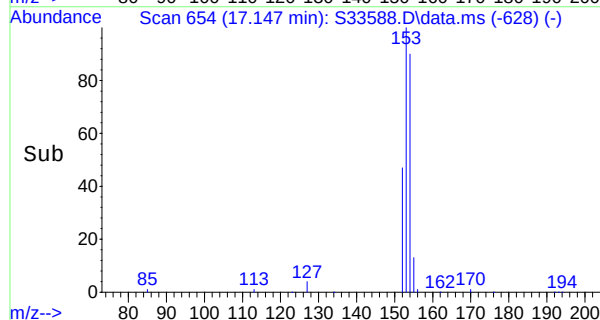
#13
 Acenaphthylene
 Concen: 8.583 ng/mL
 RT: 16.801 min Scan# 606
 Delta R.T. -0.015 min
 Lab File: S33588.D
 Acq: 16 Sep 2013 7:16 pm

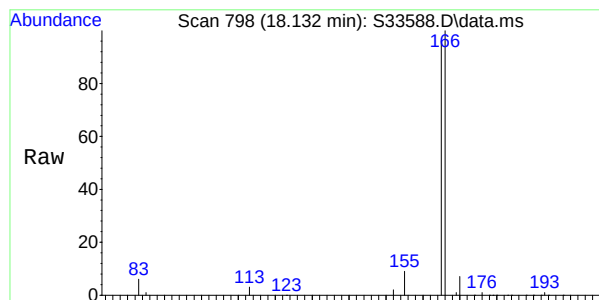
Tgt Ion:152 Resp: 19174
 Ion Ratio Lower Upper
 152 100
 153 17.4 0.0 0.0#



#14
 Acenaphthene
 Concen: 21.873 ng/mL
 RT: 17.147 min Scan# 654
 Delta R.T. -0.014 min
 Lab File: S33588.D
 Acq: 16 Sep 2013 7:16 pm

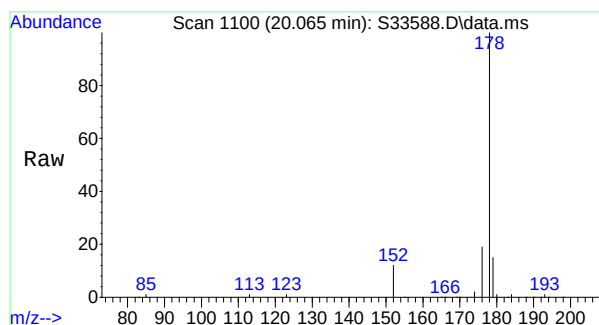
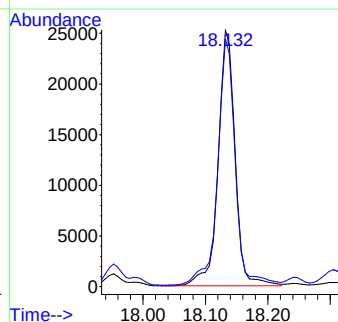
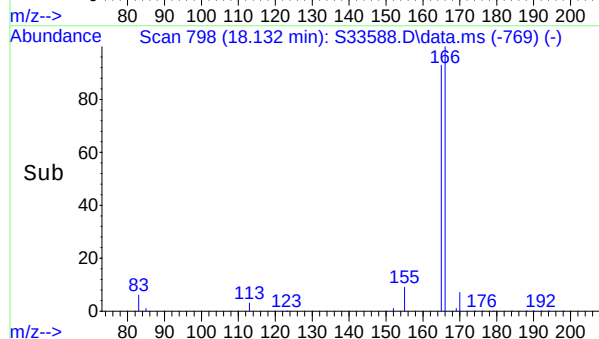
Tgt Ion:154 Resp: 55891
 Ion Ratio Lower Upper
 154 100
 153 110.3 86.6 129.8





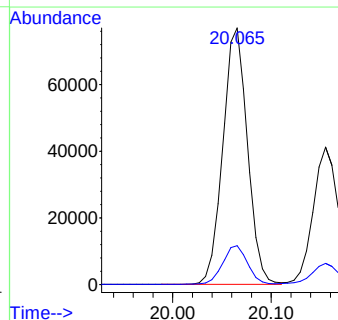
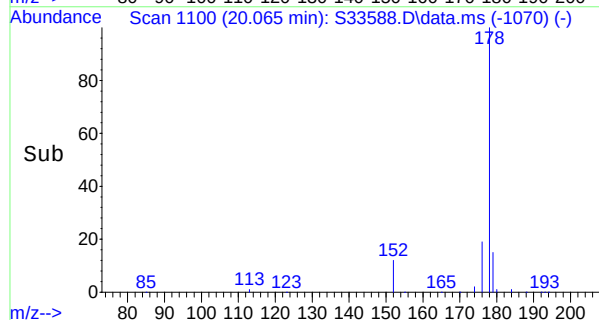
#16
Fluorene
Concen: 10.843 ng/mL
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

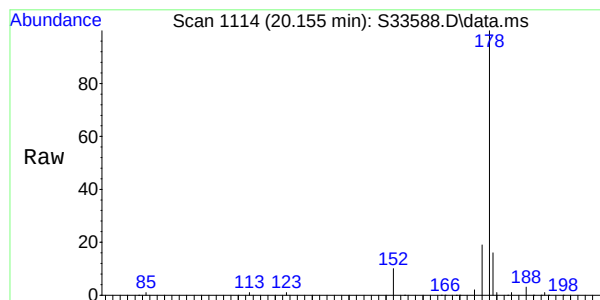
Tgt Ion:166 Resp: 47751
Ion Ratio Lower Upper
166 100
165 99.7 76.4 114.6



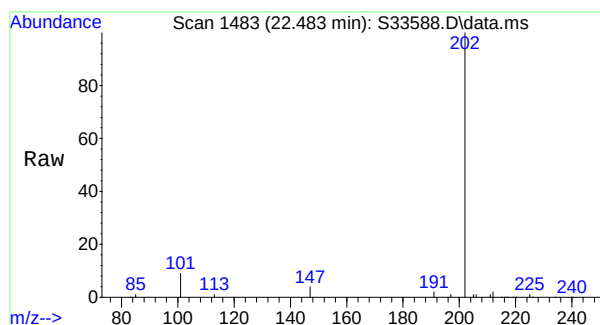
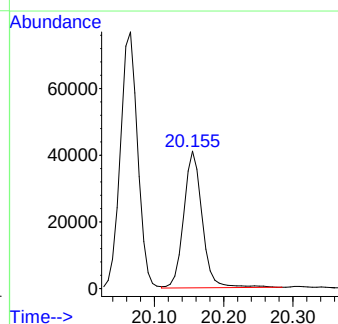
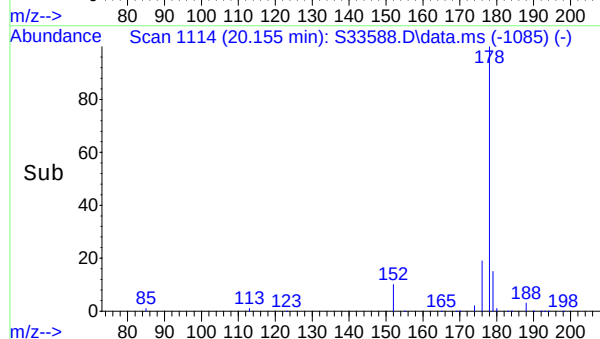
#21
Phenanthrene
Concen: 12.135 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

Tgt Ion:178 Resp: 133334
Ion Ratio Lower Upper
178 100
179 15.3 12.4 18.6

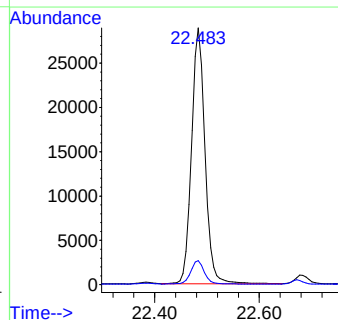
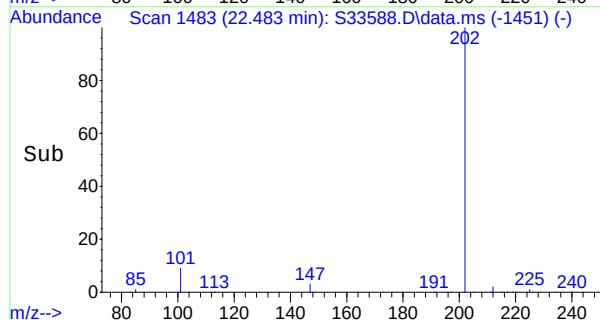


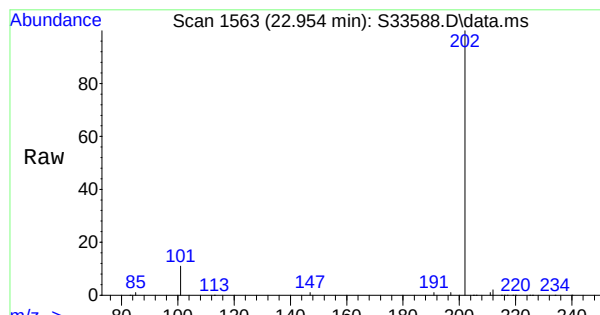


#27
Anthracene
Concen: 6.130 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm
Tgt Ion:178 Resp: 75463



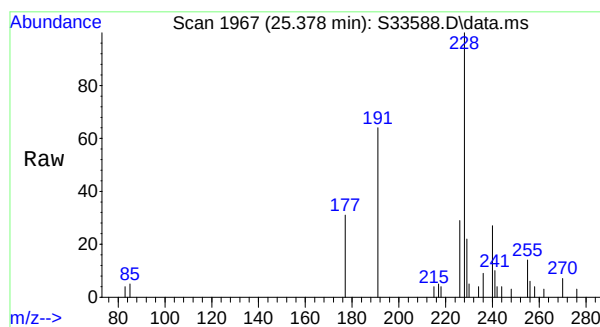
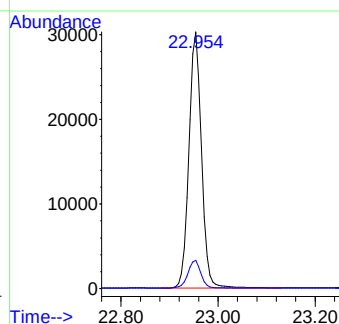
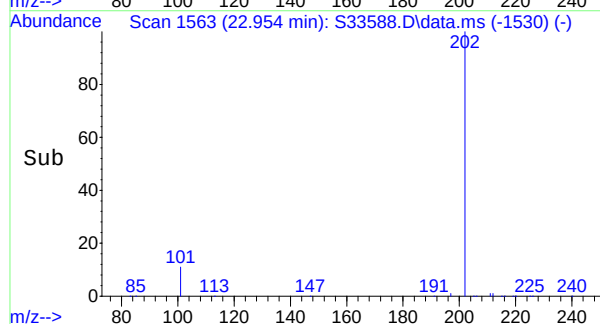
#29
Fluoranthene
Concen: 2.282 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm
Tgt Ion:202 Resp: 51516
Ion Ratio Lower Upper
202 100
101 9.4 14.3 21.5#





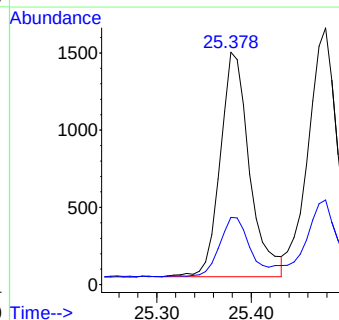
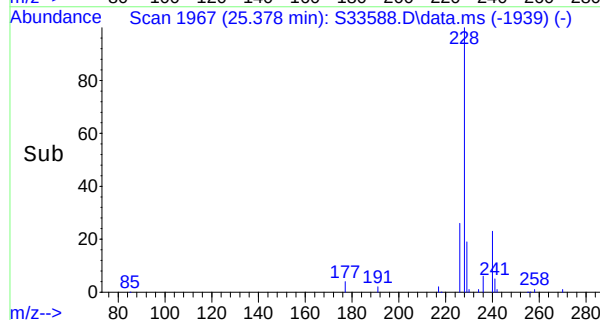
#31
Pyrene
Concen: 2.289 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

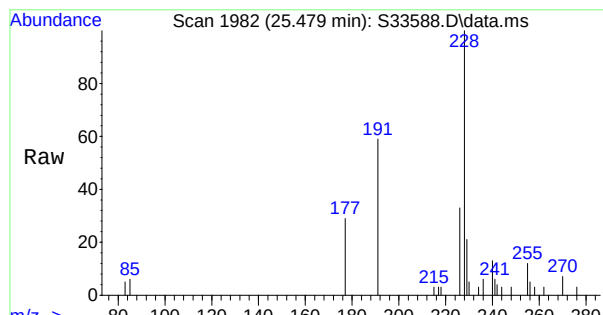
Tgt Ion: 202 Resp: 54303
Ion Ratio Lower Upper
202 100
101 11.4 16.6 24.8#



#36
Benz(a)anthracene
Concen: 0.110 ng/mL
RT: 25.378 min Scan# 1967
Delta R.T. -0.014 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

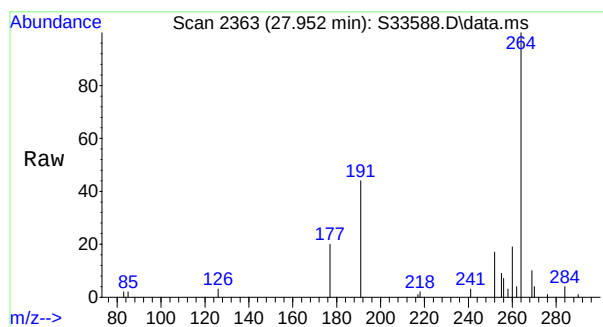
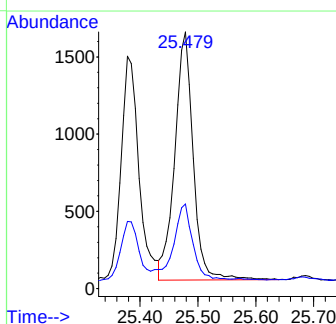
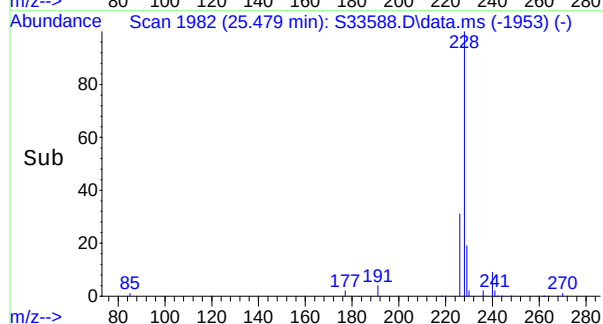
Tgt Ion: 228 Resp: 3140
Ion Ratio Lower Upper
228 100
226 27.2 23.7 35.5





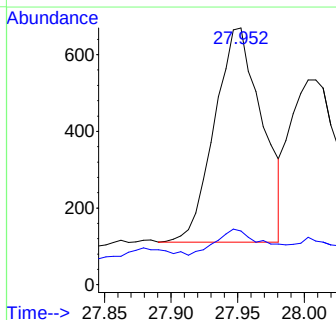
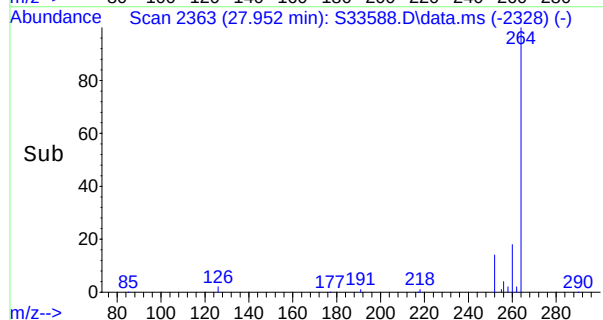
#38
Chrysene
Concen: 0.112 ng/mL
RT: 25.479 min Scan# 1982
Delta R.T. -0.006 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

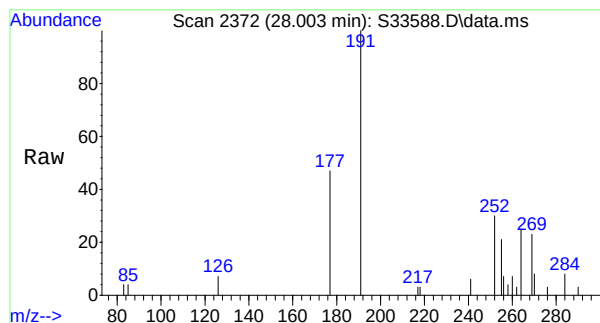
Tgt Ion: 228 Resp: 3551
Ion Ratio Lower Upper
228 100
226 30.2 26.0 39.0



#44
Benzo(b)fluoranthene
Concen: 0.033 ng/mL
RT: 27.952 min Scan# 2363
Delta R.T. -0.006 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

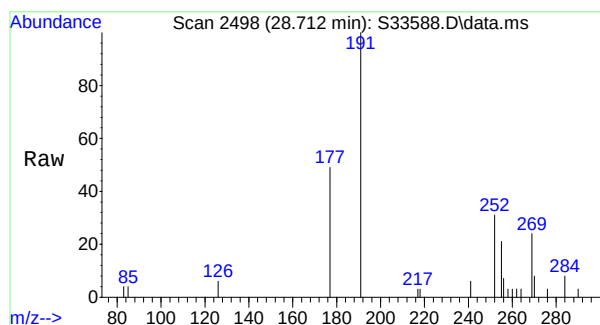
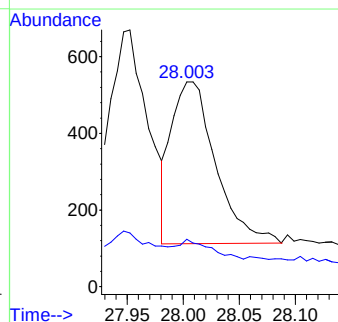
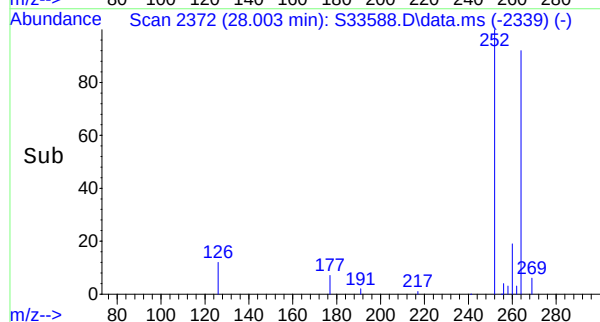
Tgt Ion: 252 Resp: 1388
Ion Ratio Lower Upper
252 100
126 13.8 23.0 34.4#





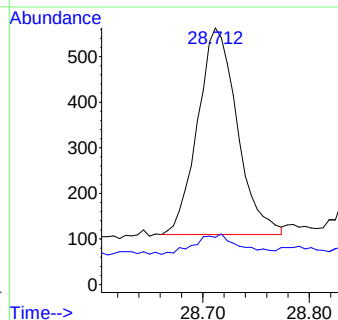
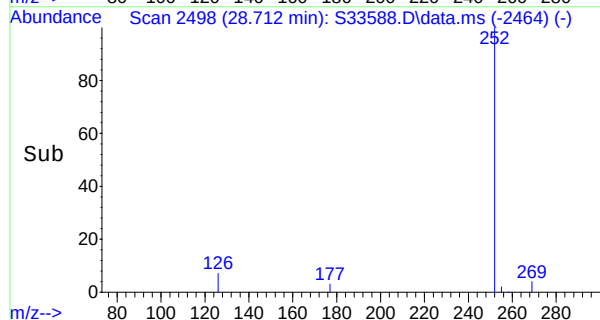
#46
Benzo(k)fluoranthene
Concen: 0.028 ng/mL
RT: 28.003 min Scan# 2372
Delta R.T. -0.017 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

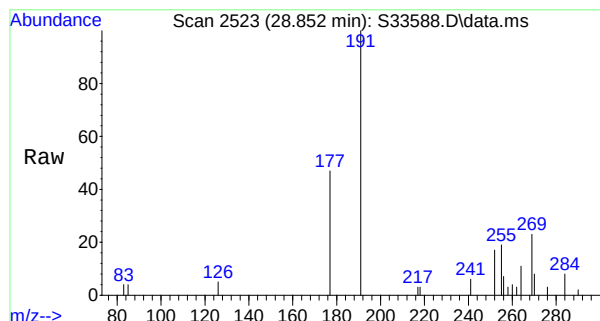
Tgt Ion:252 Resp: 1160
Ion Ratio Lower Upper
252 100
126 8.2 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.030 ng/mL
RT: 28.712 min Scan# 2498
Delta R.T. -0.011 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

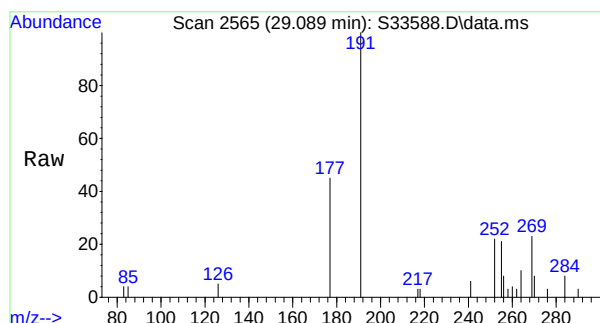
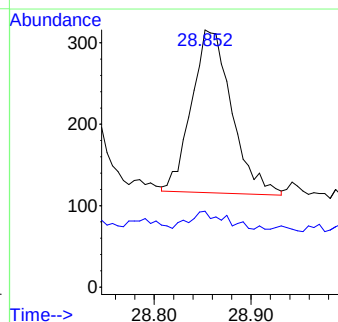
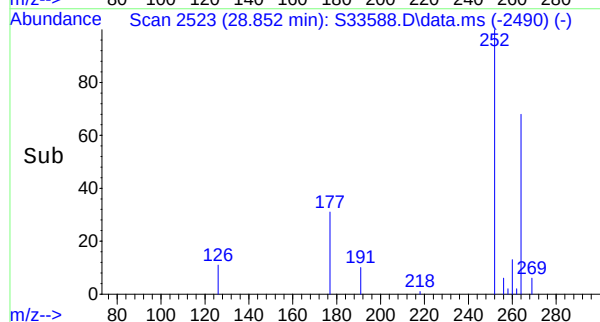
Tgt Ion:252 Resp: 1170
Ion Ratio Lower Upper
252 100
126 11.0 22.6 34.0#





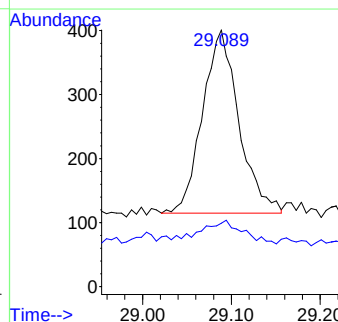
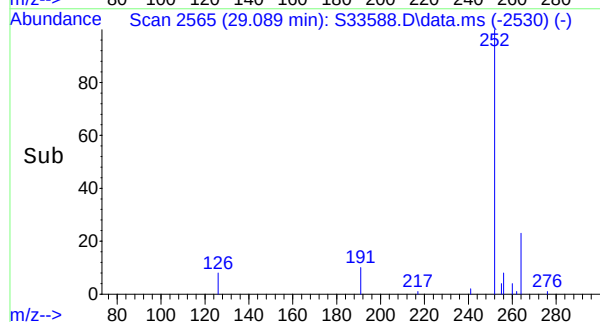
#49
Benzo(a)pyrene
Concen: 0.025 ng/mL
RT: 28.852 min Scan# 2523
Delta R.T. -0.017 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

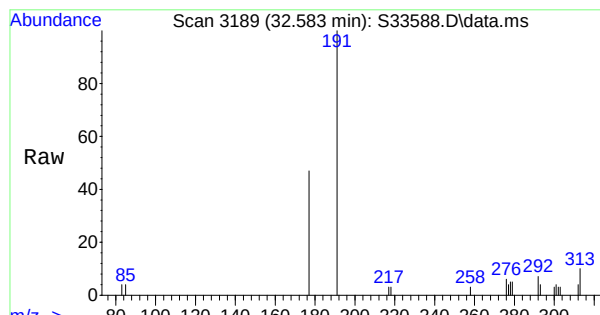
Tgt Ion:252 Resp: 576
Ion Ratio Lower Upper
252 100
126 9.4 25.1 37.7#



#51
Perylene
Concen: 0.036 ng/mL
RT: 29.089 min Scan# 2565
Delta R.T. -0.005 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

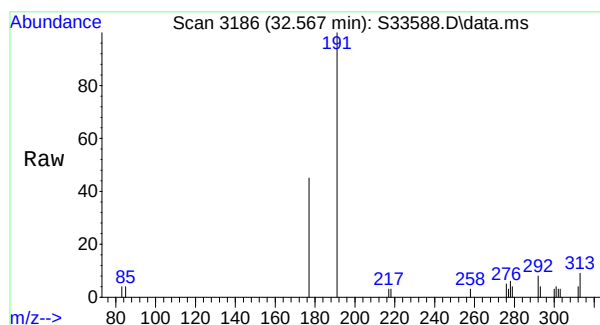
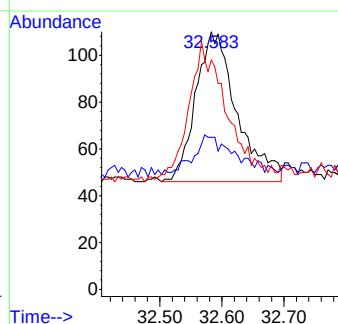
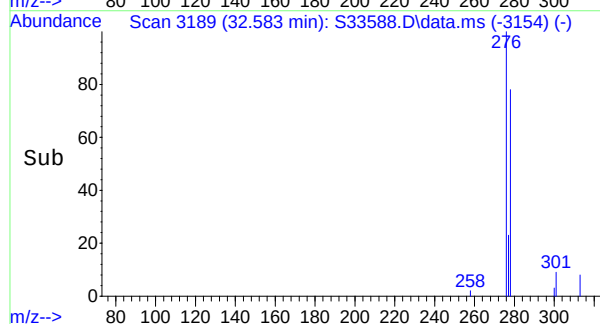
Tgt Ion:252 Resp: 813
Ion Ratio Lower Upper
252 100
126 15.0 26.6 40.0#





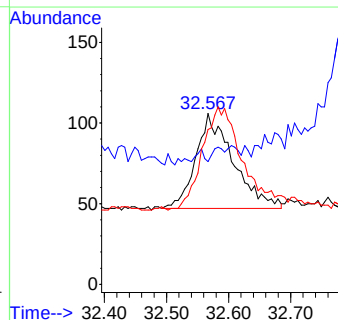
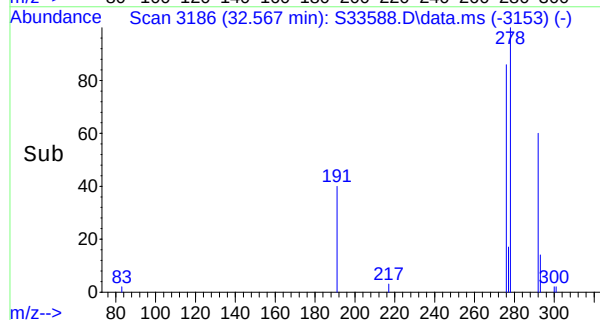
#52
 Indeno(1,2,3-cd)pyrene
 Concen: 0.007 ng/mL
 RT: 32.583 min Scan# 3189
 Delta R.T. -0.011 min
 Lab File: S33588.D
 Acq: 16 Sep 2013 7:16 pm

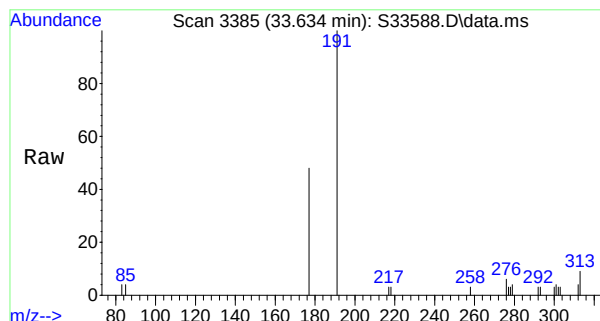
Tgt Ion	Ratio	Lower	Upper
276	100		
277	22.4	21.3	31.9
278	83.7	21.8	32.8#



#53
 Dibenzo(a,h)anthracene
 Concen: 0.008 ng/mL
 RT: 32.567 min Scan# 3186
 Delta R.T. -0.021 min
 Lab File: S33588.D
 Acq: 16 Sep 2013 7:16 pm

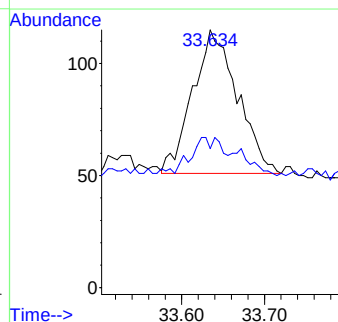
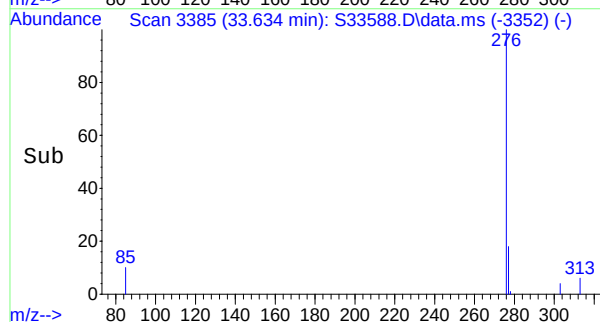
Tgt Ion	Ratio	Lower	Upper
278	100		
279	0.0	32.2	48.4#
276	119.4	242.1	363.1#





#54
Benzo(g,h,i)perylene
Concen: 0.007 ng/mL
RT: 33.634 min Scan# 3385
Delta R.T. -0.022 min
Lab File: S33588.D
Acq: 16 Sep 2013 7:16 pm

Tgt Ion: 276 Resp: 241
Ion Ratio Lower Upper
276 100
277 10.4 20.3 30.5#



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130916\
 Data File : S33589.D
 Acq On : 16 Sep 2013 8:03 pm
 Operator : RUBENP
 Sample : mc24285-1msd
 Misc : ms29817,mss1485,1.5,,,1.5,1
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Oct 16 16:58:12 2013
 Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:37:34 2013
 Response via : Initial Calibration

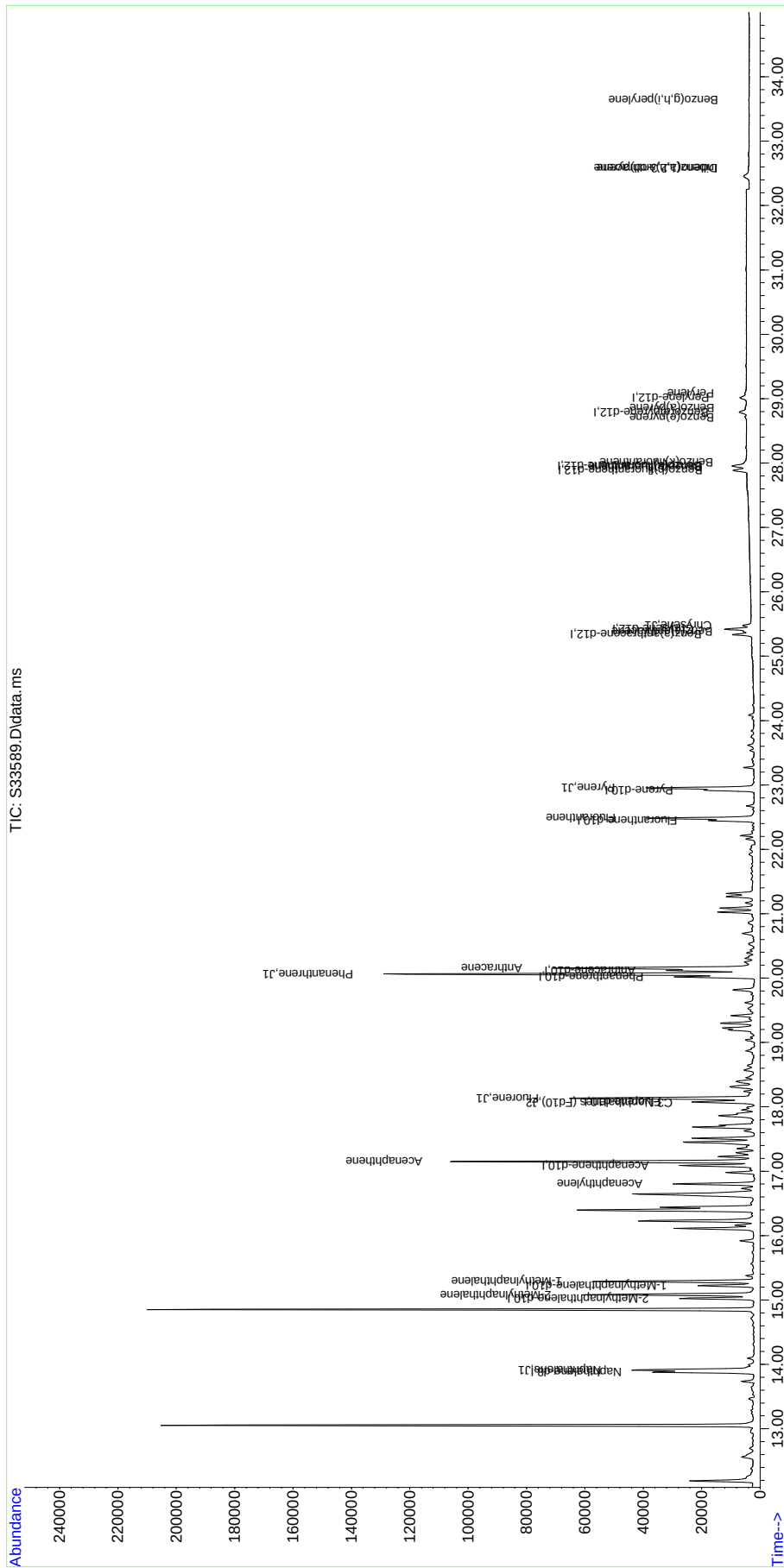
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	55519	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	36605	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	27003	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	17859	8.33	ng/mL	0.00
15) Fluorene-d10	18.074	176	15765	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.021	188	39847	5.00	ng/mL	0.00
26) Anthracene-d10	20.117	188	44507	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	24756	1.67	ng/mL	0.00
30) Pyrene-d10	22.919	212	22287	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	9047	0.50	ng/mL	0.00
37) Chrysene-d12	25.418	240	12021	0.50	ng/mL	-0.01
43) Benzo(b)fluoranthene-d12	27.885	264	8908	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.952	264	9698	0.33	ng/mL	-0.01
47) Benzo(a)pyrene-d12	28.791	264	5600	0.33	ng/mL	-0.01
50) Perylene-d12	29.016	264	4685	0.33	ng/mL	-0.01
Target Compounds						
					Qvalue	
2) Naphthalene	13.910	128	60514	30.146	ng/mL	100
6) C3-Naphthalenes (Fd10)	18.068	170	4209	1.563	µg/mL#	100
9) 2-Methylnaphthalene	15.081	142	52781	18.999	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	47794	21.929	ng/mL	100
13) Acenaphthylene	16.801	152	22606	9.469	ng/mL#	100
14) Acenaphthene	17.154	154	65683	24.051	ng/mL	98
16) Fluorene	18.132	166	53557	11.932	ng/mL	95
21) Phenanthrene	20.065	178	142457	13.464	ng/mL	100
27) Anthracene	20.155	178	78747	6.589	ng/mL	100
29) Fluoranthene	22.483	202	55401	2.606	ng/mL#	81
31) Pyrene	22.954	202	58457	2.615	ng/mL#	80
36) Benz(a)anthracene	25.385	228	3311	0.125	ng/mL	98
38) Chrysene	25.479	228	3895	0.131	ng/mL	99
44) Benzo(b)fluoranthene	27.947	252	1562	0.041	ng/mL#	72
46) Benzo(k)fluoranthene	28.009	252	1296	0.034	ng/mL#	64
48) Benzo(e)pyrene	28.712	252	1340	0.039	ng/mL#	63
49) Benzo(a)pyrene	28.858	252	628	0.031	ng/mL#	67
51) Perylene	29.089	252	930	0.045	ng/mL#	56
52) Indeno(1,2,3-cd)pyrene	32.583	276	300	0.008	ng/mL#	40
53) Dibenzo(a,h)anthracene	32.578	278	256	0.009	ng/mL#	12
54) Benzo(g,h,i)perylene	33.634	276	267	0.009	ng/mL#	50

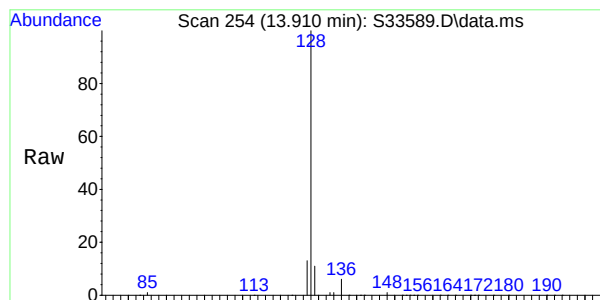
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130916\
Data File : S33589.D
Acq On : 16 Sep 2013 8:03 pm
Operator : RUBENP
Sample : mc24285-1msd
Misc : ms29817, mss1485, 1.5,, 1.5, 1
ALS Vial : 11 Sample Multiplier: 1

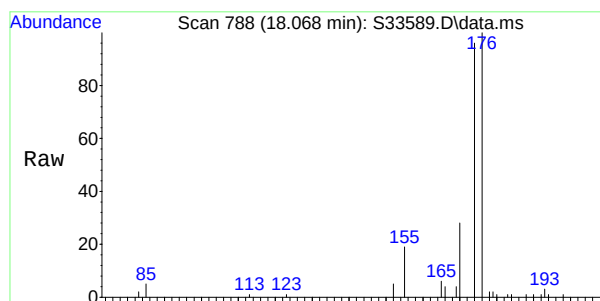
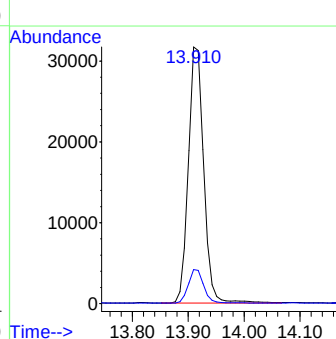
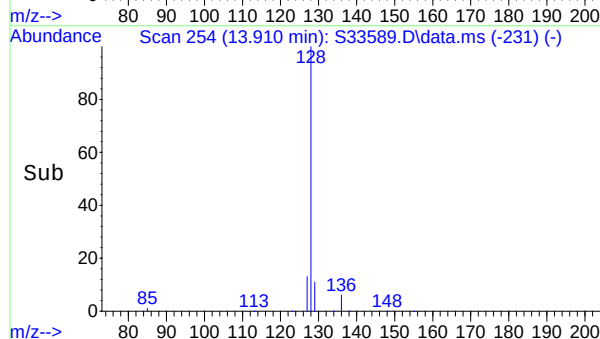
Quant Time: Oct 16 16:58:12 2013
Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Fri Oct 11 11:37:34 2013
Response via : Initial Calibration





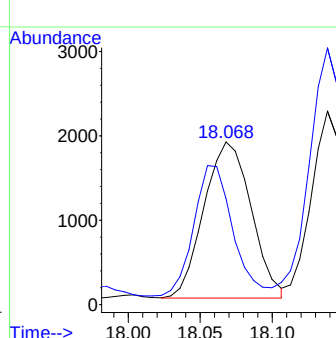
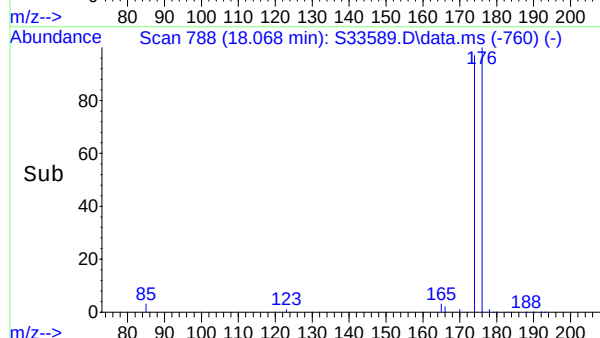
#2
Naphthalene
Concen: 30.146 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

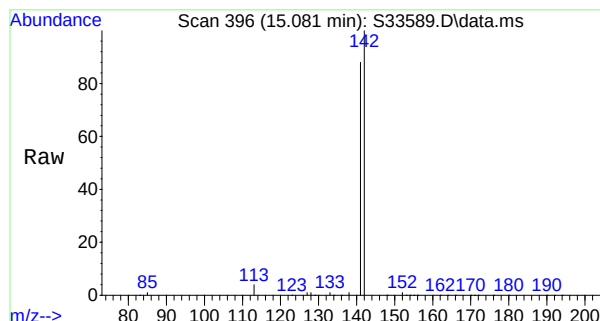
Tgt Ion:128 Resp: 60514
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



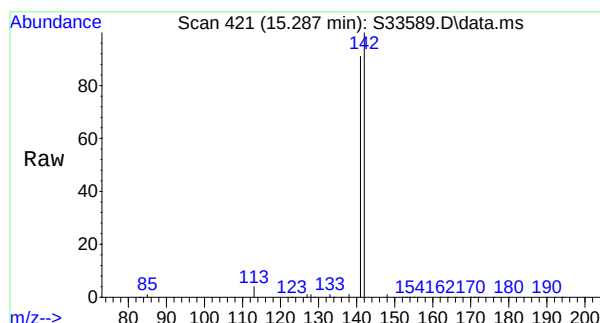
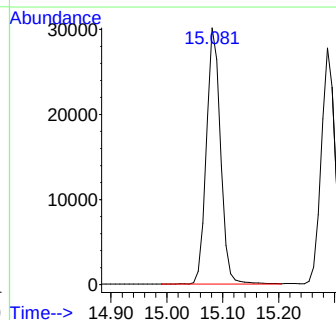
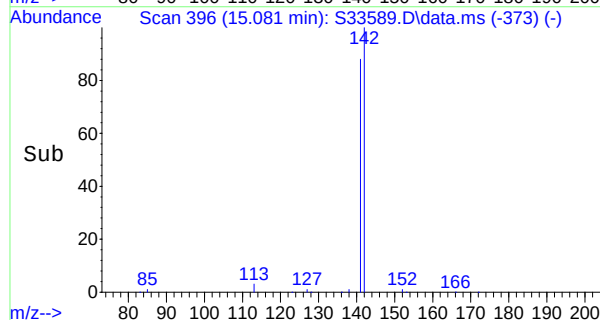
#6
C3-Naphthalenes (Fd10)
Concen: 1.563 µg/mL
RT: 18.068 min Scan# 788
Delta R.T. -0.019 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

Tgt Ion:170 Resp: 4209
Ion Ratio Lower Upper
170 100
155 69.1 0.0 0.0#

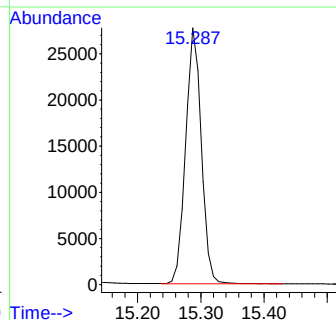
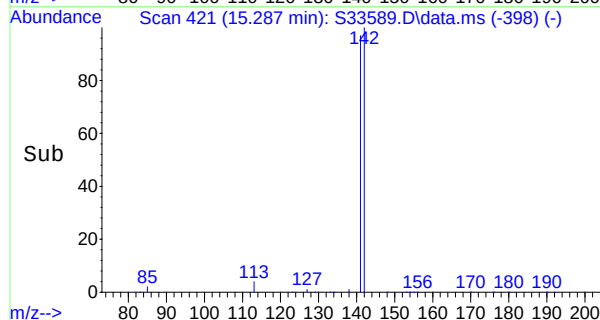


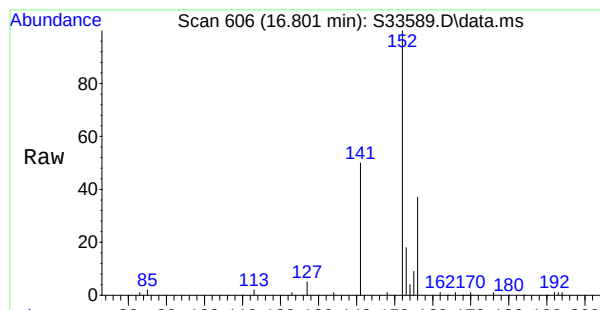


#9
2-Methylnaphthalene
Concen: 18.999 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm
Tgt Ion:142 Resp: 52781



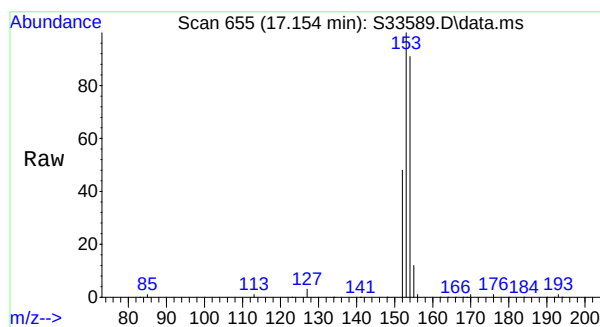
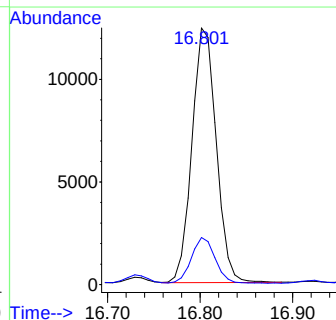
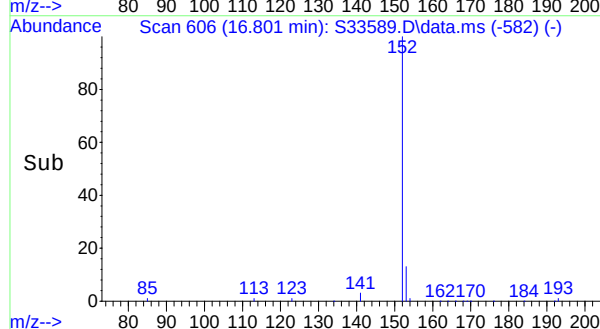
#11
1-Methylnaphthalene
Concen: 21.929 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm
Tgt Ion:142 Resp: 47794





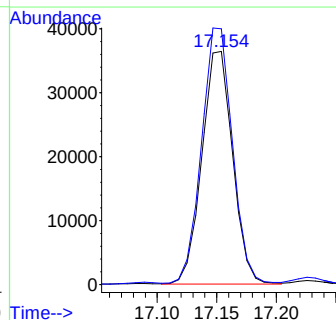
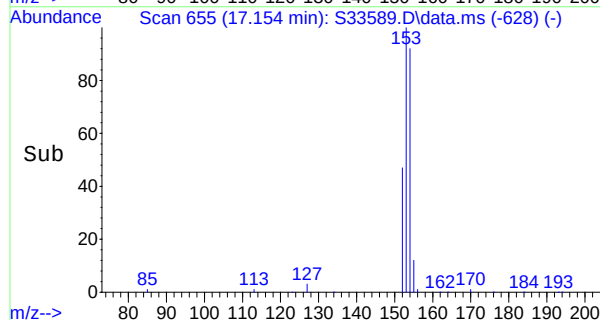
#13
Acenaphthylene
Concen: 9.469 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

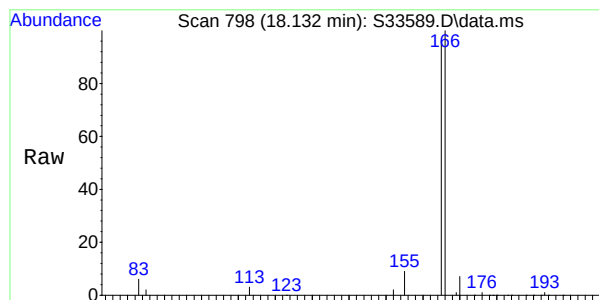
Tgt Ion:152 Resp: 22606
Ion Ratio Lower Upper
152 100
153 17.5 0.0 0.0#



#14
Acenaphthene
Concen: 24.051 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

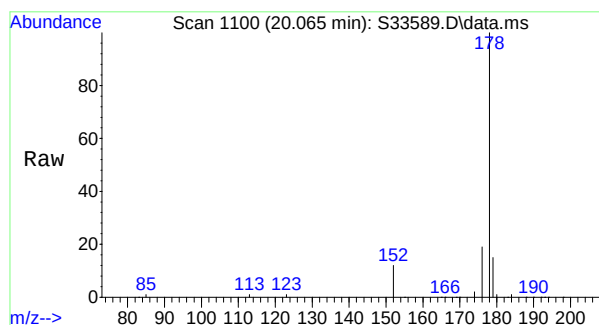
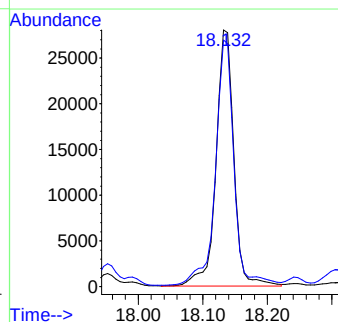
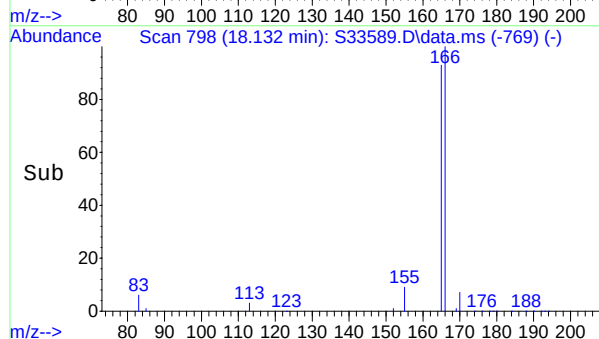
Tgt Ion:154 Resp: 65683
Ion Ratio Lower Upper
154 100
153 110.0 86.6 129.8





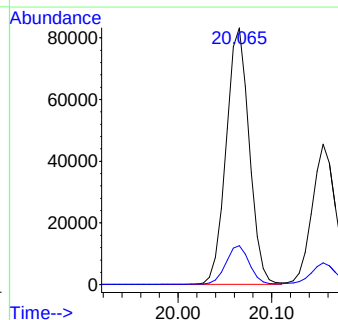
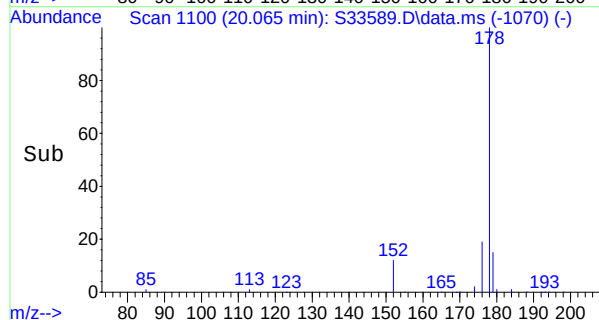
#16
Fluorene
Concen: 11.932 ng/mL
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

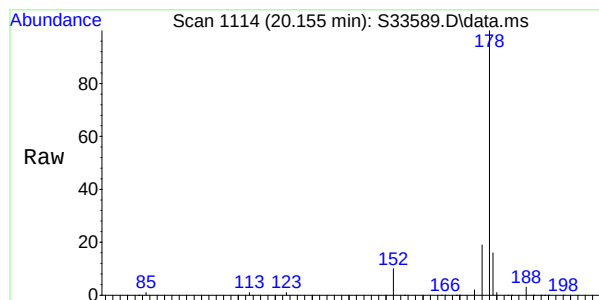
Tgt Ion:166 Resp: 53557
Ion Ratio Lower Upper
166 100
165 99.9 76.4 114.6



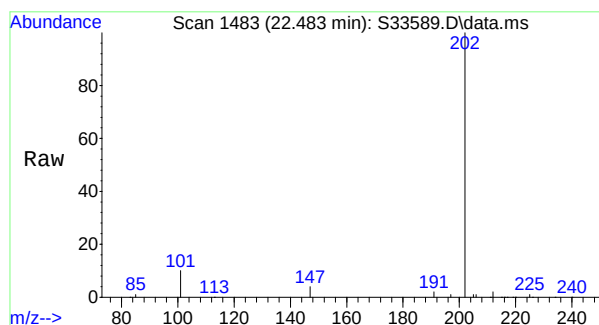
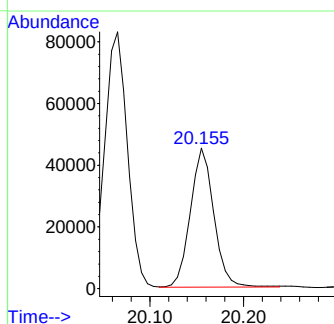
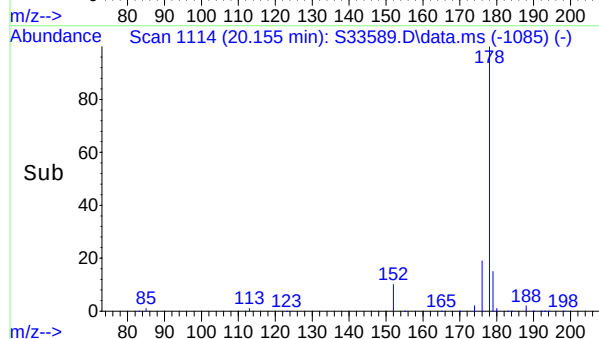
#21
Phenanthrene
Concen: 13.464 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

Tgt Ion:178 Resp: 142457
Ion Ratio Lower Upper
178 100
179 15.3 12.4 18.6

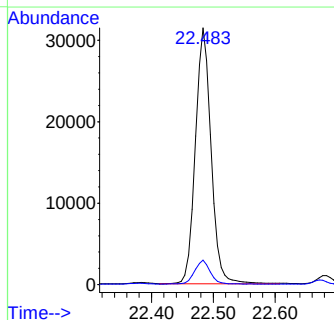
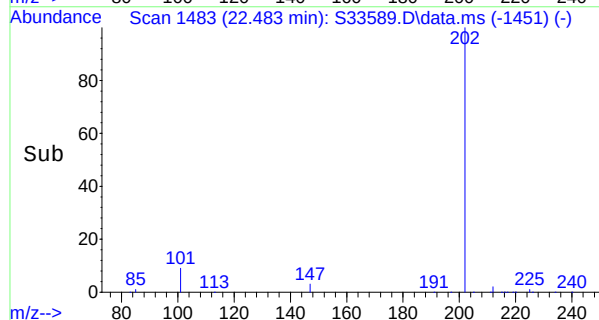


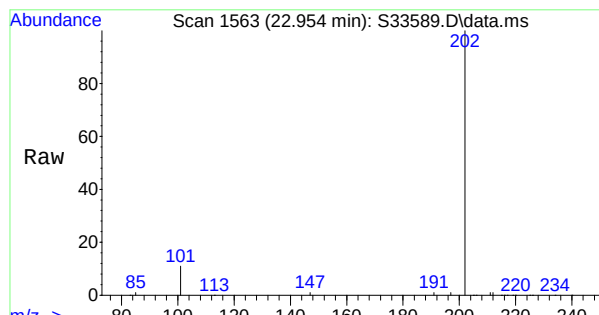


#27
Anthracene
Concen: 6.589 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm
Tgt Ion:178 Resp: 78747



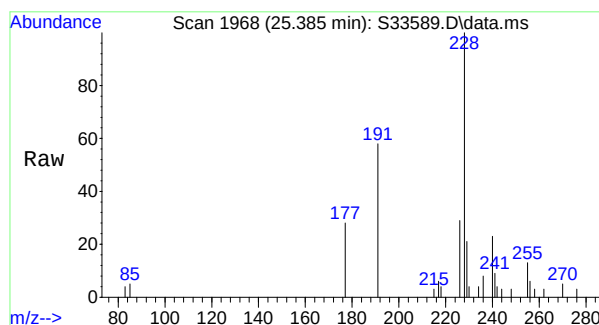
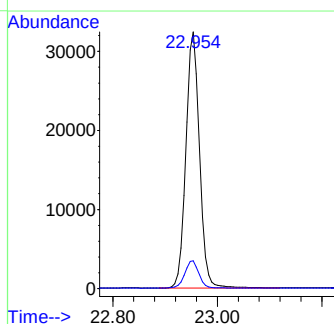
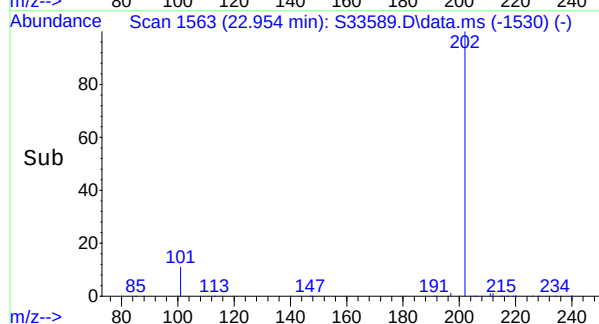
#29
Fluoranthene
Concen: 2.606 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm
Tgt Ion:202 Resp: 55401
Ion Ratio Lower Upper
202 100
101 9.4 14.3 21.5#





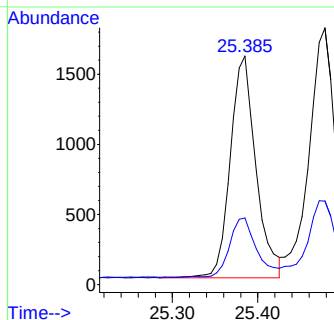
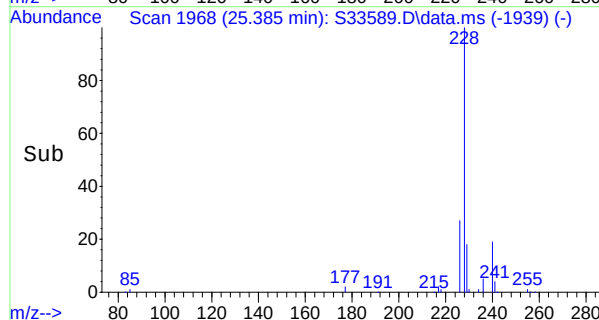
#31
Pyrene
Concen: 2.615 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

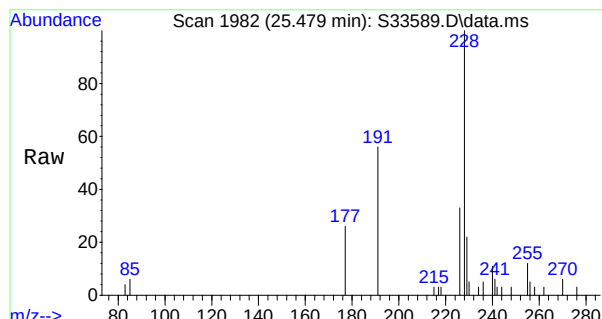
Tgt Ion: 202 Resp: 58457
Ion Ratio Lower Upper
202 100
101 11.2 16.6 24.8#



#36
Benz(a)anthracene
Concen: 0.125 ng/mL
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

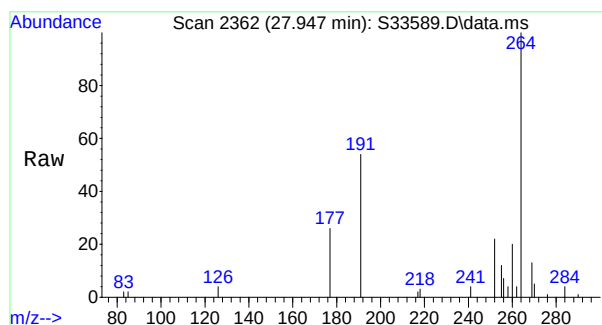
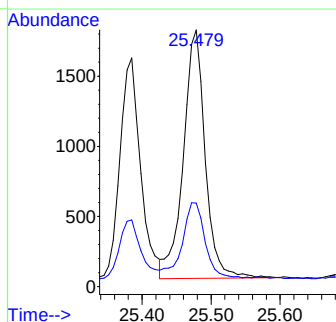
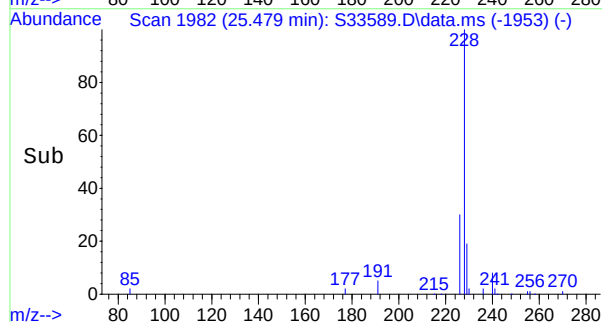
Tgt Ion: 228 Resp: 3311
Ion Ratio Lower Upper
228 100
226 28.5 23.7 35.5





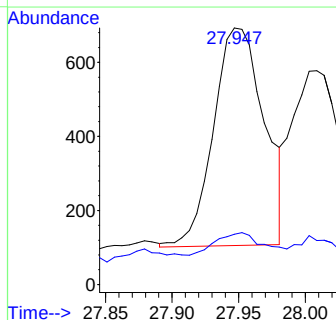
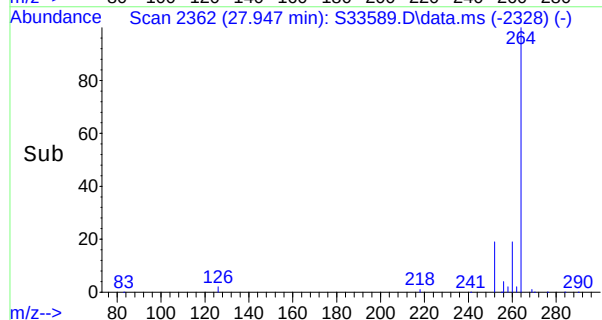
#38
Chrysene
Concen: 0.131 ng/mL
RT: 25.479 min Scan# 1982
Delta R.T. -0.006 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

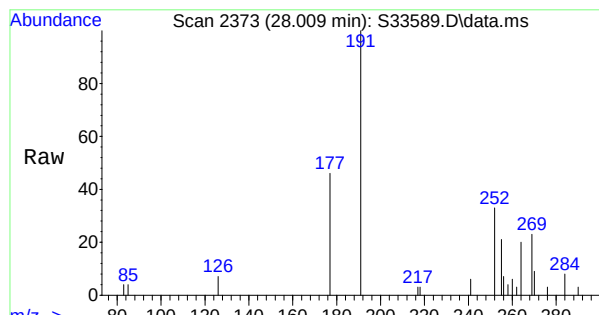
Tgt Ion: 228 Resp: 3895
Ion Ratio Lower Upper
228 100
226 31.9 26.0 39.0



#44
Benzo(b)fluoranthene
Concen: 0.041 ng/mL
RT: 27.947 min Scan# 2362
Delta R.T. -0.011 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

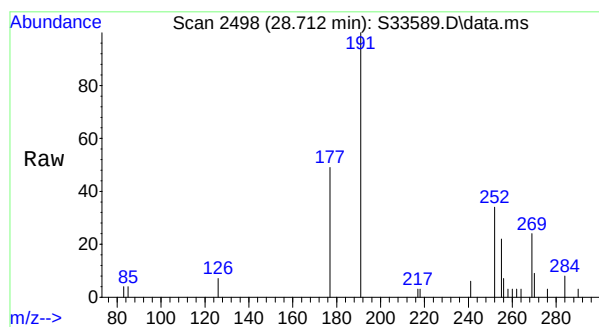
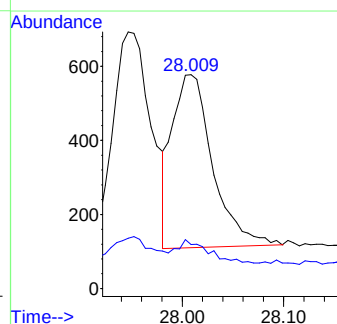
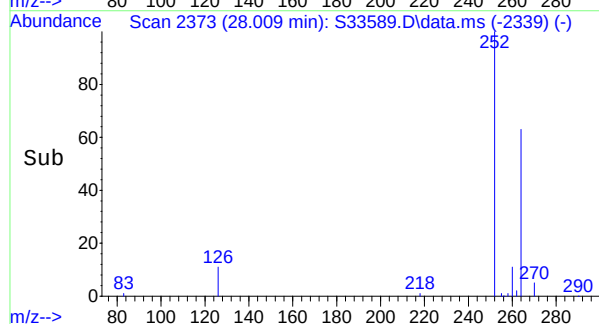
Tgt Ion: 252 Resp: 1562
Ion Ratio Lower Upper
252 100
126 13.7 23.0 34.4#





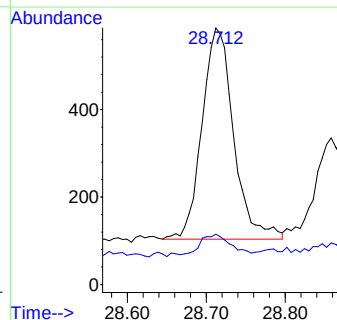
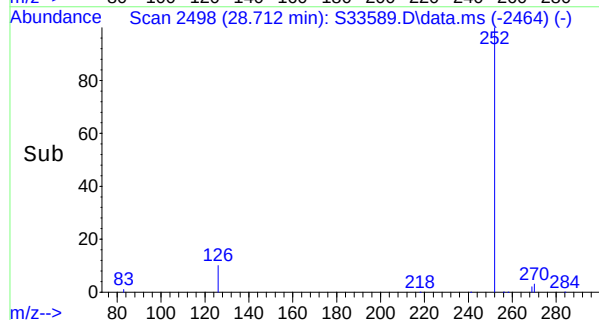
#46
Benzo(k)fluoranthene
Concen: 0.034 ng/mL
RT: 28.009 min Scan# 2373
Delta R.T. -0.011 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

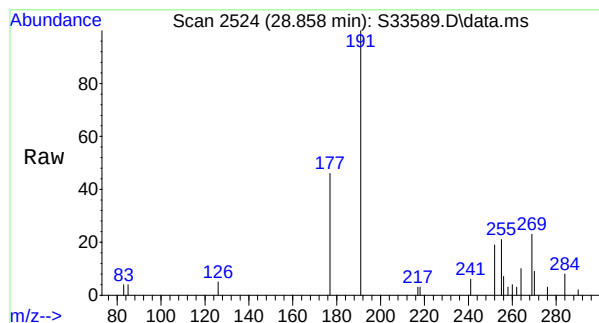
Tgt Ion:252 Resp: 1296
Ion Ratio Lower Upper
252 100
126 10.7 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.039 ng/mL
RT: 28.712 min Scan# 2498
Delta R.T. -0.011 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

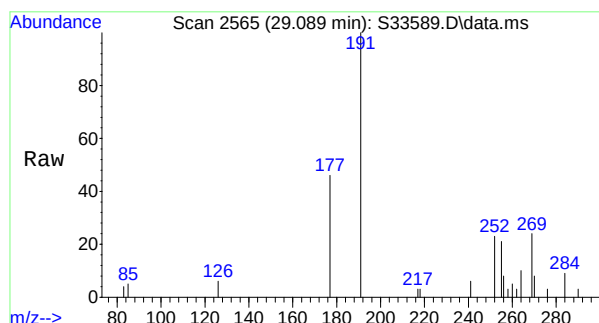
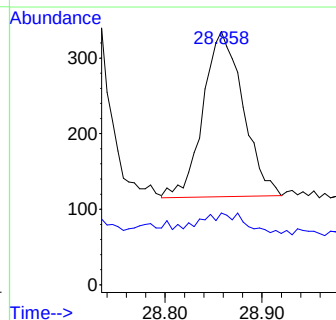
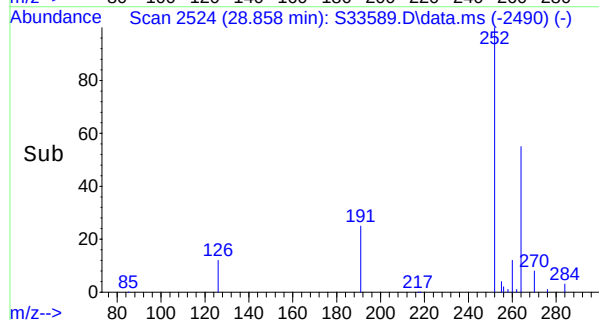
Tgt Ion:252 Resp: 1340
Ion Ratio Lower Upper
252 100
126 8.9 22.6 34.0#





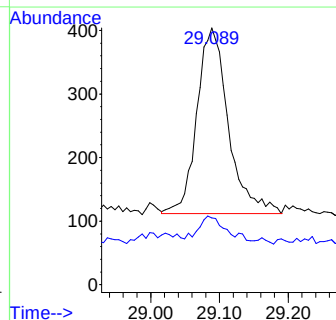
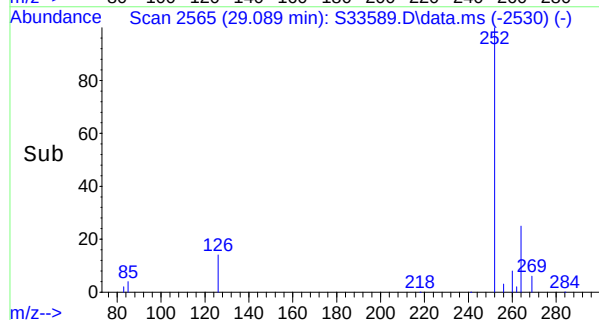
#49
Benzo(a)pyrene
Concen: 0.031 ng/mL
RT: 28.858 min Scan# 2524
Delta R.T. -0.011 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

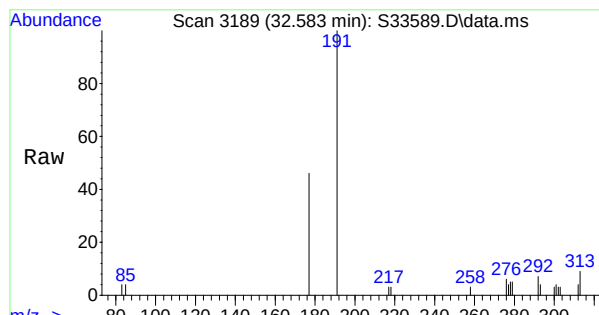
Tgt Ion:252 Resp: 628
Ion Ratio Lower Upper
252 100
126 13.2 25.1 37.7#



#51
Perylene
Concen: 0.045 ng/mL
RT: 29.089 min Scan# 2565
Delta R.T. -0.005 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

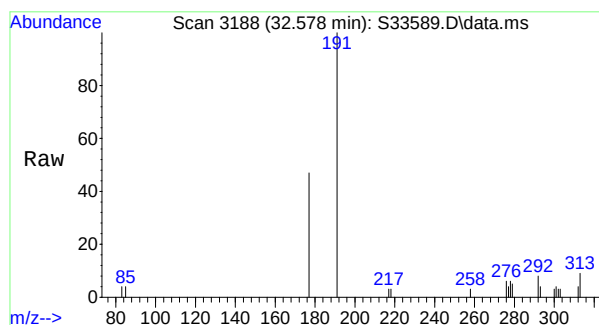
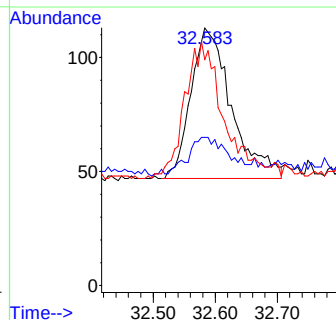
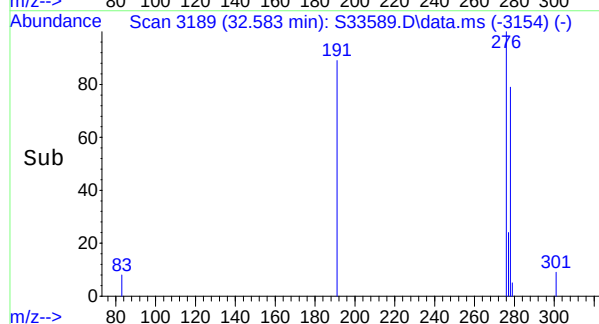
Tgt Ion:252 Resp: 930
Ion Ratio Lower Upper
252 100
126 8.6 26.6 40.0#





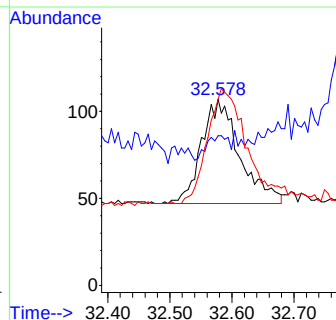
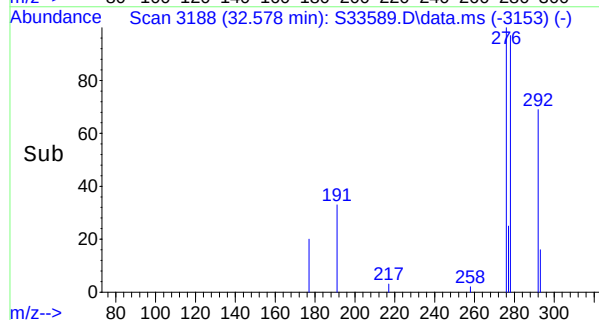
#52
Indeno(1,2,3-cd)pyrene
Concen: 0.008 ng/mL
RT: 32.583 min Scan# 3189
Delta R.T. -0.011 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

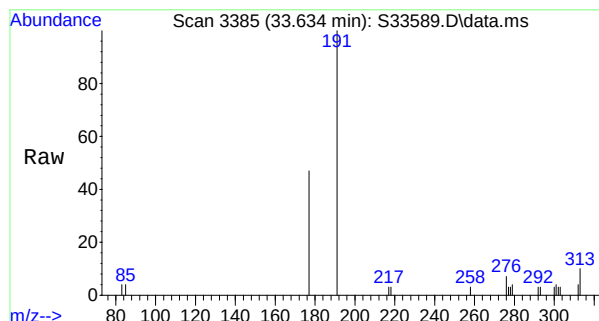
Tgt Ion:	276	Resp:	300
Ion Ratio	Lower	Upper	
276	100		
277	23.3	21.3	31.9
278	85.3	21.8	32.8#



#53
Dibenz(a,h)anthracene
Concen: 0.009 ng/mL
RT: 32.578 min Scan# 3188
Delta R.T. -0.010 min
Lab File: S33589.D
Acq: 16 Sep 2013 8:03 pm

Tgt Ion:	278	Resp:	256
Ion Ratio	Lower	Upper	
278	100		
279	13.3	32.2	48.4#
276	117.2	242.1	363.1#





#54

Benzo(g,h,i)perylene

Concen: 0.009 ng/mL

RT: 33.634 min Scan# 3385

Delta R.T. -0.022 min

Lab File: S33589.D

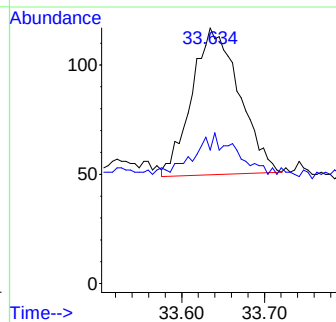
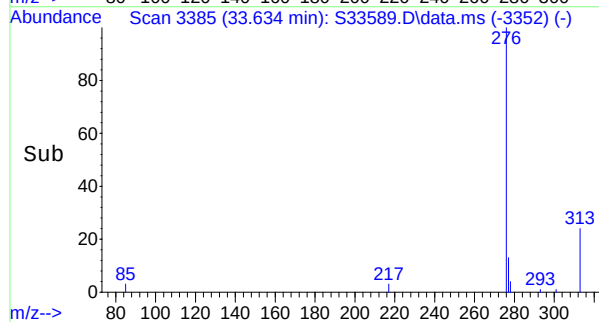
Acq: 16 Sep 2013 8:03 pm

Tgt Ion: 276 Resp: 267

Ion Ratio Lower Upper

276 100

277 0.0 20.3 30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130916\
 Data File : S33585.D
 Acq On : 16 Sep 2013 4:56 pm
 Operator : RUBENP
 Sample : mc24285-1dup
 Misc : ms29817,mss1484,1.5,,,1.5,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 16 12:40:02 2013
 Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Fri Oct 11 11:37:34 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	51511	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	33838	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	24852	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.089	164	18004	8.33	ng/mL	0.00
15) Fluorene-d10	18.081	176	16687	5.00	ng/mL	0.00
20) Phenanthrene-d10	20.021	188	43666	5.00	ng/mL	0.00
26) Anthracene-d10	20.117	188	51423	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.448	212	27329	1.67	ng/mL	0.00
30) Pyrene-d10	22.918	212	24696	1.67	ng/mL	0.00
35) Benz(a)anthracene-d12	25.338	240	10438	0.50	ng/mL	0.00
37) Chrysene-d12	25.425	240	13134	0.50	ng/mL	0.00
43) Benzo(b)fluoranthene-d12	27.885	264	10426	0.33	ng/mL	-0.01
45) Benzo(k)fluoranthene-d12	27.958	264	10728	0.33	ng/mL	0.00
47) Benzo(a)pyrene-d12	28.791	264	7007	0.33	ng/mL	-0.01
50) Perylene-d12	29.015	264	5818	0.33	ng/mL	-0.01

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.918	128	2913	1.564	ng/mL#	86
3) C1-Naphthalenes	15.287	142	30977m	16.632	ng/mL	
4) C2-Naphthalenes	16.401	156	142869m	38.833	ng/mL	
5) C3-Naphthalenes	17.514	170	99816m	39.961	ng/mL	
6) C3-Naphthalenes (Fd10)	18.068	170	4843	1.939	µg/mL#	100
7) C4-Naphthalenes	18.875	184	21005m	17.184	ng/mL	
9) 2-Methylnaphthalene	15.081	142	14417	5.614	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	16257	8.105	ng/mL	100
13) Acenaphthylene	16.801	152	3026	1.257	ng/mL#	100
14) Acenaphthene	17.154	154	48859	17.747	ng/mL	99
16) Fluorene	18.138	166	35956m	7.568	ng/mL	
17) C1-Fluorenes	19.227	180	37695m	9.349	ng/mL	
18) C2-Fluorenes	20.309	194	14422m	4.685	ng/mL	
19) C3-Fluorenes	21.328	208	3648m	1.271	ng/mL	
21) Phenanthrene	20.065	178	117931	10.171	ng/mL	100
22) C1-Phenanthrenes/anthr...	21.026	192	59848m	4.671	ng/mL	
23) C2-Phenanthrenes/anthr...	22.160	206	15556m	3.265	ng/mL	
24) C3-Phenanthrenes/anthr...	23.077	220	2261m	1.131	ng/mL	
25) C4-Phenanthrenes/anthr...	23.530	234	533m	0.590	ng/mL	
27) Anthracene	20.155	178	28317	2.051	ng/mL	100
29) Fluoranthene	22.483	202	30310	1.291	ng/mL#	82
31) Pyrene	22.954	202	32657	1.318	ng/mL#	81
32) C1-Fluoranthenes/pyrenes	23.618	216	9850m	0.616	ng/mL	
33) C2-Fluoranthenes/pyrenes	24.442	230	1838m	0.074	ng/mL	
36) Benz(a)anthracene	25.385	228	1653	0.054	ng/mL	100
38) Chrysene	25.479	228	1856	0.057	ng/mL	96
39) C1-Benz(a)anthracenes/...	26.307	242	718m	0.038	ng/mL	
44) Benzo(b)fluoranthene	27.952	252	166	0.004	ng/mL#	83
46) Benzo(k)fluoranthene	28.009	252	218	0.005	ng/mL#	44
48) Benzo(e)pyrene	28.712	252	135	0.003	ng/mL#	46
49) Benzo(a)pyrene	28.847	252	108	0.004	ng/mL#	43
51) Perylene	29.083	252	222	0.009	ng/mL#	41

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130916\
Data File : S33585.D
Acq On : 16 Sep 2013 4:56 pm
Operator : RUBENP
Sample : mc24285-1dup
Misc : ms29817,mss1484,1.5,,,1.5,1
ALS Vial : 7 Sample Multiplier: 1

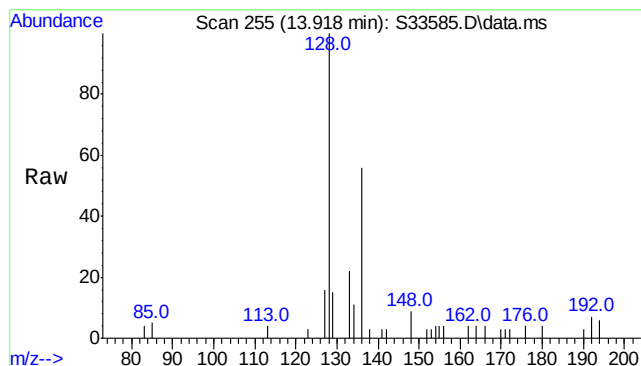
Quant Time: Oct 16 12:40:02 2013
Quant Method : S:\1\methods\S130916-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Fri Oct 11 11:37:34 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

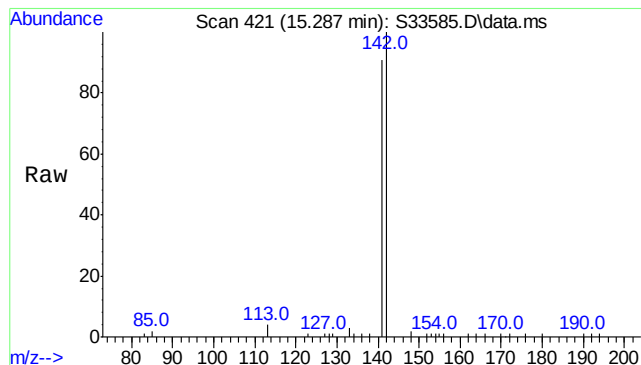
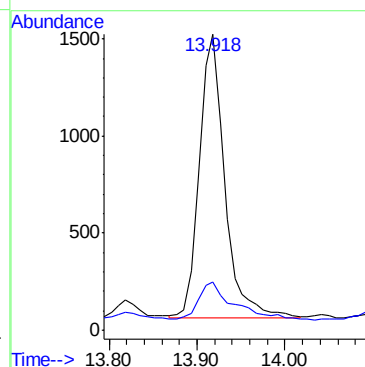
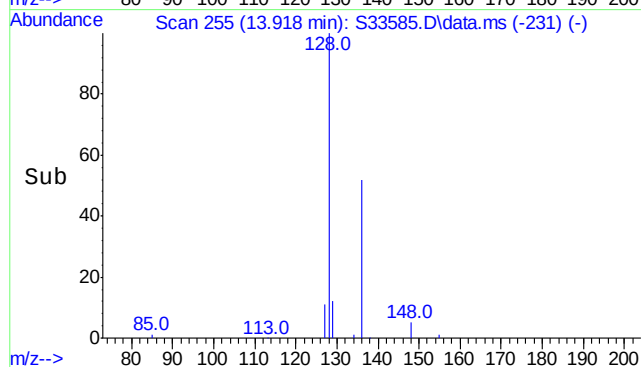
7.4.1

7



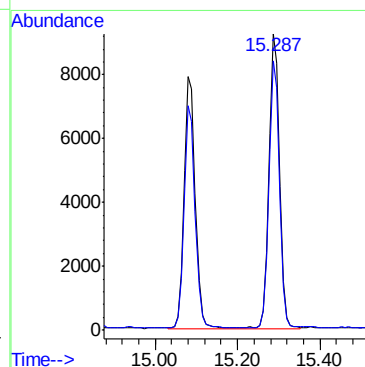
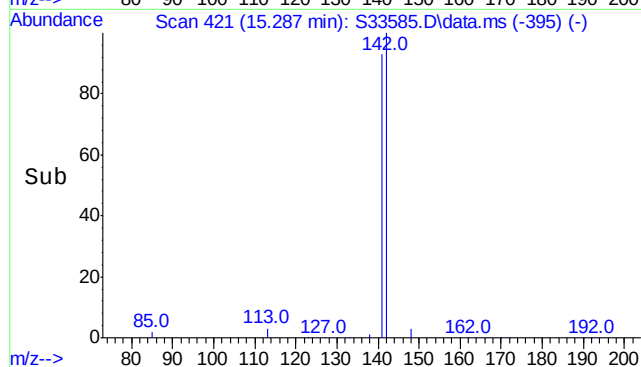
#2
Naphthalene
Concen: 1.564 ng/mL
RT: 13.918 min Scan# 255
Delta R.T. -0.000 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

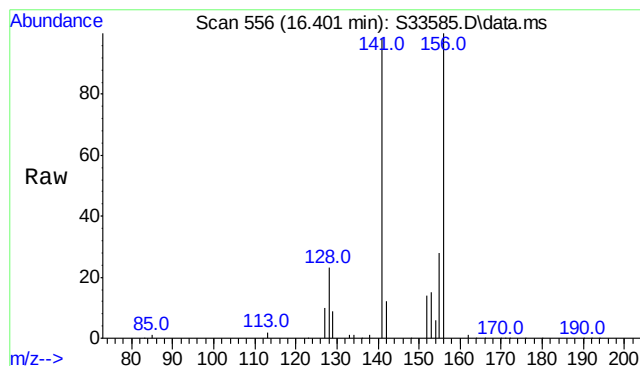
Tgt Ion:128 Resp: 2913
Ion Ratio Lower Upper
128 100
127 18.7 10.6 15.8#



#3
C1-Naphthalenes
Concen: 16.632 ng/mL m
RT: 15.287 min Scan# 421
Delta R.T. 0.165 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

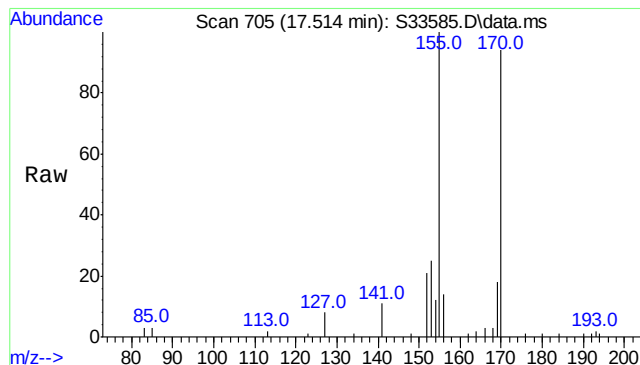
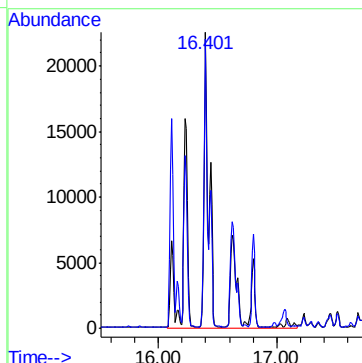
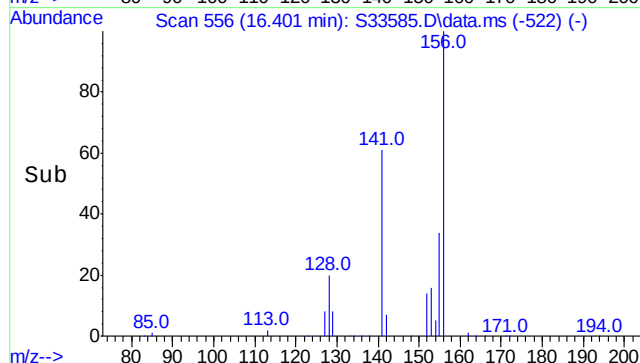
Tgt Ion:142 Resp: 30977
Ion Ratio Lower Upper
142 100
141 48.0 71.0 106.6#





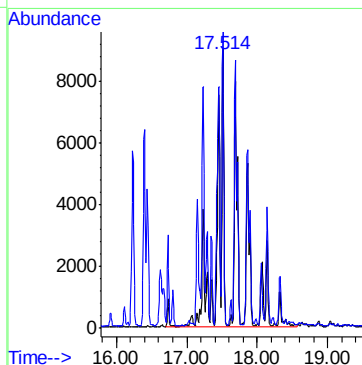
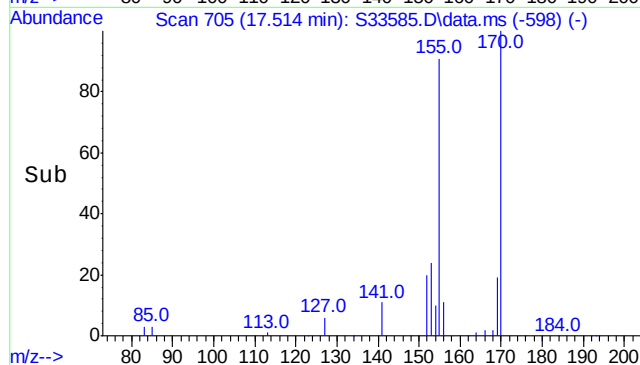
#4
C2-Naphthalenes
Concen: 38.833 ng/mL m
RT: 16.401 min Scan# 556
Delta R.T. -0.056 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

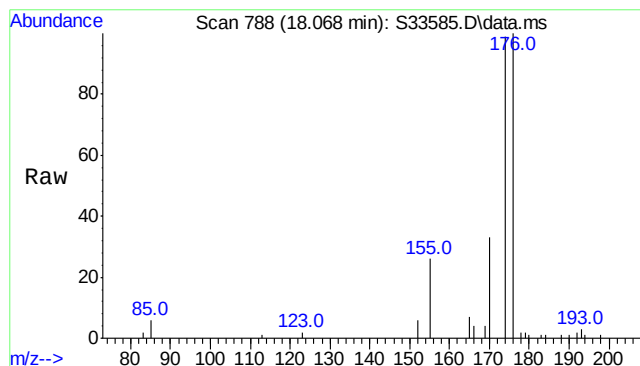
Tgt Ion:156 Resp: 142869
Ion Ratio Lower Upper
156 100
141 10.4 79.0 118.4#



#5
C3-Naphthalenes
Concen: 39.961 ng/mL m
RT: 17.514 min Scan# 705
Delta R.T. -0.145 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

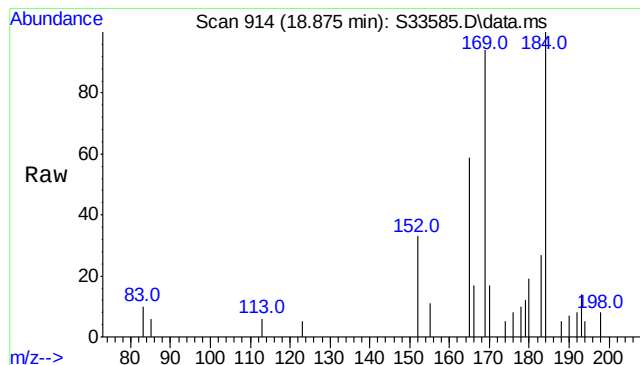
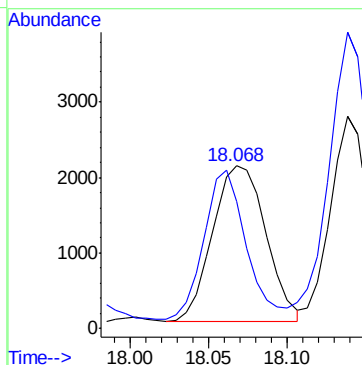
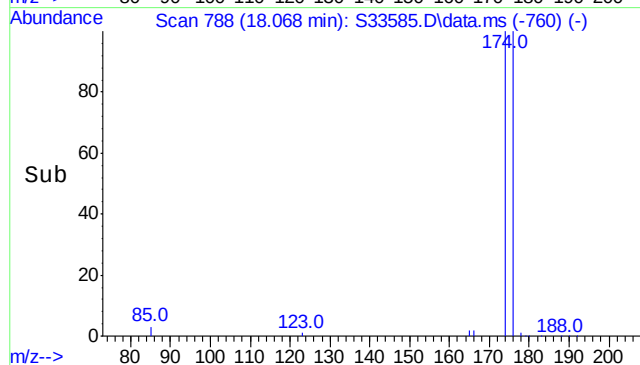
Tgt Ion:170 Resp: 99816
Ion Ratio Lower Upper
170 100
155 15.4 80.7 121.1#





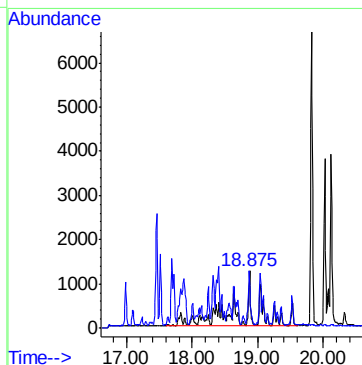
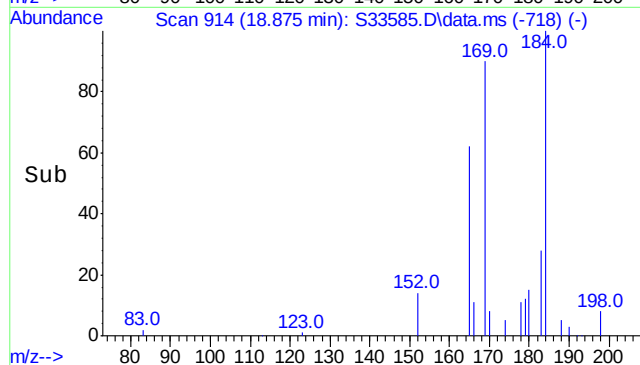
#6
C3-Naphthalenes (Fd10)
Concen: 1.939 µg/mL
RT: 18.068 min Scan# 788
Delta R.T. -0.019 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

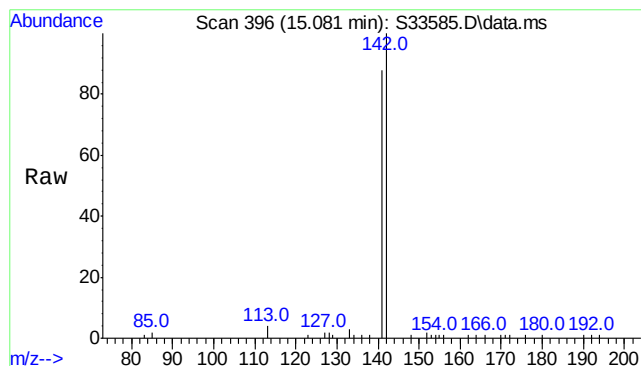
Tgt Ion:170 Resp: 4843
Ion Ratio Lower Upper
170 100
155 76.0 0.0 0.0#



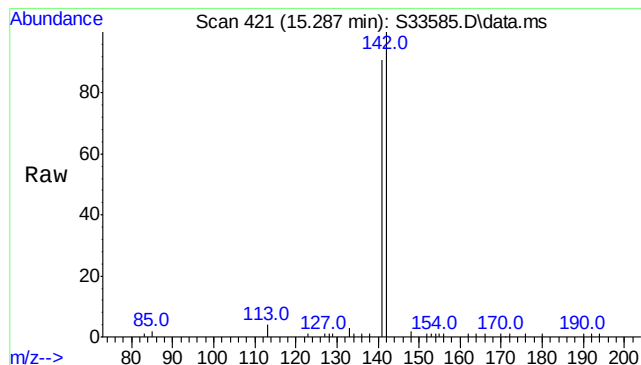
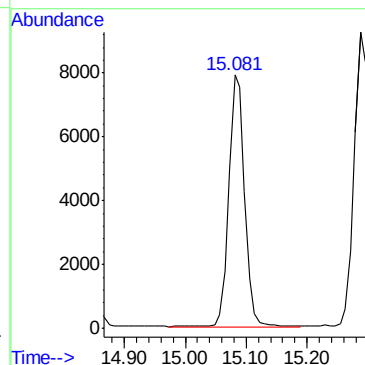
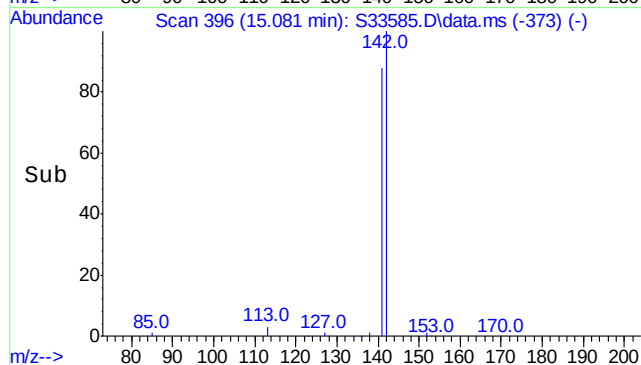
#7
C4-Naphthalenes
Concen: 17.184 ng/mL m
RT: 18.875 min Scan# 914
Delta R.T. -0.056 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

Tgt Ion:184 Resp: 21005
Ion Ratio Lower Upper
184 100
169 13.6 80.1 120.1#

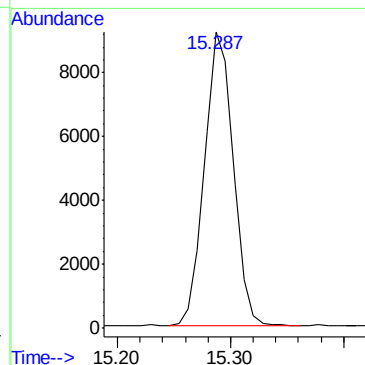
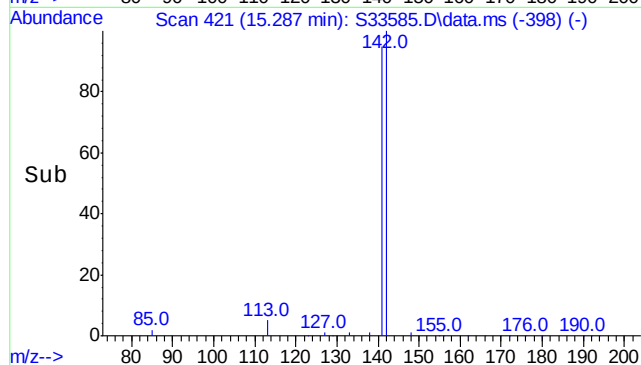


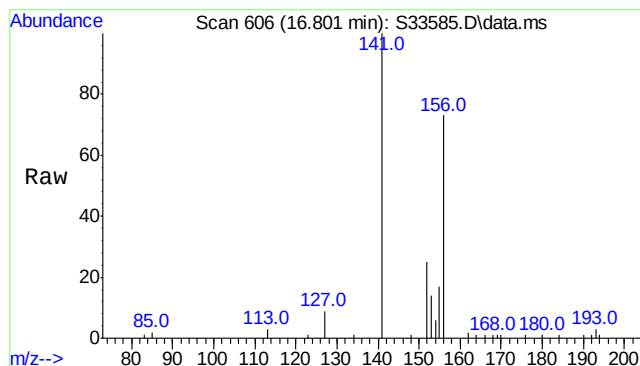


#9
2-Methylnaphthalene
Concen: 5.614 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm
Tgt Ion:142 Resp: 14417



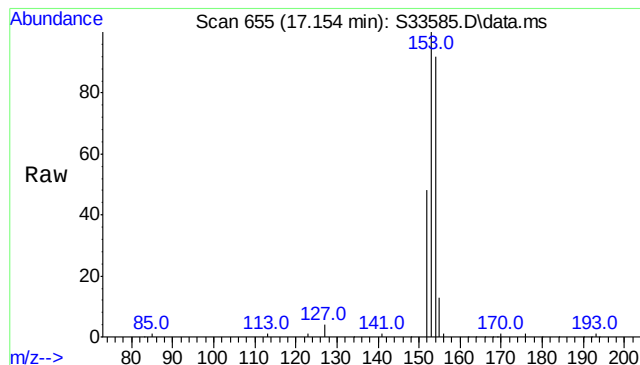
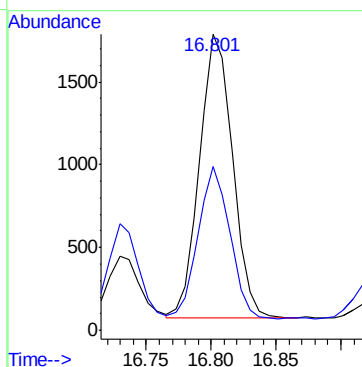
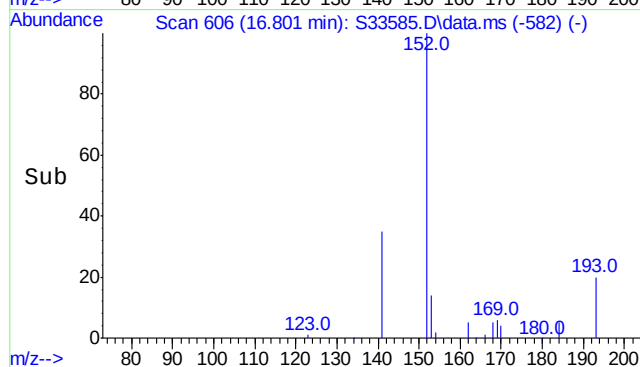
#11
1-Methylnaphthalene
Concen: 8.105 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm
Tgt Ion:142 Resp: 16257





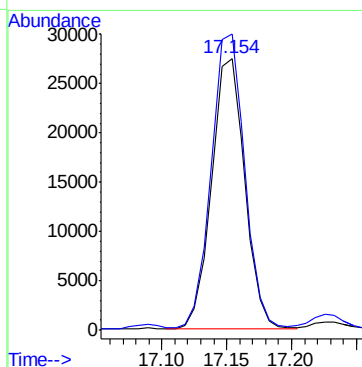
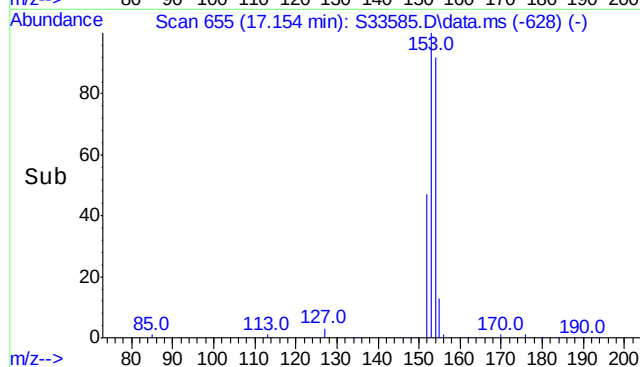
#13
Acenaphthylene
Concen: 1.257 ng/mL
RT: 16.801 min Scan# 606
Delta R.T. -0.015 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

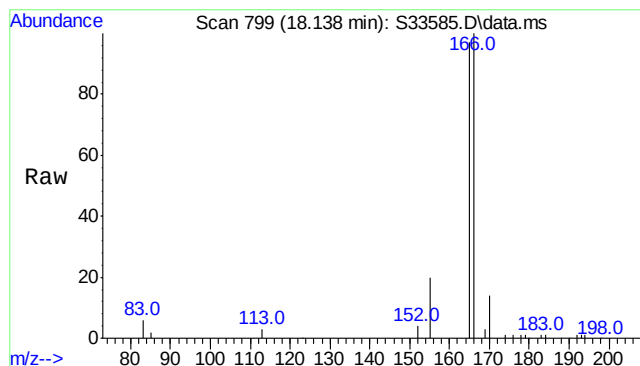
Tgt Ion:152 Resp: 3026
Ion Ratio Lower Upper
152 100
153 51.6 0.0 0.0#



#14
Acenaphthene
Concen: 17.747 ng/mL
RT: 17.154 min Scan# 655
Delta R.T. -0.007 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

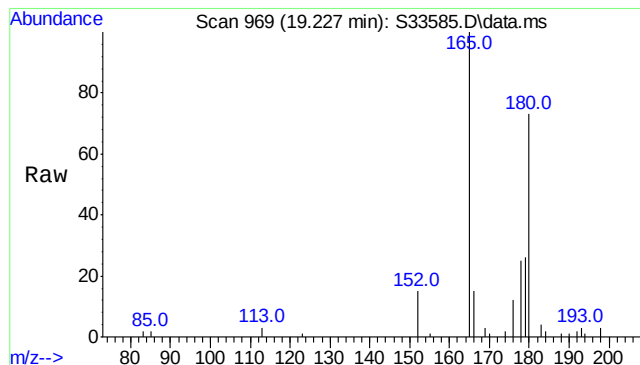
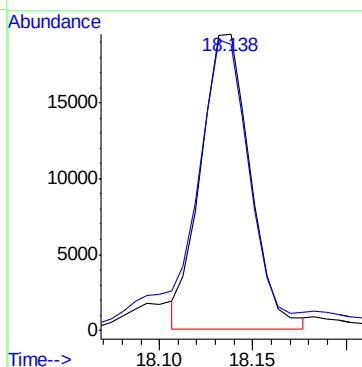
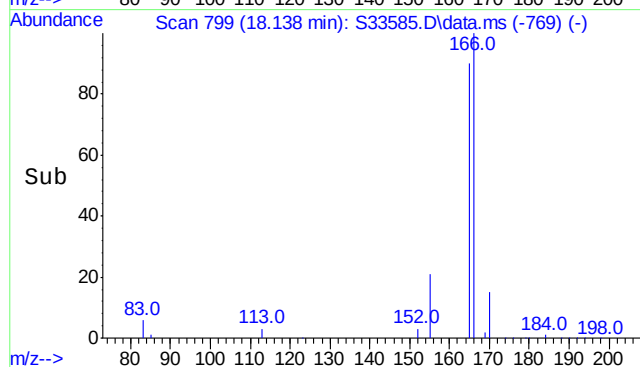
Tgt Ion:154 Resp: 48859
Ion Ratio Lower Upper
154 100
153 109.7 86.6 129.8





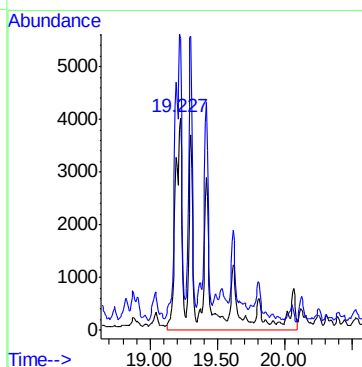
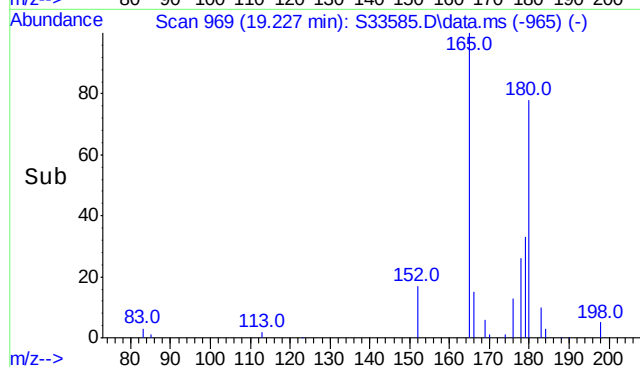
#16
 Fluorene
 Concen: 7.568 ng/mL m
 RT: 18.138 min Scan# 799
 Delta R.T. -0.007 min
 Lab File: S33585.D
 Acq: 16 Sep 2013 4:56 pm

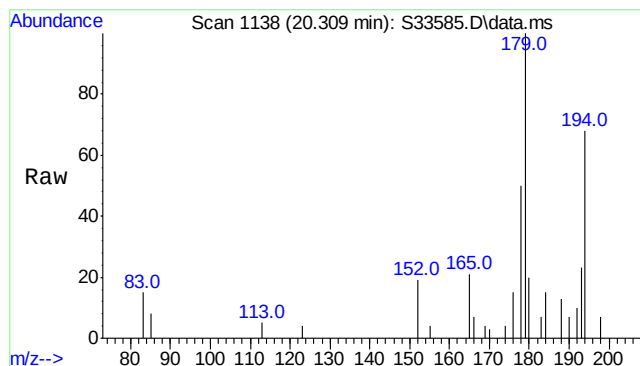
Tgt Ion:166 Resp: 35956
 Ion Ratio Lower Upper
 166 100
 165 110.5 76.4 114.6



#17
 C1-Fluorenes
 Concen: 9.349 ng/mL m
 RT: 19.227 min Scan# 969
 Delta R.T. -0.085 min
 Lab File: S33585.D
 Acq: 16 Sep 2013 4:56 pm

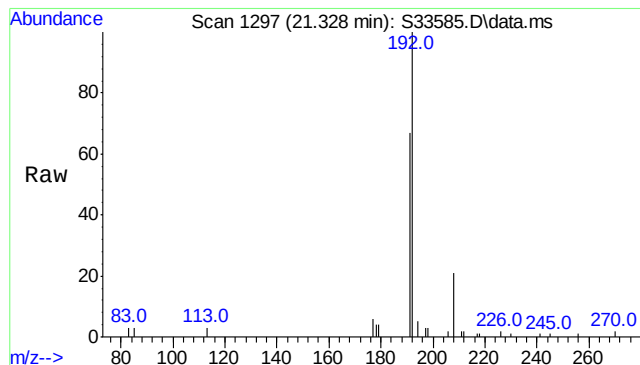
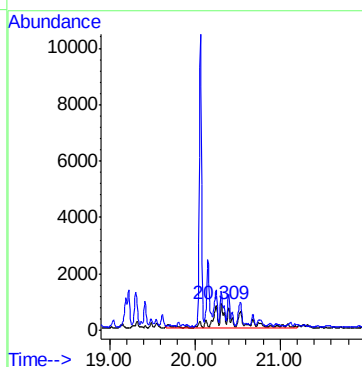
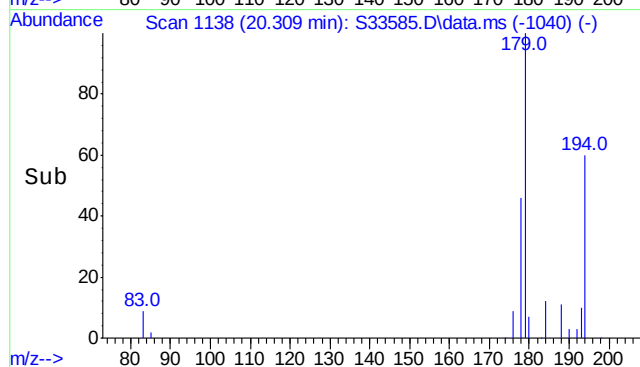
Tgt Ion:180 Resp: 37695
 Ion Ratio Lower Upper
 180 100
 165 24.9 111.1 166.7#





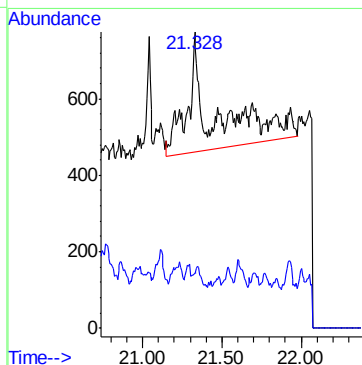
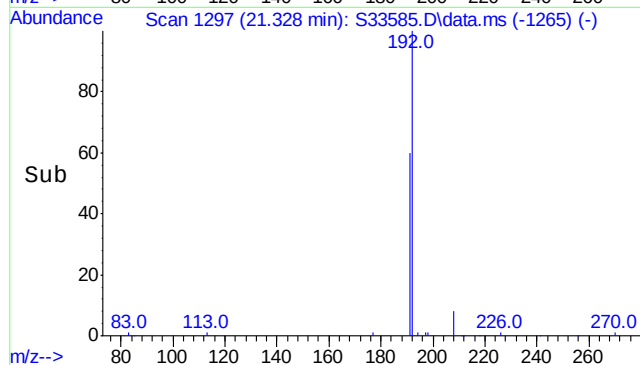
#18
C2-Fluorenes
Concen: 4.685 ng/mL m
RT: 20.309 min Scan# 1138
Delta R.T. -0.005 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

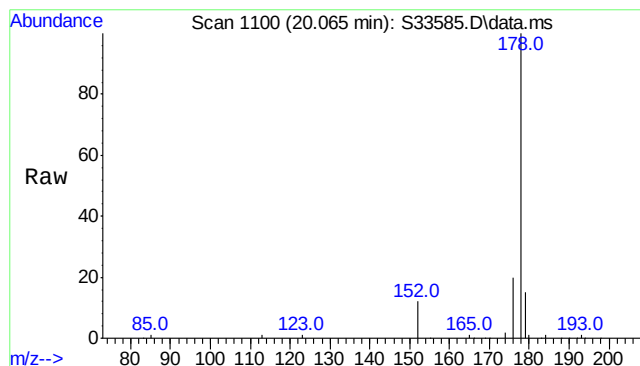
Tgt Ion:194 Resp: 14422
Ion Ratio Lower Upper
194 100
179 6.3 131.8 197.6#



#19
C3-Fluorenes
Concen: 1.271 ng/mL m
RT: 21.328 min Scan# 1297
Delta R.T. -0.024 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

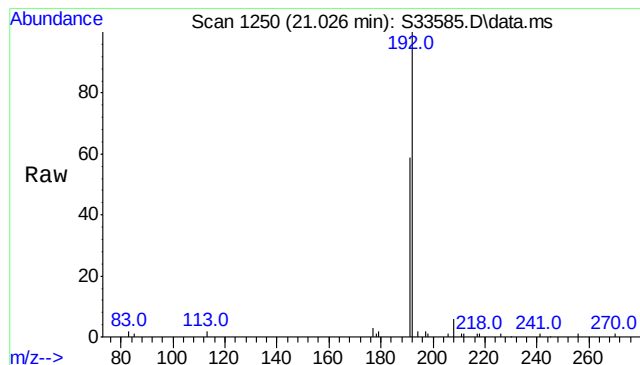
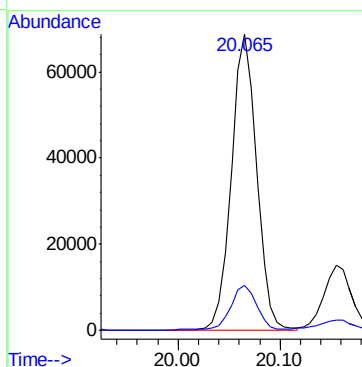
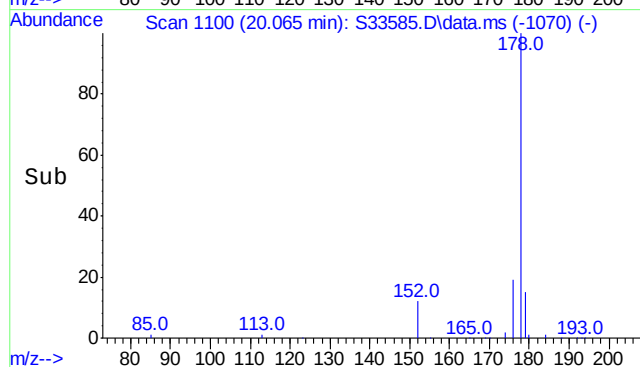
Tgt Ion:208 Resp: 3648
Ion Ratio Lower Upper
208 100
178 2.3 43.4 65.2#





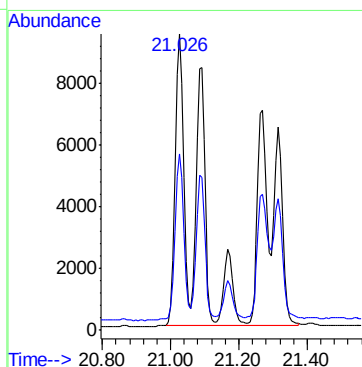
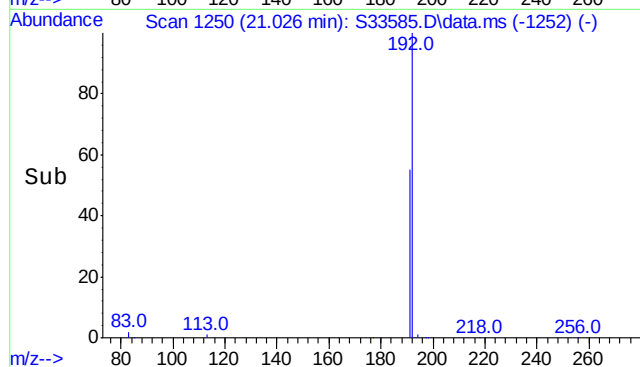
#21
Phenanthrene
Concen: 10.171 ng/mL
RT: 20.065 min Scan# 1100
Delta R.T. -0.007 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

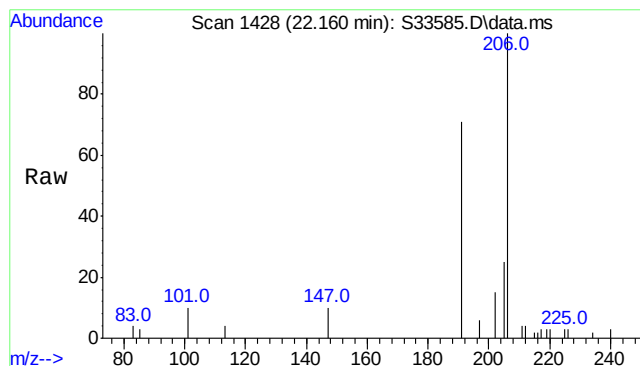
Tgt Ion:178 Resp: 117931
Ion Ratio Lower Upper
178 100
179 15.3 12.4 18.6



#22
C1-Phenanthrenes/anthracenes
Concen: 4.671 ng/mL m
RT: 21.026 min Scan# 1250
Delta R.T. -0.127 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

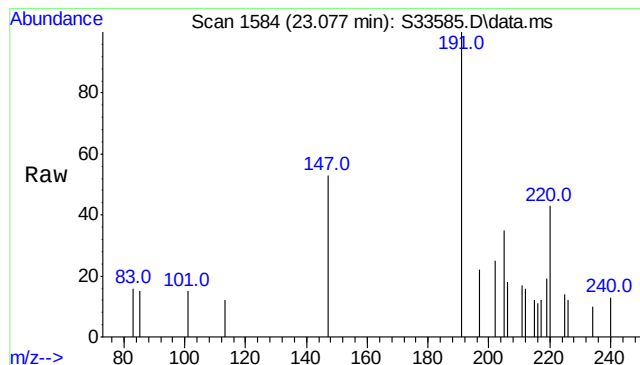
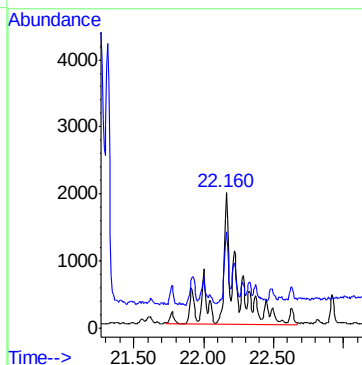
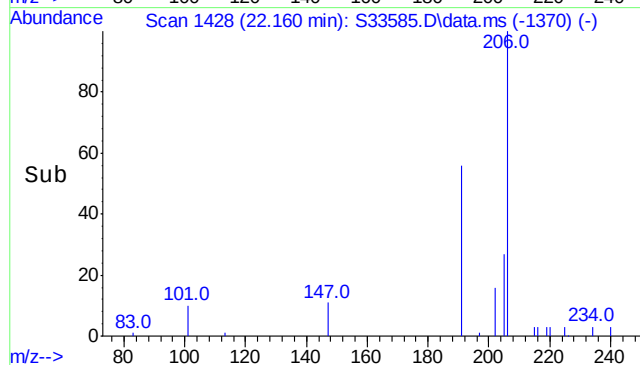
Tgt Ion:192 Resp: 59848
Ion Ratio Lower Upper
192 100
191 3.5 45.1 67.7#





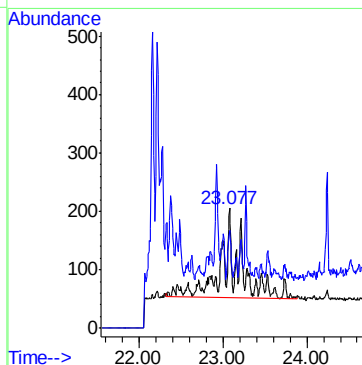
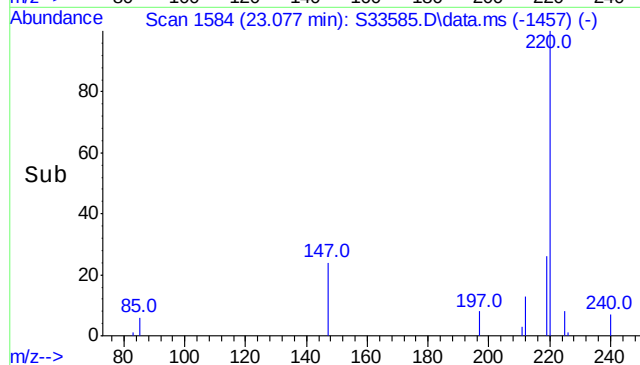
#23
C2-Phenanthrenes/anthracenes
Concen: 3.265 ng/mL m
RT: 22.160 min Scan# 1428
Delta R.T. -0.063 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

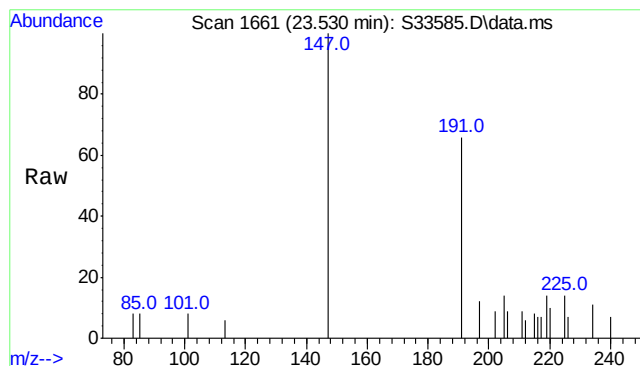
Tgt Ion:206 Resp: 15556
Ion Ratio Lower Upper
206 100
191 7.8 45.1 67.7#



#24
C3-Phenanthrenes/anthracenes
Concen: 1.131 ng/mL m
RT: 23.077 min Scan# 1584
Delta R.T. -0.064 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

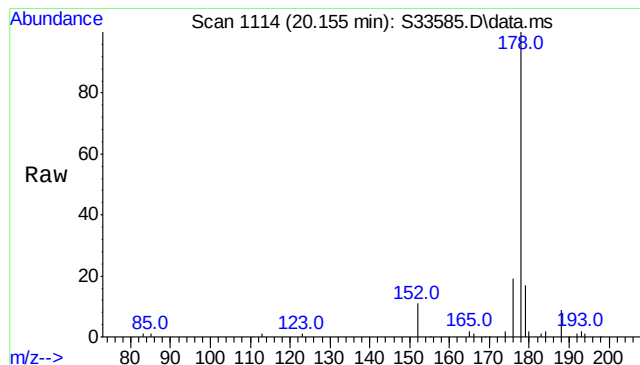
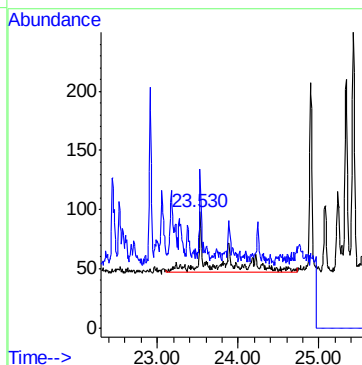
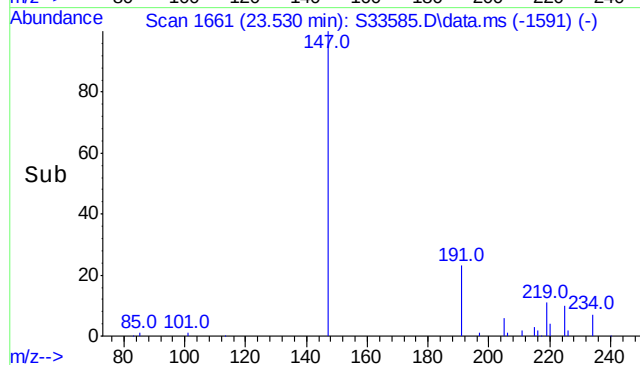
Tgt Ion:220 Resp: 2261
Ion Ratio Lower Upper
220 100
205 2.8 45.1 67.7#





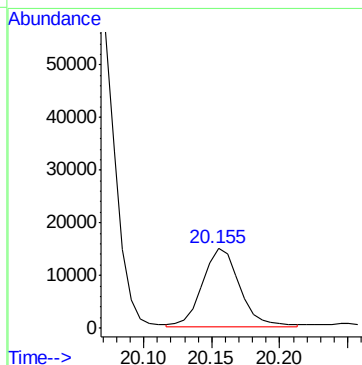
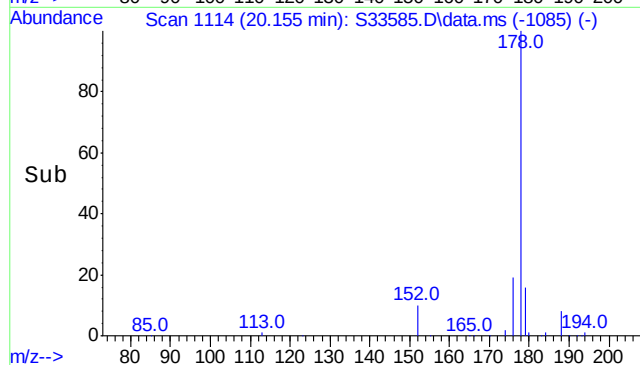
#25
C4-Phenanthrenes/anthracenes
Concen: 0.590 ng/mL m
RT: 23.530 min Scan# 1661
Delta R.T. -0.699 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

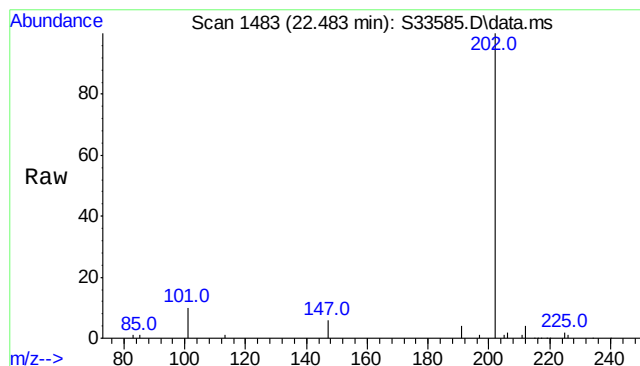
Tgt Ion:234 Resp: 533
Ion Ratio Lower Upper
234 100
219 10.1 53.0 79.6#



#27
Anthracene
Concen: 2.051 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

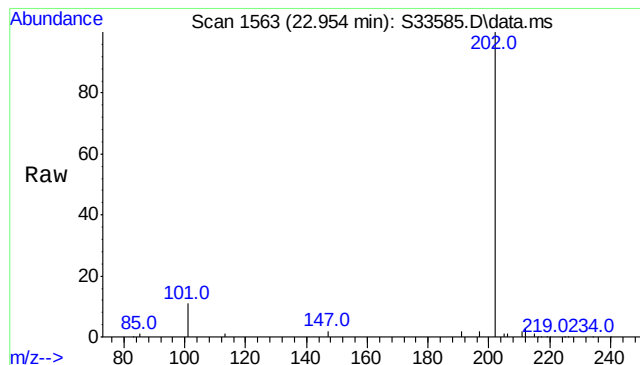
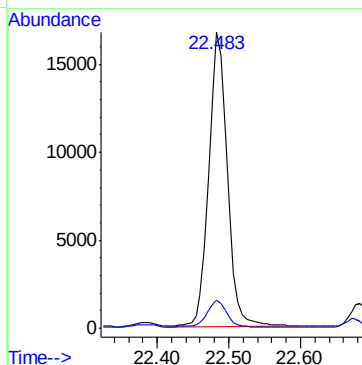
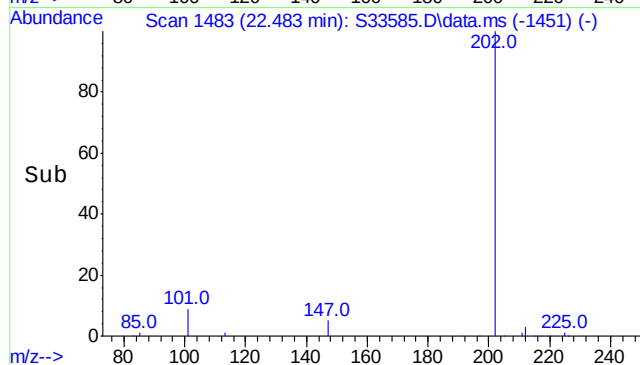
Tgt Ion:178 Resp: 28317





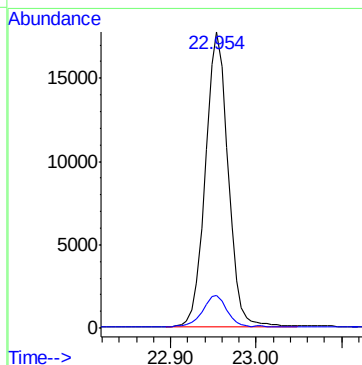
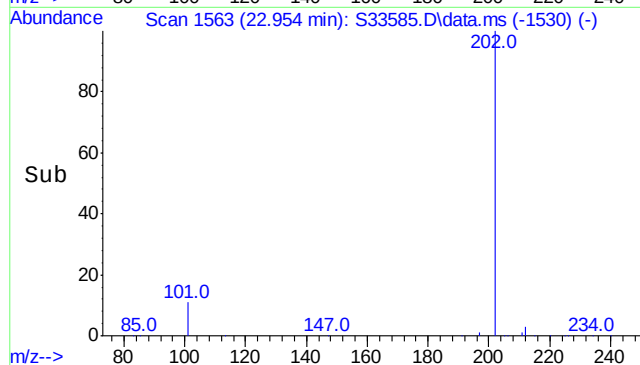
#29
Fluoranthene
Concen: 1.291 ng/mL
RT: 22.483 min Scan# 1483
Delta R.T. -0.012 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

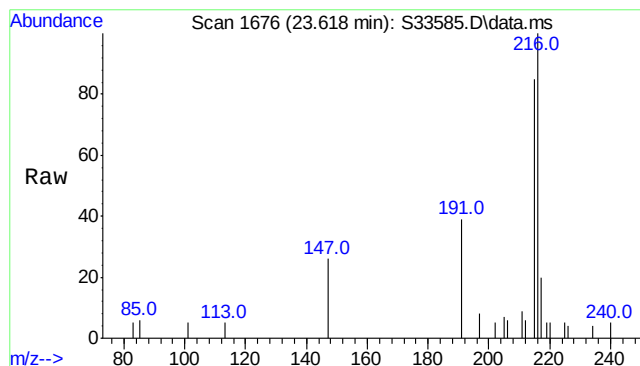
Tgt Ion:202	Resp:	30310
Ion Ratio	Lower	Upper
202	100	
101	9.8	14.3
		21.5#



#31
Pyrene
Concen: 1.318 ng/mL
RT: 22.954 min Scan# 1563
Delta R.T. -0.006 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

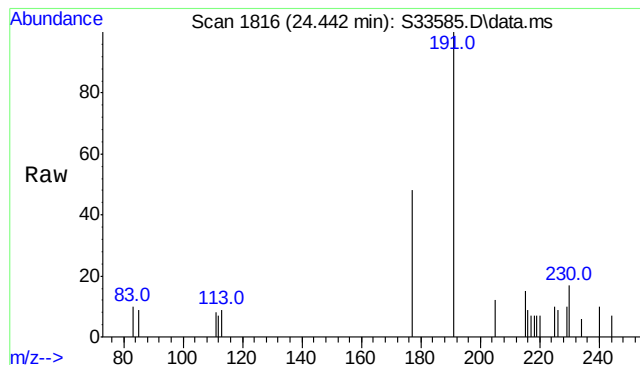
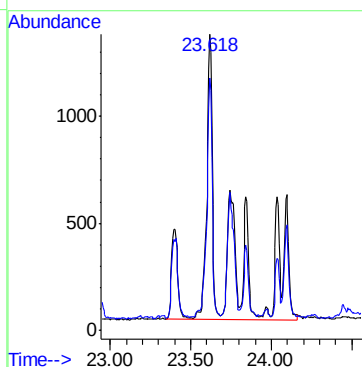
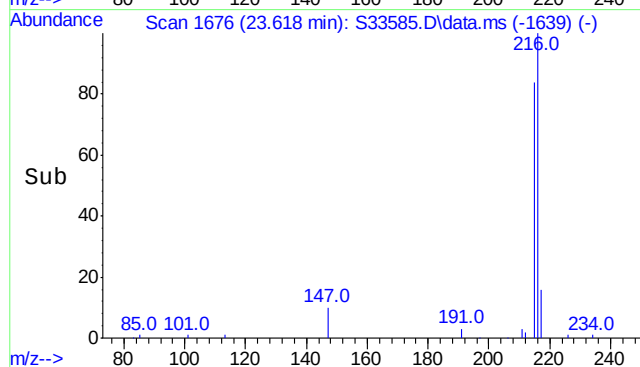
Tgt Ion:202	Resp:	32657
Ion Ratio	Lower	Upper
202	100	
101	11.8	16.6
		24.8#





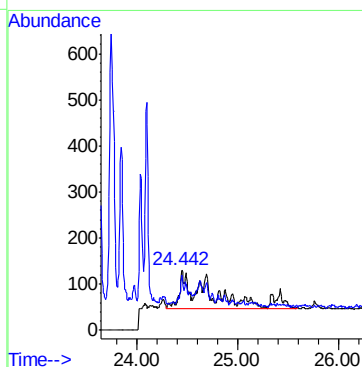
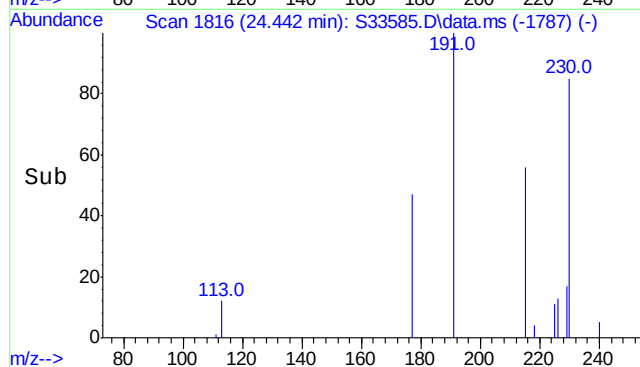
#32
C1-Fluoranthenes/pyrenes
Concen: 0.616 ng/mL m
RT: 23.618 min Scan# 1676
Delta R.T. -0.064 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

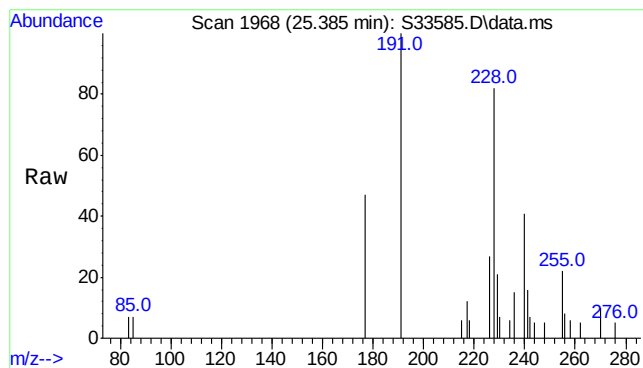
Tgt Ion:216 Resp: 9850
Ion Ratio Lower Upper
216 100
215 26.5 67.0 100.6#



#33
C2-Fluoranthenes/pyrenes
Concen: 0.074 ng/mL m
RT: 24.442 min Scan# 1816
Delta R.T. -0.069 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

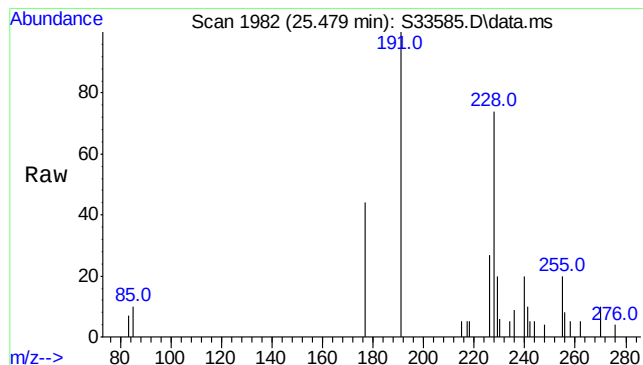
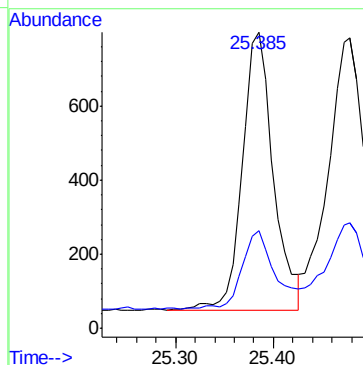
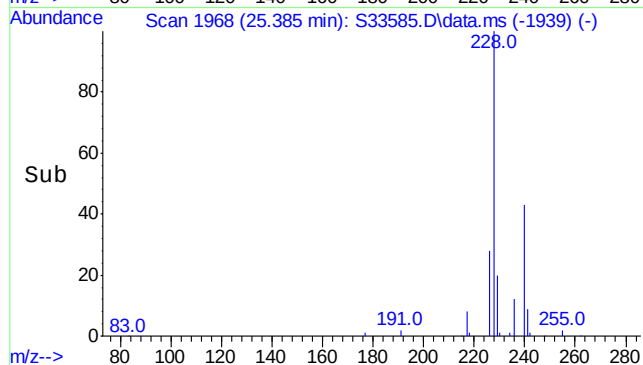
Tgt Ion:230 Resp: 1838
Ion Ratio Lower Upper
230 100
215 3.6 51.4 77.2#





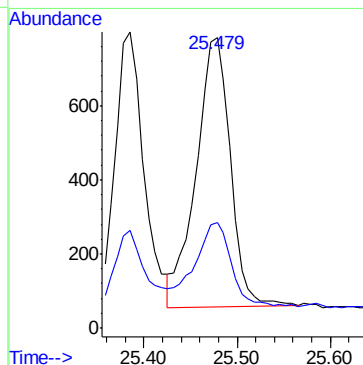
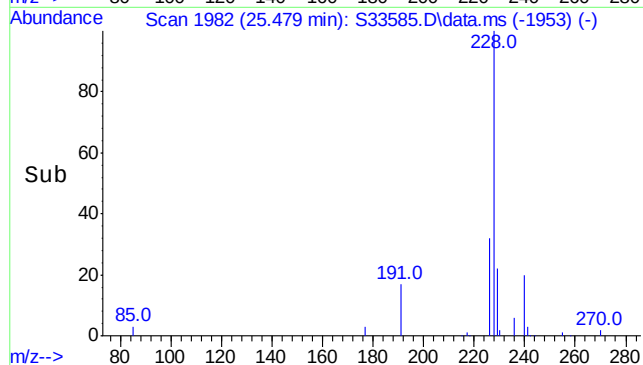
#36
Benz(a)anthracene
Concen: 0.054 ng/mL
RT: 25.385 min Scan# 1968
Delta R.T. -0.007 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

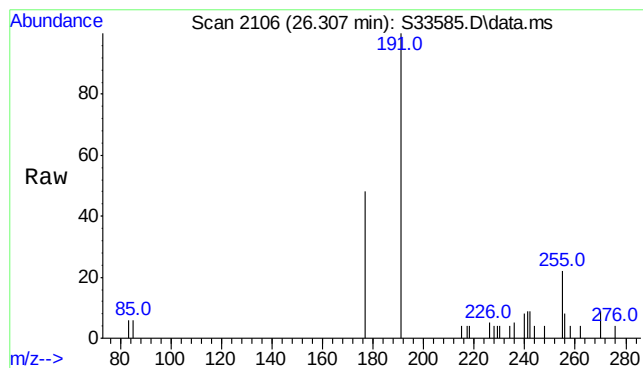
Tgt Ion:228 Resp: 1653
Ion Ratio Lower Upper
228 100
226 29.8 23.7 35.5



#38
Chrysene
Concen: 0.057 ng/mL
RT: 25.479 min Scan# 1982
Delta R.T. -0.006 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

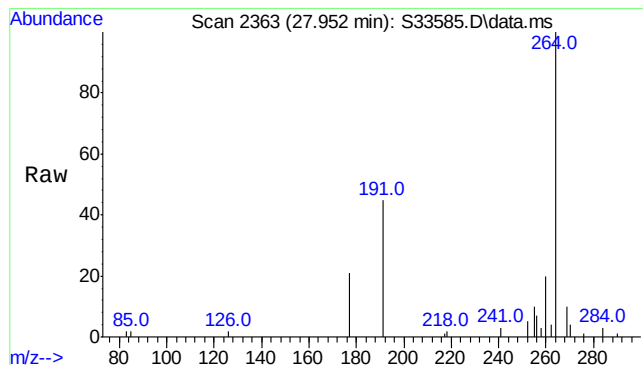
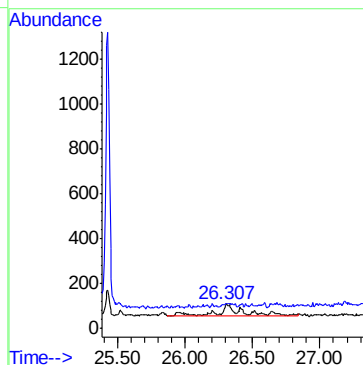
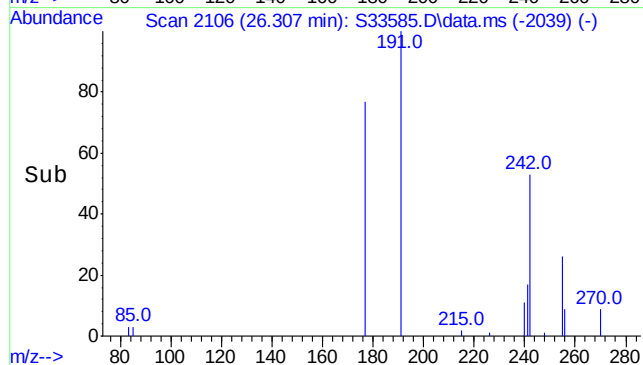
Tgt Ion:228 Resp: 1856
Ion Ratio Lower Upper
228 100
226 34.5 26.0 39.0





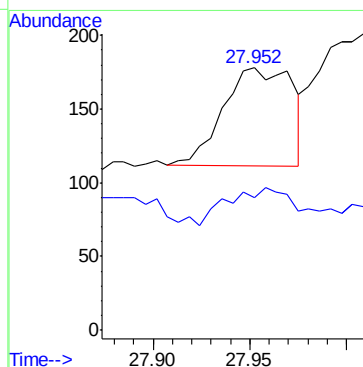
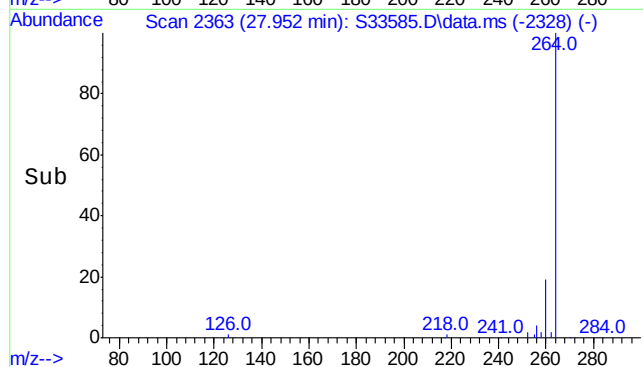
#39
C1-Benz(a)anthracenes/chrysenes
Concen: 0.038 ng/mL m
RT: 26.307 min Scan# 2106
Delta R.T. -0.051 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

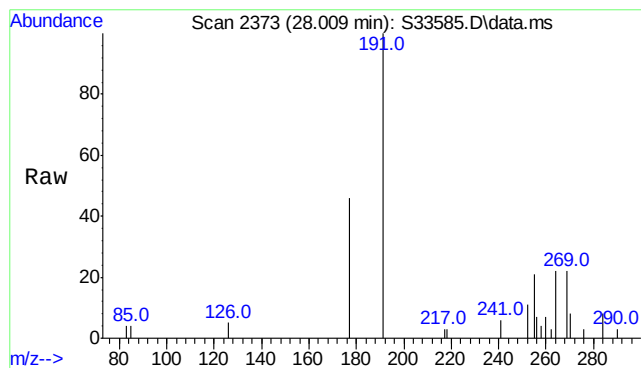
Tgt Ion:	242	Resp:	718
Ion Ratio	Lower	Upper	
242	100		
241	3.6	27.2	40.8#



#44
Benzo(b)fluoranthene
Concen: 0.004 ng/mL
RT: 27.952 min Scan# 2363
Delta R.T. -0.006 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

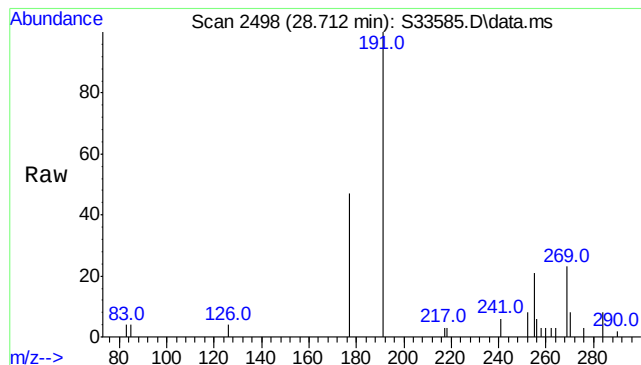
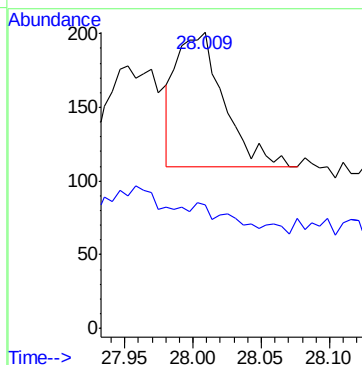
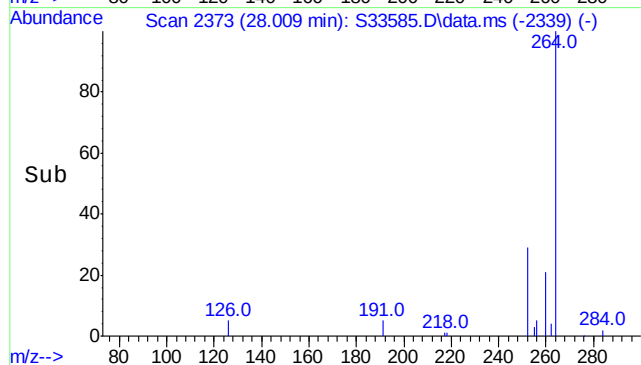
Tgt Ion:	252	Resp:	166
Ion Ratio	Lower	Upper	
252	100		
126	38.0	23.0	34.4#





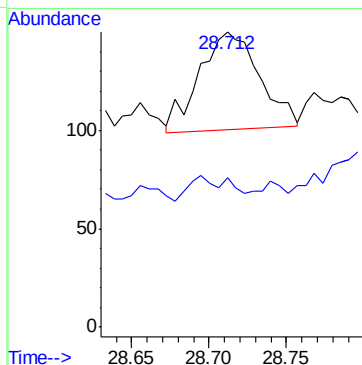
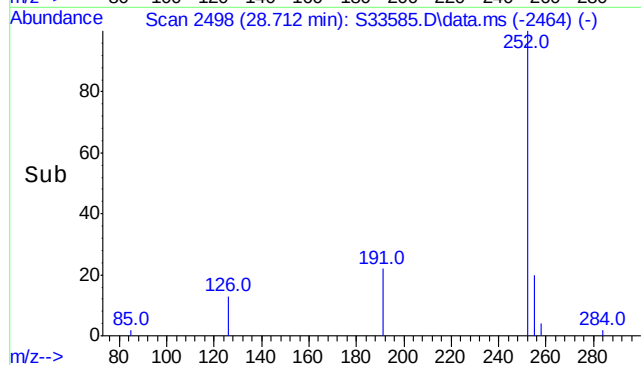
#46
Benzo(k)fluoranthene
Concen: 0.005 ng/mL
RT: 28.009 min Scan# 2373
Delta R.T. -0.011 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

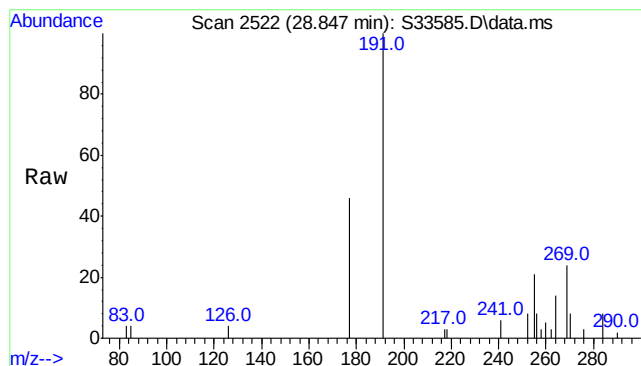
Tgt Ion:252 Resp: 218
Ion Ratio Lower Upper
252 100
126 0.0 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.003 ng/mL
RT: 28.712 min Scan# 2498
Delta R.T. -0.011 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

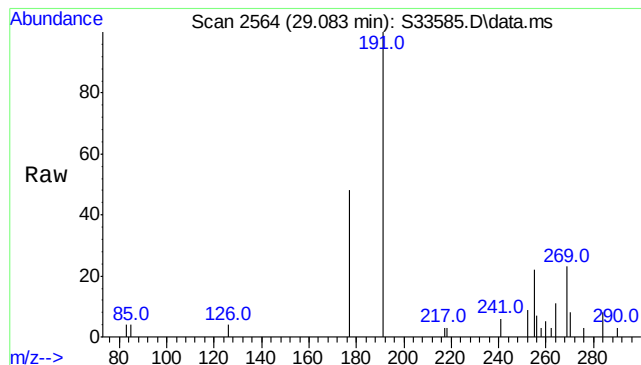
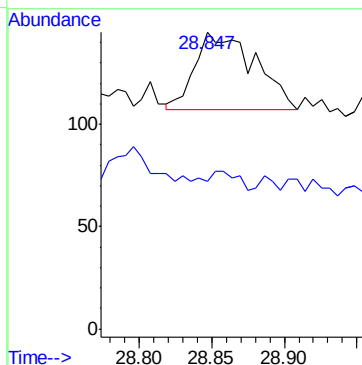
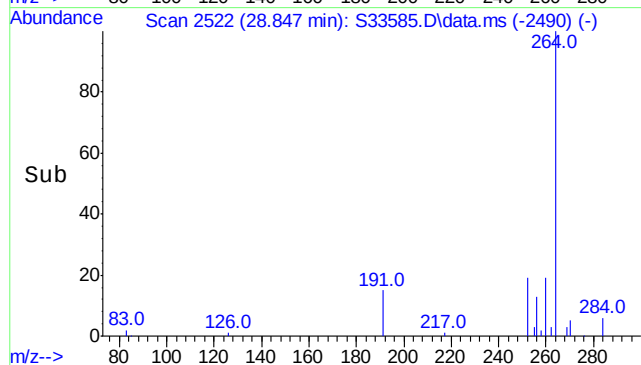
Tgt Ion:252 Resp: 135
Ion Ratio Lower Upper
252 100
126 0.0 22.6 34.0#





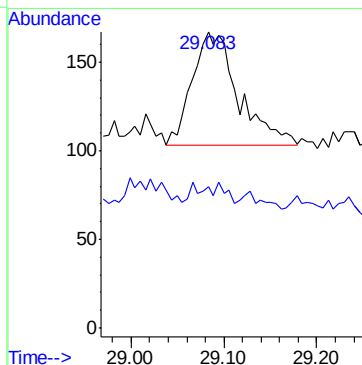
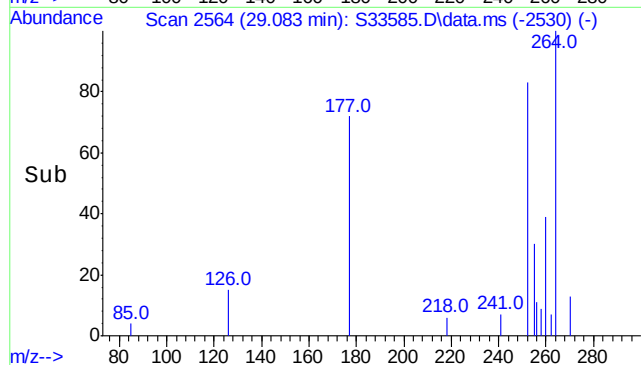
#49
Benzo(a)pyrene
Concen: 0.004 ng/mL
RT: 28.847 min Scan# 2522
Delta R.T. -0.022 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

Tgt Ion:252 Resp: 108
Ion Ratio Lower Upper
252 100
126 0.0 25.1 37.7#



#51
Perylene
Concen: 0.009 ng/mL
RT: 29.083 min Scan# 2564
Delta R.T. -0.011 min
Lab File: S33585.D
Acq: 16 Sep 2013 4:56 pm

Tgt Ion:252 Resp: 222
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33636.D
 Acq On : 21 Sep 2013 6:40 am
 Operator : RUBENP
 Sample : mc24285-2dup
 Misc : ms29817,mss1494,,,,
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 24 17:57:22 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	29191	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	18749	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	15971	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	13417	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	11592	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	30949	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	35517	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	22508	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	21435	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	10728	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	12696	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	10691	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	10820	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.779	264	7415	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	5908	0.33	ng/mL	-0.02

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Naphthalene	13.910	128	2081033	2071.517	ng/mL	100
3) C1-Naphthalenes	15.081	142	1140312m	1135.098	ng/mL	
4) C2-Naphthalenes	16.392	156	633605m	319.286	ng/mL	
5) C3-Naphthalenes	17.449	170	245953m	182.553	ng/mL	
7) C4-Naphthalenes	19.521	184	46922m	71.168	ng/mL	
9) 2-Methylnaphthalene	15.081	142	676677	497.235	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	463173	374.496	ng/mL	100
13) Acenaphthylene	16.802	152	33736	18.136	ng/mL#	100
14) Acenaphthene	17.147	154	757819	381.471	ng/mL	98
16) Fluorene	18.132	166	584563m	185.756	ng/mL	
17) C1-Fluorenes	19.220	180	137126m	51.345	ng/mL	
18) C2-Fluorenes	20.245	194	42895m	21.037	ng/mL	
19) C3-Fluorenes	21.200	208	7197m	3.785	ng/mL	
21) Phenanthrene	20.066	178	1738799	222.964	ng/mL	99
22) C1-Phenanthrenes/anthr...	21.020	192	295353m	34.275	ng/mL	
23) C2-Phenanthrenes/anthr...	22.154	206	51906m	16.196	ng/mL	
24) C3-Phenanthrenes/anthr...	23.072	220	11729m	8.723	ng/mL	
25) C4-Phenanthrenes/anthr...	23.807	234	2097m	3.451	ng/mL	
27) Anthracene	20.155	178	355135	39.489	ng/mL	100
29) Fluoranthene	22.478	202	406052	22.385	ng/mL#	80
31) Pyrene	22.948	202	297262	14.795	ng/mL#	80
32) C1-Fluoranthenes/pyrenes	23.613	216	68589m	5.291	ng/mL	
33) C2-Fluoranthenes/pyrenes	25.011	230	11031m	0.549	ng/mL	
34) C3-Fluoranthenes/pyrenes	25.419	244	2030m	0.101	ng/mL	
36) Benz(a)anthracene	25.379	228	24303	0.842	ng/mL	96
38) Chrysene	25.465	228	18616	0.640	ng/mL	98
39) C1-Benz(a)anthracenes/...	26.293	242	4866m	0.285	ng/mL	
44) Benzo(b)fluoranthene	27.941	252	1766	0.041	ng/mL#	72
46) Benzo(k)fluoranthene	27.992	252	2303	0.061	ng/mL#	60
48) Benzo(e)pyrene	28.706	252	1037	0.024	ng/mL#	65
49) Benzo(a)pyrene	28.847	252	1419	0.057	ng/mL#	61
51) Perylene	29.072	252	263	0.011	ng/mL#	41

Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
Data File : S33636.D
Acq On : 21 Sep 2013 6:40 am
Operator : RUBENP
Sample : mc24285-2dup
Misc : ms29817,mss1494,,,,
ALS Vial : 23 Sample Multiplier: 1

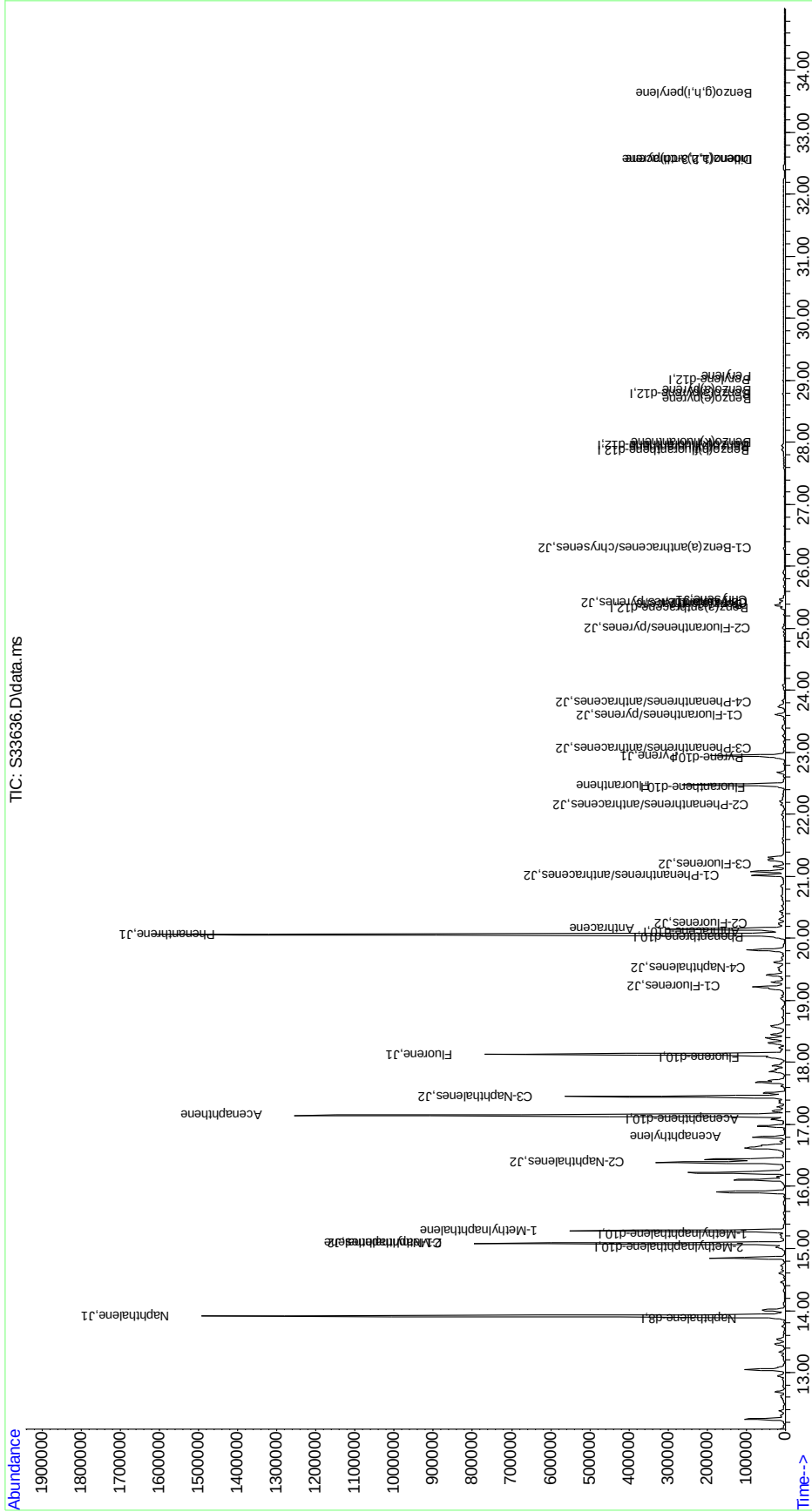
Quant Time: Oct 24 17:57:22 2013
Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration

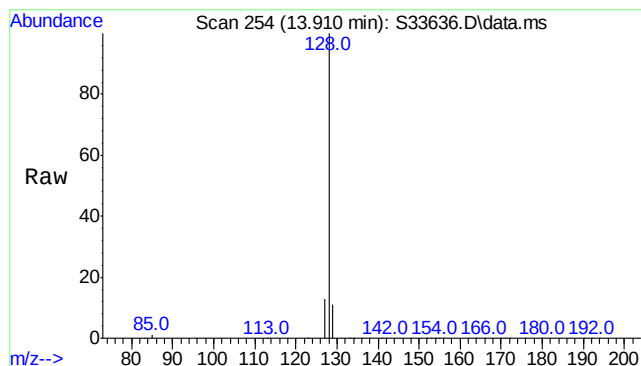
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) Indeno(1,2,3-cd)pyrene	32.567	276	175	0.004	ng/mL#	70
53) Dibenz(a,h)anthracene	32.567	278	52m	0.001	ng/mL	
54) Benzo(g,h,i)perylene	33.629	276	107	0.003	ng/mL#	50

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : Z:\data\S130920\
Data File : S33636.D
Acq On : 21 Sep 2013 6:40 am
Operator : RUBENP
Sample : mc24285-2dup
Misc : ms29817,mss1494,,,,
ALS Vial : 23 Sample Multiplier: 1

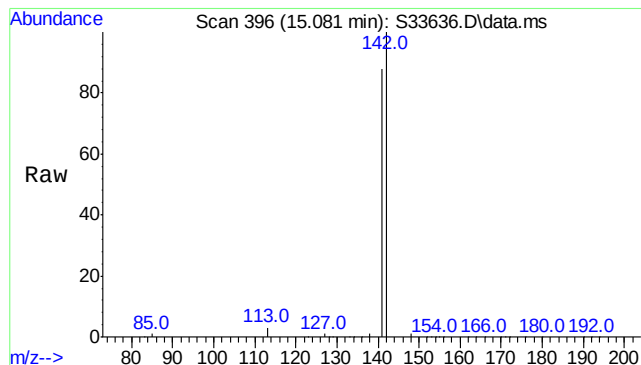
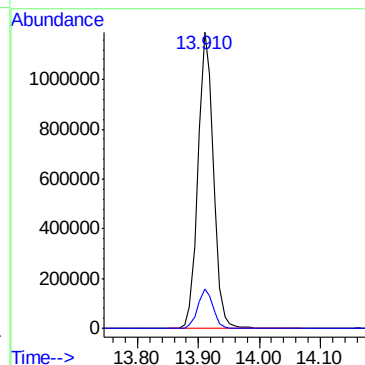
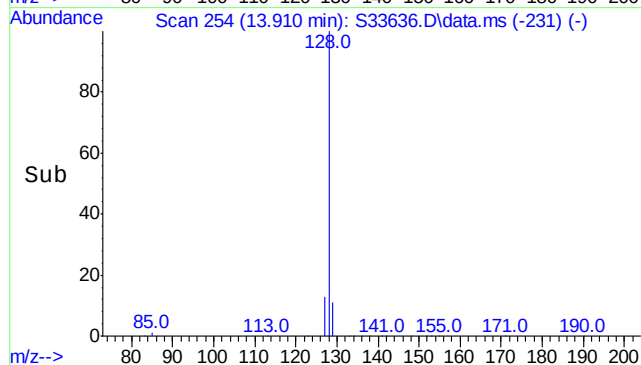
Quant Time: Oct 24 17:57:22 2013
Quant Method : S:\methods\S130920-SPMEPAH-CCQ-13.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Thu Oct 24 16:19:38 2013
Response via : Initial Calibration





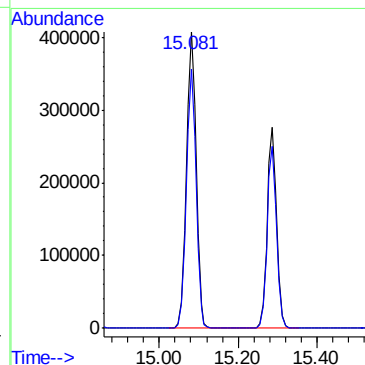
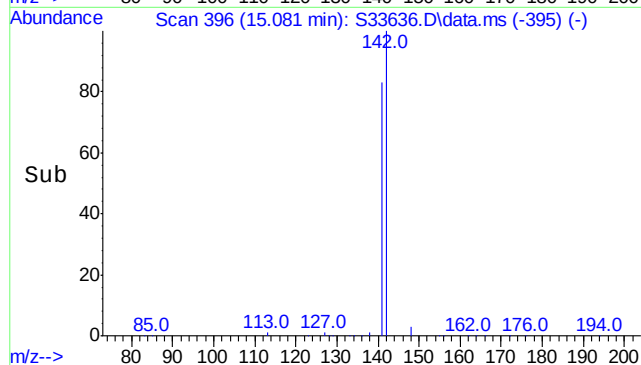
#2
Naphthalene
Concen: 2071.517 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

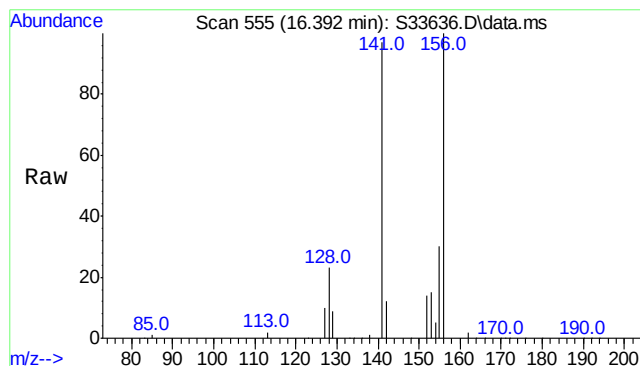
Tgt Ion:128 Resp: 2081033
Ion Ratio Lower Upper
128 100
127 13.1 10.6 15.8



#3
C1-Naphthalenes
Concen: 1135.098 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

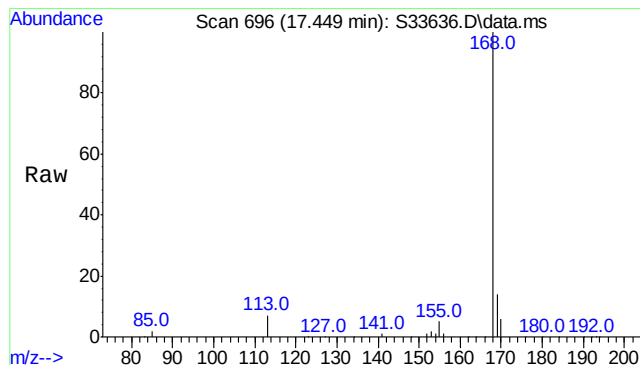
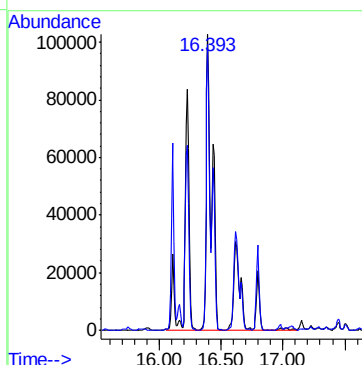
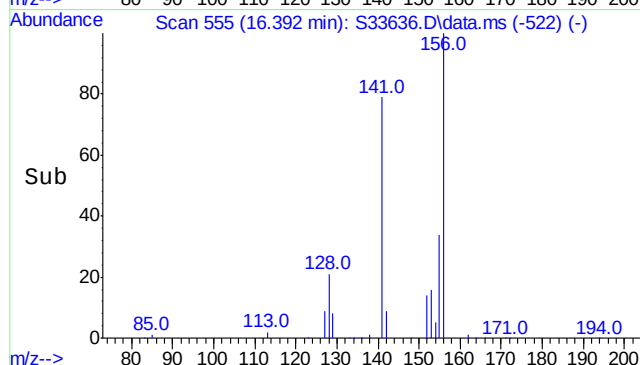
Tgt Ion:142 Resp: 1140312
Ion Ratio Lower Upper
142 100
141 36.9 71.0 106.6#





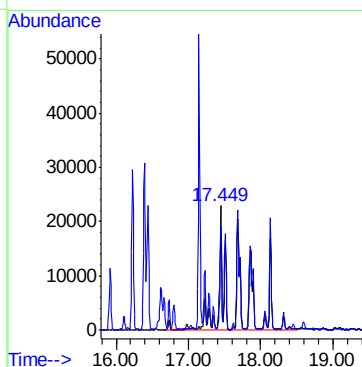
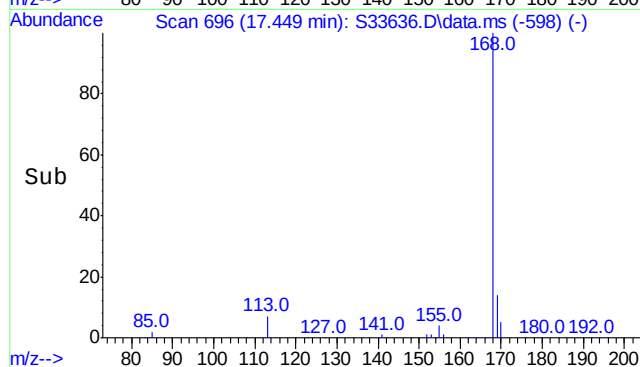
#4
C2-Naphthalenes
Concen: 319.286 ng/mL m
RT: 16.392 min Scan# 555
Delta R.T. -0.065 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

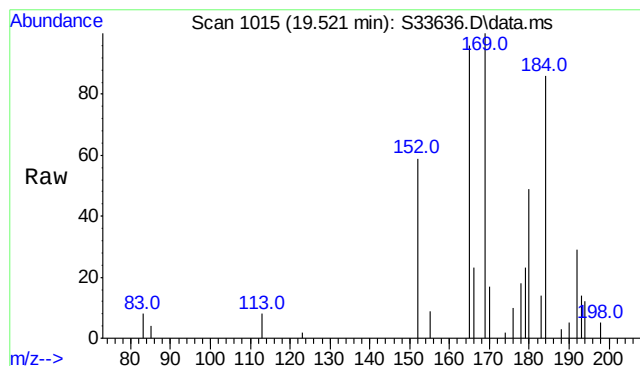
Tgt Ion:156 Resp: 633605
Ion Ratio Lower Upper
156 100
141 13.4 79.0 118.4#



#5
C3-Naphthalenes
Concen: 182.553 ng/mL m
RT: 17.449 min Scan# 696
Delta R.T. -0.210 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

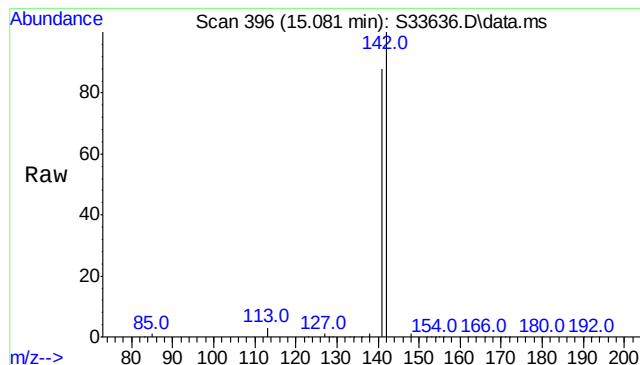
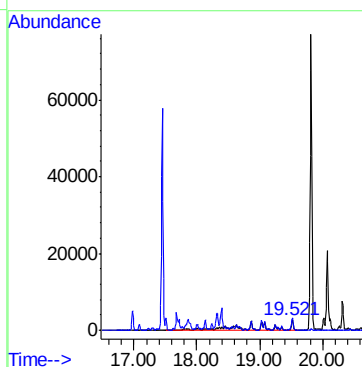
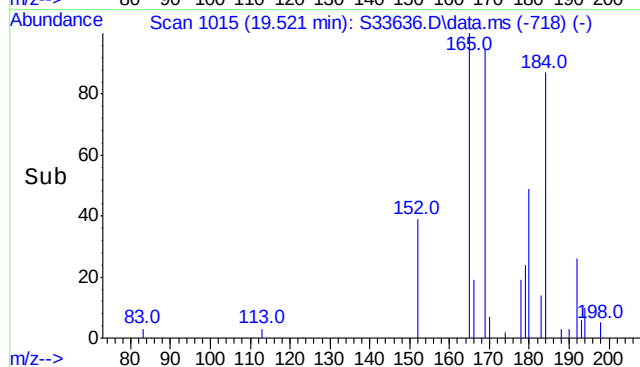
Tgt Ion:170 Resp: 245953
Ion Ratio Lower Upper
170 100
155 15.7 80.7 121.1#





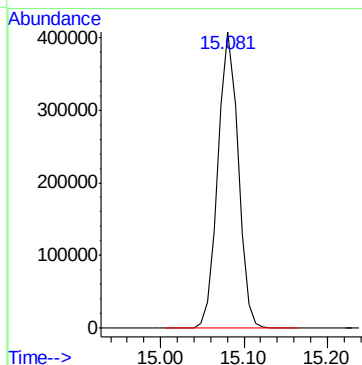
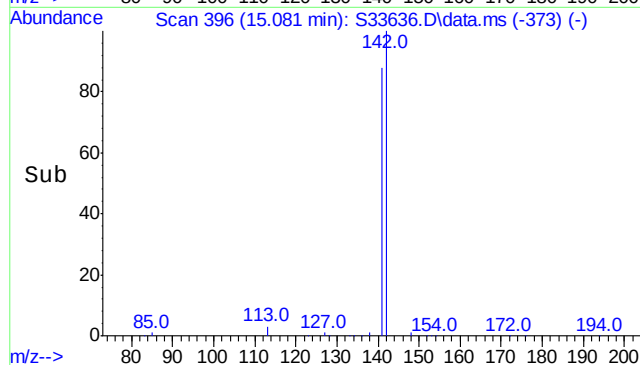
#7
C4-Naphthalenes
Concen: 71.168 ng/mL m
RT: 19.521 min Scan# 1015
Delta R.T. 0.590 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

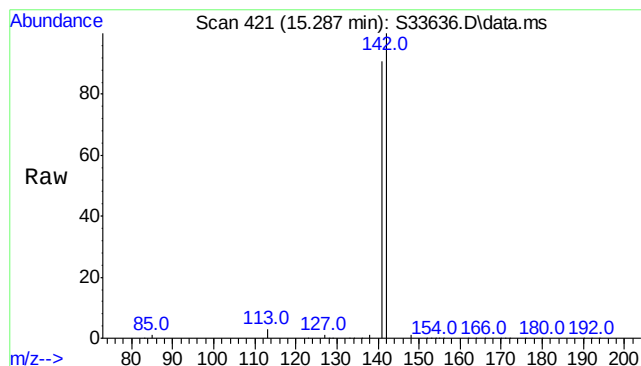
Tgt Ion:184 Resp: 46922
Ion Ratio Lower Upper
184 100
169 11.1 80.1 120.1#



#9
2-Methylnaphthalene
Concen: 497.235 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

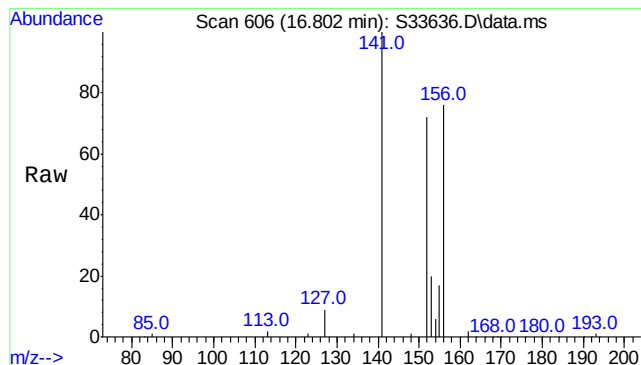
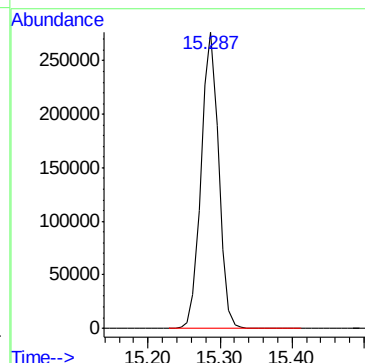
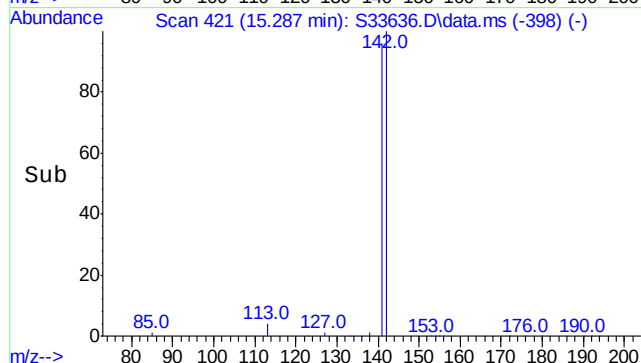
Tgt Ion:142 Resp: 676677





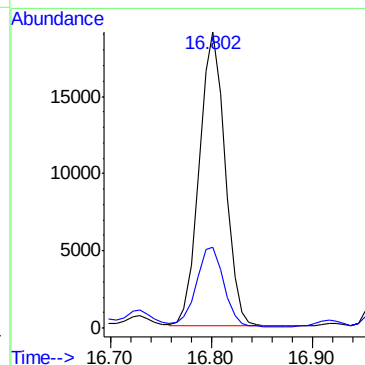
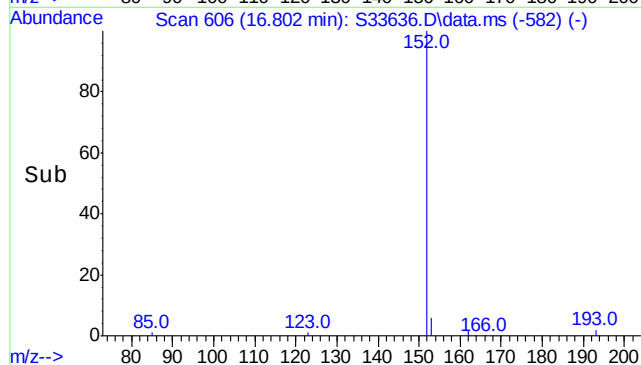
#11
1-Methylnaphthalene
Concen: 374.496 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

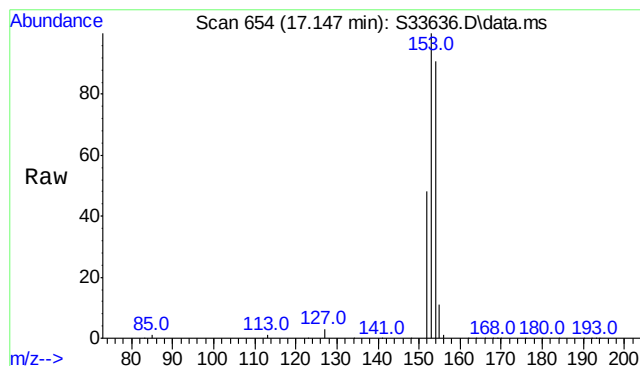
Tgt Ion:142 Resp: 463173



#13
Acenaphthylene
Concen: 18.136 ng/mL
RT: 16.802 min Scan# 606
Delta R.T. -0.014 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

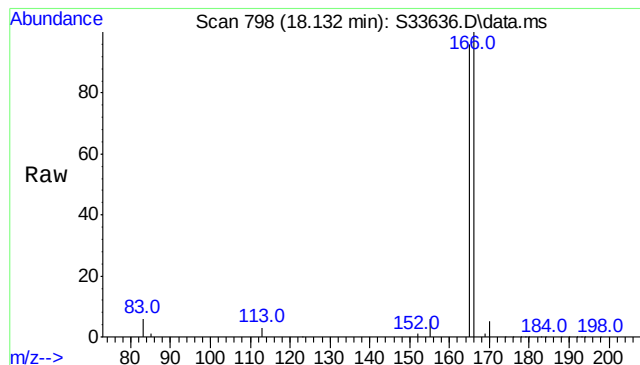
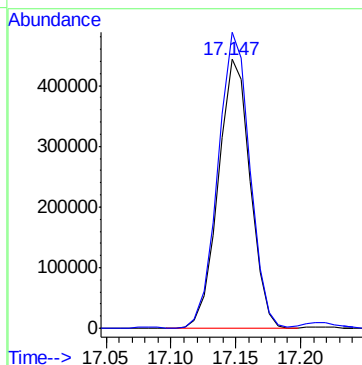
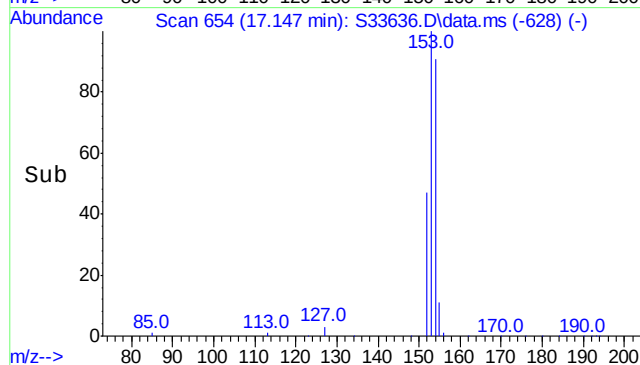
Tgt Ion:152 Resp: 33736
Ion Ratio Lower Upper
152 100
153 28.7 0.0 0.0#





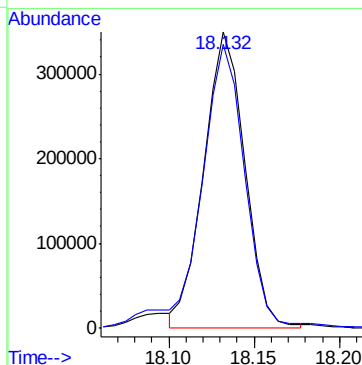
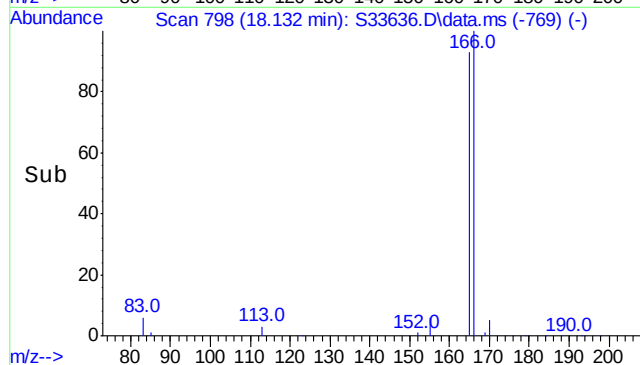
#14
Acenaphthene
Concen: 381.471 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

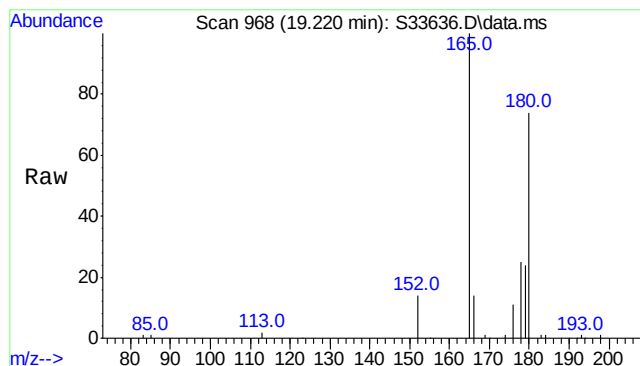
Tgt Ion:154 Resp: 757819
Ion Ratio Lower Upper
154 100
153 109.8 86.6 129.8



#16
Fluorene
Concen: 185.756 ng/mL m
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

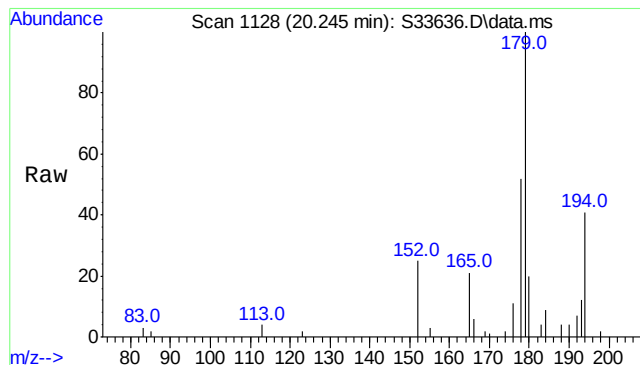
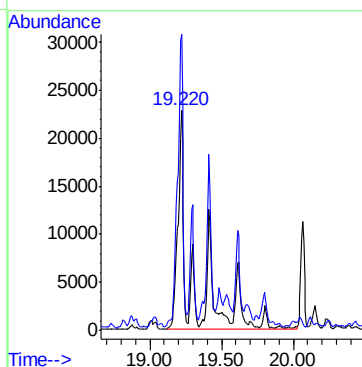
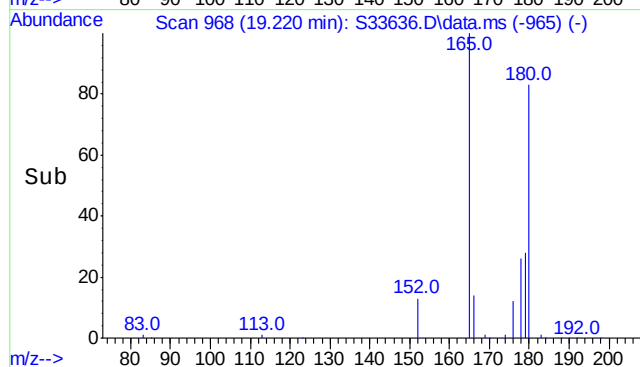
Tgt Ion:166 Resp: 584563
Ion Ratio Lower Upper
166 100
165 103.5 76.4 114.6





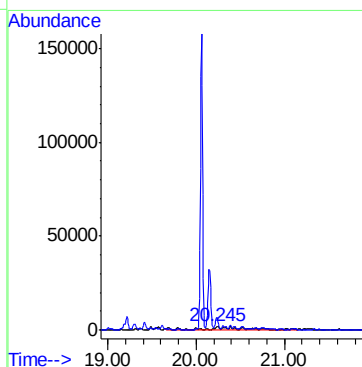
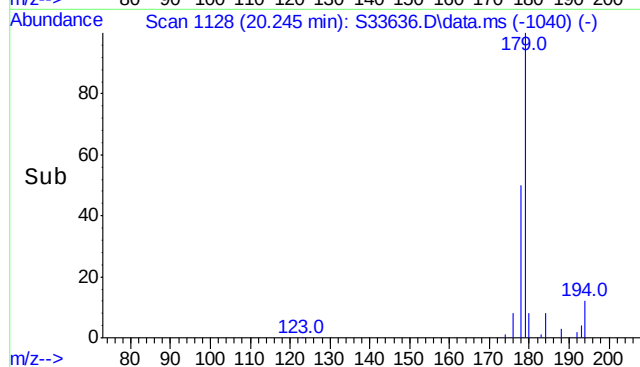
#17
C1-Fluorenes
Concen: 51.345 ng/mL m
RT: 19.220 min Scan# 968
Delta R.T. -0.092 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

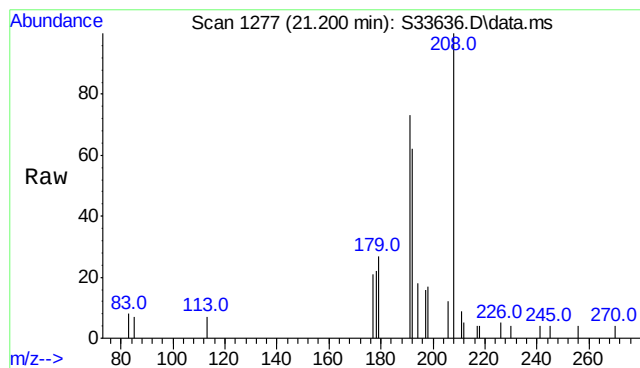
Tgt Ion:180 Resp: 137126
Ion Ratio Lower Upper
180 100
165 15.5 111.1 166.7#



#18
C2-Fluorenes
Concen: 21.037 ng/mL m
RT: 20.245 min Scan# 1128
Delta R.T. -0.069 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

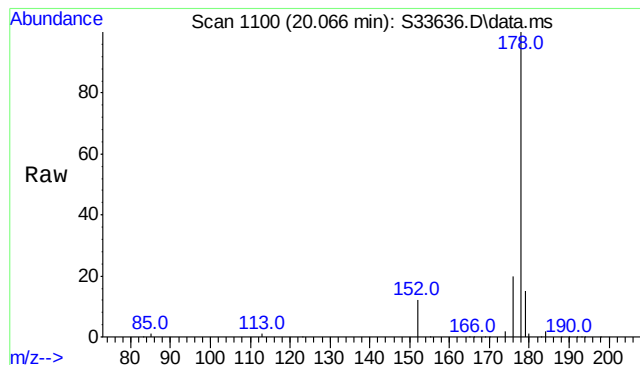
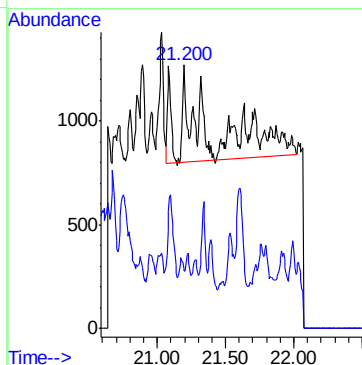
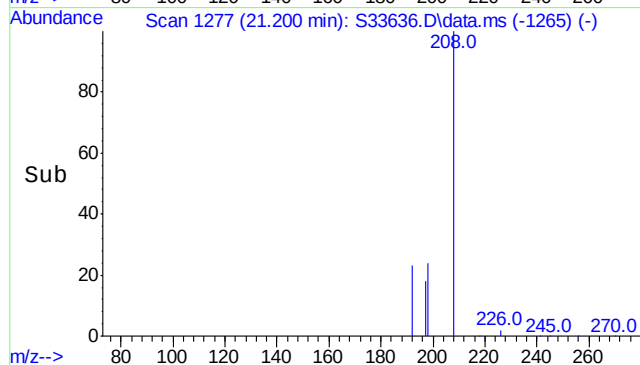
Tgt Ion:194 Resp: 42895
Ion Ratio Lower Upper
194 100
179 6.9 131.8 197.6#





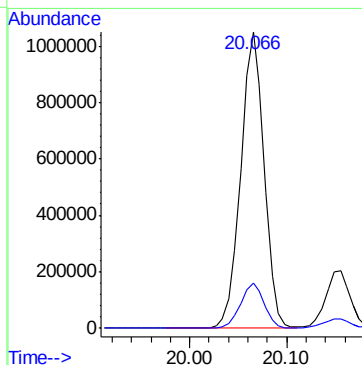
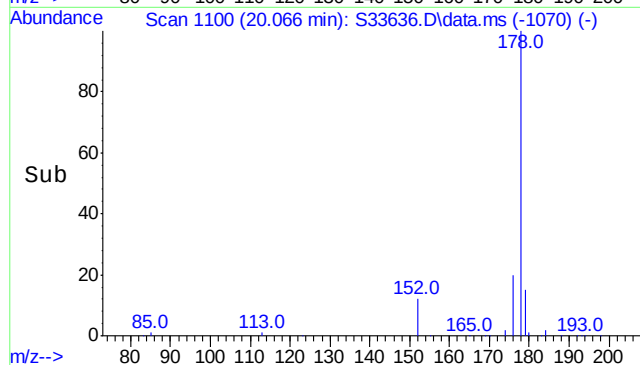
#19
C3-Fluorenes
Concen: 3.785 ng/mL m
RT: 21.200 min Scan# 1277
Delta R.T. -0.152 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

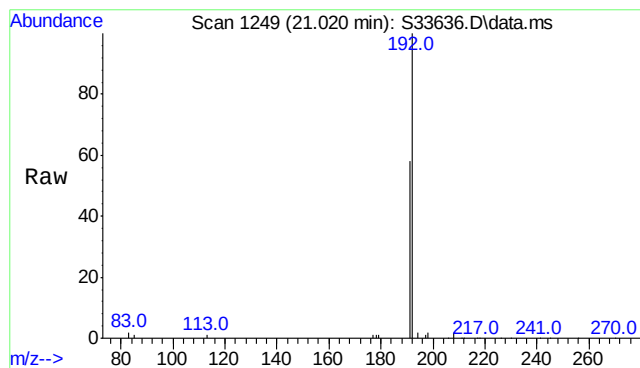
Tgt Ion:208 Resp: 7197
Ion Ratio Lower Upper
208 100
178 8.1 43.4 65.2#



#21
Phenanthrene
Concen: 222.964 ng/mL
RT: 20.066 min Scan# 1100
Delta R.T. -0.006 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

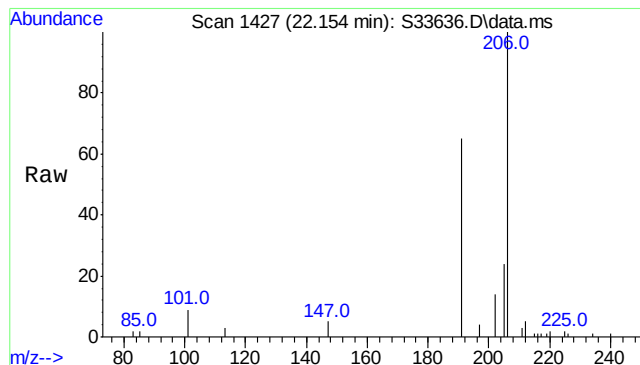
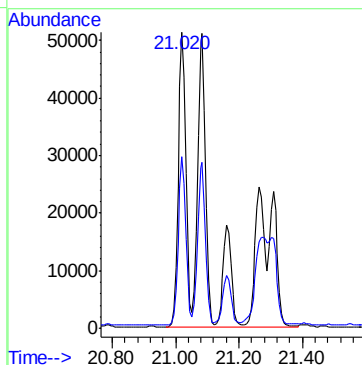
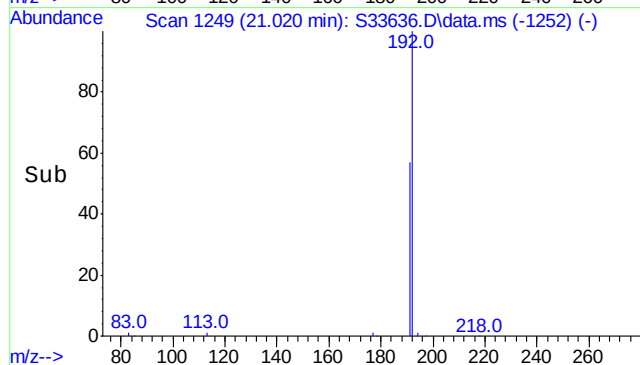
Tgt Ion:178 Resp: 1738799
Ion Ratio Lower Upper
178 100
179 15.1 12.4 18.6





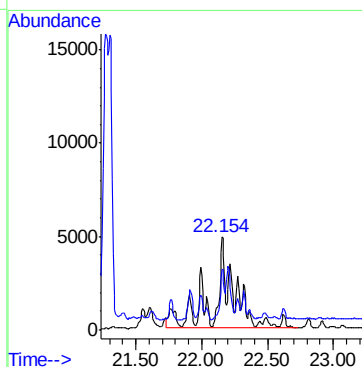
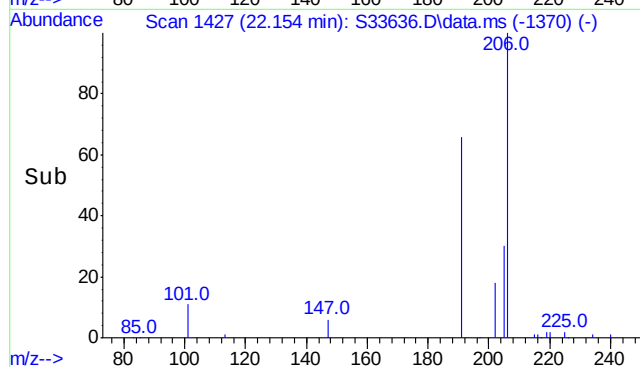
#22
C1-Phenanthrenes/anthracenes
Concen: 34.275 ng/mL m
RT: 21.020 min Scan# 1249
Delta R.T. -0.133 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

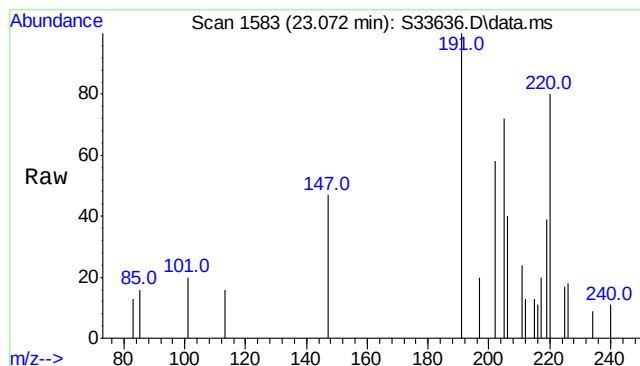
Tgt Ion:192 Resp: 295353
Ion Ratio Lower Upper
192 100
191 4.9 45.1 67.7#



#23
C2-Phenanthrenes/anthracenes
Concen: 16.196 ng/mL m
RT: 22.154 min Scan# 1427
Delta R.T. -0.069 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

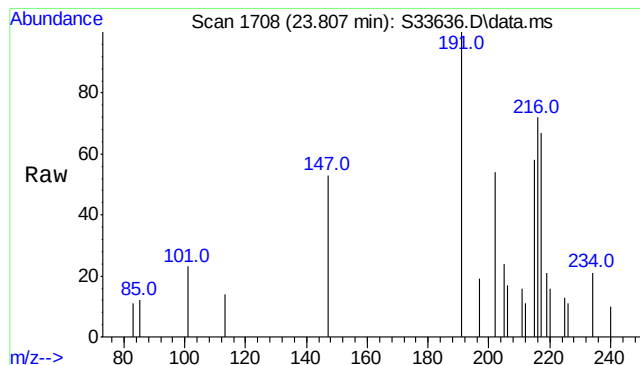
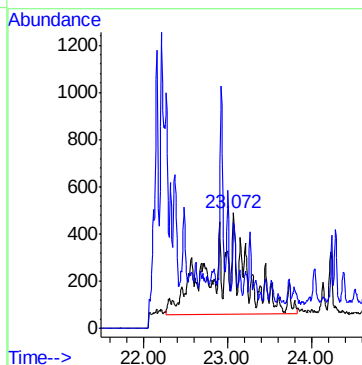
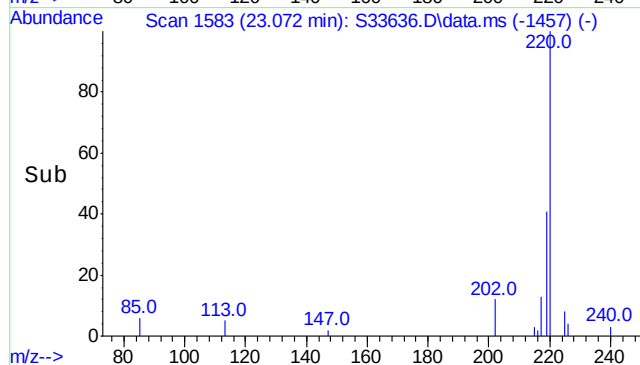
Tgt Ion:206 Resp: 51906
Ion Ratio Lower Upper
206 100
191 11.5 45.1 67.7#





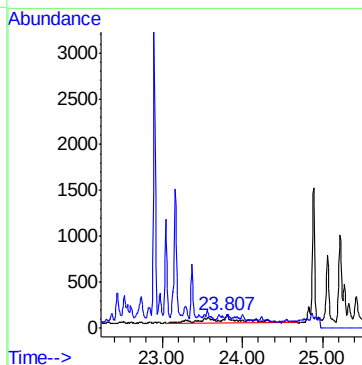
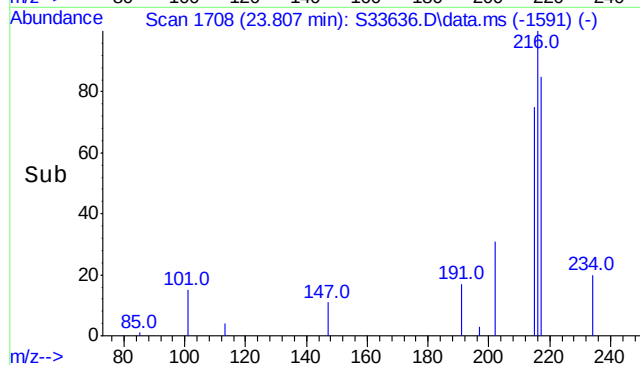
#24
C3-Phenanthrenes/anthracenes
Concen: 8.723 ng/mL m
RT: 23.072 min Scan# 1583
Delta R.T. -0.069 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

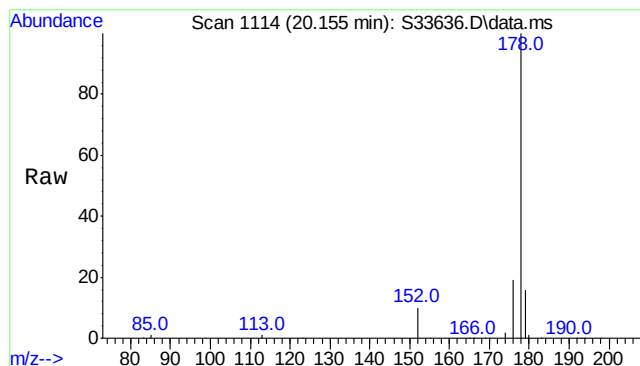
Tgt Ion:220 Resp: 11729
Ion Ratio Lower Upper
220 100
205 5.7 45.1 67.7#



#25
C4-Phenanthrenes/anthracenes
Concen: 3.451 ng/mL m
RT: 23.807 min Scan# 1708
Delta R.T. -0.422 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

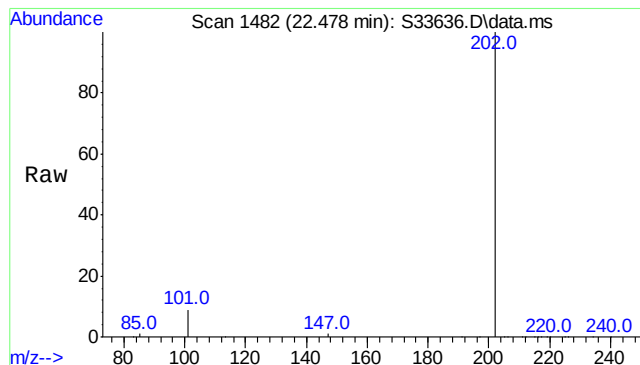
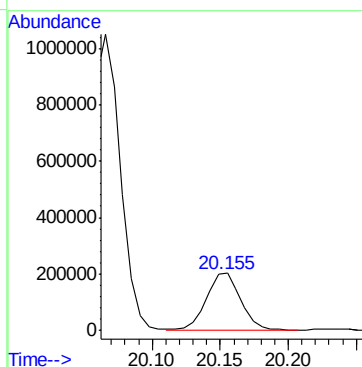
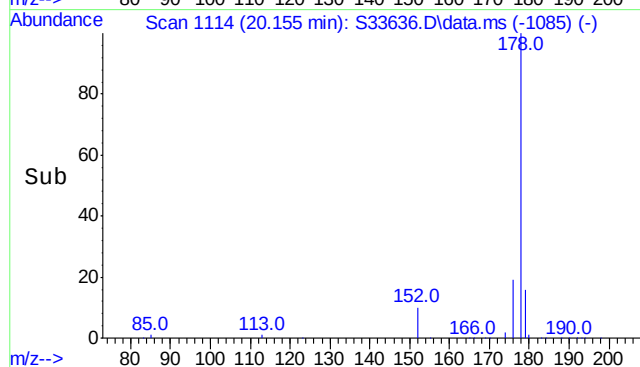
Tgt Ion:234 Resp: 2097
Ion Ratio Lower Upper
234 100
219 1.7 53.0 79.6#





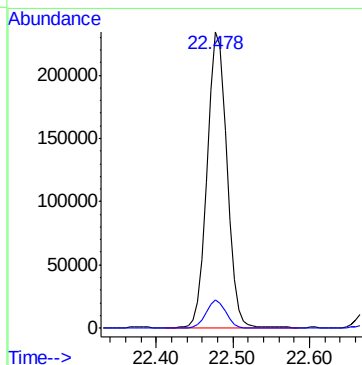
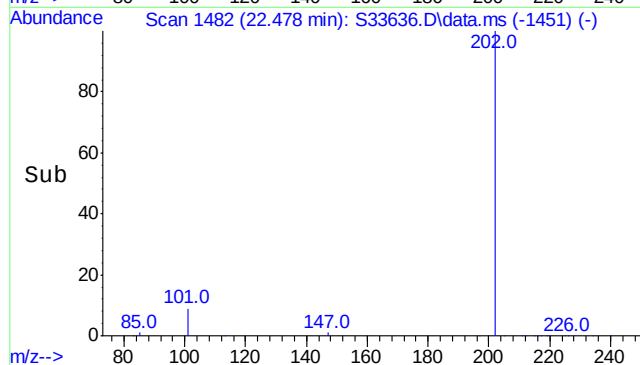
#27
Anthracene
Concen: 39.489 ng/mL
RT: 20.155 min Scan# 1114
Delta R.T. -0.013 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

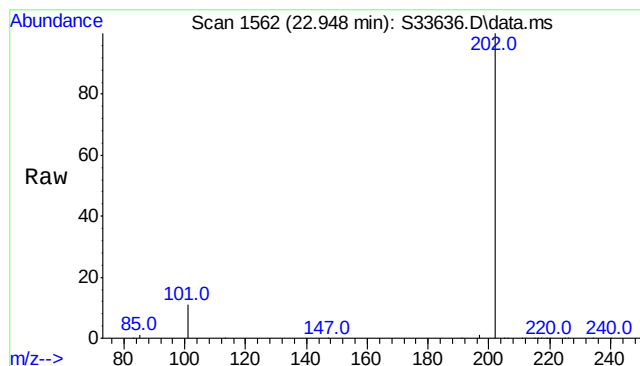
Tgt Ion:178 Resp: 355135



#29
Fluoranthene
Concen: 22.385 ng/mL
RT: 22.478 min Scan# 1482
Delta R.T. -0.017 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

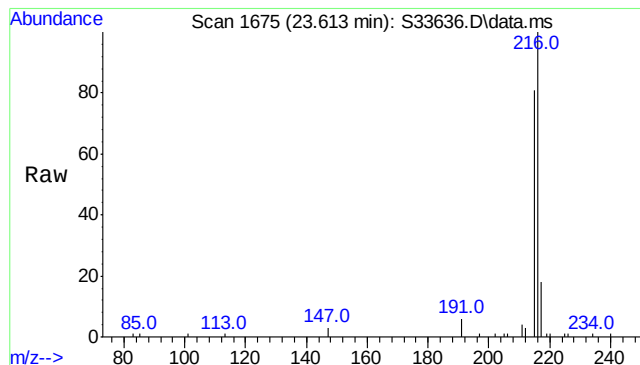
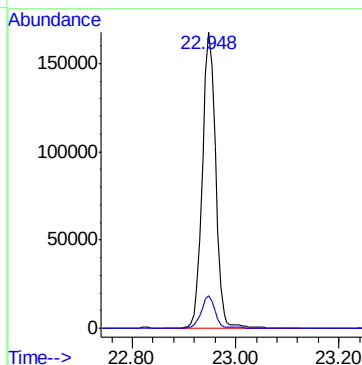
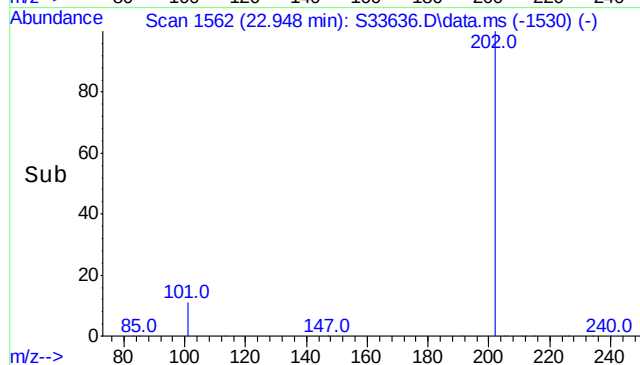
Tgt Ion:202 Resp: 406052
Ion Ratio Lower Upper
202 100
101 9.2 14.3 21.5#





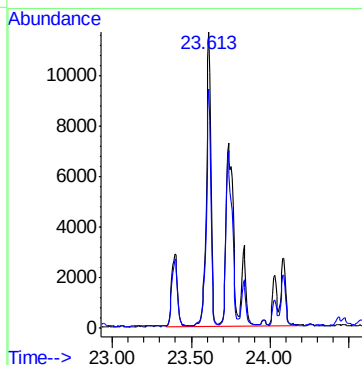
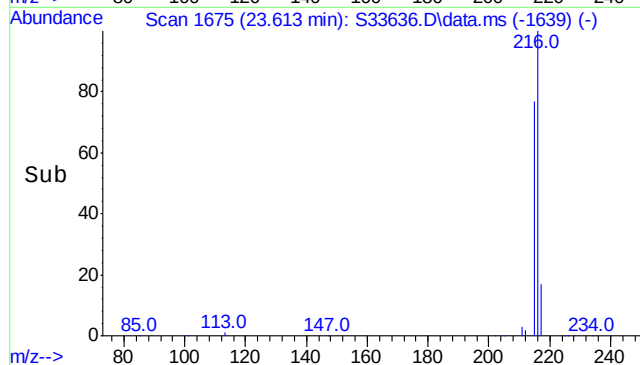
#31
Pyrene
Concen: 14.795 ng/mL
RT: 22.948 min Scan# 1562
Delta R.T. -0.012 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

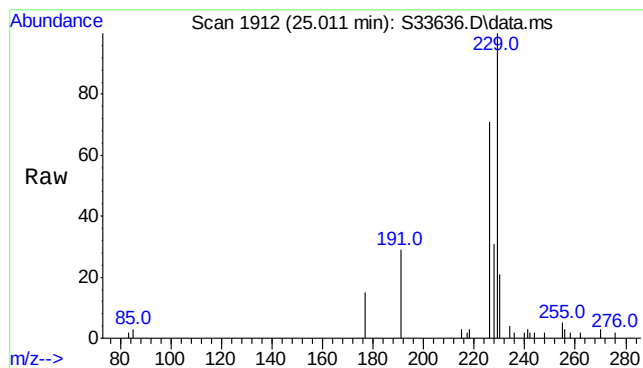
Tgt Ion:	202	Resp:	297262
Ion Ratio	Lower	Upper	
202	100		
101	11.2	16.6	24.8#



#32
C1-Fluoranthenes/pyrenes
Concen: 5.291 ng/mL m
RT: 23.613 min Scan# 1675
Delta R.T. -0.069 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

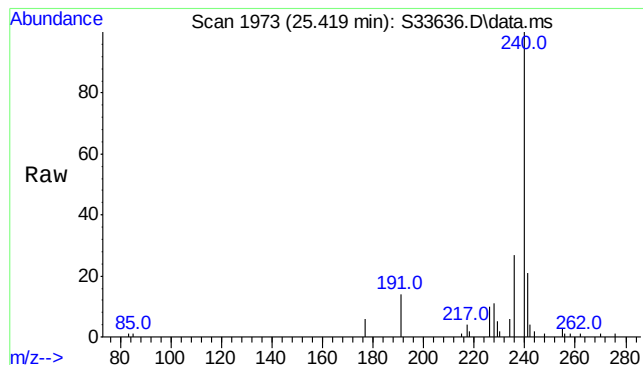
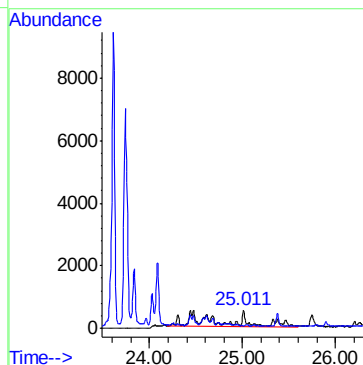
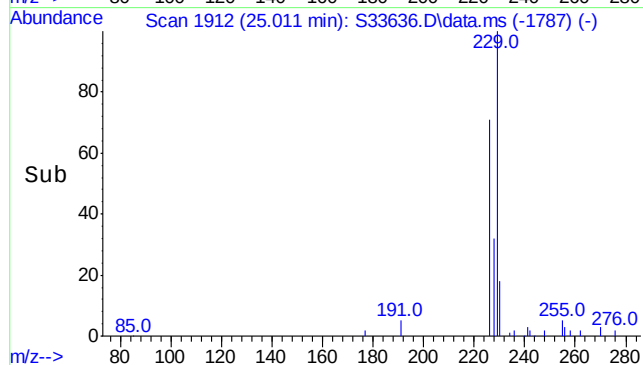
Tgt Ion:	216	Resp:	68589
Ion Ratio	Lower	Upper	
216	100		
215	28.3	67.0	100.6#





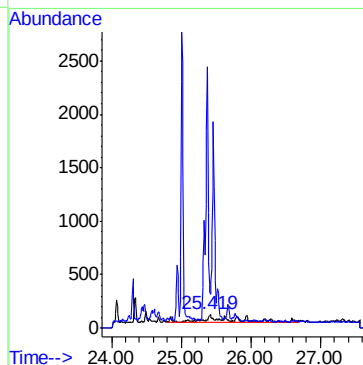
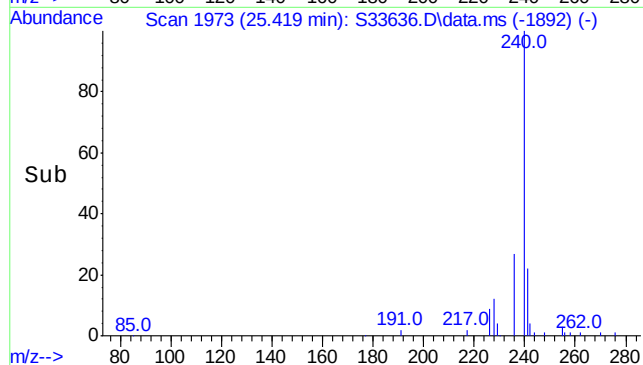
#33
C2-Fluoranthenes/pyrenes
Concen: 0.549 ng/mL m
RT: 25.011 min Scan# 1912
Delta R.T. 0.500 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

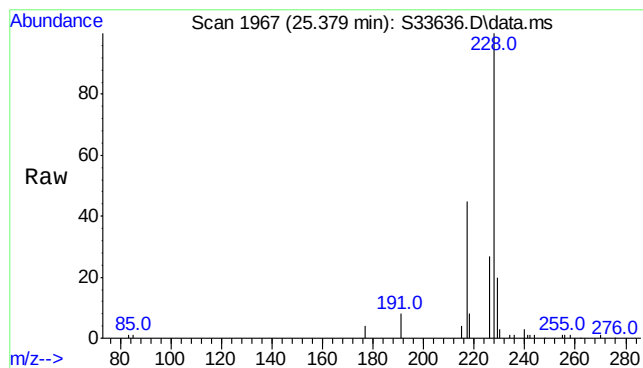
Tgt Ion:	230	Resp:	11031
Ion Ratio	Lower	Upper	
230	100		
215	5.8	51.4	77.2#



#34
C3-Fluoranthenes/pyrenes
Concen: 0.101 ng/mL m
RT: 25.419 min Scan# 1973
Delta R.T. -0.071 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

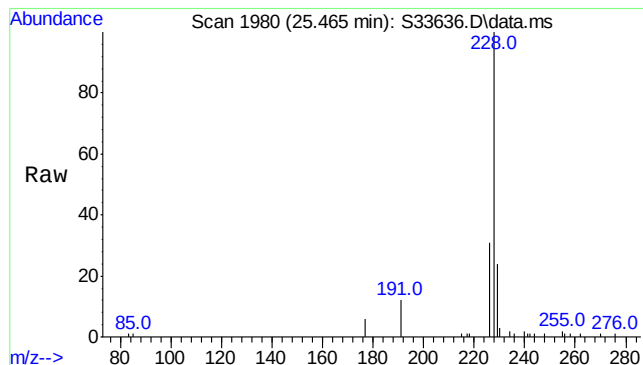
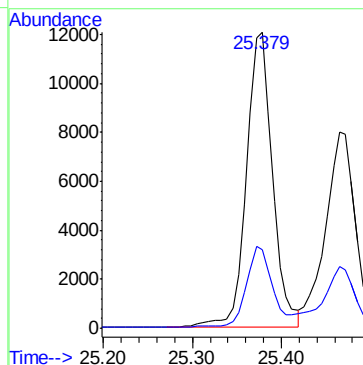
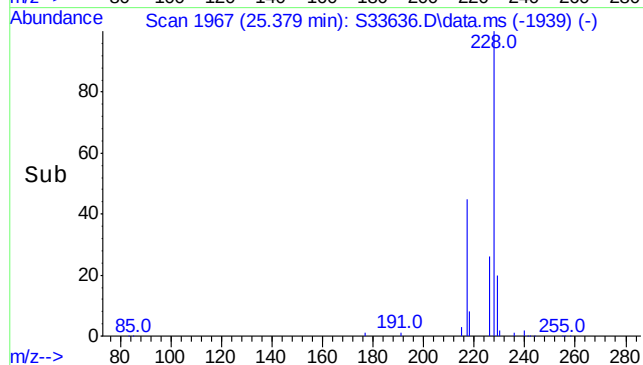
Tgt Ion:	244	Resp:	2030
Ion Ratio	Lower	Upper	
244	100		
229	29.2	112.3	168.5#





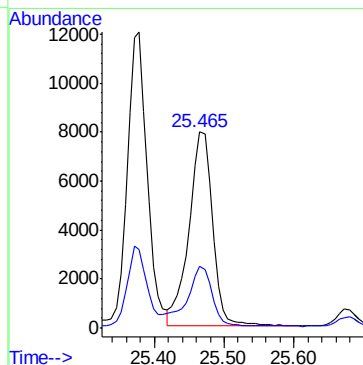
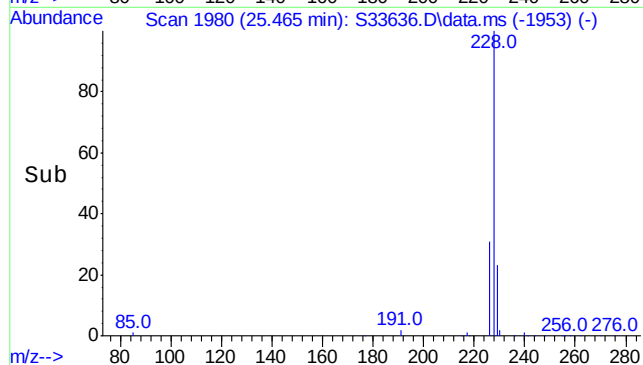
#36
Benz(a)anthracene
Concen: 0.842 ng/mL
RT: 25.379 min Scan# 1967
Delta R.T. -0.013 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

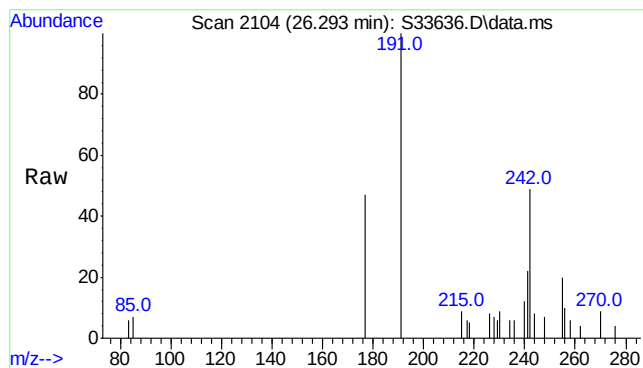
Tgt Ion:228 Resp: 24303
Ion Ratio Lower Upper
228 100
226 27.4 23.7 35.5



#38
Chrysene
Concen: 0.640 ng/mL
RT: 25.465 min Scan# 1980
Delta R.T. -0.020 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

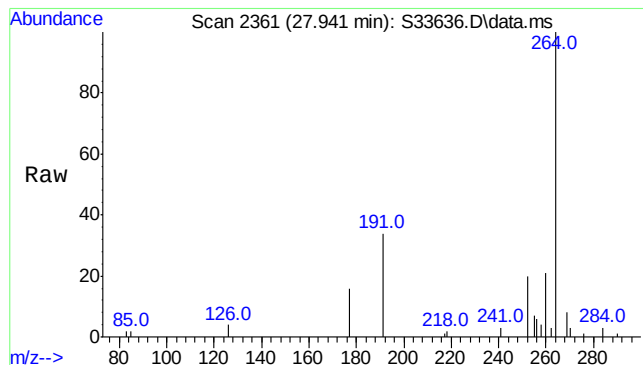
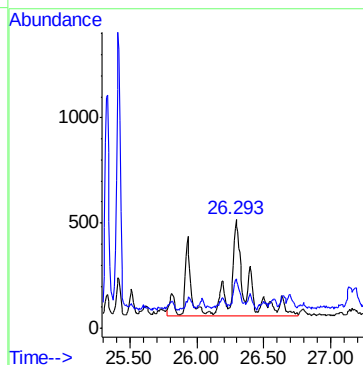
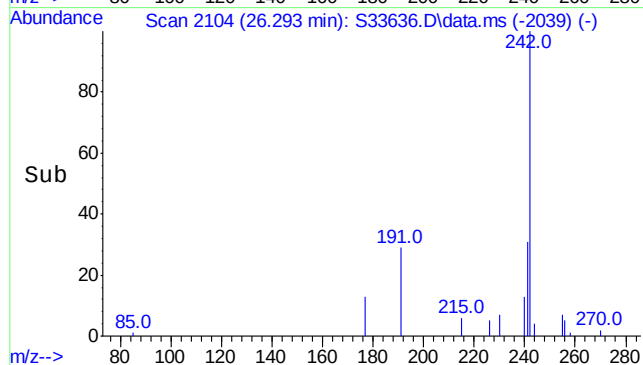
Tgt Ion:228 Resp: 18616
Ion Ratio Lower Upper
228 100
226 33.5 26.0 39.0





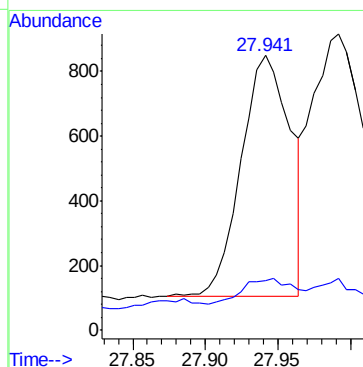
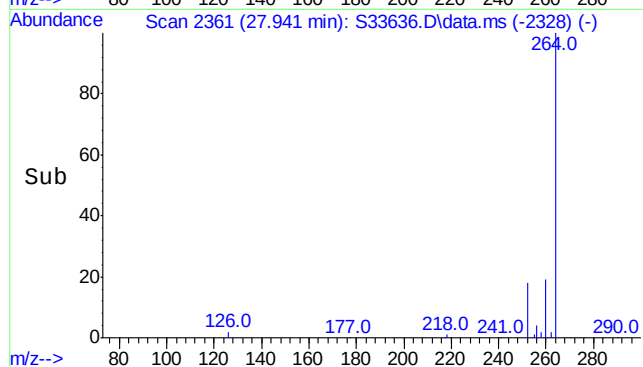
#39
C1-Benz(a)anthracenes/chrysenes
Concen: 0.285 ng/mL m
RT: 26.293 min Scan# 2104
Delta R.T. -0.065 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

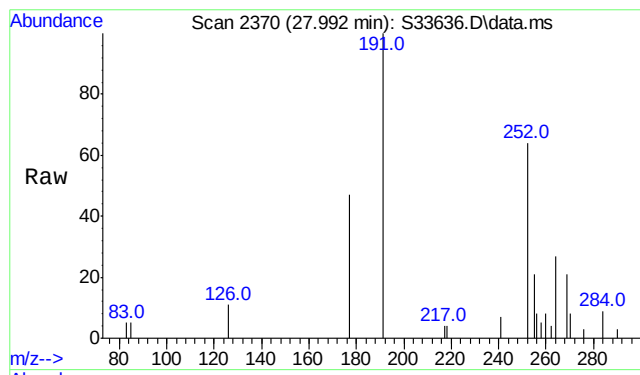
Tgt Ion:242 Resp: 4866
Ion Ratio Lower Upper
242 100
241 9.3 27.2 40.8#



#44
Benzo(b)fluoranthene
Concen: 0.041 ng/mL
RT: 27.941 min Scan# 2361
Delta R.T. -0.017 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

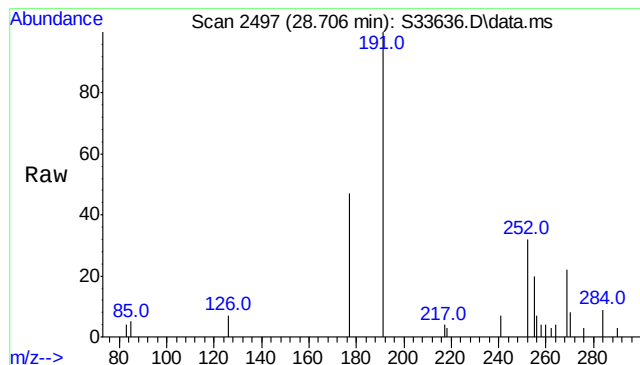
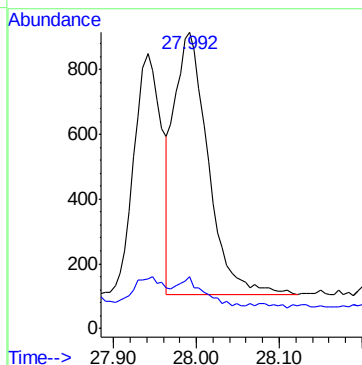
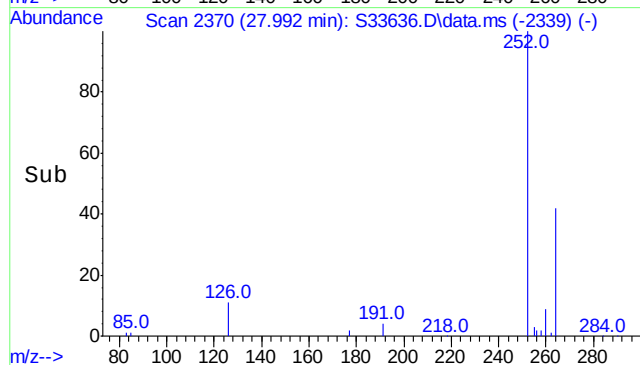
Tgt Ion:252 Resp: 1766
Ion Ratio Lower Upper
252 100
126 13.8 23.0 34.4#





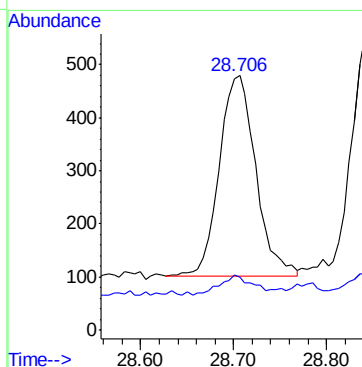
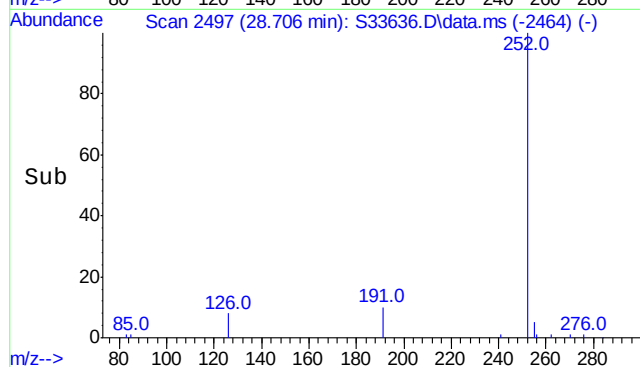
#46
Benzo(k)fluoranthene
Concen: 0.061 ng/mL
RT: 27.992 min Scan# 2370
Delta R.T. -0.028 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

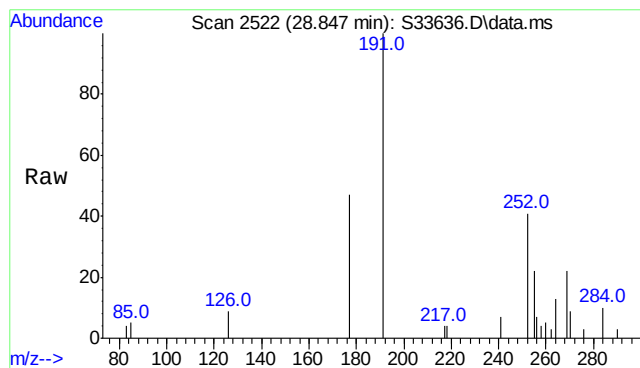
Tgt Ion:252 Resp: 2303
Ion Ratio Lower Upper
252 100
126 8.4 24.4 36.6#



#48
Benzo(e)pyrene
Concen: 0.024 ng/mL
RT: 28.706 min Scan# 2497
Delta R.T. -0.017 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

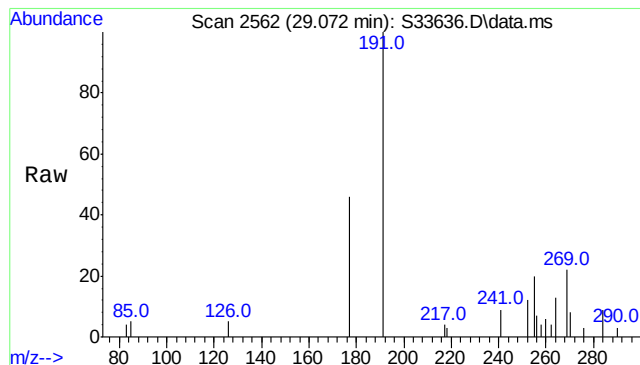
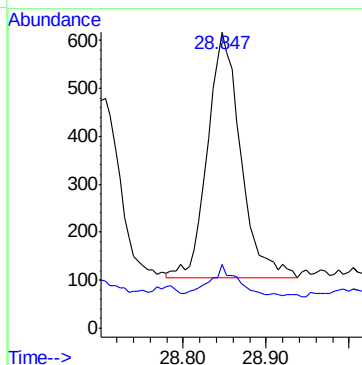
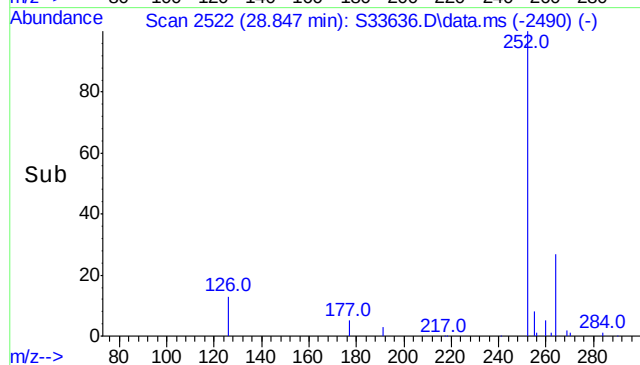
Tgt Ion:252 Resp: 1037
Ion Ratio Lower Upper
252 100
126 10.0 22.6 34.0#





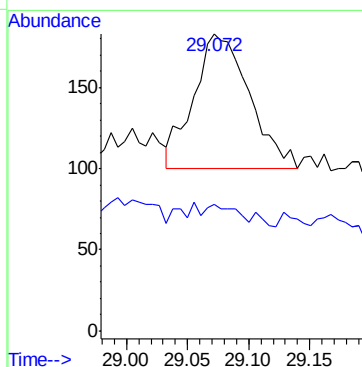
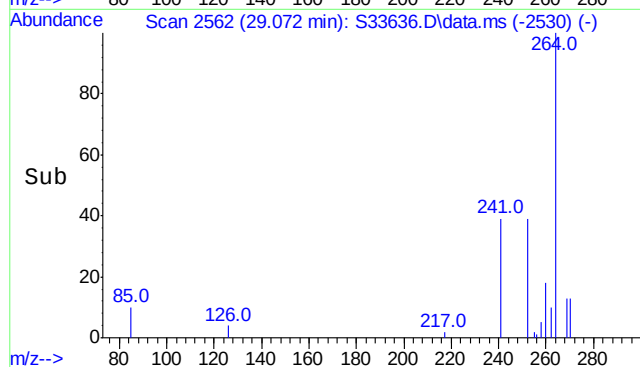
#49
Benzo(a)pyrene
Concen: 0.057 ng/mL
RT: 28.847 min Scan# 2522
Delta R.T. -0.022 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

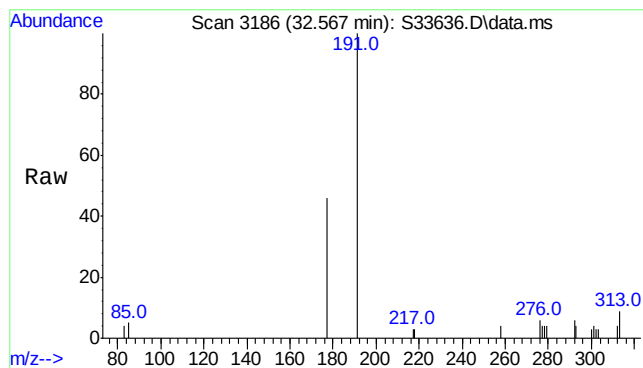
Tgt Ion:252 Resp: 1419
Ion Ratio Lower Upper
252 100
126 9.7 25.1 37.7#



#51
Perylene
Concen: 0.011 ng/mL
RT: 29.072 min Scan# 2562
Delta R.T. -0.022 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

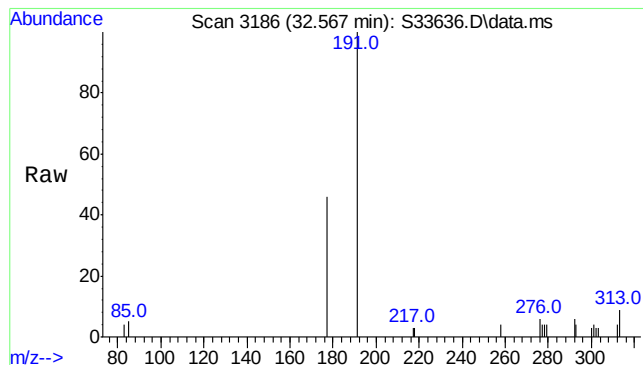
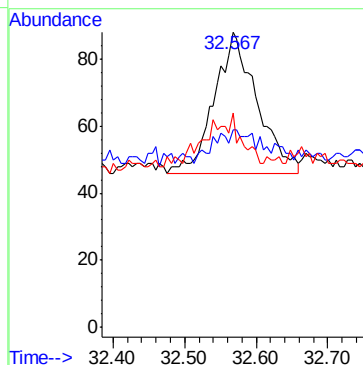
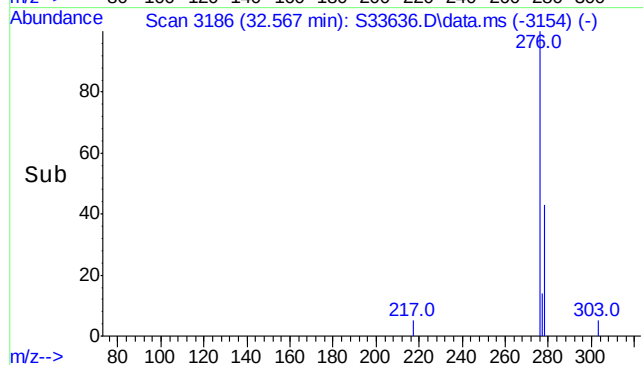
Tgt Ion:252 Resp: 263
Ion Ratio Lower Upper
252 100
126 0.0 26.6 40.0#





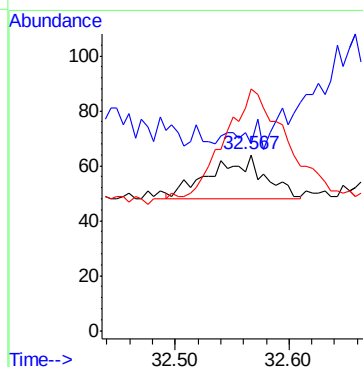
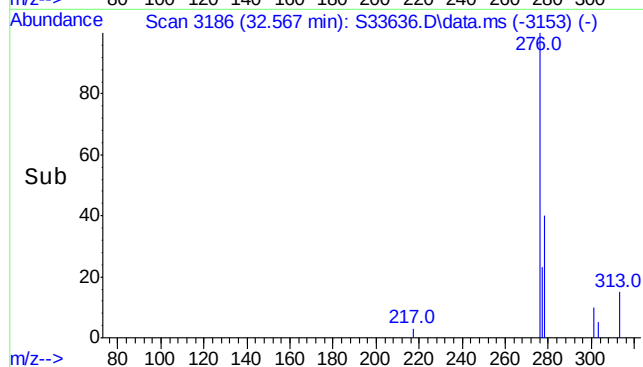
#52
Indeno(1,2,3-cd)pyrene
Concen: 0.004 ng/mL
RT: 32.567 min Scan# 3186
Delta R.T. -0.027 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

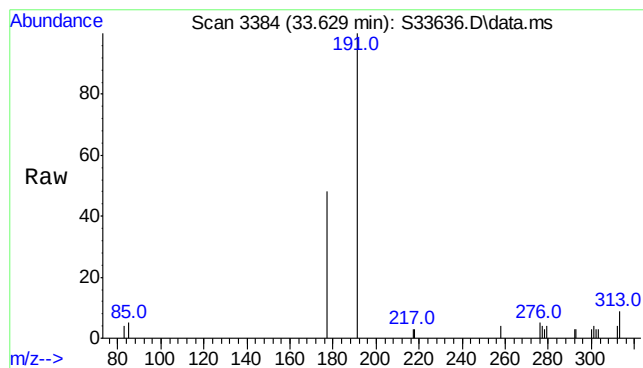
Tgt Ion:	276	Resp:	175
Ion Ratio	Lower	Upper	
276	100		
277	23.4	21.3	31.9
278	0.0	21.8	32.8#



#53
Dibenz(a,h)anthracene
Concen: 0.001 ng/mL m
RT: 32.567 min Scan# 3186
Delta R.T. -0.021 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

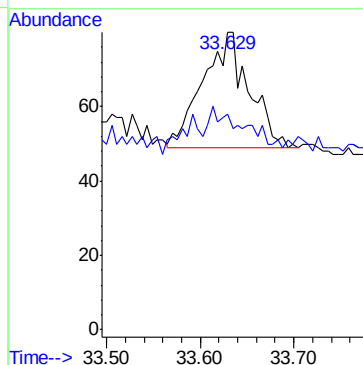
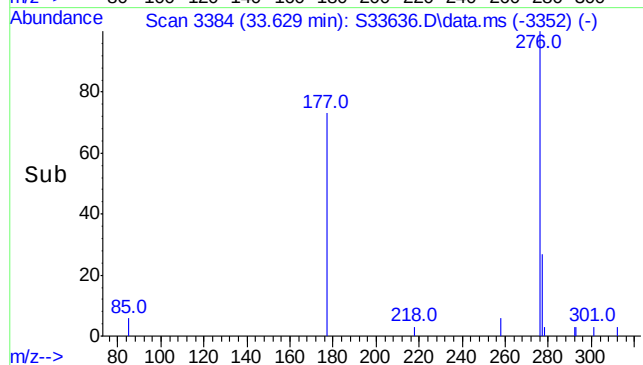
Tgt Ion:	278	Resp:	52
Ion Ratio	Lower	Upper	
278	100		
279	0.0	32.2	48.4#
276	0.0	242.1	363.1#





#54
Benzo(g,h,i)perylene
Concen: 0.003 ng/mL
RT: 33.629 min Scan# 3384
Delta R.T. -0.027 min
Lab File: S33636.D
Acq: 21 Sep 2013 6:40 am

Tgt Ion: 276 Resp: 107
Ion Ratio Lower Upper
276 100
277 0.0 20.3 30.5#



Quantitation Report (QT Reviewed)

Data Path : Z:\1\data\S130920\
 Data File : S33640.D
 Acq On : 21 Sep 2013 9:47 am
 Operator : RUBENP
 Sample : mc24285-2dup
 Misc : ms29817,mss1495,,,,10
 ALS Vial : 27 Sample Multiplier: 1

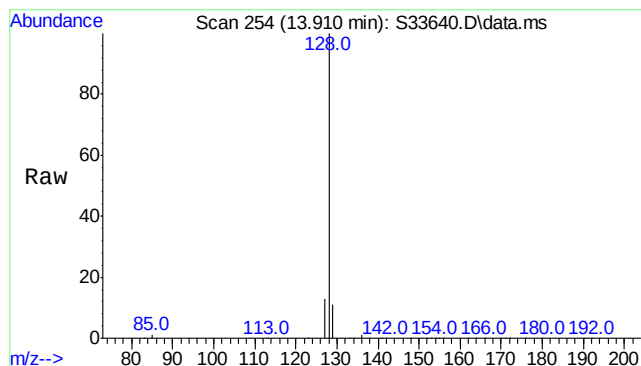
Quant Time: Oct 24 18:02:54 2013
 Quant Method : S:\1\methods\S130920-SPMEPAH-CCQ-13.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Oct 24 16:19:38 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	48025	33.30	ng/mL	0.00
8) 2-Methylnaphthalene-d10	15.023	152	30754	16.70	ng/mL	0.00
10) 1-Methylnaphthalene-d10	15.221	152	23870	16.70	ng/mL	0.00
12) Acenaphthene-d10	17.082	164	17434	8.33	ng/mL	-0.01
15) Fluorene-d10	18.074	176	15432	5.00	ng/mL	-0.01
20) Phenanthrene-d10	20.014	188	39538	5.00	ng/mL	-0.01
26) Anthracene-d10	20.117	188	41241	5.00	ng/mL	-0.01
28) Fluoranthene-d10	22.442	212	23078	1.67	ng/mL	-0.01
30) Pyrene-d10	22.913	212	21158	1.67	ng/mL	-0.01
35) Benz(a)anthracene-d12	25.332	240	8760	0.50	ng/mL	-0.01
37) Chrysene-d12	25.412	240	11551	0.50	ng/mL	-0.02
43) Benzo(b)fluoranthene-d12	27.879	264	8672	0.33	ng/mL	-0.02
45) Benzo(k)fluoranthene-d12	27.947	264	8817	0.33	ng/mL	-0.02
47) Benzo(a)pyrene-d12	28.779	264	5627	0.33	ng/mL	-0.02
50) Perylene-d12	29.004	264	4756	0.33	ng/mL	-0.02
Target Compounds						
2) Naphthalene	13.910	128	264644	160.123	ng/mL	100
3) C1-Naphthalenes	15.081	142	144791m	87.606	ng/mL	
9) 2-Methylnaphthalene	15.081	142	87768	39.318	ng/mL	100
11) 1-Methylnaphthalene	15.287	142	57048	30.862	ng/mL	100
14) Acenaphthene	17.147	154	84168	32.606	ng/mL	98
16) Fluorene	18.132	166	73026	17.431	ng/mL	98
21) Phenanthrene	20.059	178	201199	20.195	ng/mL	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

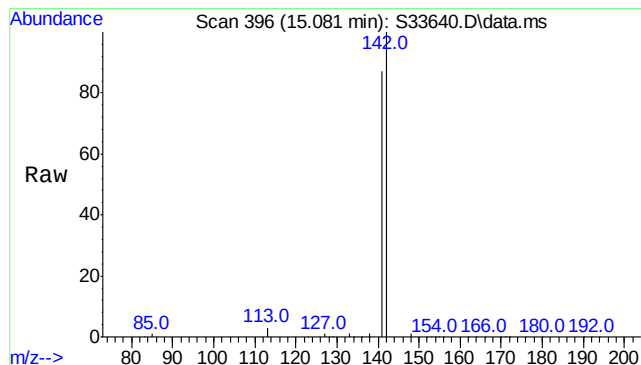
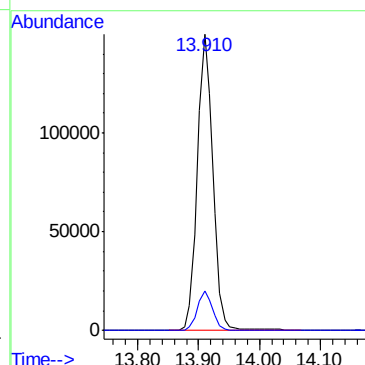
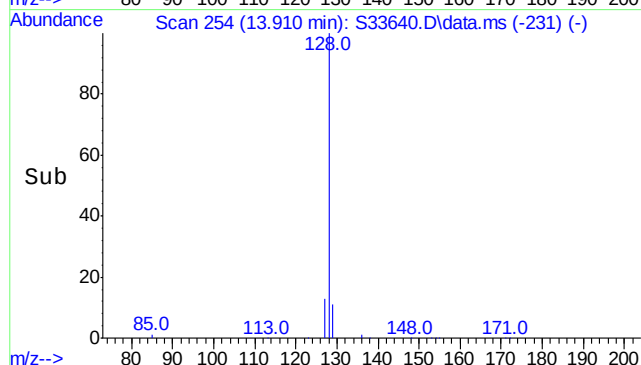
7.4.3

7



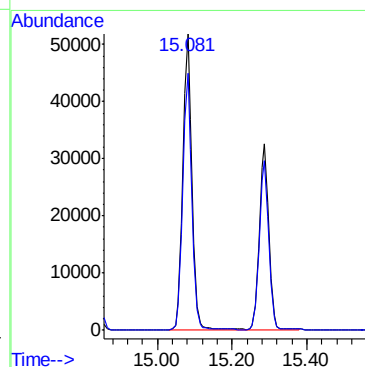
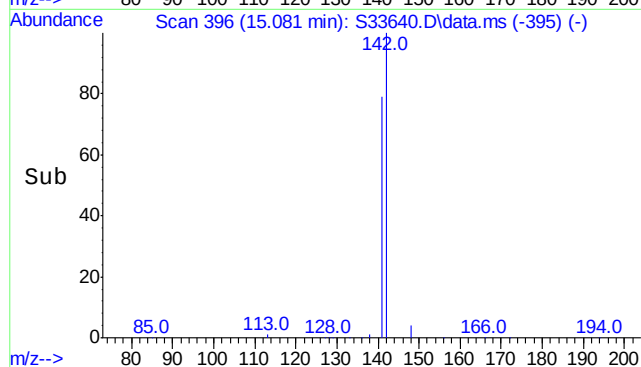
#2
Naphthalene
Concen: 160.123 ng/mL
RT: 13.910 min Scan# 254
Delta R.T. -0.008 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am

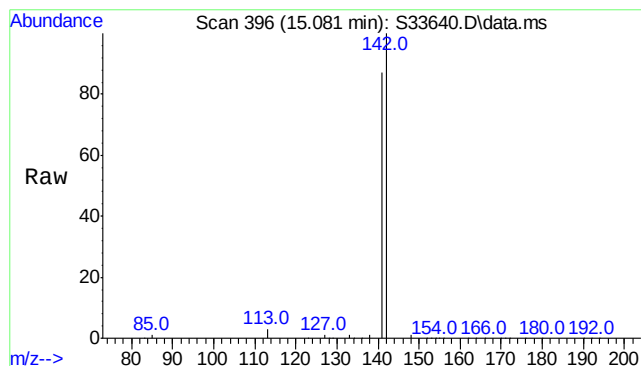
Tgt Ion:128 Resp: 264644
Ion Ratio Lower Upper
128 100
127 13.2 10.6 15.8



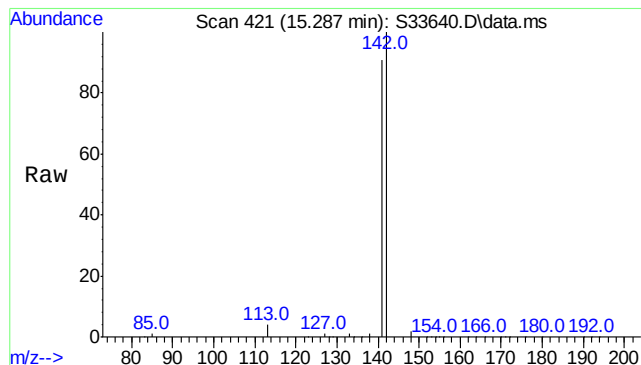
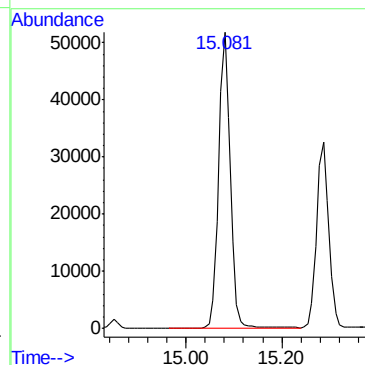
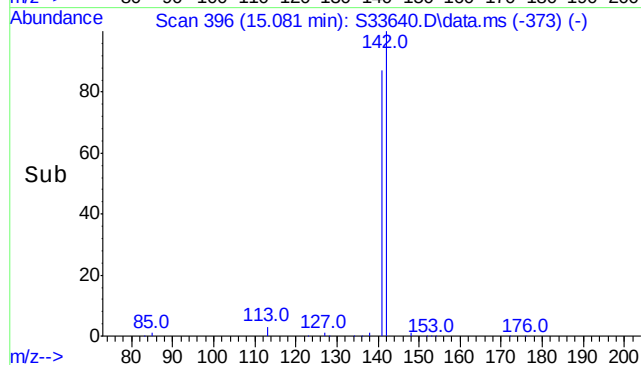
#3
C1-Naphthalenes
Concen: 87.606 ng/mL m
RT: 15.081 min Scan# 396
Delta R.T. -0.041 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am

Tgt Ion:142 Resp: 144791
Ion Ratio Lower Upper
142 100
141 35.7 71.0 106.6#

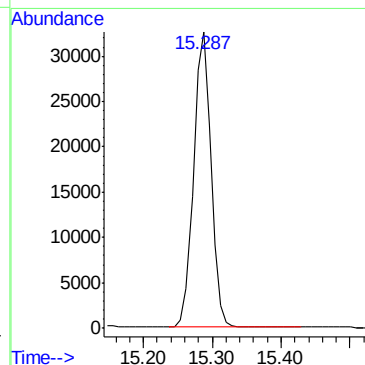
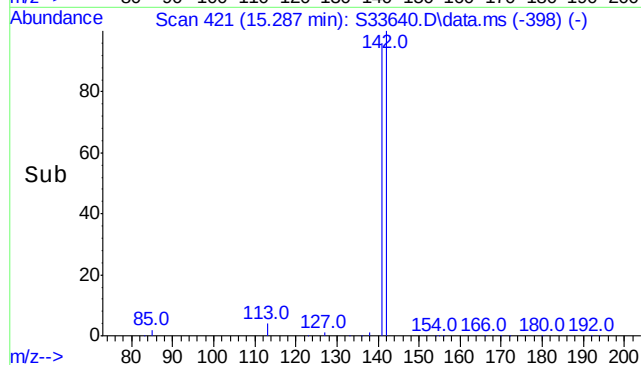


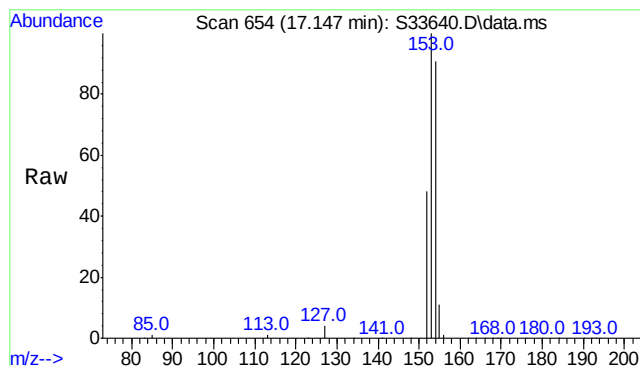


#9
2-Methylnaphthalene
Concen: 39.318 ng/mL
RT: 15.081 min Scan# 396
Delta R.T. -0.008 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am
Tgt Ion:142 Resp: 87768



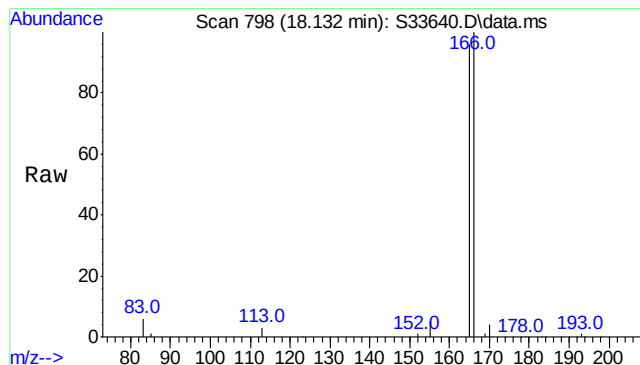
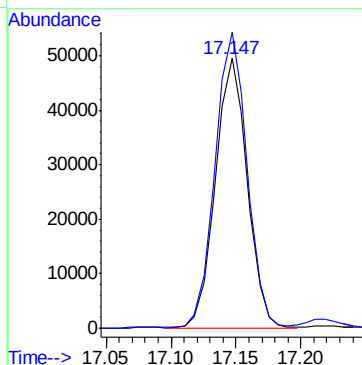
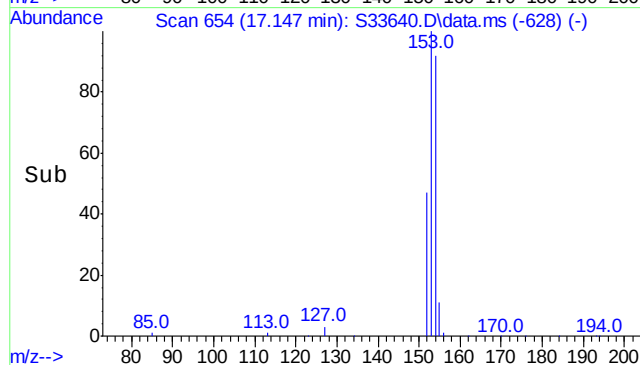
#11
1-Methylnaphthalene
Concen: 30.862 ng/mL
RT: 15.287 min Scan# 421
Delta R.T. -0.008 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am
Tgt Ion:142 Resp: 57048





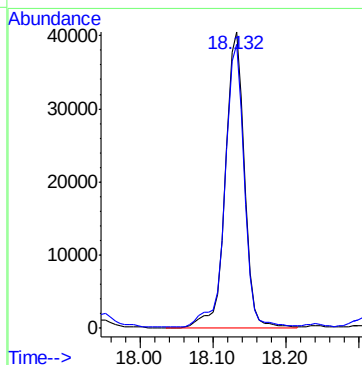
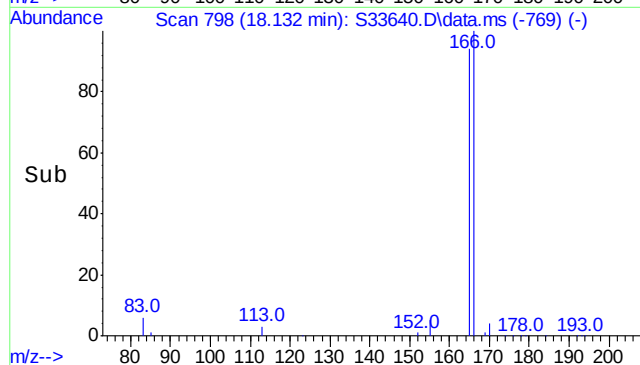
#14
Acenaphthene
Concen: 32.606 ng/mL
RT: 17.147 min Scan# 654
Delta R.T. -0.014 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am

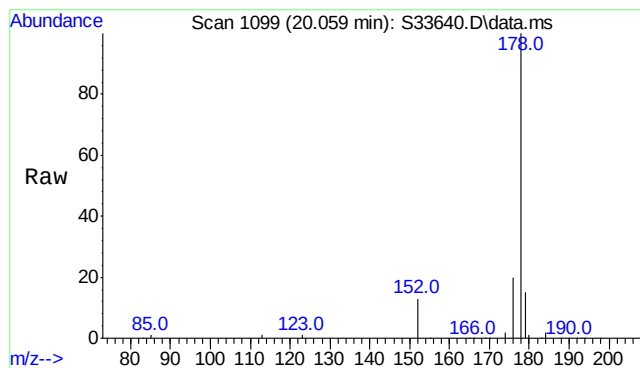
Tgt Ion:154 Resp: 84168
Ion Ratio Lower Upper
154 100
153 110.4 86.6 129.8



#16
Fluorene
Concen: 17.431 ng/mL
RT: 18.132 min Scan# 798
Delta R.T. -0.013 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am

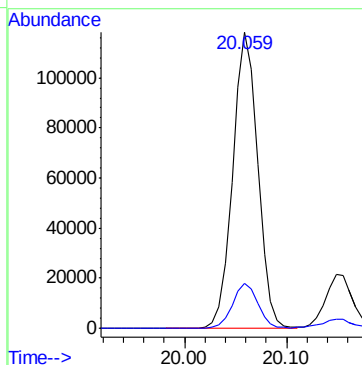
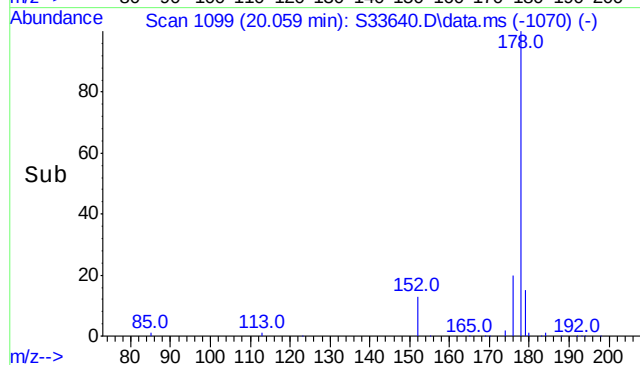
Tgt Ion:166 Resp: 73026
Ion Ratio Lower Upper
166 100
165 97.6 76.4 114.6





#21
Phenanthrene
Concen: 20.195 ng/mL
RT: 20.059 min Scan# 1099
Delta R.T. -0.013 min
Lab File: S33640.D
Acq: 21 Sep 2013 9:47 am

Tgt Ion	Ratio	Lower	Upper
178	100		
179	15.2	12.4	18.6



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33445.D
 Acq On : 7 Sep 2013 6:27 am
 Operator : jamesr1
 Sample : IC1465-1,MSS1466-1
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Sep 09 11:32:39 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Thu Sep 05 12:14:01 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	38822	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	26647	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	21689	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.103	164	15510	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	13570	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	37659	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	31779	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	24929	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	22580	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	8631	0.50	ng/mL	0.00
36) Chrysene-d12	25.438	240	12946	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	10449	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	10679	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.813	264	5503	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	5178	0.33	ng/mL	0.00

Target Compounds Qvalue

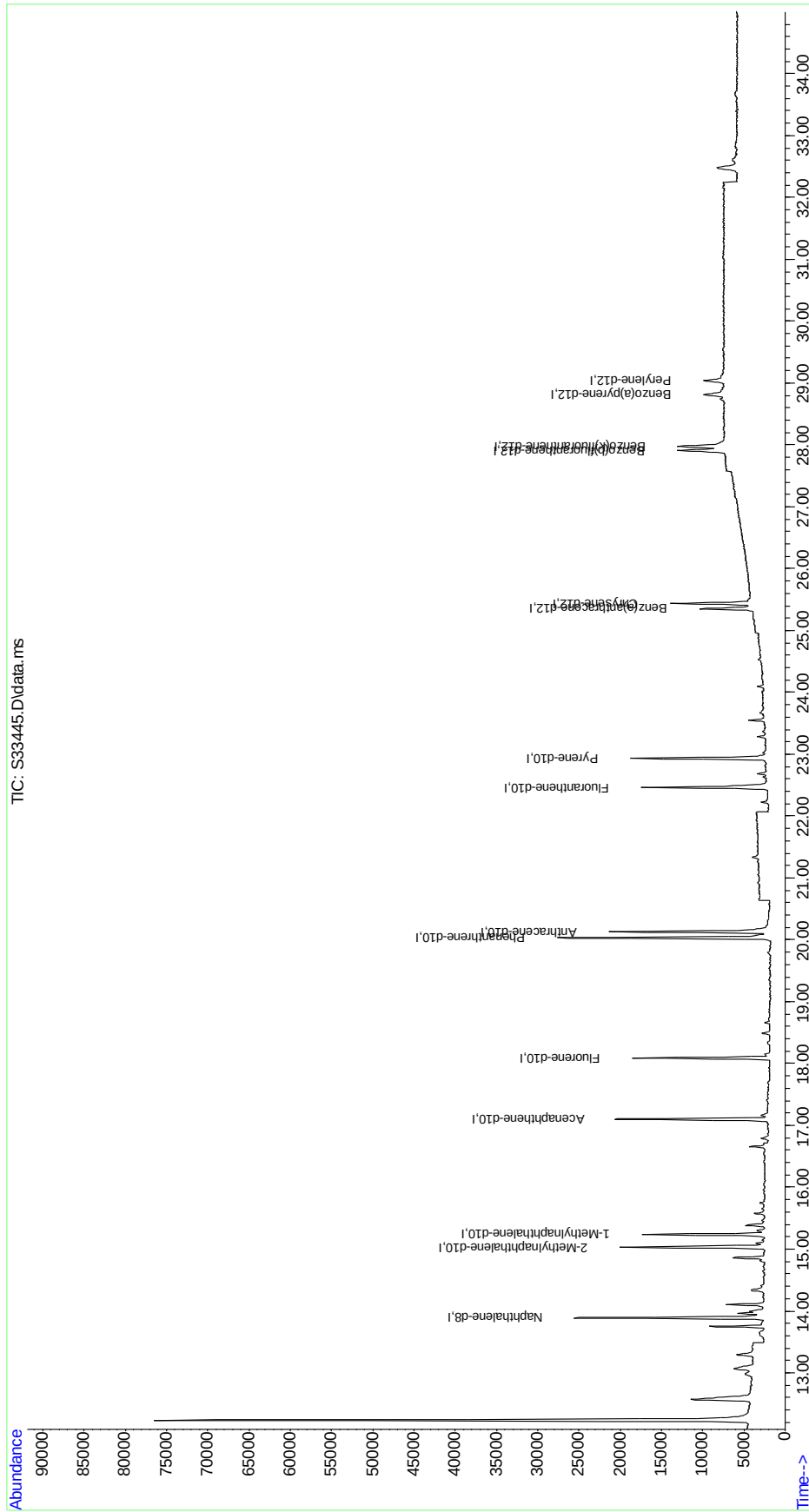
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.5.1

7

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33445.D
Acq On : 7 Sep 2013 6:27 am
Operator : jamesr1
Sample : IC1465-1, MSS1466-1
Misc : MS29817, MSS1465,,,1
ALS Vial : 23 Sample Multiplier: 1
Quant Time: Sep 09 11:32:39 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Thu Sep 05 12:14:01 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33446.D
 Acq On : 7 Sep 2013 7:14 am
 Operator : jamesr1
 Sample : IC1465-2,MSS1466-2
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 09 11:34:52 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:53:53 2013
 Response via : Initial Calibration

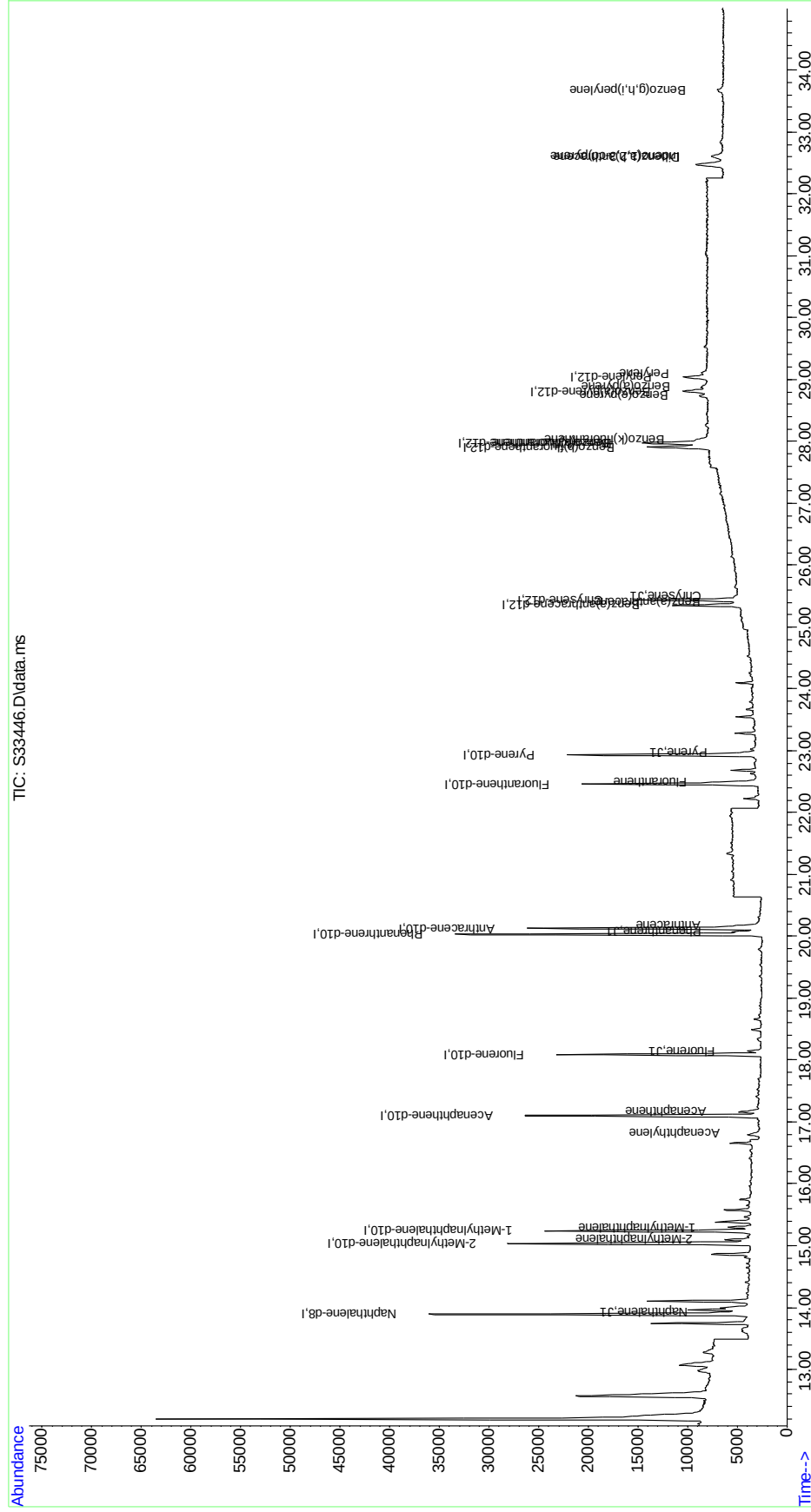
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.893	136	53583	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.040	152	37418	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	29881	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.104	164	19970	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	16842	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	45113	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	37459	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	29075	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	25826	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9057	0.50	ng/mL	0.00
36) Chrysene-d12	25.439	240	13557	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11471	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	11670	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.807	264	5621	0.33	ng/mL	0.00
49) Perylene-d12	29.032	264	5132m	0.33	ng/mL	0.00
Target Compounds						
2) Naphthalene	13.926	128	3202m	1.447	ng/mL	Qvalue
8) 2-Methylnaphthalene	15.098	142	2322	0.782	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	1948	0.765	ng/mL	100
12) Acenaphthylene	16.816	152	924	0.379	ng/mL#	89
13) Acenaphthene	17.161	154	1258	0.386	ng/mL	97
15) Fluorene	18.145	166	1098	0.223	ng/mL	97
20) Phenanthrene	20.078	178	2903m	0.224	ng/mL	
26) Anthracene	20.168	178	2132	0.225	ng/mL	100
28) Fluoranthene	22.495	202	1913	0.073	ng/mL#	86
30) Pyrene	22.972	202	1990	0.072	ng/mL#	83
35) Benz(a)anthracene	25.405	228	218m	0.007	ng/mL	
37) Chrysene	25.492	228	275	0.007	ng/mL#	83
43) Benzo(b)fluoranthene	27.969	252	2200	0.044	ng/mL	95
45) Benzo(k)fluoranthene	28.031	252	1846	0.043	ng/mL	99
47) Benzo(e)pyrene	28.734	252	1932	0.049	ng/mL	99
48) Benzo(a)pyrene	28.875	252	932	0.044	ng/mL	98
50) Perylene	29.106	252	1077m	0.049	ng/mL	
51) Indeno(1,2,3-cd)pyrene	32.615	276	1936m	0.056	ng/mL	
52) Dibenz(a,h)anthracene	32.599	278	1433	0.052	ng/mL#	1
53) Benzo(g,h,i)perylene	33.672	276	1937m	0.058	ng/mL	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33446.D
Acq On : 7 Sep 2013 7:14 am
Operator : jamesr1
Sample : IC1465-2, MSS1466-2
Misc : MS29817, MSS1465,,,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 09 11:34:52 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 10:53:53 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33447.D
 Acq On : 7 Sep 2013 8:00 am
 Operator : jamesr1
 Sample : IC1465-3,MSS1466-3
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Sep 09 10:57:30 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:55:51 2013
 Response via : Initial Calibration

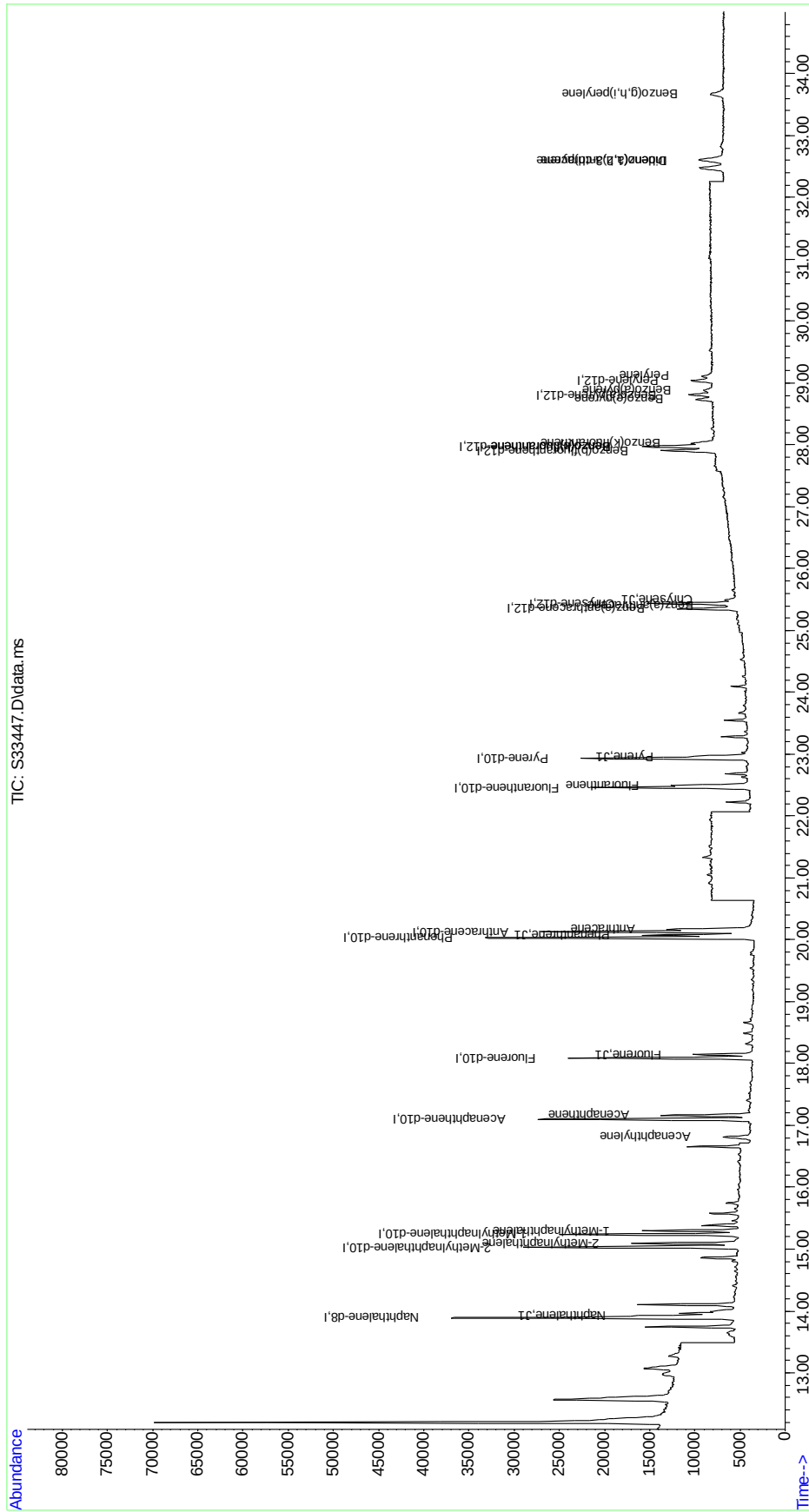
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	51633	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	35090	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	28366	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	19197	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	16511	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	44099	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	36379	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	28173	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	25023	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	8830	0.50	ng/mL	0.00
36) Chrysene-d12	25.439	240	12960	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11044	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	11267	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.807	264	5399	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	4968	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	15412	7.590	ng/mL#	93
8) 2-Methylnaphthalene	15.089	142	10961	3.981	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	9378	3.967	ng/mL	100
12) Acenaphthylene	16.816	152	4529	1.984	ng/mL	98
13) Acenaphthene	17.161	154	6024	1.958	ng/mL	98
15) Fluorene	18.145	166	5512	1.183	ng/mL	98
20) Phenanthrene	20.078	178	13790	1.126	ng/mL	98
26) Anthracene	20.168	178	11038	1.238	ng/mL	100
28) Fluoranthene	22.495	202	9351	0.386	ng/mL	97
30) Pyrene	22.966	202	9623	0.379	ng/mL	96
35) Benz(a)anthracene	25.398	228	1022m	0.037	ng/mL	
37) Chrysene	25.492	228	1271	0.037	ng/mL	93
43) Benzo(b)fluoranthene	27.969	252	5566	0.120	ng/mL	100
45) Benzo(k)fluoranthene	28.031	252	5043	0.128	ng/mL	98
47) Benzo(e)pyrene	28.734	252	4624	0.121	ng/mL	99
48) Benzo(a)pyrene	28.881	252	2245	0.116	ng/mL	95
50) Perylene	29.111	252	2459	0.118	ng/mL	94
51) Indeno(1,2,3-cd)pyrene	32.604	276	5149m	0.143	ng/mL	
52) Dibenz(a,h)anthracene	32.599	278	3617	0.131	ng/mL	98
53) Benzo(g,h,i)perylene	33.667	276	4732	0.136	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33447.D
Acq On : 7 Sep 2013 8:00 am
Operator : jamesr1
Sample : IC1465-3, MSS1466-3
Misc : MS29817, MSS1465,,,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Sep 09 10:57:30 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 10:55:51 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33448.D
 Acq On : 7 Sep 2013 8:47 am
 Operator : jamesr1
 Sample : ICC1465-4,MSS1466-4
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Sep 09 10:58:54 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:57:37 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

Internal Standards						
1) Naphthalene-d8	13.885	136	50005	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	34668	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	28140	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.103	164	19431	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	16098	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	42657	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	37300	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	27344	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	24566	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9302	0.50	ng/mL	0.00
36) Chrysene-d12	25.438	240	14077	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11566	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	12072	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.813	264	6073	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	5327	0.33	ng/mL	0.00

Target Compounds				Qvalue		
2) Naphthalene	13.926	128	71132	36.830	ng/mL	98
8) 2-Methylnaphthalene	15.089	142	52749	19.421	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	45467	19.442	ng/mL	100
12) Acenaphthylene	16.816	152	22208	9.636	ng/mL	100
13) Acenaphthene	17.161	154	29193	9.439	ng/mL	99
15) Fluorene	18.145	166	26567	5.875	ng/mL	100
20) Phenanthrene	20.078	178	64791	5.583	ng/mL	100
26) Anthracene	20.168	178	57400	6.213	ng/mL	100
28) Fluoranthene	22.495	202	45095	1.942	ng/mL	100
30) Pyrene	22.965	202	46808	1.913	ng/mL	99
35) Benz(a)anthracene	25.398	228	5099	0.179	ng/mL	98
37) Chrysene	25.492	228	6457	0.178	ng/mL	100
43) Benzo(b)fluoranthene	27.969	252	11659	0.241	ng/mL	98
45) Benzo(k)fluoranthene	28.031	252	10296	0.239	ng/mL	99
47) Benzo(e)pyrene	28.734	252	9571	0.223	ng/mL	99
48) Benzo(a)pyrene	28.880	252	5123	0.237	ng/mL	96
50) Perylene	29.105	252	5182	0.233	ng/mL	97
51) Indeno(1,2,3-cd)pyrene	32.610	276	10190m	0.249	ng/mL	
52) Dibenz(a,h)anthracene	32.604	278	6579	0.216	ng/mL	90
53) Benzo(g,h,i)perylene	33.672	276	8495	0.218	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

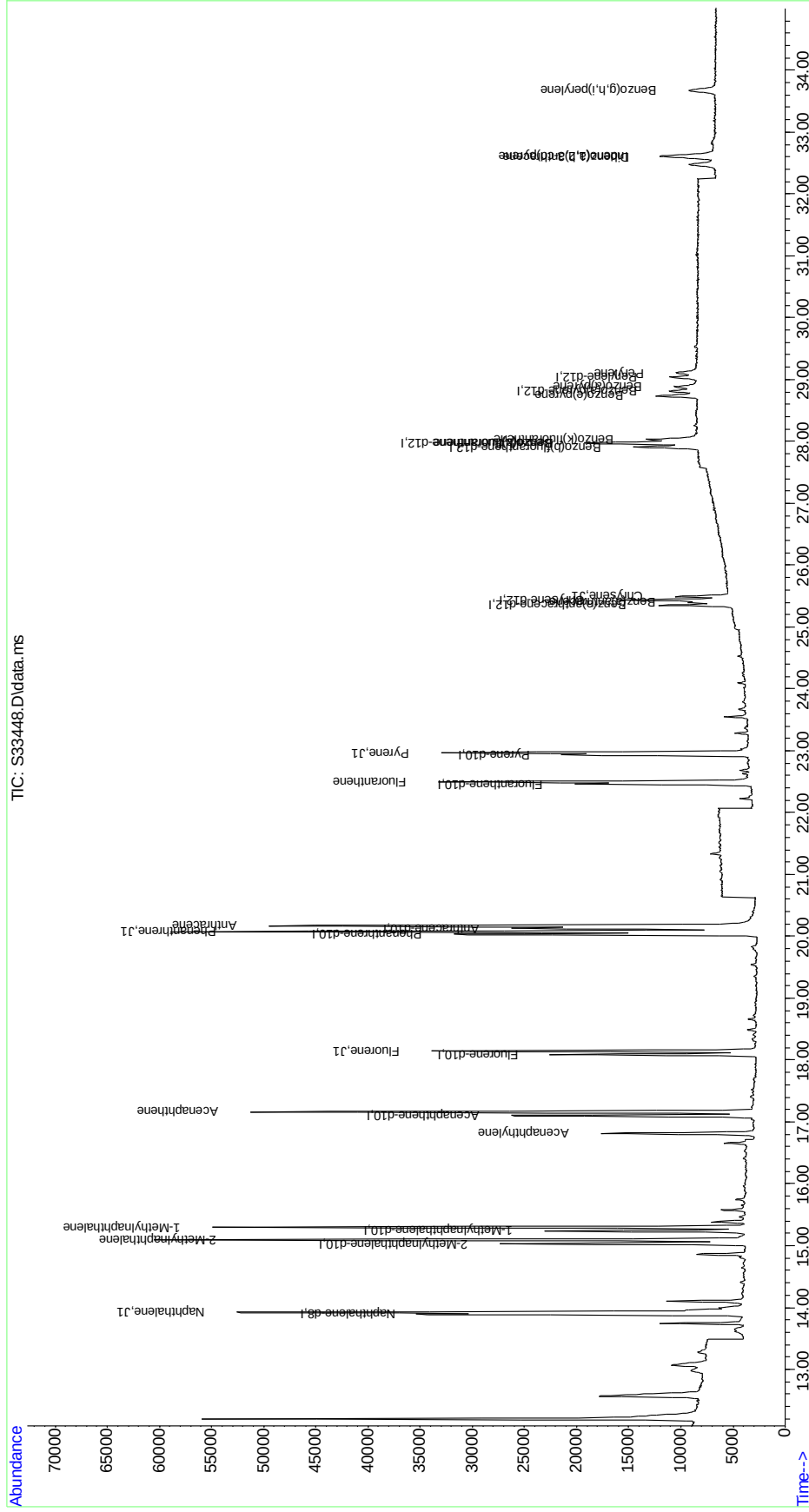
7.5.4

7

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33448.D
Acq On : 7 Sep 2013 8:47 am
Operator : jamesr1
Sample : ICC1465-4, MSS1466-4
Misc : MS29817, MSS1465,,,1
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Sep 09 10:58:54 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Mon Sep 09 10:57:37 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33449.D
 Acq On : 7 Sep 2013 9:34 am
 Operator : jamesr1
 Sample : IC1465-5,MSS1466-5
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Sep 09 11:44:06 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 10:59:02 2013
 Response via : Initial Calibration

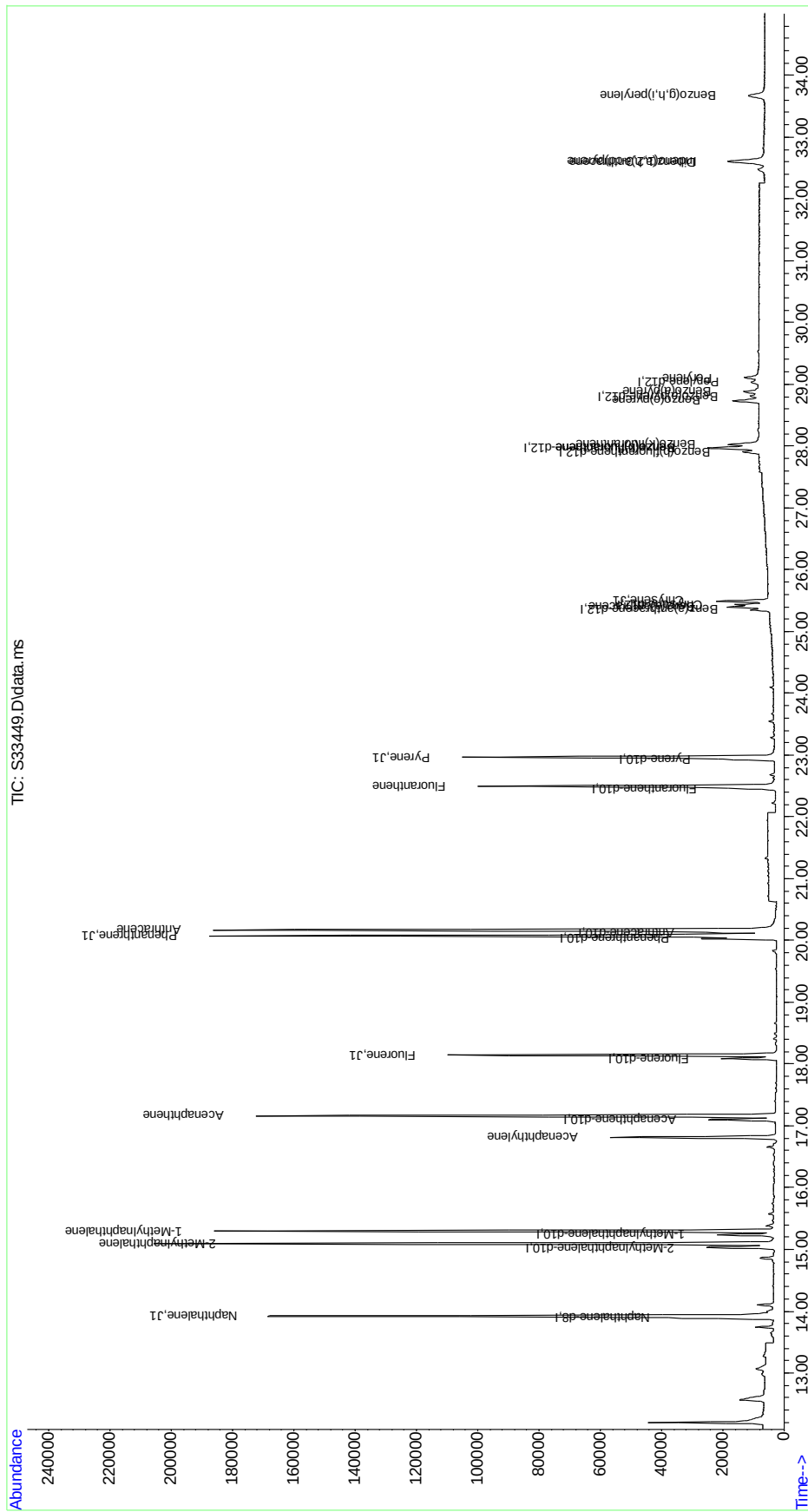
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	46931	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.031	152	32611	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	26763	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	18207	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	14547	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.027	188	36819	5.00	ng/mL	0.00
25) Anthracene-d10	20.129	188	35207	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	23964	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	22044	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	8621	0.50	ng/mL	0.00
36) Chrysene-d12	25.432	240	13163	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.902	264	10744	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.969	264	11287	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.807	264	6033	0.33	ng/mL	0.00
49) Perylene-d12	29.032	264	4907m	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	244775	137.848	ng/mL	99
8) 2-Methylnaphthalene	15.089	142	185530	73.147	ng/mL	100
10) 1-Methylnaphthalene	15.295	142	160167	72.517	ng/mL	100
12) Acenaphthylene	16.816	152	80520	37.630	ng/mL	100
13) Acenaphthene	17.161	154	102715	35.948	ng/mL	100
15) Fluorene	18.145	166	89800	22.090	ng/mL	100
20) Phenanthrene	20.078	178	210311	21.367	ng/mL	100
26) Anthracene	20.168	178	213321	24.248	ng/mL	100
28) Fluoranthene	22.495	202	148987	7.374	ng/mL	100
30) Pyrene	22.966	202	158478	7.296	ng/mL	99
35) Benz(a)anthracene	25.398	228	18268	0.711	ng/mL	99
37) Chrysene	25.492	228	22230	0.674	ng/mL	100
43) Benzo(b)fluoranthene	27.969	252	24181	0.537	ng/mL	97
45) Benzo(k)fluoranthene	28.025	252	22398	0.556	ng/mL	97
47) Benzo(e)pyrene	28.734	252	20446	0.487	ng/mL	97
48) Benzo(a)pyrene	28.875	252	13070m	0.611	ng/mL	
50) Perylene	29.106	252	11617	0.572	ng/mL	95
51) Indeno(1,2,3-cd)pyrene	32.610	276	23093m	0.606	ng/mL	
52) Dibenz(a,h)anthracene	32.599	278	14652	0.535	ng/mL	87
53) Benzo(g,h,i)perylene	33.672	276	17588	0.502	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33449.D
Acq On : 7 Sep 2013 9:34 am
Operator : jamesr1
Sample : IC1465-5, MSS1466-5
Misc : MS29817, MSS1465,,,1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Sep 09 11:44:06 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 10:59:02 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130906\
 Data File : S33450.D
 Acq On : 7 Sep 2013 10:20 am
 Operator : jamesr1
 Sample : IC1465-6,MSS1466-6
 Misc : MS29817,MSS1465,,,1
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Sep 09 11:24:48 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:00:22 2013
 Response via : Initial Calibration

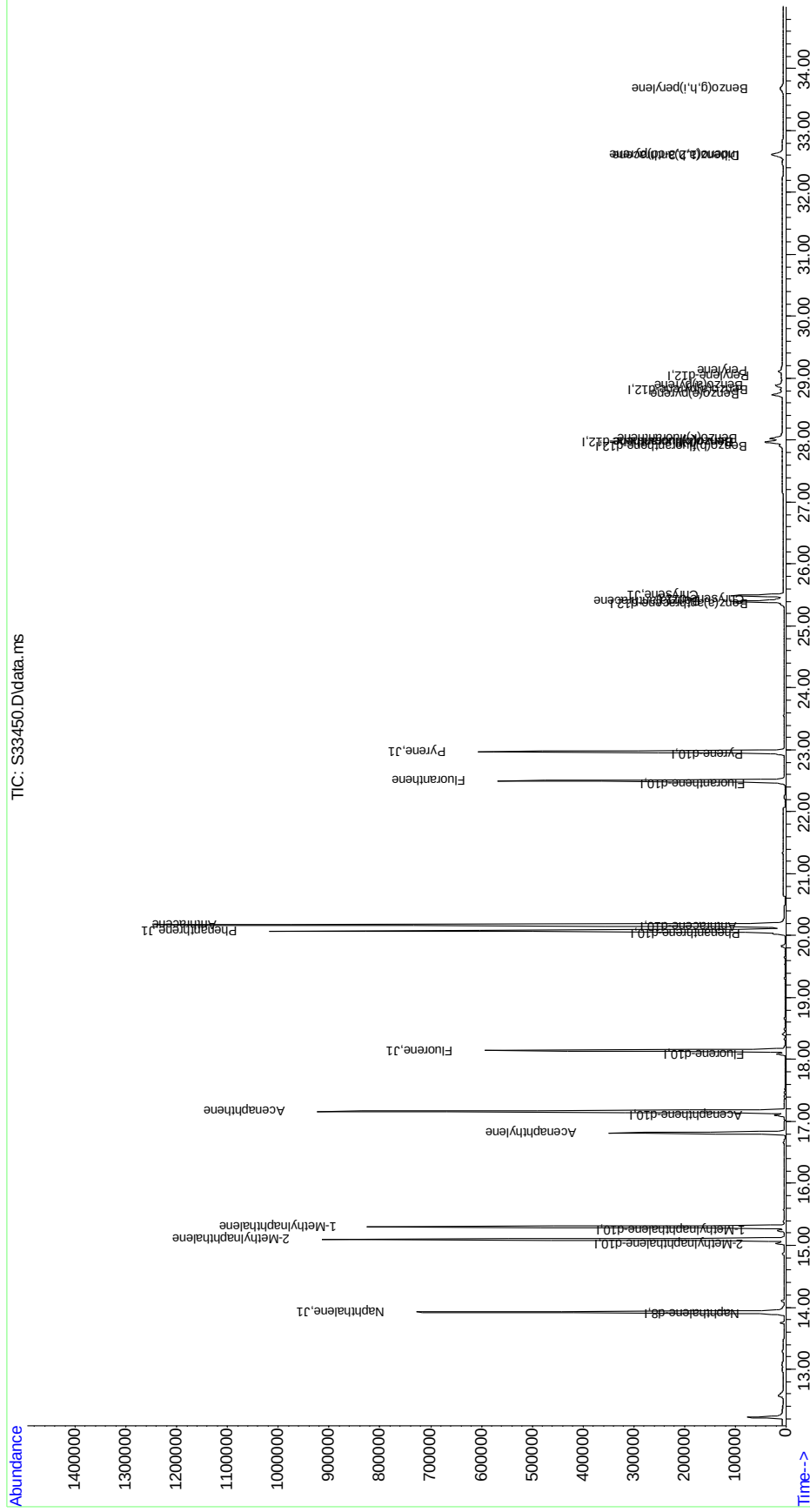
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	35280	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.032	152	24580	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	21508	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	16696	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	13640	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.034	188	35382	5.00	ng/mL	0.00
25) Anthracene-d10	20.136	188	39006	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	23790	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	22780	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9706	0.50	ng/mL	0.00
36) Chrysene-d12	25.439	240	13472	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	11379	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	11750	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.813	264	6872	0.33	ng/mL	0.00
49) Perylene-d12	29.038	264	4209m	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	1066139	821.437	ng/mL	100
8) 2-Methylnaphthalene	15.098	142	816063	434.303	ng/mL	100
10) 1-Methylnaphthalene	15.304	142	744625	427.504	ng/mL	100
12) Acenaphthylene	16.816	152	488984	252.188	ng/mL	100
13) Acenaphthene	17.161	154	553260	215.518	ng/mL	100
15) Fluorene	18.145	166	488173	130.142	ng/mL	99
20) Phenanthrene	20.078	178	1162310	125.641	ng/mL	100
26) Anthracene	20.174	178	1418818	145.267	ng/mL	100
28) Fluoranthene	22.501	202	861028	43.611	ng/mL	100
30) Pyrene	22.972	202	934056	42.359	ng/mL	99
35) Benz(a)anthracene	25.399	228	126706	4.481	ng/mL	98
37) Chrysene	25.492	228	127478	3.899	ng/mL	100
43) Benzo(b)fluoranthene	27.969	252	58203	1.246	ng/mL	99
45) Benzo(k)fluoranthene	28.026	252	52158	1.263	ng/mL	97
47) Benzo(e)pyrene	28.734	252	45057	0.980	ng/mL	97
48) Benzo(a)pyrene	28.881	252	32212	1.341	ng/mL	98
50) Perylene	29.111	252	15950	0.926	ng/mL	98
51) Indeno(1,2,3-cd)pyrene	32.610	276	49980m	1.531	ng/mL	
52) Dibenz(a,h)anthracene	32.605	278	17552	0.766	ng/mL#	1
53) Benzo(g,h,i)perylene	33.672	276	20419	0.704	ng/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33450.D
Acq On : 7 Sep 2013 10:20 am
Operator : jamesr1
Sample : IC1465-6, MSS1466-6
Misc : MS29817, MSS1465,,,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Sep 09 11:24:48 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 11:00:22 2013
Response via : Initial Calibration



Data Path : S:\1\data\S130906\
 Data File : S33453.D
 Acq On : 7 Sep 2013 12:41 pm
 Operator : jamesr1
 Sample : ICV1465-4,SRM 1991
 Misc : MS29817,MSS1465,,,,,
 ALS Vial : 31 Sample Multiplier: 1

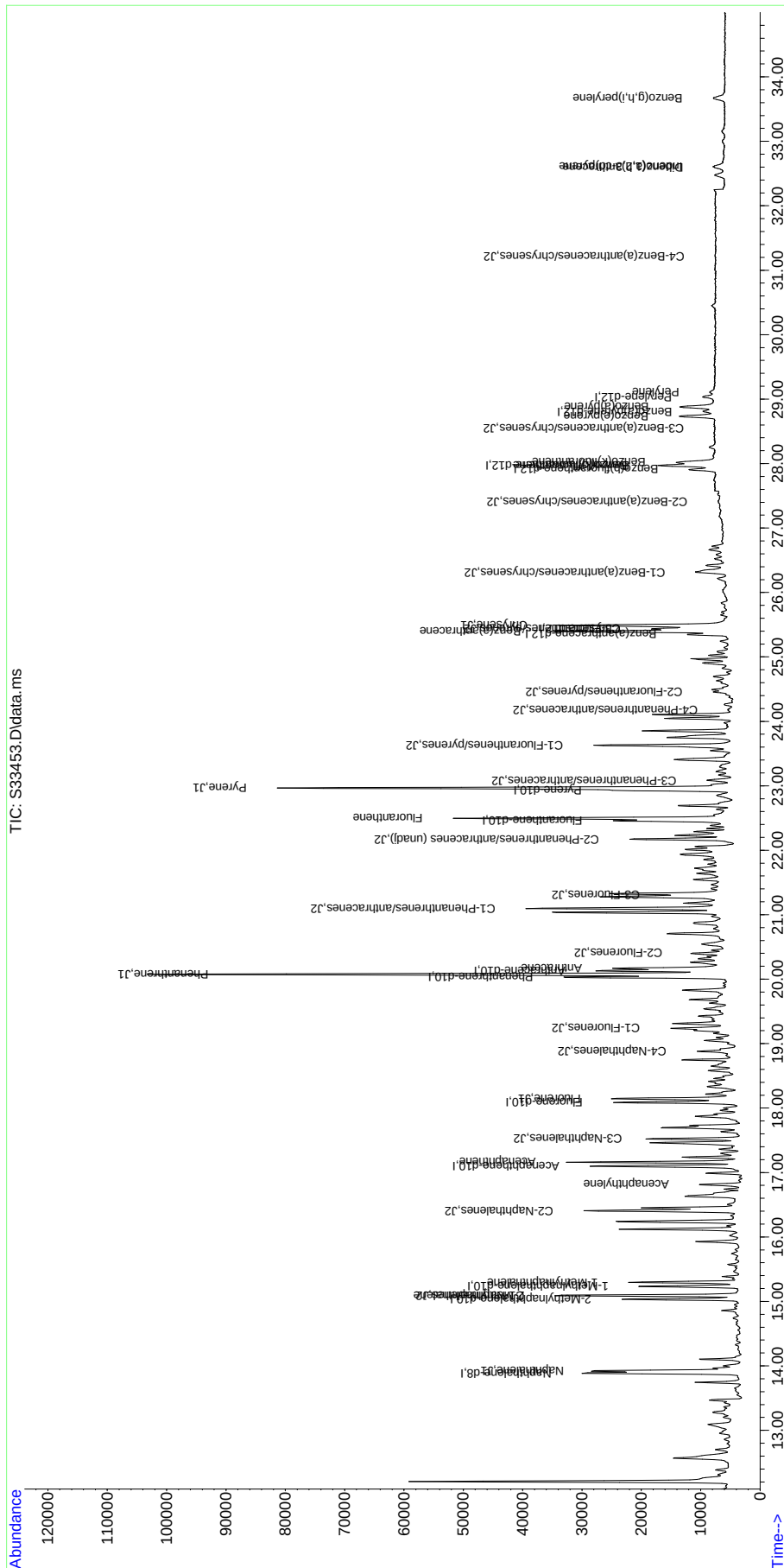
Quant Time: Sep 25 16:02:38 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	41695	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.032	152	28979	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.238	152	24412	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.096	164	18286	8.33	ng/mL	0.00
14) Fluorene-d10	18.087	176	15486	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.033	188	40452	5.00	ng/mL	0.00
25) Anthracene-d10	20.130	188	31511	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.460	212	27415	1.67	ng/mL	0.00
29) Pyrene-d10	22.930	212	24053	1.67	ng/mL	0.00
34) Benz(a)anthracene-d12	25.352	240	9053	0.50	ng/mL	0.00
36) Chrysene-d12	25.432	240	12543	0.50	ng/mL	0.00
42) Benzo(b)fluoranthene-d12	27.907	264	8403	0.33	ng/mL	0.00
44) Benzo(k)fluoranthene-d12	27.975	264	8395	0.33	ng/mL	0.00
46) Benzo(a)pyrene-d12	28.808	264	4293	0.33	ng/mL	0.00
49) Perylene-d12	29.033	264	3974	0.33	ng/mL	0.00
Target Compounds						
					Qvalue	
2) Naphthalene	13.926	128	36139	23.466	ng/mL	97
3) C1-Naphthalenes	15.089	142	44695m	29.021	ng/mL	
4) C2-Naphthalenes	16.409	156	58359m	37.893	ng/mL	
5) C3-Naphthalenes	17.528	170	54903m	35.649	ng/mL	
6) C4-Naphthalenes	18.881	184	30816m	20.009	ng/mL	
8) 2-Methylnaphthalene	15.089	142	28395	12.637	ng/mL	100
10) 1-Methylnaphthalene	15.296	142	16192	8.098	ng/mL	100
12) Acenaphthylene	16.816	152	3904	1.762	ng/mL#	75
13) Acenaphthene	17.161	154	17391	6.106	ng/mL	99
15) Fluorene	18.145	166	14264m	3.303	ng/mL	
16) C1-Fluorenes	19.240	180	17912m	4.148	ng/mL	
17) C2-Fluorenes	20.405	194	17509m	4.054	ng/mL	
18) C3-Fluorenes	21.302	208	11701m	2.709	ng/mL	
20) Phenanthrene	20.078	178	113085	10.609	ng/mL	100
21) C1-Phenanthrenes/anthr...	21.097	192	110599m	10.376	ng/mL	
22) C2-Phenanthrenes/anthr...	22.172	206	59719m	5.602	ng/mL	
23) C3-Phenanthrenes/anthr...	23.083	220	24334m	2.283	ng/mL	
24) C4-Phenanthrenes/anthr...	24.183	234	7424m	0.696	ng/mL	
26) Anthracene	20.168	178	21752	2.663	ng/mL	100
28) Fluoranthene	22.495	202	69217	2.997	ng/mL	99
30) Pyrene	22.966	202	117617	5.002	ng/mL	98
31) C1-Fluoranthenes/pyrenes	23.630	216	88182m	3.751	ng/mL	
32) C2-Fluoranthenes/pyrenes	24.459	230	29570m	1.258	ng/mL	
33) C3-Fluoranthenes/pyrenes	25.432	244	8141m	0.346	ng/mL	
35) Benz(a)anthracene	25.399	228	38240	1.422	ng/mL	99
37) Chrysene	25.492	228	41267	1.361	ng/mL	90
38) C1-Benz(a)anthracenes/...	26.313	242	28245m	0.932	ng/mL	
39) C2-Benz(a)anthracenes/...	27.409	256	6250m	0.206	ng/mL	
40) C3-Benz(a)anthracenes/...	28.543	270	3544m	0.117	ng/mL	
41) C4-Benz(a)anthracenes/...	31.215	284	1319m	0.044	ng/mL	
43) Benzo(b)fluoranthene	27.969	252	12207	0.352	ng/mL	99
45) Benzo(k)fluoranthene	28.020	252	15524	0.521	ng/mL	95
47) Benzo(e)pyrene	28.734	252	14342	0.515	ng/mL	98
48) Benzo(a)pyrene	28.881	252	14537	0.937	ng/mL	97
50) Perylene	29.111	252	2057	0.125	ng/mL#	91
51) Indeno(1,2,3-cd)pyrene	32.610	276	4988	0.161	ng/mL#	71
52) Dibenzo(a,h)anthracene	32.599	278	1487	0.068	ng/mL#	1
53) Benzo(g,h,i)perylene	33.667	276	6281	0.223	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130906\
Data File : S33453.D
Acq On : 7 Sep 2013 12:41 pm
Operator : jamesr1
Sample : ICV1465-4, SRM 1991
Misc : MS29817, MSS1465
ALS Vial : 31 Sample Multiplier: 1
Quant Time: Sep 25 16:02:38 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



S:\1\data\S130906\S33453.D

Alkylated PAH Homologue Relative Response Factor Calculations

Data File Name **S33453.D**
 Data File Path **S:\1\data\S130906**
 Operator **jamesr1**
 Date Acquired **9/7/2013 12:41**
 Acq. Method File **S:\1\methods\S130906-SPMEPAH.M**
 Sample Name **SRM**
 Misc Info
 Vial Number **31**
 Instrument Name **MSS**
 Number of Compounds **53**

Name	Level 4 Concentration (µg/mL)	SRM Concentration (µg/mL)	SRM Area Counts	Certified Reference Value (mg/kg)	Density Corrected Reference Value (µg/mL)	RRF	RRF Corrected Level 4 Concentration (µg/mL)
Naphthalene-d8	33.3	33.30	41695				
Naphthalene	40.1	23.47	36139	26	34.6		
C2-Naphthalenes	40.1	37.89	58359	21.3	28.3	1.971	20.3
C3-Naphthalenes	40.1	35.65	54903	29.5	39.2	1.339	29.9
C4-Naphthalenes	40.1	20.01	30816	33.8	45.0	0.656	61.1
Fluorene-d10	5	5.00	15486				
Fluorene	6	3.30	14264	3.8	5.05		
C1-Fluorenes	6	4.15	17912	5.62	7.47	0.849	7.07
C2-Fluorenes	6	4.05	17509	7.2	9.58	0.648	9.26
C3-Fluorenes	6	2.71	11701	5.16	6.86	0.604	9.93
Phenanthrene-d10	5	5.00	40452				
Phenanthrene	6	10.61	113085	12.1	16.1		
C1-Phenanthrenes/anthracenes	6	10.38	110599	10.7	14.2	1.106	5.43
C2-Phenanthrenes/anthracenes (unadj)	6	5.60	59719	15.5	20.6	0.412	14.6
C3-Phenanthrenes/anthracenes	6	2.28	24334	15.1	20.1	0.172	34.8
C4-Phenanthrenes/anthracenes	6	0.70	7424	10.2	13.6	0.078	77.0
Pyrene-d10	1.67	1.67	24053				
Pyrene	2	5.00	117617	5.91	7.86		
C1-Fluoranthenes/pyrenes	2	3.75	88182	6.86	9.12	0.646	3.10
Chrysene-d12	0.5	0.50	12543				
Chrysene	0.2	1.36	41267	1.32	1.76		
C1-Benz(a)anthracenes/chrysenes	0.2	0.93	28245	1.54	2.05	0.587	0.341
C2-Benz(a)anthracenes/chrysenes	0.2	0.21	6250	0.44	0.585	0.454	0.440
C3-Benz(a)anthracenes/chrysenes	0.2	0.12	3544	NA	NA	0.230	0.870
C4-Benz(a)anthracenes/chrysenes	0.2	0.04	1319	NA	NA	0.170	1.176

BOLD - Certified Mass Fractions

Normal - Reference Mass Fractions

Italics - Relative Response Factor based on Hawthorne, et al. 2005.

Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130916\
 Data File : S33581.D
 Acq On : 16 Sep 2013 1:49 pm
 Operator : RUBENP
 Sample : CC1465-4,mss1466-4
 Misc : ms29817,mss1484,1.5,,,1.5,1
 ALS Vial : 3 Sample Multiplier: 1

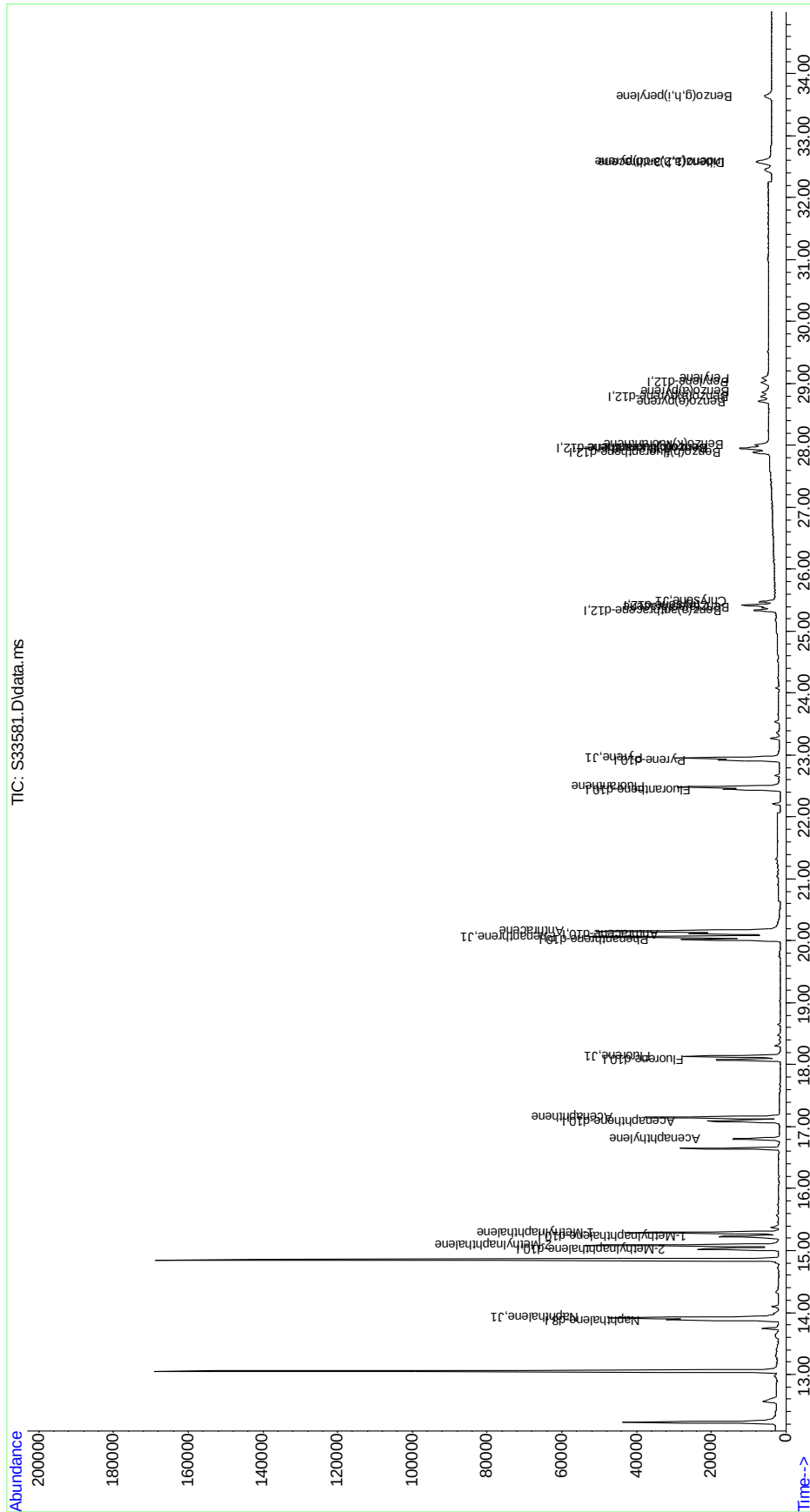
Quant Time: Sep 16 14:57:13 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	48635	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.023	152	32278	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.221	152	23023	16.70	ng/mL	-0.02
11) Acenaphthene-d10	17.089	164	15490	8.33	ng/mL	0.00
14) Fluorene-d10	18.081	176	14413	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.021	188	39381	5.00	ng/mL	0.00
25) Anthracene-d10	20.117	188	39088	5.00	ng/mL	-0.01
27) Fluoranthene-d10	22.448	212	24782	1.67	ng/mL	-0.01
29) Pyrene-d10	22.919	212	22082	1.67	ng/mL	-0.01
34) Benz(a)anthracene-d12	25.338	240	8186	0.50	ng/mL	-0.01
36) Chrysene-d12	25.419	240	11975	0.50	ng/mL	-0.01
42) Benzo(b)fluoranthene-d12	27.885	264	8614	0.33	ng/mL	-0.02
44) Benzo(k)fluoranthene-d12	27.958	264	8746	0.33	ng/mL	-0.01
46) Benzo(a)pyrene-d12	28.791	264	4701	0.33	ng/mL	-0.02
49) Perylene-d12	29.016	264	4242	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.918	128	68500	38.131	ng/mL	99
8) 2-Methylnaphthalene	15.081	142	47424	18.949	ng/mL	100
10) 1-Methylnaphthalene	15.287	142	35901	19.037	ng/mL	100
12) Acenaphthylene	16.802	152	20050	10.681	ng/mL	100
13) Acenaphthene	17.154	154	22869	9.479	ng/mL	99
15) Fluorene	18.138	166	23630	5.879	ng/mL	100
20) Phenanthrene	20.066	178	60053	5.787	ng/mL	99
26) Anthracene	20.155	178	60727	5.994	ng/mL	100
28) Fluoranthene	22.483	202	41166	1.972	ng/mL	99
30) Pyrene	22.954	202	42979	1.991	ng/mL	100
35) Benz(a)anthracene	25.378	228	4688	0.193	ng/mL	99
37) Chrysene	25.479	228	5720	0.198	ng/mL	99
43) Benzo(b)fluoranthene	27.952	252	8636	0.243	ng/mL	97
45) Benzo(k)fluoranthene	28.009	252	7939	0.256	ng/mL	95
47) Benzo(e)pyrene	28.712	252	7047	0.231	ng/mL	96
48) Benzo(a)pyrene	28.858	252	3901	0.230	ng/mL	95
50) Perylene	29.089	252	4406	0.250	ng/mL#	93
51) Indeno(1,2,3-cd)pyrene	32.583	276	7728	0.234	ng/mL#	77
52) Dibenz(a,h)anthracene	32.572	278	6505	0.280	ng/mL	82
53) Benzo(g,h,i)perylene	33.635	276	6631	0.221	ng/mL	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : S:\data\S130916\
Data File : S33581.D
Acq On : 16 Sep 2013 1:49 pm
Operator : RUBENP
Sample : CC1465-4,mss1466-4
Misc : ms29817,mss1484,1.5,,1.5,1
ALS Vial : 3 Sample Multiplier: 1
Quant Time: Sep 16 14:57:13 2013
Quant Method : S:\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
Qlast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130920\
 Data File : S33615a.D
 Acq On : 20 Sep 2013 1:40 pm
 Operator : RUBENP
 Sample : ic1490-4,mss1466-4
 Misc : ms29817,mss1490,,,,,
 ALS Vial : 2 Sample Multiplier: 1

Quant Time: Sep 20 14:30:32 2013
 Quant Method : S:\1\methods\S130906-SPMEPAH.M
 Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
 QLast Update : Mon Sep 09 11:44:11 2013
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.885	136	45095	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.023	152	29392	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.229	152	20696	16.70	ng/mL	0.00
11) Acenaphthene-d10	17.089	164	14245	8.33	ng/mL	0.00
14) Fluorene-d10	18.081	176	13928	5.00	ng/mL	0.00
19) Phenanthrene-d10	20.020	188	41159	5.00	ng/mL	0.00
25) Anthracene-d10	20.123	188	40291	5.00	ng/mL	0.00
27) Fluoranthene-d10	22.448	212	26778	1.67	ng/mL	-0.01
29) Pyrene-d10	22.918	212	23263	1.67	ng/mL	-0.01
34) Benz(a)anthracene-d12	25.338	240	8713	0.50	ng/mL	-0.01
36) Chrysene-d12	25.418	240	12763	0.50	ng/mL	-0.01
42) Benzo(b)fluoranthene-d12	27.890	264	8732	0.33	ng/mL	-0.01
44) Benzo(k)fluoranthene-d12	27.952	264	9496	0.33	ng/mL	-0.02
46) Benzo(a)pyrene-d12	28.785	264	4727	0.33	ng/mL	-0.02
49) Perylene-d12	29.015	264	4390	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.918	128	58048	34.850	ng/mL	99
8) 2-Methylnaphthalene	15.089	142	39689	17.415	ng/mL	100
10) 1-Methylnaphthalene	15.287	142	29655	17.493	ng/mL	100
12) Acenaphthylene	16.808	152	17981	10.416	ng/mL	100
13) Acenaphthene	17.154	154	19515	8.796	ng/mL	100
15) Fluorene	18.138	166	20782	5.350	ng/mL	100
20) Phenanthrene	20.065	178	56942	5.250	ng/mL	99
26) Anthracene	20.155	178	55341	5.299	ng/mL	100
28) Fluoranthene	22.483	202	39018	1.730	ng/mL	99
30) Pyrene	22.954	202	39548	1.739	ng/mL	100
35) Benz(a)anthracene	25.385	228	4238	0.164	ng/mL	100
37) Chrysene	25.478	228	5369	0.174	ng/mL	100
43) Benzo(b)fluoranthene	27.947	252	7838	0.217	ng/mL	96
45) Benzo(k)fluoranthene	28.008	252	7130	0.212	ng/mL	95
47) Benzo(e)pyrene	28.712	252	6629	0.216	ng/mL	95
48) Benzo(a)pyrene	28.858	252	3502	0.205	ng/mL	96
50) Perylene	29.089	252	3959	0.217	ng/mL	96
51) Indeno(1,2,3-cd)pyrene	32.583	276	7522	0.220	ng/mL#	71
52) Dibenzo(a,h)anthracene	32.572	278	6821	0.284	ng/mL#	77
53) Benzo(g,h,i)perylene	33.640	276	6556	0.211	ng/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

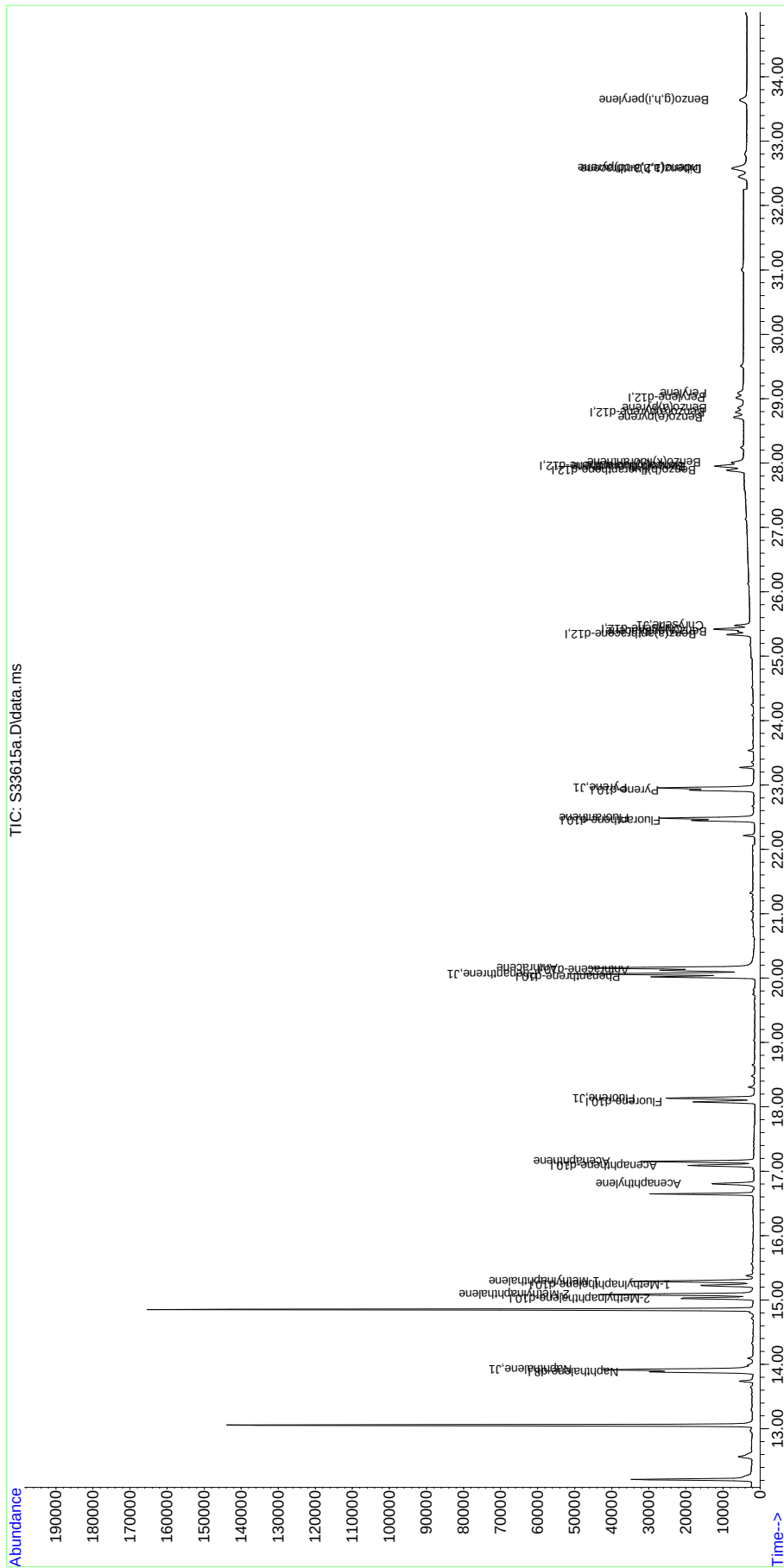
7.5.9

7

Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130920\
Data File : S33615a.D
Acq On : 20 Sep 2013 1:40 pm
Operator : RUBENP
Sample : IC1490-4, mss1466-4
Misc : ms29817, mss1490,,,,,
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Sep 20 14:30:32 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Manual Integrations
APPROVED
(compounds with "m" flag)

James Roush
10/25/13 14:31

Data Path : S:\1\data\S130920\
Data File : S33616a.D
Acq On : 20 Sep 2013 2:27 pm
Operator : RUBENP
Sample : icc1490-4,mss1466-4
Misc : ms29817,mss1490,,,,,
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 23 09:28:33 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHs & Alkylated PAHs by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	13.877	136	56095	33.30	ng/mL	0.00
7) 2-Methylnaphthalene-d10	15.023	152	38403	16.70	ng/mL	0.00
9) 1-Methylnaphthalene-d10	15.221	152	27230	16.70	ng/mL	-0.02
11) Acenaphthene-d10	17.089	164	18665	8.33	ng/mL	0.00
14) Fluorene-d10	18.074	176	16984	5.00	ng/mL	-0.01
19) Phenanthrene-d10	20.014	188	45361	5.00	ng/mL	-0.01
25) Anthracene-d10	20.117	188	52494	5.00	ng/mL	-0.01
27) Fluoranthene-d10	22.442	212	26868	1.67	ng/mL	-0.02
29) Pyrene-d10	22.918	212	23991	1.67	ng/mL	-0.01
34) Benz(a)anthracene-d12	25.332	240	8896	0.50	ng/mL	-0.02
36) Chrysene-d12	25.418	240	12197	0.50	ng/mL	-0.01
42) Benzo(b)fluoranthene-d12	27.885	264	8354	0.33	ng/mL	-0.02
44) Benzo(k)fluoranthene-d12	27.952	264	8937	0.33	ng/mL	-0.02
46) Benzo(a)pyrene-d12	28.785	264	5467	0.33	ng/mL	-0.02
49) Perylene-d12	29.010	264	4618	0.33	ng/mL	-0.02
Target Compounds						
					Qvalue	
2) Naphthalene	13.910	128	82617	39.873	ng/mL	99
8) 2-Methylnaphthalene	15.081	142	59641	20.029	ng/mL	100
10) 1-Methylnaphthalene	15.287	142	45330	20.323	ng/mL	100
12) Acenaphthylene	16.801	152	28196m	12.466	ng/mL	
13) Acenaphthene	17.147	154	29702	10.217	ng/mL	99
15) Fluorene	18.132	166	29987	6.331	ng/mL	100
20) Phenanthrene	20.059	178	74406	6.225	ng/mL	100
26) Anthracene	20.155	178	87402	6.424	ng/mL	100
28) Fluoranthene	22.483	202	47465	2.097	ng/mL	98
30) Pyrene	22.954	202	49164	2.096	ng/mL	100
35) Benz(a)anthracene	25.378	228	5246	0.198	ng/mL	100
37) Chrysene	25.472	228	6039	0.205	ng/mL	99
43) Benzo(b)fluoranthene	27.947	252	8624	0.250	ng/mL	98
45) Benzo(k)fluoranthene	28.003	252	8364	0.264	ng/mL	95
47) Benzo(e)pyrene	28.706	252	7484	0.211	ng/mL	96
48) Benzo(a)pyrene	28.858	252	4775	0.242	ng/mL	96
50) Perylene	29.083	252	4891	0.255	ng/mL#	92
51) Indeno(1,2,3-cd)pyrene	32.578	276	7438	0.207	ng/mL#	82
52) Dibenz(a,h)anthracene	32.567	278	5863	0.232	ng/mL	88
53) Benzo(g,h,i)perylene	33.624	276	6730	0.206	ng/mL	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

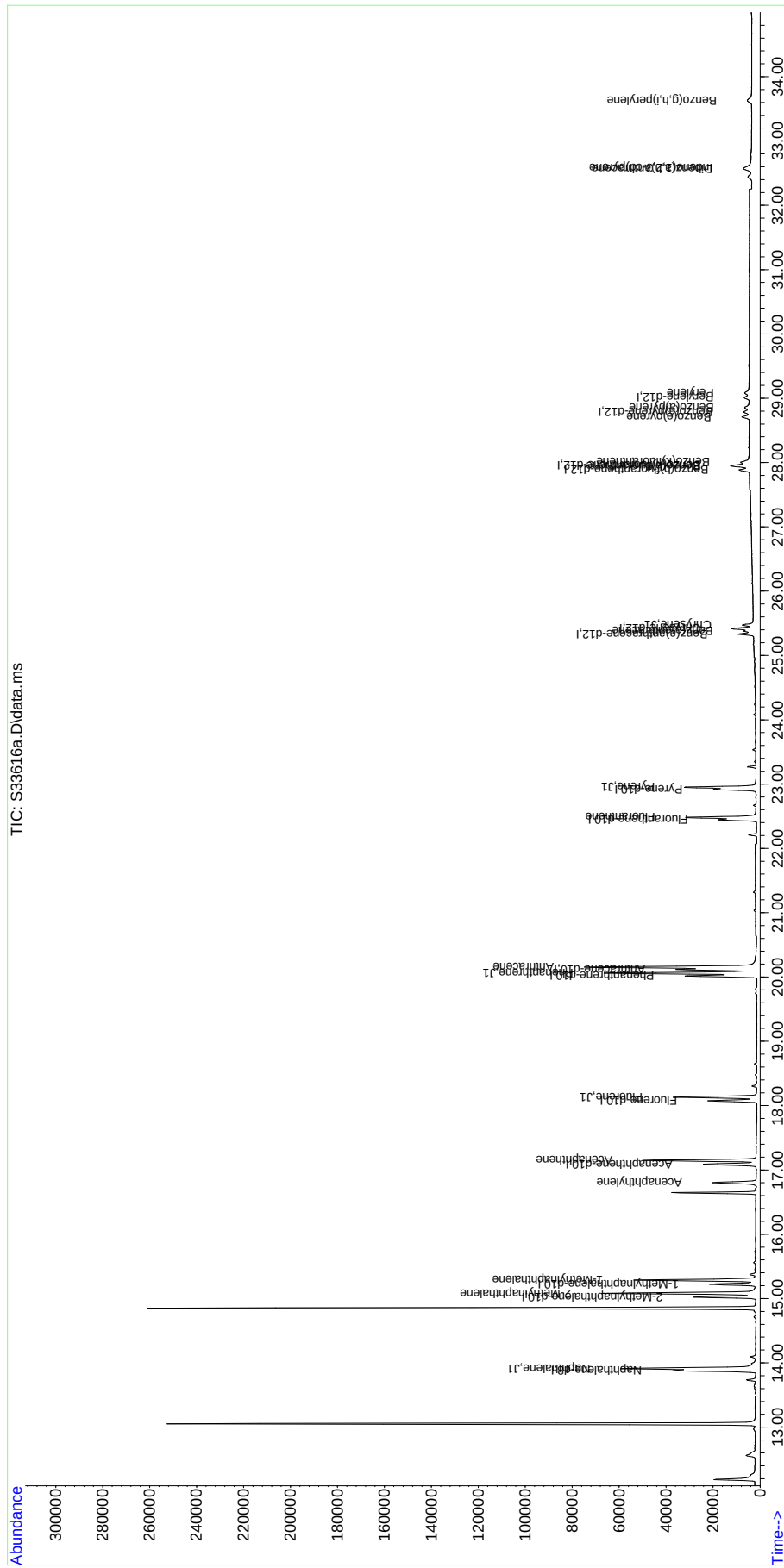
7.5.10

7

Quantitation Report (QT Reviewed)

Data Path : S:\1\data\S130920\
Data File : S33616a.D
Acq On : 20 Sep 2013 2:27 pm
Operator : RUBENP
Sample : ICC1490-4, mss1466-4
Misc : ms29817, mss1490,,,,,
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 23 09:28:33 2013
Quant Method : S:\1\methods\S130906-SPMEPAH.M
Quant Title : PAHS & Alkylated PAHS by GC/MS/SIM
QLast Update : Mon Sep 09 11:44:11 2013
Response via : Initial Calibration



130906-SPMEPAH.M Fri Oct 25 14:29:26 2013

Page: 2

GCMS Analysis Log - Extractables

Run Date: 9/16/13Analyst Signature: [Signature]

Standard Data

Lot #	Description	Conc
MSS13039	INTERNAL STANDARD	Various
MSS1466-1	ICAL LV1	
-2	ICAL LV2	
-3	ICAL LV3	
-4	ICAL LV4	
-5	ICAL LV5	
-6	ICAL LV6	
MSS1467	SPME SKM 1991	

Column Information: Front ZB5MSi 60M
Rear

Sequence File:

Quantitation Methods: S130906-SPMEPAH.MInstrument Run Batches: MS29817 / MSS1465Inj. Vol: NAData Acquisition Methods: SAPAHSPME.MInj. Vol: NA

Sequence verified:

ICAL verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33422.D	Fiber GC take	NA	SPME	AQ	NA	NA	
2	23.D	Blank						
2	24.D							
3	25.D							
4	26.D							
5	27.D							
6	28.D							
7	29.D							
8	30.D							
9	31.D							
10	32.D							
11	33.D							
12	34.D							
13	35.D							
14	36.D							
15	37.D							
16	38.D							
17	39.D							
18	40.D							
19	41.D							
20	42.D							
21	43.D	DI Blank	MSS1465					Spiked w/ internal std.
22	44.D	DI Blank						
23	45.D	ICAL LV1, MSS1466-1						
24	46.D	ICAL LV2, MSS1466-2						
25	47.D	ICAL LV3, MSS1466-3						
26	48.D	ICAL LV4, MSS1466-4						
27	49.D	ICAL LV5, MSS1466-5						
28	50.D	ICAL LV6, MSS1466-6						
29	51.D	Blank						Spiked w/ internal std.
30	52.D	Blank						
31	53.D	ICAL LV1, SPME SKM 1991						

MS002-04

Date: 8/29/06

Dilution Solvent: NALot: NAReview: 9

GCMS Analysis Log - Extractables

Run Date:

Analyst Signature:

Standard Data

Lot #	Description	Conc
MSS13939	Internal standard	Various
MSS14061	ICAL LV1	
↓ -2	ICAL LV2	
↓ -3	ICAL LV3	
↓ -4	ICAL LV4	
↓ -5	ICAL LV5	
↓ -6	ICAL LV6	
MSS14067	SPIKE SRM 1991	↓

Column Information: Front ZB5MSi 60m
Rear

Sequence File: 5130906

Quantitation Methods: 3130906-SPMEPA+LWA

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPHASPMI.M

Ini. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

[illegible]

Date: 8/29/06 Dilution Solvent:

Lot:

Review:

10

GCMS Analysis Log - Extractables

Run Date:

10/8/13 9/16/13

Analyst Signature:



Standard Data

Lot #	Description	Conc
MSS1493	Internal Standard	Various
MSS1466-4	Mid check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130916-SPKPK

Quantitation Methods: S130906-SPMEPAH.M

S130906-SPMEPAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M Inj. Vol: NA
Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33579.D	Fiber / QC BARE	MSS1484	SPME	AQ	NA	NA	
2	S33580.D	CC1465-4, MSS1466-4						
2	S33560A.D	IC1484-4, MSS1466-4						Duplicate Analysis
3	81.D	CC1465-4, MSS1466-4						
3	81A.D	IC1484-4, MSS1466-4						Duplicate Analysis
4	82.D	Blank						
5	83.D	MS29817-MB27						
6	84.D	MC24285-1						
7	85.D	↓ -DUP	↓					
8	86.D	Blank	MSS1485					
9	87.D	MS29817-MB28						
10	88.D	MC24285-1 MS						
11	89.D	↓ -MSD	↓					
12	90.D	Blank	MSS1486					
13	91.D	MS29817-MB29						
14	92.D	MC24285-2						Sample needs dilution
15	93.D	↓ -DUP	↓					↓
16	94.D	Blank	MSS1487					
17	95.D	MS29817-MB30						
18	96.D	MC23817-9						
19	97.D	↓ -DUP	↓					
20	98.D	Blank	MSS1488					
21	99.D	MS29817-MB31						
22	S33600.D	MC24019-1				10		Parent sample re-equilibrated and diluted
23	01.D	MC24019-1DUP	↓			10		↓
24	02.D	Blank	MSS1489			NA		
25	03.D	MS29817-MB32				NA		
26	04.D	MC24019-2				10		Parent sample re-equilibrated and diluted
27	05.D	-DUP	↓			10		↓
28	06.D	DI / Acetone				NA	✓	

MS002-04

Date: 8/29/06 Dilution Solvent:

N/A

Lot:

N/A

Review:

18

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature:

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPMEPAH.M

S130920-SPMEPAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	1C1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	1C1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

Review:

20

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature: [Signature]

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPME PAH.M

S130920-SPME PAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	CC1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	CC1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

Review:

20

GCMS Analysis Log - Extractables

Run Date:

10/10/13 9/20/13

Analyst Signature: [Signature]

Standard Data

Lot #	Description	Conc
MSS1490-4	Internal std	Various
MSS1466-4	Ward check	Various

Column Information: Front ZB5MSi 60m
Rear

Sequence File: S130920.S

Quantitation Methods: S130906-SPME PAH.M

S130920-SPME PAH-CCG-13.M

Instrument Run Batches: MS29817

Data Acquisition Methods: SAPAHSPME.M

Inj. Vol: NA

Inj. Vol: NA

ICAL verified:

Sequence verified:

Vial #	Data File ID	Sample ID	Ext. Batch	Analysis	Matrix	Dilution	Mult.	Comments
1	S33614.D	Fiber/GC Bake	MSS1490	SPME	AQ	NA	NA	
2	15.D	CC1465-4, MSS1466-4						
2	15A.D	CC1490-4, MSS1466-4						Duplicate Analysis
3	16.D	CC1465-4, MSS1466-4						
3	16A.D	CC1490-4, MSS1466-4						Duplicate Analysis
4	17.D	Blank						
5	18.D	MS29817-MB33						
6	19.D	MC24019-1						
7	20.D	↓ -1DUP						
8	21.D	Blank	MSS1491					
9	22.D	MS29817-MB34						
10	23.D	MC24019-1				10		
11	24.D	↓ -1DUP				10		
12	25.D	Blank	MSS1492			NA		
13	26.D	MS29817-MB35						
14	27.D	MC24019-2						
15	28.D	↓ -2DUP						
16	29.D	Blank	MSS1493					
17	30.D	MS29817-MB36						
18	31.D	MC24019-2				10		
19	32.D	↓ -2DUP				10		
20	33.D	Blank	MSS1494			NA		
21	34.D	MS29817-MB37						
22	35.D	MC24285-2						
23	36.D	↓ -2DUP						
24	37.D	Blank	MSS1495					
25	38.D	MS29817-MB38						
26	39.D	MC24285-2				10		
27	40.D	↓ -2DUP				10		
28	41.D	DI Acetone	NA			NA		

MS002-04

Date: 8/29/06 Dilution Solvent: NA

Lot: NA

Review:

20



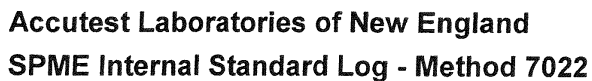
Analytical Batch Date: 9/16/13 MS Batch: MS29817 Initials: RPR

[illegible]

Notes:

ms017-01 (9/27/13)

Review:



Analytical Batch Date: 9/20/13 MS Batch: MS29617 Initials: RPR

[illegible]

Notes:

ms017-01 (9/27/13)

Review:

Centrifuge Batch Date: 9/3/3 Alum Batch: 99-37107 NaOH Batch: 99-36887 Initials: WJR

[illegible]

Notes: Samples equilibrated with DI water. 20g of sediment to 20 mL of DI water.

Review:

9/20/13

Alum Batch: 26737167

NaOH Batch: RYT36887

Initials: _____

Notes: Samples equilibrated overnight using DI water. 20g of sediment to 20 mL of DI water.

9

Initials: KPK

[illegible]

Notes: Samples (MC24255-1 & 2) were equilibrated overnight using DI. 20g of sediment to 20ml of DI water.
MC24019-1 & 2

ms018-01 (9/27/13)

Review:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: MC24285
Account: METAMAW META Environmental, Inc.
Project: Arcadis, National Grid, Water Street, Hudson, NY

Sample: MC24285-1 ClientID: EB-1(0-1)	Analyzed: 18-SEP-13 by HS	Method: SM21 2540 B MOD.
Wet Weight (Total)	29.168	g
Tare Weight	18.863	g
Dry Weight (Total)	26.927	g
Solids, Percent	78.3	%
Sample: MC24285-2 ClientID: EB-18(0-1.5)	Analyzed: 18-SEP-13 by HS	Method: SM21 2540 B MOD.
Wet Weight (Total)	35.241	g
Tare Weight	24.401	g
Dry Weight (Total)	32.808	g
Solids, Percent	77.6	%

8.1
8



Appendix C

Results of Forensic Analysis of
Observed Sheen

To:
File

Copies:
Adam Etringer, ARCADIS

From:
Ted C. Sauer, ARCADIS

Date:
April 9, 2014

ARCADIS Project No.:
B0037602.0002

Subject:
**Forensic Evaluation of the Hydrocarbon Content (Source) of Surface Water
Sheens Observed During Pre-Design Investigation Drilling Activities (EB-14, EB-
15, EB-16, EB-17)
Operable Unit 2 - National Grid Hudson (Water Street) Site, Hudson, New York**

1.0 Introduction

As stated in the Remedial Design Work Plan (RDWP), four borings were advanced in the area to the south of the Area for Remedial Consideration (ARC) to either confirm or refute the presence of sheen-producing sediments in that area. Sheens were observed on the water surface during advancement of borings EB-14, EB-15, EB-16, and EB-17. As a result, surface water sheen samples were collected from each location on August 29, 2013 for environmental forensic hydrocarbon analysis and subsequent evaluation of the content (source) of hydrocarbons in the sheen samples associated with the underlying disturbed sediments. The locations of the samples are shown on Figure 6 of the RDWP.

Surface sheen samples were collected with Teflon net samplers (General Oceanics) specifically designed to collect sheens from the water surface. The contents on the nets were analyzed for forensic polycyclic aromatic hydrocarbons (PAHs) and total hydrocarbons (TPH). 'Forensic PAHs' are an extended list of over 50 PAHs that include the sixteen, 2- to 6-ring priority pollutant PAHs plus 2- to 4-ring alkylated PAH groups (Table C-1). These PAHs were determined by modified Environmental Protection Agency (EPA) Method 8270C (gas chromatography/mass spectrometry in selective ion monitoring mode [GC/MS SIM]). Forensic PAHs have been found to be essential in identifying and differentiating sources of hydrocarbons in environmental samples (Stout et al., 2002). 'Forensic TPH' is a measurement of all types of hydrocarbons in the general carbon range of C10 to C40 that include petroleum, natural organic material (e.g., wood), and hydrocarbon by-products produced by pyrolytic processes (e.g., coal tar) and incomplete

combustion processes (e.g., soot). TPH concentrations were determined by modified EPA Method 8015 (gas chromatography/flame ion detection (GC/FID)). As part of this quantitative total hydrocarbon analysis, a gas chromatogram (i.e., GC fingerprint) was produced which is useful in distinguishing types of petroleum products (e.g., No. 2 fuel oil, lubrication oil) and other material (coal tar, natural organic material) in a sample.

Results of the PAH and TPH analyses are provided in Table C-1. Attachment A contains the TPH GC fingerprints (TPH fingerprints) of each sample. Histograms of the PAH compositions of the samples were prepared and are provided in Attachment B. The patterns of the TPH fingerprints and PAH compositions were evaluated and compared among samples. The characteristics of the pattern types are described in Table C-1. In addition, selected diagnostic ratios and analyte summations were calculated for use in the evaluation.

The evaluation of hydrocarbon content in these surface water sheens was based on multiple lines of evidence that included comparison of TPH fingerprint and PAH compositional patterns among samples and use of PAH/TPH diagnostic ratios. In this memo, total hydrocarbon content and PAH compositional characteristics of the samples were evaluated independently and the results summarized in a discussion of the probable sources of hydrocarbons in the sheens (Section 3) with conclusions provided in Section 4. But first, an introduction to the basic characteristics in interpretation of forensic analysis results is provided in Section 2.

2.0 Basic Interpretative Characteristics of Forensic Analysis Results

When considering the potential sources of hydrocarbons characterized by the TPH GC fingerprint, the shape and position of the unresolved complex mixture (UCM) represented by a 'hump' or humps, and peaks in the GC trace of the gas chromatogram help to indicate the type of hydrocarbon in the sample. Hydrocarbon compound molecular weight represented by carbon range from C10 to C40 increases from left to right (increasing GC run time) on the gas chromatogram. Petroleum and natural organic material are characterized by size and location of UCM and peaks in the GC fingerprint. Lighter fuel oils (e.g., gasoline, diesel) are characterized by Gaussian-shaped UCM and peaks near the left side of the GC fingerprint (carbon range C8 to C24) whereas heavy oils (e.g., motor oil) are characterized by Gaussian-shaped UCM and peaks near the right side of the GC fingerprint (carbon range C20 to C40). Natural organic material (NOM) is generally characterized in GC fingerprints by non-descript UCMs in the C20 to C36+ carbon range with large peaks in the C25 to C34 range. Pyrogenic sources have small UCMs in the GC fingerprint with relatively large peaks in the C10 to C30 carbon range which are generally associated with PAHs in the sample.

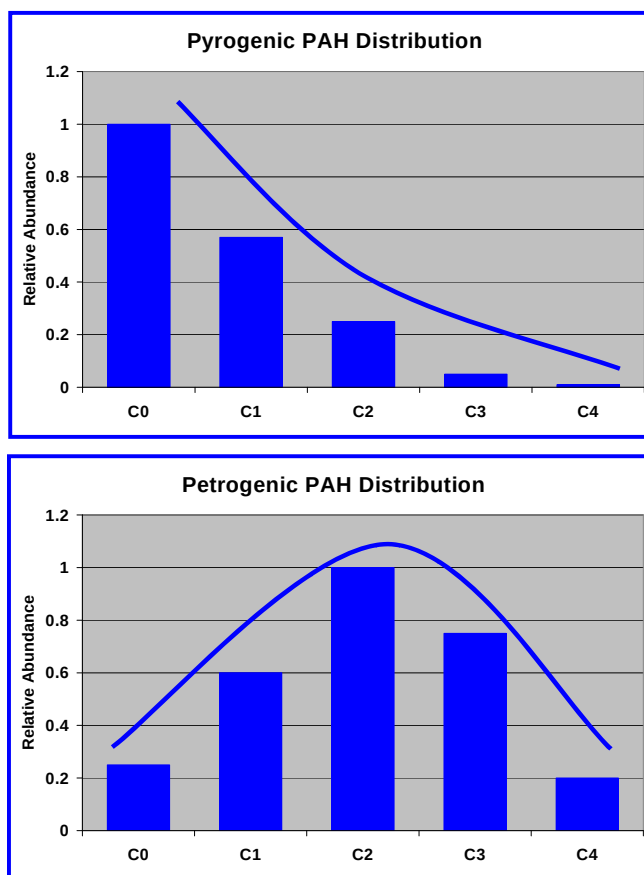
When considering the potential sources of PAHs, the patterns of the PAH compositions, particularly the alkyl groups for the 2-, 3-, and 4-ring PAHs (e.g., phenanthrene, C1-phenanthrenes, C2-phenanthrenes, etc. where C1, C2, etc. is the number of carbon side chains to the parent compound [C0]), provide

information on types of hydrocarbons in the sample (Stout et al., 2002). There are two major sources of PAHs: petrogenic sources and pyrogenic sources.

PAHs from a petrogenic source, such as those in diesel and heavy oil, have a composition in which the shape of the alkyl group concentrations in a PAH family (e.g., naphthalene, C1-naphthalenes, C2-naphthalenes etc.) has a 'Gaussian' or 'normal' pattern where generally the C2-alkyl group has the highest relative concentration compared to the other alkyl groups in the family. This is illustrated in the adjacent chart. Weathered oil will often show alkyl groups of families increasing in relative concentration with increasing alkylation.

In contrast, pyrogenic-source PAHs which originate as by-products of incomplete combustion of petroleum, coal, and natural material (e.g., ash, soot, exhaust fumes), and by-products of pyrolytic processes (e.g., coal tar/creosote from coal carbonization process) have a very different characteristic pattern than that of petrogenic PAHs. For pyrogenic PAHs, the parent PAH (e.g., naphthalene) of a PAH family has the highest concentration relative to the alkyl groups with the alkyl group concentrations decreasing with increasing alkylation ($C_0 > C_1 > C_2 > C_3$). Also, pyrogenic-source PAHs have a significant amount of 5- and 6-ring PAHs (e.g., benzo(a)pyrene) compared to petroleum which has relatively negligible to low amounts of 5- and 6-ring PAHs. The pattern for pyrogenic PAHs is illustrated in the adjacent chart.

Pyrogenic versus Petrogenic PAH Distributions



PAH diagnostic ratios (e.g., C2-dibenzothiophenes/C2-phenathrenes and C3-dibenzothiophenes/C3-phenathrenes) were calculated to help in differentiating PAH compositions of samples which in turn suggest different potential sources of hydrocarbons in the sample. These ratios have been found to retain their initial source values over wide ranges of source material weathering (Stout et al., 2002).

3.0 TPH and PAH Compositional Characterization of Sheen Samples

The general content of the hydrocarbons, such as petroleum product types and background hydrocarbons, in samples are characterized by the patterns of the TPH GC fingerprints. PAH compositions provide a specific characterization of the hydrocarbon content that include distinguishing between petroleum and pyrogenic source PAHs, and differentiating the source of particular petroleum products [e.g., diesel 1 vs diesel 2] (Stout et al., 2002). The TPH GC fingerprint and PAH compositional characteristics of each sheen sample are described in Table C-1 and are summarized below.

Except for the EB-15 (L1316940-02) sample, the patterns of the GC fingerprints from the TPH analysis of all sheen samples were consistently similar (e.g., Figure C-1, all samples in Attachment A). The GC fingerprints contained a large, prominent Gaussian-shaped UCM with small peaks in the C20 to C36 carbon range. This type of pattern is indicative of the presence of a weathered heavy oil residual. The shape of the UCM indicates more of a lubrication type heavy oil, not necessarily a No. 6 fuel oil type (a common heavy oil type also). There was no evidence of coal tar peaks in the GC fingerprints of the samples. Because of over dilution of the sample extract in the analysis of EB-15 (L1316940-02), the GC fingerprint did not show the same characteristics as its corresponding duplicate, EB-15 Dup (L1316940-03). As a result, the EB-15 Dup sample was used in the evaluation.

Similar to the TPH GC fingerprints, the PAH compositional signatures of the sheen samples had consistently similar patterns which showed almost exclusively petroleum PAHs (e.g., Figure C-1, all samples in Attachment B). The presence of the 4-ring PAHs indicates a heavy type oil. The PAH compositions of EB-16 and EB-17 were essentially identical and exclusively petroleum. Except for the presence of trace parent 2- to 4-ring PAHs, the EB-14 PAH composition was nearly identical to that of EB-16/EB-17. As discussed in Table C-1 and above, EB-15 (L1316940-02) was over diluted during analysis, so most of the PAHs were not detected, resulting in an unrecognizable compositional pattern. EB-15 Dup (L1316940-03) was also diluted as part of analysis but not as much as EB-15 (L1316940-02). However, dilution of EB-15 Dup was sufficient to cause the relatively low concentration 4-ring PAHs, evident in EB-14, to be non-detect. The PAHs that were detected in EB-15 Dup provided a pattern very similar to EB-14. In addition to petroleum PAHs, EB-14 and EB-15 Dup had trace amounts of 2- to 4-ring parent PAHs (e.g., phenanthrene) indicative of a contribution from a pyrogenic source. There are a variety of sources of these pyrogenic PAHs, but the pattern of the 4- to 6-ring PAHs was not typical of a coal tar material. In any case, the overall contribution of any pyrogenic source material in the sheen samples was negligible compared to the petroleum content evident in all the sheen samples.

Values of the PAH diagnostic ratios, C2-dibenzothiophenes/C2-phenathrenes and C3-dibenzothiophenes/C3-phenathrenes (Table C-1), of the sheen samples were found to be very consistent among samples. These PAH diagnostic ratios have been found to be particularly useful in identifying common sources of petroleum in samples (Sauer and Uhler, 1995) because they retain their

compositional ratios over wide extents of weathering (weathering processes include evaporation, dissolution, and biodegradation). The range of C2-dibenzothiophenes/C2-phenathrenes ratios was very tight at 1.14-1.20. Similarly, the C3-dibenzothiophenes/C3-phenanthrenes ratio range was also tight, 1.49-1.66. The consistent values of these ratios indicate that the petroleum in these sheens originated from the same source.

4.0 Forensic Evaluation Conclusion

Evaluation of TPH and PAH compositional characteristics of the 4 sheen samples indicate that the content of all the sheen samples is determined to be petroleum-based, specifically a lubrication type heavy oil. In EB-14 and EB-15 there are trace amounts of pyrogenic-source PAHs that contribute negligibly to the hydrocarbon content of the sheen samples. Also, the similarity in PAH diagnostic ratio values of the samples show that the petroleum in all samples originated from a common source.

References

- Sauer, T.C., and A.D. Uhler. 1995. Pollutant source identification and allocation: Advances in hydrocarbon fingerprinting. *Remediation* 5(1): 25-50.
- Stout, S.A., A.D. Uhler, K.J. McCarthy, and S. Emsbo-Mattingly. 2002. Chemical fingerprinting of hydrocarbons. In: *Introduction to Environmental Forensics*, 1st Edition. Eds. B.L. Murphy and R.D. Morrison. Academic Press, London, pp. 137-260.

Table C-1
PAH and TPH Concentrations and Diagnostic Ratio Values
For Sheen Samples Collected on August 29, 2013
National Grid Hudson (Water St) Site

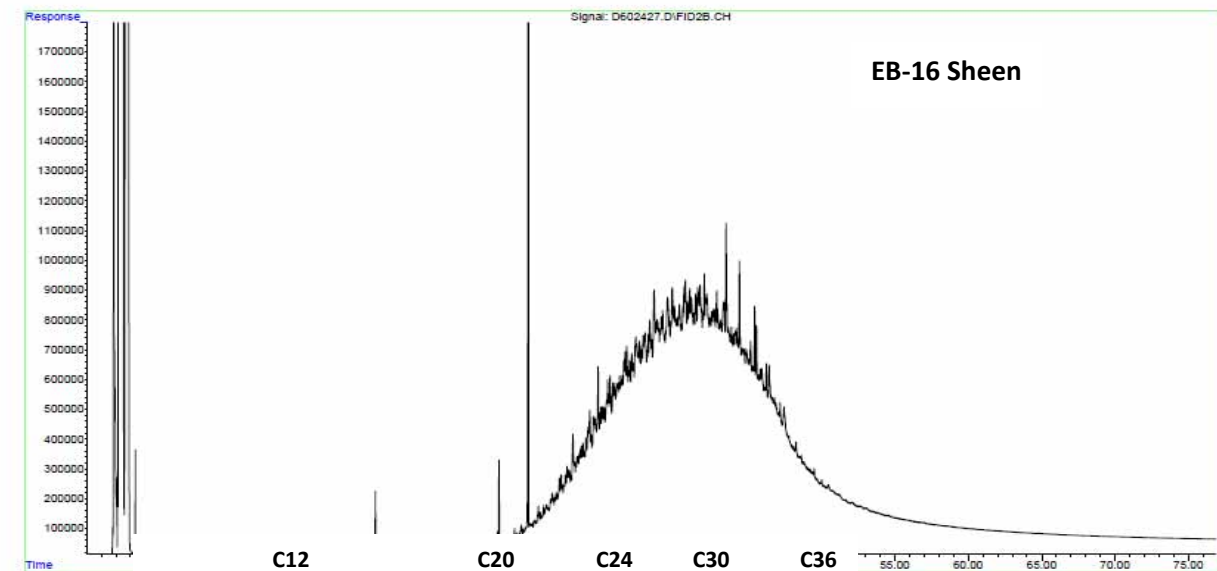
Sample ID	EB-14 SHEEN		EB-15 SHEEN		EB-15 Dup DUP-1-SHEEN		EB-16 SHEEN		EB-17 SHEEN	
Lab ID	L1316940-01		L1316940-02		L1316940-03		L1316940-04		L1316940-05	
Collection Date	8/29/2013		8/29/2013		8/29/2013		8/29/2013		8/29/2013	
Date Received	8/30/2013		8/30/2013		8/30/2013		8/30/2013		8/30/2013	
Date Analyzed	9/6/2013		9/6/2013		9/6/2013		9/6/2013		9/6/2013	
Reporting Limit	2.03		57.7		11		3		3.08	
Units	mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil	
Cis/Trans-Decalin	0	U	0	U	0	U	0	U	0	U
C1-Decalins	1.96	J	0	U	9.53	J	0	U	0	U
C2-Decalins	2.53		0	U	0	U	0	U	0	U
C3-Decalins	0	U	0	U	0	U	0	U	0	U
C4-Decalins	0	U	0	U	0	U	0	U	0	U
Naphthalene	2.08		0	U	13.5		0	U	0	U
C1-Naphthalenes	2.76		0	U	13.6		2.71	J	2.33	J
C2-Naphthalenes	5.54		35	J	15.1		8.02		7.84	
C3-Naphthalenes	5.44		28	J	12.2		7.97		8.6	
C4-Naphthalenes	5.56		0	U	11.6		7.84		8.06	
Biphenyl	0.832	J	0	U	3.67	J	0	U	0	U
Carbazole	0	U	0	U	0	U	0	U	0	U
Dibenzofuran	3.9		0	U	25.7		0	U	0	U
Acenaphthylene	0	U	0	U	0	U	0	U	0	U
Acenaphthene	1.14	J	0	U	7.3	J	0	U	0	U
Fluorene	1.73	J	0	U	10.7	J	0	U	0	U
C1-Fluorenes	2.39		0	U	6.3	J	2.35	J	2.67	J
C2-Fluorenes	7.72		0	U	18.3		11.5		12.1	
C3-Fluorenes	18.8		0	U	43.2		25.7		30.1	
Anthracene	0.792	J	0	U	4.62	J	0	U	0	U
Phenanthrene	15.2		27.8	J	108		2.44	J	2.61	J
C1-Phenanthrenes/Anthracenes	8.62		30.5	J	30.2		9.95		11.3	
C2-Phenanthrenes/Anthracenes	16.4		44.6	J	28.7		24.4		26.4	
C3-Phenanthrenes/Anthracenes	18.9		34.1	J	28		29.1		32.3	
C4-Phenanthrenes/Anthracenes	19.5		0	U	0	U	30.6		34.5	
Dibenzothiophene	1.09	J	0	U	6.84	J	0	U	0	U
C1-Dibenzothiophenes	3.91		0	U	6.74	J	5.35		6.15	
C2-Dibenzothiophenes	19.5		0	U	32.6		29.4		31.8	
C3-Dibenzothiophenes	30.8		0	U	41.7		48.4		53	
C4-Dibenzothiophenes	24.6		0	U	31.8		40		41.8	
Fluoranthene	1.69	J	0	U	14.4		0	U	0	U
Pyrene	1.61	J	0	U	7.4	J	1.85	J	2.11	J
C1-Fluoranthenes/Pyrenes	6.6		23.2	J	11.5		10.4		11.2	
C2-Fluoranthenes/Pyrenes	8.24		0	U	0	U	11.2		12.7	
C3-Fluoranthenes/Pyrenes	0	U	0	U	0	U	0	U	0	U
C4-Fluoranthenes/Pyrenes	0	U	0	U	0	U	0	U	0	U
Benzo(b)fluorene	0	U	0	U	0	U	0	U	0	U
Naphthobenzothiophene	0	U	0	U	0	U	0	U	0	U
C1-Naphthobenzothiophenes	5.35		0	U	0	U	6.98		7.51	
C2-Naphthobenzothiophenes	10.2		0	U	0	U	12.6		15.5	
C3-Naphthobenzothiophenes	9.27		0	U	0	U	10.5		13.2	
C4-Naphthobenzothiophenes	0	U	0	U	0	U	0	U	0	U
Benz(a)anthracene	0	U	0	U	0	U	0	U	0	U
Chrysene/Triphenylene	0.757	J	0	U	0	U	1.08	J	1.05	J
C1-Chrysenes	2.39		0	U	0	U	3.36		4.16	
C2-Chrysenes	4.83		0	U	0	U	8.9		9.43	
C3-Chrysenes	0	U	0	U	0	U	0	U	0	U
C4-Chrysenes	0	U	0	U	0	U	0	U	0	U
Benzo(b)fluoranthene	0	U	0	U	0	U	0	U	0	U
Benzo(j)+(k)Fluoranthene	0	U	0	U	0	U	0	U	0	U
Benzo(a)fluoranthene	0	U	0	U	0	U	0	U	0	U
Benzo(e)Pyrene	0.907	J	0	U	0	U	1.38	J	1.53	J
Benzo(a)pyrene	0	U	0	U	0	U	0	U	0	U
Perylene	0.752	J	0	U	0	U	1.26	J	1.12	J
Indeno(1,2,3-cd)Pyrene	0	U	0	U	0	U	0	U	0	U
Dibenz(a,h)+(a,c)anthracene	2.03	U	0	U	0	U	0	U	0	U
Benzo(ghi)perylene	1.18	J	0	U	0	U	1.94	J	2.17	J
2-Methylnaphthalene	2.6		0	U	13		2.44	J	1.68	J
1-Methylnaphthalene	1.41	J	0	U	5.53	J	1.33	J	1.36	J
2,6-Dimethylnaphthalene	2.55		0	U	6.26	J	3.49		3.83	
2,3,5-Trimethylnaphthalene	0.724	J	0	U	2.01	J	0.721	J	1	J
4-Methyldibenzothiophene(4MDT)	2.17		0	U	4.19	J	3.05		3.17	
2/3-Methyldibenzothiophene(2MDT)	0	U	0	U	0	U	0	U	0	U
1-Methyldibenzothiophene(1MDT)	0.792	J	0	U	0	U	1.11	J	1.25	J
3-Methylphenanthrene (3MP)	1.96	J	0	U	7.43	J	1.9	J	2.12	J
2-Methylphenanthrene (2MP)	2.3		0	U	9.97	J	2.3	J	2.53	J
2-Methylantracene (2MA)	0	U	0	U	0	U	0	U	0	U
9/4-Methylphenanthrene (9MP)	1.97	J	0	U	4.4	J	2.49	J	2.44	J
1-Methylphenanthrene (1MP)	1.23	J	0	U	4.82	J	1.59	J	1.64	J
Retene	0	U	0	U	11	U	0	U	0	U

Table C-1
PAH and TPH Concentrations and Diagnostic Ratio Values
For Sheen Samples Collected on August 29, 2013
National Grid Hudson (Water St) Site

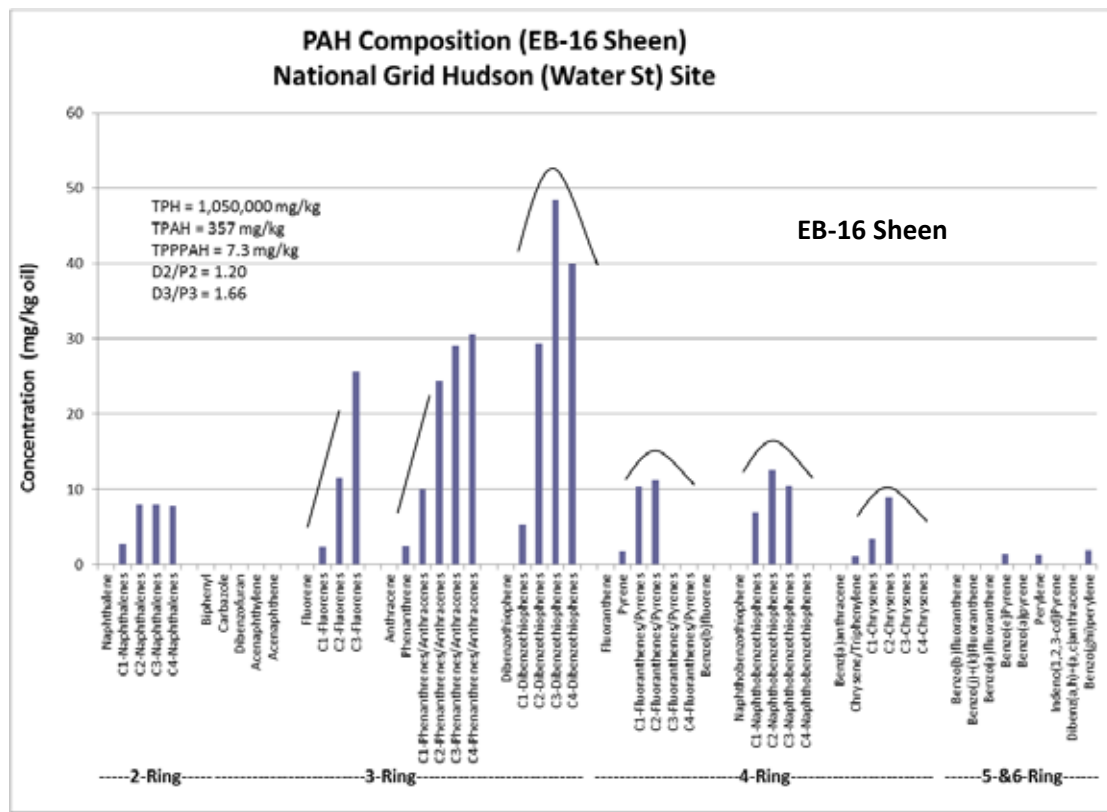
Sample ID	EB-14 SHEEN		EB-15 SHEEN		EB-15 Dup DUP-1-SHEEN		EB-16 SHEEN		EB-17 SHEEN	
Lab ID	L1316940-01		L1316940-02		L1316940-03		L1316940-04		L1316940-05	
Collection Date	8/29/2013		8/29/2013		8/29/2013		8/29/2013		8/29/2013	
Date Received	8/30/2013		8/30/2013		8/30/2013		8/30/2013		8/30/2013	
Date Analyzed	9/6/2013		9/6/2013		9/6/2013		9/6/2013		9/6/2013	
Reporting Limit	2.03		57.7		11		3		3.08	
Units	mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil	
Benzothiophene	0	U	0	U	0	U	0	U	0	U
C1-Benzo(b)thiophenes	0	U	0	U	0	U	0	U	0	U
C2-Benzo(b)thiophenes	0	U	0	U	0	U	0	U	0	U
C3-Benzo(b)thiophenes	0	U	0	U	0	U	0	U	0	U
C4-Benzo(b)thiophenes	0	U	0	U	0	U	0	U	0	U
Total Petroleum Hydrocarbons (C9-C44)	634,000		513,000		837,000		1,050,000		1,150,000	
Total PAHs (mg/kg)	273.0		223.2		533.7		357.2		393.2	
Total PPPAHs (mg/kg)	28.2		27.8		165.9		7.3		7.9	
Percent TPPAHs/TPAH	10.3		12.5		31.1		2.0		2.0	
Percent PAHs	0.04		0.04		0.06		0.03		0.03	
BaP Eq	0.70		0.00		0.00		0.01		0.01	
Source Summary	Weathered heavy oil identical to EB-16 and EB-17		Sample content too diluted by lab to suggest content		Weathered heavy oil probably the same as EB-14, EB-16 and EB-17		Weathered heavy oil identical to EB-14 and EB-17		Weathered heavy oil identical to EB-14 and EB-16	
PAH Pattern	Heavy petroleum signature with dominant 3- and 4-ring alkyl groups. Dominant dibenzothiophenes. Small presence of parent pyrogenic-associated PAHs, particularly phenanthrene. Petroleum PAHs nearly identical to EB-16 and EB-17.		High reporting limit (25x normal) due to sample dilution caused non-detects for almost all PAHs		High reporting limits (11x normal) caused non-detects of 4-ring PAHs. Signature of the 2- and 3-ring PAHs similar to EB-14 with presence of parent pyrogenic-associated PAHs, particularly phenanthrene.		Heavy petroleum signature with dominant 3- and 4-ring alkyl groups. Dominant dibenzothiophenes. Negligible parent pyrogenic-associated PAHs. No coal tar PAHs. Nearly identical to EB-14, but identical to EB-17.		Heavy petroleum signature with dominant 3- and 4-ring alkyl groups. Dominant dibenzothiophenes. Negligible parent pyrogenic-associated PAHs. No coal tar PAHs. Nearly identical to EB-14, but identical to EB-16.	
GC Pattern	Large Gaussian-shaped UCM with small peaks in the C20 to C36+ carbon range. Nearly identical to EB-15 Dup, -16 and -17		A number of peaks along GC baseline. No UCM. Too much dilution of sample resulting unrecognizable pattern. Not the same characteristics as EB-15 Duplicate.		Large Gaussian-shaped UCM with small peaks in the C20 to C36+ carbon range. Nearly identical to EB-14, -16 and -17		Large Gaussian-shaped UCM with small peaks in the C20 to C36+ carbon range. Nearly identical to EB-14, -15 Dup and -17		Large Gaussian-shaped UCM with small peaks in the C20 to C36+ carbon range. Nearly identical to EB-14, -15 Dup and -16	
D2/P2	1.19		0.00		1.14		1.20		1.20	
D3/P3	1.63		0.00		1.49		1.66		1.64	

Figure C-1. TPH GC Fingerprint and PAH Composition Representative of Sheen Samples

File : O:\Forensics\Data\FID6\2013\SRPT2013\SRPT04.SRC\D602427.D
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 Instrument : FID6
 Sample : L1316940-04.42
 Misc Info : WG634334, WG633412, ICAL7976
 ALS Vial : 70



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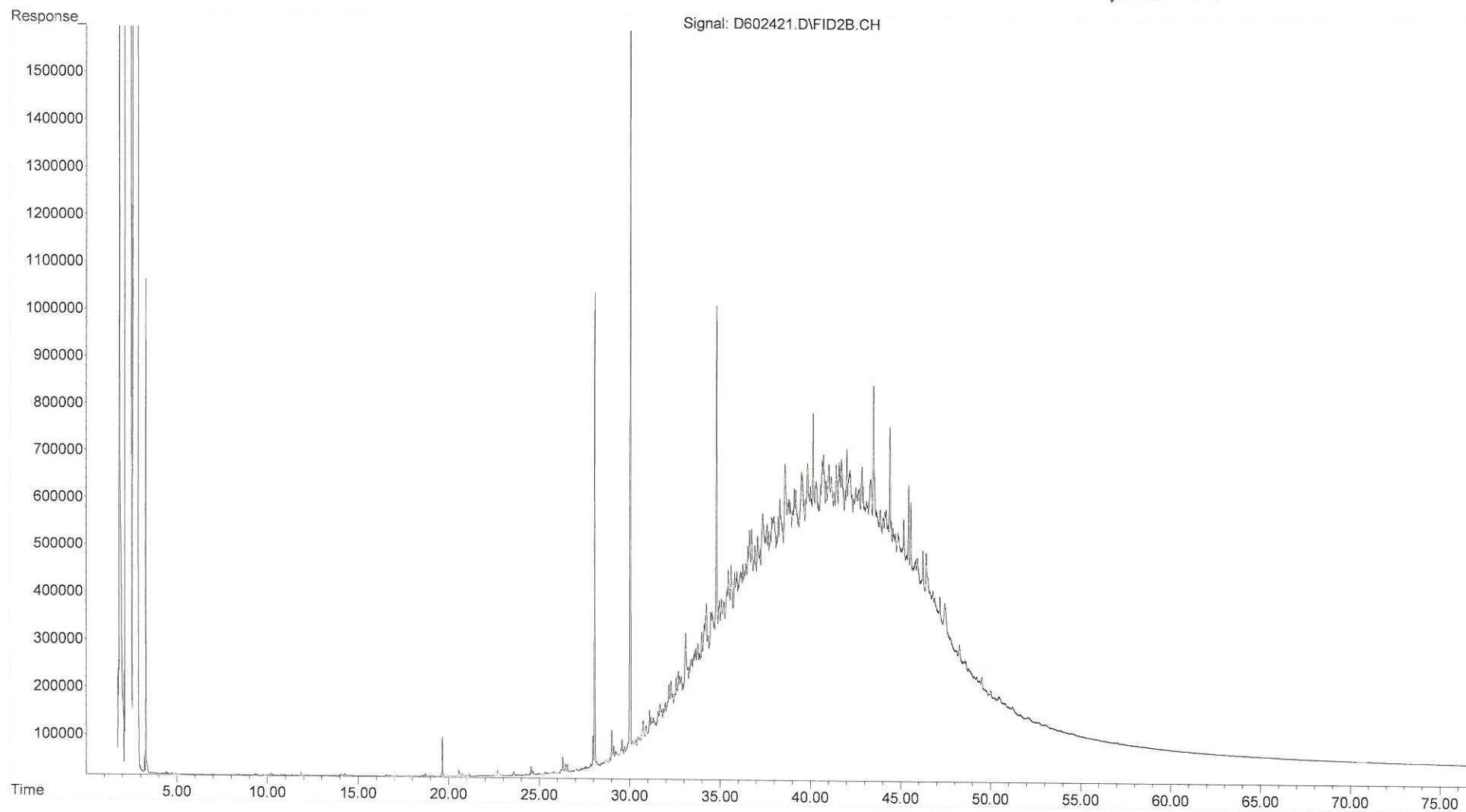




Attachment A

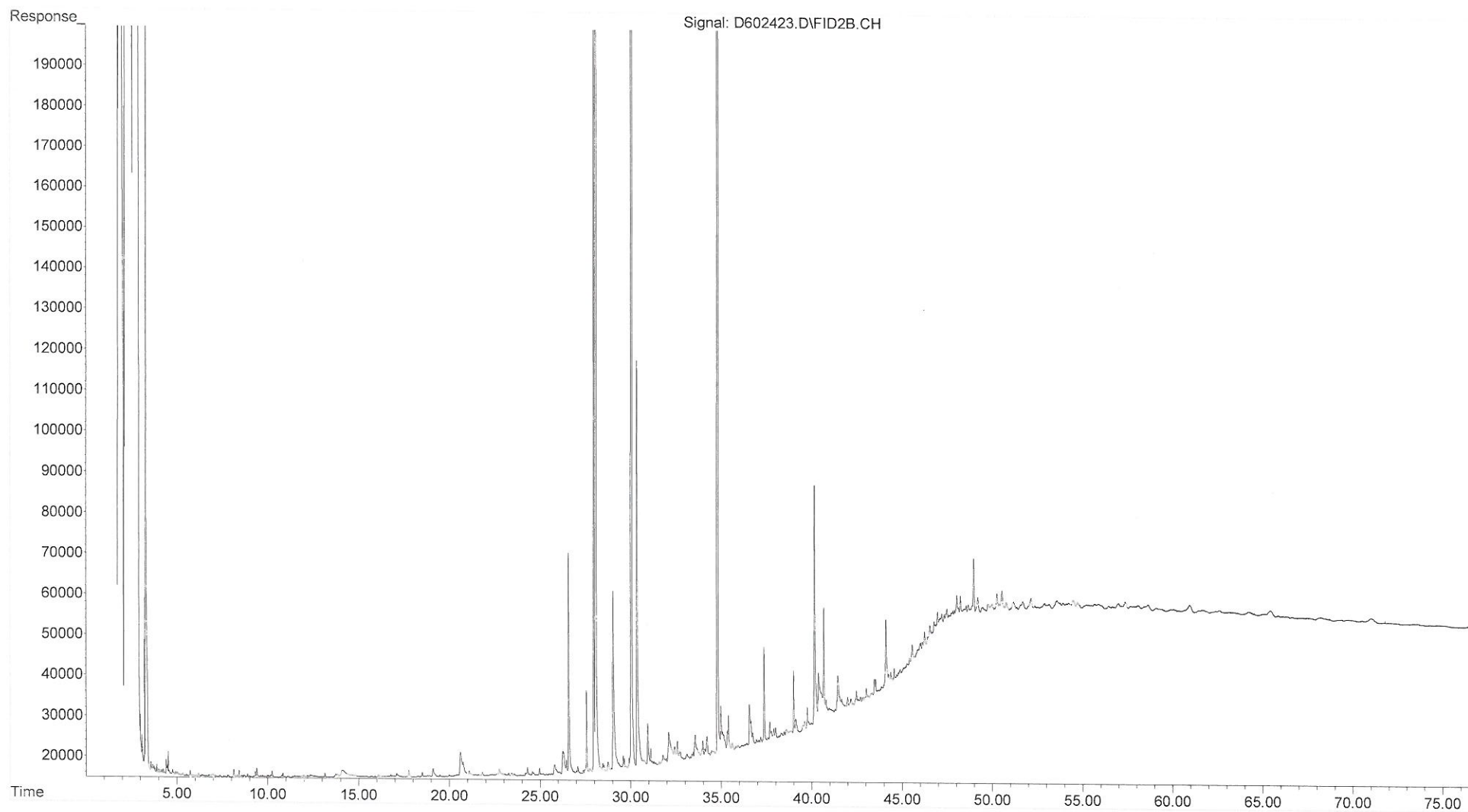
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ALS Vial : 67

EB-14

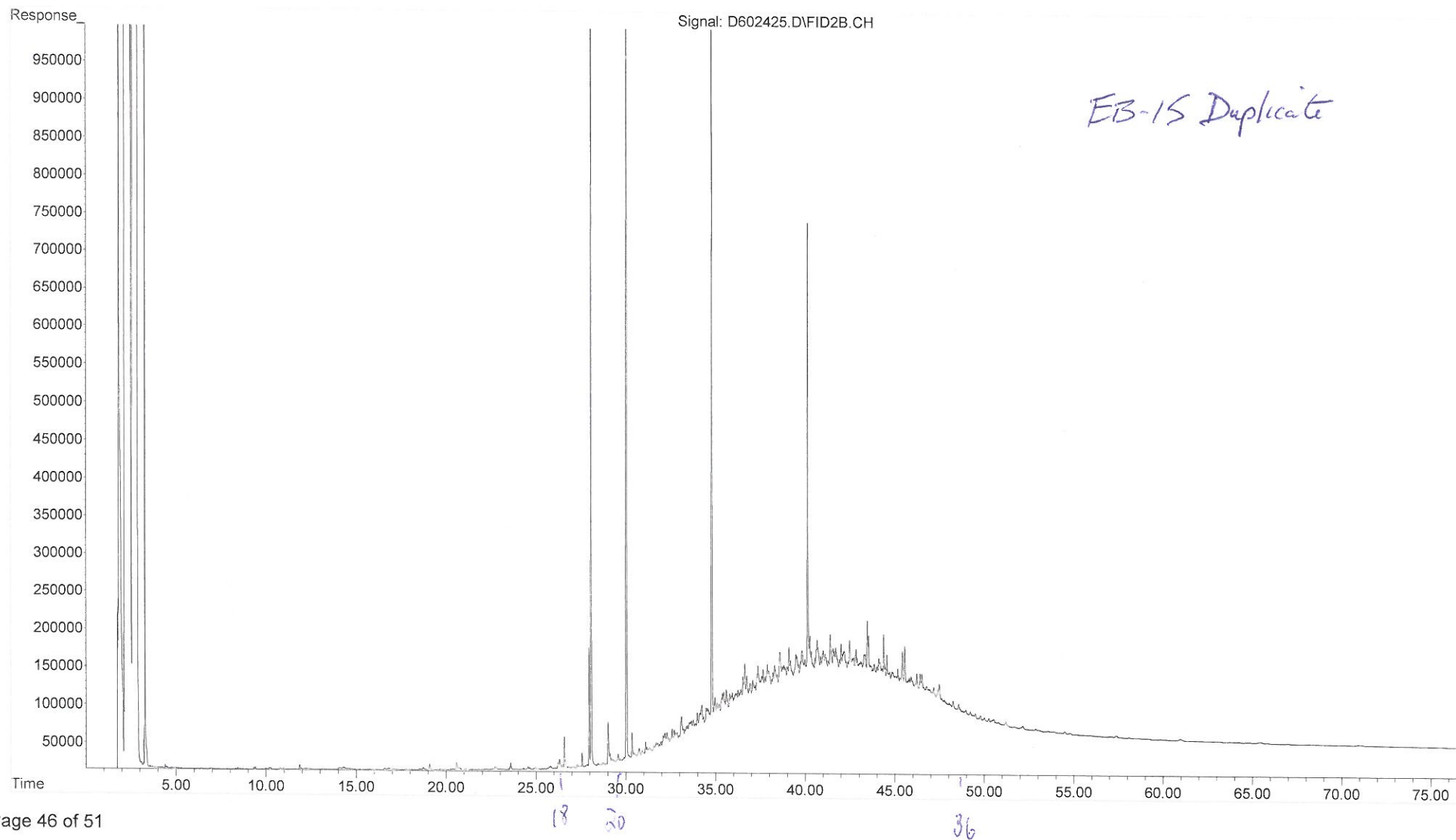


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Instrument : FID6
Sample : L1316940-02,42
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ALS Vial : 68

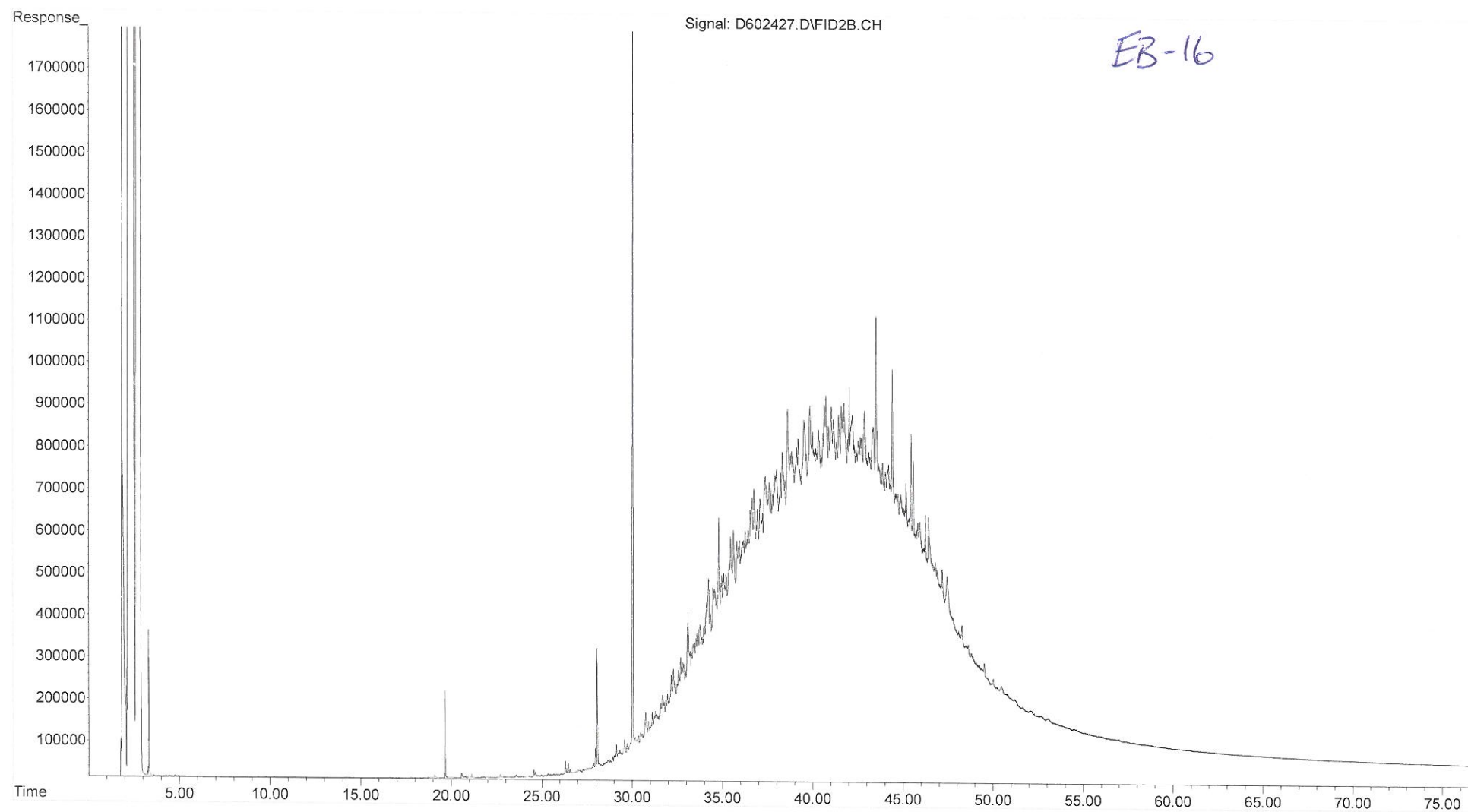
EB-15



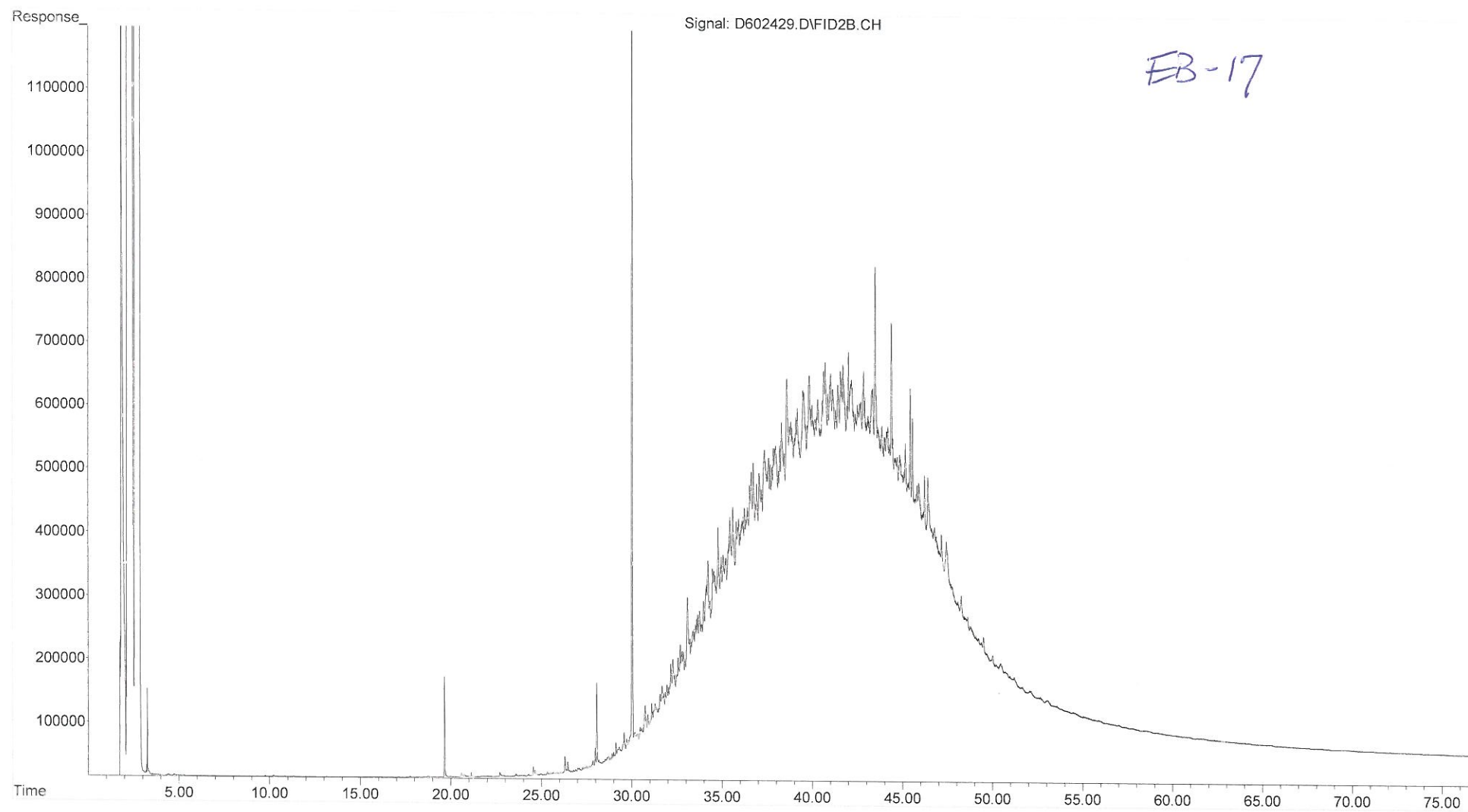
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Instrument : FID6
Sample : L1316940-03,42
Misc Info : WG634334, WG633412, ICAL7976
ALS Vial : 69



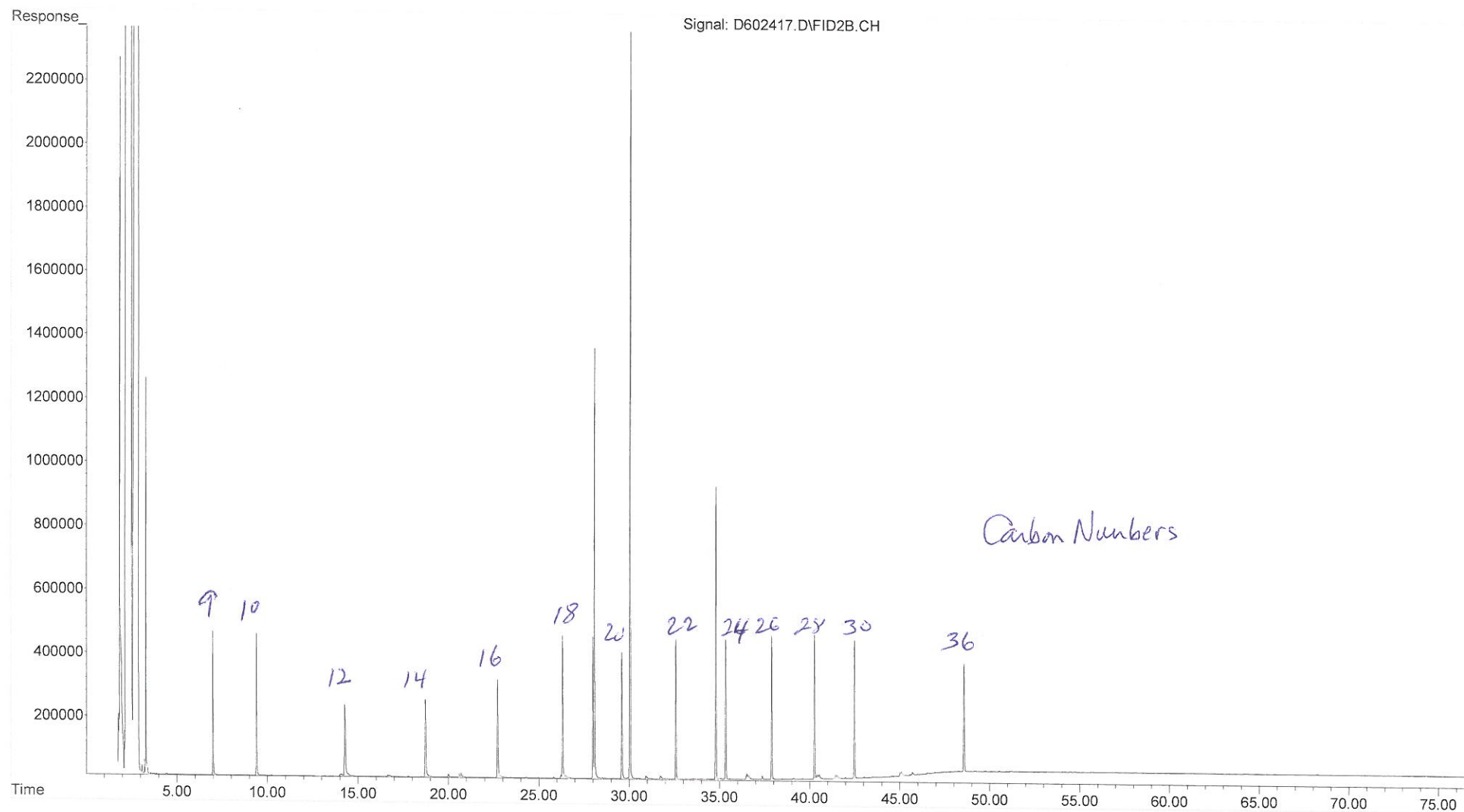
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Operator : FID6:JT
Acquired : 05 Sep 2013 2:18 pm using AcqMethod FID6A.M
Instrument : FID6
Sample : L1316940-04,42
Misc Info : WG634334,WG633412,ICAL7976
ALS Vial : 70



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Instrument : FID6
Sample : L1316940-05,42
Misc Info : WG634334,WG633412,ICAL7976
ALS Vial : 71



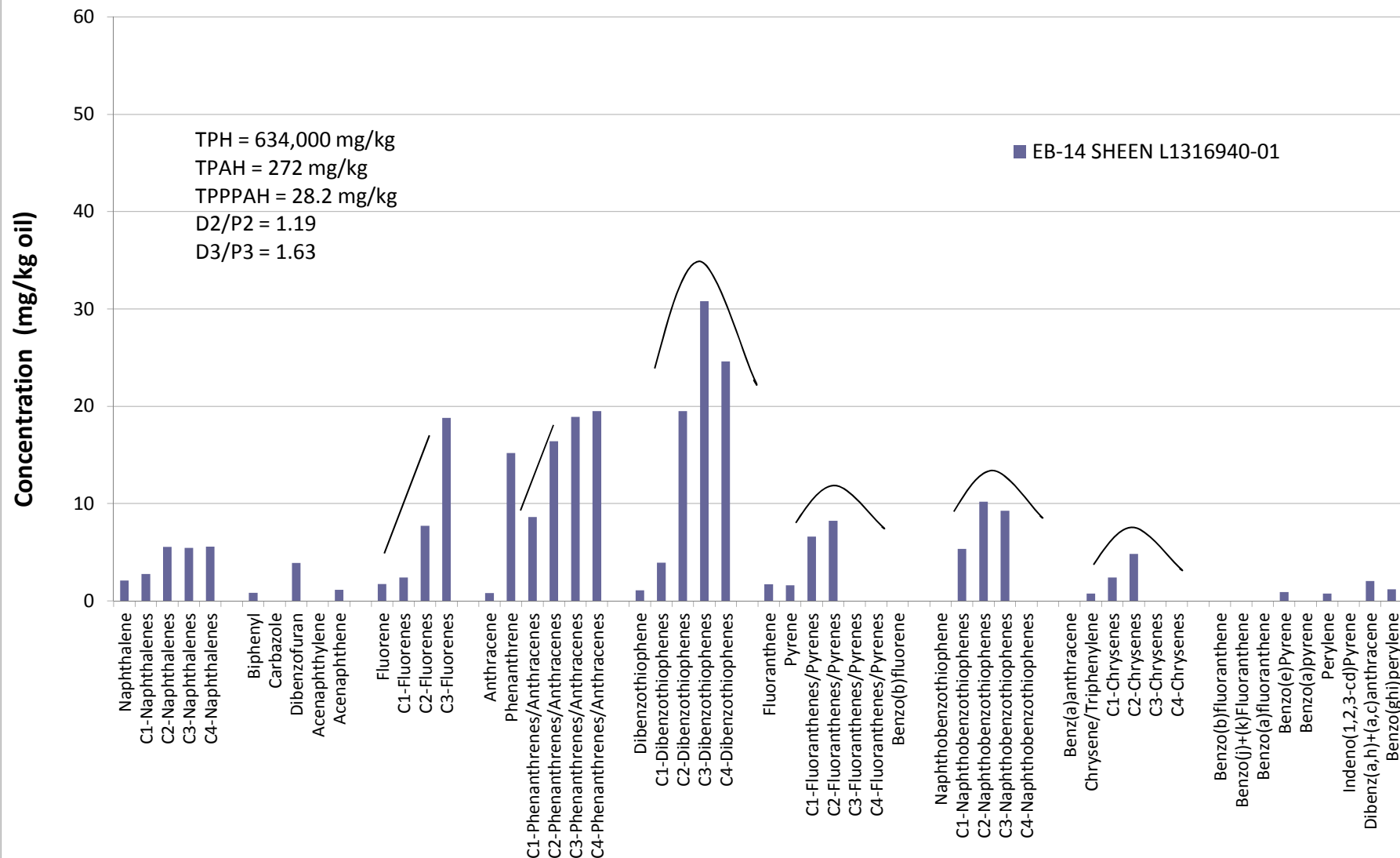
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Sample : WG633412-2,42
Misc Info : WG634334,WG633412
ALS Vial : 65



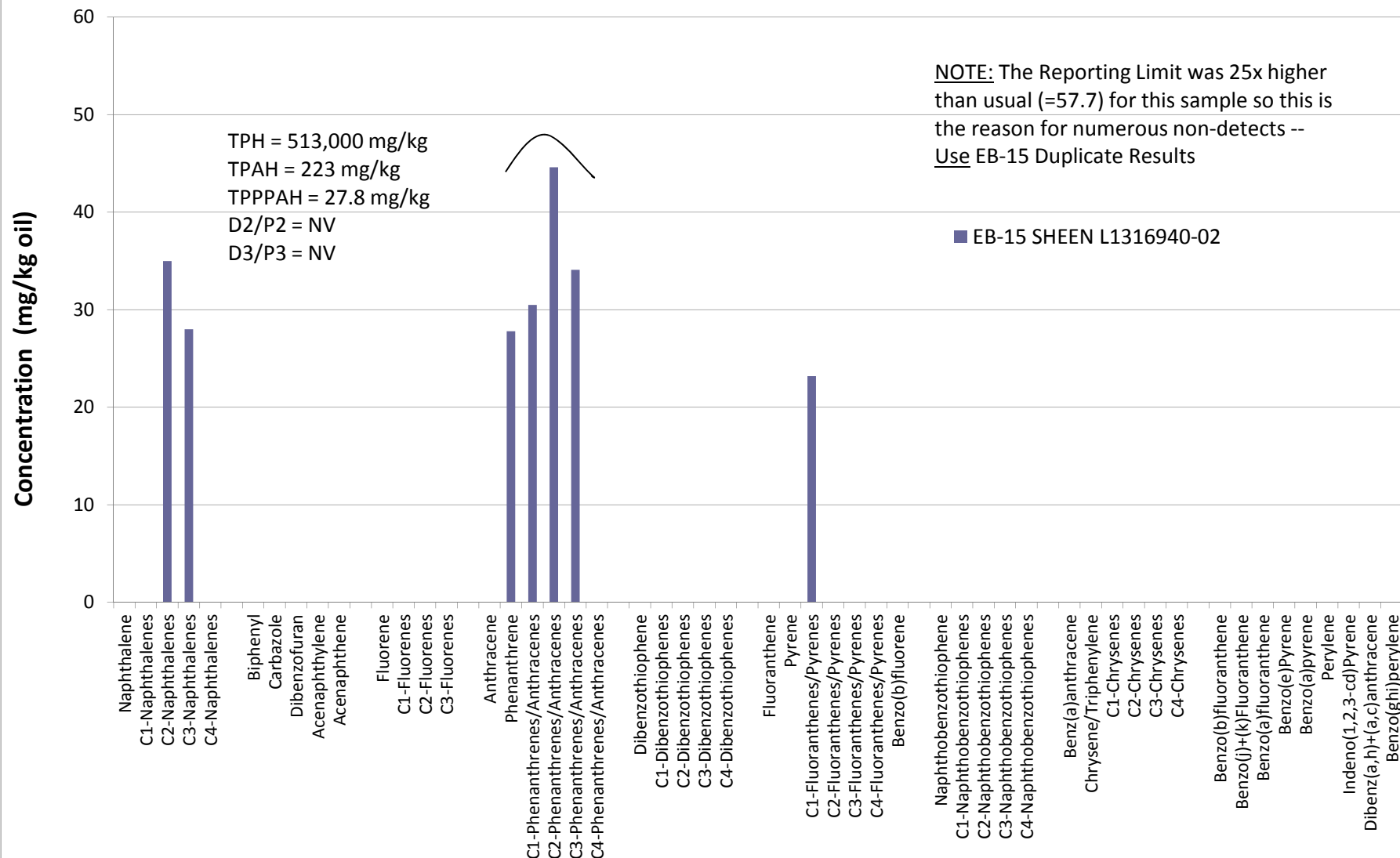


Attachment B

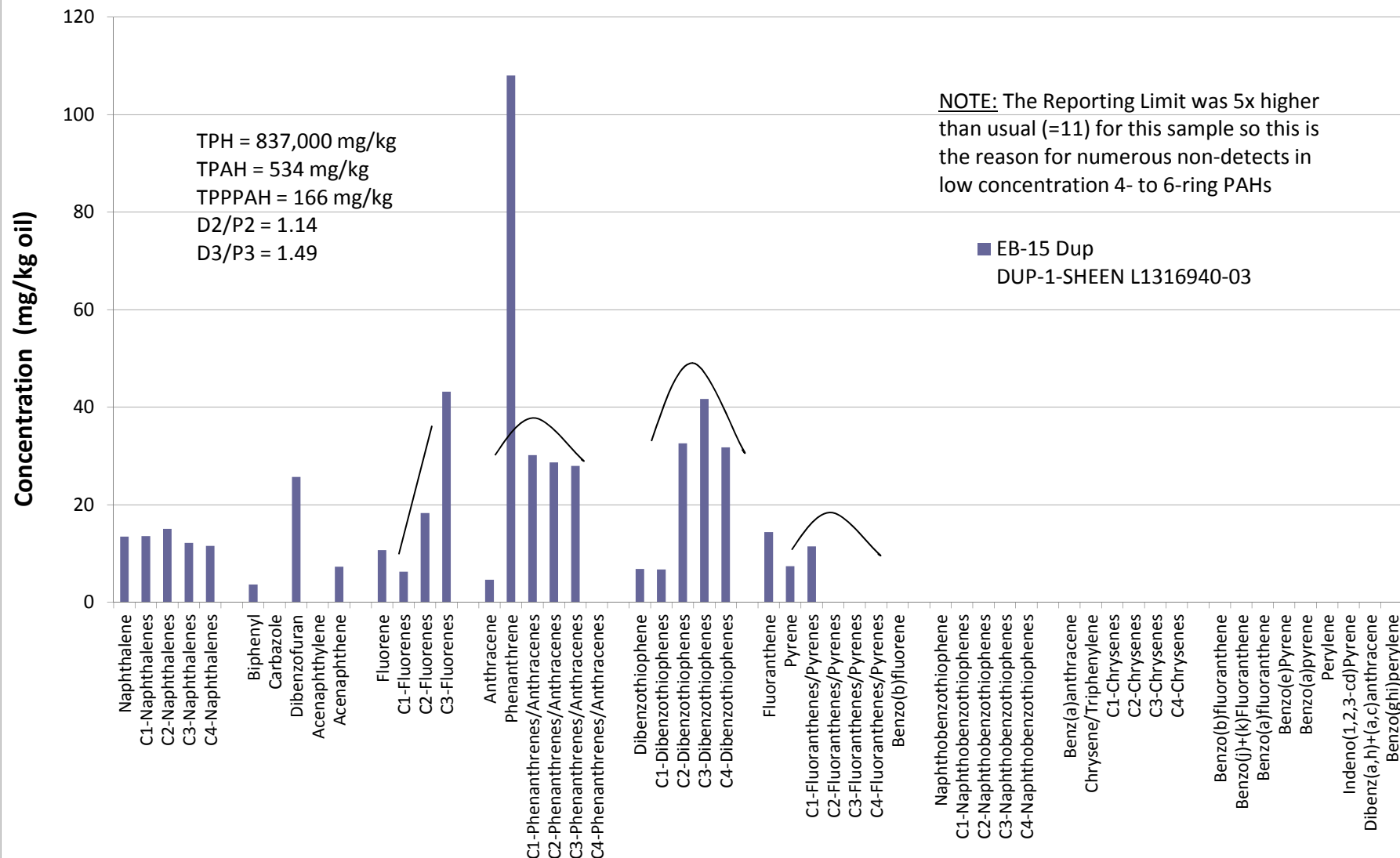
PAH Composition (EB-14 Sheen) National Grid Hudson (Water St) Site



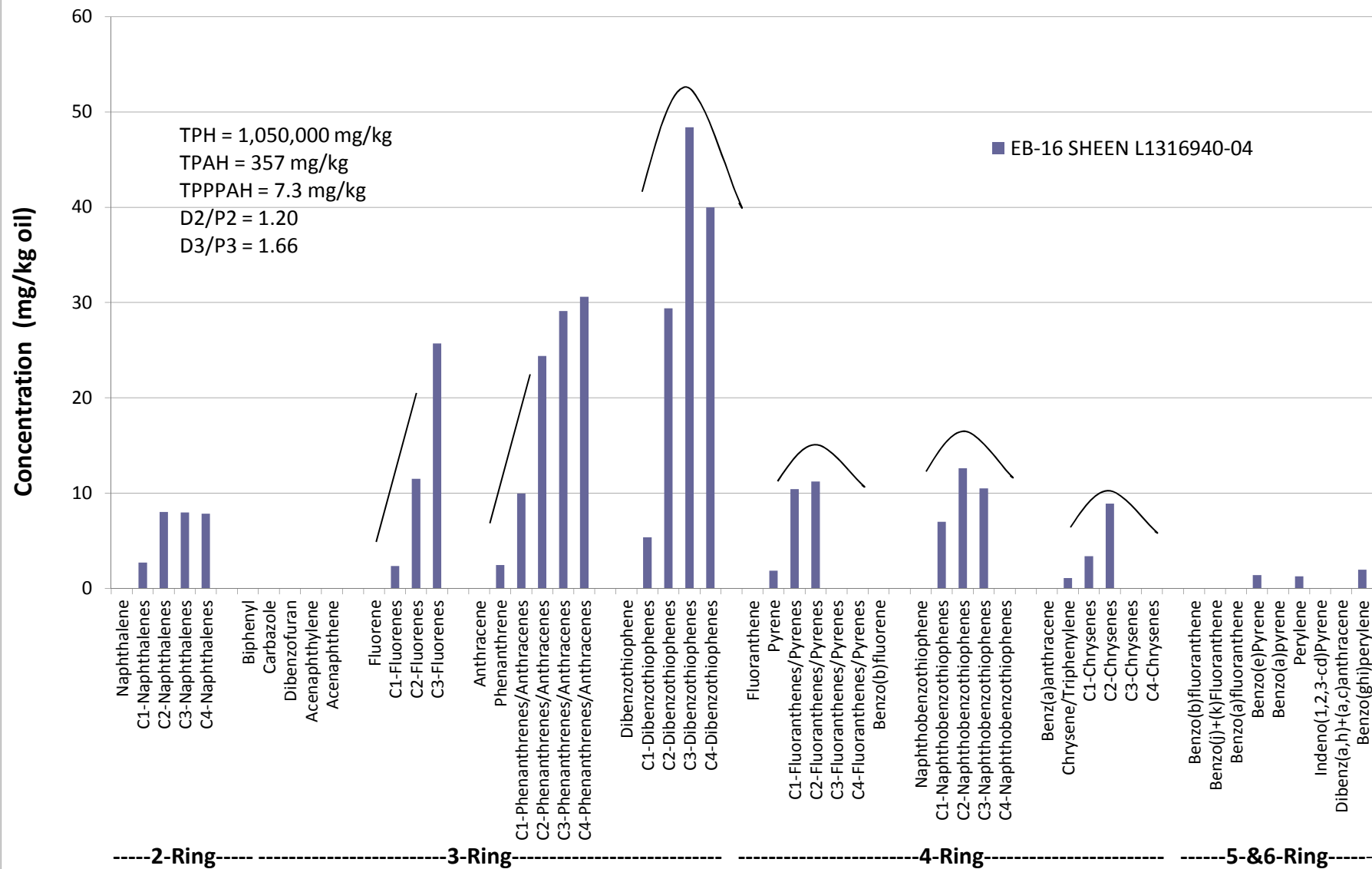
PAH Composition (EB-15 Sheen) National Grid Hudson (Water St) Site



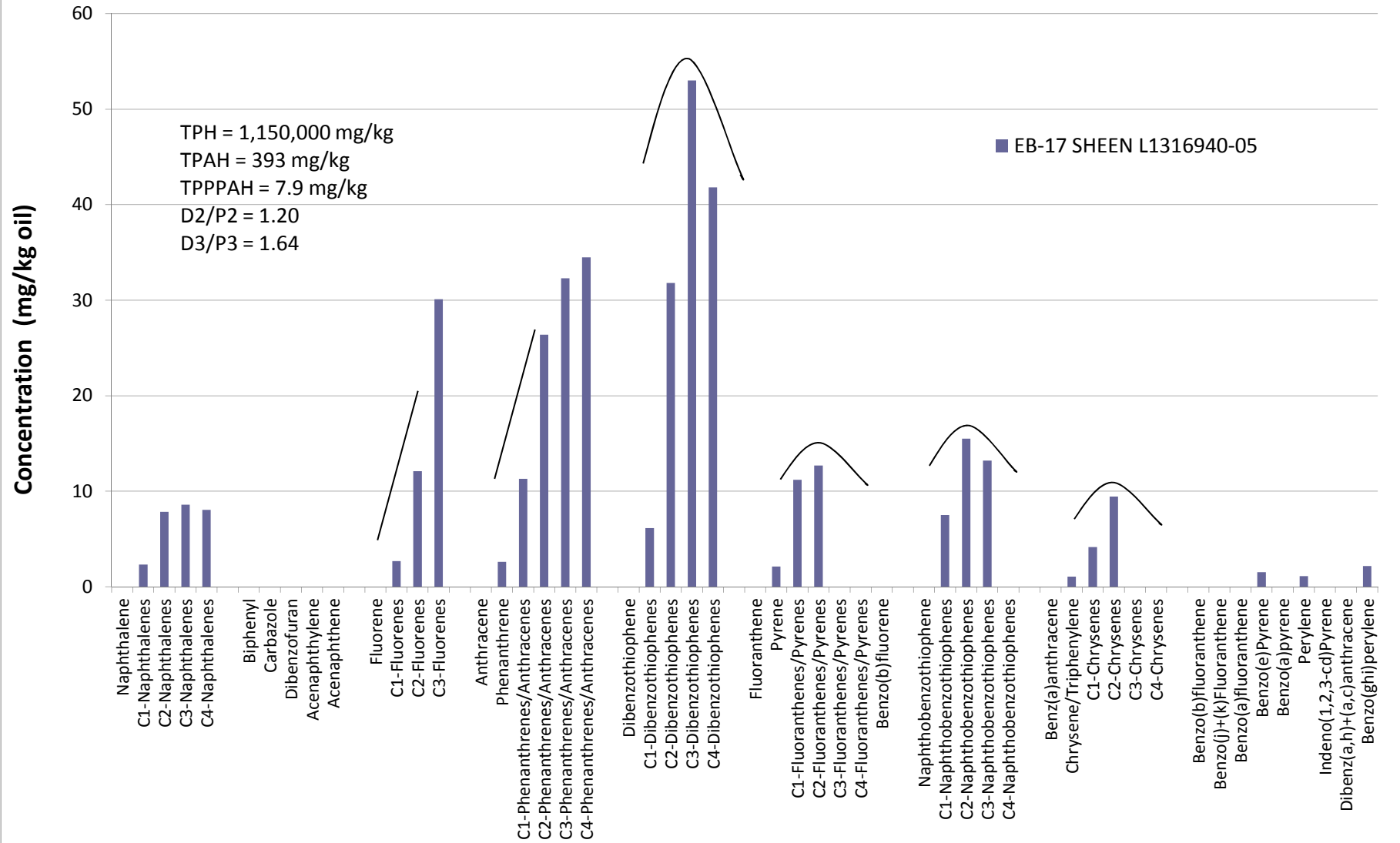
PAH Composition (EB-15 Sheen Dup) National Grid Hudson (Water St) Site



PAH Composition (EB-16 Sheen) National Grid Hudson (Water St) Site



PAH Composition (EB-17 Sheen) National Grid Hudson (Water St) Site





Appendix D

Results of Waste Characterization
Analysis

Table D-1
Summary of Waste Characterization Analysis

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site

Location ID: Date Collected:	Units	WC-NORTH 09/09/13	WC-SOUTH 09/09/13
PCBs			
PCB-1016	mg/kg	0.042 U	0.040 U
PCB-1221	mg/kg	0.042 U	0.040 U
PCB-1232	mg/kg	0.042 U	0.040 U
PCB-1242	mg/kg	0.042 U	0.040 U
PCB-1248	mg/kg	0.042 U	0.040 U
PCB-1254	mg/kg	0.042 U	0.040 U
PCB-1260	mg/kg	0.042 U	0.040 U
Miscellaneous			
Cyanide	mg/kg	< 0.15	< 0.14
Heat Content	BTU/lb	988	1220
Solids, percent	%	76.7	79.3
Sulfur, percent	%	< 0.10	0.20
Volatile Organic Compounds			
1,1-Dichloroethane	mg/kg	0.740 U	0.150 U
1,2-Dichloroethane	mg/kg	0.740 U	0.150 U
1,1-Dichloroethene	mg/kg	0.740 U	0.150 U
cis-1,2-Dichloroethene	mg/kg	0.740 U	0.150 U
trans-1,2-Dichloroethene	mg/kg	0.740 U	0.150 U
1,2-Dichloropropane	mg/kg	0.740 U	0.150 U
cis-1,3-Dichloropropene	mg/kg	0.740 U	0.150 U
trans-1,3-Dichloropropene	mg/kg	0.740 U	0.150 U
1,1,2,2-Tetrachloroethane	mg/kg	0.740 U	0.150 U
1,1,1-Trichloroethane	mg/kg	0.740 U	0.150 U
1,1,2-Trichloroethane	mg/kg	0.740 U	0.150 U
2-Butanone	mg/kg	1.80 U	0.370 U
2-Hexanone	mg/kg	1.80 U	0.370 U
4-Methyl-2-pentanone	mg/kg	1.80 U	0.370 U
Acetone	mg/kg	3.70 U	0.750 U
Benzene	mg/kg	0.534	0.037 U
Bromodichloromethane	mg/kg	0.740 U	0.150 U
Bromoform	mg/kg	0.740 U	0.150 U
Bromomethane	mg/kg	0.740 U	0.150 U
Carbon disulfide	mg/kg	1.80 U	0.370 U
Carbon Tetrachloride	mg/kg	0.740 U	0.150 U
Chlorobenzene	mg/kg	0.740 U	0.150 U
Chloroethane	mg/kg	1.80 U	0.370 U
Chloroform	mg/kg	0.740 U	0.150 U
Chloromethane	mg/kg	1.80 U	0.370 U
Dibromochloromethane	mg/kg	0.740 U	0.150 U
Ethylbenzene	mg/kg	6.85	0.150 U
Methylene chloride	mg/kg	0.740 U	0.150 U
Styrene	mg/kg	1.80 U	0.370 U
Tetrachloroethene	mg/kg	0.740 U	0.150 U
Toluene	mg/kg	1.80 U	0.370 U
Trichloroethene	mg/kg	0.740 U	0.150 U
TPH-GRO	mg/kg	7.1 U	7.2 U
Vinyl chloride	mg/kg	0.740 U	0.150 U
Xylene	mg/kg	5.44	0.150 U

Table D-1
Summary of Waste Characterization Analysis

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site

Location ID: Date Collected:	Units	WC-NORTH 09/09/13	WC-SOUTH 09/09/13
Semi-Volatile Organic Compounds			
1,2-Dichlorobenzene	mg/kg	1.60 U	0.300 U
1,2,4-Trichlorobenzene	mg/kg	1.60 U	0.300 U
1,3-Dichlorobenzene	mg/kg	1.60 U	0.300 U
1,4-Dichlorobenzene	mg/kg	1.60 U	0.300 U
bis (2-Chloroethoxy) methane	mg/kg	1.60 U	0.300 U
bis (2-Chloroethyl) ether	mg/kg	1.60 U	0.300 U
bis (2-Chloroisopropyl) ether	mg/kg	1.60 U	0.300 U
2-Chloronaphthalene	mg/kg	1.60 U	0.300 U
2-Chlorophenol	mg/kg	1.60 U	0.300 U
bis (2-Ethylhexyl) phthalate	mg/kg	1.60 U	0.300 U
2-Methylnaphthalene	mg/kg	34.6	0.120 U
2-Methylphenol	mg/kg	3.20 U	0.600 U
2-Nitroaniline	mg/kg	3.20 U	0.600 U
2-Nitrophenol	mg/kg	3.20 U	0.600 U
2,4-Dichlorophenol	mg/kg	3.20 U	0.600 U
2,4-Dimethylphenol	mg/kg	3.20 U	0.600 U
2,4-Dinitrophenol	mg/kg	6.30 U	1.20 U
2,4-Dinitrotoluene	mg/kg	3.20 U	0.600 U
2,4,5-Trichlorophenol	mg/kg	3.20 U	0.600 U
2,4,6-Trichlorophenol	mg/kg	3.20 U	0.600 U
2,6-Dinitrotoluene	mg/kg	3.20 U	0.600 U
3-Nitroaniline	mg/kg	3.20 U	0.600 U
3,3'-Dichlorobenzidine	mg/kg	1.60 U	0.300 U
3&4-Methylphenol	mg/kg	3.20 U	0.600 U
4-Bromophenyl phenyl ether	mg/kg	1.60 U	0.300 U
4-Chloro-3-methyl phenol	mg/kg	3.20 U	0.600 U
4-Chloroaniline	mg/kg	3.20 U	0.600 U
4-Chlorophenyl phenyl ether	mg/kg	1.60 U	0.300 U
4-Nitroaniline	mg/kg	3.20 U	0.600 U
4-Nitrophenol	mg/kg	6.30 U	1.20 U
4,6-Dinitro-o-cresol	mg/kg	3.20 U	0.600 U
Acenaphthene	mg/kg	26.3	0.120 U
Acenaphthylene	mg/kg	1.62	0.120 U
Anthracene	mg/kg	11.5	0.120 U
Benzo (a) anthracene	mg/kg	8.03	0.120 U
Benzo (a) pyrene	mg/kg	6.91	0.120 U
Benzo (b) fluoranthene	mg/kg	3.51	0.120 U
Benzo (g,h,i) perylene	mg/kg	3.47	0.120 U
Benzo (k) fluoranthene	mg/kg	3.16	0.120 U
Butyl benzyl phthalate	mg/kg	1.60 U	0.300 U
Carbazole	mg/kg	1.19	0.120 U
Chrysene	mg/kg	6.84	0.120 U
Dibenzo (a,h) anthracene	mg/kg	0.959	0.120 U
Dibenzofuran	mg/kg	3.15	0.120 U
Di-n-butyl phthalate	mg/kg	1.60 U	0.300 U
Di-n-octyl phthalate	mg/kg	1.60 U	0.300 U
Diethyl phthalate	mg/kg	1.60 U	0.300 U
Dimethyl phthalate	mg/kg	1.60 U	0.300 U

Table D-1
Summary of Waste Characterization Analysis

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site

Location ID: Date Collected:	Units	WC-NORTH 09/09/13	WC-SOUTH 09/09/13
Fluoranthene	mg/kg	18.8	0.170
Fluorene	mg/kg	9.51	0.120 U
Hexachlorobenzene	mg/kg	1.60 U	0.300 U
Hexachlorobutadiene	mg/kg	1.60 U	0.300 U
Hexachlorocyclopentadiene	mg/kg	3.20 U	0.600 U
Hexachloroethane	mg/kg	1.60 U	0.300 U
Indeno (1,2,3-cd) pyrene	mg/kg	2.63	0.120 U
Isophorone	mg/kg	1.60 U	0.300 U
Naphthalene	mg/kg	52.8	0.120 U
Nitrobenzene	mg/kg	1.60 U	0.300 U
N-Nitroso-di-n-propylamine	mg/kg	1.60 U	0.300 U
N-Nitrosodiphenylamine	mg/kg	1.60 U	0.300 U
Pentachlorophenol	mg/kg	3.20 U	0.600 U
Phenanthrene	mg/kg	43.2	0.196
Phenol	mg/kg	1.60 U	0.300 U
Pyrene	mg/kg	22.5	0.145
TPH-DRO	mg/kg	1180	20 U
Inorganics			
Arsenic	mg/kg	4.0	2.4
Barium	mg/kg	52.9	19.0
Cadmium	mg/kg	< 0.33	< 0.38
Chromium	mg/kg	9.6	5.9
Lead	mg/kg	50.7	6.0
Mercury	mg/kg	0.092	0.041
Selenium	mg/kg	< 0.81	< 0.95
Silver	mg/kg	< 0.41	< 0.47

Notes:

1. Samples collected by ARCADIS on the dates indicated.
2. Samples analyzed by Accutest in Marlborough, MA and Dayton, NJ.
3. Shading indicates that the analyte was detected.
4. U - The compound was analyzed for but not detected. The associated value is the compound reporting limit.



10/08/13

Technical Report for

Arcadis

National Grid, Water Street, Hudson, NY

B0036702

Accutest Job Number: MC24291

Sampling Date: 09/09/13

Report to:

Arcadis

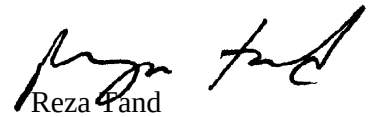
Adam.Etringer@arcadis-us.com

ATTN: Adam Etringer

Total number of pages in report: **31**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Reza Fand
Lab Director

Client Service contact: Matthew Morrell 508-481-6200

Certifications: MA (M-MA136, SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.

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Sample Summary

Arcadis

Job No: MC24291

National Grid, Water Street, Hudson, NY
Project No: B0036702

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC24291-1	09/09/13	17:00	MWE	09/12/13	SO Sediment	WC-NORTH
MC24291-2	09/09/13	17:00	MWE	09/12/13	SO Sediment	WC-SOUTH

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: MC24291
Account: Arcadis
Project: National Grid, Water Street, Hudson, NY
Collected: 09/09/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

MC24291-1 WC-NORTH

Benzene ^a	534	180		ug/kg	SW846 8260B
Ethylbenzene ^a	6850	740		ug/kg	SW846 8260B
Xylene (total) ^a	5440	740		ug/kg	SW846 8260B
Acenaphthene	26300	630		ug/kg	SW846 8270C
Acenaphthylene	1620	630		ug/kg	SW846 8270C
Anthracene	11500	630		ug/kg	SW846 8270C
Benzo(a)anthracene	8030	630		ug/kg	SW846 8270C
Benzo(a)pyrene	6910	630		ug/kg	SW846 8270C
Benzo(b)fluoranthene	3510	630		ug/kg	SW846 8270C
Benzo(g,h,i)perylene	3470	630		ug/kg	SW846 8270C
Benzo(k)fluoranthene	3160	630		ug/kg	SW846 8270C
Carbazole	1190	630		ug/kg	SW846 8270C
Chrysene	6840	630		ug/kg	SW846 8270C
Dibenzo(a,h)anthracene	959	630		ug/kg	SW846 8270C
Dibenzofuran	3150	630		ug/kg	SW846 8270C
Fluoranthene	18800	630		ug/kg	SW846 8270C
Fluorene	9510	630		ug/kg	SW846 8270C
Indeno(1,2,3-cd)pyrene	2630	630		ug/kg	SW846 8270C
2-Methylnaphthalene	34600	630		ug/kg	SW846 8270C
Naphthalene	52800	3200		ug/kg	SW846 8270C
Phenanthrene	43200	630		ug/kg	SW846 8270C
Pyrene	22500	630		ug/kg	SW846 8270C
TPH-DRO (Semi-VOA)	1180	21		mg/kg	SW846-8015
Arsenic	4.0	0.81		mg/kg	SW846 6010C
Barium	52.9	4.1		mg/kg	SW846 6010C
Chromium	9.6	0.81		mg/kg	SW846 6010C
Lead	50.7	0.81		mg/kg	SW846 6010C
Mercury	0.092	0.035		mg/kg	SW846 7471B
Heat Content, BTU ^b	988	100		BTU/lb	ASTM D240-92

MC24291-2 WC-SOUTH

Fluoranthene	170	120		ug/kg	SW846 8270C
Phenanthrene	196	120		ug/kg	SW846 8270C
Pyrene	145	120		ug/kg	SW846 8270C
Arsenic	2.4	0.95		mg/kg	SW846 6010C
Barium	19.0	4.7		mg/kg	SW846 6010C
Chromium	5.9	0.95		mg/kg	SW846 6010C
Lead	6.0	0.95		mg/kg	SW846 6010C
Mercury	0.041	0.035		mg/kg	SW846 7471B
Heat Content, BTU ^b	1220	100		BTU/lb	ASTM D240-92
Percent Sulfur ^b	0.20	0.10		%	ASTM D129-95

Summary of Hits

Job Number: MC24291
Account: Arcadis
Project: National Grid, Water Street, Hudson, NY
Collected: 09/09/13

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

- (a) Elevated RL due to sample matrix.
(b) Analysis performed at Accutest Laboratories, Dayton, NJ.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WC-NORTH	
Lab Sample ID:	MC24291-1	Date Sampled: 09/09/13
Matrix:	SO - Sediment	Date Received: 09/12/13
Method:	SW846 8260B	Percent Solids: 76.7
Project:	National Grid, Water Street, Hudson, NY	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	G131683.D	1	09/23/13	JM	n/a	n/a	MSG5115
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	11.2 g	10.0 ml	20.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	3700	ug/kg	
71-43-2	Benzene	534	180	ug/kg	
75-27-4	Bromodichloromethane	ND	740	ug/kg	
75-25-2	Bromoform	ND	740	ug/kg	
74-83-9	Bromomethane	ND	740	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1800	ug/kg	
75-15-0	Carbon disulfide	ND	1800	ug/kg	
56-23-5	Carbon tetrachloride	ND	740	ug/kg	
108-90-7	Chlorobenzene	ND	740	ug/kg	
75-00-3	Chloroethane	ND	1800	ug/kg	
67-66-3	Chloroform	ND	740	ug/kg	
74-87-3	Chloromethane	ND	1800	ug/kg	
124-48-1	Dibromochloromethane	ND	740	ug/kg	
75-34-3	1,1-Dichloroethane	ND	740	ug/kg	
107-06-2	1,2-Dichloroethane	ND	740	ug/kg	
75-35-4	1,1-Dichloroethene	ND	740	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	740	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	740	ug/kg	
78-87-5	1,2-Dichloropropane	ND	740	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	740	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	740	ug/kg	
100-41-4	Ethylbenzene	6850	740	ug/kg	
591-78-6	2-Hexanone	ND	1800	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	1800	ug/kg	
75-09-2	Methylene chloride	ND	740	ug/kg	
100-42-5	Styrene	ND	1800	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	740	ug/kg	
127-18-4	Tetrachloroethene	ND	740	ug/kg	
108-88-3	Toluene	ND	1800	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	740	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	740	ug/kg	
79-01-6	Trichloroethene	ND	740	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-1	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	76.7
Method:	SW846 8260B		
Project:	National Grid, Water Street, Hudson, NY		

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
75-01-4	Vinyl chloride	ND	740	ug/kg	
1330-20-7	Xylene (total)	5440	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	120%		70-130%

(a) Elevated RL due to sample matrix.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH		
Lab Sample ID:	MC24291-1	Date Sampled:	09/09/13
Matrix:	SO - Sediment	Date Received:	09/12/13
Method:	SW846 8270C SW846 3546	Percent Solids:	76.7
Project:	National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F67092.D	5	09/18/13	KR	09/16/13	OP34843	MSF3093
Run #2	R33677.D	25	09/21/13	KR	09/16/13	OP34843	MSR1225

	Initial Weight	Final Volume
Run #1	20.6 g	1.0 ml
Run #2	20.6 g	1.0 ml

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	1600	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	3200	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	3200	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	3200	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	6300	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	3200	ug/kg	
95-48-7	2-Methylphenol	ND	3200	ug/kg	
	3&4-Methylphenol	ND	3200	ug/kg	
88-75-5	2-Nitrophenol	ND	3200	ug/kg	
100-02-7	4-Nitrophenol	ND	6300	ug/kg	
87-86-5	Pentachlorophenol	ND	3200	ug/kg	
108-95-2	Phenol	ND	1600	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	3200	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	3200	ug/kg	
83-32-9	Acenaphthene	26300	630	ug/kg	
208-96-8	Acenaphthylene	1620	630	ug/kg	
120-12-7	Anthracene	11500	630	ug/kg	
56-55-3	Benzo(a)anthracene	8030	630	ug/kg	
50-32-8	Benzo(a)pyrene	6910	630	ug/kg	
205-99-2	Benzo(b)fluoranthene	3510	630	ug/kg	
191-24-2	Benzo(g,h,i)perylene	3470	630	ug/kg	
207-08-9	Benzo(k)fluoranthene	3160	630	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	1600	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	1600	ug/kg	
91-58-7	2-Chloronaphthalene	ND	1600	ug/kg	
106-47-8	4-Chloroaniline	ND	3200	ug/kg	
86-74-8	Carbazole	1190	630	ug/kg	
218-01-9	Chrysene	6840	630	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	1600	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	1600	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	1600	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1600	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-1	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	76.7
Method:	SW846 8270C SW846 3546		
Project:	National Grid, Water Street, Hudson, NY		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	1600	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1600	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1600	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	3200	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	3200	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	1600	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	959	630	ug/kg	
132-64-9	Dibenzofuran	3150	630	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	1600	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	1600	ug/kg	
84-66-2	Diethyl phthalate	ND	1600	ug/kg	
131-11-3	Dimethyl phthalate	ND	1600	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1600	ug/kg	
206-44-0	Fluoranthene	18800	630	ug/kg	
86-73-7	Fluorene	9510	630	ug/kg	
118-74-1	Hexachlorobenzene	ND	1600	ug/kg	
87-68-3	Hexachlorobutadiene	ND	1600	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	3200	ug/kg	
67-72-1	Hexachloroethane	ND	1600	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2630	630	ug/kg	
78-59-1	Isophorone	ND	1600	ug/kg	
91-57-6	2-Methylnaphthalene	34600	630	ug/kg	
88-74-4	2-Nitroaniline	ND	3200	ug/kg	
99-09-2	3-Nitroaniline	ND	3200	ug/kg	
100-01-6	4-Nitroaniline	ND	3200	ug/kg	
91-20-3	Naphthalene	52800 ^a	3200	ug/kg	
98-95-3	Nitrobenzene	ND	1600	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	1600	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1600	ug/kg	
85-01-8	Phenanthrene	43200	630	ug/kg	
129-00-0	Pyrene	22500	630	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%	38%	30-130%
4165-62-2	Phenol-d5	42%	37%	30-130%
118-79-6	2,4,6-Tribromophenol	56%	49%	30-130%
4165-60-0	Nitrobenzene-d5	50%	37%	30-130%
321-60-8	2-Fluorobiphenyl	60%	56%	30-130%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH		
Lab Sample ID:	MC24291-1	Date Sampled:	09/09/13
Matrix:	SO - Sediment	Date Received:	09/12/13
Method:	SW846 8270C SW846 3546	Percent Solids:	76.7
Project:	National Grid, Water Street, Hudson, NY		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	62%	69%	30-130%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH	
Lab Sample ID:	MC24291-1	Date Sampled: 09/09/13
Matrix:	SO - Sediment	Date Received: 09/12/13
Method:	SW846 8015	Percent Solids: 76.7
Project:	National Grid, Water Street, Hudson, NY	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH31342.D	1	09/14/13	TB	n/a	n/a	GBH1829
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	11.6 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	Units	Q
	TPH-GRO (VOA)	ND	7.1	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
	2,3,4-Trifluorotoluene	80%		61-116%	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH						
Lab Sample ID:	MC24291-1					Date Sampled:	09/09/13
Matrix:	SO - Sediment					Date Received:	09/12/13
Method:	SW846 8082 SW846 3545					Percent Solids:	76.7
Project:	National Grid, Water Street, Hudson, NY						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB50989.D	1	09/19/13	NK	09/16/13	OP34839	GBB3009
Run #2							

	Initial Weight	Final Volume
Run #1	15.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	42	ug/kg	
11104-28-2	Aroclor 1221	ND	42	ug/kg	
11141-16-5	Aroclor 1232	ND	42	ug/kg	
53469-21-9	Aroclor 1242	ND	42	ug/kg	
12672-29-6	Aroclor 1248	ND	42	ug/kg	
11097-69-1	Aroclor 1254	ND	42	ug/kg	
11096-82-5	Aroclor 1260	ND	42	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	66%		30-150%
877-09-8	Tetrachloro-m-xylene	52%		30-150%
2051-24-3	Decachlorobiphenyl	72%		30-150%
2051-24-3	Decachlorobiphenyl	58%		30-150%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH						
Lab Sample ID:	MC24291-1					Date Sampled:	09/09/13
Matrix:	SO - Sediment					Date Received:	09/12/13
Method:	SW846-8015 SW846 3546					Percent Solids:	76.7
Project:	National Grid, Water Street, Hudson, NY						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BC656471.D	1	09/19/13	KN	09/16/13	OP34845	GBC3455
Run #2							

	Initial Weight	Final Volume
Run #1	15.3 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH-DRO (Semi-VOA)	1180	21	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	75%		40-140%	

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-NORTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-1	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	76.7
Project:	National Grid, Water Street, Hudson, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Arsenic	4.0	0.81	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Barium	52.9	4.1	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Cadmium	< 0.33	0.33	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Chromium	9.6	0.81	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Lead	50.7	0.81	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Mercury	0.092	0.035	mg/kg	1	09/25/13	09/26/13 EM	SW846 7471B ²	SW846 7471B ⁴
Selenium	< 0.81	0.81	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Silver	< 0.41	0.41	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA16085

(2) Instrument QC Batch: MA16132

(3) Prep QC Batch: MP21629

(4) Prep QC Batch: MP21700

RL = Reporting Limit

Report of Analysis

Client Sample ID:	WC-NORTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-1	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	76.7
Project:	National Grid, Water Street, Hudson, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.15	0.15	mg/kg	1	09/16/13 14:14	MA	SW846 9012 M
Heat Content, BTU ^a	988	100	BTU/lb	1	09/18/13	ANJ	ASTM D240-92
Percent Sulfur ^a	< 0.10	0.10	%	1	09/18/13	ANJ	ASTM D129-95
Solids, Percent	76.7		%	1	09/13/13	HS	SM21 2540 B MOD.

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	WC-SOUTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	SW846 8260B		
Project:	National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G131623.D	1	09/20/13	JM	n/a	n/a	MSG5114
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.2 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	750	ug/kg	
71-43-2	Benzene	ND	37	ug/kg	
75-27-4	Bromodichloromethane	ND	150	ug/kg	
75-25-2	Bromoform	ND	150	ug/kg	
74-83-9	Bromomethane	ND	150	ug/kg	
78-93-3	2-Butanone (MEK)	ND	370	ug/kg	
75-15-0	Carbon disulfide	ND	370	ug/kg	
56-23-5	Carbon tetrachloride	ND	150	ug/kg	
108-90-7	Chlorobenzene	ND	150	ug/kg	
75-00-3	Chloroethane	ND	370	ug/kg	
67-66-3	Chloroform	ND	150	ug/kg	
74-87-3	Chloromethane	ND	370	ug/kg	
124-48-1	Dibromochloromethane	ND	150	ug/kg	
75-34-3	1,1-Dichloroethane	ND	150	ug/kg	
107-06-2	1,2-Dichloroethane	ND	150	ug/kg	
75-35-4	1,1-Dichloroethene	ND	150	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	150	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	150	ug/kg	
78-87-5	1,2-Dichloropropane	ND	150	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	150	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	150	ug/kg	
100-41-4	Ethylbenzene	ND	150	ug/kg	
591-78-6	2-Hexanone	ND	370	ug/kg	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	370	ug/kg	
75-09-2	Methylene chloride	ND	150	ug/kg	
100-42-5	Styrene	ND	370	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	150	ug/kg	
127-18-4	Tetrachloroethene	ND	150	ug/kg	
108-88-3	Toluene	ND	370	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	150	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	150	ug/kg	
79-01-6	Trichloroethene	ND	150	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-SOUTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	SW846 8260B		
Project:	National Grid, Water Street, Hudson, NY		

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
75-01-4	Vinyl chloride	ND	150	ug/kg	
1330-20-7	Xylene (total)	ND	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		70-130%
2037-26-5	Toluene-D8	81%		70-130%
460-00-4	4-Bromofluorobenzene	92%		70-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-SOUTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	SW846 8270C SW846 3546		
Project:	National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F67093.D	1	09/18/13	KR	09/16/13	OP34843	MSF3093
Run #2							

	Initial Weight	Final Volume
Run #1	21.0 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	300	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	600	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	600	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	600	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	600	ug/kg	
95-48-7	2-Methylphenol	ND	600	ug/kg	
	3&4-Methylphenol	ND	600	ug/kg	
88-75-5	2-Nitrophenol	ND	600	ug/kg	
100-02-7	4-Nitrophenol	ND	1200	ug/kg	
87-86-5	Pentachlorophenol	ND	600	ug/kg	
108-95-2	Phenol	ND	300	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	600	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	600	ug/kg	
83-32-9	Acenaphthene	ND	120	ug/kg	
208-96-8	Acenaphthylene	ND	120	ug/kg	
120-12-7	Anthracene	ND	120	ug/kg	
56-55-3	Benzo(a)anthracene	ND	120	ug/kg	
50-32-8	Benzo(a)pyrene	ND	120	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	120	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	120	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	120	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	300	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	300	ug/kg	
91-58-7	2-Chloronaphthalene	ND	300	ug/kg	
106-47-8	4-Chloroaniline	ND	600	ug/kg	
86-74-8	Carbazole	ND	120	ug/kg	
218-01-9	Chrysene	ND	120	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	300	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	300	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	300	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	300	ug/kg	

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-SOUTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	SW846 8270C SW846 3546		
Project:	National Grid, Water Street, Hudson, NY		

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	300	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	300	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	300	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	600	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	600	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	300	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	120	ug/kg	
132-64-9	Dibenzofuran	ND	120	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	300	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	300	ug/kg	
84-66-2	Diethyl phthalate	ND	300	ug/kg	
131-11-3	Dimethyl phthalate	ND	300	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	300	ug/kg	
206-44-0	Fluoranthene	170	120	ug/kg	
86-73-7	Fluorene	ND	120	ug/kg	
118-74-1	Hexachlorobenzene	ND	300	ug/kg	
87-68-3	Hexachlorobutadiene	ND	300	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	600	ug/kg	
67-72-1	Hexachloroethane	ND	300	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	120	ug/kg	
78-59-1	Isophorone	ND	300	ug/kg	
91-57-6	2-Methylnaphthalene	ND	120	ug/kg	
88-74-4	2-Nitroaniline	ND	600	ug/kg	
99-09-2	3-Nitroaniline	ND	600	ug/kg	
100-01-6	4-Nitroaniline	ND	600	ug/kg	
91-20-3	Naphthalene	ND	120	ug/kg	
98-95-3	Nitrobenzene	ND	300	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	300	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	ug/kg	
85-01-8	Phenanthrene	196	120	ug/kg	
129-00-0	Pyrene	145	120	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	300	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		30-130%
4165-62-2	Phenol-d5	56%		30-130%
118-79-6	2,4,6-Tribromophenol	66%		30-130%
4165-60-0	Nitrobenzene-d5	71%		30-130%
321-60-8	2-Fluorobiphenyl	69%		30-130%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-SOUTH		
Lab Sample ID:	MC24291-2	Date Sampled:	09/09/13
Matrix:	SO - Sediment	Date Received:	09/12/13
Method:	SW846 8270C SW846 3546	Percent Solids:	79.3
Project:	National Grid, Water Street, Hudson, NY		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	76%		30-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-SOUTH	
Lab Sample ID:	MC24291-2	Date Sampled: 09/09/13
Matrix:	SO - Sediment	Date Received: 09/12/13
Method:	SW846 8015	Percent Solids: 79.3
Project:	National Grid, Water Street, Hudson, NY	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH31343.D	1	09/14/13	TB	n/a	n/a	GBH1829
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.8 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	Units	Q
	TPH-GRO (VOA)	ND	7.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
	2,3,4-Trifluorotoluene	79%		61-116%	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-SOUTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Method:	SW846 8082 SW846 3545		
Project:	National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BB50990.D	1	09/19/13	NK	09/16/13	OP34839	GBB3009
Run #2							

	Initial Weight	Final Volume
Run #1	15.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	Units	Q
12674-11-2	Aroclor 1016	ND	40	ug/kg	
11104-28-2	Aroclor 1221	ND	40	ug/kg	
11141-16-5	Aroclor 1232	ND	40	ug/kg	
53469-21-9	Aroclor 1242	ND	40	ug/kg	
12672-29-6	Aroclor 1248	ND	40	ug/kg	
11097-69-1	Aroclor 1254	ND	40	ug/kg	
11096-82-5	Aroclor 1260	ND	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		30-150%
877-09-8	Tetrachloro-m-xylene	63%		30-150%
2051-24-3	Decachlorobiphenyl	68%		30-150%
2051-24-3	Decachlorobiphenyl	65%		30-150%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	WC-SOUTH		
Lab Sample ID:	MC24291-2	Date Sampled:	09/09/13
Matrix:	SO - Sediment	Date Received:	09/12/13
Method:	SW846-8015 SW846 3546	Percent Solids:	79.3
Project:	National Grid, Water Street, Hudson, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BC656451.D	1	09/18/13	KN	09/16/13	OP34845	GBC3455
Run #2							

	Initial Weight	Final Volume
Run #1	15.9 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	Units	Q
	TPH-DRO (Semi-VOA)	ND	20	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	81%		40-140%	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: WC-SOUTH**Lab Sample ID:** MC24291-2**Matrix:** SO - Sediment**Date Sampled:** 09/09/13**Date Received:** 09/12/13**Percent Solids:** 79.3**Project:** National Grid, Water Street, Hudson, NY**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Arsenic	2.4	0.95	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Barium	19.0	4.7	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Cadmium	< 0.38	0.38	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Chromium	5.9	0.95	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Lead	6.0	0.95	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Mercury	0.041	0.035	mg/kg	1	09/25/13	09/26/13 EM	SW846 7471B ²	SW846 7471B ⁴
Selenium	< 0.95	0.95	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³
Silver	< 0.47	0.47	mg/kg	1	09/13/13	09/13/13 EAL	SW846 6010C ¹	SW846 3050B ³

(1) Instrument QC Batch: MA16085

(2) Instrument QC Batch: MA16132

(3) Prep QC Batch: MP21629

(4) Prep QC Batch: MP21700

RL = Reporting Limit

Report of Analysis

Client Sample ID:	WC-SOUTH	Date Sampled:	09/09/13
Lab Sample ID:	MC24291-2	Date Received:	09/12/13
Matrix:	SO - Sediment	Percent Solids:	79.3
Project:	National Grid, Water Street, Hudson, NY		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.14	0.14	mg/kg	1	09/16/13 14:15	MA	SW846 9012 M
Heat Content, BTU ^a	1220	100	BTU/lb	1	09/18/13	ANJ	ASTM D240-92
Percent Sulfur ^a	0.20	0.10	%	1	09/18/13	ANJ	ASTM D129-95
Solids, Percent	79.3		%	1	09/13/13	HS	SM21 2540 B MOD.

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Chain of Custody (Accutest New Jersey)

Client / Reporting Information		Project Information										Requested Analysis (see TEST CODE sheet)										Matrix Codes							
Company Name Arcadis		Project Name Nat-Grid - Hudson - Water St.										Request # _____ Quote # _____ Job # MC24291										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LO - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank EB-Equipment Blank RB-Rinse Blank TB-Trip Blank							
Street Address 855 Route 146, Suite 210		Street: Water St.		Billing Information (If different from Report to)																									
City State Zip Clifton Park, NY 12065		City: Hudson, NY		Company Name																									
Project Contact Adam Etringer		Project# BCC36702		Street Address																									
Phone # Fax # 518-250-7341		Client PO#		City State Zip								TCE VOC, SVOC, PCB, PAK & M... T-CU, 2 Solids, GRO, DRO, BTL 2 Solids																	
Sampler(s) Name(s) Phone # Marcus Eriksson 315-247-5760		Project Manager Adam Etringer		Attention: PO#																									
Accutest Sample # Field ID / Point of Collection		MECH/DI Vial #		Collection Date Time		Sampled by Matrix		# of bottles		Number of preserved Bottles										LAB USE ONLY									
-1 WC-North				9-9-13 17:00		MWE Sed		2		X X										12F									
-2 WC-South				9-9-13 17:00		MWE Sed		Gallon Bag		X X																			
Turnaround Time (Business days) ☐ Std. 10 Business Days ☐ Std. 5 Business Days (By Contract only) ☐ 5 Day RUSH ☐ 3 Day EMERGENCY ☐ 2 Day EMERGENCY ☐ 1 Day EMERGENCY															Approved By (Accutest PM): / Date:					☐ Commercial "A" (Level 1) ☐ NYASP Category A ☐ Commercial "B" (Level 2) ☐ NYASP Category B ☐ FULLT1 (Level 3+4) ☐ State Forms ☐ CT RCP ☐ EDD Format ☐ MA MCP ☐ Other _____ Commercial "A" = Results Only Commercial "B" = Results + QC Summary									
Emergency & Rush T/A data available VIA Lablink															Comments / Special Instructions														
Sample Custody must be documented below each time samples change possession, including courier delivery.																													
Relinquished to Sample #1					Date Time: 9/1/13 - 12:00					Received By: [Signature]					Relinquished By: [Signature]					Date Time:					Received By: 2				
Relinquished by: [Signature]					Date Time: 9-12-13 9:20					Received By: 3 [Signature]					Relinquished By: 4					Date Time:					Received By: 4				
Relinquished by: 5					Date Time:					Received By: 5					Custody Seal #					☐ Intact Preserved where applicable ☐ Not intact ☐					On Ice ☒ Cooler Temp. 0.7°				

MC24291: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC24291 **Client:** ARCADIS **Immediate Client Services Action Required:** No
Date / Time Received: 9/12/2013 **Delivery Method:** **Client Service Action Required at Login:** No
Project: NAT. GRID HUDSON WATER ST **No. Coolers:** 1 **Airbill #'s:**

Cooler Security **Y or N** **Y or N**
1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK: ☒ ☐

Cooler Temperature **Y or N**
1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Infrared gun
3. Cooler media: Ice (bag)

Quality Control Preservation **Y** **or** **N** **N/A**
1. Trip Blank present / cooler: ☐ ☐ ☒
2. Trip Blank listed on COC: ☐ ☐ ☒
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☐ ☐ ☒

Sample Integrity - Documentation **Y or N**
1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition **Y or N**
1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

Sample Integrity - Instructions **Y** **or** **N** **N/A**
1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume recvd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

Comments



495 Tech Center West, Bldg 1, Marlboro, MA 01752
TEL: (508)481-6200 FAX: (508)-481-7753

Index # 574345399128

Accutest Job #:	MC24291
Accutest Quote #:	Page 1 of 1
AMS P.O. #:	
Project No.:	

[illegible]

1A

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MC24291: Chain of Custody

Page 1 of 2

Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC24291 **Client:** _____ **Project:** _____
Date / Time Received: 9/14/2013 **Delivery Method:** _____ **Airbill #s:** _____
Cooler Temps (Initial/Adjusted): #1: (3.2/3.2); 0

Cooler Security

<u>Y or N</u>	<u>Y or N</u>
1. Custody Seals Present: ☒ ☐	3. COC Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐	4. Smpl Dates/Time OK ☒ ☐

Cooler Temperature

<u>Y or N</u>	
1. Temp criteria achieved: ☒ ☐	
2. Cooler temp verification: _____	
3. Cooler media: _____	Ice (Bag)
4. No. Coolers: _____	1

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	☐	☒	☐	
2. Trip Blank listed on COC:	☐	☒	☐	
3. Samples preserved properly:	☒	☐	☐	
4. VOCs headspace free:	☐	☐	☐	☒

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	☒	☐	☐
2. Container labeling complete:	☒	☐	☐
3. Sample container label / COC agree:	☒	☐	☐

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	☒	☐	☐
2. All containers accounted for:	☒	☐	☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	☒	☐	☐	
2. Bottles received for unspecified tests	☐	☐	☒	
3. Sufficient volume recvd for analysis:	☒	☐	☐	
4. Compositing instructions clear:	☐	☐	☐	☒
5. Filtering instructions clear:	☐	☐	☐	☒

Comments



Appendix E

Geotechnical Boring Logs,
Laboratory Testing Results, and
Cone Penetrometer Test Results

Geotechnical Boring Logs

Date Start/Finish: 9/9/2013 - 9/10/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 3" x 2' Split Spoon	Northing: 1246874.65 Easting: 681446.60 Casing Elevation: NA Borehole Depth: 89.1' bss Water Surface: 3.7' MLW Sediment Surface Elev.: -6.4 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-1 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-10										Pushed casing 3 feet into mudline for stability - very soft muck.
-5		1	3-5	0.8	8 4 4 5 8	9				Silty GRAVEL, angular, poorly graded, nonplastic, saturated, loose, olive gray (5Y-4/2).
-15		2	5-7	0.7		4				SAND and GRAVEL, angular, poorly graded, saturated, very loose, dark brown (7.5YR-3/4), olive gray (5Y-4/2).
-10		3	7-9	1.0		5				Medium SAND, some Gravel, trace Silt, well graded, angular, nonplastic, saturated, loose, greenish black (1-2.5/5GY), trace sheen.
-20		4	9-11	1.2		3				SAA, very loose. [MC = 28.8%, GS: #4 = 73%, #200 = 5.8%]
-20										
-15										
-25										
-20		5	19-21	1.4	7 2 2 2	4				Medium fine SAND, some GRAVEL, angular, poorly graded, little clay, low plasticity, saturated, loose, greenish black (1-2.5/5GY), trace sheen.
-30										
-25		6	24-26	1.0	4 2 1 1	3	0.188			Clayey very fine SAND, subrounded to subangular, poorly graded, low plasticity, wet, very loose, greenish black (1-2.5/5GY).
-35										
-30		7	29-31	1.4	15 10 9 9	19	3.75			Silty Lean CLAY, medium plasticity, trace sand, wet, firm, greenish black (1-2.5/5GY). [LL = 35, PL = 21, MC = 40.7%, GS: #200 = 100%, Silt = 26%, Clay = 74%]
-40										
-35		8	34-36	2.0	WOH WOH WOH WOH	WOH	0.11			Lean CLAY, medium plasticity, wet, soft, greenish black (1-2.5/5GY).
-45		9	36-38	1.8		NA				SAA. [LL = 28, PL = 16, MC = 28.1%, GS: #4 = 100%, #200 = 99%, UWD = 86.8 pcf, SG = 2.77, Su = 3.5 psi]
-40		10	39-41	2.0	WOR WOH 1 3	1	0.17			SAA, olive gray (5Y-4/2).
-50			42							Vane shear test; Tmax = 175 lbf; time to failure = 2.15 min rate of remould = 1 min; tmax = 45; H = 4 in D = 3 in, non-tapered
-45		11	44-46	2.0	2 1 1 1	2	0.14			SAA, saturated, grades to very soft.
-55							0			
-55		12	49-51	1.0	1	2				SAA

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWD = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch. Top of Deck to Top of Water Surface: 11.7 ft. Top of Deck to Top of Mudline: 24 ft. Vane Shear dimensions: H = 4 in. D = 3 in., non-tapered.	Water Level Data		
		Date	Water Depth	MLW
		9/9/13	12.3'	3.7'
		Depth measured from top of deck		

Date Start/Finish: 9/9/2013 - 9/10/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 3" x 2' Split Spoon	Northing: 1246874.65 Easting: 681446.60 Casing Elevation: NA Borehole Depth: 89.1' bss Water Surface: 3.7' MLW Sediment Surface Elev.: -6.4 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-1 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-60					1 WOH					Lean CLAY, medium plasticity, wet, soft, greenish black (1-2.5/5GY).
-55		13	54-56	2.0	WOH 3	3				SAA, grades from very soft to firm.
-65										
-60		14	59-61	2.0	1 WOH 3	WOH	0.11			SAA, grades from very soft to soft.
-70			62							Vane shear test; Tmax = 80 lbf; time to failure = 1.26 min rate of remould = 2.39 min; tmax = 60; H = 4 in D = 3 in, non-tapered
-65		15	64-66	2.0	7 1 1 2	2				SILT and Lean CLAY, medium to high plasticity, saturated, very soft, greenish black (1-2.5/5GY)
-75		16	66-68	1.8		NA				SAA. [LL = 24, PL = 18, MC = 28.3%, UWd = 85.2 pcf, SG = 2.77, Su = 6.0 psi]
-70		17	69-71	1.2	1 1 1 2	2				SAA, firm to very soft.
-80										
-75		18	74-76	1.8	WOH WOH 2 6	2	0.22 0.14			SAA, firm.
-85										
-80		19	79-81	2.0	8 5 4 5	9	0.16			Lean CLAY, medium plasticity, wet, firm, greenish black (1-2.5/5GY).
-90										
-85		20	84-86	1.4	17 25 47 39	72				(Glacial Till) Clayey medium SAND, low plasticity, angular, some Gravel, trace silt, saturated, very dense, greenish black (1-2.5/5GY).
-95										
-90		21	89-89.1	NR	50/1"	50+				Apparent weathered ROCK encountered at 87' bss. Rollerbit from 87' to 89' bss. Apparent competent ROCK at 89.1' bss.
-90										End of Boring at 89.1 ft bss. Borehole backfilled with grout on 9/10/13.
-100										
-95										
-105										
-100										

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch. Top of Deck to Top of Water Surface: 11.7 ft. Top of Deck to Top of Mudline: 24 ft. Vane Shear dimensions: H = 4 in. D = 3 in., non-tapered.	Water Level Data		
		Date	Water Depth	MLW
		9/9/13	12.3'	3.7'
		Depth measured from top of deck		

Date Start/Finish: 9/13/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 3" x 2' Split Spoon	Northing: 1246996.82 Easting: 681407.27 Casing Elevation: NA Borehole Depth: 85' bss Water Surface: 2.4' MLW Sediment Surface Elev.: -33.4 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-2 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
55	-90	15	50-52	1.8	WOH 1 5	1		X		Lean CLAY, little Silt, low to medium plasticity, saturated, soft, gray (gley 1-6/N).
55	-90	16	55-57	2.0	WOH 1 2	1	0.22	X		SAA.
60	-95	17	60-62	1.7	WOH 1 3	1	0.16	X		SAA, some Silt.
65	-100	18	65-67	1.7	5 13 13 10	26		X		Clayey SILT, medium plasticity, little sand, subrounded, poorly graded, wet/saturated, medium dense, greenish black (gley 1-2.5/5GY). [MC = 17.4%, GS: #4 = 100%, #200 = 81%]
70	-105	19	70-72	2.0	2 2 3	4		X		SAA, low to medium plasticity, trace sand, saturated, soft to firm, gray (gley 1-6/N).
75	-110	20	75-76.3	1.3	50 70 52/3"	100+		X		(Glacial Till) Medium SAND, some SILT/CLAY, little gravel, angular, poorly graded, low to medium plasticity, wet, very dense, greenish gray (gley 1-5/5GY).
80	-115									(Apparent Weathered Rock) GRAVEL, some Sand, angular, poorly graded, wet, very dense, greenish black (gley 1-2.5/5GY), brittle, thinly bedded. Rollerbit from 75 to 80: 75-78.2 = rapid progress; 78.2-79 = hard zone; 79-80 = softer WR zone Rollerbit from 80 to 85: 80-80.5 = quick progress; 80.5-83 = slow progress (approx. 8min/ft); 83-85 = (approx. 10min/ft) Possible hard, competent rock at 85 ft bss. Weathered Rock layered between highly weathered zones and hard zones from 75 ft to 85 ft bss.
85	-120									End of Boring at 85 ft bss. Borehole backfilled with grout on 9/13/13.
90	-125									
95	-130									
100	-135									

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch. Top of Deck to Top of Water Surface: 10 ft. Top of Deck to Top of Mudline: 48 ft. Vane Shear dimensions: H = 4 in. D = 3 in., non-tapered.	Water Level Data		
		Date	Water Depth	MLW
		9/13/13	38.0'	2.4'
		Depth measured from top of deck		

Date Start/Finish: 9/11/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 2 1/4" NX Core Barrel 3"x2' Split Spoon	Northing: 1247129.64 Easting: 681489.56 Casing Elevation: NA Borehole Depth: 75' bss Water Surface: 4.0' MLW Sediment Surface Elev.: -36.3 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-3 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-40		1	0-2	0.2	18	19				Shells and GRAVEL, angular, poorly graded, little sand, wet, medium dense, olive gray (5Y-4/2).
		2	2-4	0.1	10	15				Fine SAND, little silt, subrounded to subangular, poorly graded, trace silt, wet, medium dense, olive gray (5Y-4/2).
		3	4-6	1.5	11	16				SAA, little silt, organics present, dark reddish brown (2.5YR-3/3). [MC = 23.2%, OC = 3.1%, GS: #4 = 100%, #200 = 18%]
-45		4	6-8	1.2	6	2				SAA, some Silt, trace gravel, very loose, dark brown (7.5YR-3/4).
		5	8-10	2.0	6	8				SAA, little silt, shells, loose.
-50					4					
-55		6	15-17	1.2	8	22				Lean CLAY, trace sand, medium plasticity, wet, firm, greenish black (gley 1-2.5/5GY). [LL = 28, PL = 19, MC = 23.4%, GS: #4 = 100%, #200 = 96%]
-60		7	20-22	2.0	2	21	1.75			Lean CLAY, some Silt, medium plasticity, wet, firm, gray (gley 1-6/N).
					12		3.75			
-65		8	25-27	2.0	8	18	1.5			SAA.
					8					
-70		9	30-32	1.4	21	24	1.25			Clayey SILT, nonplastic to low plasticity, some very fine Sand, wet, firm, greenish black (gley 1-2.5/5GY).
					11					
-75		10	35-37	2.0	11	5	0.5			SAA, trace sand, firm to soft.
					5		0.0			
-80		11	40-42	2.0	WOH	2	0.11			Lean CLAY, little silt, low to medium plasticity, wet/saturated, soft, greenish black (gley 1-2.5/5GY). [MC = 28.6%]
					1					
-85		12	45-47	2.0	WOH	WOH				SILT and Lean CLAY, low to medium plasticity, wet/saturated, soft, greenish black (gley 1-2.5/5GY). [LL = 24, PL = 20, MC = 21.6%, GS: #200 = 100%, Silt = 75%, Clay = 25%]
					WOH					
		13	47-49	2.0	WOH	NA				SAA. [LL = 28, PL = 20, MC = 28.3%, UWd = 85.2 pcf, SG = 2.77, Su = 6.0 psi]
					3					

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch. Top of Deck to Top of Water Surface: 5.5 ft. Top of Deck to Top of Mudline: 48 ft.	Water Level Data		
		Date	Water Depth	MLW
		9/11/13	42.5'	4.0'
		Depth measured from top of deck		

Date Start/Finish: 9/11/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 2 1/4" NX Core Barrel 3"x2" Split Spoon	Northing: 1247129.64 Easting: 681489.56 Casing Elevation: NA Borehole Depth: 75' bss Water Surface: 4.0' MLW Sediment Surface Elev.: -36.3 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-3 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-90		14	50-52	2.0	7 10 12 12	22	1.75 2.25	X		Silty lean CLAY, low plasticity, wet/saturated, firm, greenish black (1-2.5/5GY).
-95		15	55-57	2.0	WOR 3 3 14	6	0.11	X		Lean CLAY, little silt, medium plasticity, wet/saturated, soft, greenish black (1-2.5/5GY).
-100		16	60-62	2.0	12 12 25 50	37		X		SILT, some Clay, nonplastic to low plasticity, little very fine sand, wet, firm, gray (gley 1-6/N). [MC = 5.9%, GS: #4 = 68%, #200 = 27%] (Glacial Till) SAND, some Gravel, angular, little silt and clay, nonplastic, poorly graded, SATURATED, very dense, gray (gley 1-6/N).
-105		R-1	65-70	12"/60"						Weathered rock encountered (rollerbit down to competent rock). LIMESTONE, highly fractured, moderate weathering, thinly bedded, dark gray, reacts with HCL, RI 65-66 = 4:00 min RQD = 0% Strength = RI 66-68 = 8:42 min 68-69 = 8:10 min 69-70 = 6:18 min
-110		R-2	70-75	0"/60"						NO RECOVERY, driller believes rock is highly fractured in barrel because of moving casing in current, rods move and barrel drops recovery on way up. 70-71 = 3:21 min RQD = 0% Strength = RI 71-72 = 4:33 min 72-74 = 5:38 min 74-75 = 5:07 min
-115										End of Boring at 75 ft bss. Borehole backfilled with grout on 9/11/13.
-120										
-125										
-130										
-135										

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch. Top of Deck to Top of Water Surface: 5.5 ft. Top of Deck to Top of Mudline: 48 ft.	Water Level Data		
		Date	Water Depth	MLW
		9/11/13	42.5'	4.0'
		Depth measured from top of deck		

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P . Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-35		1	0-2	2.0	8 8 8 7 4 3 5 4 4 4	16		X	[Pattern]	Medium to fine SAND, subrounded, trace silt, nonplastic, poorly graded, wet, medium dense, olive brown (2.5Y-6/4).
-35		2	2-4	0.8		8		X	[Pattern]	(1.2-1.5) Apparent WOOD layer, highly organic (no impacts - no odor, no coal tar). (1.5) SAA, saturated
-35		3	4-6	2.0		8		X	[Pattern]	(2.0) SAA, trace Silt, trace Organics, loose. [MC = 21.6%, OC = 0.7%, GS: #4 = 100%, #200 = 7.3%]
-40		4	6-8	NR	WOH WOH 1 3 1	1		X	[Pattern]	NO RECOVERY.
-40		5	8-10	1.7	WOH 2 2	2		X	[Pattern]	Clayey fine SAND, medium plasticity, trace gravel, subangular, saturated, very loose, olive gray (5Y-4/2).
-45		6	13-15	1.5	1 1 1 2	2		X	[Pattern]	SAA, Clayey fine SAND, some Gravel, subrounded, trace silt, gray (grey 1-6/N).
-50		7	18-20	1.3	7 6 1 3	7		X	[Pattern]	
-55		8	23-25	2.0	3 3 4 5	7		X	[Pattern]	SILT and Lean CLAY, medium plasticity, trace very fine sand, wet, soft, gray (grey 1-6/N). [LL = 28, PL = 19, MC = 35.1%, GS: #4 = 100%, #200 = 99%]
-55		9	25-27	1.9		-		[Solid Black]	[Pattern]	Lean CLAY, medium plasticity, trace gravel, saturated, soft to firm, gray (grey 1-6/N). SAA.
-60		10	28-30	2.0	WOR WOH 3 3	3		X	[Pattern]	
-65		11	33-35	2.0	WOR WOH WOH 3	WOH		X	[Pattern]	Silty Lean CLAY, medium plasticity, saturated, soft to firm, gray (grey 1-6/N). [LL = 29, PL = 20, MC = 38.9%, GS: #200 = 100%, Silt = 46%, Clay = 54%] Vane shear test: Tmax = 290 lbf; t = 5:00 mins Rate of remoulding = 1 min; Max. torque remold = 49 lbf
-70		12	38-40	2.0	3 6 8	11		X	[Pattern]	Lean CLAY, little silt, medium plasticity, saturated, firm, gray (grey 1-6/N). Vane shear test: Tmax = 220 lbf; t = 5:40 mins Rate of remoulding = -- min; Max. torque remold = -- lbf
-75		13	43-45	2.0	WOH 1 WOH 2	1		X	[Pattern]	Lean CLAY, some Silt, medium plasticity, saturated, very soft, gray (grey 1-6/N). [LL = 30, PL = 22, MC = 24.5%, GS: #4 = 100%, #200 = 100%]
-80		14	48-50	1.6	1 1 5	3	0.14	X	[Pattern]	SAA, soft.

Project: B0036702.0002 Template: C:\Users\ajbaird\Documents\GEOTECHNICAL\Projects\HWS\HWS_boring_well HSA 2007 WL analytical
Data File: GT-4.dat Date: 4/14/2014 Created/Edited by: AJB Page: 1 of 2

Date Start/Finish: 9/16/2013 - 9/17/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 2 1/4" NX Core Barrel 3"x2' Split Spoon	Northing: 1247223.80 Easting: 681654.24 Casing Elevation: NA Borehole Depth: 92.8' bss Water Surface: 4.4' MLW Sediment Surface Elev.: -29.0 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-4 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-85		15	53-55	2.0	WOH WOH WOH 4	WOH	0.25	X		SAA, very soft. SAA, soft to firm.
-90		16	58-60	2.0	WOH WOH 6 10	6	0.19 0.23	X		SILT, some Clay, medium plasticity, wet, soft to firm, gray (gley 1-6/N). [LL = 25, PL = 18, MC = 23.2%, GS: #200 = 100%, Silt = 68%, Clay = 32%]
-95		17	63-65	2.0	8 9 10 11	19	1.5-2.5	X		Silty Lean CLAY, medium plasticity, wet, firm to hard, gray (gley 1-6/N).
-100		18	68-70	2.0	8 6 5 6	11		X		SILT, little clay, trace very fine sand, wet, firm, gray (gley 1-6/N).
-105		19	73-75	2.0	6 9 13 26	21		X		SAA, soft (Glacial Till) GRAVEL, some Sand, angular, little silt, poorly graded, saturated, dense, greenish black (gley 1-2.5/GY). [MC = 30.0%, GS: #200 = 96%, Silt = 75%, Clay = 21%]
-110		20	78-80	1.4	55 50 35 56	85		X		SAA, very dense (Apparent weathered ROCK).
-115										Rollerbit apparent weathered ROCK, alternating hard and soft zones. Apparent weathered ROCK, in hard rock, begin rock core at 88 ft bss.
-120		R-1	88-93	16"/ 46"						LIMESTONE, HW, HF, thinly bedded, reacts with HCL, gray (gley 1-6/N). 88-89 = 3:22 min RQD = 10.8% Strength = RO-RI 89-90 = 10:56 min 90-91 = 19:51 min 91-92.8 = 34:48 min
-125										Barrel was not advancing, driller believes it is clogged, stopped run at 3.8 ft. End of Boring at 92.8 ft bss. Borehole backfilled with grout on 9/17/13.
-130										

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch; HW = Highly Weathered, HF = Highly Fractured. Top of Deck to Top of Water Surface: 5.5 ft. Top of Deck to Top of Mudline: 41 ft.	Water Level Data		
		Date	Water Depth	MLW
		9/16/13	35.5'	4.4'
		Depth measured from top of deck		

Date Start/Finish: 9/3/2013 - 9/4/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 2 1/4" NX Core Barrel 3"x2' Split Spoon	Northing: 1246957.97 Easting: 681531.21 Casing Elevation: NA Borehole Depth: 93' bss Water Surface: 3.0' MLW Sediment Surface Elev.: -8.9 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-5 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
		1	0-2	1.5	1 WOH WOH WOH	WOH				Fat CLAY, some Silt, high plasticity, little fine sand, wet, very soft, grayish black (1-2.5/5GY), petroleum color, sheen on top 2" of sample.
		2	2-4	1.5	1 WOH WOH WOH	WOH				Silty Fat CLAY, high plasticity, some Sand, wet, very soft, gray black (1-2.5/5GY), odor.
-15		3	4-6	1.2	1 WOH WOH WOH	WOH				(3-3.2 ft bss) NAPL stained CLAY and poorly graded GRAVEL, wet, black. Lean CLAY, low to medium plasticity, little sand, trace gravel, trace organics, wet, very soft, grayish black (1-2.5/5GY), NAPL staining
-5		4	6-8	1.8	1 WOH WOH WOH	2				Silty Lean CLAY, medium plasticity, little sand, trace gravel, wet, very soft, grayish black (1-2.5/5GY), odor, NAPL stain.
-20		5	8-10	2.0	1 WOH WOH WOH	WOH				SAA, some sand, trace gravel, trace organics.
-10										
-25										
-15		6	15-17	0.9	WR WR WR	WR				SILT, medium plasticity, little clay, little sand, wet, very soft, gray black (1-2.5/5GY), odor, NAPL stain. [LL = 55, PL = 33, MC = 55.7%]
-30		7	17-19	2.0		NA				SAA. [MC = 48.7%, UWd = 70.2 pcf, Su = 1.0 psi]
-20		8	20-22	NR	WR WR WR	WR				
-35										
-25		9	25-27	2.0	3 WOH WR WR	WOH				Poorly graded SAND, some Clay, medium plasticity, trace silt, trace gravel, wet, soft, grayish black (1-2.5/5GY).
-40										Lean CLAY, low plasticity, some Sand, little silt, wet, soft, grayish black (1-2.5/5GY).
-30		10	30-32	2.0	WOH WOH WOH	WOH				SAA, very soft. [LL = 35, PL = 22, MC = 47.8%]
-45										
-35		11	35-37	0.7	9 7 5 4	12				Sandy SILT, little clay, nonplastic, gravel, saturated, very soft, grayish black (1-2.5/5GY), trace wood debris.
-50										
-40		12	40-42	1.6	14 6 8 9	14				Silty Lean CLAY, medium plasticity, trace sand, wet, soft to firm, grayish black (1-2.5/5GY). [MC = 23.3%, GS: #4 = 100%, #200 = 100%]
-55										
-45		13	45-47	2.0	7 5 3 2	8				
-60										

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch; HW = Highly Weathered; HF = Highly Fractured. Top of Deck to Top of Water Surface: 27 ft. Top of Deck to Top of Mudline: 41 ft.	Water Level Data		
		Date	Water Depth	MLW
		9/3/13	14'	3.0'
		Depth measured from top of deck		

Date Start/Finish: 9/3/2013 - 9/4/2013 Drilling Company: Atlantic Testing Laboratories, Inc. Driller's Name: M. Childs, T. Weston Drilling Method: Casing Casing Size: 4.0" ID Rig Type: CME-850X Sampling Method: 2 1/4" NX Core Barrel 3"x2' Split Spoon	Northing: 1246957.97 Easting: 681531.21 Casing Elevation: NA Borehole Depth: 93' bss Water Surface: 3.0' MLW Sediment Surface Elev.: -8.9 ft NAVD88 Descriptions By: K. Warren	Well/Boring ID: GT-5 Client: National Grid Project: Hudson Water Street-OU2 Location: Water Street Hudson, NY

DEPTH	ELEVATION (NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	P. Penetrometer (tsf)	Analytical Sample	Geologic Column	Stratigraphic Description
-60		14	50-52	2.0	WOH WOH WOH 5	WOH		X		SAA.
-65		15	55-57	2.0	6 6 6 12	15		X		SAA, low plasticity, firm.
-70		16	60-62	2.0	13 9 4 3	13		X		SILT, some Lean CLAY, nonplastic to low plasticity, wet, firm, grayish black (1-2.5/5GY).
-75		17	65-67	2.0	6 1 1 3	2		X		SAA. [LL = NP, PL = NP, MC = 23.9%, GS: #200 = 100%, Silt = 79%, Clay = 21%]
-80		18	67-69	1.9		NA		I		SAA. [LL = NP, PL = NP, MC = 29.7%, UWd = 81.2 pcf, Su = 18.5 psi]
-70		19	70-72	2.0	2 3 3 3 16	6		X		SAA, soft to firm, gray (Gley 1-6/N).
-85		20	75-77	2.0	3 6 5 5 5	7		X		
-90		21	80-82	2.0	37 32 36 48	68		X		(Glacial Till) Poorly graded GRAVEL and SAND, angular, some Clay, nonplastic to low plasticity, wet, very dense, gray (Gley 1-6/N).
-95	R-1	83-88	10"/60"			NA				LIMESTONE, HF, HW, gray, reacts with HCL - calcite strings. 83-84 = 2:04 min RQD = 0% Strength = RO-RI 84-85 = 1:37 min 85-86 = 5:07 min 86-88 = 10:13 min
-100	R-2	88-93	10"/60"			NA				Rock frag broken off, jammed barrel. SAA. 88-93 = 23:00 min RQD = 0% Strength = RO Apparent Artesian encountered at 91.5 ft bss.
-105										End of Boring at 93 ft bss. Borehole backfilled with grout on 9/4/13.

	Remarks: SAA = same as above; bss = below sediment surface; NA = Not Applicable/Available; MLW = Mean Low Water; NAVD88 = North American Vertical Datum of 1988; NR = No Recovery; LL = Liquid Limit; PL = Plastic Limit; MC = Moisture Content; OC = Organic Content; GS = Grain Size, #4 and #200 refer to percent of soil finer than the #4 and #200 sieves during laboratory testing; UWd = Dry Unit Weight; Su = Undrained Shear Strength; SG = Specific Gravity; pcf = pounds per cubic foot; psi = pounds per square inch; HW = Highly Weathered; HF = Highly Fractured. Top of Deck to Top of Water Surface: 27 ft. Top of Deck to Top of Mudline: 41 ft.	Water Level Data		
		Date	Water Depth	MLW
		9/3/13	14'	3.0'
		Depth measured from top of deck		

Laboratory Testing Results



ATLANTIC TESTING LABORATORIES

Canton
6431 U.S. Highway 11
P.O. Box 29
Canton, NY 13617
315-386-4578 (T)
315-386-1012 (F)

January 20, 2014

ARCADIS
6723 Towpath Road
PO Box 66
Syracuse, New York 13214-0066

Attn: Mr. Adam Chwalibog, PE
Geotechnical Engineer

Re: **Laboratory Analysis Services**
Hudson Water Street – Operable Unit 2
Hudson, Columbia County, New York
ATL No. CD3574D-02-12-13 Rev. 1

Ladies and Gentleman:

At the request of Mr. Adam Chwalibog, PE, representing ARCADIS, and in accordance with our proposal (ATL No. CD998-376XX-10-12 dated December 21, 2012), Atlantic Testing Laboratories, Limited (ATL) performed a subsurface investigation and laboratory analysis services for the referenced project.

Select soil samples were submitted to ATL's laboratory for geotechnical analysis. Twelve samples were analyzed in accordance with ASTM D 422 Particle Size Analysis of Soil without Hydrometer. Seven samples were analyzed in accordance with ASTM D 422 Particle Size Analysis of Soil with Hydrometer. The **Particle Size Analysis Results** are included in **Attachment A**.

Twenty-four soil samples were analyzed in accordance with ASTM D 2216 Moisture Content Test. The **Moisture Content Results** are included in **Attachment B**.

Seventeen soil samples were analyzed in accordance with ASTM D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils. The **Atterberg Limit Test Results** are included in **Attachment C**.

Three soil samples were analyzed in accordance with ASTM D 2974 Percent Organics Test. The Percent Organics test results are included on the Particle Size Analysis Results in Attachment A.

Two soil samples were analyzed in accordance with ASTM D 4767 Consolidated-Undrained Triaxial Compression Test. The **Consolidated-Undrained Triaxial Compression Test Results** are included in **Attachment D**.

Four soil samples were analyzed in accordance with ASTM D 2859 Unconsolidated-Undrained Triaxial Compression Test. The **Unconsolidated-Undrained Triaxial Compression Test Results** are included in **Attachment E**.

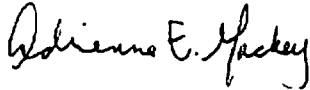
Two soil samples were analyzed in accordance with ASTM D 2435 One-Dimensional Consolidation Properties of Soils Using Incremental Loading. The **One-Dimensional Consolidation Test Results** are included in **Attachment F**.

Five soil samples were analyzed in accordance with ASTM D 854 Specific Gravity of Soil Solids by Water Pycnometer. The Specific Gravity test results are included on the Consolidated-Undrained Triaxial Compression Test Results in Attachment D and the Unconsolidated-Undrained Triaxial Compression Test Results in Attachment E.

The soil samples obtained during this investigation will be retained for a period of 6 months and subsequently discarded, unless otherwise instructed.

Please contact our office should you have any questions, or if we may be of further service. We look forward to our continued association to obtain a successful completion of the project.

Sincerely,
ATLANTIC TESTING LABORATORIES, Limited

A handwritten signature in black ink, appearing to read "Adrienne E. Mackey". The signature is fluid and cursive, with the first name being the most prominent.

Adrienne E. Mackey
Project Manager

AEM/AJS/aem
Enclosures

ATTACHMENT A
PARTICLE SIZE ANALYSIS RESULTS

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-01-11-13

Client: ARCADIS US, Inc.

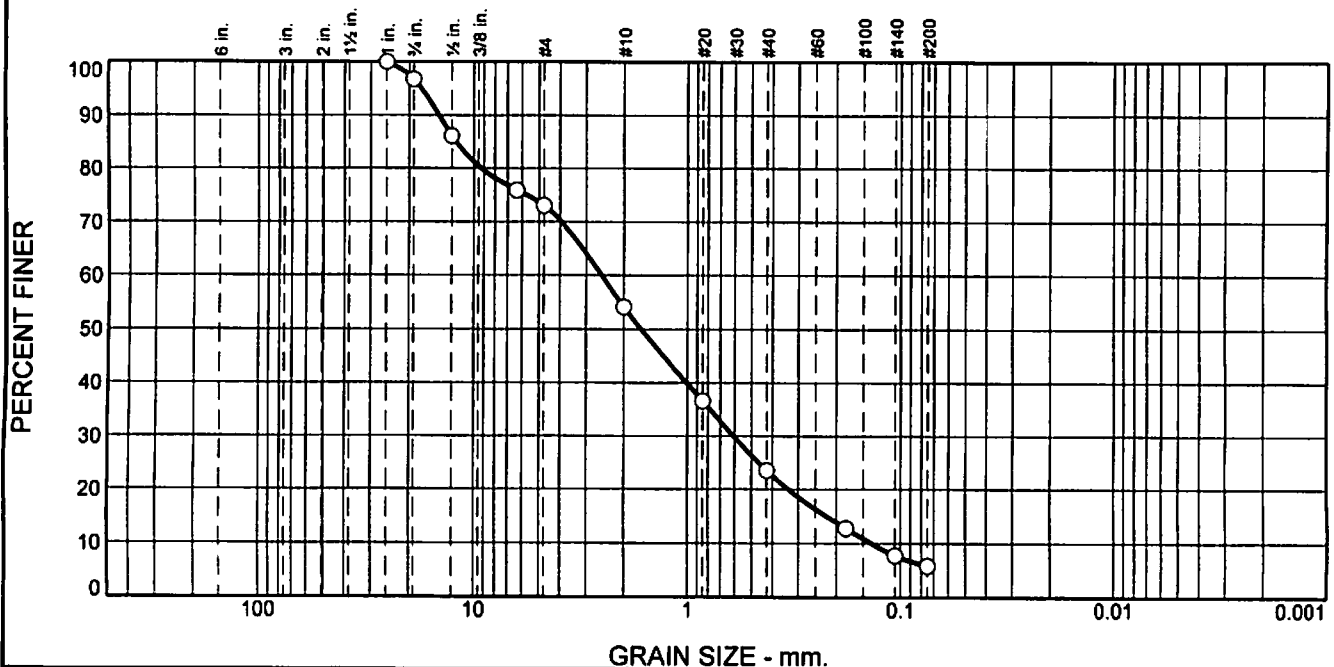
Date: 11/1/2013

Sample No: GT-1; S-4

Source of Sample: Boring Sample

Location:

Elev./Depth: 9.0 - 11.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	3	24	19	30	18	6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
1"	100		
3/4"	97		
1/2"	86		
1/4"	76		
#4	73		
#10	54		
#20	37		
#40	24		
#80	13		
#140	8		
#200	5.8		

Soil Description

Grey cm+f SAND; some mf+ GRAVEL; trace SILT

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 12.1409 D₆₀= 2.5413 D₅₀= 1.6648
D₃₀= 0.6081 D₁₅= 0.2218 D₁₀= 0.1376
C_u= 18.47 C_c= 1.06

Classification

USCS= SW-SM AASHTO=

Remarks

Moisture content 28.8%

* (no specification provided)

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-05-11-13

Client: ARCADIS US, Inc.

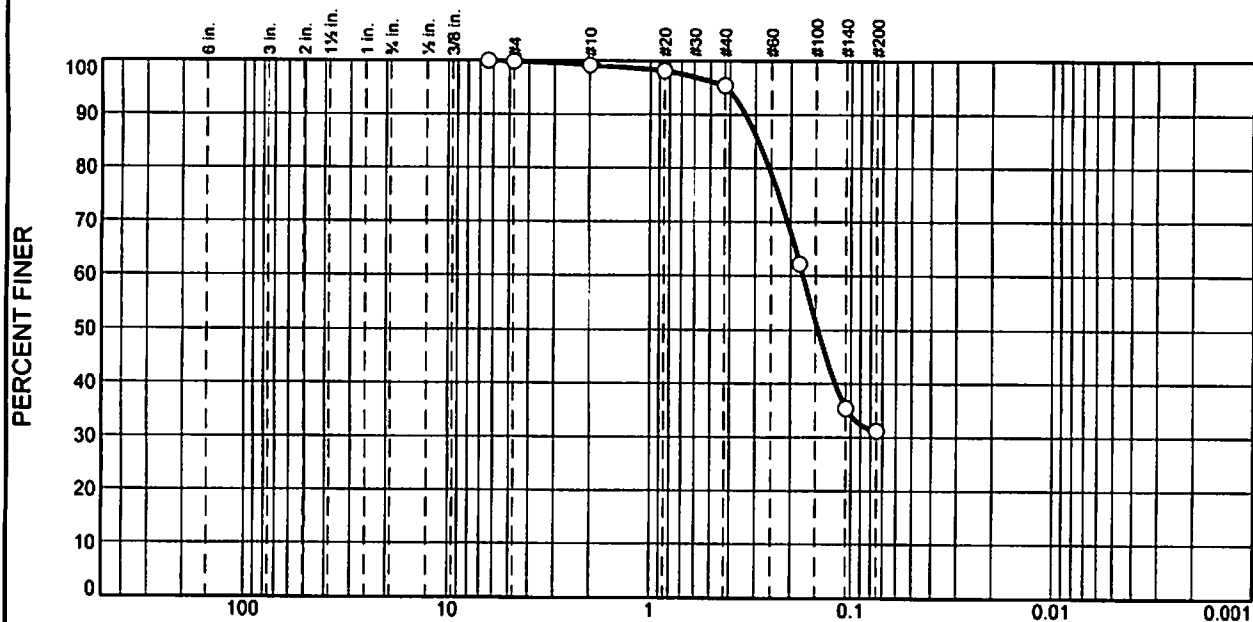
Date: 11/01/2013

Sample No: GT-2; S-3

Source of Sample: Boring Sample

Location:

Elev./Depth: 4.0 - 6.0'



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	4	64	31	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
1/4"	100		
#4	100		
#10	99		
#20	98		
#40	95		
#80	62		
#140	35		
#200	31		

Soil Description

Grey cmf- SAND; some SILT; trace ORGANIC MATERIAL

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 0.2906 D₆₀= 0.1734 D₅₀= 0.1460
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Moisture content 29.4%
Organic content 2.3%

* (no specification provided)

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574-SL-06-11-13

Client: ARCADIS US, Inc.

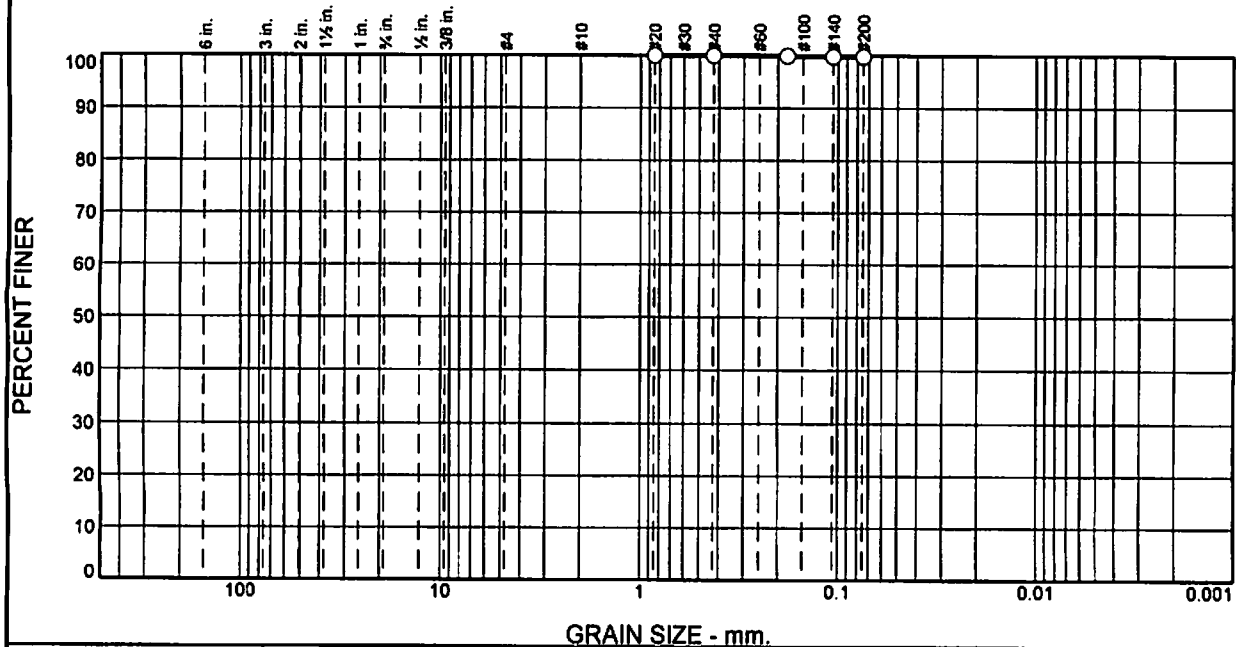
Date: 11/01/2013

Sample No: GT-2; S-7

Source of Sample: Boring Sample

Location:

Elev./Depth: 20.0 - 22.0'



GRAIN SIZE - mm.

% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	100	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#20	100		
#40	100		
#80	100		
#140	100		
#200	100		

* (no specification provided)

Soil Description

Grey CLAY; and SILT

Atterberg Limits

PL= 20

LL= 33

PI= 13

Coefficients

D₈₅=

D₆₀=

D₅₀=

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= CL

AASHTO=

Remarks

Moisture content 26.3%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date:

1/20/14

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-09-11-13

Client: ARCADIS US, Inc.

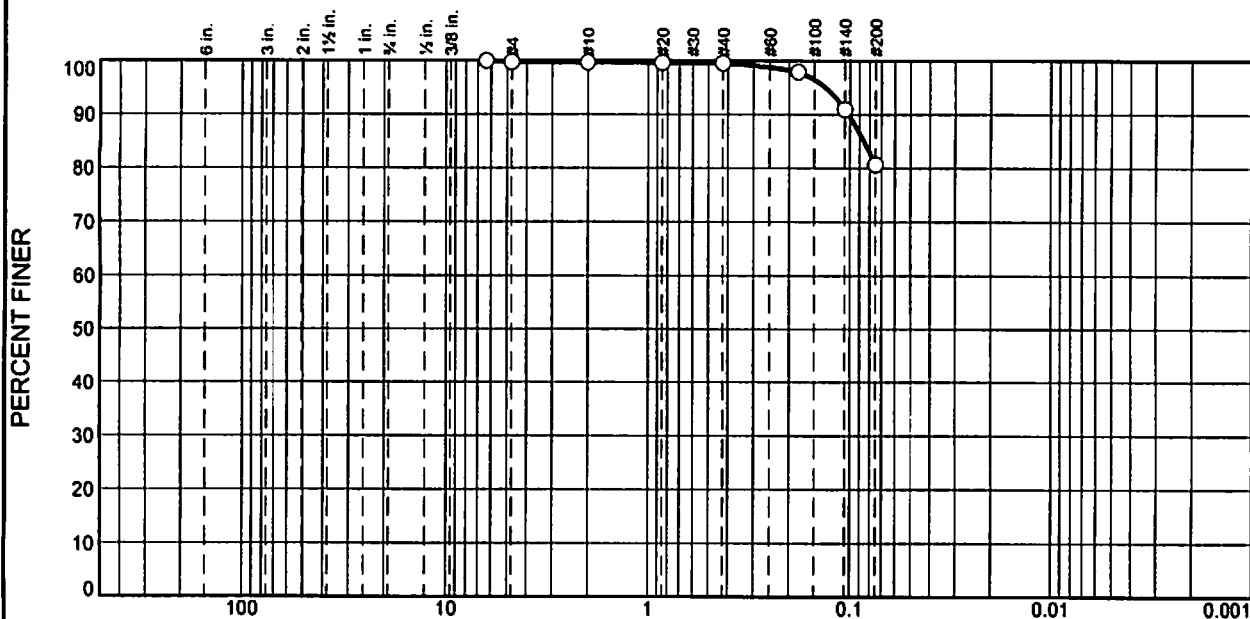
Date: 11/01/2013

Sample No: GT-2; S-18

Source of Sample: Boring Sample

Location:

Elev./Depth: 65.0 - 67.0'



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	19	81	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
1/4"	100		
#4	100		
#10	100		
#20	100		
#40	100		
#80	98		
#140	91		
#200	81		

Soil Description

Grey SILT; some CLAY; little f SAND

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 0.0859 D₆₀= D₅₀=
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Moisture content 17.4%

* (no specification provided)

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-10-11-13

Client: ARCADIS US, Inc.

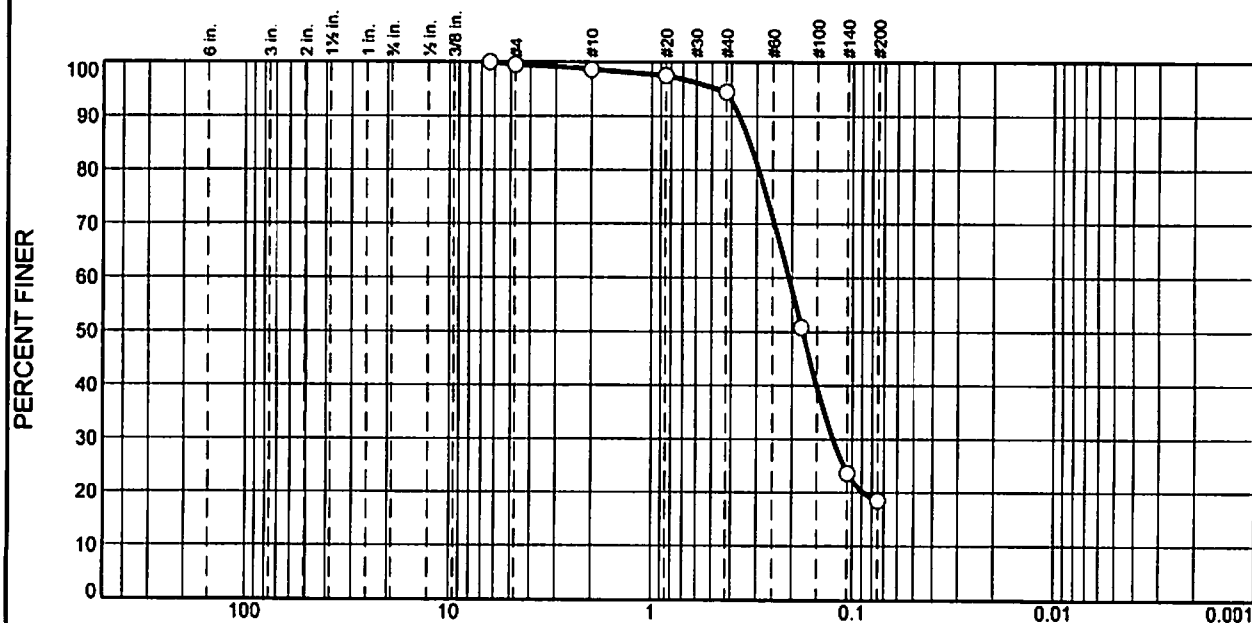
Date: 11/01/2013

Sample No: GT-3; S-3

Source of Sample: Boring Sample

Location:

Elev./Depth: 4.0 - 6.0'



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	5	76	18	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
1/4"	100		
#4	100		
#10	99		
#20	98		
#40	94		
#80	51		
#140	24		
#200	18		

* (no specification provided)

Soil Description

Grey cmf+ SAND; little SILT; trace ORGANIC MATERIAL

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 0.3255 D₆₀= 0.2082 D₅₀= 0.1777
D₃₀= 0.1252 D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

Moisture content 23.2%
Organic content 3.1%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-11-11-13

Client: ARCADIS US, Inc.

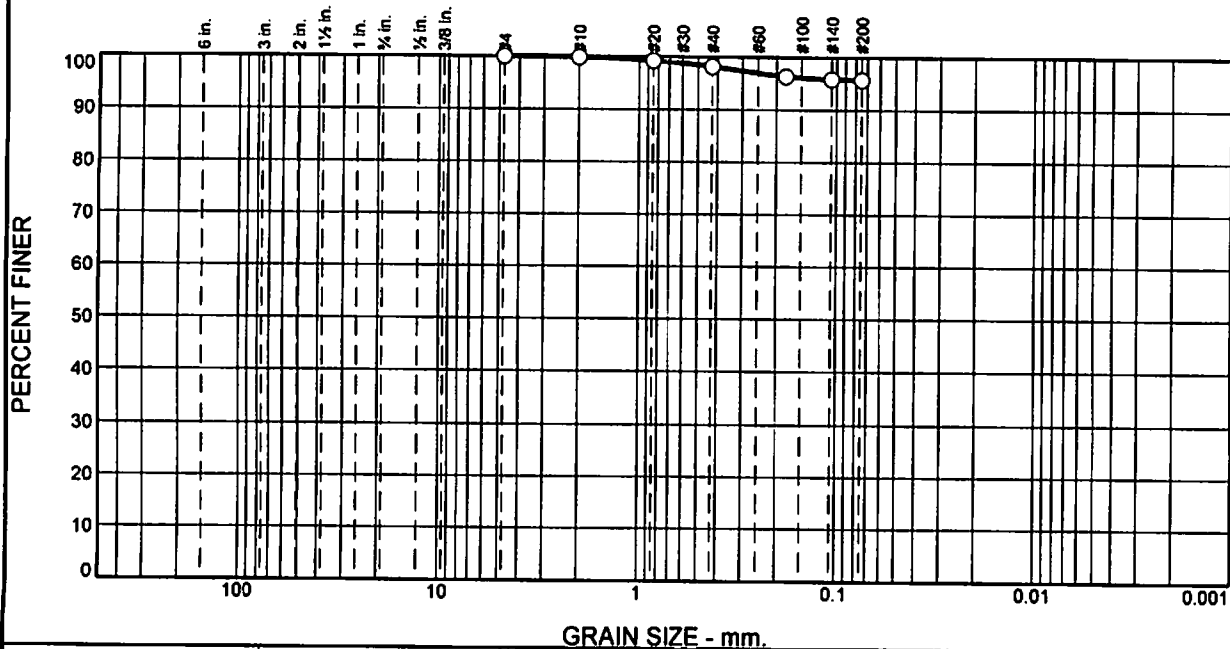
Date: 11/01/2013

Sample No: GT-3; S-6

Source of Sample: Boring Sample

Location:

Elev./Depth: 15.0 - 17.0'



GRAIN SIZE - mm.

% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	2	2	96	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#4	100		
#10	100		
#20	99		
#40	98		
#80	96		
#140	96		
#200	96		

* (no specification provided)

Soil Description

Grey CLAY; trace mf SAND

Atterberg Limits

PL= 19

LL= 28

PI= 9

Coefficients

D₈₅=

D₆₀=

D₅₀=

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= CL

AASHTO=

Remarks

Moisture content 23.4%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 1/20/14

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-14-11-13

Client: ARCADIS US, Inc.

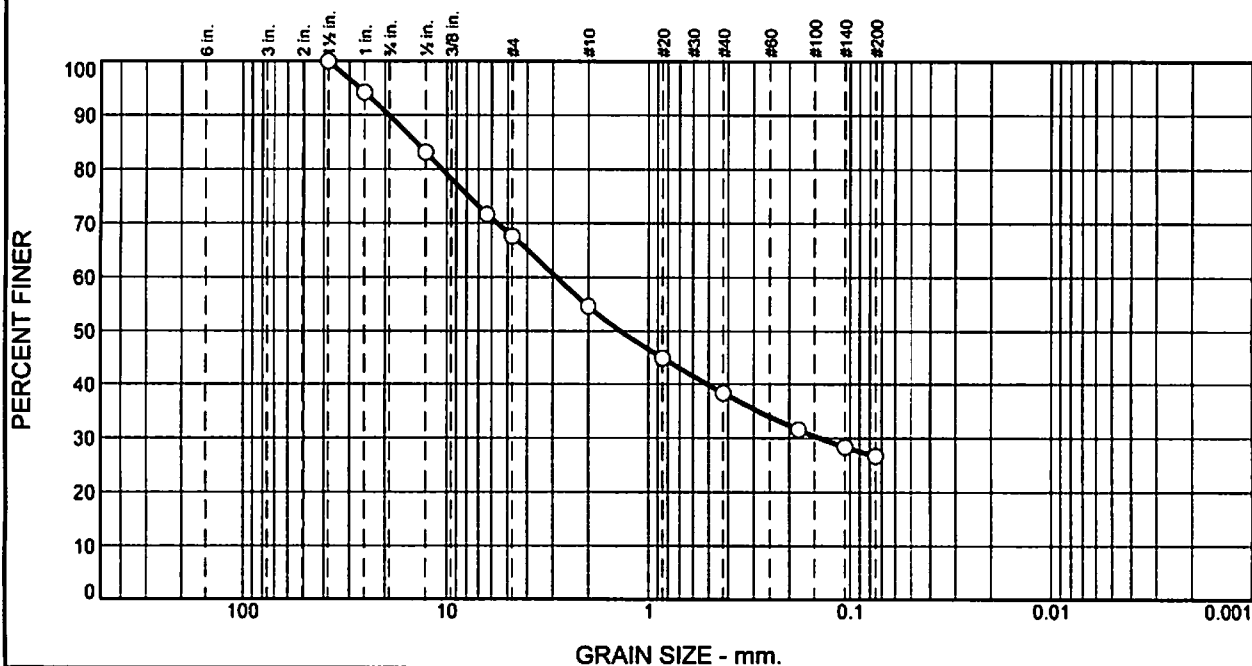
Date: 11/01/2013

Sample No: GT-3; S-16

Source of Sample: Boring Sample

Location:

Elev./Depth: 60.0 - 62.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	10	22	13	17	11	27	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
1-1/2"	100		
1"	94		
1/2"	83		
1/4"	72		
#4	68		
#10	55		
#20	45		
#40	38		
#80	32		
#140	28		
#200	27		

* (no specification provided)

Soil Description

Grey cmf SAND; some cmf GRAVEL; some SILT

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 14.1820 D₆₀= 2.8763 D₅₀= 1.3800
D₃₀= 0.1414 D₁₅= C_u= D₁₀= C_c=

Classification

USCS= SM AASHTO=

Remarks

Moisture content 5.9%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by: *AL*

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-15-11-13

Client: ARCADIS US, Inc.

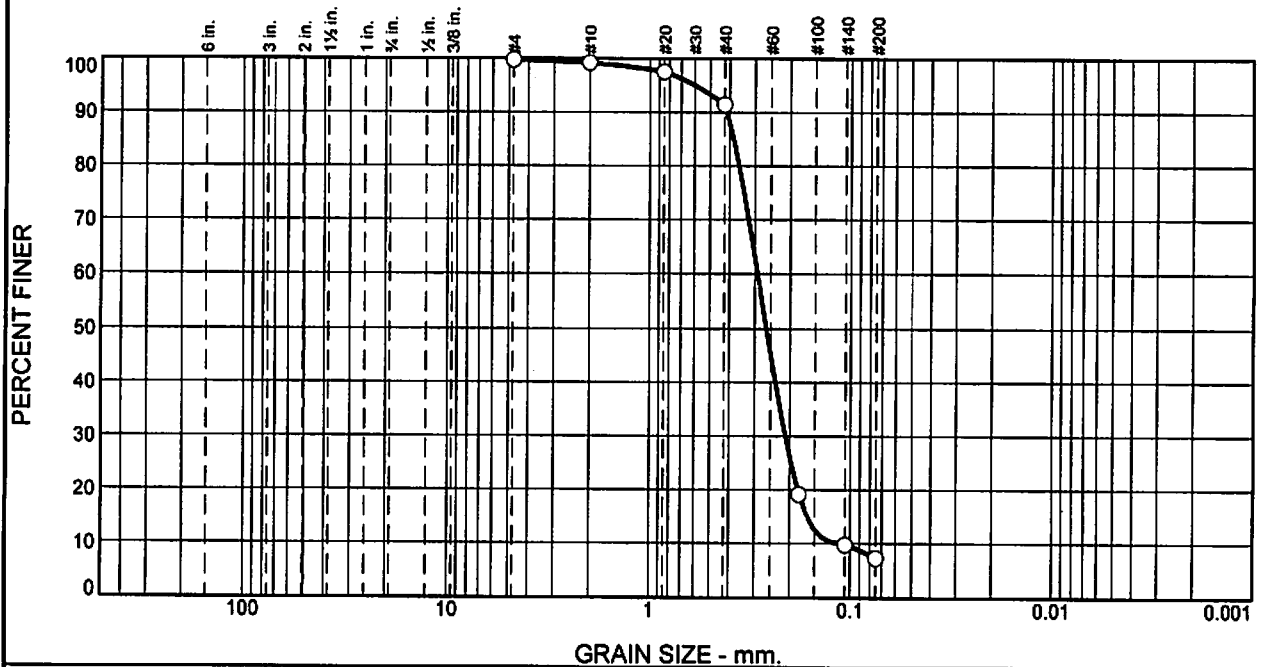
Date: 11/01/2013

Sample No: GT-4; S-3

Source of Sample: Boring Sample

Location:

Elev./Depth: 4.0 - 6.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
			1	8	84	7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#4	100		
#10	99		
#20	98		
#40	91		
#80	19		
#140	10		
#200	7.3		

Soil Description

Grey cmf+ SAND; trace SILT; trace ORGANIC MATERIAL

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 0.3841 D₆₀= 0.2902 D₅₀= 0.2624
D₃₀= 0.2111 D₁₅= 0.1637 D₁₀= 0.1143
C_u= 2.54 C_c= 1.34

Classification

USCS= SP AASHTO=

Remarks

Moisture content 21.6%
Organic content 0.7%

* (no specification provided)

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/12

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-16-11-13

Client: ARCADIS US, Inc.

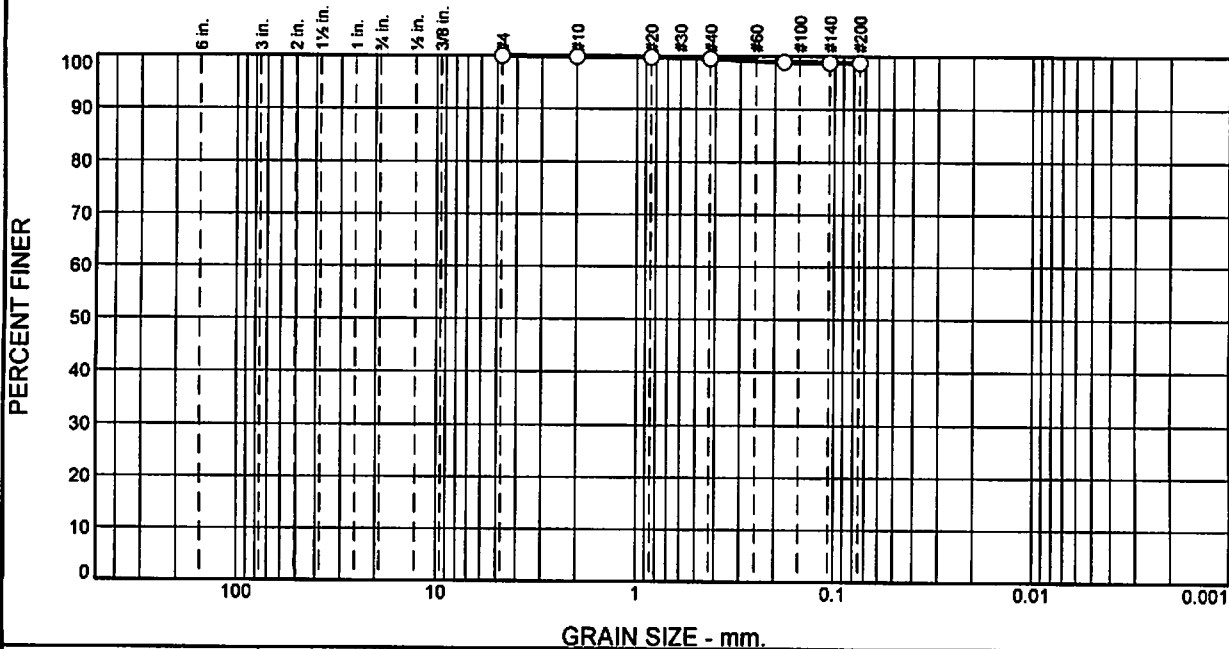
Date: 11/01/2013

Sample No: GT-4; S-7

Source of Sample: Boring Sample

Location:

Elev./Depth: 18.0 - 20.0'



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	1	99	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#4	100		
#10	100		
#20	100		
#40	100		
#80	99		
#140	99		
#200	99		

Soil Description

Grey CLAY; and SILT; trace f SAND

Atterberg Limits

PL= 19 LL= 28 PI= 9

Coefficients

D₈₅= D₆₀= D₅₀=
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

Moisture content 35.1%

* (no specification provided)

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by: *[Signature]*

Date: *1/20/14*

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-18-11-13

Client: ARCADIS US, Inc.

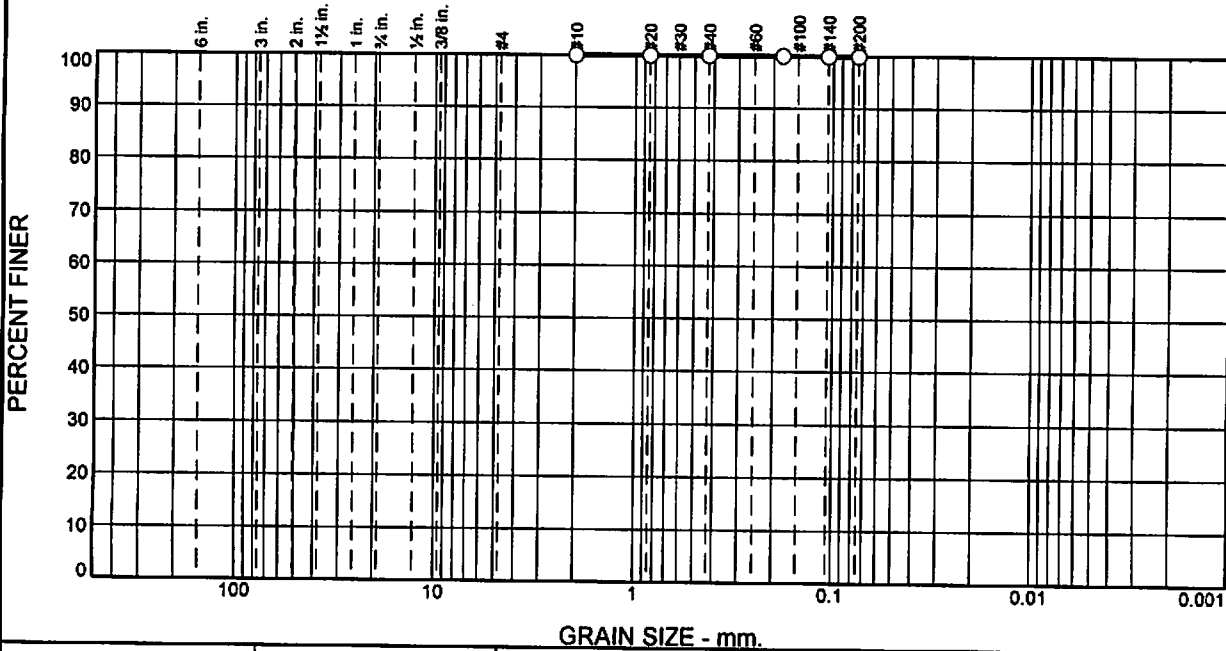
Date: 11/01/2013

Sample No: GT-4; S-13

Source of Sample: Boring Sample

Location:

Elev./Depth: 38.0 - 40.0'



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	100	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#20	100		
#40	100		
#80	100		
#140	100		
#200	100		

Soil Description

Grey CLAY; and SILT

Atterberg Limits

PL= 22

LL= 30

PI= 8

Coefficients

D₈₅=

D₆₀=

D₅₀=

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= ML

AASHTO=

Remarks

Moisture content 24.5%

* (no specification provided)

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 1/20/14

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-22-11-13

Client: ARCADIS US, Inc.

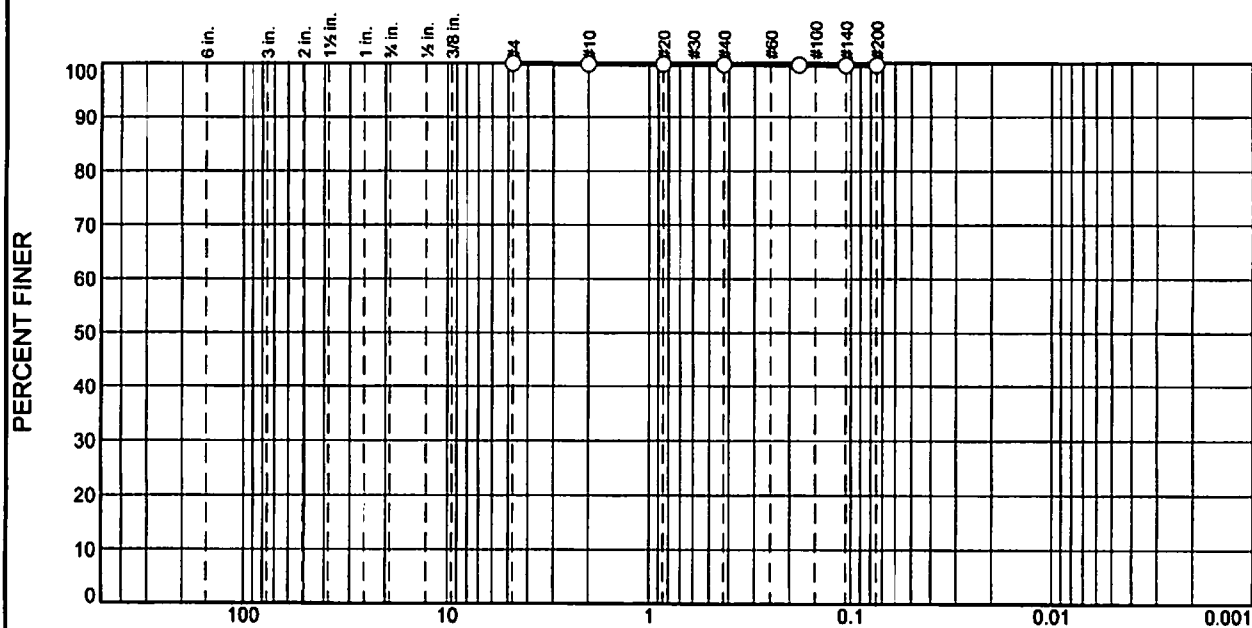
Date: 11/01/2013

Sample No: GT-5; S-12

Source of Sample: Boring Sample

Location:

Elev./Depth: 40.0 - 42.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	100	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#4	100		
#10	100		
#20	100		
#40	100		
#80	100		
#140	100		
#200	100		

* (no specification provided)

Soil Description

Grey CLAY; and SILT

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= D₆₀= D₅₀=
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Moisture content 23.3%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-02-11-13

Client: ARCADIS US, Inc.

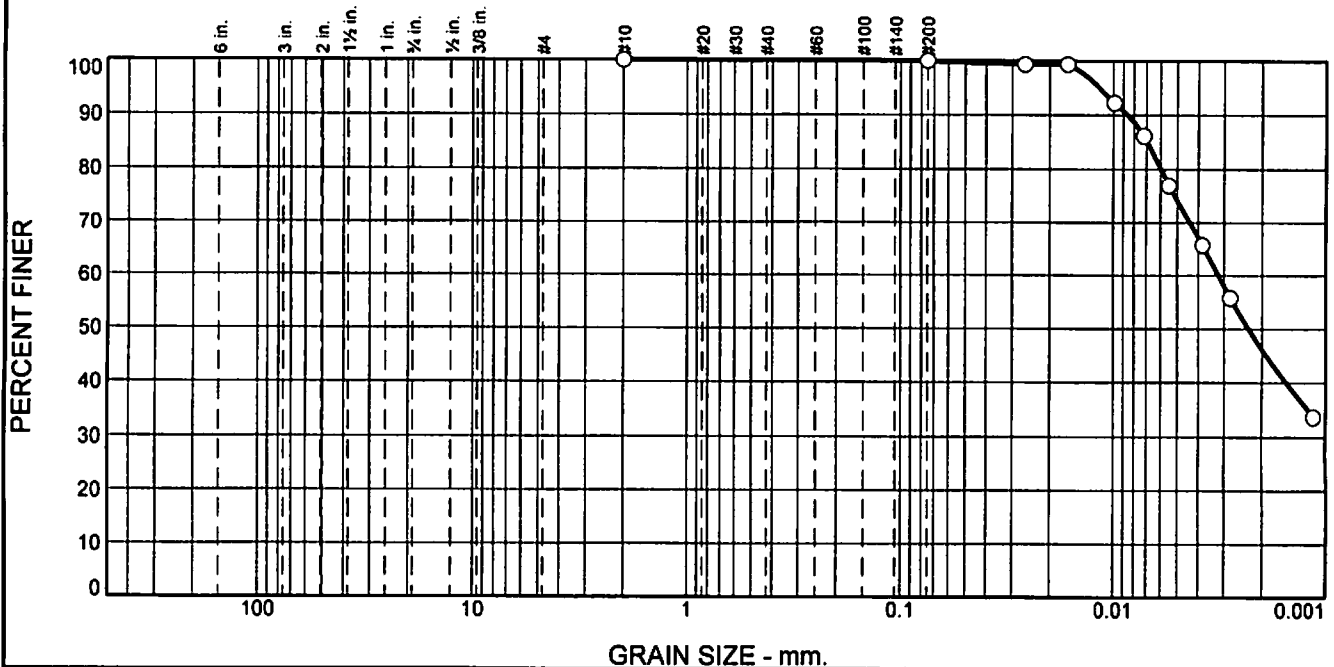
Date: 11/1/2013

Sample No: GT-1; S-7

Source of Sample: Boring Sample

Location:

Elev./Depth: 29.0 - 31.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	26	74

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	100		

* (no specification provided)

Soil Description

Grey CLAY; some SILT

Atterberg Limits

PL= 21

LL= 35

PI= 14

Coefficients

D₈₅= 0.0069

D₆₀= 0.0032

D₅₀= 0.0023

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= CL

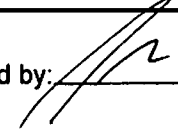
AASHTO=

Remarks

Moisture content 40.7%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by: 

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-03-11-13

Client: ARCADIS US, Inc.

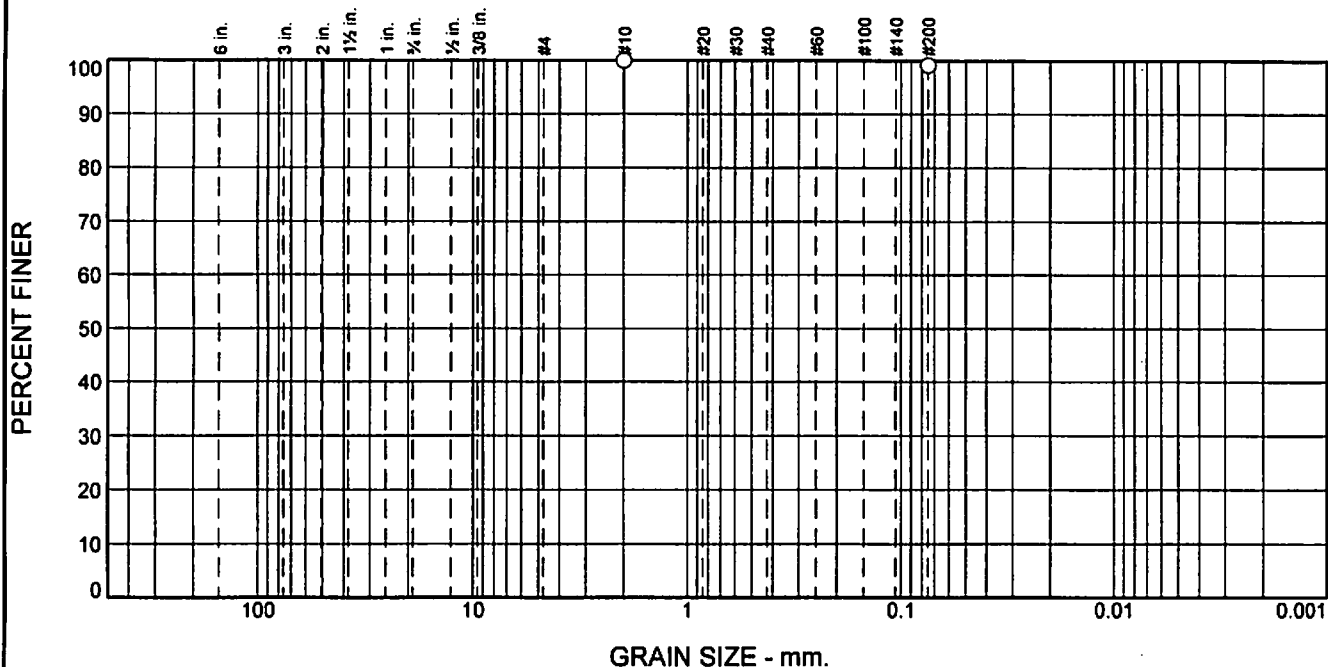
Date: 11/22/13

Sample No: GT-1; S-9

Source of Sample: Boring Sample

Location:

Elev./Depth: 36.0 - 38.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	1	99	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	99		

* (no specification provided)

Soil Description

Grey CLAY; and SILT

Atterberg Limits

PL= 16

LL= 28

PI= 12

Coefficients

D₈₅=

D₆₀=

D₅₀=

D₃₀=

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= CL

AASHTO=

Remarks

Moisture content 28.1%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-08-11-13

Client: ARCADIS US, Inc.

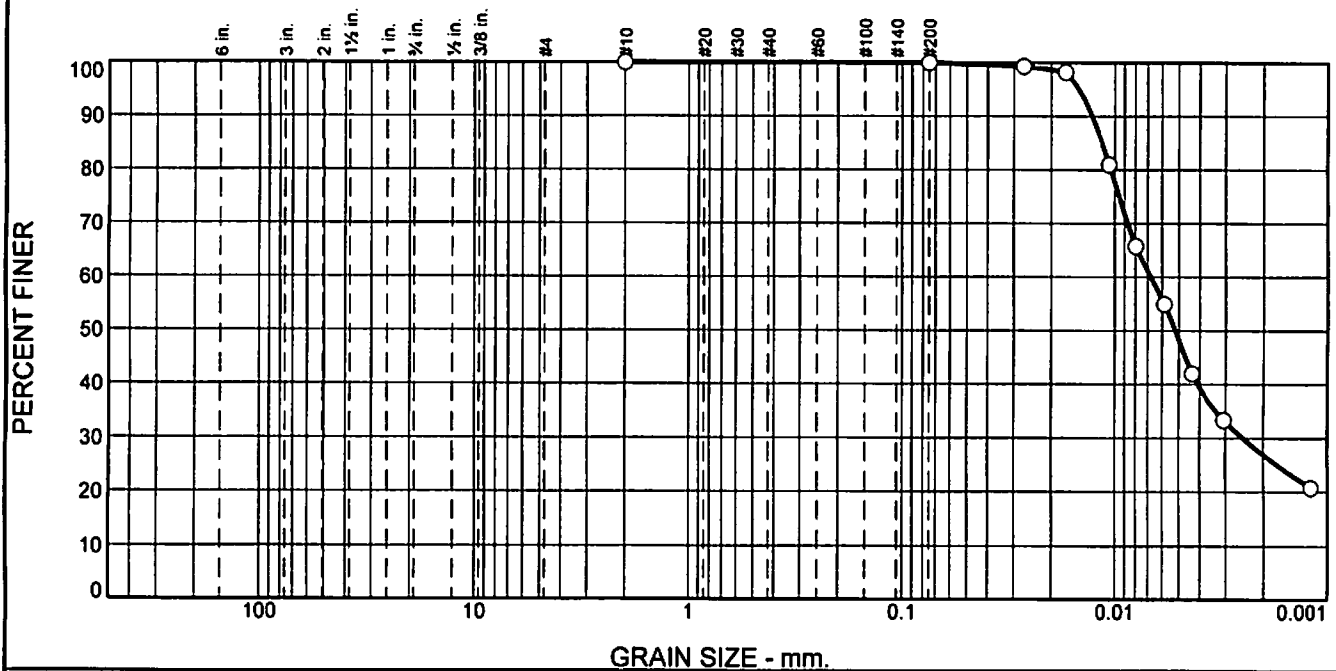
Date: 11/1/13

Sample No: GT-2; S-14

Source of Sample: Boring Sample

Location:

Elev./Depth: 45.0 - 47.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	52	48

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	100		

* (no specification provided)

Soil Description

Grey SILT; and CLAY

Atterberg Limits

PL= 18

LL= 27

PI= 9

Coefficients

D₈₅= 0.0115

D₆₀= 0.0068

D₅₀= 0.0052

D₃₀= 0.0025

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= CL

AASHTO=

Remarks

Moisture content 25.2%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-12-11-13

Client: ARCADIS US, Inc.

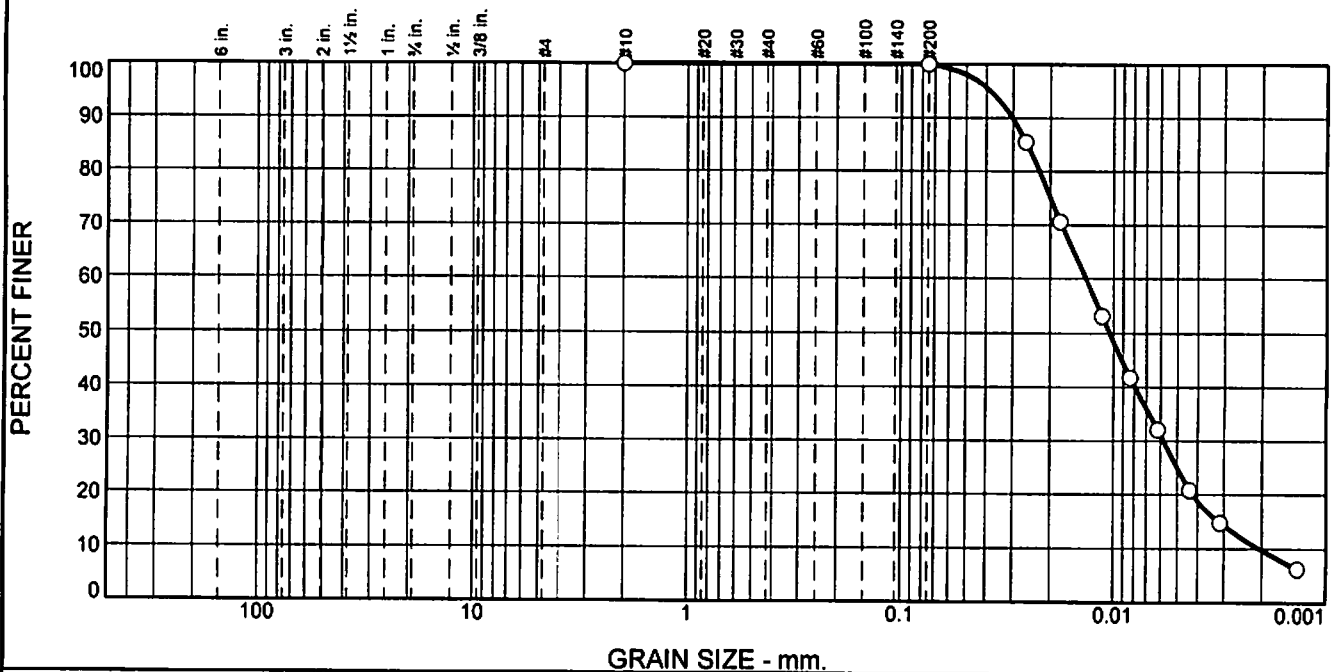
Date: 11/1/2013

Sample No: GT-3; S-12

Source of Sample: Boring Sample

Location:

Elev./Depth: 45.0 - 47.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	75	25

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	100		

* (no specification provided)

Soil Description

Grey SILT; some CLAY

Atterberg Limits

PL= 20

LL= 24

PI= 4

Coefficients

D₈₅= 0.0258

D₆₀= 0.0136

D₅₀= 0.0104

D₃₀= 0.0058

D₁₅= 0.0032

D₁₀= 0.0021

C_u= 6.60

C_c= 1.21

Classification

USCS= CL-ML

AASHTO=

Remarks

Moisture content 21.6%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-17-11-13

Client: ARCADIS US, Inc.

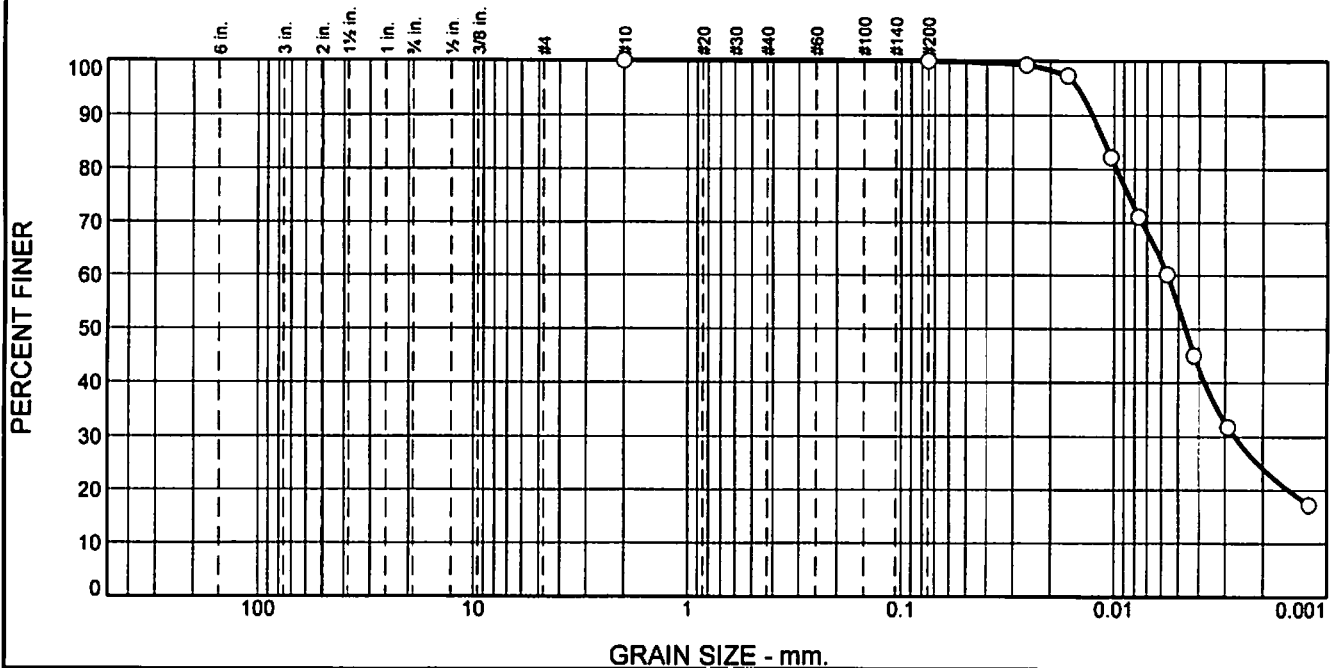
Date: 11/1/2013

Sample No: GT-4; S-10

Source of Sample: Boring Sample

Location:

Elev./Depth: 28.0 - 30.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	46	54

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	100		

* (no specification provided)

Soil Description

Grey CLAY; and SILT

Atterberg Limits

PL= 20

LL= 29

PI= 9

Coefficients

D₈₅= 0.0111

D₆₀= 0.0056

D₅₀= 0.0047

D₃₀= 0.0027

D₁₅=

D₁₀=

C_u=

C_c=

Classification

USCS= CL

AASHTO=

Remarks

Moisture content 38.9%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by:

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-19-11-13

Client: ARCADIS US, Inc.

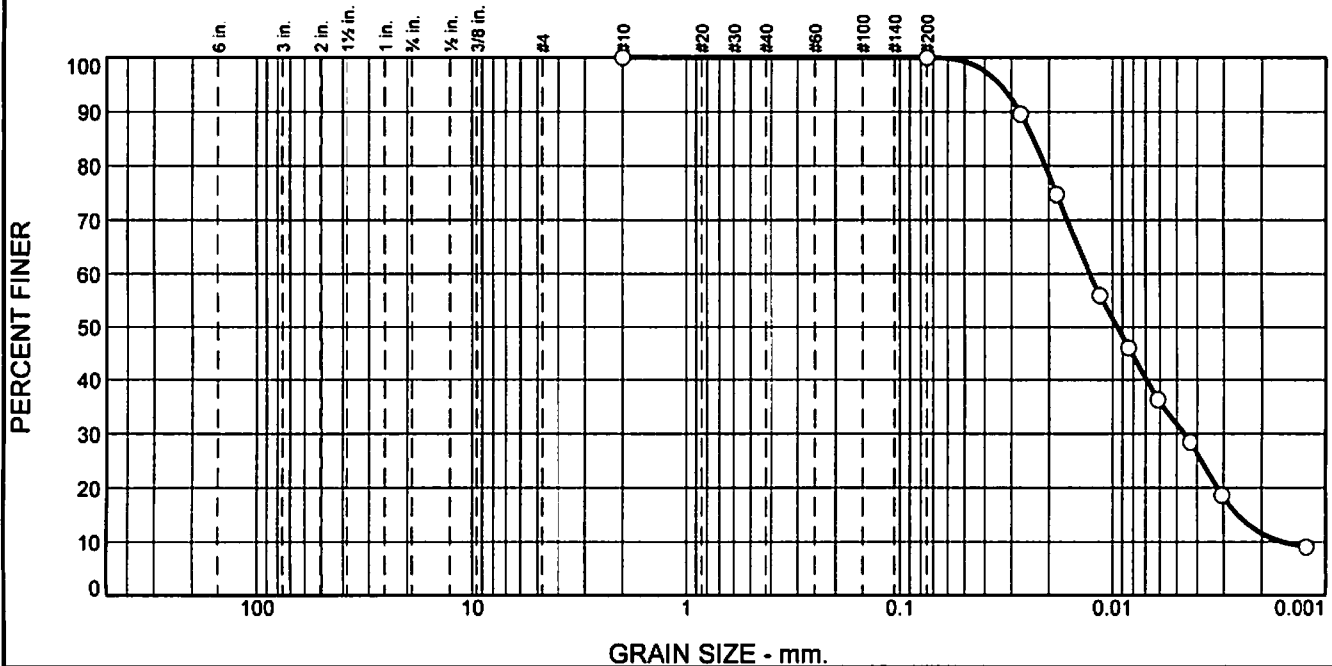
Date: 11/01/2013

Sample No: GT-4; S-16

Source of Sample: Boring Sample

Location:

Elev./Depth: 53.0 - 55.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	68	32

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	100		

* (no specification provided)

Soil Description

Grey SILT; some CLAY

Atterberg Limits

PL= 18

LL= 25

PI= 7

Coefficients

D₈₅= 0.0237

D₆₀= 0.0128

D₅₀= 0.0095

D₃₀= 0.0046

D₁₅= 0.0026

D₁₀= 0.0016

C_u= 8.00

C_c= 1.04

Classification

USCS= CL-ML

AASHTO=

Remarks

Moisture content 23.2%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by: *[Signature]*

Date: 12/3/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-20-11-13

Client: ARCADIS US, Inc.

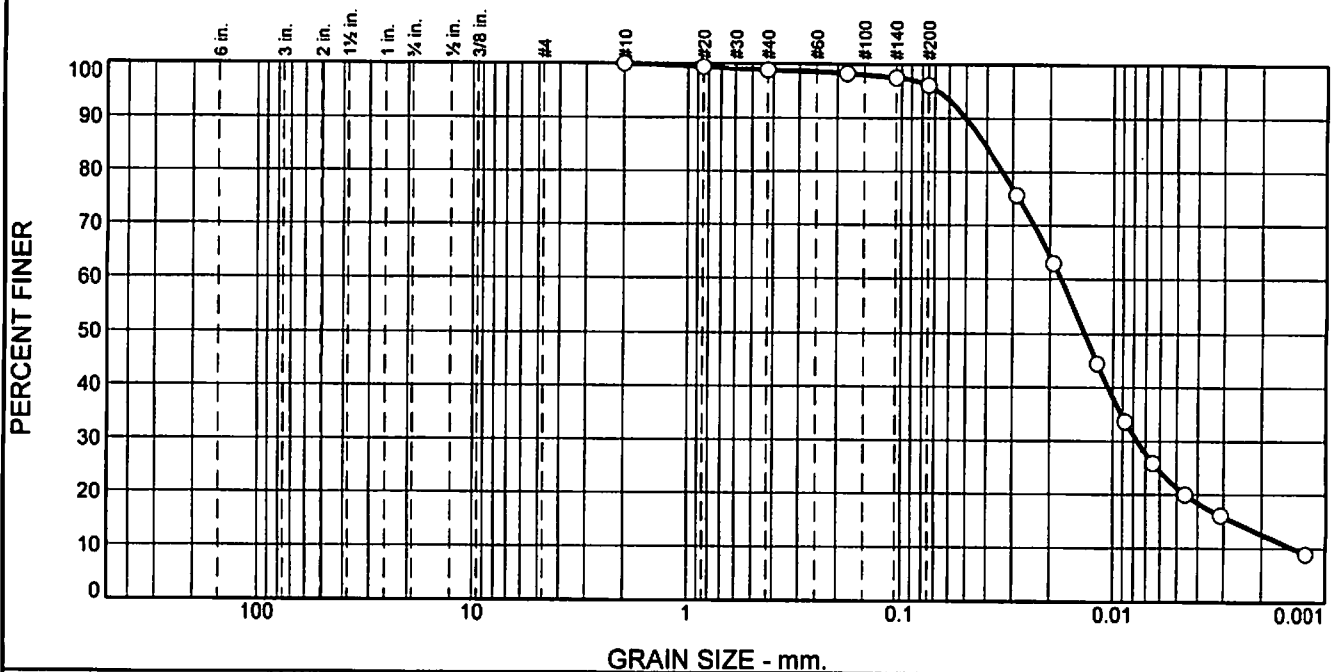
Date: 11/01/2013

Sample No: GT-4; S-19

Source of Sample: Boring Sample

Location:

Elev./Depth: 68.0 - 70.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	1	3	75	21

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#20	99		
#40	99		
#80	98		
#140	97		
#200	96		

* (no specification provided)

Soil Description

Grey SILT; some CLAY; trace mf SAND

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 0.0406 D₆₀= 0.0178 D₅₀= 0.0138
D₃₀= 0.0077 D₁₅= 0.0027 D₁₀= 0.0014
C_u= 12.37 C_c= 2.32

Classification

USCS= CL-ML AASHTO=

Remarks

Moisture content 30.0%

ATLANTIC TESTING LABORATORIES, LIMITED

Figure

Reviewed by:

Date: 12/2/13

Particle Size Distribution Report

Project: Hudson Water Street - Operable Unit 2 Hudson, NY

Report No.: CD3574SL-23-11-13

Client: ARCADIS US, Inc.

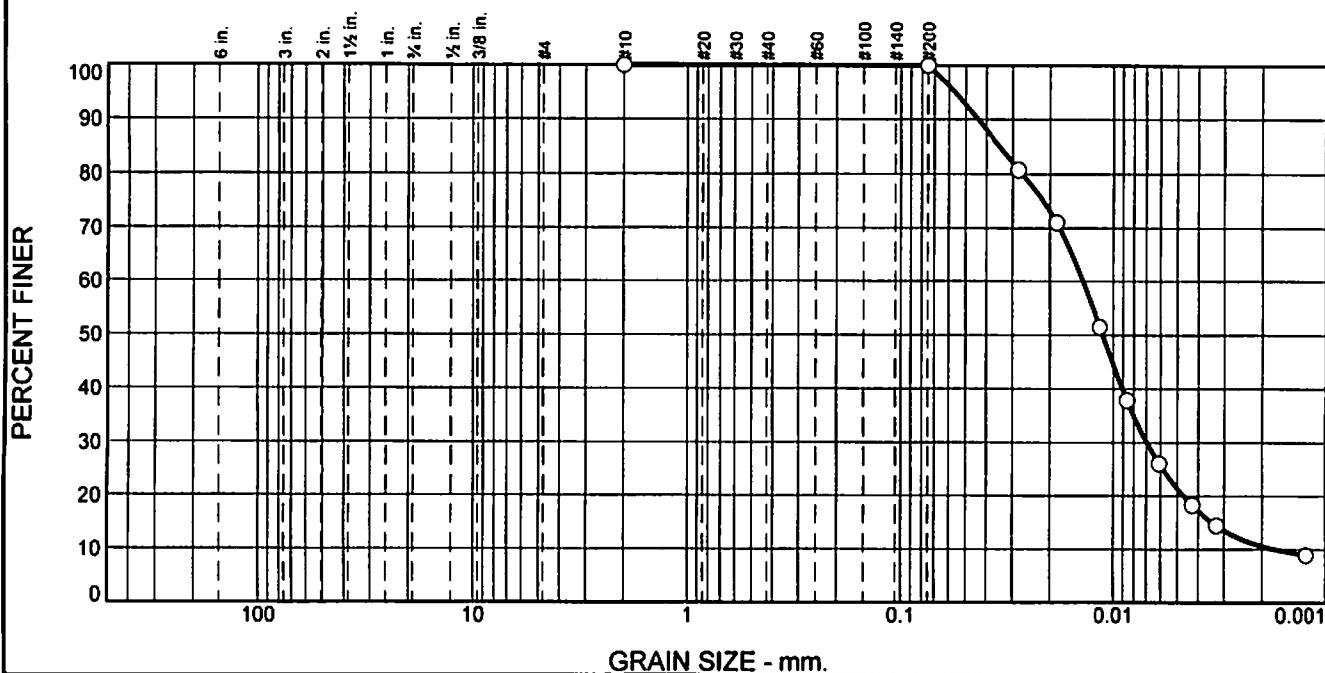
Date: 11/01/2013

Sample No: GT-5; S-17

Source of Sample: Boring Sample

Location:

Elev./Depth: 65.0 - 67.0'



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	0	79	21

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#200	100		

* (no specification provided)

Soil Description

Grey SILT; some CLAY

Atterberg Limits

PL= NP

LL= NP

PI= NP

Coefficients

D₈₅= 0.0346

D₆₀= 0.0140

D₅₀= 0.0113

D₃₀= 0.0070

D₁₅= 0.0034

D₁₀= 0.0018

C_u= 7.92

C_c= 1.97

Classification

USCS= ML

AASHTO=

Remarks

Moisture content 23.9%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by:

Date: 12/18/13

ATTACHMENT B
MOISTURE CONTENT RESULTS



ATLANTIC TESTING LABORATORIES

Hudson Water Street – Operable Unit 2

Hudson, New York

ARCADIS

ATL Report No. CD3574D-02-12-13

ASTM D 2216 Moisture Content

Boring No.	Sample No.	Depth (ft)	Water Content (%)
GT-1	S-4	9.0 – 11.0	28.8
GT-1	S-7	29.0 – 31.0	40.7
GT-1	S-9	36.0 – 38.0	28.1
GT-1	S-16	66.0 – 68.0	28.3
GT-2	S-3	4.0 – 6.0	29.4
GT-2	S-7	20.0 – 22.0	26.3
GT-2	S-8	22.0 – 24.0	25.9
GT-2	S-14	45.0 – 47.0	25.2
GT-2	S-18	65.0 – 67.0	17.4
GT-3	S-3	4.0 – 6.0	23.2
GT-3	S-6	15.0 – 17.0	23.4
GT-3	S-11	40.0 – 42.0	28.6
GT-3	S-12	45.0 – 47.0	21.6
GT-3	S-13	47.0 – 49.0	28.3
GT-3	S-16	60.0 – 62.0	5.9
GT-4	S-3	4.0 – 6.0	21.6
GT-4	S-7	18.0 – 20.0	35.1
GT-4	S-10	28.0 – 30.0	38.9
GT-4	S-13	38.0 – 40.0	24.5
GT-4	S-16	53.0 – 55.0	23.2
GT-4	S-19	68.0 – 70.0	30.0
GT-5	S-6	15.0 – 17.0	55.7
GT-5	S-7	17.0 – 19.0	48.7
GT-5	S-10	30.0 – 32.0	47.8
GT-5	S-12	40.0 – 42.0	23.3
GT-5	S-17	65.0 – 67.0	23.9
GT-5	S-18	67.0 – 69.0	29.7

ATTACHMENT C
ATTERBERG LIMIT TEST RESULTS



ATLANTIC TESTING LABORATORIES

Hudson Water Street – Operable Unit 2

Hudson, New York

ARCADIS

ATL Report No. CD3574D-02-12-13

ASTM D 4318 Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits)

Boring No.	Sample No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index
GT-1	S-7	29.0 – 31.0	35	21	14
GT-1	S-9	36.0 – 38.0	28	16	12
GT-1	S-16	66.0 – 68.0	24	18	6
GT-2	S-7	20.0 – 22.0	33	20	13
GT-2	S-8	22.0 – 24.0	30	18	12
GT-2	S-14	45.0 – 47.0	27	18	9
GT-3	S-6	15.0 – 17.0	28	19	9
GT-3	S-12	45.0 – 47.0	24	20	4
GT-3	S-13	47.0 – 49.0	28	20	8
GT-4	S-7	18.0 – 20.0	28	19	9
GT-4	S-10	28.0 – 30.0	29	20	9
GT-4	S-13	38.0 – 40.0	30	22	8
GT-4	S-16	53.0 – 55.0	25	18	7
GT-5	S-6	15.0 – 17.0	55	33	22
GT-5	S-10	30.0 – 32.0	35	22	13
GT-5	S-17	65.0 – 67.0	NP	NP	NP
GT-5	S-18	67.0 – 69.0	NP	NP	NP

*NP = Non-plastic

ATTACHMENT D
CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
TEST RESULTS



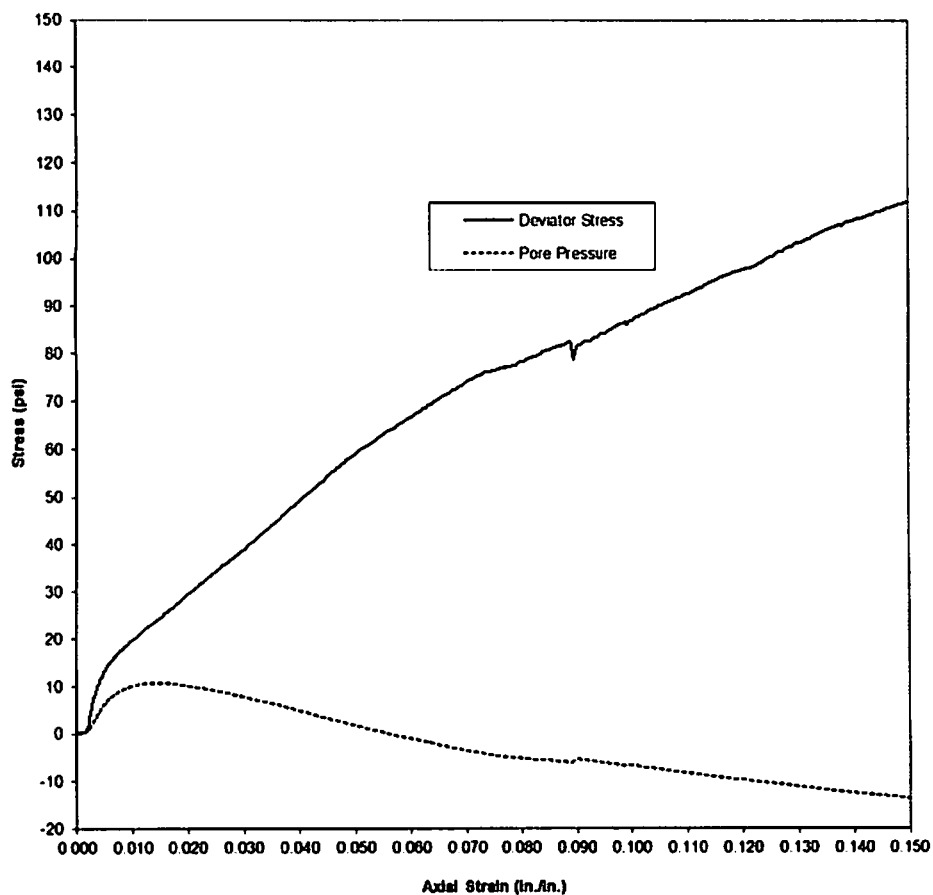
ATLANTIC TESTING LABORATORIES

Client:	ARCADIS US, Inc.	ATL Report No.:	CD3574SL-06-11-13
Project:	Hudson Water Street-Operable Unit 2	Date:	November 18, 2013
Sample ID:	GT-2; S-8	Sample Depth:	22.0 – 24.0'

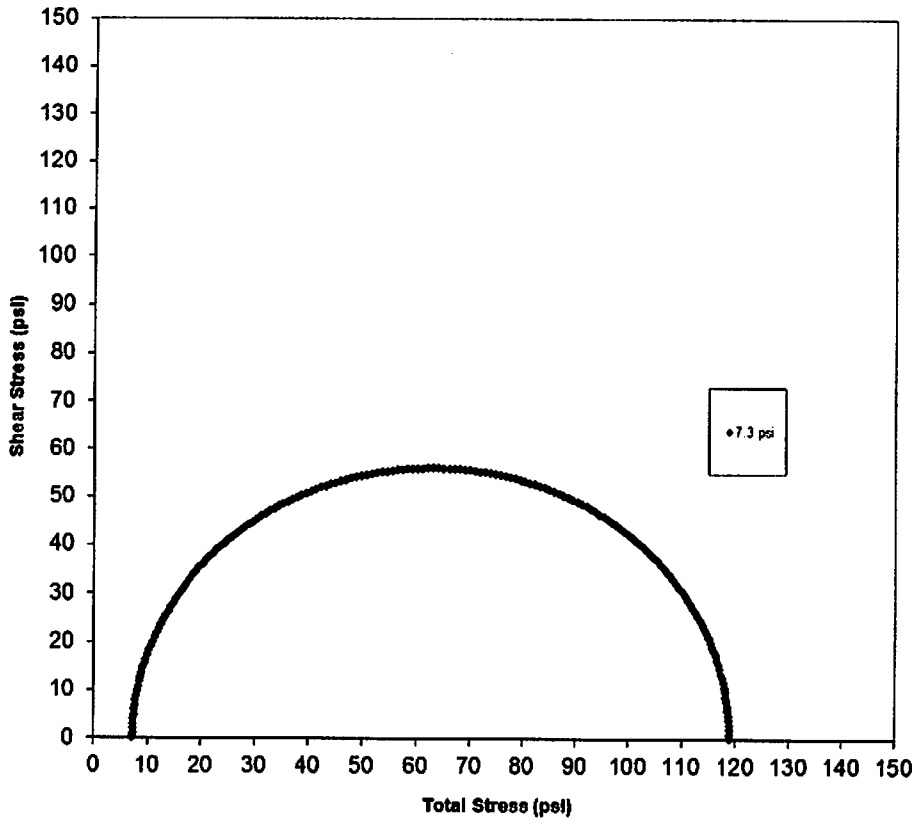
Consolidated-Undrained Triaxial Compression Test ASTM D 4767

Parameter	Result
Confining Pressure, (psi)	7.3
Dry Unit Weight, (pcf)	86.3
Moisture Content, (%)	25.9
Height of Sample, (in)	5.987
Diameter of Sample, (in)	2.837
Height/Diameter Ratio	2.11
Deviator Stress, (psi)	111.8
Effective Minor Principal Stress, (psi)	20.9
Effective Major Principal Stress, (psi)	132.7
Axial Strain at Failure, (%)	15.0
Rate of Axial Strain, (%/min)	0.08

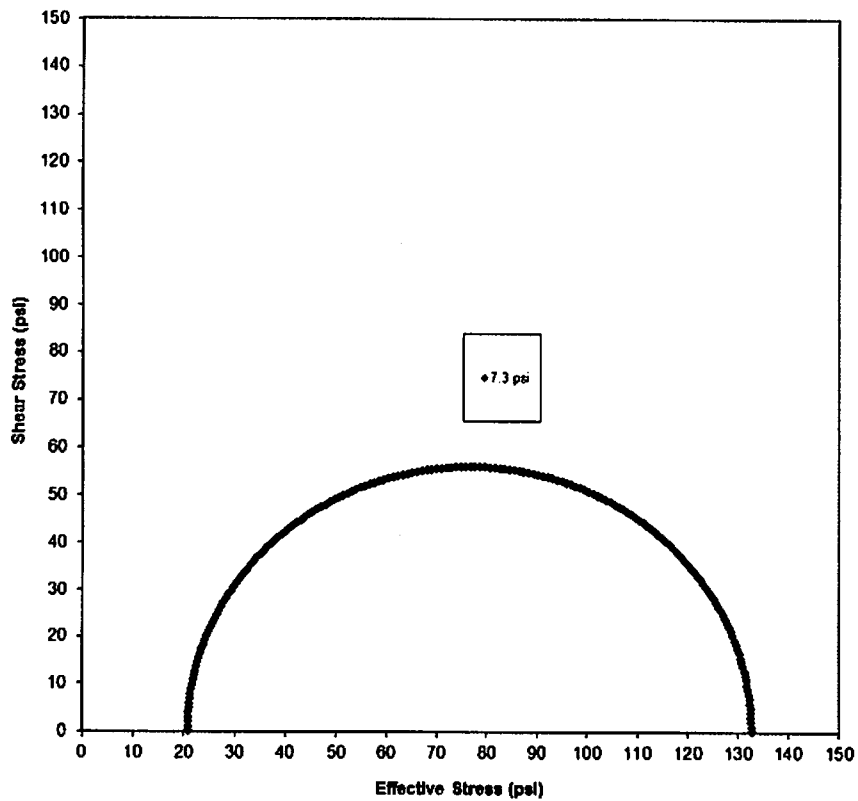
Deviator Stress and Pore Pressure 7.3 psi



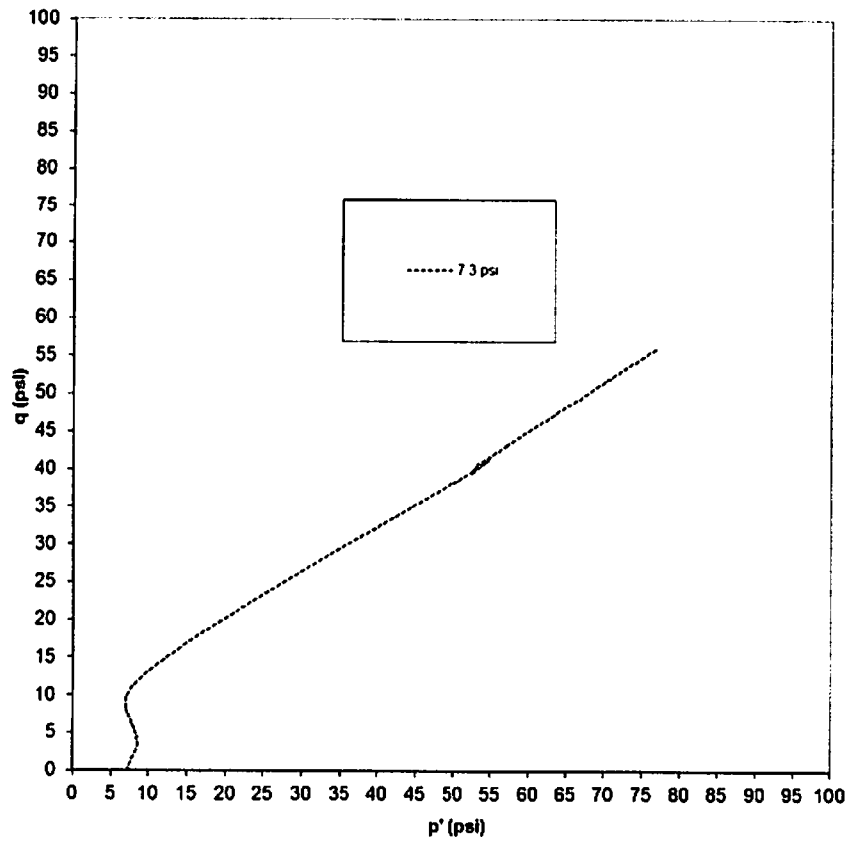
Mohr's Circle for Total Stress



Mohr's Circle for Effective Stress



p' vs. q



7.3psi Failure Photograph

Reviewed By: _____

Date: 12/3/13



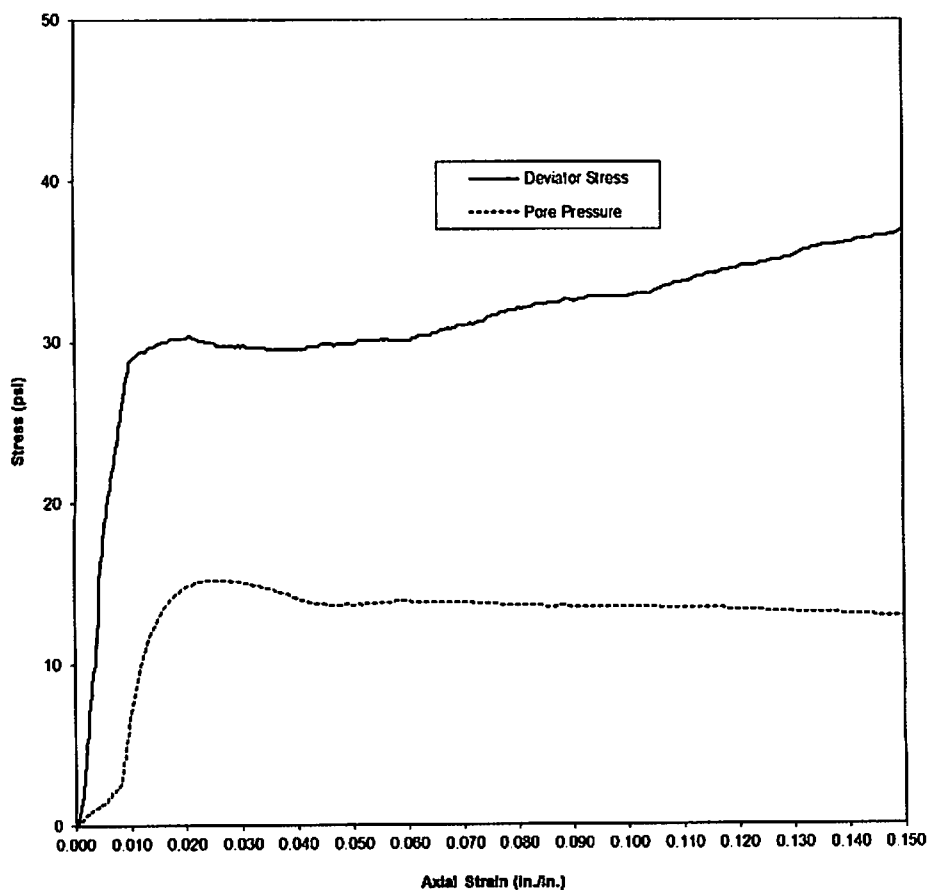
ATLANTIC TESTING LABORATORIES

Client:	ARCADIS US, Inc.	ATL Report No.:	CD3574SL-23-11-13(Revised)
Project:	Hudson Water Street-Operable Unit 2	Date:	November 18, 2013
Sample ID:	GT-5; S-18	Sample Depth:	67.0 – 69.0'

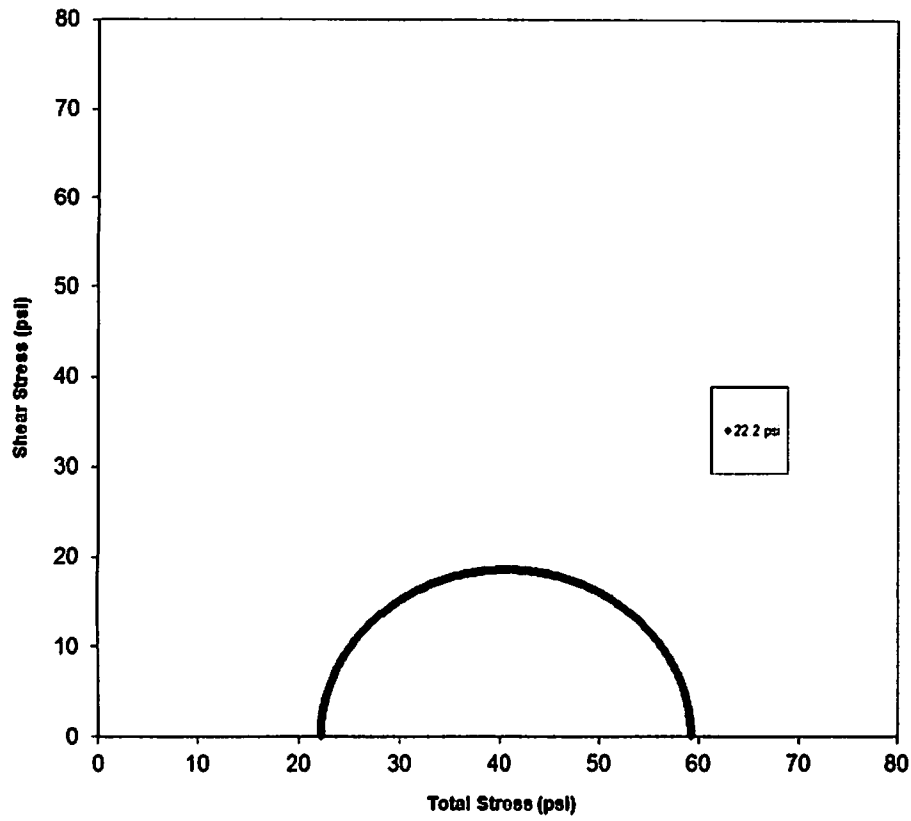
Consolidated-Undrained Triaxial Compression Test ASTM D 4767

Parameter	Result
Confining Pressure, (psi)	22.2
Dry Unit Weight, (pcf)	81.2
Moisture Content, (%)	29.7
Height of Sample, (in)	5.876
Diameter of Sample, (in)	2.937
Height/Diameter Ratio	2.02
Deviator Stress, (psi)	37.1
Effective Minor Principal Stress, (psi)	9.4
Effective Major Principal Stress, (psi)	46.5
Axial Strain at Failure, (%)	15.0
Rate of Axial Strain, (%/min)	0.09

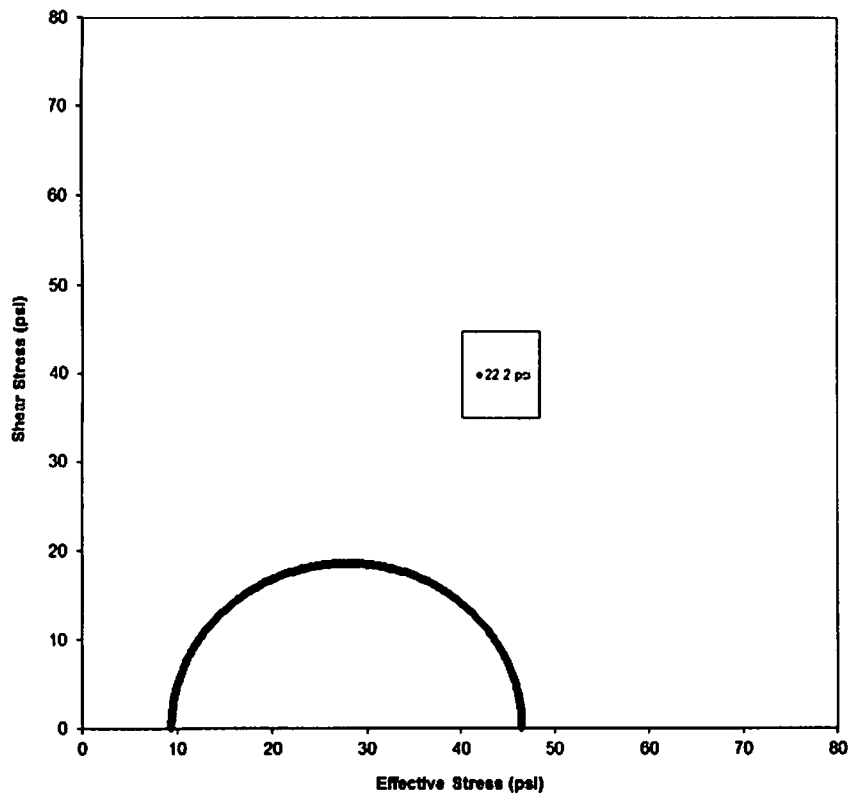
Deviator Stress and Pore Pressure 22.2 psi

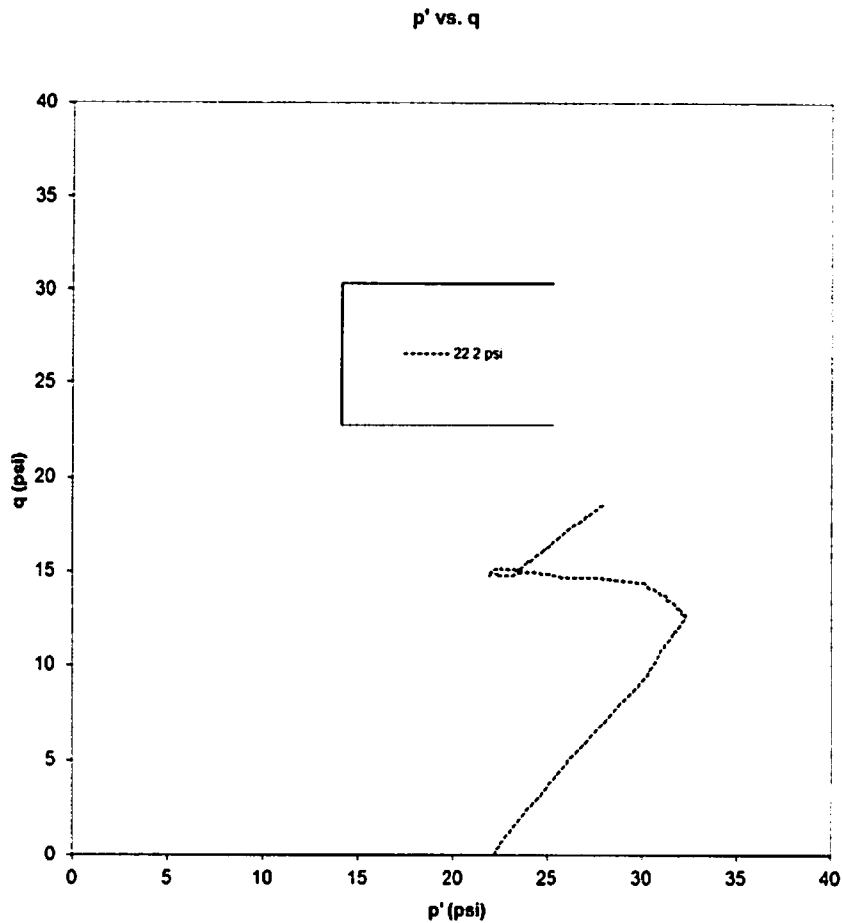


Mohr's Circle for Total Stress



Mohr's Circle for Effective Stress

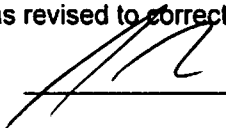




22.2psi Failure Photograph

Remarks

This report was revised to correctly indicate the deviator stress at failure was 37.1psi, not 37.0psi.

Reviewed By: 

Date: 1/20/14

ATTACHMENT E
UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION
TEST RESULTS

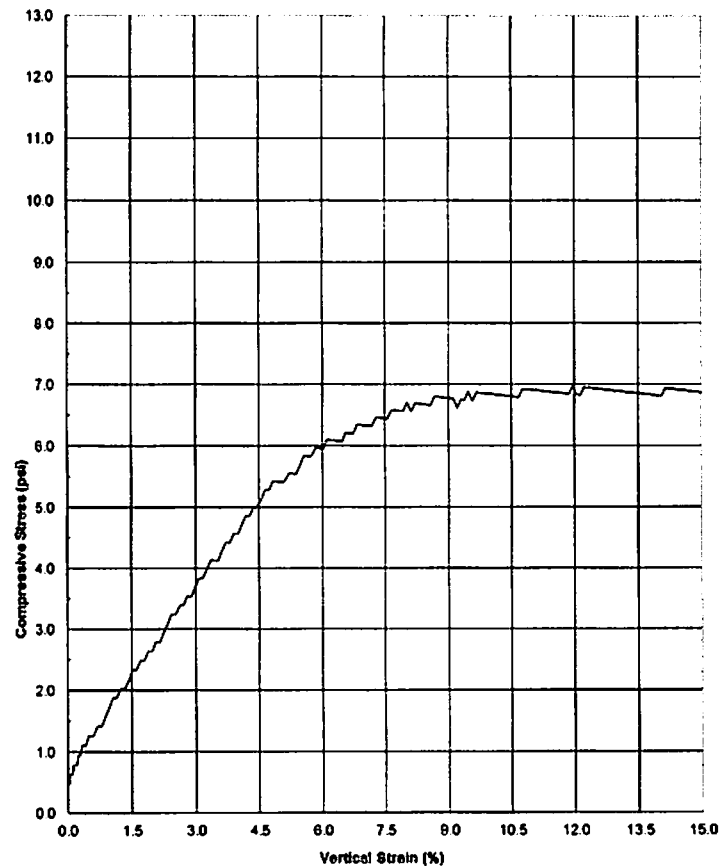


ATLANTIC TESTING LABORATORIES

Client:	ARCADIS US, Inc.	ATL Report No.:	CD3574SL-03-11-13
Project:	Hudson Water Street-Operable Unit 2	Date:	November 18, 2013
Sample ID:	GT-1; S-9	Sample Depth:	36.0 – 38.0'

Unconsolidated-Undrained Triaxial Compression Test ASTM D 2850

Parameter	Results
Visual Soil Classification	CL (Lean Clay)
Minor Principal Stress (psi)	11.8
Initial Dry Unit Weight (pcf)	86.8
Initial Water Content, Entire Sample (%)	28.1
Specific Gravity	2.77
Void Ratio	0.992
Saturation (%)	100.7
Compressive Strength (psi)	7.0
Major Principal Stress (psi)	18.8
Initial Height (in.)	5.862
Initial Diameter (in.)	2.834
Height-to-Diameter Ratio	2.07
Axial Rate of Strain (%/min)	0.85
Axial Strain at Failure (%)	12.0





Failure Photograph

Reviewed By: _____

A handwritten signature in dark ink, consisting of a stylized 'M' or 'R' followed by a horizontal line.

Date: 12/3/13

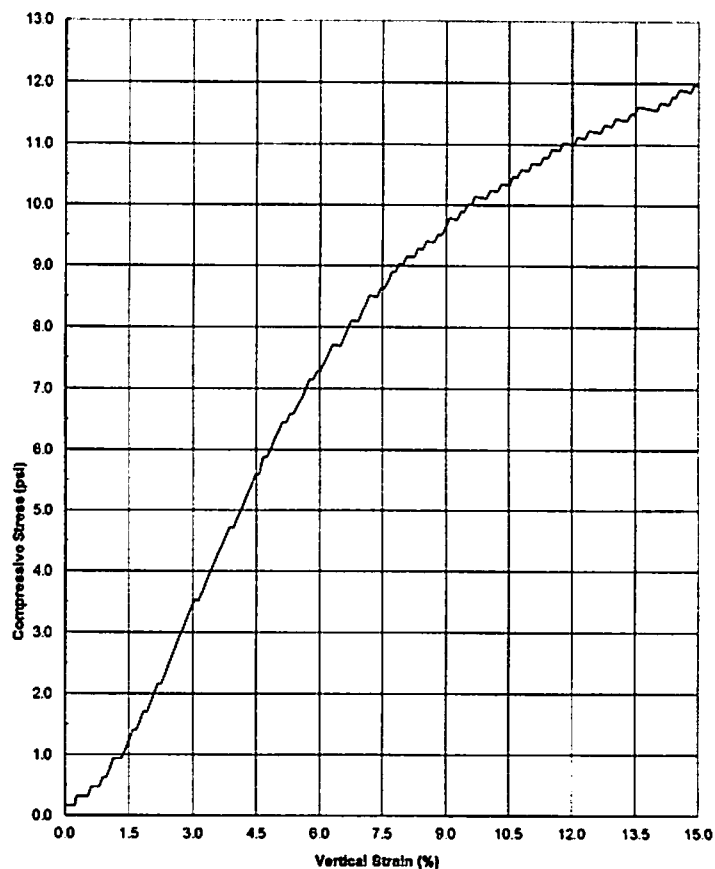


ATLANTIC TESTING LABORATORIES

Client:	ARCADIS US, Inc.	ATL Report No.:	CD3574SL-04-11-13
Project:	Hudson Water Street-Operable Unit 2	Date:	November 18, 2013
Sample ID:	GT-1; S-16	Sample Depth:	66.0 – 68.0'

Unconsolidated-Undrained Triaxial Compression Test ASTM D 2850

Parameter	Results
Visual Soil Classification	CL-ML (Silty Clay)
Minor Principal Stress (psi)	21.8
Initial Dry Unit Weight (pcf)	85.2
Initial Water Content, Entire Sample (%)	28.3
Specific Gravity	2.77
Void Ratio	1.030
Saturation (%)	97.7
Compressive Strength (psi)	12.0
Major Principal Stress (psi)	33.8
Initial Height (in.)	5.981
Initial Diameter (in.)	2.836
Height-to-Diameter Ratio	2.11
Axial Rate of Strain (%/min)	0.84
Axial Strain at Failure (%)	14.9





Failure Photograph

Reviewed By: 

Date: 12/3/13

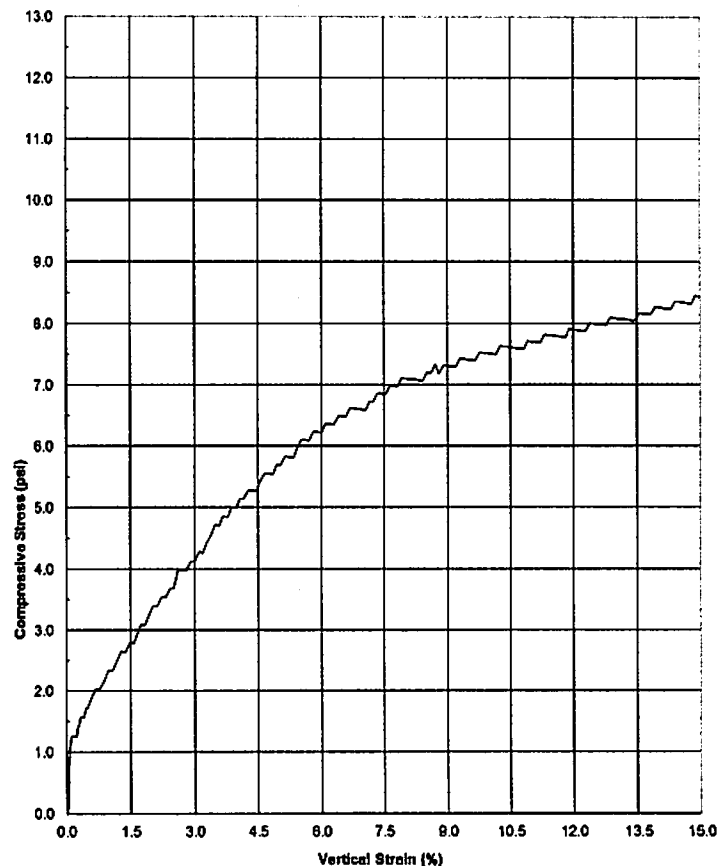


ATLANTIC TESTING LABORATORIES

Client:	ARCADIS US, Inc.	ATL Report No.:	CD3574SL-12-11-13
Project:	Hudson Water Street-Operable Unit 2	Date:	November 15, 2013
Sample ID:	GT-3; S-13	Sample Depth:	47.0 – 49.0'

Unconsolidated-Undrained Triaxial Compression Test ASTM D 2850

Parameter	Results
Visual Soil Classification	CL-ML (Silty Clay)
Minor Principal Stress (psi)	21.8
Initial Dry Unit Weight (pcf)	85.2
Initial Water Content, Entire Sample (%)	28.3
Specific Gravity	2.77
Void Ratio	1.030
Saturation (%)	97.7
Compressive Strength (psi)	12.0
Major Principal Stress (psi)	33.8
Initial Height (in.)	5.981
Initial Diameter (in.)	2.836
Height-to-Diameter Ratio	2.11
Axial Rate of Strain (%/min)	0.84
Axial Strain at Failure (%)	14.9





Failure Photograph

Reviewed By: _____

Date: 12/3/13

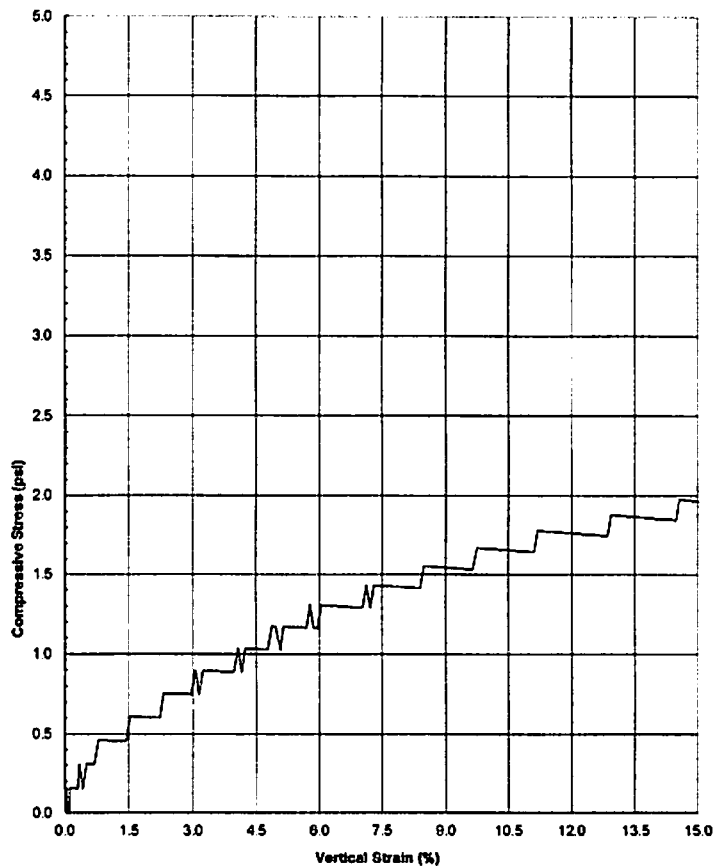


ATLANTIC TESTING LABORATORIES

Client:	ARCADIS US, Inc.	ATL Report No.:	CD3574SL-20-11-13
Project:	Hudson Water Street-Operable Unit 2	Date:	November 15, 2013
Sample ID:	GT-5; S-7	Sample Depth:	17.0 – 19.0'

Unconsolidated-Undrained Triaxial Compression Test ASTM D 2850

Parameter	Results
Visual Soil Classification	CL (Lean Clay)
Minor Principal Stress (psi)	4.4
Initial Dry Unit Weight (pcf)	70.2
Initial Water Content, Entire Sample (%)	48.7
Specific Gravity, Assumed	2.77
Void Ratio	1.465
Saturation (%)	137.0
Compressive Strength (psi)	2.0
Major Principal Stress (psi)	6.4
Initial Height (in.)	5.938
Initial Diameter (in.)	2.873
Height-to-Diameter Ratio	2.07
Axial Rate of Strain (%/min)	0.84
Axial Strain at Failure (%)	14.6





Failure Photograph

Reviewed By: _____

A handwritten signature, possibly reading 'AC', is written over a horizontal line.

Date: _____

12/3/13

ATTACHMENT F
ONE-DIMENSIONAL CONSOLIDATION TEST RESULTS



ATLANTIC TESTING LABORATORIES

Client: ARCADIS US, Inc.

ATL Report No.: CD3574SL-06-11-13

Project: Hudson Water Street – Operable Unit 2

Date: November 18, 2013

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING
ASTM D 2435

Sample: GT-2; S-8 Sample Depth: 22.0 – 24.0'

Classification: Grey Silty Clay Specific Gravity: 2.776

Average Moisture of Trimmings (%) 30.5 Seating Pressure (psf) 50

Initial Moisture (%) 30.9 Final Moisture (%) 28.0

Initial Dry Unit Weight (pcf) 107.5 Final Dry Unit Weight (pcf) 116.3

Initial Void Ratio 0.608 Final Void Ratio 0.487

Initial Degree of Saturation 99.2 Final Degree of Saturation 100.2

Sample Trimming Method: ☐ Turntable ☒ Cutting Shoe ☐ Ring Lined Sampler

Condition of Test: ☐ Natural Moisture ☒ Inundated ☐ Pressure at Inundation

Test Method: ☐ A Load Increment Duration ☒ B

Increment No.	Load (tsf)	Final Deformation (in.)	End-of-Primary Deformation (in.)	Coefficient of Consolidation (in. ² /min.)
1	0.25	0.0133	0.0109	0.0446
2	0.50	0.0205	0.0147	0.0373
3	1.00	0.0285	0.0257	0.0924
4	2.00	0.0394	0.0362	0.0900
5	4.00	0.0543	0.0494	0.0955
6	1.00	0.0698	0.0658	0.1046
7	0.25	0.0933	0.0875	0.1054
8	0.50	0.0876	0.0881	0.1146
9	1.00	0.0765	0.0785	0.0810
10	2.00	0.0827	0.0823	0.1174
11	4.00	0.0769	0.0777	0.0723
12	8.00	0.0636	0.0679	0.0301
13	16.00	0.0133	0.0109	0.0446
14	4.00	0.0205	0.0147	0.0373
15	1.00	0.0285	0.0257	0.0924
16	0.25	0.0394	0.0362	0.0900

Remarks

Reviewed By: 

Date: 12/3/13



ATLANTIC TESTING LABORATORIES

ATL Report No. CD3574SL-06-11-13

ARCADIS US, Inc.

**Hudson Street - Operable Unit 2
Hudson, Columbia County, New York**

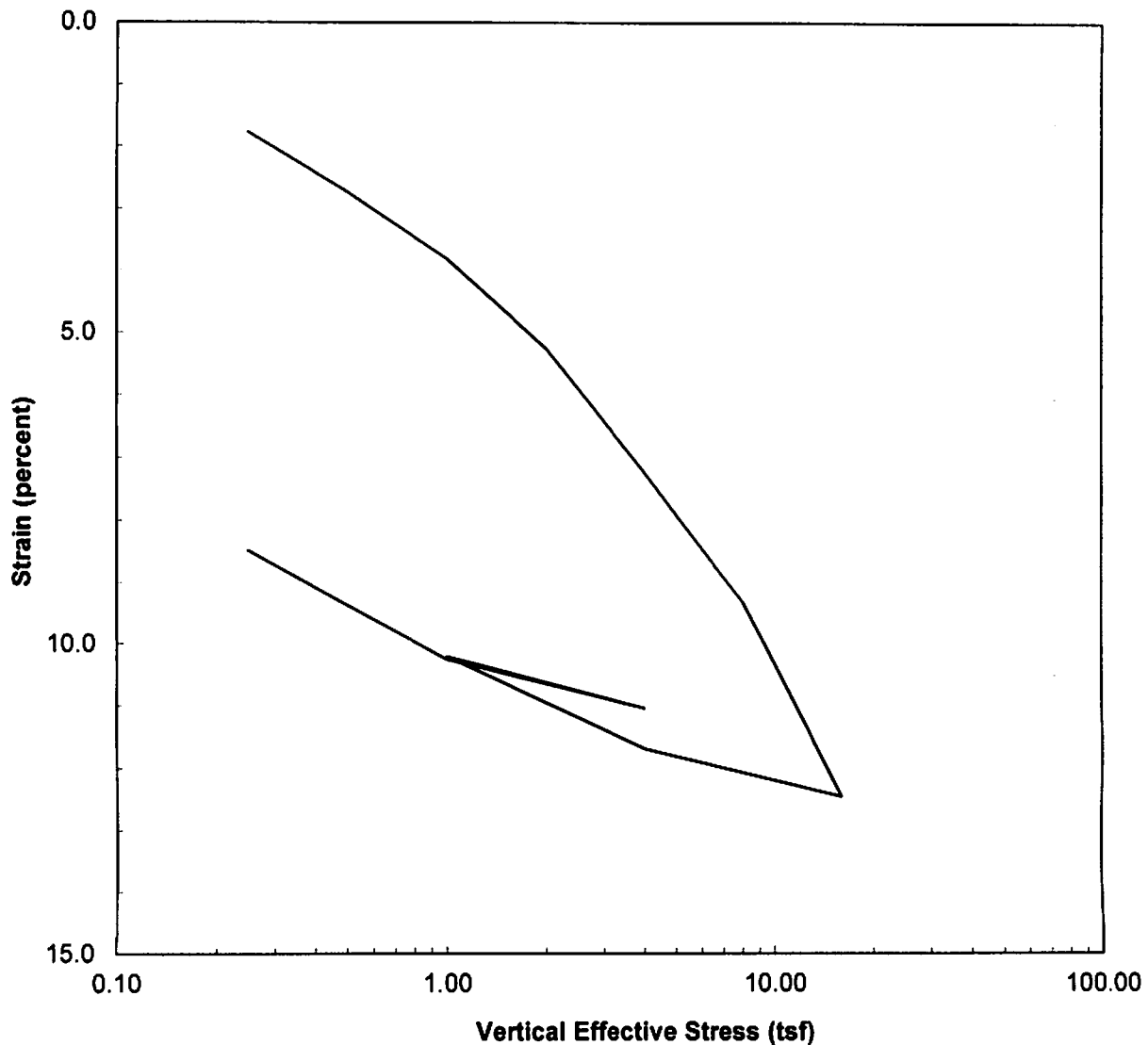
One-Dimensional Consolidation of Soil

ASTM D 2435

Stress-Strain Graph

Sample No: GT-22; S-8

Depth: 22.0-24.0'





ATLANTIC TESTING LABORATORIES

ATL Report No. CD3574SL-06-11-13

ARCADIS US, Inc.

**Hudson Street - Operable Unit 2
Hudson, Columbia County, New York**

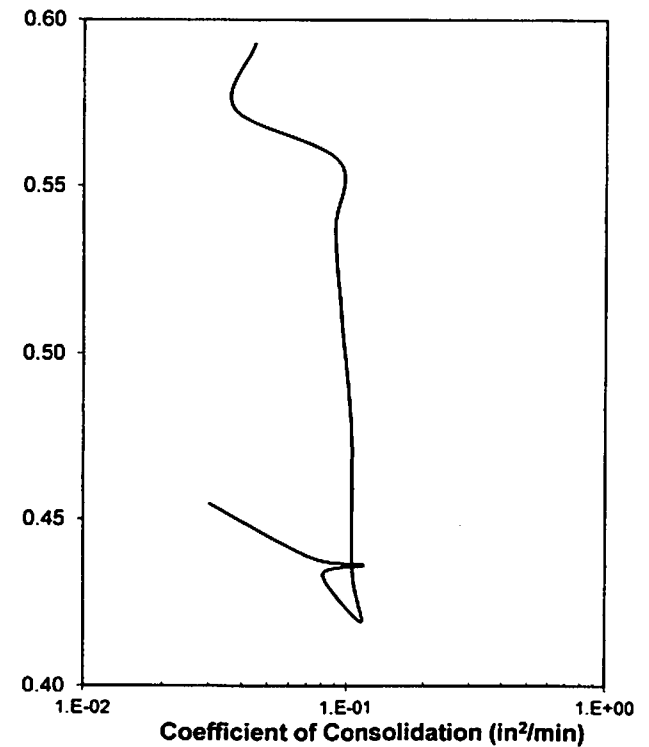
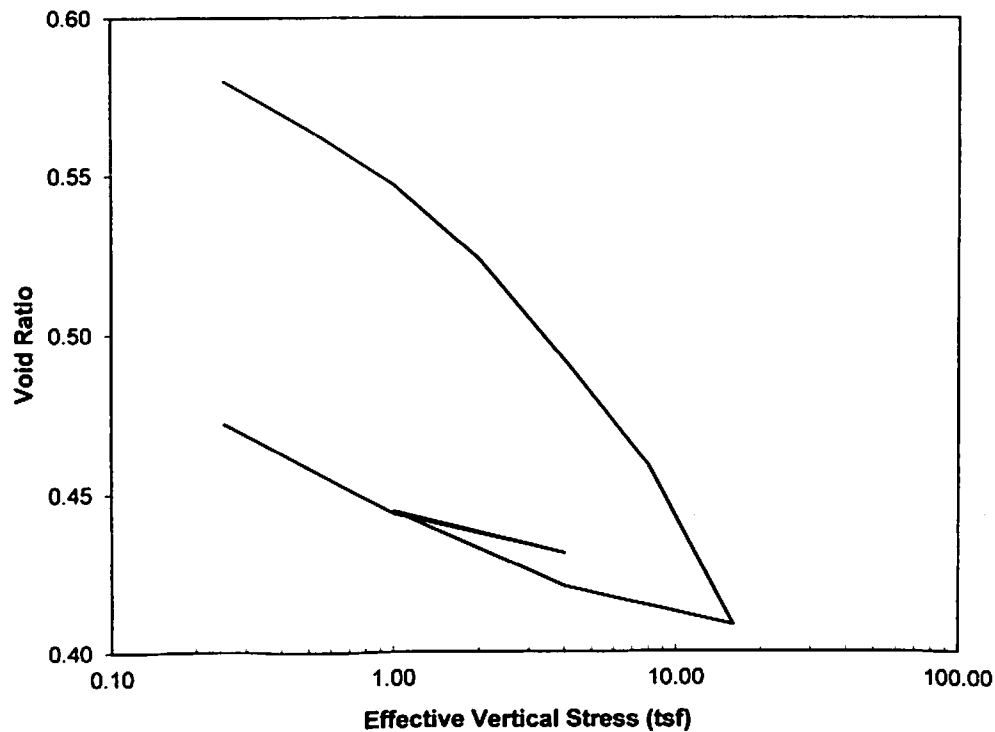
One-Dimensional Consolidation of Soil

ASTM D 2435

Void Ratio-Vertical Stress and Coefficient of Consolidation

Sample No.: GT-2; S-8

Depth: 22.0-24.0'





ATLANTIC TESTING LABORATORIES

Client: ARCADIS US, Inc.

ATL Report No.: CD3574SL-23-11-13

Project: Hudson Water Street – Operable Unit 2

Date: November 18, 2013

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS USING INCREMENTAL LOADING ASTM D 2435

Sample: GT-5; S-18

Sample Depth: 67.0 – 69.0'

Classification: Grey Silty Clay

Specific Gravity: 2.771

Average Moisture of Trimmings (%) 21.3

Seating Pressure (psf) 50

Initial Moisture (%) 22.9

Final Moisture (%) 17.8

Initial Dry Unit Weight (pcf) 108.4

Final Dry Unit Weight (pcf) 117.3

Initial Void Ratio 0.595

Final Void Ratio 0.475

Initial Degree of Saturation 106.6

Final Degree of Saturation 103.8

Sample Trimming Method: ☐ Turntable

☒ Cutting Shoe ☐ Ring Lined Sampler

Condition of Test: ☐ Natural Moisture

☒ Inundated ☐ Pressure at Inundation

Test Method: ☐ A Load Increment Duration _____

☒ B

Increment No.	Load (tsf)	Final Deformation (in.)	End-of-Primary Deformation (in.)	Coefficient of Consolidation (in. ² /min.)
1	0.25	0.0073	0.0061	0.1009
2	0.50	0.0115	0.0105	0.1433
3	1.00	0.0171	0.0156	0.1416
4	2.00	0.0230	0.0219	0.1566
5	4.00	0.0303	0.0295	0.1534
6	8.00	0.0399	0.0384	0.1609
7	16.00	0.0516	0.0489	0.1474
8	4.00	0.0481	0.0483	0.2087
9	1.00	0.0436	0.0441	0.1426
10	4.00	0.0465	0.0464	0.1381
11	1.00	0.0439	0.0440	0.1320
12	0.25	0.0405	0.0411	0.1498

Remarks

Reviewed By: AR

Date: 12/3/13



ATLANTIC TESTING LABORATORIES

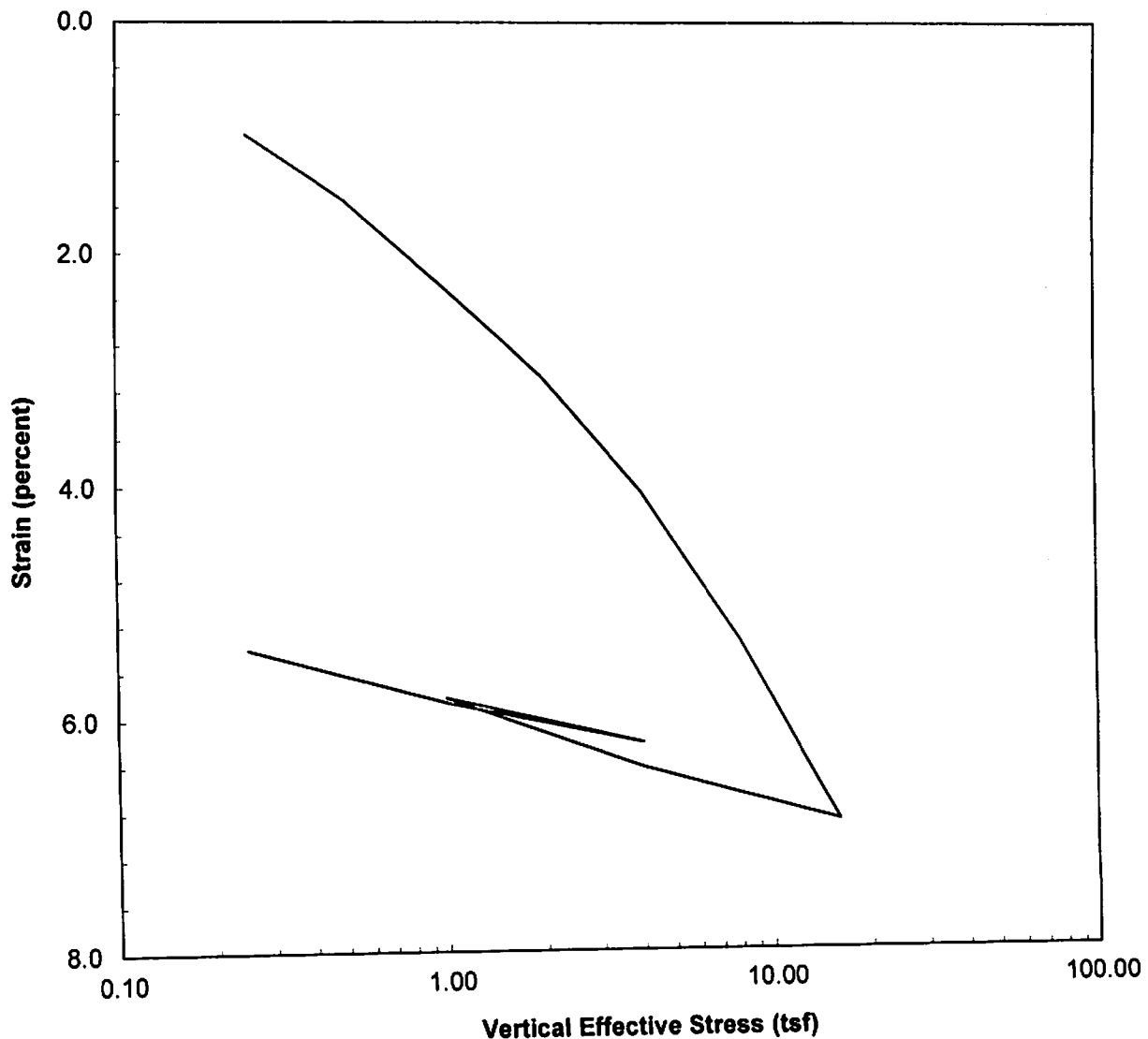
ATL Report No. CD3574SL-23-11-13

**ARCADIS US, Inc.
Hudson Street - Operable Unit 2
Hudson, Columbia County, New York**

One-Dimensional Consolidation of Soil

**ASTM D 2435
Stress-Strain Graph**

**Sample No: GT-5; S-18
Depth: 67.0-69.0'**





ATLANTIC TESTING LABORATORIES

ATL Report No. CD3574SL-23-11-13

ARCADIS US, Inc.

Hudson Street - Operable Unit 2

Hudson, Columbia County, New York

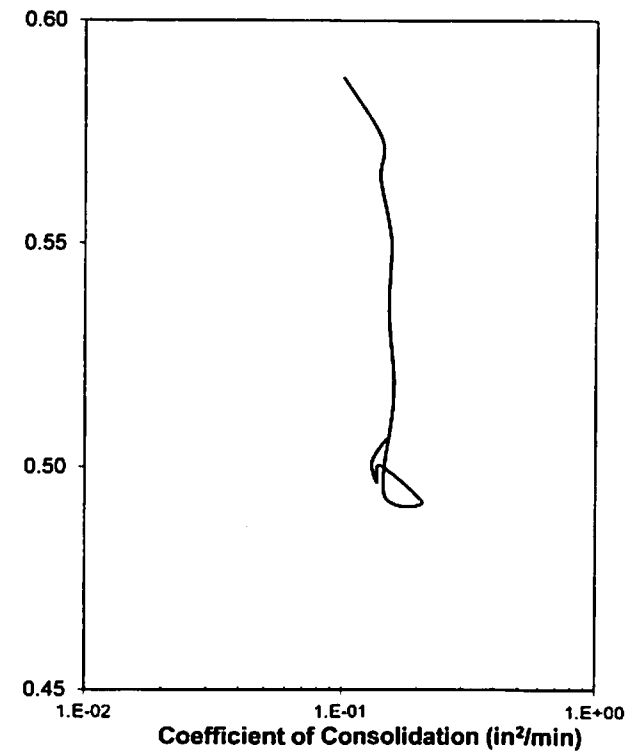
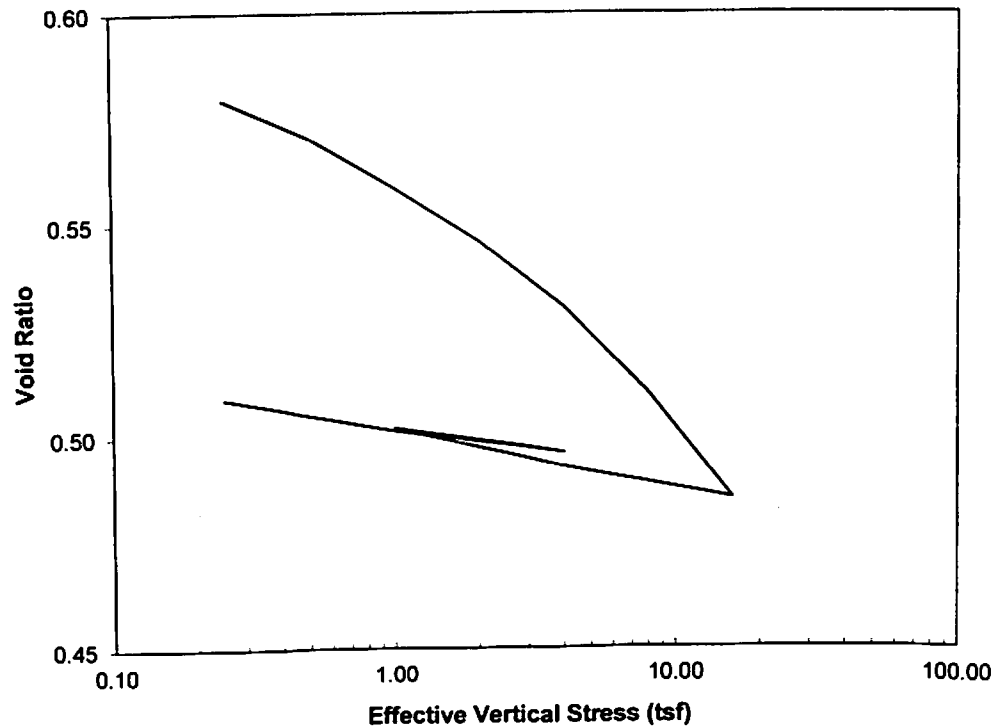
One-Dimensional Consolidation of Soil

ASTM D 2435

Void Ratio-Vertical Stress and Coefficient of Consolidation

Sample No.: GT-5; S-18

Depth: 22.0-24.0'



Cone Penetrometer Test Results



ATLANTIC TESTING LABORATORIES

Canton
6431 U.S. Highway 11
P.O. Box 29
Canton, NY 13617
315-386-4578 (T)
315-386-1012 (F)

January 28, 2014

ARCADIS
6723 Towpath Road
PO Box 66
Syracuse, New York 13214-0066

Attn: Mr. Adam Chwalibog, PE
Geotechnical Engineer

Re: Subsurface Investigation Services
Hudson Water Street-Operable Unit 2
Hudson, Columbia County, New York
ATL Report No. CD3574D-01-09-13 Rev. 1

Ladies/Gentlemen:

At the request of Mr. Adam Chwalibog, PE, of ARCADIS and in accordance with our proposal (ATL No. CD998-376XX-10-12, dated December 21, 2012) Atlantic Testing Laboratories, Limited (ATL) performed a subsurface investigation program consisting of cone penetration testing (CPT) for the referenced project. The field investigation was conducted on September 5 and September 12, 2013.

A 10cm electronic piezocone was pushed from the ground surface to refusal at locations CPT-1, CPT-2, CPT-3, and CPT-4. During all CPT pushes, tip resistance, friction resistance, and pore water pressures were continuously recorded.

Upon completion of the field investigation, the data was processed using the computer program "Cleanup" to remove irrelevant data resulting from starts and stops in the CPT push. The CPT Data Graphs are attached. An electronic copy of the CPT Data will be transmitted via email.

The coordinates and surface elevations reported on the CPT Data Graphs were provided to ATL by representatives of ARCADIS. The surface elevations are referenced to the mean low water elevation.

ATL appreciates the opportunity to provide subsurface investigation services for your project. Please contact our office should you have any questions, or we may be of further service.

Sincerely,
ATLANTIC TESTING LABORATORIES, Limited

Brian C. teRiele, PE
Engineer

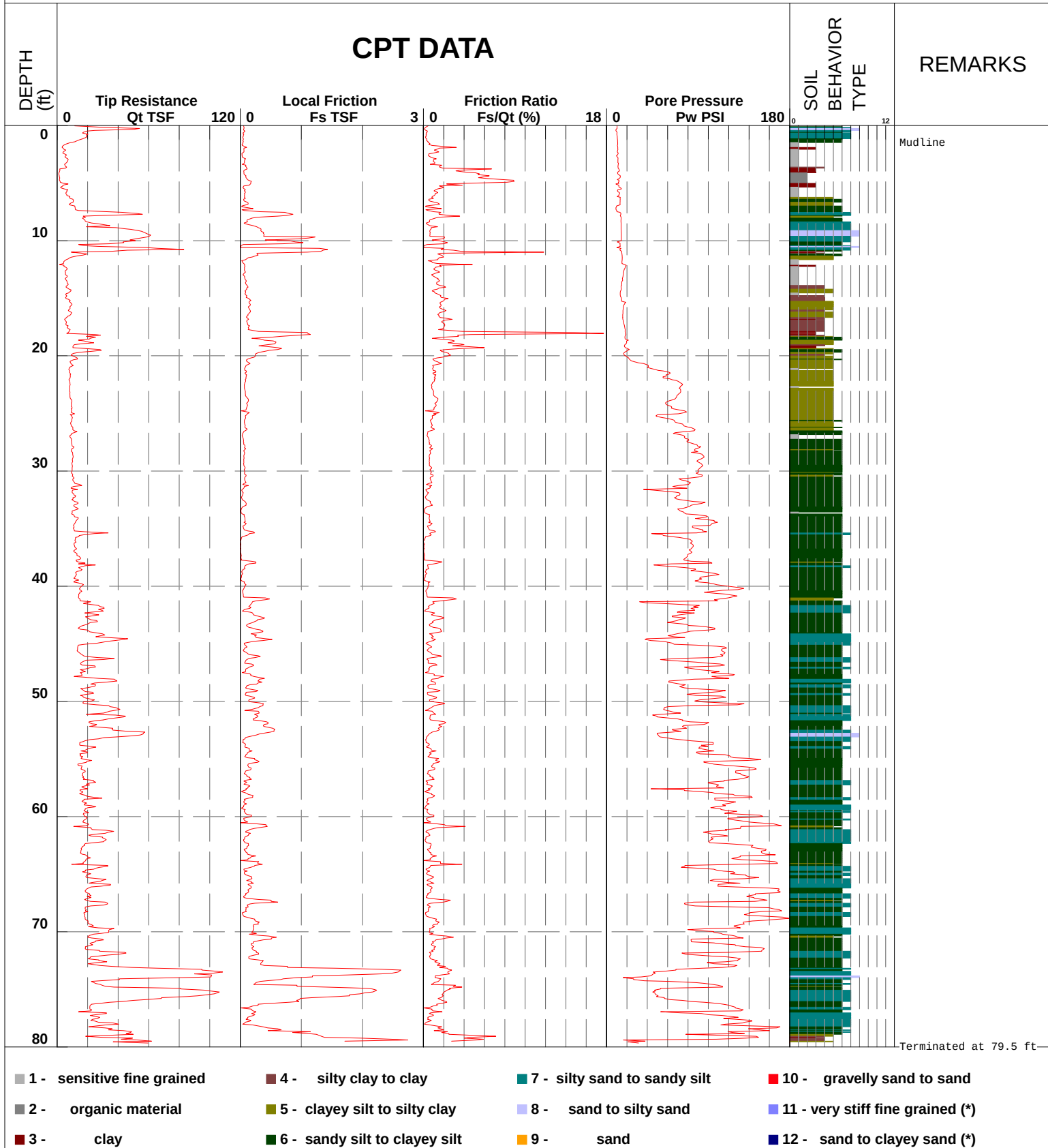
BCT/TJG/bct

Enclosures



ATLANTIC TESTING LABORATORIES, Limited

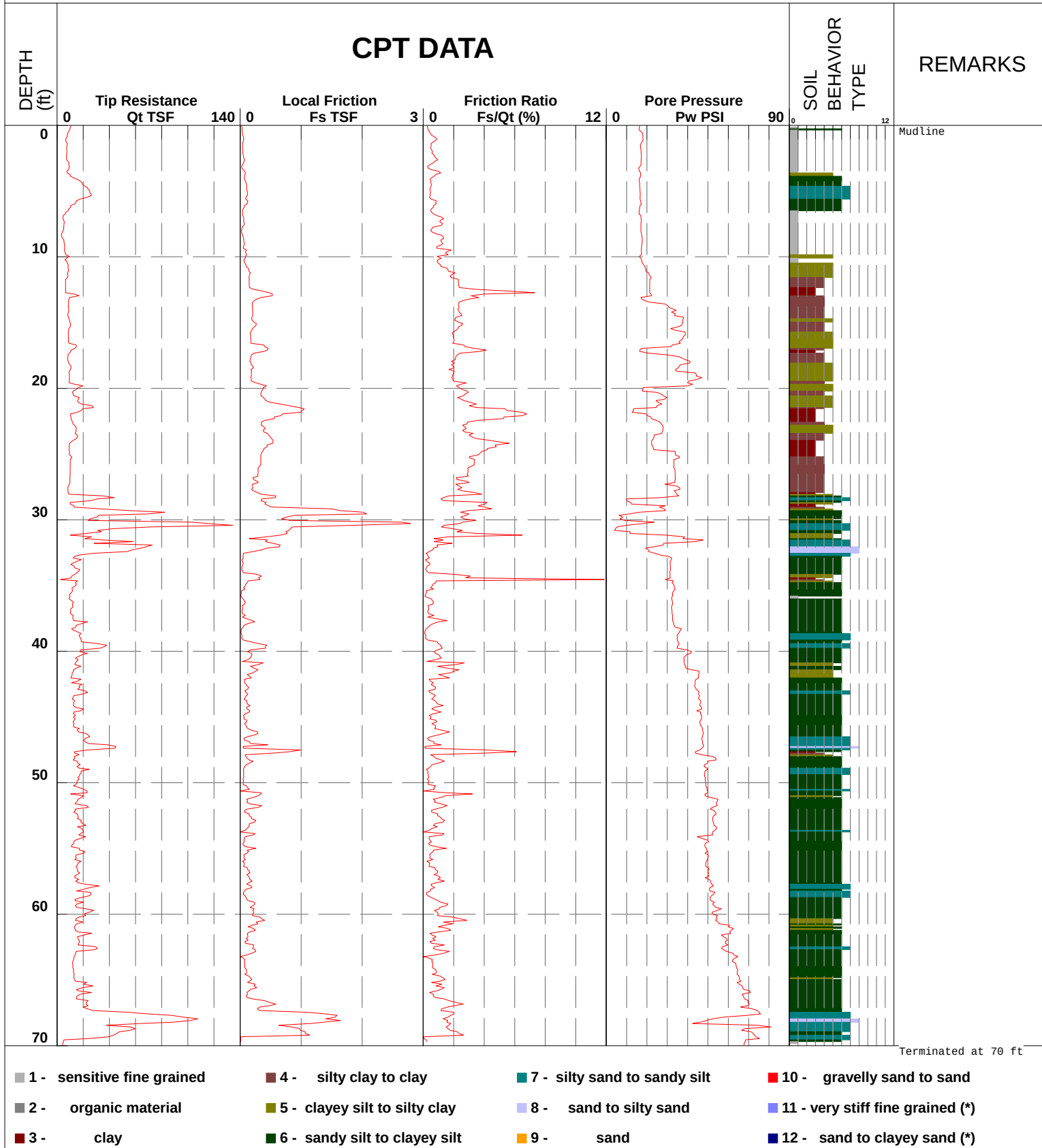
Job No.	CD3574	Location	Hudson, NY	Hole No.	CPT-1
Operator	Brian teRiele	Cone No.	DSA1003	Date	9/5/2013 7:54:28 AM
Northing	1246937.60	Easting	681423.79	Surface Elev.	-20





ATLANTIC TESTING LABORATORIES, Limited

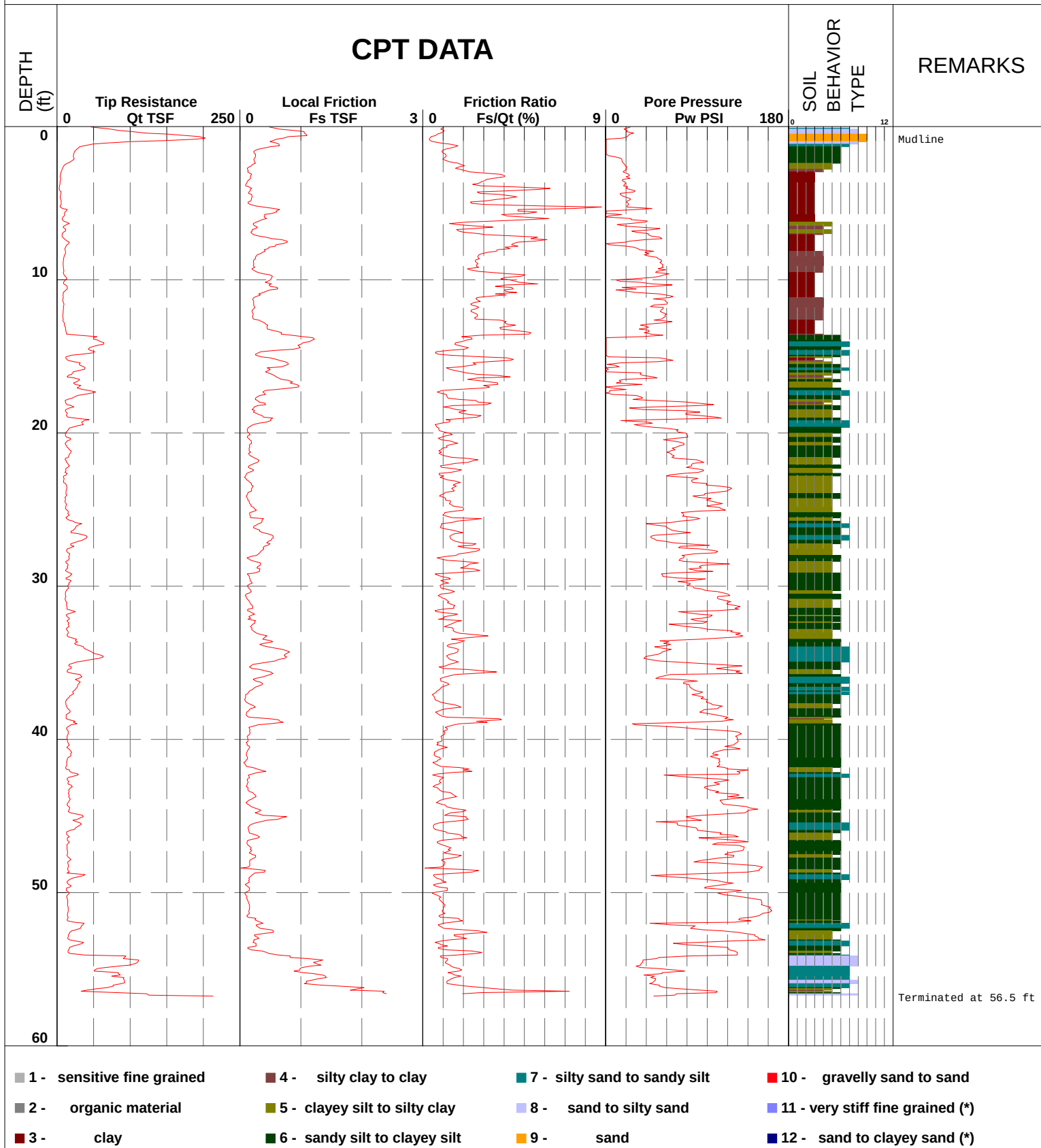
Job No.	CD3574	Location	Hudson, NY	Hole No.	CPT 2
Operator	Brian teRiele	Cone No.	DSA1003	Date	9/5/2013 11:10:12 AM
Northing	1247060.41	Easting	681451.84	Surface Elev.	-44.6





ATLANTIC TESTING LABORATORIES, Limited

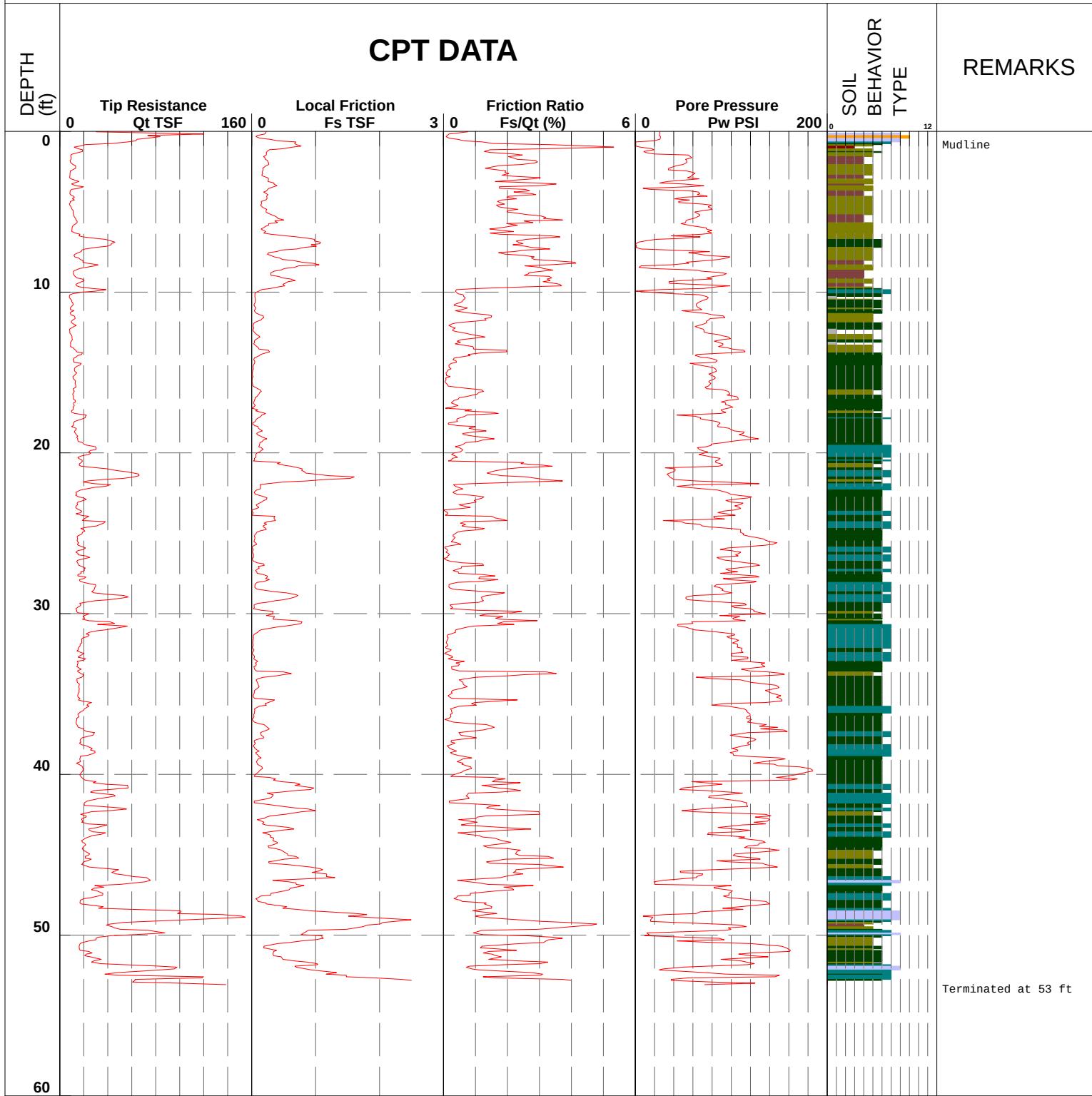
Job No.	CD3574	Location	Hudson, NY	Hole No.	CPT 2A
Operator	Brian teRiele	Cone No.	DSG1001	Date	9/12/2013 1:41:15 PM
Northing	1247068.48	Easting	681461.21	Surface Elev.	-37.6





ATLANTIC TESTING LABORATORIES, Limited

Job No.	CD3574	Location	Hudson, NY	Hole No.	CPT 3
Operator	Brian teRiele	Cone No.	DSG1001	Date	9/12/2013 9:42:37 AM
Northing	1247172.24	Easting	681578.16	Surface Elev.	-36

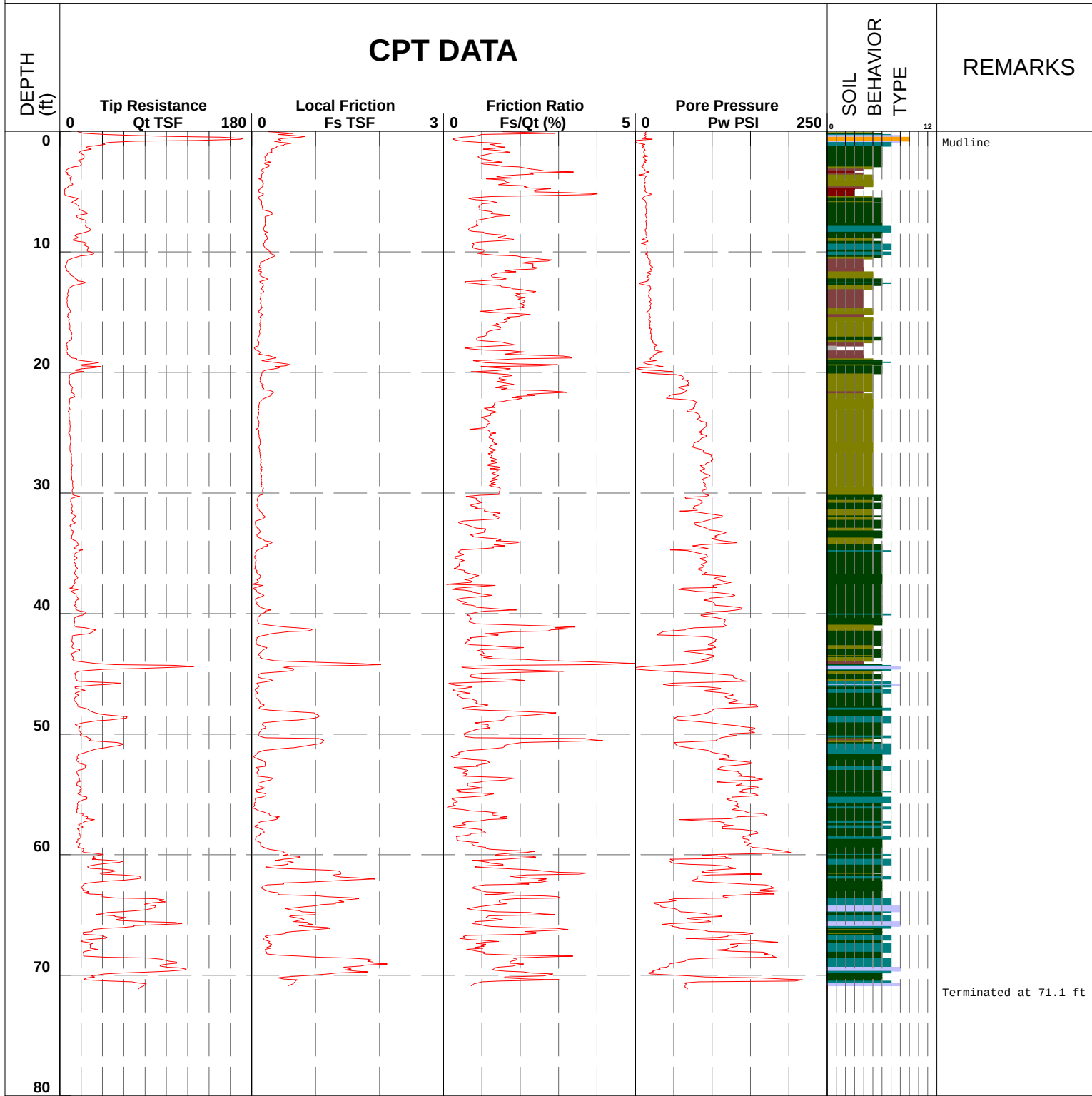


1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)



ATLANTIC TESTING LABORATORIES, Limited

Job No.	CD3574	Location	Hudson, NY	Hole No.	CPT 4
Operator	Brian teRiele	Cone No.	DSG1001	Date	9/12/2013 4:15:28 PM
Northing	1247231.67	Easting	681686.92	Surface Elev.	-20.1



1 - sensitive fine grained	4 - silty clay to clay	7 - silty sand to sandy silt	10 - gravelly sand to sand
2 - organic material	5 - clayey silt to silty clay	8 - sand to silty sand	11 - very stiff fine grained (*)
3 - clay	6 - sandy silt to clayey silt	9 - sand	12 - sand to clayey sand (*)



Appendix F

Preliminary List of Design
Drawings

Appendix F
Preliminary List of Design Drawings

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

General Notes, Legend, and Abbreviations

Existing Site Plan

Site Preparation Plan

Preliminary Truck Routes

Known Obstructions and Site Utility Plan

Erosion and Sediment Control Plan

Debris Removal Plan

Sediment Removal Plan

Site Restoration Plan

Erosion and Sediment Control Details

Miscellaneous Details



Appendix G

Preliminary List of Technical
Specifications

Appendix G
Preliminary List of Technical Specifications
Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Section 011100 – Summary of Work

Section 011400 – Work Restrictions

Section 013100 – Project Management and Coordination

Section 013213 – Scheduling of Work

Section 013300 – Submittal Procedures

Section 013543 – Environmental Procedures

Section 014100 – Regulatory Requirements

Section 015000 – Temporary Facilities and Controls

 Section 015100 – Temporary Utilities

 Section 015200 – Temporary Construction Facilities

 Section 015600 – Temporary Environmental and Security Barriers

 Section 015700 – Temporary Erosion, Sedimentation and Environmental Controls

Section 017000 – Execution and Closeout Requirements

Section 022100 – Surveys

Section 028100 – Transport and Disposal of Impacted Materials

Section 101400 – Signage

Section 310000 – Earthwork

Section 310519 – Geotextiles

Section 311000 – Site Clearing

Section 312200 – Grading

Section 312313 – Sediment Removal

Appendix G
Preliminary List of Technical Specifications
Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Section 312323 – Selected Fill

Section 313200 – Material Stabilization

Section 313700 – Riprap

Section 312500 – Erosion and Sedimentation Controls

Section 315000 – Excavation Support and Protection

Section 323113 – Chain-link Fences and Gates

Section 329000 – Plantings and Site Restoration

Section 444000 – Water Handling and Disposal



Appendix H

Preliminary List of Supporting
Plans

Appendix H
Preliminary List of Supporting Plans

Remedial Design Work Plan for Operable Unit 2
National Grid - Hudson (Water Street) Site, Hudson, New York

Waste Management Plan

Community Air Monitoring Plan

Storm Water Pollution Prevention Plan

Construction Quality Assurance Plan

Health and Safety Plan

Maintenance and Protection of Traffic Plan

Contingency Plan

Restoration Plan