Aggregate resource potential reconnaissance mapping of the Middle Peninsula, Virginia: Final Report

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This image shows cross-bedding within an excavated pit from an active site in Gloucester County. A hammer is shown for scale.

Report Availability

A PDF of this report, including Plate 1, and accompanying geodatabase files are available for download through Virginia Energy's webstore: https://www.energy.virginia.gov/commerce/. ISO 19115 metadata are available for the geodatabase. These products have been submitted to the Virginia Coastal Zone Management Program, for the National Oceanic and Atmospheric Administration (NOAA), and are available on request.

Citation

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Executive Summary

Resilience refers to a community's ability to adapt to changes from increased hazards due to natural and anthropogenic forcings. Initiatives to better prepare municipalities and establish protective measures are a key focus in the Virginia coastal zone as the region experiences one of the highest rates of sea level rise on the East Coast. The Virginia Department of Energy's Geology and Mineral Resources Program conducted a study of potential sand, gravel, and clay aggregate resources in a portion of the Coastal Plain. This one-year effort was funded in part by the Virginia Coastal Zone Management (CZM) Program through a grant provided by the U.S. National Oceanic and Atmospheric Administration (NOAA). The focus for this pilot phase of assessment was Virginia's Middle Peninsula, which encompasses almost 900 thousand acres, with over a 1,000 miles of shoreline. Other efforts in states with significant glaciofluvial deposits guided this study; however, the geologic deposits in this region of the Coastal Plain are fluvial, estuarine, and marine in origin.

Virginia Energy staff conducted a multiparameter geospatial analysis in ArcGIS including the comparison of topographic, geologic and soil maps, borehole data, occurrences of mine sites, textural data, and the presence of sensitive habitat such as wetlands. Staff also visited active mine sites across the project area for field mapping and characterization of existing aggregate materials. The majority of potential sand and gravel deposits identified in study are within Pleistocene fluvial-estuarine terraces, extending into older Pliocene units. Clay resources are typically limited to Miocene Chesapeake Group marine units. These data can support resilience initiatives that were identified in the 2021 Virginia Coastal Resilience Master Plan, which include efforts to mitigate widespread habitat loss, impacts to critical infrastructure, and potential residential displacement due to increased coastal flooding. Planners and contractors who are interested in materials for elevating roads, shoring up existing structures, providing shoreline protection, and restoring wetland habitats can utilize the data to understand where potential resources may occur. Users should consult this report for details on methodology and criteria used for the resource potential analysis. Additional information is available within the report appendices including a field log of site visits, lithologic and geochemical data for samples, and a summary of project coordination activities throughout the grant.

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1 Introduction

1.1 Using the Data

This technical summary report supplements an Esri™ ArcGIS file geodatabase (NA23NOS4190255_Task73.gdb) and discusses the significance and methodology of the project. Point, polyline, and polygon data were compiled into a Level 3-compliant Geologic Map Schema (GeMS) geodatabase. The geodatabase validation, metadata, and style (symbol) files are included with the deliverable. A GeMS geodatabase is the national standard for publishing digital geologic maps and also provides a consistent baseline for organization of geologic data that can be incorporated into other mapping products (USGS, 2020). Select data are also provided as a 1:100,000-scale PDF map (Plate 1) with independent layers. Table 1 below provides an overview of each field within the geodatabase. The geodatabase uses a relational database schema that links spatial feature classes and nonspatial tables.

Table 1. What's in the Geodatabase?

Feature Name	Data Source Originator	Data Significance
DCR_ConservationEasements (polygon feature)	Virginia Department of Conservation and Recreation (VDCR)	External data layer showing areas that are restricted for development with a conservation easement. Land owned or managed by local, state, federal, and non-profit entities. Historic easements are administered by the Virginia Department of Historic Resources. These lands are considered unsuitable for the development of aggregate resources.
NativeAmericanTribalLand (polygon feature)	VDCR	External data layer showing state-recognized reservation land owned by either the Pamunkey or Mattaponi Tribes. These lands are considered unsuitable for the development of aggregate resources.
NWI_Wetlands (polygon feature)	United States Fish and Wildlife Service (USFWS)	External data layer showing wetland habitats designated by the USFWS, updated October 2024. These lands are considered unsuitable for the development of aggregate resources.
ProtectedLands (polygon feature)	VDCR	External data layer showing areas that are protected, such as State Parks and Preserves, Military Installations, recreational areas, and other protected land-designated areas. Land owned or managed by local, state, federal, and non-profit entities. These lands are considered unsuitable for the development of aggregate resources.
Transportation (line feature)	Virginia Department of Transportation (VDOT)	Road network across the Middle Peninsula, published November 2017. Locations of roads can provide insight into the proximity of mine sites and market distances.

Table 1. What's in the Geodatabase?

Feature Name	Data Source Originator	Data Significance
CartographicLines* (line feature)	Virginia Department of Energy (Virginia Energy), Geology and Mineral Resources Program (GMR)	This layer depicts the Middle Peninsula county boundaries, and the cross-section transect line for Plate 1.
ContactsAndFaults* (line feature)	Virginia Energy, GMR	This layer depicts the project area boundary (Middle Peninsula Planning Region) and provides the bounds for the MapUnitPolys layer.
MapUnitPolys* (polygon feature)	Virginia Energy, GMR	This layer depicts the general geology of the study area. For the purposes of the study area, the geology is grouped into Cenozoic Undifferentiated (Cu); the source of the units is the 2021 statewide geologic map geodatabase (Witt and others, 2021).
SurficialPoints (point feature)	Virginia Energy, GMR	Points from legacy datasets including: 1) internal rock repository samples; 2) sample data from a published VDOT geotechnical study (VDOT, 1954); and 3) historically identified sand, gravel, or clay pits (Mineral Resources of Virginia dataset – MRV). These data provide insight into commodity type and potential.
SubsurfacePoints (point feature)	Virginia Energy, GMR	Locations for lithologic logs that were reviewed as part of this project and used for resource potential interpretations. Includes drilled boreholes, water well records, and VDOT geotechnical logs. Geologists reviewed parameters for each log and provided generalized lithological notes in a separate related nonspatial table ("Label" ID in SubsurfaceLithology).
Stations (point feature)	Virginia Energy, GMR	Point locations for field reconnaissance observations.
PermittedSites (point feature)	Virginia Energy, GMR and Mineral Mining Program	Points depicting permitted mineral mining sites. Original data can be accessed here: https://energy.virginia.gov/webmaps/MineralMining/.
FieldSamples (point feature)	Virginia Energy, GMR	Point locations of samples collected from active mine sites. This feature class is related to the nonspatial tables by the Repository ID attribute field (tables: GrainSizeData and Geochemistry). These data provide information on the type of material available at the mine sites.

Table 1. What's in the Geodatabase?

Feature Name	Data Source Originator	Data Significance
IdentifiedExcavationPits (polygon feature)	Virginia Energy, GMR	Polygons depicting the areal extent of lidar-identified pit features that include excavations at active sites, historic sites, and potential borrow pit areas that are not part of a regulated site. These features provide direct evidence into locations where sand and gravel material has been prospected or used as a resource.
SandandGravelPotential (polygon feature)	Virginia Energy, GMR	Polygon feature class that depicts the potential for sand and gravel deposits to occur based on the evaluation of set criteria. These criteria are explained within this report.
DataSources* (table)	Virginia Energy, GMR	List of citations and data sources for features within the geodatabase, indicated by a DAS ID in the attribute table of each feature class.
DescriptionofMapUnits (DMU)* (table)	Virginia Energy, GMR	Provides a description of the geologic map units in the geodatabase (Cenozoic Undifferentiated, Cu).
GeoMaterialDict* (table)	Automatically generated within the GeMS structure	Contains types of geologic material used to populate GeoMaterial in the DescriptionOfMapUnits. Since only one unit is provided in the DMU, "sediment" is included as the GeoMaterial.
Glossary* (table)	Virginia Energy, GMR	Definitions of terms used in the geodatabase.
GrainSizeData (table)	Virginia Energy, GMR	Information on grainsize for the samples collected as part of this project. Methods described in this report.
Geochemistry (table)	Virginia Energy, GMR	Information on geochemistry for the samples collected as part of this project. Methods described in this report.
SubsurfaceLithology (table)	Virginia Energy, GMR	Information on borehole locations and general lithologic parameters that were evaluated to help determine deposit potential. Methods described in this report.

Notes: The green colored cells are feature level datasets from external sources (feature dataset name: ExternalData); purple-colored cells are internally derived feature classes (feature dataset name: GeologicMap); nonspatial tables are colored in yellow. GeMS-required component indicated by asterisk (*).

1.2 Goals and Objectives

For context, this project was developed to address resilience initiatives outlined in the Phase 1 Virginia Coastal Resilience Master Plan (CRMP) and meet goals for the Coastal Zone Management (CZM) Program's 2021-2026 Coastal Resilience Focal Area (https://www.deq.virginia.gov/our-programs/coastal-zone-management/strategic-planning-and-funding/focal-area). The CRMP assessed areas in the coastal zone that are vulnerable and prone to disruption from increased coastal flooding (VDCR, 2021). Key vulnerabilities identified in the CRMP include the potential for widespread habitat loss, impediments to critical infrastructure via flood damage and land loss and impacts to residents in rural communities where resources may be limited. Virginia Energy analyzed CRMP vulnerability parameters to assess the overall risk to the region and decided to focus on the Middle Peninsula for an initial proof-of-concept area. The project area is also located within the U.S. National Oceanic and Atmospheric Administration (NOAA) habitat focus area for coastal resilience. This project aims to address the following goals with these products: 1) provide regional-scale geologic data to help identify areas that may host sand, gravel, or clay deposits; 2) provide site-specific textural and lithologic data to inform assessments for aggregate resources; and 3) inform end-users about data access and limitations.

1.3 Background

1.3.1 Resilience Needs

Resilience refers to a community's ability to adapt to changes brought on by increased hazards. In the broadest sense, resilience can be enhanced by responsible management and stewardship of natural and community resources. Initiatives that support resilient coastal zones in Virginia may include elevating land or infrastructure, implementing and promoting living shorelines, conserving and establishing natural habitat as coastal buffer zones, and providing technical assistance to localities for grant opportunities to support projects that will better prepare communities for the potential impacts of flooding. An end goal with these initiatives is to create proactive solutions, while providing a seamless route to adapt to potential hazards and economic disruptions.

Increased tidal and stormwater flooding poses a significant threat to low-lying areas in coastal Virginia. Infrastructure may be impacted directly during storm events such as Hurricanes or Nor'easters, or indirectly through heightened daily tidal flooding that can impact roads and other critical utility infrastructure such as water treatment plants, sanitary and stormwater systems, and septic systems. Flooding can also impact natural habitats such as wetlands and marshes, where sediment deposition or erosion and changes in salinity can degrade vegetation. Data from the Phase I iteration of the Virginia CRMP estimates that by the year 2080, a significant amount of the natural infrastructure within the Rural Coastal Virginia Master Planning Region (MPR) will be impacted by daily flooding (Table 2). The Rural Coastal Virginia MPR includes the Middle Peninsula, Northern Neck, and Eastern Shore (VDCR, 2021).

Table 2. Parameters evaluated in selecting the Rural Coastal Virginia MPR as the focus region for the assessment.

Parameter	Statistic	
Aggregate Use		
Clay, Sand, Gravel* Portion of Total Mining Production (2020)	Geologic Material	99%
County Supply Status (Aggregates in Virginia ArcGIS Story Map[1])	Limiting Factor	Short Supply
Socioeconomic Data		
Average Population Change[2]	Fastest Growth	+1.02%
Individuals Below Poverty (2014-2018 Average)**	Highest Poverty	13.0%
Civilian Unemployment (2014-2018 Average)**	Highest Unemployment	4.2%
Hide-Tide Flooding Impacts		
Daily Hide Tide Inundation (2020-2080) - Acreage Increase	Most Acreage	+157,200
Structures Impacted by Flooding (MHW) % Increase 2020-2080	Most Structures	2,210
Population Impacted by Flooding (MHW) % Increase 2020-2080	Highest Population	3,345
Roads Impacted by Flooding (MHW) % Increase 2020-2080	Most Roads (Count)	1,980
Natural Infrastructure Impacted by Flooding (MHW-2080) - Acres	Most Acreage	207,295
Tribal Acres Impacted by Flooding (MHW-2080) - Acres	Most Acreage	177
Agricultural Land Impacted by Flooding (MHW-2080) - Acres	Most Acreage	10,038

Notes:
Green highlighted - data from Virginia Energy/WCC[2]
Blue highlighted - data from Virginia CRMP
Statistics obtained from tabular data at https://www.dcr.virginia.gov/crmp/plan
* - 2020 data used since CRMP uses 2020 as baseline
** - See Appendix E from the CRMP for methods
WCC - Weldon Cooper Center
1 – Aggregates in Virginia ArcGIS Story Map at https://arcg.is/1HiSDz
2 – 2010-2020 Census data for Rural Coastal Virginia MPR counties; data from the UVA Weldon Cooper Center for Public Service (https://www.coopercenter.org/virginia-population-estimates), value updated January 2025
MHW - mean high water
Individual county data not presented and may be variable within an MPR
This list is not exhaustive, and some critical sector and socioeconomic data may not be included, please consult the CRMP for additional data

The region experiences one of the highest rates of relative sea level rise in the United States (NOAA, 2024a) due to glacio-isostatic adjustment (Whittecar and others, 2016), land subsidence resulting from groundwater extraction, and the structural influence of the Chesapeake Bay Impact Crater (Powars and others, 2016). Mitigation strategies will require dependable sources of aggregate materials. Aggregate is a relatively low-value commodity compared to other non-fuel minerals, but the transportation costs are prohibitive when sources are not close to areas of need. VDOT, private road owners, and developers will need to find local, suitable fill material to elevate roads and other critical structures and infrastructure. Many communities in coastal Virginia rely on a transportation network that includes low-lying roads affected by flooding. Local sources of aggregate can reduce project costs and allow for more efficient long-term planning. Based on trends identified by Virginia Energy's ***Aggregates in Virginia*** ArcGIS story map (https://arcg.is/1HiSDz), aggregate demand currently exceeds supply in two-thirds of Middle Peninsula counties as depicted in Figure 1 (Virginia Energy, 2022). As of 2023, approximately 1.3 million metric tons of sand and gravel were produced from operations within the Middle Peninsula. The estimated value of this material is approximately $14.4 million based on current market estimates, which was about 12% of the state-wide total production for sand and gravel (Virginia Energy, 2024a).

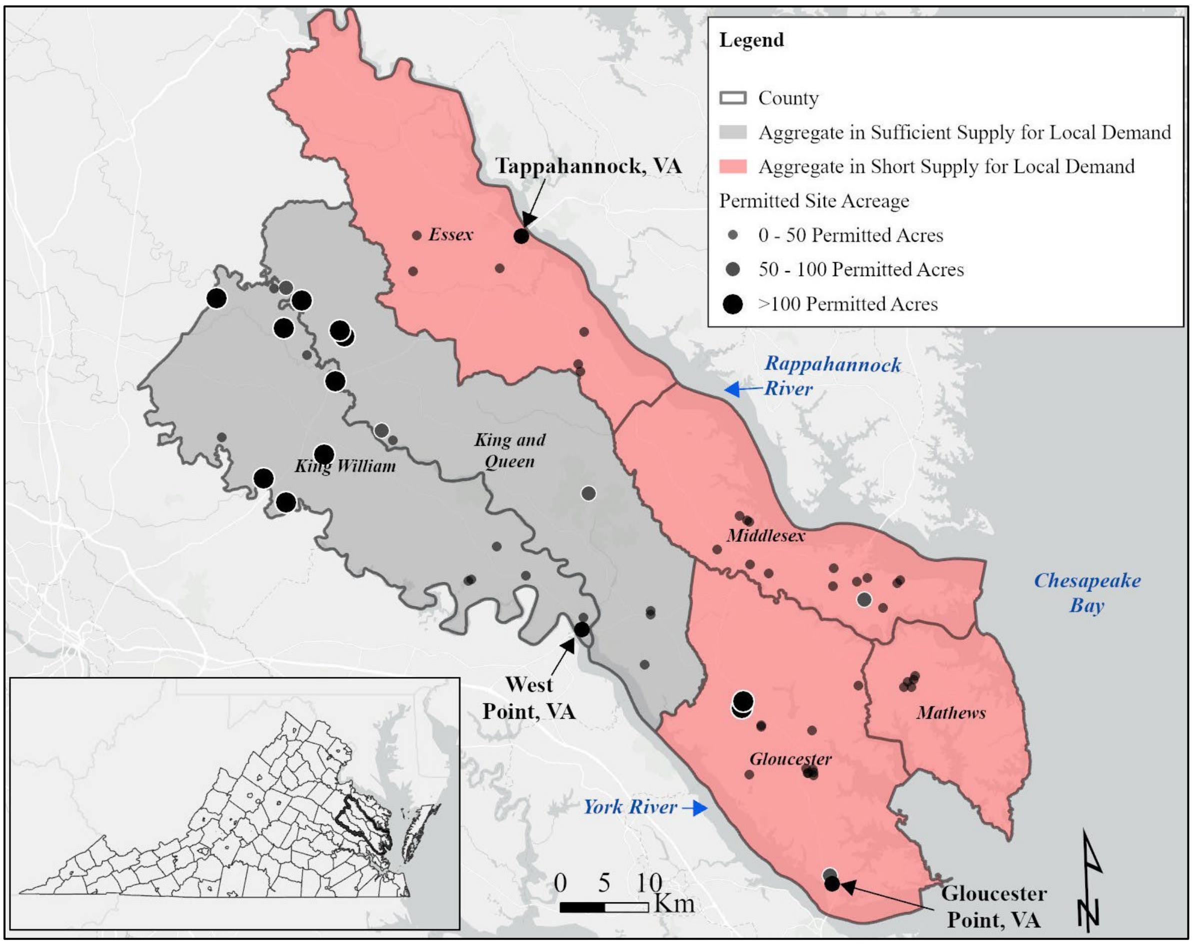


Figure 1. Six counties within the Middle Peninsula and their respective supply and demand for aggregate sources. Aggregate Supply data obtained from Virginia Energy's Aggregates in Virginia (ArcGIS Story Map) and site acreage data obtained from Virginia Energy's Mineral Mining Program database of permitted sites (Virginia Energy, 2024a).

1.3.2 Aggregate Resources

Minnesota and Washington have completed decades worth of aggregate resource mapping that is focused on glacial deposits and landforms (MNDNR, 2024a, 2024b; WADNR, 2024). Virginia is south of the furthest glacial ice sheet extent and therefore surficial deposits are mapped as fluvial, colluvial and eolian in origin. With the absence of bedrock in the Coastal Plain's shallow subsurface, the surficial deposits evaluated in this study are considered the original parent material (i.e., fluvial, estuarine, marine). A GIS-based derivative mapping product specific to sand and gravel resources has never been completed at this scale in Virginia. Southworth and others (1998) completed a 1:250,000-scale map of aggregate resource bearing geologic units for the Washington D.C. and the Baltimore corridor in the Mid-Atlantic using compiled geologic map units from 30- x 60-minute quadrangles in the area. Virginia Energy took a modified approach for this map following the above examples and utilized a geomorphic framework which incorporates the mapped geology, available surface and subsurface data, landforms, and overall topography.

Aggregate materials traditionally considered important to coastal resilience include sand, gravel, and crushed stone. Sand is used for beach nourishment to help negate the effects of coastal erosion. Other uses of sand and gravel include use as fill, for filtration, as a component of Portland cement and concrete, in masonry, and as component of pavement (asphalt) (VDMR, 1978). Other historical uses have included uses as abrasives and traction sand, in high heat foundry applications, in glass applications for deposits high in silica content (VDMR, 1978), and in landscaping (Sweet and others, 2016). If a significant fraction of the sand material is comprised of denser minerals such as zircon, ilmenite, or rutile, it can be used for additional industrial and commercial applications. Gravel is typically used for fill and road construction where larger clasts are needed, as well as in concrete when the deposit is low in organics and friable materials (VDMR, 1978). Crushed stone has historically been sourced from the Piedmont for use as riprap and other hardened shoreline structures. Crushed stone is not a resource locally derived from the Coastal Plain.

Clay is also a lightweight aggregate resource within the Coastal Plain. Calcined clay can be incorporated into concrete, and clay-rich materials are being considered for new innovative uses such as riprap and shoreline stabilization alternatives (Natrx, 2024). Other uses of clay include brick production, pottery, and cement. Fuller’s Earth (a diatomaceous montmorillonite clay) is mined in King William County as an industrial product for use as cat litter. Other uses may include use as an absorbent for contamination spill cleanup and as an additive to animal feed. Earlier studies on the clay resources of the Virginia Coastal Plain (Johnson and Tyrrell, 1967; Sweet, 1976; Sweet, 1982) provide detailed information about samples that are accessible through Virginia Energy’s rock repository. Heinrich Reis (1906) provided one of the first publications for the origin and occurrences of clay deposits in the Virginia Coastal Plain, and additional sample data is available in that report, although location (GPS) data is unavailable.

2 Project Area Setting

2.1.1 Rural Coastal Virginia

The Rural Coastal Virginia MPR covers three planning districts: Accomack-Northampton, Middle Peninsula, and the Northern Neck. It comprises 12 counties: Accomack and Northampton on the Eastern Shore; Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex within the Middle Peninsula; and Lancaster, Northumberland, Richmond, and Westmoreland within the Northern Neck (Upper Peninsula). The region's 4,050 miles of shoreline experience a variety of natural hazards that threaten critical infrastructure including: coastal erosion, tidal, riverine, and storm surge flooding, and saltwater intrusion into groundwater and aquifers (VDCR, 2021). Although the Rural Coastal Virginia MPR is small in terms of population (~185,000), the region still contributed to a gross domestic product (GDP) of over 6 billion dollars in 2023 (USBEA, 2024). The Middle Peninsula alone contributed 2.6 billion dollars of GDP in 2023 (USBEA, 2024).The Middle Peninsula covers 888,000 acres that vary in elevation from sea level to more than 240 feet or 76 meters (m) above mean sea level (msl) (Figure 2). This area experiences regional land subsidence that increases the relative rate of sea level rise and makes the region more susceptible to coastal flooding (Eggleston and Pope, 2013). The Chesapeake Bay Foundation (CBF) notes that coastal Virginia has seen the largest impact thus far compared to the whole Atlantic coast, with sea levels rising more than 14 inches in the last 100 years (CBF, 2024).

Data from the Virginia CRMP predicts that by 2080, the Rural Coastal Virginia MPR may have 96,500 acres of land subject to extreme flooding events (0.2% annual exceedance probability), and 157,000 acres of land subject to daily high tidal flooding, capable of displacing approximately 17,200 residents based on current population estimates (VDCR, 2021). The baseline data used for these acreage estimates was the land area that was not inundated during low tide, based on 2020 values (VDCR, 2021). This area experiences erosion hazards from the Rappahannock River, York River, Pamunkey River, Mattaponi River, Piankatank River, and Chesapeake Bay with extended marine fetch far reaching into the Atlantic Ocean. The wide range of modern shorelines and paleoshorelines, from wave dominated high-energy beaches to lower-energy estuarine marshes and riverbanks, make the region a unique place to assess the distribution of aggregate resources.

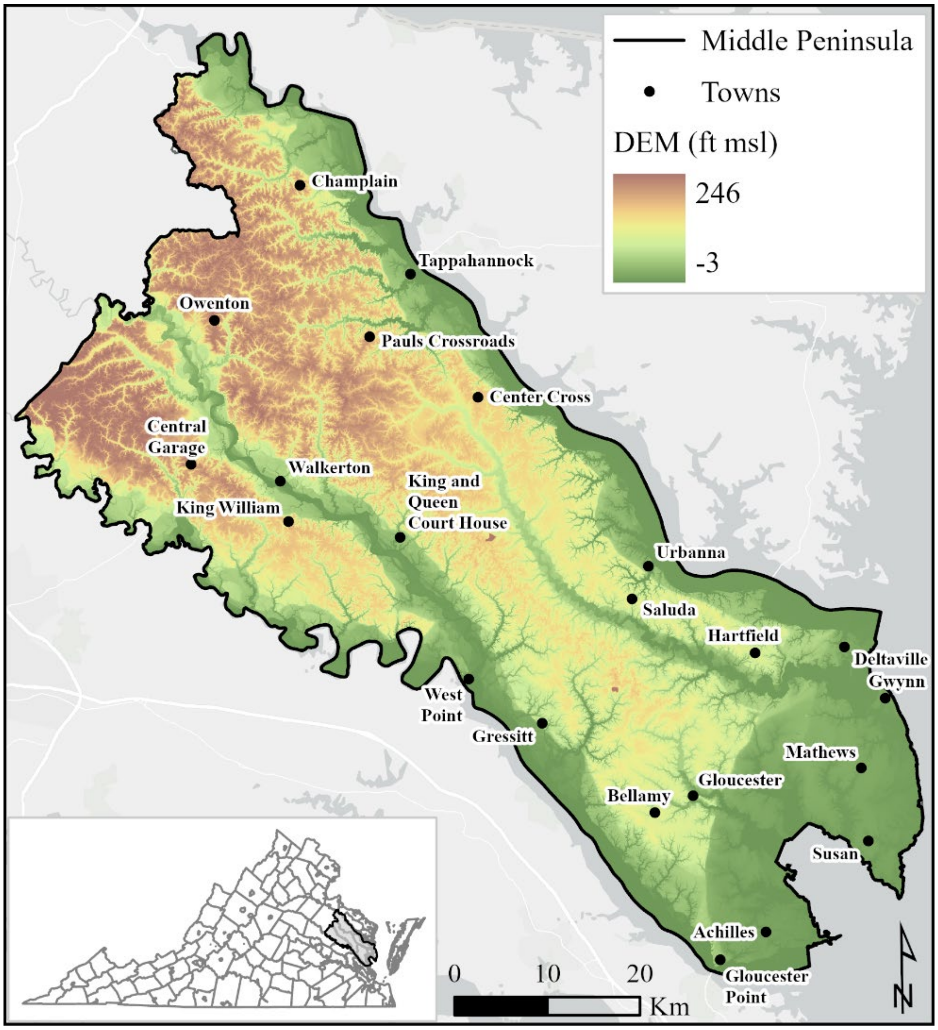


Figure 2. 1-meter lidar Digital Elevation Model (DEM) for the project area (USGS, 2021); ft msl: feet above mean sea level.

2.1.2 Geologic Setting

Since the Cretaceous, the Coastal Plain has accumulated thousands of feet of sediment sourced primarily from the Appalachian Mountains and Piedmont. In response to Cenozoic uplift in these western areas, increased erosion led to more material being available for deposition along the passive continental margin. Further molded by many iterations of transgressive and regressive sea-level cycles, the modern-day features of the Coastal Plain became evident throughout the Quaternary. Tens of millions of years of geomorphic change has left a highly dissected package of Neogene (Tertiary) to Quaternary fluvial, estuarine, and marine sediments. These sediments unconformably overly older fluvial to deltaic Cretaceous deposits throughout most of the Coastal Plain. A series of scarps represent paleoshorelines that segment the Coastal Plain into the Inner, Middle, and Outer Coastal Plain (Whittecar and others, 2016) (Figure 3). The Middle Peninsula spans these three segments of the Coastal Plain and has deep structural control due to a buried impact crater. Approximately 35 million years ago, a large comet or asteroid struck the modern-day Chesapeake Bay, warping marine sediments and basement rock, as well as providing more accommodation for sediments to fill in the newly created crater (Powars and others, 2016). Evidence of the crater's outer rim can be observed with the location of the Suffolk Scarp as it roughly follows the topographic high of the buried rim (Figure 3).

In the project area, regressive and transgressive Pleistocene sequences are inset into older marginal marine and marine Pliocene and Miocene units, typically along modern rivers. Some of the older Pleistocene-aged terraces step up away from the modern river valleys and cap older marine units atop interfluves (Whittecar and others, 2016). Late Pleistocene deposits are located east of the Suffolk Scarp and along lower stretches of the river systems, generally behind modern marsh systems (Berquist, 2013). Terraces and scarps throughout the Coastal Plain have been incised through fluvial processes and later covered by estuarine sediment during the subsequent sea-level transgressions along the major rivers. These patterns can be observed on a regional scale in Figure 3. Sand and gravel deposits typically occur within Neogene sediments that underlie uplands and Pleistocene sediments that underlie lower terraces (Wentworth, 1930; Gooch and others, 1960; Powars and others, 2016). For a more detailed overview of the Coastal Plain stratigraphy and structure, the authors recommend consulting the *Geology of the Virginia Coastal Plain* chapter in the *Geology of Virginia Special Publication 18* (Powars and others, 2016).

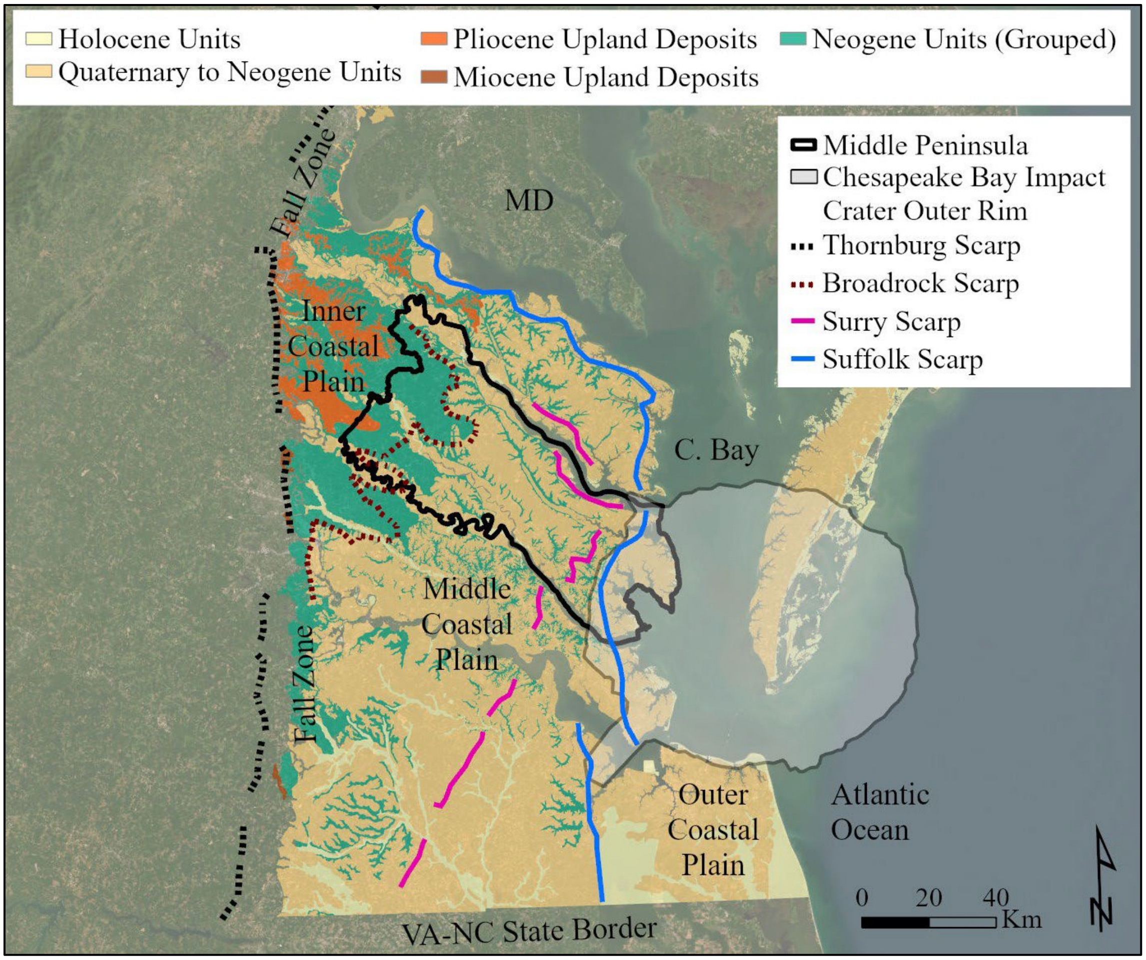


Figure 3. Generalized Coastal Plain geology derived from the 1:250,000-scale Virginia geologic map geodatabase (Witt and others, 2021); Geologic units across the Middle Peninsula range from modern Holocene marsh and beach deposits to Neogene-aged marine deposits. Chesapeake Bay is represented by "C. Bay", Maryland by "MD", and North Carolina by "NC". Scarp and crater features modified from Powars and others (2016).

3 Methods

3.1 Legacy Data Review

Prior to field work, staff reviewed various datasets such as the Virginia Energy Mineral Mining database for permitted and orphaned sites (Virginia Energy, 2021a, 2024a), 1-m lidar (USGS, 2021), aerial orthoimagery (VBMP, 2021) and published geologic maps (Figure 4). While portions of the Middle Peninsula are covered by published maps at the 1:100,000-scale (Berquist, 2013; Mangum and others, 2021) and 1:24,000-scale (Berquist and Occhi, 2015; Gilmer and Berquist, 2015), the best available coverage for the majority of the Peninsula is a 1:250,000-scale map of the Coastal Plain and easternmost Piedmont (Mixon and others, 1989). The recently compiled statewide geologic map database of Virginia (Witt and others, 2021) largely incorporates units from the Coastal Plain (Mixon and others, 1989) but includes some modifications made for a previous version of the Geologic Map of Virginia (Virginia Division of

Mineral Resources, 1993). This database was the primary source of geologic map units evaluated for this project.

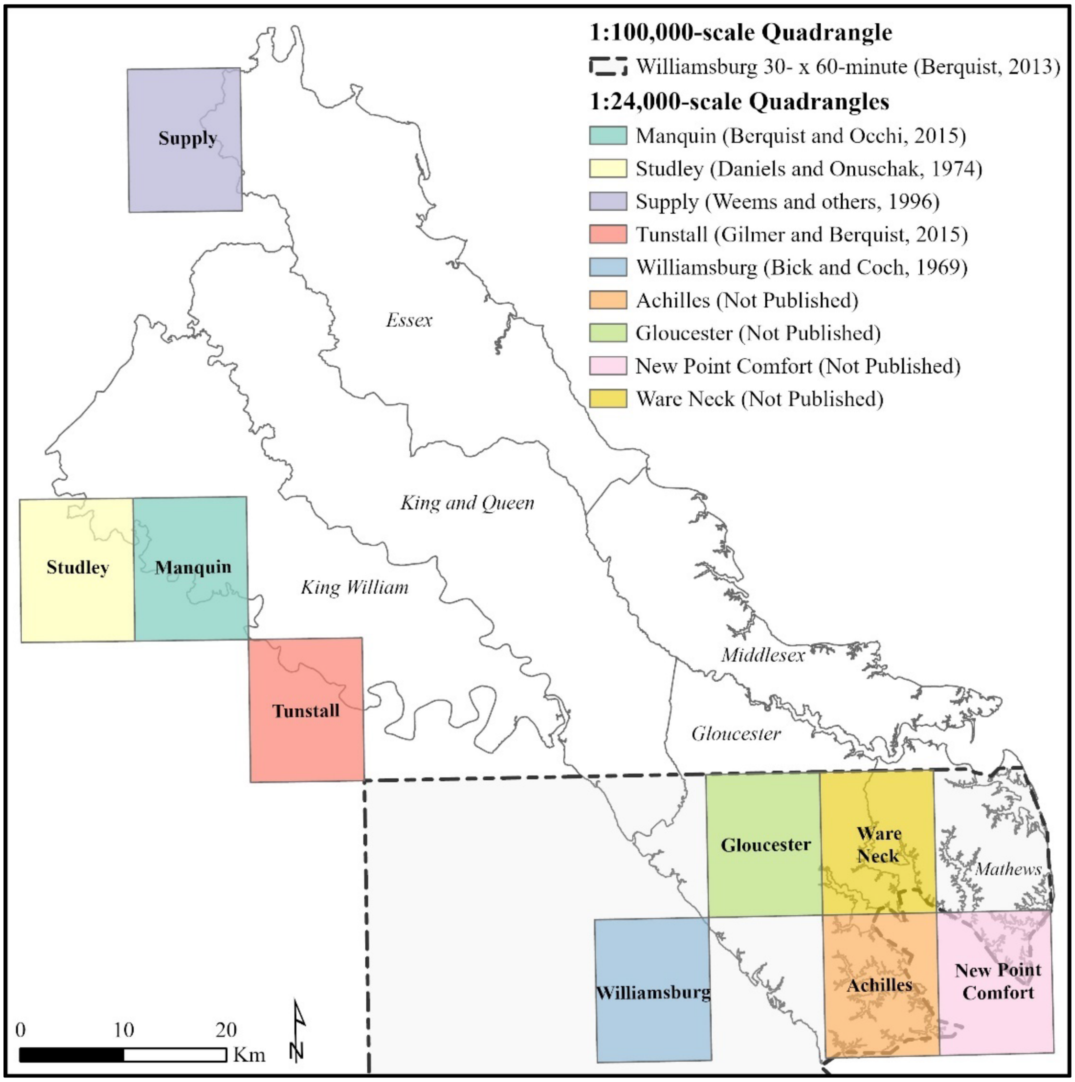


Figure 4. Geologic mapping coverage for the Middle Peninsula. Color-coded quadrangles range from 1:24,000 to 1:100,000-scale. The remainder of the Peninsula is covered by 1:250,000-scale geologic mapping (Mixon and others, 1989).

Staff reviewed unpublished geologic field maps and point datasets including GMR's rock repository (VGMRP, 1957-2021), GMR's MRV database (Virginia Energy, 2021b), and other external datasets for sample specific information (i.e., VDOT, 1954). Each of the point datasets utilized are provided in the *References* section of this report and within the geodatabase. Staff reviewed over 600 borehole log records from our borehole database and other external datasets (USGS, 2024a; VDEQ, 2024; VDOT, 2019, 2020a; Virginia Energy 2004-2021). Data were also downloaded from our internal Microsoft Access borehole database and geothermal well project database (Virginia Energy, 2024b). The USFWS National Wetlands Inventory was reviewed to incorporate mapped wetlands in the region (USFWS, 2024). Publicly available land easement and conservation data was also incorporated into the geodatabase. Information about specific land-use was analyzed to better understand where resources typically occur and/or may be limited (USGS, 2024b; VDCR, 2024).

3.2 Field Work

Sand and gravel pits were identified and digitized as polygons at a scale of 1:15,000 from hillshade and slopeshade rasters derived from the 1-m lidar DEM. Digitized features were bookmarked for further aerial photo and field validation to determine if the digitized area was related to a mine feature. Virginia Energy mine inspectors assisted with sand and gravel mine site verification during the field work planning process, which followed the lidar evaluation. It should be noted that some of these features are not active mining sites and may be related to older borrow pit areas for private use. The conditions of the awarded grant (#NA23NOS4190255, Task 73) did not allow for new ground disturbance, so sampling was limited to previously disturbed sites.

Field work was conducted along the Middle Peninsula between February and August 2024 to verify lidar features, observe potential orphaned sites, and sample active mine sites. Staff worked closely with Virginia Energy's mine inspectors who oversee the Middle Peninsula region to identify active mine sites that would allow sampling. Sampling included materials sold as aggregate, overburden, and materials to be used as fill during reclamation. During sample collection, the goal was to collect a range of material (i.e., sand, gravel, clay) from different geologic units present in order to fully characterize each site. The geologic units that are used for these comparisons are taken from the 1:250,000-scale map database (Witt and others, 2021). Grab samples were placed in a half-gallon sized plastic bag for transport and identified by the permit and sample numbers. The priority during sampling was to obtain a representative sample of the material rather than a specific volume of material. In total, 90 samples were collected, and 86 samples were analyzed and archived in GMR's internal rock repository. Geologists also reviewed historic sites using aerial imagery and historic inspection reports, to determine if site visits were feasible. Sites that were easily accessible and located on a public road were noted and observed during field reconnaissance. A field log including site and sample collection details is provided as Appendix A.

3.3 Sample Processing

Samples were photographed and the general color and texture of the fresh material was described. Samples were then spread out onto aluminum trays and dried in a furnace at 170°F for 6 to 8 hours, or until fully dried. This dried material was weighed and recorded. Each sample was split using a small splitter to obtain a 500-gram sample and two 100-gram samples, with the remainder set aside for archiving in GMR's rock repository. Grain size data was collected for each of the samples following the Udden-Wentworth classification system, for size classes ranging from clay up to boulder sizes (Wentworth, 1922).

Grain size analysis included: 1) sieve analysis using dry sieve shakers (modified from ASTM D422, D136), and 2) laser diffraction particle size analysis (Beckman Coulter, 2011). Openings in the sieves ranged in size from 4.75 mm to 0.063 mm (sieve #4 to #230). The 500-gram sample was an ideal size for sieve analysis and was first wet-sieved using the #230 sieve to remove silt and clay material. The >0.063 mm portion was retained and dried for further dry sieve analysis. The difference in weight was recorded to obtain percent mud. The dried >0.063 mm portion was gravity sieved through the nest of sieves in descending order of size (sieve #4 to #230) for a total of 20 minutes per sample via a mechanical shaking method. To reduce the weight of material within the sieves at a given time, the sieves were completed in two 10-minute runs (i.e., coarser sieves first then finer sieves after for remaining material). The retained material weights were recorded in a spreadsheet and converted from grams to percent weight for gravel, sand, and mud. The relevant sieve size breaks are provided in Table 3, and gradation information is available in Appendix B.

Table 3. Breakdown of sieve sizes used for this study.

Sieve No.	#4	#10	#18	#35	#60	#80	#100	#120	#200	#230
Phi Size (Φ)	-2	-1	0	1	2	2.5	2.75	3	3.75	4
Millimeter	4.74	2	1	0.5	0.25	0.178	0.149	0.125	0.075	0.063
Lithology	gravel		vc sand	c sand	m sand	fine sand			very fine sand	

Notes: Sieve numbers between #4 and #230 were used to determine the percentage of material retained on those sieves, while the material that passed through the #230 sieve represented the combined clay and silt portion. Abbreviations: vc – very coarse, c – coarse, m – medium.

While the sieve analysis is ideal for sand and gravel, the characterization of smaller particles including silt and clay requires another method. In July 2024, a 100-gram split of each sample was taken to James Madison University's Department of Geology and Environmental Science, located in Harrisonburg, Virginia, for particle size analysis using a Beckman-Coulter LS 13320 Laser Diffraction Particle Size Analyzer (LDPSA). This equipment uses diffraction principles and measures percent by volume, rather than weight. This method provides high precision estimates of silt and clay content. To limit the coarse material that could cause disturbance in suspended samples, grains larger than 1 mm were removed prior to testing. Between 1.5 and 4.5 grams of each sample was run on the analyzer three times to obtain an average result. Sampling was done in accordance with the analyzer guidelines (Beckman Coulter, 2011). The results are provided in Appendix B. As the results of the sieve analysis and the particle size analysis follow different techniques, the data should be consulted separately based on user needs.

In addition to grain size data, each of the samples were screened for major and trace element geochemistry using Virginia Energy's portable x-ray fluorescence (pXRF) analyzer. Our unit is a Sci-Aps X-555 model and provides real-time data through non-destructive means, allowing further preservation of the sample. This technology is commonly used in geological and soil applications as an initial screening and exploration tool (Lemière, 2018). Virginia Energy developed a protocol for analyzing unconsolidated sand-sized sediments and followed that protocol for this project (Nelson and others, 2024). An elemental signature is obtained from known fluorescence spectra, which can then be converted to a percentage or concentration in parts per million (ppm). Detectable elements are based on elemental mass and fall between magnesium and uranium; lighter elements are grouped together.

Staff subsampled less than 20 grams from a 100-gram split for each sample, sieved out gravel sized grains (>2 mm), and homogenized the material with a mortar and pestle to disaggregate clay and silt clumps. Approximately 10-15 grams of material was packed into a plastic container to form a puck which would then be ready to analyze. A detailed procedure on sample preparation is available in Appendix C. Prior to analyses, a certified standard was run to track any drift variance in the instrument over the testing period. Each sample was analyzed using the detector's mining mode, which normalizes elements to 100% of the sample, and is appropriate for major elements and/or oxides. Each sample result is represented by the average of three test runs for each sample. Due to high silica content in some samples, the mining mode sometimes displays an error message; therefore, the secondary mode (soil) was used to measure the subset of samples where the mining mode result was not conclusive. If the sample did not display a mining mode result, that data is not included within this report due to the focus on relative percentages of major elements and oxides. The original raw data including individual mining and supplemental soil results are available in Excel spreadsheet format upon request. Mineral assemblages for each sample were not evaluated as it was outside the scope of the project.

3.4 Developing a Resource Potential Raster

The goal of this project was to create a classified raster that would represent resource potential for sand and gravel deposits, or areas that may be favorable to have those deposits. Esri™ ArcGIS Pro 3.1.3 software was utilized to review all geospatial data, compile previously published geologic data, and evaluate raster data and aerial imagery. For sand and gravel potential, nine parameters were assigned for raster conversion as described in Table 4. Rasters were all converted to an integer format with a 10-meter (m) pixel size and assigned a ranking based on predetermined weights. The Cell Statistics geoprocessing tool was used to generate summation statistics for pixel values between individual rasters (i.e., weighted sum for each pixel). Elevation data was calculated for digitized pit features (polygons) using the lidar DEM and used to classify the DEM into areas of low, moderate, and high site potential (Table 4). Additionally, the polygons provide evidence on the existence of favorable deposit material (Table 4).

Surface commodity, surface sample, and subsurface point data were spatially joined to the geologic map polygons and weighed against each other based on preassigned rankings of lithological and textural characteristics and number of data points (Figure 5; Table 4). Data from the geodatabase fields (SurficialPoints, FieldSamples, and SubsurfacePoints) were used in this step. Staff incorporated data from 440 points for textural and grainsize data, 268 points for surface lithology, and 558 boreholes for subsurface deposit characterization (Figure 5; Table 4). Not all of the geologic units have an equal distribution of data; therefore, the amount of data points was weighted for each unit to help determine confidence levels. These steps are explained below.

1) Spatially joined point data from separate point files to the geologic map polygons.
2) Exported each new attribute table to a spreadsheet and sorted by geologic unit.
3) Obtained the average rank for each geologic unit for the respective point dataset.
4) Weighed the map units by number of data point as follows: a. unit with 1-10 data points (value of 1), b. unit with 10-50 data points (value of 2), and c. unit with 50+ data points (value of 3).
5) Obtained a normalized rank based by multiplying the average rank by the data weight. This weighted system gives a higher confidence to the unit with more data coverage; therefore, a higher rank.
6) Reassigned units a rank and reclassified the polygon feature for the three different datasets as shown in Figure 5.

Based on a review of selected parameters from the NRCS Web Soil Survey databases for each county (NRCS, 2024), staff assigned the following parameters for soils that could represent favorable conditions for sand or gravel deposits:

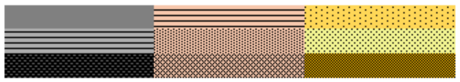
1) soil units with slopes less than a 15 percent grade;
2) soil units occurring at elevations between 10 and 90 feet msl on terraces, uplands, and floodplains;
3) soil units derived mostly from alluvial, fluvial, or marine deposits;
4) soil units with mostly sand-size or larger grains; and
5) soil units that do not meet hydric soil conditions.

Each of the soil unit polygons were then reclassified into a raster value as likely or unlikely for sand or gravel. Slopes were assessed using the 1-m lidar-derived slope raster and those with values less than 10% were ranked higher than those with slopes greater than 10%. This threshold was assigned as active sites were not present across slopes greater than 10%. Wetland coverage was derived using the USFWS National Wetlands Inventory and applied as a final mask to the raster to obtain a value of zero for those areas. Locations with wetlands mapped at the time of this assessment are deemed unlikely to have sand and gravel resource potential due to the grain size and wetland protection regulations. It should be noted that some active mining sites may have current wetlands now due to the conversion of pits to ponds or via reclamation activities and may appear to be dissected within this map product. For the final sand and gravel potential overlay, weighted cell values ranged from 0 to 103. These values were classified with a break of >75%, 25-75%, and <25% of the weighted cell values to meet the higher potential, lower potential, and unlikely potential criteria, respectively. These intervals are explained in more detail in the discussion section in the context of resource favorability.

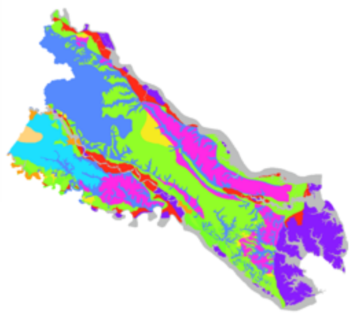
5a Stratigraphic Indices

Boreholes (n=558)	
Criteria	**Weighted Rank**
Primary lithologic texture	0-5
Secondary lithologic texture	0-5
Deposit thickness	0-2
Sand & gravel zone	0-2
Overburden thickness	0-2

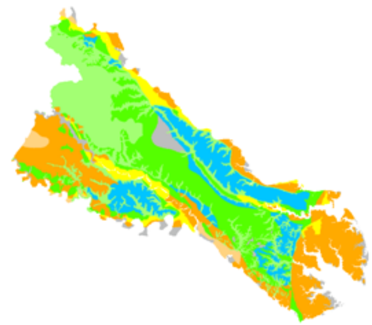
0, 1, 2, 3, 4, 5 →



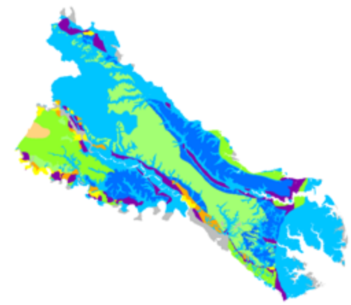
Criteria	Primary Deposit Thickness (feet)
0-10 feet	0
11-20 feet	1
≥21 feet	2
Criteria	**Sand & Gravel Zone (feet)**
0-5 feet	0
6-15 feet	1
≥16 feet	2
Criteria	**Overburden Thickness (feet)**
≥16 feet	0
6-15 feet	1
0-5 feet	2



5b Locality Point



5c Textural Data Point



Cell pixel rank

Locality Points (n=268)	
Criteria	**Weighted Rank**
clay	0
clayey or silty sand	1
sand, gravel, active site	2

Textural Data Points (n=440)	
Criteria	**Weighted Rank**
<50% of material ≥75 micron	0
>50% of material ≥75 micron	1
>60% of material ≥75 micron	2
>70% of material ≥75 micron	3
>80% of material ≥75 micron	4
>90% of material ≥75 micron	5

Figure 5. Individual rank criteria for each of the datasets. 5a) boreholes with a maximum rank of 16; 5b) surface points with locality/commodity information with a maximum rank of 2; and 5c) surface points with gradation data with a maximum rank of 2. The three color-coded Peninsula images are the reassigned map unit polygons based on the joined point data; ranks were reclassified once joined to a scale ranging between 0 - 10. The ranges for each of the input ranks are shown in Table 4.

Table 4. Individual resource parameters utilized to construct rasters for cell statistics.

Parameter	Criteria	Reasoning	Input Dataset	Rasterized dataset/ No. of classes	Reclassified Rank for Raster
Surface Elevation of Active Sites and/or Pit Features	Quartile median values and arithmetic mean for maximum land surface elevation	If sites occur at common elevations, it is likely associated with the geology and can be used to help interpolate where other deposits may occur	1-m DEM	Reclassified DEM / 3	0, 10, 20
Extent of Mine or Excavation Features	Verified mining-related site or excavation extent in lidar	Evidence of mining suggests greater resource potential	Digitized polygons from lidar, limited to localized features (not extrapolated)	Rasterized polygons / 1	20
Stratigraphic Indices (see Figure 5)	Borehole data and overlapping geologic unit	Subsurface deposit information informs resource potential	558 borehole points spatially joined with geologic map polygons	Rasterized polygons / 11	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
Locality Point and Geologic Unit (see Figure 5)	Permitted site data and MRV data	Existence of active site and historical MRV location informs frequency of sites relative to geologic unit	268 surface points spatially joined with geologic map polygons	Rasterized polygons / 6	0, 1, 2, 3, 4, 5, 6
Textural Data Point and Geologic Unit (see Figure 5)	Historical VDOT gradation data for surface points and new grain size data	Surficial texture data informs which units may host more sand or gravel	440 surface points spatially joined with geologic map polygons	Rasterized polygons / 9	0, 1, 2, 3, 4, 5, 6, 7, 8
Soil Series Data - Sand	Reviewed soil map units for each county	Slope, elevation, parent material, landform, hydric conditions, and textural data indicated favorable conditions for sand borrow material to be present	Polygons reattributed with a likely or unlikely field for sand potential	Rasterized polygons / 2	0, 10
Soil Series Data - Gravel	Reviewed soil map units for each county	Slope, elevation, parent material, landform, hydric conditions, and textural data indicated favorable conditions for sand borrow material to be present	Polygons reattributed with a likely or unlikely field for gravel potential	Rasterized polygons / 2	0, 10

Table 4. Individual resource parameters utilized to construct rasters for cell statistics.

Parameter	Criteria	Reasoning	Input Dataset	Rasterized dataset/ No. of classes	Reclassified Rank for Raster
Topography	Slope of the land surface	Based on a review of lidar, all active sites are present in topography with less than a 10% grade. Similar slopes for the sites may indicate a larger areal extent of favorable geology for deposits.	Slopeshade from 1-m DEM	Reclassified slopeshade / 2	0, 1
Wetlands	USFWS National Wetland Inventory	Presence of wetland makes area unsuitable for aggregate resource	Polygons downloaded from October 2024 version of the NWI	Reclassified raster / 1	0 (used as a mask to automatically make "unlikely")

Notes: Final integer raster outputs were resampled to a 10-meter pixel size. Reclassified ranks with higher values carry more weight in the Cell Statistics summation. For the final sand and gravel potential raster, a total of 103 unique pixel classifications are present. These 103 values were reclassified into three classes based on the following conditions: 1) meets 75% or greater of the 103-pixel total (higher potential), 2) meets 25-75% of the 103-pixel total (lower potential), and 3) less than 25% of the 103-pixel total is met (unlikely potential). Plate 1 shows these potential thresholds across the Peninsula.

4 Discussion

4.1 Synthesizing the Data for a Bigger Picture

Lithological and Textural Characteristics

Borehole logs provide information about surficial deposits across the Middle Peninsula, and for the purposes of this study, material logged as dominantly sand and/or gravel is assumed to be more favorable as an aggregate resource. Within most borehole logs, sediments grade from clay or silt to finer grained sand, and to coarse sand and gravel; therefore, it is important to evaluate the primary lithology (main constituent) and secondary lithology (sediment modifiers). Sediments having a primary and secondary lithology consisting of silt, shell, clay, or organic material are considered to have lower potential. Layers of topsoil and surficial clay deposits were categorized as overburden as this material would have to be removed prior to excavating the sand and gravel deposits. If the borehole log indicated clay as the primary lithology at the surface, that was considered overburden. If the primary lithology was sand or gravel at the surface, but clay or silt as a secondary lithology, that was still considered deposit material; albeit, with lower favorability. The stripping ratio is the ratio of overburden thickness to deposit thickness, and a lower ratio is generally more economically favorable. Primary and secondary lithology with the lowest ranked material (i.e., including clay and silt) have an average stripping ratio of 0.57; whereas primary and secondary lithology ranked higher have a stripping ratio of 0.22.

Data from 558 boreholes located across the Middle Peninsula indicate that typical primary deposit thicknesses of 20 feet or greater may be more favorable for resource potential. This was also observed at active mining sites where minable product ranges from 15-20 feet. Mine operators across a subset of sites (n=10) estimated a variable thickness range of minable product between 8 and 60 feet. Overburden consisting of clay-rich material that is less than five feet thick is also ranked as more favorable. Overburden estimates at active sand and gravel sites ranged between 0 and 30 feet thick, with stripping ratios ranging between 0 and 0.5, depending on the site and the thickness of the material. The deposit and overburden thicknesses are included as part of the "Stratigraphic Indices" parameter (Table 4), illustrated on Figure 5. The individual borehole files within the geodatabase should be consulted for more detailed information for localized assessments.

Geologic units containing MRV sites with commodities listed as sand and gravel or with permitted active sites are ranked the highest, while geologic units with clay commodities are ranked the lowest for the sand and gravel resource potential. Published grain size data (VDOT, 1954) and newly collected grain size data obtained as part of this study, indicate lithologies are more favorable when a higher percentage of grains are retained on a #200 sieve (or larger than 75 microns), indicating higher probability for economic sand and gravel, with less fines. To standardize legacy and new data, these points are all compared against that threshold and ranked accordingly based on percentages (Figure 5). For more detailed analyses, the VDOT publication, Plate 1 and Appendix B of this report should be consulted.

Geologic map units from the 2021 statewide geologic map and collocated point data are ranked in order of most favorable to least favorable on Table 5. Although the favorability varies depending on the dataset used, it should be noted that these individual raster datasets were summed together. For example, The Windsor Formation (Qw) received the highest cumulative rank for these rasters based on the occurrence of the unit meeting more favorable parameters. The Chesapeake Group (Tc) was also ranked within the top 50% across each of the parameters. The Tc unit is a broad grouping of undivided geologic formations, and the upper Tc units including the sandier zones of the Yorktown Formation are commonly present in many of the active sites stratigraphically below the Quaternary units, such as Qw. These ranked units still should be used in conjunction with the other parameters but provide a general breakdown of how the mapped units stack up against each other based on this specific methodology. The map units are based on a 1:250,000-scale; therefore, more detailed mapping could produce different results that may be appropriate for smaller, localized regions. The authors consider the scale of these units to be appropriate for the intended use of this 1:100,000-scale map product.

Table 5. Map unit favorability for sand and gravel deposits.

Parameter	Commodity and Mine Frequency	Grainsize Data	Deposit Favorability
Point Type	Surface	Surface	Borehole
1:250,000-scale Geologic Map Unit	n=13	n=13	n=15
Higher Favorability	Qw	Qsh	Qts
	Tc	Qw	Qw
	Qsh, Obc	Qtlp, Qts, Tc	Qtlp
	Qts	Qbc, Qms	Tc
	Qtlp, Qeg, Qc, Qcc, Qtu, Tch	Qeg, Tch	Tch
	Qtl, psg	Qc, QTu	Qeg, Qsh, Qbc
	--	Qcc	Qtl, Qcc, Qmsm
	--	psg	Qc, Qms
	--	--	QTu
Lower Favorability	--	--	psg

Notes: Each point data utilized for the sand and gravel potential raster was spatially joined to the geologic map unit. The map units were then ranked based on the average scores from each point dataset and their data density for that specific unit (shown on Figure 5). The units are presented in order of favorability with the more favorable units at the top of the chart, and units that received the same ranking are located on the same row. The brown shading indicates the top half of units for each respective parameter.

Geomorphic and Physiographic Setting

Through a detailed lidar assessment of topographic features, in conjunction with known geological units, three primary geomorphic systems were determined for the Middle Peninsula (Figure 6): 1) Incised uplands capped with Pliocene to early Pleistocene marginal marine sediments with steep drainages that expose older Neogene marine sediments; 2) Fluvial-estuarine terraces typically adjacent to the modern river systems comprised of Pleistocene units formed through sea-level oscillations; and 3) Bay-coastal region east of the Suffolk Scarp (paleoshoreline), comprised of late Pleistocene fluvial, estuarine, and beach/barrier deposits.

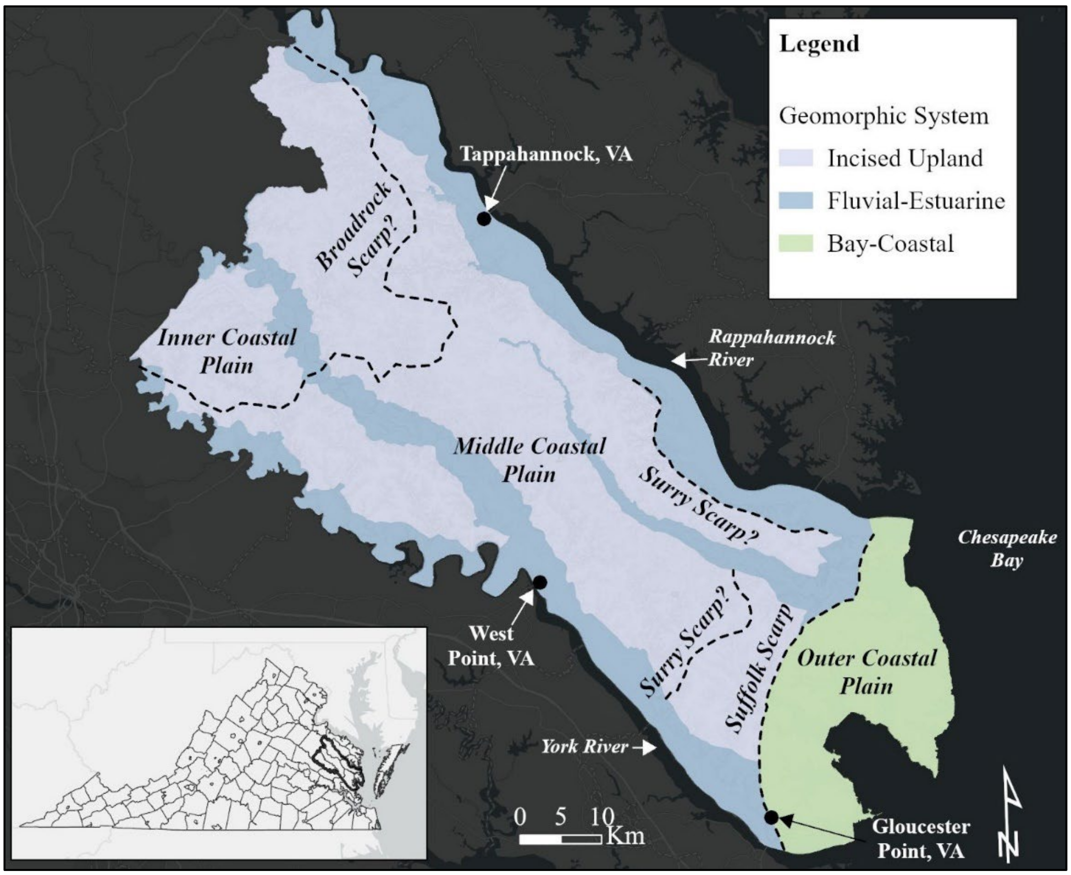


Figure 6. Three geomorphic systems across the Middle Peninsula. Approximate scarp locations are generalized and are modified from Powars and others, 2016.

The lidar also provides surface elevations for active mine sites and borrow pits. Sites are typically located in regions where the geology and ease of economic development would be favorable. The question on whether elevation can impact where a site is located is something that is not traditionally considered; however, after examining the data, there do seem to be elevation intervals that have more sites. This may be related to the geomorphology, landforms, and deposits that comprise the region. Other factors such as the depth to groundwater could influence why fewer sites are present in lower fluvial terraces and coastal fronting regions.

Figure 7 displays the range in elevations observed in lidar for the digitized features, clearly showing a wide-range of values, but with noticeable clustering for the fluvial-estuarine and bay-coastal sites. Statistical analysis of the features indicated that the maximum surface elevation generally trended between 22 and 73 feet msl for most sites (i.e. represented by the 2nd quartile median values), while elevations between 9-22 and 73-128 feet msl had site occurrences at a lower frequency, and little to no sites were located below 9 feet msl or above 128 feet msl (i.e. outliers) (Figure 8). These data provide insight into where sites may occur in this region and are likely related to elevations of Pleistocene terraces in areas with favorable geology. Sites where the water table is shallow or near sea-level are likely to have more ponding features. Active permitted mine sites and associated pits are located in areas with slopes between a 0-10% grade based on the lidar-derived slope raster. Staff did not observe evidence of active or historic mine sites in areas with slopes greater than a 10% grade.

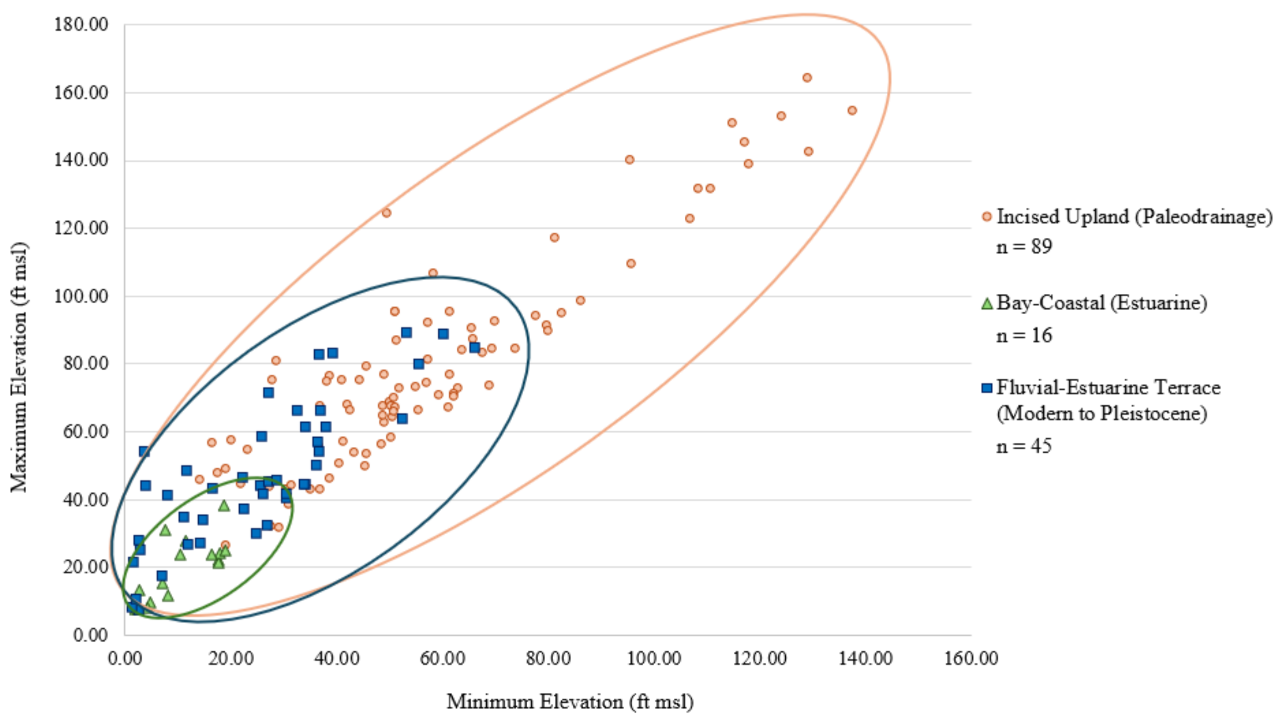


Figure 7. Scatter plot for range of maximum and minimum elevations above sea level for the lidar identified sites, sourced from the 1-m DEM. Note the clustering of features separated by color; (ft msl) – feet above mean sea level.

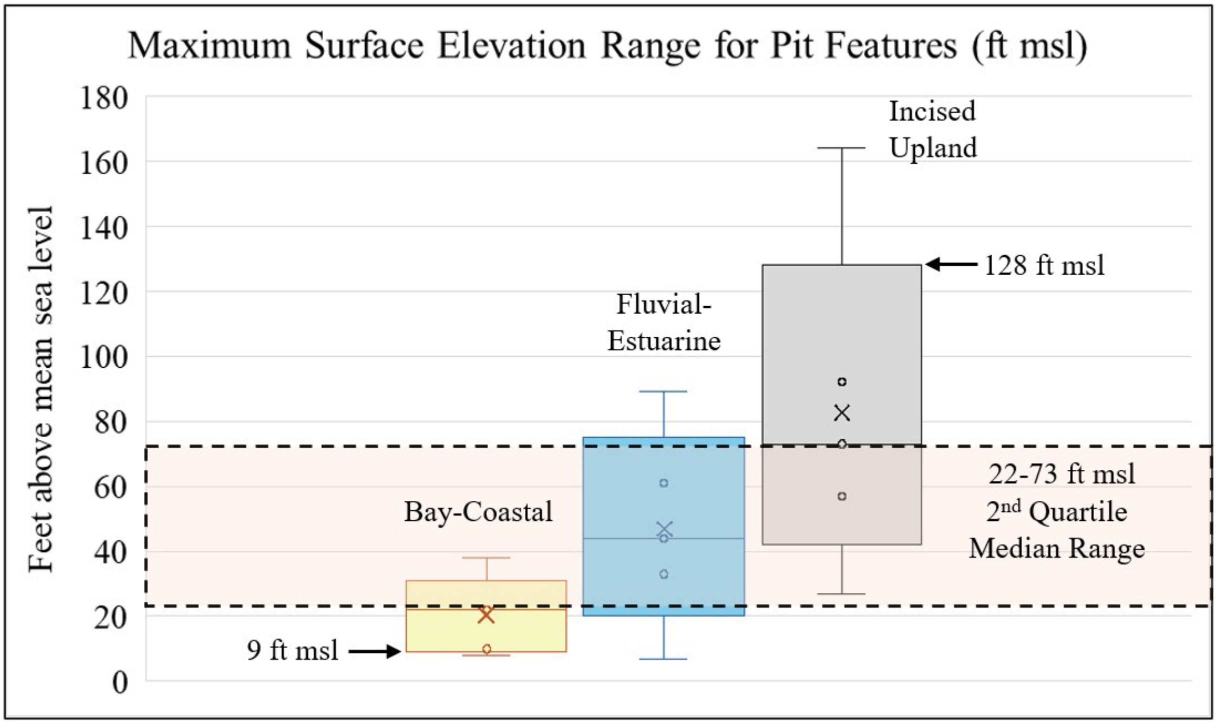


Figure 8. Box and whisker plot for the maximum surface elevation ranges for pit-related features identified in the lidar. The 2nd quartile or median range encompasses the lowest and highest median elevations and is an indicator for higher probability of sites to occur in that range. Additional sites occur between 9 and 128 ft msl within the lower and upper quartiles. Outliers are ranked lower.

4.2 Sand and Gravel Potential Raster Results

The sum of the nine separate integer rasters, uniquely classified based on the preassigned rankings, produces a sand and gravel potential layer (Figure 9; Plate 1) consisting of: 1) higher potential as a resource (9% of the study area), which have more geologic evidence to support the potential for deposits to occur; 2) lower potential as a resource (65% of the study area), which may have existing mine-related features but have met less of the initial criteria; and 3) unlikely potential as a resource (26% of the study area), where geologic or lithologic conditions are less favorable or restricted. Protected and conserved lands are not included in this ranked layer but are presented separately within the geodatabase and map and are considered unlikely areas of resource potential due to their protected status. Based on the data inputs, the following parameters are considered to be the top criteria for determining sand and gravel potential: 1) geologic units with favorable deposit lithologies and indicated sand and gravel commodities, 2) frequency of indicated active and historic mine sites, 3) demonstrated occurrences of sites at similar elevations, 4) absence of wetlands and hydric soils, 5) and soil units that meet the specifications as described in Section 3.4. To a lesser extent, the slope of the land can also provide evidence to where sites may occur but could differ regionally.

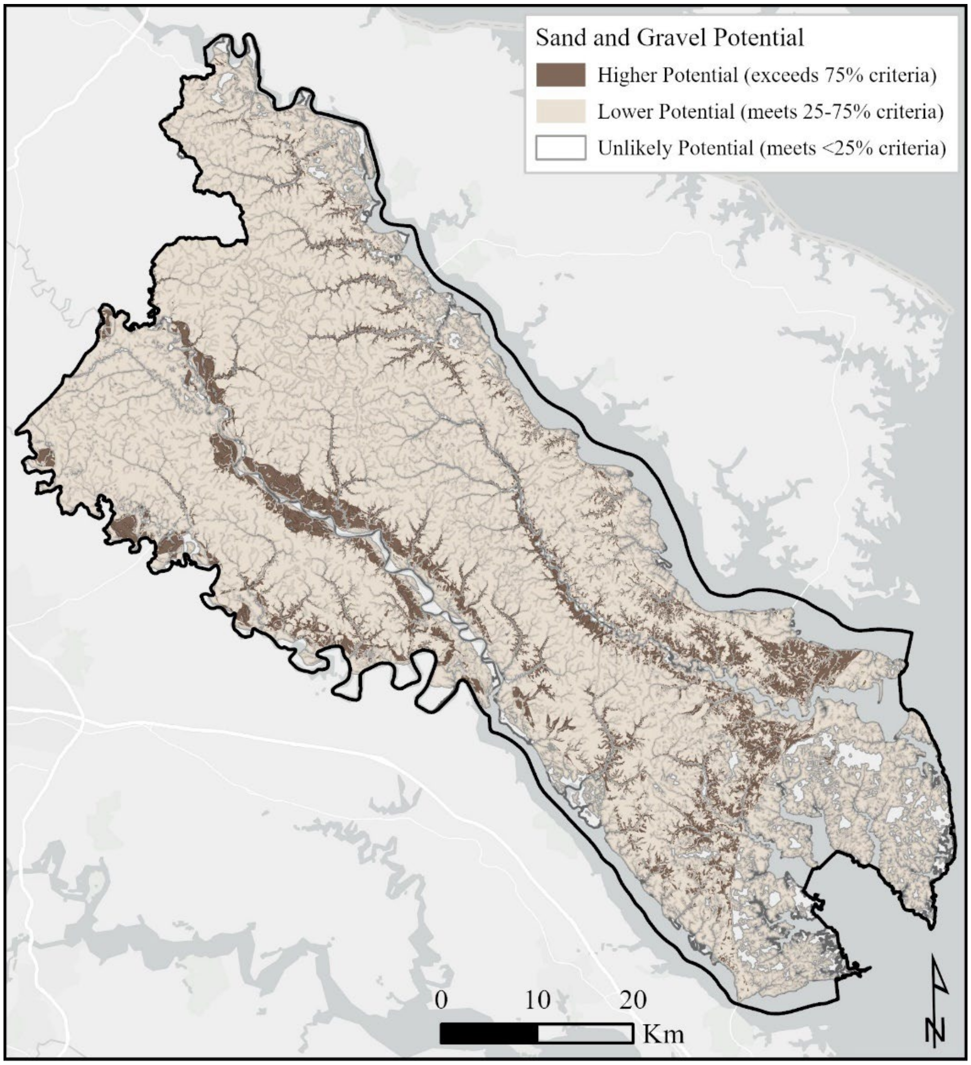


Figure 9. Sand and gravel potential for the project area based on compiled datasets and raster cell statistics; also shown on Plate 1 in more detail.

4.3 Clay Resource Potential

While the initial assessment plan for aggregate resources across the Middle Peninsula included clay, the lack of permitted clay-related deposit mines in the region prohibited spatial analysis of potential resources. One active site, the Nestle Purina Plant in King William County (Permit No. 90298AB) produces cat litter products from diatomaceous clay (Fuller's Earth), which is derived from the Miocene Calvert Formation (Berquist, 2013; Berquist and Occhi, 2015; Gilmer and Berquist, 2015). The Miocene Eastover Formation overlies the Calvert in some regions and is the typical confining clay unit below most sand and gravel sites. Many site operators stated that their minable sand and gravel deposits terminate on top of a gray-blue gray layer (e.g., blue marl), interpreted to be the Eastover or Calvert, and therefore these could be potential clay resources. One concern with the Eastover Formation is that due to the pyrite content, sediments become acidic when exposed at the surface, which can cause acidic surface water runoff (Berquist, 2013; Berquist and Occhi, 2015; Gilmer and Berquist, 2015). Individual point data should be consulted for more information on clay lithology, as some sites utilize clayey or silty material on-site for reclamation, and the potential for other uses of site material could be explored. Additional publications specific to Virginia clay resources are available for download in the Virginia Energy webstore (https://www.energy.virginia.gov/commerce/).

4.4 Resilience Applications

Coastal Inundation and Community Resilience

The primary end-use for sand and gravel deposits for coastal resilience applications has traditionally been for beach nourishment. Some sites on the Middle Peninsula have provided sand for beach nourishment in Gloucester County. Zones of well sorted quartz-rich sand could benefit beach front communities as potential sources when adjacent offshore sediment in the vicinity may not be as compatible. The Virginia CRMP identified areas that are susceptible to increased inundation based on modeled sea level rise scenarios (VDCR, 2021). These data are accessible via the Virginia Coastal Resilience Web Explorer. Planners can incorporate the CRMP data and the geodatabase for this study to assess potential sand and gravel resource areas that may be impacted from future flooding, to prioritize where efforts may be focused on potential expansion or development of new sand and gravel resource sites.

Roads within the project area rely on a dependable source of sand and gravel for road base. Increased inundation will impact a higher number of roads, which can cause connectivity issues across communities, particularly during higher intensity storms that can wash out existing infrastructure. Elevating roads via sand and gravel is a feasible method and may become more popular for secondary and frontage roads that don’t require specific asphalt-based designs. Aside from roads, other infrastructure such as water and wastewater treatment plants, septic systems, and buried utility lines will also be threatened by increased inundation. Sand and gravel can be used for maintenance of existing systems through retrofitting with new fill material, and for elevating locations for new systems. To provide context for these spatial relationships, Figure 10 illustrates mine site features and modeled flooding for the counties of Gloucester and Mathews. The scenario is for 2080 and shows different exceedance probabilities (VDCR, 2021). The inundation data represent surficial coastal flooding but is not inclusive of groundwater changes or precipitation driven flooding, the latter of which is to be addressed in the Phase II iteration of the Virginia CRMP. It is expected that sites that intersect the water table may experience ponding and subsequent infilling by water.

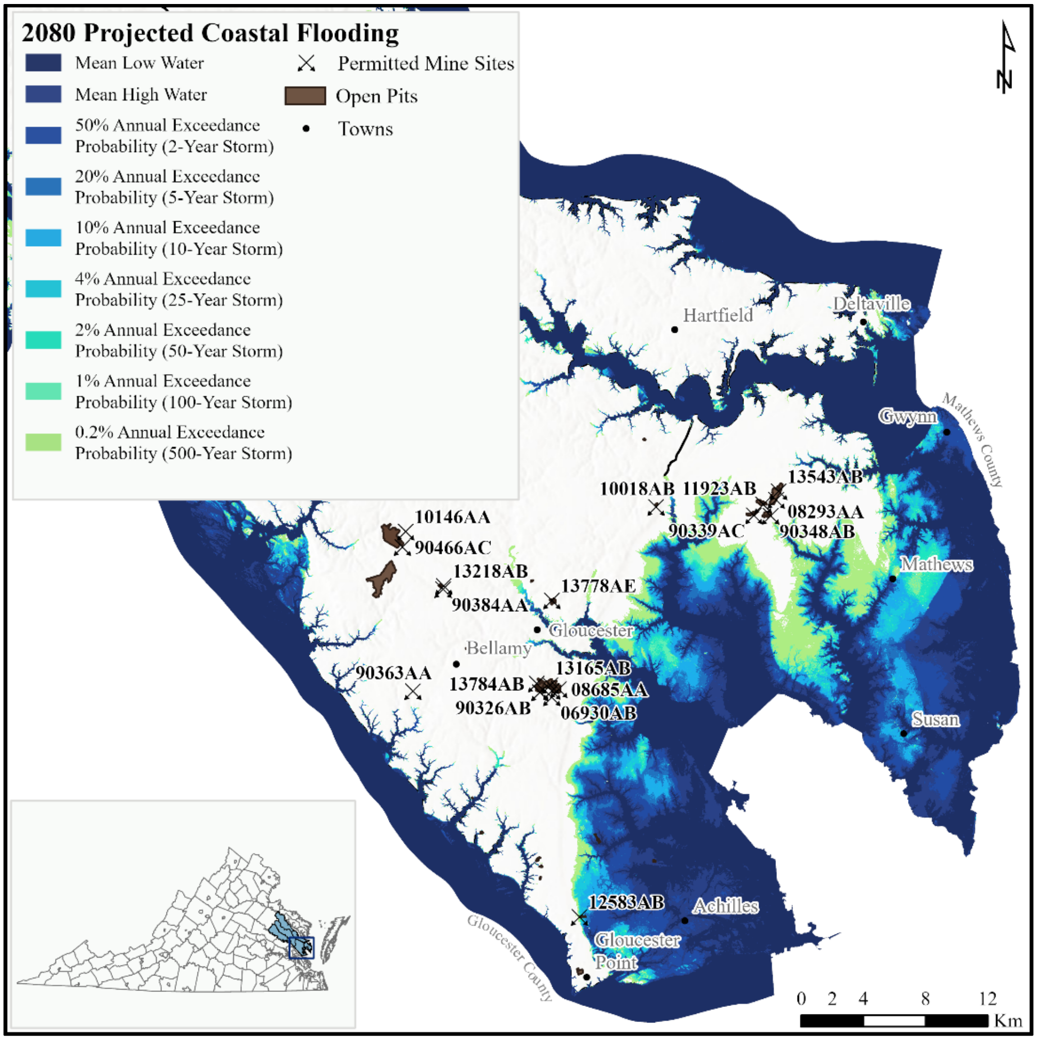


Figure 10. Location of permitted mines and identified pit features relative to modeled inundation scenarios for 2080 (DCR, 2021).

Innovative Uses of Mined Material

Shell material from the Eastover Formation may have potential for use in sustainable aquaculture, by providing an inert substrate for oyster reefs (VMRC personnel communication). However, clay resources from the Eastover Formation should be evaluated for their acid-forming potential. The data presented in this report helps support efforts outlined in NOAA's Middle Peninsula Habitat Focus Area (NOAA, 2024b) by providing geospatial context for these resources and where they may be limited due to coastal hazard disruptions. At the local level, these data can support the Middle Peninsula's Fight the Flood Program by providing contractors with reconnaissance data to source aggregate material for use as fill, beach nourishment, filtration, habitat restoration, and in other construction-based projects.

4.5 Economic Considerations

The Middle Peninsula conducted a 2020 study related to extractive natural resource industries, funded by the Virginia Coastal Zone Management Program through NOAA. This study examined multiple natural resource industries and how they contribute to the local economy, jobs availability, and tax revenue generation. Their report indicated that sand and gravel mining operations provide tax revenue to localities; however, these are limited in what is and what is not tax exempt. Personal property, including large equipment and other processing equipment may be tax exempt. Exploration, site preparation, mineral extraction, inspection and maintenance, and reclamation are examples of taxable functions, while the report indicates that there is no tax on tonnage of material removed from a mine site (MPPDC, 2020). According to the 2022 Middle Peninsula Comprehensive Economic Development Strategy, this industry is traditionally recognized as a sector supported for growth, as jobs can offer higher worker wages (MPPDC, 2022).

4.6 Summary

Prior to this study, a GIS-based regional-scale assessment of aggregate resources for the Coastal Plain is not known to have occurred. This project provided Virginia Energy the opportunity to carry out a proof-of-concept mapping study that can be applied to other areas of the Coastal Plain. Our assumptions and interpretations are based on the available geologic data as of the issuance of this report. New detailed geologic mapping or compilation efforts are anticipated to occur in the region over the next five years, and those efforts may incorporate data from this study or provide new data that could augment this product. In support of the CZM's coastal resilience focal area, additional work to characterize potential deposits across the remainder of the Rural Coastal Virginia MPR is proposed for 2025 and 2026. While the Middle Peninsula serves as the pilot project area, the authors are open to modifications in the methodology as appropriate with new data considerations. The digital format of the data allows users ease to incorporate into other GIS based software.

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PLATE 1

Aggregate Resource Potential Reconnaissance Mapping of the Middle Peninsula, Virginia

1:100,000-scale Map

Aggregate resource potential reconnaissance mapping of the Middle Peninsula, Virginia

Lauren N. Schmidt and David W. Hawkins

2025

Open-file Report 2024-19
Aggregate resource potential reconnaissance mapping of the Middle Peninsula, Virginia
Virginia Department of Energy, Geology and Mineral Resources Program

Plate 1, Version: February 11, 2025

MAP DISCLAIMER: An ArcGIS Pro Geologic Map Schema (GeMS) compliant geodatabase is intended to supplement this map and provides additional feature classes and data sources. For detailed methodology and interpretations, please consult the technical summary report (Hawkins and Schmidt, 2025).

INTRODUCTION

Aggregate is vital to communities' infrastructure as it is used in constructing buildings, maintaining and elevating roadways, and creating resilient coastlines. Aggregate is a high-volume and low-value commodity, so transportation costs increase significantly when the material is sourced far from where it is needed. In the Coastal Plain, sand and gravel are the primary aggregate resources. Sand and gravel aggregate production in the Commonwealth of Virginia was valued at $124 million in 2023, and $14.4 million of that total was from the Middle Peninsula alone (Virginia Energy, 2024). The geologic setting of the Middle Peninsula is a result of millions of years of Coastal Plain evolution that has deposited packages of marginal marine and marine sediments during sea-level transgressions, and further shaped by modern fluvial processes and erosion as sea level has changed through time. Similar to other settings where clastic unconsolidated sediments have been deposited (e.g., glacial, eolian), these Coastal Plain sediments host known sand, gravel, and clay resources that are critical to develop and upgrade infrastructure. As a proof-of-concept study for the Virginia Coastal Plain, we evaluated multiple geological and spatial datasets to assess the favorability for these types of deposits to occur in the Middle Peninsula Region, which is part of the larger Rural Coastal Virginia Master Planning Region (Virginia Department of Conservation and Recreation, 2021). The Middle Peninsula Region comprises six counties: Essex, Gloucester, King and Queen, King William, Mathews, and Middlesex. The final products are a technical summary report, 1:100,000-scale aggregate resource potential map (Plate 1), and an accompanying geodatabase. These data can support resilience initiatives that were identified in the 2021 Virginia Coastal Resilience Master Plan (VCRMP), which include efforts to mitigate widespread habitat loss, impacts to critical infrastructure, and potential residential displacement due to increased coastal flooding. Planners and contractors who are interested in materials for elevating roads, shoring up existing structures, providing shoreline protection, and restoring wetland habitats can utilize the data to understand where potential deposits may occur.

APPROACH

Various legacy datasets were reviewed to obtain a basic understanding of the regional geology and local mining operations. These datasets are described in detail in the technical summary report and include: 1) published geologic maps and databases (Mixon and others, 1989; Berquist, 2013; Gilmer and Berquist, 2015; Berquist and Occhi, 2015; Witt and others, 2021), 2) 1-m lidar, 3) mining permit data, 4) internal repository and external point datasets, 5) borehole logs, and 6) sensitive land-use areas. Reconnaissance-level field mapping was conducted across the Middle Peninsula from February 2024 to August 2024. The conditions of this grant restricted sample collection to areas where prior ground disturbance had occurred, which limited our samples to active mine sites. During sample collection, sand, gravel, and clay were characterized from different geologic units. A Geologic Map Schema (GeMS) compliant file geodatabase with spatial and non-spatial information is available for this map (USGS, 2020) and represents point, polygon, and line files including: mine site locations, sample points, cultural boundaries, land-use designations, and polygons reflective of the potential for sand and gravel deposits. This map does not depict clay resource potential as the extent of this commodity was limited to one mine site. However, the MRV and VDOT datasets provide commodity and textural data for clay and are included within the geodatabase for further reference. Additional publications pertaining to clay resources in this portion of the state are available for download through the Virginia Energy Map and Publications online store (Ries, 1906; Johnson and Tyrrell, 1967; Sweet, 1976, 1982). Figure 1 illustrates the systematic approach we used to compile and compare spatial information. Our approach involved converting relevant datasets to rasters to weigh areas that have been assigned rankings. Point data were joined through geoprocessing to the geologic map polygons and weighed against each other based on preassigned rankings of lithological and textural characteristics and number of data points. Staff incorporated data from 440 points for textural and grainsize data, 268 points for commodity data, and 558 boreholes for subsurface lithology characterization. These methods are described in more detail in the technical summary report. Each of the raster datasets were summed in ArcGIS Pro to generate a unique valued raster, which was then reclassified into three classes (Table 1).

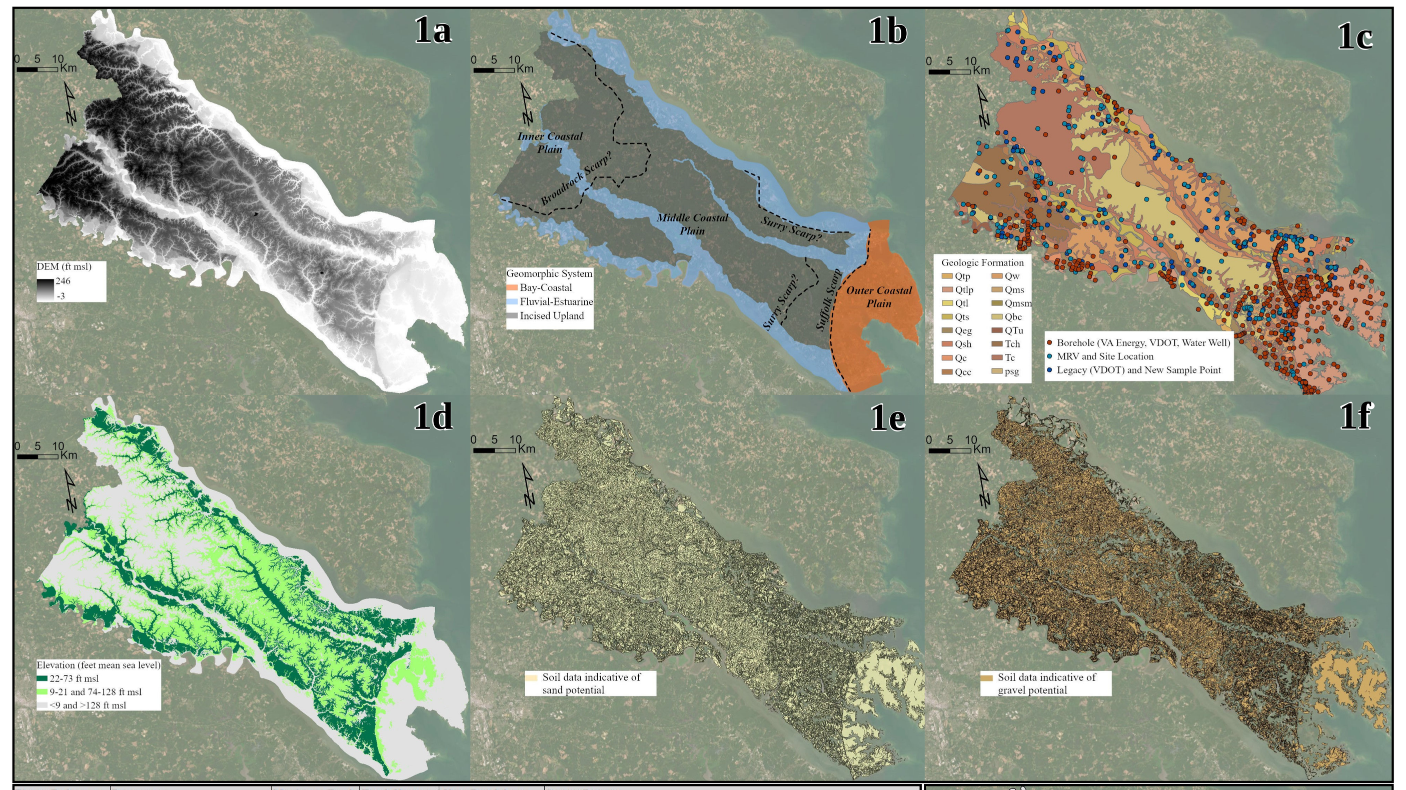


Figure Reference	Parameter	Maximum Rank	Total Classes	Class Breakdown	Source Dataset
1a	Digital Elevation Model (DEM)	NA	NA	NA	1-m DEM lidar (USGS, 2021)
1b	Geomorphic system	NA	NA	NA	Digitized polygon (Hawkins and Schmidt, 2025)
1c	Ranked subsurface criteria and geologic unit	10	11	0-10	Polygons (Witt and others, 2021); point data (borehole database, water wells, VDOT logs)
1c	Ranked surficial grainsize data and geologic unit	8	9	0-8	Polygons (Witt and others, 2021); point data (Hawkins and Schmidt, 2025; VDOT, 1954)
1c	Ranked surficial texture data and geologic unit	6	7	0-6	Polygons (Witt and others, 2021); point data (Hawkins and Schmidt, 2025; MRV database, repository)
1d	Elevation analysis	20	3	0, 10, 20	DEM (USGS, 2021); Hawkins and Schmidt, 2025
1e	Ranked soil criteria for sand	20	2	0, 10	Soil polygon (NRCS, 2024)
1f	Ranked soil criteria for gravel	20	2	0, 10	Soil polygon (NRCS, 2024)
Not shown	Observed pit and/or excavation	20	1	20	Digitized polygon (Hawkins and Schmidt, 2025)
Not shown	Slope raster	1	2	0, 1	DEM (USGS, 2021)
Not shown	National wetland inventory	*Automatic unlikely potential*			Raster to polygon (USFWS, 2024)
1g	Reclassified final raster	103	3	0-25; 26-77; 78-103	Reclassified into 3 classes as *<25%, 25-75%, >75%*

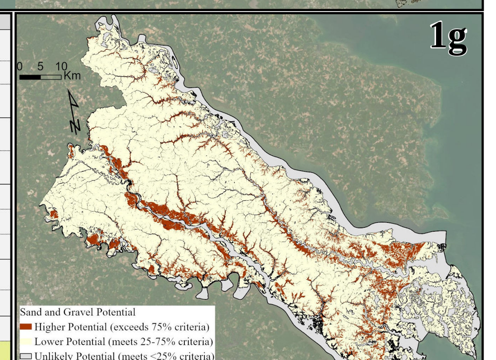


Figure 1: Parameters used for raster conversions and ranking via ArcGIS cell statistics. Each raster was created from either existing raster datasets or polygons, converted to an integer raster, and sampled to a 10-meter cell size. 1a) 1-meter Digital Elevation Model (DEM); 1b) Geomorphic systems (fluvial-estuarine, incised uplands, and bay-coastal) and Coastal Plain features; 1c) 1:250,000-scale published geologic map units (Witt and others, 2021) and point location data; 1d) Elevation intervals from the DEM based on statistics of pit occurrences; 1e) Ranked web soil survey derived polygons with sand potential; 1f) Ranked web soil survey derived polygons with gravel potential; 1g) Composite raster with 103 unique cell values, reclassified into the three classes. Other parameters including pit feature polygons, slope, and wetlands are not shown in the figures above. NA refers to not assigned for ranking.

Table 1: Potential occurrence for sand and gravel deposits

Resource Parameter	Higher Potential	Lower Potential	Unlikely Potential
Geomorphology	Fluvial-estuarine terraces, incised uplands, higher elevation bay-coastal areas (Fig. 1b)	Incised uplands, modern alluvium and floodplains, lower elevation bay-coastal areas (Fig. 1b)	Wetlands, areas covered by water (Fig. 1b)
Stratigraphic Indices	Favorable sediment texture characteristics, primary deposit thickness of more than 20 feet and less than 5 feet overburden generally (Fig. 1c)	Favorable sediment texture characteristics, primary deposit thickness between 0 and 20 feet and more than 5 feet overburden generally (Fig. 1c)	Higher overburden and/or clayey to silty surficial material (Fig. 1c)
Locality Data and Geologic Unit	Mapped geologic units with field verified sand or gravel site (Fig. 1c)	Mapped geologic units with field verified sand or gravel site, including clayey and silty sand (Fig. 1c)	Mapped geologic units without indication of field verified sand or gravel site (Fig. 1c)
Texture Data and Geologic Unit	Mapped geologic units and associated surficial point data containing sand and gravel, little to no silt/clay content* (Fig. 1c)	Mapped geologic units and associated surficial point data containing sand and gravel, with some silt and clay* (Fig. 1c)	Mapped geologic units and associated surficial point data with higher silt and clay content* (Fig. 1c)
Surface Elevation of Active Sites and/or Pit Features	22-73 feet mean sea level (elevation analysis) (Fig. 1d)	9-21 and 74-128 feet mean sea level (elevation analysis) (Fig. 1d)	<9 and >128 feet mean sea level (elevation analysis) (Fig. 1d)
Presence of Mining Excavation or Pit Features	Close proximity to an active site or an area with evidence of an excavated pit feature	Evidence of an excavated pit feature observed but may not be associated with an active site	Evidence of excavated feature not observed in lidar hillshade and slopeshade
Soil Series Data	Ranked soil criteria indicates suitability for sand and/or gravel deposits (Figs. 1e, 1f)	Ranked soil criteria indicates suitability for sand and/or gravel deposits (Figs. 1e, 1f)	Ranked soil criteria does not indicate suitability for sand and/or gravel deposits (Figs. 1e, 1f)
Topography	Less than 10% slopes	Less than 10% slopes	Greater than 10% slopes
Wetlands	Wetlands not present	Wetlands not present	Wetlands present

Notes: Table describes resource parameters that were evaluated to distinguish intervals associated with likely or unlikely conditions to host sand and gravel deposits. These potential indices are based on regional reconnaissance and field verification data and are meant to demonstrate areas that may be more favorable to host sand and/or gravel deposits. Refer to Figure 1 for examples of the data sources. These are not intended to represent known areas of economic resources or mineral reserves, and further site-specific assessments including geologic mapping and drilling should be conducted to assess areal and volumetric factors. Additional texture data denoted with an asterisk* is available within the technical summary report and supplemental grainsize data. The resource potential indices are intended to be utilized at the 1:100,000-scale, and individual borehole, surficial, and mineral resource data should be consulted for site-specific data.

SAND AND GRAVEL POTENTIAL

Higher Potential for Sand and Gravel Deposits: At least 75% of the input criteria are met (9% of the study area).

Lower Potential for Sand and Gravel Deposits: Between 25 and 75% of the input criteria are met (65% of the study area).

Unlikely Potential for Sand and Gravel Deposits: Less than 25% of the input criteria are met and/or includes wetlands (26% of the study area).

Restricted Area: Many land-use restrictions may impede the ability for extractive industries. Land that is protected, restricted, or under conservation is shown on this map.

Sand and gravel potential is classified into three categories based on the summation of raster cell statistics. These input data are derived from interpreted geomorphology, surface elevation, soil series classifications, current or historic evidence of mining excavations, mapped geological units, topography, wetlands, and interpreted resource thickness from borehole and water well logs (Figure 1, Table 1). Only onshore deposits are considered, and this study does not evaluate subaqueous deposits. The feasibility and limitations of excavating potential areas as it relates to material quality, site ownership, zoning, and accessibility were not considered in the production of this map. Factors such as protected, conserved, and restricted lands are included within this map but were not ranked within the initial raster datasets. Specific information on the classifications of the protected lands, including easement and preserves can be assessed from the accompanying geodatabase.

The permitted sand and gravel mine sites in the Middle Peninsula serve a variety of customers and are primarily used in concrete and cement for building and road construction, as fill material, and for beach nourishment. The VCRMP provides inundation data over a 60-year period (2020-2080) depicting where land and critical infrastructure may be impacted by recurrent flooding. These data along with the sand and gravel potential data can be used collectively for long-term land use planning and prioritization for resilience projects. This product also supports industry needs by providing a comprehensive regional dataset to help guide more site-specific evaluations. The accompanying geodatabase contains point-specific lithologic data, and the technical report discusses the ways these potential resources can be used for infrastructure and coastal resilience, and how planners and contractors can best use these data.

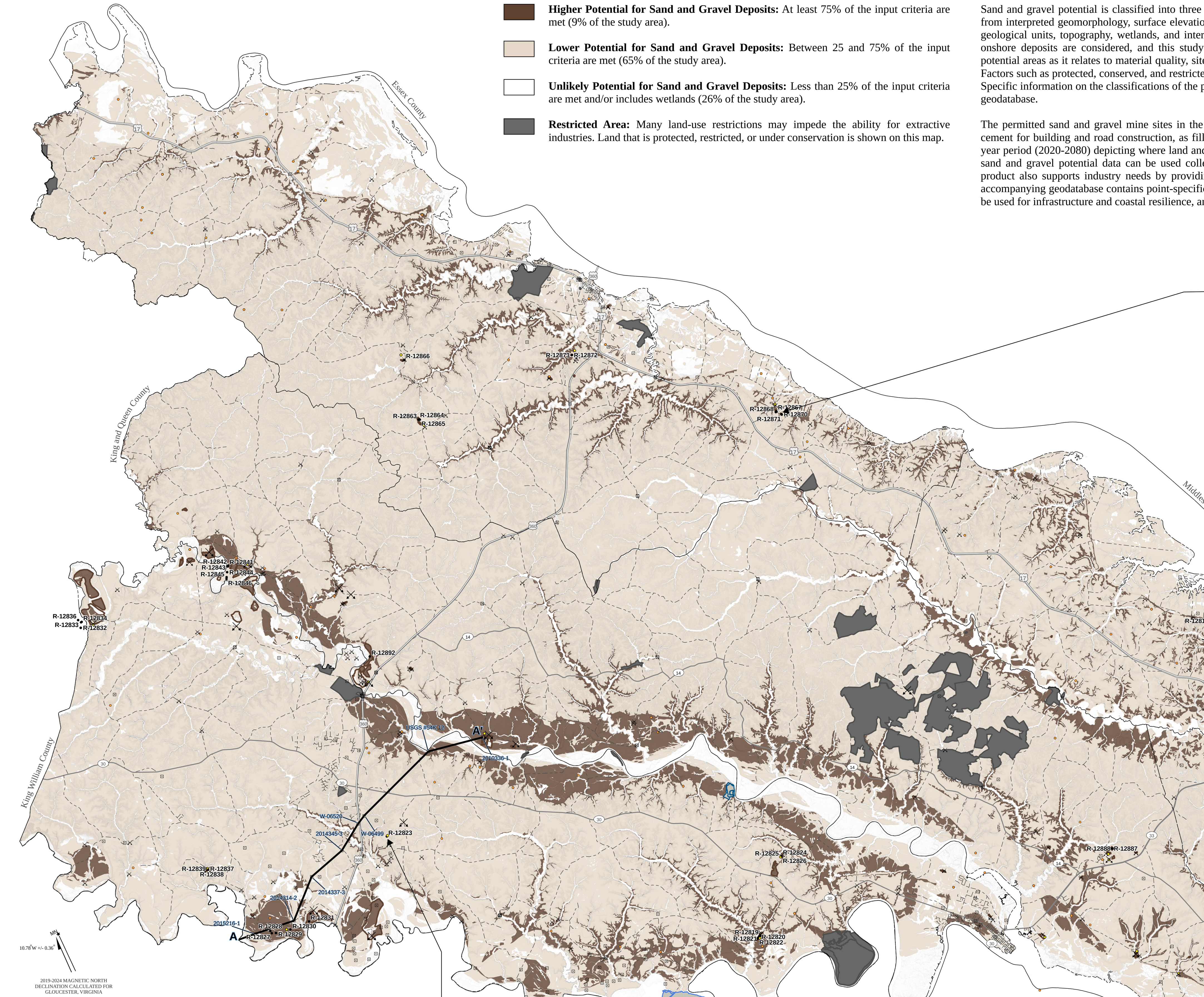
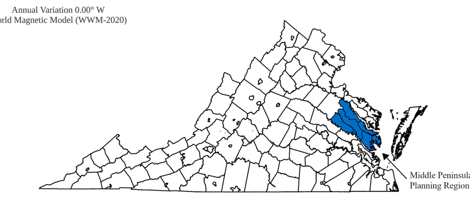


Photo 2: Excavation sidewall showing basal Bacons Castle deposits over likely Yorktown marine deposits, ferricrete layering present.

Photo 3: Medium sized operation (20.5 acres) with typical sandy stockpiled material.



SCALE 1:100 000

Geologic data compiled from multiple sources, details provided in the reference list and within the Data Sources tables in the accompanying geodatabase. Field sampling and geologic verification completed between February 2024 and August 2024.

Photo 1: Large clay site at the Nestle Purina plant, mined material is from the Calvert Formation, with minor Eastover sourced material.

Base Map and Aggregate Resources Map Explanation

Transportation Network (Roads)
- U.S. Route
- State Route
- Secondary Route
- Mine Road

Cartographic Lines
- Middle Peninsula County Boundary
- Cross-Section Line (A-A')
- Middle Peninsula Planning Region

Protected or Conservation Land
- Protected or Conservation Land
- Mattaponi Reservation
- Pamunkey Reservation

Legacy Data
- VDOT Sample (1954)
- Abandoned/Orphaned Pit
- GMR Rock Repository "ID: R-#"
- Borehole and/or Water Well

Permitted Mine Sites
Site Acreage
- <10 Acres (small)
- 10-50 Acres (medium)
- >50 Acres (large)
- Field Observation (2024)
- Field Sample (2024) "ID: R-12813 through R-12898"
- Identified Excavation Feature

Cartographic Sources

Digital Cartography by Lauren N. Schmidt and David W. Hawkins.

North American Datum of 1983 (NAD83) State Plane Virginia South FIPS 4502 Feet Projection.

Multidirectional slope raster derived from the USGS VA_UpperMiddleNeck_2018_D18 project, flown between 2018 and 2020 (USGS, 2021).

Transportation layer source: ESRI™; Tele Atlas North America (ArcGIS Online).

County Boundaries derived from the ESRI™ United States County Boundary using the U.S. Census Bureau 2020 TIGER FGDB, 2023.

Mattaponi Tribe Reservation Boundary derived from the Virginia Department of Conservation and Recreation's (VA-DCR) Conservation Lands Database, October 2024.

Pamunkey Tribe Reservation Boundary derived from VA-DCR's Conservation Lands Database, October 2024.

Protected Lands derived from VA-DCR's Conservation and Easement Lands Database, October 2024.

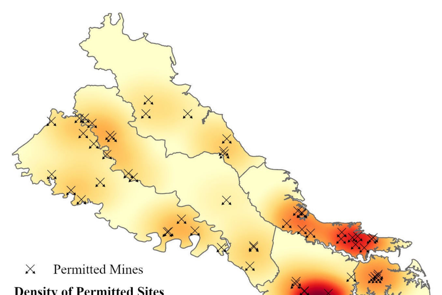
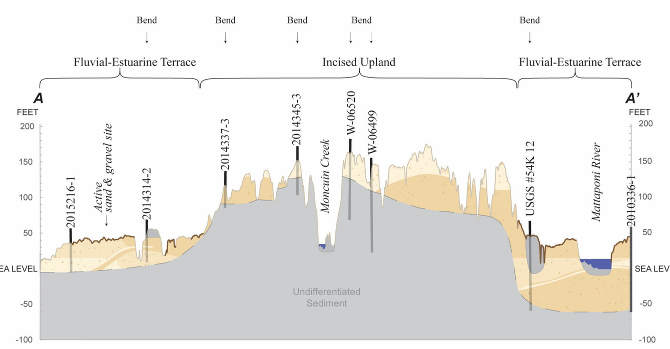


Figure 2: Density of permitted mine sites using the kernel density geoprocessing tool in ArcGIS Pro.



Interpretive cross section A-A':
10x vertical exaggeration. S&G - sand and gravel.
Higher potential for S&G deposits demonstrated by solid brown line.
Lower potential and unlikely potential for S&G deposits grouped on light tan line due to scale.
Subsurface lithologic descriptors interpreted from borehole data.

Surficial primary deposit (i.e., mixed sand and gravel)

Clay dominant material (i.e., lower Chesapeake Group and older units)

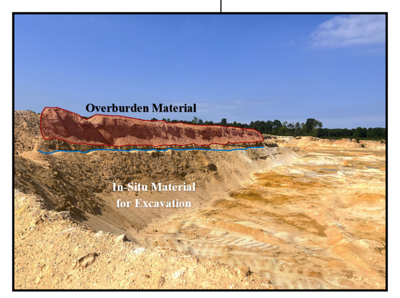


Photo 4: Example of a large sand and gravel operation (>500 acres) in Gloucester County with overburden material stockpiled for reclamation needs.

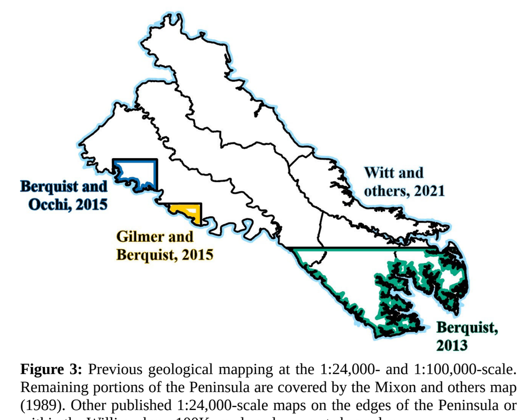


Figure 3: Previous geological mapping at the 1:24,000- and 1:100,000-scale. Remaining portions of the Peninsula are covered by the Mixon and others map (1989). Other published 1:24,000-scale maps on the edges of the Peninsula or within the Williamsburg 100K quadrangle are not shown here.

Table 2: Textural characteristics of samples and corresponding geologic unit

			Material retained on										Finer than
Geologic Unit(s)	**Age**	**Samples (n)**	**#4**	**#10**	**#18**	**#35**	**#60**	**#80**	**#100**	**#120**	**#200**	**#230**	**#230**
Alluvium, undifferentiated	Q	3	32%	16%	17%	23%	11%	1%	0%	0%	0%	0%	1%
Quaternary Terrace, undifferentiated	Q	4	9%	4%	6%	10%	21%	13%	5%	7%	11%	1%	14%
Tabb Formation	Q	6	1%	6%	9%	17%	23%	12%	8%	7%	8%	0%	9%
Shirley Formation	Q	8	4%	6%	11%	21%	19%	7%	5%	9%	6%	1%	11%
Charles City Formation	Q	4	7%	14%	20%	25%	17%	4%	1%	1%	3%	1%	8%
Windsor Formation	Q	9	0%	2%	7%	23%	38%	10%	3%	2%	3%	0%	12%
Grouped Pleistocene Units (Qbc, Qw, Qcc)	Q	13	0%	2%	7%	20%	30%	10%	5%	4%	6%	1%	16%
Bacons Castle Formation	Q	6	20%	5%	5%	11%	21%	8%	3%	3%	4%	1%	21%
Cold Harbor formation (informal)	N	2	0%	1%	2%	7%	17%	14%	6%	7%	17%	1%	29%
Chesapeake Group*	N	29	1%	2%	8%	20%	31%	14%	4%	3%	4%	0%	13%
Eastover Formation	N	1	0%	0%	0%	1%	9%	16%	5%	7%	40%	2%	22%
			gravel		*vc sand*	*c sand*	*m sand*	*fine sand*			*very fine sand*		*silt and clay*
		Phi Size (Φ)	*-2*	*-1*	*0*	*1*	*2*	*2.5*	*2.75*	*3*	*3.75*	*4*	*>4*
		Millimeter	*4.74*	*2*	*1*	*0.5*	*0.25*	*0.178*	*0.149*	*0.125*	*0.075*	*0.063*	*<0.063*

Notes: A total of 85 samples collected from active mining sites across the Middle Peninsula were processed via grainsize sieve analysis. Asterisk superscript "*" - the Chesapeake Group includes multiple geologic units and may include units that were not differentiated at the time of sample collection. Age (Q - Quaternary; N - Neogene). Additional details for individual samples are available in the technical summary report (Hawkins and Schmidt, 2025).

Table 3: Geochemical data and corresponding geologic unit

Geologic Unit(s)	Age	Samples (n)	Al_2O_3	BaO	CaO	Cr_2O_3	K_2O	MnO	P_2O_5	SiO_2	TiO_2	V_2O_5	Fe_2O_3	SO_2
Quaternary Terrace, undifferentiated	Q	4	5.38	0.10	0.20	0.01	0.84	0.02	0.69	63.77	1.30	0.01	1.32	2.31
Tabb Formation	Q	5	5.78	0.09	0.13	0.01	0.71	0.01	0.44	60.39	0.76	0.01	1.01	0.05
Shirley Formation	Q	8	7.36	0.13	0.29	0.01	1.12	0.02	0.64	53.63	0.51	0.01	1.94	--
Charles City Formation	Q	2	5.01	0.13	0.15	0.01	0.66	0.04	0.58	47.36	1.00	0.01	1.64	0.03
Windsor Formation	Q	6	6.82	0.09	0.05	0.01	0.58	0.01	0.46	56.77	0.94	0.02	1.79	0.05
Grouped Pleistocene Units (Qbc, Qw, Qcc)	Q	9	8.10	0.09	0.04	0.01	0.60	0.01	0.50	56.36	1.23	0.02	1.80	0.05
Bacons Castle Formation	Q	6	9.99	0.08	0.09	0.01	0.70	0.01	0.45	48.89	0.88	0.02	4.32	--
Chesapeake Group*	N	23	7.96	0.09	0.04	0.01	0.80	0.01	0.47	47.56	0.93	0.02	2.99	0.05
Eastover Formation	N	1	5.05	--	0.62	0.01	2.02	0.03	0.51	54.67	1.68	0.02	4.89	2.34
Calvert Formation	N	1	8.34	--	0.78	0.01	2.34	0.01	0.42	51.36	0.58	0.02	3.92	3.65

Notes: This sample dataset includes 65 samples that were analyzed on a portable x-ray fluorescence (pXRF) unit. Major oxides were estimated based on element to stoichiometric oxide conversion factors and are provided in percentages. Individual elemental data is presented for samples in the technical summary report (Hawkins and Schmidt, 2025). Asterisk superscript "*" - the Chesapeake Group includes multiple geologic units and may include units that were not differentiated at the time of sample collection. The samples highlighted in purple are from the lower Chesapeake Group and typically occur as confining clay units under mineable sand and gravel deposits across the study area. The Miocene-aged Eastover Formation has been described as having potential acid forming soil conditions when excavated and exposed. (Berquist, 2013; Berquist and Occhi, 2015; Gilmer and Berquist, 2015). Age (Q - Quaternary; N - Neogene).

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APPENDIX A

Field Records

Appendix A

Field Records

Map of Field Stops

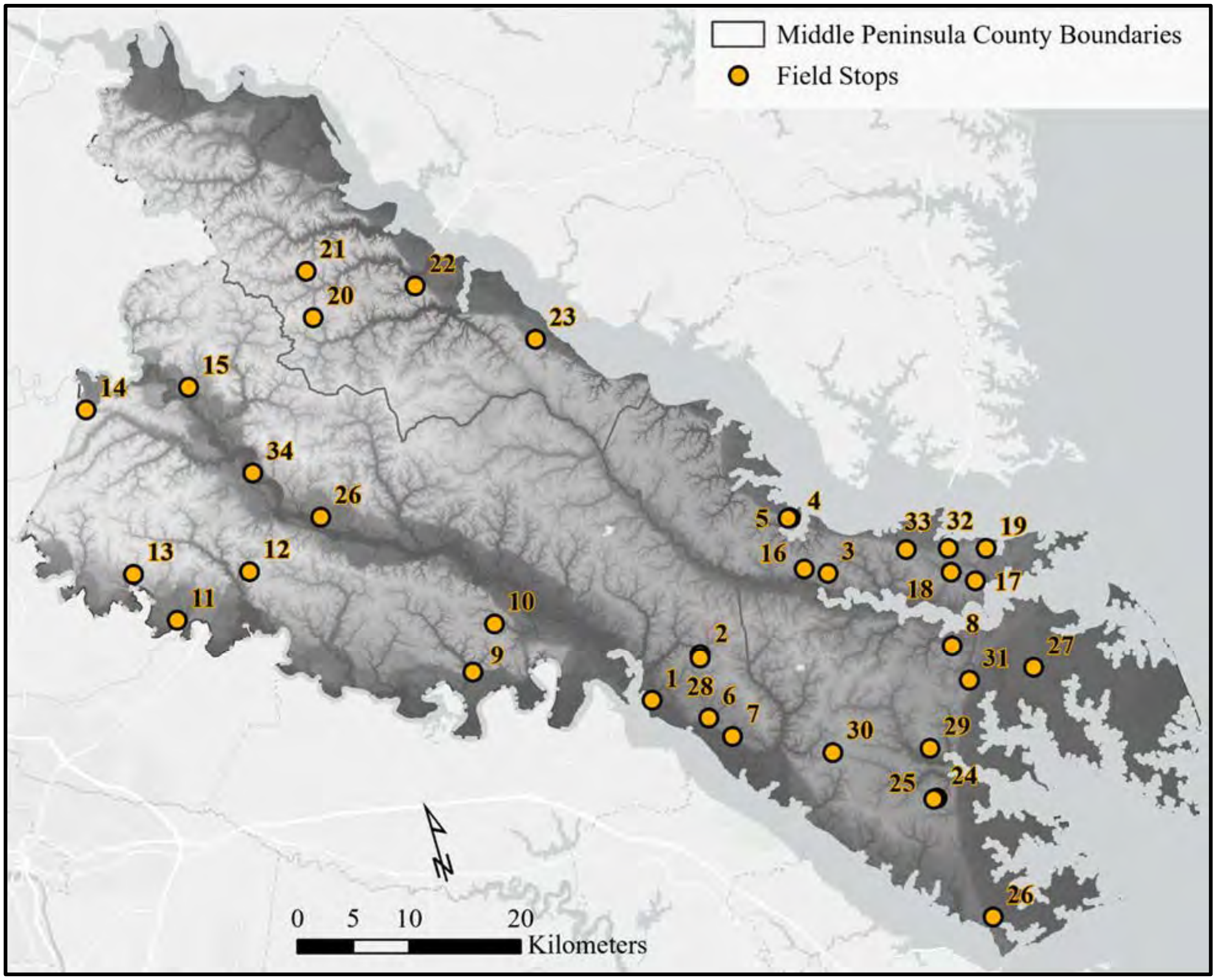


Figure 1. Map of all Field Stops conducted from February 2024 to June 2024 for NA23NOS4190255_Task73.

Appendix A

Field Records

List of Field Stops and Sampling Records

1. **Field Stop #1**
   - Date and Time of Visit: February 1st , 2024, 11:00
     - Individuals in Field: LNS and DWH field verified
   - Permit information: **MRV124D_901**
     - Commodity: Historically mined Sand
     - Acreage: 3 acres
     - Geological Unit: Qsh
   - Location: (37.52665, -76.77096); West Point - King and Queen County
   - Overview: This abandoned mine site is heavily overgrown. Original path to mine area goes through heavily wooded, low-relief lands and is covered in cattails, an indicator of adjacent land being a wetland area.
   - Samples Collected: No samples were collected

Photo showing boundary extent of site MRV124D_901 from secondary road, looking eastward.

2. **Field Stop #2**
   - Date and Time of Visit: February 1st, 2024, 11:20
     - Individuals in Field: LNS and DWH field verified
   - Permit information: **90497AA** – R.L. Bryd Properties, LLC
     - Commodity: Sand
     - Acreage: 9.9 acres
     - Geological Unit: QTw
   - Location: (37.5519, -76.713); Shacklesfords Fork - King and Queen County
   - Overview: Drove by the site and verified that there was an active open pit on site. Site was busy with operations at time of visit.
   - Samples Collected: No samples were collected because site was actively removing material.

Aerial Photograph of site 90497AA taken from Google Earth, 2/2024.

3. **<u>Field Stop #3</u>**

Photograph of site 90474AB, looking to the northwest.

- Date and Time of Visit: February 1st, 2024, 12:05
  - Individuals in Field: LNS and DWH field verified
- Permit Information: **90474AB** – Jodi Ann Major
  - Commodity: Sand and Gravel
  - Acreage: 1 acre
  - Geological Unit: QTw
- Location: (37.5851, -76.5635); Saluda - Middlesex County
- Overview: Field verified small, intermittently active mine site. Site was located off a secondary road and was a gravel drive into an open pit area.
- Samples Collected:
  - **a) R-12815**
    - Location: (37.585556, -76.564444)
    - Elevation: 80 ft
    - Description: Orange-brown clays with some white mottling. Potential glauconitic and quartz grains.
  - **b) R-12817**
    - Location: (37.585639, -76.565166)
    - Elevation: 100 ft
    - Description: Coarse, wet clayey sand that's dark orange to bright red with white/gray mottling present. Glauconite and quartzite grains (0.1 - 0.2mm diameter).
  - **c) R-12818**
    - Location: (37.585424, -76.564522)
    - Elevation: 90 ft
    - Description: Orange to red clayey sand, medium grained and sub-angular, glauconitic and quartzite grains - up to 0.4mm in diameter - makes up approximately 30% of overall sample.

Photograph of site 90474AB, looking to the northwest.

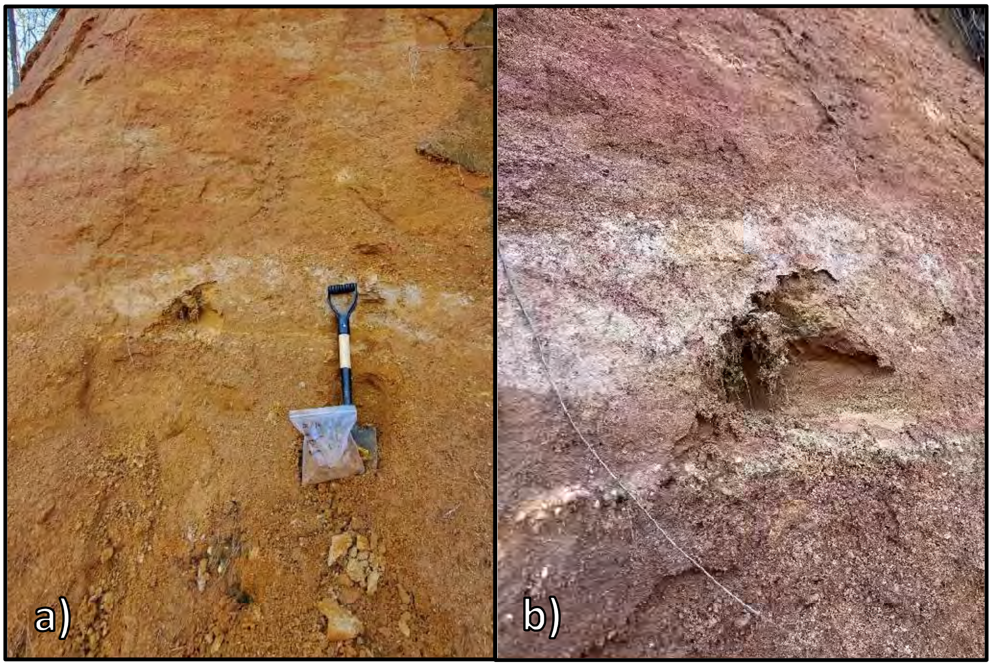
Photographs of Field Samples from site 90474AB: **a)** R-12815, **b)** R-12816, **c)** R-12817, **d)** R-12818.

4. **Field Stop #4**
   - Date and Time of Visit: February 1st , 2024, 12:58
     - Individuals in Field: LNS and DWH field verified
   - Permit Information: **90471AA**
     - Commodity: Historically mined Sand and Gravel
     - Acreage: 1.6 acres
     - Geological Unit: Tc
   - Location: (37.6371, -76.5855); Urbanna – Middlesex County
   - Overview: Site was almost entirely reclaimed. Historic pit area was not able to be located.
   - Samples Collected: No samples were collected.

Photograph of 90471AA site from a secondary street taken from Google Maps, 9/2024.

5. **Field Stop #5**
   - Date and Time of Visit: February 1st , 2024, 13:00
     - Individuals in Field: LNS and DWH field verified
   - Permit Information: **90473AB** – MHC Bethpage, LLC
     - Commodity: Sand and Gravel
     - Acreage: 1.1 acres
     - Geological Unit: Tc
   - Location: (37.63811, -76.58775); Urbanna – Middlesex County
   - Overview: Overgrown site that is infrequently active but recent land disturbance was present along pit walls.
   - Samples Collected:
     a) **R-12813**
        - Location: (37.6371602, -76.5878960)
        - Elevation: 90 ft
        - Description: Orange clayey sand with red staining and white/gray mottling, basal gravels. Sample taken from near a potential contact.
     b) **R-12814**
        - Location: (37.637222, -76.587778)
        - Elevation: 95 ft
        - Description: Fine-grained orange to brown wet clayey sand with red to white and gray mottling, glauconite & quartzite grains up to 0.4mm in diameter, gravel present.

Photographs of site 90473AB taken from pit bottom, looking to the southeast.



Photograph of Field Samples from 90473AB: **a)** R-12813 and **b)** R-12814.

6. <u>Field Stop #6</u>

- Date and Time of Visit: February 1st , 2024, 13:37
    - Individuals in Field: LNS and DWH field verified
- Permit Information: **13737AA** – Walter C. Via Enterprises, INC.
    - Commodity: Sand
    - Acreage: 12.85 acres
    - Geological Unit: Qcc
- Location: (37.4988, -76.7229); Shacklesford – King and Queen County
- Overview: Drove past this active site. Material on site could not be easily discerned if it had been brought in from another area due to the piles of material on the site. Decided not to pursue sampling at this site.
- Samples Collected: No samples collected.

Photograph of site 13737AA taken from secondary road, looking westward.

7. **<u>Field Stop #7</u>**

- Date and Time of Visit: February 1st , 2024, 13:43
  - Individuals in Field: LNS and DWH field verified
- Permit Information: **MRV96B_201**
  - Commodity: Historically mined Sand and Gravel
  - Acreage: 1 acre
  - Geological Unit: Tc
- Location: (37.48057, -76.70354); Gressitt – King and Queen County
- Overview: Highly overgrown and forested abandoned mine site. Historic pit location was not obvious.
- Samples Collected: No samples collected.

Photograph of site MRV96B_201 from secondary road, looking southwest.

8. **<u>Field Stop #8</u>**

- Date and Time of Visit: February 1st , 2024, 14:10
  - Individuals in Field: LNS and DWH field verified
- Permit Information: **MRV Site 122C-701/122C-702**
  - Commodity: Historically mined Sand and Gravel
  - Acreage: 2 acres
  - Geological Unit: QTw
- Location: (37.501044, -76.463908) – Gloucester County
- Overview: An MRV site that was mostly cleared land with some geologic exposures along the edges of the sites.
- Samples Collected: No samples collected.

Photograph of MRV site 122C-701 & 122C-702 taken from site entrance looking southward.

Photograph of MRV site 122C-701 & 122C-702 taken from site entrance: **a)** looking north and **b)** southeast.

9. **Field Stop #9**

- Date and Time of Visit: March 13th, 2024, 10:50
  - Individuals in Field: LNS and DWH field verified
- Permit Information: **13215AB** – Cohoke Farms Ptr
  - Commodity: Sand
  - Acreage: 4 acres
  - Geological Unit: Qsh
- Location: (37.5879, -76.93922) – King William County
- Overview: An intermittently active site with multiple open pits and excavation equipment present on site. Areas of the site were overgrown or untouched for mining purposes. Site access is by a secondary road that turns onto a dirt road.
- Samples Collected:

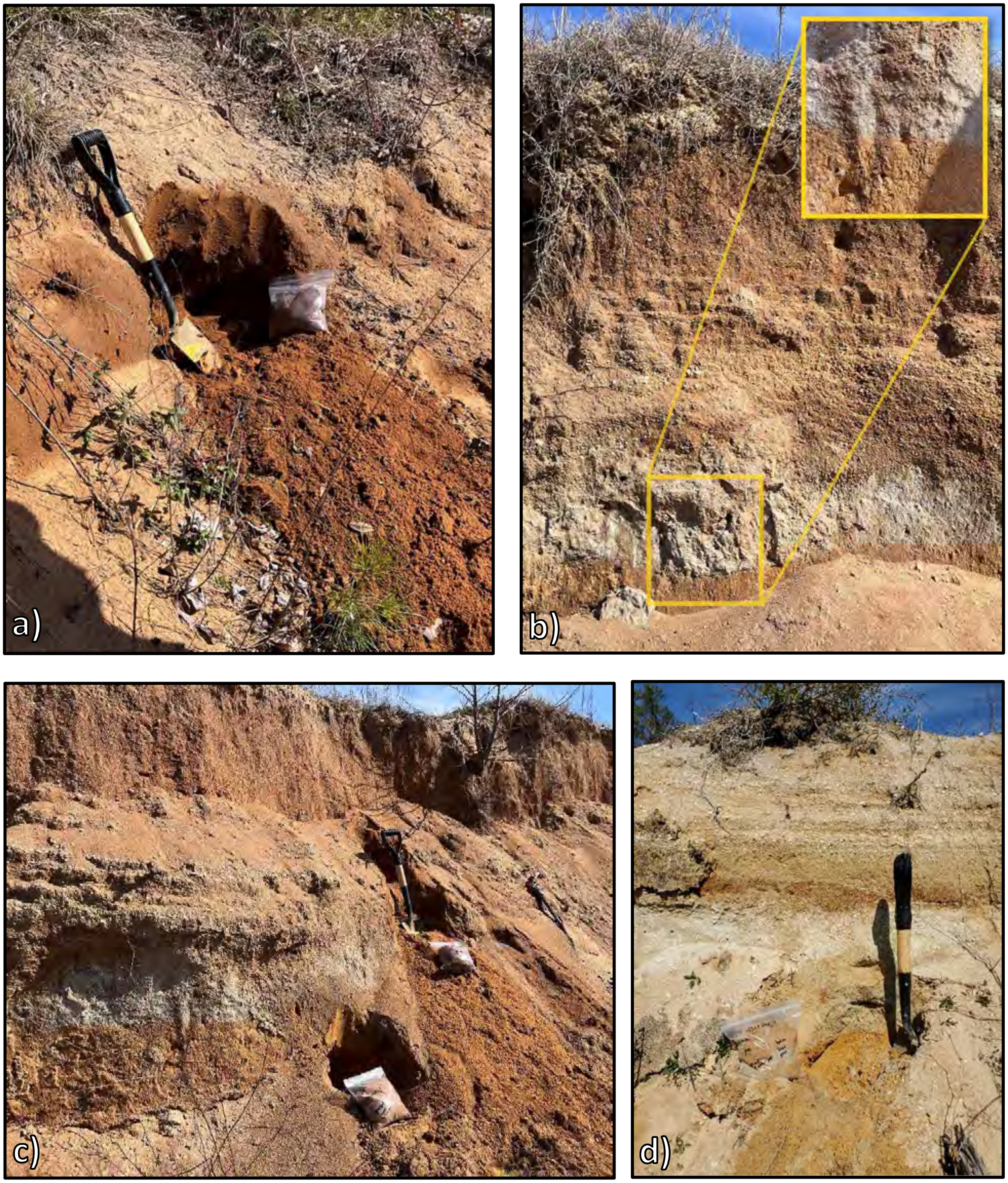
Photograph of site 13215AB from outside pit area, looking westward.

a) R-12819
- Location: (37.588634, -76.937235)
- Elevation: 60 ft
- Description: Medium to dark brown, moderately well-sorted, sub-rounded fine to medium grained sand; moist, soft, slightly clayey sand. Gravel pieces up to 0.5mm in diameter not evenly dispersed throughout.

b) R-12820
- Location: (37.5881053, -76.9383306)
- Elevation: 30 ft
- Description: Orange to light tan, fine-grained, moist sand with lots of heavy minerals and quartz grains. Small amount of gravels (< 5% throughout) that are max 0.5mm in diameter. Moderately well-sorted beyond bits of gravel or large (0.1mm) quartz grains.

c) R-12821
- Location: (37.5881053, -76.9383306)
- Elevation: 30 ft
- Description: Light tan to medium orange tan moist, fine-grained sands with lots of gravels (ranging in size from 0.1mm – 1mm in diameter). Slightly darker in color from R-12820. Coarsens upwards.

d) R-12822
- Location: (37.588056, -76.939444)
- Elevation: 50 ft
- Description: Light tan to medium orange-tan fine-grained sands with heavy minerals. Moist, soft sands. Gravels dispersed throughout but make up less than 5% of sample (range in size from 0.1 – 1.5mm in diameter – sub-rounded to round).



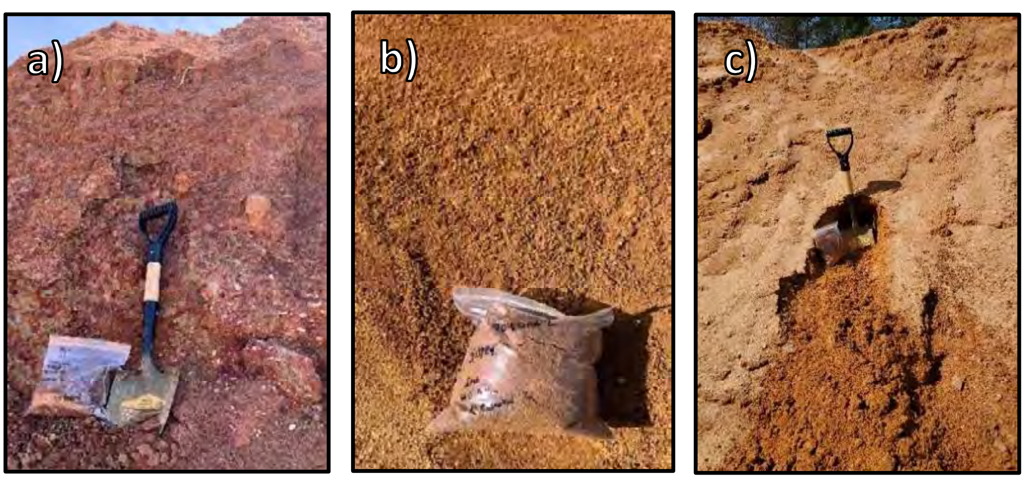
Photograph of Field Samples from 13215AB; **a)** R-12819, **b)** pit wall, northeast exposure with inset figure showing wall detail, **c)** R-12820 and R-12821, **d)** R-12822.

10. Field Stop #10

- Date and Time of Visit: March 13th, 2024, 11:50
    - Individuals in Field: LNS and DWH field verified
- Permit Information: **90451AA** – J & R Czablewski Pit
    - Commodity: Sand
    - Acreage: 10 acres
    - Geological Unit: QTw
- Location: (37.614109, -76.913649); West Point – King William County
- Overview: Spoke with site owner, Carroll J. Sanders while on site and learned that the site has been intermittently active over the past few years.

Photograph of site 90451AA from outside pit area, looking westward.

- Samples Collected:
    - **a) R-12824**
        - Location: (37.621111, -76.903611)
        - Elevation: 105 ft
        - Description: Soft, fine-grained silty clay that is light gray to orange-brown to dark reddish-brown in color. Minimal gravels, > 4mm throughout.
    - **b) R-12825**
        - Location: (37.620833, -76.903334)
        - Elevation: 110 ft
        - Description: Orange, coarse-grained quartz sand, well-sorted, sub-rounded to sub-angular grains and opaque grains. Taken from pit floor with hand auger.
    - **c) R-12826**
        - Location: (37.621111, -76.903335)
        - Elevation: 120 ft
        - Description: Medium brown to dark orange/brown, reddish brown, moist, coarse-grained sand and sandy clay with white/light tan sub-angular to sub-rounded very coarse (0.5mm – 1.25mm in diameter). Collected from suspected stockpile on-site, material native to site.



Photograph of Field Samples from 90451AA: **a)** R-12824, **b)** pit floor from where R-12825 was taken, **c)** R-12826, from suspected stockpile.

11. <u>Field Stop #11</u>

- Date and Time of Visit: March 13th, 2024, 13:10
    - Individuals in Field: LNS and DWH field verified
- Permit Information: **90490AA** – King William Sand and Gravel
    - Commodity: Sand
    - Acreage: 390 acres
    - Geological Unit: Qsh
- Location: (37.69248, -77.18147); Manquin – King William County
- Overview: Visited the site while active excavation operations were going on, so site contact showed us around the site to places where we could sample from and be away from equipment. Note that more of the site is excavated than current satellite imagery shows.

Photograph of site 90490AA from along pit interior road, looking eastward.

- Samples Collected:
    a) **R-12827**
        - Location: (37.695278, -77.2225)
        - Elevation: 50 ft
        - Description: Very dark brown, moist, fine-grained sand with heavy minerals and potentially weathered biotite with goldish hue; well-sorted with small (<0.5mm) sub-rounded tan coarse sands.
    b) **R-12828**
        - Location: (37.696667, -77.222778)
        - Elevation: 48 ft
        - Description: Medium to fine-grained slightly clayey, sand; medium dull brown color; small quartz grains, heavy minerals or small flakes of biotite mica; some small gravels present. Material is considered overburden.
    c) **R-12829**
        - Location: (37.694444, -77.222778)
        - Elevation: 50 ft
        - Description: Medium-brown coarse to very coarse sands with abundant gravels present ranging from 4 - 20 mm in size; abundant heavy minerals and quartz grains. Material is considered overburden.
    d) **R-12830**
        - Location: (37.693056, -77.210556)
        - Elevation: 50 ft
        - Description: Medium brown, moist/soft, fine-grained clayey sand with occasional very coarse sands (1-2mm in diameter); weathered biotite mica which appears gold in color; heavy minerals common.
    e) **R-12831**
        - Location: (37.692778, -77.1975)
        - Elevation: 50 ft
        - Description: Fine-grained, medium brown, moist sand and clay with quartz grains; gravels within sample < 0.5mm. Material is saved for reclamation purposes.

Photograph of Field Samples from 90490AA: **a)** R-12827, **b)** R-12828, **c)** R-12829, **d)** R-12831 pit wall, **e)** R-12830.

12. <u>Field Stop #12</u>

- Date and Time of Visit: March 13th, 2024, 14:49
  - Individuals in Field: LNS and DWH field verified
- Permit Information: **90298AB** – Nestle Purina Petcare
  - Commodity: Clay
  - Acreage: 378 acres
  - Geological Unit: Qbc
- Location: (37.7185, -77.11518); Rumford - King William County
- Overview: Met with the site contact who directed us to the main pit area which steeply slopes down. Sand and gravel material is removed as overburden in order to access the clay material at this site.
- Samples Collected:

  a) R-12823
  - Location: (37.716609, -77.129574)
  - Elevation: 110 ft
  - Description: Dark gray to bluish-gray hard/firm, fine-grained clay which breaks almost in blocks. Mapped as the Calvert Formation (*Tc*).

Photograph of site 90298AB from the road that slopes down into the bottom of the pit, looking southwest.

Photograph of Field Samples from 90298AB: **a)** R-12823, **b)** detailed picture of samples R-12823, **c)** pile of clay shell mixture removed from directly above thick clay layer R-12823 derives from, moved to another area of the site.

13. <u>Field Stop #13</u>

Photograph of entrance of site 90367AA, looking southwest.

- Date and Time of Visit: April 2nd, 2024, 10:40
  - Individuals in Field: LNS and VML field verified
- Permit Information: **90367AA** – Richard E. Vaughan, INC.
  - Commodity: Sand
  - Acreage: 3 acres
  - Geological Unit: Qbc
- Location: (37.739357, -77.242660); Enfield - King William County
- Overview: Contacted site owner prior to visit and obtained permission to visit site and sample. Area looked heavily overgrown and was not occupied at time of field visit, did not appear to have had any material excavated recently.

Photograph of sample R-12837, to show cobbles.

- Samples Collected:

  a) R-12837
  - Location: (37.738611, -77.242778)
  - Elevation: 115 ft
  - Description: Rounded quartzite cobbles and pebbles (ranging from 0.5” to 2” in diameter) within medium brown/tan clayey to coarse sands with light gray to red mottling.

  b) R-12838
  - Location: (37.738333, -77.242778)
  - Elevation: 120 ft
  - Description: Mostly a medium brown, moist clay with some small cobbles (<0.5” diameter) present and quartz grains; with some red staining throughout.

  c) R-12839
  - Location: (37.7386532, -77.2426634)
  - Elevation: 115 ft
  - Description: Medium brown, clay with large, quartzite cobbles (0.5” – 2.5”) with light gray to red-orange mottling throughout.

  d) R-12840
  - Location: (37.7386586, -77.2426456)
  - Elevation: 110 ft
  - Description: Sample collected from above the cobbles and pebbles, mostly medium orange-brown, fine to clayey sands, some red mottling throughout – occasional pebbles.

Photograph of Field Samples from 90367AA: **a)** R-12837, **b)** R-12838, **c)** R-12839, with shovel for scale, **d)** R-12840, with shovel for scale.

14. <u>Field Stop #14</u>

- Date and Time of Visit: April 2nd, 2024, 12:10
    - Individuals in Field: LNS and VML field verified
- Permit Information: **13889AD** – HOLCIM MAR INC./Mattaponi Sand & Gravel
    - Commodity: Sand and Gravel
    - Acreage: 480
    - Geological Unit: QTu

Photograph of site 13889AD showing pile of sorted sand.

- Location: (37.877091, -77.243785); Duane – King William County
- Overview: Spoke with site contact who directed us around the large active site to ideal sampling sites. They are currently excavating a section that is around 200 acres total. Note that more of the site is excavated than satellite imagery currently shows.
- Samples Collected:

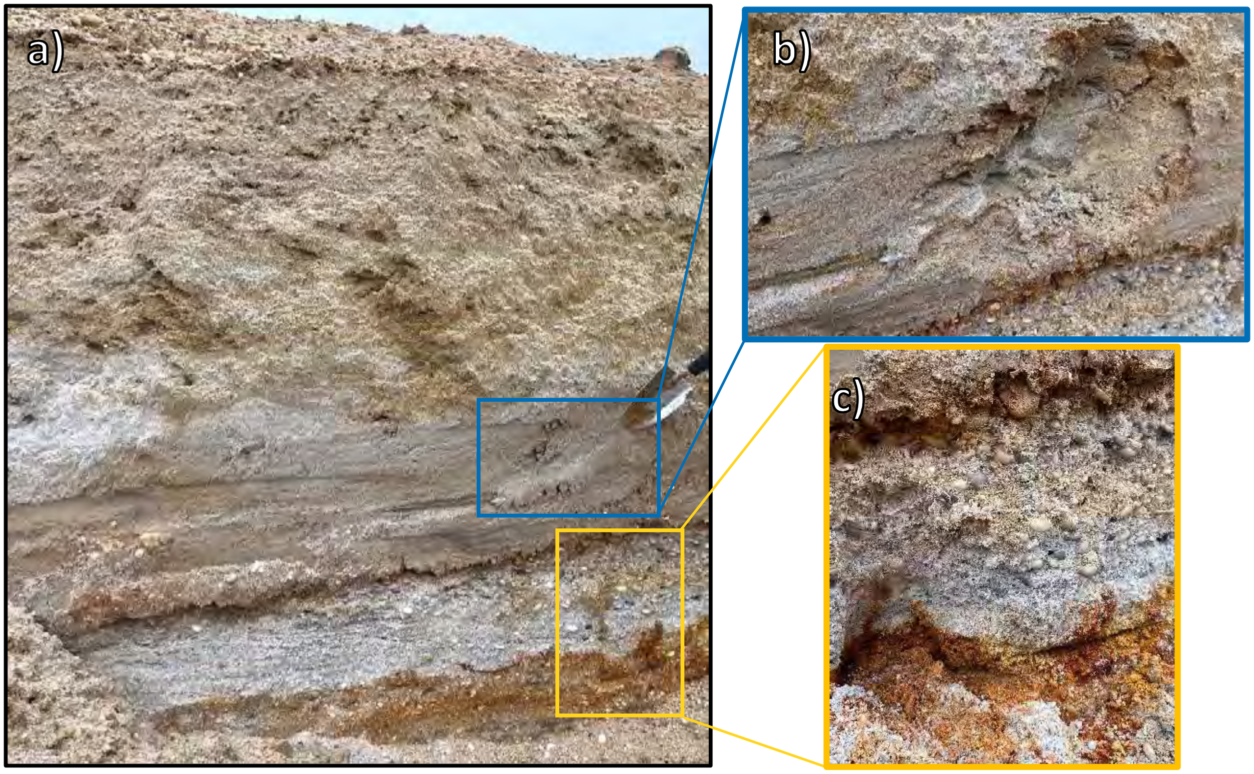
a) R-12832
- Location: (37.878611, -77.251944)
- Elevation: 55f ft
- Description: Very fine, soft sand. Light gray in color with some sections medium orange to tan. Heavy minerals up to 20-30%.

b) R-12833
- Location: (37.878611, -77.251944)
- Elevation: 55 ft
- Description: Very coarse, bright white/gray sands with some cobbles present. Abundant iron oxide staining in the white sand, orange to red.

c) R-12834
- Location: (37.881188, -77.249769)
- Elevation: 53 ft
- Description: Medium to dark gray, somewhat clayey-very fine sand with some heavy minerals and quartz grains. Some yellow to green discoloration in small lenses throughout.

d) R-12835
- Location: (37.881111, -77.250278)
- Elevation: 68 ft
- Description: Sandy, slightly clayey overburden with small cobbles (<0.5” to 2” in diameter). Medium brown with light gray lenses.

e) R-12836
- Location: (37.882778, -77.251389)
- Elevation: 70 ft
- Description: Very fine orange/tan sand with red to light gray mottling throughout.



Photograph of Field Samples from 13889AD: **a)** sample area for R-12832 & R-12833, shovel pointing to finest sand layer, **b)** R-12832, **c)** R-12833.

Photograph of Field Samples from 13889AD: **d)** R-13834, **e)** R-13835, **f)** R-12836.

15. **<u>Field Stop #15</u>**

Photograph of site 90562AA driving by past excavation areas to current excavation areas.

- Date and Time of Visit: April 2nd, 2024, 15:05
    - Individuals in Field: LNS and VML field verified
- Permit Information: **90562AA** – Mattaponi Sand & Gravel
    - Commodity: Sand & Gravel
    - Acreage: 325 acres
    - Geological Unit: Qts and al
- Location: (37.878354, -77.140993); Owenton - King and Queen County
- Overview: Large active site mining and reclaiming areas. Note that more of the site is being excavated than satellite imagery currently shows.
- Samples Collected:

a) R-12841
- Location: (37.875833, -77.148611)
- Elevation: 45 ft
- Description: Orange/brown, medium to coarse sands with gravels, 0.5-1 inches in diameter.

b) R-12842
- Location: (37.875833, -77.148611)
- Elevation: 50 ft
- Description: Reddish brown, fine to medium-grained sands with some pebbles.

c) R-12843
- Location: (37.875556, -77.148889)
- Elevation: 42 ft
- Description: Very coarse, white to gray sands with some staining orange/red throughout. Pebbles throughout, up to 0.25” in diameter. Heavy minerals present in small amounts. Same retrieved from excavator bucket.

d) R-12844
- Location: (37.873056, -77.150833)
- Elevation: 47 ft
- Description: Medium to coarse, gray to orange sands with some heavy minerals and pebbles, <0.5” to 1” in diameter.

e) R-12845
- Location: (37.870833, -77.1525)
- Elevation: 40 ft
- Description: Light gray to white, medium grained, sub-rounded sand with quartz grains and some pebbles (up to <1” diameter). Some heavy minerals present. Sands are minimally stained orange in some areas.

f) R-12846
- Location: (37.87, -77.153056)
- Elevation: 13 ft
- Description: Dark gray to brown-gray medium grained sand with lots of small gravels and pebbles in it, up to 3 inches in diameter and range from white to dark gray in color.

Photograph of Field Samples from 90562AA: **a)** sample area of R-12841, **b)** R-12842, **c)** R-12843, **d)** R-13844,
e) sample area of R-13845, **f)** sample area of R-12846.

16. <u>Field Stop #16</u>

- Date and Time of Visit: April 17th, 2024, 11:05
  - Individuals in Field: LNS and VML field verified
- Permit Information: **13867AB** – Coastal Excavation
  - Commodity: Sand
  - Acreage: 9.5 acres
  - Geological Unit: QTw
- Location: (37.5945, -76.5864); Saluda – Middlesex County
- Overview: This active site has been inconsistently mined for the last 100 years. They have very little overburden to remove at this site and excavate until they reach the gray clay layer. Both the sand and clay excavated here is used in their final product, which they sell to local consumers in the Gloucester County and Middlesex County areas.

Photograph of site 13867AB overlooking the North portion of the site.

- Samples Collected:

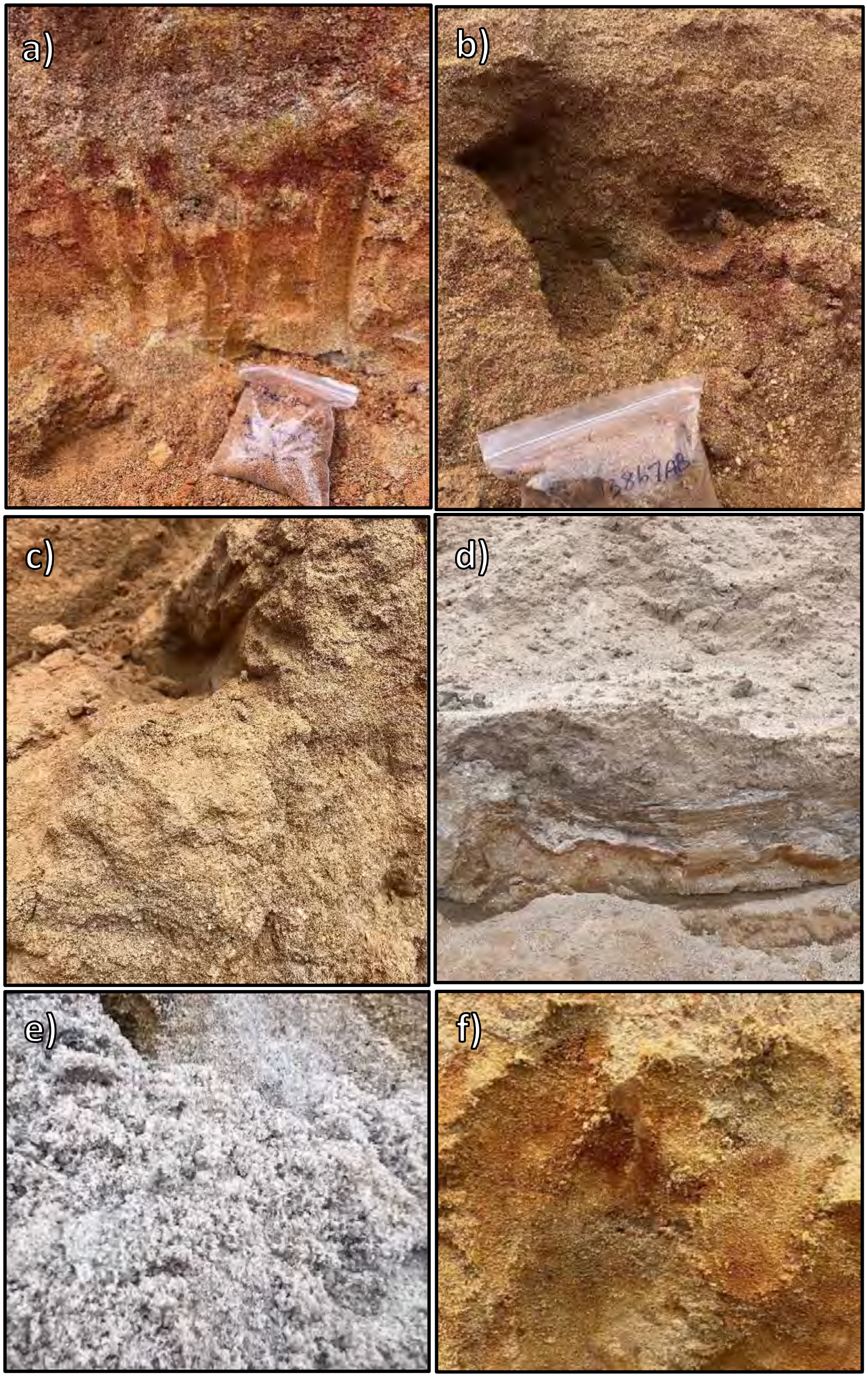
a) R-12858
- Location: (37.592222, -76.589722)
- Elevation: 60 ft
- Description: Medium to coarse orange to brown sand with iron oxide staining red. Smaller gravels (3 mm) occasional, subangular. Very coarse sands, white to dark gray in color, lenses of gray, slightly clayey, sands present throughout.

b) R-12859
- Location: (37.592222, -76.589722)
- Elevation: 70 ft
- Description: Coarse to very coarse orange sand with small gravels, includes thin, compacted (*approximately 2" in height*) red-stained sand layer.

c) R-12860
- Location: (37.592415, -76.589688)
- Elevation: 60 ft
- Description: Very fine, tan to orange sand with some areas of coarse grained sands throughout, dark gray to tan in color and subangular quartz.

d) R-12861
- Location: (37.591667, -76.589167)
- Elevation: 50 ft
- Description: Soft, white, very fine sand with tan layers throughout. Heavy minerals present, small quartzite gravels occasionally present in thin horizontal layers.

e) R-12862
- Location: (37.5925, -76.589167)
- Elevation: 50 ft
- Description: Layered soft, very fine tan to dark tan sand with lenses of dark orange sand throughout. Some heavy minerals and quartz sands approximately collected from layer close to the bottom of the pit.



Photograph of Field Samples from 13867AB: **a)** R-12858, **b)** R-12859, **c)** R-12860, **d)** sample area of R-13861, **e)** R-13861, **f)** R-12862.

17. Field Stop #17

Photograph of site 13771AC overlooking the Eastern portion of the site.

- Date and Time of Visit: April 17th, 2024, 12:30
  - Individuals in Field: LNS and VML field verified
- Permit Information: **13771AC** – Joseph C. Jones INC
  - Commodity: Sand
  - Acreage: 14.3 acres
  - Geological Unit: Qsh
- Location: 275 Stampers Bay Road, Hartfield, VA, 23071 | (37.546546, -76.423417); Hartfield – Middlesex County
- Overview: This active site was not currently excavating at the time of our visit. The owner noted that they mine for a variety of material. Owner directed us to three spots around the site that would be good for sampling.
- Samples Collected:
  - **a) R-12849**
    - Location: (37.5454955, -76.4206796)
    - Elevation: 75 ft
    - Description: Bright orange-red clay with light to dark red layering and occasional bright white mottling. Areas of light tan sandy clay.
  - **b) R-12850**
    - Location: (37.5454955, -76.4206796)
    - Elevation: 68 ft
    - Description: Sand and clay that is bright orange with tan to white mottling.
  - **c) R-12851**
    - Location: (37.5454955, -76.4206796)
    - Elevation: 60 ft
    - Description: Medium brown to tan coarse sand, soft – occasional white, small gravels throughout (<5%).

Photograph of site 13771AC overlooking the Southern portion of the site with sample area for R-12849, R-12850, and R-12851 visible.

  - **d) R-12852**
    - Location: (37.545833, -76.418611)
    - Elevation: 36 ft
    - Description: Brownish gray to dark gray, hard, clayey, medium coarse sand with some quartz grains visible. Sample taken from the top section of pit wall.
  - **e) R-12853**
    - Location: (37.545833, -76.418611)
    - Elevation: 38 ft
    - Description: Soft, fine white sand with some gray/brown layering of tan and white coarser sand.

f) R-12854

- Location: (37.545833, -76.418611)
- Elevation: 40 ft
- Description: Yellowish to tan, coarse sand collected from the bottom most section of the pit wall.

g) R-12855

- Location: (37.5475, -76.420833)
- Elevation: 40 ft
- Description: Reddish pink, fine, hard sand with some white mottling/layering throughout – material is the same across the entire pit wall, just colored/stained different (from tan to orange to yellow).

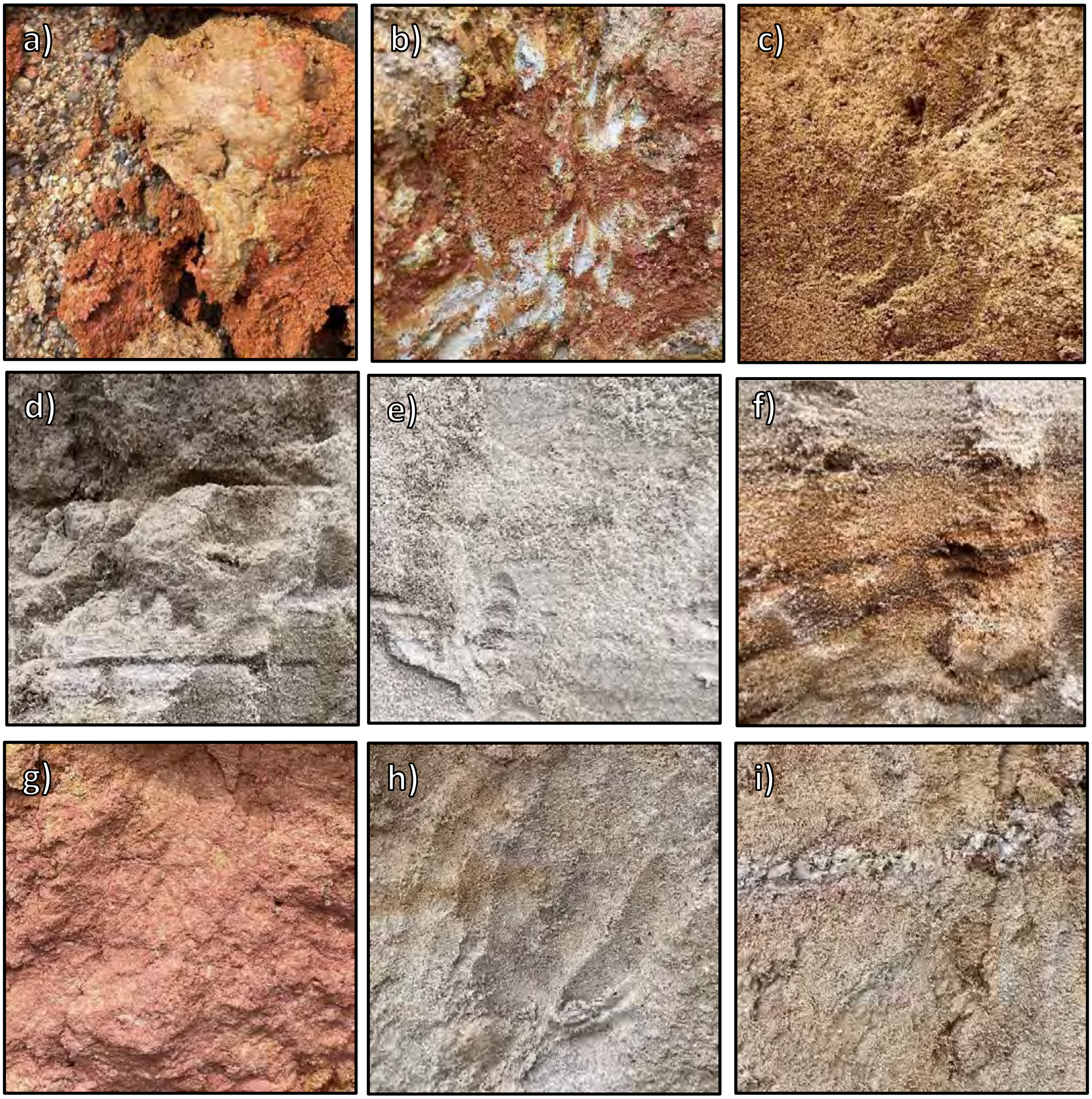
h) R-12856

- Location: (37.545833, -76.420833)
- Elevation: 50 ft
- Description: Tan, fine, clayey sand, where the clay is light gray and the sand is a medium tan to orange-tan in color.

i) R-12857

- Location: (37.545833, -76.420833)
- Elevation: 50 ft
- Description: Coarse white sand with an interbedded clayey layer.

Photograph of samples for site 13771AC: **a)** pit wall for R-12852, R-12853, and R-12854, **b)** R-12855 sample area, and **c)** pit wall for R-12856 and R-12857.



Photograph of Field Samples from 13771AC: **a)** R-12849, **b)** R-12850, **c)** R-12851, **d)** R-12852, **e)** R-12853, **f)** R-12854, **g)** R-12855, **h)** R-12856, **i)** R-12857.

18. **Field Stop #18**

- Date and Time of Visit: April 17th, 2024, 13:50
  - Individuals in Field: LNS and VML field verified
- Permit Information: **08766AB** – William Wills Contractor
  - Commodity: Sand
  - Acreage: 55 acres
  - Geological Unit: QTw
- Location: (37.5551, -76.4454) – 130 Wood Brothers Road, Hartfield, VA, 23071 – Middlesex County
- Overview: We received direction from the site owner of best places to sample. Sampling took place from a pile of material that was excavated from the wall earlier in the week. The pit has been excavated intermittently over the last 18 months.

Photograph of site 08766AB looking Southward.

- Samples Collected:

  a) R-12847
  - Location: (37.557222, -76.439722)
  - Elevation: 70 ft
  - Description: Medium coarse red/orange sand, dry; occasional clumps of light tan sand; areas of very coarse sand, light tan to white in color (< 10%), sample taken from bottom section of the pile.

  b) R-12848
  - Location: (37.557222, -76.439722)
  - Elevation: 70 ft
  - Description: Medium tan, coarse sand with some white to gray sand – occasional pebbles of grains of quartz.

Photograph of samples from site 08766AB: **a)** R-12847, **b)** R-12848, and **c)** sample area for R-12847.

19. <u>Field Stop #19</u>

- Date and Time of Visit: April 17th, 2024
    - Individuals in Field: LNS and VML field verified
- Permit Information: **90467AA** – Bush Park Self Storage, Inc.
    - Commodity: Sand and Gravel
    - Acreage: 1 acre
    - Geological Unit: Qsh
- Location: (37.5698, -76.4037) – Middlesex County
- Overview: This site is listed as an active site but confirmed with mine inspector that the site was inactive. Site was heavily overgrown with vegetation and it was difficult to tell where pits on the site once were.
- Samples Collected: no samples were collected

Photograph of site 90467AA: **a)** presumed pile of previously excavated material, and **b)** looking South showing former pit walls overgrown with vegetation.

Photograph of site 90467AA looking East, showing a mostly flat field surrounding an overgrown historic pit.

20. <u>Field Stop #20</u>

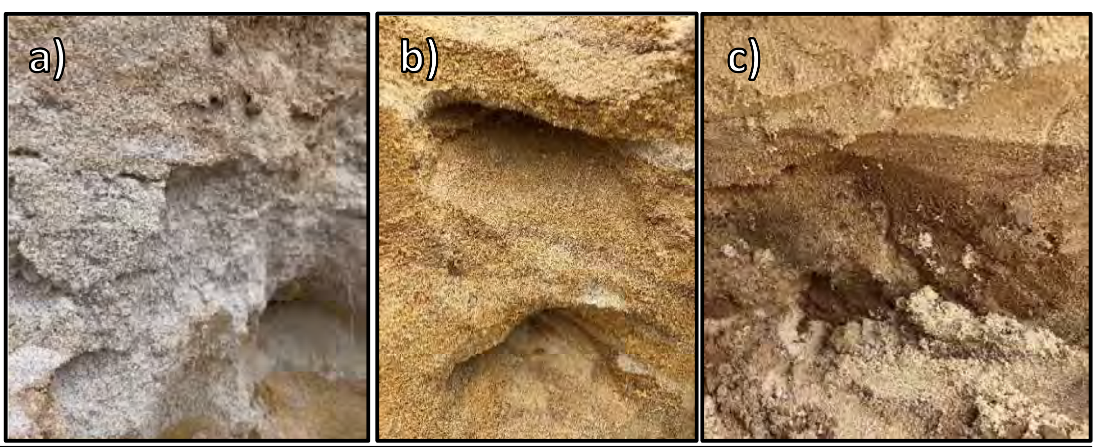
Photograph of site 90347AA looking Southeast.

- Date and Time of Visit: April 25th, 2024 – 11:00
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **90347AA** – Pollard Sand
    - Commodity: Sand and Gravel
    - Acreage: 4.2 acres
    - Geological Unit: Tc
- Location: (37.8979, -76.99533) – Essex County
- Overview: Small site that is intermittently excavated for sand and gravel. Geologists identified a range of gravel sizes on the bottom of the pit presumed to be washed out from the Bacons Castle Formation (*Qbc*) at the surface. In a portion of the bottom of the pit existed a small pond area with vegetation growing out of it.
- Samples Collected:

a) R-12863
- Location: (37.902778, -76.996944)
- Elevation: 140 ft
- Description: Medium to coarse white, quartz sand, stained to orange – some heavy minerals; sand layer is approx. 5 ft thick from bottom of pit to surface (which appears to have washed out Bacons Castle gravels).

b) R-12864
- Location: (37.902778, -76.996389)
- Elevation: 135 ft
- Description: Medium to coarse orange/tan sand and layering of medium brown to light tan sand throughout; heavy minerals (20%).

c) R-12865
- Location: (37.9025, -76.996111)
- Elevation: 150 ft
- Description: Soft, very fine, light tan to medium brown quartz sand - layering, (<5% heavy minerals).



Photograph of samples from site 90347AA: **a)** R-12863, **b)** R-12864, and **c)** R-12865.

21. <u>Field Stop #21</u>

Photograph of site 90397AA, looking West.

- Date and Time of Visit: April 25th, 2024 – 11:50
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **90397AA - Joe C. Andrews Jr.**
    - Commodity: Sand
    - Acreage: 2.54 acres
    - Geological Unit: Tc
- Location: (37.9338, -76.9889) – Essex County
- Overview: Visited very small active site that is intermittently mined and had not been mined for a few months prior to visit. Part of the site is reclaimed.
- Samples Collected:
    a) **R-12866**
        - Location: (37.933611, -76.988889)
        - Elevation: 165 ft
        - Description: Fine, red-orange sands; hard/compacted within the pit wall – but soft and very slightly clayey once in sample bag. Abundant layers of ferricrete (*compacted sands*) and pieces broken around the site.

Photograph of sample from site 90397AA: **a)** R-12866, and **b)** photograph of ferricrete within hillside on site.

Left: Photograph of large piece of ferricrete that was loose from the pit wall. This was found abundantly around the site.

22. Field Stop #22

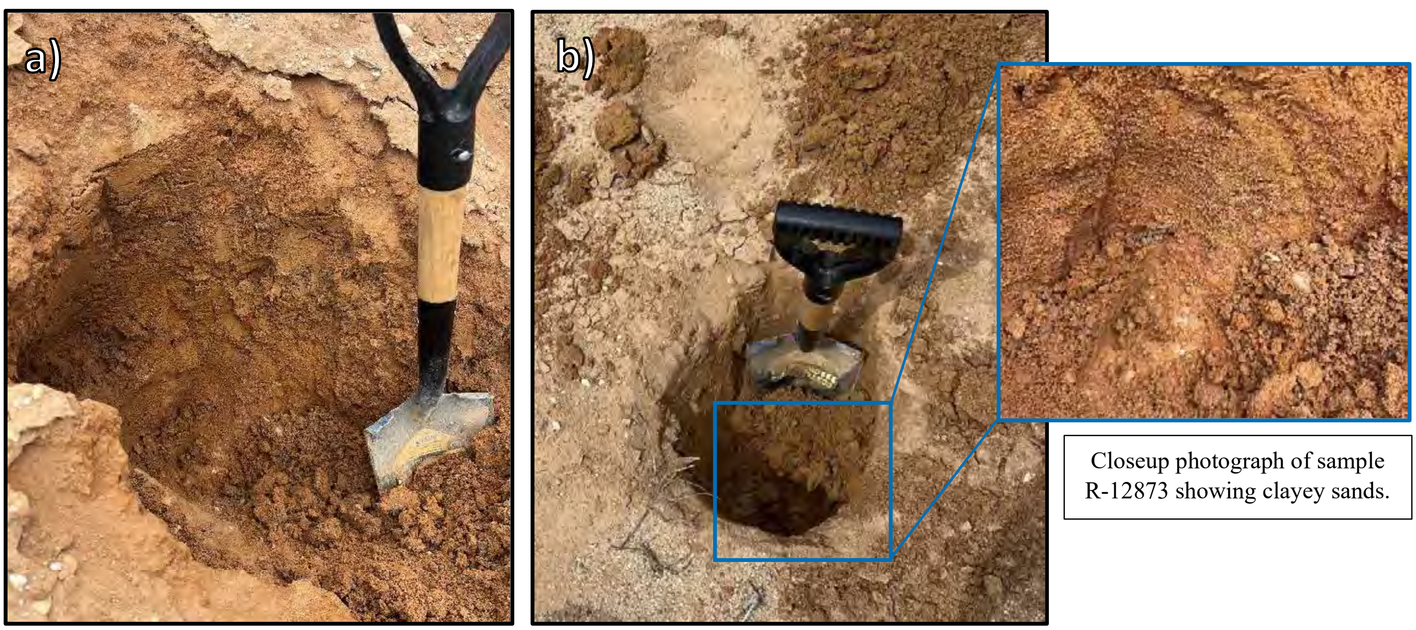
Photograph of site 90560AA, looking Northwest.

- Date and Time of Visit: April 25th, 2024 – 12:50
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **90560AA** – Joe C. Andrews Jr.
  - Commodity: Sand and Gravel
  - Acreage: 8 acres
  - Geological Unit: Qbc
- Location: (37.897757, -76.886013) – Essex County
- Overview: Visited small active site that only recently started to be excavated. Owners noted that very little overburden has to be removed to make the primary sand deposits accessible.
- Samples Collected:

Photograph of mudcracks on pit floor on site 90560AA.

a) R-12872
- Location: (37.899722, -76.889444)
- Elevation: 110 ft
- Description: Clayey, medium reddish-brown sand with occasional gravel 1-3mm in diameter.

b) R-12873
- Location: (37.89967, -76.88913)
- Elevation: 105 ft
- Description: Yellow orange, fine, slightly clayey sand; small, white gravels present throughout 2.5mm in dimeter and only 20% of total sample.



Closeup photograph of sample R-12873 showing clayey sands.

Photograph of samples from site 90560AA: **a)** R-12872 with shovel for scale and **b)** R-12873, sample was taken from pit floor.

23. **<u>Field Stop #23</u>**

- Date and Time of Visit: April 25th, 2024 – 13:20
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **90413AA** – James C. Haile Site
    - Commodity: Sand
    - Acreage: 4 acres
    - Geological Unit: Tc
- Location: (37.8319, -76.78342) – Essex County
- Overview: Visited this intermittently mined sand pit. Site was separated into 2 pit areas by a pond feature. Owner indicated that one pit had more examples of shells than the other.
- Samples Collected:

Photograph of the larger pit at site 90413AA.

Photograph of the smaller, terraced pit at site 90413AA.

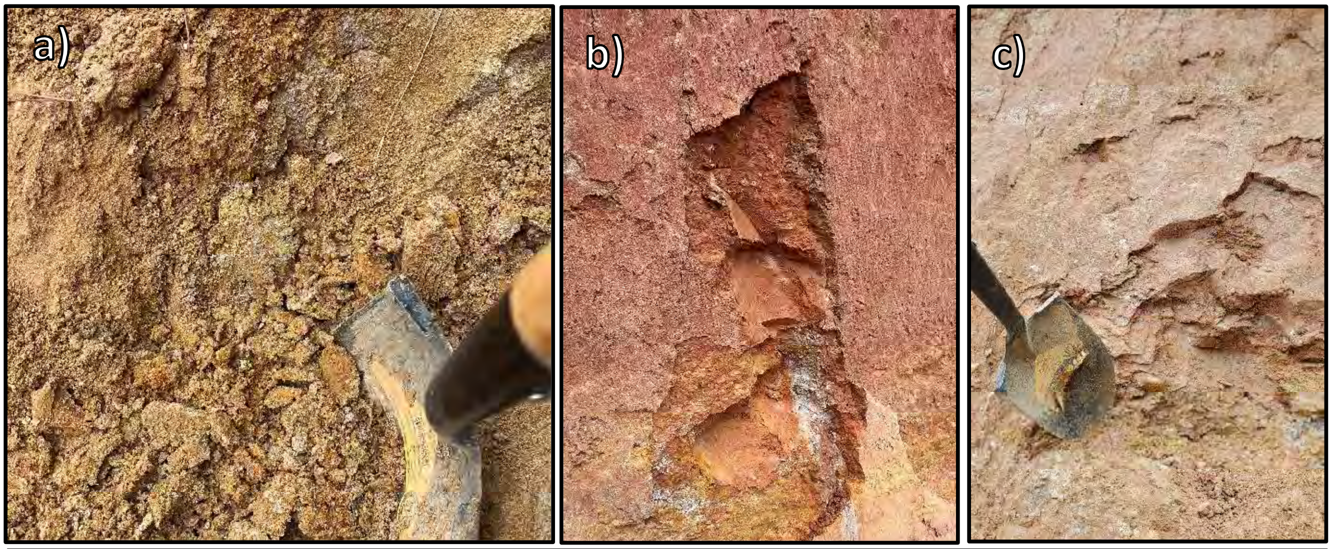
a) R-12867
- Location: (37.829167, -76.784722)
- Elevation: 95 ft
- Description: Soft, fine orange to tan sand with lenses of white/gray sand. Abundant heavy minerals throughout. Gravels observed surrounding sample area but not collected in sample.

b) R-12868
- Location: (37.828889, -76.785278)
- Elevation: 120 ft
- Description: Fine, red to orange sand with slightly clayey white sand lenses.

c) R-12869
- Location: (37.828889, -76.785)
- Elevation: 110 ft
- Description: Fine, slightly clayey, tan to brown sand with some gravel (2-6mm diameter) with lenses of very fine white sand and/or reddish brown sand throughout. Occasional quartzite gravels up to 2” in diameter.

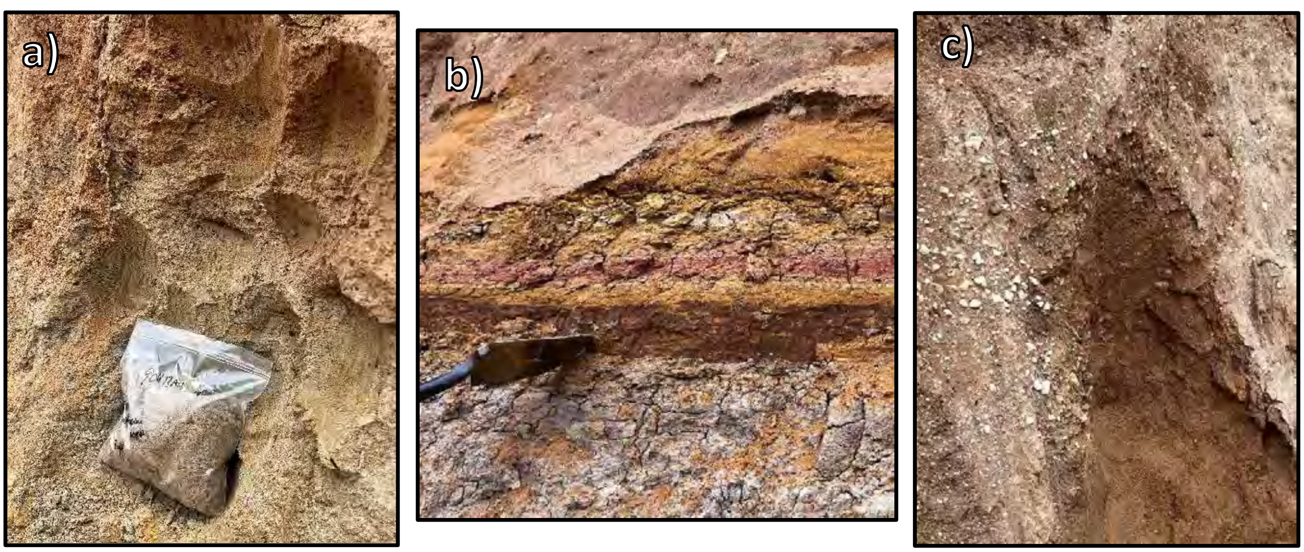
d) R-12870
- Location: (37.826667, -76.7825)
- Elevation: 110 ft
- Description: Medium brown to light gray, soft, fine sand with abundant heavy minerals. Layers of bright orange fine sand throughout.

e) R-12871
- Location: (37.826434, -76.782472)
- Elevation: 120 ft
- Description: Reddish-brown, medium to fine, slightly clayey sand with a small amount of gravel (0.5 – 3mm in diameter). Gravels above apparent contact of ferricrete layer, with evident gravel stringers present in this sample horizon, potentially basal Qbc.



Photographs of samples taken from the larger pit area on site 90413AA: **a)** R-12867, **b)** R-12868, and **c)** R-12869.

Left: Photograph of large cobbles taken from the upper layer in the larger pit area on site 90413AA.



Photographs of samples taken from the smaller, terraced pit area on site 90413AA: **a)** R-12870, **b)** image of layers found at site with shovel pointing to an approximately 6” thick paleosol layer, **c)** R-12871.

24. <u>Field Stop #24</u>

- Date and Time of Visit: May 30th, 2024; 11:00
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **06930AB** – F.A. Cottee Sand and Gravel
    - Commodity: Sand
    - Acreage: 32.6
    - Geological Unit: QTw
- Location: (37.38277, -76.51703) - Gloucester County

Photograph of site 06930AB from entrance, looking North.

- Overview: Visited this large active site where the site owner directed us to specific locations that would be ideal for sampling. Material consists of sand to clayey sand, underlain by a gray shelly layer.
- Samples Collected:
    a) R-12874
    - Location: (37.38639, -76.521682)
    - Elevation: 78 ft
    - Description: Medium to coarse sand, tan-brown/orange, sub-angular quartz grains; heavy minerals (<10%).

    b) R-12875
    - Location: (37.386399, -76.521689)
    - Elevation: 72 ft
    - Description: Fine/soft gray clay with orange to red mottling occasionally which transitions to a clayey sand towards the bottom and as it reaches the coarse sand below.

Photograph of samples from site 06930AB: **a)** R-12874 and **b)** R-12875 with shovel and rock hammer for scale.

25. Field Stop #25

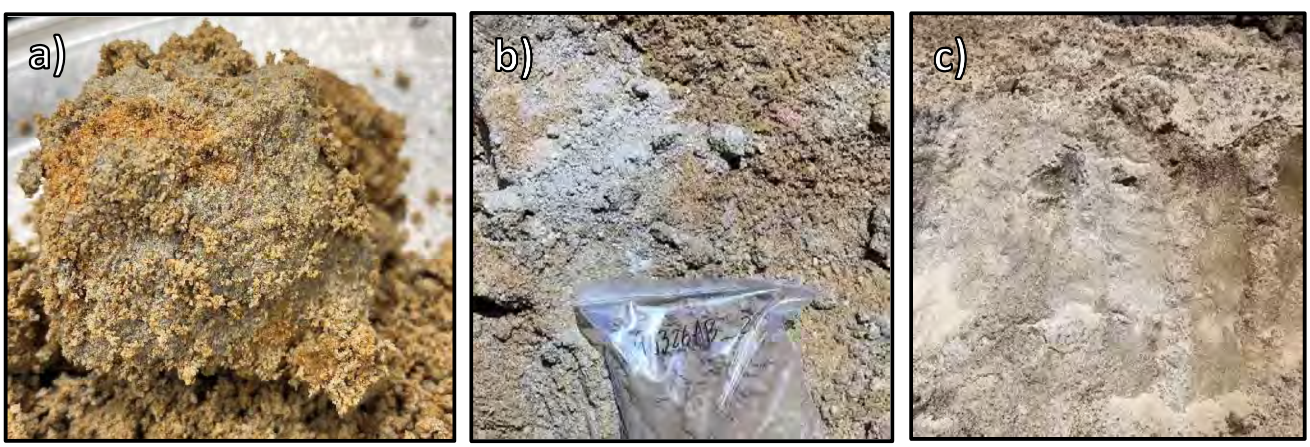
Photograph of site 90326AB, looking at the current excavation pit.

- Date and Time of Visit: May 30th, 2024
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **90326AB** – Jenkins Excavating Construction Inc.
  - Commodity: Sand
  - Acreage: 7.04 acres
  - Geological Unit: Qbc
- Location: (37.38505, -76.52405) – Gloucester County
- Overview: This site is partially being excavated. Owner indicated that they remove very little overburden and excavate fine and coarse sand, with gray marl underlying the deposit.
- Samples Collected:

  a) R-12880
  - Location: (37.387095, -76.525497)
  - Elevation: 65 ft
  - Description: Soft, fine, sandy clay. Tan to light brown with orange lenses; material is more clay-rich than sand apparent. Sample was taken from an excavator's bucket, with location of sampling known.

  b) R-12881
  - Location: (37.386944, -76.525833)
  - Elevation: 62 ft
  - Description: Orange to white to gray soft, fine quartz sand with occasional gravel throughout with quartz.

  c) R-12882
  - Location: (37.386944, -76.525722)
  - Elevation: 59 ft
  - Description: White to very light tan, soft, fine quartz sand. Mostly clean sand with heavy minerals occasionally throughout.



Photograph of samples from site 90326AB: **a)** close up of R-12880, **b)** sample area for R-12881, **c)** sample area for R-12882.

26. <u>Field Stop #26</u>

Photograph of site 12583AC showing that portions of the site are forested.

- Date and Time of Visit: May 30th, 2024; 13:00
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **12583AC** – Harris and Co. LLC
  - Commodity: Sand
  - Acreage: 65 acres
  - Geological Unit: Qts and Qsh
- Location: (37.281264, -76.503775) – Gloucester County
- Overview: Site has many pond features where historic excavating occurred. Site is mapped as two different geological formations. Owner directed us to a few locations around the site that had material they seek to excavate.
- Samples Collected:

Photograph of site 12583AC showing a pond that was a previous open pit.

  a) R-12876
  - Location: (37.282221, -76.497502)
  - Elevation: 80 ft
  - Description: Fine sand, tan to brown, some pea gravels throughout (0.5 – 1" in diameter). Sample is representative of 10-12 ft depth.

  b) R-12877
  - Location: (37.282218, -76.497507)
  - Elevation: 20 ft
  - Description: White to tan, moist, fine sand with occasional small gravels (no larger than 3mm). Dark gray areas of fine, almost clayey sand.

  c) R-12878
  - Location: (37.282211, -76.497511)
  - Elevation: 20 ft
  - Description: Slightly clayey sand, tan to brown to brownish gray with quartz sand grains.

  d) R-12879
  - Location: (37.282146, -76.500471)
  - Elevation: 25 ft
  - Description: Medium to dark tan to orange brown, fine quartz sand. Occasional small gravels. Sample retrieved pond which was once a pit by an excavator - composite sample at 20 to 25 ft depth.

Photograph of samples from site 12583AC: **a)** R-12876, **b)** sample area of R-12877, **c)** sample area of R-12878, **d)** pond where R-12879 was retrieved.

27. Field Stop #27

- Date and Time of Visit: May 30th, 2024; 16:00
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **90348AB** – Gregg Construction
  - Commodity: Sand and Gravel
  - Acreage: 32 acres
  - Geological Unit: Qts
- Location: (37.465828, -76.390106) – Mathews County
- Overview: Site has been active for a while and part of the site is now reclaimed. Only about 8 acres is currently being excavated according to the site owner. Very little overburden is removed before they start excavating material. Material gets used as road dirt and fill material.
- Samples Collected:

  a) R- 12883
  - Location: (37.465228, -76.392208)
  - Elevation: 30 ft
  - Description: Clayey sand, light brown to orange brown; heavy minerals are concentrated.

  b) R-12884
  - Location: (37.465833, -76.396111)
  - Elevation: 32 ft
  - Description: Very coarse, tan to brown sand and a minor amount of opaque to dark gray very coarse sand grains throughout. Occasional gravel (> 4mm likely washed out from above).

Photograph of site 90348AB overlooking one pit area towards the front of the site.

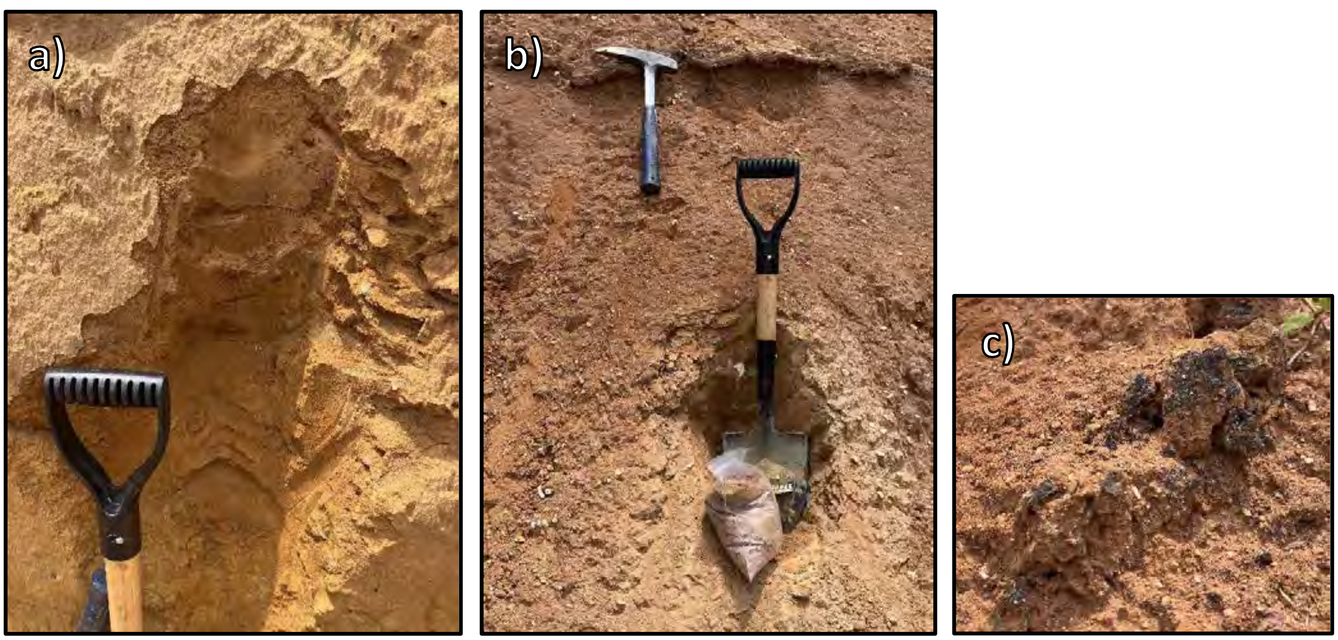
Photograph of samples from site 90348AB: **a)** R-12883, **b)** sample area of R-12884.

28. <u>Field Stop #28</u>

- Date and Time of Visit: June 17th, 2024; 12:20
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **90319AA** – J. Sanders Construction
  - Commodity: Sand
  - Acreage: 21.2 acres
  - Geological Unit: Qbc
- Location: (37.548444, -76.712722); West Point - King and Queen County
- Overview: Medium sized active site appeared inactive during visit, site was mostly cleared. Identified stockpile of material obtained from pit walls.
- Samples Collected:
  - **a) R-12887**
    - Location: (37.553056, -76.708333)
    - Elevation: 60 ft
    - Description: Fine, brown/orange quartz sand; heavy minerals approx. 20% or less; small lenses of brown/black fine sand.
  - **b) R-12888**
    - Location: (37.552778, -76.7075)
    - Elevation: 70 ft
    - Description: Fine to medium light orange/brown sand with abundant coarse sands (0.5-1mm diameter) – which are opaque to dark gray; white to tan gravels larger than 4mm abundant on surface of exposure - potentially being washed out from above.

Photograph of site 90319AA with pit walls in the distance.

Photograph of site 90319AA showing a presumed stockpile of material.



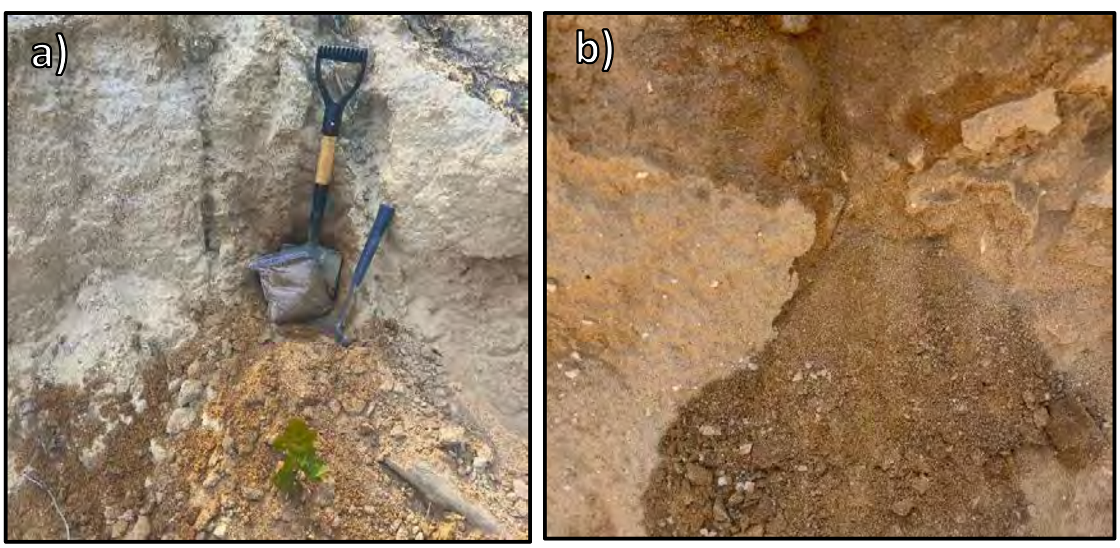
Photograph of samples from site 90319AA: **a)** R-12887, **b)** sample area of R-12888, **c)** pieces of ferricrete found beside R-12888.

29. Field Stop #29

- Date and Time of Visit: June 17th, 2024; 15:30
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **13778AF** – Tom's Paving & Sealing LLC.
    - Commodity: Sand and Clay
    - Acreage: 34.15 acres
    - Geological Unit: Tc
- Location: (37.4268, -76.5143); Gloucester County
- Overview: Medium sized active site that has had most of its areas excavated with some areas having already been reclaimed. There were piles of concrete and asphalt on the site.
- Samples Collected:
    - **a) R-12885**
        - Location: (37.426667, -76.516111)
        - Elevation: 60 ft
        - Description: Fine to medium orangish-brown sand w/occasional gravel. Some very coarse sands that are white to opaque. Lenses of dark gray fine sands occasionally throughout. <1% white gravels larger than 4mm.
    - **b) R-12886**
        - Location: (37.426667, -76.516111)
        - Elevation: 70 ft
        - Description: Fine, brown/orange quartz sand with some heavy minerals present. Small lenses of brown/black fine sand.

Photograph of site 13778AF showing previously excavated land now covered with vegetation.

Photograph of site 13778AF showing pit wall.



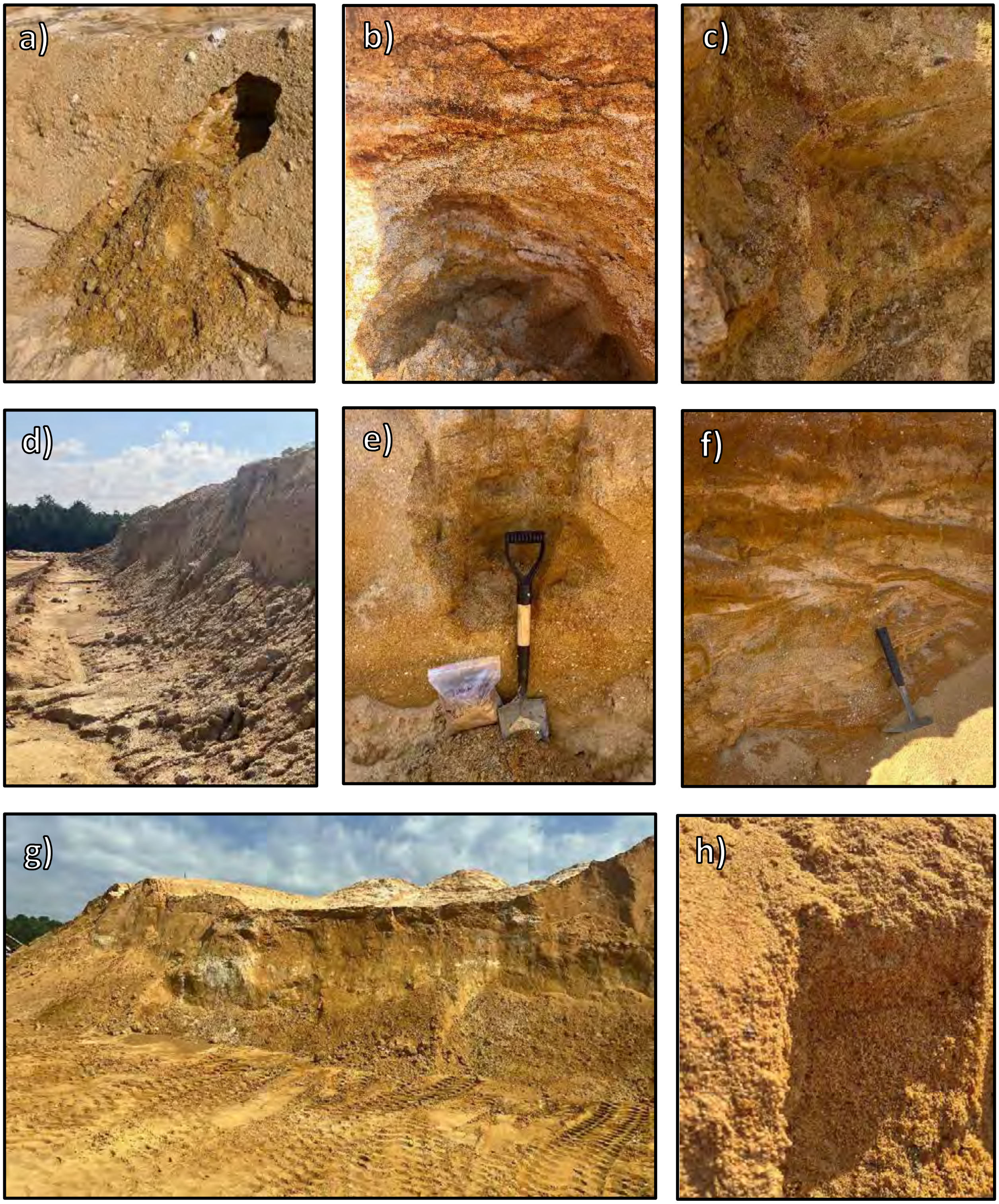
Photograph of samples from site 13778AF: **a)** sample area for R-12885, **b)** sample area of R-12886.

30. <u>Field Stop #30</u>

Photograph of site 90466AC showing large pit area.

- Date and Time of Visit: June 18th, 2024; 9:30
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **90466AC** – Holcim-MAR INC.
  - Commodity: Sand
  - Acreage: 536.2 acres
  - Geological Unit: QTw
- Location: (37.451707, -76.603496) – Gloucester County
- Overview: Very large site that is currently active. Site contact drove us to an area where they had recently excavated and pointed out a few areas that would be idea for our sampling. Overburden is removed and stored onsite for reclamation. The sand and gravel deposit overlies a gray clay layer.
- Samples Collected:
  - **a) R-12895**
    - Location: (37.434874, -76.619617)
    - Elevation: 80 ft
    - Description: Coarse orange to white to tan sand, quartz. Some very coarse sands with a small amount of heavy minerals.
  - **b) R-12896**
    - Location: (37.434906, -76.619776)
    - Elevation: 90 ft
    - Description: Soft sandy clay, dark reddish-orange, some white mottling. Smooth clays.
  - **c) R-12897**
    - Location: (37.433204, -76.617781)
    - Elevation: 70 ft
    - Description: Coarse, orange sand – with some very coarse, angular sands that are white, opaque, and dark gray. Larger white gravels seen around the deposit are likely washed out from above and sometimes deposited in horizontal layers.
  - **d) R-12898**
    - Location: (37.443056, -76.609444)
    - Elevation: 100 ft
    - Description: Coarse, yellow-orange sand with occasional pure white sand. Very coarse sands that are dark/light gray and opaque to white. Sample collected from a raw feed stockpile on-site.

Photograph of site 90466AC showing mine road that led to another pit area.

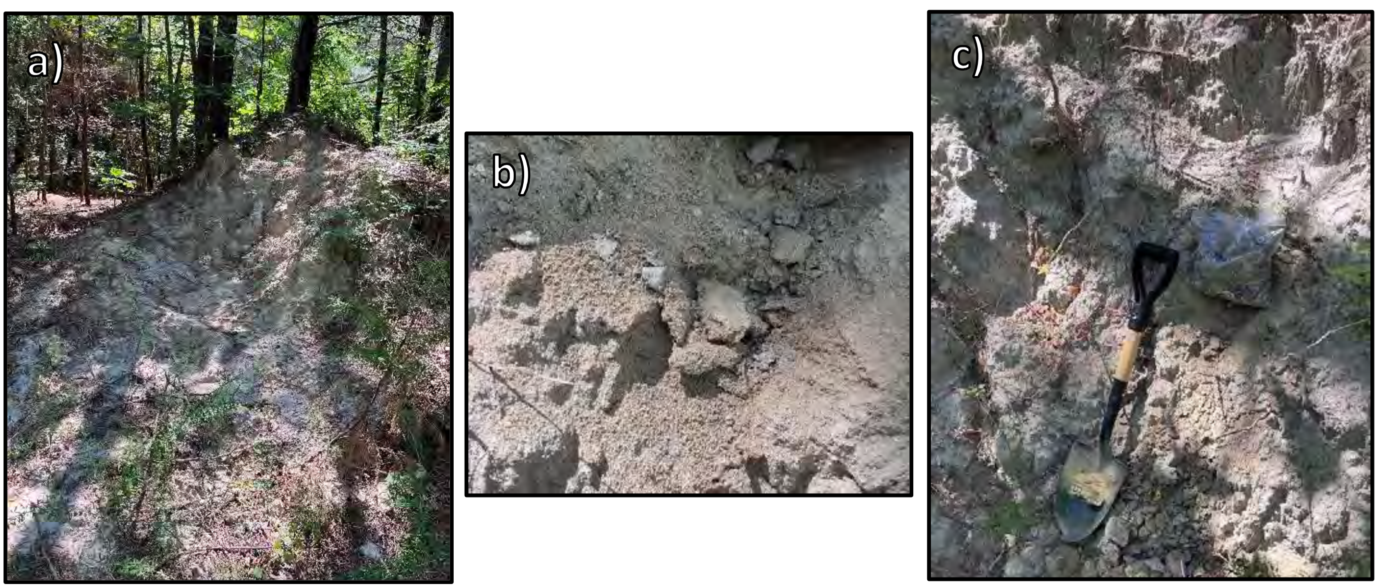


Photograph of samples from site 90466AC: **a)** sample area for R-12895, **b)** detailed photo for R-12895, **c)** R-12896, **d)** sample area for R-12896, **e)** sample area for R-12897, **f)** area next to R-12897 showing layering and white gravels deposited throughout, **g)** sample area showing stockpile for R-12898, **h)** R-12898.

31. **<u>Field Stop #31</u>**

- Date and Time of Visit: June 18th, 2024; 11:00
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **10018AB** – R&W Marine
    - Commodity: Sand and Gravel
    - Acreage: 6.49 acres
    - Geological Unit: QTw
- Location: (37.470112, -76.456688) – Gloucester County
- Overview: Visited this small, temporarily inactive sand and gravel pit. Site was very overgrown, there was a pond feature on site that was located where the pit once was.
- Samples Collected:
    - **a) R-12891**
        - Location: (37.471387, -76.456659)
        - Elevation: 80 ft
        - Description: Fine, light gray sand, well compacted, occasional white very coarse, subangular sands < 2mm washed out from above. Sample was taken from suspected stockpile nearby the pit as the historical pit was not accessible due to it being filled in with water.

Photograph of site 10018AB showing area of site suspected to be a former open pit that is now filled with water and vegetation.



Photograph of samples taken at site 10018AB: **a)** sample area for R-12891 taken from a suspected stockpile from nearby historic pit, **b)** close-up image of R-12891, **c)** sample area for R-12891.

32. <u>Field Stop #32</u>

- Date and Time of Visit: June 18th, 2024; 11:30
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **06988AC** – R&W Marine
  - Commodity: Sand
  - Acreage: 12.2 acres
  - Geological Unit: QTw
- Location: (37.57565, -76.4408) – Middlesex County
- Overview: Visited this small site that currently holds an active permit but has not been excavated for at least 5 years according to the site contact's knowledge. Because of this, the site was heavily overgrown. We were able to access areas that appeared to be historical pits but entire pit boundary was obscured because of vegetation and small trees.
- Samples Collected:
  - **a) R-12889**
    - Location: (37.578333, -76.438056)
    - Elevation: 30 ft
    - Description: Coarse orange/tan/white sands with occasional dark gray very coarse sands. Lenses of coarser dark brown (*iron stained*) sand which are very compacted.
  - **b) R-12890**
    - Location: (37.5775, -76.438333)
    - Elevation: 45 ft
    - Description: Very fine, dark reddish-brown sand with pieces of small, thin ferricrete found around this area. Occasional white gravels present, potentially washed out from surface.

Photograph of site 06988AC showing area of site suspected to be a former open pit that is now overgrown with vegetation.

Photograph of site 06988AC showing an overgrown area that was a path to a former open pit.

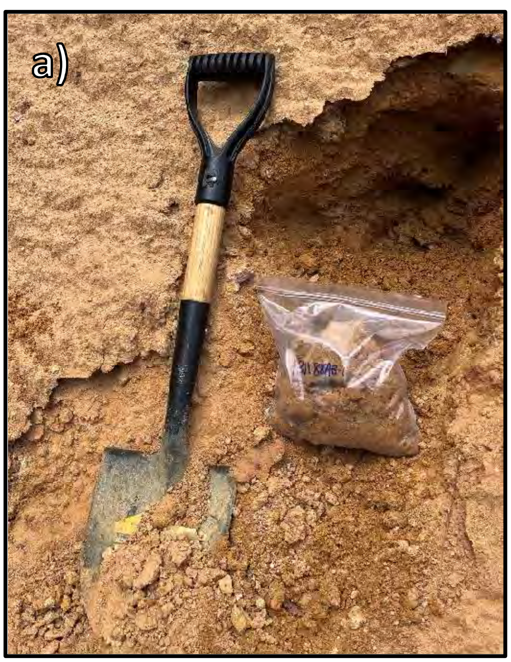
Photograph of samples taken at site 06889AC: **a)** sample area for R-12889, **b)** close-up image of R-12889, **c)** sample area for R-12890, **d)** close-up image of R-12890.

33. <u>Field Stop #33</u>

- Date and Time of Visit: June 18th, 2024; 12:00
    - Individuals in Field: DWH and LNS field verified
- Permit Information: **13118AA** – William H. Wright
    - Commodity: Sand
    - Acreage: 20.5 acres
    - Geological Unit: QTw
- Location: (37.58477, -76.48042) – Middlesex County
- Overview: Visited this large site that is occasionally actively excavating clay material for use as fill material. The sand they excavate is used as road sand.
- Samples Collected:
    - **a) R-12893**
        - Location: (37.586389, -76.483889)
        - Elevation: 70 ft
        - Description: Very fine, clayey sand that is tan to yellow with some pinkish-red lenses. Heavy minerals occasionally throughout. A small amount of medium coarse sands.
    - **b) R-12894**
        - Location: (37.586389, -76.483611)
        - Elevation: 80 ft
        - Description: Very coarse quartz sand, gray with occasional orange.

Photograph of site 13118AA showing excavated pit wall.

Photograph of site 13118AA stockpile of material taken from pit wall.



Photograph of samples taken at site 13118AA: **a)** sample area for R-12893, **b)** sample area of R-12894.

34. <u>Field Stop #34</u>

- Date and Time of Visit: June 18th, 2024; 14:25
  - Individuals in Field: DWH and LNS field verified
- Permit Information: **11273AA** – Essex Concrete Corp.
  - Commodity: Sand and Gravel
  - Acreage: 263.82 acres
  - Geological Unit: QTw
- Location: (37.79063, -77.09742) – King and Queen
- Overview: Visited this large, now inactive, site that is currently under reclamation. Site is only hauling material out, no excavation has occurred for a while but former open pit areas area still accessible.
- Samples Collected:
  - **a) R-12892**
    - Location: (37.803056, -77.09)
    - Elevation: 50 ft
    - Description: Very fine, white clean sand with occasional brown to orange lenses. Some heavy minerals throughout but occasionally concentrated in areas.

Photograph of site 11273AA looking South, showing former mine road.

Photograph of site 11273AA looking North, showing back area and permitted land boundary of site.

Photograph of samples taken at site 11273AA: **a)** sample area for R-12892 showing vegetation surrounding former pit wall, **b)** close-up image of R-12892.

Appendix A

Field Records

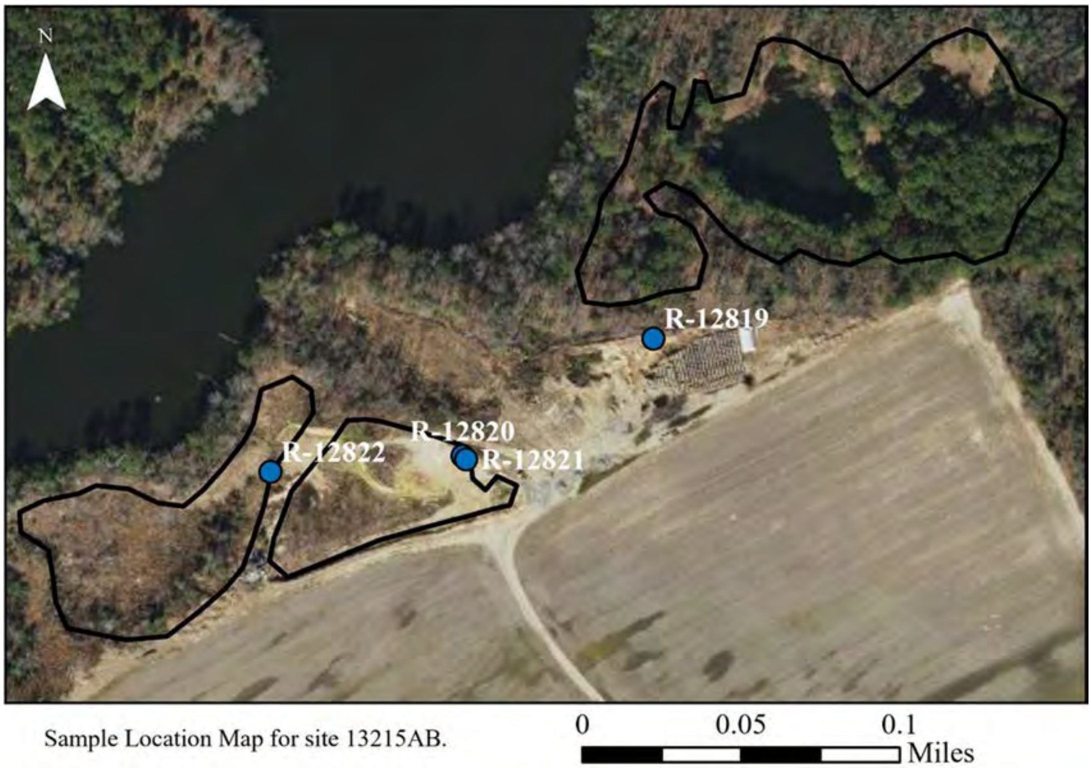
Sample Location Maps for Field Stops

Sample Location Map for site 90474AB.

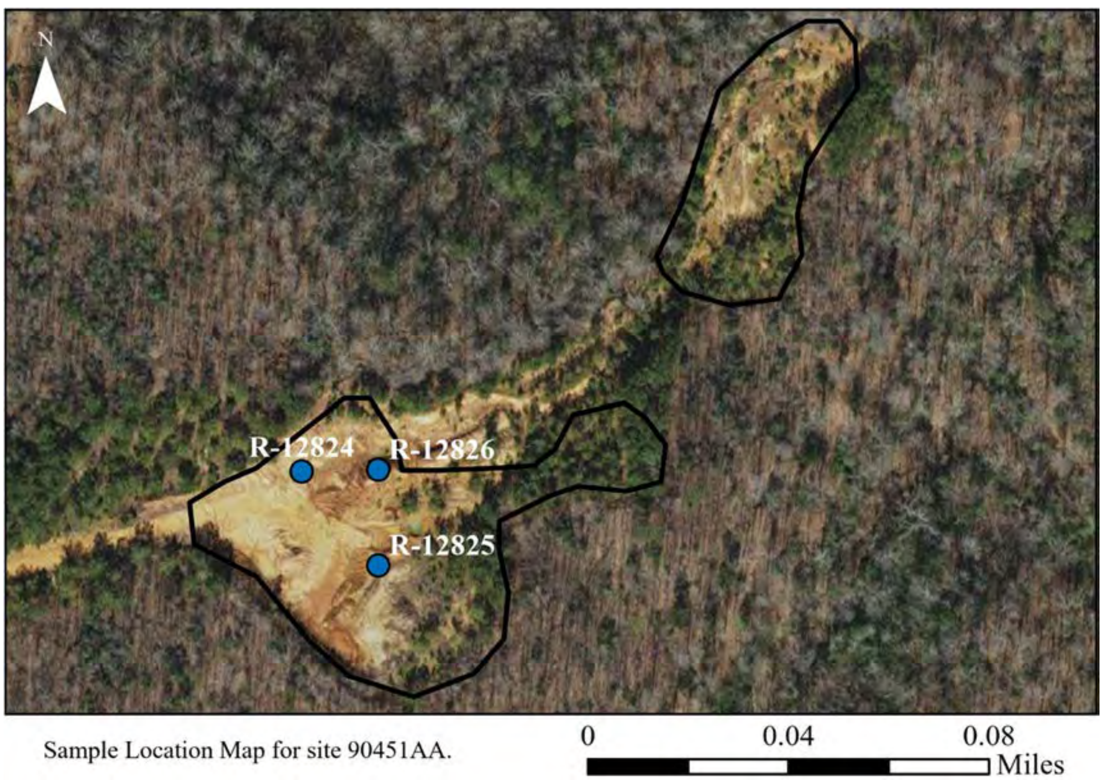
0 0.02 0.04 Miles

Sample Location Map for site 90473AB.

0 0.03 0.06 Miles



Sample Location Map for site 13215AB.



Sample Location Map for site 90451AA.

Sample Location Map for site 90490AA.

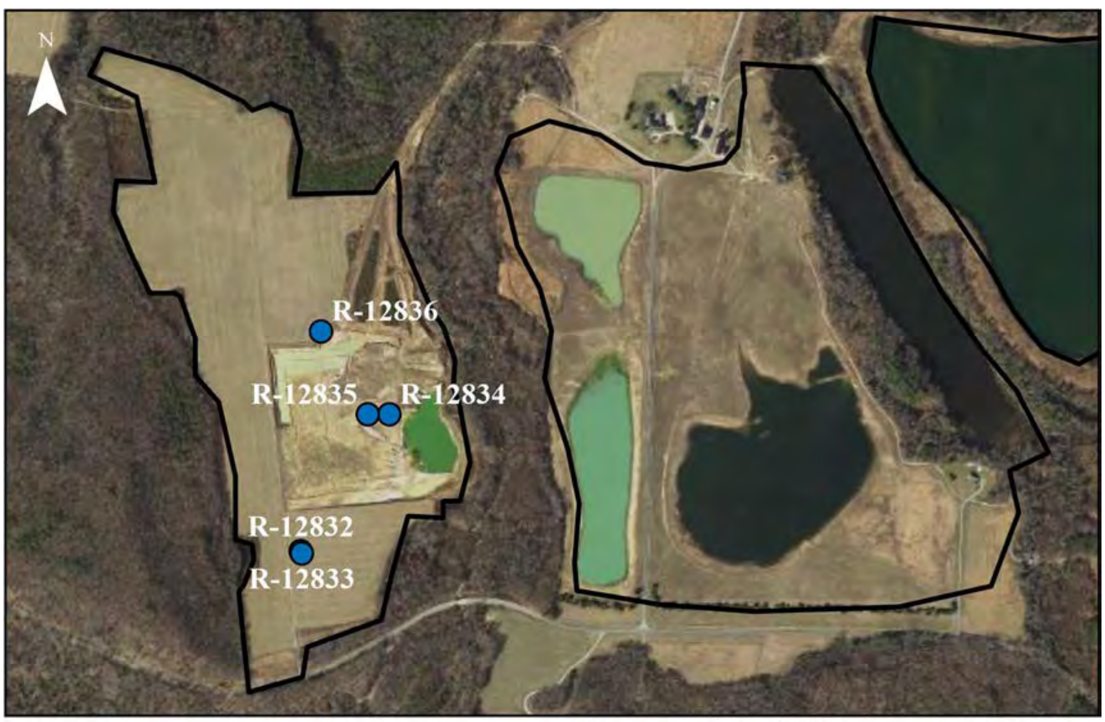
0 0.42 0.85 Miles

Sample Location Map for site 90298AB.

0 0.2 0.4 Miles

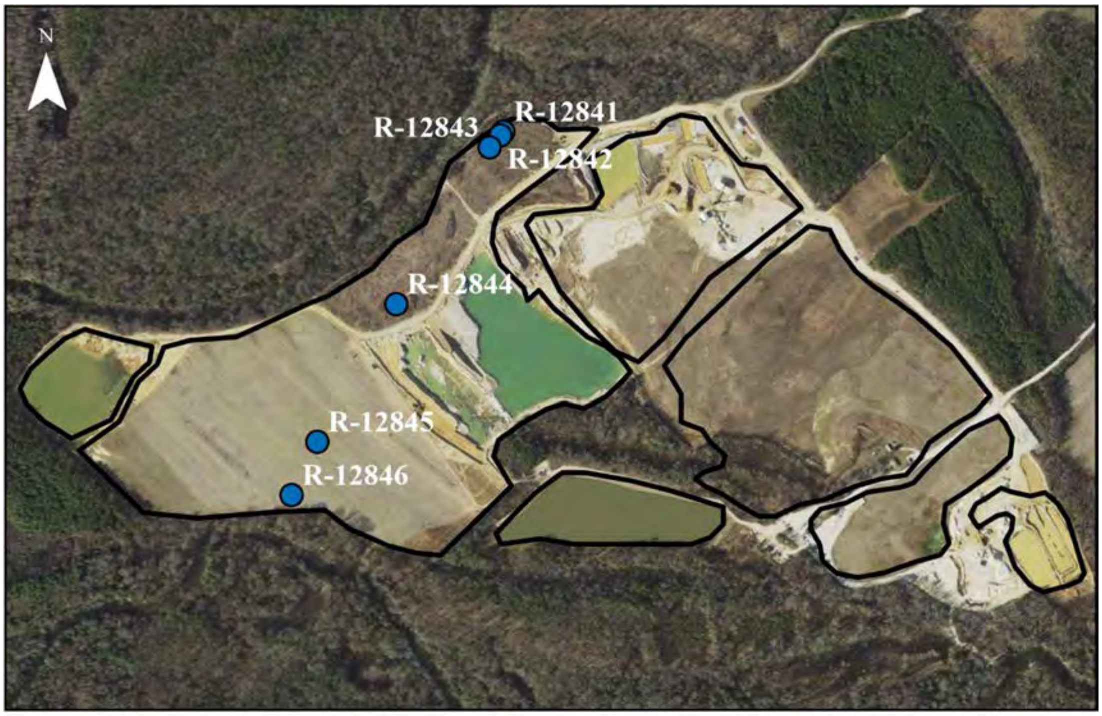
Sample Location Map for site 90367AA.

0 0.03 0.06 Miles



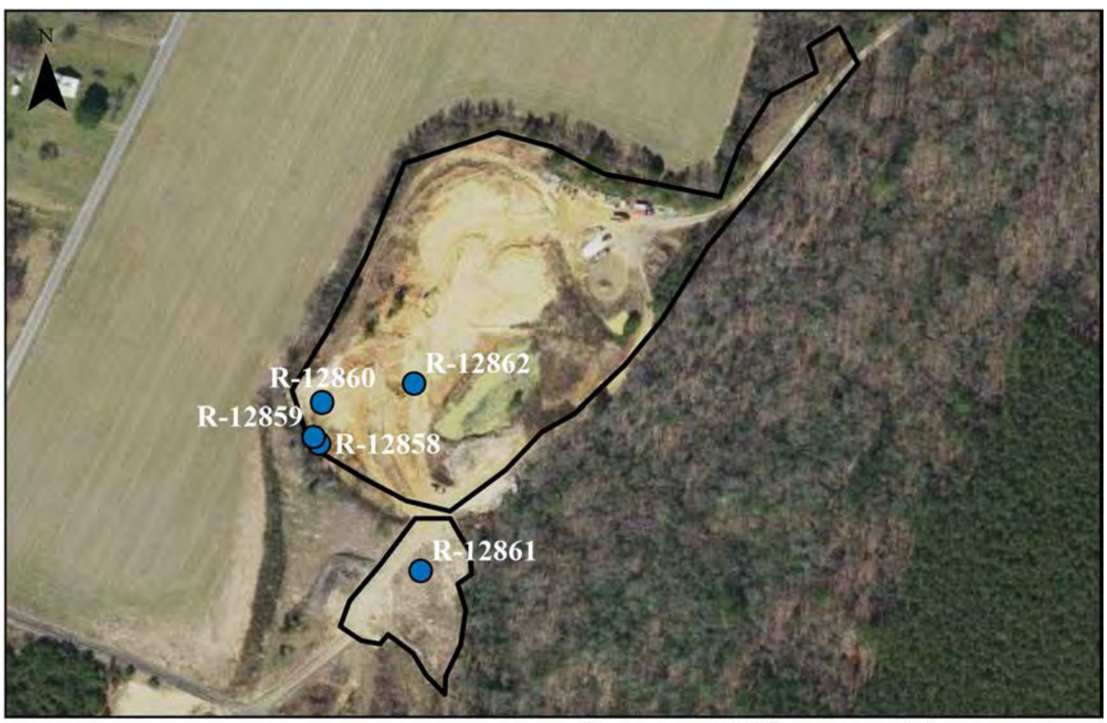
Sample Location Map for site 13889AD.

0 0.28 0.55 Miles



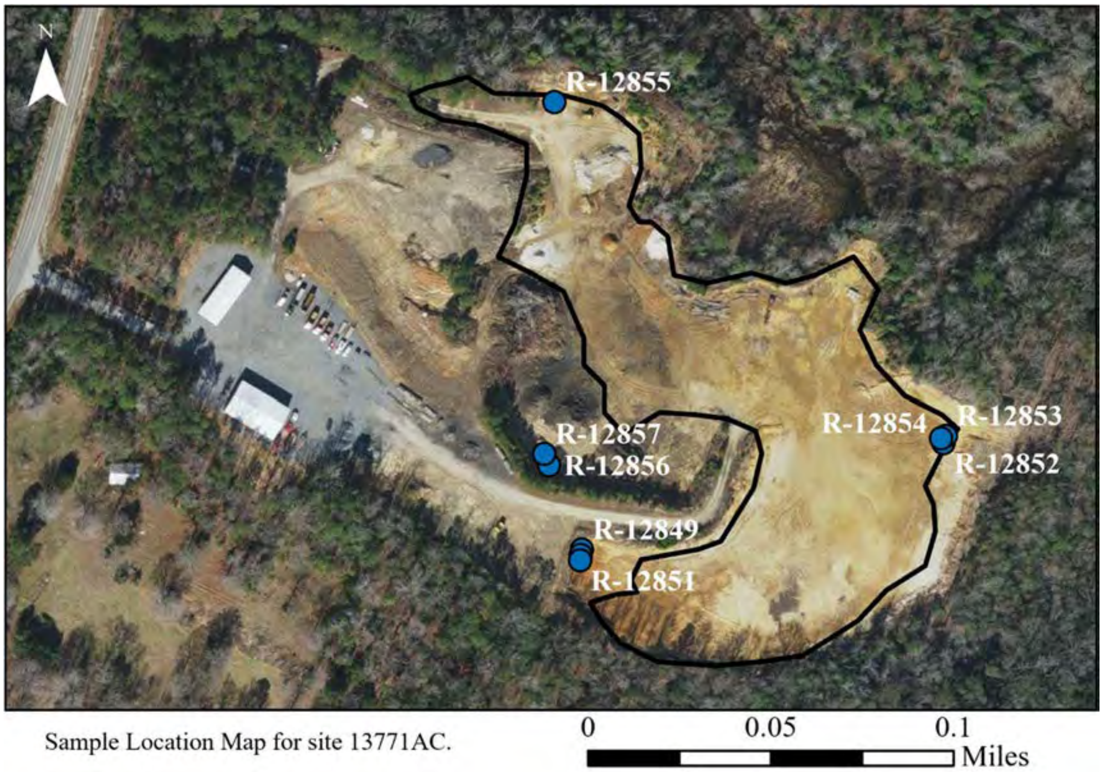
Sample Location Map for site 90562AA.

0 0.23 0.45 Miles

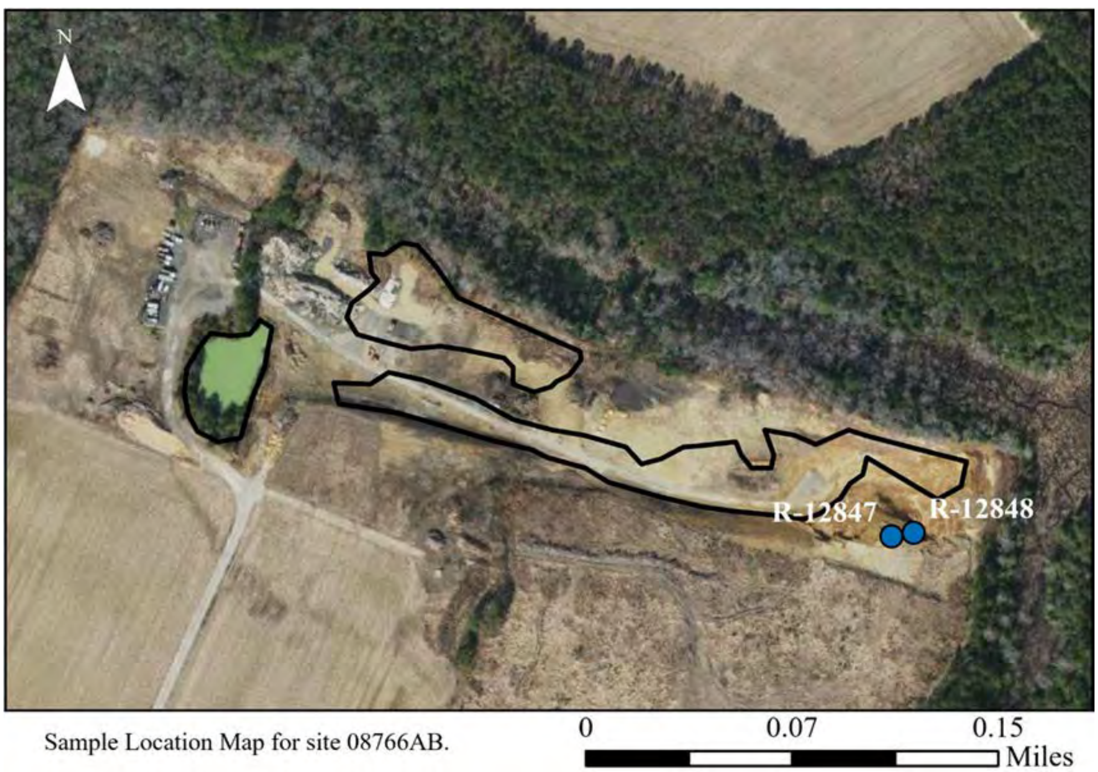


Sample Location Map for site 13867AB.

0 0.05 0.1 Miles



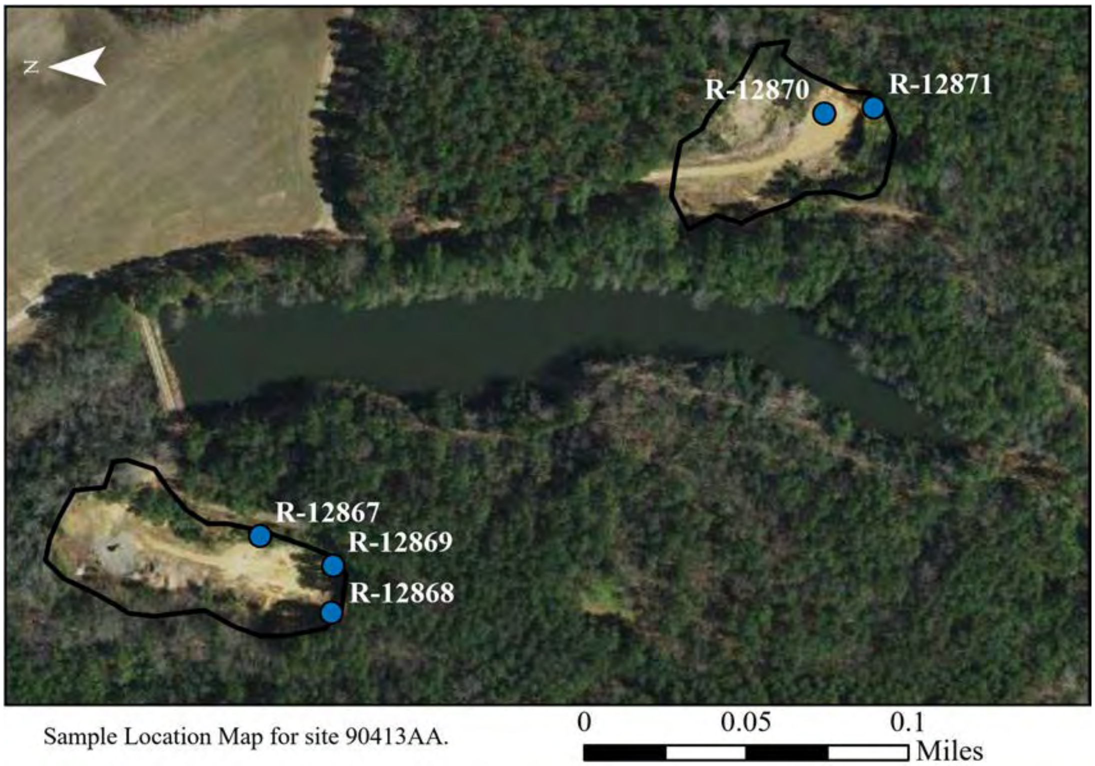
Sample Location Map for site 13771AC.



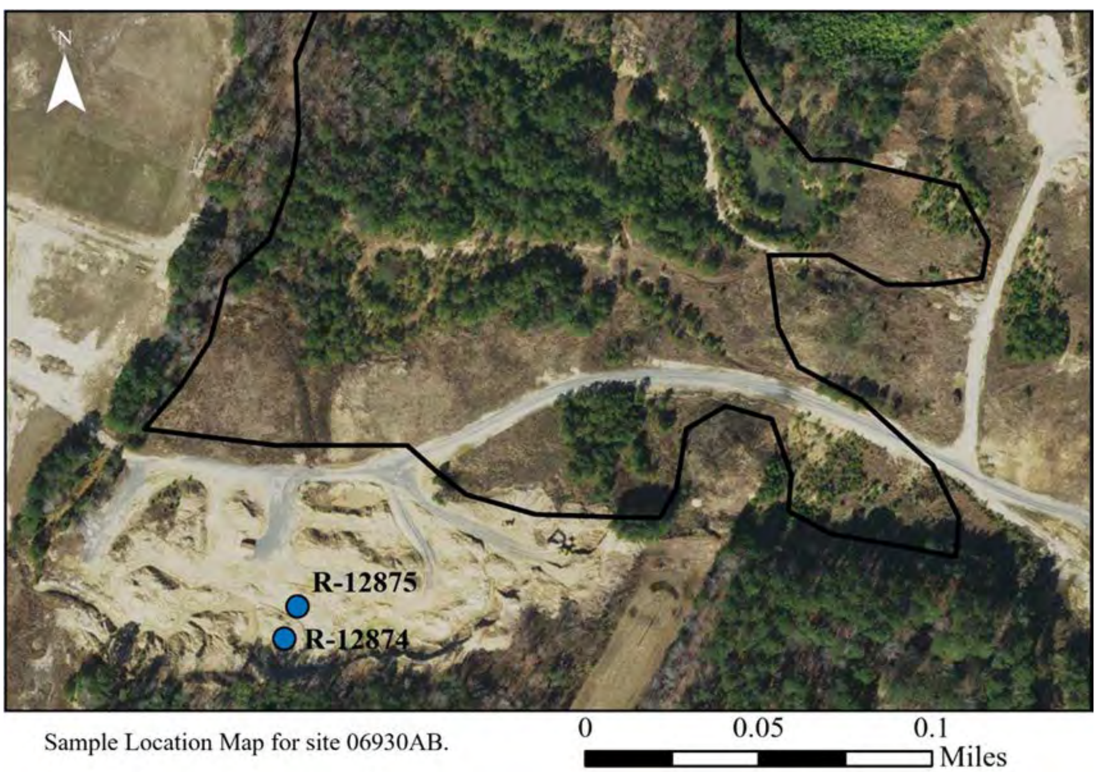
Sample Location Map for site 08766AB.

Sample Location Map for site 90347AA.

Sample Location Map for site 90560AA.

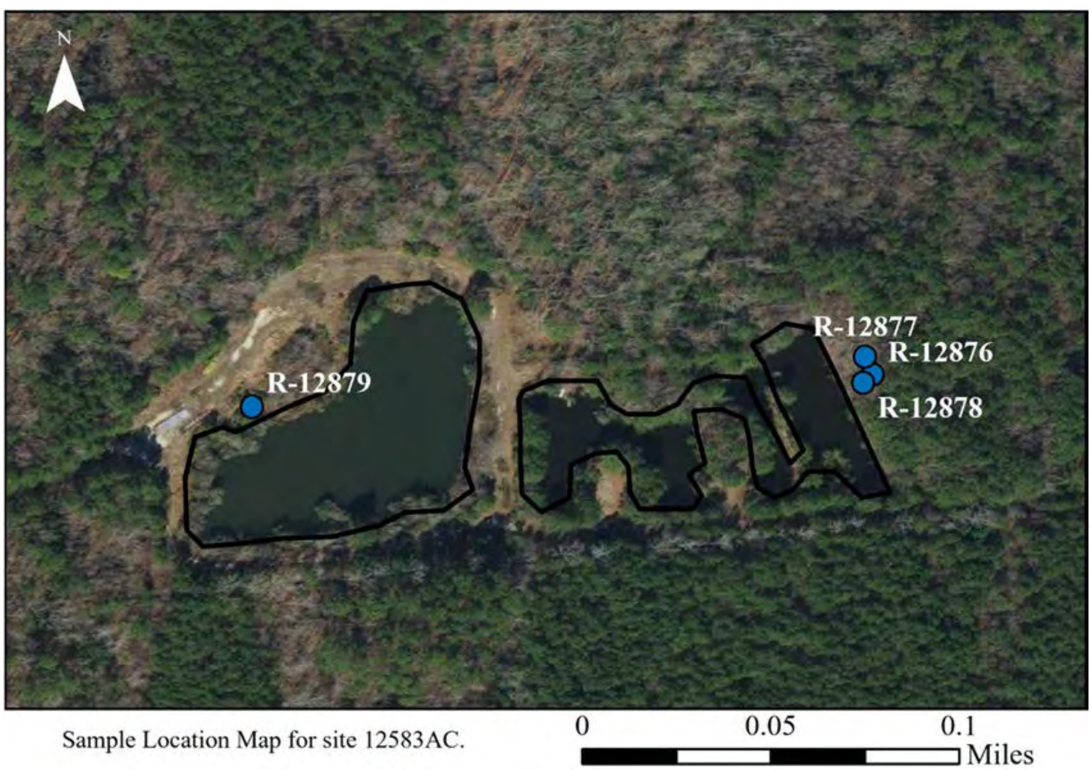


Sample Location Map for site 90413AA.



Sample Location Map for site 06930AB.

Sample Location Map for site 90326AB.
Note that at the time of site visit sampling area was not filled with water.



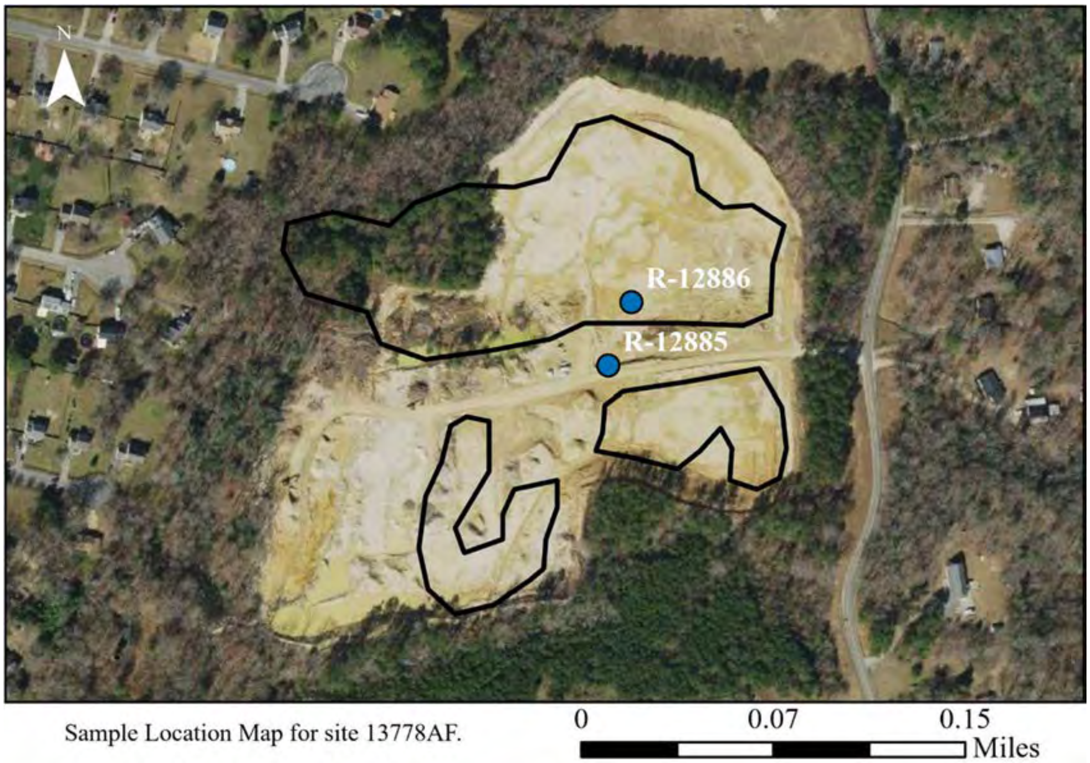
Sample Location Map for site 12583AC.

Sample Location Map for site 90348AB.

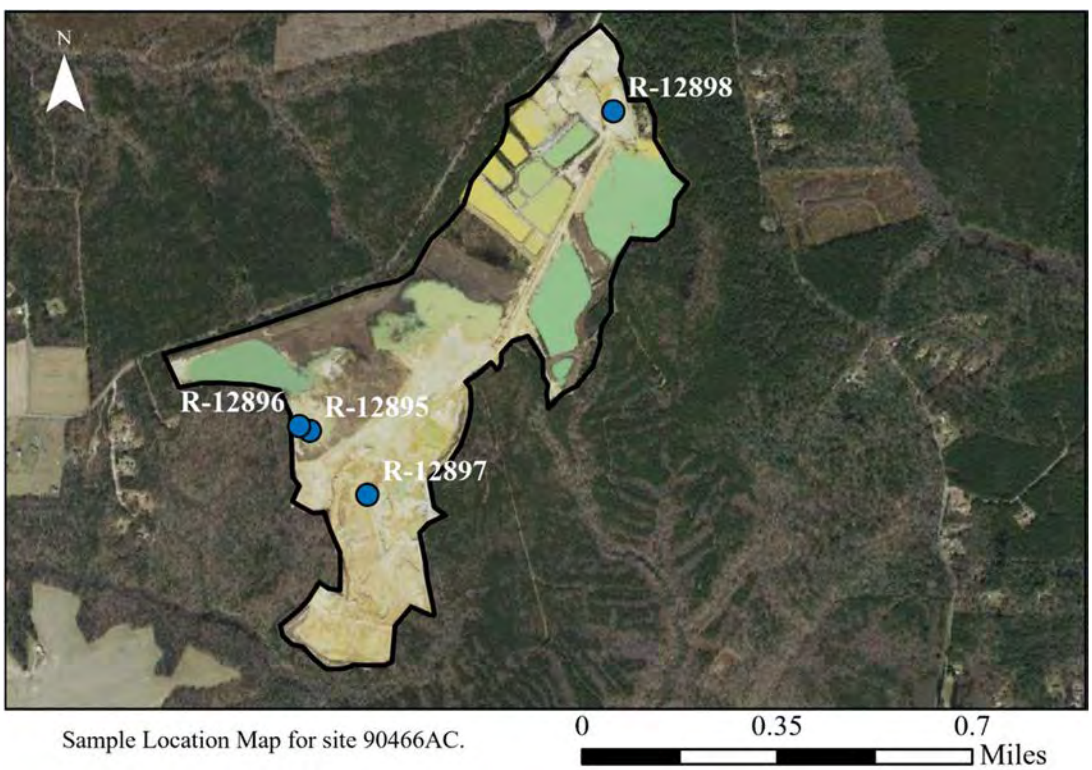
0 0.15 0.3 Miles

Sample Location Map for site 90319AA.

0 0.07 0.15 Miles



Sample Location Map for site 13778AF.



Sample Location Map for site 90466AC.

Sample Location Map for site 10018AB.

Sample Location Map for site 06988AC.

Sample Location Map for site 13118AA.

Sample Location Map for site 11273AA.

Appendix A

Field Records

Glossary

Terms Used

Abandoned Site: a mine where mining operations have previously occurred but are no longer operational and the area has not been reclaimed

Active Site: a mine site that is actively excavating material, within the last 5 years

Ferricrete: sand and gravel cemented into a hard, erosion-resistant mass by iron oxide

Glauconite: dark green mineral that is an indicator of a continental shelf marine depositional environment

Heavy Minerals: typically dark colored minerals found in sands; due to their specific gravity being higher than standard, they tend to concentrate areas by wave or stream transport

Historically Mines/Historic Site: a known site that was once mined for resources but is no longer operational

Reclamation/Reclaimed: the process of restoring previously mined land to a minimize environmental hazards

Overburden: a layer of soil, sediment, and/or clay that sits above a primary deposit and must be removed in order to access aggregate resources

MRV Site: a Mineral Resources of Virginia site that has known mineral occurrences, and/or mines

Primary Deposit: the material excavated for use by mine sites in aggregate production

Geological Units

Al (*alluvium*): flood-plain deposits consisting of pebbly sand, sand, and clay interbedded with silt and fine sand.

QTu: Quaternary and Tertiary surficial deposits, undifferentiated

Qts (*Tabb Formation, Sedgefield Member*): gray to yellow, fine- to coarse-grained sand (slightly clayey in places) grading downward to pebbly sand.

Qsh (*Shirley Formation*): gray to brown gravel, fine- to coarse-grained sand, silt, and clay. Weathered, gold-colored, biotite grains are common with up to 5% heavy minerals.

Qcc (*Charles City Formation*): yellowish red to brown, clayey fine- to medium-grained sand grading downward to sand and pebbles.

QTw (*Windsor Formation*): red to yellow, yellowish brown, fine- to coarse-grained pebbly sand.

Qbc (*Bacons Castle Formation*): yellowish-brown, fine- to medium-grained sand coarsening downward to granule sand with pebbles and cobbles.

Tc (*Calvert Formation*): dark blue to dark greenish-gray, silty to clayey fine- to medium-grained sand to sandy clayey silt.

Individuals in Field:

- DWH: David Hawkins, Virginia Energy
- LNS: Lauren Schmidt, Virginia Energy
- VML: Virginia “Jennie” Latane, Virginia Energy

APPENDIX B

Grainsize Records

Appendix B

Grainsize Data

Sieve Analysis Results

Repository ID	Alternate ID	Total Amount of Sample Collected (g)	Dry Bulk Split Weight (g)	%Gravel (≥2mm)	%Sand (1mm - 2mm)	%Sand (0.063 - 1mm)	%Material finer than 0.075 mm	%Material finer than 0.063 mm
R-12813	90473AB_1	1150	500	9.00%	13.80%	62.00%	15.80%	15.40%
R-12814	90473AB_2	838	500	3.80%	6.60%	78.40%	14.40%	13.40%
R-12815	90474AA_1	323	200	0.50%	4.00%	63.50%	41.00%	34.00%
R-12816	90474AA_2	1213	500	1.68%	23.80%	55.80%	19.20%	19.00%
R-12817	90474AA_3	1000	500	1.60%	11.20%	58.40%	30.00%	29.60%
R-12818	90474AA_4	1270	500	2.70%	20.90%	62.28%	12.88%	12.36%
R-12819	13215AB_1	1408	500	0.80%	8.00%	75.40%	17.80%	17.20%
R-12820	13215AB_2	1773	500	2.20%	8.80%	82.40%	7.00%	6.80%
R-12821	13215AB_3	2057	500	21.40%	22.00%	55.00%	2.00%	1.80%
R-12822	13215AB_4	1602	500	4.00%	11.00%	81.00%	4.40%	4.20%
R-12824	90451AA_1	1104	500	2.40%	4.20%	63.20%	35.20%	33.40%
R-12825	90451AA_2	1737	500	5.20%	13.20%	72.80%	9.20%	9.00%
R-12826	90451AA_3	1474	500	10.60%	11.20%	61.20%	18.60%	18.00%
R-12827	90490AA_1	1561	500	4.00%	8.80%	73.40%	14.60%	14.00%
R-12828	90490AA_2	1527	500	4.80%	6.60%	57.40%	34.20%	31.60%
R-12829	90490AA_3	1622	500	31.00%	14.60%	48.20%	7.00%	6.40%
R-12830	90490AA_4	1743	500	10.00%	10.00%	70.60%	10.80%	9.60%
R-12831	90490AA_5	1277	500	3.80%	2.20%	68.20%	30.00%	28.20%
R-12832	13889AD_1	927	500	0.20%	0.20%	85.00%	16.80%	15.00%
R-12833	13889AD_2	1605	500	33.40%	14.60%	35.90%	16.30%	16.20%
R-12834	13889AD_3	1248	500	0.20%	0.20%	80.80%	24.20%	21.80%
R-12835	13889AD_4	1206	500	17.80%	5.40%	58.00%	21.60%	20.20%
R-12836	13889AD_5	1613	500	0.40%	1.00%	87.00%	12.60%	11.80%
R-12837	90367AA_1	1167	500	50.80%	11.40%	29.60%	9.60%	9.00%
R-12838	90367AA_2	811	500	16.80%	2.60%	54.20%	30.20%	28.80%
R-12839	90367AA_3	1520	500	42.20%	2.40%	30.60%	27.00%	26.20%
R-12840	90367AA_4	897	500	30.20%	3.00%	48.40%	20.80%	20.00%
R-12841	90562AA_1	2042	500	29.80%	13.40%	55.40%	1.60%	1.40%
R-12842	90562AA_2	1809	500	9.60%	29.00%	61.20%	0.20%	0.20%
R-12843	90562AA_3	1927	500	37.40%	37.20%	22.20%	3.20%	3.20%
R-12844	90562AA_4	2097	500	41.26%	17.68%	39.58%	1.44%	1.44%
R-12845	90562AA_5	1920	500	27.50%	25.26%	46.56%	0.80%	0.80%
R-12846	90562AA_6	1684	500	75.30%	7.46%	16.28%	1.08%	1.08%
R-12847	08776AB_1	1405	500	1.82%	6.44%	76.52%	16.68%	16.00%
R-12848	08776AB_2	1693	500	1.52%	7.34%	87.22%	4.08%	3.96%
R-12849	13771AC_1	1359	500	0.00%	0.34%	70.96%	33.22%	31.40%
R-12850	13771AC_2	1228	500	1.42%	4.04%	67.96%	28.40%	27.48%
R-12851	13771AC_3	1210	500	3.32%	13.38%	73.36%	10.68%	10.24%
R-12852	13771AC_4	1089	500	0.06%	3.70%	73.54%	23.44%	23.16%
R-12853	13771AC_5	1729	500	0.08%	0.78%	98.26%	0.86%	0.80%
R-12854	13771AC_6	1665	500	0.02%	1.76%	96.24%	2.04%	2.00%
R-12855	13771AC_7	1147	500	0.02%	0.28%	79.02%	22.82%	21.60%
R-12856	13771AC_8	1390	500	0.18%	2.08%	64.50%	34.62%	34.00%
R-12857	13771AC_9	1350	500	1.34%	6.74%	80.04%	12.88%	12.36%
R-12858	13867AB_1	1704	500	11.36%	19.14%	60.02%	9.72%	9.56%
R-12859	13867AB_2	1392	500	16.66%	38.48%	39.80%	5.40%	5.28%

Repository ID	Alternate ID	Total Amount of Sample Collected (g)	Dry Bulk Split Weight (g)	%Gravel (≥2mm)	%Sand (1mm - 2mm)	%Sand (0.063 - 1mm)	%Material finer than 0.075 mm	%Material finer than 0.063 mm
R-12860	13867AB_3	1934	500	1.08%	8.46%	82.90%	8.14%	7.68%
R-12861	13867AB_4	1956	500	7.38%	10.40%	80.52%	1.76%	1.60%
R-12862	13867AB_5	1506	500	0.42%	1.00%	92.62%	7.20%	6.36%
R-12863	90347AA_1	1732	500	0.00%	0.08%	95.56%	4.32%	4.32%
R-12864	90347AA_2	1826	500	0.84%	7.88%	87.22%	4.20%	4.12%
R-12865	90347AA_3	1516	500	1.30%	3.04%	87.72%	8.44%	8.32%
R-12866	90397AA_1	1333	500	0.84%	2.74%	82.84%	14.42%	14.08%
R-12867	90413AA_1	1356	500	0.00%	0.30%	89.82%	11.00%	10.60%
R-12868	90413AA_2	1392	500	0.08%	0.22%	85.78%	15.96%	15.44%
R-12869	90413AA_3	1342	500	8.56%	3.44%	70.84%	18.80%	18.28%
R-12870	90413AA_4	1273	500	0.34%	1.44%	88.14%	11.30%	10.96%
R-12871	90413AA_5	1510	500	6.12%	11.14%	68.34%	16.38%	15.52%
R-12872	90560AA_1	1393	500	9.28%	8.48%	65.14%	18.24%	17.84%
R-12873	90560AA_2	1716	500	1.70%	2.42%	71.66%	24.94%	24.64%
R-12874	06930AB_1	1898	500	3.40%	12.16%	79.18%	5.30%	5.24%
R-12875	06930AB_2	1528	500	0.52%	2.04%	68.12%	31.48%	30.76%
R-12876	12583AC_1	1773	500	8.18%	9.42%	70.76%	12.18%	11.96%
R-12877	12583AC_2	1414	500	2.20%	5.18%	91.14%	1.50%	1.48%
R-12878	12583AC_3	1703	500	4.12%	6.04%	73.56%	16.90%	16.72%
R-12879	12583AC_4	1909	500	2.18%	4.26%	79.36%	14.54%	14.40%
R-12880	90326AB_1	1304	500	2.20%	6.18%	68.16%	25.22%	24.60%
R-12881	90326AB_2	1465	500	0.22%	1.70%	94.60%	3.62%	3.56%
R-12882	90326AB_3	1555	500	2.06%	5.78%	89.18%	3.24%	3.12%
R-12883	90348AB_1	1556	500	6.12%	6.94%	83.94%	3.44%	3.24%
R-12884	90348AB_2	2033	500	17.66%	19.62%	54.84%	7.90%	7.88%
R-12885	13778AF_1	1770	500	4.02%	13.40%	76.52%	6.14%	6.04%
R-12886	13778AF_2	1547	500	1.06%	3.74%	82.32%	14.58%	13.96%
R-12887	90319AA_1	1336	500	0.00%	0.46%	90.34%	9.64%	9.44%
R-12888	90319AA_2	1679	500	4.60%	7.96%	65.22%	23.16%	22.64%
R-12889	06988AC_1	1557	500	0.04%	2.12%	94.54%	3.76%	3.40%
R-12890	06988AC_2	1508	500	2.02%	1.70%	87.36%	9.44%	9.20%
R-12891	10018AB_1	1173	500	1.16%	6.82%	68.20%	24.88%	24.44%
R-12892	11273AA_1	1654	500	0.22%	2.06%	92.32%	6.08%	5.70%
R-12893	13118AA_1	1296	500	0.92%	3.92%	81.80%	15.36%	14.78%
R-12894	13118AA_2	1546	500	0.96%	12.54%	83.92%	2.76%	2.70%
R-12895	90466AC_1	1879	500	7.74%	15.06%	65.50%	11.94%	11.80%
R-12896	90466AC_2	1252	500	0.44%	1.50%	65.06%	36.40%	35.52%
R-12897	90466AC_3	1517	500	6.08%	13.08%	72.56%	8.54%	8.40%
R-12898	90466AC_4	1715	500	4.72%	15.70%	74.94%	5.04%	4.88%

Appendix B

Grainsize Data

Sieve Analysis Results

Percent Material Retained on Sieves (#4 through #230)

Percent Material Passed through #230 Sieve

Repository ID	Alternate ID	Sieve # / Phi Size (Φ) / millimeter / micrometer	4 / -2 / 4.75 / 4750	10 / -1 / 2 / 2000	18 / 0 / 1 / 1000	35 / 1 / 0.5 / 500	60 / 2 / 0.25 / 250	80 / 2.5 / 0.1777 / 177.7	100 / 2.75 / 0.149 / 149	120 / 3 / 0.125 / 125	200 / 3.75 / 0.075 / 75	230 / 4 / 0.063 / 63	Silt+Clay / >4 / <0.063 / <63
R-12813	90473AB_1	--	2.40%	6.60%	13.80%	32.20%	23.20%	3.20%	0.60%	0.80%	1.60%	0.40%	15.40%
R-12814	90473AB_2	--	1.00%	2.80%	6.60%	27.60%	32.80%	7.20%	2.80%	2.80%	4.20%	1.00%	13.40%
R-12815	90474AA_1	--	0.00%	0.50%	4.00%	13.50%	17.00%	8.50%	4.00%	5.00%	8.50%	7.00%	34.00%
R-12816	90474AA_2	--	0.08%	1.60%	23.80%	43.00%	10.40%	1.00%	0.40%	0.40%	0.40%	0.20%	19.00%
R-12817	90474AA_3	--	0.20%	1.40%	11.20%	36.40%	16.20%	2.20%	0.80%	0.80%	1.60%	0.40%	29.60%
R-12818	90474AA_4	--	0.12%	2.58%	20.90%	39.68%	15.84%	1.60%	0.90%	0.80%	2.94%	0.52%	12.36%
R-12819	13215AB_1	--	0.00%	0.80%	8.00%	40.80%	22.60%	4.80%	1.80%	2.00%	2.80%	0.60%	17.20%
R-12820	13215AB_2	--	0.40%	1.80%	8.80%	16.40%	12.80%	8.80%	9.00%	23.60%	11.60%	0.20%	6.80%
R-12821	13215AB_3	--	5.00%	16.40%	22.00%	23.80%	8.00%	3.80%	4.40%	10.60%	4.20%	0.20%	1.80%
R-12822	13215AB_4	--	0.60%	3.40%	11.00%	18.40%	13.00%	9.80%	9.40%	23.60%	6.60%	0.20%	4.20%
R-12824	90451AA_1	--	0.60%	1.80%	4.20%	11.40%	20.80%	11.20%	4.20%	5.20%	8.60%	1.80%	33.40%
R-12825	90451AA_2	--	1.20%	4.00%	13.20%	41.20%	27.60%	2.60%	0.40%	0.40%	0.40%	0.20%	9.00%
R-12826	90451AA_3	--	4.20%	6.40%	11.20%	23.40%	26.00%	5.20%	1.40%	1.60%	3.00%	0.60%	18.00%
R-12827	90490AA_1	--	0.60%	3.40%	8.80%	21.00%	28.40%	12.20%	3.80%	3.60%	3.80%	0.60%	14.00%
R-12828	90490AA_2	--	1.60%	3.20%	6.60%	13.80%	17.00%	5.60%	2.60%	4.00%	11.80%	2.60%	31.60%
R-12829	90490AA_3	--	16.00%	15.00%	14.60%	17.20%	20.80%	4.00%	1.40%	1.60%	2.60%	0.60%	6.40%
R-12830	90490AA_4	--	3.80%	6.20%	10.00%	15.80%	28.00%	10.00%	3.60%	4.40%	7.60%	1.20%	9.60%
R-12831	90490AA_5	--	1.80%	2.00%	2.20%	11.00%	27.00%	10.40%	3.40%	4.20%	10.40%	1.80%	28.20%
R-12832	13889AD_1	--	0.00%	0.20%	0.20%	0.80%	6.20%	23.60%	9.20%	17.40%	26.00%	1.80%	15.00%
R-12833	13889AD_2	--	22.80%	10.60%	14.60%	18.20%	15.80%	1.30%	0.20%	0.20%	0.10%	0.10%	16.20%
R-12834	13889AD_3	--	0.20%	0.00%	0.20%	1.20%	9.20%	16.40%	4.80%	7.00%	39.80%	2.40%	21.80%
R-12835	13889AD_4	--	13.60%	4.20%	5.40%	11.20%	18.00%	6.60%	3.40%	5.60%	11.80%	1.40%	20.20%
R-12836	13889AD_5	--	0.20%	0.20%	1.00%	5.20%	15.00%	15.40%	8.60%	21.80%	20.20%	0.80%	11.80%
R-12837	90367AA_1	--	35.60%	15.20%	11.40%	9.00%	9.80%	4.00%	1.40%	1.80%	3.00%	0.60%	9.00%
R-12838	90367AA_2	--	13.60%	3.20%	2.60%	8.60%	18.80%	9.60%	3.60%	4.60%	7.60%	1.40%	28.80%
R-12839	90367AA_3	--	38.40%	3.80%	2.40%	6.00%	10.60%	5.00%	2.00%	2.40%	3.80%	0.80%	26.20%
R-12840	90367AA_4	--	28.40%	1.80%	3.00%	9.00%	17.60%	8.80%	3.00%	3.40%	5.80%	0.80%	20.00%
R-12841	90562AA_1	--	21.60%	8.20%	13.40%	34.40%	17.60%	2.80%	0.10%	0.10%	0.20%	0.20%	1.40%
R-12842	90562AA_2	--	1.00%	8.60%	29.00%	41.40%	17.80%	1.80%	0.10%	0.10%	0.00%	0.00%	0.20%
R-12843	90562AA_3	--	1.80%	35.60%	37.20%	12.60%	6.60%	2.20%	0.60%	0.20%	0.00%	0.00%	3.20%
R-12844	90562AA_4	--	25.10%	16.16%	17.68%	23.94%	14.32%	1.28%	0.02%	0.00%	0.02%	0.00%	1.44%
R-12845	90562AA_5	--	14.92%	12.58%	25.26%	33.88%	11.64%	1.02%	0.00%	0.00%	0.02%	0.00%	0.80%
R-12846	90562AA_6	--	57.06%	18.24%	7.46%	10.14%	5.62%	0.44%	0.00%	0.00%	0.08%	0.00%	1.08%
R-12847	08776AB_1	--	0.48%	1.34%	6.44%	21.66%	36.40%	8.82%	2.64%	2.00%	4.32%	0.68%	16.00%
R-12848	08776AB_2	--	0.28%	1.24%	7.34%	28.22%	50.04%	6.18%	1.28%	0.52%	0.86%	0.12%	3.96%
R-12849	13771AC_1	--	0.00%	0.00%	0.34%	1.38%	6.08%	13.46%	7.92%	11.94%	28.36%	1.82%	31.40%
R-12850	13771AC_2	--	0.34%	1.08%	4.04%	11.84%	28.46%	13.70%	3.74%	2.76%	6.54%	0.92%	27.48%
R-12851	13771AC_3	--	0.48%	2.84%	13.38%	31.28%	30.98%	4.28%	1.42%	1.14%	3.82%	0.44%	10.24%
R-12852	13771AC_4	--	0.00%	0.06%	3.70%	14.64%	32.06%	15.92%	5.44%	3.14%	2.06%	0.28%	23.16%
R-12853	13771AC_5	--	0.00%	0.08%	0.78%	9.88%	54.92%	20.54%	7.12%	4.14%	1.60%	0.06%	0.80%
R-12854	13771AC_6	--	0.00%	0.02%	1.76%	27.26%	51.06%	12.30%	3.36%	1.60%	0.62%	0.04%	2.00%
R-12855	13771AC_7	--	0.00%	0.02%	0.28%	1.86%	10.26%	24.28%	9.24%	13.06%	19.10%	1.22%	21.60%
R-12856	13771AC_8	--	0.00%	0.18%	2.08%	10.80%	28.50%	9.78%	5.10%	3.54%	6.16%	0.62%	34.00%
R-12857	13771AC_9	--	0.00%	1.34%	6.74%	20.38%	33.02%	11.88%	5.22%	3.30%	5.72%	0.52%	12.36%
R-12858	13867AB_1	--	3.56%	7.80%	19.14%	23.68%	31.08%	2.94%	0.82%	0.58%	0.76%	0.16%	9.56%
R-12859	13867AB_2	--	0.64%	16.02%	38.48%	19.74%	14.28%	3.10%	1.00%	0.56%	1.00%	0.12%	5.28%

Repository ID	Alternate ID	Sieve #	4	10	18	35	60	80	100	120	200	230	Silt+Clay
		Phi Size (Φ)	-2	-1	0	1	2	2.5	2.75	3	3.75	4	>4
		millimeter	4.75	2	1	0.5	0.25	0.1777	0.149	0.125	0.075	0.063	<0.063
		micrometer	4750	2000	1000	500	250	177.7	149	125	75	63	<63
R-12860	13867AB_3	--	0.16%	0.92%	8.46%	27.78%	37.58%	8.76%	3.14%	1.68%	3.50%	0.46%	7.68%
R-12861	13867AB_4	--	2.22%	5.16%	10.40%	19.08%	37.60%	13.52%	4.56%	2.42%	3.18%	0.16%	1.60%
R-12862	13867AB_5	--	0.00%	0.42%	1.00%	2.94%	16.08%	19.98%	19.72%	18.16%	14.90%	0.84%	6.36%
R-12863	90347AA_1	--	0.00%	0.00%	0.08%	24.04%	66.96%	4.04%	0.32%	0.08%	0.12%	0.00%	4.32%
R-12864	90347AA_2	--	0.00%	0.84%	7.88%	26.66%	53.98%	4.18%	1.14%	0.48%	0.70%	0.08%	4.12%
R-12865	90347AA_3	--	0.22%	1.08%	3.04%	8.56%	68.82%	6.56%	1.74%	0.76%	1.16%	0.12%	8.32%
R-12866	90397AA_1	--	0.08%	0.76%	2.74%	13.96%	54.34%	8.54%	2.10%	1.18%	2.38%	0.34%	14.08%
R-12867	90413AA_1	--	0.00%	0.00%	0.30%	1.44%	18.06%	51.28%	8.28%	5.10%	5.26%	0.40%	10.60%
R-12868	90413AA_2	--	0.00%	0.08%	0.22%	0.94%	18.64%	37.10%	15.48%	6.54%	6.56%	0.52%	15.44%
R-12869	90413AA_3	--	5.74%	2.82%	3.44%	8.88%	31.44%	14.26%	5.38%	3.48%	6.88%	0.52%	18.28%
R-12870	90413AA_4	--	0.00%	0.34%	1.44%	2.80%	14.58%	51.50%	7.60%	5.30%	6.02%	0.34%	10.96%
R-12871	90413AA_5	--	1.66%	4.46%	11.14%	21.62%	23.42%	6.54%	4.02%	3.30%	8.58%	0.86%	15.52%
R-12872	90560AA_1	--	3.60%	5.68%	8.48%	22.54%	29.88%	5.36%	2.16%	1.50%	3.30%	0.40%	17.84%
R-12873	90560AA_2	--	0.40%	1.30%	2.42%	9.20%	39.44%	14.66%	3.12%	1.88%	3.06%	0.30%	24.64%
R-12874	06930AB_1	--	0.40%	3.00%	12.16%	37.26%	35.36%	4.80%	0.74%	0.36%	0.60%	0.06%	5.24%
R-12875	06930AB_2	--	0.16%	0.36%	2.04%	10.76%	26.22%	11.34%	5.16%	4.26%	9.66%	0.72%	30.76%
R-12876	12583AC_1	--	2.02%	6.16%	9.42%	14.02%	21.40%	10.00%	7.68%	7.48%	9.96%	0.22%	11.96%
R-12877	12583AC_2	--	0.54%	1.66%	5.18%	24.12%	49.00%	10.34%	3.96%	1.96%	1.74%	0.02%	1.48%
R-12878	12583AC_3	--	1.18%	2.94%	6.04%	10.58%	20.50%	11.40%	9.96%	9.34%	11.60%	0.18%	16.72%
R-12879	12583AC_4	--	0.38%	1.80%	4.26%	11.28%	35.36%	13.34%	5.24%	4.54%	9.46%	0.14%	14.40%
R-12880	90326AB_1	--	0.14%	2.06%	6.18%	13.88%	27.98%	9.82%	4.42%	3.22%	8.22%	0.62%	24.60%
R-12881	90326AB_2	--	0.00%	0.22%	1.70%	34.94%	48.18%	8.38%	1.88%	0.62%	0.54%	0.06%	3.56%
R-12882	90326AB_3	--	0.28%	1.78%	5.78%	15.68%	51.16%	11.68%	4.34%	2.90%	3.30%	0.12%	3.12%
R-12883	90348AB_1	--	1.30%	4.82%	6.94%	13.18%	7.00%	24.28%	18.96%	10.88%	9.44%	0.20%	3.24%
R-12884	90348AB_2	--	1.98%	15.68%	19.62%	29.38%	7.12%	2.70%	4.78%	5.36%	5.48%	0.02%	7.88%
R-12885	13778AF_1	--	0.40%	3.62%	13.40%	50.02%	23.06%	2.14%	0.44%	0.22%	0.54%	0.10%	6.04%
R-12886	13778AF_2	--	0.38%	0.68%	3.74%	19.20%	43.82%	9.20%	3.04%	2.08%	4.36%	0.62%	13.96%
R-12887	90319AA_1	--	0.00%	0.00%	0.46%	1.40%	36.42%	41.62%	6.44%	2.16%	2.10%	0.20%	9.44%
R-12888	90319AA_2	--	0.34%	4.26%	7.96%	18.26%	26.20%	7.34%	3.38%	3.06%	6.46%	0.52%	22.64%
R-12889	06988AC_1	--	0.00%	0.04%	2.12%	15.26%	38.20%	19.60%	9.76%	5.64%	5.72%	0.36%	3.40%
R-12890	06988AC_2	--	0.00%	2.02%	1.70%	4.44%	45.96%	25.40%	6.20%	2.66%	2.46%	0.24%	9.20%
R-12891	10018AB_1	--	0.10%	1.06%	6.82%	20.56%	26.40%	8.38%	4.26%	3.14%	5.02%	0.44%	24.44%
R-12892	11273AA_1	--	0.00%	0.22%	2.06%	10.20%	44.92%	21.20%	7.34%	3.84%	4.44%	0.38%	5.70%
R-12893	13118AA_1	--	0.06%	0.86%	3.92%	13.14%	37.34%	19.12%	4.68%	2.36%	4.58%	0.58%	14.78%
R-12894	13118AA_2	--	0.00%	0.96%	12.54%	44.44%	36.38%	2.00%	0.48%	0.18%	0.38%	0.06%	2.70%
R-12895	90466AC_1	--	1.40%	6.34%	15.06%	28.02%	28.82%	5.14%	1.46%	0.74%	1.18%	0.14%	11.80%
R-12896	90466AC_2	--	0.12%	0.32%	1.50%	8.96%	25.20%	10.06%	4.68%	4.32%	10.96%	0.88%	35.52%
R-12897	90466AC_3	--	0.70%	5.38%	13.08%	32.40%	34.22%	3.16%	0.96%	0.50%	1.18%	0.14%	8.40%
R-12898	90466AC_4	--	0.20%	4.52%	15.70%	33.60%	33.58%	4.88%	1.14%	0.58%	1.00%	0.16%	4.88%

Appendix B

Grainsize Data

Sieve Analysis Results

Texture Data for Sand and Gravel Portion

(excluding material finer than 63 microns)

GRADISTAT SOFTWARE

Note: *Sample statistics apply only to the sieved sand and gravel portions of the bulk sample; therefore, specific textural and sorting characteristics should only be evaluated for unimodal sample types per the Gradistat Software.*

SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12813** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Coarse Sand

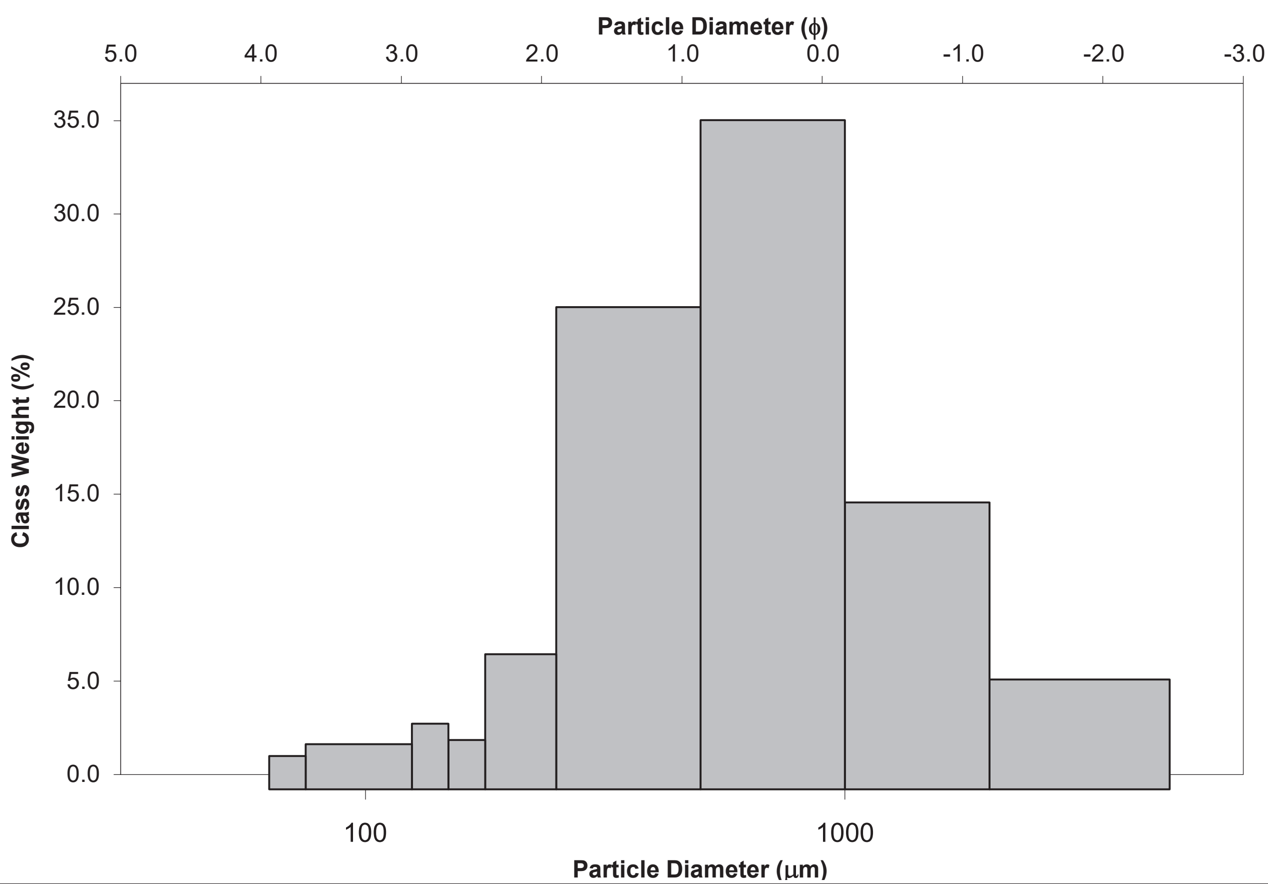
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	264.4	-1.098
MEDIAN or D_{50}:	655.8	0.609
D_{90}:	2141.1	1.919
(D_{90} / D_{10}):	8.096	-1.747
$(D_{90} - D_{10})$:	1876.6	3.017
(D_{75} / D_{25}):	2.802	-11.822
$(D_{75} - D_{25})$:	697.0	1.487

GRAIN SIZE DISTRIBUTION

GRAVEL:	10.6%	COARSE SAND:	38.0%
SAND:	89.4%	MEDIUM SAND:	27.4%
MUD:	0.0%	FINE SAND:	5.4%
		V FINE SAND:	2.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	4.4%	FINE SILT:	0.0%
V FINE GRAVEL:	6.2%	V FINE SILT:	0.0%
V COARSE SAND:	16.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	906.9	540.8	0.605	684.7	0.546	Coarse Sand
SORTING (σ):	827.4	3.713	1.092	2.359	1.238	Poorly Sorted
SKEWNESS (Sk):	1.956	-2.975	0.004	0.128	-0.128	Coarse Skewed
KURTOSIS (K):	6.345	15.39	3.247	1.175	1.175	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12814**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

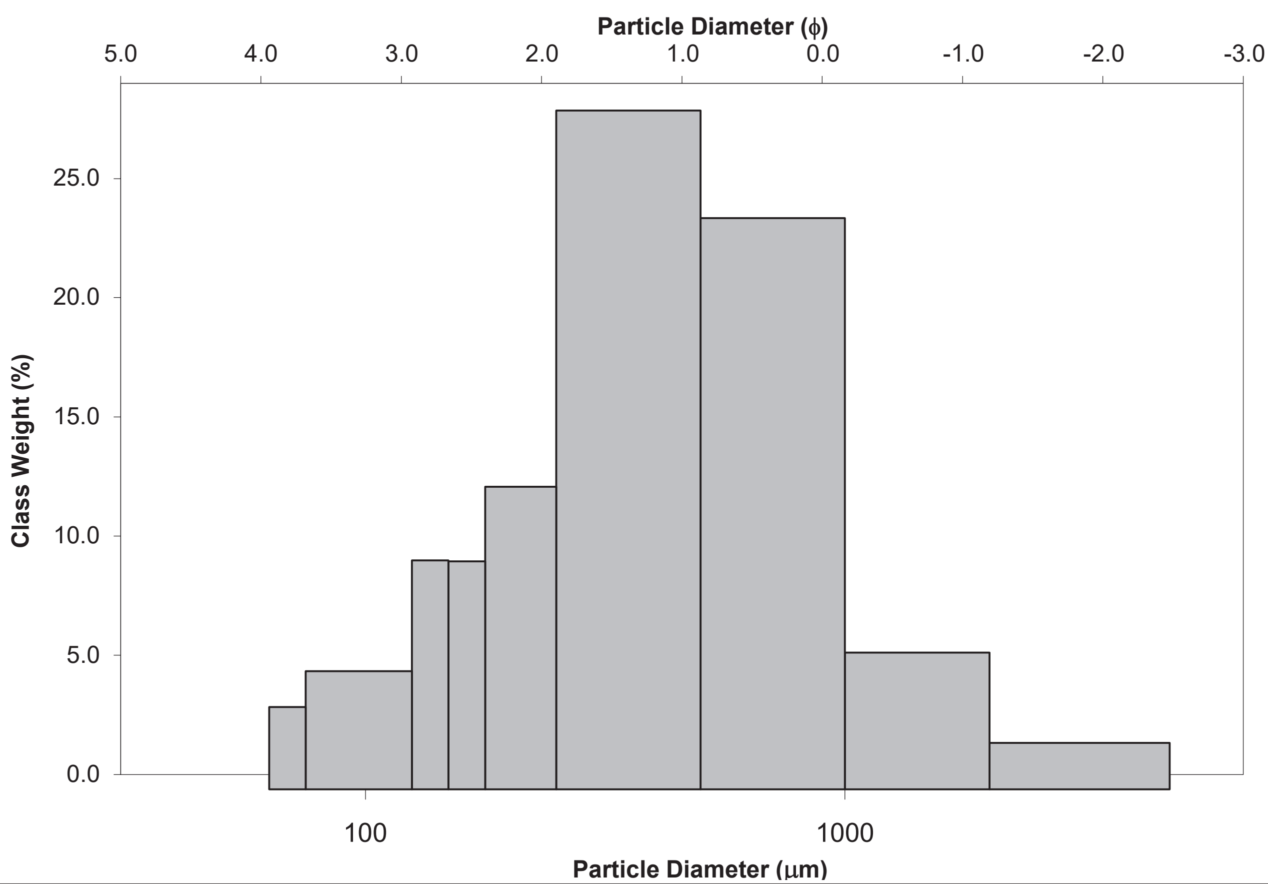
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	157.5	-0.230
MEDIAN or D_{50}:	436.7	1.195
D_{90}:	1173.1	2.667
(D_{90} / D_{10}):	7.449	-11.579
$(D_{90} - D_{10})$:	1015.6	2.897
(D_{75} / D_{25}):	2.722	4.378
$(D_{75} - D_{25})$:	470.3	1.444

GRAIN SIZE DISTRIBUTION

GRAVEL:	4.3%	COARSE SAND:	31.1%
SAND:	95.7%	MEDIUM SAND:	36.9%
MUD:	0.0%	FINE SAND:	14.4%
		V FINE SAND:	5.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.8%	FINE SILT:	0.0%
V FINE GRAVEL:	2.5%	V FINE SILT:	0.0%
V COARSE SAND:	7.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	621.8	408.5	1.179	436.0	1.197	Medium Sand
SORTING (σ):	610.0	2.699	1.100	2.207	1.142	Poorly Sorted
SKEWNESS (Sk):	2.995	-2.340	-0.068	0.018	-0.018	Symmetrical
KURTOSIS (K):	13.49	16.31	3.277	1.145	1.145	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12815** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Trimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

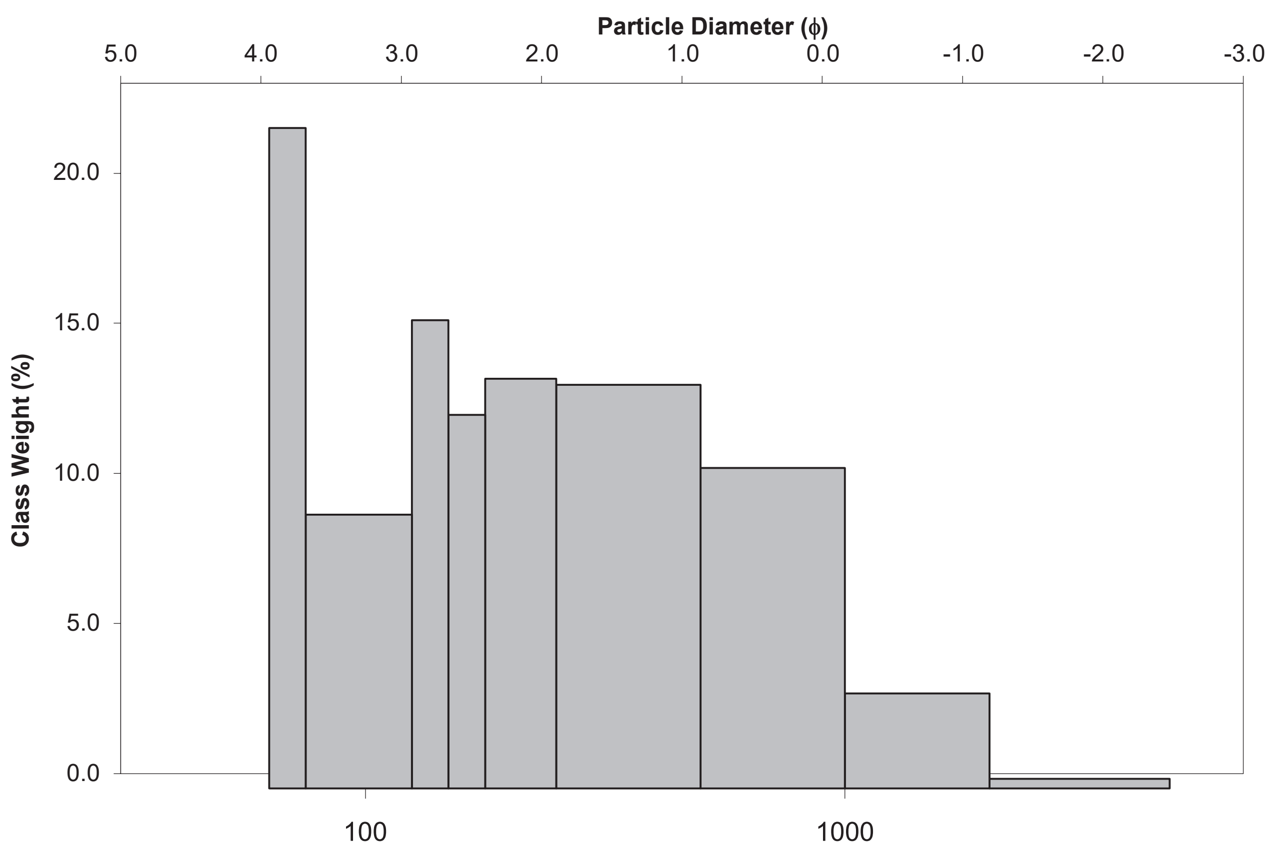
	μm	ϕ
MODE 1:	69.00	3.863
MODE 2:	137.0	2.873
MODE 3:	213.9	2.246
D_{10}:	74.63	0.170
MEDIAN or D_{50}:	260.4	1.941
D_{90}:	888.6	3.744
(D_{90} / D_{10}):	11.91	21.98
$(D_{90} - D_{10})$:	814.0	3.574
(D_{75} / D_{25}):	3.995	3.158
$(D_{75} - D_{25})$:	394.6	1.998

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.7%	COARSE SAND:	19.9%
SAND:	99.3%	MEDIUM SAND:	25.0%
MUD:	0.0%	FINE SAND:	25.7%
		V FINE SAND:	22.8%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.1%	FINE SILT:	0.0%
V FINE GRAVEL:	0.6%	V FINE SILT:	0.0%
V COARSE SAND:	5.9%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	421.7	268.4	1.898	261.0	1.938	Medium Sand
SORTING (σ):	442.2	2.430	1.281	2.566	1.359	Poorly Sorted
SKEWNESS (Sk):	2.980	0.198	-0.198	0.037	-0.037	Symmetrical
KURTOSIS (K):	16.88	2.246	2.246	0.849	0.849	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12816** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

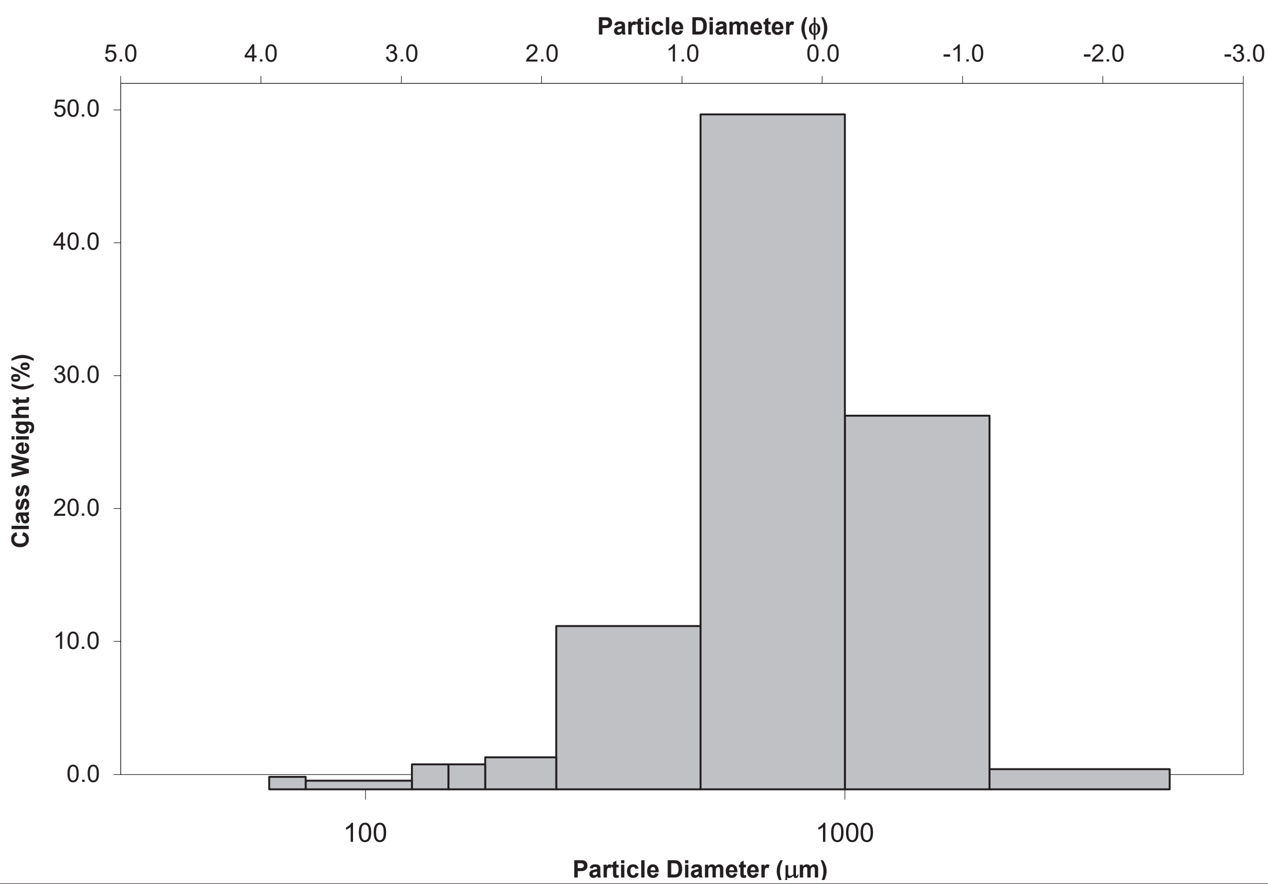
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	366.2	-0.729
MEDIAN or D_{50}:	783.2	0.353
D_{90}:	1657.6	1.449
(D_{90} / D_{10}):	4.526	-1.988
$(D_{90} - D_{10})$:	1291.4	2.178
(D_{75} / D_{25}):	2.059	-3.806
$(D_{75} - D_{25})$:	597.7	1.042

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.1%	COARSE SAND:	52.9%
SAND:	97.9%	MEDIUM SAND:	12.8%
MUD:	0.0%	FINE SAND:	2.2%
		V FINE SAND:	0.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.5%	FINE SILT:	0.0%
V FINE GRAVEL:	1.6%	V FINE SILT:	0.0%
V COARSE SAND:	29.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	955.2	774.5	0.359	826.7	0.275	Coarse Sand
SORTING (σ):	535.8	1.813	0.803	1.735	0.795	Moderately Sorted
SKEWNESS (Sk):	1.826	-1.839	0.599	0.034	-0.034	Symmetrical
KURTOSIS (K):	8.844	18.96	4.648	1.078	1.078	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12817** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

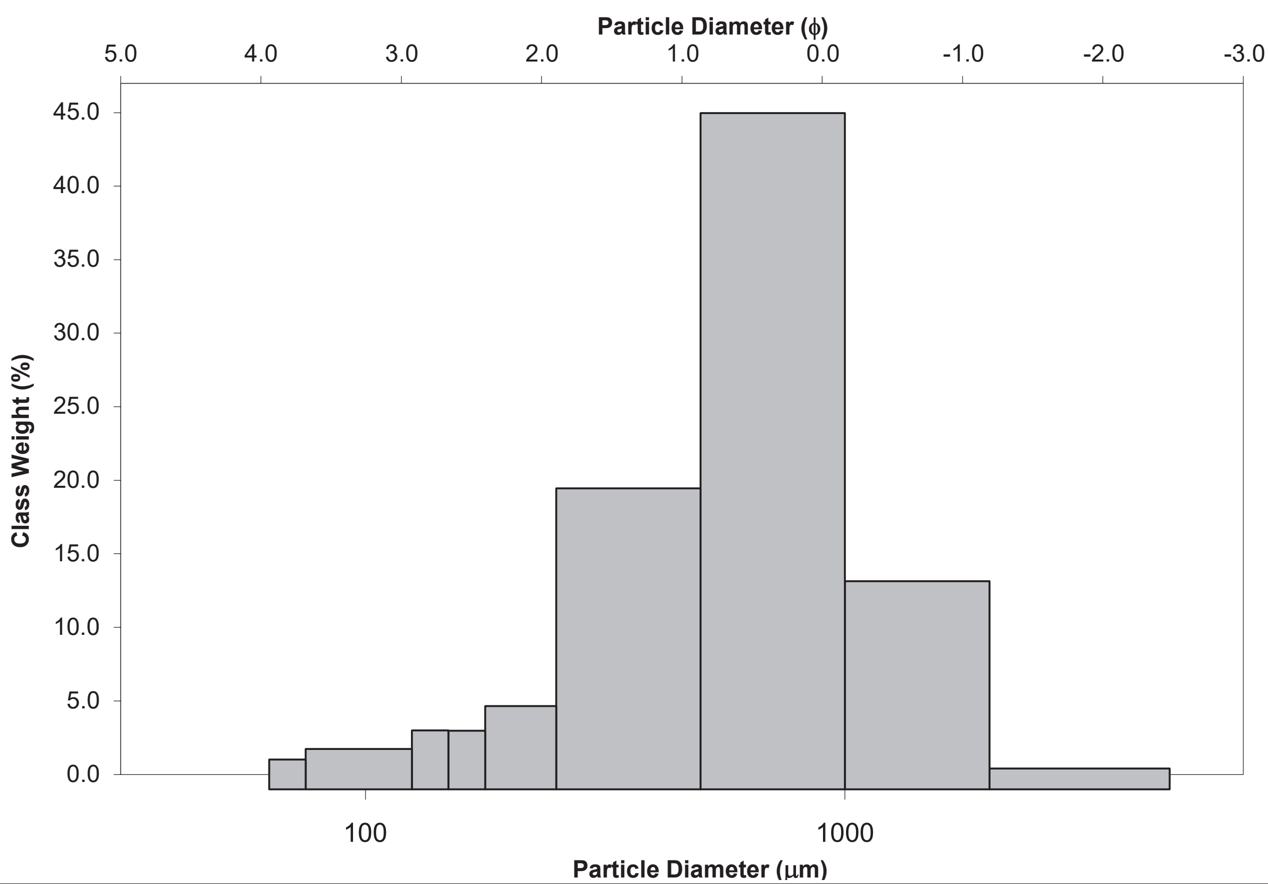
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	264.5	-0.507
MEDIAN or D_{50}:	647.8	0.626
D_{90}:	1421.2	1.919
(D_{90} / D_{10}):	5.373	-3.783
(D_{90} - D_{10}):	1156.7	2.426
(D_{75} / D_{25}):	2.176	9.167
(D_{75} - D_{25}):	491.4	1.122

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.2%	COARSE SAND:	51.1%
SAND:	97.8%	MEDIUM SAND:	22.8%
MUD:	0.0%	FINE SAND:	5.3%
		V FINE SAND:	2.8%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.7%	FINE SILT:	0.0%
V FINE GRAVEL:	1.6%	V FINE SILT:	0.0%
V COARSE SAND:	15.7%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	783.7	597.6	0.715	607.7	0.718	Coarse Sand
SORTING (σ):	534.3	2.084	0.940	1.931	0.950	Moderately Sorted
SKEWNESS (Sk):	2.376	-2.184	0.562	-0.142	0.142	Fine Skewed
KURTOSIS (K):	11.64	18.66	4.150	1.217	1.217	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12818** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

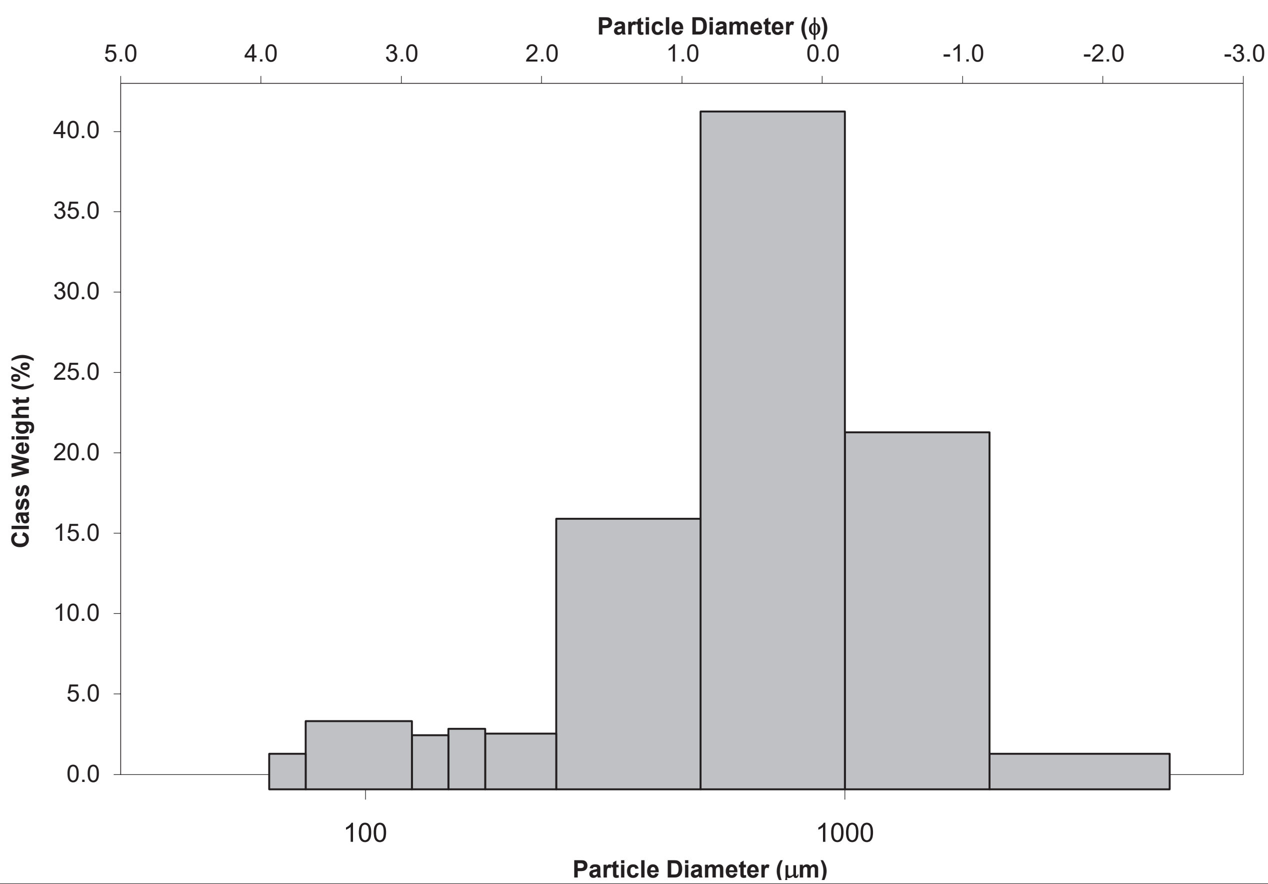
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	270.8	-0.718
MEDIAN or D_{50}:	713.3	0.487
D_{90}:	1645.2	1.885
(D_{90} / D_{10}):	6.075	-2.624
(D_{90} - D_{10}):	1374.4	2.603
(D_{75} / D_{25}):	2.255	-10.512
(D_{75} - D_{25}):	597.3	1.173

GRAIN SIZE DISTRIBUTION

GRAVEL:	3.1%	COARSE SAND:	46.2%
SAND:	96.9%	MEDIUM SAND:	18.4%
MUD:	0.0%	FINE SAND:	3.8%
		V FINE SAND:	4.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.7%	FINE SILT:	0.0%
V FINE GRAVEL:	2.4%	V FINE SILT:	0.0%
V COARSE SAND:	24.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	892.9	666.2	0.572	695.0	0.525	Coarse Sand
SORTING (σ):	616.4	2.128	1.032	2.088	1.062	Poorly Sorted
SKEWNESS (Sk):	1.928	-1.463	0.714	-0.142	0.142	Fine Skewed
KURTOSIS (K):	8.410	10.87	4.014	1.279	1.279	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12819** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

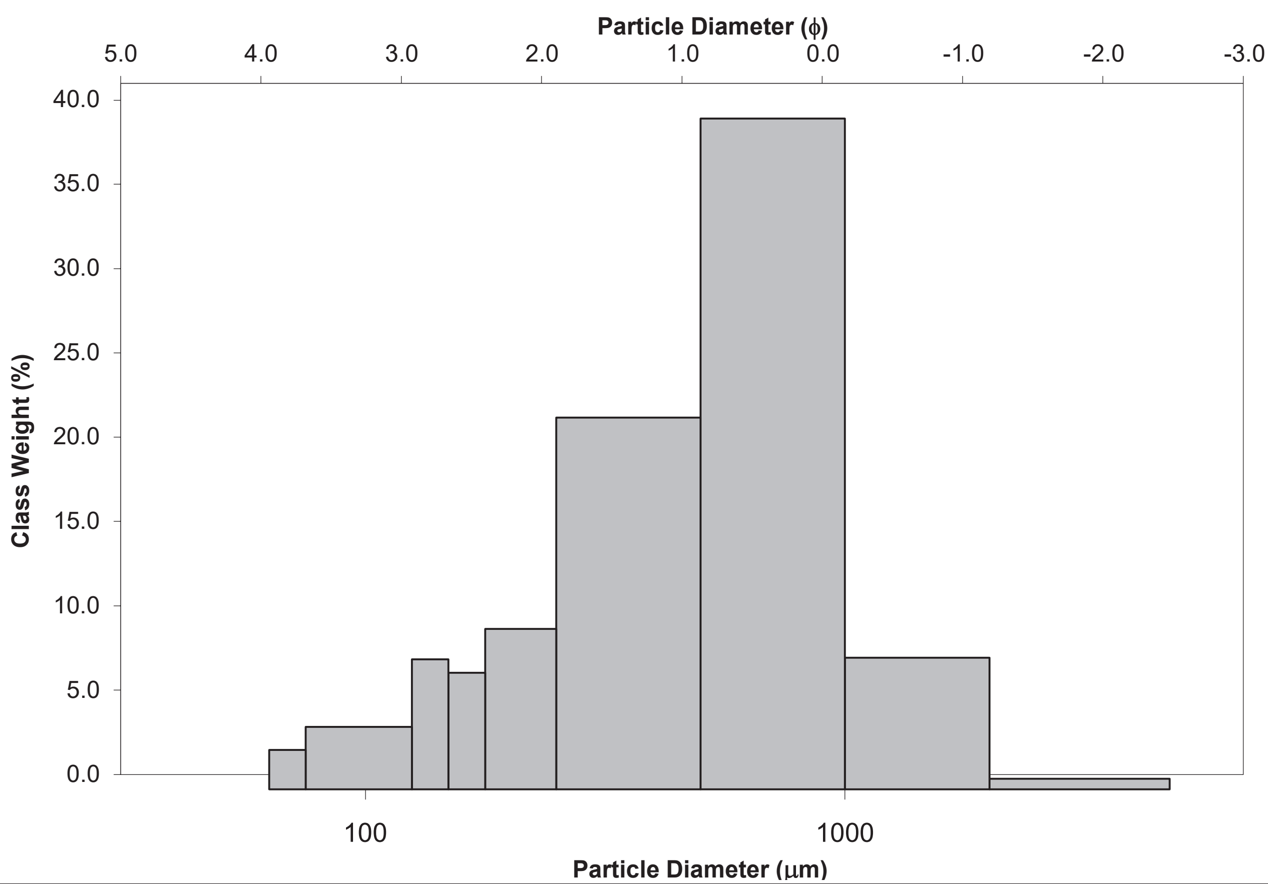
	μm	φ
MODE 1:	750.0	0.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	193.8	-0.047
MEDIAN or D_{50}:	567.9	0.816
D_{90}:	1033.5	2.367
(D_{90} / D_{10}):	5.332	-49.838
$(D_{90} - D_{10})$:	839.7	2.415
(D_{75} / D_{25}):	2.461	5.328
$(D_{75} - D_{25})$:	482.1	1.299

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.0%	COARSE SAND:	48.5%
SAND:	99.0%	MEDIUM SAND:	26.8%
MUD:	0.0%	FINE SAND:	10.2%
		V FINE SAND:	4.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.2%	FINE SILT:	0.0%
V FINE GRAVEL:	0.8%	V FINE SILT:	0.0%
V COARSE SAND:	9.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	661.4	509.2	0.974	515.8	0.955	Coarse Sand
SORTING (σ):	445.9	1.958	0.969	1.974	0.981	Moderately Sorted
SKEWNESS (Sk):	2.497	-0.572	0.572	-0.214	0.214	Fine Skewed
KURTOSIS (K):	14.51	3.546	3.546	1.095	1.095	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12820** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

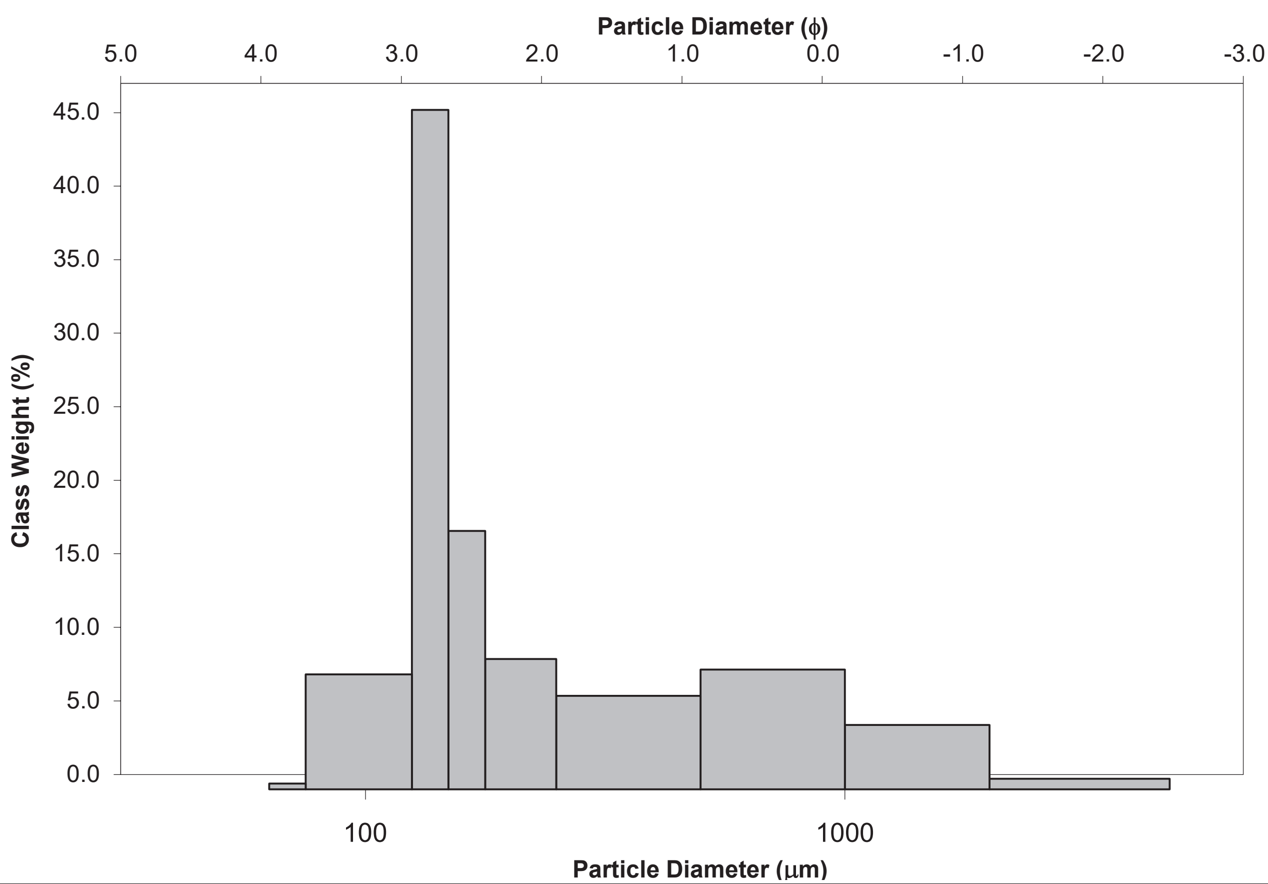
	μm	φ
MODE 1:	137.0	2.873
MODE 2:	750.0	0.500
MODE 3:		
D_{10}:	112.2	-0.189
MEDIAN or D_{50}:	194.3	2.364
D_{90}:	1139.7	3.156
(D_{90} / D_{10}):	10.16	-16.732
$(D_{90} - D_{10})$:	1027.5	3.345
(D_{75} / D_{25}):	4.356	3.819
$(D_{75} - D_{25})$:	457.1	2.123

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.4%	COARSE SAND:	17.6%
SAND:	97.6%	MEDIUM SAND:	13.7%
MUD:	0.0%	FINE SAND:	44.3%
		V FINE SAND:	12.6%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.8%	FINE SILT:	0.0%
V FINE GRAVEL:	1.5%	V FINE SILT:	0.0%
V COARSE SAND:	9.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	472.5	272.8	1.832	276.1	1.857	Medium Sand
SORTING (σ):	582.4	2.667	1.317	2.486	1.314	Poorly Sorted
SKEWNESS (Sk):	2.815	-0.158	-0.712	0.518	-0.518	Very Coarse Skewed
KURTOSIS (K):	12.88	6.433	2.391	0.805	0.805	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12821** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Coarse Sand

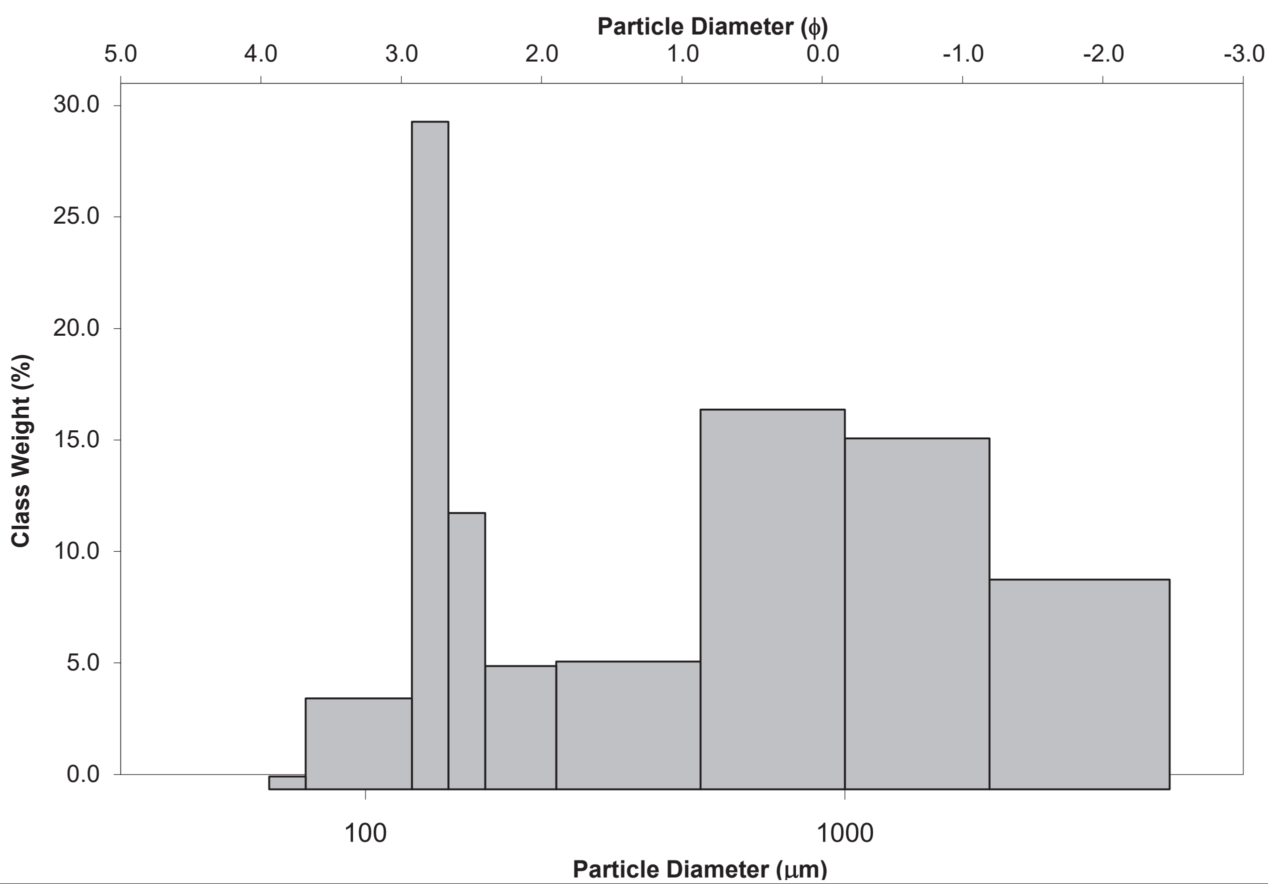
	μm	φ
MODE 1:	137.0	2.873
MODE 2:	750.0	0.500
MODE 3:		
D_{10}:	136.8	-1.880
MEDIAN or D_{50}:	844.6	0.244
D_{90}:	3679.8	2.870
(D_{90} / D_{10}):	26.90	-1.527
$(D_{90} - D_{10})$:	3543.0	4.750
(D_{75} / D_{25}):	6.407	-2.136
$(D_{75} - D_{25})$:	1525.9	2.680

GRAIN SIZE DISTRIBUTION

GRAVEL:	21.7%	COARSE SAND:	24.2%
SAND:	78.3%	MEDIUM SAND:	8.1%
MUD:	0.0%	FINE SAND:	19.1%
		V FINE SAND:	4.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	8.4%	FINE SILT:	0.0%
V FINE GRAVEL:	13.4%	V FINE SILT:	0.0%
V COARSE SAND:	22.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1144.5	489.1	0.525	704.3	0.506	Coarse Sand
SORTING (σ):	1115.6	5.955	1.539	3.534	1.821	Poorly Sorted
SKEWNESS (Sk):	1.078	-1.981	0.337	-0.123	0.123	Fine Skewed
KURTOSIS (K):	2.896	7.658	2.031	0.795	0.795	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12822** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

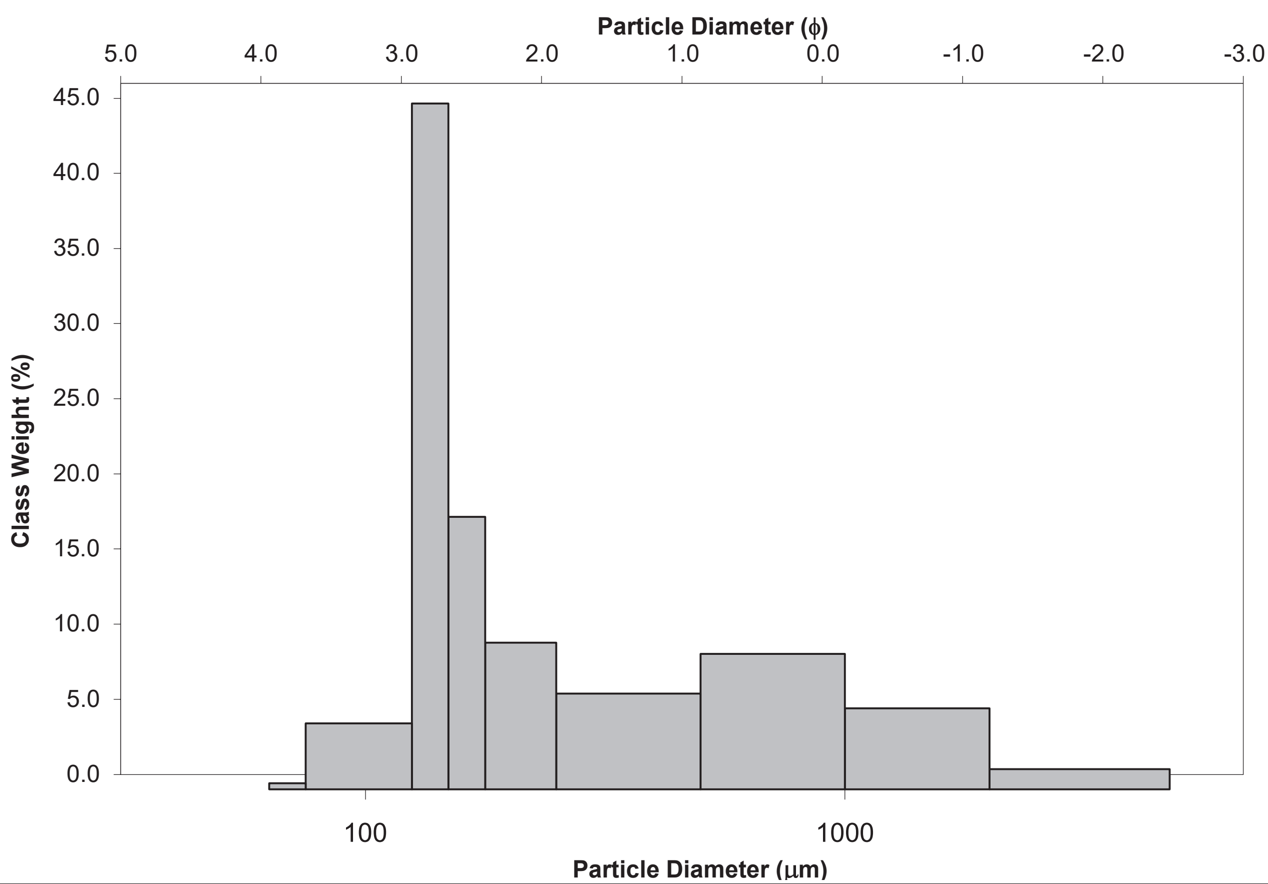
	μm	φ
MODE 1:	137.0	2.873
MODE 2:	750.0	0.500
MODE 3:		
D_{10}:	127.6	-0.491
MEDIAN or D_{50}:	236.4	2.080
D_{90}:	1405.3	2.970
(D_{90} / D_{10}):	11.01	-6.050
$(D_{90} - D_{10})$:	1277.7	3.461
(D_{75} / D_{25}):	5.015	5.756
$(D_{75} - D_{25})$:	570.4	2.326

GRAIN SIZE DISTRIBUTION

GRAVEL:	4.2%	COARSE SAND:	19.2%
SAND:	95.8%	MEDIUM SAND:	13.5%
MUD:	0.0%	FINE SAND:	44.6%
		V FINE SAND:	7.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.3%	FINE SILT:	0.0%
V FINE GRAVEL:	2.8%	V FINE SILT:	0.0%
V COARSE SAND:	11.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	564.5	312.5	1.616	314.4	1.669	Medium Sand
SORTING (σ):	694.3	2.865	1.375	2.551	1.351	Poorly Sorted
SKEWNESS (Sk):	2.516	-0.473	-0.606	0.438	-0.438	Very Coarse Skewed
KURTOSIS (K):	9.959	7.112	2.229	0.731	0.731	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12824** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

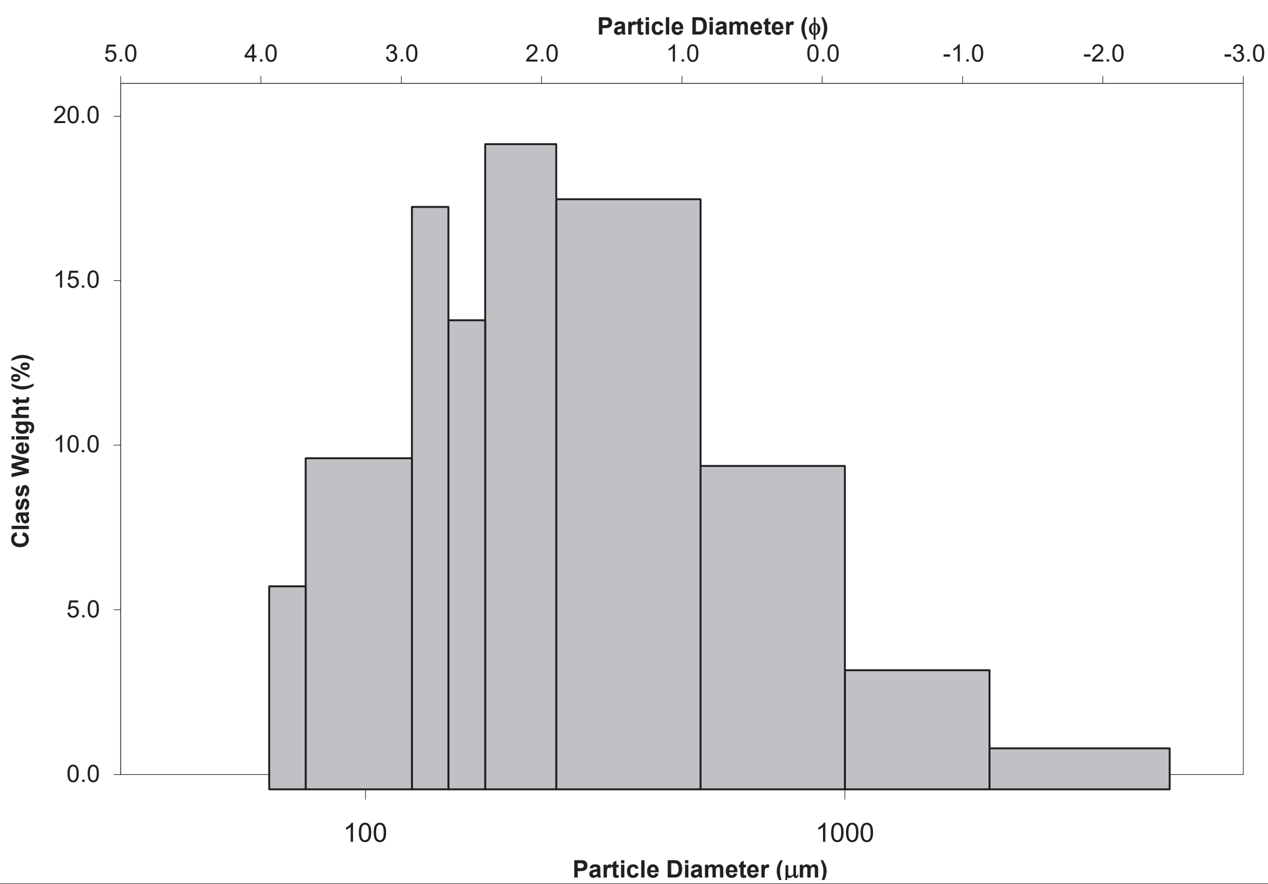
	μm	ϕ
MODE 1:	213.9	2.246
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	102.0	0.033
MEDIAN or D_{50}:	284.7	1.813
D_{90}:	977.2	3.293
(D_{90} / D_{10}):	9.578	98.79
(D_{90} - D_{10}):	875.1	3.260
(D_{75} / D_{25}):	3.211	2.768
(D_{75} - D_{25}):	356.0	1.683

GRAIN SIZE DISTRIBUTION

GRAVEL:	3.4%	COARSE SAND:	16.3%
SAND:	96.6%	MEDIUM SAND:	29.8%
MUD:	0.0%	FINE SAND:	29.5%
		V FINE SAND:	14.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.4%	FINE SILT:	0.0%
V FINE GRAVEL:	2.1%	V FINE SILT:	0.0%
V COARSE SAND:	6.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	480.0	289.4	1.703	302.4	1.725	Medium Sand
SORTING (σ):	586.7	2.709	1.230	2.457	1.297	Poorly Sorted
SKEWNESS (Sk):	3.342	-1.162	-0.486	0.140	-0.140	Coarse Skewed
KURTOSIS (K):	15.90	10.62	2.926	1.055	1.055	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12825** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Coarse Sand

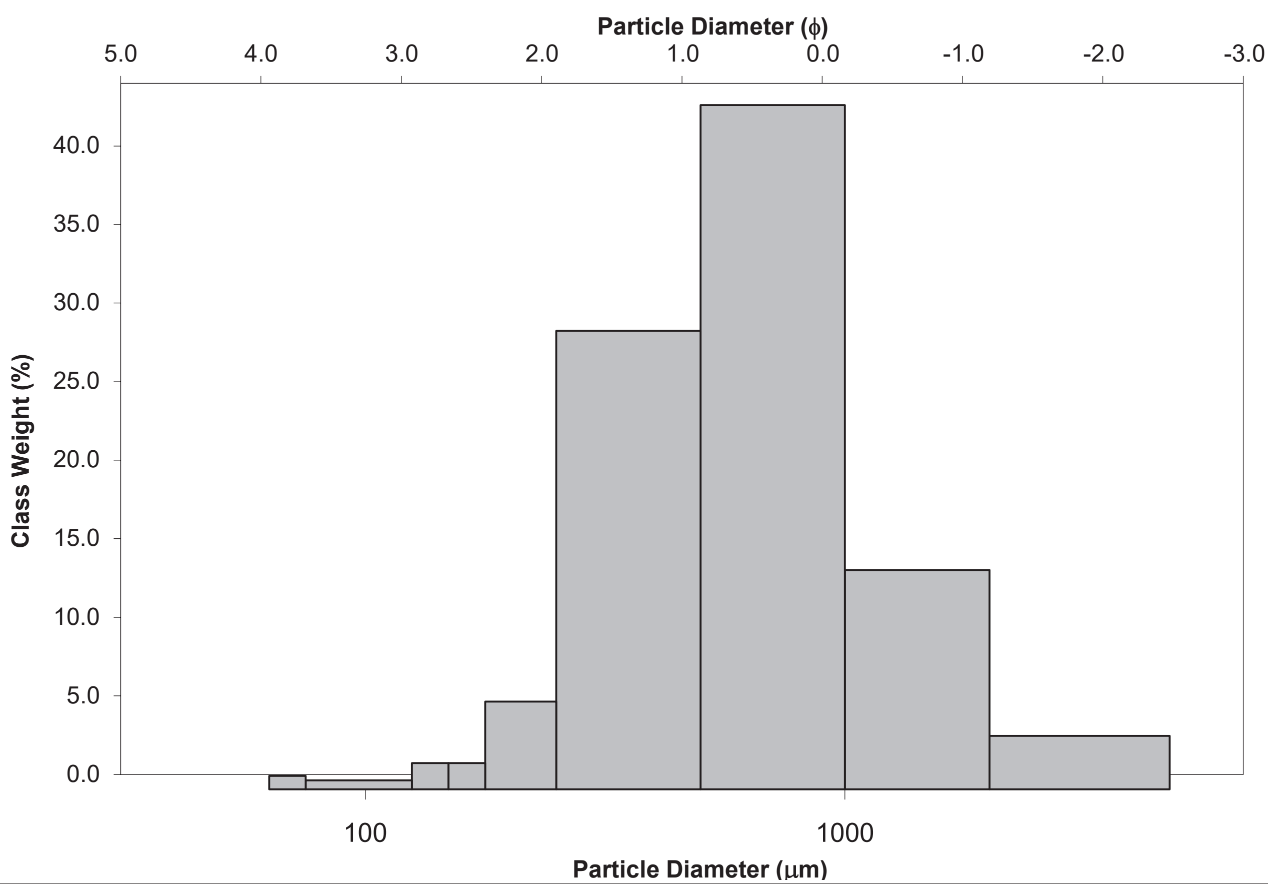
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	284.3	-0.703
MEDIAN or D_{50}:	632.8	0.660
D_{90}:	1627.9	1.814
(D_{90} / D_{10}):	5.726	-2.581
$(D_{90} - D_{10})$:	1343.6	2.518
(D_{75} / D_{25}):	2.317	12.35
$(D_{75} - D_{25})$:	527.8	1.212

GRAIN SIZE DISTRIBUTION

GRAVEL:	5.7%	COARSE SAND:	45.2%
SAND:	94.3%	MEDIUM SAND:	30.3%
MUD:	0.0%	FINE SAND:	3.7%
		V FINE SAND:	0.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	2.2%	FINE SILT:	0.0%
V FINE GRAVEL:	3.5%	V FINE SILT:	0.0%
V COARSE SAND:	14.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	825.4	582.9	0.648	631.7	0.663	Coarse Sand
SORTING (σ):	664.9	2.625	0.905	1.942	0.958	Moderately Sorted
SKEWNESS (Sk):	2.463	-3.591	-0.257	0.083	-0.083	Symmetrical
KURTOSIS (K):	9.769	25.63	3.602	1.075	1.075	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12826** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

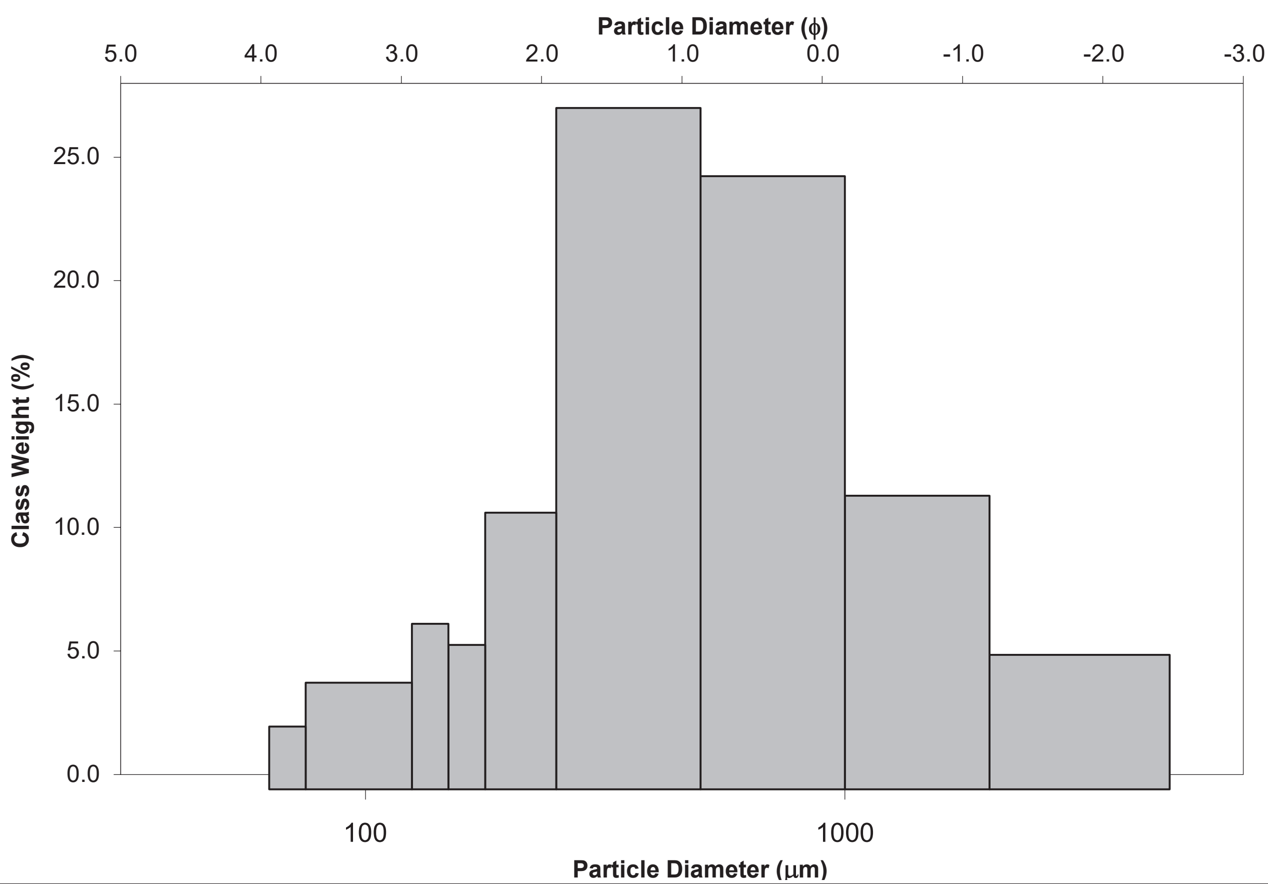
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	198.7	-1.448
MEDIAN or D_{50}:	557.9	0.842
D_{90}:	2729.2	2.331
(D_{90} / D_{10}):	13.74	-1.610
$(D_{90} - D_{10})$:	2530.5	3.780
(D_{75} / D_{25}):	3.362	-17.662
$(D_{75} - D_{25})$:	749.8	1.750

GRAIN SIZE DISTRIBUTION

GRAVEL:	12.8%	COARSE SAND:	28.2%
SAND:	87.2%	MEDIUM SAND:	31.3%
MUD:	0.0%	FINE SAND:	9.9%
		V FINE SAND:	4.3%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	6.6%	FINE SILT:	0.0%
V FINE GRAVEL:	6.2%	V FINE SILT:	0.0%
V COARSE SAND:	13.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	814.5	402.6	0.808	626.4	0.675	Coarse Sand
SORTING (σ):	851.6	5.025	1.212	2.739	1.454	Poorly Sorted
SKEWNESS (Sk):	2.013	-2.412	-0.041	0.189	-0.189	Coarse Skewed
KURTOSIS (K):	6.474	9.930	2.863	1.203	1.203	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12827**   ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted   TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

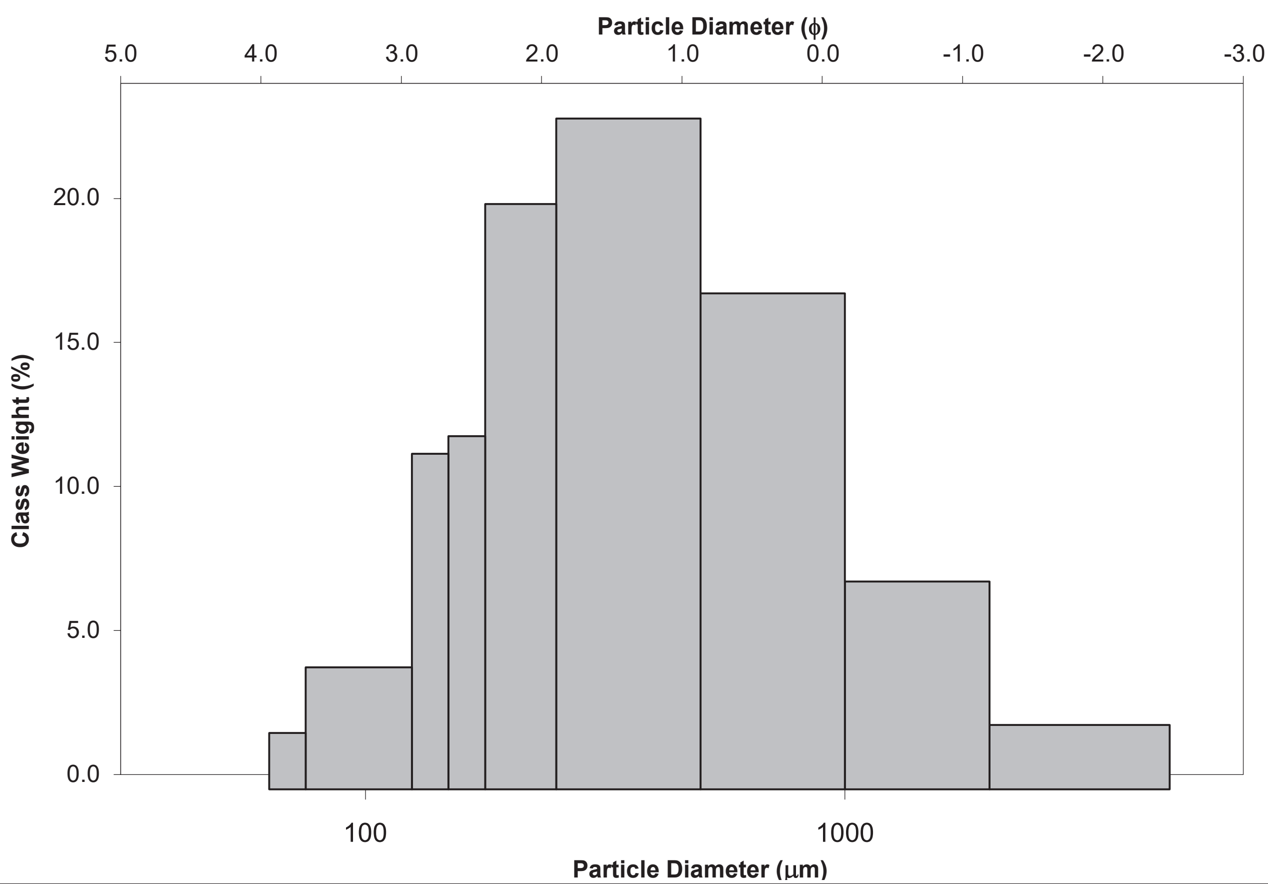
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	153.3	-0.475
MEDIAN or D_{50}:	398.5	1.327
D_{90}:	1389.9	2.705
(D_{90} / D_{10}):	9.064	-5.695
$(D_{90} - D_{10})$:	1236.6	3.180
(D_{75} / D_{25}):	3.209	5.037
$(D_{75} - D_{25})$:	515.7	1.682

GRAIN SIZE DISTRIBUTION

GRAVEL:	4.6%	COARSE SAND:	24.4%
SAND:	95.4%	MEDIUM SAND:	32.9%
MUD:	0.0%	FINE SAND:	22.7%
		V FINE SAND:	5.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.5%	FINE SILT:	0.0%
V FINE GRAVEL:	3.2%	V FINE SILT:	0.0%
V COARSE SAND:	10.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	640.6	406.4	1.230	416.9	1.262	Medium Sand
SORTING (σ):	678.9	2.600	1.177	2.289	1.195	Poorly Sorted
SKEWNESS (Sk):	2.666	-1.420	-0.328	0.117	-0.117	Coarse Skewed
KURTOSIS (K):	10.72	12.43	2.864	0.970	0.970	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12828**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

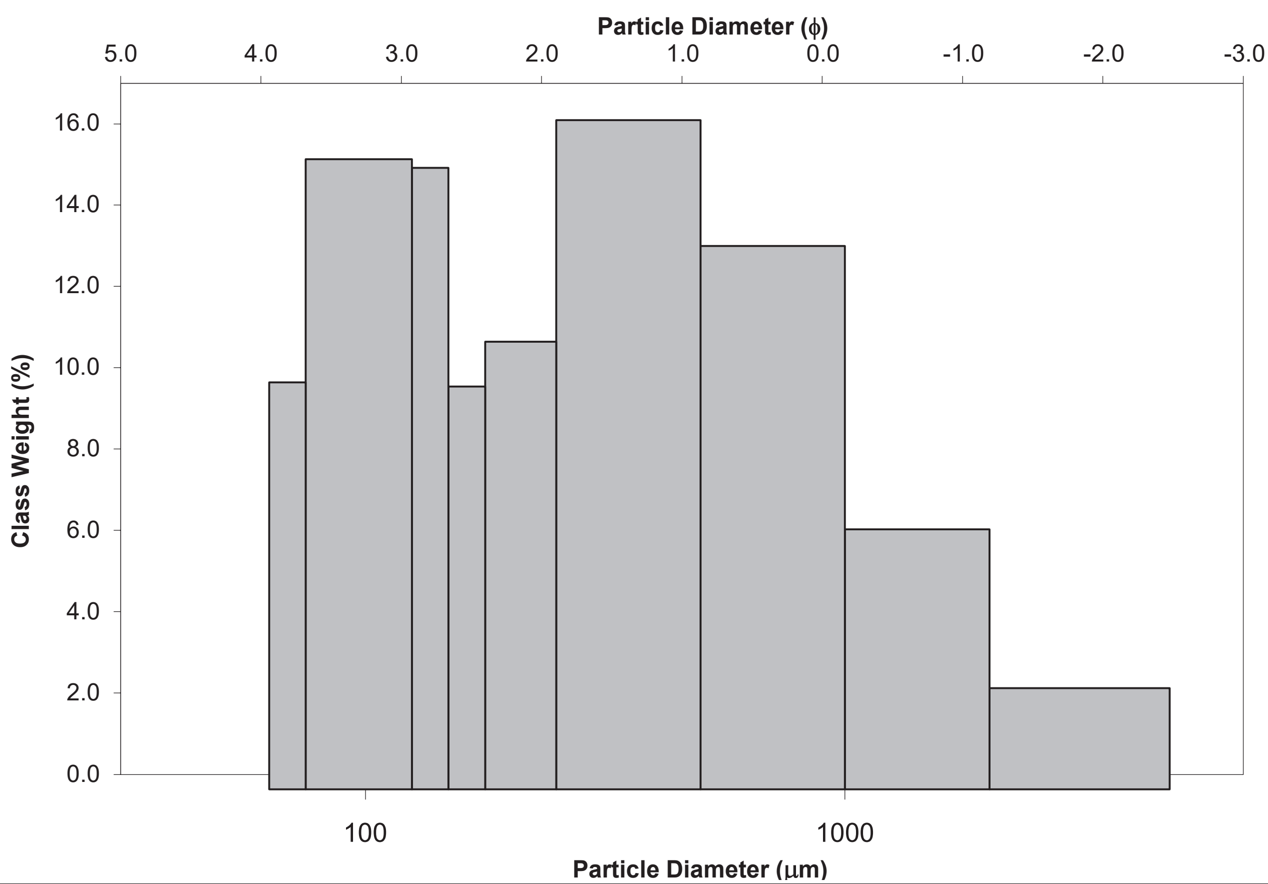
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:	100.0	3.368
MODE 3:		
D_{10}:	90.27	-0.685
MEDIAN or D_{50}:	343.6	1.541
D_{90}:	1607.5	3.470
(D_{90} / D_{10}):	17.81	-5.066
(D_{90} - D_{10}):	1517.3	4.155
(D_{75} / D_{25}):	5.287	6.716
(D_{75} - D_{25}):	605.9	2.402

GRAIN SIZE DISTRIBUTION

GRAVEL:	7.0%	COARSE SAND:	20.1%
SAND:	93.0%	MEDIUM SAND:	24.7%
MUD:	0.0%	FINE SAND:	17.7%
		V FINE SAND:	20.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	3.2%	FINE SILT:	0.0%
V FINE GRAVEL:	3.7%	V FINE SILT:	0.0%
V COARSE SAND:	9.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	595.3	296.9	1.520	338.1	1.565	Medium Sand
SORTING (σ):	739.3	3.762	1.450	3.048	1.608	Poorly Sorted
SKEWNESS (Sk):	2.533	-1.547	-0.241	0.078	-0.078	Symmetrical
KURTOSIS (K):	9.585	8.757	2.239	0.890	0.890	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12829** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

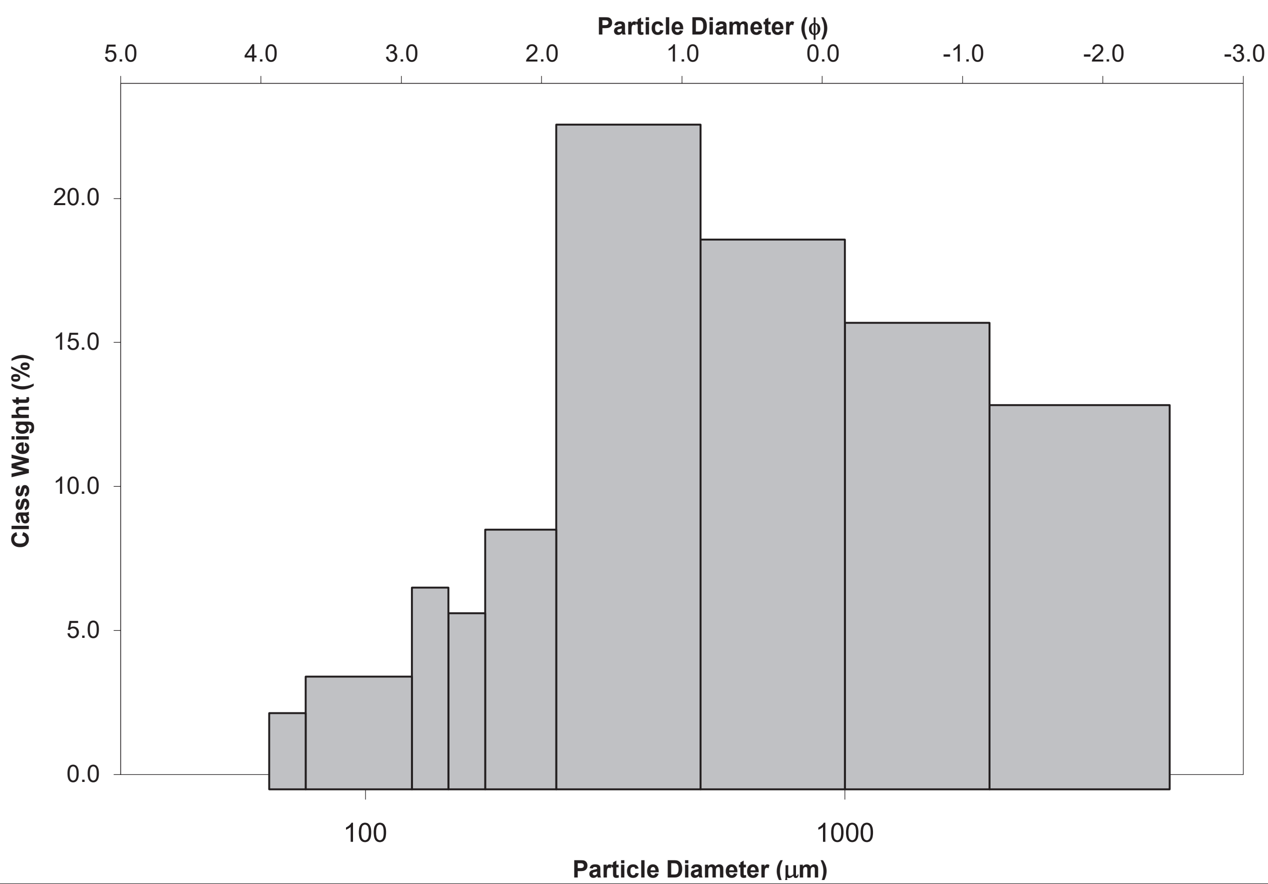
	μm	φ
MODE 1:	375.0	1.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	233.1	-2.701
MEDIAN or D_{50}:	949.0	0.076
D_{90}:	6501.9	2.101
(D_{90} / D_{10}):	27.89	-0.778
(D_{90} - D_{10}):	6268.8	4.802
(D_{75} / D_{25}):	7.951	-0.837
(D_{75} - D_{25}):	2702.3	2.991

GRAIN SIZE DISTRIBUTION

GRAVEL:	33.0%	COARSE SAND:	18.3%
SAND:	67.0%	MEDIUM SAND:	22.2%
MUD:	0.0%	FINE SAND:	7.5%
		V FINE SAND:	3.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	20.2%	FINE SILT:	0.0%
V FINE GRAVEL:	12.8%	V FINE SILT:	0.0%
V COARSE SAND:	15.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1011.0	235.1	0.389	1062.9	-0.088	Very Coarse Sand
SORTING (σ):	1134.4	13.94	1.312	2.805	1.488	Poorly Sorted
SKEWNESS (Sk):	1.251	-1.307	0.258	-0.222	0.222	Fine Skewed
KURTOSIS (K):	3.186	3.330	2.597	0.469	0.469	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12830**
ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted
TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

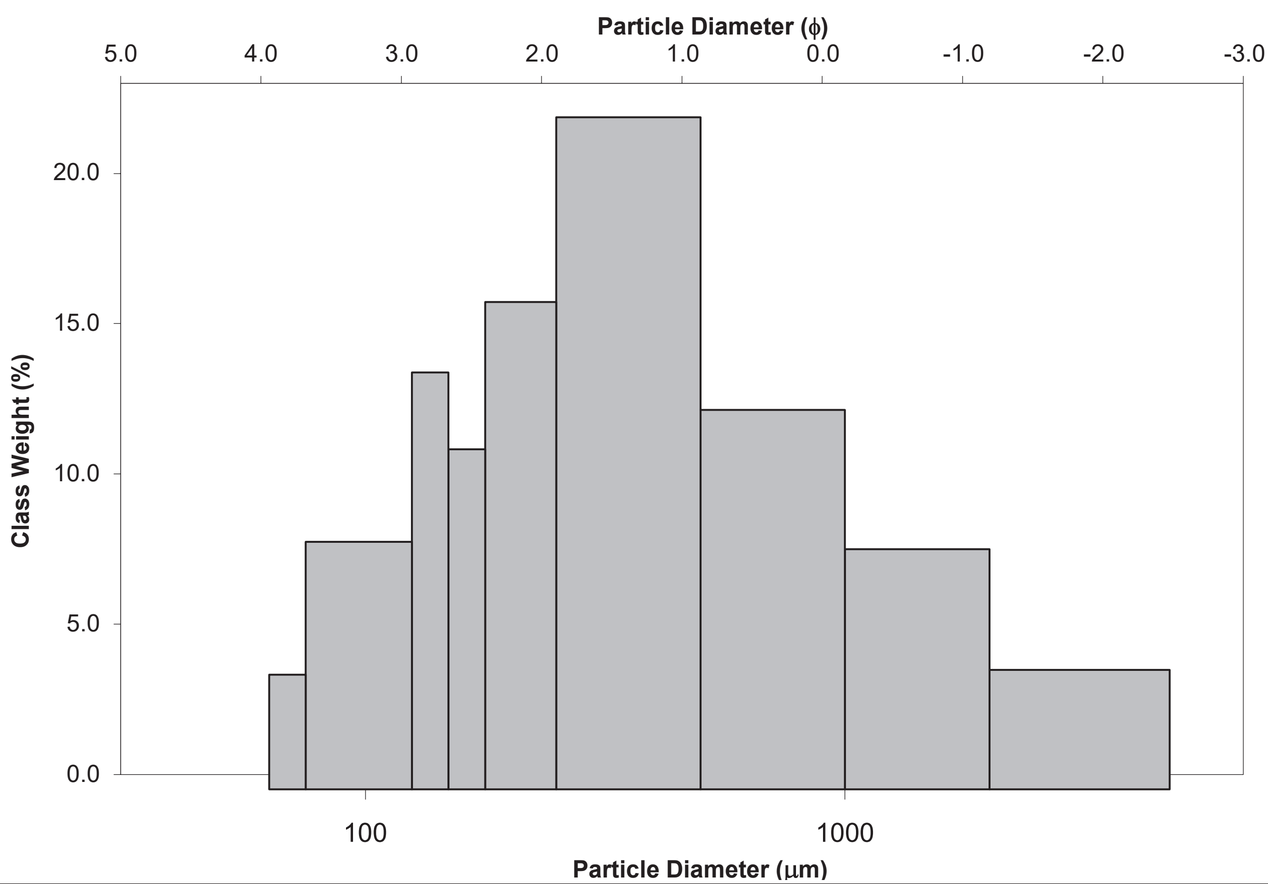
	μm	φ
MODE 1:	375.0	1.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	126.3	-1.189
MEDIAN or D_{50}:	395.2	1.339
D_{90}:	2280.3	2.985
(D_{90} / D_{10}):	18.05	-2.510
$(D_{90} - D_{10})$:	2154.0	4.174
(D_{75} / D_{25}):	4.103	13.14
$(D_{75} - D_{25})$:	673.3	2.037

GRAIN SIZE DISTRIBUTION

GRAVEL:	11.0%	COARSE SAND:	17.4%
SAND:	89.0%	MEDIUM SAND:	30.9%
MUD:	0.0%	FINE SAND:	19.9%
		V FINE SAND:	9.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	5.6%	FINE SILT:	0.0%
V FINE GRAVEL:	5.5%	V FINE SILT:	0.0%
V COARSE SAND:	11.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	689.3	323.6	1.210	451.2	1.148	Medium Sand
SORTING (σ):	838.0	4.597	1.365	3.110	1.637	Poorly Sorted
SKEWNESS (Sk):	2.235	-2.007	-0.271	0.213	-0.213	Coarse Skewed
KURTOSIS (K):	7.394	9.132	2.484	1.110	1.110	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12831**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

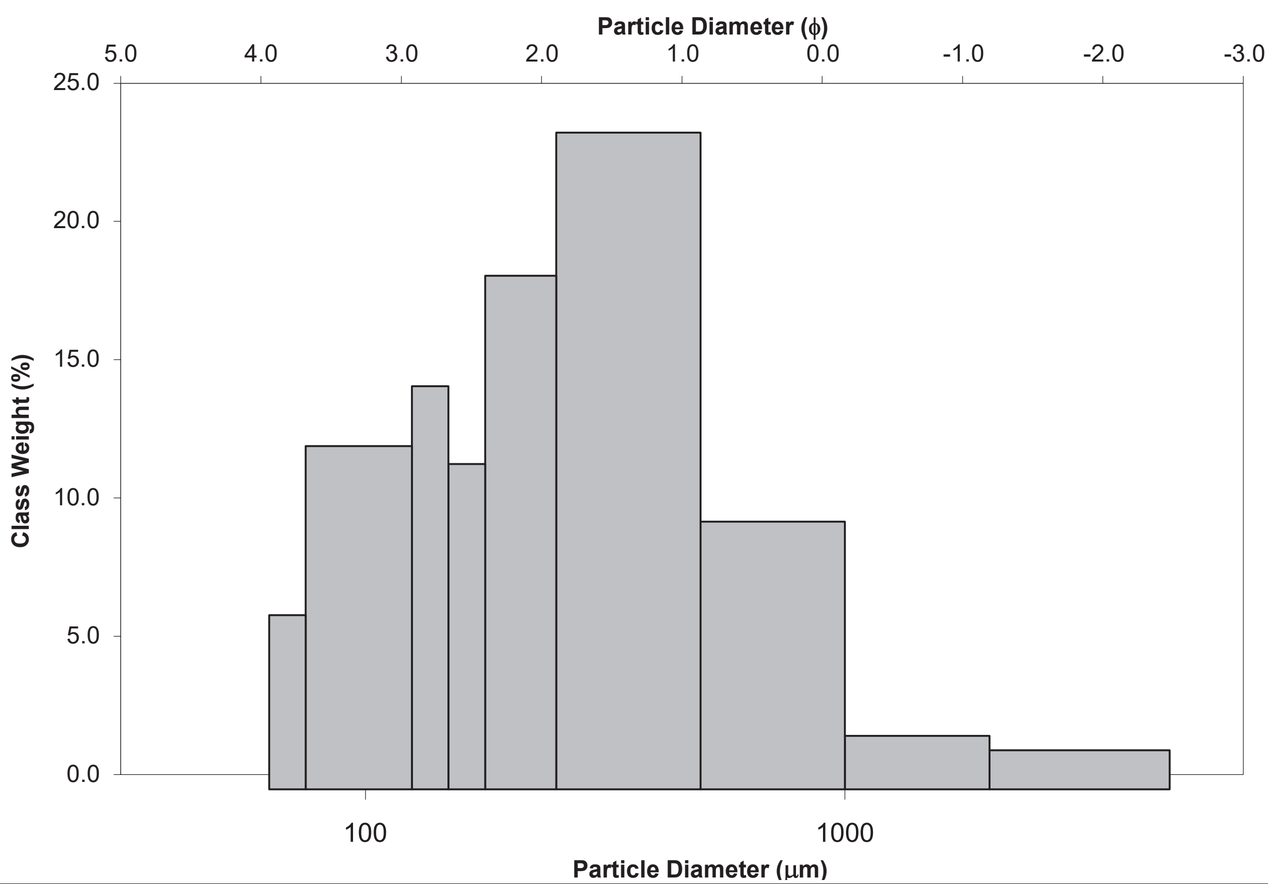
	μm	φ
MODE 1:	375.0	1.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	98.84	0.129
MEDIAN or D_{50}:	298.4	1.744
D_{90}:	914.4	3.339
(D_{90} / D_{10}):	9.251	25.86
$(D_{90} - D_{10})$:	815.6	3.210
(D_{75} / D_{25}):	2.885	2.446
$(D_{75} - D_{25})$:	313.9	1.529

GRAIN SIZE DISTRIBUTION

GRAVEL:	5.1%	COARSE SAND:	14.8%
SAND:	94.9%	MEDIUM SAND:	36.4%
MUD:	0.0%	FINE SAND:	24.3%
		V FINE SAND:	16.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	3.0%	FINE SILT:	0.0%
V FINE GRAVEL:	2.2%	V FINE SILT:	0.0%
V COARSE SAND:	3.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	444.0	255.9	1.725	293.8	1.767	Medium Sand
SORTING (σ):	566.9	3.268	1.184	2.511	1.328	Poorly Sorted
SKEWNESS (Sk):	3.866	-2.173	-0.447	0.088	-0.088	Symmetrical
KURTOSIS (K):	19.67	12.51	3.227	1.249	1.249	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12832**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Moderately Well Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

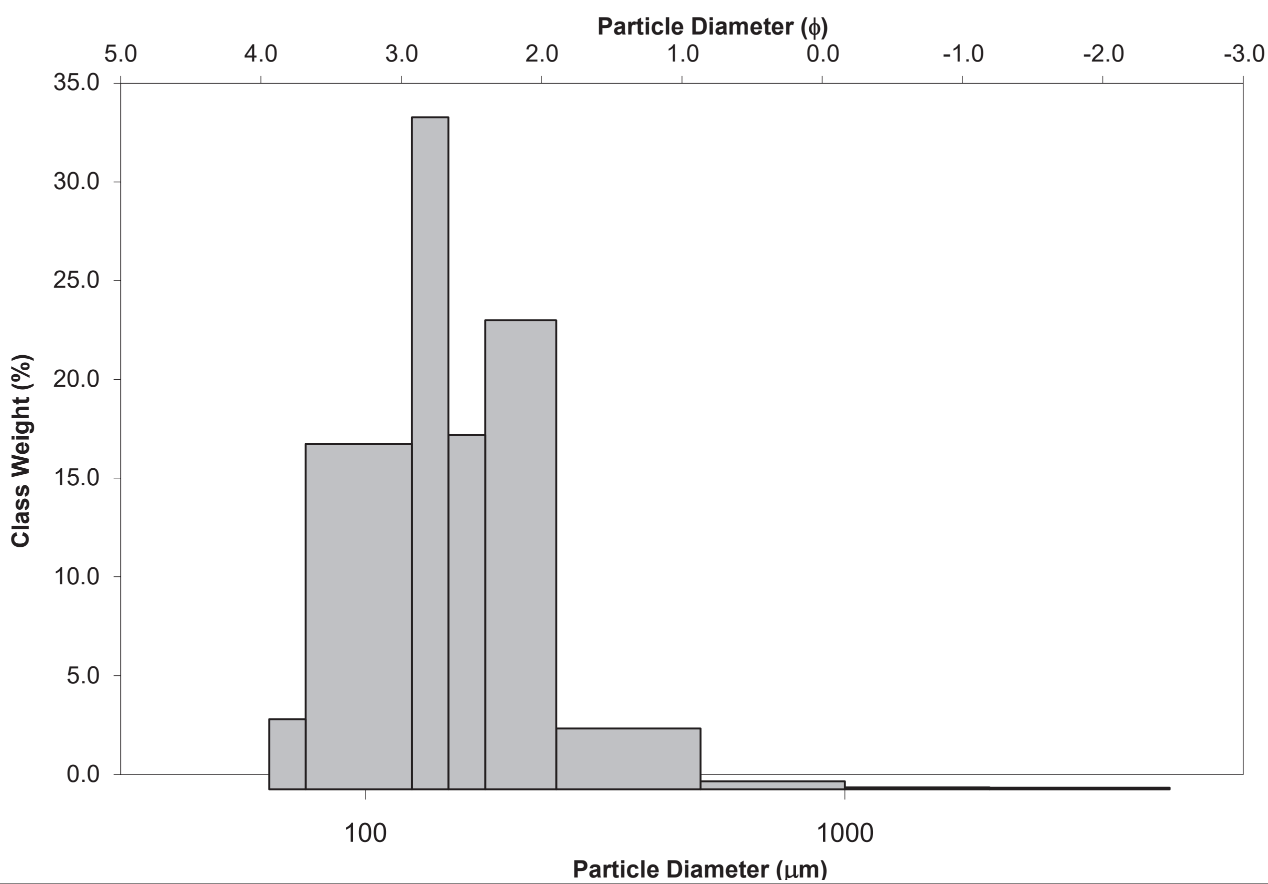
	μm	φ
MODE 1:	137.0	2.873
MODE 2:	213.9	2.246
MODE 3:		
D_{10}:	85.62	2.024
MEDIAN or D_{50}:	145.3	2.783
D_{90}:	245.9	3.546
(D_{90} / D_{10}):	2.872	1.752
$(D_{90} - D_{10})$:	160.3	1.522
(D_{75} / D_{25}):	1.855	1.389
$(D_{75} - D_{25})$:	94.20	0.892

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.2%	COARSE SAND:	0.9%
SAND:	99.8%	MEDIUM SAND:	7.3%
MUD:	0.0%	FINE SAND:	58.8%
		V FINE SAND:	32.6%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.2%	V FINE SILT:	0.0%
V COARSE SAND:	0.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	182.2	153.5	2.704	146.5	2.771	Fine Sand
SORTING (σ):	191.6	1.589	0.668	1.565	0.647	Moderately Well Sorted
SKEWNESS (Sk):	11.88	1.334	-1.334	0.107	-0.107	Coarse Skewed
KURTOSIS (K):	186.6	7.804	7.804	0.998	0.998	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12833**
ANALYST & DATE: D. Hawkins, 09/24/2024
SAMPLE TYPE: Unimodal, Moderately Sorted
TEXTURAL GROUP: Sandy Gravel
SEDIMENT NAME: Sandy Fine Gravel

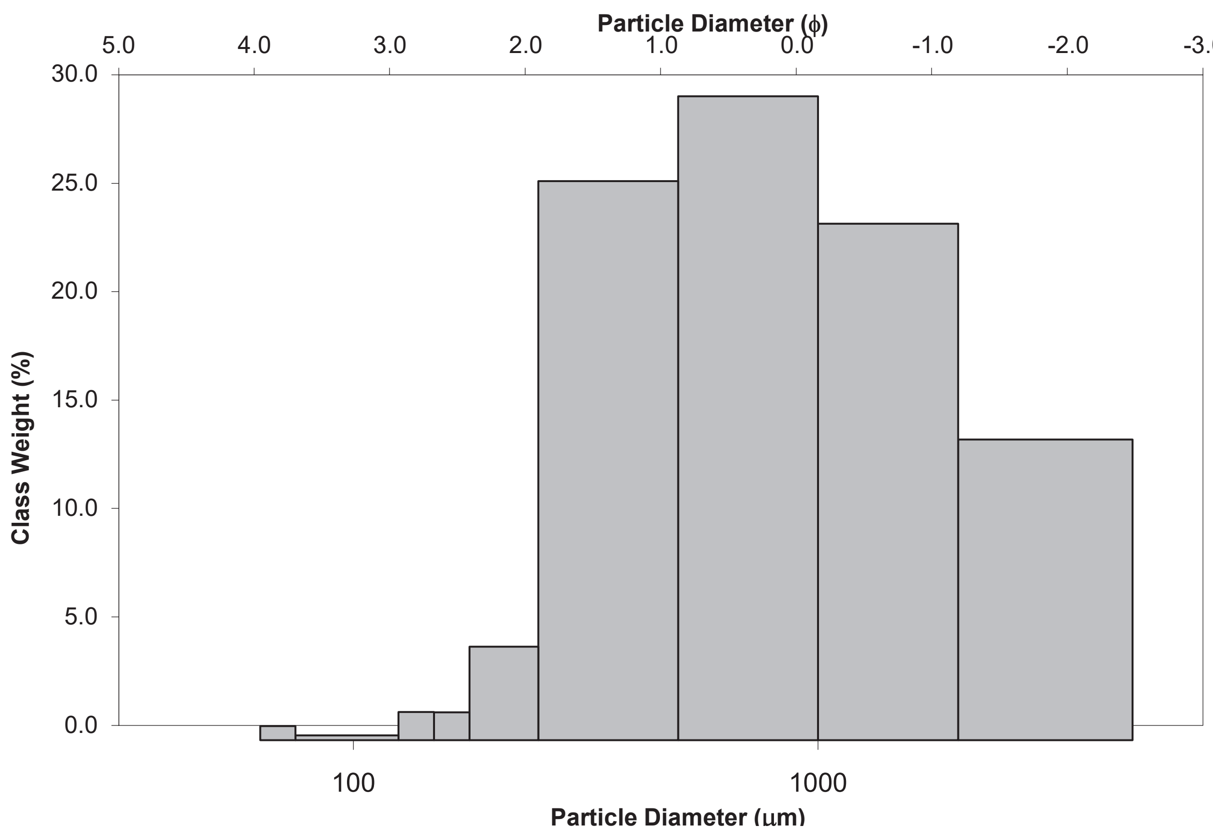
	μm	ϕ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	332.3	-3.326
MEDIAN or D_{50}:	1332.7	-0.414
D_{90}:	10030.6	1.589
(D_{90} / D_{10}):	30.18	-0.478
$(D_{90} - D_{10})$:	9698.2	4.916
(D_{75} / D_{25}):	7.403	-0.397
$(D_{75} - D_{25})$:	3626.6	2.888

GRAIN SIZE DISTRIBUTION

GRAVEL:	39.8%	COARSE SAND:	21.7%
SAND:	60.2%	MEDIUM SAND:	18.8%
MUD:	0.0%	FINE SAND:	2.0%
		V FINE SAND:	0.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	29.7%	FINE SILT:	0.0%
V FINE GRAVEL:	10.1%	V FINE SILT:	0.0%
V COARSE SAND:	17.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	925.0	137.4	0.155	1114.0	-0.156	Very Coarse Sand
SORTING (σ):	1060.4	21.84	0.988	1.989	0.992	Moderately Sorted
SKEWNESS (Sk):	1.371	-0.863	0.032	-0.650	0.650	Very Fine Skewed
KURTOSIS (K):	3.792	1.972	2.922	0.322	0.322	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12834** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Fine Gravelly Very Fine Sand

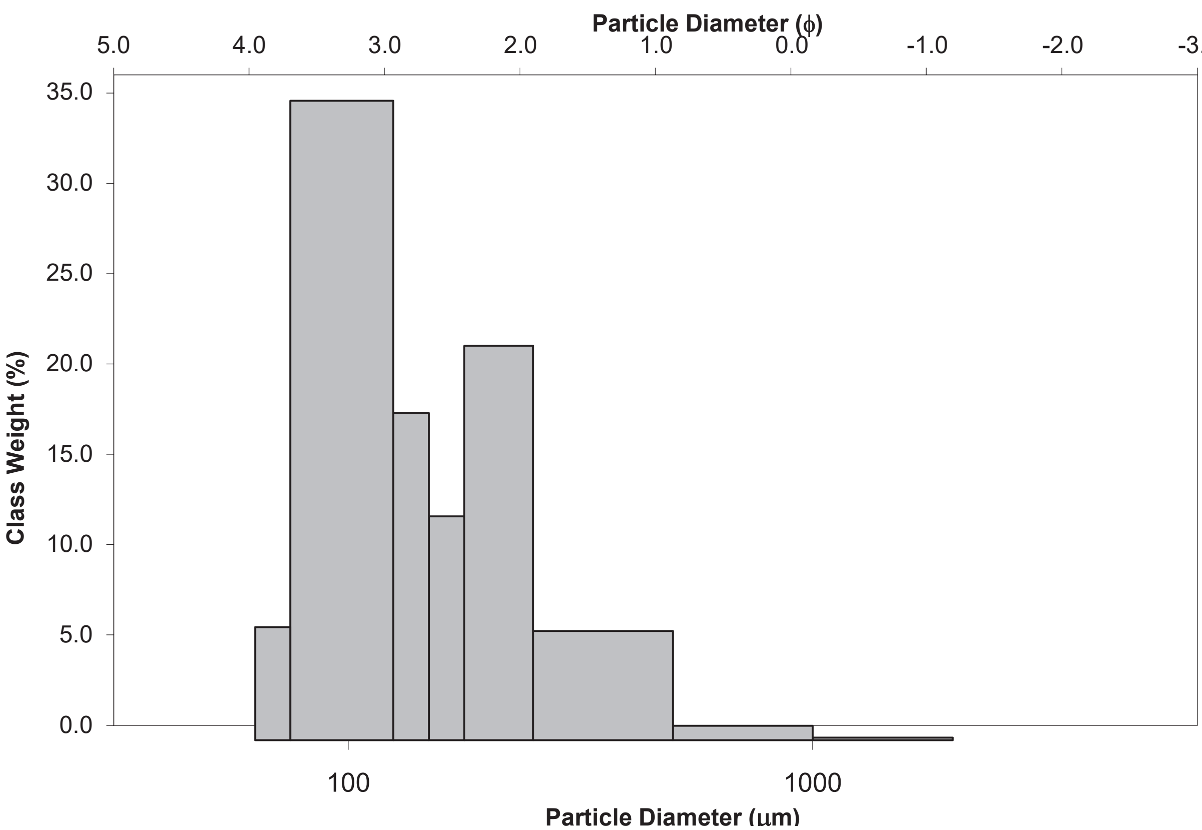
	μm	φ
MODE 1:	100.0	3.368
MODE 2:	213.9	2.246
MODE 3:		
D_{10}:	80.71	1.709
MEDIAN or D_{50}:	122.5	3.030
D_{90}:	305.9	3.631
(D_{90} / D_{10}):	3.790	2.125
(D_{90} - D_{10}):	225.2	1.922
(D_{75} / D_{25}):	2.174	1.490
(D_{75} - D_{25}):	110.8	1.120

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.2%	COARSE SAND:	1.5%
SAND:	99.8%	MEDIUM SAND:	11.3%
MUD:	0.0%	FINE SAND:	34.7%
		V FINE SAND:	52.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.2%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	0.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	173.0	141.4	2.798	136.0	2.879	Fine Sand
SORTING (σ):	131.7	1.770	0.756	1.668	0.738	Moderately Sorted
SKEWNESS (Sk):	4.074	-0.778	-1.101	0.376	-0.376	Very Coarse Skewed
KURTOSIS (K):	31.55	16.49	3.926	0.892	0.892	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12835**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

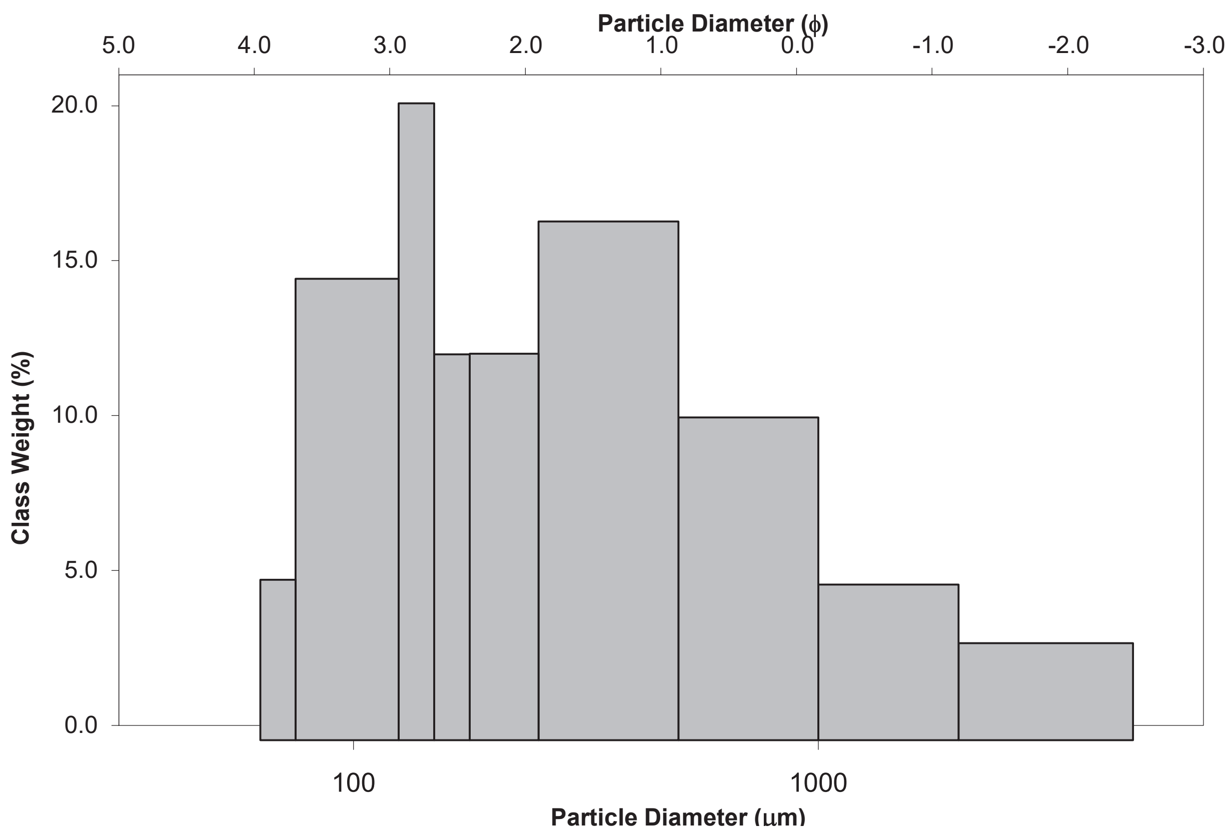
	μm	φ
MODE 1:	137.0	2.873
MODE 2:	375.0	1.500
MODE 3:		
D_{10}:	100.3	-2.777
MEDIAN or D_{50}:	393.8	1.344
D_{90}:	6852.3	3.317
(D_{90} / D_{10}):	68.30	-1.195
$(D_{90} - D_{10})$:	6751.9	6.094
(D_{75} / D_{25}):	9.010	-4.906
$(D_{75} - D_{25})$:	1289.9	3.172

GRAIN SIZE DISTRIBUTION

GRAVEL:	21.9%	COARSE SAND:	13.8%
SAND:	78.1%	MEDIUM SAND:	22.2%
MUD:	0.0%	FINE SAND:	19.2%
		V FINE SAND:	16.3%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	17.8%	FINE SILT:	0.0%
V FINE GRAVEL:	4.1%	V FINE SILT:	0.0%
V COARSE SAND:	6.7%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	510.3	125.0	1.331	600.1	0.737	Coarse Sand
SORTING (σ):	771.3	10.49	1.445	3.818	1.933	Poorly Sorted
SKEWNESS (Sk):	2.704	-1.173	-0.100	0.152	-0.152	Coarse Skewed
KURTOSIS (K):	10.08	3.289	2.077	0.548	0.548	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12836** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Fine Gravelly Fine Sand

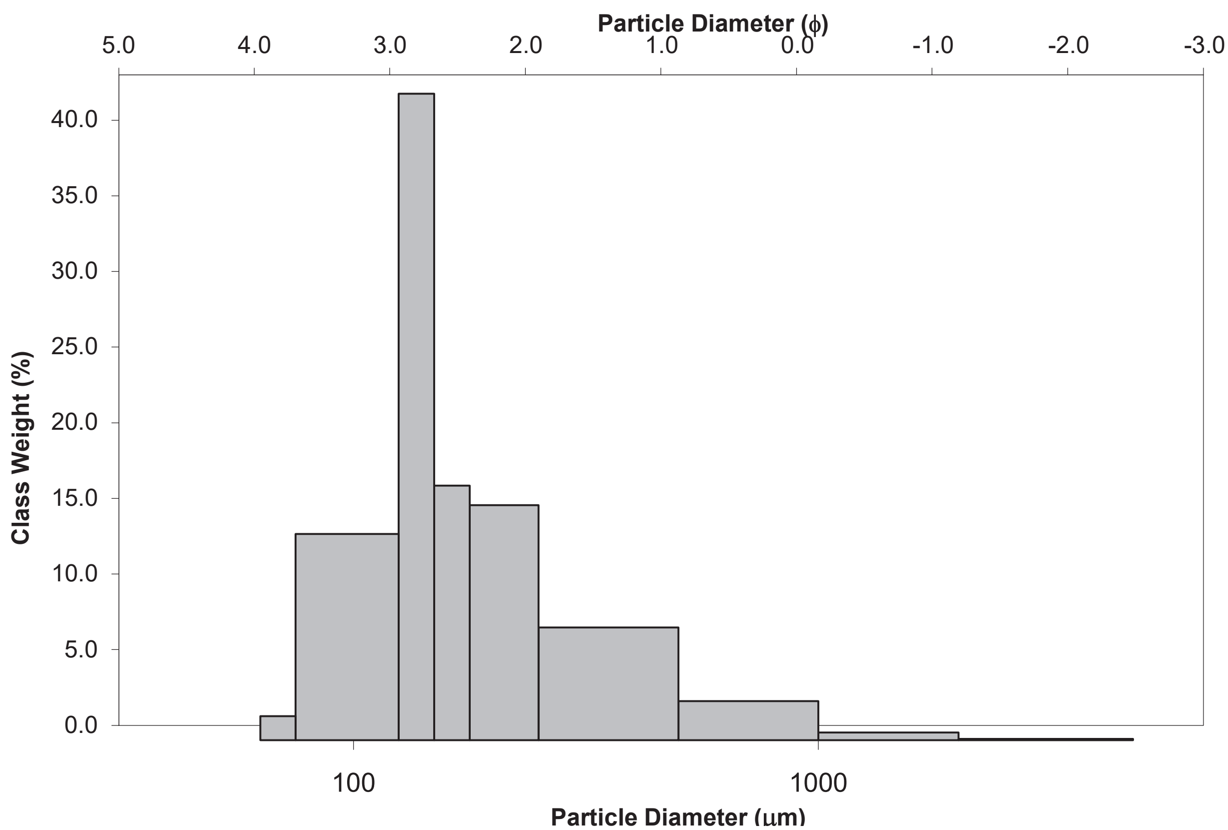
	μm	ϕ
MODE 1:	137.0	2.873
MODE 2:		
MODE 3:		
D_{10}:	91.91	1.149
MEDIAN or D_{50}:	153.3	2.705
D_{90}:	450.8	3.444
(D_{90} / D_{10}):	4.905	2.996
(D_{90} - D_{10}):	358.9	2.294
(D_{75} / D_{25}):	1.961	1.482
(D_{75} - D_{25}):	121.1	0.971

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.5%	COARSE SAND:	5.9%
SAND:	99.5%	MEDIUM SAND:	17.0%
MUD:	0.0%	FINE SAND:	51.8%
		V FINE SAND:	23.8%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.3%	FINE SILT:	0.0%
V FINE GRAVEL:	0.2%	V FINE SILT:	0.0%
V COARSE SAND:	1.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	242.8	182.2	2.434	178.5	2.486	Fine Sand
SORTING (σ):	258.4	1.934	0.889	1.860	0.895	Moderately Sorted
SKEWNESS (Sk):	5.738	-0.160	-1.137	0.391	-0.391	Very Coarse Skewed
KURTOSIS (K):	56.12	12.06	4.321	1.276	1.276	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12837**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Trimodal, Poorly Sorted

TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

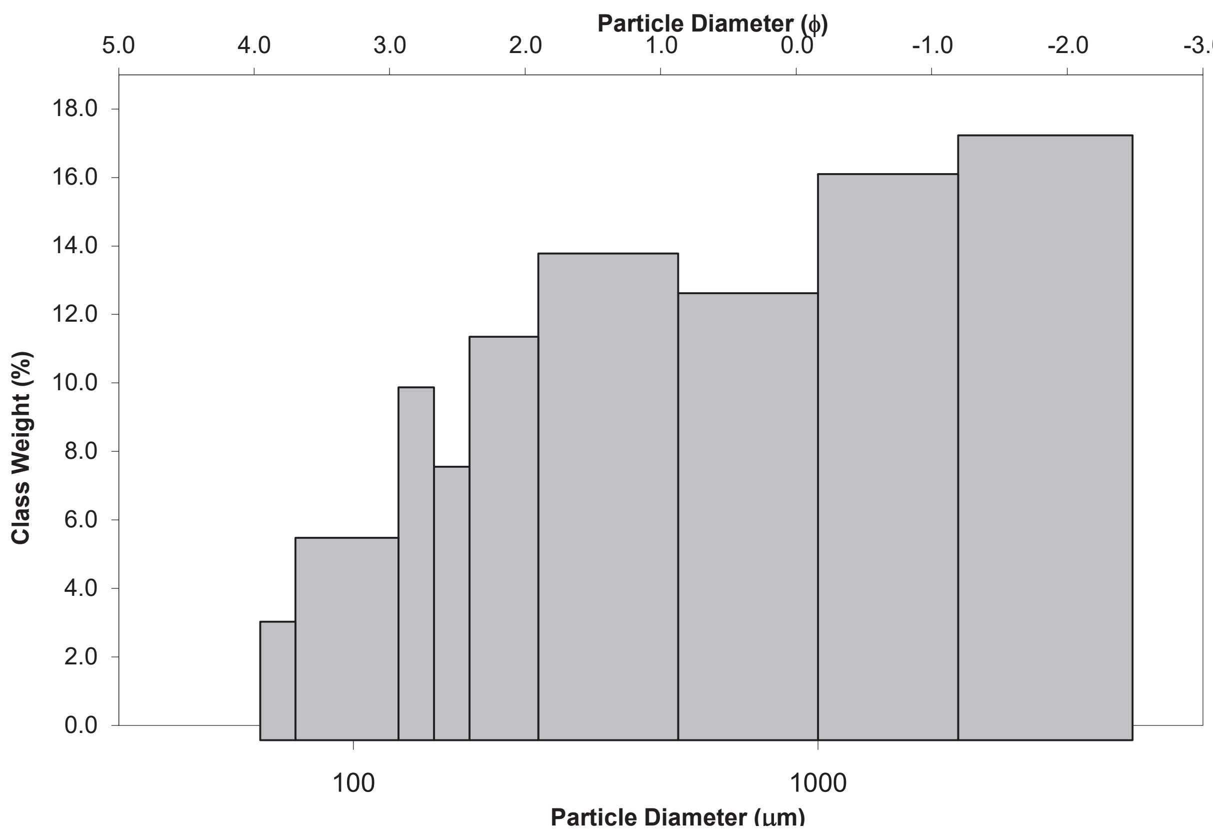
	μm	ϕ
MODE 1:	3375.0	-1.624
MODE 2:	375.0	1.500
MODE 3:	137.0	2.873
D_{10}:	217.7	-4.845
MEDIAN or D_{50}:	2643.2	-1.402
D_{90}:	28749.9	2.199
(D_{90} / D_{10}):	132.0	-0.454
$(D_{90} - D_{10})$:	28532.1	7.045
(D_{75} / D_{25}):	4.557	-0.510
$(D_{75} - D_{25})$:	2131.3	2.188

GRAIN SIZE DISTRIBUTION

GRAVEL:	55.3%	COARSE SAND:	9.8%
SAND:	44.7%	MEDIUM SAND:	10.7%
MUD:	0.0%	FINE SAND:	7.8%
		V FINE SAND:	3.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	42.1%	FINE SILT:	0.0%
V FINE GRAVEL:	13.3%	V FINE SILT:	0.0%
V COARSE SAND:	12.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	876.9	59.44	0.208	1182.8	-0.242	Very Coarse Sand
SORTING (σ):	1212.4	29.04	1.282	2.158	1.110	Poorly Sorted
SKEWNESS (Sk):	1.286	-0.264	0.699	-1.541	1.541	Very Fine Skewed
KURTOSIS (K):	3.118	1.287	3.286	0.590	0.590	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12838** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

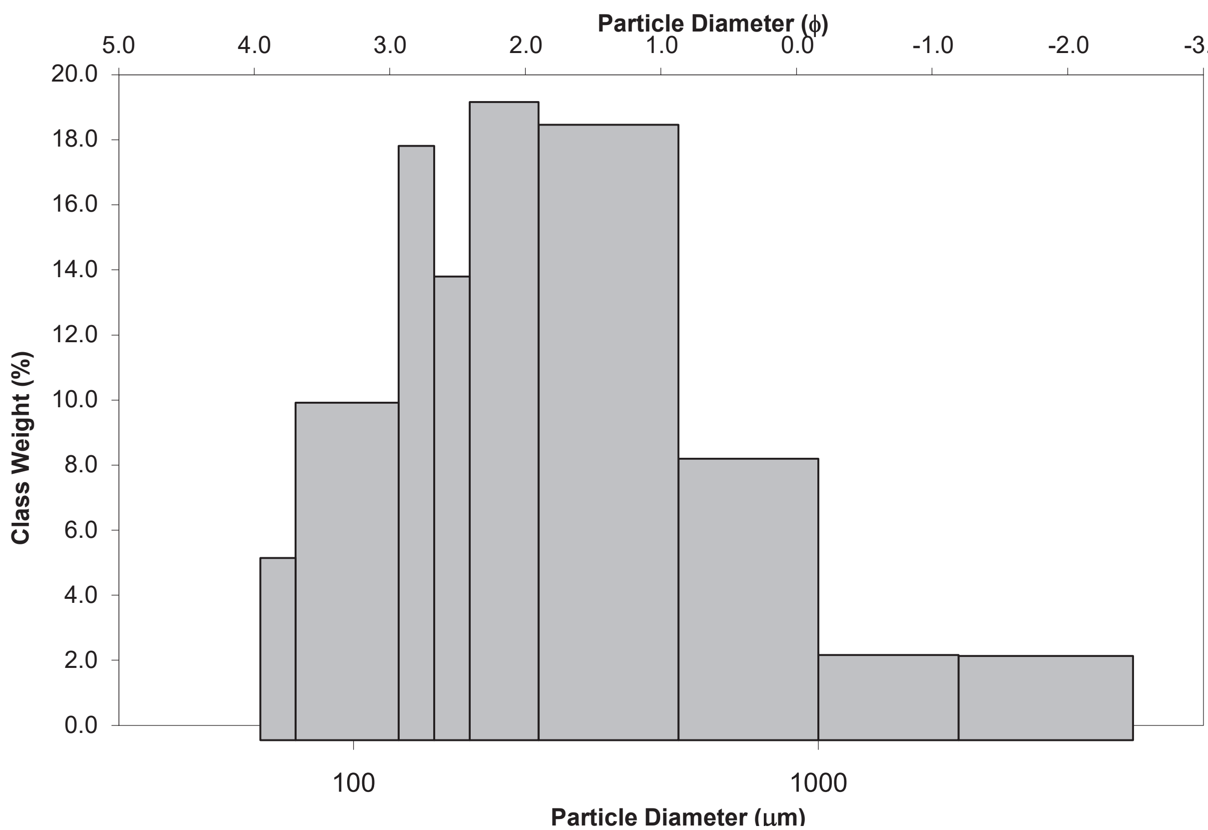
	μm	φ
MODE 1:	213.9	2.246
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	112.0	-2.890
MEDIAN or D_{50}:	361.5	1.468
D_{90}:	7412.8	3.159
(D_{90} / D_{10}):	66.21	-1.093
$(D_{90} - D_{10})$:	7300.9	6.049
(D_{75} / D_{25}):	7.040	-6.320
$(D_{75} - D_{25})$:	1120.1	2.816

GRAIN SIZE DISTRIBUTION

GRAVEL:	22.8%	COARSE SAND:	11.7%
SAND:	77.2%	MEDIUM SAND:	25.5%
MUD:	0.0%	FINE SAND:	24.2%
		V FINE SAND:	12.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	19.3%	FINE SILT:	0.0%
V FINE GRAVEL:	3.5%	V FINE SILT:	0.0%
V COARSE SAND:	3.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	439.2	107.6	1.375	578.5	0.790	Coarse Sand
SORTING (σ):	702.1	10.70	1.342	3.539	1.823	Poorly Sorted
SKEWNESS (Sk):	3.238	-1.157	-0.192	0.216	-0.216	Coarse Skewed
KURTOSIS (K):	13.52	3.090	2.327	0.600	0.600	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12839** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Trimodal, Poorly Sorted TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

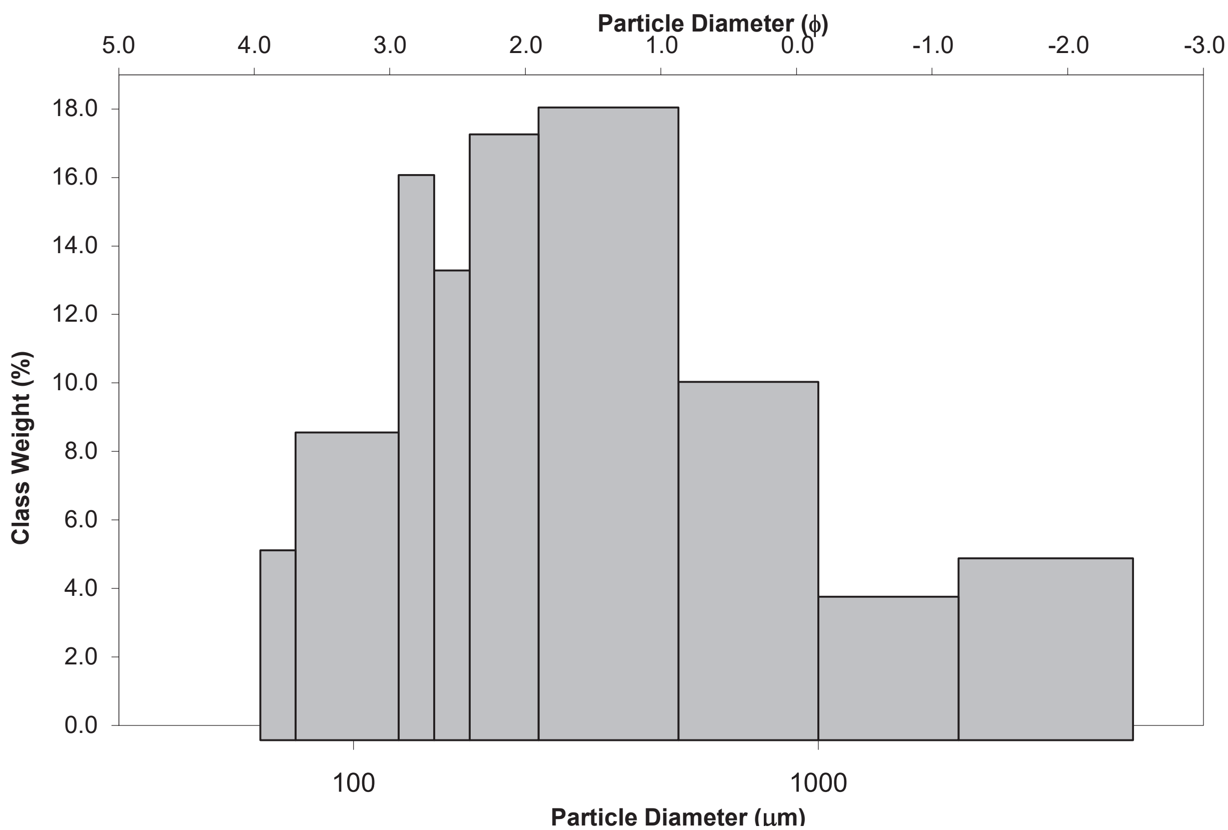
	μm	φ
MODE 1:	375.0	1.500
MODE 2:	137.0	2.873
MODE 3:	3375.0	-1.624
D_{10}:	156.0	-7.281
MEDIAN or D_{50}:	4598.3	-2.201
D_{90}:	155494.8	2.681
(D_{90} / D_{10}):	996.9	-0.368
$(D_{90} - D_{10})$:	155338.8	9.961
(D_{75} / D_{25}):	6.267	-1.406
$(D_{75} - D_{25})$:	1802.2	2.648

GRAIN SIZE DISTRIBUTION

GRAVEL:	56.1%	COARSE SAND:	8.0%
SAND:	43.9%	MEDIUM SAND:	14.1%
MUD:	0.0%	FINE SAND:	12.5%
		V FINE SAND:	6.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	52.1%	FINE SILT:	0.0%
V FINE GRAVEL:	4.0%	V FINE SILT:	0.0%
V COARSE SAND:	3.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	359.8	18.40	0.675	1178.7	-0.237	Very Coarse Sand
SORTING (σ):	766.5	21.31	1.239	2.357	1.237	Poorly Sorted
SKEWNESS (Sk):	3.134	0.211	0.724	-2.102	2.102	Very Fine Skewed
KURTOSIS (K):	12.29	1.274	2.938	0.524	0.524	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12840**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

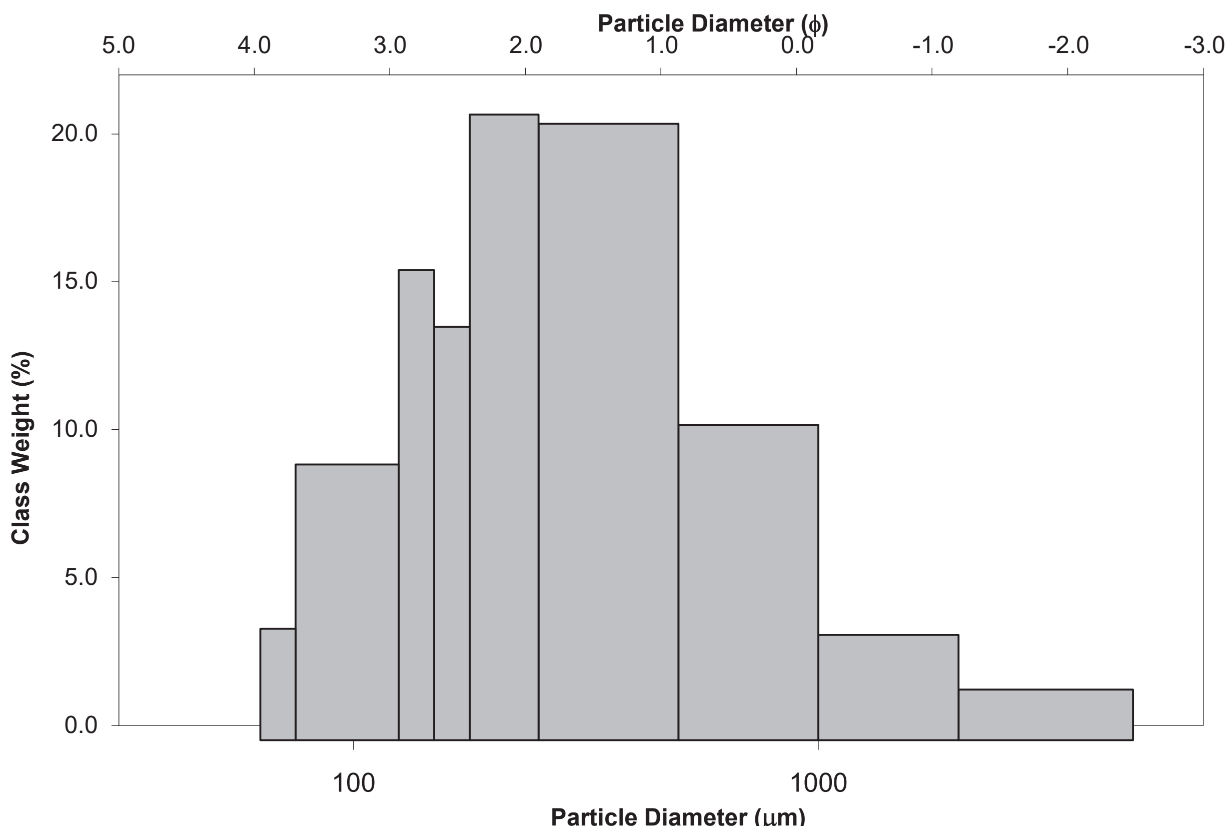
	μm	ϕ
MODE 1:	213.9	2.246
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	135.5	-4.527
MEDIAN or D_{50}:	556.9	0.844
D_{90}:	23059.4	2.884
(D_{90} / D_{10}):	170.2	-0.637
$(D_{90} - D_{10})$:	22923.9	7.411
(D_{75} / D_{25}):	12.93	-1.287
$(D_{75} - D_{25})$:	2825.7	3.693

GRAIN SIZE DISTRIBUTION

GRAVEL:	37.0%	COARSE SAND:	11.0%
SAND:	63.0%	MEDIUM SAND:	21.6%
MUD:	0.0%	FINE SAND:	18.6%
		V FINE SAND:	8.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	35.2%	FINE SILT:	0.0%
V FINE GRAVEL:	1.8%	V FINE SILT:	0.0%
V COARSE SAND:	3.7%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	335.8	43.33	1.060	587.7	0.767	Coarse Sand
SORTING (σ):	566.6	17.04	1.245	2.699	1.433	Poorly Sorted
SKEWNESS (Sk):	3.683	-0.454	0.351	-0.147	0.147	Fine Skewed
KURTOSIS (K):	18.99	1.466	2.217	0.404	0.404	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12841**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

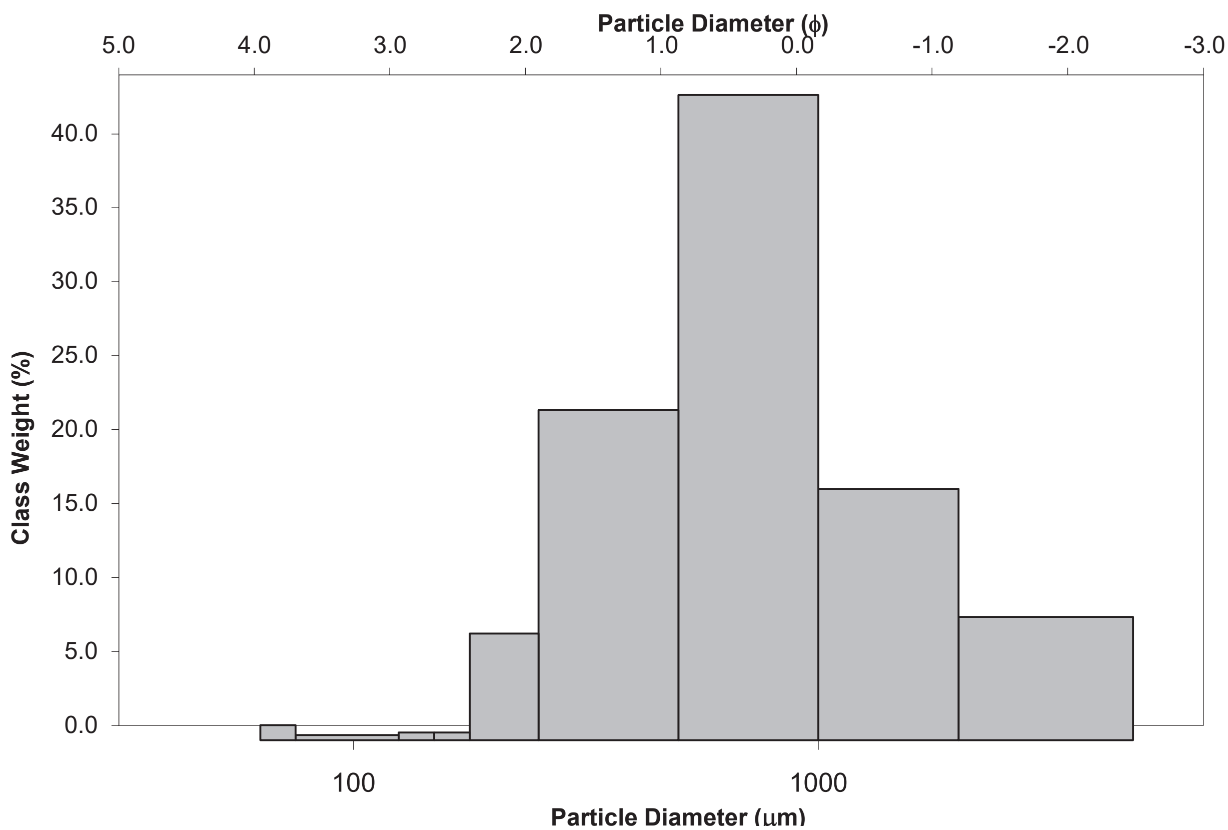
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	322.4	-2.929
MEDIAN or D_{50}:	884.3	0.177
D_{90}:	7614.9	1.633
(D_{90} / D_{10}):	23.62	-0.558
$(D_{90} - D_{10})$:	7292.5	4.562
(D_{75} / D_{25}):	6.398	-0.501
$(D_{75} - D_{25})$:	2905.1	2.678

GRAIN SIZE DISTRIBUTION

GRAVEL:	30.2%	COARSE SAND:	34.9%
SAND:	69.8%	MEDIUM SAND:	17.8%
MUD:	0.0%	FINE SAND:	3.0%
		V FINE SAND:	0.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	23.6%	FINE SILT:	0.0%
V FINE GRAVEL:	6.7%	V FINE SILT:	0.0%
V COARSE SAND:	13.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	819.9	176.0	0.323	1039.5	-0.056	Very Coarse Sand
SORTING (σ):	896.5	16.60	0.922	2.147	1.102	Poorly Sorted
SKEWNESS (Sk):	1.784	-1.177	-0.033	-0.096	0.096	Symmetrical
KURTOSIS (K):	5.706	2.665	3.540	0.371	0.371	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12842**
ANALYST & DATE: D. Hawkins, 09/24/2024
SAMPLE TYPE: Unimodal, Poorly Sorted
TEXTURAL GROUP: Gravelly Sand
SEDIMENT NAME: Very Fine Gravelly Coarse Sand

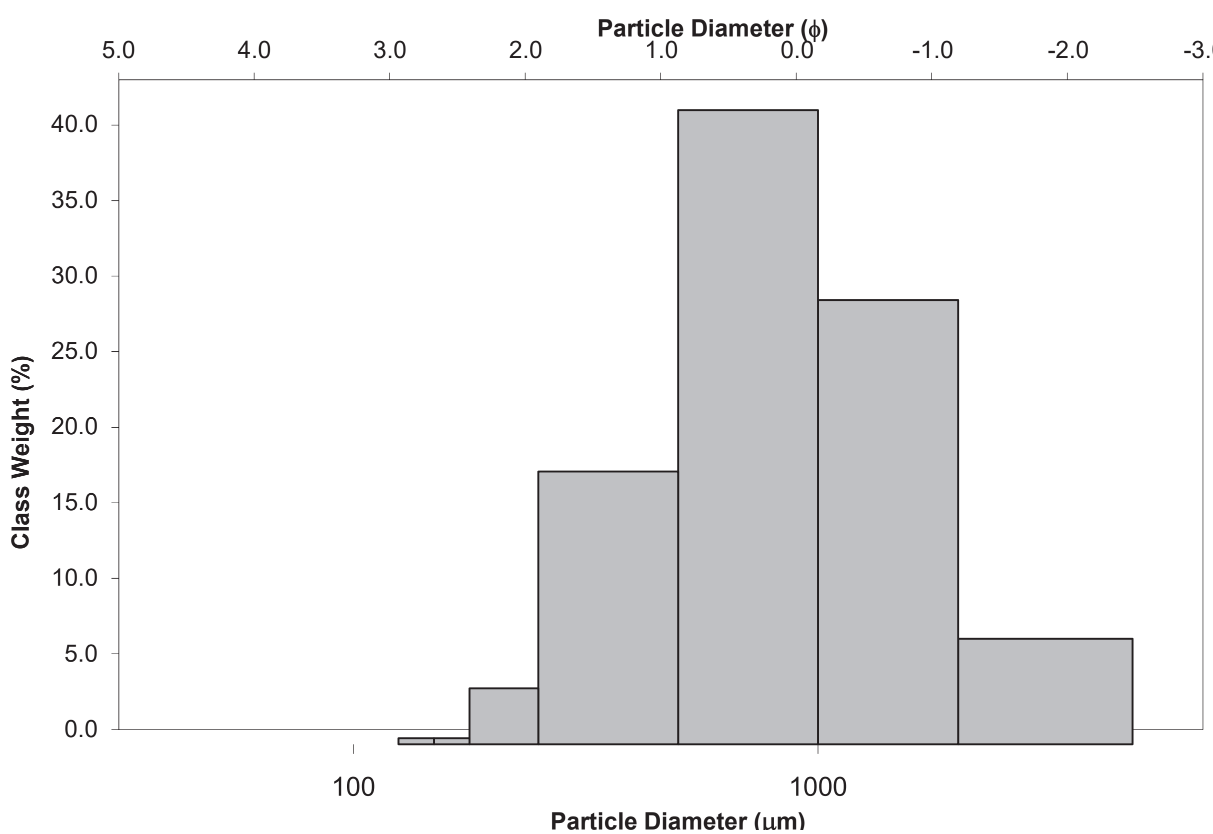
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	341.1	-0.987
MEDIAN or D_{50}:	827.6	0.273
D_{90}:	1981.9	1.552
(D_{90} / D_{10}):	5.810	-1.572
(D_{90} - D_{10}):	1640.8	2.539
(D_{75} / D_{25}):	2.543	-1.860
(D_{75} - D_{25}):	840.7	1.346

GRAIN SIZE DISTRIBUTION

GRAVEL:	9.6%	COARSE SAND:	41.5%
SAND:	90.4%	MEDIUM SAND:	17.8%
MUD:	0.0%	FINE SAND:	2.0%
		V FINE SAND:	0.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	2.7%	FINE SILT:	0.0%
V FINE GRAVEL:	6.9%	V FINE SILT:	0.0%
V COARSE SAND:	29.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1108.9	792.5	0.236	849.1	0.236	Coarse Sand
SORTING (σ):	815.5	2.530	0.925	2.041	1.029	Poorly Sorted
SKEWNESS (Sk):	1.663	-3.567	-0.156	0.082	-0.082	Symmetrical
KURTOSIS (K):	5.350	27.43	2.663	1.066	1.066	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12843** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Very Fine Gravel

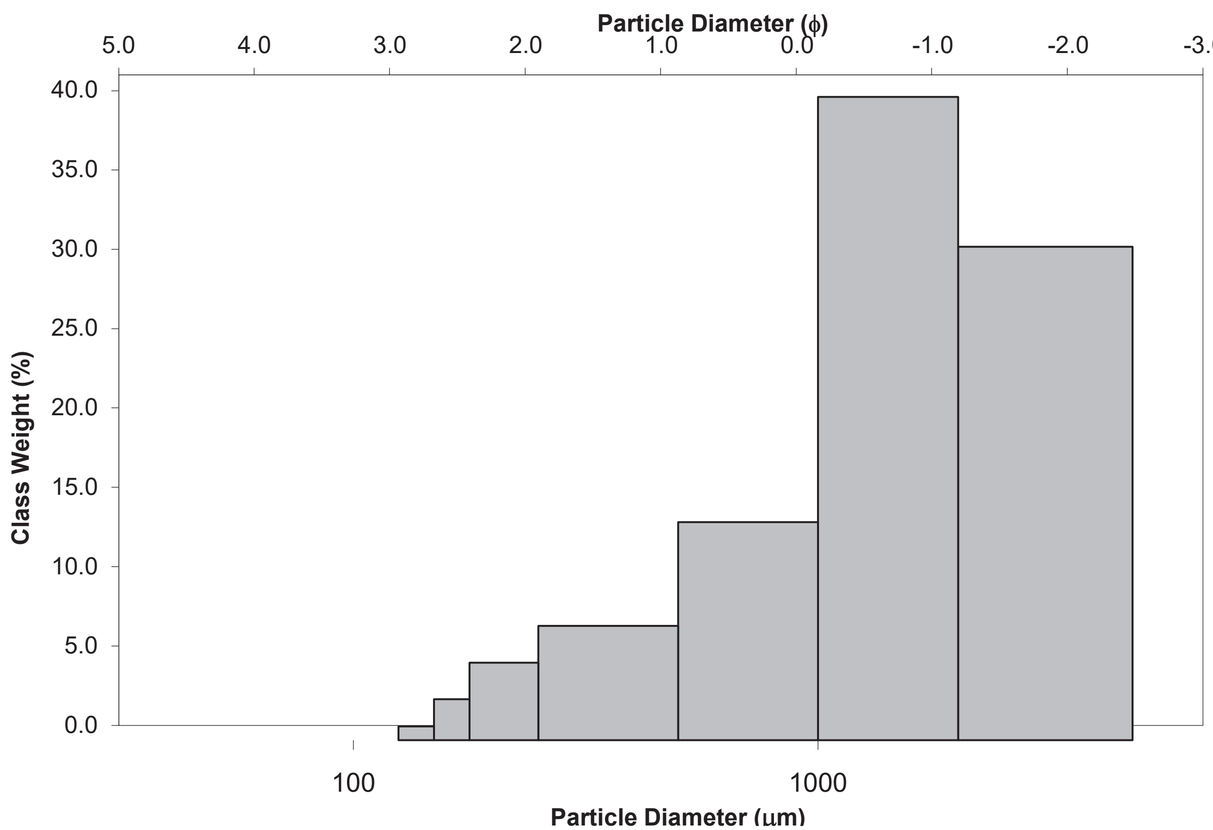
	μm	φ
MODE 1:	1500.0	-0.500
MODE 2:		
MODE 3:		
D_{10}:	502.2	-1.972
MEDIAN or D_{50}:	1629.4	-0.704
D_{90}:	3922.3	0.994
(D_{90} / D_{10}):	7.810	-0.504
$(D_{90} - D_{10})$:	3420.1	2.965
(D_{75} / D_{25}):	2.655	0.037
$(D_{75} - D_{25})$:	1718.3	1.409

GRAIN SIZE DISTRIBUTION

GRAVEL:	38.6%	COARSE SAND:	13.0%
SAND:	61.4%	MEDIUM SAND:	6.8%
MUD:	0.0%	FINE SAND:	3.1%
		V FINE SAND:	0.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	9.2%	FINE SILT:	0.0%
V FINE GRAVEL:	29.5%	V FINE SILT:	0.0%
V COARSE SAND:	38.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1947.0	1286.5	-0.549	1565.4	-0.647	Very Coarse Sand
SORTING (σ):	1160.6	3.416	1.061	2.235	1.160	Poorly Sorted
SKEWNESS (Sk):	0.157	-3.758	0.887	-0.166	0.166	Fine Skewed
KURTOSIS (K):	1.535	21.82	3.277	1.124	1.124	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12844** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

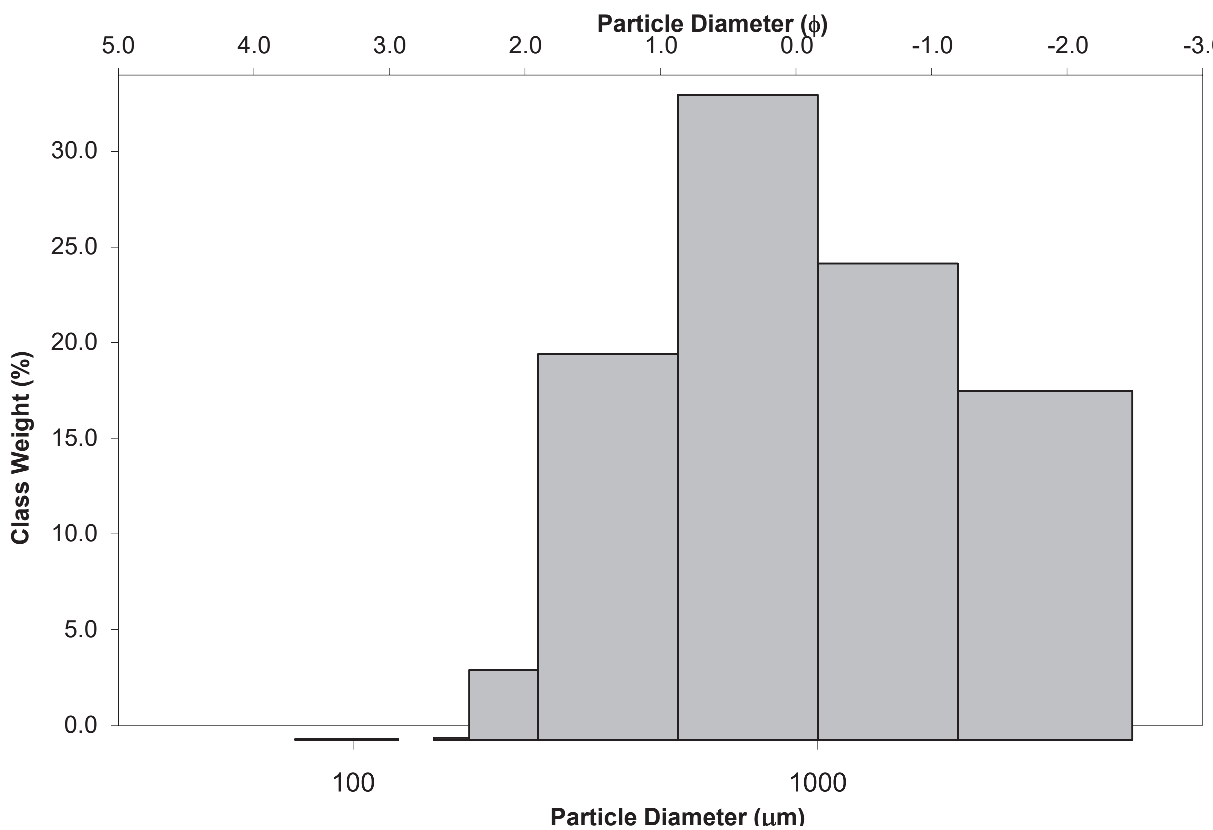
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	377.8	-3.105
MEDIAN or D_{50}:	1461.6	-0.548
D_{90}:	8604.2	1.404
(D_{90} / D_{10}):	22.77	-0.452
$(D_{90} - D_{10})$:	8226.4	4.509
(D_{75} / D_{25}):	7.112	-0.283
$(D_{75} - D_{25})$:	3964.8	2.830

GRAIN SIZE DISTRIBUTION

GRAVEL:	41.9%	COARSE SAND:	24.3%
SAND:	58.1%	MEDIUM SAND:	14.5%
MUD:	0.0%	FINE SAND:	1.3%
		V FINE SAND:	0.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	28.7%	FINE SILT:	0.0%
V FINE GRAVEL:	13.1%	V FINE SILT:	0.0%
V COARSE SAND:	17.9%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1062.4	170.4	0.014	1249.6	-0.321	Very Coarse Sand
SORTING (σ):	1140.7	21.72	0.967	1.910	0.933	Moderately Sorted
SKEWNESS (Sk):	1.129	-0.964	-0.093	-0.689	0.689	Very Fine Skewed
KURTOSIS (K):	2.991	2.158	2.604	0.317	0.317	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12845**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Coarse Sand

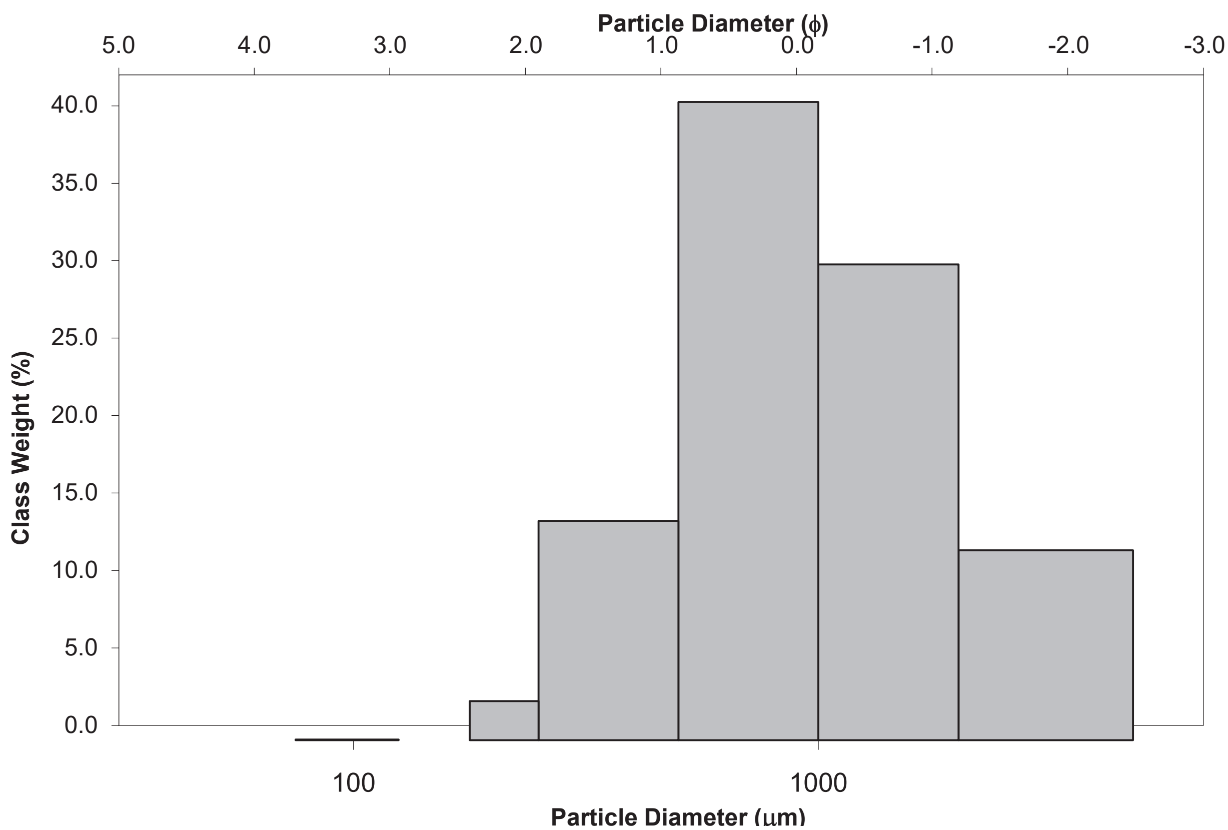
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	424.5	-2.474
MEDIAN or D_{50}:	1088.8	-0.123
D_{90}:	5555.1	1.236
(D_{90} / D_{10}):	13.09	-0.500
$(D_{90} - D_{10})$:	5130.6	3.710
(D_{75} / D_{25}):	3.748	-0.507
$(D_{75} - D_{25})$:	1761.9	1.906

GRAIN SIZE DISTRIBUTION

GRAVEL:	27.7%	COARSE SAND:	34.1%
SAND:	72.3%	MEDIUM SAND:	11.7%
MUD:	0.0%	FINE SAND:	1.0%
		V FINE SAND:	0.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	17.5%	FINE SILT:	0.0%
V FINE GRAVEL:	10.1%	V FINE SILT:	0.0%
V COARSE SAND:	25.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1111.0	345.2	0.037	1372.1	-0.456	Very Coarse Sand
SORTING (σ):	994.8	12.61	0.894	2.188	1.129	Poorly Sorted
SKEWNESS (Sk):	1.228	-1.710	-0.142	-0.077	0.077	Symmetrical
KURTOSIS (K):	3.686	4.347	2.829	0.518	0.518	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12846** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Well Sorted TEXTURAL GROUP: Sandy Gravel

SEDIMENT NAME: Sandy Fine Gravel

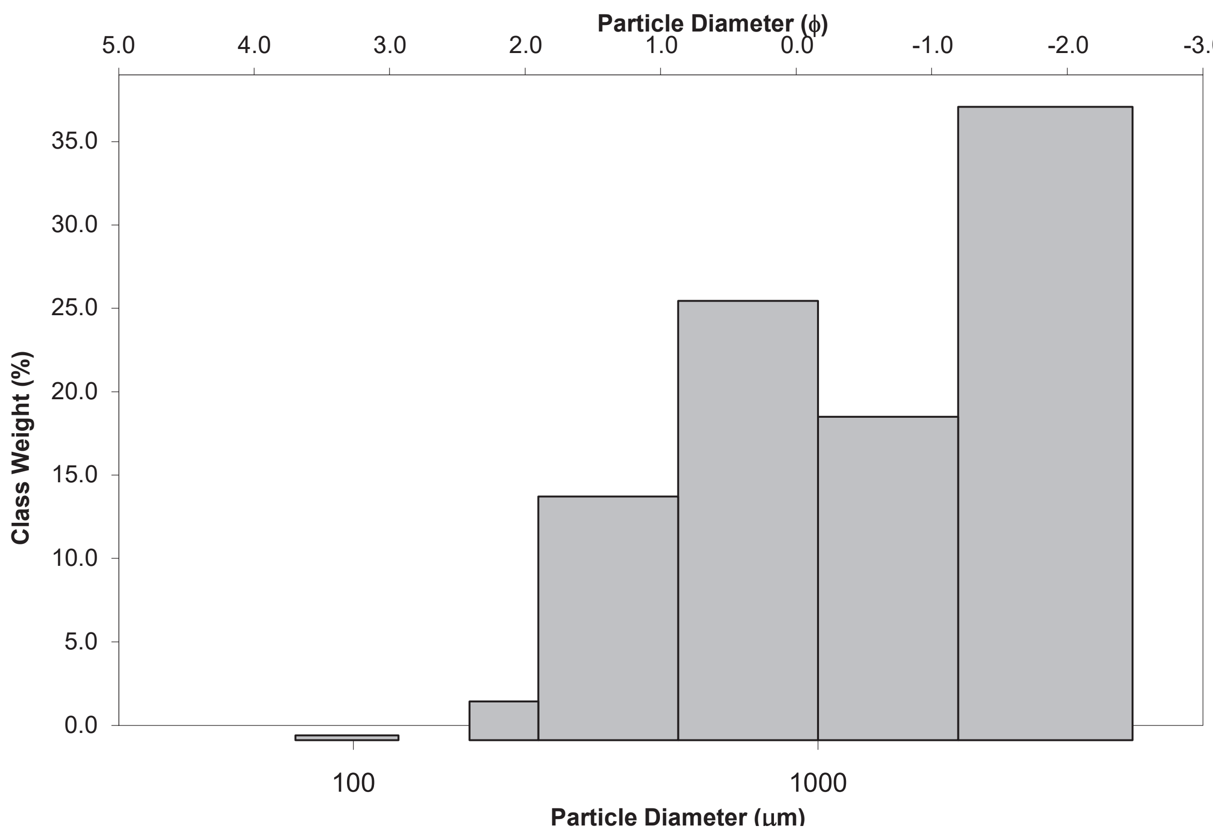
	μm	ϕ
MODE 1:	3375.0	-1.624
MODE 2:	750.0	0.500
MODE 3:		
D_{10}:	646.7	-6.521
MEDIAN or D_{50}:	3866.1	-1.951
D_{90}:	91858.7	0.629
(D_{90} / D_{10}):	142.0	-0.096
$(D_{90} - D_{10})$:	91212.0	7.150
(D_{75} / D_{25}):	0.937	1.097
$(D_{75} - D_{25})$:	-132.878	-0.094

GRAIN SIZE DISTRIBUTION

GRAVEL:	76.0%	COARSE SAND:	10.2%
SAND:	24.0%	MEDIUM SAND:	5.7%
MUD:	0.0%	FINE SAND:	0.4%
		V FINE SAND:	0.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	61.3%	FINE SILT:	0.0%
V FINE GRAVEL:	14.8%	V FINE SILT:	0.0%
V COARSE SAND:	7.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	833.6	21.29	-0.188	1795.2	-0.844	Very Coarse Sand
SORTING (σ):	1279.9	36.82	0.809	1.301	0.380	Well Sorted
SKEWNESS (Sk):	1.290	0.373	-0.260	-4.237	4.237	Very Fine Skewed
KURTOSIS (K):	2.973	1.216	3.631	-6.110	-6.110	Very Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12847** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

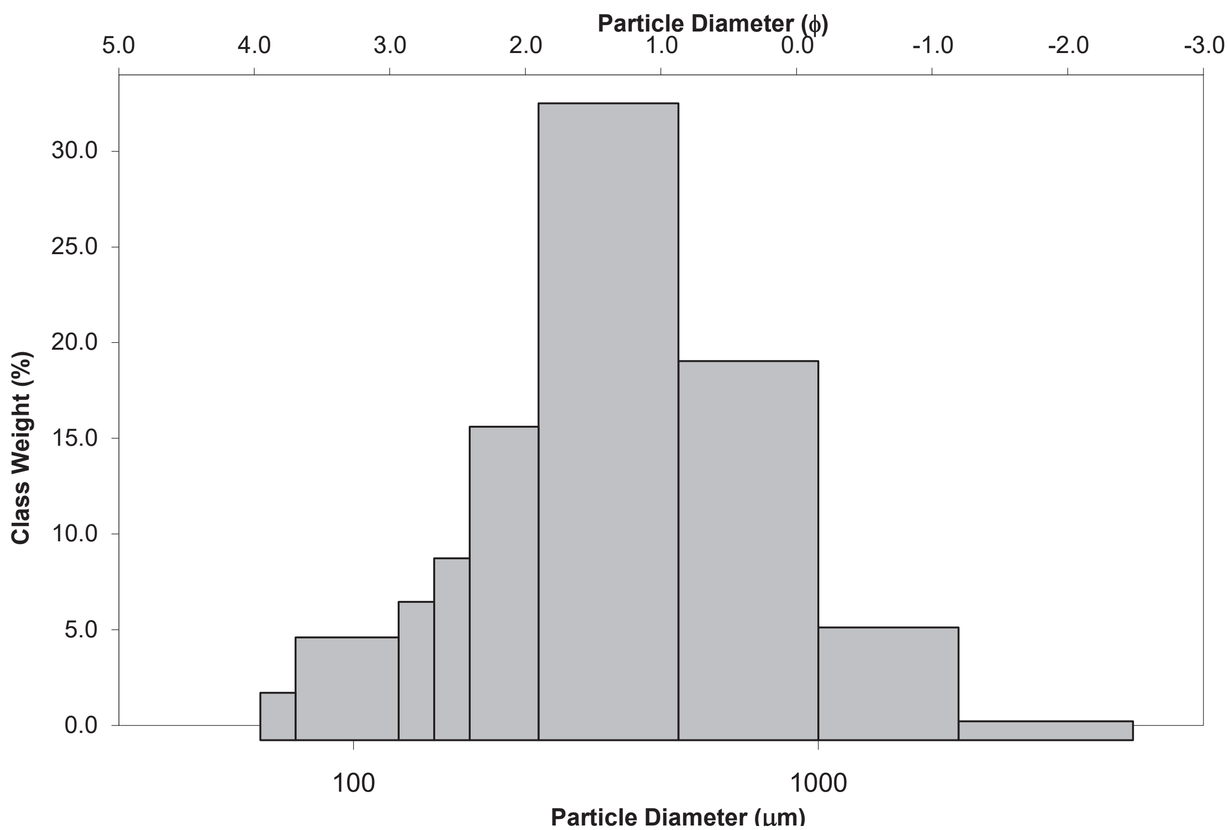
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	164.4	0.010
MEDIAN or D_{50}:	394.3	1.343
D_{90}:	993.0	2.604
(D_{90} / D_{10}):	6.039	258.8
$(D_{90} - D_{10})$:	828.6	2.594
(D_{75} / D_{25}):	2.510	3.223
$(D_{75} - D_{25})$:	397.7	1.328

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.1%	COARSE SAND:	25.5%
SAND:	97.9%	MEDIUM SAND:	42.9%
MUD:	0.0%	FINE SAND:	15.9%
		V FINE SAND:	5.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.9%	FINE SILT:	0.0%
V FINE GRAVEL:	1.3%	V FINE SILT:	0.0%
V COARSE SAND:	7.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	556.1	392.2	1.294	409.8	1.287	Medium Sand
SORTING (σ):	502.3	2.311	1.024	2.108	1.076	Poorly Sorted
SKEWNESS (Sk):	3.177	-1.889	-0.113	0.065	-0.065	Symmetrical
KURTOSIS (K):	16.73	16.35	3.344	1.159	1.159	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12848** — ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted — TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

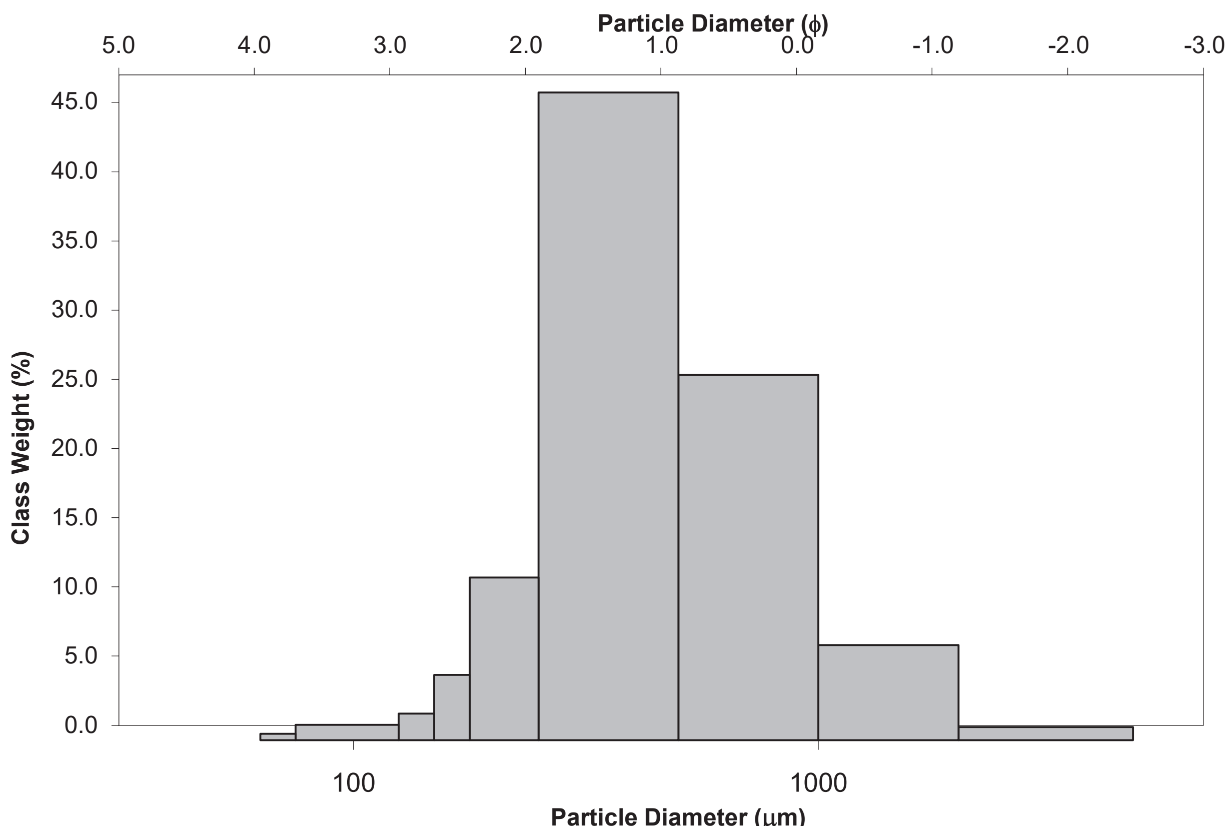
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	252.3	0.027
MEDIAN or D_{50}:	429.6	1.219
D_{90}:	981.8	1.987
(D_{90} / D_{10}):	3.892	74.97
$(D_{90} - D_{10})$:	729.5	1.961
(D_{75} / D_{25}):	2.237	3.163
$(D_{75} - D_{25})$:	381.1	1.162

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.6%	COARSE SAND:	29.4%
SAND:	98.4%	MEDIUM SAND:	52.1%
MUD:	0.0%	FINE SAND:	8.3%
		V FINE SAND:	1.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.5%	FINE SILT:	0.0%
V FINE GRAVEL:	1.0%	V FINE SILT:	0.0%
V COARSE SAND:	7.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	591.4	457.6	1.099	464.2	1.107	Medium Sand
SORTING (σ):	459.5	1.928	0.820	1.799	0.847	Moderately Sorted
SKEWNESS (Sk):	3.348	-1.951	-0.546	0.217	-0.217	Coarse Skewed
KURTOSIS (K):	18.65	24.41	4.012	1.017	1.017	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12849** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Sand

SEDIMENT NAME: Moderately Sorted Fine Sand

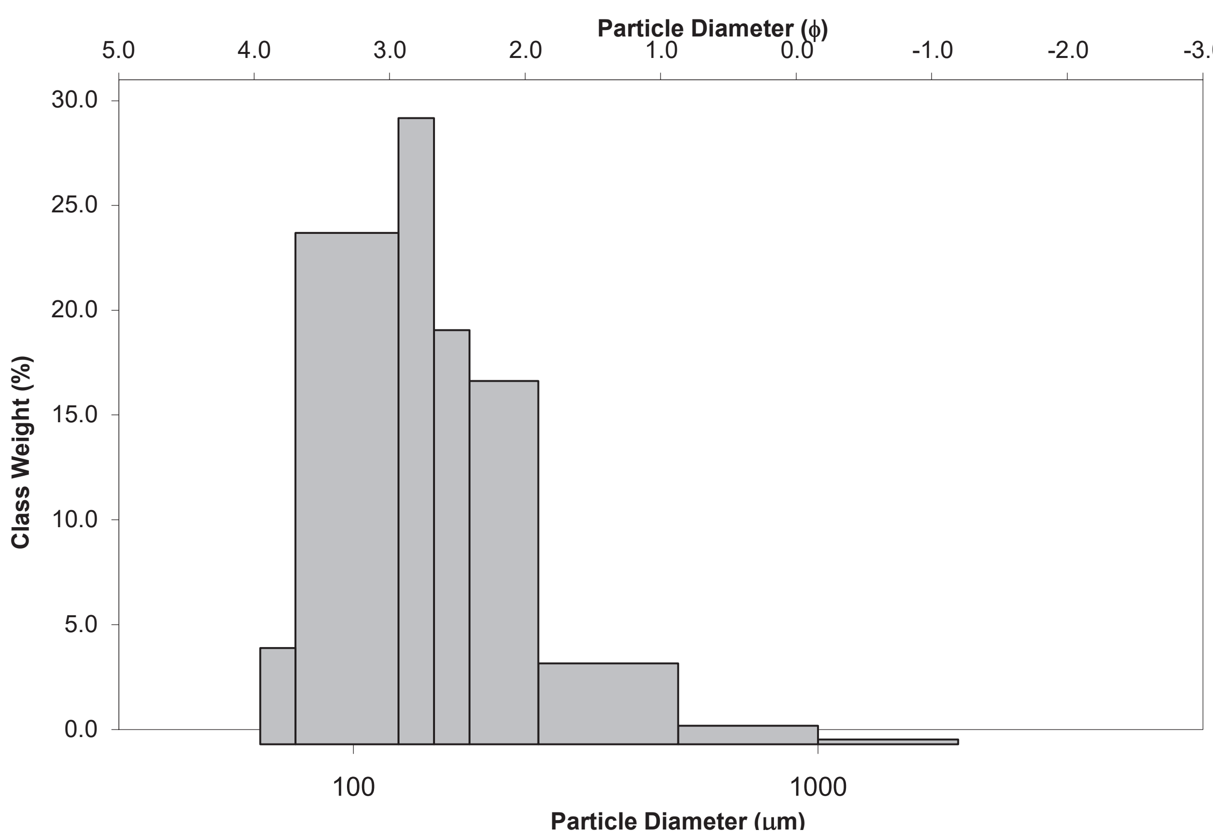
	μm	φ
MODE 1:	137.0	2.873
MODE 2:		
MODE 3:		
D_{10}:	82.53	1.890
MEDIAN or D_{50}:	135.5	2.884
D_{90}:	269.8	3.599
(D_{90} / D_{10}):	3.270	1.904
(D_{90} - D_{10}):	187.3	1.709
(D_{75} / D_{25}):	1.938	1.403
(D_{75} - D_{25}):	93.81	0.954

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	1.9%
SAND:	100.0%	MEDIUM SAND:	8.5%
MUD:	0.0%	FINE SAND:	46.7%
		V FINE SAND:	42.3%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	0.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	176.6	146.6	2.770	140.2	2.835	Fine Sand
SORTING (σ):	145.8	1.646	0.719	1.625	0.701	Moderately Sorted
SKEWNESS (Sk):	4.893	1.280	-1.280	0.216	-0.216	Coarse Skewed
KURTOSIS (K):	37.37	5.166	5.166	1.026	1.026	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12850** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

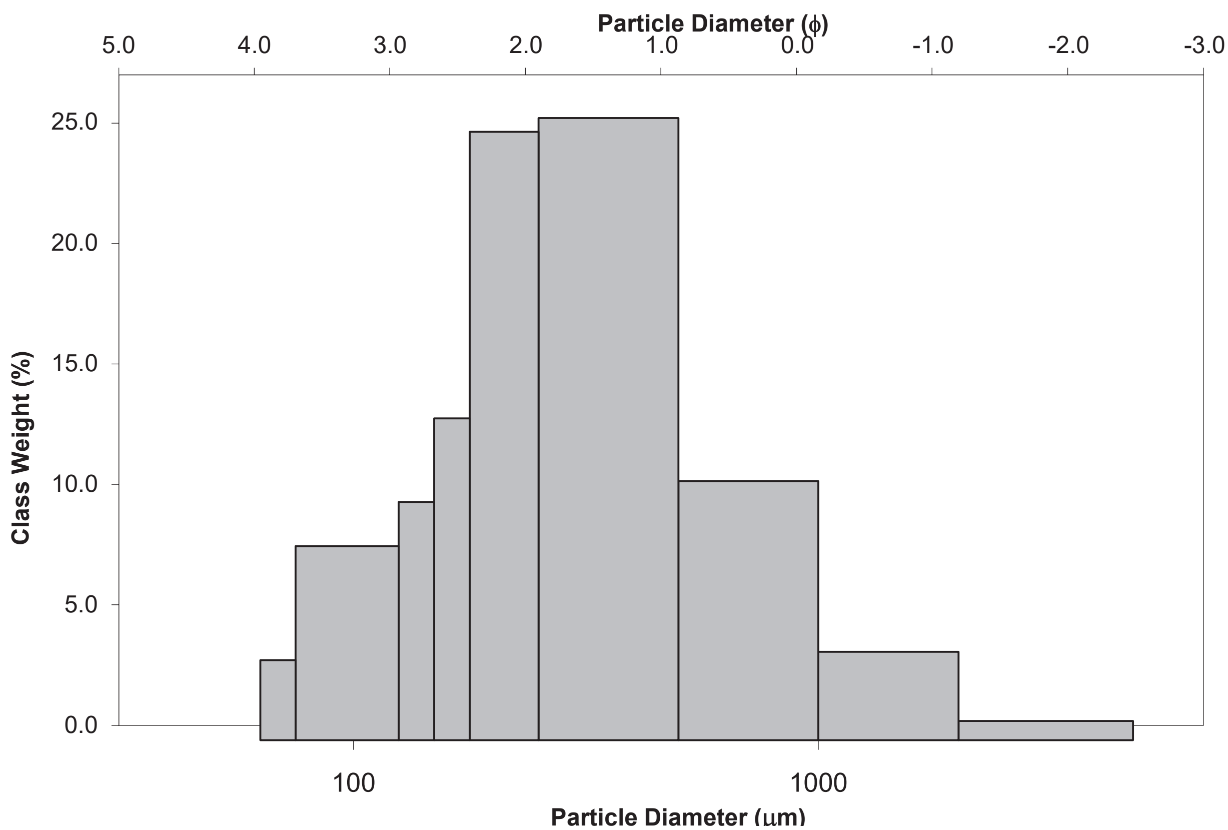
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	123.9	0.159
MEDIAN or D_{50}:	311.6	1.682
D_{90}:	895.7	3.013
(D_{90} / D_{10}):	7.232	18.96
$(D_{90} - D_{10})$:	771.8	2.854
(D_{75} / D_{25}):	2.458	2.251
$(D_{75} - D_{25})$:	289.1	1.297

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.9%	COARSE SAND:	16.1%
SAND:	98.1%	MEDIUM SAND:	38.8%
MUD:	0.0%	FINE SAND:	27.5%
		V FINE SAND:	10.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.8%	FINE SILT:	0.0%
V FINE GRAVEL:	1.2%	V FINE SILT:	0.0%
V COARSE SAND:	5.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	461.6	315.2	1.620	325.6	1.619	Medium Sand
SORTING (σ):	484.8	2.303	1.068	2.165	1.114	Poorly Sorted
SKEWNESS (Sk):	3.669	-1.162	-0.398	0.094	-0.094	Symmetrical
KURTOSIS (K):	20.43	12.57	3.342	1.222	1.222	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12851**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

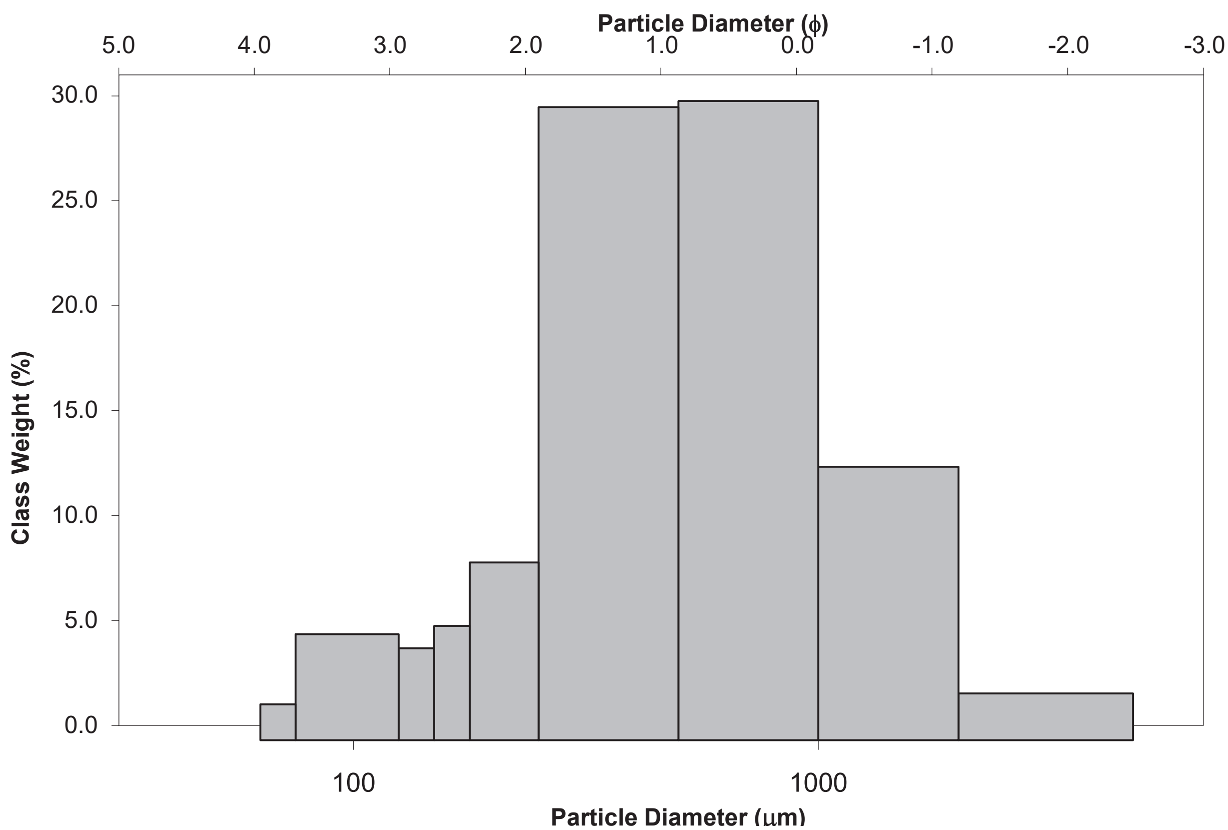
	μm	φ
MODE 1:	750.0	0.500
MODE 2:	100.0	3.368
MODE 3:		
D_{10}:	211.5	-0.575
MEDIAN or D_{50}:	533.8	0.906
D_{90}:	1489.7	2.241
(D_{90} / D_{10}):	7.042	-3.897
(D_{90} - D_{10}):	1278.2	2.816
(D_{75} / D_{25}):	2.724	8.776
(D_{75} - D_{25}):	556.4	1.446

GRAIN SIZE DISTRIBUTION

GRAVEL:	3.7%	COARSE SAND:	34.7%
SAND:	96.3%	MEDIUM SAND:	34.4%
MUD:	0.0%	FINE SAND:	7.6%
		V FINE SAND:	4.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.2%	FINE SILT:	0.0%
V FINE GRAVEL:	2.5%	V FINE SILT:	0.0%
V COARSE SAND:	14.9%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	737.8	512.8	0.910	544.9	0.876	Coarse Sand
SORTING (σ):	629.4	2.396	1.077	2.144	1.101	Poorly Sorted
SKEWNESS (Sk):	2.409	-1.929	0.125	-0.007	0.007	Symmetrical
KURTOSIS (K):	10.18	15.58	3.229	1.094	1.094	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12852**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

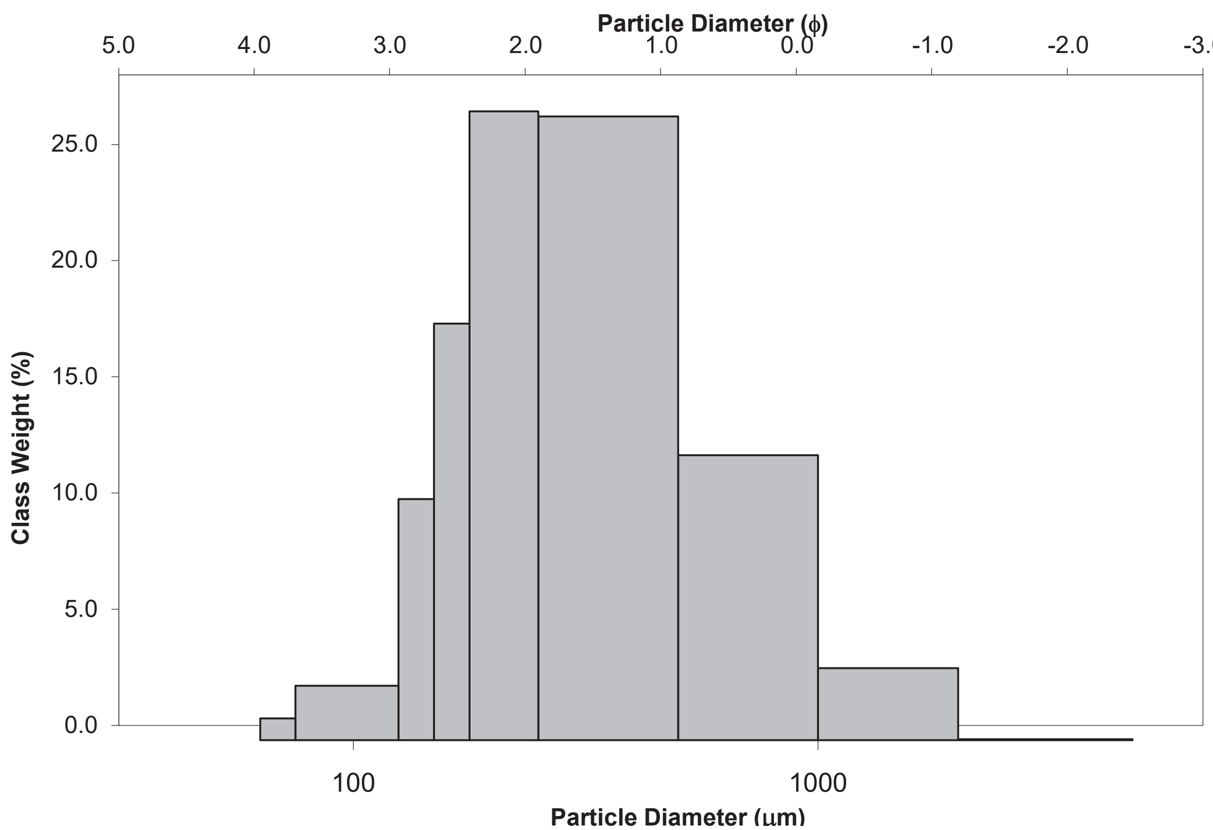
SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

	μm	ϕ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	160.3	0.271
MEDIAN or D_{50}:	322.7	1.632
D_{90}:	828.6	2.642
(D_{90} / D_{10}):	5.171	9.741
(D_{90} - D_{10}):	668.4	2.370
(D_{75} / D_{25}):	2.303	2.170
(D_{75} - D_{25}):	277.3	1.204

GRAIN SIZE DISTRIBUTION			
GRAVEL:	0.1%	COARSE SAND:	18.9%
SAND:	99.9%	MEDIUM SAND:	41.5%
MUD:	0.0%	FINE SAND:	31.7%
		V FINE SAND:	3.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.1%	V FINE SILT:	0.0%
V COARSE SAND:	4.8%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	436.0	339.4	1.559	340.1	1.556	Medium Sand
SORTING (σ):	321.9	1.843	0.882	1.866	0.900	Moderately Sorted
SKEWNESS (Sk):	2.313	0.325	-0.325	0.127	-0.127	Coarse Skewed
KURTOSIS (K):	11.43	3.013	3.013	0.977	0.977	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12853** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

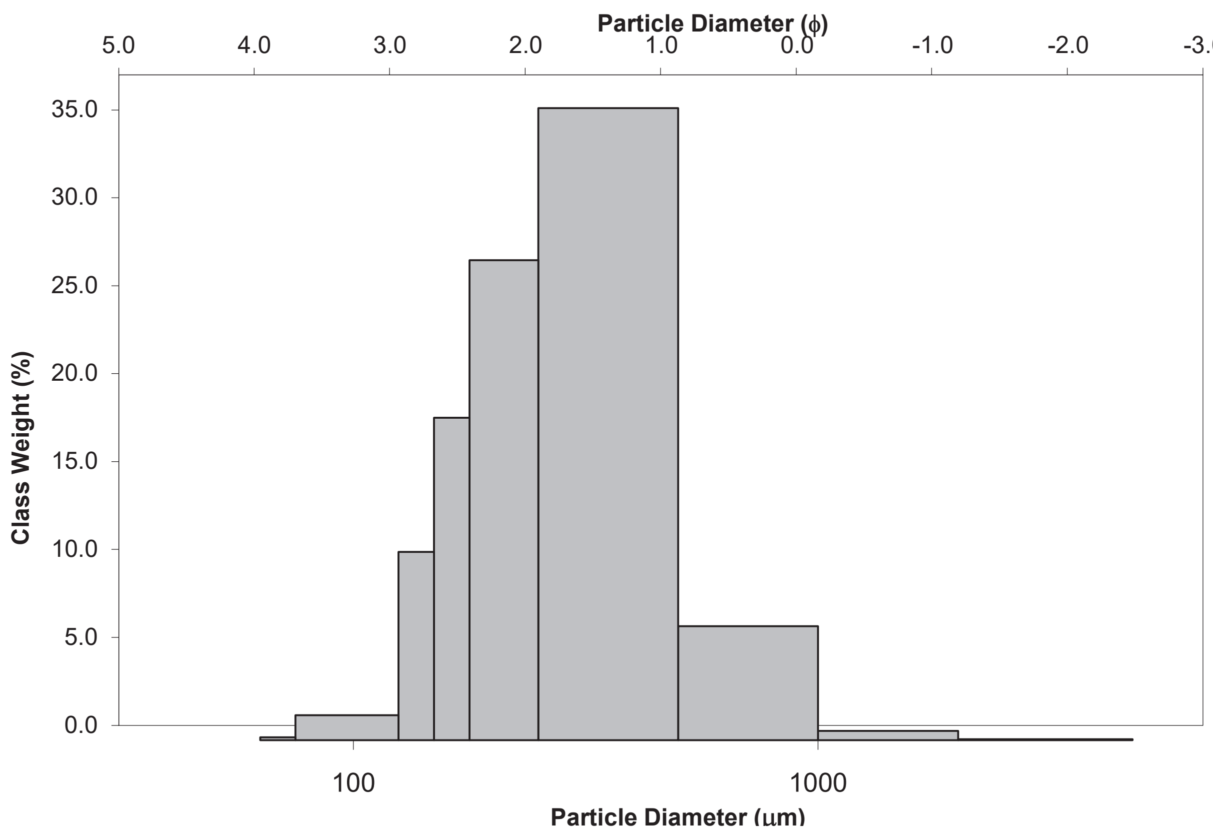
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	165.0	0.916
MEDIAN or D_{50}:	306.3	1.707
D_{90}:	529.9	2.600
(D_{90} / D_{10}):	3.212	2.838
$(D_{90} - D_{10})$:	364.9	1.684
(D_{75} / D_{25}):	1.935	1.759
$(D_{75} - D_{25})$:	202.4	0.952

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.1%	COARSE SAND:	10.0%
SAND:	99.9%	MEDIUM SAND:	55.4%
MUD:	0.0%	FINE SAND:	32.1%
		V FINE SAND:	1.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.1%	V FINE SILT:	0.0%
V COARSE SAND:	0.8%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	360.5	306.5	1.706	299.2	1.741	Medium Sand
SORTING (σ):	208.0	1.584	0.664	1.617	0.693	Moderately Well Sorted
SKEWNESS (Sk):	4.185	0.205	-0.205	0.004	-0.004	Symmetrical
KURTOSIS (K):	44.11	4.015	4.015	1.026	1.026	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12854** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

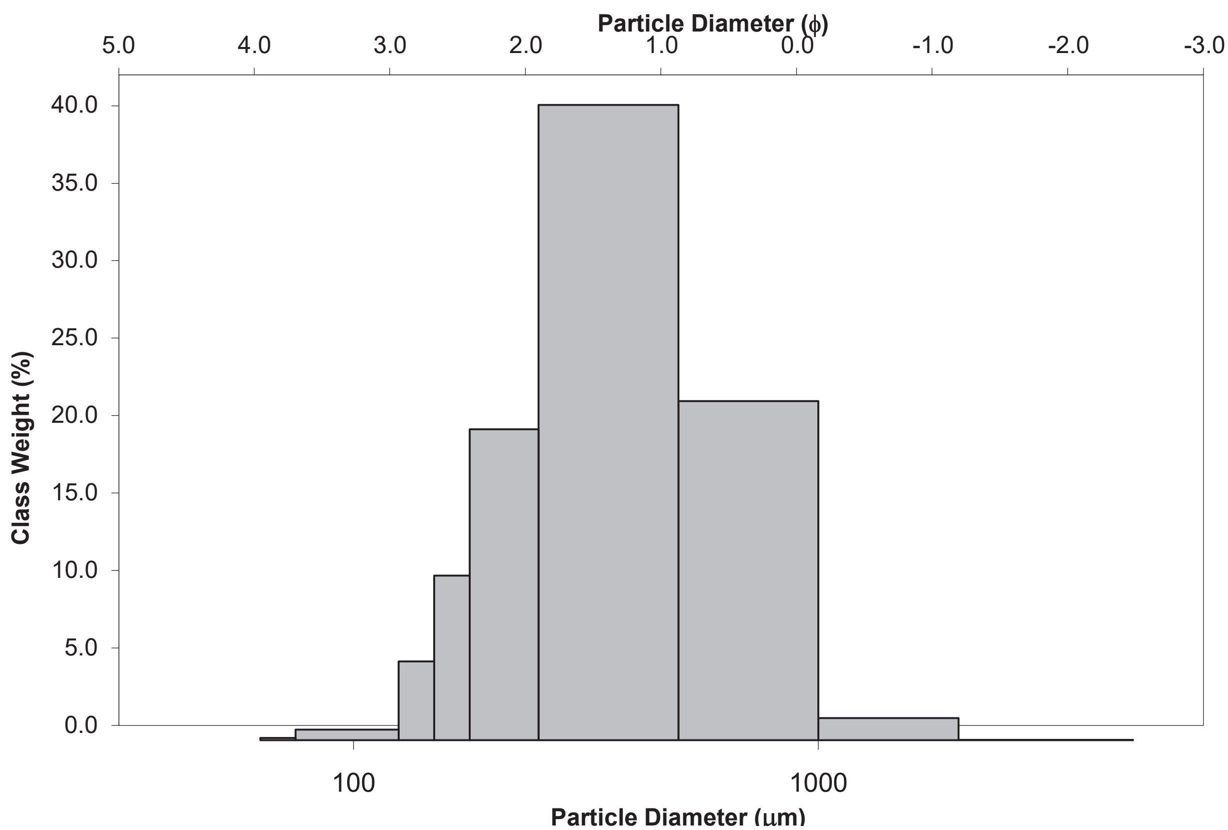
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	199.6	0.294
MEDIAN or D_{50}:	381.3	1.391
D_{90}:	815.5	2.325
(D_{90} / D_{10}):	4.086	7.901
(D_{90} - D_{10}):	615.9	2.031
(D_{75} / D_{25}):	2.053	2.244
(D_{75} - D_{25}):	287.7	1.037

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	27.8%
SAND:	100.0%	MEDIUM SAND:	52.1%
MUD:	0.0%	FINE SAND:	17.6%
		V FINE SAND:	0.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	1.8%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	466.9	391.6	1.353	397.7	1.330	Medium Sand
SORTING (σ):	247.9	1.631	0.706	1.698	0.763	Moderately Sorted
SKEWNESS (Sk):	1.759	0.043	-0.043	0.083	-0.083	Symmetrical
KURTOSIS (K):	10.06	3.026	3.026	0.961	0.961	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12855**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Moderately Well Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

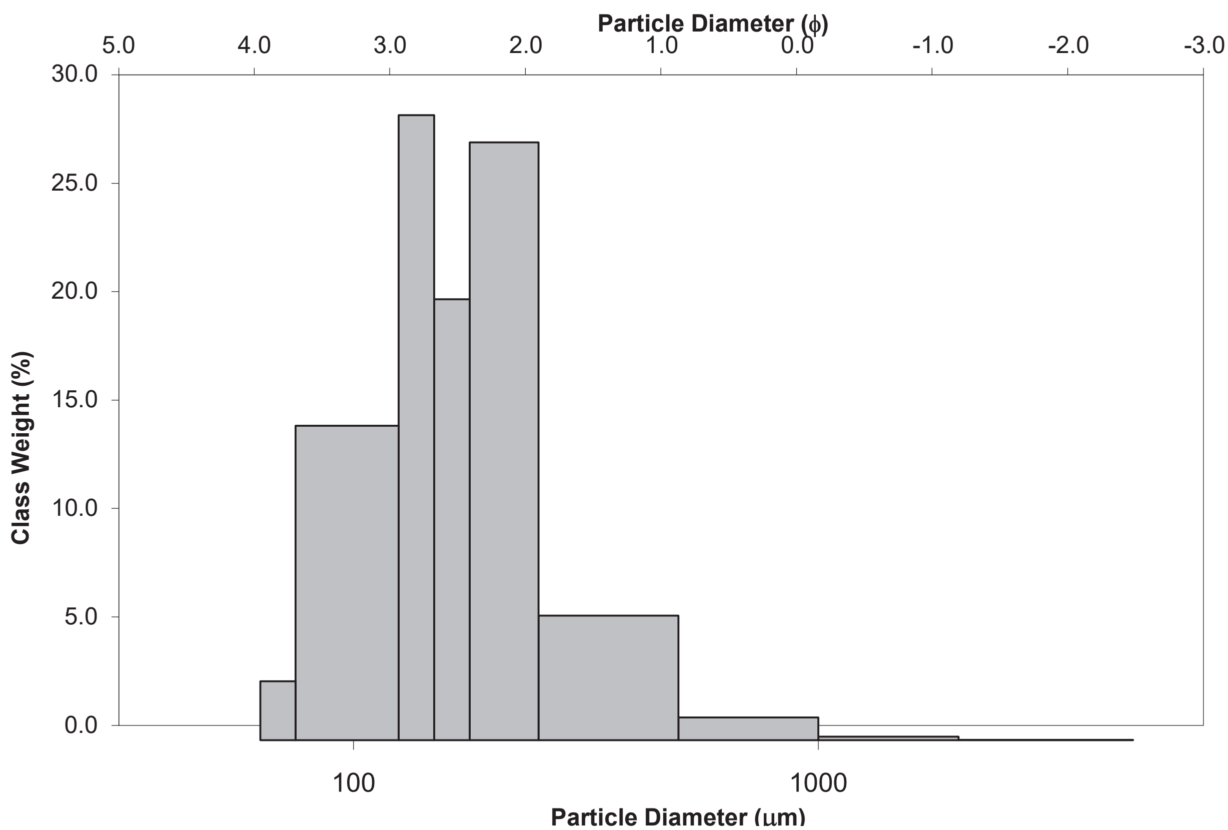
	μm	φ
MODE 1:	137.0	2.873
MODE 2:	213.9	2.246
MODE 3:		
D_{10}:	89.75	1.563
MEDIAN or D_{50}:	168.0	2.574
D_{90}:	338.5	3.478
(D_{90} / D_{10}):	3.772	2.226
(D_{90} - D_{10}):	248.8	1.915
(D_{75} / D_{25}):	1.826	1.404
(D_{75} - D_{25}):	101.9	0.869

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	2.3%
SAND:	100.0%	MEDIUM SAND:	12.9%
MUD:	0.0%	FINE SAND:	58.7%
		V FINE SAND:	25.6%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	0.4%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	204.4	172.0	2.540	162.2	2.625	Fine Sand
SORTING (σ):	151.9	1.642	0.716	1.618	0.694	Moderately Well Sorted
SKEWNESS (Sk):	5.643	0.794	-0.794	0.010	-0.010	Symmetrical
KURTOSIS (K):	70.66	4.192	4.192	1.158	1.158	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12856** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

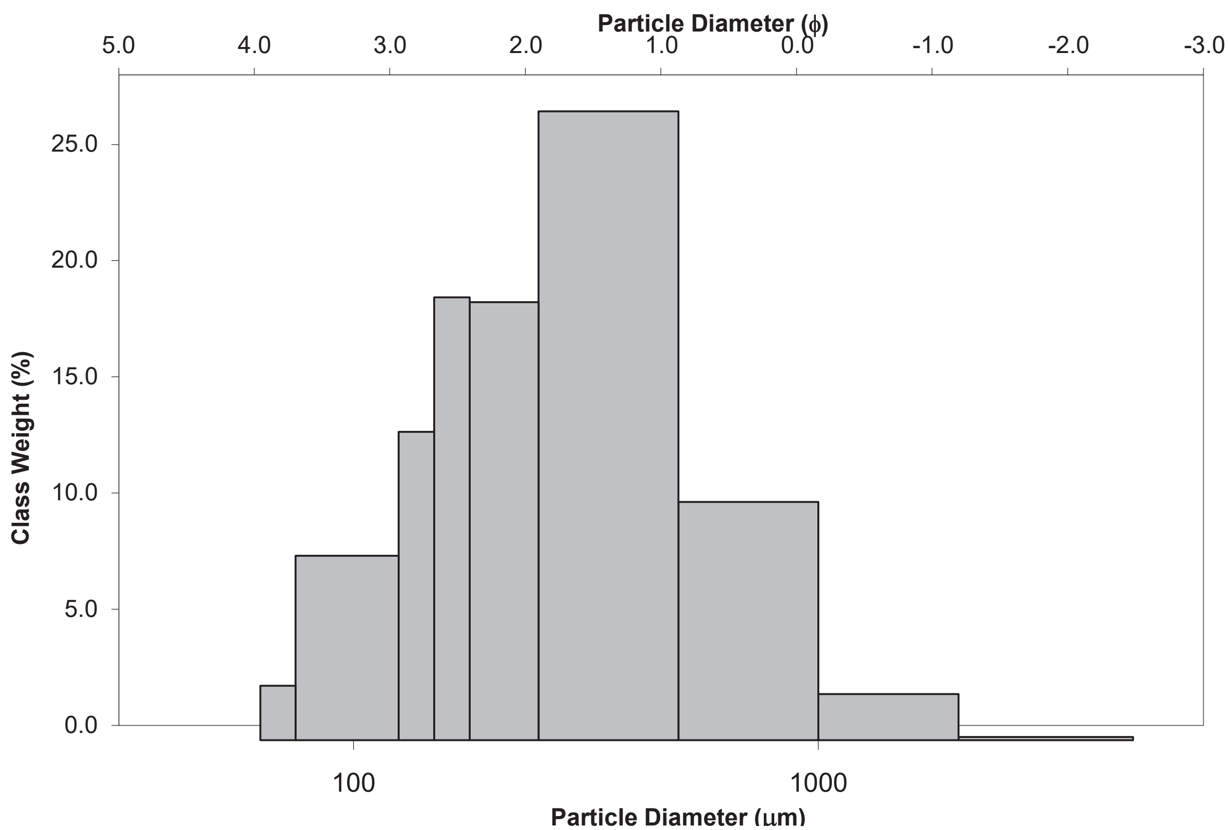
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:	163.4	2.620
MODE 3:		
D_{10}:	123.9	0.409
MEDIAN or D_{50}:	305.0	1.713
D_{90}:	753.2	3.012
(D_{90} / D_{10}):	6.078	7.367
(D_{90} - D_{10}):	629.3	2.604
(D_{75} / D_{25}):	2.464	2.154
(D_{75} - D_{25}):	272.0	1.301

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.3%	COARSE SAND:	16.2%
SAND:	99.7%	MEDIUM SAND:	42.7%
MUD:	0.0%	FINE SAND:	27.6%
		V FINE SAND:	10.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.1%	FINE SILT:	0.0%
V FINE GRAVEL:	0.2%	V FINE SILT:	0.0%
V COARSE SAND:	3.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	398.2	301.6	1.730	299.3	1.740	Medium Sand
SORTING (σ):	322.5	1.938	0.955	1.985	0.989	Moderately Sorted
SKEWNESS (Sk):	3.406	0.118	-0.118	-0.034	0.034	Symmetrical
KURTOSIS (K):	24.19	2.997	2.997	1.043	1.043	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12857** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

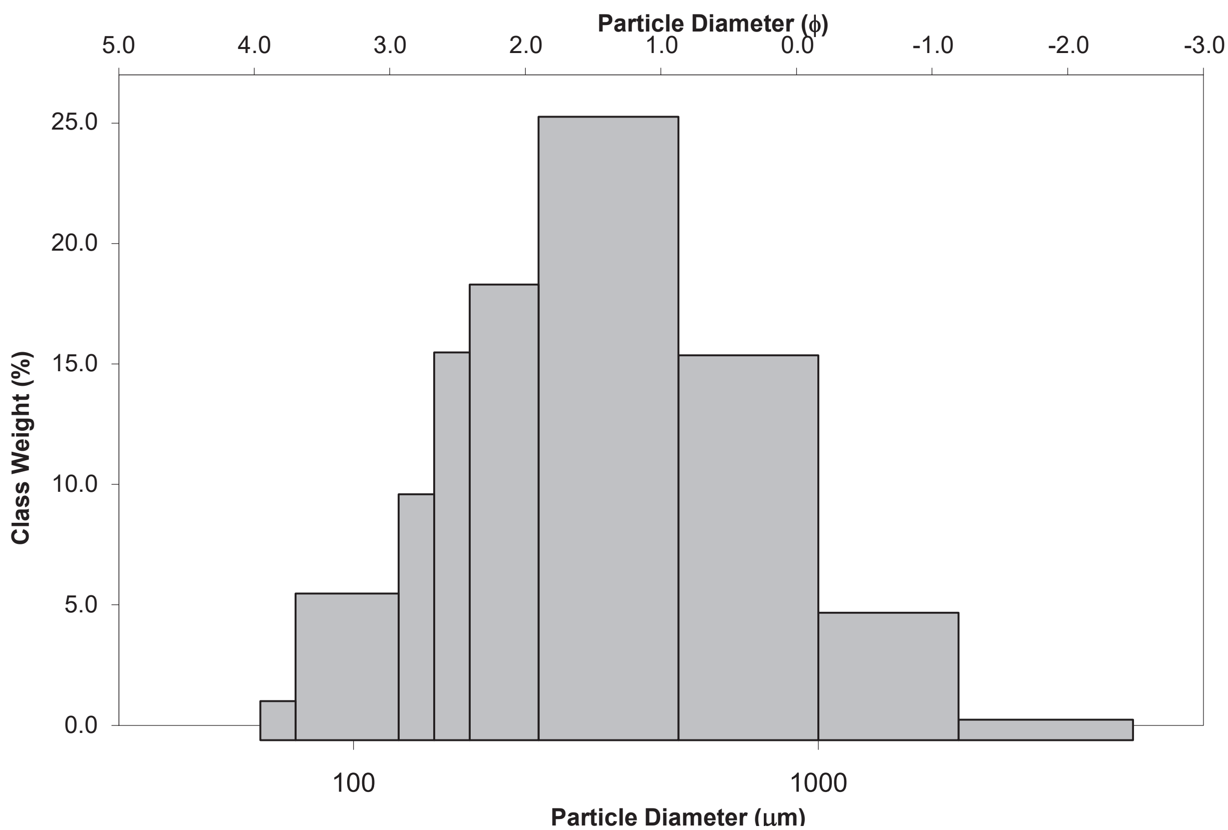
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	143.3	0.036
MEDIAN or D_{50}:	360.4	1.472
D_{90}:	975.4	2.803
(D_{90} / D_{10}):	6.805	78.03
$(D_{90} - D_{10})$:	832.1	2.767
(D_{75} / D_{25}):	2.841	3.201
$(D_{75} - D_{25})$:	403.2	1.507

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.5%	COARSE SAND:	23.1%
SAND:	98.5%	MEDIUM SAND:	37.5%
MUD:	0.0%	FINE SAND:	23.2%
		V FINE SAND:	7.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.3%	FINE SILT:	0.0%
V FINE GRAVEL:	1.2%	V FINE SILT:	0.0%
V COARSE SAND:	7.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	530.6	373.2	1.422	370.9	1.431	Medium Sand
SORTING (σ):	505.7	2.109	1.077	2.189	1.130	Poorly Sorted
SKEWNESS (Sk):	3.135	0.238	-0.238	0.062	-0.062	Symmetrical
KURTOSIS (K):	16.36	2.986	2.986	1.029	1.029	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12858** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

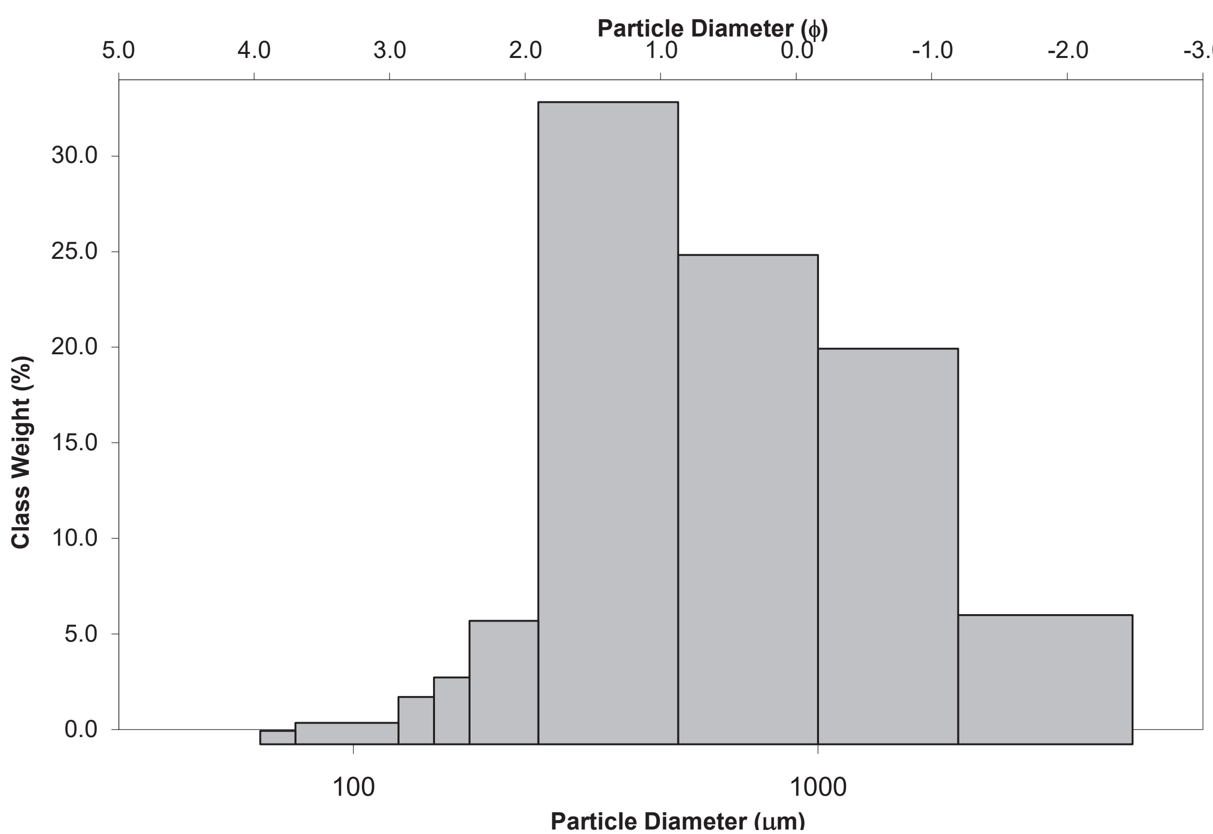
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	272.1	-1.369
MEDIAN or D_{50}:	649.2	0.623
D_{90}:	2583.4	1.878
(D_{90} / D_{10}):	9.496	-1.372
$(D_{90} - D_{10})$:	2311.3	3.247
(D_{75} / D_{25}):	3.611	-3.505
$(D_{75} - D_{25})$:	961.5	1.852

GRAIN SIZE DISTRIBUTION

GRAVEL:	12.5%	COARSE SAND:	26.2%
SAND:	87.5%	MEDIUM SAND:	34.3%
MUD:	0.0%	FINE SAND:	4.8%
		V FINE SAND:	1.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	5.6%	FINE SILT:	0.0%
V FINE GRAVEL:	6.9%	V FINE SILT:	0.0%
V COARSE SAND:	21.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	943.2	520.4	0.550	708.8	0.497	Coarse Sand
SORTING (σ):	874.6	4.377	1.103	2.418	1.274	Poorly Sorted
SKEWNESS (Sk):	1.721	-2.811	-0.203	0.219	-0.219	Coarse Skewed
KURTOSIS (K):	5.334	12.93	2.591	0.933	0.933	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12859** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Very Coarse Sand

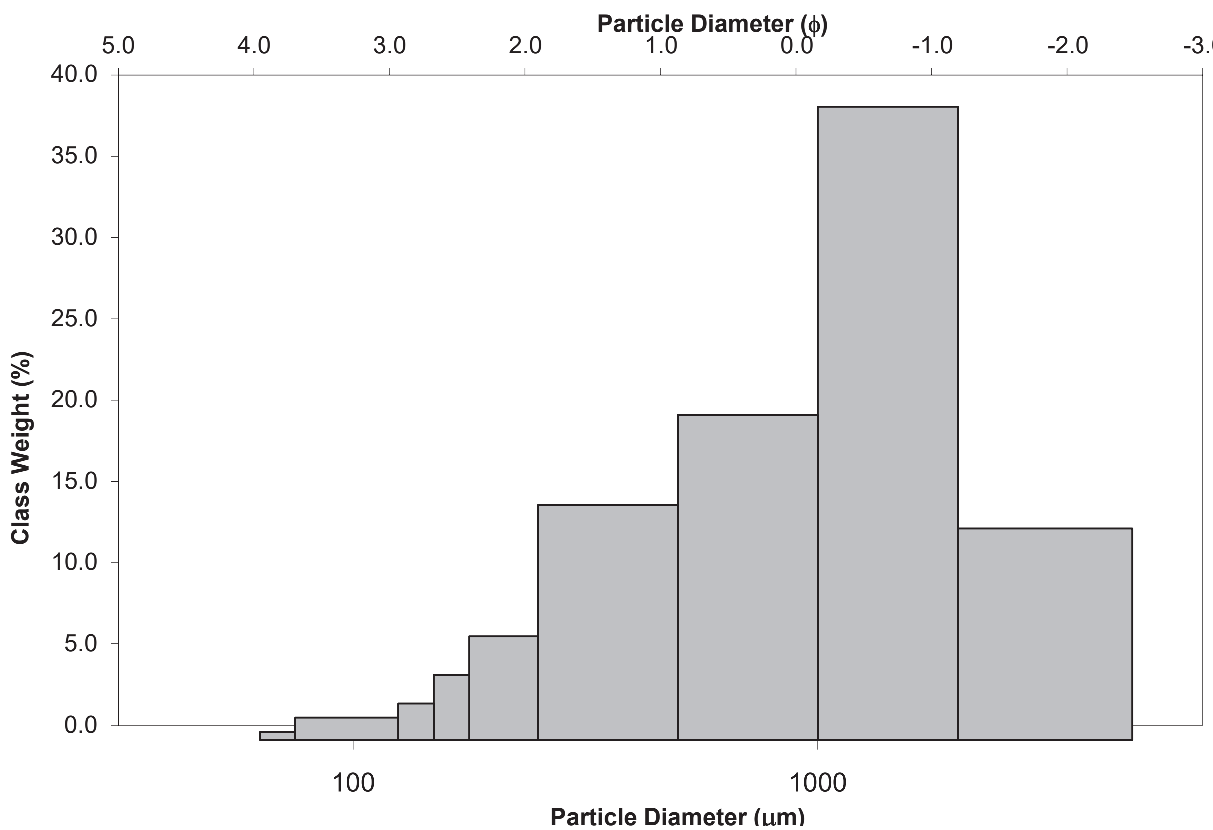
	μm	φ
MODE 1:	1500.0	-0.500
MODE 2:		
MODE 3:		
D_{10}:	299.4	-1.558
MEDIAN or D_{50}:	1148.2	-0.199
D_{90}:	2944.9	1.740
(D_{90} / D_{10}):	9.836	-1.117
(D_{90} - D_{10}):	2645.5	3.298
(D_{75} / D_{25}):	3.095	-0.997
(D_{75} - D_{25}):	1191.8	1.630

GRAIN SIZE DISTRIBUTION

GRAVEL:	17.5%	COARSE SAND:	20.8%
SAND:	82.5%	MEDIUM SAND:	15.0%
MUD:	0.0%	FINE SAND:	4.9%
		V FINE SAND:	1.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	4.0%	FINE SILT:	0.0%
V FINE GRAVEL:	13.5%	V FINE SILT:	0.0%
V COARSE SAND:	40.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1400.5	947.2	0.011	993.7	0.009	Coarse Sand
SORTING (σ):	1006.4	2.681	1.166	2.352	1.234	Poorly Sorted
SKEWNESS (Sk):	0.931	-2.476	0.560	-0.205	0.205	Fine Skewed
KURTOSIS (K):	2.859	16.97	2.862	1.029	1.029	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12860** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

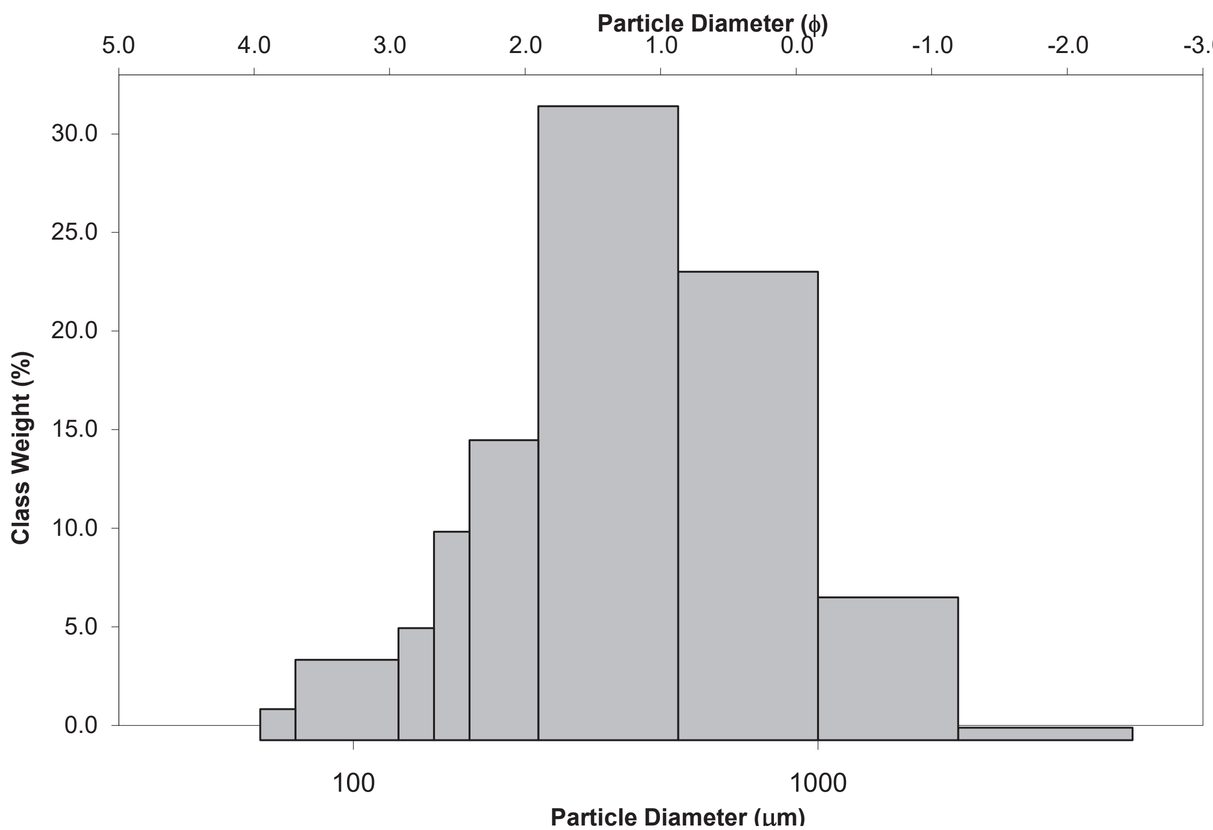
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	180.9	-0.035
MEDIAN or D_{50}:	424.3	1.237
D_{90}:	1024.5	2.466
(D_{90} / D_{10}):	5.662	-70.492
$(D_{90} - D_{10})$:	843.6	2.501
(D_{75} / D_{25}):	2.573	3.791
$(D_{75} - D_{25})$:	435.7	1.363

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.2%	COARSE SAND:	30.1%
SAND:	98.8%	MEDIUM SAND:	40.7%
MUD:	0.0%	FINE SAND:	14.7%
		V FINE SAND:	4.3%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.4%	FINE SILT:	0.0%
V FINE GRAVEL:	0.8%	V FINE SILT:	0.0%
V COARSE SAND:	9.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	581.1	430.4	1.199	437.3	1.193	Medium Sand
SORTING (σ):	462.3	2.067	0.983	2.026	1.019	Poorly Sorted
SKEWNESS (Sk):	2.752	-0.973	0.005	0.055	-0.055	Symmetrical
KURTOSIS (K):	14.85	10.89	3.166	1.047	1.047	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12861**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

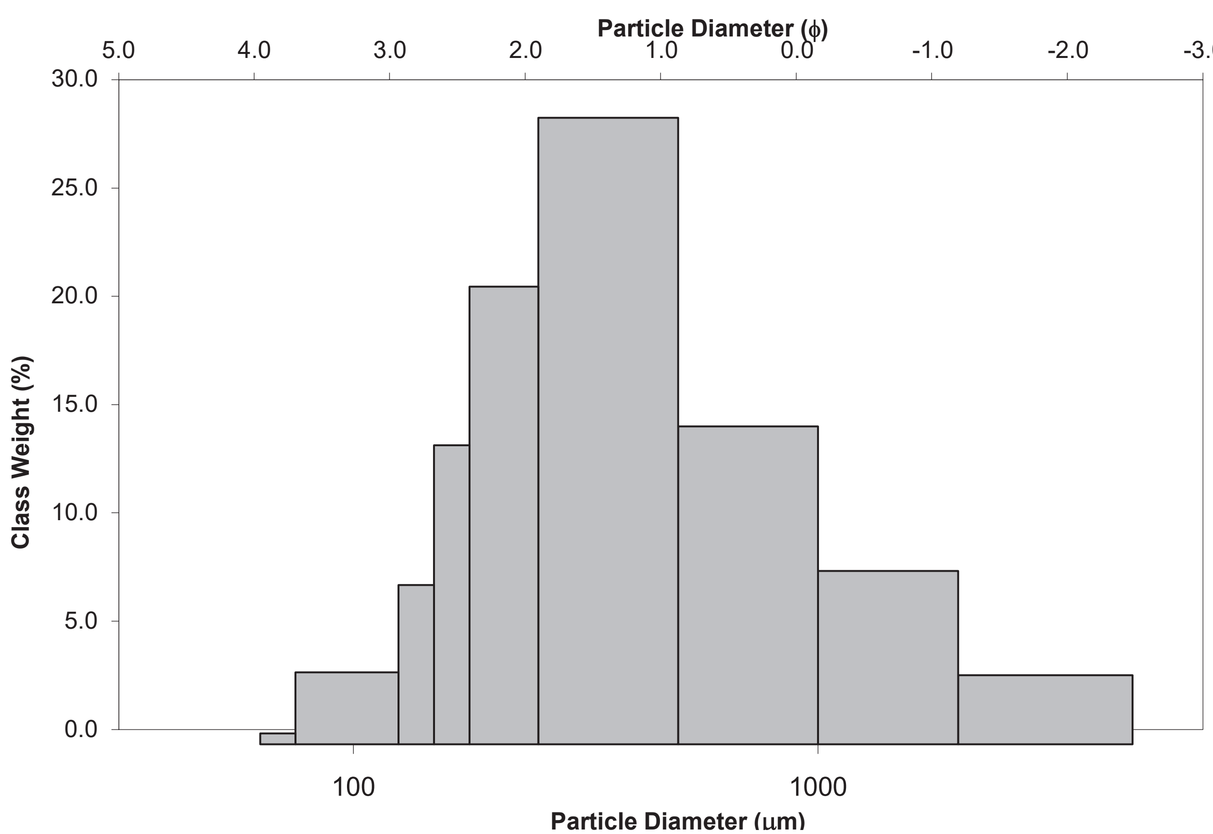
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	174.4	-0.764
MEDIAN or D_{50}:	398.6	1.327
D_{90}:	1698.7	2.520
(D_{90} / D_{10}):	9.742	-3.296
(D_{90} - D_{10}):	1524.3	3.284
(D_{75} / D_{25}):	3.083	5.561
(D_{75} - D_{25}):	527.8	1.624

GRAIN SIZE DISTRIBUTION

GRAVEL:	7.5%	COARSE SAND:	19.4%
SAND:	92.5%	MEDIUM SAND:	38.3%
MUD:	0.0%	FINE SAND:	20.9%
		V FINE SAND:	3.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	3.3%	FINE SILT:	0.0%
V FINE GRAVEL:	4.2%	V FINE SILT:	0.0%
V COARSE SAND:	10.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	668.6	385.8	1.149	453.2	1.142	Medium Sand
SORTING (σ):	748.5	3.346	1.166	2.453	1.295	Poorly Sorted
SKEWNESS (Sk):	2.519	-2.388	-0.519	0.271	-0.271	Coarse Skewed
KURTOSIS (K):	9.203	14.07	2.957	1.118	1.118	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12862** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

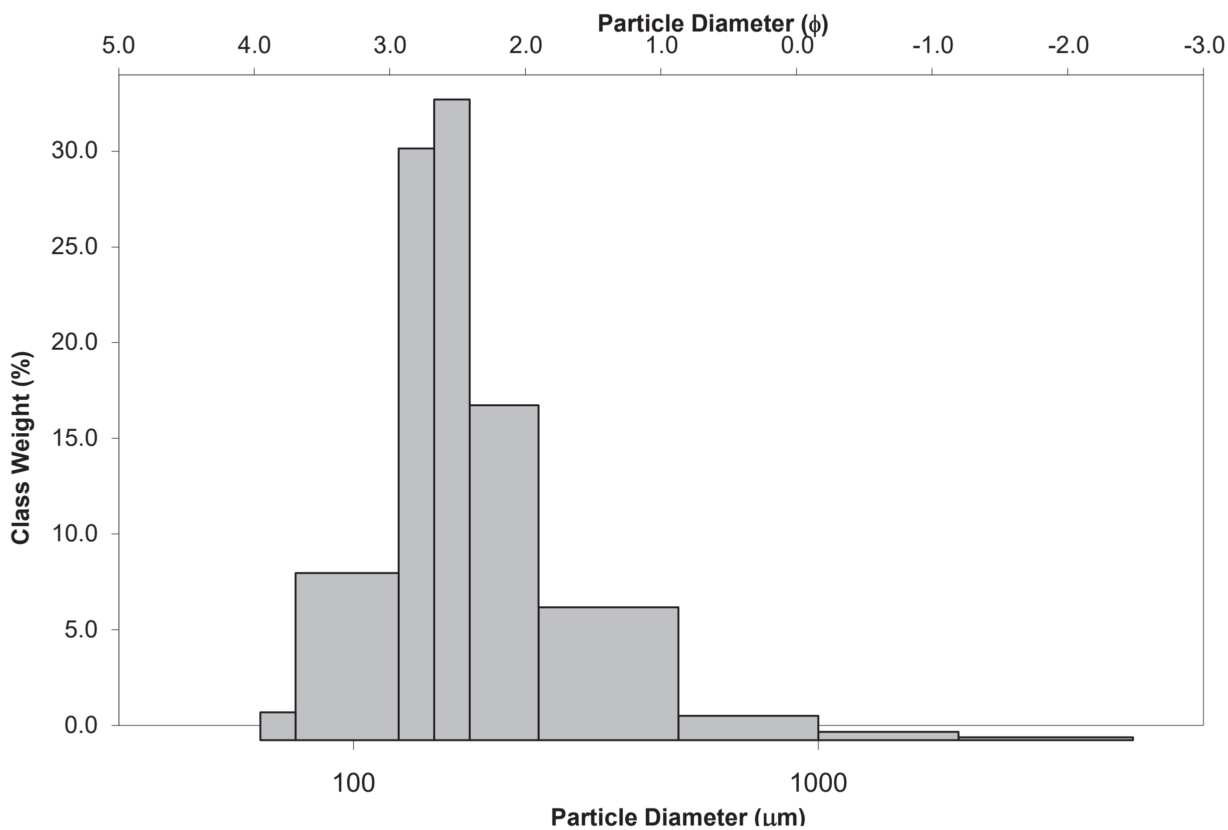
	μm	φ
MODE 1:	163.4	2.620
MODE 2:		
MODE 3:		
D_{10}:	100.6	1.314
MEDIAN or D_{50}:	167.5	2.578
D_{90}:	402.3	3.313
(D_{90} / D_{10}):	3.999	2.522
$(D_{90} - D_{10})$:	301.7	2.000
(D_{75} / D_{25}):	1.760	1.393
$(D_{75} - D_{25})$:	102.5	0.816

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.4%	COARSE SAND:	3.1%
SAND:	99.6%	MEDIUM SAND:	17.1%
MUD:	0.0%	FINE SAND:	61.5%
		V FINE SAND:	16.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.1%	FINE SILT:	0.0%
V FINE GRAVEL:	0.4%	V FINE SILT:	0.0%
V COARSE SAND:	1.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	241.2	188.3	2.409	186.1	2.425	Fine Sand
SORTING (σ):	280.7	1.740	0.799	1.653	0.725	Moderately Sorted
SKEWNESS (Sk):	7.338	1.396	-1.396	0.283	-0.283	Coarse Skewed
KURTOSIS (K):	74.00	6.510	6.510	1.268	1.268	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12863** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted TEXTURAL GROUP: Sand

SEDIMENT NAME: Moderately Well Sorted Medium Sand

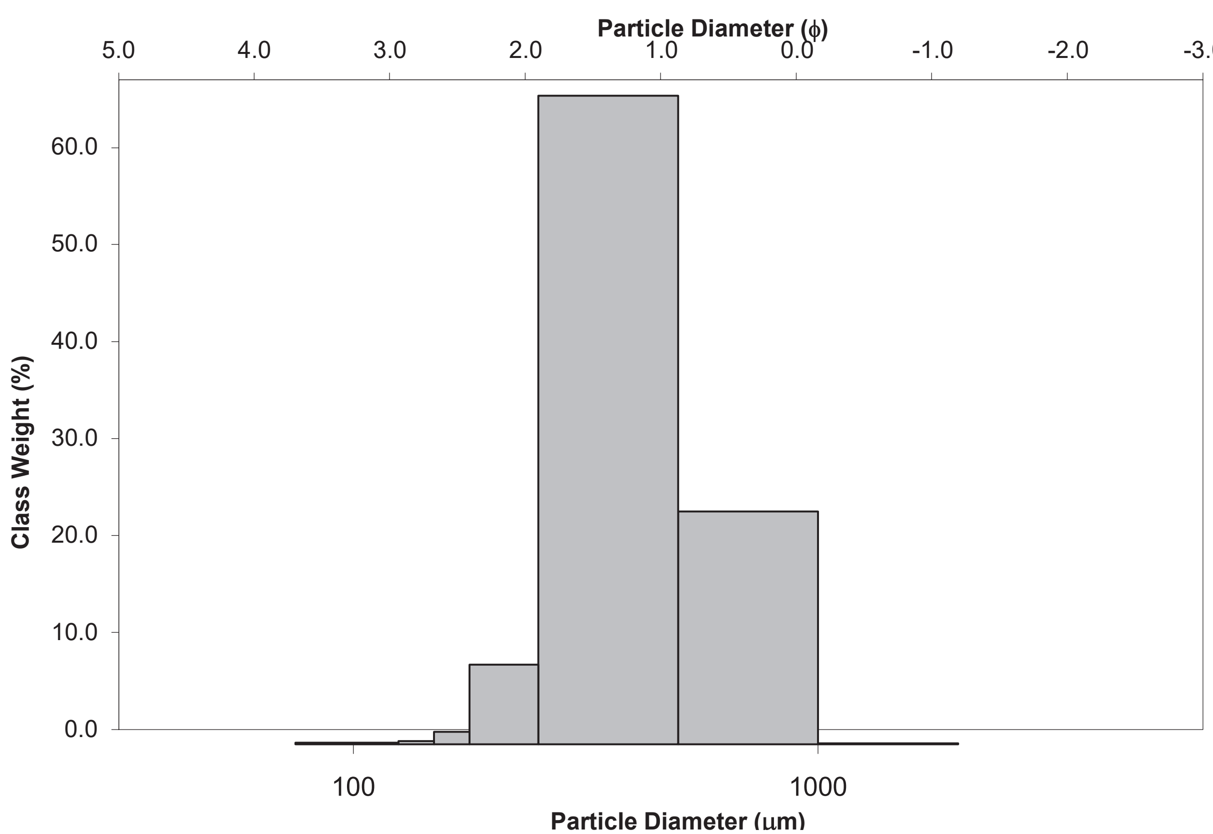
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	263.3	0.395
MEDIAN or D_{50}:	391.2	1.354
D_{90}:	760.7	1.925
(D_{90} / D_{10}):	2.889	4.880
$(D_{90} - D_{10})$:	497.5	1.531
(D_{75} / D_{25}):	1.647	1.726
$(D_{75} - D_{25})$:	197.6	0.720

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	25.1%
SAND:	100.0%	MEDIUM SAND:	70.0%
MUD:	0.0%	FINE SAND:	4.6%
		V FINE SAND:	0.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	0.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	462.1	410.2	1.286	413.1	1.276	Medium Sand
SORTING (σ):	173.8	1.407	0.492	1.489	0.574	Moderately Well Sorted
SKEWNESS (Sk):	1.075	0.500	-0.500	0.241	-0.241	Coarse Skewed
KURTOSIS (K):	3.240	3.083	3.083	1.026	1.026	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12864**
ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted
TEXTURAL GROUP: Slightly Gravelly Sand
SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

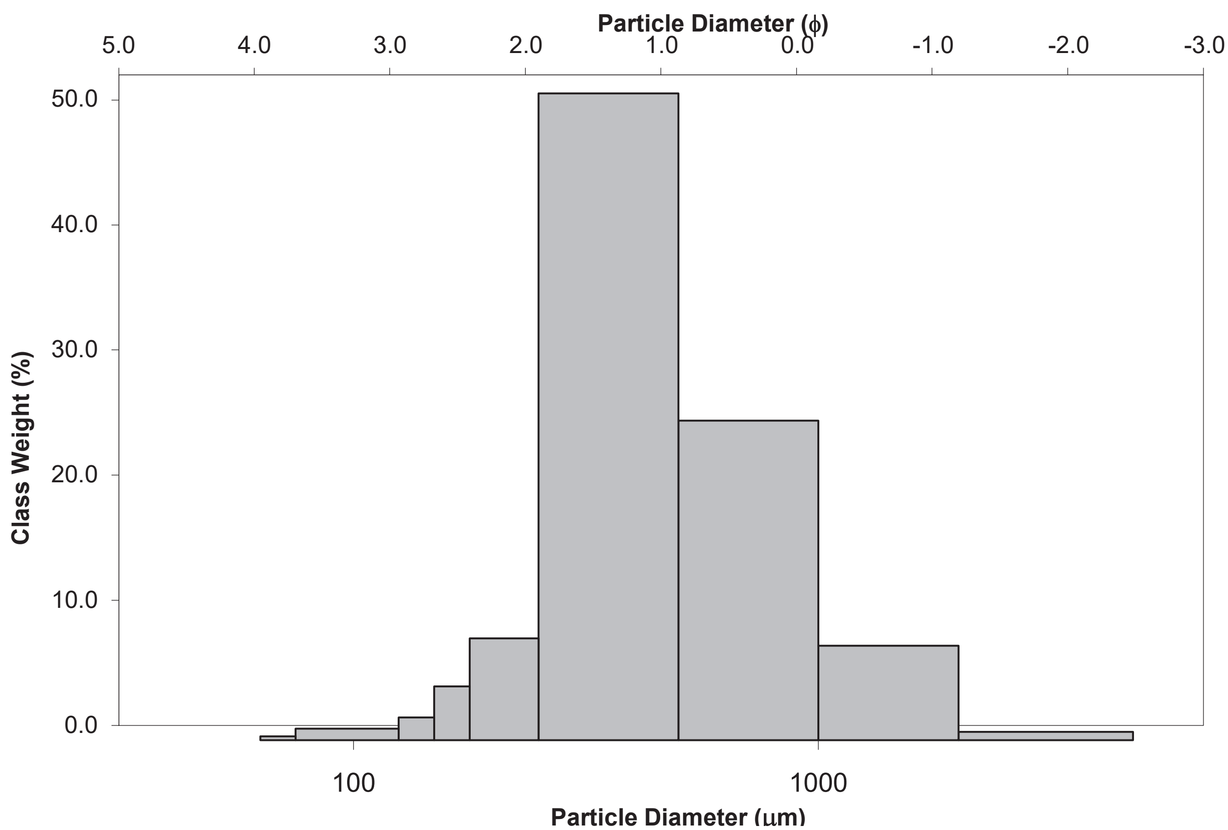
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	259.9	0.033
MEDIAN or D_{50}:	425.4	1.233
D_{90}:	977.5	1.944
(D_{90} / D_{10}):	3.762	59.30
$(D_{90} - D_{10})$:	717.7	1.911
(D_{75} / D_{25}):	2.151	2.930
$(D_{75} - D_{25})$:	359.8	1.105

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.9%	COARSE SAND:	27.8%
SAND:	99.1%	MEDIUM SAND:	56.3%
MUD:	0.0%	FINE SAND:	6.0%
		V FINE SAND:	0.8%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.2%	FINE SILT:	0.0%
V FINE GRAVEL:	0.7%	V FINE SILT:	0.0%
V COARSE SAND:	8.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	584.9	466.9	1.099	464.4	1.106	Medium Sand
SORTING (σ):	424.7	1.718	0.781	1.750	0.807	Moderately Sorted
SKEWNESS (Sk):	3.194	0.624	-0.624	0.259	-0.259	Coarse Skewed
KURTOSIS (K):	18.18	4.034	4.034	1.004	1.004	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12865**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

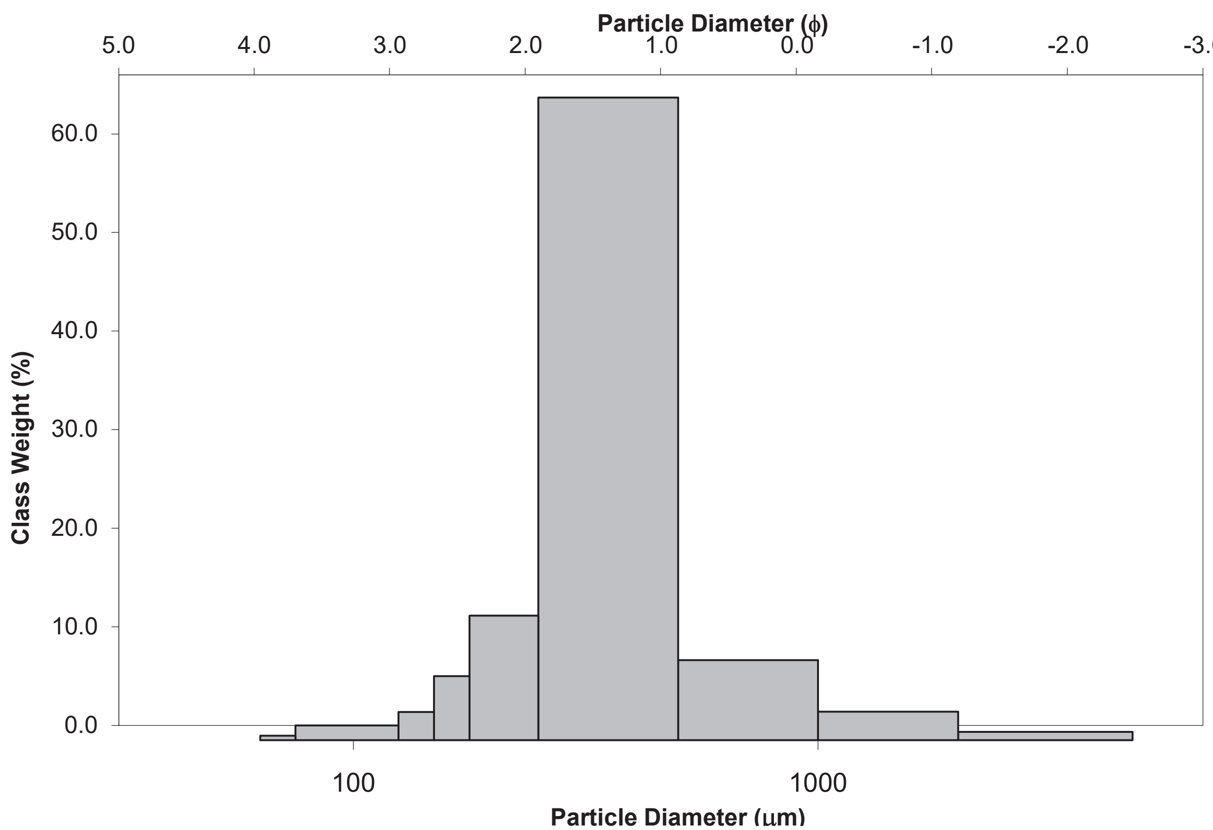
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	235.7	0.568
MEDIAN or D_{50}:	358.1	1.481
D_{90}:	674.3	2.085
(D_{90} / D_{10}):	2.861	3.668
(D_{90} - D_{10}):	438.7	1.517
(D_{75} / D_{25}):	1.590	1.583
(D_{75} - D_{25}):	167.5	0.669

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.4%	COARSE SAND:	9.3%
SAND:	98.6%	MEDIUM SAND:	74.8%
MUD:	0.0%	FINE SAND:	9.8%
		V FINE SAND:	1.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.5%	FINE SILT:	0.0%
V FINE GRAVEL:	0.9%	V FINE SILT:	0.0%
V COARSE SAND:	3.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	460.0	369.4	1.413	358.1	1.481	Medium Sand
SORTING (σ):	397.2	1.739	0.684	1.506	0.591	Moderately Well Sorted
SKEWNESS (Sk):	5.213	-2.032	-1.324	0.104	-0.104	Coarse Skewed
KURTOSIS (K):	35.63	35.81	8.496	1.471	1.471	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12866** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

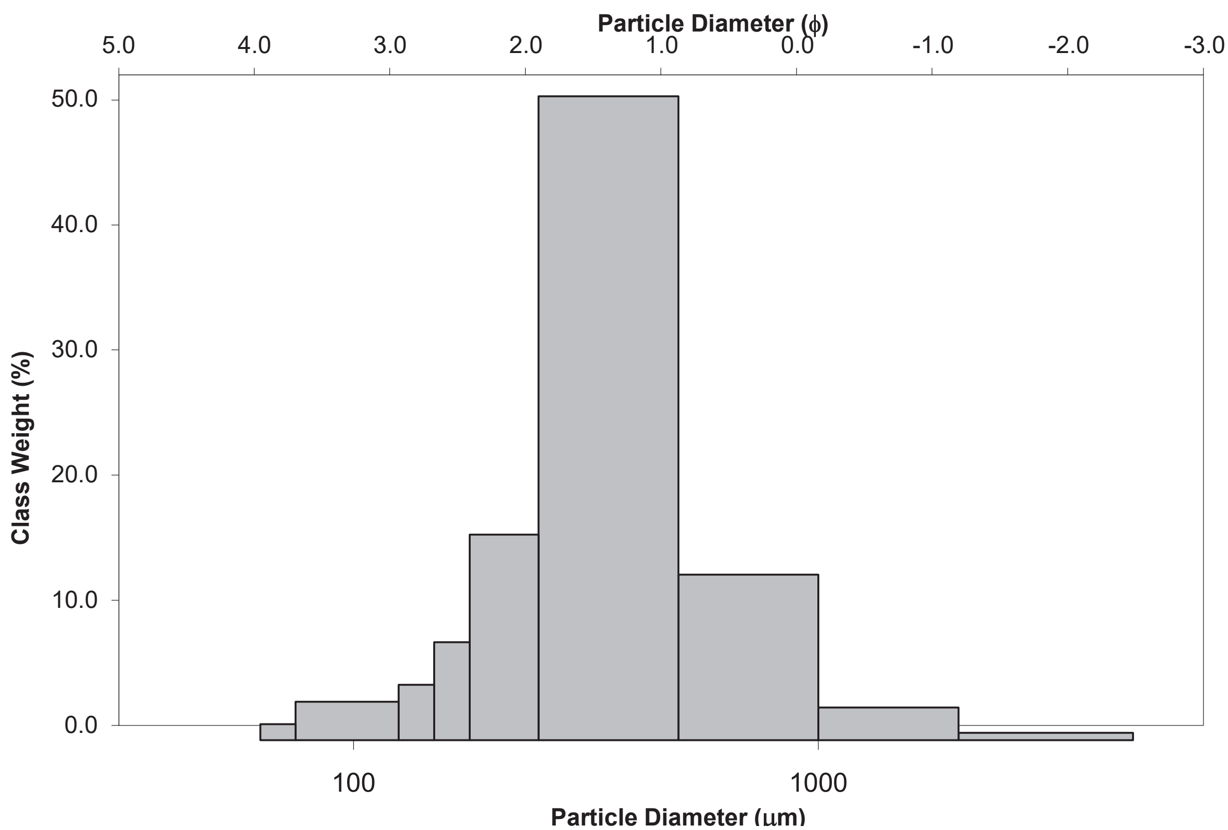
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	197.5	0.363
MEDIAN or D_{50}:	360.4	1.472
D_{90}:	777.8	2.340
(D_{90} / D_{10}):	3.938	6.454
$(D_{90} - D_{10})$:	580.3	1.978
(D_{75} / D_{25}):	1.735	1.740
$(D_{75} - D_{25})$:	201.2	0.795

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.0%	COARSE SAND:	16.2%
SAND:	99.0%	MEDIUM SAND:	62.9%
MUD:	0.0%	FINE SAND:	13.7%
		V FINE SAND:	3.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.3%	FINE SILT:	0.0%
V FINE GRAVEL:	0.7%	V FINE SILT:	0.0%
V COARSE SAND:	3.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	464.2	369.6	1.427	374.8	1.416	Medium Sand
SORTING (σ):	375.6	1.760	0.775	1.655	0.727	Moderately Sorted
SKEWNESS (Sk):	4.740	-0.642	-0.456	0.102	-0.102	Coarse Skewed
KURTOSIS (K):	33.69	15.59	5.566	1.362	1.362	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12867**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted

TEXTURAL GROUP: Sand

SEDIMENT NAME: Moderately Well Sorted Fine Sand

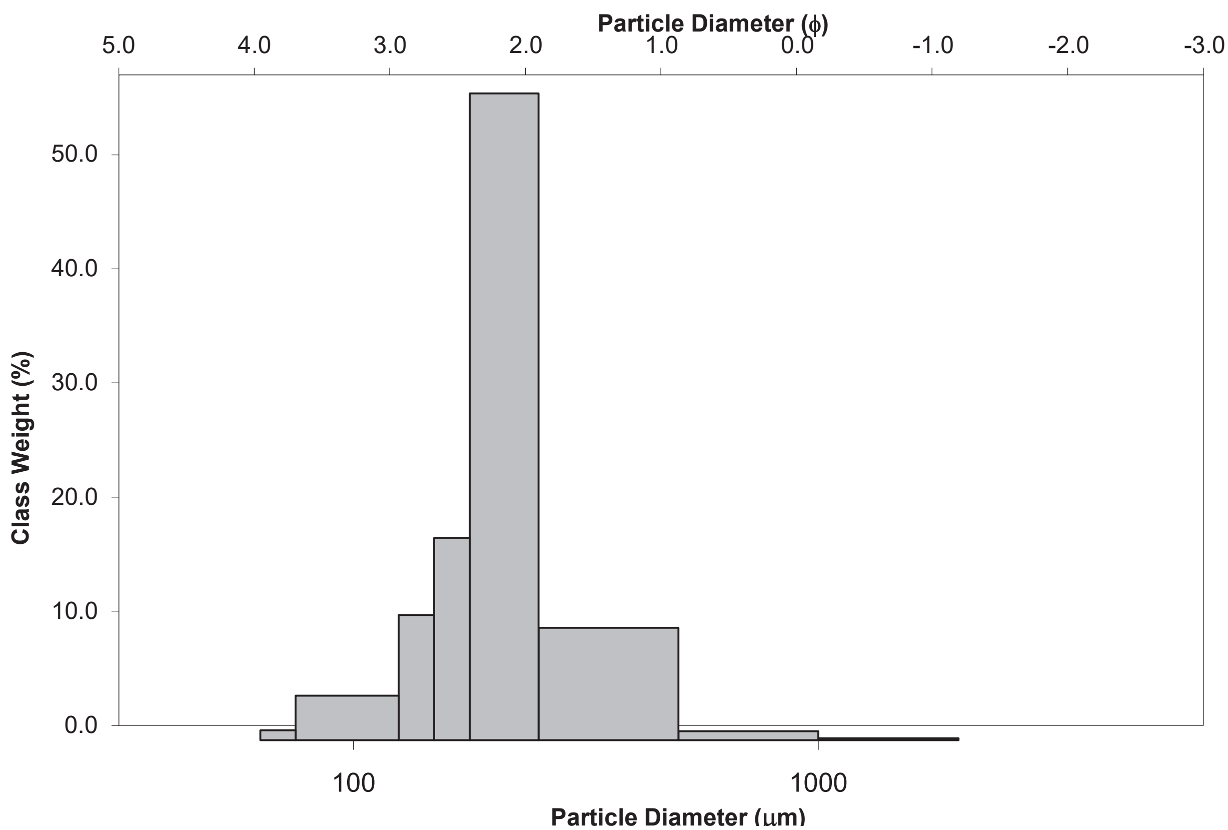
	μm	φ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	140.3	1.403
MEDIAN or D_{50}:	211.3	2.243
D_{90}:	378.2	2.833
(D_{90} / D_{10}):	2.696	2.020
(D_{90} - D_{10}):	237.9	1.431
(D_{75} / D_{25}):	1.350	1.214
(D_{75} - D_{25}):	63.62	0.433

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	1.6%
SAND:	100.0%	MEDIUM SAND:	20.0%
MUD:	0.0%	FINE SAND:	71.7%
		V FINE SAND:	6.3%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	0.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	242.7	217.3	2.202	218.7	2.193	Fine Sand
SORTING (σ):	126.1	1.465	0.551	1.451	0.537	Moderately Well Sorted
SKEWNESS (Sk):	4.417	0.460	-0.460	0.122	-0.122	Coarse Skewed
KURTOSIS (K):	37.54	5.600	5.600	1.902	1.902	Very Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12868** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

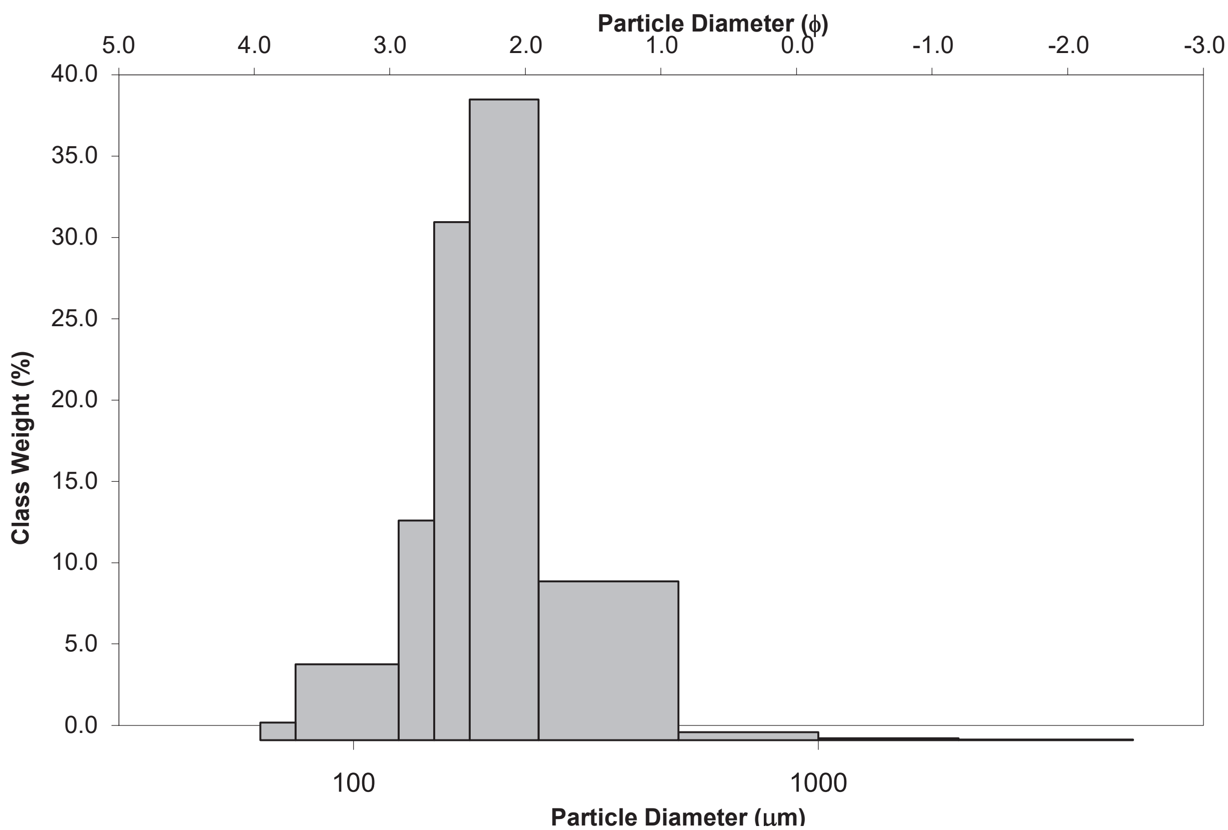
	μm	ϕ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	130.2	1.395
MEDIAN or D_{50}:	202.0	2.307
D_{90}:	380.2	2.941
(D_{90} / D_{10}):	2.919	2.108
$(D_{90} - D_{10})$:	249.9	1.546
(D_{75} / D_{25}):	1.511	1.294
$(D_{75} - D_{25})$:	83.24	0.595

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.1%	COARSE SAND:	1.1%
SAND:	99.9%	MEDIUM SAND:	21.7%
MUD:	0.0%	FINE SAND:	68.7%
		V FINE SAND:	8.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.1%	V FINE SILT:	0.0%
V COARSE SAND:	0.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	236.4	208.0	2.265	211.5	2.241	Fine Sand
SORTING (σ):	154.2	1.510	0.594	1.509	0.593	Moderately Well Sorted
SKEWNESS (Sk):	9.694	0.540	-0.540	0.125	-0.125	Coarse Skewed
KURTOSIS (K):	172.4	5.666	5.666	1.479	1.479	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12869**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

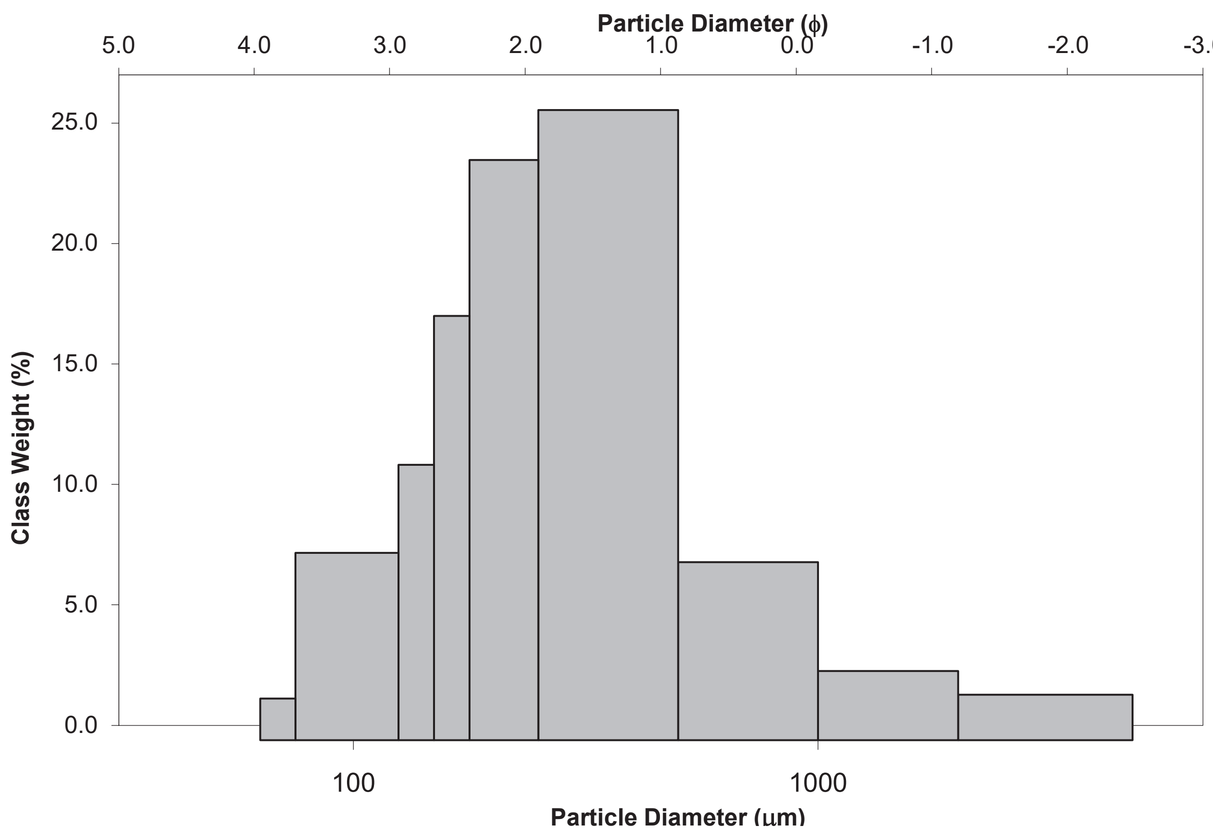
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	130.7	-1.122
MEDIAN or D_{50}:	317.9	1.653
D_{90}:	2176.7	2.936
(D_{90} / D_{10}):	16.65	-2.616
$(D_{90} - D_{10})$:	2046.0	4.058
(D_{75} / D_{25}):	2.563	2.384
$(D_{75} - D_{25})$:	309.0	1.358

GRAIN SIZE DISTRIBUTION

GRAVEL:	10.3%	COARSE SAND:	10.7%
SAND:	89.7%	MEDIUM SAND:	38.0%
MUD:	0.0%	FINE SAND:	27.9%
		V FINE SAND:	8.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	7.6%	FINE SILT:	0.0%
V FINE GRAVEL:	2.7%	V FINE SILT:	0.0%
V COARSE SAND:	4.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	461.8	214.8	1.528	359.4	1.476	Medium Sand
SORTING (σ):	626.8	5.184	1.158	2.596	1.376	Poorly Sorted
SKEWNESS (Sk):	3.548	-2.162	-0.598	0.265	-0.265	Coarse Skewed
KURTOSIS (K):	16.25	8.200	3.318	1.500	1.500	Very Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12870** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

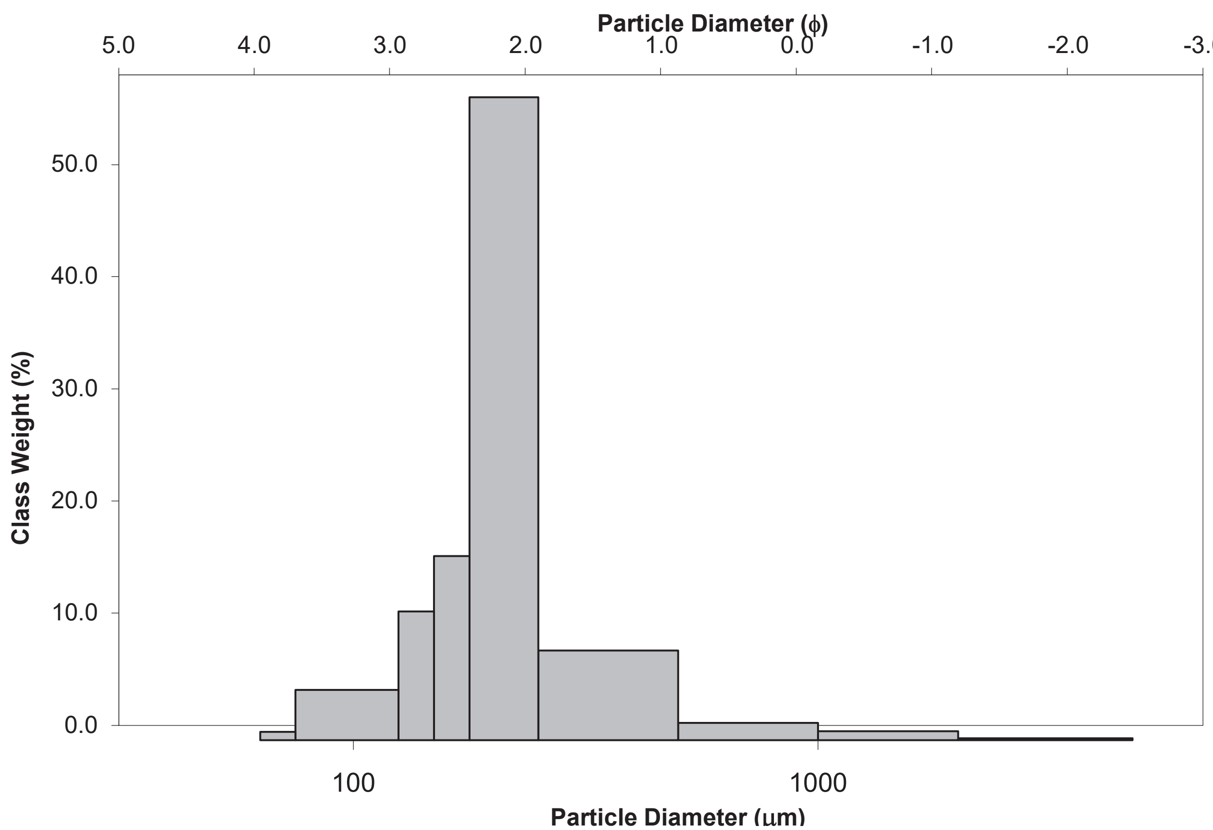
	μm	φ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	136.4	1.303
MEDIAN or D_{50}:	210.7	2.247
D_{90}:	405.4	2.874
(D_{90} / D_{10}):	2.972	2.206
(D_{90} - D_{10}):	269.0	1.572
(D_{75} / D_{25}):	1.347	1.212
(D_{75} - D_{25}):	63.02	0.430

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.4%	COARSE SAND:	3.1%
SAND:	99.6%	MEDIUM SAND:	16.2%
MUD:	0.0%	FINE SAND:	71.6%
		V FINE SAND:	7.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.1%	FINE SILT:	0.0%
V FINE GRAVEL:	0.3%	V FINE SILT:	0.0%
V COARSE SAND:	1.6%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	272.3	223.4	2.162	218.9	2.192	Fine Sand
SORTING (σ):	274.8	1.620	0.696	1.503	0.588	Moderately Well Sorted
SKEWNESS (Sk):	7.004	1.575	-1.575	0.150	-0.150	Coarse Skewed
KURTOSIS (K):	68.10	8.691	8.691	2.153	2.153	Very Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12871**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

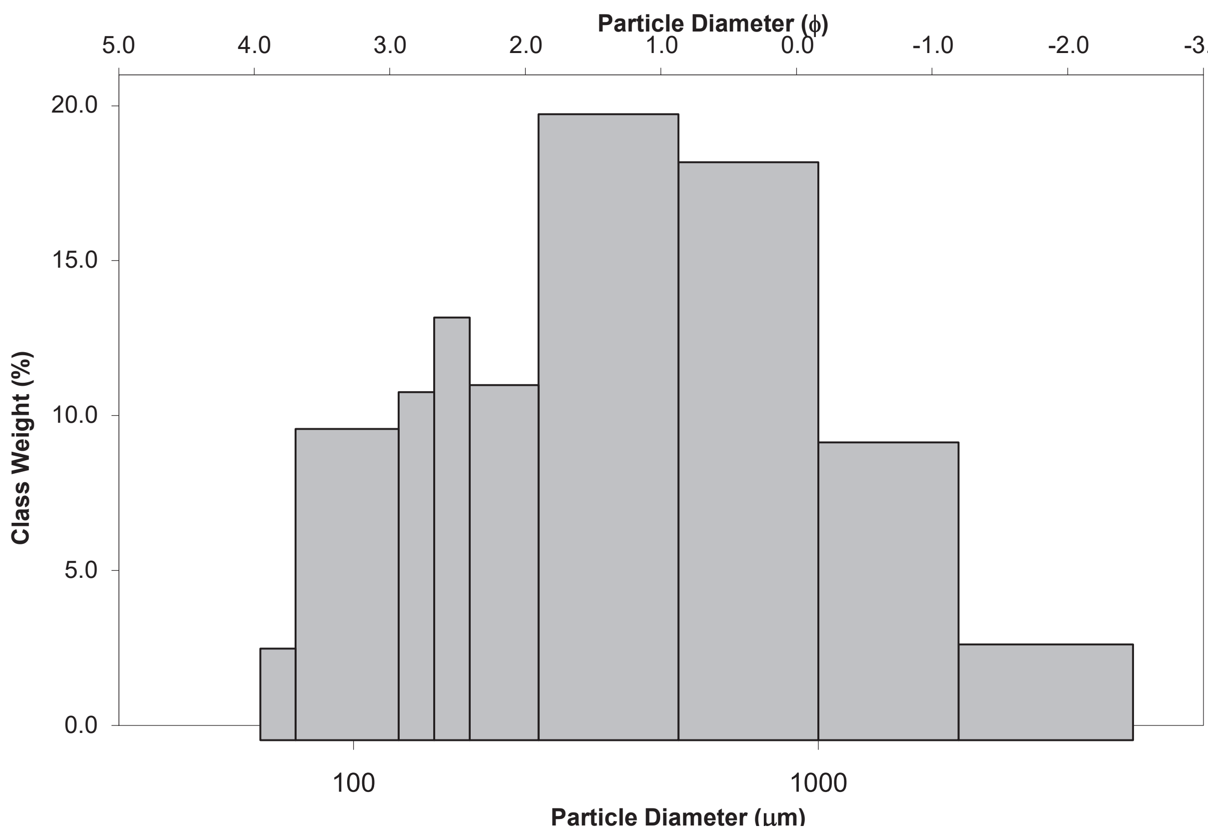
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:	163.4	2.620
MODE 3:		
D_{10}:	118.6	-0.781
MEDIAN or D_{50}:	445.2	1.167
D_{90}:	1718.3	3.076
(D_{90} / D_{10}):	14.49	-3.938
(D_{90} - D_{10}):	1599.7	3.857
(D_{75} / D_{25}):	3.868	11.19
(D_{75} - D_{25}):	649.3	1.952

GRAIN SIZE DISTRIBUTION

GRAVEL:	7.1%	COARSE SAND:	25.3%
SAND:	92.9%	MEDIUM SAND:	27.4%
MUD:	0.0%	FINE SAND:	16.2%
		V FINE SAND:	11.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	3.0%	FINE SILT:	0.0%
V FINE GRAVEL:	4.2%	V FINE SILT:	0.0%
V COARSE SAND:	13.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	703.1	389.0	1.169	442.0	1.178	Medium Sand
SORTING (σ):	760.9	3.477	1.340	2.834	1.503	Poorly Sorted
SKEWNESS (Sk):	2.259	-1.928	-0.060	0.036	-0.036	Symmetrical
KURTOSIS (K):	8.182	10.96	2.413	1.041	1.041	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12872**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Fine Gravelly Medium Sand

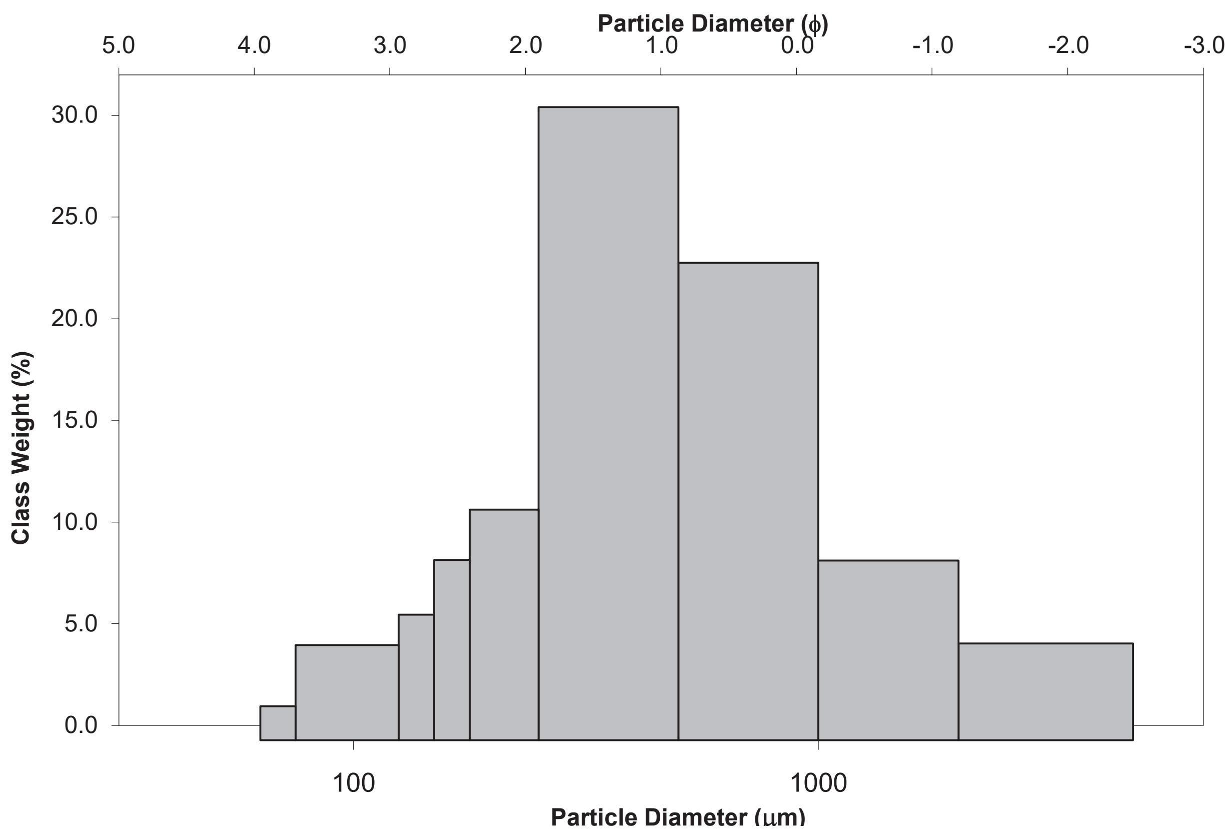
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	188.5	-1.218
MEDIAN or D_{50}:	486.8	1.038
D_{90}:	2325.4	2.407
(D_{90} / D_{10}):	12.33	-1.977
$(D_{90} - D_{10})$:	2136.9	3.625
(D_{75} / D_{25}):	3.033	13.17
$(D_{75} - D_{25})$:	611.8	1.601

GRAIN SIZE DISTRIBUTION

GRAVEL:	11.2%	COARSE SAND:	27.2%
SAND:	88.8%	MEDIUM SAND:	36.0%
MUD:	0.0%	FINE SAND:	10.9%
		V FINE SAND:	4.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	5.7%	FINE SILT:	0.0%
V FINE GRAVEL:	5.5%	V FINE SILT:	0.0%
V COARSE SAND:	10.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	748.6	388.2	0.932	562.5	0.830	Coarse Sand
SORTING (σ):	811.3	4.503	1.181	2.627	1.394	Poorly Sorted
SKEWNESS (Sk):	2.277	-2.494	-0.204	0.251	-0.251	Coarse Skewed
KURTOSIS (K):	7.692	11.05	3.013	1.294	1.294	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12873** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

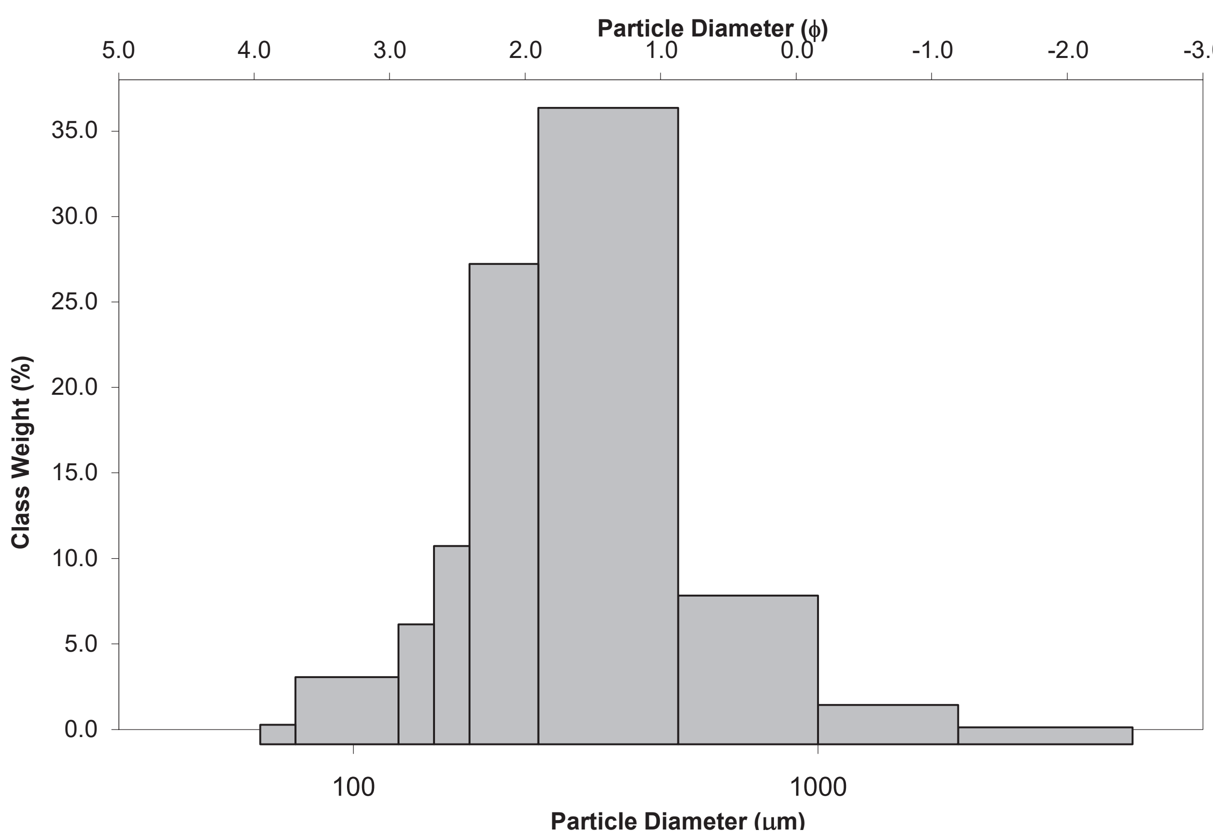
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	170.0	0.376
MEDIAN or D_{50}:	324.7	1.623
D_{90}:	770.6	2.556
(D_{90} / D_{10}):	4.533	6.801
$(D_{90} - D_{10})$:	600.6	2.180
(D_{75} / D_{25}):	1.992	1.870
$(D_{75} - D_{25})$:	225.6	0.994

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.2%	COARSE SAND:	12.1%
SAND:	97.8%	MEDIUM SAND:	52.0%
MUD:	0.0%	FINE SAND:	25.9%
		V FINE SAND:	4.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.9%	FINE SILT:	0.0%
V FINE GRAVEL:	1.4%	V FINE SILT:	0.0%
V COARSE SAND:	3.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	447.8	326.4	1.563	325.4	1.620	Medium Sand
SORTING (σ):	468.0	2.103	0.891	1.791	0.840	Moderately Sorted
SKEWNESS (Sk):	4.527	-1.962	-0.776	0.075	-0.075	Symmetrical
KURTOSIS (K):	27.13	21.90	5.143	1.269	1.269	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12874**
ANALYST & DATE: D. Hawkins, 09/24/2024
SAMPLE TYPE: Unimodal, Moderately Sorted
TEXTURAL GROUP: Slightly Gravelly Sand
SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

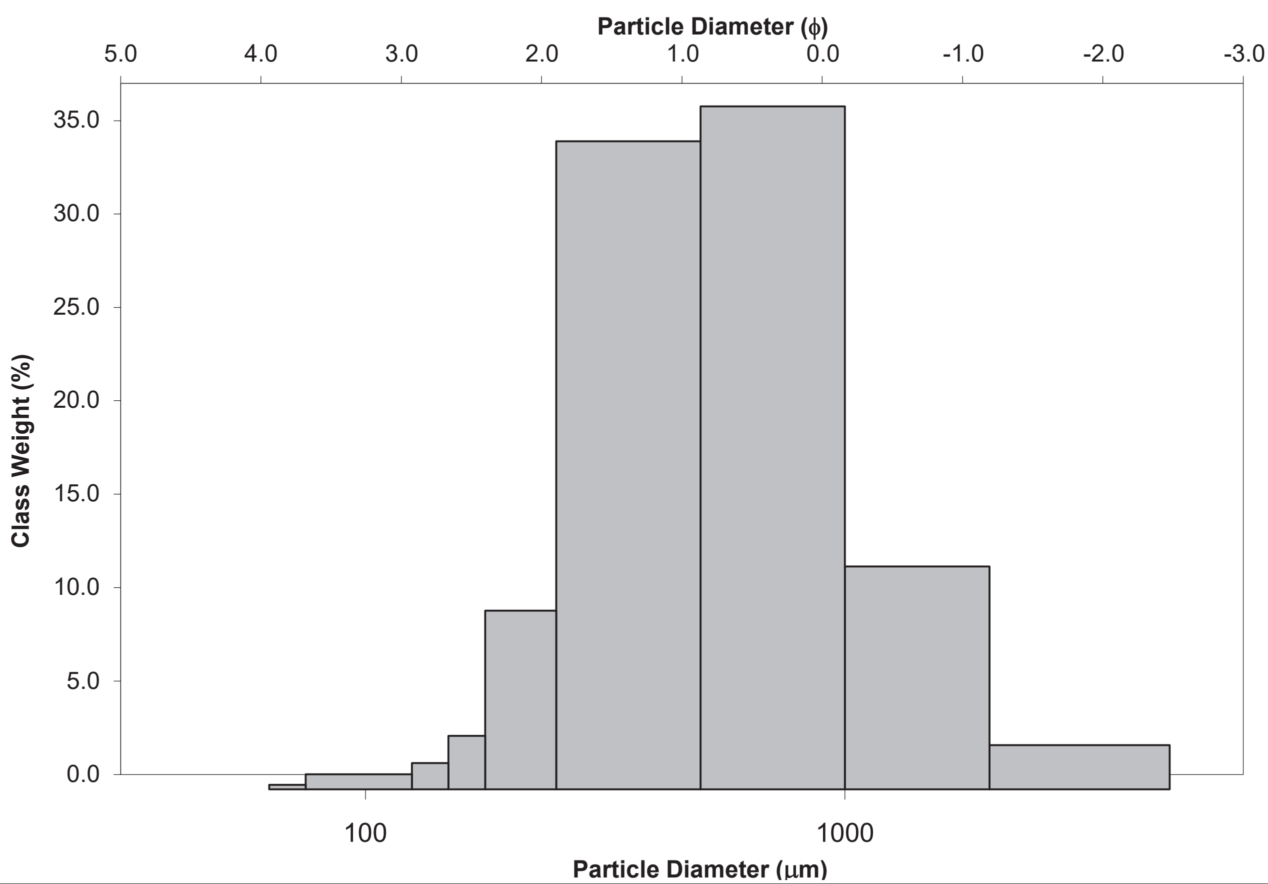
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	264.7	-0.500
MEDIAN or D_{50}:	553.4	0.854
D_{90}:	1414.7	1.918
(D_{90} / D_{10}):	5.345	-3.831
$(D_{90} - D_{10})$:	1150.0	2.418
(D_{75} / D_{25}):	2.458	6.951
$(D_{75} - D_{25})$:	510.0	1.298

GRAIN SIZE DISTRIBUTION

GRAVEL:	3.6%	COARSE SAND:	39.3%
SAND:	96.4%	MEDIUM SAND:	37.3%
MUD:	0.0%	FINE SAND:	6.2%
		V FINE SAND:	0.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.1%	FINE SILT:	0.0%
V FINE GRAVEL:	2.5%	V FINE SILT:	0.0%
V COARSE SAND:	12.8%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	747.6	554.0	0.810	551.3	0.859	Coarse Sand
SORTING (σ):	605.7	2.116	0.905	1.884	0.914	Moderately Sorted
SKEWNESS (Sk):	2.681	-2.225	-0.380	0.062	-0.062	Symmetrical
KURTOSIS (K):	11.63	23.01	3.384	0.972	0.972	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12875** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

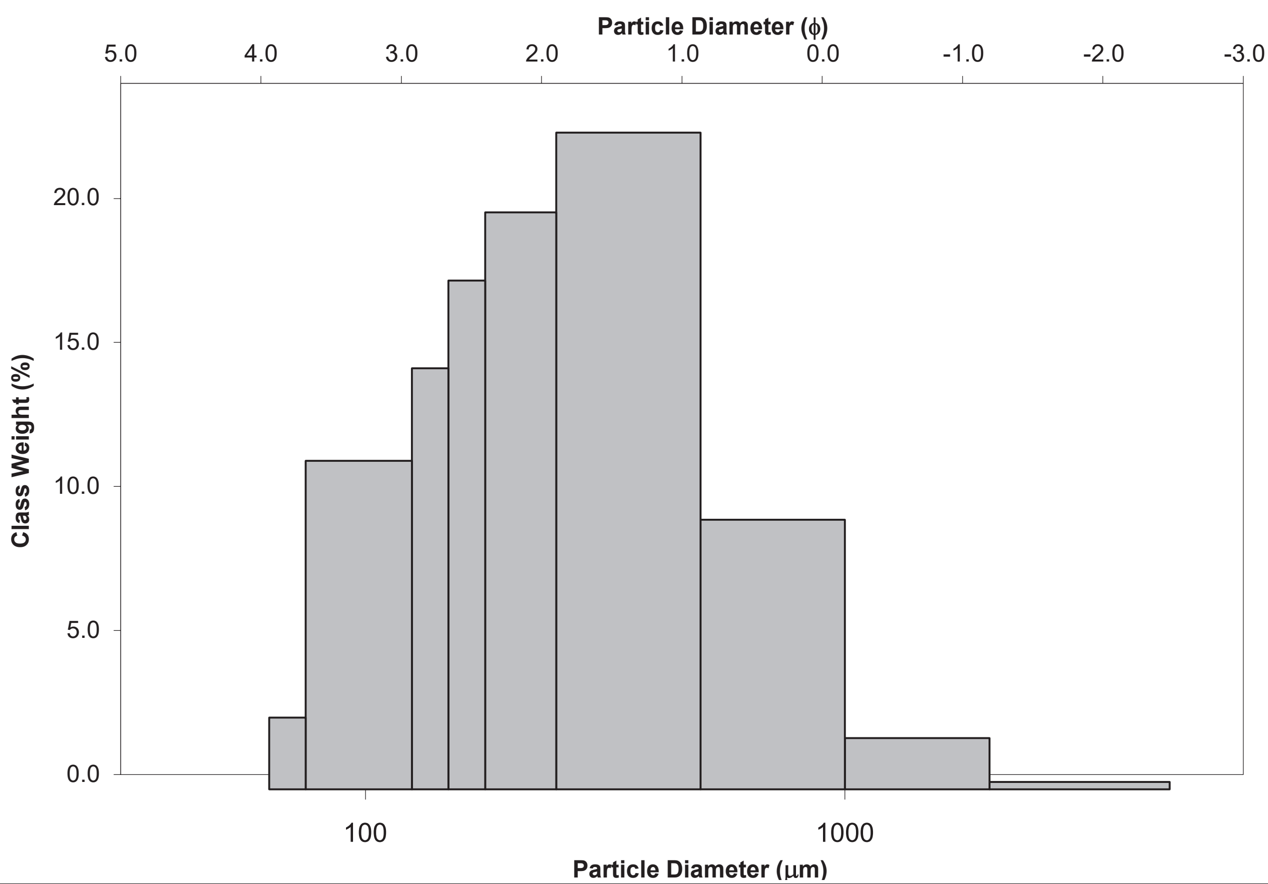
SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	104.9	0.419
MEDIAN or D_{50}:	279.4	1.840
D_{90}:	748.0	3.253
(D_{90} / D_{10}):	7.129	7.764
(D_{90} - D_{10}):	643.0	2.834
(D_{75} / D_{25}):	2.697	2.228
(D_{75} - D_{25}):	280.4	1.431

GRAIN SIZE DISTRIBUTION			
GRAVEL:	0.7%	COARSE SAND:	15.2%
SAND:	99.3%	MEDIUM SAND:	37.1%
MUD:	0.0%	FINE SAND:	29.4%
		V FINE SAND:	14.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.3%	FINE SILT:	0.0%
V FINE GRAVEL:	0.4%	V FINE SILT:	0.0%
V COARSE SAND:	2.9%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	382.6	276.1	1.834	274.4	1.866	Medium Sand
SORTING (σ):	355.2	2.124	1.019	2.075	1.053	Poorly Sorted
SKEWNESS (Sk):	3.979	-0.683	-0.259	-0.009	0.009	Symmetrical
KURTOSIS (K):	28.75	9.266	2.899	0.983	0.983	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12876**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Fine Sand

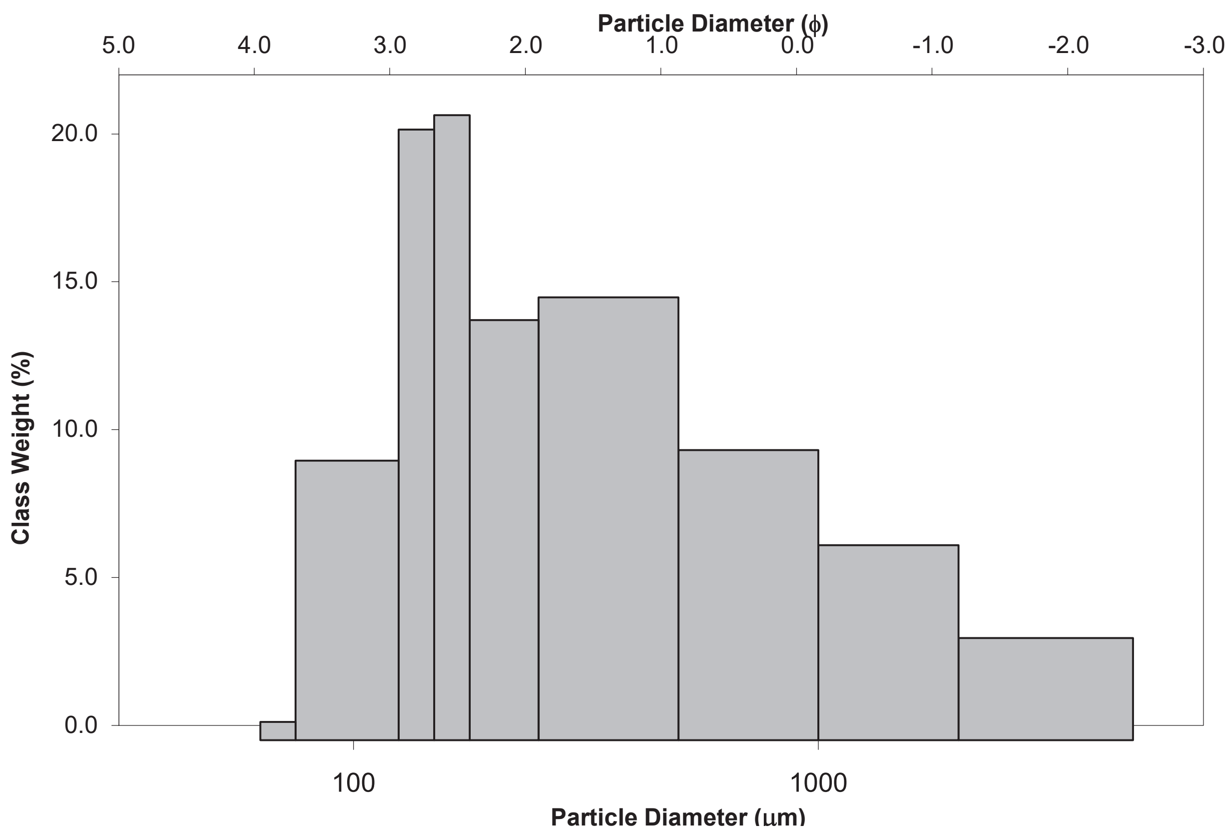
	μm	φ
MODE 1:	163.4	2.620
MODE 2:	375.0	1.500
MODE 3:		
D_{10}:	116.7	-0.930
MEDIAN or D_{50}:	332.9	1.587
D_{90}:	1905.8	3.099
(D_{90} / D_{10}):	16.33	-3.331
(D_{90} - D_{10}):	1789.1	4.030
(D_{75} / D_{25}):	4.856	8.119
(D_{75} - D_{25}):	636.0	2.280

GRAIN SIZE DISTRIBUTION

GRAVEL:	9.3%	COARSE SAND:	15.9%
SAND:	90.7%	MEDIUM SAND:	24.2%
MUD:	0.0%	FINE SAND:	28.5%
		V FINE SAND:	11.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	3.7%	FINE SILT:	0.0%
V FINE GRAVEL:	5.6%	V FINE SILT:	0.0%
V COARSE SAND:	10.7%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	666.5	325.7	1.391	389.1	1.362	Medium Sand
SORTING (σ):	850.5	3.745	1.430	3.020	1.595	Poorly Sorted
SKEWNESS (Sk):	2.242	-1.533	-0.474	0.250	-0.250	Coarse Skewed
KURTOSIS (K):	7.337	9.304	2.343	0.933	0.933	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12877**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

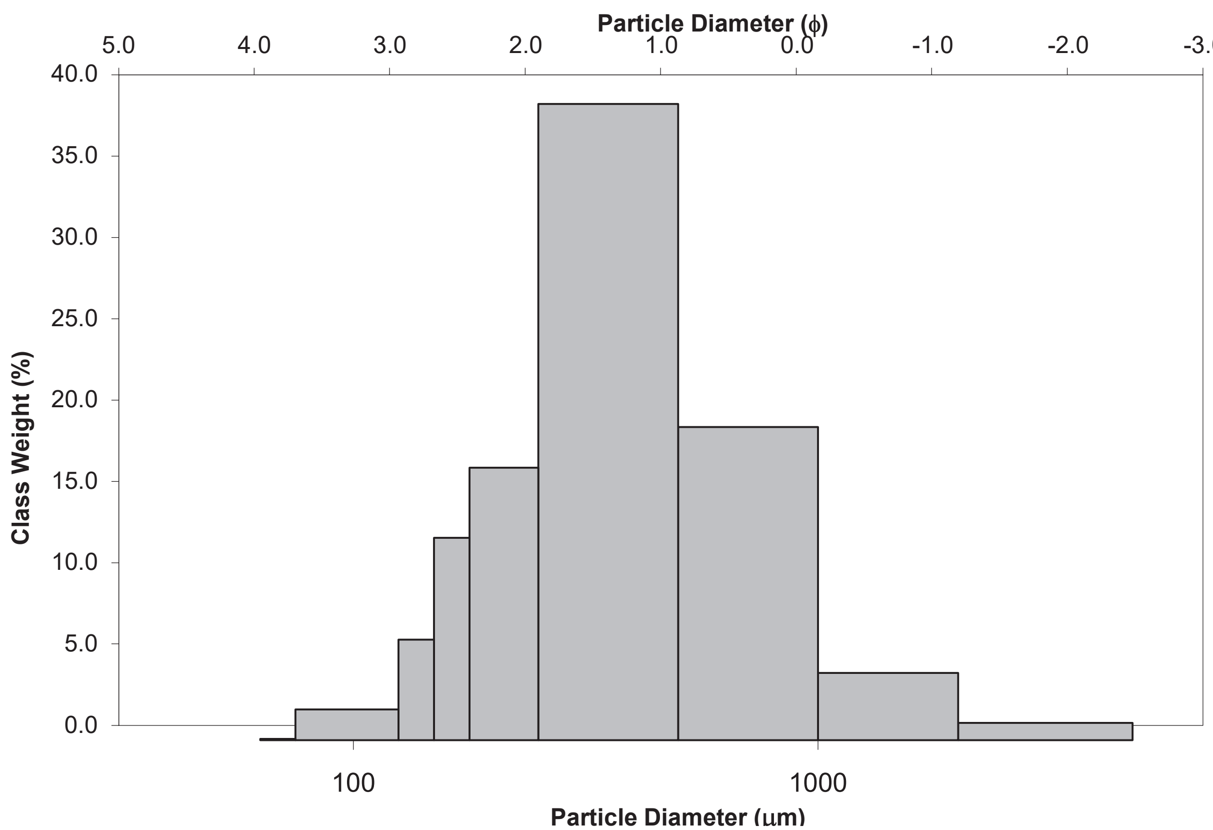
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	190.9	0.102
MEDIAN or D_{50}:	388.9	1.362
D_{90}:	931.4	2.389
(D_{90} / D_{10}):	4.879	23.31
(D_{90} - D_{10}):	740.5	2.287
(D_{75} / D_{25}):	2.219	2.608
(D_{75} - D_{25}):	334.6	1.150

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.2%	COARSE SAND:	24.5%
SAND:	97.8%	MEDIUM SAND:	49.7%
MUD:	0.0%	FINE SAND:	16.5%
		V FINE SAND:	1.8%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.9%	FINE SILT:	0.0%
V FINE GRAVEL:	1.4%	V FINE SILT:	0.0%
V COARSE SAND:	5.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	539.4	398.3	1.273	413.9	1.273	Medium Sand
SORTING (σ):	483.1	2.131	0.889	1.887	0.916	Moderately Sorted
SKEWNESS (Sk):	3.738	-2.333	-0.541	0.161	-0.161	Coarse Skewed
KURTOSIS (K):	20.91	23.31	4.036	1.120	1.120	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12878**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Fine Sand

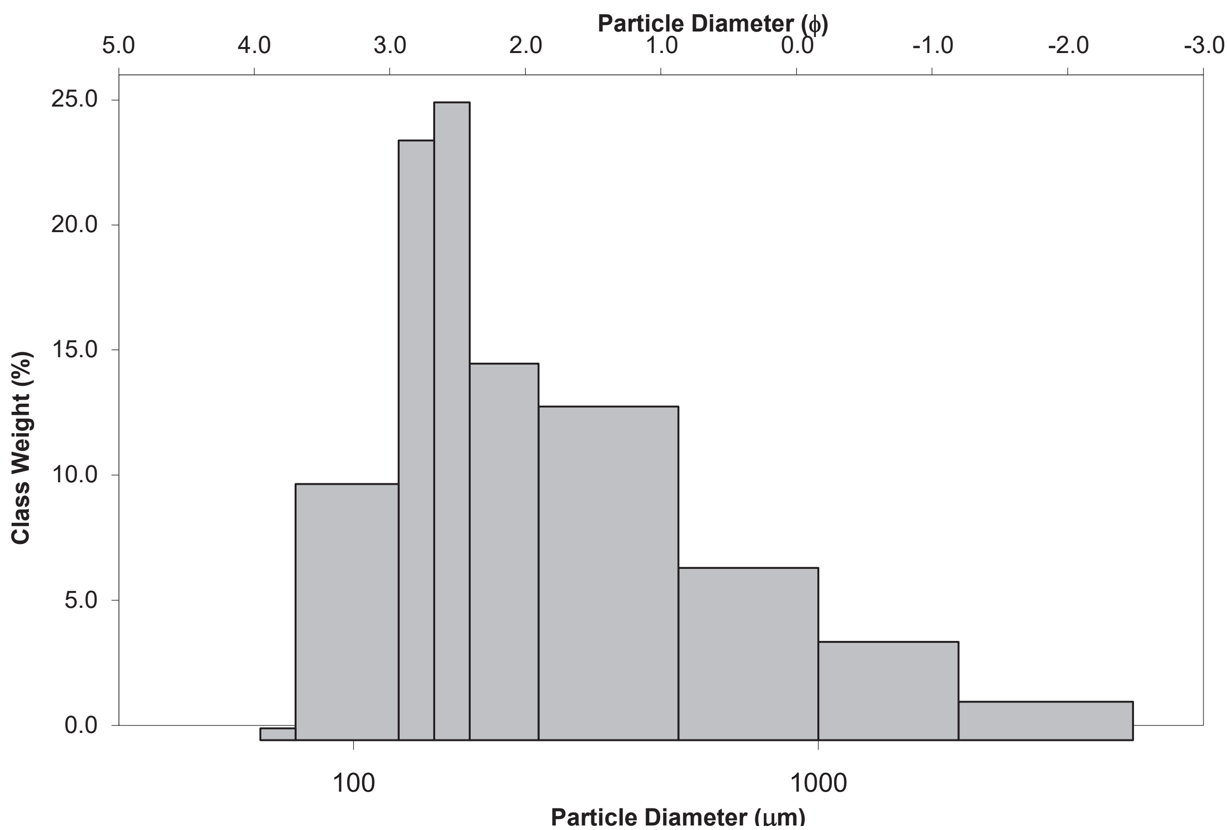
	μm	φ
MODE 1:	163.4	2.620
MODE 2:		
MODE 3:		
D_{10}:	107.6	-0.296
MEDIAN or D_{50}:	245.4	2.027
D_{90}:	1227.8	3.217
(D_{90} / D_{10}):	11.41	-10.866
$(D_{90} - D_{10})$:	1120.2	3.513
(D_{75} / D_{25}):	3.346	2.727
$(D_{75} - D_{25})$:	348.3	1.743

GRAIN SIZE DISTRIBUTION

GRAVEL:	4.9%	COARSE SAND:	12.6%
SAND:	95.1%	MEDIUM SAND:	24.5%
MUD:	0.0%	FINE SAND:	36.7%
		V FINE SAND:	14.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	2.1%	FINE SILT:	0.0%
V FINE GRAVEL:	2.8%	V FINE SILT:	0.0%
V COARSE SAND:	7.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	491.2	269.6	1.750	294.7	1.763	Medium Sand
SORTING (σ):	662.9	3.022	1.288	2.532	1.340	Poorly Sorted
SKEWNESS (Sk):	3.075	-1.274	-0.768	0.324	-0.324	Very Coarse Skewed
KURTOSIS (K):	13.01	10.64	2.945	1.052	1.052	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12879** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

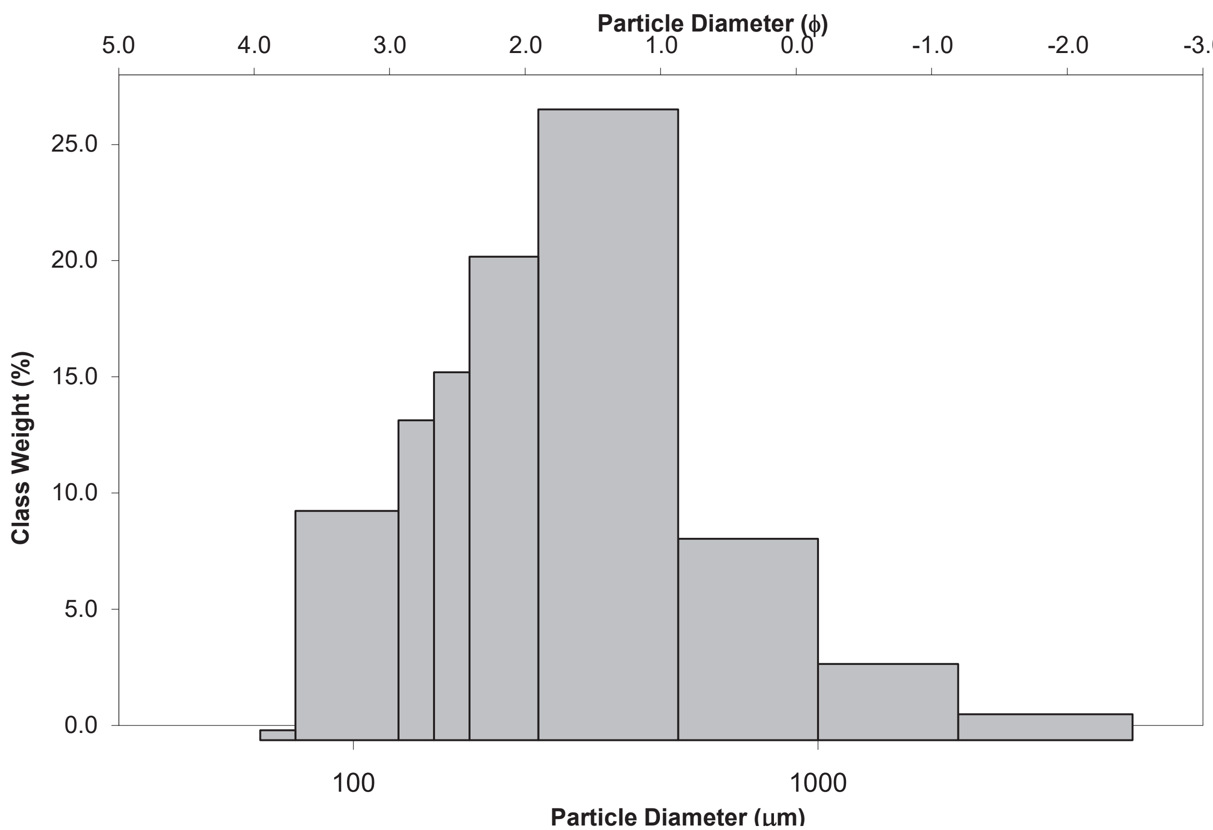
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	118.3	0.190
MEDIAN or D_{50}:	305.2	1.712
D_{90}:	876.8	3.079
(D_{90} / D_{10}):	7.411	16.23
$(D_{90} - D_{10})$:	758.5	2.890
(D_{75} / D_{25}):	2.480	2.186
$(D_{75} - D_{25})$:	277.4	1.311

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.5%	COARSE SAND:	13.1%
SAND:	97.5%	MEDIUM SAND:	41.2%
MUD:	0.0%	FINE SAND:	26.9%
		V FINE SAND:	11.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.9%	FINE SILT:	0.0%
V FINE GRAVEL:	1.7%	V FINE SILT:	0.0%
V COARSE SAND:	5.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	460.0	306.1	1.664	305.8	1.709	Medium Sand
SORTING (σ):	530.8	2.315	1.084	2.180	1.125	Poorly Sorted
SKEWNESS (Sk):	3.791	-0.914	-0.579	0.068	-0.068	Symmetrical
KURTOSIS (K):	19.87	11.94	3.599	1.225	1.225	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12880**
ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted
TEXTURAL GROUP: Slightly Gravelly Sand
SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

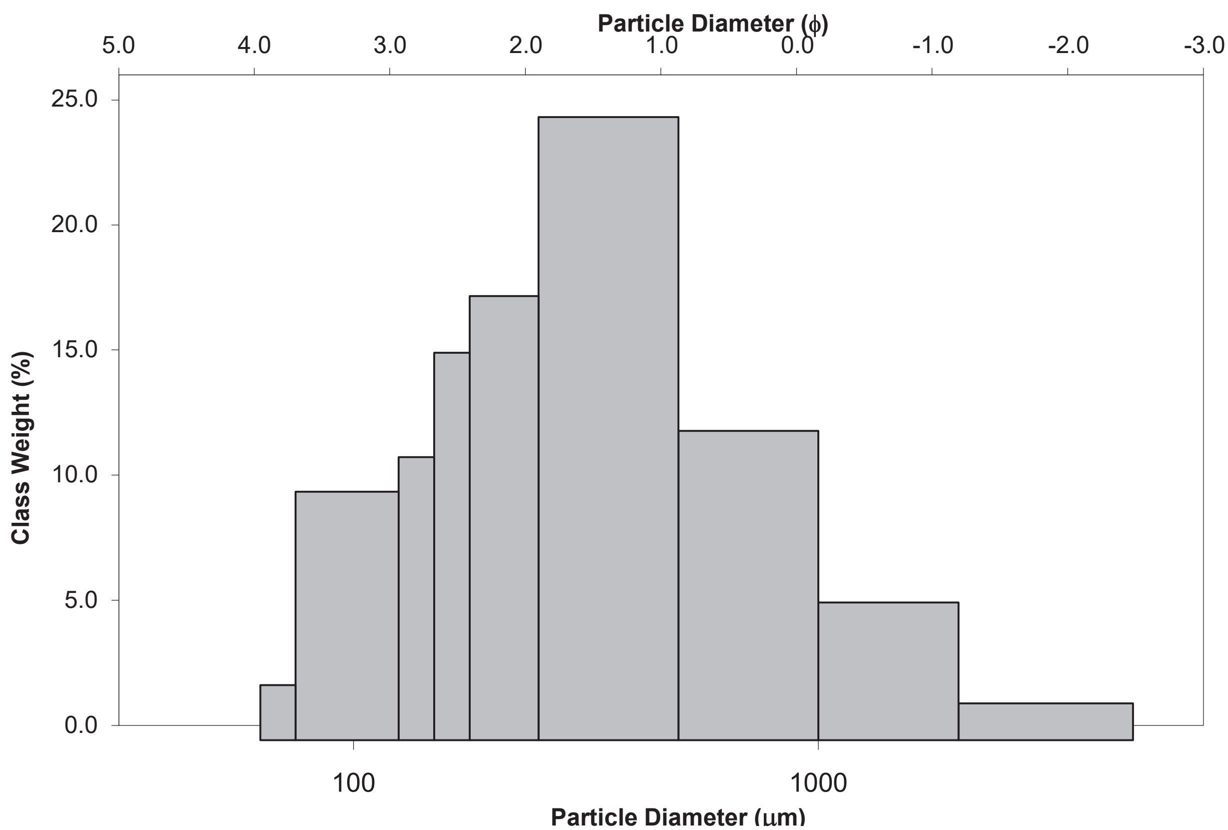
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	116.1	-0.117
MEDIAN or D_{50}:	336.3	1.572
D_{90}:	1084.8	3.106
(D_{90} / D_{10}):	9.342	-26.442
$(D_{90} - D_{10})$:	968.7	3.224
(D_{75} / D_{25}):	2.999	3.045
$(D_{75} - D_{25})$:	389.6	1.584

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.9%	COARSE SAND:	18.1%
SAND:	97.1%	MEDIUM SAND:	36.6%
MUD:	0.0%	FINE SAND:	22.8%
		V FINE SAND:	11.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.7%	FINE SILT:	0.0%
V FINE GRAVEL:	2.2%	V FINE SILT:	0.0%
V COARSE SAND:	8.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	539.0	347.1	1.508	346.5	1.529	Medium Sand
SORTING (σ):	600.4	2.364	1.189	2.376	1.249	Poorly Sorted
SKEWNESS (Sk):	3.074	-0.204	-0.380	0.078	-0.078	Symmetrical
KURTOSIS (K):	14.00	6.414	2.953	1.083	1.083	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12881** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

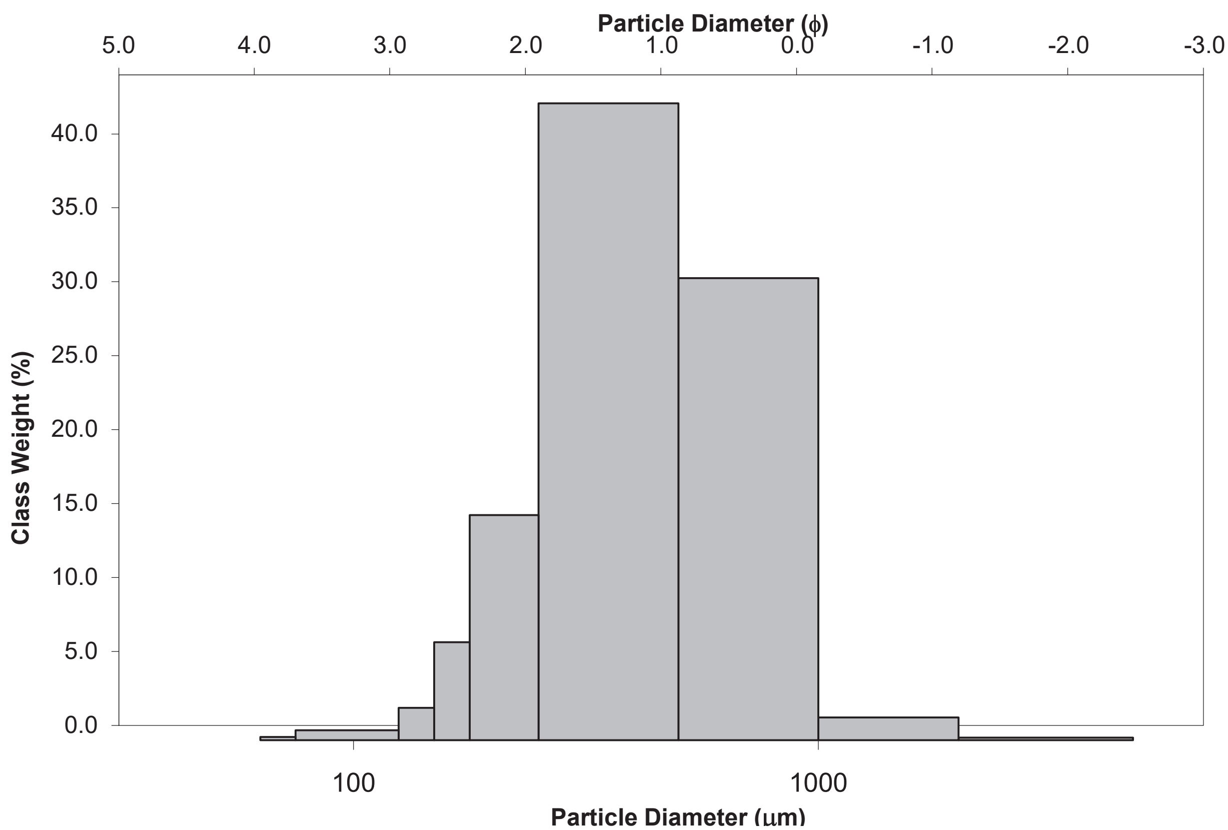
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	232.1	0.221
MEDIAN or D_{50}:	424.4	1.237
D_{90}:	857.8	2.107
(D_{90} / D_{10}):	3.696	9.523
$(D_{90} - D_{10})$:	625.7	1.886
(D_{75} / D_{25}):	2.146	2.733
$(D_{75} - D_{25})$:	343.7	1.102

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.2%	COARSE SAND:	36.2%
SAND:	99.8%	MEDIUM SAND:	49.9%
MUD:	0.0%	FINE SAND:	11.3%
		V FINE SAND:	0.6%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.2%	V FINE SILT:	0.0%
V COARSE SAND:	1.8%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	516.0	434.4	1.203	441.2	1.180	Medium Sand
SORTING (σ):	278.9	1.612	0.689	1.661	0.732	Moderately Sorted
SKEWNESS (Sk):	3.190	-0.004	0.004	0.055	-0.055	Symmetrical
KURTOSIS (K):	28.33	3.428	3.428	0.858	0.858	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12882**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

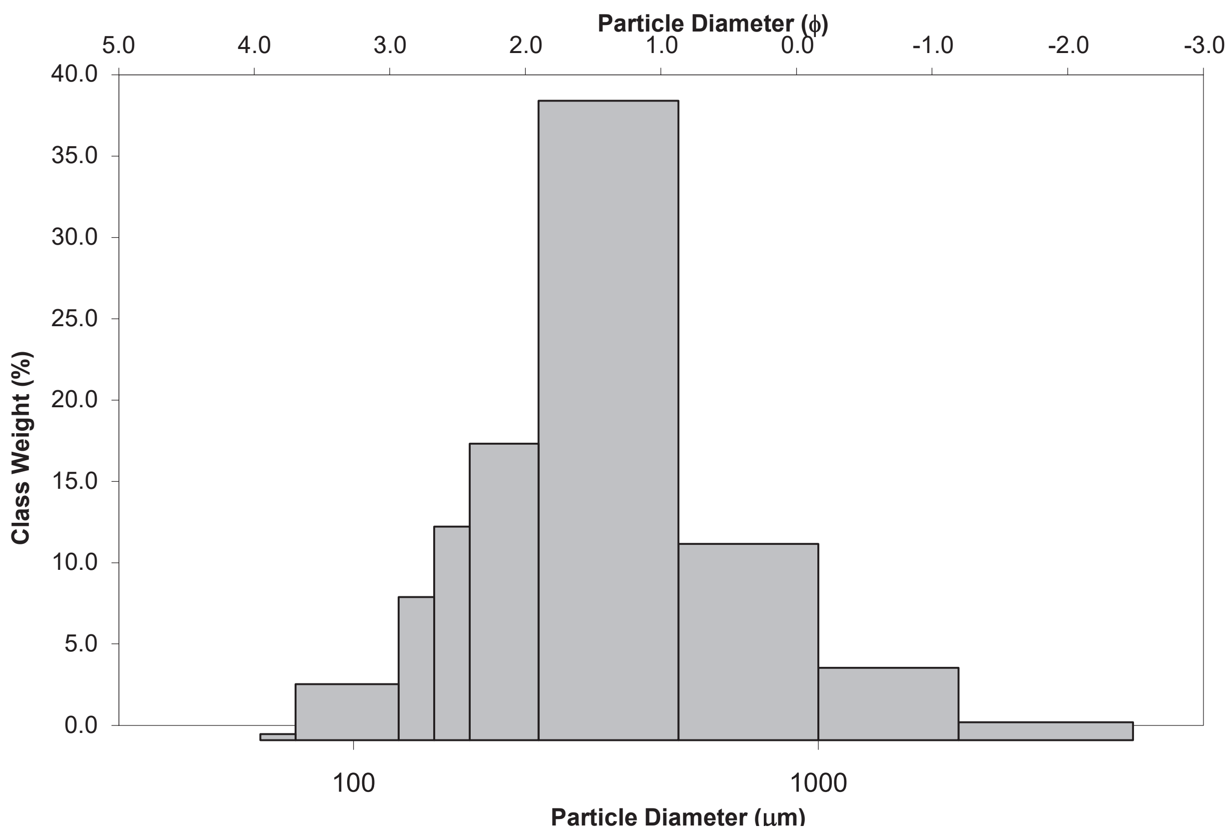
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	170.9	0.119
MEDIAN or D_{50}:	356.4	1.488
D_{90}:	921.0	2.549
(D_{90} / D_{10}):	5.388	21.46
$(D_{90} - D_{10})$:	750.1	2.430
(D_{75} / D_{25}):	1.929	1.935
$(D_{75} - D_{25})$:	238.5	0.948

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.1%	COARSE SAND:	16.2%
SAND:	97.9%	MEDIUM SAND:	52.7%
MUD:	0.0%	FINE SAND:	19.5%
		V FINE SAND:	3.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.7%	FINE SILT:	0.0%
V FINE GRAVEL:	1.5%	V FINE SILT:	0.0%
V COARSE SAND:	6.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	510.9	370.2	1.405	373.2	1.422	Medium Sand
SORTING (σ):	504.7	2.060	0.939	1.950	0.963	Moderately Sorted
SKEWNESS (Sk):	3.735	-1.058	-0.637	0.147	-0.147	Coarse Skewed
KURTOSIS (K):	19.97	15.79	4.241	1.466	1.466	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12883**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Fine Sand

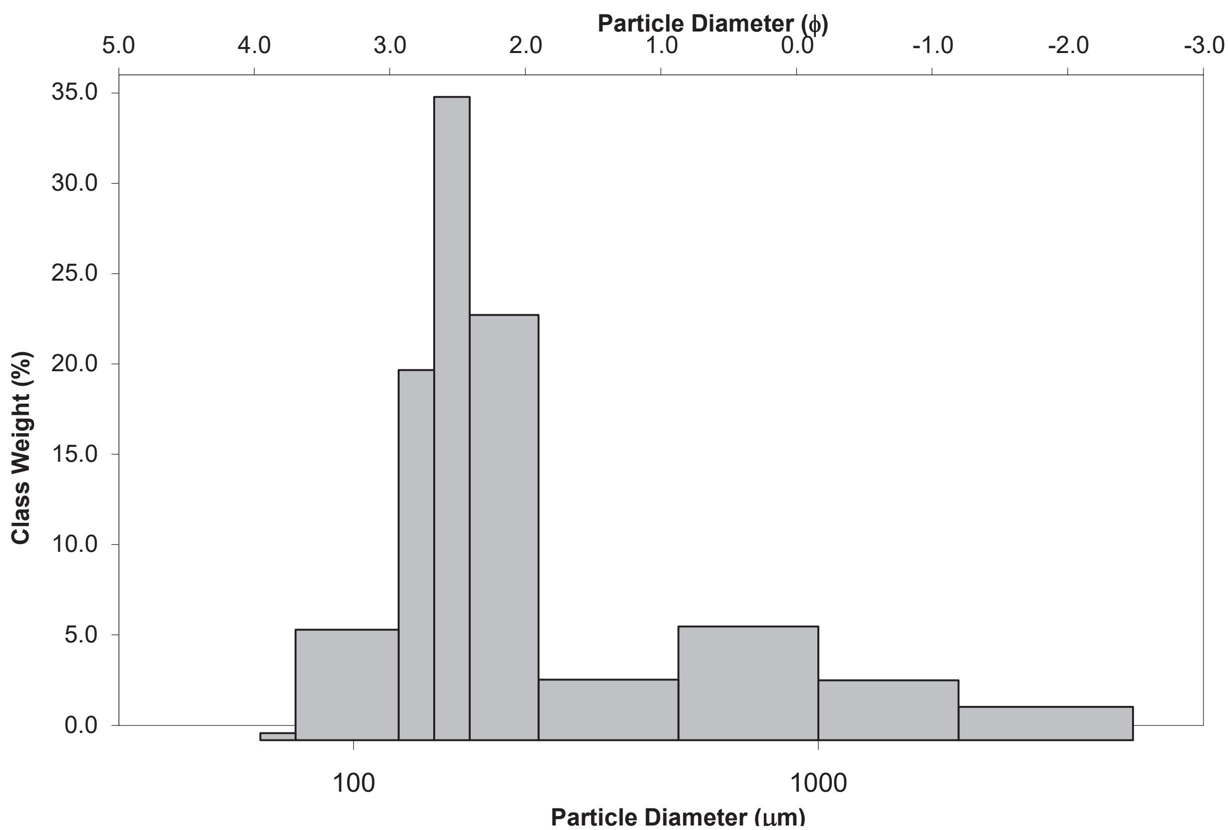
	μm	ϕ
MODE 1:	163.4	2.620
MODE 2:	750.0	0.500
MODE 3:		
D_{10}:	125.1	-0.484
MEDIAN or D_{50}:	201.7	2.310
D_{90}:	1398.8	2.999
(D_{90} / D_{10}):	11.18	-6.194
(D_{90} - D_{10}):	1273.6	3.483
(D_{75} / D_{25}):	3.599	3.176
(D_{75} - D_{25}):	400.9	1.848

GRAIN SIZE DISTRIBUTION

GRAVEL:	6.3%	COARSE SAND:	13.6%
SAND:	93.7%	MEDIUM SAND:	7.2%
MUD:	0.0%	FINE SAND:	55.8%
		V FINE SAND:	9.9%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	2.3%	FINE SILT:	0.0%
V FINE GRAVEL:	4.0%	V FINE SILT:	0.0%
V COARSE SAND:	7.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	514.7	263.2	1.792	289.9	1.786	Medium Sand
SORTING (σ):	753.9	3.080	1.341	2.606	1.382	Poorly Sorted
SKEWNESS (Sk):	2.806	-0.889	-1.052	0.567	-0.567	Very Coarse Skewed
KURTOSIS (K):	10.54	9.736	3.137	1.043	1.043	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12884**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Bimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Coarse Sand

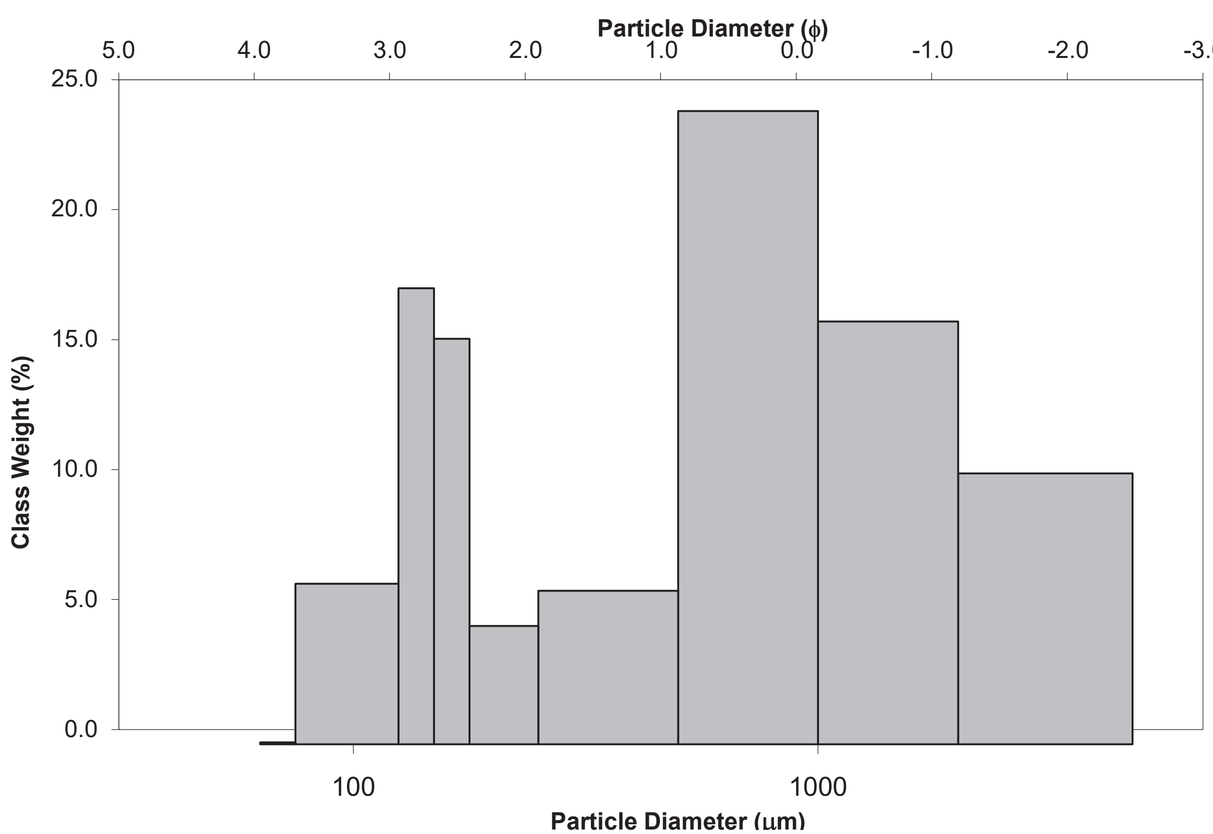
	μm	φ
MODE 1:	750.0	0.500
MODE 2:	137.0	2.873
MODE 3:		
D_{10}:	141.2	-1.672
MEDIAN or D_{50}:	812.9	0.299
D_{90}:	3187.3	2.825
(D_{90} / D_{10}):	22.58	-1.689
$(D_{90} - D_{10})$:	3046.2	4.497
(D_{75} / D_{25}):	4.192	-1.847
$(D_{75} - D_{25})$:	1259.7	2.068

GRAIN SIZE DISTRIBUTION

GRAVEL:	19.2%	COARSE SAND:	31.9%
SAND:	80.8%	MEDIUM SAND:	7.7%
MUD:	0.0%	FINE SAND:	13.9%
		V FINE SAND:	6.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	5.5%	FINE SILT:	0.0%
V FINE GRAVEL:	13.6%	V FINE SILT:	0.0%
V COARSE SAND:	21.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	1190.8	625.5	0.463	689.9	0.536	Coarse Sand
SORTING (σ):	1093.0	4.066	1.485	3.306	1.725	Poorly Sorted
SKEWNESS (Sk):	1.107	-2.067	0.403	-0.141	0.141	Fine Skewed
KURTOSIS (K):	2.947	10.18	2.296	1.023	1.023	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12885** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

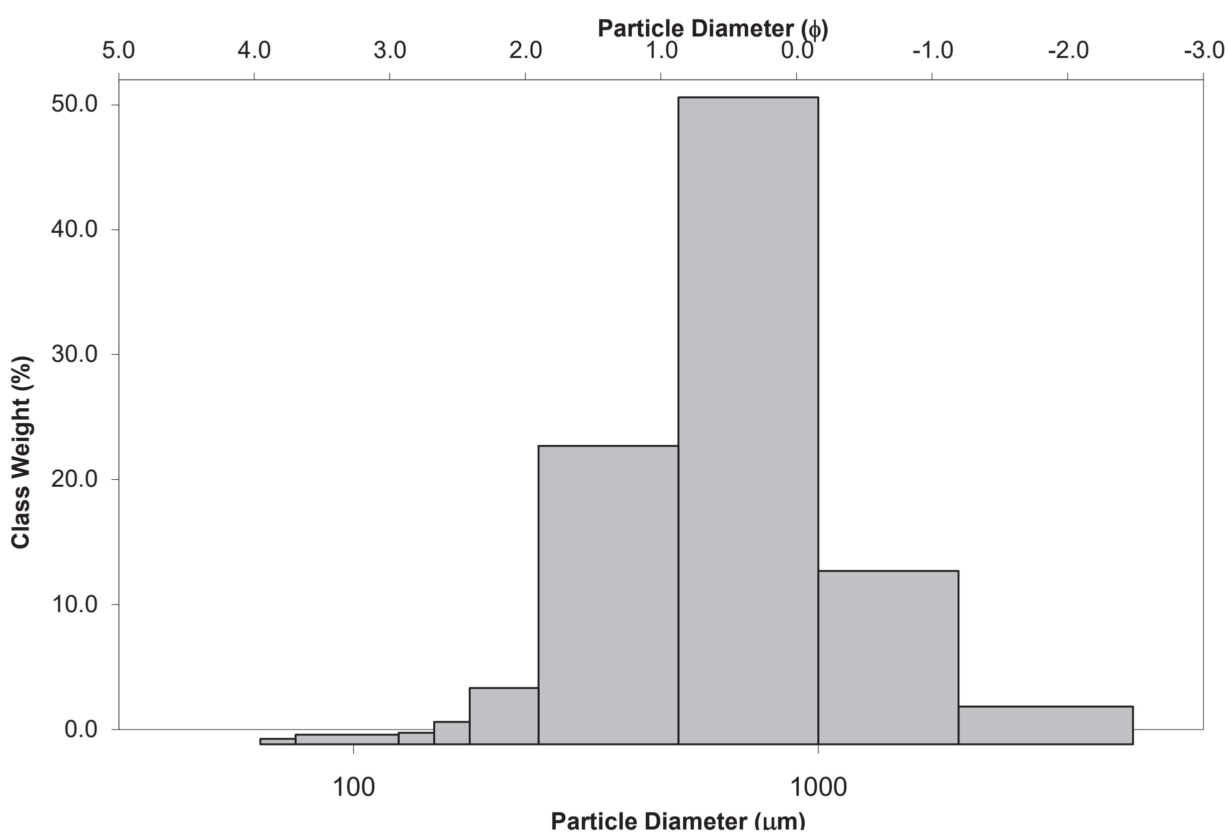
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	299.0	-0.599
MEDIAN or D_{50}:	664.0	0.591
D_{90}:	1514.6	1.742
(D_{90} / D_{10}):	5.066	-2.908
$(D_{90} - D_{10})$:	1215.6	2.341
(D_{75} / D_{25}):	2.013	9.326
$(D_{75} - D_{25})$:	462.7	1.009

GRAIN SIZE DISTRIBUTION

GRAVEL:	4.3%	COARSE SAND:	53.2%
SAND:	95.7%	MEDIUM SAND:	24.5%
MUD:	0.0%	FINE SAND:	3.0%
		V FINE SAND:	0.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.2%	FINE SILT:	0.0%
V FINE GRAVEL:	3.1%	V FINE SILT:	0.0%
V COARSE SAND:	14.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	842.0	643.2	0.594	643.2	0.637	Coarse Sand
SORTING (σ):	621.4	2.061	0.847	1.812	0.858	Moderately Sorted
SKEWNESS (Sk):	2.617	-2.882	-0.160	-0.009	0.009	Symmetrical
KURTOSIS (K):	10.96	29.03	4.038	1.175	1.175	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12886**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

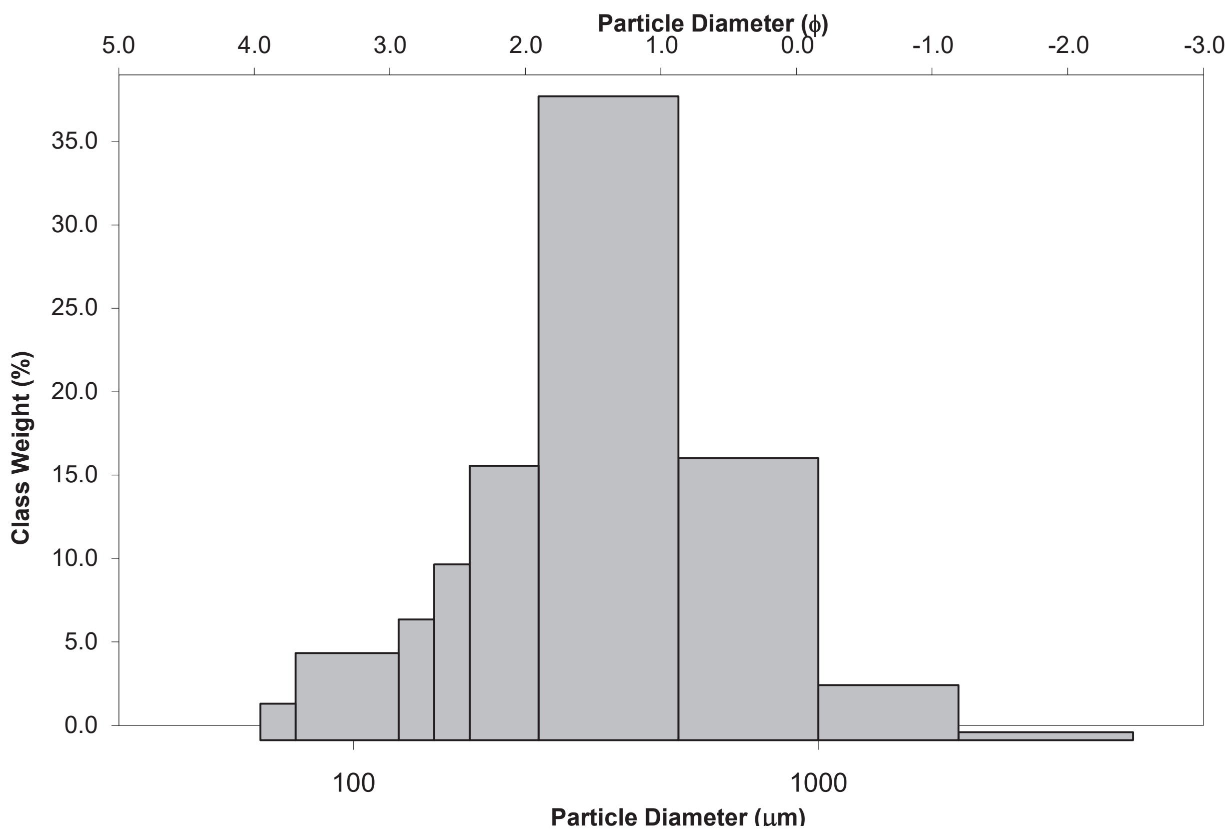
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	164.0	0.204
MEDIAN or D_{50}:	366.9	1.446
D_{90}:	868.3	2.609
(D_{90} / D_{10}):	5.295	12.80
$(D_{90} - D_{10})$:	704.3	2.405
(D_{75} / D_{25}):	2.084	2.197
$(D_{75} - D_{25})$:	281.7	1.059

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.2%	COARSE SAND:	22.0%
SAND:	98.8%	MEDIUM SAND:	50.3%
MUD:	0.0%	FINE SAND:	16.4%
		V FINE SAND:	5.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.6%	FINE SILT:	0.0%
V FINE GRAVEL:	0.6%	V FINE SILT:	0.0%
V COARSE SAND:	4.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	481.7	361.7	1.424	378.1	1.403	Medium Sand
SORTING (σ):	393.6	2.097	0.913	1.920	0.941	Moderately Sorted
SKEWNESS (Sk):	3.774	-2.075	-0.066	0.021	-0.021	Symmetrical
KURTOSIS (K):	24.88	19.47	3.782	1.248	1.248	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12887**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Well Sorted

TEXTURAL GROUP: Sand

SEDIMENT NAME: Moderately Well Sorted Fine Sand

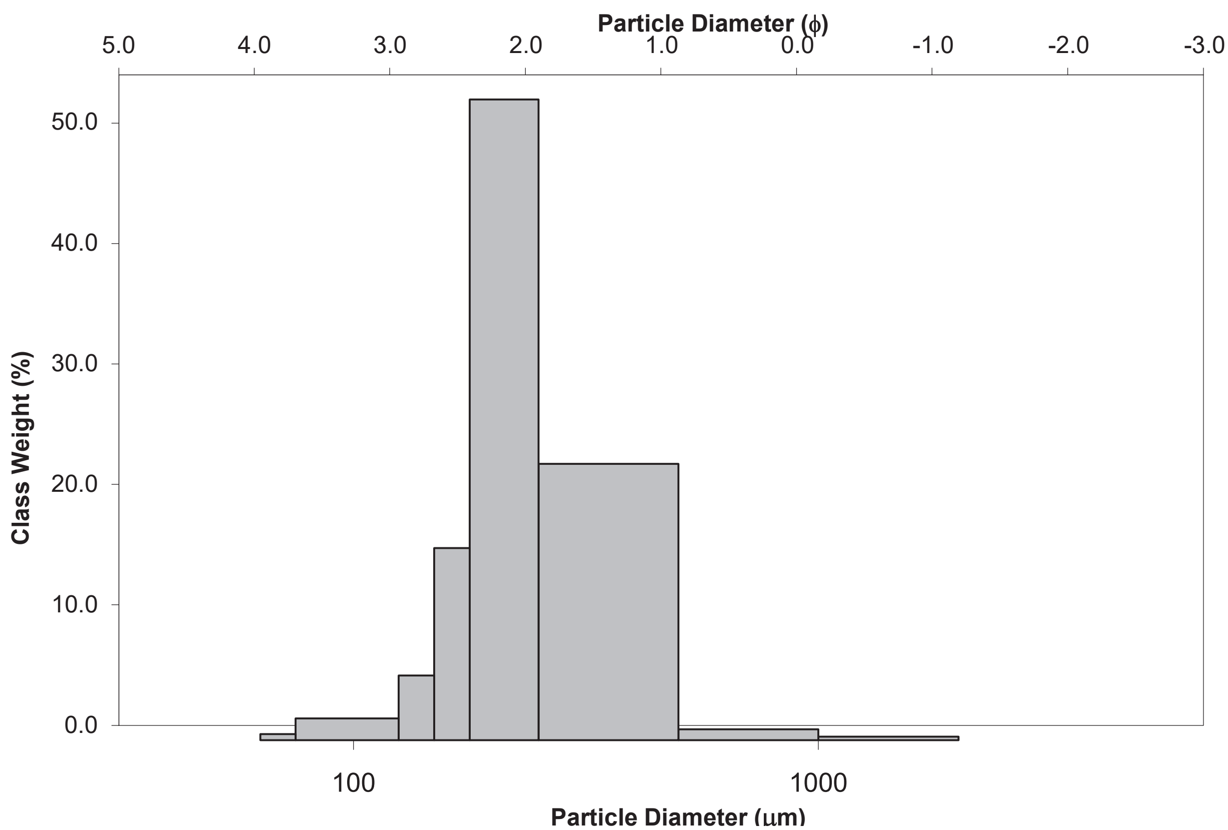
	μm	ϕ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	169.1	1.198
MEDIAN or D_{50}:	235.8	2.084
D_{90}:	435.8	2.564
(D_{90} / D_{10}):	2.578	2.140
$(D_{90} - D_{10})$:	266.7	1.366
(D_{75} / D_{25}):	1.718	1.497
$(D_{75} - D_{25})$:	140.5	0.781

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	1.5%
SAND:	100.0%	MEDIUM SAND:	40.1%
MUD:	0.0%	FINE SAND:	55.3%
		V FINE SAND:	2.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	0.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	284.9	254.0	1.977	256.9	1.961	Medium Sand
SORTING (σ):	137.3	1.453	0.539	1.442	0.528	Moderately Well Sorted
SKEWNESS (Sk):	4.018	0.308	-0.308	0.274	-0.274	Coarse Skewed
KURTOSIS (K):	33.39	5.097	5.097	0.877	0.877	Platykurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12888**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

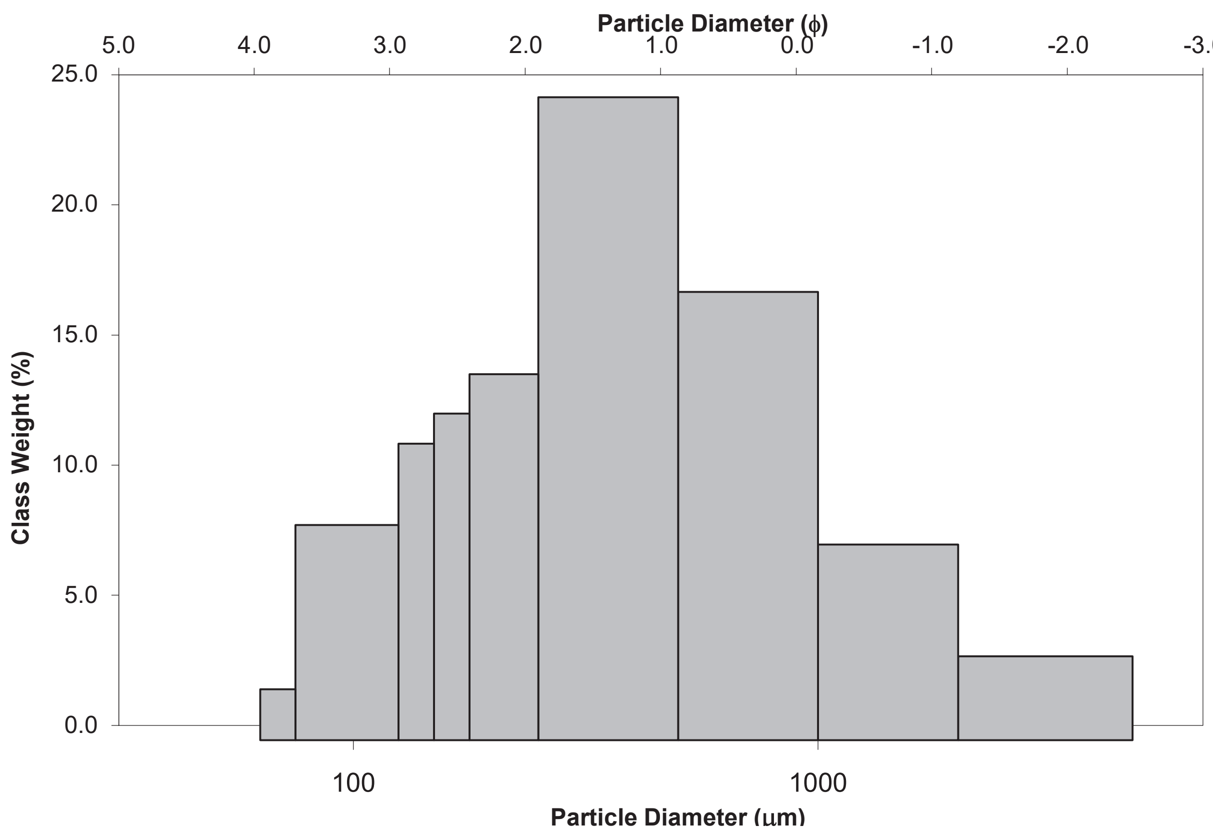
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	130.9	-0.601
MEDIAN or D_{50}:	403.9	1.308
D_{90}:	1516.5	2.934
(D_{90} / D_{10}):	11.59	-4.884
(D_{90} - D_{10}):	1385.7	3.535
(D_{75} / D_{25}):	3.274	5.538
(D_{75} - D_{25}):	534.8	1.711

GRAIN SIZE DISTRIBUTION

GRAVEL:	5.9%	COARSE SAND:	23.5%
SAND:	94.1%	MEDIUM SAND:	33.7%
MUD:	0.0%	FINE SAND:	17.7%
		V FINE SAND:	9.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.5%	FINE SILT:	0.0%
V FINE GRAVEL:	4.4%	V FINE SILT:	0.0%
V COARSE SAND:	10.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	682.2	414.5	1.227	410.0	1.286	Medium Sand
SORTING (σ):	758.5	2.631	1.274	2.525	1.336	Poorly Sorted
SKEWNESS (Sk):	2.462	-0.778	-0.269	0.064	-0.064	Symmetrical
KURTOSIS (K):	8.918	8.520	2.747	1.092	1.092	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12889** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

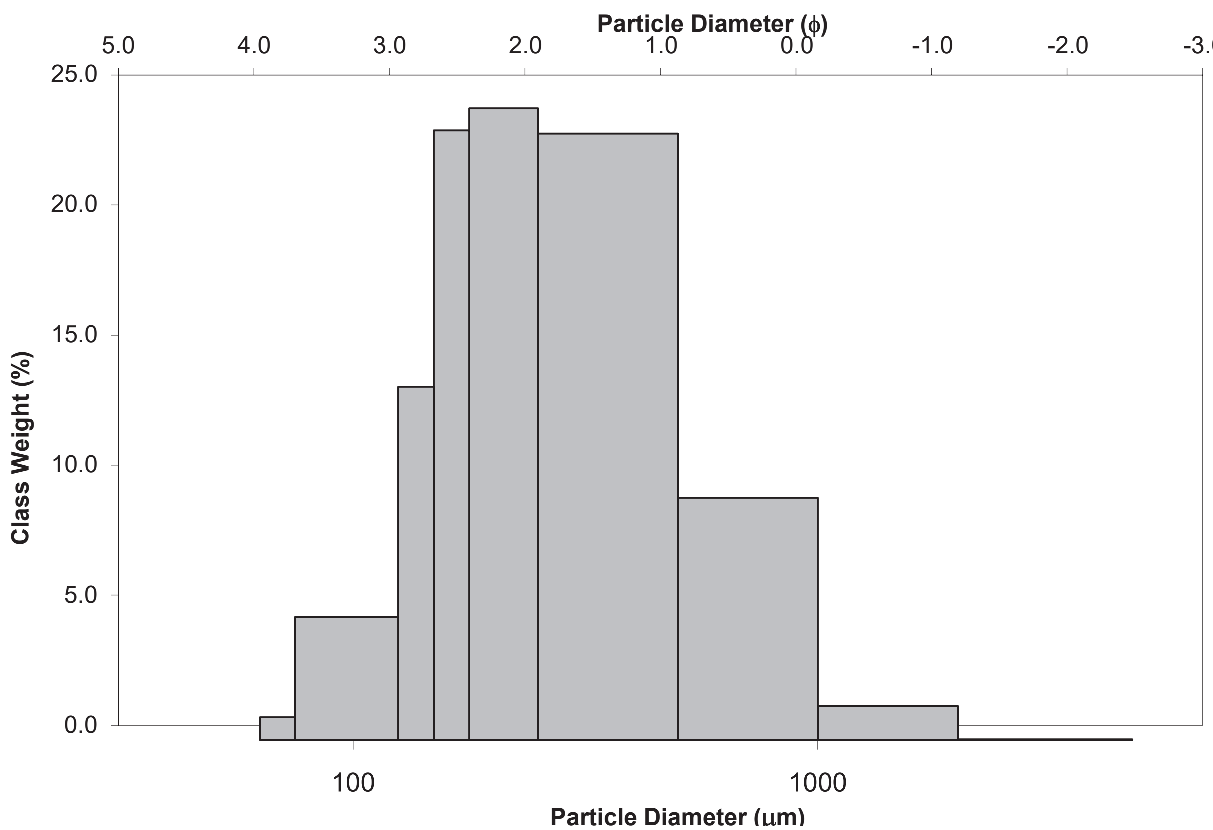
	μm	φ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	139.8	0.492
MEDIAN or D_{50}:	285.3	1.810
D_{90}:	711.0	2.839
(D_{90} / D_{10}):	5.086	5.768
$(D_{90} - D_{10})$:	571.2	2.347
(D_{75} / D_{25}):	2.375	2.060
$(D_{75} - D_{25})$:	256.1	1.248

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.0%	COARSE SAND:	15.8%
SAND:	100.0%	MEDIUM SAND:	39.5%
MUD:	0.0%	FINE SAND:	36.2%
		V FINE SAND:	6.3%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.0%	V FINE SILT:	0.0%
V COARSE SAND:	2.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	374.8	295.1	1.761	291.8	1.777	Medium Sand
SORTING (σ):	267.5	1.829	0.871	1.861	0.896	Moderately Sorted
SKEWNESS (Sk):	2.446	0.219	-0.219	0.075	-0.075	Symmetrical
KURTOSIS (K):	14.19	2.872	2.872	0.980	0.980	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12890**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

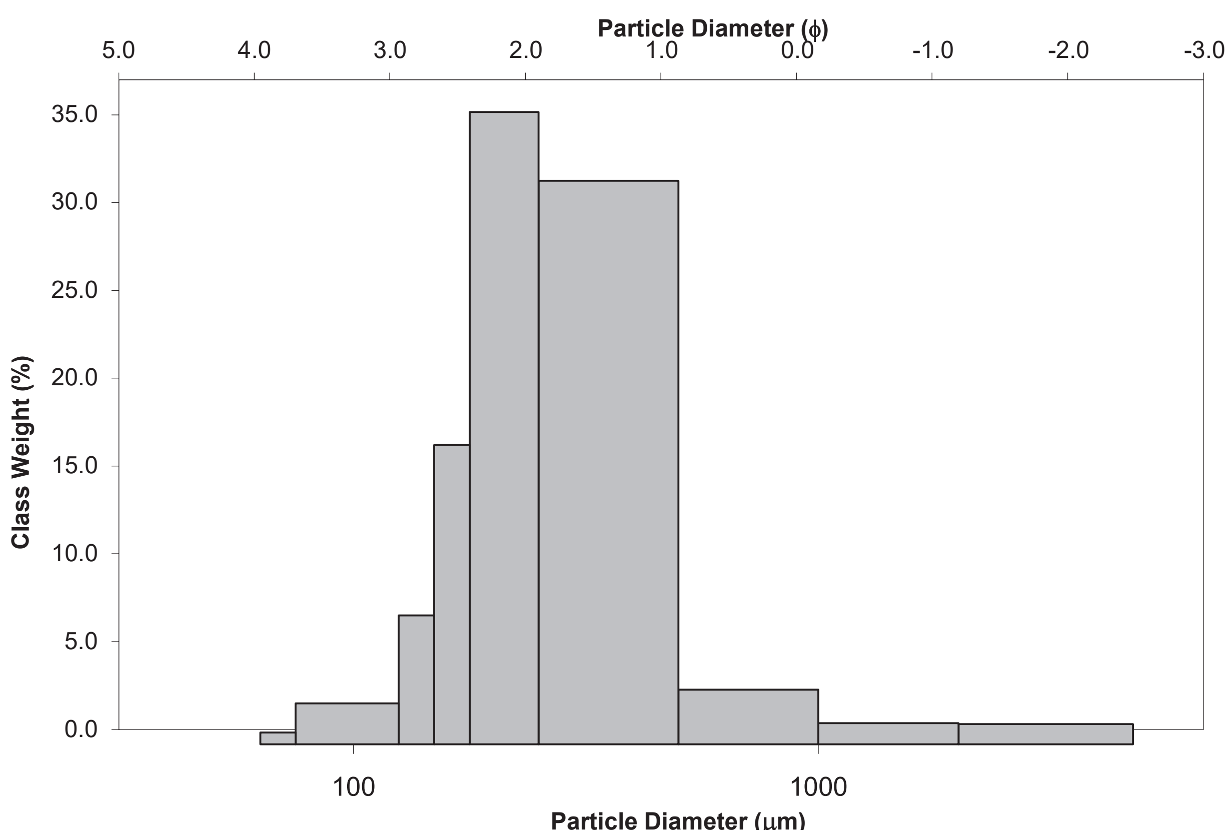
	μm	ϕ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	165.7	1.021
MEDIAN or D_{50}:	284.5	1.813
D_{90}:	492.9	2.593
(D_{90} / D_{10}):	2.974	2.541
(D_{90} - D_{10}):	327.2	1.572
(D_{75} / D_{25}):	1.942	1.726
(D_{75} - D_{25}):	194.5	0.957

GRAIN SIZE DISTRIBUTION

GRAVEL:	2.2%	COARSE SAND:	4.9%
SAND:	97.8%	MEDIUM SAND:	50.5%
MUD:	0.0%	FINE SAND:	37.6%
		V FINE SAND:	3.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.4%	FINE SILT:	0.0%
V FINE GRAVEL:	1.8%	V FINE SILT:	0.0%
V COARSE SAND:	1.9%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	406.3	302.3	1.726	288.0	1.796	Medium Sand
SORTING (σ):	493.3	1.781	0.833	1.651	0.723	Moderately Sorted
SKEWNESS (Sk):	5.017	1.484	-1.484	0.137	-0.137	Coarse Skewed
KURTOSIS (K):	29.57	7.749	7.749	1.128	1.128	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12891**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

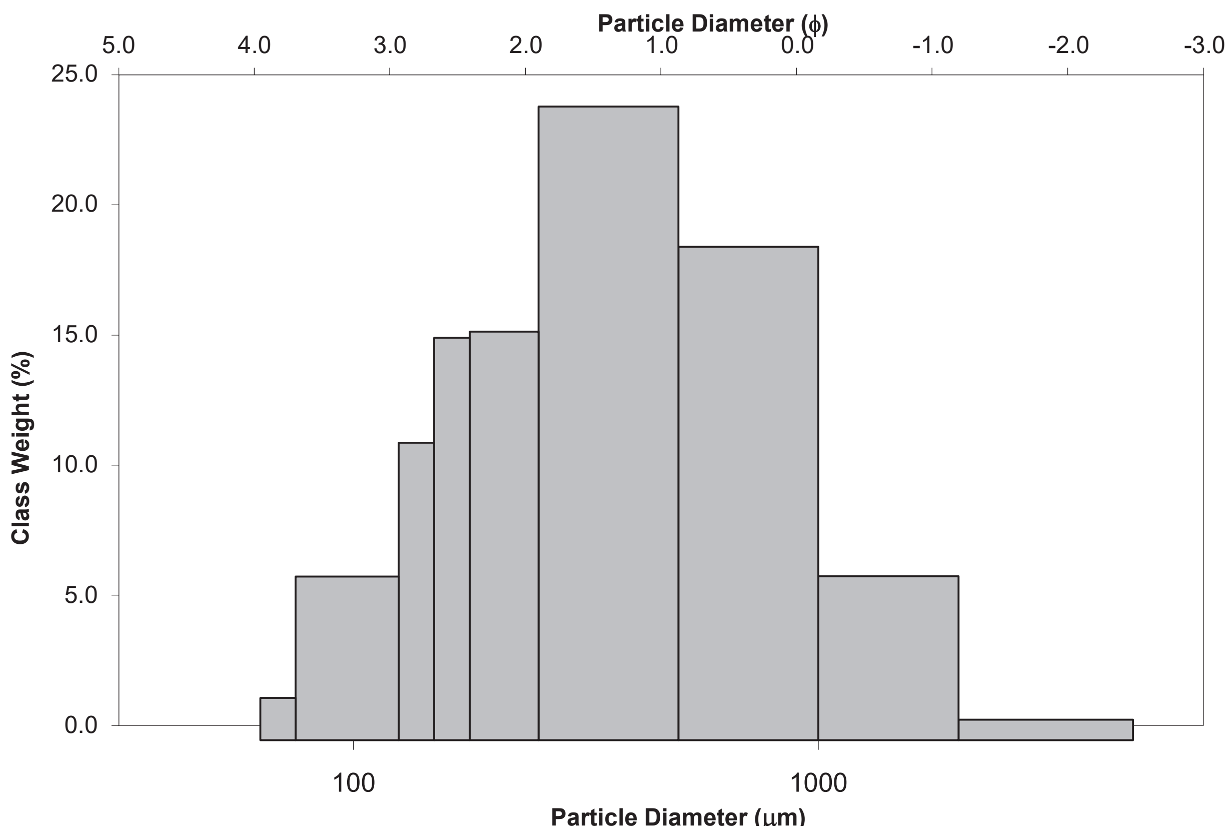
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	141.0	-0.053
MEDIAN or D_{50}:	389.1	1.362
D_{90}:	1037.5	2.826
(D_{90} / D_{10}):	7.356	-53.239
$(D_{90} - D_{10})$:	896.4	2.879
(D_{75} / D_{25}):	3.012	3.956
$(D_{75} - D_{25})$:	460.0	1.591

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.5%	COARSE SAND:	27.0%
SAND:	98.5%	MEDIUM SAND:	34.7%
MUD:	0.0%	FINE SAND:	20.7%
		V FINE SAND:	7.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.4%	FINE SILT:	0.0%
V FINE GRAVEL:	1.1%	V FINE SILT:	0.0%
V COARSE SAND:	9.0%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	558.9	390.5	1.344	387.9	1.366	Medium Sand
SORTING (σ):	506.0	2.210	1.102	2.244	1.166	Poorly Sorted
SKEWNESS (Sk):	2.830	-0.460	-0.078	0.009	-0.009	Symmetrical
KURTOSIS (K):	14.54	6.571	2.744	0.993	0.993	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12892**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

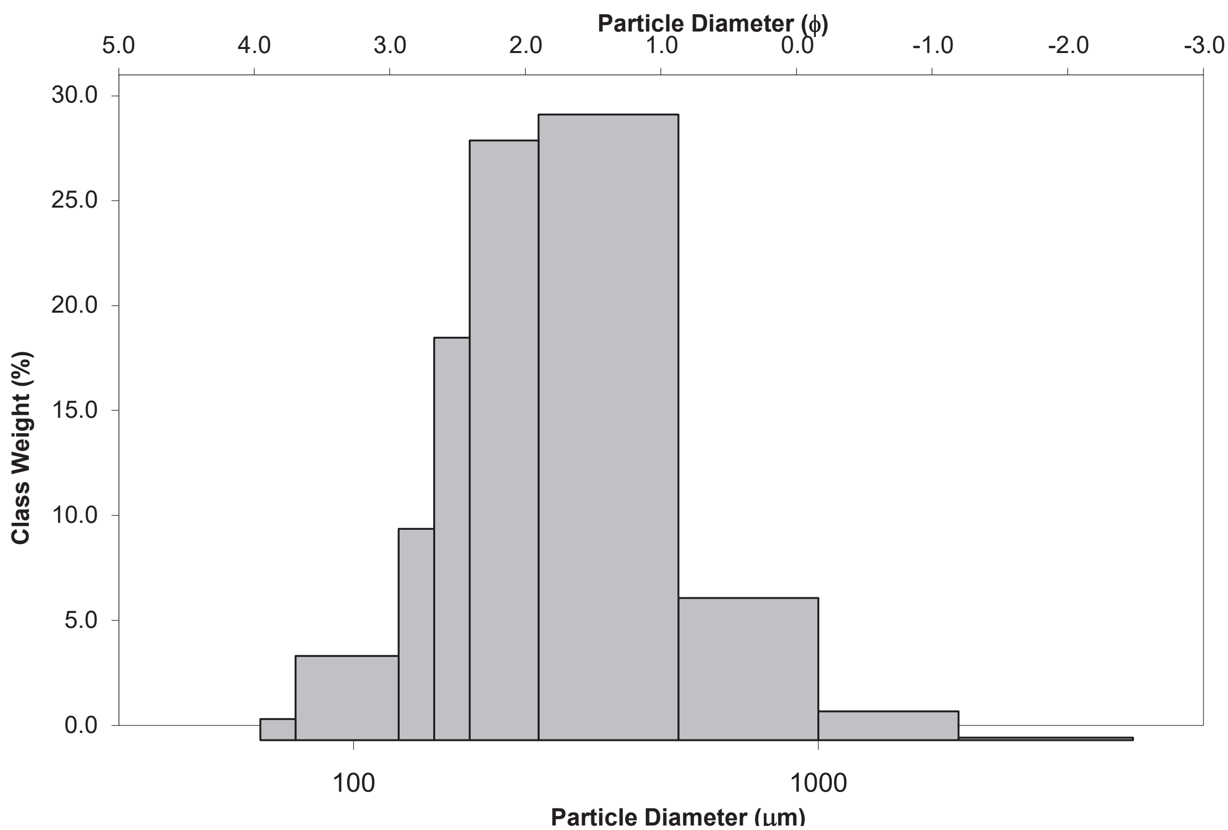
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	151.9	0.704
MEDIAN or D_{50}:	292.2	1.775
D_{90}:	613.9	2.719
(D_{90} / D_{10}):	4.042	3.863
$(D_{90} - D_{10})$:	462.0	2.015
(D_{75} / D_{25}):	2.094	1.854
$(D_{75} - D_{25})$:	219.8	1.066

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.2%	COARSE SAND:	10.8%
SAND:	99.8%	MEDIUM SAND:	47.5%
MUD:	0.0%	FINE SAND:	34.2%
		V FINE SAND:	5.1%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.0%	FINE SILT:	0.0%
V FINE GRAVEL:	0.2%	V FINE SILT:	0.0%
V COARSE SAND:	2.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	370.6	297.6	1.748	290.1	1.786	Medium Sand
SORTING (σ):	281.3	1.742	0.801	1.725	0.786	Moderately Sorted
SKEWNESS (Sk):	4.366	0.350	-0.350	0.043	-0.043	Symmetrical
KURTOSIS (K):	36.36	4.013	4.013	1.067	1.067	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12893**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

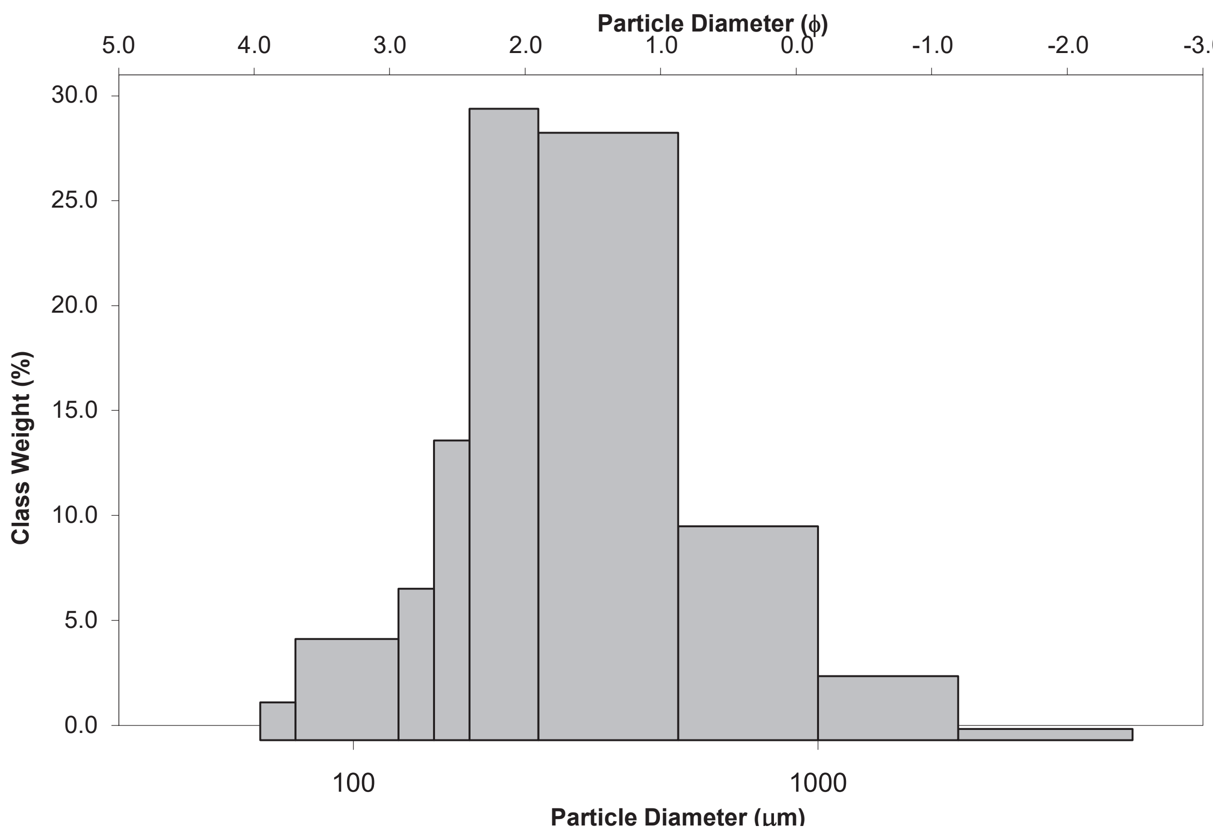
	μm	φ
MODE 1:	213.9	2.246
MODE 2:		
MODE 3:		
D_{10}:	155.6	0.291
MEDIAN or D_{50}:	312.4	1.679
D_{90}:	817.3	2.684
(D_{90} / D_{10}):	5.254	9.224
(D_{90} - D_{10}):	661.8	2.393
(D_{75} / D_{25}):	2.220	2.047
(D_{75} - D_{25}):	256.6	1.150

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.1%	COARSE SAND:	15.2%
SAND:	98.9%	MEDIUM SAND:	43.1%
MUD:	0.0%	FINE SAND:	30.2%
		V FINE SAND:	6.0%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.3%	FINE SILT:	0.0%
V FINE GRAVEL:	0.8%	V FINE SILT:	0.0%
V COARSE SAND:	4.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	442.2	327.6	1.603	328.7	1.605	Medium Sand
SORTING (σ):	421.7	1.952	0.940	1.912	0.935	Moderately Sorted
SKEWNESS (Sk):	4.016	0.037	-0.507	0.117	-0.117	Coarse Skewed
KURTOSIS (K):	25.12	7.417	3.893	1.163	1.163	Leptokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12894** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Moderately Sorted TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

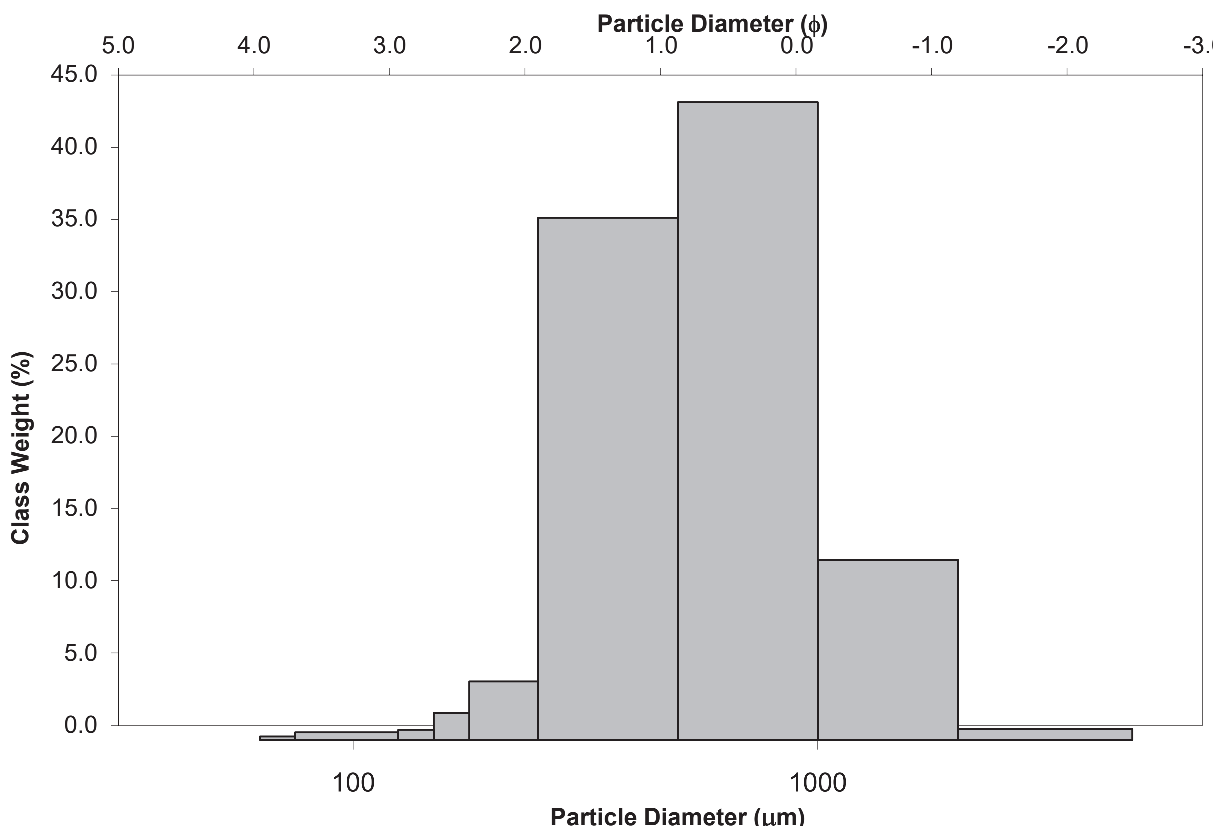
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	283.7	-0.300
MEDIAN or D_{50}:	577.4	0.792
D_{90}:	1230.9	1.817
(D_{90} / D_{10}):	4.338	-6.065
$(D_{90} - D_{10})$:	947.1	2.117
(D_{75} / D_{25}):	2.252	5.796
$(D_{75} - D_{25})$:	469.4	1.171

GRAIN SIZE DISTRIBUTION

GRAVEL:	1.0%	COARSE SAND:	45.6%
SAND:	99.0%	MEDIUM SAND:	37.3%
MUD:	0.0%	FINE SAND:	2.7%
		V FINE SAND:	0.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.2%	FINE SILT:	0.0%
V FINE GRAVEL:	0.8%	V FINE SILT:	0.0%
V COARSE SAND:	12.9%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	714.4	579.3	0.788	561.7	0.832	Coarse Sand
SORTING (σ):	449.2	1.709	0.773	1.744	0.802	Moderately Sorted
SKEWNESS (Sk):	2.522	0.202	-0.202	0.024	-0.024	Symmetrical
KURTOSIS (K):	13.52	3.350	3.350	0.923	0.923	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12895** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

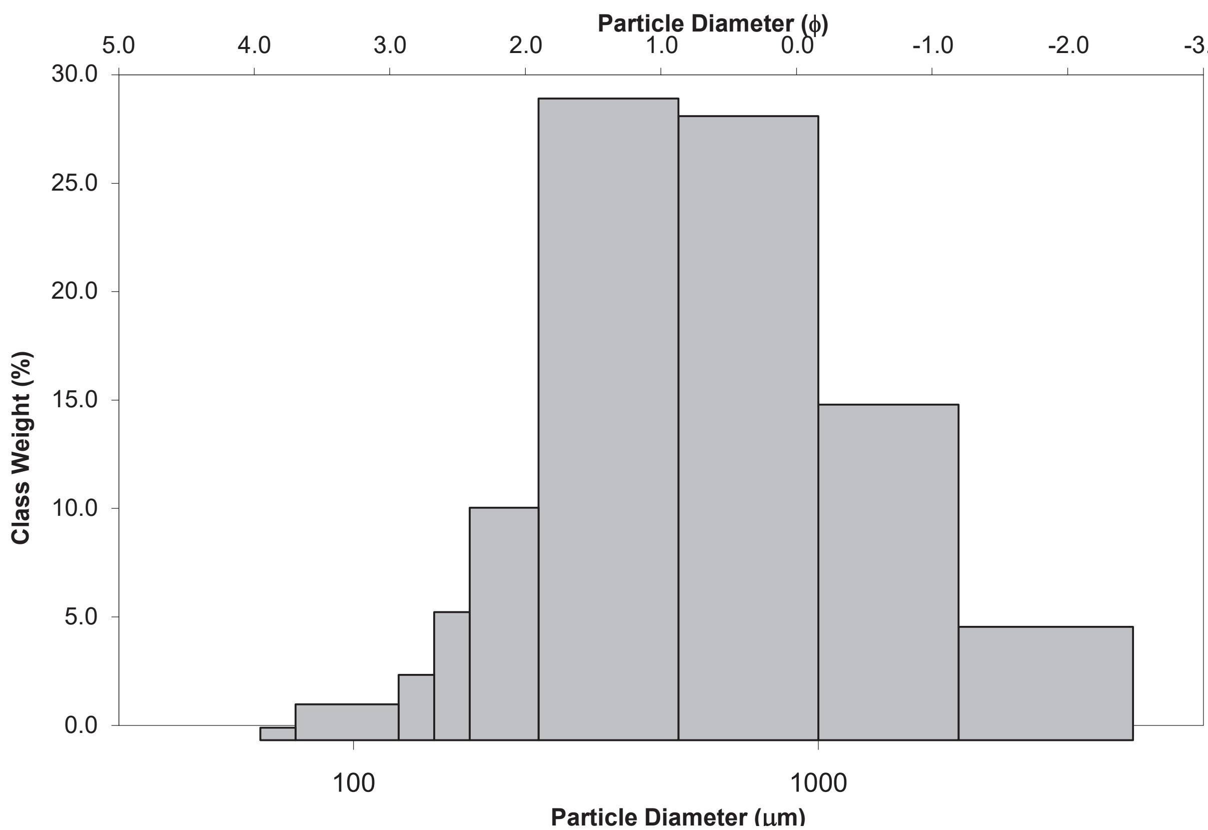
	μm	ϕ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	251.0	-0.928
MEDIAN or D_{50}:	589.7	0.762
D_{90}:	1902.1	1.994
(D_{90} / D_{10}):	7.578	-2.150
$(D_{90} - D_{10})$:	1651.1	2.922
(D_{75} / D_{25}):	2.995	-31.876
$(D_{75} - D_{25})$:	688.7	1.583

GRAIN SIZE DISTRIBUTION

GRAVEL:	8.8%	COARSE SAND:	31.7%
SAND:	91.2%	MEDIUM SAND:	32.6%
MUD:	0.0%	FINE SAND:	8.3%
		V FINE SAND:	1.5%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	3.0%	FINE SILT:	0.0%
V FINE GRAVEL:	5.8%	V FINE SILT:	0.0%
V COARSE SAND:	17.1%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic ϕ	Geometric μm	Logarithmic ϕ	Description
MEAN ($\bar{x}$):	876.3	553.4	0.696	630.5	0.665	Coarse Sand
SORTING (σ):	813.3	3.020	1.102	2.316	1.212	Poorly Sorted
SKEWNESS (Sk):	1.999	-2.744	-0.223	0.156	-0.156	Coarse Skewed
KURTOSIS (K):	6.577	17.60	2.826	1.052	1.052	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12896**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Medium Sand

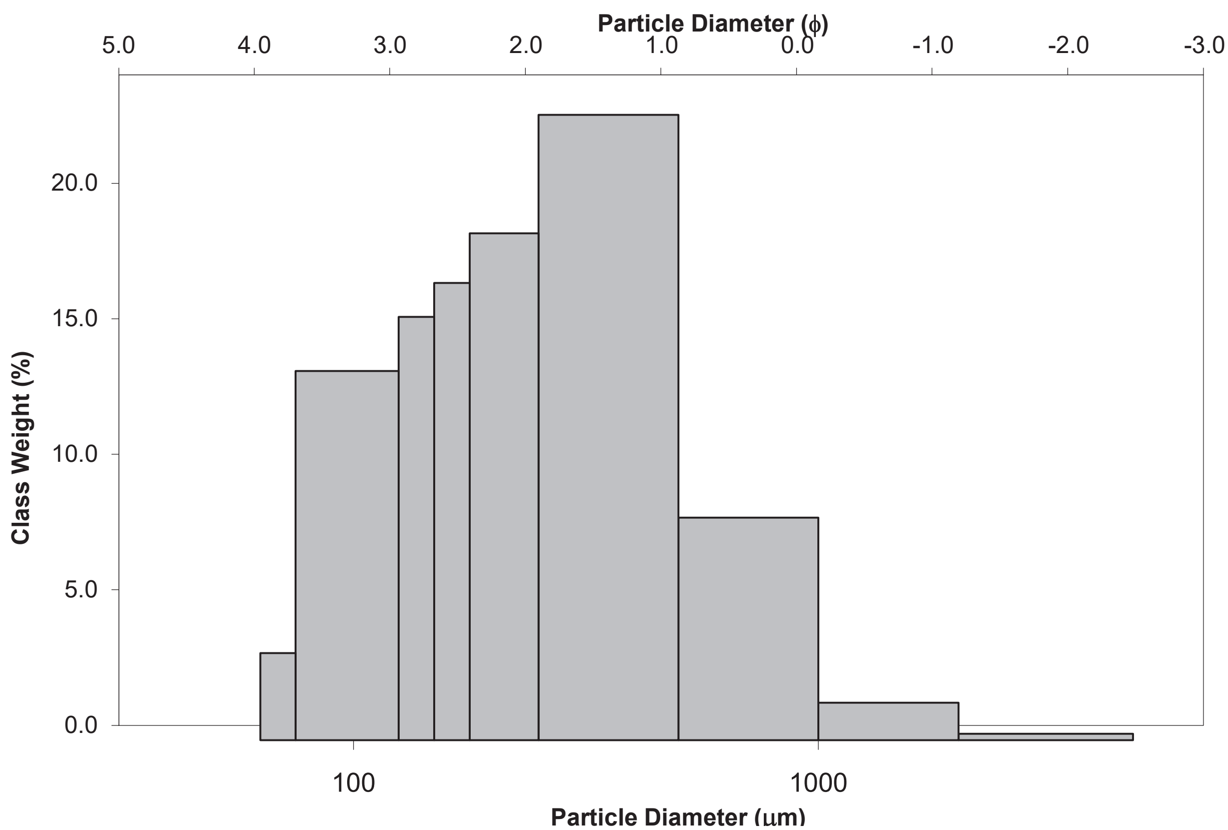
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	98.37	0.531
MEDIAN or D_{50}:	268.5	1.897
D_{90}:	692.0	3.346
(D_{90} / D_{10}):	7.034	6.298
$(D_{90} - D_{10})$:	593.6	2.814
(D_{75} / D_{25}):	2.794	2.203
$(D_{75} - D_{25})$:	273.3	1.482

GRAIN SIZE DISTRIBUTION

GRAVEL:	0.7%	COARSE SAND:	13.4%
SAND:	99.3%	MEDIUM SAND:	37.6%
MUD:	0.0%	FINE SAND:	28.4%
		V FINE SAND:	17.7%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	0.3%	FINE SILT:	0.0%
V FINE GRAVEL:	0.4%	V FINE SILT:	0.0%
V COARSE SAND:	2.2%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	360.7	261.1	1.919	252.8	1.984	Medium Sand
SORTING (σ):	338.3	2.099	1.017	2.058	1.041	Poorly Sorted
SKEWNESS (Sk):	4.307	-0.500	-0.259	-0.053	0.053	Symmetrical
KURTOSIS (K):	33.31	8.032	2.873	0.944	0.944	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12897** ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted TEXTURAL GROUP: Gravelly Sand

SEDIMENT NAME: Very Fine Gravelly Medium Sand

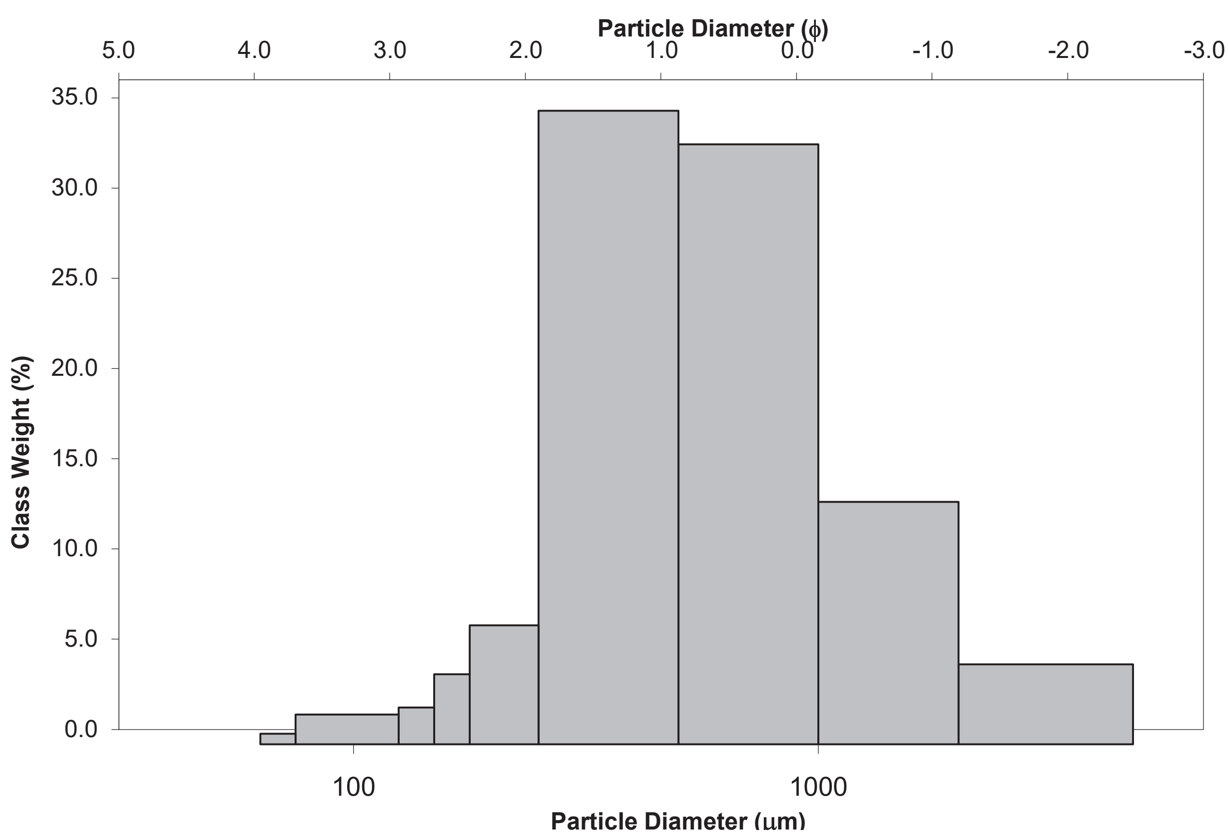
	μm	φ
MODE 1:	375.0	1.500
MODE 2:		
MODE 3:		
D_{10}:	266.9	-0.764
MEDIAN or D_{50}:	564.8	0.824
D_{90}:	1697.7	1.906
(D_{90} / D_{10}):	6.361	-2.495
$(D_{90} - D_{10})$:	1430.8	2.669
(D_{75} / D_{25}):	2.616	12.92
$(D_{75} - D_{25})$:	569.8	1.387

GRAIN SIZE DISTRIBUTION

GRAVEL:	6.6%	COARSE SAND:	35.3%
SAND:	93.4%	MEDIUM SAND:	37.3%
MUD:	0.0%	FINE SAND:	5.0%
		V FINE SAND:	1.4%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.9%	FINE SILT:	0.0%
V FINE GRAVEL:	4.7%	V FINE SILT:	0.0%
V COARSE SAND:	14.3%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	827.9	568.2	0.739	597.9	0.742	Coarse Sand
SORTING (σ):	746.2	2.450	1.015	2.086	1.061	Poorly Sorted
SKEWNESS (Sk):	2.298	-2.430	-0.352	0.169	-0.169	Coarse Skewed
KURTOSIS (K):	8.159	20.47	3.271	1.051	1.051	Mesokurtic

GRAIN SIZE DISTRIBUTION



SAMPLE STATISTICS

SAMPLE IDENTITY: **R-12898**

ANALYST & DATE: D. Hawkins, 09/24/2024

SAMPLE TYPE: Unimodal, Poorly Sorted

TEXTURAL GROUP: Slightly Gravelly Sand

SEDIMENT NAME: Slightly Very Fine Gravelly Coarse Sand

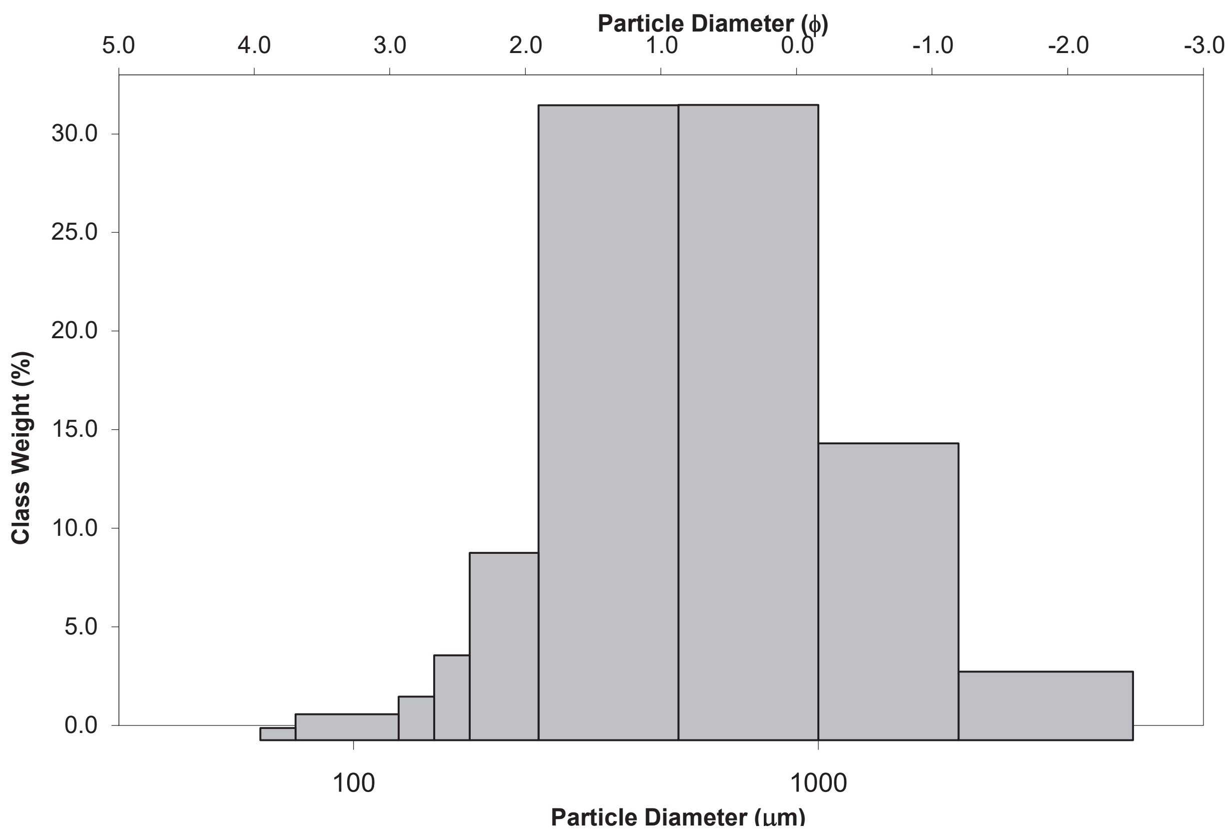
	μm	φ
MODE 1:	750.0	0.500
MODE 2:		
MODE 3:		
D_{10}:	259.3	-0.693
MEDIAN or D_{50}:	569.9	0.811
D_{90}:	1616.9	1.947
(D_{90} / D_{10}):	6.235	-2.809
$(D_{90} - D_{10})$:	1357.6	2.640
(D_{75} / D_{25}):	2.675	14.94
$(D_{75} - D_{25})$:	583.5	1.419

GRAIN SIZE DISTRIBUTION

GRAVEL:	4.9%	COARSE SAND:	35.2%
SAND:	95.1%	MEDIUM SAND:	35.2%
MUD:	0.0%	FINE SAND:	6.9%
		V FINE SAND:	1.2%
V COARSE GRAVEL:	0.0%	V COARSE SILT:	0.0%
COARSE GRAVEL:	0.0%	COARSE SILT:	0.0%
MEDIUM GRAVEL:	0.0%	MEDIUM SILT:	0.0%
FINE GRAVEL:	1.2%	FINE SILT:	0.0%
V FINE GRAVEL:	3.8%	V FINE SILT:	0.0%
V COARSE SAND:	16.5%	CLAY:	0.0%

	METHOD OF MOMENTS			FOLK & WARD METHOD		
	Arithmetic μm	Geometric μm	Logarithmic φ	Geometric μm	Logarithmic φ	Description
MEAN ($\bar{x}$):	818.1	585.8	0.751	593.3	0.753	Coarse Sand
SORTING (σ):	701.1	2.133	1.009	2.037	1.026	Poorly Sorted
SKEWNESS (Sk):	2.296	-0.995	-0.262	0.090	-0.090	Symmetrical
KURTOSIS (K):	8.647	12.77	3.089	0.953	0.953	Mesokurtic

GRAIN SIZE DISTRIBUTION



Appendix B

Grainsize Data

Laser Diffraction Particle Size Results

Sample Log and Notes

Repository ID	Sample ID	Final Bulk Sample Weight (g)	Sample Weight (g) used in Run (subsample from bulk)	Amount of Water Used in Run (ml)	Obscurity Level - Before Run 1 (%)	Obscurity Level - End of Run 3 (%)	Pump Speed	Sample Run Number (set by Instrument)
R-12813	90473AB_1	76.3	1.1	50	10	20	66	716-718
R-12814	90473AB_2	117.1	1.2	50	10	16	66	719-721
R-12815	90474AA_1	46.2	0.5	30	10	17	66	704-706
R-12816	90474AA_2	89.8	1.0	75	10	17	66	707-709
R-12817	90474AA_3	126	1.0	50	10	21	66	710-712
R-12818	90474AA_4	92.5	1.1	50	10	19	66	713-715
R-12819	13215AB_1	94.7	1.2	50	10	21	66	722-724
R-12820	13215AB_2	99.3	1.4	50	10	12	66	725-727
R-12821	13215AB_3	73.1	2.1	50	10	13	66	728-730
R-12822	13215AB_4	144.4	2.4	50	10	13	66	761-733
R-12824	90451AA_1	153.9	1.0	50	10	30	66	734-736
R-12825	90451AA_2	165.6	2.0	75	10	16	66	737-739
R-12826	90451AA_3	72.4	1.6	50	11	19	66	740-742
R-12827	90490AA_1	74.3	1.5	50	10	15	66	743-745
R-12828	90490AA_2	129.1	1.1	50	10	14	66	746-748
R-12829	90490AA_3	94.6	1.7	50	10	15	66	749-751
R-12830	90490AA_4	109.9	1.5	75	10	13	66	752-754
R-12831	90490AA_5	86	1.5	50	10	19	66	755-757
R-12832	13889AD_1	102.8	1.0	50	9	11	66	770-772
R-12833	13889AD_2	61.4	5.0	100	9	12	100	773-775
R-12834	13889AD_3	99.6	2.0	50	10	17	100	776-778
R-12835	13889AD_4	114.9	2.0	30	10	14	100	779-781
R-12836	13889AD_5	108.2	1.2	25	9	11	100	782-784
R-12837	90367AA_1	62.3	1.5	50	10	19	66	758-760
R-12838	90367AA_2	61.4	1.5	50	11	21	66	761-763
R-12839	90367AA_3	96.7	1.0	50	10	26	66	764-766
R-12840	90367AA_4	78.2	1.3	50	9	26	66	767-769
R-12841	90562AA_1	96.7	4.0	125	10	14	86	785-787
R-12842	90562AA_2	81.9	1.2	50	10	15	86	788-790
R-12843	90562AA_3	29.5	3.2	70	9	14	86	791-793
R-12844	90562AA_4	47	5.1	75	9	11	86	794-796
R-12845	90562AA_5	69.3	5.1	50	10	11	86	797-799
R-12846	90562AA_6	42.1	4.1	50	10	16	86	800-802
R-12847	08776AB_1	108	1.7	50	10	20	65	846-848
R-12848	08776AB_2	77.5	2.8	70	10	14	65	849-851
R-12849	13771AC_1	90	1.0	50	10	19	65	819-821
R-12850	13771AC_2	77.7	1.2	60	10	16	65	822-824
R-12851	13771AC_3	82.7	1.4	80	10	17	65	825-827
R-12852	13771AC_4	94	1.2	60	10	19	65	828-830
R-12853	13771AC_5	85.6	3.9	100	10	13	65	831-833
R-12854	13771AC_6	114.1	4.6	110	10	14	65	834-836
R-12855	13771AC_7	65.9	1.9	70	10	23	65	837-839
R-12856	13771AC_8	74.6	2.2	70	10	21	65	840-842
R-12857	13771AC_9	84.4	2.3	50	11	17	65	843-845
R-12858	13867AB_1	64.8	2.0	70	10	15	65	803-805
R-12859	13867AB_2	41.9	2.0	70	10	18	65	806-808

Repository ID	Sample ID	Final Bulk Sample Weight (g)	Sample Weight (g) used in Run (subsample from bulk)	Amount of Water Used in Run (ml)	Obscurity Level - Before Run 1 (%)	Obscurity Level - End of Run 3 (%)	Pump Speed	Sample Run Number (set by Instrument)
R-12860	13867AB_3	78.9	1.6	70	10	15	65	809-811
R-12861	13867AB_4	90.6	4.5	100	10	11	65	813-815
R-12862	13867AB_5	97.8	2.0	100	10	14	65	816-818
R-12863	90347AA_1	78	2.5	50	11	17	65	852-854
R-12864	90347AA_2	94.6	2.9	70	10	17	65	855-857
R-12865	90347AA_3	88.5	2.6	70	11	17	65	858-860
R-12866	90397AA_1	77.9	2.6	70	10	24	65	861-863
R-12867	90413AA_1	84.3	1.7	50	10	18	65	870-872
R-12868	90413AA_2	91.6	2.0	70	11	26	65	873-875
R-12869	90413AA_3	84	1.7	70	10	22	65	876-878
R-12870	90413AA_4	55.5	1.8	90	10	21	65	879-881
R-12871	90413AA_5	52.9	2.3	70	11	23	65	882-884
R-12872	90560AA_1	79.3	2.6	70	11	25	65	864-866
R-12873	90560AA_2	110.7	2.1	70	10	21	65	866-869
R-12874	06930AB_1	95.6	2.1	90	10	15	65	885-887
R-12875	06930AB_2	80.9	2.6	90	11	17	65	888-890
R-12876	12583AC_1	52.5	2.5	70	10	16	65	900-902
R-12877	12583AC_2	67	4.5	100	9	12	65	903-905
R-12878	12583AC_3	79.6	2.2	70	11	18	65	906-908
R-12879	12583AC_4	54.3	1.5	50	10	14	65	909-911
R-12880	90326AB_1	66.6	1.6	50	10	22	65	891-893
R-12881	90326AB_2	66.3	2.8	70	9	14	65	894-896
R-12882	90326AB_3	89.6	3.2	100	10	12	65	897-899
R-12883	90348AB_1	62.6	2.0	70	10	14	65	912-914
R-12884	90348AB_2	54	3.0	90	11	17	65	915-917
R-12885	13778AF_1	69.2	3.3	90	10	16	65	924-926
R-12886	13778AF_2	68	2.5	70	10	21	65	927-929
R-12887	90319AA_1	49.7	2.6	70	10	18	65	918-920
R-12888	90319AA_2	58.1	3.5	90	11	19	65	921-923
R-12889	06988AC_1	67.2	2.3	50	9	12	65	945-947
R-12890	06988AC_2	55.4	2.4	50	10	20	65	948-950
R-12891	10018AB_1	57.1	3.2	70	10	20	65	942-944
R-12892	11273AA_1	87.8	3.5	90	10	15	65	957-959
R-12893	13118AA_1	89.3	2.7	50	12	24	65	951-953
R-12894	13118AA_2	70.3	3.4	90	10	13	65	954-956
R-12895	90466AC_1	53.2	3.0	70	10	14	65	930-932
R-12896	90466AC_2	84.4	2.2	70	10	23	65	933-935
R-12897	90466AC_3	55.7	3.3	100	11	20	65	936-938
R-12898	90466AC_4	86.5	4.4	70	10	15	65	939-941

Beckman Coulter LS 13 320 Laser Diffraction Particle Size Analyzer
Owner: James Madison University, Department of Geology and Environmental Science

Notes on cell contents in Sample Log
Final Sample Weight Ran (g) = the total amount of sample left after sieving through a #18 sieve to remove grains greater than 1mm.

Notes on sample analyses
Obscurity Level is not an exact number - it is chosen when you set up the run settings; our goal was to keep it at/or around 10%; (i.e., when it hit 8%, it went from "Low, Add Sample" to "OK" and when it hit 12% it went from "OK" to "High, dilute").

Obscurity: "a quantification of the amount of emitted laser light reaching the detector" - Houghton, 2024

Reference: Houghton, J.E., Behnsen, J., Duller, R.A., Nichols, T.E., and Worden, R.H., 2024, Particle size analysis: A comparison of laboratory-based techniques and their application to geoscience, Sedimentary Geology, 464 (106607)

https://doi.org/10.1016/j.sedgeo.2024.106607

Notes on sample table and subsequent PDF reports for individual sample runs
We provide a sample log which includes details on the individual sample runs. The technical guidance for operating the LS 13 320 Laser Diffraction Particle Size Analyzer should be consulted for background information.
The average of three sample runs per sample is provided in the table. Individual sample runs are provided as PDFs.

Appendix B

Grainsize Data

Laser Diffraction Particle Size Results

Compiled Averages (n=3 per sample)

Size Millimeters		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12813	R-12814	R-12815	R-12816
		Sample ID:	90473AB_1	90473AB_2	90474AA_1	90474AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
		Microns				
2.0		2000				
1.8		1822	0.001026573	0.000944197	0.00232966	0.015816817
1.7		1660	0.015938723	0.01496658	0.0241615	0.1574531
1.5		1512	0.103592967	0.096503433	0.109470933	0.639719333
1.4		1377	0.367058333	0.328267333	0.259565333	1.632663333
1.3		1255	0.844565	0.746902667	0.492802667	2.977483333
1.1		1143	1.494063333	1.31301	0.643857	4.35315
1.0		1041	2.246113333	1.977996667	0.650827667	5.58691
0.95		948	3.10478	2.707136667	0.518700333	6.513523333
0.86		864	4.034116667	3.44186	0.411966667	6.996933333
0.79		787	4.9576	4.11428	0.403223	6.989156667
0.72		717	5.769953333	4.67542	0.515825	6.537513333
0.65		653	6.347806667	5.096606667	0.755534	5.75398
0.59		595	6.585886667	5.365336667	1.051966667	4.789523333
0.54		542	6.429466667	5.476276667	1.289216667	3.78861
0.49		494	5.896156667	5.422753333	1.36213	2.863366667
0.45		450	5.080716667	5.204493333	1.25553	2.08901
0.41		410	4.1331	4.83637	1.052427	1.500626667
0.37		373	3.21432	4.35463	0.878074333	1.09762
0.34	Sand	340	2.44649	3.811973333	0.815688667	0.853756667
0.31		310	1.882926667	3.266013333	0.886815667	0.730076333
0.28		282	1.511353333	2.766366667	1.060653	0.686705333
0.26		257	1.281216667	2.344796667	1.265034667	0.689185333
0.23		234	1.136146667	2.01392	1.418767667	0.712877
0.21		213	1.035152667	1.76965	1.490004	0.747094333
0.19		194	0.961549	1.598443333	1.510134333	0.793873
0.18		177	0.915370667	1.482303333	1.534478	0.859087333
0.16		161	0.899689667	1.403183333	1.60162	0.943939667
0.15		147	0.910562333	1.34553	1.71571	1.039833
0.13		134	0.934943333	1.29702	1.850743333	1.129420333
0.12		122	0.956990333	1.24957	1.973026667	1.19511
0.11		111	0.965478333	1.19806	2.06009	1.228226667
0.10		101	0.958605667	1.140576667	2.109113333	1.23213
0.092		92	0.941609333	1.07737	2.12901	1.216453333
0.084		84	0.921797333	1.011124333	2.132573333	1.190366667
0.076		76	0.904581333	0.945815333	2.133073333	1.15918
0.070		70	0.892298	0.885563667	2.142623333	1.124833333
0.063		63	0.884197	0.832643667	2.16919	1.08743

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12813	R-12814	R-12815	R-12816
		Sample ID:	90473AB_1	90473AB_2	90474AA_1	90474AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.877235333	0.786620333	2.21226	1.046437333
0.053		53	0.866758	0.744580667	2.26093	1.000617
0.048		48	0.848241667	0.702625667	2.298206667	0.948645667
0.044		44	0.819184333	0.658032	2.308976667	0.890084333
0.040		40	0.779995	0.610458333	2.286566667	0.826017667
0.036		36	0.734119	0.562234333	2.235656667	0.759587
0.033		33	0.686389667	0.516943667	2.168503333	0.694981
0.030		30	0.64134	0.47756	2.098753333	0.636166
0.027		27	0.602219333	0.445490667	2.036603333	0.586061333
0.025		25	0.569938	0.419864667	1.98481	0.545161
0.023		23	0.543997	0.398725667	1.940583333	0.512479667
0.021		21	0.522664667	0.379742	1.897083333	0.485698667
0.019		19	0.503911	0.361206667	1.846956667	0.462275667
0.017		17	0.486115	0.342536	1.78527	0.440429
0.016		16	0.467501	0.323402333	1.708783333	0.418401
0.014		14	0.447119	0.304100333	1.61769	0.395589
0.013		13	0.424222667	0.284632667	1.51385	0.371441333
0.012		12	0.399188667	0.26542	1.40188	0.346385333
0.011		11	0.373251667	0.247036	1.288176667	0.321468
0.0098		9.8	0.347960333	0.230078	1.179186	0.297856333
0.0089		8.9	0.324801667	0.215079333	1.080229667	0.276780333
0.0081		8.1	0.304244667	0.201964667	0.993387333	0.258486
0.0074		7.4	0.286346333	0.190656	0.918897333	0.243028
0.0068		6.8	0.270632	0.180774	0.855419333	0.229878
0.0062		6.2	0.256835667	0.172208333	0.801964	0.218748667
0.0056		5.6	0.244684333	0.164713	0.757566333	0.209288667
0.0051		5.1	0.234040667	0.158182667	0.721664667	0.201318
0.0047	Silt	4.7	0.224667333	0.152389333	0.693353667	0.194555667
0.0042		4.2	0.216246667	0.147151333	0.671403	0.188631667
0.0039		3.9	0.208459667	0.142278	0.654341667	0.183174667
0.0035		3.5	0.200962667	0.137561333	0.640526	0.177761
0.0032		3.2	0.193497	0.132820667	0.628452667	0.172082
0.0029		2.9	0.185758	0.1278402	0.616422667	0.165784667
0.0027		2.7	0.177513333	0.122501967	0.602863333	0.158632
0.0024		2.4	0.168573667	0.116705067	0.586288333	0.150454
0.0022		2.2	0.158920333	0.1104592	0.565769	0.141281667
0.0020		2.0	0.148703333	0.103825167	0.541035667	0.131324667
0.0018		1.8	0.138196767	0.096928433	0.512402	0.120905733
0.0017		1.7	0.1277606	0.089957467	0.480626	0.110425533
0.0015		1.5	0.117718067	0.083120533	0.446607	0.100235733
0.0014		1.4	0.1083746	0.076650667	0.411419667	0.0906779
0.0013		1.3	0.099925467	0.0707026	0.376103667	0.081981467
0.0011		1.1	0.0925233	0.065416	0.341667667	0.074327067
0.0010		1.05	0.0862502	0.060887667	0.308964333	0.067816667
0.00095		0.95	0.081126267	0.0571982	0.278625333	0.062485067
0.00087		0.87	0.077109633	0.0543856	0.251136333	0.058314267
0.00079		0.79	0.074042233	0.052374433	0.226629333	0.055162
0.00072		0.72	0.071732067	0.0510297	0.205003667	0.0528496
0.00066		0.66	0.069949967	0.0501534	0.185931333	0.051145933
0.00060		0.60	0.0686028	0.049700833	0.169207333	0.0499555
0.00054		0.54	0.06759	0.0495956	0.154706333	0.0491829
0.00050		0.50	0.066801933	0.049751267	0.1422158	0.0487289
0.00045		0.45	0.0660166	0.0499185	0.131372833	0.0483822
0.00041		0.41	0.065163667	0.050047033	0.121784967	0.048048

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12813	R-12814	R-12815	R-12816
		Sample ID:	90473AB_1	90473AB_2	90474AA_1	90474AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.064219933	0.050104833	0.113363833	0.047697
0.00034		0.34	0.0631733	0.050092833	0.105956133	0.047314567
0.00031		0.31	0.0618477	0.0498148	0.099285033	0.0467675
0.00028		0.28	0.0601064	0.049162733	0.0928301	0.045912467
0.00026		0.26	0.057931967	0.048118133	0.086477867	0.044734133
0.00024		0.24	0.055453367	0.0467695	0.0803948	0.0433071
0.00021		0.21	0.052700633	0.0450741	0.074623967	0.041616667
0.00020		0.20	0.049779	0.0430895	0.069194933	0.039694867
0.00018		0.18	0.0467608	0.0408871	0.064046267	0.037591333
0.00016		0.16	0.043943467	0.038780267	0.059591567	0.0356104
0.00015		0.15	0.040976667	0.036457567	0.055127433	0.033458133
0.00013		0.13	0.037790533	0.033859	0.050509067	0.031062067
0.00012		0.12	0.034243667	0.030858463	0.045443233	0.028287233
0.00011	Clay	0.11	0.0307012	0.027822547	0.040564333	0.0254916
0.00010		0.10	0.026853133	0.024466037	0.035373997	0.022425067
0.000093		0.093	0.0227721	0.02084585	0.029932847	0.019120173
0.000084		0.084	0.018908087	0.017378543	0.024789413	0.015942933
0.000077		0.077	0.0150923	0.013922163	0.019773667	0.01279064
0.000070		0.070	0.010970027	0.010148737	0.01438773	0.009356693
0.000064		0.064	0.00660125	0.006113593	0.00867685	0.005673697
0.000058		0.058	0.00333289	0.003084823	0.004385837	0.00287553
0.000053		0.053	0.001572533	0.00145473	0.002070453	0.0013566
0.000048		0.048	0.000853428	0.000791044	0.001122058	0.000733318
0.000044		0.044	0.00058945	0.000548102	0.000773355	0.000505485
0.000040		0.040	0.000489127	0.000455706	0.00064007	0.000418491
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	76.89	82.14	41.49	67.54
		%Silt	17.23	12.70	55.14	16.46
		%Clay	0.81	0.69	1.18	0.64
		% 1mm-2mm	5.07	4.48	2.18	15.36
		Folk and Ward Statistics				
		Mean:	1.9	1.7	4.5	1.6
		Median:	1.1	1.3	4.3	0.7
		Deviation:	2.1	1.8	2.5	2.1
		Skewness:	0.7	0.5	0.1	0.7
		Kurtosis:	1.2	1.3	1.1	1.0

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12817	R-12818	R-12819	R-12820
		Sample ID:	90474AA_3	90474AA_4	13215AB_1	13215AB_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0.003565051	0	0.112667333
1.7		1660	0.00220485	0.047602	0.001180973	0.659785
1.5		1512	0.03778425	0.258799	0.027105257	1.018216
1.4		1377	0.23576	0.722212667	0.196091333	1.491406667
1.3		1255	0.75584	1.41416	0.725609	1.744003333
1.1		1143	1.629165	2.20206	1.660863333	2.004303333
1.0		1041	2.71344	3.02481	2.852306667	2.261266667
0.95		948	3.84891	3.793036667	4.065423333	2.492216667
0.86		864	4.87043	4.405193333	5.19531	2.636083333
0.79		787	5.616865	4.79627	6.10572	2.671433333
0.72		717	5.99229	4.95196	6.679673333	2.611996667
0.65		653	5.984025	4.890733333	6.849556667	2.487856667
0.59		595	5.63294	4.644576667	6.58704	2.333166667
0.54		542	5.017235	4.242073333	5.93914	2.16594
0.49		494	4.226675	3.71226	5.024476667	1.99599
0.45		450	3.356395	3.102356667	4.009006667	1.84205
0.41		410	2.50773	2.479543333	3.063623333	1.73663
0.37		373	1.77788	1.917206667	2.312356667	1.724813333
0.34	Sand	340	1.23579	1.470863333	1.798993333	1.847406667
0.31		310	0.898573	1.162043333	1.49514	2.133163333
0.28		282	0.7350455	0.980488333	1.332513333	2.587593333
0.26		257	0.692419	0.898411333	1.23694	3.185723333
0.23		234	0.7168705	0.886269	1.153793333	3.870173333
0.21		213	0.763551	0.920808333	1.062563	4.552873333
0.19		194	0.808247	0.988110333	0.973946667	5.127166667
0.18		177	0.851889	1.081208	0.909125667	5.479766667
0.16		161	0.90948	1.195967	0.880651667	5.51705
0.15		147	0.993647	1.327177333	0.885634333	5.19474
0.13		134	1.1040615	1.466066667	0.908173333	4.53956
0.12		122	1.226035	1.600453333	0.92819	3.65235
0.11		111	1.336145	1.715463333	0.929808	2.679633333
0.10		101	1.41291	1.797213333	0.907372333	1.775713333
0.092		92	1.44537	1.836723333	0.865021	1.060496667
0.084		84	1.4364	1.83366	0.813339333	0.593048333
0.076		76	1.399605	1.796193333	0.764815667	0.353384
0.070		70	1.35232	1.73728	0.729629333	0.274025333
0.063		63	1.3079	1.668716667	0.712132	0.292789

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12817	R-12818	R-12819	R-12820
		Sample ID:	90474AA_3	90474AA_4	13215AB_1	13215AB_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	1.271095	1.59696	0.709897333	0.364930333
0.053		53	1.237435	1.521916667	0.714913667	0.448751667
0.048		48	1.19746	1.43961	0.717479333	0.511365667
0.044		44	1.14282	1.34633	0.710696	0.541812
0.040		40	1.070955	1.241946667	0.693018	0.543944333
0.036		36	0.9868995	1.131372333	0.668314333	0.526844
0.033		33	0.900244	1.022616	0.642847667	0.499561333
0.030		30	0.8207405	0.923569667	0.622054667	0.468745
0.027		27	0.7551605	0.839650333	0.608767	0.438751333
0.025		25	0.704945	0.771655333	0.602204	0.411049333
0.023		23	0.6681155	0.717180333	0.599582667	0.385456667
0.021		21	0.6403435	0.671661	0.597122667	0.361203333
0.019		19	0.6172805	0.630571667	0.591644	0.337484
0.017		17	0.5960905	0.591204667	0.58142	0.314578
0.016		16	0.5742065	0.551816	0.565293667	0.292509333
0.014		14	0.5503795	0.512510333	0.543252333	0.271867
0.013		13	0.5232725	0.473386333	0.515598	0.252557667
0.012		12	0.4930035	0.435303667	0.483827	0.234685667
0.011		11	0.4612195	0.399353667	0.450394	0.218425
0.0098		9.8	0.430365	0.366568	0.417910333	0.203896667
0.0089		8.9	0.403111	0.337946667	0.388537667	0.191379
0.0081		8.1	0.380405	0.313439333	0.362893	0.180510333
0.0074		7.4	0.3622975	0.292915667	0.340808	0.171158
0.0068		6.8	0.3478275	0.275626333	0.321544	0.162837333
0.0062		6.2	0.3363645	0.261202333	0.304723	0.1556
0.0056		5.6	0.3274335	0.249116667	0.290137	0.149205
0.0051		5.1	0.320785	0.239124	0.277738	0.143634667
0.0047	Silt	4.7	0.315954	0.230811	0.267322333	0.138615333
0.0042		4.2	0.312195	0.223737	0.258546	0.134105333
0.0039		3.9	0.308764	0.217415333	0.251080333	0.129992667
0.0035		3.5	0.3049355	0.211306667	0.244605667	0.126185333
0.0032		3.2	0.3001805	0.204976667	0.238868333	0.122527
0.0029		2.9	0.293873	0.197935	0.233467333	0.118857
0.0027		2.7	0.2854675	0.189860667	0.227942333	0.115116733
0.0024		2.4	0.2745335	0.180487333	0.221802333	0.111223267
0.0022		2.2	0.2610125	0.169806	0.214709667	0.1071559
0.0020		2.0	0.24525	0.157979333	0.206543333	0.102836067
0.0018		1.8	0.2278605	0.145324	0.197355667	0.098301167
0.0017		1.7	0.20968	0.132259	0.187347667	0.093578867
0.0015		1.5	0.1915355	0.119204067	0.176758	0.088755333
0.0014		1.4	0.174298	0.106607	0.165882333	0.083852633
0.0013		1.3	0.1585975	0.094803233	0.155004	0.078941633
0.0011		1.1	0.1449765	0.084093233	0.144387	0.0740798
0.0010		1.05	0.1337905	0.074685133	0.134243333	0.069341633
0.00095		0.95	0.1252725	0.066725567	0.124709	0.064766033
0.00087		0.87	0.119433	0.0602815	0.115898967	0.060382033
0.00079		0.79	0.1159835	0.055252667	0.107827567	0.056216167
0.00072		0.72	0.114486	0.0514428	0.1004699	0.0522665
0.00066		0.66	0.11438535	0.048582	0.093723633	0.048559267
0.00060		0.60	0.1154341	0.046560933	0.087543767	0.045029867
0.00054		0.54	0.1173295	0.045276367	0.081896867	0.041697133
0.00050		0.50	0.1197555	0.044589667	0.076743	0.038523033
0.00045		0.45	0.1220125	0.044213767	0.071990767	0.0356176
0.00041		0.41	0.1239505	0.044011133	0.067543233	0.032821633

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12817	R-12818	R-12819	R-12820
		Sample ID:	90474AA_3	90474AA_4	13215AB_1	13215AB_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.125422	0.0439346	0.0633881	0.030160767
0.00034		0.34	0.126424	0.043943	0.059501533	0.027526667
0.00031		0.31	0.1263315	0.04385186	0.055784733	0.025026967
0.00028		0.28	0.124967	0.043489873	0.0520425	0.022470667
0.00026		0.26	0.122261	0.04283485	0.0482289	0.019941167
0.00024		0.24	0.1185271	0.041936307	0.044485367	0.017606467
0.00021		0.21	0.1137035	0.040705363	0.040912033	0.015536667
0.00020		0.20	0.10817465	0.03916035	0.037590133	0.0136708
0.00018		0.18	0.10222645	0.037347813	0.0345037	0.011878267
0.00016		0.16	0.09649335	0.035644713	0.0318144	0.01041307
0.00015		0.15	0.09016555	0.03367885	0.029184233	0.009090623
0.00013		0.13	0.08326375	0.0314154	0.026534733	0.007859387
0.00012		0.12	0.07557505	0.028695473	0.023728233	0.006561703
0.00011	Clay	0.11	0.0678557	0.025965797	0.021033667	0.005533673
0.00010		0.10	0.05925115	0.022901087	0.018210833	0.004641413
0.000093		0.093	0.0501152	0.01956297	0.0153081	0.003833877
0.000084		0.084	0.0415705	0.016342803	0.01261045	0.002980063
0.000077		0.077	0.0329835	0.013107587	0.00999971	0.00233746
0.000070		0.070	0.0236327	0.009542946	0.007230423	0.001778007
0.000064		0.064	0.01382265	0.005708828	0.004334767	0.001246585
0.000058		0.058	0.006840625	0.002861805	0.002185767	0.000693943
0.000053		0.053	0.003220355	0.001347932	0.001031773	0.00032947
0.000048		0.048	0.0017961	0.000740488	0.000559951	0.000152751
0.000044		0.044	0.001270805	0.000518486	0.000385926	9.00848E-05
0.000040		0.040	0.001074809	0.000434242	0.000319775	6.5042E-05

% by volume stats	**Total (Sum)**	100	100	100	100
LPSA	**%Sand (1mm and less)**	69.46	69.30	75.12	79.41
	%Silt	23.45	22.40	18.78	11.05
	%Clay	1.72	0.63	0.64	0.24
	% 1mm-2mm	5.37	7.67	5.46	9.29
	Folk and Ward Statistics				
	Mean:	2.2	2.1	1.9	1.9
	Median:	1.2	1.4	1.0	2.2
	Deviation:	2.5	2.2	2.3	1.7
	Skewness:	0.7	0.5	0.7	-0.1
	Kurtosis:	1.0	0.9	1.2	1.3

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12821	R-12822	R-12824	R-12825
		Sample ID:	13215AB_3	13215AB_4	90451AA_1	90451AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.204598	0.003686664	0.000896083	0.019915837
1.7		1660	1.2045	0.058573467	0.012813993	0.162895933
1.5		1512	1.882716667	0.248830667	0.066360267	0.523332667
1.4		1377	2.804276667	0.613511	0.170698333	1.186573333
1.3		1255	3.35	1.141256667	0.293483	2.022936667
1.1		1143	3.932803333	1.689203333	0.401599	2.926023333
1.0		1041	4.526893333	2.20593	0.504881333	3.92136
0.95		948	5.084423333	2.68567	0.623303333	4.964463333
0.86		864	5.468376667	2.942083333	0.773342333	5.948516667
0.79		787	5.596033333	2.932453333	0.969568667	6.75283
0.72		717	5.44594	2.7806	1.22423	7.278686667
0.65		653	5.04124	2.580436667	1.52805	7.46396
0.59		595	4.452996667	2.437533333	1.845103333	7.29843
0.54		542	3.75819	2.415646667	2.115093333	6.806836667
0.49		494	3.03832	2.42305	2.27998	6.04607
0.45		450	2.378083333	2.314976667	2.322706667	5.106966667
0.41		410	1.850753333	2.102063333	2.280516667	4.098936667
0.37		373	1.507936667	1.951806667	2.224953333	3.13202
0.34	Sand	340	1.36331	2.018993333	2.2223	2.293676667
0.31		310	1.405986667	2.35305	2.302876667	1.633023333
0.28		282	1.607386667	2.90917	2.451373333	1.15767
0.26		257	1.921893333	3.60185	2.6174	0.842982333
0.23		234	2.286816667	4.359723333	2.744086667	0.649750667
0.21		213	2.630776667	5.12625	2.799103333	0.539274333
0.19		194	2.888723333	5.82144	2.791553333	0.48194
0.18		177	3.008706667	6.311666667	2.75616	0.459063333
0.16		161	2.96045	6.411373333	2.727313333	0.460605667
0.15		147	2.742206667	5.963063333	2.719493333	0.481715333
0.13		134	2.383413333	4.97849	2.723343333	0.518587667
0.12		122	1.94124	3.687903333	2.718286667	0.565577
0.11		111	1.485113333	2.42149	2.684626667	0.614648667
0.10		101	1.079833333	1.436813333	2.61477	0.65722
0.092		92	0.767224333	0.822982667	2.51195	0.687120333
0.084		84	0.559260667	0.517437667	2.38624	0.702273333
0.076		76	0.442345667	0.396700667	2.249226667	0.703971333
0.070		70	0.390853667	0.35685	2.110843333	0.695193667
0.063		63	0.377570333	0.339088667	1.9774	0.678371667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12821	R-12822	R-12824	R-12825
		Sample ID:	13215AB_3	13215AB_4	90451AA_1	90451AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.378708	0.323728	1.850436667	0.654652
0.053		53	0.377222667	0.307843	1.727046667	0.623951667
0.048		48	0.365014333	0.289448667	1.6025	0.586019667
0.044		44	0.341973	0.268497667	1.473786667	0.541634333
0.040		40	0.312118	0.246804	1.34164	0.493077667
0.036		36	0.280206667	0.224989667	1.211446667	0.443896333
0.033		33	0.250088667	0.204737	1.090774333	0.397725667
0.030		30	0.223995	0.188271333	0.986398	0.357177333
0.027		27	0.202876333	0.176497333	0.902670333	0.323432333
0.025		25	0.186286667	0.168918333	0.839241333	0.296076667
0.023		23	0.173125333	0.162975333	0.793382	0.273899667
0.021		21	0.162198333	0.157349667	0.760224667	0.255321667
0.019		19	0.152473333	0.152425667	0.734758667	0.239003333
0.017		17	0.14359	0.148324	0.713260667	0.224126
0.016		16	0.135169	0.145375	0.691486333	0.210057667
0.014		14	0.127263333	0.142669	0.66719	0.196607
0.013		13	0.119684333	0.139079333	0.638243667	0.183573
0.012		12	0.112485833	0.134305	0.605189	0.17109
0.011		11	0.105775667	0.128538	0.570609333	0.159384
0.0098		9.8	0.099658333	0.122589	0.537746667	0.148715333
0.0089		8.9	0.094283767	0.1169933	0.509994667	0.139251333
0.0081		8.1	0.0895013	0.1120967	0.488213667	0.130889333
0.0074		7.4	0.0853101	0.107987467	0.472472667	0.123549333
0.0068		6.8	0.081522067	0.104593033	0.461379667	0.1170424
0.0062		6.2	0.0781987	0.101802767	0.454104333	0.1113042
0.0056		5.6	0.0752208	0.099439833	0.449863	0.1061775
0.0051		5.1	0.0726008	0.097396933	0.448228667	0.101600733
0.0047	Silt	4.7	0.070214267	0.095533633	0.448495333	0.097456333
0.0042		4.2	0.068066367	0.093763167	0.449643667	0.0936735
0.0039		3.9	0.0661044	0.0920058	0.450677	0.090149267
0.0035		3.5	0.0642889	0.090216667	0.450579	0.086778867
0.0032		3.2	0.062540833	0.0883607	0.448595	0.083459067
0.0029		2.9	0.060792933	0.0863961	0.443813333	0.080092433
0.0027		2.7	0.059019067	0.084280067	0.435425	0.076622967
0.0024		2.4	0.057174967	0.081947967	0.422788667	0.0729985
0.0022		2.2	0.0552455	0.0793546	0.405804	0.069214
0.0020		2.0	0.0531902	0.076475367	0.384965333	0.065288133
0.0018		1.8	0.051030567	0.073335	0.361147333	0.061281233
0.0017		1.7	0.0487784	0.0699947	0.335485	0.0572748
0.0015		1.5	0.046477533	0.066542033	0.309071333	0.053363167
0.0014		1.4	0.044140667	0.063074033	0.282983	0.049641567
0.0013		1.3	0.041804133	0.059676333	0.258099333	0.046190267
0.0011		1.1	0.039498767	0.056422067	0.235089	0.043074367
0.0010		1.05	0.0372631	0.0533572	0.214428333	0.040346967
0.00095		0.95	0.035118933	0.050512367	0.196334667	0.0380345
0.00087		0.87	0.033080867	0.0478973	0.180945	0.036162
0.00079		0.79	0.031161967	0.045492833	0.168053667	0.034697233
0.00072		0.72	0.0293576	0.043274133	0.1573485	0.033582033
0.00066		0.66	0.027672333	0.041214367	0.1483444	0.032718167
0.00060		0.60	0.0260812	0.0392896	0.140782	0.0320717
0.00054		0.54	0.0245929	0.037475467	0.134489833	0.031614067
0.00050		0.50	0.0231866	0.035754333	0.129256267	0.031303333
0.00045		0.45	0.021888333	0.034106967	0.124738667	0.031048933
0.00041		0.41	0.0206453	0.0325222	0.1205518	0.030786467

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12821	R-12822	R-12824	R-12825
		Sample ID:	13215AB_3	13215AB_4	90451AA_1	90451AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.019469067	0.0309855	0.116662333	0.030510133
0.00034		0.34	0.018328133	0.029491067	0.112975967	0.030200267
0.00031		0.31	0.0172619	0.028028033	0.109347667	0.029821167
0.00028		0.28	0.0161852	0.026521167	0.105256167	0.029258867
0.00026		0.26	0.015098933	0.0249178	0.100639967	0.0285075
0.00024		0.24	0.014011667	0.023260233	0.095713133	0.027599067
0.00021		0.21	0.012987667	0.0216647	0.0904523	0.0265326
0.00020		0.20	0.012010367	0.020180033	0.085064133	0.0253165
0.00018		0.18	0.01107213	0.018805133	0.0795565	0.0239683
0.00016		0.16	0.010232897	0.017489267	0.074863633	0.022733833
0.00015		0.15	0.009438697	0.016187433	0.069762233	0.021386133
0.00013		0.13	0.00863004	0.0148955	0.0642939	0.01987845
0.00012		0.12	0.007752777	0.013615767	0.057953467	0.0180876
0.00011	Clay	0.11	0.006887487	0.0123159	0.0519514	0.016304883
0.00010		0.10	0.006009013	0.010852547	0.045314723	0.01434893
0.000093		0.093	0.005095843	0.009325243	0.038317257	0.012241537
0.000084		0.084	0.0042223	0.007822337	0.031742633	0.010210787
0.000077		0.077	0.003390227	0.00639656	0.025146107	0.00818998
0.000070		0.070	0.002515613	0.00509615	0.017932563	0.00598033
0.000064		0.064	0.0015811	0.00385325	0.010330133	0.00360315
0.000058		0.058	0.000822841	0.00258854	0.005042507	0.001815074
0.000053		0.053	0.000389549	0.001300597	0.00236941	0.000854973
0.000048		0.048	0.000202785	0.000467217	0.001350858	0.000466344
0.000044		0.044	0.00013477	0.000194602	0.000976182	0.000324699
0.000040		0.040	0.00010834	0.00014714	0.000836675	0.000270789
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	75.87	87.40	66.30	79.72
		%Silt	6.02	6.29	30.86	9.11
		%Clay	0.20	0.35	1.39	0.41
		% 1mm-2mm	17.91	5.96	1.45	10.76
		Folk and Ward Statistics				
		Mean:	1.1	1.8	3.4	1.1
		Median:	0.8	2.1	3.0	0.7
		Deviation:	1.5	1.4	2.4	1.5
		Skewness:	0.4	-0.1	0.3	0.6
		Kurtosis:	0.9	1.1	1.2	2.0

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12826	R-12827	R-12828	R-12829
		Sample ID:	90451AA_3	90490AA_1	90490AA_2	90490AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0.00962446	0.000376501	0.039393497
1.7		1660	0.002897093	0.087142467	0.007908093	0.260208967
1.5		1512	0.039379433	0.311341	0.0542754	0.556316
1.4		1377	0.213948667	0.724095	0.191723333	1.046842
1.3		1255	0.588696333	1.247343333	0.426407	1.562906667
1.1		1143	1.131603333	1.798956667	0.713516	2.104586667
1.0		1041	1.73642	2.378776667	0.992621333	2.671966667
0.95		948	2.39369	2.950996667	1.242586667	3.25059
0.86		864	3.08791	3.46205	1.4581	3.812516667
0.79		787	3.787556667	3.87412	1.657073333	4.3441
0.72		717	4.454183333	4.17061	1.86907	4.841126667
0.65		653	5.03547	4.349973333	2.105383333	5.286193333
0.59		595	5.469676667	4.41841	2.34716	5.6452
0.54		542	5.700866667	4.379463333	2.545843333	5.858646667
0.49		494	5.688843333	4.239596667	2.643226667	5.86399
0.45		450	5.42506	4.021803333	2.6057	5.62839
0.41		410	4.941256667	3.763036667	2.445886667	5.166093333
0.37		373	4.305933333	3.5038	2.21928	4.541103333
0.34	Sand	340	3.607006667	3.27183	1.997906667	3.847296667
0.31		310	2.92945	3.07275	1.838723333	3.17974
0.28		282	2.337096667	2.891856667	1.765353333	2.609463333
0.26		257	1.863543333	2.70518	1.768433333	2.1703
0.23		234	1.515376667	2.495353333	1.81892	1.86204
0.21		213	1.280593333	2.26055	1.88511	1.660736667
0.19		194	1.139521	2.015656667	1.9502	1.532686667
0.18		177	1.071285667	1.782443333	2.014516667	1.444056667
0.16		161	1.057086667	1.579086667	2.086906667	1.36792
0.15		147	1.080669333	1.41429	2.169623333	1.287796667
0.13		134	1.127294	1.287116667	2.24957	1.19683
0.12		122	1.183782333	1.192463333	2.30268	1.095593333
0.11		111	1.238053333	1.123994667	2.30472	0.987708333
0.10		101	1.28064	1.076750333	2.24623	0.878174667
0.092		92	1.305413333	1.045884667	2.135863333	0.771855
0.084		84	1.31065	1.026776333	1.995303333	0.673897
0.076		76	1.2981	1.014610667	1.84708	0.588822
0.070		70	1.271366667	1.005041333	1.70561	0.519831
0.063		63	1.233556667	0.994077333	1.5753	0.467559667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12826	R-12827	R-12828	R-12829
		Sample ID:	90451AA_3	90490AA_1	90490AA_2	90490AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	1.18608	0.978051	1.454983333	0.430047
0.053		53	1.128616667	0.953591	1.34544	0.403308333
0.048		48	1.060393333	0.918248333	1.25323	0.382483
0.044		44	0.982024333	0.871522333	1.188193333	0.363428
0.040		40	0.896344	0.815257667	1.157373333	0.343666333
0.036		36	0.808553	0.753648	1.160013333	0.323028333
0.033		33	0.724643667	0.691989	1.18526	0.303026
0.030		30	0.649594333	0.635060667	1.2139	0.285649
0.027		27	0.586397667	0.586151333	1.226286667	0.272508667
0.025		25	0.535153	0.546026	1.211816667	0.263815
0.023		23	0.49422	0.513787667	1.1752	0.258795667
0.021		21	0.460749	0.487272	1.131256667	0.255879
0.019		19	0.431908667	0.464140333	1.095213333	0.253398333
0.017		17	0.405720667	0.442725333	1.074056667	0.250244667
0.016		16	0.380504	0.421624333	1.06287	0.245546333
0.014		14	0.355689	0.400392667	1.05111	0.239197
0.013		13	0.330868667	0.378668667	1.027833333	0.231128333
0.012		12	0.306520667	0.356802	0.989858333	0.221755667
0.011		11	0.283489667	0.335433333	0.941232333	0.211658333
0.0098		9.8	0.262644333	0.315294667	0.888784	0.201456
0.0089		8.9	0.244678667	0.297056	0.838253667	0.191768
0.0081		8.1	0.229478333	0.280746333	0.791231667	0.182752667
0.0074		7.4	0.216856333	0.266333333	0.748052	0.174545667
0.0068		6.8	0.206264333	0.253454333	0.708114	0.166987667
0.0062		6.2	0.197461	0.241998333	0.671744667	0.160109
0.0056		5.6	0.190089	0.231711333	0.639183333	0.153815667
0.0051		5.1	0.183989	0.222465	0.610435333	0.148108
0.0047	Silt	4.7	0.178879333	0.214013333	0.585053	0.142873667
0.0042		4.2	0.174504667	0.206144667	0.562384	0.138032667
0.0039		3.9	0.170586	0.198629667	0.541966333	0.133487667
0.0035		3.5	0.166827	0.191209	0.523147	0.129127333
0.0032		3.2	0.162978333	0.183653333	0.505199667	0.124850667
0.0029		2.9	0.158745333	0.175702667	0.487025	0.120513667
0.0027		2.7	0.153922333	0.167201667	0.467579333	0.116023167
0.0024		2.4	0.148311333	0.158035	0.446056	0.111281967
0.0022		2.2	0.141854333	0.148216667	0.422124	0.1062665
0.0020		2.0	0.134576667	0.137838667	0.395955667	0.100974867
0.0018		1.8	0.126612667	0.127081333	0.368053	0.095458067
0.0017		1.7	0.1181535	0.116197667	0.339219333	0.089795367
0.0015		1.5	0.109421567	0.105455367	0.310274333	0.084081533
0.0014		1.4	0.100658067	0.095127533	0.282035667	0.0784179
0.0013		1.3	0.092073733	0.085428	0.255143667	0.072886567
0.0011		1.1	0.083860967	0.0765391	0.230066	0.0675653
0.0010		1.05	0.0761768	0.0686103	0.207165667	0.062515233
0.00095		0.95	0.069144167	0.0617439	0.186621	0.057790667
0.00087		0.87	0.0628487	0.056000133	0.168529667	0.053428267
0.00079		0.79	0.0572955	0.0513036	0.152692667	0.049428333
0.00072		0.72	0.052423433	0.047518767	0.138830667	0.045760433
0.00066		0.66	0.048136833	0.0444626	0.126593	0.042386033
0.00060		0.60	0.044384767	0.042057667	0.115799667	0.039286767
0.00054		0.54	0.041143633	0.040234167	0.106359133	0.036458833
0.00050		0.50	0.0383477	0.038883633	0.098072967	0.0338738
0.00045		0.45	0.035898833	0.037832367	0.090694733	0.031496133
0.00041		0.41	0.033703967	0.036960933	0.0839815	0.029284033

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12826	R-12827	R-12828	R-12829
		Sample ID:	90451AA_3	90490AA_1	90490AA_2	90490AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.031757667	0.036245567	0.077974433	0.027243133
0.00034		0.34	0.0300181	0.035631233	0.072561533	0.025354533
0.00031		0.31	0.028413533	0.035028067	0.067578567	0.023578033
0.00028		0.28	0.0268095	0.0342715	0.062693233	0.0218279
0.00026		0.26	0.0251895	0.0333504	0.057933533	0.020093167
0.00024		0.24	0.023599467	0.0322924	0.0533908	0.018423167
0.00021		0.21	0.022045067	0.031078467	0.0491676	0.016863667
0.00020		0.20	0.02054547	0.029699267	0.0452192	0.015429233
0.00018		0.18	0.019091483	0.0281694	0.0415603	0.014111367
0.00016		0.16	0.017826757	0.026756667	0.038274933	0.012953367
0.00015		0.15	0.016533477	0.0252112	0.0351483	0.011849293
0.00013		0.13	0.015181617	0.0234705	0.031990633	0.010748633
0.00012		0.12	0.013679343	0.021401067	0.028726467	0.009605093
0.00011	Clay	0.11	0.01223113	0.0193224	0.025517067	0.00849981
0.00010		0.10	0.01067582	0.017041	0.022241833	0.007365683
0.000093		0.093	0.009039497	0.01456842	0.0188232	0.006200207
0.000084		0.084	0.007491223	0.012170603	0.0155686	0.005108893
0.000077		0.077	0.00597363	0.009790967	0.012497033	0.004070557
0.000070		0.070	0.004337277	0.007189777	0.009291027	0.002982023
0.000064		0.064	0.002601249	0.00437881	0.00589419	0.00183914
0.000058		0.058	0.001309252	0.00222316	0.003098053	0.000947098
0.000053		0.053	0.000617687	0.001048327	0.001473423	0.000448636
0.000048		0.048	0.000336869	0.00056571	0.000756505	0.000236532
0.000044		0.044	0.000233648	0.000389942	0.000492608	0.000158353
0.000040		0.040	0.000194315	0.000322711	0.000389108	0.000128129

% by volume stats	**Total (Sum)**	100	100	100	100
LPSA	**%Sand (1mm and less)**	79.42	76.39	60.80	82.38
	%Silt	16.52	16.57	36.04	9.11
	%Clay	0.35	0.48	0.78	0.27
	% 1mm-2mm	3.71	6.56	2.39	8.24
	Folk and Ward Statistics				
	Mean:	1.9	2.0	3.4	1.4
	Median:	1.3	1.4	3.1	1.1
	Deviation:	1.9	2.0	2.6	1.6
	Skewness:	0.6	0.5	0.3	0.5
	Kurtosis:	1.1	1.2	0.9	1.6

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12830	R-12831	R-12832	R-12833
		Sample ID:	90490AA_4	90490AA_5	13889AD_1	13889AD_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.021395033	0.000333905	0.006748293	0.021708933
1.7		1660	0.14661	0.006003863	0.042370667	0.253019333
1.5		1512	0.320273333	0.0390792	0.0759939	0.725130667
1.4		1377	0.587098333	0.1350999	0.109624433	1.343736667
1.3		1255	0.841988667	0.30645	0.118060167	2.216753333
1.1		1143	1.104843333	0.540784667	0.119173933	3.18252
1.0		1041	1.39167	0.822507667	0.119155	4.114336667
0.95		948	1.708413333	1.15526	0.115190667	4.957603333
0.86		864	2.040746667	1.539713333	0.104505733	5.643526667
0.79		787	2.378483333	1.97225	0.096804033	6.165186667
0.72		717	2.722456667	2.443356667	0.107234	6.563196667
0.65		653	3.071723333	2.920673333	0.151391	6.879343333
0.59		595	3.421836667	3.348996667	0.238306333	7.117576667
0.54		542	3.748203333	3.66273	0.363336667	7.226486667
0.49		494	4.016013333	3.809583333	0.51369	7.121
0.45		450	4.19652	3.778406667	0.697316667	6.729253333
0.41		410	4.276293333	3.60536	0.951946	6.048103333
0.37		373	4.260283333	3.35653	1.333063333	5.156196667
0.34	Sand	340	4.164026667	3.09683	1.889276667	4.177676667
0.31		310	4.00442	2.86474	2.6333	3.23406
0.28		282	3.794516667	2.665656667	3.520786667	2.409996667
0.26		257	3.544733333	2.48306	4.455196667	1.742536667
0.23		234	3.26985	2.300543333	5.317556667	1.23059
0.21		213	2.990033333	2.117713333	5.9975	0.854952
0.19		194	2.729043333	1.954093333	6.423043333	0.593833667
0.18		177	2.504356667	1.83534	6.567846667	0.424643
0.16		161	2.320386667	1.777493333	6.448476667	0.321044
0.15		147	2.167536667	1.7787	6.109286667	0.257000333
0.13		134	2.027053333	1.820236667	5.60405	0.213796667
0.12		122	1.882013333	1.87647	4.987263333	0.181551667
0.11		111	1.723383333	1.92342	4.30648	0.155003
0.10		101	1.553626667	1.946496667	3.608063333	0.13031
0.092		92	1.382	1.940566667	2.935983333	0.106799
0.084		84	1.22047	1.908336667	2.332293333	0.0877806
0.076		76	1.078943333	1.856903333	1.82941	0.076170867
0.070		70	0.963338667	1.79481	1.44369	0.071149867
0.063		63	0.874460333	1.728726667	1.172366667	0.0696932

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12830	R-12831	R-12832	R-12833
		Sample ID:	90490AA_4	90490AA_5	13889AD_1	13889AD_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
0.058		58	0.808565333	1.661213333	0.996805	0.069285267
0.053		53	0.759284	1.590416667	0.890382667	0.068624567
0.048		48	0.719677667	1.512446667	0.825381	0.067090067
0.044		44	0.684490667	1.424926667	0.779032667	0.064621567
0.040		40	0.650970333	1.329053333	0.736615333	0.061717367
0.036		36	0.618992333	1.230103333	0.6923	0.058896167
0.033		33	0.589978	1.135028333	0.647298	0.056311933
0.030		30	0.565268333	1.049612667	0.605328667	0.0540858
0.027		27	0.545502333	0.977004	0.570062333	0.0525211
0.025		25	0.529735333	0.916361333	0.542205	0.051802833
0.023		23	0.516311333	0.864958333	0.520371	0.051878633
0.021		21	0.503246667	0.818917333	0.502123667	0.052535233
0.019		19	0.488884333	0.774948667	0.484833333	0.053444467
0.017		17	0.472519	0.731332	0.467462667	0.054305833
0.016		16	0.453633333	0.686466	0.448866333	0.054838867
0.014		14	0.432593	0.640147	0.42932	0.054737833
0.013		13	0.409669	0.592038667	0.408586333	0.053812267
0.012		12	0.385689333	0.543163667	0.387213333	0.052092333
0.011		11	0.361528	0.495362	0.365862333	0.049800667
0.0098		9.8	0.337953333	0.450578667	0.345091667	0.0472211
0.0089		8.9	0.315638333	0.410633333	0.325653	0.044584333
0.0081		8.1	0.294675	0.375808	0.307412333	0.0420364
0.0074		7.4	0.27524	0.346102667	0.290668	0.0396511
0.0068		6.8	0.257118667	0.320723667	0.274984333	0.0374599
0.0062		6.2	0.240368667	0.299332333	0.260602333	0.035463567
0.0056		5.6	0.224812	0.281478333	0.247237667	0.033654967
0.0051		5.1	0.210486333	0.267023667	0.235037	0.032031867
0.0047	Silt	4.7	0.197279333	0.255662667	0.223734333	0.030593033
0.0042		4.2	0.185180667	0.247003	0.213360333	0.0293392
0.0039		3.9	0.174088333	0.240592333	0.203777	0.028275867
0.0035		3.5	0.163876333	0.235866667	0.194885667	0.0274101
0.0032		3.2	0.154421	0.232364	0.186519667	0.026746833
0.0029		2.9	0.145573667	0.229474333	0.178484667	0.026281567
0.0027		2.7	0.137245667	0.226646667	0.170685667	0.0259941
0.0024		2.4	0.129288	0.22325	0.162946	0.025846333
0.0022		2.2	0.121622667	0.218846333	0.155216333	0.0257863
0.0020		2.0	0.114162033	0.213186333	0.147364667	0.025757133
0.0018		1.8	0.106905167	0.206234333	0.139411667	0.025705467
0.0017		1.7	0.0998573	0.198111667	0.131348	0.025589567
0.0015		1.5	0.093049467	0.188984667	0.123263	0.025381133
0.0014		1.4	0.086501033	0.179115333	0.115206333	0.025066767
0.0013		1.3	0.080245	0.168763667	0.1072583	0.0246445
0.0011		1.1	0.0743255	0.158235	0.099499967	0.0241212
0.0010		1.05	0.068779933	0.147763	0.092016267	0.0235093
0.00095		0.95	0.0636368	0.137549	0.0849012	0.0228239
0.00087		0.87	0.058902133	0.1277503	0.078203433	0.0220817
0.00079		0.79	0.0545723	0.118477067	0.071969	0.021300533
0.00072		0.72	0.050603867	0.109784667	0.066152433	0.020496667
0.00066		0.66	0.046963333	0.1016435	0.0607527	0.0196805
0.00060		0.60	0.043607933	0.0940473	0.055739167	0.018862
0.00054		0.54	0.0405431	0.086982867	0.051152267	0.0180462
0.00050		0.50	0.037727667	0.080465033	0.0469209	0.0172391
0.00045		0.45	0.0351493	0.074427767	0.043024533	0.016442333
0.00041		0.41	0.032738233	0.0688155	0.039408167	0.015659267

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12830	R-12831	R-12832	R-12833
		Sample ID:	90490AA_4	90490AA_5	13889AD_1	13889AD_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.030511133	0.063586	0.0361194	0.0148897
0.00034		0.34	0.0284311	0.0587583	0.033094533	0.0141358
0.00031		0.31	0.026488467	0.054211	0.030278267	0.013396233
0.00028		0.28	0.024568233	0.049789867	0.027572667	0.012636233
0.00026		0.26	0.0226664	0.045411267	0.0249973	0.011834033
0.00024		0.24	0.020823233	0.0412357	0.022581867	0.0110109
0.00021		0.21	0.019104633	0.037382233	0.020381067	0.010224093
0.00020		0.20	0.017513233	0.033907133	0.018398267	0.009497493
0.00018		0.18	0.0160377	0.0307842	0.0166328	0.008827997
0.00016		0.16	0.014738867	0.0280607	0.015058067	0.008191757
0.00015		0.15	0.0135049	0.025507467	0.013605467	0.007566367
0.00013		0.13	0.0122713	0.022996367	0.012207133	0.00694977
0.00012		0.12	0.010975897	0.020445467	0.010845907	0.006342343
0.00011	Clay	0.11	0.009719593	0.017999033	0.00952943	0.005729433
0.00010		0.10	0.008435933	0.015514033	0.00821907	0.00504465
0.000093		0.093	0.007114193	0.012992333	0.006888617	0.00433053
0.000084		0.084	0.00586952	0.010661537	0.005647573	0.003630637
0.000077		0.077	0.004686513	0.00845183	0.00450455	0.00296778
0.000070		0.070	0.003446577	0.006150313	0.003342433	0.002364397
0.000064		0.064	0.00213844	0.0037609	0.00213791	0.001789753
0.000058		0.058	0.001105035	0.00192743	0.00113493	0.001206923
0.000053		0.053	0.000523398	0.00091297	0.000542013	0.00061276
0.000048		0.048	0.000274783	0.00048379	0.000274143	0.000221677
0.000044		0.044	0.000183464	0.000324892	0.000174603	9.10202E-05
0.000040		0.040	0.000148093	0.000263615	0.000135286	6.79401E-05
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	80.04	71.26	82.25	85.95
		%Silt	15.25	26.30	16.83	2.03
		%Clay	0.30	0.59	0.32	0.16
		% 1mm-2mm	4.41	1.85	0.59	11.86
		Folk and Ward Statistics				
		Mean:	2.1	2.7	2.9	0.8
		Median:	1.7	2.3	2.7	0.8
		Deviation:	1.8	2.2	1.4	0.7
		Skewness:	0.4	0.4	0.4	0.1
		Kurtosis:	1.3	1.0	1.8	1.0

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12834	R-12835	R-12836	R-12837
		Sample ID:	13889AD_3	13889AD_4	13889AD_5	90367AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.004058717	0.000350503	0.011417997	0.002934199
1.7		1660	0.0255252	0.00650166	0.069834353	0.025291517
1.5		1512	0.045320867	0.049247567	0.130603133	0.090045867
1.4		1377	0.0587907	0.196478	0.227797667	0.232477333
1.3		1255	0.052697833	0.484696	0.322334	0.460911333
1.1		1143	0.043863333	0.888400667	0.424815333	0.766417
1.0		1041	0.0425793	1.340693333	0.53781	1.13231
0.95		948	0.050631233	1.81058	0.657604333	1.532956667
0.86		864	0.0687057	2.26903	0.780419	1.936193333
0.79		787	0.101999867	2.705013333	0.920251333	2.31541
0.72		717	0.164198667	3.124603333	1.102100333	2.64891
0.65		653	0.274527667	3.524933333	1.33984	2.91328
0.59		595	0.447375667	3.877493333	1.621056667	3.0824
0.54		542	0.682298	4.12828	1.896876667	3.133403333
0.49		494	0.965585333	4.216896667	2.103466667	3.057896667
0.45		450	1.28714	4.1115	2.205593333	2.872356667
0.41		410	1.645976667	3.83162	2.22277	2.615823333
0.37		373	2.044853333	3.445123333	2.22238	2.33947
0.34	Sand	340	2.478213333	3.04071	2.285973333	2.09175
0.31		310	2.923153333	2.69478	2.47728	1.907793333
0.28		282	3.340233333	2.450716667	2.823626667	1.804653333
0.26		257	3.687213333	2.31664	3.309383333	1.781663333
0.23		234	3.94177	2.277546667	3.882506667	1.824743333
0.21		213	4.113846667	2.306623333	4.465966667	1.909436667
0.19		194	4.245763333	2.375643333	4.977256667	2.00787
0.18		177	4.38985	2.456316667	5.33659	2.09451
0.16		161	4.58194	2.520603333	5.4772	2.155156667
0.15		147	4.819433333	2.541126667	5.356253333	2.19054
0.13		134	5.053833333	2.495266667	4.96822	2.211616667
0.12		122	5.206303333	2.37387	4.356643333	2.231243333
0.11		111	5.194766667	2.18438	3.606606667	2.253813333
0.10		101	4.969806667	1.950926667	2.82798	2.27441
0.092		92	4.53284	1.705663333	2.123896667	2.2818
0.084		84	3.93759	1.47986	1.566316667	2.266586667
0.076		76	3.270003333	1.29544	1.181226667	2.226046667
0.070		70	2.620996667	1.161473333	0.953912	2.163916667
0.063		63	2.060396667	1.074569667	0.846500667	2.08627

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12834	R-12835	R-12836	R-12837
		Sample ID:	13889AD_3	13889AD_4	13889AD_5	90367AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
0.058		58	1.622313333	1.022500667	0.814782	1.997263333
0.053		53	1.306493333	0.988979333	0.818178333	1.8973
0.048		48	1.089865333	0.958861	0.825668333	1.784653333
0.044		44	0.941856	0.922544333	0.820614667	1.6586
0.040		40	0.835034667	0.877209	0.799620667	1.521616667
0.036		36	0.750351333	0.825905667	0.767438	1.38048
0.033		33	0.678024	0.774263	0.731359333	1.24401
0.030		30	0.614035667	0.727254667	0.696974	1.120061667
0.027		27	0.558056333	0.687903333	0.667436333	1.013778
0.025		25	0.509857	0.655899	0.642344	0.925585
0.023		23	0.468932667	0.629321	0.619662333	0.853413333
0.021		21	0.434331667	0.605329667	0.596959333	0.793273667
0.019		19	0.404376333	0.581433	0.572303333	0.741118667
0.017		17	0.378202	0.556583667	0.545601333	0.694129667
0.016		16	0.354075	0.529740667	0.51665	0.649243
0.014		14	0.331614	0.501109333	0.486431333	0.605061667
0.013		13	0.310013667	0.470609667	0.455273333	0.560245667
0.012		12	0.289434667	0.439095	0.424101667	0.515312667
0.011		11	0.270006667	0.407889667	0.393953667	0.471939
0.0098		9.8	0.251673	0.378264	0.365634333	0.432013667
0.0089		8.9	0.234677333	0.351491333	0.340022	0.397371
0.0081		8.1	0.218693667	0.327654	0.316942667	0.368126
0.0074		7.4	0.204134	0.306831333	0.296521333	0.344201
0.0068		6.8	0.190546333	0.288460667	0.278215667	0.324662667
0.0062		6.2	0.178116667	0.272445	0.262119	0.309122333
0.0056		5.6	0.166442333	0.258471667	0.247884667	0.297006667
0.0051		5.1	0.155820333	0.246455667	0.235529667	0.288033333
0.0047	Silt	4.7	0.146062667	0.236118	0.224743	0.281692
0.0042		4.2	0.137304333	0.227190667	0.215422667	0.2774
0.0039		3.9	0.129368433	0.219393333	0.207349667	0.274554667
0.0035		3.5	0.122244233	0.212363	0.200266667	0.272460333
0.0032		3.2	0.1158636	0.205801333	0.193886	0.270552
0.0029		2.9	0.110181133	0.199291333	0.18785	0.268126667
0.0027		2.7	0.105157633	0.192544333	0.181940333	0.264621333
0.0024		2.4	0.100624367	0.185246333	0.175867333	0.259478667
0.0022		2.2	0.096554067	0.177254667	0.169484	0.252423667
0.0020		2.0	0.092818967	0.168498333	0.162613333	0.243416667
0.0018		1.8	0.089447333	0.159036333	0.155243	0.232645667
0.0017		1.7	0.0863143	0.149016	0.14739	0.220476
0.0015		1.5	0.0834193	0.138614	0.139162	0.207316333
0.0014		1.4	0.080654933	0.128062333	0.130672	0.193659
0.0013		1.3	0.078046167	0.117535	0.122039	0.179932667
0.0011		1.1	0.075558133	0.107239167	0.113418	0.166550667
0.0010		1.05	0.0731848	0.097327533	0.104938167	0.153829
0.00095		0.95	0.070871167	0.0879729	0.096757033	0.142012667
0.00087		0.87	0.068585567	0.0792711	0.088964667	0.131288833
0.00079		0.79	0.0663618	0.071265167	0.081645833	0.1216955
0.00072		0.72	0.064165133	0.063922267	0.0747867	0.1131789
0.00066		0.66	0.0620296	0.057194	0.068392567	0.1055725
0.00060		0.60	0.059843533	0.051078867	0.062457067	0.098810633
0.00054		0.54	0.057688433	0.045567	0.0570111	0.092831733
0.00050		0.50	0.055491867	0.040620967	0.0520077	0.087565133
0.00045		0.45	0.053421	0.036117433	0.0473904	0.0828245
0.00041		0.41	0.051265533	0.032064067	0.0431378	0.078469033

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12834	R-12835	R-12836	R-12837
		Sample ID:	13889AD_3	13889AD_4	13889AD_5	90367AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.0491248	0.028447	0.039269433	0.0744562
0.00034		0.34	0.0468701	0.0252663	0.035753767	0.070757733
0.00031		0.31	0.044750567	0.0223183	0.032464467	0.067222933
0.00028		0.28	0.042465233	0.019592133	0.029334433	0.063605567
0.00026		0.26	0.040068333	0.0170518	0.026349133	0.059841133
0.00024		0.24	0.037543833	0.014784233	0.0235833	0.056074533
0.00021		0.21	0.035104133	0.012770867	0.021072633	0.052350867
0.00020		0.20	0.032694	0.01107236	0.0188586	0.048741933
0.00018		0.18	0.030288433	0.009676357	0.0169286	0.0452427
0.00016		0.16	0.028173	0.008466923	0.015228733	0.042169667
0.00015		0.15	0.026124533	0.00736712	0.01366	0.039055133
0.00013		0.13	0.024003533	0.00637126	0.0121722	0.035808933
0.00012		0.12	0.021589333	0.00551397	0.01075601	0.0322346
0.00011	Clay	0.11	0.019230833	0.004727067	0.00940552	0.02877476
0.00010		0.10	0.016808533	0.003949483	0.008054793	0.025079883
0.000093		0.093	0.014281	0.003200773	0.006702413	0.021208053
0.000084		0.084	0.0118522	0.00254914	0.005464203	0.017557837
0.000077		0.077	0.009513287	0.001969587	0.004324637	0.013985183
0.000070		0.070	0.007028447	0.0014059	0.003169297	0.010145063
0.000064		0.064	0.004356453	0.000869161	0.00199088	0.006084553
0.000058		0.058	0.00223977	0.000458473	0.001046036	0.00306402
0.000053		0.053	0.001056797	0.000221526	0.000499416	0.001445678
0.000048		0.048	0.000559893	0.000111957	0.000255582	0.000787483
0.000044		0.044	0.00038	6.88426E-05	0.000164075	0.00054546
0.000040		0.040	0.00031074	5.16969E-05	0.00012811	0.000453269
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	83.10	77.75	79.90	68.21
		%Silt	16.08	19.08	18.04	28.26
		%Clay	0.55	0.21	0.34	0.82
		% 1mm-2mm	0.27	2.97	1.72	2.71
		Folk and Ward Statistics				
		Mean:	2.9	2.3	2.7	2.9
		Median:	2.9	1.9	2.5	2.7
		Deviation:	1.3	2.0	1.8	2.3
		Skewness:	0.2	0.4	0.3	0.2
		Kurtosis:	1.4	1.1	1.7	1.0

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12838	R-12839	R-12840	R-12841
		Sample ID:	90367AA_2	90367AA_3	90367AA_4	90562AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0.031275733	0.005663927	0
1.7		1660	0.000665904	0.181616967	0.050732667	0.027240033
1.5		1512	0.010351517	0.280598333	0.176351667	0.347135333
1.4		1377	0.064548433	0.417314333	0.386822667	1.12171
1.3		1255	0.210515333	0.505599	0.582042	2.220813333
1.1		1143	0.45359	0.603172333	0.686497	3.621173333
1.0		1041	0.726390667	0.711729667	0.718203667	5.127
0.95		948	0.939005	0.839266333	0.72687	6.599673333
0.86		864	1.043306667	0.998526667	0.767715667	7.791643333
0.79		787	1.055023333	1.212153333	0.886655	8.502563333
0.72		717	1.047845333	1.491943333	1.111989333	8.676706667
0.65		653	1.100243333	1.81728	1.430756667	8.34423
0.59		595	1.248556667	2.128946667	1.788373333	7.622906667
0.54		542	1.47042	2.349656667	2.09837	6.678906667
0.49		494	1.69132	2.423226667	2.284163333	5.66536
0.45		450	1.828816667	2.35446	2.32725	4.69294
0.41		410	1.849566667	2.20853	2.271333333	3.835073333
0.37		373	1.786146667	2.078156667	2.193083333	3.13408
0.34	Sand	340	1.70628	2.035733333	2.159876667	2.59285
0.31		310	1.667526667	2.10663	2.202193333	2.17914
0.28		282	1.69114	2.264266667	2.308263333	1.84626
0.26		257	1.760806667	2.442743333	2.436723333	1.553773333
0.23		234	1.841023333	2.56818	2.542133333	1.280626667
0.21		213	1.90143	2.596113333	2.59658	1.0268
0.19		194	1.93684	2.533196667	2.599676667	0.805699667
0.18		177	1.964986667	2.4231	2.566613333	0.629486333
0.16		161	2.009696667	2.316343333	2.515206667	0.496009667
0.15		147	2.083563333	2.244513333	2.45783	0.392774667
0.13		134	2.180346667	2.21056	2.400296667	0.309904667
0.12		122	2.28126	2.19759	2.346223333	0.243978333
0.11		111	2.364536667	2.18123	2.29514	0.193106333
0.10		101	2.41642	2.1449	2.243356667	0.153222667
0.092		92	2.43346	2.084753333	2.183223333	0.120890667
0.084		84	2.420753333	2.00844	2.10839	0.096080033
0.076		76	2.387423333	1.928273333	2.018826667	0.078622867
0.070		70	2.342476667	1.854563333	1.921953333	0.066592033
0.063		63	2.291616667	1.791373333	1.828313333	0.059661233

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12838	R-12839	R-12840	R-12841
		Sample ID:	90367AA_2	90367AA_3	90367AA_4	90562AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
0.058		58	2.23546	1.735453333	1.745066667	0.058581167
0.053		53	2.169736667	1.678383333	1.671883333	0.061339733
0.048		48	2.08855	1.611483333	1.602313333	0.0632963
0.044		44	1.988763333	1.530683333	1.528563333	0.0614669
0.040		40	1.87251	1.43844	1.446256667	0.056792
0.036		36	1.74809	1.34278	1.3576	0.051931533
0.033		33	1.626573333	1.252856667	1.269663333	0.048628
0.030		30	1.518036667	1.174988333	1.190553333	0.047252
0.027		27	1.42917	1.111391333	1.126233	0.0473673
0.025		25	1.360726667	1.059773333	1.077360667	0.048106833
0.023		23	1.309913333	1.017147667	1.041297	0.048695133
0.021		21	1.27086	0.980917667	1.012799667	0.048836967
0.019		19	1.23701	0.950040667	0.986532333	0.048593467
0.017		17	1.202978667	0.924293333	0.958832	0.0481623
0.016		16	1.163210667	0.900842667	0.926111667	0.047646267
0.014		14	1.114712333	0.875826333	0.886826	0.0468938
0.013		13	1.055621333	0.843878667	0.839698667	0.045694333
0.012		12	0.987641333	0.802478	0.785961	0.043998467
0.011		11	0.915174667	0.753093333	0.728924	0.041931533
0.0098		9.8	0.84348	0.700144	0.672702333	0.039691567
0.0089		8.9	0.777547333	0.649197667	0.621467333	0.037436633
0.0081		8.1	0.719360667	0.603274667	0.576848	0.035259533
0.0074		7.4	0.669567333	0.563693	0.539329667	0.033202933
0.0068		6.8	0.627185333	0.529870667	0.507904	0.0312822
0.0062		6.2	0.591650667	0.501487	0.482024333	0.0294987
0.0056		5.6	0.562383667	0.478300333	0.461233333	0.027851433
0.0051		5.1	0.539150333	0.460347667	0.445431	0.026348233
0.0047	Silt	4.7	0.521408	0.447242667	0.434231333	0.024997667
0.0042		4.2	0.508252	0.438105667	0.426877	0.023811133
0.0039		3.9	0.498661333	0.431904	0.422489	0.022801233
0.0035		3.5	0.491467667	0.427515	0.420037667	0.0219768
0.0032		3.2	0.485694	0.424022333	0.418634667	0.0213382
0.0029		2.9	0.480133333	0.420283333	0.417122333	0.020872933
0.0027		2.7	0.473580333	0.415109667	0.414294	0.0205543
0.0024		2.4	0.464786667	0.407325	0.408934667	0.020342467
0.0022		2.2	0.452897667	0.396208	0.400254667	0.020191767
0.0020		2.0	0.437603667	0.38165	0.388046667	0.020058667
0.0018		1.8	0.419058667	0.364008333	0.372573667	0.019908467
0.0017		1.7	0.397801667	0.343966	0.354457667	0.019718933
0.0015		1.5	0.374467667	0.322248	0.334386667	0.019479133
0.0014		1.4	0.349845333	0.299677667	0.313172	0.019187267
0.0013		1.3	0.324706	0.277033	0.291587	0.018846467
0.0011		1.1	0.299813333	0.255033333	0.270355333	0.018462967
0.0010		1.05	0.275800333	0.234242333	0.250054	0.018042833
0.00095		0.95	0.253128	0.215012	0.231061333	0.0175921
0.00087		0.87	0.232158333	0.197603333	0.213677667	0.0171153
0.00079		0.79	0.213016667	0.182041667	0.197971667	0.016618033
0.00072		0.72	0.195704667	0.168255667	0.183913333	0.0161042
0.00066		0.66	0.180029667	0.155986	0.171270333	0.015576667
0.00060		0.60	0.165885333	0.145079867	0.159914667	0.015037933
0.00054		0.54	0.153183667	0.135418767	0.149742333	0.014489567
0.00050		0.50	0.141832667	0.126892667	0.140669	0.013933867
0.00045		0.45	0.131604967	0.1192699	0.1324777	0.0133715
0.00041		0.41	0.1222709	0.112293467	0.124913033	0.012804867

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12838	R-12839	R-12840	R-12841
		Sample ID:	90367AA_2	90367AA_3	90367AA_4	90562AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.1137562	0.1058923	0.117903867	0.012234433
0.00034		0.34	0.106001567	0.1000052	0.1114006	0.0116626
0.00031		0.31	0.0987589	0.094442267	0.1052218	0.011089667
0.00028		0.28	0.0916465	0.0888167	0.0989435	0.01049316
0.00026		0.26	0.0845393	0.083021033	0.0924463	0.009853237
0.00024		0.24	0.077689667	0.0772806	0.085993133	0.009192197
0.00021		0.21	0.071235033	0.071679433	0.079693733	0.008551747
0.00020		0.20	0.065306	0.066366567	0.073727333	0.007951447
0.00018		0.18	0.059852867	0.0613145	0.068059667	0.00739467
0.00016		0.16	0.055134133	0.056964233	0.063206567	0.006861433
0.00015		0.15	0.050527133	0.052560967	0.058298	0.00633648
0.00013		0.13	0.0458992	0.0480303	0.053251667	0.00581888
0.00012		0.12	0.041018867	0.043077067	0.047720567	0.00530907
0.00011	Clay	0.11	0.0363539	0.038356	0.042466933	0.00479515
0.00010		0.10	0.031462	0.033300033	0.036842833	0.004228033
0.000093		0.093	0.026433467	0.02804987	0.031014167	0.00363235
0.000084		0.084	0.0217666	0.02315528	0.0255904	0.00304744
0.000077		0.077	0.017248727	0.0183442	0.020250963	0.002493997
0.000070		0.070	0.012454813	0.013172183	0.0145082	0.001989513
0.000064		0.064	0.007449353	0.007750523	0.00849563	0.00151159
0.000058		0.058	0.003751397	0.003850927	0.004205313	0.001029752
0.000053		0.053	0.001771353	0.001814319	0.001979967	0.000536803
0.000048		0.048	0.000963146	0.001006555	0.001104276	0.000197657
0.000044		0.044	0.000664478	0.000708597	0.000781423	7.8104E-05
0.000040		0.040	0.000550911	0.000596331	0.000660183	5.62531E-05
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	54.74	61.83	61.62	85.67
		%Silt	42.67	34.31	34.53	1.73
		%Clay	1.12	1.12	1.24	0.14
		% 1mm-2mm	1.47	2.73	2.61	12.47
		Folk and Ward Statistics				
		Mean:	3.8	3.4	3.4	0.7
		Median:	3.6	3.0	3.1	0.6
		Deviation:	2.6	2.5	2.5	0.7
		Skewness:	0.2	0.3	0.3	0.3
		Kurtosis:	1.1	1.1	1.1	1.2

Size Millimeters		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12842	R-12843	R-12844	R-12845
		Sample ID:	90562AA_2	90562AA_3	90562AA_4	90562AA_5
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
		Microns				
2.0		2000				
1.8		1822	0.019505903	0.010933343	0.007105803	0.0242539
1.7		1660	0.287619	0.225637667	0.117516633	0.334069667
1.5		1512	1.085673667	1.110102333	0.52443	1.120143333
1.4		1377	2.34683	2.735576667	1.23348	2.209453333
1.3		1255	4.02542	4.8622	2.222326667	3.636223333
1.1		1143	5.85823	7.037866667	3.458346667	5.205
1.0		1041	7.463806667	8.687733333	4.780993333	6.66495
0.95		948	8.59021	9.499186667	6.081246667	7.832086667
0.86		864	9.023983333	9.25439	7.203186667	8.514493333
0.79		787	8.77633	8.10317	8.039433333	8.651083333
0.72		717	8.074736667	6.555586667	8.533946667	8.307906667
0.65		653	7.172013333	5.08443	8.651273333	7.62775
0.59		595	6.25563	3.958796667	8.389366667	6.778996667
0.54		542	5.406943333	3.234536667	7.771936667	5.894836667
0.49		494	4.61773	2.80921	6.85451	5.052713333
0.45		450	3.855486667	2.536756667	5.729636667	4.276923333
0.41		410	3.124306667	2.328843333	4.52946	3.570243333
0.37		373	2.470073333	2.174123333	3.40025	2.936013333
0.34	Sand	340	1.936496667	2.080443333	2.454673333	2.376896667
0.31		310	1.53162	2.026976667	1.742546667	1.89284
0.28		282	1.227916667	1.967006667	1.251256667	1.480686667
0.26		257	0.982731667	1.84639	0.929911333	1.134623333
0.23		234	0.763717333	1.62327	0.719932	0.848251333
0.21		213	0.563018333	1.304633333	0.574713	0.616845
0.19		194	0.394685	0.969406667	0.466865333	0.438969
0.18		177	0.276356667	0.712442667	0.385137	0.312694333
0.16		161	0.206573	0.557878333	0.325310333	0.229516333
0.15		147	0.165885667	0.461981333	0.283597	0.175650667
0.13		134	0.137505	0.381607333	0.255487667	0.138973667
0.12		122	0.117934667	0.313521	0.236453667	0.112713667
0.11		111	0.107673	0.271311	0.221265333	0.0932119
0.10		101	0.101763867	0.250320667	0.203759333	0.077221633
0.092		92	0.094420367	0.230937667	0.180284	0.063084733
0.084		84	0.0858381	0.206173667	0.152583333	0.0517071
0.076		76	0.0786428	0.186931333	0.125202333	0.044243033
0.070		70	0.0737511	0.179953	0.101623333	0.040436133
0.063		63	0.072151133	0.180646333	0.083451067	0.039300733

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12842	R-12843	R-12844	R-12845
		Sample ID:	90562AA_2	90562AA_3	90562AA_4	90562AA_5
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.0748197	0.180595	0.070830567	0.039739867
0.053		53	0.079768133	0.175316667	0.062594433	0.040471567
0.048		48	0.082623633	0.164955	0.0569555	0.0403731
0.044		44	0.0813104	0.15305	0.052592	0.039131933
0.040		40	0.077828333	0.144367	0.049038267	0.037233367
0.036		36	0.074810533	0.140206333	0.046171367	0.035283167
0.033		33	0.072899133	0.13731	0.0437774	0.0335127
0.030		30	0.071596033	0.132379333	0.0417862	0.031925
0.027		27	0.0705515	0.125262667	0.040395533	0.030565433
0.025		25	0.0696534	0.117449	0.039780267	0.029484233
0.023		23	0.068940167	0.110464667	0.039966033	0.0286959
0.021		21	0.068498967	0.105265467	0.040791567	0.0281801
0.019		19	0.068314033	0.101916333	0.041935167	0.027847767
0.017		17	0.068358067	0.100136033	0.043080133	0.0275954
0.016		16	0.068444133	0.099275533	0.0439306	0.027304733
0.014		14	0.068066167	0.098066067	0.0442145	0.026829667
0.013		13	0.0667369	0.095390933	0.0437804	0.026078633
0.012		12	0.064357533	0.0910041	0.0426667	0.025064533
0.011		11	0.0612322	0.085507133	0.0410708	0.023881933
0.0098		9.8	0.057817633	0.0797907	0.039231233	0.0226439
0.0089		8.9	0.054473733	0.074489533	0.037343967	0.021434733
0.0081		8.1	0.051390967	0.069873	0.0355289	0.020299233
0.0074		7.4	0.048629267	0.065947833	0.033844733	0.019251633
0.0068		6.8	0.046180033	0.0626059	0.032311067	0.018291633
0.0062		6.2	0.044001733	0.059706333	0.030922333	0.017411167
0.0056		5.6	0.042051033	0.0571319	0.0296659	0.016604933
0.0051		5.1	0.040298233	0.054811	0.028531967	0.015874633
0.0047	Silt	4.7	0.038716367	0.0526923	0.027511	0.015225533
0.0042		4.2	0.0372851	0.0507499	0.0265943	0.014665867
0.0039		3.9	0.035990767	0.048976733	0.025777067	0.0142064
0.0035		3.5	0.0348181	0.0473657	0.025055233	0.013857633
0.0032		3.2	0.0337455	0.0458903	0.0244248	0.013626267
0.0029		2.9	0.032741733	0.044495433	0.023877567	0.0135113
0.0027		2.7	0.0317678	0.043099833	0.023398333	0.013500967
0.0024		2.4	0.030781633	0.041609033	0.0229637	0.013572333
0.0022		2.2	0.0297515	0.039944333	0.0225451	0.013693567
0.0020		2.0	0.028666133	0.038066467	0.022113767	0.013829333
0.0018		1.8	0.0275401	0.035993167	0.021645	0.013945867
0.0017		1.7	0.026406833	0.03379	0.0211227	0.014016
0.0015		1.5	0.025310067	0.031558233	0.020538667	0.014020767
0.0014		1.4	0.024290833	0.029408467	0.019894367	0.013950567
0.0013		1.3	0.0233794	0.027442333	0.019196233	0.013803333
0.0011		1.1	0.022591933	0.025740167	0.018455733	0.013583133
0.0010		1.05	0.0219282	0.024350233	0.017686	0.013298133
0.00095		0.95	0.021376933	0.023297	0.016900433	0.0129583
0.00087		0.87	0.020915767	0.022572933	0.016112333	0.0125751
0.00079		0.79	0.020514867	0.0221332	0.015332167	0.0121613
0.00072		0.72	0.020143967	0.021917567	0.0145683	0.011728333
0.00066		0.66	0.0197791	0.0218687	0.013825533	0.011283733
0.00060		0.60	0.019398533	0.0219243	0.0131078	0.010834567
0.00054		0.54	0.018986933	0.0220298	0.0124161	0.010384563
0.00050		0.50	0.018531833	0.022132633	0.0117519	0.009937843
0.00045		0.45	0.018025233	0.0221882	0.011114067	0.009495633
0.00041		0.41	0.017462533	0.0221587	0.0105028	0.009060233

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12842	R-12843	R-12844	R-12845
		Sample ID:	90562AA_2	90562AA_3	90562AA_4	90562AA_5
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.016841767	0.022013967	0.009916043	0.00863145
0.00034		0.34	0.016165367	0.0217354	0.009353323	0.00821065
0.00031		0.31	0.015437033	0.021311467	0.00881214	0.007796883
0.00028		0.28	0.014623633	0.020706	0.00826968	0.007375367
0.00026		0.26	0.013683433	0.019864633	0.007711383	0.00693764
0.00024		0.24	0.012676867	0.018840067	0.007150617	0.006490877
0.00021		0.21	0.011680747	0.0177197	0.006620687	0.006059537
0.00020		0.20	0.010743993	0.016580867	0.006134527	0.005654267
0.00018		0.18	0.009892073	0.015482533	0.005688263	0.005272473
0.00016		0.16	0.00908419	0.014390533	0.005266573	0.004905333
0.00015		0.15	0.008299627	0.013290633	0.00485521	0.004542537
0.00013		0.13	0.00753835	0.012189127	0.004452653	0.004183597
0.00012		0.12	0.00680376	0.01109706	0.00405836	0.00382816
0.00011	Clay	0.11	0.006070543	0.00998127	0.003663823	0.00347069
0.00010		0.10	0.00527999	0.00874849	0.00322975	0.003077577
0.000093		0.093	0.004480833	0.00747706	0.002773547	0.002654813
0.000084		0.084	0.00371208	0.006232933	0.00232745	0.00223842
0.000077		0.077	0.00300924	0.00507689	0.001904787	0.00183954
0.000070		0.070	0.002377973	0.00402738	0.001519933	0.00147349
0.000064		0.064	0.00178249	0.003029833	0.00115631	0.001129167
0.000058		0.058	0.001180637	0.002017263	0.000790302	0.000783969
0.000053		0.053	0.000576405	0.000994824	0.000415333	0.000427582
0.000048		0.048	0.000203252	0.000353133	0.000153738	0.000162083
0.000044		0.044	8.71341E-05	0.000149702	6.01782E-05	6.0401E-05
0.000040		0.040	6.74926E-05	0.000114856	4.29784E-05	4.11489E-05

% by volume stats	**Total (Sum)**	100	100	100	100
LPSA	**%Sand (1mm and less)**	76.29	71.29	85.88	79.61
	%Silt	2.44	3.77	1.67	1.10
	%Clay	0.18	0.27	0.11	0.10
	% 1mm-2mm	21.09	24.67	12.34	19.19
	Folk and Ward Statistics				
	Mean:	0.5	0.6	0.6	0.5
	Median:	0.4	0.3	0.6	0.4
	Deviation:	0.7	1.0	0.7	0.7
	Skewness:	0.3	0.5	0.2	0.2
	Kurtosis:	1.2	1.3	1.2	1.1

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12846	R-12847	R-12848	R-12849
		Sample ID:	90562AA_6	08776AB_1	08776AB_2	13771AC_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.003595267	0.000241988	0.055917933	0
1.7		1660	0.058683567	0.004995013	0.361451	0
1.5		1512	0.319805	0.033626733	0.328630333	0
1.4		1377	0.952869333	0.119393833	0.249758	0
1.3		1255	1.985186667	0.262008667	0.520558333	0
1.1		1143	3.247486667	0.447843333	0.813729667	0
1.0		1041	4.5425	0.666559	1.034688	0
0.95		948	5.841093333	0.944764333	1.518846667	0
0.86		864	6.948893333	1.29493	2.278373333	0
0.79		787	7.682743333	1.71764	3.149793333	0.000490367
0.72		717	8.027223333	2.210106667	4.072443333	0.009135423
0.65		653	7.99525	2.757876667	5.03886	0.059440767
0.59		595	7.62594	3.3379	5.991226667	0.195752333
0.54		542	6.98972	3.910763333	6.854586667	0.402998
0.49		494	6.118993333	4.42027	7.518966667	0.606189333
0.45		450	5.04594	4.80659	7.842476667	0.744864
0.41		410	3.899713333	5.023546667	7.746556667	0.828246667
0.37		373	2.87657	5.052116667	7.26343	0.906164667
0.34	Sand	340	2.1044	4.902933333	6.491936667	1.046326667
0.31		310	1.57999	4.60966	5.54376	1.31024
0.28		282	1.22993	4.217773333	4.51976	1.730023333
0.26		257	0.984535667	3.774243333	3.514023333	2.292766667
0.23		234	0.792402667	3.323603333	2.60809	2.945193333
0.21		213	0.622966	2.903396667	1.857396667	3.61142
0.19		194	0.488678	2.543396667	1.29629	4.22111
0.18		177	0.427538667	2.260876667	0.931569667	4.715756667
0.16		161	0.446198333	2.058786667	0.723112333	5.049163333
0.15		147	0.509499	1.92675	0.604135333	5.187006667
0.13		134	0.583490667	1.844246667	0.525375667	5.112216667
0.12		122	0.663121	1.78803	0.471967	4.837686667
0.11		111	0.740408333	1.736733333	0.443089667	4.408333333
0.10		101	0.781541333	1.6766	0.429731	3.896903333
0.092		92	0.761500333	1.60142	0.417405	3.383013333
0.084		84	0.691867	1.51225	0.398554	2.93298
0.076		76	0.59715	1.41414	0.372345333	2.58458
0.070		70	0.494055667	1.31345	0.341070667	2.343963333
0.063		63	0.398588	1.215136667	0.312391	2.191926667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12846	R-12847	R-12848	R-12849
		Sample ID:	90562AA_6	08776AB_1	08776AB_2	13771AC_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.325259667	1.121304333	0.29489	2.09443
0.053		53	0.274333333	1.031473333	0.287741333	2.014406667
0.048		48	0.233898	0.943870333	0.280937333	1.922713333
0.044		44	0.196375	0.857514333	0.266758333	1.805363333
0.040		40	0.165338667	0.773247333	0.246336333	1.663556667
0.036		36	0.144939667	0.693916333	0.224533	1.50934
0.033		33	0.132789333	0.623069333	0.204379	1.35823
0.030		30	0.124671333	0.563187333	0.187128	1.222646667
0.027		27	0.118399	0.515086333	0.173246667	1.109729
0.025		25	0.113142333	0.477229667	0.162423667	1.018963
0.023		23	0.109137733	0.447089333	0.153921333	0.946082
0.021		21	0.1067798	0.421732	0.147021333	0.884988667
0.019		19	0.106095233	0.398788333	0.141198667	0.830382
0.017		17	0.107271933	0.377037333	0.136222333	0.780102667
0.016		16	0.1097637	0.35546	0.131818333	0.731891333
0.014		14	0.1117632	0.333990333	0.127267333	0.685624333
0.013		13	0.1113893	0.312420667	0.121842	0.640161667
0.012		12	0.108145533	0.291278667	0.115398133	0.595812
0.011		11	0.1030716	0.271276667	0.108366233	0.553830667
0.0098		9.8	0.0976156	0.253080667	0.1013767	0.515505333
0.0089		8.9	0.092761	0.237250667	0.0948981	0.482491667
0.0081		8.1	0.088825067	0.223633333	0.089136133	0.454365667
0.0074		7.4	0.085716367	0.212182	0.084106267	0.430977333
0.0068		6.8	0.083206533	0.202450667	0.0797312	0.411075
0.0062		6.2	0.081058067	0.194332	0.075890467	0.394409333
0.0056		5.6	0.079106267	0.187496667	0.072472533	0.38032
0.0051		5.1	0.077254033	0.181844333	0.069396267	0.368576333
0.0047	Silt	4.7	0.075454033	0.177114667	0.066589867	0.358556333
0.0042		4.2	0.073698367	0.173132	0.063997667	0.349714667
0.0039		3.9	0.0720094	0.169662333	0.061581367	0.341575
0.0035		3.5	0.070395333	0.166459	0.0593095	0.333601333
0.0032		3.2	0.068812633	0.163308	0.0571481	0.325414333
0.0029		2.9	0.0671566	0.159970333	0.055050767	0.316454667
0.0027		2.7	0.0652725	0.156292667	0.0529573	0.306431
0.0024		2.4	0.0629967	0.152102333	0.050800633	0.295046
0.0022		2.2	0.0602145	0.147346667	0.048527267	0.282321667
0.0020		2.0	0.0569072	0.1420114	0.0461167	0.268367
0.0018		1.8	0.053165667	0.1361898	0.0435926	0.253465
0.0017		1.7	0.0491661	0.1300003	0.0410155	0.237989333
0.0015		1.5	0.045124067	0.1235981	0.038469567	0.222320333
0.0014		1.4	0.0412481	0.117137833	0.036043333	0.206868
0.0013		1.3	0.037703433	0.110775233	0.0338129	0.191933
0.0011		1.1	0.034598933	0.1046446	0.031836233	0.177787
0.0010		1.05	0.031980167	0.0988513	0.030143533	0.164601
0.00095		0.95	0.029846767	0.093460267	0.028747	0.152511667
0.00087		0.87	0.028156067	0.088532733	0.027634567	0.141604
0.00079		0.79	0.026818667	0.0840764	0.026764967	0.131841967
0.00072		0.72	0.0257437	0.080054533	0.026089167	0.1230945
0.00066		0.66	0.024853567	0.076388067	0.025562133	0.115187133
0.00060		0.60	0.0240813	0.073021667	0.0251398	0.108033767
0.00054		0.54	0.0233756	0.069942067	0.0247831	0.1015958
0.00050		0.50	0.022696967	0.067106233	0.0244585	0.0957823
0.00045		0.45	0.022016833	0.064481733	0.024135467	0.0904707
0.00041		0.41	0.021316733	0.061935867	0.023791533	0.0854924

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12846	R-12847	R-12848	R-12849
		Sample ID:	90562AA_6	08776AB_1	08776AB_2	13771AC_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.020584133	0.059472533	0.023404733	0.0808481
0.00034		0.34	0.019814833	0.057045967	0.0229634	0.076483733
0.00031		0.31	0.019006233	0.0546799	0.0224539	0.0723329
0.00028		0.28	0.0181207	0.052137533	0.021839633	0.068094633
0.00026		0.26	0.0171244	0.049395067	0.021082367	0.063730933
0.00024		0.24	0.016056167	0.0465424	0.020193867	0.059382233
0.00021		0.21	0.014990833	0.0436532	0.019239867	0.055161067
0.00020		0.20	0.0139727	0.040784633	0.018262167	0.051121
0.00018		0.18	0.0130168	0.0379238	0.0172866	0.047244433
0.00016		0.16	0.012091667	0.0354651	0.0162917	0.043869633
0.00015		0.15	0.01117401	0.032937067	0.015258067	0.040518733
0.00013		0.13	0.010263947	0.030275667	0.014188157	0.037065333
0.00012		0.12	0.009364657	0.0272381	0.013089953	0.033278867
0.00011	Clay	0.11	0.008453943	0.024333333	0.011939253	0.029632
0.00010		0.10	0.00744588	0.021217567	0.010609343	0.025794367
0.000093		0.093	0.006391037	0.017953293	0.009184437	0.0217975
0.000084		0.084	0.005355477	0.01487005	0.007752727	0.018028023
0.000077		0.077	0.004378747	0.01182889	0.006372533	0.014367337
0.000070		0.070	0.00348888	0.00853966	0.00509703	0.010456047
0.000064		0.064	0.00264448	0.0050529	0.003869647	0.006316667
0.000058		0.058	0.001791213	0.002514857	0.002615937	0.00319685
0.000053		0.053	0.000920859	0.00118346	0.001331797	0.001508799
0.000048		0.048	0.000336034	0.00065597	0.00048267	0.000816067
0.000044		0.044	0.000135197	0.000462937	0.000197593	0.000561923
0.000040		0.040	9.90262E-05	0.000390024	0.000147144	0.000464793
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	83.95	82.10	91.08	67.55
		%Silt	4.70	15.69	5.25	31.58
		%Clay	0.24	0.68	0.31	0.86
		% 1mm-2mm	11.11	1.53	3.36	0.00
		Folk and Ward Statistics				
		Mean:	0.8	2.2	1.2	3.6
		Median:	0.7	1.8	1.2	3.2
		Deviation:	1.1	1.8	1.0	1.8
		Skewness:	0.4	0.5	0.3	0.5
		Kurtosis:	1.8	1.3	1.8	1.4

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12850	R-12851	R-12852	R-12853
		Sample ID:	13771AC_2	13771AC_3	13771AC_4	13771AC_5
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.00288986	0.00182089	0.003581087	0.028063667
1.7		1660	0.020714186	0.029058433	0.030892077	0.179021667
1.5		1512	0.046469443	0.169838333	0.104271167	0.196917333
1.4		1377	0.097002267	0.506436333	0.248894	0.178085333
1.3		1255	0.1628135	1.025845333	0.429672333	0.234579333
1.1		1143	0.257011667	1.6454	0.623016333	0.226943667
1.0		1041	0.372003	2.336823333	0.823033333	0.227719333
0.95		948	0.505714	3.081116667	1.051197667	0.350131667
0.86		864	0.653946667	3.835873333	1.311433333	0.629657333
0.79		787	0.835870333	4.55264	1.60607	1.053488333
0.72		717	1.08006	5.191583333	1.93293	1.663936667
0.65		653	1.405226667	5.708206667	2.280216667	2.490446667
0.59		595	1.798066667	6.060213333	2.63411	3.457016667
0.54		542	2.20683	6.201943333	2.978873333	4.461793333
0.49		494	2.557746667	6.09394	3.301033333	5.387696667
0.45		450	2.800693333	5.72622	3.599536667	6.12978
0.41		410	2.93386	5.133363333	3.88324	6.652053333
0.37		373	2.99752	4.394136667	4.161406667	6.986206667
0.34	Sand	340	3.040676667	3.611643333	4.428533333	7.182296667
0.31		310	3.08877	2.883473333	4.654463333	7.258126667
0.28		282	3.12978	2.276416667	4.784473333	7.184153333
0.26		257	3.12356	1.815656667	4.754733333	6.908653333
0.23		234	3.029663333	1.49274	4.520493333	6.395386667
0.21		213	2.833636667	1.28098	4.079856667	5.652083333
0.19		194	2.56	1.15147	3.48614	4.737616667
0.18		177	2.26032	1.081278333	2.832306667	3.747013333
0.16		161	1.99029	1.054424333	2.2183	2.781273333
0.15		147	1.790486667	1.058046333	1.716886667	1.9234
0.13		134	1.67697	1.077774	1.354783333	1.231053333
0.12		122	1.64484	1.097302333	1.120911333	0.732375667
0.11		111	1.671876667	1.100977667	0.984090333	0.419416333
0.10		101	1.726316667	1.079151667	0.913201	0.251830667
0.092		92	1.7747	1.030936	0.884919333	0.176235667
0.084		84	1.794113333	0.963871	0.885555	0.147371
0.076		76	1.780233333	0.889486	0.907049333	0.135408667
0.070		70	1.745933333	0.818683667	0.943554667	0.124720667
0.063		63	1.7102	0.758018667	0.988116333	0.111977667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12850	R-12851	R-12852	R-12853
		Sample ID:	13771AC_2	13771AC_3	13771AC_4	13771AC_5
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	1.6856	0.708804	1.031092333	0.100773733
0.053		53	1.670923333	0.667996	1.061442333	0.0938882
0.048		48	1.653093333	0.630517333	1.069936667	0.090090233
0.044		44	1.61561	0.592046	1.052628333	0.086539833
0.040		40	1.54829	0.550634333	1.012017667	0.081338733
0.036		36	1.453973333	0.507330667	0.956031333	0.073979267
0.033		33	1.346746667	0.464938333	0.894698	0.065532233
0.030		30	1.244696667	0.426306333	0.836643333	0.0578299
0.027		27	1.162336667	0.393378	0.786999333	0.052075233
0.025		25	1.104619	0.366229333	0.746520333	0.048499533
0.023		23	1.068155667	0.343902333	0.713239667	0.046485333
0.021		21	1.043567333	0.324704667	0.68373	0.045282
0.019		19	1.02072	0.307050333	0.654976	0.044424333
0.017		17	0.993163	0.290081	0.625302333	0.0435975
0.016		16	0.957892333	0.273054667	0.59377	0.0427095
0.014		14	0.915653333	0.255981	0.560386667	0.041630167
0.013		13	0.867617667	0.238753333	0.525207667	0.0402485
0.012		12	0.815792667	0.221774	0.489103667	0.038604533
0.011		11	0.762884667	0.205618333	0.453518333	0.0368027
0.0098		9.8	0.712103333	0.190849	0.420171667	0.035008033
0.0089		8.9	0.666858667	0.177993667	0.390491333	0.033327167
0.0081		8.1	0.628541333	0.166987333	0.364821667	0.0318293
0.0074		7.4	0.597179	0.157769	0.342969	0.0305417
0.0068		6.8	0.571325667	0.149956333	0.324322	0.0294736
0.0062		6.2	0.549872	0.143418333	0.308593333	0.0286265
0.0056		5.6	0.53195	0.137919667	0.295478	0.027999967
0.0051		5.1	0.517121667	0.133374	0.284798	0.027609633
0.0047	Silt	4.7	0.50471	0.129591667	0.276206	0.0274633
0.0042		4.2	0.493701667	0.126395333	0.269338333	0.027569
0.0039		3.9	0.483042667	0.123598	0.263789	0.027925733
0.0035		3.5	0.471761	0.120988	0.259120667	0.028524067
0.0032		3.2	0.459195333	0.1183986	0.254892	0.029338067
0.0029		2.9	0.444623333	0.115618633	0.250571333	0.030322133
0.0027		2.7	0.427433667	0.112506933	0.245686667	0.031410867
0.0024		2.4	0.407155333	0.108928467	0.239802333	0.0325204
0.0022		2.2	0.383780333	0.104859033	0.23266	0.033559433
0.0020		2.0	0.357801	0.100329967	0.224152	0.034438767
0.0018		1.8	0.330023	0.095443267	0.214337333	0.035083167
0.0017		1.7	0.301474	0.0903363	0.203402667	0.0354404
0.0015		1.5	0.273135333	0.085155367	0.191600667	0.035484133
0.0014		1.4	0.246011333	0.080057667	0.179249	0.035213233
0.0013		1.3	0.220872333	0.075168433	0.166632	0.034648167
0.0011		1.1	0.198362333	0.070595967	0.154036333	0.033823767
0.0010		1.05	0.178934	0.066409933	0.141703333	0.032784833
0.00095		0.95	0.162835333	0.062653967	0.129865333	0.0315792
0.00087		0.87	0.150131667	0.0593625	0.1186913	0.030255833
0.00079		0.79	0.140511	0.056512267	0.108267467	0.0288643
0.00072		0.72	0.133508533	0.0540479	0.098595367	0.0274446
0.00066		0.66	0.128495167	0.051873067	0.089632767	0.026024967
0.00060		0.60	0.125182433	0.049949733	0.081382767	0.0246274
0.00054		0.54	0.123287167	0.048250033	0.073846533	0.023265
0.00050		0.50	0.122483933	0.0467371	0.066995	0.021948267
0.00045		0.45	0.122119667	0.045336267	0.060702767	0.020680867
0.00041		0.41	0.121900867	0.0439692	0.054949267	0.0194668

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12850	R-12851	R-12852	R-12853
		Sample ID:	13771AC_2	13771AC_3	13771AC_4	13771AC_5
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.121707433	0.0426298	0.049727967	0.018304733
0.00034		0.34	0.121465667	0.0413	0.045040233	0.017195267
0.00031		0.31	0.1207169	0.039957333	0.040658533	0.016134533
0.00028		0.28	0.1190976	0.0384528	0.036493367	0.0150796
0.00026		0.26	0.116556033	0.036770833	0.032490967	0.014000133
0.00024		0.24	0.113284067	0.0349709	0.0288	0.012926533
0.00021		0.21	0.109206233	0.0331001	0.025480533	0.011920667
0.00020		0.20	0.104428	0.031170333	0.022613933	0.011005267
0.00018		0.18	0.099115233	0.0291909	0.020180833	0.010173503
0.00016		0.16	0.094006067	0.027409633	0.018063267	0.00939307
0.00015		0.15	0.088399833	0.0255787	0.016109633	0.008637183
0.00013		0.13	0.082125	0.023612133	0.0142681	0.007902387
0.00012		0.12	0.074887433	0.021369467	0.012547733	0.007187163
0.00011	Clay	0.11	0.067533133	0.019156167	0.010921373	0.006474953
0.00010		0.10	0.0594342	0.016791723	0.009282037	0.005696903
0.000093		0.093	0.0506867	0.014280707	0.007660623	0.004883843
0.000084		0.084	0.042277533	0.011874897	0.006212173	0.004091513
0.000077		0.077	0.0339287	0.00951698	0.004862977	0.00334445
0.000070		0.070	0.024834333	0.006972097	0.00349132	0.002666137
0.000064		0.064	0.015086857	0.00424635	0.00211812	0.00202635
0.000058		0.058	0.007659827	0.00215828	0.00108806	0.001383273
0.000053		0.053	0.003615183	0.001018329	0.000518035	0.000725441
0.000048		0.048	0.00194907	0.000548101	0.000272417	0.00026818
0.000044		0.044	0.001339593	0.000376432	0.000179435	0.000105147
0.000040		0.040	0.001106822	0.000310656	0.000143592	7.51934E-05
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	62.15	82.50	75.20	96.36
		%Silt	35.22	11.27	22.13	2.17
		%Clay	1.67	0.51	0.41	0.19
		% 1mm-2mm	0.96	5.72	2.26	1.27
		Folk and Ward Statistics				
		Mean:	3.5	1.6	2.6	1.6
		Median:	3.0	1.1	2.0	1.6
		Deviation:	2.5	1.7	2.1	0.7
		Skewness:	0.3	0.5	0.5	0.0
		Kurtosis:	1.0	1.5	1.2	1.0

Size Millimeters		Microns	Average	Average	Average	Average
		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12854	R-12855	R-12856	R-12857
		Sample ID:	13771AC_6	13771AC_7	13771AC_8	13771AC_9
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
2.0		2000				
1.8		1822	0.002628726	2.6821E-05	0.000222056	0.009904407
1.7		1660	0.020280289	0.000542893	0.003140993	0.081593067
1.5		1512	0.043593933	0.002182187	0.016093872	0.249264333
1.4		1377	0.144827333	0.004091933	0.046332587	0.538113
1.3		1255	0.490883333	0.004271633	0.096304133	0.870256667
1.1		1143	1.050316667	0.0044174	0.178157	1.21514
1.0		1041	1.738506667	0.006127233	0.300099667	1.594623333
0.95		948	2.656263333	0.010427433	0.472465	2.007966667
0.86		864	3.74965	0.018796014	0.703582	2.424666667
0.79		787	4.885546667	0.03731344	1.005224667	2.81681
0.72		717	5.95542	0.091909933	1.386003333	3.17155
0.65		653	6.83963	0.225881	1.83868	3.484976667
0.59		595	7.43225	0.446558333	2.338236667	3.762376667
0.54		542	7.683163333	0.705717	2.84225	4.001236667
0.49		494	7.59954	0.938966	3.300136667	4.192573333
0.45		450	7.228533333	1.138633333	3.675263333	4.330856667
0.41		410	6.652803333	1.33763	3.954606667	4.416066667
0.37		373	5.9732	1.598633333	4.146256667	4.45293
0.34	Sand	340	5.27373	1.983593333	4.26487	4.444346667
0.31		310	4.599606667	2.523403333	4.317563333	4.387056667
0.28		282	3.95796	3.19651	4.2968	4.27074
0.26		257	3.336536667	3.929583333	4.18656	4.08282
0.23		234	2.72762	4.625806667	3.978586667	3.818503333
0.21		213	2.1411	5.19761	3.68323	3.485383333
0.19		194	1.60396	5.59042	3.333933333	3.105923333
0.18		177	1.148183333	5.779046667	2.973963333	2.71009
0.16		161	0.793083	5.759626667	2.640603333	2.327073333
0.15		147	0.53748	5.542	2.354403333	1.9786
0.13		134	0.366562667	5.14923	2.11717	1.675513333
0.12		122	0.261372	4.624926667	1.921346667	1.421176667
0.11		111	0.202749	4.028496667	1.756273333	1.213003333
0.10		101	0.173144	3.42829	1.615436667	1.046739333
0.092		92	0.158707333	2.88264	1.495663333	0.916374333
0.084		84	0.149907333	2.429036667	1.396606667	0.816099
0.076		76	0.140821	2.079086667	1.31826	0.740188667
0.070		70	0.129158333	1.823323333	1.259636667	0.683707667
0.063		63	0.116591333	1.639456667	1.217526667	0.642063

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12854	R-12855	R-12856	R-12857
		Sample ID:	13771AC_6	13771AC_7	13771AC_8	13771AC_9
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.106489233	1.500626667	1.18588	0.610609
0.053		53	0.100175133	1.382613333	1.156613333	0.584705333
0.048		48	0.0960335	1.268383333	1.12163	0.56007
0.044		44	0.091667133	1.150410333	1.075773	0.533910667
0.040		40	0.085782067	1.029268	1.018383333	0.505472667
0.036		36	0.078360167	0.910790667	0.953638667	0.476154
0.033		33	0.070199133	0.802636333	0.888380667	0.448578333
0.030		30	0.062432167	0.710617333	0.829173667	0.425056333
0.027		27	0.055955067	0.637724667	0.7804	0.406774
0.025		25	0.051069633	0.582513	0.742509333	0.393100667
0.023		23	0.047558767	0.541249667	0.713427333	0.382396
0.021		21	0.045014467	0.509298333	0.689329333	0.372601667
0.019		19	0.0430584	0.482509667	0.666452333	0.362022667
0.017		17	0.041425633	0.458896	0.642458333	0.349875667
0.016		16	0.039955767	0.436577333	0.615614667	0.335774
0.014		14	0.0384882	0.415343333	0.585754333	0.320029667
0.013		13	0.0369001	0.394410333	0.552839333	0.302904667
0.012		12	0.035180833	0.374020333	0.517975	0.285057
0.011		11	0.033397233	0.35473	0.482898333	0.267198333
0.0098		9.8	0.031642533	0.337047667	0.449481333	0.250021667
0.0089		8.9	0.029982367	0.321673333	0.419465	0.234086
0.0081		8.1	0.0284457	0.308186333	0.393270333	0.219492333
0.0074		7.4	0.0270371	0.296640667	0.370937667	0.206307
0.0068		6.8	0.025751367	0.286369	0.351789333	0.194342333
0.0062		6.2	0.0245799	0.277448333	0.335532667	0.183618333
0.0056		5.6	0.023517733	0.269451667	0.321752333	0.173998
0.0051		5.1	0.0225688	0.262354	0.310248	0.165476333
0.0047	Silt	4.7	0.021738833	0.255758	0.30062	0.157926667
0.0042		4.2	0.021035533	0.249525667	0.292437	0.15131
0.0039		3.9	0.0204678	0.243447	0.285248333	0.145511
0.0035		3.5	0.0200423	0.237330333	0.278574667	0.140402667
0.0032		3.2	0.0197613	0.230997333	0.272028333	0.135832333
0.0029		2.9	0.0196181	0.224221333	0.265139667	0.131637667
0.0027		2.7	0.019595	0.216955	0.257547667	0.127686667
0.0024		2.4	0.019663	0.209094	0.248915	0.123817667
0.0022		2.2	0.019785	0.200705333	0.239111667	0.119914167
0.0020		2.0	0.019921967	0.191803333	0.228155667	0.1158634
0.0018		1.8	0.0200374	0.182548	0.216219667	0.111633433
0.0017		1.7	0.020103433	0.173079333	0.203573333	0.107207833
0.0015		1.5	0.020100067	0.163591333	0.190506	0.102613867
0.0014		1.4	0.020017533	0.154219667	0.177341333	0.097876533
0.0013		1.3	0.019852967	0.145089433	0.164355667	0.0930561
0.0011		1.1	0.019609133	0.1363044	0.151802667	0.088218067
0.0010		1.05	0.019292733	0.127944867	0.139875733	0.0834312
0.00095		0.95	0.0189118	0.1200703	0.128722433	0.078746067
0.00087		0.87	0.018476133	0.112707467	0.1184531	0.074212067
0.00079		0.79	0.0179973	0.105858233	0.109078867	0.0698701
0.00072		0.72	0.017486733	0.099460467	0.100547033	0.065734767
0.00066		0.66	0.0169514	0.093482933	0.092747267	0.061809767
0.00060		0.60	0.016399067	0.087860067	0.085631433	0.058073533
0.00054		0.54	0.015833267	0.082608867	0.079176833	0.054539233
0.00050		0.50	0.015259367	0.0776657	0.0733348	0.051196167
0.00045		0.45	0.014678667	0.0730615	0.0680065	0.0480703
0.00041		0.41	0.014094867	0.068662467	0.063082733	0.0450875

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12854	R-12855	R-12856	R-12857
		Sample ID:	13771AC_6	13771AC_7	13771AC_8	13771AC_9
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.013508033	0.0645038	0.058560533	0.042255967
0.00034		0.34	0.012921033	0.060512833	0.054415233	0.039547533
0.00031		0.31	0.012333133	0.056725767	0.050537933	0.0369876
0.00028		0.28	0.011717933	0.0528918	0.046727233	0.0344265
0.00026		0.26	0.011062367	0.048994967	0.0429394	0.031842833
0.00024		0.24	0.010376867	0.0451435	0.039306967	0.029302033
0.00021		0.21	0.009708397	0.041486767	0.035908467	0.026916067
0.00020		0.20	0.009078403	0.038085233	0.032804433	0.024695367
0.00018		0.18	0.008483407	0.0349012	0.029969967	0.0226196
0.00016		0.16	0.007908977	0.0321794	0.027533533	0.020805833
0.00015		0.15	0.00733699	0.029532067	0.0251751	0.0190825
0.00013		0.13	0.00676663	0.026869333	0.0228198	0.017352533
0.00012		0.12	0.006198497	0.023986733	0.0203518	0.0155083
0.00011	Clay	0.11	0.005621947	0.0212469	0.018007533	0.0137266
0.00010		0.10	0.004974923	0.018394233	0.015569127	0.0119063
0.000093		0.093	0.004287613	0.015470467	0.013070437	0.010036683
0.000084		0.084	0.003609713	0.012745647	0.010752063	0.008279107
0.000077		0.077	0.00296094	0.01010623	0.00852126	0.006600293
0.000070		0.070	0.00236657	0.007303607	0.006163883	0.004834407
0.000064		0.064	0.0018017	0.004363013	0.003704013	0.00297081
0.000058		0.058	0.001230323	0.00219114	0.001872247	0.001522923
0.000053		0.053	0.000643894	0.001032685	0.000884837	0.000719829
0.000048		0.048	0.000237673	0.000564154	0.000478631	0.000382043
0.000044		0.044	9.37753E-05	0.000392305	0.000328411	0.000258296
0.000040		0.040	6.75174E-05	0.000327186	0.000271037	0.000210641
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	94.47	78.76	75.79	82.83
		%Silt	1.88	20.57	23.00	12.19
		%Clay	0.16	0.65	0.57	0.42
		% 1mm-2mm	3.49	0.02	0.64	4.56
		Folk and Ward Statistics				
		Mean:	1.1	3.1	2.7	1.8
		Median:	1.0	2.8	2.2	1.6
		Deviation:	0.7	1.6	2.1	1.7
		Skewness:	0.2	0.4	0.5	0.4
		Kurtosis:	1.0	1.6	1.2	1.5

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12858	R-12859	R-12860	R-12861
		Sample ID:	13867AB_1	13867AB_2	13867AB_3	13867AB_4
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.013424113	0.03961257	0.006349767	0.004644093
1.7		1660	0.110406033	0.264395333	0.040923583	0.06162374
1.5		1512	0.358637	0.572757667	0.113862067	0.219949667
1.4		1377	0.813270667	1.081223667	0.487117	0.499159667
1.3		1255	1.380243333	1.615293333	1.28176	0.940599
1.1		1143	1.981126667	2.178173333	2.121736667	1.46838
1.0		1041	2.63735	2.762226667	2.917713333	2.02415
0.95		948	3.34012	3.332006667	3.753313333	2.61797
0.86		864	4.056416667	3.819373333	4.48118	3.153523333
0.79		787	4.756973333	4.180533333	5.035793333	3.567283333
0.72		717	5.420223333	4.415526667	5.488093333	3.88604
0.65		653	6.01576	4.54576	5.84072	4.1514
0.59		595	6.497153333	4.606263333	6.083416667	4.395406667
0.54		542	6.788983333	4.610556667	6.22835	4.63634
0.49		494	6.80618	4.55647	6.22033	4.871676667
0.45		450	6.492623333	4.4378	5.968163333	5.086453333
0.41		410	5.84828	4.25333	5.479586667	5.281866667
0.37		373	4.941	4.013646667	4.87678	5.47449
0.34	Sand	340	3.892826667	3.737313333	4.279026667	5.660666667
0.31		310	2.849153333	3.444896667	3.73732	5.790716667
0.28		282	1.942296667	3.152823333	3.2579	5.7765
0.26		257	1.259303333	2.87041	2.81541	5.531156667
0.23		234	0.82245	2.60217	2.35939	5.018586667
0.21		213	0.594834667	2.348783333	1.869143333	4.280533333
0.19		194	0.514009333	2.11156	1.40391	3.428926667
0.18		177	0.521453667	1.892723333	1.053146667	2.602806667
0.16		161	0.569322333	1.695783333	0.837670667	1.90818
0.15		147	0.621671333	1.52403	0.704502333	1.385566667
0.13		134	0.660385333	1.377993333	0.604057667	1.020873333
0.12		122	0.684243	1.255523333	0.531194667	0.773582333
0.11		111	0.699699667	1.151323333	0.488196667	0.599948
0.10		101	0.713129333	1.059886667	0.453499333	0.46714
0.092		92	0.727694667	0.976530667	0.410576667	0.359494667
0.084		84	0.743727333	0.899428667	0.371164667	0.274694667
0.076		76	0.759489	0.828833667	0.344993333	0.213035333
0.070		70	0.772082333	0.765957667	0.322957	0.171062333
0.063		63	0.777753	0.711099	0.302878	0.143167

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12858	R-12859	R-12860	R-12861
		Sample ID:	13867AB_1	13867AB_2	13867AB_3	13867AB_4
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.772957	0.662872667	0.297503667	0.124779333
0.053		53	0.755302667	0.618492333	0.308166	0.112735
0.048		48	0.724338667	0.574808	0.316343	0.104493233
0.044		44	0.681841333	0.529759	0.308041667	0.098164067
0.040		40	0.631252333	0.483139667	0.289560667	0.092429333
0.036		36	0.577078	0.436713667	0.272073333	0.0863216
0.033		33	0.523719	0.393291	0.258191333	0.079489367
0.030		30	0.474544333	0.355301667	0.246153333	0.072349633
0.027		27	0.431522	0.324117	0.234982333	0.0656568
0.025		25	0.394880333	0.299390333	0.224372	0.059886667
0.023		23	0.363826333	0.279828667	0.2146	0.055169033
0.021		21	0.336938667	0.263630333	0.206205	0.051487933
0.019		19	0.312897	0.249179	0.199542333	0.048700633
0.017		17	0.290902333	0.23558	0.195114667	0.0465999
0.016		16	0.270361667	0.222145333	0.192485333	0.044929133
0.014		14	0.251168333	0.208838	0.189226667	0.043378
0.013		13	0.233154	0.195532	0.182665333	0.041695533
0.012		12	0.216436	0.182515333	0.172152667	0.0397764
0.011		11	0.201179	0.170166	0.159229333	0.0376575
0.0098		9.8	0.187571	0.158876	0.146171667	0.035444967
0.0089		8.9	0.175718333	0.148989333	0.134582667	0.0332467
0.0081		8.1	0.16542	0.140432667	0.125068667	0.0311416
0.0074		7.4	0.156493	0.133172667	0.117582333	0.029180067
0.0068		6.8	0.148639667	0.126934867	0.11178	0.027393033
0.0062		6.2	0.141728	0.1216716	0.107233133	0.025796367
0.0056		5.6	0.13554	0.117199433	0.103573833	0.024404
0.0051		5.1	0.129976	0.1134821	0.100551733	0.023236467
0.0047	Silt	4.7	0.124872	0.110368467	0.097989667	0.0223123
0.0042		4.2	0.1201216	0.1077759	0.0957865	0.021645033
0.0039		3.9	0.115587033	0.105573267	0.09392	0.021244333
0.0035		3.5	0.1111409	0.1036314	0.092388	0.021111067
0.0032		3.2	0.106662033	0.101820833	0.0911475	0.021234267
0.0029		2.9	0.1020415	0.099996667	0.090064067	0.0215859
0.0027		2.7	0.097226867	0.098057133	0.088898767	0.022119
0.0024		2.4	0.092172733	0.0958897	0.087346733	0.0227685
0.0022		2.2	0.086888067	0.0934511	0.0851281	0.0234568
0.0020		2.0	0.0814018	0.090713333	0.082079267	0.024103433
0.0018		1.8	0.075794967	0.0877141	0.078201267	0.0246348
0.0017		1.7	0.0701592	0.084499833	0.0736479	0.0249935
0.0015		1.5	0.0645975	0.0811447	0.068670467	0.025142433
0.0014		1.4	0.059198767	0.077716367	0.063554367	0.025066733
0.0013		1.3	0.054042867	0.074294233	0.058557967	0.024770233
0.0011		1.1	0.0491962	0.070944133	0.053886	0.0242718
0.0010		1.05	0.0447189	0.067718567	0.049667667	0.023600367
0.00095		0.95	0.040649733	0.0646456	0.0459719	0.0227897
0.00087		0.87	0.037010567	0.0617591	0.042807533	0.021876033
0.00079		0.79	0.0337871	0.0590702	0.040110933	0.020898367
0.00072		0.72	0.030933667	0.056567733	0.037802833	0.0198888
0.00066		0.66	0.028402233	0.054218333	0.035806033	0.018870567
0.00060		0.60	0.0261535	0.051992167	0.034049167	0.017862067
0.00054		0.54	0.024182433	0.049890567	0.0324719	0.016874633
0.00050		0.50	0.022444167	0.047894533	0.0310252	0.0159175
0.00045		0.45	0.020909567	0.046005767	0.029669	0.0149944
0.00041		0.41	0.019512367	0.044142633	0.028374733	0.014109033

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12858	R-12859	R-12860	R-12861
		Sample ID:	13867AB_1	13867AB_2	13867AB_3	13867AB_4
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.018264567	0.042313833	0.027118567	0.013261067
0.00034		0.34	0.017128467	0.040491	0.025887133	0.012451433
0.00031		0.31	0.016093467	0.0387086	0.0246676	0.011677533
0.00028		0.28	0.01506739	0.036806367	0.023395433	0.010910333
0.00026		0.26	0.014052463	0.0347702	0.0220212	0.010128613
0.00024		0.24	0.013064663	0.032661467	0.0205864	0.009353827
0.00021		0.21	0.012126817	0.0305587	0.0191894	0.008627587
0.00020		0.20	0.011237983	0.028489	0.017877933	0.007965127
0.00018		0.18	0.010388753	0.026443033	0.0166587	0.00736181
0.00016		0.16	0.009653453	0.024662533	0.015487033	0.006795307
0.00015		0.15	0.008924397	0.0228713	0.0143266	0.006247073
0.00013		0.13	0.008174573	0.020999233	0.013175067	0.00571482
0.00012		0.12	0.007348757	0.018888467	0.012035273	0.005197153
0.00011	Clay	0.11	0.006553123	0.016851233	0.010877753	0.004682817
0.00010		0.10	0.005716127	0.014694687	0.009581953	0.004124097
0.000093		0.093	0.004840733	0.012440003	0.008229437	0.003537557
0.000084		0.084	0.004009517	0.010304853	0.006899133	0.002965763
0.000077		0.077	0.003204853	0.008216633	0.005640553	0.002426107
0.000070		0.070	0.002345155	0.00597204	0.004492977	0.001935817
0.000064		0.064	0.001430109	0.003586827	0.003398267	0.00147485
0.000058		0.058	0.000728386	0.001804907	0.0022864	0.001013022
0.000053		0.053	0.000344036	0.000850315	0.001154097	0.00053947
0.000048		0.048	0.000184544	0.000463853	0.000415919	0.000201414
0.000044		0.044	0.000126113	0.00032265	0.000171914	7.73199E-05
0.000040		0.040	0.000103681	0.000268943	0.000129055	5.41798E-05
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	81.09	81.18	85.60	92.53
		%Silt	11.43	9.83	7.12	2.11
		%Clay	0.19	0.47	0.31	0.14
		% 1mm-2mm	7.29	8.51	6.97	5.22
		Folk and Ward Statistics				
		Mean:	1.5	1.5	1.1	1.3
		Median:	1.0	1.2	1.0	1.4
		Deviation:	1.6	1.6	1.3	0.9
		Skewness:	0.5	0.4	0.4	0.0
		Kurtosis:	1.9	1.3	1.7	1.0

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12862	R-12863	R-12864	R-12865
		Sample ID:	13867AB_5	90347AA_1	90347AA_2	90347AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.00836	0	0.012705633	0
1.7		1660	0.0532957	0	0.088828667	0
1.5		1512	0.061616133	0	0.103973	0
1.4		1377	0.0877516	0	0.148299333	0.012569867
1.3		1255	0.216953	0	0.612255	0.112019333
1.1		1143	0.263898667	0	1.18288	0.163148
1.0		1041	0.253208	0	1.390636667	0.096166333
0.95		948	0.321958667	0.001538768	1.672073333	0.102900433
0.86		864	0.297136333	0.081983633	2.206576667	0.376175333
0.79		787	0.177767667	0.787750667	2.941356667	0.890534333
0.72		717	0.160262467	2.529503333	3.89517	1.5231
0.65		653	0.277871667	4.805773333	5.116783333	2.498826667
0.59		595	0.549133	7.337203333	6.545346667	3.917326667
0.54		542	0.968400333	9.713946667	8.01539	5.750086667
0.49		494	1.412436667	11.29063333	9.18533	7.724166667
0.45		450	1.684413333	11.53486667	9.620813333	9.338476667
0.41		410	1.795103333	10.36173333	9.10435	10.14766667
0.37		373	1.976806667	8.26696	7.796536667	9.99587
0.34	Sand	340	2.470506667	6.01363	6.10759	9.012296667
0.31		310	3.374046667	4.194236667	4.472666667	7.50591
0.28		282	4.588776667	3.021343333	3.173323333	5.82792
0.26		257	5.876593333	2.370303333	2.27623	4.262726667
0.23		234	6.988683333	1.977553333	1.69279	2.977536667
0.21		213	7.753026667	1.6384	1.29505	2.02435
0.19		194	8.0924	1.29799	0.99974	1.385486667
0.18		177	7.992443333	1.002182667	0.768891333	1.003711
0.16		161	7.45209	0.788382333	0.577497333	0.784363333
0.15		147	6.491516667	0.644912667	0.420881667	0.631725667
0.13		134	5.231576667	0.549414	0.31902	0.505931
0.12		122	3.908526667	0.496594	0.279815667	0.421443
0.11		111	2.763226667	0.475295667	0.278101667	0.387734333
0.10		101	1.928303333	0.454972333	0.271813667	0.383939333
0.092		92	1.405646667	0.418923	0.247176667	0.385431
0.084		84	1.115083333	0.382720333	0.224409	0.386024333
0.076		76	0.957012333	0.361803	0.218266	0.384850333
0.070		70	0.854424667	0.350401	0.225817333	0.377140667
0.063		63	0.770199	0.337636	0.238205333	0.366705

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12862	R-12863	R-12864	R-12865
		Sample ID:	13867AB_5	90347AA_1	90347AA_2	90347AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.697413	0.322939	0.250476333	0.364753333
0.053		53	0.634584333	0.308450333	0.258861	0.371316
0.048		48	0.575275	0.290559333	0.257242	0.372392333
0.044		44	0.516084	0.266877667	0.244342333	0.358846333
0.040		40	0.45886	0.242120333	0.227046333	0.336934667
0.036		36	0.405211333	0.220884333	0.211795	0.315934
0.033		33	0.35707	0.202297667	0.198775667	0.297716333
0.030		30	0.31666	0.184476333	0.186221	0.280537667
0.027		27	0.284506667	0.167792	0.174122	0.263724333
0.025		25	0.259526667	0.153334667	0.163227667	0.247677333
0.023		23	0.239056333	0.141967333	0.154324667	0.233212
0.021		21	0.221605	0.133948667	0.147755667	0.220953667
0.019		19	0.207172667	0.128905	0.143270333	0.211069667
0.017		17	0.195484333	0.126551	0.140681667	0.203643
0.016		16	0.186274	0.126070667	0.139340667	0.198039
0.014		14	0.178229	0.125377	0.137593667	0.192119
0.013		13	0.169958333	0.122374333	0.133803333	0.183681333
0.012		12	0.160982	0.116547667	0.127589	0.172275667
0.011		11	0.151434667	0.1090172	0.119878333	0.159183667
0.0098		9.8	0.142043667	0.101426067	0.112013733	0.146263
0.0089		8.9	0.133311667	0.09494	0.104974233	0.134849
0.0081		8.1	0.125547833	0.089996333	0.0991573	0.125490333
0.0074		7.4	0.118828633	0.0865673	0.0945766	0.118206933
0.0068		6.8	0.113093267	0.084422233	0.091065567	0.112764367
0.0062		6.2	0.1082348	0.083245133	0.088380433	0.108814133
0.0056		5.6	0.1041046	0.082745133	0.086298233	0.106013767
0.0051		5.1	0.1006265	0.082705967	0.0846513	0.104093
0.0047	Silt	4.7	0.097695433	0.082967633	0.0833089	0.102800167
0.0042		4.2	0.095244667	0.083437033	0.082182967	0.1019238
0.0039		3.9	0.0932112	0.084100967	0.0812361	0.101307333
0.0035		3.5	0.0915494	0.084988567	0.0804519	0.100821733
0.0032		3.2	0.090207233	0.0861225	0.0798036	0.100337167
0.0029		2.9	0.089105467	0.087457533	0.079226067	0.099696933
0.0027		2.7	0.0881351	0.088835733	0.078598	0.0987042
0.0024		2.4	0.087144167	0.089989867	0.077756167	0.097140033
0.0022		2.2	0.085979633	0.090604533	0.076540233	0.0948249
0.0020		2.0	0.0845031	0.090401533	0.0748443	0.0916732
0.0018		1.8	0.082631367	0.0892127	0.072649667	0.0877299
0.0017		1.7	0.0803379	0.087007733	0.070024467	0.0831573
0.0015		1.5	0.077650267	0.083889667	0.067099567	0.078194367
0.0014		1.4	0.074636367	0.080051767	0.0640332	0.0731052
0.0013		1.3	0.071383267	0.075736567	0.060978	0.0681318
0.0011		1.1	0.067986533	0.071194867	0.0580599	0.063471
0.0010		1.05	0.064533233	0.0666521	0.0553649	0.0592537
0.00095		0.95	0.061103633	0.062300333	0.052944533	0.055558667
0.00087		0.87	0.057759067	0.058279167	0.0508107	0.052405333
0.00079		0.79	0.0545402	0.0546557	0.0489336	0.049742967
0.00072		0.72	0.051468133	0.0514422	0.047264367	0.047494467
0.00066		0.66	0.0485519	0.048622933	0.045753833	0.045584
0.00060		0.60	0.0457928	0.046153	0.044347533	0.0439316
0.00054		0.54	0.0431844	0.0439782	0.042998367	0.042466667
0.00050		0.50	0.040719867	0.042035233	0.0416614	0.041124533
0.00045		0.45	0.038386467	0.040260767	0.040299967	0.0398496
0.00041		0.41	0.0361755	0.038595767	0.038884767	0.0385978

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12862	R-12863	R-12864	R-12865
		Sample ID:	13867AB_5	90347AA_1	90347AA_2	90347AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.034072733	0.036987033	0.0373938	0.037331367
0.00034		0.34	0.0320706	0.035394167	0.035817	0.0360275
0.00031		0.31	0.030155833	0.033784567	0.0341505	0.034666233
0.00028		0.28	0.0282384	0.032052033	0.032303667	0.033164833
0.00026		0.26	0.0262457	0.030079467	0.030173333	0.0314361
0.00024		0.24	0.0242477	0.0279737	0.027894233	0.029553367
0.00021		0.21	0.022370033	0.025888833	0.025645367	0.027656333
0.00020		0.20	0.020660233	0.0239219	0.023542133	0.0258289
0.00018		0.18	0.019114533	0.022126267	0.021640167	0.0241145
0.00016		0.16	0.017661733	0.0204109	0.019843867	0.022444267
0.00015		0.15	0.016249967	0.0187299	0.0181034	0.020775833
0.00013		0.13	0.014872433	0.017081833	0.016418167	0.019108733
0.00012		0.12	0.0135286	0.0154765	0.014796367	0.0174527
0.00011	Clay	0.11	0.012181	0.013855167	0.0131784	0.015757433
0.00010		0.10	0.010694413	0.012075887	0.011434353	0.013853733
0.000093		0.093	0.00915663	0.01027266	0.009682793	0.01188037
0.000084		0.084	0.007656373	0.008526017	0.008005287	0.00993777
0.000077		0.077	0.006247677	0.006920153	0.006479277	0.00811213
0.000070		0.070	0.004969503	0.005469637	0.00511053	0.006447177
0.000064		0.064	0.003755543	0.004089957	0.003818773	0.00485378
0.000058		0.058	0.002526203	0.002681803	0.002508613	0.003226423
0.000053		0.053	0.001276597	0.001271949	0.00119948	0.001579803
0.000048		0.048	0.000460549	0.000439522	0.000417011	0.000557915
0.000044		0.044	0.000189763	0.000196434	0.000183836	0.000239796
0.000040		0.040	0.000142096	0.000157822	0.000145969	0.00018644
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	89.64	93.49	90.19	91.28
		%Silt	9.06	6.11	5.87	7.90
		%Clay	0.36	0.41	0.40	0.44
		% 1mm-2mm	0.95	0.00	3.54	0.38
		Folk and Ward Statistics				
		Mean:	2.4	1.3	1.2	1.5
		Median:	2.4	1.2	1.1	1.4
		Deviation:	1.0	1.0	1.0	1.1
		Skewness:	0.2	0.5	0.3	0.5
		Kurtosis:	1.9	2.3	2.4	2.5

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12866	R-12867	R-12868	R-12869
		Sample ID:	90397AA_1	90413AA_1	90413AA_2	90413AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0	0	0.001984777
1.7		1660	3.67647E-05	0	0.000363937	0.023927767
1.5		1512	0.00124341	0	0.002825047	0.1121853
1.4		1377	0.029305833	0	0.0107414	0.257685667
1.3		1255	0.221603867	0	0.018825	0.412397333
1.1		1143	0.353795	0	0.0260174	0.543194
1.0		1041	0.382140667	0	0.0303357	0.678616333
0.95		948	0.658104	0	0.034448667	0.828409
0.86		864	1.24804	0	0.036526667	0.989766667
0.79		787	1.97739	0	0.03607887	1.170163333
0.72		717	2.762396667	0	0.040072233	1.386313333
0.65		653	3.717636667	0.001662407	0.064979007	1.653466667
0.59		595	4.79326	0.064125867	0.136926167	1.978636667
0.54		542	5.88574	0.456593667	0.309230667	2.352343333
0.49		494	6.836436667	1.114465333	0.547089333	2.754453333
0.45		450	7.409	1.52111	0.779667	3.172036667
0.41		410	7.462966667	1.60933	1.057275333	3.601343333
0.37		373	7.049503333	1.749366667	1.549513333	4.03609
0.34	Sand	340	6.30434	2.433	2.438603333	4.449686667
0.31		310	5.363803333	3.902466667	3.778083333	4.78658
0.28		282	4.353733333	5.941916667	5.402326667	4.971333333
0.26		257	3.379163333	7.977096667	6.974873333	4.937843333
0.23		234	2.51866	9.408876667	8.114226667	4.665396667
0.21		213	1.837803333	9.82472	8.530453333	4.194963333
0.19		194	1.389073333	9.123576667	8.15315	3.619856667
0.18		177	1.169788667	7.588223333	7.14688	3.04721
0.16		161	1.109198667	5.721936667	5.811103333	2.558556667
0.15		147	1.108918667	3.985563333	4.452556667	2.19033
0.13		134	1.108973333	2.686566667	3.302996667	1.937343333
0.12		122	1.108342	1.924773333	2.479513333	1.773606667
0.11		111	1.108572333	1.588263333	1.974253333	1.667636667
0.10		101	1.089223333	1.472866667	1.70371	1.5945
0.092		92	1.040103333	1.41386	1.57116	1.53653
0.084		84	0.97949	1.34198	1.503253333	1.483616667
0.076		76	0.920340333	1.248663333	1.450036667	1.430906667
0.070		70	0.8557	1.139546667	1.382673333	1.377806667
0.063		63	0.785551667	1.031342333	1.29567	1.325433333

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12866	R-12867	R-12868	R-12869
		Sample ID:	90397AA_1	90413AA_1	90413AA_2	90413AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
0.058		58	0.725906333	0.94499	1.198946667	1.273726667
0.053		53	0.681949667	0.878776	1.101527667	1.219993333
0.048		48	0.638076	0.809240333	1.004800667	1.15977
0.044		44	0.581509333	0.725375667	0.909003	1.089676667
0.040		40	0.518916667	0.639166333	0.816673	1.009647
0.036		36	0.461786667	0.561802667	0.729842333	0.923800667
0.033		33	0.412869667	0.494821333	0.650133	0.838733333
0.030		30	0.370931	0.438969667	0.580176333	0.760695
0.027		27	0.336161333	0.394608667	0.52204	0.693877
0.025		25	0.308496	0.359627667	0.475417667	0.639132
0.023		23	0.286703667	0.331449333	0.438527333	0.595315333
0.021		21	0.268851333	0.308372333	0.409042	0.559996
0.019		19	0.253759	0.290413333	0.385037	0.530637
0.017		17	0.242004	0.278425333	0.365265333	0.505311
0.016		16	0.233743	0.27171	0.348388333	0.481883667
0.014		14	0.226976667	0.266941667	0.333159	0.458967333
0.013		13	0.218580333	0.260145	0.318125333	0.435216667
0.012		12	0.207462	0.249728667	0.302954	0.410599667
0.011		11	0.194826	0.236756667	0.288091	0.385935333
0.0098		9.8	0.182714333	0.223352	0.274413	0.362448
0.0089		8.9	0.172522	0.211202	0.262670333	0.341246667
0.0081		8.1	0.164483667	0.201035	0.252925667	0.322479
0.0074		7.4	0.158386	0.192954	0.245083667	0.306145333
0.0068		6.8	0.153712333	0.186696667	0.238707	0.291818
0.0062		6.2	0.150055333	0.181853	0.233628	0.279453
0.0056		5.6	0.146953	0.178028333	0.229537333	0.268764
0.0051		5.1	0.1441383	0.174906667	0.226237667	0.259606
0.0047	Silt	4.7	0.141352567	0.172212333	0.223375667	0.251614333
0.0042		4.2	0.138501633	0.169714667	0.220716667	0.244521667
0.0039		3.9	0.135561067	0.167244	0.218010333	0.238023
0.0035		3.5	0.132594567	0.164632333	0.215014667	0.231788333
0.0032		3.2	0.1296539	0.161678333	0.211466333	0.225480667
0.0029		2.9	0.1267222	0.158134667	0.207093333	0.218715
0.0027		2.7	0.1236805	0.153727	0.201697333	0.211241333
0.0024		2.4	0.120271967	0.148212	0.195138333	0.202857333
0.0022		2.2	0.116211333	0.141455133	0.187410333	0.193524333
0.0020		2.0	0.111240467	0.1335003	0.178603	0.183271333
0.0018		1.8	0.105273533	0.124579633	0.168941	0.172250667
0.0017		1.7	0.098405167	0.115074433	0.158731333	0.160685
0.0015		1.5	0.0909338	0.1054358	0.148337667	0.148844667
0.0014		1.4	0.083289367	0.096107533	0.1381014	0.137004667
0.0013		1.3	0.0759752	0.0874583	0.1283309	0.125386233
0.0011		1.1	0.0694788	0.079760667	0.1192496	0.114188467
0.0010		1.05	0.064205767	0.073164367	0.111034433	0.1035843
0.00095		0.95	0.060434833	0.0677331	0.103779133	0.0937332
0.00087		0.87	0.0583156	0.063432767	0.097551933	0.084731367
0.00079		0.79	0.057759233	0.0601066	0.092271467	0.0765851
0.00072		0.72	0.058564033	0.057571367	0.0878149	0.069223267
0.00066		0.66	0.060448233	0.055657533	0.084017067	0.062567367
0.00060		0.60	0.063043367	0.054199333	0.0807644	0.0565819
0.00054		0.54	0.0659989	0.053054833	0.077973567	0.051256333
0.00050		0.50	0.068923367	0.052097867	0.0755348	0.046512833
0.00045		0.45	0.071499967	0.051222267	0.073353767	0.042246867
0.00041		0.41	0.073340433	0.050344167	0.071258633	0.038393567

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12866	R-12867	R-12868	R-12869
		Sample ID:	90397AA_1	90413AA_1	90413AA_2	90413AA_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.0742221	0.049392833	0.069221	0.0349643
0.00034		0.34	0.073948133	0.048324167	0.067163867	0.031912267
0.00031		0.31	0.072524733	0.047100933	0.065090367	0.0290993
0.00028		0.28	0.069629333	0.0456265	0.0627365	0.0264128
0.00026		0.26	0.065094267	0.0437932	0.060049533	0.023834567
0.00024		0.24	0.059274867	0.041661467	0.057120367	0.021443933
0.00021		0.21	0.052865333	0.039399533	0.0540151	0.019266667
0.00020		0.20	0.0466016	0.037125133	0.050843	0.017355933
0.00018		0.18	0.040812167	0.034916967	0.047609867	0.015688493
0.00016		0.16	0.035620267	0.032706433	0.044770267	0.01425943
0.00015		0.15	0.0307239	0.0304497	0.041752	0.01289109
0.00013		0.13	0.026180333	0.028150767	0.0385512	0.011570473
0.00012		0.12	0.021883667	0.025829367	0.034900033	0.010259093
0.00011	Clay	0.11	0.0179881	0.023418967	0.0313794	0.009025607
0.00010		0.10	0.014343913	0.020666133	0.027486633	0.007742437
0.000093		0.093	0.011038217	0.0177837	0.0233786	0.00644821
0.000084		0.084	0.008373637	0.01491965	0.019452367	0.00527147
0.000077		0.077	0.006218167	0.012204943	0.015565567	0.0041477
0.000070		0.070	0.00427748	0.009715067	0.011465863	0.0029738
0.000064		0.064	0.002468088	0.00732075	0.007202547	0.001772357
0.000058		0.058	0.001187578	0.004865543	0.003967963	0.000894507
0.000053		0.053	0.00053783	0.00237745	0.00192817	0.00042375
0.000048		0.048	0.000289334	0.000838472	0.00092741	0.000229212
0.000044		0.044	0.000200018	0.000361825	0.000575957	0.000156351
0.000040		0.040	0.00016812	0.000282557	0.000479091	0.000128638
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	87.33	86.27	82.06	77.47
		%Silt	10.94	13.11	17.02	20.19
		%Clay	0.74	0.62	0.84	0.31
		% 1mm-2mm	0.99	0.00	0.09	2.03
		Folk and Ward Statistics				
		Mean:	1.8	2.6	2.8	2.6
		Median:	1.4	2.3	2.4	2.1
		Deviation:	1.5	1.3	1.5	1.9
		Skewness:	0.6	0.5	0.6	0.4
		Kurtosis:	1.8	2.1	1.8	1.3

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12870	R-12871	R-12872	R-12873
		Sample ID:	90413AA_4	90413AA_5	90560AA_1	90560AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0.005331887	0	0.002184337
1.7		1660	0	0.051721233	0.000252887	0.019843727
1.5		1512	0	0.197841	0.00419823	0.065925033
1.4		1377	0	0.456868	0.0316354	0.149239367
1.3		1255	0	0.770000667	0.131741333	0.242397333
1.1		1143	0	1.091056667	0.351112333	0.341738667
1.0		1041	0	1.44588	0.714672	0.454605
0.95		948	0	1.835726667	1.220283333	0.600681
0.86		864	0	2.239486667	1.88381	0.795162667
0.79		787	0	2.63806	2.687553333	1.07166
0.72		717	0.013580033	3.016683333	3.577576667	1.46084
0.65		653	0.147327	3.356723333	4.462053333	1.97979
0.59		595	0.417478	3.634916667	5.21977	2.619863333
0.54		542	0.801881667	3.817133333	5.730406667	3.3466
0.49		494	1.266626667	3.87105	5.905396667	4.098383333
0.45		450	1.558466667	3.79008	5.721816667	4.811296667
0.41		410	1.674643333	3.601446667	5.2349	5.42658
0.37		373	1.930543333	3.359993333	4.56321	5.89053
0.34	Sand	340	2.720816667	3.125896667	3.848763333	6.148576667
0.31		310	4.225706667	2.94295	3.21092	6.148823333
0.28		282	6.218276667	2.82628	2.71519	5.855696667
0.26		257	8.149513333	2.764236667	2.369426667	5.27357
0.23		234	9.429303333	2.73171	2.1424	4.46603
0.21		213	9.663966667	2.703033333	1.98708	3.551536667
0.19		194	8.813693333	2.66401	1.863183333	2.673733333
0.18		177	7.21779	2.611666667	1.749093333	1.95139
0.16		161	5.382823333	2.549056667	1.64308	1.43875
0.15		147	3.723543333	2.478333333	1.55444	1.123596667
0.13		134	2.492243333	2.396876667	1.491413333	0.954536
0.12		122	1.76085	2.300603333	1.454843333	0.875116333
0.11		111	1.418706667	2.186323333	1.435876667	0.840022667
0.10		101	1.280876667	2.056236667	1.420733333	0.821858333
0.092		92	1.211626667	1.916313333	1.39613	0.807799333
0.084		84	1.16042	1.774783333	1.35538	0.794449667
0.076		76	1.1113	1.638476667	1.299466667	0.782266
0.070		70	1.047273333	1.51121	1.234776667	0.773389333
0.063		63	0.969001	1.39317	1.168413333	0.769441333

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12870	R-12871	R-12872	R-12873
		Sample ID:	90413AA_4	90413AA_5	90560AA_1	90560AA_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
0.058		58	0.897065	1.281823333	1.104606667	0.769688667
0.053		53	0.837761667	1.173773333	1.043261667	0.770191
0.048		48	0.774469333	1.066561667	0.981118	0.764888333
0.044		44	0.698027333	0.960117667	0.914528667	0.748609333
0.040		40	0.619005	0.856585	0.841883667	0.719468333
0.036		36	0.547390667	0.759595667	0.765074333	0.680226
0.033		33	0.48484	0.672732667	0.688602333	0.637069333
0.030		30	0.432848	0.598091667	0.617606333	0.59704
0.027		27	0.392674667	0.536256	0.556366333	0.565769
0.025		25	0.362474	0.485709	0.506611333	0.545524333
0.023		23	0.339121	0.444272333	0.468120667	0.535519333
0.021		21	0.320235	0.409448667	0.438755	0.532366333
0.019		19	0.305285	0.379059667	0.415494667	0.531804333
0.017		17	0.295016333	0.351882	0.395541667	0.530242667
0.016		16	0.289059333	0.326504333	0.376111	0.525165667
0.014		14	0.284403667	0.302546667	0.355815333	0.515759
0.013		13	0.277342667	0.279456667	0.333884667	0.502020667
0.012		12	0.266552333	0.257570333	0.310947333	0.485001333
0.011		11	0.253341333	0.237469667	0.288253333	0.466227333
0.0098		9.8	0.239978333	0.219636	0.26709	0.447407333
0.0089		8.9	0.228064	0.204526	0.248545667	0.430002667
0.0081		8.1	0.218106333	0.191833	0.232757667	0.414595
0.0074		7.4	0.210005	0.181500667	0.219738	0.40124
0.0068		6.8	0.203412667	0.173000333	0.20901	0.389508
0.0062		6.2	0.197951	0.166204667	0.200375667	0.379151
0.0056		5.6	0.193312	0.160707333	0.193470667	0.369873
0.0051		5.1	0.189275667	0.156399333	0.188114667	0.361462667
0.0047	Silt	4.7	0.185661	0.1529987	0.183992333	0.353555
0.0042		4.2	0.182321667	0.150328133	0.180802667	0.345765
0.0039		3.9	0.179150333	0.148143733	0.178213333	0.337718333
0.0035		3.5	0.17602	0.1461834	0.175860333	0.329098
0.0032		3.2	0.172748333	0.1442386	0.173445333	0.319649
0.0029		2.9	0.16908	0.142072833	0.170633333	0.309104333
0.0027		2.7	0.164715333	0.139552433	0.167184667	0.297279667
0.0024		2.4	0.159364333	0.1365026	0.162876667	0.284087667
0.0022		2.2	0.152839667	0.132875233	0.157638333	0.269620667
0.0020		2.0	0.1451315	0.1286541	0.151510867	0.254100667
0.0018		1.8	0.136434433	0.123934333	0.144655233	0.237849
0.0017		1.7	0.127105467	0.118821833	0.137297167	0.221245
0.0015		1.5	0.117586567	0.1134478	0.1296768	0.204674
0.0014		1.4	0.108323667	0.1079356	0.122041033	0.188498667
0.0013		1.3	0.0996917	0.1024154	0.114610667	0.173008
0.0011		1.1	0.091969367	0.097005333	0.1075694	0.158406333
0.0010		1.05	0.085312533	0.091789967	0.1010534	0.144865
0.00095		0.95	0.079786733	0.0868194	0.095130867	0.132487667
0.00087		0.87	0.075359233	0.0821388	0.0898684	0.1213467
0.00079		0.79	0.0718742	0.077774333	0.0852439	0.1113732
0.00072		0.72	0.069147833	0.073713033	0.081198567	0.102435633
0.00066		0.66	0.067009433	0.069918033	0.0776055	0.094369267
0.00060		0.60	0.0652913	0.06634	0.074391033	0.087092633
0.00054		0.54	0.063849767	0.062983567	0.071517967	0.080581267
0.00050		0.50	0.062557667	0.059825833	0.0689336	0.074736267
0.00045		0.45	0.0613079	0.056885767	0.066575067	0.0694363
0.00041		0.41	0.060017433	0.054044167	0.064286167	0.064538367

			Average of 3 Runs	Average	Average	Average	Average
			Repository ID:	R-12870	R-12871	R-12872	R-12873
			Sample ID:	90413AA_4	90413AA_5	90560AA_1	90560AA_2
			Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size							
Millimeters			**Microns**				
0.00038			0.38	0.058617	0.0513087	0.062057433	0.060075267
0.00034			0.34	0.0570663	0.048641867	0.059844433	0.055986
0.00031			0.31	0.0553335	0.046095733	0.0576653	0.052157733
0.00028			0.28	0.053289233	0.0434581	0.055260667	0.048351267
0.00026			0.26	0.0507959	0.0407041	0.052599267	0.044549967
0.00024			0.24	0.047958967	0.037919	0.049782067	0.040885
0.00021			0.21	0.045018567	0.035200067	0.046856033	0.0374269
0.00020			0.20	0.0421361	0.032591733	0.043903033	0.0342622
0.00018			0.18	0.039405767	0.030070967	0.0409133	0.0313599
0.00016			0.16	0.036723833	0.0279354	0.038374933	0.028886633
0.00015			0.15	0.034025967	0.0258041	0.035703167	0.0264437
0.00013			0.13	0.031313533	0.023605367	0.032863567	0.024001633
0.00012			0.12	0.028609133	0.021139467	0.029573033	0.021415
0.00011	Clay		0.11	0.025823267	0.0188048	0.0264543	0.018975733
0.00010			0.10	0.022665033	0.0163418	0.023068117	0.016399747
0.000093			0.093	0.019413867	0.013789287	0.019513353	0.013759407
0.000084			0.084	0.016214023	0.01139131	0.016161903	0.011318083
0.000077			0.077	0.01321561	0.009045197	0.012829027	0.008948077
0.000070			0.070	0.010481593	0.006526537	0.009203133	0.00642834
0.000064			0.064	0.007853133	0.003867123	0.005366753	0.00380407
0.000058			0.058	0.005148017	0.001927453	0.002641553	0.001901083
0.000053			0.053	0.002428977	0.000907286	0.001241505	0.000896877
0.000048			0.048	0.000835941	0.000501625	0.000699388	0.000493019
0.000044			0.044	0.000378068	0.000353134	0.000500805	0.000343582
0.000040			0.040	0.000307183	0.000296974	0.000426355	0.000287131
% by volume stats			**Total (Sum)**	100	100	100	100
LPSA			**%Sand (1mm and less)**	85.81	79.73	81.55	78.15
			%Silt	13.49	15.70	16.50	19.98
			%Clay	0.71	0.55	0.72	0.59
			% 1mm-2mm	0.00	4.02	1.23	1.28
			Folk and Ward Statistics				
			Mean:	2.6	2.2	2.1	2.5
			Median:	2.3	1.9	1.5	1.8
			Deviation:	1.4	1.8	1.9	2.1
			Skewness:	0.5	0.3	0.6	0.6
			Kurtosis:	2.3	1.1	1.2	1.5

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12874	R-12875	R-12876	R-12877
		Sample ID:	06930AB_1	06930AB_2	12583AC_1	12583AC_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.005759267	0.000794899	0.048324867	0.0204228
1.7		1660	0.033238633	0.012787063	0.298667667	0.182544667
1.5		1512	0.0209382	0.0669476	0.521588	0.380287667
1.4		1377	0.072802433	0.174935	0.845424333	0.614144
1.3		1255	0.663136333	0.294484	1.09875	1.048477333
1.1		1143	1.674176667	0.400287333	1.376166667	1.553963333
1.0		1041	2.573483333	0.511310333	1.6849	2.101866667
0.95		948	3.723813333	0.667892333	2.022196667	2.73892
0.86		864	5.002313333	0.891091667	2.35128	3.429013333
0.79		787	6.09621	1.182163333	2.64628	4.10497
0.72		717	6.91102	1.52548	2.89353	4.737886667
0.65		653	7.436646667	1.880743333	3.090466667	5.306123333
0.59		595	7.66557	2.20891	3.241183333	5.772466667
0.54		542	7.630826667	2.47732	3.347056667	6.118043333
0.49		494	7.351883333	2.669663333	3.407063333	6.337086667
0.45		450	6.816016667	2.795896667	3.432273333	6.42655
0.41		410	6.05293	2.88591	3.44656	6.392426667
0.37		373	5.161563333	2.97262	3.482436667	6.245013333
0.34	Sand	340	4.25572	3.07276	3.56483	5.986743333
0.31		310	3.41451	3.17617	3.700823333	5.608036667
0.28		282	2.669243333	3.2493	3.87316	5.098296667
0.26		257	2.023696667	3.253303333	4.044026667	4.464023333
0.23		234	1.477286667	3.16819	4.166993333	3.73984
0.21		213	1.032560667	3.003986667	4.198156667	2.985463333
0.19		194	0.704424333	2.7969	4.108943333	2.269433333
0.18		177	0.504806667	2.587706667	3.889443333	1.64972
0.16		161	0.405003333	2.403613333	3.549906667	1.158373333
0.15		147	0.348857333	2.251076667	3.118676667	0.796831333
0.13		134	0.305184	2.1206	2.636683333	0.544941667
0.12		122	0.280658	2.00033	2.152366667	0.374674
0.11		111	0.278569667	1.88282	1.710013333	0.259531333
0.10		101	0.279402	1.7691	1.342786667	0.179348667
0.092		92	0.267889	1.664293333	1.064993333	0.122284333
0.084		84	0.251651667	1.574903333	0.873944667	0.083033767
0.076		76	0.240418	1.505966667	0.754443	0.058438433
0.070		70	0.232758333	1.459843333	0.686077667	0.0447197
0.063		63	0.227465667	1.434766667	0.648212667	0.0378226

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12874	R-12875	R-12876	R-12877
		Sample ID:	06930AB_1	06930AB_2	12583AC_1	12583AC_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.228318667	1.42437	0.623370333	0.034564433
0.053		53	0.233844333	1.418806667	0.599494	0.032794867
0.048		48	0.234750667	1.4078	0.570369667	0.0311158
0.044		44	0.225242	1.384513333	0.534916	0.0289486
0.040		40	0.209624333	1.347436667	0.495138333	0.0263426
0.036		36	0.194514	1.300596667	0.454376	0.0235737
0.033		33	0.181654667	1.250823333	0.416048	0.0209955
0.030		30	0.170197667	1.204423333	0.382434	0.018939967
0.027		27	0.160001333	1.165253333	0.354538333	0.017604533
0.025		25	0.151417333	1.132886667	0.331717	0.016937133
0.023		23	0.144807	1.104405333	0.312618667	0.0167066
0.021		21	0.140176	1.075299	0.295803667	0.016706767
0.019		19	0.137111333	1.041477333	0.280124	0.0167813
0.017		17	0.135442667	1.000788333	0.265175667	0.016827167
0.016		16	0.134743	0.951977	0.250512333	0.0167947
0.014		14	0.133611667	0.895876333	0.236168	0.0166183
0.013		13	0.130614667	0.833752667	0.221955667	0.016250467
0.012		12	0.125464333	0.768321	0.208095	0.0156931
0.011		11	0.119041	0.702996	0.194904667	0.014986
0.0098		9.8	0.112595033	0.641004	0.182702667	0.014187267
0.0089		8.9	0.1069977	0.585031667	0.171768	0.013349167
0.0081		8.1	0.1025579	0.535849333	0.161977	0.012515667
0.0074		7.4	0.099217933	0.493502667	0.153330333	0.011721523
0.0068		6.8	0.096759033	0.457078667	0.145595667	0.010997737
0.0062		6.2	0.094913033	0.426053667	0.138821667	0.01036997
0.0056		5.6	0.093438633	0.399839	0.132837667	0.009863913
0.0051		5.1	0.0921487	0.378170667	0.127637333	0.00951032
0.0047	Silt	4.7	0.0908926	0.360608667	0.1230578	0.00933759
0.0042		4.2	0.089566	0.346601667	0.119084567	0.009369487
0.0039		3.9	0.0881127	0.335505	0.115610933	0.009623583
0.0035		3.5	0.0865069	0.326570667	0.112532	0.010108537
0.0032		3.2	0.0847196	0.319173	0.109694567	0.010819657
0.0029		2.9	0.082694967	0.312564667	0.106960867	0.011735067
0.0027		2.7	0.0803373	0.306078	0.104239533	0.012813767
0.0024		2.4	0.0775252	0.298984667	0.1014137	0.013996667
0.0022		2.2	0.074152333	0.290776667	0.098412367	0.015211867
0.0020		2.0	0.0701702	0.281172	0.095153233	0.016382267
0.0018		1.8	0.0656219	0.270139667	0.091643667	0.017435367
0.0017		1.7	0.0606401	0.257831333	0.087892033	0.0183117
0.0015		1.5	0.0554314	0.244454667	0.083953033	0.018970267
0.0014		1.4	0.050238633	0.230322333	0.079858767	0.019390467
0.0013		1.3	0.045304733	0.215747333	0.075675133	0.019570867
0.0011		1.1	0.040847767	0.201096667	0.0714669	0.019525167
0.0010		1.05	0.037031767	0.186663667	0.067306367	0.019278533
0.00095		0.95	0.033976033	0.172701667	0.0632453	0.018861433
0.00087		0.87	0.031728933	0.159407667	0.0593269	0.018308467
0.00079		0.79	0.030240033	0.146905	0.0555896	0.017659867
0.00072		0.72	0.029411033	0.135242333	0.052042867	0.016950033
0.00066		0.66	0.029133333	0.124376733	0.0486948	0.016204367
0.00060		0.60	0.029274867	0.114298133	0.045523867	0.015443567
0.00054		0.54	0.0297084	0.1049901	0.042546133	0.014681133
0.00050		0.50	0.0303036	0.096455967	0.0397441	0.013928333
0.00045		0.45	0.0309413	0.088588567	0.037137567	0.0131909
0.00041		0.41	0.031515233	0.0813281	0.034666533	0.012474267

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12874	R-12875	R-12876	R-12877
		Sample ID:	06930AB_1	06930AB_2	12583AC_1	12583AC_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.031934467	0.0746291	0.032343867	0.0117797
0.00034		0.34	0.0321336	0.0685095	0.030140067	0.0111095
0.00031		0.31	0.032065567	0.062770633	0.0280671	0.01046245
0.00028		0.28	0.031672467	0.0572416	0.0260104	0.0098187
0.00026		0.26	0.030861433	0.051823167	0.023958233	0.009164037
0.00024		0.24	0.0296783	0.046717433	0.0219577	0.008512427
0.00021		0.21	0.0282375	0.042046333	0.020095133	0.007894233
0.00020		0.20	0.026669233	0.037895733	0.018378233	0.007321467
0.00018		0.18	0.025093133	0.034231933	0.016790867	0.00679038
0.00016		0.16	0.023473567	0.031052133	0.015399133	0.00628621
0.00015		0.15	0.021801933	0.028083267	0.014085967	0.00579503
0.00013		0.13	0.020092433	0.0251993	0.01278	0.00531558
0.00012		0.12	0.0183698	0.022330667	0.011408733	0.00484646
0.00011	Clay	0.11	0.016579033	0.019598633	0.010082643	0.004380003
0.00010		0.10	0.014562233	0.0168263	0.008733693	0.003876167
0.000093		0.093	0.01247373	0.014034233	0.007353183	0.003336753
0.000084		0.084	0.01041357	0.011479507	0.006058887	0.002808323
0.000077		0.077	0.008490757	0.00906535	0.00482829	0.002305323
0.000070		0.070	0.00673518	0.006562887	0.003540423	0.001845677
0.000064		0.064	0.005054053	0.003988937	0.002185497	0.001416117
0.000058		0.058	0.003332497	0.002038893	0.00112504	0.000988001
0.000053		0.053	0.001599467	0.000966434	0.000532326	0.000545933
0.000048		0.048	0.000557252	0.000513404	0.000280813	0.000208646
0.000044		0.044	0.000245396	0.000344702	0.000188518	7.62454E-05
0.000040		0.040	0.000194745	0.000279766	0.000152899	5.08956E-05
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	89.05	66.53	83.44	93.07
		%Silt	5.48	31.34	10.36	0.90
		%Clay	0.43	0.67	0.32	0.13
		% 1mm-2mm	5.04	1.46	5.87	5.90
		Folk and Ward Statistics				
		Mean:	1.0	3.1	1.8	1.1
		Median:	0.9	2.6	1.8	1.1
		Deviation:	1.1	2.3	1.6	0.8
		Skewness:	0.4	0.4	0.2	0.0
		Kurtosis:	1.9	1.0	1.3	1.0

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12878	R-12879	R-12880	R-12881
		Sample ID:	12583AC_3	12583AC_4	90326AB_1	90326AB_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.01188491	0.01038654	0.005728993	0
1.7		1660	0.080709367	0.0768496	0.043551953	0
1.5		1512	0.183045667	0.190418333	0.116072167	0
1.4		1377	0.343804667	0.36034	0.264831667	0.026802267
1.3		1255	0.505588333	0.517098667	0.465280667	0.290764667
1.1		1143	0.675845667	0.666269	0.71757	0.720984333
1.0		1041	0.874261	0.828816	1.012213667	1.177833333
0.95		948	1.102606667	1.013005	1.370313333	1.99623
0.86		864	1.344016667	1.206636667	1.794843333	3.18488
0.79		787	1.590953333	1.40631	2.27968	4.487
0.72		717	1.84378	1.61679	2.794526667	5.743743333
0.65		653	2.106343333	1.852103333	3.284696667	6.836663333
0.59		595	2.3751	2.12912	3.68697	7.594243333
0.54		542	2.633676667	2.45983	3.951336667	7.936626667
0.49		494	2.857713333	2.846616667	4.05492	7.872643333
0.45		450	3.03831	3.290593333	4.01624	7.45636
0.41		410	3.191043333	3.786833333	3.88524	6.801663333
0.37		373	3.3514	4.31541	3.72248	6.050183333
0.34	Sand	340	3.55469	4.8298	3.573483333	5.306286667
0.31		310	3.817186667	5.256893333	3.454563333	4.609106667
0.28		282	4.12351	5.510216667	3.351606667	3.94405
0.26		257	4.4279	5.519066667	3.233	3.281416667
0.23		234	4.669276667	5.261046667	3.07105	2.610553333
0.21		213	4.787963333	4.77557	2.857916667	1.952713333
0.19		194	4.74491	4.155466667	2.61239	1.363683333
0.18		177	4.527446667	3.510586667	2.36884	0.905908
0.16		161	4.150866667	2.9288	2.160603333	0.601118333
0.15		147	3.654213333	2.45333	2.006883333	0.427208667
0.13		134	3.091676667	2.08298	1.907366667	0.346913
0.12		122	2.52541	1.793416667	1.8477	0.322844
0.11		111	2.010883333	1.556163333	1.805606667	0.318638
0.10		101	1.5885	1.354483333	1.76063	0.307264
0.092		92	1.274753333	1.183656667	1.6989	0.285654333
0.084		84	1.065	1.046870333	1.61645	0.267473667
0.076		76	0.939844	0.947305	1.517723333	0.26026
0.070		70	0.873941333	0.884206667	1.41217	0.258948
0.063		63	0.842096333	0.851359333	1.30935	0.256998333

Size		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12878	R-12879	R-12880	R-12881
		Sample ID:	12583AC_3	12583AC_4	90326AB_1	90326AB_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Millimeters		**Microns**				
0.058		58	0.823266333	0.837756667	1.215113333	0.253292667
0.053		53	0.803231667	0.830219	1.130177	0.246771667
0.048		48	0.774938667	0.816860333	1.051335	0.233750333
0.044		44	0.737417333	0.790825333	0.974465	0.213610333
0.040		40	0.693246	0.751461333	0.896987	0.191166
0.036		36	0.646631667	0.703274667	0.819524333	0.1714
0.033		33	0.601888667	0.652898667	0.745133667	0.155447667
0.030		30	0.562019	0.605848	0.677464333	0.142223667
0.027		27	0.528430667	0.565132	0.619491333	0.130746
0.025		25	0.500300333	0.530625	0.571849	0.12045
0.023		23	0.475842667	0.500631333	0.533697	0.111315467
0.021		21	0.453061	0.472939	0.502766667	0.103611267
0.019		19	0.430462667	0.445940333	0.476383	0.097393967
0.017		17	0.407707667	0.419244667	0.452477	0.0925838
0.016		16	0.384511333	0.392702667	0.428935667	0.088800533
0.014		14	0.361292667	0.366745	0.405024	0.085269667
0.013		13	0.338084	0.341418667	0.380210333	0.081278167
0.012		12	0.315398667	0.317155333	0.355180667	0.076635133
0.011		11	0.293863667	0.294490333	0.331071	0.071653967
0.0098		9.8	0.274051	0.273965667	0.308976667	0.066803
0.0089		8.9	0.256479	0.256013	0.289882333	0.0624362
0.0081		8.1	0.240977667	0.240431	0.273753333	0.058692267
0.0074		7.4	0.227483667	0.227031	0.260541333	0.0555635
0.0068		6.8	0.215576	0.215356	0.249626	0.052976833
0.0062		6.2	0.205240333	0.205313667	0.240768667	0.050836733
0.0056		5.6	0.196219667	0.196631667	0.233541	0.049067467
0.0051		5.1	0.188451	0.189200667	0.227753	0.047617267
0.0047	Silt	4.7	0.181678333	0.182753333	0.223053	0.046438767
0.0042		4.2	0.175792333	0.177134333	0.219106333	0.045484233
0.0039		3.9	0.170617333	0.172138667	0.215556667	0.0447079
0.0035		3.5	0.165951	0.167539667	0.212006	0.044051533
0.0032		3.2	0.16157	0.163097	0.208139333	0.0434416
0.0029		2.9	0.157221333	0.158541	0.203580333	0.042792567
0.0027		2.7	0.152748	0.153697	0.198074667	0.042014567
0.0024		2.4	0.147968333	0.14839	0.191392	0.041028833
0.0022		2.2	0.142795667	0.142546	0.183497667	0.039783667
0.0020		2.0	0.137139333	0.136108667	0.174481333	0.038269467
0.0018		1.8	0.131020333	0.129123	0.164562333	0.036520833
0.0017		1.7	0.124494167	0.121680333	0.154042333	0.0346074
0.0015		1.5	0.117669967	0.113922867	0.143238467	0.0326178
0.0014		1.4	0.110656033	0.1060022	0.1324884	0.030643533
0.0013		1.3	0.103561833	0.098053267	0.1220721	0.028763867
0.0011		1.1	0.096508733	0.090216	0.1122368	0.027040867
0.0010		1.05	0.0896054	0.0826209	0.103166633	0.0255122
0.00095		0.95	0.082965567	0.075401933	0.094989833	0.024198867
0.00087		0.87	0.076662733	0.068644333	0.0878014	0.023100733
0.00079		0.79	0.0707446	0.062387833	0.081572	0.022193233
0.00072		0.72	0.065204567	0.056613933	0.076209133	0.0214434
0.00066		0.66	0.060035533	0.051301533	0.0715514	0.0208199
0.00060		0.60	0.055231733	0.046443733	0.067522233	0.0202909
0.00054		0.54	0.050802033	0.042042833	0.064069433	0.019828033
0.00050		0.50	0.046717467	0.038059167	0.061113633	0.019406167
0.00045		0.45	0.042941133	0.0344266	0.058517733	0.019002533
0.00041		0.41	0.039443667	0.031123067	0.056138133	0.0185999

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12878	R-12879	R-12880	R-12881
		Sample ID:	12583AC_3	12583AC_4	90326AB_1	90326AB_2
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.036229367	0.0281517	0.053956133	0.0181813
0.00034		0.34	0.033277267	0.0254895	0.051926433	0.017737267
0.00031		0.31	0.030505	0.023022233	0.049983667	0.017256767
0.00028		0.28	0.027828033	0.020694867	0.047906267	0.016712
0.00026		0.26	0.025222033	0.018489667	0.045662867	0.016072233
0.00024		0.24	0.0227635	0.0164669	0.043333267	0.015351
0.00021		0.21	0.020514967	0.014644533	0.040921467	0.014593533
0.00020		0.20	0.0185113	0.013054767	0.0384722	0.01382762
0.00018		0.18	0.016736433	0.011685833	0.035981867	0.013069973
0.00016		0.16	0.015179567	0.010489903	0.0338206	0.012302453
0.00015		0.15	0.013729233	0.009385587	0.031536787	0.011510387
0.00013		0.13	0.012327	0.00834237	0.029088873	0.0106958
0.00012		0.12	0.0109385	0.007358243	0.026269013	0.00986298
0.00011	Clay	0.11	0.009605607	0.006426247	0.023555117	0.008995537
0.00010		0.10	0.00825741	0.005490933	0.02060105	0.008005663
0.000093		0.093	0.00689784	0.00455733	0.01747284	0.00693662
0.000084		0.084	0.00564762	0.00370866	0.014503093	0.005862857
0.000077		0.077	0.00447284	0.002926293	0.011558817	0.004826057
0.000070		0.070	0.003260787	0.002132737	0.008355493	0.003866947
0.000064		0.064	0.002010647	0.001327963	0.004948687	0.002949187
0.000058		0.058	0.001038763	0.0006941	0.002464862	0.0020176
0.000053		0.053	0.00049313	0.000331363	0.001160603	0.001058755
0.000048		0.048	0.000258309	0.000170651	0.000642916	0.000391454
0.000044		0.044	0.000171058	0.000110081	0.000453141	0.000153678
0.000040		0.040	0.000137286	8.63457E-05	0.000381313	0.000110053

% by volume stats	**Total (Sum)**	100	100	100	100
LPSA	**%Sand (1mm and less)**	82.11	81.82	78.41	93.59
	%Silt	14.89	15.29	18.33	3.96
	%Clay	0.33	0.24	0.63	0.23
	% 1mm-2mm	2.68	2.65	2.63	2.22
	Folk and Ward Statistics				
	Mean:	2.3	2.3	2.3	1.1
	Median:	2.1	2.0	1.9	1.1
	Deviation:	1.7	1.7	2.0	0.9
	Skewness:	0.3	0.4	0.4	0.3
	Kurtosis:	1.5	1.6	1.2	1.5

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12882	R-12883	R-12884	R-12885
		Sample ID:	90326AB_3	90348AB_1	90348AB_2	13778AF_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0.034048933	0.011839237	0.048915433	0.019831633
1.7		1660	0.234355	0.100488767	0.346645333	0.154859803
1.5		1512	0.305439667	0.195639667	0.463584667	0.238006333
1.4		1377	0.362755667	0.356375	0.704167	0.397842333
1.3		1255	0.635292667	0.735022	1.82853	1.071957667
1.1		1143	0.898886	1.104651	3.366476667	2.257596667
1.0		1041	1.145806667	1.401843333	4.88765	3.662113333
0.95		948	1.520693333	1.73278	6.63625	5.331936667
0.86		864	1.984826667	1.90032	7.902103333	7.06592
0.79		787	2.438426667	1.86927	8.20049	8.536596667
0.72		717	2.90259	1.88343	7.917536667	9.517973333
0.65		653	3.421716667	2.01637	7.208636667	9.819046667
0.59		595	3.98045	2.17607	6.062976667	9.37774
0.54		542	4.57477	2.26539	4.836343333	8.342746667
0.49		494	5.200773333	2.15342	3.80264	6.959676667
0.45		450	5.82413	1.738053333	2.856773333	5.46047
0.41		410	6.39484	1.167825667	1.931506667	4.04966
0.37		373	6.854816667	0.829358	1.211576667	2.883173333
0.34	Sand	340	7.1324	1.014756333	0.858489333	2.023516667
0.31		310	7.146376667	1.94975	0.847838667	1.443016667
0.28		282	6.832906667	3.630146667	1.068956667	1.06488
0.26		257	6.185106667	5.673946667	1.39379	0.802753333
0.23		234	5.27171	7.56886	1.731906667	0.593798333
0.21		213	4.22369	8.849573333	2.033243333	0.419437
0.19		194	3.195303333	9.228473333	2.257183333	0.296809333
0.18		177	2.31565	8.673833333	2.372686667	0.239097667
0.16		161	1.647563333	7.3937	2.325376667	0.229366333
0.15		147	1.18214	5.737916667	2.052046667	0.234990333
0.13		134	0.870772	4.081116667	1.599436667	0.238428
0.12		122	0.659680333	2.70861	1.135676667	0.245082667
0.11		111	0.506741	1.73719	0.78492	0.257178
0.10		101	0.386372667	1.12955	0.54662	0.262256333
0.092		92	0.289437667	0.775038667	0.381170667	0.253920667
0.084		84	0.216725667	0.565358667	0.27693	0.242837333
0.076		76	0.168516333	0.429121667	0.222459	0.237295333
0.070		70	0.139950667	0.332189	0.191117667	0.233394667
0.063		63	0.124318667	0.26429	0.172831	0.228112667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12882	R-12883	R-12884	R-12885
		Sample ID:	90326AB_3	90348AB_1	90348AB_2	13778AF_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.116592667	0.222928	0.178855	0.225120667
0.053		53	0.112847	0.201360667	0.206046333	0.224584
0.048		48	0.109408	0.188178667	0.226347333	0.220263
0.044		44	0.104194	0.175446333	0.224696667	0.209149
0.040		40	0.097197433	0.161295	0.216931333	0.195821
0.036		36	0.0892971	0.145986333	0.216901	0.184960333
0.033		33	0.081408633	0.131671	0.222136	0.175935667
0.030		30	0.074414033	0.121190667	0.227061	0.166385333
0.027		27	0.069041033	0.115213967	0.230504333	0.156171
0.025		25	0.0654135	0.1126421	0.232357333	0.146671333
0.023		23	0.063171967	0.1112558	0.231572	0.139250667
0.021		21	0.061877833	0.109577567	0.227857	0.134336
0.019		19	0.0610655	0.107604233	0.222752333	0.131391667
0.017		17	0.060368333	0.105498633	0.219114	0.129832
0.016		16	0.0595165	0.103611933	0.218527667	0.128849333
0.014		14	0.058225767	0.101722433	0.218129333	0.126934
0.013		13	0.056332467	0.099353233	0.213347	0.122746
0.012		12	0.0538992	0.096361933	0.202673333	0.116121733
0.011		11	0.051165967	0.092762633	0.188120333	0.108036933
0.0098		9.8	0.0484123	0.08887	0.173051667	0.0998204
0.0089		8.9	0.045843133	0.0849053	0.15971	0.0924283
0.0081		8.1	0.0435632	0.081043533	0.148752667	0.086261067
0.0074		7.4	0.041602567	0.0773811	0.139992333	0.081356667
0.0068		6.8	0.0399541	0.073960433	0.132948333	0.077573367
0.0062		6.2	0.0385904	0.070815467	0.127139	0.0746806
0.0056		5.6	0.0374883	0.067949467	0.122165667	0.072446333
0.0051		5.1	0.0366396	0.0653953	0.117773233	0.070685333
0.0047	Silt	4.7	0.0360359	0.0631585	0.113789833	0.069240533
0.0042		4.2	0.0356686	0.061253267	0.110148333	0.067999133
0.0039		3.9	0.0355283	0.059673967	0.106892167	0.0669064
0.0035		3.5	0.035598733	0.0584053	0.104085633	0.0659471
0.0032		3.2	0.035851867	0.0574071	0.101742133	0.065120533
0.0029		2.9	0.036242867	0.056611967	0.099751167	0.064402767
0.0027		2.7	0.036707967	0.055934267	0.0978499	0.0637186
0.0024		2.4	0.0371684	0.055270933	0.0956661	0.062939233
0.0022		2.2	0.037539167	0.054527733	0.0928325	0.061918433
0.0020		2.0	0.037740967	0.053627267	0.089122433	0.060541233
0.0018		1.8	0.037711633	0.052525833	0.0845222	0.058758033
0.0017		1.7	0.037413233	0.051211167	0.079221967	0.056594333
0.0015		1.5	0.036833133	0.049698733	0.073543867	0.054131433
0.0014		1.4	0.035982933	0.0480237	0.067850367	0.051483467
0.0013		1.3	0.034891667	0.046227633	0.062463933	0.0487665
0.0011		1.1	0.033600767	0.044356867	0.057624133	0.046083933
0.0010		1.05	0.0321576	0.042451533	0.053464867	0.0435121
0.00095		0.95	0.0306104	0.040547367	0.050033233	0.0411038
0.00087		0.87	0.0290062	0.038673167	0.047294	0.0388852
0.00079		0.79	0.027387167	0.036846433	0.045124733	0.0368507
0.00072		0.72	0.025786067	0.035078533	0.043384667	0.034982667
0.00066		0.66	0.024225067	0.033373133	0.041949967	0.0332584
0.00060		0.60	0.02272	0.0317332	0.040705033	0.031655367
0.00054		0.54	0.0212795	0.0301559	0.039560967	0.0301514
0.00050		0.50	0.019909433	0.0286409	0.0384437	0.028728167
0.00045		0.45	0.018610533	0.0271826	0.0373004	0.027368267
0.00041		0.41	0.0173834	0.0257798	0.036093667	0.026060233

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12882	R-12883	R-12884	R-12885
		Sample ID:	90326AB_3	90348AB_1	90348AB_2	13778AF_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.016224733	0.024426133	0.034800033	0.024791433
0.00034		0.34	0.015132567	0.023120467	0.0334107	0.0235563
0.00031		0.31	0.014101767	0.021856367	0.031924867	0.022346367
0.00028		0.28	0.013088667	0.020574867	0.0302649	0.021095367
0.00026		0.26	0.012059533	0.019239533	0.028345833	0.019754
0.00024		0.24	0.011049833	0.017882533	0.0262839	0.018367667
0.00021		0.21	0.010117167	0.016592867	0.0242407	0.0170391
0.00020		0.20	0.009281053	0.015406067	0.0223207	0.0158132
0.00018		0.18	0.008534907	0.014313667	0.0205722	0.014691933
0.00016		0.16	0.007843457	0.0132776	0.018913167	0.013626867
0.00015		0.15	0.00718097	0.012261167	0.0172987	0.012579367
0.00013		0.13	0.006543393	0.0112608	0.015728467	0.01154531
0.00012		0.12	0.005928917	0.01027639	0.014209833	0.010527213
0.00011	Clay	0.11	0.005320827	0.00928524	0.012689967	0.009494937
0.00010		0.10	0.00466169	0.008182053	0.011041297	0.008334267
0.000093		0.093	0.003982113	0.007027217	0.009374743	0.007139027
0.000084		0.084	0.003324067	0.005895627	0.00777011	0.005968463
0.000077		0.077	0.002709523	0.00482256	0.006300277	0.004867137
0.000070		0.070	0.00215449	0.003845073	0.00497838	0.003866527
0.000064		0.064	0.00163132	0.002916323	0.00372815	0.002908157
0.000058		0.058	0.001105297	0.001976447	0.00246025	0.001928677
0.000053		0.053	0.000569807	0.001016328	0.00118871	0.000938109
0.000048		0.048	0.000208319	0.000370852	0.000416155	0.00032963
0.000044		0.044	8.34407E-05	0.000149635	0.000181158	0.000143356
0.000040		0.040	6.0857E-05	0.000109963	0.000142261	0.000112572
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	93.59	91.48	80.82	86.89
		%Silt	2.63	4.35	7.16	5.03
		%Clay	0.16	0.27	0.38	0.27
		% 1mm-2mm	3.62	3.91	11.65	7.80
		Folk and Ward Statistics				
		Mean:	1.4	1.9	1.1	0.7
		Median:	1.4	2.2	0.6	0.6
		Deviation:	0.8	1.1	1.5	1.0
		Skewness:	0.0	-0.3	0.6	0.4
		Kurtosis:	1.1	1.5	1.3	2.3

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12886	R-12887	R-12888	R-12889
		Sample ID:	13778AF_2	90319AA_1	90319AA_2	06988AC_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0	0.003807257	0.022167567
1.7		1660	0.0016856	0	0.036337167	0.138937667
1.5		1512	0.023775367	0	0.1361248	0.132005333
1.4		1377	0.132501	0	0.371470667	0.156090067
1.3		1255	0.379432667	0	0.715988333	0.472521
1.1		1143	0.760833667	0	1.127530333	0.697897667
1.0		1041	1.229486667	0	1.549736667	0.745557
0.95		948	1.786843333	0	1.983123333	1.023607333
0.86		864	2.43133	0	2.418336667	1.417096667
0.79		787	3.1367	0.00071173	2.866133333	1.74983
0.72		717	3.866653333	0.027701447	3.329216667	2.17692
0.65		653	4.573376667	0.182117167	3.784623333	2.760176667
0.59		595	5.199676667	0.473631333	4.183613333	3.373873333
0.54		542	5.689743333	0.811003667	4.463416667	3.947806667
0.49		494	5.990896667	1.199253333	4.569043333	4.42276
0.45		450	6.067966667	1.756456667	4.48796	4.693623333
0.41		410	5.914003333	2.651803333	4.25629	4.759093333
0.37		373	5.554706667	4.066466667	3.94314	4.771586667
0.34	Sand	340	5.040803333	6.036446667	3.618176667	4.90807
0.31		310	4.434113333	8.270506667	3.326933333	5.237176667
0.28		282	3.794076667	10.19786667	3.081356667	5.674593333
0.26		257	3.16905	11.20016667	2.867566667	6.037126667
0.23		234	2.595423333	10.89133333	2.66387	6.138443333
0.21		213	2.098113333	9.32069	2.455456667	5.87114
0.19		194	1.692963333	6.980963333	2.24317	5.260553333
0.18		177	1.385926667	4.583833333	2.038146667	4.44756
0.16		161	1.172732	2.70789	1.852323333	3.590346667
0.15		147	1.040585667	1.57065	1.69135	2.788636667
0.13		134	0.970785333	1.053468667	1.552183333	2.094476667
0.12		122	0.943132	0.903904	1.427883333	1.54069
0.11		111	0.937903667	0.902418667	1.3106	1.134616667
0.10		101	0.938936	0.911089667	1.196293333	0.852868
0.092		92	0.934848	0.885353333	1.085262	0.657445333
0.084		84	0.920635	0.84194	0.982717667	0.515001
0.076		76	0.896472333	0.802743333	0.896541667	0.406929333
0.070		70	0.865697333	0.768936333	0.834087667	0.326901
0.063		63	0.831641333	0.732788667	0.798251	0.271726667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12886	R-12887	R-12888	R-12889
		Sample ID:	13778AF_2	90319AA_1	90319AA_2	06988AC_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.795753333	0.691688667	0.785390667	0.235407333
0.053		53	0.757208333	0.644355333	0.785537333	0.207628667
0.048		48	0.713974667	0.587867333	0.785574667	0.179592
0.044		44	0.664743667	0.524174	0.774312	0.151481333
0.040		40	0.610137	0.460975	0.746627667	0.128986
0.036		36	0.553131	0.40448	0.705306667	0.1146469
0.033		33	0.497926	0.355875333	0.6586	0.107148
0.030		30	0.448312333	0.314722	0.61583	0.1042069
0.027		27	0.406679333	0.280876667	0.583868667	0.103716167
0.025		25	0.373223333	0.253363	0.564538333	0.1041159
0.023		23	0.346734333	0.231232667	0.555744	0.104572033
0.021		21	0.325051333	0.213689667	0.552708	0.105195667
0.019		19	0.306068	0.199771667	0.550440333	0.106445
0.017		17	0.288395333	0.188853	0.545735333	0.1084
0.016		16	0.271061333	0.179981	0.536694667	0.110661
0.014		14	0.253938667	0.171826667	0.523193333	0.112071333
0.013		13	0.23699	0.163245667	0.505282333	0.111472
0.012		12	0.220670333	0.153949	0.483823667	0.108585
0.011		11	0.205514	0.144549333	0.460291	0.103928
0.0098		9.8	0.192023667	0.135818333	0.436484667	0.0984123
0.0089		8.9	0.180545	0.1283013	0.414254667	0.092781433
0.0081		8.1	0.170937333	0.1221186	0.394290667	0.0874772
0.0074		7.4	0.16304	0.117148033	0.376736333	0.082704867
0.0068		6.8	0.156491	0.113166233	0.361059667	0.078532
0.0062		6.2	0.151167	0.109916133	0.347038333	0.074966633
0.0056		5.6	0.146849667	0.1072027	0.334438333	0.0720057
0.0051		5.1	0.143461	0.1048797	0.323158667	0.069684267
0.0047	Silt	4.7	0.140815333	0.102833833	0.312901667	0.068026467
0.0042		4.2	0.138775	0.1009663	0.30329	0.0670513
0.0039		3.9	0.137162	0.099205333	0.293979	0.0667602
0.0035		3.5	0.135791767	0.0974715	0.284650333	0.067115433
0.0032		3.2	0.134479967	0.095670533	0.275067667	0.0680185
0.0029		2.9	0.133008367	0.093685867	0.264918	0.069295033
0.0027		2.7	0.131204267	0.091386867	0.253955	0.070707733
0.0024		2.4	0.128888733	0.088655067	0.242003667	0.071979567
0.0022		2.2	0.1259706	0.085410367	0.229083667	0.072844067
0.0020		2.0	0.122399933	0.081642733	0.215369	0.073087133
0.0018		1.8	0.118208333	0.0774175	0.201134333	0.072580033
0.0017		1.7	0.113463633	0.0728643	0.186719667	0.071286467
0.0015		1.5	0.108274867	0.0681521	0.172449667	0.069250533
0.0014		1.4	0.102769767	0.063459167	0.158639667	0.0665744
0.0013		1.3	0.097078867	0.058948	0.145531667	0.063394
0.0011		1.1	0.091329033	0.054752233	0.133301	0.059856
0.0010		1.05	0.085627967	0.050963167	0.12207	0.0561026
0.00095		0.95	0.080072167	0.047640933	0.111894967	0.0522636
0.00087		0.87	0.074745267	0.0448039	0.1028119	0.048449033
0.00079		0.79	0.069700933	0.042413567	0.094740033	0.0447416
0.00072		0.72	0.064951833	0.040410767	0.087551933	0.041194033
0.00066		0.66	0.0604854	0.038734933	0.081084067	0.037839633
0.00060		0.60	0.056293733	0.0373197	0.075257033	0.034694367
0.00054		0.54	0.052388567	0.036103733	0.07004	0.031764867
0.00050		0.50	0.048758867	0.035028633	0.065354467	0.029048967
0.00045		0.45	0.045383667	0.0340413	0.061096733	0.0265402
0.00041		0.41	0.0422121	0.033097467	0.057137733	0.024228933

			Average of 3 Runs	Average	Average	Average	Average
			Repository ID:	R-12886	R-12887	R-12888	R-12889
			Sample ID:	13778AF_2	90319AA_1	90319AA_2	06988AC_1
			Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size							
Millimeters			**Microns**				
0.00038			0.38	0.0392497	0.032156667	0.0534996	0.022103233
0.00034			0.34	0.0364833	0.0311917	0.0501381	0.0201512
0.00031			0.31	0.033867433	0.030177333	0.046980733	0.0183592
0.00028			0.28	0.0312807	0.029045667	0.043813633	0.016657867
0.00026			0.26	0.0286956	0.0277231	0.040624533	0.014983767
0.00024			0.24	0.026200567	0.026253367	0.0375166	0.013407067
0.00021			0.21	0.0238727	0.0247406	0.034562467	0.011996667
0.00020			0.20	0.0217535	0.023249867	0.0318069	0.0107699
0.00018			0.18	0.019825467	0.0218215	0.0292331	0.009714473
0.00016			0.16	0.0181613	0.020406033	0.027009467	0.00876649
0.00015			0.15	0.016571033	0.0189723	0.024822433	0.00788916
0.00013			0.13	0.014993967	0.017521367	0.022607467	0.00707402
0.00012			0.12	0.013352	0.0160631	0.0202352	0.006314857
0.00011	Clay		0.11	0.011786437	0.01455675	0.0179691	0.00558679
0.00010			0.10	0.010172267	0.012847917	0.015593193	0.00483628
0.000093			0.093	0.008528067	0.01105612	0.013137133	0.004083643
0.000084			0.084	0.007007513	0.009277963	0.010838173	0.00337167
0.000077			0.077	0.005548837	0.007592287	0.0086175	0.002726937
0.000070			0.070	0.004014387	0.00604741	0.006257693	0.002156027
0.000064			0.064	0.00241673	0.00456554	0.003775417	0.00162811
0.000058			0.058	0.00122314	0.00305158	0.00191124	0.001106367
0.000053			0.053	0.000577835	0.00151344	0.000902693	0.000578748
0.000048			0.048	0.000311798	0.000539132	0.000487652	0.000213716
0.000044			0.044	0.000213592	0.000227972	0.000334767	8.315E-05
0.000040			0.040	0.000176141	0.000174775	0.000276352	5.88816E-05
% by volume stats			**Total (Sum)**	100	100	100	100
LPSA			**%Sand (1mm and less)**	84.88	90.73	76.21	92.85
			%Silt	12.22	8.88	19.31	4.59
			%Clay	0.38	0.39	0.54	0.19
			% 1mm-2mm	2.53	0.00	3.94	2.37
			Folk and Ward Statistics				
			Mean:	1.8	2.2	2.3	1.7
			Median:	1.4	2.0	1.6	1.7
			Deviation:	1.6	1.0	2.2	1.0
			Skewness:	0.5	0.5	0.5	0.1
			Kurtosis:	1.6	2.3	1.3	1.2

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12890	R-12891	R-12892	R-12893
		Sample ID:	06988AC_2	10018AB_1	11273AA_1	13118AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
2.0		2000				
1.8		1822	0	0.004419255	0.0069966	0.000399643
1.7		1660	0	0.041685967	0.045776419	0.006033897
1.5		1512	0	0.150027667	0.058589087	0.0346246
1.4		1377	0	0.385882667	0.093588767	0.107462667
1.3		1255	0	0.729347667	0.196879	0.215042
1.1		1143	0	1.157596667	0.288815	0.349202
1.0		1041	0.00556497	1.63977	0.365284667	0.507721667
0.95		948	0.116648733	2.149546667	0.496787333	0.717092333
0.86		864	0.463019667	2.642246667	0.688641333	0.985998333
0.79		787	0.605139667	3.098233333	0.933589	1.323826667
0.72		717	0.611506	3.50487	1.266393333	1.739536667
0.65		653	0.914854667	3.850866667	1.709653333	2.23165
0.59		595	1.476456667	4.11809	2.255946667	2.788926667
0.54		542	2.190896667	4.281446667	2.898606667	3.387573333
0.49		494	3.137946667	4.313223333	3.628613333	3.994793333
0.45		450	4.246316667	4.208653333	4.424016667	4.58122
0.41		410	5.403636667	3.99419	5.254086667	5.125043333
0.37		373	6.590743333	3.722503333	6.075533333	5.605783333
0.34	Sand	340	7.731406667	3.45008	6.817813333	5.992186667
0.31		310	8.615313333	3.216353333	7.380306667	6.235946667
0.28		282	8.963076667	3.03067	7.652446667	6.276363333
0.26		257	8.582863333	2.87447	7.550826667	6.059313333
0.23		234	7.501753333	2.715583333	7.05529	5.566126667
0.21		213	5.971886667	2.525393333	6.221983333	4.832596667
0.19		194	4.377853333	2.29485	5.172636667	3.95251
0.18		177	3.05027	2.03611	4.05892	3.05251
0.16		161	2.095003333	1.774053333	3.01917	2.252603333
0.15		147	1.439646667	1.533576667	2.146593333	1.630253333
0.13		134	1.001660667	1.32936	1.481086667	1.204266667
0.12		122	0.744985667	1.165603333	1.020901667	0.949395667
0.11		111	0.624261	1.038319667	0.734039	0.819505667
0.10		101	0.566165667	0.941763333	0.574212333	0.768736
0.092		92	0.515688333	0.870908667	0.495531667	0.757551667
0.084		84	0.468215667	0.823249667	0.463936333	0.756998667
0.076		76	0.43441	0.79761	0.455285667	0.749585667
0.070		70	0.409954	0.792757333	0.452045667	0.729753333
0.063		63	0.393551333	0.805450667	0.443281	0.700129333

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12890	R-12891	R-12892	R-12893
		Sample ID:	06988AC_2	10018AB_1	11273AA_1	13118AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.395125	0.829491	0.425281333	0.666300667
0.053		53	0.411265333	0.856050333	0.398857667	0.632439
0.048		48	0.418613	0.87589	0.366304333	0.599257667
0.044		44	0.403322667	0.882625333	0.330533	0.565261
0.040		40	0.376186667	0.874672	0.294507	0.528937
0.036		36	0.351040333	0.855545	0.260730333	0.490755
0.033		33	0.330221	0.831400667	0.230977667	0.453205
0.030		30	0.311836	0.807967667	0.20613	0.419297
0.027		27	0.295739333	0.788549	0.186179667	0.391162333
0.025		25	0.281923667	0.772839333	0.170304	0.369084667
0.023		23	0.270151667	0.758463333	0.157471667	0.352028
0.021		21	0.260278667	0.742124667	0.146778333	0.338119333
0.019		19	0.252178	0.721304	0.137569667	0.325567
0.017		17	0.246374	0.695133667	0.129432	0.313214333
0.016		16	0.242636667	0.663413333	0.122041667	0.300405
0.014		14	0.238260667	0.626885667	0.115186067	0.287114333
0.013		13	0.230027333	0.586207667	0.108680033	0.273373667
0.012		12	0.217140667	0.542832667	0.1025333	0.259598667
0.011		11	0.20143	0.498918	0.0968029	0.246255667
0.0098		9.8	0.185582	0.456857667	0.0915783	0.233879
0.0089		8.9	0.171464333	0.418772333	0.086882	0.222837
0.0081		8.1	0.159745	0.385408	0.082676233	0.213133667
0.0074		7.4	0.15038	0.356740667	0.078917033	0.204651667
0.0068		6.8	0.143020667	0.332089	0.0755372	0.197121333
0.0062		6.2	0.137189667	0.311049667	0.072508867	0.190459
0.0056		5.6	0.132430333	0.293295667	0.0697663	0.184507667
0.0051		5.1	0.128393667	0.278679	0.067284533	0.179194333
0.0047	Silt	4.7	0.124807333	0.266893667	0.065017033	0.174350333
0.0042		4.2	0.1215137	0.257510333	0.0629734	0.169891667
0.0039		3.9	0.1184992	0.250049667	0.061120733	0.165687667
0.0035		3.5	0.115831333	0.244006667	0.0594348	0.161631333
0.0032		3.2	0.113597967	0.238948667	0.057871633	0.157594
0.0029		2.9	0.111820667	0.234344667	0.056421433	0.153461667
0.0027		2.7	0.110381633	0.229671333	0.055061633	0.149140667
0.0024		2.4	0.109027967	0.224391333	0.053760033	0.144554667
0.0022		2.2	0.107483933	0.218131	0.0524747	0.139673333
0.0020		2.0	0.105586433	0.210718	0.0511734	0.134485967
0.0018		1.8	0.1033707	0.202161333	0.049848533	0.129042067
0.0017		1.7	0.101051667	0.192609333	0.048487733	0.1234017
0.0015		1.5	0.0989402	0.182251	0.047089267	0.117655433
0.0014		1.4	0.097337167	0.171349333	0.0456361	0.1118721
0.0013		1.3	0.0964528	0.160167	0.044147533	0.106144767
0.0011		1.1	0.096365167	0.148982667	0.042634433	0.100537867
0.0010		1.05	0.097016167	0.13802	0.0411208	0.0951244
0.00095		0.95	0.098242267	0.127462333	0.039600367	0.089935967
0.00087		0.87	0.0997977	0.117453133	0.0380847	0.085017967
0.00079		0.79	0.1014058	0.108072367	0.036582067	0.080378067
0.00072		0.72	0.102810867	0.099345667	0.035111133	0.0760119
0.00066		0.66	0.1038175	0.091231033	0.0336794	0.071895967
0.00060		0.60	0.104267367	0.083713667	0.032265467	0.067993
0.00054		0.54	0.104059367	0.076782533	0.030870533	0.064304833
0.00050		0.50	0.1031254	0.0704341	0.029497567	0.060810567
0.00045		0.45	0.101438767	0.064587233	0.028193067	0.0575449
0.00041		0.41	0.099000367	0.059191167	0.026899567	0.054398333

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12890	R-12891	R-12892	R-12893
		Sample ID:	06988AC_2	10018AB_1	11273AA_1	13118AA_1
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.095841433	0.0542208	0.0256162	0.051381667
0.00034		0.34	0.092022233	0.049686333	0.0243253	0.048453067
0.00031		0.31	0.087624633	0.0454382	0.023098	0.045664233
0.00028		0.28	0.082441	0.041345467	0.0218264	0.042808733
0.00026		0.26	0.076222067	0.037340533	0.020492633	0.0398612
0.00024		0.24	0.069469467	0.0335735	0.019119633	0.0369131
0.00021		0.21	0.062792267	0.0301379	0.0177997	0.0340749
0.00020		0.20	0.056629233	0.0270993	0.0165298	0.0314002
0.00018		0.18	0.051168633	0.0244344	0.0152964	0.028857367
0.00016		0.16	0.046123533	0.0221243	0.014201033	0.026706533
0.00015		0.15	0.041344933	0.019971067	0.0131403	0.024584967
0.00013		0.13	0.0368403	0.017887733	0.012055267	0.0224261
0.00012		0.12	0.0326279	0.0158315	0.010866527	0.020038967
0.00011	Clay	0.11	0.028534933	0.013877033	0.009706227	0.017783867
0.00010		0.10	0.024316033	0.0118955	0.008495323	0.015418167
0.000093		0.093	0.020220767	0.009905673	0.007231063	0.0129834
0.000084		0.084	0.0164442	0.008092483	0.006014423	0.010707517
0.000077		0.077	0.013148	0.0063807	0.004846457	0.008490367
0.000070		0.070	0.010257923	0.004610037	0.003647767	0.00612062
0.000064		0.064	0.007592113	0.00279559	0.00239621	0.0036265
0.000058		0.058	0.004919417	0.001427517	0.00136253	0.00180799
0.000053		0.053	0.002296073	0.000676755	0.000672434	0.000850929
0.000048		0.048	0.000786305	0.000359809	0.000312092	0.000469855
0.000044		0.044	0.000354298	0.000241572	0.000182069	0.000330225
0.000040		0.040	0.00028679	0.00019613	0.000145054	0.0002775
% by volume stats		**Total (Sum)**	100	100	100	100
LPSA		**%Sand (1mm and less)**	89.25	73.90	92.83	85.77
		%Silt	9.79	21.51	5.84	12.48
		%Clay	0.96	0.48	0.28	0.53
		% 1mm-2mm	0.01	4.11	1.06	1.22
		Folk and Ward Statistics				
		Mean:	1.9	2.4	1.8	2.1
		Median:	1.8	1.7	1.8	1.8
		Deviation:	1.3	2.2	1.0	1.6
		Skewness:	0.4	0.5	0.2	0.4
		Kurtosis:	2.7	1.1	1.6	2.0

Size Millimeters		Microns	Average	Average	Average	Average
		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12894	R-12895	R-12896	R-12897
		Sample ID:	13118AA_2	90466AC_1	90466AC_2	90466AC_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
2.0		2000				
1.8		1822	0.035661633	0.037066367	0.011397193	0
1.7		1660	0.303468667	0.239636667	0.084074333	0
1.5		1512	0.569957	0.246695667	0.208943667	0
1.4		1377	0.863841333	0.312295333	0.380237333	0.0594031
1.3		1255	1.559736667	0.956344333	0.508183	0.650039667
1.1		1143	2.504556667	1.950153333	0.595533333	1.51509
1.0		1041	3.5546	2.892456667	0.685355	2.071923333
0.95		948	4.683696667	3.99535	0.820331	2.911566667
0.86		864	5.779323333	5.15021	1.025533667	4.112806667
0.79		787	6.712126667	6.134666667	1.316946667	5.2898
0.72		717	7.40666	6.881433333	1.68627	6.24881
0.65		653	7.836893333	7.36113	2.095146667	6.97486
0.59		595	7.996826667	7.54995	2.486736667	7.445293333
0.54		542	7.890603333	7.478786667	2.798653333	7.716256667
0.49		494	7.503186667	7.167826667	2.98578	7.759413333
0.45		450	6.81024	6.59653	3.04594	7.391603333
0.41		410	5.845166667	5.792396667	3.014063333	6.534636667
0.37		373	4.721953333	4.87331	2.942083333	5.3644
0.34	Sand	340	3.592306667	3.982336667	2.87113	4.167406667
0.31		310	2.589286667	3.21481	2.816026667	3.158813333
0.28		282	1.789843333	2.590003333	2.765286667	2.410056667
0.26		257	1.21019	2.073443333	2.69617	1.877866667
0.23		234	0.822038	1.624653333	2.59442	1.472146667
0.21		213	0.576766667	1.22861	2.463823333	1.1286
0.19		194	0.431405333	0.900805	2.324273333	0.855370667
0.18		177	0.356264333	0.664063	2.197413333	0.687483333
0.16		161	0.323771	0.511864	2.096356667	0.606489333
0.15		147	0.305831667	0.410132333	2.022986667	0.549991667
0.13		134	0.286827333	0.334243333	1.97071	0.488224667
0.12		122	0.268198333	0.283349333	1.93126	0.446092
0.11		111	0.254227333	0.258282667	1.895513333	0.435316333
0.10		101	0.24215	0.247248	1.856026667	0.425065
0.092		92	0.228183667	0.23734	1.80713	0.395136333
0.084		84	0.213712667	0.226030333	1.748283333	0.363692667
0.076		76	0.201320333	0.215074333	1.685153333	0.341258333
0.070		70	0.191052333	0.204920667	1.6271	0.314734
0.063		63	0.182464	0.198578667	1.581473333	0.284421667

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12894	R-12895	R-12896	R-12897
		Sample ID:	13118AA_2	90466AC_1	90466AC_2	90466AC_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.058		58	0.175722667	0.199931333	1.54891	0.270551333
0.053		53	0.169670667	0.205935333	1.52234	0.276990333
0.048		48	0.16183	0.207473667	1.49075	0.281069667
0.044		44	0.151189333	0.200005333	1.444993333	0.264484333
0.040		40	0.139322	0.187898	1.382013333	0.236314
0.036		36	0.128263333	0.176782333	1.306463333	0.21297
0.033		33	0.118657667	0.167707333	1.22762	0.198121
0.030		30	0.1102925	0.159336	1.154902	0.188140333
0.027		27	0.103040833	0.151056667	1.094718	0.180572667
0.025		25	0.096924233	0.143227333	1.047890667	0.174531333
0.023		23	0.092011033	0.136618	1.011682	0.169894
0.021		21	0.088288567	0.131756333	0.980882667	0.166690333
0.019		19	0.0855415	0.128566667	0.950378333	0.165142667
0.017		17	0.083476467	0.126709333	0.916965	0.166548667
0.016		16	0.081740567	0.125522667	0.878080667	0.171253667
0.014		14	0.079870233	0.123793667	0.833206667	0.176254333
0.013		13	0.077501	0.120441667	0.782158667	0.177455333
0.012		12	0.074552433	0.115270067	0.726601667	0.173415
0.011		11	0.0711874	0.1089071	0.669622	0.165833
0.0098		9.8	0.0676558	0.1022664	0.614681333	0.157508
0.0089		8.9	0.064154667	0.0960357	0.565054333	0.150327333
0.0081		8.1	0.0607852	0.090530567	0.521840333	0.144839
0.0074		7.4	0.057577233	0.0857978	0.485193	0.140863667
0.0068		6.8	0.054526567	0.0817457	0.454116667	0.137979333
0.0062		6.2	0.051614533	0.078225167	0.428046667	0.135728333
0.0056		5.6	0.048825	0.0750963	0.406475	0.133716
0.0051		5.1	0.046152	0.072256567	0.389186667	0.131661
0.0047	Silt	4.7	0.043593333	0.069622	0.375742667	0.129391
0.0042		4.2	0.0411515	0.0671337	0.365463667	0.12687
0.0039		3.9	0.038833033	0.064758967	0.357631333	0.124203333
0.0035		3.5	0.036643867	0.0624761	0.351467333	0.1215577
0.0032		3.2	0.034585667	0.060259033	0.346367333	0.119054333
0.0029		2.9	0.032653567	0.058064133	0.341560667	0.1166778
0.0027		2.7	0.030836067	0.055827567	0.336281333	0.114232033
0.0024		2.4	0.0291184	0.053472867	0.329721667	0.1113859
0.0022		2.2	0.0274879	0.0509357	0.321340667	0.1078039
0.0020		2.0	0.0259394	0.048184733	0.310940667	0.1032821
0.0018		1.8	0.024477933	0.045239833	0.29861	0.097826867
0.0017		1.7	0.0231164	0.042164967	0.284667	0.091645033
0.0015		1.5	0.021869567	0.039059433	0.269474667	0.085072233
0.0014		1.4	0.020751133	0.036034733	0.253503333	0.078482333
0.0013		1.3	0.019767767	0.033196933	0.237216667	0.0722071
0.0011		1.1	0.018919567	0.030637133	0.221072	0.066496067
0.0010		1.05	0.018198467	0.0284167	0.205433333	0.061491033
0.00095		0.95	0.017591567	0.0265771	0.19055	0.057249267
0.00087		0.87	0.0170814	0.025127067	0.176640667	0.053744933
0.00079		0.79	0.016642733	0.024032967	0.163787667	0.050859
0.00072		0.72	0.016254067	0.023242767	0.152008333	0.0484564
0.00066		0.66	0.015896	0.022705133	0.141175467	0.046415
0.00060		0.60	0.0155544	0.022362267	0.131228033	0.044623233
0.00054		0.54	0.015216267	0.0221609	0.1221209	0.042992133
0.00050		0.50	0.014873733	0.0220495	0.113829933	0.0414499
0.00045		0.45	0.0145187	0.0219807	0.106241367	0.039942467
0.00041		0.41	0.014147833	0.021914967	0.099191	0.038432467

		Average of 3 Runs	Average	Average	Average	Average
		Repository ID:	R-12894	R-12895	R-12896	R-12897
		Sample ID:	13118AA_2	90466AC_1	90466AC_2	90466AC_3
		Operator:	lns/dwh	lns/dwh	lns/dwh	lns/dwh
Size						
Millimeters		**Microns**				
0.00038		0.38	0.0137562	0.0218152	0.092633867	0.0368933
0.00034		0.34	0.0133436	0.0216566	0.086555867	0.0353134
0.00031		0.31	0.012907233	0.021415167	0.080832167	0.033685767
0.00028		0.28	0.0124215	0.021057367	0.0751521	0.031917667
0.00026		0.26	0.011872367	0.020537133	0.069418567	0.029923833
0.00024		0.24	0.011264673	0.019858933	0.063847667	0.027803867
0.00021		0.21	0.01064653	0.019073667	0.058571	0.025726367
0.00020		0.20	0.010042993	0.018221133	0.0536982	0.023787
0.00018		0.18	0.00945667	0.0173416	0.0491887	0.0220185
0.00016		0.16	0.008875613	0.0164164	0.045331467	0.0203379
0.00015		0.15	0.008283023	0.0154342	0.041562533	0.018691933
0.00013		0.13	0.007678913	0.01439891	0.037763433	0.0170772
0.00012		0.12	0.007066103	0.013321477	0.033708267	0.015500867
0.00011	Clay	0.11	0.006431973	0.012176143	0.029863767	0.013908933
0.00010		0.10	0.005701447	0.010835933	0.025839467	0.012145517
0.000093		0.093	0.004925157	0.00939553	0.021706933	0.010352637
0.000084		0.084	0.004151543	0.007937493	0.017869943	0.008611847
0.000077		0.077	0.003407117	0.00652877	0.014149883	0.0069987
0.000070		0.070	0.002722417	0.005222353	0.010195023	0.00553989
0.000064		0.064	0.002064533	0.0039591	0.006062467	0.0041481
0.000058		0.058	0.001392783	0.002663333	0.003037647	0.002725497
0.000053		0.053	0.00070561	0.001337857	0.00143303	0.00129729
0.000048		0.048	0.000254859	0.000480466	0.000784957	0.000449222
0.000044		0.044	0.000105215	0.000200291	0.000545738	0.00020045
0.000040		0.040	7.89742E-05	0.000151552	0.00045494	0.00016085

% by volume stats	**Total (Sum)**	100	100	100	100
LPSA	**%Sand (1mm and less)**	87.25	88.39	65.17	88.16
	%Silt	3.19	4.68	31.44	7.14
	%Clay	0.17	0.30	0.92	0.41
	% 1mm-2mm	9.39	6.63	2.47	4.30
	Folk and Ward Statistics				
	Mean:	0.8	0.9	3.1	1.1
	Median:	0.8	0.9	2.7	1.0
	Deviation:	0.8	1.0	2.4	1.3
	Skewness:	0.2	0.3	0.3	0.4
	Kurtosis:	1.5	1.7	1.0	2.3

Size			
		Average of 3 Runs	Average
		Repository ID:	R-12898
		Sample ID:	90466AC_4
		Operator:	lns/dwh
Size			
Millimeters		**Microns**	
2.0		2000	
1.8		1822	0.0468533
1.7		1660	0.323496333
1.5		1512	0.546823333
1.4		1377	0.890987667
1.3		1255	1.554966667
1.1		1143	2.362793333
1.0		1041	3.117243333
0.95		948	3.950326667
0.86		864	4.76397
0.79		787	5.414186667
0.72		717	5.906753333
0.65		653	6.259006667
0.59		595	6.459413333
0.54		542	6.49988
0.49		494	6.36351
0.45		450	6.026953333
0.41		410	5.510776667
0.37		373	4.887366667
0.34	Sand	340	4.230616667
0.31		310	3.5837
0.28		282	2.96032
0.26		257	2.368886667
0.23		234	1.82982
0.21		213	1.36853
0.19		194	1.009288
0.18		177	0.767503333
0.16		161	0.630172
0.15		147	0.558170667
0.13		134	0.514261
0.12		122	0.482773333
0.11		111	0.460966333
0.10		101	0.444287667
0.092		92	0.428964
0.084		84	0.417407667
0.076		76	0.409972667
0.070		70	0.400715333
0.063		63	0.386152667

		Average of 3 Runs	Average
		Repository ID:	R-12898
		Sample ID:	90466AC_4
		Operator:	lns/dwh
Size			
Millimeters		**Microns**	
0.058		58	0.369191
0.053		53	0.351702
0.048		48	0.331183
0.044		44	0.306161
0.040		40	0.279319333
0.036		36	0.253967667
0.033		33	0.230997667
0.030		30	0.210124333
0.027		27	0.191542667
0.025		25	0.175673
0.023		23	0.162721
0.021		21	0.152491
0.019		19	0.144411
0.017		17	0.137878
0.016		16	0.132213333
0.014		14	0.126541
0.013		13	0.1201432
0.012		12	0.112946667
0.011		11	0.105392033
0.0098		9.8	0.098093867
0.0089		8.9	0.091485933
0.0081		8.1	0.0857299
0.0074		7.4	0.080817167
0.0068		6.8	0.0766386
0.0062		6.2	0.073067833
0.0056		5.6	0.069969567
0.0051		5.1	0.067256733
0.0047	Silt	4.7	0.064838467
0.0042		4.2	0.0626518
0.0039		3.9	0.060635567
0.0035		3.5	0.058742833
0.0032		3.2	0.0569213
0.0029		2.9	0.055117567
0.0027		2.7	0.053268767
0.0024		2.4	0.051307567
0.0022		2.2	0.0491823
0.0020		2.0	0.046870833
0.0018		1.8	0.044397533
0.0017		1.7	0.041816867
0.0015		1.5	0.039210667
0.0014		1.4	0.036661967
0.0013		1.3	0.034254267
0.0011		1.1	0.032053867
0.0010		1.05	0.030107333
0.00095		0.95	0.028438167
0.00087		0.87	0.0270498
0.00079		0.79	0.025915967
0.00072		0.72	0.024998
0.00066		0.66	0.024256667
0.00060		0.60	0.023644
0.00054		0.54	0.023124633
0.00050		0.50	0.022661033
0.00045		0.45	0.0222294
0.00041		0.41	0.021787167

		Average of 3 Runs	Average
		Repository ID:	R-12898
		Sample ID:	90466AC_4
		Operator:	lns/dwh
Size			
Millimeters		**Microns**	
0.00038		0.38	0.0213143
0.00034		0.34	0.0207899
0.00031		0.31	0.020213767
0.00028		0.28	0.019532667
0.00026		0.26	0.018709633
0.00024		0.24	0.0177695
0.00021		0.21	0.016779167
0.00020		0.20	0.0157783
0.00018		0.18	0.014797533
0.00016		0.16	0.013844903
0.00015		0.15	0.01287867
0.00013		0.13	0.011887683
0.00012		0.12	0.010858693
0.00011	Clay	0.11	0.009806787
0.00010		0.10	0.008632217
0.000093		0.093	0.007403847
0.000084		0.084	0.00619379
0.000077		0.077	0.005042677
0.000070		0.070	0.003947703
0.000064		0.064	0.002865347
0.000058		0.058	0.001830089
0.000053		0.053	0.000887268
0.000048		0.048	0.000332634
0.000044		0.044	0.00015922
0.000040		0.040	0.000126397

% by volume stats	**Total (Sum)**	100
LPSA	**%Sand (1mm and less)**	85.29
	%Silt	5.60
	%Clay	0.26
	% 1mm-2mm	8.84

Folk and Ward Statistics

Mean:	1.0
Median:	0.9
Deviation:	1.1
Skewness:	0.3
Kurtosis:	1.6

Appendix B

Grainsize Data

Laser Diffraction Particle Size Results

Averaged Results (n=3 per sample)

Exported Charts from Analyzer

Note: *Exported spreadsheet data is available upon request.*

LS Particle Size Analyzer

10 Jul 2024 13:50

Beckman Coulter LS 13 320

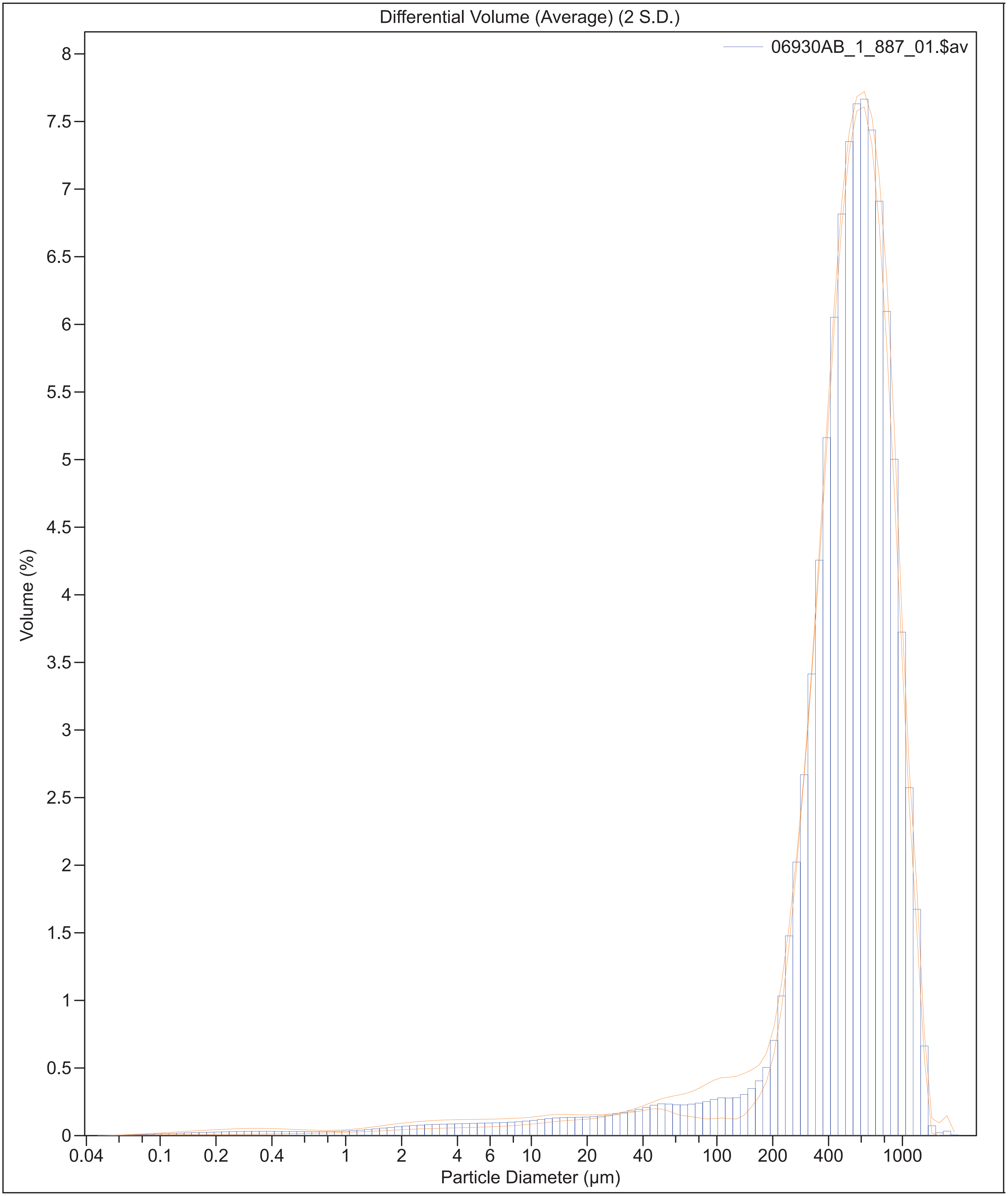
File name:	C:\LS13320\Samples\NOAA-CZM FY23\06930AB_1_887_01.$av
	06930AB_1_887_01.$av
File ID:	06930AB_1
Sample ID:	06930AB_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\06930AB_1_885_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06930AB_1_886_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06930AB_1_887_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:50

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 13:50

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 06930AB_1_887_01.$av

Calculations from 0.040 µm to 2000 µm

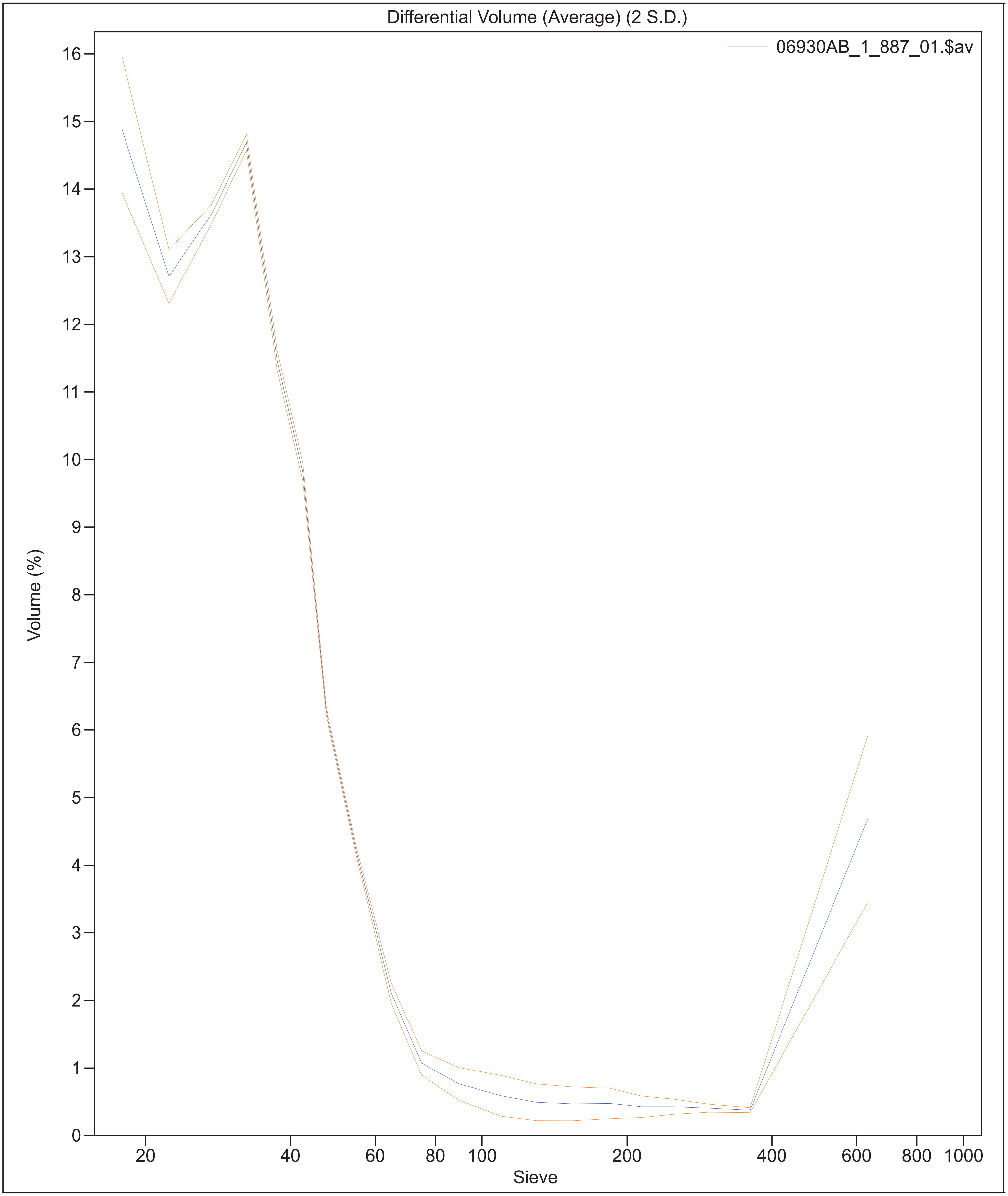
Volume:	100%		
Mean:	554.3 µm	S.D.:	280.1 µm
Median:	538.7 µm	Variance:	78470 μm^2
Mean/Median ratio:	1.029	C.V.:	50.5%
Mode:	623.3 µm	Skewness:	0.221 Right skewed
		Kurtosis:	-0.024 Platykurtic

d_{10}: 206.9 µm d_{50}: 538.7 µm d_{90}: 927.5 µm

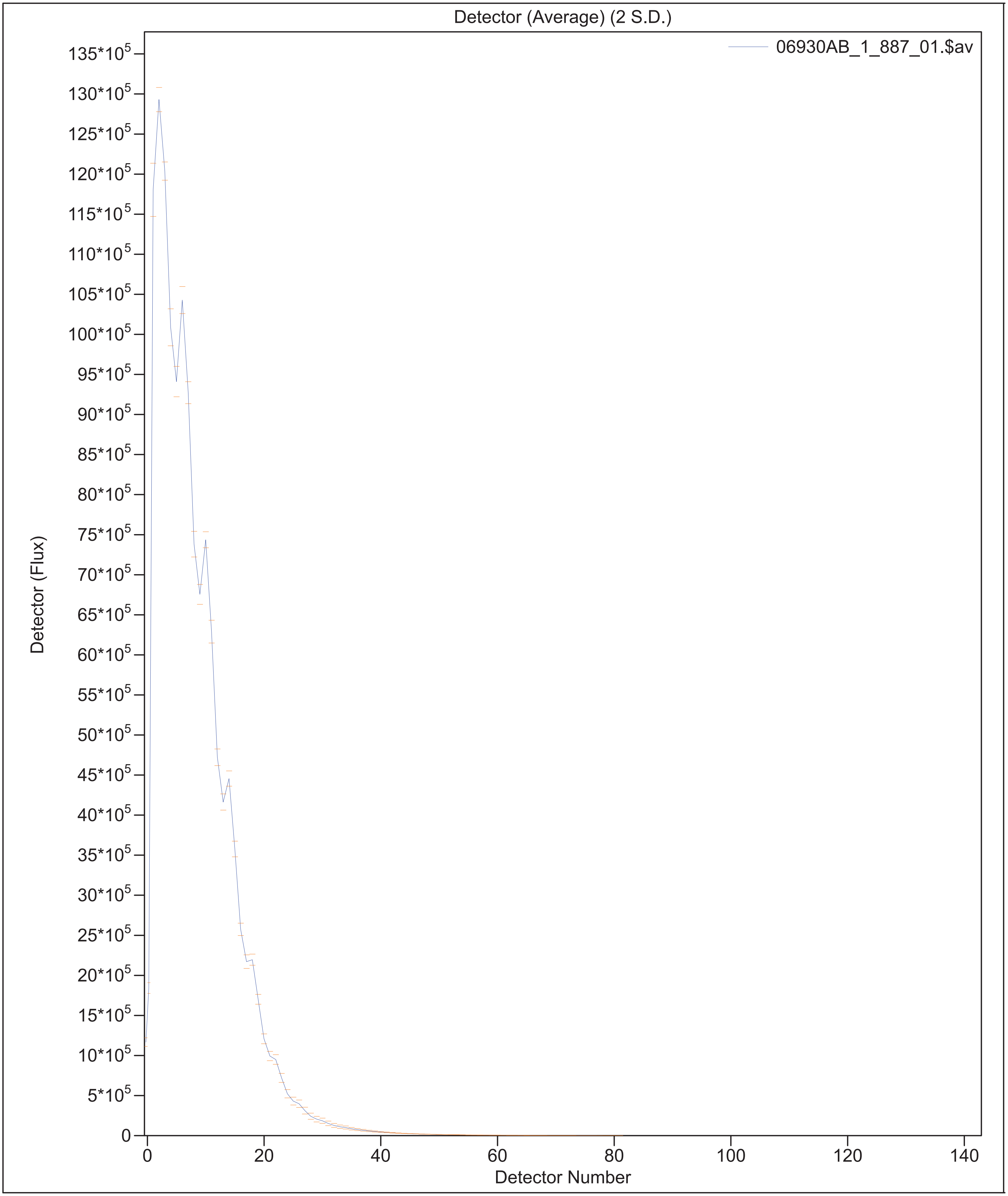
Folk and Ward Statistics (Phi)

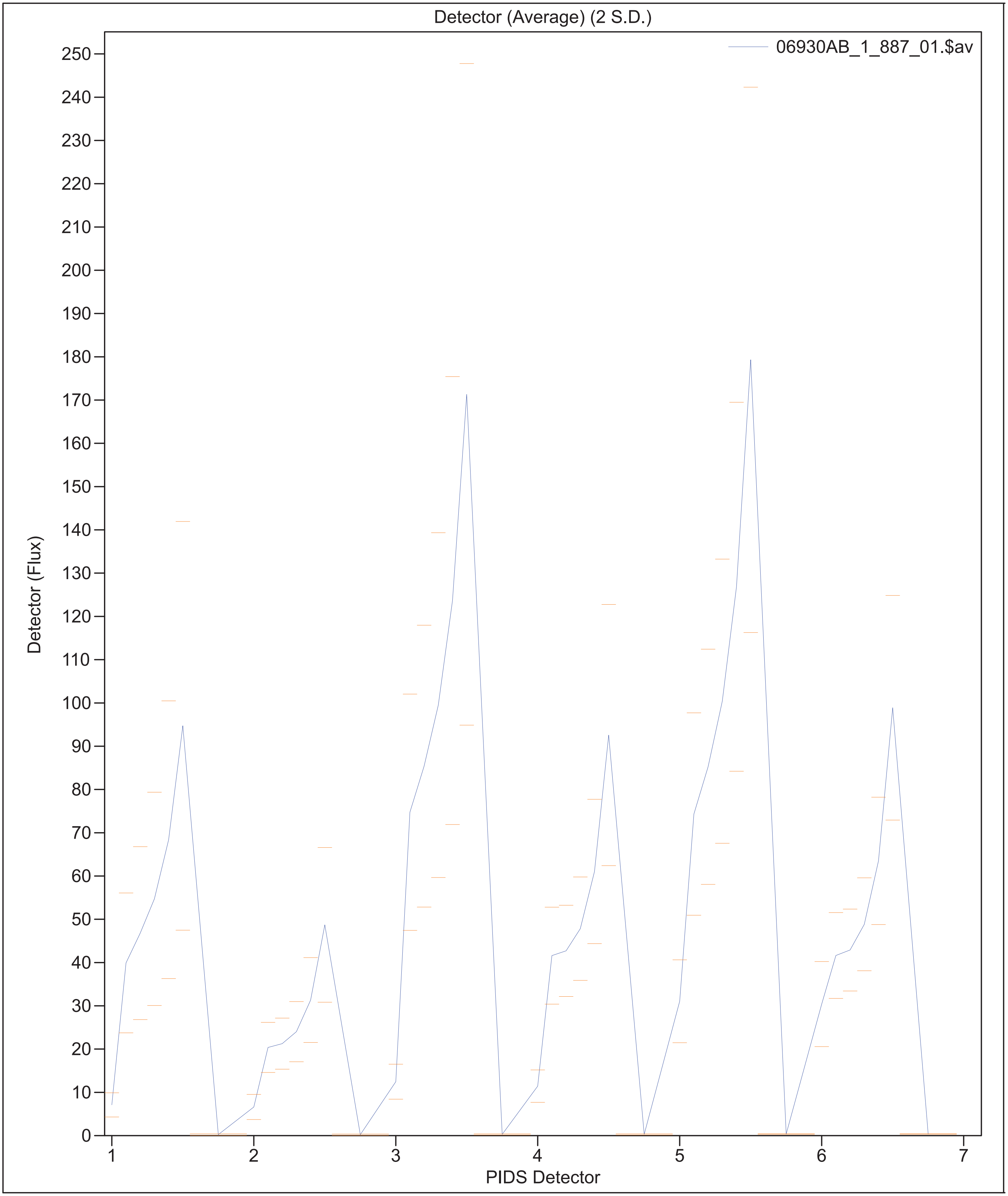
Mean:	0.97	Median:	0.89	Deviation:	1.07
Skewness:	0.37	Kurtosis:	1.91		

<10%	<25%	<50%	<75%	<90%
206.9 µm	372.3 µm	538.7 µm	734.9 µm	927.5 µm


Differential Volume (Average) (2 S.D.)
06930AB_1_887_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Sieve
20
40
60
80
100
200
400
600
800
1000

Beckman Coulter LS 13 320

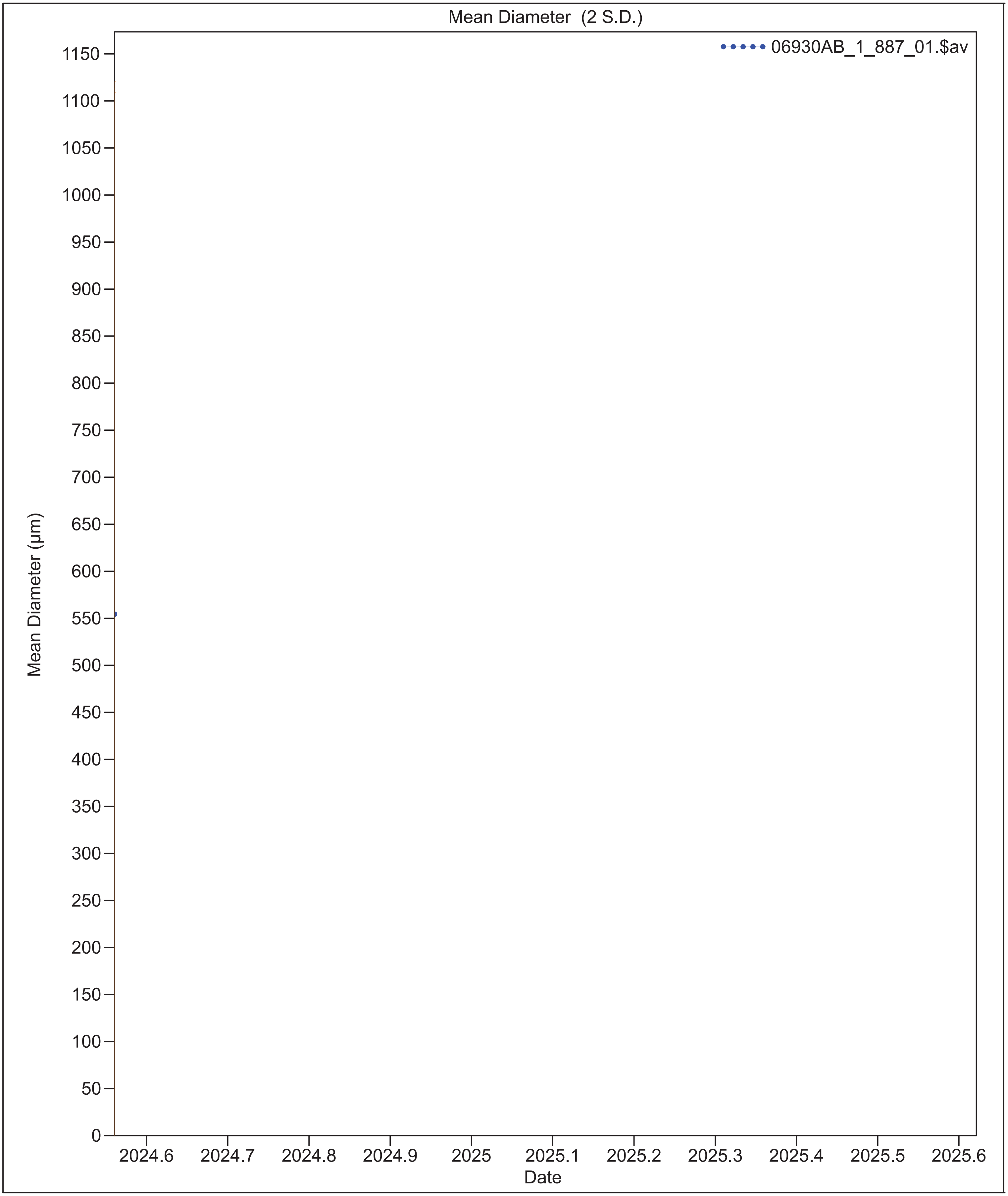



Detector (Average) (2 S.D.)
06930AB_1_887_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 13:50

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:50

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   06930AB_1_887_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	554.3 µm	0.224	553.8	554.7
Median:	538.7 µm	1.514	535.6	541.7
S.D.:	280.1 µm	2.891	274.3	285.9
Variance:	78470 µm^2	1620	75229	81711
C.V.:	50.54%	0.519	49.50	51.58
Skewness:	0.219	0.086	0.046	0.391
Kurtosis:	-0.030	0.201	-0.432	0.373
d_{10}:	207.1 µm	7.849	191.4	222.8
d_{50}:	538.7 µm	1.514	535.6	541.7
d_{90}:	927.6 µm	3.209	921.1	934.0

Beckman Coulter LS 13 320

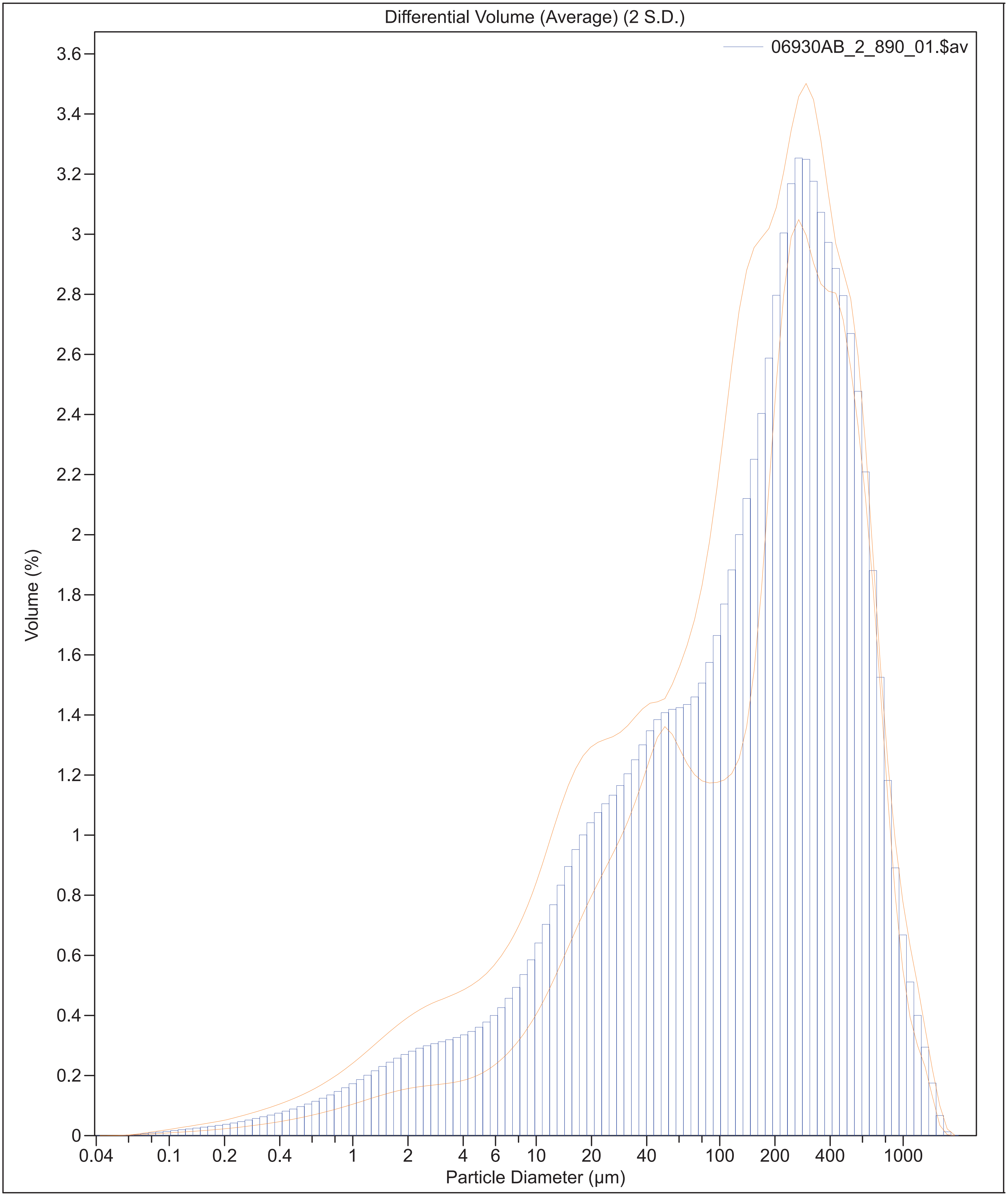
File name:	C:\LS13320\Samples\NOAA-CZM FY23\06930AB_2_890_01.$av		
	06930AB_2_890_01.$av		
File ID:	06930AB_2		
Sample ID:	06930AB_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\06930AB_2_888_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06930AB_2_889_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06930AB_2_890_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:58

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 06930AB_2_890_01.$av

Calculations from 0.040 µm to 2000 µm

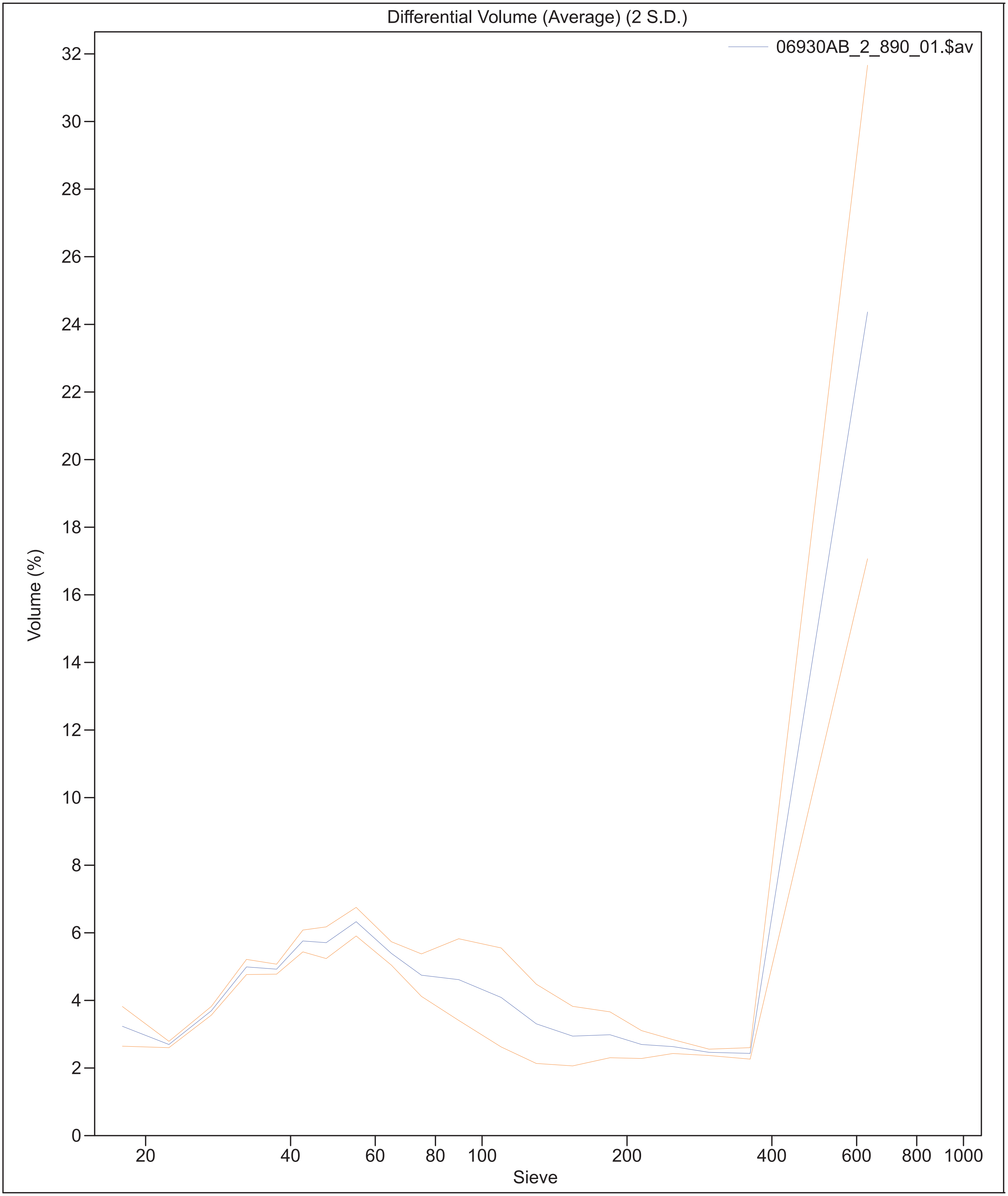
Volume:	100%		
Mean:	240.9 µm	S.D.:	254.5 µm
Median:	163.3 µm	Variance:	64793 µm^2
Mean/Median ratio:	1.475	C.V.:	106%
Mode:	269.2 µm	Skewness:	1.600 Right skewed
		Kurtosis:	3.035 Leptokurtic

d_{10}: 9.889 µm d_{50}: 163.3 µm d_{90}: 591.0 µm

Folk and Ward Statistics (Phi)

Mean:	3.13	Median:	2.61	Deviation:	2.35
Skewness:	0.39	Kurtosis:	1.02		

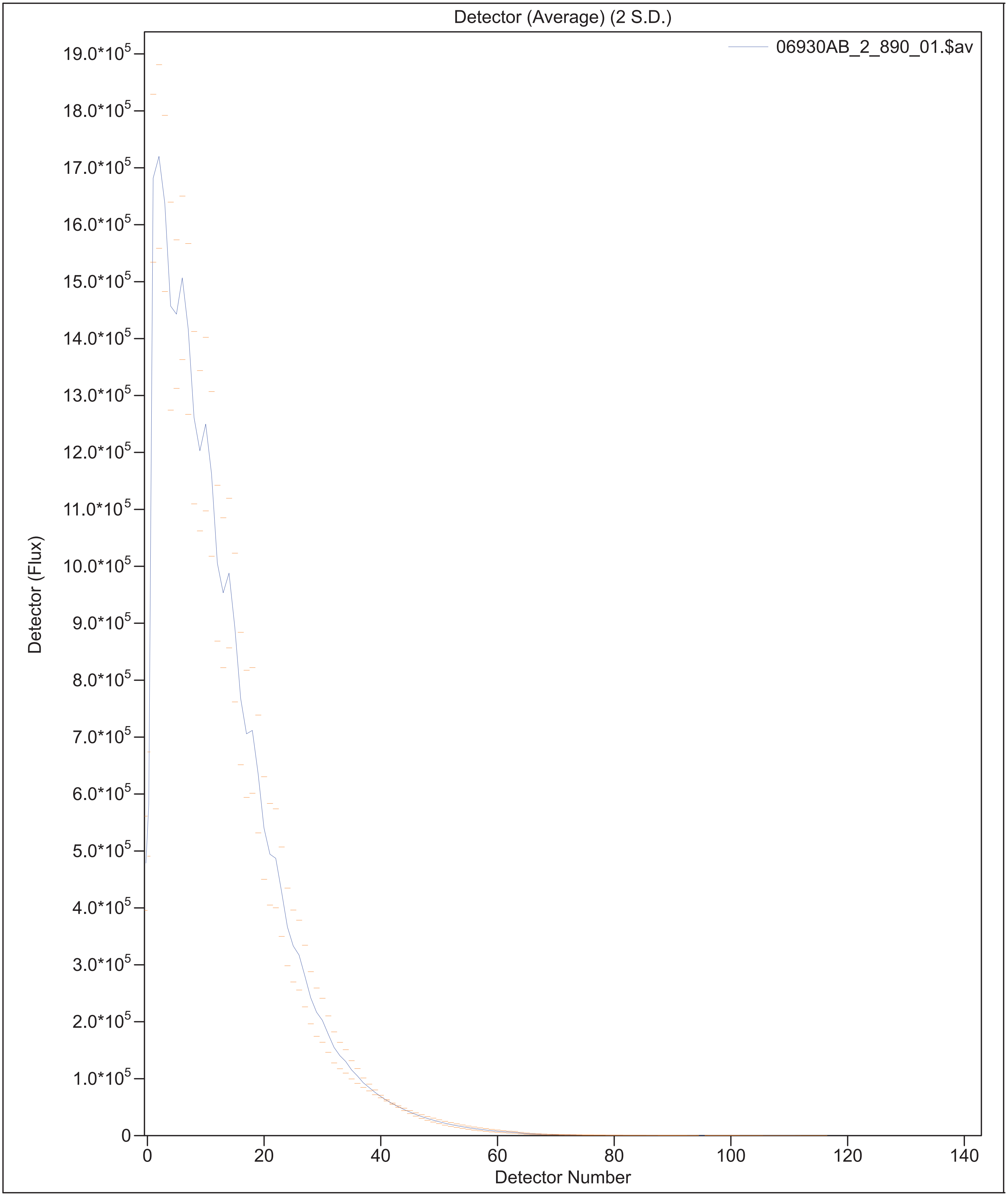
<10%	<25%	<50%	<75%	<90%
9.889 µm	39.72 µm	163.3 µm	358.2 µm	591.0 µm


Differential Volume (Average) (2 S.D.)
06930AB_2_890_01.$av
Volume (%)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

10 Jul 2024 13:58

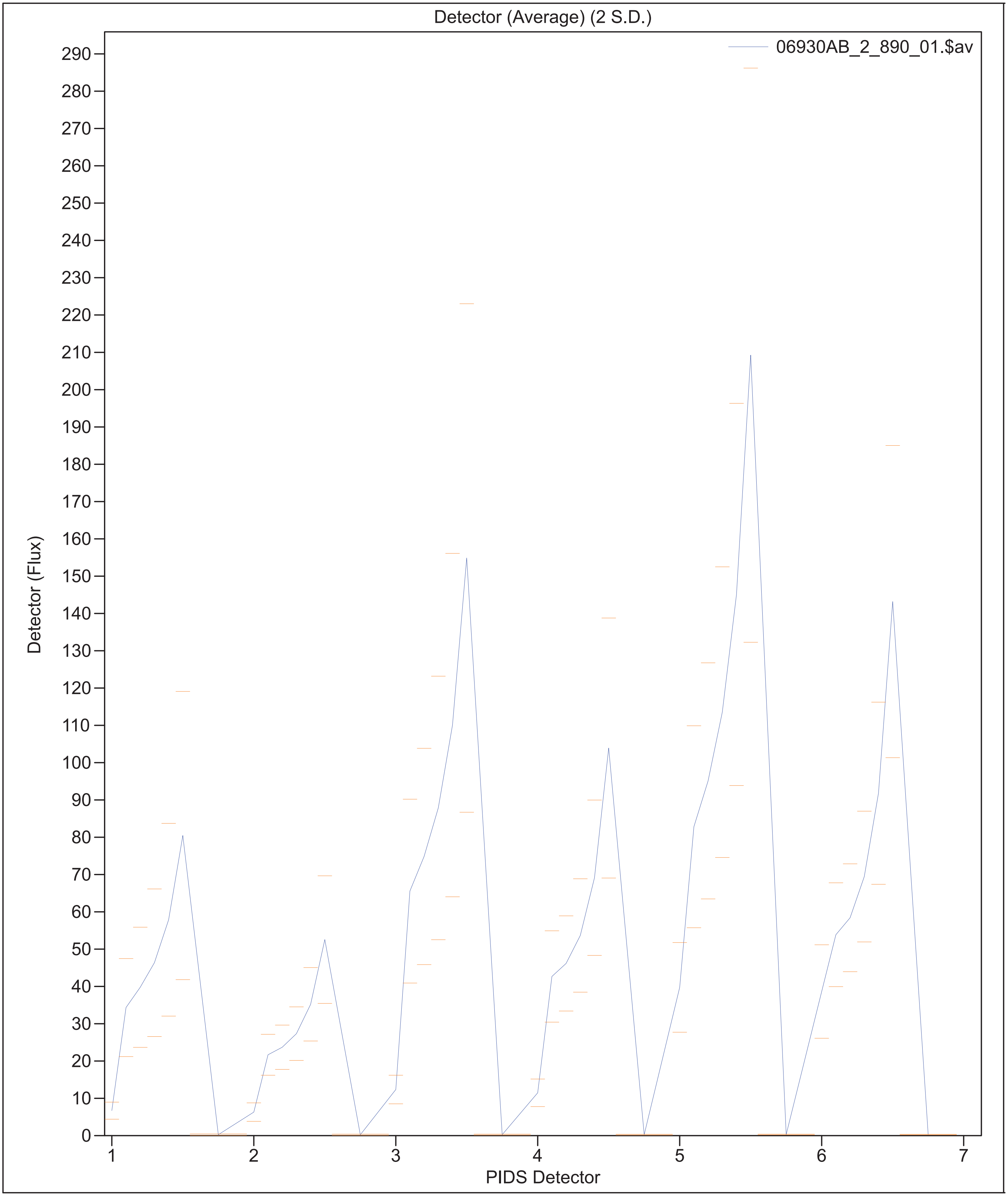
Beckman Coulter LS 13 320

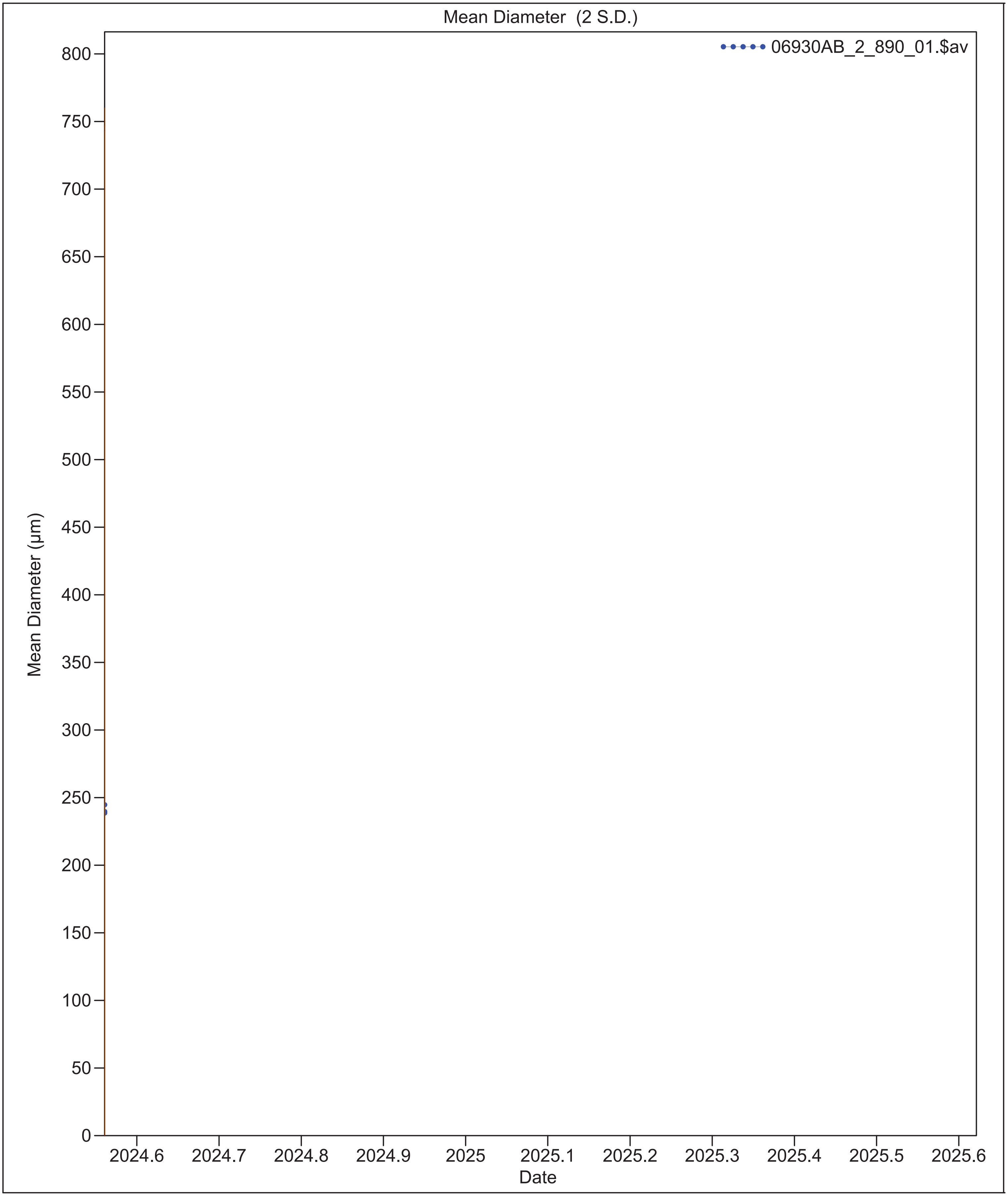


LS Particle Size Analyzer

10 Jul 2024 13:58

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
06930AB_2_890_01.$av
Mean Diameter (µm)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

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LS Particle Size Analyzer

10 Jul 2024 13:58

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   06930AB_2_890_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	240.9 µm	3.278	234.4	247.5
Median:	162.8 µm	6.741	149.3	176.3
S.D.:	254.5 µm	6.014	242.5	266.5
Variance:	64785 $µm^2$	3068	58650	70921
C.V.:	105.7%	3.814	98.02	113.3
Skewness:	1.602	0.050	1.502	1.702
Kurtosis:	3.043	0.359	2.324	3.762
d_{10}:	10.28 µm	3.269	3.740	16.82
d_{50}:	162.8 µm	6.741	149.3	176.3
d_{90}:	591.1 µm	6.526	578.0	604.1

Beckman Coulter LS 13 320

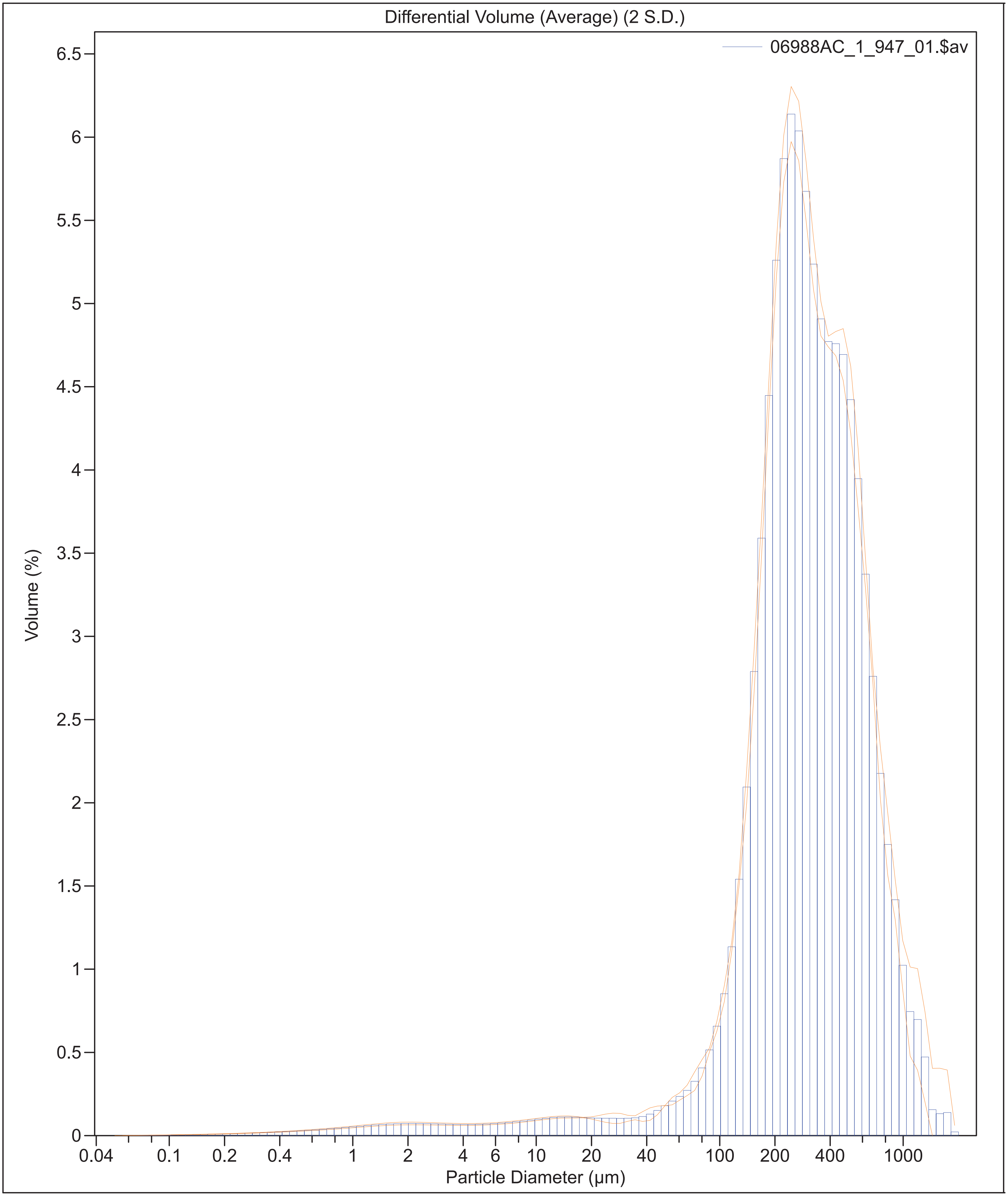
File name:	C:\LS13320\Samples\NOAA-CZM FY23\06988AC_1_947_01.$av		
	06988AC_1_947_01.$av		
File ID:	06988AC_1		
Sample ID:	06988AC_1		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\06988AC_1_945_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06988AC_1_946_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06988AC_1_947_01.$ls

LS Particle Size Analyzer

10 Jul 2024 16:18

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 06988AC_1_947_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	364.9 µm	S.D.:	250.2 µm
Median:	298.0 µm	Variance:	62621 $µm^2$
Mean/Median ratio:	1.224	C.V.:	68.6%
Mode:	245.2 µm	Skewness:	1.586 Right skewed
		Kurtosis:	3.722 Leptokurtic

d_{10}: 129.9 µm d_{50}: 298.0 µm d_{90}: 687.5 µm

Folk and Ward Statistics (Phi)

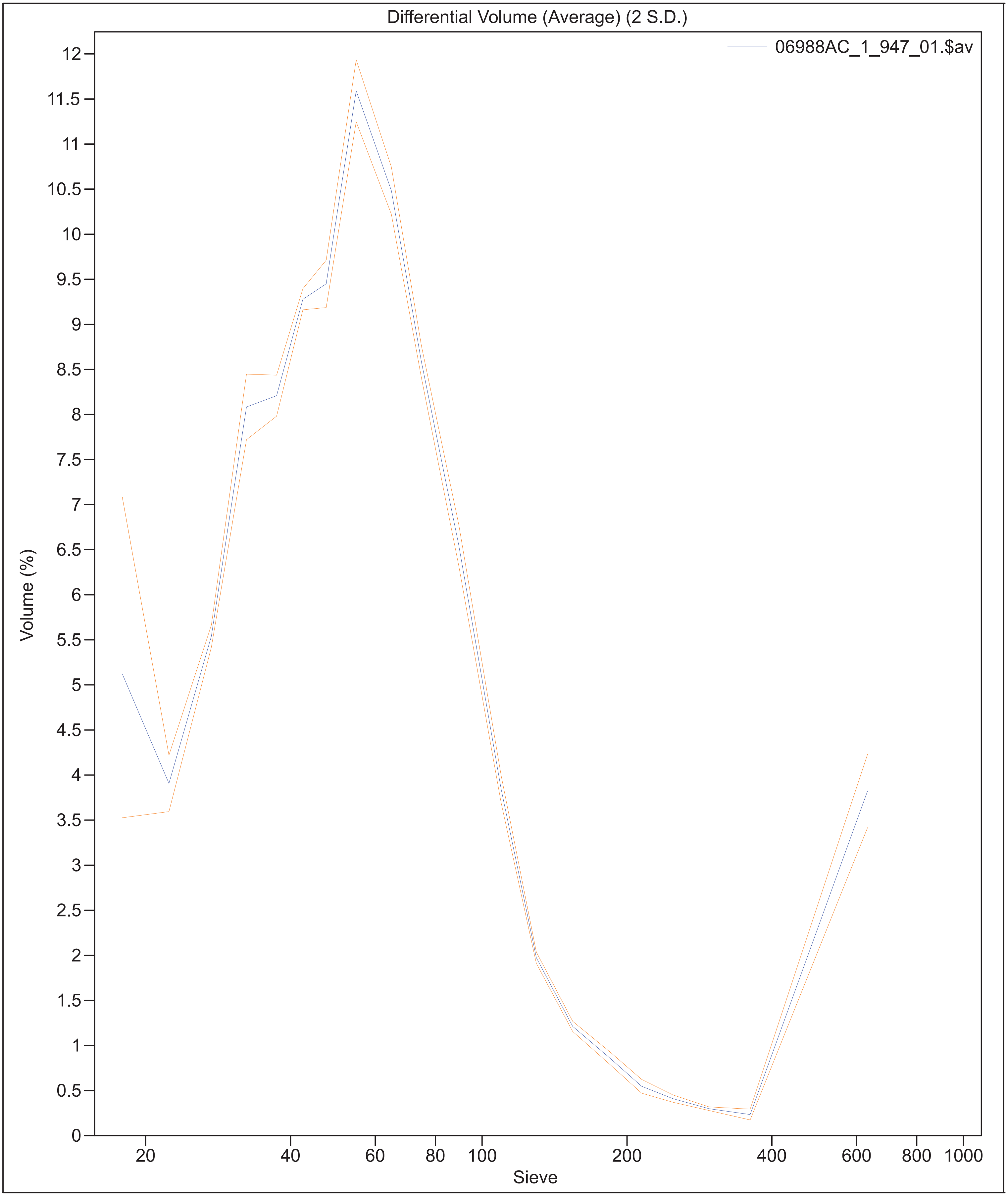
Mean:	1.71	Median:	1.75	Deviation:	1.01
Skewness:	0.06	Kurtosis:	1.19		

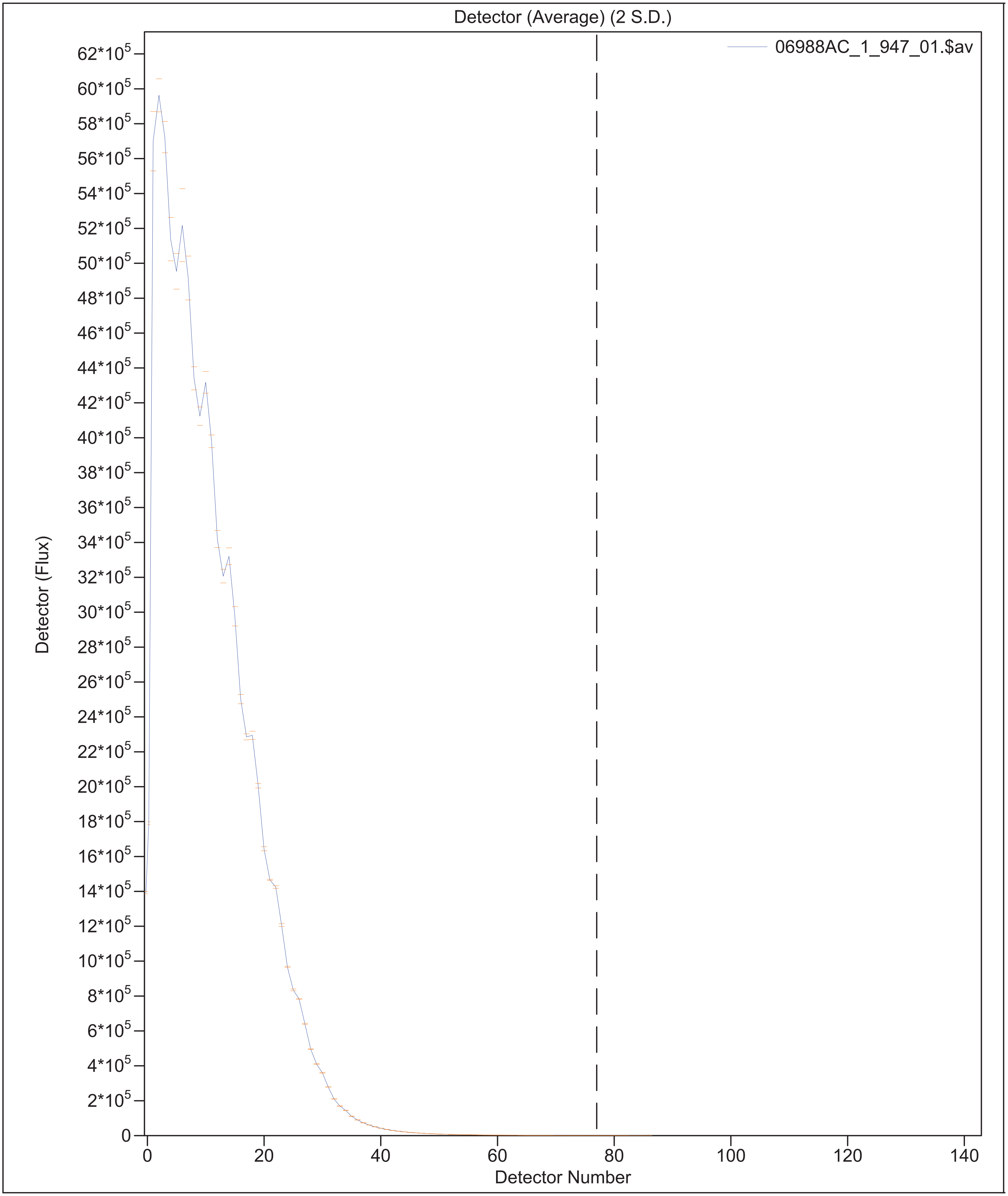
<10%	<25%	<50%	<75%	<90%
129.9 µm	200.0 µm	298.0 µm	477.1 µm	687.5 µm

LS Particle Size Analyzer

10 Jul 2024 16:18

Beckman Coulter LS 13 320

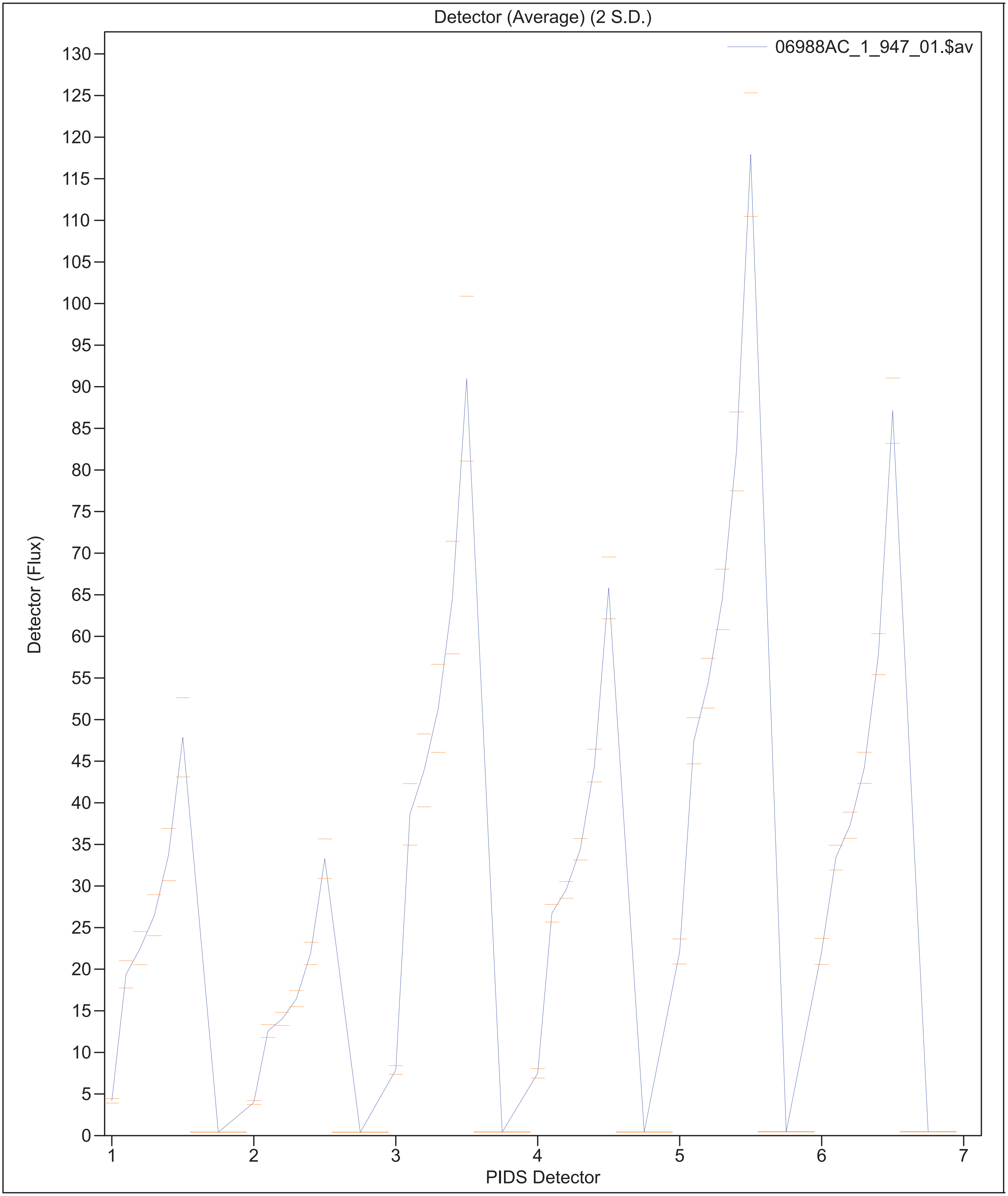


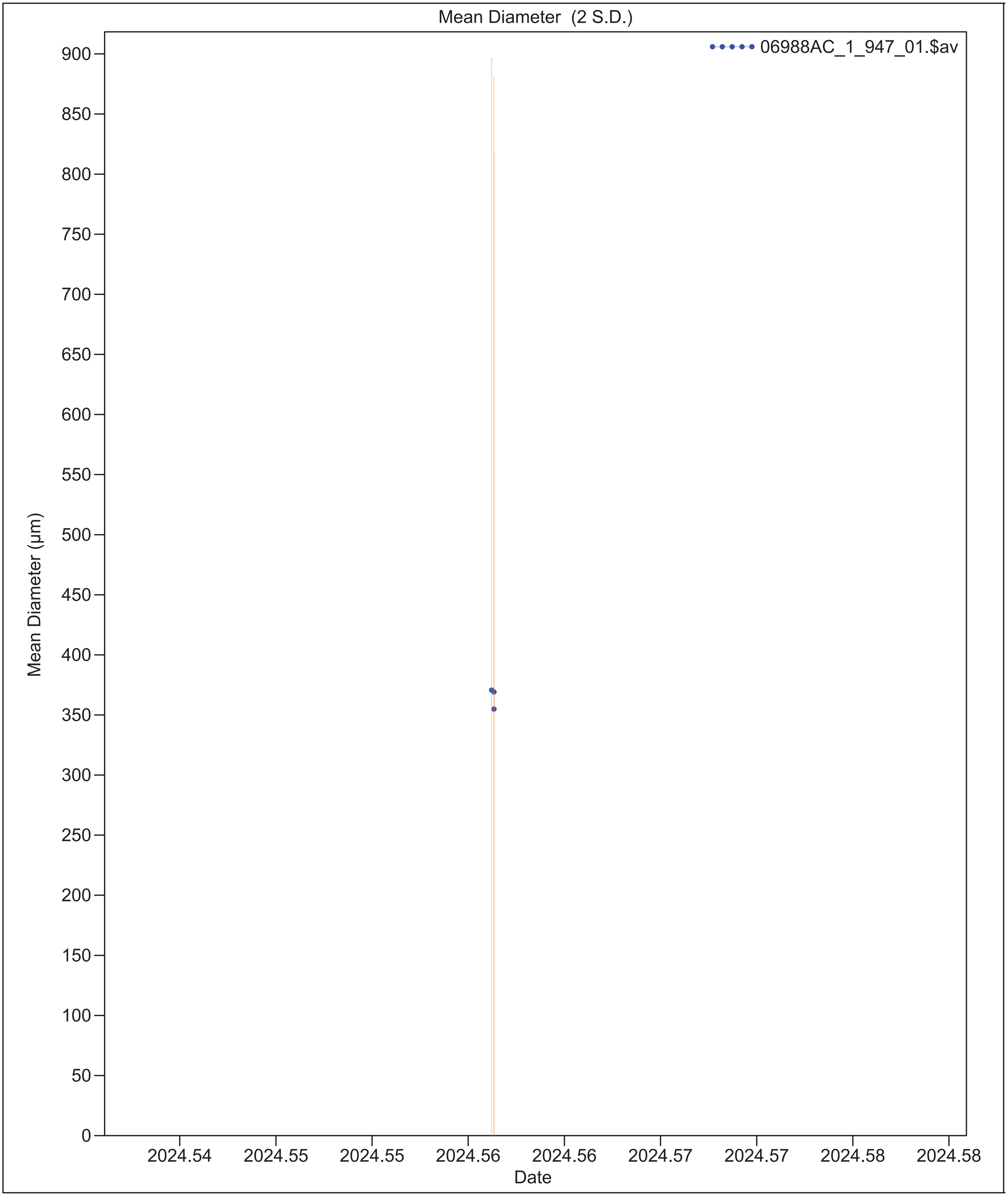

Detector (Average) (2 S.D.)
06988AC_1_947_01.$av
62*10^5
60*10^5
58*10^5
56*10^5
54*10^5
52*10^5
50*10^5
48*10^5
46*10^5
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
Detector (Flux)
0
20
40
60
80
100
120
140
Detector Number

LS Particle Size Analyzer

10 Jul 2024 16:18

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
06988AC_1_947_01.$av
Mean Diameter (µm)
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.54
2024.55
2024.55
2024.56
2024.56
2024.57
2024.57
2024.58
2024.58
Date

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LS Particle Size Analyzer

10 Jul 2024 16:18

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   06988AC_1_947_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	364.9 µm	8.730	347.4	382.3
Median:	298.0 µm	3.269	291.5	304.6
S.D.:	249.8 µm	16.51	216.8	282.8
Variance:	62570 μm^2	8125	46321	78819
C.V.:	68.41%	2.943	62.53	74.30
Skewness:	1.539	0.264	1.011	2.066
Kurtosis:	3.377	1.380	0.616	6.137
d_{10}:	130.0 µm	0.925	128.1	131.8
d_{50}:	298.0 µm	3.269	291.5	304.6
d_{90}:	687.6 µm	12.75	662.1	713.1

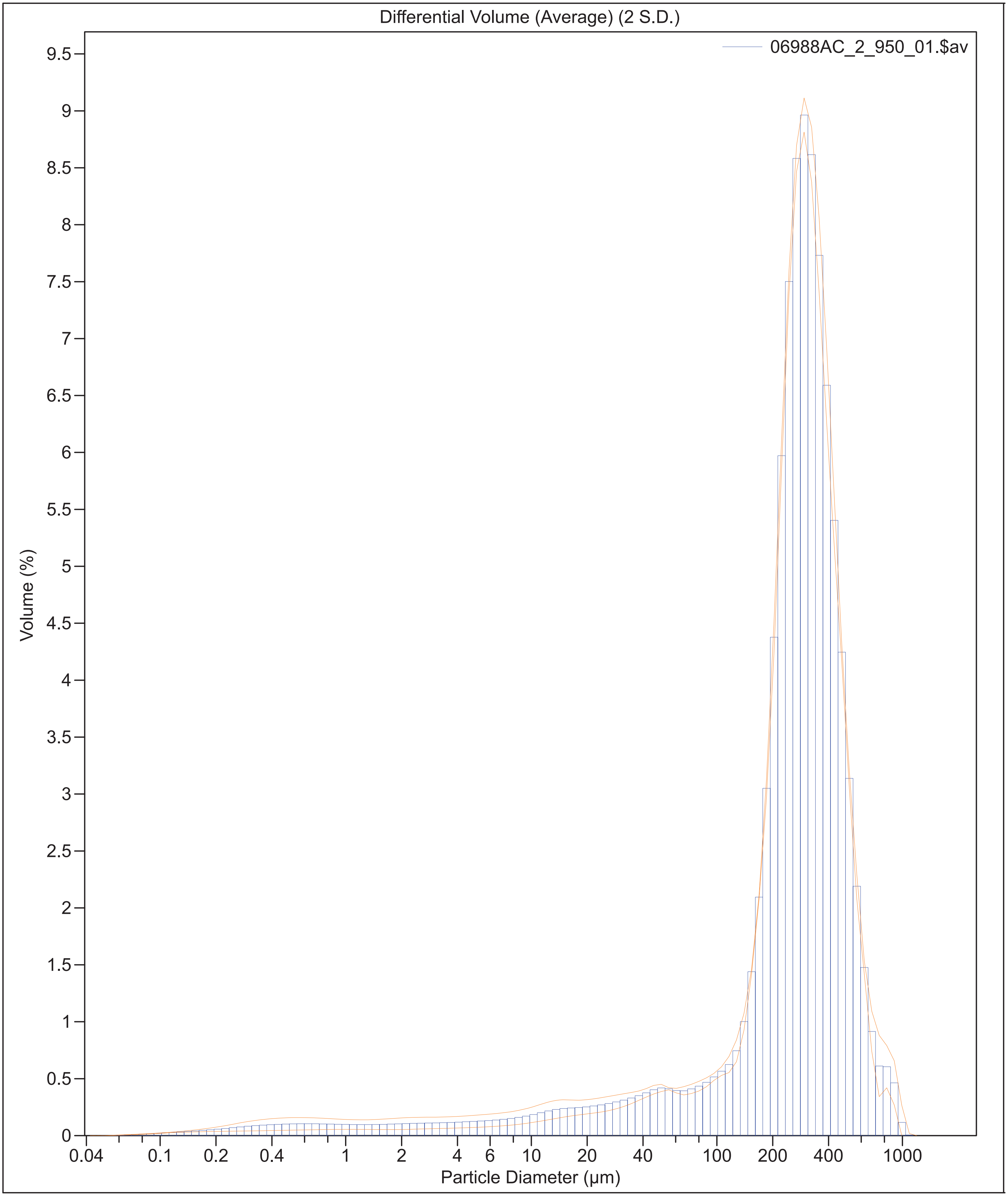
File name:	C:\LS13320\Samples\NOAA-CZM FY23\06988AC_2_950_01.$av
	06988AC_2_950_01.$av
File ID:	06988AC_2
Sample ID:	06988AC_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\06988AC_2_948_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06988AC_2_949_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\06988AC_2_950_01.$ls

LS Particle Size Analyzer

10 Jul 2024 16:25

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 06988AC_2_950_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	292.8 µm	S.D.:	163.4 µm
Median:	285.4 µm	Variance:	26698 µm^2
Mean/Median ratio:	1.026	C.V.:	55.8%
Mode:	295.5 µm	Skewness:	0.592 Right skewed
		Kurtosis:	1.323 Leptokurtic

d_{10}: 53.34 µm d_{50}: 285.4 µm d_{90}: 488.7 µm

Folk and Ward Statistics (Phi)

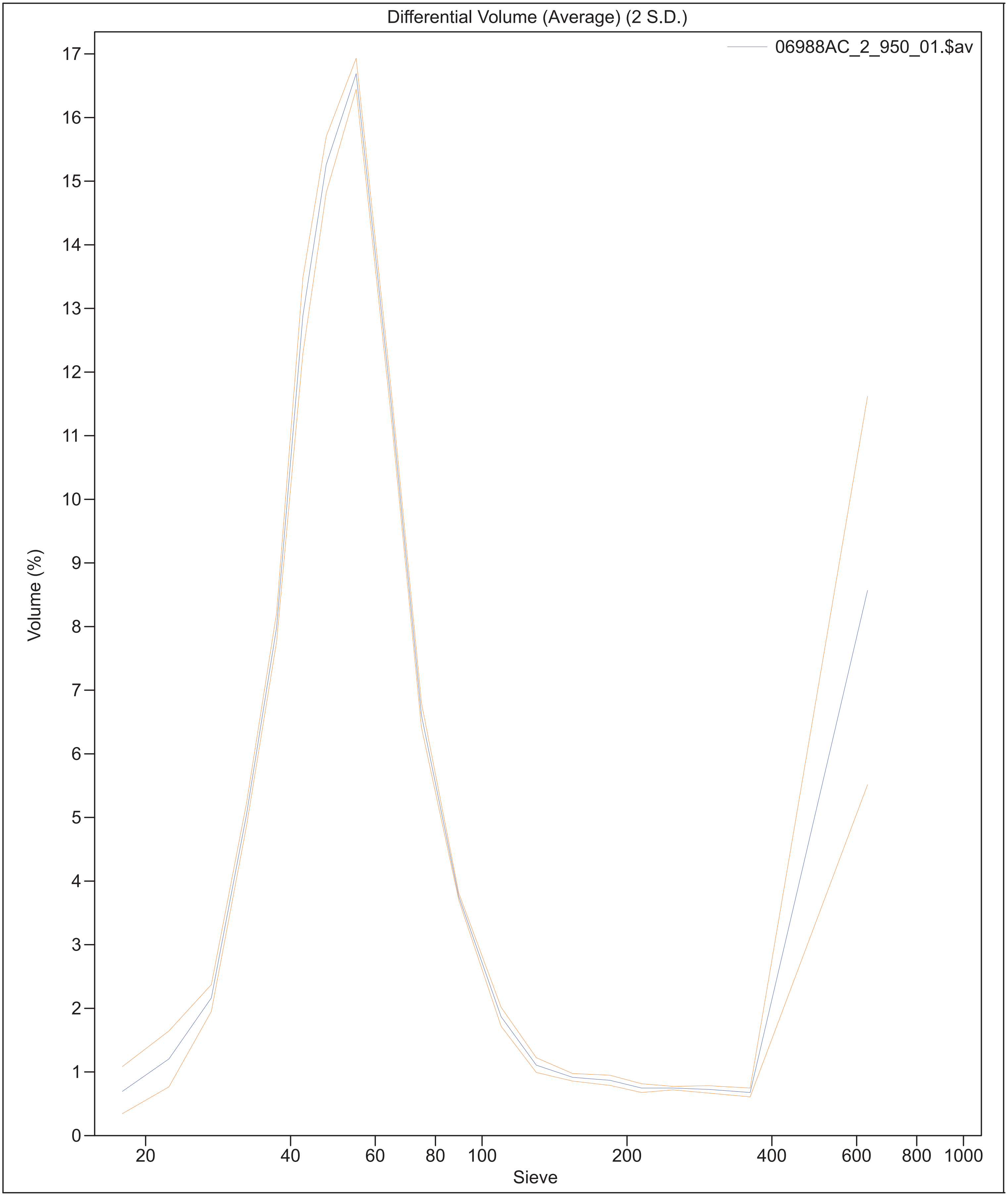
Mean:	1.93	Median:	1.81	Deviation:	1.26
Skewness:	0.44	Kurtosis:	2.68		

<10%	<25%	<50%	<75%	<90%
53.34 µm	205.1 µm	285.4 µm	377.4 µm	488.7 µm

LS Particle Size Analyzer

10 Jul 2024 16:25

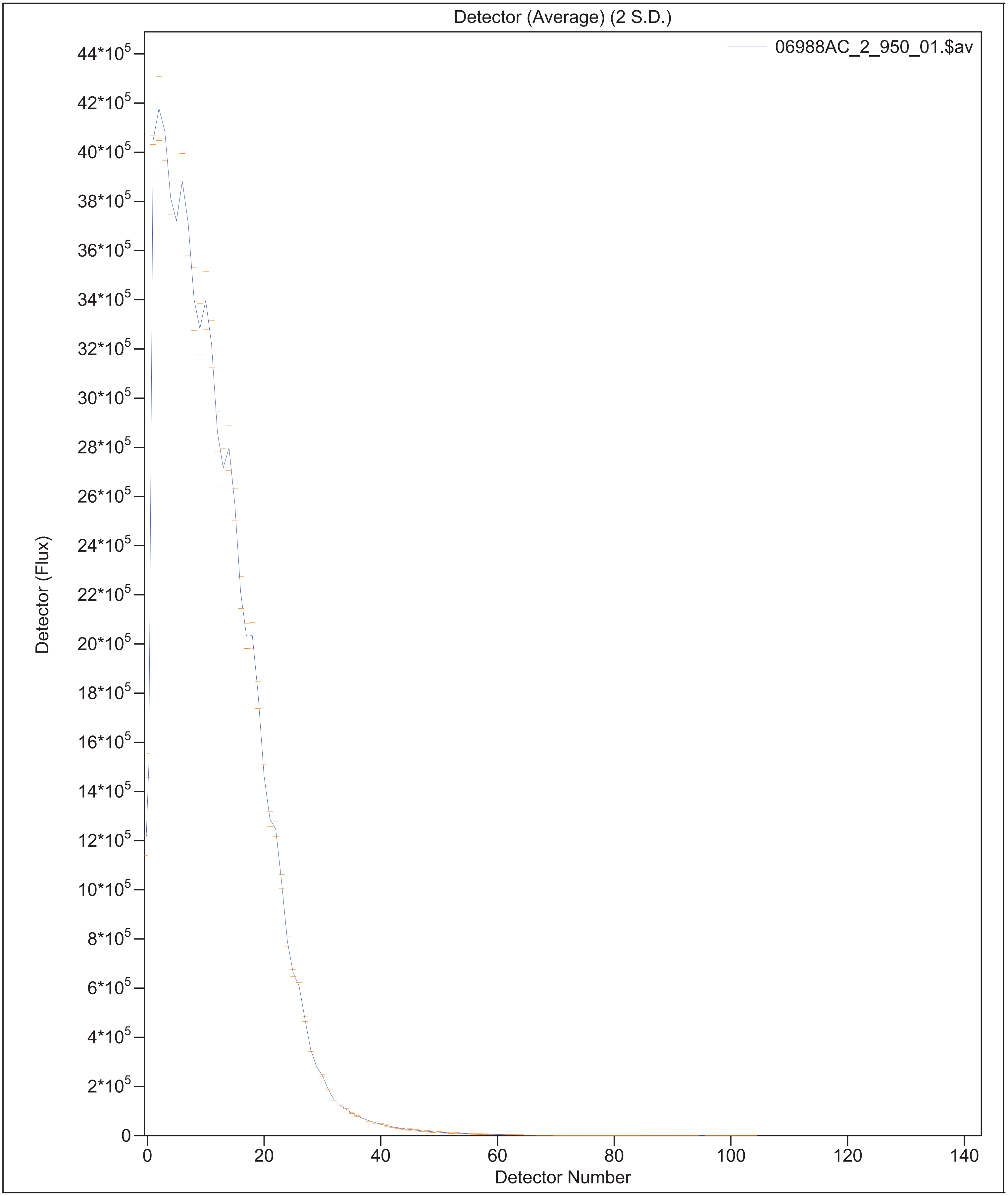
Beckman Coulter LS 13 320

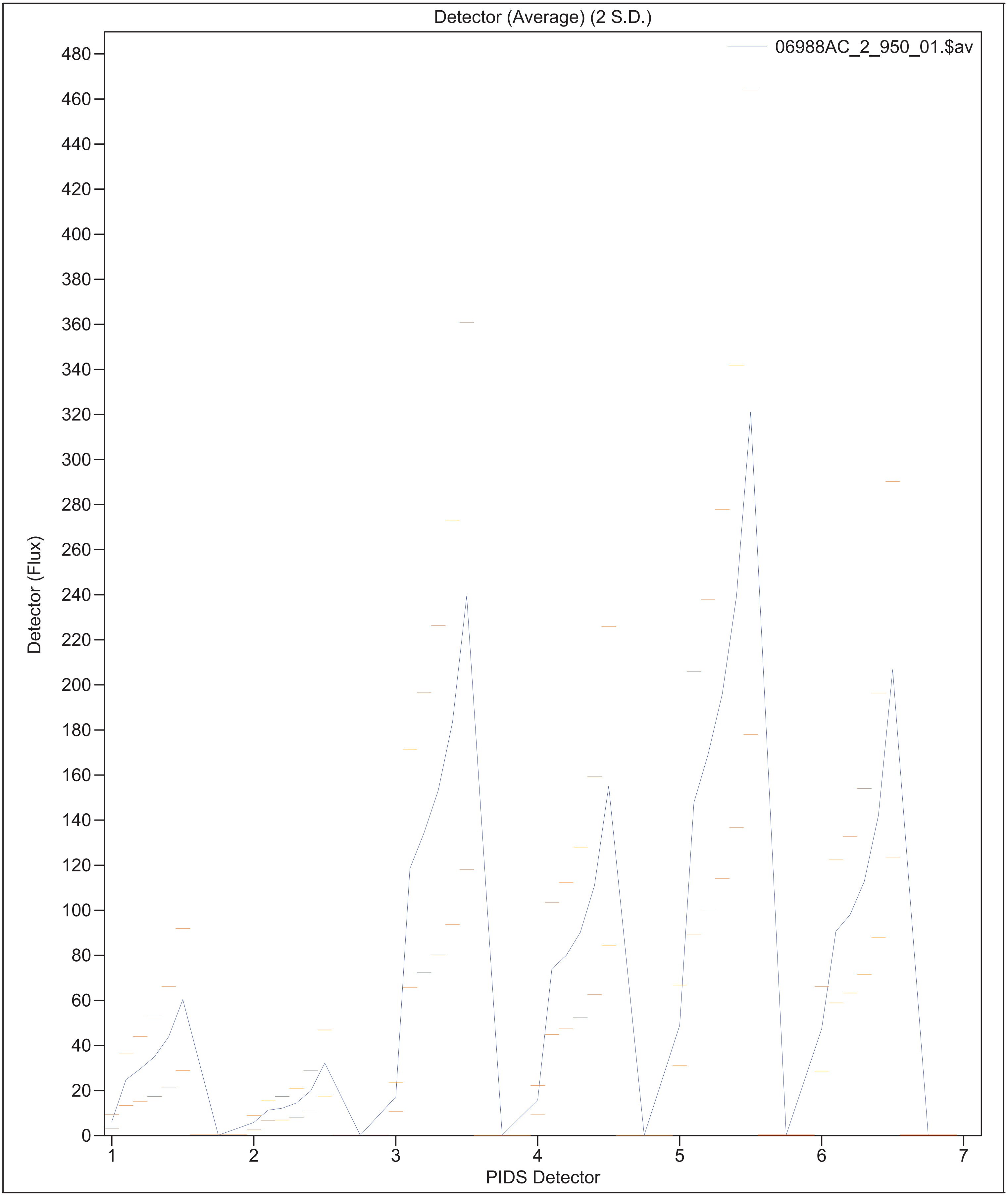


LS Particle Size Analyzer

10 Jul 2024 16:25

Beckman Coulter LS 13 320

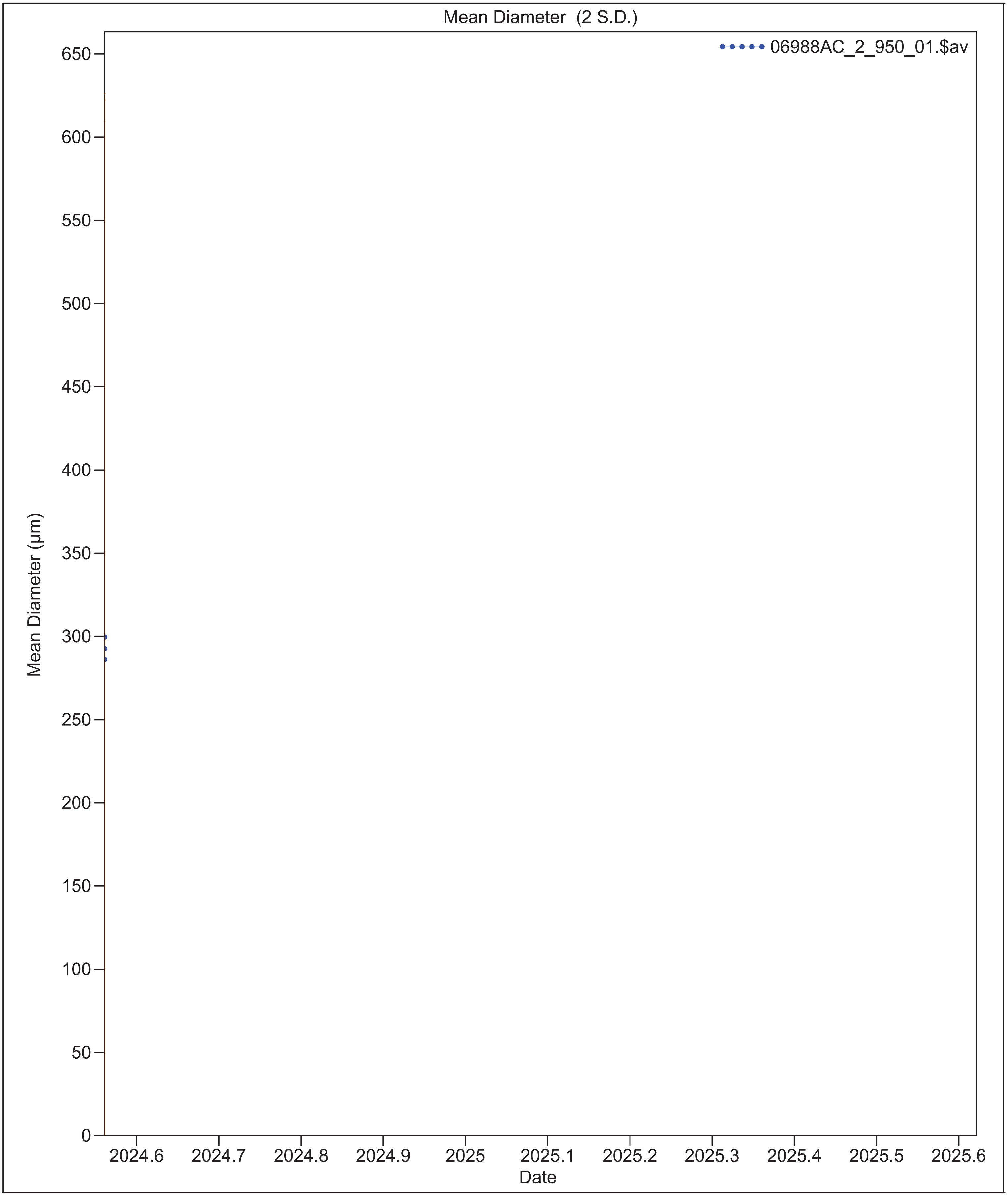



Detector (Average) (2 S.D.)
06988AC_2_950_01.$av
Detector (Flux)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
380
400
420
440
460
480
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 16:25

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 06988AC_2_950_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	292.8 µm	6.686	279.4	306.1
Median:	285.3 µm	3.286	278.8	291.9
S.D.:	163.3 µm	1.564	160.2	166.4
Variance:	26668 µm^2	511.3	25645	27690
C.V.:	55.80%	1.109	53.58	58.01
Skewness:	0.591	0.133	0.325	0.857
Kurtosis:	1.305	0.361	0.583	2.026
d_{10}:	55.58 µm	20.16	15.27	95.90
d_{50}:	285.3 µm	3.286	278.8	291.9
d_{90}:	488.6 µm	4.531	479.6	497.7

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LS Particle Size Analyzer

10 Jul 2024 12:12

Beckman Coulter LS 13 320

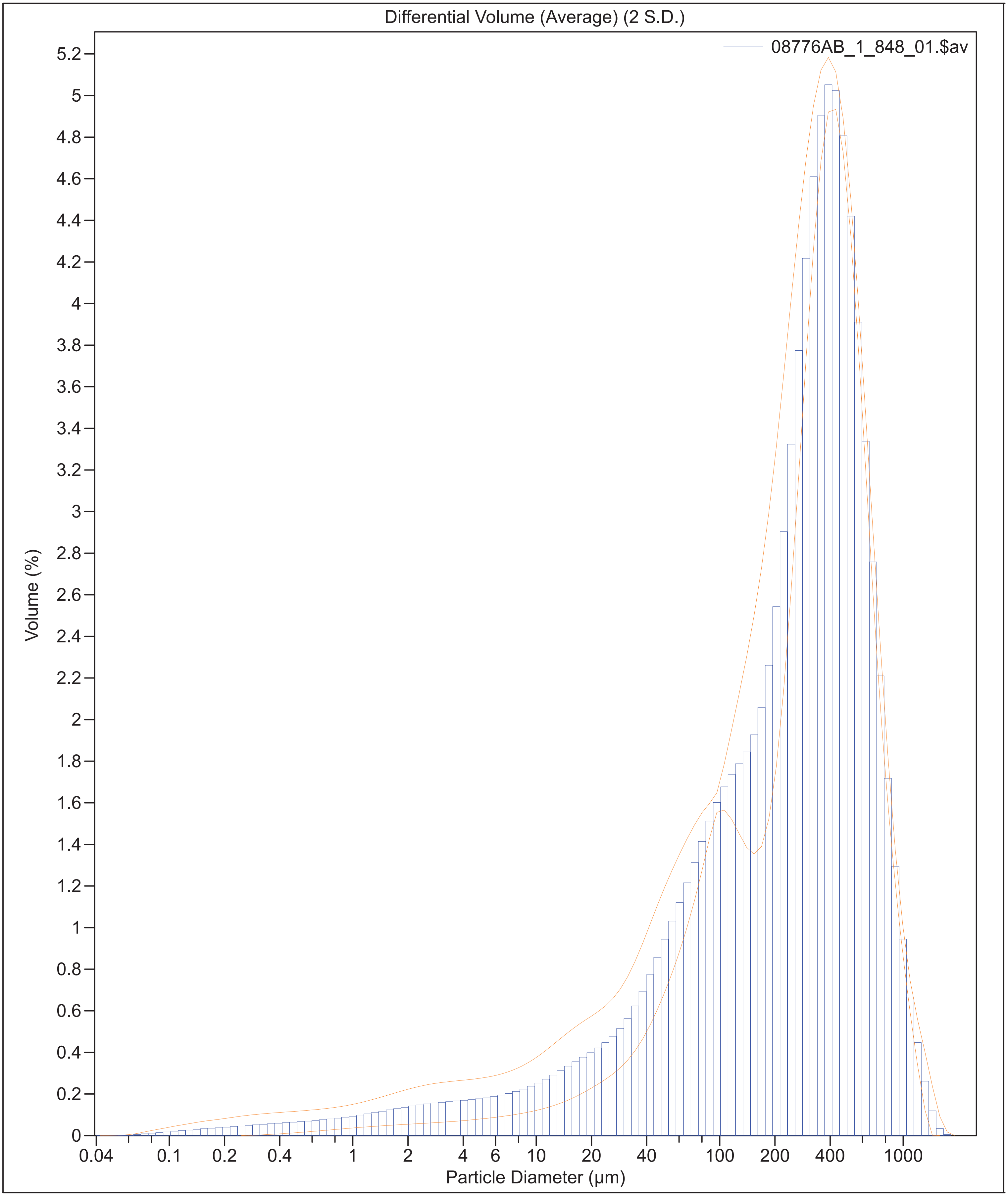
File name:	C:\LS13320\Samples\NOAA-CZM FY23\08776AB_1_848_01.$av		
	08776AB_1_848_01.$av		
File ID:	08776AB_1		
Sample ID:	08776AB_1		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\08776AB_1_846_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\08776AB_1_847_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\08776AB_1_848_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:12

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 08776AB_1_848_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	323.0 µm	S.D.:	256.1 µm
Median:	286.9 µm	Variance:	65578 μm^2
Mean/Median ratio:	1.126	C.V.:	79.3%
Mode:	390.9 µm	Skewness:	1.038 Right skewed
		Kurtosis:	1.262 Leptokurtic

d_{10}: 31.33 µm d_{50}: 286.9 µm d_{90}: 663.7 µm

Folk and Ward Statistics (Phi)

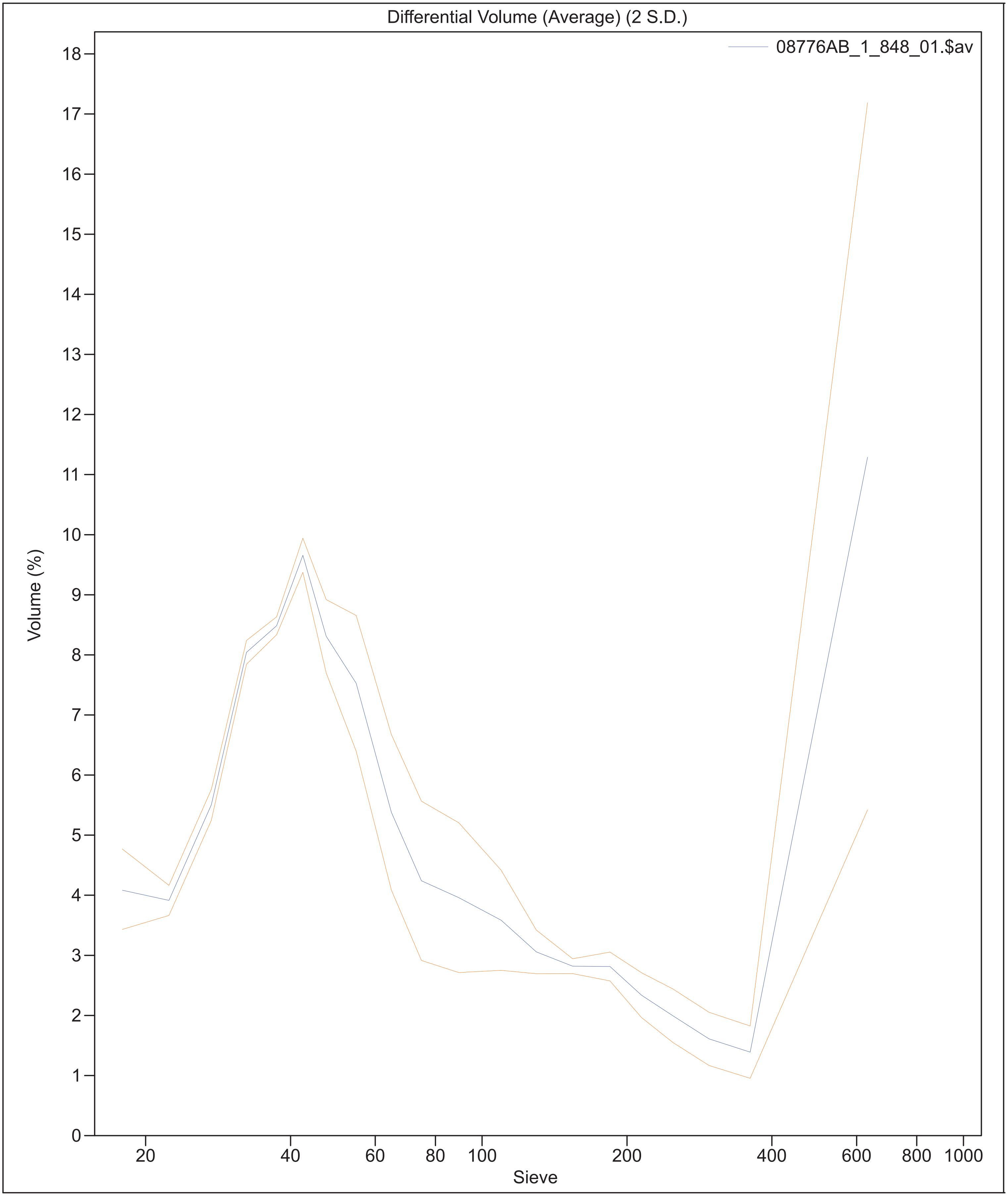
Mean:	2.22	Median:	1.80	Deviation:	1.79
Skewness:	0.47	Kurtosis:	1.29		

<10%	<25%	<50%	<75%	<90%
31.33 µm	110.4 µm	286.9 µm	467.4 µm	663.7 µm

LS Particle Size Analyzer

10 Jul 2024 12:12

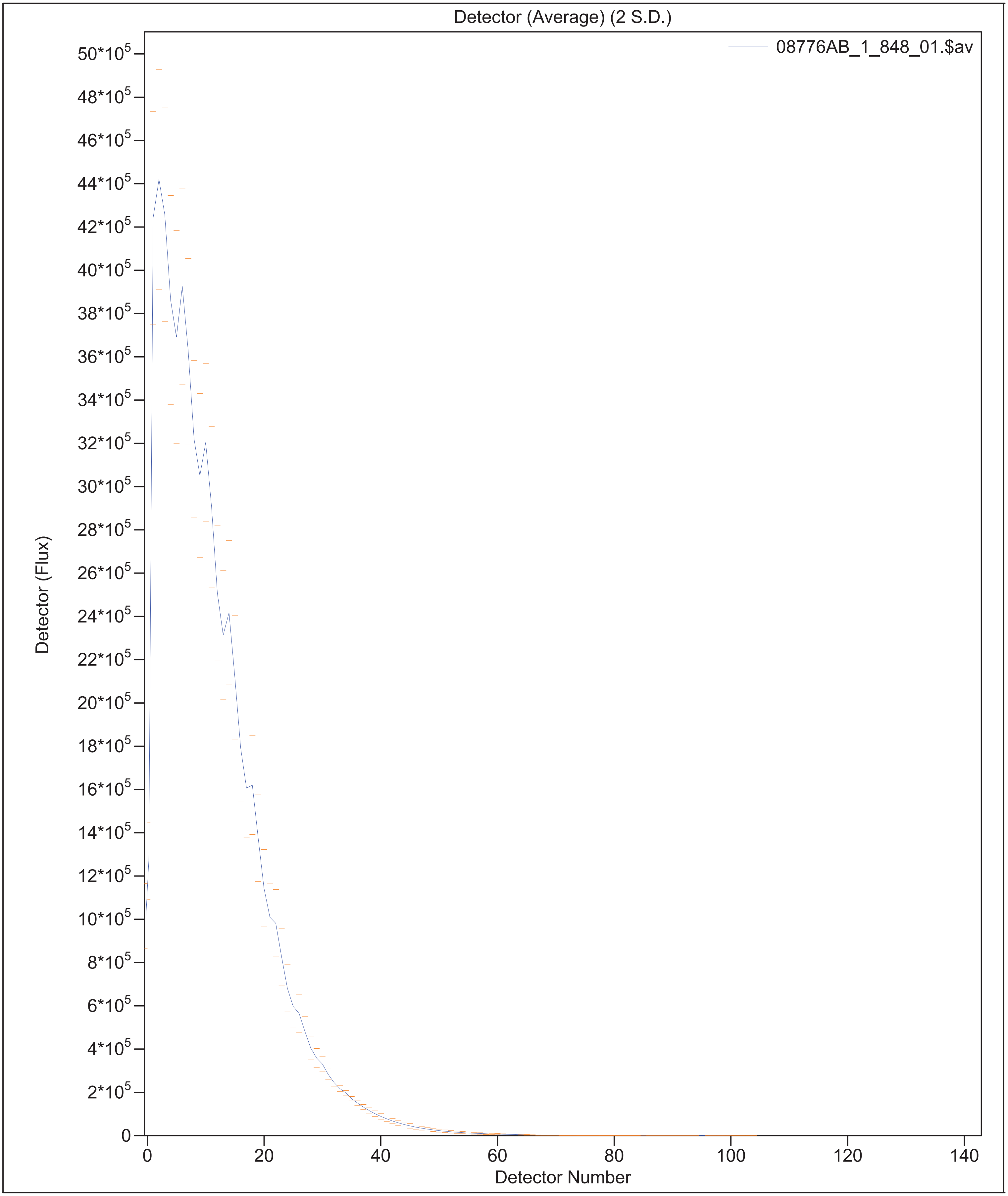
Beckman Coulter LS 13 320

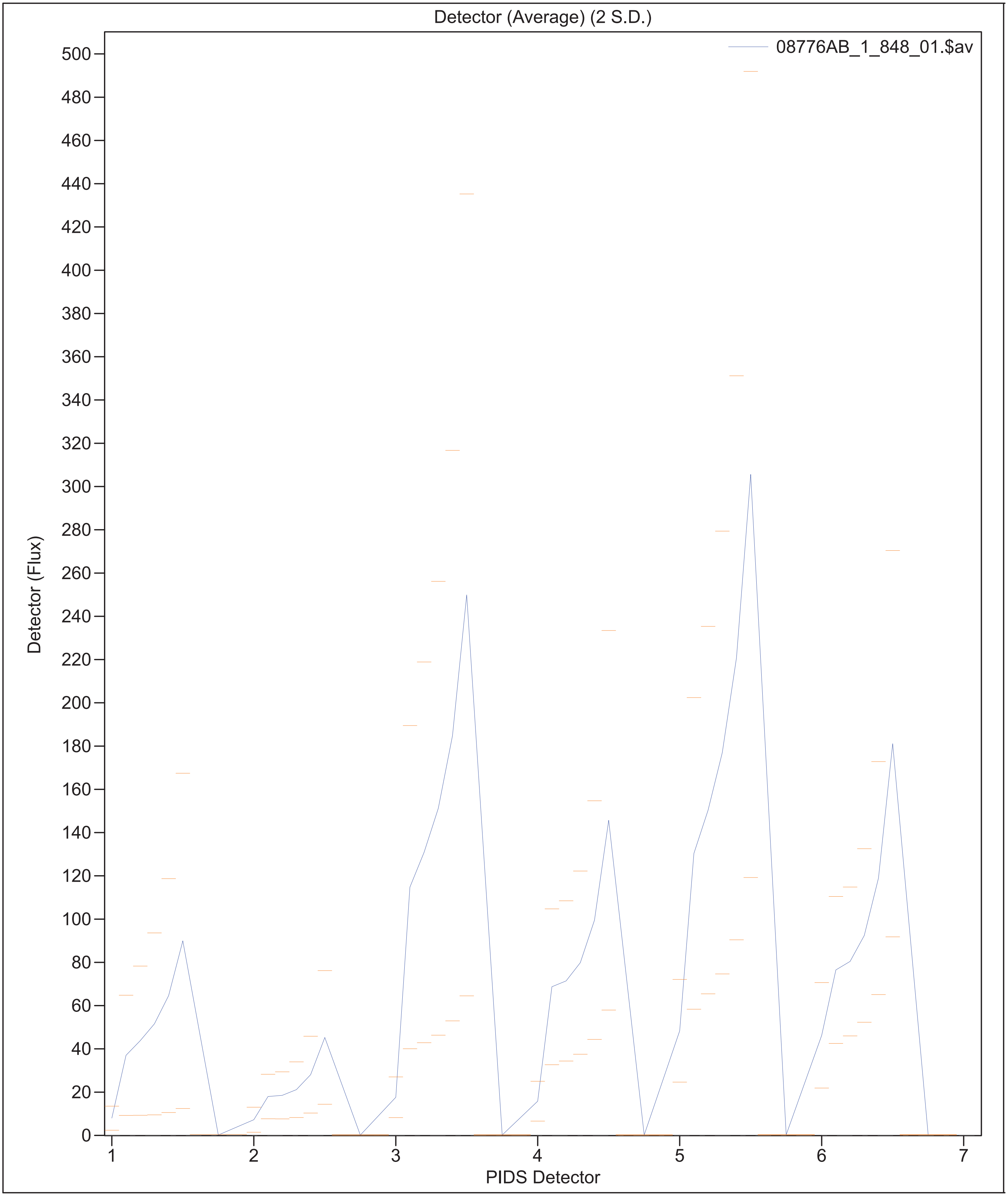


LS Particle Size Analyzer

10 Jul 2024 12:12

Beckman Coulter LS 13 320

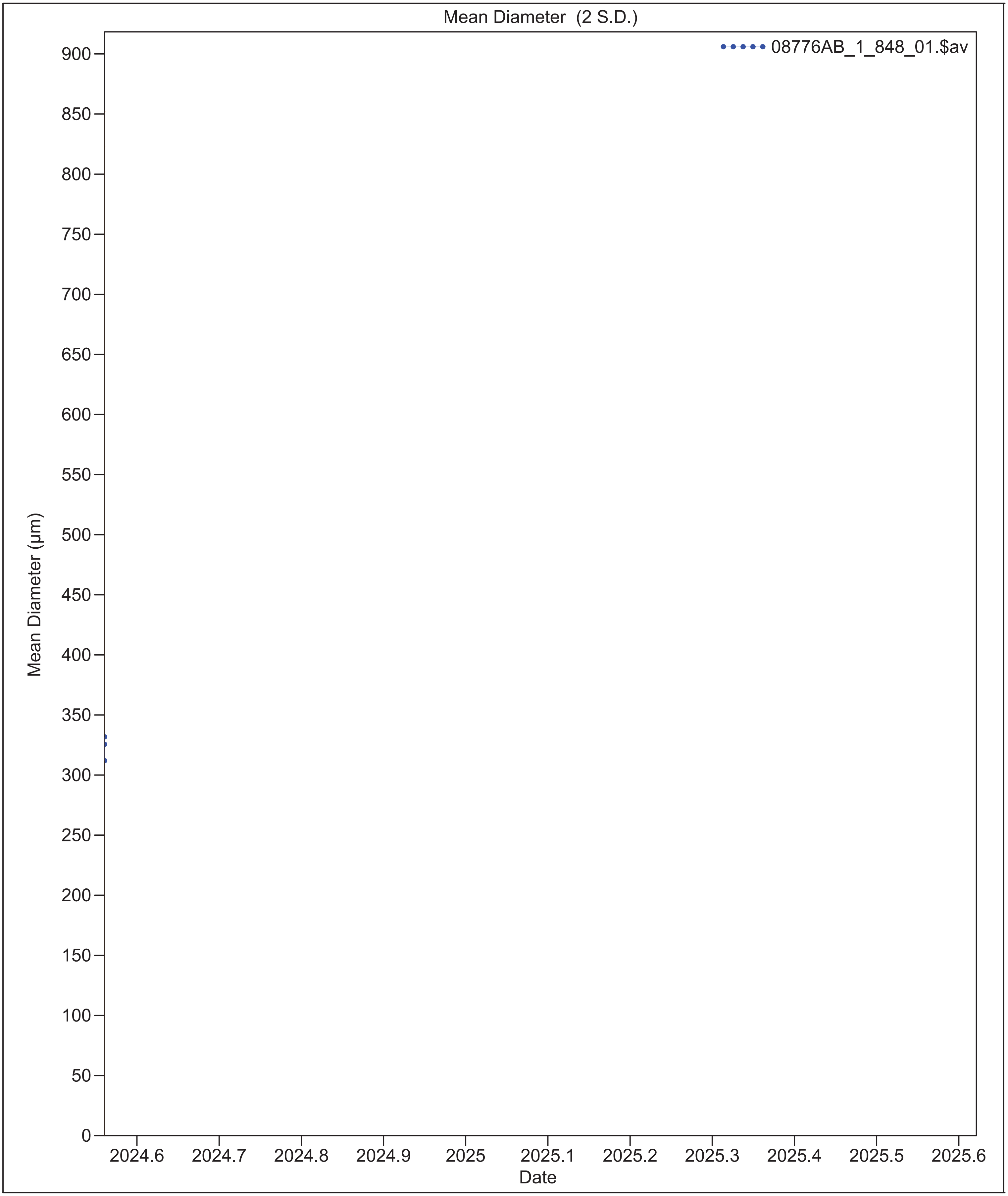



Detector (Average) (2 S.D.)
08776AB_1_848_01.$av
Detector (Flux)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
380
400
420
440
460
480
500
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 12:12

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 08776AB_1_848_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	323.0 µm	10.16	302.7	343.4
Median:	286.7 µm	6.125	274.4	298.9
S.D.:	255.9 µm	7.247	241.4	270.4
Variance:	65510 μm^2	3710	58089	72930
C.V.:	79.28%	3.772	71.73	86.82
Skewness:	1.038	0.074	0.890	1.186
Kurtosis:	1.243	0.312	0.618	1.867
d_{10}:	33.02 µm	14.35	4.315	61.72
d_{50}:	286.7 µm	6.125	274.4	298.9
d_{90}:	663.6 µm	10.78	642.0	685.2

LS Particle Size Analyzer

10 Jul 2024 12:20

Beckman Coulter LS 13 320

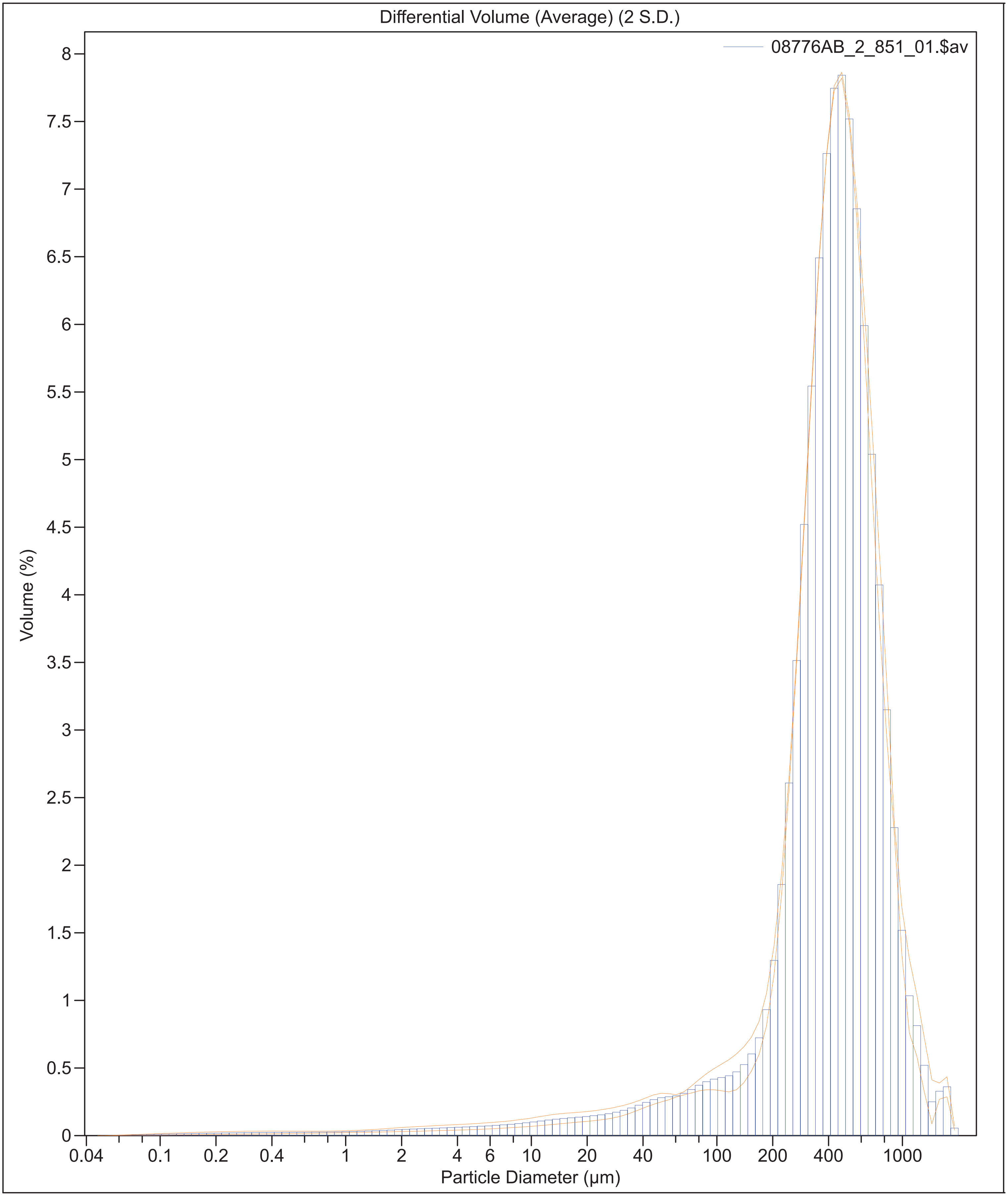
File name:	C:\LS13320\Samples\NOAA-CZM FY23\08776AB_2_851_01.$av
	08776AB_2_851_01.$av
File ID:	08776AB_2
Sample ID:	08776AB_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 54 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\08776AB_2_849_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\08776AB_2_850_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\08776AB_2_851_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:20

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)		08776AB_2_851_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	470.6 µm	S.D.:	269.3 µm
Median:	437.4 µm	Variance:	72531 $µm^2$
Mean/Median ratio:	1.076	C.V.:	57.2%
Mode:	471.1 µm	Skewness:	1.154 Right skewed
		Kurtosis:	3.040 Leptokurtic

d_{10}: 163.9 µm d_{50}: 437.4 µm d_{90}: 794.5 µm

Folk and Ward Statistics (Phi)

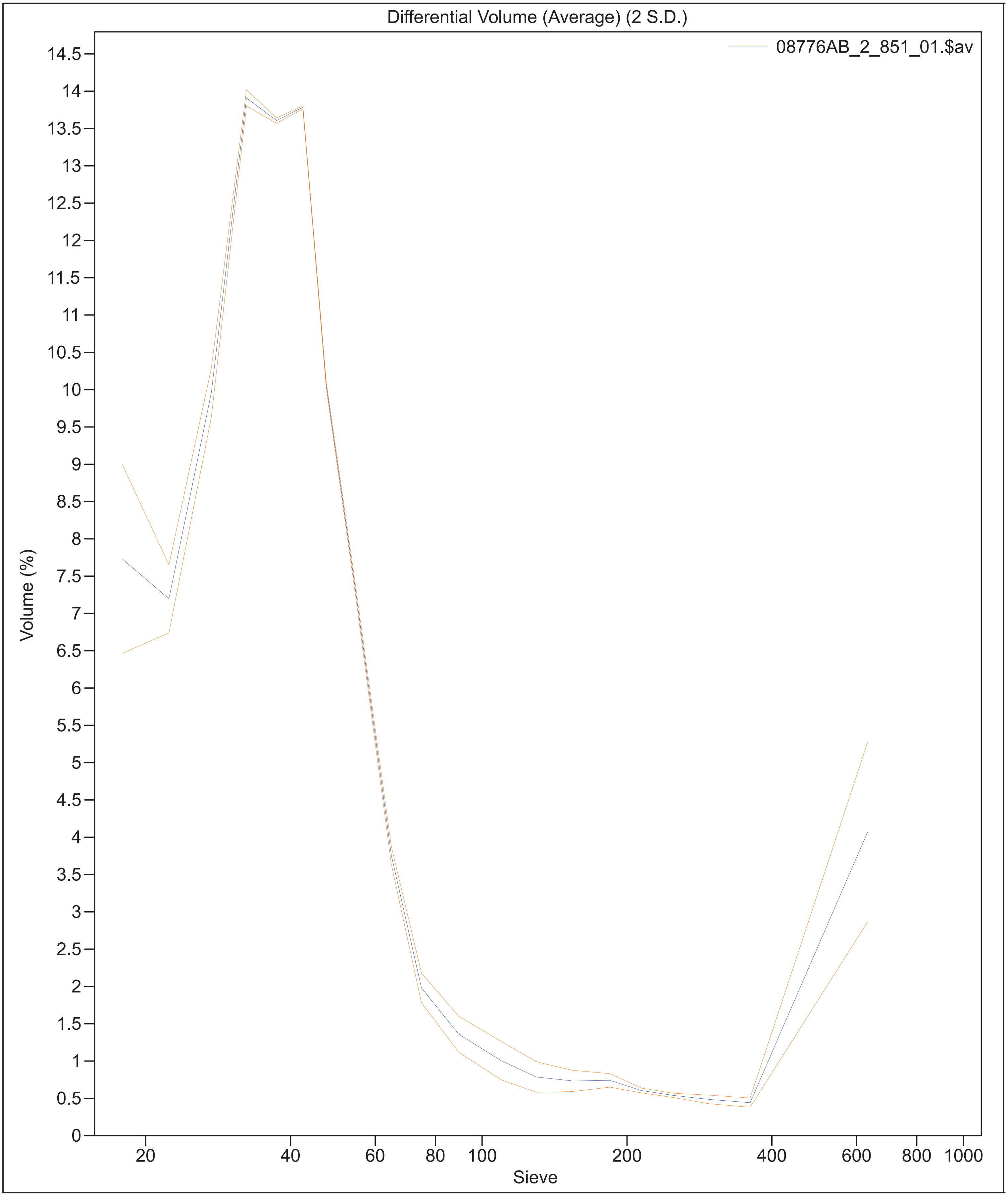
Mean:	1.25	Median:	1.19	Deviation:	1.01
Skewness:	0.29	Kurtosis:	1.77		

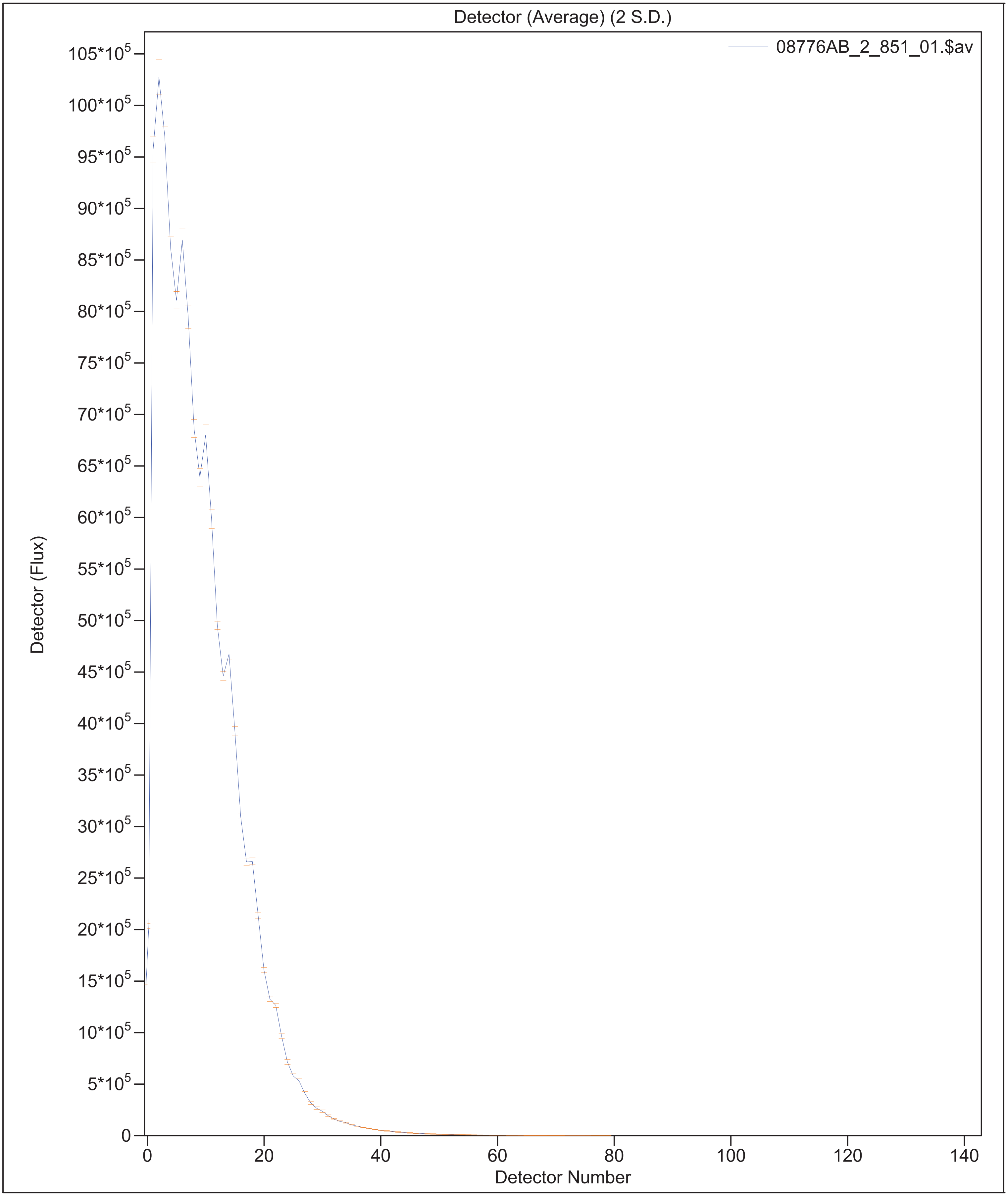
<10%	<25%	<50%	<75%	<90%
163.9 µm	307.7 µm	437.4 µm	598.9 µm	794.5 µm

LS Particle Size Analyzer

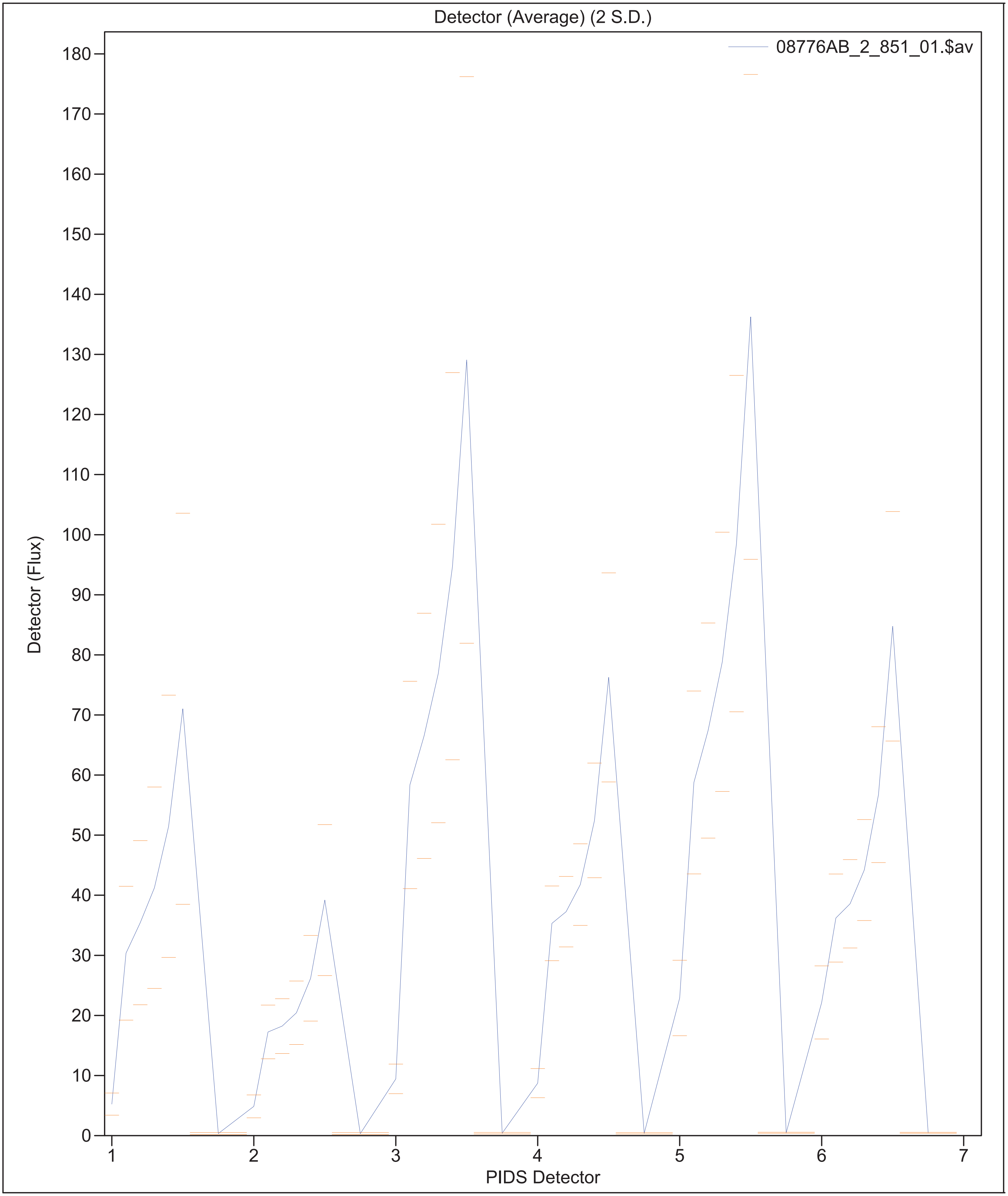
10 Jul 2024 12:20

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
08776AB_2_851_01.$av
Detector (Flux)
105*10^5
100*10^5
95*10^5
90*10^5
85*10^5
80*10^5
75*10^5
70*10^5
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
0
20
40
60
80
100
120
140
Detector Number

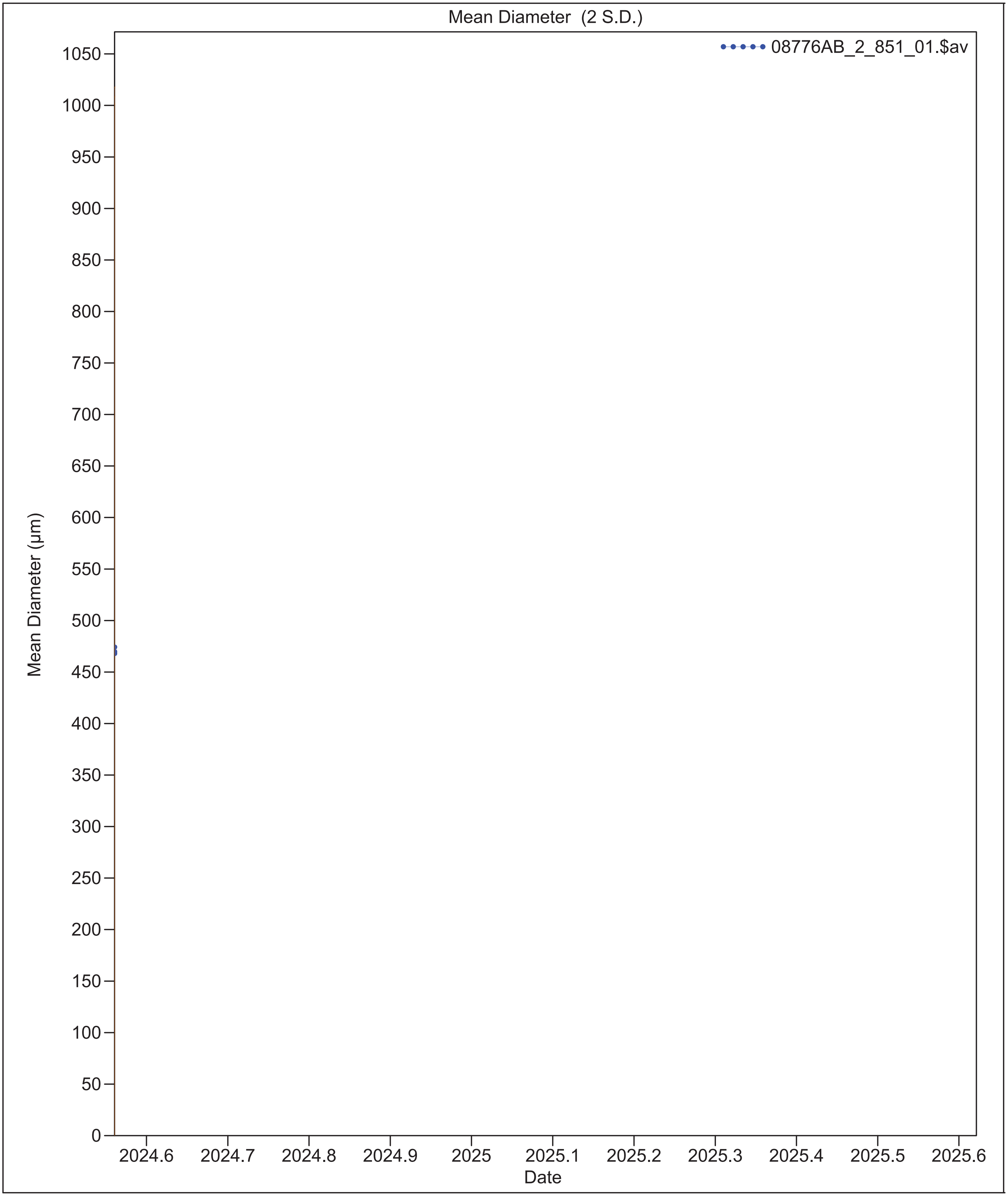
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:20

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 12:20

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 08776AB_2_851_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	470.6 µm	3.198	464.2	477.0
Median:	437.4 µm	0.152	437.1	437.7
S.D.:	269.3 µm	2.574	264.1	274.4
Variance:	72524 μm^2	1386	69752	75297
C.V.:	57.22%	0.186	56.85	57.60
Skewness:	1.153	0.035	1.083	1.224
Kurtosis:	3.041	0.154	2.732	3.349
d_{10}:	163.5 µm	5.788	152.0	175.1
d_{50}:	437.4 µm	0.152	437.1	437.7
d_{90}:	794.8 µm	9.463	775.8	813.7

LS Particle Size Analyzer

10 Jul 2024 16:11

Beckman Coulter LS 13 320

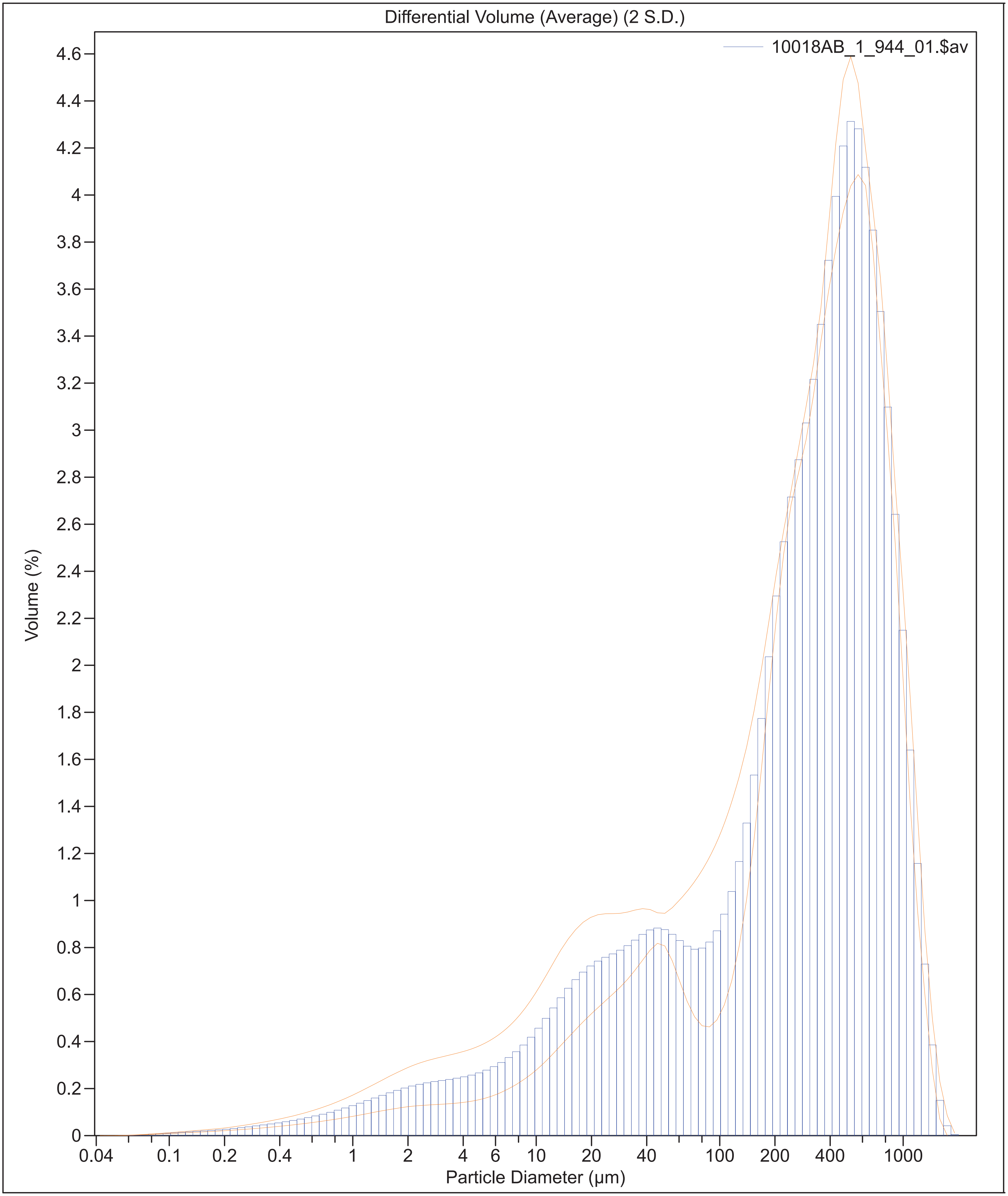
File name:	C:\LS13320\Samples\NOAA-CZM FY23\10018AB_1_944_01.$av
	10018AB_1_944_01.$av
File ID:	10018AB_1
Sample ID:	10018AB_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\10018AB_1_942_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\10018AB_1_943_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\10018AB_1_944_01.$ls

LS Particle Size Analyzer

10 Jul 2024 16:11

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:11

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 10018AB_1_944_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	376.6 µm	S.D.:	323.4 µm
Median:	315.8 µm	Variance:	104.6e3 μm^2
Mean/Median ratio:	1.192	C.V.:	85.9%
Mode:	517.2 µm	Skewness:	0.894 Right skewed
		Kurtosis:	0.371 Leptokurtic

d_{10}: 15.57 µm d_{50}: 315.8 µm d_{90}: 836.6 µm

Folk and Ward Statistics (Phi)

Mean:	2.36	Median:	1.66	Deviation:	2.26
Skewness:	0.52	Kurtosis:	1.16		

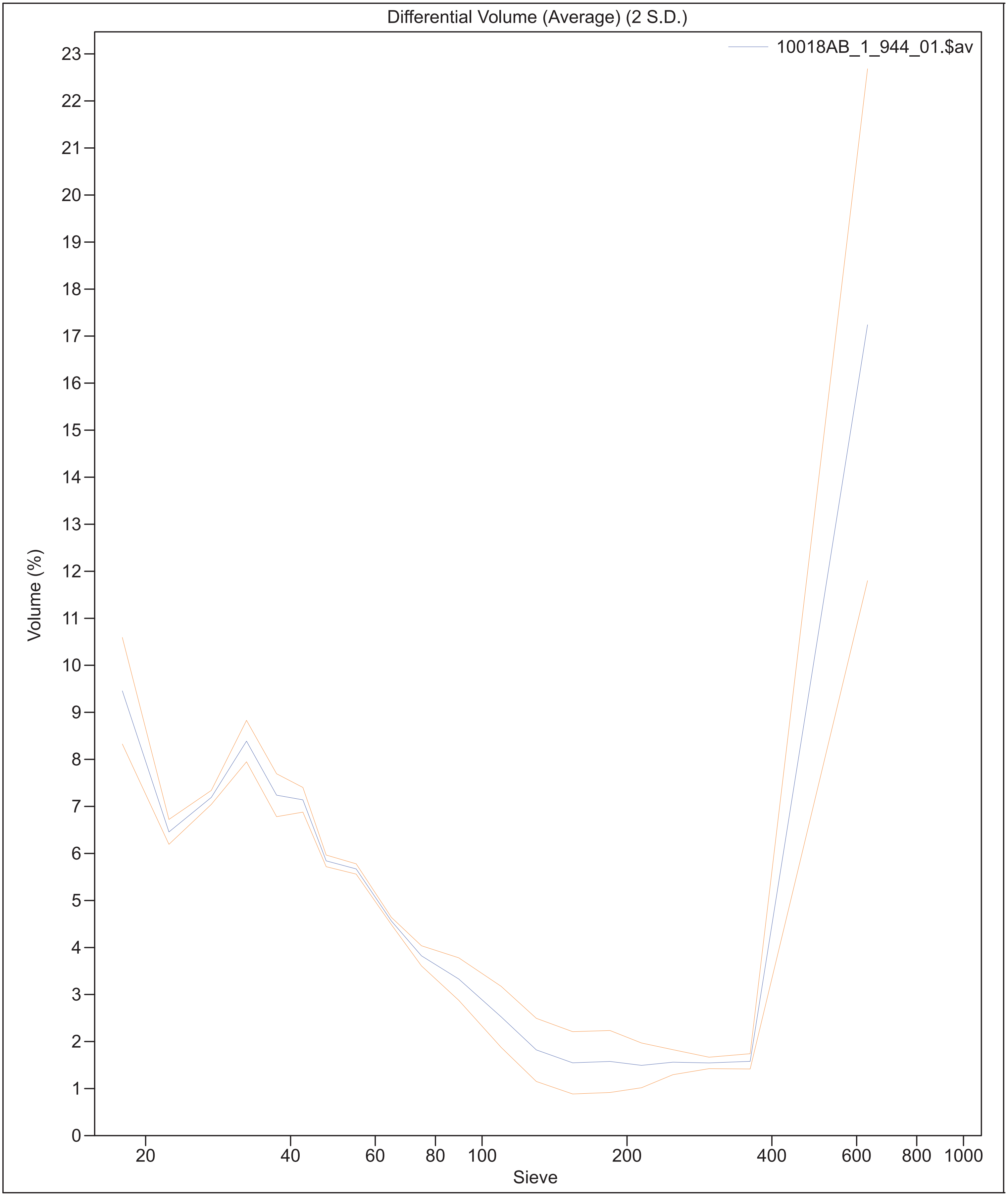
<10%	<25%	<50%	<75%	<90%
15.57 µm	90.00 µm	315.8 µm	576.0 µm	836.6 µm

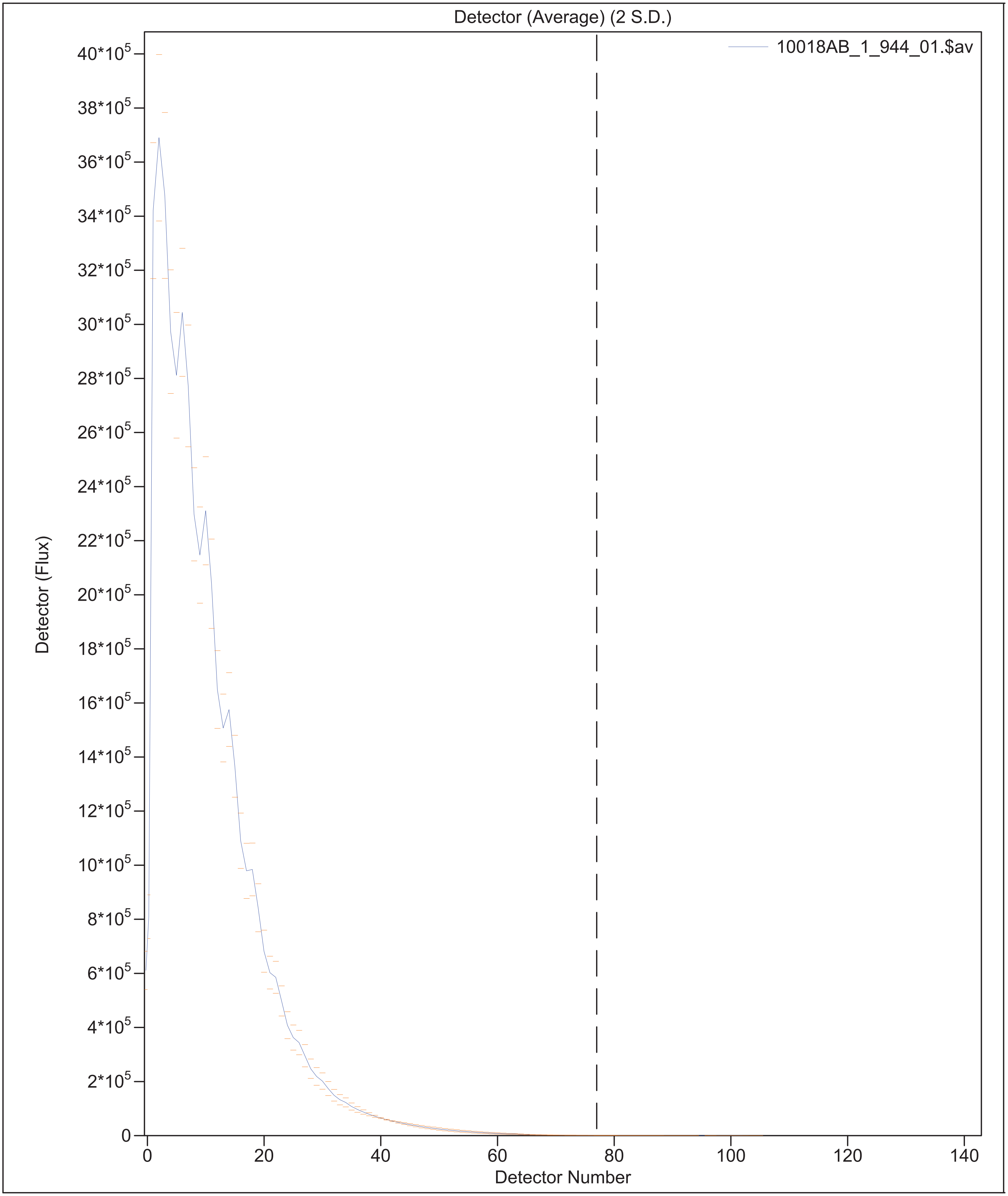
BECKMAN COULTER

LS Particle Size Analyzer

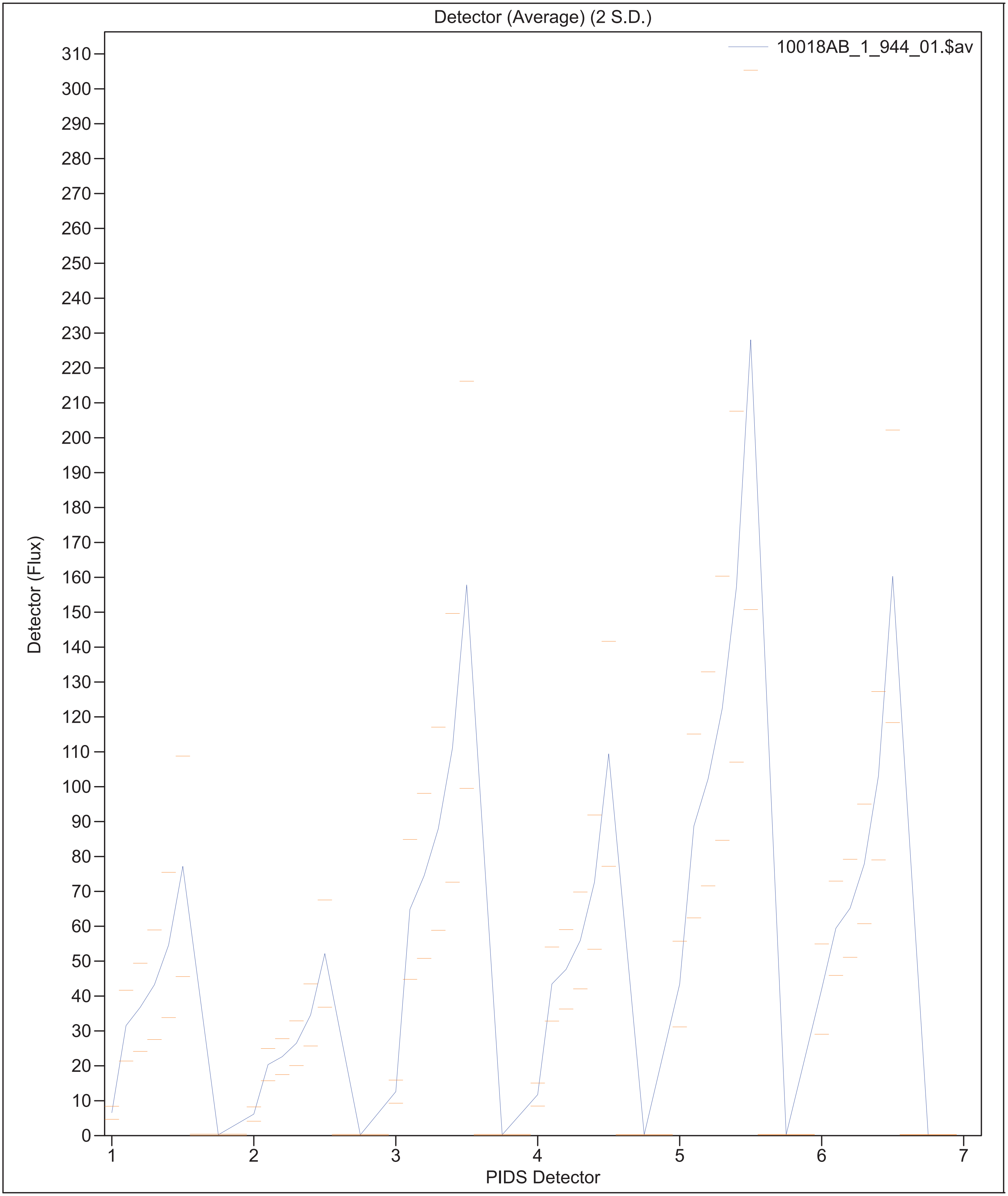
10 Jul 2024 16:11

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
10018AB_1_944_01.$av
Detector (Flux)
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140
Detector Number

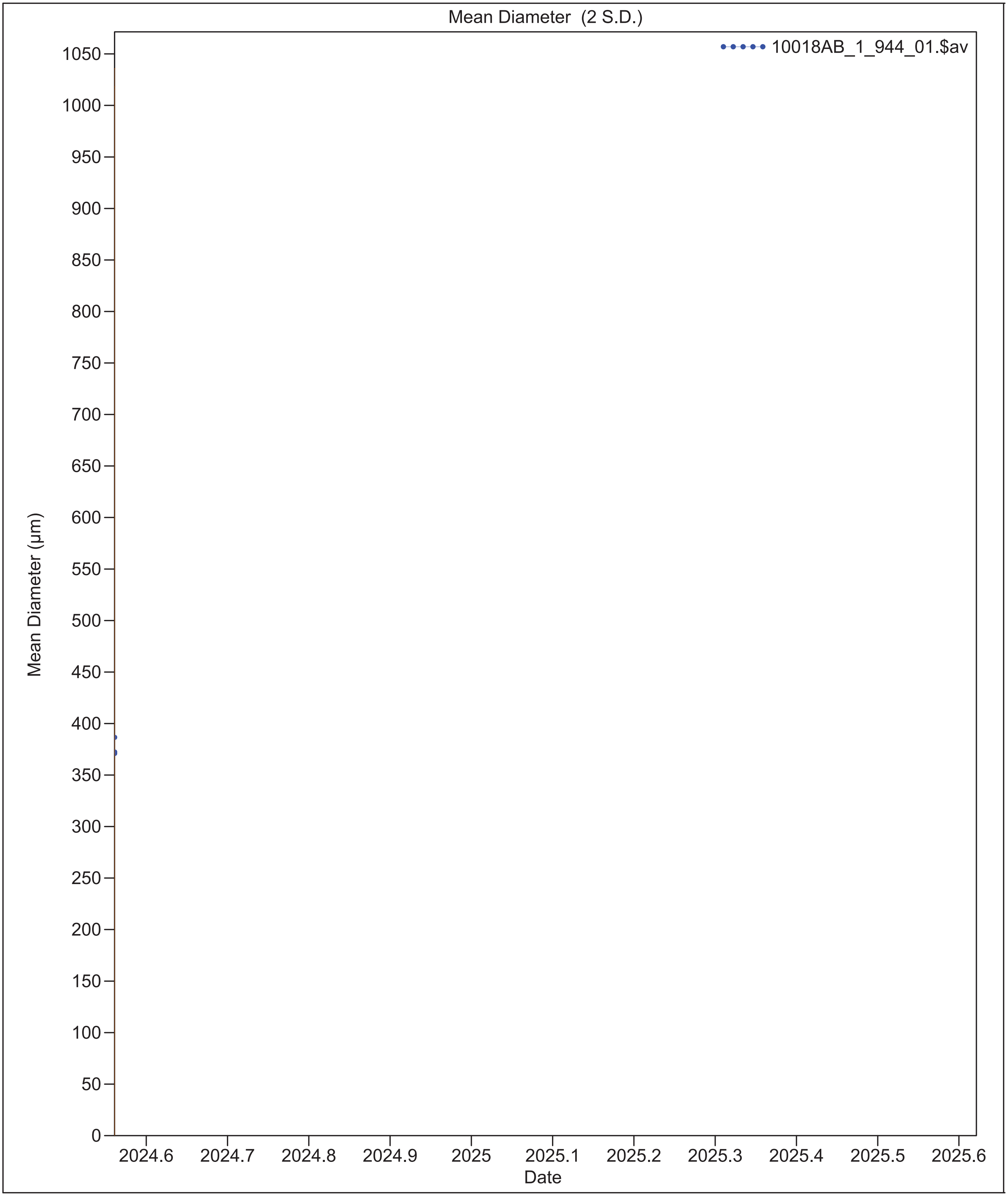
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:11

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:11

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 10018AB_1_944_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	376.6 µm	8.639	359.3	393.9
Median:	315.9 µm	8.480	298.9	332.8
S.D.:	323.3 µm	1.178	321.0	325.7
Variance:	104.6e3 μm^2	760.5	103.0e3	106.1e3
C.V.:	85.89%	1.640	82.61	89.17
Skewness:	0.894	0.046	0.802	0.985
Kurtosis:	0.368	0.166	0.035	0.701
d_{10}:	16.26 µm	4.798	6.666	25.86
d_{50}:	315.9 µm	8.480	298.9	332.8
d_{90}:	836.6 µm	10.65	815.3	857.9

BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 16:49

Beckman Coulter LS 13 320

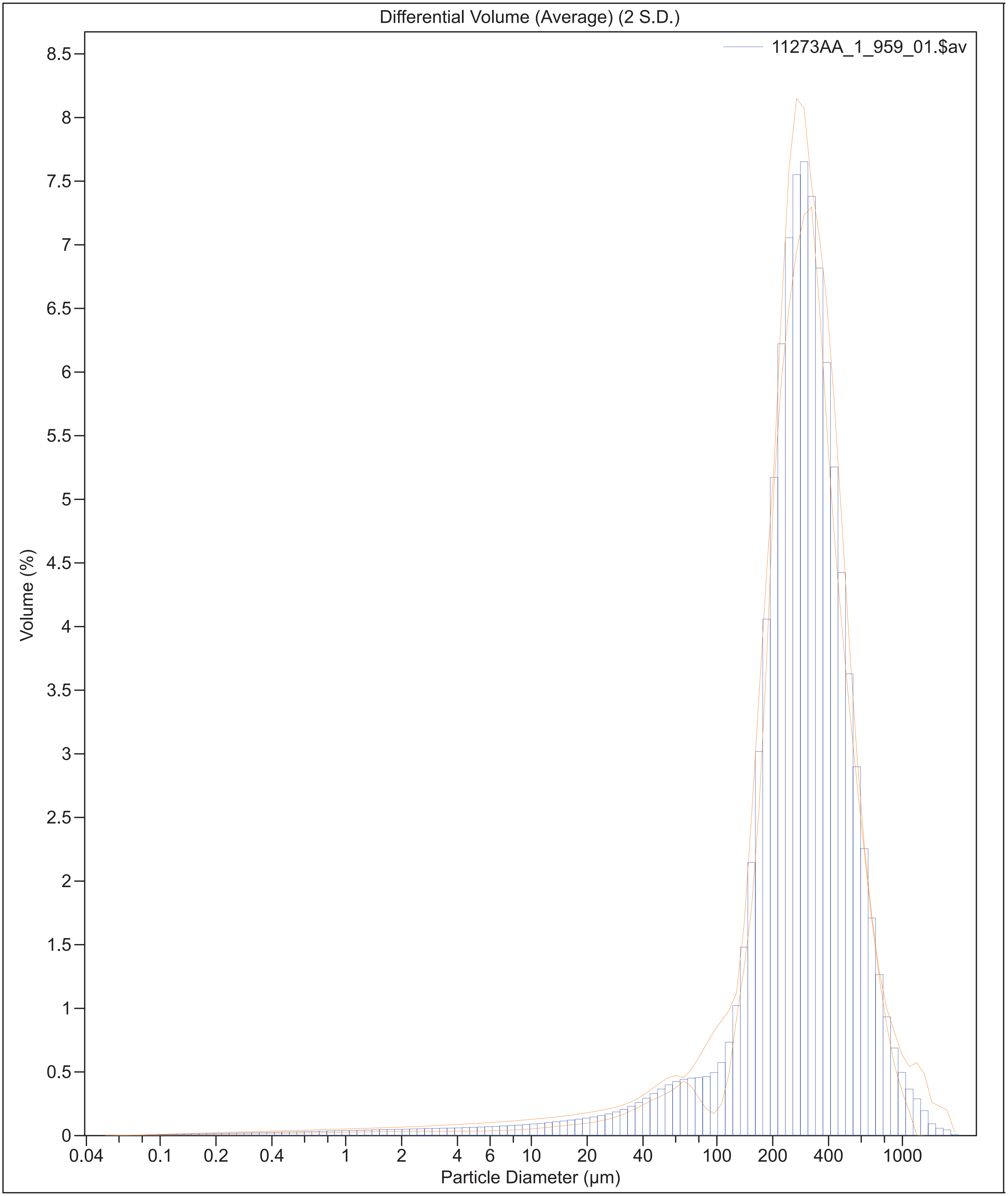
File name:	C:\LS13320\Samples\NOAA-CZM FY23\11273AA_1_959_01.$av
	11273AA_1_959_01.$av
File ID:	11273AA_1
Sample ID:	11273AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\11273AA_1_957_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\11273AA_1_958_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\11273AA_1_959_01.$ls

LS Particle Size Analyzer

10 Jul 2024 16:49

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 11273AA_1_959_01.$av

Calculations from 0.040 µm to 2000 µm

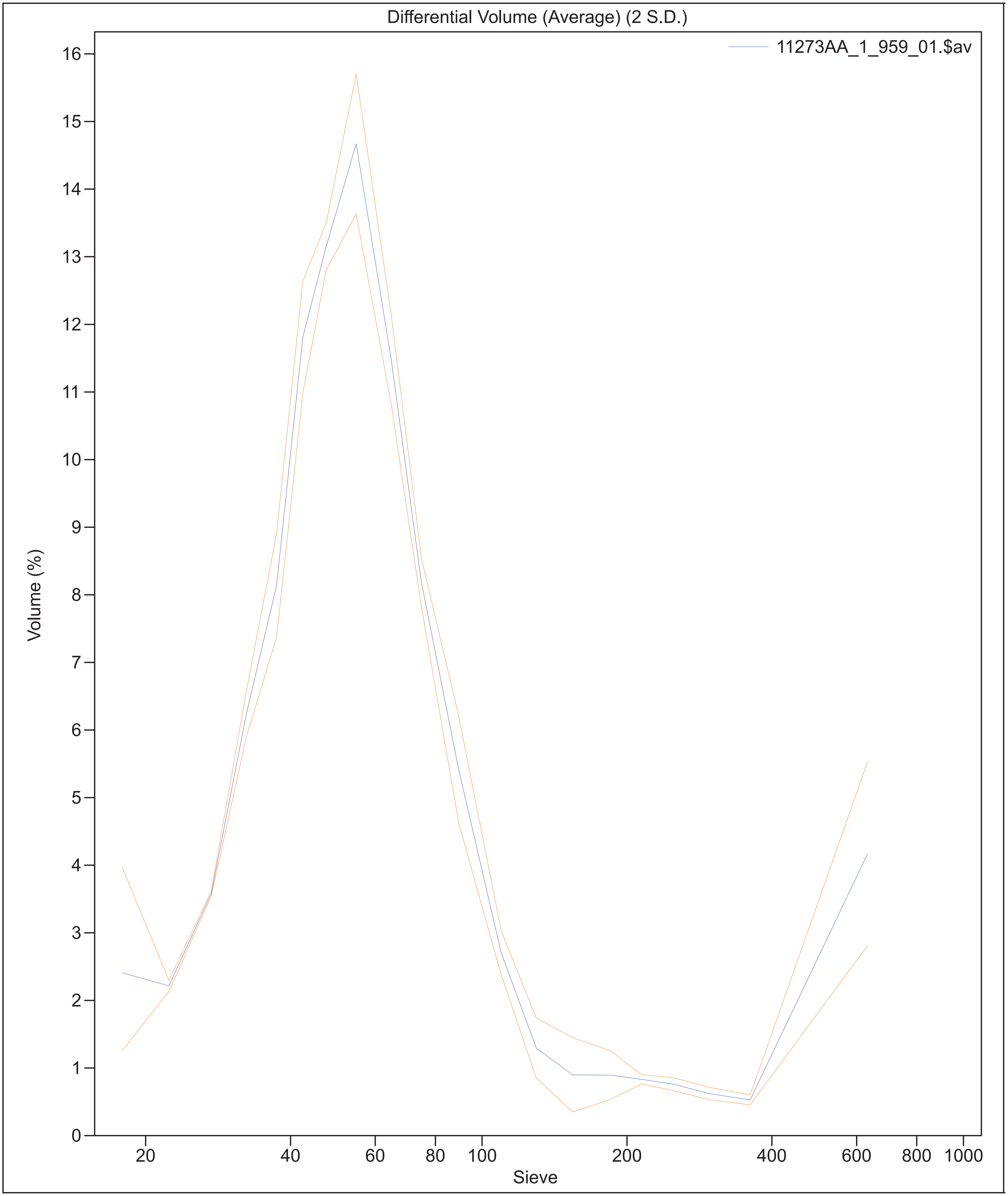
Volume:	100%		
Mean:	326.8 µm	S.D.:	201.1 µm
Median:	291.2 µm	Variance:	40431 $µm^2$
Mean/Median ratio:	1.122	C.V.:	61.5%
Mode:	295.5 µm	Skewness:	1.685 Right skewed
		Kurtosis:	5.597 Leptokurtic

d_{10}: 124.9 µm d_{50}: 291.2 µm d_{90}: 565.7 µm

Folk and Ward Statistics (Phi)

Mean:	1.80	Median:	1.78	Deviation:	0.96
Skewness:	0.19	Kurtosis:	1.61		

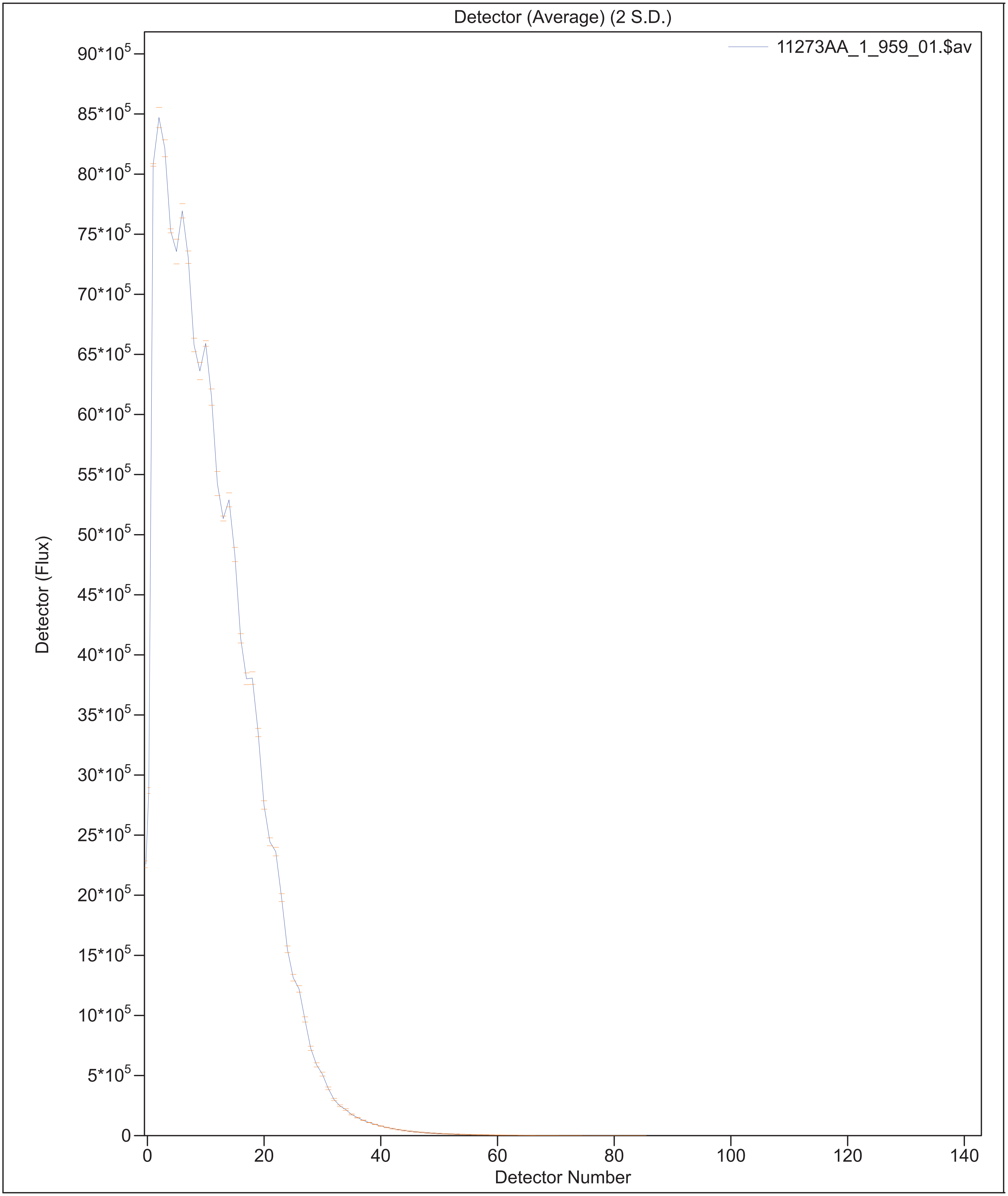
<10%	<25%	<50%	<75%	<90%
124.9 µm	207.2 µm	291.2 µm	407.3 µm	565.7 µm

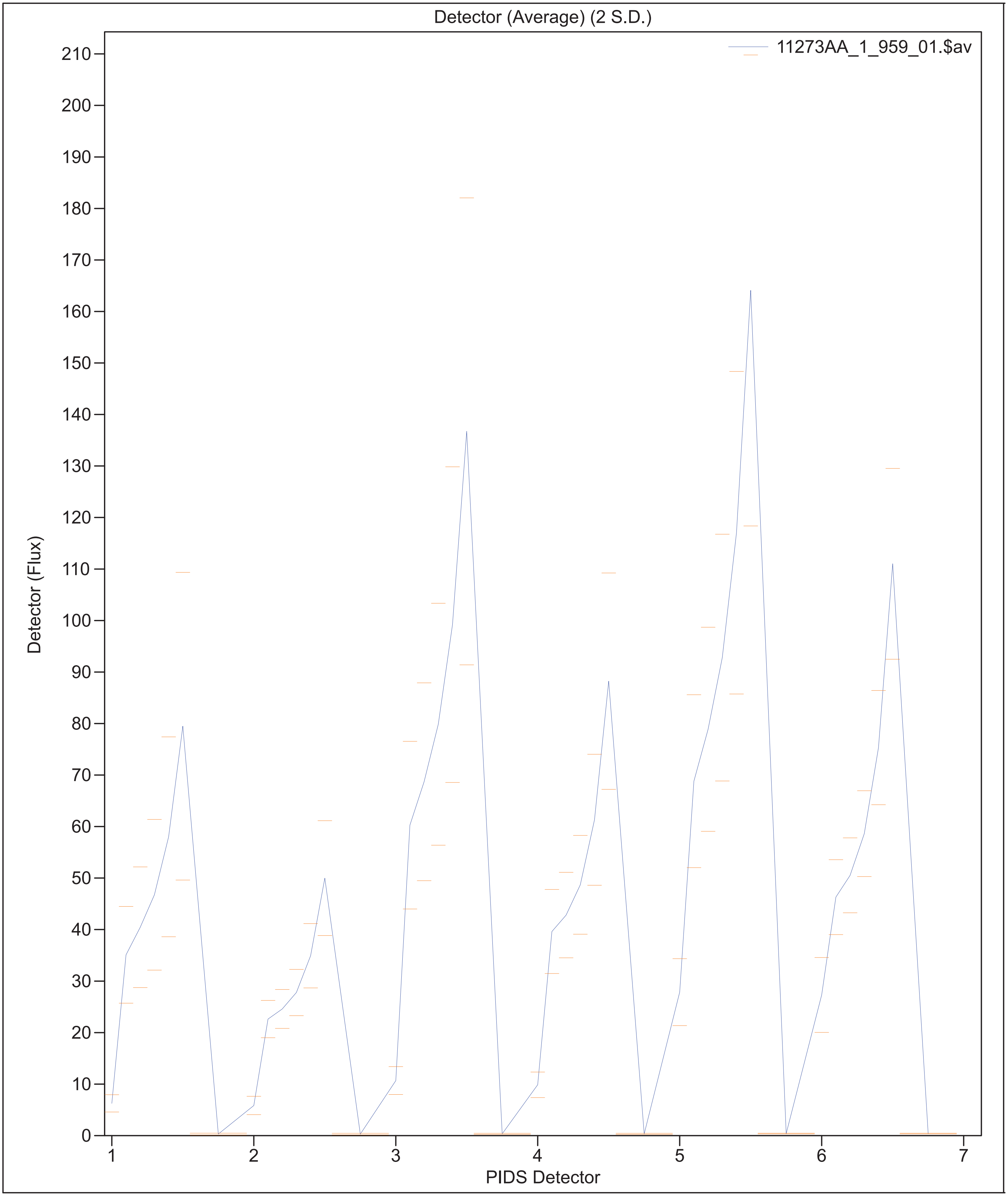

Differential Volume (Average) (2 S.D.)
11273AA_1_959_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Sieve
20
40
60
80
100
200
400
600
800
1000

LS Particle Size Analyzer

10 Jul 2024 16:49

Beckman Coulter LS 13 320

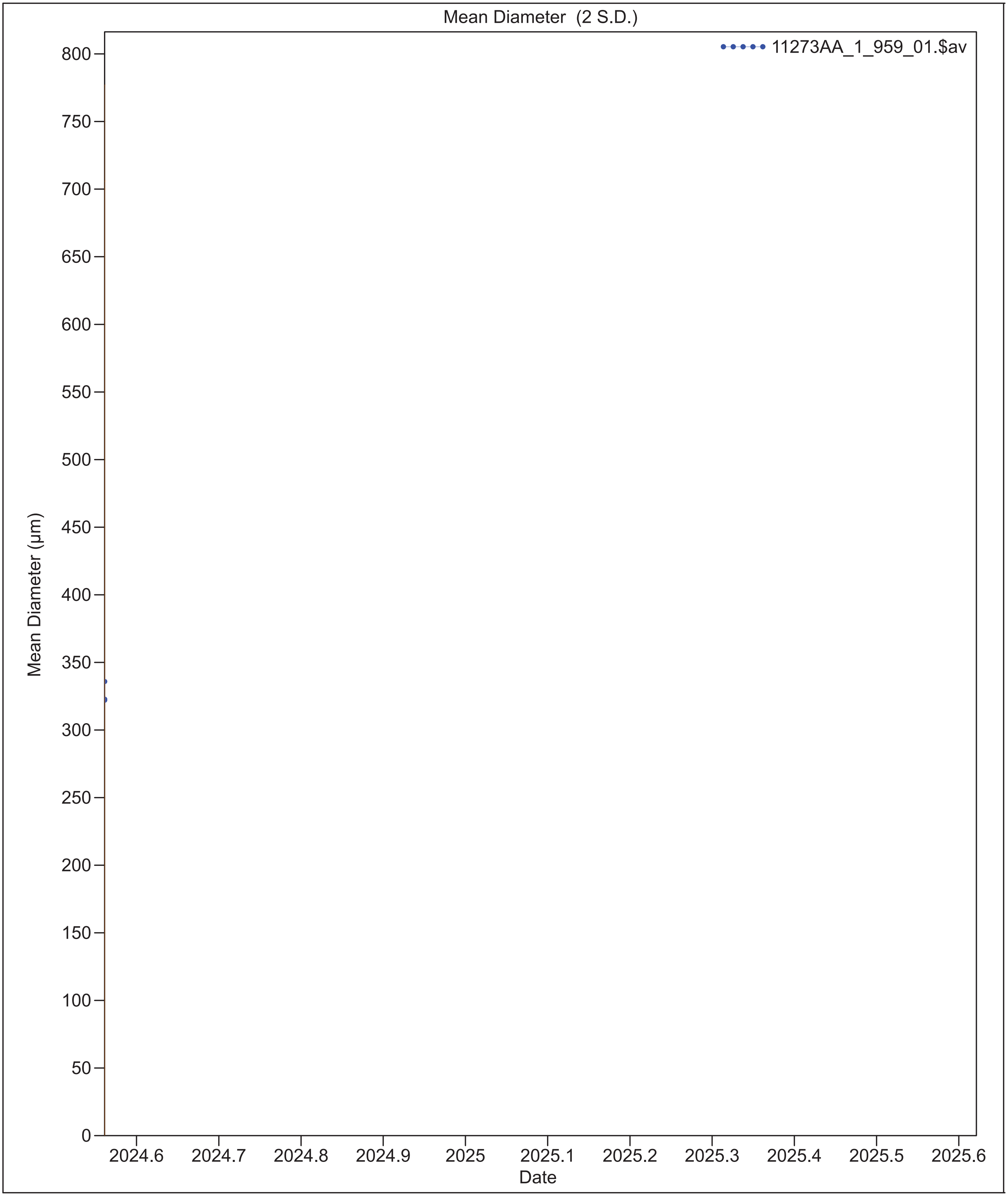



Detector (Average) (2 S.D.)
11273AA_1_959_01.$av
Detector (Flux)
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 16:49

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 16:49

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   11273AA_1_959_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	326.8 µm	7.758	311.3	342.3
Median:	291.2 µm	0.311	290.6	291.8
S.D.:	200.5 µm	17.51	165.4	235.5
Variance:	40391 μm^2	7193	26005	54777
C.V.:	61.28%	3.851	53.58	68.98
Skewness:	1.579	0.449	0.681	2.478
Kurtosis:	4.769	2.310	0.148	9.390
d_{10}:	124.9 µm	1.513	121.9	127.9
d_{50}:	291.2 µm	0.311	290.6	291.8
d_{90}:	565.9 µm	14.26	537.4	594.5

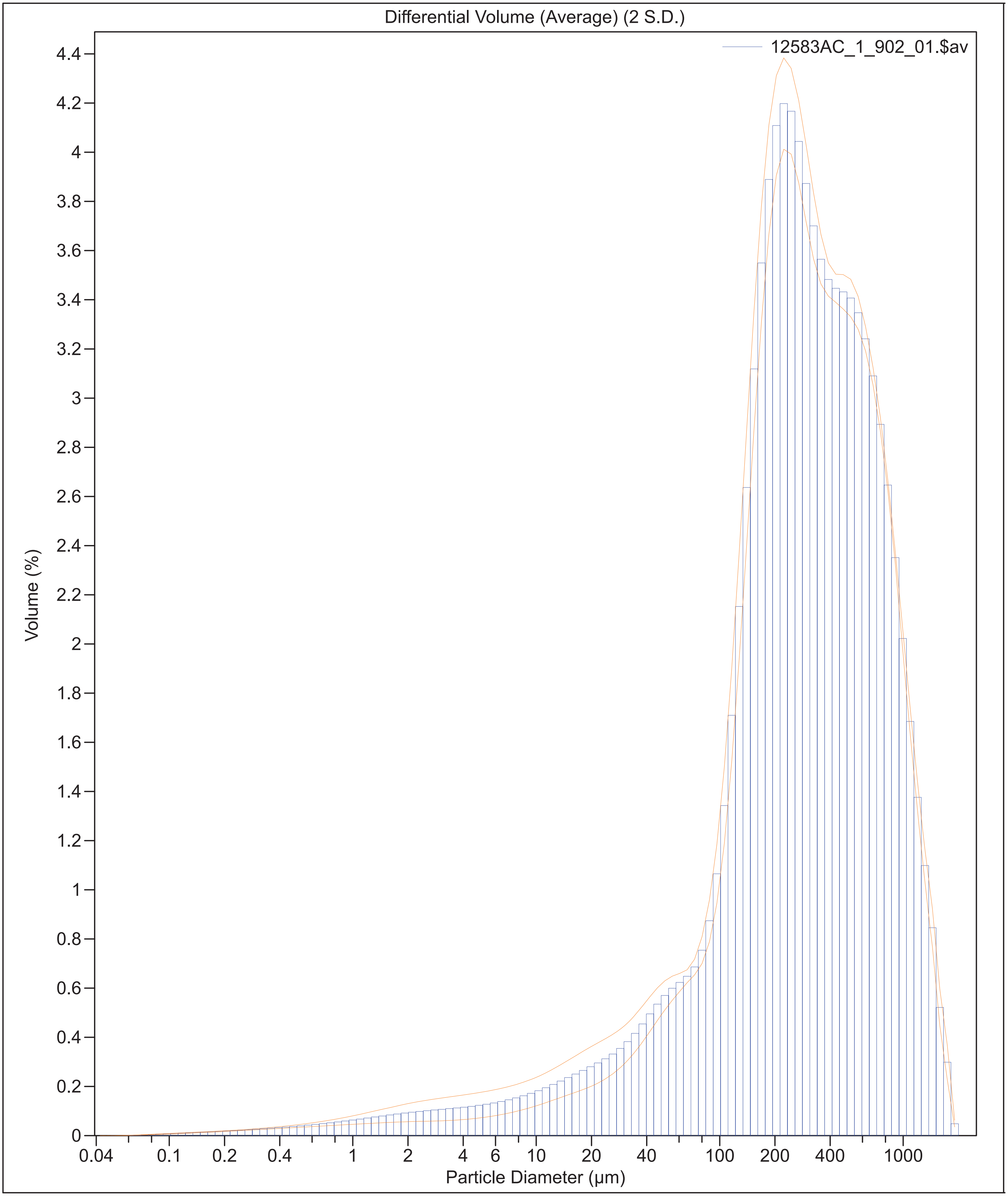
LS Particle Size Analyzer

10 Jul 2024 14:30

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\12583AC_1_902_01.$av
	12583AC_1_902_01.$av
File ID:	12583AC_1
Sample ID:	12583AC_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_1_900_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_1_901_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_1_902_01.$ls


Differential Volume (Average) (2 S.D.)
12583AC_1_902_01.$av
Volume (%)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (μm)

Volume Statistics (Arithmetic)		12583AC_1_902_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	392.1 µm	S.D.:	334.7 µm
Median:	284.7 µm	Variance:	112.0e3 $µm^2$
Mean/Median ratio:	1.377	C.V.:	85.3%
Mode:	223.4 µm	Skewness:	1.380 Right skewed
		Kurtosis:	1.793 Leptokurtic

d_{10}: 57.27 µm d_{50}: 284.7 µm d_{90}: 872.7 µm

Folk and Ward Statistics (Phi)

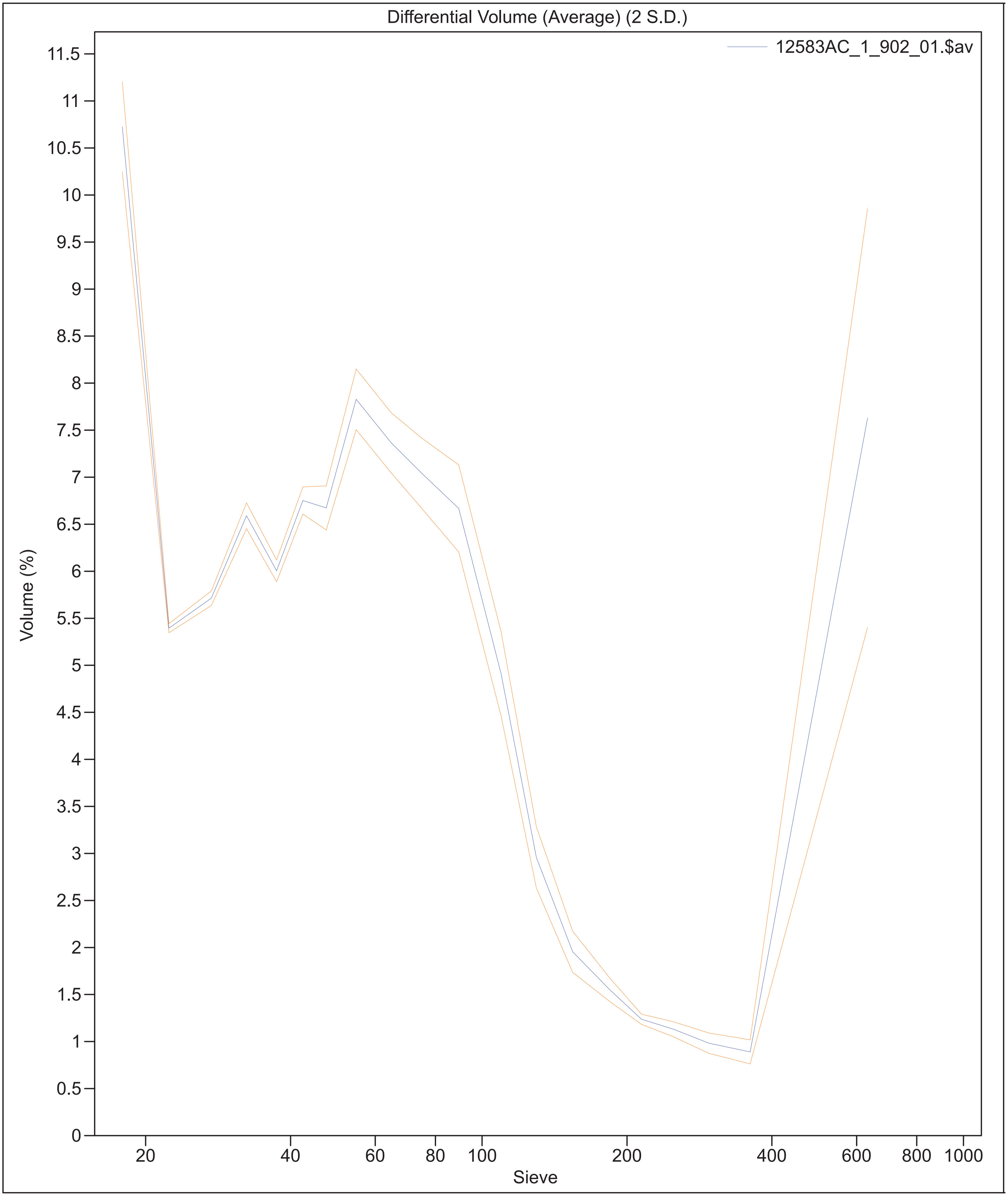
Mean:	1.83	Median:	1.81	Deviation:	1.56
Skewness:	0.18	Kurtosis:	1.34		

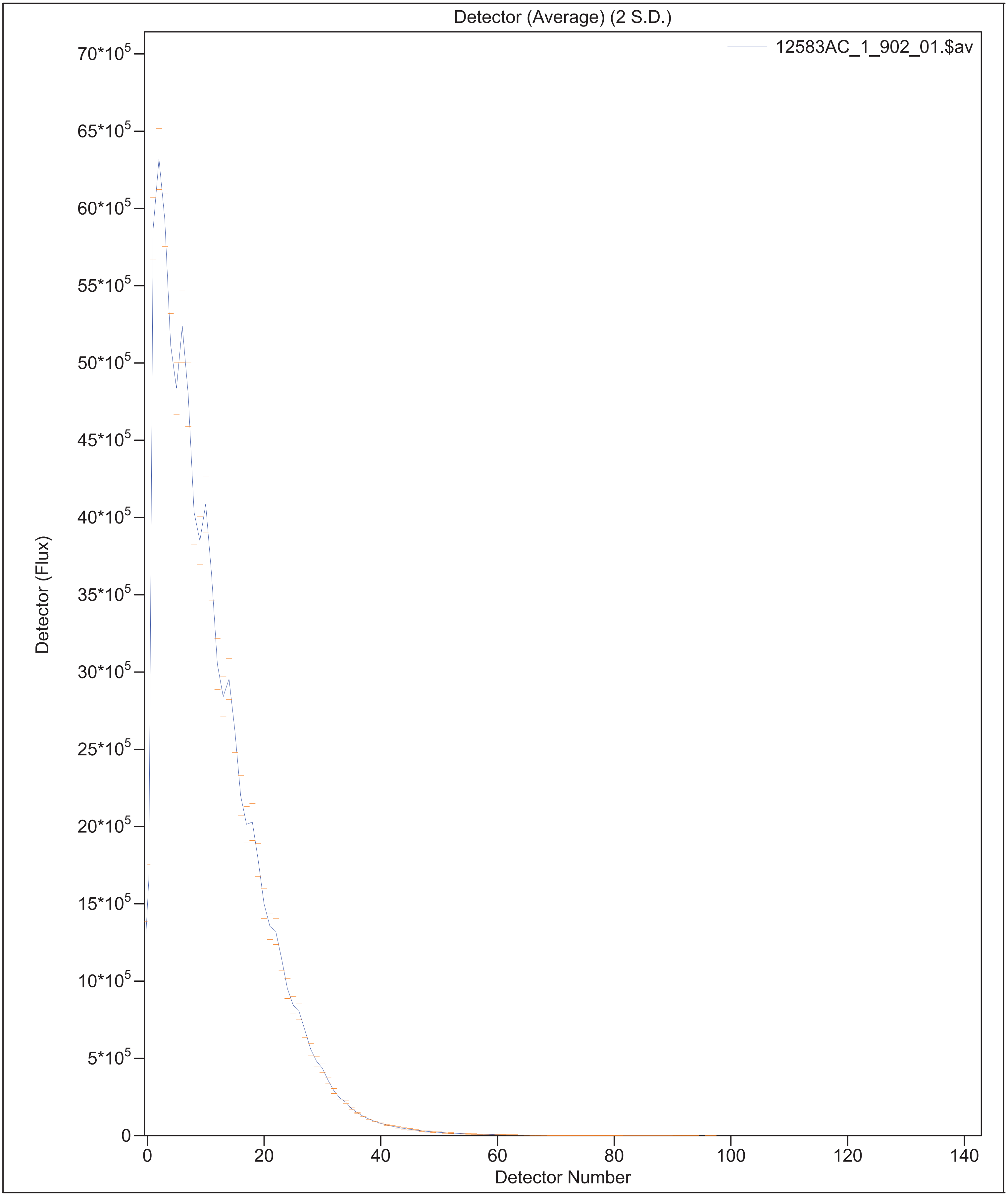
<10%	<25%	<50%	<75%	<90%
57.27 µm	158.1 µm	284.7 µm	549.2 µm	872.7 µm

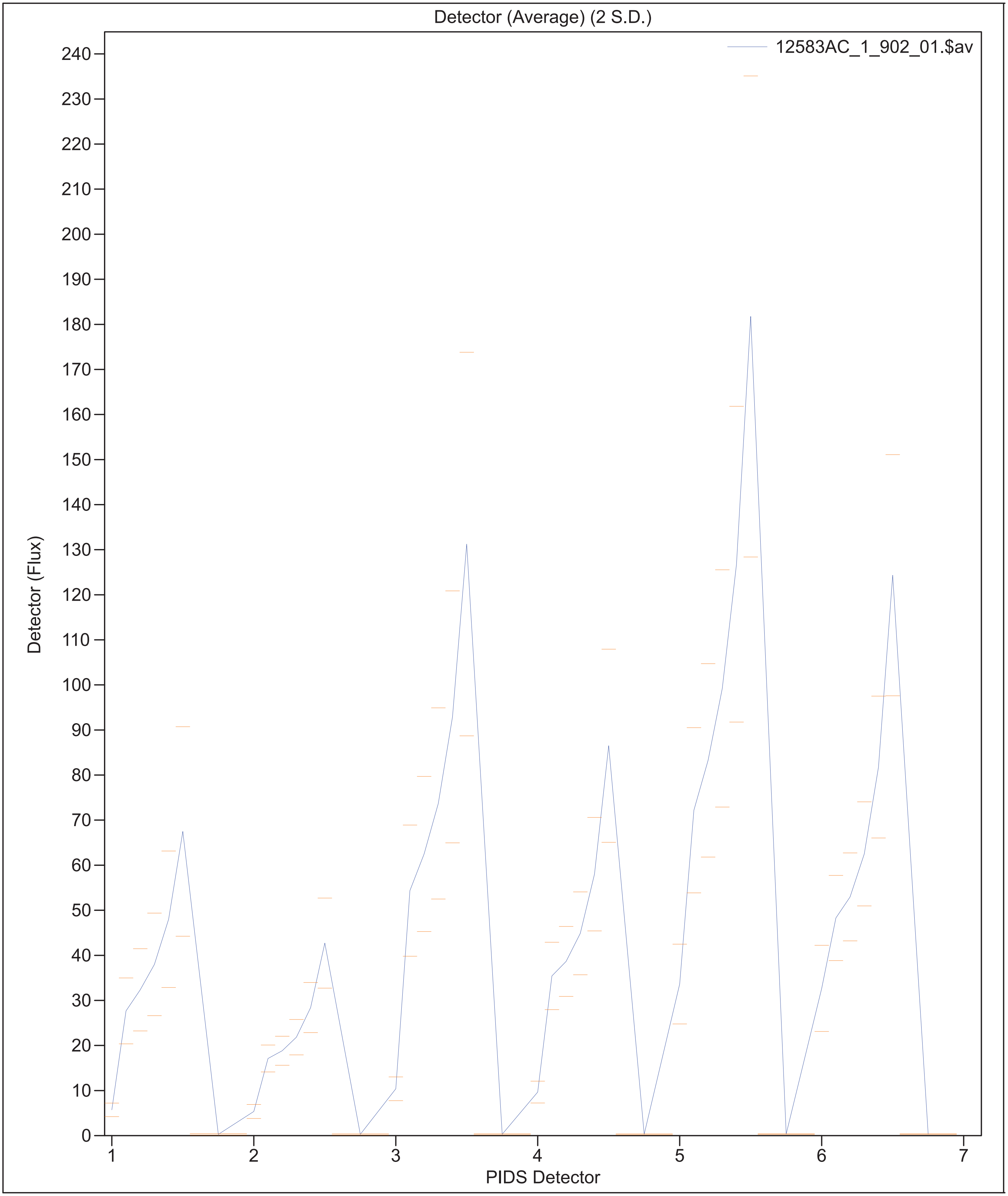
LS Particle Size Analyzer

10 Jul 2024 14:30

Beckman Coulter LS 13 320



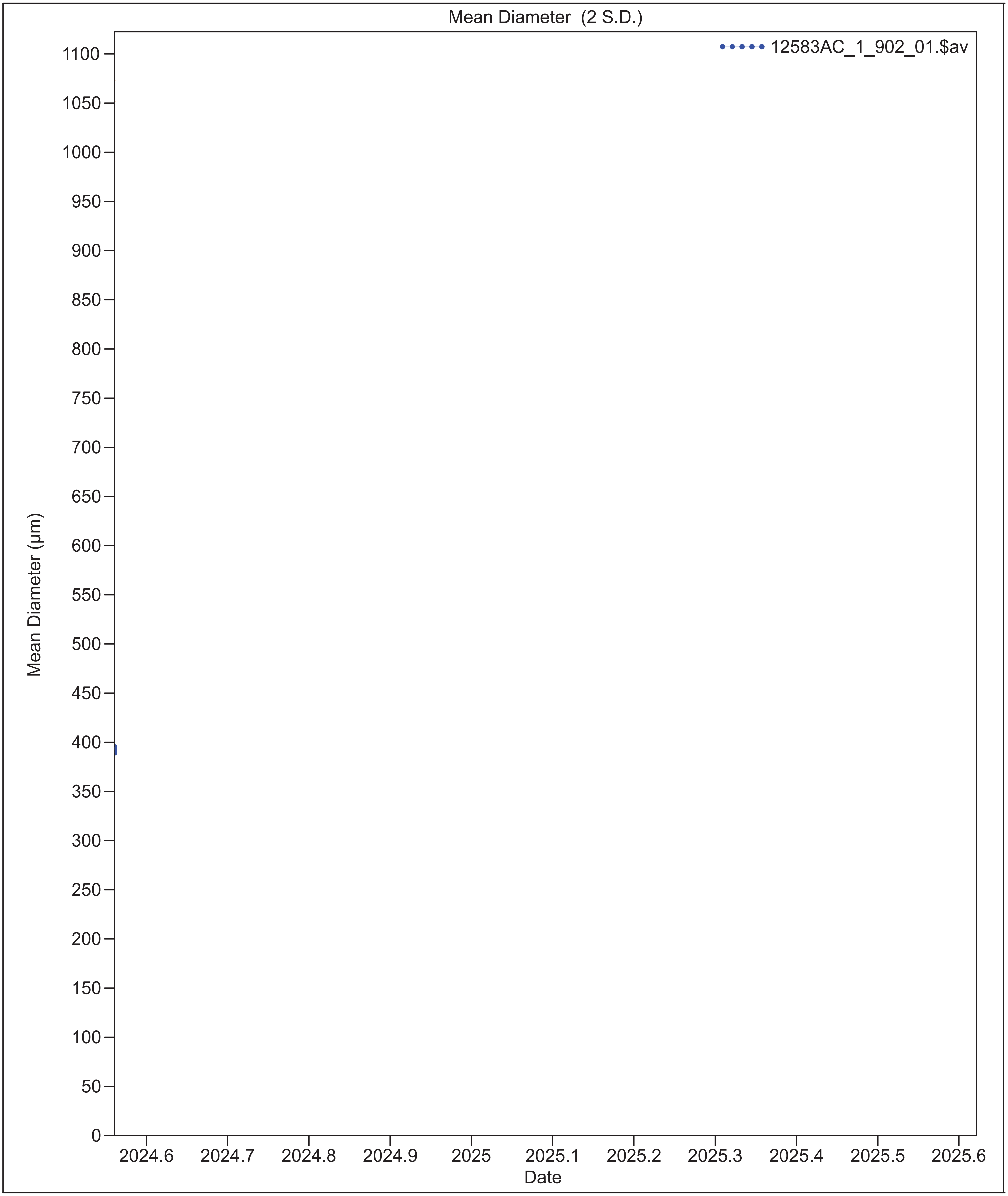

Detector (Average) (2 S.D.)
12583AC_1_902_01.$av
Detector (Flux)
70*10^5
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
12583AC_1_902_01.$av
Detector (Flux)
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 14:30

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 12583AC_1_902_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	392.1 µm	3.039	386.1	398.2
Median:	284.7 µm	1.806	281.1	288.3
S.D.:	334.6 µm	4.519	325.6	343.7
Variance:	112.0e3 $µm^2$	3022	106.0e3	118.0e3
C.V.:	85.34%	1.033	83.27	87.41
Skewness:	1.380	0.013	1.354	1.405
Kurtosis:	1.792	0.036	1.720	1.864
d_{10}:	57.87 µm	10.96	35.94	79.80
d_{50}:	284.7 µm	1.806	281.1	288.3
d_{90}:	872.7 µm	8.315	856.1	889.4

LS Particle Size Analyzer

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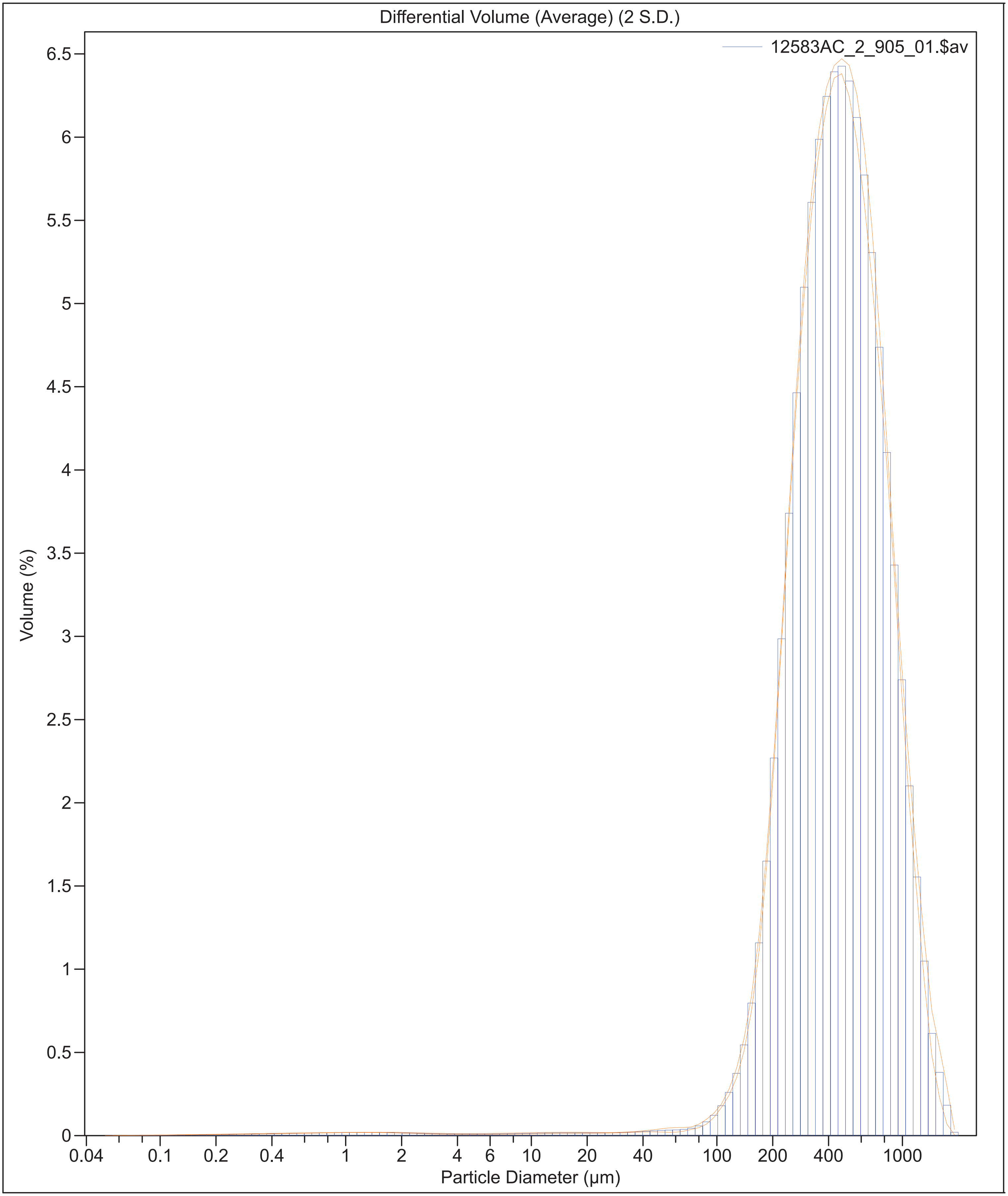
Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\12583AC_2_905_01.$av
	12583AC_2_905_01.$av
File ID:	12583AC_2
Sample ID:	12583AC_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_2_903_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_2_904_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_2_905_01.$ls

Beckman Coulter LS 13 320



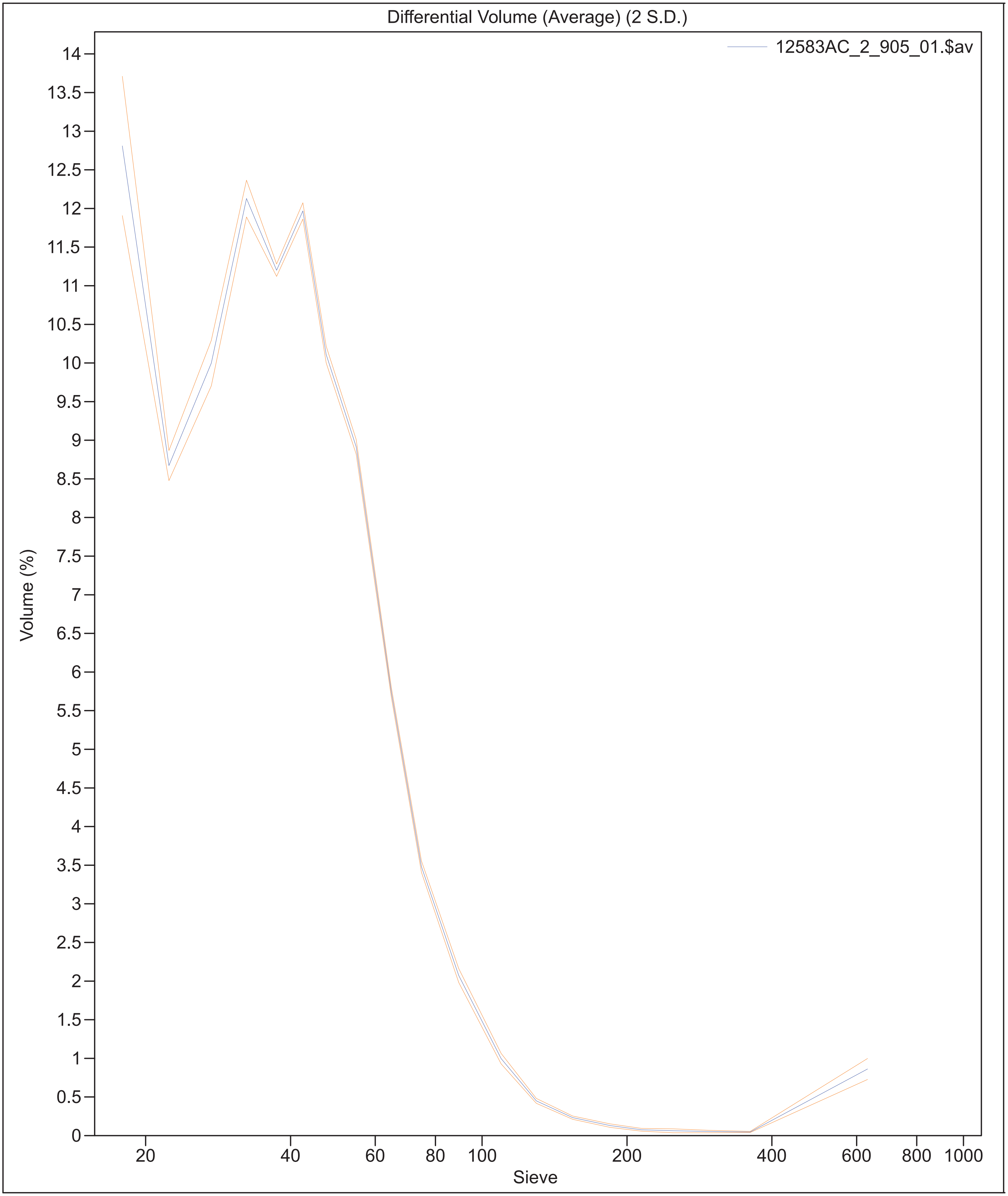
Volume Statistics (Arithmetic)		12583AC_2_905_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	518.8 µm	S.D.:	285.1 µm
Median:	455.6 µm	Variance:	81282 $µm^2$
Mean/Median ratio:	1.139	C.V.:	55.0%
Mode:	471.1 µm	Skewness:	1.125 Right skewed
		Kurtosis:	1.444 Leptokurtic

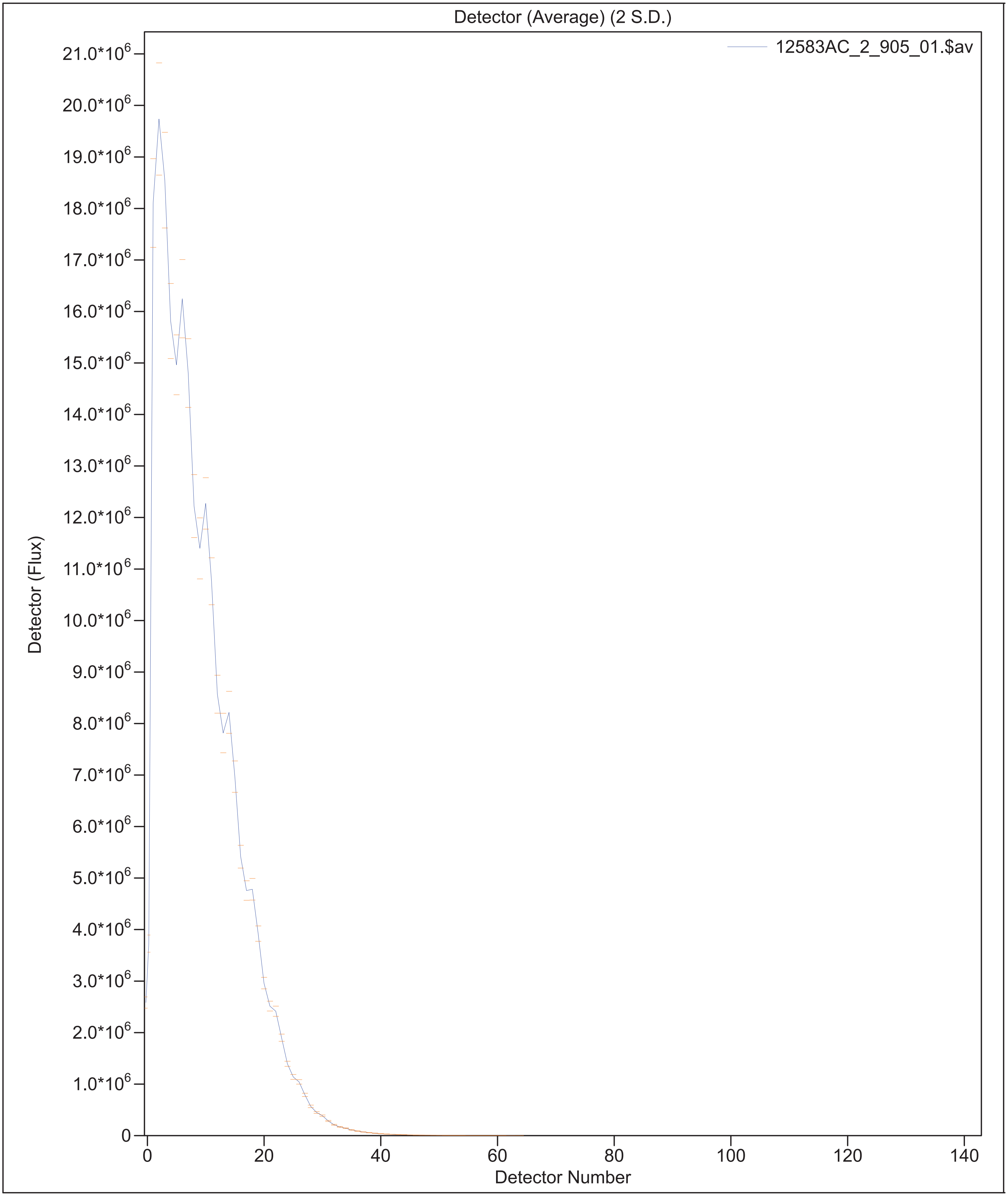
d_{10}: 222.9 µm d_{50}: 455.6 µm d_{90}: 914.8 µm

Folk and Ward Statistics (Phi)

Mean:	1.14	Median:	1.13	Deviation:	0.79
Skewness:	0.02	Kurtosis:	0.96		

<10%	<25%	<50%	<75%	<90%
222.9 µm	310.2 µm	455.6 µm	667.7 µm	914.8 µm


Differential Volume (Average) (2 S.D.)
12583AC_2_905_01.$av
Volume (%)
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve



Detector (Average) (2 S.D.)
12583AC_2_905_01.$av
Detector (Flux)
21.0*10^6
20.0*10^6
19.0*10^6
18.0*10^6
17.0*10^6
16.0*10^6
15.0*10^6
14.0*10^6
13.0*10^6
12.0*10^6
11.0*10^6
10.0*10^6
9.0*10^6
8.0*10^6
7.0*10^6
6.0*10^6
5.0*10^6
4.0*10^6
3.0*10^6
2.0*10^6
1.0*10^6
0
0
20
40
60
80
100
120
140
Detector Number

LS Particle Size Analyzer

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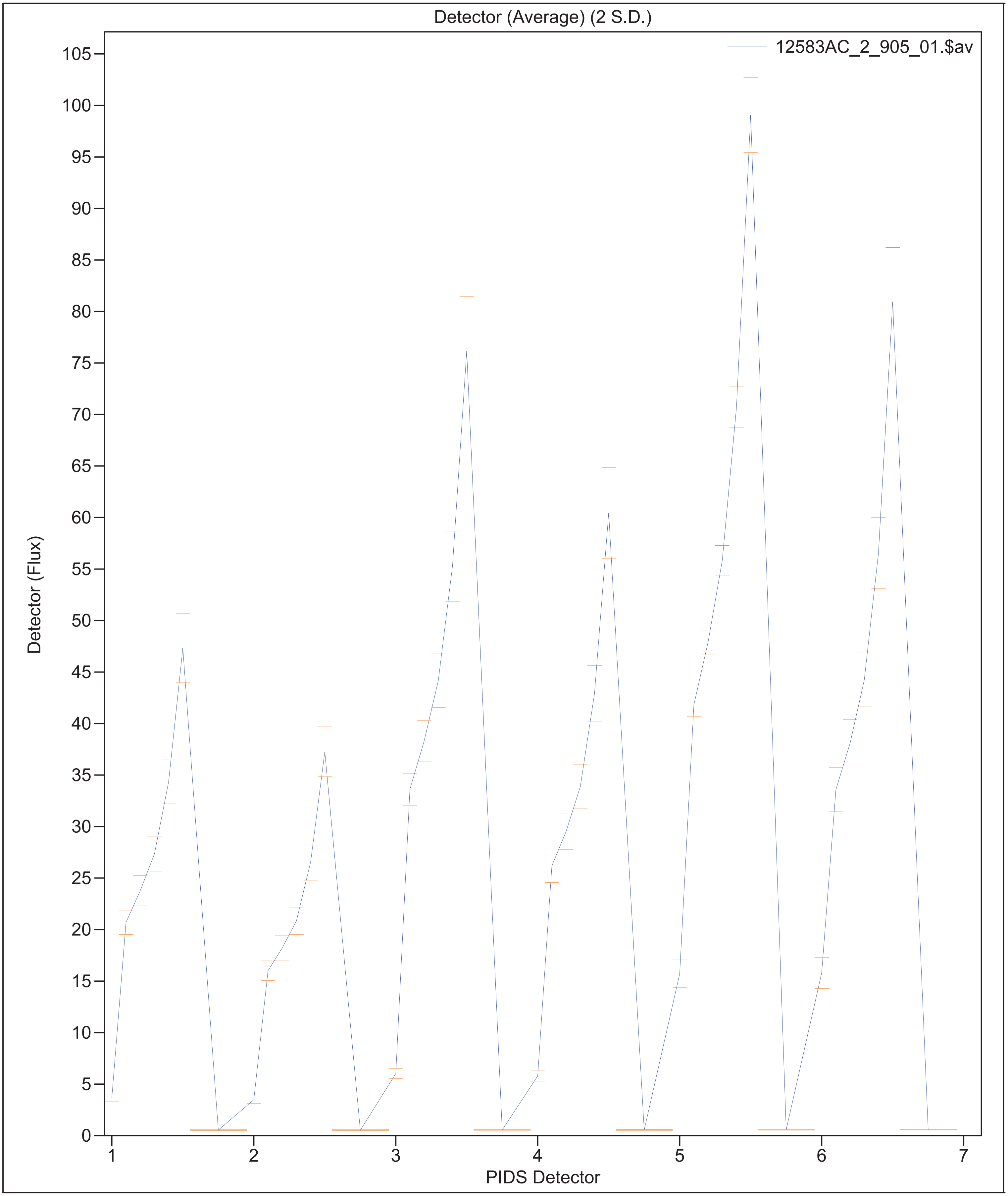
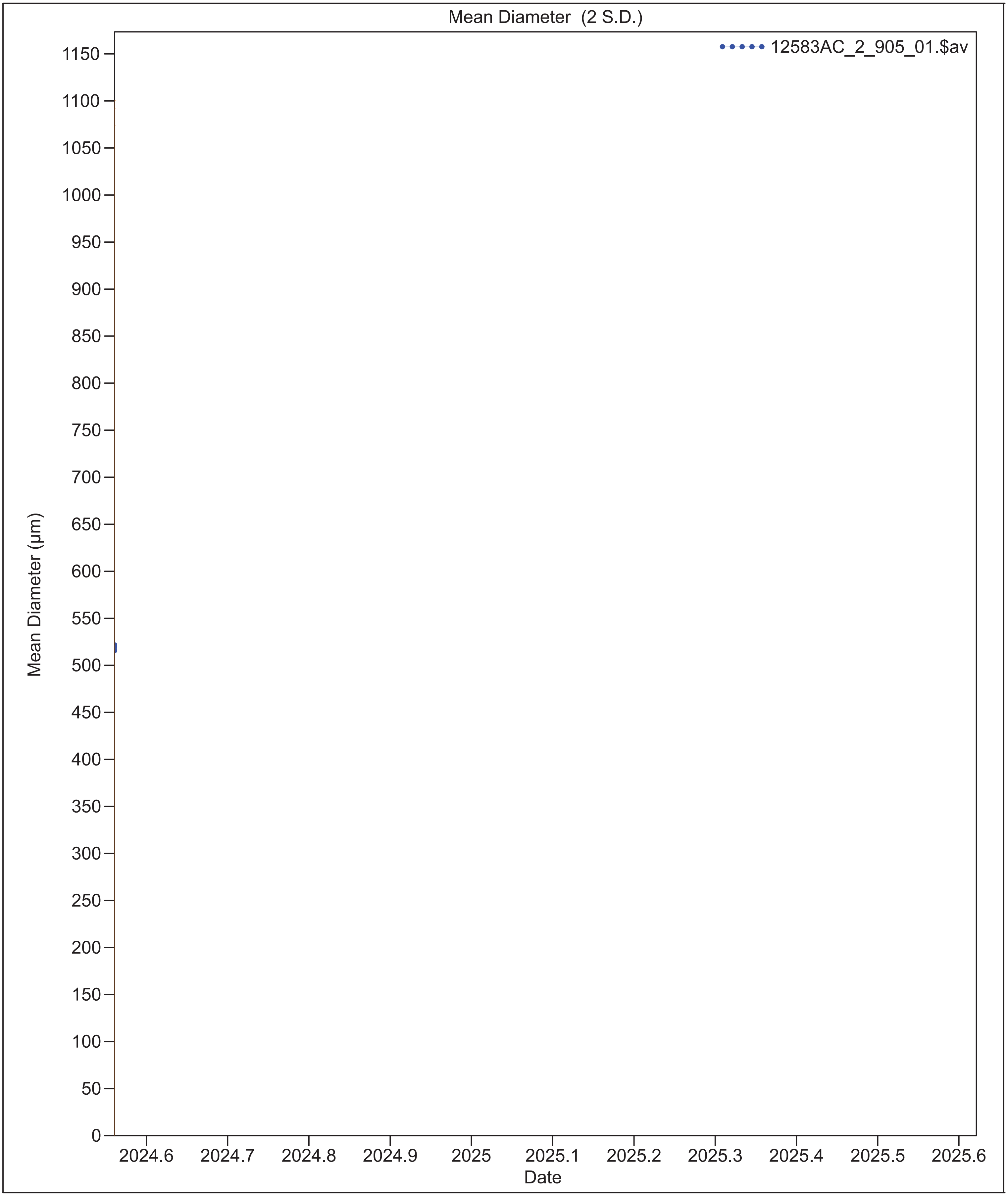
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 14:39

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 14:39

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 12583AC_2_905_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	518.8 µm	3.007	512.8	524.8
Median:	455.6 µm	1.334	453.0	458.3
S.D.:	285.1 µm	5.204	274.6	295.5
Variance:	81276 μm^2	2958	75361	87192
C.V.:	54.94%	0.688	53.56	56.32
Skewness:	1.123	0.042	1.039	1.207
Kurtosis:	1.431	0.150	1.130	1.731
d_{10}:	222.9 µm	0.434	222.1	223.8
d_{50}:	455.6 µm	1.334	453.0	458.3
d_{90}:	914.8 µm	8.866	897.1	932.6

LS Particle Size Analyzer

10 Jul 2024 14:45

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\12583AC_3_908_01.$av		
	12583AC_3_908_01.$av		
File ID:	12583AC_3		
Sample ID:	12583AC_3		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_3_906_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_3_907_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_3_908_01.$ls

LS Particle Size Analyzer

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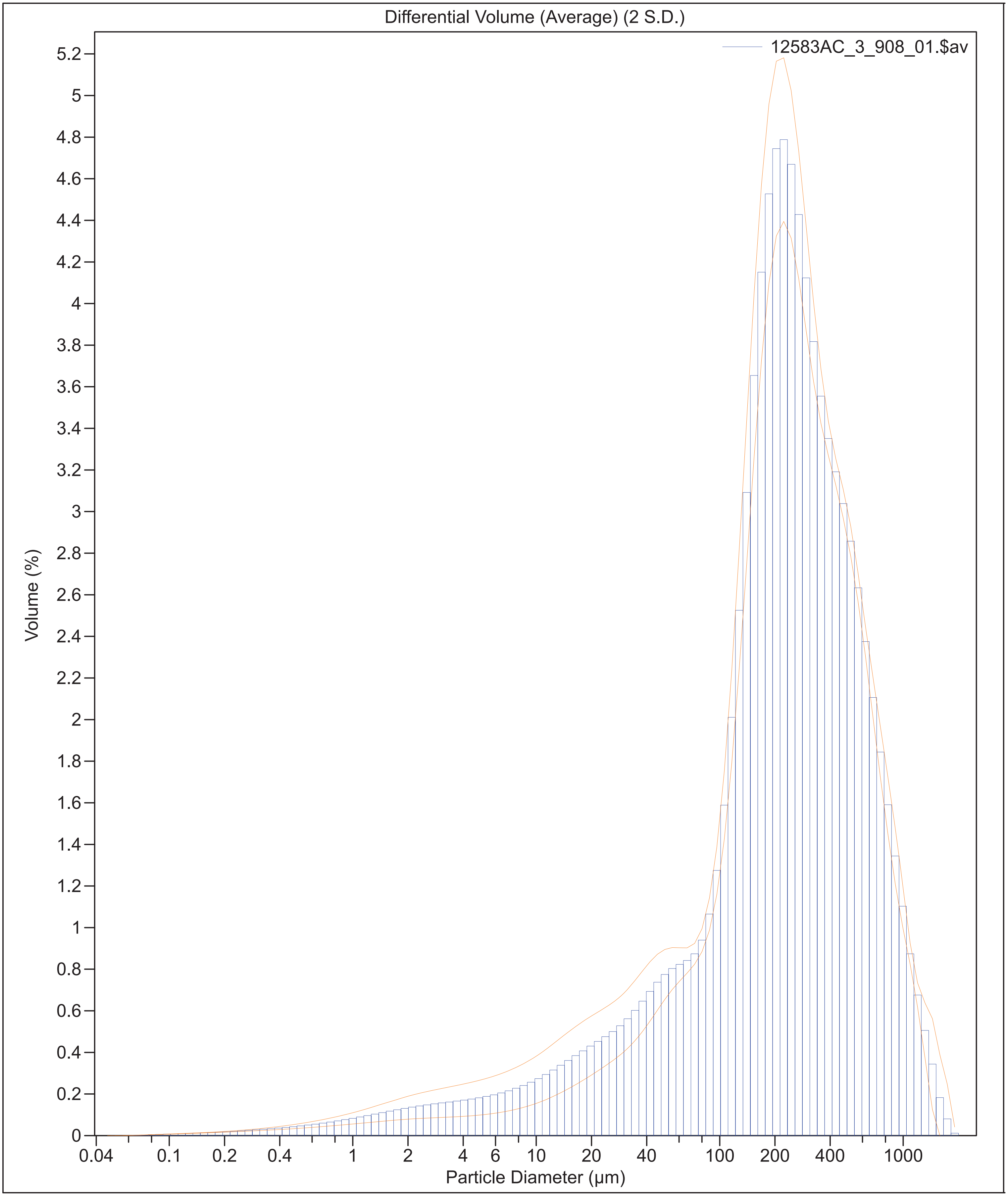
Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 12583AC_3_908_01.$av

Calculations from 0.040 µm to 2000 µm

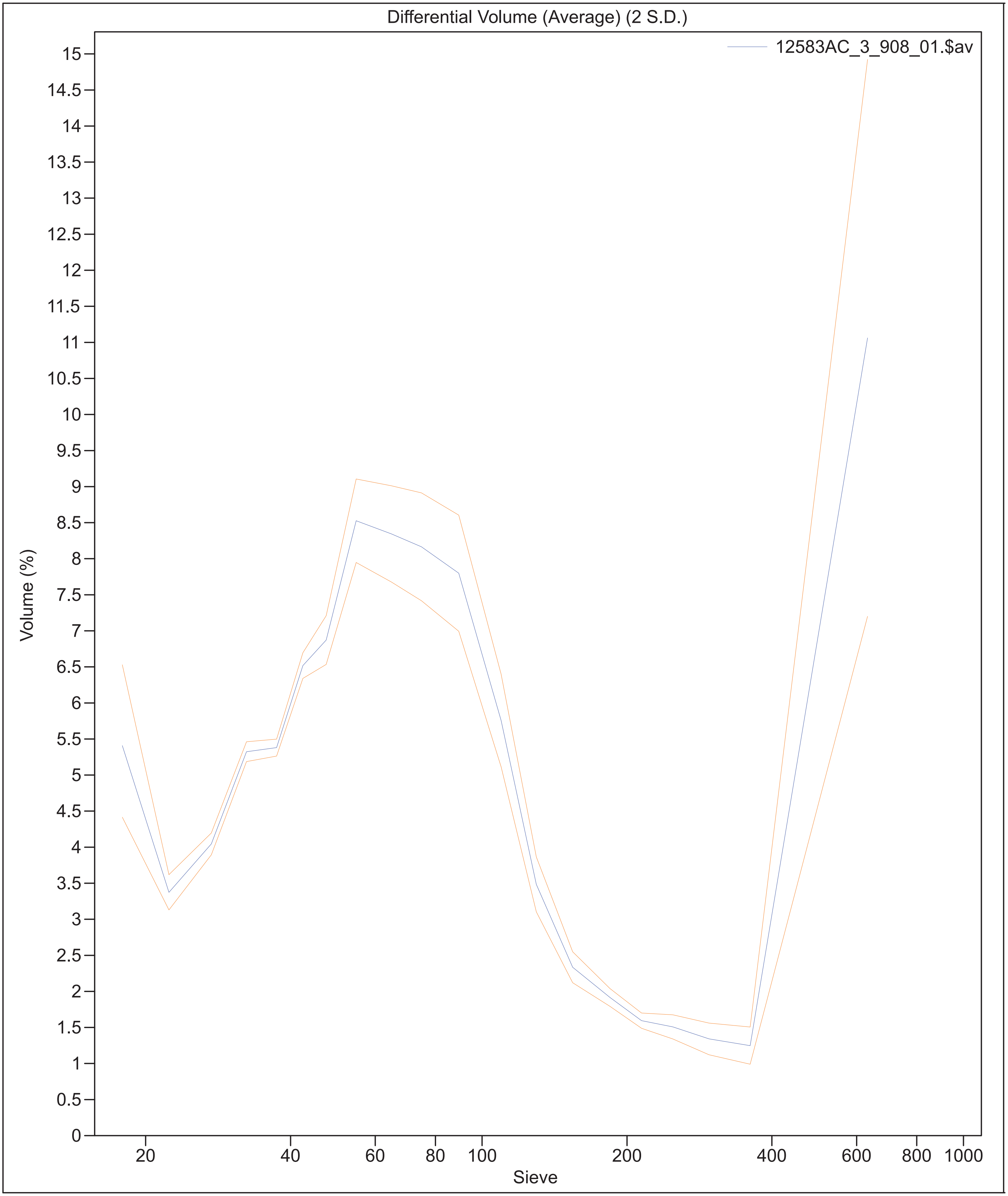
Volume:	100%		
Mean:	305.3 µm	S.D.:	272.8 µm
Median:	228.4 µm	Variance:	74401 µm^2
Mean/Median ratio:	1.336	C.V.:	89.4%
Mode:	223.4 µm	Skewness:	1.691 Right skewed
		Kurtosis:	3.493 Leptokurtic

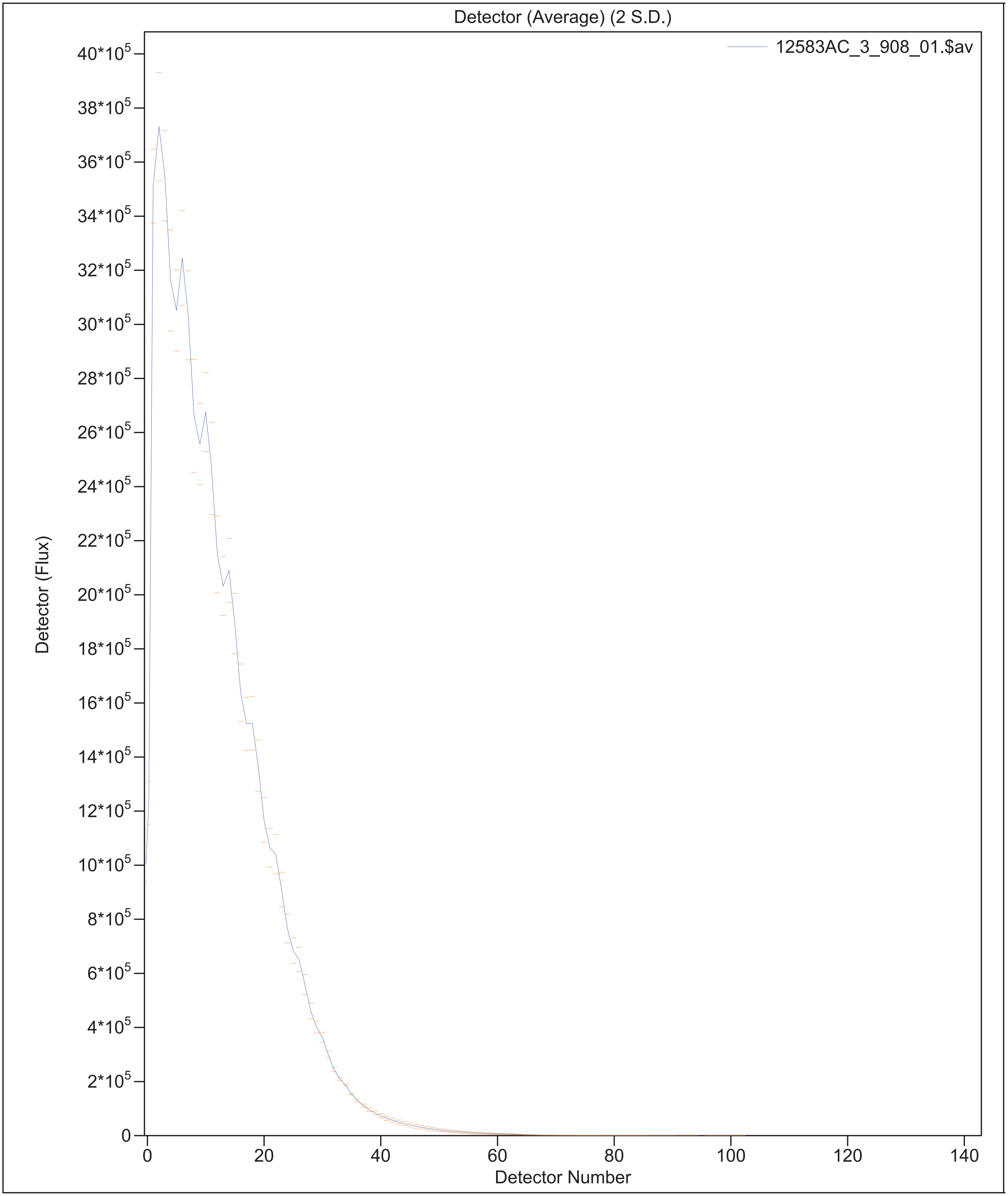
d_{10}: 32.28 µm d_{50}: 228.4 µm d_{90}: 673.1 µm

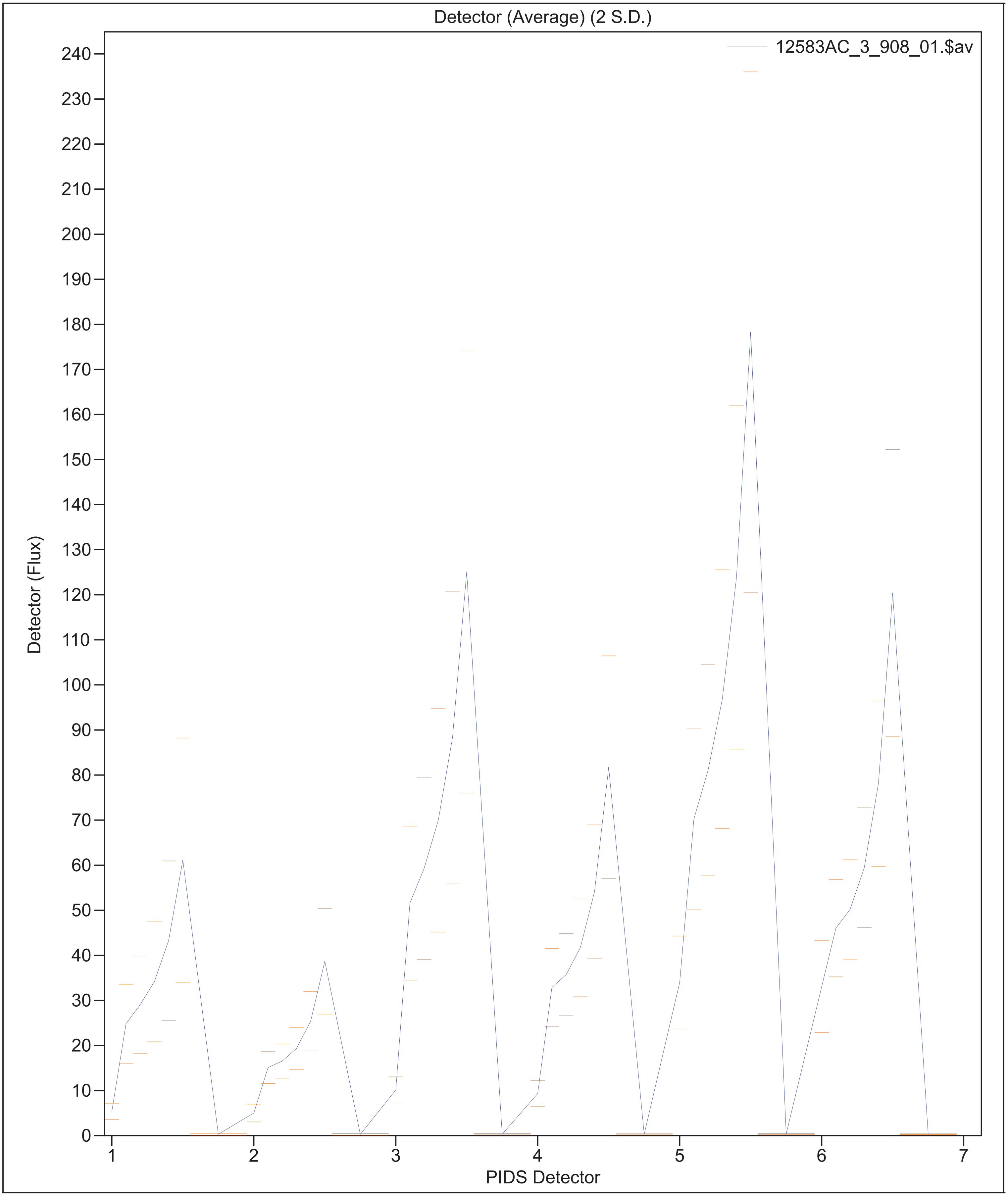
Folk and Ward Statistics (Phi)

Mean:	2.29	Median:	2.13	Deviation:	1.71
Skewness:	0.28	Kurtosis:	1.56		

<10%	<25%	<50%	<75%	<90%
32.28 µm	127.4 µm	228.4 µm	407.0 µm	673.1 µm


Differential Volume (Average) (2 S.D.)
12583AC_3_908_01.$av
Volume (%)
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve


Detector (Average) (2 S.D.)
12583AC_3_908_01.$av
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
Detector (Flux)
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
12583AC_3_908_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

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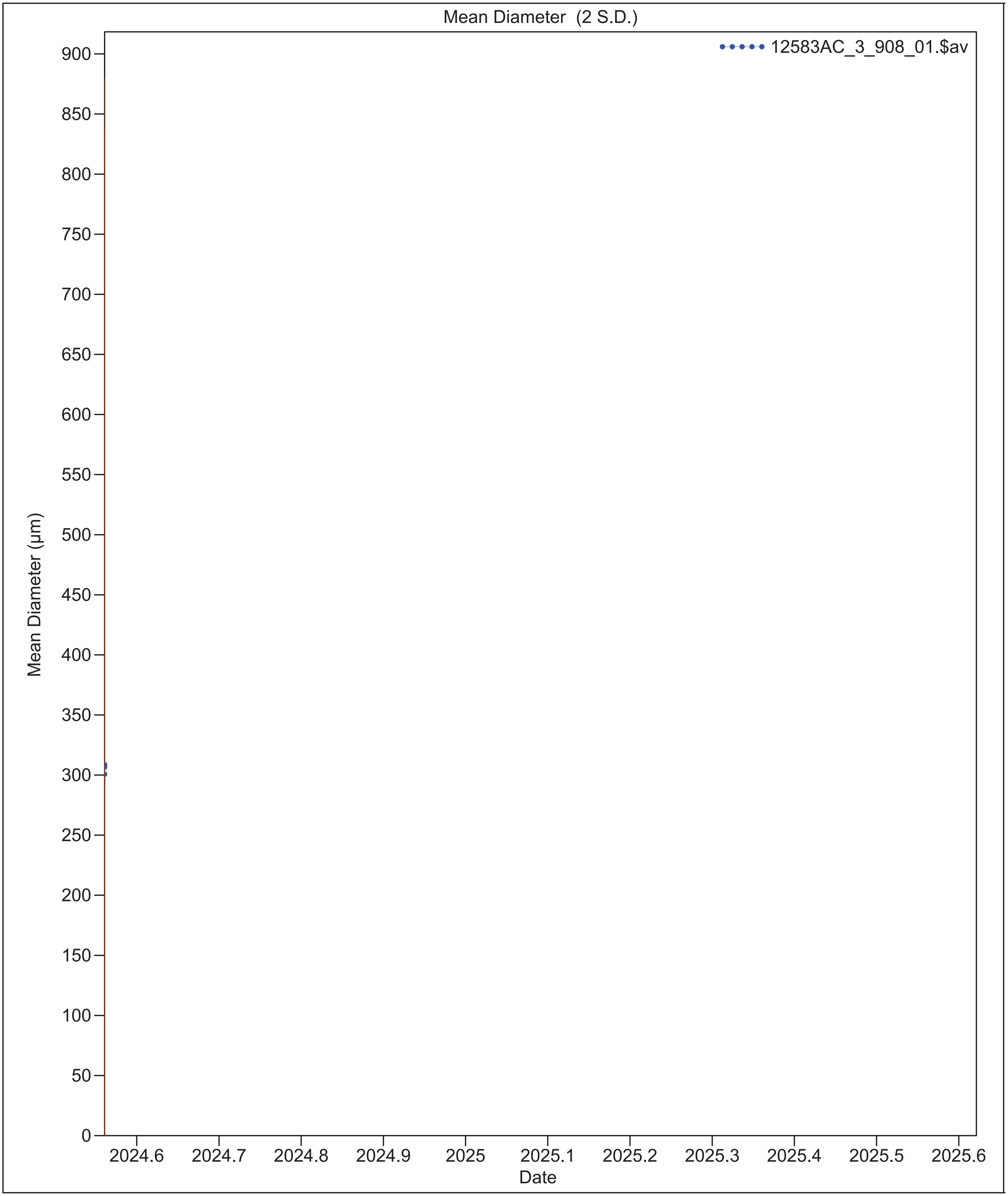
Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 12583AC_3_908_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	305.3 µm	4.165	296.9	313.6
Median:	228.3 µm	3.539	221.2	235.4
S.D.:	272.6 µm	12.02	248.5	296.6
Variance:	74389 $µm^2$	6620	61149	87629
C.V.:	89.30%	4.037	81.22	97.37
Skewness:	1.678	0.102	1.475	1.882
Kurtosis:	3.393	0.559	2.275	4.511
d_{10}:	33.34 µm	10.03	13.28	53.41
d_{50}:	228.3 µm	3.539	221.2	235.4
d_{90}:	673.1 µm	7.925	657.2	688.9

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LS Particle Size Analyzer

10 Jul 2024 14:52

Beckman Coulter LS 13 320

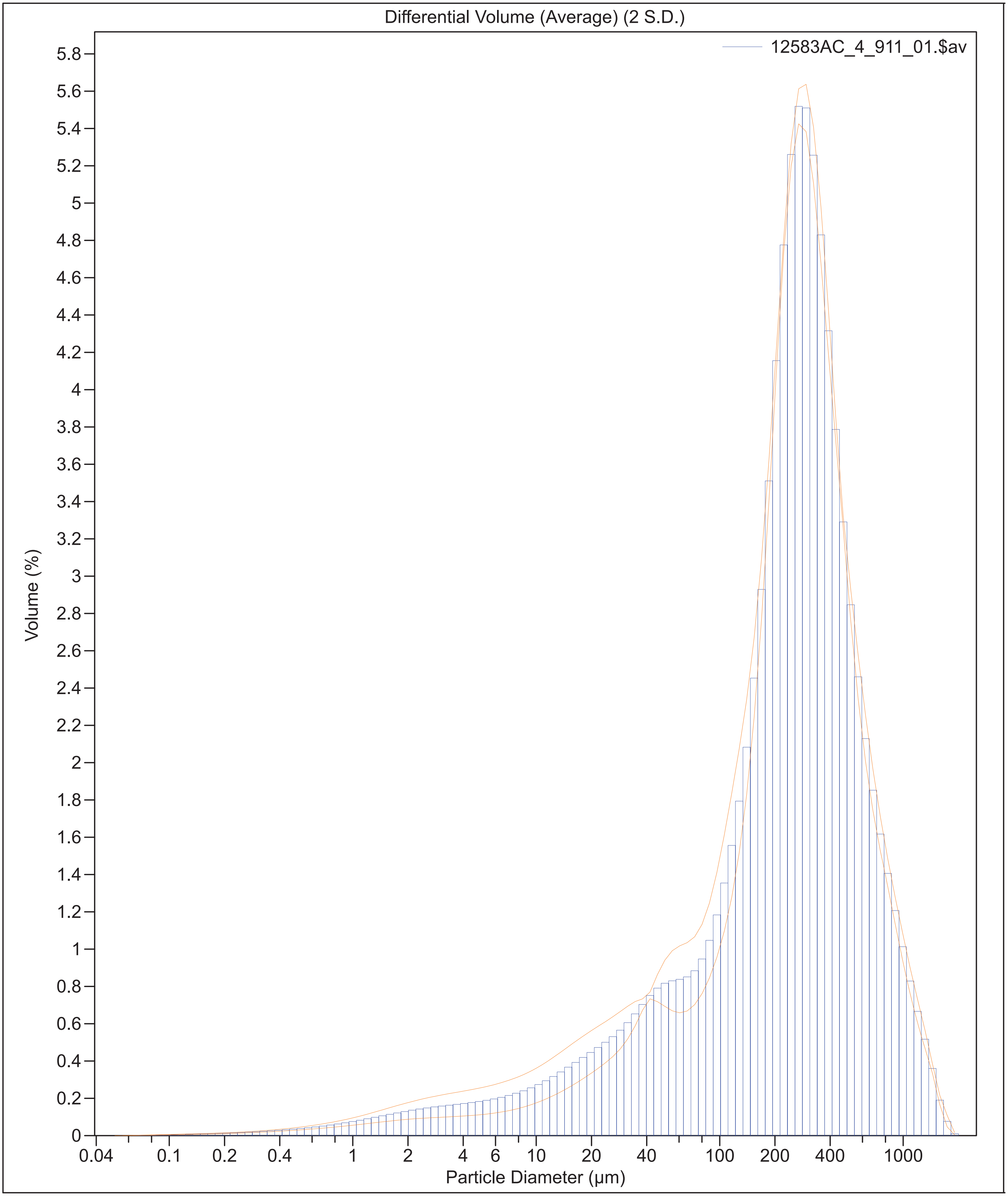
File name:	C:\LS13320\Samples\NOAA-CZM FY23\12583AC_4_911_01.$av
	12583AC_4_911_01.$av
File ID:	12583AC_4
Sample ID:	12583AC_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_4_909_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_4_910_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\12583AC_4_911_01.$ls

LS Particle Size Analyzer

10 Jul 2024 14:52

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 12583AC_4_911_01.$av

Calculations from 0.040 μm to 2000 μm

Volume:	100%		
Mean:	310.5 μm	S.D.:	265.9 μm
Median:	255.6 μm	Variance:	70725 μm^2
Mean/Median ratio:	1.215	C.V.:	85.6%
Mode:	269.2 μm	Skewness:	1.710 Right skewed
		Kurtosis:	3.924 Leptokurtic

d_{10}: 32.32 μm d_{50}: 255.6 μm d_{90}: 646.0 μm

Folk and Ward Statistics (Phi)

Mean:	2.28	Median:	1.97	Deviation:	1.68
Skewness:	0.38	Kurtosis:	1.60		

<10%	<25%	<50%	<75%	<90%
32.32 μm	132.8 μm	255.6 μm	403.3 μm	646.0 μm

LS Particle Size Analyzer

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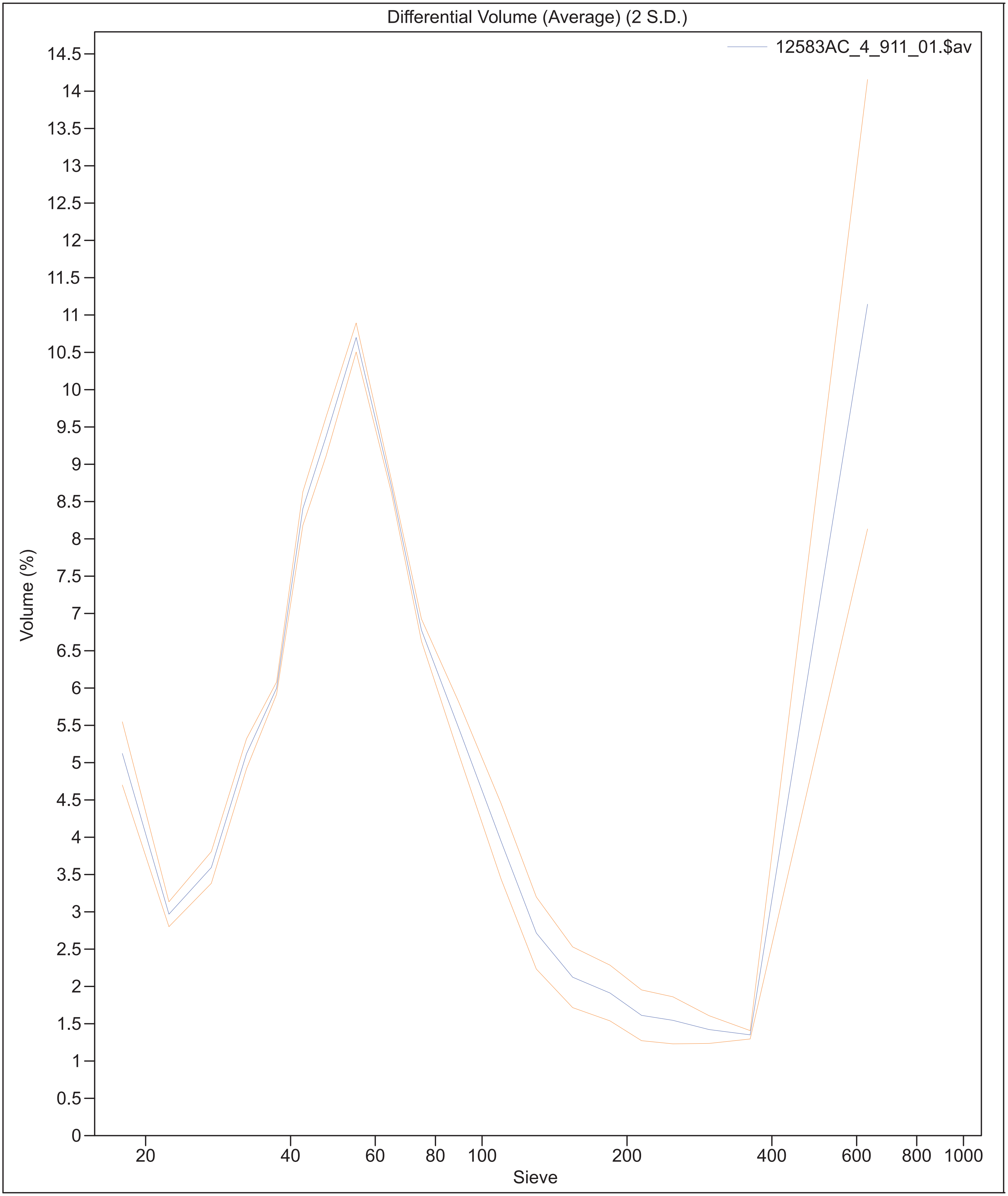
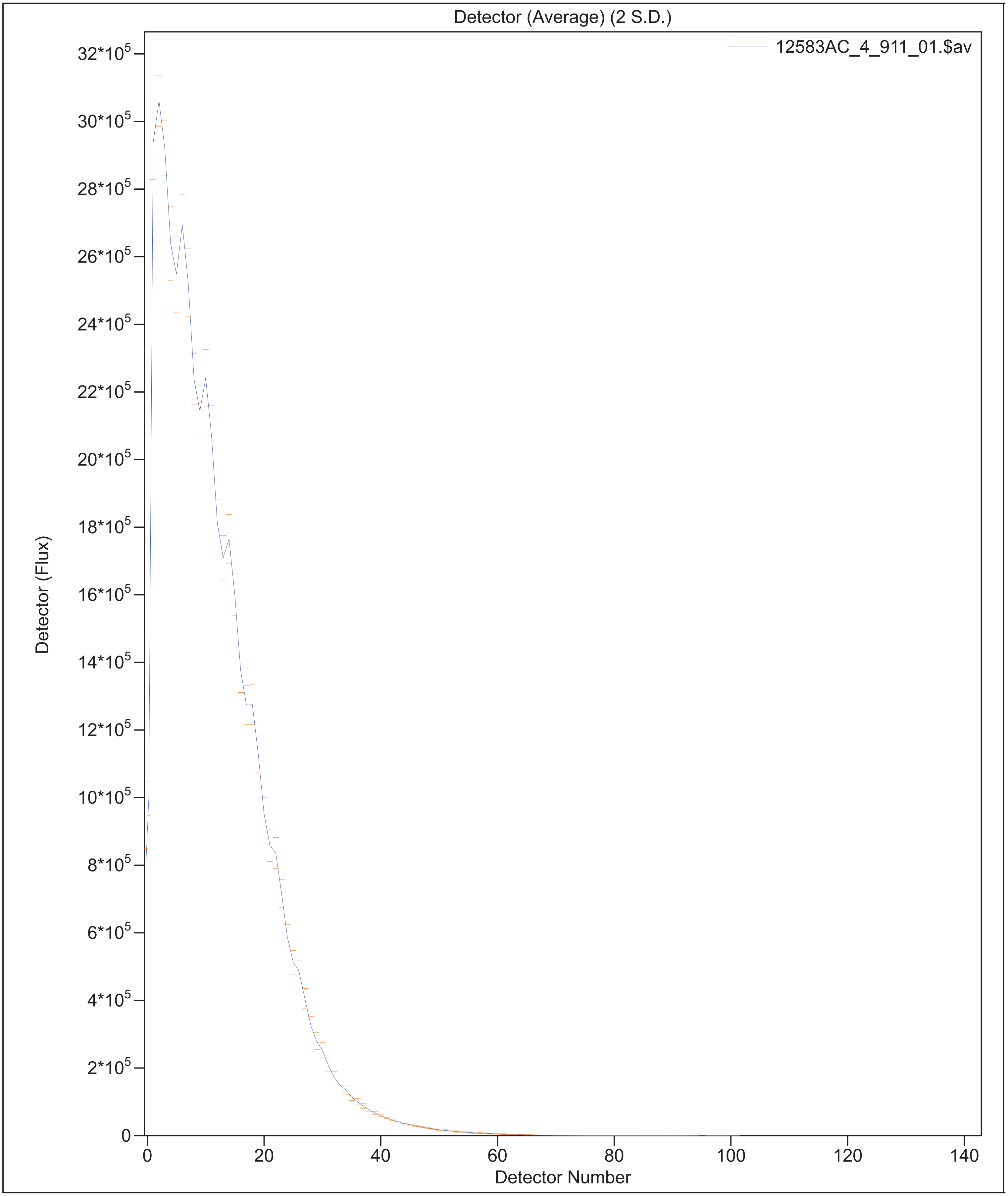
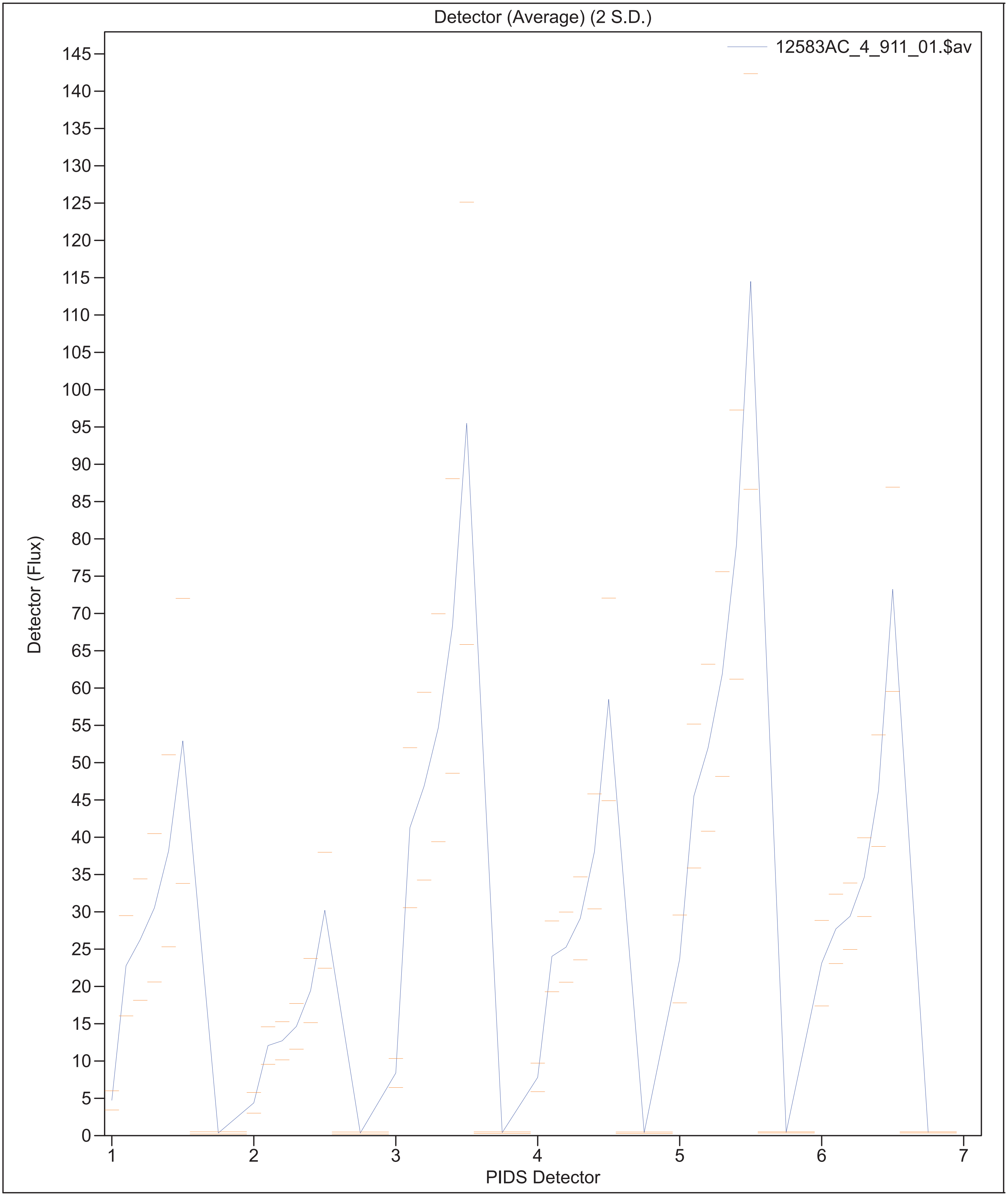
Beckman Coulter LS 13 320



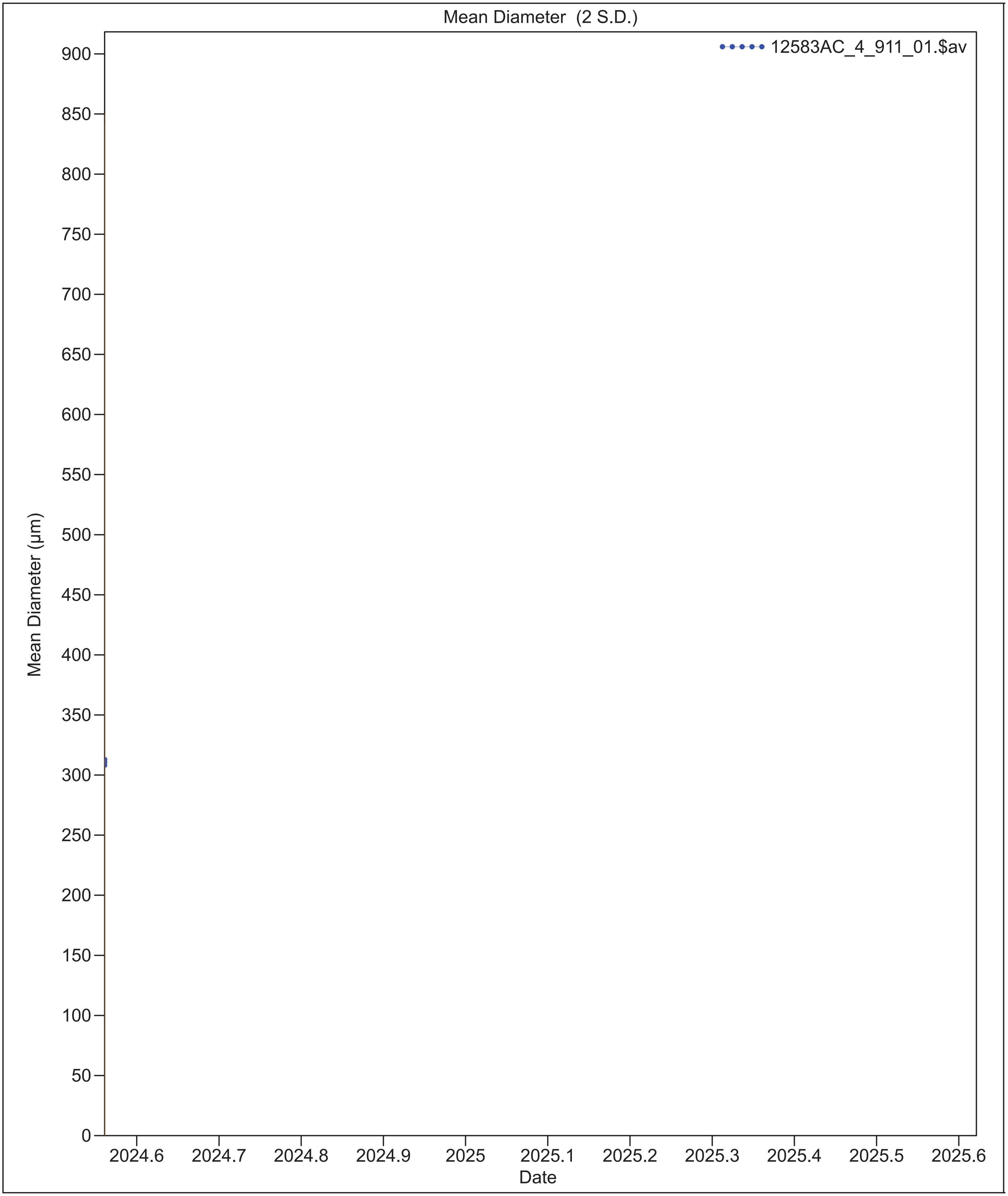

Detector (Average) (2 S.D.)
12583AC_4_911_01.$av
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
Detector (Flux)
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
12583AC_4_911_01.$av
Detector (Flux)
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 14:52

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 14:52

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 12583AC_4_911_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	310.5 µm	2.392	305.8	315.3
Median:	255.6 µm	0.560	254.5	256.7
S.D.:	265.9 µm	3.151	259.6	272.2
Variance:	70722 $µm^2$	1672	67378	74065
C.V.:	85.63%	1.033	83.57	87.70
Skewness:	1.711	0.033	1.644	1.777
Kurtosis:	3.927	0.231	3.464	4.389
d_{10}:	32.69 µm	7.040	18.61	46.76
d_{50}:	255.6 µm	0.560	254.5	256.7
d_{90}:	646.1 µm	8.445	629.2	663.0

LS Particle Size Analyzer

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Beckman Coulter LS 13 320

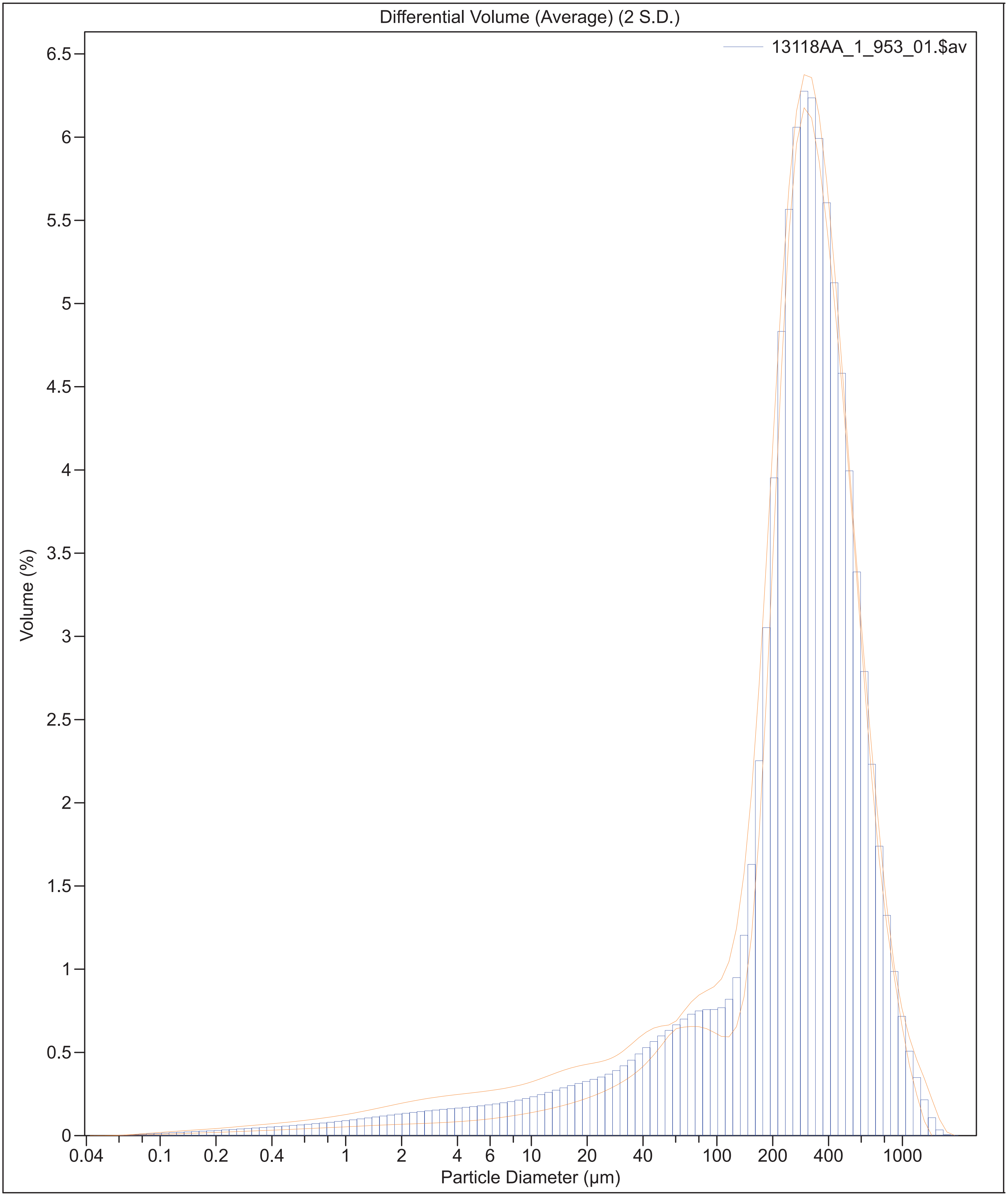
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13118AA_1_953_01.$av
	13118AA_1_953_01.$av
File ID:	13118AA_1
Sample ID:	13118AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13118AA_1_951_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13118AA_1_952_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13118AA_1_953_01.$ls

LS Particle Size Analyzer

10 Jul 2024 16:32

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:32

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13118AA_1_953_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	324.3 µm	S.D.:	228.9 µm
Median:	291.7 µm	Variance:	52410 $µm^2$
Mean/Median ratio:	1.111	C.V.:	70.6%
Mode:	295.5 µm	Skewness:	1.174 Right skewed
		Kurtosis:	2.386 Leptokurtic

d_{10}: 39.64 µm d_{50}: 291.7 µm d_{90}: 615.9 µm

Folk and Ward Statistics (Phi)

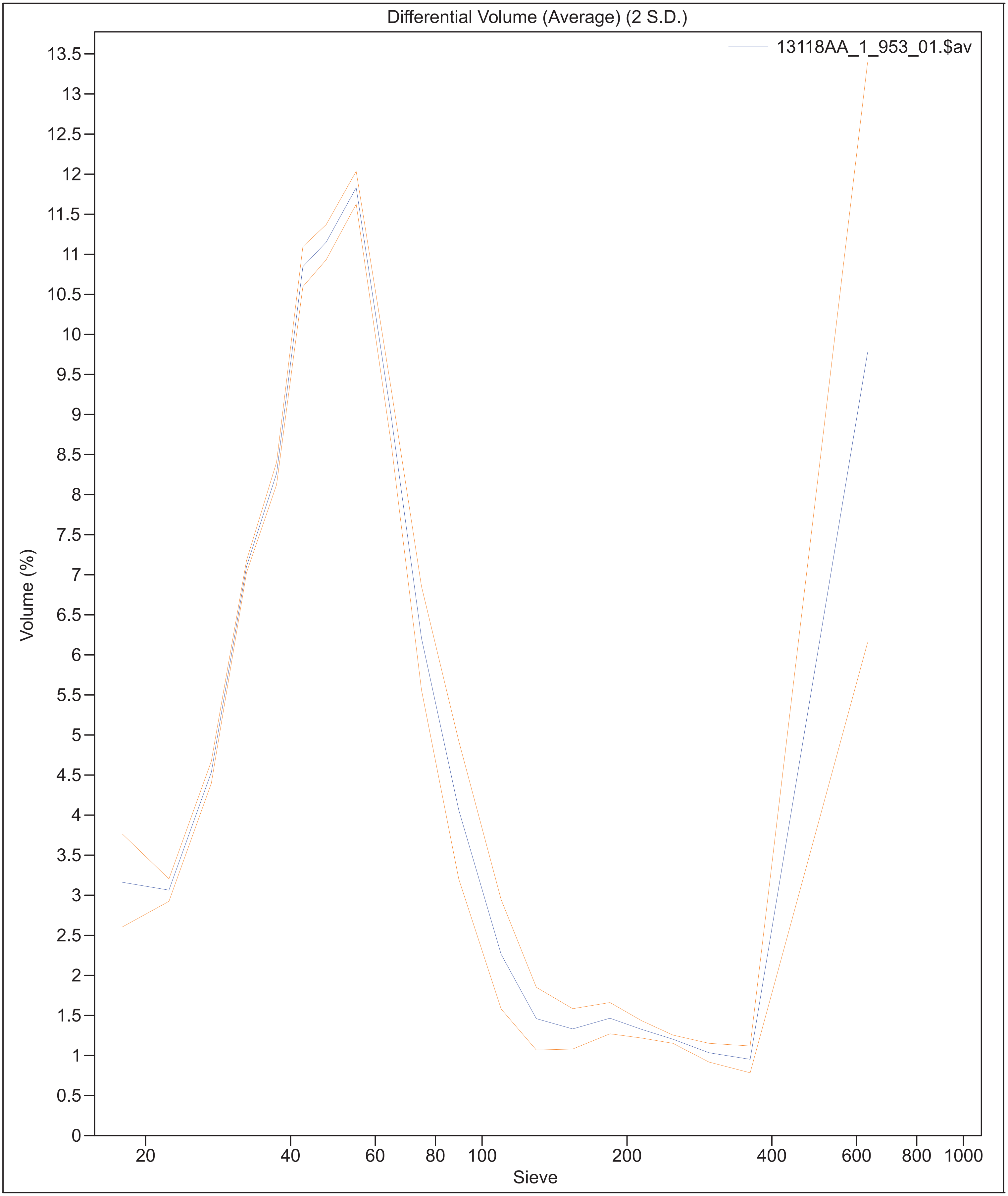
Mean:	2.05	Median:	1.78	Deviation:	1.57
Skewness:	0.44	Kurtosis:	2.03		

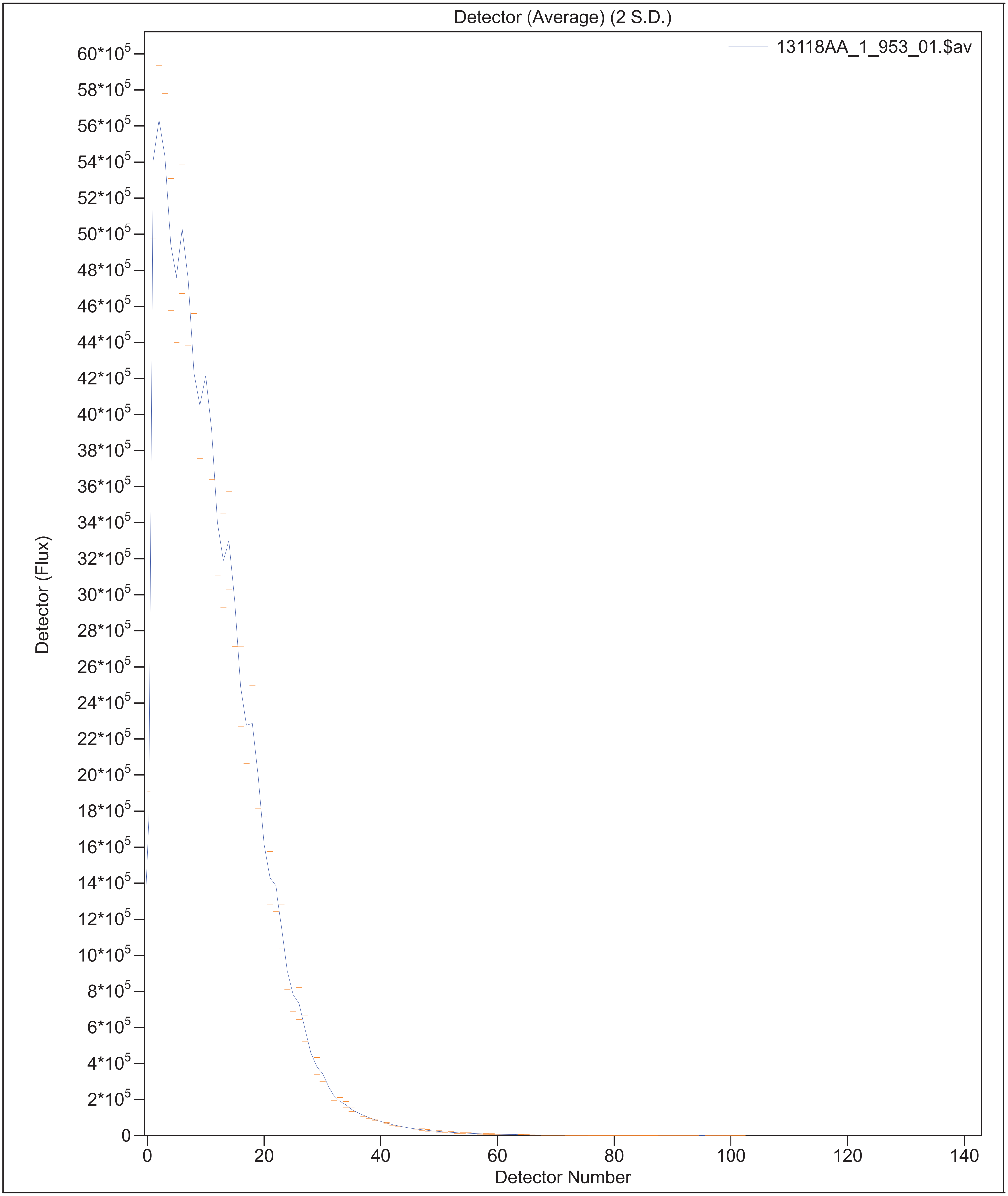
<10%	<25%	<50%	<75%	<90%
39.64 µm	180.7 µm	291.7 µm	433.8 µm	615.9 µm

LS Particle Size Analyzer

10 Jul 2024 16:32

Beckman Coulter LS 13 320

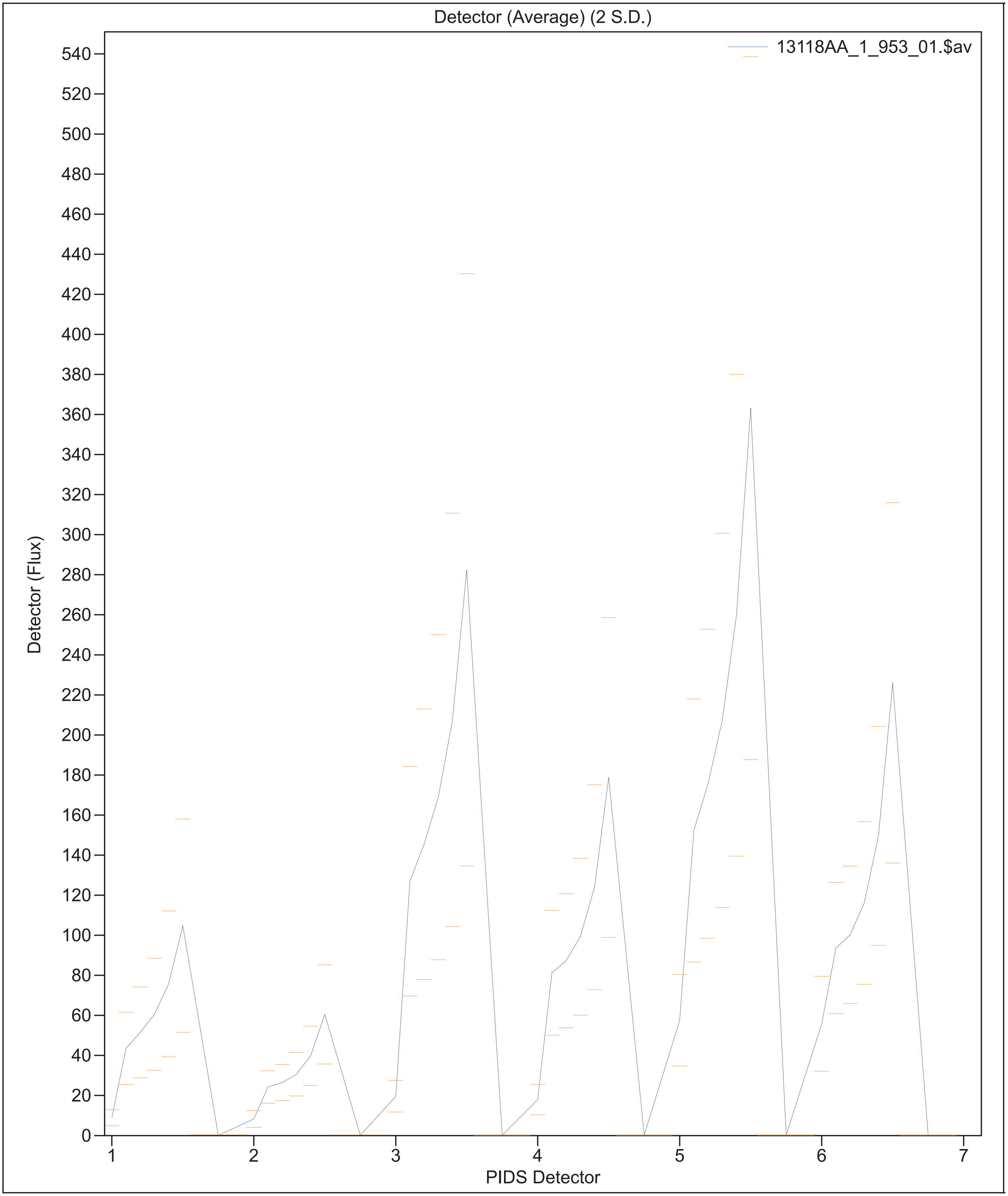


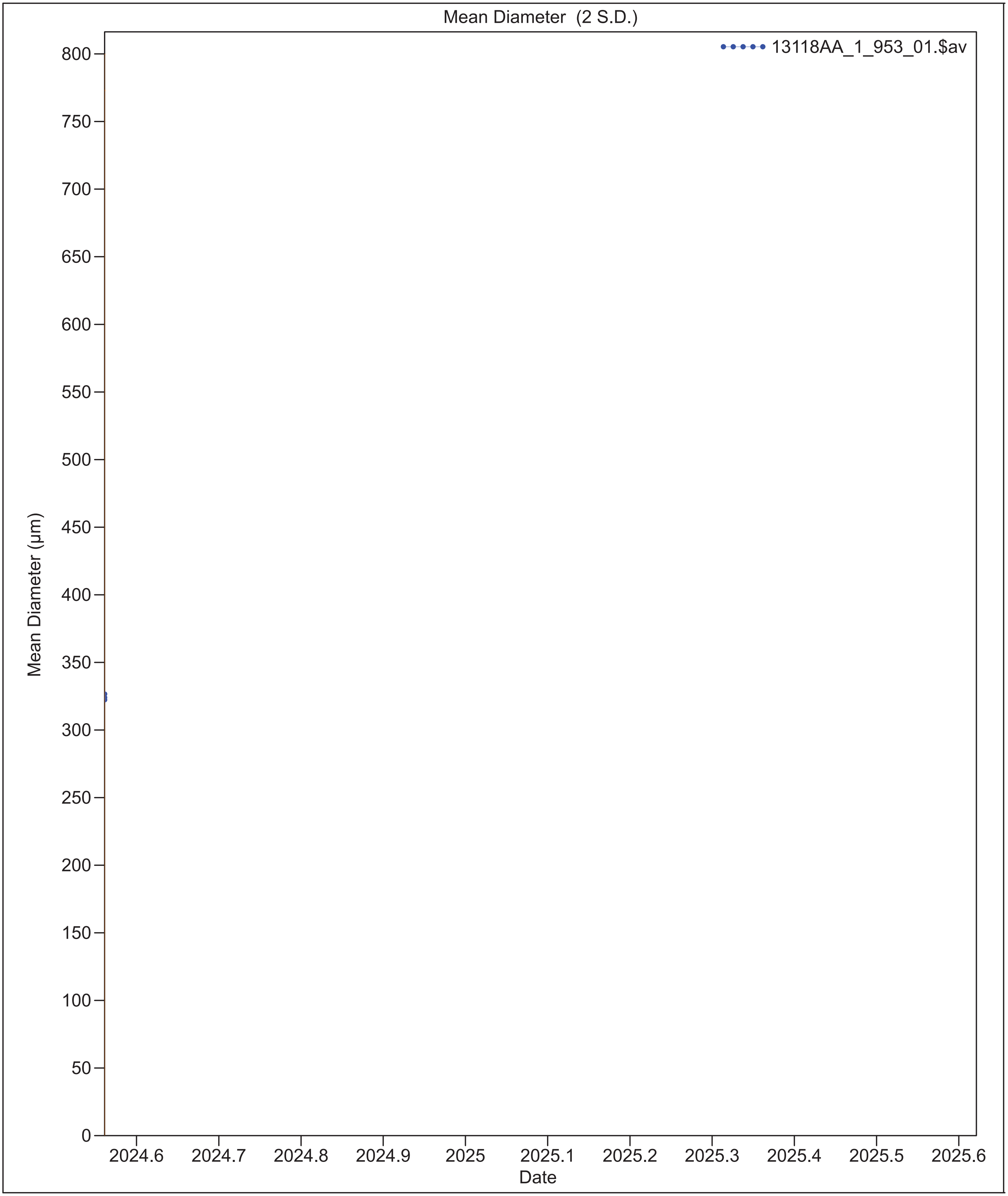

Detector (Average) (2 S.D.)
13118AA_1_953_01.$av
Detector (Flux)
Detector Number
60*10^5
58*10^5
56*10^5
54*10^5
52*10^5
50*10^5
48*10^5
46*10^5
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140

LS Particle Size Analyzer

10 Jul 2024 16:32

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
13118AA_1_953_01.$av
Mean Diameter (µm)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 16:32

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13118AA_1_953_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	324.3 µm	2.181	319.9	328.6
Median:	291.7 µm	0.641	290.5	293.0
S.D.:	228.8 µm	7.899	213.0	244.6
Variance:	52407 μm^2	3648	45110	59704
C.V.:	70.58%	2.581	65.42	75.74
Skewness:	1.168	0.095	0.978	1.359
Kurtosis:	2.336	0.447	1.442	3.230
d_{10}:	40.73 µm	13.69	13.35	68.10
d_{50}:	291.7 µm	0.641	290.5	293.0
d_{90}:	615.9 µm	4.458	607.0	624.8

BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 16:42

Beckman Coulter LS 13 320

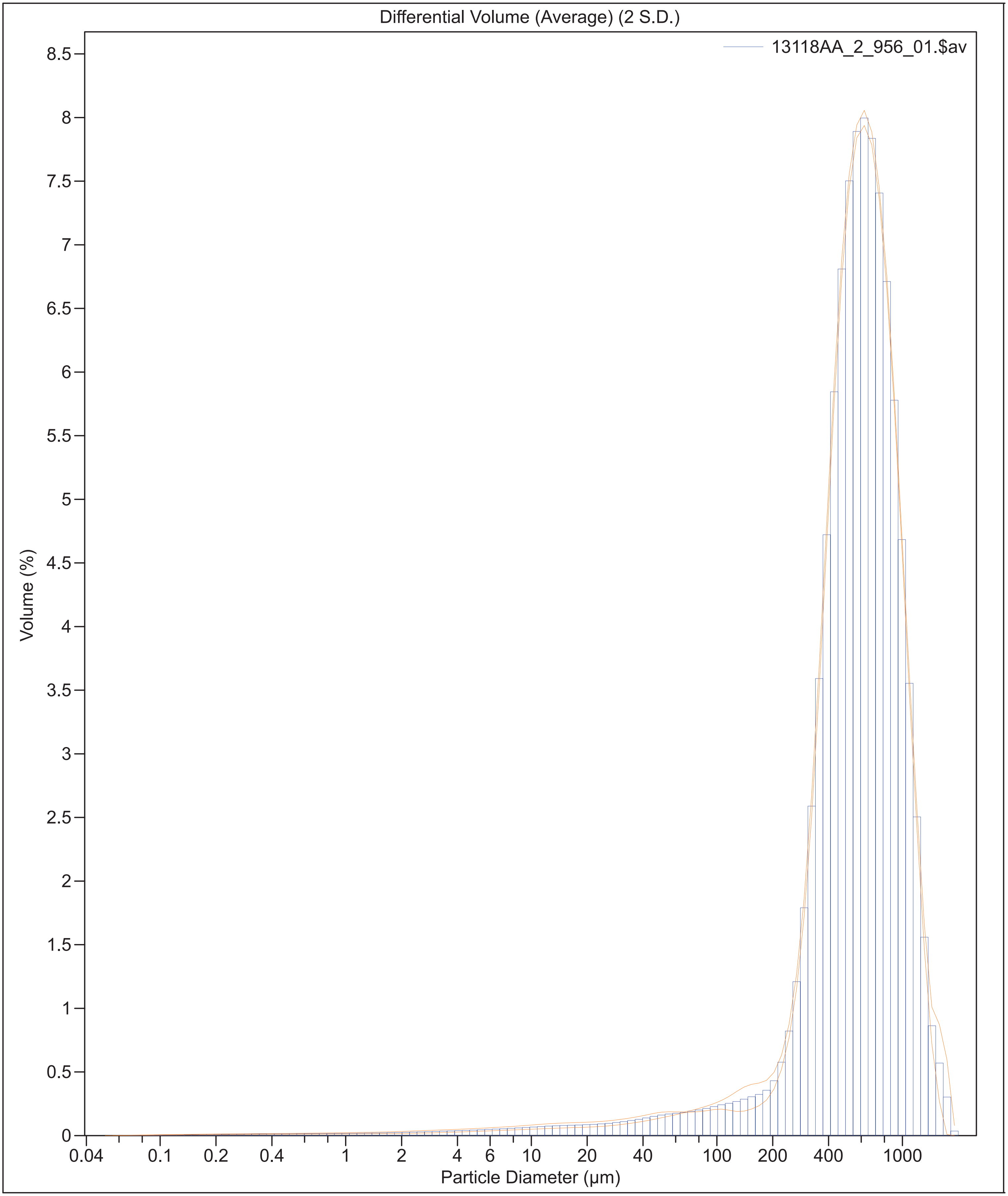
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13118AA_2_956_01.$av
	13118AA_2_956_01.$av
File ID:	13118AA_2
Sample ID:	13118AA_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13118AA_2_954_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13118AA_2_955_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13118AA_2_956_01.$ls

LS Particle Size Analyzer

10 Jul 2024 16:42

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:42

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13118AA_2_956_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	627.7 µm	S.D.:	304.1 µm
Median:	593.6 µm	Variance:	92457 μm^2
Mean/Median ratio:	1.058	C.V.:	48.4%
Mode:	623.3 µm	Skewness:	0.544 Right skewed
		Kurtosis:	0.667 Leptokurtic

d_{10}: 290.5 µm d_{50}: 593.6 µm d_{90}: 1029 µm

Folk and Ward Statistics (Phi)

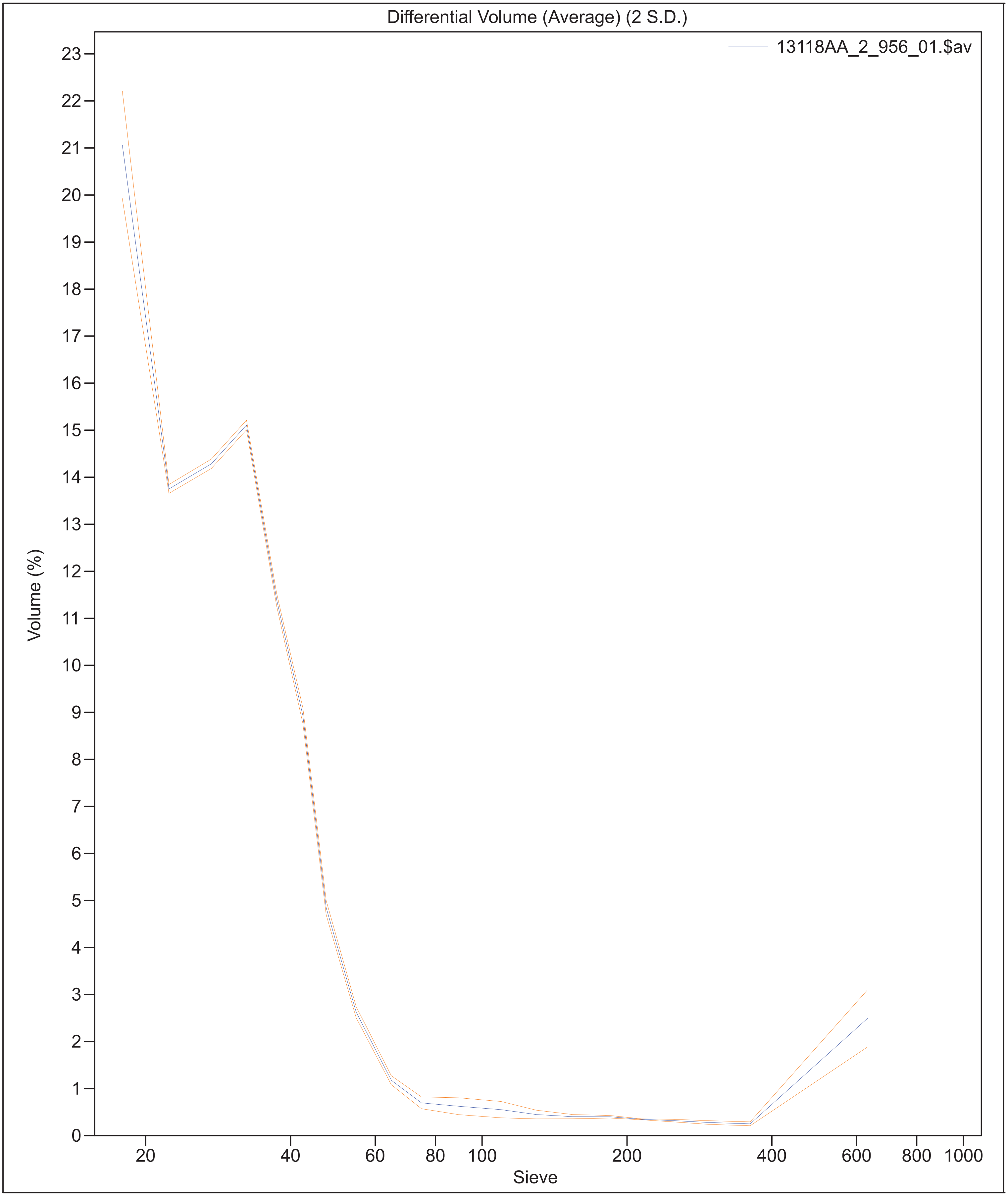
Mean:	0.78	Median:	0.75	Deviation:	0.82
Skewness:	0.22	Kurtosis:	1.45		

<10%	<25%	<50%	<75%	<90%
290.5 µm	429.2 µm	593.6 µm	804.9 µm	1029 µm

LS Particle Size Analyzer

10 Jul 2024 16:42

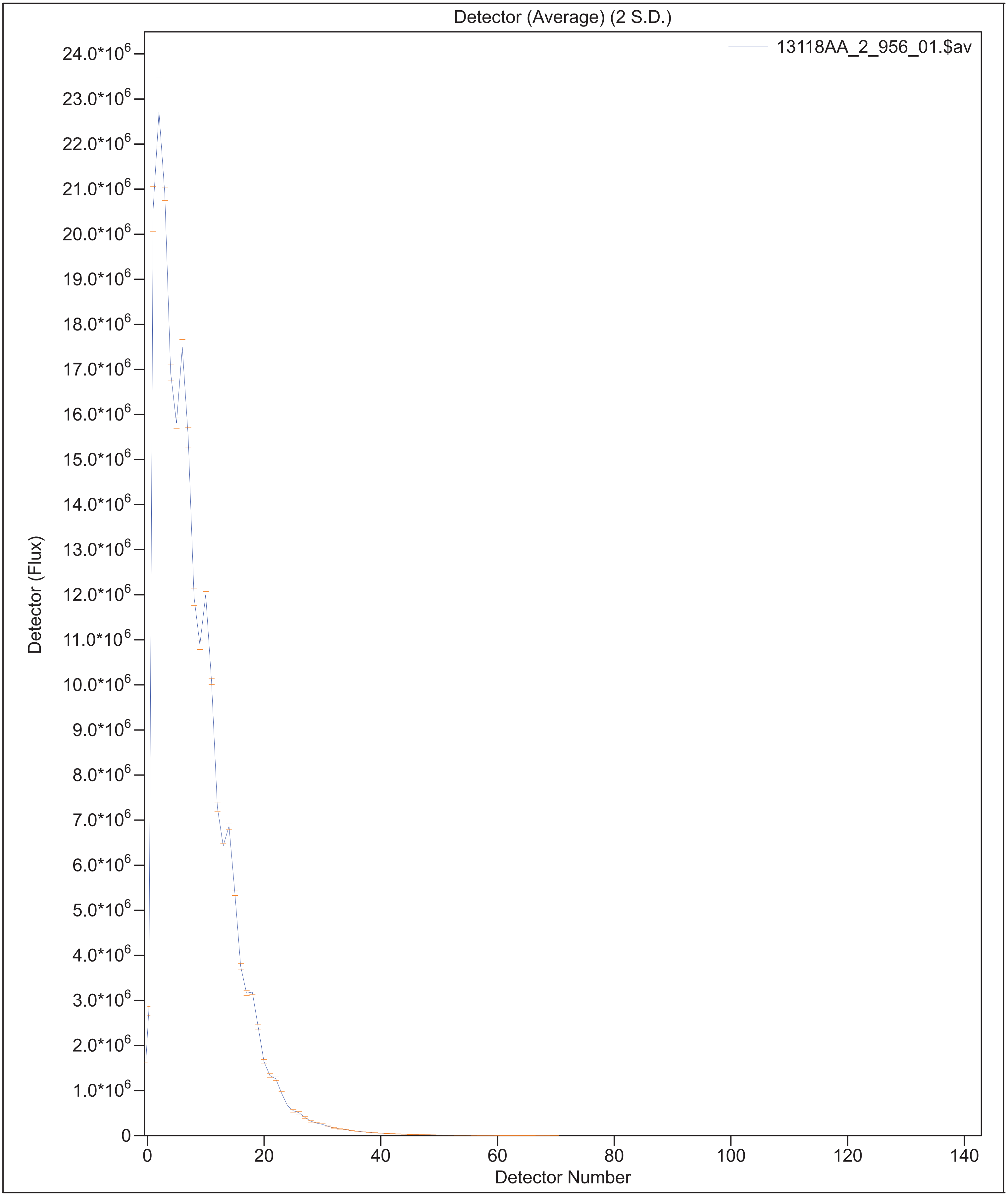
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:42

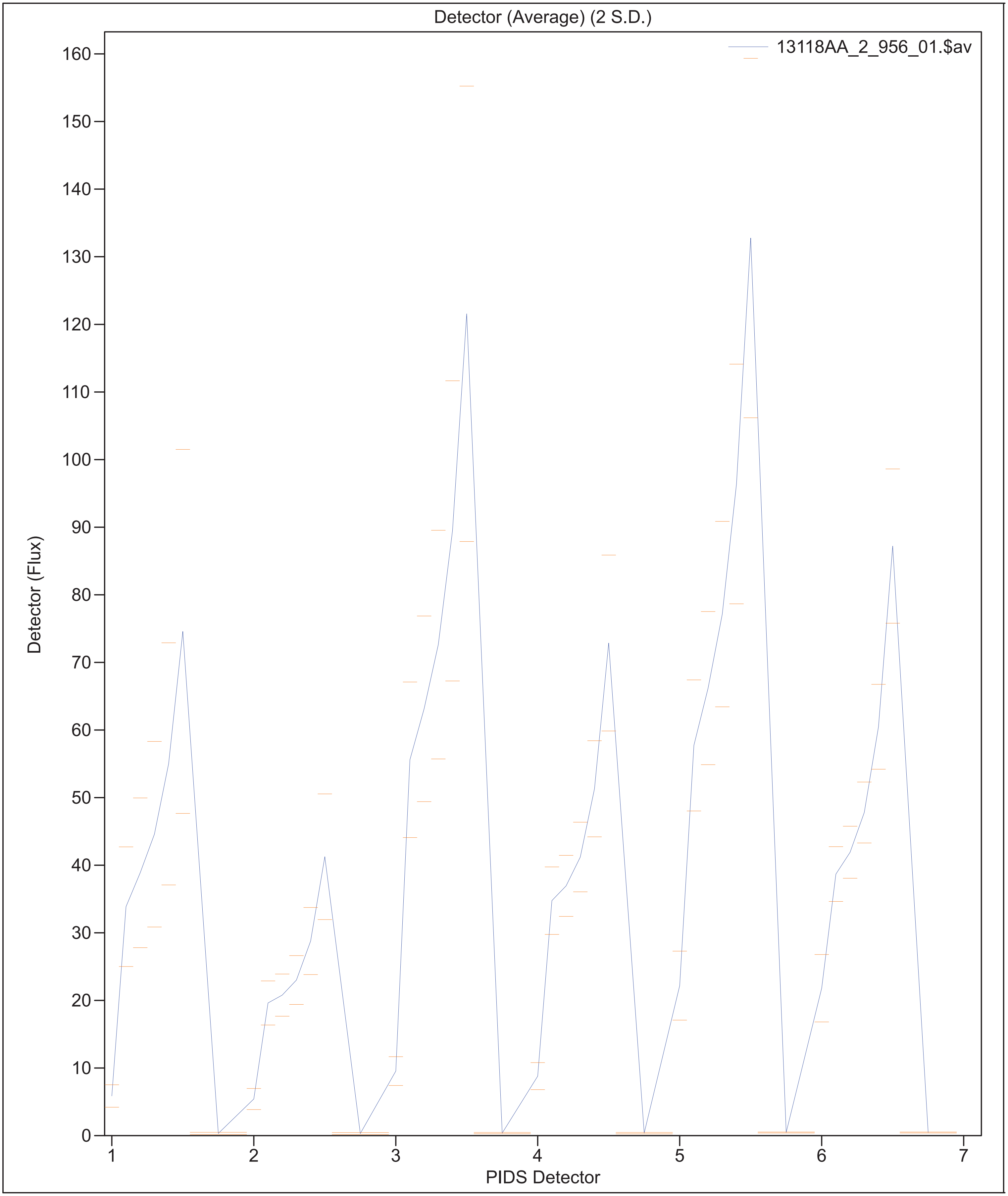
Beckman Coulter LS 13 320

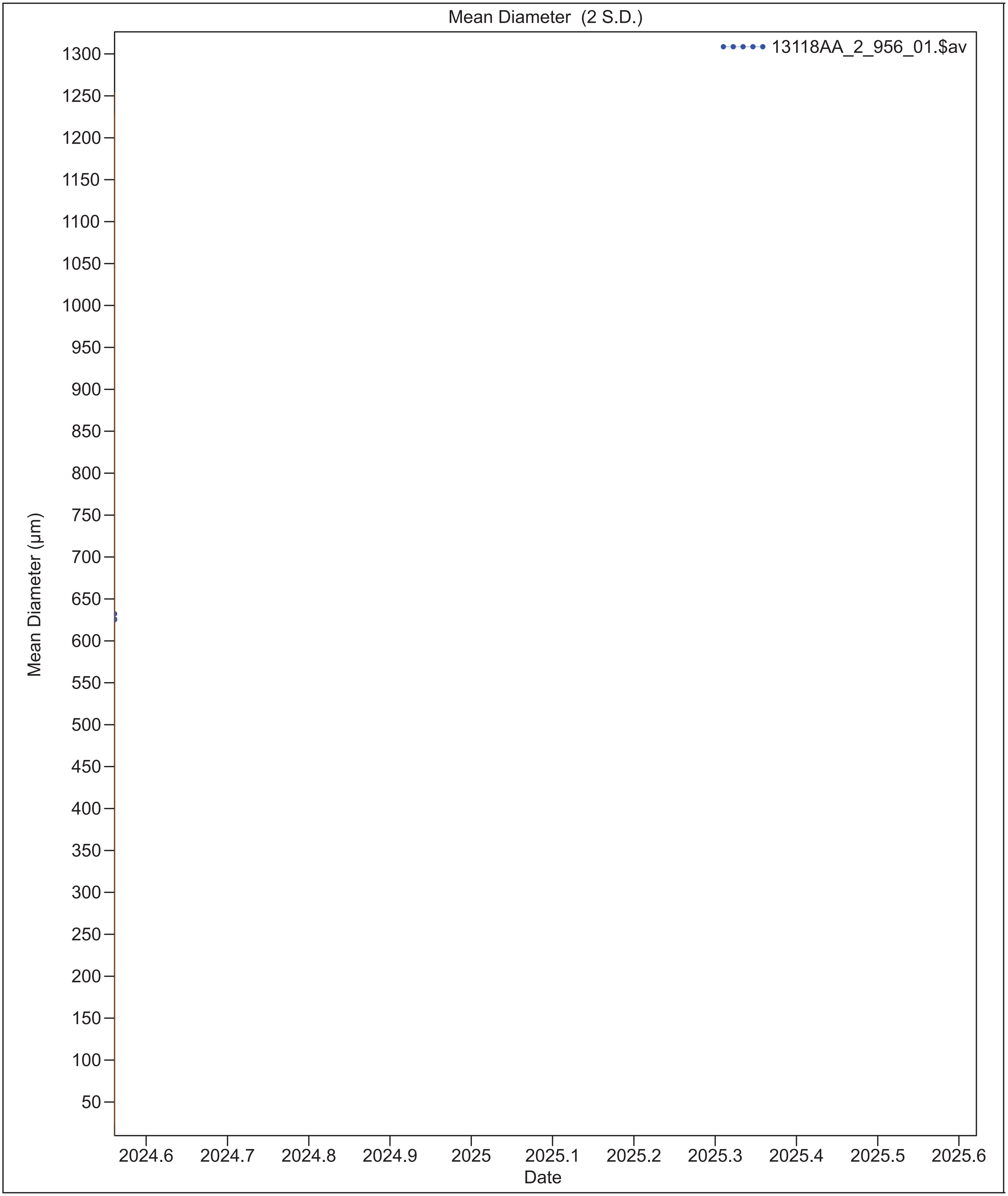


LS Particle Size Analyzer

10 Jul 2024 16:42

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
13118AA_2_956_01.$av
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
Mean Diameter (µm)
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 16:42

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13118AA_2_956_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	627.7 µm	3.869	620.0	635.5
Median:	593.6 µm	1.501	590.6	596.6
S.D.:	304.0 µm	6.252	291.5	316.5
Variance:	92447 μm^2	3822	84803	100.1e3
C.V.:	48.43%	0.711	47.01	49.85
Skewness:	0.540	0.066	0.407	0.673
Kurtosis:	0.650	0.177	0.296	1.004
d_{10}:	290.5 µm	0.802	288.9	292.1
d_{50}:	593.6 µm	1.501	590.6	596.6
d_{90}:	1029 µm	6.837	1015	1043

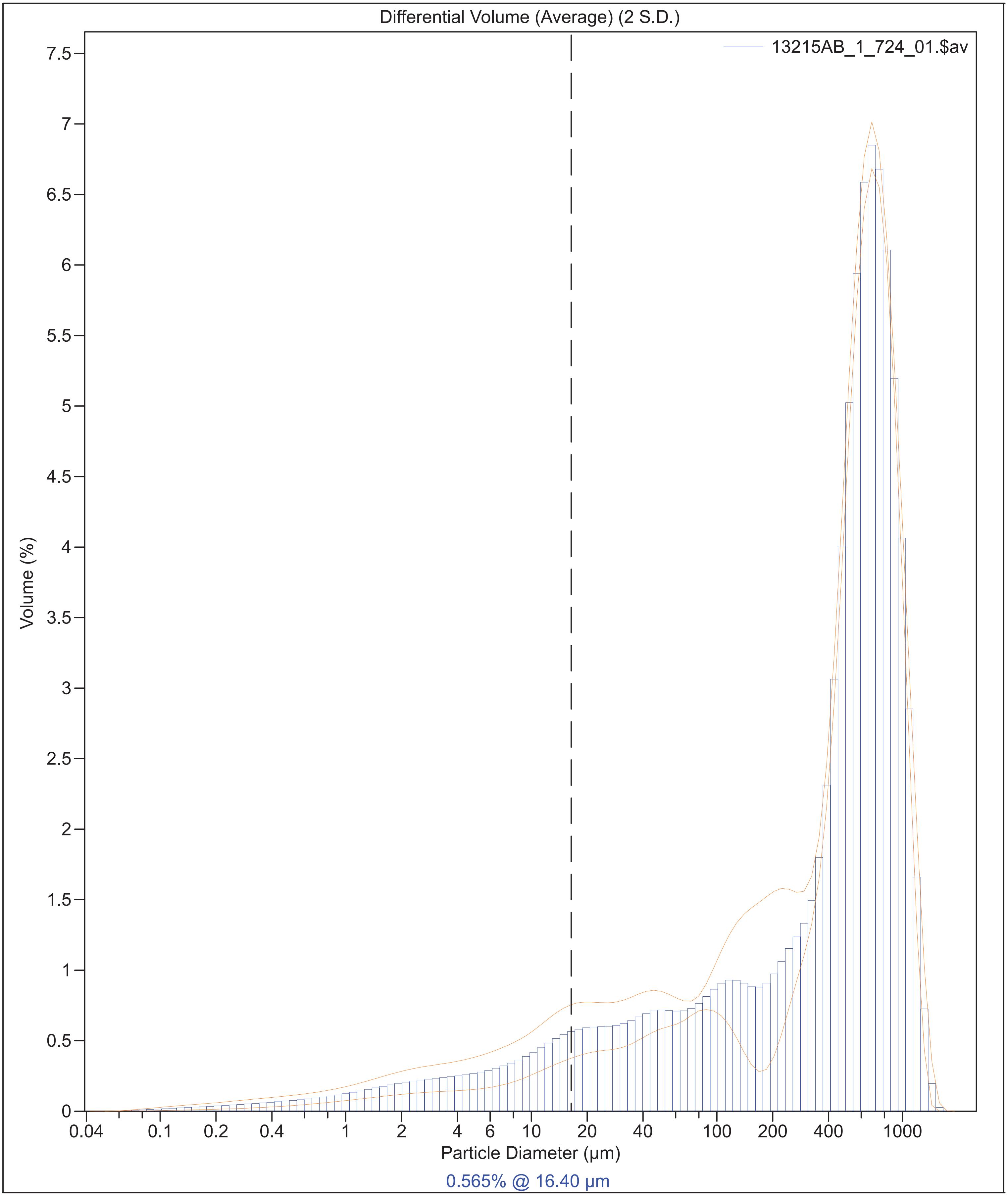
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13215AB_1_724_01.$av
	13215AB_1_724_01.$av
File ID:	13215AB_1
Sample ID:	13215AB_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_1_722_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_1_723_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_1_724_01.$ls

LS Particle Size Analyzer

9 Jul 2024 12:56

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13215AB_1_724_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	482.3 µm	S.D.:	349.2 µm
Median:	512.0 µm	Variance:	121.9e3 μm^2
Mean/Median ratio:	0.942	C.V.:	72.4%
Mode:	684.2 µm	Skewness:	0.177 Right skewed
		Kurtosis:	-0.942 Platykurtic

d_{10}: 16.21 µm d_{50}: 512.0 µm d_{90}: 940.7 µm

Folk and Ward Statistics (Phi)

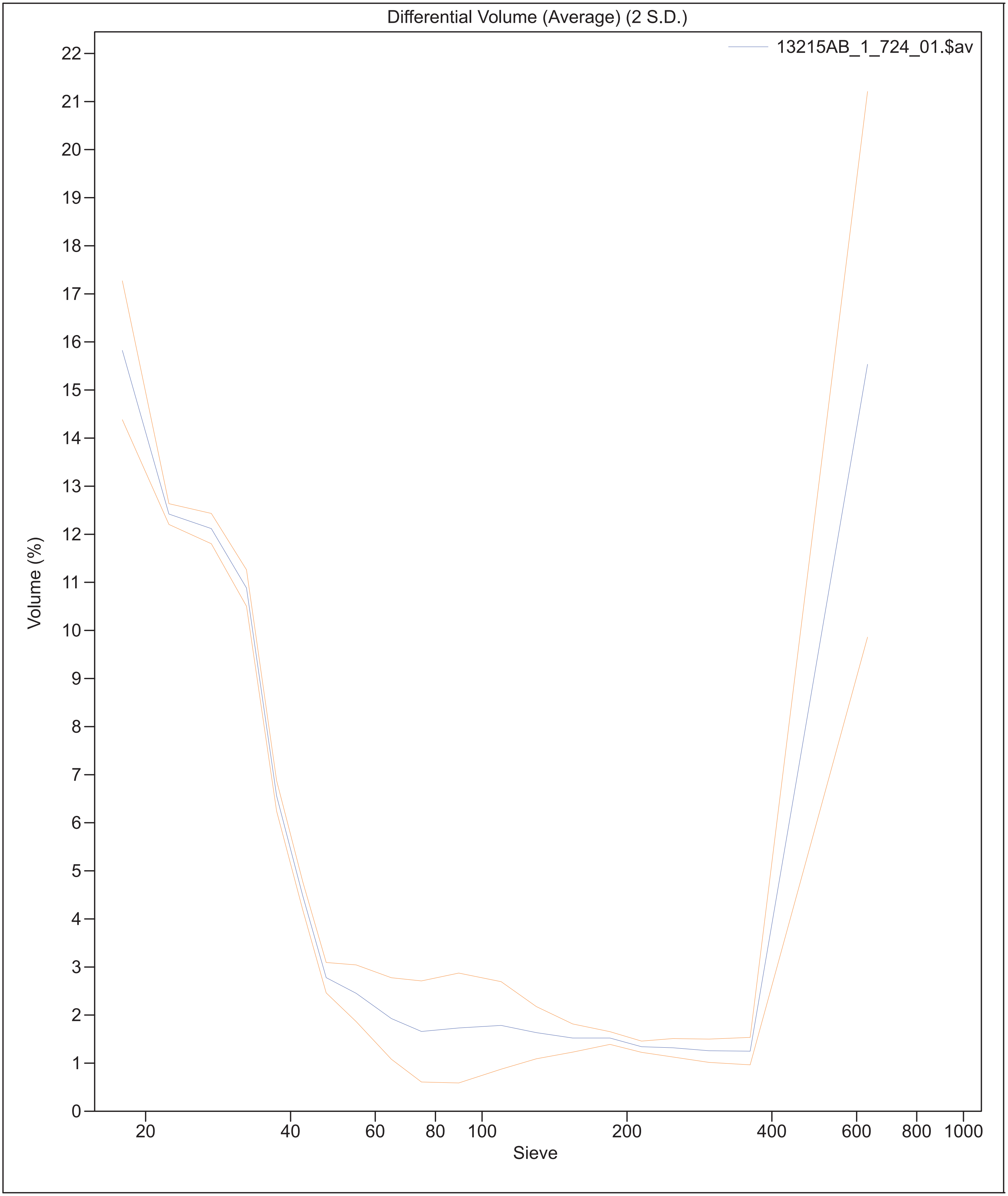
Mean:	1.94	Median:	0.97	Deviation:	2.27
Skewness:	0.70	Kurtosis:	1.21		

<10%	<25%	<50%	<75%	<90%
16.21 µm	120.2 µm	512.0 µm	743.2 µm	940.7 µm

LS Particle Size Analyzer

9 Jul 2024 12:56

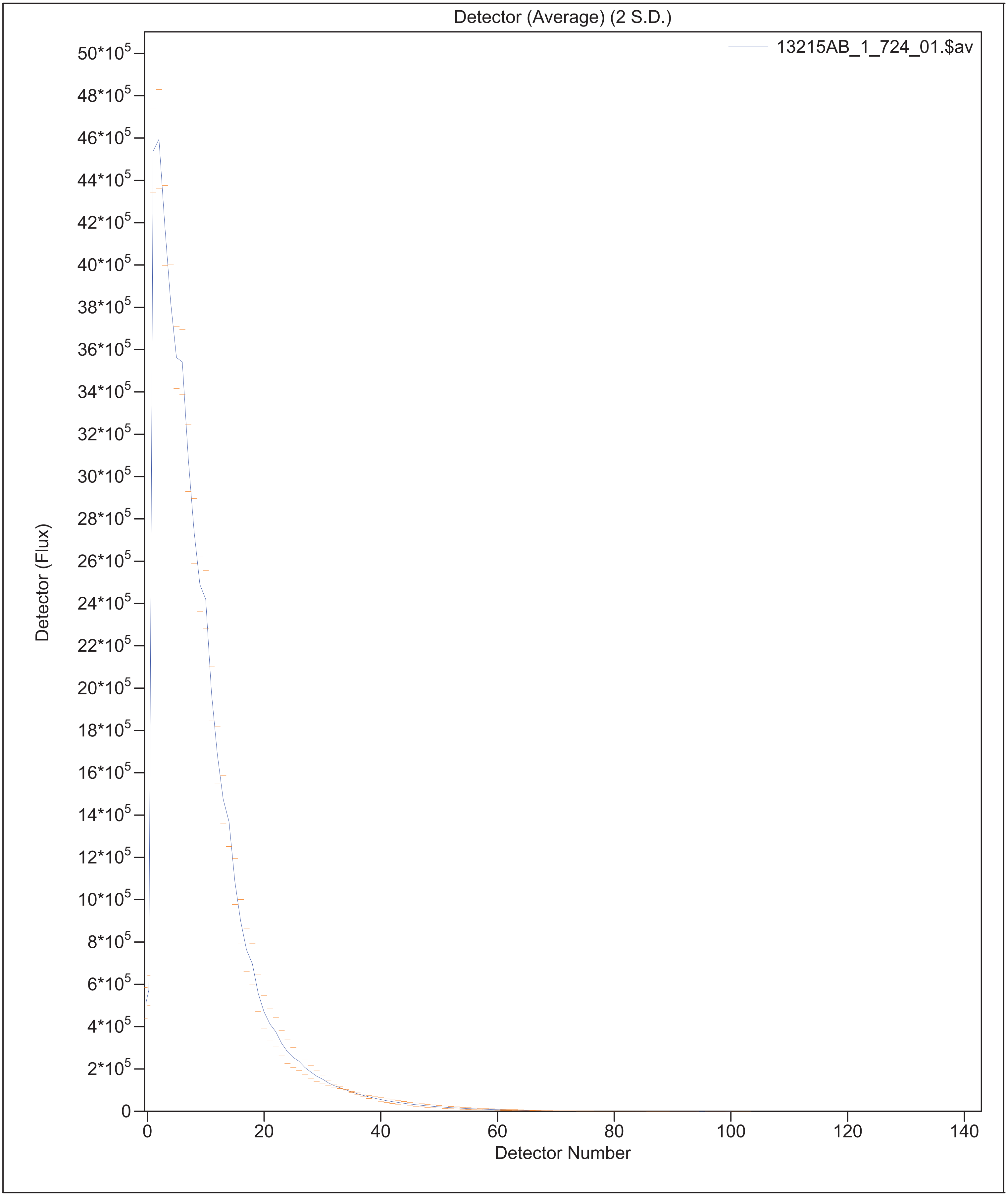
Beckman Coulter LS 13 320

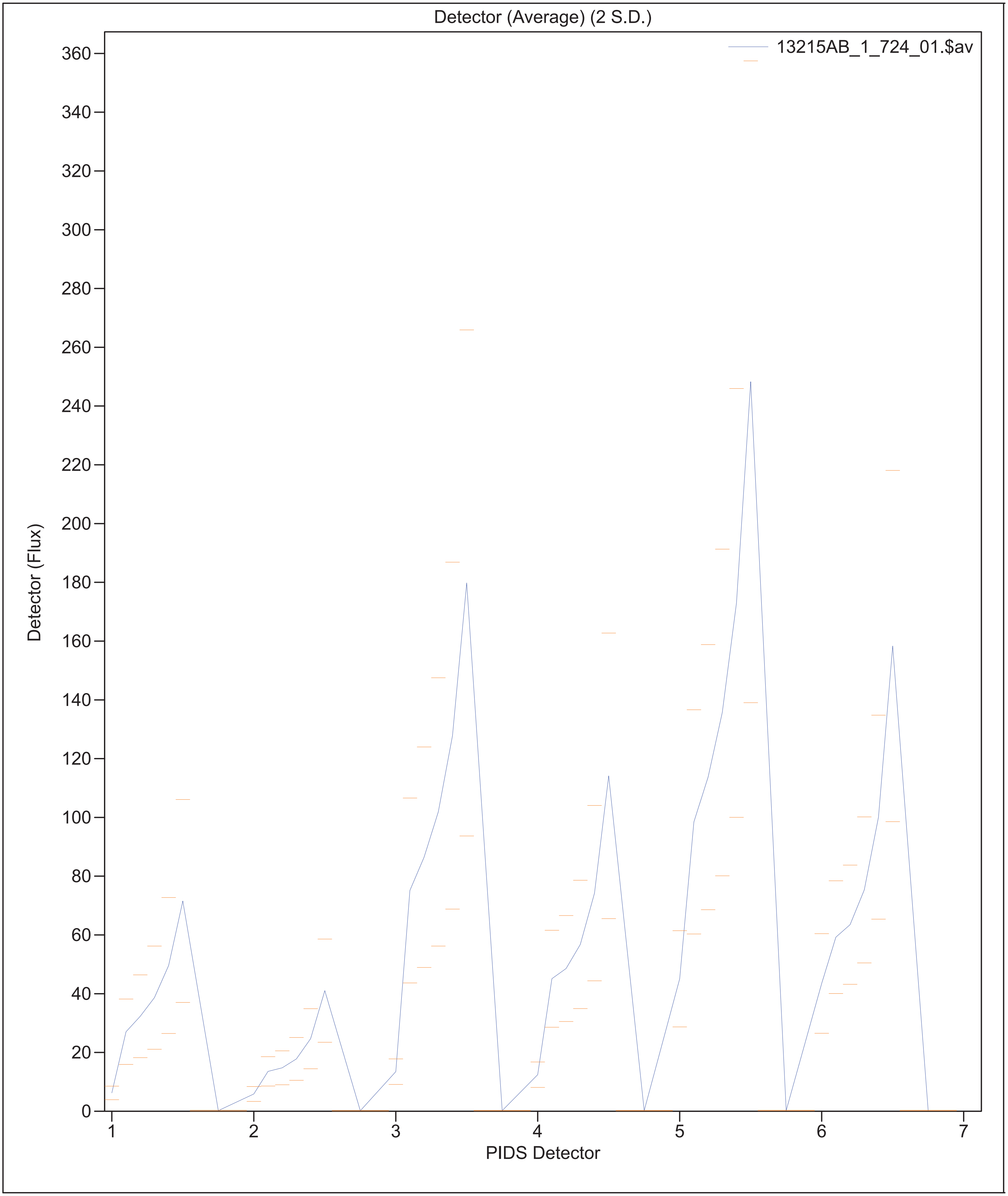


LS Particle Size Analyzer

9 Jul 2024 12:56

Beckman Coulter LS 13 320

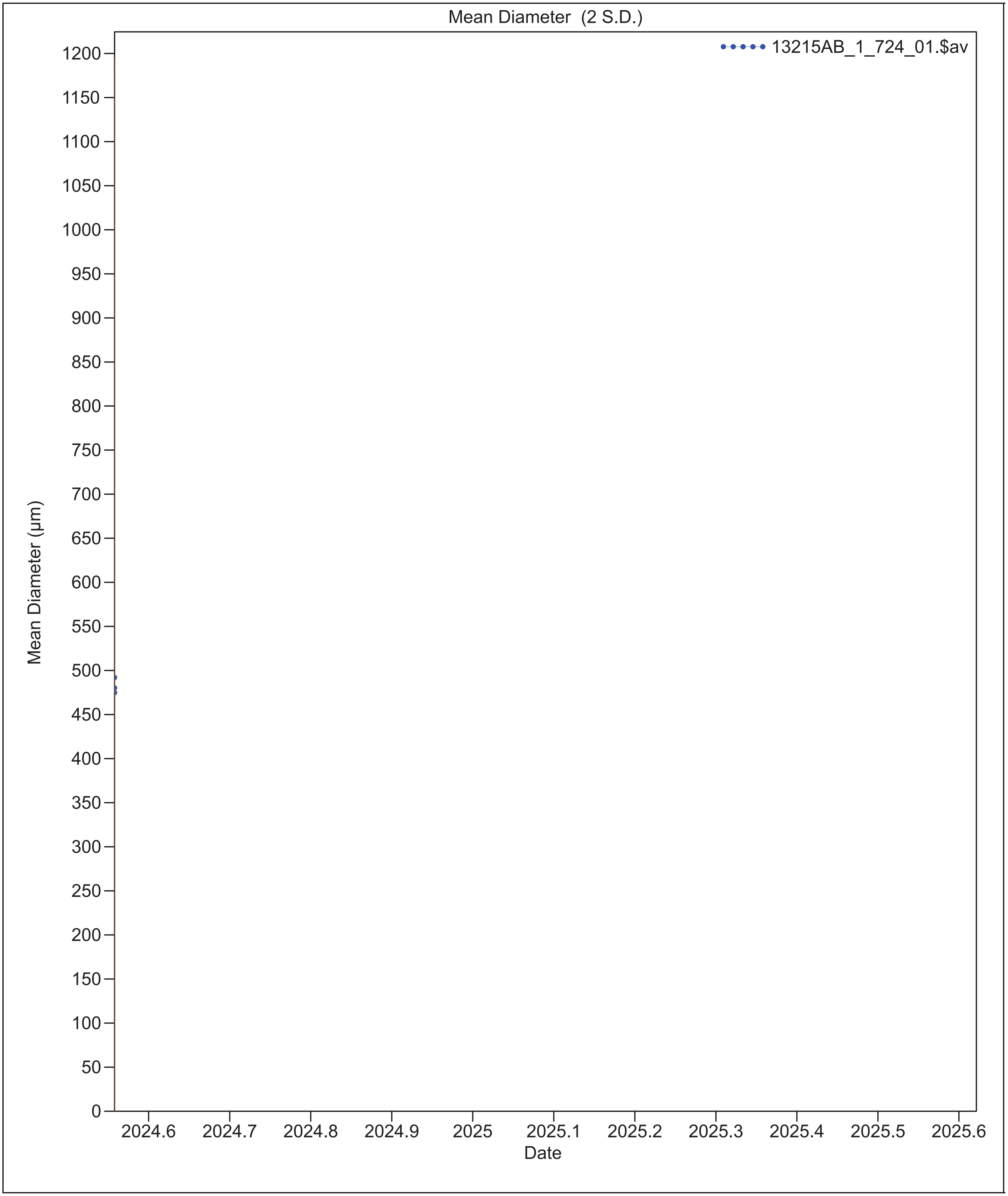



Detector (Average) (2 S.D.)
13215AB_1_724_01.$av
Detector (Flux)
PIDS Detector
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
1
2
3
4
5
6
7

LS Particle Size Analyzer

9 Jul 2024 12:56

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13215AB_1_724_01.$av

Calculations from 0.040 μm to 2000 μm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	482.3 μm	8.776	464.8	499.9
Median:	512.0 μm	3.400	505.2	518.8
S.D.:	349.0 μm	7.424	334.2	363.9
Variance:	121.9e3 μm^2	5213	111.4e3	132.3e3
C.V.:	72.39%	2.240	67.91	76.87
Skewness:	0.178	0.026	0.125	0.231
Kurtosis:	-0.945	0.073	-1.092	-0.798
d_{10}:	17.37 μm	6.430	4.506	30.23
d_{50}:	512.0 μm	3.400	505.2	518.8
d_{90}:	940.6 μm	10.75	919.1	962.1

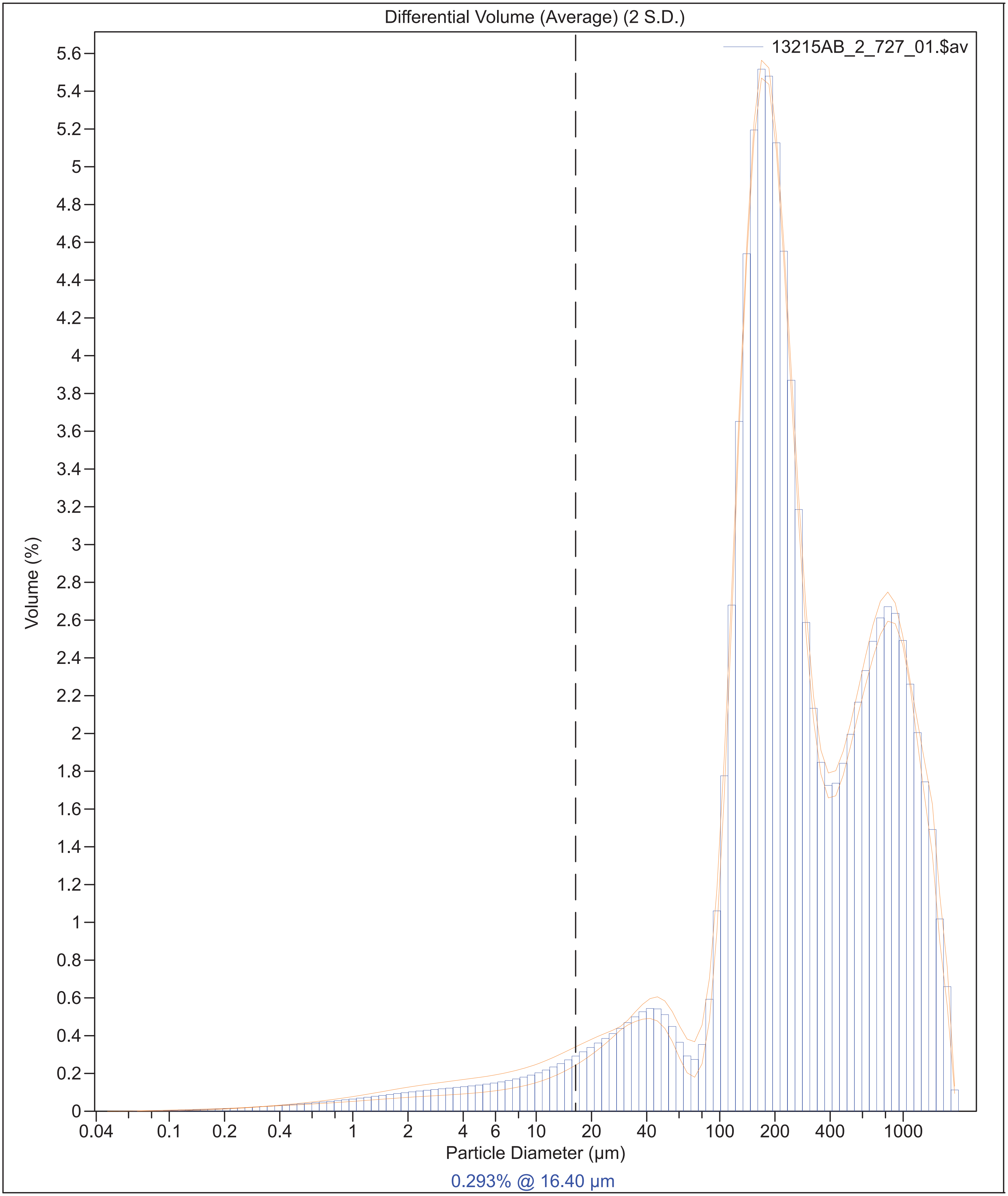
LS Particle Size Analyzer

9 Jul 2024 13:09

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\13215AB_2_727_01.$av
	13215AB_2_727_01.$av
File ID:	13215AB_2
Sample ID:	13215AB_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_2_725_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_2_726_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_2_727_01.$ls


Differential Volume (Average) (2 S.D.)
13215AB_2_727_01.$av
Volume (%)
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (µm)
0.293% @ 16.40 µm

Volume Statistics (Arithmetic) 13215AB_2_727_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	398.3 µm	S.D.:	390.8 µm
Median:	223.1 µm	Variance:	152.7e3 μm^2
Mean/Median ratio:	1.785	C.V.:	98.1%
Mode:	168.9 µm	Skewness:	1.434 Right skewed
		Kurtosis:	1.327 Leptokurtic

d_{10}: 48.22 µm d_{50}: 223.1 µm d_{90}: 1015 µm

Folk and Ward Statistics (Phi)

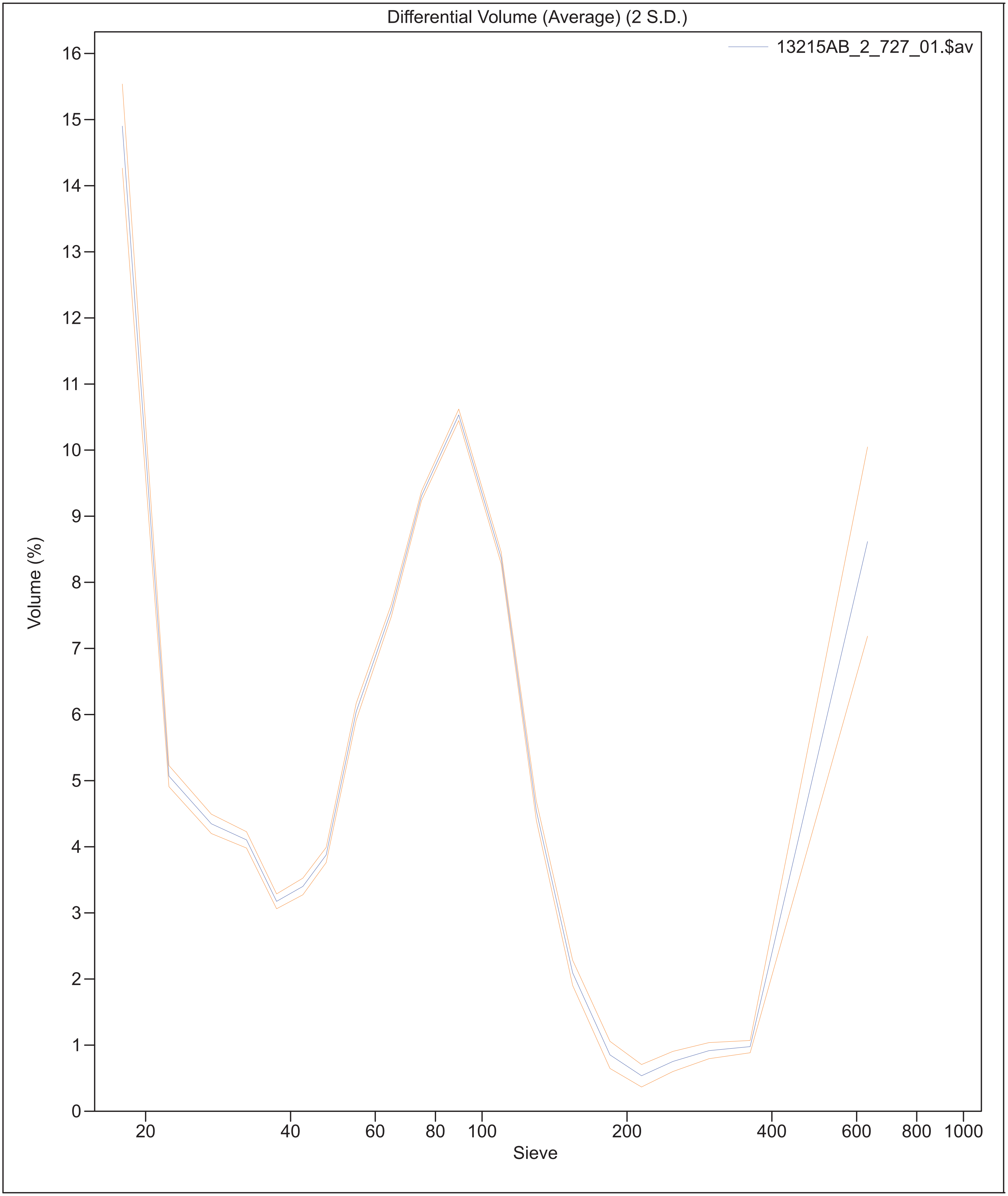
Mean:	1.87	Median:	2.16	Deviation:	1.66
Skewness:	-0.05	Kurtosis:	1.26		

<10%	<25%	<50%	<75%	<90%
48.22 µm	142.5 µm	223.1 µm	583.2 µm	1015 µm

LS Particle Size Analyzer

9 Jul 2024 13:09

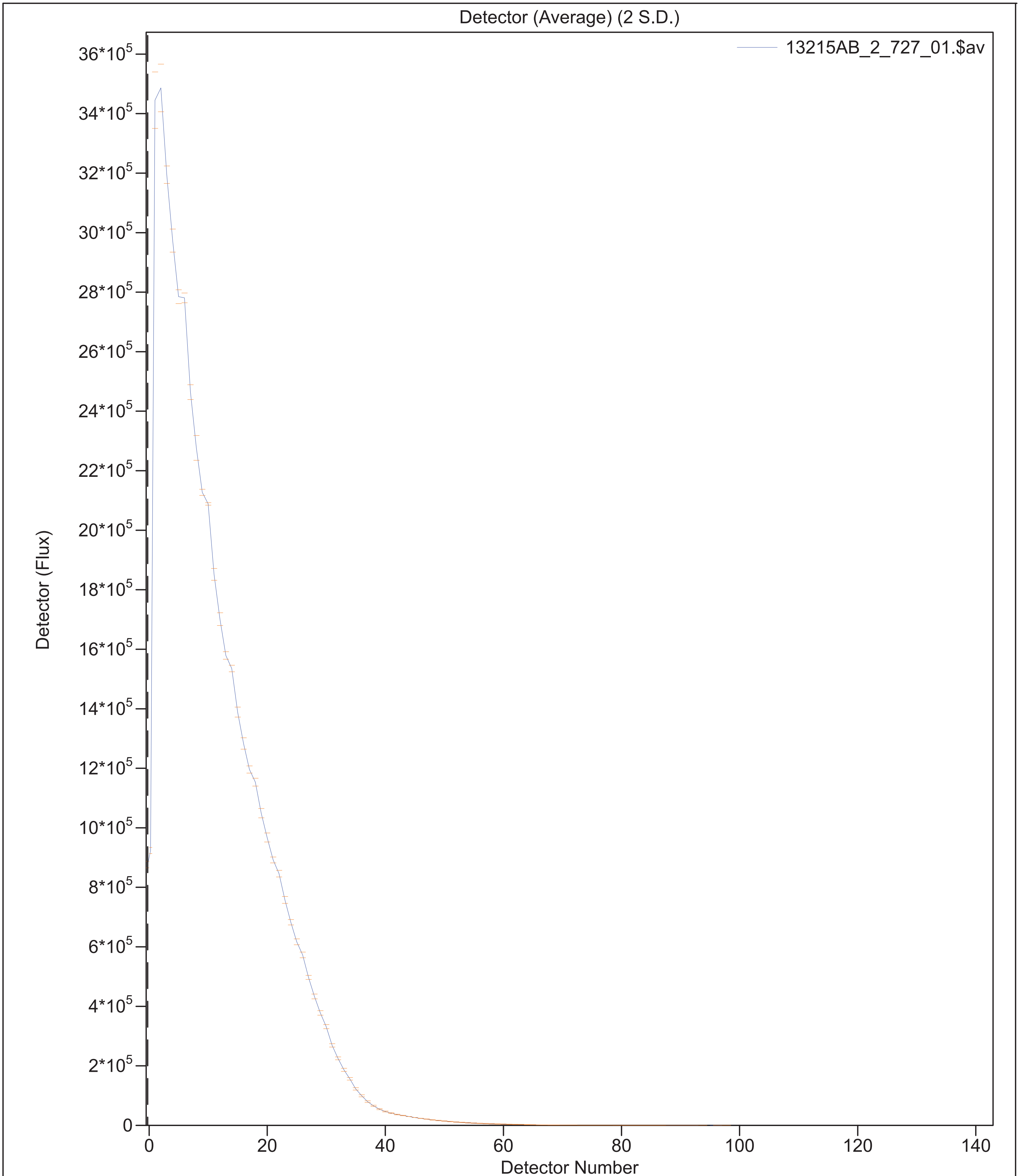
Beckman Coulter LS 13 320



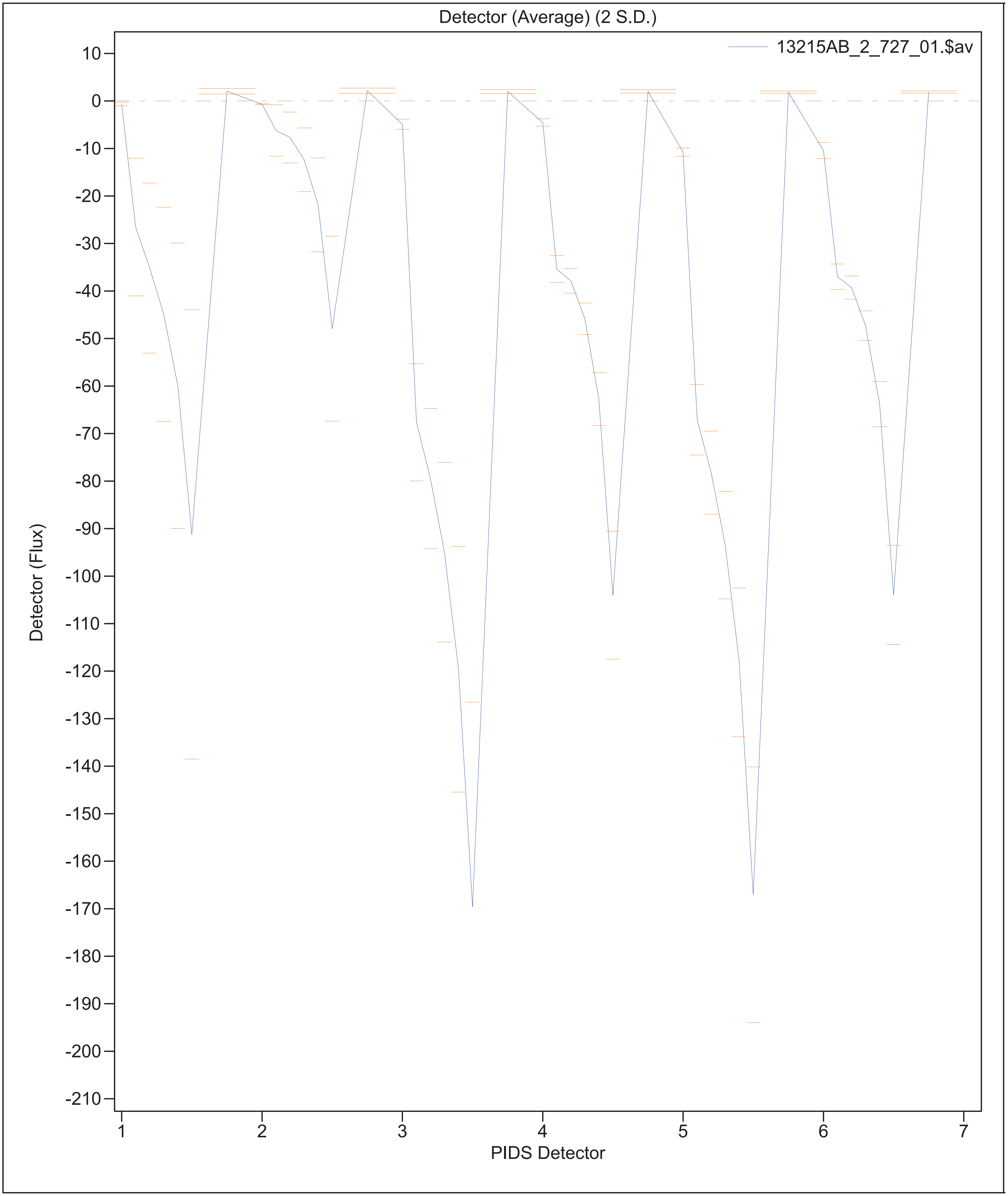
LS Particle Size Analyzer

9 Jul 2024 13:09

Beckman Coulter LS 13 320



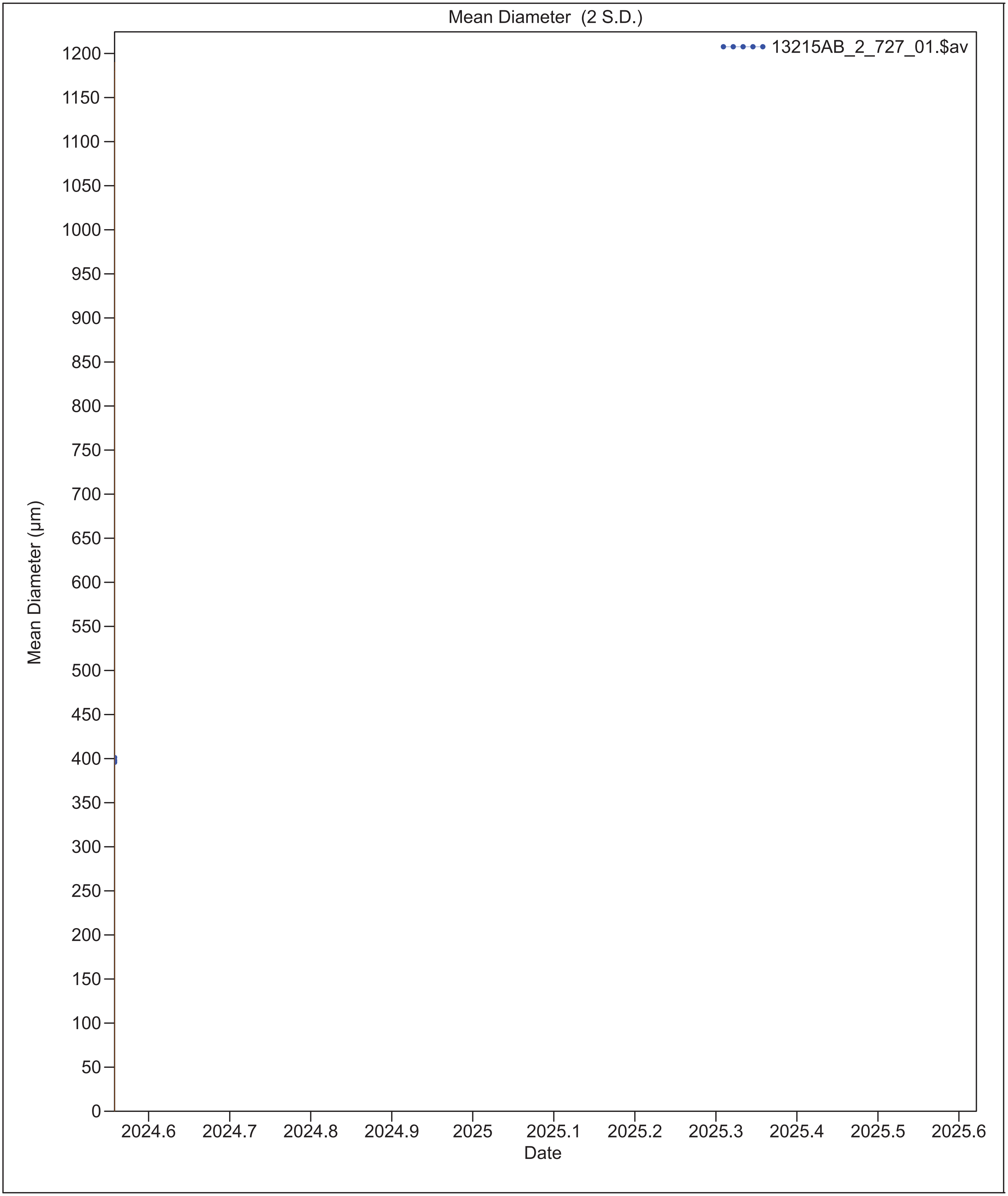
876.4*10^3 Flux @ -0.250


Detector (Average) (2 S.D.)
13215AB_2_727_01.$av
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
-210
Detector (Flux)
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

9 Jul 2024 13:09

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13215AB_2_727_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	398.3 µm	2.801	392.7	403.9
Median:	223.1 µm	0.854	221.4	224.8
S.D.:	390.8 µm	3.486	383.8	397.8
Variance:	152.7e3 μm^2	2724	147.3e3	158.2e3
C.V.:	98.12%	0.212	97.69	98.54
Skewness:	1.434	0.0060	1.422	1.446
Kurtosis:	1.325	0.0021	1.321	1.329
d_{10}:	48.32 µm	4.875	38.57	58.07
d_{50}:	223.1 µm	0.854	221.4	224.8
d_{90}:	1015 µm	9.982	994.7	1035

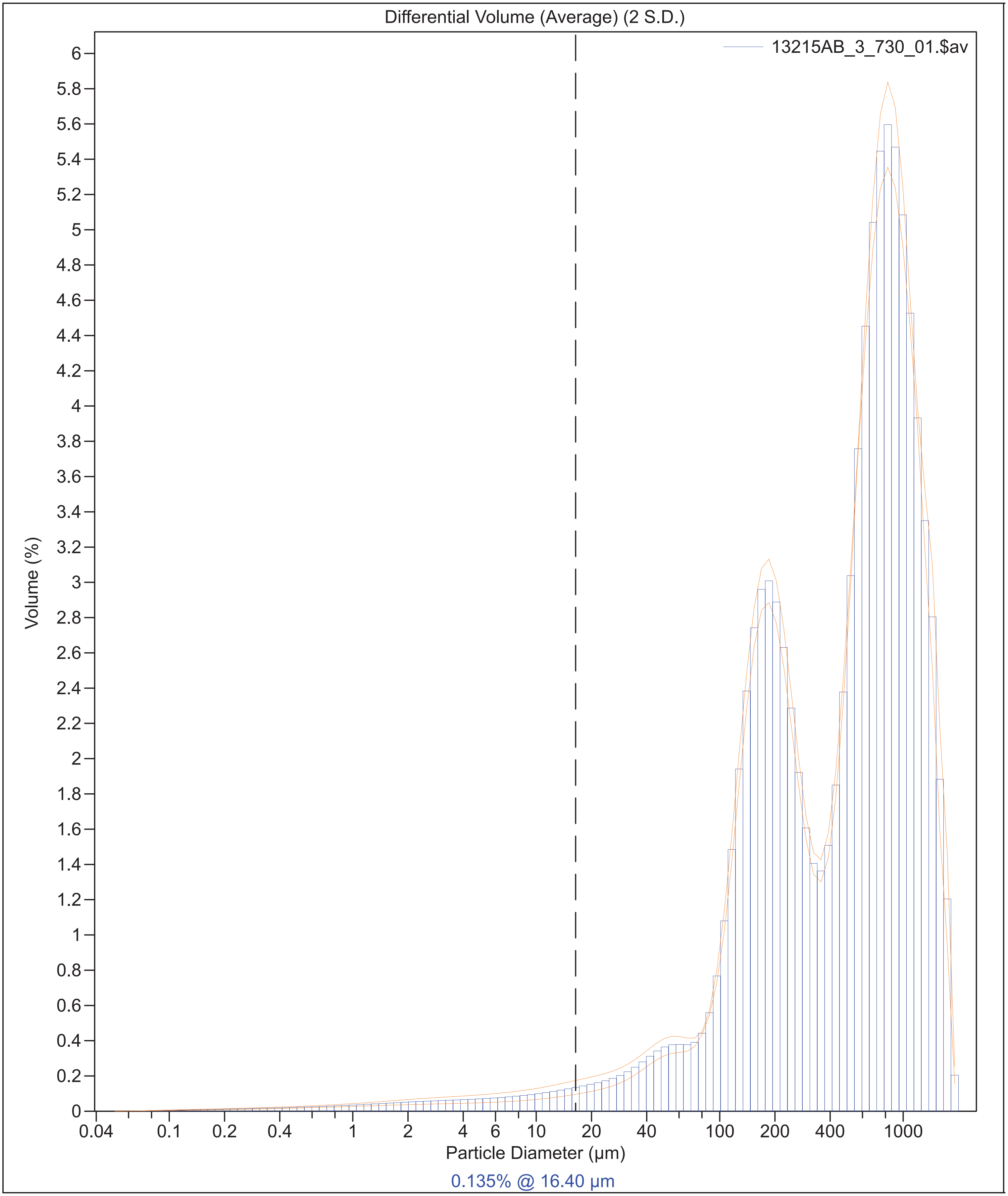
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13215AB_3_730_01.$av
	13215AB_3_730_01.$av
File ID:	13215AB_3
Sample ID:	13215AB_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_3_728_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_3_729_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_3_730_01.$ls

LS Particle Size Analyzer

9 Jul 2024 13:23

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 13:23

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13215AB_3_730_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	610.9 µm	S.D.:	440.5 µm
Median:	580.7 µm	Variance:	194.1e3 μm^2
Mean/Median ratio:	1.052	C.V.:	72.1%
Mode:	824.5 µm	Skewness:	0.543 Right skewed
		Kurtosis:	-0.572 Platykurtic

d_{10}: 112.1 µm d_{50}: 580.7 µm d_{90}: 1239 µm

Folk and Ward Statistics (Phi)

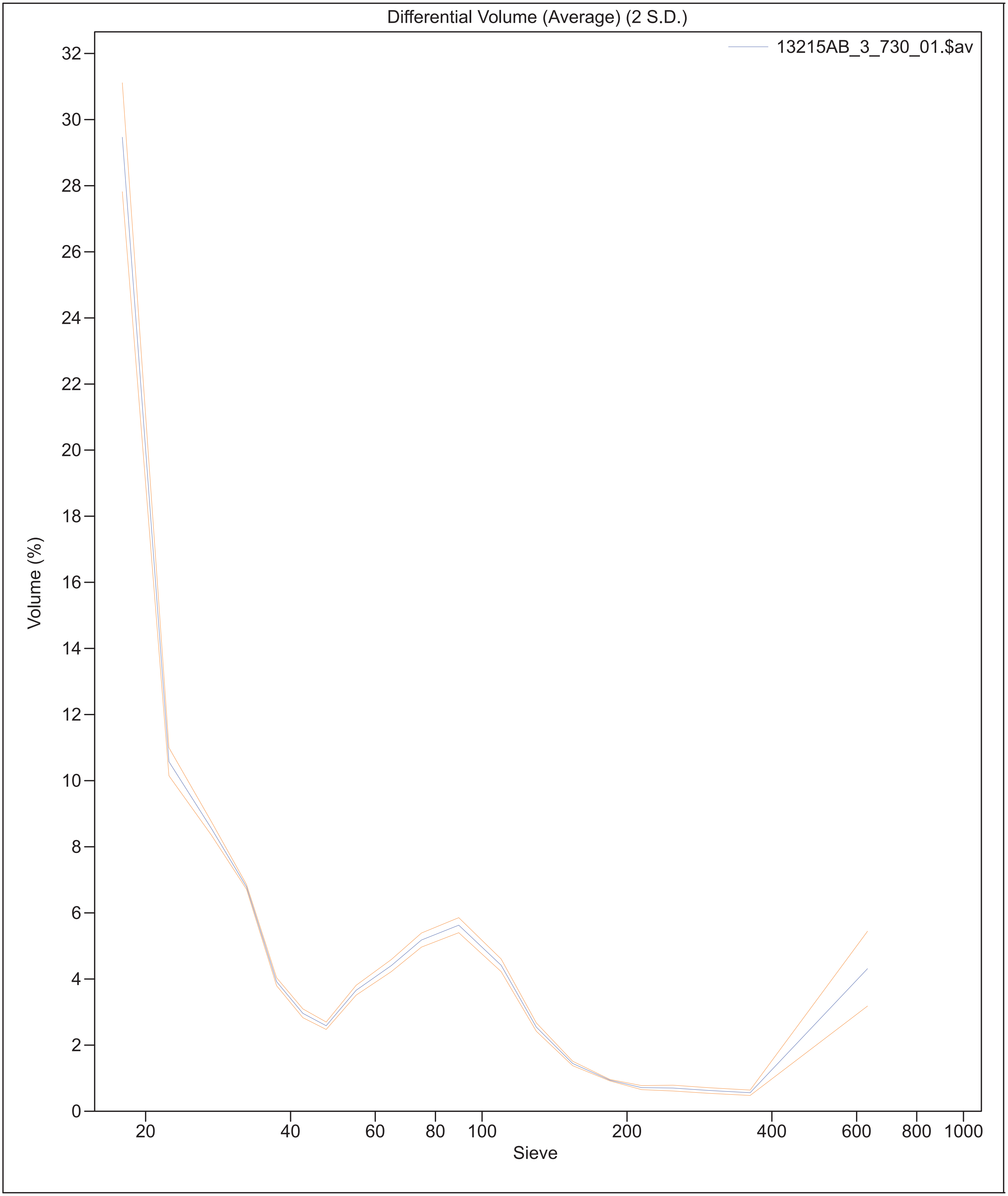
Mean:	1.14	Median:	0.78	Deviation:	1.47
Skewness:	0.42	Kurtosis:	0.92		

<10%	<25%	<50%	<75%	<90%
112.1 µm	198.4 µm	580.7 µm	917.3 µm	1239 µm

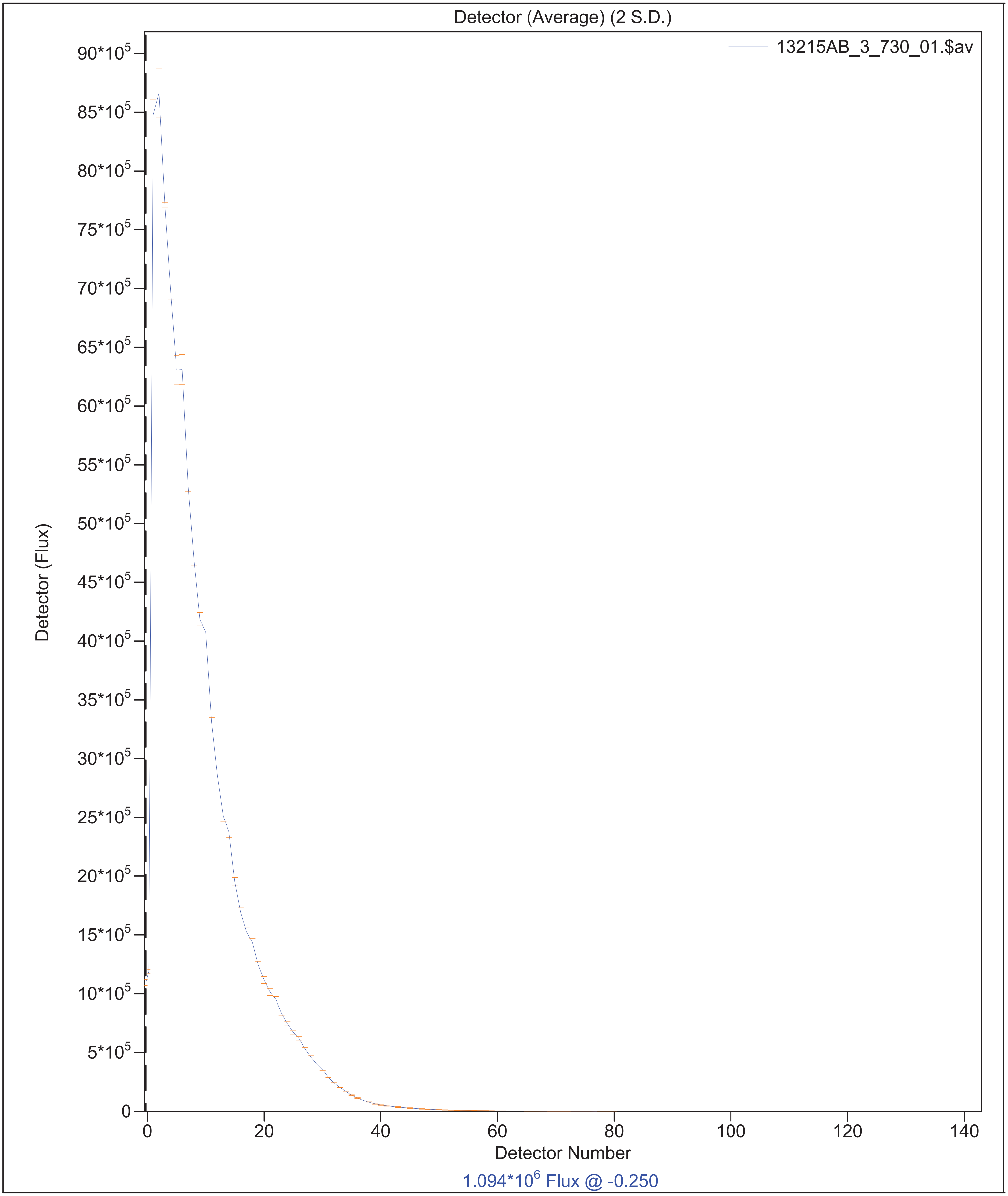
LS Particle Size Analyzer

9 Jul 2024 13:23

Beckman Coulter LS 13 320



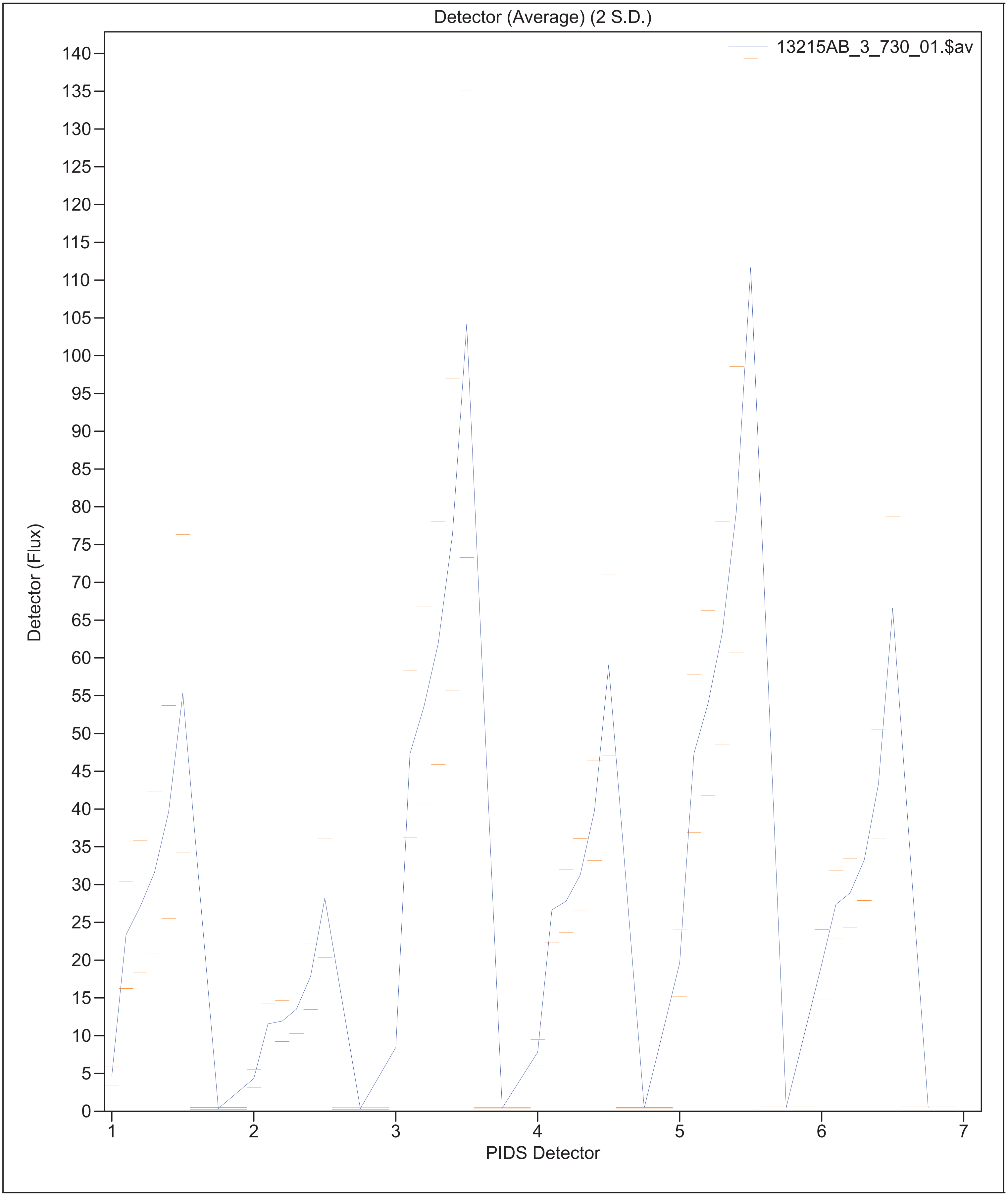
Beckman Coulter LS 13 320

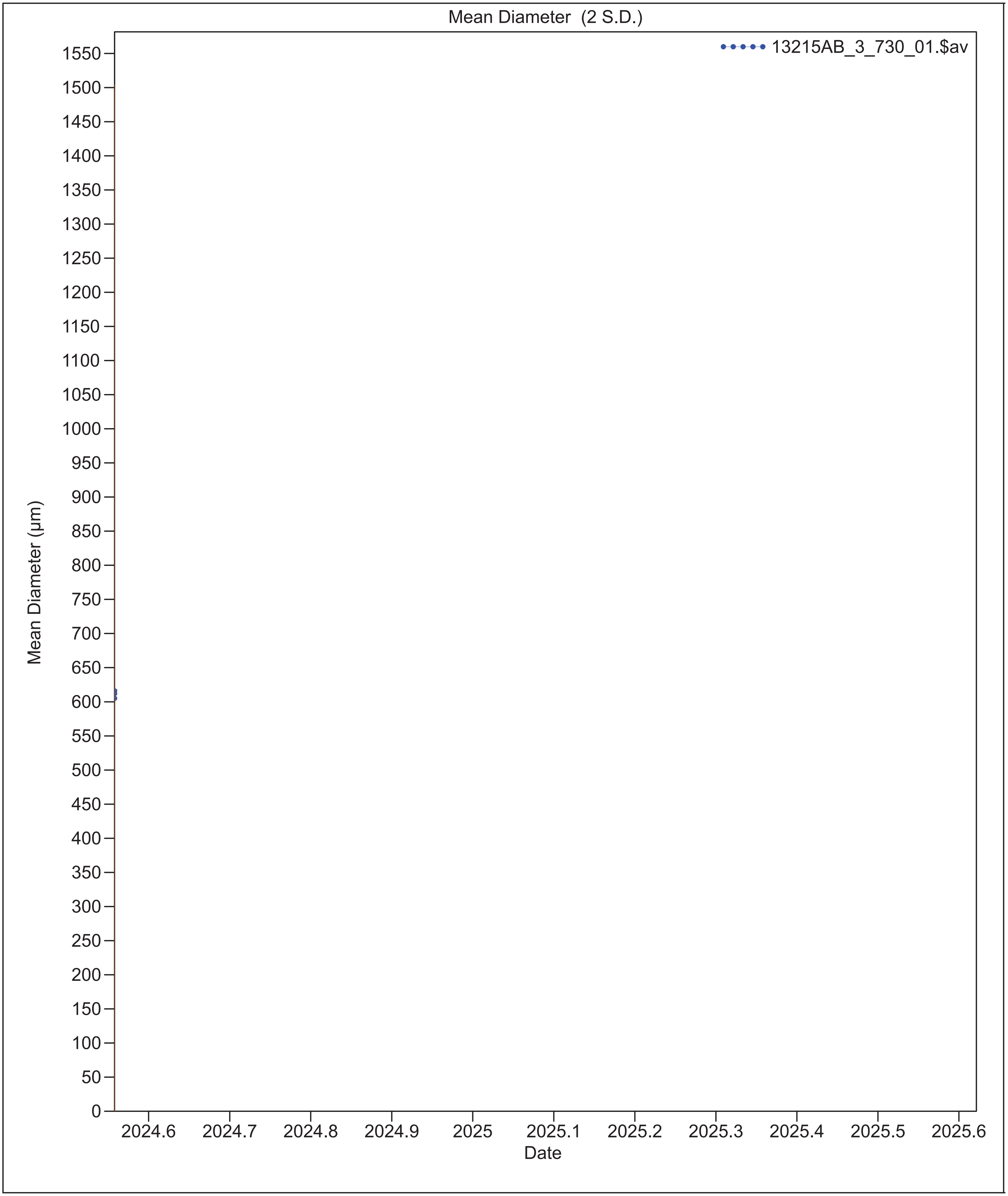


LS Particle Size Analyzer

9 Jul 2024 13:23

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
13215AB_3_730_01.$av
Mean Diameter (µm)
1550
1500
1450
1400
1350
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

9 Jul 2024 13:23

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13215AB_3_730_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	610.9 µm	5.507	599.9	621.9
Median:	580.7 µm	1.923	576.8	584.5
S.D.:	440.5 µm	3.626	433.2	447.7
Variance:	194.0e3 μm^2	3195	187.7e3	200.4e3
C.V.:	72.10%	0.138	71.83	72.38
Skewness:	0.542	0.018	0.505	0.579
Kurtosis:	-0.574	0.0089	-0.592	-0.556
d_{10}:	111.7 µm	5.354	101.0	122.4
d_{50}:	580.7 µm	1.923	576.8	584.5
d_{90}:	1239 µm	15.27	1208	1269

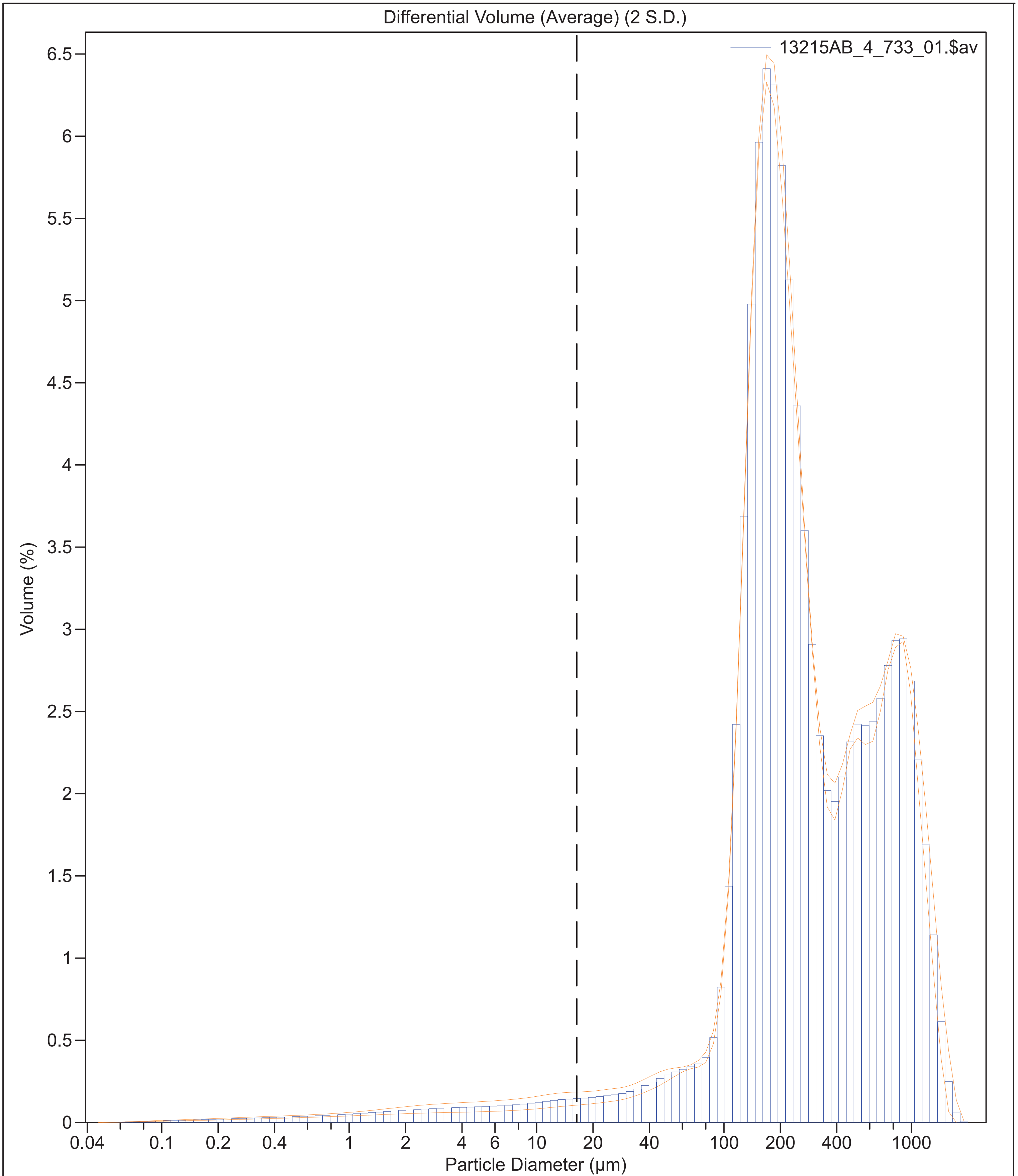
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13215AB_4_733_01.$av
	13215AB_4_733_01.$av
File ID:	13215AB_4
Sample ID:	13215AB_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_4_731_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_4_732_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13215AB_4_733_01.$ls

LS Particle Size Analyzer

9 Jul 2024 13:34

Beckman Coulter LS 13 320



0.145% @ 16.40 µm

Volume Statistics (Arithmetic) 13215AB_4_733_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	376.5 µm	S.D.:	330.0 µm
Median:	229.1 µm	Variance:	108.9e3 $µm^2$
Mean/Median ratio:	1.644	C.V.:	87.7%
Mode:	168.9 µm	Skewness:	1.349 Right skewed
		Kurtosis:	1.062 Leptokurtic

d_{10}: 107.5 µm d_{50}: 229.1 µm d_{90}: 909.5 µm

Folk and Ward Statistics (Phi)

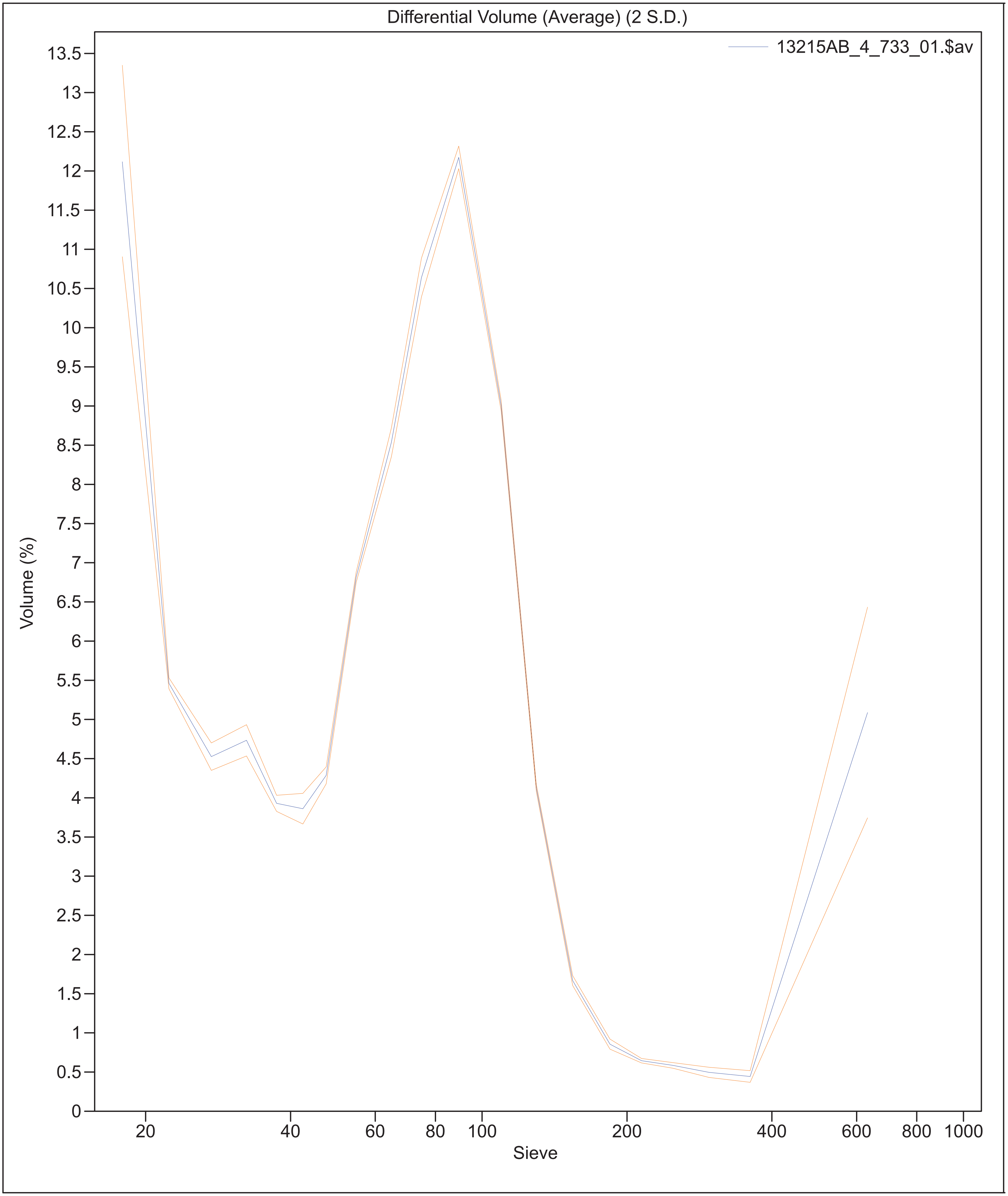
Mean:	1.82	Median:	2.13	Deviation:	1.37
Skewness:	-0.14	Kurtosis:	1.12		

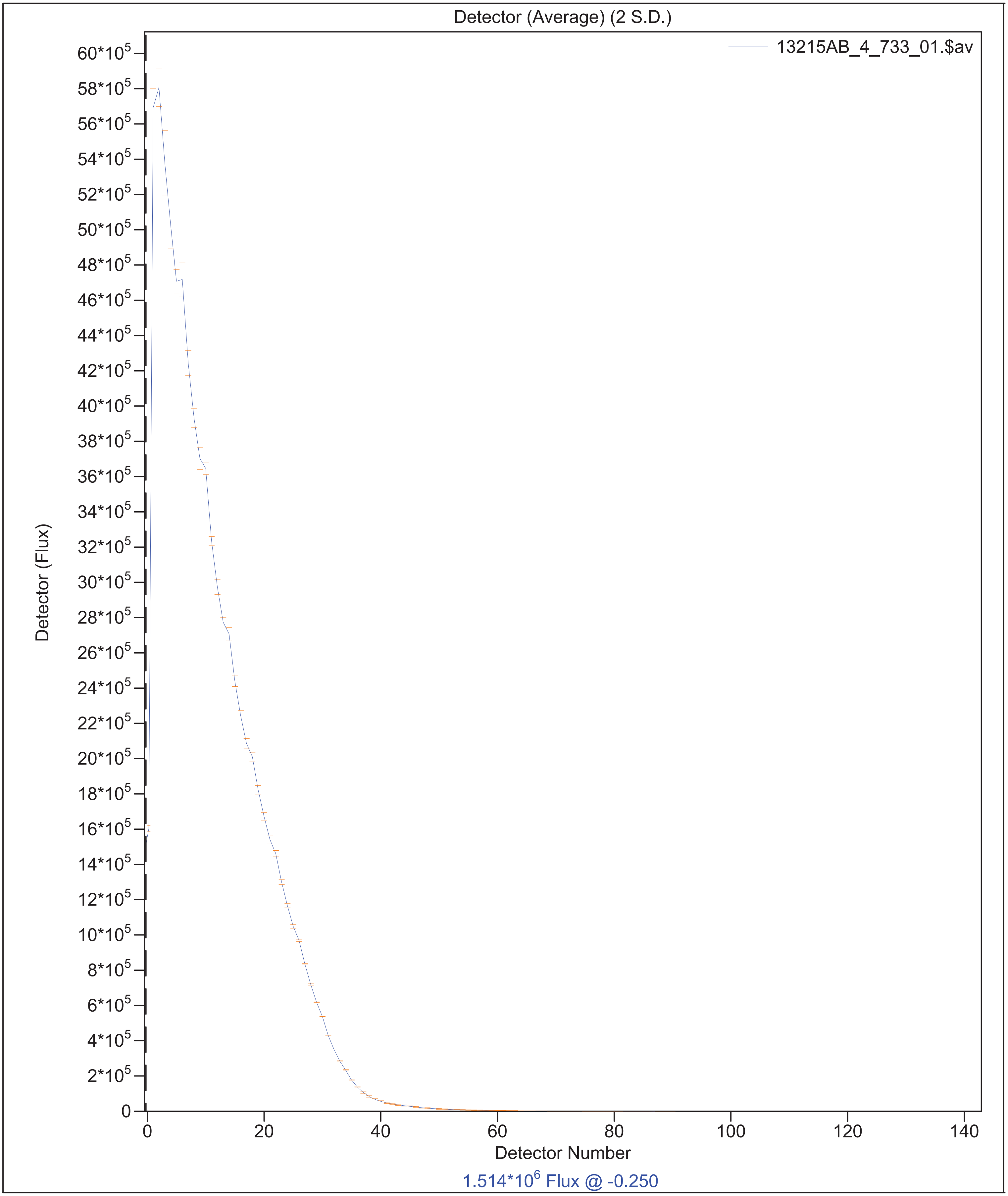
<10%	<25%	<50%	<75%	<90%
107.5 µm	155.0 µm	229.1 µm	536.6 µm	909.5 µm

LS Particle Size Analyzer

9 Jul 2024 13:34

Beckman Coulter LS 13 320

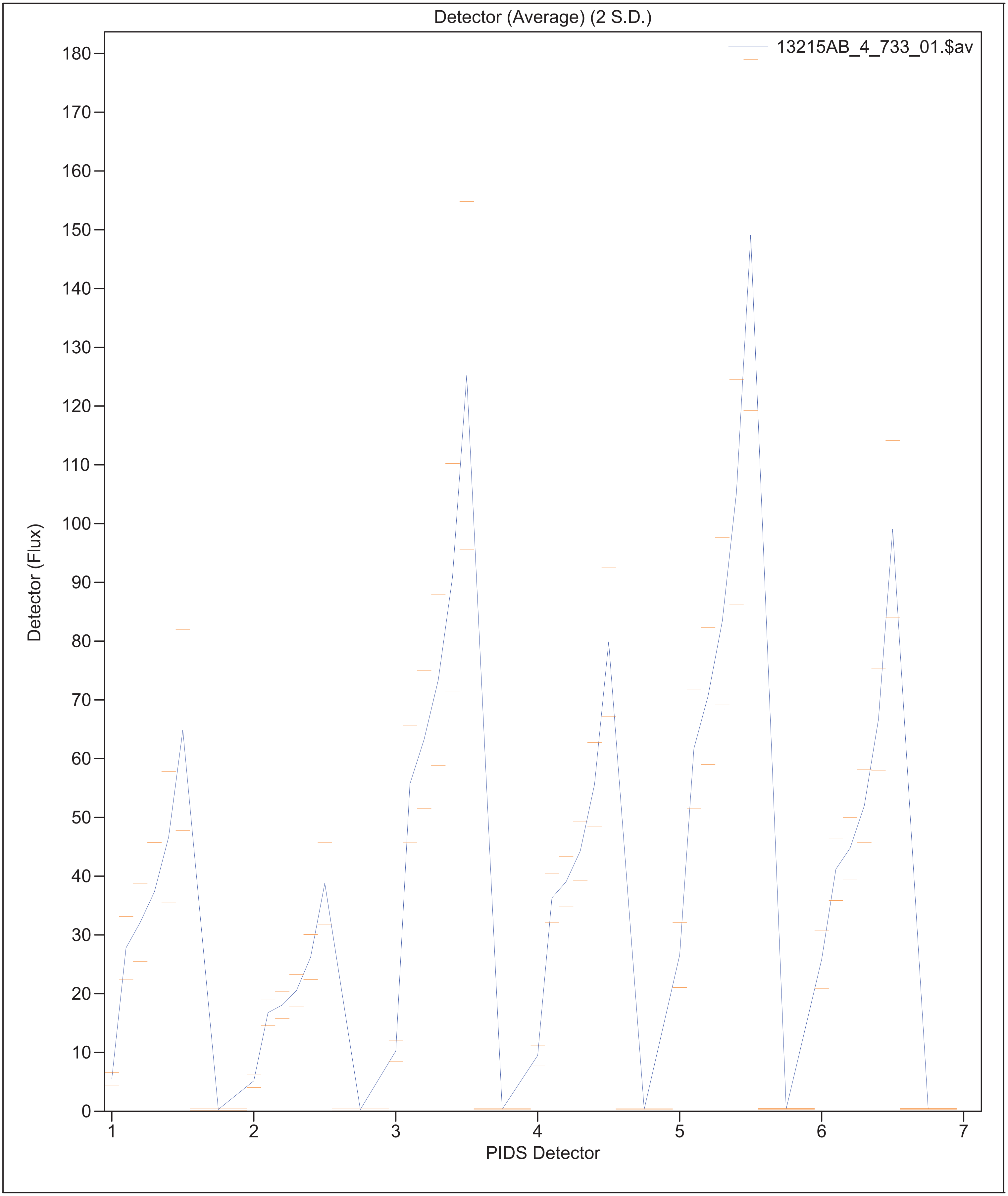


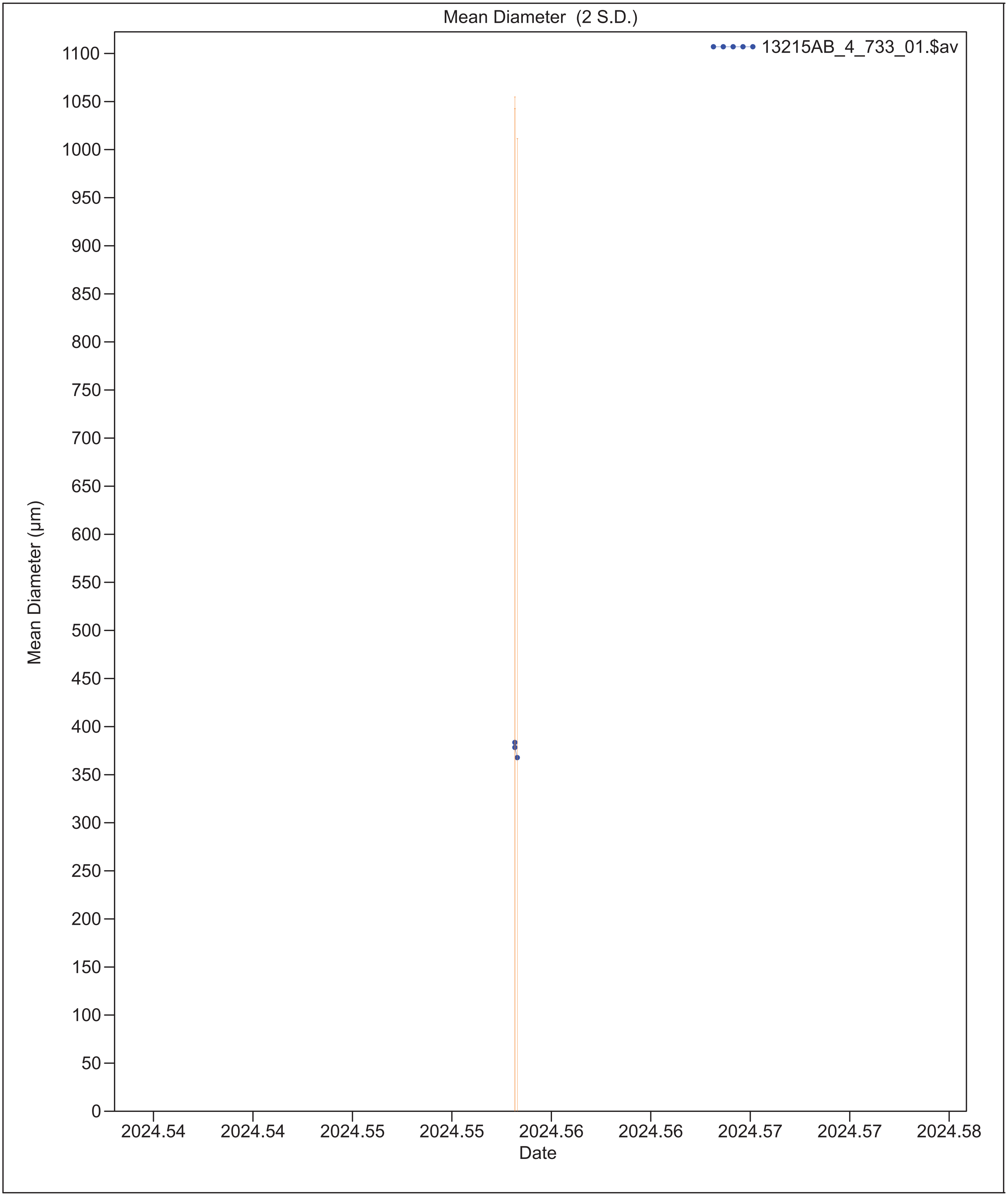

Detector (Average) (2 S.D.)
13215AB_4_733_01.$av
Detector (Flux)
60*10^5
58*10^5
56*10^5
54*10^5
52*10^5
50*10^5
48*10^5
46*10^5
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140
Detector Number
1.514*10^6 Flux @ -0.250

LS Particle Size Analyzer

9 Jul 2024 13:34

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
13215AB_4_733_01.$av
Mean Diameter (µm)
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.54
2024.54
2024.55
2024.55
2024.56
2024.56
2024.57
2024.57
2024.58
Date

LS Particle Size Analyzer

9 Jul 2024 13:34

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13215AB_4_733_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	376.5 µm	8.003	360.4	392.5
Median:	229.0 µm	2.634	223.8	234.3
S.D.:	329.9 µm	7.205	315.5	344.3
Variance:	108.9e3 µm^2	4731	99406	118.3e3
C.V.:	87.63%	0.143	87.35	87.92
Skewness:	1.347	0.018	1.310	1.383
Kurtosis:	1.047	0.069	0.910	1.184
d_{10}:	107.2 µm	5.309	96.61	117.8
d_{50}:	229.0 µm	2.634	223.8	234.3
d_{90}:	909.5 µm	17.14	875.2	943.8

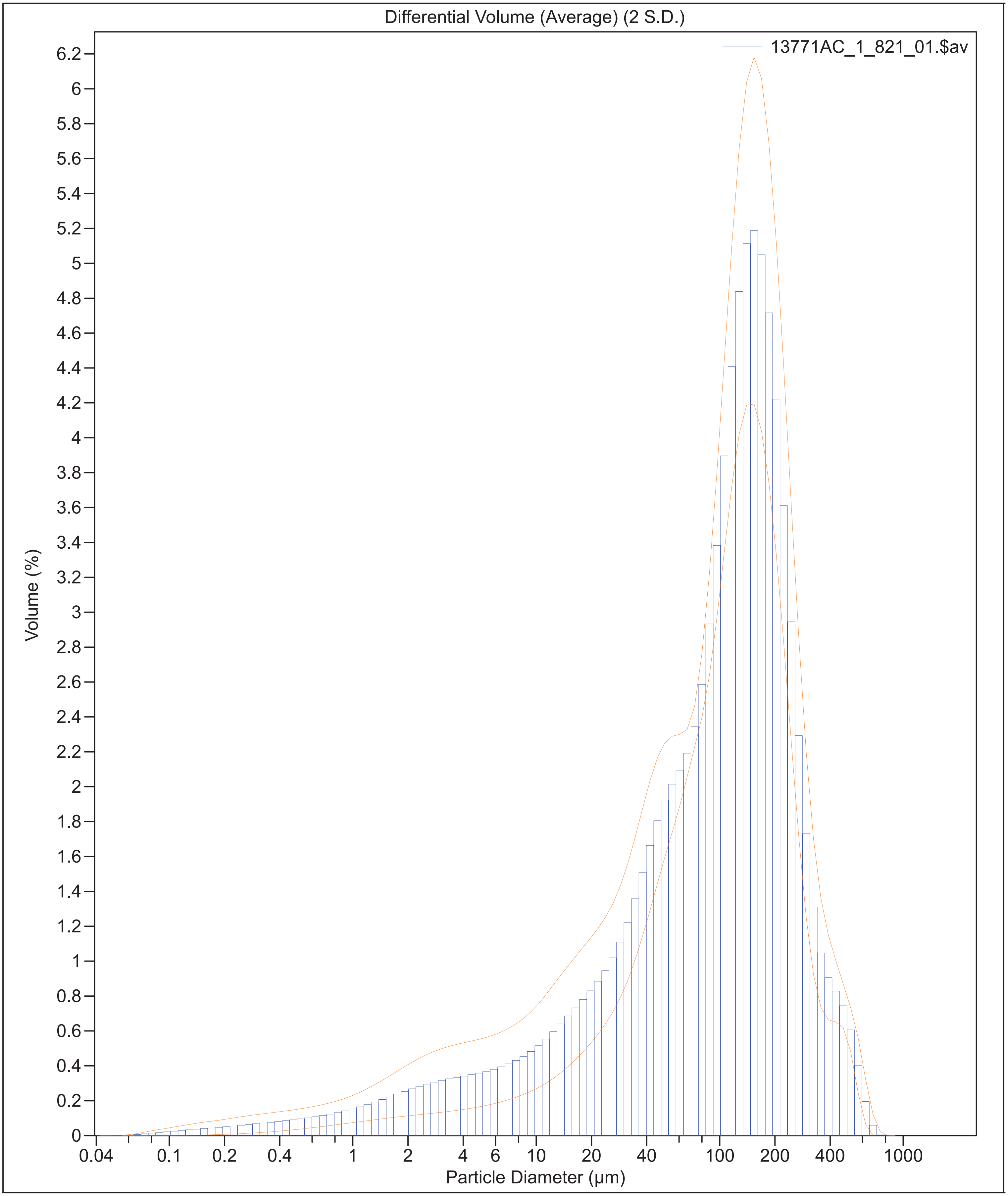
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_1_821_01.$av
	13771AC_1_821_01.$av
File ID:	13771AC_1
Sample ID:	13771AC_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_1_819_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_1_820_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_1_821_01.$ls

LS Particle Size Analyzer

10 Jul 2024 10:57

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_1_821_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	128.2 µm	S.D.:	108.2 µm
Median:	111.5 µm	Variance:	11718 μm^2
Mean/Median ratio:	1.150	C.V.:	84.4%
Mode:	153.8 µm	Skewness:	1.443 Right skewed
		Kurtosis:	2.949 Leptokurtic

d_{10}: 10.63 µm d_{50}: 111.5 µm d_{90}: 258.4 µm

Folk and Ward Statistics (Phi)

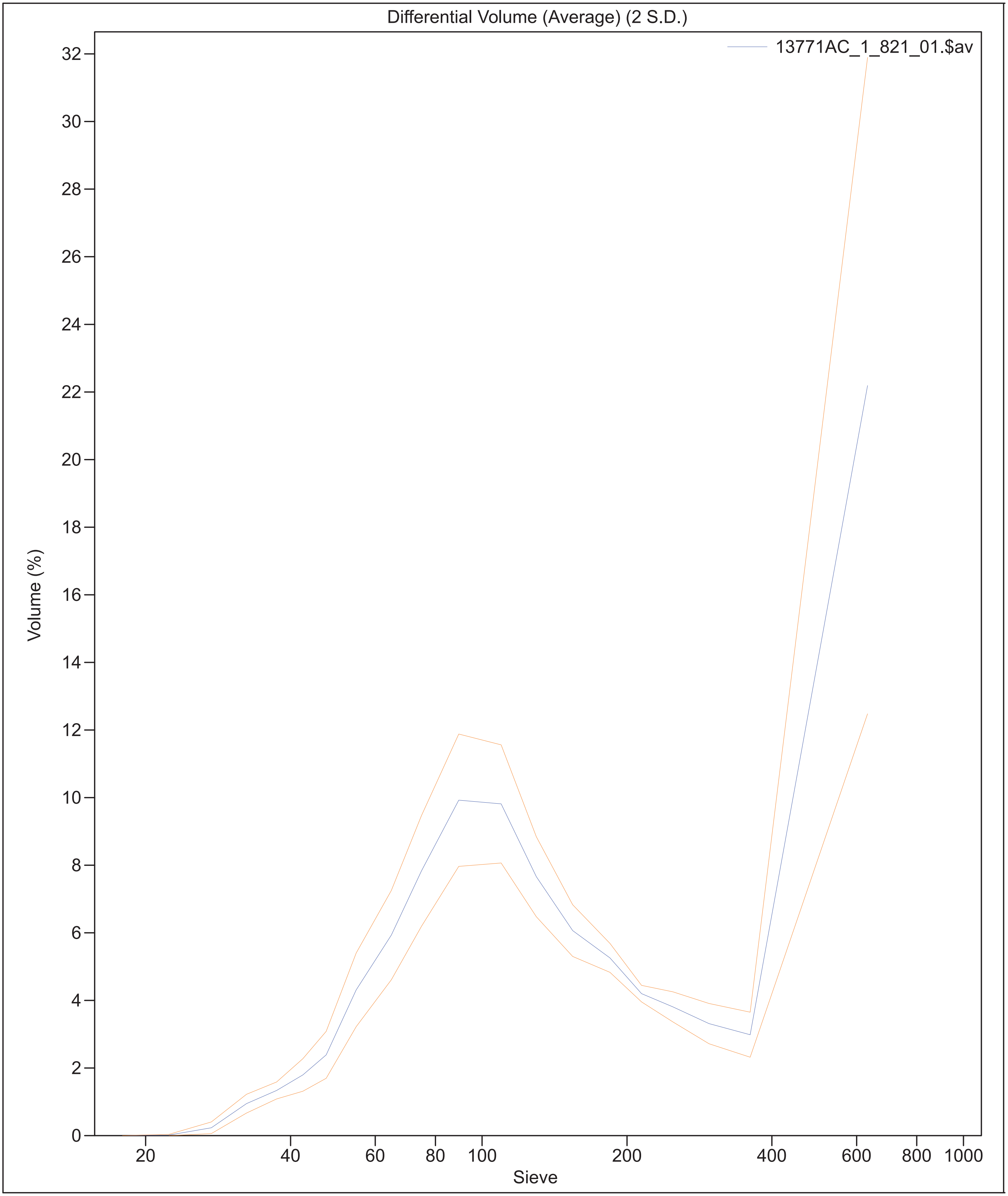
Mean:	3.60	Median:	3.16	Deviation:	1.82
Skewness:	0.46	Kurtosis:	1.36		

<10%	<25%	<50%	<75%	<90%
10.63 µm	44.59 µm	111.5 µm	179.2 µm	258.4 µm

LS Particle Size Analyzer

10 Jul 2024 10:57

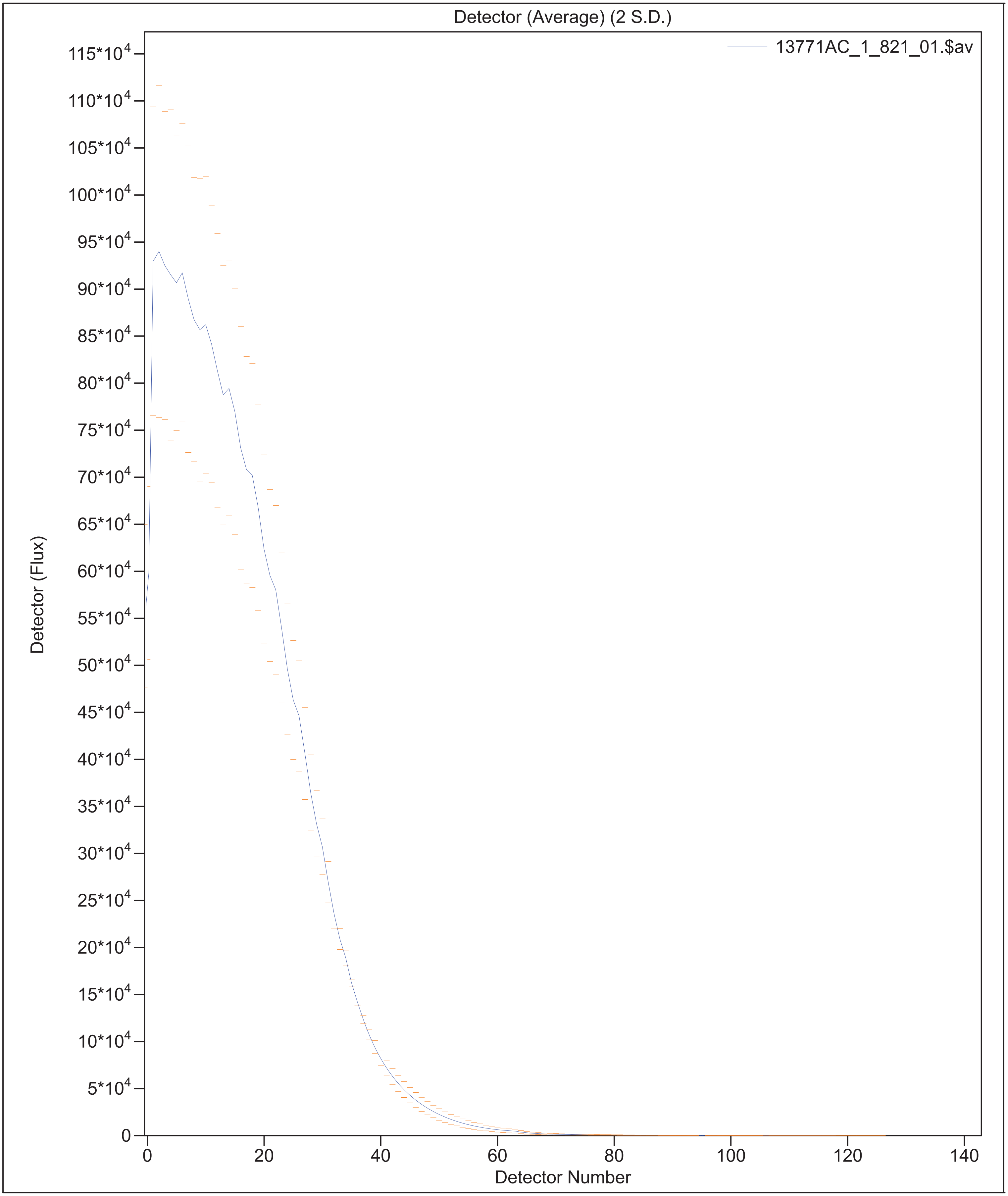
Beckman Coulter LS 13 320

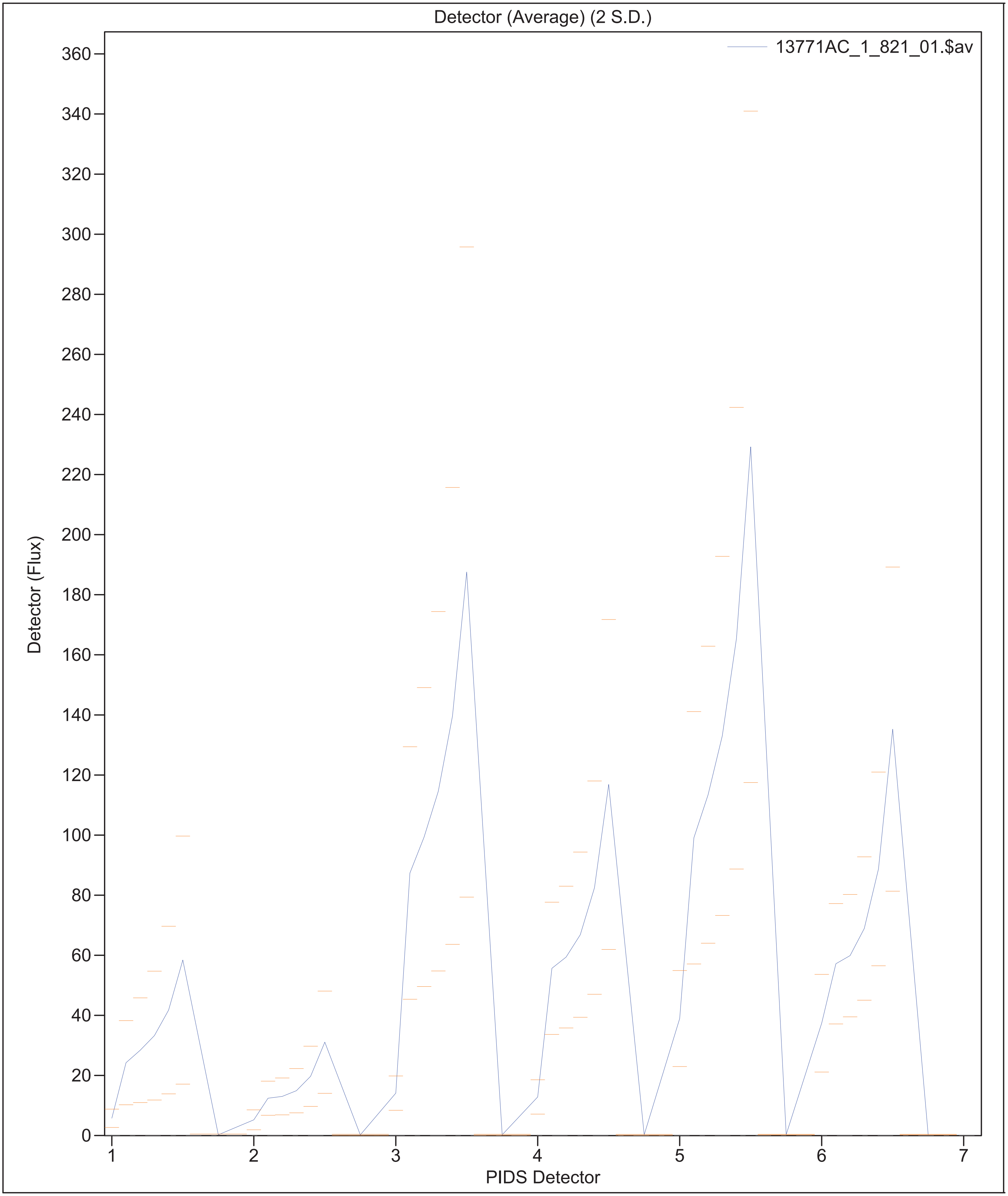


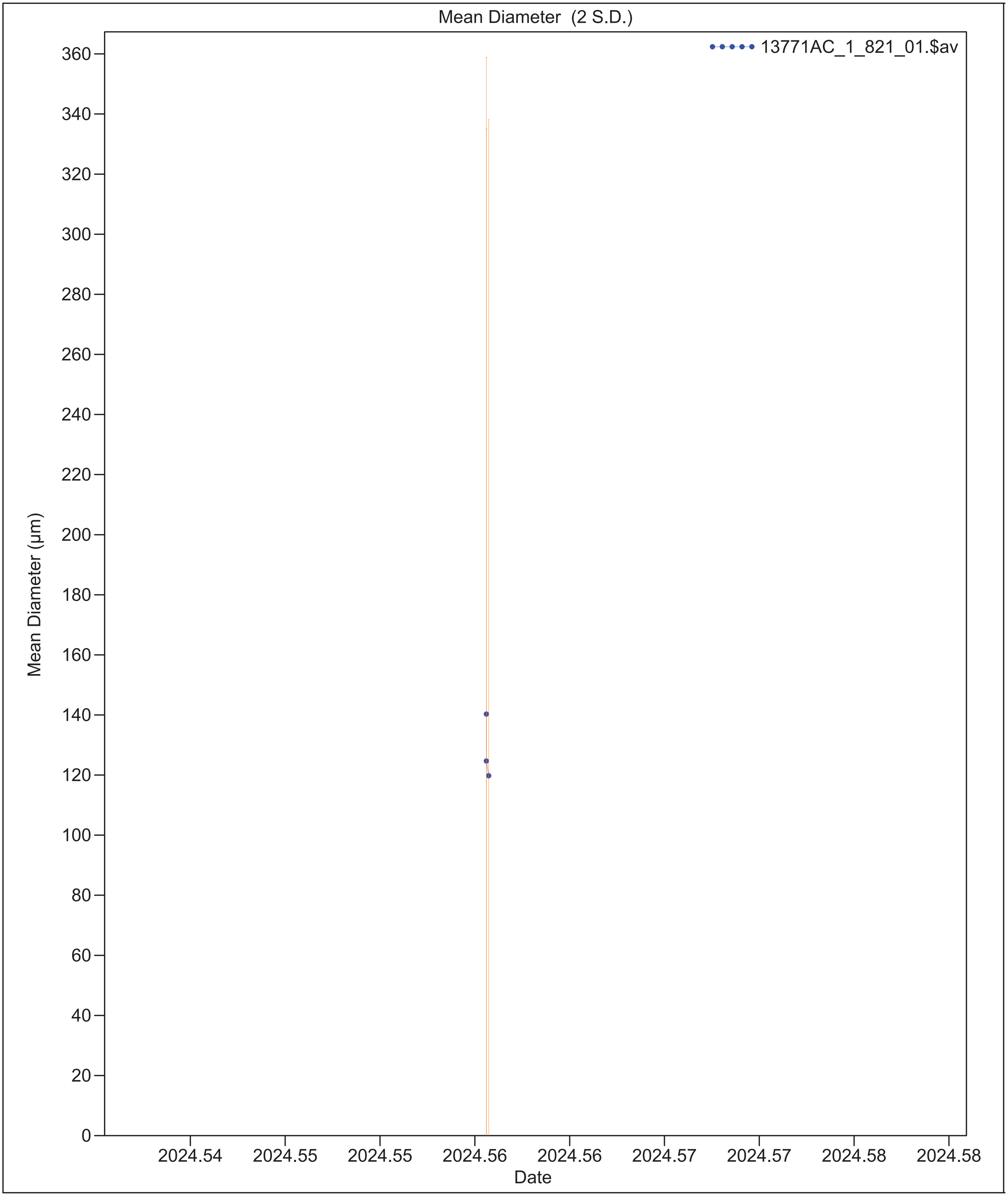
LS Particle Size Analyzer

10 Jul 2024 10:57

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
13771AC_1_821_01.$av
Detector (Flux)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
13771AC_1_821_01.$av
Mean Diameter (µm)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
2024.54
2024.55
2024.55
2024.56
2024.56
2024.57
2024.57
2024.58
2024.58
Date

Volume Statistics (Arithmetic)   Average of 3 files   13771AC_1_821_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	128.2 µm	10.72	106.8	149.7
Median:	110.8 µm	12.50	85.76	135.8
S.D.:	107.9 µm	2.322	103.2	112.5
Variance:	11641 $µm^2$	497.9	10645	12637
C.V.:	84.48%	6.640	71.20	97.75
Skewness:	1.452	0.093	1.267	1.637
Kurtosis:	2.974	0.357	2.261	3.688
d_{10}:	11.74 µm	5.891	0	23.52
d_{50}:	110.8 µm	12.50	85.76	135.8
d_{90}:	258.7 µm	11.75	235.2	282.2

LS Particle Size Analyzer

10 Jul 2024 11:07

Beckman Coulter LS 13 320

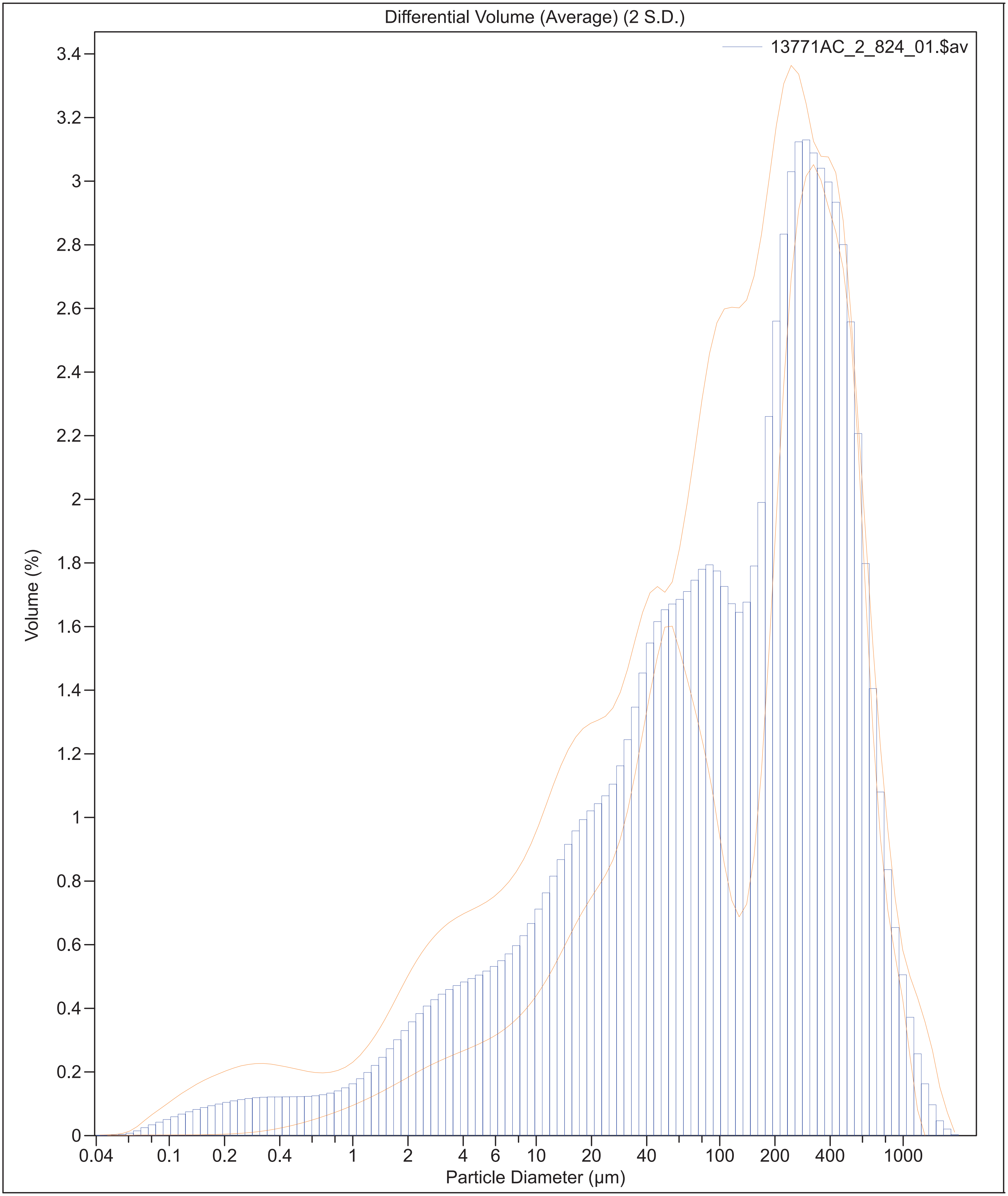
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_2_824_01.$av		
	13771AC_2_824_01.$av		
File ID:	13771AC_2		
Sample ID:	13771AC_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_2_822_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_2_823_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_2_824_01.$ls

LS Particle Size Analyzer

10 Jul 2024 11:07

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_2_824_01.$av

Calculations from 0.040 μm to 2000 μm

Volume:	100%		
Mean:	213.2 μm	S.D.:	235.2 μm
Median:	128.4 μm	Variance:	55316 μm^2
Mean/Median ratio:	1.661	C.V.:	110%
Mode:	295.5 μm	Skewness:	1.674 Right skewed
		Kurtosis:	3.613 Leptokurtic

d_{10}: 5.915 μm d_{50}: 128.4 μm d_{90}: 531.4 μm

Folk and Ward Statistics (Phi)

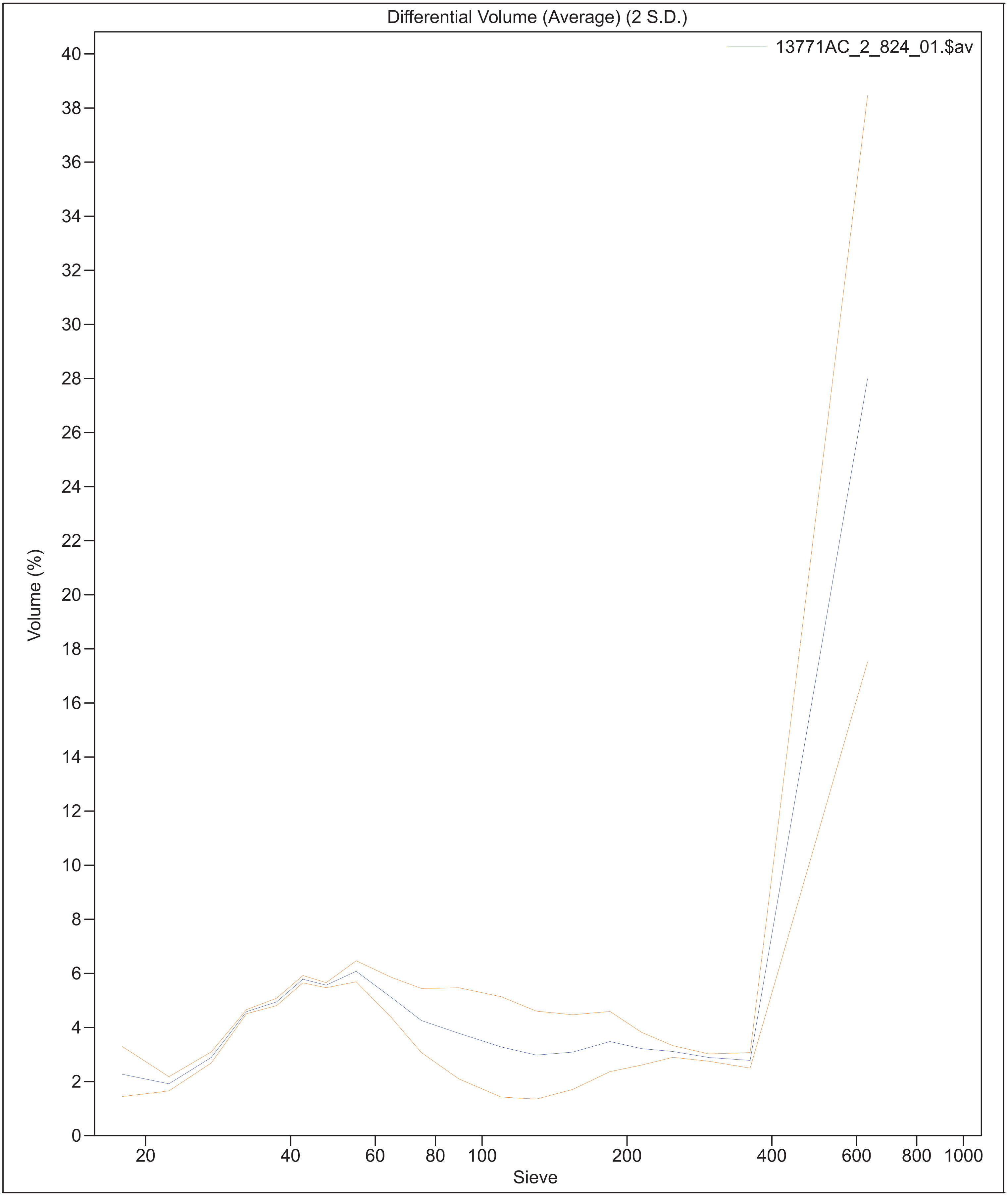
Mean:	3.45	Median:	2.96	Deviation:	2.50
Skewness:	0.36	Kurtosis:	1.00		

<10%	<25%	<50%	<75%	<90%
5.915 μm	30.84 μm	128.4 μm	327.9 μm	531.4 μm

LS Particle Size Analyzer

10 Jul 2024 11:07

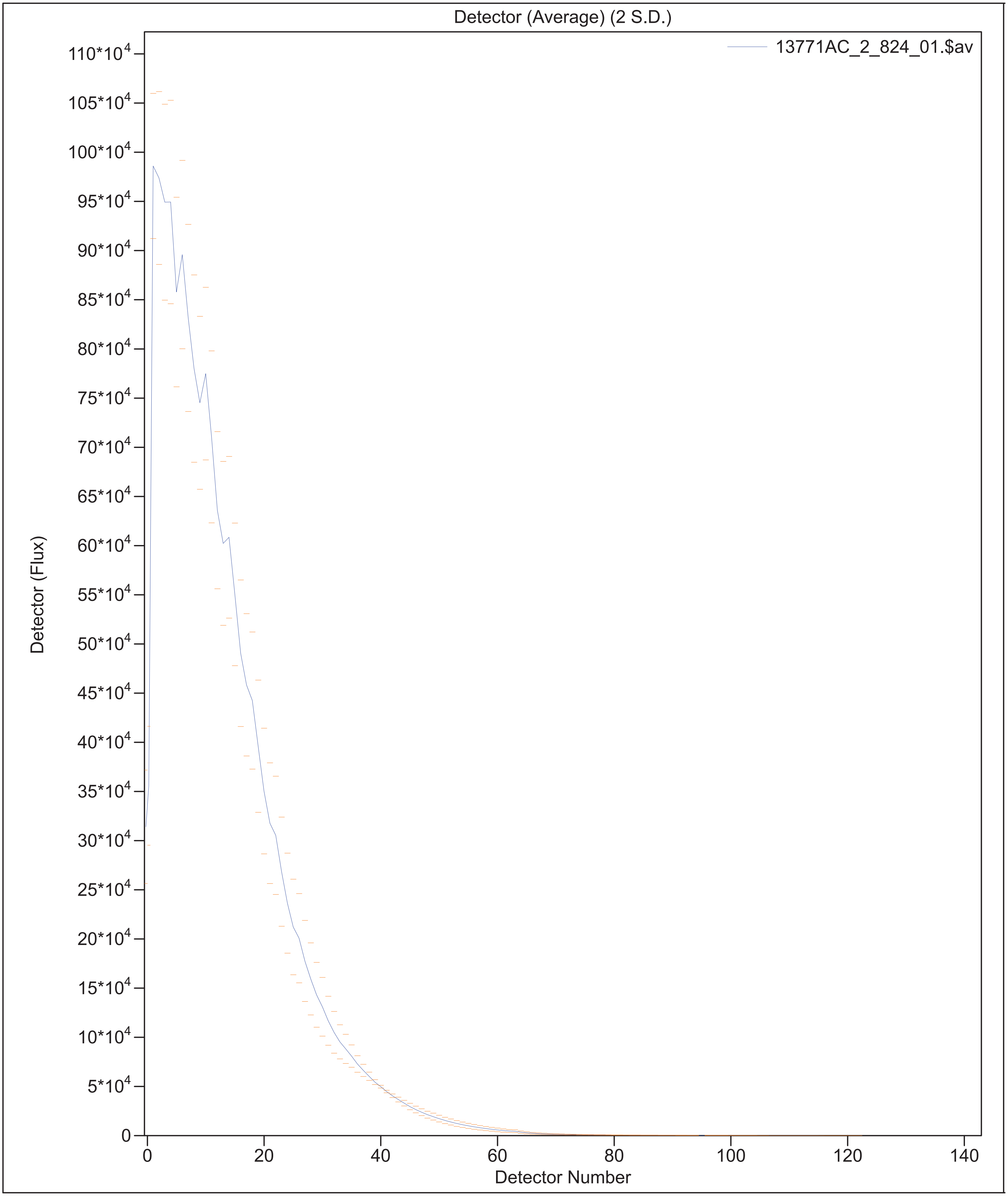
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:07

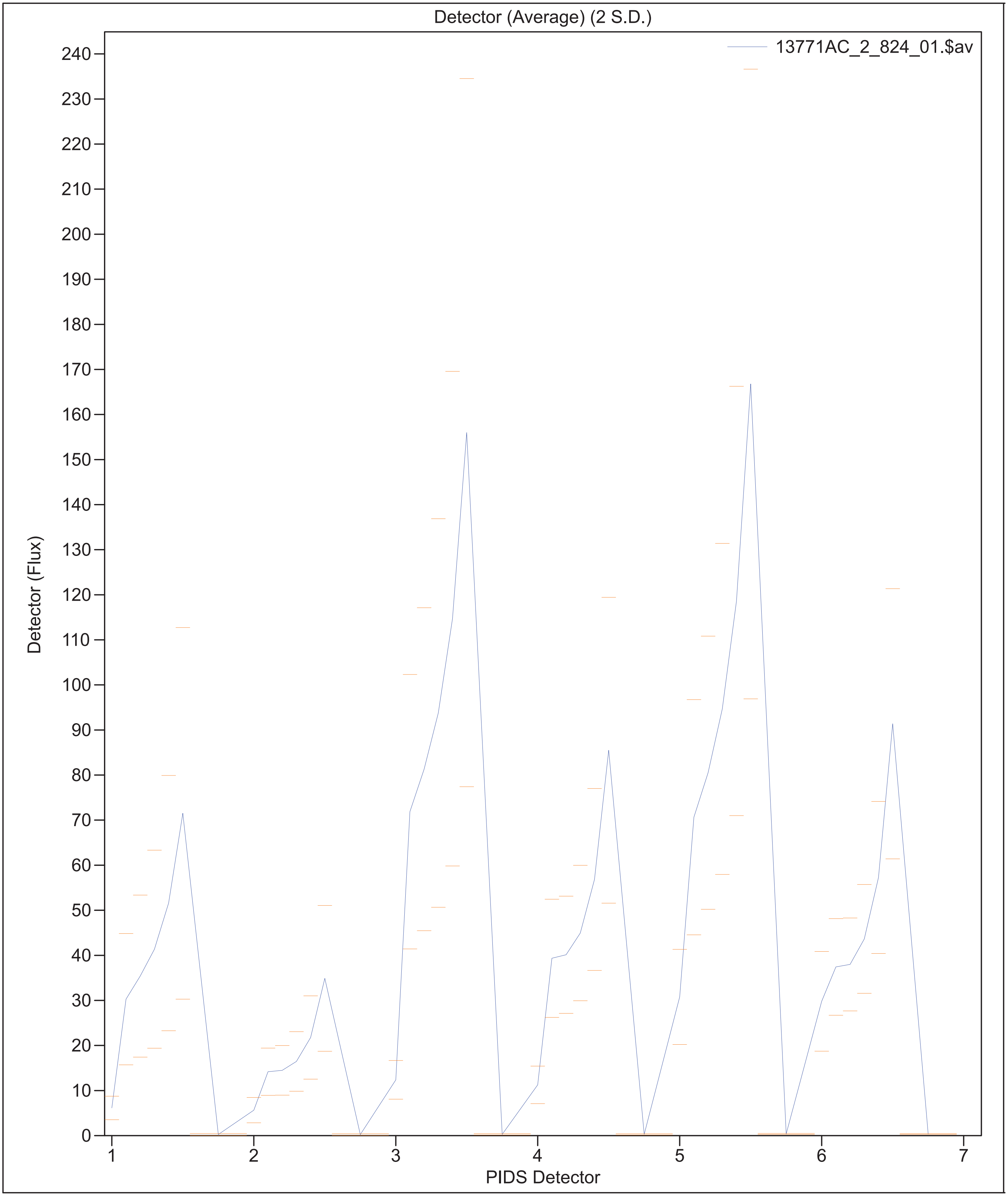
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:07

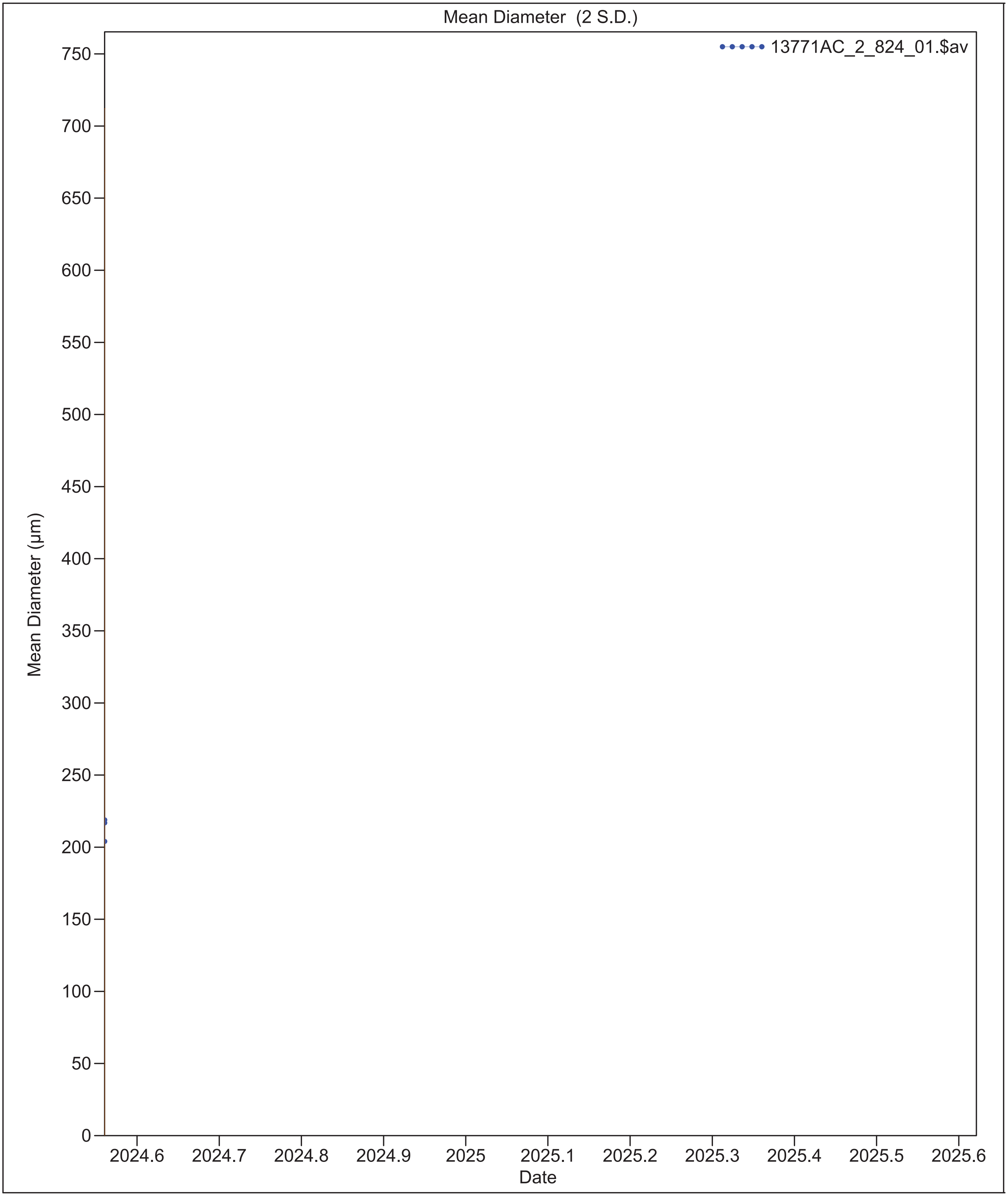
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:07

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:07

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13771AC_2_824_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	213.2 µm	8.082	197.0	229.4
Median:	125.6 µm	20.08	85.47	165.8
S.D.:	234.9 µm	11.79	211.3	258.5
Variance:	55272 μm^2	5576	44120	66424
C.V.:	110.3%	6.713	96.86	123.7
Skewness:	1.652	0.190	1.273	2.032
Kurtosis:	3.412	1.154	1.103	5.721
d_{10}:	6.618 µm	3.215	0.189	13.05
d_{50}:	125.6 µm	20.08	85.47	165.8
d_{90}:	531.4 µm	4.374	522.6	540.1

LS Particle Size Analyzer

10 Jul 2024 11:16

Beckman Coulter LS 13 320

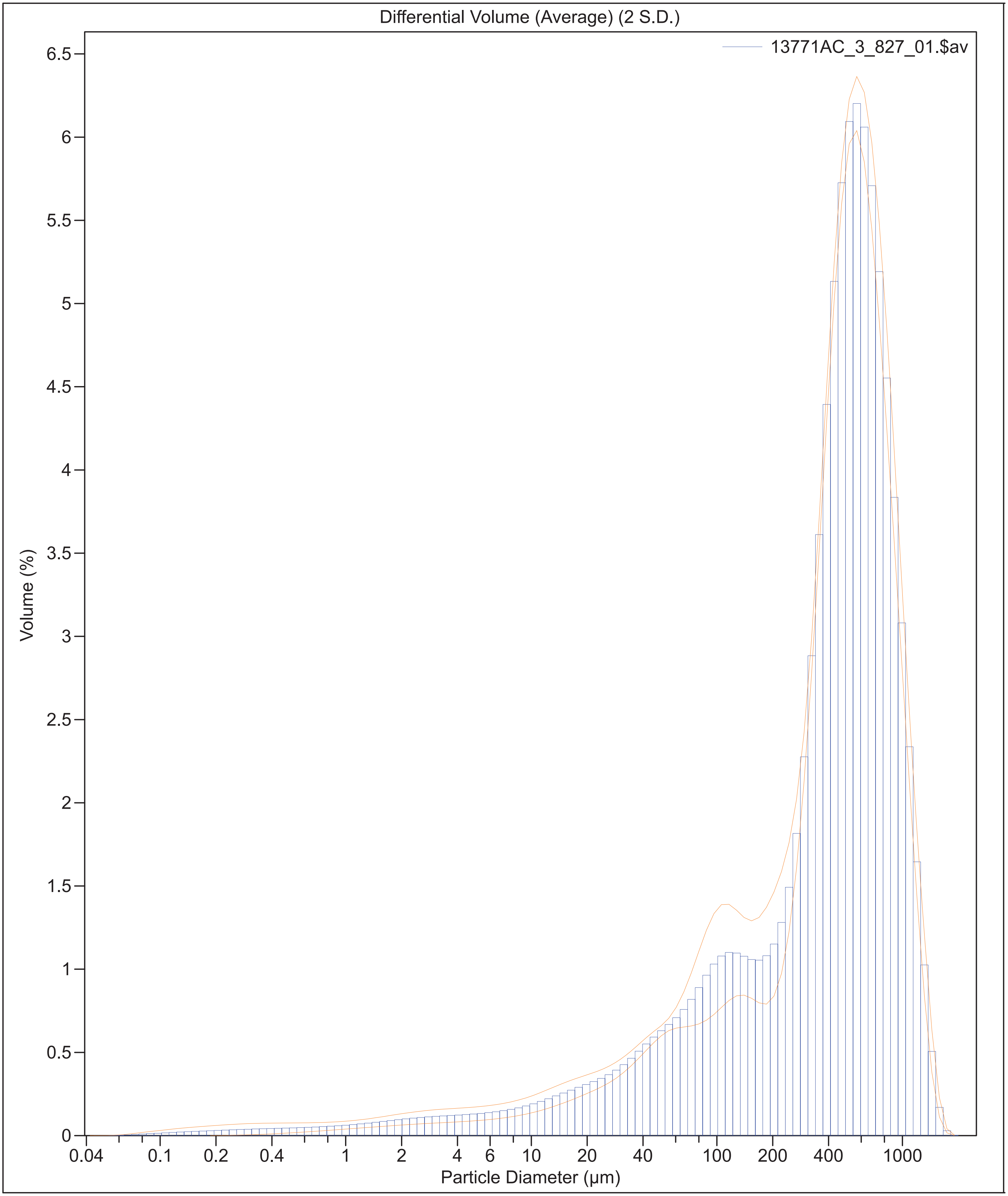
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_3_827_01.$av
	13771AC_3_827_01.$av
File ID:	13771AC_3
Sample ID:	13771AC_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_3_825_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_3_826_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_3_827_01.$ls

LS Particle Size Analyzer

10 Jul 2024 11:16

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:16

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13771AC_3_827_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	480.8 µm	S.D.:	325.8 µm
Median:	466.3 µm	Variance:	106.1e3 μm^2
Mean/Median ratio:	1.031	C.V.:	67.8%
Mode:	567.7 µm	Skewness:	0.495 Right skewed
		Kurtosis:	-0.143 Platykurtic

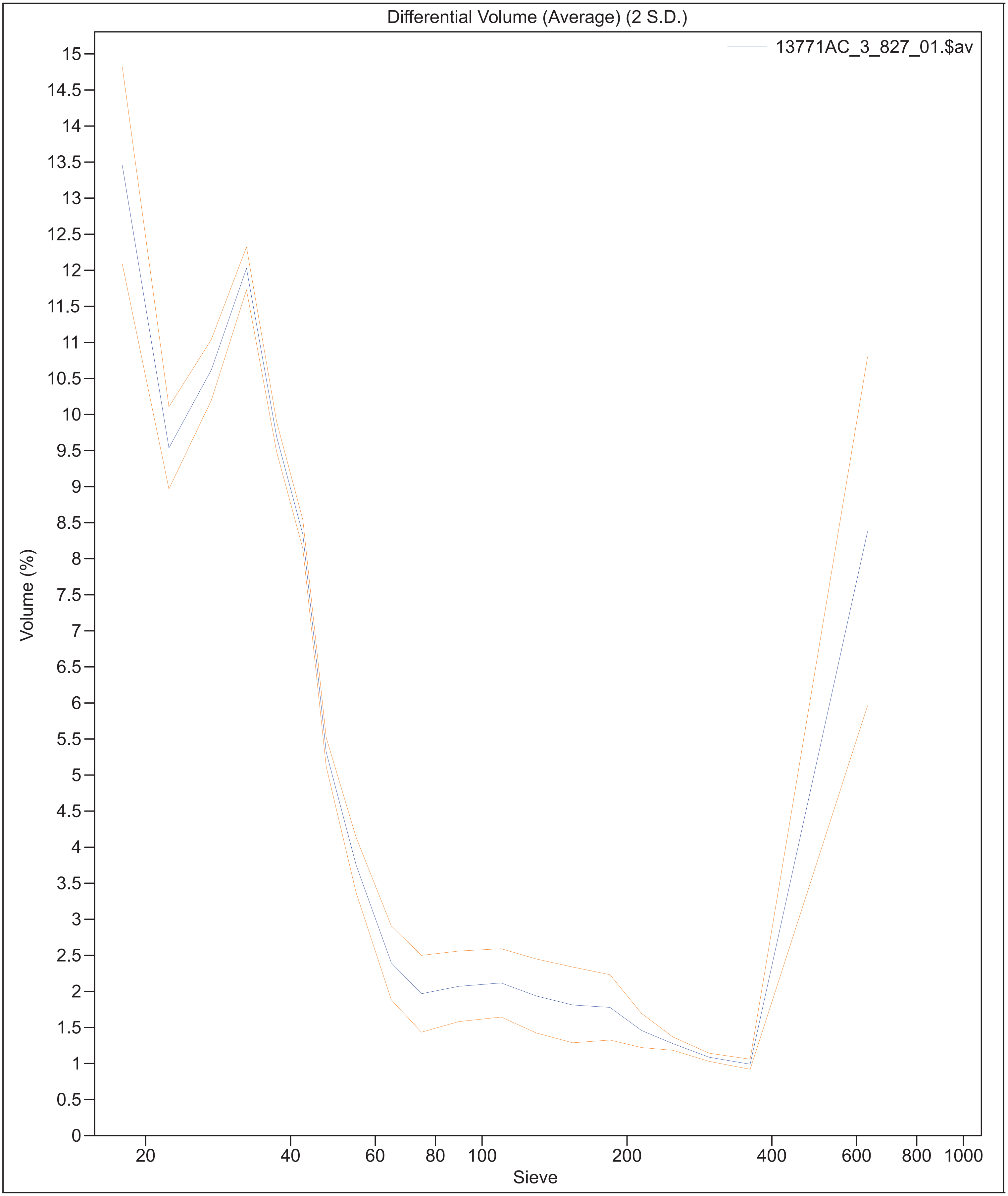
d_{10}: 49.60 µm d_{50}: 466.3 µm d_{90}: 921.8 µm

Folk and Ward Statistics (Phi)

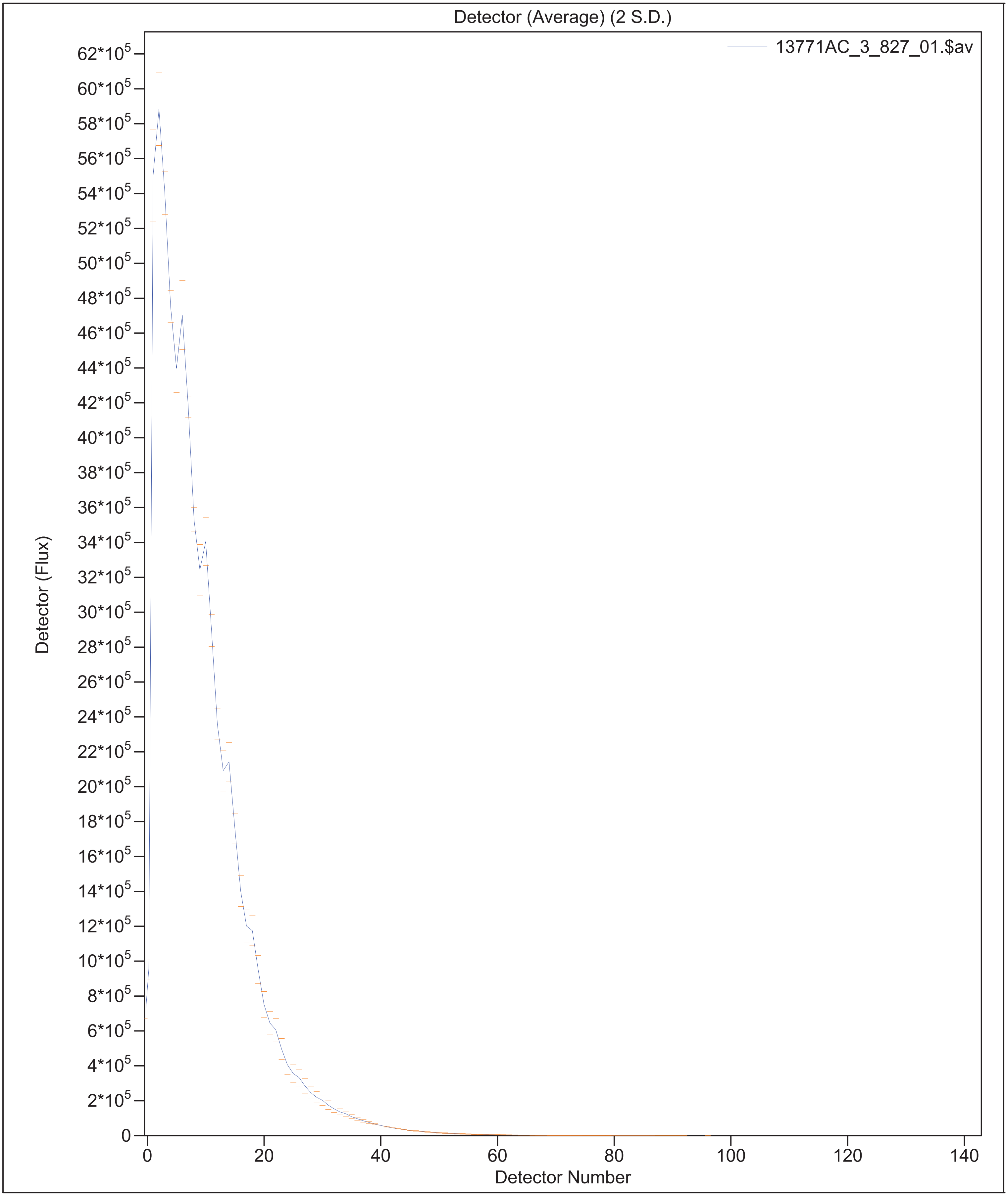
Mean:	1.58	Median:	1.10	Deviation:	1.68
Skewness:	0.54	Kurtosis:	1.48		

<10%	<25%	<50%	<75%	<90%
49.60 µm	214.1 µm	466.3 µm	687.5 µm	921.8 µm

Beckman Coulter LS 13 320



Beckman Coulter LS 13 320

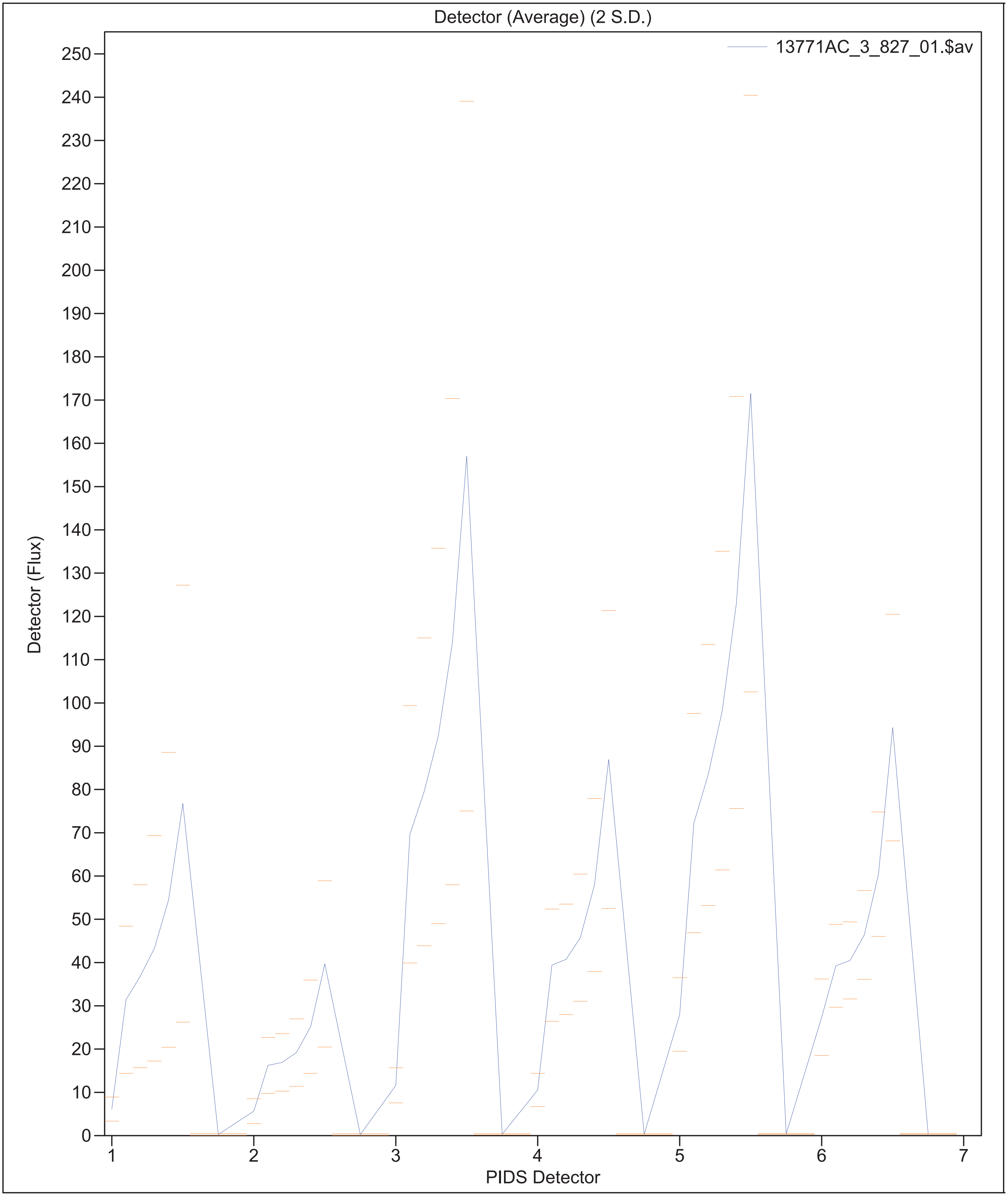


BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 11:16

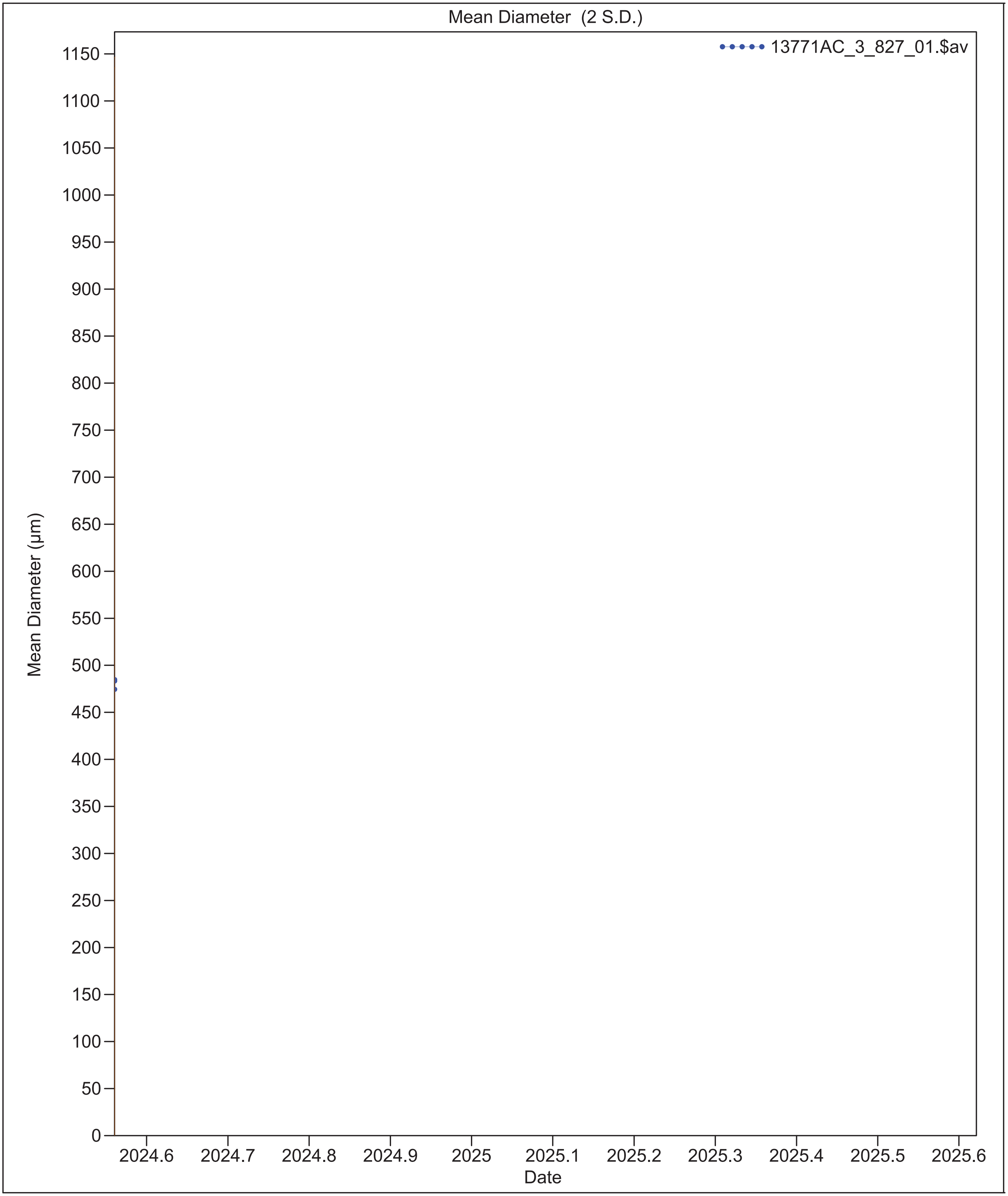
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:16

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13771AC_3_827_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	480.8 µm	5.577	469.7	492.0
Median:	466.3 µm	7.629	451.0	481.6
S.D.:	325.7 µm	5.325	315.1	336.4
Variance:	106.1e3 $µm^2$	3468	99182	113.1e3
C.V.:	67.74%	0.453	66.84	68.65
Skewness:	0.494	0.045	0.404	0.584
Kurtosis:	-0.144	0.051	-0.245	-0.043
d_{10}:	49.79 µm	9.258	31.28	68.31
d_{50}:	466.3 µm	7.629	451.0	481.6
d_{90}:	921.6 µm	11.59	898.4	944.8

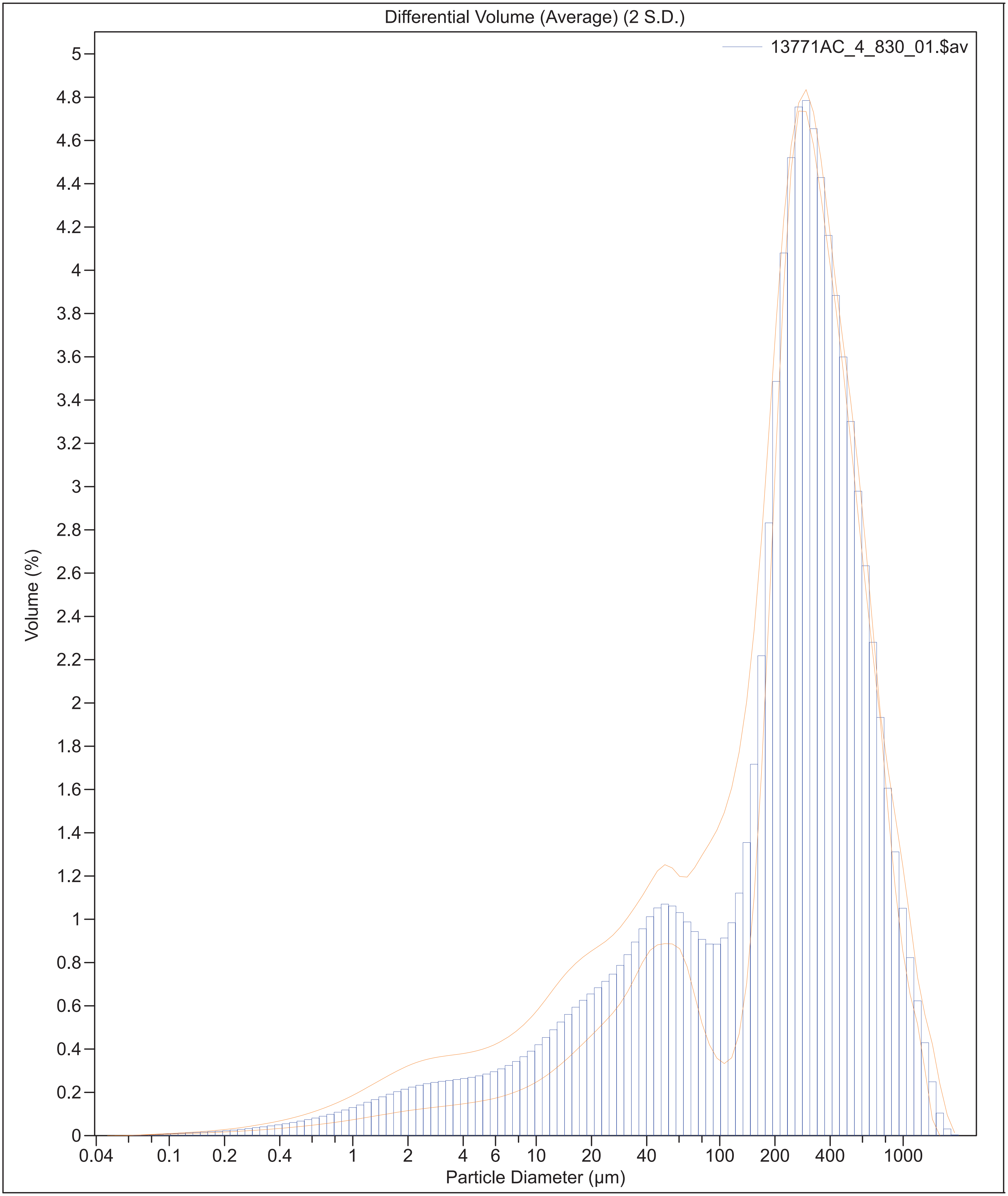
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_4_830_01.$av
	13771AC_4_830_01.$av
File ID:	13771AC_4
Sample ID:	13771AC_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_4_828_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_4_829_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_4_830_01.$ls

LS Particle Size Analyzer

10 Jul 2024 11:24

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:24

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13771AC_4_830_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	305.0 µm	S.D.:	270.7 µm
Median:	255.0 µm	Variance:	73278 $µm^2$
Mean/Median ratio:	1.196	C.V.:	88.7%
Mode:	295.5 µm	Skewness:	1.365 Right skewed
		Kurtosis:	2.343 Leptokurtic

d_{10}: 16.12 µm d_{50}: 255.0 µm d_{90}: 665.5 µm

Folk and Ward Statistics (Phi)

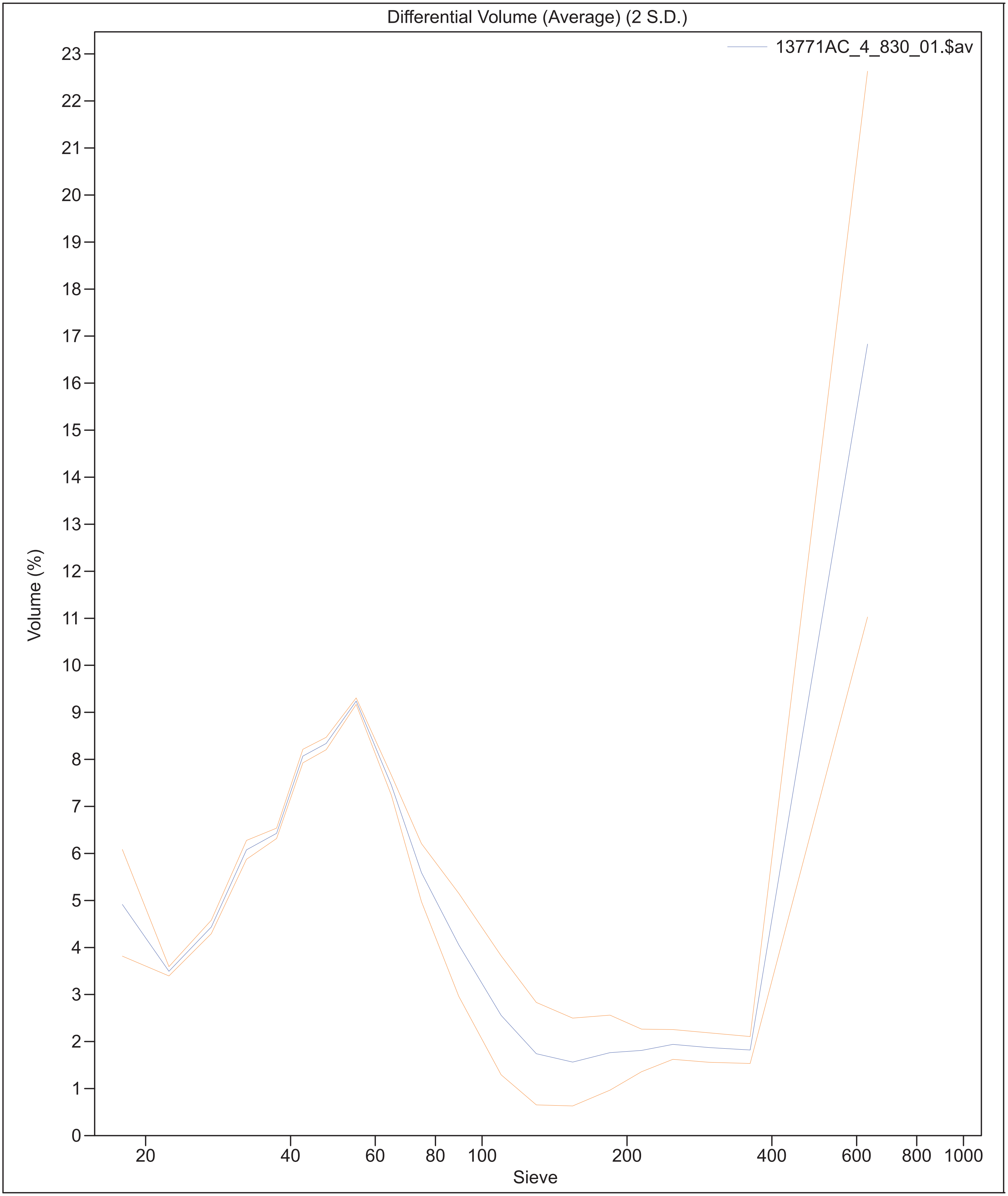
Mean:	2.56	Median:	1.97	Deviation:	2.11
Skewness:	0.49	Kurtosis:	1.26		

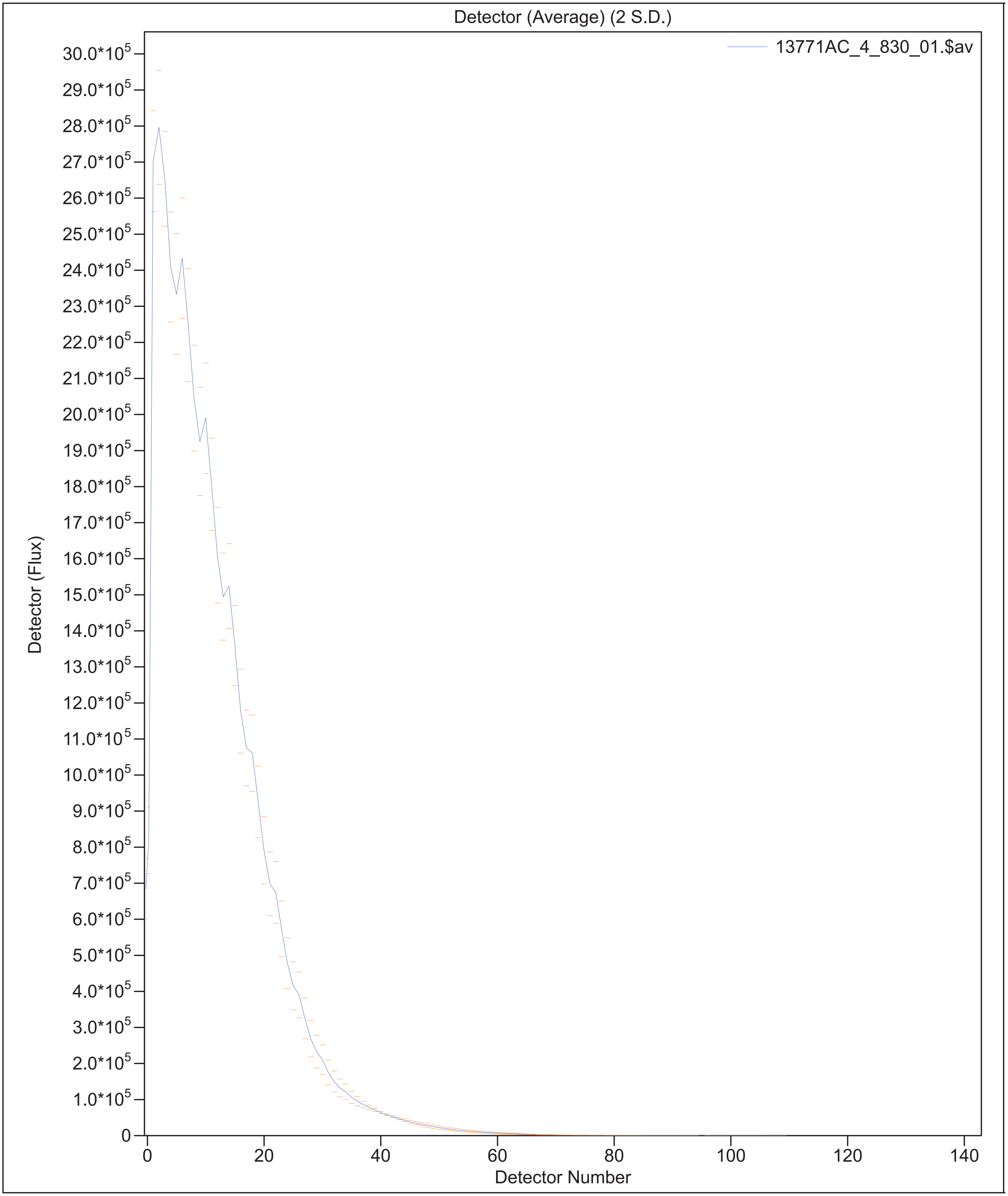
<10%	<25%	<50%	<75%	<90%
16.12 µm	80.79 µm	255.0 µm	428.6 µm	665.5 µm

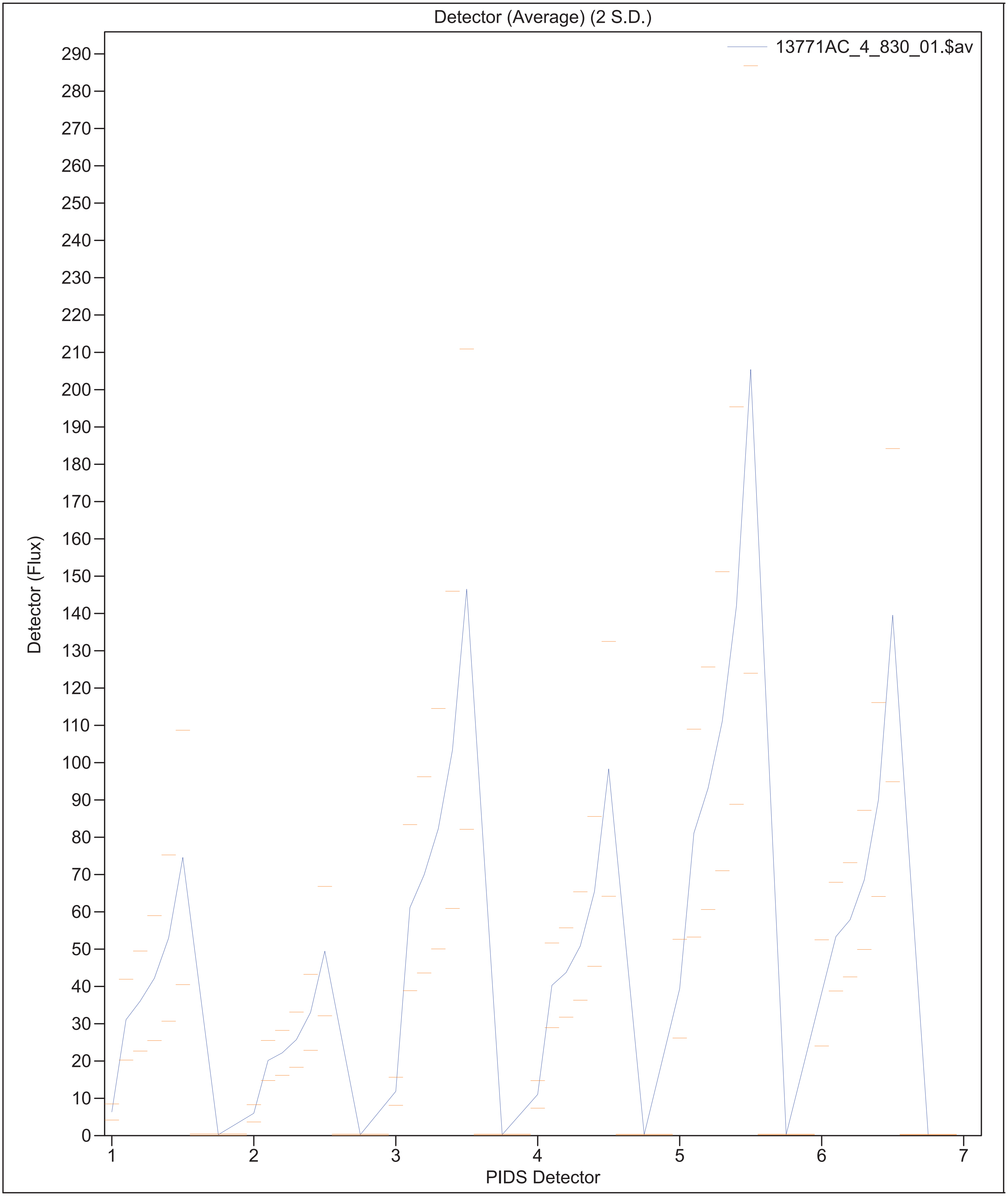
LS Particle Size Analyzer

10 Jul 2024 11:24

Beckman Coulter LS 13 320



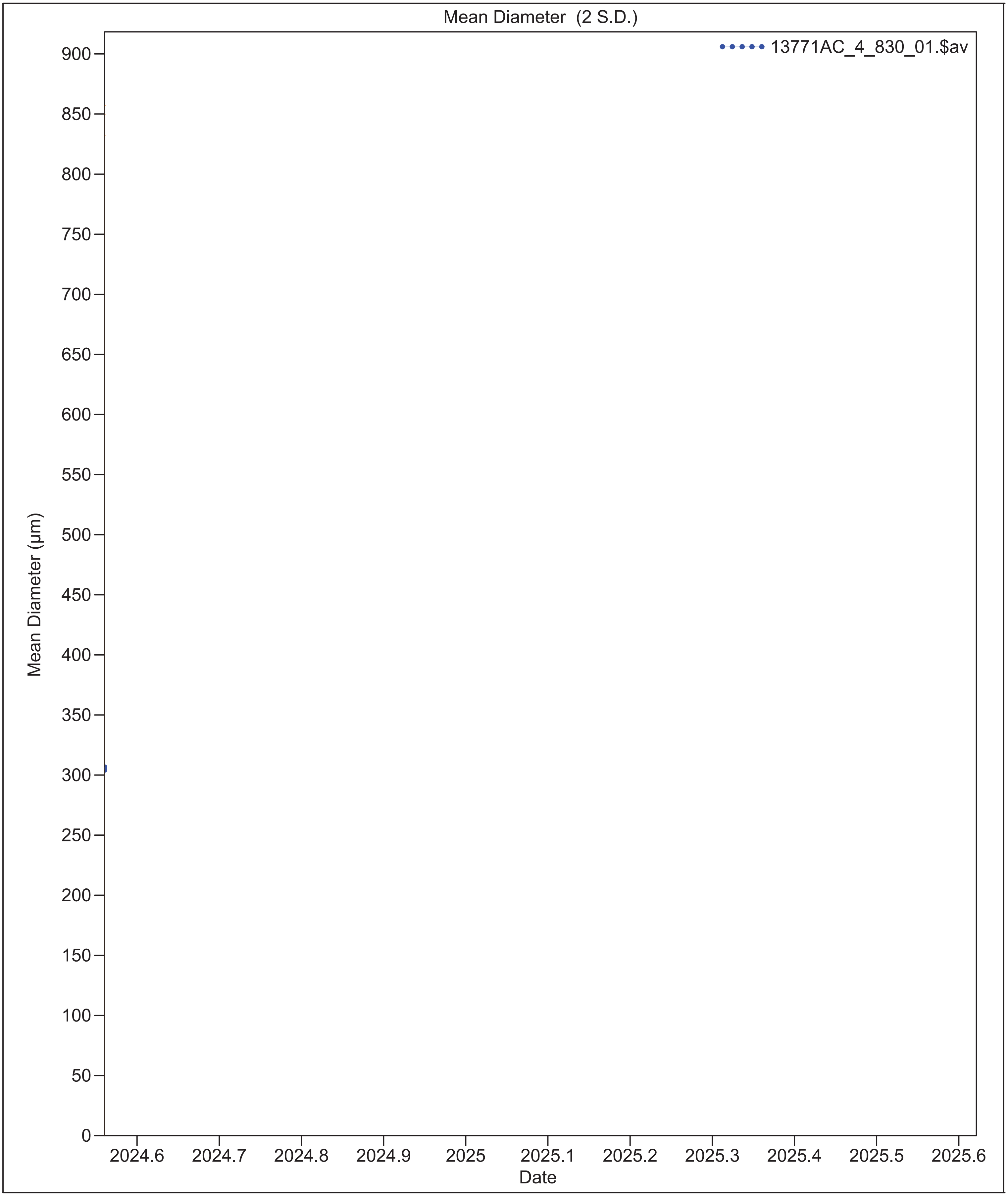

Detector (Average) (2 S.D.)
13771AC_4_830_01.$av
30.0*10^5
29.0*10^5
28.0*10^5
27.0*10^5
26.0*10^5
25.0*10^5
24.0*10^5
23.0*10^5
22.0*10^5
21.0*10^5
20.0*10^5
19.0*10^5
18.0*10^5
17.0*10^5
16.0*10^5
15.0*10^5
14.0*10^5
13.0*10^5
12.0*10^5
11.0*10^5
10.0*10^5
9.0*10^5
8.0*10^5
7.0*10^5
6.0*10^5
5.0*10^5
4.0*10^5
3.0*10^5
2.0*10^5
1.0*10^5
0
Detector (Flux)
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
13771AC_4_830_01.$av
Detector (Flux)
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 11:24

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:24

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13771AC_4_830_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	305.0 µm	1.344	302.4	307.7
Median:	255.0 µm	1.101	252.8	257.2
S.D.:	270.6 µm	7.079	256.5	284.8
Variance:	73277 μm^2	3812	65653	80901
C.V.:	88.73%	2.704	83.32	94.14
Skewness:	1.362	0.070	1.222	1.503
Kurtosis:	2.316	0.476	1.365	3.268
d_{10}:	16.97 µm	5.661	5.653	28.30
d_{50}:	255.0 µm	1.101	252.8	257.2
d_{90}:	665.5 µm	4.771	655.9	675.0

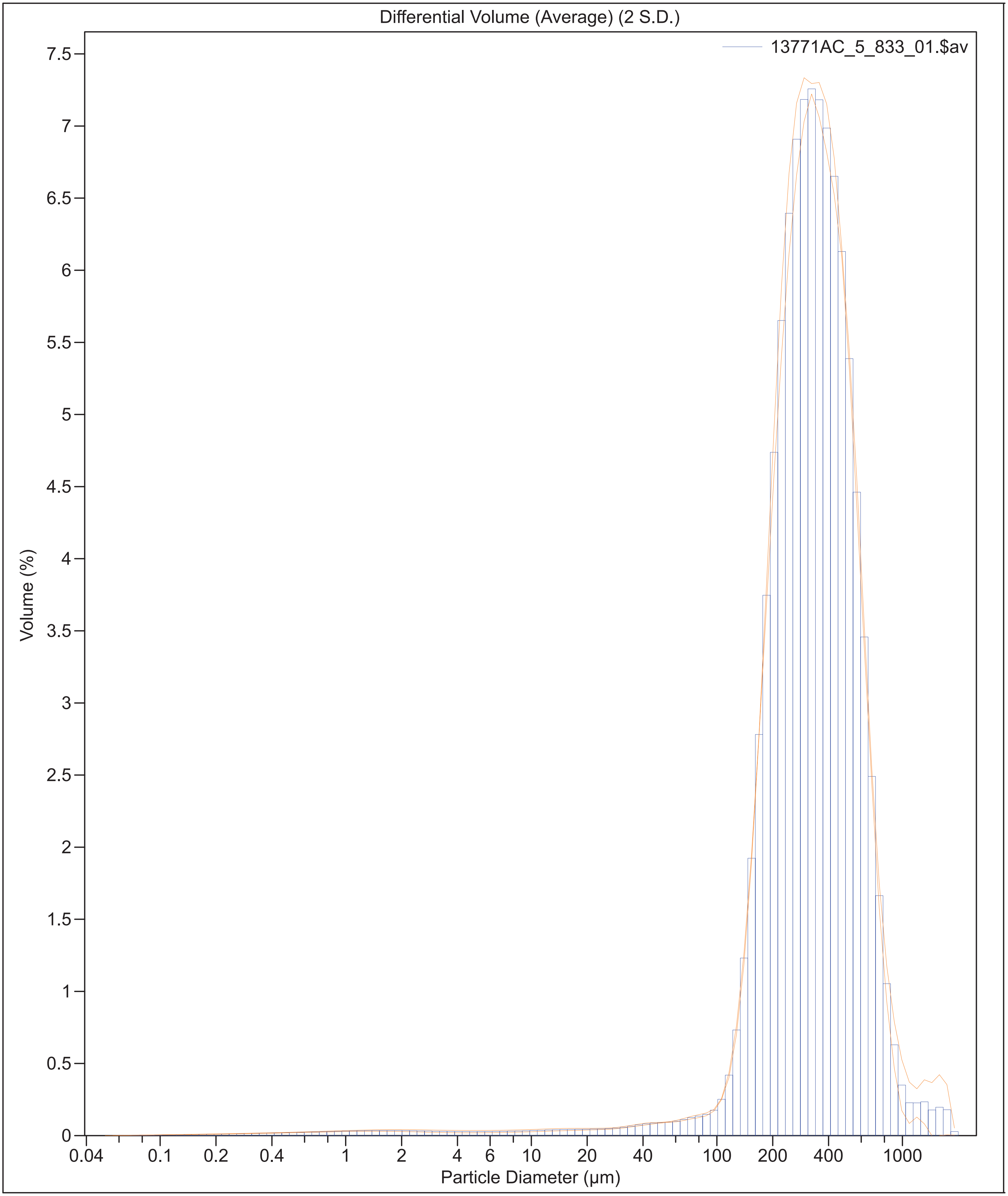
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_5_833_01.$av
	13771AC_5_833_01.$av
File ID:	13771AC_5
Sample ID:	13771AC_5
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_5_831_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_5_832_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_5_833_01.$ls

LS Particle Size Analyzer

10 Jul 2024 11:34

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_5_833_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	370.4 µm	S.D.:	207.8 µm
Median:	330.4 µm	Variance:	43167 μm^2
Mean/Median ratio:	1.121	C.V.:	56.1%
Mode:	324.4 µm	Skewness:	2.028 Right skewed
		Kurtosis:	8.306 Leptokurtic

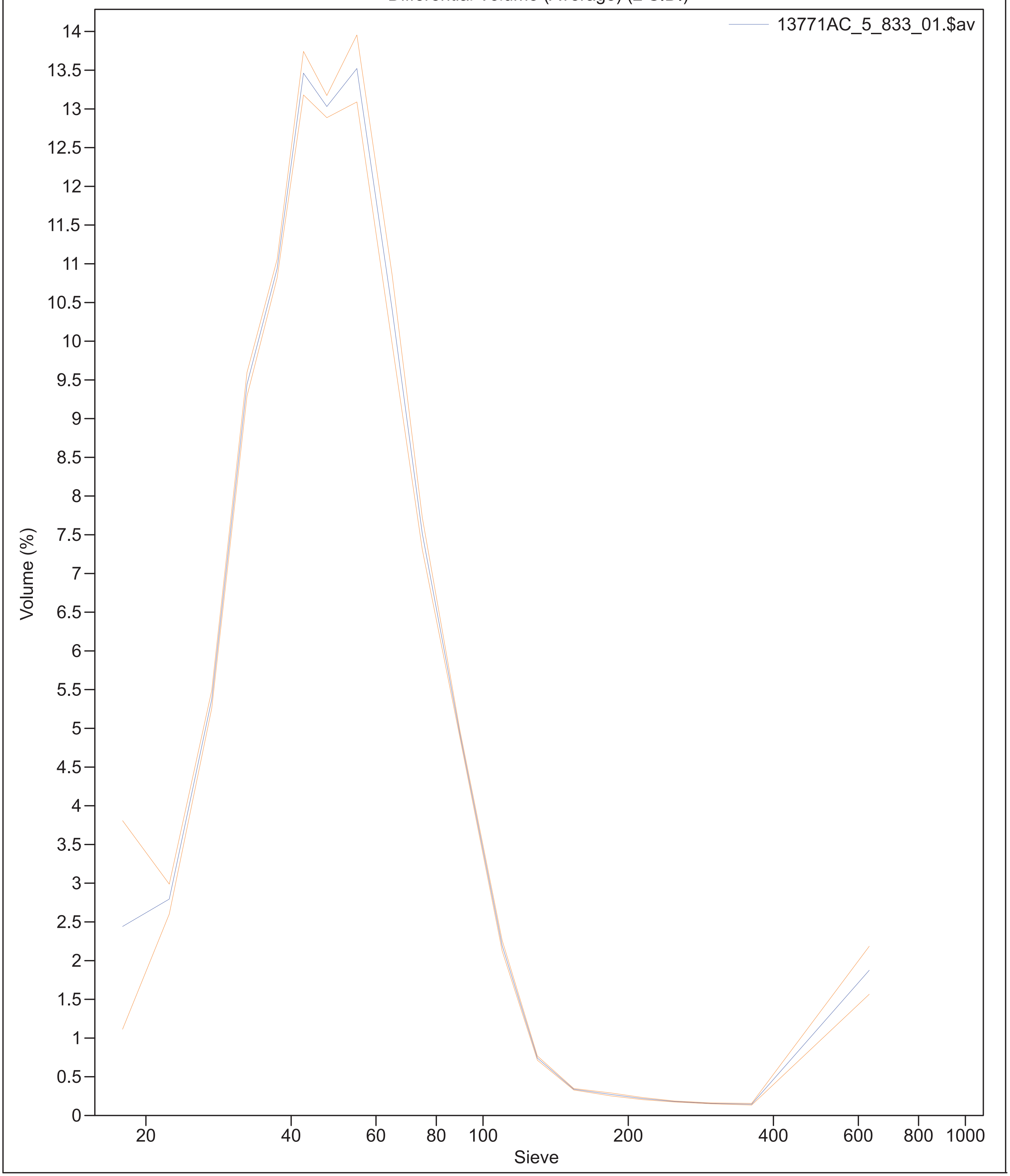
d_{10}: 174.7 µm d_{50}: 330.4 µm d_{90}: 610.3 µm

Folk and Ward Statistics (Phi)

Mean:	1.60	Median:	1.60	Deviation:	0.71
Skewness:	0.03	Kurtosis:	0.99		

<10%	<25%	<50%	<75%	<90%
174.7 µm	235.7 µm	330.4 µm	463.2 µm	610.3 µm

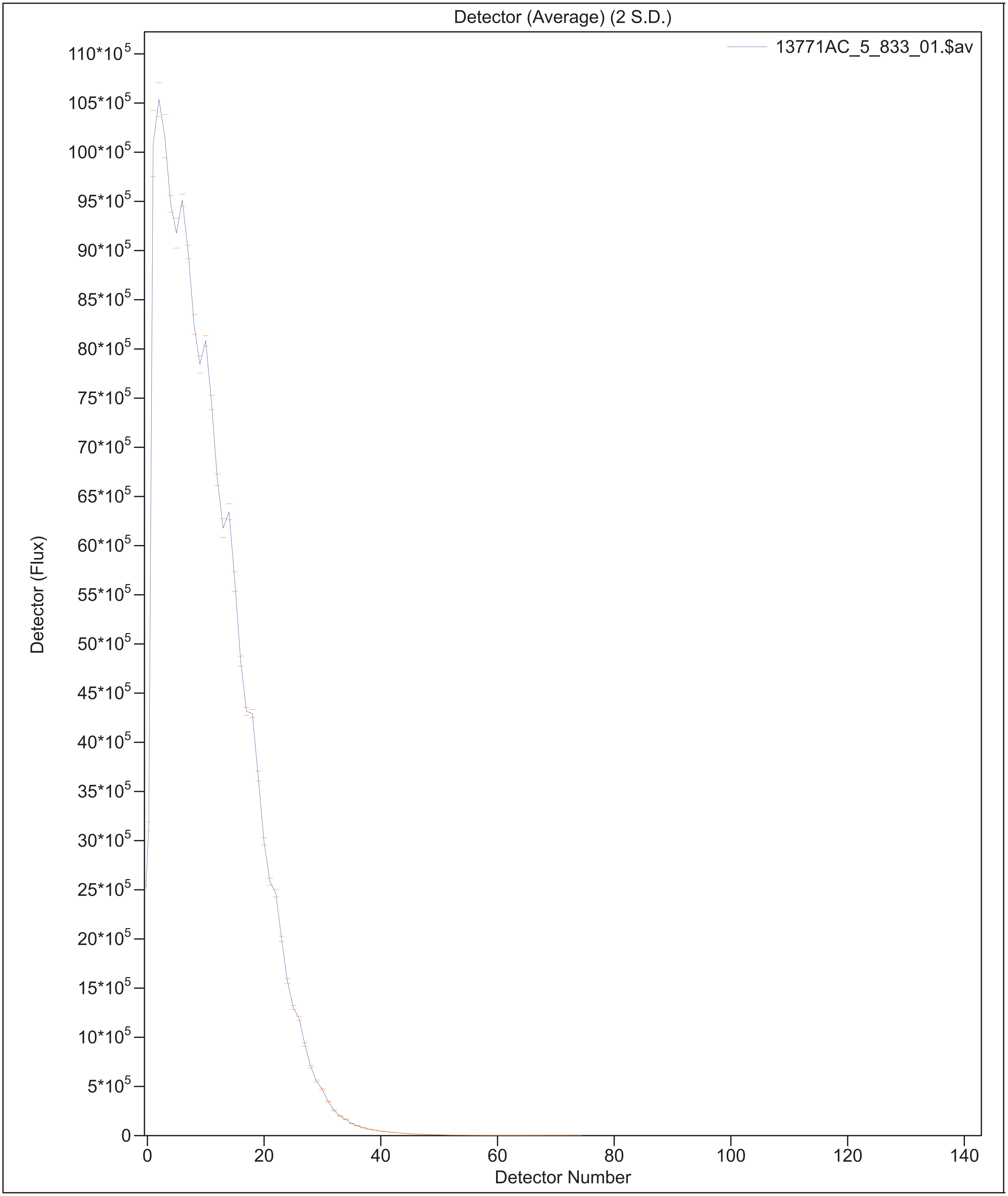
Differential Volume (Average) (2 S.D.)



LS Particle Size Analyzer

10 Jul 2024 11:34

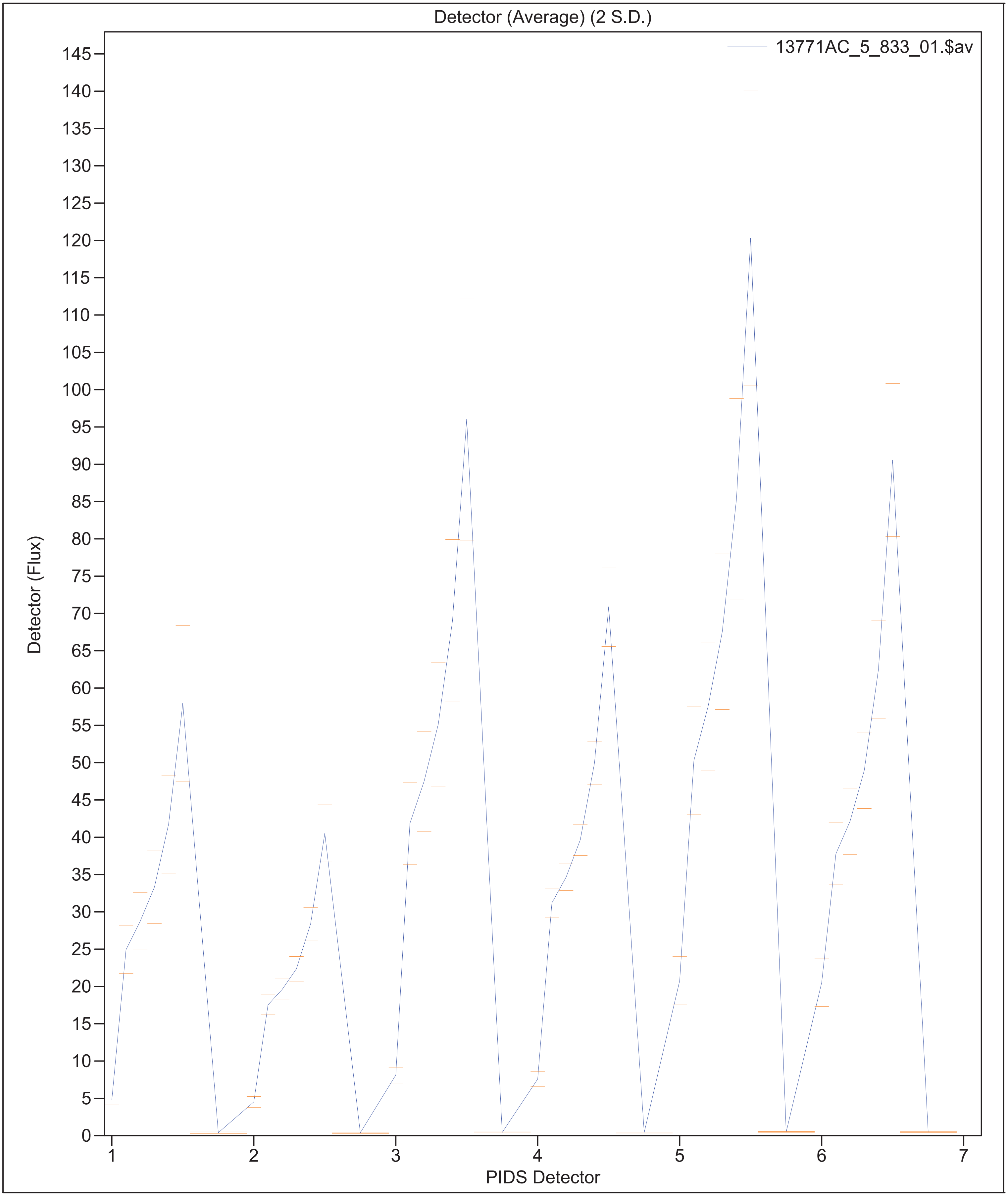
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:34

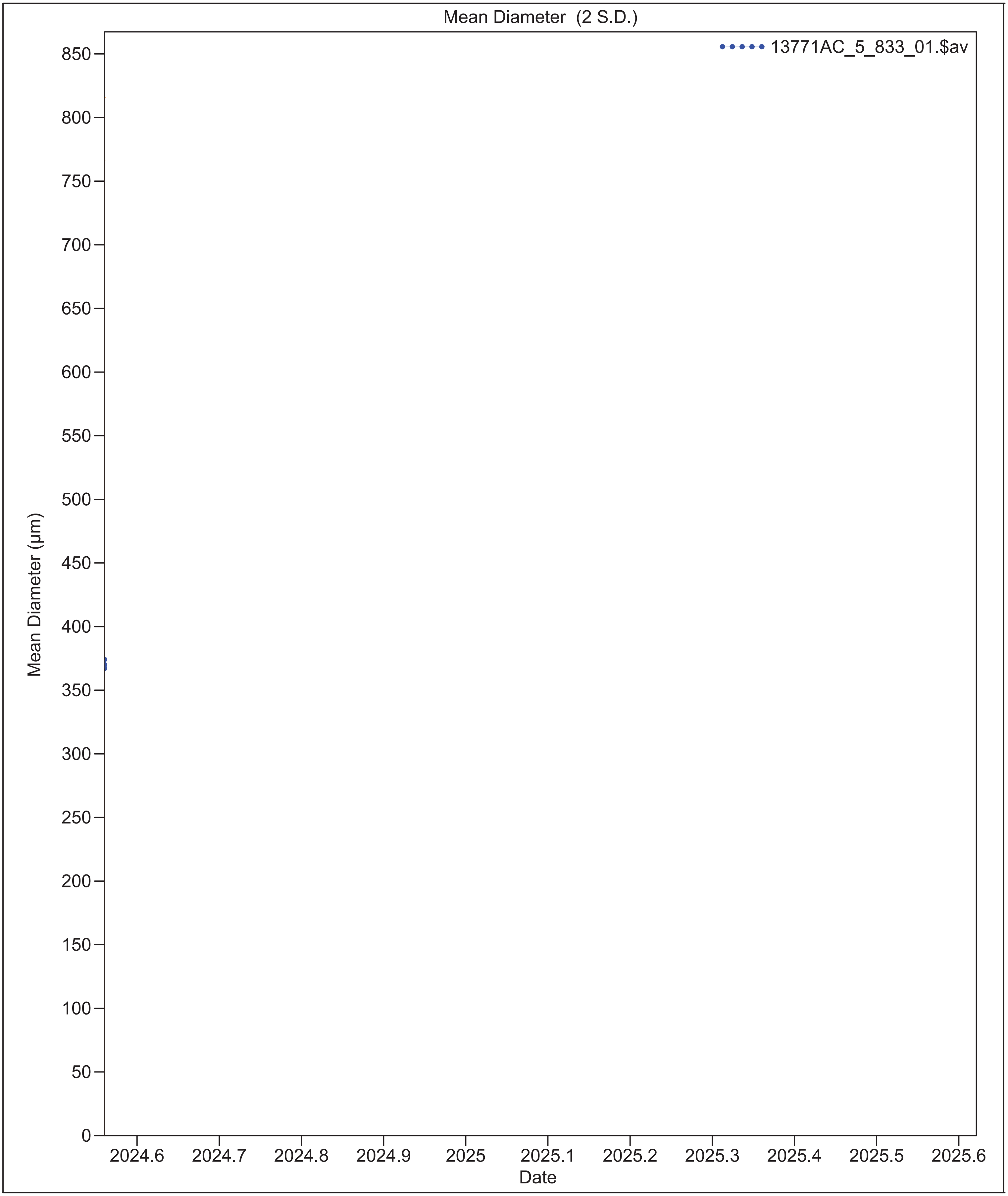
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:34

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:34

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13771AC_5_833_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	370.4 µm	3.497	363.4	377.4
Median:	330.4 µm	1.686	327.0	333.7
S.D.:	207.5 µm	11.63	184.3	230.8
Variance:	43159 µm^2	4902	33354	52963
C.V.:	56.01%	2.631	50.75	61.27
Skewness:	1.989	0.274	1.442	2.537
Kurtosis:	8.001	1.488	5.025	10.98
d_{10}:	174.7 µm	1.038	172.6	176.7
d_{50}:	330.4 µm	1.686	327.0	333.7
d_{90}:	610.3 µm	4.727	600.8	619.7

Beckman Coulter LS 13 320

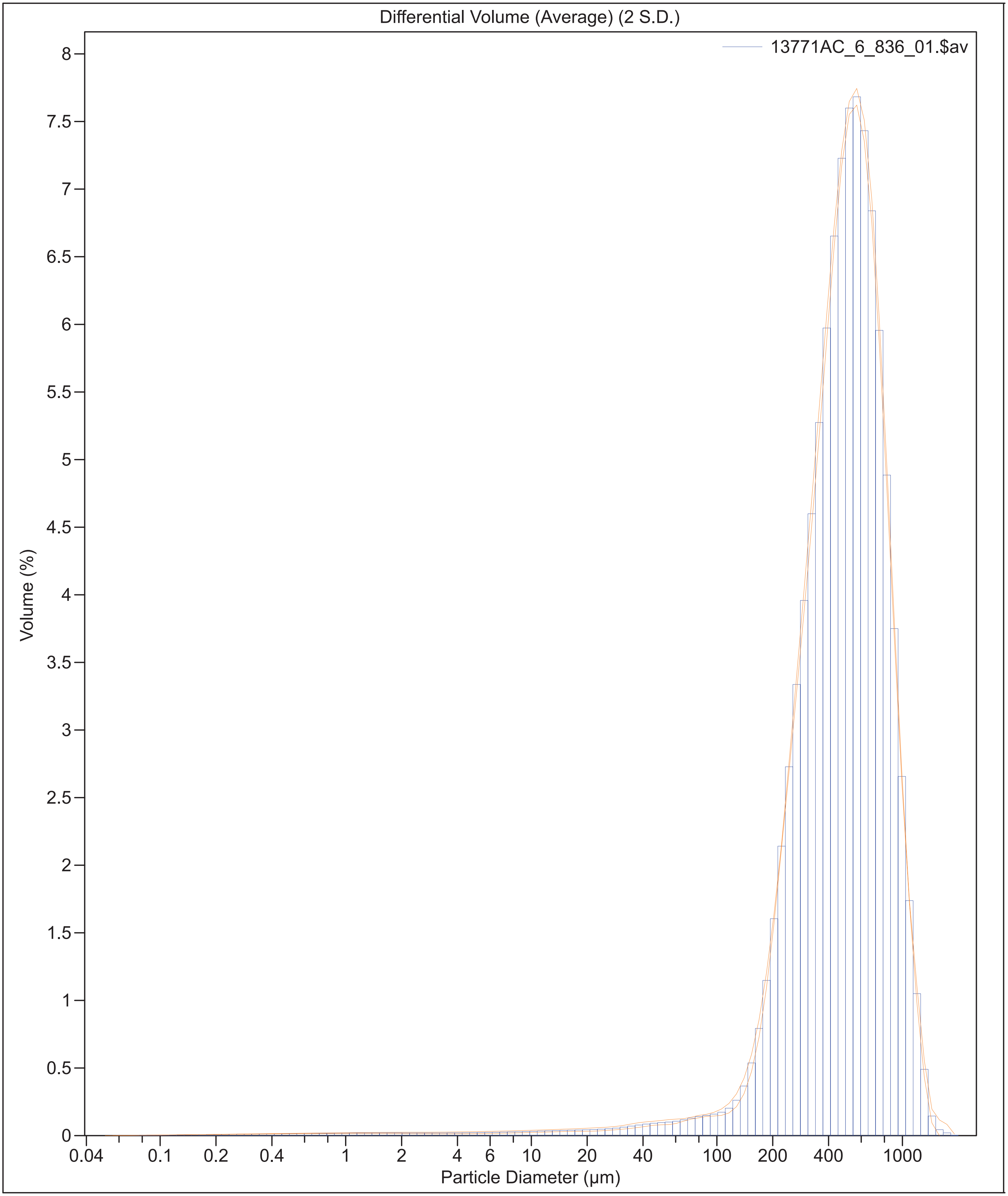
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_6_836_01.$av
	13771AC_6_836_01.$av
File ID:	13771AC_6
Sample ID:	13771AC_6
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_6_834_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_6_835_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_6_836_01.$ls

LS Particle Size Analyzer

10 Jul 2024 11:42

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_6_836_01.$av

Calculations from 0.040 µm to 2000 µm

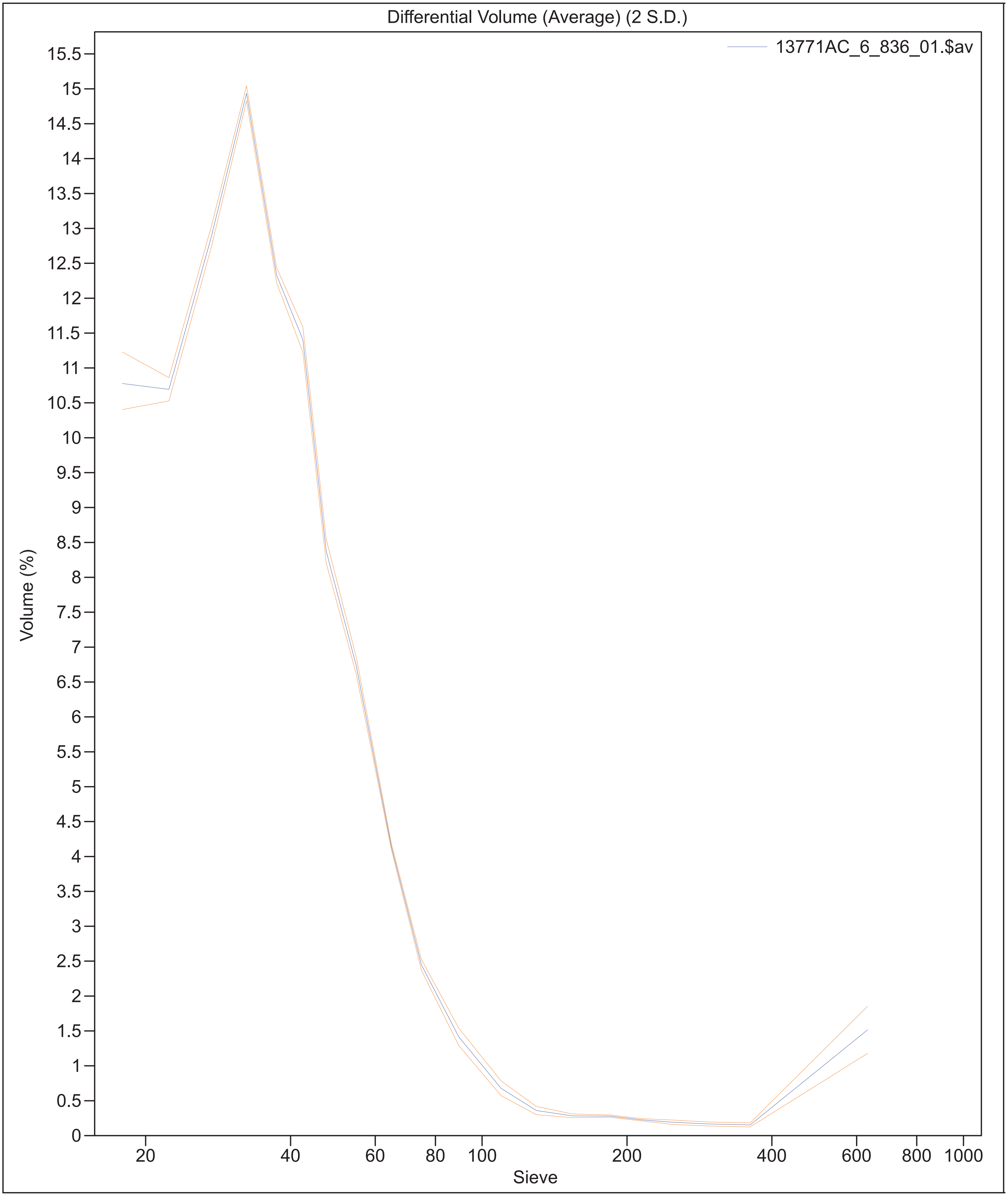
Volume:	100%		
Mean:	524.2 µm	S.D.:	251.3 µm
Median:	495.5 µm	Variance:	63159 μm^2
Mean/Median ratio:	1.058	C.V.:	47.9%
Mode:	567.7 µm	Skewness:	0.604 Right skewed
		Kurtosis:	0.454 Leptokurtic

d_{10}: 234.4 µm d_{50}: 495.5 µm d_{90}: 862.2 µm

Folk and Ward Statistics (Phi)

Mean:	1.07	Median:	1.01	Deviation:	0.74
Skewness:	0.16	Kurtosis:	1.04		

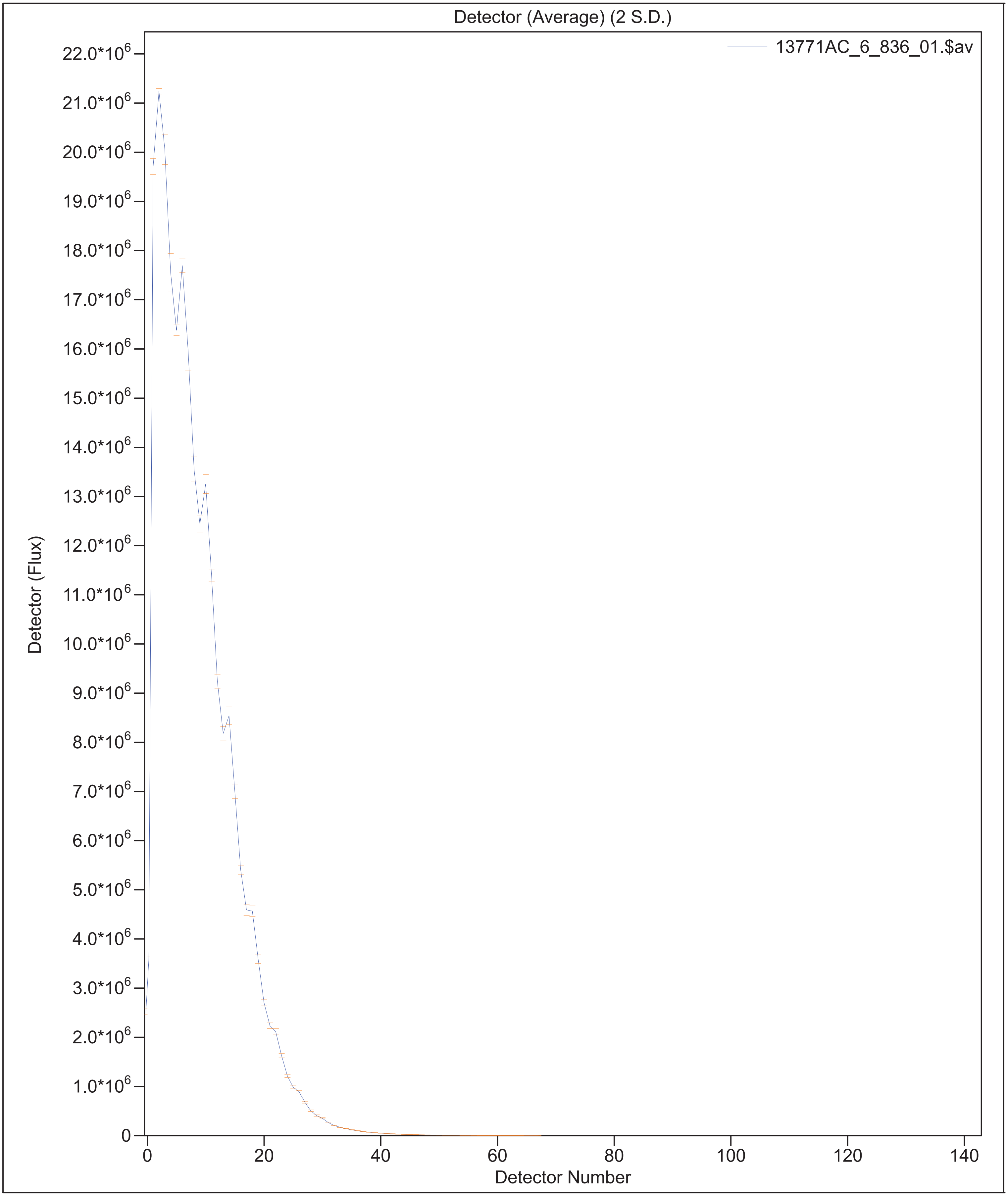
<10%	<25%	<50%	<75%	<90%
234.4 µm	342.6 µm	495.5 µm	677.1 µm	862.2 µm

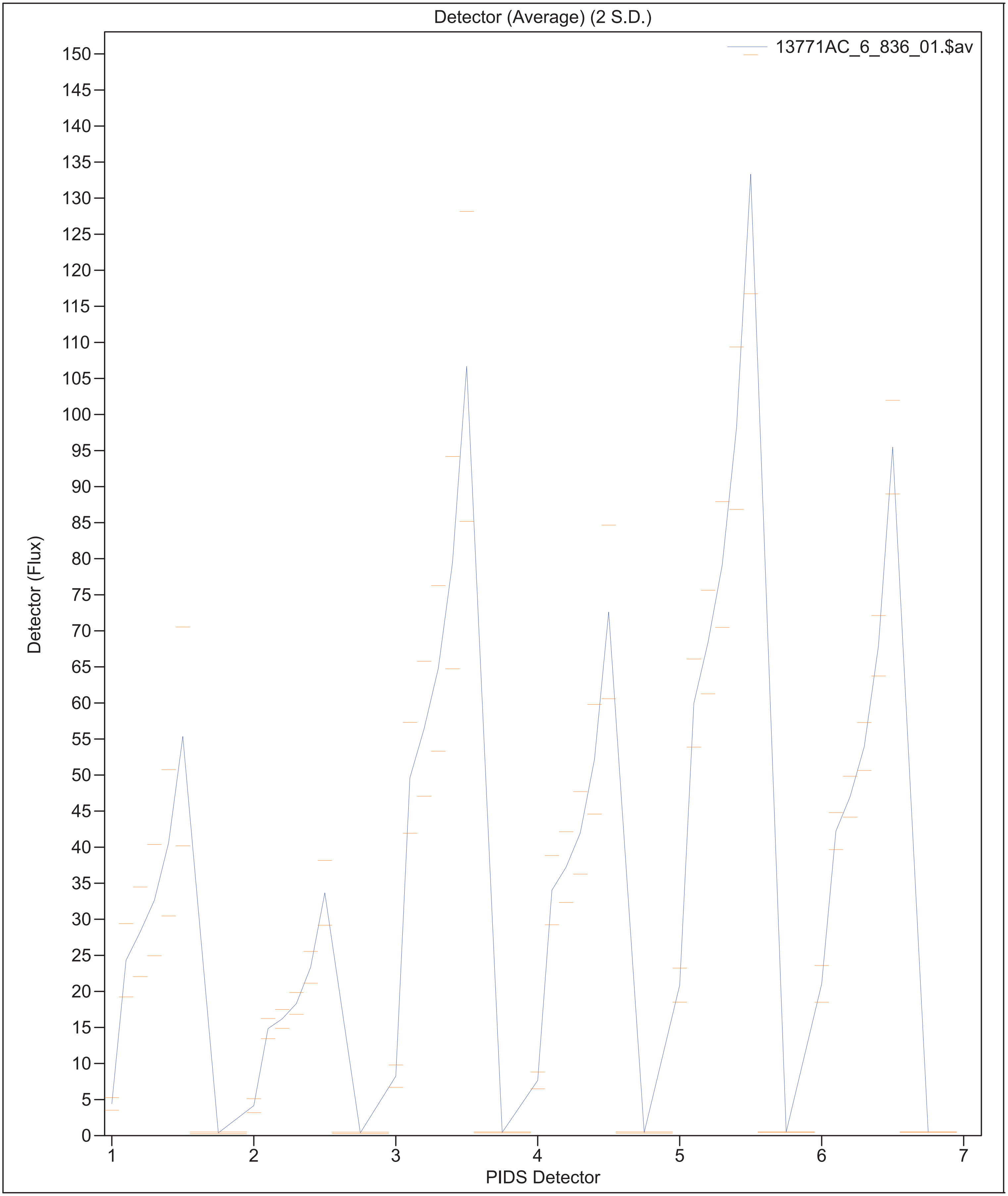

Differential Volume (Average) (2 S.D.)
13771AC_6_836_01.$av
Volume (%)
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

10 Jul 2024 11:42

Beckman Coulter LS 13 320

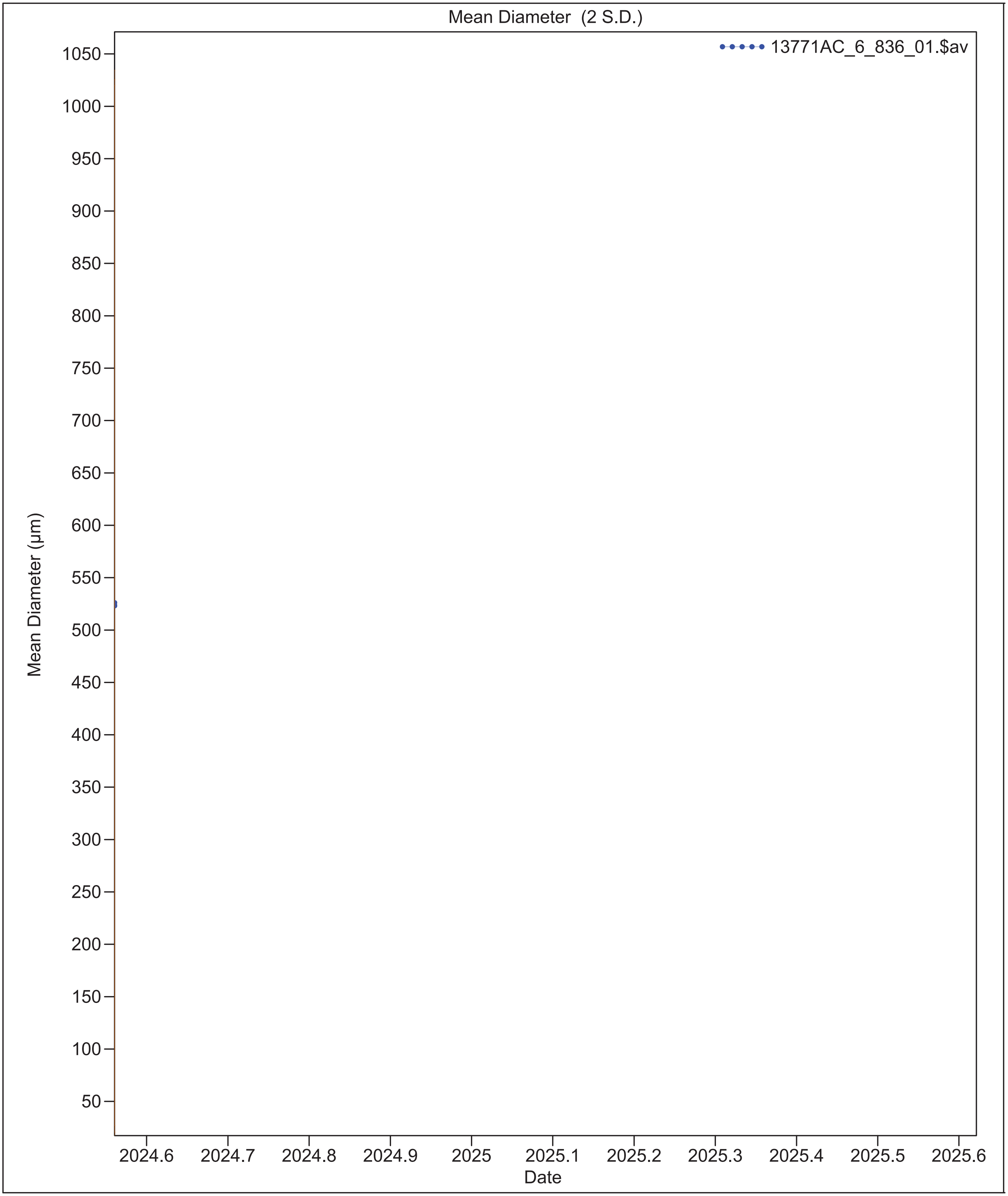



Detector (Average) (2 S.D.)
13771AC_6_836_01.$av
Detector (Flux)
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 11:42

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 11:42

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13771AC_6_836_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	524.2 µm	1.633	520.9	527.5
Median:	495.5 µm	1.822	491.8	499.1
S.D.:	251.3 µm	3.013	245.3	257.3
Variance:	63157 $µm^2$	1515	60127	66188
C.V.:	47.94%	0.465	47.01	48.87
Skewness:	0.603	0.041	0.522	0.684
Kurtosis:	0.445	0.227	-0.010	0.900
d_{10}:	234.4 µm	0.474	233.5	235.4
d_{50}:	495.5 µm	1.822	491.8	499.1
d_{90}:	862.3 µm	1.966	858.4	866.2

Beckman Coulter LS 13 320

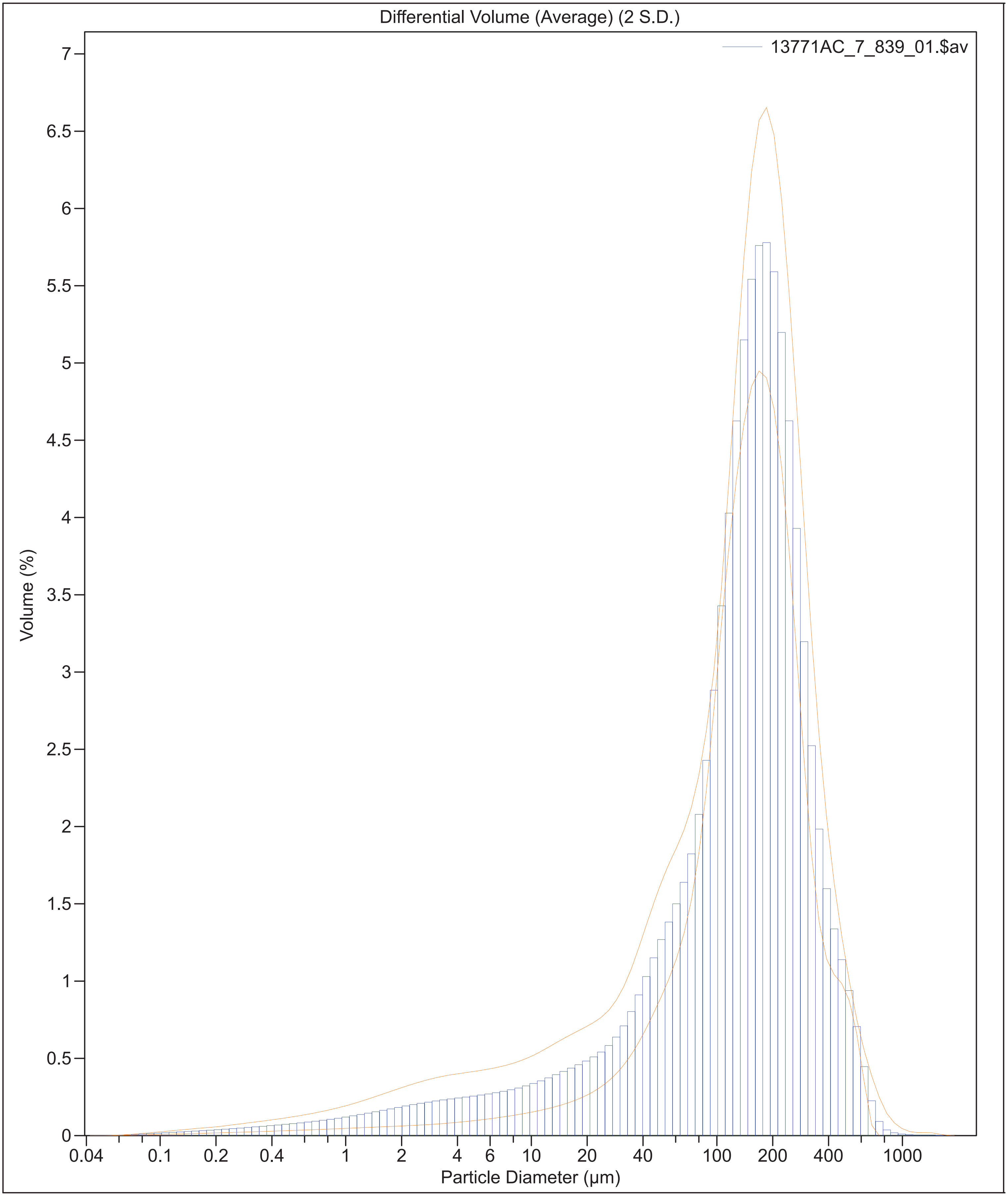
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_7_839_01.$av		
	13771AC_7_839_01.$av		
File ID:	13771AC_7		
Sample ID:	13771AC_7		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_7_837_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_7_838_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_7_839_01.$ls

LS Particle Size Analyzer

10 Jul 2024 11:50

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_7_839_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	166.5 µm	S.D.:	125.7 µm
Median:	148.6 µm	Variance:	15798 $µm^2$
Mean/Median ratio:	1.120	C.V.:	75.5%
Mode:	185.4 µm	Skewness:	1.394 Right skewed
		Kurtosis:	3.909 Leptokurtic

d_{10}: 19.98 µm d_{50}: 148.6 µm d_{90}: 322.6 µm

Folk and Ward Statistics (Phi)

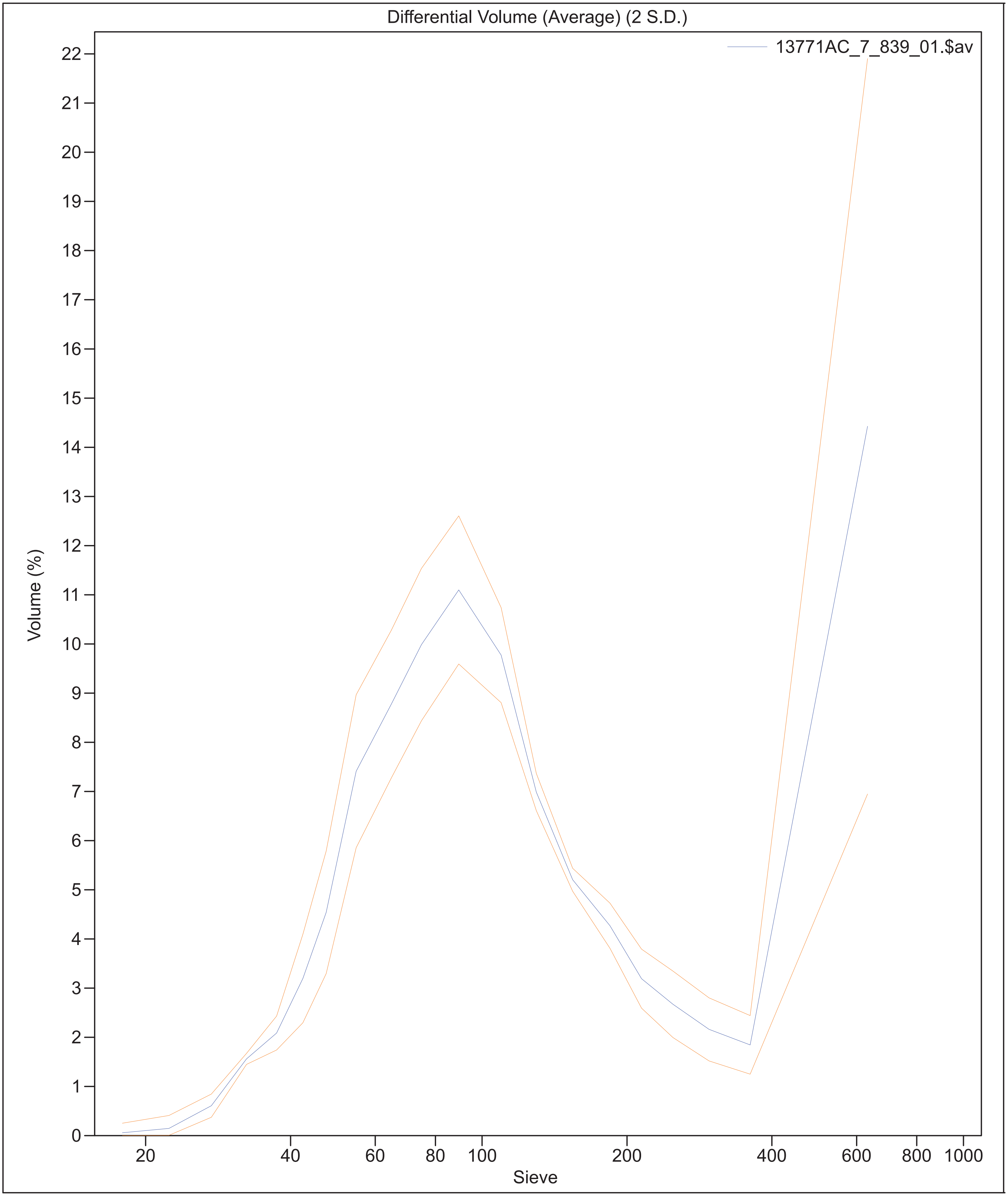
Mean:	3.05	Median:	2.75	Deviation:	1.61
Skewness:	0.44	Kurtosis:	1.67		

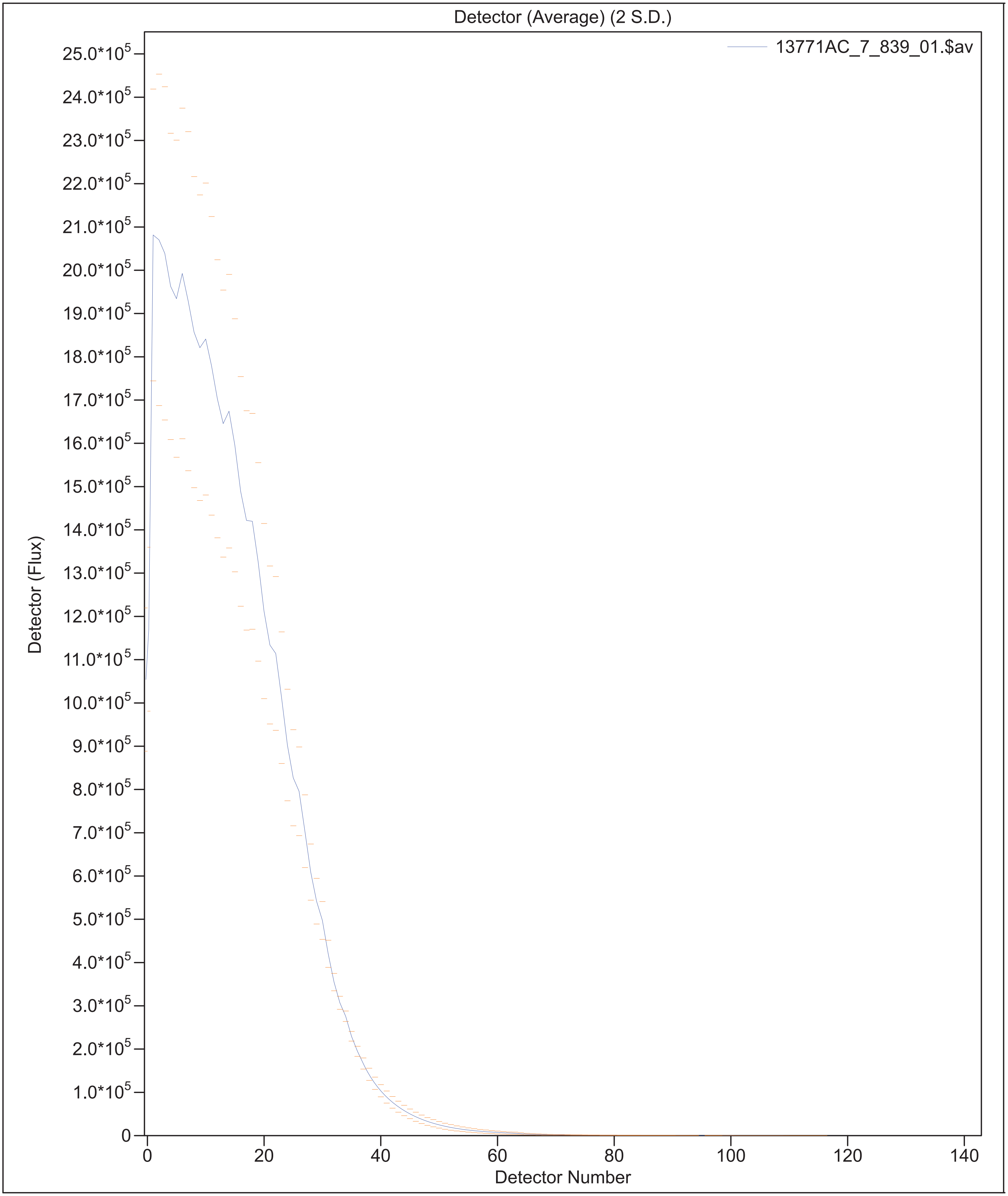
<10%	<25%	<50%	<75%	<90%
19.98 µm	77.57 µm	148.6 µm	225.4 µm	322.6 µm

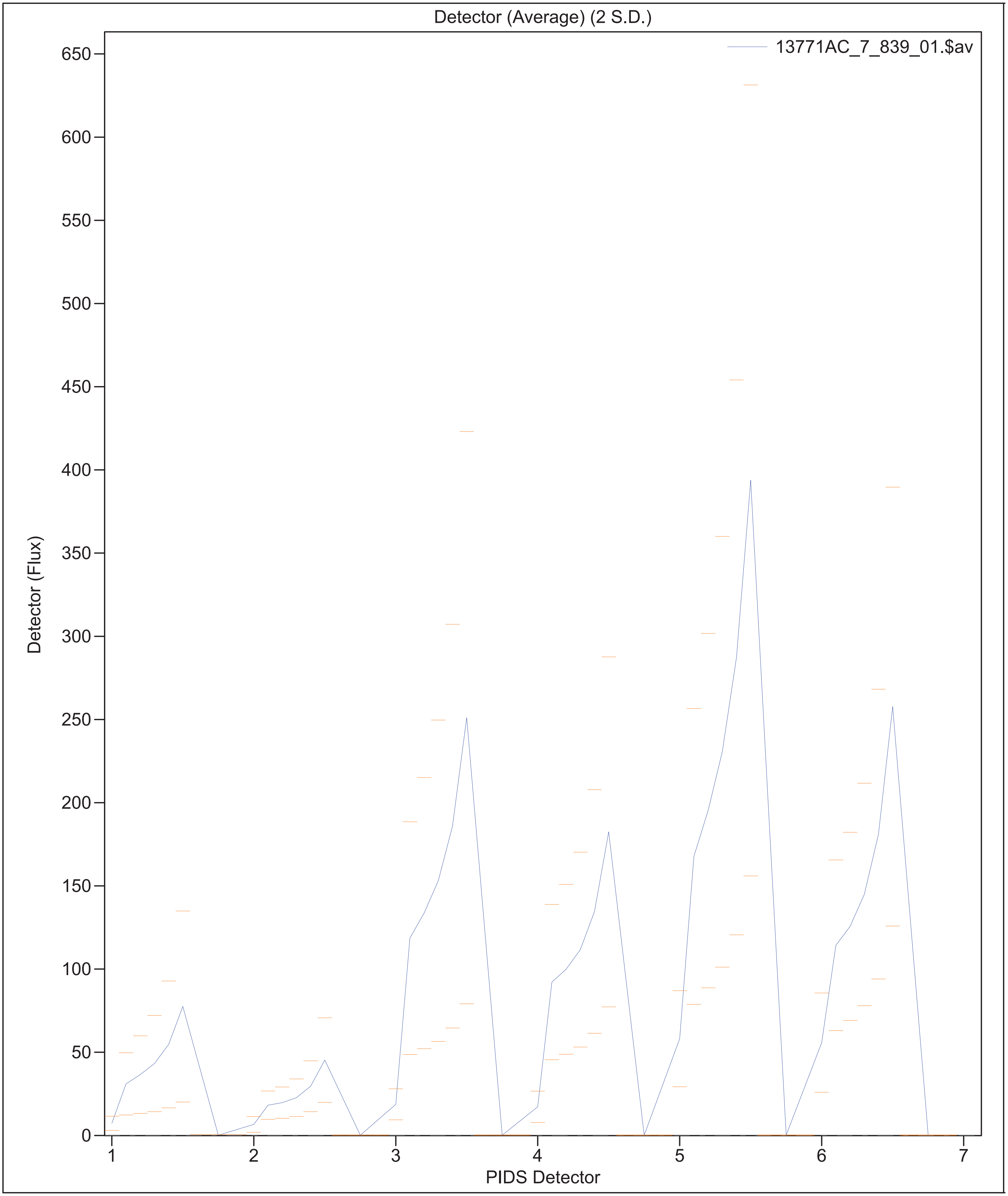
LS Particle Size Analyzer

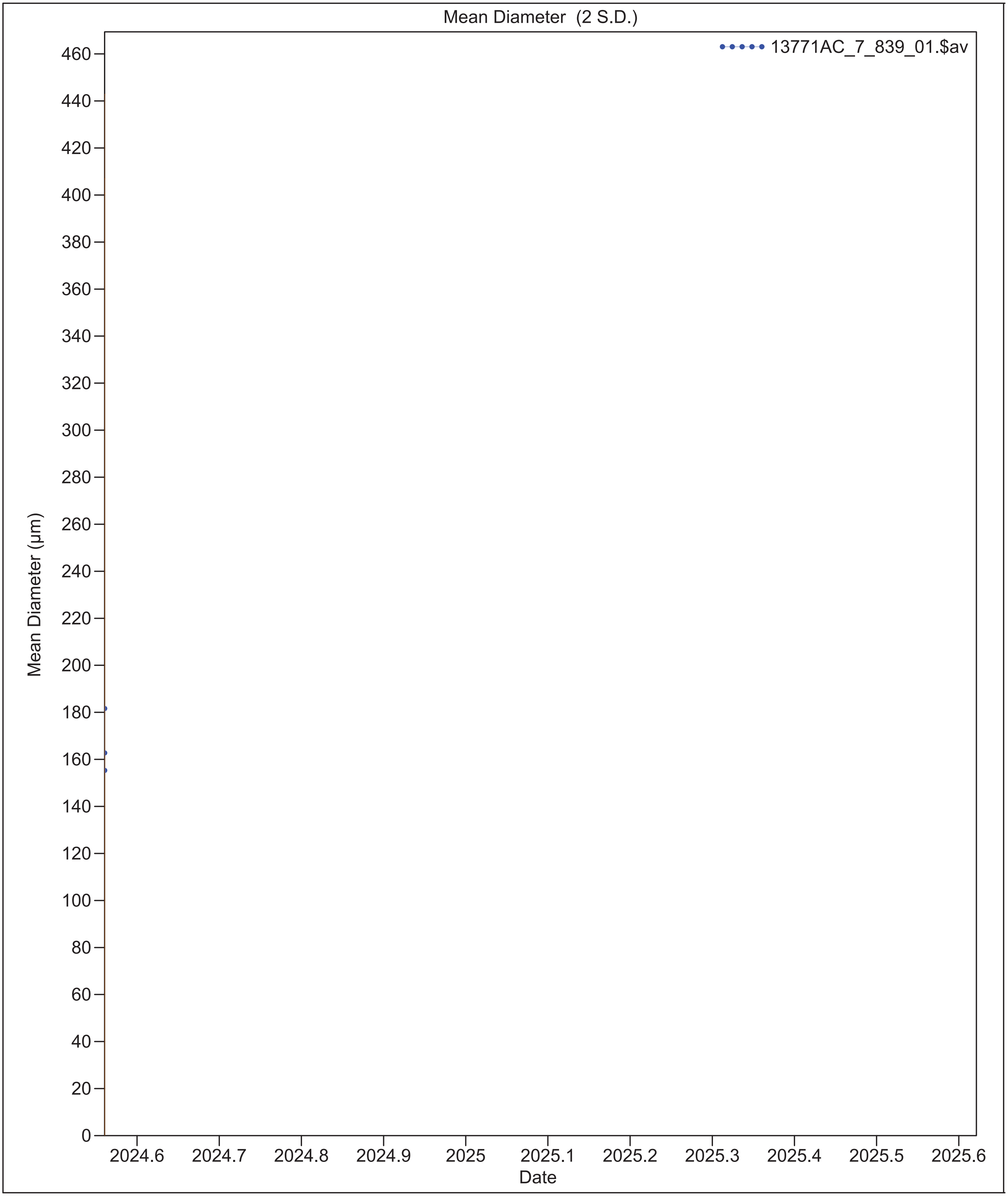
10 Jul 2024 11:50

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
13771AC_7_839_01.$av
25.0*10^5
24.0*10^5
23.0*10^5
22.0*10^5
21.0*10^5
20.0*10^5
19.0*10^5
18.0*10^5
17.0*10^5
16.0*10^5
15.0*10^5
14.0*10^5
13.0*10^5
12.0*10^5
11.0*10^5
10.0*10^5
9.0*10^5
8.0*10^5
7.0*10^5
6.0*10^5
5.0*10^5
4.0*10^5
3.0*10^5
2.0*10^5
1.0*10^5
0
Detector (Flux)
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
13771AC_7_839_01.$av
Detector (Flux)
650
600
550
500
450
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
13771AC_7_839_01.$av
Mean Diameter (µm)
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic)   Average of 3 files   13771AC_7_839_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	166.5 µm	13.56	139.4	193.6
Median:	148.2 µm	11.91	124.4	172.1
S.D.:	125.1 µm	4.763	115.6	134.7
Variance:	15675 $µm^2$	1205	13265	18085
C.V.:	75.33%	3.547	68.24	82.42
Skewness:	1.370	0.289	0.792	1.948
Kurtosis:	3.532	2.693	-1.854	8.918
d_{10}:	22.27 µm	12.08	0	46.44
d_{50}:	148.2 µm	11.91	124.4	172.1
d_{90}:	321.2 µm	15.39	290.4	352.0

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LS Particle Size Analyzer

10 Jul 2024 11:57

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_8_842_01.$av
	13771AC_8_842_01.$av
File ID:	13771AC_8
Sample ID:	13771AC_8
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_8_840_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_8_841_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_8_842_01.$ls

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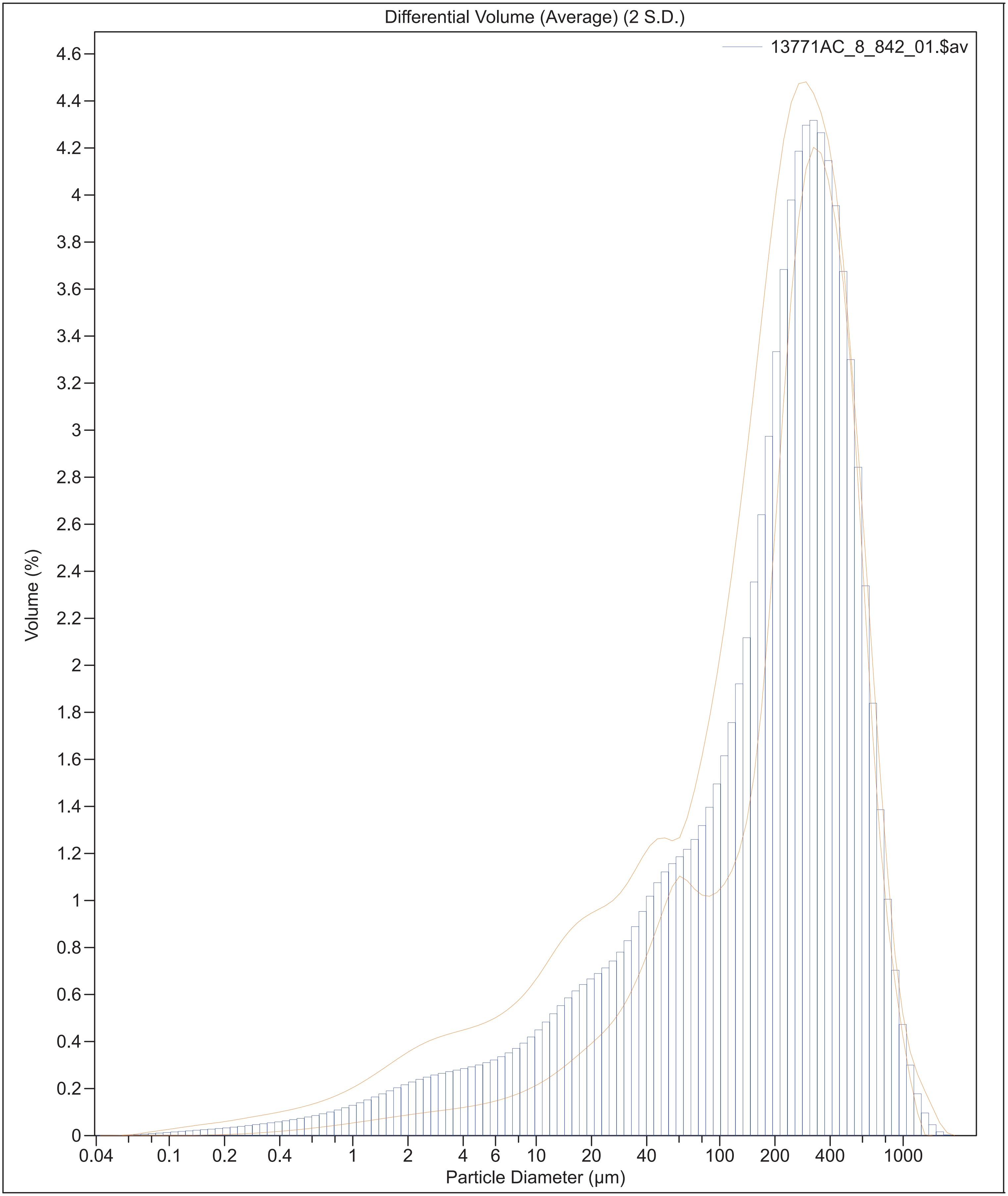
LS Particle Size Analyzer

10 Jul 2024 11:57

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_8_842_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	259.9 µm	S.D.:	225.3 µm
Median:	219.0 µm	Variance:	50741 µm^2
Mean/Median ratio:	1.187	C.V.:	86.7%
Mode:	324.4 µm	Skewness:	1.186 Right skewed
		Kurtosis:	1.807 Leptokurtic

d_{10}: 14.49 µm d_{50}: 219.0 µm d_{90}: 564.7 µm

Folk and Ward Statistics (Phi)

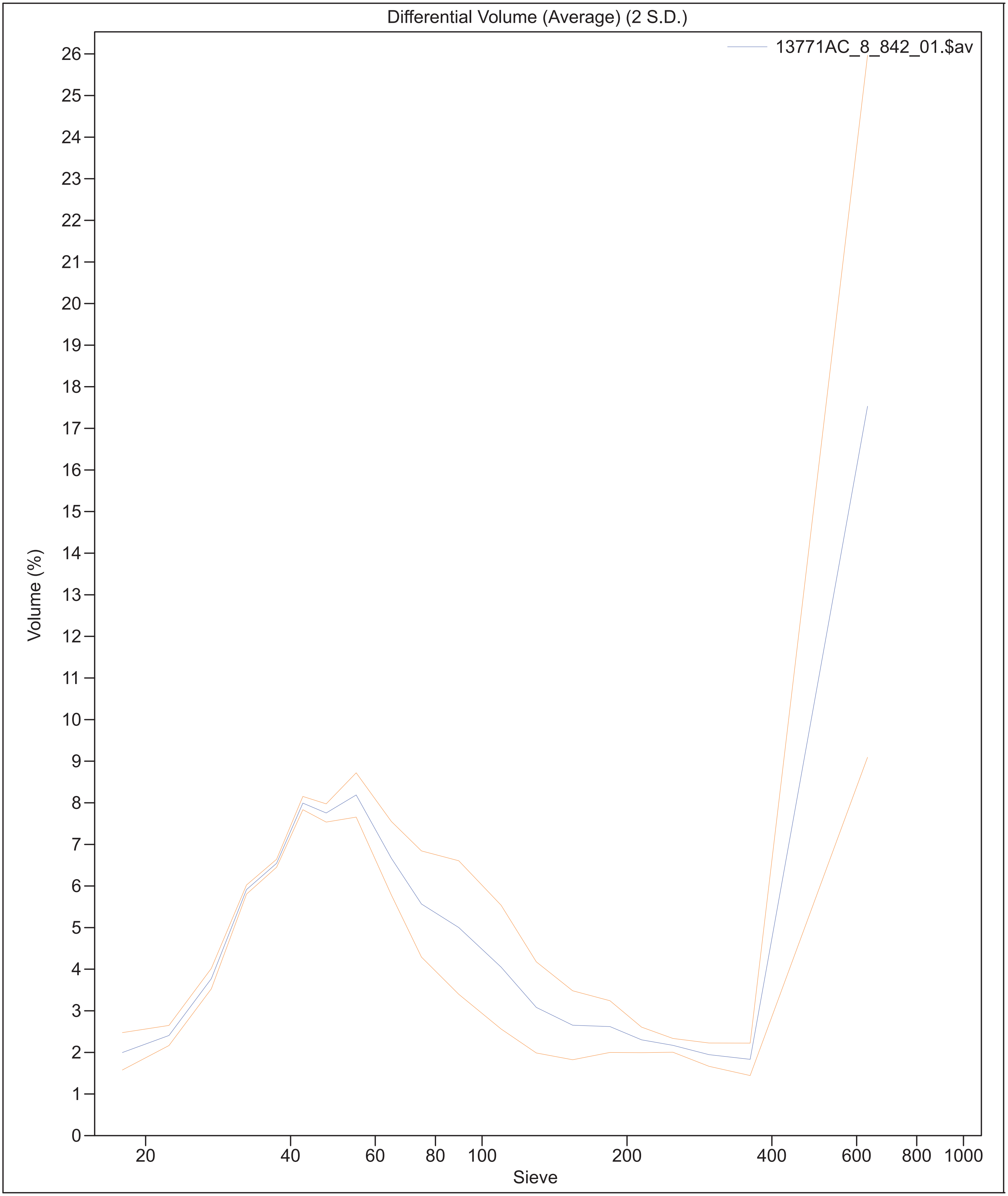
Mean:	2.74	Median:	2.19	Deviation:	2.07
Skewness:	0.48	Kurtosis:	1.22		

<10%	<25%	<50%	<75%	<90%
14.49 µm	70.77 µm	219.0 µm	384.6 µm	564.7 µm

LS Particle Size Analyzer

10 Jul 2024 11:57

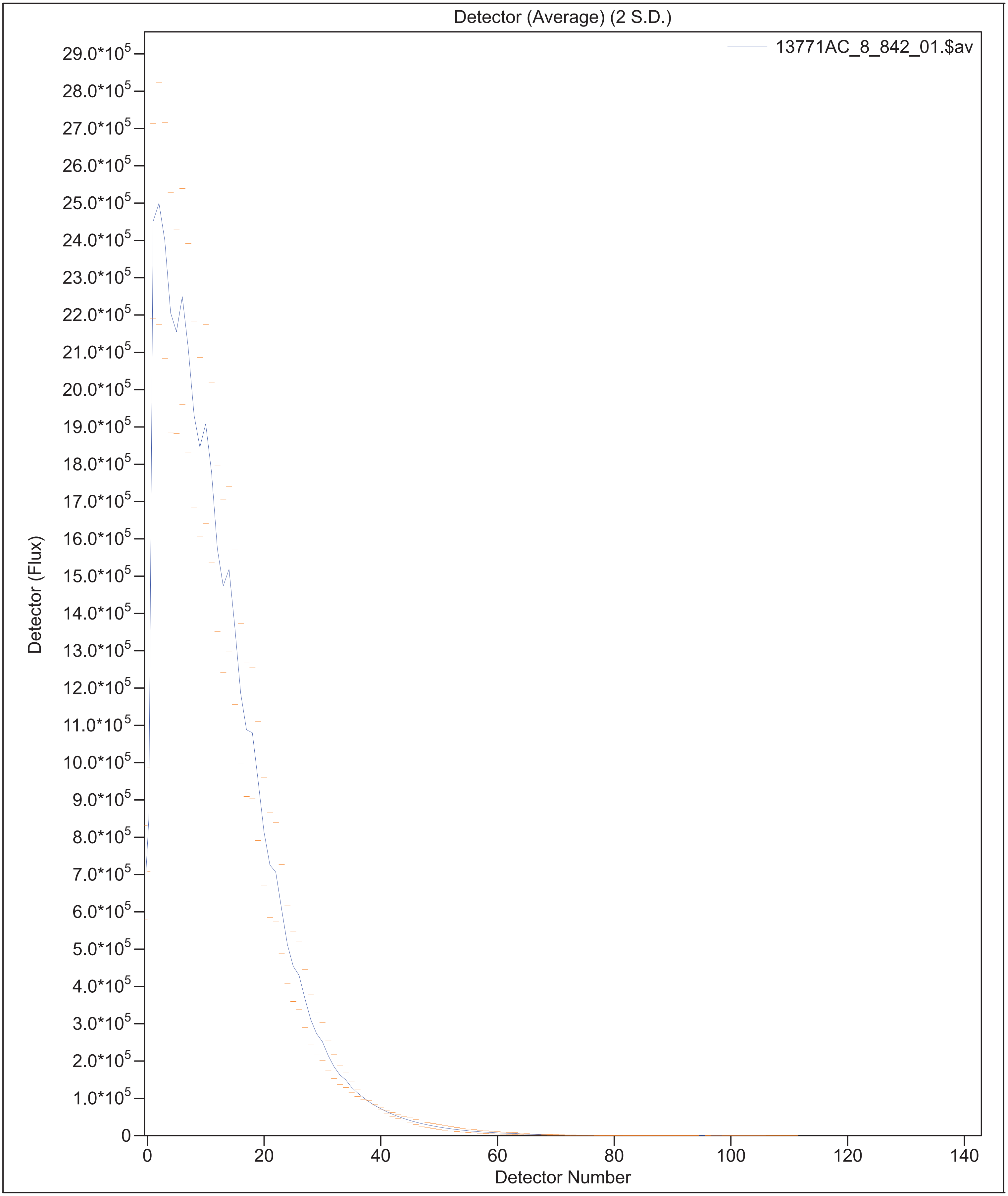
Beckman Coulter LS 13 320

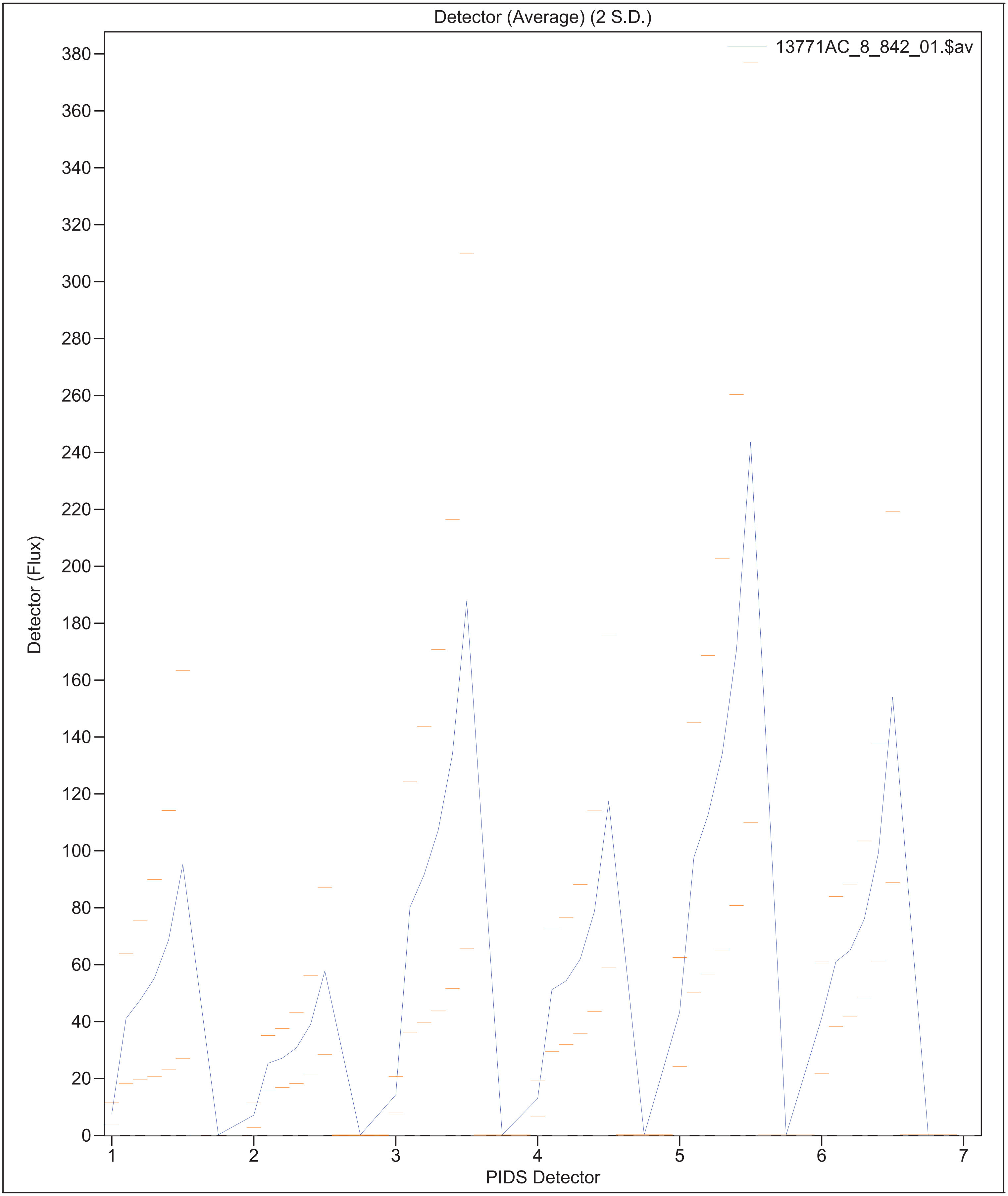


LS Particle Size Analyzer

10 Jul 2024 11:57

Beckman Coulter LS 13 320

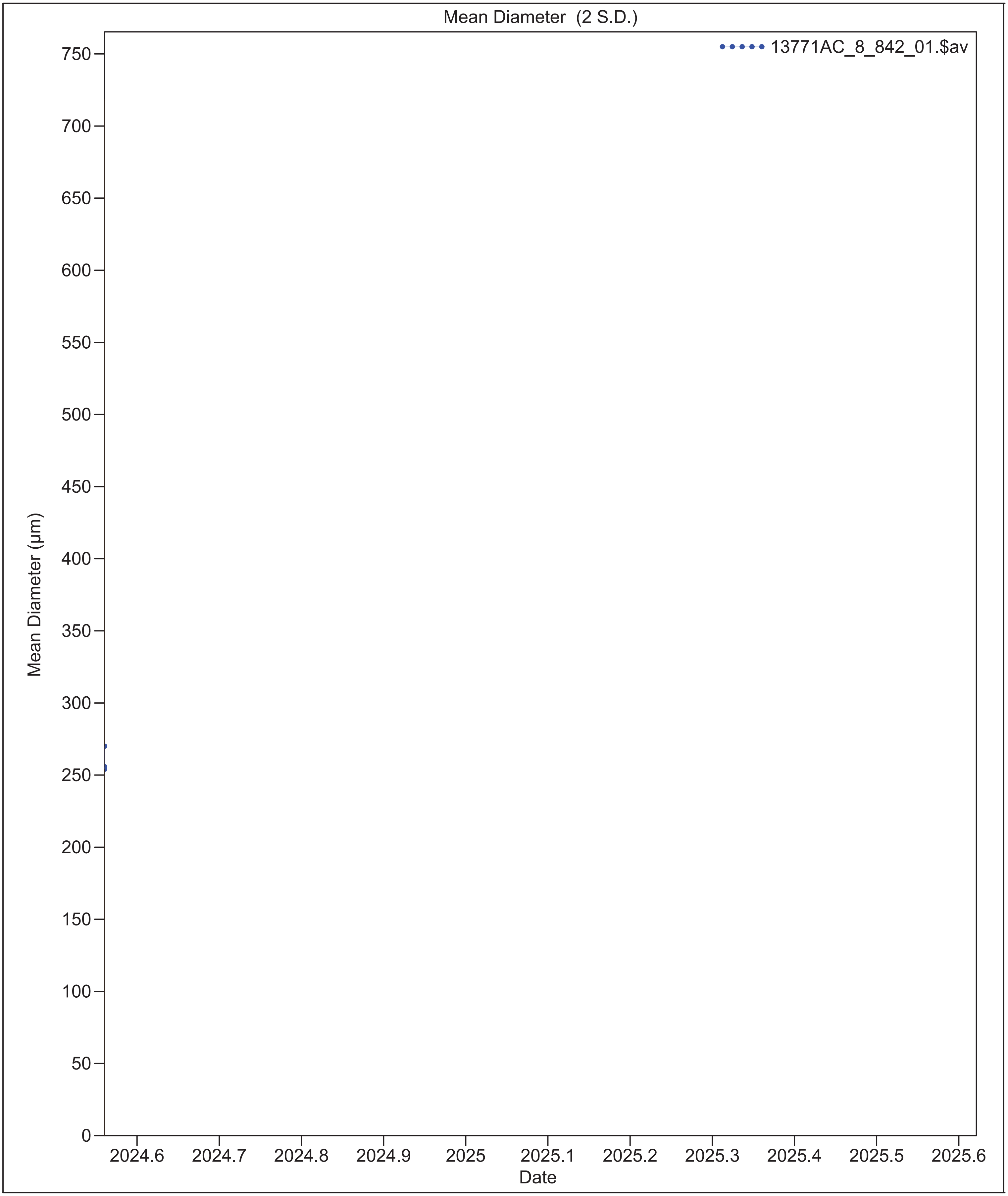



Detector (Average) (2 S.D.)
13771AC_8_842_01.$av
Detector (Flux)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
380
PIDS Detector
1
2
3
4
5
6
7

LS Particle Size Analyzer

10 Jul 2024 11:57

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13771AC_8_842_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	259.9 µm	8.796	242.3	277.5
Median:	218.8 µm	5.702	207.4	230.2
S.D.:	225.1 µm	5.923	213.2	236.9
Variance:	50690 $µm^2$	2678	45334	56046
C.V.:	86.68%	3.842	78.99	94.36
Skewness:	1.186	0.110	0.966	1.406
Kurtosis:	1.787	0.642	0.503	3.071
d_{10}:	16.23 µm	8.166	0	32.56
d_{50}:	218.8 µm	5.702	207.4	230.2
d_{90}:	564.7 µm	8.930	546.8	582.5

LS Particle Size Analyzer

10 Jul 2024 12:05

Beckman Coulter LS 13 320

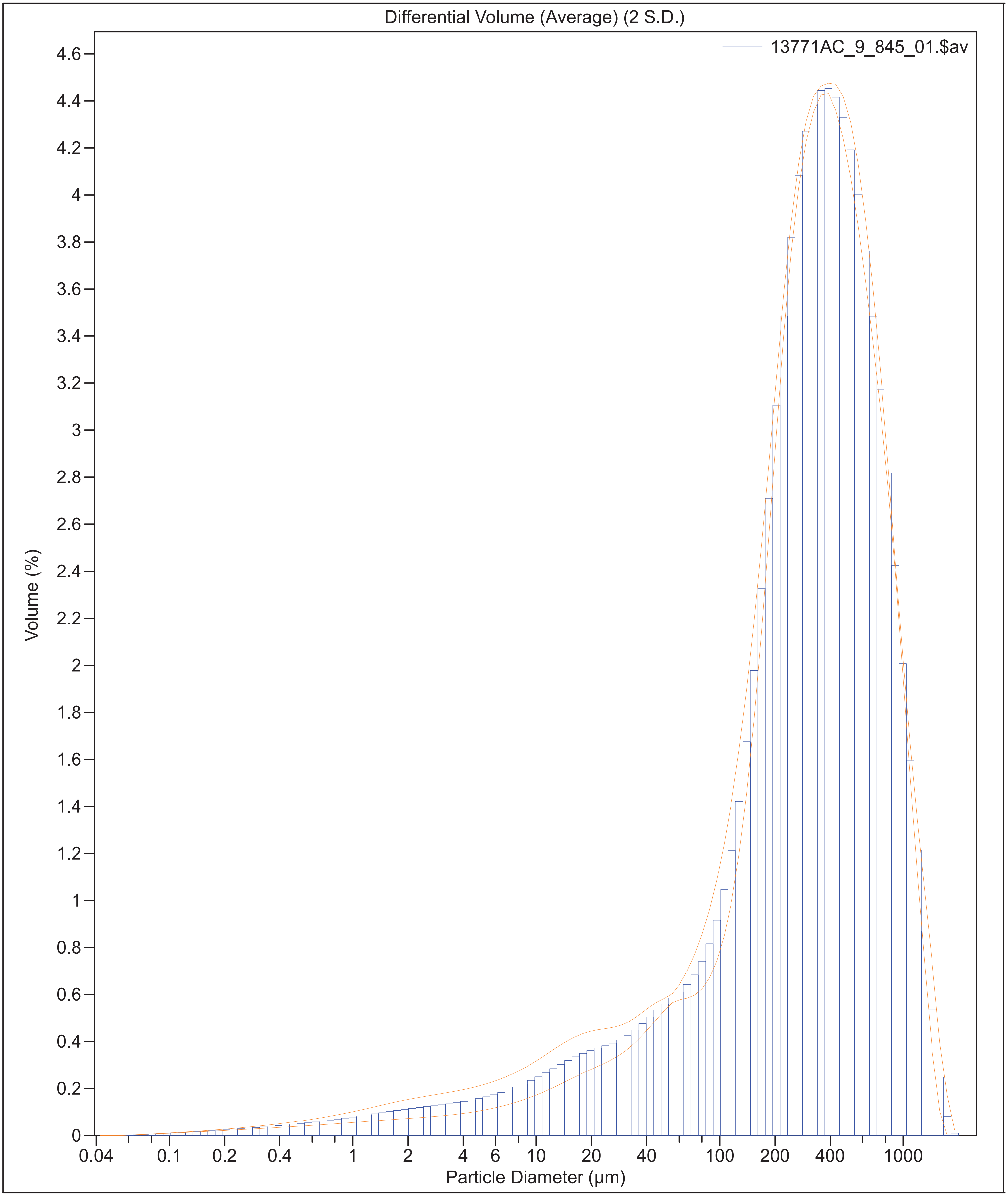
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13771AC_9_845_01.$av
	13771AC_9_845_01.$av
File ID:	13771AC_9
Sample ID:	13771AC_9
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_9_843_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_9_844_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13771AC_9_845_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:05

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13771AC_9_845_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	395.9 µm	S.D.:	311.2 µm
Median:	326.6 µm	Variance:	96862 µm^2
Mean/Median ratio:	1.212	C.V.:	78.6%
Mode:	390.9 µm	Skewness:	1.107 Right skewed
		Kurtosis:	1.159 Leptokurtic

d_{10}: 41.17 µm d_{50}: 326.6 µm d_{90}: 836.3 µm

Folk and Ward Statistics (Phi)

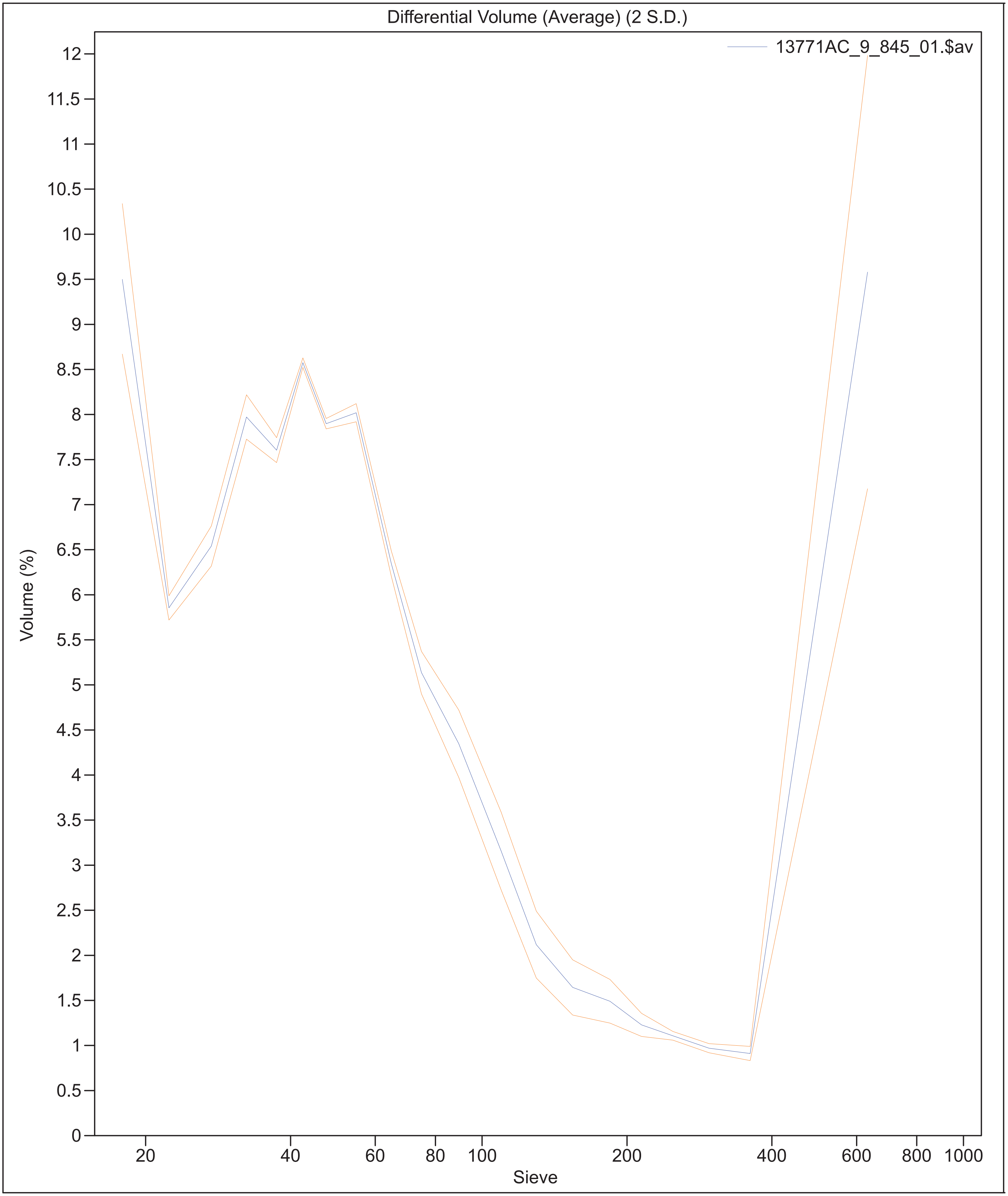
Mean:	1.83	Median:	1.61	Deviation:	1.68
Skewness:	0.36	Kurtosis:	1.53		

<10%	<25%	<50%	<75%	<90%
41.17 µm	169.7 µm	326.6 µm	558.1 µm	836.3 µm

LS Particle Size Analyzer

10 Jul 2024 12:05

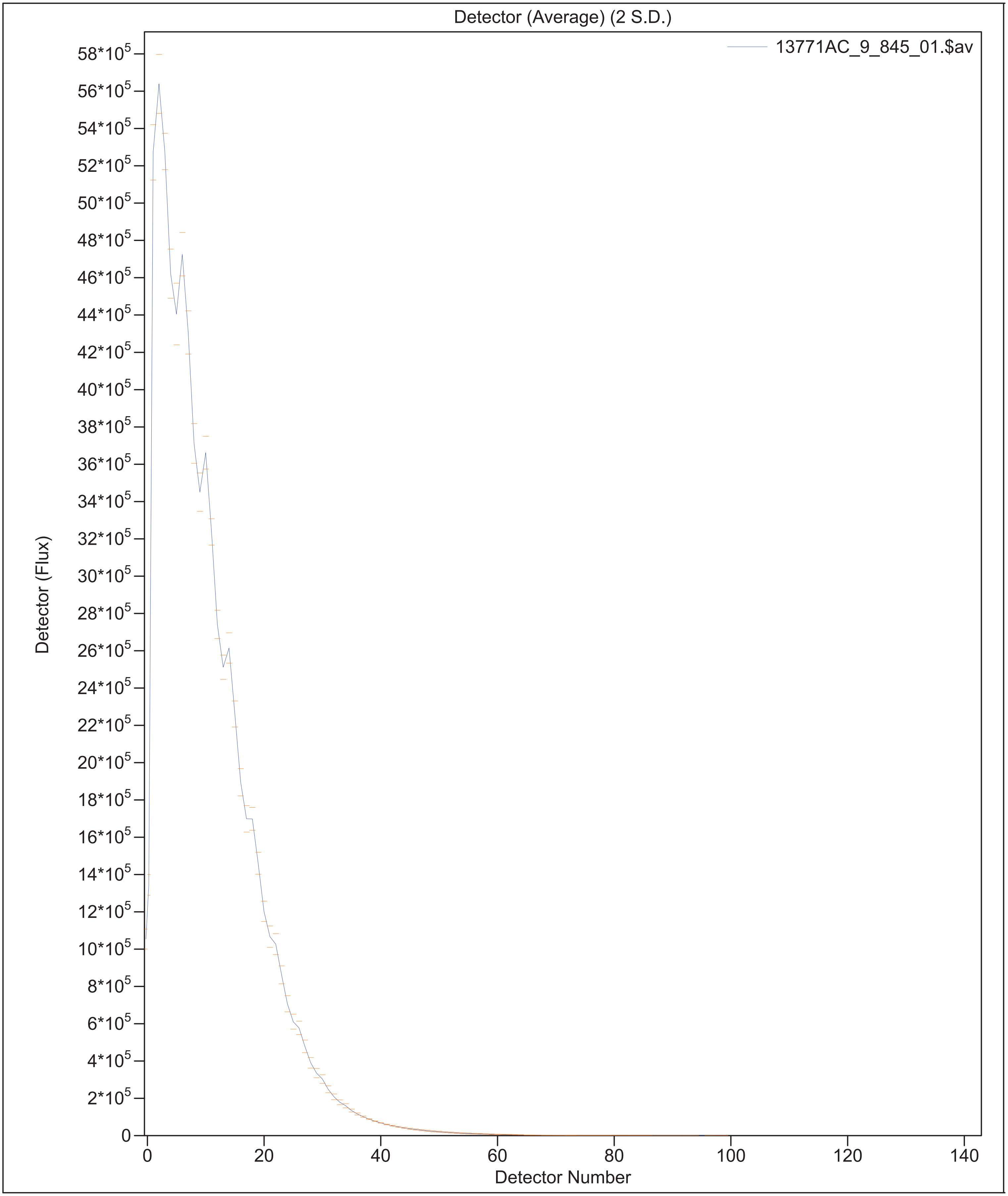
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:05

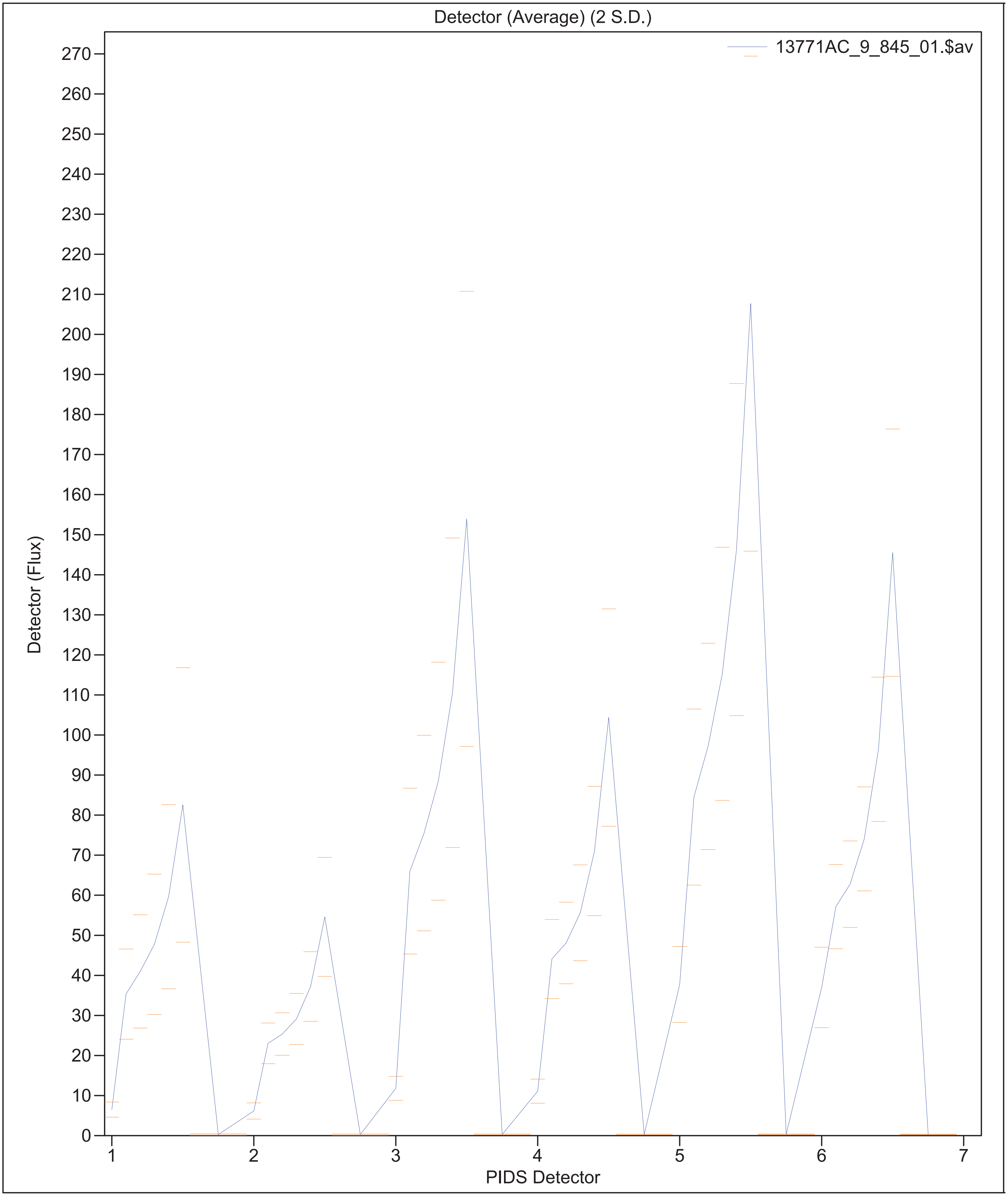
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:05

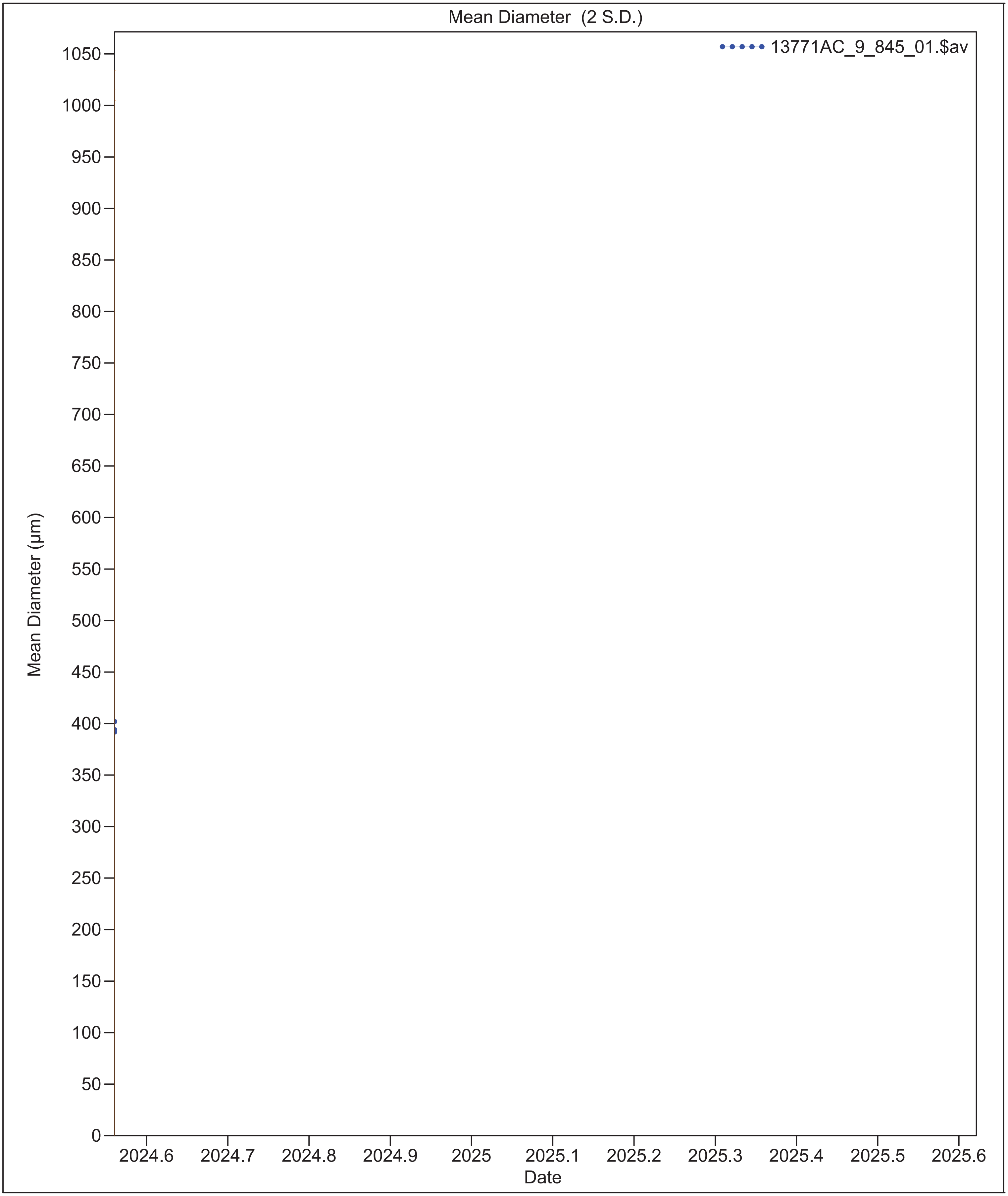
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:05

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:05

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13771AC_9_845_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	395.9 µm	5.312	385.2	406.5
Median:	326.6 µm	1.355	323.8	329.3
S.D.:	311.2 µm	4.846	301.5	320.9
Variance:	96843 μm^2	3019	90806	102.9e3
C.V.:	78.60%	0.353	77.90	79.31
Skewness:	1.104	0.067	0.970	1.239
Kurtosis:	1.143	0.206	0.732	1.554
d_{10}:	41.69 µm	9.584	22.52	60.86
d_{50}:	326.6 µm	1.355	323.8	329.3
d_{90}:	836.4 µm	10.90	814.6	858.2

File name:	C:\LS13320\Samples\NOAA-CZM FY23\13778AF_1_926_01.$av
	13778AF_1_926_01.$av
File ID:	13778AF_1
Sample ID:	13778AF_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files

C:\LS13320\Samples\NOAA-CZM FY23\13778AF_1_924_01.$ls

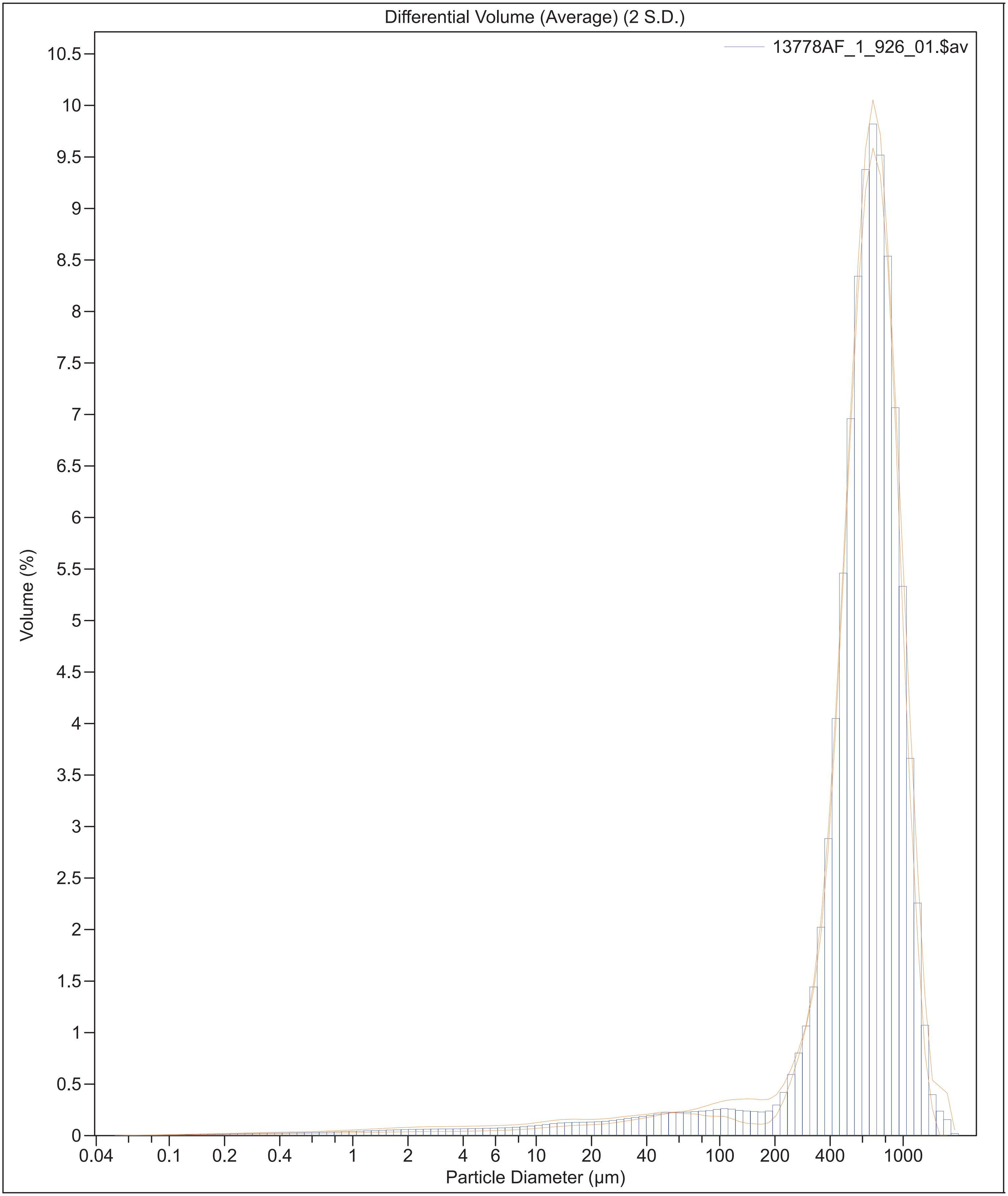
C:\LS13320\Samples\NOAA-CZM FY23\13778AF_1_925_01.$ls

C:\LS13320\Samples\NOAA-CZM FY23\13778AF_1_926_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:28

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 15:28

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13778AF_1_926_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	640.5 µm	S.D.:	291.2 µm
Median:	641.1 µm	Variance:	84788 μm^2
Mean/Median ratio:	0.999	C.V.:	45.5%
Mode:	684.2 µm	Skewness:	0.020 Right skewed
		Kurtosis:	0.453 Leptokurtic

d_{10}: 272.0 µm d_{50}: 641.1 µm d_{90}: 1003 µm

Folk and Ward Statistics (Phi)

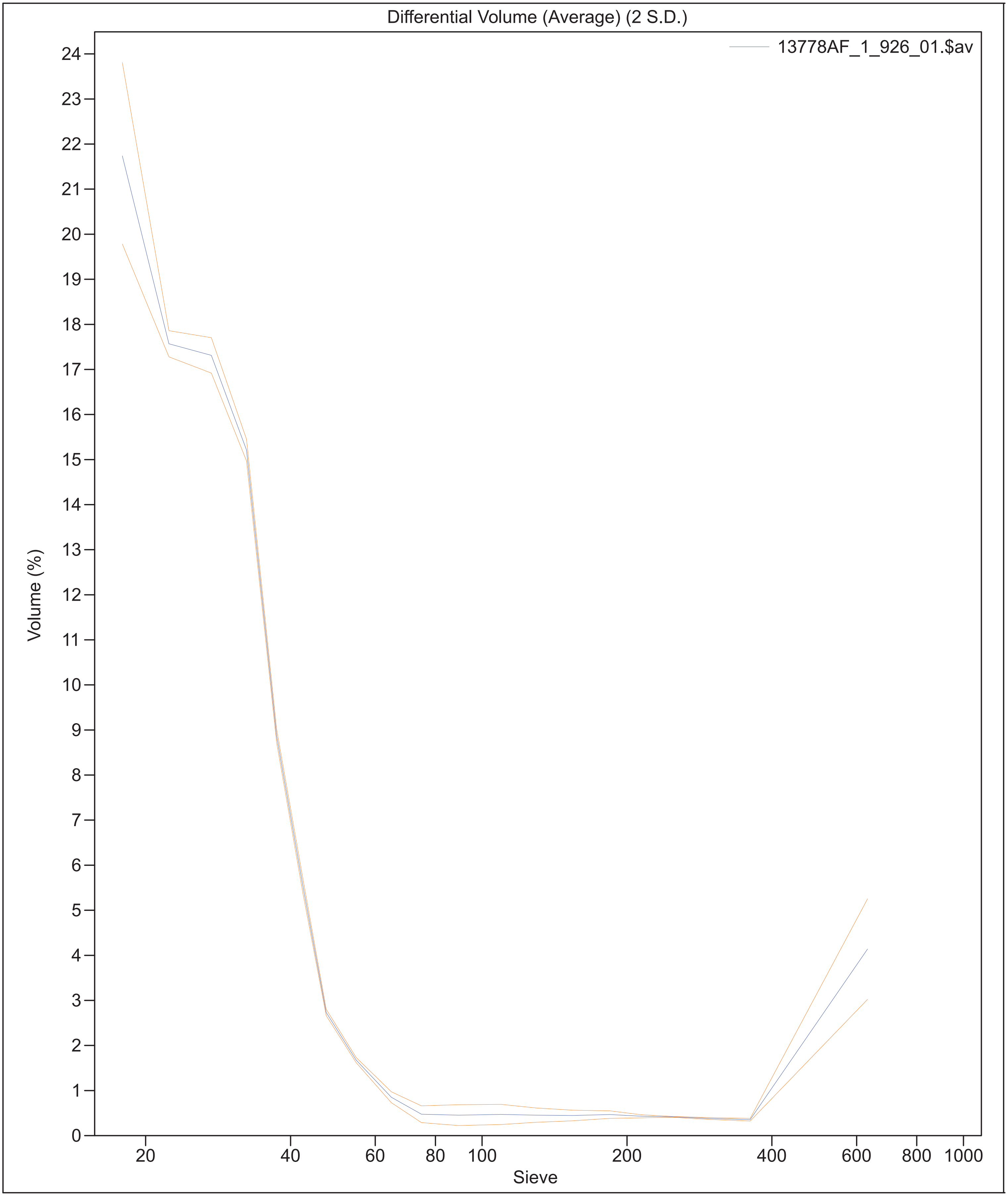
Mean:	0.71	Median:	0.64	Deviation:	0.96
Skewness:	0.40	Kurtosis:	2.25		

<10%	<25%	<50%	<75%	<90%
272.0 µm	475.5 µm	641.1 µm	820.6 µm	1003 µm

LS Particle Size Analyzer

10 Jul 2024 15:28

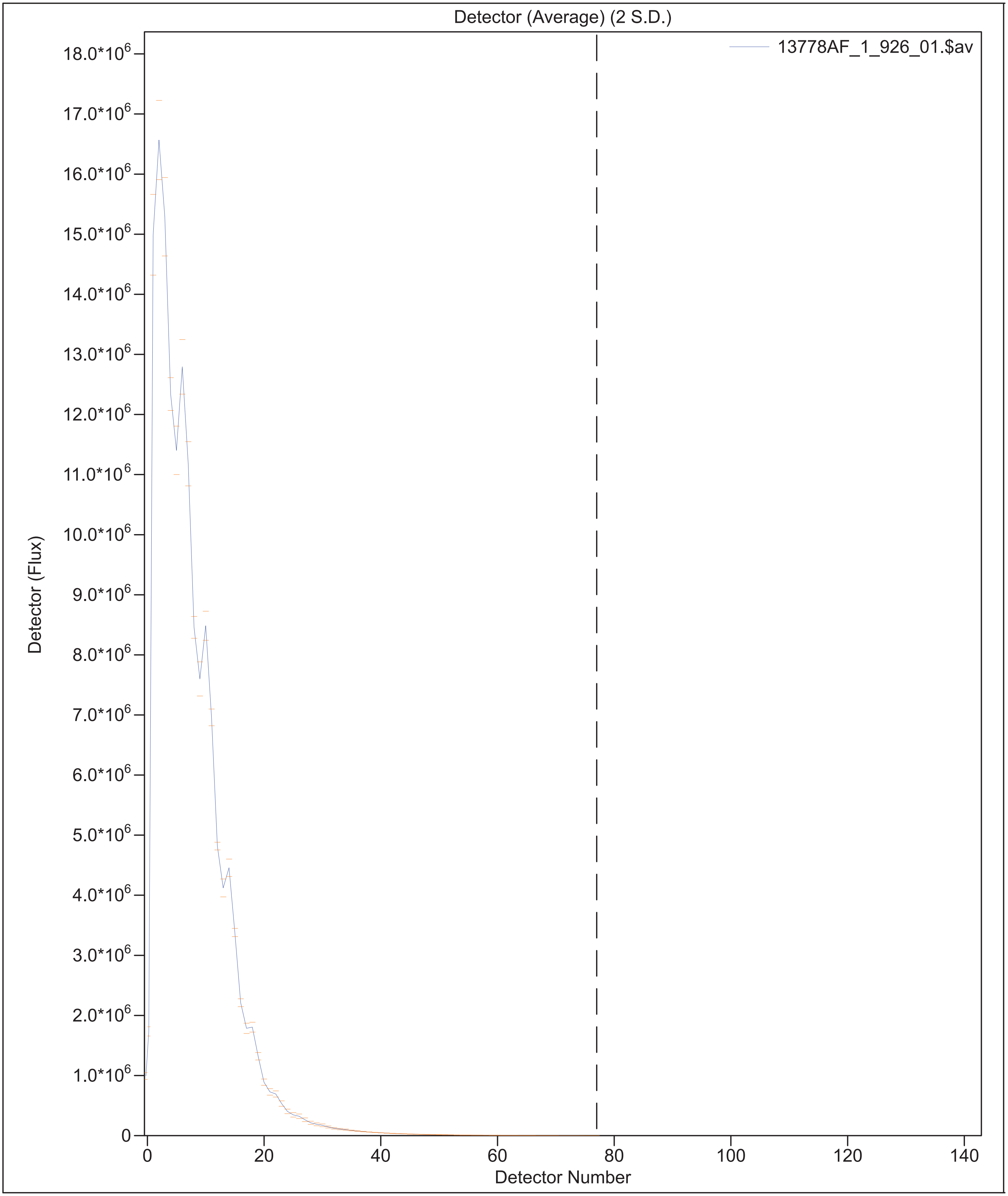
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:28

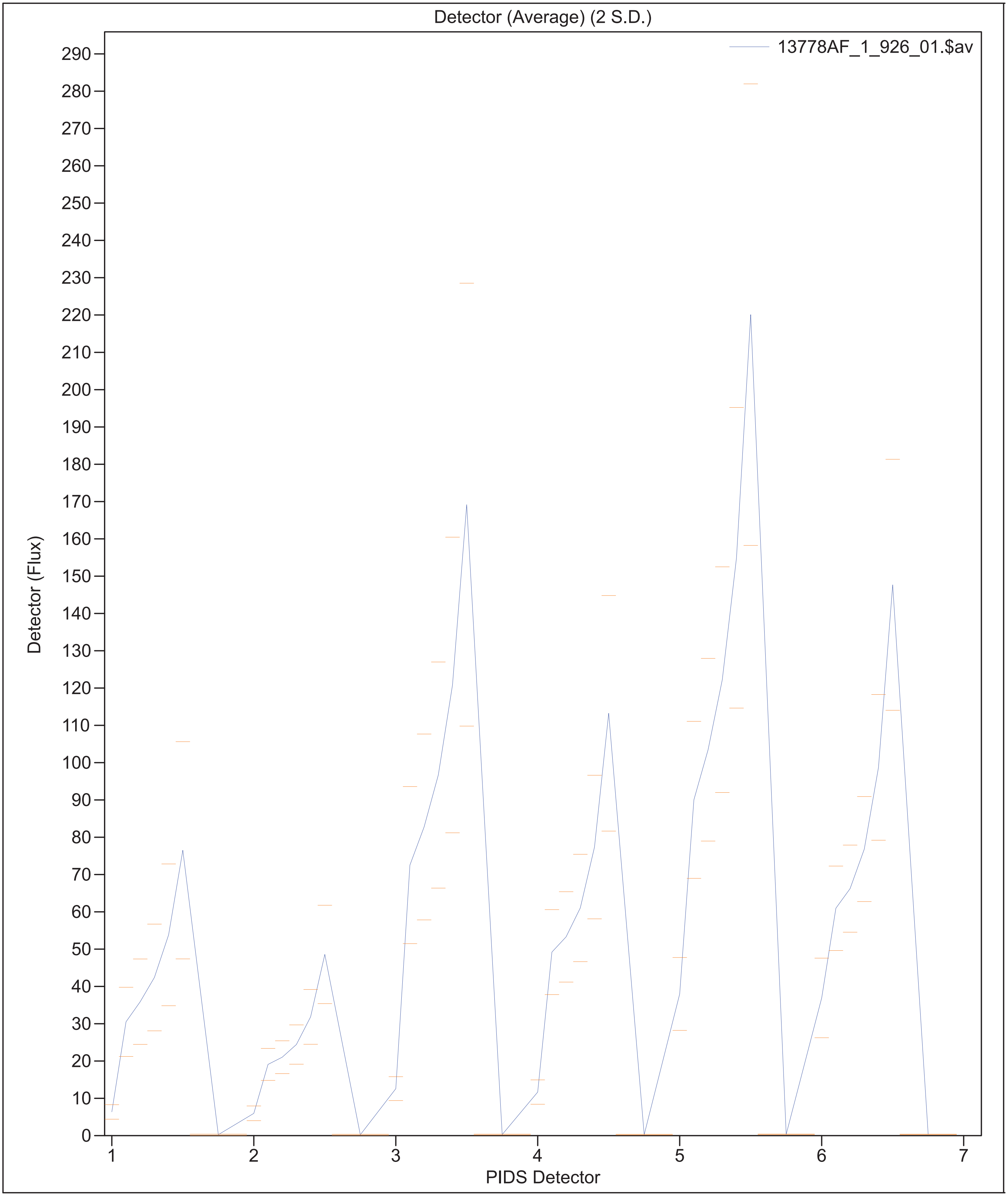
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:28

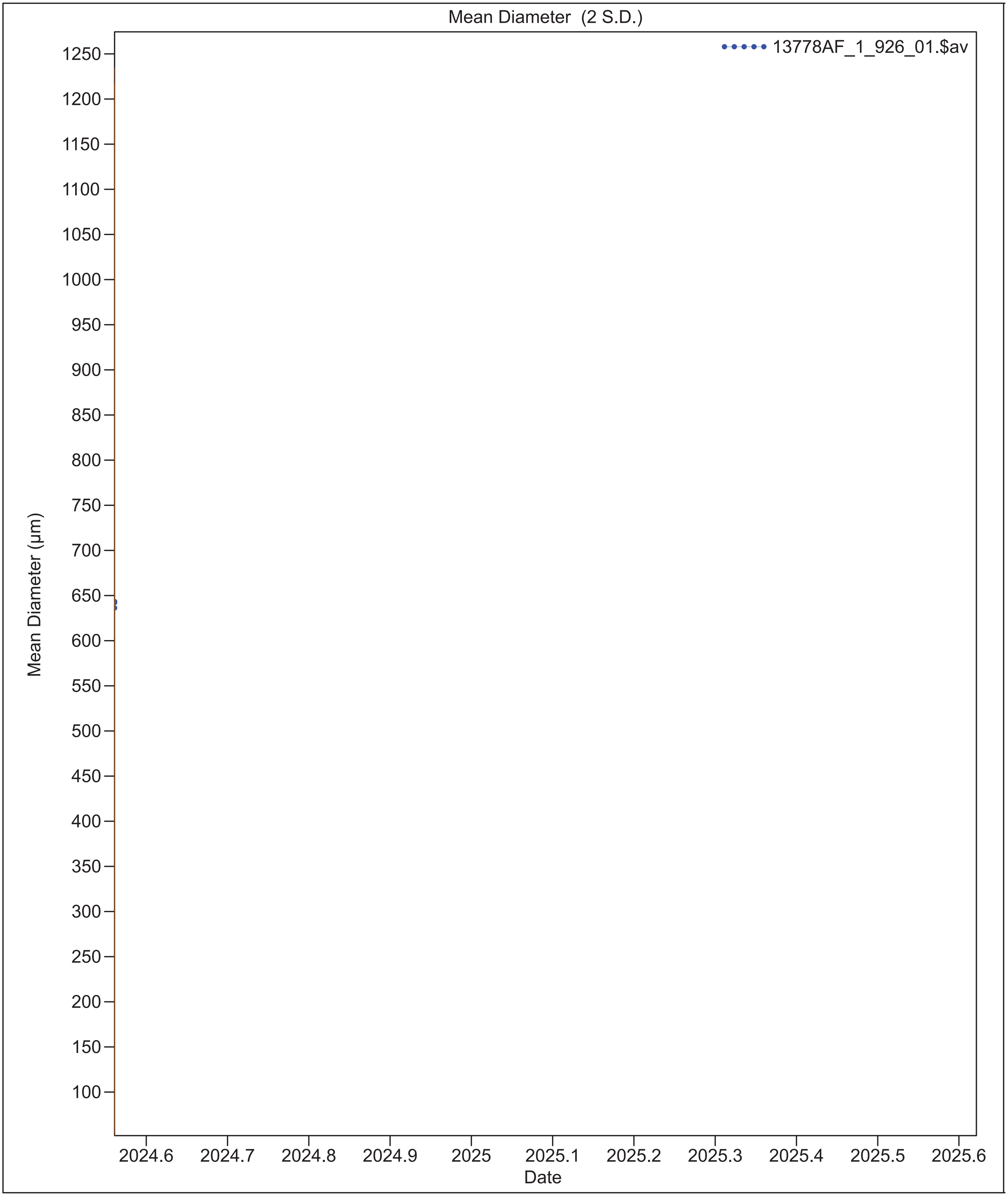
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:28

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 15:28

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13778AF_1_926_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	640.5 µm	3.835	632.8	648.2
Median:	641.1 µm	2.164	636.7	645.4
S.D.:	291.1 µm	4.324	282.5	299.8
Variance:	84778 μm^2	2524	79731	89825
C.V.:	45.46%	0.647	44.16	46.75
Skewness:	0.018	0.079	-0.140	0.176
Kurtosis:	0.442	0.273	-0.104	0.988
d_{10}:	272.0 µm	1.865	268.3	275.8
d_{50}:	641.1 µm	2.164	636.7	645.4
d_{90}:	1003 µm	8.660	985.4	1020

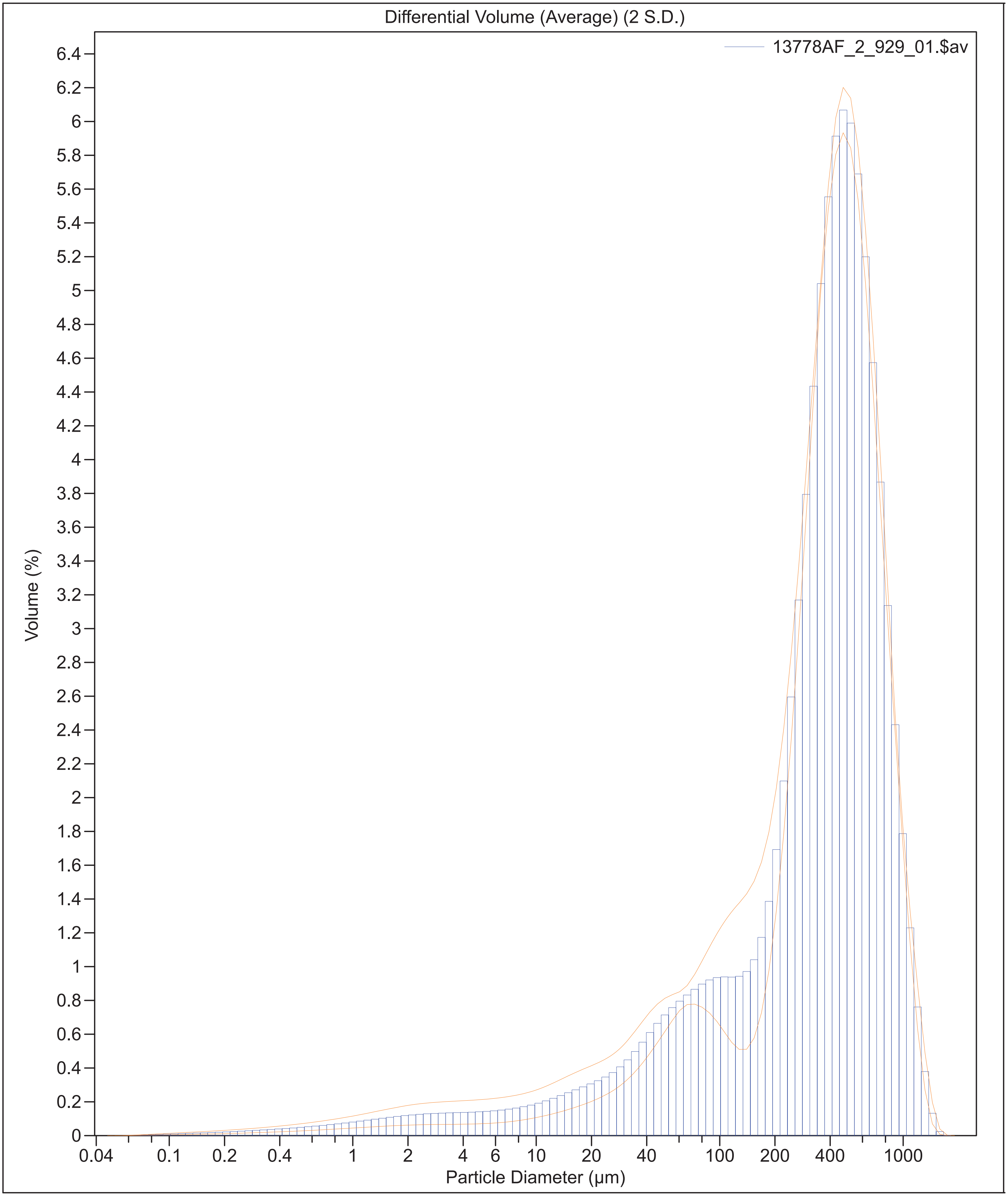
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13778AF_2_929_01.$av
	13778AF_2_929_01.$av
File ID:	13778AF_2
Sample ID:	13778AF_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13778AF_2_927_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13778AF_2_928_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13778AF_2_929_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:35

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:35

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13778AF_2_929_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	411.3 µm	S.D.:	279.1 µm
Median:	391.1 µm	Variance:	77888 $µm^2$
Mean/Median ratio:	1.052	C.V.:	67.9%
Mode:	471.1 µm	Skewness:	0.607 Right skewed
		Kurtosis:	0.174 Leptokurtic

d_{10}: 45.82 µm d_{50}: 391.1 µm d_{90}: 784.8 µm

Folk and Ward Statistics (Phi)

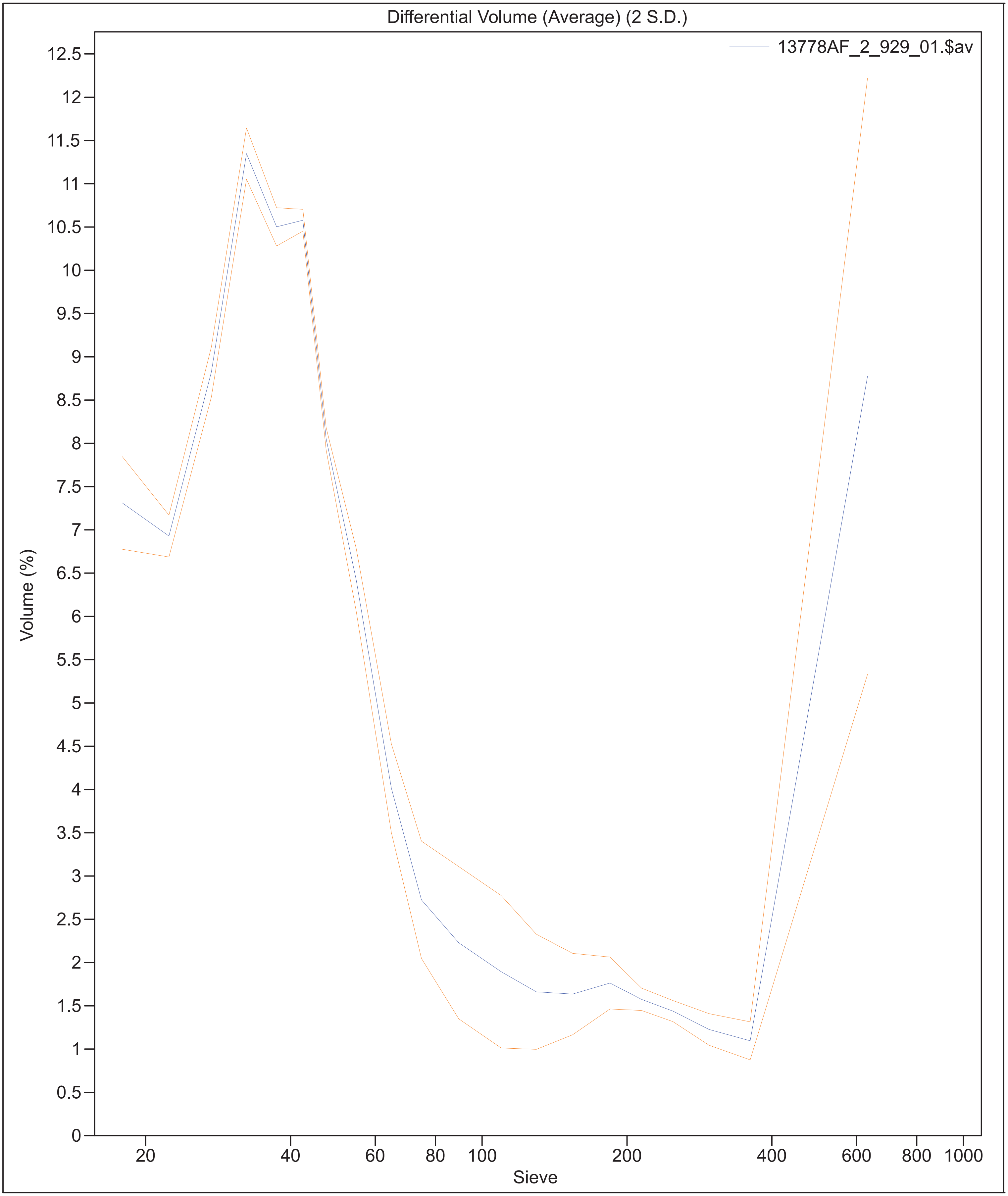
Mean:	1.79	Median:	1.35	Deviation:	1.64
Skewness:	0.52	Kurtosis:	1.60		

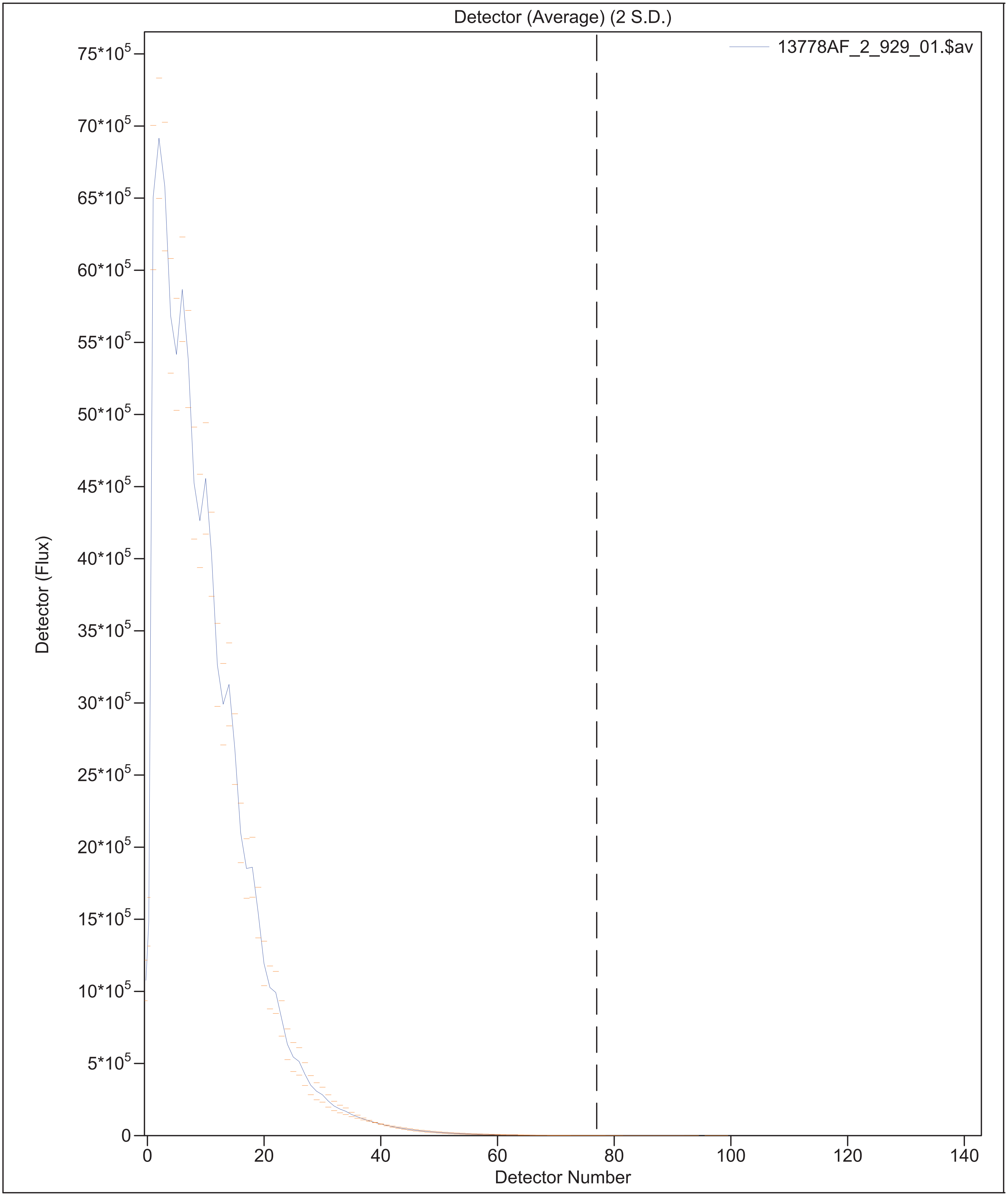
<10%	<25%	<50%	<75%	<90%
45.82 µm	200.5 µm	391.1 µm	581.1 µm	784.8 µm

LS Particle Size Analyzer

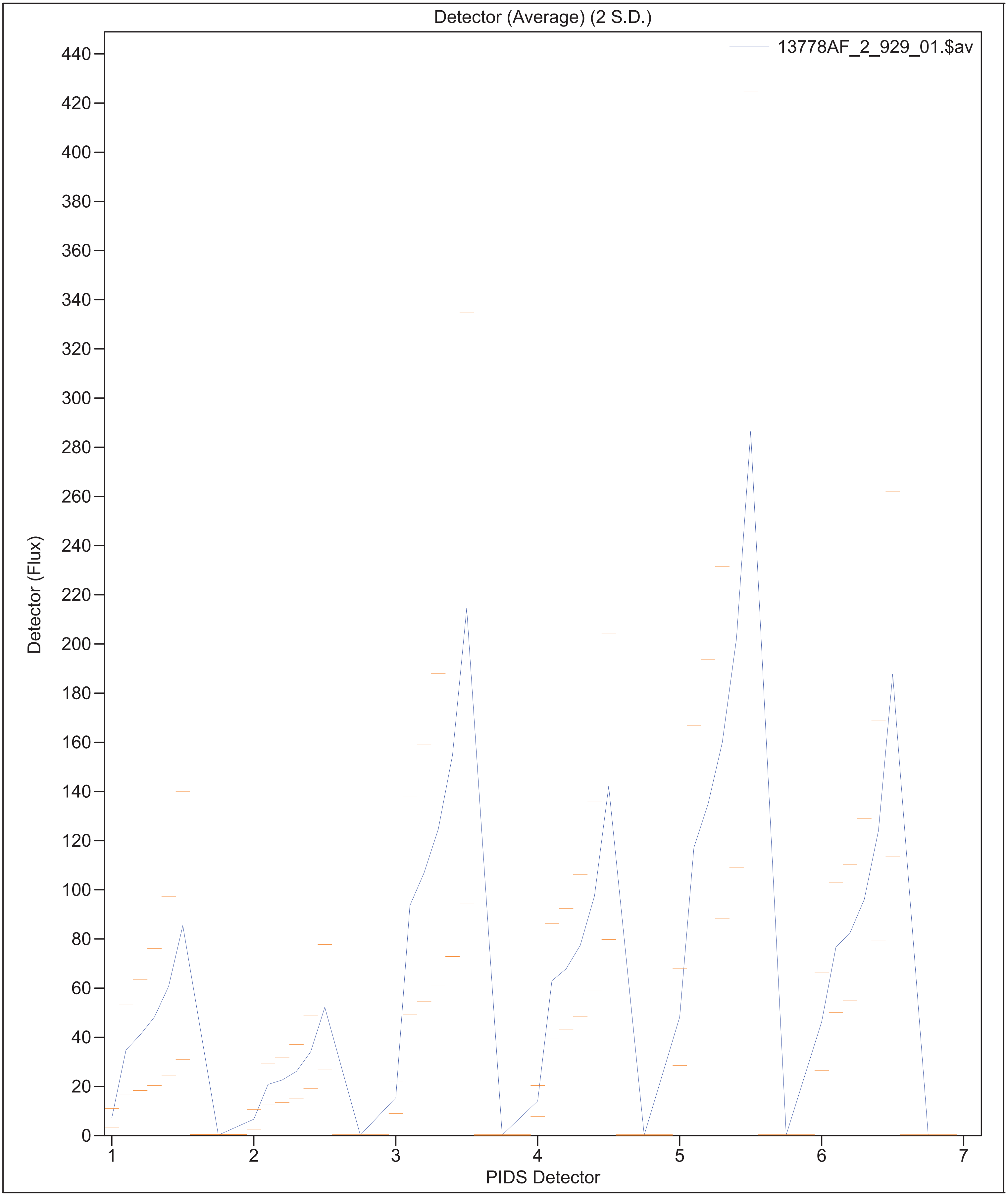
10 Jul 2024 15:35

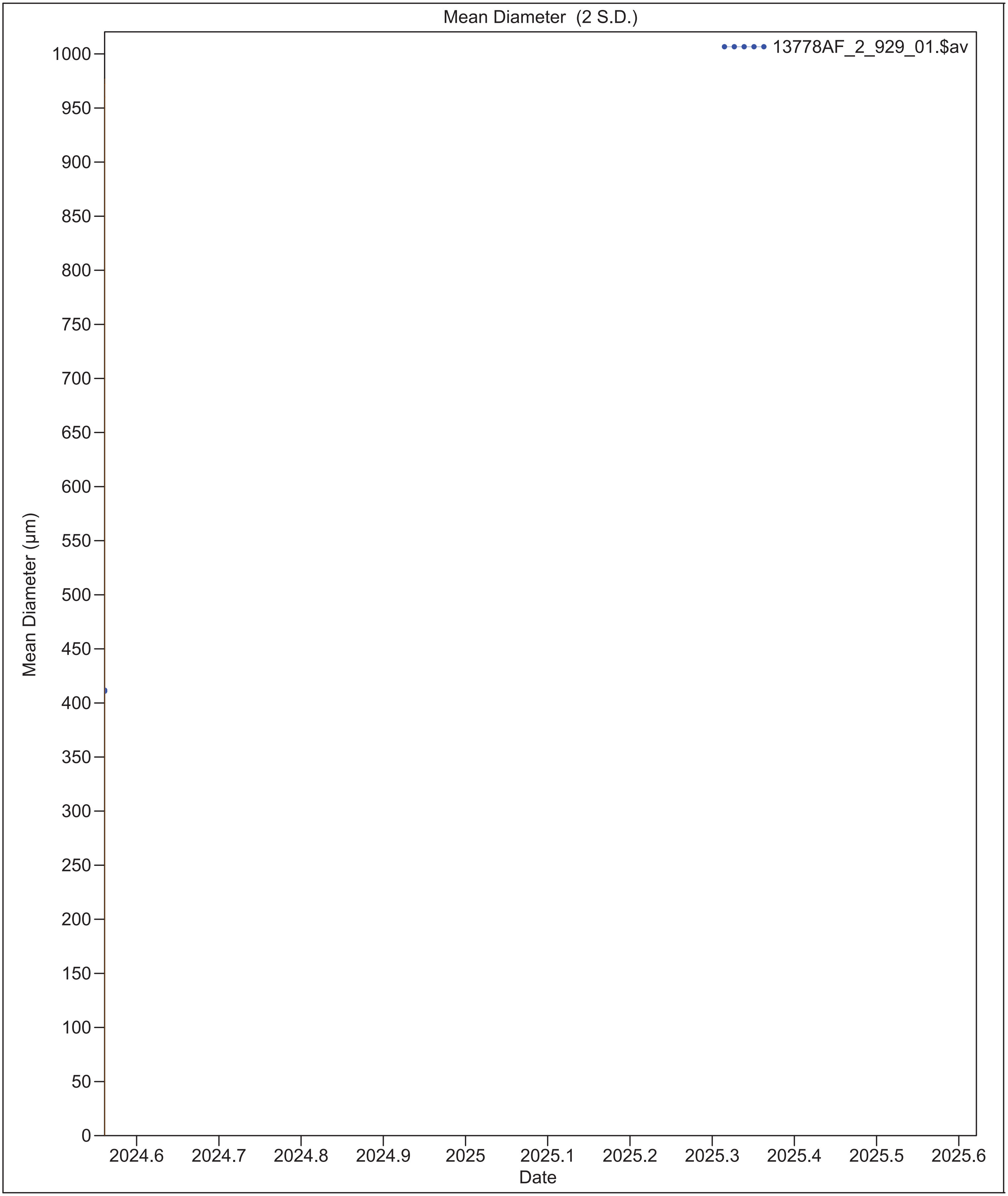
Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
13778AF_2_929_01.$av
Detector (Flux)
Detector Number
75*10^5
70*10^5
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
0
20
40
60
80
100
120
140

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
13778AF_2_929_01.$av
Mean Diameter (µm)
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 15:35

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13778AF_2_929_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	411.3 µm	0.531	410.2	412.4
Median:	391.1 µm	3.272	384.6	397.7
S.D.:	279.1 µm	4.701	269.7	288.5
Variance:	77888 $µm^2$	2614	72659	83117
C.V.:	67.85%	1.206	65.44	70.26
Skewness:	0.607	0.049	0.509	0.705
Kurtosis:	0.171	0.086	-0.0019	0.344
d_{10}:	46.63 µm	12.22	22.19	71.07
d_{50}:	391.1 µm	3.272	384.6	397.7
d_{90}:	785.0 µm	3.928	777.2	792.9

LS Particle Size Analyzer

10 Jul 2024 9:56

Beckman Coulter LS 13 320

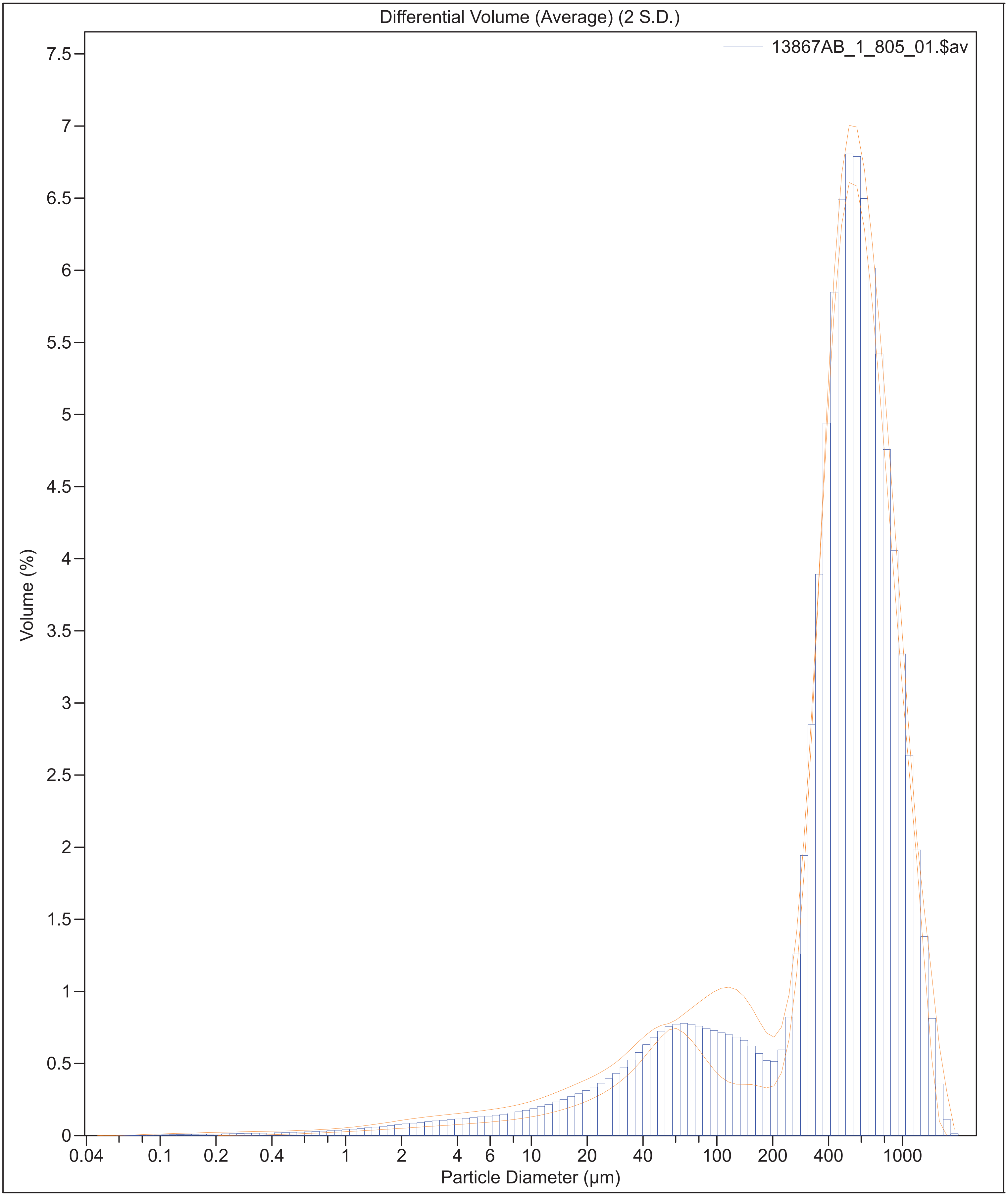
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13867AB_1_805_01.$av
	13867AB_1_805_01.$av
File ID:	13867AB_1
Sample ID:	13867AB_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_1_803_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_1_804_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_1_805_01.$ls

LS Particle Size Analyzer

10 Jul 2024 9:56

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 9:56

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13867AB_1_805_01.$av

Calculations from 0.040 µm to 2000 µm

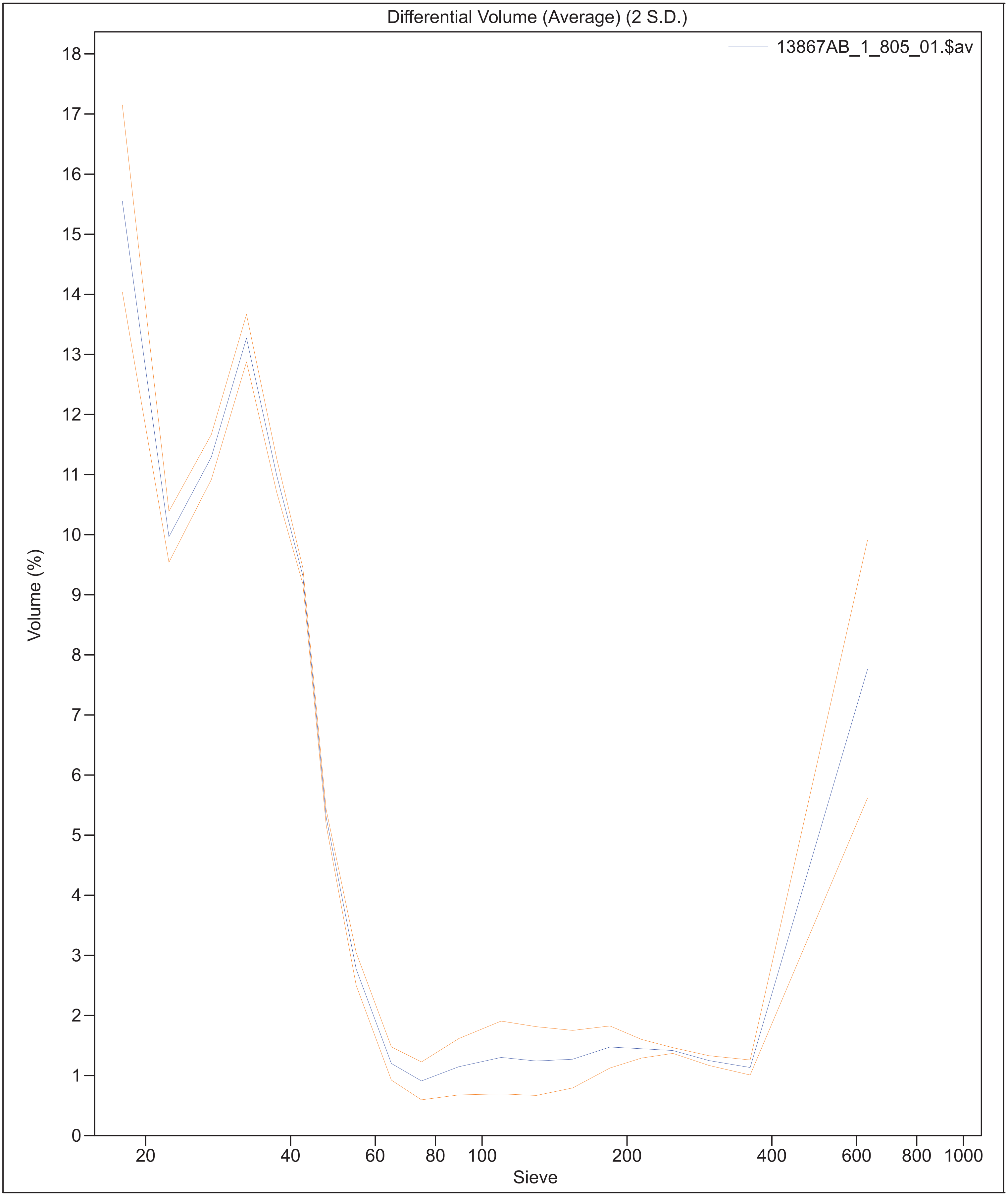
Volume:	100%		
Mean:	519.6 µm	S.D.:	334.1 µm
Median:	500.5 µm	Variance:	111.6e3 $µm^2$
Mean/Median ratio:	1.038	C.V.:	64.3%
Mode:	517.2 µm	Skewness:	0.491 Right skewed
		Kurtosis:	0.109 Leptokurtic

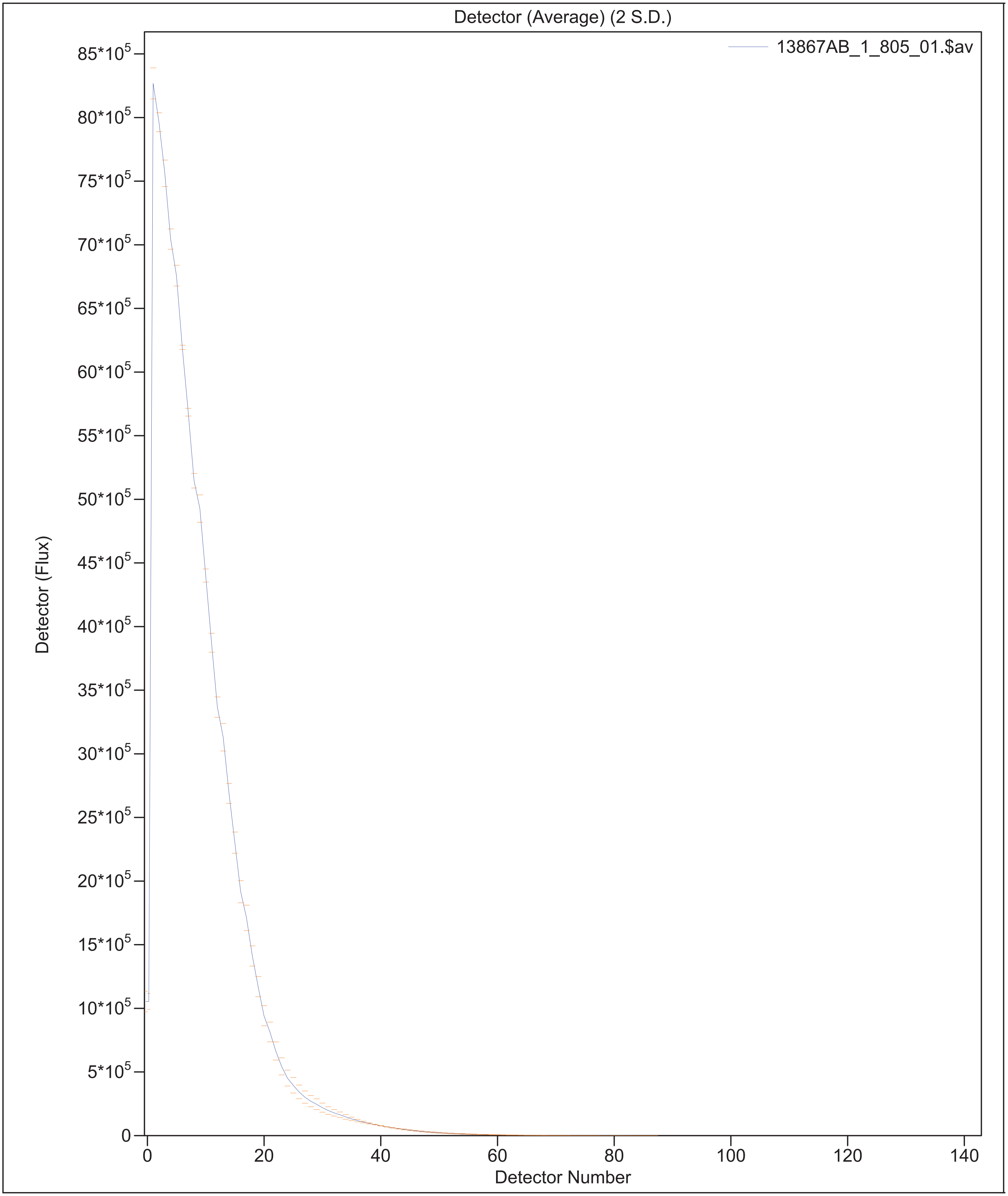
d_{10}: 52.05 µm d_{50}: 500.5 µm d_{90}: 965.9 µm

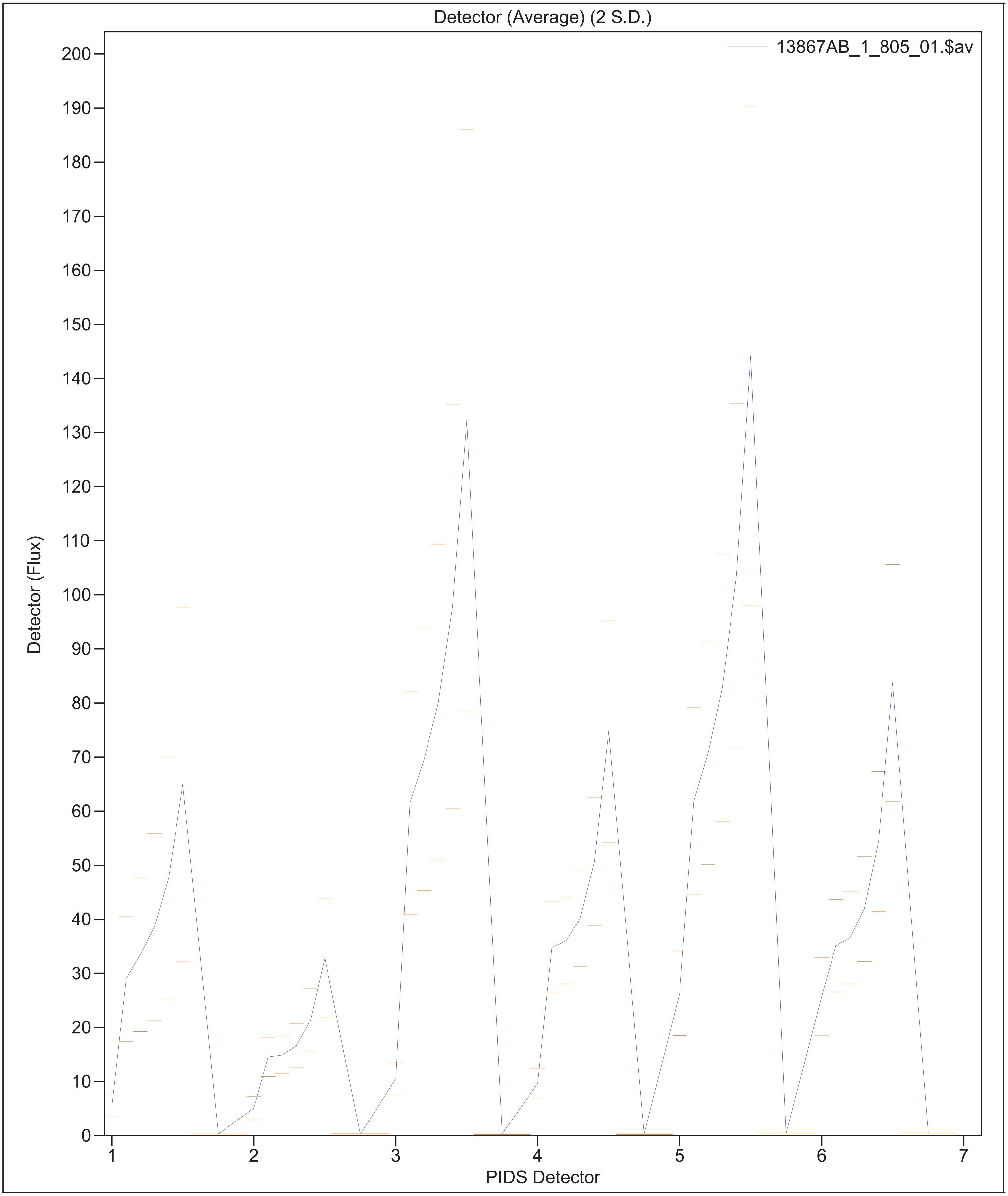
Folk and Ward Statistics (Phi)

Mean:	1.48	Median:	1.00	Deviation:	1.61
Skewness:	0.54	Kurtosis:	1.95		

<10%	<25%	<50%	<75%	<90%
52.05 µm	309.6 µm	500.5 µm	715.5 µm	965.9 µm


Differential Volume (Average) (2 S.D.)
13867AB_1_805_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Sieve
20
40
60
80
100
200
400
600
800
1000

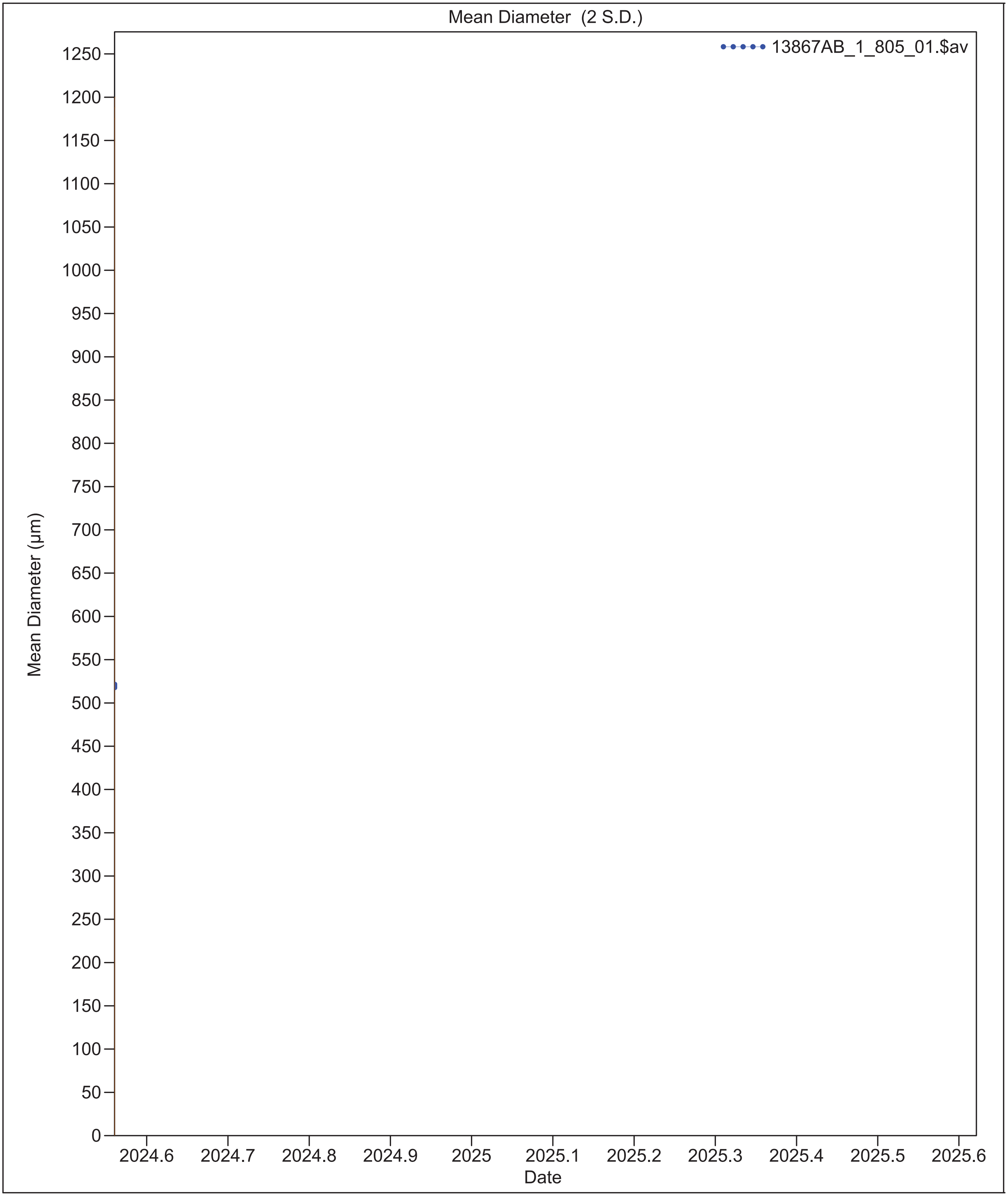

Detector (Average) (2 S.D.)
13867AB_1_805_01.$av
Detector (Flux)
85*10^5
80*10^5
75*10^5
70*10^5
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
13867AB_1_805_01.$av
Detector (Flux)
PIDS Detector
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
1
2
3
4
5
6
7

LS Particle Size Analyzer

10 Jul 2024 9:56

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13867AB_1_805_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	519.6 µm	1.931	515.7	523.4
Median:	500.5 µm	3.021	494.5	506.6
S.D.:	334.1 µm	5.266	323.5	344.6
Variance:	111.6e3 μm^2	3518	104.6e3	118.6e3
C.V.:	64.29%	0.775	62.74	65.85
Skewness:	0.488	0.102	0.285	0.691
Kurtosis:	0.097	0.197	-0.297	0.490
d_{10}:	52.36 µm	7.809	36.74	67.98
d_{50}:	500.5 µm	3.021	494.5	506.6
d_{90}:	966.1 µm	9.121	947.9	984.3

LS Particle Size Analyzer

10 Jul 2024 10:07

Beckman Coulter LS 13 320

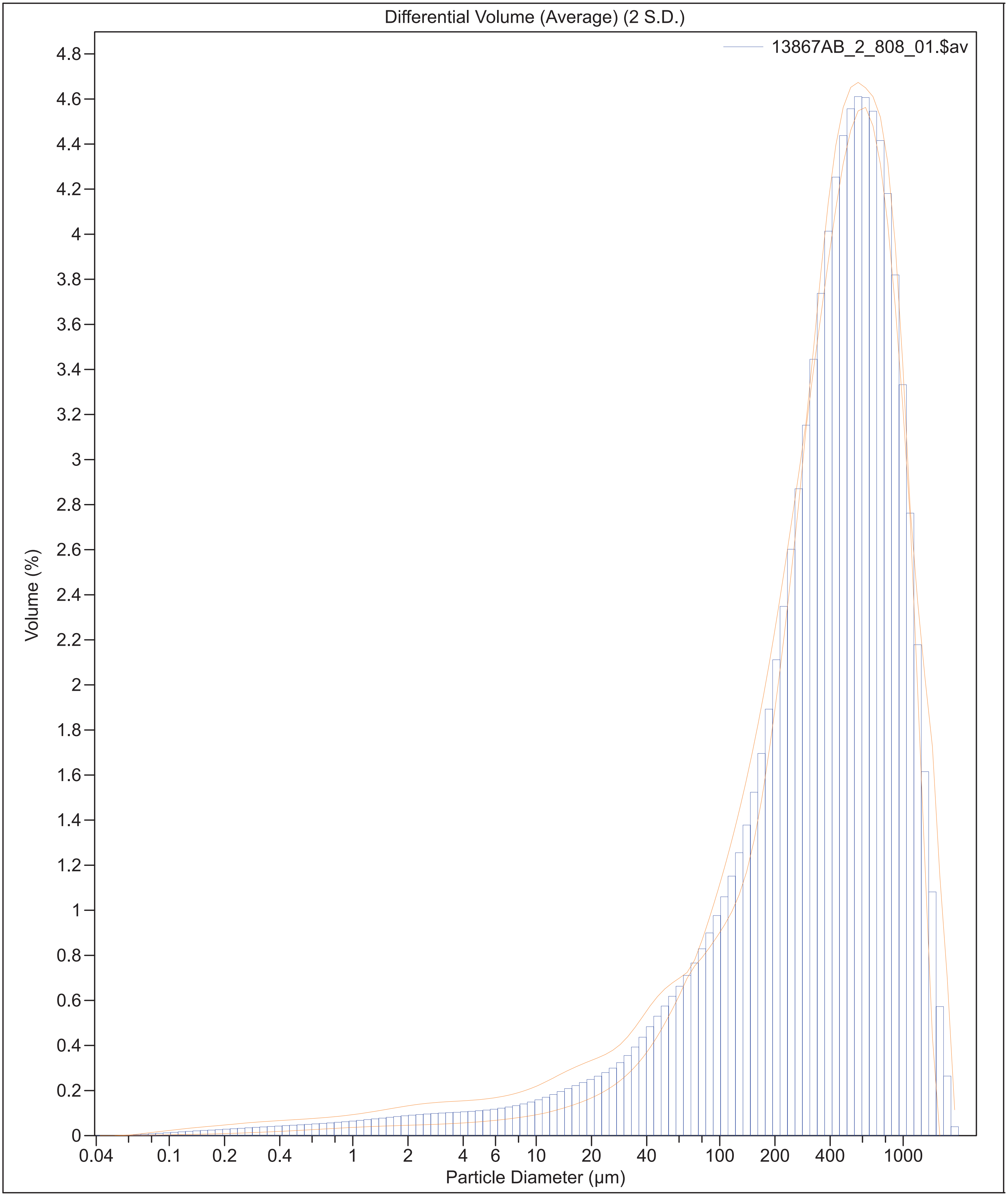
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13867AB_2_808_01.$av		
	13867AB_2_808_01.$av		
File ID:	13867AB_2		
Sample ID:	13867AB_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_2_806_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_2_807_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_2_808_01.$ls

LS Particle Size Analyzer

10 Jul 2024 10:07

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13867AB_2_808_01.$av

Calculations from 0.040 µm to 2000 µm

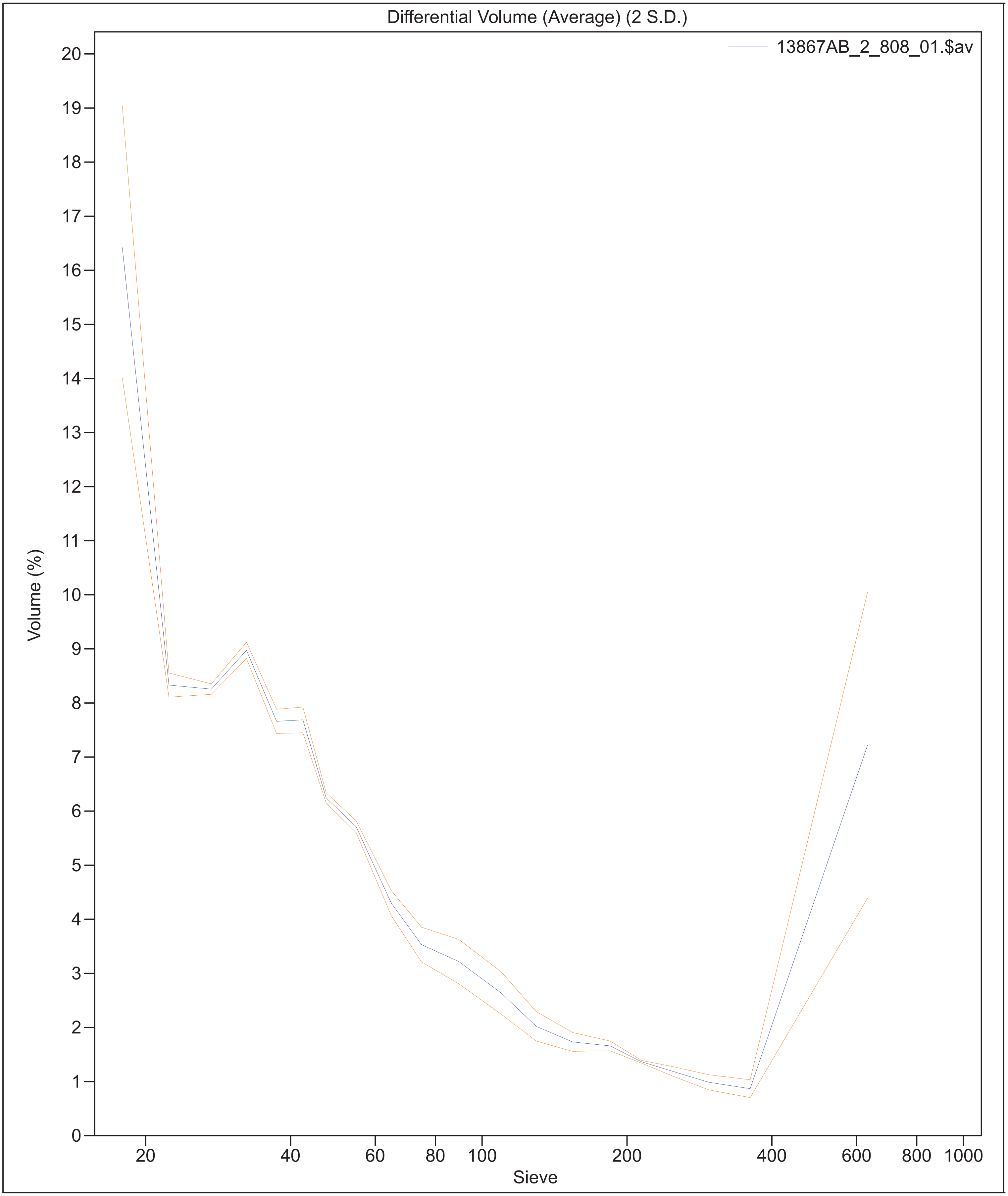
Volume:	100%		
Mean:	485.3 µm	S.D.:	360.3 µm
Median:	421.6 µm	Variance:	129.8e3 μm^2
Mean/Median ratio:	1.151	C.V.:	74.2%
Mode:	567.7 µm	Skewness:	0.813 Right skewed
		Kurtosis:	0.231 Leptokurtic

d_{10}: 60.79 µm d_{50}: 421.6 µm d_{90}: 999.7 µm

Folk and Ward Statistics (Phi)

Mean:	1.53	Median:	1.25	Deviation:	1.61
Skewness:	0.39	Kurtosis:	1.32		

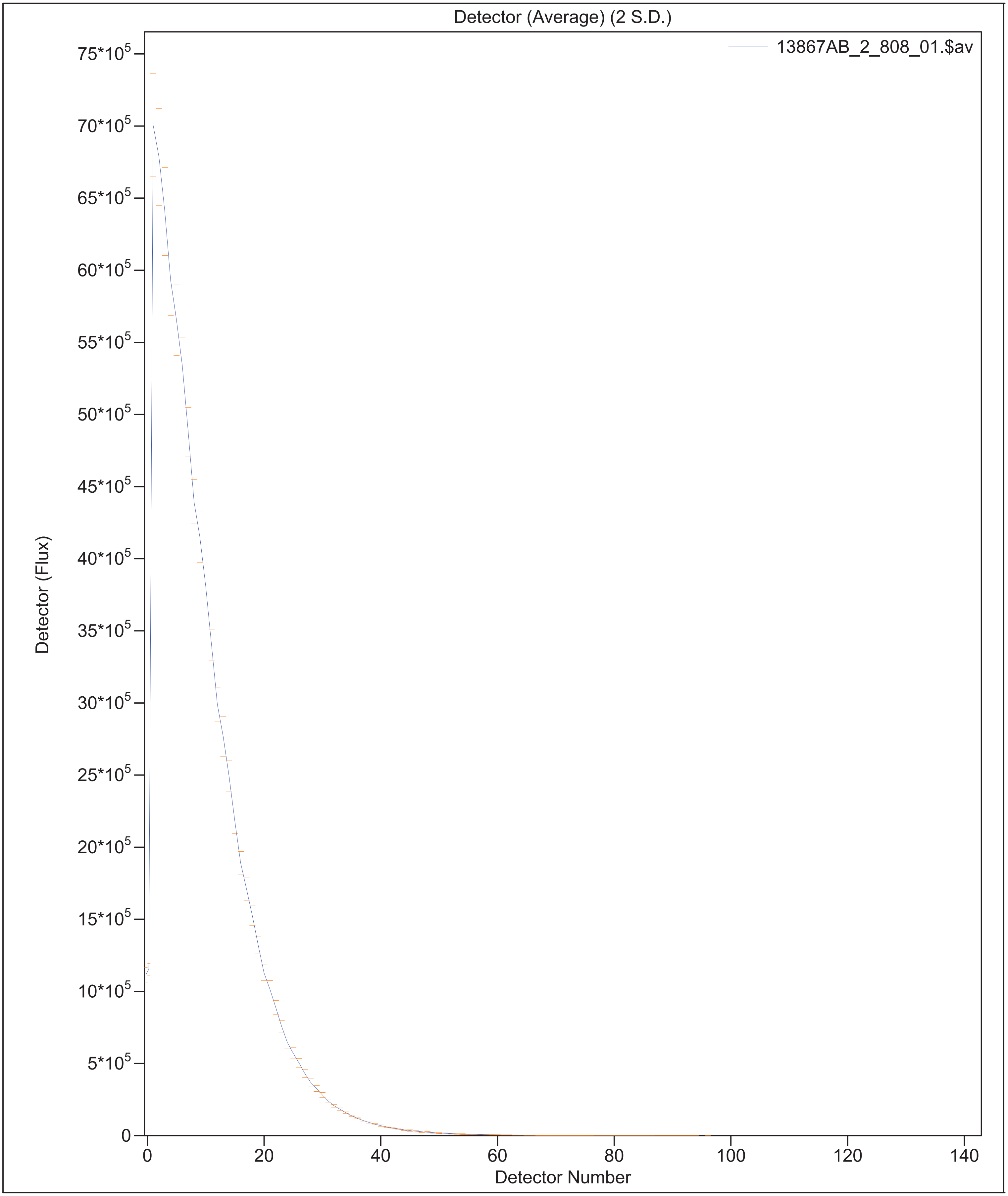
<10%	<25%	<50%	<75%	<90%
60.79 µm	199.2 µm	421.6 µm	706.5 µm	999.7 µm


Differential Volume (Average) (2 S.D.)
13867AB_2_808_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

10 Jul 2024 10:07

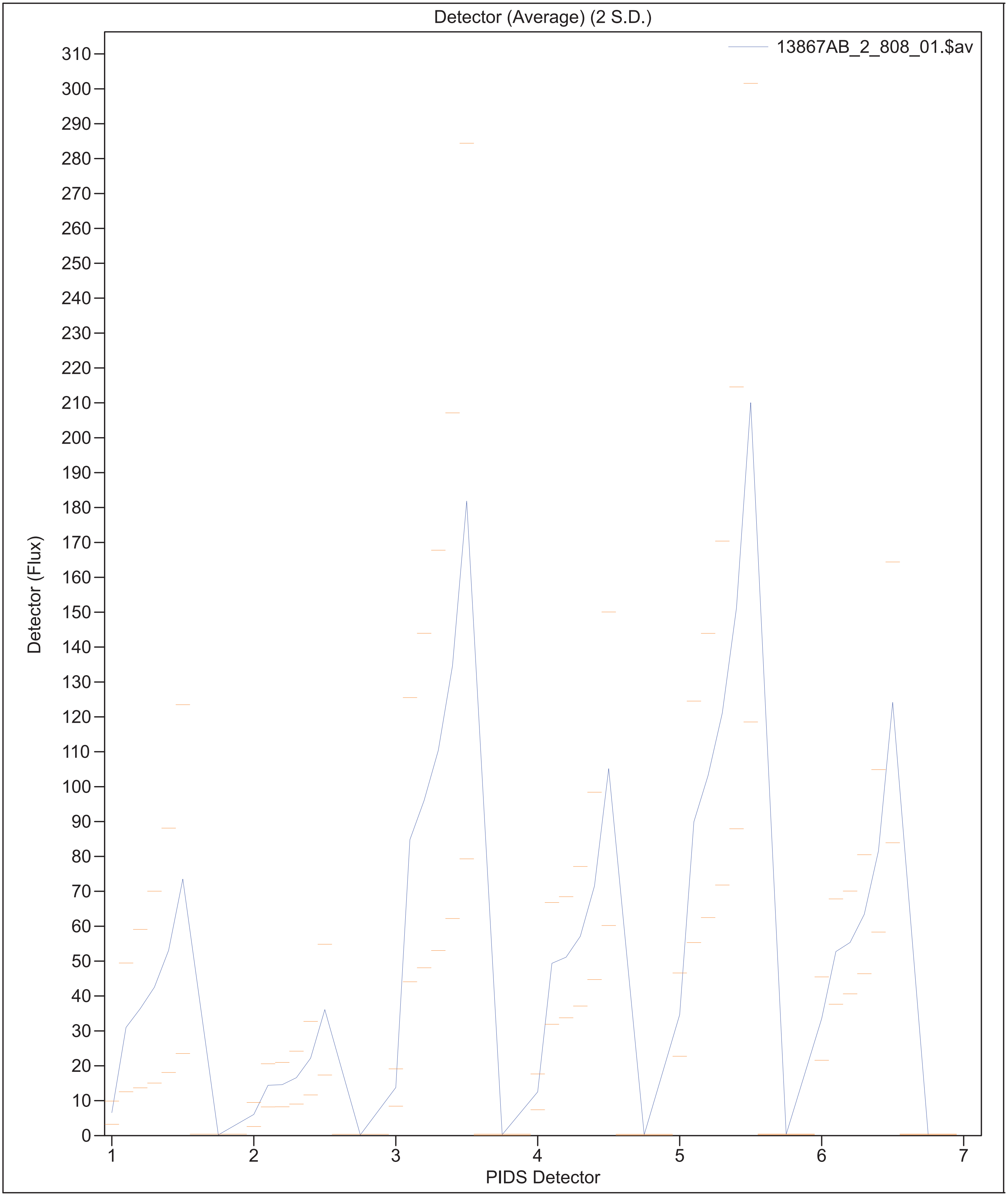
Beckman Coulter LS 13 320

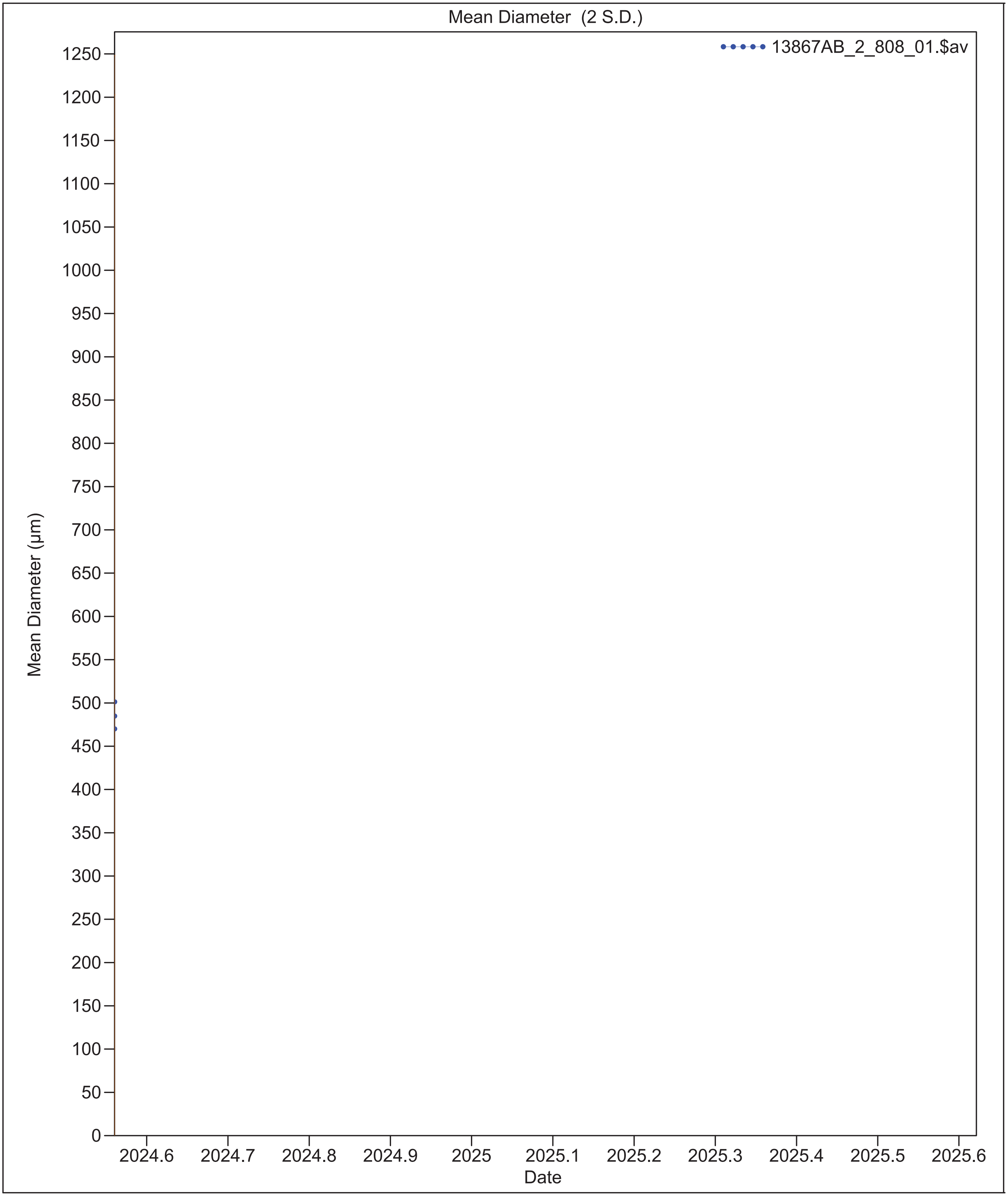


LS Particle Size Analyzer

10 Jul 2024 10:07

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
13867AB_2_808_01.$av
Mean Diameter (µm)
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

BECKMAN COULTER™

LS Particle Size Analyzer

10 Jul 2024 10:07

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13867AB_2_808_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	485.3 µm	15.58	454.2	516.5
Median:	421.6 µm	7.448	406.7	436.5
S.D.:	359.9 µm	13.38	333.1	386.6
Variance:	129.6e3 μm^2	9646	110.3e3	148.9e3
C.V.:	74.14%	0.378	73.39	74.90
Skewness:	0.800	0.096	0.607	0.992
Kurtosis:	0.176	0.242	-0.309	0.660
d_{10}:	61.25 µm	13.46	34.33	88.17
d_{50}:	421.6 µm	7.448	406.7	436.5
d_{90}:	1000.0 µm	32.22	935.5	1064

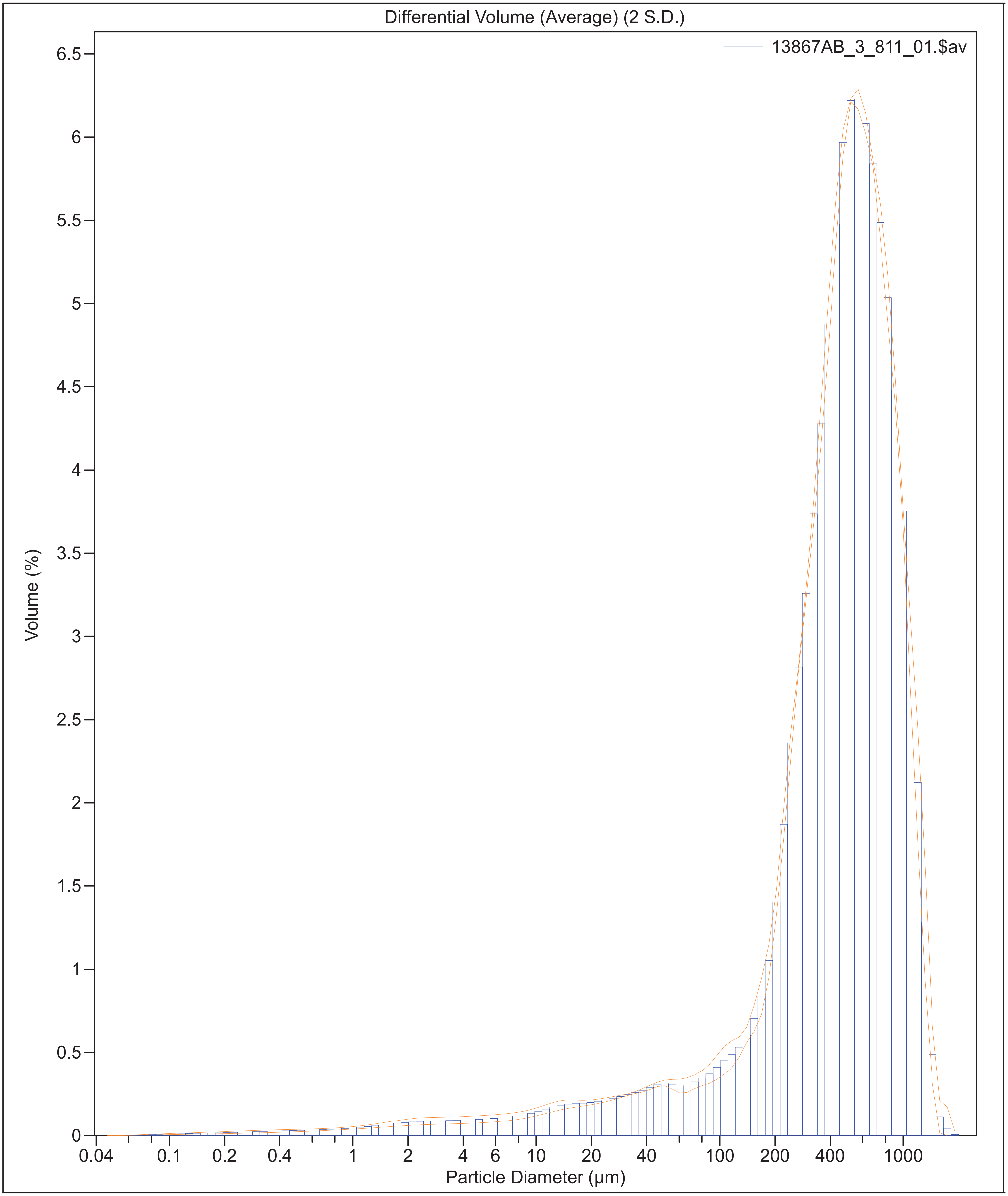
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13867AB_3_811_01.$av
	13867AB_3_811_01.$av
File ID:	13867AB_3
Sample ID:	13867AB_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Run length:	53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_3_809_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_3_810_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_3_811_01.$ls

LS Particle Size Analyzer

10 Jul 2024 10:17

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13867AB_3_811_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	527.9 µm	S.D.:	314.6 µm
Median:	494.4 µm	Variance:	98986 μm^2
Mean/Median ratio:	1.068	C.V.:	59.6%
Mode:	567.7 µm	Skewness:	0.489 Right skewed
		Kurtosis:	-0.071 Platykurtic

d_{10}: 119.1 µm d_{50}: 494.4 µm d_{90}: 966.2 µm

Folk and Ward Statistics (Phi)

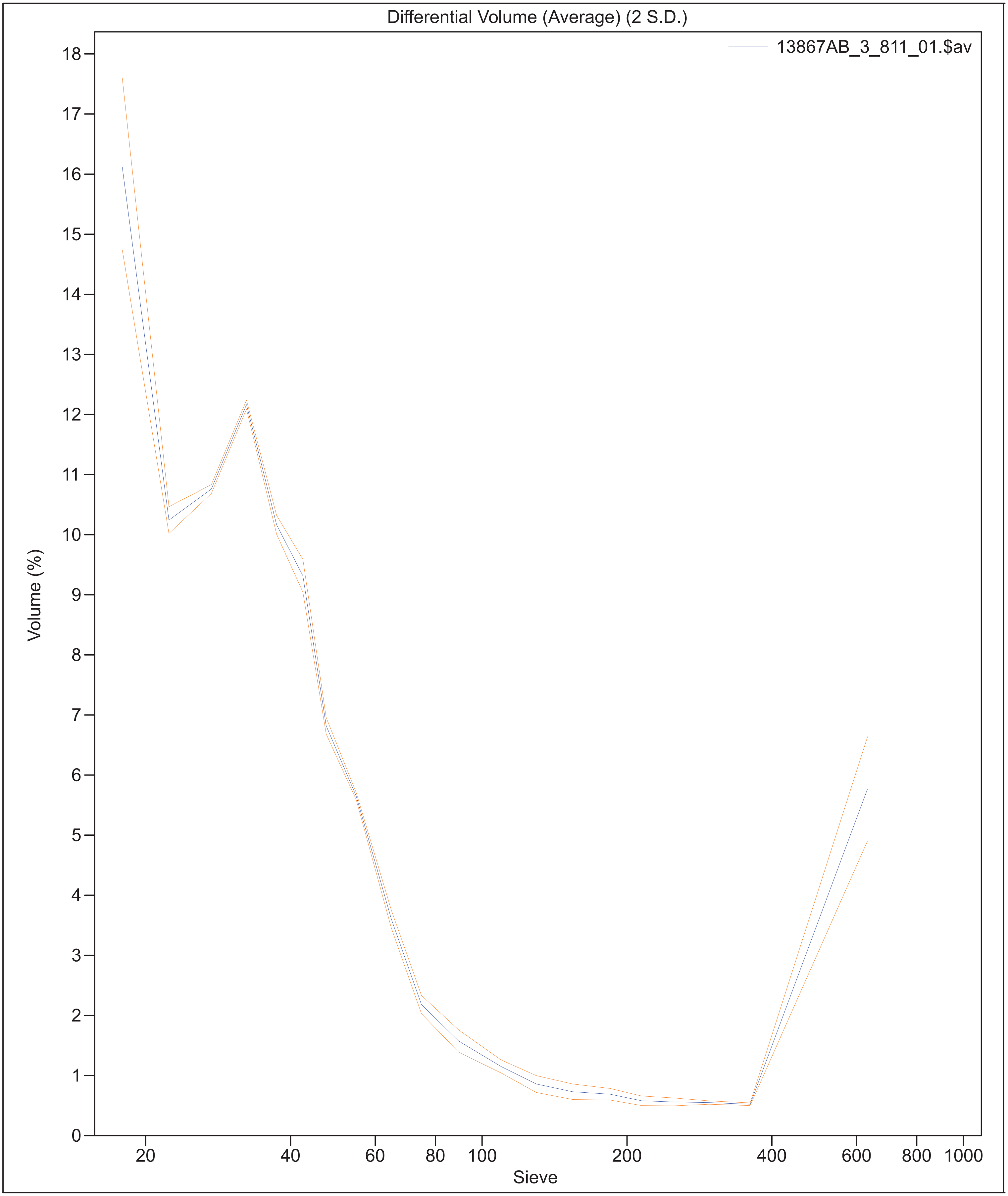
Mean:	1.14	Median:	1.02	Deviation:	1.29
Skewness:	0.38	Kurtosis:	1.73		

<10%	<25%	<50%	<75%	<90%
119.1 µm	304.9 µm	494.4 µm	726.1 µm	966.2 µm

LS Particle Size Analyzer

10 Jul 2024 10:17

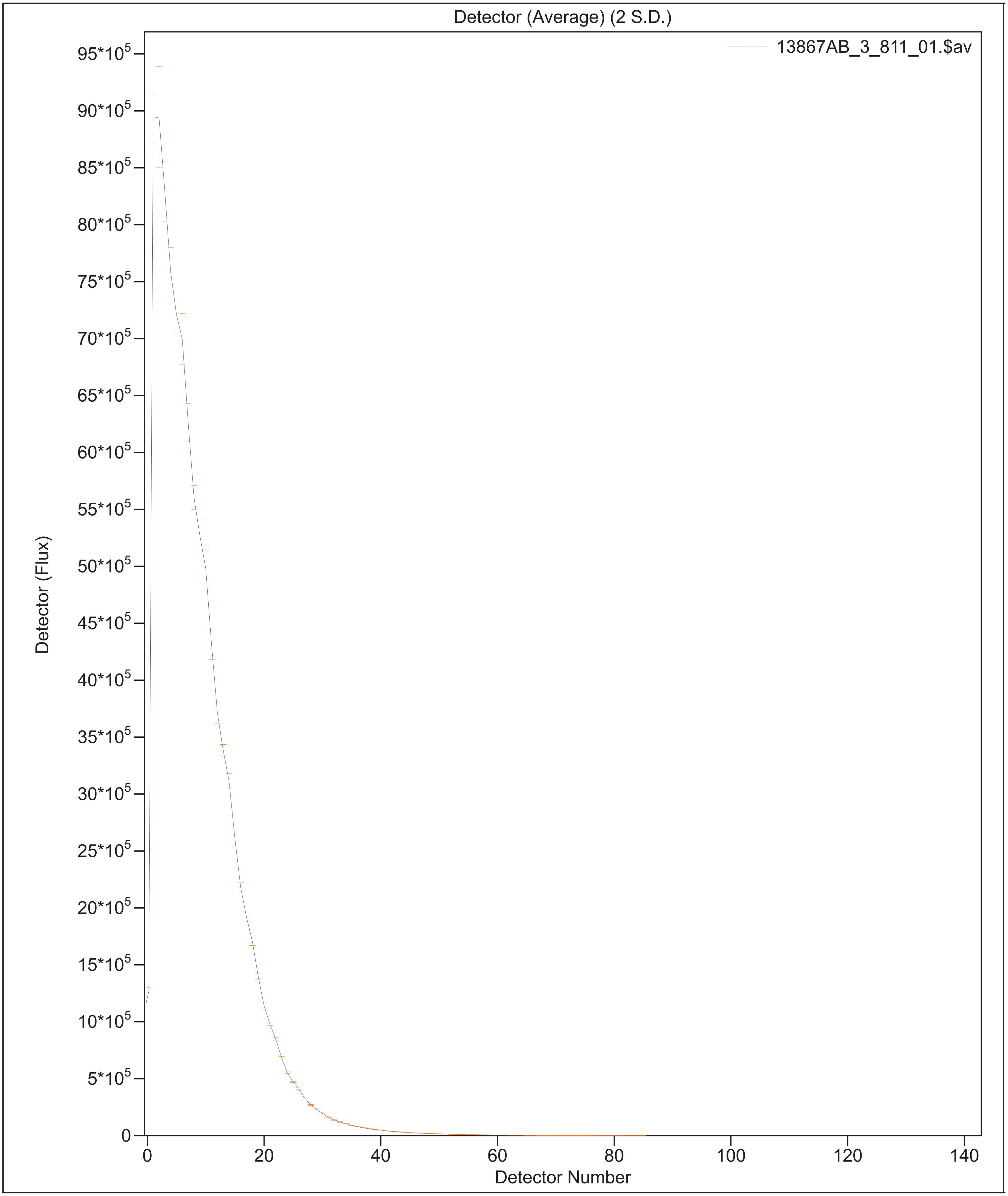
Beckman Coulter LS 13 320

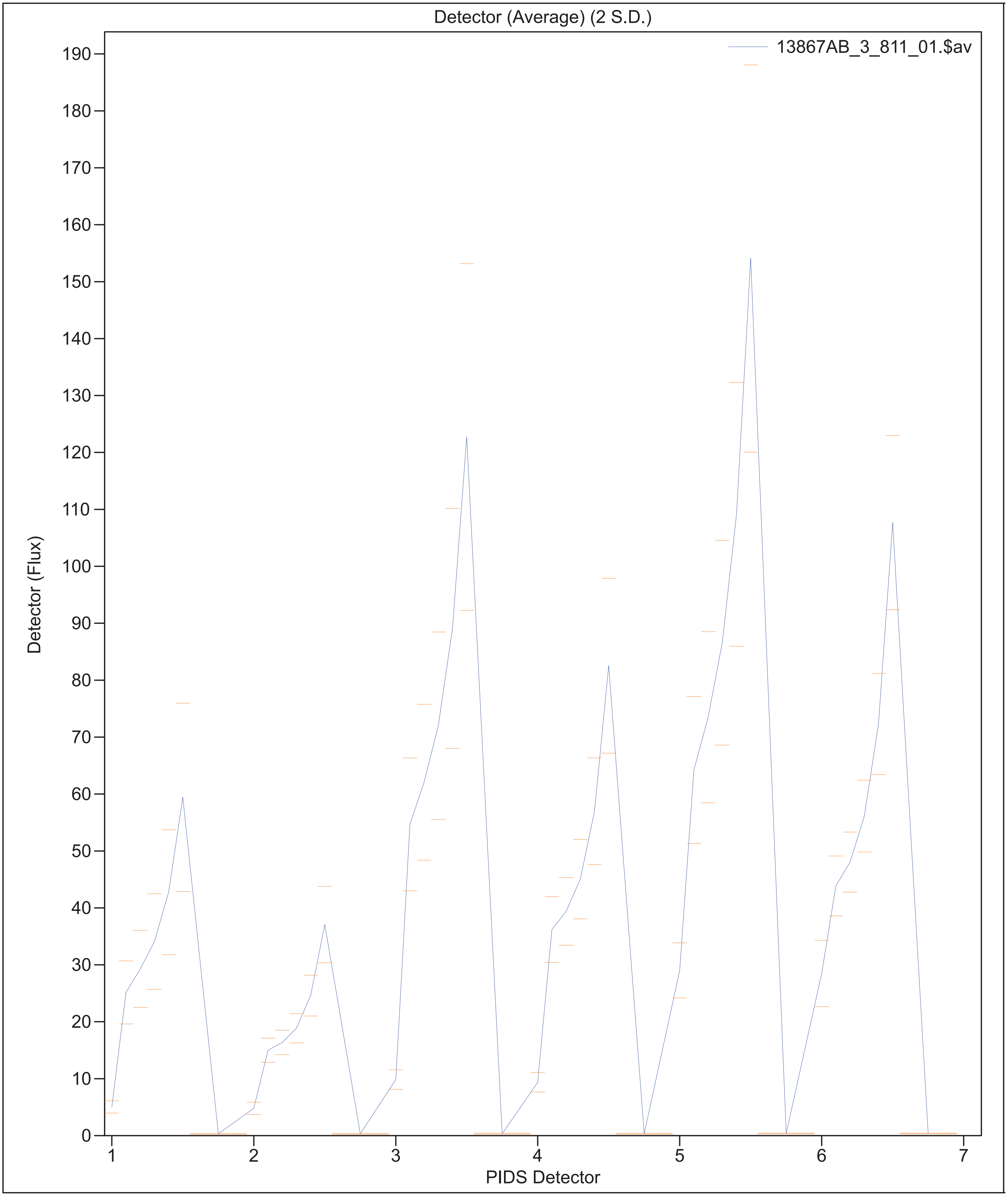


LS Particle Size Analyzer

10 Jul 2024 10:17

Beckman Coulter LS 13 320

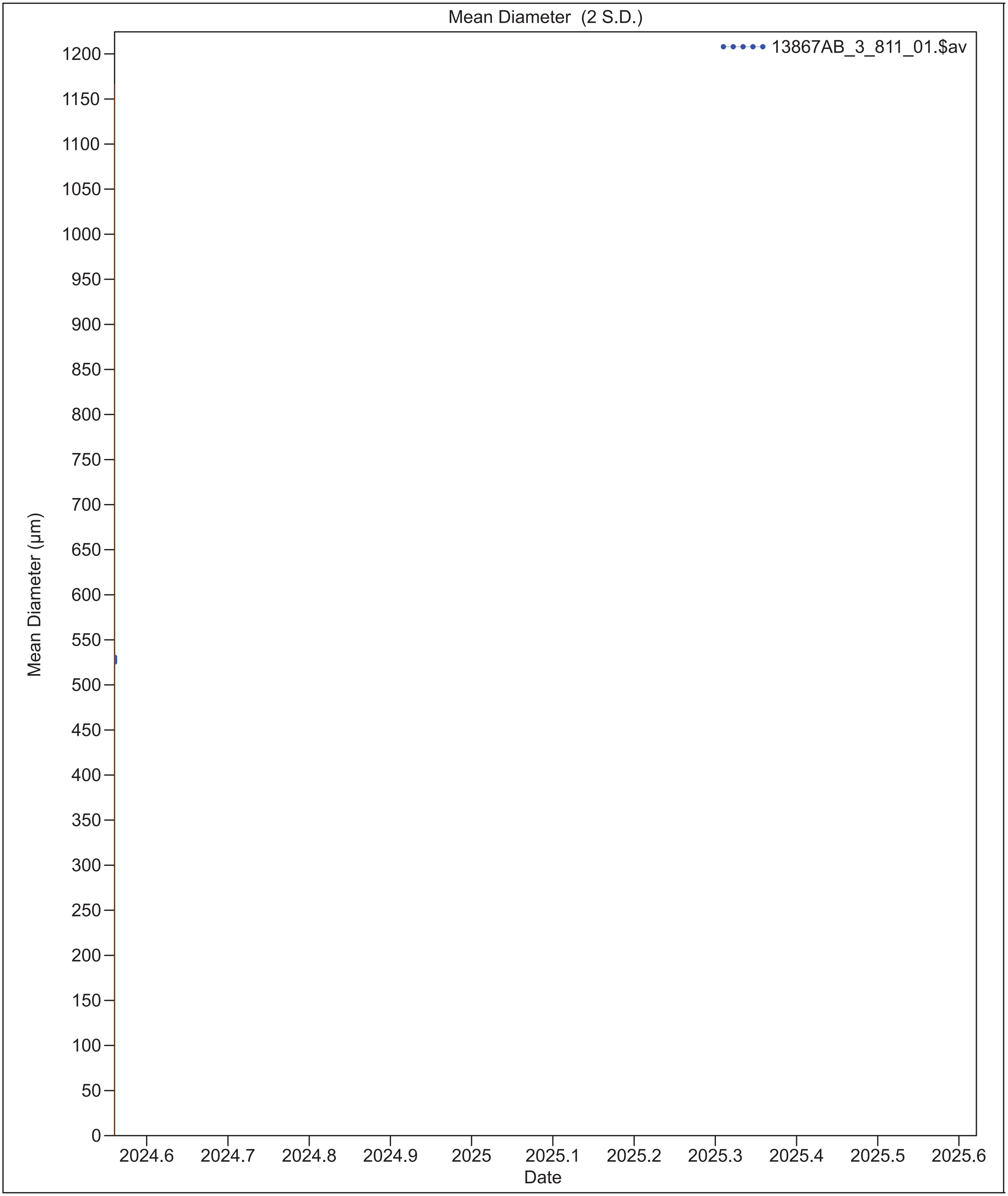



Detector (Average) (2 S.D.)
13867AB_3_811_01.$av
Detector (Flux)
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 10:17

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13867AB_3_811_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	527.9 µm	2.755	522.4	533.4
Median:	494.4 µm	2.690	489.0	499.8
S.D.:	314.6 µm	2.835	308.9	320.3
Variance:	98981 μm^2	1790	95400	102.6e3
C.V.:	59.60%	0.335	58.93	60.27
Skewness:	0.488	0.026	0.436	0.541
Kurtosis:	-0.070	0.145	-0.359	0.219
d_{10}:	119.0 µm	4.735	109.5	128.5
d_{50}:	494.4 µm	2.690	489.0	499.8
d_{90}:	966.1 µm	11.16	943.8	988.5

LS Particle Size Analyzer

10 Jul 2024 10:38

Beckman Coulter LS 13 320

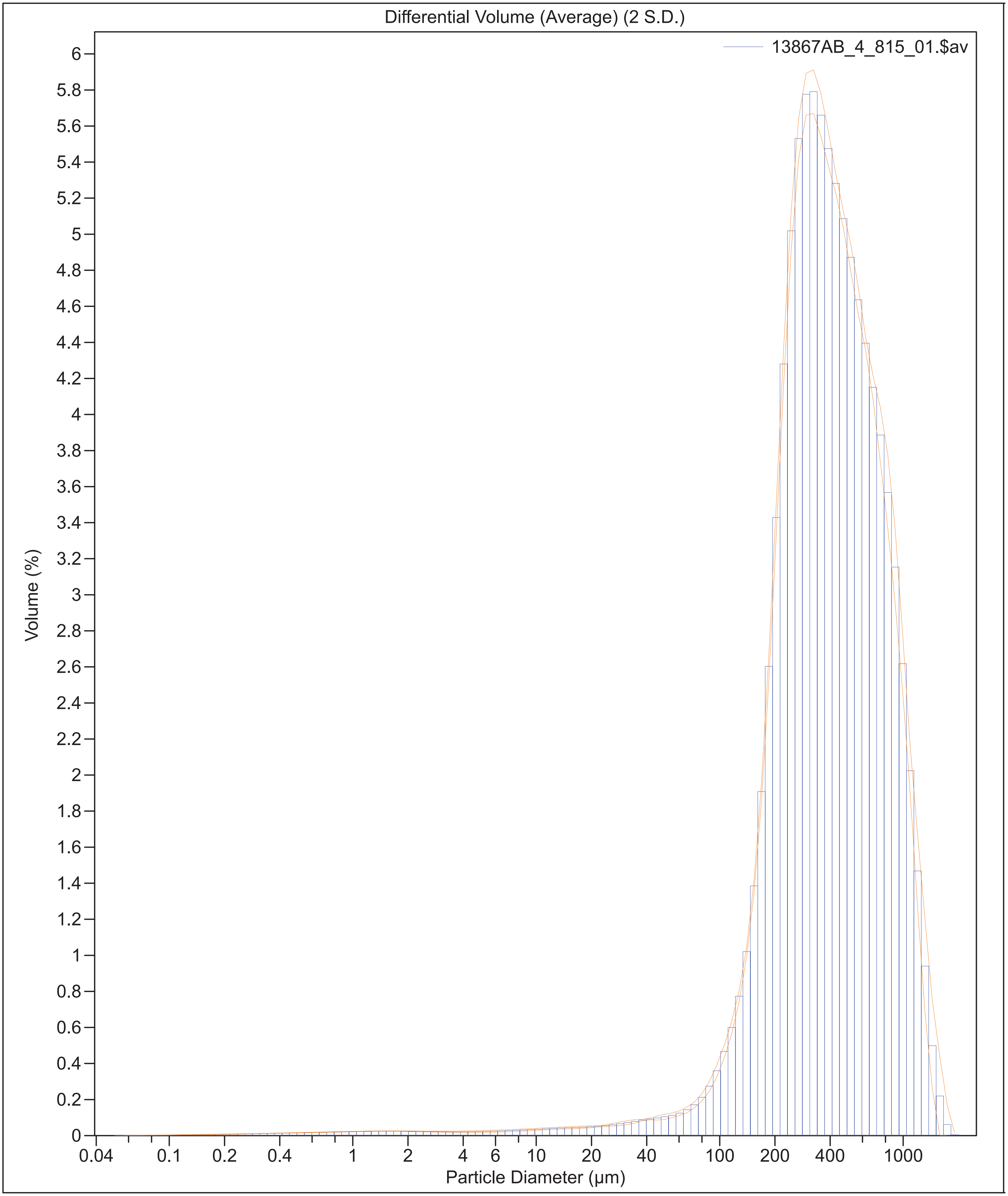
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13867AB_4_815_01.$av		
	13867AB_4_815_01.$av		
File ID:	13867AB_4		
Sample ID:	13867AB_4		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 4 files
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_4_812_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_4_813_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_4_814_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_4_815_01.$ls

LS Particle Size Analyzer

10 Jul 2024 10:38

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 10:38

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13867AB_4_815_01.$av

Calculations from 0.040 µm to 2000 µm

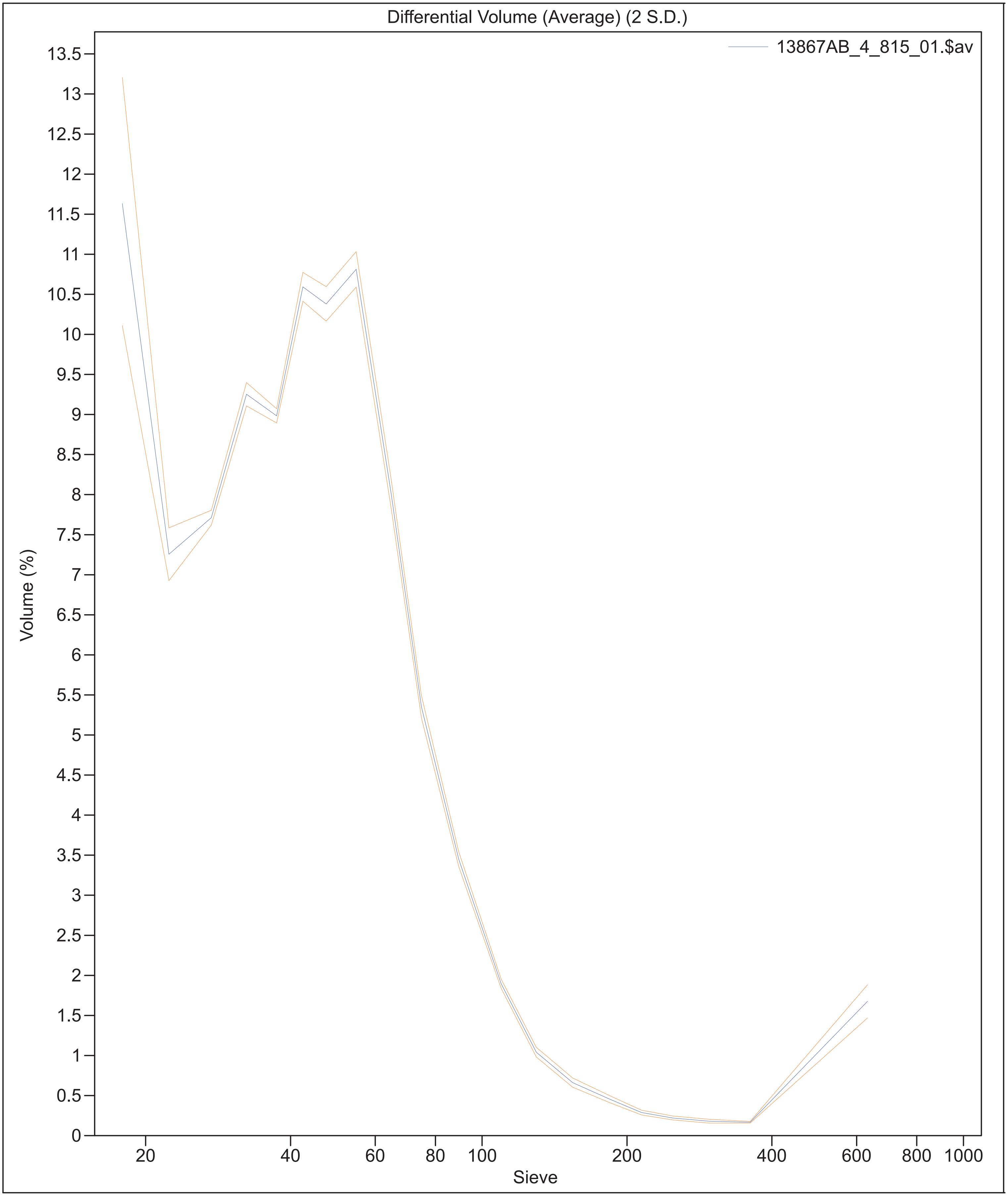
Volume:	100%		
Mean:	467.4 µm	S.D.:	289.5 µm
Median:	388.7 µm	Variance:	83829 µm^2
Mean/Median ratio:	1.202	C.V.:	61.9%
Mode:	324.4 µm	Skewness:	1.109 Right skewed
		Kurtosis:	1.061 Leptokurtic

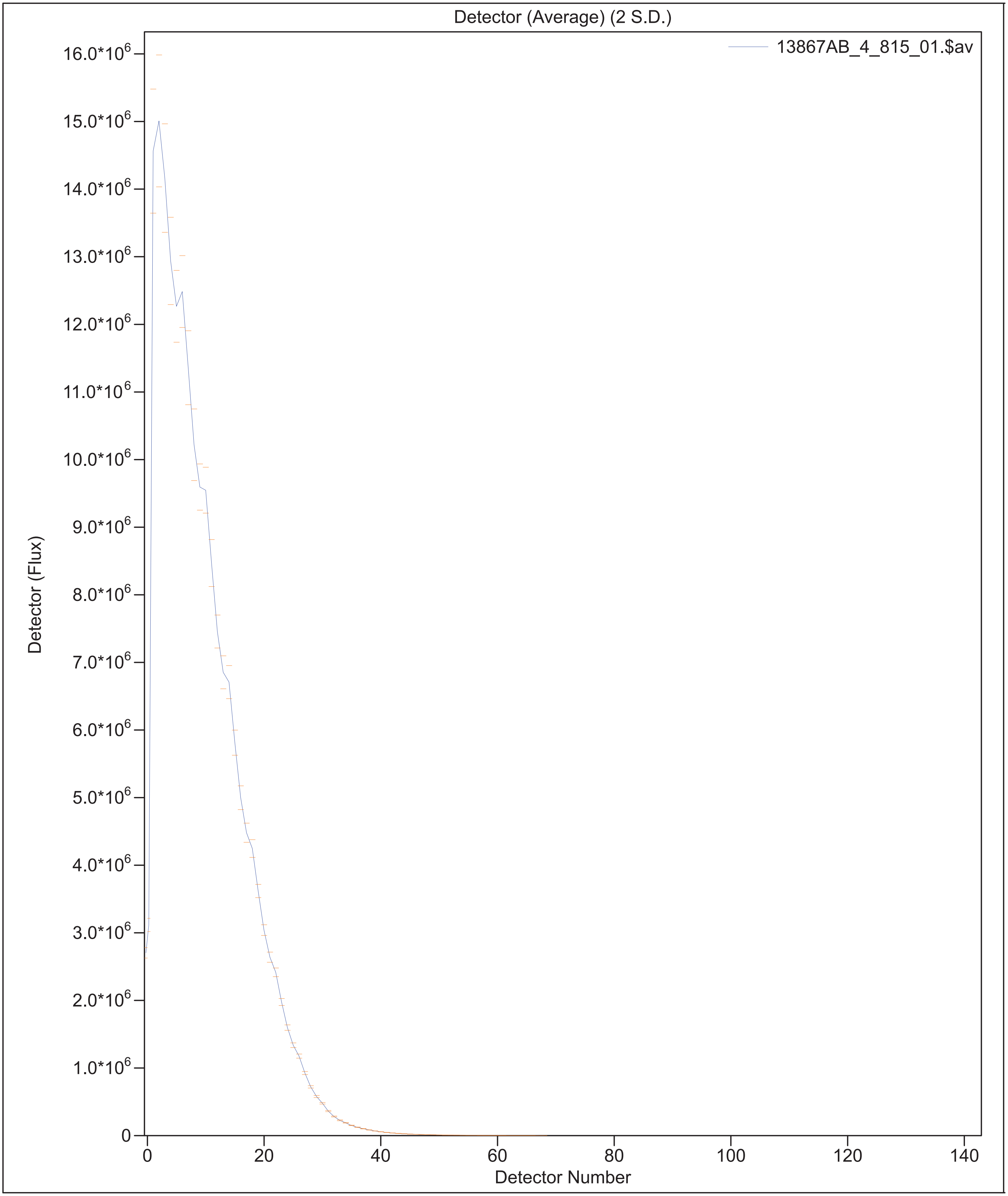
d_{10}: 179.8 µm d_{50}: 388.7 µm d_{90}: 890.4 µm

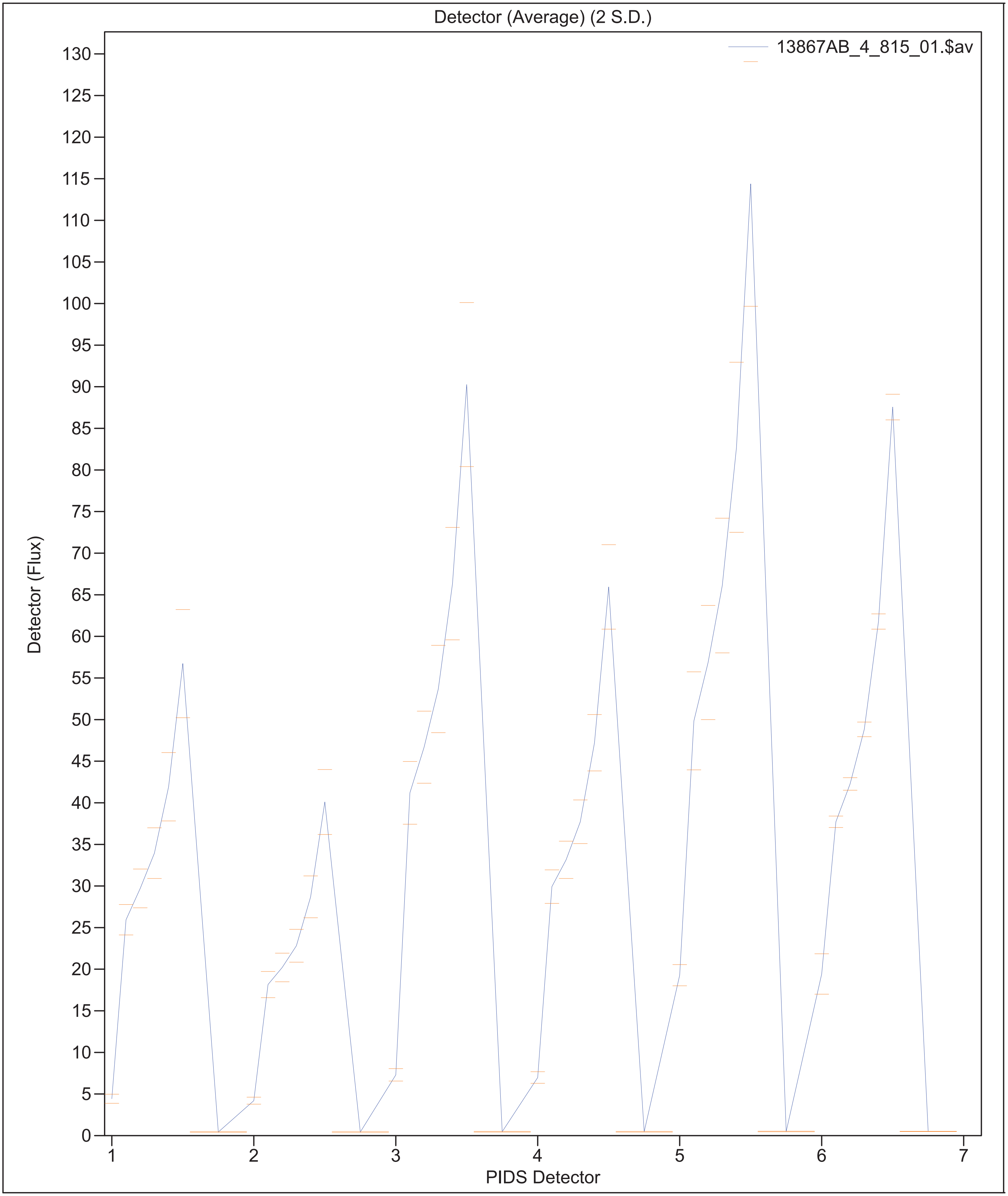
Folk and Ward Statistics (Phi)

Mean:	1.32	Median:	1.36	Deviation:	0.91
Skewness:	-0.01	Kurtosis:	0.97		

<10%	<25%	<50%	<75%	<90%
179.8 µm	257.4 µm	388.7 µm	621.2 µm	890.4 µm


Differential Volume (Average) (2 S.D.)
13867AB_4_815_01.$av
Volume (%)
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve

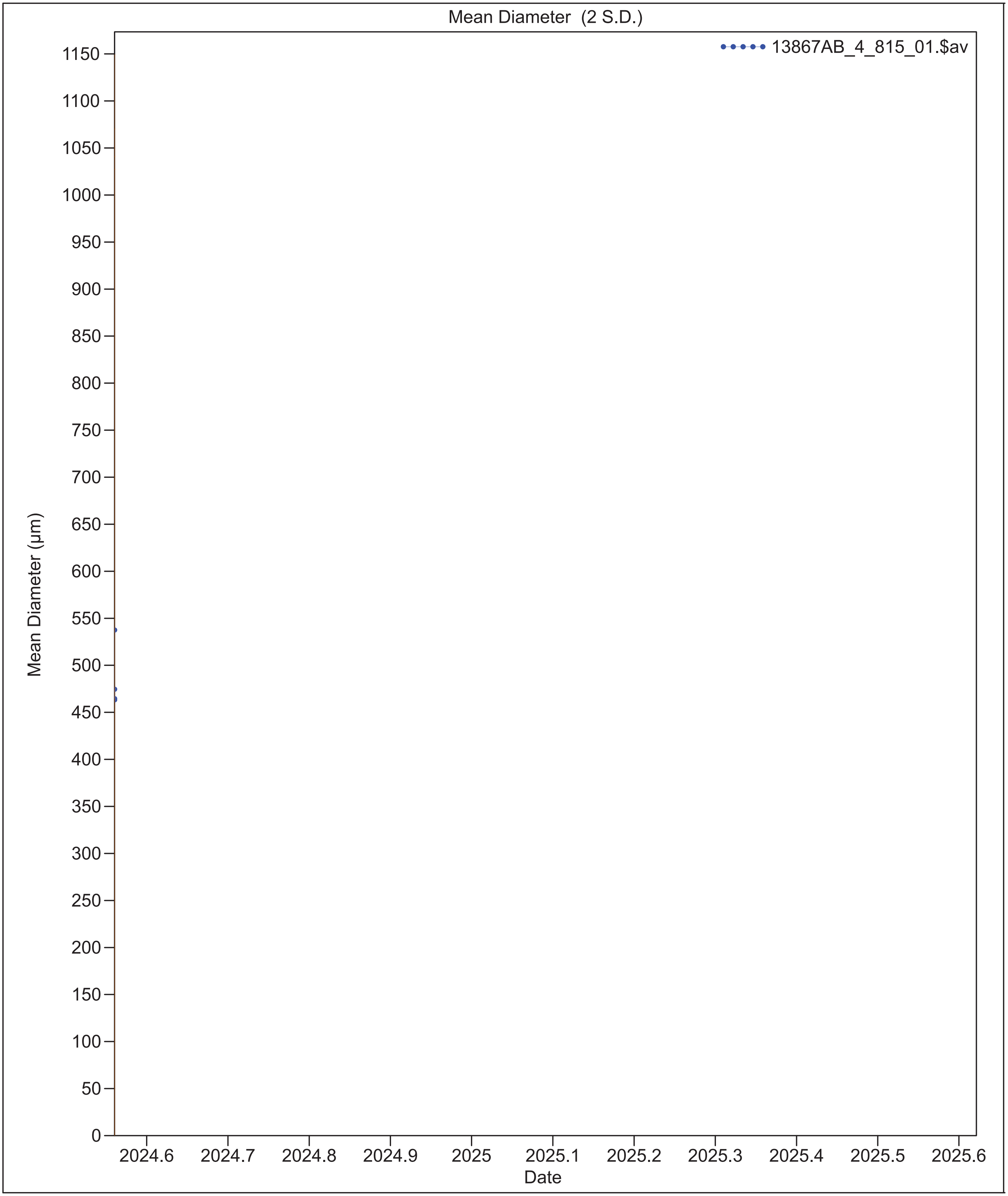

Detector (Average) (2 S.D.)
13867AB_4_815_01.$av
Detector (Flux)
16.0*10^6
15.0*10^6
14.0*10^6
13.0*10^6
12.0*10^6
11.0*10^6
10.0*10^6
9.0*10^6
8.0*10^6
7.0*10^6
6.0*10^6
5.0*10^6
4.0*10^6
3.0*10^6
2.0*10^6
1.0*10^6
0
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
13867AB_4_815_01.$av
Detector (Flux)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 10:38

Beckman Coulter LS 13 320



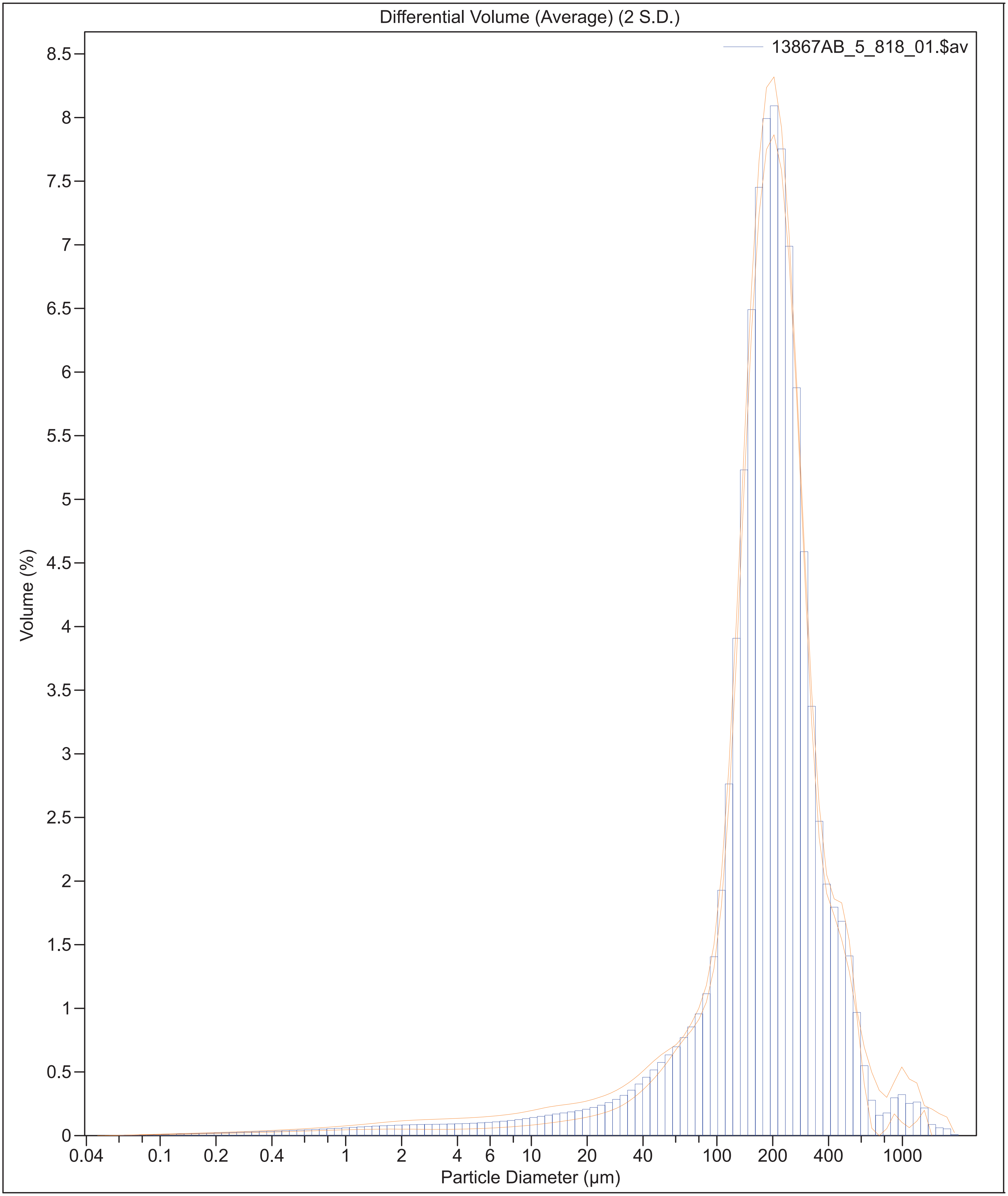
Volume Statistics (Arithmetic) Average of 4 files 13867AB_4_815_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	484.9 µm	35.38	414.1	555.7
Median:	418.1 µm	58.81	300.5	535.7
S.D.:	293.5 µm	10.51	272.5	314.6
Variance:	86250 μm^2	6179	73892	98609
C.V.:	60.67%	2.615	55.44	65.90
Skewness:	0.958	0.296	0.366	1.551
Kurtosis:	0.815	0.478	-0.141	1.772
d_{10}:	173.2 µm	13.13	147.0	199.5
d_{50}:	418.1 µm	58.81	300.5	535.7
d_{90}:	906.6 µm	34.55	837.5	975.7

File name:	C:\LS13320\Samples\NOAA-CZM FY23\13867AB_5_818_01.$av
	13867AB_5_818_01.$av
File ID:	13867AB_5
Sample ID:	13867AB_5
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_5_816_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_5_817_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13867AB_5_818_01.$ls


Differential Volume (Average) (2 S.D.)
13867AB_5_818_01.$av
Volume (%)
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (µm)

Volume Statistics (Arithmetic) 13867AB_5_818_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	223.8 µm	S.D.:	171.3 µm
Median:	193.6 µm	Variance:	29352 $µm^2$
Mean/Median ratio:	1.156	C.V.:	76.5%
Mode:	203.5 µm	Skewness:	3.229 Right skewed
		Kurtosis:	17.13 Leptokurtic

d_{10}: 68.09 µm d_{50}: 193.6 µm d_{90}: 383.6 µm

Folk and Ward Statistics (Phi)

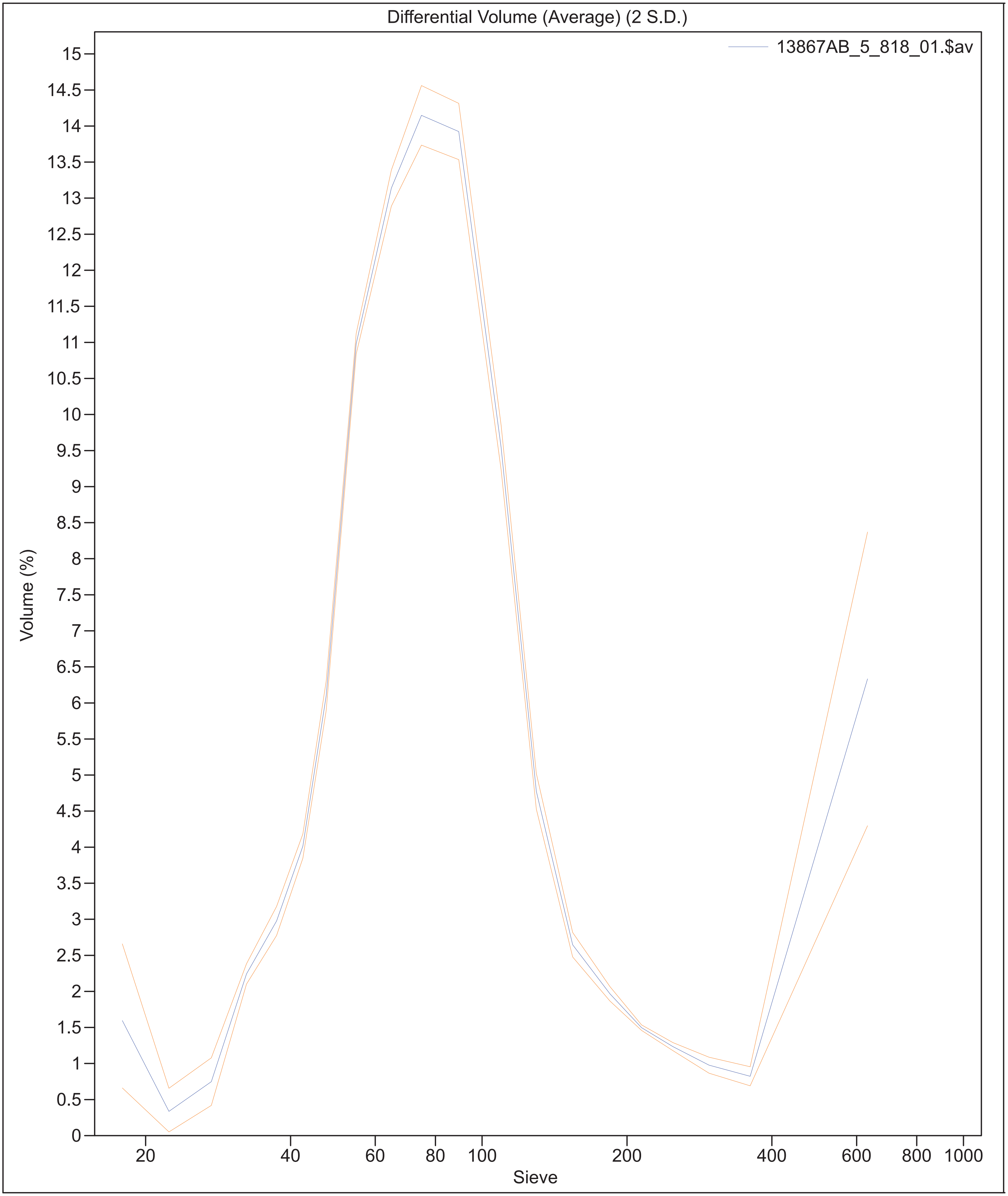
Mean:	2.42	Median:	2.37	Deviation:	1.03
Skewness:	0.23	Kurtosis:	1.87		

<10%	<25%	<50%	<75%	<90%
68.09 µm	138.4 µm	193.6 µm	265.0 µm	383.6 µm

LS Particle Size Analyzer

10 Jul 2024 10:48

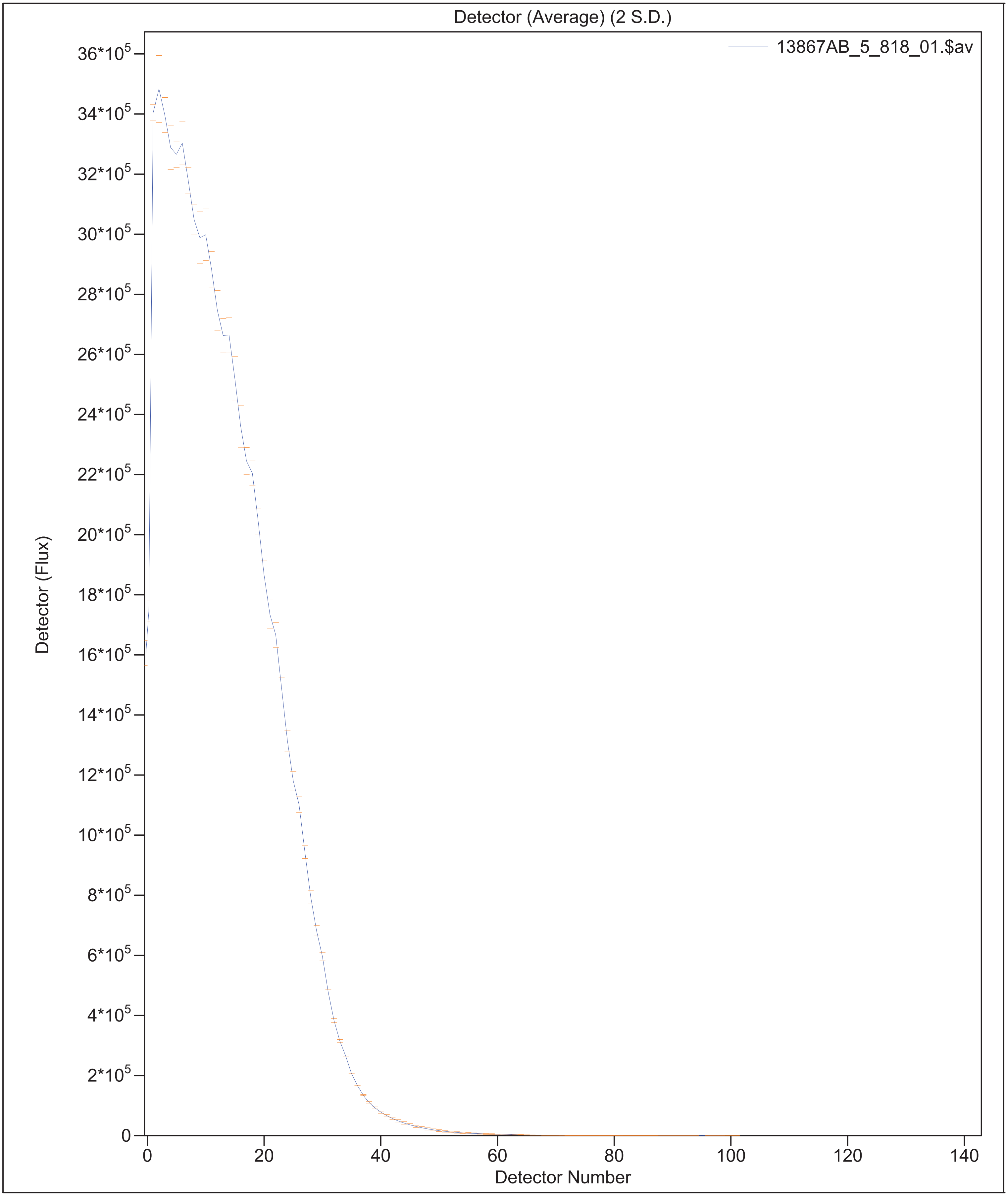
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 10:48

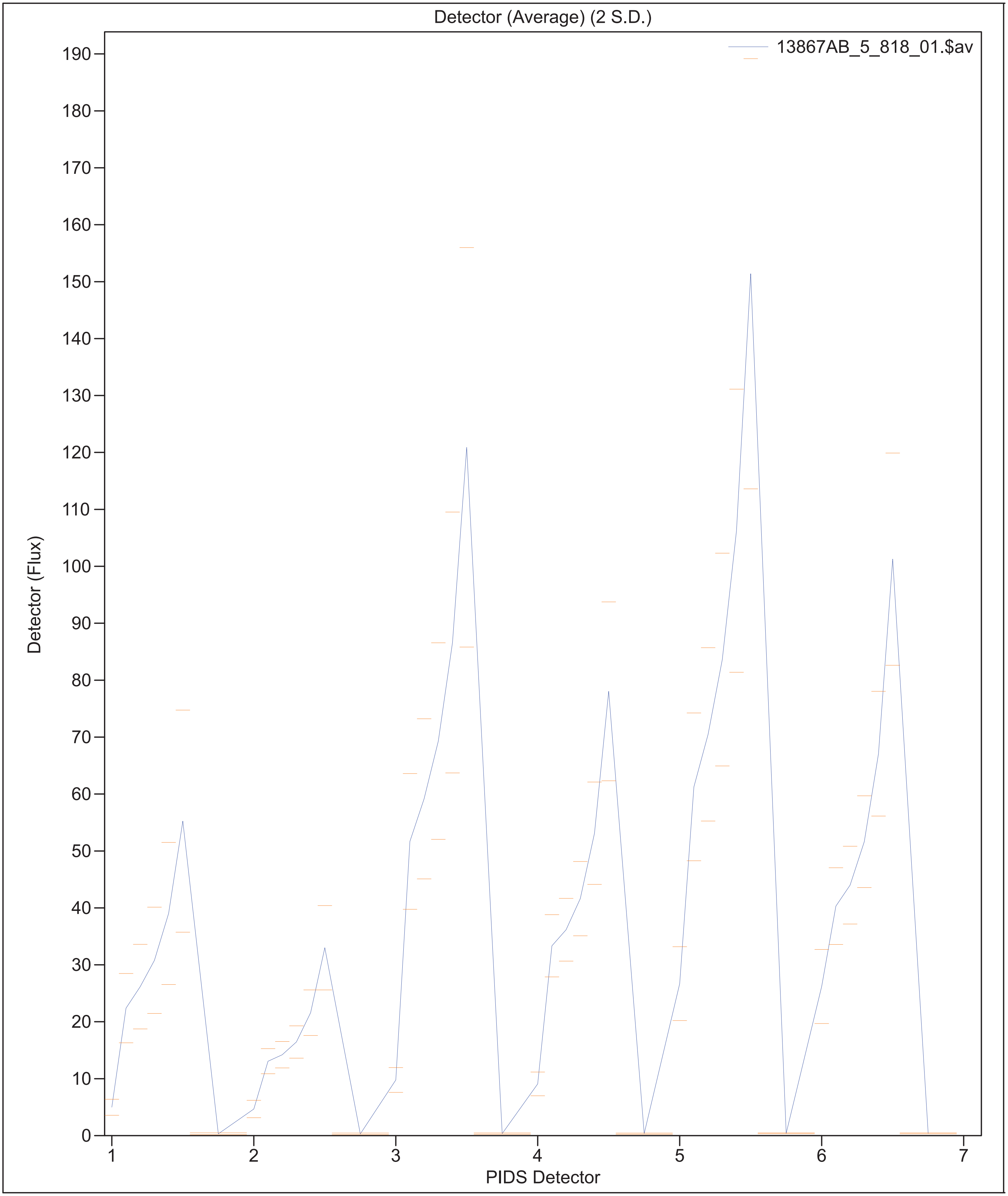
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 10:48

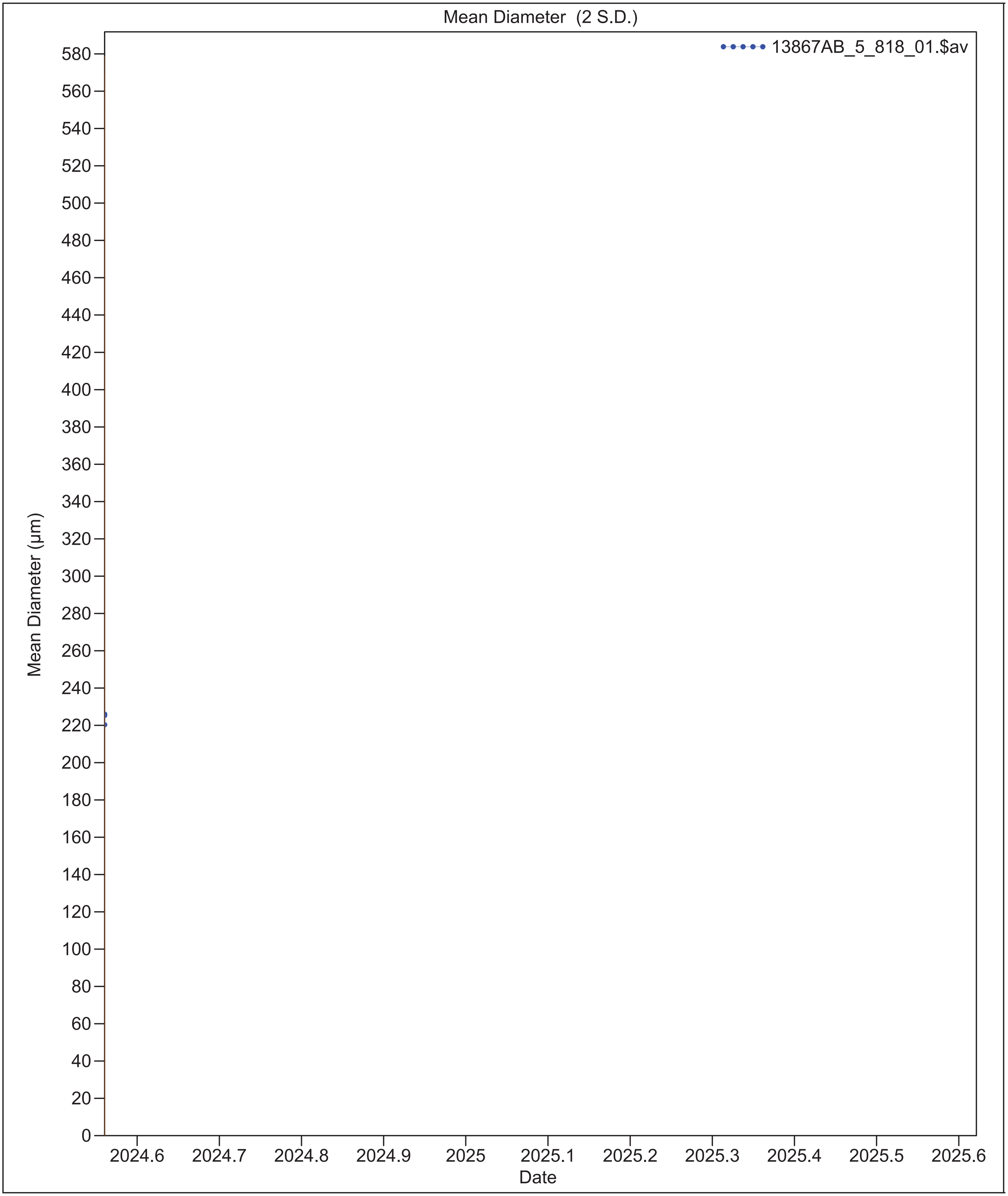
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 10:48

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13867AB_5_818_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	223.8 µm	3.111	217.6	230.1
Median:	193.6 µm	1.026	191.5	195.6
S.D.:	171.2 µm	5.741	159.8	182.7
Variance:	29346 μm^2	1962	25422	33269
C.V.:	76.49%	1.756	72.98	80.01
Skewness:	3.206	0.353	2.501	3.912
Kurtosis:	16.81	3.703	9.403	24.21
d_{10}:	68.00 µm	9.252	49.49	86.50
d_{50}:	193.6 µm	1.026	191.5	195.6
d_{90}:	383.6 µm	3.231	377.1	390.0

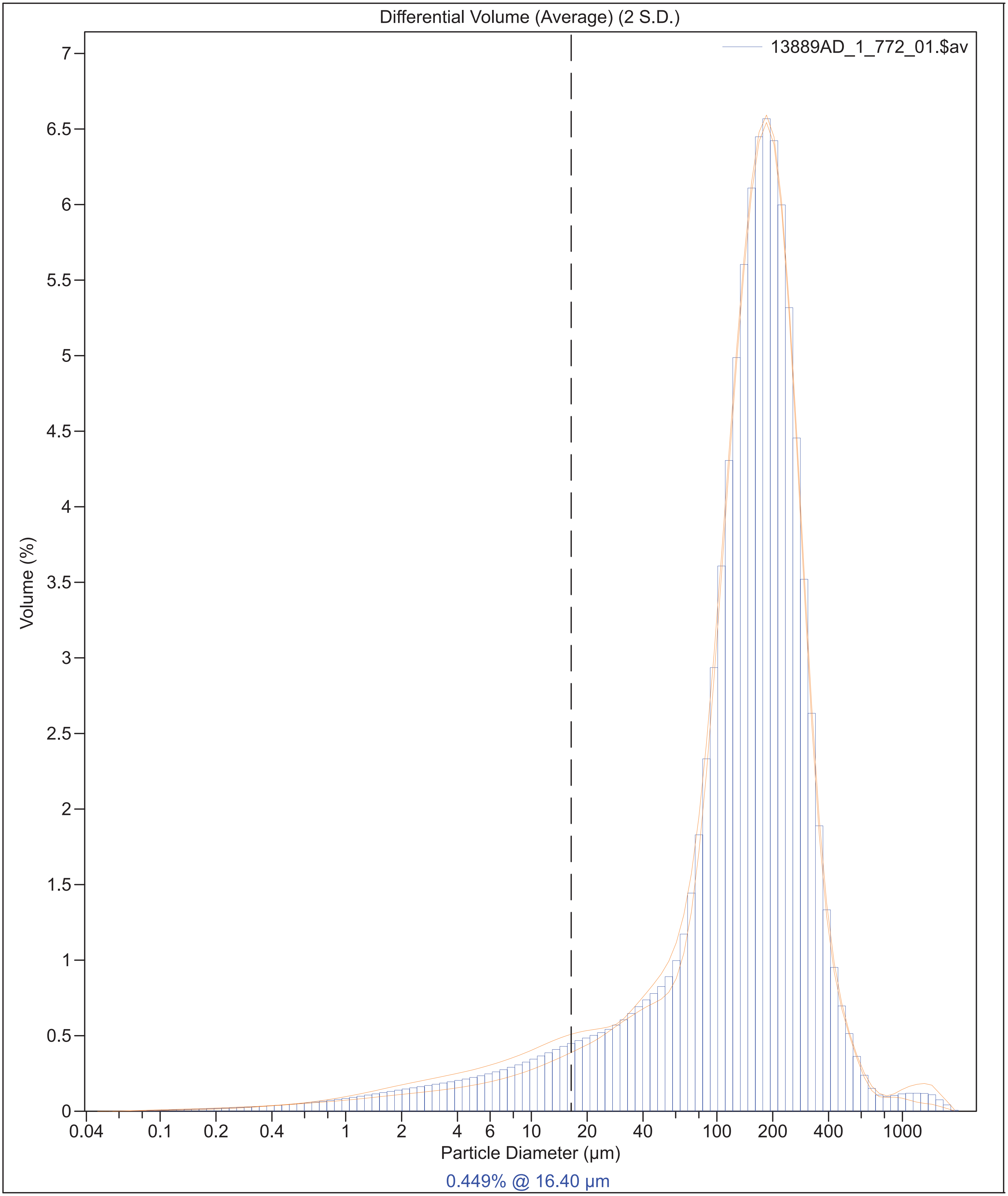
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13889AD_1_772_01.$av
	13889AD_1_772_01.$av
File ID:	13889AD_1
Sample ID:	13889AD_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_1_770_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_1_771_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_1_772_01.$ls

LS Particle Size Analyzer

9 Jul 2024 15:52

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

9 Jul 2024 15:52

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13889AD_1_772_01.$av

Calculations from 0.040 µm to 2000 µm

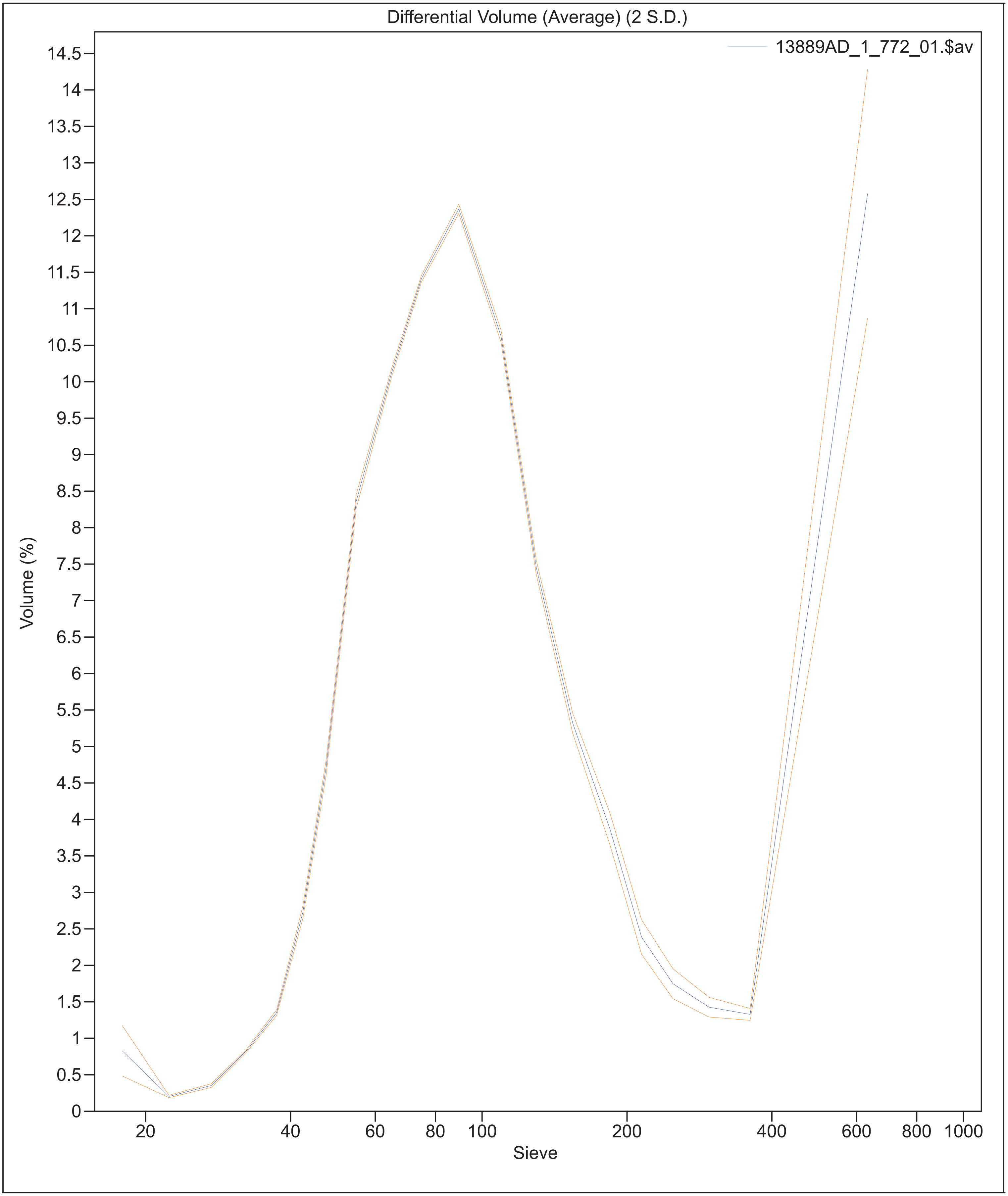
Volume:	100%		
Mean:	176.4 µm	S.D.:	148.8 µm
Median:	157.7 µm	Variance:	22154 $µm^2$
Mean/Median ratio:	1.119	C.V.:	84.4%
Mode:	185.4 µm	Skewness:	3.820 Right skewed
		Kurtosis:	27.08 Leptokurtic

d_{10}: 25.54 µm d_{50}: 157.7 µm d_{90}: 308.0 µm

Folk and Ward Statistics (Phi)

Mean:	2.90	Median:	2.66	Deviation:	1.39
Skewness:	0.43	Kurtosis:	1.79		

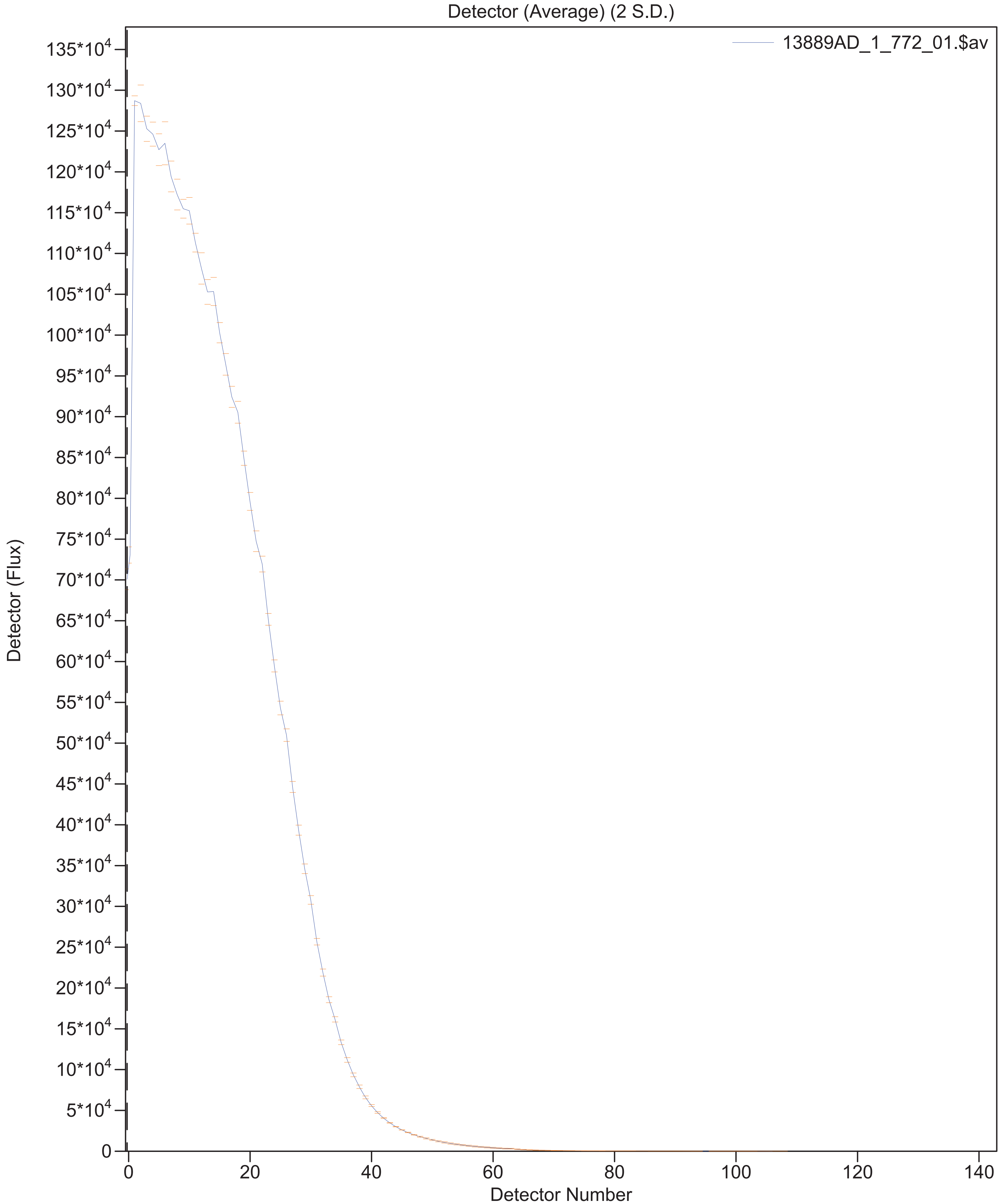
<10%	<25%	<50%	<75%	<90%
25.54 µm	95.37 µm	157.7 µm	227.4 µm	308.0 µm


Differential Volume (Average) (2 S.D.)
13889AD_1_772_01.$av
Volume (%)
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

9 Jul 2024 15:52

Beckman Coulter LS 13 320

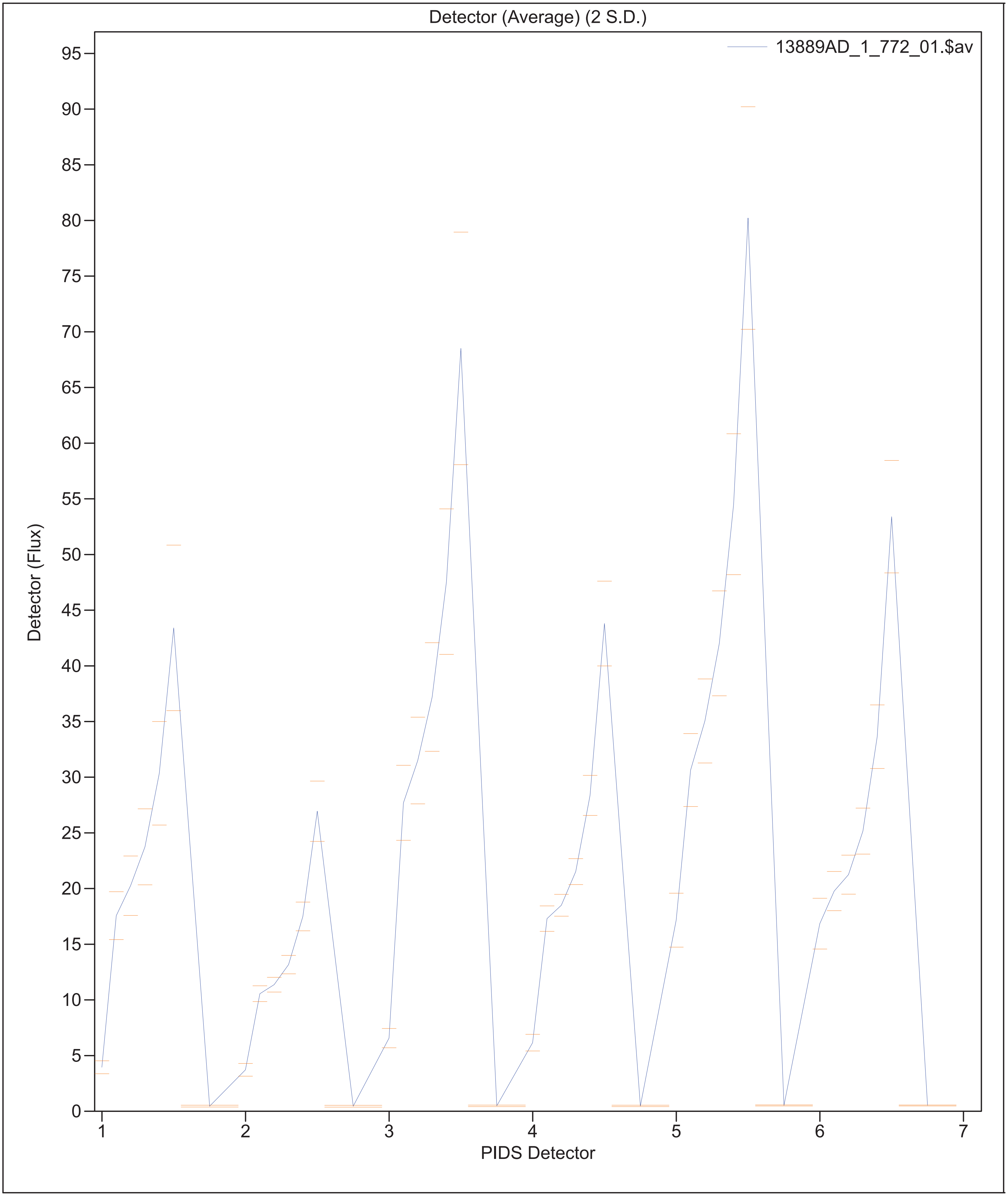


700.8*10^3 Flux @ -0.250

LS Particle Size Analyzer

9 Jul 2024 15:52

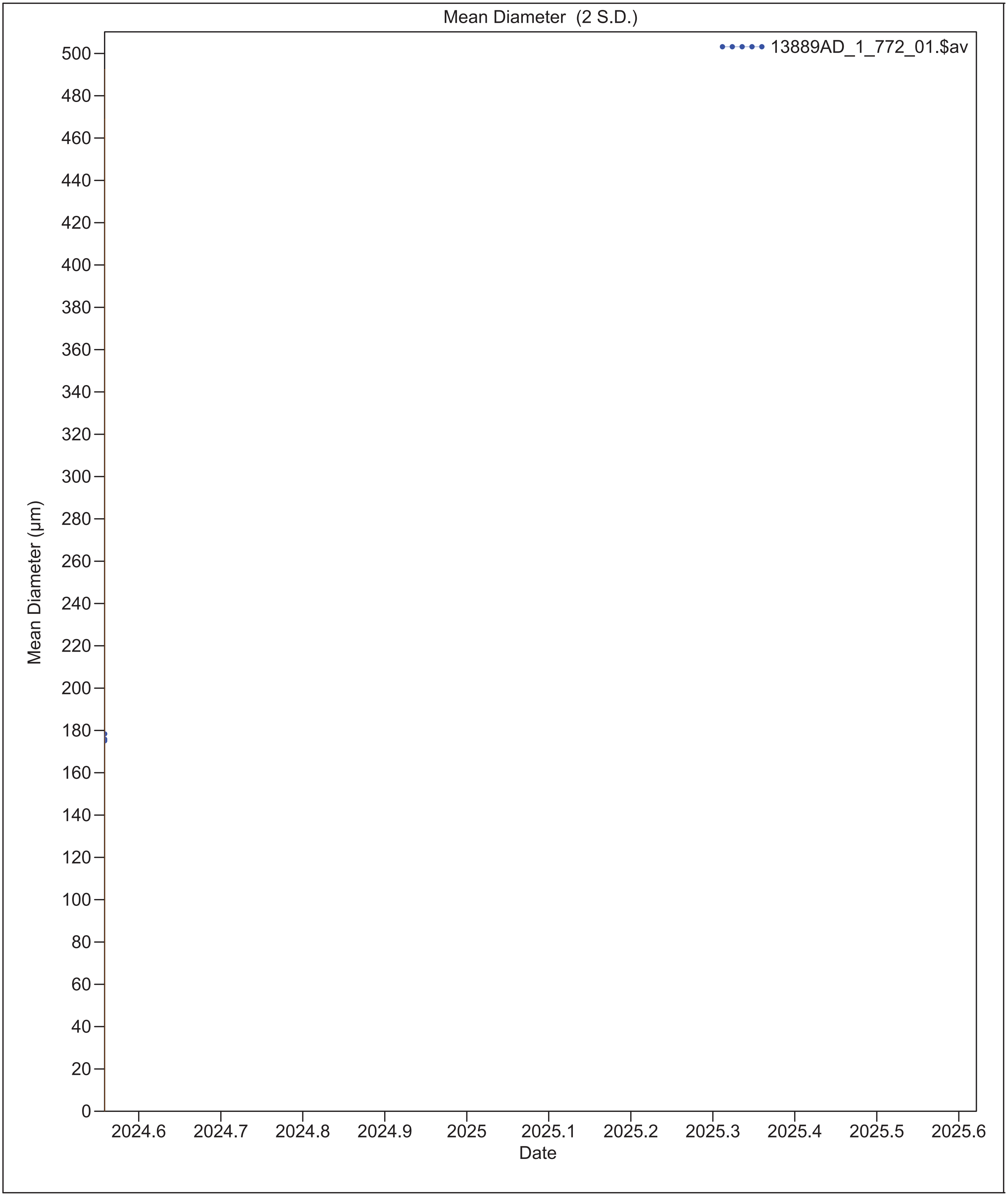
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 15:52

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)   Average of 3 files   13889AD_1_772_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	176.4 µm	1.739	172.9	179.9
Median:	157.7 µm	0.431	156.8	158.5
S.D.:	148.7 µm	7.592	133.5	163.9
Variance:	22152 μm^2	2277	17598	26706
C.V.:	84.27%	3.613	77.05	91.50
Skewness:	3.786	0.219	3.347	4.225
Kurtosis:	26.73	0.959	24.81	28.65
d_{10}:	25.66 µm	3.424	18.81	32.51
d_{50}:	157.7 µm	0.431	156.8	158.5
d_{90}:	308.0 µm	0.951	306.1	309.9

Beckman Coulter LS 13 320

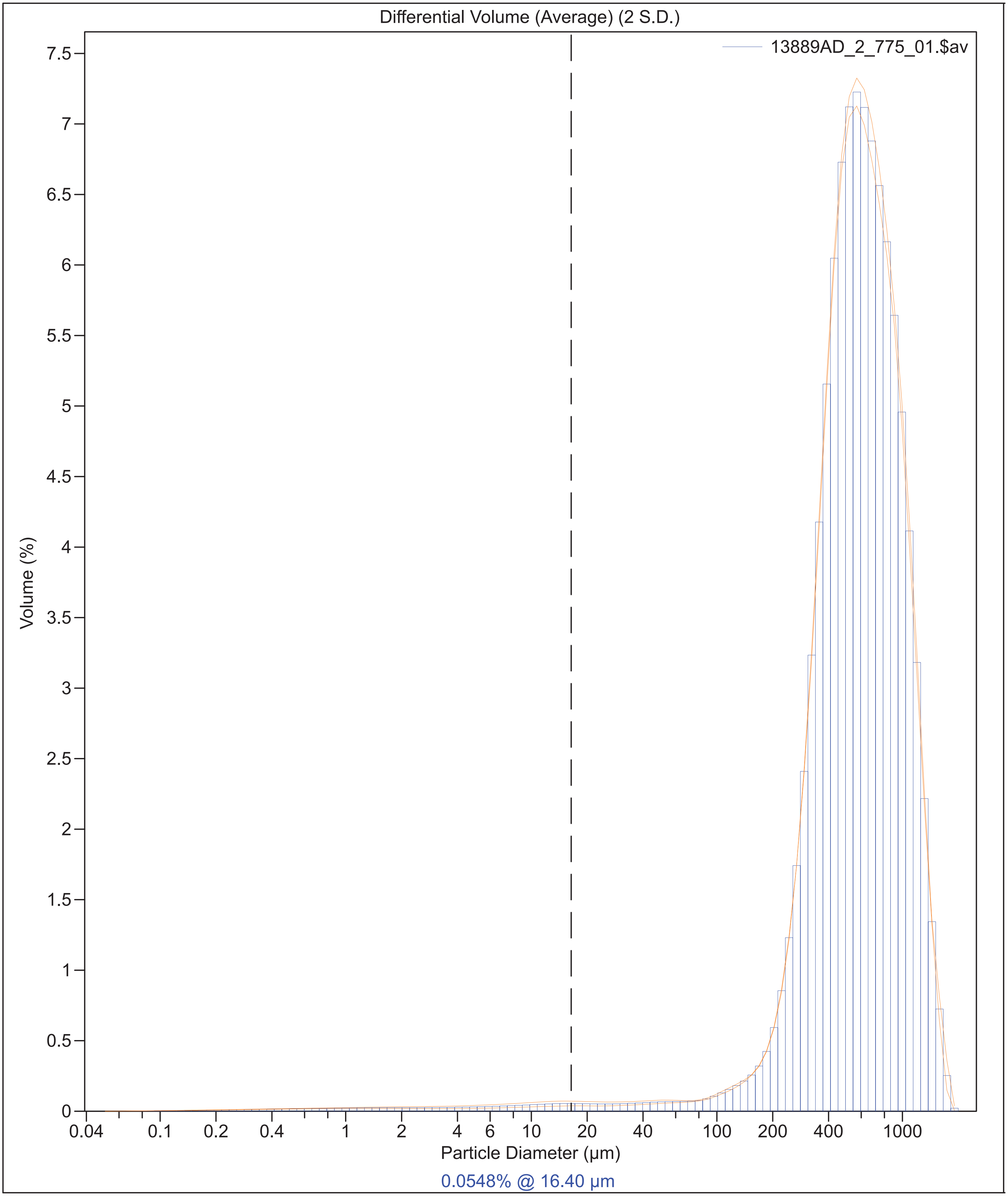
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13889AD_2_775_01.$av		
	13889AD_2_775_01.$av		
File ID:	13889AD_2		
Sample ID:	13889AD_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	100		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_2_773_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_2_774_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_2_775_01.$ls

LS Particle Size Analyzer

9 Jul 2024 16:05

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 16:05

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 13889AD_2_775_01.$av

Calculations from 0.040 µm to 2000 µm

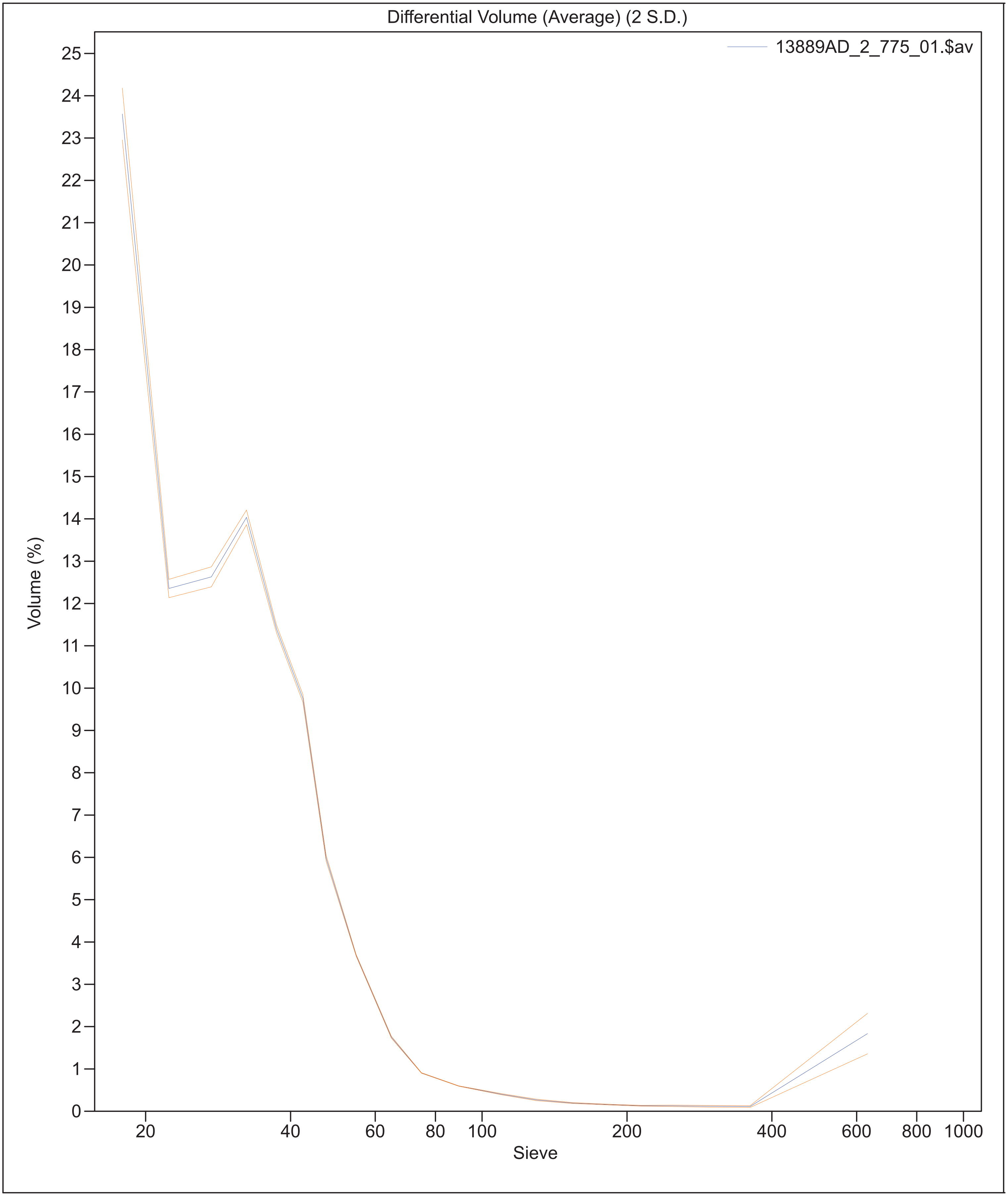
Volume:	100%		
Mean:	642.0 µm	S.D.:	315.5 µm
Median:	588.9 µm	Variance:	99533 μm^2
Mean/Median ratio:	1.090	C.V.:	49.1%
Mode:	567.7 µm	Skewness:	0.653 Right skewed
		Kurtosis:	0.334 Leptokurtic

d_{10}: 296.8 µm d_{50}: 588.9 µm d_{90}: 1087 µm

Folk and Ward Statistics (Phi)

Mean:	0.77	Median:	0.76	Deviation:	0.74
Skewness:	0.08	Kurtosis:	1.04		

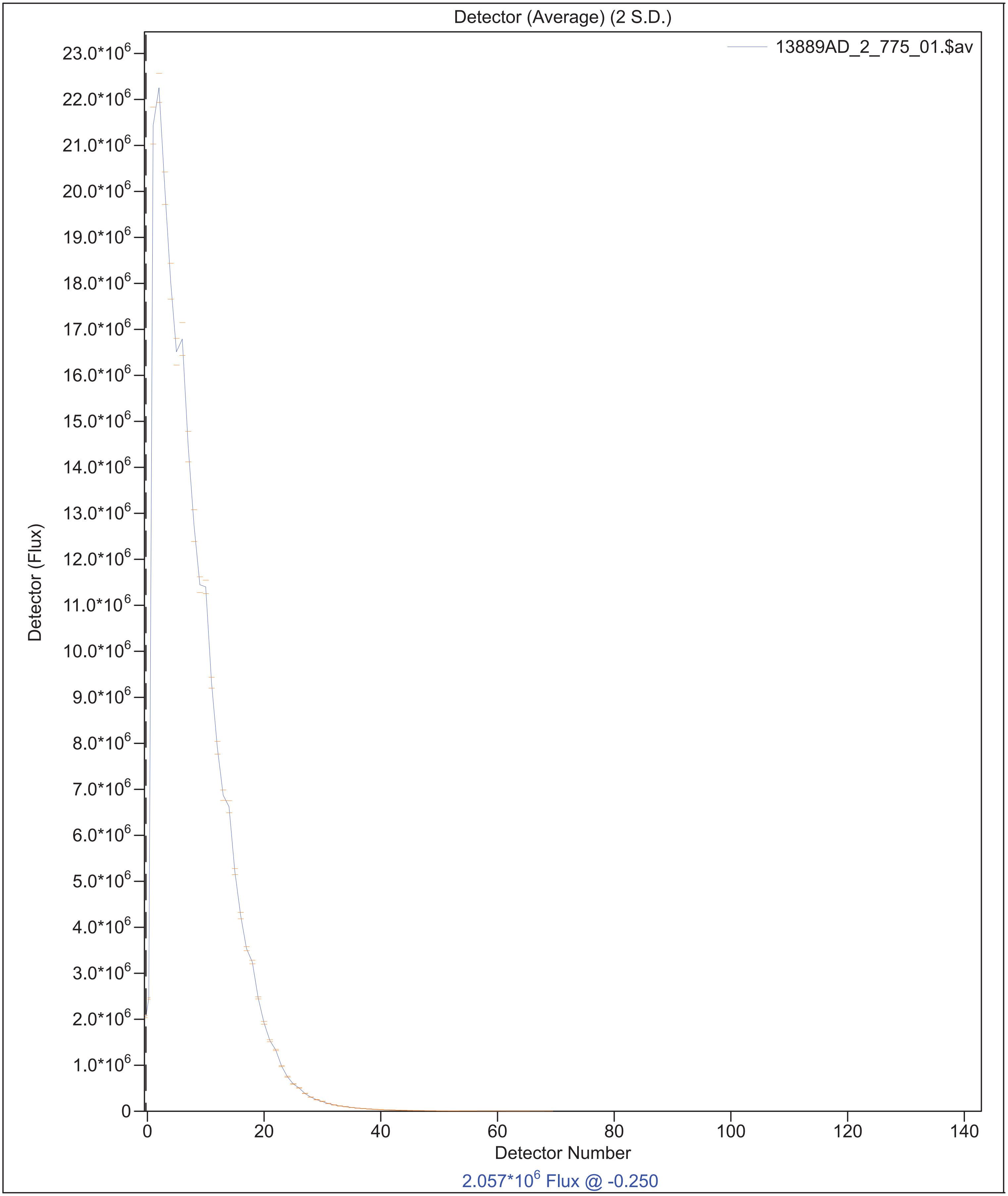
<10%	<25%	<50%	<75%	<90%
296.8 µm	418.3 µm	588.9 µm	832.1 µm	1087 µm

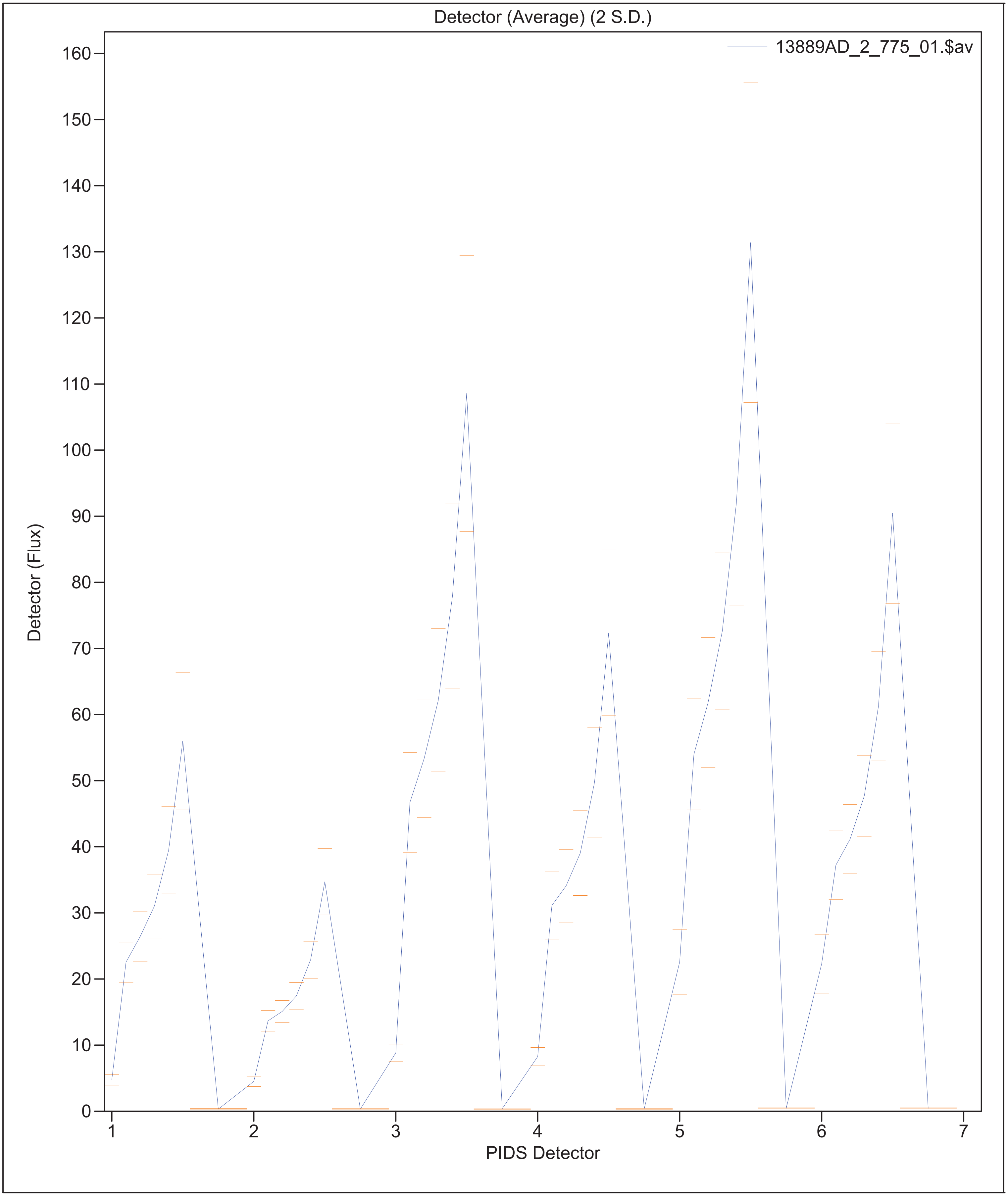

Differential Volume (Average) (2 S.D.)
13889AD_2_775_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
Sieve
20
40
60
80
100
200
400
600
800
1000

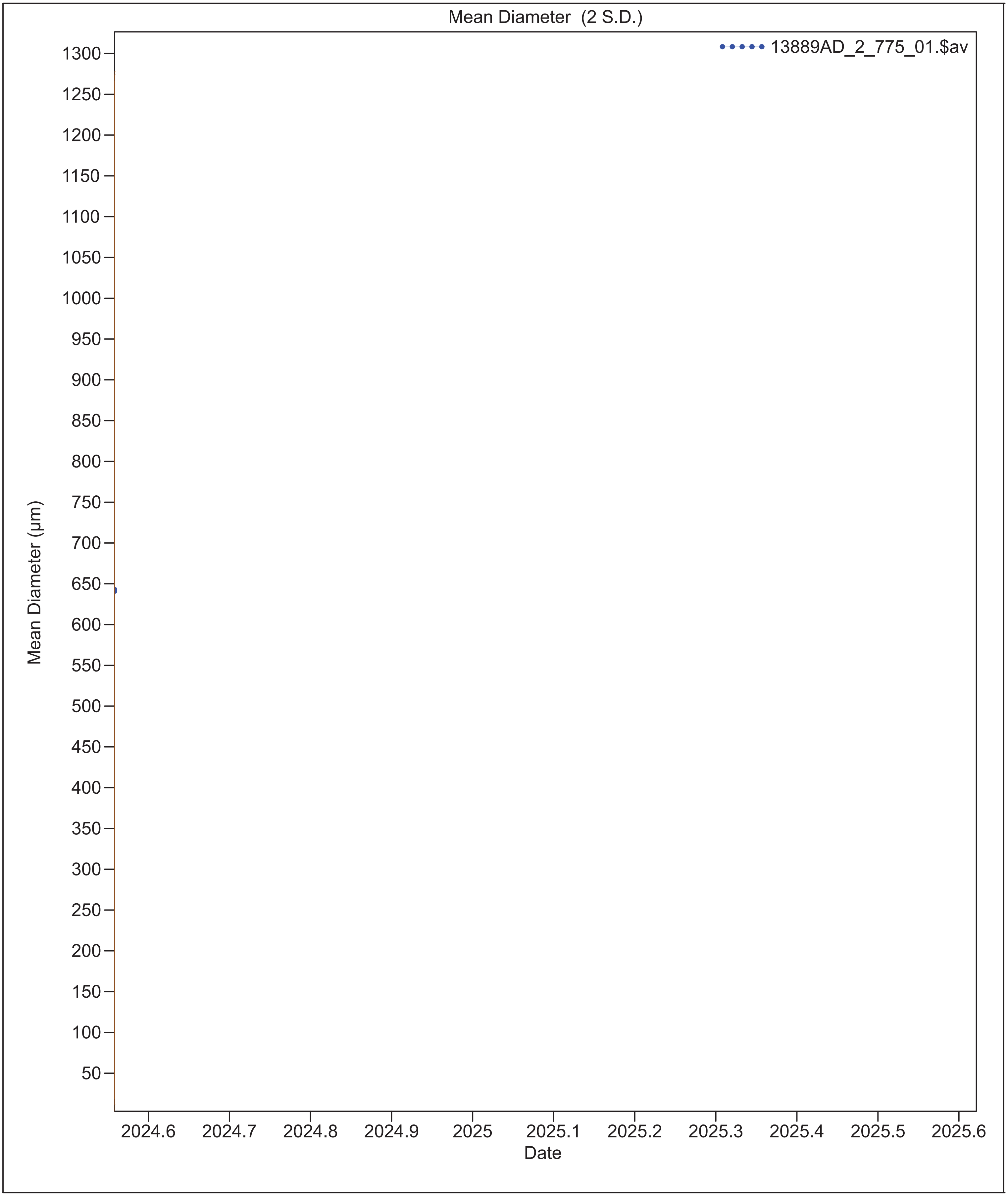
LS Particle Size Analyzer

9 Jul 2024 16:05

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
13889AD_2_775_01.$av
Detector (Flux)
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
13889AD_2_775_01.$av
Mean Diameter (µm)
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

9 Jul 2024 16:05

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13889AD_2_775_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	642.0 µm	1.045	639.9	644.1
Median:	588.9 µm	1.375	586.1	591.6
S.D.:	315.5 µm	3.331	308.8	322.1
Variance:	99532 µm^2	2102	95329	103.7e3
C.V.:	49.14%	0.580	47.98	50.30
Skewness:	0.653	0.012	0.629	0.677
Kurtosis:	0.333	0.049	0.236	0.430
d_{10}:	296.8 µm	3.514	289.7	303.8
d_{50}:	588.9 µm	1.375	586.1	591.6
d_{90}:	1087 µm	2.840	1081	1093

LS Particle Size Analyzer

9 Jul 2024 16:14

Beckman Coulter LS 13 320

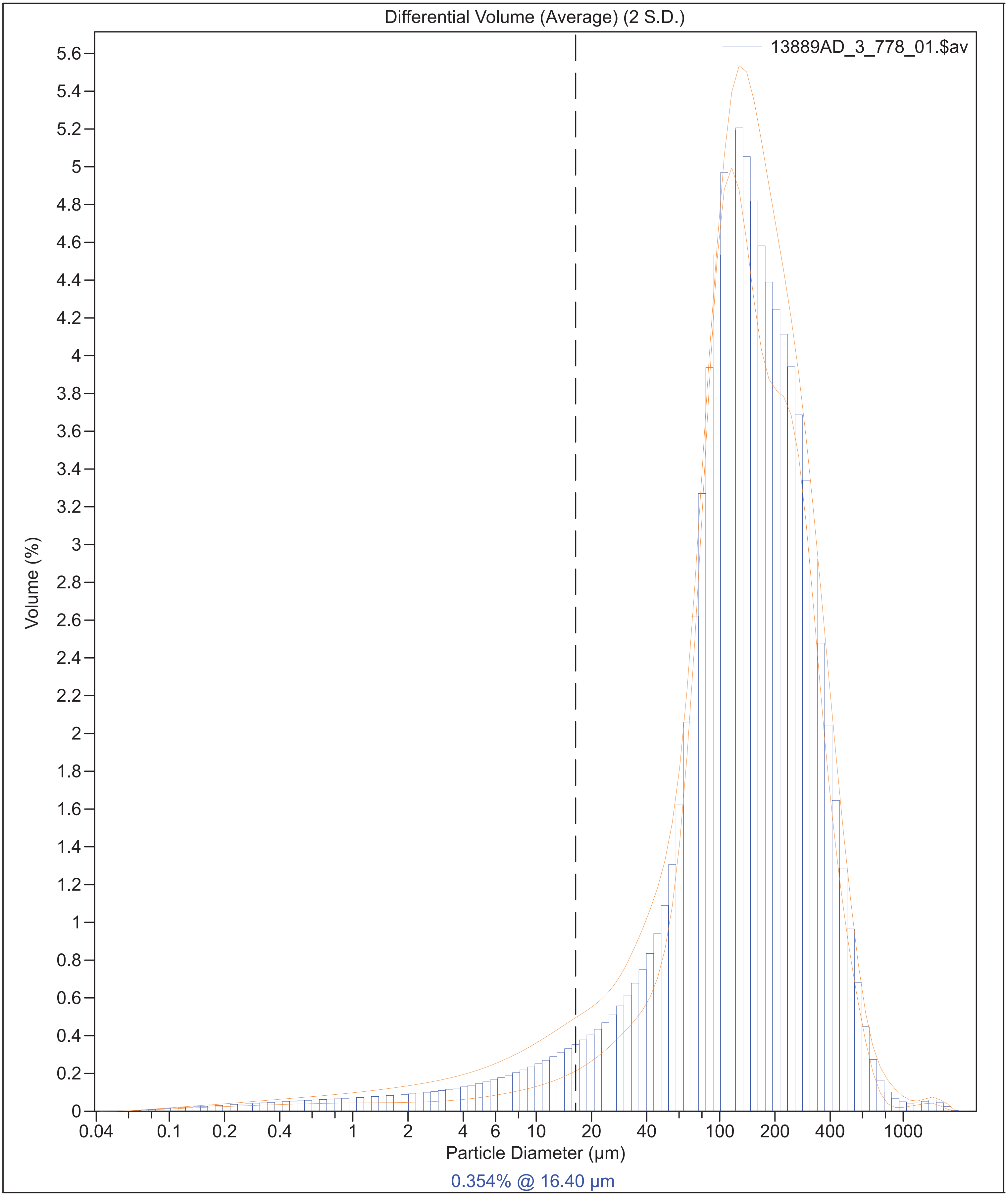
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13889AD_3_778_01.$av
	13889AD_3_778_01.$av
File ID:	13889AD_3
Sample ID:	13889AD_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	100
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_3_776_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_3_777_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_3_778_01.$ls

LS Particle Size Analyzer

9 Jul 2024 16:14

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13889AD_3_778_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	174.1 µm	S.D.:	144.7 µm
Median:	137.8 µm	Variance:	20947 µm^2
Mean/Median ratio:	1.263	C.V.:	83.1%
Mode:	127.6 µm	Skewness:	2.784 Right skewed
		Kurtosis:	16.84 Leptokurtic

d_{10}: 35.85 µm d_{50}: 137.8 µm d_{90}: 346.4 µm

Folk and Ward Statistics (Phi)

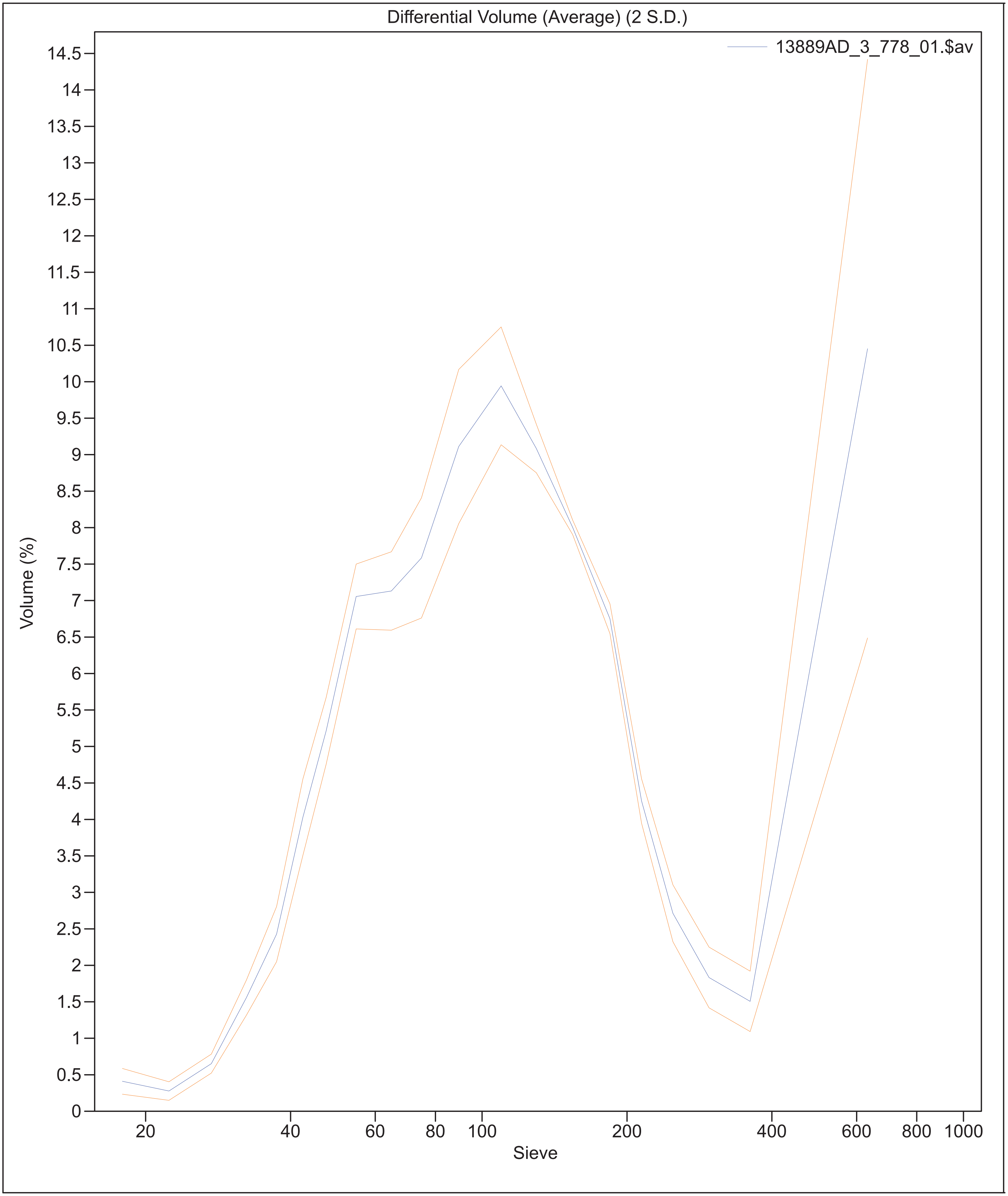
Mean:	2.89	Median:	2.86	Deviation:	1.33
Skewness:	0.20	Kurtosis:	1.44		

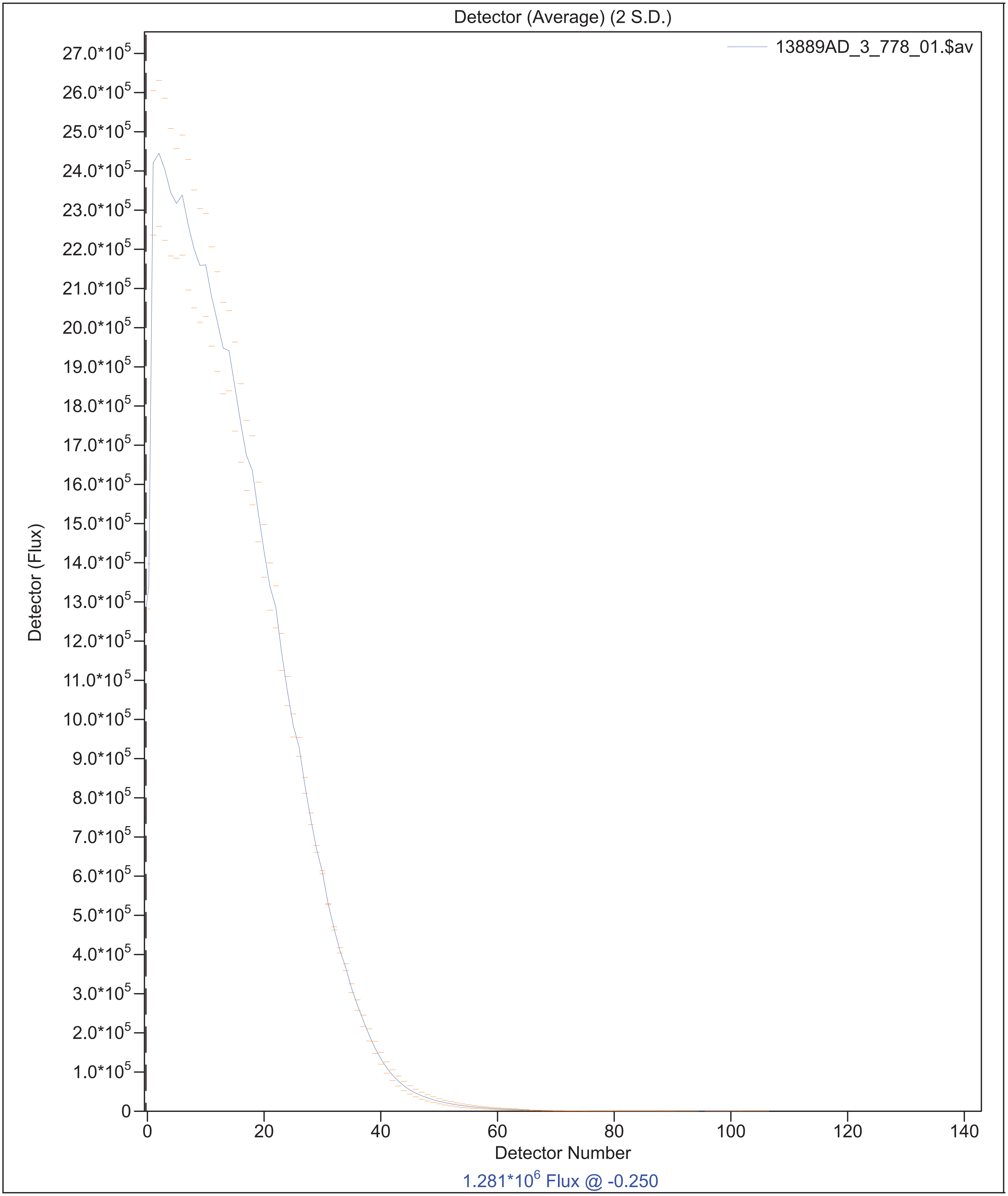
<10%	<25%	<50%	<75%	<90%
35.85 µm	84.77 µm	137.8 µm	230.9 µm	346.4 µm

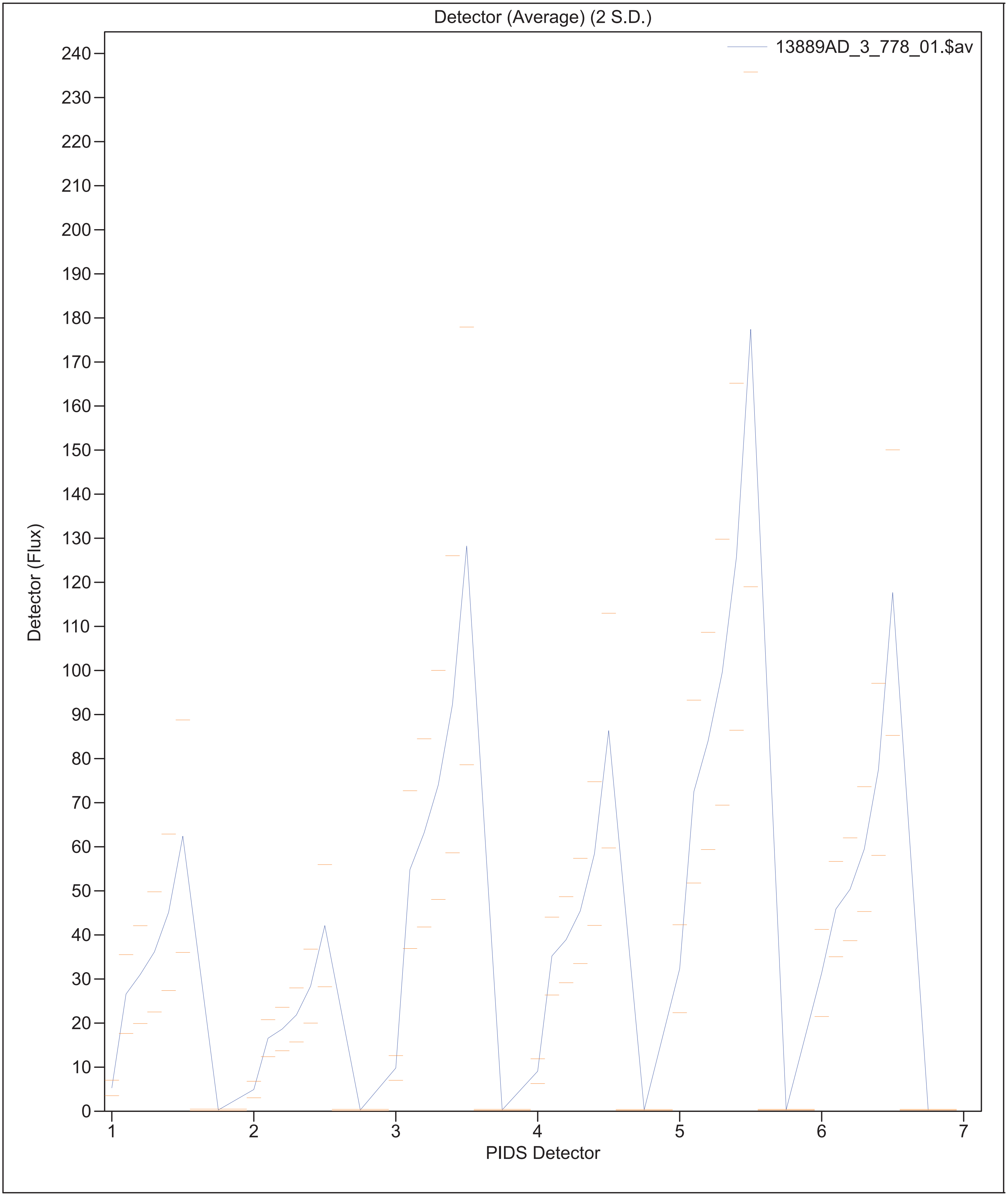
LS Particle Size Analyzer

9 Jul 2024 16:14

Beckman Coulter LS 13 320



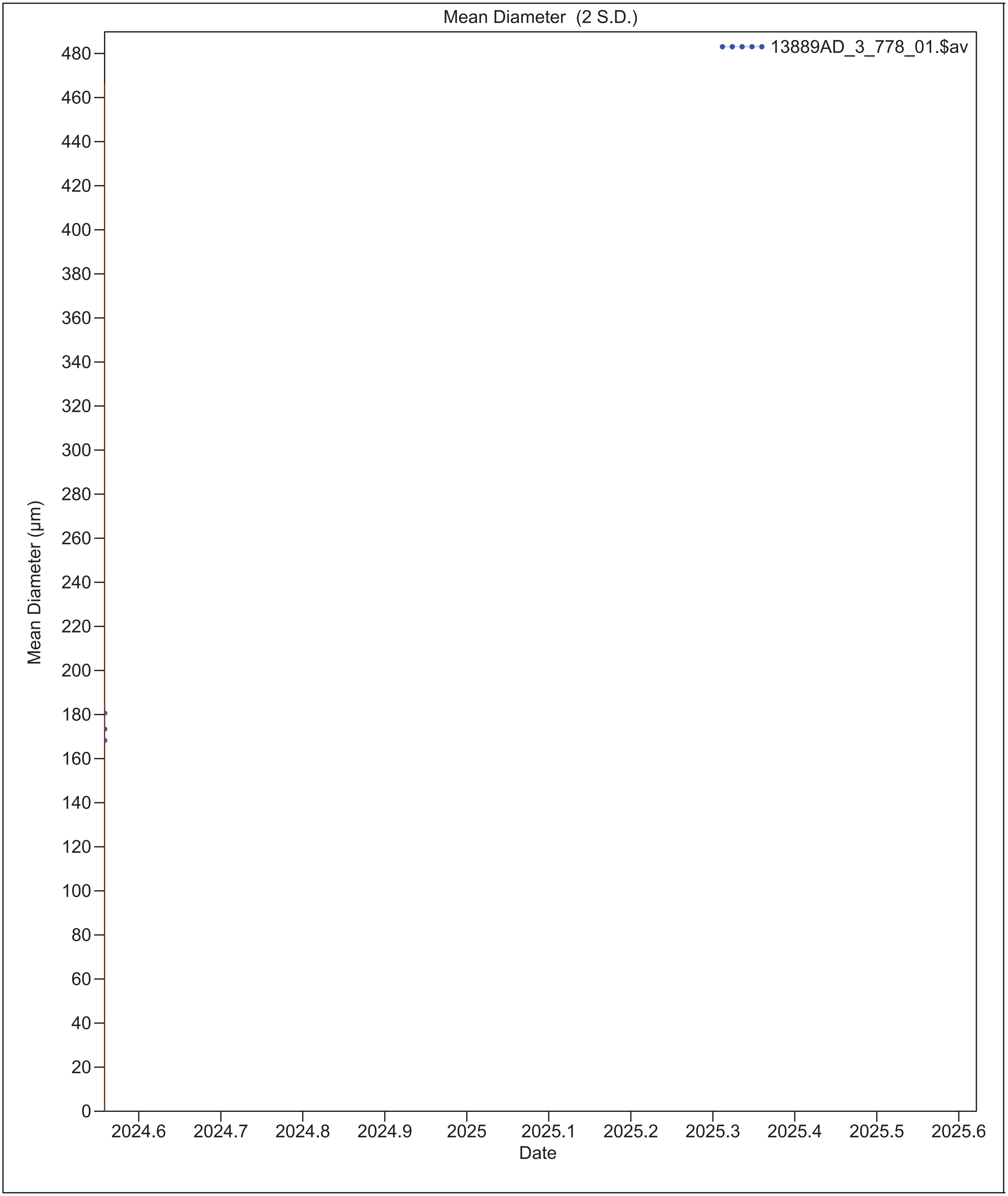

Detector (Average) (2 S.D.)
13889AD_3_778_01.$av
Detector (Flux)
27.0*10^5
26.0*10^5
25.0*10^5
24.0*10^5
23.0*10^5
22.0*10^5
21.0*10^5
20.0*10^5
19.0*10^5
18.0*10^5
17.0*10^5
16.0*10^5
15.0*10^5
14.0*10^5
13.0*10^5
12.0*10^5
11.0*10^5
10.0*10^5
9.0*10^5
8.0*10^5
7.0*10^5
6.0*10^5
5.0*10^5
4.0*10^5
3.0*10^5
2.0*10^5
1.0*10^5
0
0
20
40
60
80
100
120
140
Detector Number
1.281*10^6 Flux @ -0.250


Detector (Average) (2 S.D.)
13889AD_3_778_01.$av
Detector (Flux)
PIDS Detector
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
1
2
3
4
5
6
7

LS Particle Size Analyzer

9 Jul 2024 16:14

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 16:14

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 13889AD_3_778_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	174.1 µm	6.217	161.6	186.5
Median:	137.7 µm	6.246	125.2	150.2
S.D.:	144.6 µm	2.037	140.6	148.7
Variance:	20922 μm^2	587.5	19747	22097
C.V.:	83.18%	3.886	75.41	90.95
Skewness:	2.787	0.189	2.409	3.166
Kurtosis:	16.87	2.238	12.40	21.35
d_{10}:	36.64 µm	9.492	17.66	55.63
d_{50}:	137.7 µm	6.246	125.2	150.2
d_{90}:	346.3 µm	8.448	329.4	363.2

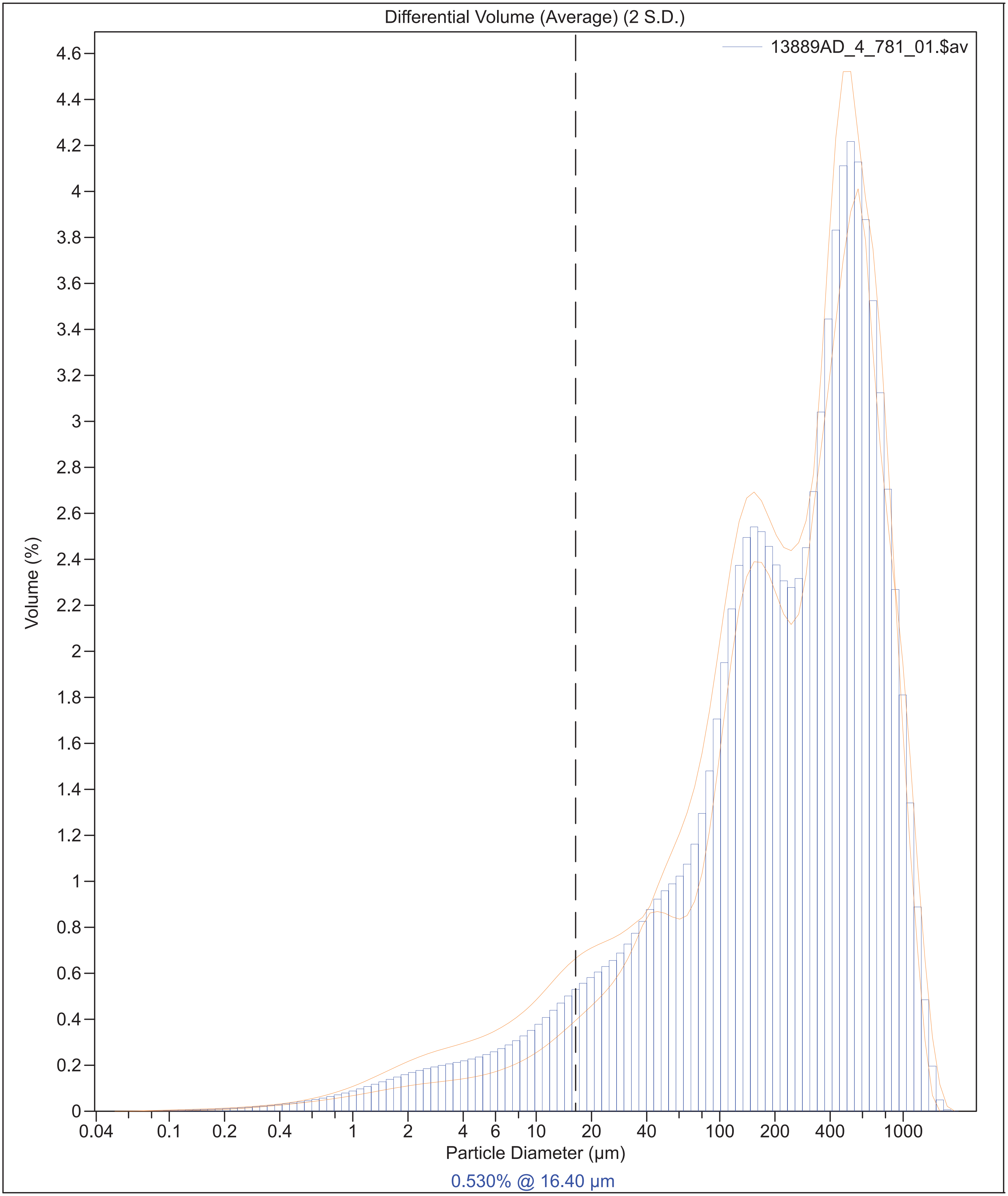
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13889AD_4_781_01.$av
	13889AD_4_781_01.$av
File ID:	13889AD_4
Sample ID:	13889AD_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	100
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_4_779_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_4_780_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_4_781_01.$ls

LS Particle Size Analyzer

9 Jul 2024 16:21

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13889AD_4_781_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	345.2 µm	S.D.:	302.9 µm
Median:	262.5 µm	Variance:	91721 $µm^2$
Mean/Median ratio:	1.315	C.V.:	87.7%
Mode:	517.2 µm	Skewness:	0.970 Right skewed
		Kurtosis:	0.406 Leptokurtic

d_{10}: 22.01 µm d_{50}: 262.5 µm d_{90}: 781.3 µm

Folk and Ward Statistics (Phi)

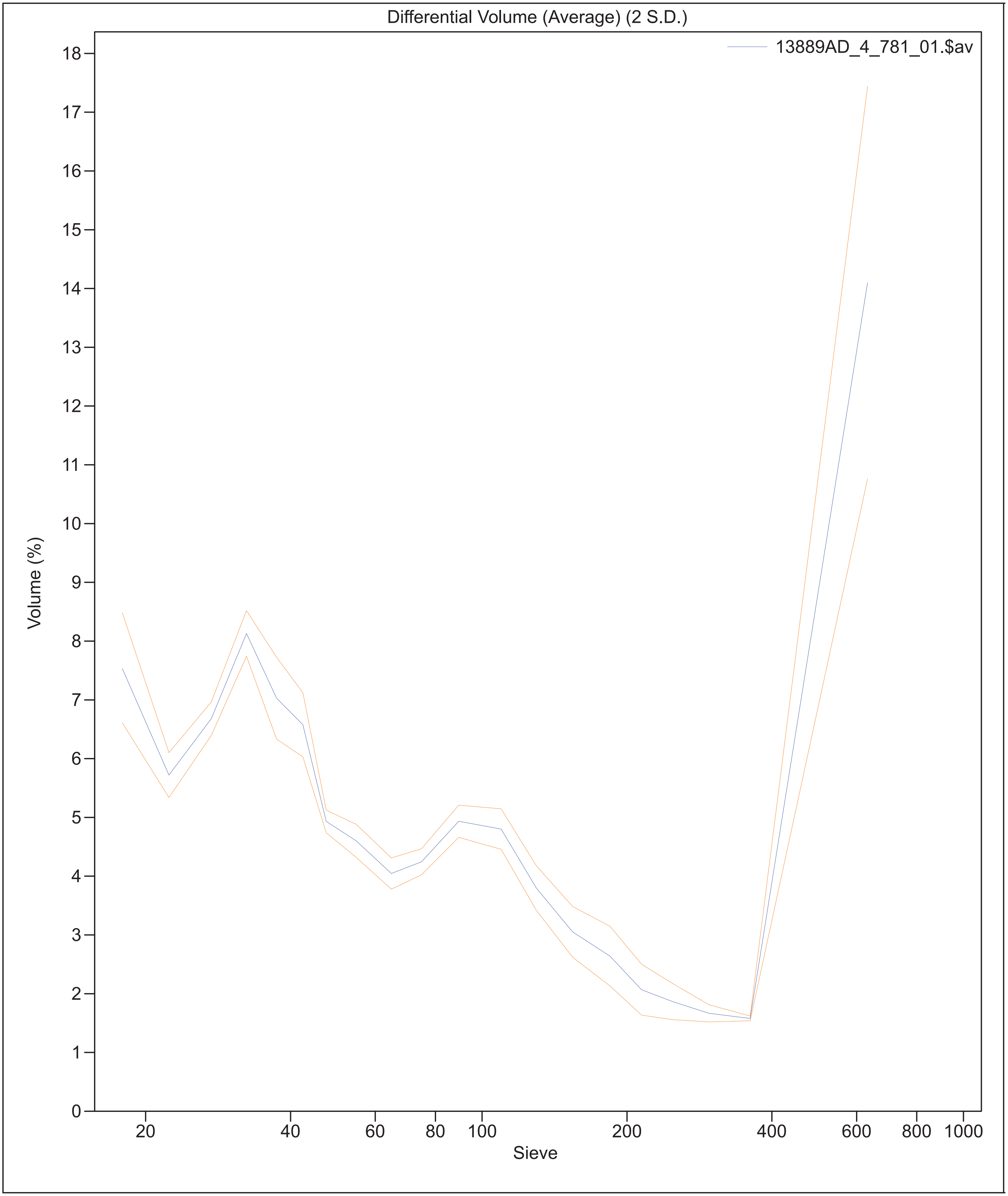
Mean:	2.32	Median:	1.93	Deviation:	2.00
Skewness:	0.38	Kurtosis:	1.14		

<10%	<25%	<50%	<75%	<90%
22.01 µm	95.80 µm	262.5 µm	535.1 µm	781.3 µm

LS Particle Size Analyzer

9 Jul 2024 16:21

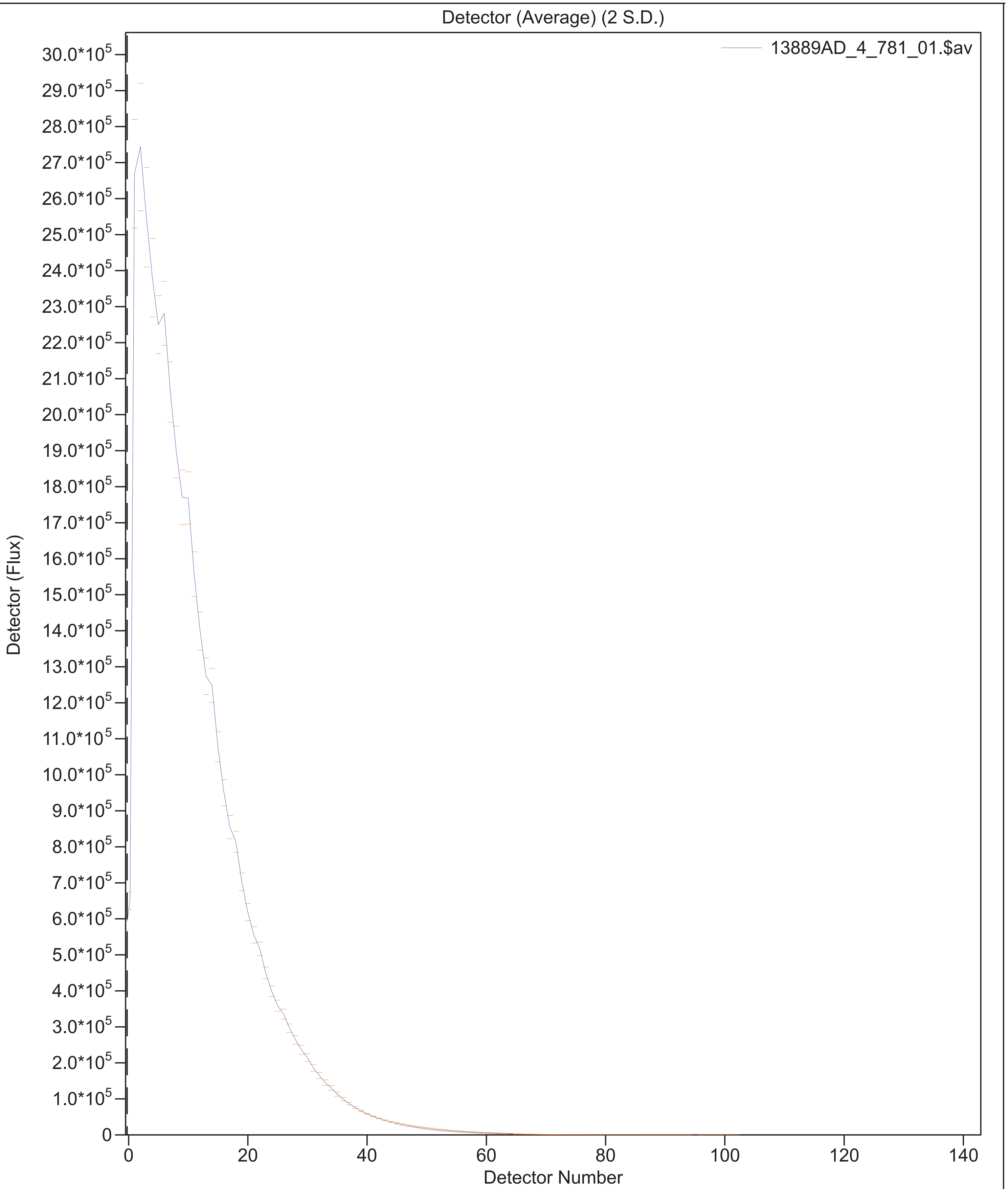
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 16:21

Beckman Coulter LS 13 320

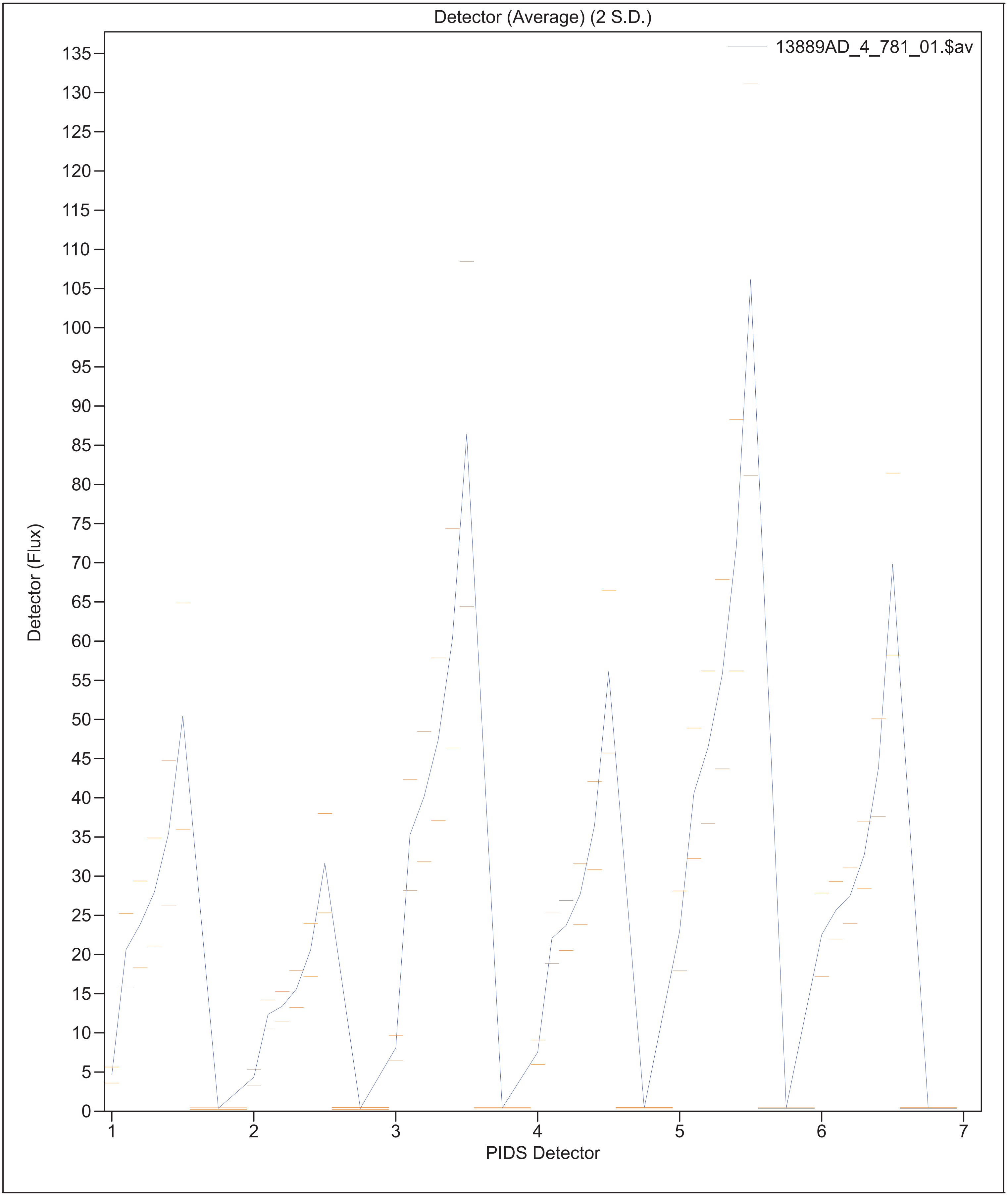


592.9*10^3 Flux @ -0.250

LS Particle Size Analyzer

9 Jul 2024 16:21

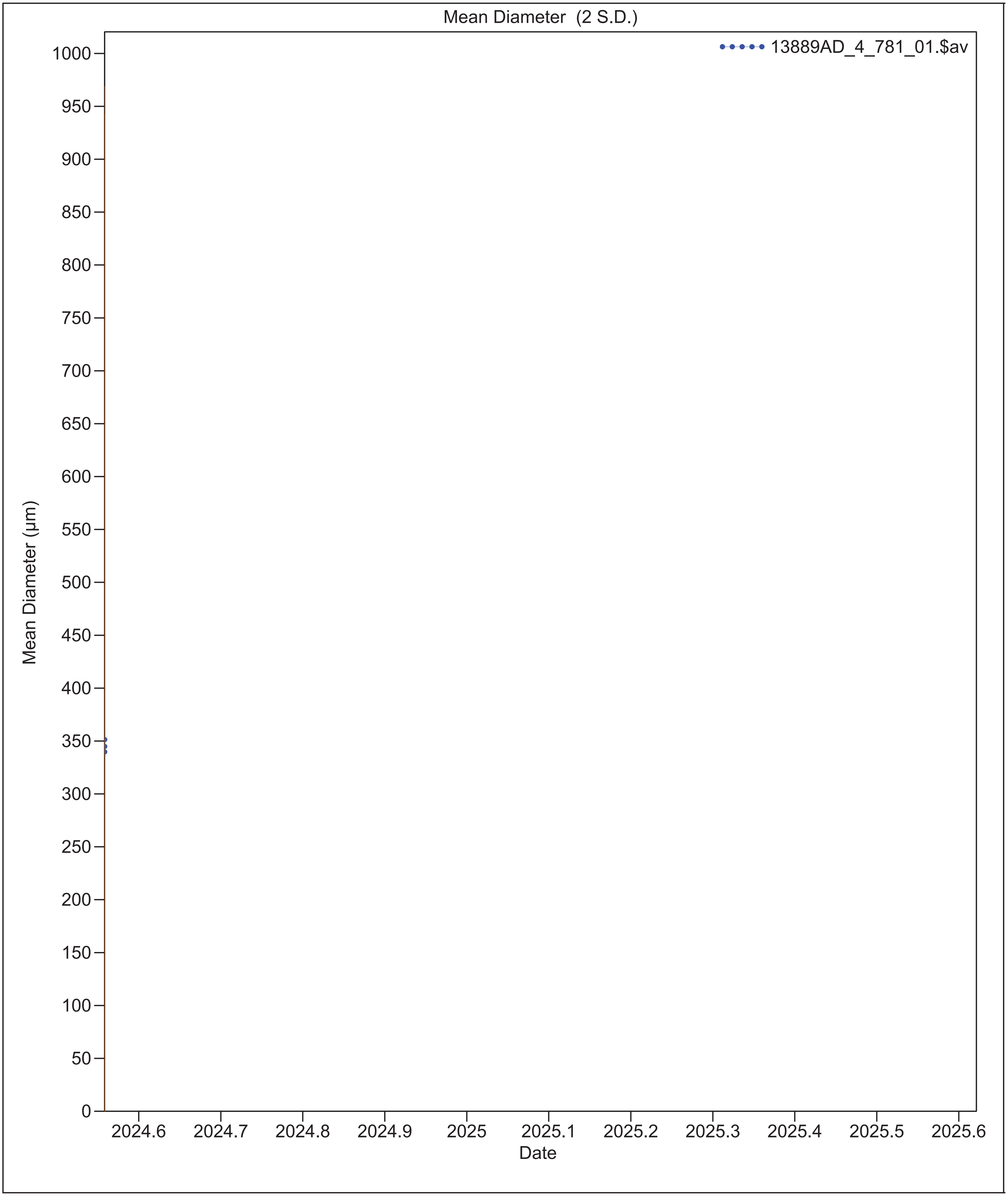
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 16:21

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 13889AD_4_781_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	345.2 µm	5.817	333.6	356.8
Median:	262.8 µm	9.513	243.8	281.8
S.D.:	302.8 µm	5.242	292.3	313.3
Variance:	91699 μm^2	3185	85328	98069
C.V.:	87.72%	1.075	85.57	89.86
Skewness:	0.969	0.026	0.916	1.021
Kurtosis:	0.395	0.128	0.139	0.651
d_{10}:	22.50 µm	4.825	12.85	32.15
d_{50}:	262.8 µm	9.513	243.8	281.8
d_{90}:	782.0 µm	9.441	763.1	800.8

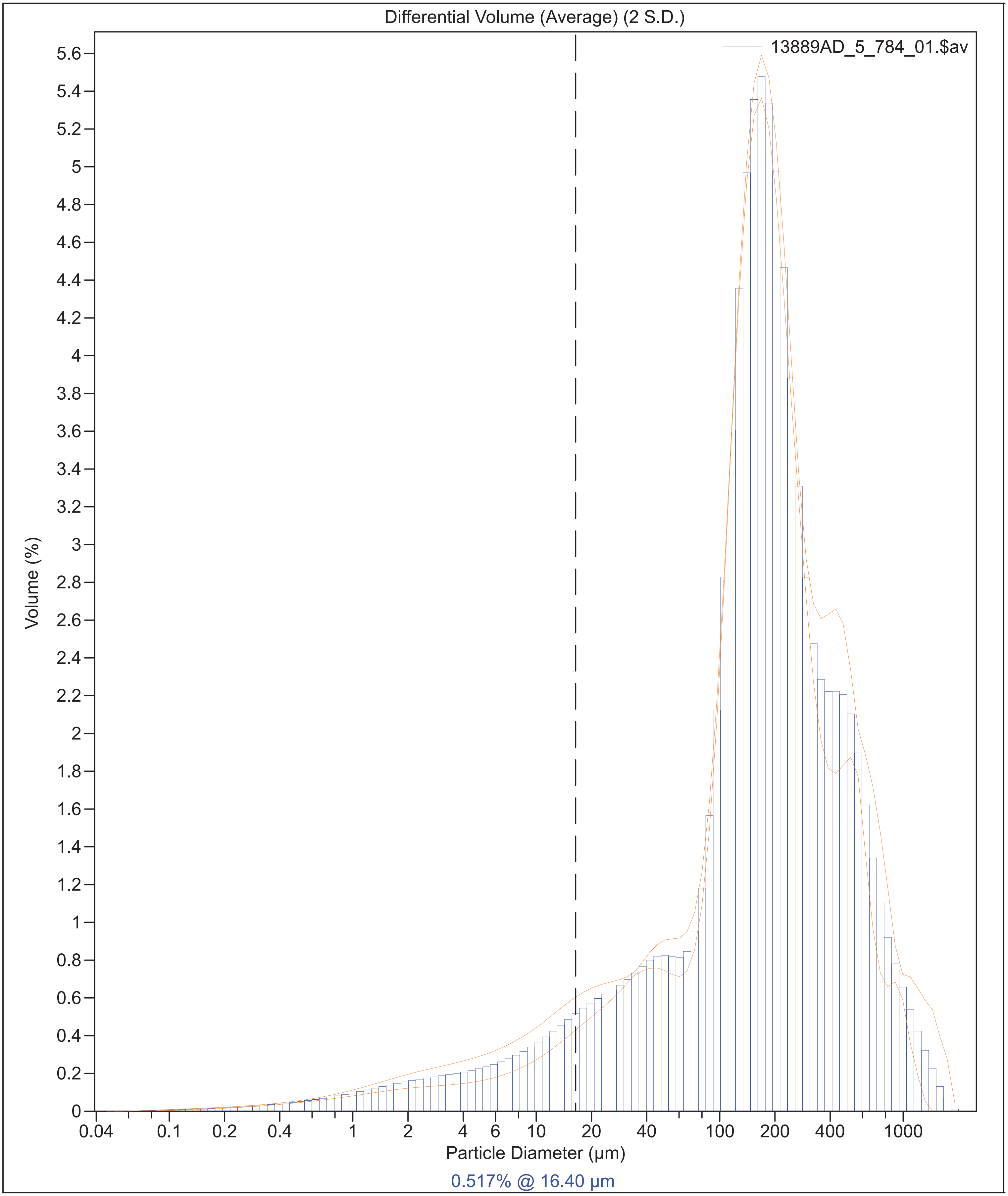
File name:	C:\LS13320\Samples\NOAA-CZM FY23\13889AD_5_784_01.$av		
	13889AD_5_784_01.$av		
File ID:	13889AD_5		
Sample ID:	13889AD_5		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	100		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_5_782_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_5_783_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\13889AD_5_784_01.$ls

LS Particle Size Analyzer

9 Jul 2024 16:30

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 13889AD_5_784_01.$av

Calculations from 0.040 µm to 2000 µm

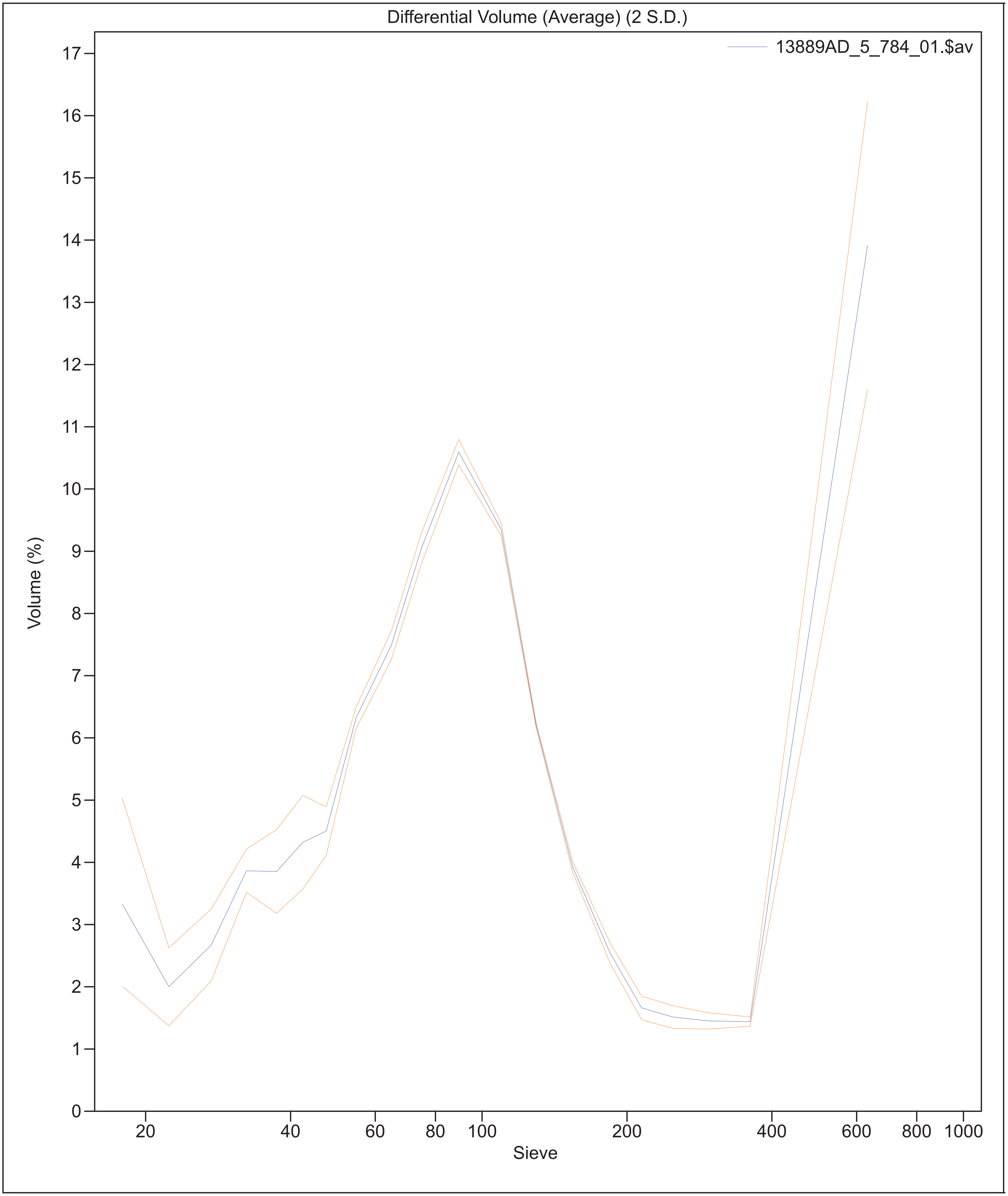
Volume:	100%		
Mean:	241.0 µm	S.D.:	239.5 µm
Median:	172.2 µm	Variance:	57359 $µm^2$
Mean/Median ratio:	1.400	C.V.:	99.4%
Mode:	168.9 µm	Skewness:	2.226 Right skewed
		Kurtosis:	6.511 Leptokurtic

d_{10}: 22.13 µm d_{50}: 172.2 µm d_{90}: 543.1 µm

Folk and Ward Statistics (Phi)

Mean:	2.72	Median:	2.54	Deviation:	1.77
Skewness:	0.27	Kurtosis:	1.73		

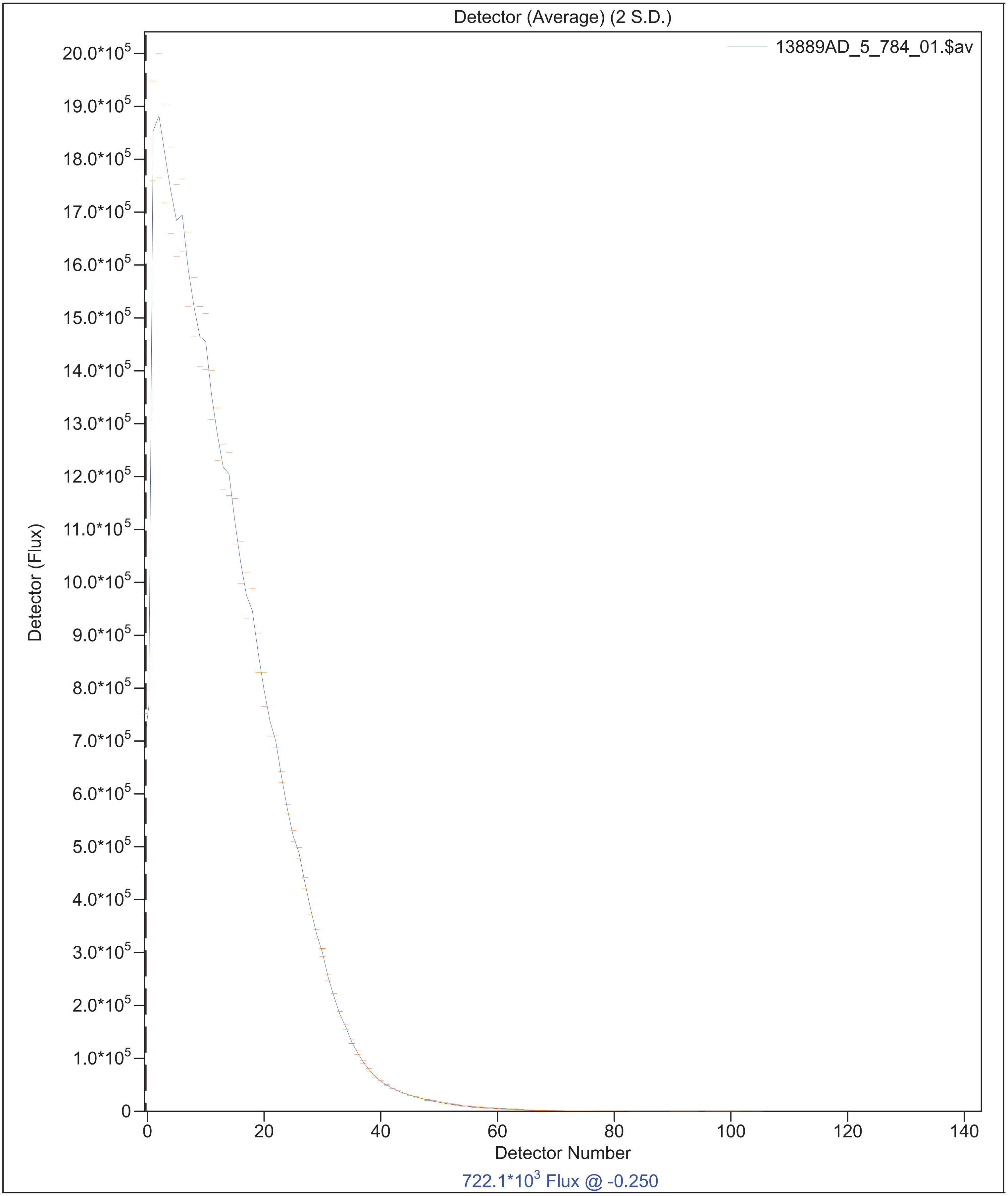
<10%	<25%	<50%	<75%	<90%
22.13 µm	100.9 µm	172.2 µm	295.6 µm	543.1 µm


Differential Volume (Average) (2 S.D.)
13889AD_5_784_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Sieve
20
40
60
80
100
200
400
600
800
1000

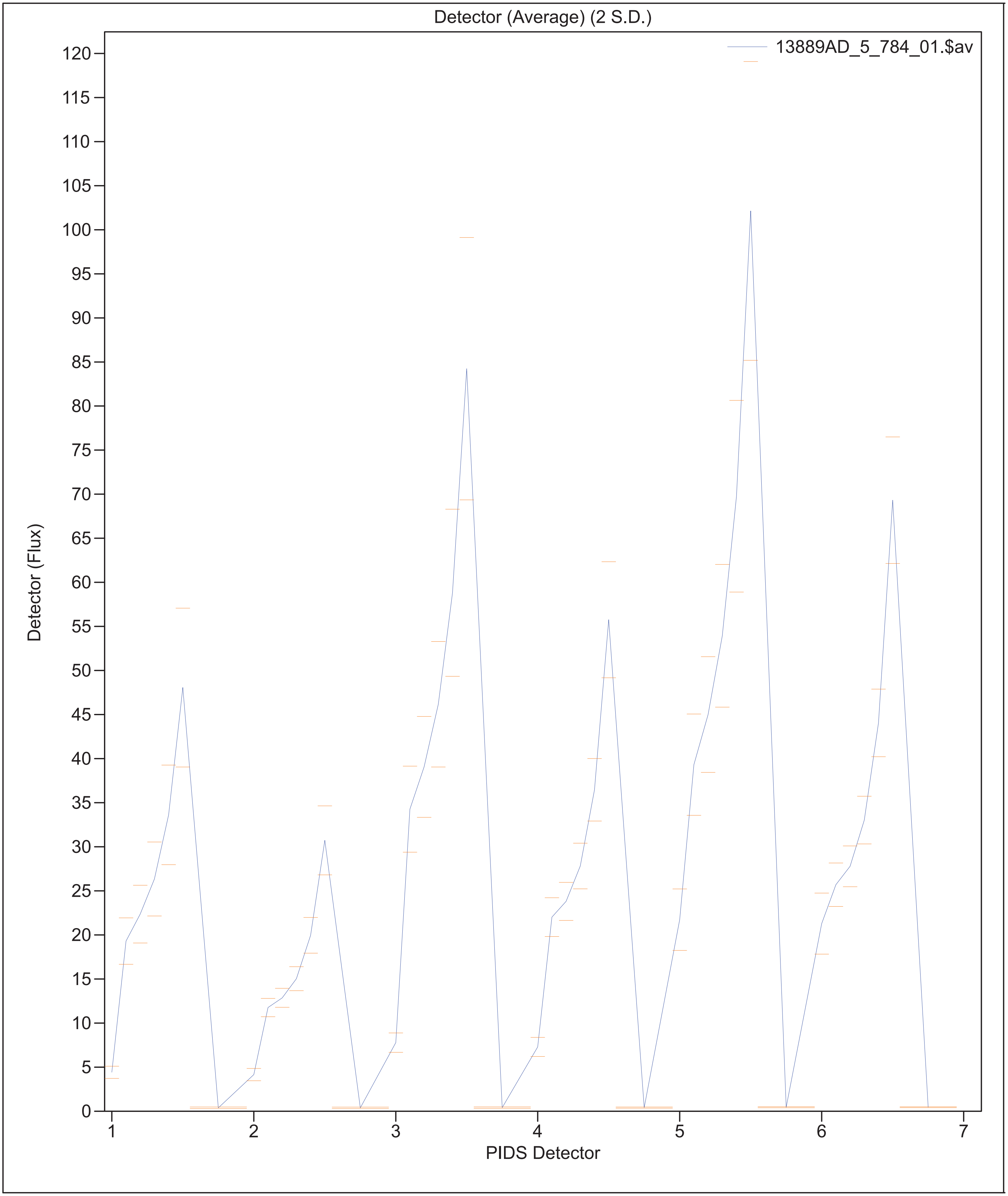
LS Particle Size Analyzer

9 Jul 2024 16:30

Beckman Coulter LS 13 320



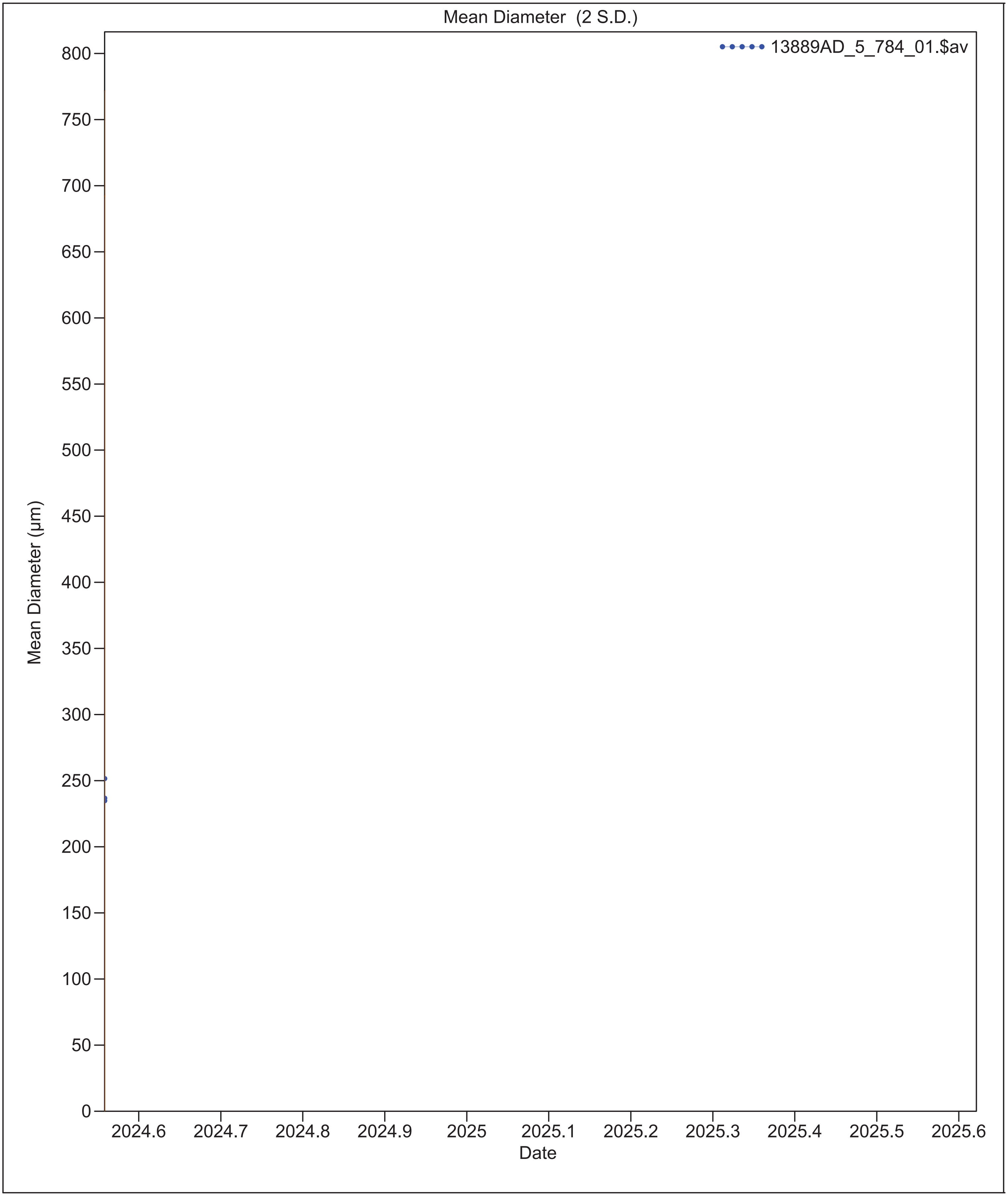
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 16:30

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

9 Jul 2024 16:30

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   13889AD_5_784_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	241.0 µm	9.133	222.8	259.3
Median:	172.2 µm	2.241	167.7	176.7
S.D.:	238.9 µm	18.36	202.2	275.6
Variance:	57304 μm^2	8965	39374	75233
C.V.:	99.03%	3.857	91.32	106.7
Skewness:	2.163	0.257	1.650	2.677
Kurtosis:	5.965	1.516	2.932	8.997
d_{10}:	22.37 µm	3.580	15.21	29.53
d_{50}:	172.2 µm	2.241	167.7	176.7
d_{90}:	543.1 µm	2.128	538.9	547.4

LS Particle Size Analyzer

10 Jul 2024 15:13

Beckman Coulter LS 13 320

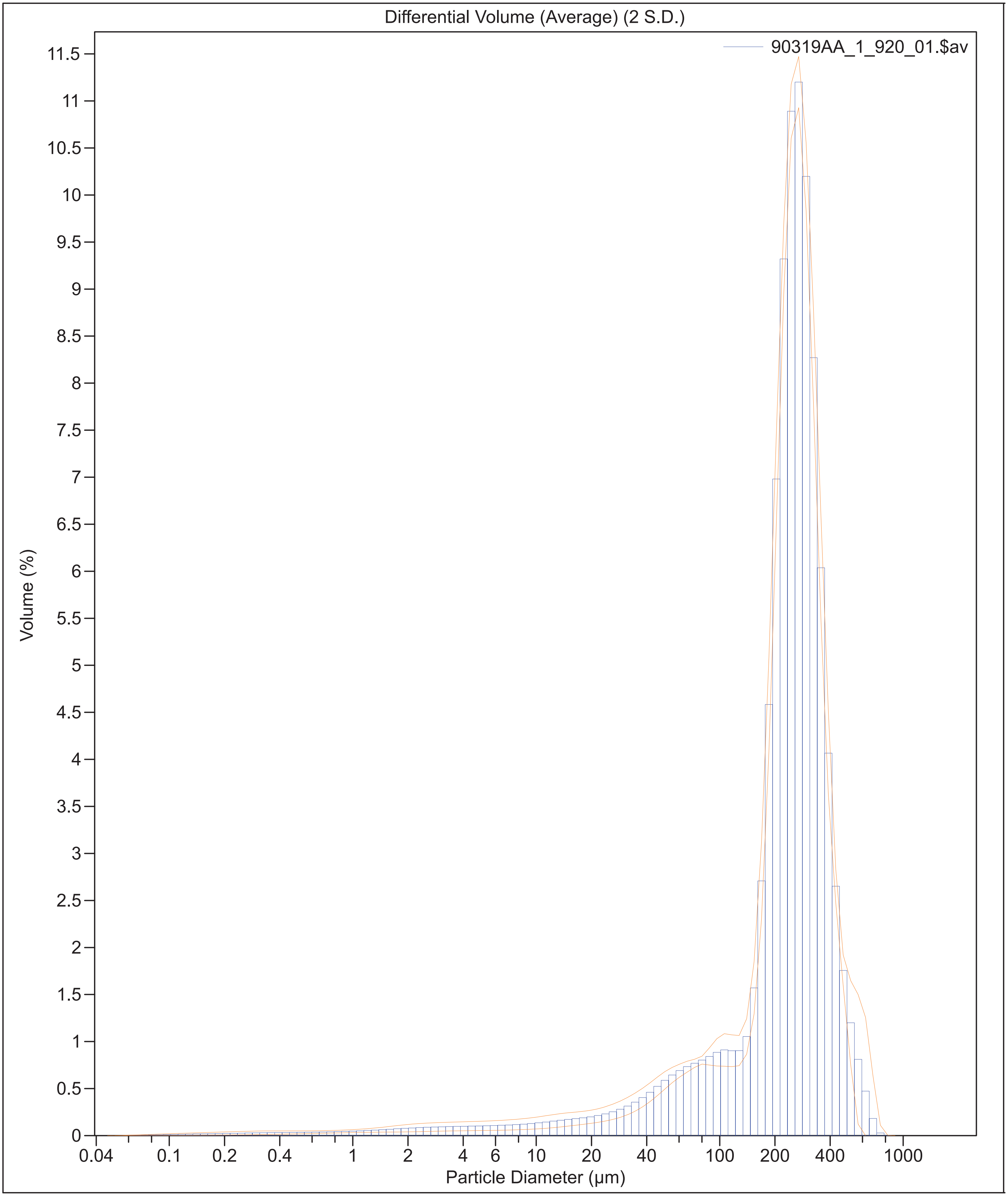
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90319AA_1_920_01.$av
	90319AA_1_920_01.$av
File ID:	90319AA_1
Sample ID:	90319AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90319AA_1_918_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90319AA_1_919_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90319AA_1_920_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:13

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:13

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90319AA_1_920_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	247.0 µm	S.D.:	117.6 µm
Median:	250.4 µm	Variance:	13828 $µm^2$
Mean/Median ratio:	0.986	C.V.:	47.6%
Mode:	269.2 µm	Skewness:	0.142 Right skewed
		Kurtosis:	0.703 Leptokurtic

d_{10}: 69.61 µm d_{50}: 250.4 µm d_{90}: 383.6 µm

Folk and Ward Statistics (Phi)

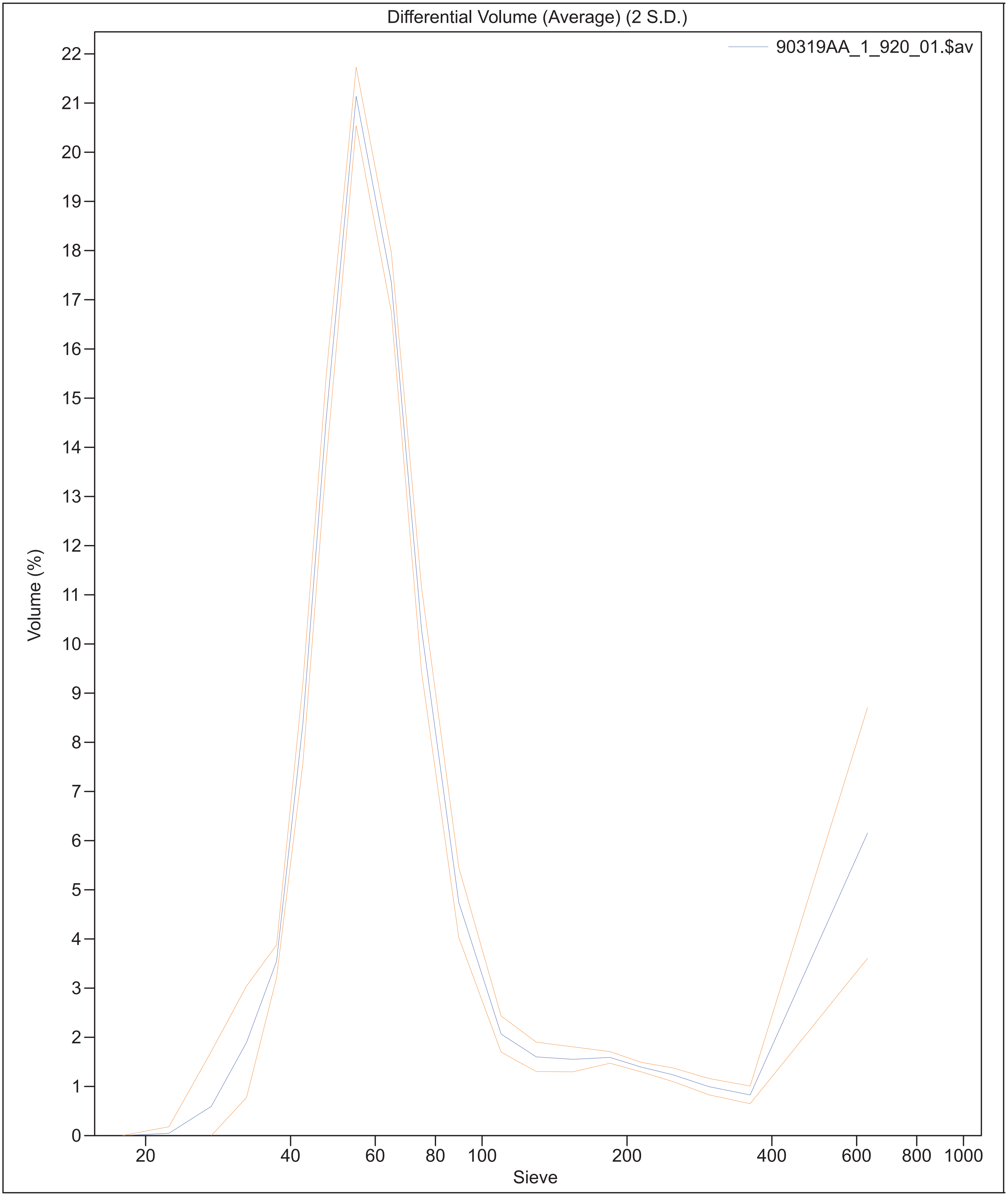
Mean:	2.14	Median:	2.00	Deviation:	0.95
Skewness:	0.46	Kurtosis:	2.32		

<10%	<25%	<50%	<75%	<90%
69.61 µm	190.7 µm	250.4 µm	311.4 µm	383.6 µm

LS Particle Size Analyzer

10 Jul 2024 15:13

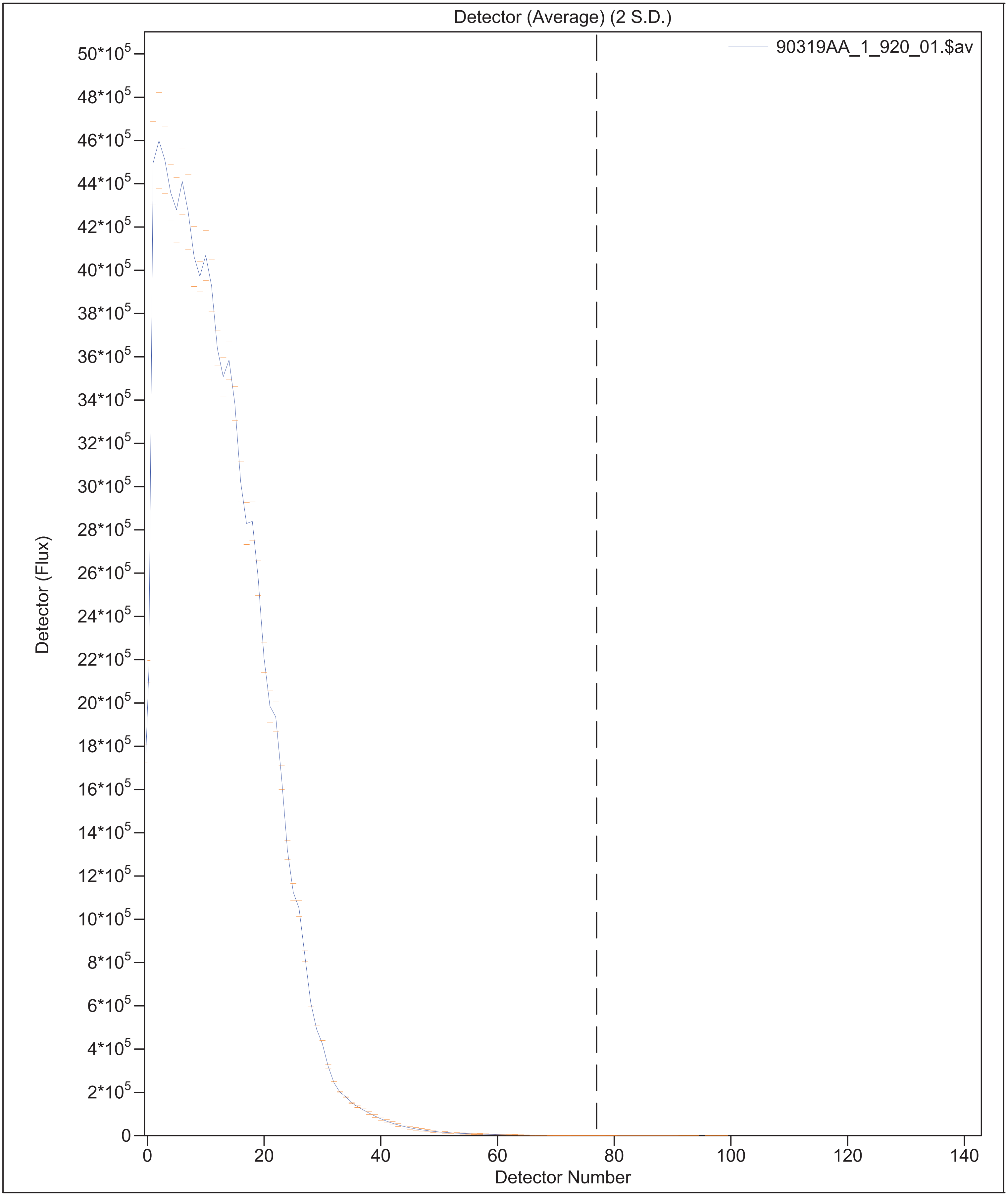
Beckman Coulter LS 13 320

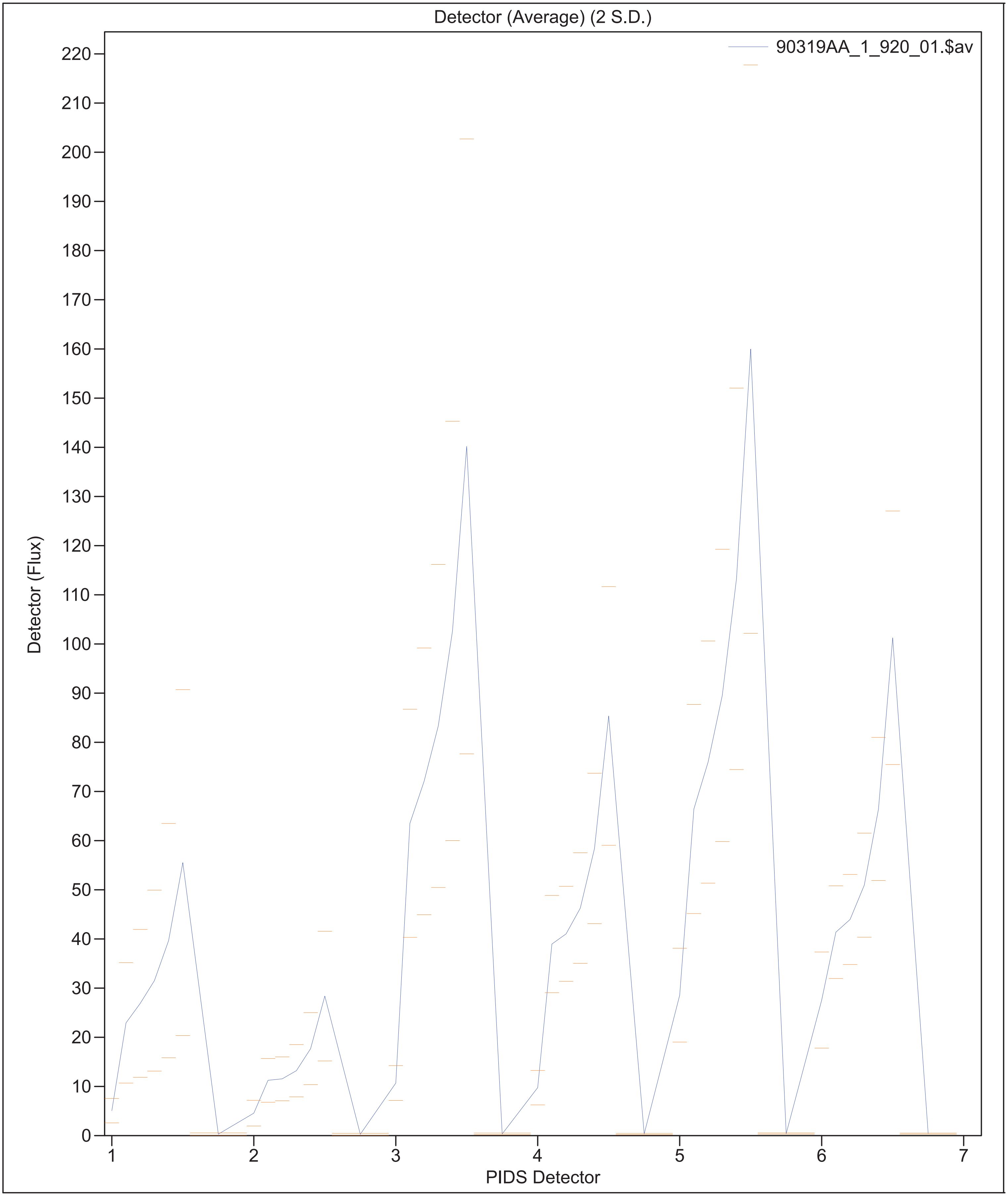


LS Particle Size Analyzer

10 Jul 2024 15:13

Beckman Coulter LS 13 320

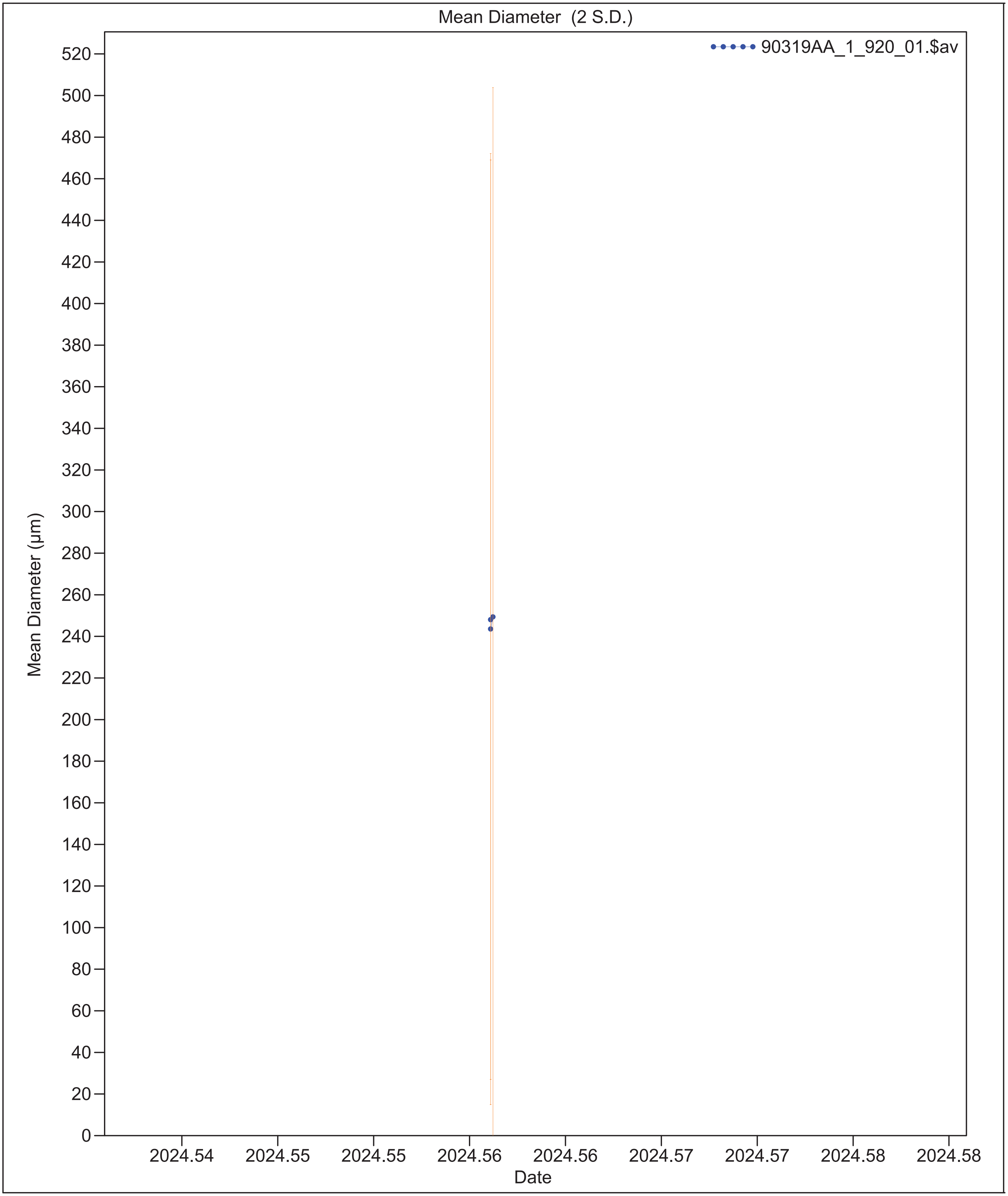



Detector (Average) (2 S.D.)
90319AA_1_920_01.$av
Detector (Flux)
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 15:13

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 15:13

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90319AA_1_920_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	247.0 µm	3.054	240.9	253.1
Median:	250.4 µm	1.211	248.0	252.8
S.D.:	117.3 µm	8.766	99.82	134.9
Variance:	13822 μm^2	2093	9636	18007
C.V.:	47.51%	3.272	40.96	54.05
Skewness:	0.111	0.181	-0.252	0.474
Kurtosis:	0.595	0.255	0.084	1.106
d_{10}:	70.20 µm	13.52	43.17	97.23
d_{50}:	250.4 µm	1.211	248.0	252.8
d_{90}:	383.9 µm	10.22	363.4	404.3

LS Particle Size Analyzer

10 Jul 2024 15:21

Beckman Coulter LS 13 320

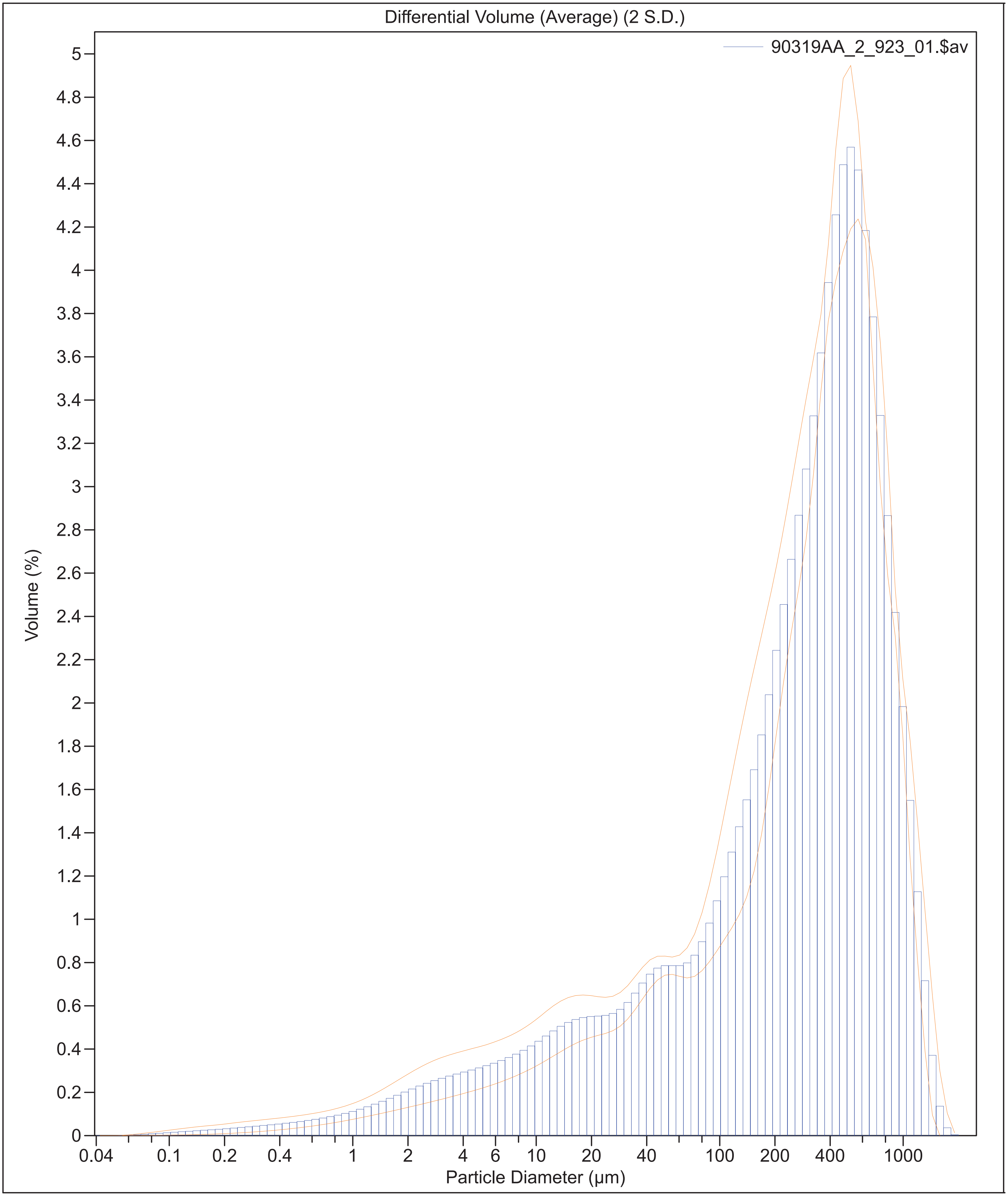
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90319AA_2_923_01.$av		
	90319AA_2_923_01.$av		
File ID:	90319AA_2		
Sample ID:	90319AA_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90319AA_2_921_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90319AA_2_922_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90319AA_2_923_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:21

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90319AA_2_923_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	375.3 µm	S.D.:	316.4 µm
Median:	320.3 µm	Variance:	100.1e3 $µm^2$
Mean/Median ratio:	1.172	C.V.:	84.3%
Mode:	517.2 µm	Skewness:	0.915 Right skewed
		Kurtosis:	0.501 Leptokurtic

d_{10}: 15.37 µm d_{50}: 320.3 µm d_{90}: 819.4 µm

Folk and Ward Statistics (Phi)

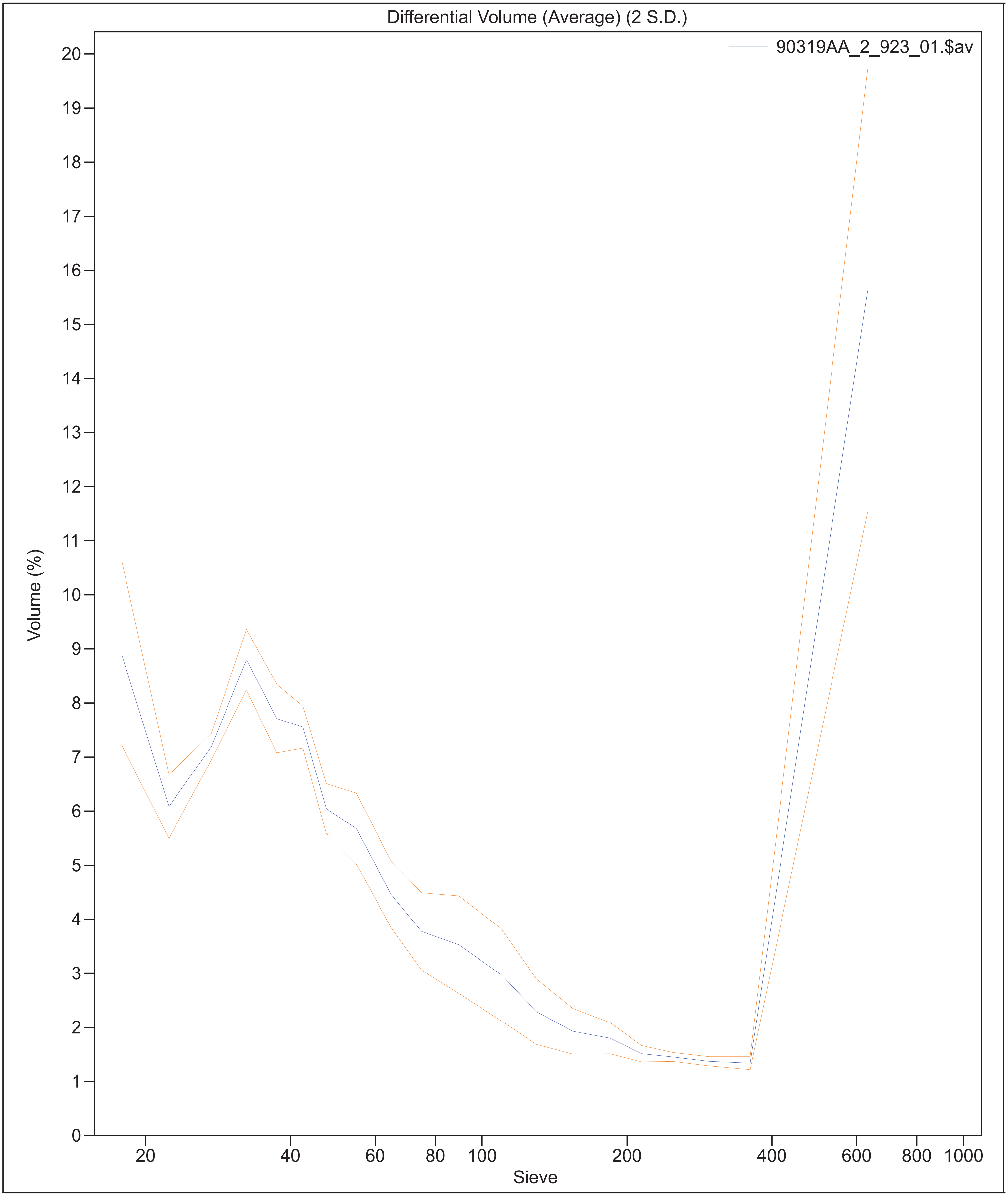
Mean:	2.27	Median:	1.64	Deviation:	2.19
Skewness:	0.52	Kurtosis:	1.30		

<10%	<25%	<50%	<75%	<90%
15.37 µm	105.6 µm	320.3 µm	565.3 µm	819.4 µm

LS Particle Size Analyzer

10 Jul 2024 15:21

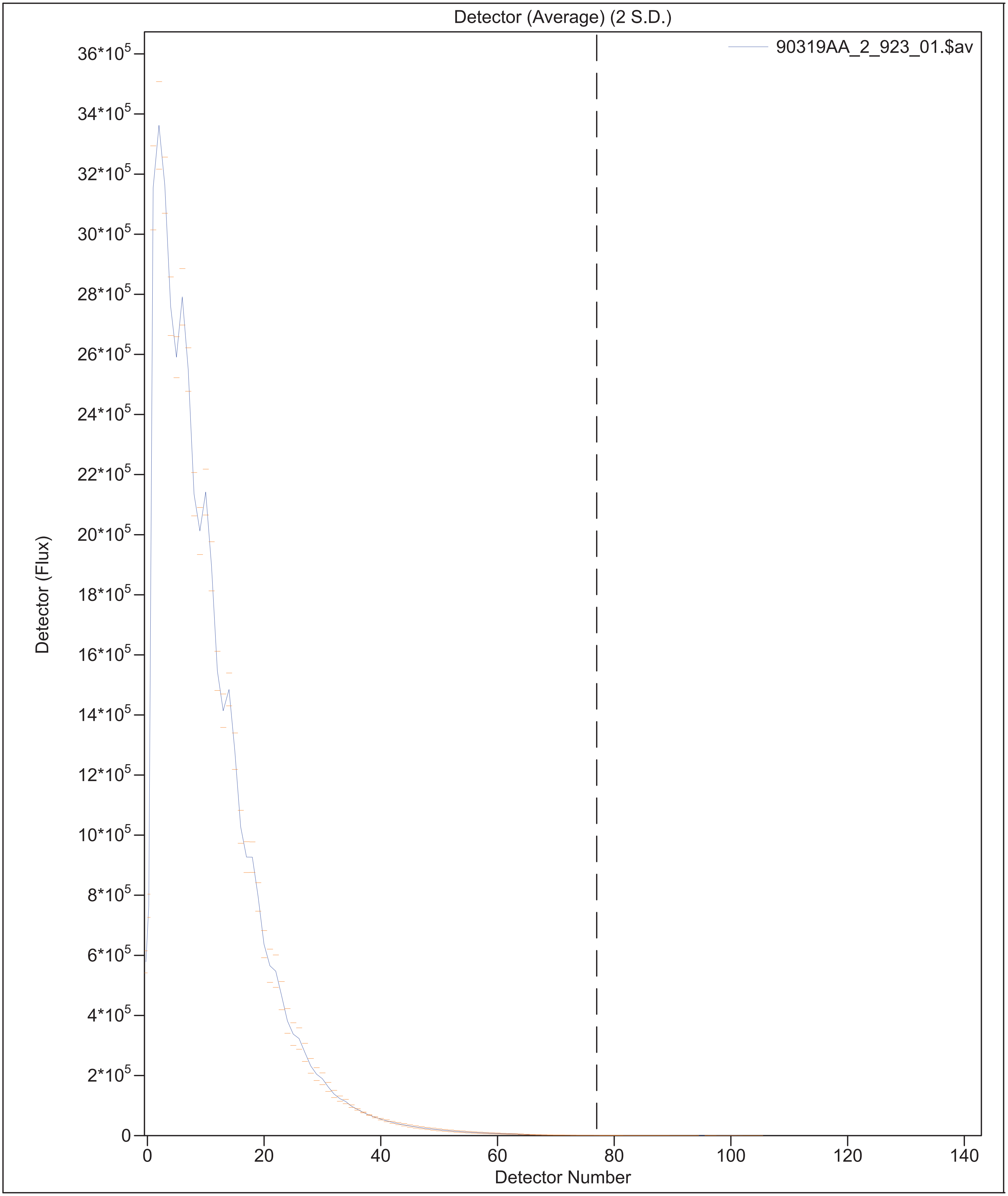
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:21

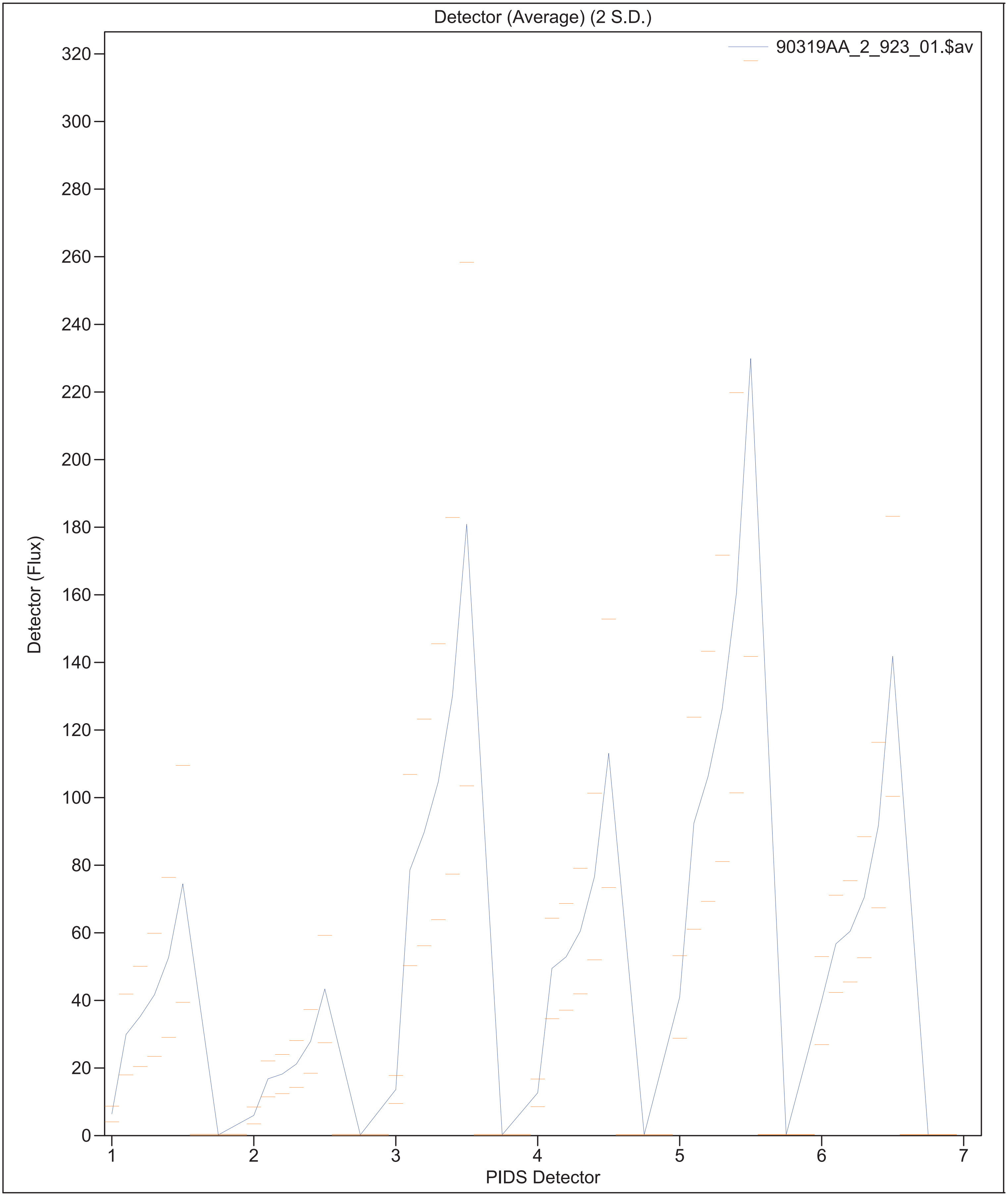
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:21

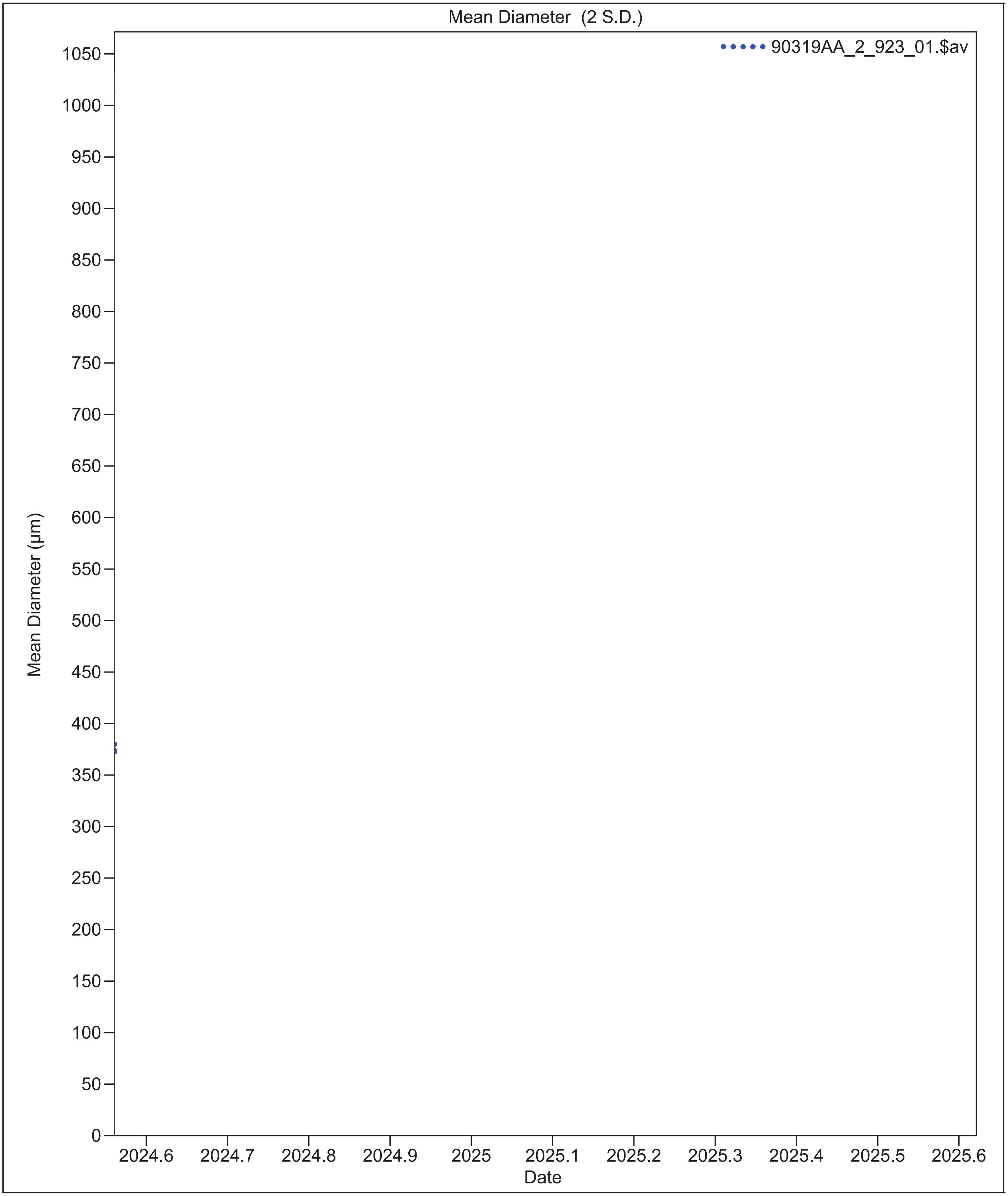
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:21

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)   Average of 3 files   90319AA_2_923_01.$av

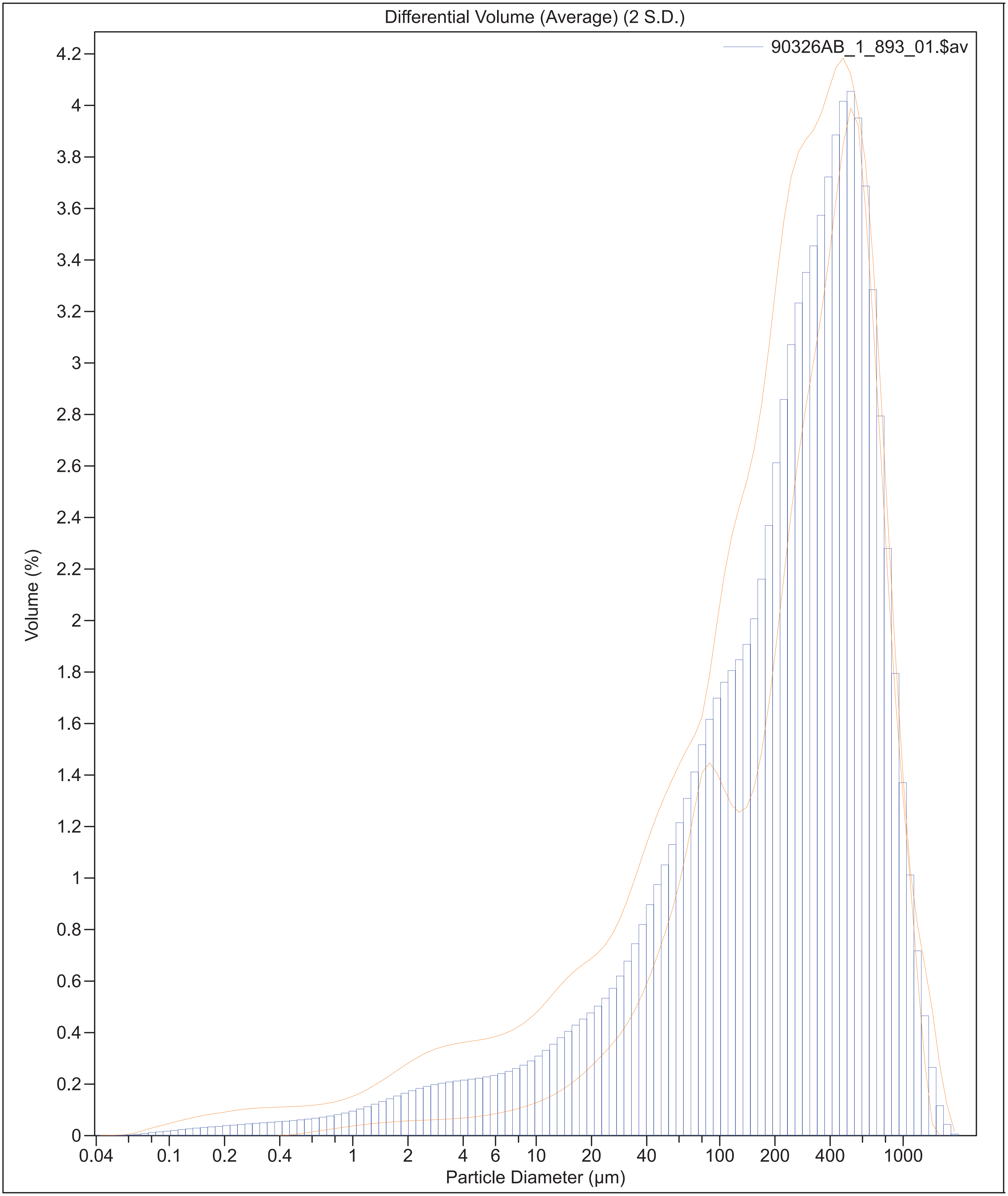
Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	375.3 µm	3.861	367.6	383.0
Median:	320.4 µm	7.386	305.7	335.2
S.D.:	316.2 µm	12.20	291.8	340.7
Variance:	100.1e3 μm^2	7666	84779	115.4e3
C.V.:	84.25%	2.576	79.10	89.40
Skewness:	0.908	0.053	0.803	1.014
Kurtosis:	0.465	0.190	0.085	0.845
d_{10}:	16.04 µm	4.886	6.271	25.81
d_{50}:	320.4 µm	7.386	305.7	335.2
d_{90}:	819.9 µm	16.53	786.8	853.0

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90326AB_1_893_01.$av
	90326AB_1_893_01.$av
File ID:	90326AB_1
Sample ID:	90326AB_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_1_891_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_1_892_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_1_893_01.$ls

Beckman Coulter LS 13 320



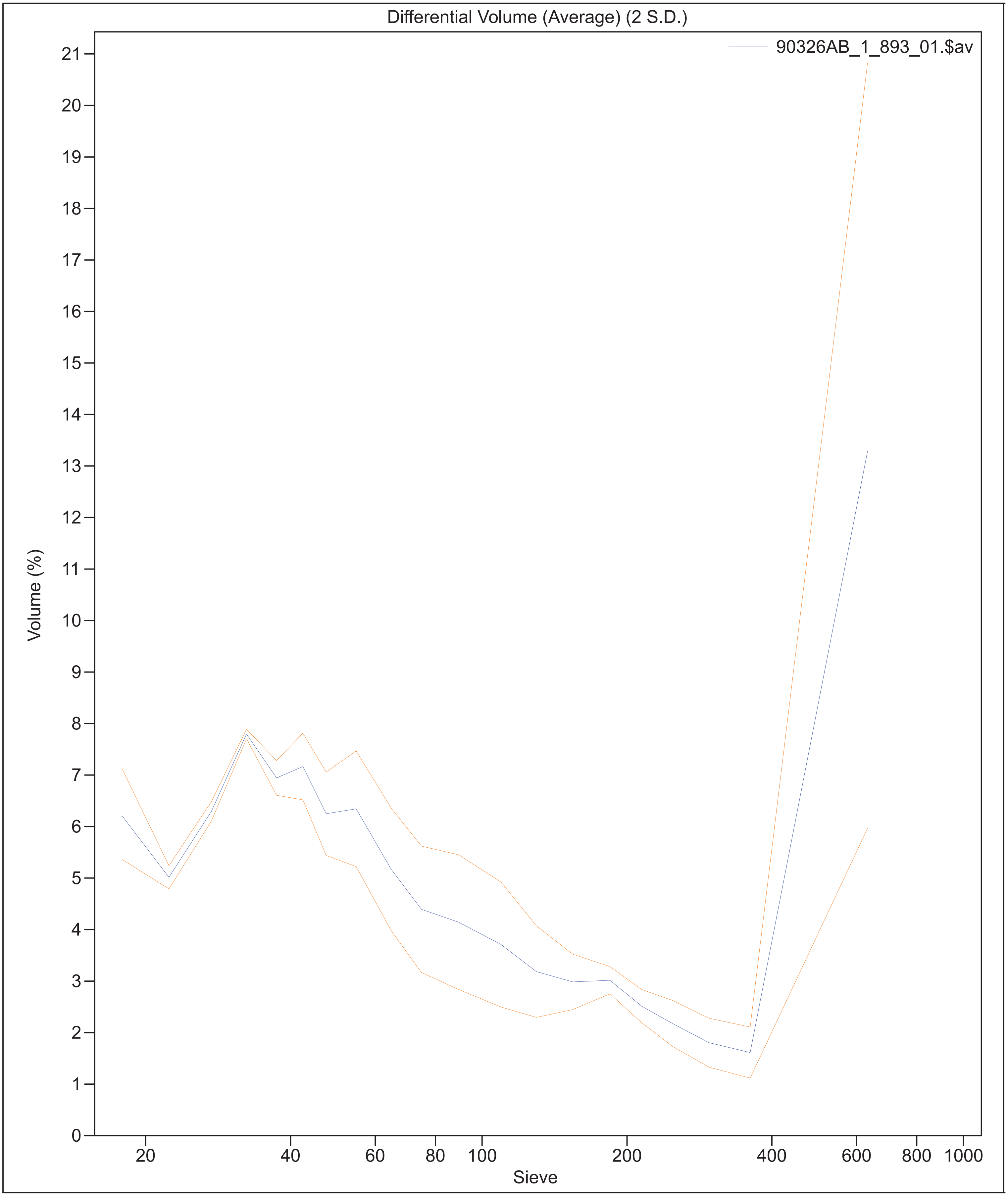
Volume Statistics (Arithmetic)		90326AB_1_893_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	333.7 µm	S.D.:	291.5 µm
Median:	265.3 µm	Variance:	84993 μm^2
Mean/Median ratio:	1.258	C.V.:	87.4%
Mode:	517.2 µm	Skewness:	1.128 Right skewed
		Kurtosis:	1.211 Leptokurtic

d_{10}: 23.84 µm d_{50}: 265.3 µm d_{90}: 738.5 µm

Folk and Ward Statistics (Phi)

Mean:	2.31	Median:	1.91	Deviation:	1.98
Skewness:	0.41	Kurtosis:	1.19		

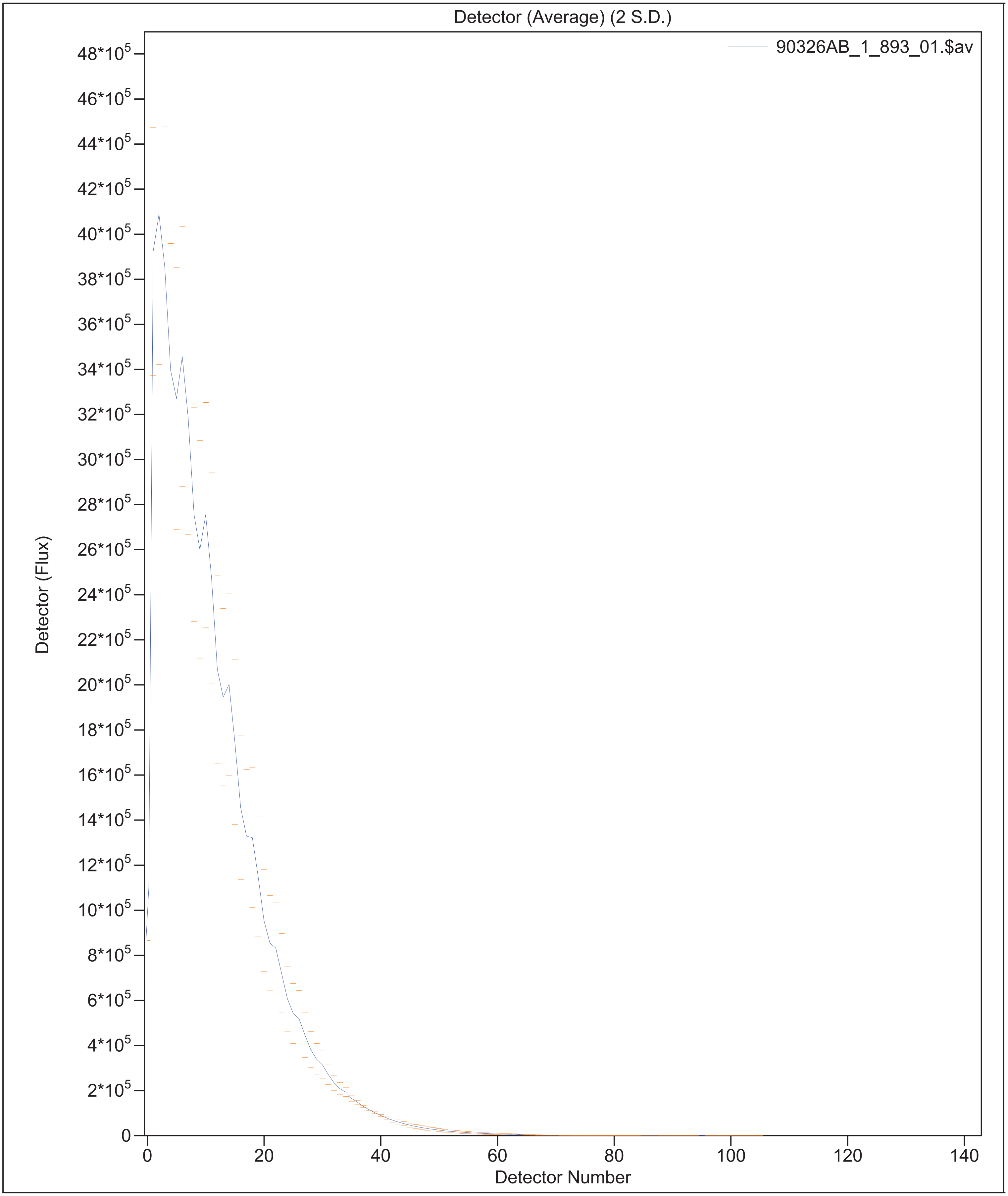
<10%	<25%	<50%	<75%	<90%
23.84 µm	93.03 µm	265.3 µm	503.6 µm	738.5 µm

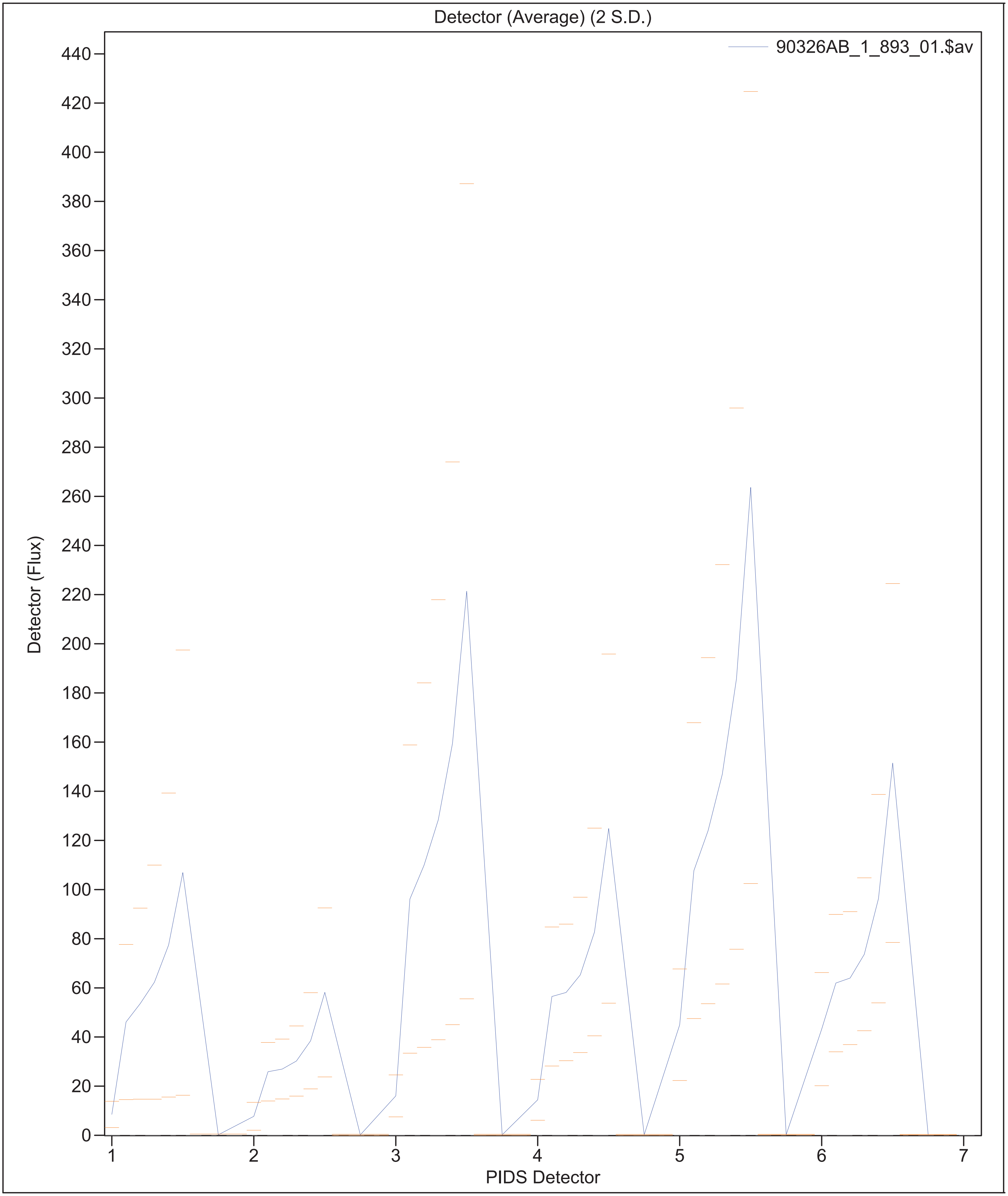

Differential Volume (Average) (2 S.D.)
90326AB_1_893_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
Sieve
20
40
60
80
100
200
400
600
800
1000

LS Particle Size Analyzer

10 Jul 2024 14:05

Beckman Coulter LS 13 320

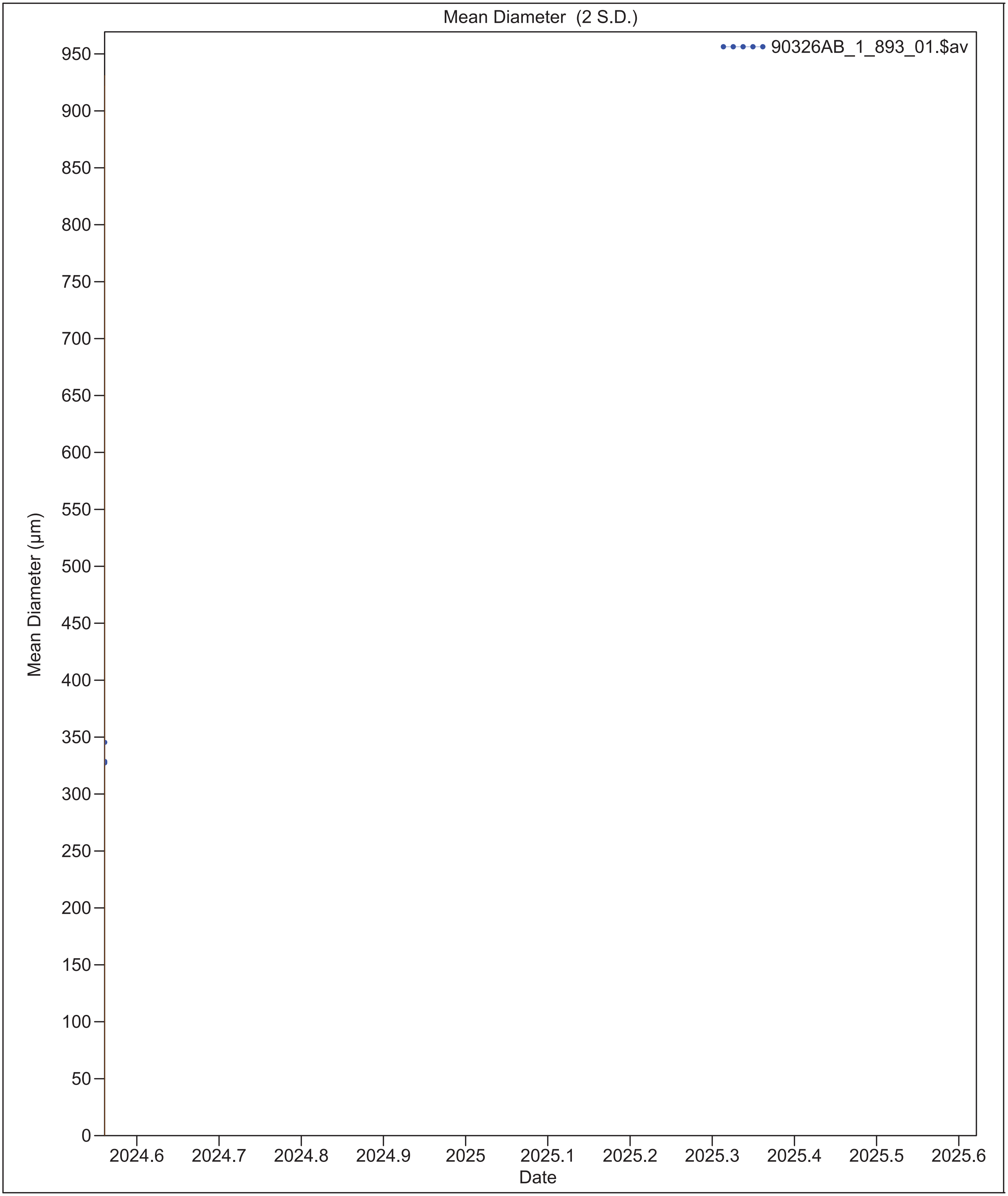



Detector (Average) (2 S.D.)
90326AB_1_893_01.$av
Detector (Flux)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
380
400
420
440
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 14:05

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)   Average of 3 files   90326AB_1_893_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	333.7 µm	10.07	313.6	353.9
Median:	264.8 µm	9.484	245.8	283.7
S.D.:	291.3 µm	8.708	273.9	308.7
Variance:	84925 μm^2	5111	74704	95146
C.V.:	87.36%	4.125	79.11	95.61
Skewness:	1.127	0.106	0.916	1.338
Kurtosis:	1.182	0.501	0.181	2.184
d_{10}:	26.18 µm	14.03	0	54.25
d_{50}:	264.8 µm	9.484	245.8	283.7
d_{90}:	738.6 µm	5.544	727.5	749.7

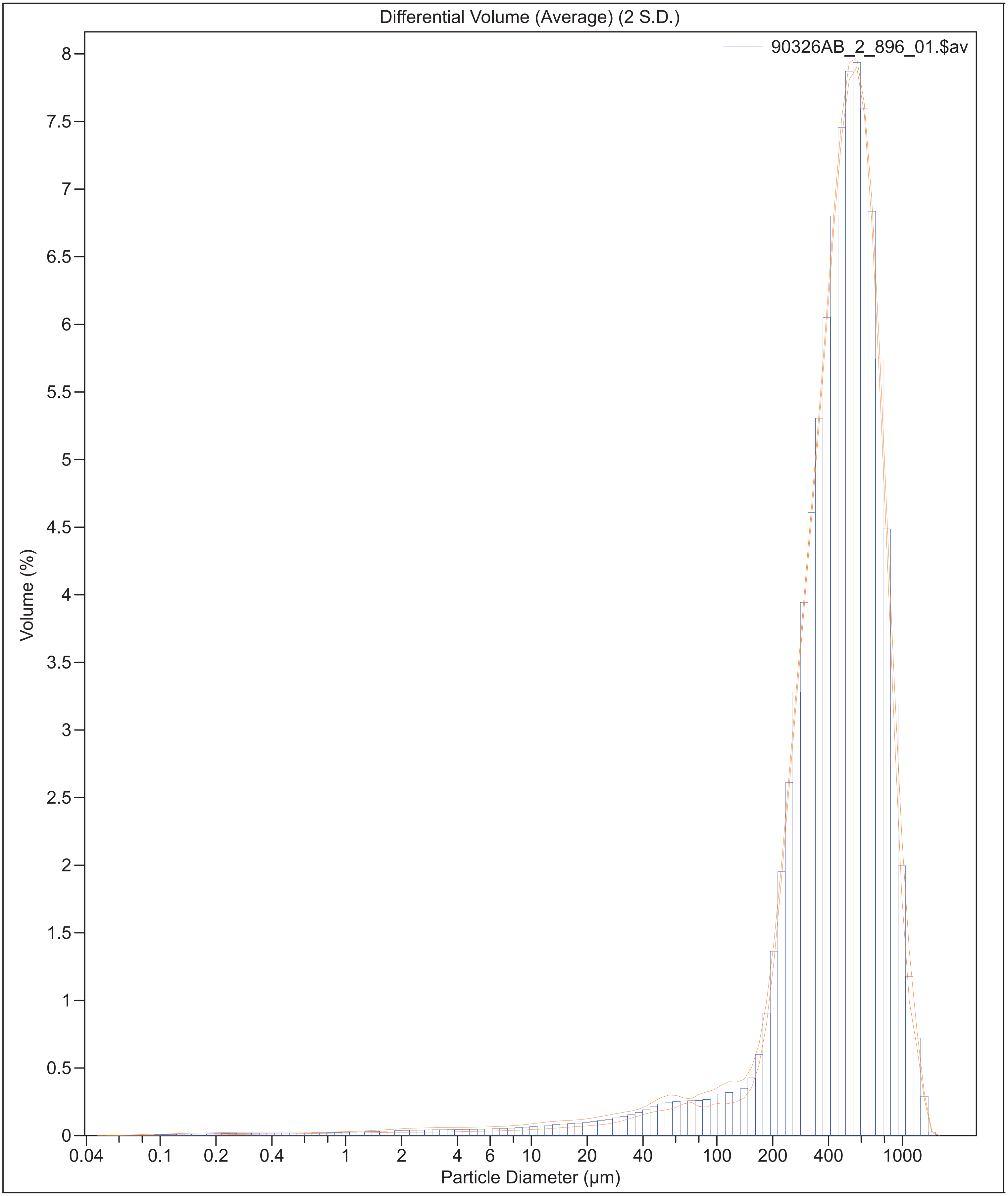
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90326AB_2_896_01.$av		
	90326AB_2_896_01.$av		
File ID:	90326AB_2		
Sample ID:	90326AB_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_2_894_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_2_895_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_2_896_01.$ls

LS Particle Size Analyzer

10 Jul 2024 14:13

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)		90326AB_2_896_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	497.3 µm	S.D.:	243.4 µm
Median:	481.0 µm	Variance:	59264 μm^2
Mean/Median ratio:	1.034	C.V.:	49.0%
Mode:	567.7 µm	Skewness:	0.372 Right skewed
		Kurtosis:	0.187 Leptokurtic

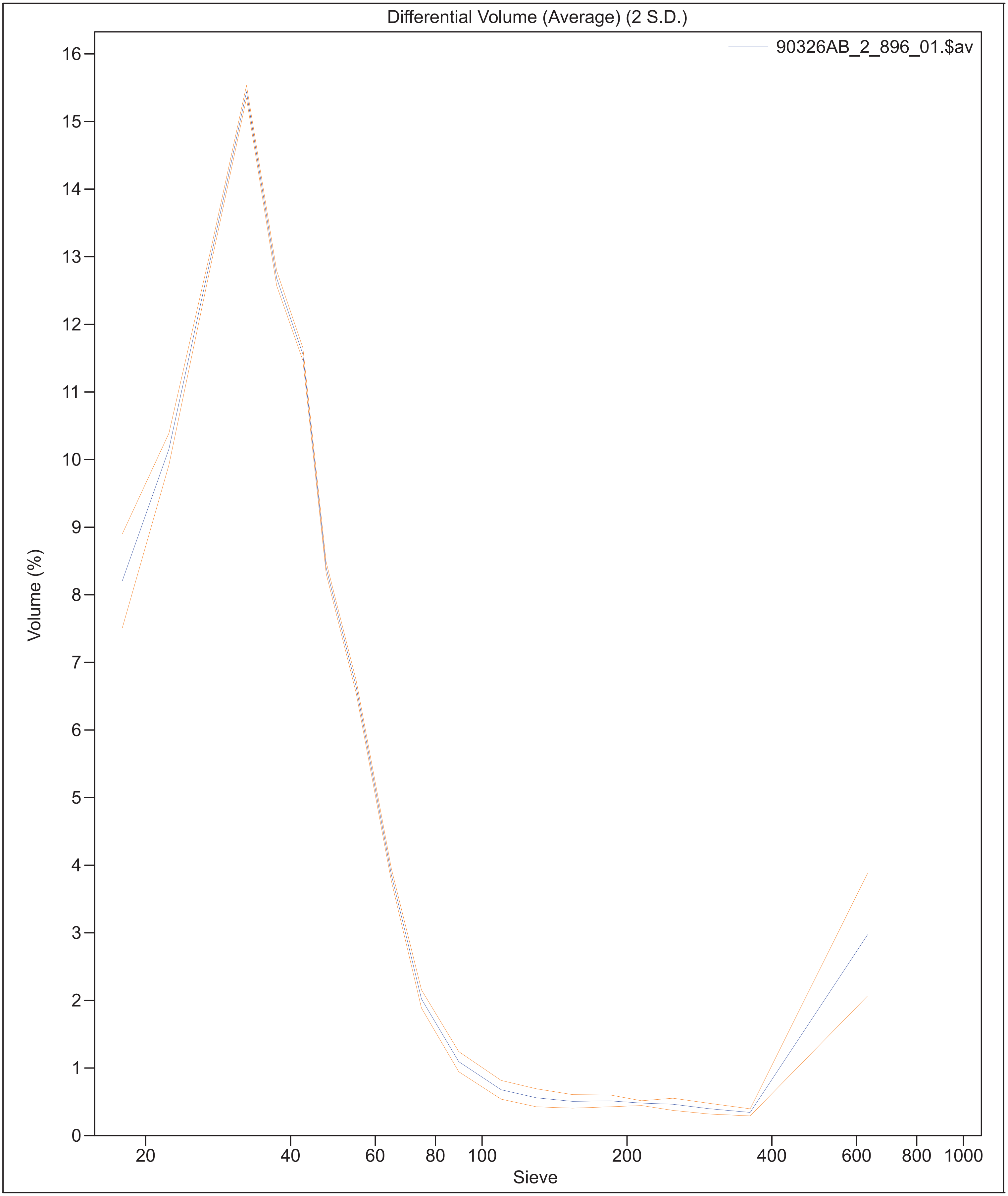
d_{10}: 211.5 µm d_{50}: 481.0 µm d_{90}: 819.2 µm

Folk and Ward Statistics (Phi)

Mean:	1.13	Median:	1.06	Deviation:	0.89
Skewness:	0.31	Kurtosis:	1.45		

<10%	<25%	<50%	<75%	<90%
211.5 µm	329.9 µm	481.0 µm	648.9 µm	819.2 µm

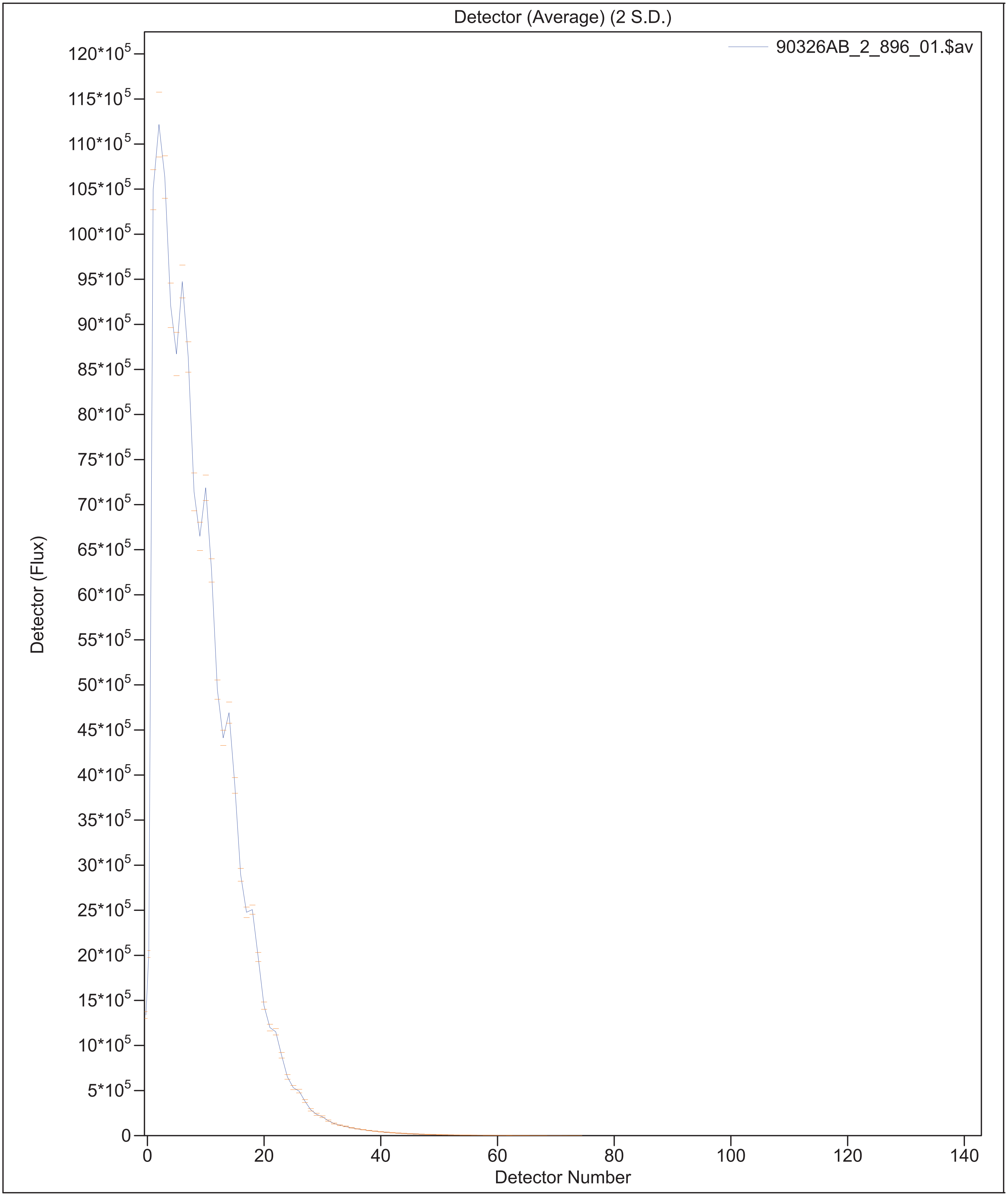
Beckman Coulter LS 13 320

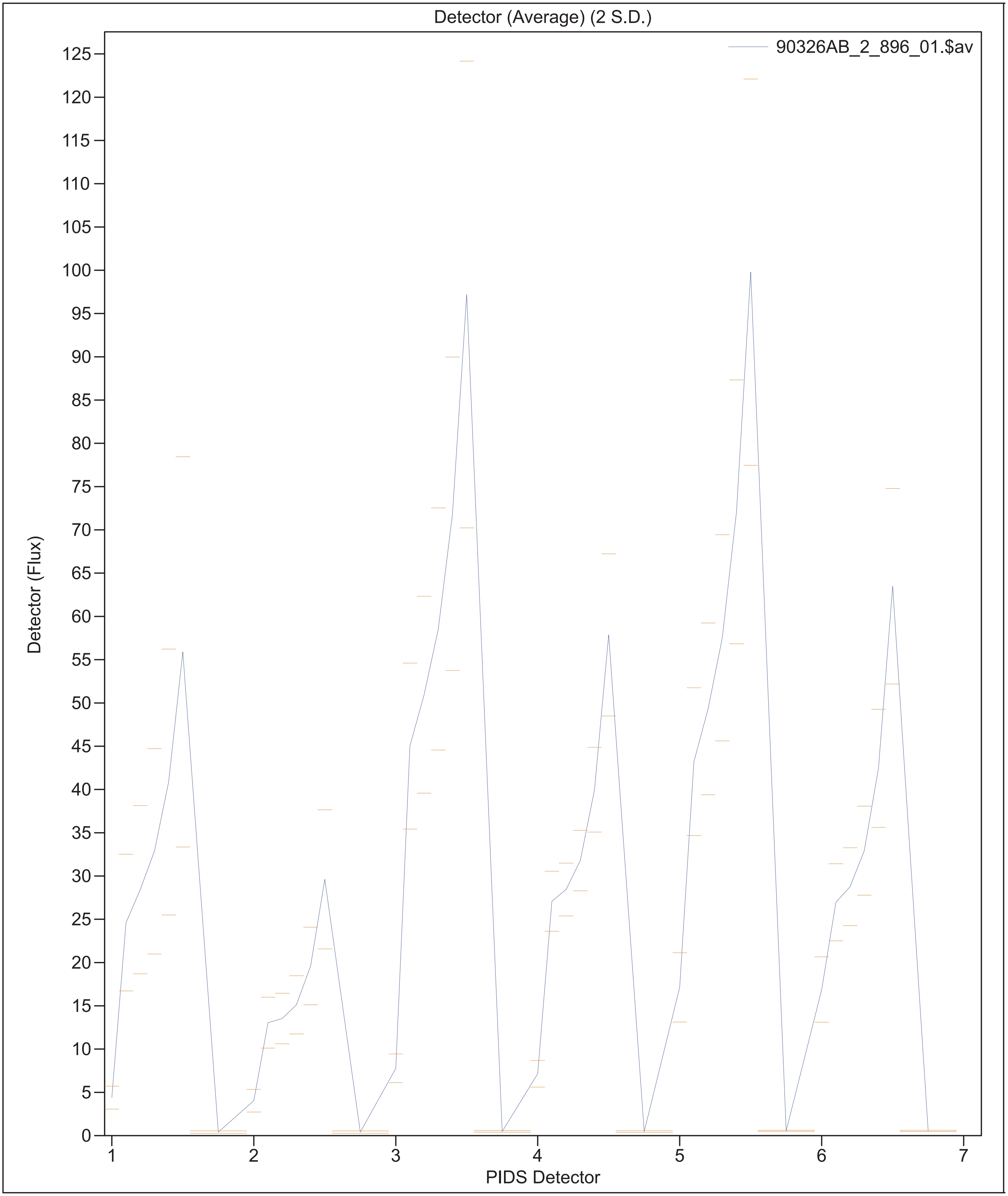


LS Particle Size Analyzer

10 Jul 2024 14:13

Beckman Coulter LS 13 320

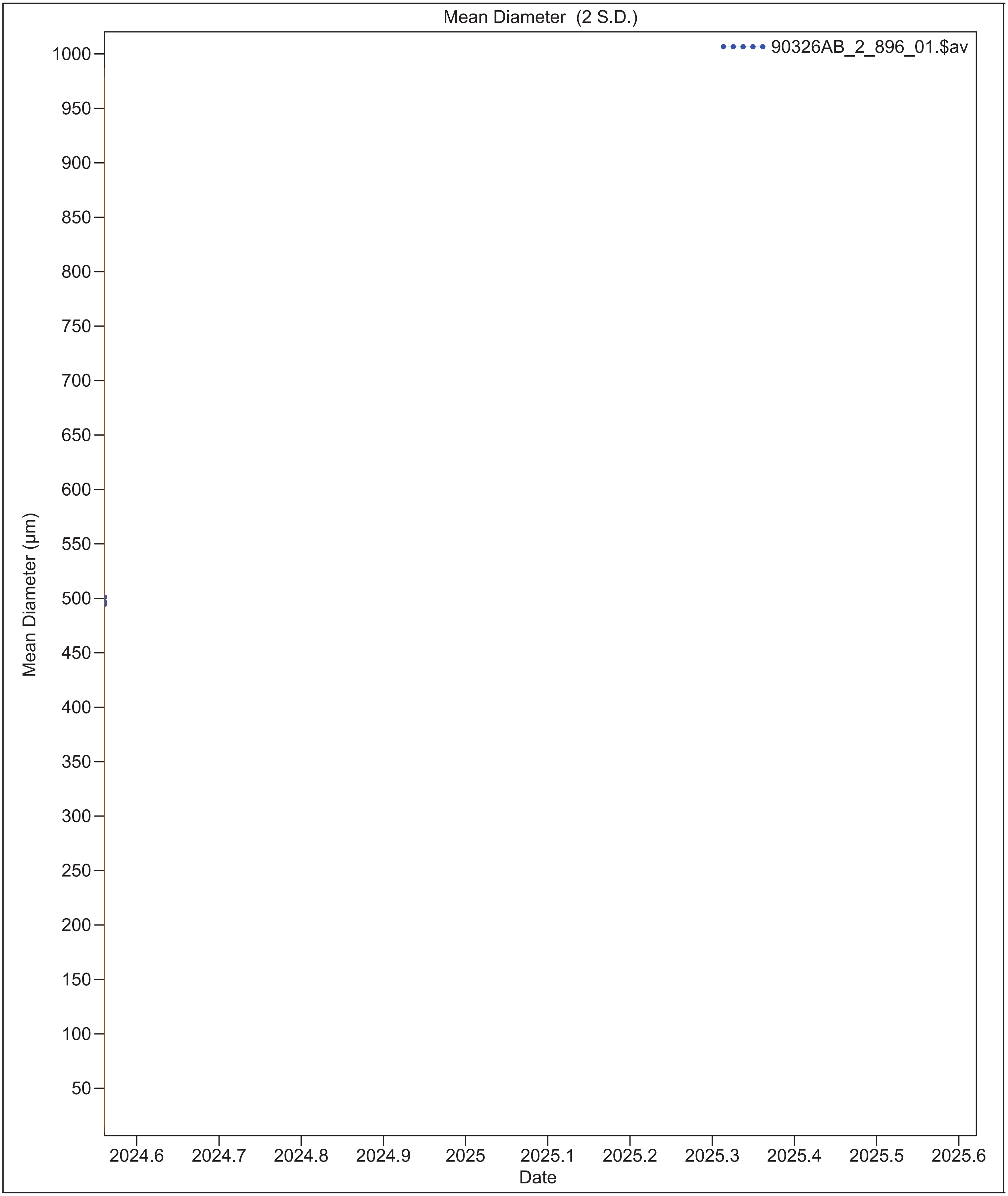



Detector (Average) (2 S.D.)
90326AB_2_896_01.$av
Detector (Flux)
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 14:13

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 14:13

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90326AB_2_896_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	497.3 µm	3.389	490.5	504.0
Median:	481.1 µm	2.300	476.5	485.7
S.D.:	243.4 µm	1.371	240.7	246.2
Variance:	59256 μm^2	669.1	57918	60595
C.V.:	48.95%	0.402	48.15	49.76
Skewness:	0.372	0.016	0.340	0.403
Kurtosis:	0.186	0.030	0.126	0.247
d_{10}:	211.4 µm	2.894	205.6	217.2
d_{50}:	481.1 µm	2.300	476.5	485.7
d_{90}:	819.2 µm	5.849	807.5	830.9

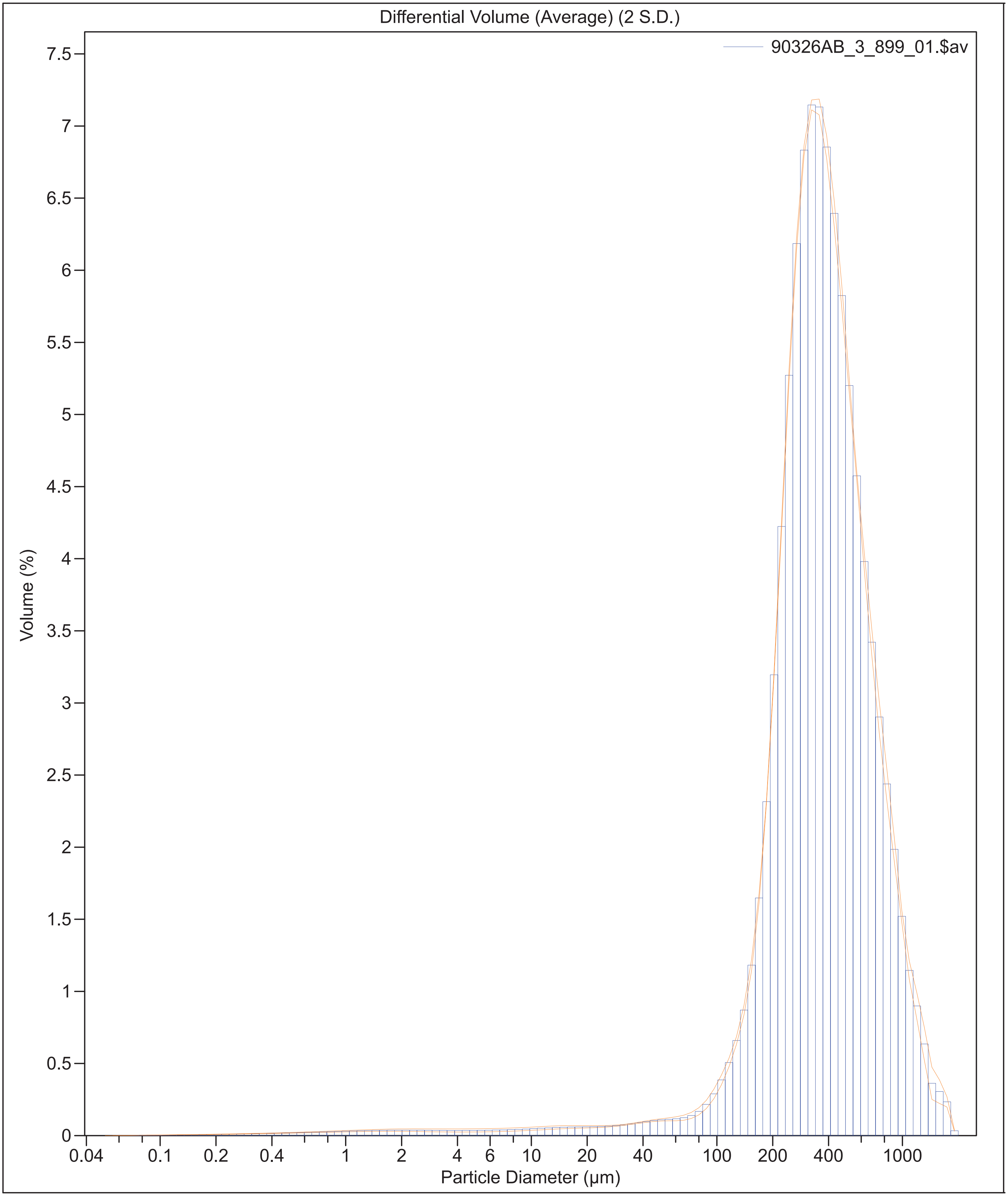
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90326AB_3_899_01.$av
	90326AB_3_899_01.$av
File ID:	90326AB_3
Sample ID:	90326AB_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_3_897_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_3_898_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90326AB_3_899_01.$ls

LS Particle Size Analyzer

10 Jul 2024 14:23

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 14:23

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90326AB_3_899_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	431.7 µm	S.D.:	264.3 µm
Median:	367.1 µm	Variance:	69832 $µm^2$
Mean/Median ratio:	1.176	C.V.:	61.2%
Mode:	324.4 µm	Skewness:	1.572 Right skewed
		Kurtosis:	3.576 Leptokurtic

d_{10}: 184.5 µm d_{50}: 367.1 µm d_{90}: 776.3 µm

Folk and Ward Statistics (Phi)

Mean:	1.41	Median:	1.45	Deviation:	0.83
Skewness:	-0.01	Kurtosis:	1.14		

<10%	<25%	<50%	<75%	<90%
184.5 µm	261.0 µm	367.1 µm	536.7 µm	776.3 µm

LS Particle Size Analyzer

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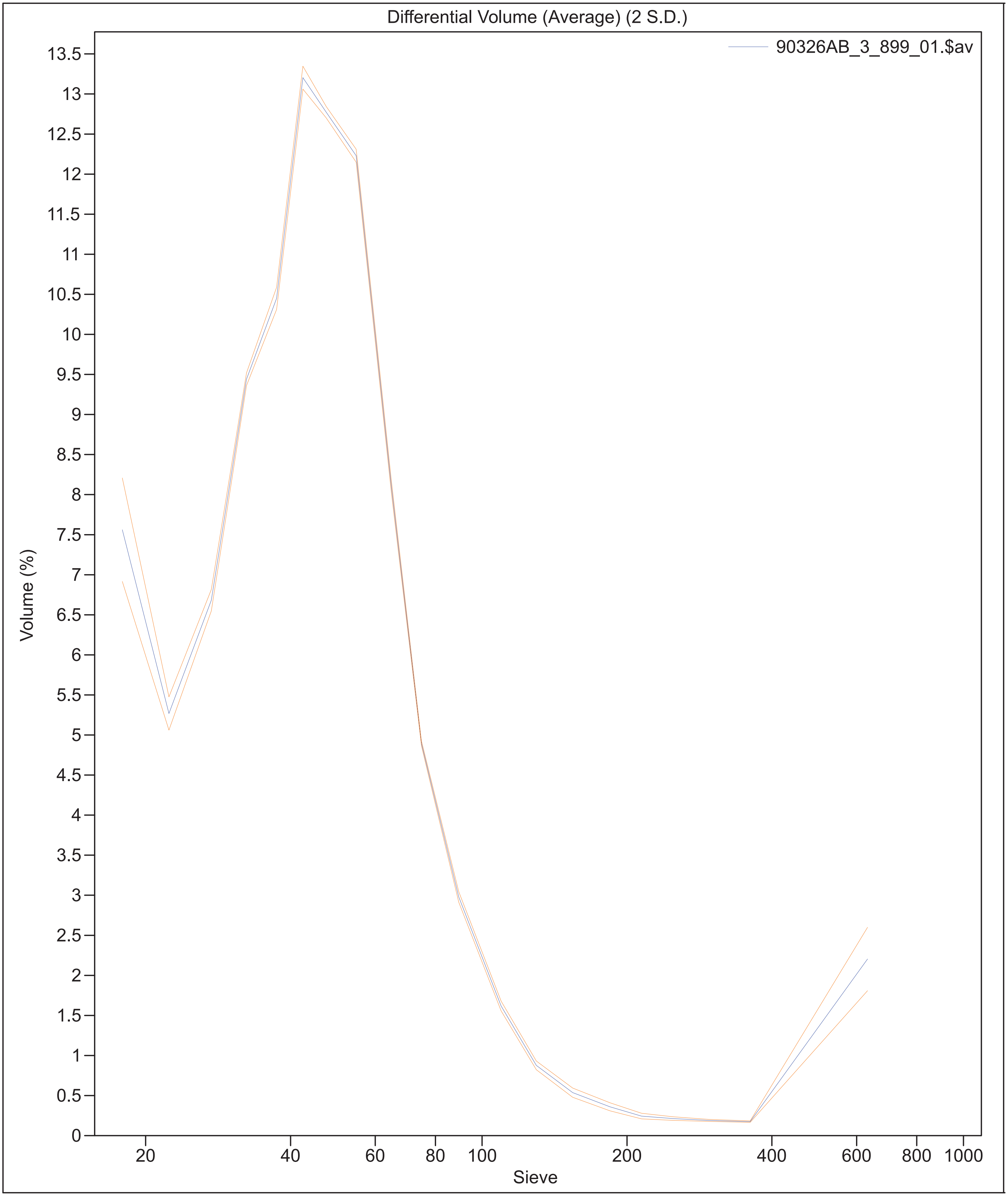
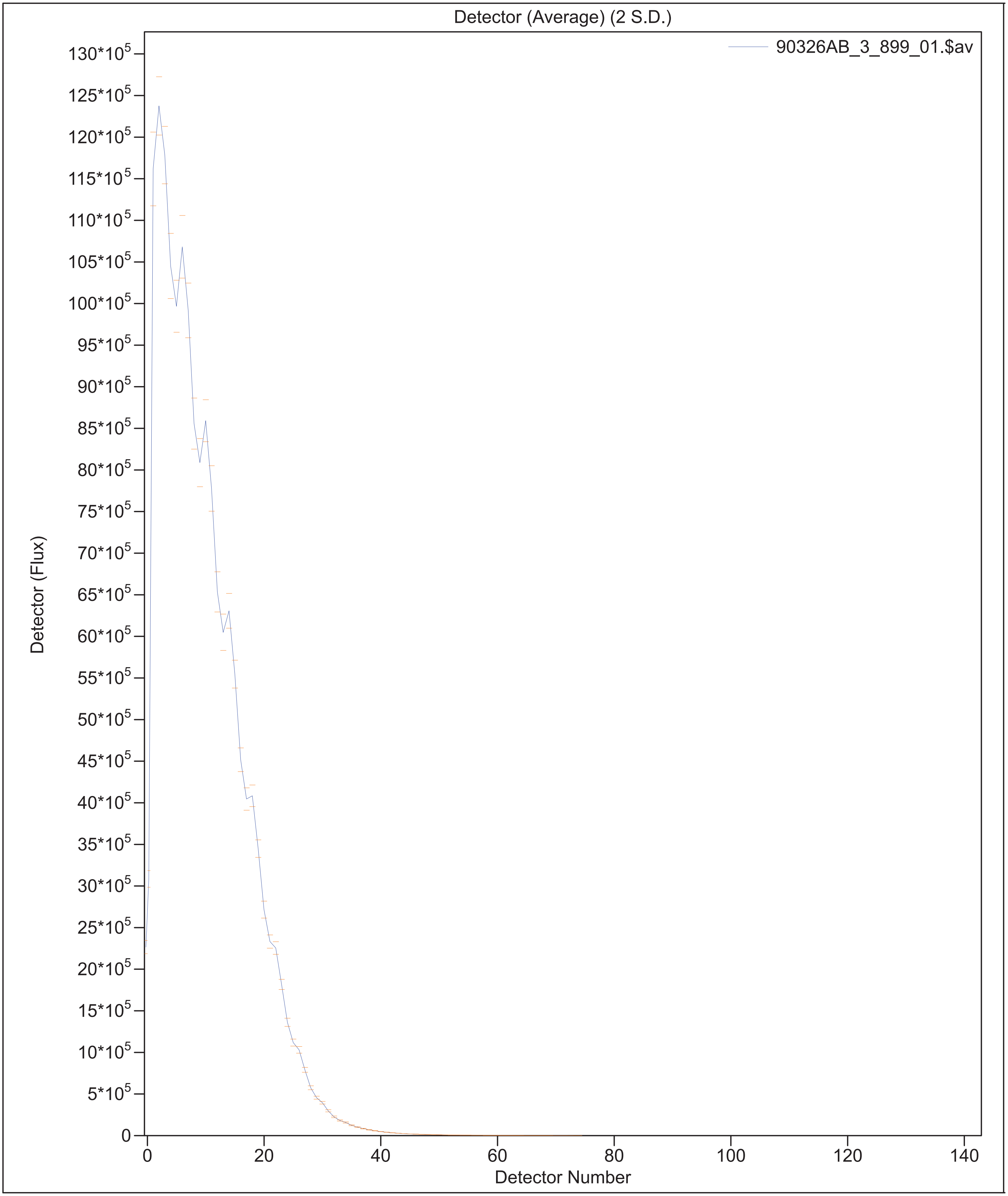
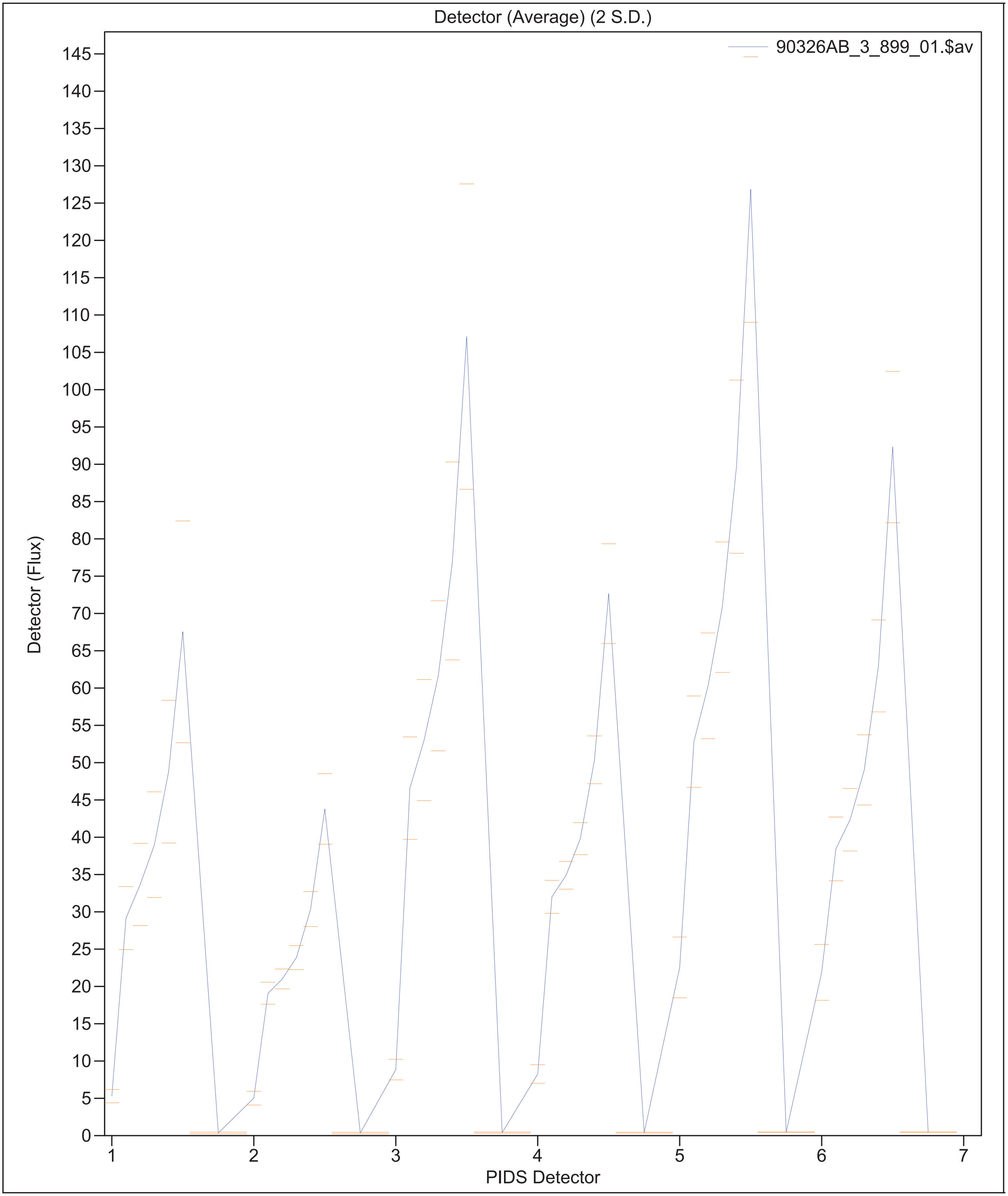
Beckman Coulter LS 13 320



LS Particle Size Analyzer

Beckman Coulter LS 13 320



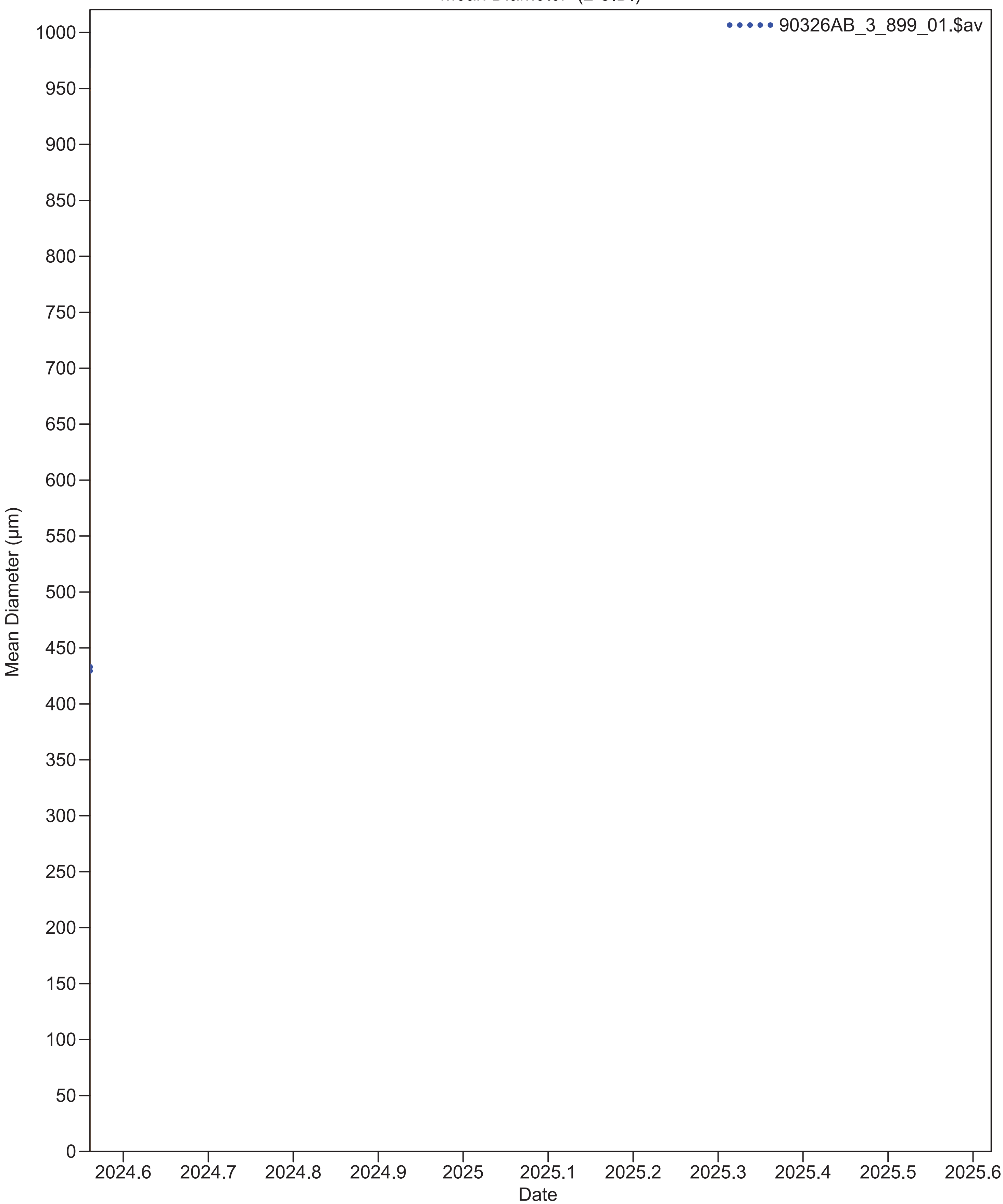

Detector (Average) (2 S.D.)
90326AB_3_899_01.$av
Detector (Flux)
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 14:23

Beckman Coulter LS 13 320

Mean Diameter (2 S.D.)



Volume Statistics (Arithmetic)   Average of 3 files   90326AB_3_899_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	431.7 µm	2.122	427.5	436.0
Median:	367.1 µm	0.374	366.4	367.9
S.D.:	264.2 µm	4.192	255.8	272.6
Variance:	69829 µm^2	2209	65410	74248
C.V.:	61.20%	0.707	59.79	62.62
Skewness:	1.571	0.025	1.522	1.620
Kurtosis:	3.568	0.039	3.490	3.646
d_{10}:	184.5 µm	0.485	183.6	185.5
d_{50}:	367.1 µm	0.374	366.4	367.9
d_{90}:	776.3 µm	5.338	765.7	787.0

LS Particle Size Analyzer

10 Jul 2024 12:27

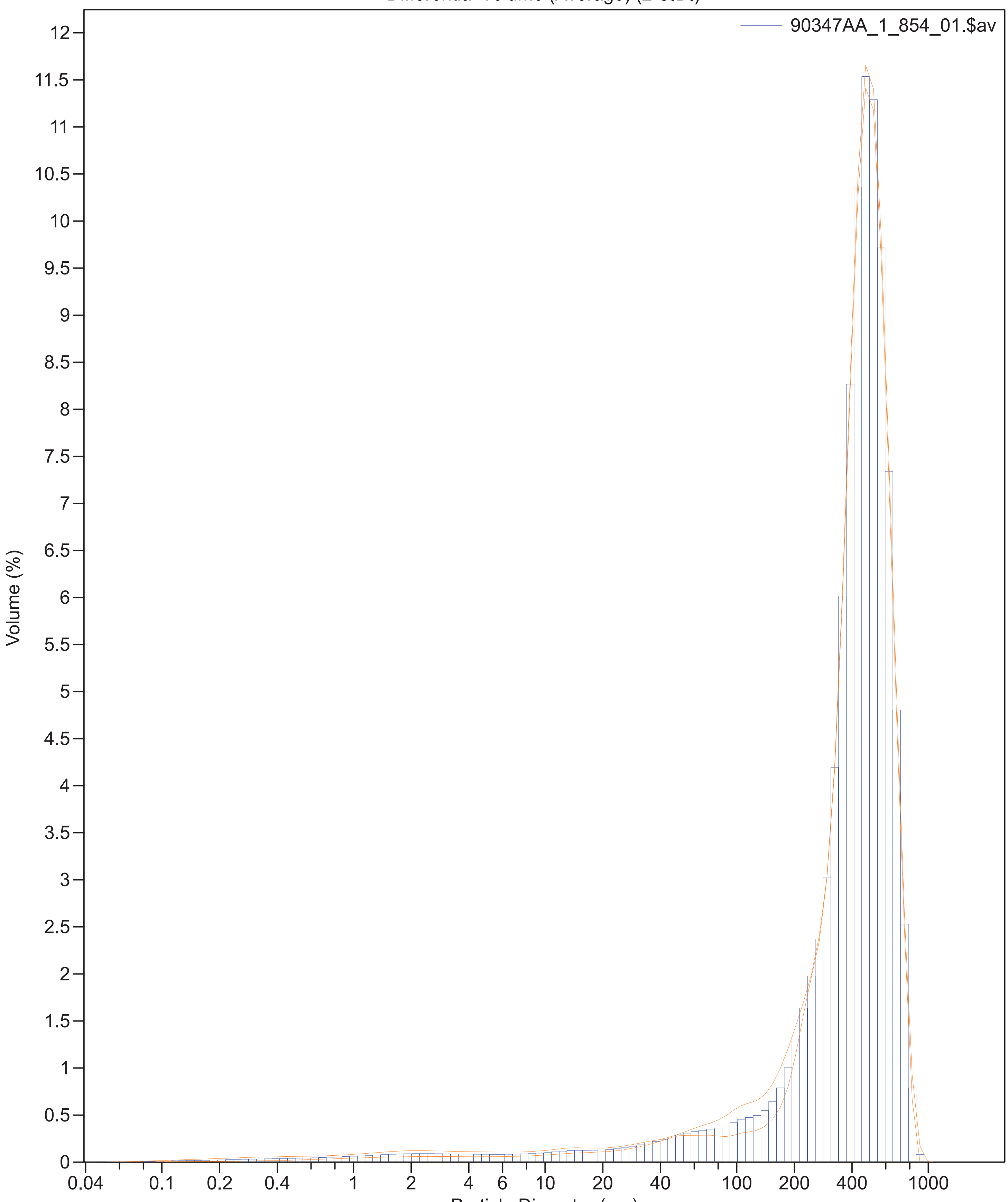
Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90347AA_1_854_01.$av		
	90347AA_1_854_01.$av		
File ID:	90347AA_1		
Sample ID:	90347AA_1		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_1_852_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_1_853_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_1_854_01.$ls

Beckman Coulter LS 13 320

Differential Volume (Average) (2 S.D.)



LS Particle Size Analyzer

10 Jul 2024 12:27

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90347AA_1_854_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	420.5 µm	S.D.:	183.0 µm
Median:	442.2 µm	Variance:	33489 μm^2
Mean/Median ratio:	0.951	C.V.:	43.5%
Mode:	471.1 µm	Skewness:	-0.479 Left skewed
		Kurtosis:	-0.095 Platykurtic

d_{10}: 138.7 µm d_{50}: 442.2 µm d_{90}: 638.8 µm

Folk and Ward Statistics (Phi)

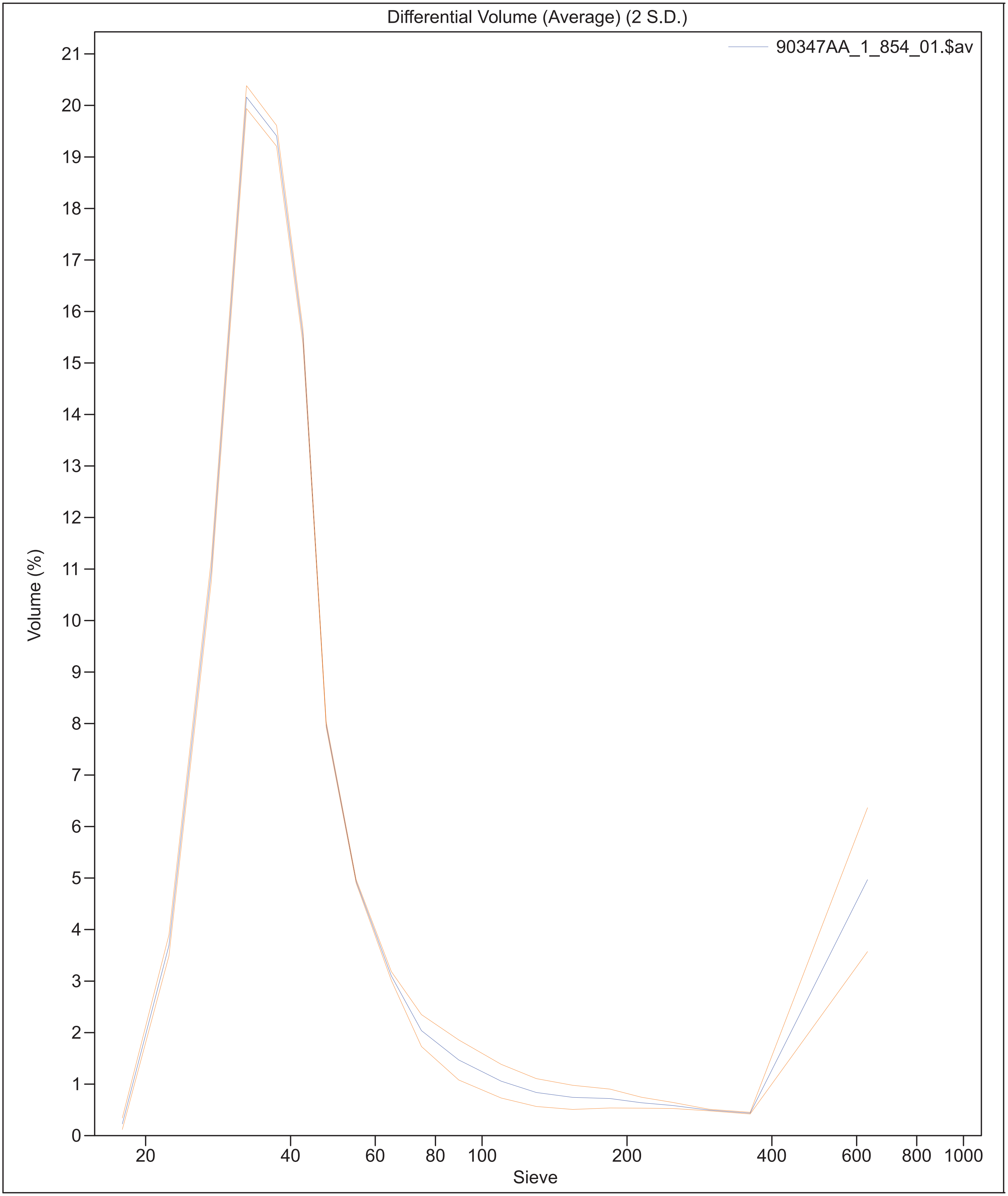
Mean:	1.34	Median:	1.18	Deviation:	0.96
Skewness:	0.52	Kurtosis:	2.29		

<10%	<25%	<50%	<75%	<90%
138.7 µm	323.5 µm	442.2 µm	543.3 µm	638.8 µm

LS Particle Size Analyzer

10 Jul 2024 12:27

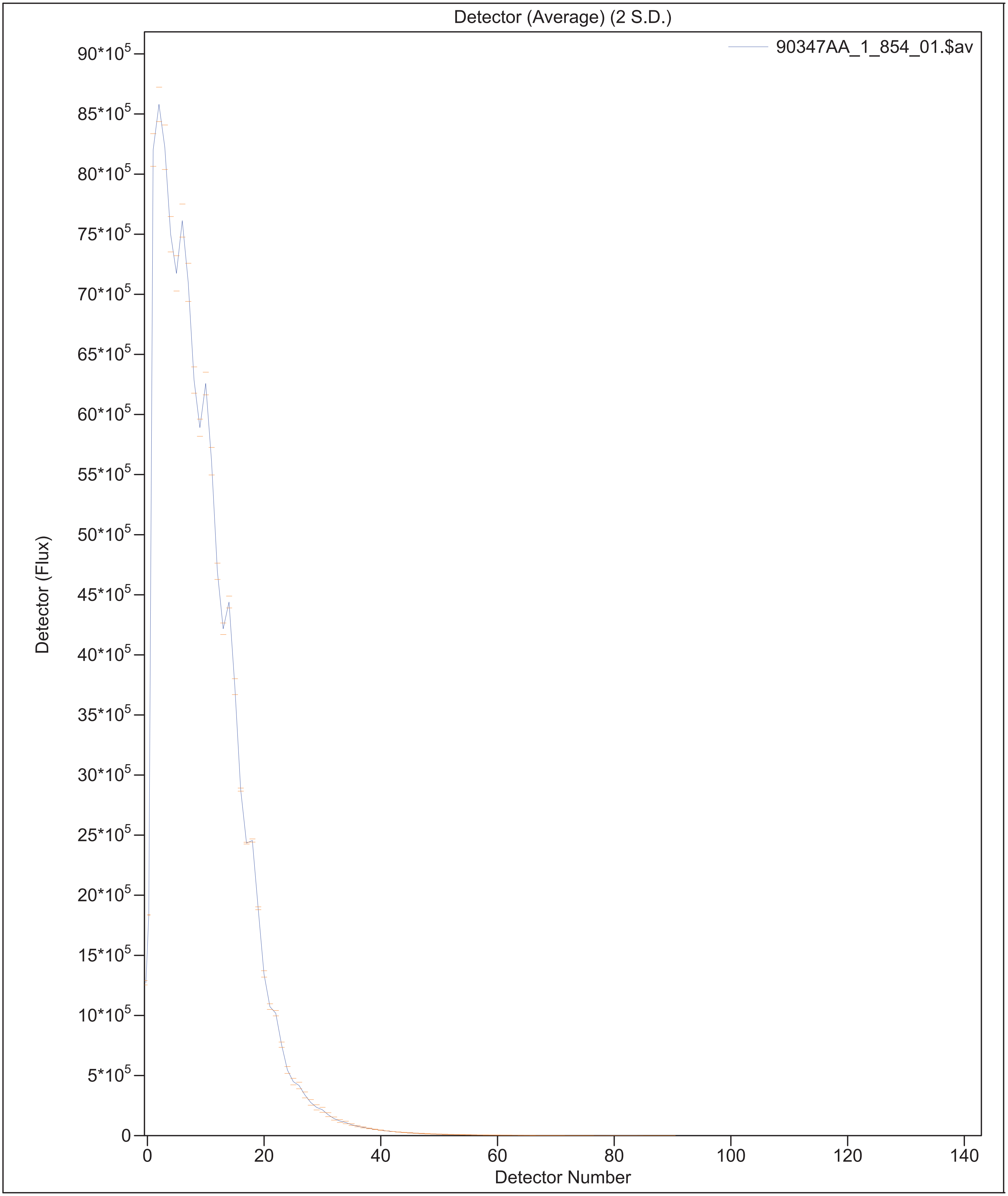
Beckman Coulter LS 13 320

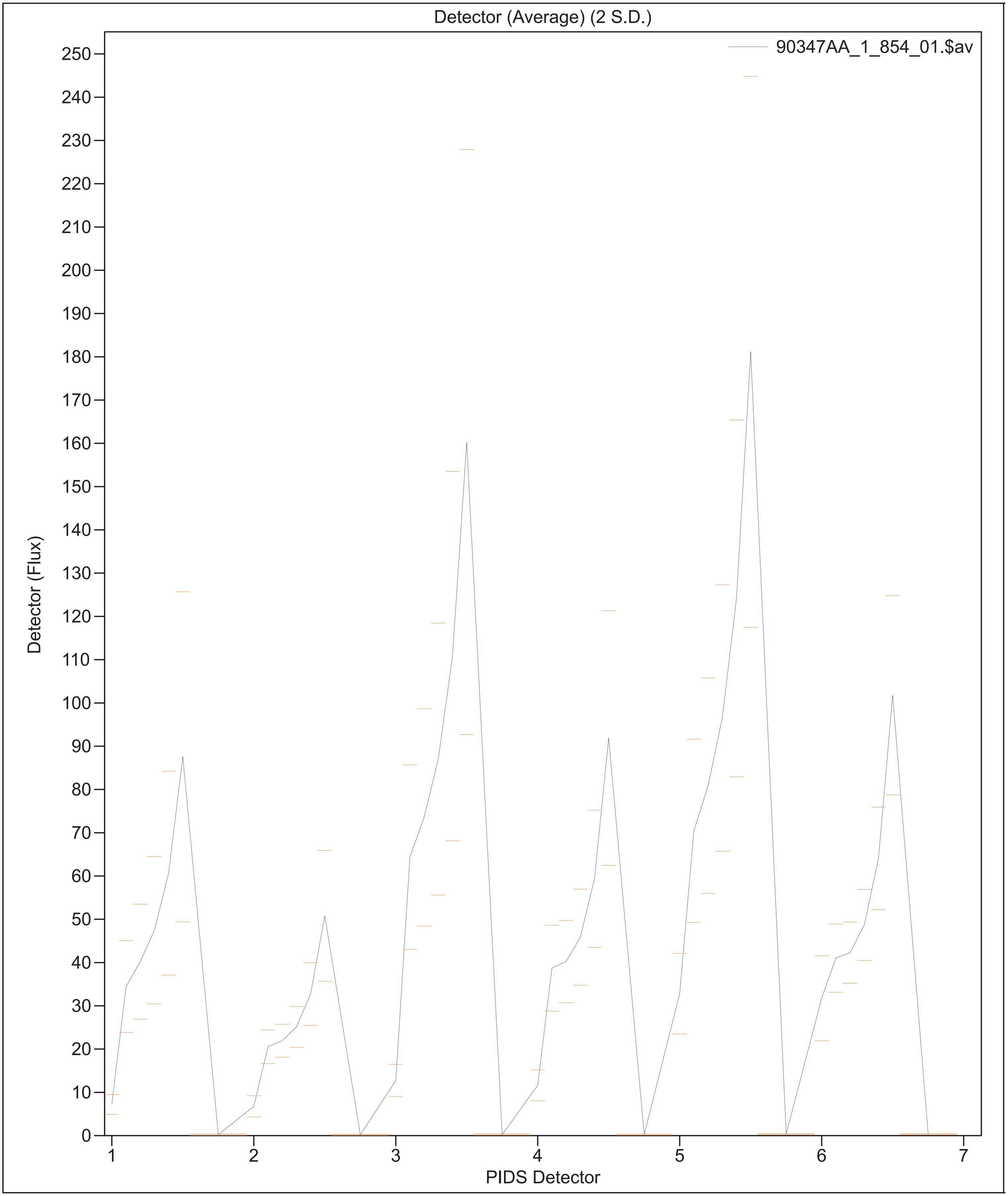


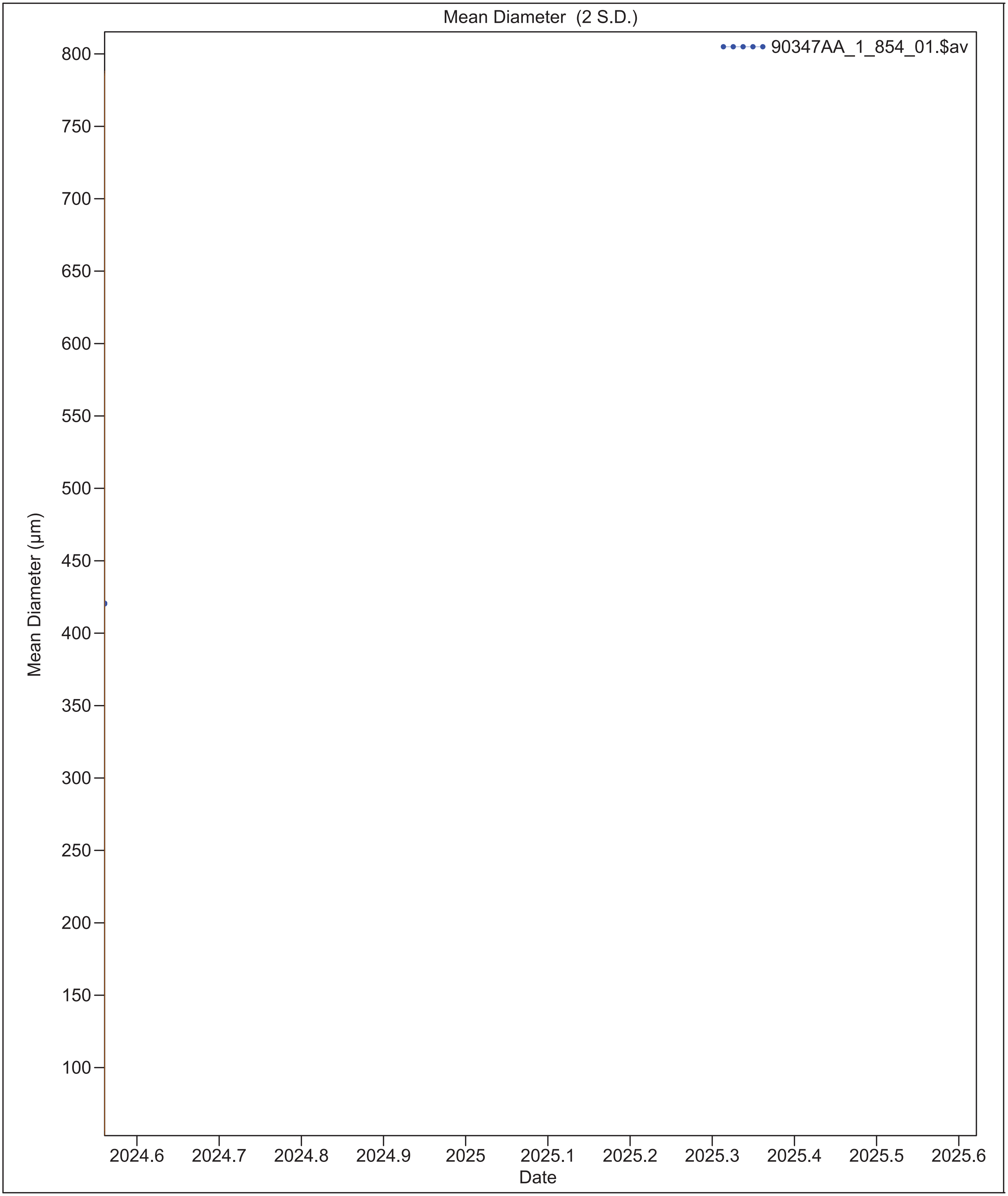
LS Particle Size Analyzer

10 Jul 2024 12:27

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90347AA_1_854_01.$av
Detector (Flux)
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
90347AA_1_854_01.$av
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
Mean Diameter (µm)
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 12:27

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90347AA_1_854_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	420.5 µm	0.284	419.9	421.0
Median:	442.2 µm	0.836	440.6	443.9
S.D.:	183.0 µm	0.873	181.3	184.7
Variance:	33489 µm^2	317.9	32854	34125
C.V.:	43.52%	0.215	43.09	43.95
Skewness:	-0.478	0.045	-0.568	-0.389
Kurtosis:	-0.096	0.036	-0.168	-0.025
d_{10}:	138.3 µm	4.480	129.3	147.3
d_{50}:	442.2 µm	0.836	440.6	443.9
d_{90}:	638.8 µm	0.504	637.8	639.8

LS Particle Size Analyzer

10 Jul 2024 12:35

Beckman Coulter LS 13 320

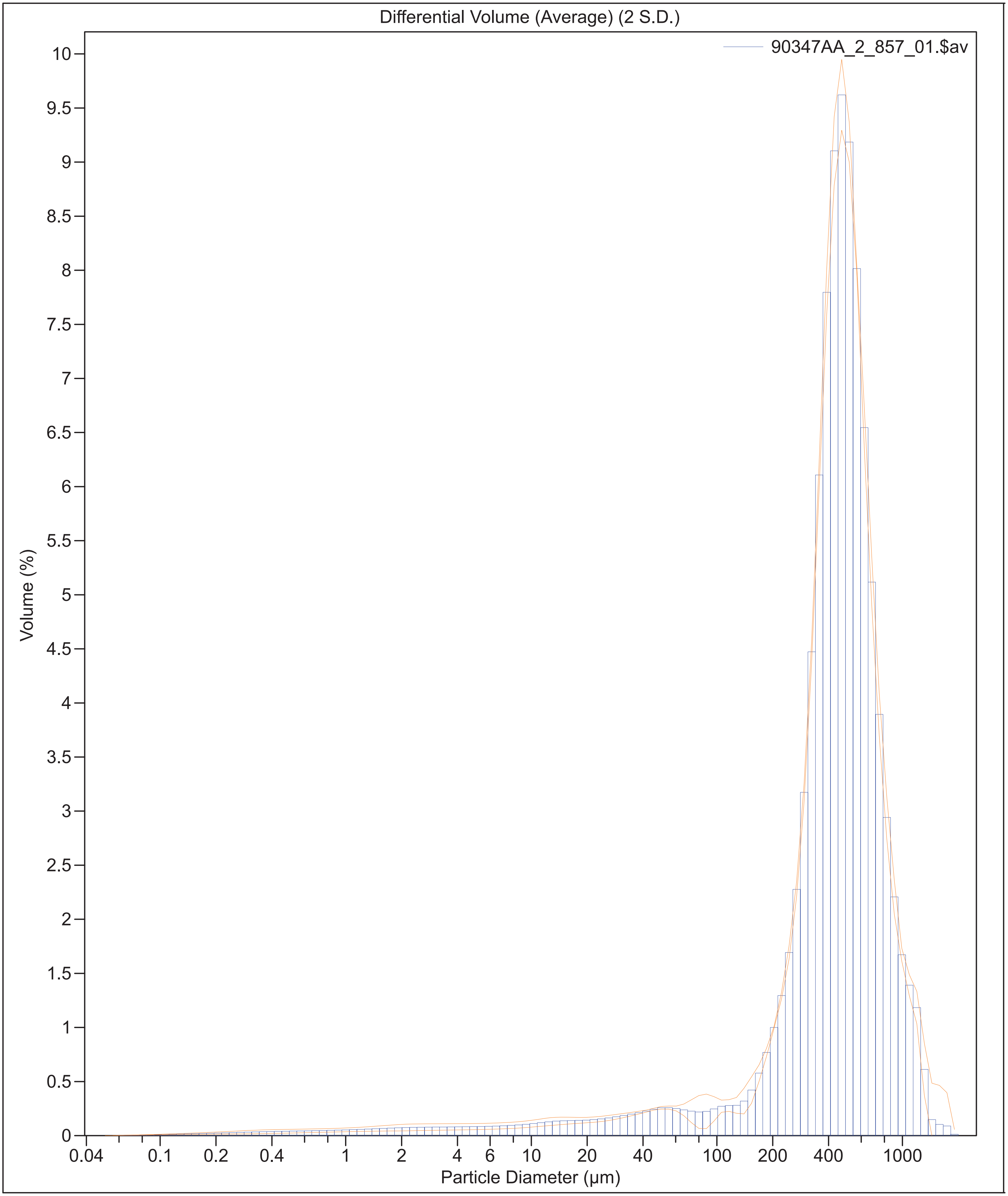
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90347AA_2_857_01.$av 90347AA_2_857_01.$av
File ID:	90347AA_2
Sample ID:	90347AA_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_2_855_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_2_856_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_2_857_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:35

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90347AA_2_857_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	484.2 µm	S.D.:	254.2 µm
Median:	462.2 µm	Variance:	64611 µm^2
Mean/Median ratio:	1.048	C.V.:	52.5%
Mode:	471.1 µm	Skewness:	0.757 Right skewed
		Kurtosis:	1.745 Leptokurtic

d_{10}: 186.5 µm d_{50}: 462.2 µm d_{90}: 796.3 µm

Folk and Ward Statistics (Phi)

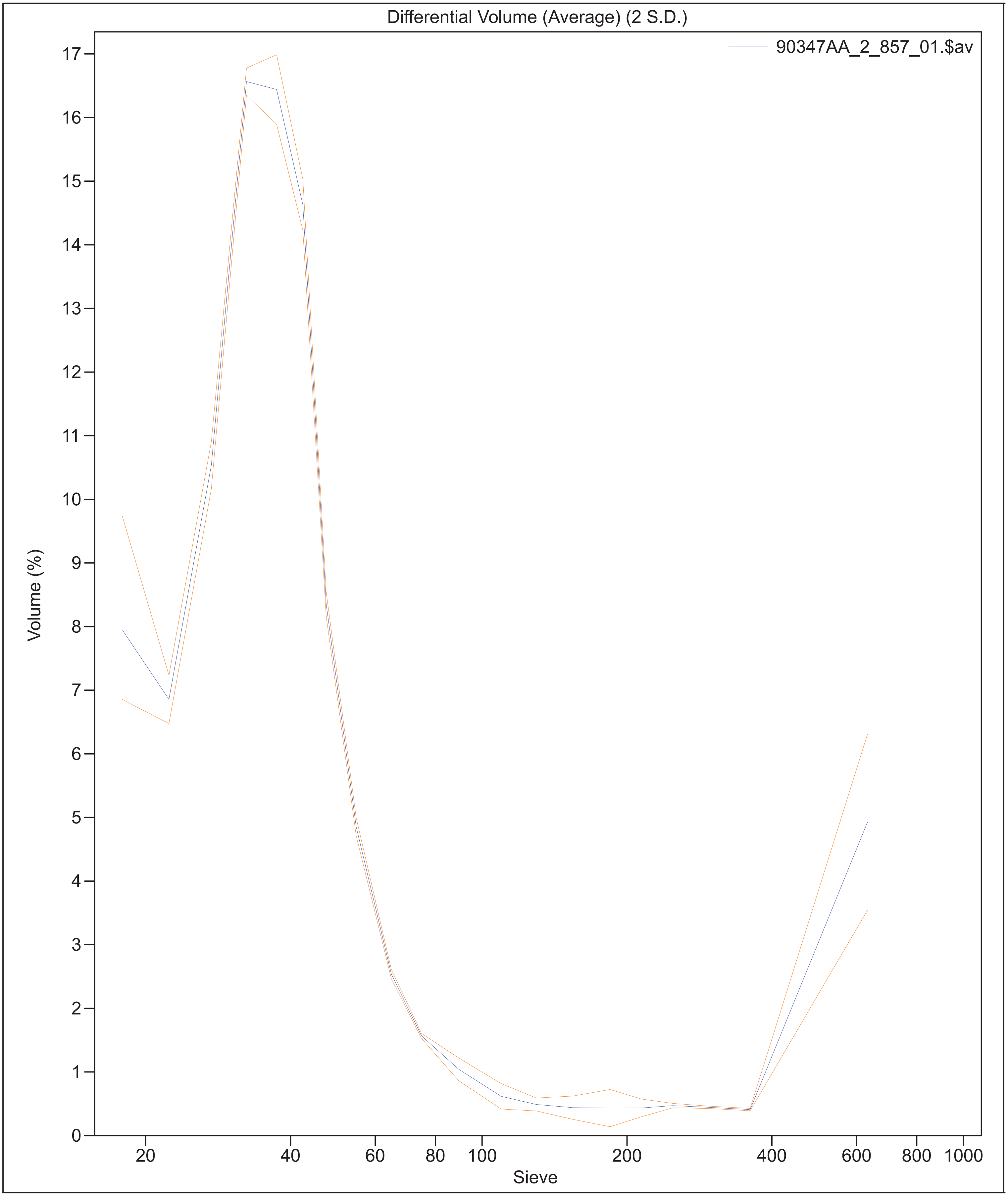
Mean:	1.17	Median:	1.11	Deviation:	1.03
Skewness:	0.33	Kurtosis:	2.34		

<10%	<25%	<50%	<75%	<90%
186.5 µm	344.0 µm	462.2 µm	603.0 µm	796.3 µm

LS Particle Size Analyzer

10 Jul 2024 12:35

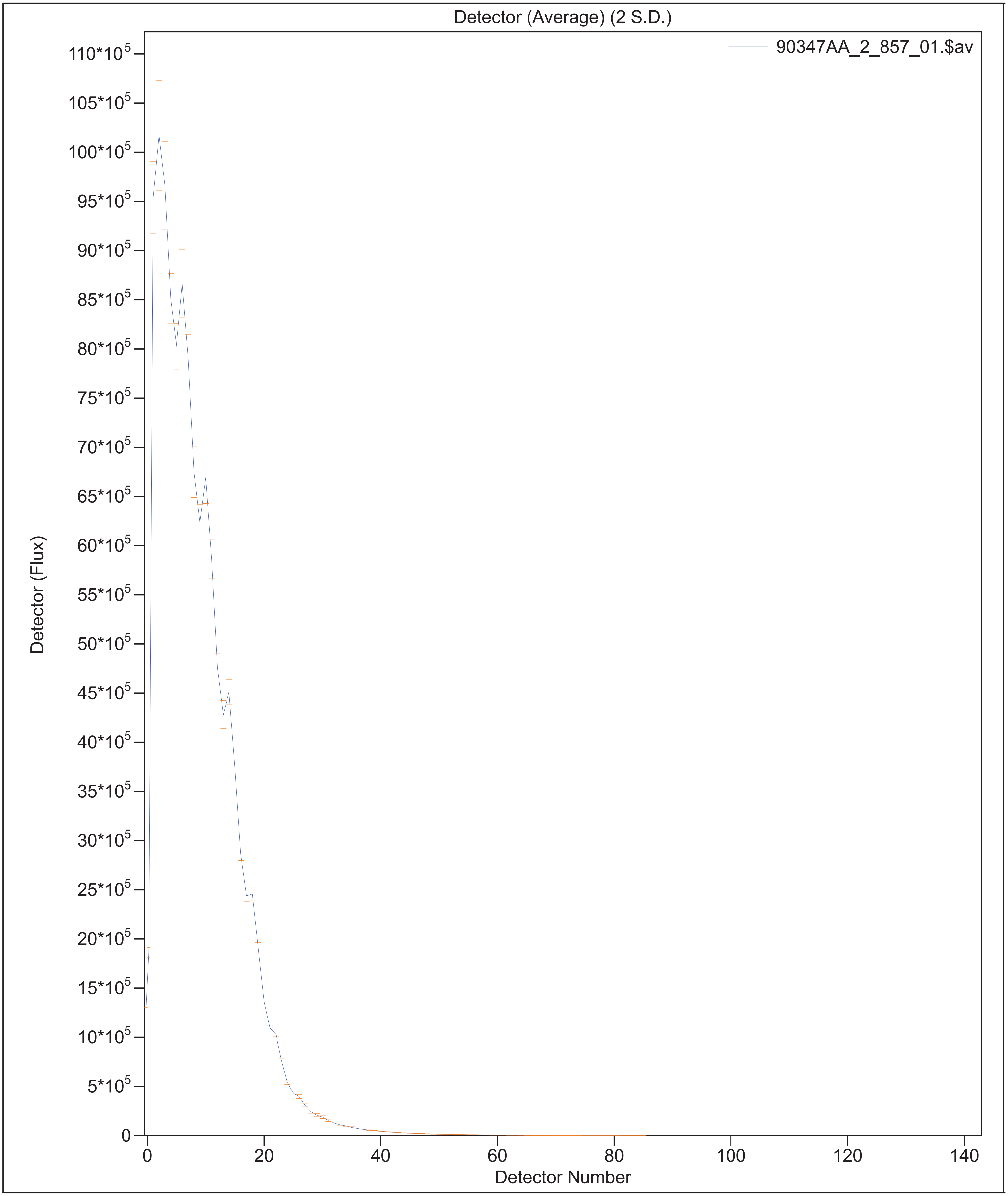
Beckman Coulter LS 13 320

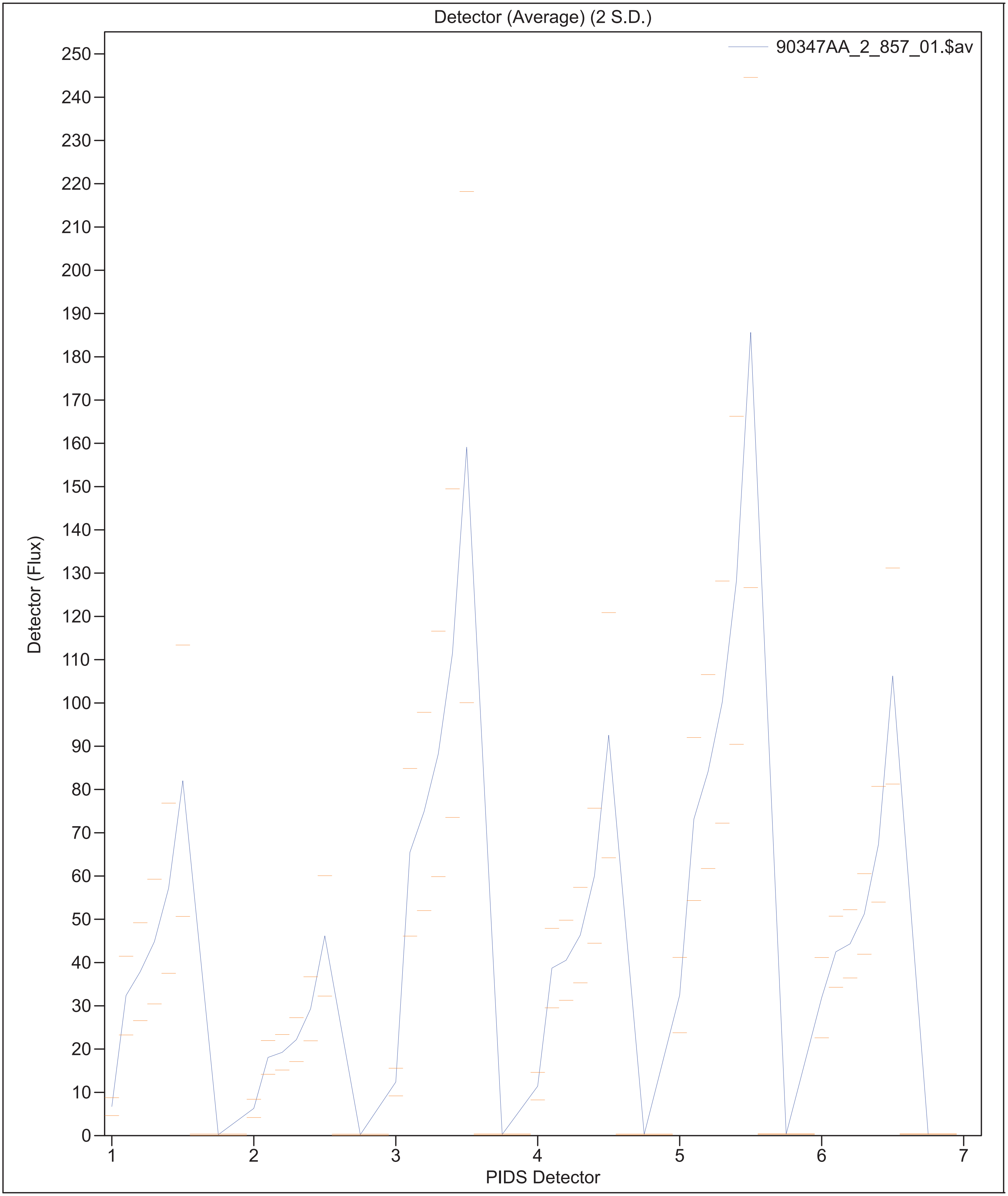


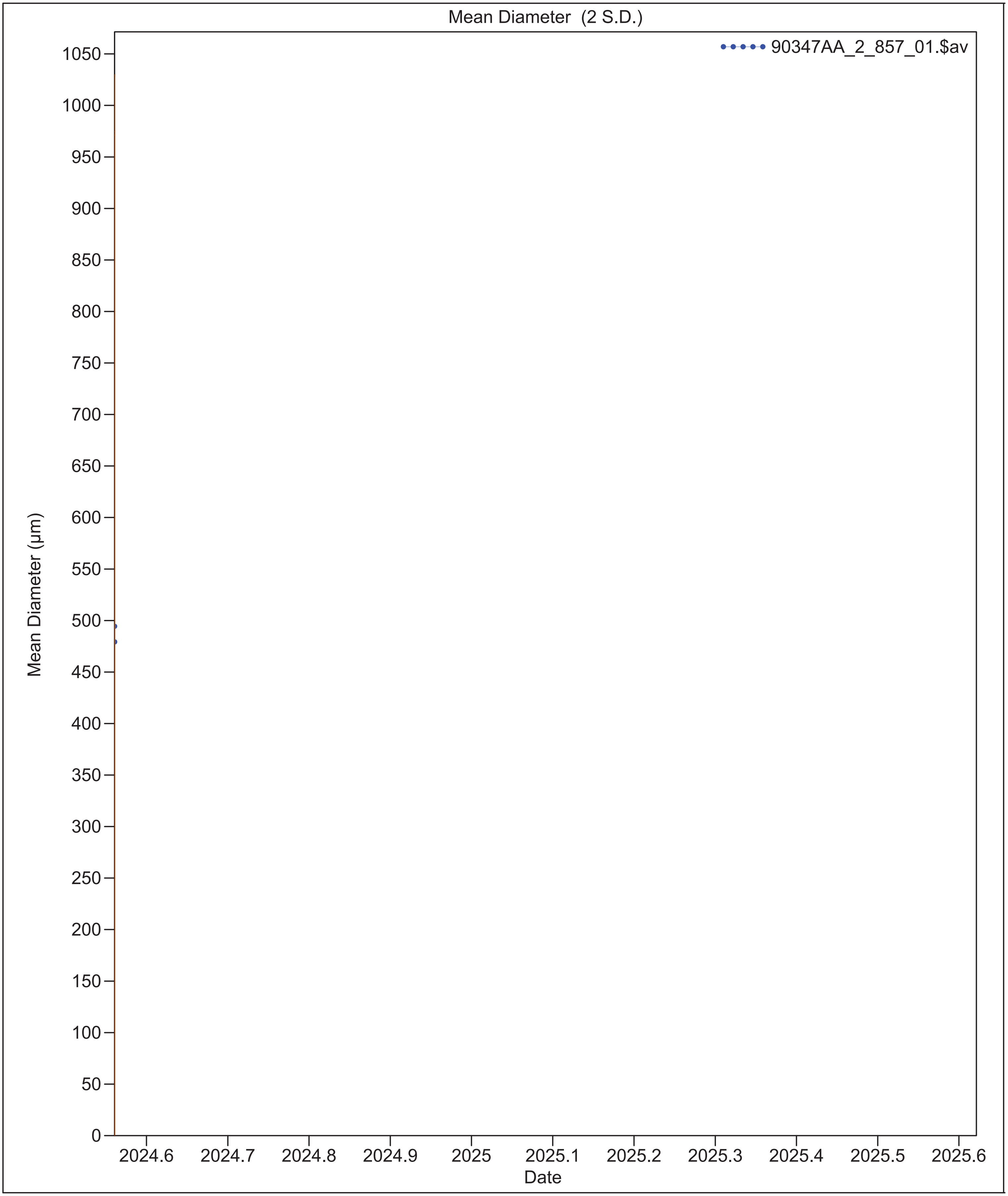
LS Particle Size Analyzer

10 Jul 2024 12:35

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90347AA_2_857_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
PIDS Detector
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90347AA_2_857_01.$av
Mean Diameter (µm)
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 12:35

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90347AA_2_857_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	484.2 µm	8.724	466.8	501.7
Median:	462.2 µm	3.108	456.0	468.4
S.D.:	253.9 µm	12.07	229.8	278.0
Variance:	64561 μm^2	6209	52144	76978
C.V.:	52.42%	1.536	49.34	55.49
Skewness:	0.722	0.282	0.158	1.286
Kurtosis:	1.551	0.988	-0.426	3.528
d_{10}:	186.4 µm	4.667	177.1	195.8
d_{50}:	462.2 µm	3.108	456.0	468.4
d_{90}:	796.3 µm	14.46	767.3	825.2

LS Particle Size Analyzer

10 Jul 2024 12:42

Beckman Coulter LS 13 320

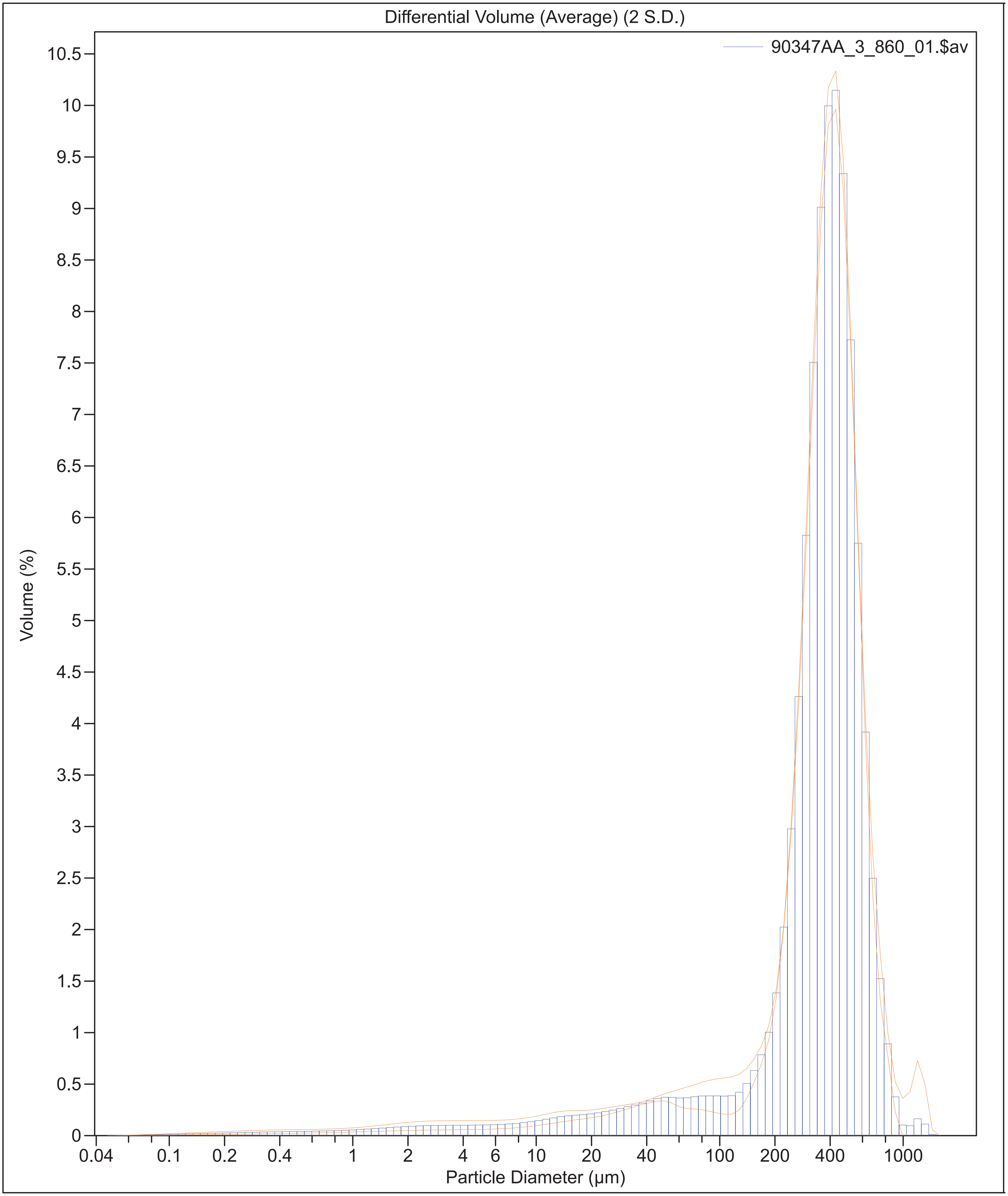
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90347AA_3_860_01.$av
	90347AA_3_860_01.$av
File ID:	90347AA_3
Sample ID:	90347AA_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_3_858_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_3_859_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90347AA_3_860_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:42

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)		90347AA_3_860_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	378.0 µm	S.D.:	185.5 µm
Median:	382.8 µm	Variance:	34421 $µm^2$
Mean/Median ratio:	0.987	C.V.:	49.1%
Mode:	429.2 µm	Skewness:	0.244 Right skewed
		Kurtosis:	1.426 Leptokurtic

d_{10}: 95.59 µm d_{50}: 382.8 µm d_{90}: 592.0 µm

Folk and Ward Statistics (Phi)

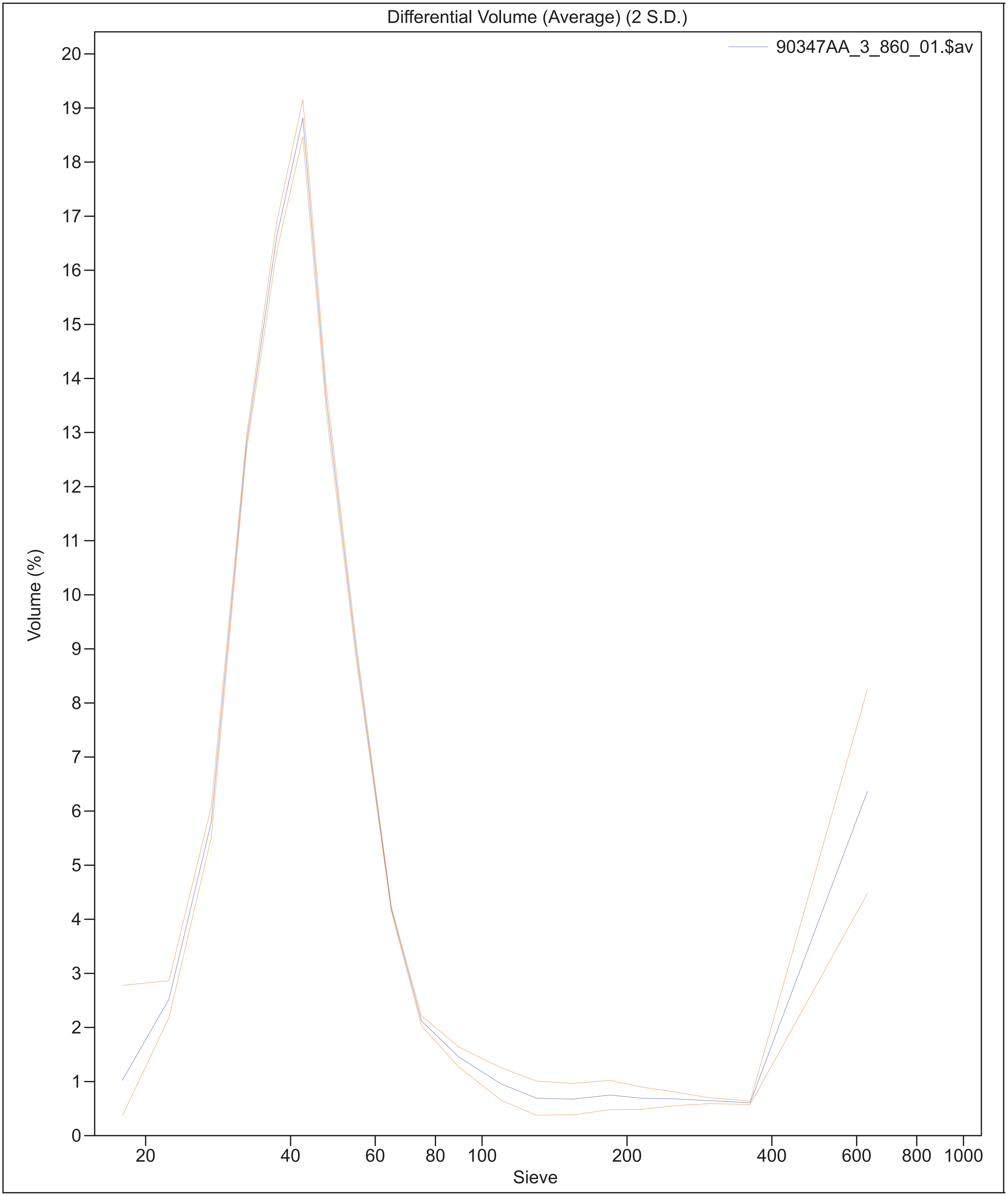
Mean:	1.50	Median:	1.39	Deviation:	1.06
Skewness:	0.46	Kurtosis:	2.53		

<10%	<25%	<50%	<75%	<90%
95.59 µm	282.0 µm	382.8 µm	485.0 µm	592.0 µm

LS Particle Size Analyzer

10 Jul 2024 12:42

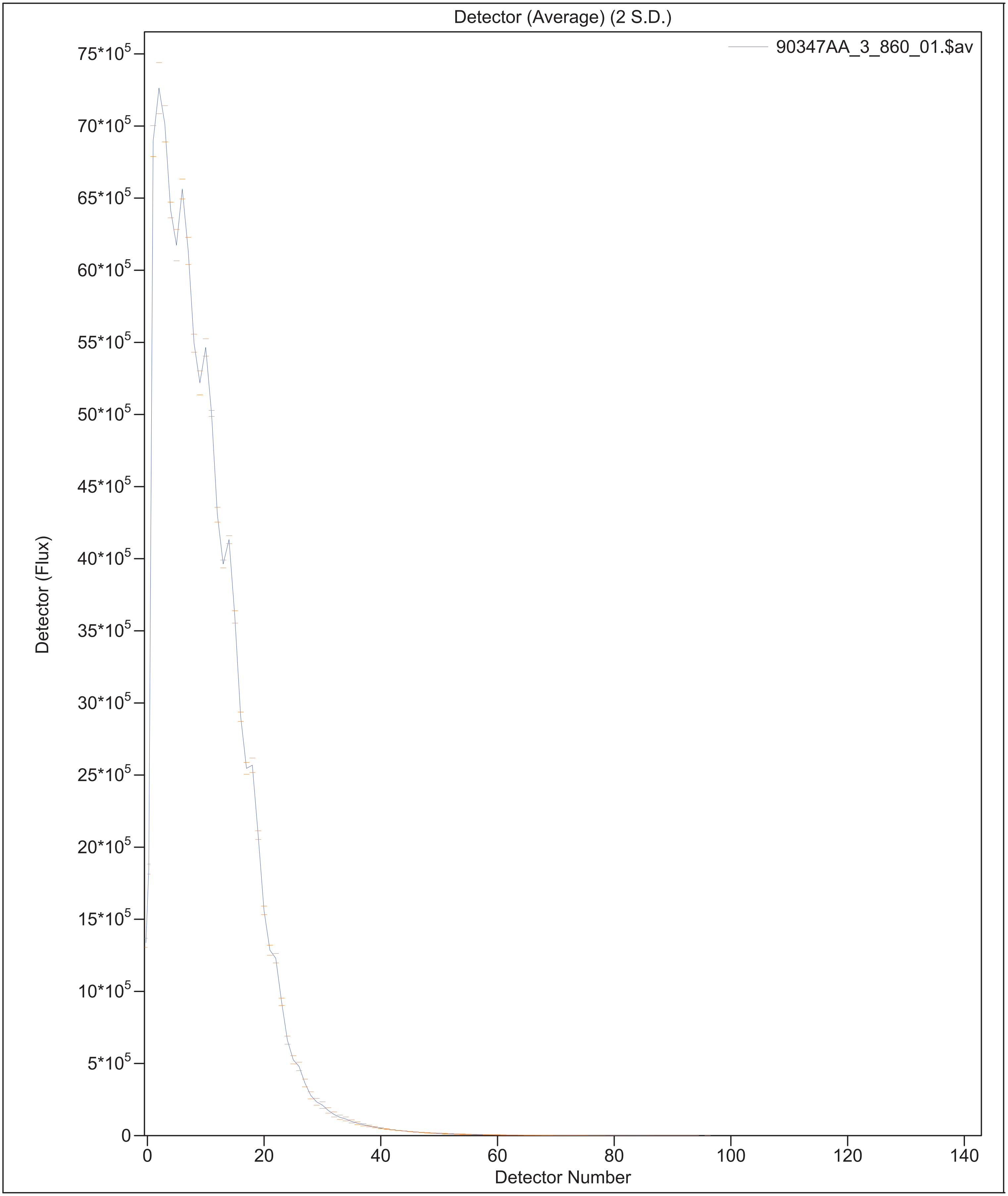
Beckman Coulter LS 13 320

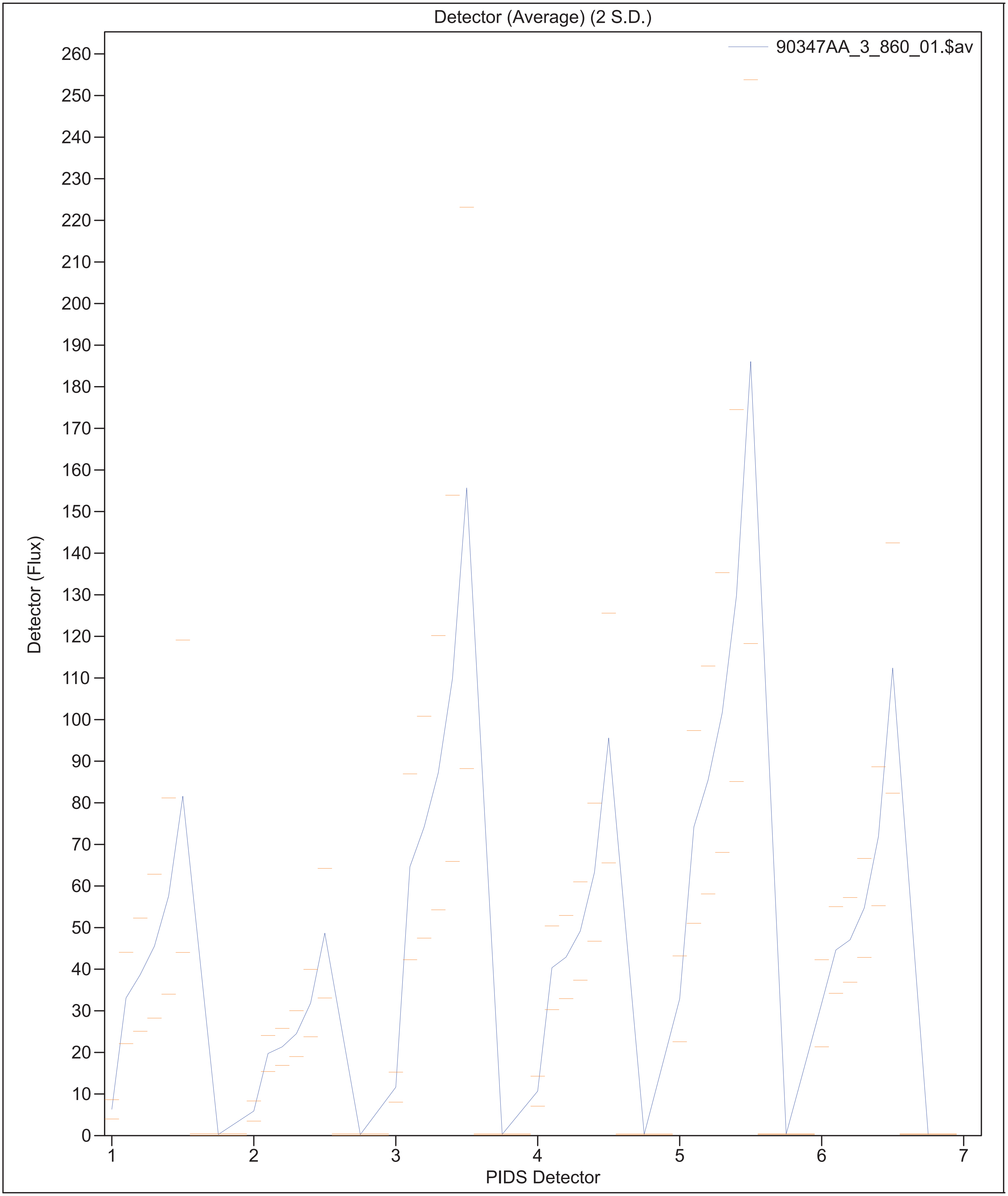


LS Particle Size Analyzer

10 Jul 2024 12:42

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90347AA_3_860_01.$av
Detector (Flux)
PIDS Detector
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
1
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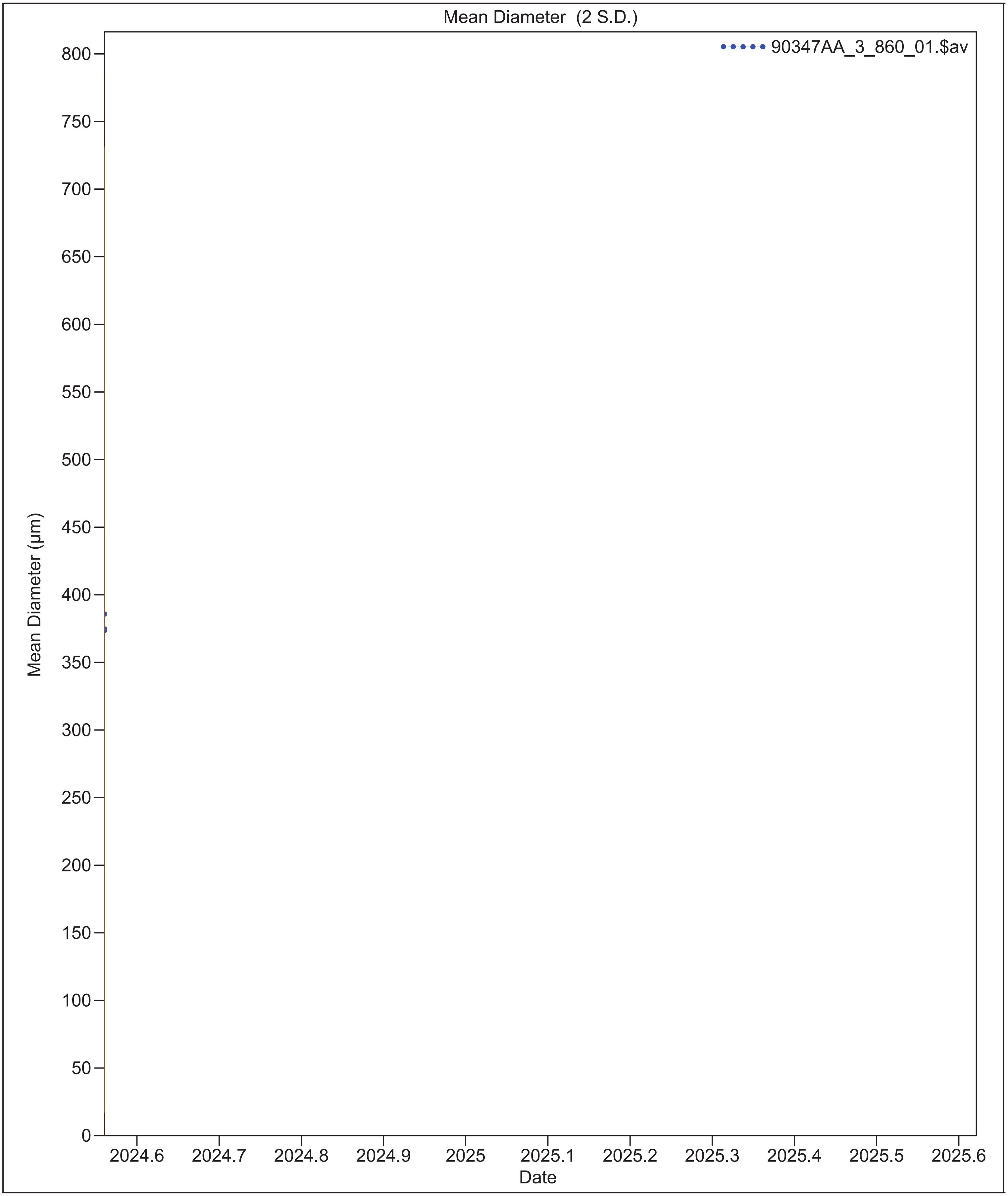
6
7


Mean Diameter (2 S.D.)
90347AA_3_860_01.$av
Mean Diameter (µm)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

BECKMAN COULTER

LS Particle Size Analyzer

10 Jul 2024 12:42

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90347AA_3_860_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	378.0 µm	6.701	364.6	391.4
Median:	382.8 µm	1.054	380.7	384.9
S.D.:	185.2 µm	11.57	162.1	208.3
Variance:	34391 µm^2	4363	25664	43117
C.V.:	48.97%	2.174	44.63	53.32
Skewness:	0.169	0.509	-0.849	1.187
Kurtosis:	1.048	1.589	-2.129	4.225
d_{10}:	94.35 µm	12.59	69.18	119.5
d_{50}:	382.8 µm	1.054	380.7	384.9
d_{90}:	592.7 µm	6.589	579.5	605.9

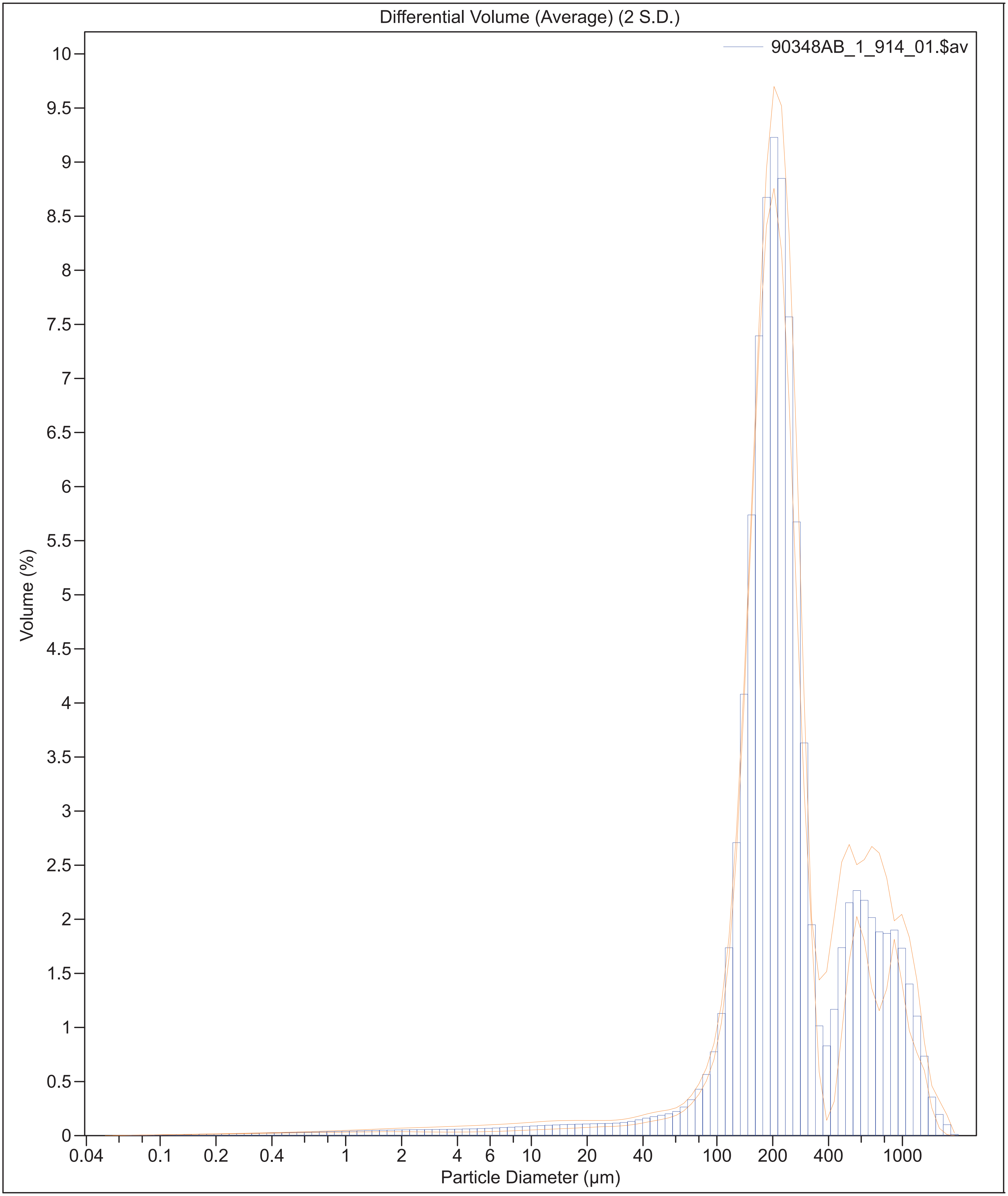
LS Particle Size Analyzer

10 Jul 2024 15:00

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90348AB_1_914_01.$av
	90348AB_1_914_01.$av
File ID:	90348AB_1
Sample ID:	90348AB_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90348AB_1_912_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90348AB_1_913_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90348AB_1_914_01.$ls


Differential Volume (Average) (2 S.D.)
90348AB_1_914_01.$av
Volume (%)
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (µm)

LS Particle Size Analyzer

10 Jul 2024 15:00

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90348AB_1_914_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	325.9 µm	S.D.:	284.1 µm
Median:	218.7 µm	Variance:	80688 μm^2
Mean/Median ratio:	1.490	C.V.:	87.2%
Mode:	203.5 µm	Skewness:	1.917 Right skewed
		Kurtosis:	3.476 Leptokurtic

d_{10}: 122.5 µm d_{50}: 218.7 µm d_{90}: 764.9 µm

Folk and Ward Statistics (Phi)

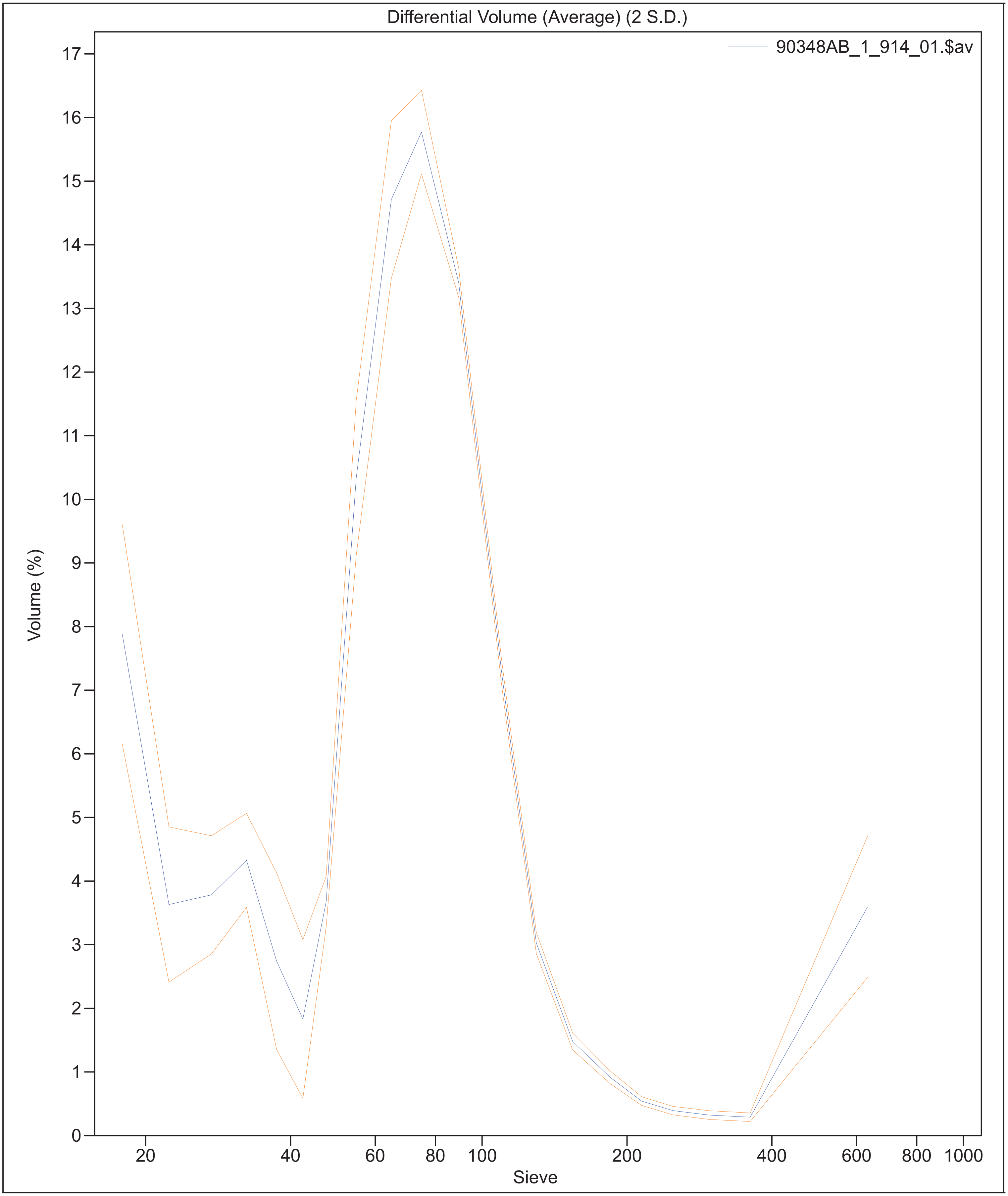
Mean:	1.92	Median:	2.19	Deviation:	1.07
Skewness:	-0.28	Kurtosis:	1.54		

<10%	<25%	<50%	<75%	<90%
122.5 µm	166.8 µm	218.7 µm	334.5 µm	764.9 µm

LS Particle Size Analyzer

10 Jul 2024 15:00

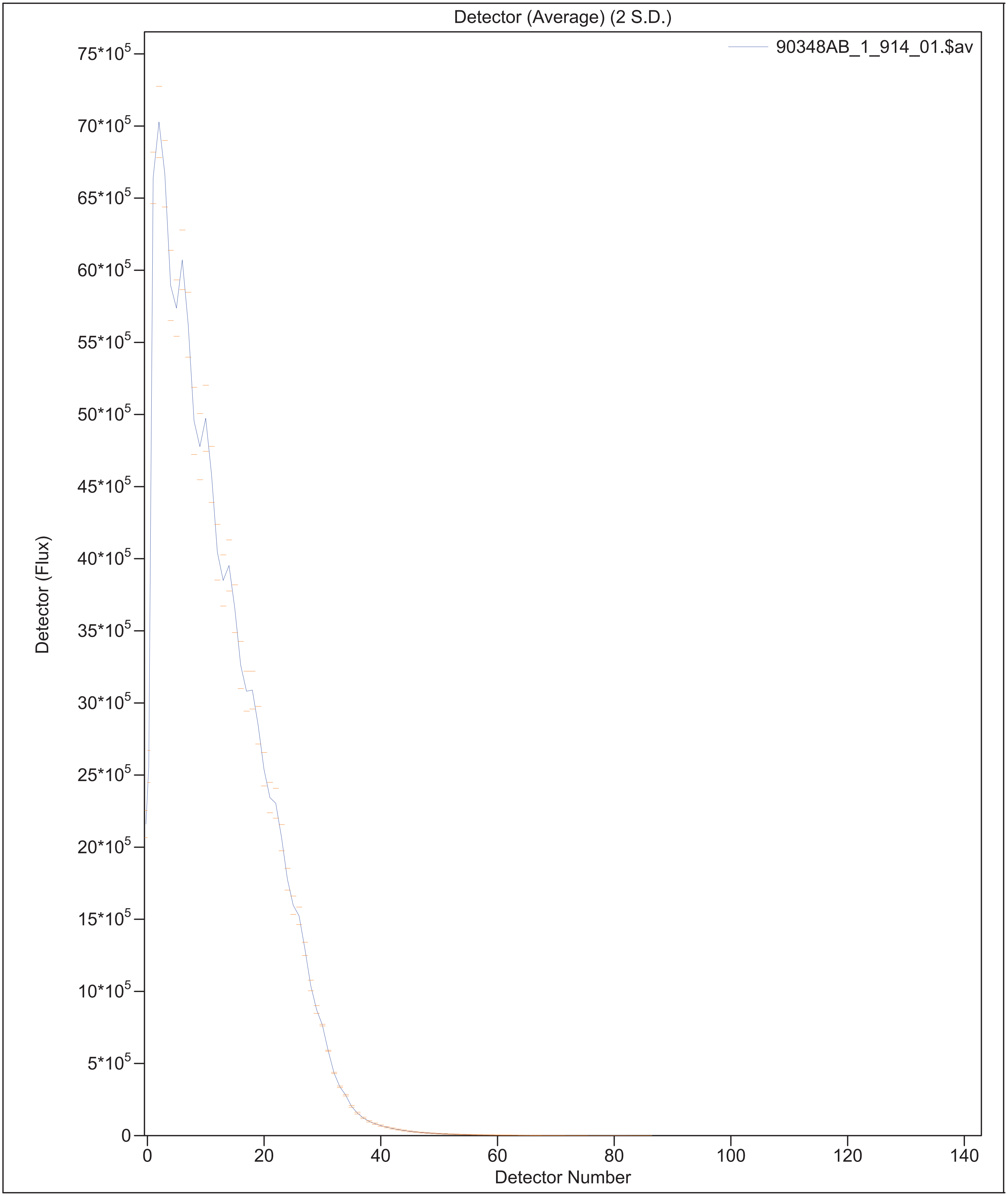
Beckman Coulter LS 13 320

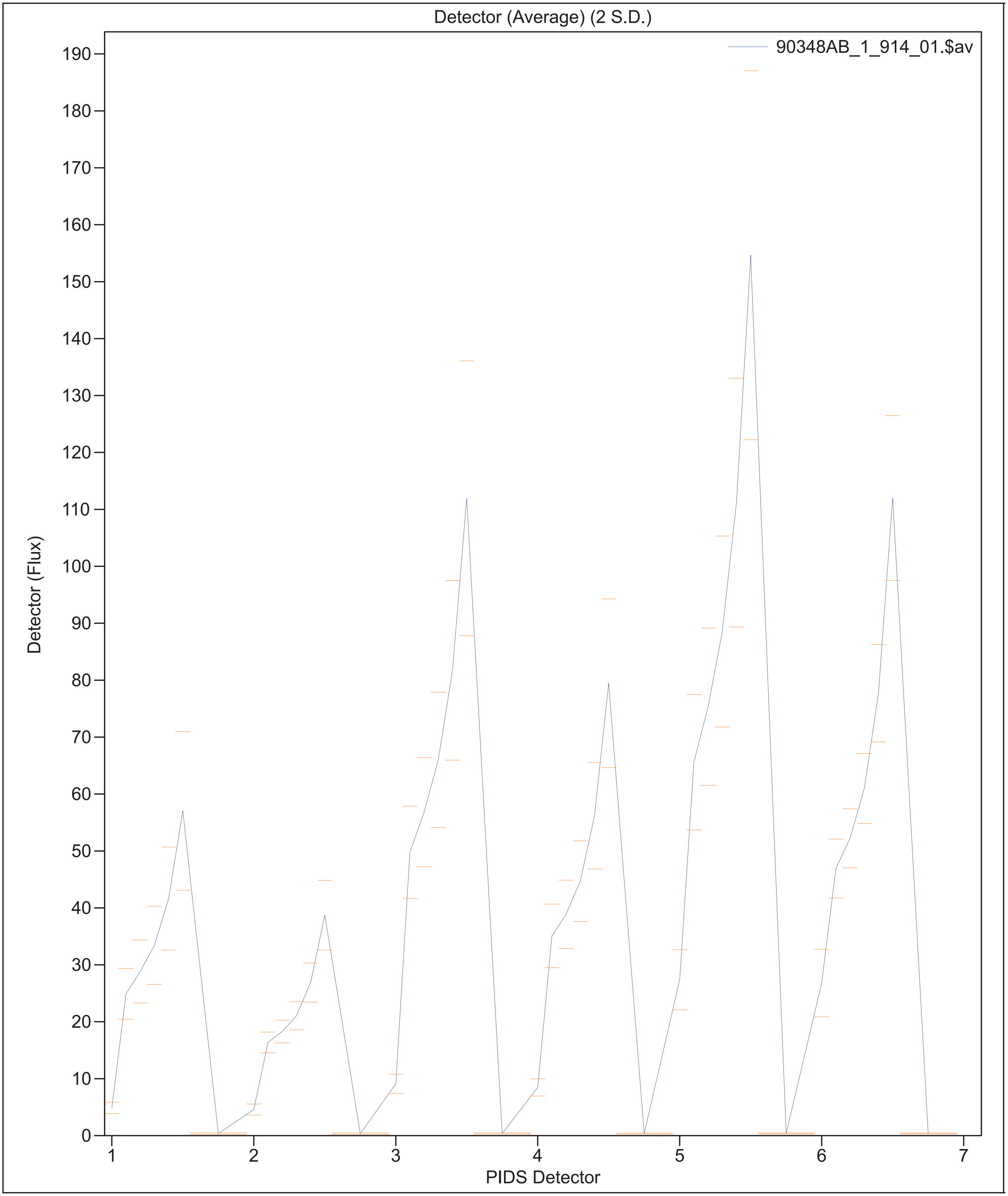


LS Particle Size Analyzer

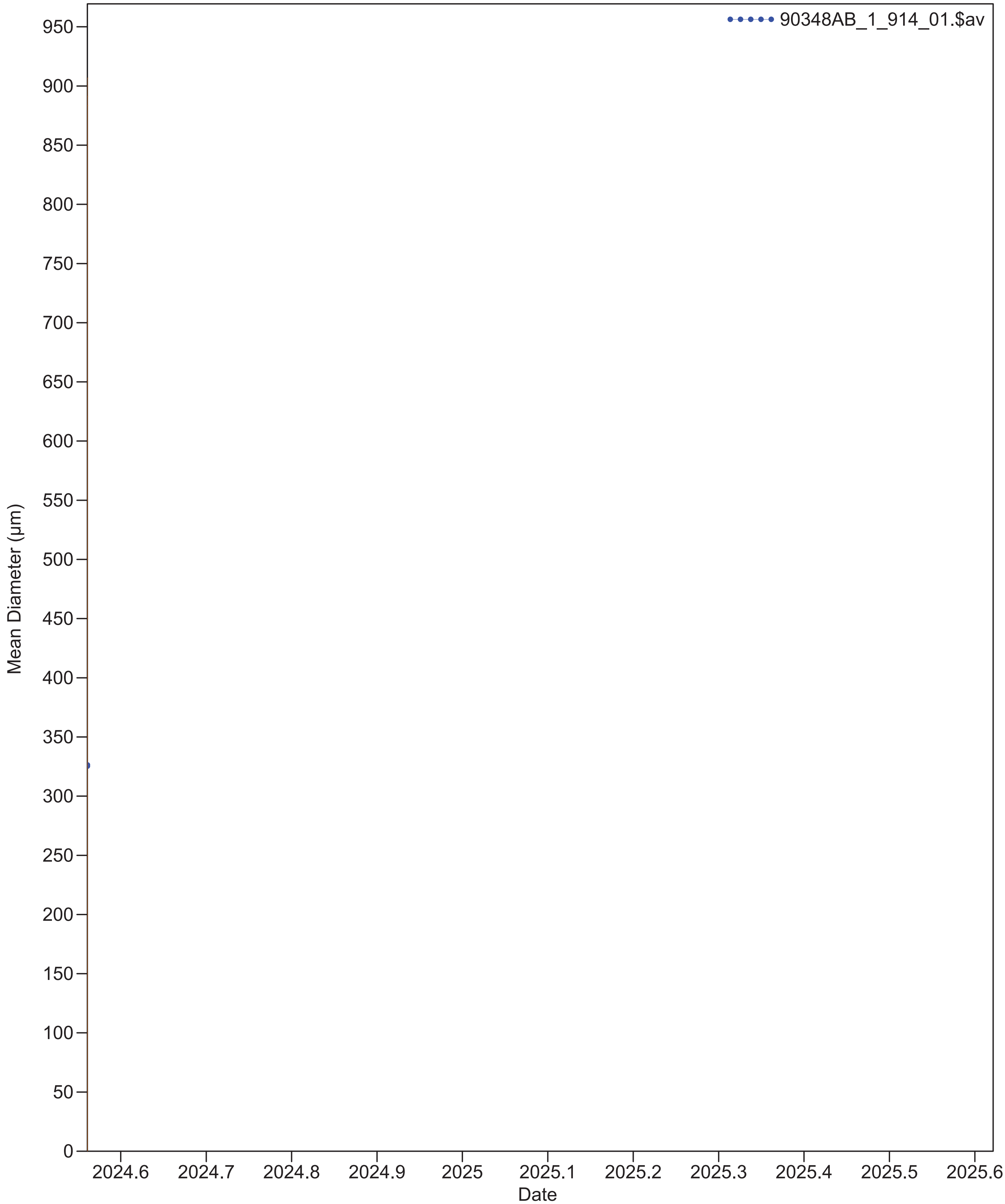
10 Jul 2024 15:00

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90348AB_1_914_01.$av
Detector (Flux)
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

Mean Diameter (2 S.D.)



Volume Statistics (Arithmetic)   Average of 3 files   90348AB_1_914_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	325.9 µm	0.589	324.8	327.1
Median:	218.7 µm	1.545	215.6	221.8
S.D.:	284.0 µm	5.648	272.7	295.3
Variance:	80688 µm^2	3220	74248	87128
C.V.:	87.14%	1.607	83.93	90.35
Skewness:	1.916	0.031	1.854	1.978
Kurtosis:	3.468	0.242	2.983	3.953
d_{10}:	122.2 µm	4.385	113.4	130.9
d_{50}:	218.7 µm	1.545	215.6	221.8
d_{90}:	765.0 µm	9.440	746.2	783.9

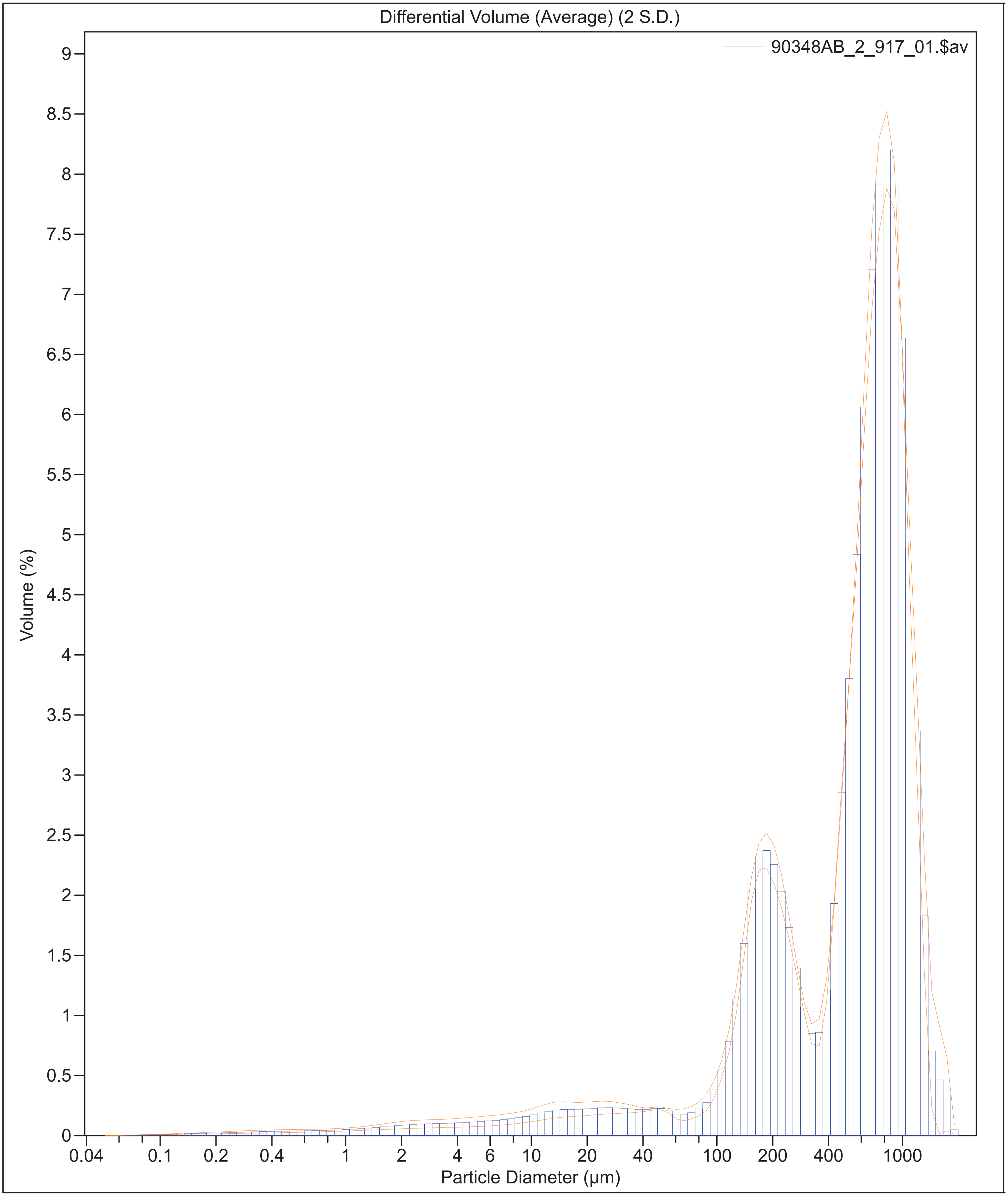
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90348AB_2_917_01.$av
	90348AB_2_917_01.$av
File ID:	90348AB_2
Sample ID:	90348AB_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90348AB_2_915_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90348AB_2_916_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90348AB_2_917_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:07

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90348AB_2_917_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	612.5 µm	S.D.:	369.5 µm
Median:	648.3 µm	Variance:	136.5e3 $µm^2$
Mean/Median ratio:	0.945	C.V.:	60.3%
Mode:	824.5 µm	Skewness:	0.117 Right skewed
		Kurtosis:	-0.600 Platykurtic

d_{10}: 120.3 µm d_{50}: 648.3 µm d_{90}: 1075 µm

Folk and Ward Statistics (Phi)

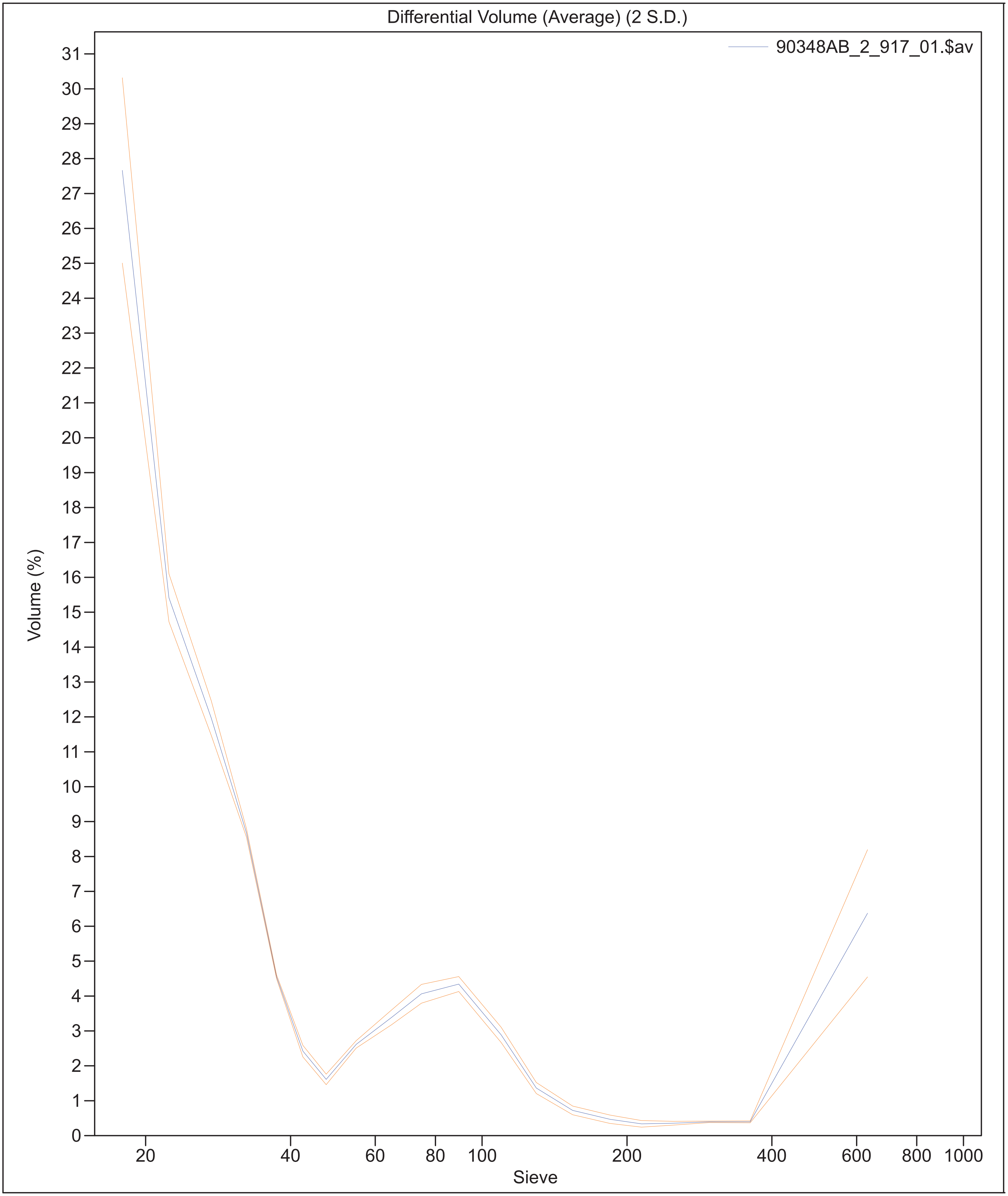
Mean:	1.07	Median:	0.63	Deviation:	1.51
Skewness:	0.61	Kurtosis:	1.31		

<10%	<25%	<50%	<75%	<90%
120.3 µm	248.8 µm	648.3 µm	876.5 µm	1075 µm

LS Particle Size Analyzer

10 Jul 2024 15:07

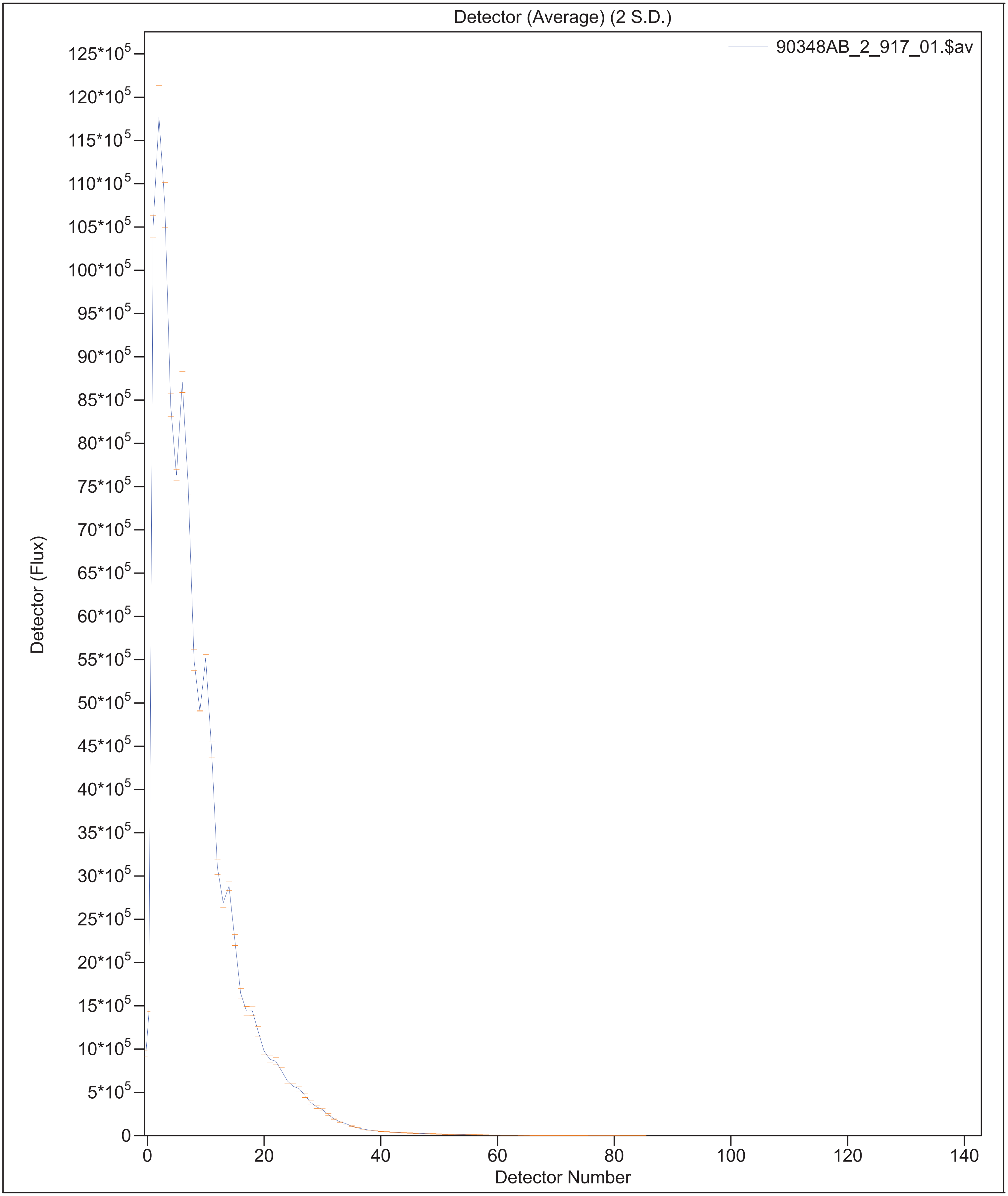
Beckman Coulter LS 13 320

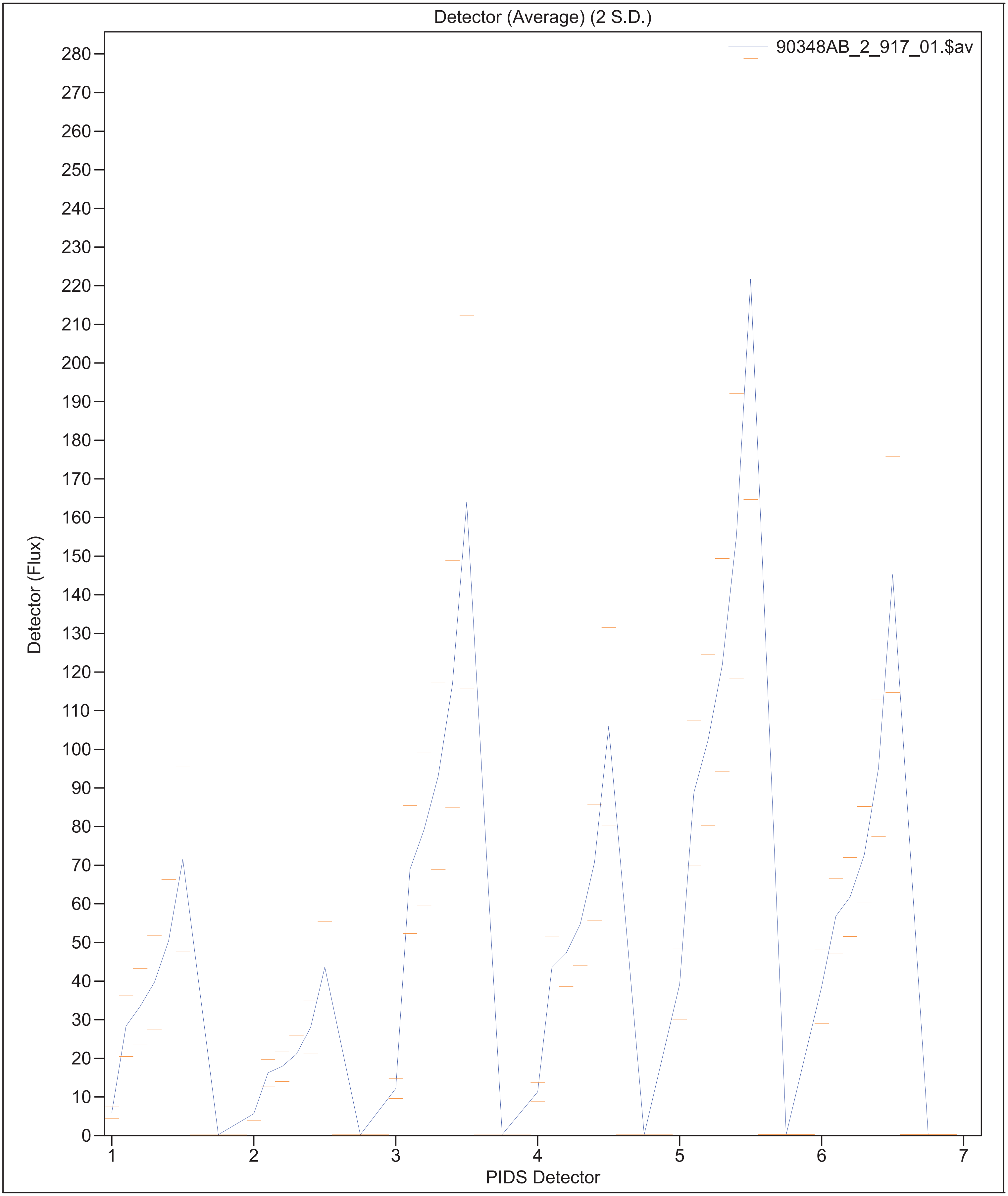


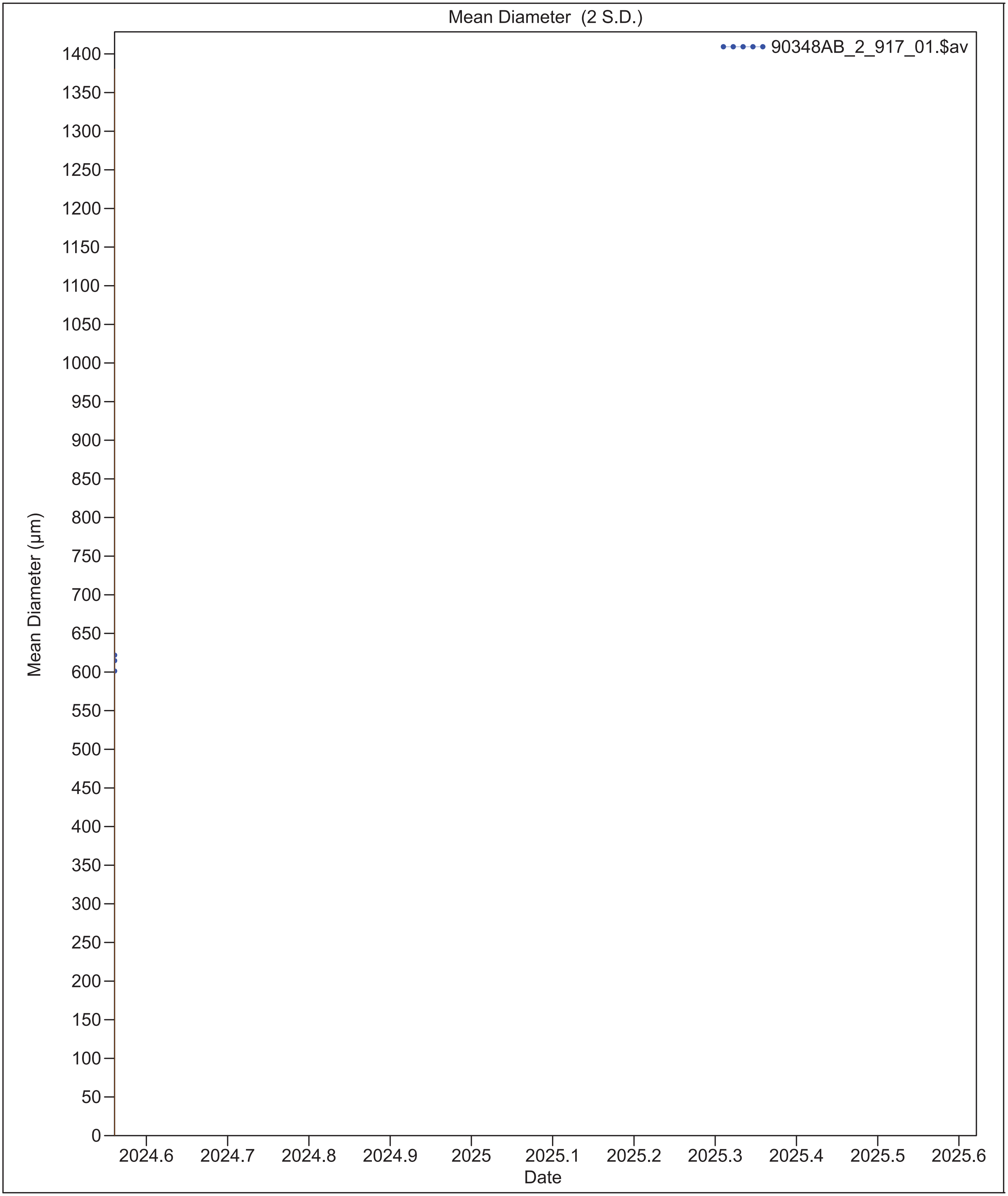
LS Particle Size Analyzer

10 Jul 2024 15:07

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90348AB_2_917_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
PIDS Detector
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90348AB_2_917_01.$av
Mean Diameter (µm)
1400
1350
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 15:07

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90348AB_2_917_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	612.5 µm	10.48	591.6	633.5
Median:	648.4 µm	5.224	637.9	658.8
S.D.:	369.3 µm	9.063	351.2	387.4
Variance:	136.4e3 μm^2	6722	123.0e3	149.9e3
C.V.:	60.29%	0.654	58.98	61.59
Skewness:	0.112	0.060	-0.0085	0.233
Kurtosis:	-0.616	0.095	-0.806	-0.426
d_{10}:	119.3 µm	8.246	102.8	135.8
d_{50}:	648.4 µm	5.224	637.9	658.8
d_{90}:	1075 µm	23.31	1028	1122

LS Particle Size Analyzer

9 Jul 2024 15:08

Beckman Coulter LS 13 320

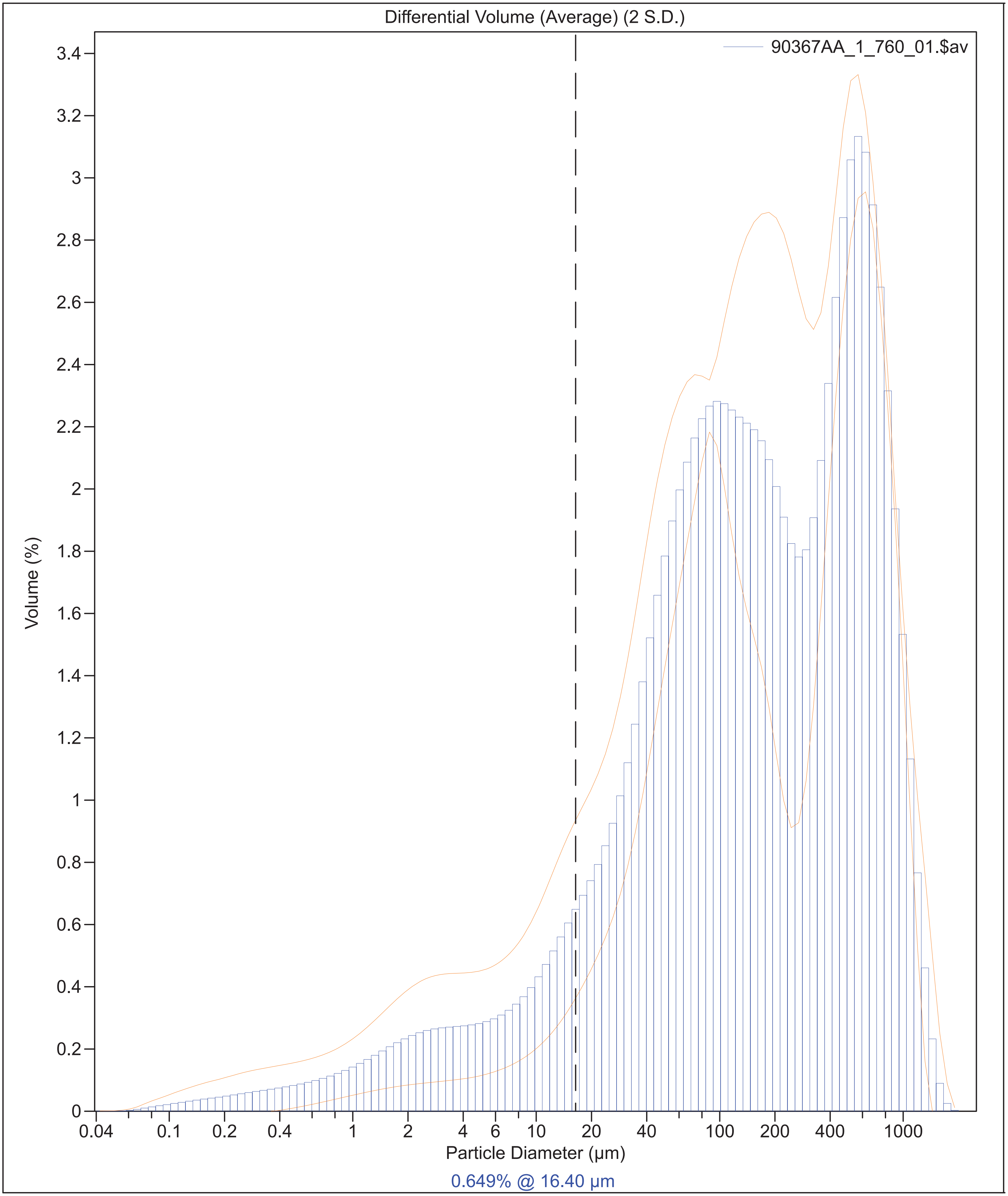
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90367AA_1_760_01.$av
	90367AA_1_760_01.$av
File ID:	90367AA_1
Sample ID:	90367AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_1_758_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_1_759_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_1_760_01.$ls

LS Particle Size Analyzer

9 Jul 2024 15:08

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90367AA_1_760_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	286.4 µm	S.D.:	305.6 µm
Median:	152.9 µm	Variance:	93373 $µm^2$
Mean/Median ratio:	1.873	C.V.:	107%
Mode:	567.7 µm	Skewness:	1.301 Right skewed
		Kurtosis:	1.147 Leptokurtic

d_{10}: 13.81 µm d_{50}: 152.9 µm d_{90}: 747.1 µm

Folk and Ward Statistics (Phi)

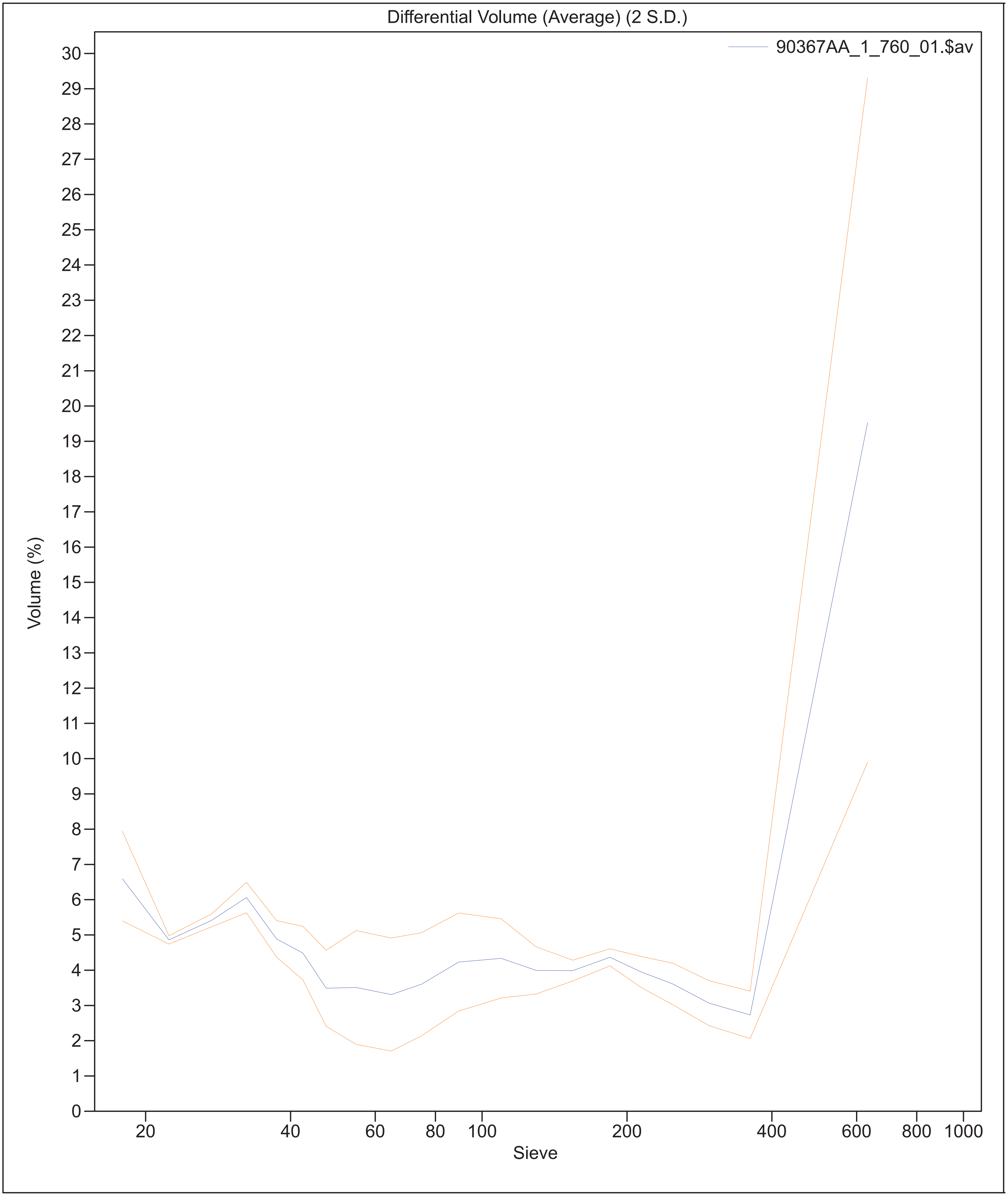
Mean:	2.84	Median:	2.71	Deviation:	2.30
Skewness:	0.22	Kurtosis:	1.02		

<10%	<25%	<50%	<75%	<90%
13.81 µm	52.14 µm	152.9 µm	468.1 µm	747.1 µm

LS Particle Size Analyzer

9 Jul 2024 15:08

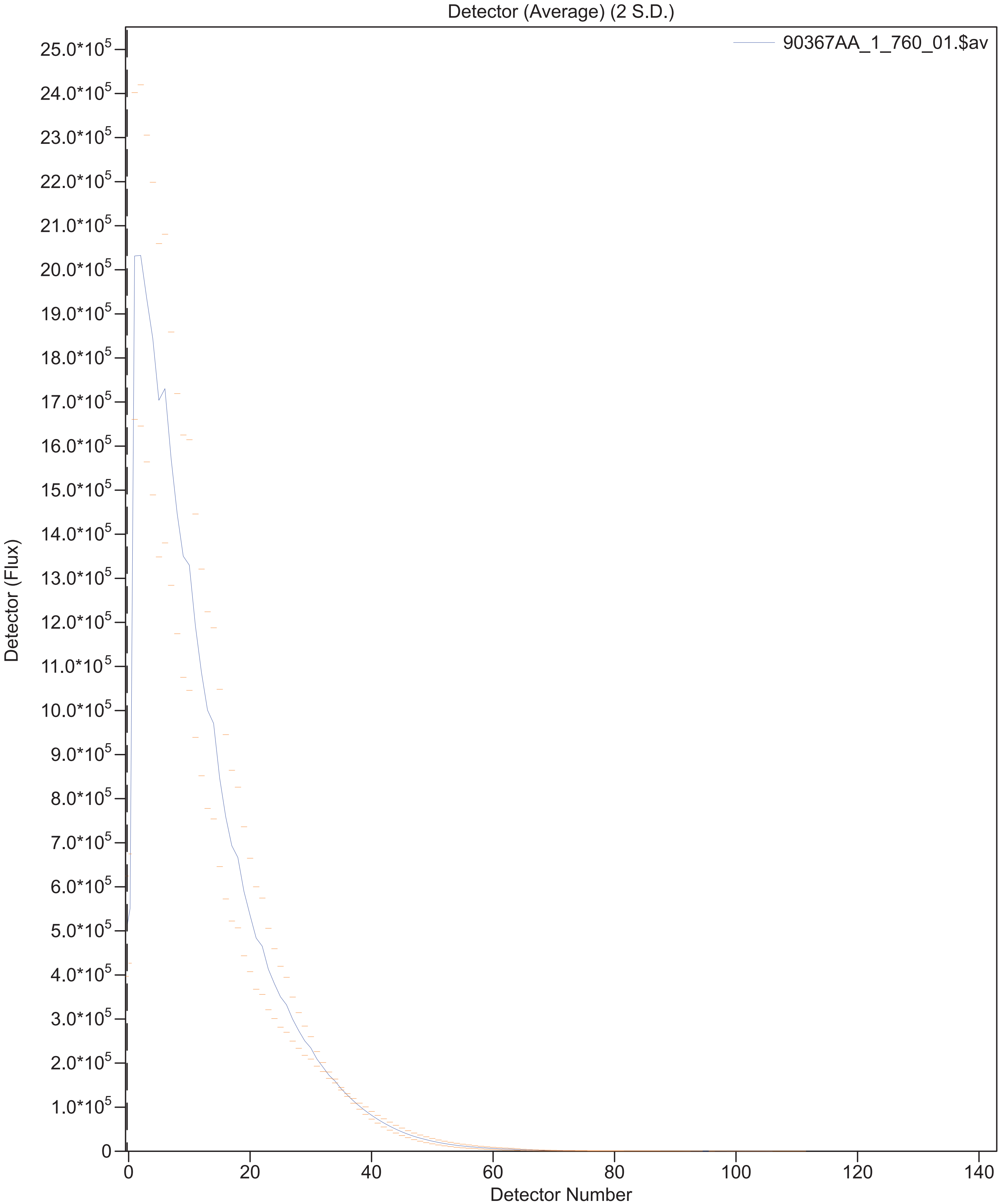
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 15:08

Beckman Coulter LS 13 320

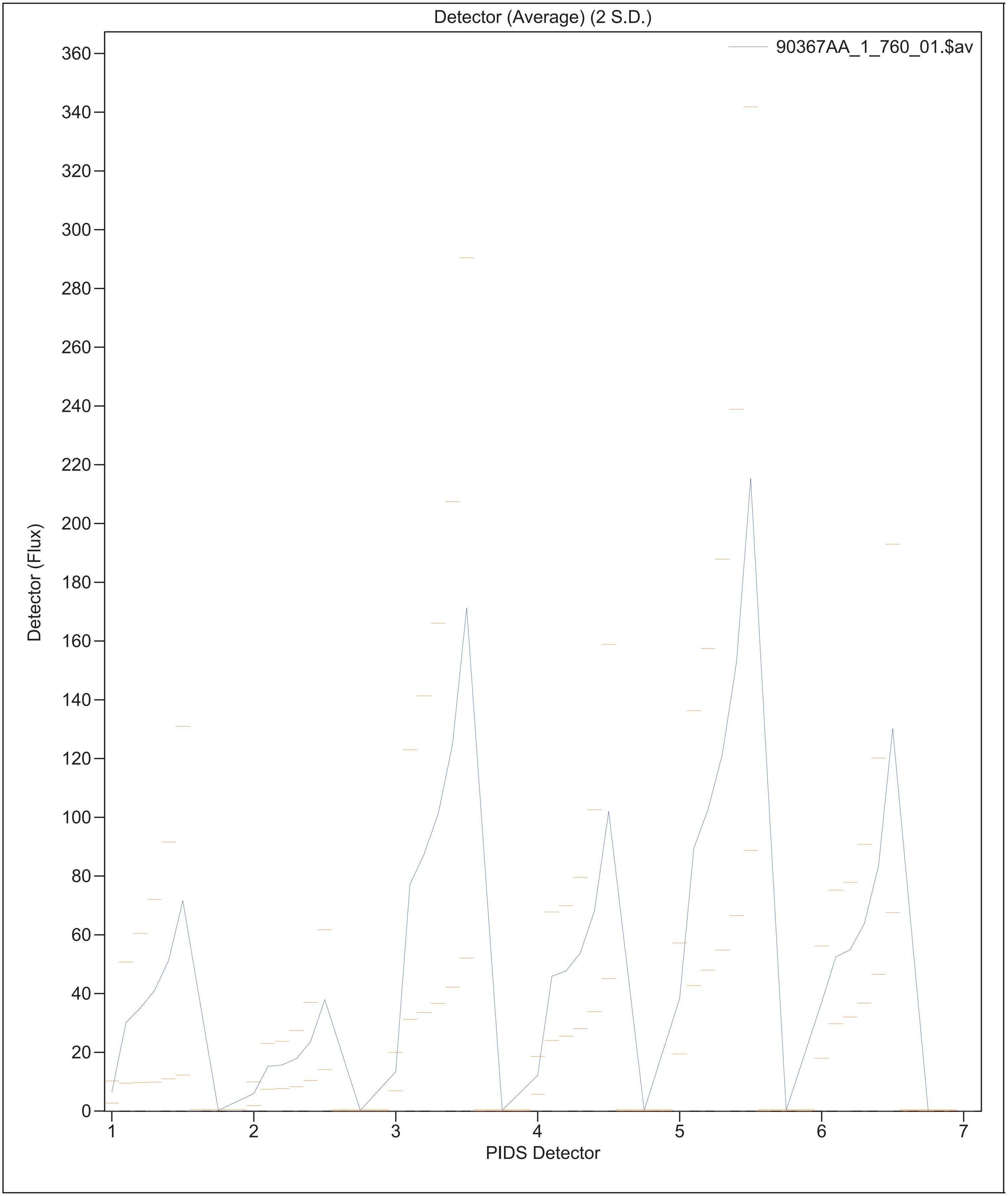


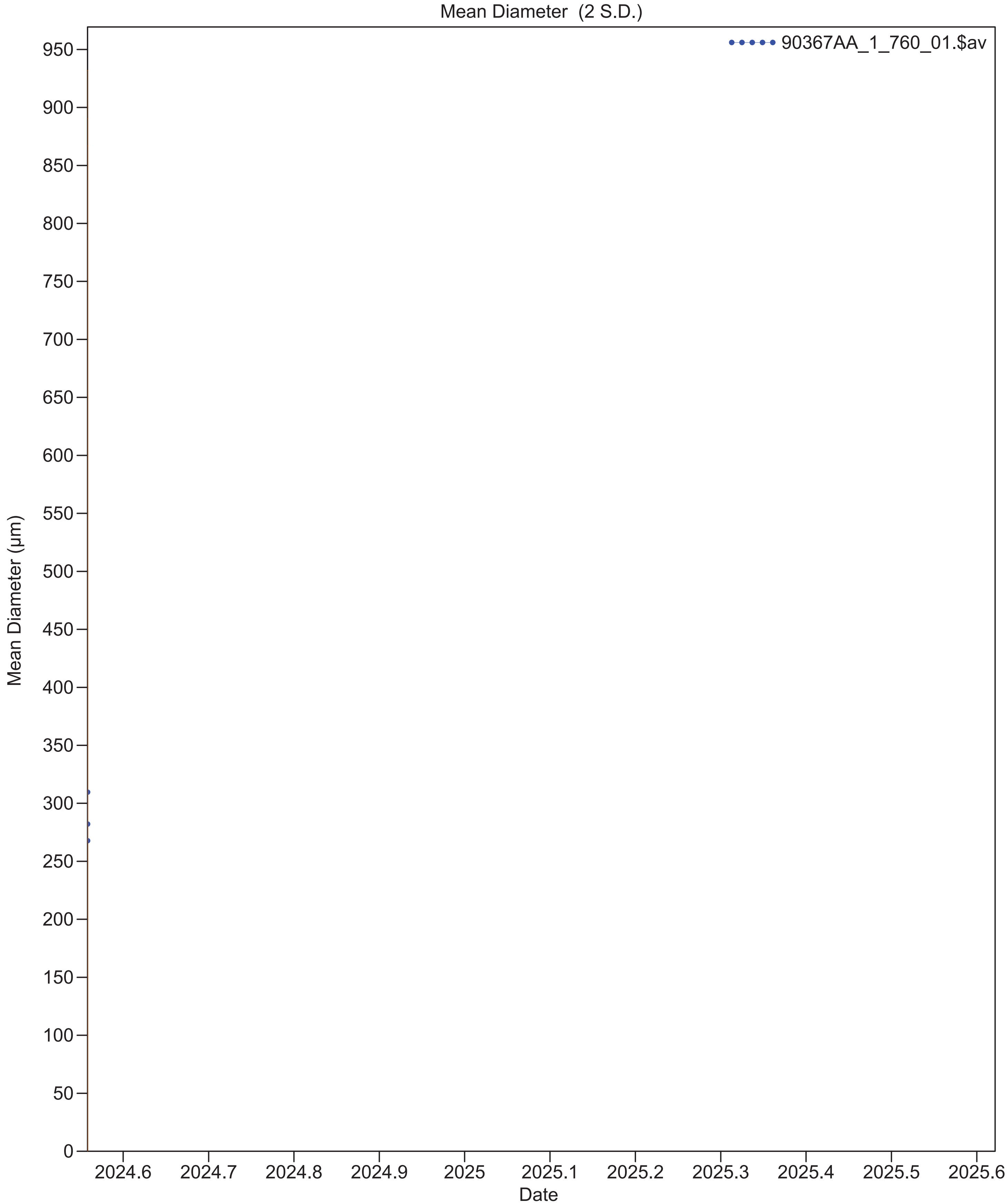
510.8*10^3 Flux @ -0.250

LS Particle Size Analyzer

9 Jul 2024 15:08

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90367AA_1_760_01.$av
Mean Diameter (µm)
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

BECKMAN COULTER™

LS Particle Size Analyzer

9 Jul 2024 15:08

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90367AA_1_760_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	286.4 µm	21.28	243.9	329.0
Median:	152.2 µm	32.63	86.95	217.5
S.D.:	305.0 µm	5.825	293.4	316.7
Variance:	93072 μm^2	3559	85953	100.2e3
C.V.:	106.8%	5.782	95.22	118.4
Skewness:	1.300	0.042	1.215	1.385
Kurtosis:	1.112	0.344	0.424	1.799
d_{10}:	15.26 µm	8.214	0	31.69
d_{50}:	152.2 µm	32.63	86.95	217.5
d_{90}:	747.1 µm	17.14	712.8	781.4

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90367AA_2_763_01.$av
	90367AA_2_763_01.$av
File ID:	90367AA_2
Sample ID:	90367AA_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

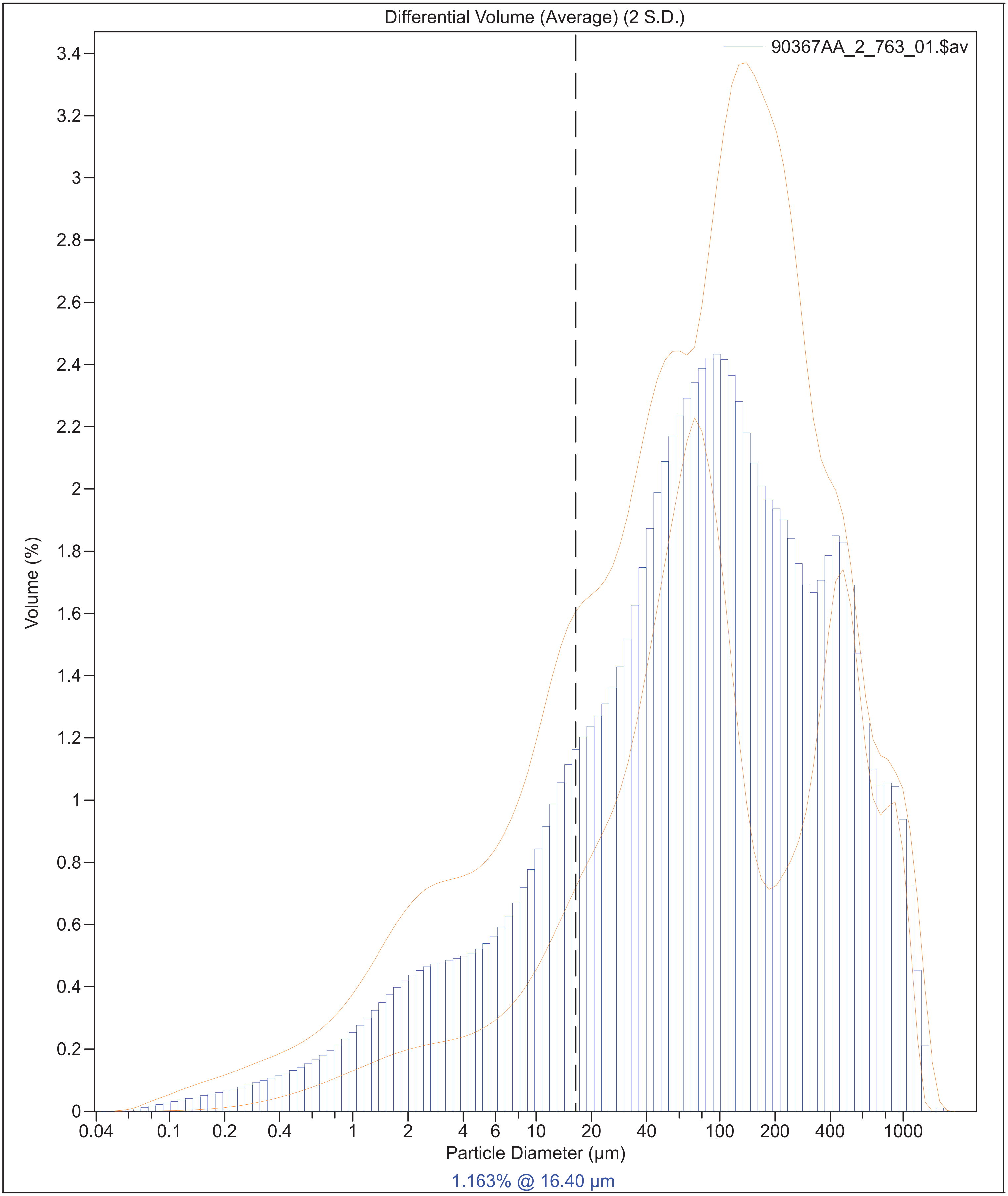
Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_2_761_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_2_762_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_2_763_01.$ls

BECKMAN COULTER™

LS Particle Size Analyzer

9 Jul 2024 15:18

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90367AA_2_763_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	183.7 µm	S.D.:	246.7 µm
Median:	81.34 µm	Variance:	60851 μm^2
Mean/Median ratio:	2.259	C.V.:	134%
Mode:	96.49 µm	Skewness:	2.083 Right skewed
		Kurtosis:	4.345 Leptokurtic

d_{10}: 4.964 µm d_{50}: 81.34 µm d_{90}: 523.9 µm

Folk and Ward Statistics (Phi)

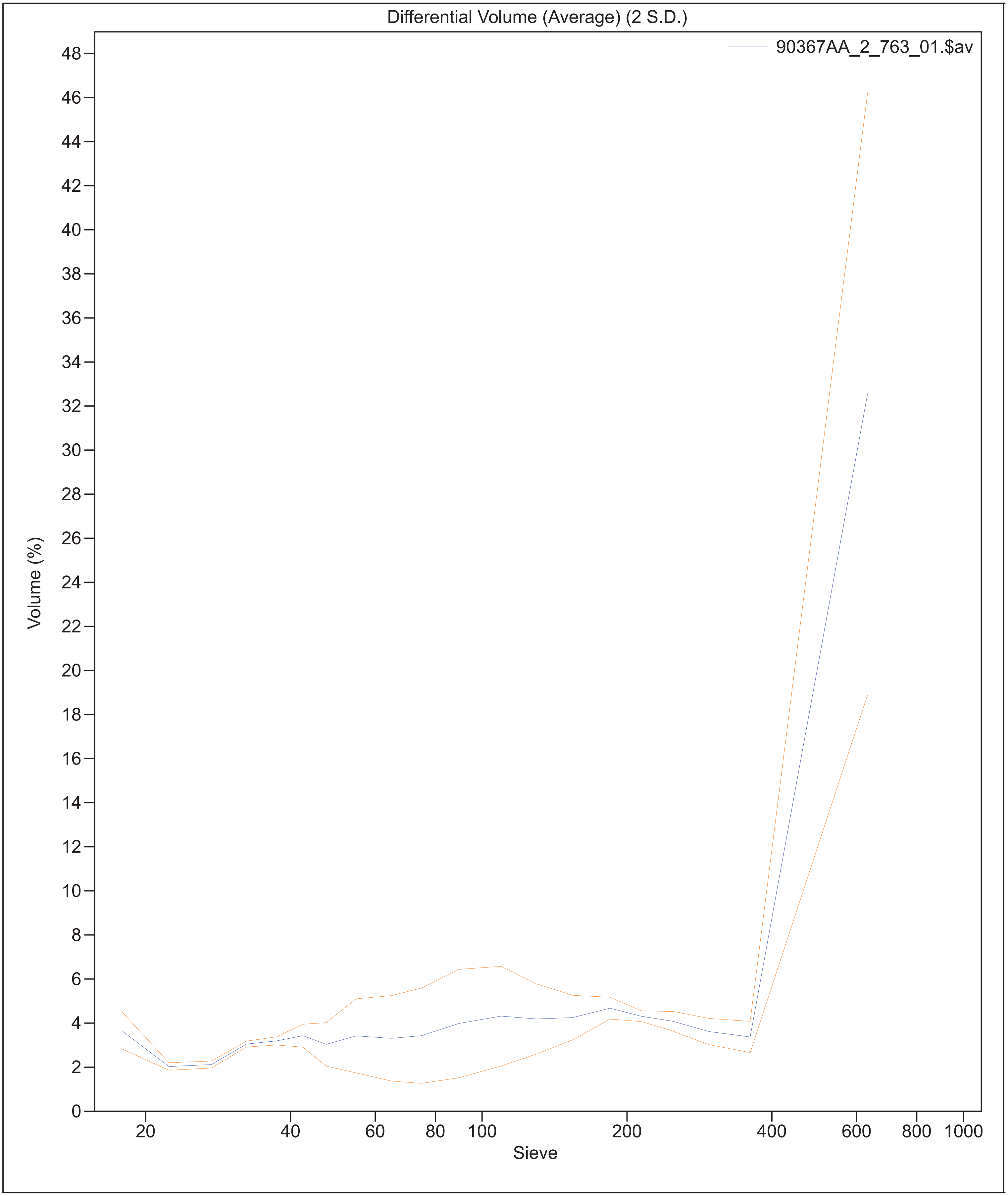
Mean:	3.82	Median:	3.62	Deviation:	2.58
Skewness:	0.19	Kurtosis:	1.07		

<10%	<25%	<50%	<75%	<90%
4.964 µm	23.67 µm	81.34 µm	236.5 µm	523.9 µm

LS Particle Size Analyzer

9 Jul 2024 15:18

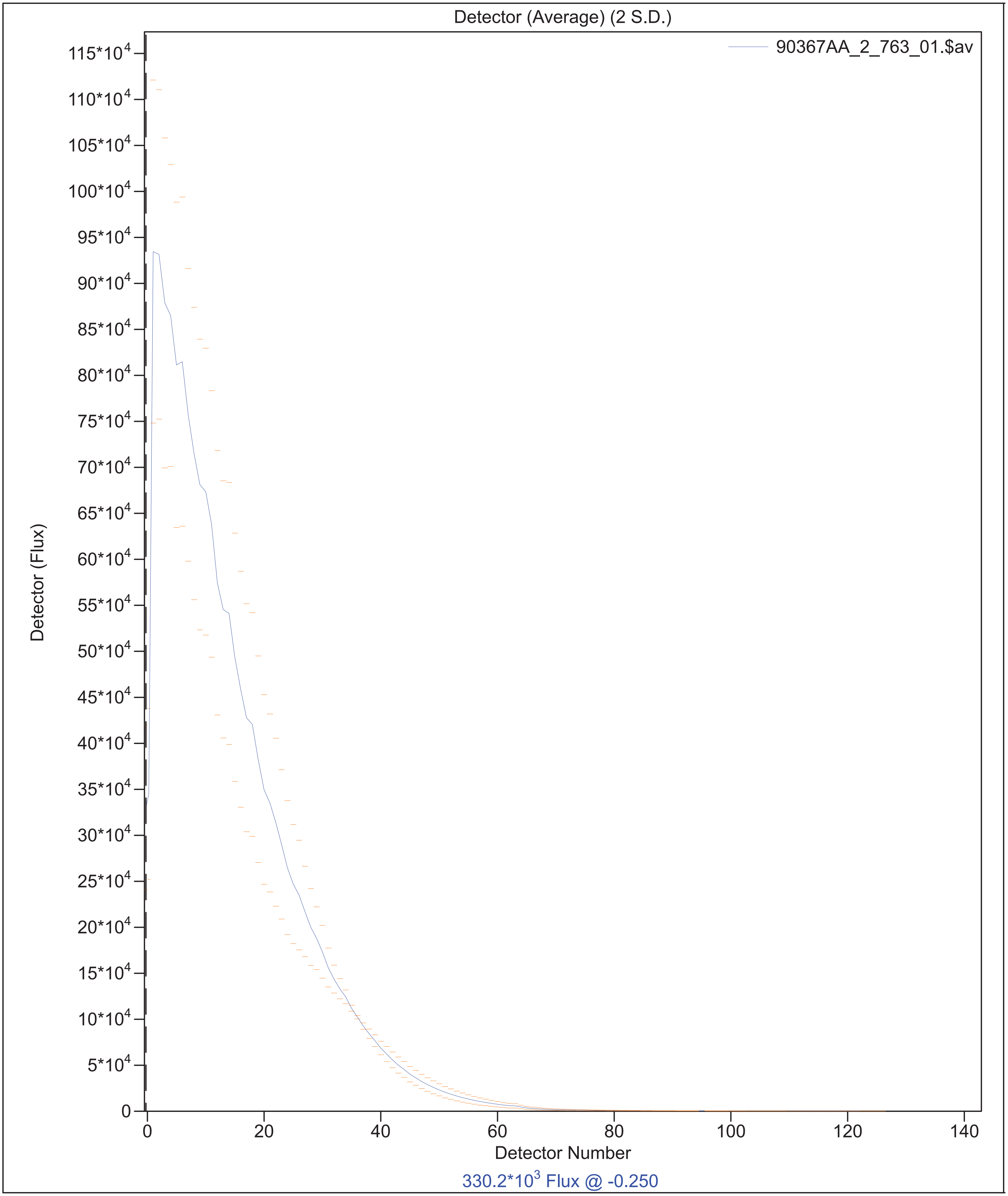
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 15:18

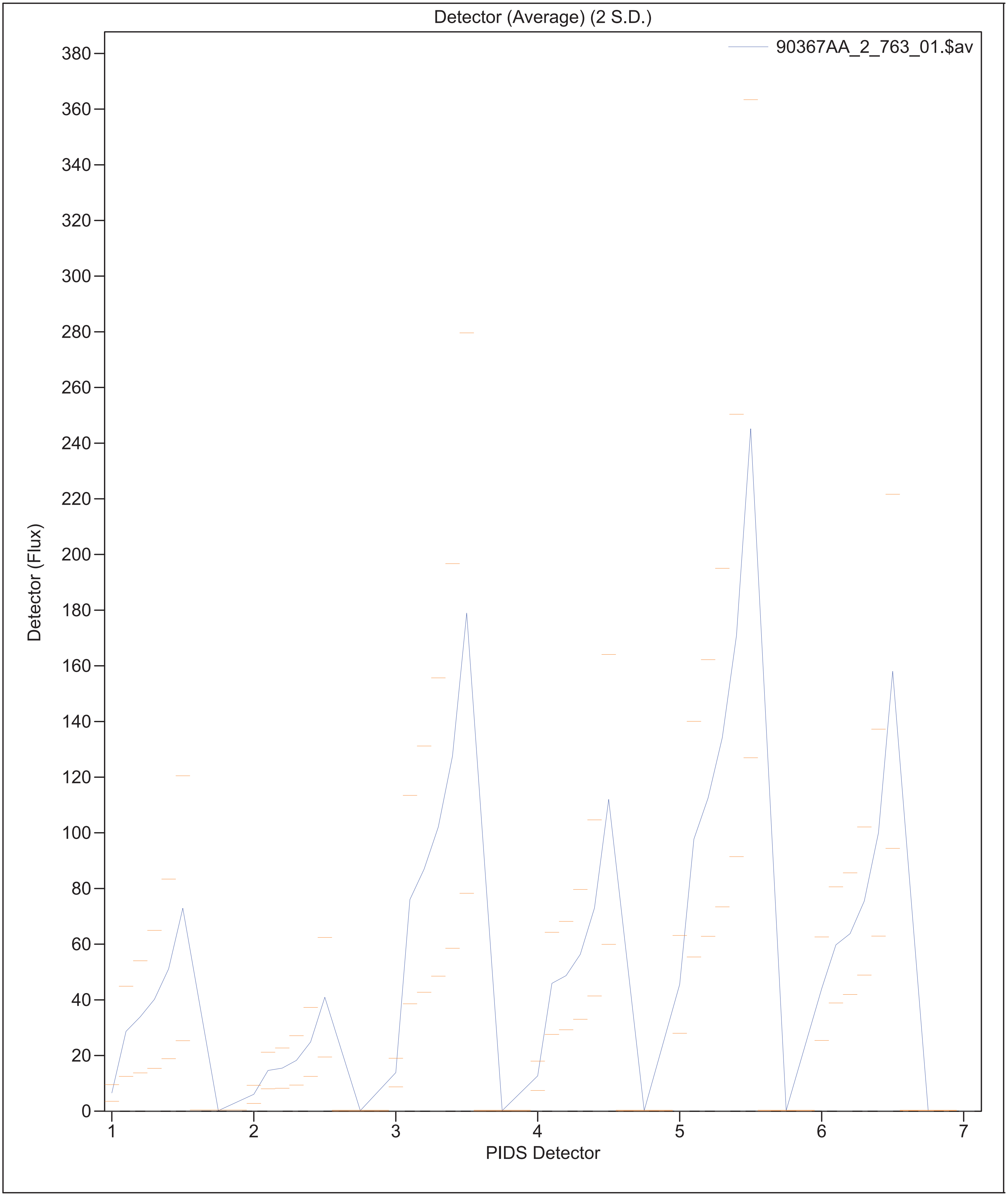
Beckman Coulter LS 13 320

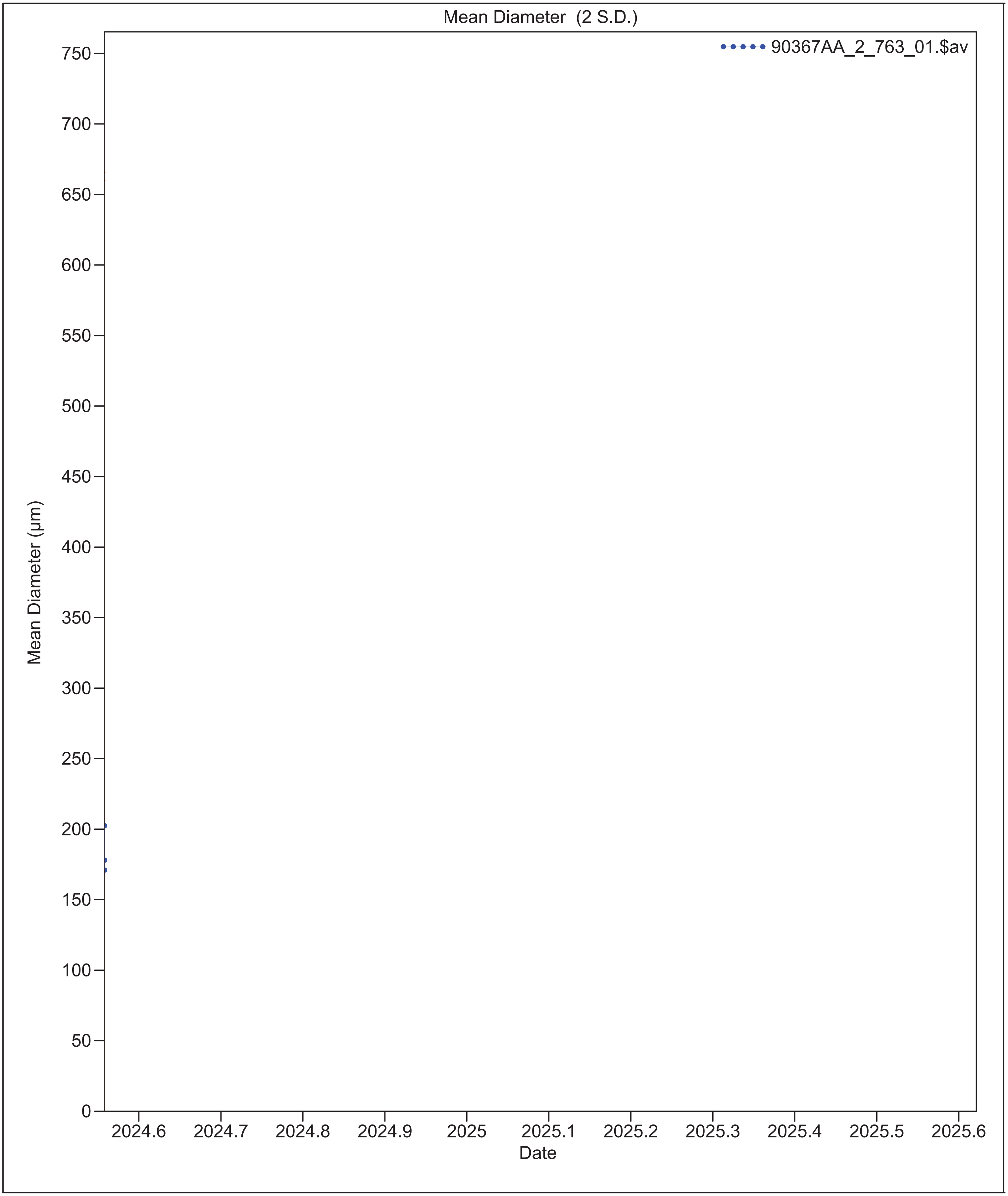


LS Particle Size Analyzer

9 Jul 2024 15:18

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90367AA_2_763_01.$av
Mean Diameter (µm)
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

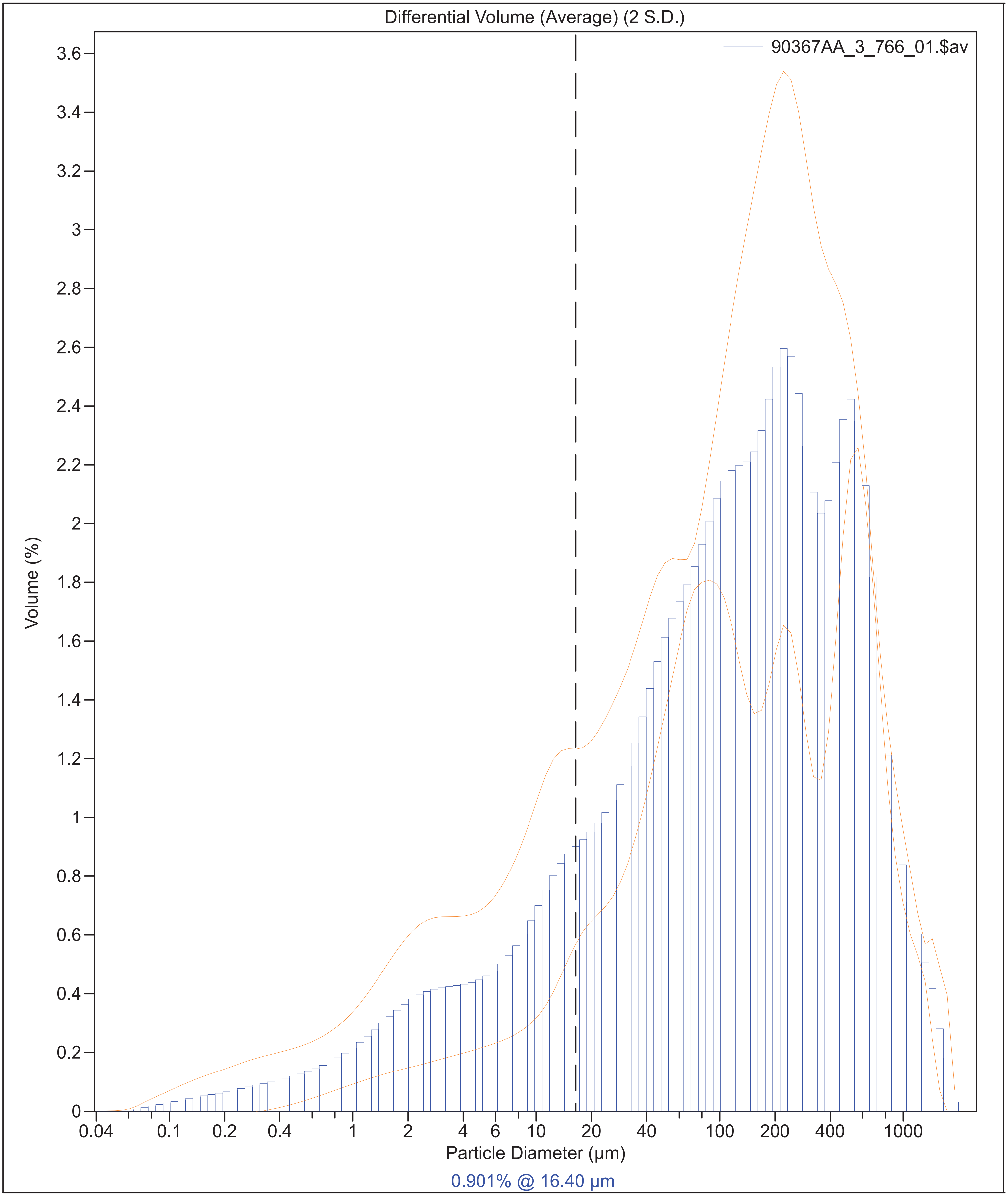
Volume Statistics (Arithmetic) Average of 3 files 90367AA_2_763_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	183.7 µm	16.53	150.7	216.8
Median:	82.47 µm	24.24	33.99	130.9
S.D.:	246.3 µm	4.902	236.5	256.1
Variance:	60669 μm^2	2406	55856	65482
C.V.:	134.6%	10.51	113.6	155.7
Skewness:	2.088	0.030	2.028	2.148
Kurtosis:	4.337	0.251	3.836	4.838
d_{10}:	5.671 µm	2.922	0	11.51
d_{50}:	82.47 µm	24.24	33.99	130.9
d_{90}:	523.9 µm	6.046	511.8	536.0

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90367AA_3_766_01.$av
	90367AA_3_766_01.$av
File ID:	90367AA_3
Sample ID:	90367AA_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_3_764_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_3_765_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_3_766_01.$ls


Differential Volume (Average) (2 S.D.)
90367AA_3_766_01.$av
Volume (%)
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (µm)
0.901% @ 16.40 µm

Volume Statistics (Arithmetic) 90367AA_3_766_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	237.7 µm	S.D.:	291.4 µm
Median:	124.9 µm	Variance:	84898 $µm^2$
Mean/Median ratio:	1.902	C.V.:	123%
Mode:	223.4 µm	Skewness:	2.002 Right skewed
		Kurtosis:	4.656 Leptokurtic

d_{10}: 6.276 µm d_{50}: 124.9 µm d_{90}: 628.2 µm

Folk and Ward Statistics (Phi)

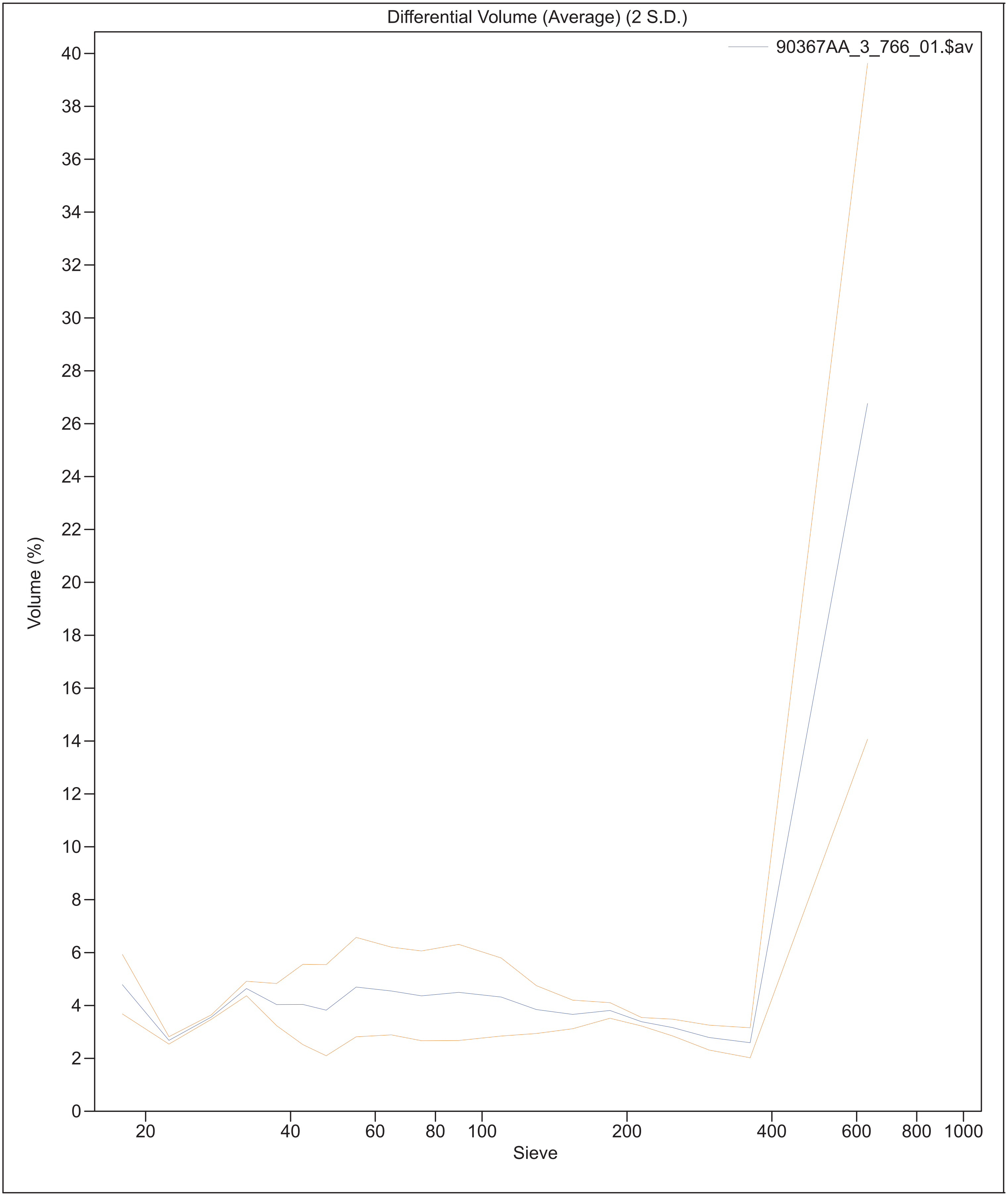
Mean:	3.38	Median:	3.00	Deviation:	2.58
Skewness:	0.29	Kurtosis:	1.06		

<10%	<25%	<50%	<75%	<90%
6.276 µm	33.41 µm	124.9 µm	335.1 µm	628.2 µm

LS Particle Size Analyzer

9 Jul 2024 15:29

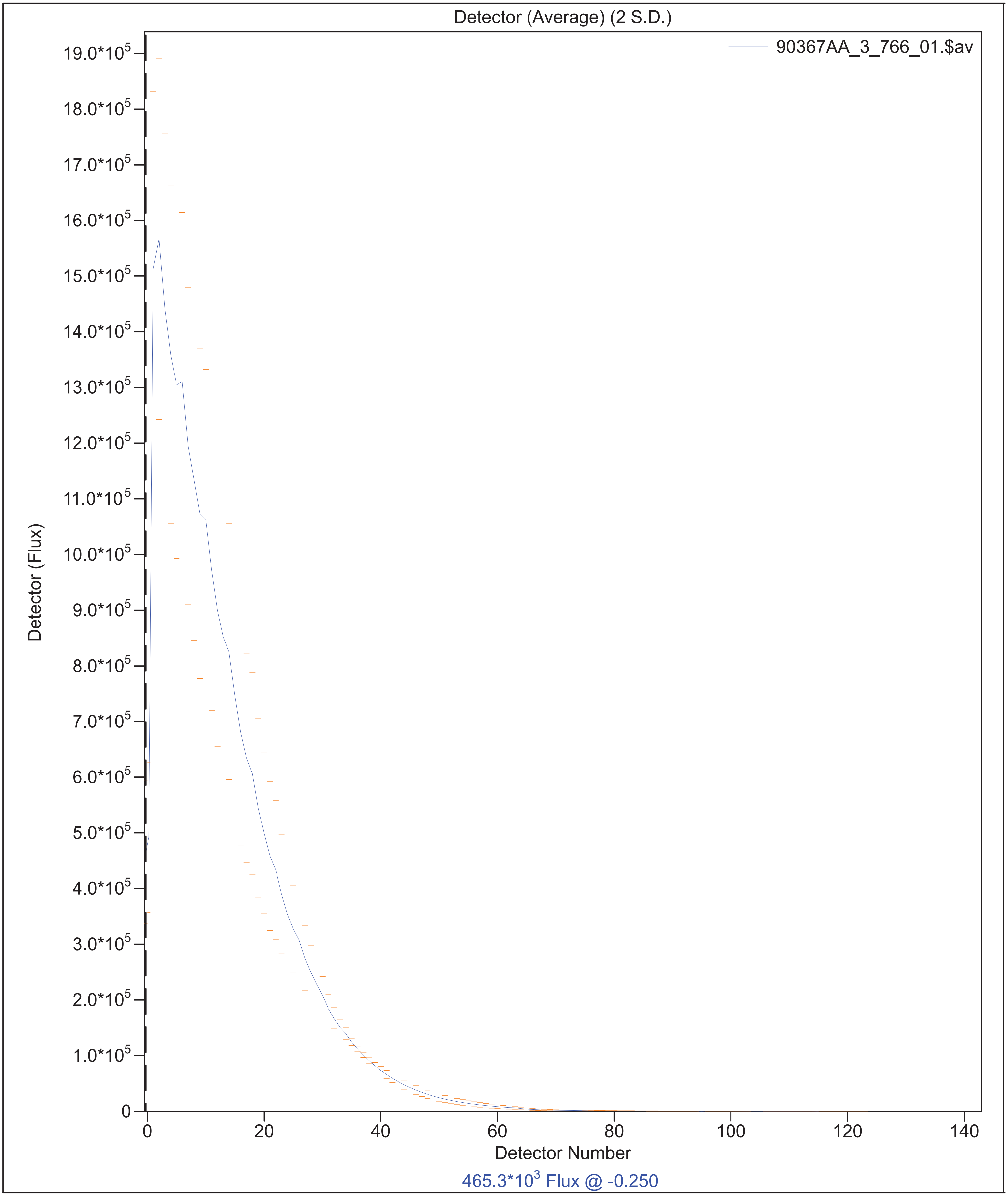
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 15:29

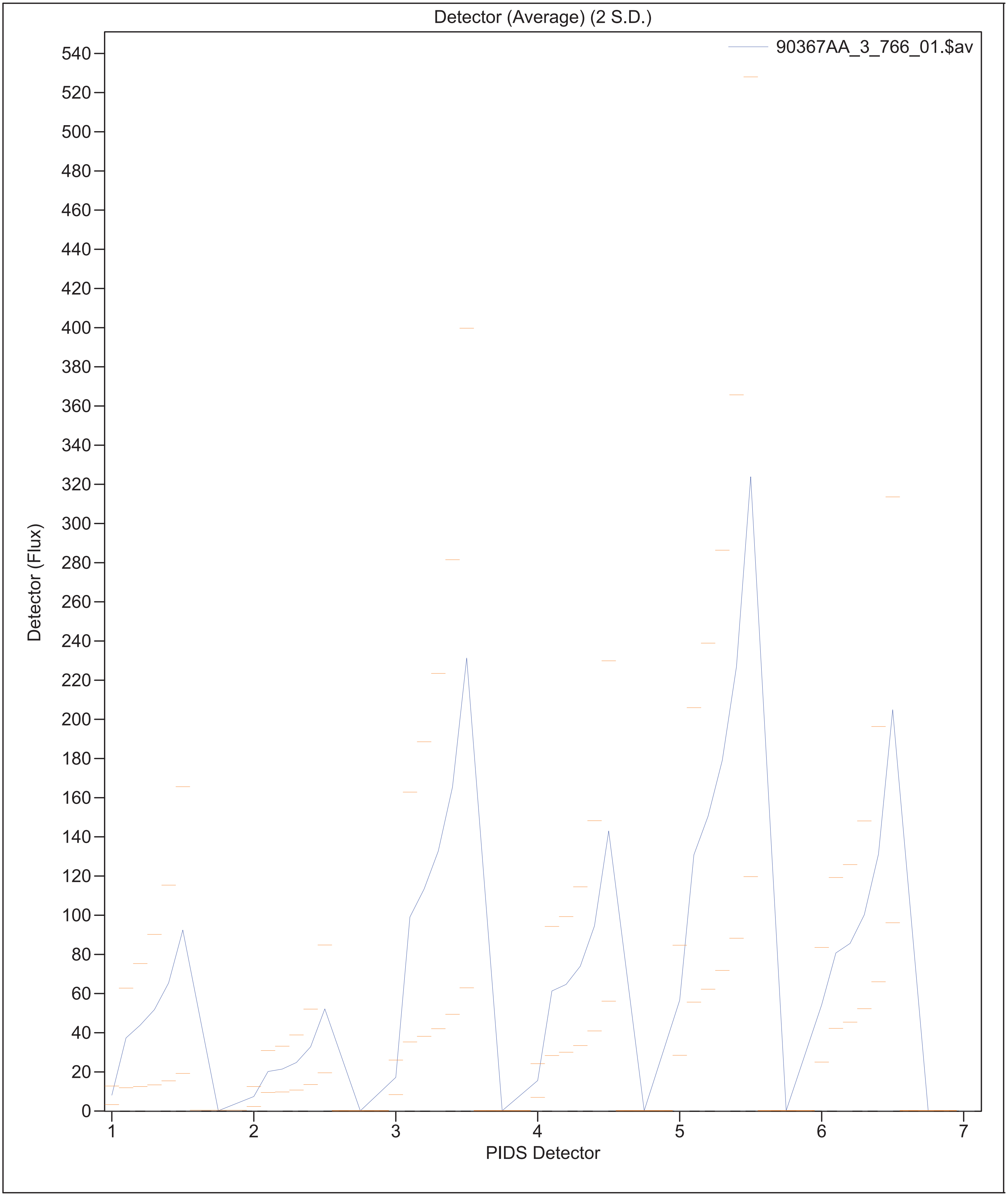
Beckman Coulter LS 13 320

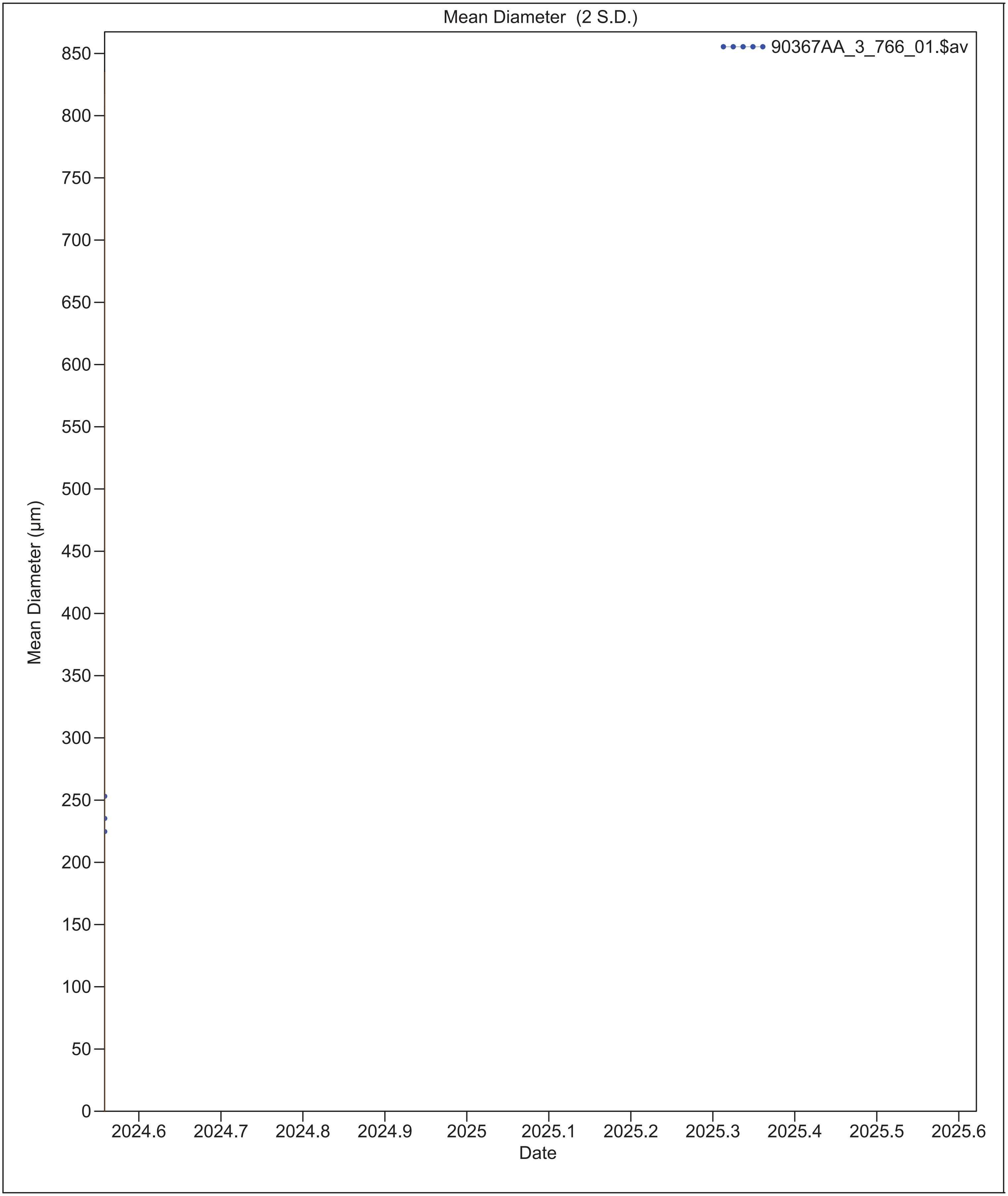


LS Particle Size Analyzer

9 Jul 2024 15:29

Beckman Coulter LS 13 320





Mean Diameter (2 S.D.)
90367AA_3_766_01.$av
Mean Diameter (µm)
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

9 Jul 2024 15:29

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90367AA_3_766_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	237.7 µm	14.32	209.0	266.3
Median:	124.3 µm	32.20	59.91	188.7
S.D.:	291.0 µm	12.40	266.2	315.8
Variance:	84762 μm^2	7136	70490	99033
C.V.:	122.9%	11.91	99.09	146.7
Skewness:	1.999	0.148	1.702	2.295
Kurtosis:	4.607	0.692	3.223	5.990
d_{10}:	7.383 µm	4.595	0	16.57
d_{50}:	124.3 µm	32.20	59.91	188.7
d_{90}:	628.2 µm	1.676	624.8	631.5

LS Particle Size Analyzer

9 Jul 2024 15:40

Beckman Coulter LS 13 320

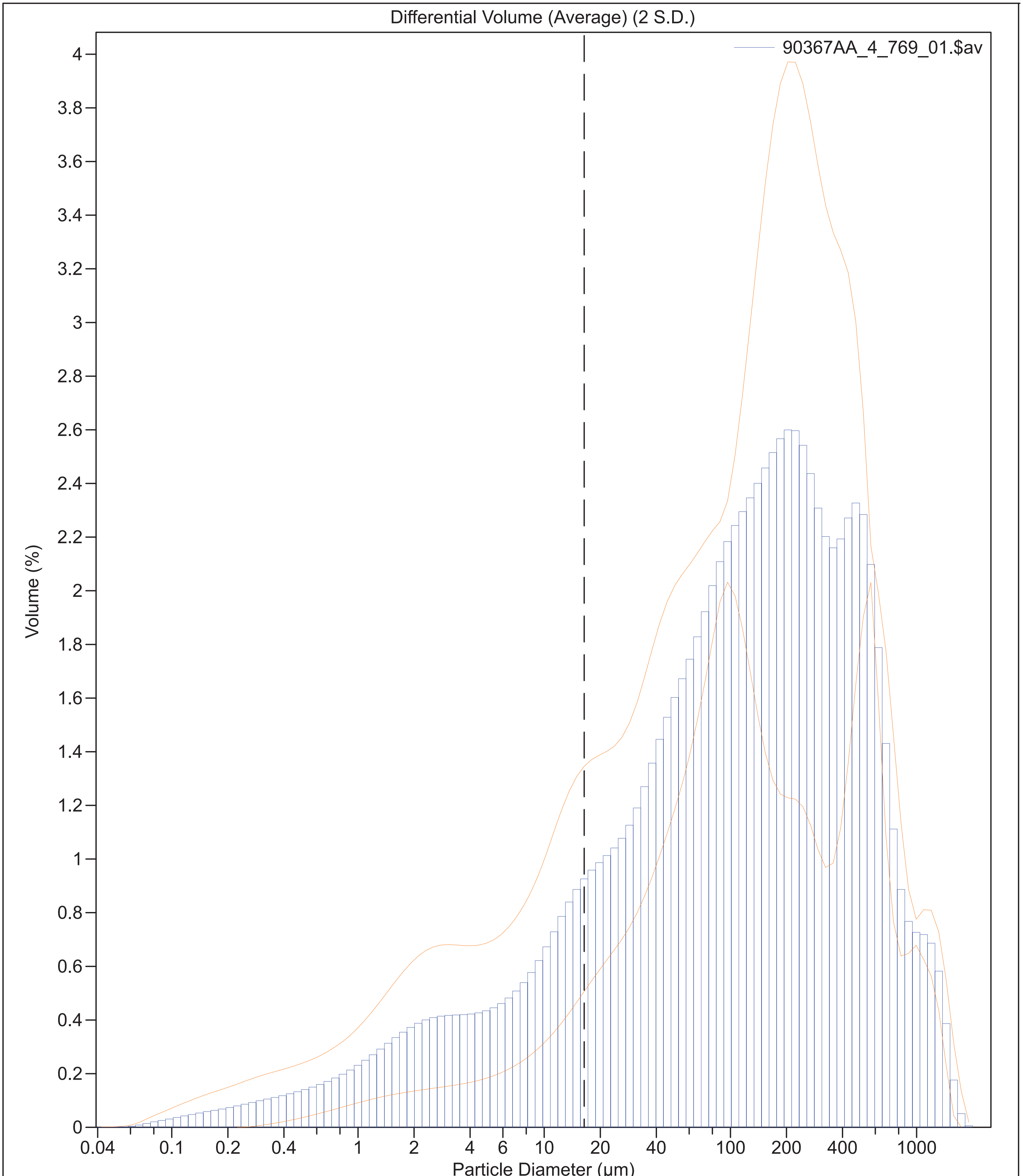
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90367AA_4_769_01.$av 90367AA_4_769_01.$av
File ID:	90367AA_4
Sample ID:	90367AA_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_4_767_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_4_768_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90367AA_4_769_01.$ls

LS Particle Size Analyzer

9 Jul 2024 15:40

Beckman Coulter LS 13 320



0.926% @ 16.40 µm

Volume Statistics (Arithmetic) 90367AA_4_769_01.$av

Calculations from 0.040 µm to 2000 µm

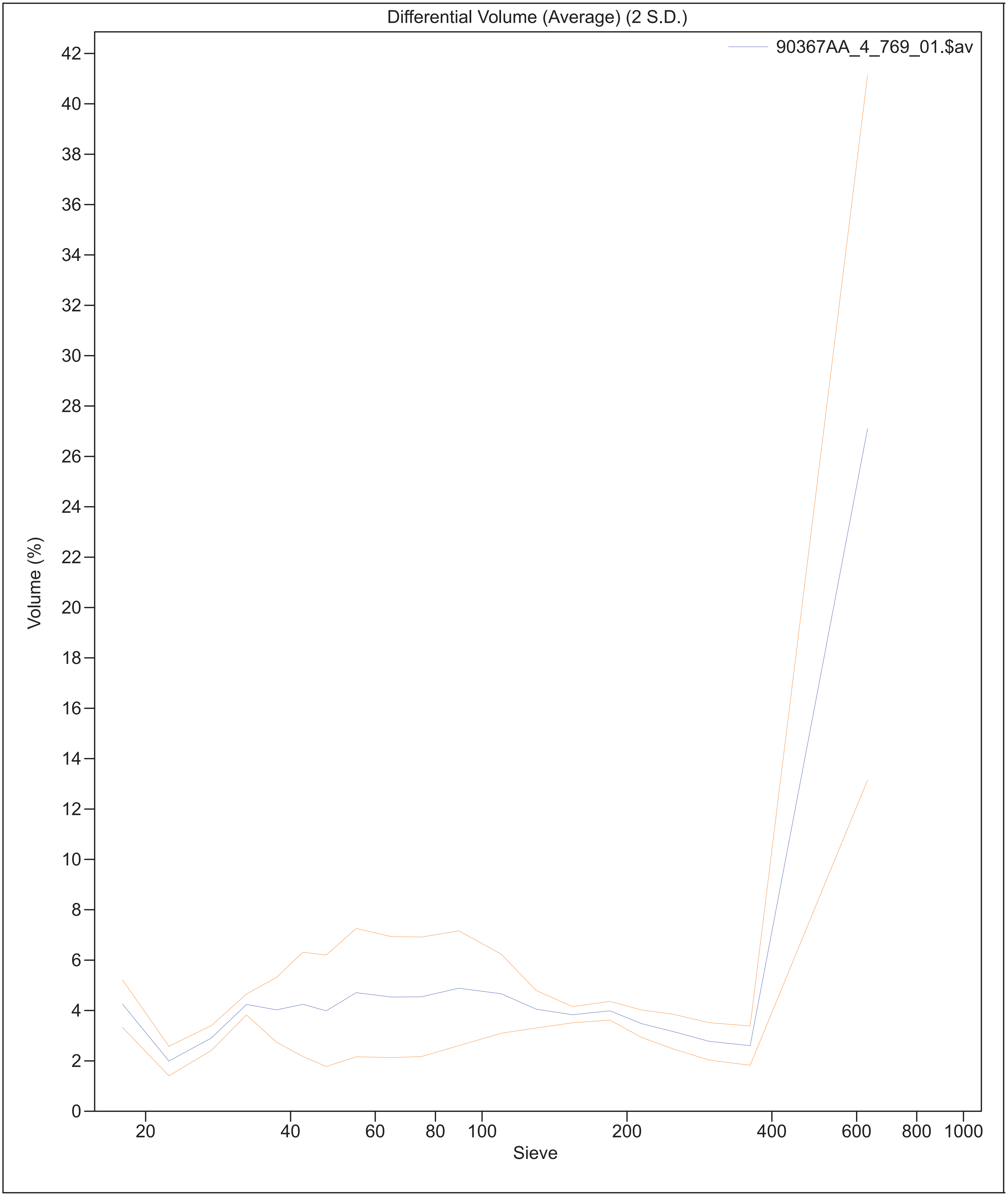
Volume:	100%		
Mean:	222.7 µm	S.D.:	274.5 µm
Median:	120.1 µm	Variance:	75357 μm^2
Mean/Median ratio:	1.855	C.V.:	123%
Mode:	203.5 µm	Skewness:	2.072 Right skewed
		Kurtosis:	4.918 Leptokurtic

d_{10}: 5.928 µm d_{50}: 120.1 µm d_{90}: 577.7 µm

Folk and Ward Statistics (Phi)

Mean:	3.44	Median:	3.06	Deviation:	2.56
Skewness:	0.30	Kurtosis:	1.10		

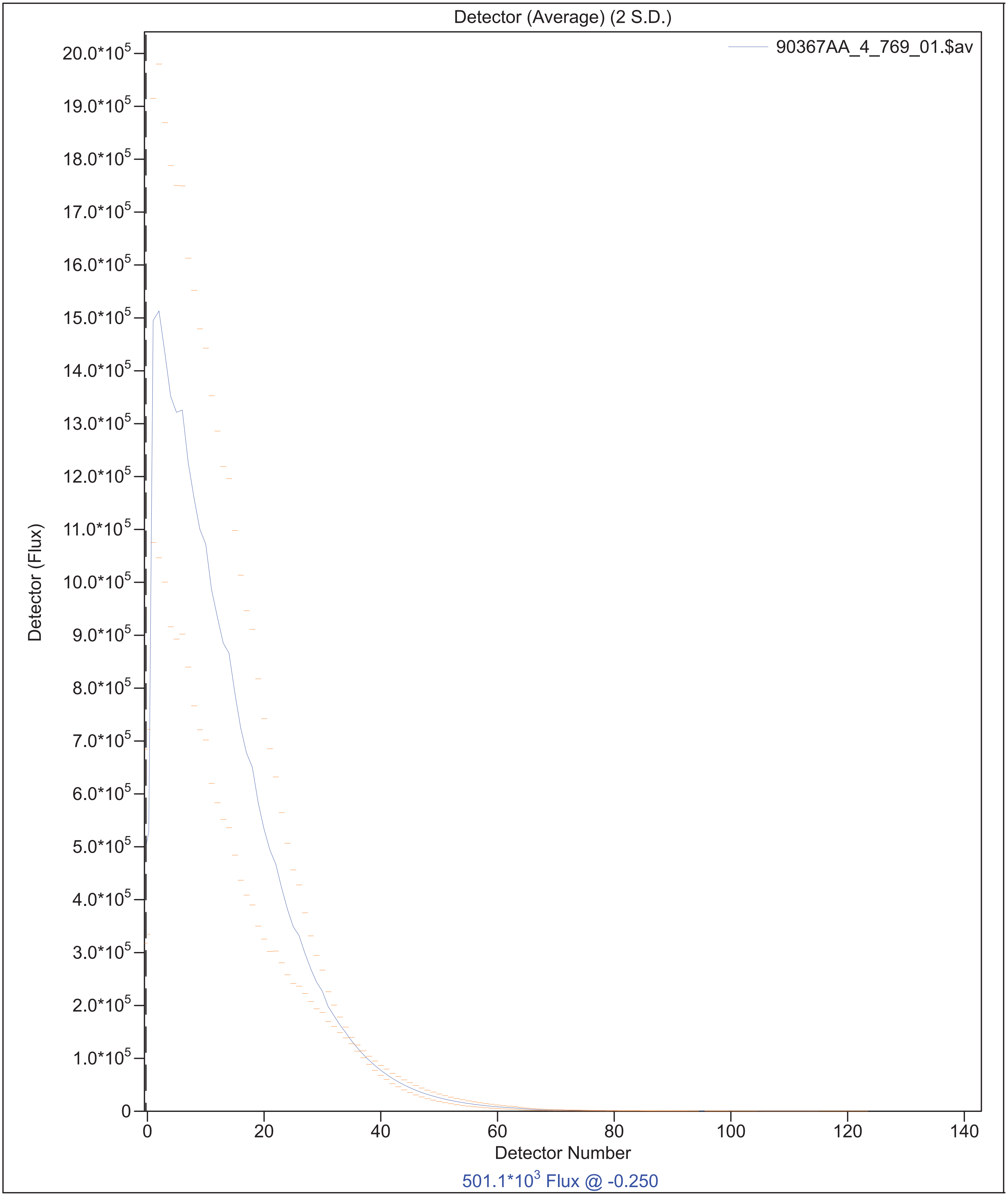
<10%	<25%	<50%	<75%	<90%
5.928 µm	32.63 µm	120.1 µm	307.9 µm	577.7 µm


Differential Volume (Average) (2 S.D.)
90367AA_4_769_01.$av
Volume (%)
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

9 Jul 2024 15:40

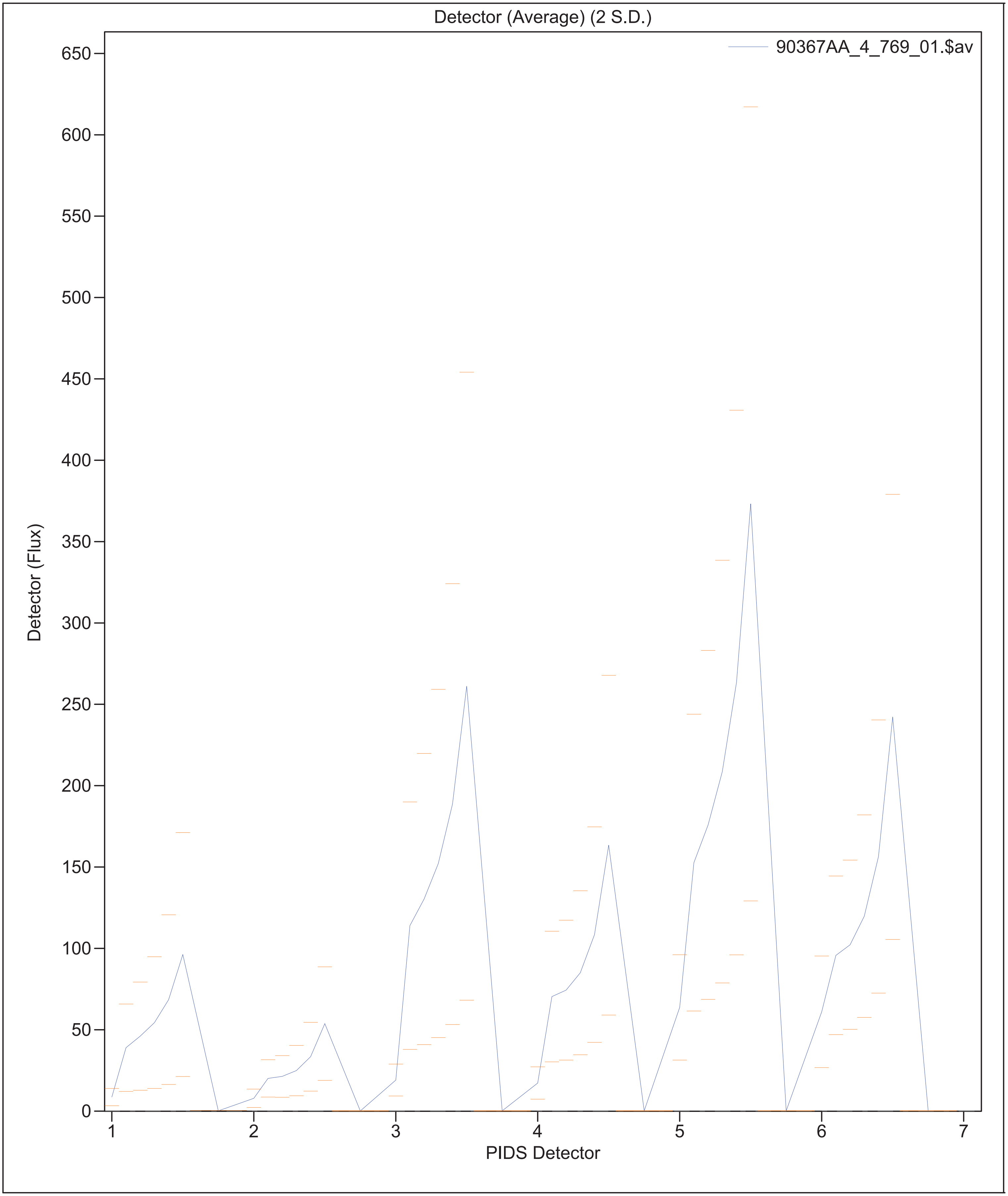
Beckman Coulter LS 13 320

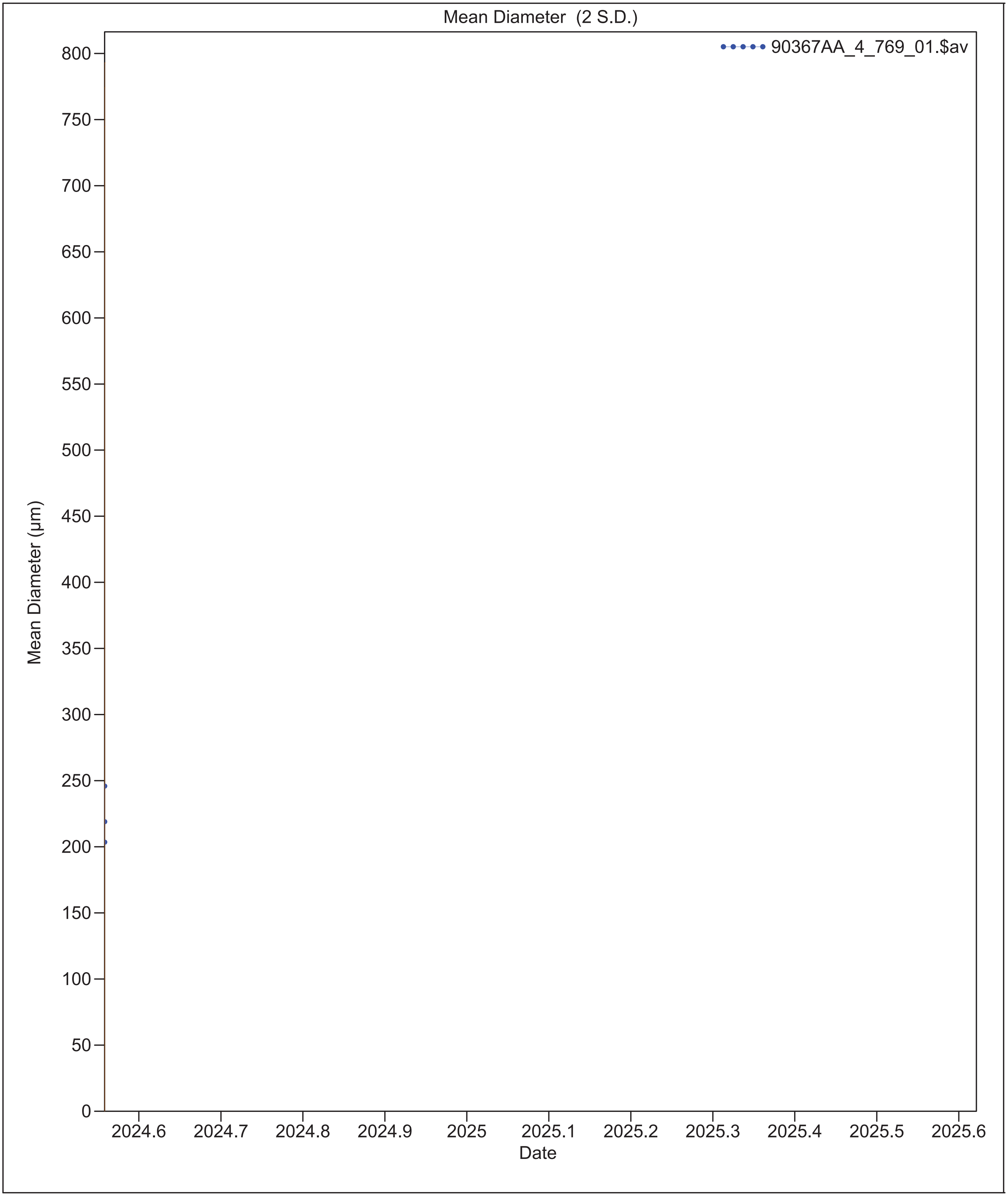


LS Particle Size Analyzer

9 Jul 2024 15:40

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90367AA_4_769_01.$av
Mean Diameter (µm)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic) Average of 3 files 90367AA_4_769_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	222.7 µm	21.47	179.8	265.7
Median:	120.2 µm	38.01	44.16	196.2
S.D.:	273.9 µm	3.553	266.8	281.0
Variance:	75049 μm^2	1948	71153	78945
C.V.:	123.7%	11.23	101.2	146.2
Skewness:	2.083	0.047	1.990	2.176
Kurtosis:	4.940	0.571	3.797	6.082
d_{10}:	7.233 µm	4.898	0	17.03
d_{50}:	120.2 µm	38.01	44.16	196.2
d_{90}:	577.8 µm	10.09	557.6	597.9

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90397AA_1_863_01.$av
	90397AA_1_863_01.$av
File ID:	90397AA_1
Sample ID:	90397AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files

C:\LS13320\Samples\NOAA-CZM FY23\90397AA_1_861_01.$ls

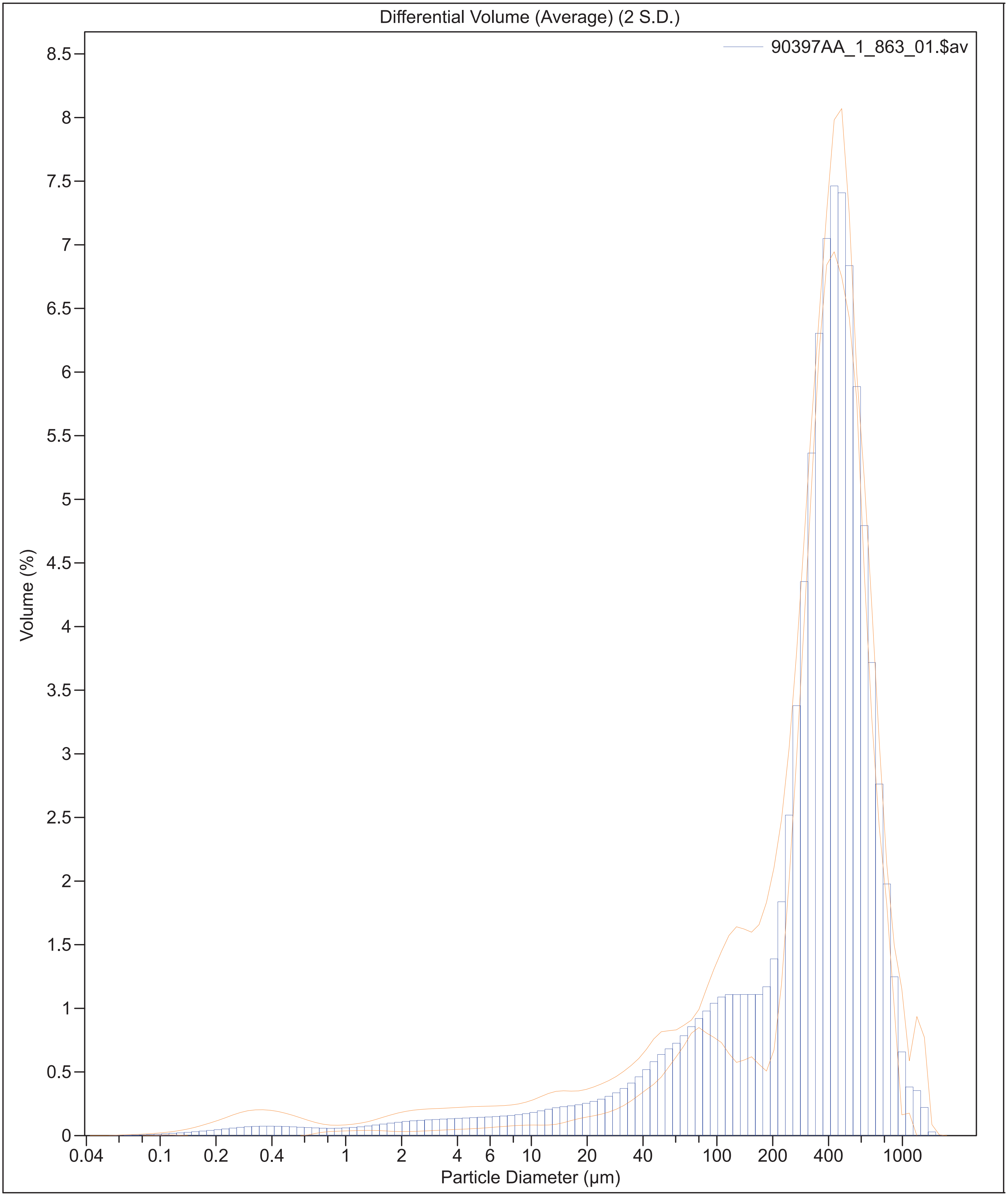
C:\LS13320\Samples\NOAA-CZM FY23\90397AA_1_862_01.$ls

C:\LS13320\Samples\NOAA-CZM FY23\90397AA_1_863_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:50

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:50

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90397AA_1_863_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	377.8 µm	S.D.:	237.3 µm
Median:	377.2 µm	Variance:	56314 µm^2
Mean/Median ratio:	1.002	C.V.:	62.8%
Mode:	429.2 µm	Skewness:	0.507 Right skewed
		Kurtosis:	0.488 Leptokurtic

d_{10}: 50.62 µm d_{50}: 377.2 µm d_{90}: 676.2 µm

Folk and Ward Statistics (Phi)

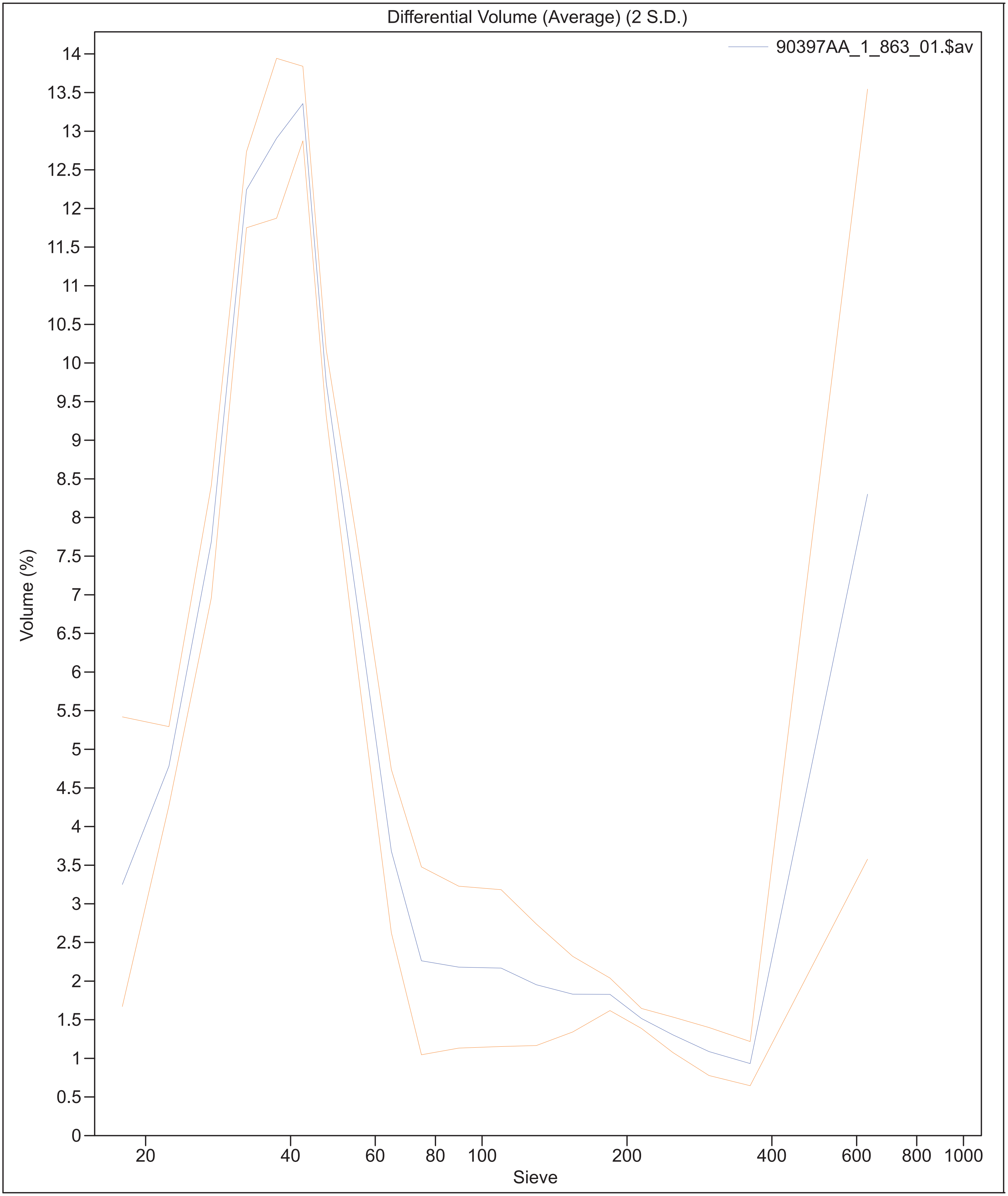
Mean:	1.83	Median:	1.41	Deviation:	1.54
Skewness:	0.56	Kurtosis:	1.80		

<10%	<25%	<50%	<75%	<90%
50.62 µm	207.0 µm	377.2 µm	520.9 µm	676.2 µm

LS Particle Size Analyzer

10 Jul 2024 12:50

Beckman Coulter LS 13 320

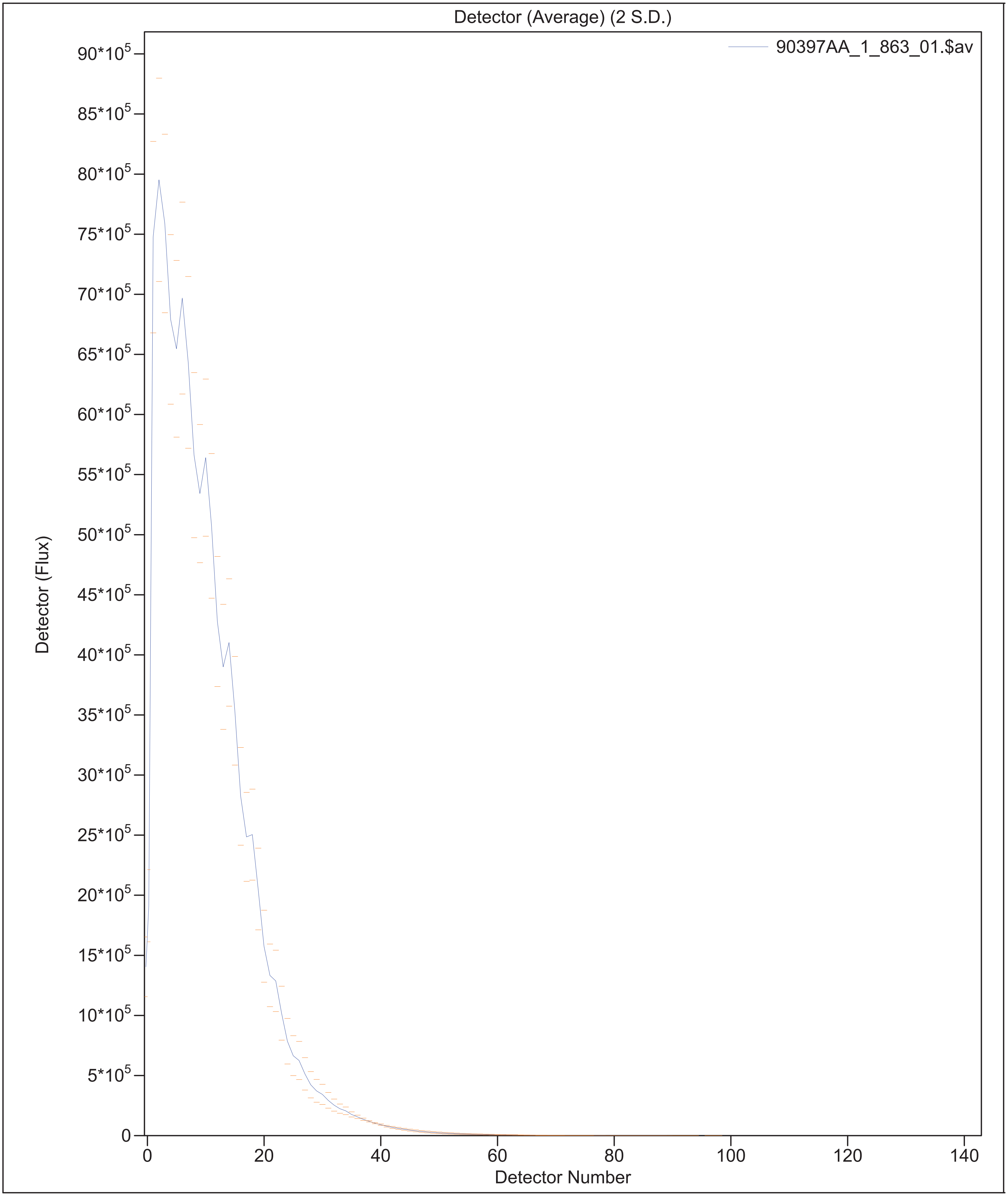


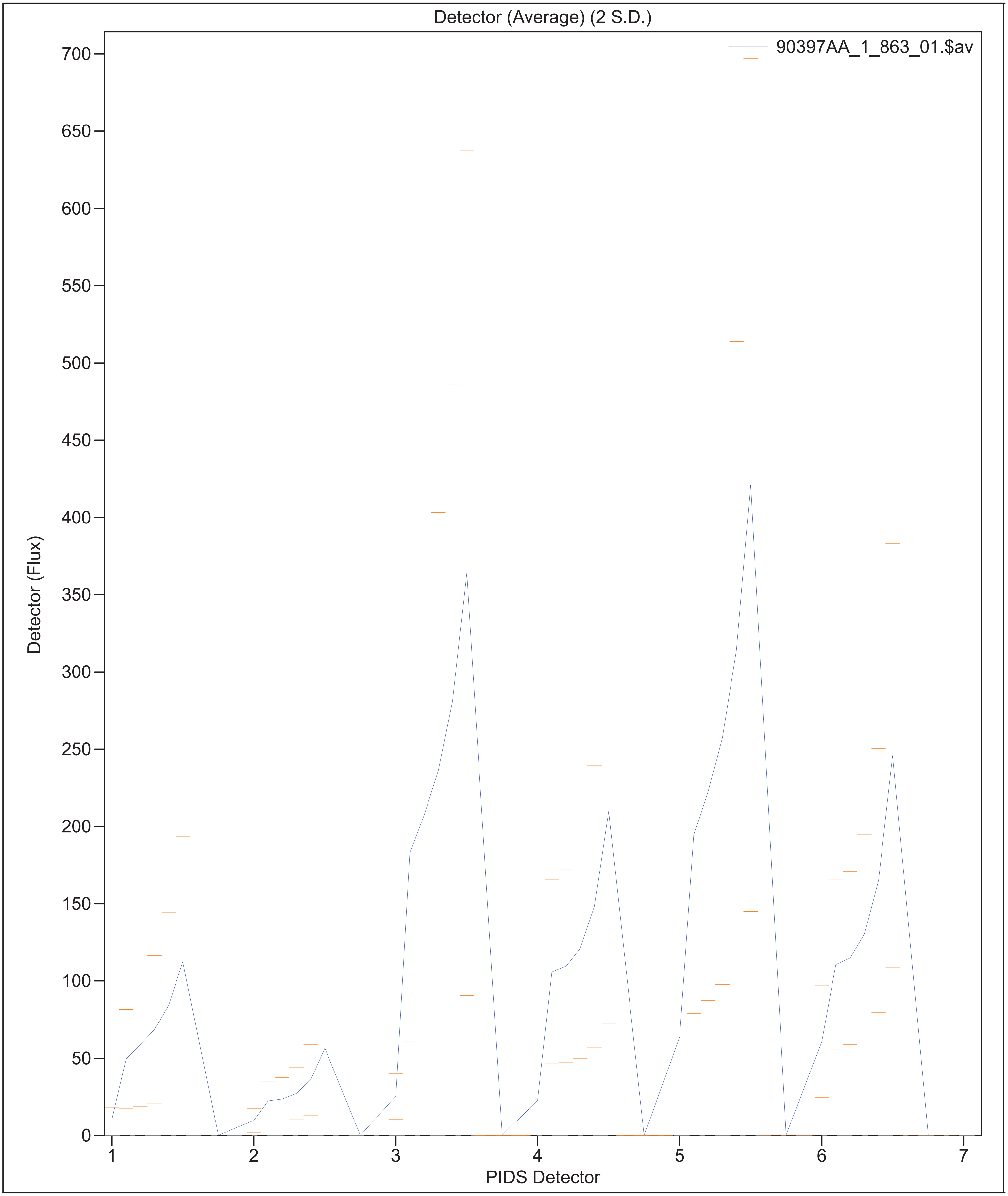
BECKMAN COULTER

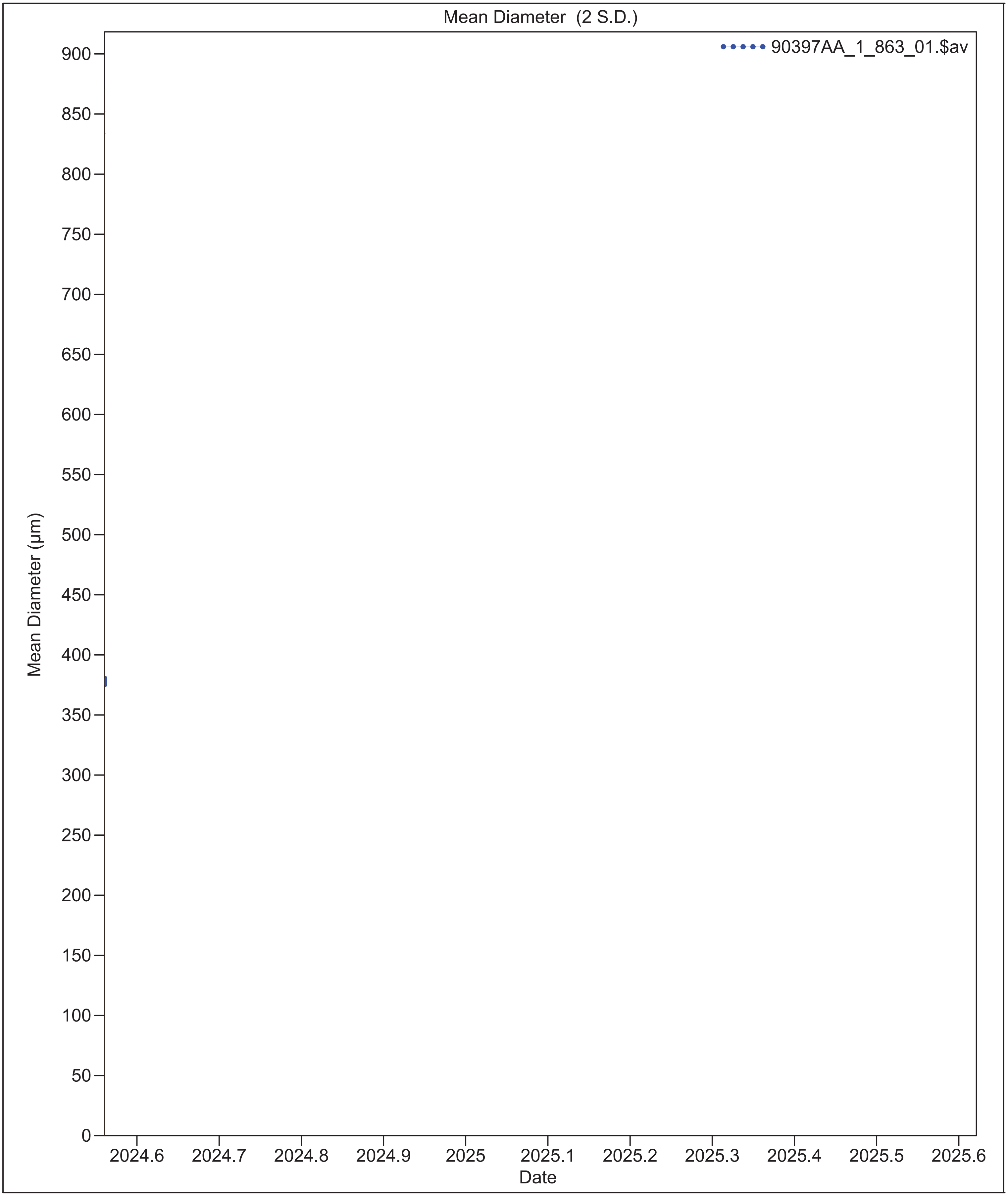
LS Particle Size Analyzer

10 Jul 2024 12:50

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90397AA_1_863_01.$av
Detector (Flux)
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
PIDS Detector
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90397AA_1_863_01.$av
Mean Diameter (µm)
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 12:50

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90397AA_1_863_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	377.8 µm	2.613	372.6	383.0
Median:	377.2 µm	2.416	372.4	382.0
S.D.:	237.1 µm	10.58	216.0	258.3
Variance:	56310 μm^2	5020	46270	66350
C.V.:	62.78%	3.235	56.31	69.25
Skewness:	0.499	0.110	0.279	0.718
Kurtosis:	0.415	0.506	-0.597	1.427
d_{10}:	52.26 µm	21.06	10.14	94.38
d_{50}:	377.2 µm	2.416	372.4	382.0
d_{90}:	676.1 µm	3.243	669.6	682.6

LS Particle Size Analyzer

10 Jul 2024 13:11

Beckman Coulter LS 13 320

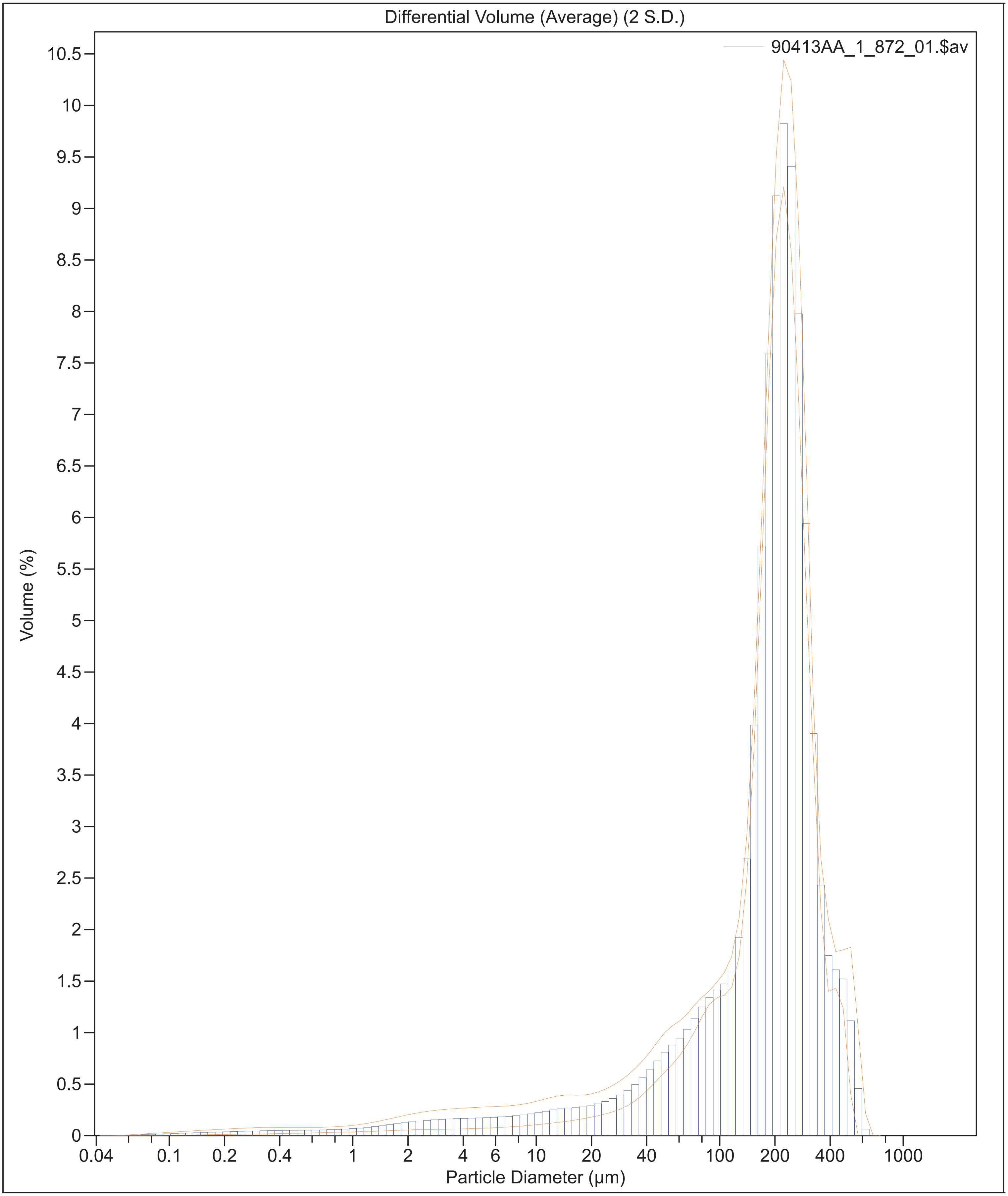
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90413AA_1_872_01.$av
	90413AA_1_872_01.$av
File ID:	90413AA_1
Sample ID:	90413AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_1_870_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_1_871_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_1_872_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:11

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)		90413AA_1_872_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	201.6 µm	S.D.:	112.1 µm
Median:	204.9 µm	Variance:	12556 $µm^2$
Mean/Median ratio:	0.984	C.V.:	55.6%
Mode:	223.4 µm	Skewness:	0.381 Right skewed
		Kurtosis:	0.489 Leptokurtic

d_{10}: 41.42 µm d_{50}: 204.9 µm d_{90}: 331.8 µm

Folk and Ward Statistics (Phi)

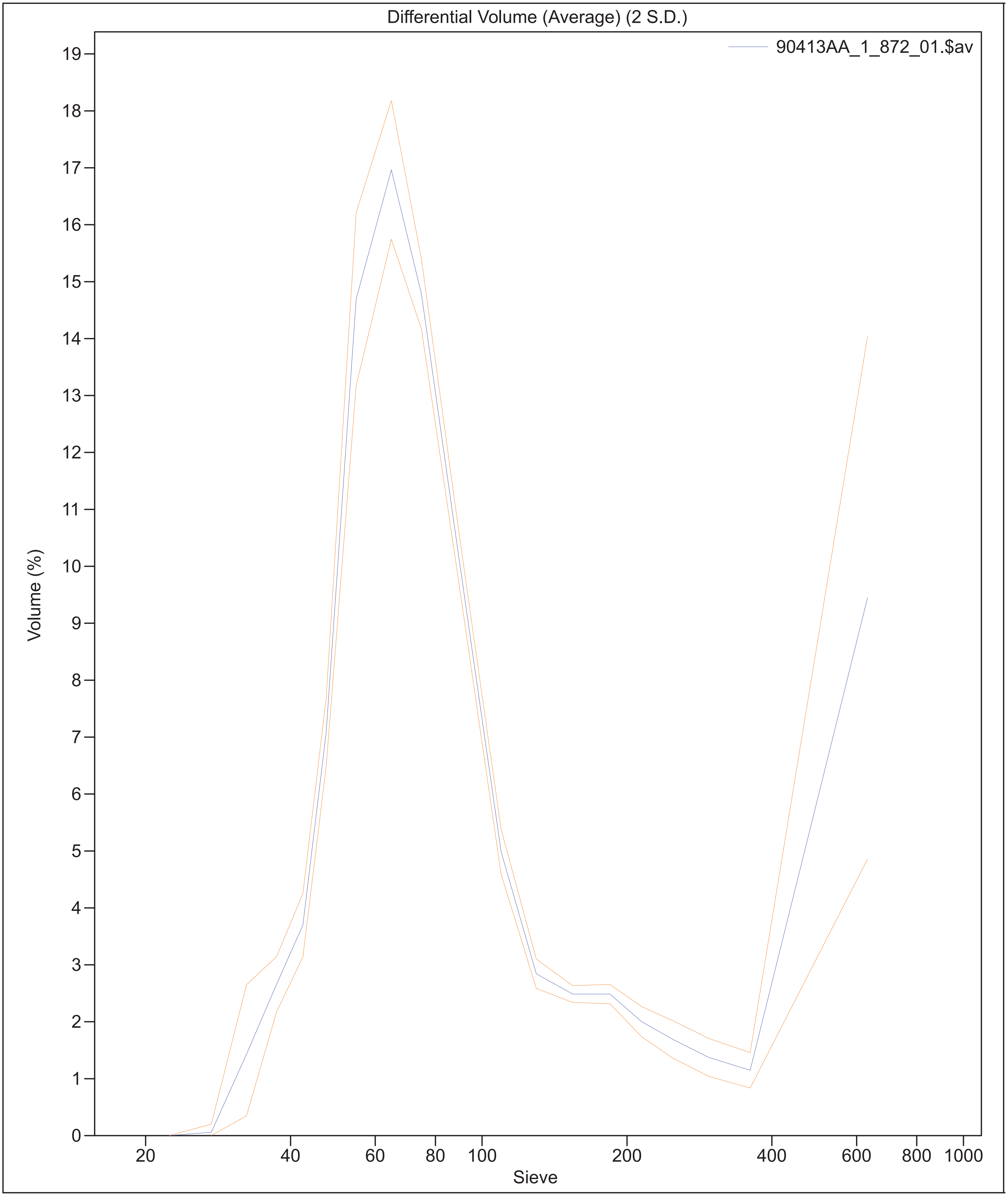
Mean:	2.58	Median:	2.29	Deviation:	1.28
Skewness:	0.54	Kurtosis:	2.21		

<10%	<25%	<50%	<75%	<90%
41.42 µm	134.3 µm	204.9 µm	262.5 µm	331.8 µm

LS Particle Size Analyzer

10 Jul 2024 13:11

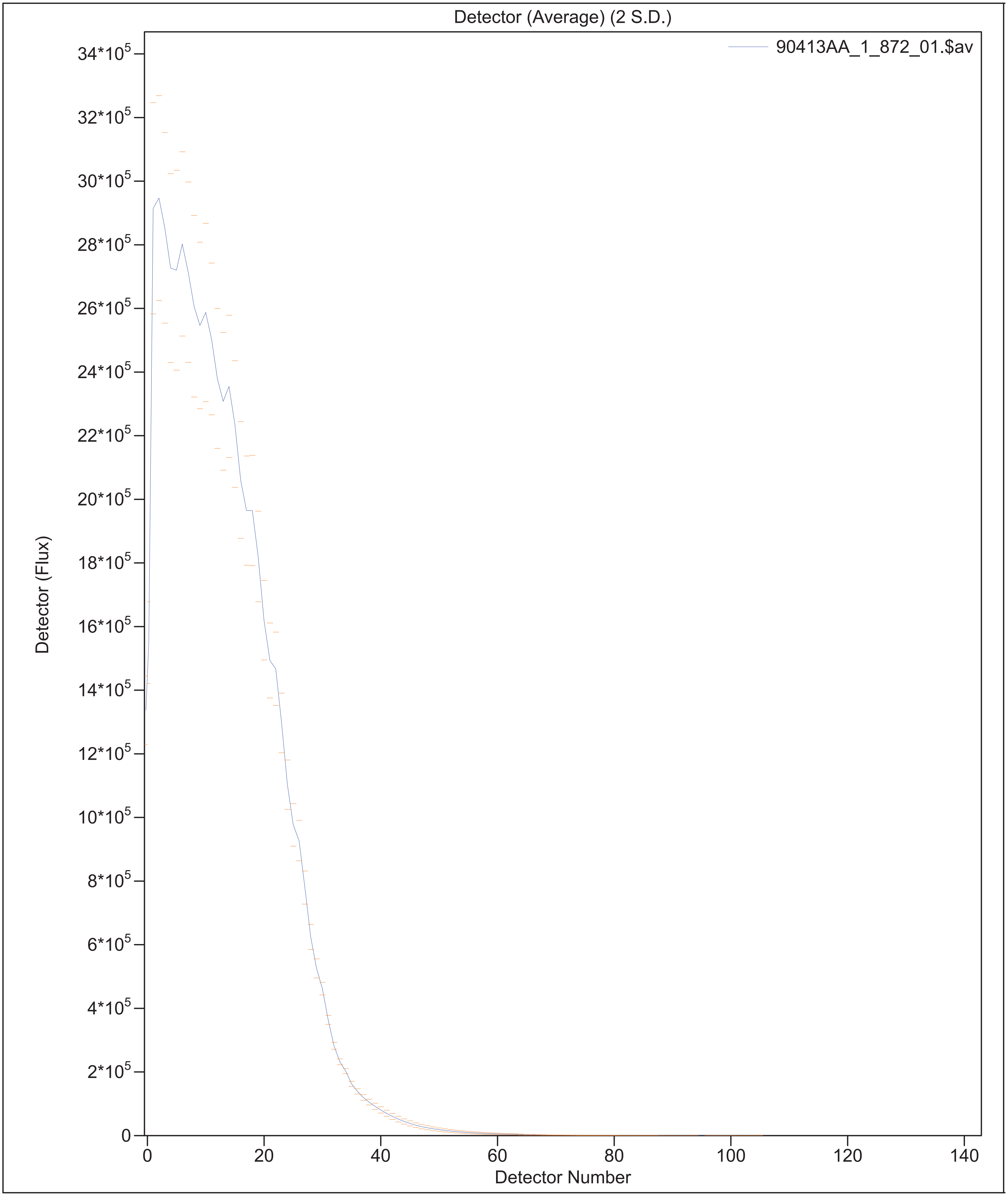
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:11

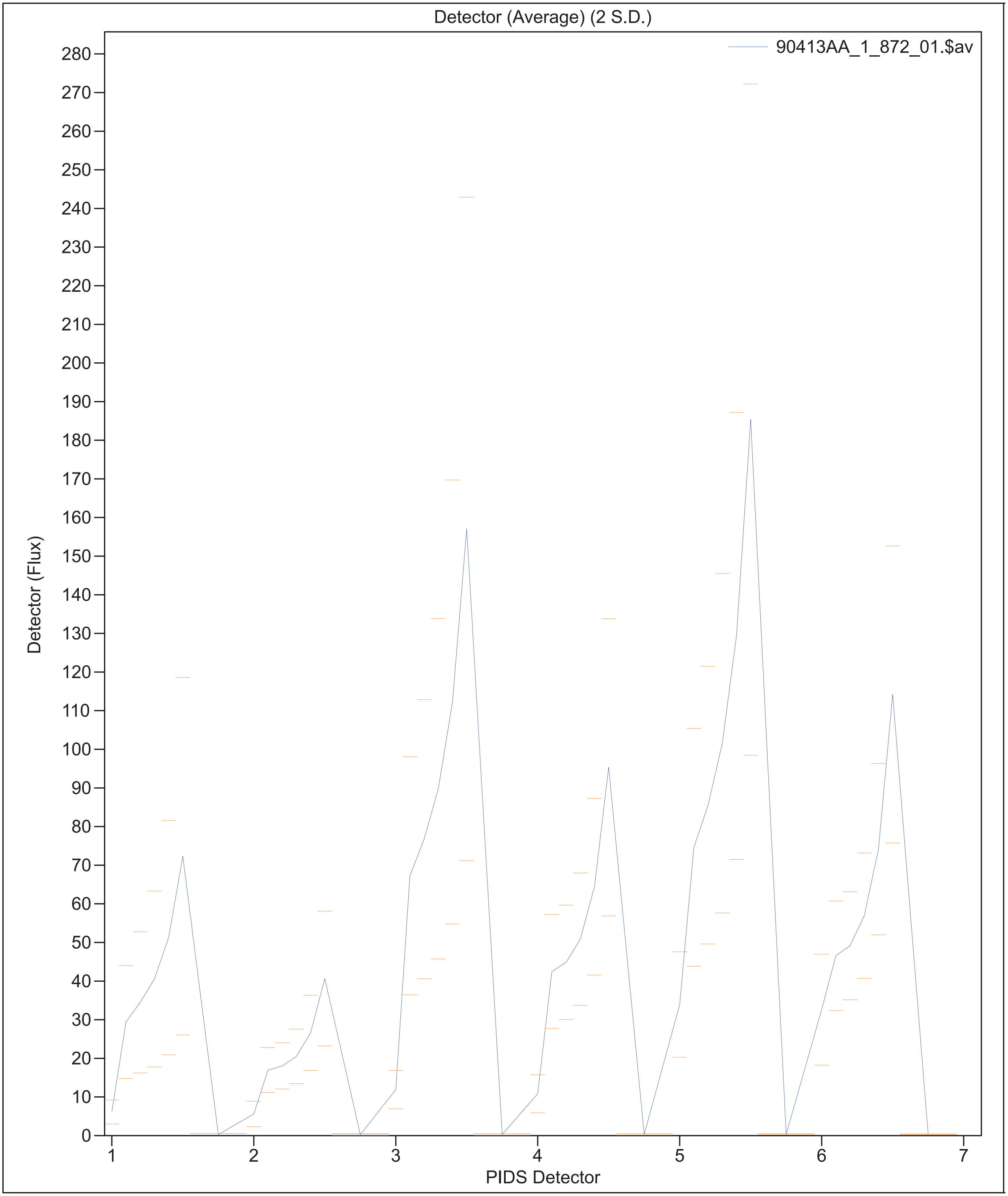
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:11

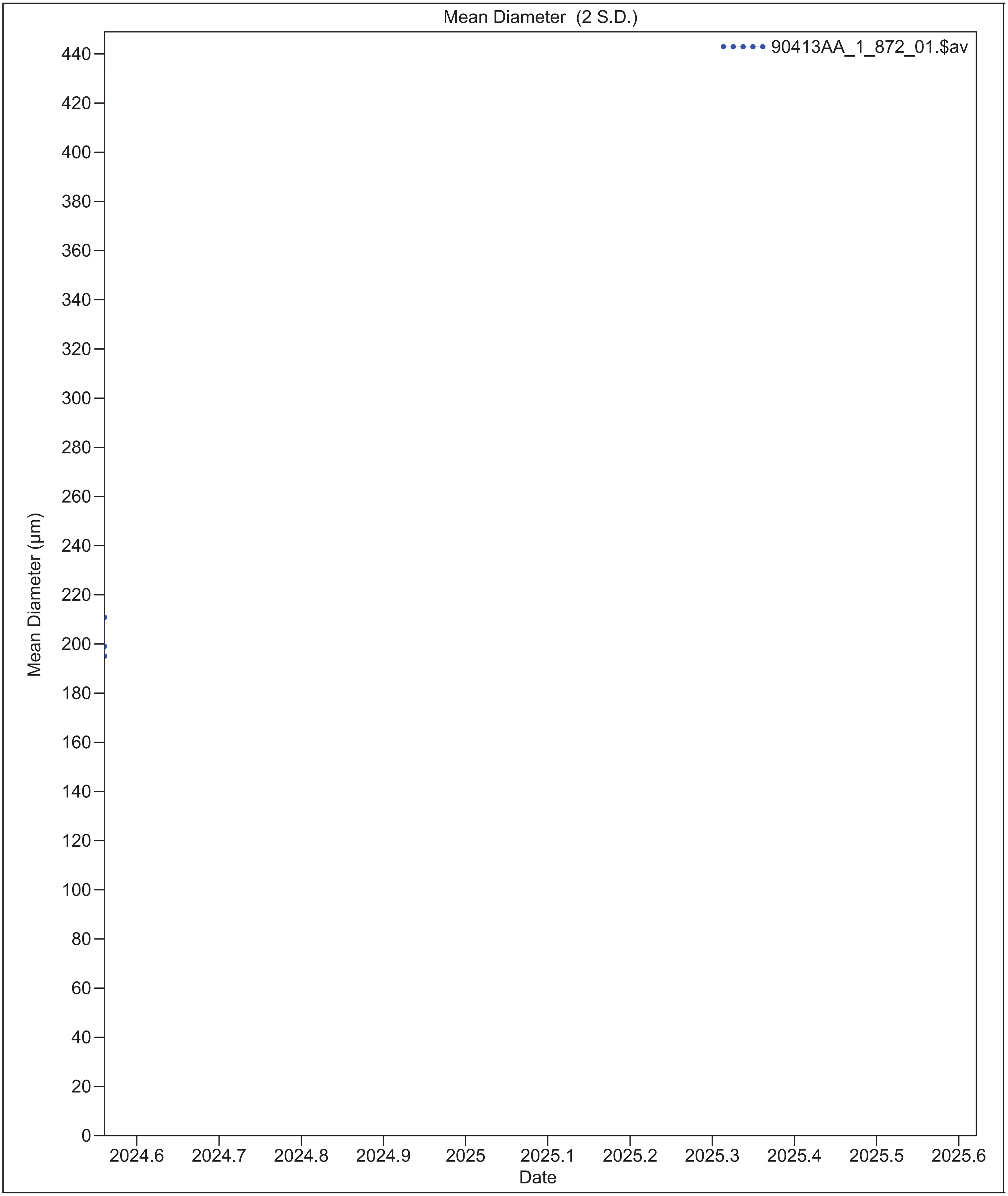
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:11

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 13:11

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90413AA_1_872_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	201.6 µm	8.241	185.1	218.1
Median:	204.8 µm	4.575	195.7	214.0
S.D.:	111.8 µm	1.158	109.5	114.2
Variance:	12511 $µm^2$	259.0	11993	13029
C.V.:	55.55%	2.441	50.67	60.43
Skewness:	0.384	0.137	0.111	0.657
Kurtosis:	0.466	0.392	-0.319	1.251
d_{10}:	42.28 µm	14.95	12.38	72.19
d_{50}:	204.8 µm	4.575	195.7	214.0
d_{90}:	331.7 µm	4.521	322.6	340.7

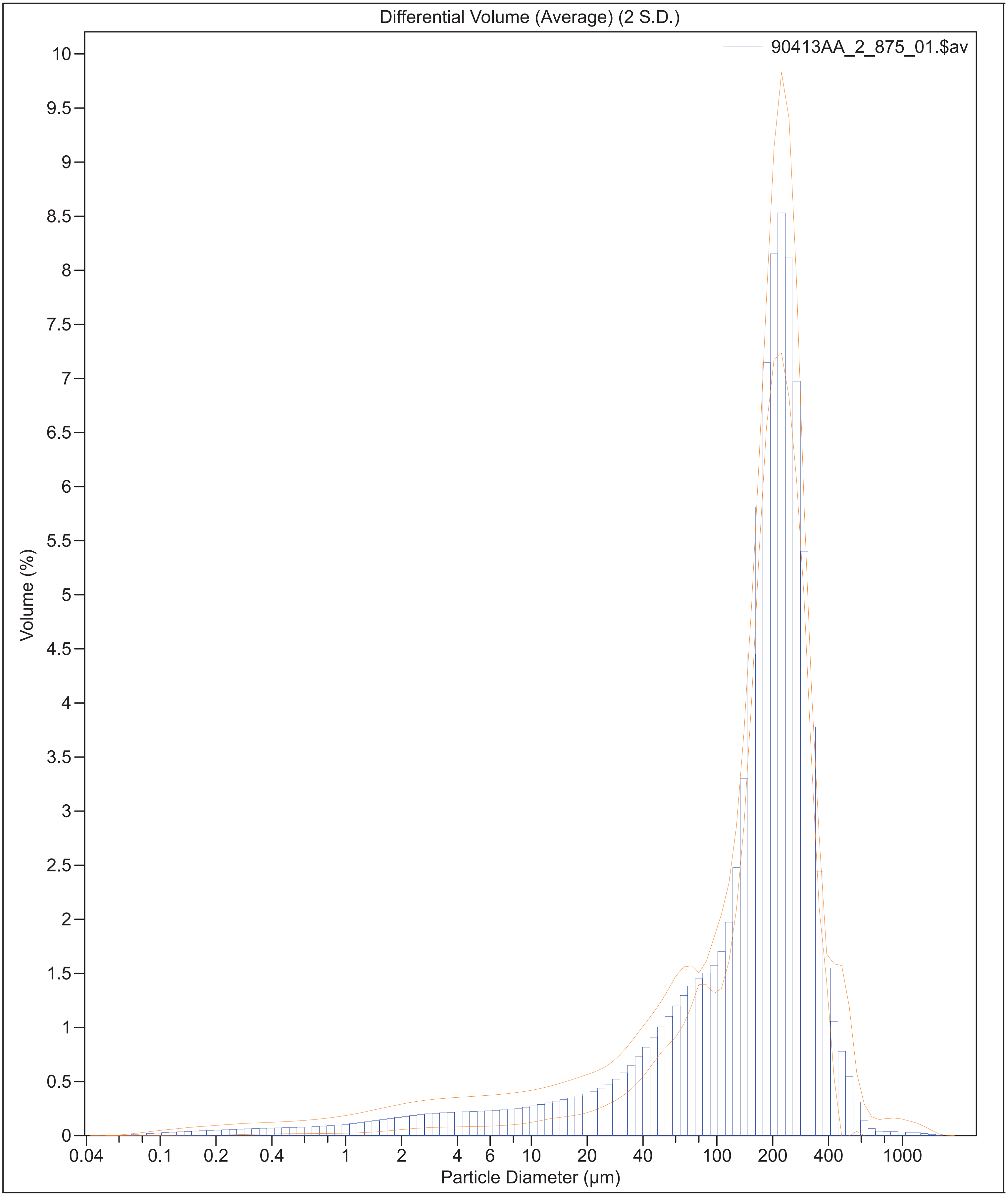
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90413AA_2_875_01.$av
	90413AA_2_875_01.$av
File ID:	90413AA_2
Sample ID:	90413AA_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_2_873_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_2_874_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_2_875_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:18

Beckman Coulter LS 13 320



Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90413AA_2_875_01.$av

Calculations from 0.040 µm to 2000 µm

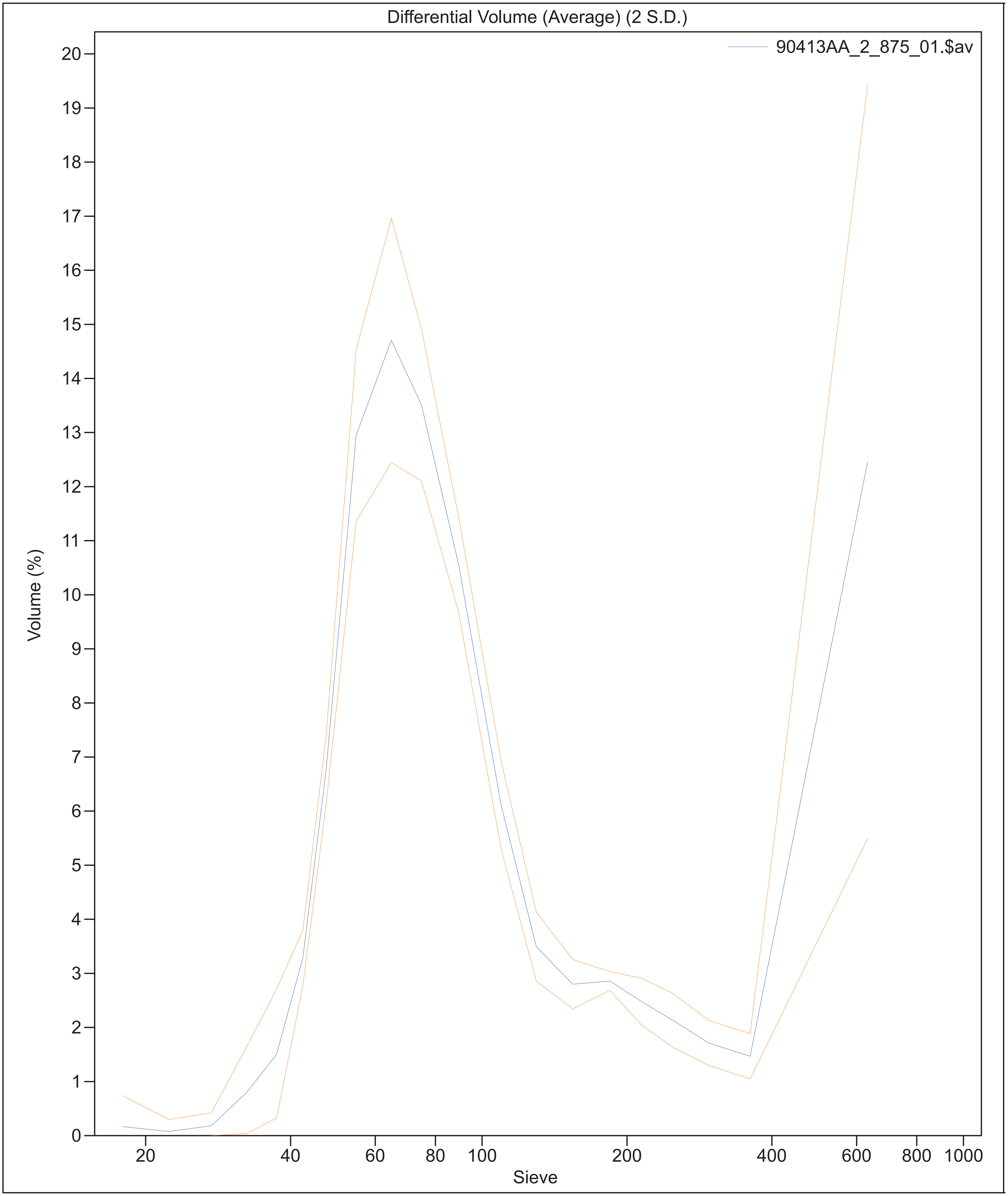
Volume:	100%		
Mean:	185.8 µm	S.D.:	118.3 µm
Median:	189.6 µm	Variance:	14004 $µm^2$
Mean/Median ratio:	0.980	C.V.:	63.7%
Mode:	223.4 µm	Skewness:	1.236 Right skewed
		Kurtosis:	7.466 Leptokurtic

d_{10}: 25.64 µm d_{50}: 189.6 µm d_{90}: 316.8 µm

Folk and Ward Statistics (Phi)

Mean:	2.80	Median:	2.40	Deviation:	1.50
Skewness:	0.60	Kurtosis:	1.86		

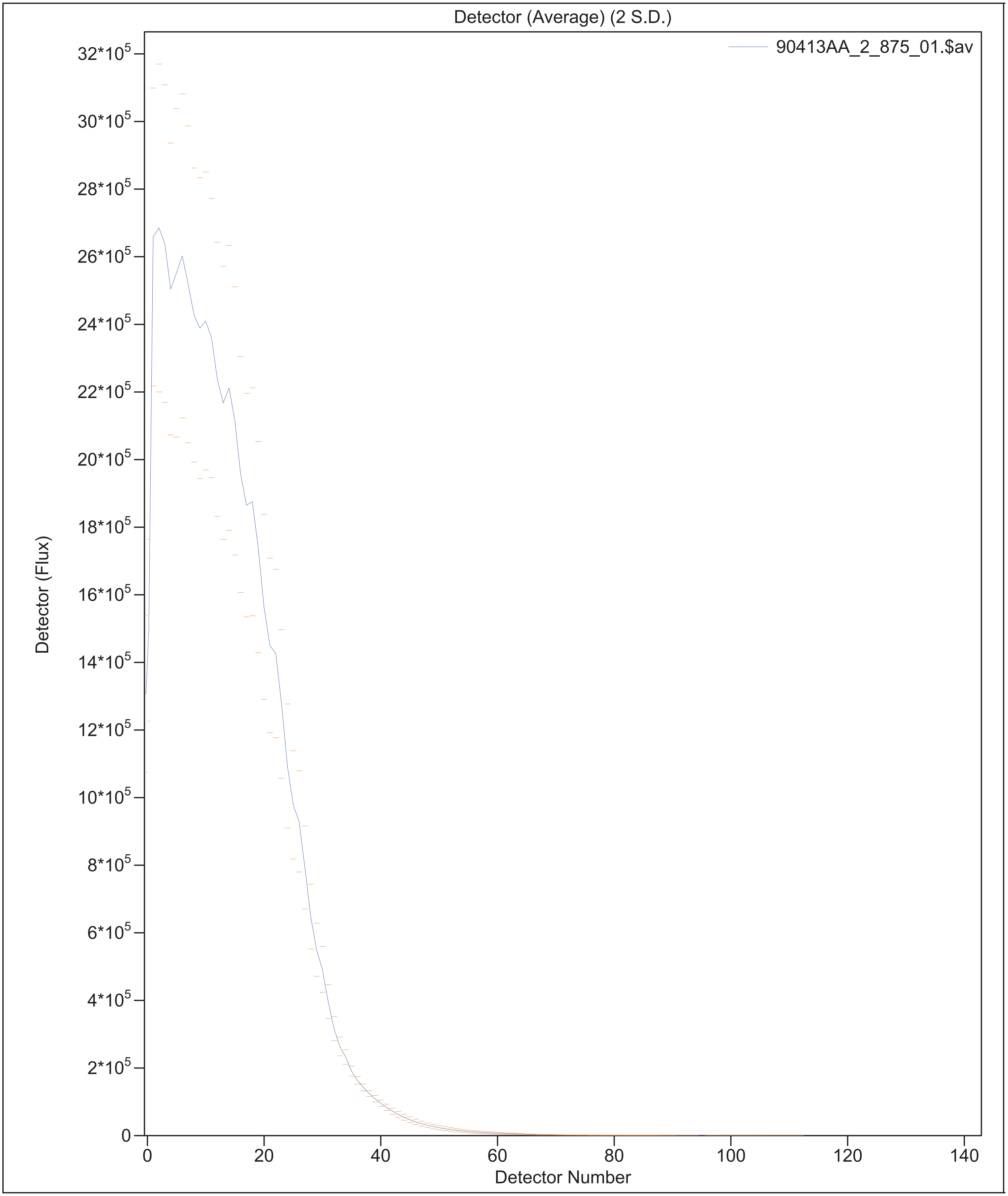
<10%	<25%	<50%	<75%	<90%
25.64 µm	100.8 µm	189.6 µm	252.1 µm	316.8 µm


Differential Volume (Average) (2 S.D.)
90413AA_2_875_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Sieve
20
40
60
80
100
200
400
600
800
1000

LS Particle Size Analyzer

10 Jul 2024 13:18

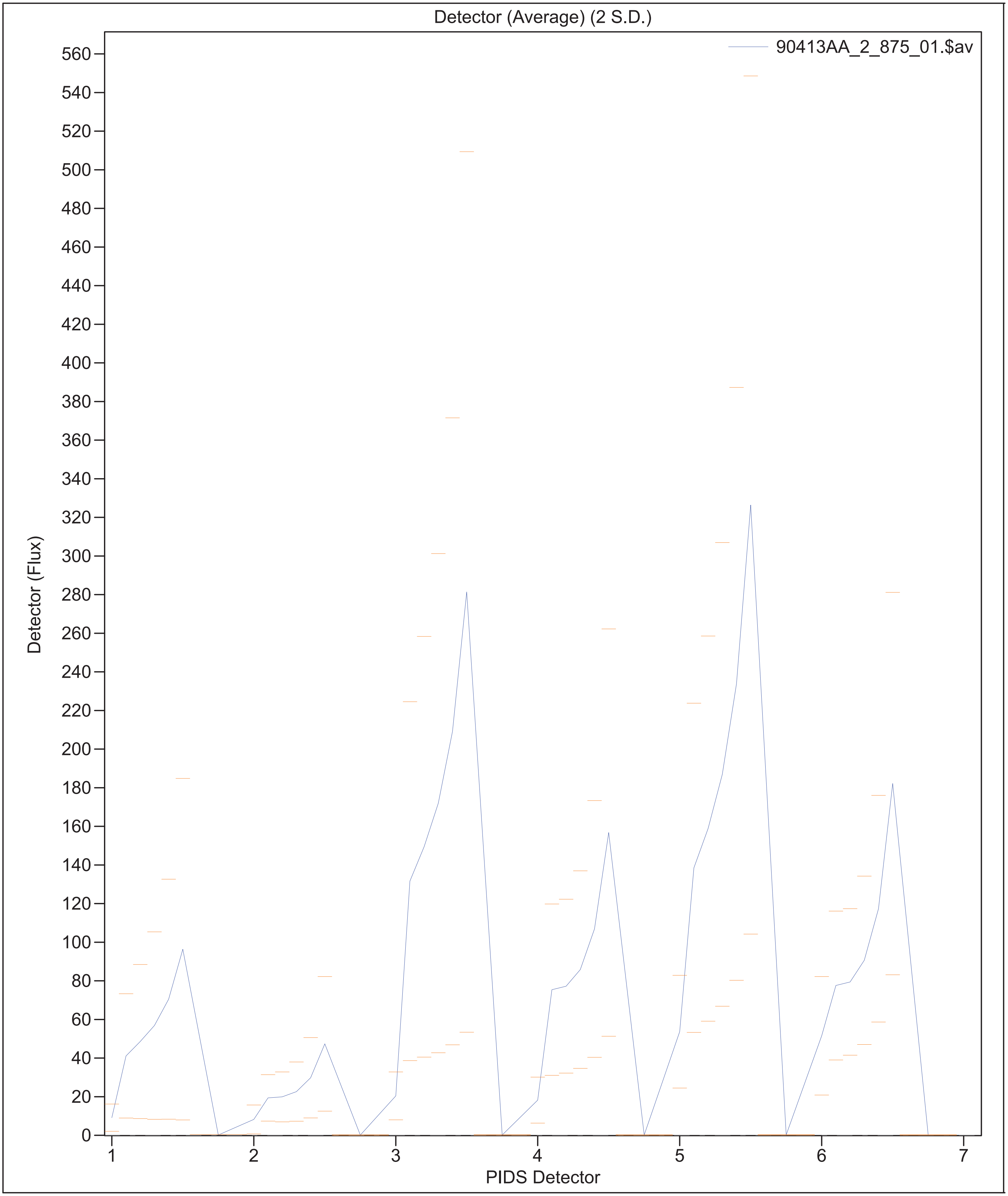
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:18

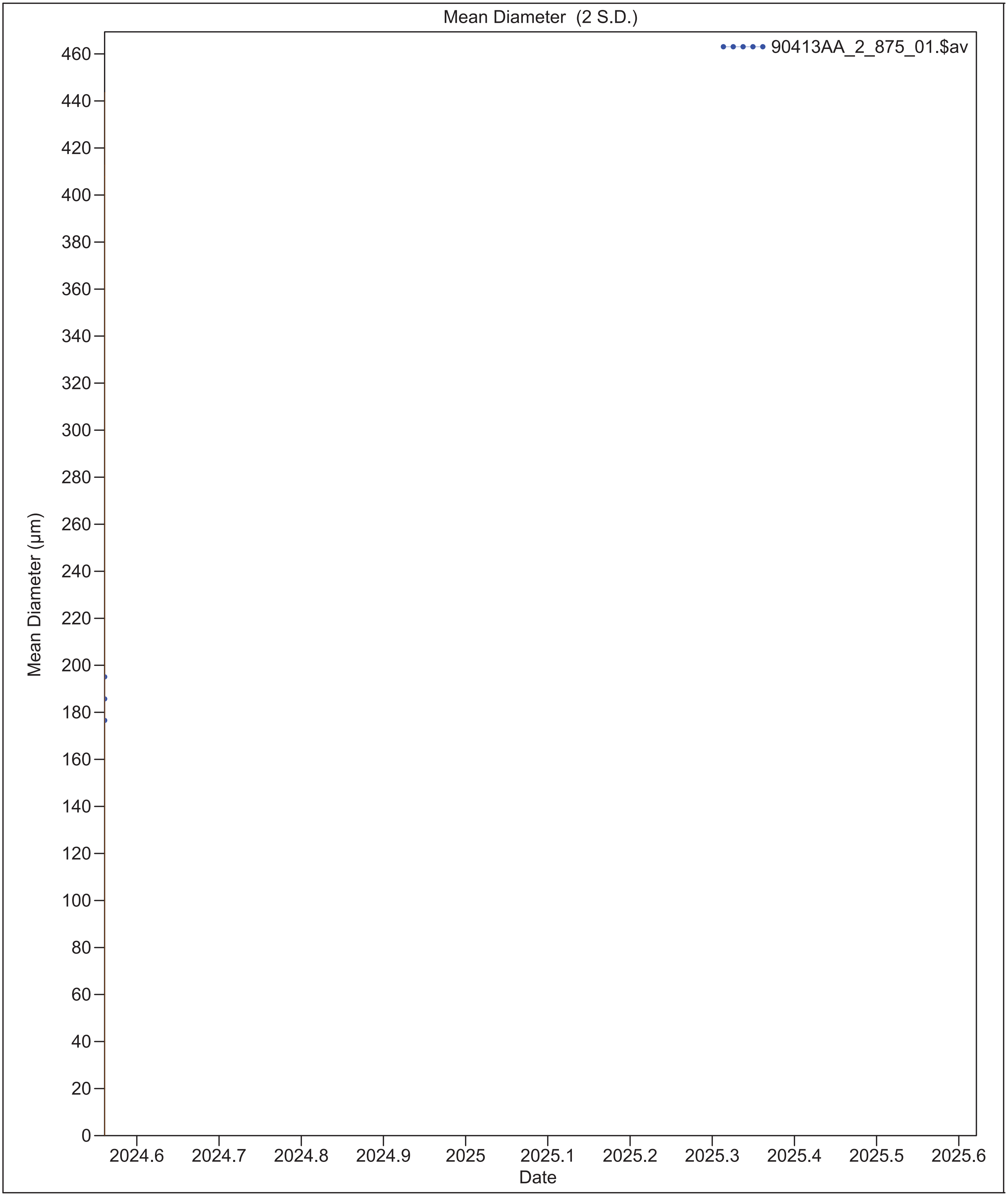
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:18

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:18

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90413AA_2_875_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	185.8 µm	9.256	167.3	204.3
Median:	189.3 µm	7.298	174.7	203.9
S.D.:	117.8 µm	10.23	97.34	138.3
Variance:	13947 $µm^2$	2443	9060	18834
C.V.:	63.57%	7.018	49.54	77.61
Skewness:	1.067	1.034	-1.001	3.135
Kurtosis:	5.432	8.373	-11.31	22.18
d_{10}:	27.74 µm	15.24	0	58.22
d_{50}:	189.3 µm	7.298	174.7	203.9
d_{90}:	316.8 µm	5.185	306.5	327.2

LS Particle Size Analyzer

10 Jul 2024 13:25

Beckman Coulter LS 13 320

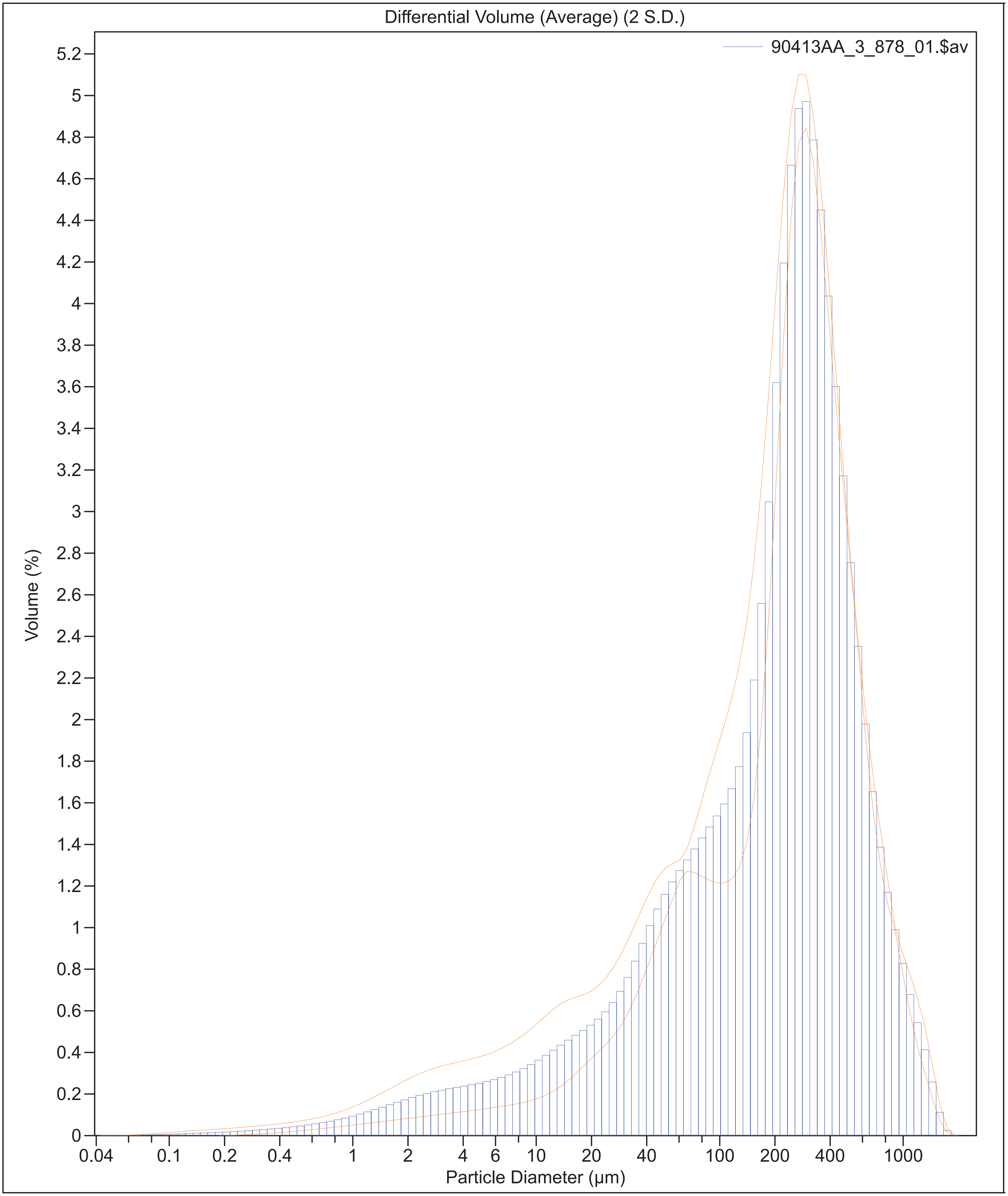
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90413AA_3_878_01.$av		
	90413AA_3_878_01.$av		
File ID:	90413AA_3		
Sample ID:	90413AA_3		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_3_876_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_3_877_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_3_878_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:25

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90413AA_3_878_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	280.5 µm	S.D.:	254.2 µm
Median:	232.9 µm	Variance:	64629 μm^2
Mean/Median ratio:	1.204	C.V.:	90.6%
Mode:	295.5 µm	Skewness:	1.659 Right skewed
		Kurtosis:	3.725 Leptokurtic

d_{10}: 21.67 µm d_{50}: 232.9 µm d_{90}: 595.9 µm

Folk and Ward Statistics (Phi)

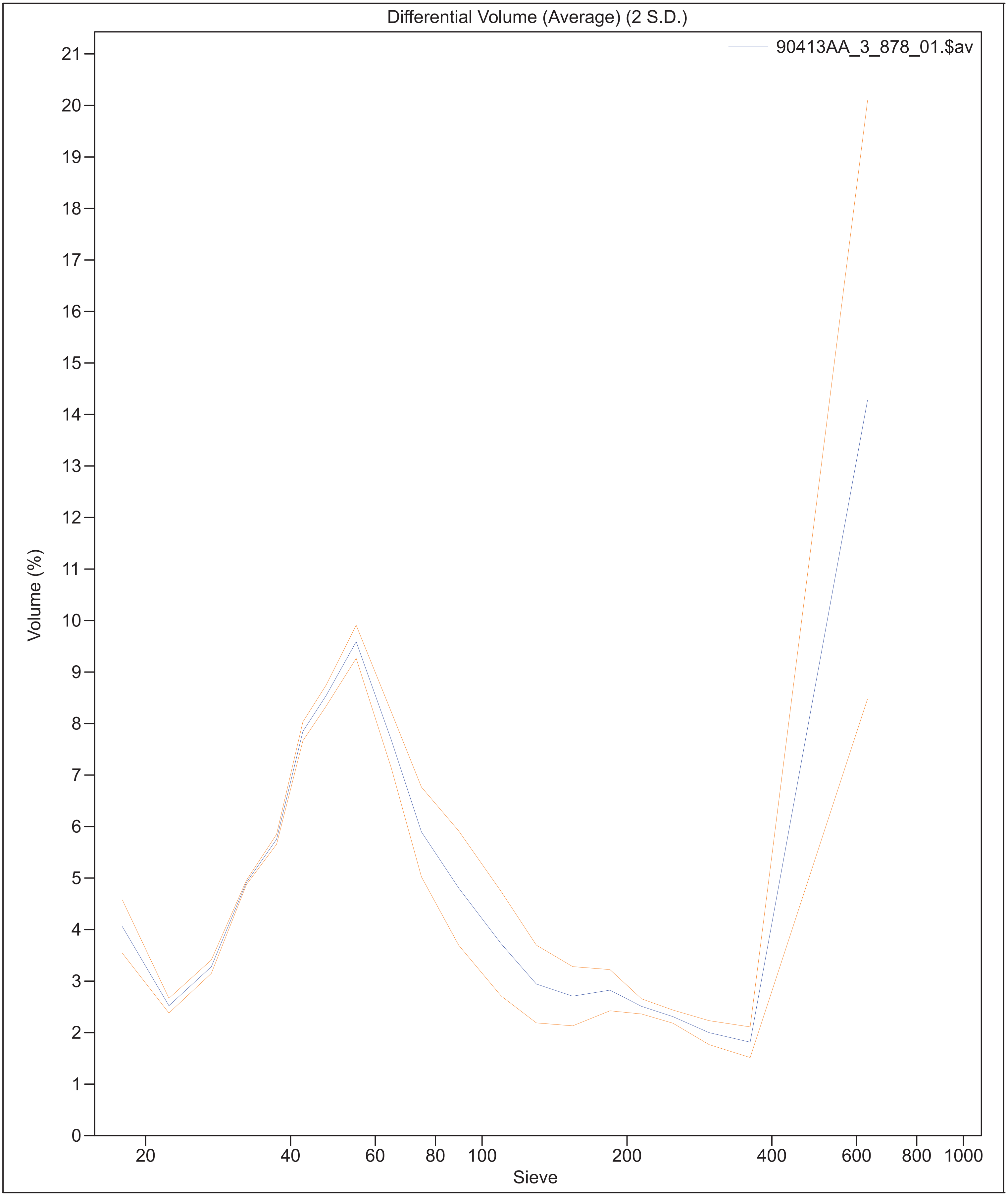
Mean:	2.55	Median:	2.10	Deviation:	1.89
Skewness:	0.44	Kurtosis:	1.30		

<10%	<25%	<50%	<75%	<90%
21.67 µm	85.92 µm	232.9 µm	381.7 µm	595.9 µm

LS Particle Size Analyzer

10 Jul 2024 13:25

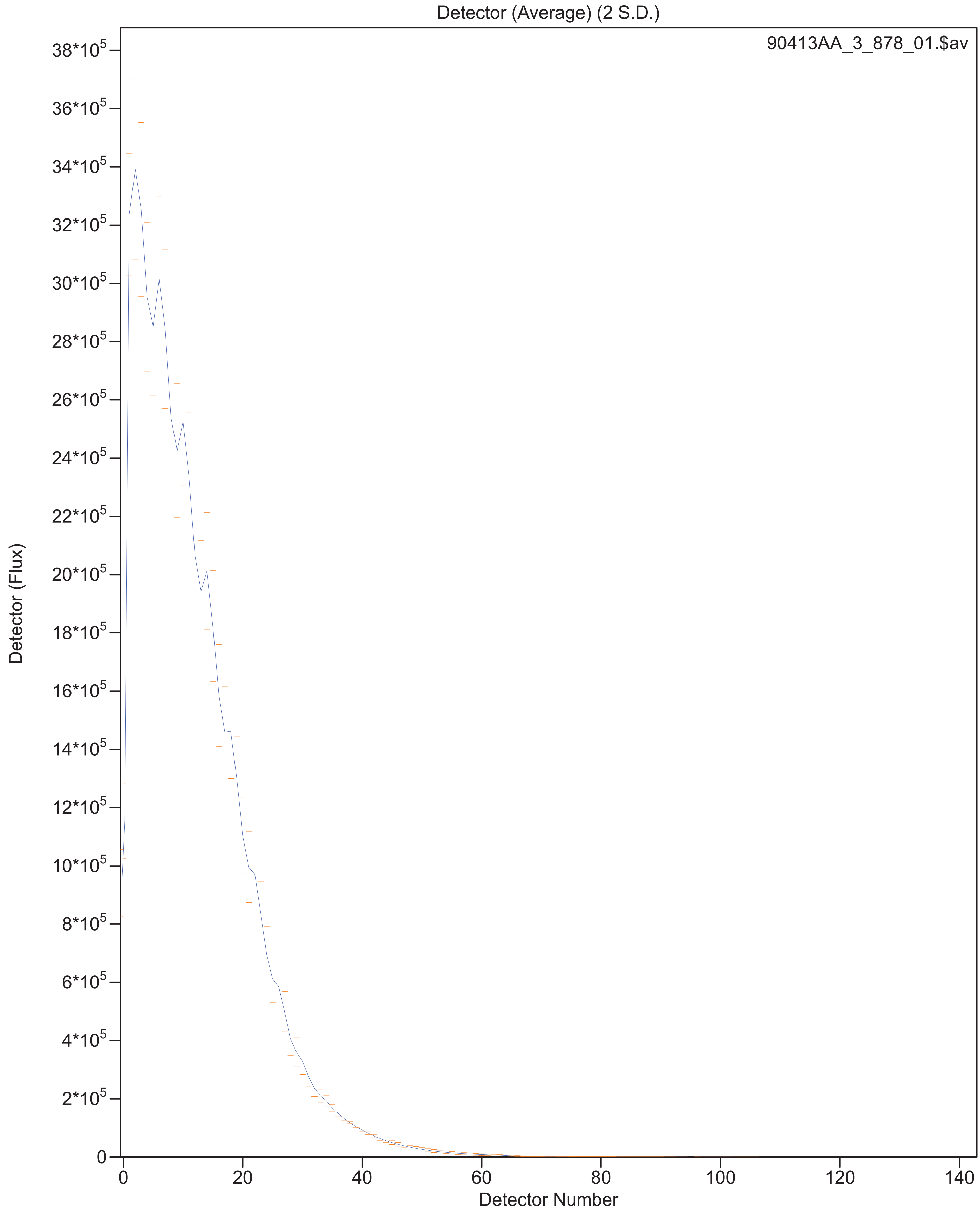
Beckman Coulter LS 13 320

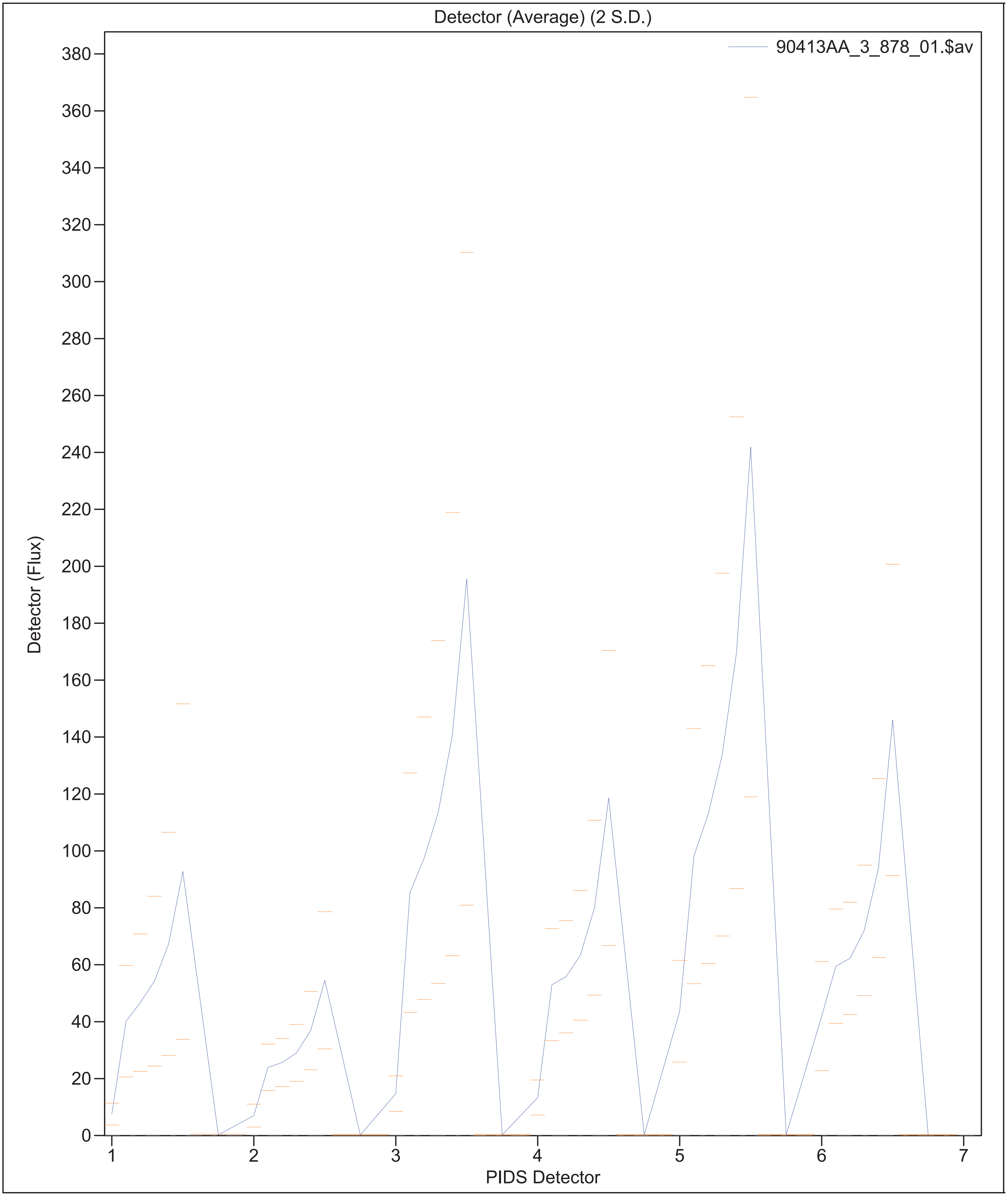


LS Particle Size Analyzer

10 Jul 2024 13:25

Beckman Coulter LS 13 320

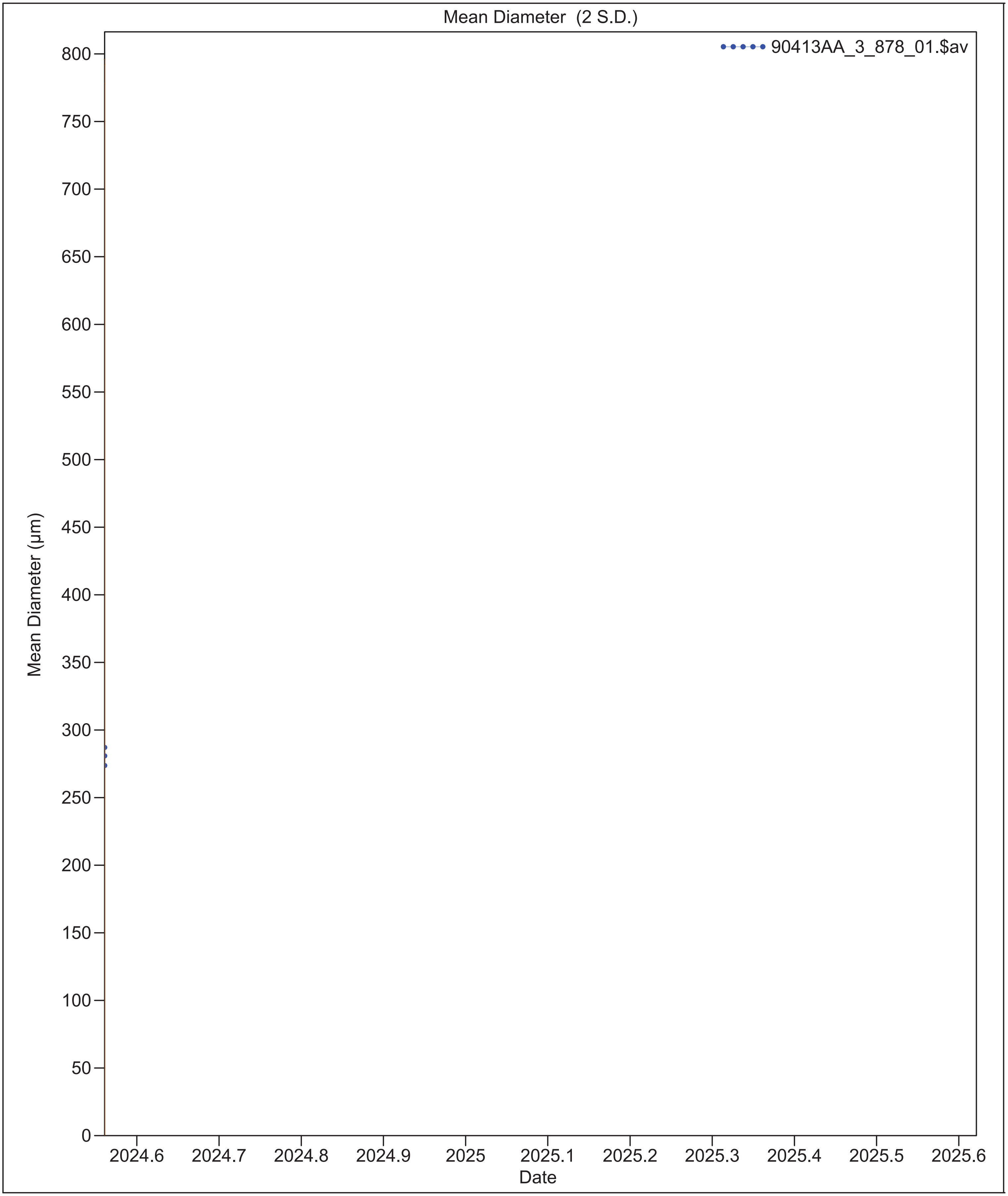



Detector (Average) (2 S.D.)
90413AA_3_878_01.$av
Detector (Flux)
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 13:25

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:25

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90413AA_3_878_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	280.5 µm	6.718	267.1	293.9
Median:	232.8 µm	3.032	226.7	238.9
S.D.:	254.2 µm	3.072	248.0	260.3
Variance:	64599 μm^2	1567	61464	67734
C.V.:	90.64%	2.370	85.90	95.38
Skewness:	1.659	0.074	1.512	1.806
Kurtosis:	3.720	0.324	3.072	4.367
d_{10}:	22.87 µm	8.927	5.016	40.72
d_{50}:	232.8 µm	3.032	226.7	238.9
d_{90}:	596.2 µm	3.924	588.4	604.1

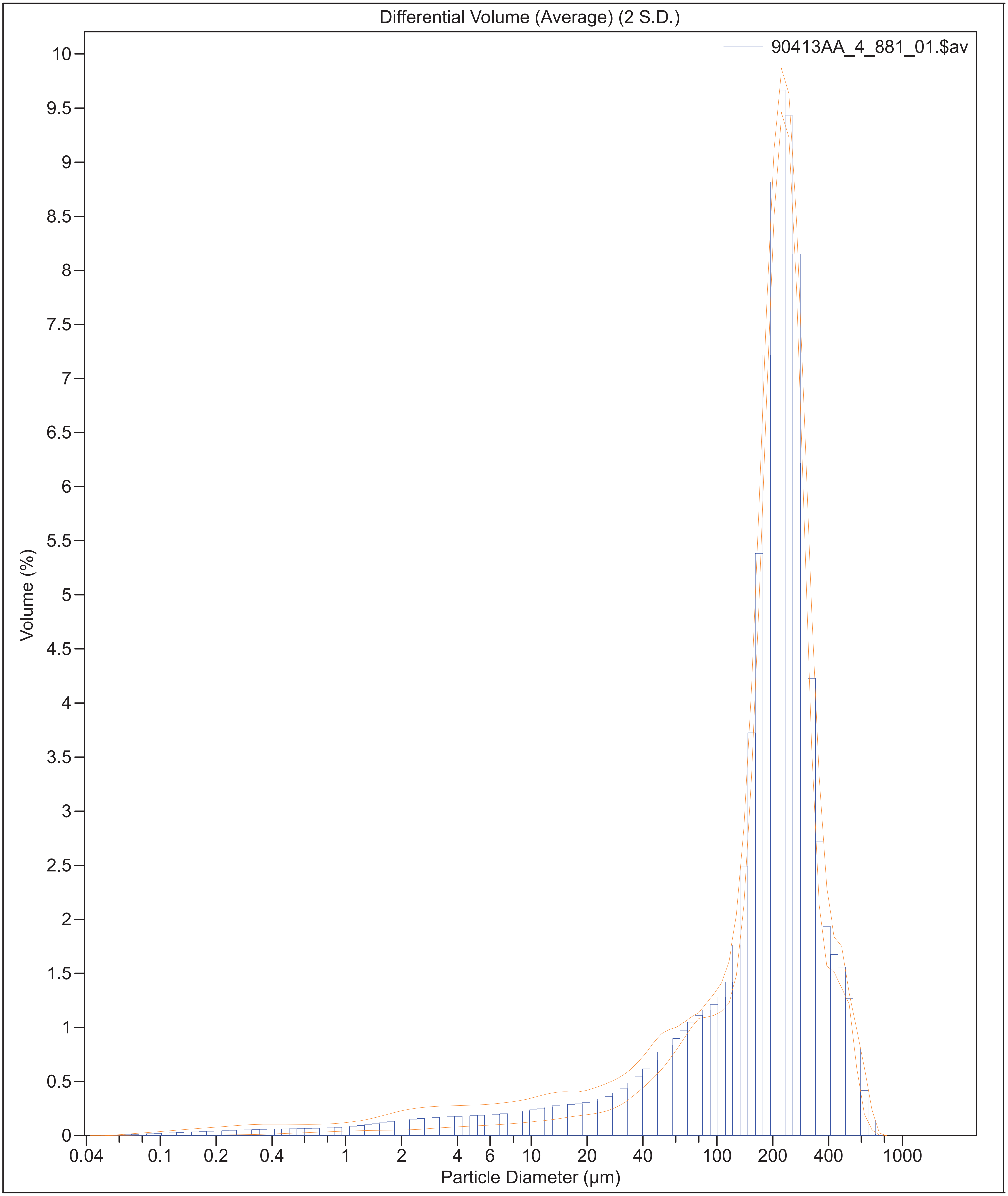
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90413AA_4_881_01.$av
	90413AA_4_881_01.$av
File ID:	90413AA_4
Sample ID:	90413AA_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_4_879_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_4_880_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_4_881_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:34

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 13:34

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90413AA_4_881_01.$av

Calculations from 0.040 μm to 2000 μm

Volume:	100%		
Mean:	208.0 μm	S.D.:	120.3 μm
Median:	209.4 μm	Variance:	14472 μm^2
Mean/Median ratio:	0.994	C.V.:	57.8%
Mode:	223.4 μm	Skewness:	0.542 Right skewed
		Kurtosis:	0.906 Leptokurtic

d_{10}: 37.41 μm d_{50}: 209.4 μm d_{90}: 346.4 μm

Folk and Ward Statistics (Phi)

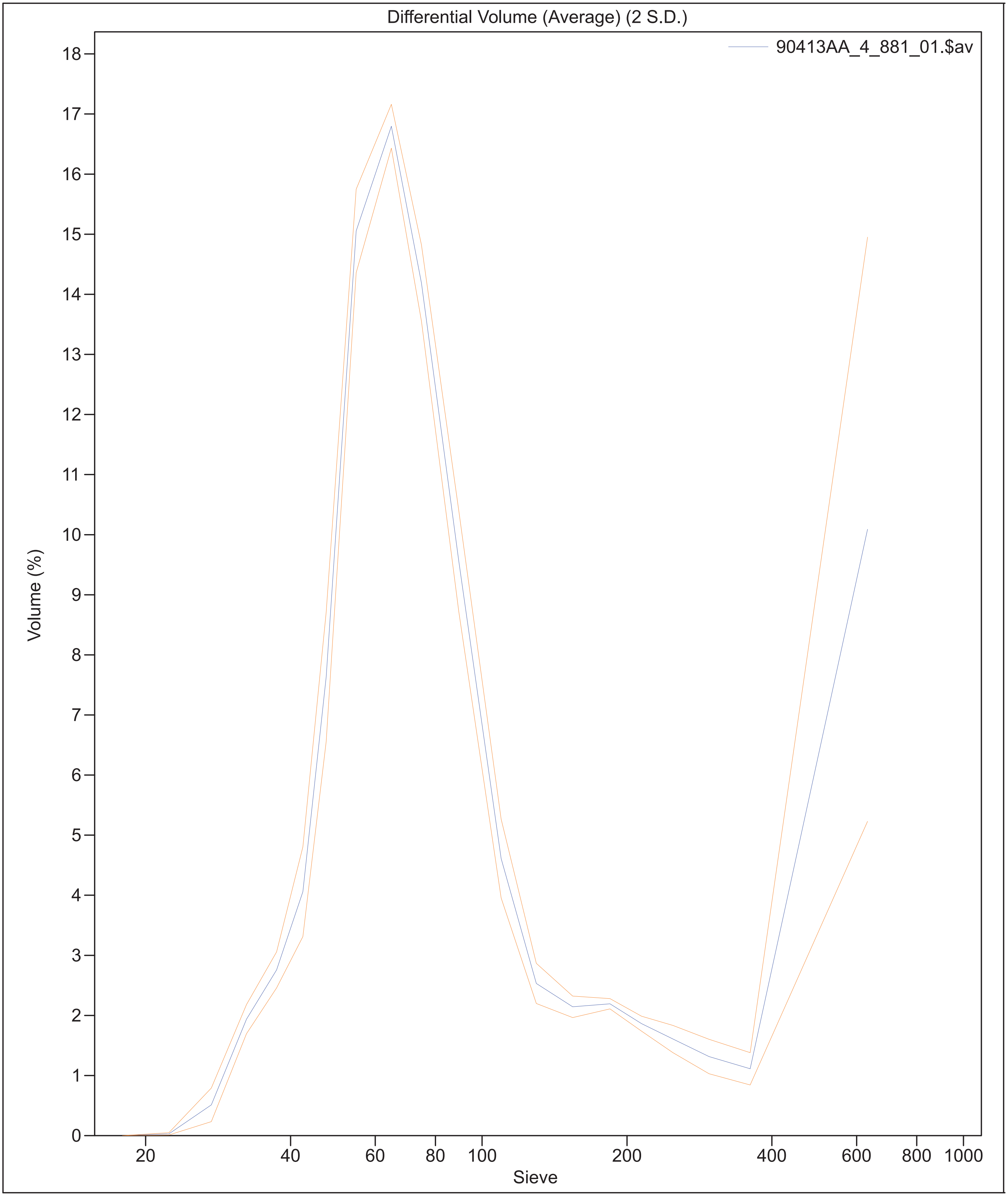
Mean:	2.57	Median:	2.26	Deviation:	1.36
Skewness:	0.55	Kurtosis:	2.39		

<10%	<25%	<50%	<75%	<90%
37.41 μm	138.2 μm	209.4 μm	269.7 μm	346.4 μm

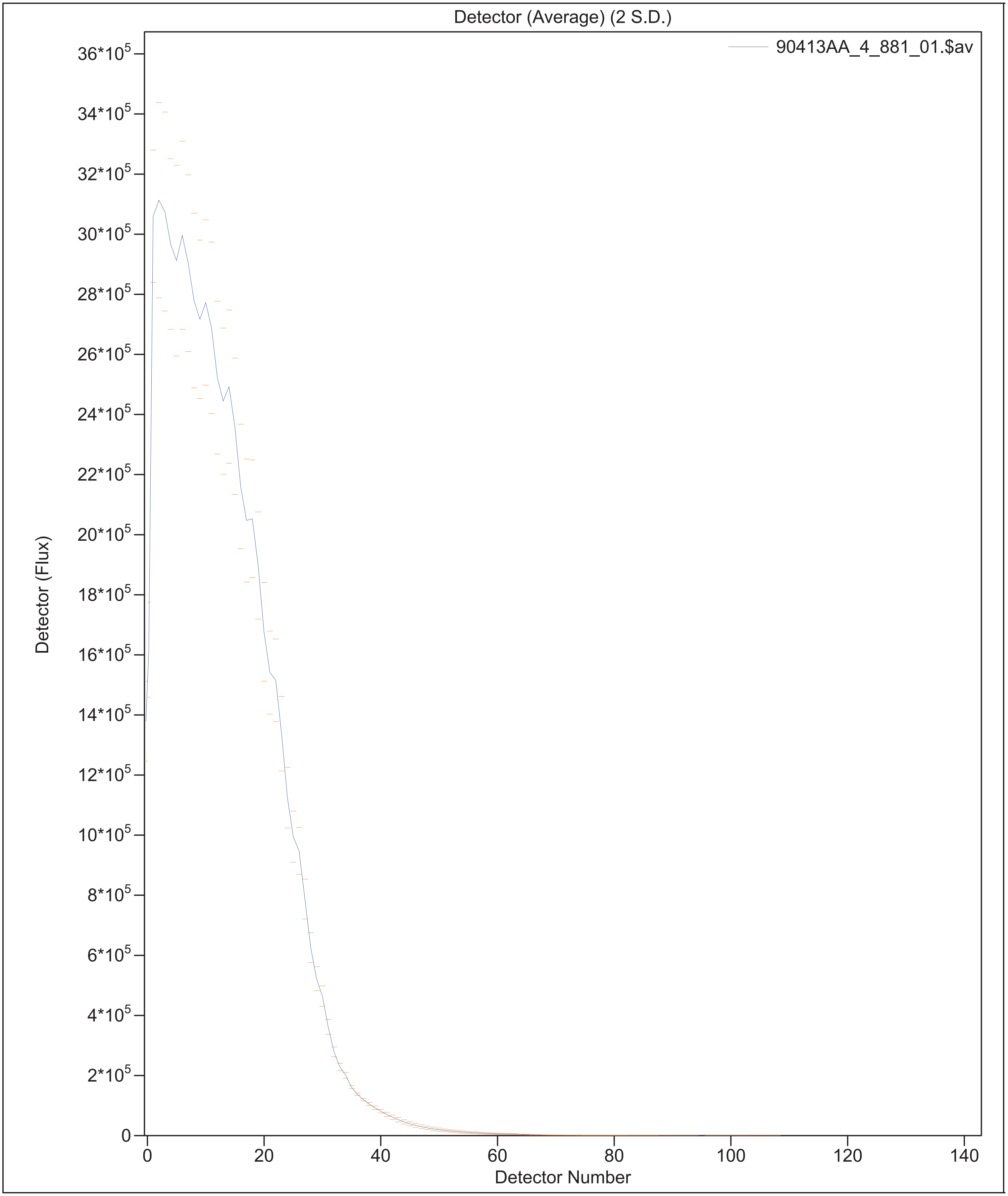
LS Particle Size Analyzer

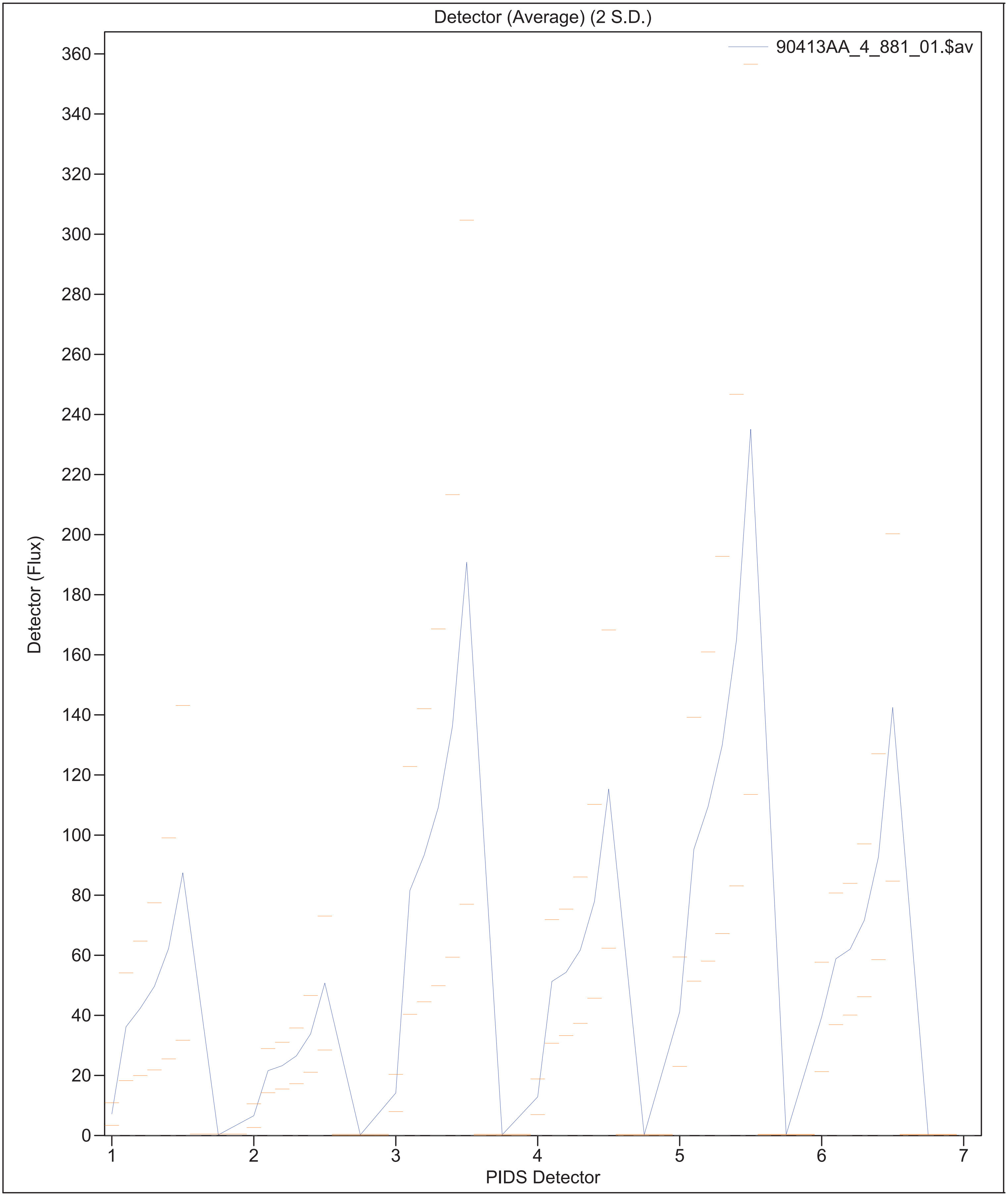
10 Jul 2024 13:34

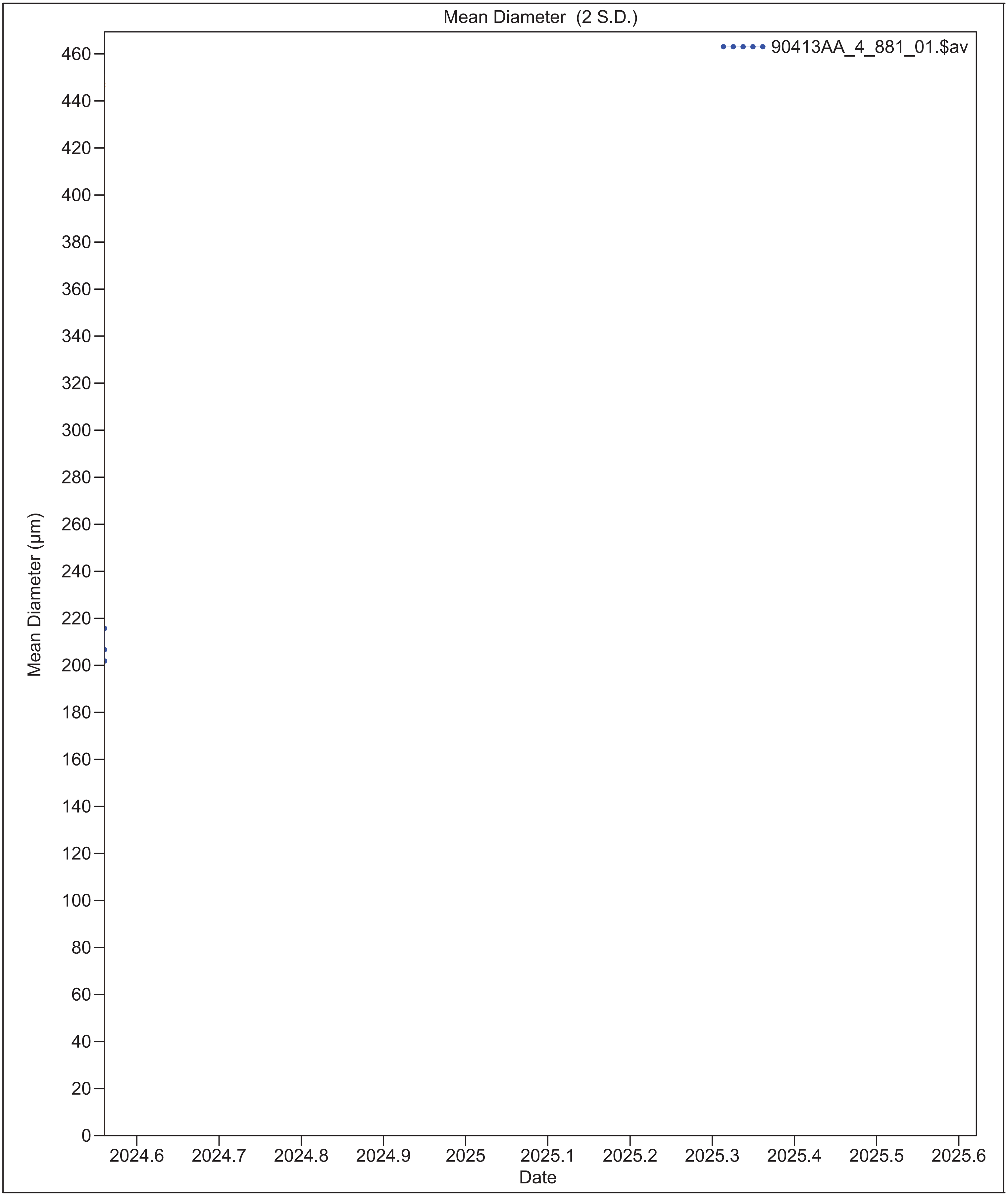
Beckman Coulter LS 13 320



Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90413AA_4_881_01.$av
Detector (Flux)
PIDS Detector
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90413AA_4_881_01.$av
Mean Diameter (µm)
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 13:34

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90413AA_4_881_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	208.0 µm	7.011	194.0	222.1
Median:	209.3 µm	3.395	202.5	216.1
S.D.:	120.2 µm	2.098	116.0	124.3
Variance:	14439 $µm^2$	503.2	13433	15446
C.V.:	57.82%	2.931	51.96	63.68
Skewness:	0.550	0.075	0.400	0.701
Kurtosis:	0.913	0.287	0.340	1.487
d_{10}:	38.35 µm	15.74	6.874	69.82
d_{50}:	209.3 µm	3.395	202.5	216.1
d_{90}:	345.9 µm	6.833	332.2	359.6

BECKMAN COULTER

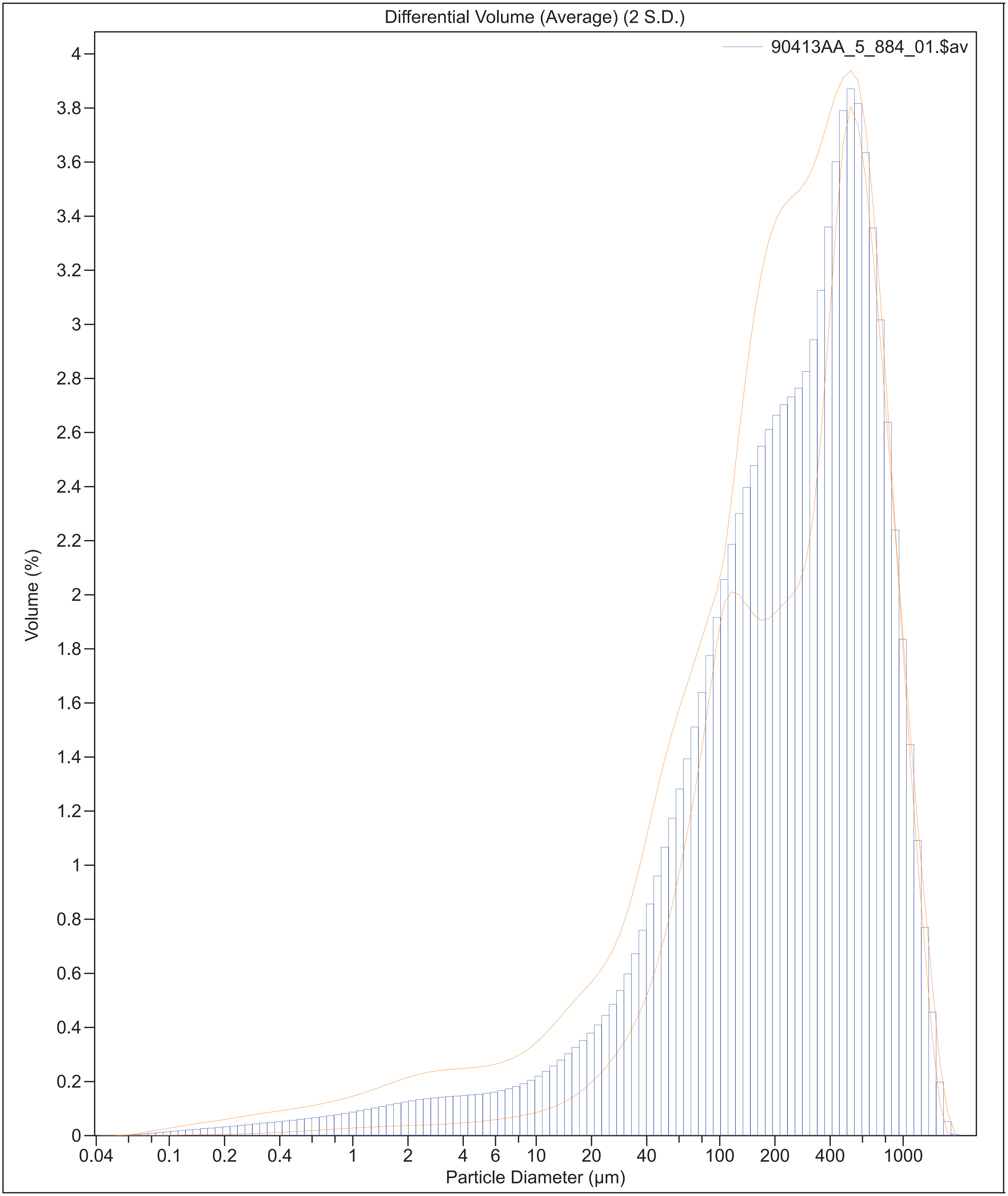
LS Particle Size Analyzer

10 Jul 2024 13:41

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90413AA_5_884_01.$av 90413AA_5_884_01.$av
File ID:	90413AA_5
Sample ID:	90413AA_5
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_5_882_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_5_883_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90413AA_5_884_01.$ls


Differential Volume (Average) (2 S.D.)
90413AA_5_884_01.$av
Volume (%)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (µm)

Volume Statistics (Arithmetic) 90413AA_5_884_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	356.2 µm	S.D.:	315.6 µm
Median:	264.6 µm	Variance:	99580 $µm^2$
Mean/Median ratio:	1.346	C.V.:	88.6%
Mode:	517.2 µm	Skewness:	1.152 Right skewed
		Kurtosis:	1.013 Leptokurtic

d_{10}: 35.51 µm d_{50}: 264.6 µm d_{90}: 808.3 µm

Folk and Ward Statistics (Phi)

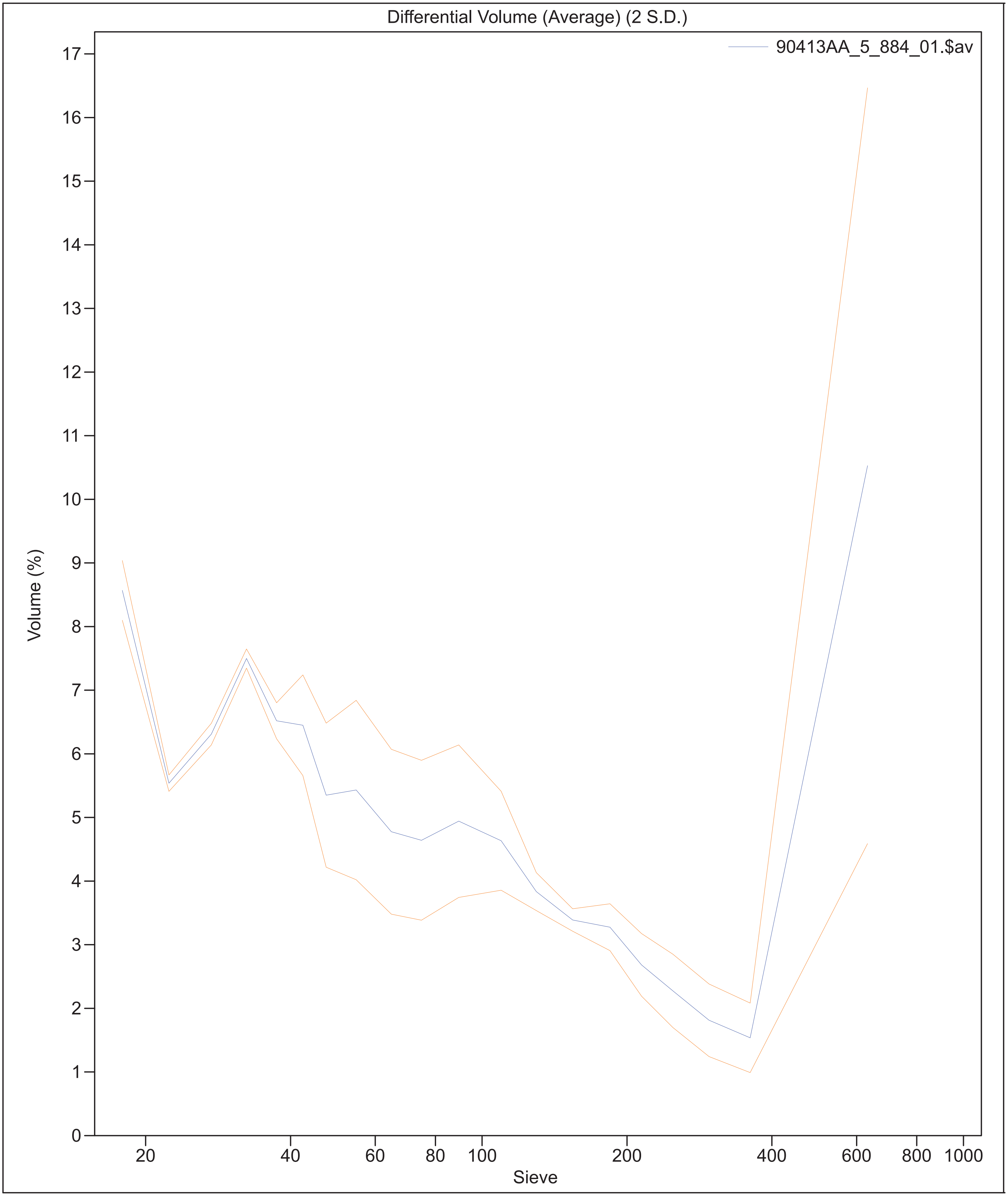
Mean:	2.16	Median:	1.92	Deviation:	1.84
Skewness:	0.31	Kurtosis:	1.11		

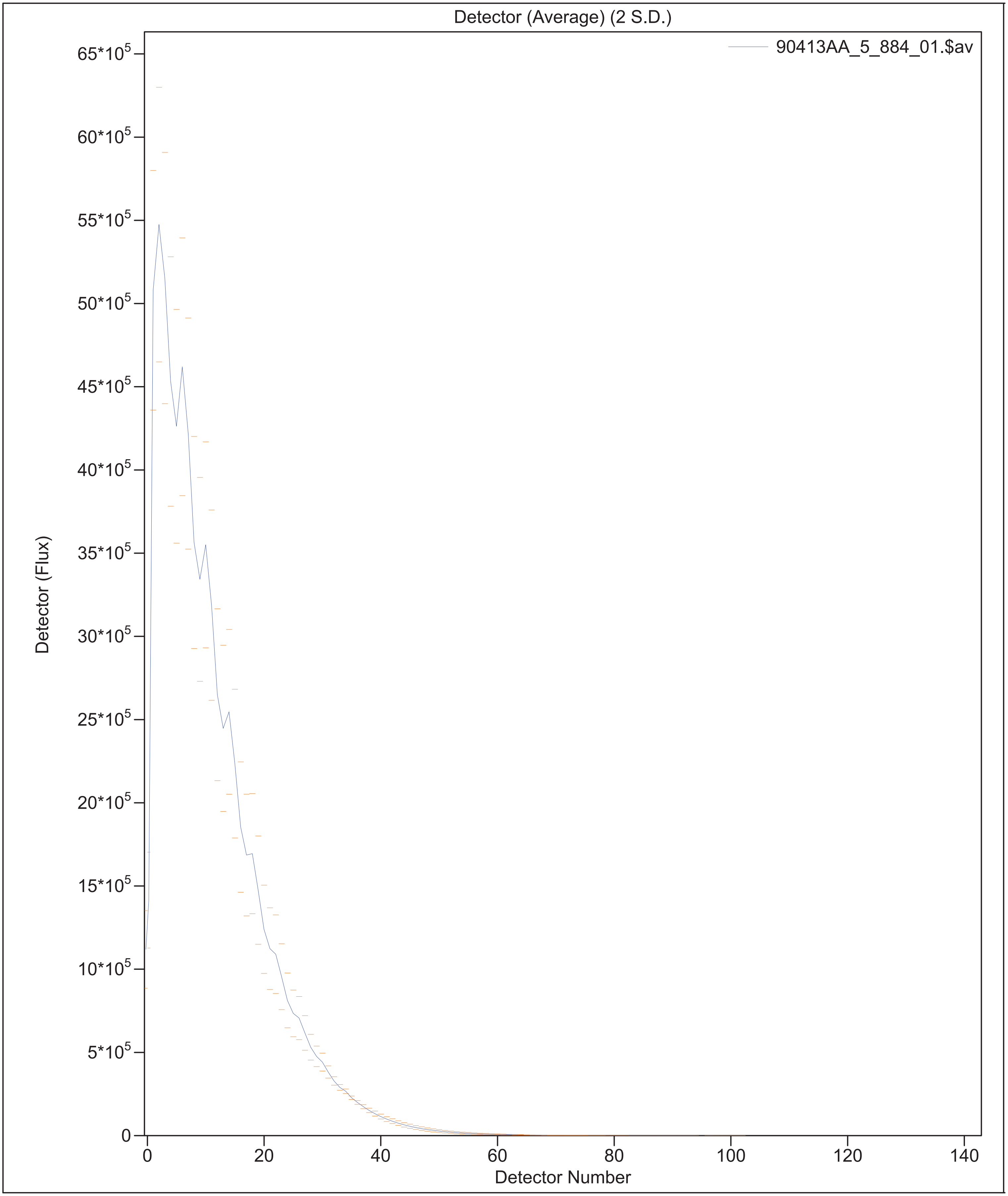
<10%	<25%	<50%	<75%	<90%
35.51 µm	103.6 µm	264.6 µm	536.4 µm	808.3 µm

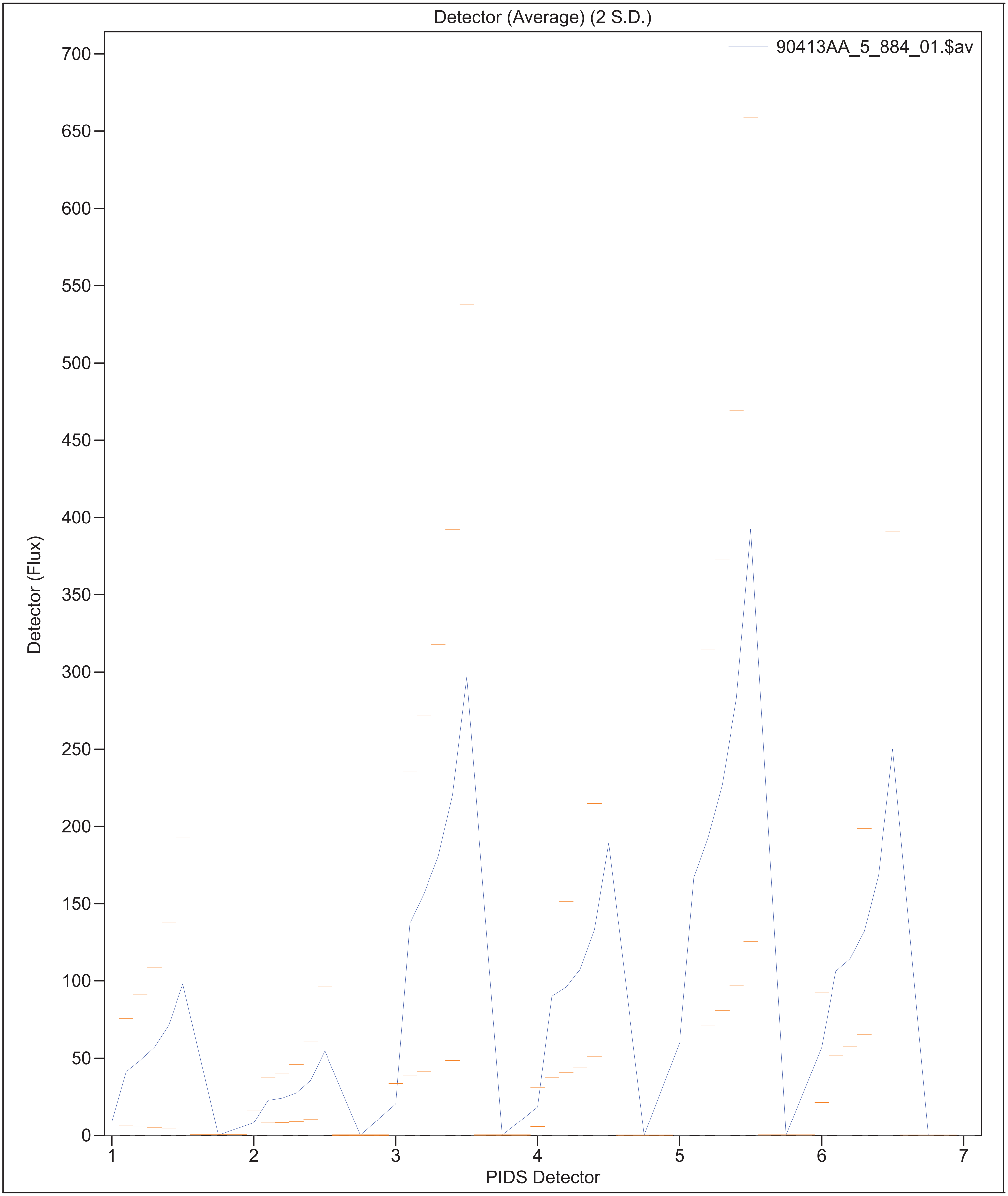
LS Particle Size Analyzer

10 Jul 2024 13:41

Beckman Coulter LS 13 320



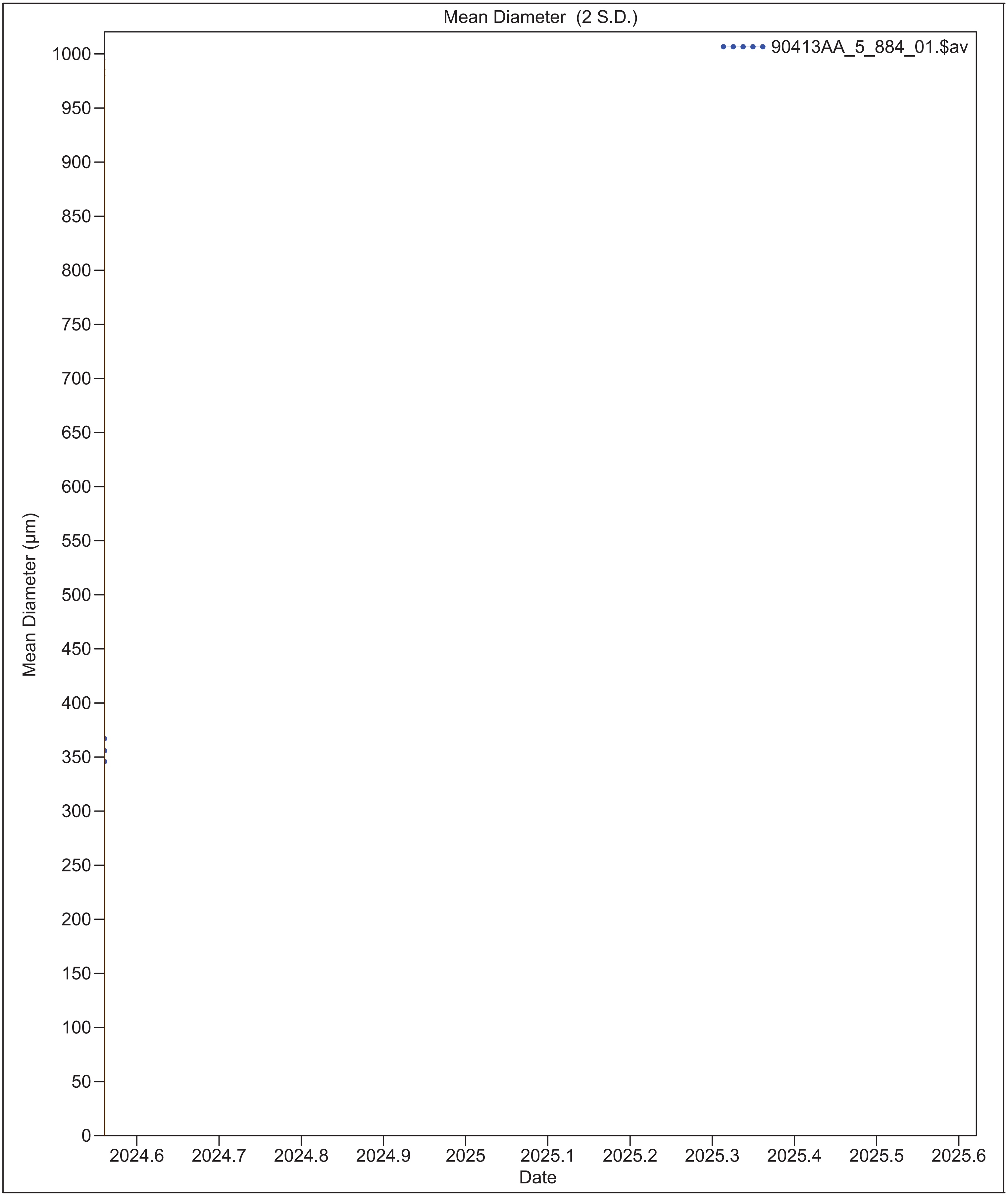

Detector (Average) (2 S.D.)
90413AA_5_884_01.$av
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
Detector (Flux)
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
90413AA_5_884_01.$av
Detector (Flux)
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 13:41

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 90413AA_5_884_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	356.2 µm	10.60	335.0	377.4
Median:	263.4 µm	14.69	234.0	292.8
S.D.:	315.4 µm	5.350	304.7	326.1
Variance:	99505 μm^2	3362	92782	106.2e3
C.V.:	88.63%	3.864	80.91	96.36
Skewness:	1.155	0.044	1.067	1.242
Kurtosis:	1.016	0.196	0.625	1.407
d_{10}:	36.82 µm	14.07	8.682	64.95
d_{50}:	263.4 µm	14.69	234.0	292.8
d_{90}:	808.3 µm	6.018	796.3	820.3

Beckman Coulter LS 13 320

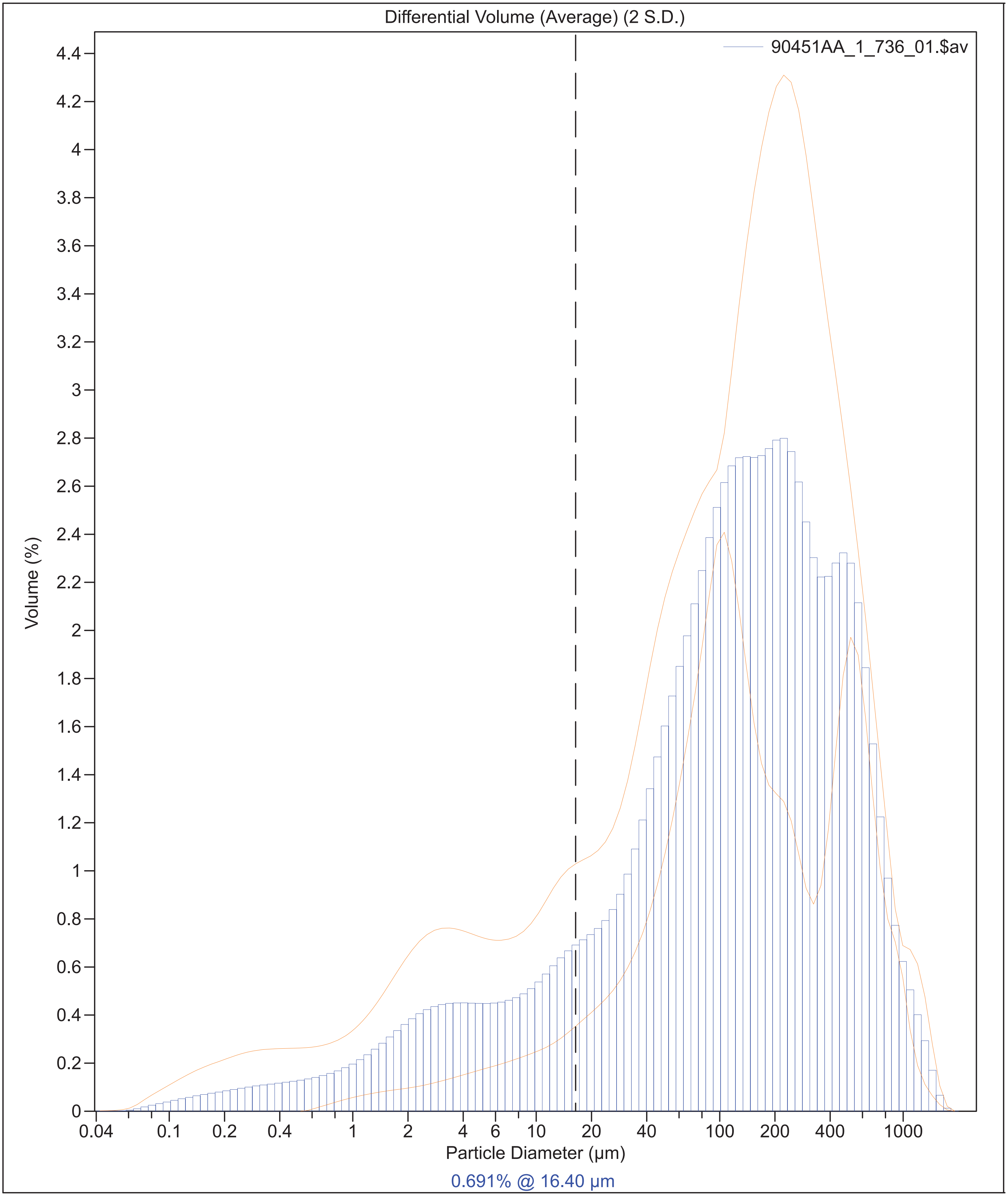
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90451AA_1_736_01.$av		
	90451AA_1_736_01.$av		
File ID:	90451AA_1		
Sample ID:	90451AA_1		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	66		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_1_734_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_1_735_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_1_736_01.$ls

LS Particle Size Analyzer

9 Jul 2024 13:44

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90451AA_1_736_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	215.4 µm	S.D.:	246.2 µm
Median:	127.1 µm	Variance:	60607 μm^2
Mean/Median ratio:	1.694	C.V.:	114%
Mode:	223.4 µm	Skewness:	1.907 Right skewed
		Kurtosis:	4.295 Leptokurtic

d_{10}: 6.000 µm d_{50}: 127.1 µm d_{90}: 555.1 µm

Folk and Ward Statistics (Phi)

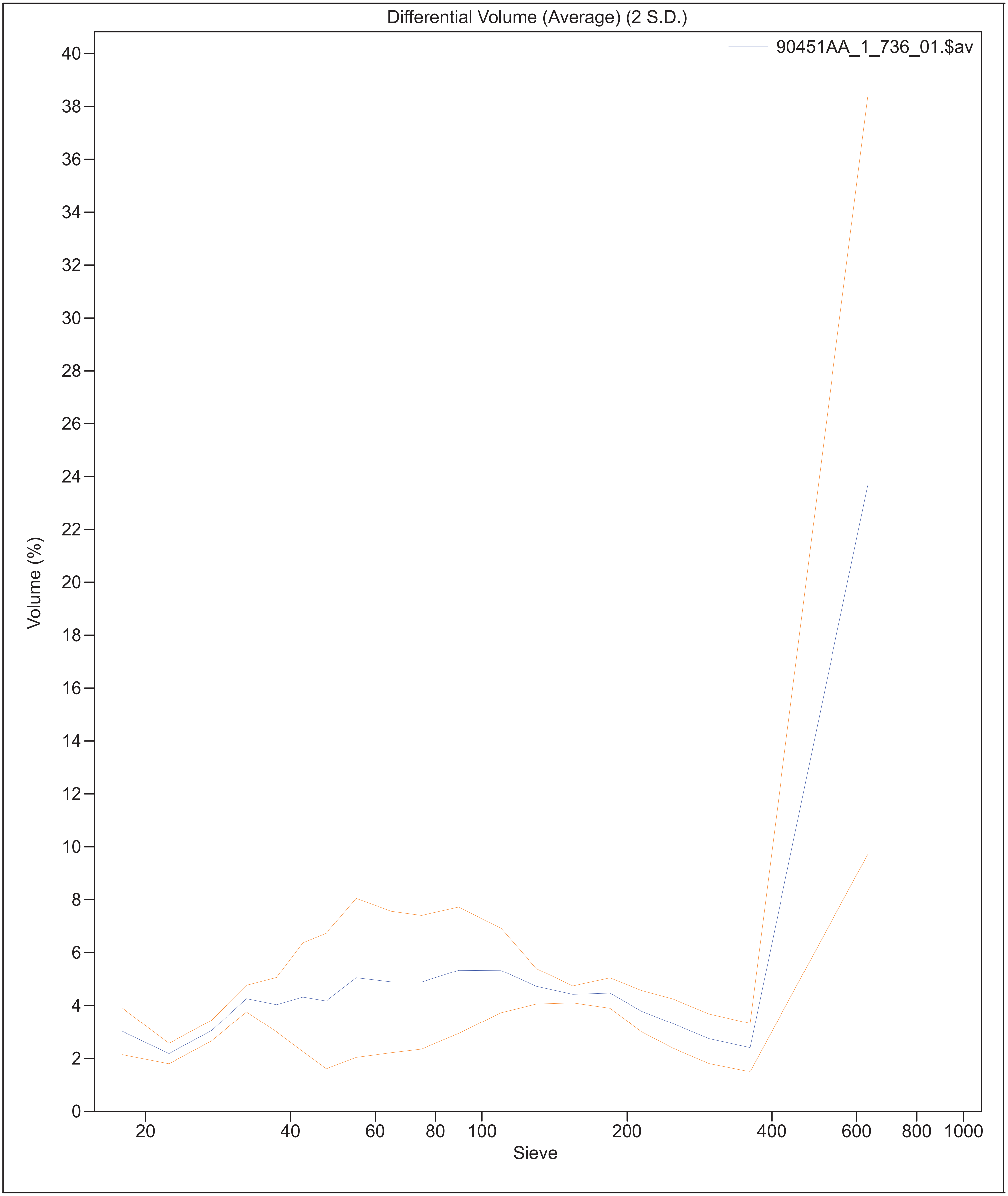
Mean:	3.36	Median:	2.98	Deviation:	2.45
Skewness:	0.33	Kurtosis:	1.22		

<10%	<25%	<50%	<75%	<90%
6.000 µm	41.93 µm	127.1 µm	300.2 µm	555.1 µm

LS Particle Size Analyzer

9 Jul 2024 13:44

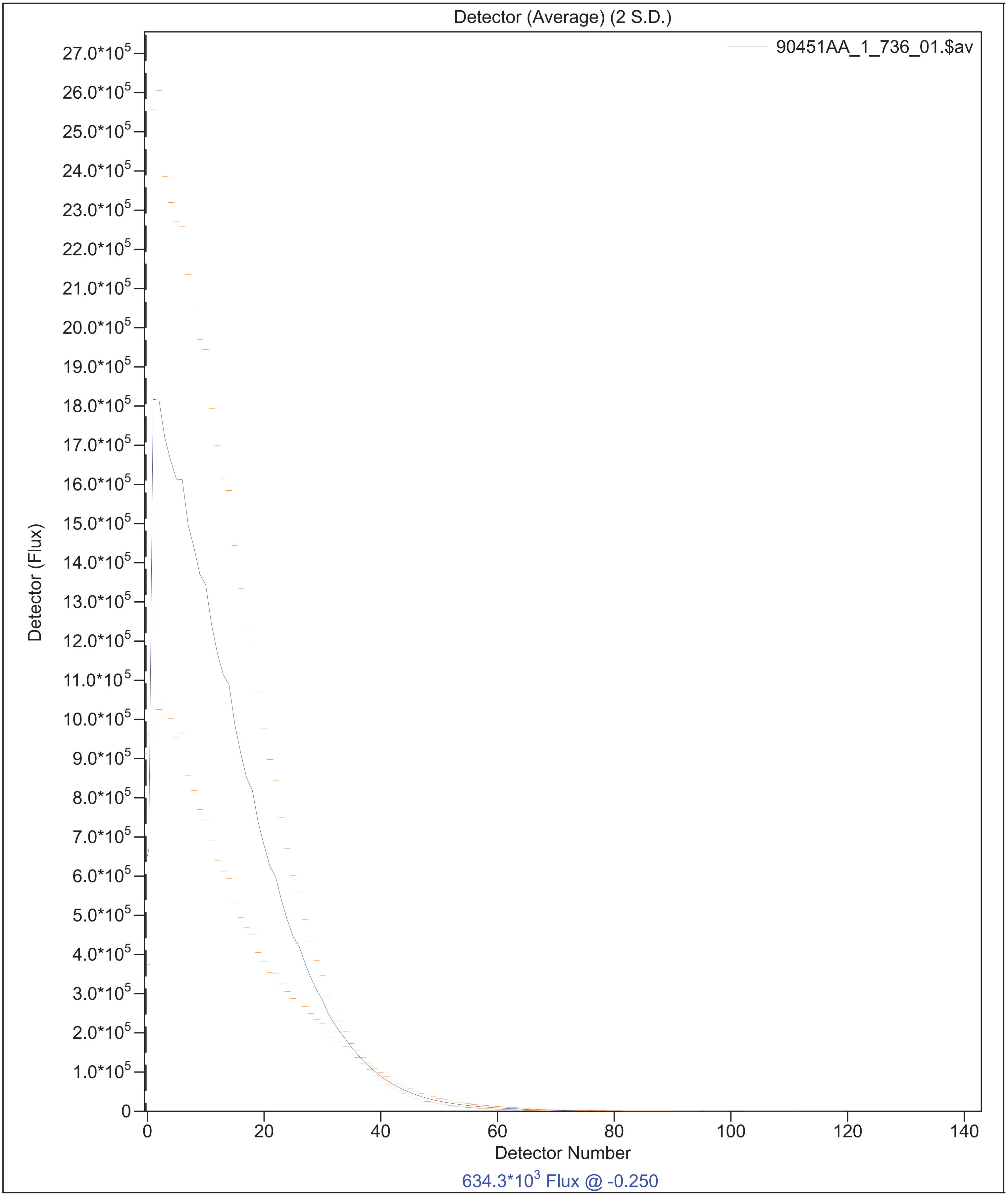
Beckman Coulter LS 13 320

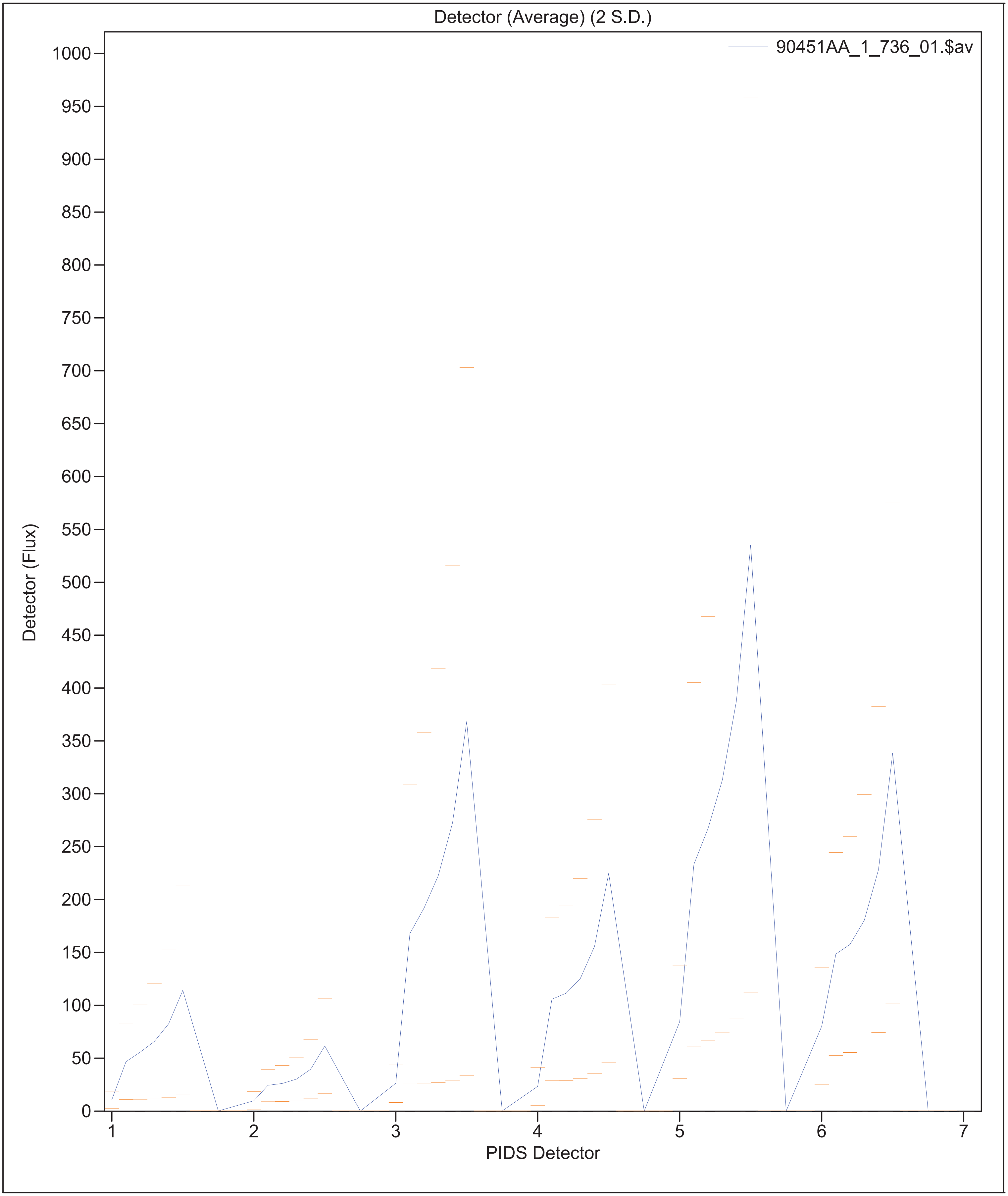


LS Particle Size Analyzer

9 Jul 2024 13:44

Beckman Coulter LS 13 320

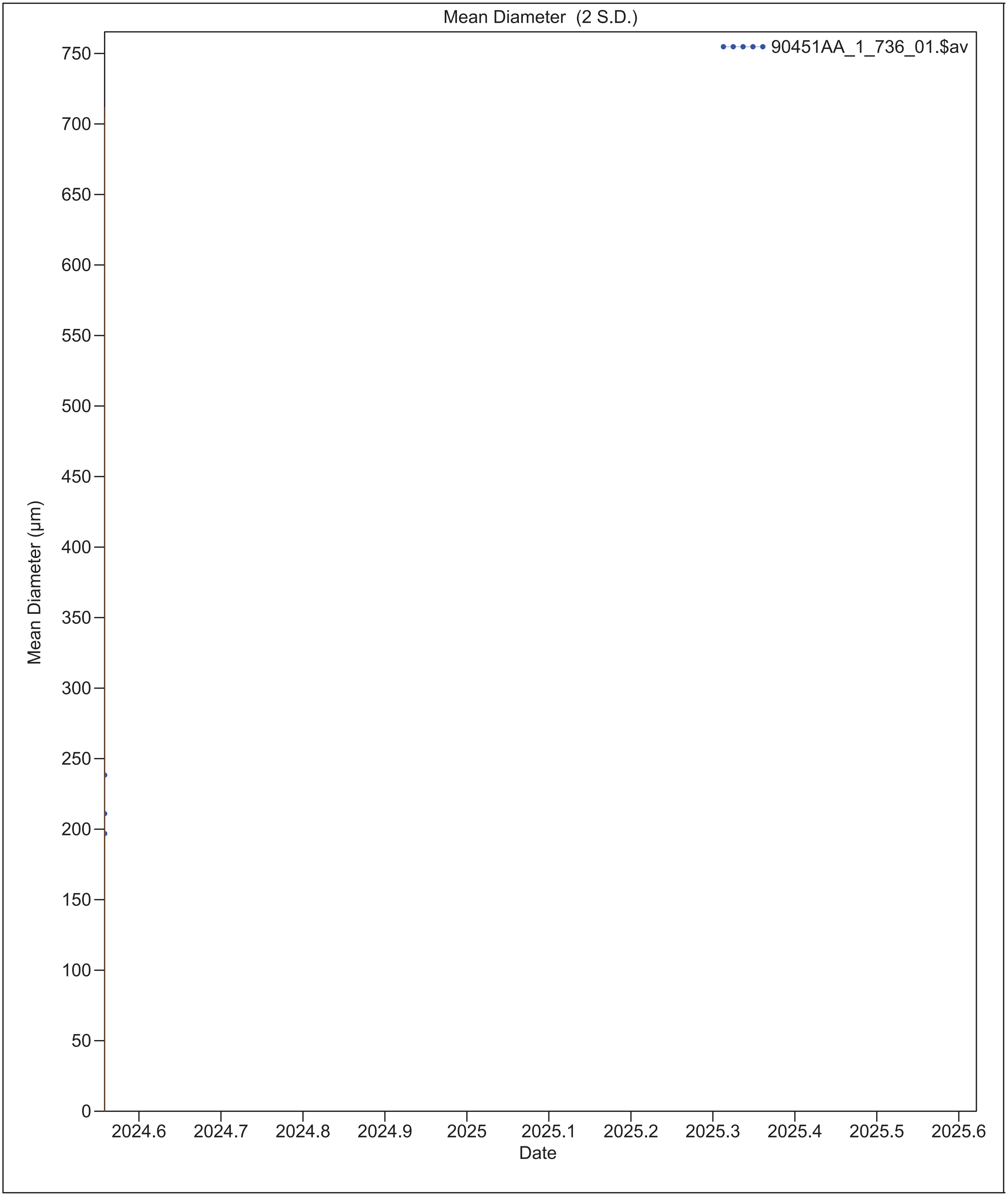



Detector (Average) (2 S.D.)
90451AA_1_736_01.$av
Detector (Flux)
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

9 Jul 2024 13:44

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 90451AA_1_736_01.$av

Calculations from 0.040 μm to 2000 μm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	215.4 μm	21.08	173.2	257.5
Median:	127.6 μm	38.28	51.03	204.1
S.D.:	245.4 μm	11.25	222.9	267.9
Variance:	60311 μm^2	5453	49405	71217
C.V.:	115.0%	15.88	83.22	146.7
Skewness:	1.915	0.190	1.535	2.295
Kurtosis:	4.323	0.633	3.057	5.589
d_{10}:	8.508 μm	7.214	0	22.94
d_{50}:	127.6 μm	38.28	51.03	204.1
d_{90}:	555.0 μm	3.542	547.9	562.1

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90451AA_2_739_01.$av		
	90451AA_2_739_01.$av		
File ID:	90451AA_2		
Sample ID:	90451AA_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	66		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_2_737_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_2_738_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_2_739_01.$ls

LS Particle Size Analyzer

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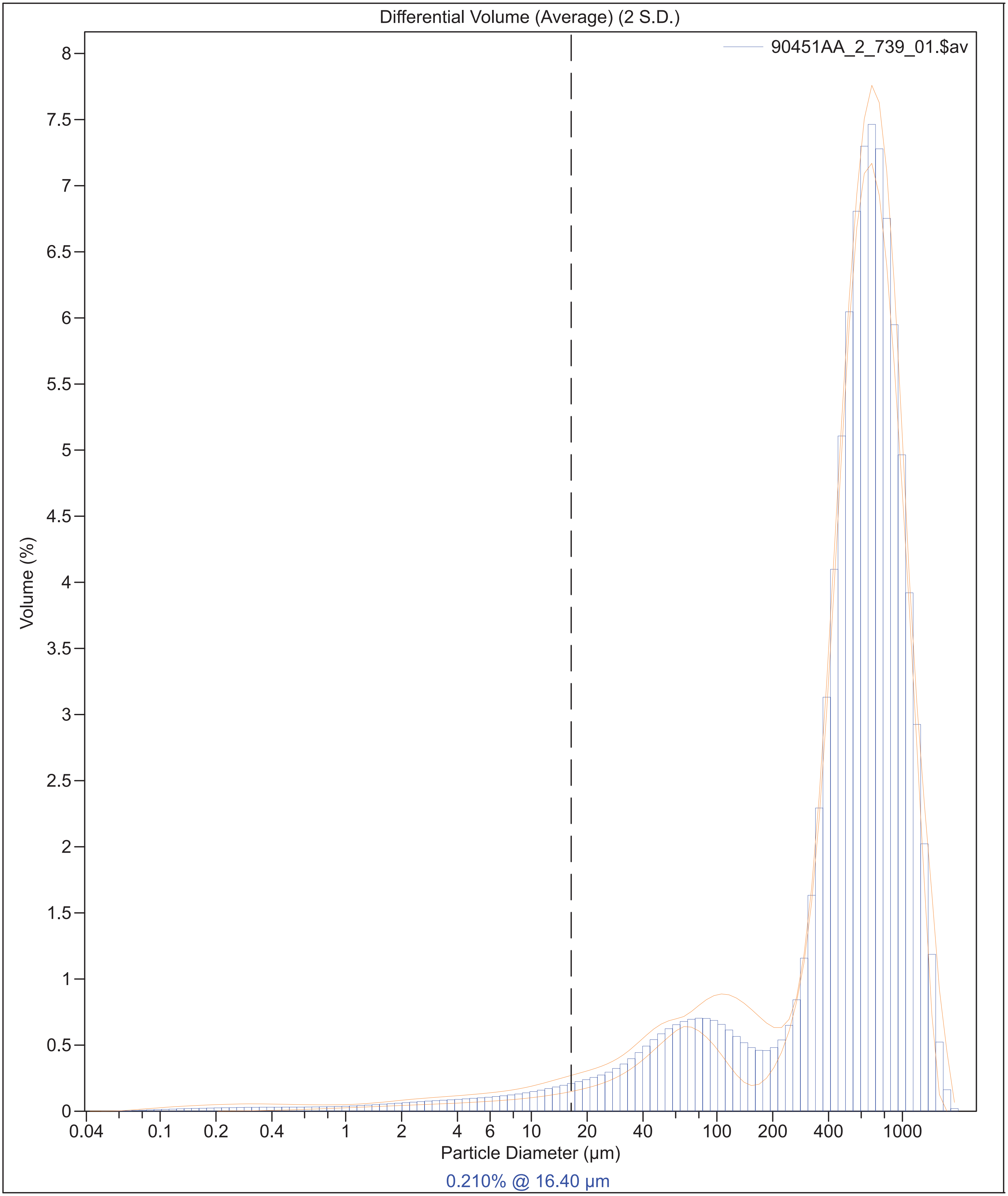
Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90451AA_2_739_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	600.4 µm	S.D.:	352.9 µm
Median:	598.6 µm	Variance:	124.6e3 μm^2
Mean/Median ratio:	1.003	C.V.:	58.8%
Mode:	684.2 µm	Skewness:	0.214 Right skewed
		Kurtosis:	-0.239 Platykurtic

d_{10}: 67.83 µm d_{50}: 598.6 µm d_{90}: 1061 µm

Folk and Ward Statistics (Phi)

Mean:	1.13	Median:	0.74	Deviation:	1.46
Skewness:	0.55	Kurtosis:	2.02		

<10%	<25%	<50%	<75%	<90%
67.83 µm	380.8 µm	598.6 µm	826.0 µm	1061 µm

LS Particle Size Analyzer

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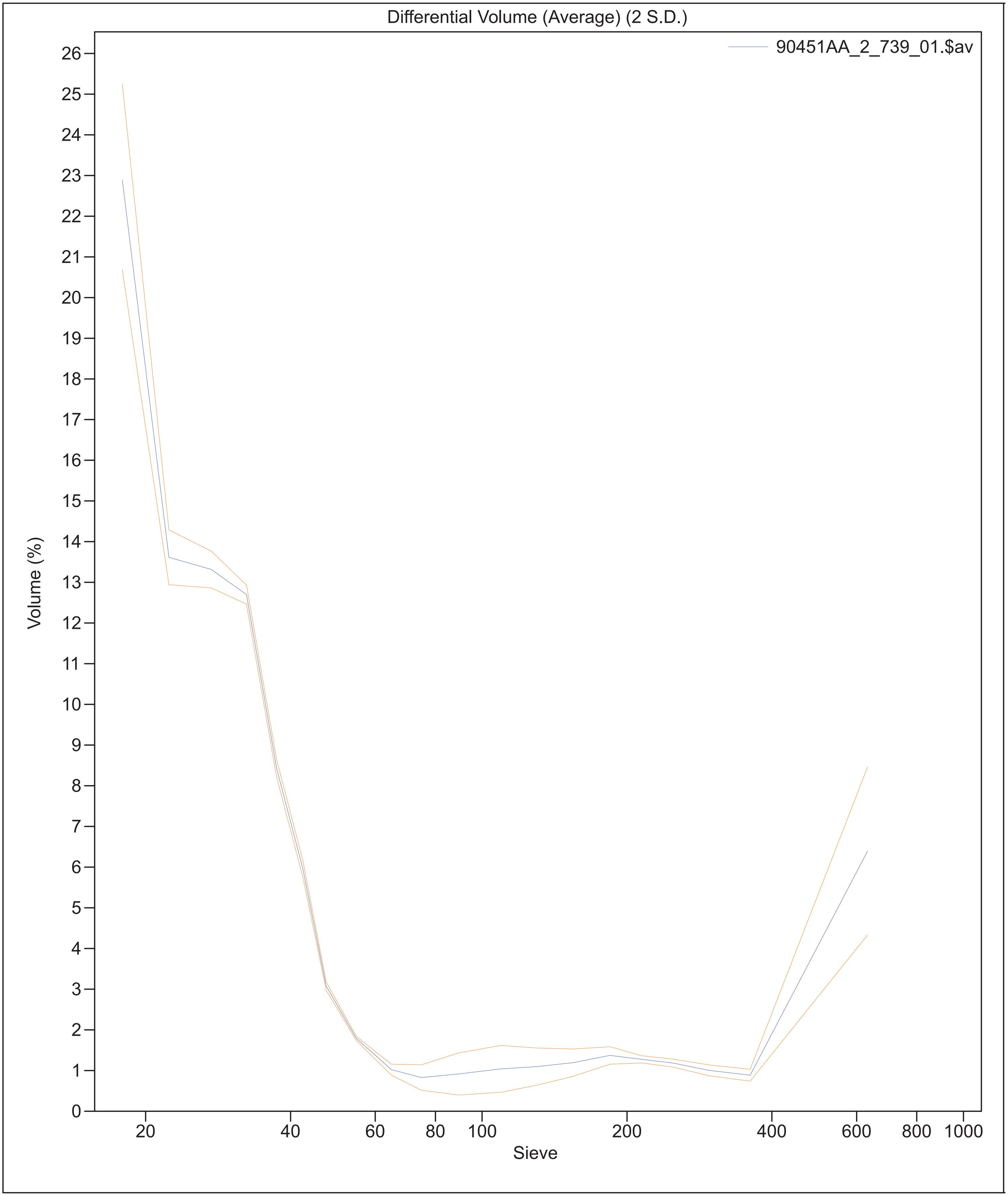
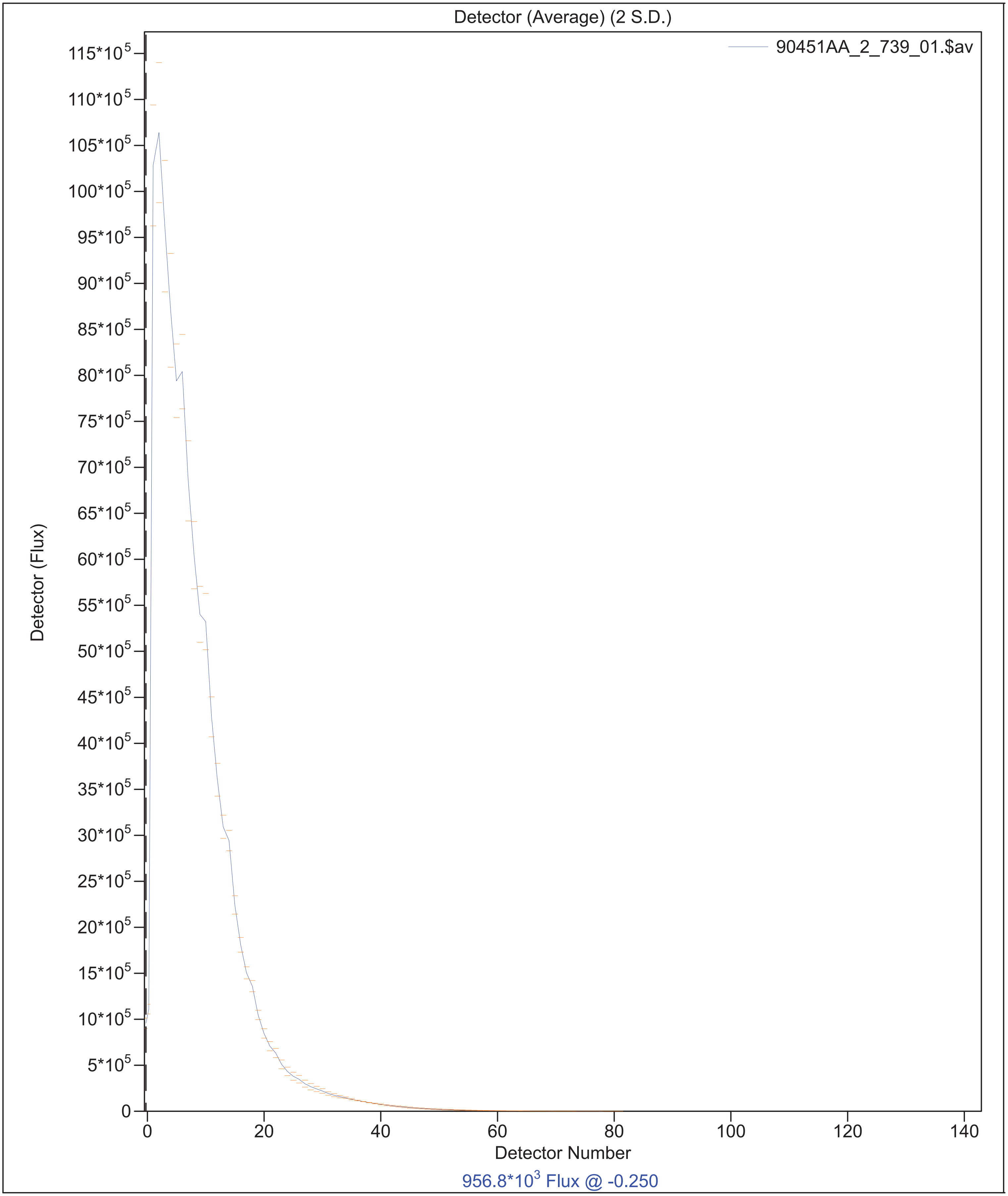
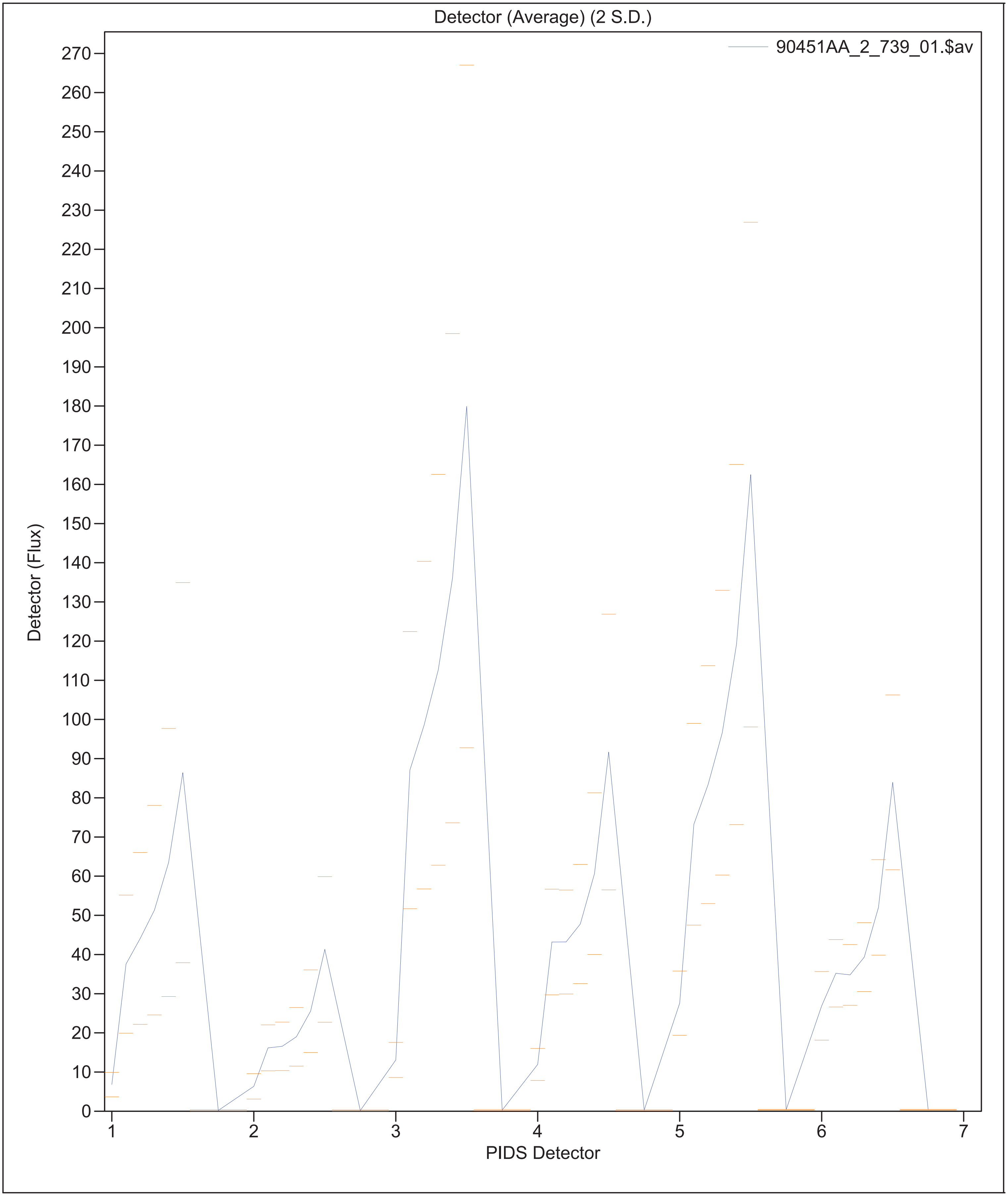
Beckman Coulter LS 13 320



Beckman Coulter LS 13 320

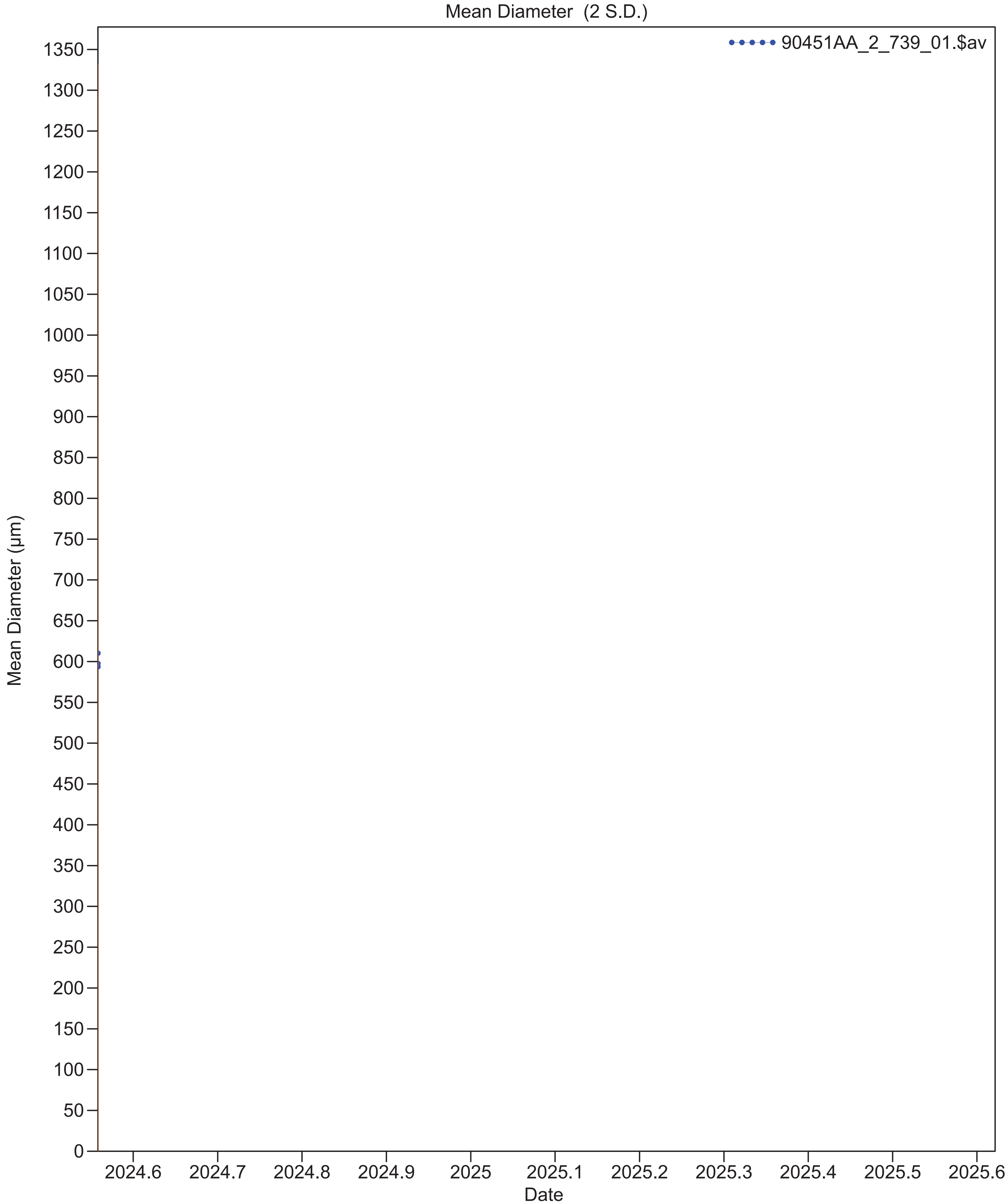



Detector (Average) (2 S.D.)
90451AA_2_739_01.$av
Detector (Flux)
PIDS Detector
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7

LS Particle Size Analyzer

9 Jul 2024 13:55

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 13:55

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90451AA_2_739_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	600.4 µm	8.678	583.0	617.7
Median:	598.6 µm	5.105	588.4	608.8
S.D.:	352.8 µm	6.931	338.9	366.7
Variance:	124.5e3 µm^2	4918	114.7e3	134.3e3
C.V.:	58.76%	0.483	57.79	59.72
Skewness:	0.209	0.094	0.021	0.397
Kurtosis:	-0.254	0.117	-0.489	-0.019
d_{10}:	68.20 µm	11.37	45.47	90.94
d_{50}:	598.6 µm	5.105	588.4	608.8
d_{90}:	1061 µm	21.41	1018	1104

Beckman Coulter LS 13 320

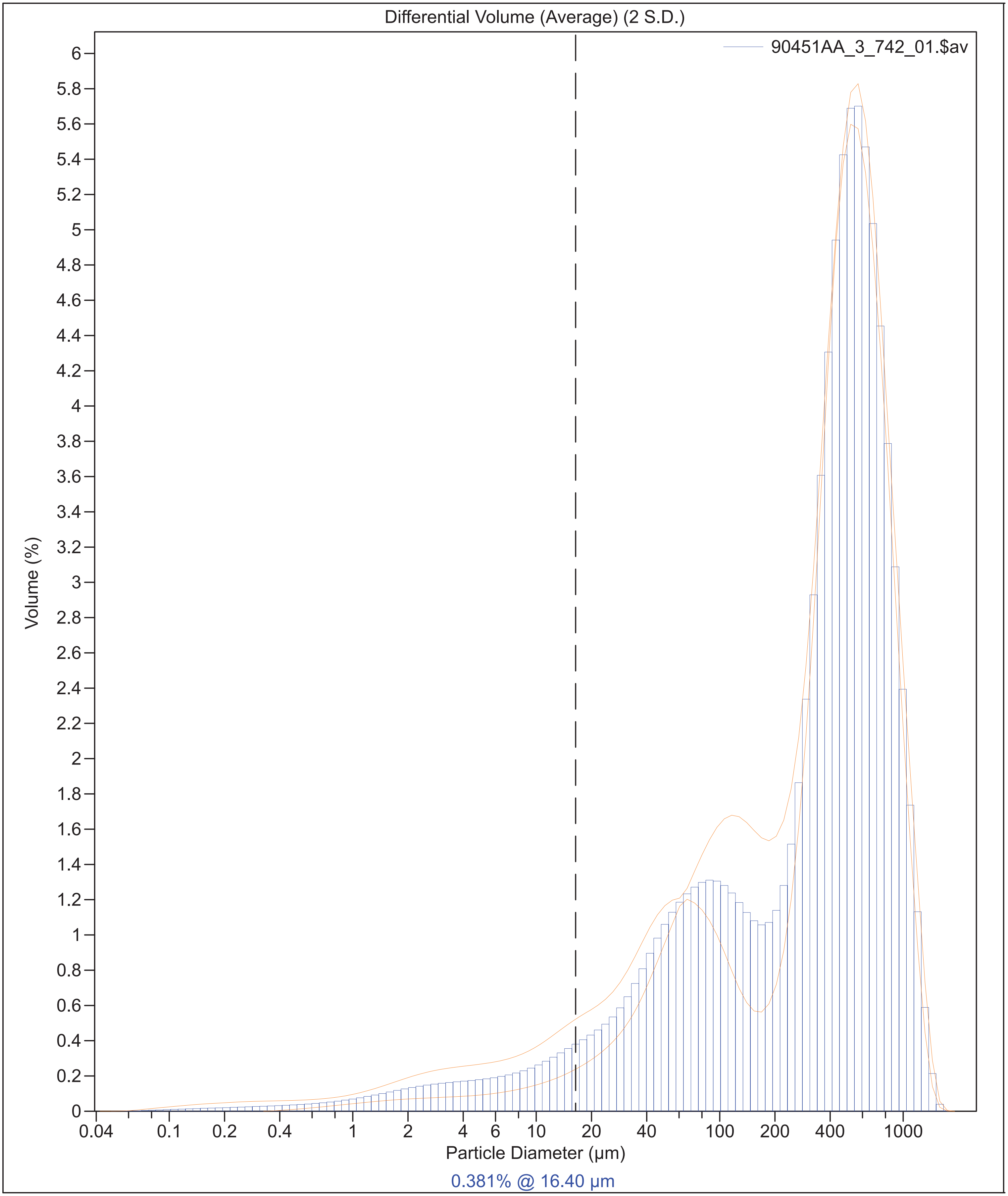
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90451AA_3_742_01.$av		
	90451AA_3_742_01.$av		
File ID:	90451AA_3		
Sample ID:	90451AA_3		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	66		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_3_740_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_3_741_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90451AA_3_742_01.$ls

LS Particle Size Analyzer

9 Jul 2024 14:05

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:05

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90451AA_3_742_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	418.6 µm	S.D.:	314.1 µm
Median:	407.0 µm	Variance:	98637 µm^2
Mean/Median ratio:	1.028	C.V.:	75.0%
Mode:	567.7 µm	Skewness:	0.546 Right skewed
		Kurtosis:	-0.286 Platykurtic

d_{10}: 32.65 µm d_{50}: 407.0 µm d_{90}: 847.5 µm

Folk and Ward Statistics (Phi)

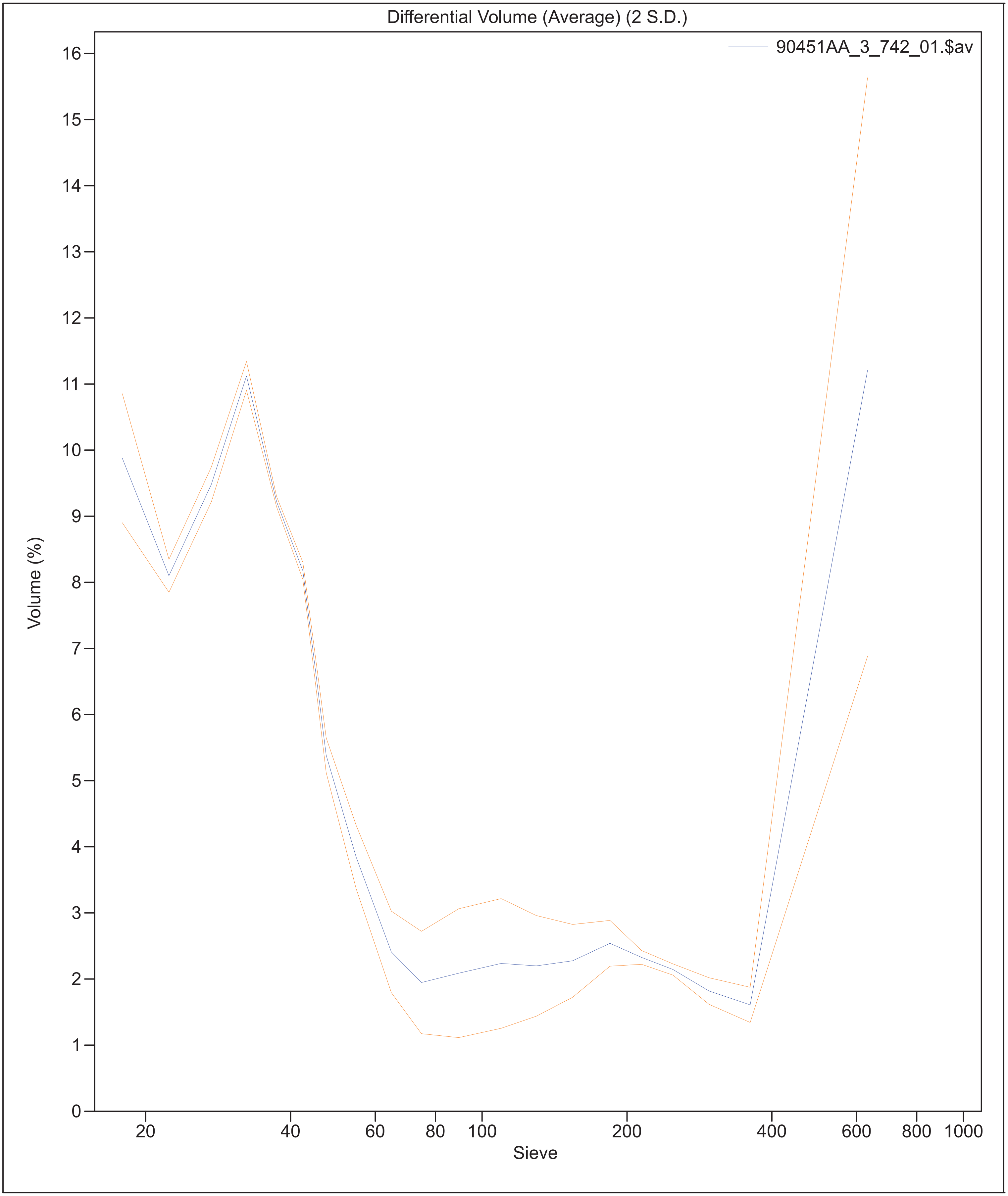
Mean:	1.94	Median:	1.30	Deviation:	1.89
Skewness:	0.56	Kurtosis:	1.08		

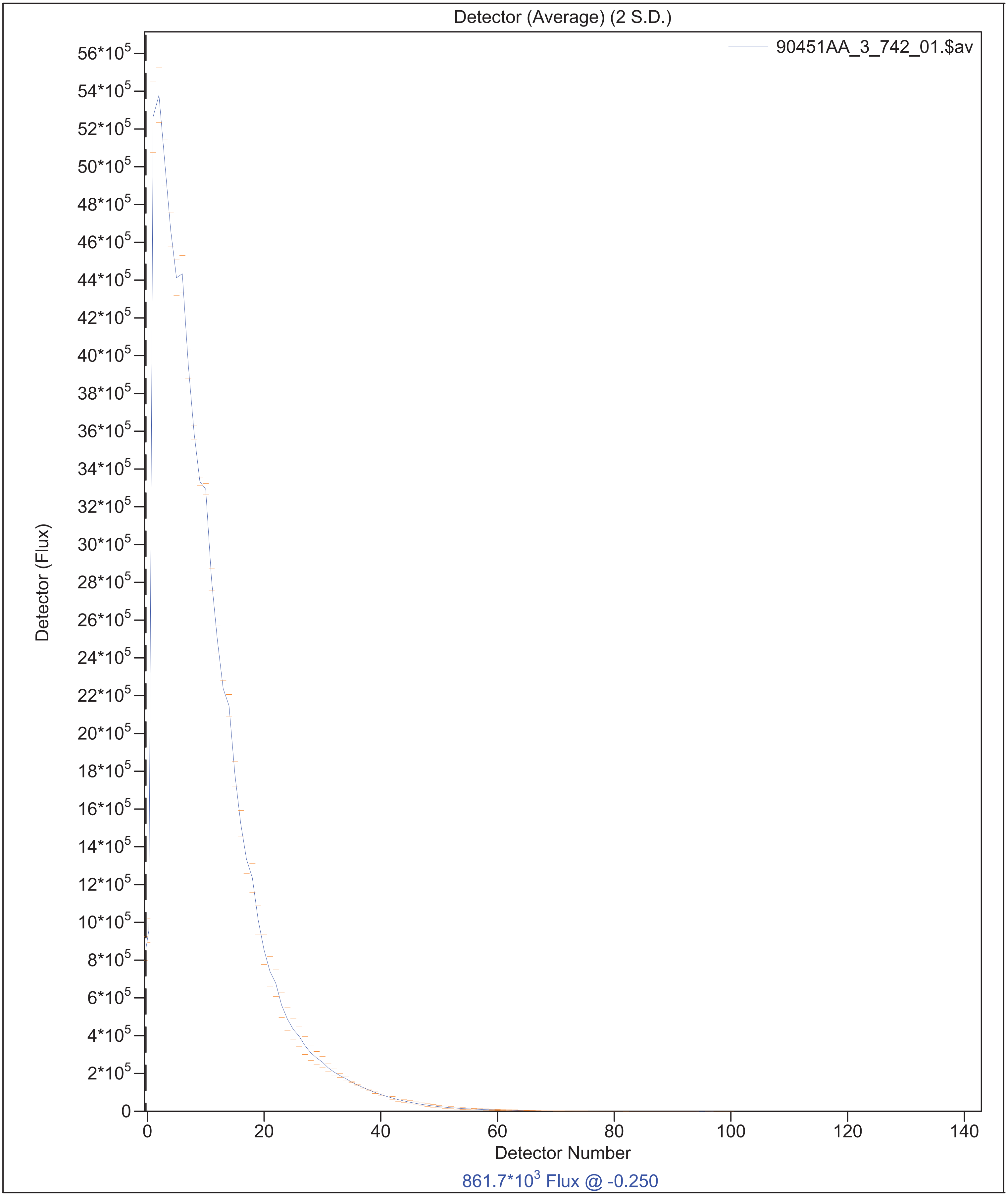
<10%	<25%	<50%	<75%	<90%
32.65 µm	114.8 µm	407.0 µm	626.1 µm	847.5 µm

LS Particle Size Analyzer

9 Jul 2024 14:05

Beckman Coulter LS 13 320

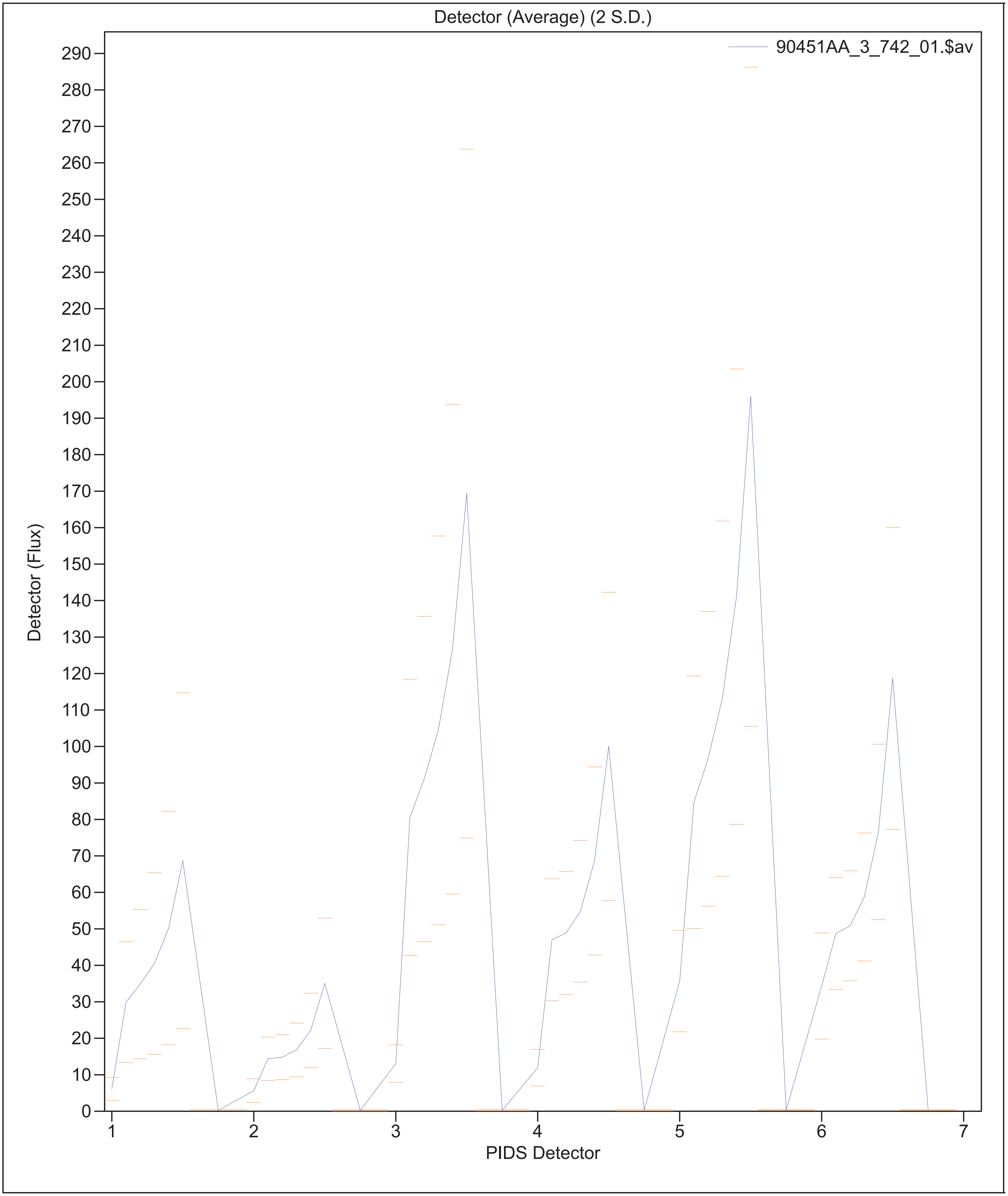



Detector (Average) (2 S.D.)
90451AA_3_742_01.$av
Detector (Flux)
56*10^5
54*10^5
52*10^5
50*10^5
48*10^5
46*10^5
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140
Detector Number
861.7*10^3 Flux @ -0.250

LS Particle Size Analyzer

9 Jul 2024 14:05

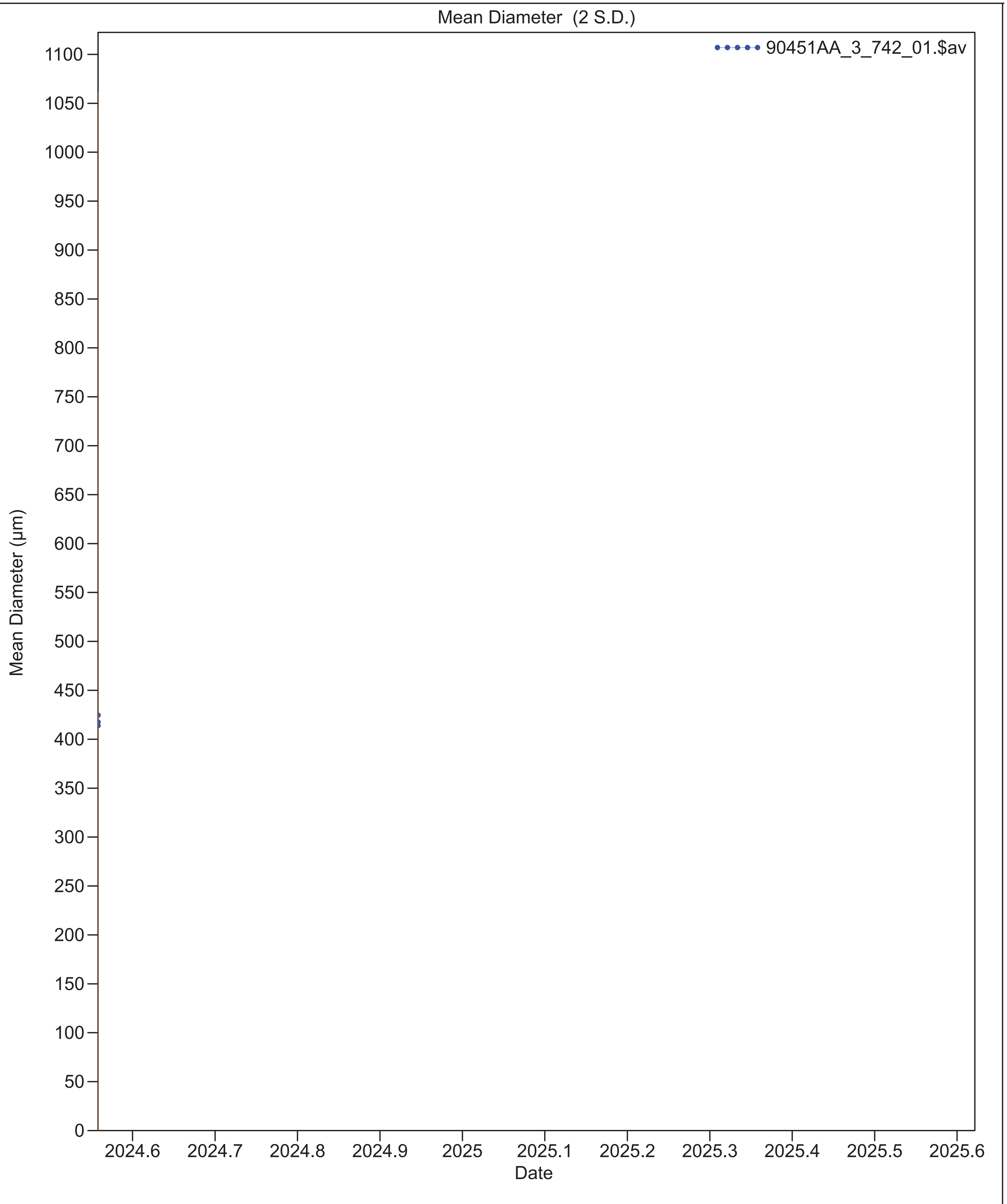
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:05

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

9 Jul 2024 14:05

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90451AA_3_742_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	418.6 µm	5.436	407.7	429.5
Median:	407.0 µm	6.045	394.9	419.1
S.D.:	314.0 µm	5.397	303.2	324.8
Variance:	98617 μm^2	3379	91859	105.4e3
C.V.:	75.02%	1.247	72.52	77.51
Skewness:	0.546	0.035	0.476	0.617
Kurtosis:	-0.288	0.067	-0.421	-0.154
d_{10}:	33.22 µm	9.286	14.65	51.79
d_{50}:	407.0 µm	6.045	394.9	419.1
d_{90}:	847.4 µm	9.810	827.8	867.0

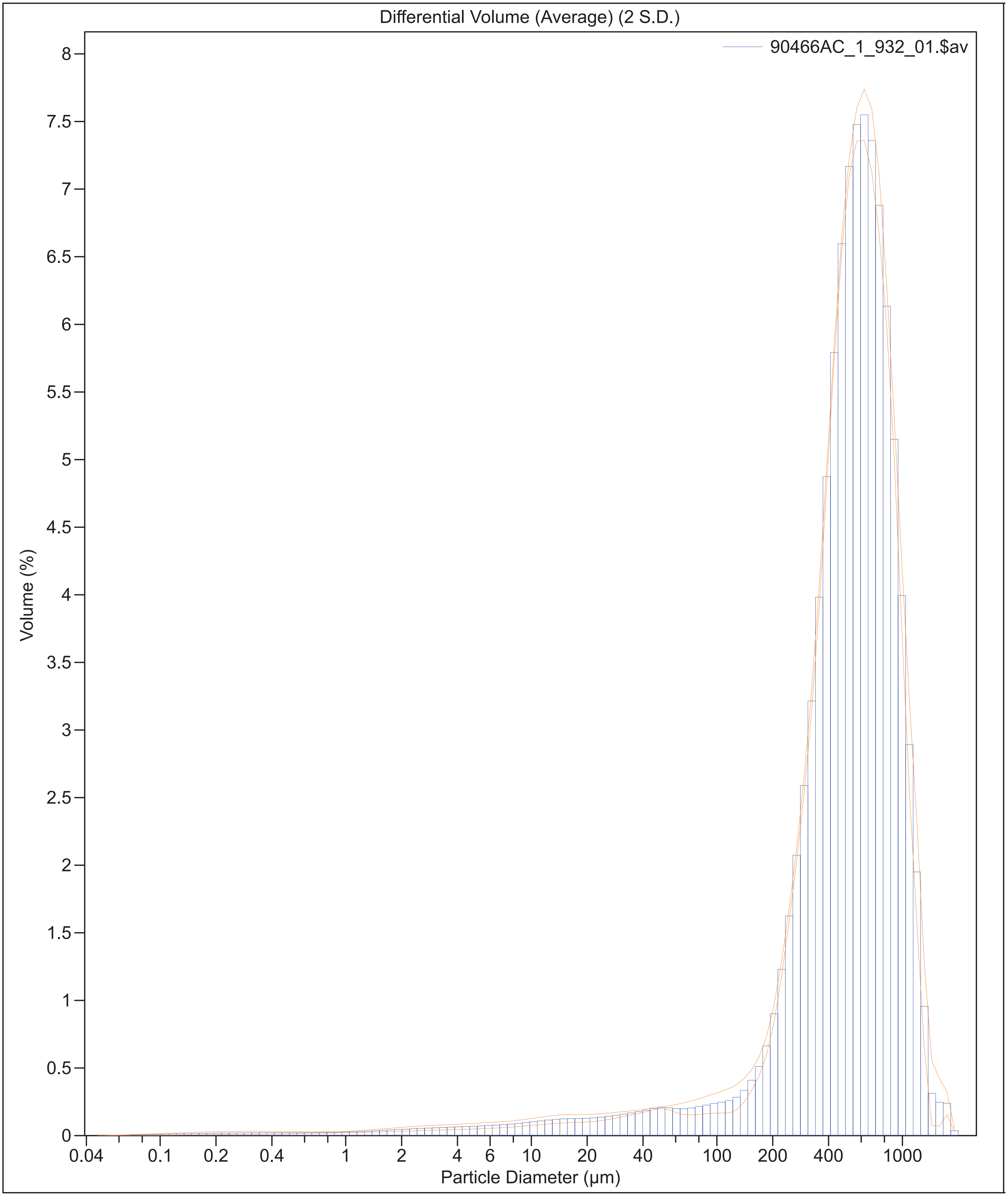
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90466AC_1_932_01.$av
	90466AC_1_932_01.$av
File ID:	90466AC_1
Sample ID:	90466AC_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_1_930_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_1_931_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_1_932_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:42

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90466AC_1_932_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	573.7 µm	S.D.:	296.5 µm
Median:	550.3 µm	Variance:	87928 $µm^2$
Mean/Median ratio:	1.043	C.V.:	51.7%
Mode:	623.3 µm	Skewness:	0.468 Right skewed
		Kurtosis:	0.545 Leptokurtic

d_{10}: 218.8 µm d_{50}: 550.3 µm d_{90}: 962.9 µm

Folk and Ward Statistics (Phi)

Mean:	0.94	Median:	0.86	Deviation:	1.01
Skewness:	0.34	Kurtosis:	1.68		

<10%	<25%	<50%	<75%	<90%
218.8 µm	377.7 µm	550.3 µm	755.5 µm	962.9 µm

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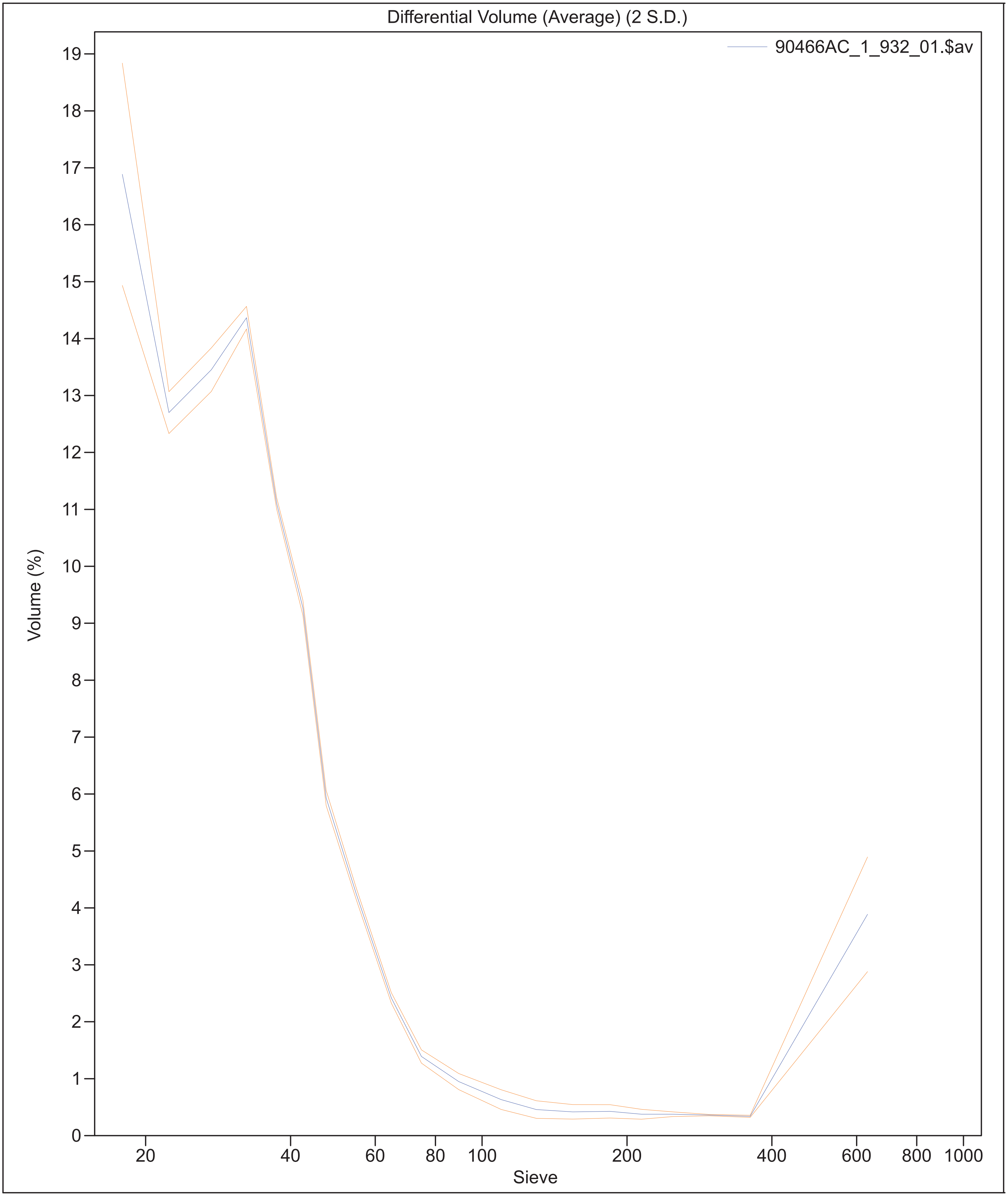
LS Particle Size Analyzer

10 Jul 2024 15:42

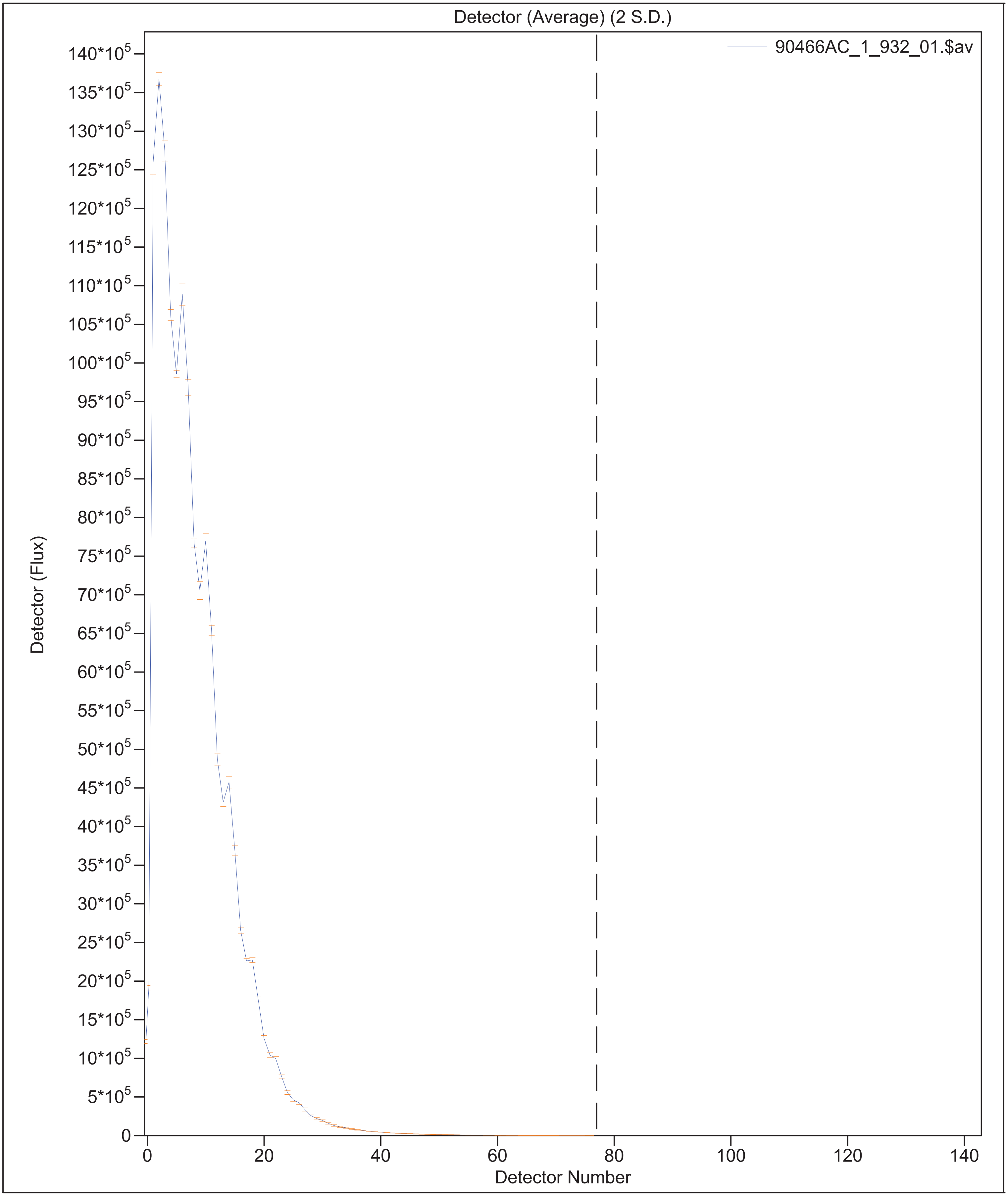
Beckman Coulter LS 13 320

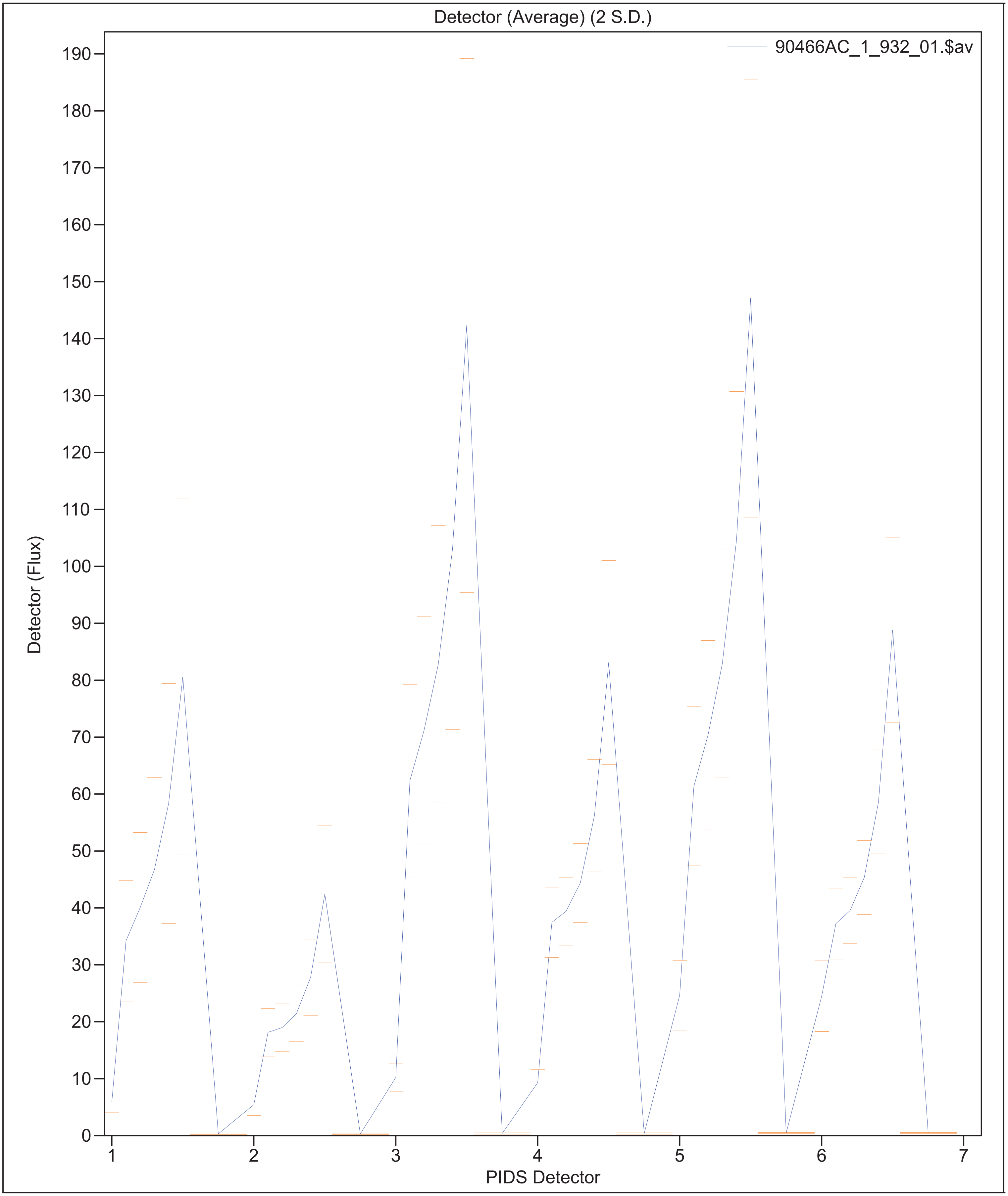


LS Particle Size Analyzer

10 Jul 2024 15:42

Beckman Coulter LS 13 320

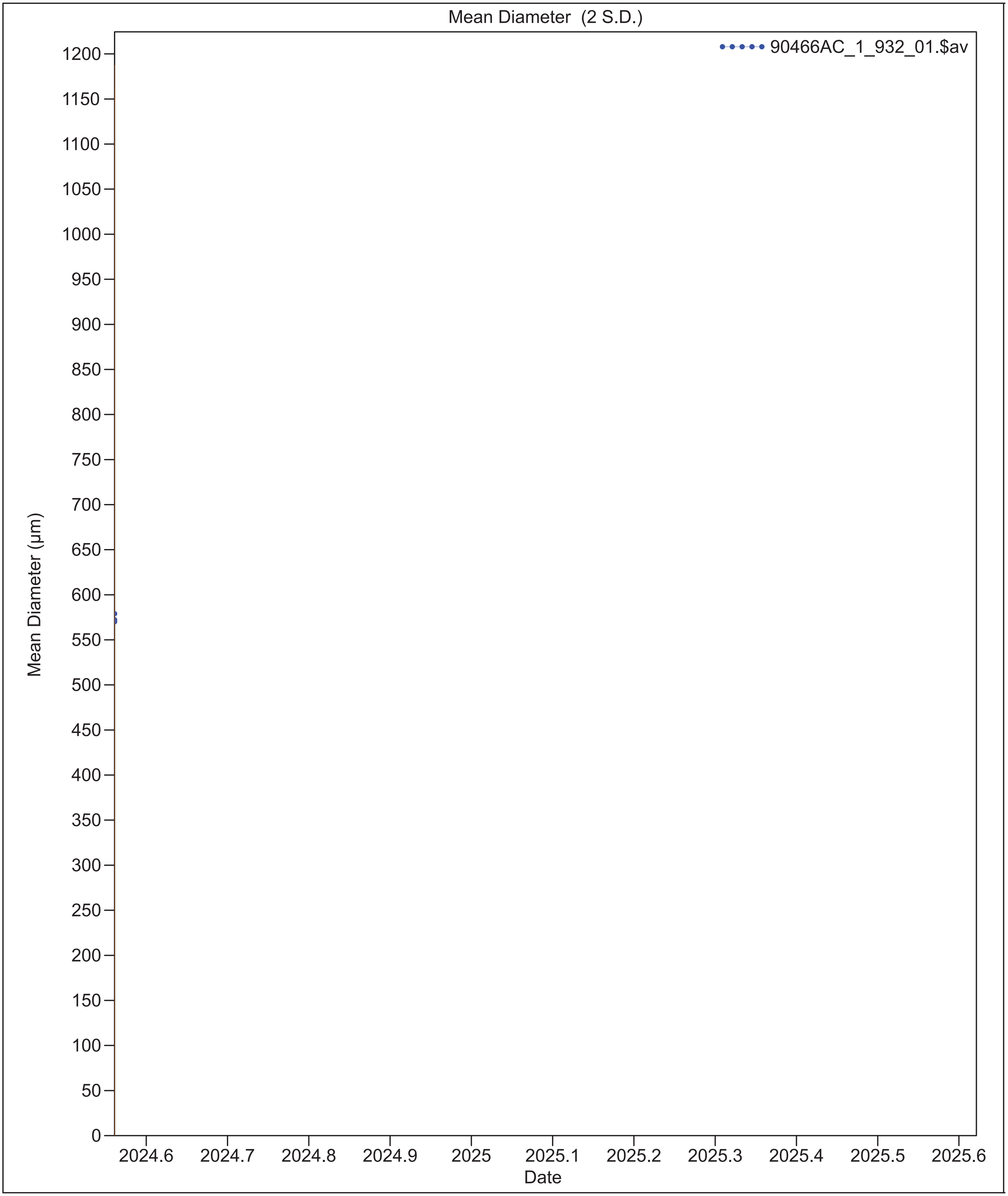



Detector (Average) (2 S.D.)
90466AC_1_932_01.$av
Detector (Flux)
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 15:42

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 15:42

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90466AC_1_932_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	573.7 µm	4.659	564.4	583.0
Median:	550.3 µm	2.086	546.1	554.5
S.D.:	296.5 µm	6.722	283.0	309.9
Variance:	87913 $µm^2$	4008	79898	95929
C.V.:	51.67%	0.751	50.17	53.17
Skewness:	0.465	0.056	0.353	0.578
Kurtosis:	0.534	0.113	0.308	0.760
d_{10}:	218.8 µm	0.622	217.6	220.1
d_{50}:	550.3 µm	2.086	546.1	554.5
d_{90}:	962.8 µm	15.94	930.9	994.6

LS Particle Size Analyzer

10 Jul 2024 15:49

Beckman Coulter LS 13 320

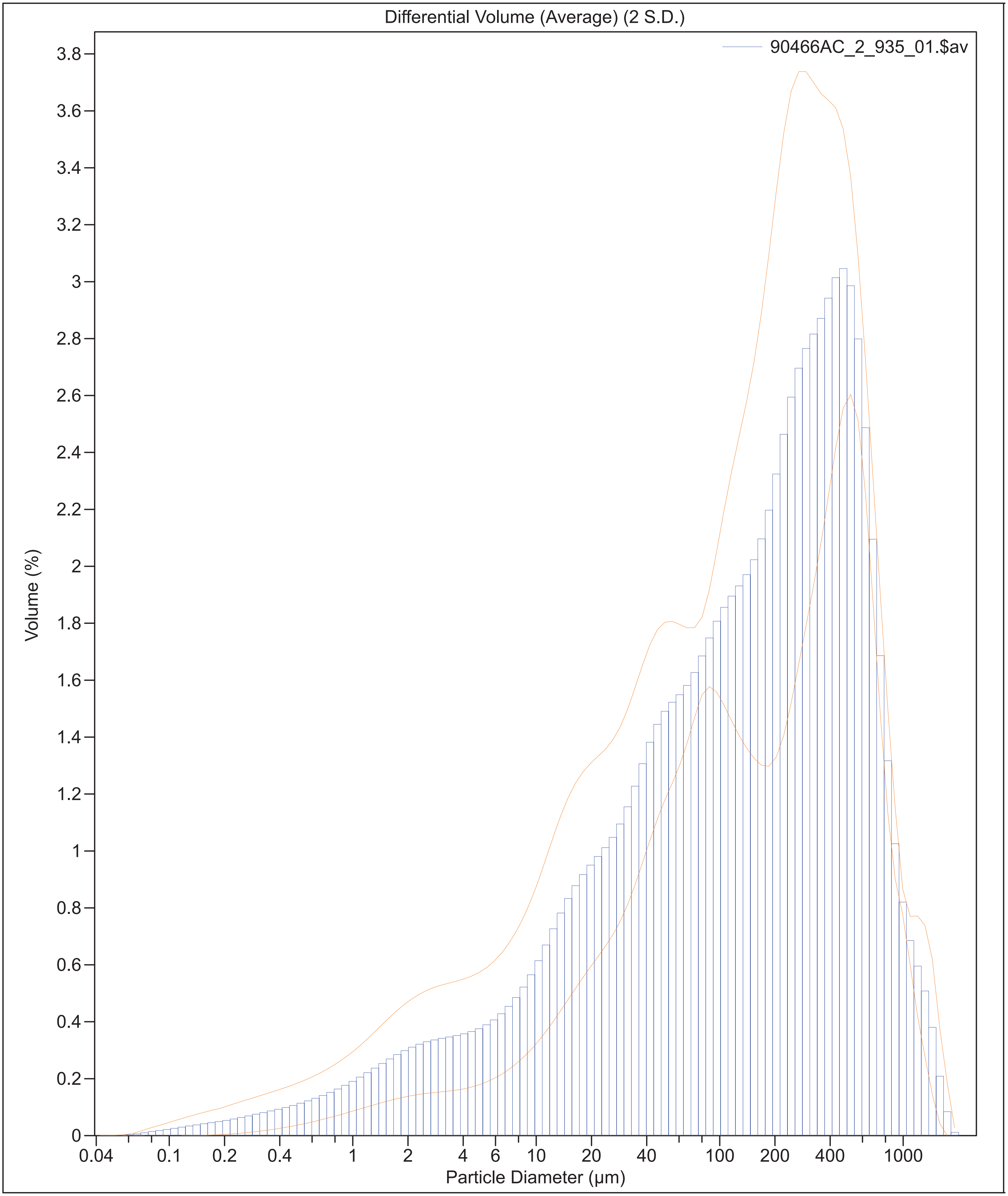
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90466AC_2_935_01.$av
	90466AC_2_935_01.$av
File ID:	90466AC_2
Sample ID:	90466AC_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_2_933_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_2_934_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_2_935_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:49

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90466AC_2_935_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	258.5 µm	S.D.:	285.7 µm
Median:	157.7 µm	Variance:	81598 µm^2
Mean/Median ratio:	1.639	C.V.:	111%
Mode:	471.1 µm	Skewness:	1.691 Right skewed
		Kurtosis:	3.361 Leptokurtic

d_{10}: 8.625 µm d_{50}: 157.7 µm d_{90}: 639.4 µm

Folk and Ward Statistics (Phi)

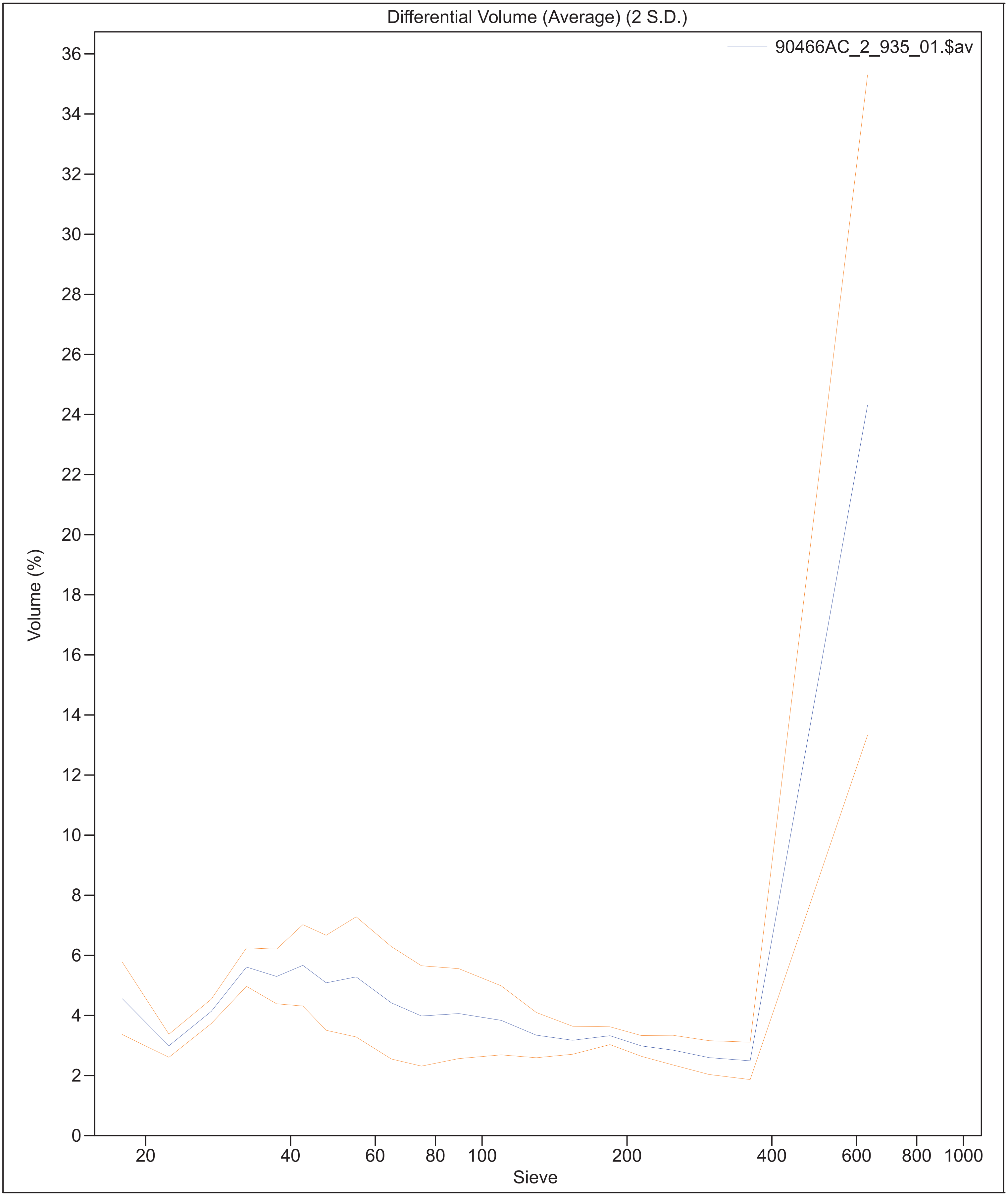
Mean:	3.12	Median:	2.66	Deviation:	2.46
Skewness:	0.35	Kurtosis:	1.03		

<10%	<25%	<50%	<75%	<90%
8.625 µm	39.86 µm	157.7 µm	394.1 µm	639.4 µm

LS Particle Size Analyzer

10 Jul 2024 15:49

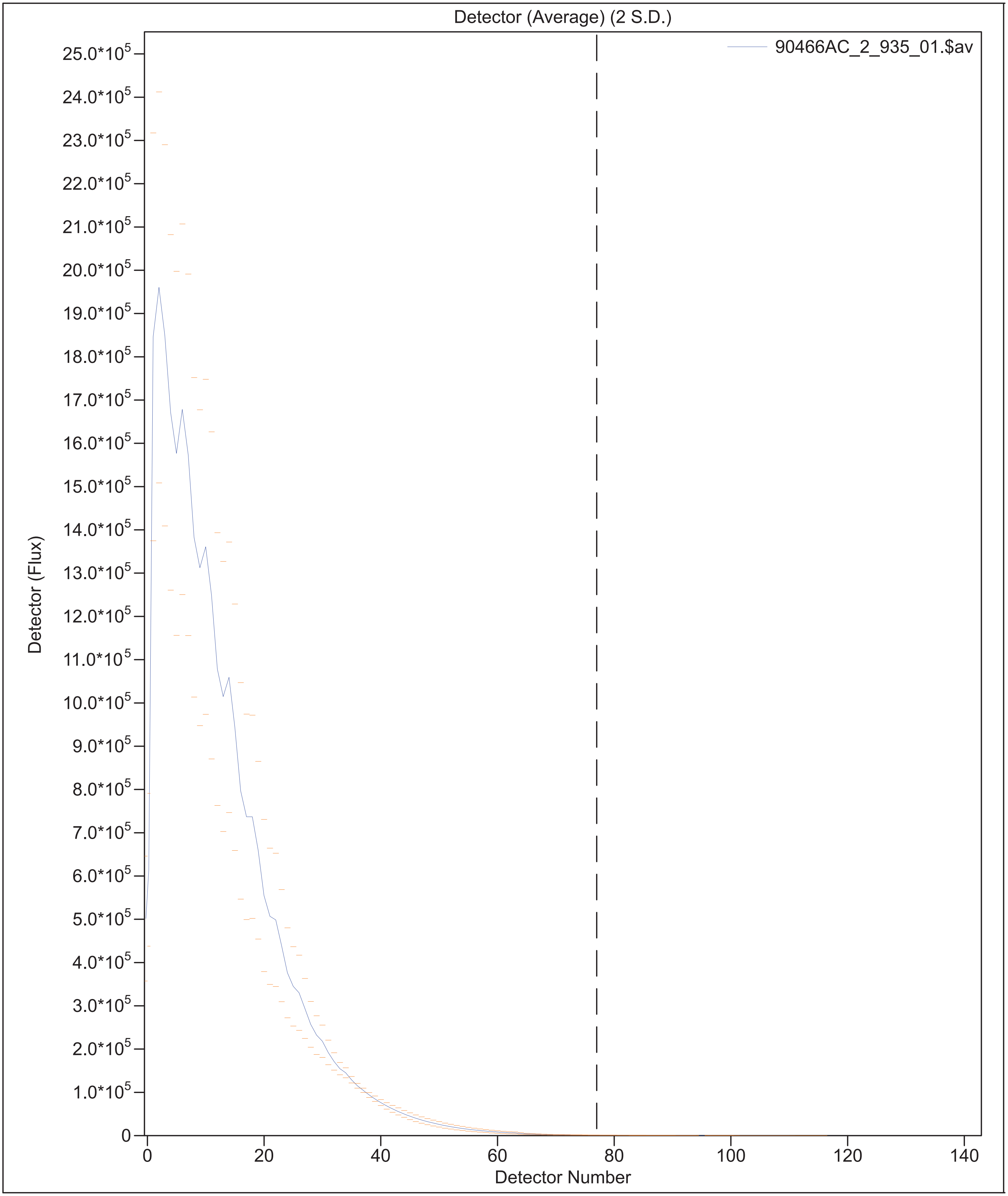
Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 15:49

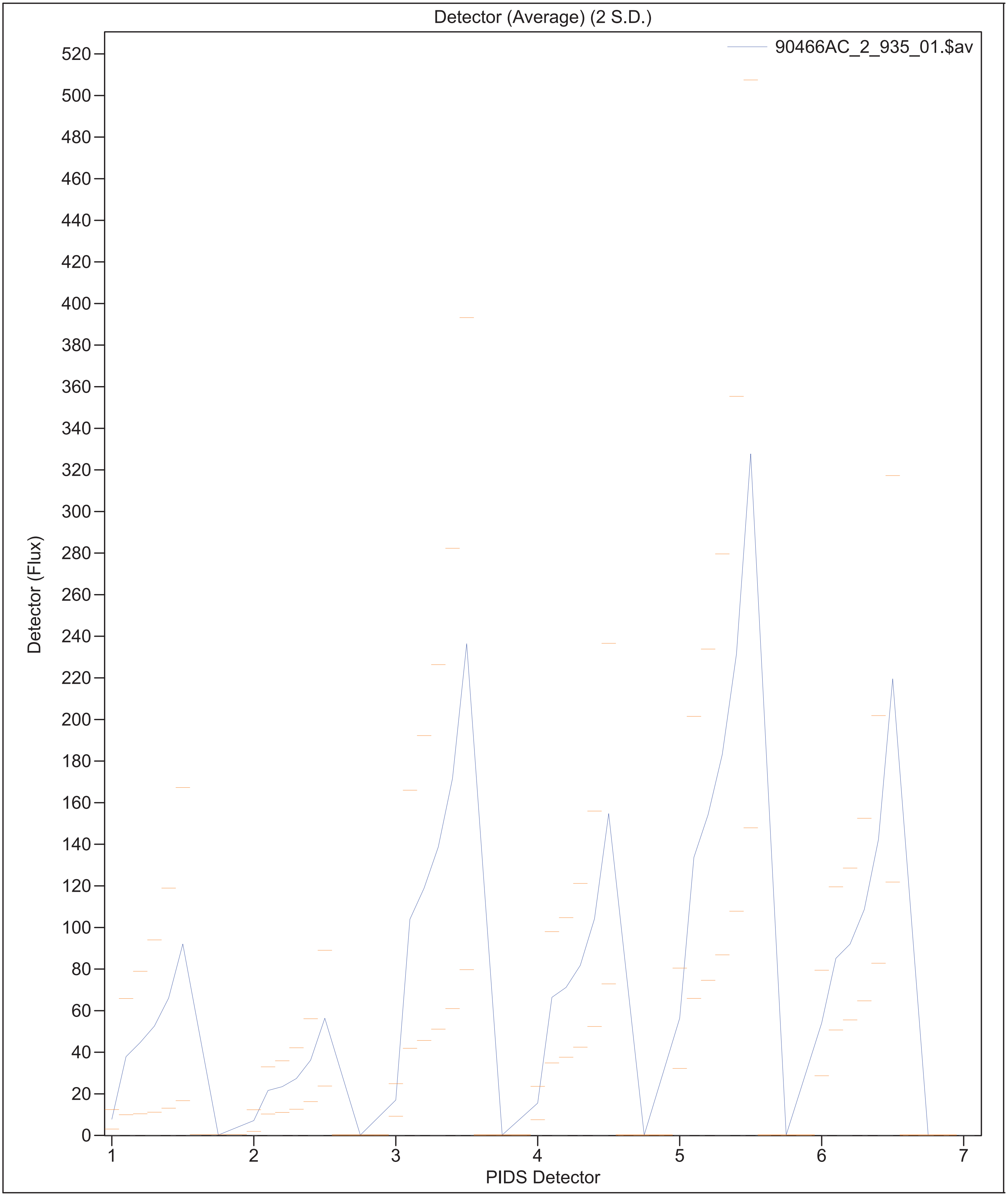
Beckman Coulter LS 13 320

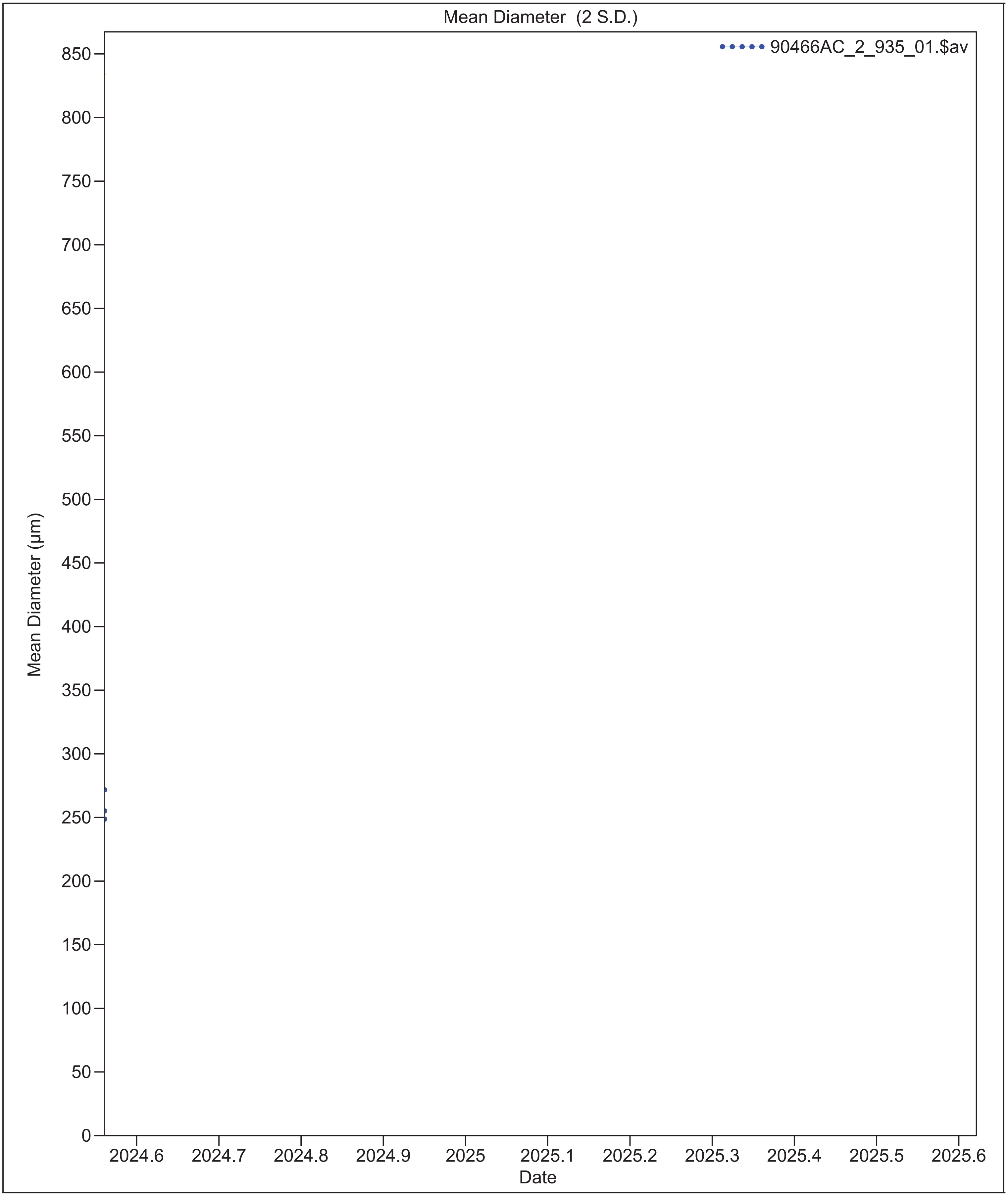


LS Particle Size Analyzer

10 Jul 2024 15:49

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90466AC_2_935_01.$av
Mean Diameter (µm)
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic) Average of 3 files 90466AC_2_935_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	258.5 µm	11.90	234.7	282.3
Median:	155.2 µm	35.76	83.69	226.7
S.D.:	285.2 µm	15.09	255.0	315.4
Variance:	81503 $µm^2$	8481	64541	98465
C.V.:	110.7%	10.50	89.65	131.7
Skewness:	1.683	0.149	1.385	1.981
Kurtosis:	3.302	0.539	2.223	4.381
d_{10}:	9.518 µm	4.921	0	19.36
d_{50}:	155.2 µm	35.76	83.69	226.7
d_{90}:	639.5 µm	7.379	624.7	654.2

LS Particle Size Analyzer

10 Jul 2024 15:56

Beckman Coulter LS 13 320

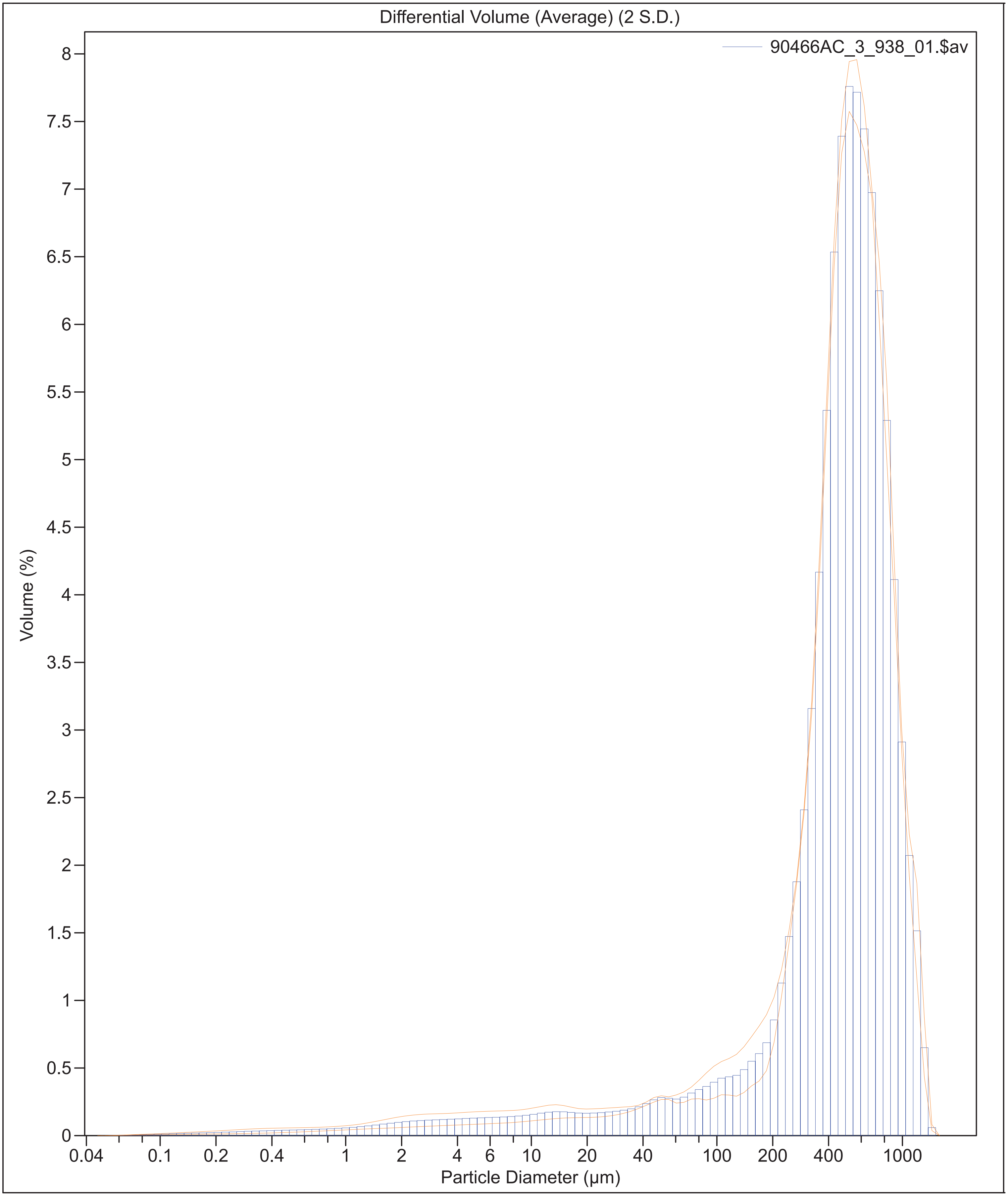
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90466AC_3_938_01.$av
	90466AC_3_938_01.$av
File ID:	90466AC_3
Sample ID:	90466AC_3
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_3_936_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_3_937_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_3_938_01.$ls

LS Particle Size Analyzer

10 Jul 2024 15:56

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 15:56

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90466AC_3_938_01.$av

Calculations from 0.040 μm to 2000 μm

Volume:	100%		
Mean:	522.0 μm	S.D.:	280.5 μm
Median:	510.8 μm	Variance:	78687 μm^2
Mean/Median ratio:	1.022	C.V.:	53.7%
Mode:	517.2 μm	Skewness:	0.225 Right skewed
		Kurtosis:	-0.079 Platykurtic

d_{10}: 119.2 μm d_{50}: 510.8 μm d_{90}: 891.0 μm

Folk and Ward Statistics (Phi)

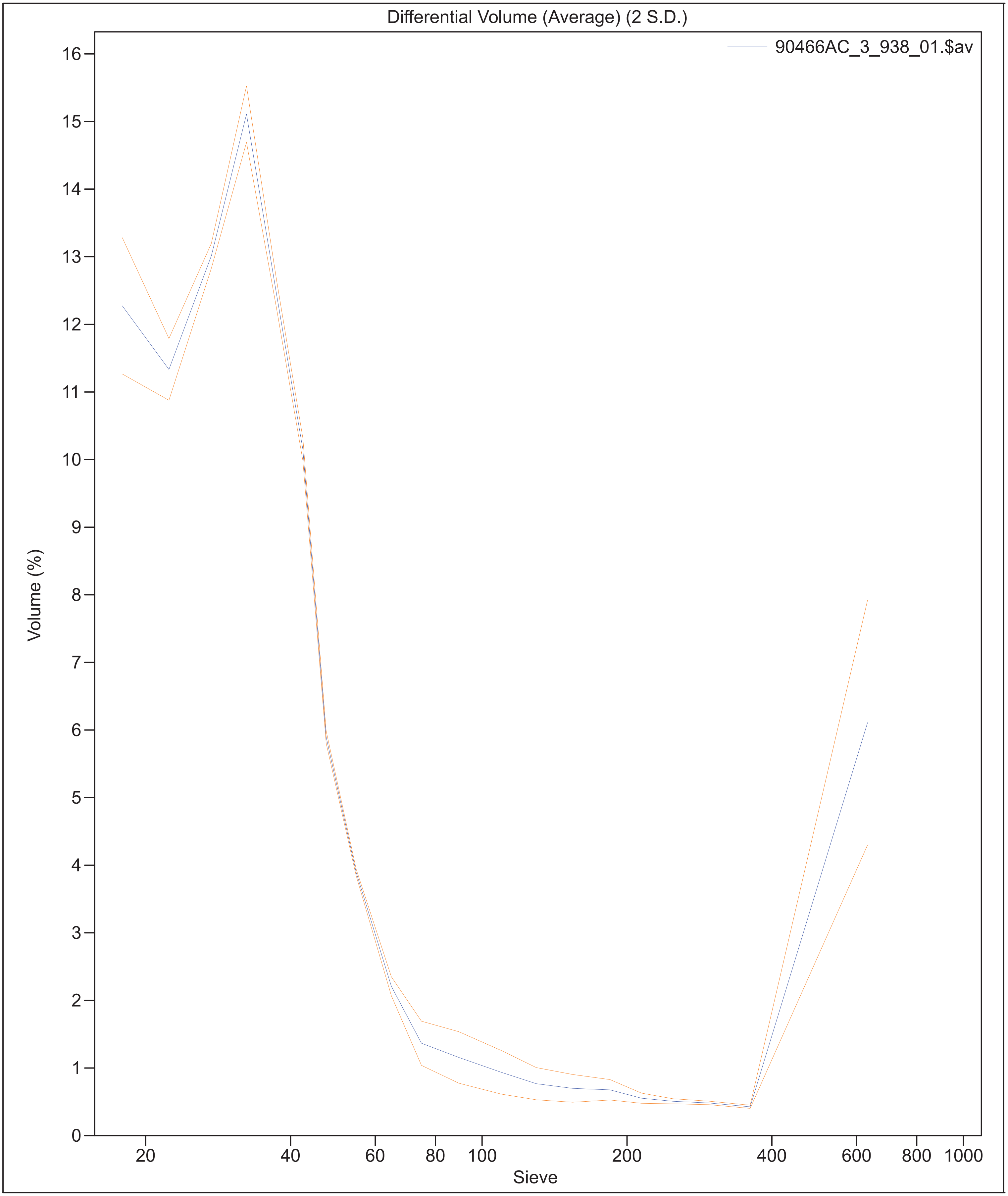
Mean:	1.10	Median:	0.97	Deviation:	1.26
Skewness:	0.44	Kurtosis:	2.29		

<10%	<25%	<50%	<75%	<90%
119.2 μm	349.6 μm	510.8 μm	697.3 μm	891.0 μm

LS Particle Size Analyzer

10 Jul 2024 15:56

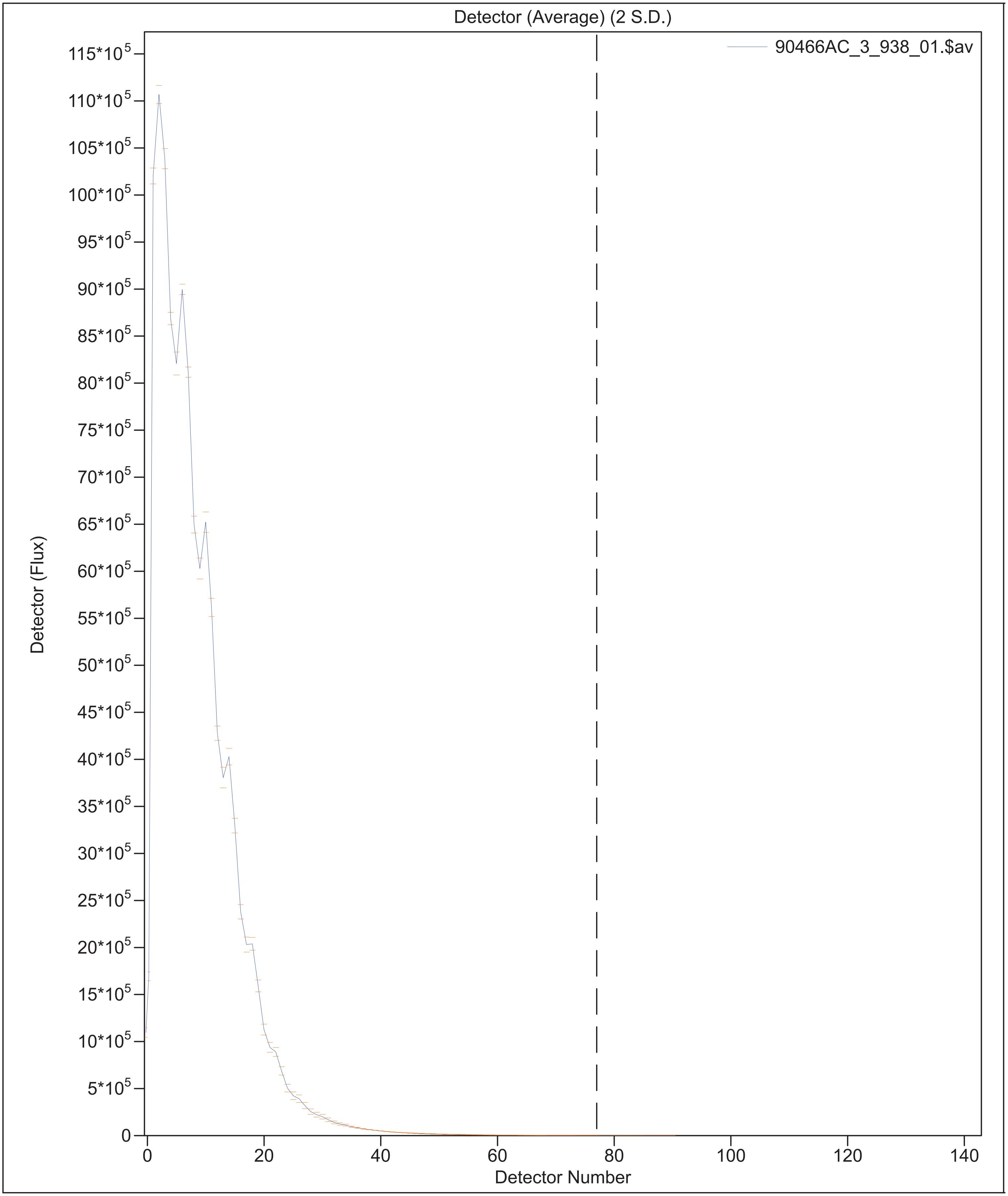
Beckman Coulter LS 13 320

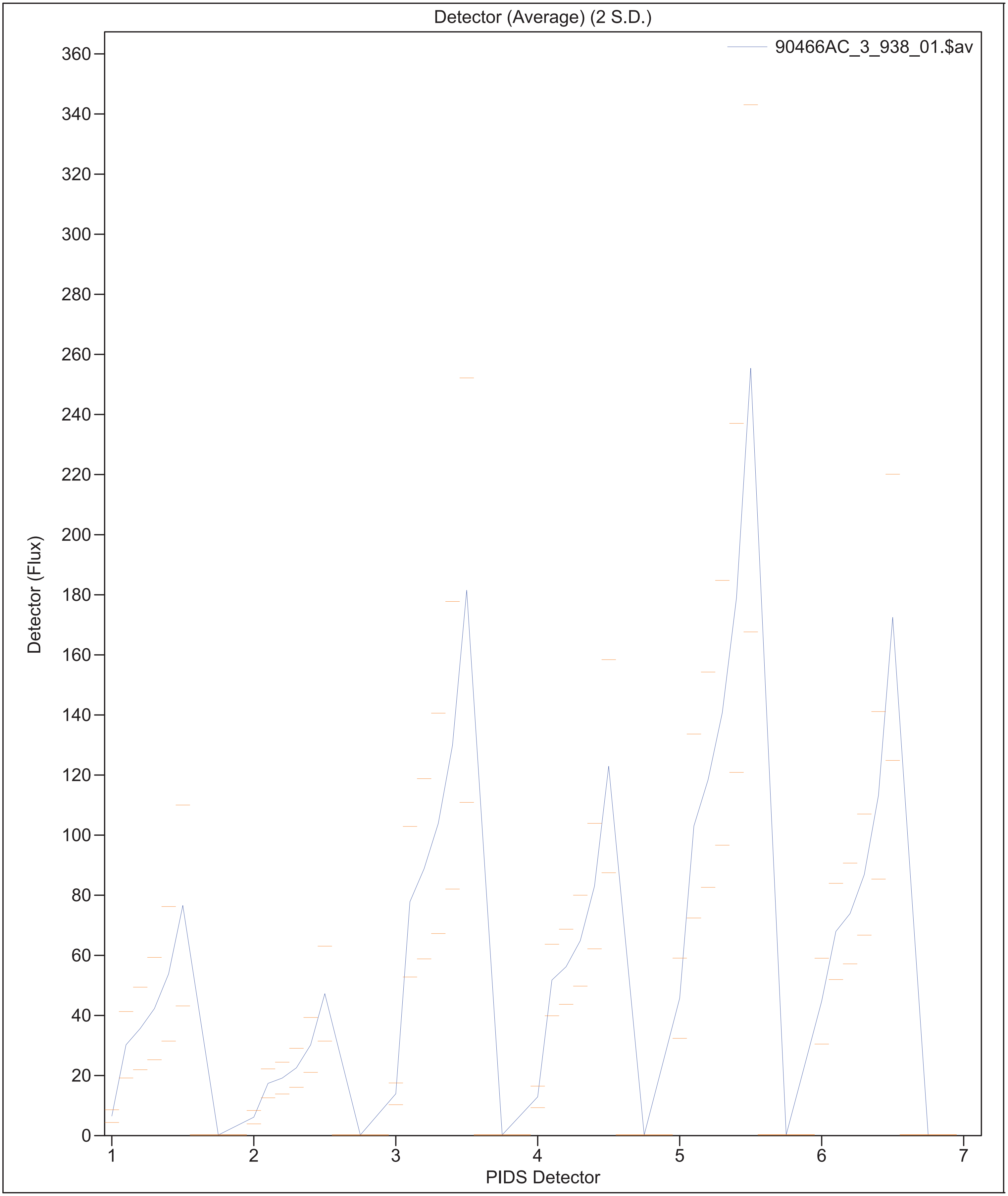


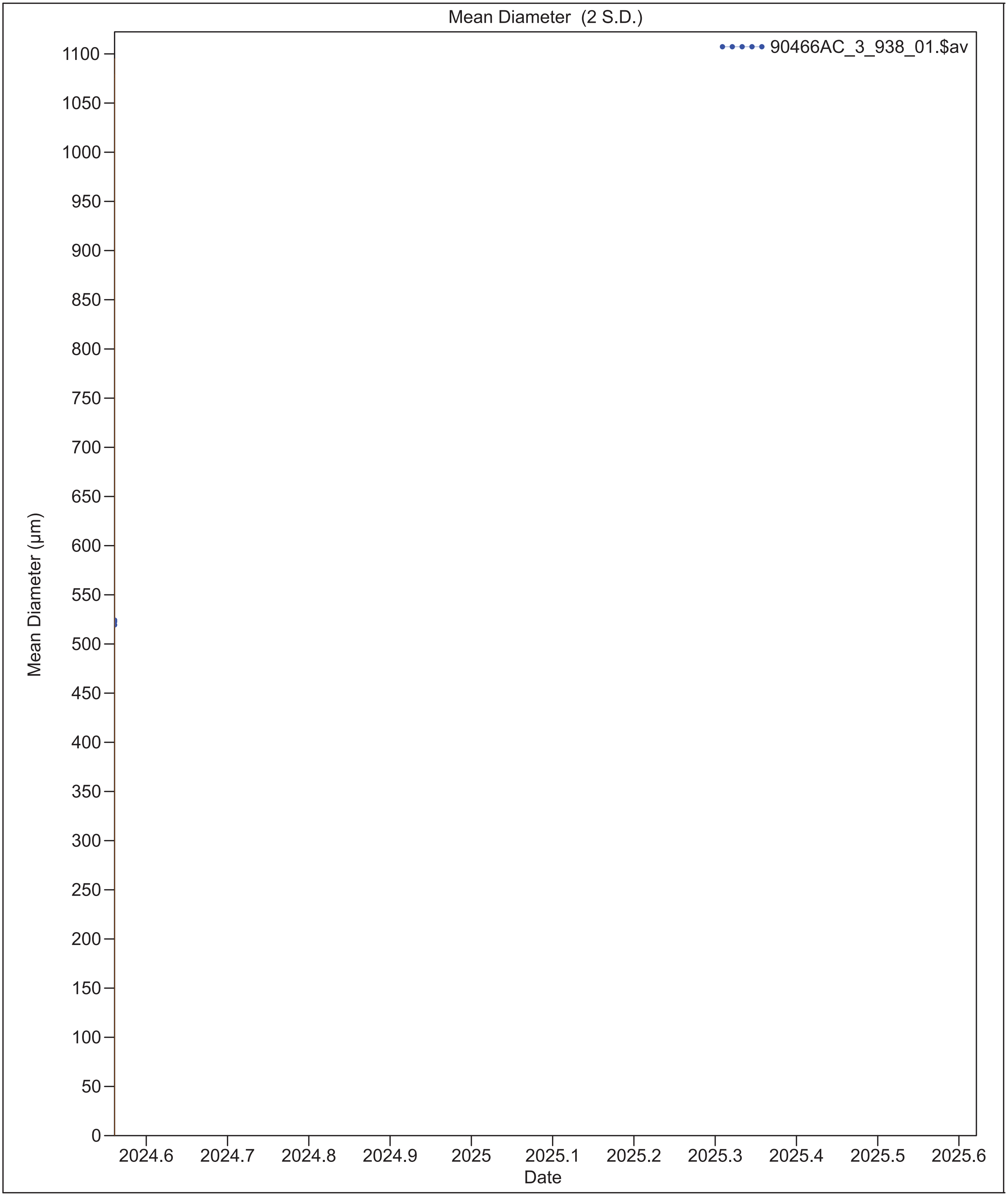
LS Particle Size Analyzer

10 Jul 2024 15:56

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90466AC_3_938_01.$av
Detector (Flux)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
PIDS Detector
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90466AC_3_938_01.$av
Mean Diameter (µm)
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

BECKMAN COULTER™

10 Jul 2024 15:56

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90466AC_3_938_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	522.0 µm	2.537	516.9	527.1
Median:	510.8 µm	1.731	507.3	514.2
S.D.:	280.5 µm	4.289	271.9	289.1
Variance:	78682 μm^2	2415	73851	83513
C.V.:	53.73%	0.641	52.45	55.01
Skewness:	0.225	0.032	0.160	0.289
Kurtosis:	-0.081	0.022	-0.125	-0.037
d_{10}:	118.0 µm	15.04	87.95	148.1
d_{50}:	510.8 µm	1.731	507.3	514.2
d_{90}:	891.0 µm	6.896	877.2	904.8

LS Particle Size Analyzer

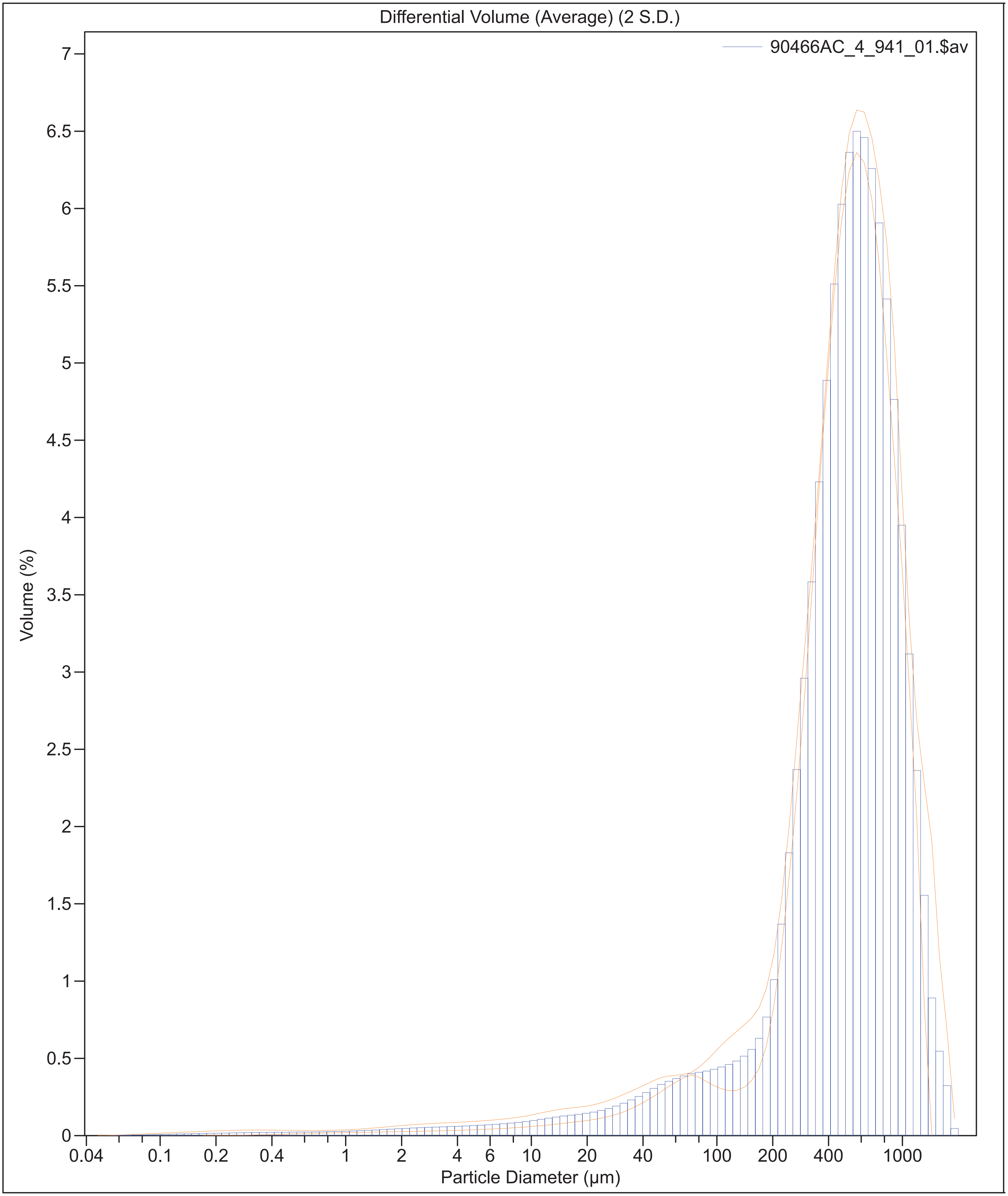
10 Jul 2024 16:04

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90466AC_4_941_01.$av		
	90466AC_4_941_01.$av		
File ID:	90466AC_4		
Sample ID:	90466AC_4		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	65		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_4_939_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_4_940_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90466AC_4_941_01.$ls

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 16:04

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90466AC_4_941_01.$av

Calculations from 0.040 μm to 2000 μm

Volume:	100%		
Mean:	566.4 μm	S.D.:	330.1 μm
Median:	527.4 μm	Variance:	109.0e3 μm^2
Mean/Median ratio:	1.074	C.V.:	58.3%
Mode:	567.7 μm	Skewness:	0.629 Right skewed
		Kurtosis:	0.419 Leptokurtic

d_{10}: 151.8 μm d_{50}: 527.4 μm d_{90}: 1014 μm

Folk and Ward Statistics (Phi)

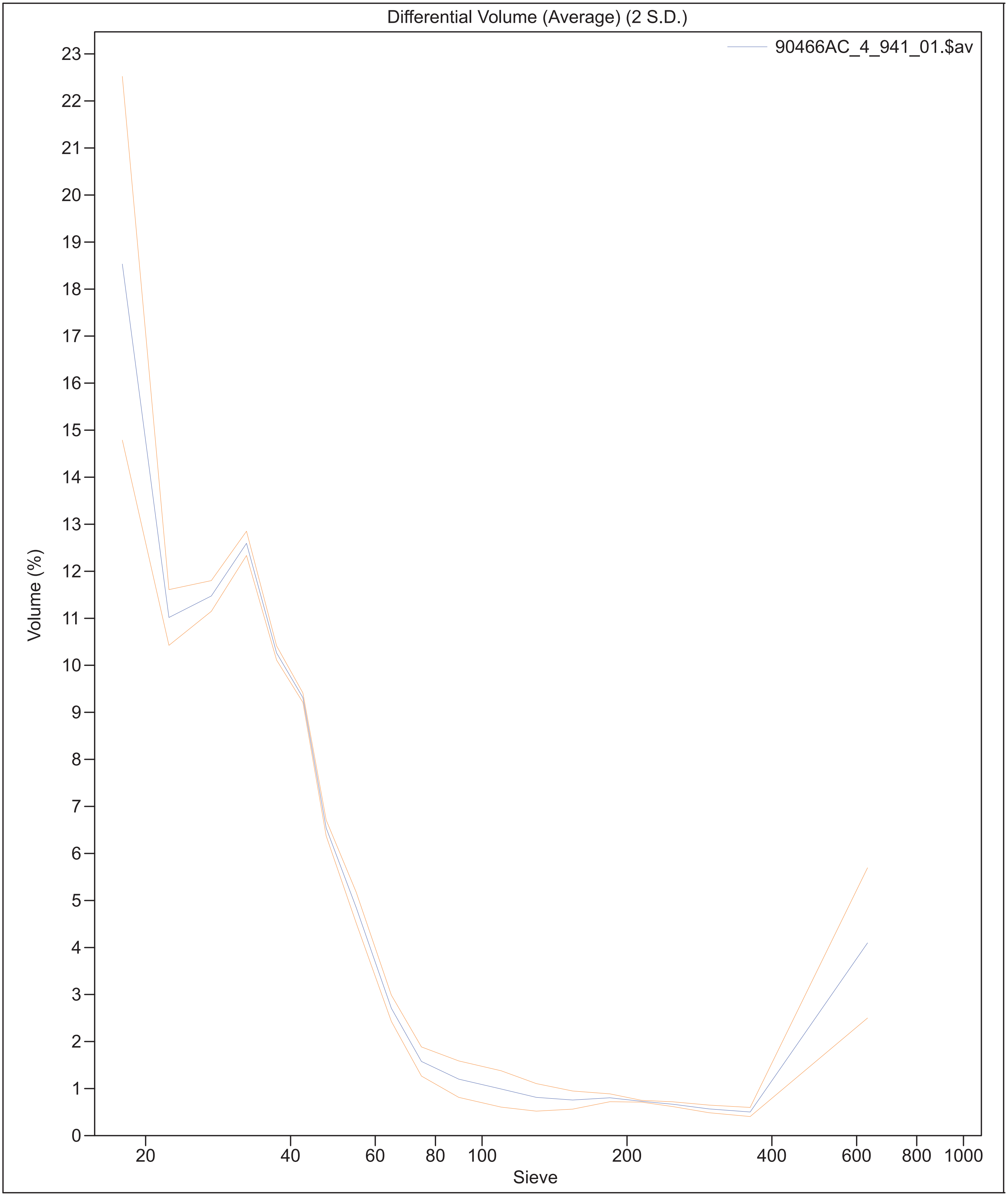
Mean:	1.02	Median:	0.92	Deviation:	1.14
Skewness:	0.32	Kurtosis:	1.60		

<10%	<25%	<50%	<75%	<90%
151.8 μm	340.8 μm	527.4 μm	762.9 μm	1014 μm

LS Particle Size Analyzer

10 Jul 2024 16:04

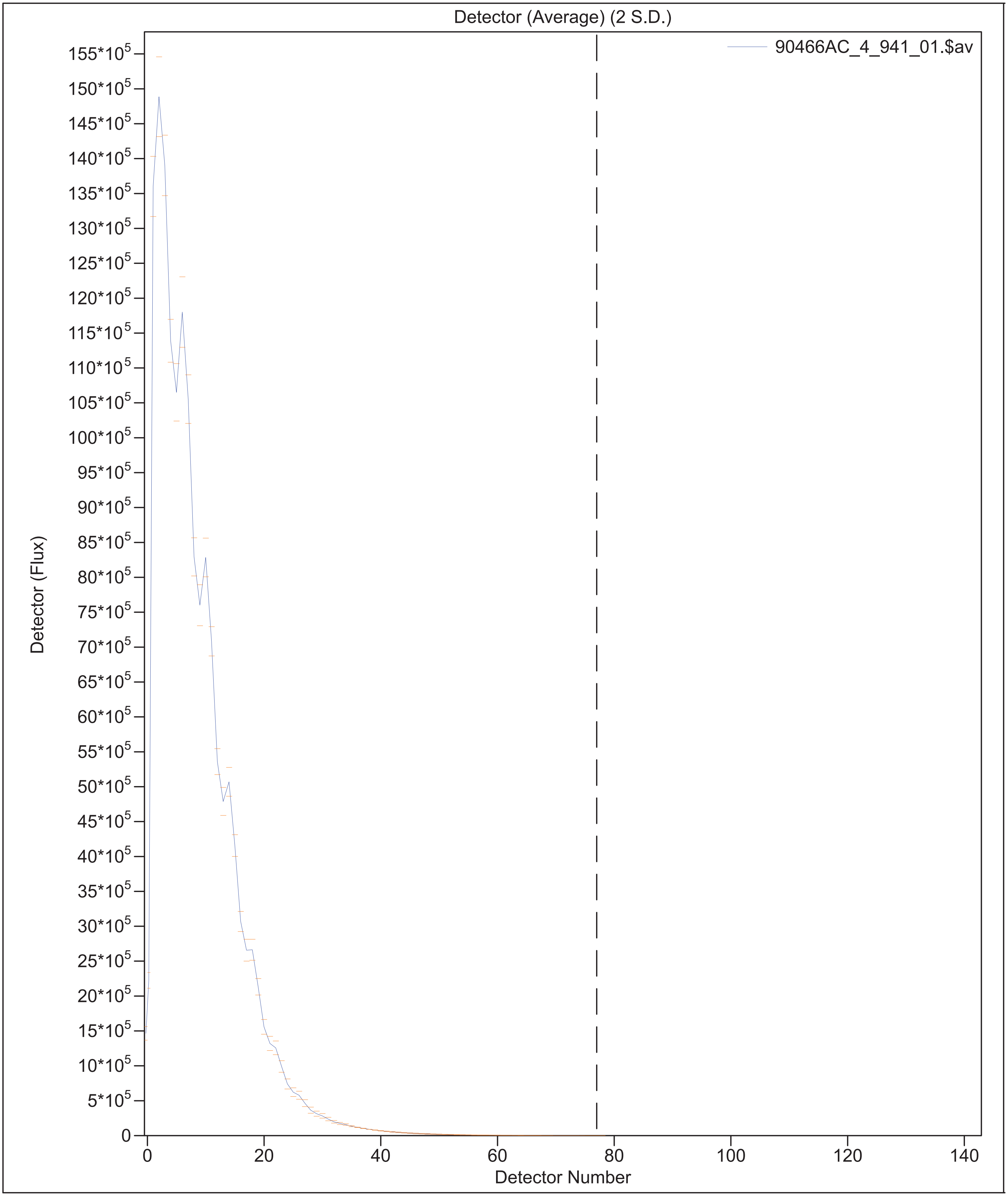
Beckman Coulter LS 13 320

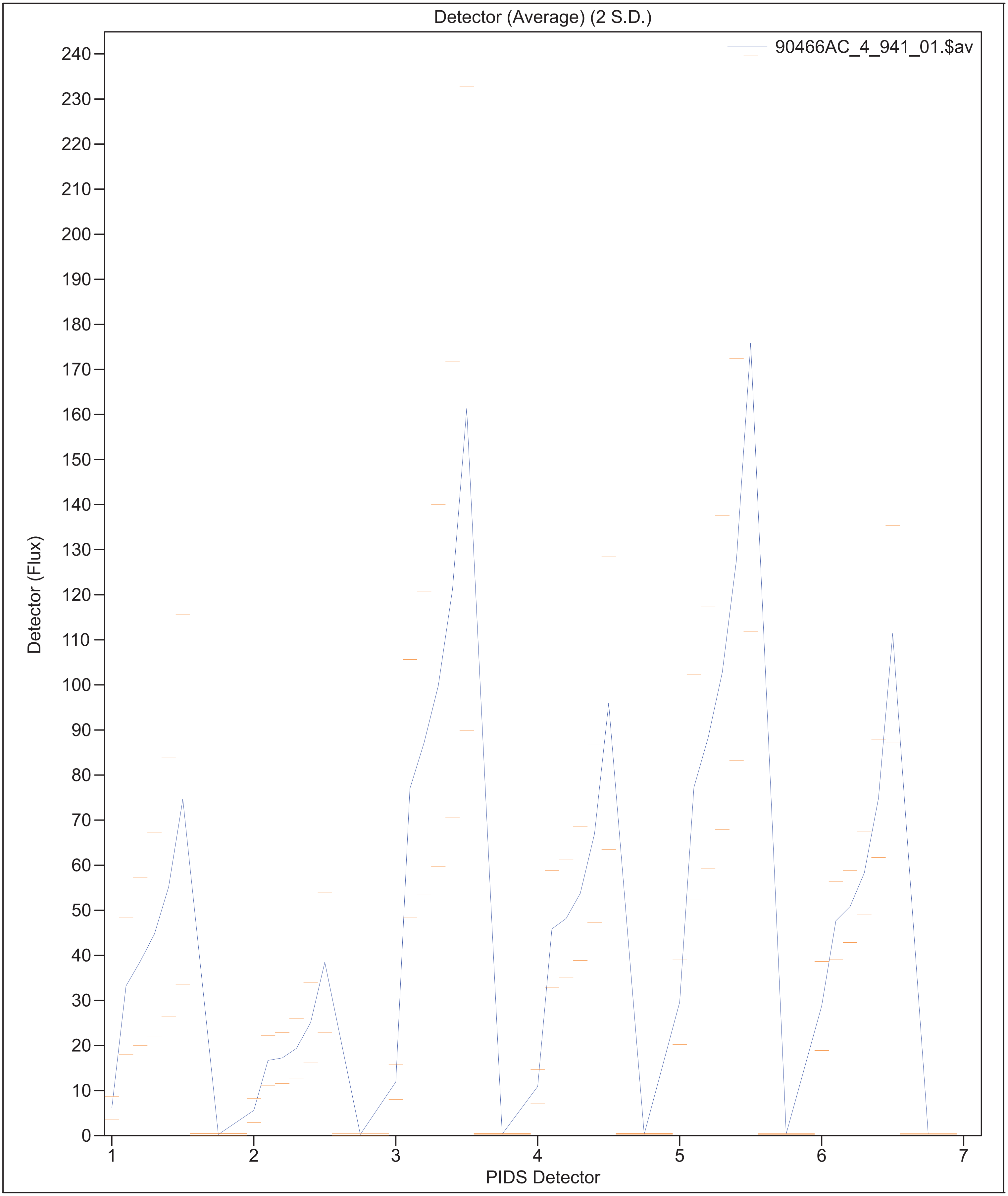


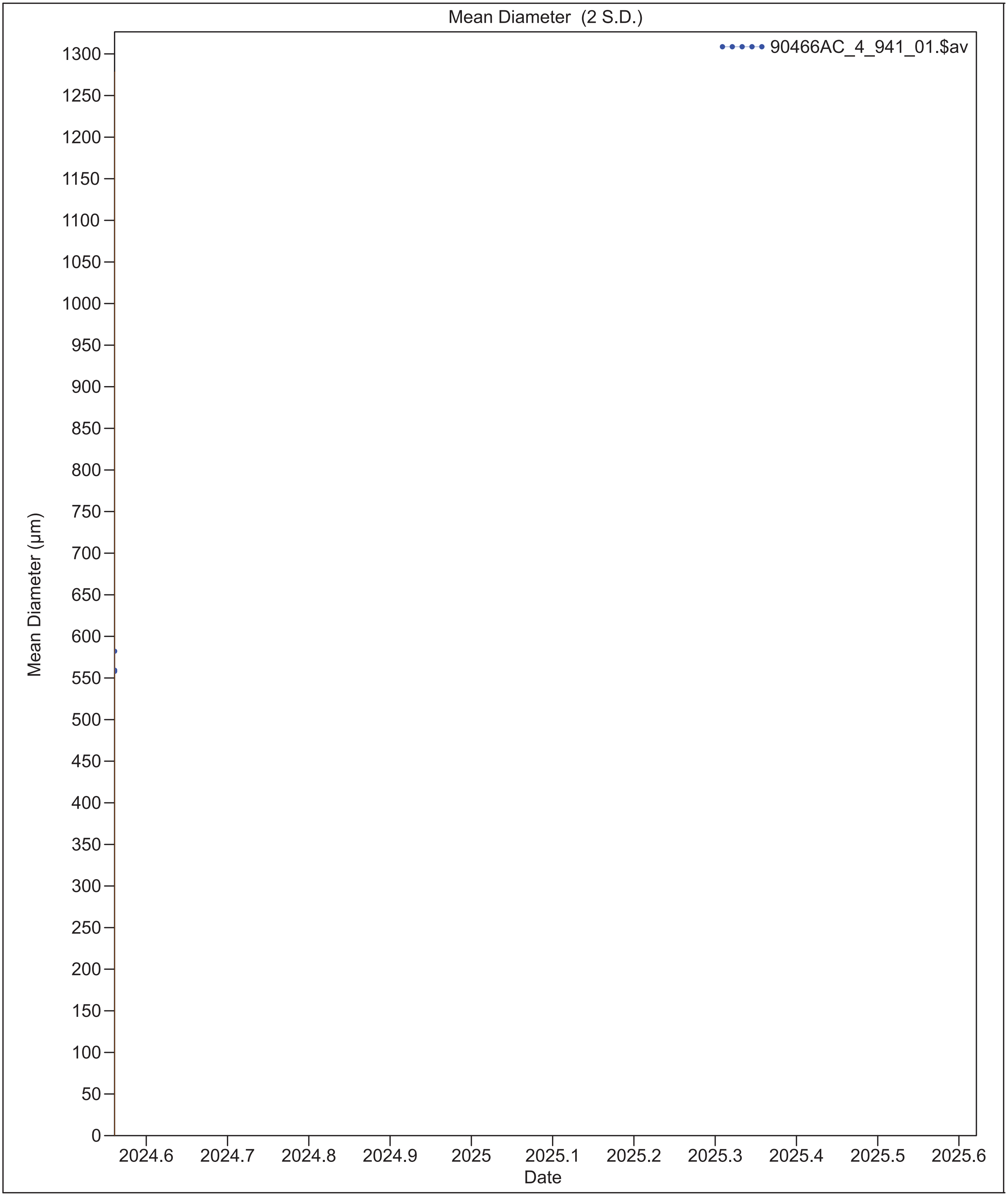
LS Particle Size Analyzer

10 Jul 2024 16:04

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90466AC_4_941_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
90466AC_4_941_01.$av
Mean Diameter (µm)
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

10 Jul 2024 16:04

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90466AC_4_941_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	566.4 µm	13.57	539.3	593.6
Median:	527.5 µm	5.398	516.7	538.3
S.D.:	329.7 µm	16.42	296.8	362.5
Variance:	108.8e3 µm^2	10943	86963	130.7e3
C.V.:	58.18%	1.597	54.98	61.37
Skewness:	0.610	0.099	0.412	0.809
Kurtosis:	0.355	0.207	-0.059	0.768
d_{10}:	150.8 µm	12.31	126.2	175.4
d_{50}:	527.5 µm	5.398	516.7	538.3
d_{90}:	1016 µm	37.67	940.6	1091

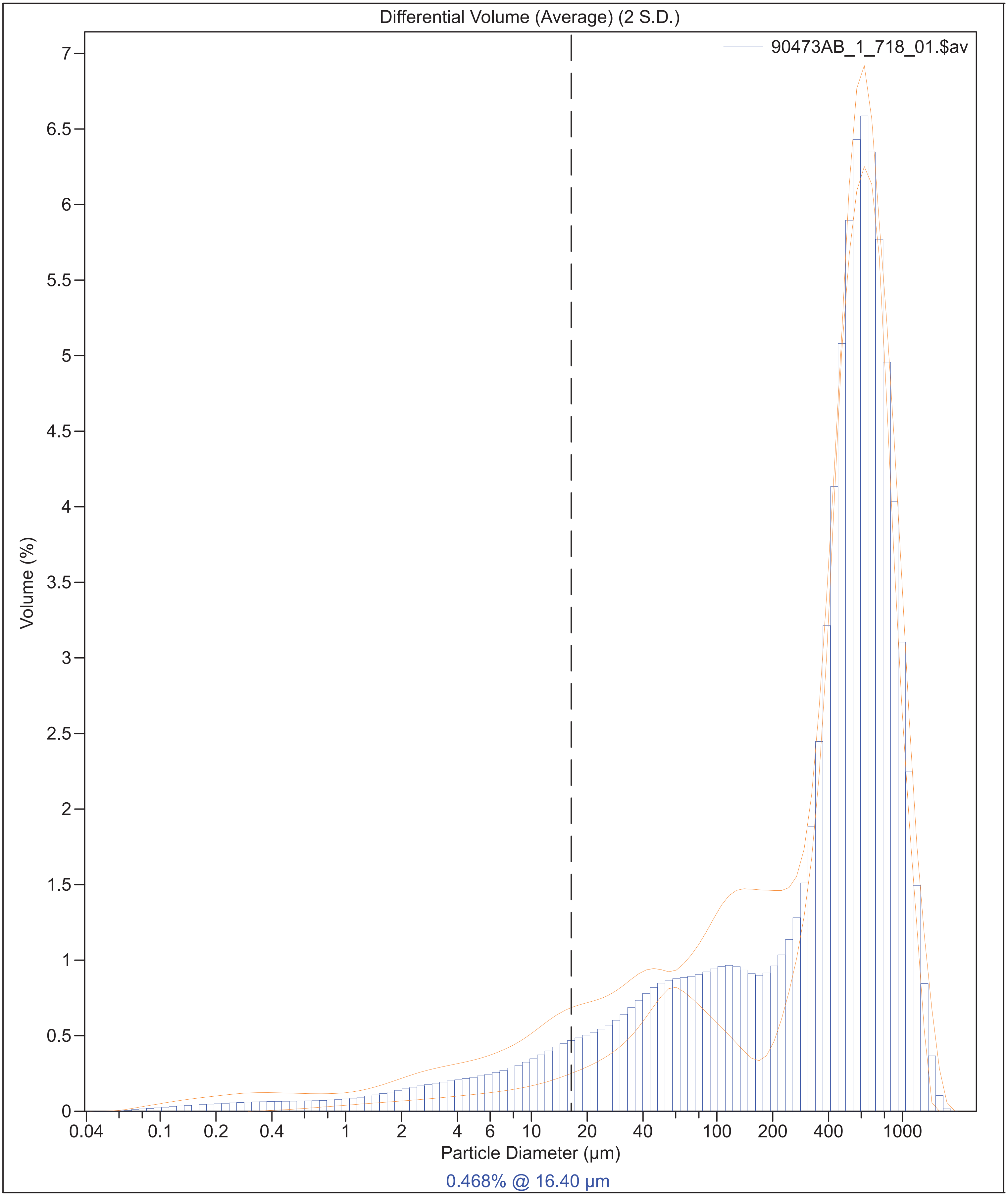
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90473AB_1_718_01.$av
	90473AB_1_718_01.$av
File ID:	90473AB_1
Sample ID:	90473AB_1
Operator:	ron
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90473AB_1_716_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90473AB_1_717_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90473AB_1_718_01.$ls

LS Particle Size Analyzer

9 Jul 2024 12:29

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90473AB_1_718_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	464.9 µm	S.D.:	337.1 µm
Median:	478.0 µm	Variance:	113.6e3 μm^2
Mean/Median ratio:	0.973	C.V.:	72.5%
Mode:	623.3 µm	Skewness:	0.348 Right skewed
		Kurtosis:	-0.540 Platykurtic

d_{10}: 22.48 µm d_{50}: 478.0 µm d_{90}: 910.2 µm

Folk and Ward Statistics (Phi)

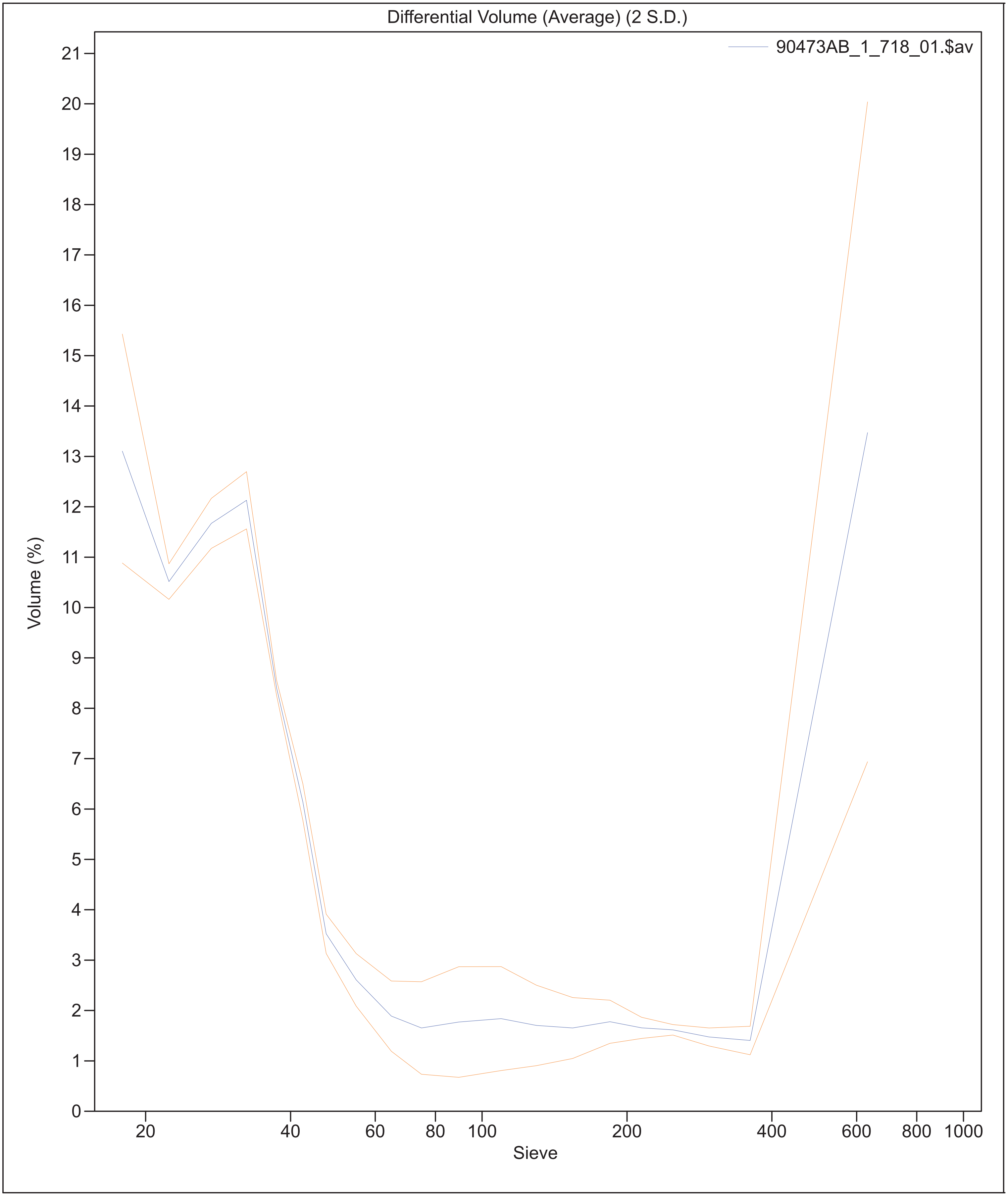
Mean:	1.89	Median:	1.06	Deviation:	2.09
Skewness:	0.65	Kurtosis:	1.21		

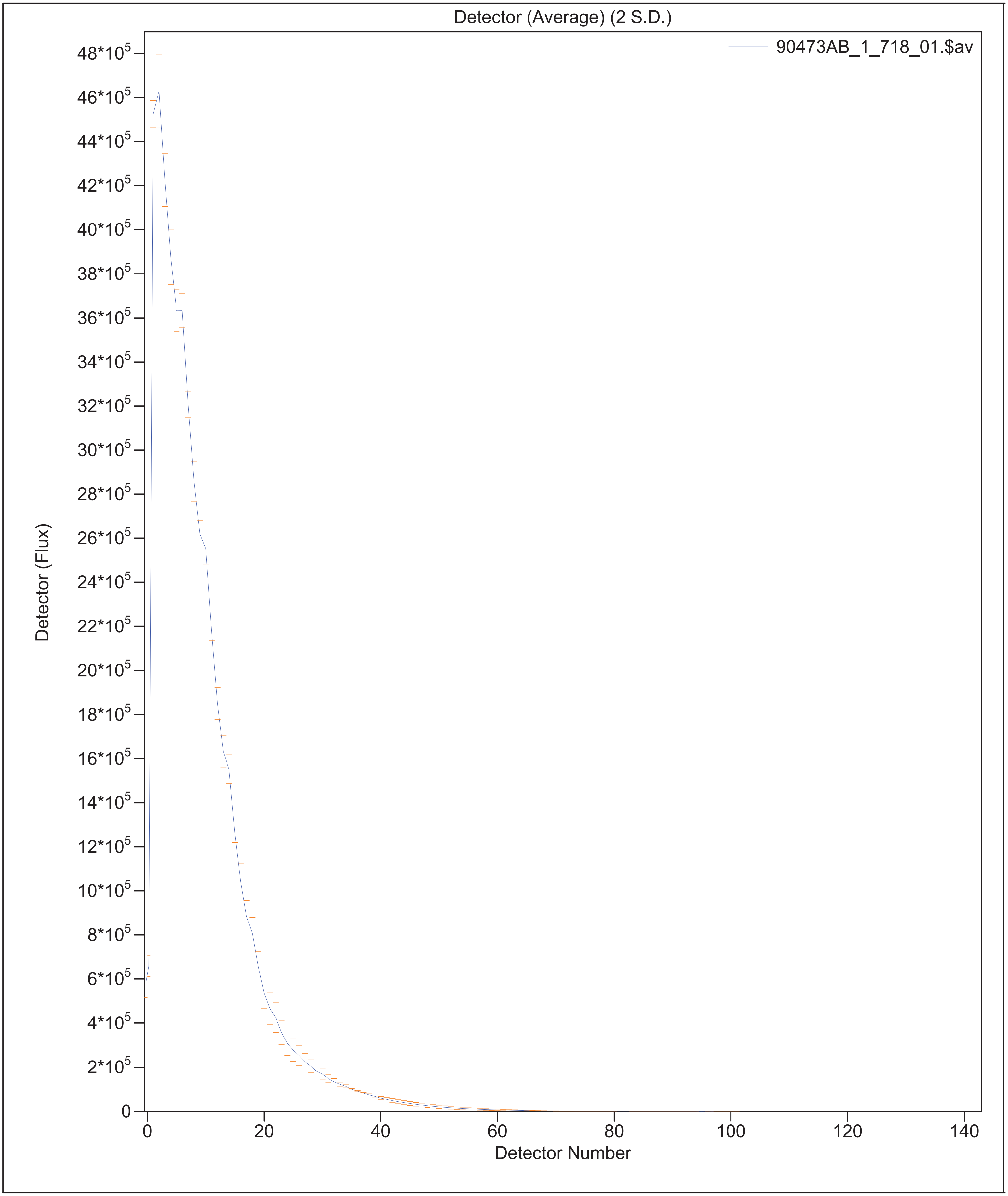
<10%	<25%	<50%	<75%	<90%
22.48 µm	128.0 µm	478.0 µm	696.1 µm	910.2 µm

LS Particle Size Analyzer

9 Jul 2024 12:29

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90473AB_1_718_01.$av
Detector (Flux)
48*10^5
46*10^5
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140
Detector Number

LS Particle Size Analyzer

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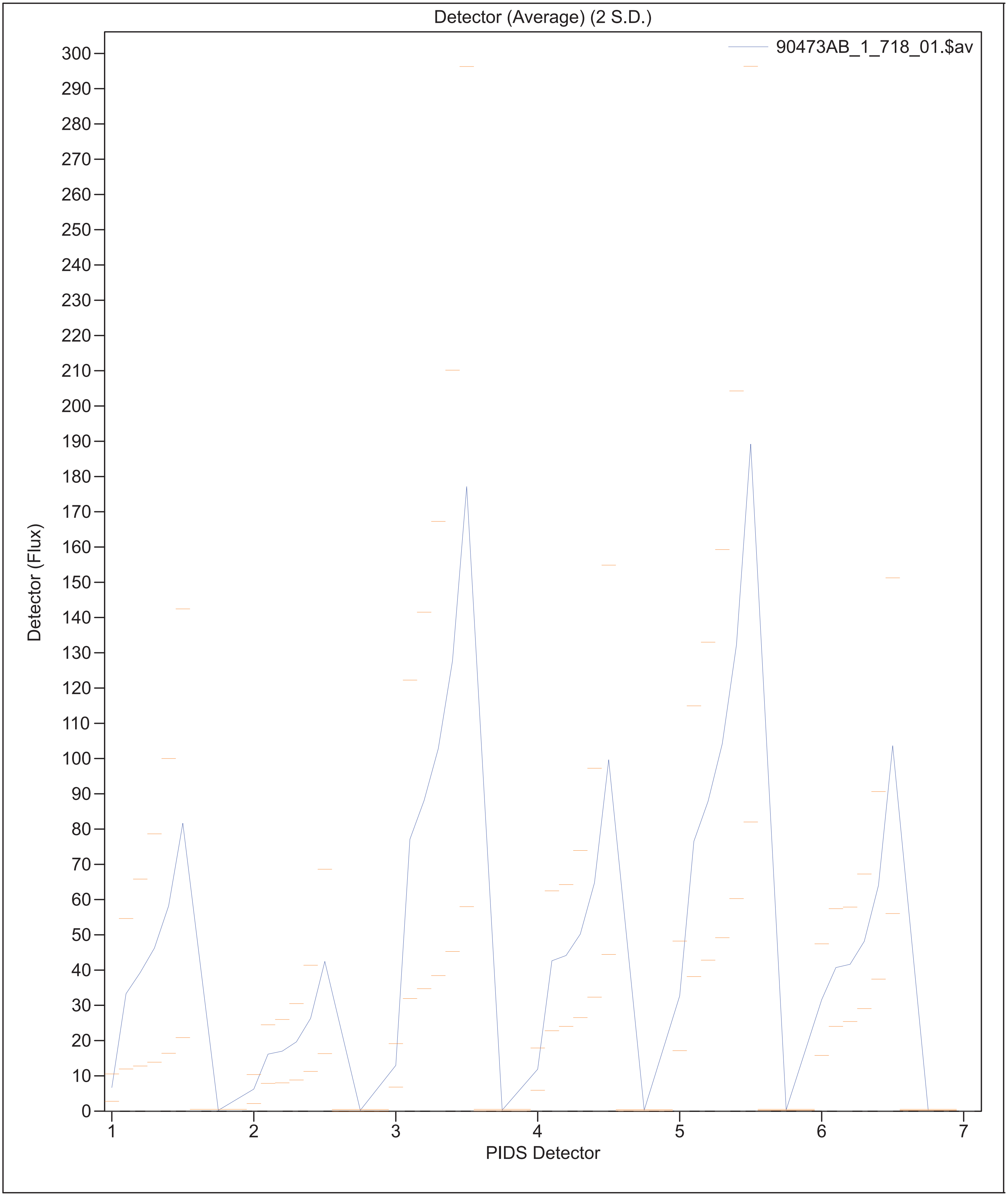
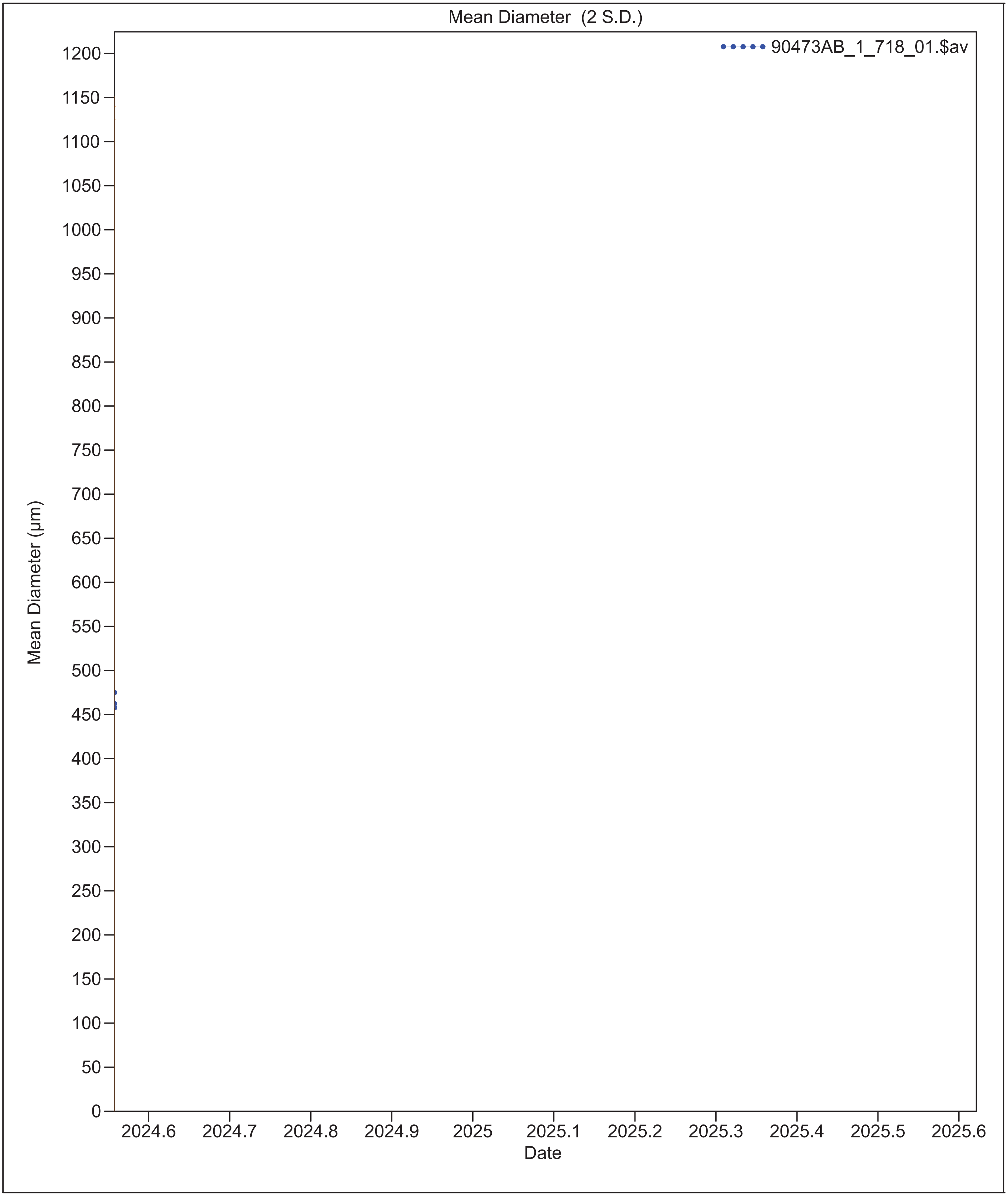
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 12:29

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 90473AB_1_718_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	464.9 µm	8.931	447.1	482.8
Median:	478.0 µm	2.198	473.6	482.4
S.D.:	337.0 µm	6.710	323.6	350.4
Variance:	113.6e3 μm^2	4547	104.5e3	122.7e3
C.V.:	72.50%	2.311	67.88	77.13
Skewness:	0.347	0.054	0.240	0.454
Kurtosis:	-0.551	0.152	-0.854	-0.247
d_{10}:	24.80 µm	12.62	0	50.04
d_{50}:	478.0 µm	2.198	473.6	482.4
d_{90}:	910.1 µm	10.91	888.2	931.9

LS Particle Size Analyzer

9 Jul 2024 12:43

Beckman Coulter LS 13 320

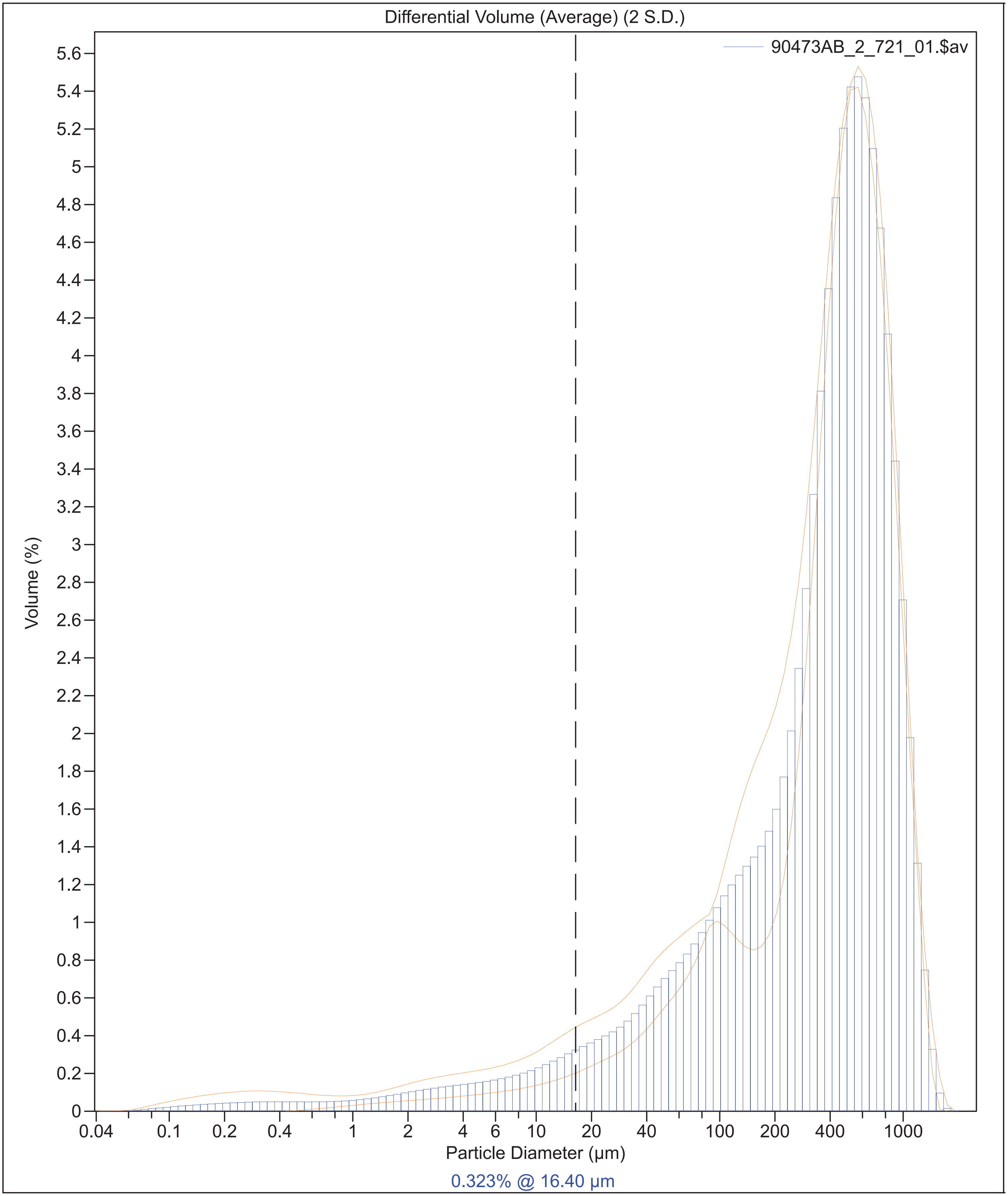
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90473AB_2_721_01.$av
	90473AB_2_721_01.$av
File ID:	90473AB_2
Sample ID:	90473AB_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90473AB_2_719_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90473AB_2_720_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90473AB_2_721_01.$ls

LS Particle Size Analyzer

9 Jul 2024 12:43

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90473AB_2_721_01.$av

Calculations from 0.040 µm to 2000 µm

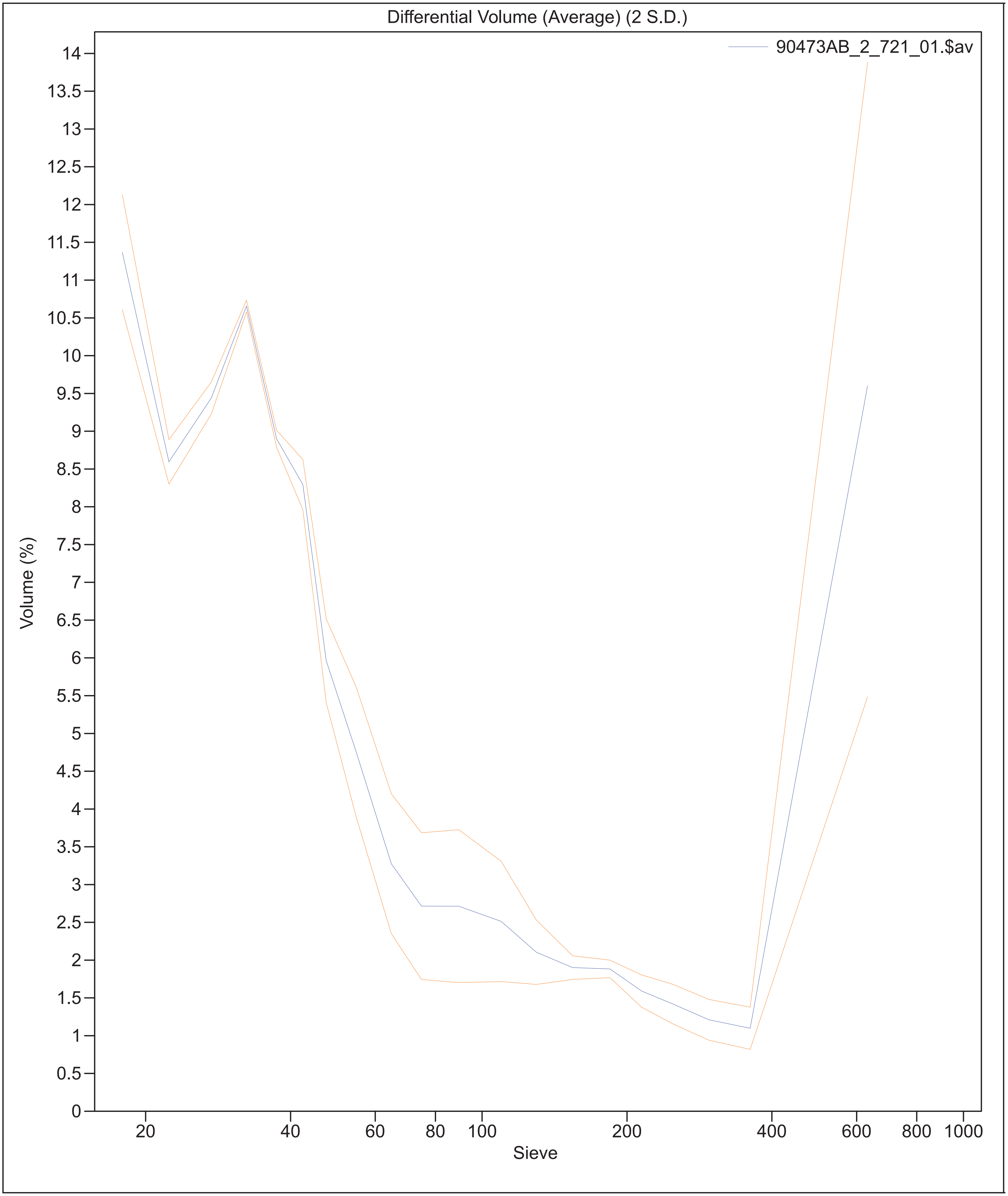
Volume:	100%		
Mean:	441.6 µm	S.D.:	317.4 µm
Median:	416.4 µm	Variance:	100.8e3 µm^2
Mean/Median ratio:	1.061	C.V.:	71.9%
Mode:	567.7 µm	Skewness:	0.584 Right skewed
		Kurtosis:	-0.142 Platykurtic

d_{10}: 40.52 µm d_{50}: 416.4 µm d_{90}: 879.3 µm

Folk and Ward Statistics (Phi)

Mean:	1.74	Median:	1.26	Deviation:	1.76
Skewness:	0.52	Kurtosis:	1.33		

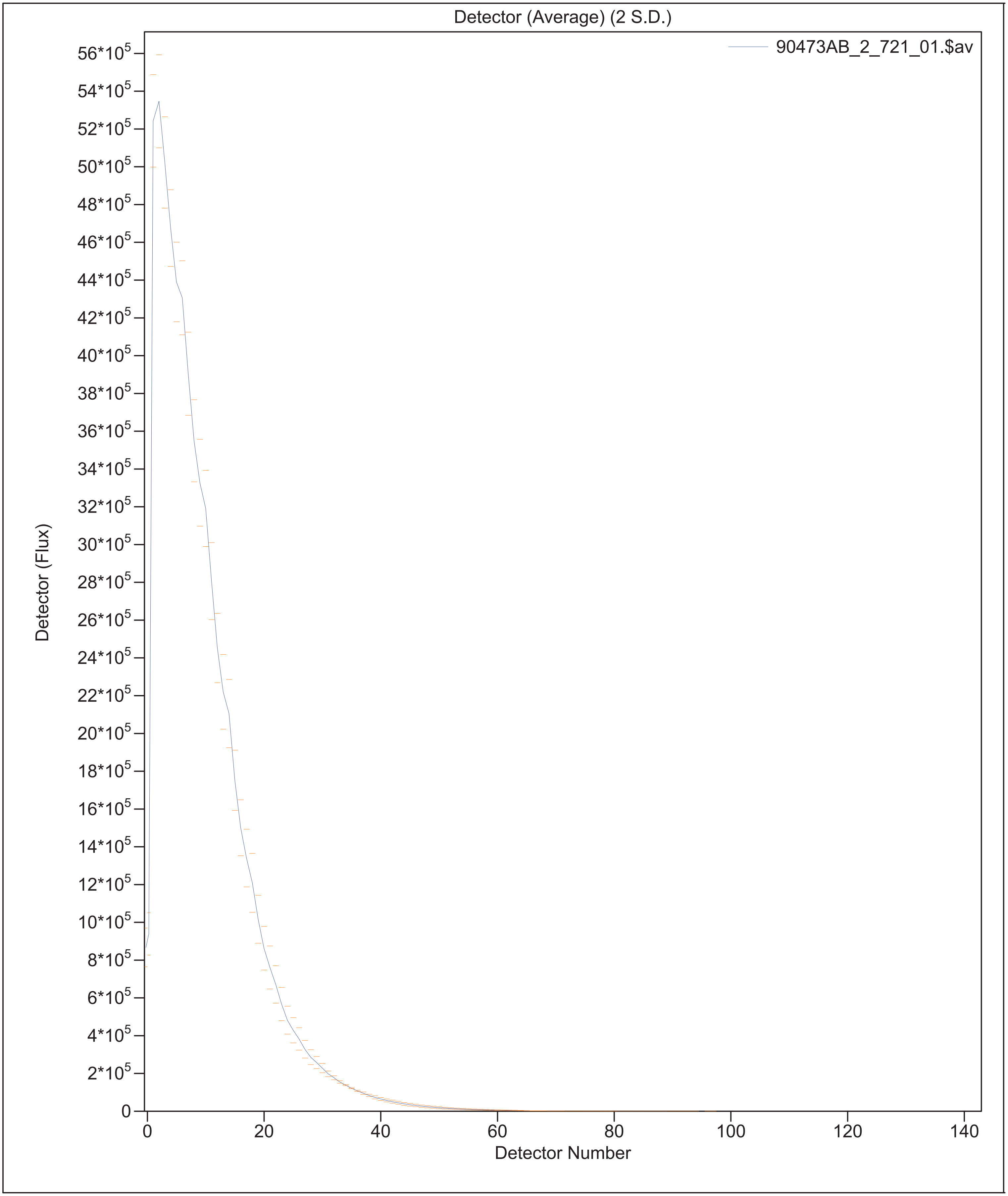
<10%	<25%	<50%	<75%	<90%
40.52 µm	168.2 µm	416.4 µm	647.7 µm	879.3 µm


Differential Volume (Average) (2 S.D.)
90473AB_2_721_01.$av
Volume (%)
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

9 Jul 2024 12:43

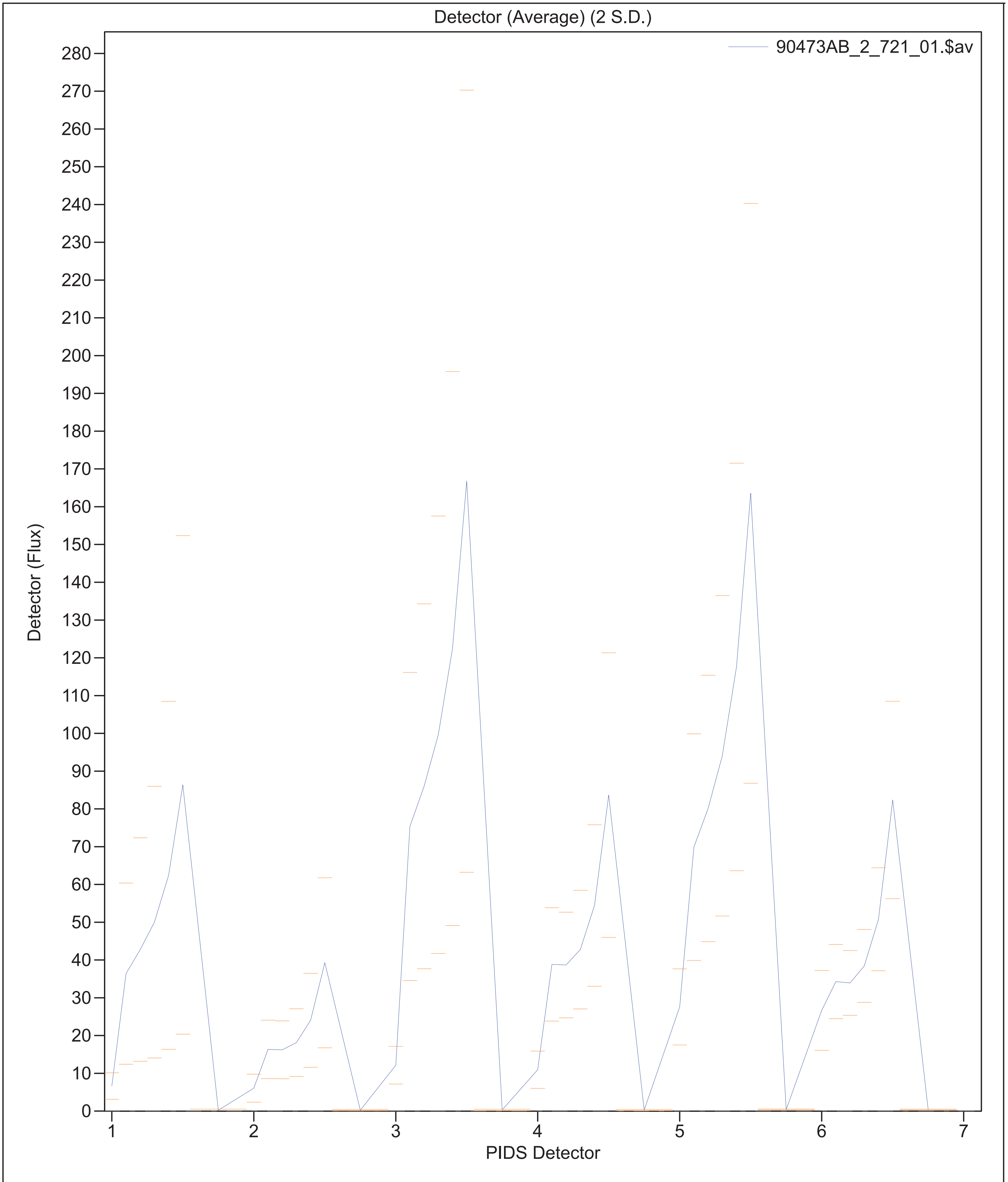
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 12:43

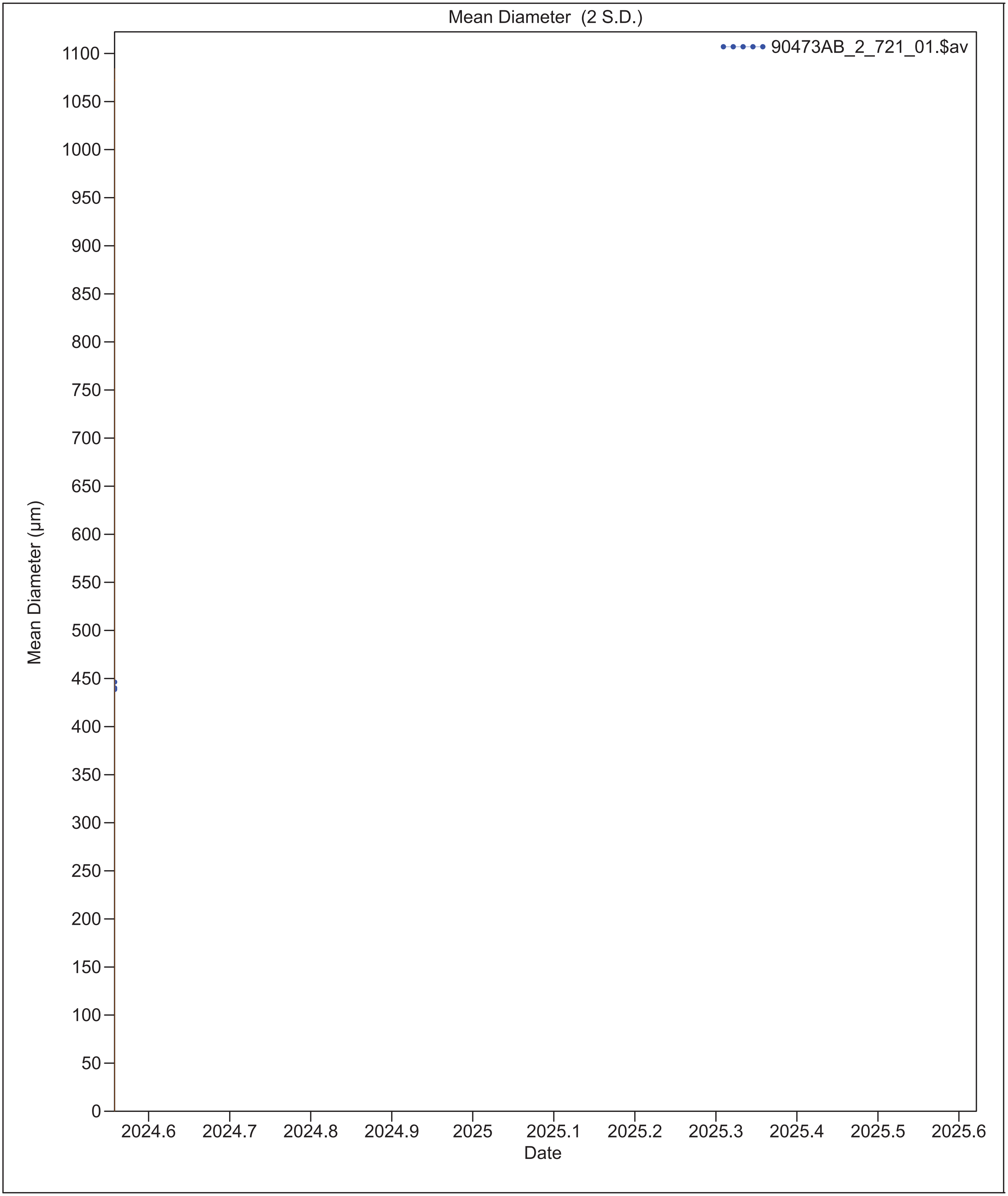
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 12:43

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)   Average of 3 files   90473AB_2_721_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	441.6 µm	4.080	433.5	449.8
Median:	416.4 µm	2.012	412.4	420.4
S.D.:	317.4 µm	5.060	307.3	327.5
Variance:	100.8e3 μm^2	3218	94320	107.2e3
C.V.:	71.88%	1.761	68.36	75.40
Skewness:	0.586	0.056	0.474	0.699
Kurtosis:	-0.142	0.148	-0.439	0.155
d_{10}:	42.02 µm	14.65	12.72	71.32
d_{50}:	416.4 µm	2.012	412.4	420.4
d_{90}:	879.3 µm	0.213	878.8	879.7

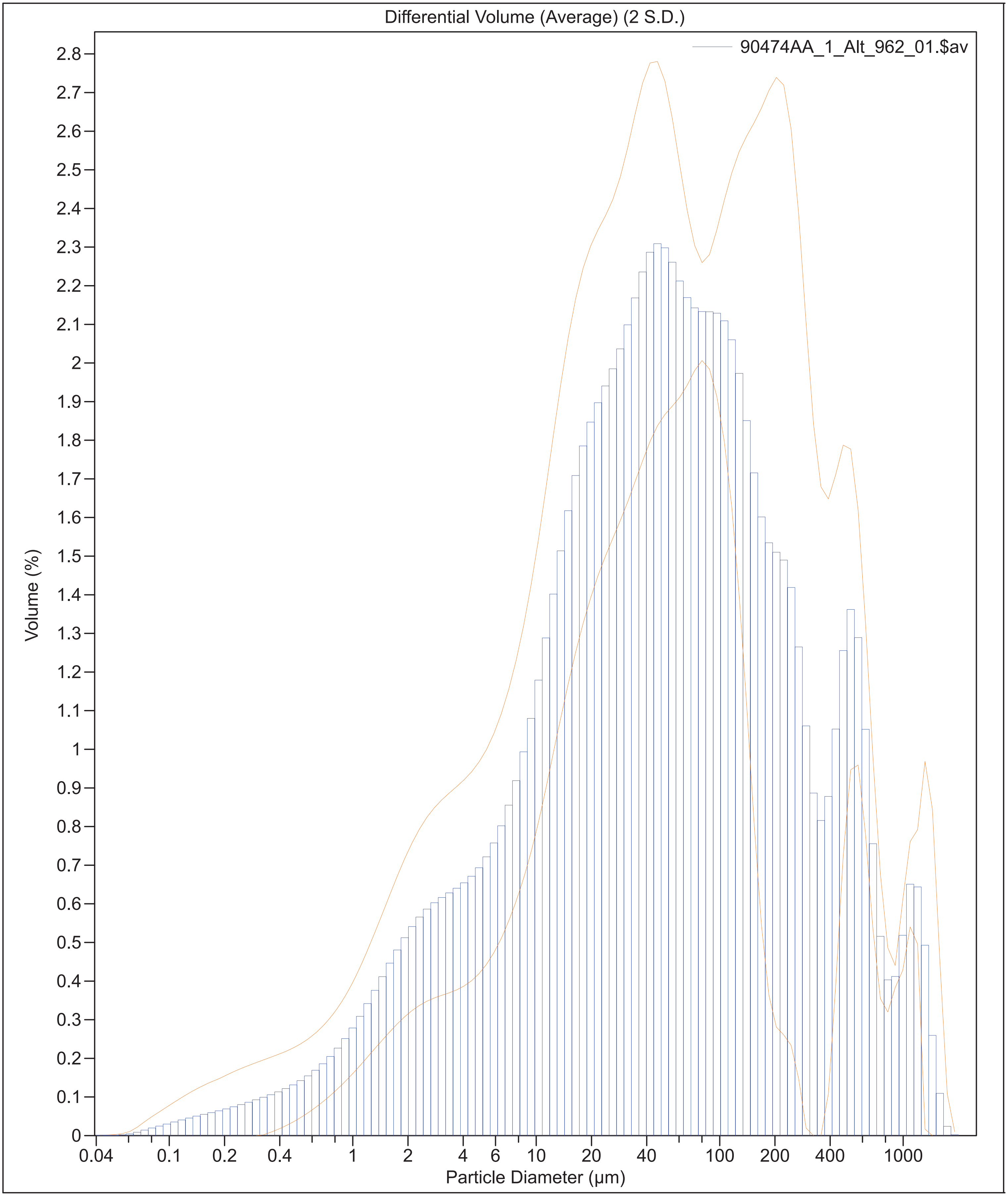
LS Particle Size Analyzer

10 Jul 2024 16:58

Beckman Coulter LS 13 320

File name:	C:\LS13320\Samples\NOAA-CZM FY23\90474AA_1_Alt_962_01.$av
	90474AA_1_Alt_962_01.$av
File ID:	90474AA_1_Alt
Sample ID:	90474AA_1_Alt
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_1_Alt_960_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_1_Alt_961_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_1_Alt_962_01.$ls


Differential Volume (Average) (2 S.D.)
90474AA_1_Alt_962_01.$av
Volume (%)
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.04
0.1
0.2
0.4
1
2
4
6
10
20
40
100
200
400
1000
Particle Diameter (μm)

Volume Statistics (Arithmetic) 90474AA_1_Alt_962_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	144.6 µm	S.D.:	242.8 µm
Median:	48.85 µm	Variance:	58972 $µm^2$
Mean/Median ratio:	2.960	C.V.:	168%
Mode:	45.75 µm	Skewness:	2.953 Right skewed
		Kurtosis:	9.692 Leptokurtic

d_{10}: 3.806 µm d_{50}: 48.85 µm d_{90}: 440.0 µm

Folk and Ward Statistics (Phi)

Mean:	4.44	Median:	4.36	Deviation:	2.54
Skewness:	0.09	Kurtosis:	1.08		

<10%	<25%	<50%	<75%	<90%
3.806 µm	15.43 µm	48.85 µm	146.6 µm	440.0 µm

LS Particle Size Analyzer

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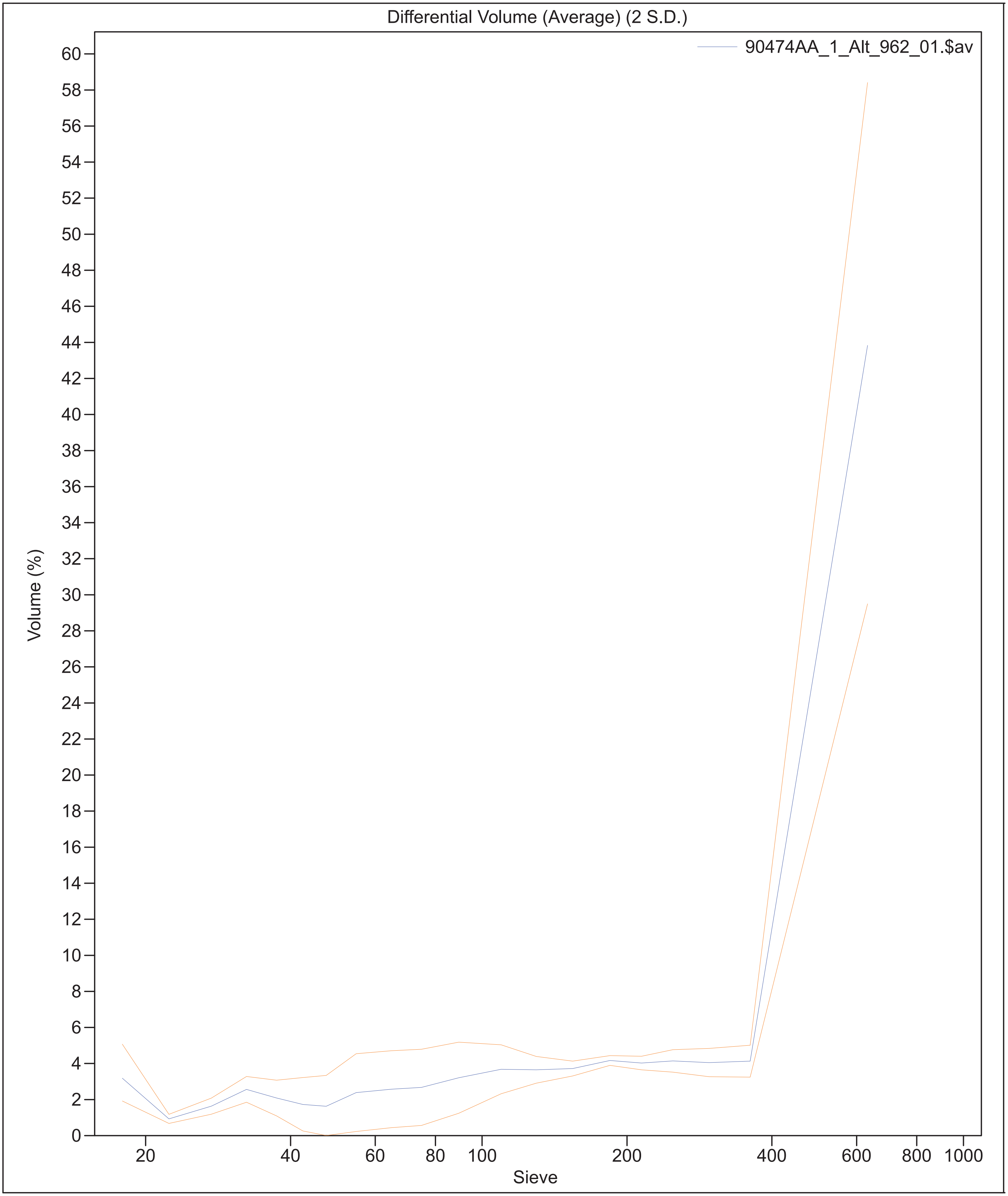
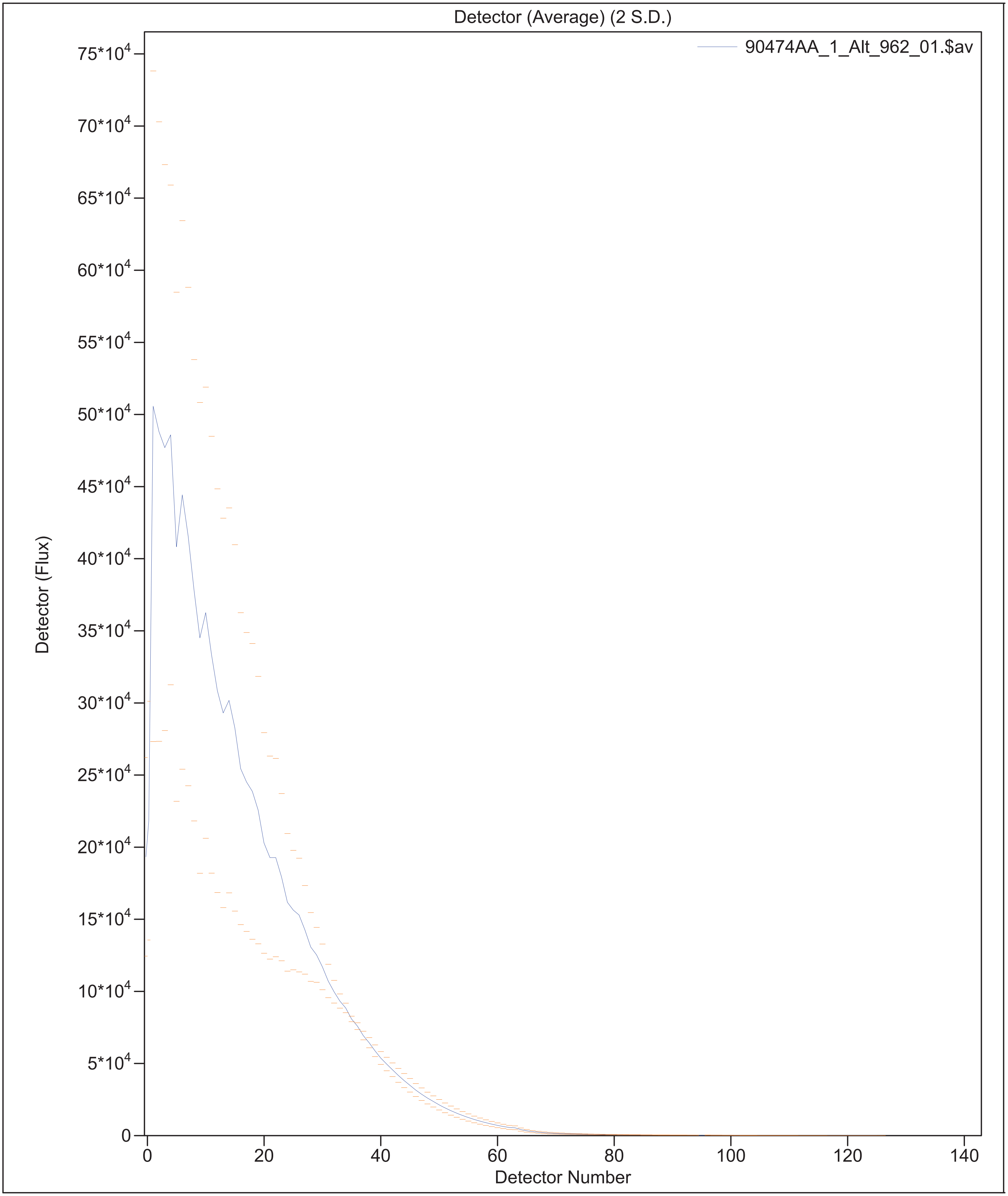
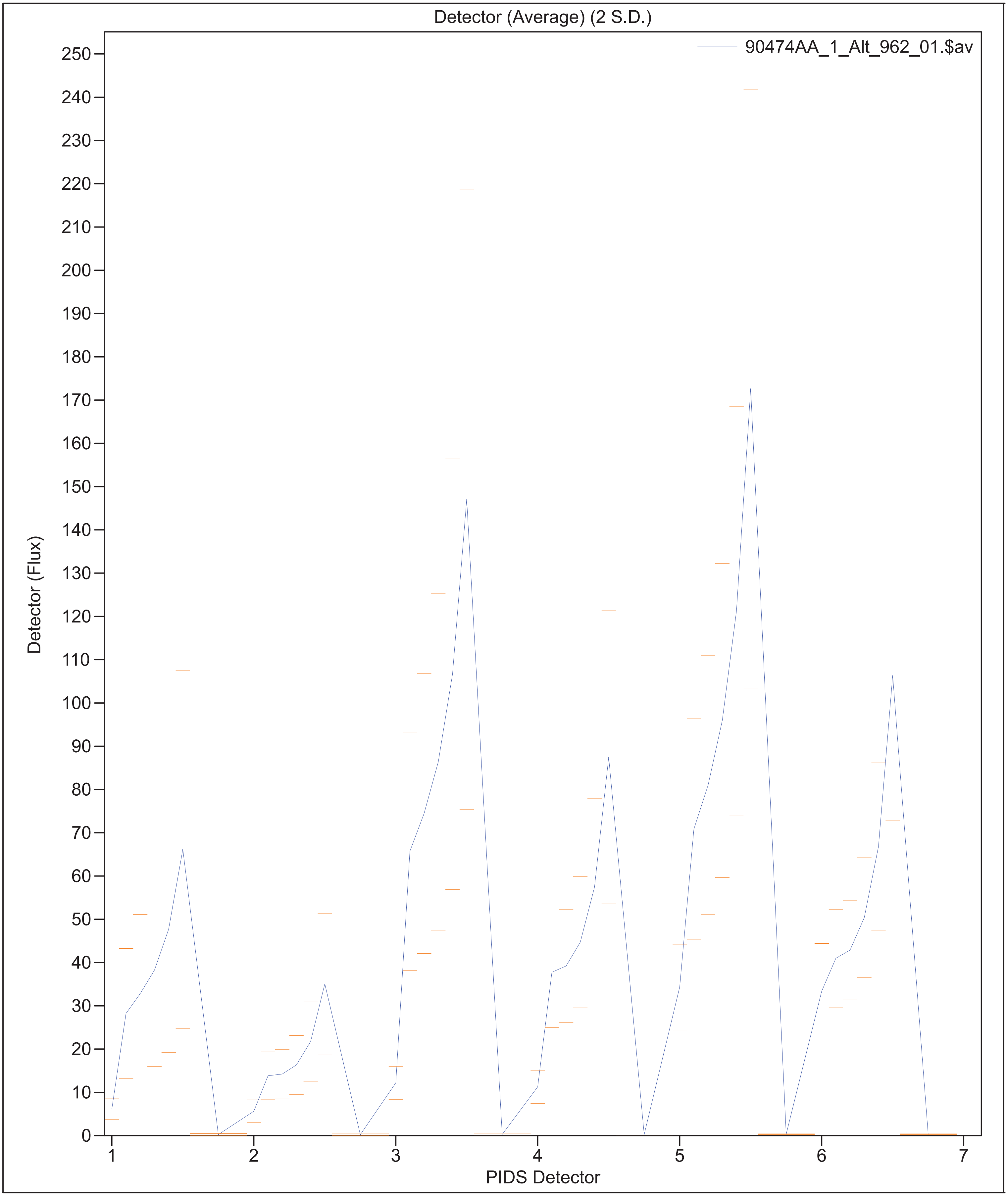
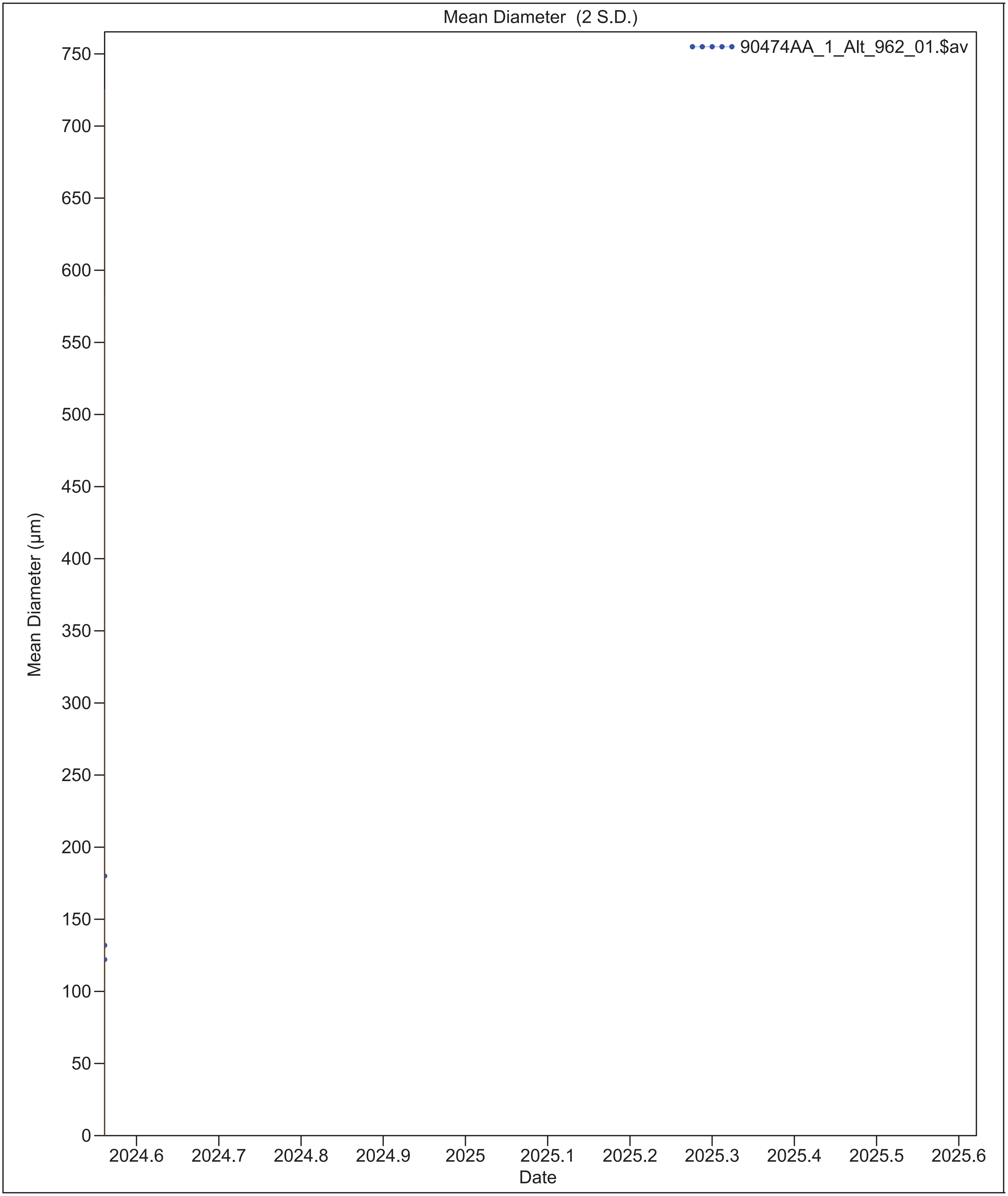
Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90474AA_1_Alt_962_01.$av
Detector (Flux)
Detector Number
75*10^4
70*10^4
65*10^4
60*10^4
55*10^4
50*10^4
45*10^4
40*10^4
35*10^4
30*10^4
25*10^4
20*10^4
15*10^4
10*10^4
5*10^4
0
0
20
40
60
80
100
120
140

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90474AA_1_Alt_962_01.$av
Mean Diameter (µm)
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

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LS Particle Size Analyzer

10 Jul 2024 16:58

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90474AA_1_Alt_962_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	144.6 µm	30.98	82.64	206.6
Median:	51.93 µm	18.18	15.56	88.29
S.D.:	240.4 µm	28.10	184.2	296.6
Variance:	58332 $µm^2$	13967	30398	86266
C.V.:	168.5%	15.91	136.7	200.3
Skewness:	2.941	0.170	2.602	3.280
Kurtosis:	9.424	0.878	7.667	11.18
d_{10}:	4.176 µm	1.711	0.754	7.599
d_{50}:	51.93 µm	18.18	15.56	88.29
d_{90}:	425.9 µm	61.32	303.2	548.5

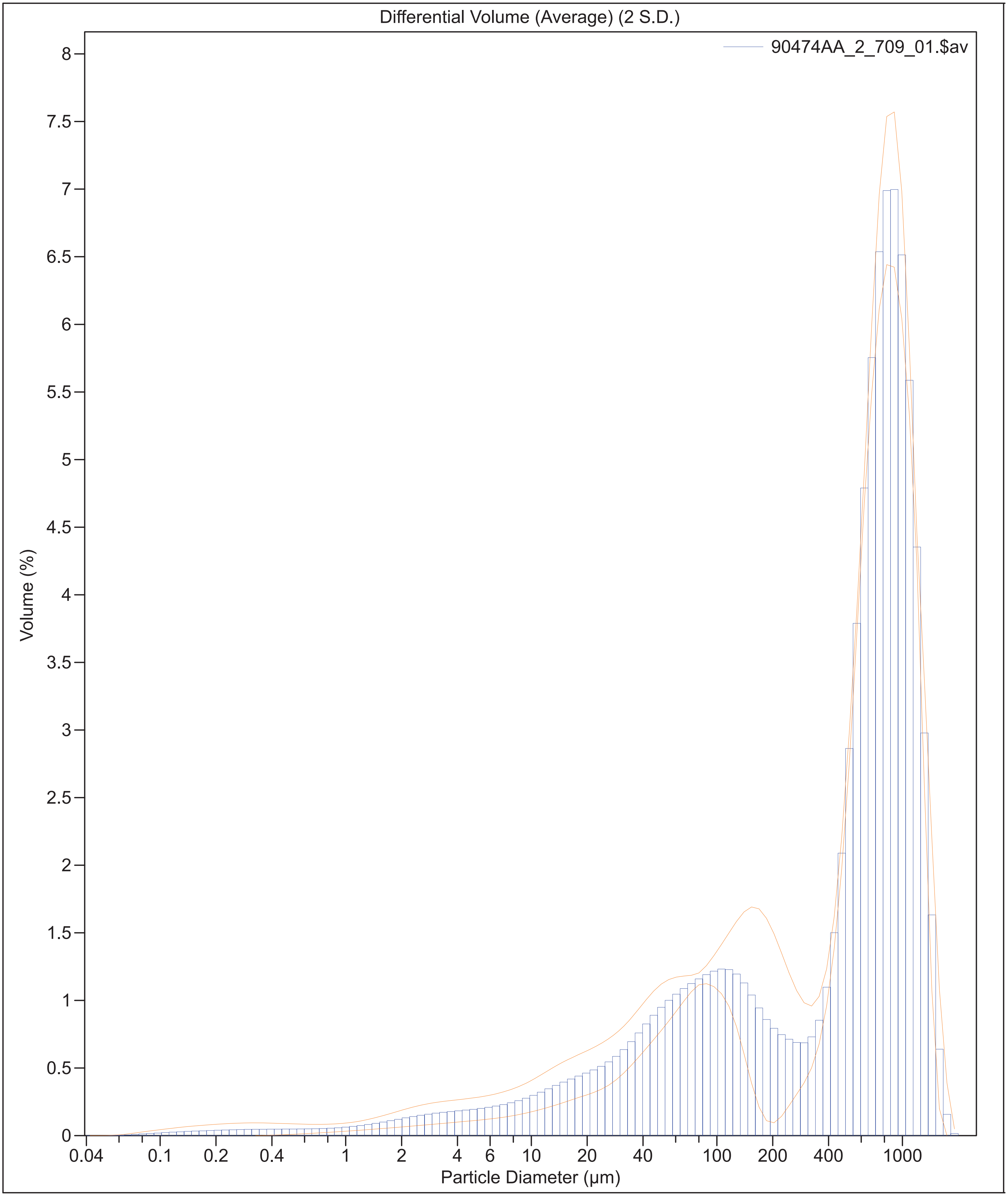
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90474AA_2_709_01.$av
	90474AA_2_709_01.$av
File ID:	90474AA_2
Sample ID:	9047AA_2
Operator:	ron
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_2_707_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_2_708_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_2_709_01.$ls

LS Particle Size Analyzer

9 Jul 2024 11:46

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90474AA_2_709_01.$av

Calculations from 0.040 µm to 2000 µm

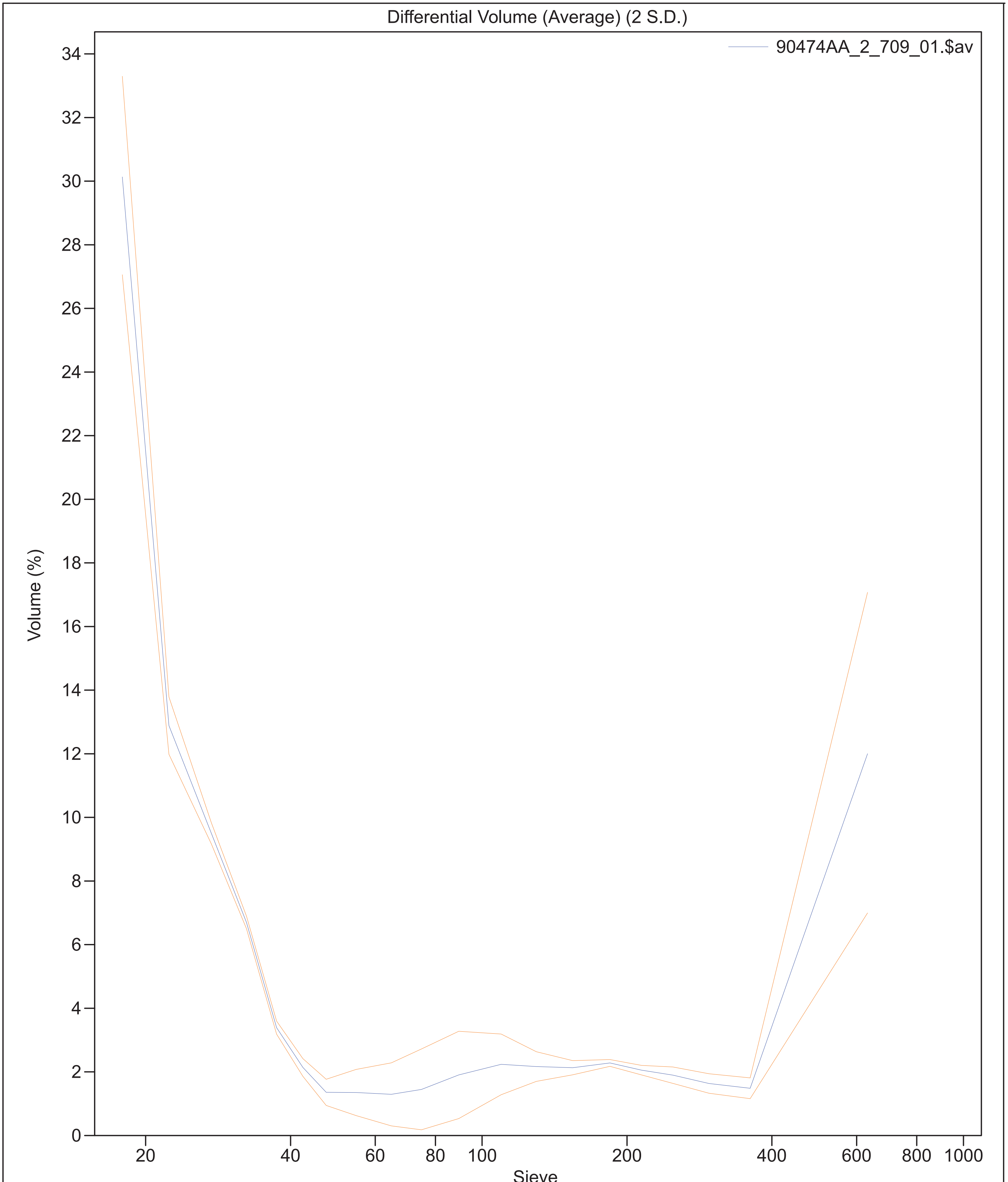
Volume:	100%		
Mean:	583.8 µm	S.D.:	426.1 µm
Median:	630.6 µm	Variance:	181.6e3 μm^2
Mean/Median ratio:	0.926	C.V.:	73.0%
Mode:	905.1 µm	Skewness:	0.140 Right skewed
		Kurtosis:	-1.062 Platykurtic

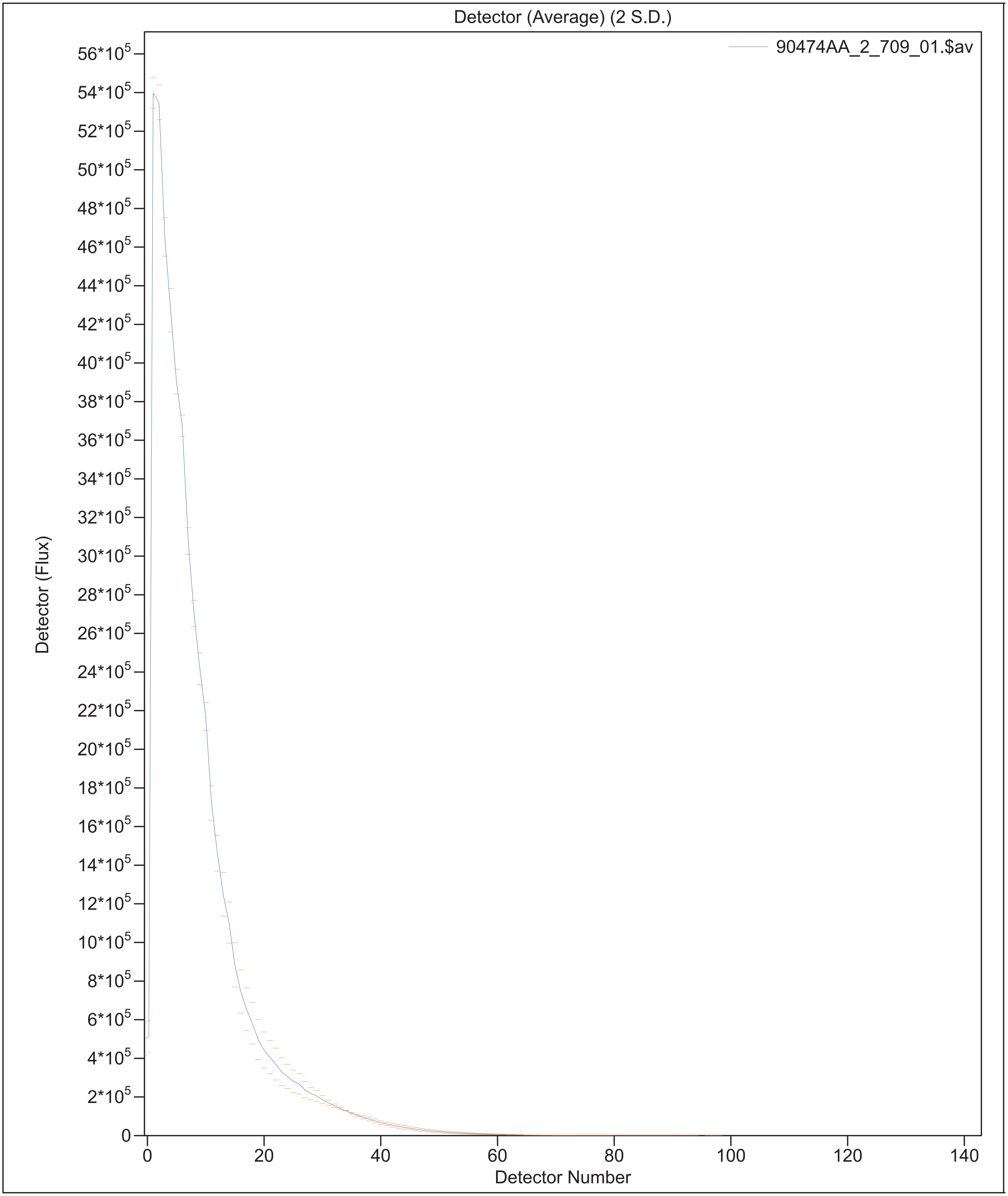
d_{10}: 28.72 µm d_{50}: 630.6 µm d_{90}: 1139 µm

Folk and Ward Statistics (Phi)

Mean:	1.58	Median:	0.67	Deviation:	2.11
Skewness:	0.69	Kurtosis:	0.99		

<10%	<25%	<50%	<75%	<90%
28.72 µm	118.9 µm	630.6 µm	910.6 µm	1139 µm

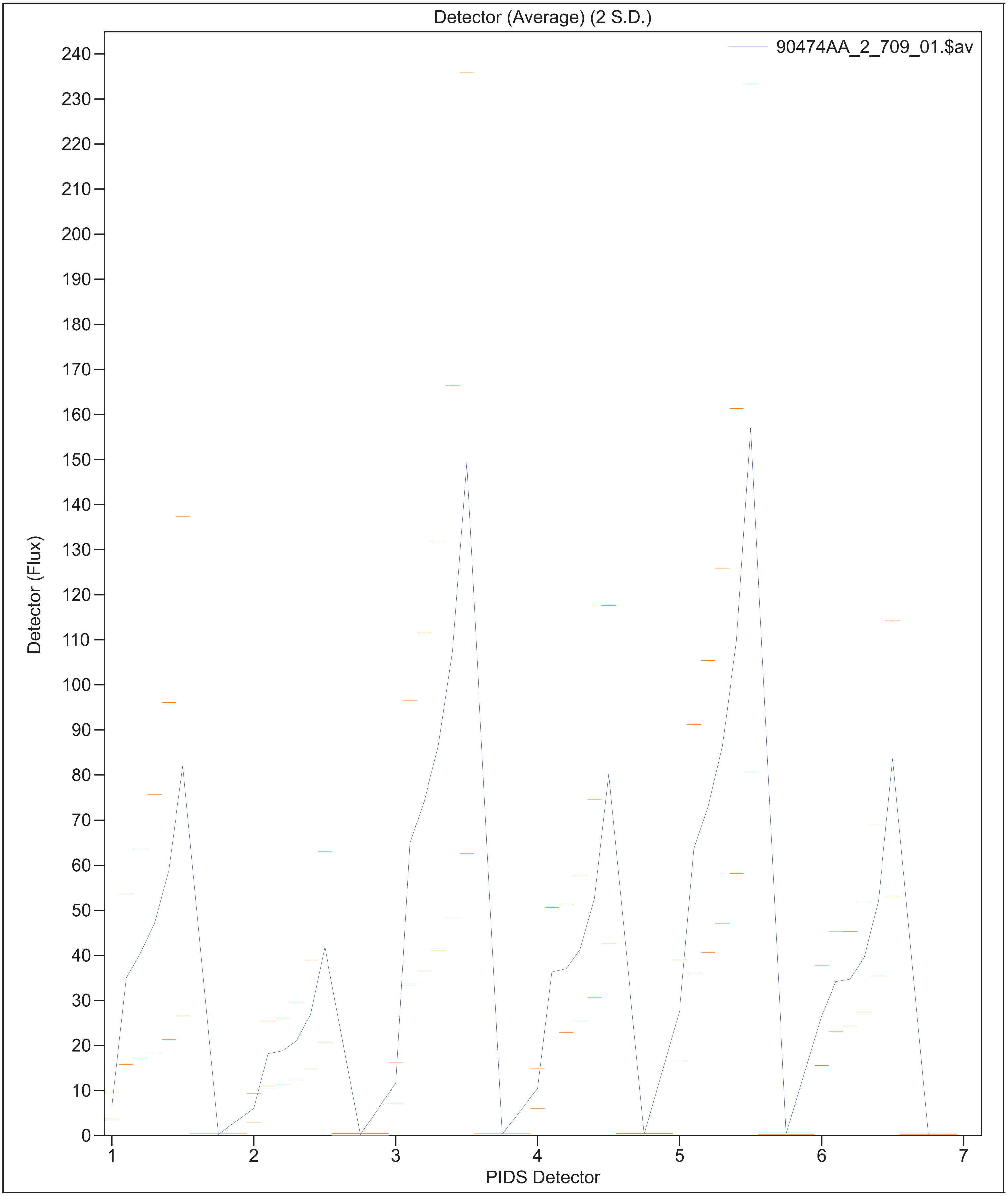

Differential Volume (Average) (2 S.D.)
90474AA_2_709_01.$av
Volume (%)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
Sieve
20
40
60
80
100
200
400
600
800
1000


Detector (Average) (2 S.D.)
90474AA_2_709_01.$av
Detector (Flux)
Detector Number
0
2*10^5
4*10^5
6*10^5
8*10^5
10*10^5
12*10^5
14*10^5
16*10^5
18*10^5
20*10^5
22*10^5
24*10^5
26*10^5
28*10^5
30*10^5
32*10^5
34*10^5
36*10^5
38*10^5
40*10^5
42*10^5
44*10^5
46*10^5
48*10^5
50*10^5
52*10^5
54*10^5
56*10^5
0
20
40
60
80
100
120
140

LS Particle Size Analyzer

9 Jul 2024 11:46

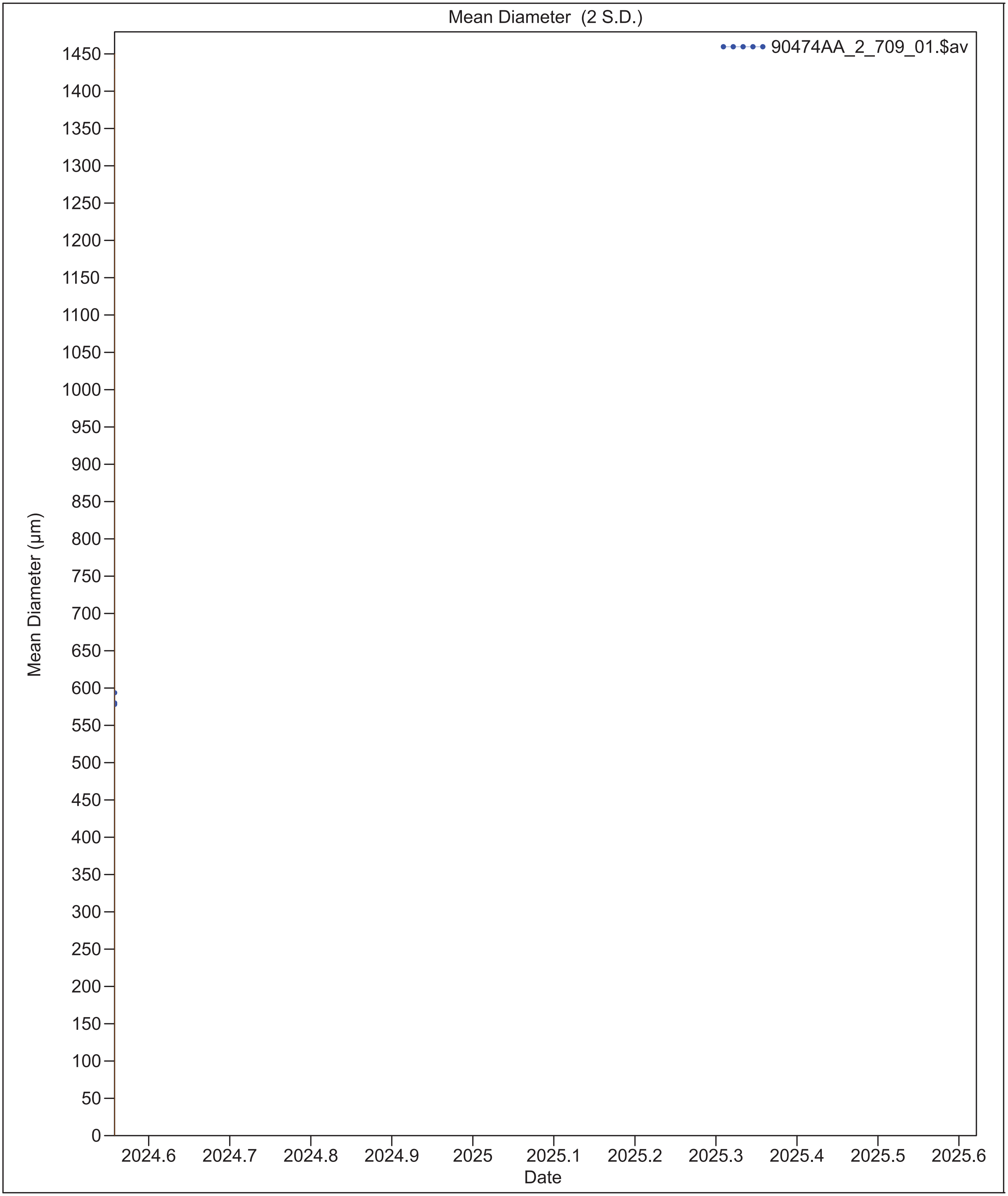
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 11:46

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 90474AA_2_709_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	583.8 µm	8.532	566.7	600.9
Median:	630.6 µm	5.808	619.0	642.2
S.D.:	426.0 µm	1.761	422.5	429.6
Variance:	181.5e3 $µm^2$	1507	178.5e3	184.5e3
C.V.:	72.99%	0.775	71.44	74.54
Skewness:	0.139	0.067	0.0054	0.272
Kurtosis:	-1.068	0.089	-1.246	-0.889
d_{10}:	29.92 µm	10.73	8.457	51.39
d_{50}:	630.6 µm	5.808	619.0	642.2
d_{90}:	1141 µm	18.40	1104	1177

LS Particle Size Analyzer

9 Jul 2024 11:58

Beckman Coulter LS 13 320

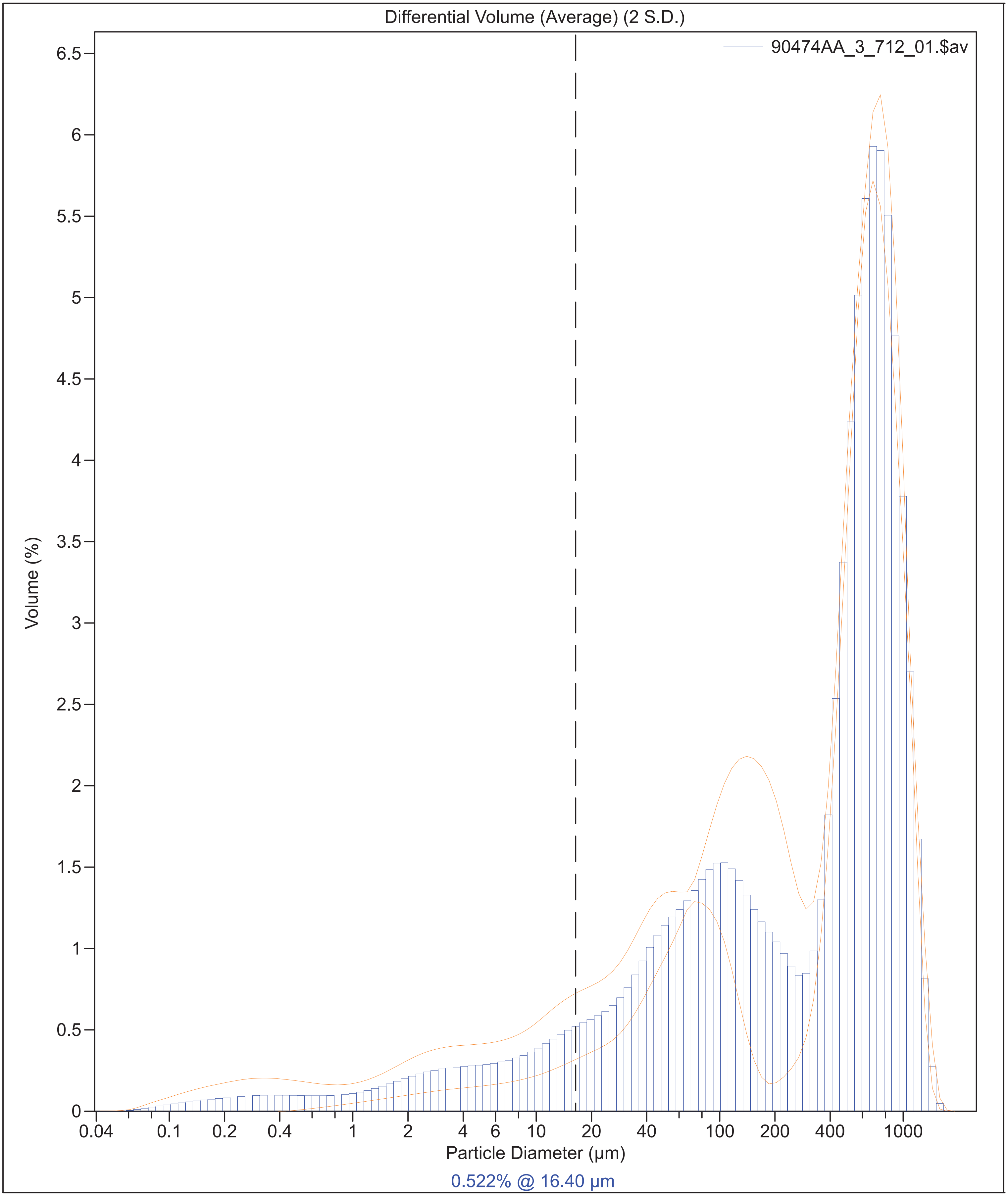
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90474AA_3_712_01.$av
	90474AA_3_712_01.$av
File ID:	90474AA_3
Sample ID:	90474AA_3
Operator:	ron
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_3_710_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_3_711_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_3_712_01.$ls

LS Particle Size Analyzer

9 Jul 2024 11:58

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

9 Jul 2024 11:58

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90474AA_3_712_01.$av

Calculations from 0.040 µm to 2000 µm

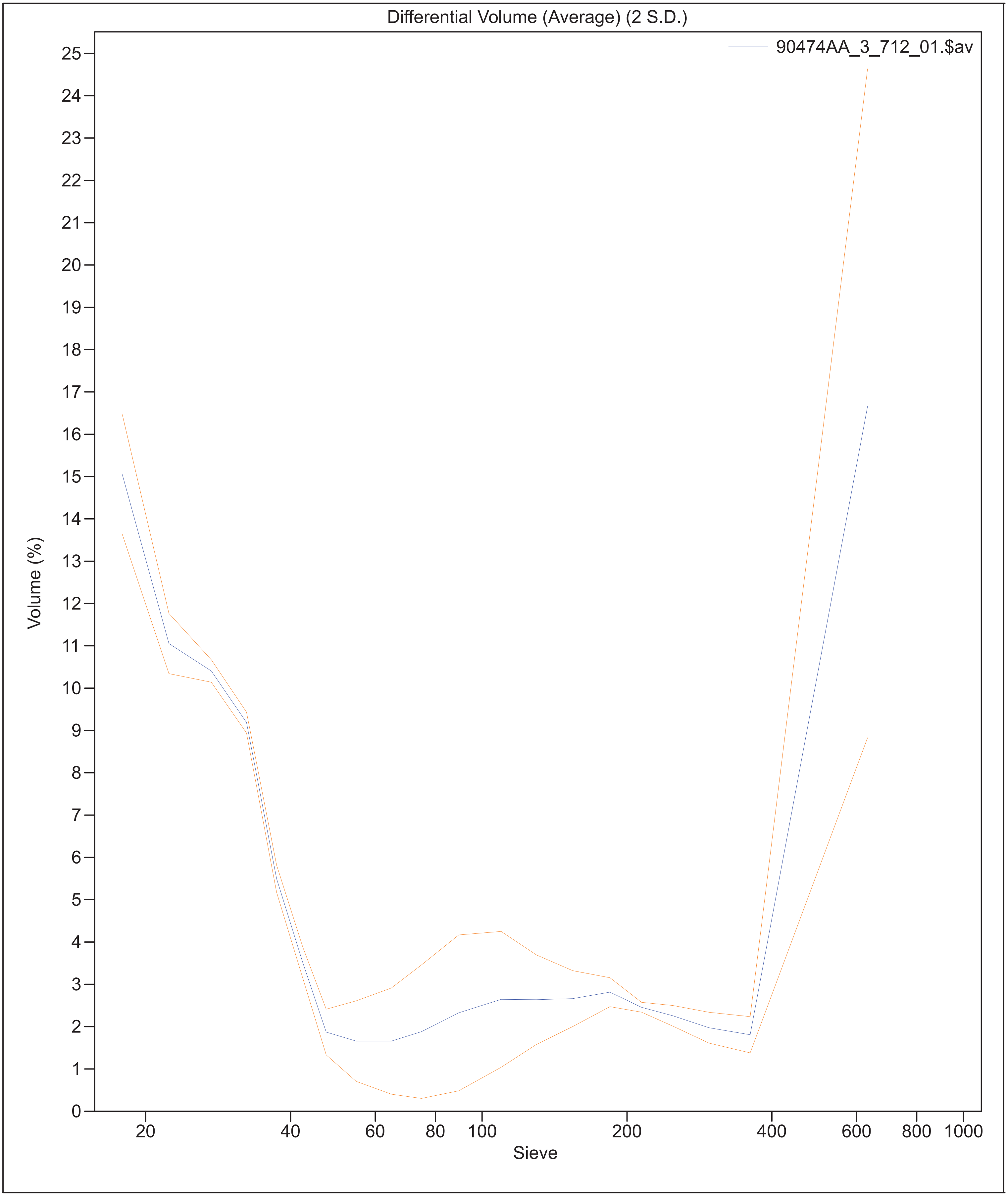
Volume:	100%		
Mean:	438.2 µm	S.D.:	363.7 µm
Median:	443.8 µm	Variance:	132.3e3 μm^2
Mean/Median ratio:	0.987	C.V.:	83.0%
Mode:	684.2 µm	Skewness:	0.395 Right skewed
		Kurtosis:	-0.955 Platykurtic

d_{10}: 14.47 µm d_{50}: 443.8 µm d_{90}: 935.8 µm

Folk and Ward Statistics (Phi)

Mean:	2.08	Median:	1.17	Deviation:	2.38
Skewness:	0.65	Kurtosis:	1.02		

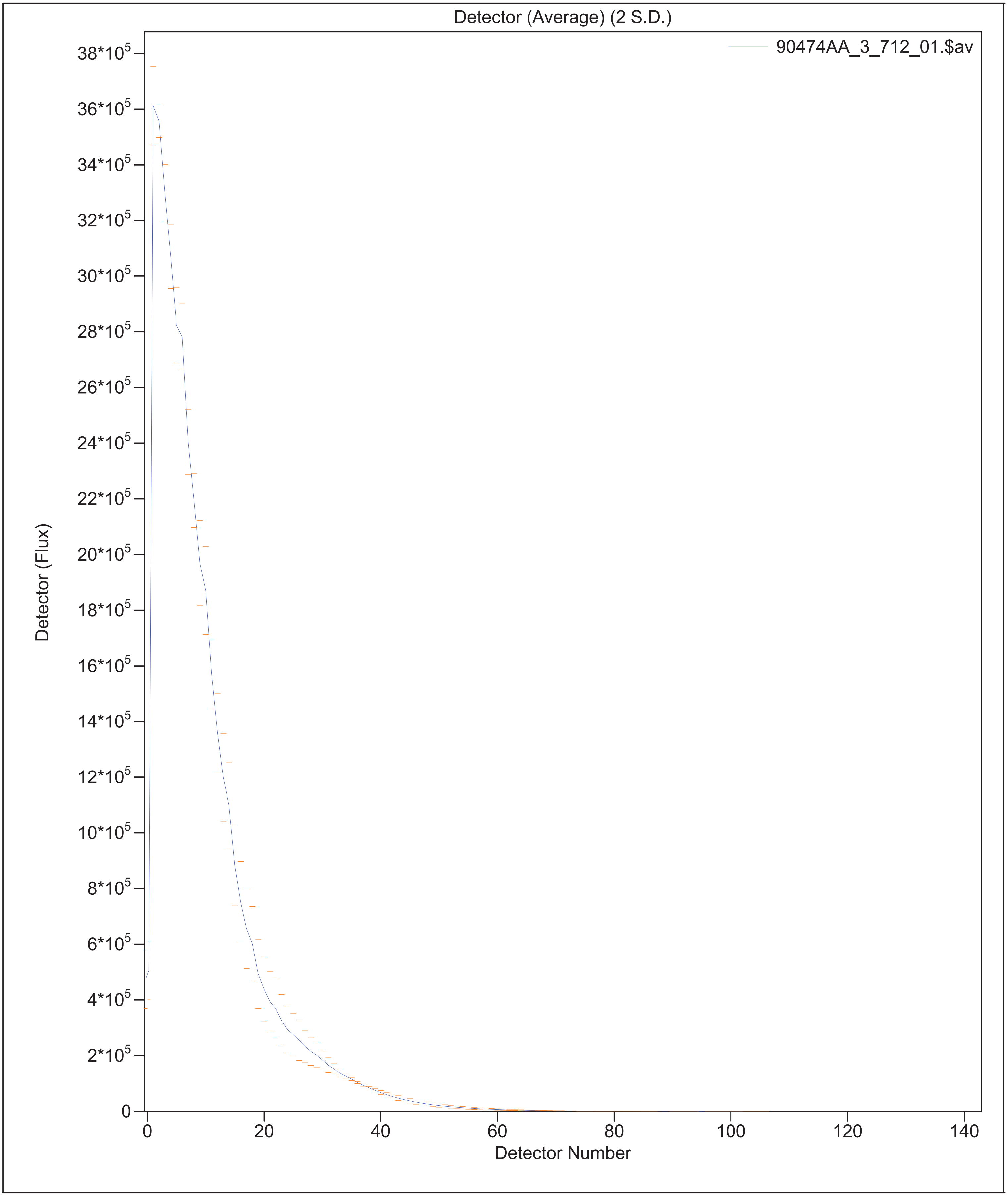
<10%	<25%	<50%	<75%	<90%
14.47 µm	74.22 µm	443.8 µm	722.4 µm	935.8 µm


Differential Volume (Average) (2 S.D.)
90474AA_3_712_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

9 Jul 2024 11:58

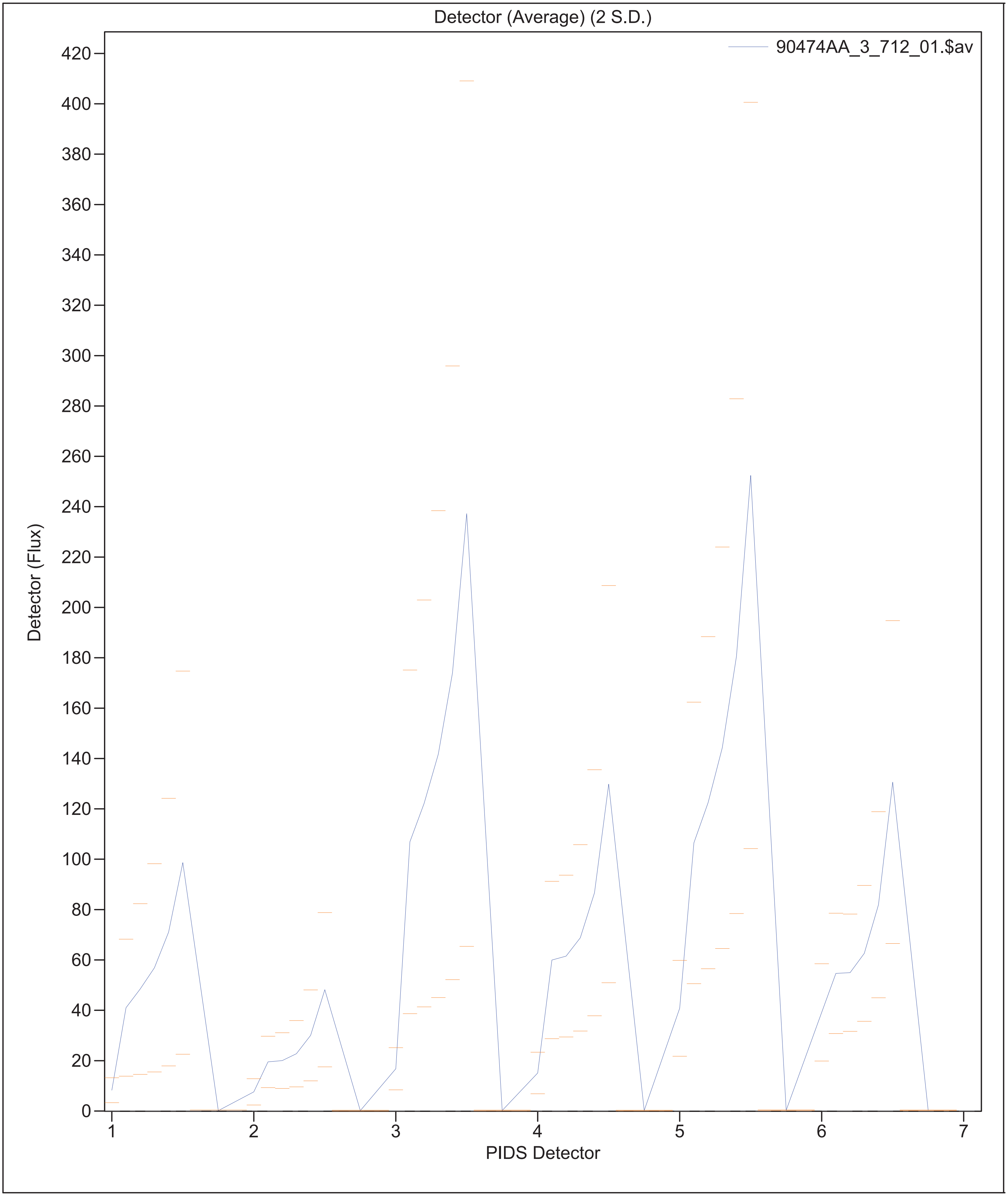
Beckman Coulter LS 13 320

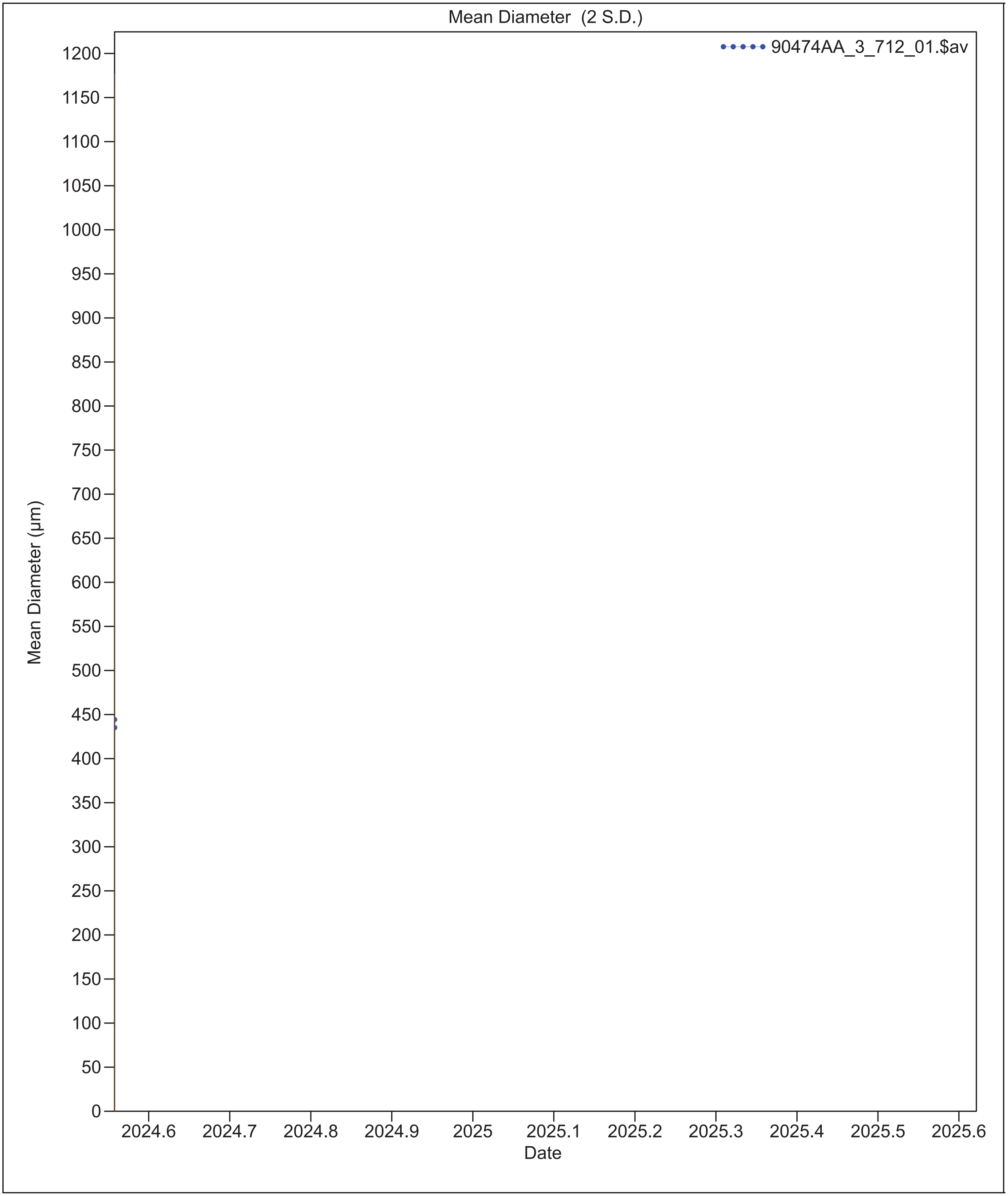


LS Particle Size Analyzer

9 Jul 2024 11:58

Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90474AA_3_712_01.$av
Mean Diameter (µm)
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

9 Jul 2024 11:58

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90474AA_3_712_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	438.2 µm	5.267	427.7	448.7
Median:	443.8 µm	8.617	426.6	461.0
S.D.:	363.6 µm	6.467	350.7	376.5
Variance:	132.2e3 µm^2	4715	122.8e3	141.7e3
C.V.:	83.00%	2.325	78.34	87.65
Skewness:	0.398	0.052	0.293	0.502
Kurtosis:	-0.953	0.121	-1.195	-0.712
d_{10}:	16.36 µm	9.324	0	35.01
d_{50}:	443.8 µm	8.617	426.6	461.0
d_{90}:	935.8 µm	3.874	928.0	943.5

LS Particle Size Analyzer

9 Jul 2024 12:13

Beckman Coulter LS 13 320

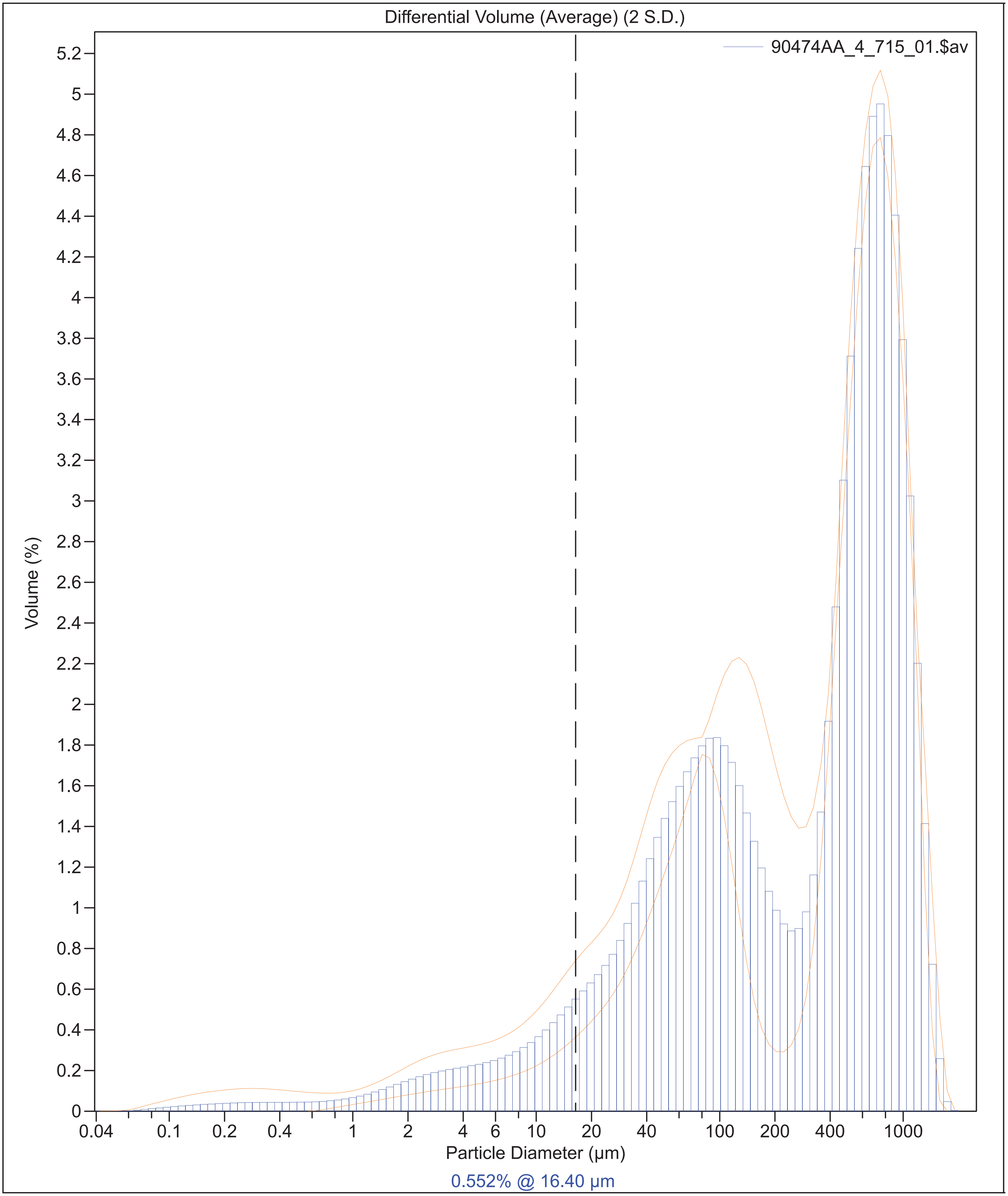
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90474AA_4_715_01.$av 90474AA_4_715_01.$av
File ID:	90474AA_4
Sample ID:	90474AA_4
Operator:	ron
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_4_713_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_4_714_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90474AA_4_715_01.$ls

LS Particle Size Analyzer

9 Jul 2024 12:13

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

9 Jul 2024 12:13

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90474AA_4_715_01.$av

Calculations from 0.040 µm to 2000 µm

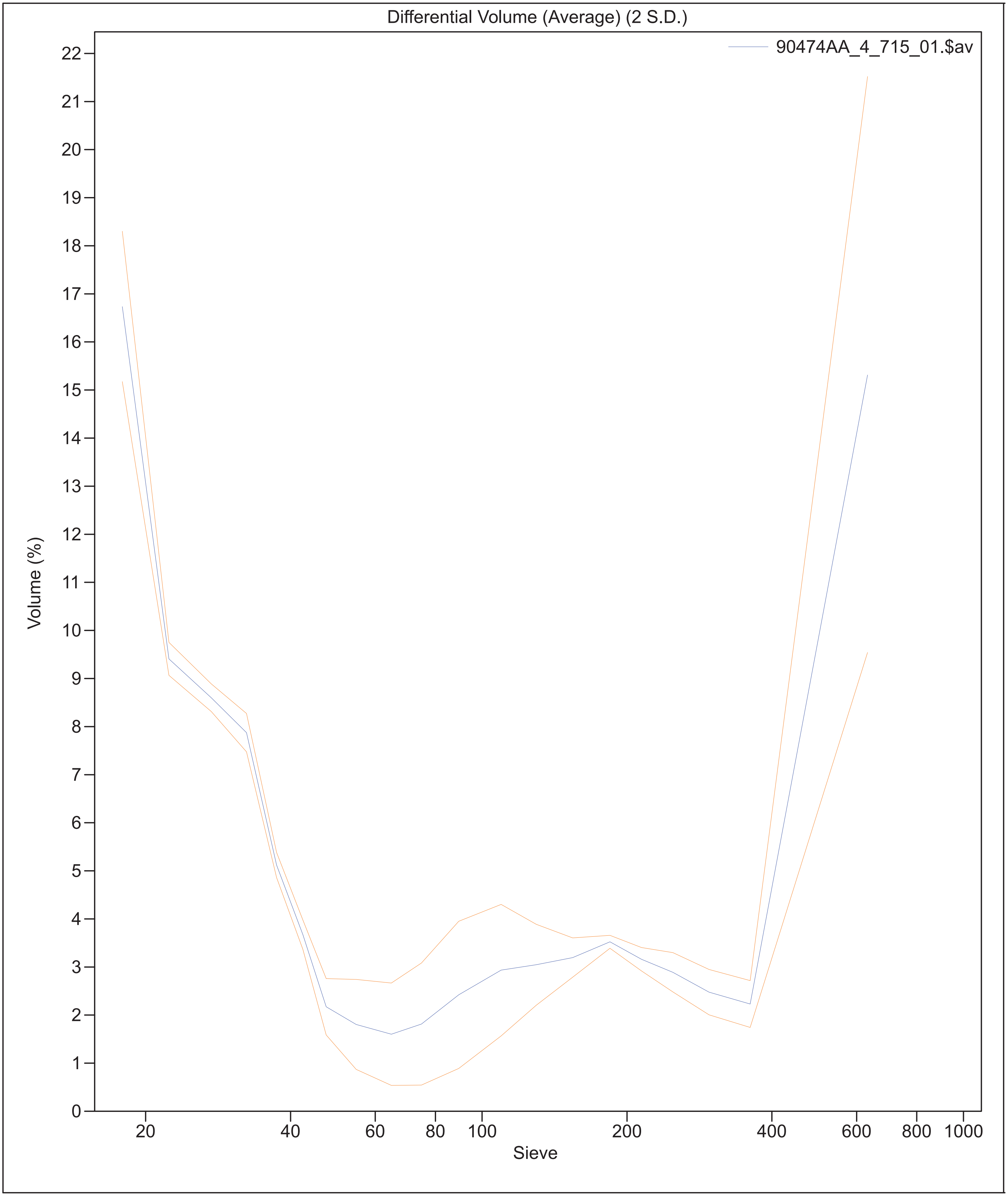
Volume:	100%		
Mean:	434.3 µm	S.D.:	385.2 µm
Median:	384.7 µm	Variance:	148.4e3 μm^2
Mean/Median ratio:	1.129	C.V.:	88.7%
Mode:	751.1 µm	Skewness:	0.609 Right skewed
		Kurtosis:	-0.659 Platykurtic

d_{10}: 21.30 µm d_{50}: 384.7 µm d_{90}: 984.2 µm

Folk and Ward Statistics (Phi)

Mean:	2.08	Median:	1.38	Deviation:	2.20
Skewness:	0.52	Kurtosis:	0.88		

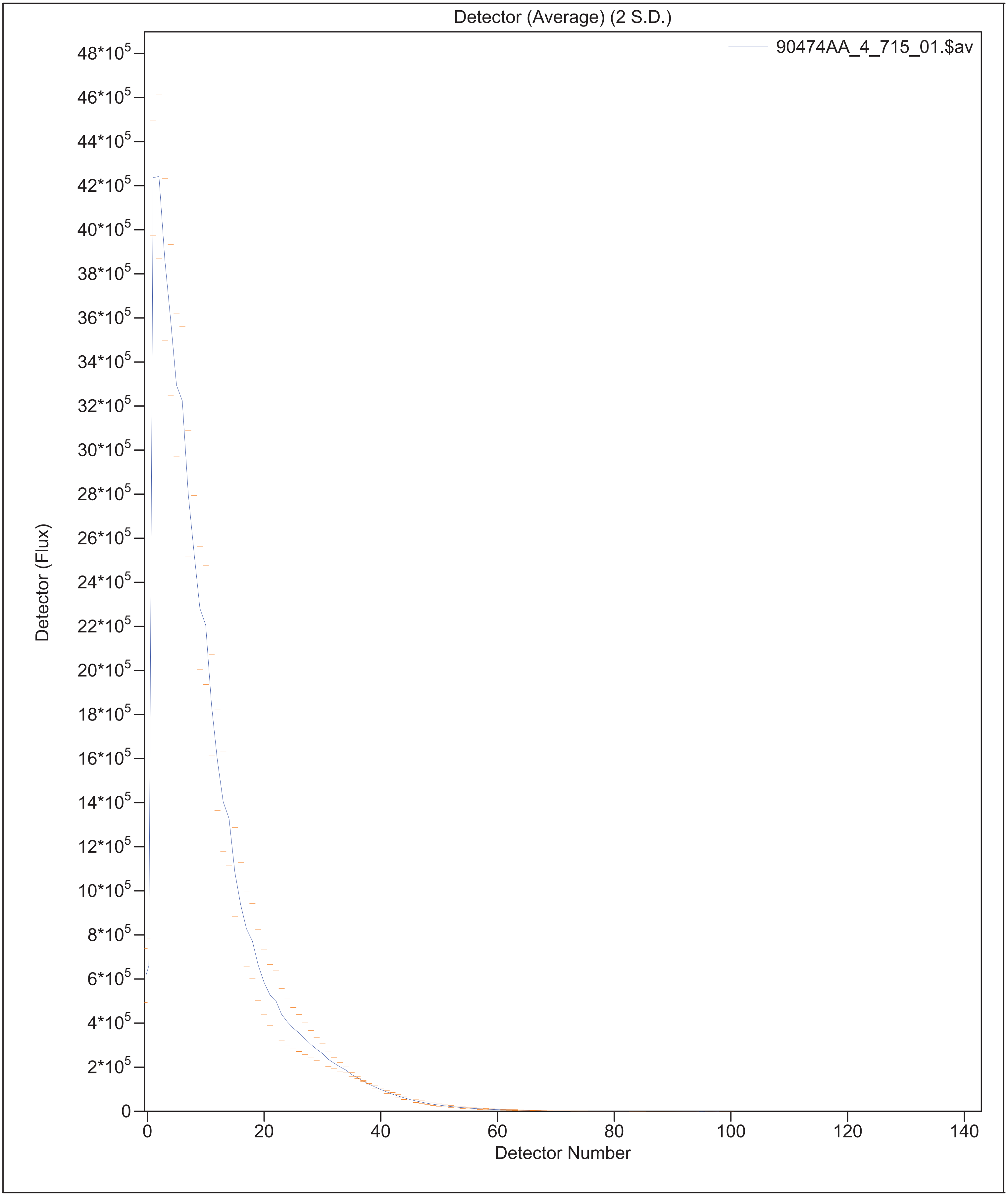
<10%	<25%	<50%	<75%	<90%
21.30 µm	70.80 µm	384.7 µm	725.6 µm	984.2 µm


Differential Volume (Average) (2 S.D.)
90474AA_4_715_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

9 Jul 2024 12:13

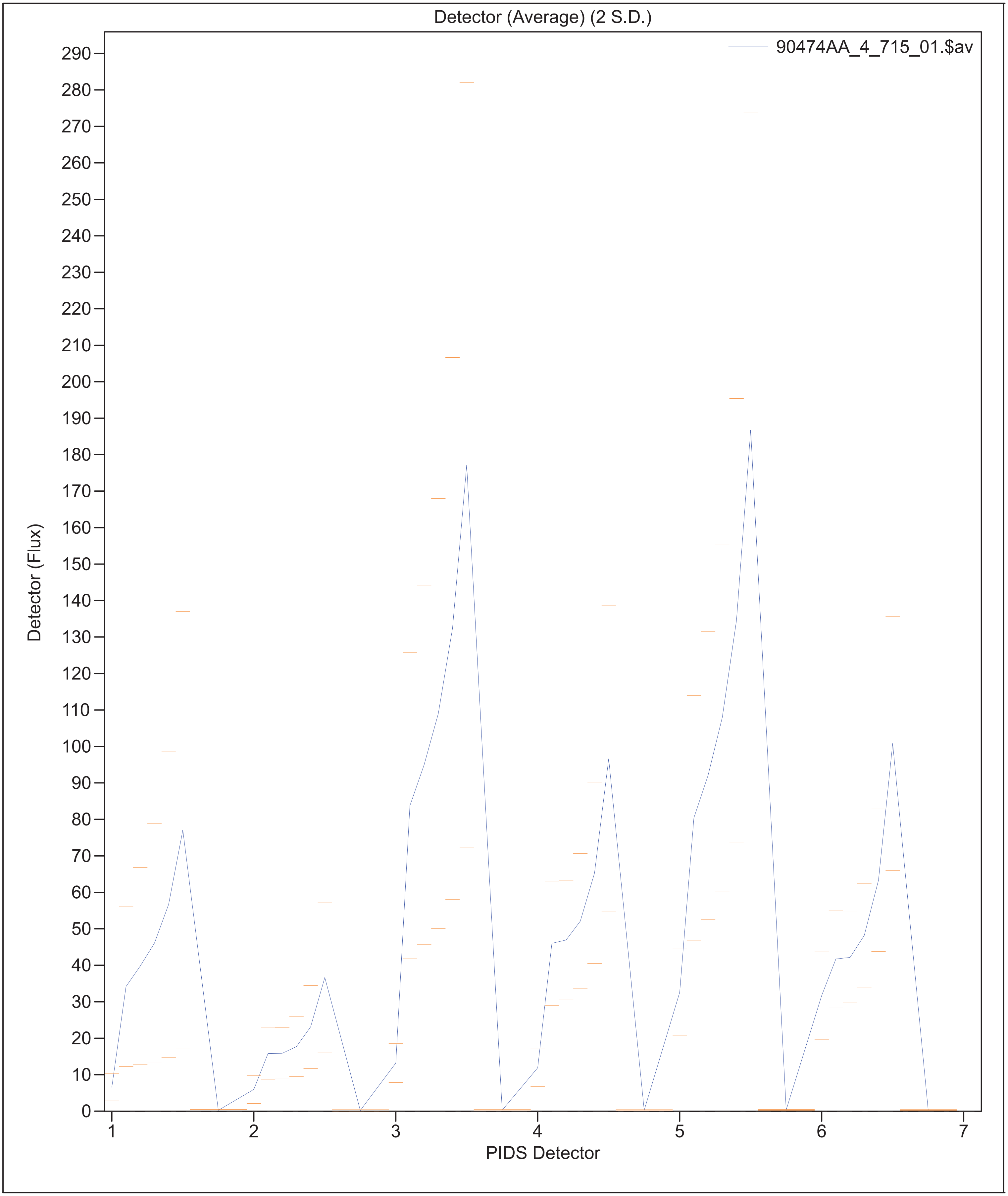
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 12:13

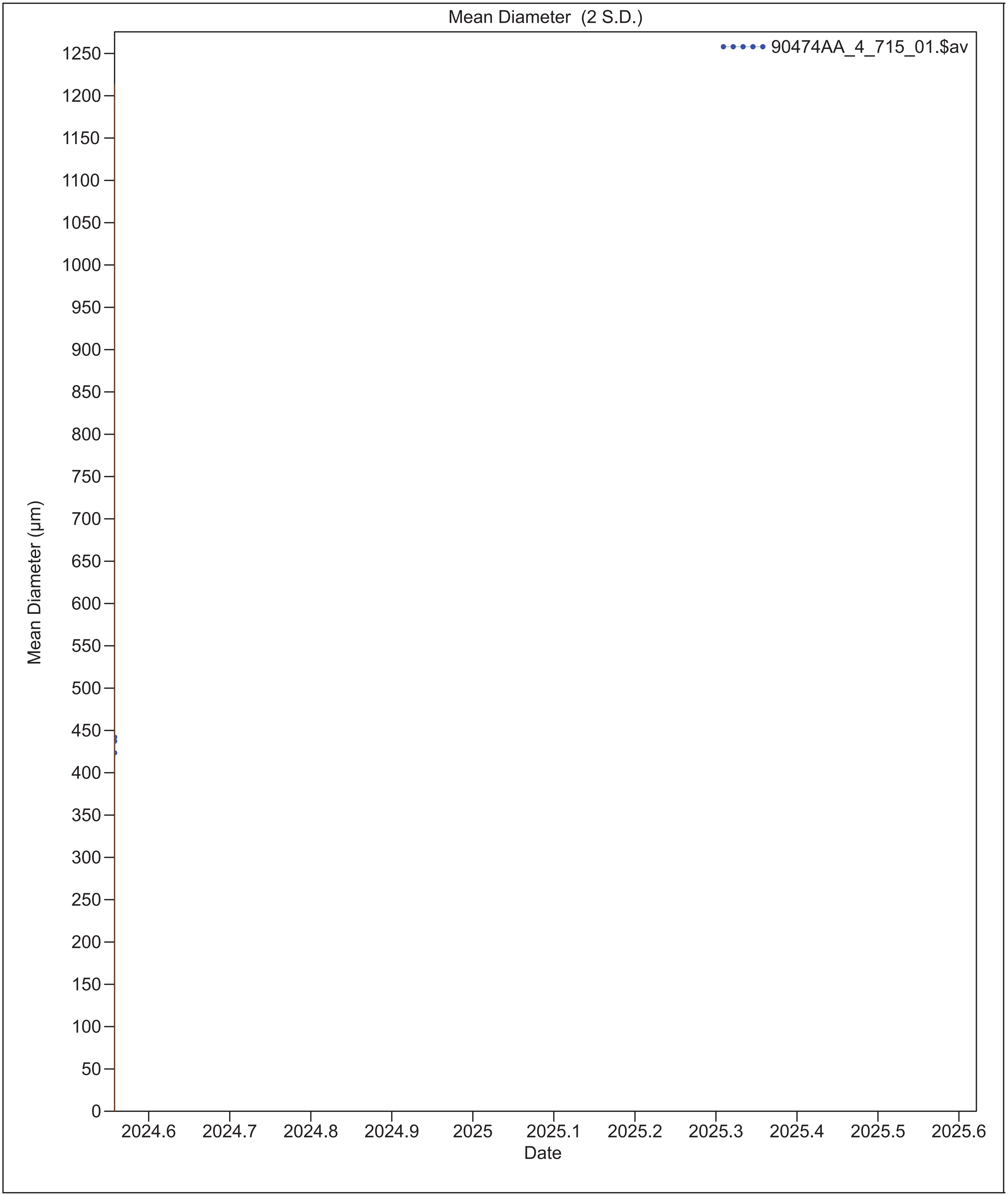
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 12:13

Beckman Coulter LS 13 320



BECKMAN COULTER™

LS Particle Size Analyzer

9 Jul 2024 12:13

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90474AA_4_715_01.$av

Calculations from 0.040 μm to 2000 μm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	434.3 μm	9.624	415.0	453.5
Median:	384.8 μm	4.598	375.6	394.0
S.D.:	385.1 μm	2.810	379.5	390.7
Variance:	148.3e3 $μm^2$	2166	144.0e3	152.6e3
C.V.:	88.71%	1.890	84.93	92.49
Skewness:	0.609	0.049	0.511	0.707
Kurtosis:	-0.663	0.137	-0.936	-0.389
d_{10}:	22.22 μm	7.521	7.176	37.26
d_{50}:	384.8 μm	4.598	375.6	394.0
d_{90}:	984.2 μm	11.65	960.9	1008

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LS Particle Size Analyzer

9 Jul 2024 14:16

Beckman Coulter LS 13 320

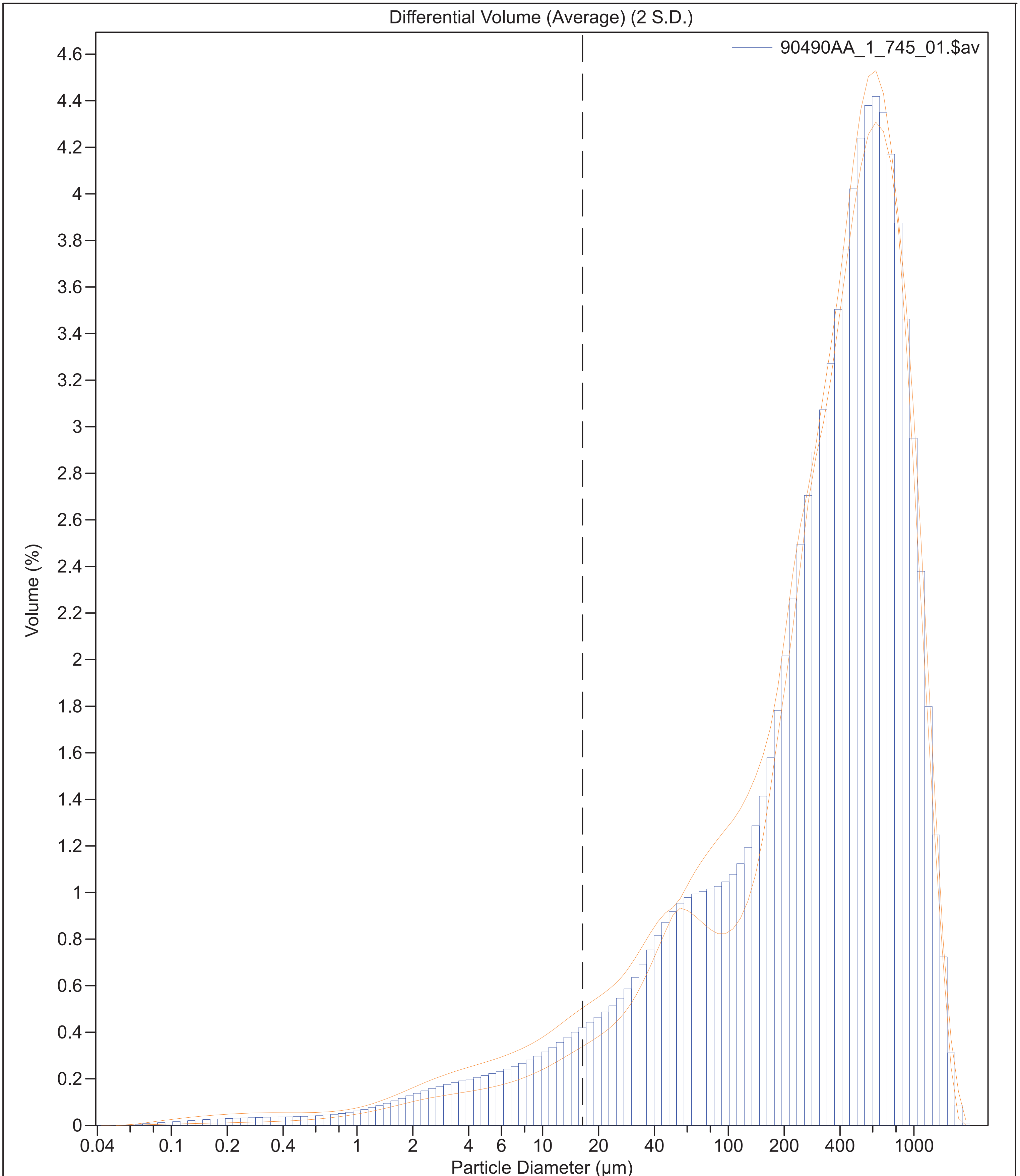
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90490AA_1_745_01.$av
	90490AA_1_745_01.$av
File ID:	90490AA_1
Sample ID:	90490AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_1_743_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_1_744_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_1_745_01.$ls

LS Particle Size Analyzer

9 Jul 2024 14:16

Beckman Coulter LS 13 320



0.422% @ 16.40 µm

Volume Statistics (Arithmetic) 90490AA_1_745_01.$av

Calculations from 0.040 µm to 2000 µm

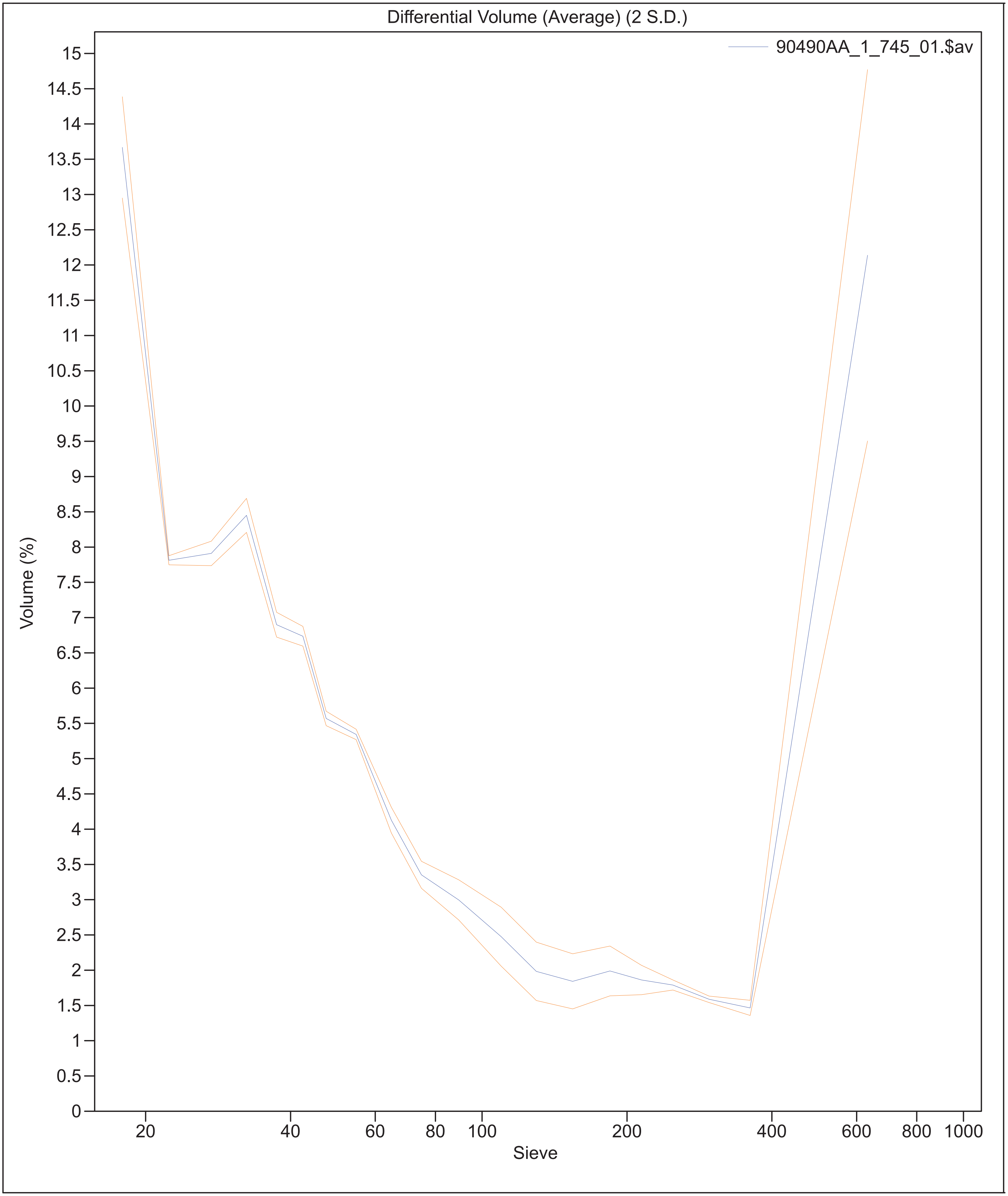
Volume:	100%		
Mean:	432.8 µm	S.D.:	351.7 µm
Median:	370.0 µm	Variance:	123.7e3 $µm^2$
Mean/Median ratio:	1.170	C.V.:	81.3%
Mode:	623.3 µm	Skewness:	0.793 Right skewed
		Kurtosis:	0.055 Leptokurtic

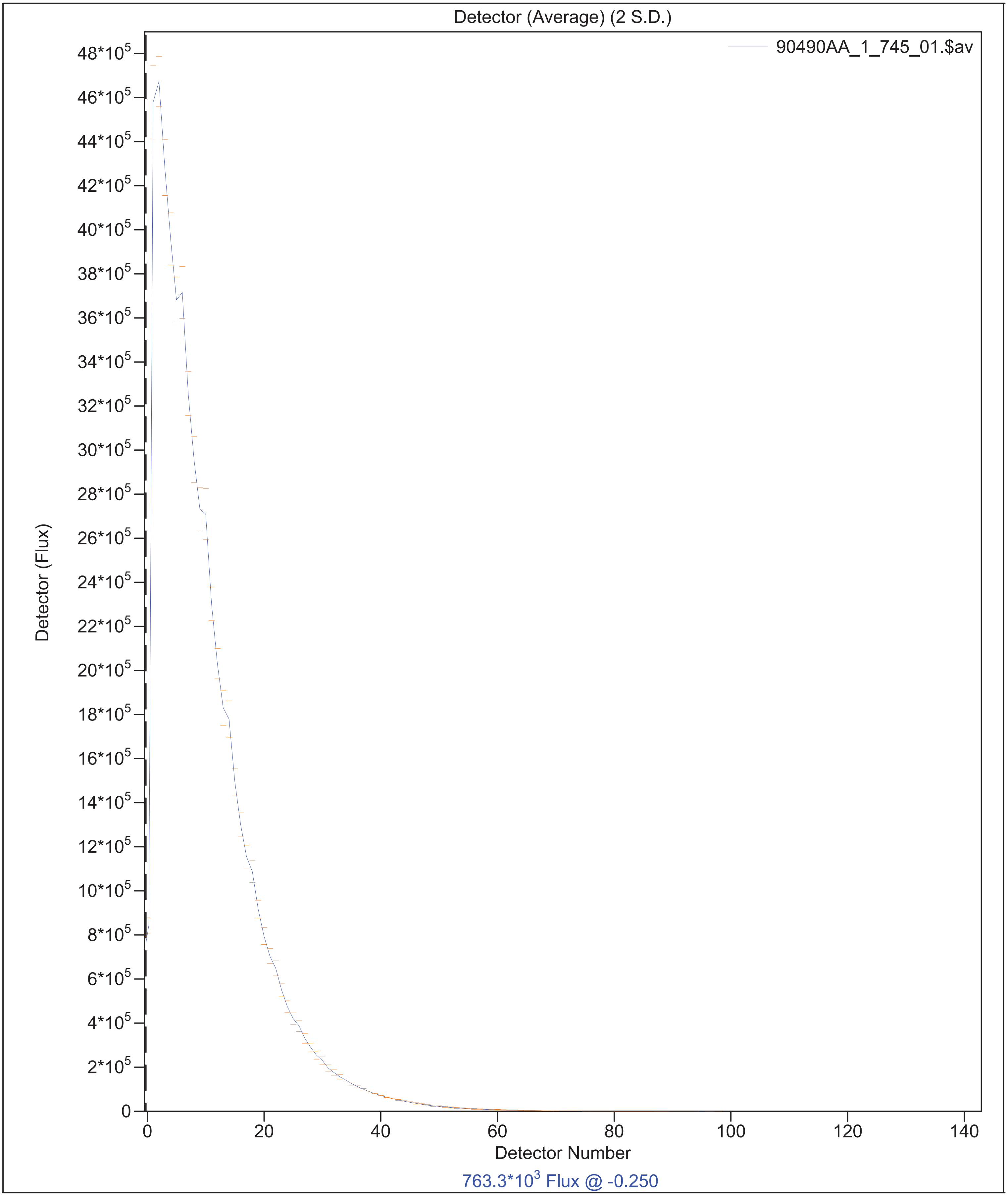
d_{10}: 28.08 µm d_{50}: 370.0 µm d_{90}: 936.3 µm

Folk and Ward Statistics (Phi)

Mean:	1.96	Median:	1.43	Deviation:	2.00
Skewness:	0.48	Kurtosis:	1.20		

<10%	<25%	<50%	<75%	<90%
28.08 µm	128.4 µm	370.0 µm	658.4 µm	936.3 µm

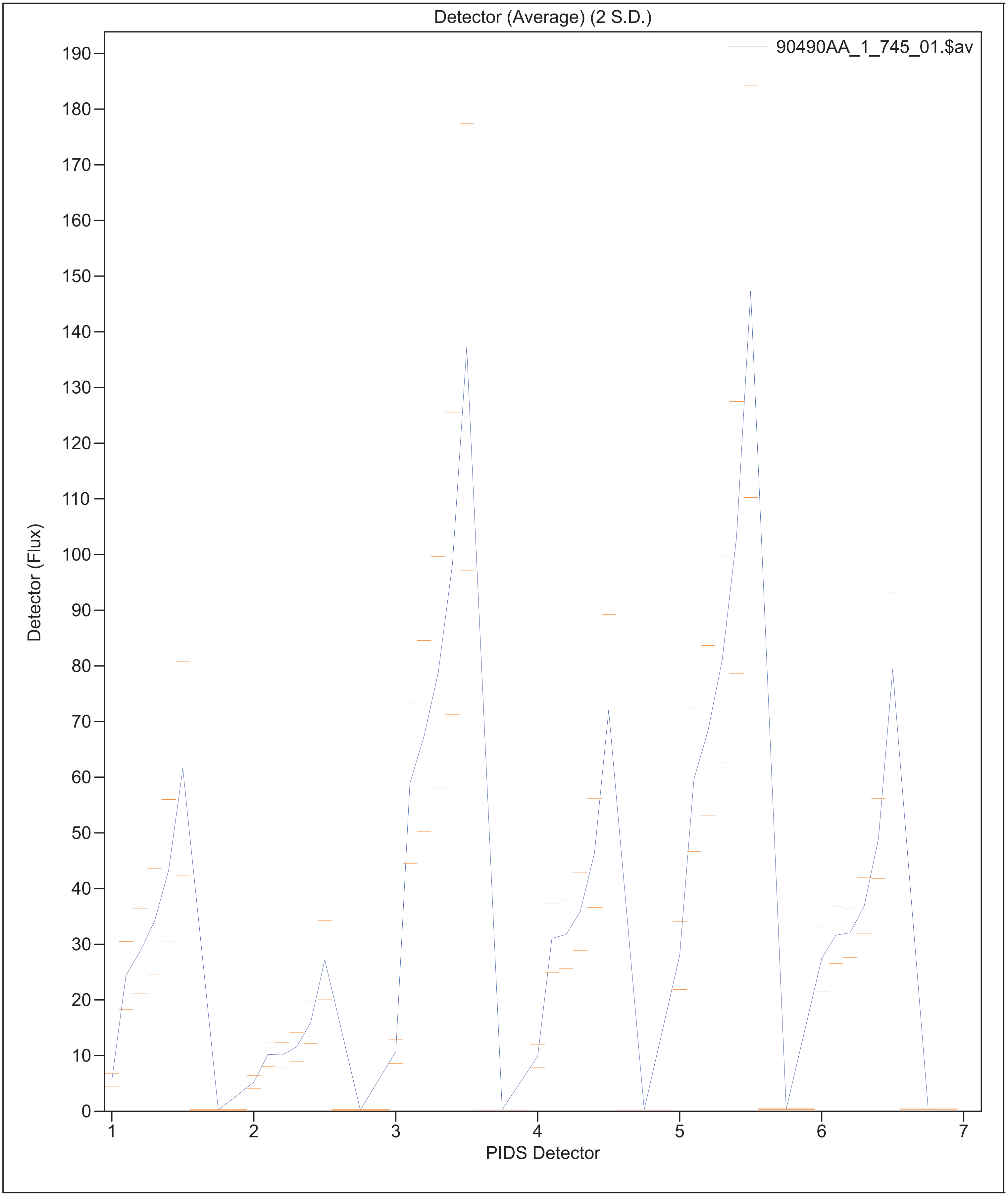

Differential Volume (Average) (2 S.D.)
90490AA_1_745_01.$av
Volume (%)
15
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
20
40
60
80
100
200
400
600
800
1000
Sieve


Detector (Average) (2 S.D.)
90490AA_1_745_01.$av
Detector (Flux)
48*10^5
46*10^5
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140
Detector Number
763.3*10^3 Flux @ -0.250

LS Particle Size Analyzer

9 Jul 2024 14:16

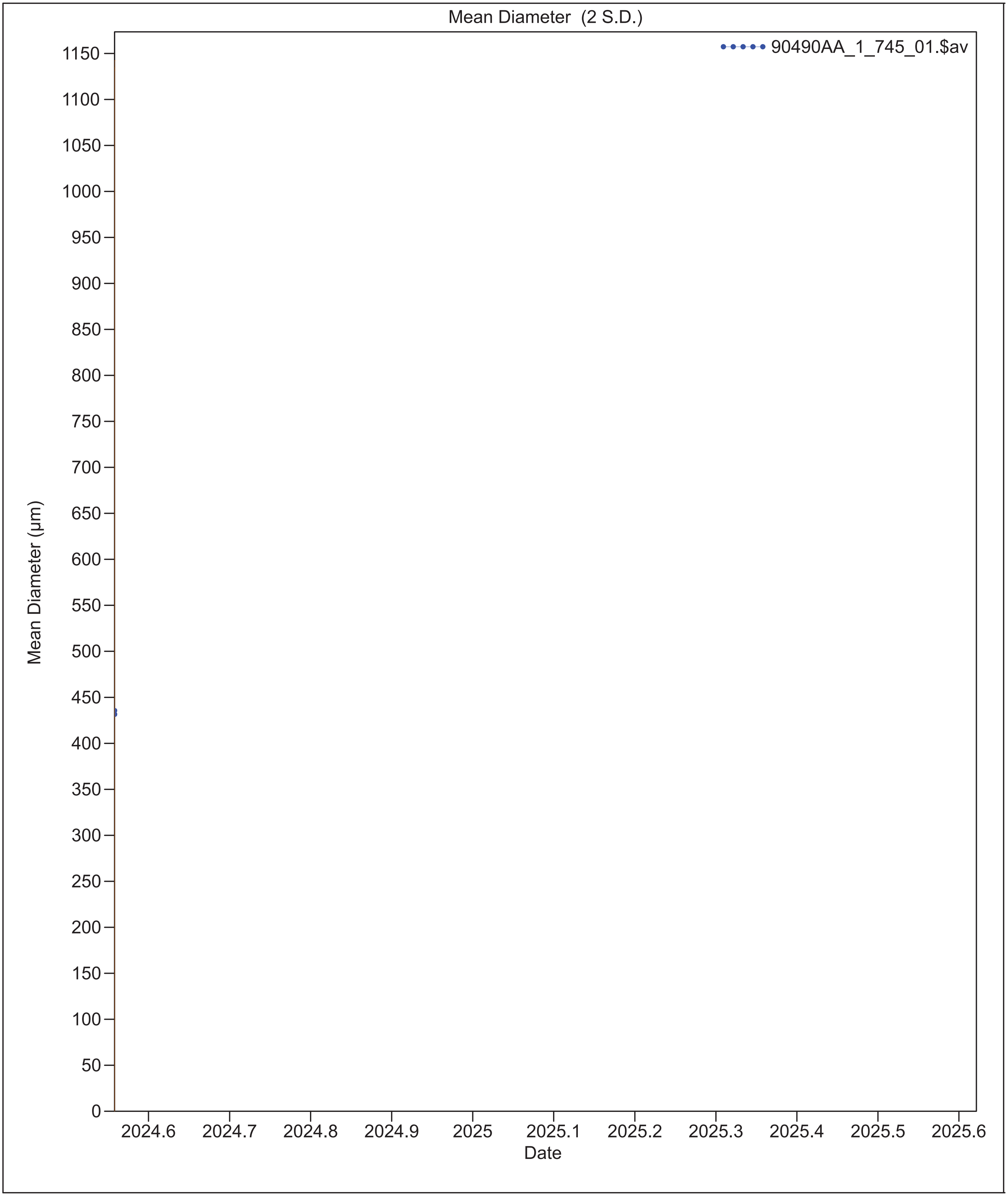
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:16

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:16

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90490AA_1_745_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	432.8 µm	2.369	428.0	437.5
Median:	370.0 µm	2.582	364.8	375.2
S.D.:	351.7 µm	3.232	345.3	358.2
Variance:	123.7e3 μm^2	2278	119.2e3	128.3e3
C.V.:	81.28%	1.069	79.14	83.41
Skewness:	0.793	0.012	0.768	0.817
Kurtosis:	0.054	0.061	-0.067	0.176
d_{10}:	28.41 µm	5.360	17.69	39.13
d_{50}:	370.0 µm	2.582	364.8	375.2
d_{90}:	936.3 µm	5.281	925.7	946.9

LS Particle Size Analyzer

9 Jul 2024 14:27

Beckman Coulter LS 13 320

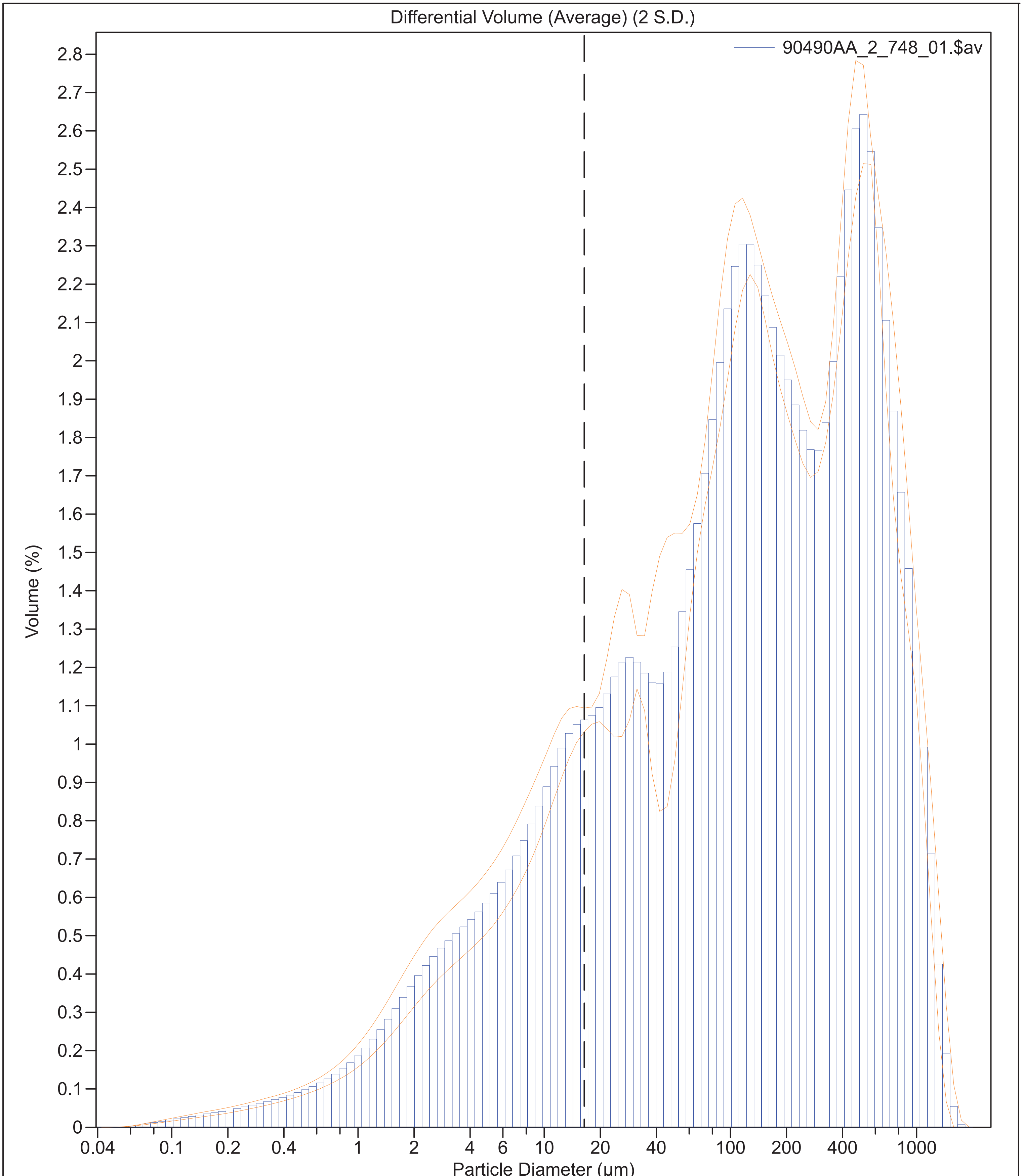
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90490AA_2_748_01.$av
	90490AA_2_748_01.$av
File ID:	90490AA_2
Sample ID:	90490AA_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_2_746_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_2_747_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_2_748_01.$ls

LS Particle Size Analyzer

9 Jul 2024 14:27

Beckman Coulter LS 13 320



1.063% @ 16.40 μm

LS Particle Size Analyzer

9 Jul 2024 14:27

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90490AA_2_748_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	243.1 µm	S.D.:	290.0 µm
Median:	118.9 µm	Variance:	84074 µm^2
Mean/Median ratio:	2.045	C.V.:	119%
Mode:	517.2 µm	Skewness:	1.556 Right skewed
		Kurtosis:	2.029 Leptokurtic

d_{10}: 5.966 µm d_{50}: 118.9 µm d_{90}: 674.8 µm

Folk and Ward Statistics (Phi)

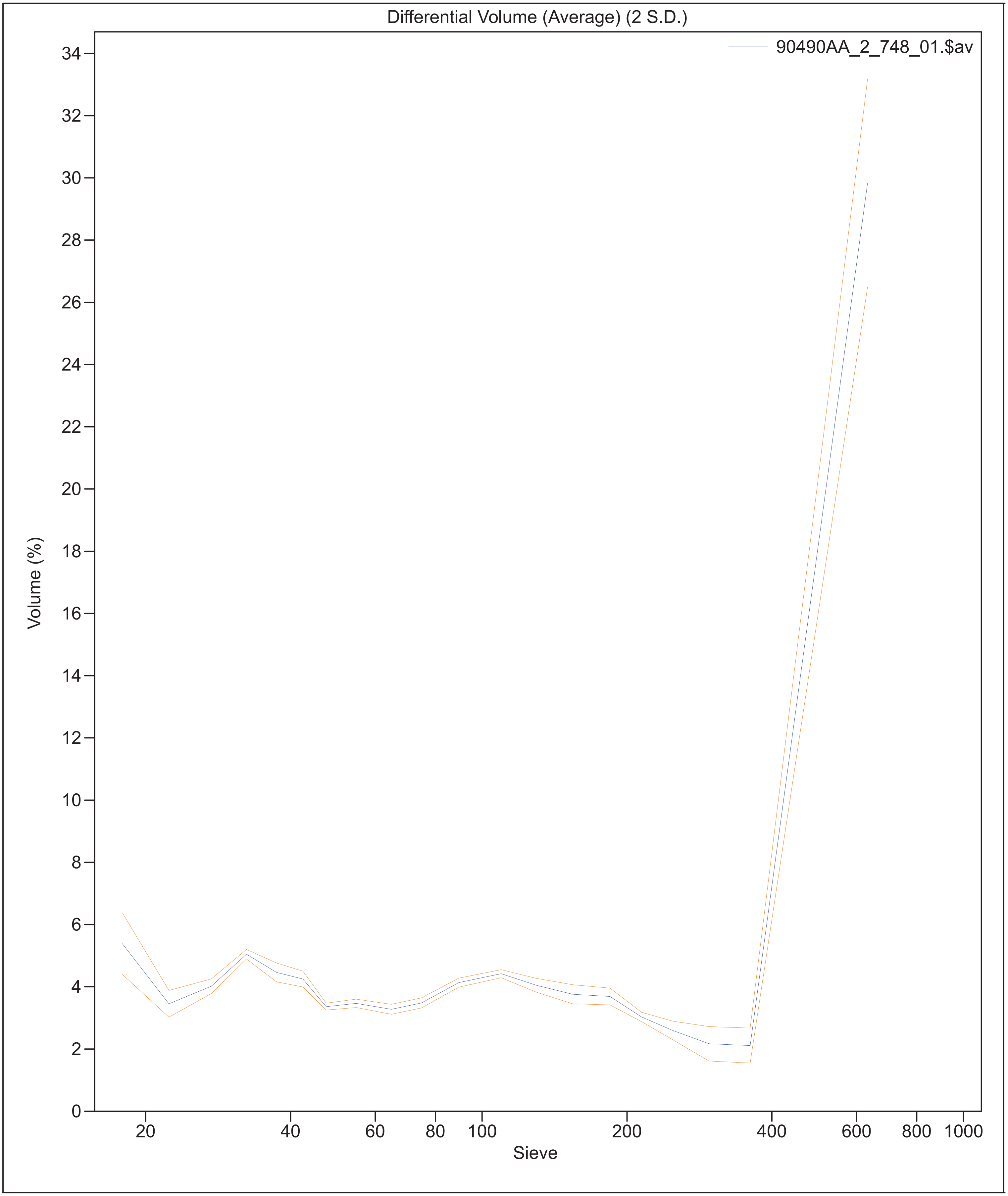
Mean:	3.45	Median:	3.07	Deviation:	2.65
Skewness:	0.26	Kurtosis:	0.89		

<10%	<25%	<50%	<75%	<90%
5.966 µm	26.12 µm	118.9 µm	381.8 µm	674.8 µm

LS Particle Size Analyzer

9 Jul 2024 14:27

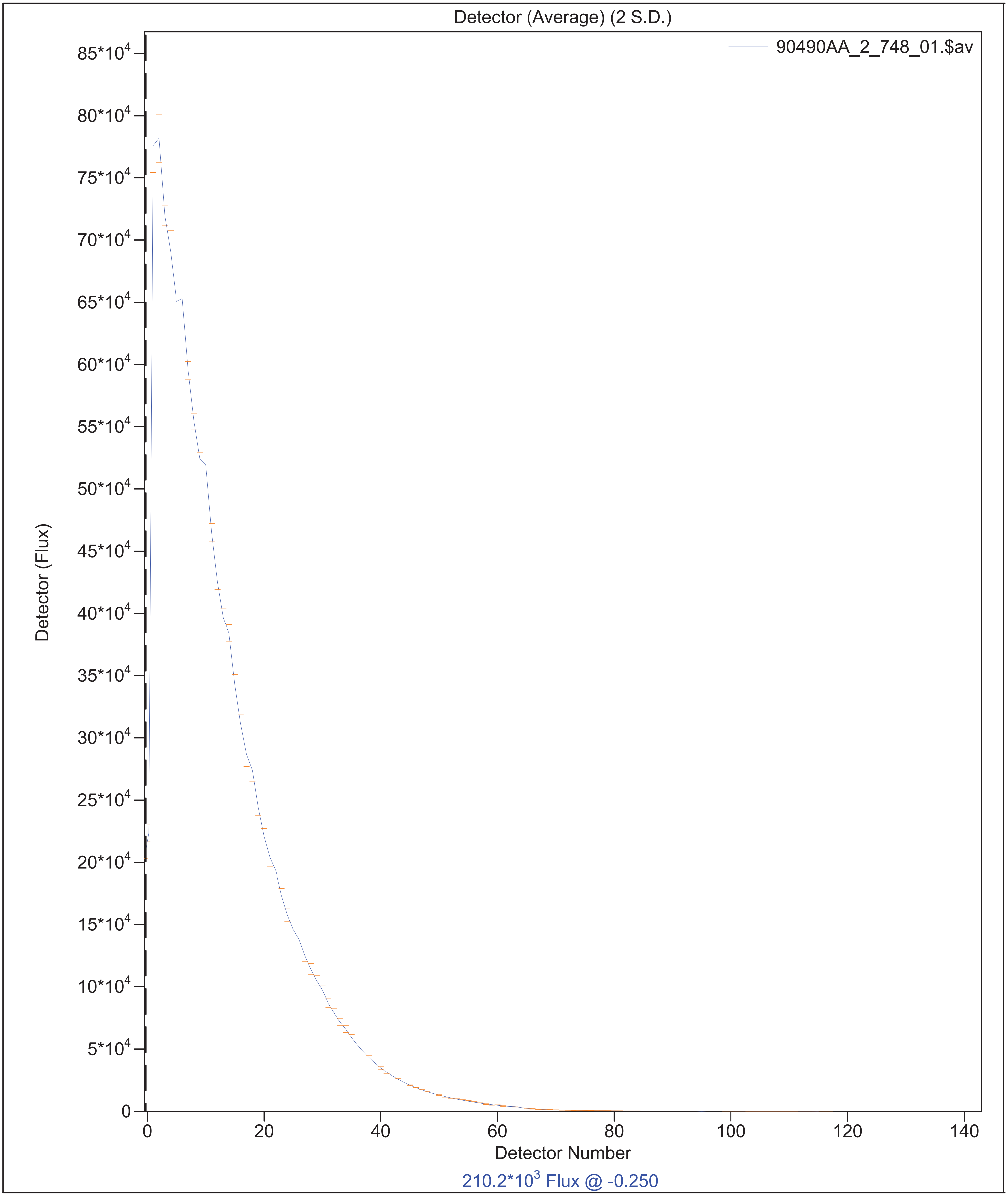
Beckman Coulter LS 13 320



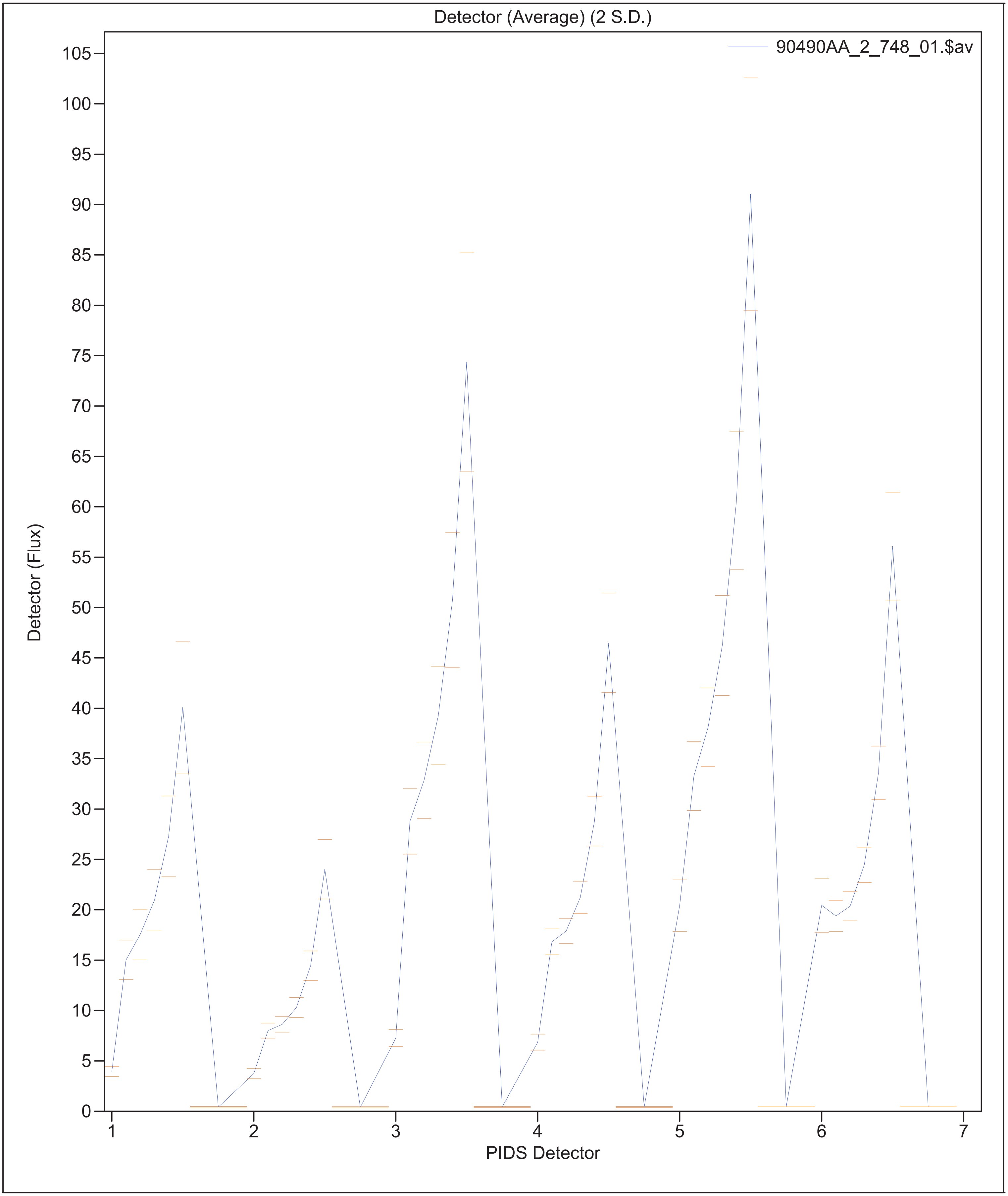
LS Particle Size Analyzer

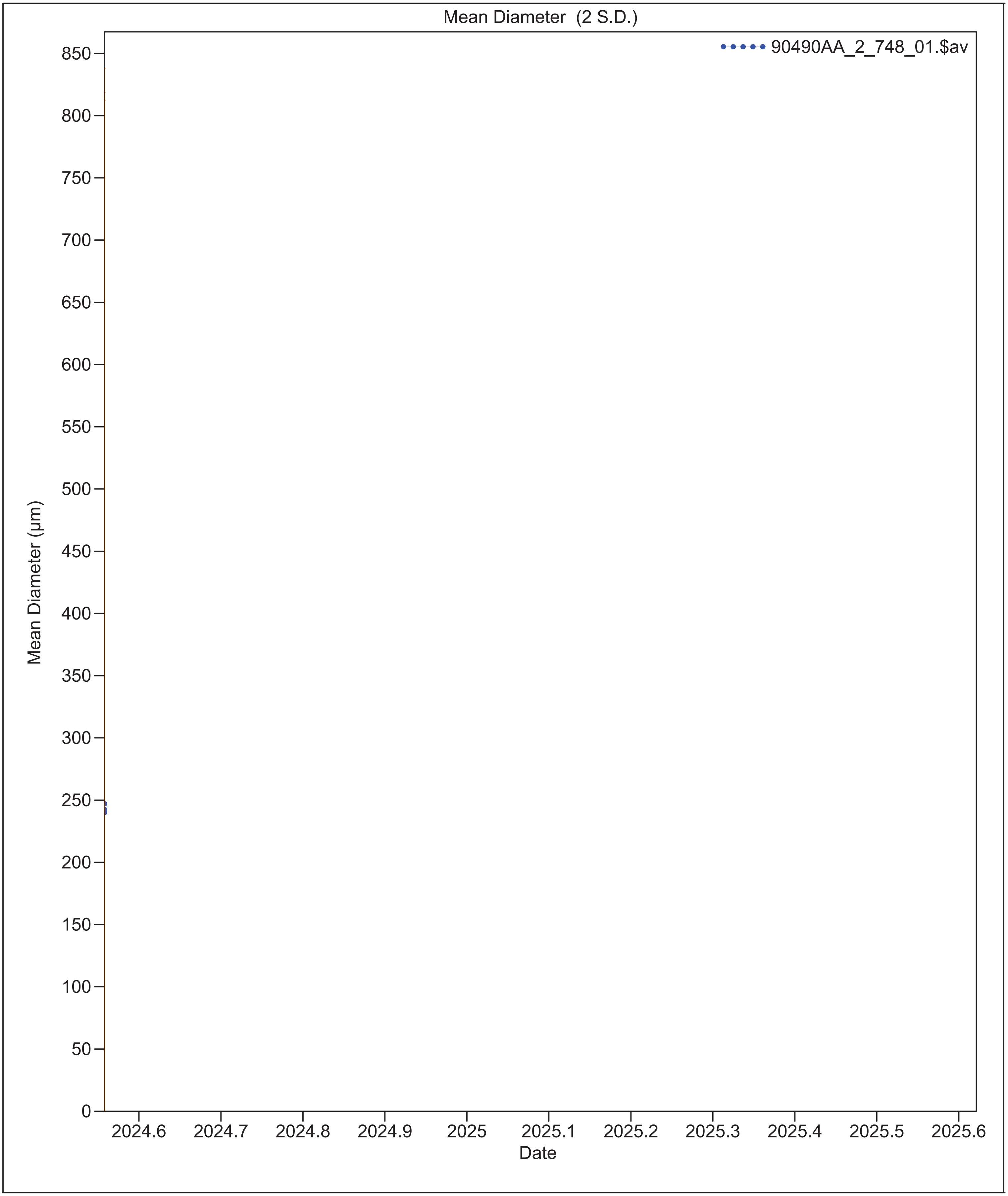
9 Jul 2024 14:27

Beckman Coulter LS 13 320



Beckman Coulter LS 13 320




Mean Diameter (2 S.D.)
90490AA_2_748_01.$av
Mean Diameter (µm)
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic) Average of 3 files 90490AA_2_748_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	243.1 µm	3.541	236.0	250.2
Median:	118.9 µm	1.688	115.5	122.2
S.D.:	289.9 µm	4.888	280.1	299.7
Variance:	84065 μm^2	2846	78373	89758
C.V.:	119.2%	0.378	118.5	120.0
Skewness:	1.554	0.054	1.446	1.662
Kurtosis:	2.016	0.286	1.443	2.589
d_{10}:	6.005 µm	0.657	4.692	7.319
d_{50}:	118.9 µm	1.688	115.5	122.2
d_{90}:	674.8 µm	8.130	658.5	691.0

LS Particle Size Analyzer

9 Jul 2024 14:37

Beckman Coulter LS 13 320

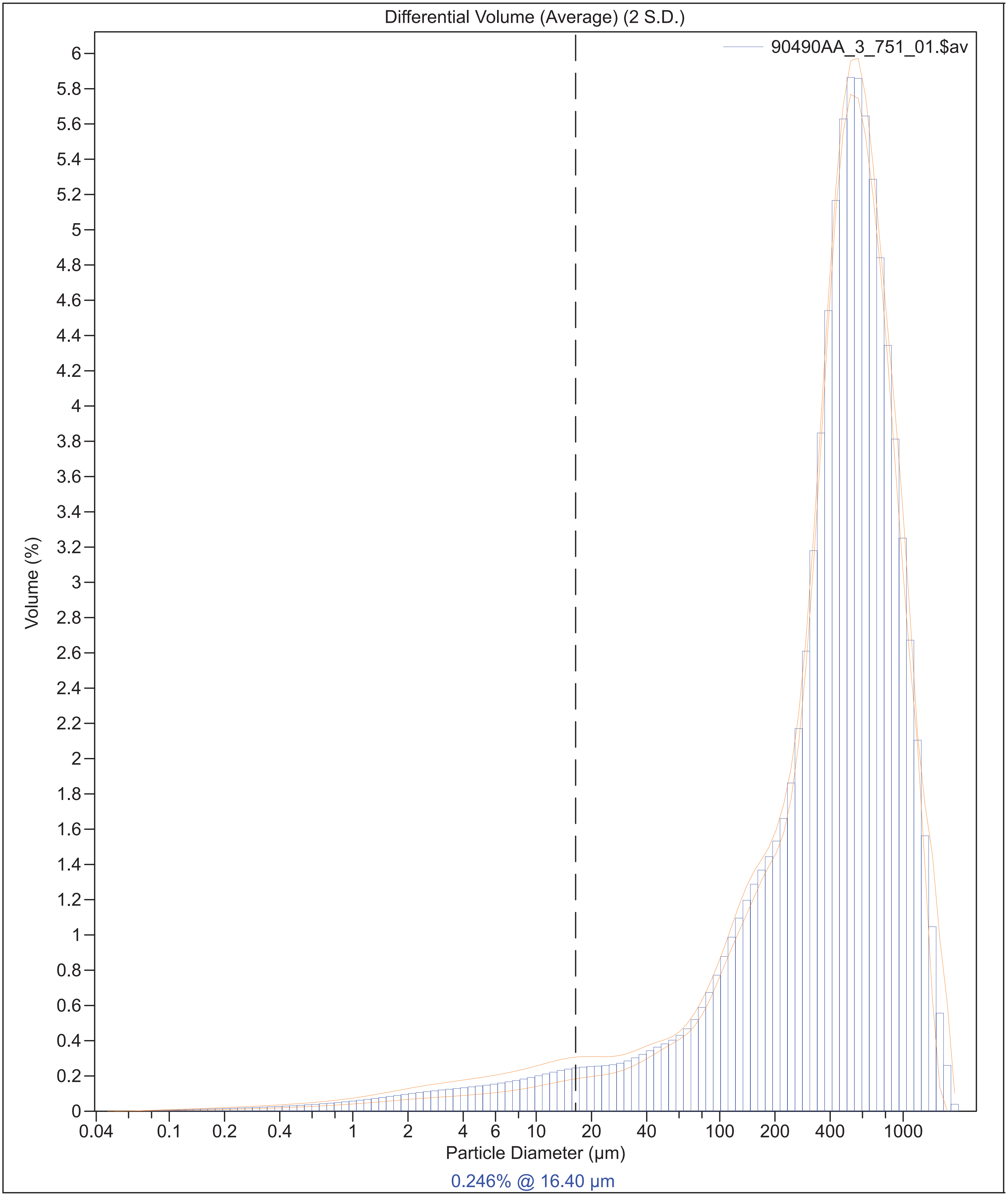
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90490AA_3_751_01.$av		
	90490AA_3_751_01.$av		
File ID:	90490AA_3		
Sample ID:	90490AA_3		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	66		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_3_749_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_3_750_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_3_751_01.$ls

LS Particle Size Analyzer

9 Jul 2024 14:37

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90490AA_3_751_01.$av

Calculations from 0.040 µm to 2000 µm

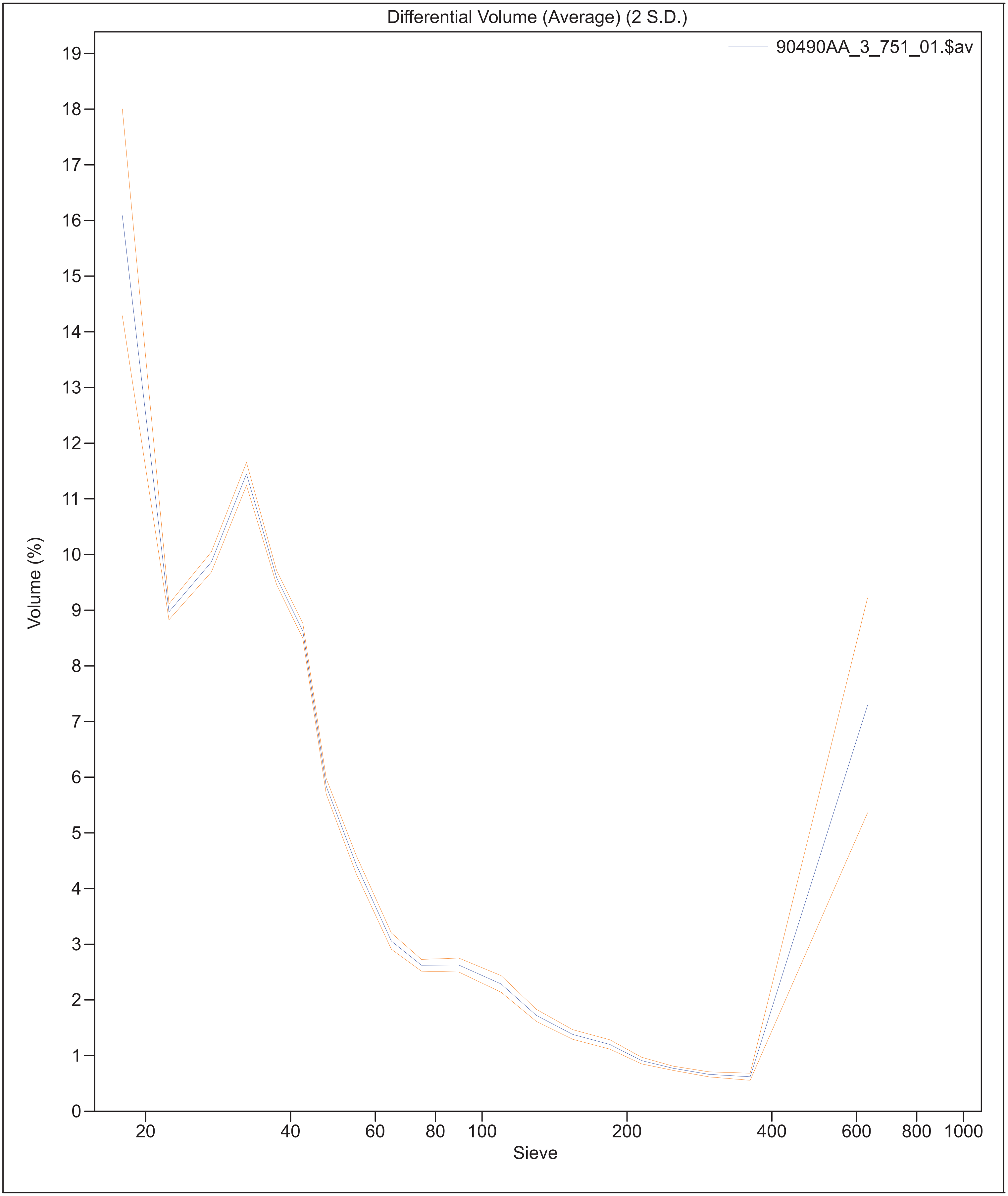
Volume:	100%		
Mean:	510.0 µm	S.D.:	347.9 µm
Median:	471.3 µm	Variance:	121.0e3 µm^2
Mean/Median ratio:	1.082	C.V.:	68.2%
Mode:	517.2 µm	Skewness:	0.721 Right skewed
		Kurtosis:	0.333 Leptokurtic

d_{10}: 71.64 µm d_{50}: 471.3 µm d_{90}: 990.9 µm

Folk and Ward Statistics (Phi)

Mean:	1.38	Median:	1.09	Deviation:	1.57
Skewness:	0.46	Kurtosis:	1.64		

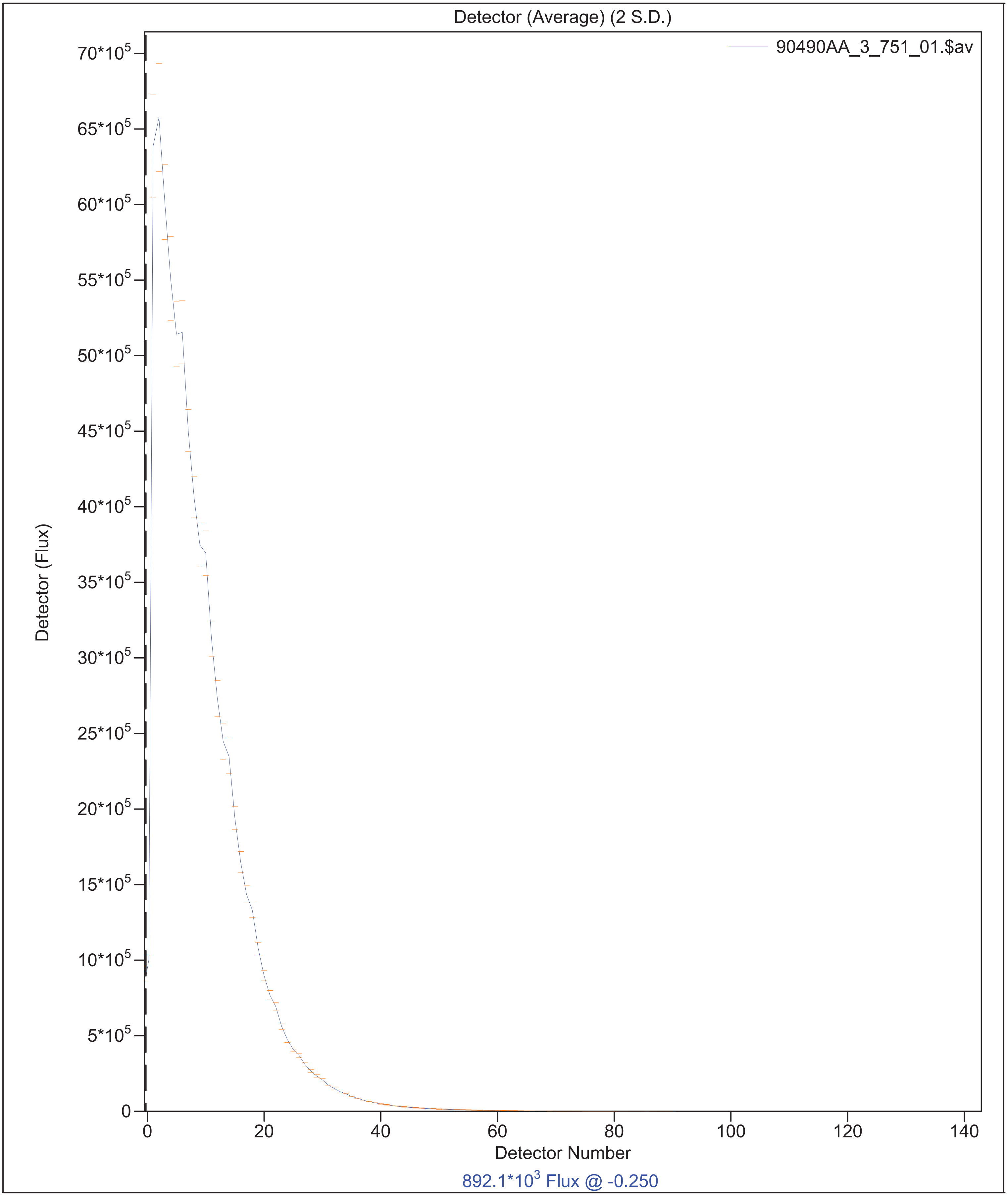
<10%	<25%	<50%	<75%	<90%
71.64 µm	248.2 µm	471.3 µm	710.7 µm	990.9 µm

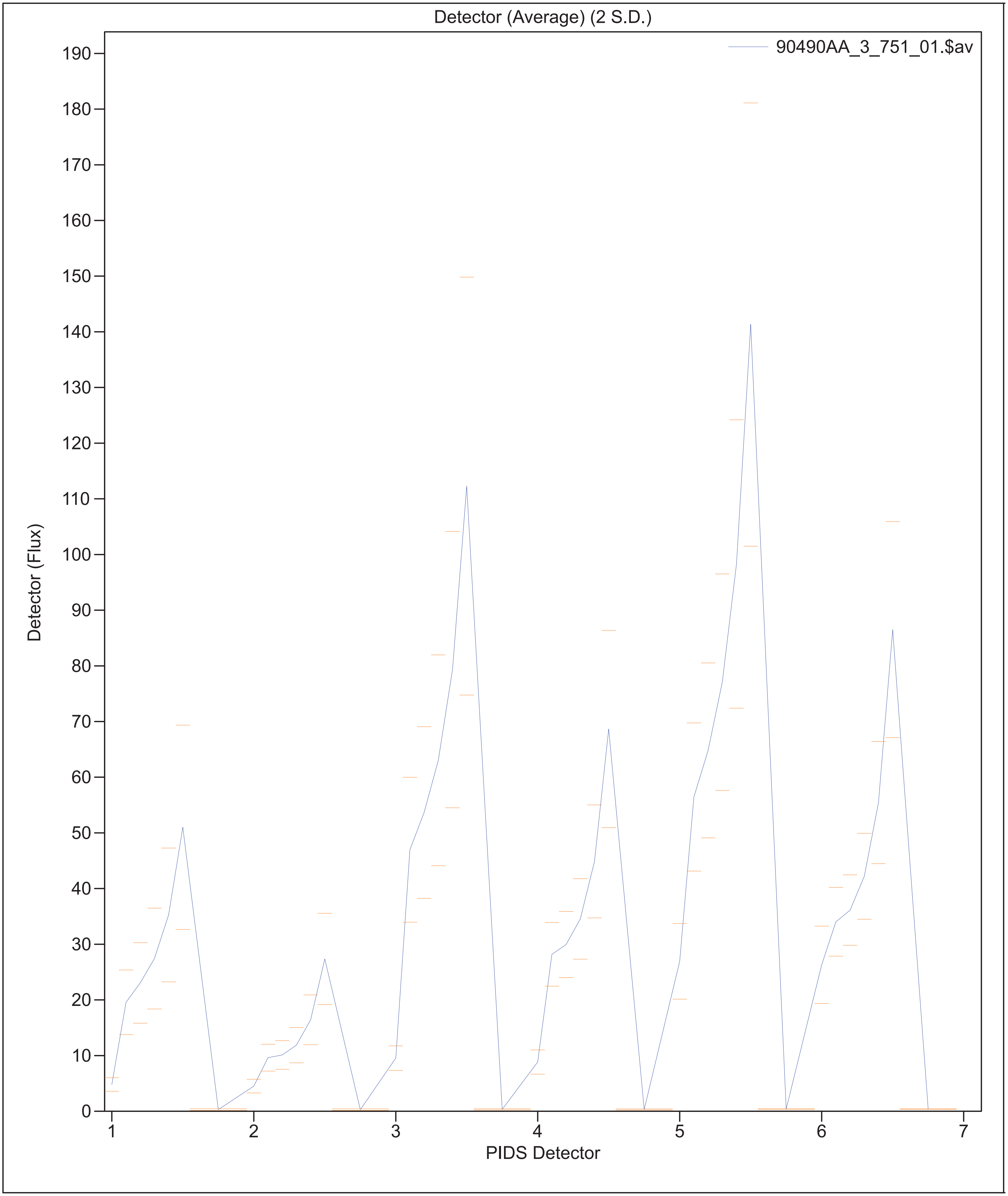

Differential Volume (Average) (2 S.D.)
90490AA_3_751_01.$av
Volume (%)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
40
60
80
100
200
400
600
800
1000
Sieve

LS Particle Size Analyzer

9 Jul 2024 14:37

Beckman Coulter LS 13 320

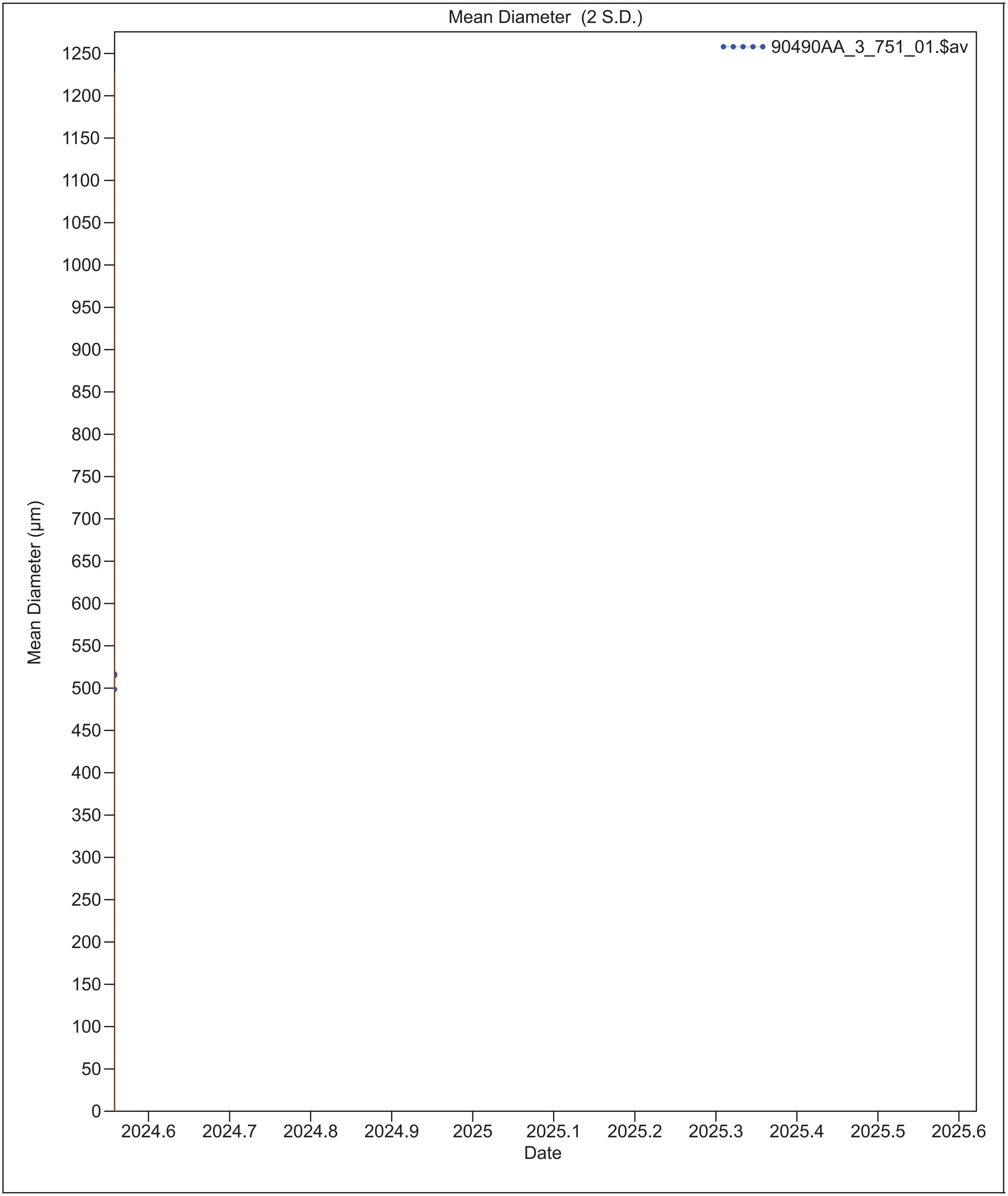



Detector (Average) (2 S.D.)
90490AA_3_751_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
PIDS Detector
1
2
3
4
5
6
7

LS Particle Size Analyzer

9 Jul 2024 14:37

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

9 Jul 2024 14:37

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90490AA_3_751_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	510.0 µm	9.993	490.0	530.0
Median:	471.3 µm	5.142	461.0	481.6
S.D.:	347.8 µm	8.549	330.7	364.8
Variance:	121.0e3 μm^2	5937	109.1e3	132.9e3
C.V.:	68.18%	0.634	66.91	69.45
Skewness:	0.714	0.094	0.526	0.902
Kurtosis:	0.302	0.266	-0.229	0.833
d_{10}:	71.42 µm	12.92	45.59	97.26
d_{50}:	471.3 µm	5.142	461.0	481.6
d_{90}:	991.2 µm	17.07	957.1	1025

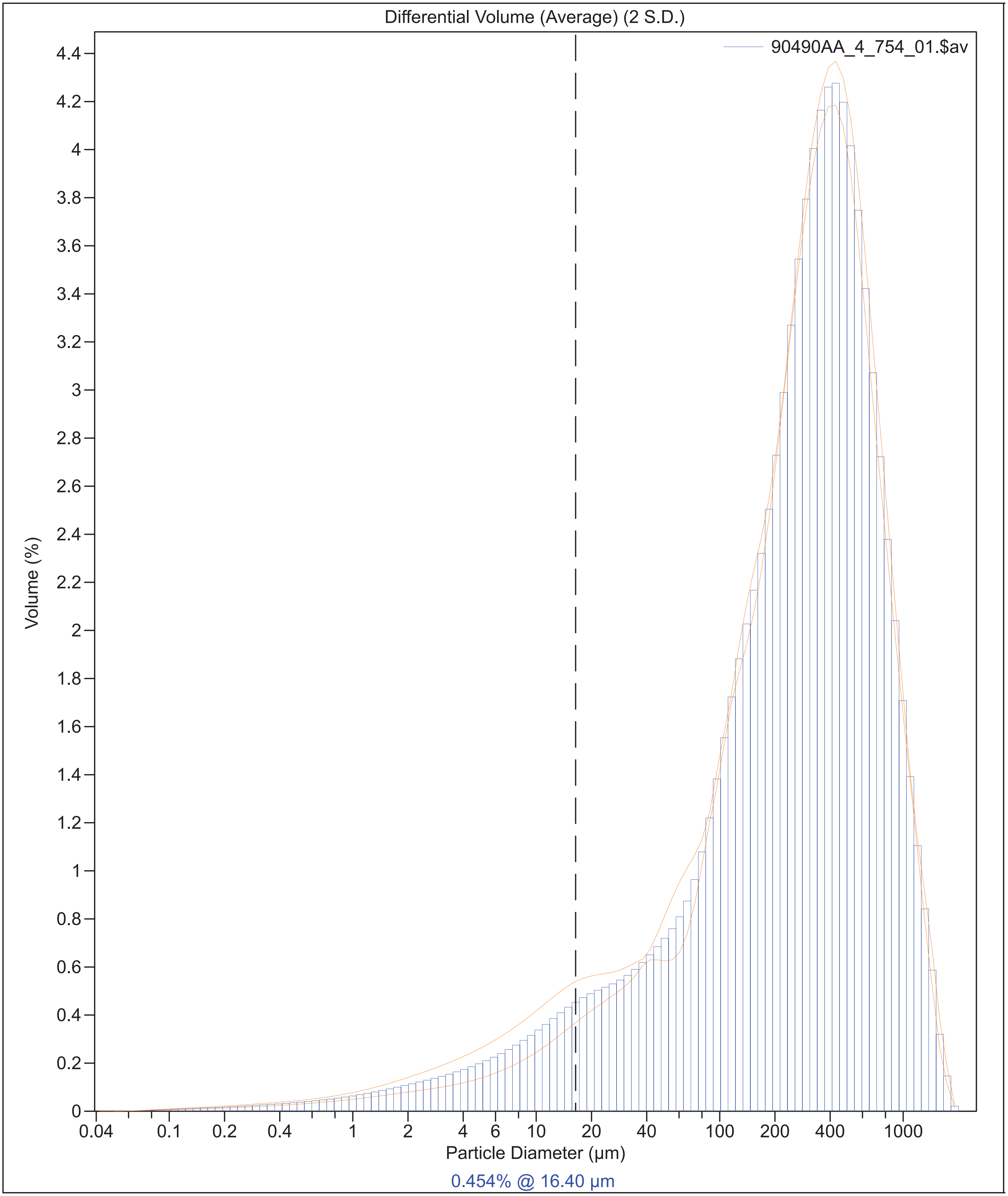
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90490AA_4_754_01.$av 90490AA_4_754_01.$av
File ID:	90490AA_4
Sample ID:	90490AA_4
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	66
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_4_752_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_4_753_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_4_754_01.$ls

LS Particle Size Analyzer

9 Jul 2024 14:48

Beckman Coulter LS 13 320



BECKMAN COULTER™

LS Particle Size Analyzer

9 Jul 2024 14:48

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90490AA_4_754_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	368.5 µm	S.D.:	315.5 µm
Median:	298.2 µm	Variance:	99553 μm^2
Mean/Median ratio:	1.236	C.V.:	85.6%
Mode:	429.2 µm	Skewness:	1.264 Right skewed
		Kurtosis:	1.682 Leptokurtic

d_{10}: 29.31 µm d_{50}: 298.2 µm d_{90}: 804.4 µm

Folk and Ward Statistics (Phi)

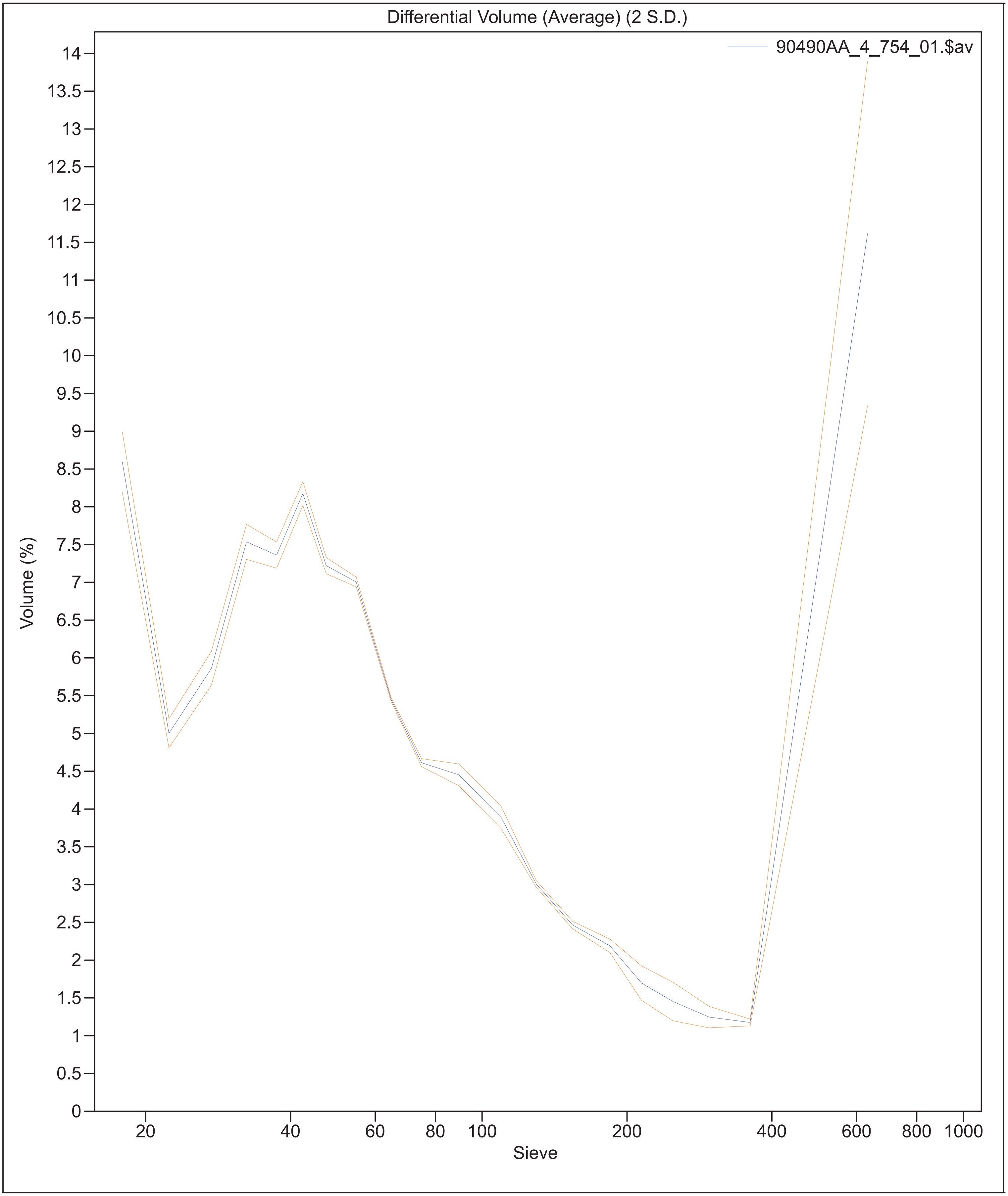
Mean:	2.08	Median:	1.75	Deviation:	1.82
Skewness:	0.39	Kurtosis:	1.31		

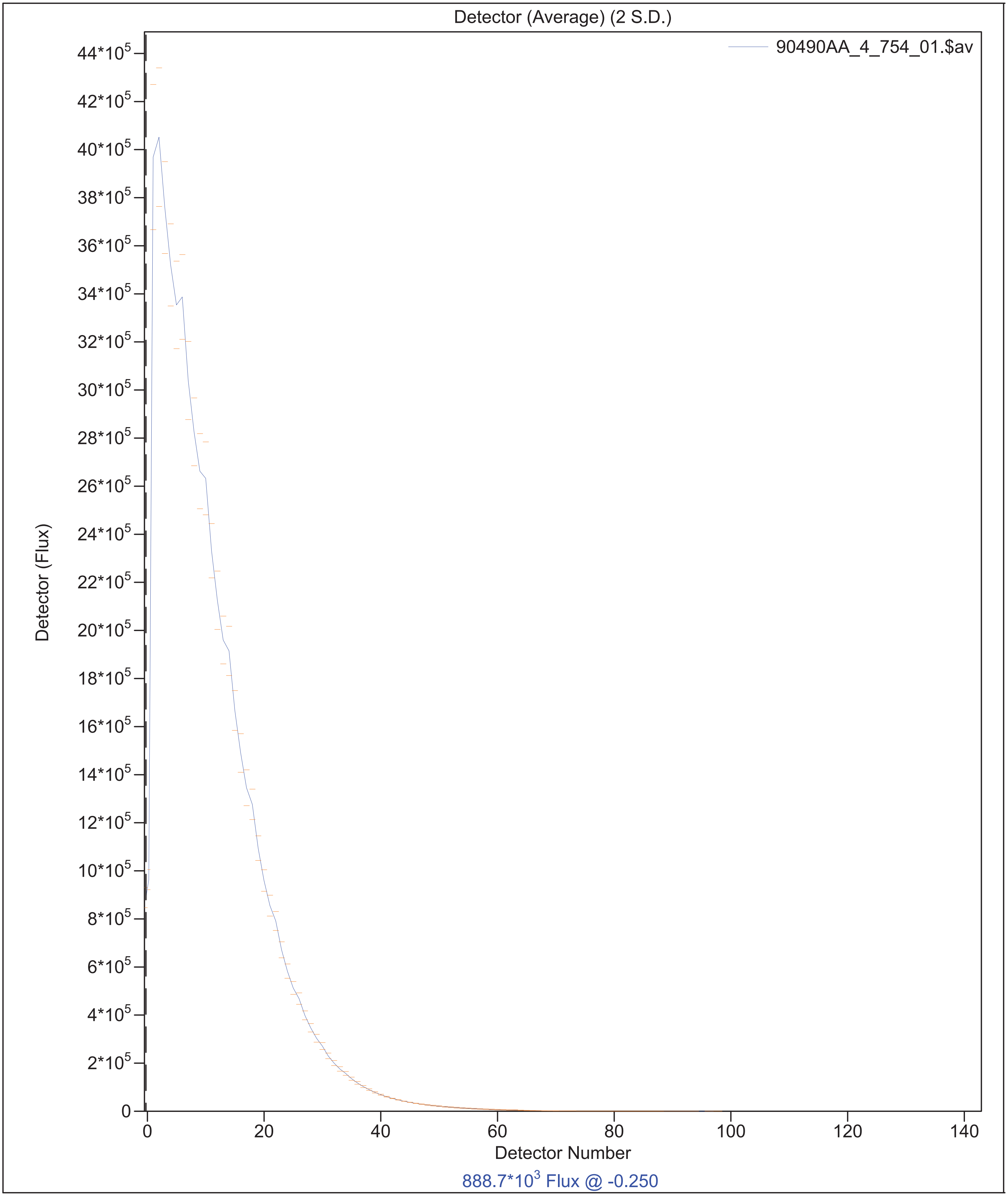
<10%	<25%	<50%	<75%	<90%
29.31 µm	126.0 µm	298.2 µm	523.9 µm	804.4 µm

LS Particle Size Analyzer

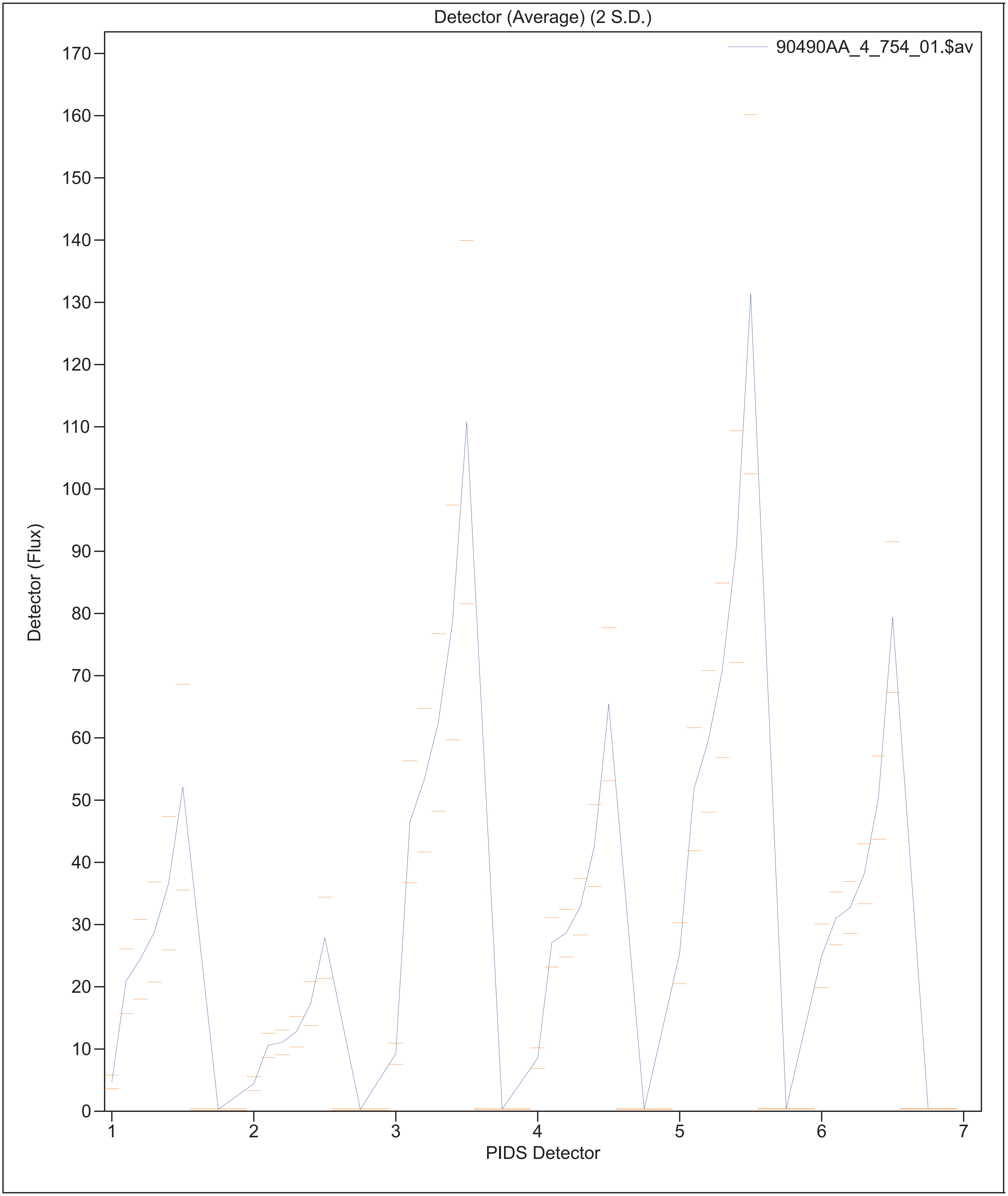
9 Jul 2024 14:48

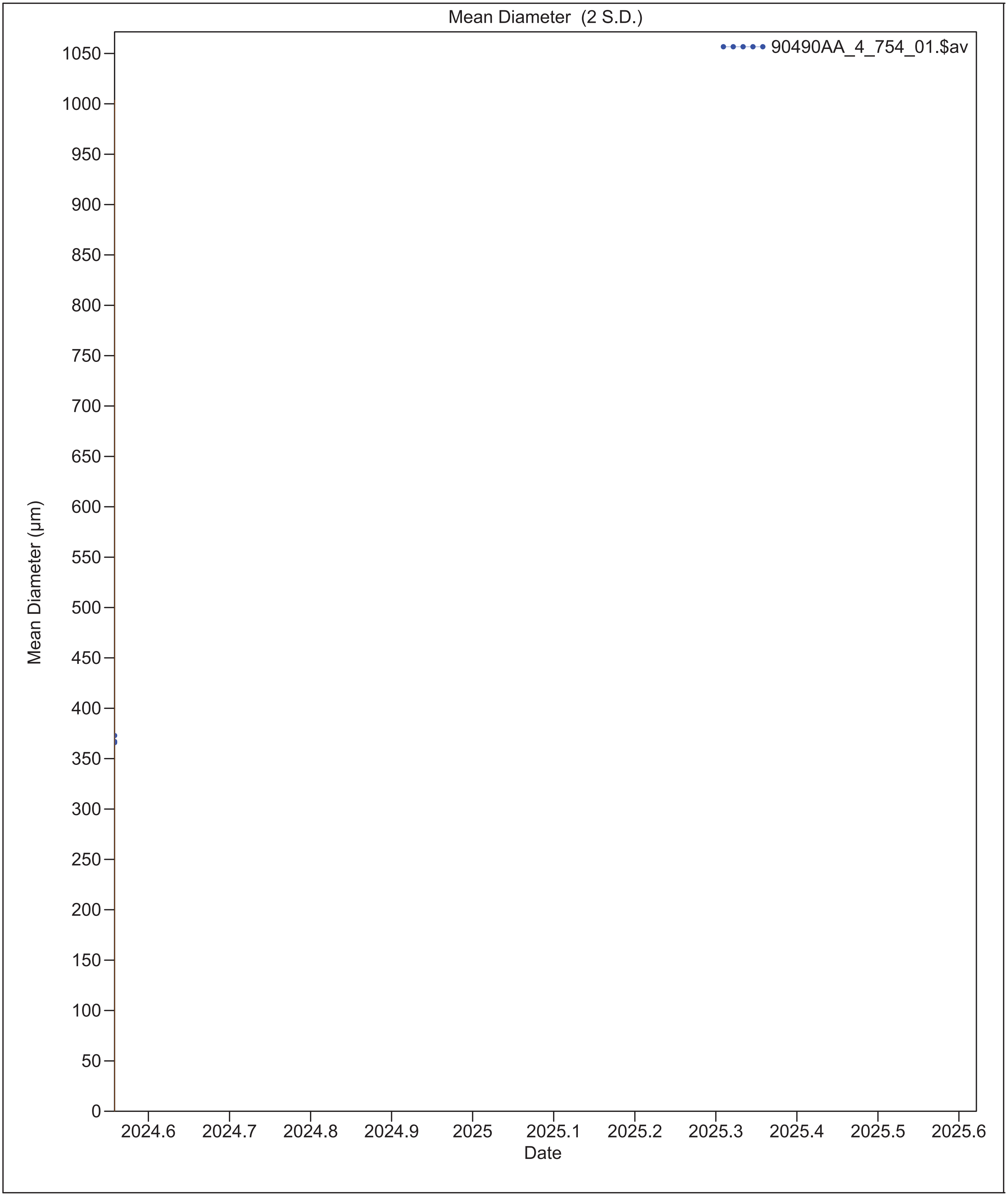
Beckman Coulter LS 13 320





Detector (Average) (2 S.D.)
90490AA_4_754_01.$av
Detector (Flux)
44*10^5
42*10^5
40*10^5
38*10^5
36*10^5
34*10^5
32*10^5
30*10^5
28*10^5
26*10^5
24*10^5
22*10^5
20*10^5
18*10^5
16*10^5
14*10^5
12*10^5
10*10^5
8*10^5
6*10^5
4*10^5
2*10^5
0
0
20
40
60
80
100
120
140
Detector Number
888.7*10^3 Flux @ -0.250


Detector (Average) (2 S.D.)
90490AA_4_754_01.$av
Detector (Flux)
PIDS Detector
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90490AA_4_754_01.$av
Mean Diameter (µm)
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic)   Average of 3 files   90490AA_4_754_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	368.5 µm	3.757	361.0	376.0
Median:	298.2 µm	4.038	290.1	306.2
S.D.:	315.5 µm	2.193	311.1	319.9
Variance:	99543 $µm^2$	1385	96772	102.3e3
C.V.:	85.62%	1.154	83.31	87.93
Skewness:	1.264	0.022	1.219	1.308
Kurtosis:	1.680	0.081	1.518	1.843
d_{10}:	29.64 µm	5.591	18.46	40.82
d_{50}:	298.2 µm	4.038	290.1	306.2
d_{90}:	804.4 µm	2.159	800.1	808.8

Beckman Coulter LS 13 320

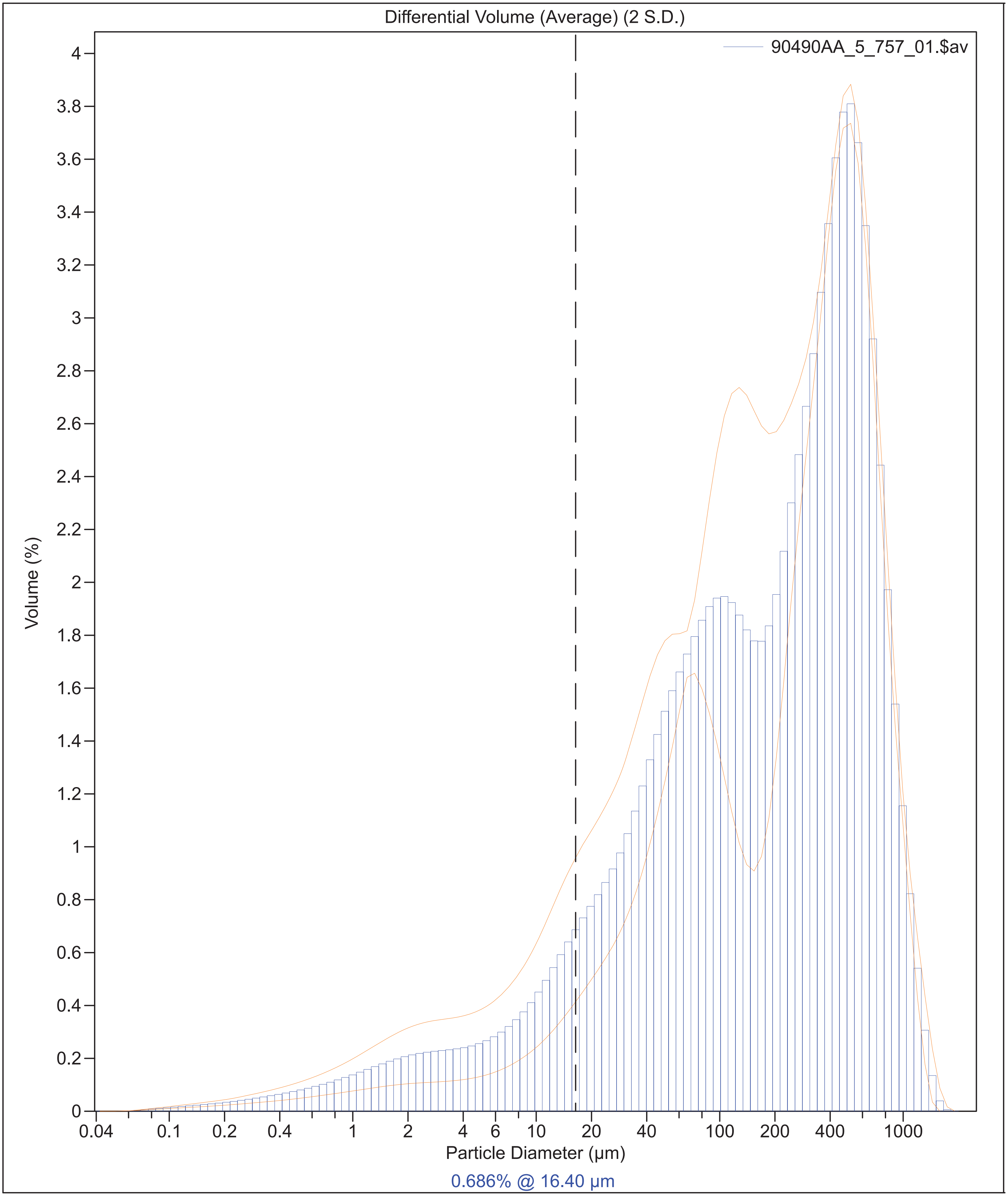
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90490AA_5_757_01.$av		
	90490AA_5_757_01.$av		
File ID:	90490AA_5		
Sample ID:	90490AA_5		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	66		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_5_755_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_5_756_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90490AA_5_757_01.$ls

LS Particle Size Analyzer

9 Jul 2024 14:59

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:59

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90490AA_5_757_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	292.0 µm	S.D.:	282.0 µm
Median:	203.2 µm	Variance:	79515 µm^2
Mean/Median ratio:	1.437	C.V.:	96.6%
Mode:	517.2 µm	Skewness:	1.136 Right skewed
		Kurtosis:	0.928 Leptokurtic

d_{10}: 15.25 µm d_{50}: 203.2 µm d_{90}: 694.1 µm

Folk and Ward Statistics (Phi)

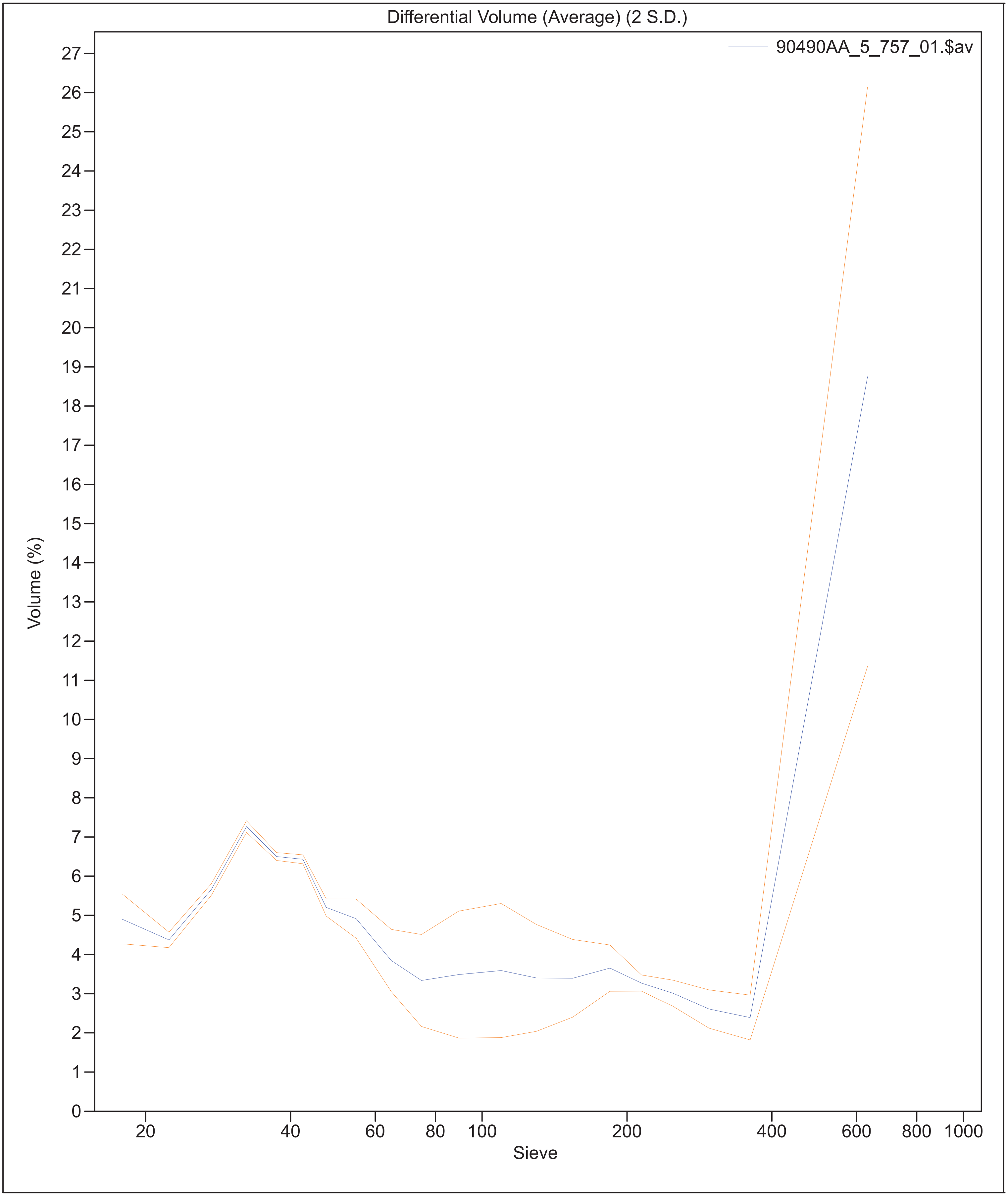
Mean:	2.71	Median:	2.30	Deviation:	2.20
Skewness:	0.37	Kurtosis:	1.01		

<10%	<25%	<50%	<75%	<90%
15.25 µm	57.04 µm	203.2 µm	466.9 µm	694.1 µm

LS Particle Size Analyzer

9 Jul 2024 14:59

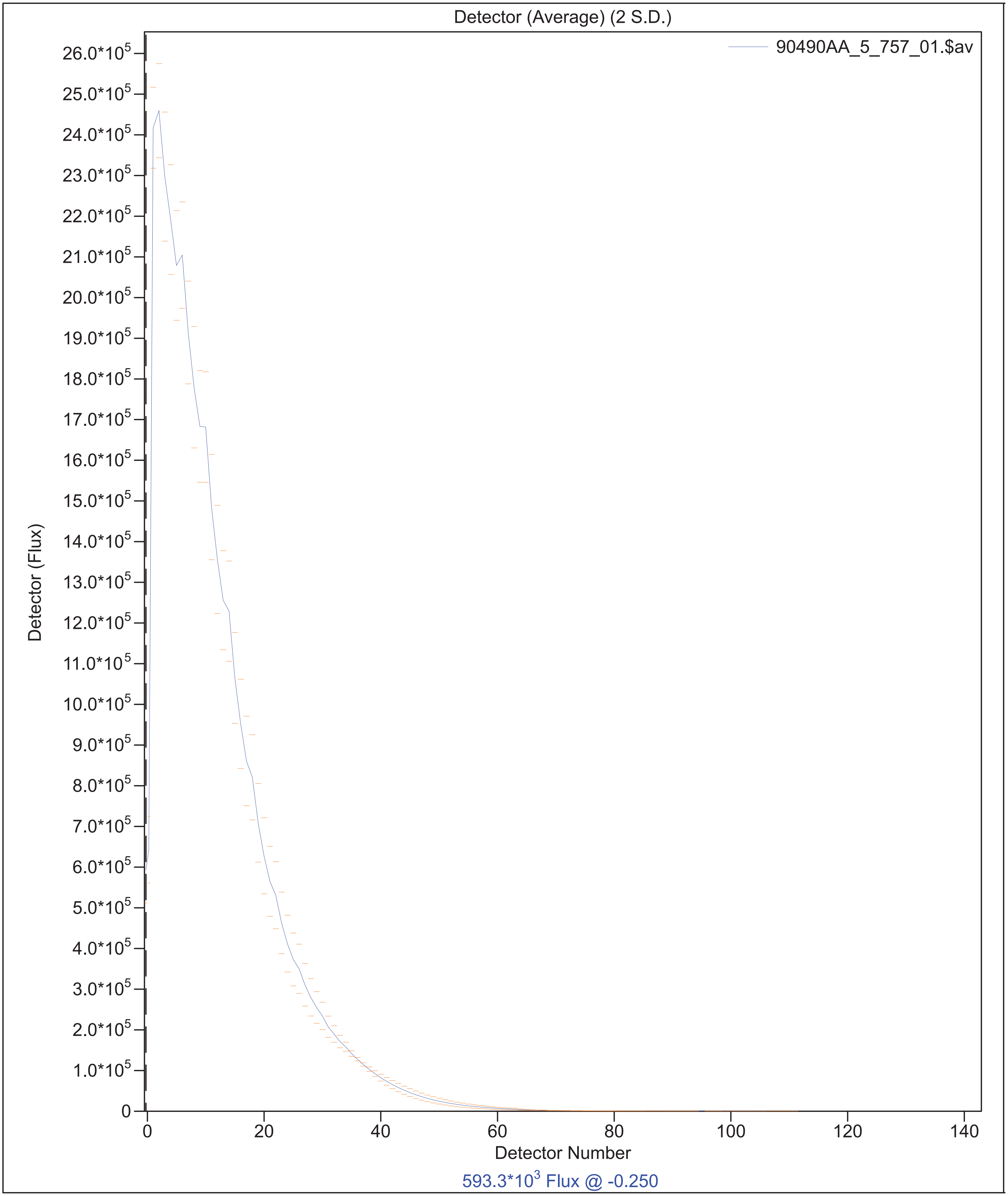
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:59

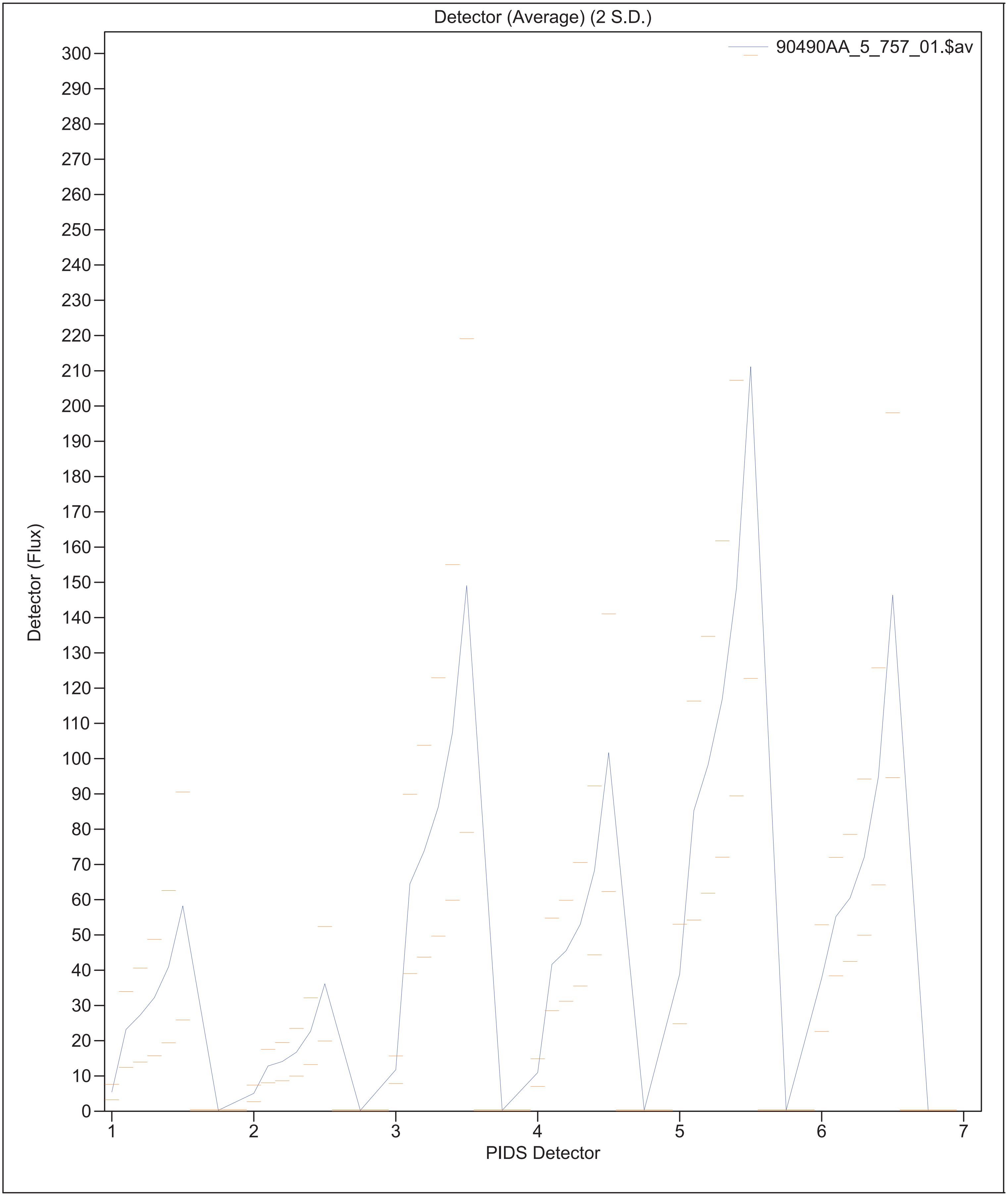
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:59

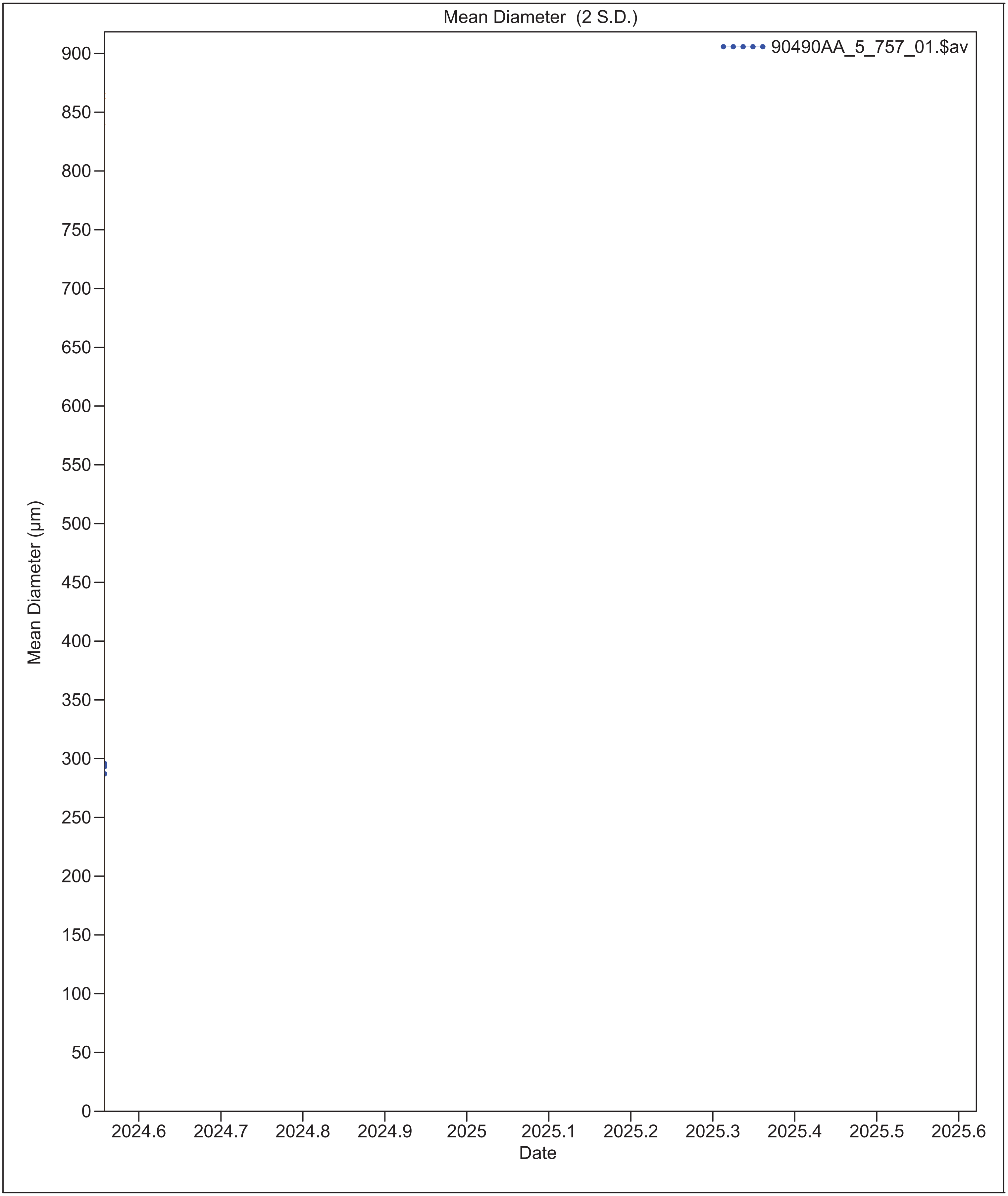
Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 14:59

Beckman Coulter LS 13 320



BECKMAN COULTER

LS Particle Size Analyzer

9 Jul 2024 14:59

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90490AA_5_757_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	292.0 µm	4.481	283.0	301.0
Median:	202.4 µm	7.667	187.1	217.8
S.D.:	281.9 µm	8.702	264.5	299.3
Variance:	79502 μm^2	4863	69777	89227
C.V.:	96.57%	4.221	88.13	105.0
Skewness:	1.135	0.026	1.084	1.187
Kurtosis:	0.915	0.099	0.716	1.113
d_{10}:	16.12 µm	5.562	4.994	27.24
d_{50}:	202.4 µm	7.667	187.1	217.8
d_{90}:	694.1 µm	7.039	680.0	708.2

LS Particle Size Analyzer

10 Jul 2024 12:57

Beckman Coulter LS 13 320

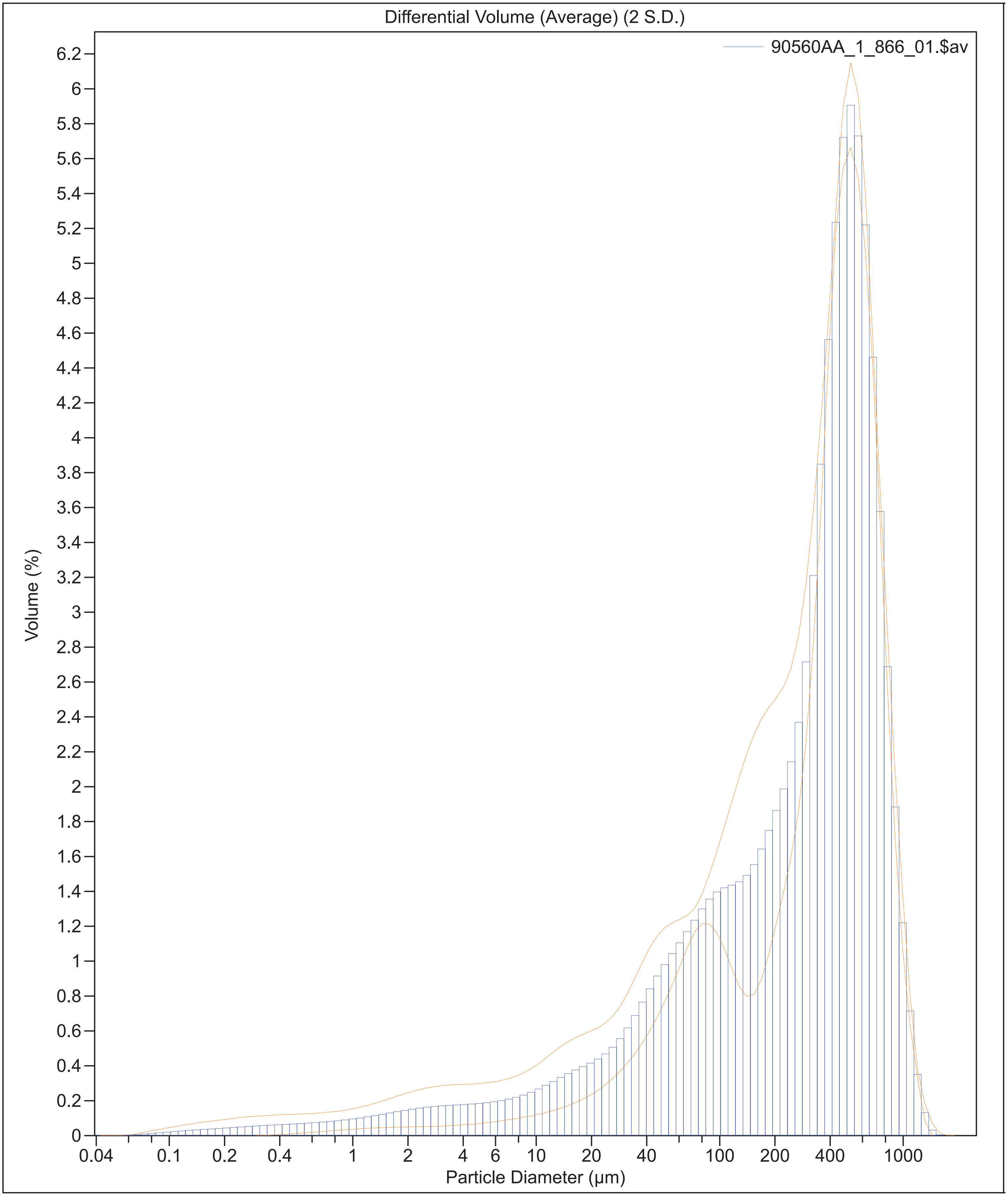
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90560AA_1_866_01.$av
	90560AA_1_866_01.$av
File ID:	90560AA_1
Sample ID:	90560AA_1
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90560AA_1_864_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90560AA_1_865_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90560AA_1_866_01.$ls

LS Particle Size Analyzer

10 Jul 2024 12:57

Beckman Coulter LS 13 320



LS Particle Size Analyzer

10 Jul 2024 12:57

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90560AA_1_866_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	363.0 µm	S.D.:	271.7 µm
Median:	351.0 µm	Variance:	73837 $µm^2$
Mean/Median ratio:	1.034	C.V.:	74.9%
Mode:	517.2 µm	Skewness:	0.542 Right skewed
		Kurtosis:	-0.293 Platykurtic

d_{10}: 28.81 µm d_{50}: 351.0 µm d_{90}: 728.7 µm

Folk and Ward Statistics (Phi)

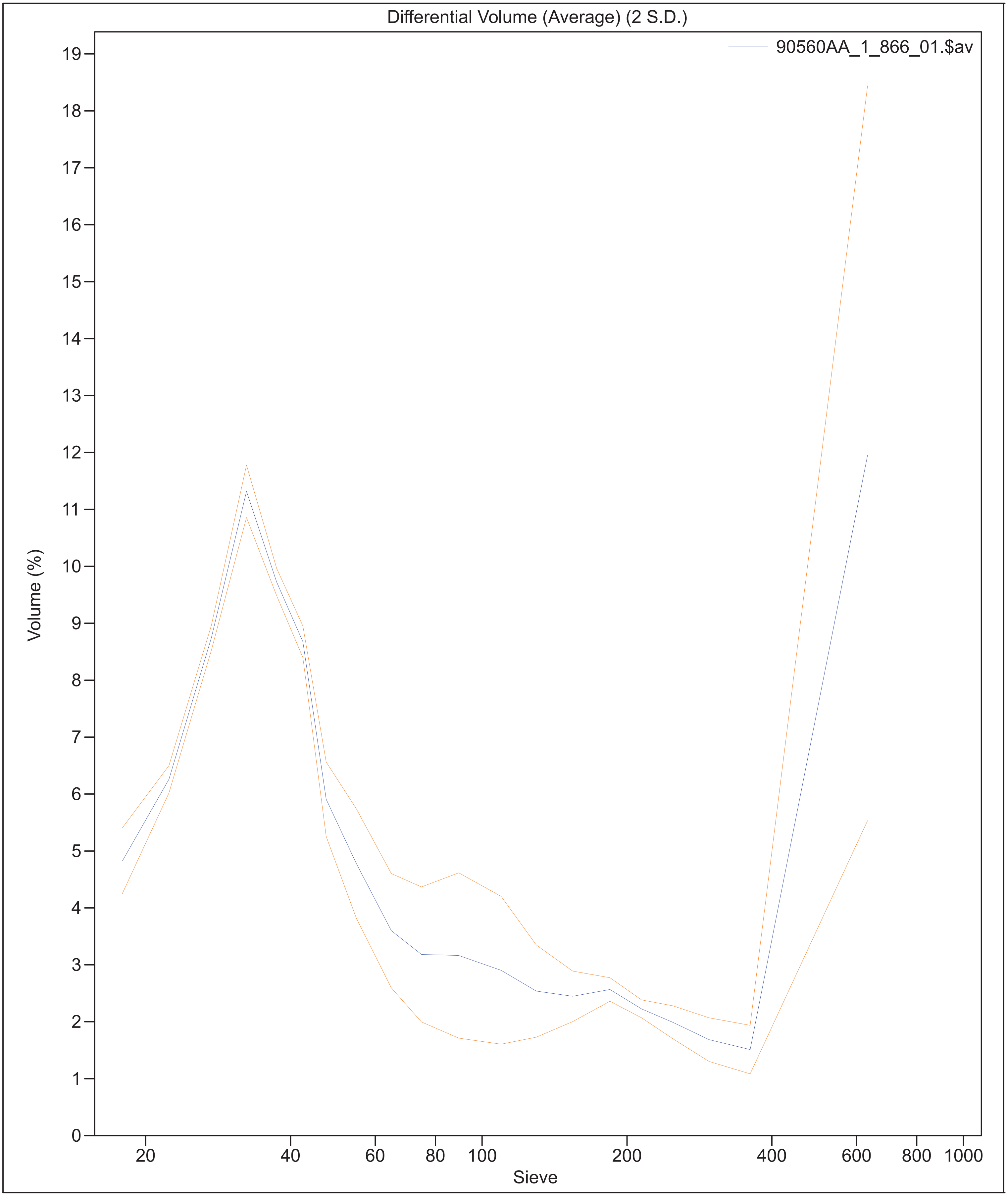
Mean:	2.09	Median:	1.51	Deviation:	1.89
Skewness:	0.56	Kurtosis:	1.19		

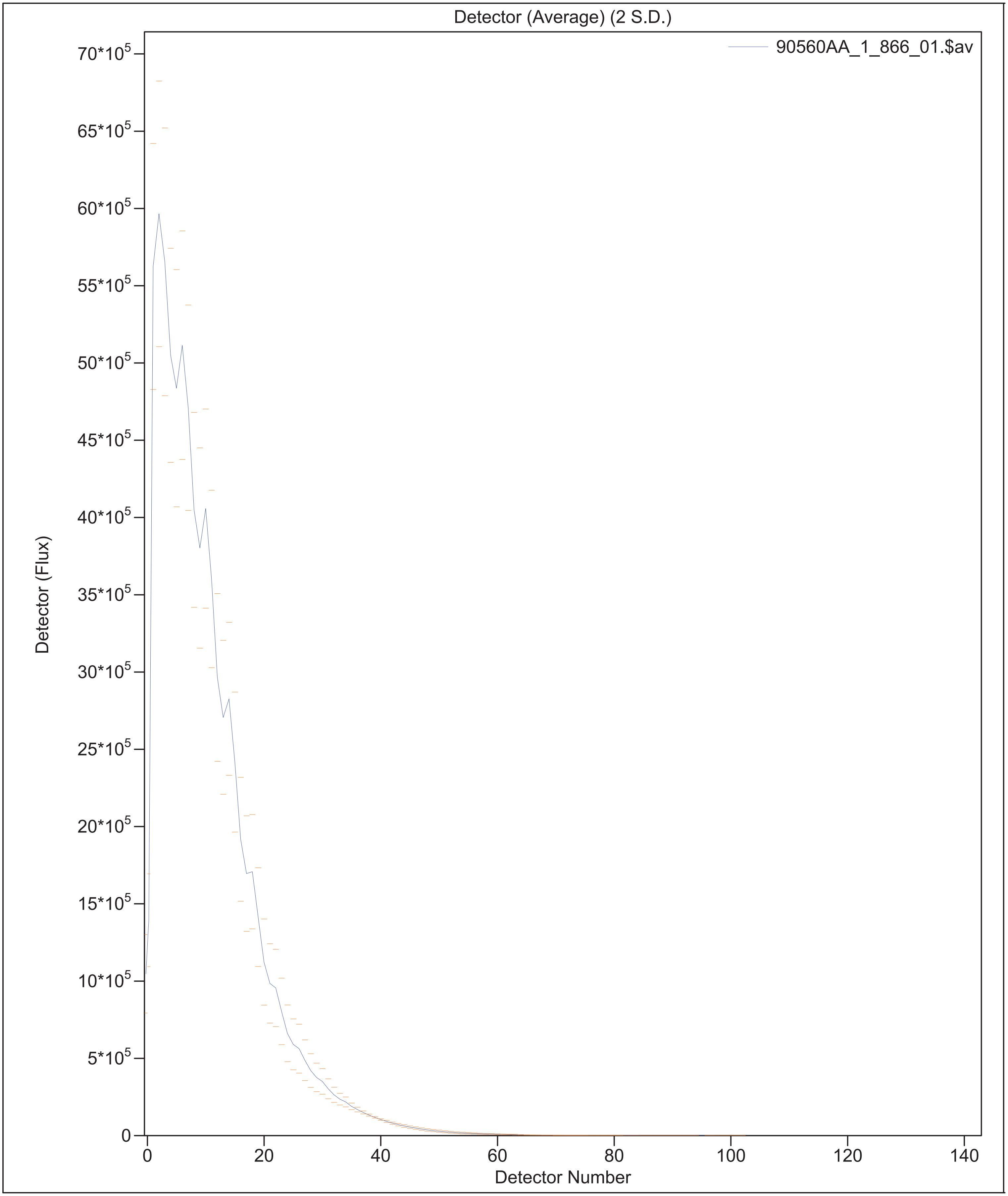
<10%	<25%	<50%	<75%	<90%
28.81 µm	110.3 µm	351.0 µm	551.3 µm	728.7 µm

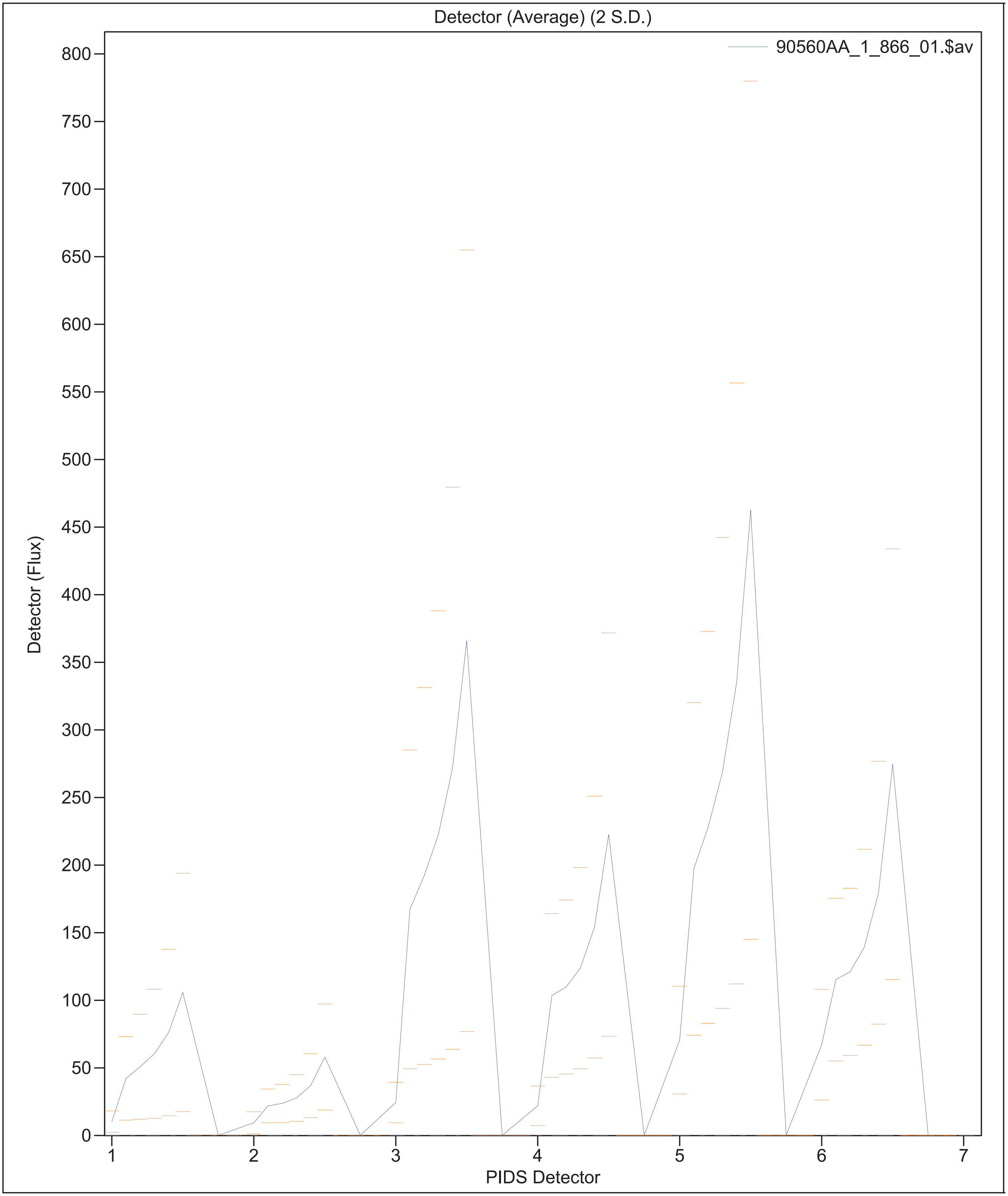
LS Particle Size Analyzer

10 Jul 2024 12:57

Beckman Coulter LS 13 320



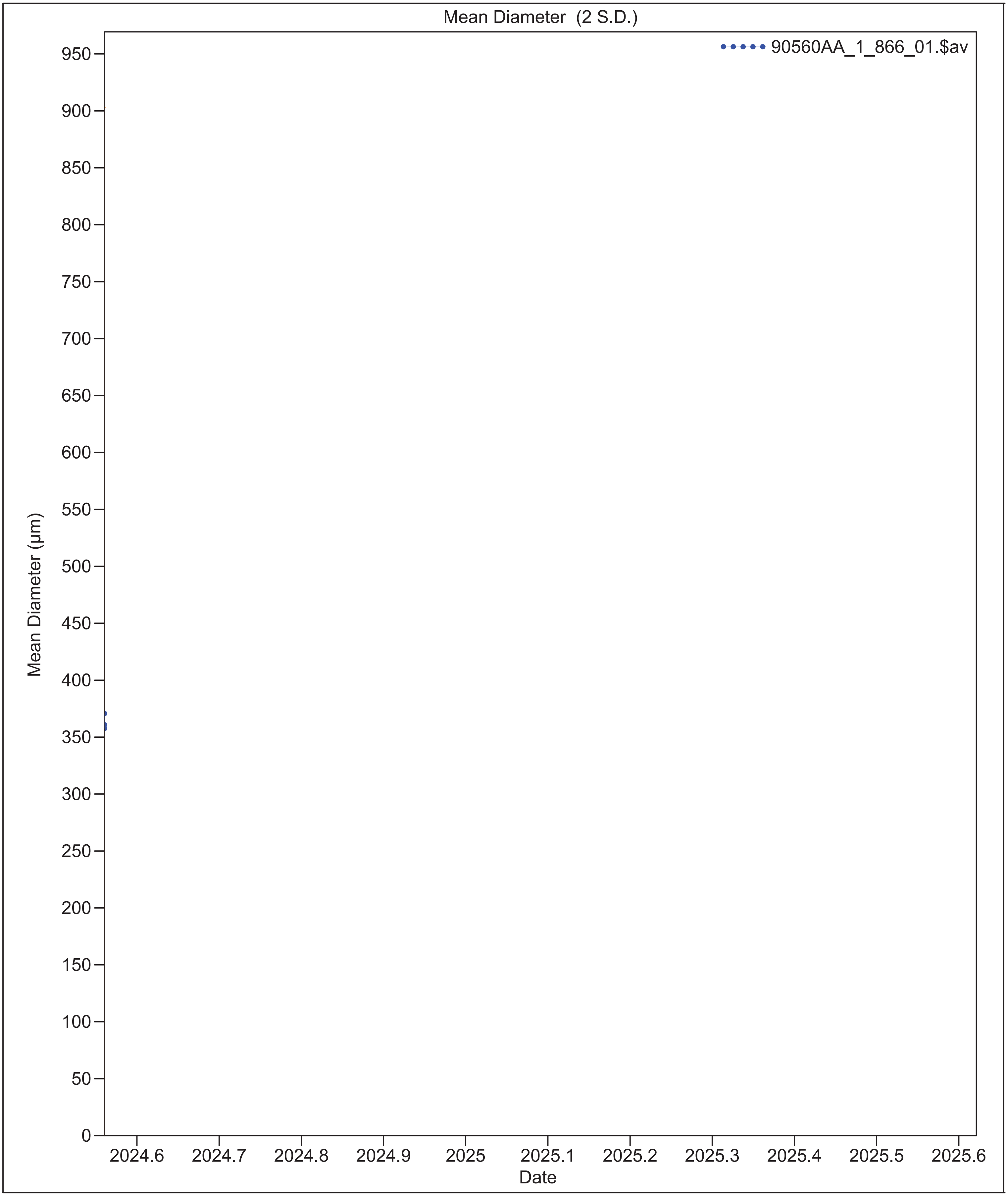

Detector (Average) (2 S.D.)
90560AA_1_866_01.$av
Detector (Flux)
70*10^5
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
0
20
40
60
80
100
120
140
Detector Number


Detector (Average) (2 S.D.)
90560AA_1_866_01.$av
Detector (Flux)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
PIDS Detector

LS Particle Size Analyzer

10 Jul 2024 12:57

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) Average of 3 files 90560AA_1_866_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	363.0 µm	6.810	349.4	376.6
Median:	351.0 µm	0.863	349.3	352.8
S.D.:	271.6 µm	5.193	261.3	282.0
Variance:	73806 μm^2	2817	68173	79439
C.V.:	74.87%	2.807	69.26	80.48
Skewness:	0.546	0.042	0.463	0.629
Kurtosis:	-0.292	0.119	-0.530	-0.053
d_{10}:	30.46 µm	14.17	2.116	58.80
d_{50}:	351.0 µm	0.863	349.3	352.8
d_{90}:	728.6 µm	5.612	717.4	739.8

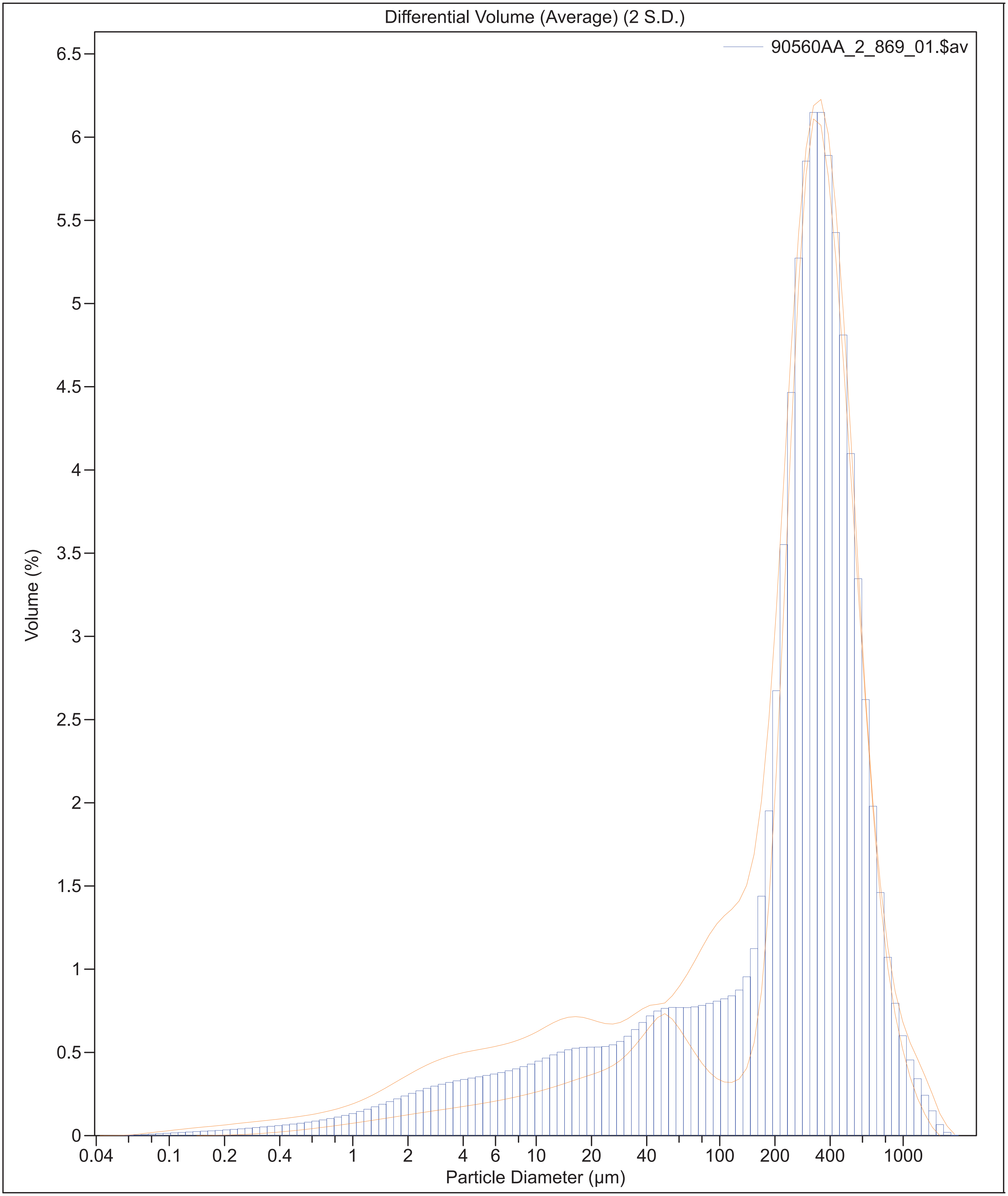
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90560AA_2_869_01.$av 90560AA_2_869_01.$av
File ID:	90560AA_2
Sample ID:	90560AA_2
Operator:	lns/dwh
Optical model:	marine_mud.rf780d PIDS included
LS 13 320	Aqueous Liquid Module
	Run length: 53 seconds
Pump speed:	65
Fluid:	Water

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90560AA_2_867_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90560AA_2_868_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90560AA_2_869_01.$ls

LS Particle Size Analyzer

10 Jul 2024 13:04

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

10 Jul 2024 13:04

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90560AA_2_869_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	304.8 µm	S.D.:	238.6 µm
Median:	289.3 µm	Variance:	56916 μm^2
Mean/Median ratio:	1.054	C.V.:	78.3%
Mode:	324.4 µm	Skewness:	1.143 Right skewed
		Kurtosis:	2.540 Leptokurtic

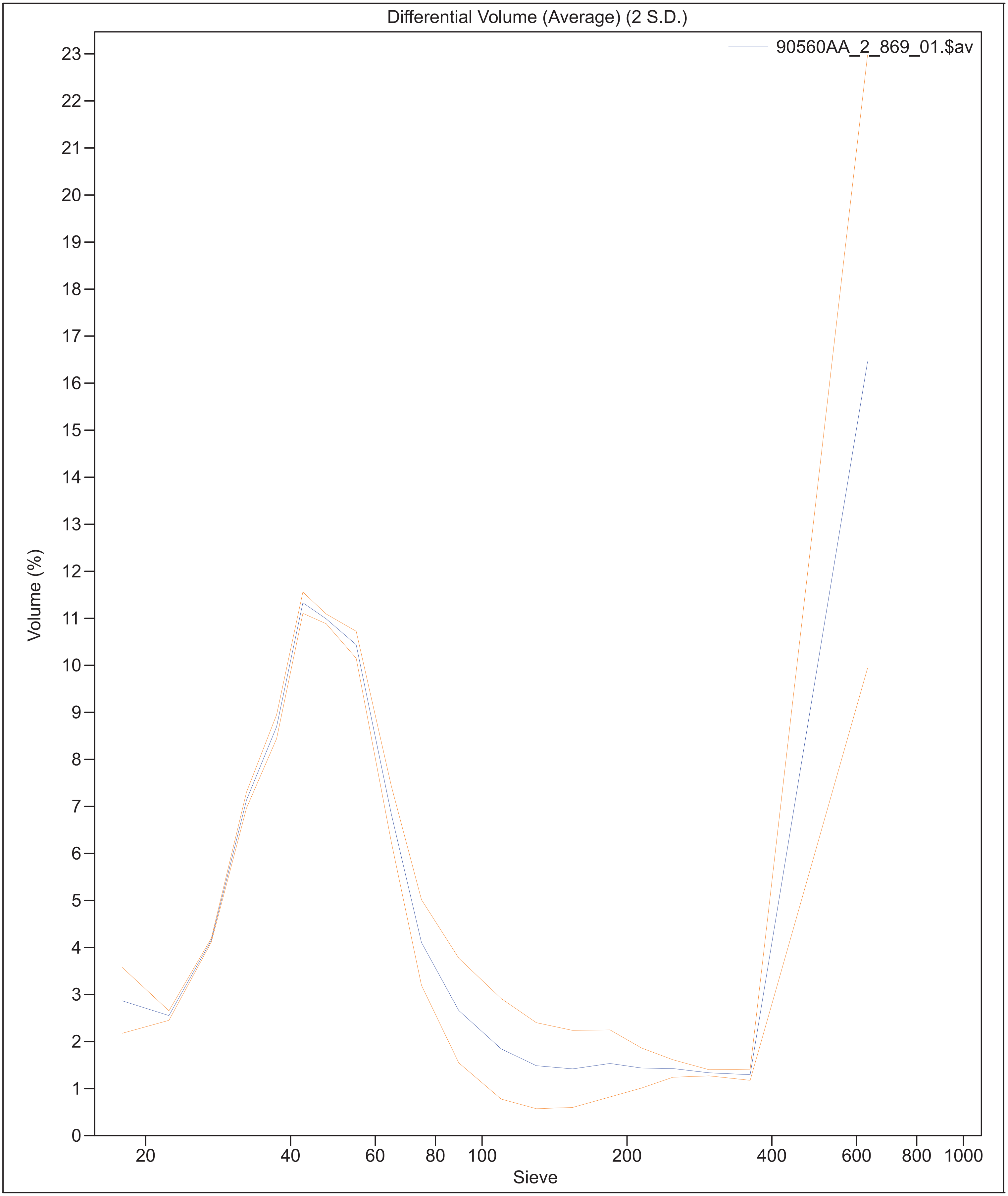
d_{10}: 12.75 µm d_{50}: 289.3 µm d_{90}: 591.7 µm

Folk and Ward Statistics (Phi)

Mean:	2.53	Median:	1.79	Deviation:	2.10
Skewness:	0.61	Kurtosis:	1.54		

<10%	<25%	<50%	<75%	<90%
12.75 µm	107.1 µm	289.3 µm	428.0 µm	591.7 µm

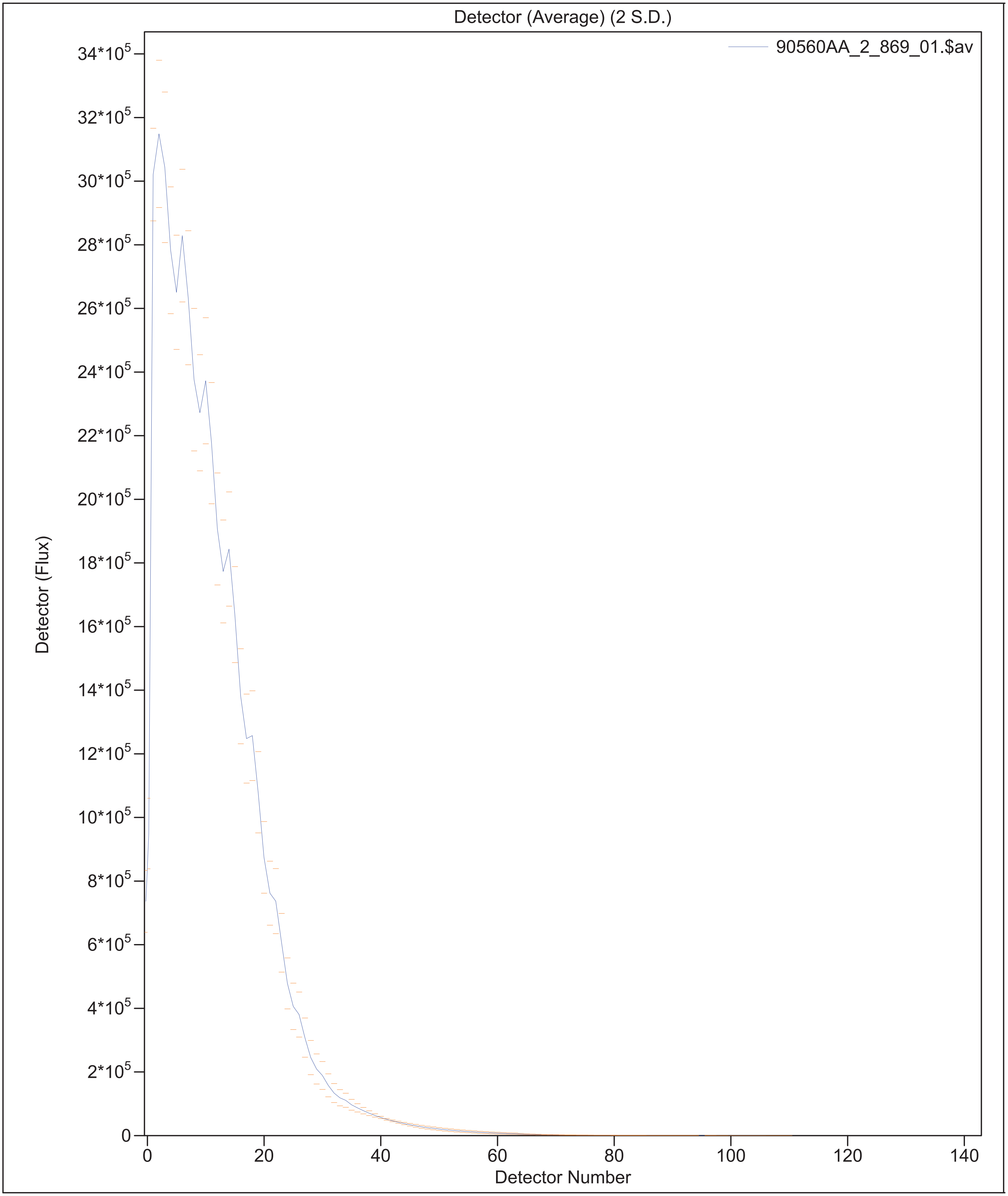
Beckman Coulter LS 13 320

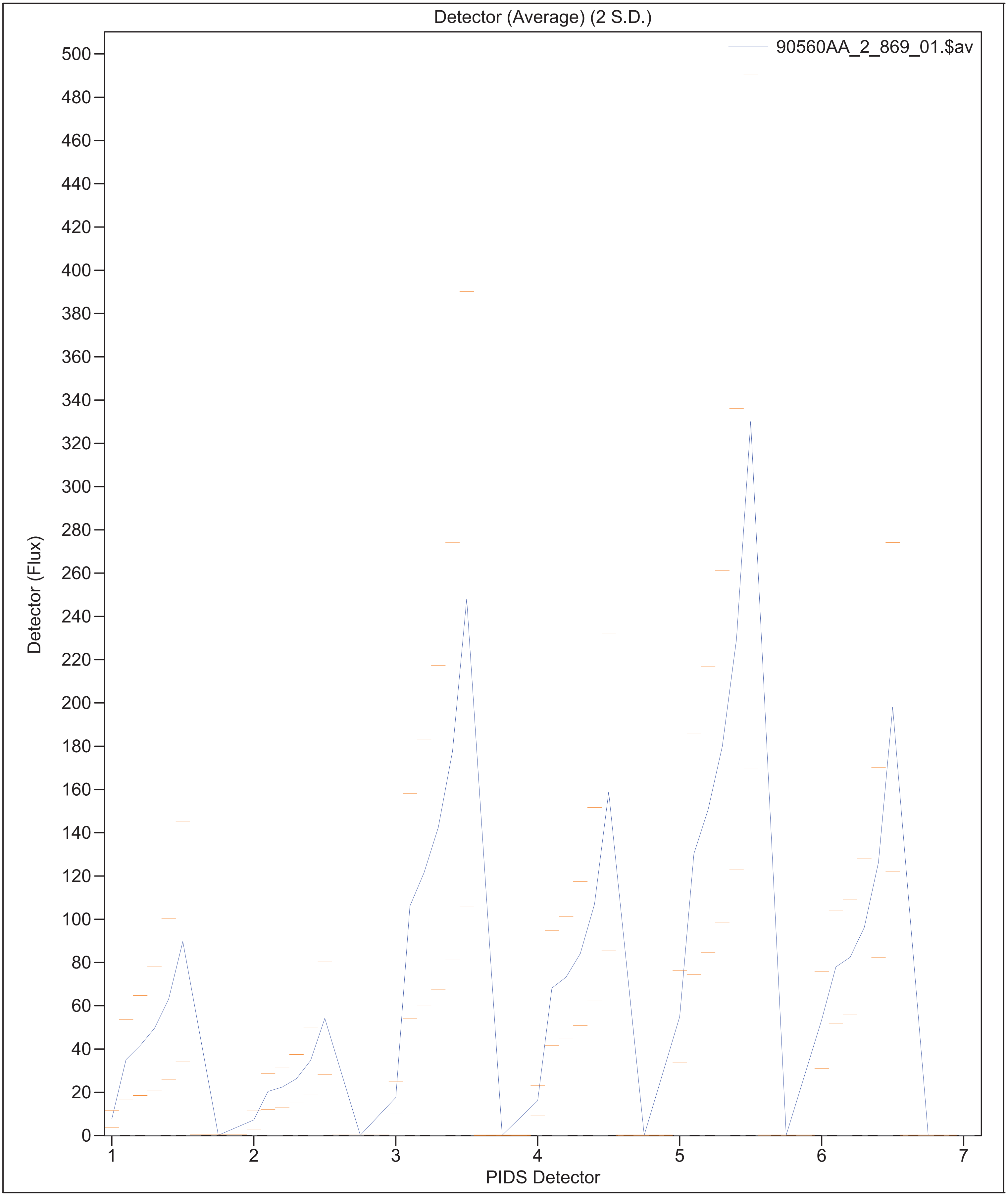


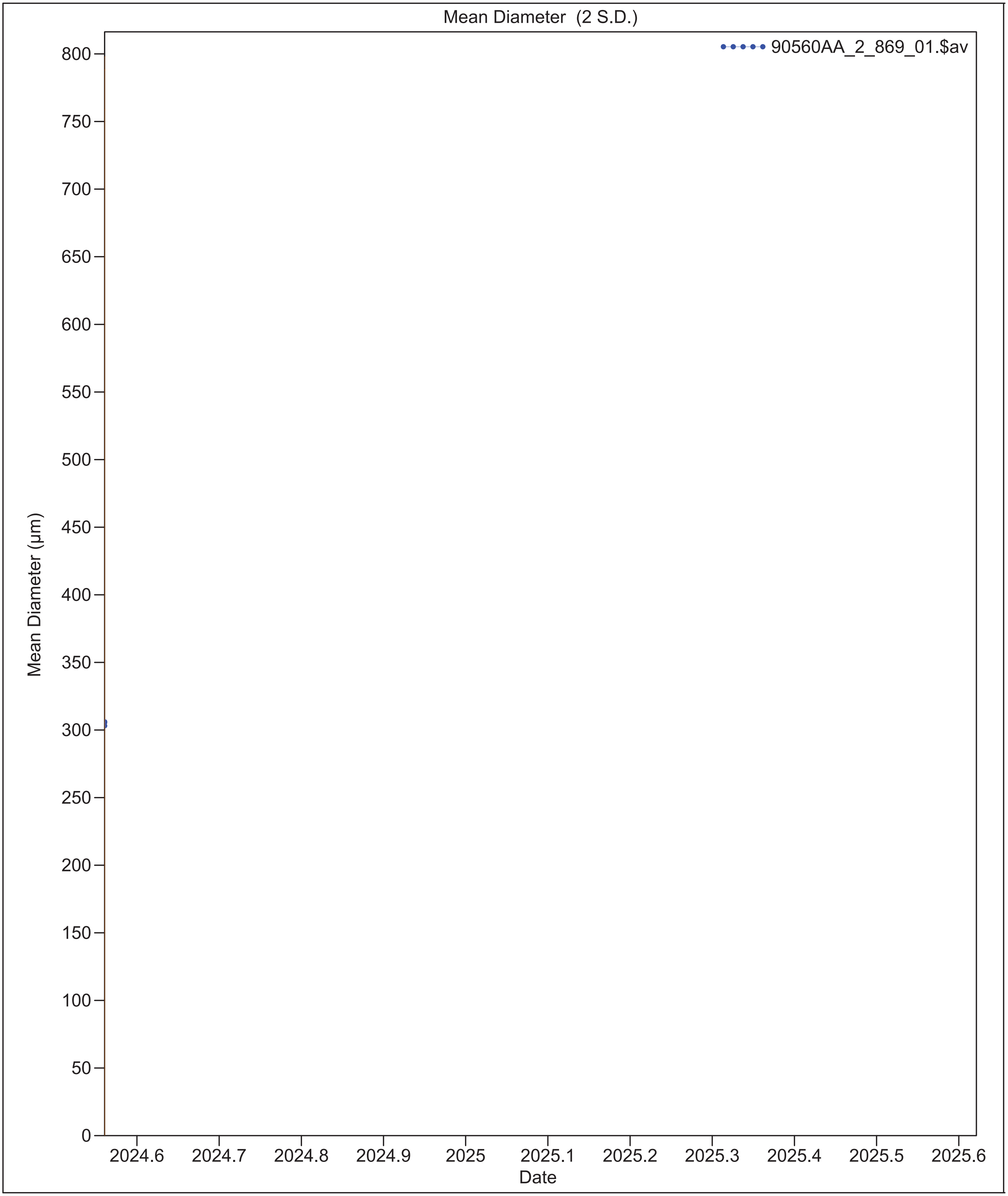
LS Particle Size Analyzer

10 Jul 2024 13:04

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90560AA_2_869_01.$av
Detector (Flux)
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
90560AA_2_869_01.$av
Mean Diameter (µm)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic) Average of 3 files 90560AA_2_869_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	304.8 µm	1.609	301.6	308.1
Median:	289.3 µm	1.568	286.1	292.4
S.D.:	238.4 µm	10.69	217.0	259.8
Variance:	56914 $µm^2$	5055	46803	67025
C.V.:	78.22%	3.779	70.66	85.77
Skewness:	1.136	0.065	1.006	1.266
Kurtosis:	2.480	0.296	1.888	3.072
d_{10}:	14.29 µm	6.945	0.403	28.18
d_{50}:	289.3 µm	1.568	286.1	292.4
d_{90}:	592.0 µm	6.350	579.3	604.7

LS Particle Size Analyzer

9 Jul 2024 16:40

Beckman Coulter LS 13 320

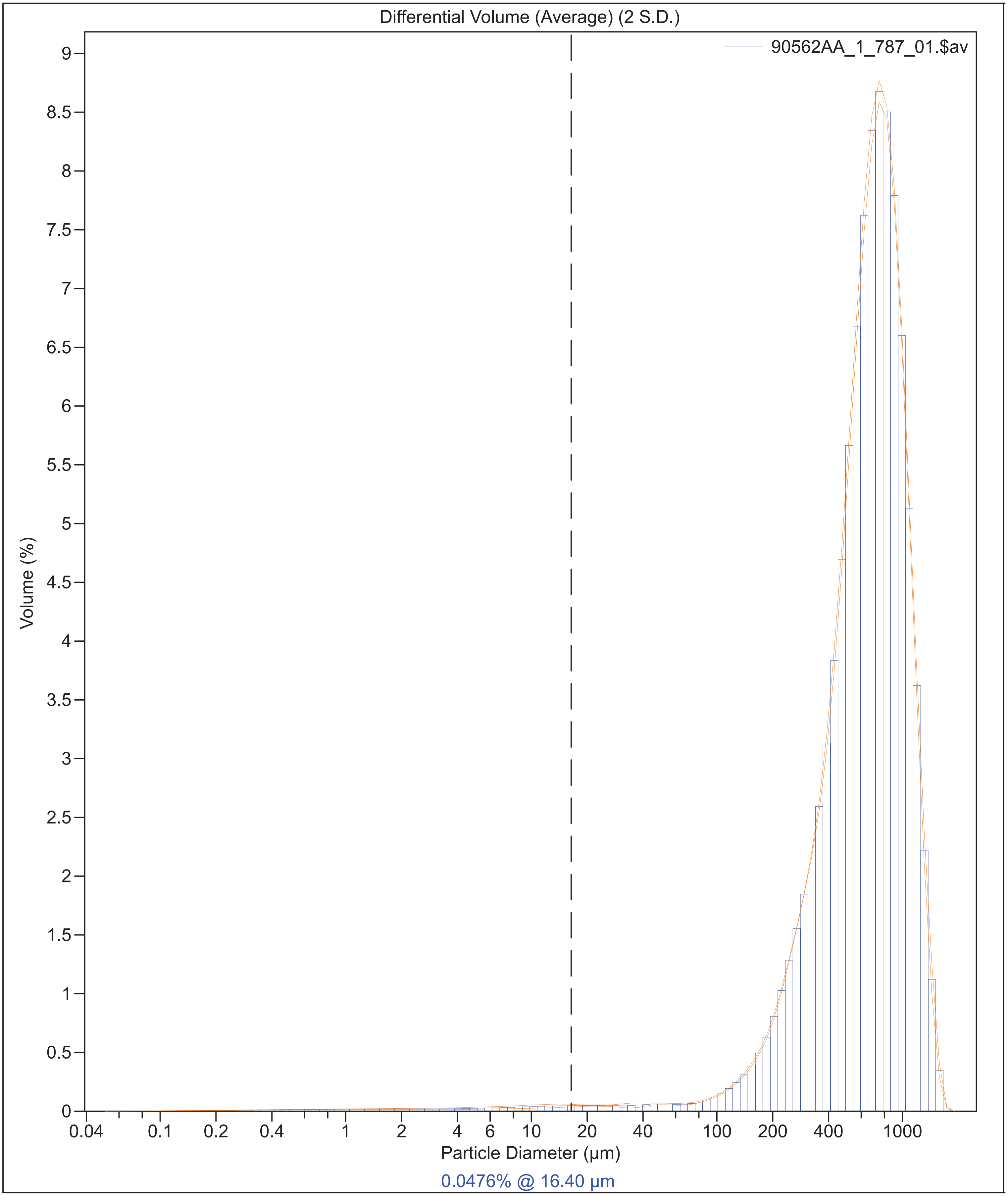
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90562AA_1_787_01.$av		
	90562AA_1_787_01.$av		
File ID:	90562AA_1		
Sample ID:	90562AA_1		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	86		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_1_785_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_1_786_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_1_787_01.$ls

LS Particle Size Analyzer

9 Jul 2024 16:40

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic)		90562AA_1_787_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	682.1 µm	S.D.:	304.7 µm
Median:	671.2 µm	Variance:	92863 $µm^2$
Mean/Median ratio:	1.016	C.V.:	44.7%
Mode:	751.1 µm	Skewness:	0.207 Right skewed
		Kurtosis:	-0.187 Platykurtic

d_{10}: 291.4 µm d_{50}: 671.2 µm d_{90}: 1090 µm

Folk and Ward Statistics (Phi)

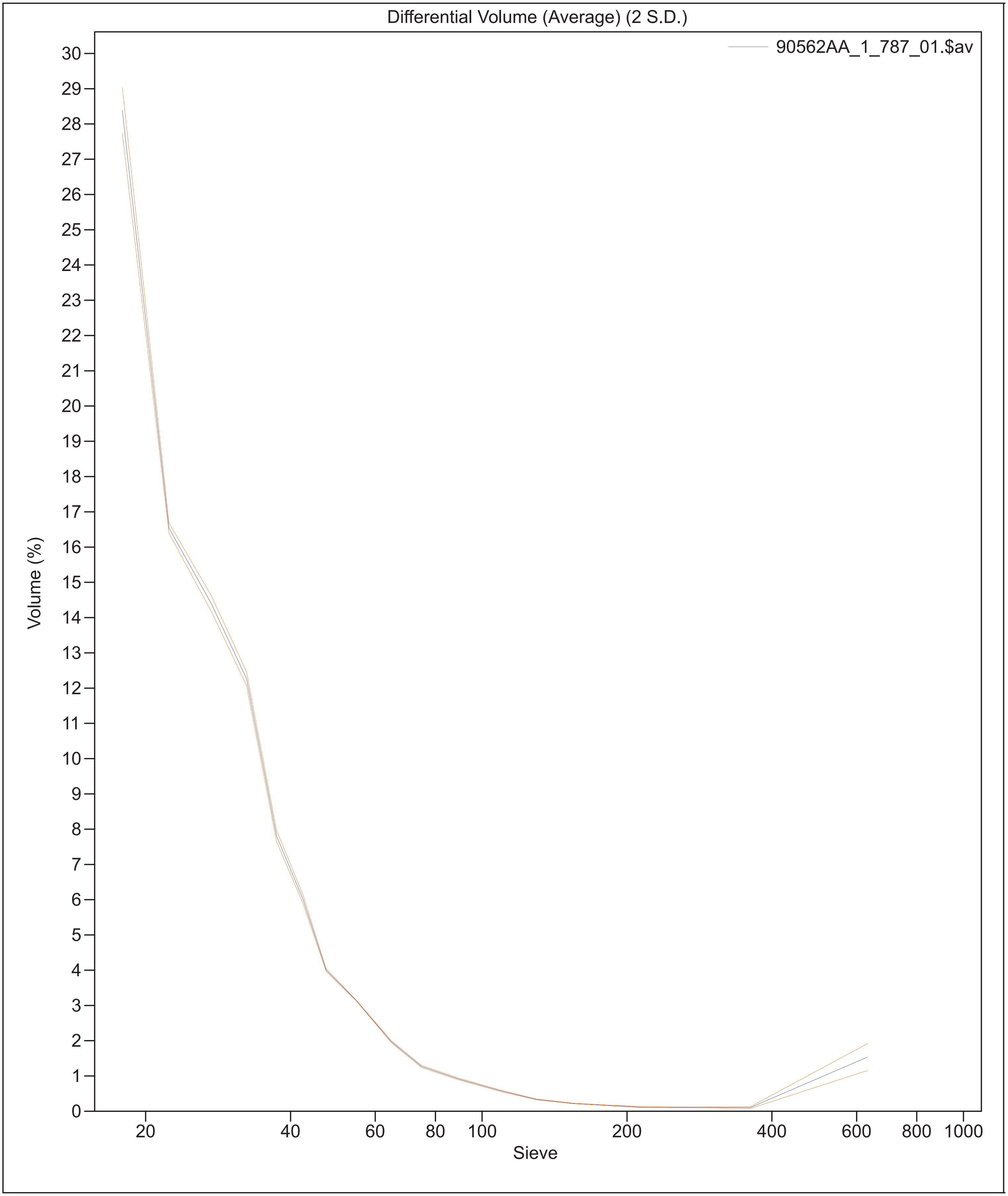
Mean:	0.67	Median:	0.58	Deviation:	0.75
Skewness:	0.27	Kurtosis:	1.16		

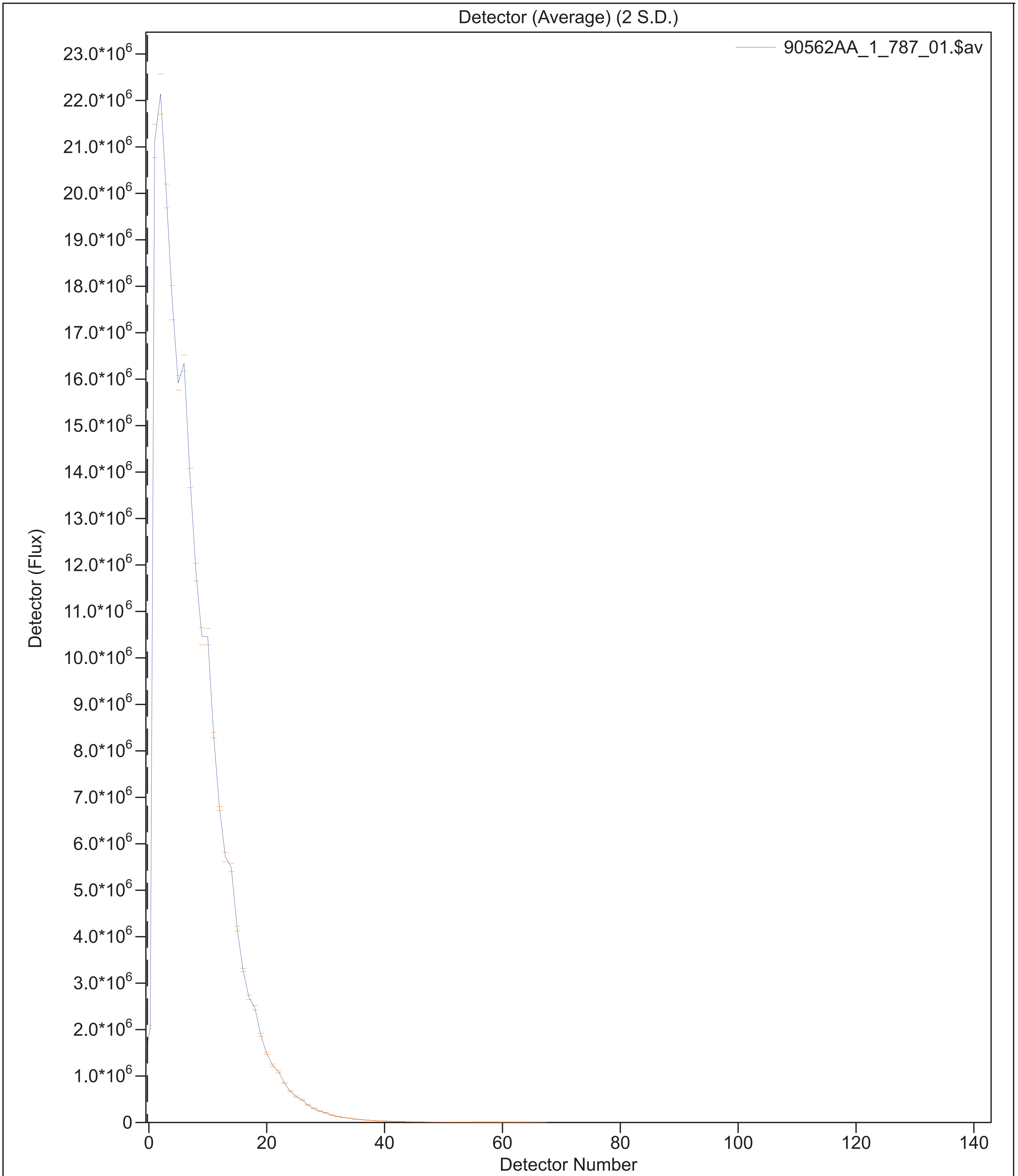
<10%	<25%	<50%	<75%	<90%
291.4 µm	468.8 µm	671.2 µm	884.0 µm	1090 µm

LS Particle Size Analyzer

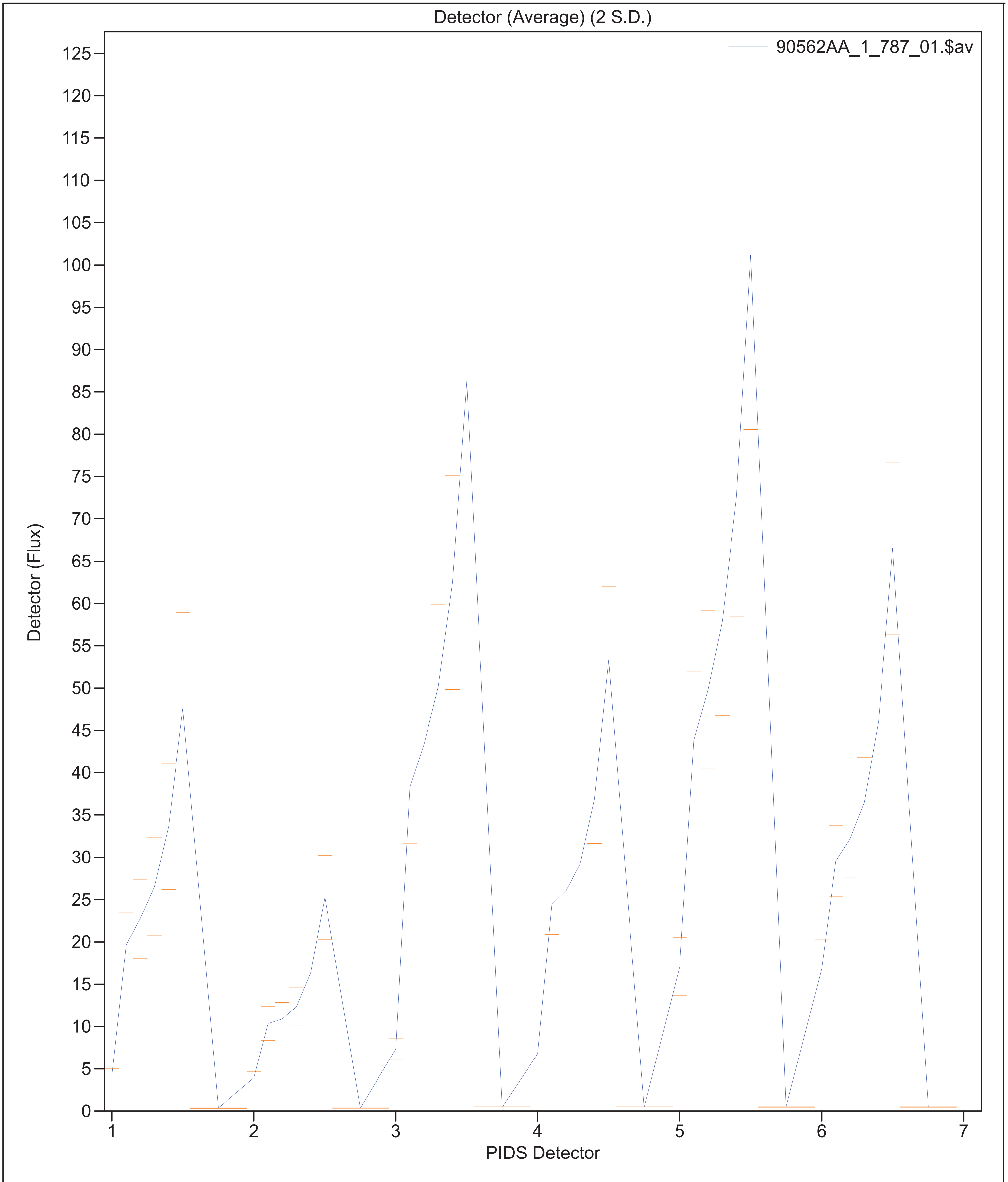
9 Jul 2024 16:40

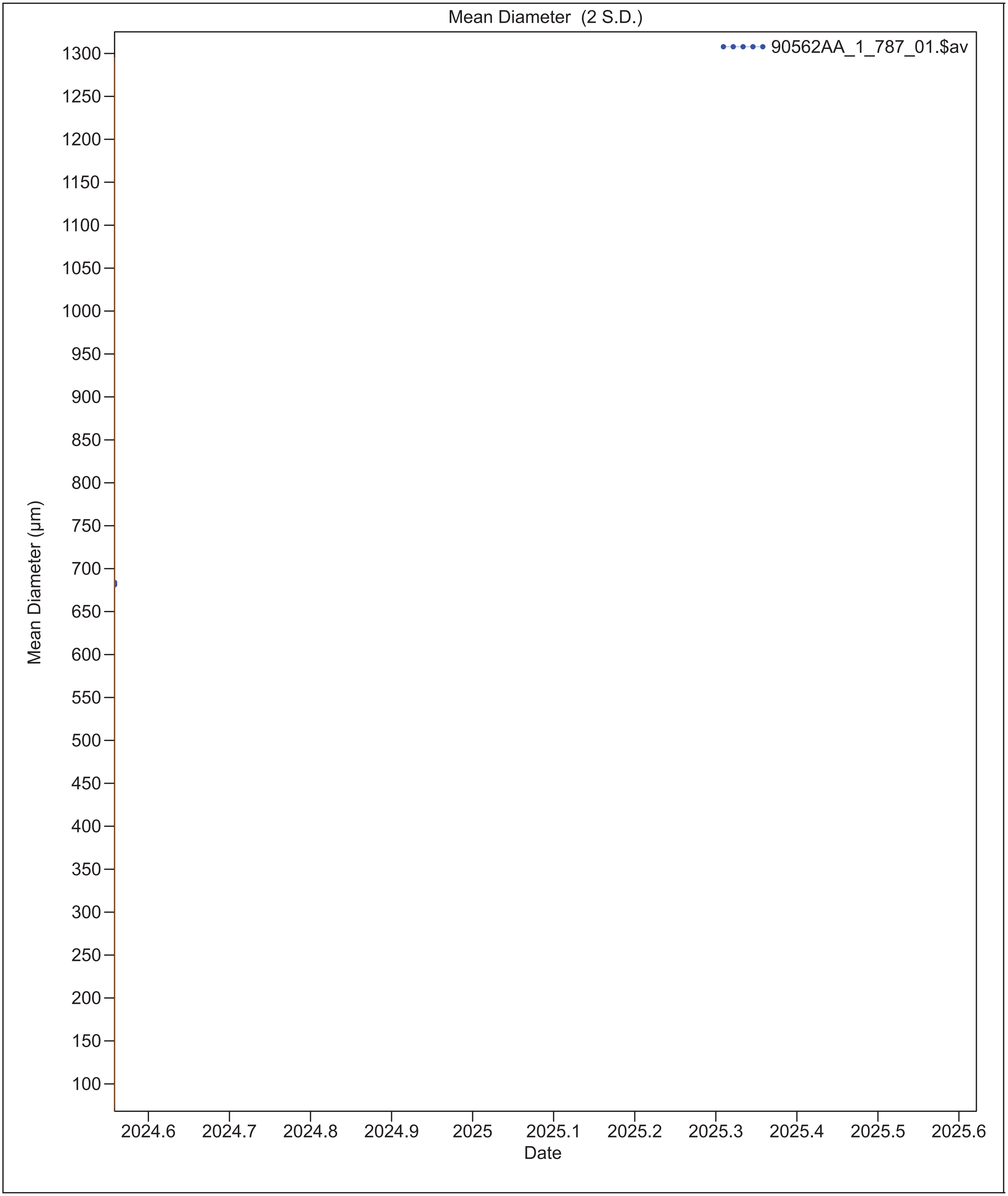
Beckman Coulter LS 13 320





$1.668*10^6$ Flux @ -0.250


Detector (Average) (2 S.D.)
90562AA_1_787_01.$av
Detector (Flux)
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
PIDS Detector


Mean Diameter (2 S.D.)
90562AA_1_787_01.$av
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
Mean Diameter (µm)
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

LS Particle Size Analyzer

9 Jul 2024 16:40

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) Average of 3 files 90562AA_1_787_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	682.1 µm	1.564	679.0	685.2
Median:	671.2 µm	1.132	669.0	673.5
S.D.:	304.7 µm	2.570	299.6	309.9
Variance:	92861 µm^2	1566	89730	95992
C.V.:	44.68%	0.345	43.99	45.37
Skewness:	0.207	0.016	0.176	0.238
Kurtosis:	-0.188	0.015	-0.218	-0.158
d_{10}:	291.4 µm	3.256	284.9	297.9
d_{50}:	671.2 µm	1.132	669.0	673.5
d_{90}:	1090 µm	4.424	1081	1099

LS Particle Size Analyzer

9 Jul 2024 16:51

Beckman Coulter LS 13 320

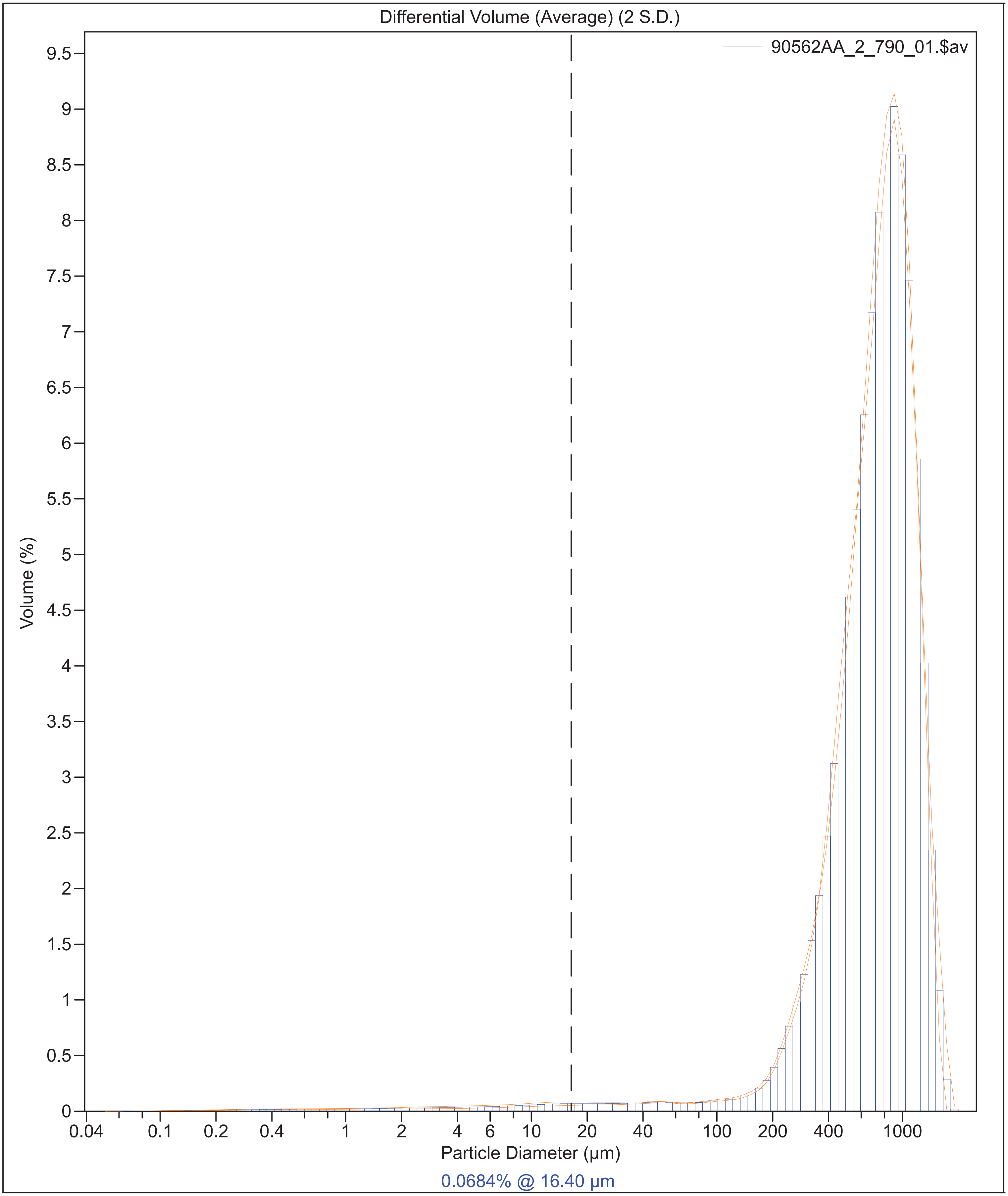
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90562AA_2_790_01.$av		
	90562AA_2_790_01.$av		
File ID:	90562AA_2		
Sample ID:	90562AA_2		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	86		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_2_788_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_2_789_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_2_790_01.$ls

LS Particle Size Analyzer

9 Jul 2024 16:51

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90562AA_2_790_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	769.4 µm	S.D.:	335.7 µm
Median:	765.0 µm	Variance:	112.7e3 μm^2
Mean/Median ratio:	1.006	C.V.:	43.6%
Mode:	905.1 µm	Skewness:	0.069 Right skewed
		Kurtosis:	-0.210 Platykurtic

d_{10}: 346.6 µm d_{50}: 765.0 µm d_{90}: 1212 µm

Folk and Ward Statistics (Phi)

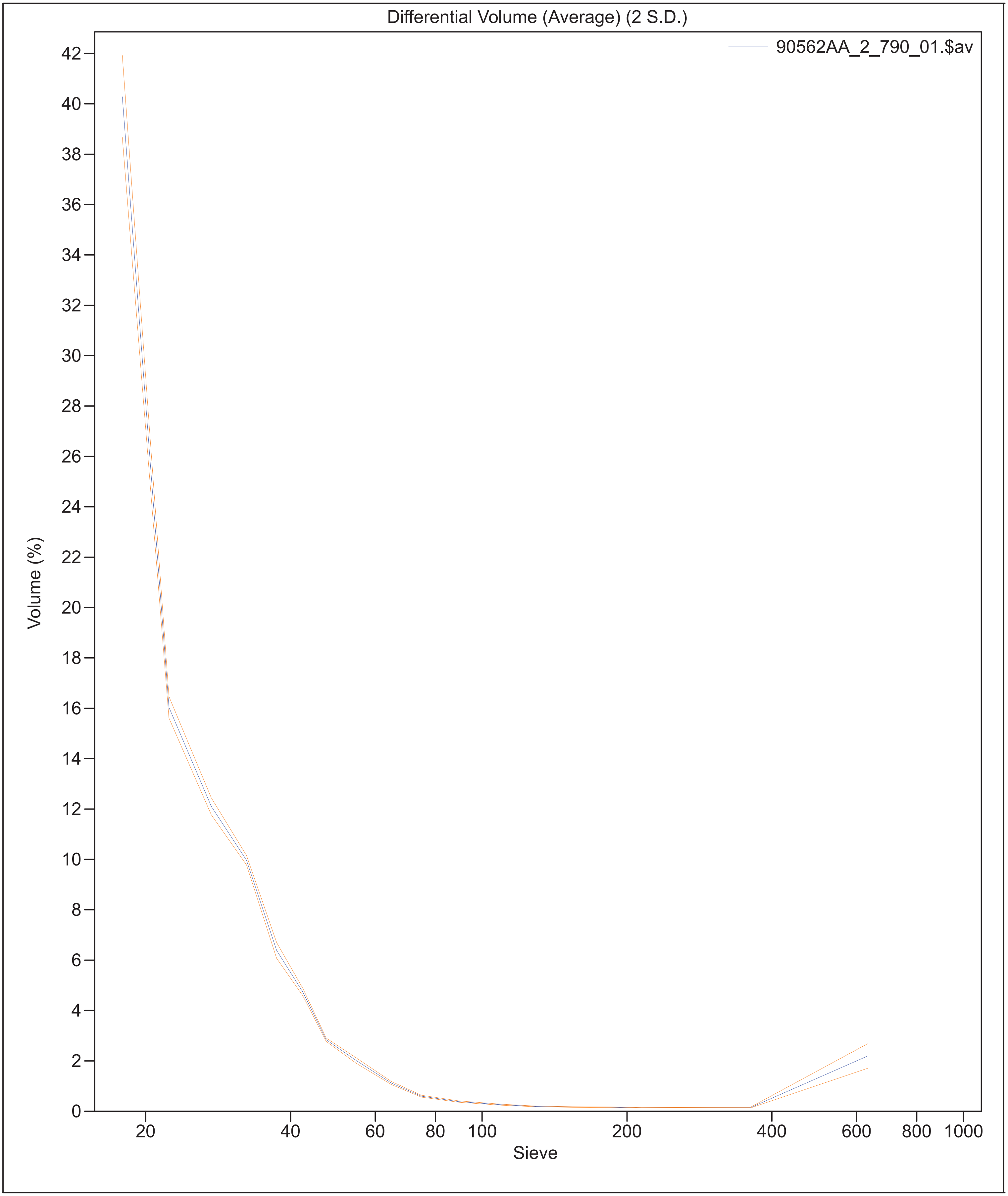
Mean:	0.48	Median:	0.39	Deviation:	0.72
Skewness:	0.28	Kurtosis:	1.16		

<10%	<25%	<50%	<75%	<90%
346.6 µm	535.5 µm	765.0 µm	998.8 µm	1212 µm

LS Particle Size Analyzer

9 Jul 2024 16:51

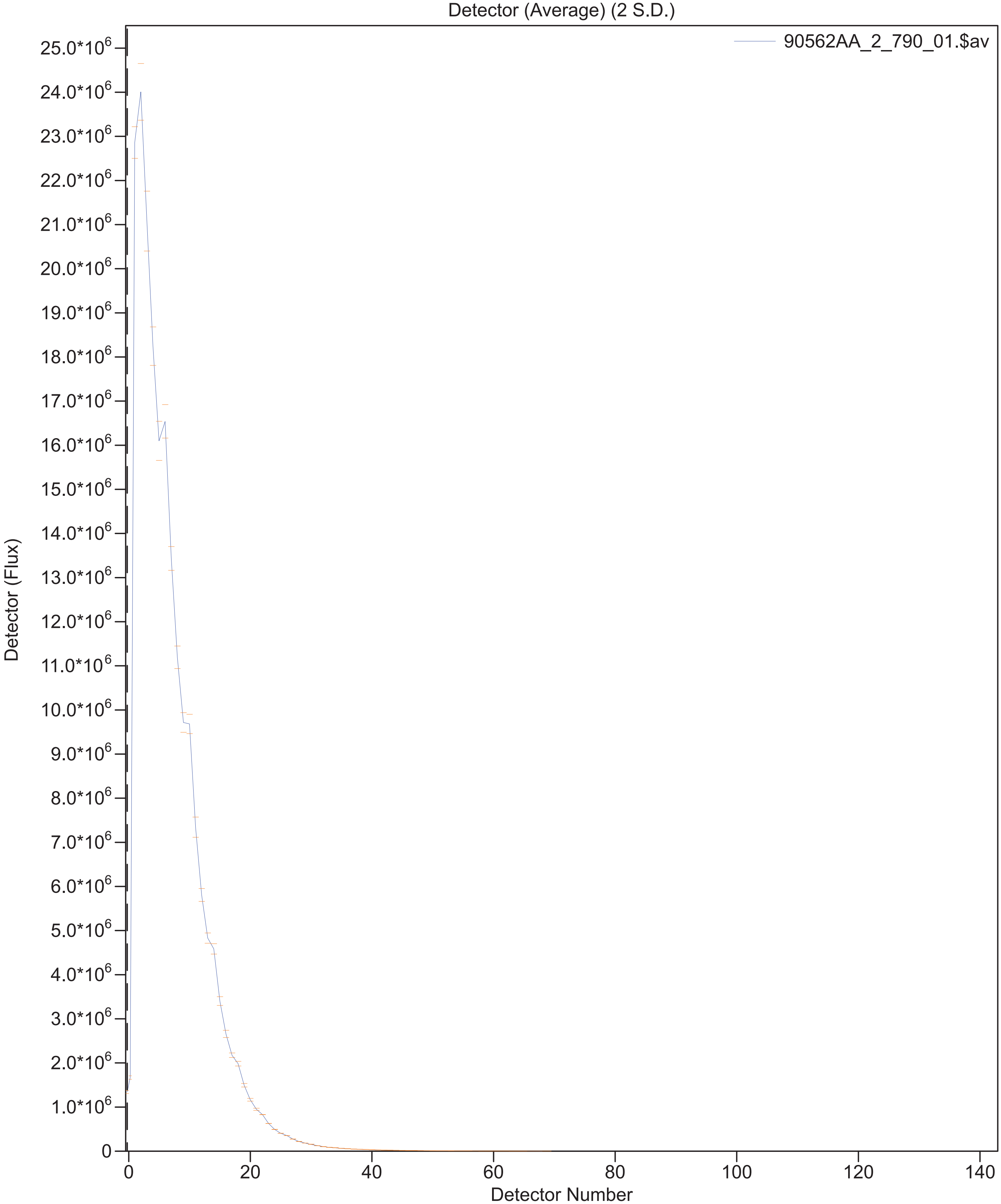
Beckman Coulter LS 13 320



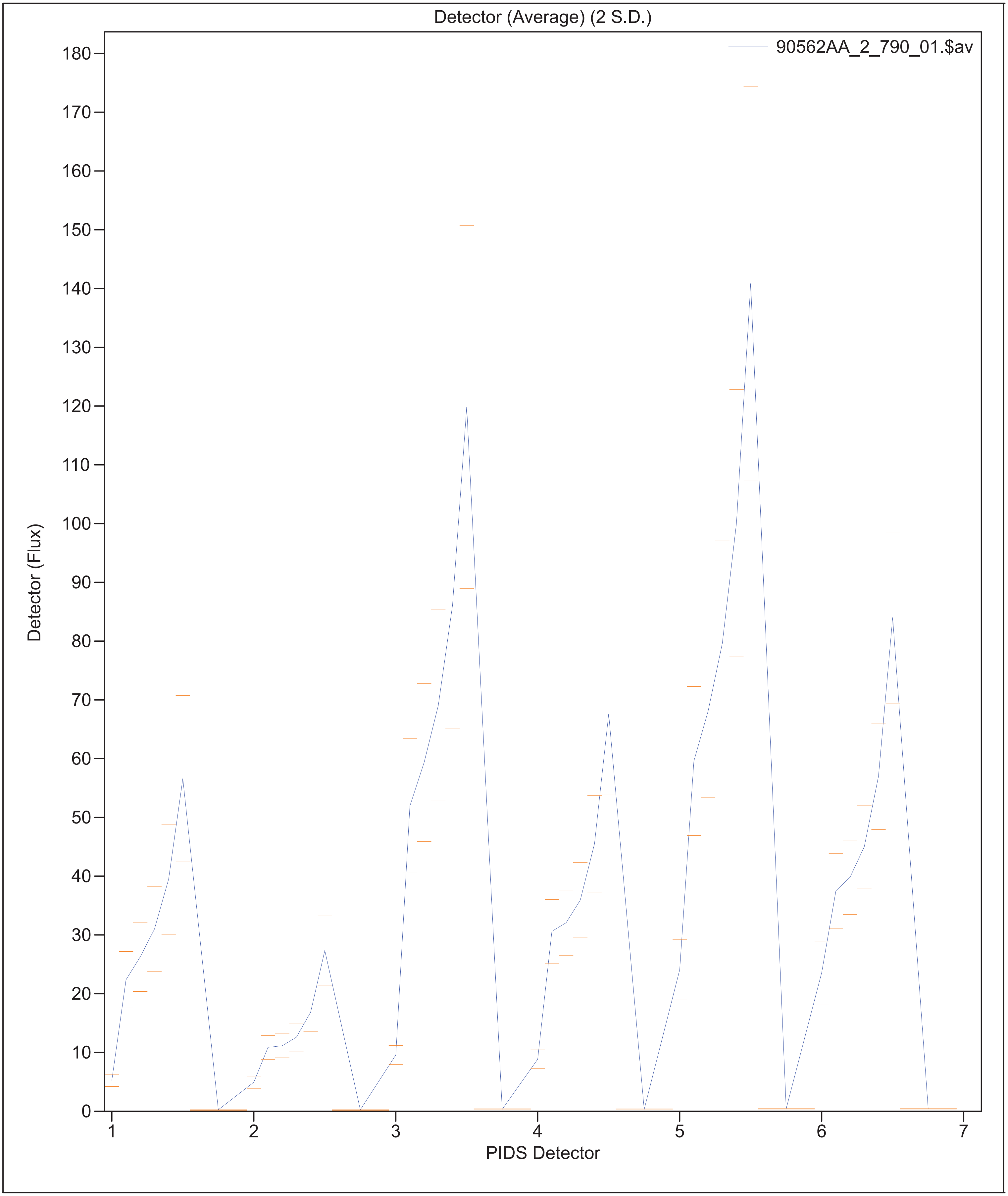
LS Particle Size Analyzer

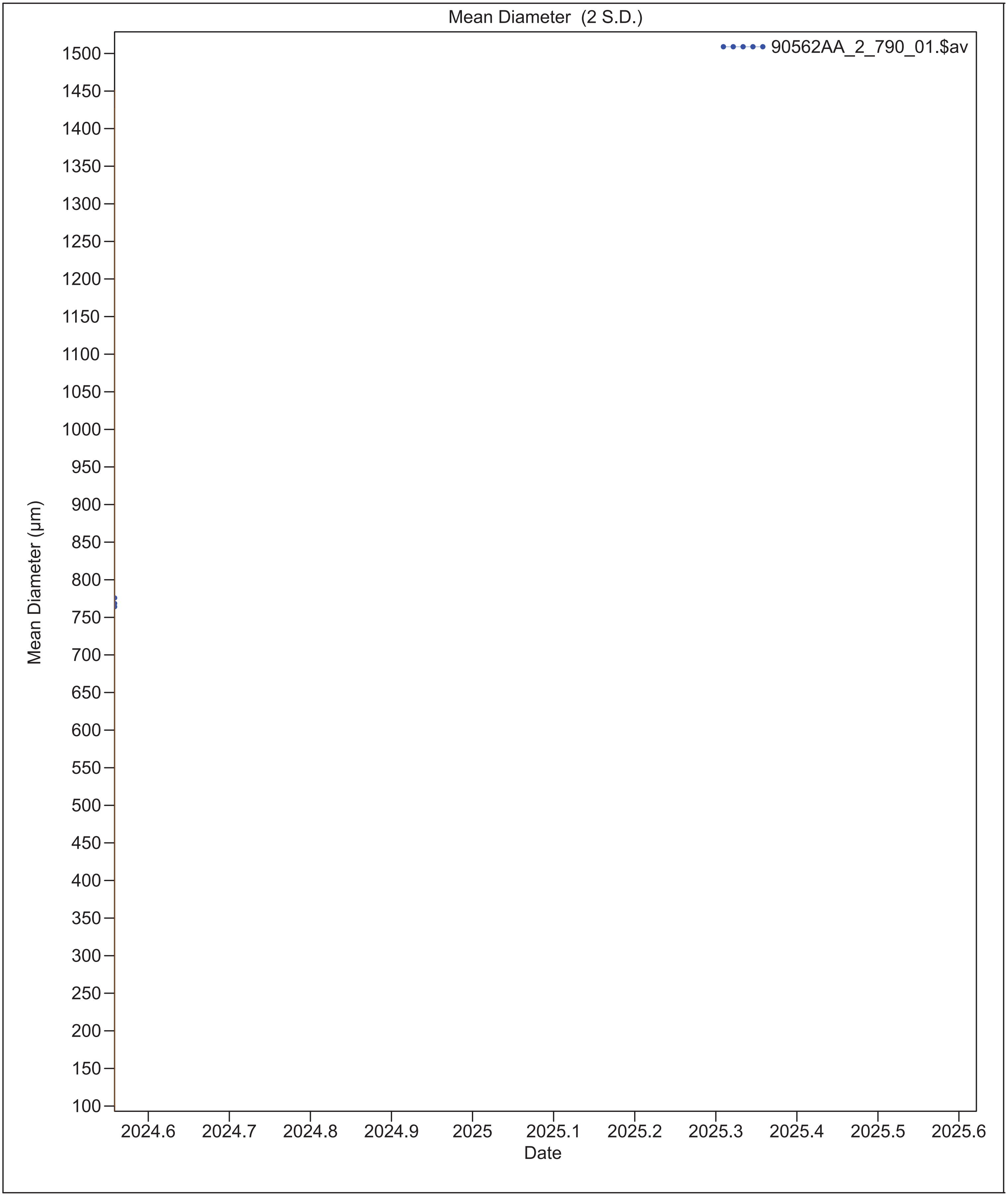
9 Jul 2024 16:51

Beckman Coulter LS 13 320



$1.341*10^6$ Flux @ -0.250


Detector (Average) (2 S.D.)
90562AA_2_790_01.$av
Detector (Flux)
PIDS Detector
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90562AA_2_790_01.$av
Mean Diameter (µm)
1500
1450
1400
1350
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90562AA_2_790_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	769.4 µm	5.981	757.4	781.3
Median:	765.0 µm	2.668	759.7	770.4
S.D.:	335.6 µm	3.565	328.5	342.7
Variance:	112.6e3 μm^2	2386	107.9e3	117.4e3
C.V.:	43.62%	0.286	43.05	44.20
Skewness:	0.068	0.054	-0.041	0.177
Kurtosis:	-0.215	0.056	-0.327	-0.102
d_{10}:	346.6 µm	4.879	336.9	356.4
d_{50}:	765.0 µm	2.668	759.7	770.4
d_{90}:	1212 µm	10.20	1192	1232

Beckman Coulter LS 13 320

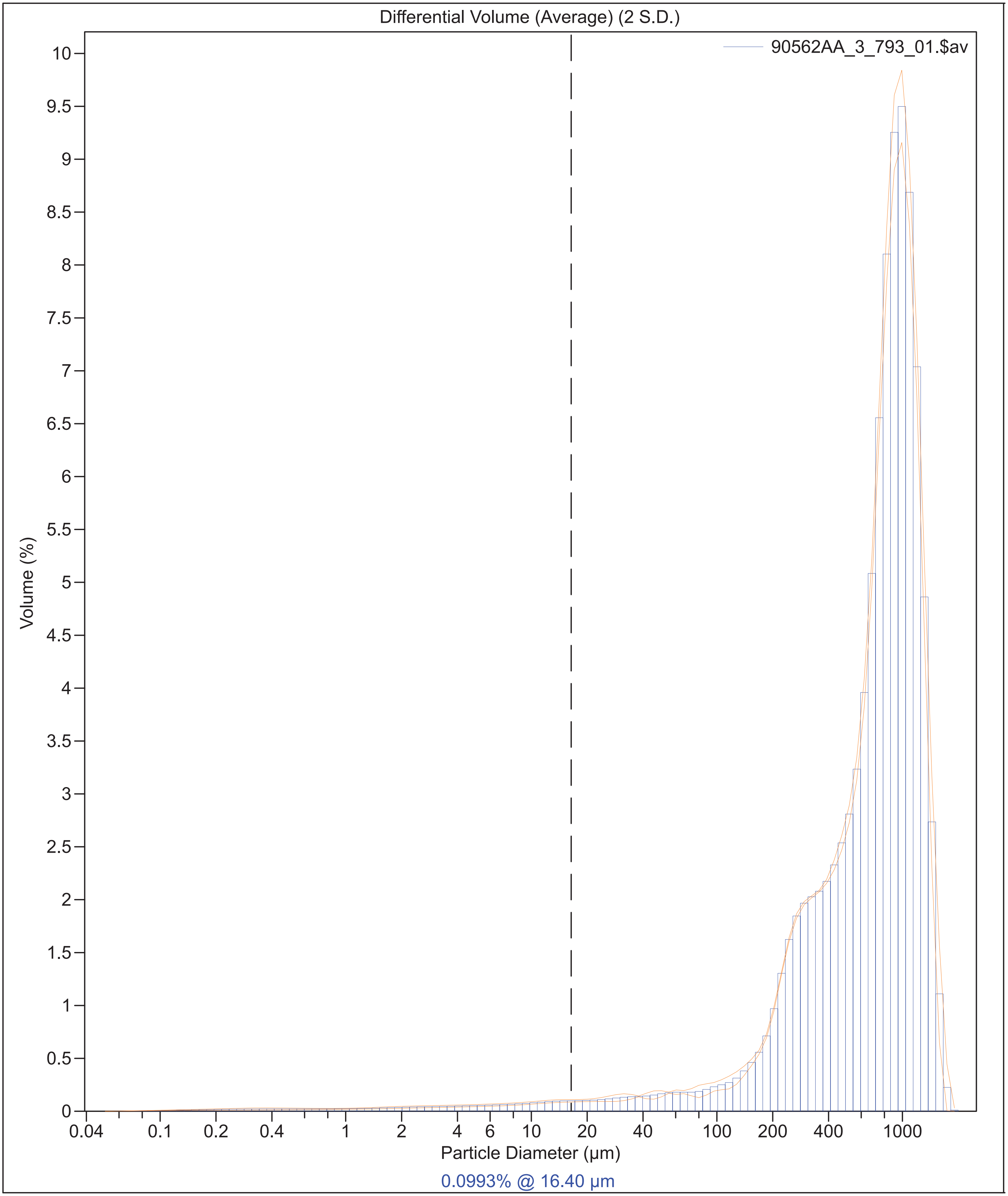
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90562AA_3_793_01.$av		
	90562AA_3_793_01.$av		
File ID:	90562AA_3		
Sample ID:	90562AA_3		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	86		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_3_791_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_3_792_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_3_793_01.$ls

LS Particle Size Analyzer

9 Jul 2024 17:01

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 17:01

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic) 90562AA_3_793_01.$av

Calculations from 0.040 μm to 2000 μm

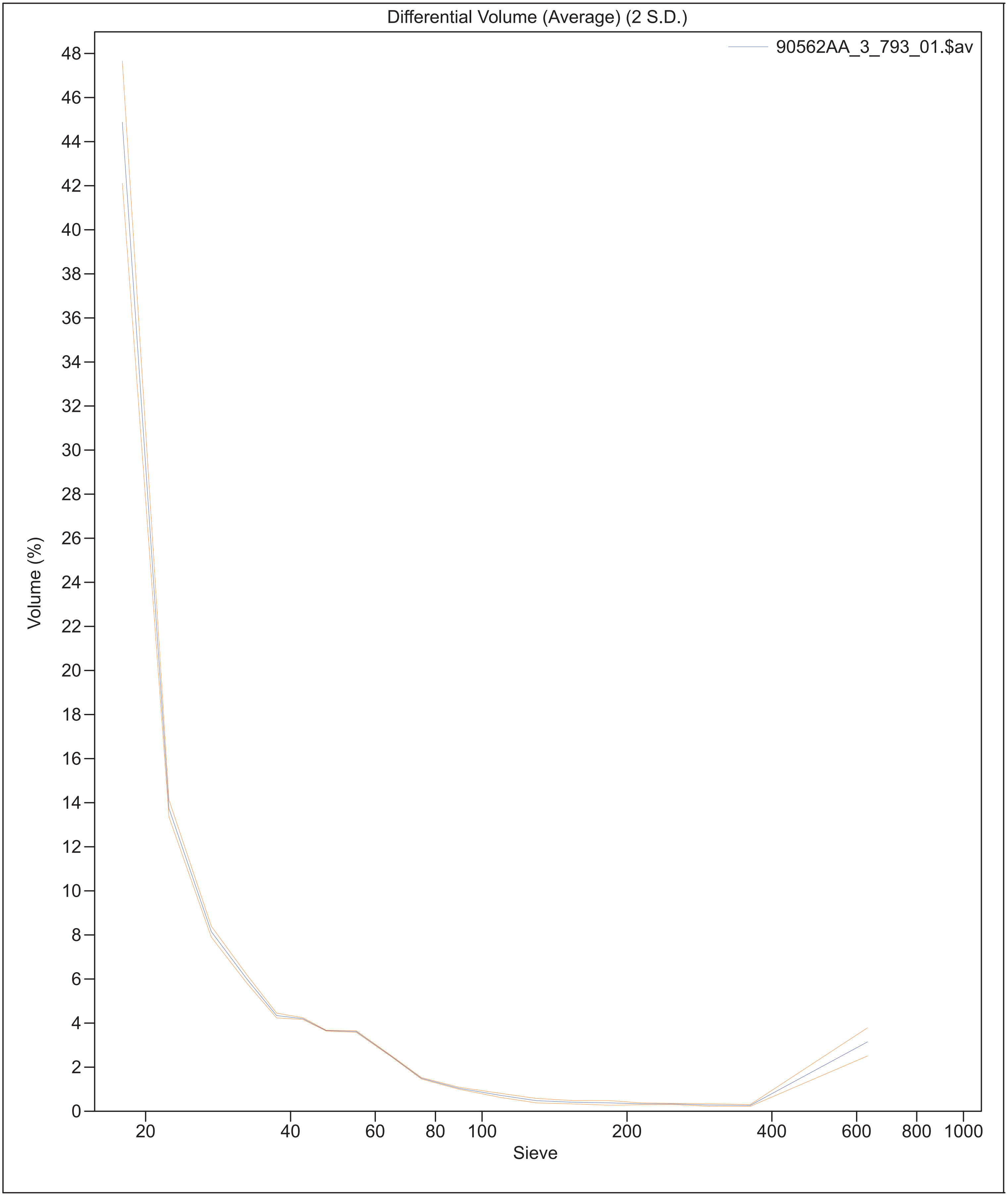
Volume:	100%		
Mean:	760.9 μm	S.D.:	379.5 μm
Median:	801.4 μm	Variance:	144.0e3 μm^2
Mean/Median ratio:	0.949	C.V.:	49.9%
Mode:	993.6 μm	Skewness:	-0.125 Left skewed
		Kurtosis:	-0.706 Platykurtic

d_{10}: 230.1 μm d_{50}: 801.4 μm d_{90}: 1238 μm

Folk and Ward Statistics (Phi)

Mean:	0.60	Median:	0.32	Deviation:	1.03
Skewness:	0.52	Kurtosis:	1.32		

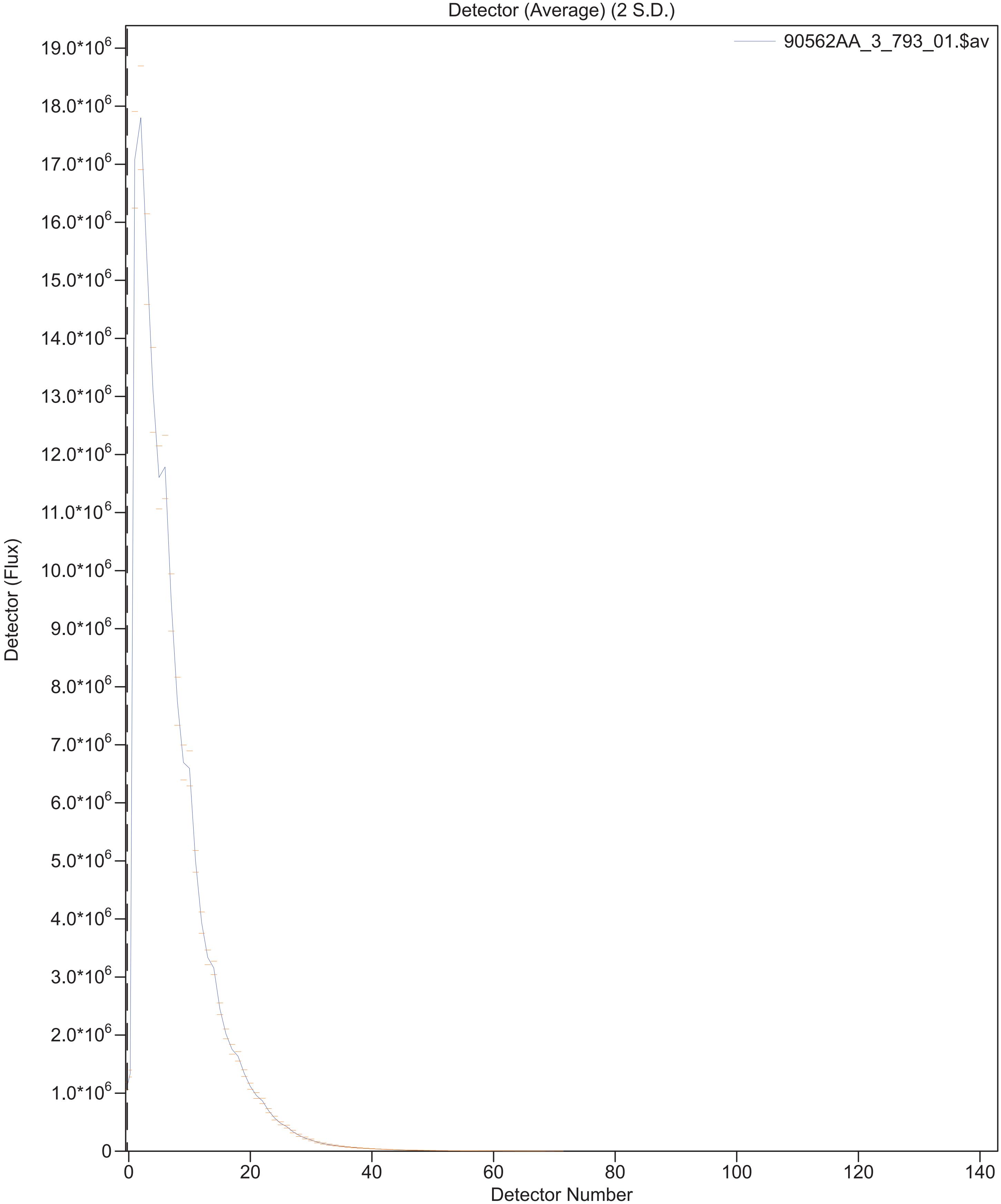
<10%	<25%	<50%	<75%	<90%
230.1 μm	461.9 μm	801.4 μm	1038 μm	1238 μm


Differential Volume (Average) (2 S.D.)
90562AA_3_793_01.$av
Volume (%)
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
20
40
60
80
100
200
400
600
800
1000
Sieve

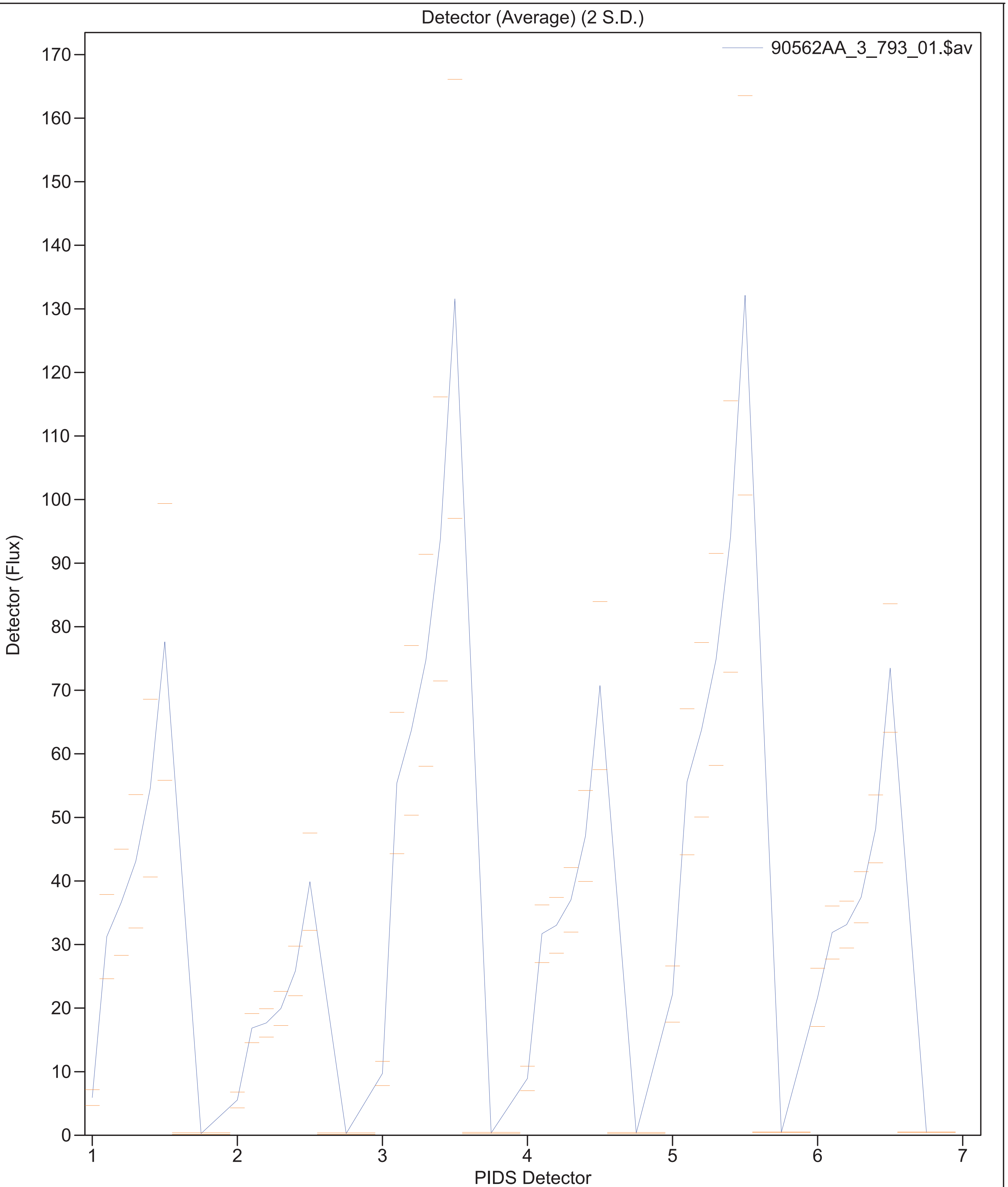
LS Particle Size Analyzer

9 Jul 2024 17:01

Beckman Coulter LS 13 320



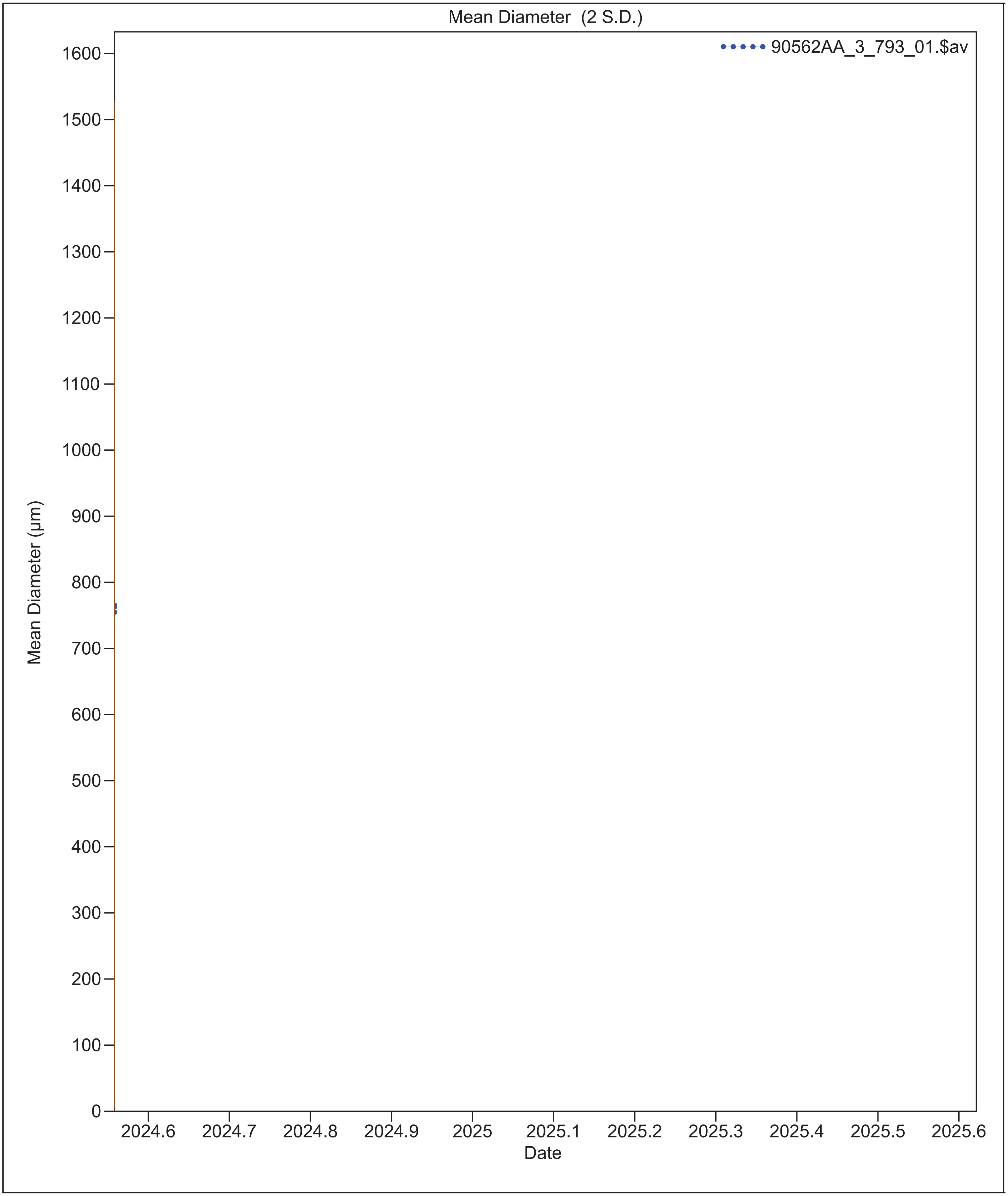
1.126*10^6 Flux @ -0.250


Detector (Average) (2 S.D.)
90562AA_3_793_01.$av
Detector (Flux)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
PIDS Detector
1
2
3
4
5
6
7

LS Particle Size Analyzer

9 Jul 2024 17:01

Beckman Coulter LS 13 320



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LS Particle Size Analyzer

9 Jul 2024 17:01

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90562AA_3_793_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	760.9 µm	5.482	749.9	771.9
Median:	801.5 µm	4.251	793.0	810.0
S.D.:	379.5 µm	4.623	370.2	388.7
Variance:	144.0e3 µm^2	3503	137.0e3	151.0e3
C.V.:	49.87%	0.370	49.13	50.61
Skewness:	-0.126	0.034	-0.194	-0.059
Kurtosis:	-0.708	0.023	-0.755	-0.661
d_{10}:	230.1 µm	0.889	228.3	231.9
d_{50}:	801.5 µm	4.251	793.0	810.0
d_{90}:	1238 µm	11.09	1216	1260

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LS Particle Size Analyzer

9 Jul 2024 17:12

Beckman Coulter LS 13 320

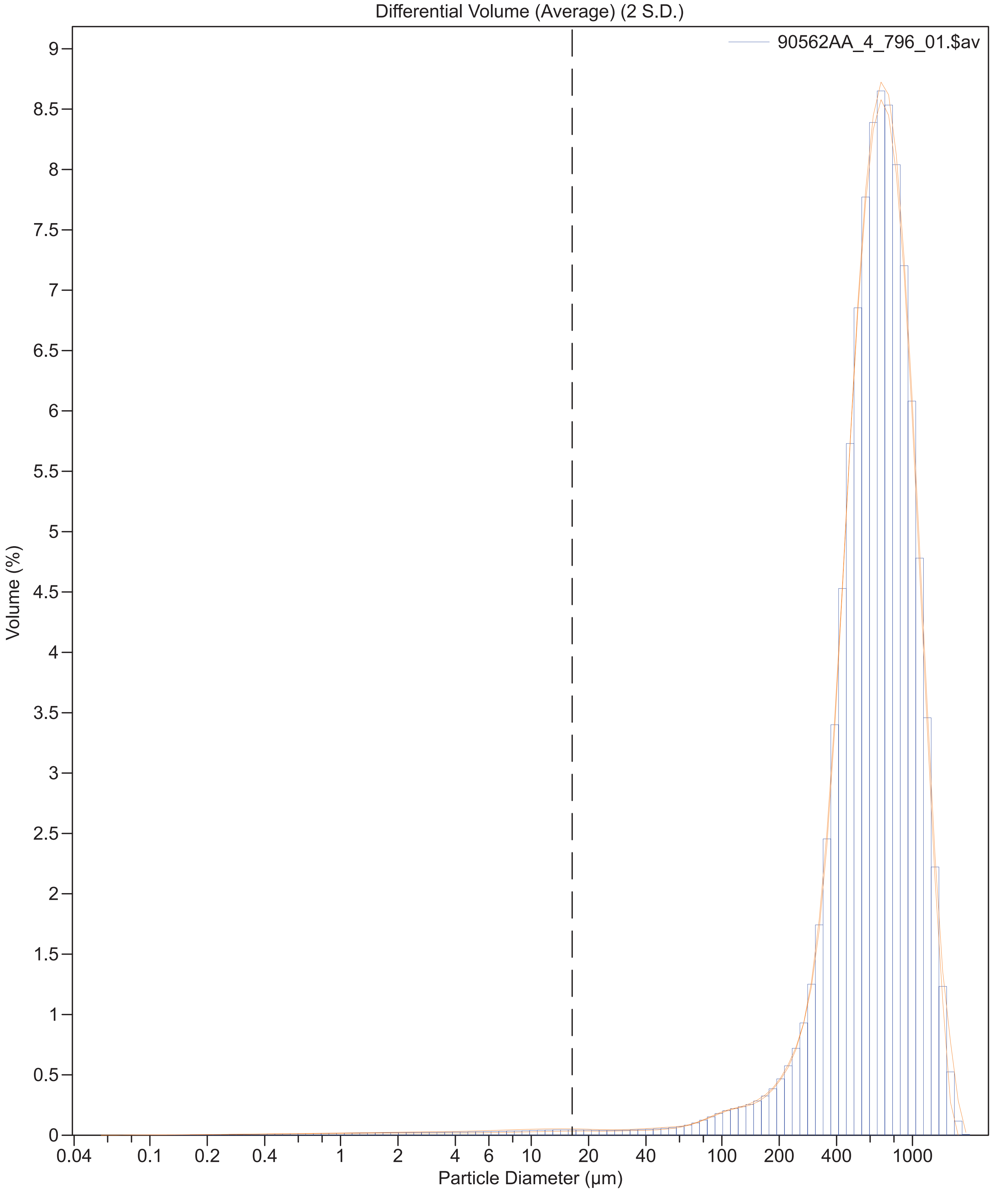
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90562AA_4_796_01.$av		
	90562AA_4_796_01.$av		
File ID:	90562AA_4		
Sample ID:	90562AA_4		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	86		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_4_794_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_4_795_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_4_796_01.$ls

LS Particle Size Analyzer

9 Jul 2024 17:12

Beckman Coulter LS 13 320



0.0439% @ 16.40 µm

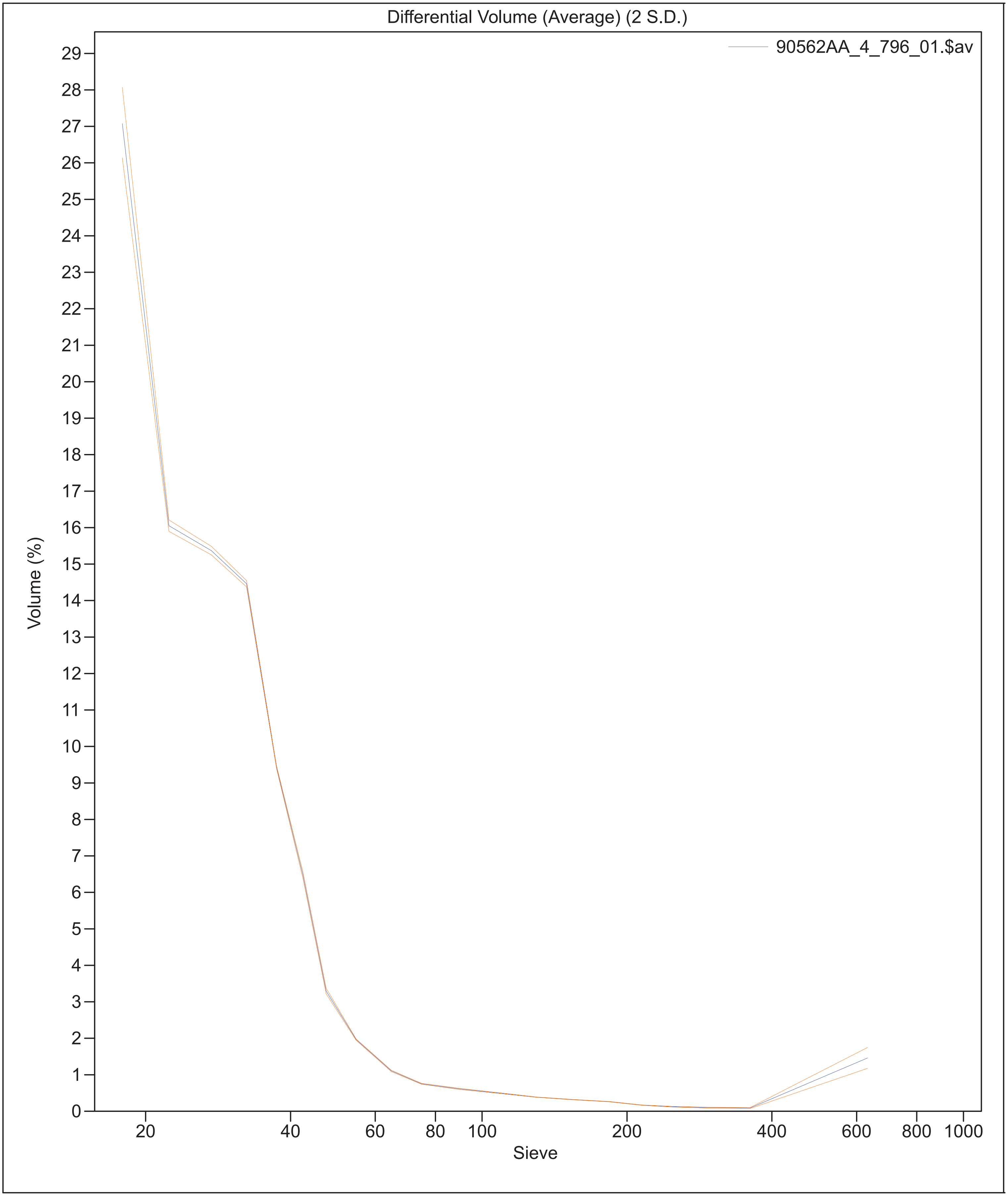
Volume Statistics (Arithmetic)		90562AA_4_796_01.$av	
Calculations from 0.040 µm to 2000 µm			
Volume:	100%		
Mean:	686.1 µm	S.D.:	299.1 µm
Median:	659.3 µm	Variance:	89445 μm^2
Mean/Median ratio:	1.041	C.V.:	43.6%
Mode:	684.2 µm	Skewness:	0.353 Right skewed
		Kurtosis:	0.193 Leptokurtic

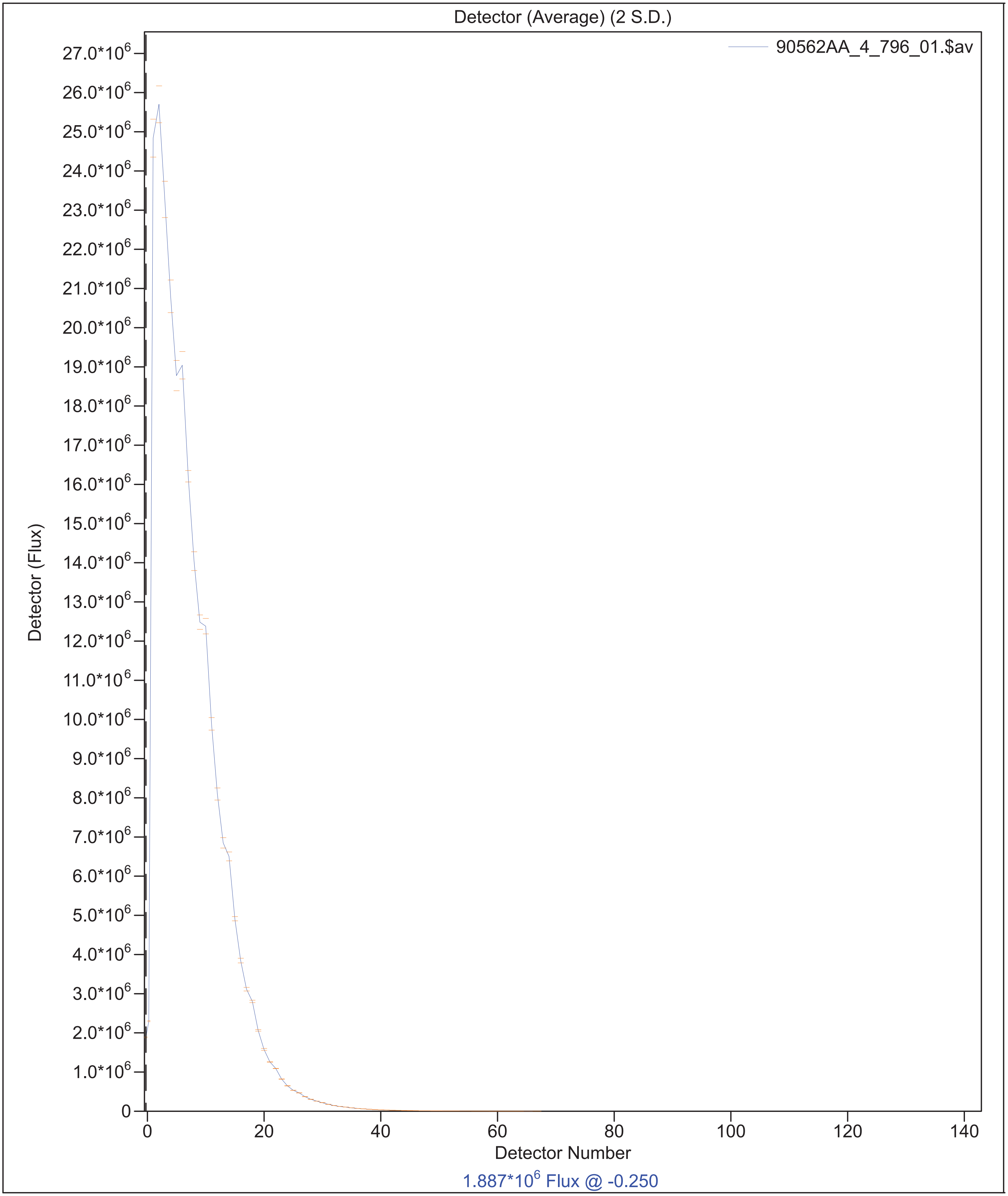
d_{10}: 339.6 µm d_{50}: 659.3 µm d_{90}: 1091 µm

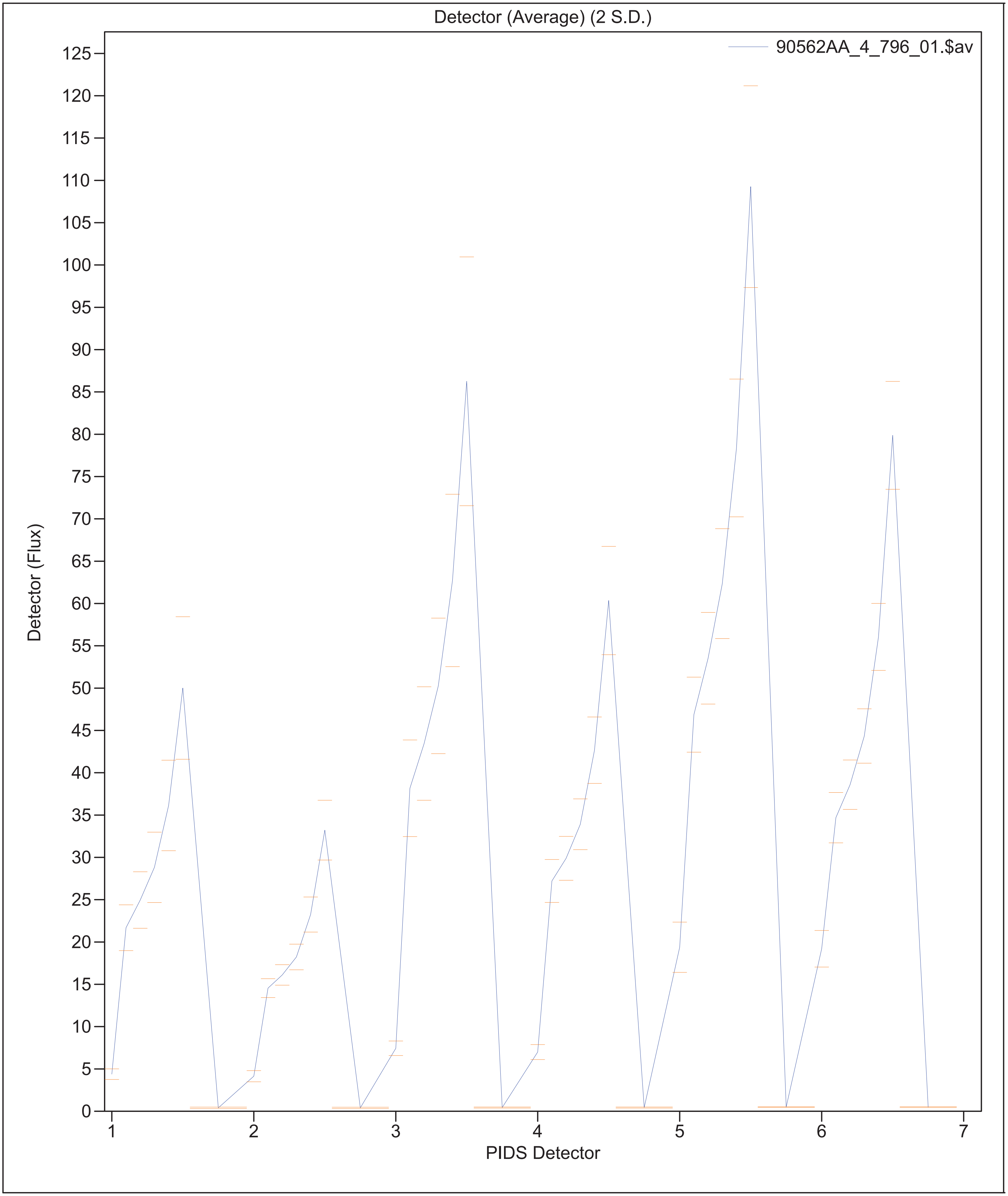
Folk and Ward Statistics (Phi)

Mean:	0.64	Median:	0.60	Deviation:	0.69
Skewness:	0.18	Kurtosis:	1.20		

<10%	<25%	<50%	<75%	<90%
339.6 µm	484.9 µm	659.3 µm	871.2 µm	1091 µm


Differential Volume (Average) (2 S.D.)
90562AA_4_796_01.$av
Volume (%)
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
20
40
60
80
100
200
400
600
800
1000
Sieve

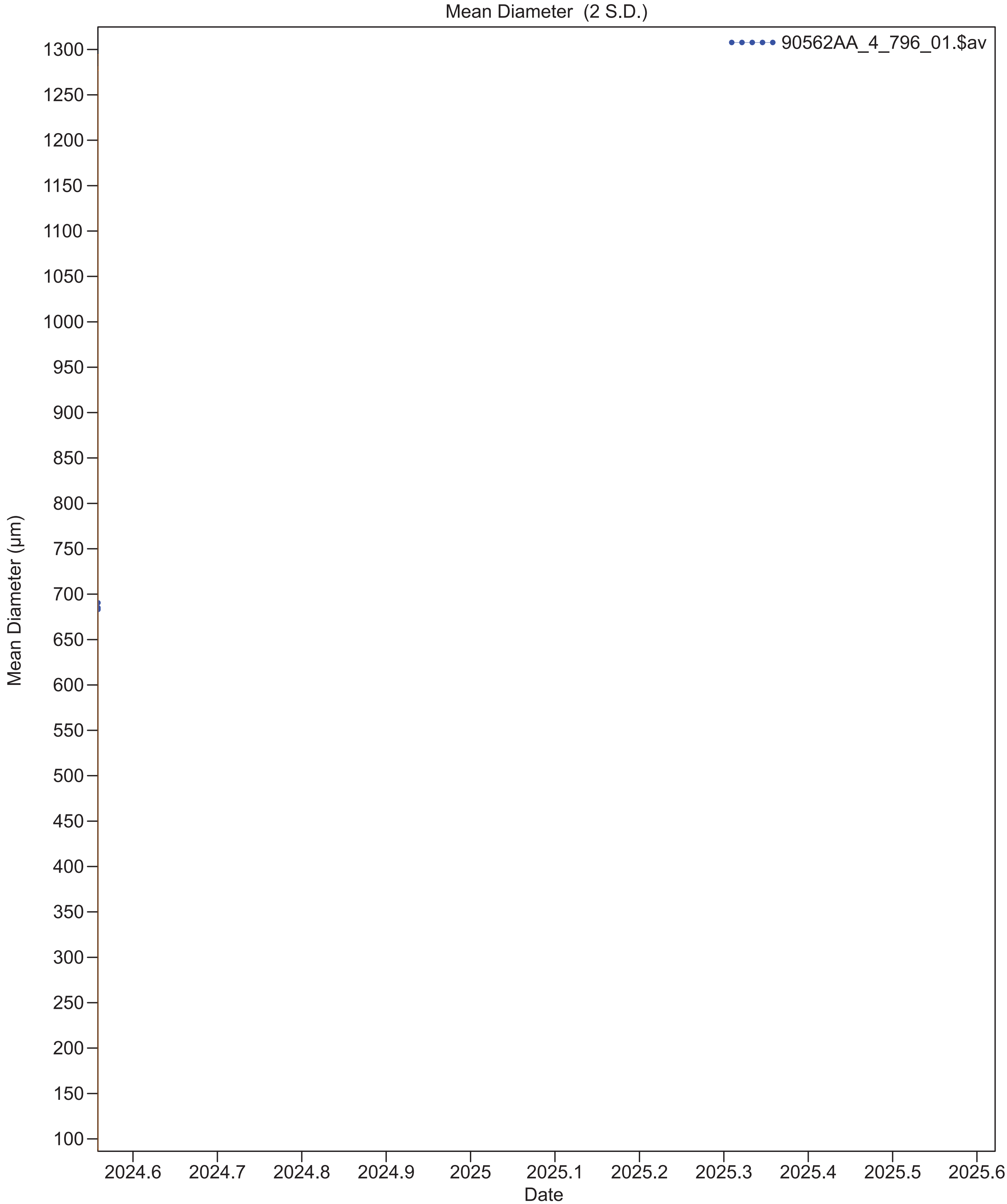

Detector (Average) (2 S.D.)
90562AA_4_796_01.$av
Detector (Flux)
27.0*10^6
26.0*10^6
25.0*10^6
24.0*10^6
23.0*10^6
22.0*10^6
21.0*10^6
20.0*10^6
19.0*10^6
18.0*10^6
17.0*10^6
16.0*10^6
15.0*10^6
14.0*10^6
13.0*10^6
12.0*10^6
11.0*10^6
10.0*10^6
9.0*10^6
8.0*10^6
7.0*10^6
6.0*10^6
5.0*10^6
4.0*10^6
3.0*10^6
2.0*10^6
1.0*10^6
0
0
20
40
60
80
100
120
140
Detector Number
1.887*10^6 Flux @ -0.250


Detector (Average) (2 S.D.)
90562AA_4_796_01.$av
Detector (Flux)
PIDS Detector
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7

LS Particle Size Analyzer

9 Jul 2024 17:12

Beckman Coulter LS 13 320



BECKMAN COULTER™

LS Particle Size Analyzer

9 Jul 2024 17:12

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90562AA_4_796_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	686.1 µm	3.837	678.4	693.8
Median:	659.3 µm	1.498	656.3	662.3
S.D.:	299.0 µm	2.627	293.8	304.3
Variance:	89435 µm^2	1575	86284	92586
C.V.:	43.59%	0.140	43.31	43.87
Skewness:	0.352	0.060	0.232	0.472
Kurtosis:	0.187	0.109	-0.031	0.406
d_{10}:	339.4 µm	3.172	333.0	345.7
d_{50}:	659.3 µm	1.498	656.3	662.3
d_{90}:	1091 µm	6.547	1078	1104

LS Particle Size Analyzer

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Beckman Coulter LS 13 320

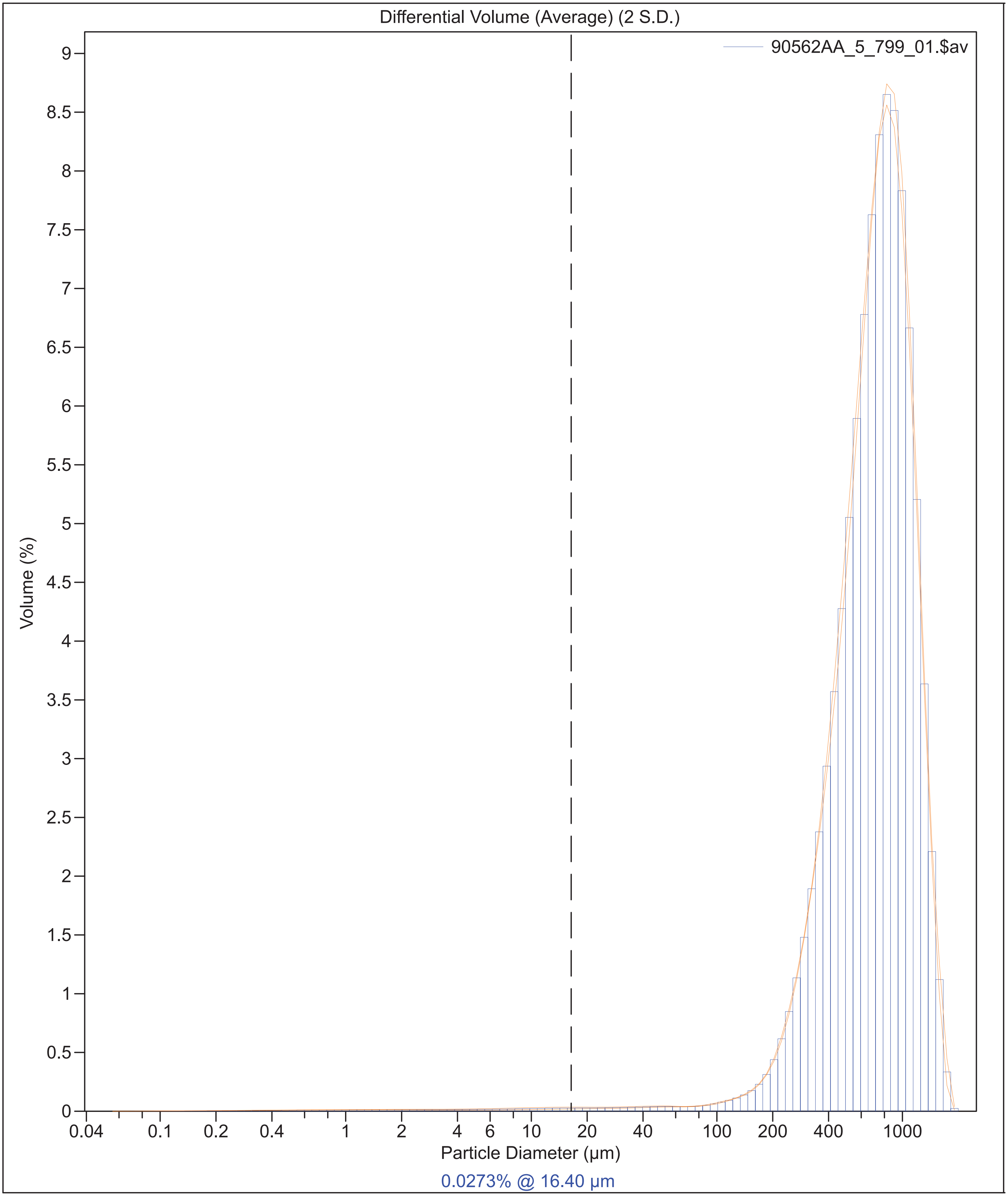
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90562AA_5_799_01.$av		
	90562AA_5_799_01.$av		
File ID:	90562AA_5		
Sample ID:	90562AA_5		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	86		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_5_797_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_5_798_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_5_799_01.$ls

LS Particle Size Analyzer

9 Jul 2024 17:21

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90562AA_5_799_01.$av

Calculations from 0.040 µm to 2000 µm

Volume:	100%		
Mean:	756.9 µm	S.D.:	324.4 µm
Median:	737.9 µm	Variance:	105.3e3 μm^2
Mean/Median ratio:	1.026	C.V.:	42.9%
Mode:	824.5 µm	Skewness:	0.290 Right skewed
		Kurtosis:	-0.164 Platykurtic

d_{10}: 354.1 µm d_{50}: 737.9 µm d_{90}: 1197 µm

Folk and Ward Statistics (Phi)

Mean:	0.51	Median:	0.44	Deviation:	0.69
Skewness:	0.21	Kurtosis:	1.05		

<10%	<25%	<50%	<75%	<90%
354.1 µm	520.9 µm	737.9 µm	972.3 µm	1197 µm

LS Particle Size Analyzer

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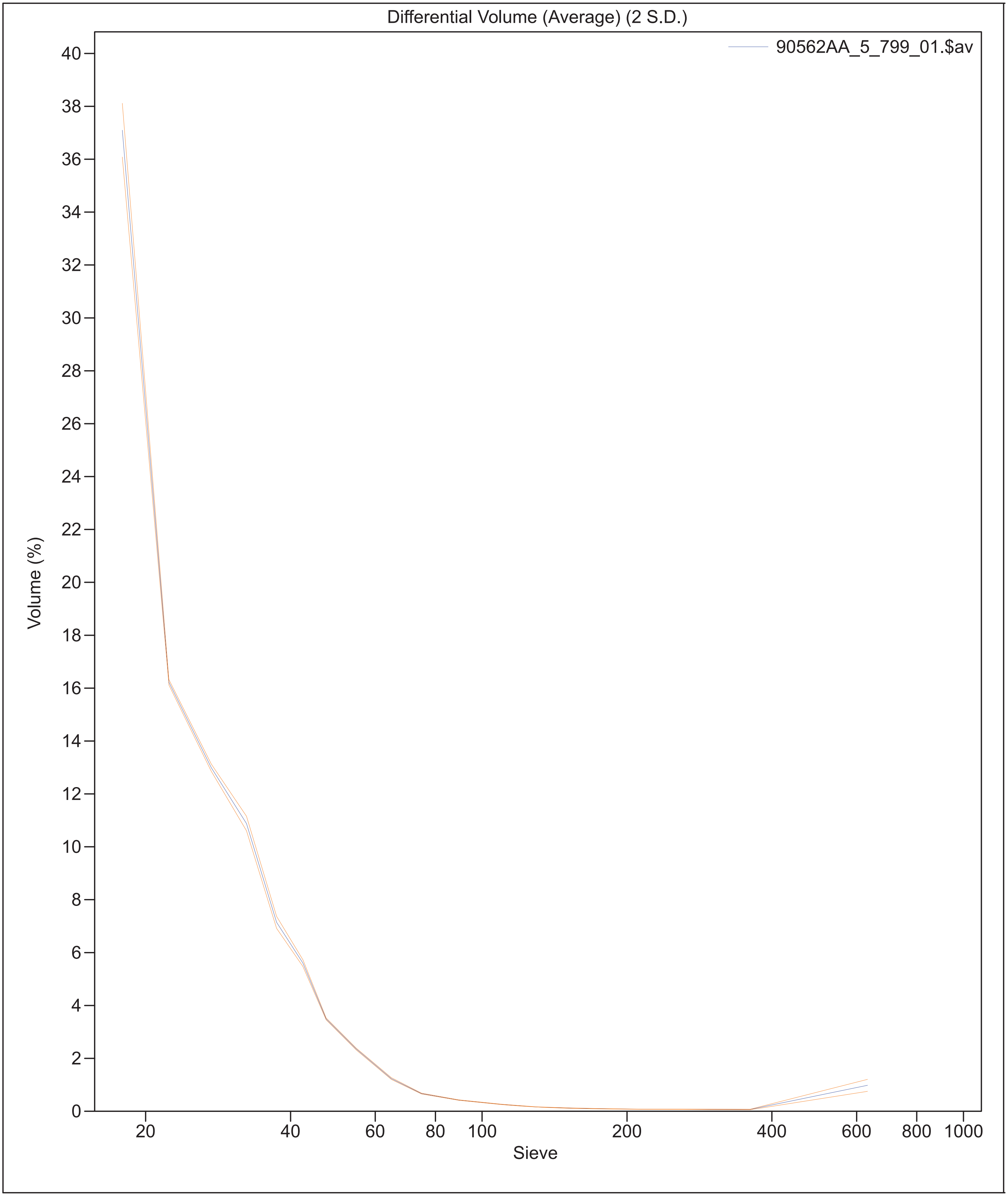
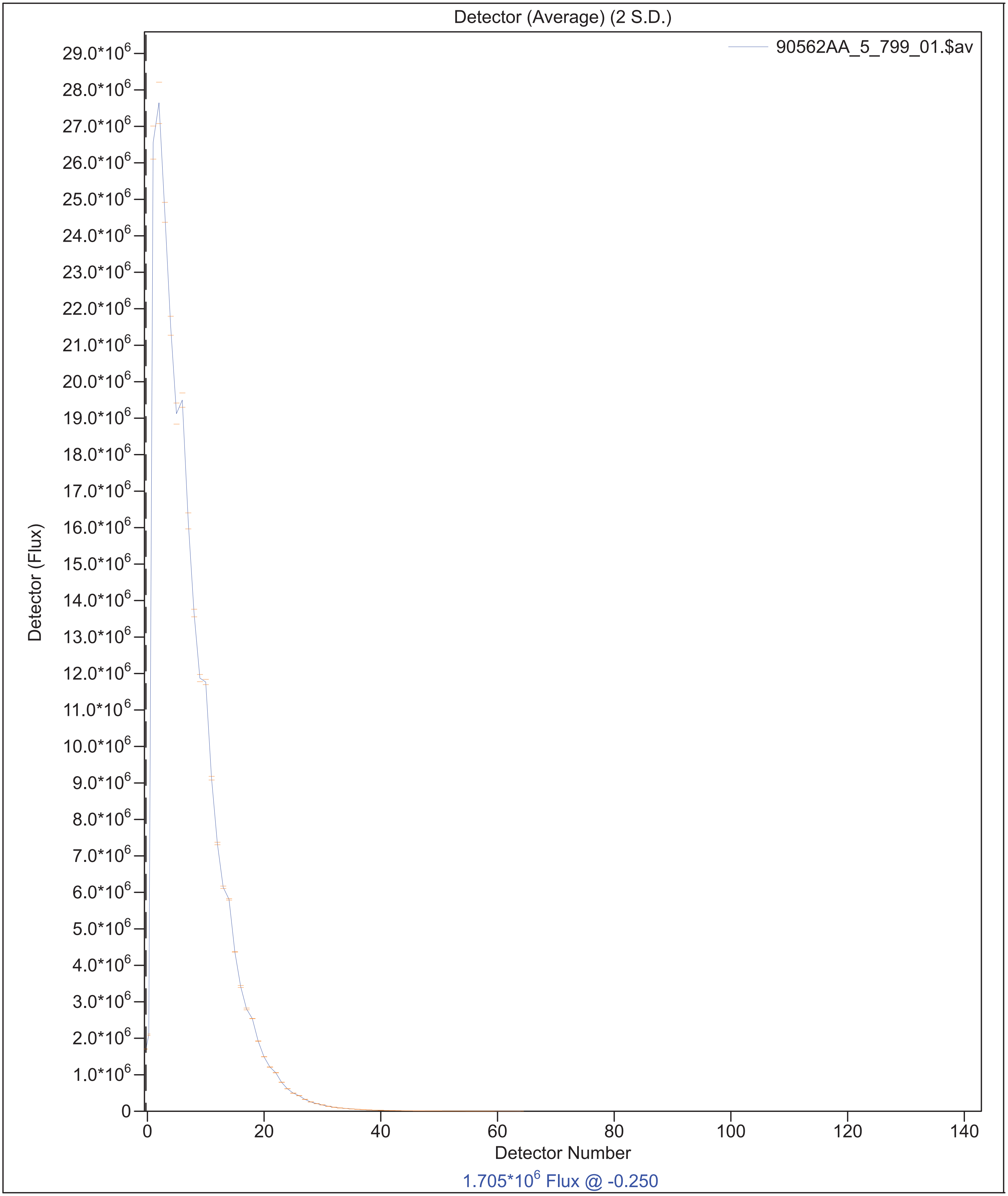
Beckman Coulter LS 13 320

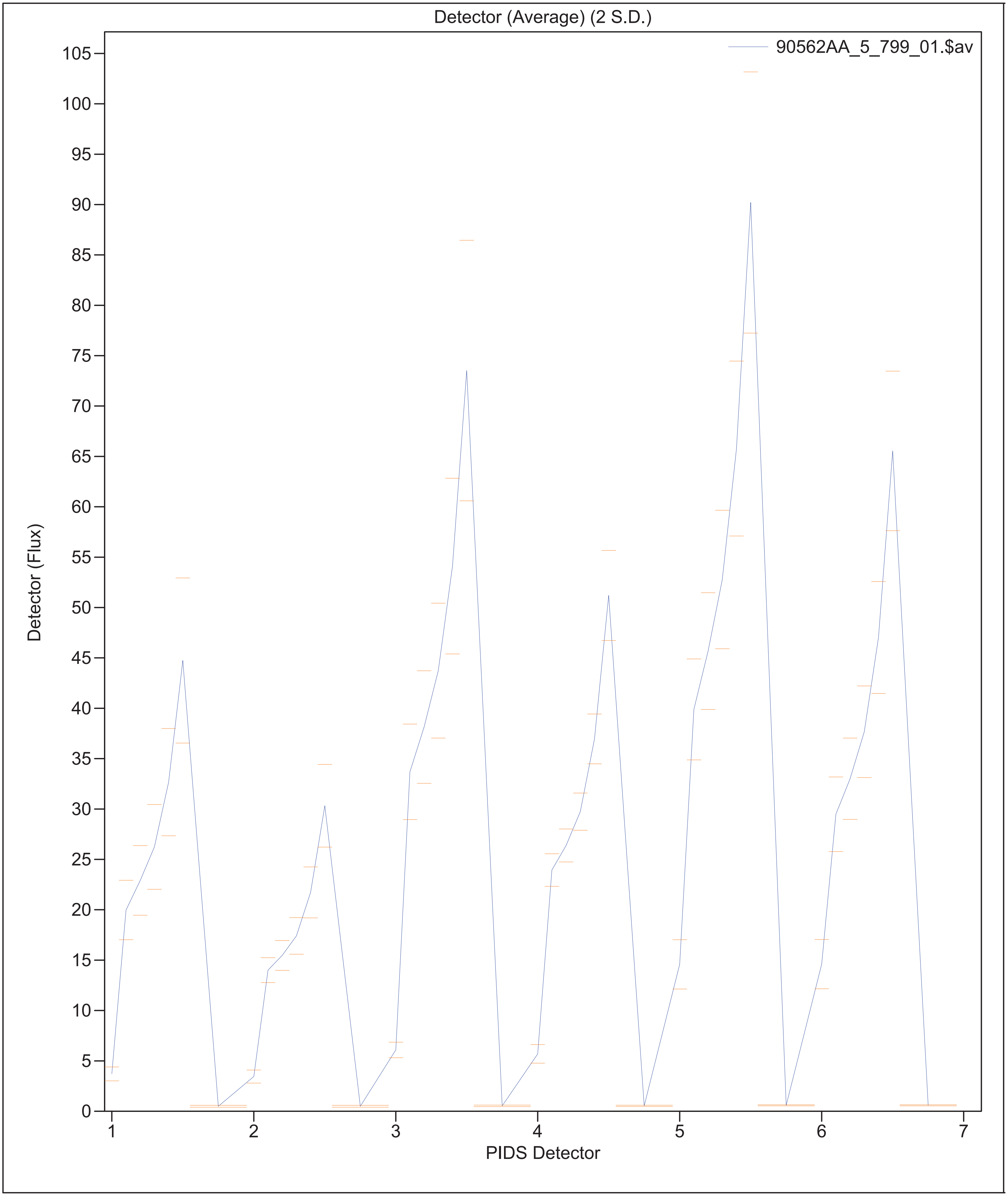


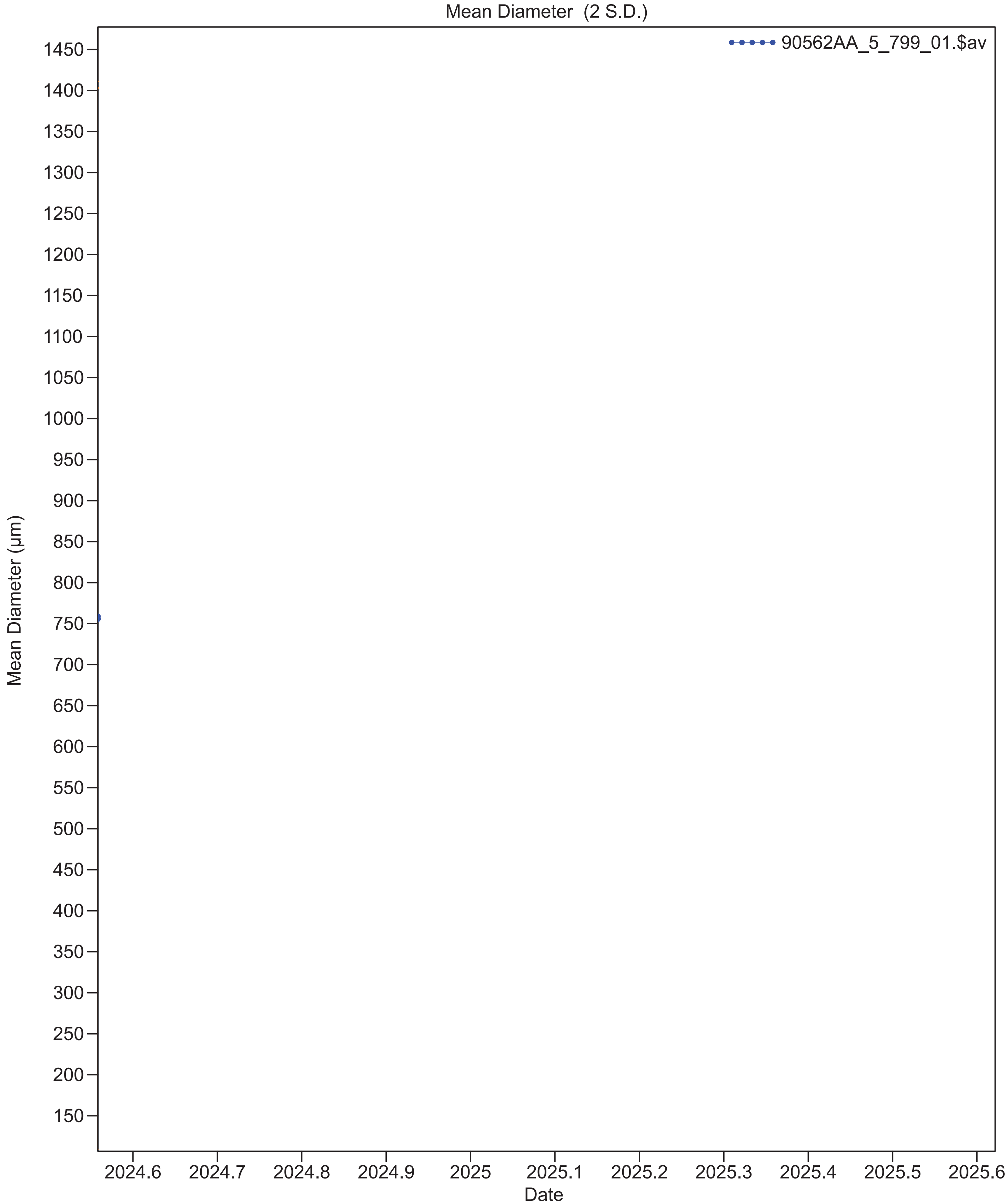
LS Particle Size Analyzer

9 Jul 2024 17:21

Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90562AA_5_799_01.$av
Detector (Flux)
PIDS Detector
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
1
2
3
4
5
6
7


Mean Diameter (2 S.D.)
90562AA_5_799_01.$av
Mean Diameter (µm)
1450
1400
1350
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
2024.6
2024.7
2024.8
2024.9
2025
2025.1
2025.2
2025.3
2025.4
2025.5
2025.6
Date

Volume Statistics (Arithmetic) Average of 3 files 90562AA_5_799_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	756.9 µm	1.751	753.4	760.4
Median:	737.9 µm	2.482	733.0	742.9
S.D.:	324.4 µm	1.363	321.7	327.2
Variance:	105.3e3 μm^2	888.1	103.5e3	107.0e3
C.V.:	42.87%	0.086	42.69	43.04
Skewness:	0.289	0.033	0.224	0.355
Kurtosis:	-0.165	0.029	-0.224	-0.106
d_{10}:	354.1 µm	1.360	351.4	356.8
d_{50}:	737.9 µm	2.482	733.0	742.9
d_{90}:	1197 µm	3.770	1190	1205

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LS Particle Size Analyzer

9 Jul 2024 17:29

Beckman Coulter LS 13 320

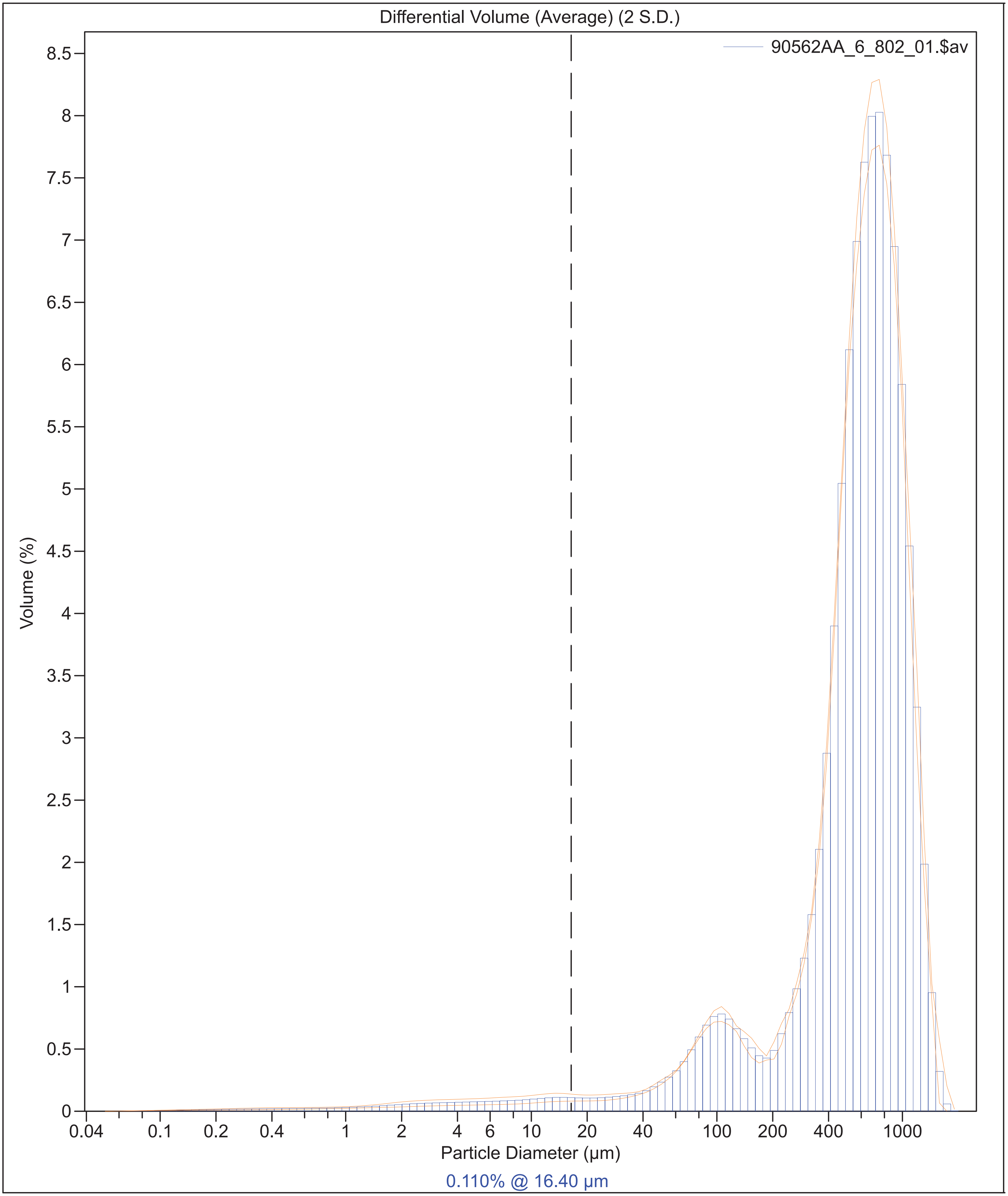
File name:	C:\LS13320\Samples\NOAA-CZM FY23\90562AA_6_802_01.$av		
	90562AA_6_802_01.$av		
File ID:	90562AA_6		
Sample ID:	90562AA_6		
Operator:	lns/dwh		
Optical model:	marine_mud.rf780d PIDS included		
LS 13 320	Aqueous Liquid Module		
		Run length:	53 seconds
Pump speed:	86		
Fluid:	Water		

Average of 3 files
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_6_800_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_6_801_01.$ls
C:\LS13320\Samples\NOAA-CZM FY23\90562AA_6_802_01.$ls

LS Particle Size Analyzer

9 Jul 2024 17:29

Beckman Coulter LS 13 320



Volume Statistics (Arithmetic) 90562AA_6_802_01.$av

Calculations from 0.040 μm to 2000 μm

Volume:	100%		
Mean:	636.8 μm	S.D.:	329.0 μm
Median:	634.7 μm	Variance:	108.2e3 μm^2
Mean/Median ratio:	1.003	C.V.:	51.7%
Mode:	751.1 μm	Skewness:	0.091 Right skewed
		Kurtosis:	-0.249 Platykurtic

d_{10}: 132.5 μm d_{50}: 634.7 μm d_{90}: 1066 μm

Folk and Ward Statistics (Phi)

Mean:	0.81	Median:	0.66	Deviation:	1.05
Skewness:	0.42	Kurtosis:	1.77		

<10%	<25%	<50%	<75%	<90%
132.5 μm	433.1 μm	634.7 μm	852.9 μm	1066 μm

LS Particle Size Analyzer

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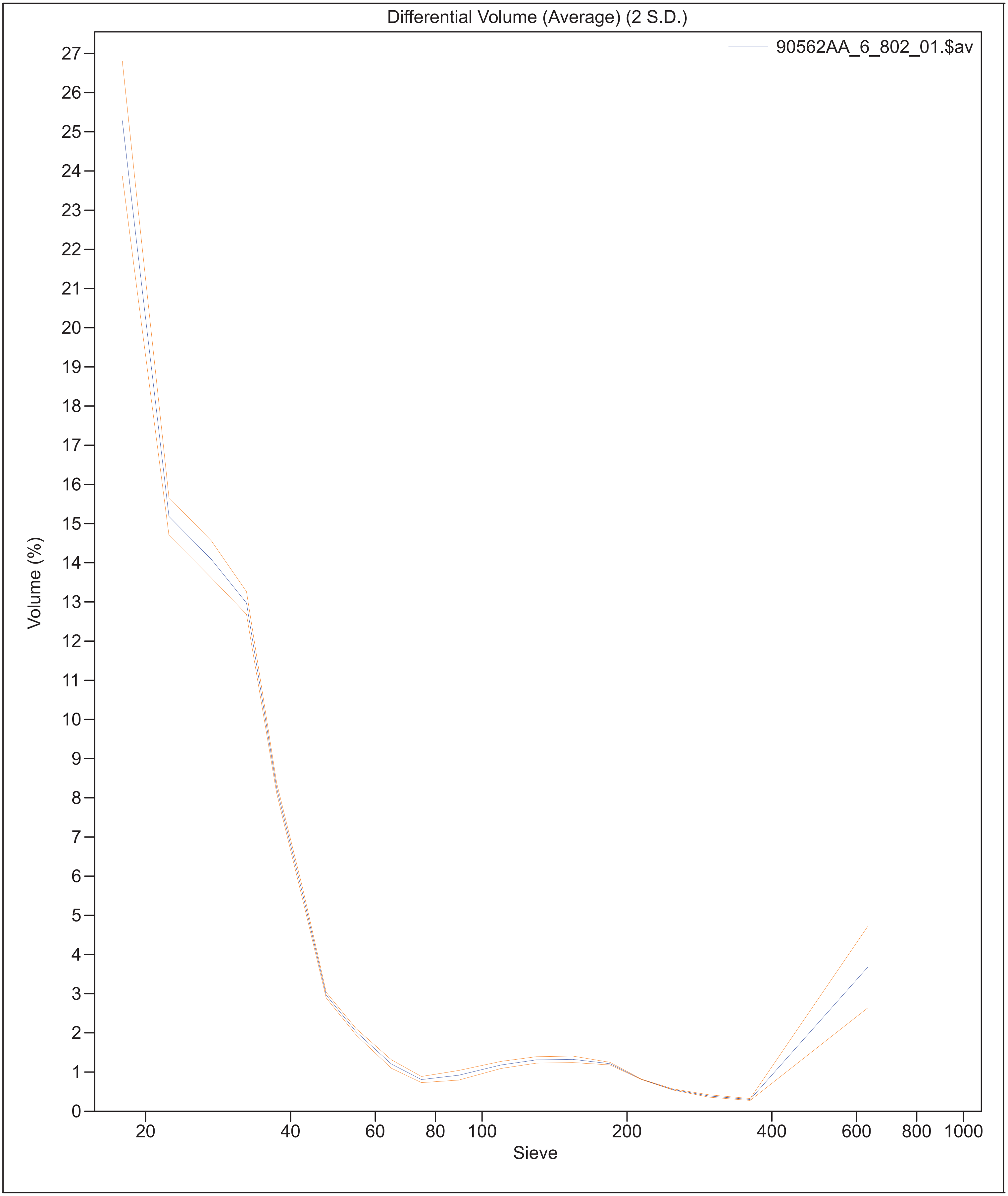
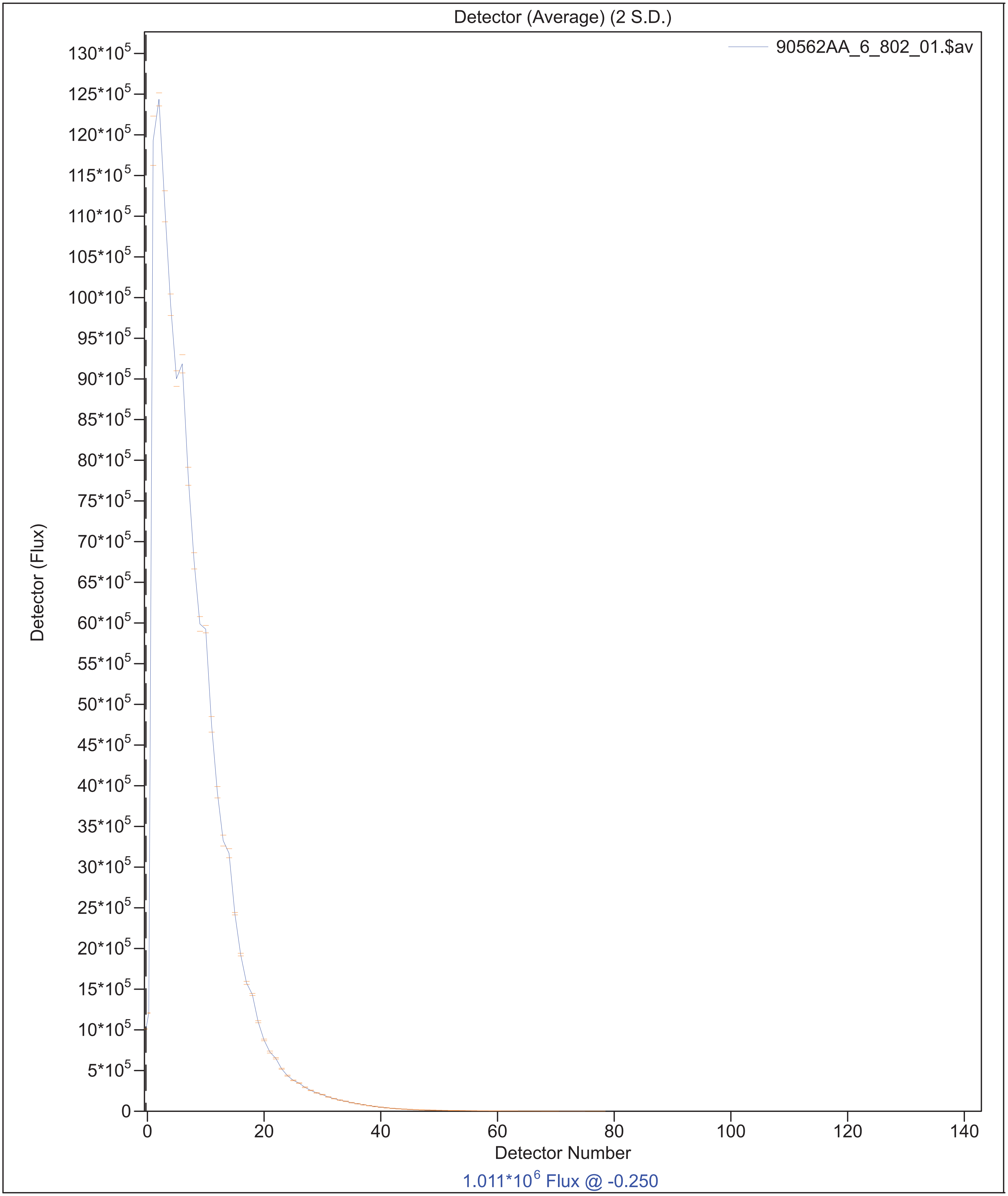
Beckman Coulter LS 13 320




Detector (Average) (2 S.D.)
90562AA_6_802_01.$av
130*10^5
125*10^5
120*10^5
115*10^5
110*10^5
105*10^5
100*10^5
95*10^5
90*10^5
85*10^5
80*10^5
75*10^5
70*10^5
65*10^5
60*10^5
55*10^5
50*10^5
45*10^5
40*10^5
35*10^5
30*10^5
25*10^5
20*10^5
15*10^5
10*10^5
5*10^5
0
Detector (Flux)
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20
40
60
80
100
120
140
Detector Number
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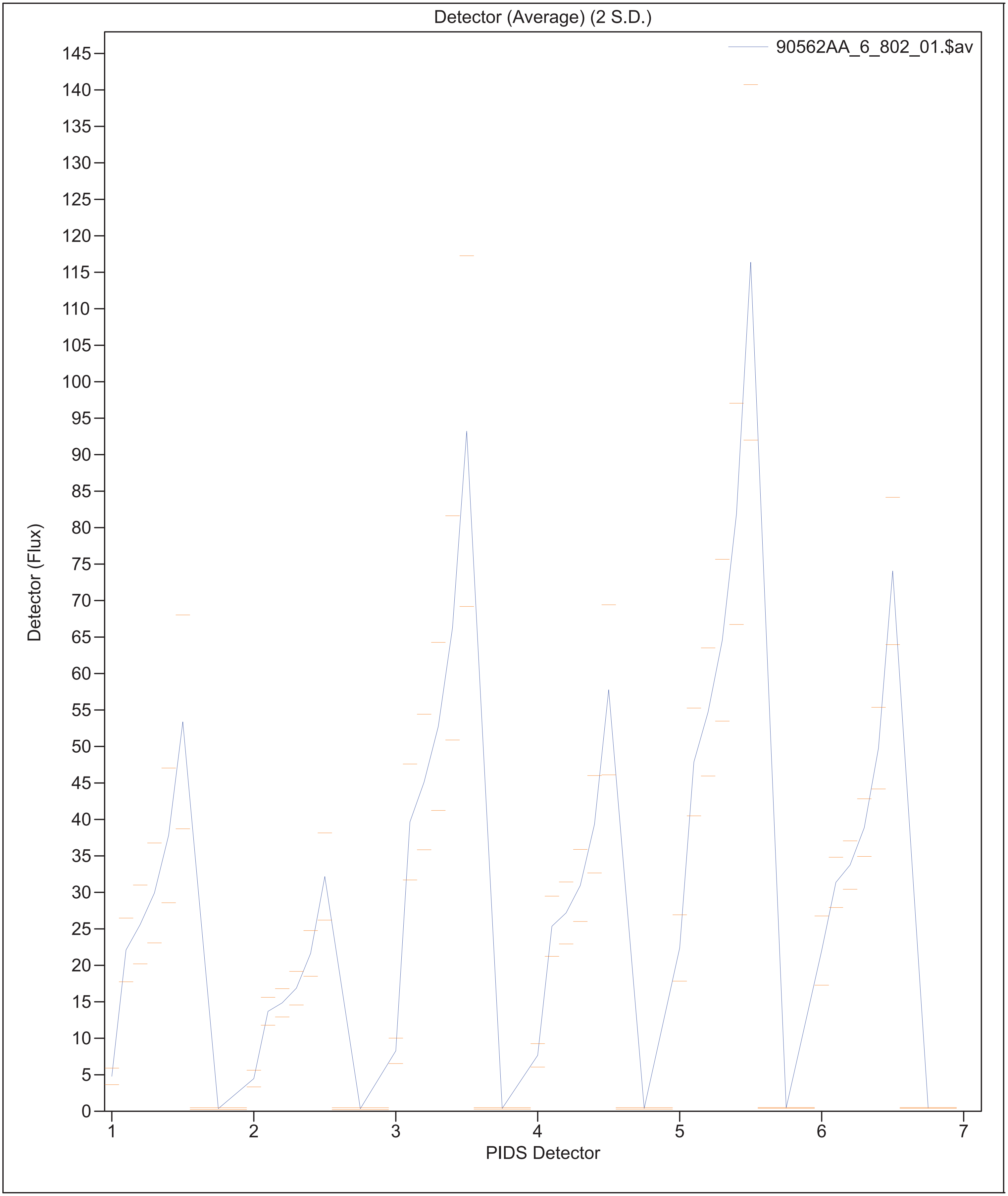
Detector (Average) (2 S.D.)
90562AA_6_802_01.$av
Detector (Flux)
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140
135
130
125
120
115
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105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
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1
2
3
4
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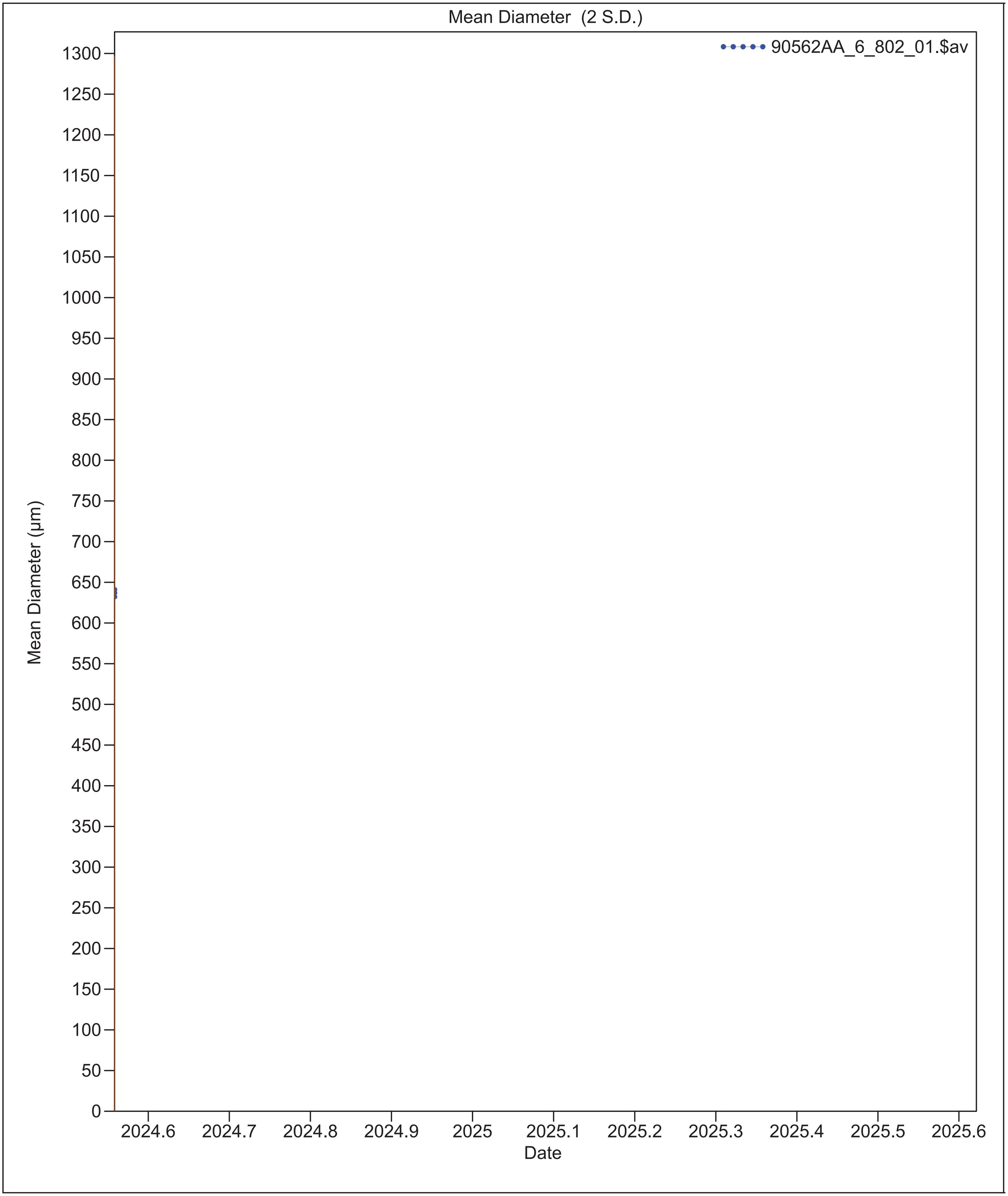
6
7
PIDS Detector

LS Particle Size Analyzer

9 Jul 2024 17:29

Beckman Coulter LS 13 320



LS Particle Size Analyzer

9 Jul 2024 17:29

Beckman Coulter LS 13 320

Volume Statistics (Arithmetic)   Average of 3 files   90562AA_6_802_01.$av

Calculations from 0.040 µm to 2000 µm

	Mean	S.D.	-2 S.D.	+2 S.D.
Mean:	636.8 µm	4.441	627.9	645.6
Median:	634.7 µm	3.156	628.4	641.0
S.D.:	328.9 µm	1.857	325.2	332.6
Variance:	108.2e3 μm^2	1222	105.8e3	110.6e3
C.V.:	51.66%	0.637	50.39	52.93
Skewness:	0.091	0.049	-0.0063	0.189
Kurtosis:	-0.249	0.135	-0.520	0.022
d_{10}:	133.1 µm	11.76	109.6	156.7
d_{50}:	634.7 µm	3.156	628.4	641.0
d_{90}:	1066 µm	2.081	1062	1070

APPENDIX C

Supplemental Geochemistry

Appendix C

X-ray Fluorescence Geochemistry Results

Parameters for pXRF protocol for prepared samples of unconsolidated sediment and soil
(modified from Nelson and others, 2024; Virginia Energy Open-file report 2024-16: https://www.energy.virginia.gov/commerce/)

Instrument Calibration	Sample Collection	Sample Preparation	Sample Analysis	Interpretation and Validation of Results
1) Confirm list of elements included in the factory calibration from the manufacturer. 2) Calibrate unit via site specific or media specific material using certified analytical standards (if available and applicable to analytical needs). 3) Follow calibration instructions per unit. 4) Prepare blank standards or checks to routinely measure for possible contamination between runs and background elements. 5) Ensure the instrument aperture window is kept clean.	1) Representative subsample of target material. Minimum: 20 grams. 2) Avoid sampling at the sediment-core liner contact as material can slump along the plastic. 3) Best to sample at a split core face that is devoid of organics, coarse gravel and/or shell material.	1) Use a 2-mm mesh sieve to remove all coarse particles. 2) Dry <2 mm fraction in annealing oven. 3) Homogenize <2 mm fraction. 4) Split using a sediment splitter. 5) Prepare sample cups with protective film (i.e., 4 µm thick Prolene)[1]. 6) Scoop material into sample cup to the appropriate volume. Ensure that the sample thickness is > 4 mm or meets the appropriate "infinite thickness"[2] requirements (up to 10 mm in some cases). 7) Add cotton ball and bottom lid to contain sample in puck.	1) Ideally, turn on analyzer to warm up 15-20 minutes prior to collecting data. 2) Conduct stainless steel check calibration. 3) Depending on the data needs, adjust run time per beam to account for reduced error (recommend 30-60 seconds per beam). 4) Check for spectral interferences. 5) Collect at least three readings and average[3].	1) Confirm if potential spectral interferences mask results (i.e., lighter elements masked by heavier elements). 2) Consider reporting requirement needs and error thresholds. 3) If analytical data are available for the site, attempt appropriate validation and potential re-calibration of instrument.

[1] There are different brands of sample preparation cups with different sizes, volume capacities, and specifications.
[2] Infinite thickness refers to the necessary thickness of a given sample ensuring that x-rays do not penetrate deeper than the sample.
[3] Averaging sample readings will provide a more representative result in a heterogeneous sample; however, if time is limited and the goal is simple spot screening of a material that appears relatively homogenous, one sample reading may be appropriate.

Repository ID	Sample ID	Unit type	Mode	LE	LE +/-	Mg	Mg +/-	Al	Al +/-	Si	Si +/-	P	P +/-	S	S +/-	K	K +/-	Ca	Ca +/-	Sc	Sc +/-	Ti	Ti +/-	V	V +/-
R-12813	90473AB_1	Percent (%)	Mining	71.047	0.396			5.586	0.086	19.593	0.097	0.205	0.015			0.899	0.005	0.013	0.001	0.001	0.001	0.391	0.010	0.012	0.003
R-12814	90473AB_2	Percent (%)	Mining	71.542	0.396			6.419	0.090	18.789	0.095	0.175	0.015			0.578	0.003	0.013	0.001	0.001	0.001	0.537	0.011	0.011	0.003
R-12815	90474AA_1	Percent (%)	Mining	68.345	0.410			5.391	0.086	21.341	0.105	0.153	0.015			0.375	0.003	0.034	0.001	0.001	0.001	0.650	0.012	0.014	0.003
R-12816	90474AA_2	Percent (%)	Mining	73.279	0.385			5.225	0.078	19.796	0.093	0.213	0.015			0.297	0.003	0.012	0.001	0.001	0.001	0.303	0.009	0.006	0.003
R-12817	90474AA_3	Percent (%)	Mining	73.659	0.422			5.951	0.090	16.101	0.091	0.179	0.014			0.352	0.003	0.059	0.001	0.001	0.001	0.449	0.010	0.011	0.003
R-12818	90474AA_4	Percent (%)	Mining	73.332	0.405			6.071	0.088	17.271	0.092	0.153	0.014			0.336	0.003	0.013	0.001	0.001	0.001	0.441	0.010	0.010	0.003
R-12819	13215AB_1	Percent (%)	Mining	71.106	0.379			3.834	0.071	22.274	0.099	0.255	0.015			0.697	0.004	0.027	0.001	0.001	0.001	0.258	0.009	0.006	0.003
R-12820	13215AB_2	Percent (%)	Mining	65.573	0.345			2.947	0.062	29.505	0.110	0.245	0.016			0.767	0.004	0.029	0.001	0.001	0.001	0.201	0.009	0.004	0.003
R-12821	13215AB_3	Percent (%)	Mining	70.112	0.367			3.794	0.069	24.079	0.101	0.326	0.016			0.684	0.004	0.040	0.001	0.001	0.001	0.118	0.007	0.005	0.002
R-12822	13215AB_4	Percent (%)	Mining	65.843	0.342			3.283	0.064	28.974	0.108	0.329	0.016			0.764	0.004	0.049	0.001	0.001	0.001	0.198	0.009	0.004	0.003
R-12823	90298AB_1	Percent (%)	Mining	63.877	0.413			4.416	0.082	24.006	0.109	0.184	0.018	1.829	0.024	1.940	0.007	0.558	0.003	0.001	0.001	0.345	0.011	0.009	0.003
R-12824	90451AA_1	Percent (%)	Mining	69.640	0.409			4.990	0.083	20.754	0.103	0.193	0.015			0.075	0.002	0.009	0.001	0.001	0.001	0.450	0.010	0.011	0.003
R-12825	90451AA_2	Percent (%)	Mining	74.146	0.402			4.565	0.076	18.646	0.092	0.136	0.014			0.285	0.002	0.007	0.001	0.001	0.001	0.135	0.007	0.005	0.002
R-12826	90451AA_3	Percent (%)	Mining	71.469	0.394			5.565	0.086	19.322	0.097	0.170	0.015			0.214	0.002	0.012	0.001	0.001	0.001	0.371	0.010	0.009	0.003
R-12827	90490AA_1	Percent (%)	Mining	72.712	0.492			4.898	0.081	18.145	0.095	0.225	0.017			1.087	0.005	0.379	0.003	0.001	0.001	0.361	0.010	0.007	0.003
R-12828	90490AA_2	Percent (%)	Mining	63.759	0.353			3.890	0.073	28.224	0.112	0.271	0.017			1.304	0.005	0.311	0.002	0.001	0.001	0.525	0.012	0.007	0.003
R-12829	90490AA_3	Percent (%)	Mining	67.640	0.380			4.165	0.075	24.084	0.104	0.315	0.017			0.949	0.005	0.381	0.002	0.001	0.001	0.353	0.010	0.007	0.003
R-12830	90490AA_4	Percent (%)	Mining	65.952	0.368			4.365	0.078	25.250	0.107	0.272	0.017			1.174	0.005	0.434	0.003	0.001	0.001	0.440	0.011	0.008	0.003
R-12831	90490AA_5	Percent (%)	Mining	68.108	0.379			3.928	0.072	24.678	0.104	0.243	0.016			0.784	0.004	0.154	0.002	0.001	0.001	0.424	0.011	0.008	0.003
R-12832	13889AD_1	Percent (%)	Mining	63.198	0.341			2.926	0.062	31.358	0.114	0.255	0.017			0.739	0.004	0.163	0.002	0.001	0.001	0.561	0.013	0.006	0.004
R-12833	13889AD_2	Percent (%)	Mining	64.235	0.360			1.661	0.052	29.692	0.110	0.414	0.018	1.155	0.020	0.677	0.003	0.206	0.002	0.001	0.001	1.065	0.016	0.010	0.004
R-12834	13889AD_3	Percent (%)	Mining	63.623	0.394			2.675	0.068	25.553	0.109	0.221	0.017	1.169	0.021	1.676	0.006	0.445	0.003	0.001	0.001	1.007	0.016	0.010	0.004
R-12835	13889AD_4	Percent (%)	Mining	65.384	0.354			3.448	0.067	28.361	0.109	0.261	0.016			0.801	0.004	0.167	0.002	0.001	0.001	0.562	0.013	0.008	0.004
R-12836	13889AD_5	Percent (%)	Mining	63.620	0.346			2.748	0.061	30.866	0.113	0.277	0.017			0.878	0.005	0.250	0.002	0.001	0.001	0.482	0.012	0.008	0.004
R-12837	90367AA_1	Percent (%)	Mining	68.398	0.399			6.575	0.095	20.117	0.103	0.179	0.015			0.457	0.003	0.028	0.001	0.001	0.001	0.465	0.011	0.013	0.003
R-12838	90367AA_2	Percent (%)	Mining	64.957	0.378			5.175	0.084	25.276	0.112	0.231	0.017			0.553	0.004	0.046	0.001	0.001	0.001	0.574	0.012	0.012	0.003
R-12839	90367AA_3	Percent (%)	Mining	66.360	0.374			5.077	0.081	24.887	0.109	0.192	0.016			0.367	0.003	0.075	0.001	0.001	0.001	0.594	0.012	0.010	0.003
R-12840	90367AA_4	Percent (%)	Mining	65.542	0.381			5.298	0.085	24.591	0.111	0.231	0.016			0.387	0.003	0.075	0.001	0.001	0.001	0.635	0.012	0.011	0.004
R-12841	90562AA_1	Percent (%)	Mining	65.498	0.353	2.159	28.798	1.378	0.053	19.601	0.146	0.262	0.586	0.015	0.004	0.305	0.463	0.057	0.001	0.002	0.002	0.770	0.016	0.009	0.003
R-12842	90562AA_2	Percent (%)	Mining	68.731		2.101	27.345	0.279		0.258	0.079	0.001	0.352	0.005	0.003	0.052	0.773	0.002		0.001	0.002				0.001
R-12843	90562AA_3	Percent (%)	Mining	67.819		2.398	27.712	0.266		0.313	0.057	0.001	0.776	0.009		0.011	0.547	0.001	0.000	0.001	0.003	0.000			0.000
R-12844	90562AA_4	Percent (%)	Mining	63.880		2.235	31.071	0.338		0.579	0.094	0.001	1.009	0.007	0.003	0.014	0.713	0.002		0.002	0.001	0.001			0.001
R-12846	90562AA_6	Percent (%)	Mining	66.022		2.883	28.709	0.316		0.710	0.097	0.001	0.550	0.007	0.005	0.013	0.586	0.002	0.000	0.002	0.002	0.001			0.002
R-12847	08766AB_1	Percent (%)	Mining	73.221	0.411			4.930	0.079	18.673	0.093	0.133	0.014			0.457	0.003	0.009	0.001	0.001	0.001	0.516	0.011	0.008	0.003
R-12849	13771AC_1	Percent (%)	Mining	69.101		4.463	21.792	0.163		1.031	0.020	0.001	0.356	0.008	0.008	0.006	2.940	0.008	0.001	0.001	0.002	0.001	0.002		0.004
R-12850	13771AC_2	Percent (%)	Mining	71.400		4.364	19.639	0.189		0.482	0.021	0.001	0.682	0.015	0.005	0.010	3.132	0.006	0.001	0.002	0.002	0.001			0.002
R-12851	13771AC_3	Percent (%)	Mining	68.512	0.405			4.449	0.076	23.268	0.103	0.179	0.016			0.806	0.004	0.067	0.001	0.001	0.001	1.105	0.016	0.014	0.004
R-12852	13771AC_4	Percent (%)	Mining	64.804	0.348			3.679	0.067	29.433	0.111	0.247	0.017			0.529	0.004	0.034	0.001	0.001	0.001	0.625	0.013	0.009	0.004
R-12855	13771AC_7	Percent (%)	Mining	66.680	0.372			4.248	0.074	25.833	0.107	0.184	0.016			1.126	0.005	0.009	0.001	0.001	0.001	0.352	0.010	0.007	0.003
R-12856	13771AC_8	Percent (%)	Mining	66.609	0.355			4.812	0.075	26.653	0.107	0.213	0.016			0.522	0.003	0.010	0.001	0.001	0.001	0.489	0.012	0.008	0.003
R-12857	13771AC_9	Percent (%)	Mining	63.972	0.348			2.879	0.060	30.535	0.112	0.283	0.017			0.301	0.003	0.008	0.001	0.001	0.001	1.341	0.018	0.011	0.005
R-12858	13867AB_1	Percent (%)	Mining	73.019		4.407	20.327	0.185		0.464	0.083	0.001	0.326	0.006	0.004	0.004	1.140		0.001	0.001	0.001	0.001			0.001
R-12859	13867AB_2	Percent (%)	Mining	70.495		3.912	21.183	0.193		0.527	0.068	0.001	1.331	0.016	0.005	0.023	2.161	0.004	0.001	0.002	0.002	0.001			0.001
R-12860	13867AB_3	Percent (%)	Mining	63.923		2.837	29.961	0.273		0.784	0.058	0.001	1.044	0.010	0.003	0.017	1.031	0.002	0.001	0.002	0.001	0.001			0.001
R-12861	13867AB_4	Percent (%)	Mining	59.284		1.188	33.188	0.488		0.236	0.030	0.001	3.829	0.023		0.063	1.384	0.005		0.005	0.002	0.001			
R-12862	13867AB_5	Percent (%)	Mining	68.911		2.099	26.797	0.263		0.798	0.066	0.001	0.190	0.006	0.003	0.009	0.755	0.002	0.001	0.001	0.001				0.002
R-12866	90397AA_1	Percent (%)	Mining	76.153	0.424			4.153	0.074	16.660	0.088	0.162	0.014			0.340	0.003	0.036	0.001	0.001	0.001	0.195	0.007	0.006	0.002
R-12867	90413AA_1	Percent (%)	Mining	69.502	0.402			3.089	0.066	23.453	0.102	0.263	0.016			0.833	0.004	0.026	0.001	0.001	0.001	0.582	0.012	0.010	0.003
R-12868	90413AA_2	Percent (%)	Mining	71.089	0.407			4.841	0.081	19.793	0.097	0.155	0.015			0.848	0.004	0.008	0.001	0.001	0.001	0.738	0.013	0.012	0.004
R-12869	90413AA_3	Percent (%)	Mining	67.435	0.366			5.335	0.081	24.463	0.105	0.163	0.015			0.906	0.004	0.010	0.001	0.001	0.001	0.575	0.012	0.013	0.004
R-12870	90413AA_4	Percent (%)	Mining	68.359	0.398			2.880	0.066	24.194	0.104	0.219	0.016			1.076	0.005	0.014	0.001	0.001	0.001	0.788	0.014	0.010	0.004
R-12871	90413AA_5	Percent (%)	Mining	72.541	0.414			5.247	0.083	18.400	0.093	0.167	0.014			0.522	0.003	0.010	0.001	0.001	0.001	0.879	0.014	0.015	0.004
R-12872	90560AA_1	Percent (%)	Mining	71.832	0.424			5.478	0.090	17.130	0.095	0.156	0.015			0.767	0.004	0.101	0.001	0.001	0.001	0.436	0.010	0.012	0.003
R-12873	90560AA_2	Percent (%)	Mining	67.081	0.371			4.132	0.075	25.115	0.107	0.186	0.016			0.969	0.005	0.052	0.001	0.001	0.001	0.456	0.011	0.009	0.003
R-12874	06930AB_1	Percent (%)	Mining	65.874	0.346			3.846	0.069	28.184	0.109	0.255	0.016			0.736	0.004	0.007	0.001	0.001	0.001	0.312	0.010	0.008	0.003
R-12875	06930AB_2	Percent (%)	Mining	62.268	0.330			3.383	0.064	32.766	0.116	0.253	0.017			0.174	0.002	0.009	0.001	0.001	0.001	0.514	0.012	0.007	0.003
R-12876	12583AC_1	Percent (%)	Mining	65.462	0.348			3.570	0.067	28.898	0.109	0.220	0.016			0.615	0.004	0.096	0.001	0.001	0.001	0.483	0.012	0.008	0.003
R-12878	12583AC_3	Percent (%)	Mining	66.177	0.349			3.913	0.069	27.955	0.108	0.169	0.016			0.585	0.004	0.084	0.001	0.001	0.001	0.351	0.011	0.006	0.003
R-12879	12583AC_4	Percent (%)	Mining	68.566	0.363			3.221	0.064	26.336	0.104	0.141	0.015			0.450	0.003	0.166	0.002	0.001	0.001	0.324	0.010	0.007	0.003
R-12880	90326AB_1	Percent (%)	Mining	69.445	0.374			5.209	0.078	23.360	0.101	0.212	0.015			0.450	0.003	0.009	0.001	0.001	0.001	0.414	0.010	0.009	0.003
R-12883	90348AB_1	Percent (%)	Mining	67.454	0.353			1.978	0.053	28.412	0.106	0.163	0.015	0.025	0.014	0.641	0.004	0.067	0.001	0.001	0.001	0.596	0.013	0.008	0.004
R-12884	90348AB_2	Percent (%)	Mining	65.359	0.345			2.610	0.060	29.532	0.110	0.270	0.016			0.669	0.004	0.044	0.001	0.001	0.001	0.535	0.012	0.006	0.004
R-12885	13778AF_1	Percent (%)	Mining	68.698	0.362			3.180	0.063	26.063	0.104	0.153	0.015			0.405	0.003	0.062	0.001	0.001	0.001	0.549	0.012	0.008	0.003
R-12886	13778AF_2	Percent (%)	Mining	68.621	0.365			3.726	0.068	25.142	0.104	0.244	0.016			0.356	0.003	0.068	0.001	0.001	0.001	0.568	0.012	0.007	0.003
R-12887	90319AA_1	Percent (%)	Mining	73.170	0.409			3.876	0.073	19.044	0.094	0.176	0.014			0.761	0.004	0.024	0.001	0.001	0.001	0.477	0.010	0.008	0.003
R-12888	90319AA_2	Percent (%)	Mining	66.077	0.383			3.791	0.073	25.172	0.108	0.200	0.016			0.795	0.004	0.012	0.001	0.001	0.001	0.387	0.010	0.011	0.003
R-12889	06988AC_1	Percent (%)	Mining	61.175	0.326			0.723	0.039	36.085	0.117	0.297	0.018			0.419	0.003	0.011	0.001	0.001	0.001	0.769	0.014	0.009	0.004
R-12890	06988AC_2	Percent (%)	Mining	77.205	0.474			1.637	0.057	14.920	0.087	0.352	0.015			0.498	0.003	0.033	0.001	0.001	0.001	0.127	0.006	0.005	0.002
R-12891	10018AB_1	Percent (%)	Mining	61.211	0.329			3.388	0.066	32.596	0.117	0.262	0.017			0.566	0.004	0.116	0.001	0.001	0.001	0.945	0.016	0.012	0.004
R-12892	11273AA_1	Percent (%)	Mining	64.365	0.341			3.355	0.065	29.821	0.111	0.267	0.017			0.564	0.004	0.040	0.001	0.001	0.001	0.925	0.015	0.010	0.004
R-12893	13118AA_1	Percent (%)	Mining	67.528	0.366			3.898	0.072	25.251	0.105	0.213	0.016			0.984	0.005	0.010	0.001	0.001	0.001	0.486	0.011	0.013	0.003
R-12894	13118AA_2	Percent (%)	Mining	65.131	0.354			4.362	0.080	24.092	0.104	0.202	0.015			2.025	0.007	0.015	0.001	0.001	0.001	2.709	0.024	0.026	0.006
R-12895	90466AC_1	Percent (%)	Mining	67.324	0.354			3.243	0.065	27.034	0.106	0.244	0.016			0.600	0.004	0.028	0.001	0.001	0.001	0.683	0.013	0.009	0.004
R-12896	90466AC_2	Percent (%)	Mining	62.679	0.347			3.409	0.068	30.628	0.117	0.198	0.017			0.346	0.003	0.033	0.001	0.001	0.001	0.602	0.013	0.009	0.004
R-12897	90466AC_3	Percent (%)	Mining	64.835	0.342			2.459	0.058	30.521	0.111	0.235	0.016			0.460	0.003	0.054	0.001	0.001	0.001	0.443	0.011	0.009	0.003
R-12898	90466AC_4	Percent (%)	Mining	70.685	0.374			3.934	0.071	22.928	0.100	0.135	0.014			0.474	0.003	0.035	0.001	0.001	0.001	0.499	0.011	0.009	0.003

Repository ID	Sample ID	Unit type	Mode	Cr	Cr +/-	Mn	Mn +/-	Fe	Fe +/-	Co	Co +/-	Ni	Ni +/-	Cu	Cu +/-	Zn	Zn +/-	Ga	Ga +/-	As	As +/-	Se	Se +/-	Rb	Rb +/-	Sr	Sr +/-	Y	Y +/-	Zr	Zr +/-
R-12813	90473AB_1	Percent (%)	Mining	0.006	0.002	0.010	0.001	2.195	0.007	0.003	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001					0.003	0.001	0.002	0.001			0.028	0.001
R-12814	90473AB_2	Percent (%)	Mining	0.005	0.002	0.009	0.001	1.877	0.007	0.003	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001			0.002	0.001	0.001	0.001			0.030	0.001
R-12815	90474AA_1	Percent (%)	Mining	0.006	0.002	0.006	0.001	3.573	0.009	0.012	0.002	0.001	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.001	0.001		0.001	0.003	0.001	0.002	0.001			0.053	0.001
R-12816	90474AA_2	Percent (%)	Mining	0.004	0.002	0.002	0.001	0.850	0.004			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001		0.001			0.007	0.001
R-12817	90474AA_3	Percent (%)	Mining	0.006	0.002	0.004	0.001	3.192	0.008	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001					0.002	0.001	0.001	0.001			0.020	0.001
R-12818	90474AA_4	Percent (%)	Mining	0.007	0.002	0.004	0.001	2.337	0.007	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001					0.002	0.001	0.001	0.001			0.011	0.001
R-12819	13215AB_1	Percent (%)	Mining	0.005	0.002	0.011	0.001	1.507	0.006	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001					0.002	0.001	0.001	0.001			0.008	0.001
R-12820	13215AB_2	Percent (%)	Mining	0.004	0.002	0.003	0.001	0.662	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001					0.002	0.001	0.002	0.001			0.014	0.001
R-12821	13215AB_3	Percent (%)	Mining	0.004	0.002	0.005	0.001	0.823	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.003	0.001			0.005	0.001
R-12822	13215AB_4	Percent (%)	Mining	0.004	0.002	0.003	0.001	0.501	0.004	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.001					0.002	0.001	0.003	0.001			0.012	0.001
R-12823	90298AB_1	Percent (%)	Mining	0.007	0.002	0.011	0.001	2.743	0.009	0.011	0.002	0.003	0.001	0.002	0.001	0.007	0.001	0.002	0.001	0.002	0.001		0.001	0.009	0.001	0.008	0.001			0.027	0.001
R-12824	90451AA_1	Percent (%)	Mining	0.008	0.002	0.004	0.001	3.809	0.009	0.009	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001				0.001		0.001	0.001	0.001			0.037	0.001
R-12825	90451AA_2	Percent (%)	Mining	0.003	0.001	0.003	0.001	2.056	0.007			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001			0.001	0.001	0.001	0.001			0.007	0.001
R-12826	90451AA_3	Percent (%)	Mining	0.008	0.002	0.004	0.001	2.827	0.008	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001					0.001	0.001	0.001	0.001			0.015	0.001
R-12827	90490AA_1	Percent (%)	Mining	0.004	0.002	0.022	0.001	2.062	0.007	0.004	0.001	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.001					0.004	0.001	0.006	0.001			0.026	0.001
R-12828	90490AA_2	Percent (%)	Mining	0.006	0.002	0.021	0.001	1.424	0.006	0.004	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001			0.004	0.001	0.005	0.001			0.035	0.001
R-12829	90490AA_3	Percent (%)	Mining	0.006	0.002	0.020	0.001	1.965	0.007	0.005	0.001	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.001					0.003	0.001	0.007	0.001			0.033	0.001
R-12830	90490AA_4	Percent (%)	Mining	0.007	0.002	0.019	0.001	1.929	0.007	0.005	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001					0.003	0.001	0.006	0.001			0.031	0.001
R-12831	90490AA_5	Percent (%)	Mining	0.005	0.002	0.015	0.001	1.464	0.006	0.004	0.001	0.001	0.001	0.003	0.001	0.004	0.001	0.001	0.001	0.001	0.001			0.004	0.001	0.004	0.001			0.086	0.001
R-12832	13889AD_1	Percent (%)	Mining	0.005	0.002	0.010	0.001	0.699	0.005	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.004	0.001			0.037	0.001
R-12833	13889AD_2	Percent (%)	Mining	0.009	0.002	0.016	0.001	1.538	0.006	0.008	0.002	0.001	0.001	0.003	0.001	0.003	0.001	0.001	0.001	0.002	0.001		0.001	0.003	0.001	0.002	0.001			0.081	0.001
R-12834	13889AD_3	Percent (%)	Mining	0.009	0.002	0.025	0.001	3.423	0.010	0.013	0.002			0.003	0.001	0.004	0.001	0.001	0.001	0.002	0.001		0.001	0.007	0.001	0.004	0.001			0.124	0.001
R-12835	13889AD_4	Percent (%)	Mining	0.005	0.002	0.010	0.001	0.875	0.005	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001					0.002	0.001	0.004	0.001			0.047	0.001
R-12836	13889AD_5	Percent (%)	Mining	0.005	0.002	0.008	0.001	0.785	0.005	0.003	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.006	0.001			0.058	0.001
R-12837	90367AA_1	Percent (%)	Mining	0.015	0.002	0.005	0.001	3.665	0.009	0.012	0.002	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.001	0.001		0.001	0.004	0.001	0.002	0.001			0.049	0.001
R-12838	90367AA_2	Percent (%)	Mining	0.008	0.002	0.007	0.001	3.029	0.009	0.011	0.002	0.002	0.001	0.002	0.001	0.003	0.001	0.002	0.001	0.002	0.001		0.001	0.005	0.001	0.002	0.001			0.047	0.001
R-12839	90367AA_3	Percent (%)	Mining	0.007	0.002	0.006	0.001	2.353	0.008	0.008	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.001	0.001		0.001	0.003	0.001	0.002	0.001			0.046	0.001
R-12840	90367AA_4	Percent (%)	Mining	0.008	0.002	0.006	0.001	3.139	0.009	0.012	0.002	0.002	0.001	0.002	0.001	0.003	0.001	0.002	0.001	0.001	0.001		0.001	0.004	0.001	0.002	0.001			0.044	0.001
R-12841	90562AA_1	Percent (%)	Mining	0.003	0.002	0.053	0.001	0.837	0.005	0.003	0.001			0.003	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.098	0.001
R-12842	90562AA_2	Percent (%)	Mining	0.001		0.017																									
R-12843	90562AA_3	Percent (%)	Mining	0.001		0.057	0.001							0.080																	
R-12844	90562AA_4	Percent (%)	Mining	0.001		0.050	0.001																								
R-12846	90562AA_6	Percent (%)	Mining	0.002		0.088	0.001	0.001																			0.001				
R-12847	08766AB_1	Percent (%)	Mining	0.005	0.002	0.007	0.001	1.994	0.007	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.001	0.001			0.033	0.001
R-12849	13771AC_1	Percent (%)	Mining	0.003		0.033	0.001							0.078										0.001			0.002				
R-12850	13771AC_2	Percent (%)	Mining	0.001		0.040	0.002	0.000																			0.001				
R-12851	13771AC_3	Percent (%)	Mining	0.004	0.002	0.019	0.001	1.500	0.006	0.003	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001					0.002	0.001	0.001	0.001			0.065	0.001
R-12852	13771AC_4	Percent (%)	Mining	0.005	0.002	0.006	0.001	0.596	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.002	0.001			0.021	0.001
R-12855	13771AC_7	Percent (%)	Mining	0.007	0.002	0.004	0.001	1.496	0.006	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			0.003	0.001	0.002	0.001			0.036	0.001
R-12856	13771AC_8	Percent (%)	Mining	0.005	0.002	0.005	0.001	0.628	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.001	0.001			0.031	0.001
R-12857	13771AC_9	Percent (%)	Mining	0.004	0.002	0.020	0.001	0.565	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.071	0.001
R-12858	13867AB_1	Percent (%)	Mining	0.001		0.024	0.001																				0.001				
R-12859	13867AB_2	Percent (%)	Mining	0.002		0.072	0.002																				0.001				
R-12860	13867AB_3	Percent (%)	Mining	0.001		0.051	0.002	0.000																			0.000				
R-12861	13867AB_4	Percent (%)	Mining	0.000		0.265	0.005	0.001																			0.001				
R-12862	13867AB_5	Percent (%)	Mining	0.004		0.024	0.001							0.102													0.000				
R-12866	90397AA_1	Percent (%)	Mining	0.004	0.001	0.004	0.001	2.271	0.007			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.010	0.001
R-12867	90413AA_1	Percent (%)	Mining	0.019	0.002	0.009	0.001	2.160	0.007	0.006	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001	0.002	0.001	0.005	0.001			0.033	0.001
R-12868	90413AA_2	Percent (%)	Mining	0.006	0.002	0.009	0.001	2.460	0.008	0.004	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.001			0.003	0.001	0.002	0.001			0.022	0.001
R-12869	90413AA_3	Percent (%)	Mining	0.007	0.002	0.007	0.001	1.003	0.005	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001					0.003	0.001	0.002	0.001			0.042	0.001
R-12870	90413AA_4	Percent (%)	Mining	0.007	0.002	0.015	0.001	2.313	0.008	0.005	0.001			0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001		0.001	0.003	0.001	0.005	0.001			0.050	0.001
R-12871	90413AA_5	Percent (%)	Mining	0.006	0.002	0.012	0.001	2.122	0.007	0.004	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001					0.002	0.001	0.001	0.001			0.058	0.001
R-12872	90560AA_1	Percent (%)	Mining	0.009	0.002	0.008	0.001	4.012	0.009	0.007	0.002	0.002	0.001	0.002	0.001	0.003	0.001	0.002	0.001	0.001	0.001			0.004	0.001	0.004	0.001			0.030	0.001
R-12873	90560AA_2	Percent (%)	Mining	0.007	0.002	0.005	0.001	1.926	0.007	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			0.004	0.001	0.002	0.001			0.022	0.001
R-12874	06930AB_1	Percent (%)	Mining	0.004	0.002	0.004	0.001	0.748	0.004			0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.019	0.001
R-12875	06930AB_2	Percent (%)	Mining	0.005	0.002	0.004	0.001	0.564	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.040	0.001
R-12876	12583AC_1	Percent (%)	Mining	0.006	0.002	0.007	0.001	0.558	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.004	0.001			0.037	0.001
R-12878	12583AC_3	Percent (%)	Mining	0.004	0.002	0.004	0.001	0.682	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.003	0.001			0.029	0.001
R-12879	12583AC_4	Percent (%)	Mining	0.004	0.002	0.003	0.001	0.756	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.001					0.001	0.001	0.002	0.001			0.022	0.001
R-12880	90326AB_1	Percent (%)	Mining	0.008	0.002	0.004	0.001	0.837	0.005	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.001	0.001			0.031	0.001
R-12883	90348AB_1	Percent (%)	Mining	0.005	0.002	0.009	0.001	0.604	0.004	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001					0.001	0.001	0.002	0.001			0.023	0.001
R-12884	90348AB_2	Percent (%)	Mining	0.003	0.002	0.008	0.001	0.924	0.005	0.002	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			0.001	0.001	0.002	0.001			0.032	0.001
R-12885	13778AF_1	Percent (%)	Mining	0.005	0.002	0.009	0.001	0.836	0.005	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.024	0.001
R-12886	13778AF_2	Percent (%)	Mining	0.005	0.002	0.006	0.001	1.191	0.006	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.029	0.001
R-12887	90319AA_1	Percent (%)	Mining	0.006	0.002	0.019	0.001	2.413	0.007	0.004	0.001	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.001					0.002	0.001	0.002	0.001			0.013	0.001
R-12888	90319AA_2	Percent (%)	Mining	0.011	0.002	0.007	0.001	3.488	0.009	0.011	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		0.001	0.002	0.001	0.002	0.001			0.025	0.001
R-12889	06988AC_1	Percent (%)	Mining			0.006	0.001	0.463	0.004	0.002	0.001			0.001	0.001	0.001	0.001		0.001	0.001	0.001			0.001	0.001	0.002	0.001			0.038	0.001
R-12890	06988AC_2	Percent (%)	Mining	0.006	0.001	0.038	0.001	5.156	0.010			0.001	0.001	0.001	0.001	0.003	0.001		0.001	0.003	0.001		0.001	0.001	0.001	0.002	0.001			0.010	0.001
R-12891	10018AB_1	Percent (%)	Mining	0.006	0.002	0.013	0.001	0.806	0.005	0.003	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.003	0.001			0.060	0.001
R-12892	11273AA_1	Percent (%)	Mining	0.004	0.002	0.014	0.001	0.590	0.004	0.002	0.001		0.001	0.001	0.001	0.002	0.001	0.001	0.001					0.001	0.001	0.002	0.001			0.036	0.001
R-12893	13118AA_1	Percent (%)	Mining	0.005	0.002	0.006	0.001	1.576	0.006	0.002	0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.002	0.001	0.002	0.001			0.021	0.001
R-12894	13118AA_2	Percent (%)	Mining			0.047	0.002	1.290	0.006	0.003	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.088	0.001
R-12895	90466AC_1	Percent (%)	Mining	0.003	0.002	0.010	0.001	0.772	0.005			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.001	0.001	0.001	0.001			0.048	0.001
R-12896	90466AC_2	Percent (%)	Mining	0.005	0.002	0.006	0.001	1.994	0.007	0.006	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			0.002	0.001	0.001	0.001			0.045	0.001
R-12897	90466AC_3	Percent (%)	Mining	0.004	0.002	0.013	0.001	0.929	0.005			0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.001					0.001	0.001	0.001	0.001			0.034	0.001
R-12898	90466AC_4	Percent (%)	Mining	0.004	0.002	0.017	0.001	1.238	0.005	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001					0.000	0.001	0.001	0.001			0.035	0.001

Repository ID	Sample ID	Unit type	Mode	Nb	Nb +/-	Mo	Mo +/-	Ag	Ag +/-	Cd	Cd +/-	Sn	Sn +/-	Sb	Sb +/-	Te	Te +/-	Ba	Ba +/-	La	La +/-	Ce	Ce +/-	Pr	Pr +/-	Nd	Nd +/-
R-12813	90473AB_1	Percent (%)	Mining	0.001	0.001		0.001																				
R-12814	90473AB_2	Percent (%)	Mining	0.002	0.001		0.001																				
R-12815	90474AA_1	Percent (%)	Mining	0.003	0.001	0.001	0.001											0.077	0.041								
R-12816	90474AA_2	Percent (%)	Mining		0.001																						
R-12817	90474AA_3	Percent (%)	Mining	0.001	0.001																						
R-12818	90474AA_4	Percent (%)	Mining	0.001	0.001																						
R-12819	13215AB_1	Percent (%)	Mining																								
R-12820	13215AB_2	Percent (%)	Mining		0.001													0.129	0.054								
R-12821	13215AB_3	Percent (%)	Mining																								
R-12822	13215AB_4	Percent (%)	Mining															0.087	0.055								
R-12823	90298AB_1	Percent (%)	Mining	0.002	0.001	0.001	0.001																				
R-12824	90451AA_1	Percent (%)	Mining	0.002	0.001																						
R-12825	90451AA_2	Percent (%)	Mining		0.001																						
R-12826	90451AA_3	Percent (%)	Mining	0.001	0.001																						
R-12827	90490AA_1	Percent (%)	Mining	0.001	0.001		0.001											0.079	0.041								
R-12828	90490AA_2	Percent (%)	Mining	0.001	0.001		0.001											0.200	0.053								
R-12829	90490AA_3	Percent (%)	Mining	0.001	0.001		0.001											0.084	0.049								
R-12830	90490AA_4	Percent (%)	Mining	0.001	0.001													0.097	0.051								
R-12831	90490AA_5	Percent (%)	Mining	0.001	0.001		0.001											0.118	0.049								
R-12832	13889AD_1	Percent (%)	Mining	0.001	0.001	0.001	0.001											0.100	0.055								
R-12833	13889AD_2	Percent (%)	Mining	0.002	0.001	0.002	0.001																				
R-12834	13889AD_3	Percent (%)	Mining	0.003	0.001	0.002	0.001	0.002	0.001																		
R-12835	13889AD_4	Percent (%)	Mining	0.001	0.001	0.000	0.001											0.083	0.053								
R-12836	13889AD_5	Percent (%)	Mining	0.001	0.001	0.001	0.001																				
R-12837	90367AA_1	Percent (%)	Mining	0.002	0.001		0.001																				
R-12838	90367AA_2	Percent (%)	Mining	0.002	0.001	0.001	0.001											0.074	0.045								
R-12839	90367AA_3	Percent (%)	Mining	0.002	0.001	0.000	0.001																				
R-12840	90367AA_4	Percent (%)	Mining	0.002	0.001	0.001	0.001																				
R-12841	90562AA_1	Percent (%)	Mining	0.001	0.001																						
R-12842	90562AA_2	Percent (%)	Mining																								
R-12843	90562AA_3	Percent (%)	Mining																								
R-12844	90562AA_4	Percent (%)	Mining																								
R-12846	90562AA_6	Percent (%)	Mining																								
R-12847	08766AB_1	Percent (%)	Mining	0.001	0.001	0.000	0.001																				
R-12849	13771AC_1	Percent (%)	Mining																								
R-12850	13771AC_2	Percent (%)	Mining																								
R-12851	13771AC_3	Percent (%)	Mining	0.001	0.001		0.001																				
R-12852	13771AC_4	Percent (%)	Mining	0.001	0.001		0.001																				
R-12855	13771AC_7	Percent (%)	Mining	0.001	0.001		0.001																				
R-12856	13771AC_8	Percent (%)	Mining	0.001	0.001	0.000	0.001																				
R-12857	13771AC_9	Percent (%)	Mining	0.002	0.001	0.001	0.001																				
R-12858	13867AB_1	Percent (%)	Mining																								
R-12859	13867AB_2	Percent (%)	Mining																								
R-12860	13867AB_3	Percent (%)	Mining																								
R-12861	13867AB_4	Percent (%)	Mining																								
R-12862	13867AB_5	Percent (%)	Mining																								
R-12866	90397AA_1	Percent (%)	Mining	0.000	0.001																						
R-12867	90413AA_1	Percent (%)	Mining	0.001	0.001	0.001	0.001																				
R-12868	90413AA_2	Percent (%)	Mining	0.001	0.001	0.001	0.001																				
R-12869	90413AA_3	Percent (%)	Mining	0.001	0.001		0.001											0.077	0.051								
R-12870	90413AA_4	Percent (%)	Mining	0.002	0.001	0.001	0.001											0.083	0.045								
R-12871	90413AA_5	Percent (%)	Mining	0.002	0.001	0.001	0.001																				
R-12872	90560AA_1	Percent (%)	Mining	0.001	0.001		0.001																				
R-12873	90560AA_2	Percent (%)	Mining	0.001	0.001													0.076	0.049								
R-12874	06930AB_1	Percent (%)	Mining		0.001																						
R-12875	06930AB_2	Percent (%)	Mining	0.001	0.001		0.001																				
R-12876	12583AC_1	Percent (%)	Mining	0.001	0.001		0.001											0.087	0.054								
R-12878	12583AC_3	Percent (%)	Mining	0.001	0.001		0.001											0.081	0.053								
R-12879	12583AC_4	Percent (%)	Mining	0.000	0.001																						
R-12880	90326AB_1	Percent (%)	Mining	0.001	0.001	0.000	0.001																				
R-12883	90348AB_1	Percent (%)	Mining		0.001													0.085	0.054								
R-12884	90348AB_2	Percent (%)	Mining	0.001	0.001																						
R-12885	13778AF_1	Percent (%)	Mining	0.001	0.001																						
R-12886	13778AF_2	Percent (%)	Mining	0.001	0.001		0.001											0.083	0.049								
R-12887	90319AA_1	Percent (%)	Mining	0.001	0.001		0.001																				
R-12888	90319AA_2	Percent (%)	Mining	0.001	0.001																						
R-12889	06988AC_1	Percent (%)	Mining	0.001	0.001	0.001	0.001																				
R-12890	06988AC_2	Percent (%)	Mining	0.001	0.001																						
R-12891	10018AB_1	Percent (%)	Mining	0.002	0.001	0.001	0.001																				
R-12892	11273AA_1	Percent (%)	Mining	0.001	0.001		0.001	0.001	0.001																		
R-12893	13118AA_1	Percent (%)	Mining	0.001	0.001																						
R-12894	13118AA_2	Percent (%)	Mining	0.002	0.001																						
R-12895	90466AC_1	Percent (%)	Mining	0.000	0.001																						
R-12896	90466AC_2	Percent (%)	Mining	0.002	0.001		0.001											0.078	0.050								
R-12897	90466AC_3	Percent (%)	Mining		0.001																						
R-12898	90466AC_4	Percent (%)	Mining		0.001		0.001																				

Repository ID	Sample ID	Unit type	Mode	Pm	Pm +/-	Sm	Sm +/-	Eu	Eu +/-	Gd	Gd +/-	Ta	Ta +/-	W	W +/-	Hg	Hg +/-	Tl	Tl +/-	Pb	Pb +/-	Th	Th +/-	U	U +/-
R-12813	90473AB_1	Percent (%)	Mining																	0.001	0.001				
R-12814	90473AB_2	Percent (%)	Mining																	0.001	0.001				
R-12815	90474AA_1	Percent (%)	Mining											0.001	0.001					0.001	0.001				
R-12816	90474AA_2	Percent (%)	Mining																	0.001	0.001				
R-12817	90474AA_3	Percent (%)	Mining																	0.001	0.001				
R-12818	90474AA_4	Percent (%)	Mining																	0.001	0.001				
R-12819	13215AB_1	Percent (%)	Mining																		0.001				
R-12820	13215AB_2	Percent (%)	Mining																		0.001				
R-12821	13215AB_3	Percent (%)	Mining																		0.001				
R-12822	13215AB_4	Percent (%)	Mining																						
R-12823	90298AB_1	Percent (%)	Mining																	0.002	0.001				
R-12824	90451AA_1	Percent (%)	Mining											0.001	0.001					0.001	0.001				
R-12825	90451AA_2	Percent (%)	Mining																		0.001				
R-12826	90451AA_3	Percent (%)	Mining												0.001					0.001	0.001				
R-12827	90490AA_1	Percent (%)	Mining																	0.001	0.001				
R-12828	90490AA_2	Percent (%)	Mining																	0.001	0.001				
R-12829	90490AA_3	Percent (%)	Mining																	0.001	0.001				
R-12830	90490AA_4	Percent (%)	Mining																	0.001	0.001				
R-12831	90490AA_5	Percent (%)	Mining												0.001					0.001	0.001				
R-12832	13889AD_1	Percent (%)	Mining																	0.001	0.001				
R-12833	13889AD_2	Percent (%)	Mining																	0.001	0.001				
R-12834	13889AD_3	Percent (%)	Mining																	0.001	0.001				
R-12835	13889AD_4	Percent (%)	Mining																	0.001	0.001				
R-12836	13889AD_5	Percent (%)	Mining																	0.001	0.001				
R-12837	90367AA_1	Percent (%)	Mining																	0.002	0.001				
R-12838	90367AA_2	Percent (%)	Mining											0.001	0.001					0.002	0.001				
R-12839	90367AA_3	Percent (%)	Mining											0.001	0.001					0.002	0.001				
R-12840	90367AA_4	Percent (%)	Mining											0.001	0.001					0.002	0.001				
R-12841	90562AA_1	Percent (%)	Mining																						
R-12842	90562AA_2	Percent (%)	Mining																						
R-12843	90562AA_3	Percent (%)	Mining																						
R-12844	90562AA_4	Percent (%)	Mining																						
R-12846	90562AA_6	Percent (%)	Mining																						
R-12847	08766AB_1	Percent (%)	Mining																	0.001	0.001				
R-12849	13771AC_1	Percent (%)	Mining																						
R-12850	13771AC_2	Percent (%)	Mining																						
R-12851	13771AC_3	Percent (%)	Mining																	0.001	0.001				
R-12852	13771AC_4	Percent (%)	Mining																	0.001	0.001				
R-12855	13771AC_7	Percent (%)	Mining																	0.001	0.001				
R-12856	13771AC_8	Percent (%)	Mining																	0.001	0.001				
R-12857	13771AC_9	Percent (%)	Mining																	0.001	0.001				
R-12858	13867AB_1	Percent (%)	Mining																						
R-12859	13867AB_2	Percent (%)	Mining																						
R-12860	13867AB_3	Percent (%)	Mining																						
R-12861	13867AB_4	Percent (%)	Mining																						
R-12862	13867AB_5	Percent (%)	Mining																						
R-12866	90397AA_1	Percent (%)	Mining																	0.000	0.001				
R-12867	90413AA_1	Percent (%)	Mining																	0.001	0.001				
R-12868	90413AA_2	Percent (%)	Mining																	0.001	0.001				
R-12869	90413AA_3	Percent (%)	Mining																	0.001	0.001	0.007	0.004		
R-12870	90413AA_4	Percent (%)	Mining											0.001	0.001					0.001	0.001				
R-12871	90413AA_5	Percent (%)	Mining																	0.001	0.001				
R-12872	90560AA_1	Percent (%)	Mining											0.001	0.001					0.002	0.001				
R-12873	90560AA_2	Percent (%)	Mining																	0.001	0.001				
R-12874	06930AB_1	Percent (%)	Mining																		0.001				
R-12875	06930AB_2	Percent (%)	Mining																	0.001	0.001				
R-12876	12583AC_1	Percent (%)	Mining																	0.001	0.001				
R-12878	12583AC_3	Percent (%)	Mining																	0.001	0.001				
R-12879	12583AC_4	Percent (%)	Mining																	0.001	0.001				
R-12880	90326AB_1	Percent (%)	Mining																	0.001	0.001				
R-12883	90348AB_1	Percent (%)	Mining																						
R-12884	90348AB_2	Percent (%)	Mining																		0.001				
R-12885	13778AF_1	Percent (%)	Mining																	0.000	0.001				
R-12886	13778AF_2	Percent (%)	Mining																	0.001	0.001				
R-12887	90319AA_1	Percent (%)	Mining																	0.000	0.001				
R-12888	90319AA_2	Percent (%)	Mining											0.001	0.001					0.001	0.001				
R-12889	06988AC_1	Percent (%)	Mining																	0.001	0.001				
R-12890	06988AC_2	Percent (%)	Mining											0.001	0.001										
R-12891	10018AB_1	Percent (%)	Mining												0.001					0.001	0.001				
R-12892	11273AA_1	Percent (%)	Mining																	0.001	0.001				
R-12893	13118AA_1	Percent (%)	Mining																	0.001	0.001				
R-12894	13118AA_2	Percent (%)	Mining									0.002	0.001							0.001	0.001				
R-12895	90466AC_1	Percent (%)	Mining																	0.001	0.001				
R-12896	90466AC_2	Percent (%)	Mining											0.001	0.001					0.001	0.001				
R-12897	90466AC_3	Percent (%)	Mining																	0.001	0.001				
R-12898	90466AC_4	Percent (%)	Mining																	0.001	0.001				

Notes:

Results are in mining mode and represent major element geochemistry normalized out of 100%. These results are not laboratory certified and are meant to be consulted as a screening tool for further assessment.
Sample results are averaged from three separate runs across each sample.
Blank cells indicate that the element was not detected above the detection limits.
Only elements that were calibrated for analysis are shown in this table.
LE - "light elements" refer to all elements with a mass less than magnesium (Mg).
pXRF is a demonstrated tool to quickly and accurately assess elemental geochemistry in geological samples and can be used for further resource assessment in initial site assessments.

More information on portable x-ray fluorescence (pXRF) results and analytical reproducibility for sand-sized sediments can be found in a recent pXRF protocol authored by Nelson and others, 2024 (Open-file report 2024-16, https://www.energy.virginia.gov/commerce/)
Nelson, M.S., Hawkins, D.W., and Lassetter, W.L., 2024, A capacity assessment on the recovery of critical and economic minerals from sand used for coastal resilience projects: Virginia Department of Energy, Geology and Mineral Resources Program, Open-file report 2024-16, 76 p. and Appendices A-E.

Repository ID	Sample ID	Unit	Unit type	Al_2O_3	Al_2O_3 +/-	BaO	BaO +/-	CaO	CaO +/-	Cr_2O_3	Cr_2O_3 +/-	K_2O	K_2O +/-	MgO	MgO +/-	MnO	MnO +/-	P_2O_5	P_2O_5 +/-	SiO_2	SiO_2 +/-	TiO_2	TiO_2 +/-	V_2O_5	V_2O_5 +/-	Fe_2O_3	Fe_2O_3 +/-	SO_2	SO_2 +/-
R-12813	90473AB_1	Chesapeake Group or Cold Harbor?	%	10.56	0.16	--	--	0.02	0.00	0.01	0.00	1.08	0.01	--	--	0.01	0.00	0.47	0.03	41.92	0.21	0.65	0.02	0.02	0.01	3.14	0.01	--	--
R-12814	90473AB_2	Chesapeake Group or Cold Harbor?	%	12.13	0.17	--	--	0.02	0.00	0.01	0.00	0.70	0.00	--	--	0.01	0.00	0.40	0.03	40.20	0.20	0.90	0.02	0.02	0.01	2.68	0.01	--	--
R-12815	90474AA_1	Windsor on Chesapeake Group or Cold Harbor?	%	10.19	0.16	0.09	0.05	0.05	0.00	0.01	0.00	0.45	0.00	--	--	0.01	0.00	0.35	0.04	45.66	0.22	1.08	0.02	0.03	0.01	5.11	0.01	--	--
R-12816	90474AA_2	Chesapeake Group or Cold Harbor?	%	9.87	0.15	--	--	0.02	0.00	0.01	0.00	0.36	0.00	--	--	0.00	0.00	0.49	0.03	42.35	0.20	0.51	0.02	0.01	0.01	1.22	0.01	--	--
R-12817	90474AA_3	Chesapeake Group or Cold Harbor?	%	11.24	0.17	--	--	0.08	0.00	0.01	0.00	0.42	0.00	--	--	0.01	0.00	0.41	0.03	34.44	0.19	0.75	0.02	0.02	0.01	4.56	0.01	--	--
R-12818	90474AA_4	Chesapeake Group or Cold Harbor?	%	11.47	0.17	--	--	0.02	0.00	0.01	0.00	0.41	0.00	--	--	0.01	0.00	0.35	0.03	36.95	0.20	0.74	0.02	0.02	0.01	3.34	0.01	--	--
R-12819	13215AB_1	Shirley	%	7.24	0.13	--	--	0.04	0.00	0.01	0.00	0.84	0.00	--	--	0.01	0.00	0.58	0.04	47.65	0.21	0.43	0.02	0.01	0.01	2.16	0.01	--	--
R-12820	13215AB_2	Shirley	%	5.57	0.12	0.14	0.06	0.04	0.00	0.01	0.00	0.92	0.00	--	--	0.00	0.00	0.56	0.04	63.12	0.23	0.33	0.01	0.01	0.01	0.95	0.01	--	--
R-12821	13215AB_3	Shirley	%	7.17	0.13	--	--	0.06	0.00	0.01	0.00	0.82	0.00	--	--	0.01	0.00	0.75	0.04	51.51	0.22	0.20	0.01	0.01	0.00	1.18	0.01	--	--
R-12822	13215AB_4	Shirley	%	6.20	0.12	0.10	0.06	0.07	0.00	0.01	0.00	0.92	0.00	--	--	0.00	0.00	0.75	0.04	61.98	0.23	0.33	0.01	0.01	0.01	0.72	0.01	--	--
R-12823	90298AB_1	Calvert	%	8.34	0.15	--	--	0.78	0.00	0.01	0.00	2.34	0.01	--	--	0.01	0.00	0.42	0.04	51.36	0.23	0.58	0.02	0.02	0.01	3.92	0.01	3.65	0.05
R-12824	90451AA_1	Chesapeake Group	%	9.43	0.16	--	--	0.01	0.00	0.01	0.00	0.09	0.00	--	--	0.00	0.00	0.44	0.04	44.40	0.22	0.75	0.02	0.02	0.01	5.45	0.01	--	--
R-12825	90451AA_2	Chesapeake Group	%	8.63	0.14	--	--	0.01	0.00	0.00	0.00	0.34	0.00	--	--	0.00	0.00	0.31	0.03	39.89	0.20	0.23	0.01	0.01	0.00	2.94	0.01	--	--
R-12826	90451AA_3	Chesapeake Group	%	10.52	0.16	--	--	0.02	0.00	0.01	0.00	0.26	0.00	--	--	0.00	0.00	0.39	0.03	41.34	0.21	0.62	0.02	0.02	0.01	4.04	0.01	--	--
R-12827	90490AA_1	Shirley	%	9.25	0.15	0.09	0.05	0.53	0.00	0.01	0.00	1.31	0.01	--	--	0.03	0.00	0.52	0.04	38.82	0.20	0.60	0.02	0.01	0.01	2.95	0.01	--	--
R-12828	90490AA_2	Shirley	%	7.35	0.14	0.22	0.06	0.44	0.00	0.01	0.00	1.57	0.01	--	--	0.03	0.00	0.62	0.04	60.38	0.24	0.88	0.02	0.01	0.01	2.04	0.01	--	--
R-12829	90490AA_3	Shirley	%	7.87	0.14	0.09	0.05	0.53	0.00	0.01	0.00	1.14	0.01	--	--	0.03	0.00	0.72	0.04	51.52	0.22	0.59	0.02	0.01	0.01	2.81	0.01	--	--
R-12830	90490AA_4	Shirley	%	8.25	0.15	0.11	0.06	0.61	0.00	0.01	0.00	1.41	0.01	--	--	0.02	0.00	0.62	0.04	54.02	0.23	0.73	0.02	0.01	0.01	2.76	0.01	--	--
R-12831	90490AA_5	Charles City	%	7.42	0.14	0.13	0.05	0.22	0.00	0.01	0.00	0.94	0.00	--	--	0.02	0.00	0.56	0.04	52.79	0.22	0.71	0.02	0.01	0.01	2.09	0.01	--	--
R-12832	13889AD_1	Quaternary Terrace, undifferentiated	%	5.53	0.12	0.11	0.06	0.23	0.00	0.01	0.00	0.89	0.00	--	--	0.01	0.00	0.58	0.04	67.08	0.24	0.94	0.02	0.01	0.01	1.00	0.01	--	--
R-12833	13889AD_2	Quaternary Terrace, undifferentiated	%	3.14	0.10	--	--	0.29	0.00	0.01	0.00	0.82	0.00	--	--	0.02	0.00	0.95	0.04	63.52	0.24	1.78	0.03	0.02	0.01	2.20	0.01	2.31	0.04
R-12834	13889AD_3	Eastover	%	5.05	0.13	--	--	0.62	0.00	0.01	0.00	2.02	0.01	--	--	0.03	0.00	0.51	0.04	54.67	0.23	1.68	0.03	0.02	0.01	4.89	0.01	2.34	0.04
R-12835	13889AD_4	Quaternary Terrace, undifferentiated	%	6.51	0.13	0.09	0.06	0.23	0.00	0.01	0.00	0.96	0.00	--	--	0.01	0.00	0.60	0.04	60.67	0.23	0.94	0.02	0.01	0.01	1.25	0.01	--	--
R-12836	13889AD_5	Cold Harbor?	%	5.19	0.12	--	--	0.35	0.00	0.01	0.00	1.06	0.01	--	--	0.01	0.00	0.64	0.04	66.03	0.24	0.80	0.02	0.01	0.01	1.12	0.01	--	--
R-12837	90367AA_1	Bacons Castle	%	12.42	0.18	--	--	0.04	0.00	0.02	0.00	0.55	0.00	--	--	0.01	0.00	0.41	0.04	43.04	0.22	0.78	0.02	0.02	0.01	5.24	0.01	--	--
R-12838	90367AA_2	Bacons Castle	%	9.78	0.16	0.08	0.05	0.06	0.00	0.01	0.00	0.67	0.00	--	--	0.01	0.00	0.53	0.04	54.07	0.24	0.96	0.02	0.02	0.01	4.33	0.01	--	--
R-12839	90367AA_3	Bacons Castle	%	9.59	0.15	--	--	0.10	0.00	0.01	0.00	0.44	0.00	--	--	0.01	0.00	0.44	0.04	53.24	0.23	0.99	0.02	0.02	0.01	3.36	0.01	--	--
R-12840	90367AA_4	Bacons Castle	%	10.01	0.16	--	--	0.10	0.00	0.01	0.00	0.47	0.00	--	--	0.01	0.00	0.53	0.04	52.61	0.24	1.06	0.02	0.02	0.01	4.49	0.01	--	--
R-12841	90562AA_1	Charles City or younger Qal	%	2.60	0.10	--	--	0.08	0.00	0.00	0.00	0.37	0.56	3.58	47.76	0.07	0.00	0.60	1.34	41.93	0.31	1.29	0.03	0.02	0.00	1.20	0.01	0.03	0.01
R-12847	08766AB_1	Windsor	%	9.31	0.15	--	--	0.01	0.00	0.01	0.00	0.55	0.00	--	--	0.01	0.00	0.30	0.03	39.95	0.20	0.86	0.02	0.01	0.01	2.85	0.01	--	--
R-12851	13771AC_3	Bacons Castle or Windsor?	%	8.41	0.14	--	--	0.09	0.00	0.01	0.00	0.97	0.01	--	--	0.02	0.00	0.41	0.04	49.78	0.22	1.84	0.03	0.02	0.01	2.14	0.01	--	--
R-12852	13771AC_4	Windsor	%	6.95	0.13	--	--	0.05	0.00	0.01	0.00	0.64	0.00	--	--	0.01	0.00	0.57	0.04	62.97	0.24	1.04	0.02	0.02	0.01	0.85	0.01	--	--
R-12855	13771AC_7	Cold Harbor?	%	8.03	0.14	--	--	0.01	0.00	0.01	0.00	1.36	0.01	--	--	0.01	0.00	0.42	0.04	55.26	0.23	0.59	0.02	0.01	0.01	2.14	0.01	--	--
R-12856	13771AC_8	Windsor?	%	9.09	0.14	--	--	0.01	0.00	0.01	0.00	0.63	0.00	--	--	0.01	0.00	0.49	0.04	57.02	0.23	0.82	0.02	0.01	0.01	0.90	0.01	--	--
R-12857	13771AC_9	Windsor?	%	5.44	0.11	--	--	0.01	0.00	0.01	0.00	0.36	0.00	--	--	0.03	0.00	0.65	0.04	65.32	0.24	2.24	0.03	0.02	0.01	0.81	0.01	--	--
R-12866	90397AA_1	Chesapeake Group or Bacons Castle	%	7.85	0.14	--	--	0.05	0.00	0.01	0.00	0.41	0.00	--	--	0.01	0.00	0.37	0.03	35.64	0.19	0.32	0.01	0.01	0.00	3.25	0.01	--	--
R-12867	90413AA_1	Chesapeake Group	%	5.84	0.13	--	--	0.04	0.00	0.03	0.00	1.00	0.00	--	--	0.01	0.00	0.60	0.04	50.17	0.22	0.97	0.02	0.02	0.01	3.09	0.01	--	--
R-12868	90413AA_2	Chesapeake Group	%	9.15	0.15	--	--	0.01	0.00	0.01	0.00	1.02	0.00	--	--	0.01	0.00	0.36	0.03	42.34	0.21	1.23	0.02	0.02	0.01	3.52	0.01	--	--
R-12869	90413AA_3	Chesapeake Group	%	10.08	0.15	0.09	0.06	0.01	0.00	0.01	0.00	1.09	0.01	--	--	0.01	0.00	0.37	0.03	52.33	0.22	0.96	0.02	0.02	0.01	1.43	0.01	--	--
R-12870	90413AA_4	Yorktown?	%	5.44	0.12	0.09	0.05	0.02	0.00	0.01	0.00	1.30	0.01	--	--	0.02	0.00	0.50	0.04	51.76	0.22	1.32	0.02	0.02	0.01	3.31	0.01	--	--
R-12871	90413AA_5	Bacons Castle?	%	9.91	0.16	--	--	0.01	0.00	0.01	0.00	0.63	0.00	--	--	0.02	0.00	0.38	0.03	39.36	0.20	1.47	0.02	0.03	0.01	3.03	0.01	--	--
R-12872	90560AA_1	Bacons Castle	%	10.35	0.17	--	--	0.14	0.00	0.01	0.00	0.92	0.00	--	--	0.01	0.00	0.36	0.03	36.65	0.20	0.73	0.02	0.02	0.01	5.74	0.01	--	--
R-12873	90560AA_2	Bacons Castle	%	7.81	0.14	0.08	0.05	0.07	0.00	0.01	0.00	1.17	0.01	--	--	0.01	0.00	0.43	0.04	53.73	0.23	0.76	0.02	0.02	0.01	2.75	0.01	--	--
R-12874	06930AB_1	Windsor or Bacons Castle?	%	7.27	0.13	--	--	0.01	0.00	0.01	0.00	0.89	0.01	--	--	0.00	0.00	0.58	0.04	60.29	0.23	0.52	0.02	0.01	0.01	1.07	0.01	--	--
R-12875	06930AB_2	Windsor or Bacons Castle?	%	6.39	0.12	--	--	0.01	0.00	0.01	0.00	0.21	0.00	--	--	0.01	0.00	0.58	0.04	70.10	0.25	0.86	0.02	0.01	0.01	0.81	0.01	--	--
R-12876	12583AC_1	Tabb	%	6.74	0.13	0.10	0.06	0.13	0.00	0.01	0.00	0.74	0.00	--	--	0.01	0.00	0.50	0.04	61.82	0.23	0.81	0.02	0.01	0.01	0.80	0.01	--	--
R-12878	12583AC_3	Tabb	%	7.39	0.13	0.09	0.06	0.12	0.00	0.01	0.00	0.71	0.00	--	--	0.00	0.00	0.39	0.04	59.80	0.23	0.59	0.02	0.01	0.01	0.98	0.01	--	--
R-12879	12583AC_4	Tabb?	%	6.09	0.12	--	--	0.23	0.00	0.01	0.00	0.54	0.00	--	--	0.00	0.00	0.32	0.03	56.34	0.22	0.54	0.02	0.01	0.01	1.08	0.01	--	--
R-12880	90326AB_1	Windsor or Bacons Castle?	%	9.84	0.15	--	--	0.01	0.00	0.01	0.00	0.54	0.00	--	--	0.01	0.00	0.49	0.04	49.97	0.22	0.69	0.02	0.02	0.01	1.20	0.01	--	--
R-12883	90348AB_1	Tabb	%	3.74	0.10	0.09	0.06	0.09	0.00	0.01	0.00	0.77	0.00	--	--	0.01	0.00	0.37	0.03	60.78	0.23	0.99	0.02	0.01	0.01	0.86	0.01	0.05	0.03
R-12884	90348AB_2	Tabb	%	4.93	0.11	--	--	0.06	0.00	0.00	0.00	0.81	0.00	--	--	0.01	0.00	0.62	0.04	63.18	0.24	0.89	0.02	0.01	0.01	1.32	0.01	0.05	0.03
R-12885	13778AF_1	Chesapeake Group	%	6.01	0.12	--	--	0.09	0.00	0.01	0.00	0.49	0.00	--	--	0.01	0.00	0.35	0.03	55.76	0.22	0.92	0.02	0.01	0.01	1.19	0.01	0.05	0.03
R-12886	13778AF_2	Chesapeake Group	%	7.04	0.13	0.09	0.05	0.09	0.00	0.01	0.00	0.43	0.00	--	--	0.01	0.00	0.56	0.04	53.79	0.22	0.95	0.02	0.01	0.01	1.70	0.01	0.05	0.03
R-12887	90319AA_1	Chesapeake Group or Bacons Castle	%	7.32	0.14	--	--	0.03	0.00	0.01	0.00	0.92	0.00	--	--	0.02	0.00	0.40	0.03	40.74	0.20	0.80	0.02	0.01	0.01	3.45	0.01	0.05	0.03
R-12888	90319AA_2	Chesapeake Group or Bacons Castle	%	7.16	0.14	--	--	0.02	0.00	0.02	0.00	0.96	0.01	--	--	0.01	0.00	0.46	0.04	53.85	0.23	0.65	0.02	0.02	0.01	4.99	0.01	0.05	0.03
R-12889	06988AC_1	Chesapeake Group	%	1.37	0.07	--	--	0.02	0.00	--	--	0.50	0.00	--	--	0.01	0.00	0.68	0.04	77.20	0.25	1.28	0.02	0.02	0.01	0.66	0.01	0.05	0.03
R-12890	06988AC_2	Chesapeake Group	%	3.09	0.11	--	--	0.05	0.00	0.01	0.00	0.60	0.00	--	--	0.05	0.00	0.81	0.03	31.92	0.19	0.21	0.01	0.01	0.00	7.37	0.01	0.05	0.03
R-12891	10018AB_1	Windsor?	%	6.40	0.12	--	--	0.16	0.00	0.01	0.00	0.68	0.00	--	--	0.02	0.00	0.60	0.04	69.73	0.25	1.58	0.03	0.02	0.01	1.15	0.01	0.05	0.03
R-12892	11273AA_1	Quaternary Terrace, undifferentiated	%	6.34	0.12	--	--	0.06	0.00	0.01	0.00	0.68	0.00	--	--	0.02	0.00	0.61	0.04	63.80	0.24	1.54	0.03	0.02	0.01	0.84	0.01	--	--
R-12893	13118AA_1	Chesapeake Group	%	7.36	0.14	--	--	0.01	0.00	0.01	0.00	1.18	0.01	--	--	0.01	0.00	0.49	0.04	54.02	0.23	0.81	0.02	0.02	0.01	2.25	0.01	0.05	0.03
R-12894	13118AA_2	Chesapeake Group	%	8.24	0.15	--	--	0.02	0.00	--	--	2.44	0.01	--	--	0.06	0.00	0.46	0.03	51.54	0.22	4.52	0.04	0.05	0.01	1.84	0.01	0.05	0.03
R-12895	90466AC_1	Windsor	%	6.13	0.12	--	--	0.04	0.00	0.00	0.00	0.72	0.00	--	--	0.01	0.00	0.56	0.04	57.83	0.23	1.14	0.02	0.02	0.01	1.10	0.01	0.05	0.03
R-12896	90466AC_2	Windsor	%	6.44	0.13	0.09	0.06	0.05	0.00	0.01	0.00	0.42	0.00	--	--	0.01	0.00	0.45	0.04	65.52	0.25	1.00	0.02	0.02	0.01	2.85	0.01	0.05	0.03
R-12897	90466AC_3	Windsor	%	4.65	0.11	--	--	0.08	0.00	0.01	0.00	0.55	0.00	--	--	0.02	0.00	0.54	0.04	65.29	0.24	0.74	0.02	0.02	0.01	1.33	0.01	0.05	0.03
R-12898	90466AC_4	Windsor	%	7.43	0.13	--	--	0.05	0.00	0.01	0.00	0.57	0.00	--	--	0.02	0.00	0.31	0.03	49.05	0.21	0.83	0.02	0.02	0.01	1.77	0.01	0.05	0.03

APPENDIX D

Project Management Reports

Outlook

CZM FY23 Task 73 Aggregate Resource Mapping - Grant No. NA23NOS4190255 (Kickoff Call Summary) - November 28, 2023

From Hawkins, David (Energy) <David.Hawkins@energy.virginia.gov>
Date Thu 3/28/2024 3:04 PM
To Flood, Jefferson (DEQ) <Jefferson.Flood@deq.virginia.gov>

Good afternoon Jeff,

Please see a summary of the main talking points from our November 28, 2023 kick-off meeting for the Middle Peninsula Aggregate Resource Mapping Project (Task 73).

1. Virginia Energy Project Manager David Hawkins & Virginia CZM Project Manager Jeff Flood met virtually on 11/28/23 to serve as the required kickoff meeting.

2. David provided Jeff w/ a mix of updates & questions about project deadlines & reporting requirements, as follows:

    - Starting 11/13/23, Virginia Energy hired the contract geologist (Lauren Schmidt) via purchase order for 1 year.
    - Due to a change in personnel for one of the match positions (Lauren Williams to Virginia Latane), David asked Jeff if this needed to be put in writing. Since there is no change in the federal dollar amount or decrease in the match commitment, Jeff stated this was a minor change and verbal notification was acceptable.
    - Since Virginia Energy waived indirect costs, we do not need to provide a negotiated rate agreement. If we do need to include indirect in another phase, then we could use a previously established rate with a federal agency (i.e., DOI).
    - Jeff informed David to copy him on semi-annual progress reports that are submitted to April Bahen.
    - Jeff requested that updates in the April 2024 semi-annual progress report be listed by Product number to keep things organized.
    - Jeff informed David that quarterly reports are not necessary for this grant, and any relevant project meeting updates can be emailed to Jeff if desired.
    - Jeff noted that 11/15/24 is not a hard deadline for final products, but to please give a head's up if a delay is anticipated. Virginia Energy can also request a no-cost extension via email just listing the reason & length of time needed.
    - Jeff confirmed that Virginia Energy doesn't have to have spent all the grant money by the project end date of 9/30/24 since Product #4: Technical Summary Report is also the final report nominally due 11/15/24 & funds can be expended between 9/30/24 & 11/15/24.
    - Ignore trainings table in progress report - that's only a requirement for PDCs.

3. David requested that Jeff send him the FY23 VMRC dredged material beneficial use guidance doc scope to help brainstorm how FY24 draft proposal for Year 2 of Virginia Energy aggregate resource mapping effort can align.

4. David and Jeff discussed timing for potential FY24 ideas and would touch base again in January 2024 prior to the CPT meeting.

Thank you,
David

David W. Hawkins, PG
Geologist

Virginia Department of Energy
Geology and Mineral Resources
900 Natural Resources Drive, Suite 500
Charlottesville, VA 22903
(434) 951-6326

VIRGINIA Energy

Outlook

CZM FY23 Task 73 Aggregate Resource Mapping - Grant No. NA23NOS4190255 (Mid-Project Status Meeting Summary) - April 1, 2024

From Hawkins, David (Energy) <David.Hawkins@energy.virginia.gov>
Date Mon 4/1/2024 10:31 AM
To Flood, Jefferson (DEQ) <Jefferson.Flood@deq.virginia.gov>

Good morning Jeff,

Please see a summary of the main talking points from this morning's project status update meeting for the Middle Peninsula Aggregate Resource Mapping Project (Task 73).

1. Virginia Energy Project Manager David Hawkins and Virginia CZM project Manager Jeff Flood met virtually on 04/01/24 to provide a mid-project status update ahead of the semi-annual and financial report submission.

2. David and Jeff discussed the following items:

    a. David estimated that approximately 35% of the federal funds have been expended as of March 2024, limited to the Contractual task associated with the contract geologist position. A detailed invoice will be provided in the April 2024 financial report to April Bahen.
    b. David provided an update on the product deliverables. Virginia Energy is currently completing field work and actively working on the GIS products. Virginia Energy will provide a draft geodatabase in late summer to the CZM Program. Virginia Energy will provide field logs and sample processing logs with the final report deliverables.
    c. David and Jeff discussed the possibility of using some of the initial travel funds to support additional silt/clay grain-size analysis at James Madison University as a potential option as part of a Memorandum of Agreement with JMU, if the federal travel allocated funds are anticipated to be less. Depending on if the amount is less than or equal to 10% of the total budget, Jeff discussed with David the process to follow. David will follow up with Jeff well ahead of time if this option seems likely.
    d. David mentioned to Jeff that we created a new project webpage for the work, located at: https://energy.virginia.gov/geology/AggCoastalPlain.shtml
    e. Jeff mentioned to David that the draft application for FY24 tasks is due to NOAA on April 5th, and we will likely hear back from NOAA in May on next steps, with a final application submittal likely in mid-summer.

Please let me know if you have any other questions or anything to add.

Thank you,
David

David W. Hawkins, PG
Geologist

Virginia Department of Energy
Geology and Mineral Resources
900 Natural Resources Drive, Suite 500

On-site meeting with Middle Peninsula Planning District Commission (MPPDC)
VA Coastal Zone Management Program Grant No. NA23NOS4190255, Task 73

Location: MPPDC Office, 125 Bowden Street, Saluda, VA 23149
Date & Time: January 8, 2024: 10:30 – 12:15

Attendees: Curt Smith, MPPDC, Deputy Director
Taylor Ovide, MPPDC, Coastal Resilience Planner I
David Hawkins, VA Energy, Geologist
Lauren Schmidt, VA Energy, Contract Geologist

Objectives:

- Meet with MPPDC to kick-off the project and discuss goals and outcomes.
- Consult with MPPDC on available datasets to be incorporated into the project.

Major Takeaways:

- Team members discussed variable data needs and anticipated products for the project.

- Curt Smith invited David Hawkins and Lauren Schmidt to attend their next internal planning meeting with the county planners. This meeting is scheduled for January 31, 2024, in Saluda, VA. The meeting will provide an opportunity for Virginia Energy to consult with local planners for an overview of their mineral mining and natural resource extraction industries and county zoning.

- David Hawkins will reach out to the local VDOT superintendent in Saluda for accessible sites to visit on VDOT-owned land.

- Team members discussed variables to consider for aggregate specifications, living shoreline specifications, manufactured shoreline and habitat restoration materials, and other characteristics for the Virginia Energy team to consider when evaluating the aggregate resource potential.

- MPPDC shared spatial files of their public access properties to be incorporated into this assessment.

- MPPDC expressed interest in adding the final products to their *Fight the Flood* website to increase accessibility and visibility to the public and contractors/consultants.

- MPPDC is interested in seeing how resource potential may change temporally due to increased inundation along low-lying areas. Virginia Energy will incorporate temporal spatial data from the Coastal Resilience Master Plan into the final product.

- MPPDC recommended reaching out to local Agricultural extension office to connect with more landowners for information regarding historical land-use and findings.

- MPPDC and Virginia Energy brainstormed potential FY24 tasks that could be pursued as part of the larger focal area opportunity. We are happy to share some ideas at the next CPT meeting for team members to discuss.

Middle Peninsula Local Government Planners Monthly Meeting
VA Coastal Zone Management Program Grant No. NA23NOS4190255, Task 73

Location: MPPDC Office, 125 Bowden Street, Saluda, VA 23149
Attendance: Virginia Energy GMR attended via Zoom virtually
Date & Time: January 31, 2024: 10:00 – onwards (Virginia Energy left meeting after presentation)

Attendees: Curt Smith, Middle Peninsula Planning District Commission (MPPDC)
Taylor Ovide, MPPDC
Dave Kretz, Middlesex County
Connie Dalton, Town of Tappahannock
Ted Costin, Town of Urbanna
Donna Sprouse, King and Queen County
Cassy Lord, Virginia Department of Transportation (VDOT)
Carol Rizzio, Gloucester County (virtual)
David Hawkins, Virginia Energy (virtual)
Lauren Schmidt, Virginia Energy (virtual)

Virginia Energy had the opportunity to provide a virtual presentation at the January 2024 Middle Peninsula Local Government Planners meeting detailing the scope and deliverables for the Coastal Zone Management Grant No. NA23NOS4190255, Task 73 project: CZM FY23 Strategic Planning and Funding. Please note that the following talking points are related to the presentation and discussion of potential outcomes of the products. Virginia Energy staff were only present for the presentation and subsequent questions.

Major Takeaways:

1. The Middle Peninsula and counties are tasked with economic development, incorporating strategies, and sharing with localities.

2. There is a general interest in the data products from this work and the potential for springboarding initiatives.

3. Sand and gravel mining activity is variable by county.

4. Existing industries influence overall land use decisions in localities, with agriculture being a dominant industry across the Middle Peninsula.

5. It is important to understand how the current mining operations and potential for new operations relate to locations of primary and secondary roads.

6. For Conditional Use Permits (CUP), factors relating to the time of operations, hauling specifications, truck traffic, impacts to wetlands and Resource Protections Areas (RPAs) are important for considering new mining operations.

7. Reclamation of mine sites varies at the county level, with some sites showing high-quality reclamation and incorporation into other economic uses of the county, while some other sites are not as far as long.

8. Attendees reiterated the importance of quality reclamation plans and for the intended land-use to be known prior to development (e.g., restoration back to agricultural, ecotourism, etc).

9. On the reclamation side, the localities have control in regard to the Chesapeake Bay Preservation Act but are not directly involved in reclamation plans aside from providing recommendations.

10. Consider the length of mining potential at the site based on the material available.

11. Consider the potential to utilize orphaned mine sites or active mine sites undergoing reclamation as locations that could receive dredge material for infilling or capping.

12. Representatives expressed the lack of taxable local revenue. This product could inform initiatives to guide potential cost-share/tax in localities (i.e. streamlining permitting, shared funds for a locality's Capital Improvement Plan).

13. The group expressed interest in the following data to be considered for the analysis:

    a. Potential for mining operations on public access lands
    b. Co-existence with eco-tourism initiatives
    c. Proximity of roads to mining operations
    d. Proximity of wetlands to existing and potential new mining operations
    e. Reclamation needs at sites
    f. Emphasize the educational utility of the tool

Outreach and Other Correspondence
VA Coastal Zone Management Program Grant No. NA23NOS4190255, Task 73

Virginia Department of Transportation (VDOT)

The following details summarize FY23 project specific correspondence between Virginia Energy and VDOT personnel.

February 2024: Matthew Heller and David Hawkins (Virginia Energy) emailed James R. (Rusty) Hall, a Senior Geotechnical Engineer with VDOT's Lynchburg District Materials Division. The email pertained to statewide and Coastal Plain specific geotechnical and construction specifications for materials used in aggregate, fill, and other purposes. Mr. Hall replied with some background information regarding naturally sourced materials and their typical end uses from VDOT's perspective, as well as some general follow-up references for standards and testing. Information provided by Mr. Hall was reviewed and references were consulted in the development of the FY23 data products and report. The information also provided insight for testing needs to characterize dredged sediments that could be used as an unconventional source for aggregates and/or construction purposes, a task associated with the proposed FY24 scope of work.

June-July 2023: Chris Berg, Director of Sustainability and Assistant Environmental Division Administrator with VDOT reached out to Virginia Energy staff for details regarding the FY23 project and to discuss opportunities for future coordination between the project goals and VDOT's resilience planning efforts. David Hawkins provided Mr. Berg with a follow-up email and time of availability to discuss more.

Additional responses were not received following this email.

November 2024: David Hawkins provided a follow-up email to Mr. Berg with details pertaining to the project's scope, timeline, and deliverables. Additional details were provided with links to Virginia Energy's project webpage for aggregate resources mapping and to the Coastal Zone Management Program's strategic planning and funding webpage with a breakdown of the FY23 grants. David Hawkins provided details for the anticipated second year of work to occur in the Northern Neck and invited Mr. Berg to provide additional recommendations on how the FY23 data products could best serve VDOT's needs.

Additional responses were not received following this email.

Minnesota Department of Natural Resources (MNDNR)

March 2024: Virginia Energy staff had the opportunity to provide a virtual presentation to geologists at the Minnesota Department of Natural Resources, Aggregate Resources Program. The goal of the meeting was to obtain feedback from the geologists regarding their experiences and to discuss methodology and best practices. Heather Arends (Mineral Potential Manager) and Chad Crotty (Geologist/Aggregate Mapper) with MNDNR provided valuable insight into their approaches and provided some feedback for Virginia Energy to consider throughout the project. More details on MNDNR's program are available at this link: https://www.dnr.state.mn.us/lands_minerals/aggregate_maps/index.html.

Virginia Department of Environmental Quality (DEQ), Groundwater Characterization Program

July 2024: Virginia Energy and DEQ staff met for a meeting at Virginia Energy's Charlottesville office on July 8, 2024, to discuss Coastal Plain geologic data and access. The meeting provided an opportunity to discuss how the programs could improve data accessibility of subsurface geologic information housed across each of the agencies in digital and repository format. Additional opportunities for collaborative efforts were encouraged. David Hawkins provided an overview of the FY23 project to DEQ and gathered feedback from the staff. DEQ staff included Scott Bruce, Allison Dorsey, and Brian Campbell. This meeting provided Virginia Energy staff with additional resources to help with information data gaps for subsurface geologic information for the FY23 project.