

# Location and grain-size analysis results of sediment samples collected in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 by the U.S. Geological Survey, University of Connecticut, and University of New Haven during field activities 2017-056-FA and 2018-018-FA (simplified point shapefile and CSV files)

## Metadata:

- [Identification Information](#)
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- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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## Identification Information:

### *Citation:*

#### *Citation Information:*

**Originator:** U.S. Geological Survey

**Publication Date:** 11/23/2020

**Title:**

Location and grain-size analysis results of sediment samples collected in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 by the U.S. Geological Survey, University of Connecticut, and University of New Haven during field activities 2017-056-FA and 2018-018-FA (simplified point shapefile and CSV files)

**Edition:** 1.0

**Geospatial Data Presentation Form:** vector and tabular digital data

**Series Information:**

**Series Name:** data release

**Issue Identification:** DOI:10.5066/P9GK29NM

#### *Publication Information:*

**Publication Place:** Woods Hole Coastal and Marine Science Center, Woods Hole, Massachusetts

**Publisher:** U.S. Geological Survey, Coastal and Marine Hazards and Resources Program

**Online Linkage:** <https://doi.org/10.5066/P9GK29NM>

**Online Linkage:** <https://www.sciencebase.gov/catalog/item/5de9be03e4b02caea0eeda45>

**Larger Work Citation:**

#### *Citation Information:*

**Originator:** Seth D. Ackerman

**Originator:** Emily C. Huntley  
**Originator:** Dann S. Blackwood  
**Originator:** Ivar G. Babb  
**Originator:** Roman N. Zajac  
**Originator:** Christian W. Conroy  
**Originator:** Peter J. Auster  
**Originator:** Courtney L. Schneeberger  
**Originator:** Olivia L. Walton  
**Publication Date:** 2020

**Title:**

Sea-floor sediment and imagery data collected in Long Island Sound, Connecticut and New York, 2017 and 2018

**Edition:** 1.0

**Series Information:**

**Series Name:** data release

**Issue Identification:** DOI:10.5066/P9GK29NM

**Publication Information:**

**Publication Place:** Reston, VA

**Publisher:** U.S. Geological Survey

**Other Citation Details:**

Suggested citation: Ackerman, S.D., Huntley, E.C., Blackwood, D.S., Babb, I.G., Zajac, R.N., Conroy, C.W., Auster, P.J., Schneeberger, C.L., and Walton, O.L., 2020, Sea-floor sediment and imagery data collected in Long Island Sound, Connecticut and New York, 2017 and 2018: U.S. Geological Survey data release, <https://doi.org/10.5066/P9GK29NM>.

**Online Linkage:** <https://doi.org/10.5066/P9GK29NM>

**Online Linkage:** <https://www.sciencebase.gov/catalog/item/5de951a4e4b02caea0eed886>

**Description:**

**Abstract:**

Two marine geological surveys were conducted in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 by the U.S. Geological Survey (USGS), University of Connecticut, and University of New Haven through the Long Island Sound Mapping and Research Collaborative. Sea-floor images and videos were collected at 210 sampling sites within the survey area, and surficial sediment samples were collected at 179 of the sites. The sediment data and the observations from the images and videos are used to identify sediment texture and sea-floor habitats.

**Purpose:**

This dataset provides access to the locations and grain-size analysis results of surficial sediments collected with a modified Van Veen grab sampler on the SEABed Observation and Sampling System (SEABOSS) aboard the Research Vessel (R/V) Connecticut during USGS field activities 2017-056-FA (November 28 to December 3, 2017) and 2018-018-FA (May 8 to 15, 2018). These data were collected to explore the nature of the sea floor and to characterize the seabed by identifying sediment texture. The sediments were analyzed using two different methods: the Beckman Coulter Multisizer 3 and sieving of the  $\geq 4$ -phi fraction, and the HORIBA LA-960 laser diffraction analyzer and sieving of the  $\geq -2$ -phi fraction. The HORIBA LA-960 laser diffraction analyzer is a new method for analyzing grain-size distribution at the sediment laboratory at the USGS Woods Hole Coastal and Marine Science Center. This dataset was analyzed using both methods so that the results could be compared. Results of the comparison are not included in this data release.

**Supplemental Information:**

See the larger work citation to view the geotagged sea-floor images, location of bottom images, sea-floor videos, and location of bottom video tracklines collected during the surveys. For more information about these field activities, see [https://cmgds.marine.usgs.gov/fan\\_info.php?fan=2017-056-FA](https://cmgds.marine.usgs.gov/fan_info.php?fan=2017-056-FA) and [https://cmgds.marine.usgs.gov/fan\\_info.php?fan=2018-018-FA](https://cmgds.marine.usgs.gov/fan_info.php?fan=2018-018-FA). These data were collected as part of a larger collaborative project, the Long Island Sound Habitat Mapping Initiative; for more information about this project, see <https://lismap.uconn.edu/>.

### ***Time Period of Content:***

#### ***Time Period Information:***

##### ***Range of Dates/Times:***

***Beginning Date:*** 11/28/2017

***Ending Date:*** 05/15/2018

##### ***Currentness Reference:***

Data were collected on the following dates: 20171128-20171203 and 20180508-20180515

### ***Status:***

#### ***Progress:***

Complete

***Maintenance and Update Frequency:*** None planned

### ***Spatial Domain:***

#### ***Description of Geographic Extent:***

##### ***Bounding Coordinates:***

***West Bounding Coordinate:*** -72.430178

***East Bounding Coordinate:*** -71.866860

***North Bounding Coordinate:*** 41.324710

***South Bounding Coordinate:*** 41.193178

### ***Keywords:***

#### ***Theme:***

***Theme Keyword Thesaurus:*** None

***Theme Keyword:*** U.S. Geological Survey

***Theme Keyword:*** USGS

***Theme Keyword:*** Coastal and Marine Hazards and Resources Program

***Theme Keyword:*** CMHRP

***Theme Keyword:*** Woods Hole Coastal and Marine Science Center

***Theme Keyword:*** WHCMSC

***Theme Keyword:*** University of Connecticut

***Theme Keyword:*** UConn

***Theme Keyword:*** Northeast Underwater Research, Technology and Education Center

***Theme Keyword:*** NURTEC

***Theme Keyword:*** University of New Haven

***Theme Keyword:*** Long Island Sound Habitat Mapping

***Theme Keyword:*** Long Island Sound Mapping and Research Collaborative

***Theme Keyword:*** LISMaRC

***Theme Keyword:*** ground-truth

***Theme Keyword:*** seafloor samples

***Theme Keyword:*** sediment samples

***Theme Keyword:*** sediment data

**Theme Keyword:** surficial sediment classification  
**Theme Keyword:** stations  
**Theme Keyword:** seafloor  
**Theme Keyword:** sea floor  
**Theme Keyword:** marine geology  
**Theme Keyword:** sediments  
**Theme Keyword:** SEABOSS  
**Theme Keyword:** SEABed Observation and Sampling System  
**Theme Keyword:** Van Veen grab sampler  
**Theme Keyword:** Beckman Coulter Multisizer 3  
**Theme Keyword:** HORIBA LA-960 laser diffraction analyzer  
**Theme Keyword:** gravel  
**Theme Keyword:** sand  
**Theme Keyword:** silt  
**Theme Keyword:** clay  
**Theme Keyword:** CSV  
**Theme Keyword:** shapefile  
**Theme Keyword:** field activity 2017-056-FA  
**Theme Keyword:** field activity 2018-018-FA  
**Theme Keyword:** R/V Connecticut

**Theme:**

**Theme Keyword Thesaurus:** USGS Thesaurus  
**Theme Keyword:** grab sampling  
**Theme Keyword:** grain-size analysis  
**Theme Keyword:** marine geology  
**Theme Keyword:** sea-floor characteristics

**Theme:**

**Theme Keyword Thesaurus:** ISO 19115 Topic Category  
**Theme Keyword:** oceans  
**Theme Keyword:** geoscientificInformation  
**Theme Keyword:** location

**Theme:**

**Theme Keyword Thesaurus:** Marine Realms Information Bank (MRIB) keywords  
**Theme Keyword:** marine geology  
**Theme Keyword:** grab sampling  
**Theme Keyword:** sediment analysis  
**Theme Keyword:** continental shelf  
**Theme Keyword:** sound

**Theme:**

**Theme Keyword Thesaurus:** USGS Metadata Identifier  
**Theme Keyword:** USGS:5de9be03e4b02caea0eeda45

**Place:**

**Place Keyword Thesaurus:** None  
**Place Keyword:** North America  
**Place Keyword:** United States  
**Place Keyword:** Atlantic Ocean  
**Place Keyword:** Connecticut  
**Place Keyword:** New York  
**Place Keyword:** Long Island Sound  
**Place Keyword:** Fishers Island

**Place Keyword:** Fishers Island Sound

**Stratum:**

**Stratum Keyword Thesaurus:** None

**Stratum Keyword:** sea floor

**Stratum Keyword:** seafloor

**Stratum Keyword:** seabed

**Temporal:**

**Temporal Keyword Thesaurus:** None

**Temporal Keyword:** 2017

**Temporal Keyword:** 2018

**Access Constraints:** None

**Use Constraints:**

Public domain data from the U.S. Government are freely redistributable with proper metadata and source attribution. Please recognize the U.S. Geological Survey as the originator of the dataset.

**Point of Contact:**

**Contact Information:**

**Contact Person Primary:**

**Contact Person:** Seth Ackerman

**Contact Organization:** U.S. Geological Survey

**Contact Position:** Geologist

**Contact Address:**

**Address Type:** mailing and physical address

**Address:** 384 Woods Hole Rd.

**City:** Woods Hole

**State or Province:** MA

**Postal Code:** 02543-1598

**Country:** USA

**Contact Voice Telephone:** 508-548-8700 x2315

**Contact Facsimile Telephone:** 508-457-2310

**Contact Electronic Mail Address:** sackerman@usgs.gov

**Browse Graphic:**

**Browse Graphic File Name:** [https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45/?name=2017-056-FA\\_and\\_2018-018-FA\\_samples\\_browse.jpg](https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45/?name=2017-056-FA_and_2018-018-FA_samples_browse.jpg)

**Browse Graphic File Description:**

Map of sediment sample locations in the survey area in Long Island Sound, Connecticut and New York.

**Browse Graphic File Type:** JPEG

**Cross Reference:**

**Citation Information:**

**Originator:** F.P. Shepard

**Publication Date:** 1954

**Title:**

Nomenclature based on sand-silt-clay ratios

**Series Information:**

**Series Name:** Journal of Sedimentary Petrology

**Issue Identification:** v. 24, no. 3., p. 151-158

**Cross Reference:**

**Citation Information:**

**Originator:** J.S. Schlee

**Originator:** J. Webster

**Publication Date:** 1967

**Title:**

A computer program for grain-size data

**Series Information:**

**Series Name:** Sedimentology

**Issue Identification:** v. 8, no. 1., p. 45-53

**Cross Reference:**

**Citation Information:**

**Originator:** J.S. Schlee

**Publication Date:** 1973

**Title:**

Atlantic continental shelf and slope of the United States—sediment texture of the northeastern part

**Series Information:**

**Series Name:** Professional Paper

**Issue Identification:** 529-L

**Publication Information:**

**Publication Place:** Reston, VA

**Publisher:** U.S. Geological Survey

**Online Linkage:** <https://doi.org/10.3133/pp529L>

**Cross Reference:**

**Citation Information:**

**Originator:** L.J. Poppe

**Originator:** K.Y. McMullen

**Originator:** S.J. Williams

**Originator:** V.F. Paskevich

**Publication Date:** 2014

**Title:**

USGS east-coast sediment analysis: Procedures, database, and GIS data

**Edition:** 3.0

**Series Information:**

**Series Name:** Open-File Report

**Issue Identification:** 2005-1001

**Publication Information:**

**Publication Place:** Reston, VA

**Publisher:** U.S. Geological Survey

**Online Linkage:** <https://pubs.usgs.gov/of/2005/1001/>

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## Data Quality Information:

### *Attribute Accuracy:*

#### *Attribute Accuracy Report:*

All attributes were evaluated during data processing as standard quality control to ensure attributes contain accurate and relevant information and values. Due to rounding, the sum of the aggregate class percentages (e.g., GRAVEL (wt%), GRAVEL\_PCT, etc.) and the sum of the phi fraction percentages (e.g., PHI\_11, PHI\_10, etc.) may not always add up to exactly 100.000%.

### *Logical Consistency Report:*

The sediment samples were all collected with the same modified Van Veen grab sampler mounted on the SEABOSS. The sediment samples were usually collected at the end of the video trackline, but some samples were collected in the middle of the transect (sites NB30, SB50\_3, NB65, SB65\_2, and 2018-018-112). The samples were analyzed using two methods; separate subsamples were taken for each grain-size analysis. For the spring 2018 survey, the University of Connecticut's Northeast Underwater Research, Technology and Education Center (NURTEC) assigned different names to the sites, which are available in the comments field (COMMENTS). Some USGS site numbers (FIELD\_NO) have the same NURTEC site name (e.g., sites 2018-018-011 and 2018-018-012 are both NURTEC site NB64-T) because the NURTEC site names are based on the target sampling site names.

### *Completeness Report:*

Physical sediment samples were collected at 179 of the 210 sites occupied during field activities 2017-056-FA and 2018-018-FA; however, locations for all 210 sites are included in the Multisizer analysis results (2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS.csv and 2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS.shp) with no data values (i.e., -9999) for those sites with no sediment sample analysis. Sediment samples were only attempted in areas where collecting a sample would not damage the SEABOSS; therefore, no samples were collected in areas with a cobble, boulder, or rocky seabed, as identified in real time using the topside live video feed. Samples were also not attempted if the current was too strong, if the deployment was aborted due to the strobe malfunctioning, or if the grab sampler accidentally tripped earlier in the deployment. Each deployment of the SEABOSS is generally considered a unique site; however, five sites (sites SB64\_2, 2018-018-024, 2018-018-089, 2018-018-094, and 2018-018-104) had two separate deployments because a sediment grab was not successfully collected during the first deployment. The sediment sample locations for these five sites are from the second deployment when a grab sample was successfully collected. For the spring 2018 data, 14 samples were randomly selected and run as replicates using the laser diffraction analyzer for internal testing purposes. The replicate results are not included in this publication.

### *Positional Accuracy:*

#### *Horizontal Positional Accuracy:*

##### *Horizontal Positional Accuracy Report:*

Navigation for field activities 2017-056-FA and 2018-018-FA used Wide Area Augmentation System (WAAS)-enabled GPS. The GPS was set to receive fixes at a 2-second interval in geographic coordinates (World Geodetic System of 1984 [WGS 84]). The recorded position of each sediment sample is the position of the GPS antenna on the survey vessel, located on the aft port side of the R/V Connecticut, not the location of the SEABOSS. The antenna was located approximately 5 meters from the SEABOSS deployment location in fall 2017 and 3 meters in spring 2018. No layback or offset was applied to the recorded position. In addition, the SEABOSS may drift away from the survey vessel when deployed to the sea floor. Based on the various sources of horizontal offsets, a conservative estimate of the horizontal accuracy of the sediment sample locations is 10 meters. The sites with no successful grab included in the Multisizer results are located along the bottom video trackline at the start of the SEABOSS retrieval. Some of these site locations did not originally intersect a bottom video trackline and were moved to the last navigation fix along the site's bottom video trackline.

#### *Vertical Positional Accuracy:*

***Vertical Positional Accuracy Report:***

The depths recorded for each sample are approximate and were derived from an unpublished composite bathymetry dataset used by the Long Island Sound Mapping and Research Collaborative project.

***Lineage:******Process Step:******Process Description:***

Step 1: Collected data.

Two marine geological surveys were conducted in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018. The R/V Connecticut occupied one of the target sites and the SEABOSS was deployed off the vessel's A-frame on the stern of the ship. The SEABOSS was equipped with a modified Van Veen grab sampler, a Nikon D300 digital still camera with a Photosea strobe, two video cameras (one forward-looking so that a shipboard operator could monitor for proper tow depth and obstacles, and one downward-looking, a Kongsberg Simrad OE1365 in this setup, that overlapped with the field of view of the still camera) with a topside feed, a GoPro HERO4 Black camera recording backup video, and lights to illuminate the sea floor for video and photograph collection. The elements of this particular SEABOSS were held within a stainless-steel frame that measured 1.15 x 1.15 meters. The frame had a stabilizer fin that oriented the system as it drifted over the seabed. The winch operator lowered the SEABOSS until the sea floor was observed in the topside live video feed. For those sites that were primarily targeted for a sediment grab, the vessel and SEABOSS then drifted with wind and current for up to a few minutes to ensure a decent image with a clear view of the sea floor was acquired; for those sites that were targeted for both a video transect of the sea floor and a sediment grab, the vessel was navigated along a planned transect for up to an hour. A scientist monitored the real-time bottom video and acquired bottom photographs at points of interest by remotely triggering the Nikon camera shutter. Bottom video was also recorded during the drift from the downward-looking video camera. Then, at most sites the winch operator lowered the Van Veen grab sampler until it rested on the sea floor. When the system was raised, the Van Veen grab sampler closed and collected a sample as it was lifted off the sea floor. Times for the sampler retrieval, which would later be used to derive the sample locations, were manually recorded in the survey log when the sampler was lifted off the seabed. The sampler was recovered to the deck of the survey vessel where a subsample was taken for grain-size analysis at the sediment laboratory at the USGS Woods Hole Coastal and Marine Science Center. Sediment samples were only attempted in areas where collecting a sample would not damage the SEABOSS; therefore, no samples were collected in areas with a cobble, boulder, or rocky seabed, as identified in real time using the topside live video feed. Samples were also not attempted if the current was too strong, if the deployment was aborted due to the strobe malfunctioning, or if the grab sampler accidentally tripped earlier in the deployment. A total of 210 sites were occupied aboard the R/V Connecticut with the SEABOSS: 93 sites were occupied in fall 2017 during field activity 2017-056-FA, and 117 sites were occupied in spring 2018 during field activity 2018-018-FA. Sediment samples were collected at 179 of the 210 sites.

***Process Date:*** 05/15/2018

***Source Produced Citation Abbreviation:***

Sediment samples

***Source Produced Citation Abbreviation:***

Survey logs

***Process Contact:******Contact Information:******Contact Person Primary:***

***Contact Person:*** Seth Ackerman

***Contact Organization:*** U.S. Geological Survey

***Contact Position:*** Geologist

***Contact Address:***



**Address Type:** mailing and physical address

**Address:** 384 Woods Hole Rd.

**City:** Woods Hole

**State or Province:** MA

**Postal Code:** 02543-1598

**Country:** USA

**Contact Voice Telephone:** 508-548-8700 x2315

**Contact Facsimile Telephone:** 508-457-2310

**Contact Electronic Mail Address:** sackerman@usgs.gov

### **Process Step:**

#### **Process Description:**

Step 2: Acquired and processed navigation.

During the surveys, WAAS-enabled GPS navigation from a Garmin GPSMAP 76C receiver was logged through a DataBridge data logger and ArcMap GPS. The GPS was set to receive fixes at a 2-second interval in geographic coordinates (WGS 84). Dates and times were recorded in Coordinated Universal Time (UTC). Log files were saved for each Julian day in text format. An AWK script (parse\_gprmc17056.awk for the fall 2017 log files and parse\_gprmc18018.awk for the spring 2018 log files) was used to parse the GPRMC navigation string from the log files for each survey and create ASCII Comma Separated Values (CSV) text files. The output files were merged for each survey and then reformatted using an AWK script (nav\_time\_reformat.awk), creating a processed navigation CSV text file for each sampling survey.

**Process Date:** 09/2018

**Source Produced Citation Abbreviation:**

Processed DataBridge navigation files

**Process Contact:**

#### **Contact Information:**

##### **Contact Person Primary:**

**Contact Person:** Seth Ackerman

**Contact Organization:** U.S. Geological Survey

**Contact Position:** Geologist

**Contact Address:**

**Address Type:** mailing and physical address

**Address:** 384 Woods Hole Rd.

**City:** Woods Hole

**State or Province:** MA

**Postal Code:** 02543-1598

**Country:** USA

**Contact Voice Telephone:** 508-548-8700 x2315

**Contact Facsimile Telephone:** 508-457-2310

**Contact Electronic Mail Address:** sackerman@usgs.gov

### **Process Step:**

#### **Process Description:**

Step 3: Assembled sample information for sediment laboratory.

The sediment sample times (as recorded in the survey logs) were used to parse GPS positions for each sediment sample from the logged GPS data. Approximate depths for each sample were derived from an

unpublished composite bathymetry dataset used by the Long Island Sound Mapping and Research Collaborative project. This information was then provided to the sediment laboratory at the USGS Woods Hole Coastal and Marine Science Center with the sample analysis request form for each survey.

***Source Used Citation Abbreviation:***

Survey logs

***Source Used Citation Abbreviation:***

Processed DataBridge navigation files

***Source Used Citation Abbreviation:***

Unpublished composite bathymetry

***Process Date:*** 09/2018

***Source Produced Citation Abbreviation:***

Sediment sample locations CSV files

***Process Contact:***

***Contact Information:***

***Contact Person Primary:***

***Contact Person:*** Seth Ackerman

***Contact Organization:*** U.S. Geological Survey

***Contact Position:*** Geologist

***Contact Address:***

***Address Type:*** mailing and physical address

***Address:*** 384 Woods Hole Rd.

***City:*** Woods Hole

***State or Province:*** MA

***Postal Code:*** 02543-1598

***Country:*** USA

***Contact Voice Telephone:*** 508-548-8700 x2315

***Contact Facsimile Telephone:*** 508-457-2310

***Contact Electronic Mail Address:*** sackerman@usgs.gov

***Process Step:***

***Process Description:***

Step 4: Analyzed sediment samples using the HORIBA LA-960 laser diffraction analyzer and sieving of the  $\geq -2\text{-}\phi$  fraction.

The samples from each survey were analyzed in the sediment laboratory at the USGS Woods Hole Coastal and Marine Science Center using two different methods: the Beckman Coulter Multisizer 3 and sieving of the  $\geq 4\text{-}\phi$  fraction, and the HORIBA LA-960 laser diffraction analyzer and sieving of the  $\geq -2\text{-}\phi$  fraction. Separate subsamples were taken from each sample submitted to the sediment analysis laboratory for each method. For the sediments analyzed using the HORIBA LA-960 laser diffraction analyzer and sieving of the  $\geq -2\text{-}\phi$  fraction, the subsamples for grain-size analysis were assigned unique analysis identifiers (ANALYSIS\_ID) and divided into batches of no more than 30 samples. Each batch was entered into a Microsoft Excel data entry spreadsheet (LD Worksheet Template\_XXXX.xlsx, where XXXX is the identifier assigned to the sample submission) to record the initial and dried sample weights, as well as the sieved coarse fraction weights. Each batch was also entered into macro-enabled Microsoft Excel data entry spreadsheets (GrainSizeWorksheet\_LD1-30\_XXXX(batch\_yy).xlsm or GrainSizeWorksheet\_LD31-60\_XXXX(batch\_yy).xlsm, where XXXX is the identifier assigned to the sample submission, "LD1-30" and "LD31-60" refer to the pre-labeled and weighed glass laser diffraction vials in which the samples will be run, and "batch\_yy" refers to the sample batch) to record the measurement data coming from the laser diffraction unit and incorporate the initial, dried, and sieved weights. About 10-15 grams of wet sediment were placed in a pre-weighed beaker and the gross weight was recorded. The sample was wet sieved through a 4 mm (No. 5) sieve. If there was any coarse fraction remaining in the sieve, the coarse material was oven dried at 100 degrees Celsius in a pre-

weighed beaker, and weighed again when dry. This coarse fraction was dry sieved to determine the individual weights of the -2- to -5-phi fractions, and the weights were recorded in the data entry spreadsheet LD Worksheet Template\_xxxx.xlsx. The fine fraction in water was collected in a pre-labeled and weighed glass laser diffraction vial. If there was any coarse fraction remaining in the sieve from wet sieving, this vial was also oven dried at 100 degrees Celsius and weighed when dry. If there was no coarse fraction remaining from wet sieving, the sample can proceed directly to processing for analyses by the HORIBA LA-960 laser diffraction unit. Fine fractions ready for analysis by the HORIBA laser diffraction unit were rehydrated with distilled water if they had been dry. Fifteen (15) ml of pre-mixed 40 g/l sodium hexametaphosphate [(NaPO<sub>3</sub>)<sub>6</sub>] were added to each sample. If the height of the fluid in the laser diffraction vial was less than 5 cm, more distilled water was added to raise the level to no more than 8 cm in the vial. The samples were gently stirred, covered, and allowed to soak for at least 1 hour (for samples that were not dried) or up to 24 hours (for samples that were dried). Soaked vials were placed into an ultrasonic bath and run for 10 minutes at a frequency of 37 Hz with a power level of 100. If the samples appeared to be fully disaggregated, they were placed into pre-determined autosampler locations and were run using the HORIBA LA-960 for Windows software to get the fine fraction grain-size distributions. The fine fraction distribution data were added to the appropriate data entry spreadsheets (GrainSizeWorksheet\_LD1-30\_xxxx(batch\_yy).xlsm or GrainSizeWorksheet\_LD31-60\_xxxx(batch\_yy).xlsm) for each survey. The spreadsheet for each survey was used to calculate a continuous phi class distribution from the original fractions.

***Source Used Citation Abbreviation:***

Sediment samples

***Source Used Citation Abbreviation:***

Sediment sample locations CSV files

***Process Date:*** 03/01/2019

***Source Produced Citation Abbreviation:***

Sediment subsamples

***Source Produced Citation Abbreviation:***

Laser diffraction data entry spreadsheets

***Process Contact:***

***Contact Information:***

***Contact Person Primary:***

***Contact Person:*** Brian Buczkowski

***Contact Organization:*** U.S. Geological Survey

***Contact Position:*** Physical Scientist

***Contact Address:***

***Address Type:*** mailing and physical address

***Address:*** 384 Woods Hole Rd.

***City:*** Woods Hole

***State or Province:*** MA

***Postal Code:*** 02543-1598

***Country:*** USA

***Contact Voice Telephone:*** 508-548-8700 x2361

***Contact Facsimile Telephone:*** 508-457-2310

***Contact Electronic Mail Address:*** bbuczkowski@usgs.gov

***Process Step:***

***Process Description:***

Step 5: Analyzed sediment samples using the Beckman Coulter Multisizer 3 and sieving of the  $\geq$  4-phi fraction.

The subsamples for grain-size analysis using the Beckman Coulter Multisizer 3 and sieving of the  $\geq$  4-phi fraction were assigned unique analysis identifiers (ANALYSIS\_ID), and a macro-enabled Microsoft Excel

data entry spreadsheet (GrainSizeWorksheet\_XXXX.xlsm, where XXXX is the batch number assigned to the sample submission) was created for each survey to record the measurement data. About 50 grams of wet sediment were placed in a pre-weighed beaker, weighed, oven dried at 100 degrees Celsius, and reweighed to correct for salt. The dried sample was wet sieved through a 0.062 mm (No. 230) sieve. The coarse fraction remaining in the sieve was oven dried at 100 degrees Celsius (until completely dried) and weighed. The fine fraction in water was collected in a plastic Nalgene bottle and sealed with a screw lid (stored for no longer than one week). The coarse fraction was dry sieved to determine the individual weights of the 4- to -5-phi fractions, and the weights were recorded in the data entry spreadsheet. The fine fraction was run and combined using the 200-micron and 30-micron Coulter analyses using the Multisizer 3 software to get the fine fraction grain-size distribution for each survey. The fine fraction distribution data were added to the data entry spreadsheet for each survey. The spreadsheet for each survey was used to calculate a continuous phi class distribution from the original fractions.

**Source Used Citation Abbreviation:**

Sediment subsamples

**Source Used Citation Abbreviation:**

Sediment sample locations CSV files

**Process Date:** 04/18/2019

**Source Produced Citation Abbreviation:**

Multisizer data entry spreadsheets

**Process Contact:**

**Contact Information:**

**Contact Person Primary:**

**Contact Person:** Allison Paquette

**Contact Organization:** U.S. Geological Survey

**Contact Position:** Integrated Statistics contractor to the U.S. Geological Survey

**Contact Address:**

**Address Type:** mailing and physical address

**Address:** 384 Woods Hole Rd.

**City:** Woods Hole

**State or Province:** MA

**Postal Code:** 02543-1598

**Country:** USA

**Contact Voice Telephone:** 508-548-8700

**Contact Facsimile Telephone:** 508-457-2310

**Process Step:**

**Process Description:**

Step 6: Calculated grain-size classification and statistical analyses.

A continuous phi class distribution from the original fractions was transposed to the "results" tab in the macro-enabled Microsoft Excel data entry workbook (GrainSizeWorksheet\_LD1-30\_XXXX(batch\_yy).xlsm or GrainSizeWorksheet\_LD31-60\_XXXX(batch\_yy).xlsm for the laser diffraction results, where XXXX is the identifier assigned to the sample submission, "LD1-30" and "LD31-60" refer to the pre-labeled and weighed glass laser diffraction vials in which the samples were run, and "batch\_yy" refers to the sample batch; or GrainSizeWorksheet\_XXXX.xlsm for the Multisizer results, where XXXX is the identifier assigned to the sample submission) for each survey. Macros in the workbook ("GS\_MoM\_Arithmetic," "GS\_statistics," and "sedimentname" for the laser diffraction results, and "GS\_statistics" and "sedimentname" for the Multisizer results) were run to calculate grain-size classification and statistical analyses and finish processing the data. Sample, navigation, and field identifiers along with continuous phi class distribution data, grain-size classification, and statistical analysis results were copied and pasted into a final Microsoft Excel spreadsheet (XXXX\_GS-LD\_results.xlsx for the laser diffraction results and XXXX\_GS-MS\_results.xlsx for the Multisizer

results, where xxxx is the batch number assigned to the sample submission) for each survey. The processed data were quality control checked and assigned a quality grade based on the examination of the analytical data. Processed data were released to the submitter and incorporated into the laboratory's database. All raw analytical data generated by the samples were archived in the sediment analysis laboratory.

***Source Used Citation Abbreviation:***

Laser diffraction data entry spreadsheets

***Source Used Citation Abbreviation:***

Multisizer data entry spreadsheets

***Process Date:*** 04/18/2019

***Source Produced Citation Abbreviation:***

Final Microsoft Excel spreadsheets (SA10\_GS-LD\_results.xlsx, SA11\_GS-LD\_results.xlsx, SA10\_GS-MS\_results.xlsx, and SA11\_GS-MS\_results.xlsx)

***Process Contact:***

***Contact Information:***

***Contact Person Primary:***

***Contact Person:*** Brian Buczkowski

***Contact Organization:*** U.S. Geological Survey

***Contact Position:*** Physical Scientist

***Contact Address:***

***Address Type:*** mailing and physical address

***Address:*** 384 Woods Hole Rd.

***City:*** Woods Hole

***State or Province:*** MA

***Postal Code:*** 02543-1598

***Country:*** USA

***Contact Voice Telephone:*** 508-548-8700 x2361

***Contact Facsimile Telephone:*** 508-457-2310

***Contact Electronic Mail Address:*** bbuczkowski@usgs.gov

***Process Step:***

***Process Description:***

Step 7: Created final sediment grain-size analysis results CSV files.

For the laser diffraction results, the sediment grain-size analysis results spreadsheets for each survey were merged in Microsoft Excel 2016 for Mac and then edited to remove the quality grade and metric distribution fields and to format fields. The Microsoft Excel spreadsheet was then saved as a CSV file (2017-056-FA\_and\_2018-018-FA\_samples\_GS-LD.csv). For the Multisizer results, the sediment grain-size analysis results spreadsheets for each survey were merged in Microsoft Excel 2016 for Mac and then edited to remove some fields, format fields, add site locations for those sites where no sample was successfully collected, and add a no data value (-9999) to empty attributes as needed. The sites with no successful grab were located using the start time of the sampler retrieval from the survey logs; the sampler retrieval position was chosen as the sample location because the video clip is considered the sample in the absence of a physical sample. Some of these site locations from the survey logs did not intersect a bottom video trackline, so they were moved to the last navigation fix along the site's bottom video trackline. Finally, the Microsoft Excel spreadsheet was saved as a CSV file (2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS.csv). This process step and the subsequent process step were performed by the same person, Emily Huntley.

***Source Used Citation Abbreviation:***

Final Microsoft Excel spreadsheets (SA10\_GS-LD\_results.xlsx, SA11\_GS-LD\_results.xlsx, SA10\_GS-MS\_results.xlsx, and SA11\_GS-MS\_results.xlsx)

***Source Used Citation Abbreviation:***

Survey logs

**Process Date:** 10/2019

**Source Produced Citation Abbreviation:**

Final sediment grain-size analysis results CSV files

**Process Contact:**

**Contact Information:**

**Contact Person Primary:**

**Contact Person:** Emily Huntley

**Contact Organization:** U.S. Geological Survey

**Contact Position:** Geographer/Database Specialist

**Contact Address:**

**Address Type:** mailing and physical address

**Address:** 384 Woods Hole Rd.

**City:** Woods Hole

**State or Province:** MA

**Postal Code:** 02543-1598

**Country:** USA

**Contact Voice Telephone:** 508-548-8700

**Contact Facsimile Telephone:** 508-457-2310

**Contact Electronic Mail Address:** ehuntley@contractor.usgs.gov

**Process Step:**

**Process Description:**

Step 8: Created a simplified sediment grain-size analysis results shapefile from the Multisizer analysis.

The CSV file of the sediment grain-size analysis results from the Multisizer analysis was copied and edited to create a simplified version of the CSV file with fewer attribute fields (specifically, STDEV, SKEWNESS, KURTOSIS, and the individual phi measurements [e.g., PHI\_11] were removed). A shapefile was created using the simplified version of the CSV file in Esri ArcGIS (version 10.3.1), and XTools Pro (version 12.0) for Esri ArcGIS was used to modify some field parameters in the point shapefile (Table Operations - Table Restructure). Please note that this metadata file represents the CSV file; users should access the CSV file for the full sediment grain-size analysis results.

**Source Used Citation Abbreviation:**

Final sediment grain-size analysis results CSV file from Multisizer analysis

**Process Date:** 10/2019

**Source Produced Citation Abbreviation:**

Final simplified sediment grain-size analysis results shapefile

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## Spatial Data Organization Information:

### Direct Spatial Reference Method:

Vector

**Point and Vector Object Information:**

**SDTS Terms Description:**

**SDTS Point and Vector Object Type:** Entity point

**Point and Vector Object Count: 210**[Back to Top](#)

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**Spatial Reference Information:****Horizontal Coordinate System Definition:****Geographic:****Latitude Resolution:** 0.00000001**Longitude Resolution:** 0.00000001**Geographic Coordinate Units:** Decimal degrees**Geodetic Model:****Horizontal Datum Name:** D\_WGS\_1984**Ellipsoid Name:** WGS\_1984**Semi-major Axis:** 6378137.000000**Denominator of Flattening Ratio:** 298.257224[Back to Top](#)

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**Entity and Attribute Information:****Detailed Description:****Entity Type:****Entity Type Label:** 2017-056-FA\_and\_2018-018-FA\_samples\_GS-LD**Entity Type Definition:**

Grain-size analysis results using the HORIBA LA-960 laser diffraction analyzer and sieving of the  $\geq -2\text{-}\phi$  fraction for sediment samples collected in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 during USGS field activities 2017-056-FA and 2018-018-FA.

**Entity Type Definition Source:**

U.S. Geological Survey

**Attribute:****Attribute Label:** ANALYSIS\_ID**Attribute Definition:**

An identifier for the sample that is unique to the database. This identifier begins with the assigned multi-letter code GS-, which corresponds to the type of analysis performed on the sample (grain-size analysis), followed by a six-digit number assigned sequentially as samples are registered for analysis.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Unrepresentable Domain:**

Character string.

**Attribute:****Attribute Label:** SAMPLE\_ID**Attribute Definition:**

The identification value assigned to the sample at the time of collection. This varies from field activity to field activity, and the ID can contain any combination of letters and numbers.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** PROJECT

***Attribute Definition:***

Name of project or project number under which samples were taken or data generated; sometimes project name indicates a more specific area.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character sting.

***Attribute:***

***Attribute Label:*** FAN

***Attribute Definition:***

The serial number assigned to the dataset field activity during which the sample was collected. This value is in the format YYYY-XXX-FA where YYYY is the year, XXX is the number assigned to the activity within the year, and FA indicates Field Activity.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** SUBMITTER

***Attribute Definition:***

Name of Principal investigator or chief scientist responsible for data collection, or researcher submitting samples for analysis (usually first initial and last name).

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***



**Attribute Label:** AREA

**Attribute Definition:**

General geographic area of data collection. Name is general enough to easily locate area on a map.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Unrepresentable Domain:**

Character string.

**Attribute:**

**Attribute Label:** SUBMISSION

**Attribute Definition:**

Unique sample submission identifier. This identifier begins with the initials of the submitter, followed by a two-digit number assigned sequentially relative to previous submissions.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Unrepresentable Domain:**

Character string.

**Attribute:**

**Attribute Label:** LATITUDE

**Attribute Definition:**

Latitude coordinate, in decimal degrees (WGS 84), of sample location. South latitude is recorded as negative values.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 41.19317830

**Range Domain Maximum:** 41.32471000

**Attribute Units of Measure:** decimal degrees

**Attribute Measurement Resolution:** 0.00000001

**Attribute:**

**Attribute Label:** LONGITUDE

**Attribute Definition:**

Longitude coordinate, in decimal degrees (WGS 84), of sample location. West longitude is recorded as negative values.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

***Range Domain:***

***Range Domain Minimum:*** -72.43017830  
***Range Domain Maximum:*** -71.86686000  
***Attribute Units of Measure:*** decimal degrees  
***Attribute Measurement Resolution:*** 0.00000001

***Attribute:***

***Attribute Label:*** DEPTH\_M

***Attribute Definition:***

Approximate depth of water in meters at the sample location derived from an unpublished composite bathymetry dataset used by the Long Island Sound Mapping and Research Collaborative project.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 4  
***Range Domain Maximum:*** 89  
***Attribute Units of Measure:*** meters  
***Attribute Measurement Resolution:*** 1

***Attribute:***

***Attribute Label:*** T\_DEPTH

***Attribute Definition:***

Top depth of the sample below the sediment-water interface in centimeters.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0  
***Range Domain Maximum:*** 0  
***Attribute Units of Measure:*** centimeters

***Attribute:***

***Attribute Label:*** B\_DEPTH

***Attribute Definition:***

Bottom depth of the sample below the sediment-water interface in centimeters.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 2  
***Range Domain Maximum:*** 2  
***Attribute Units of Measure:*** centimeters

***Attribute:******Attribute Label:*** DEVICE***Attribute Definition:***

Sampling device used to collect the sample.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** DATE COLLECTED***Attribute Definition:***

Calendar date based on UTC time indicating when the sample was collected in the format MM/DD/YYYY where MM is the numeric month, DD is the day of the month, and YYYY is the year.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** ANALYSIS COMPLETION DATE***Attribute Definition:***

Calendar date indicating when analyses on the sample were completed in the format MM/DD/YYYY where MM is the numeric month, DD is the day of the month, and YYYY is the year.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** ANALYSIS METHOD***Attribute Definition:***

Method used to analyze the sample for grain-size distribution.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Enumerated Domain:***

**Enumerated Domain Value:** GS-LD

**Enumerated Domain Value Definition:**

Grain-size analysis using the HORIBA laser diffraction unit and sieving of the  $\geq -2$  phi fraction.

**Enumerated Domain Value Definition Source:**

U.S. Geological Survey

**Attribute:**

**Attribute Label:** WEIGHT WET SAMPLE (g)

**Attribute Definition:**

Weight of initial sample in grams.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 4.3286

**Range Domain Maximum:** 30.3185

**Attribute Units of Measure:** grams

**Attribute Measurement Resolution:** 0.0001

**Attribute:**

**Attribute Label:** GRAVEL (wt%)

**Attribute Definition:**

Gravel content in percent dry weight of the sample. Gravel consists of particles with nominal diameters greater than 2 mm (-1 phi and larger).

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 61.3508

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.0001

**Attribute:**

**Attribute Label:** SAND (wt%)

**Attribute Definition:**

Sand content in percent dry weight of the sample. Sand consists of particles with nominal diameters less than 2 mm, but greater than or equal to 0.0625 mm (0 phi through 4 phi, inclusive).

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0.0515

**Range Domain Maximum:** 99.5135

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.0001

**Attribute:**

**Attribute Label:** SILT (wt%)

**Attribute Definition:**

Silt content in percent dry weight of the sample. Silt consists of particles with nominal diameters less than 0.0625 mm, but greater than or equal to 0.004 mm (5 phi through 8 phi, inclusive).

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 62.8030

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.0001

**Attribute:**

**Attribute Label:** CLAY (wt%)

**Attribute Definition:**

Clay content in percent dry weight of the sample. Clay consists of particles with nominal diameters less than 0.004 mm (9 phi and smaller).

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 47.5030

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.0001

**Attribute:**

**Attribute Label:** CLASSIFICATION (Shepard)

**Attribute Definition:**

Sediment classification based on a rigorous definition (Shepard [1954] as modified by Schlee and Webster [1967], Schlee [1973], and Poppe and others [2005]). In the definitions below, gravel is defined as particles with nominal diameters greater than 2 mm; sand consists of particles with nominal diameters less than 2 mm, but greater than or equal to 0.0625 mm; silt consists of particles with nominal diameters less than 0.0625 mm, but greater than or equal to 0.004 mm; and clay consists of particles with nominal diameters less than 0.004 mm.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Enumerated Domain:**

**Enumerated Domain Value:** clayey silt

**Enumerated Domain Value Definition:**

Sediment whose main phase is silt, but with significant clay.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** gravel

***Enumerated Domain Value Definition:***

Sediment whose main phase is gravel.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** gravelly sediment

***Enumerated Domain Value Definition:***

Sediment whose main phase is gravel, but with significant other sediment. Gravel greater than 10 percent.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** sand

***Enumerated Domain Value Definition:***

Sediment whose main phase is sand.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** sandy silt

***Enumerated Domain Value Definition:***

Sediment whose main phase is silt, but with significant sand.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** silty sand

***Enumerated Domain Value Definition:***

Sediment whose main phase in sand, but with significant silt.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

**Attribute:****Attribute Label:** MEAN (Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Average value in the grain-size distribution in phi units.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** -2.16**Range Domain Maximum:** 8.59**Attribute Units of Measure:** phi**Attribute Measurement Resolution:** 0.01**Attribute:****Attribute Label:** STDEV (Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Standard deviation (root mean square of the deviations) of the grain-size distribution in phi units (sorting).

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0.57**Range Domain Maximum:** 3.87**Attribute Units of Measure:** phi**Attribute Measurement Resolution:** 0.01**Attribute:****Attribute Label:** SKEWNESS (Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Skewness (deviation from symmetrical form) of the grain-size distribution in phi units.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** -2.39**Range Domain Maximum:** 4.29**Attribute Units of Measure:** phi**Attribute Measurement Resolution:** 0.01**Attribute:****Attribute Label:** KURTOSIS (Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Kurtosis (degree of curvature near the mode) of the grain-size distribution in phi units.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 1.01**Range Domain Maximum:** 35.39**Attribute Units of Measure:** phi**Attribute Measurement Resolution:** 0.01**Attribute:****Attribute Label:** D10 (Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Diameter at which 10% of the sample mass is comprised of sediment particles with a diameter less than this value.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** -4.80**Range Domain Maximum:** 5.81**Attribute Units of Measure:** phi**Attribute Measurement Resolution:** 0.01**Attribute:****Attribute Label:** D25 (Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Diameter at which 25% of the sample mass is comprised of sediment particles with a diameter less than this value.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** -4.50**Range Domain Maximum:** 6.66**Attribute Units of Measure:** phi**Attribute Measurement Resolution:** 0.01**Attribute:****Attribute Label:** MEDIAN (D50; Method of Moments Statistics - Logarithmic [phi])**Attribute Definition:**

Diameter at which 50% of the sample mass is comprised of sediment particles with a diameter less than this value and 50% is larger; middle point in the grain-size distribution in phi units.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**



***Range Domain:******Range Domain Minimum:*** -3.98***Range Domain Maximum:*** 7.88***Attribute Units of Measure:*** phi***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** D75 (Method of Moments Statistics - Logarithmic [phi])***Attribute Definition:***

Diameter at which 75% of the sample mass is comprised of sediment particles with a diameter less than this value.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 0.32***Range Domain Maximum:*** 11.17***Attribute Units of Measure:*** phi***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** D90 (Method of Moments Statistics - Logarithmic [phi])***Attribute Definition:***

Diameter at which 90% of the sample mass is comprised of sediment particles with a diameter less than this value.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 0.83***Range Domain Maximum:*** 11.89***Attribute Units of Measure:*** phi***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** MEAN (Method of Moments Statistics - Arithmetic [micron])***Attribute Definition:***

Average value in the grain-size distribution in microns.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 6.65***Range Domain Maximum:*** 12,594.95***Attribute Units of Measure:*** microns

***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** STDEV (Method of Moments Statistics - Arithmetic [micron])***Attribute Definition:***

Standard deviation (root mean square of the deviations) of the grain-size distribution in microns (sorting).

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 8.11***Range Domain Maximum:*** 10,397.25***Attribute Units of Measure:*** microns***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** SKEWNESS (Method of Moments Statistics - Arithmetic [micron])***Attribute Definition:***

Skewness (deviation from symmetrical form) of the grain-size distribution in microns.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** -0.19***Range Domain Maximum:*** 14.80***Attribute Units of Measure:*** microns***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** KURTOSIS (Method of Moments Statistics - Arithmetic [micron])***Attribute Definition:***

Kurtosis (degree of curvature near the mode) of the grain-size distribution in microns.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 1.06***Range Domain Maximum:*** 266.87***Attribute Units of Measure:*** microns***Attribute Measurement Resolution:*** 0.01***Attribute:******Attribute Label:*** D10 (Method of Moments Statistics - Arithmetic [micron])***Attribute Definition:***

Diameter at which 10% of the sample mass is comprised of sediment particles with a diameter less than this value.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0.28

***Range Domain Maximum:*** 711.50

***Attribute Units of Measure:*** microns

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** D25 (Method of Moments Statistics - Arithmetic [micron])

***Attribute Definition:***

Diameter at which 25% of the sample mass is comprised of sediment particles with a diameter less than this value.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0.45

***Range Domain Maximum:*** 924.32

***Attribute Units of Measure:*** microns

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** MEDIAN (D50; Method of Moments Statistics - Arithmetic [micron])

***Attribute Definition:***

Diameter at which 50% of the sample mass is comprised of sediment particles with a diameter less than this value and 50% is larger; middle point in the grain-size distribution in microns.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 4.93

***Range Domain Maximum:*** 15,856.37

***Attribute Units of Measure:*** microns

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** D75 (Method of Moments Statistics - Arithmetic [micron])

***Attribute Definition:***

Diameter at which 75% of the sample mass is comprised of sediment particles with a diameter less than this value.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 10.86

***Range Domain Maximum:*** 23,976.96

***Attribute Units of Measure:*** microns

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** D90 (Method of Moments Statistics - Arithmetic [micron])

***Attribute Definition:***

Diameter at which 90% of the sample mass is comprised of sediment particles with a diameter less than this value.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 19.02

***Range Domain Maximum:*** 28,790.78

***Attribute Units of Measure:*** microns

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** PHI\_16

***Attribute Definition:***

Weight percent of the sample in the 16-phi fraction and smaller (nominal diameter of particles less than 0.00003125 mm); colloid.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 0

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_15

***Attribute Definition:***

Weight percent of the sample in the 15-phi fraction (nominal diameter of particles greater than or equal to 0.00003125 mm, but less than 0.0000625 mm); colloid.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 0

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_14

***Attribute Definition:***

Weight percent of the sample in the 14-phi fraction (nominal diameter of particles greater than or equal to 0.0000625 mm, but less than 0.000125 mm); colloid.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 0.491

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_13

***Attribute Definition:***

Weight percent of the sample in the 13-phi fraction (nominal diameter of particles greater than or equal to 0.000125 mm, but less than 0.00025 mm); fine clay.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 7.122

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_12

***Attribute Definition:***

Weight percent of the sample in the 12-phi fraction (nominal diameter of particles greater than or equal to 0.00025 mm, but less than 0.0005 mm); fine clay.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 20.865

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

**Attribute:****Attribute Label:** PHI\_11**Attribute Definition:**

Weight percent of the sample in the 11-phi fraction (nominal diameter of particles greater than or equal to 0.0005 mm, but less than 0.001 mm); fine clay.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 5.917**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_10**Attribute Definition:**

Weight percent of the sample in the 10-phi fraction (nominal diameter of particles greater than or equal to 0.001 mm, but less than 0.002 mm); medium clay.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 1.938**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_9**Attribute Definition:**

Weight percent of the sample in the 9-phi fraction (nominal diameter of particles greater than or equal to 0.002 mm, but less than 0.004 mm); coarse clay.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 11.171**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_8**Attribute Definition:**

Weight percent of the sample in the 8-phi fraction (nominal diameter of particles greater than or equal to 0.004 mm, but less than 0.008 mm); very fine silt.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 20.639

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_7

***Attribute Definition:***

Weight percent of the sample in the 7-phi fraction (nominal diameter of particles greater than or equal to 0.008 mm, but less than 0.016 mm); fine silt.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 25.934

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_6

***Attribute Definition:***

Weight percent of the sample in the 6-phi fraction (nominal diameter of particles greater than or equal to 0.016 mm, but less than 0.031 mm); medium silt.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 21.261

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_5

***Attribute Definition:***

Weight percent of the sample in the 5-phi fraction (nominal diameter of particles greater than or equal to 0.031 mm, but less than 0.0625 mm); coarse silt.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 34.783

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_4

***Attribute Definition:***

Weight percent of the sample in the 4-phi fraction (nominal diameters of particles greater than or equal to 0.0625 mm, but less than 0.125 mm); very fine sand.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 54.543

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_3

***Attribute Definition:***

Weight percent of the sample in the 3-phi fraction (nominal diameter of particles greater than or equal to 0.125 mm, but less than 0.25 mm); fine sand.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 52.024

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_2

***Attribute Definition:***

Weight percent of the sample in the 2-phi fraction (nominal diameter of particles greater than or equal to 0.25 mm, but less than 0.5 mm); medium sand.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***



**Range Domain Minimum:** 0

**Range Domain Maximum:** 59.879

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:**

**Attribute Label:** PHI\_1

**Attribute Definition:**

Weight percent of the sample in the 1-phi fraction (nominal diameter of particles greater than or equal to 0.5 mm, but less than 1 mm); coarse sand.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 69.706

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:**

**Attribute Label:** PHI\_0

**Attribute Definition:**

Weight percent of the sample in the 0-phi fraction (nominal diameters of particles greater than or equal to 1 mm, but less than 2 mm); very coarse sand.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 63.764

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:**

**Attribute Label:** PHI\_-1

**Attribute Definition:**

Weight percent of the sample in the -1-phi fraction (nominal diameter of particles greater than or equal to 2 mm, but less than 4 mm); very fine pebbles (granules).

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 8.571

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:****Attribute Label:** PHI\_-2**Attribute Definition:**

Weight percent of the sample in the -2-phi fraction (nominal diameter of particles greater than or equal to 4 mm, but less than 8 mm); fine pebbles.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 29.953**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_-3**Attribute Definition:**

Weight percent of the sample in the -3-phi fraction (nominal diameter of particles greater than or equal to 8 mm, but less than 16 mm); medium pebbles.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 53.733**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_-4**Attribute Definition:**

Weight percent of the sample in the -4-phi fraction (nominal diameter of particles greater than or equal to 16 mm, but less than 32 mm); coarse pebbles.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 49.856**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_-5**Attribute Definition:**

Weight percent of the sample in the -5-phi fraction (nominal diameter of particles greater than or equal to 32 mm, but less than 64 mm); very coarse pebbles.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 0

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_-6

***Attribute Definition:***

Weight percent of the sample in the -6-phi fraction and larger (nominal diameter of particles greater than or equal to 64 mm); cobbles and boulders.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 0

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** ANALYST

***Attribute Definition:***

Name (usually first, middle, and last initials) of person who performed the grain-size or physical properties analysis.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** QA/QC COMMENTS

***Attribute Definition:***

Relevant comments on analytical observations or anomalies that may affect the quality of the data. Entries with no comments are left blank.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** COMMENTS

***Attribute Definition:***

Comments field with the USGS site number and University of Connecticut's Northeast Underwater Research, Technology and Education Center (NURTEC) site name for the spring 2018 survey.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Detailed Description:******Entity Type:***

***Entity Type Label:*** 2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS

***Entity Type Definition:***

Grain-size analysis results using the Beckman Coulter Multisizer 3 and sieving of the  $\geq 4$ -phi fraction for sediment samples collected in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 during USGS field activities 2017-056-FA and 2018-018-FA. These are the attributes for the CSV file. The shapefile is a simplified version of the CSV file with fewer attribute fields and two additional software-generated attributes, FID and Shape. Please see the entity and attribute overview section for a description of the shapefile attributes.

***Entity Type Definition Source:***

U.S. Geological Survey

***Attribute:***

***Attribute Label:*** ANALYSIS\_ID

***Attribute Definition:***

An identifier for the sample that is unique to the database. This identifier begins with the assigned multi-letter code GS-, which corresponds to the type of analysis performed on the sample (grain-size analysis), followed by a six-digit number assigned sequentially as samples are registered for analysis. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** FIELD\_NO

***Attribute Definition:***

The identification value assigned to the sample at the time of collection. This varies from field activity to field activity, and the ID can contain any combination of letters and numbers.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** PROJECT***Attribute Definition:***

Name of project or project number under which samples were taken or data generated; sometimes project name indicates a more specific area.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character sting.

***Attribute:******Attribute Label:*** FA\_ID***Attribute Definition:***

The serial number assigned to the dataset field activity during which the sample was collected. This value is in the format YYYY-XXX-FA where YYYY is the year, XXX is the number assigned to the activity within the year, and FA indicates Field Activity.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** CONTACT***Attribute Definition:***

Name of Principal investigator or chief scientist responsible for data collection, or researcher submitting samples for analysis (usually first initial and last name).

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** AREA***Attribute Definition:***

General geographic area of data collection. Name is general enough to easily locate area on a map.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** LATITUDE

***Attribute Definition:***

Latitude coordinate, in decimal degrees (WGS 84), of sample location. South latitude is recorded as negative values.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 41.19317830

***Range Domain Maximum:*** 41.32471000

***Attribute Units of Measure:*** decimal degrees

***Attribute Measurement Resolution:*** 0.00000001

***Attribute:***

***Attribute Label:*** LONGITUDE

***Attribute Definition:***

Longitude coordinate, in decimal degrees (WGS 84), of sample location. West longitude is recorded as negative values.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** -72.43017830

***Range Domain Maximum:*** -71.86686000

***Attribute Units of Measure:*** decimal degrees

***Attribute Measurement Resolution:*** 0.00000001

***Attribute:***

***Attribute Label:*** DEPTH\_M

***Attribute Definition:***

Approximate depth of water in meters at the sample location derived from an unpublished composite bathymetry dataset used by the Long Island Sound Mapping and Research Collaborative project.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 4  
***Range Domain Maximum:*** 89  
***Attribute Units of Measure:*** meters  
***Attribute Measurement Resolution:*** 1

***Attribute:***

***Attribute Label:*** T\_DEPTH

***Attribute Definition:***

Top depth of the sample below the sediment-water interface in centimeters. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0  
***Range Domain Maximum:*** 0  
***Attribute Units of Measure:*** centimeters

***Attribute:***

***Attribute Label:*** B\_DEPTH

***Attribute Definition:***

Bottom depth of the sample below the sediment-water interface in centimeters. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 2  
***Range Domain Maximum:*** 2  
***Attribute Units of Measure:*** centimeters

***Attribute:***

***Attribute Label:*** DEVICE

***Attribute Definition:***

Sampling device used to collect the sample.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** DATE\_COLLECTED

***Attribute Definition:***

Calendar date based on UTC time indicating when the sample was collected in the format MM/DD/YYYY where MM is the numeric month, DD is the day of the month, and YYYY is the year.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** ANALYSIS\_COMPLETION\_DATE***Attribute Definition:***

Calendar date indicating when analyses on the sample were completed in the format MM/DD/YYYY where MM is the numeric month, DD is the day of the month, and YYYY is the year. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Unrepresentable Domain:***

Character string.

***Attribute:******Attribute Label:*** WEIGHT***Attribute Definition:***

Weight of initial sample in grams. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:***

***Range Domain Minimum:*** 36.3872

***Range Domain Maximum:*** 153.7566

***Attribute Units of Measure:*** grams

***Attribute Measurement Resolution:*** 0.0001

***Attribute:******Attribute Label:*** GRAVEL\_PCT***Attribute Definition:***

Gravel content in percent dry weight of the sample. Gravel consists of particles with nominal diameters greater than 2 mm (-1 phi and larger). No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***



***Range Domain:******Range Domain Minimum:*** 0***Range Domain Maximum:*** 74.3715***Attribute Units of Measure:*** weight percent***Attribute Measurement Resolution:*** 0.0001***Attribute:******Attribute Label:*** SAND\_PCT***Attribute Definition:***

Sand content in percent dry weight of the sample. Sand consists of particles with nominal diameters less than 2 mm, but greater than or equal to 0.0625 mm (0 phi through 4 phi, inclusive). No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 12.8380***Range Domain Maximum:*** 99.8050***Attribute Units of Measure:*** weight percent***Attribute Measurement Resolution:*** 0.0001***Attribute:******Attribute Label:*** SILT\_PCT***Attribute Definition:***

Silt content in percent dry weight of the sample. Silt consists of particles with nominal diameters less than 0.0625 mm, but greater than or equal to 0.004 mm (5 phi through 8 phi, inclusive). No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:******Range Domain Minimum:*** 0.0002***Range Domain Maximum:*** 60.4170***Attribute Units of Measure:*** weight percent***Attribute Measurement Resolution:*** 0.0001***Attribute:******Attribute Label:*** CLAY\_PCT***Attribute Definition:***

Clay content in percent dry weight of the sample. Clay consists of particles with nominal diameters less than 0.004 mm (9 phi and smaller). No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:***

**Range Domain Minimum:** 0

**Range Domain Maximum:** 41.9248

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.0001

**Attribute:**

**Attribute Label:** CLASSIFICATION (Shepard)

**Attribute Definition:**

Sediment classification based on a rigorous definition (Shepard [1954] as modified by Schlee and Webster [1967], Schlee [1973], and Poppe and others [2005]). In the definitions below, gravel is defined as particles with nominal diameters greater than 2 mm; sand consists of particles with nominal diameters less than 2 mm, but greater than or equal to 0.0625 mm; silt consists of particles with nominal diameters less than 0.0625 mm, but greater than or equal to 0.004 mm; and clay consists of particles with nominal diameters less than 0.004 mm.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:**

**Enumerated Domain:**

**Enumerated Domain Value:** gravel

**Enumerated Domain Value Definition:**

Sediment whose main phase is gravel.

**Enumerated Domain Value Definition Source:**

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

**Attribute Domain Values:**

**Enumerated Domain:**

**Enumerated Domain Value:** gravelly sediment

**Enumerated Domain Value Definition:**

Sediment whose main phase is gravel, but with significant other sediment. Gravel greater than 10 percent.

**Enumerated Domain Value Definition Source:**

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

**Attribute Domain Values:**

**Enumerated Domain:**

**Enumerated Domain Value:** sand

**Enumerated Domain Value Definition:**

Sediment whose main phase is sand.

**Enumerated Domain Value Definition Source:**

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

**Attribute Domain Values:**

**Enumerated Domain:**

**Enumerated Domain Value:** sandy silt

**Enumerated Domain Value Definition:**

Sediment whose main phase is silt, but with significant sand.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** silty clay

***Enumerated Domain Value Definition:***

Sediment whose main phase in clay, but with significant silt.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute Domain Values:******Enumerated Domain:***

***Enumerated Domain Value:*** silty sand

***Enumerated Domain Value Definition:***

Sediment whose main phase in sand, but with significant silt.

***Enumerated Domain Value Definition Source:***

Shepard (1954) as modified by Schlee and Webster (1967), Schlee (1973), and Poppe and others (2005)

***Attribute:***

***Attribute Label:*** MEDIAN

***Attribute Definition:***

Diameter at which 50% of the sample mass is comprised of sediment particles with a diameter less than this value and 50% is larger; middle point in the grain-size distribution in phi units. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:***

***Range Domain Minimum:*** -4.22

***Range Domain Maximum:*** 6.51

***Attribute Units of Measure:*** phi

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** MEAN

***Attribute Definition:***

Average value in the grain-size distribution in phi units. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:******Range Domain:***

***Range Domain Minimum:*** -3.04

***Range Domain Maximum:*** 5.94

***Attribute Units of Measure:*** phi  
***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** STDEV

***Attribute Definition:***

Standard deviation (root mean square of the deviations) of the grain-size distribution in phi units (sorting). No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0.52

***Range Domain Maximum:*** 4.15

***Attribute Units of Measure:*** phi

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** SKEWNESS

***Attribute Definition:***

Skewness (deviation from symmetrical form) of the grain-size distribution in phi units. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** -1.90

***Range Domain Maximum:*** 4.66

***Attribute Units of Measure:*** phi

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

***Attribute Label:*** KURTOSIS

***Attribute Definition:***

Kurtosis (degree of curvature near the mode) of the grain-size distribution in phi units. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 1.35

***Range Domain Maximum:*** 63.48

***Attribute Units of Measure:*** phi

***Attribute Measurement Resolution:*** 0.01

***Attribute:***

**Attribute Label:** PHI\_11**Attribute Definition:**

Weight percent of the sample in the 11-phi fraction and smaller (nominal diameter of particles less than 0.001 mm); fine clay. No data value is -9999.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 9.451

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:****Attribute Label:** PHI\_10**Attribute Definition:**

Weight percent of the sample in the 10-phi fraction (nominal diameter of particles greater than or equal to 0.001 mm, but less than 0.002 mm); medium clay. No data value is -9999.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 21.003

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:****Attribute Label:** PHI\_9**Attribute Definition:**

Weight percent of the sample in the 9-phi fraction (nominal diameter of particles greater than or equal to 0.002 mm, but less than 0.004 mm); coarse clay. No data value is -9999.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:**

**Range Domain Minimum:** 0

**Range Domain Maximum:** 13.526

**Attribute Units of Measure:** weight percent

**Attribute Measurement Resolution:** 0.001

**Attribute:****Attribute Label:** PHI\_8**Attribute Definition:**

Weight percent of the sample in the 8-phi fraction (nominal diameter of particles greater than or equal to 0.004 mm, but less than 0.008 mm); very fine silt. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 11.599

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_7

***Attribute Definition:***

Weight percent of the sample in the 7-phi fraction (nominal diameter of particles greater than or equal to 0.008 mm, but less than 0.016 mm); fine silt. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 13.693

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_6

***Attribute Definition:***

Weight percent of the sample in the 6-phi fraction (nominal diameter of particles greater than or equal to 0.016 mm, but less than 0.031 mm); medium silt. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 19.248

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_5

***Attribute Definition:***

Weight percent of the sample in the 5-phi fraction (nominal diameter of particles greater than or equal to 0.031 mm, but less than 0.0625 mm); coarse silt. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 26.456

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_4

***Attribute Definition:***

Weight percent of the sample in the 4-phi fraction (nominal diameters of particles greater than or equal to 0.0625 mm, but less than 0.125 mm); very fine sand. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0.031

***Range Domain Maximum:*** 78.656

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_3

***Attribute Definition:***

Weight percent of the sample in the 3-phi fraction (nominal diameter of particles greater than or equal to 0.125 mm, but less than 0.25 mm); fine sand. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0.065

***Range Domain Maximum:*** 81.325

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** PHI\_2

***Attribute Definition:***

Weight percent of the sample in the 2-phi fraction (nominal diameter of particles greater than or equal to 0.25 mm, but less than 0.5 mm); medium sand. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

**Range Domain Minimum:** 0.392  
**Range Domain Maximum:** 90.072  
**Attribute Units of Measure:** weight percent  
**Attribute Measurement Resolution:** 0.001

**Attribute:**

**Attribute Label:** PHI\_1  
**Attribute Definition:**

Weight percent of the sample in the 1-phi fraction (nominal diameter of particles greater than or equal to 0.5 mm, but less than 1 mm); coarse sand. No data value is -9999.

**Attribute Definition Source:**  
U.S. Geological Survey  
**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0.188  
**Range Domain Maximum:** 75.003  
**Attribute Units of Measure:** weight percent  
**Attribute Measurement Resolution:** 0.001

**Attribute:**

**Attribute Label:** PHI\_0  
**Attribute Definition:**

Weight percent of the sample in the 0-phi fraction (nominal diameters of particles greater than or equal to 1 mm, but less than 2 mm); very coarse sand. No data value is -9999.

**Attribute Definition Source:**  
U.S. Geological Survey  
**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0.026  
**Range Domain Maximum:** 42.523  
**Attribute Units of Measure:** weight percent  
**Attribute Measurement Resolution:** 0.001

**Attribute:**

**Attribute Label:** PHI\_-1  
**Attribute Definition:**

Weight percent of the sample in the -1-phi fraction (nominal diameter of particles greater than or equal to 2 mm, but less than 4 mm); very fine pebbles (granules). No data value is -9999.

**Attribute Definition Source:**  
U.S. Geological Survey  
**Attribute Domain Values:**

**Range Domain:**

**Range Domain Minimum:** 0  
**Range Domain Maximum:** 29.194  
**Attribute Units of Measure:** weight percent  
**Attribute Measurement Resolution:** 0.001



**Attribute:****Attribute Label:** PHI\_-2**Attribute Definition:**

Weight percent of the sample in the -2-phi fraction (nominal diameter of particles greater than or equal to 4 mm, but less than 8 mm); fine pebbles. No data value is -9999.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 35.482**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_-3**Attribute Definition:**

Weight percent of the sample in the -3-phi fraction (nominal diameter of particles greater than or equal to 8 mm, but less than 16 mm); medium pebbles. No data value is -9999.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 26.718**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_-4**Attribute Definition:**

Weight percent of the sample in the -4-phi fraction (nominal diameter of particles greater than or equal to 16 mm, but less than 32 mm); coarse pebbles. No data value is -9999.

**Attribute Definition Source:**

U.S. Geological Survey

**Attribute Domain Values:****Range Domain:****Range Domain Minimum:** 0**Range Domain Maximum:** 30.900**Attribute Units of Measure:** weight percent**Attribute Measurement Resolution:** 0.001**Attribute:****Attribute Label:** PHI\_-5**Attribute Definition:**

Weight percent of the sample in the -5-phi fraction and larger (nominal diameter of particles greater than or equal to 32 mm); very coarse pebbles, cobbles, and boulders. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Range Domain:***

***Range Domain Minimum:*** 0

***Range Domain Maximum:*** 46.452

***Attribute Units of Measure:*** weight percent

***Attribute Measurement Resolution:*** 0.001

***Attribute:***

***Attribute Label:*** ANALYST

***Attribute Definition:***

Name (usually first, middle, and last initials) of person who performed the grain-size or physical properties analysis. No data value is -9999.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Attribute:***

***Attribute Label:*** COMMENTS

***Attribute Definition:***

Comments field with the USGS site number and University of Connecticut's Northeast Underwater Research, Technology and Education Center (NURTEC) site name for the spring 2018 survey.

***Attribute Definition Source:***

U.S. Geological Survey

***Attribute Domain Values:***

***Unrepresentable Domain:***

Character string.

***Overview Description:***

***Entity and Attribute Overview:***

The shapefile is a simplified version of the CSV file of the Multisizer analysis results (2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS.csv) with fewer attribute fields. Specifically, STDEV, SKEWNESS, KURTOSIS, and the individual phi measurements (e.g., PHI\_11) were removed. The shapefile also has two additional attributes, FID and Shape, which have the following descriptions:

Attribute:

Attribute Label: FID

Attribute Definition: Internal feature number.

Attribute Definition Source: Esri

Attribute Domain Values:

Unrepresentable Domain: Sequential unique whole numbers that are automatically generated.

Attribute:

Attribute Label: Shape

Attribute Definition: Feature geometry.

Attribute Definition Source: Esri

Attribute Domain Values:

Unrepresentable Domain: Coordinates defining the features.

All the other attributes in the shapefile have the same definitions as the CSV file attributes (see the detailed description section for the 2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS entity for definitions of the CSV file attributes). Please note that some of the field names were truncated since a shapefile field name can only contain up to 10 characters. The following fields are included in the shapefile: FID, Shape, ANALYSIS\_I (truncated field name for ANALYSIS\_ID), FIELD\_NO, PROJECT, FA\_ID, CONTACT, AREA, LATITUDE, LONGITUDE, DEPTH\_M, T\_DEPTH, B\_DEPTH, DEVICE, DATE\_COLLE (truncated field name for DATE\_COLLECTED), ANALYSIS\_C (truncated field name for ANALYSIS\_COMPLETION\_DATE), WEIGHT, GRAVEL\_PCT, SAND\_PCT, SILT\_PCT, CLAY\_PCT, CLASSIFICA (truncated field name for CLASSIFICATION), MEDIAN, MEAN, ANALYST, and COMMENTS.

***Entity and Attribute Detail Citation:***

U.S. Geological Survey

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## Distribution Information:

***Distributor:***

***Contact Information:***

***Contact Organization Primary:***

***Contact Organization:*** U.S. Geological Survey - ScienceBase

***Contact Address:***

***Address Type:*** mailing and physical address

***Address:*** Denver Federal Center, Building 810, Mail Stop 302

***City:*** Denver

***State or Province:*** CO

***Postal Code:*** 80225

***Country:*** USA

***Contact Voice Telephone:*** 1-888-275-8747

***Contact Electronic Mail Address:*** sciencebase@usgs.gov

***Resource Description:*** Location and grain-size analysis results of sediment samples collected in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 by the U.S. Geological Survey, University of Connecticut, and University of New Haven during field activities 2017-056-FA and 2018-018-FA. This dataset contains the following files: a CSV file of the sediment sample locations and grain-size analysis results using the HORIBA LA-960 laser diffraction analyzer and sieving of the  $\geq -2$ -phi fraction (2017-056-FA\_and\_2018-018-FA\_samples\_GS-LD.csv); a CSV file of the sediment sample locations and grain-size analysis results using the Beckman Coulter Multisizer 3 and sieving of the  $\geq 4$ -phi fraction (2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS.csv); a simplified shapefile of the sediment sample locations and grain-size analysis results using the Beckman Coulter Multisizer 3 and sieving of the  $\geq 4$ -phi fraction (2017-056-FA\_and\_2018-018-FA\_samples\_GS-MS.shp); a browse graphic of sediment sample locations (2017-056-FA\_and\_2018-018-FA\_samples\_browse.jpg); and a Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM) metadata file (2017-056-FA\_and\_2018-018-FA\_samples\_meta.xml).

***Distribution Liability:***

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***Standard Order Process:******Digital Form:******Digital Transfer Information:***

***Format Name:*** Comma-delimited text

***Format Version Number:*** Microsoft Excel 2016 for Mac

***Format Specification:***

Comma Separated Values (CSV) text file

***Format Information Content:***

This dataset contains CSV files and a shapefile of locations and grain-size analysis results for sediment samples collected by the U.S. Geological Survey, University of Connecticut, and University of New Haven in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 and the associated metadata.

***Transfer Size:*** 0.8

***Digital Transfer Option:***

***Online Option:***

***Computer Contact Information:******Network Address:******Network Resource***

***Name:***<https://www.sciencebase.gov/catalog/item/5de9be03e4b02caea0eeda45>

***Network Resource***

***Name:***<https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45>

***Network Resource Name:***<https://doi.org/10.5066/P9GK29NM>

***Access Instructions:***

The first link is to the page containing the data. The second is a direct link to download all data available from the page as a zip file. The final link is to the publication landing page. The data page (first link) may have additional data access options, including web services.

***Digital Form:******Digital Transfer Information:***

***Format Name:*** Shapefile

***Format Version Number:*** Esri ArcGIS 10.3.1

***Format Specification:***

Shapefile

***Format Information Content:***

This dataset contains CSV files and a shapefile of locations and grain-size analysis results for sediment samples collected by the U.S. Geological Survey, University of Connecticut, and University of New Haven in Long Island Sound, Connecticut and New York, in fall 2017 and spring 2018 and the associated metadata.

***Transfer Size:*** 0.8

**Digital Transfer Option:****Online Option:****Computer Contact Information:****Network Address:****Network Resource****Name:**<https://www.sciencebase.gov/catalog/item/5de9be03e4b02caea0eeda45>**Network Resource****Name:**<https://www.sciencebase.gov/catalog/file/get/5de9be03e4b02caea0eeda45>**Network Resource Name:**<https://doi.org/10.5066/P9GK29NM>**Access Instructions:**

The first link is to the page containing the data. The second is a direct link to download all data available from the page as a zip file. The final link is to the publication landing page. The data page (first link) may have additional data access options, including web services.

**Fees:** none**Technical Prerequisites:**

This dataset contains data available as CSV files and a point shapefile. The CSV files can be read with a text editor. The user must have software capable of reading shapefile format to use the point shapefile.

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**Metadata Reference Information:****Metadata Date:** 11/23/2020**Metadata Contact:****Contact Information:****Contact Person Primary:****Contact Person:** Emily Huntley**Contact Organization:** U.S. Geological Survey**Contact Position:** Geographer/Database Specialist**Contact Address:****Address Type:** mailing and physical address**Address:** 384 Woods Hole Rd.**City:** Woods Hole**State or Province:** MA**Postal Code:** 02543-1598**Country:** USA**Contact Voice Telephone:** 508-548-8700**Contact Facsimile Telephone:** 508-457-2310**Contact Electronic Mail Address:** [ehuntley@contractor.usgs.gov](mailto:ehuntley@contractor.usgs.gov)**Metadata Standard Name:** FGDC Content Standard for Digital Geospatial Metadata**Metadata Standard Version:** FGDC-STD-001-1998**Metadata Time Convention:** local time[Back to Top](#)