Sediment FAQs

Welcome to the Kentucky District Sediment Laboratory

http://wwwdkylsv.er.usgs.gov/technical_info/dist_sedlab_files/sed_lab.htm

We have put together answers to many Frequently Asked Questions that come to us throughout the year. Hopefully these will be of help to you.

- ## What is the ASTM method for suspended-sediment?

  ASTM D3977-97(2002) Standard Test Methods for Determining Sediment Concentration in Water Samples

  Test Method A-Evaporation

  Test Method B-Filtration

  Test Method C-Wet-sieving-filtration

- ## What is SSC vs. TSS?

  Suspended-sediment concentration analysis is the approved method used in all U. S. Geological Survey sediment laboratories in which the entire sample is analyzed. TSS is a method used outside the USGS. This method requires the sample to be shaken, an aliquot taken, and only the aliquot analyzed, not the entire sample. If samples have heavy sands, there can be a misrepresentation in the data results.

  OSW and OWQ Technical Memo 2001.03, Collection and Use of Total Suspended Solids Data:

  http://water.usgs.gov/admin/memo/SW/sw01.03.html

- ## What documentation do you use for your analyses techniques?

  Guy, H.P., 1969, Laboratory Theory and Methods for Sediment Analysis: U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 5, Chapter C1, 58 p., available on-line at http://pubs.usgs.gov/twri/twri5c1/

  Knott, J. M., Glysson, G. D., Malo, B. A., AND Schroeder, L. J., 1993, Quality assurance plan for the collection and processing of sediment data by the U.S. Geological Survey, Water Resources Division: USGS Open-File Report 92-499, available on-line at: http://pubs.er.usgs.gov/pubs/ofr/ofr92499

Knott, J. M., Sholar, Clyde J., Matthes, Wilbur J., 1992, Quality assurance guidelines for the analyses of sediment concentration by U.S. Geological Survey sediment laboratories: USGS Open-File Report 92-33, available on-line at: http://pubs.er.usgs.gov/pubs/ofr/ofr9233

Matthes, Wilbur J.; Sholar, Clyde J.; George, John R., 1992, Quality-assurance plan for the analysis of fluvial sediment by laboratories of the U.S. Geological Survey: USGS Open-File Report 91-467, available on-line at: http://pubs.er.usgs.gov/pubs/ofr/ofr91467

Sholar, Clyde J.; Shreve, Elizabeth A, Quality-assurance Plan for the Analysis of Fluvial Sediment by the Northeastern Region, Kentucky District Sediment Laboratory: USGS Open-File Report 98-384 available on-line at:

http://ky.water.usgs.gov/usgs/technical_info/dist_sedlab_files/swd_labQAPlan.pdf

- **How may I contact Office of Surface Water for additional information?**

  http://water.usgs.gov/osw/techniques/sediment.html

- **Do you have a shipping form?**

  A Sediment Laboratory Analysis Report (SLAR) is available for your use.

  http://water.usgs.gov/osw/techniques/sediment/USGS_Sediment_Laboratories.html

- **What is the holding time for samples until they must be analyzed?**

  The combined time for sample storage at the field and consolidation sites should not exceed 120 days.

  Knott, J. M., Glysson, G. D., Malo, B. A., AND Schroeder, L. J., 1993, Quality assurance plan for the collection and processing of sediment data by the U.S. Geological Survey, Water Resources Division: USGS Open-File Report 92-499, available on-line at: http://pubs.er.usgs.gov/pubs/ofr/ofr92499

- **What is your turn-around time for analysis?**

  Under normal conditions, SSC samples are completed within 6-8 weeks, if not earlier. Bed-material samples take up to two months to complete their entire analyses. Samples are put in a queue upon arrival. Customers are updated on sample status throughout their progress.

- **What is Specific Conductivity?**

  Specific conductivity is a measure of the capacity of water to conduct an electrical current. The conductivity of water is related to the presence of dissolved solids, and thus is higher in sewage, road salt, septic system leachate, and agricultural runoff than in natural waters.

- **What type of filter do you use and what is its retenion?**

  We use a Whatman #934-AH glass fiber filter that allows for 1.5 μm retention of suspended solids.

  Guy, H.P., 1969, Laboratory Theory and Methods for Sediment Analysis: U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 5, Chapter C1, 58 p.

- **What is the NWIS parameter code for suspended-sediment concentration analysis?**

  80154

- **What is the NWIS parameter code for suspended-sediment sand/break analysis?**

  70331

- **How do I get my data results?**

We upload results into the QW-data Transfer System (QWDX). QWDX is a secure, web-based system available to internal USGS laboratories and WSCs; this system will allow uploads and downloads of water-quality data that are formatted in tab-delimited NWIS batch files. This centralized data-distribution system will facilitate the movement of data from multiple USGS laboratories and WSC field locations to multiple NWIS installations.
https://qwdx.cr.usgs.gov/

- **How do I ship?**

Under normal conditions, few problems are encountered when shipping samples during the warm-weather months. Extra care must be taken when shipping samples during cold weather because freezing may cause minerals to form a precipitate, glass bottles to fracture, or plastic bottles to split. Any of these conditions will compromise sample validity. Also, handling of fractured glass bottles by the carrier and laboratory personnel is a potential hazard. Avoid shipping samples when the air temperature is below freezing (0°C).

The required shipping cases for glass pint or quart sediment-sample containers may be purchased through *USGS One Stop Shopping* at the following URL:

http://1stop.usgs.gov/ (accessed June 13, 2005).

These cases must be used if a shipment is mailed using the U.S. Postal Service. 3M Polyethylene Film Tape (or the equivalent) should be used on each bottle in the shipping case to secure plastic bottle lids to prevent loosening and leakage.

M**ark the water line of at least two bottles per case with a grease pen** to assist laboratory personnel in detecting if leakage or evaporation occurred at any point from the time the sample was collected until sample analysis.***Indicate any known or possible contaminants that might be present in the samples.***

- **What is the Reporting limit?**

To the nearest 1mg/l up to 999 mg/l and then to use three significant figures.

- **What is the detection limit?**

MINIMUM DETECTION-LIMIT AND ACCURACY CRITERIA FOR SEDIMENT LABORATORY ANALYSES			
[µS /cm. microsiemens per centimeter at 25 degrees Celsius; >, greater than; mg/L, milligrams per liter; NTU, nephelometric turbidity units]			
Measured property	**Type of analysis**	**Accuracy criterion (percent)**	**Detection limit**
Sediment concentration	Filtration 0-50 mg/L	15	0.5 mg/L
	Filtration >50 mg/L	5	0.5 mg/L
Particle-size distribution	Pipet	5	([1])
	Visual accumulation tube	5	([2])
	Sieve	5	([2])
Turbidity	Nephelometric	10	0.1 NTU
Specific conductance	Electrometric		Not applicable
	10-100µS /cm	5	
	> 100µS /cm	2	
([1]) Silt-clay concentration must be at least 1,000 milligrams per liter.			
([2]) Mass of sand must be at least 0.05 gram.			

Knott, J. M., Glysson, G. D., Malo, B. A., AND Schroeder, L. J., 1993, Quality assurance plan for the collection and processing of sediment data by the U.S. Geological Survey, Water Resources Division: USGS Open-File Report 92-499, page 9, available on-line at: http://pubs.er.usgs.gov/pubs/ofr/ofr92499.