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Standard Operating Procedure #11: Shipping Samples to the Water Quality Laboratory, Version SCPN_WATER_ QUALITY_SOP11_20160901

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Standard Operating Procedure #11: Shipping Samples to the Water Quality Laboratory

Version SCPN_Water_Quality_SOP11_20160901				
Revision History Log				
Previous version number	Revision date	Section and paragraph	Change(s) made	Approved by

Only changes in this specific SOP will be logged here. Record the previous version number and date of revision; identify sections and paragraphs where changes were made, who approved the revision, and the new version number. More detailed descriptions of the changes made and the reason for the changes is provided at the end of this SOP.

This Standard Operating Procedure (SOP) describes methods for preparing, labeling, and shipping water quality sample bottles to a laboratory for analysis after they have been collected in the field (see SOP #6: Collecting Water Quality Samples). Only samples that require shipping to an external laboratory/facility for analyses are covered in this SOP. (Methods for preparation of samples to be analyzed by SCPN staff are covered in other SOPs.)

Equipment

Please see Appendix F for a list of the equipment needed for shipping samples to the water quality laboratory.

1 Overview of sample shipping workflow

As of this writing, all water quality samples that require shipping to an external facility for analysis are to be sent to the USGS

National Water Quality Laboratory (NWQL) unless given other guidance by NWQL. Refer to Section 2 for specific instructions on how to properly ship water quality samples to this laboratory.

The NWQL laboratory can receive samples Monday through Friday, except federal holidays, at the following address:

National Water Quality Laboratory
U.S. Geologic Survey
Denver Federal Center
Building 95 Entrance E3
Denver, CO 80225-8046
(303) 236-3160
labhelp@usgs.gov

After you have collected the samples, they should be shipped as quickly as practical to the NWQL via a reliable shipping company. Because most SCPN water quality trips are for one week, and the current sample holding times are at least 30 days (Table 11-1), it

Table 11-1. Lab sample holding times and shipping details.

Sample treatment Type(s)*	Schedule 101	Maximum holding time	Ship on ice?	Shipping method
FCC	101	30 days	Yes	FedEx Priority Overnight
RU, FU, FA, FAM	2278, 2281	180 days	Not necessary	FedEx Ground or Overnight

* FA: Filtered, acidified; FAM: Filtered, acidified, mercury; FCC: Filtered, chilled; FU: Filtered, unchilled; RU: Raw, untreated

is customary to ship samples from SCPN offices at the trip's end. However, in the future there may be instances when samples need to be shipped "on the road." In such cases, appropriate shipping locations should be determined in advance.

2 Preparing samples for shipping to NWQL

SCPN ships its samples to NWQL in coolers. Complete an Analytical Services Request (ASR) form (see section 3, Figure 11-1) for each set of samples that are collected from the same site. If you are shipping samples from two different sites in the same cooler, fill out two separate ASR forms. Ensure that the information on the ASR forms matches that on the sample bottle labels. If samples are being shipped in two coolers, include a separate set of ASR forms for each cooler.

Samples that will be analyzed for nutrients (FCC; filtered and chilled) must be shipped on ice and maintained at 4°C or less. In order to maintain samples at or below this level, samples should be packed in coolers and dropped off at the shipping location as late in the day as possible and shipped overnight. If nutrient samples are to be shipped in the same cooler with other sample types, place them in their own ziplock bag. Upon receiving the samples, the NWQL will check the temperature of each nutrient bottle and will flag any that are >4°C. Refer to Table 11-1 for details on shipping different sample types.

Follow these instructions when preparing samples for shipping:

Samples that require chilling

- Wipe and dry each sample bottle. Make a label for each that includes the following information: collection date, time,

station ID, sample schedule, and bottle type. Label templates are available on the SCPN server. Use waterproof labels (Avery #5520), and be sure to cover other types of labels on the bottles.

- Place the set of sample bottles collected from the same site in a re-sealable plastic bag and expel the air.
- Line the sample coolers with two trash bags so that they don't leak. If ice is needed, pour it in the trash bag and fill the entire cooler. Do not use dry ice, as it can freeze samples with which it comes into contact. Place the plastic bag with the sample bottles in the bag and tie off the trash bags.

Samples that don't require chilling

- Line the inside of the container with a layer of bubble packing or other suitable shock-absorbing material. Do not use styrofoam peanuts, shredded paper, or vermiculite. Place a layer of absorbent material (i.e., multi-ply paper padding) in the bottom of the inner trash bag. Tightly pack sample bottles against each other inside the trash bag. Ensure that bottles and re-sealable plastic bags are upright and tie off the trash bag.
- Place a layer of bubble packing on top of the trash bags. Place the completed ASR forms for the sample bottles to be shipped in a sealed waterproof bag, and tape it to the inside of the cooler lid. Also include a prepaid return shipping label so that the NWQL will return the cooler.
- Before taping the cooler handle down, tie a zip-tie with prepaid, addressed shipping label attached around the handle. (This is the preferred method of attaching shipping labels, because tape

can be removed during shipping and handling. If zip-tie label materials aren't available, thoroughly tape the label to the top of the cooler.)

- Close the shipping container and seal with heavy-duty tape, and make sure to wrap tape around the cooler lid.

3 Filling out the NWQL Analytical Service Request forms

Site-specific ASR form templates can be found on the SCPN server. Many fields on these forms have been filled out for each site-specific template, such as the User Code, Project Account and Station ID. The field technician should fill in the fields highlighted in yellow on the example form in Figure 11-1. Some of the pre-completed fields, such as the Project Account, NWQL Proposal Number, and agency contacts change periodically, and the ASR templates should be updated each year. Provide the following information in the ASR form.

3.1 Sample Login section

- Begin date and begin time.
- Medium code - for regular stream samples this is WS; for blank samples, enter OAQ; for duplicate samples, enter WSQ. For other codes, refer to the pages following the original ASR form that was sent by the NWQL.
- Sample type - for most samples, this is 9; for blank samples, enter 2; for duplicates, enter 5; for other codes, refer to the original ASR form on the SCPN server.

3.2 Analytical Work Requests: Schedules and Lab Codes

- Enter the appropriate schedules and Lab Codes for the sample bottles being shipped in the cooler. SOP 8 describes the schedules and Lab Codes SCPN normally uses for water quality monitoring. These are schedules 101, 2278, and 2281. Schedules or lab codes for analyses not normally requested by SCPN are obtained from the NWQL.

3.3 Shipping information

- Shipping information – write the quantity of each bottle being shipped (normally only 1 bottle of each type will be sent for each site).
- Name of person shipping bottles, phone number, and date shipped
- Field values
- Specific conductance value – write the specific conductance of the stream water at the time of sample collection, whole numbers only
- pH value
- Alkalinity value will be determined by NWQL.

4 Shipping carrier

SCPN's currently uses FedEx to ship its samples to NWQL. An internet-based account is used for arranging shipments and printing shipping labels. If there is a spending freeze due to end of fiscal year accounting, the internet account cannot be used. In this case, SCPN's Program Assistant should be consulted in order to obtain a different account number and internal reference number, and paper shipping forms must be used. Record the date, time, and tracking number for each shipment on page 4 of the *Hydrology Datasheet*.

**U.S. GEOLOGICAL SURVEY – NATIONAL WATER QUALITY LABORATORY
ANALYTICAL SERVICES REQUEST**

THIS SECTION MANDATORY FOR SAMPLE LOGIN

NWIS RECORD NUMBER											LAB USE ONLY																			
SAMPLE TRACKING ID	User Code										Project Account										NWQL LABORATORY ID									

STATION ID										Begin Date (YYYYMMDD)										Begin Time										Medium Code										Sample Type									

Science Center Contact										Phone Number										End Date (YYYYMMDD)										End Time										Science Center Contact Email									

SITE / SAMPLE / SPECIAL PROJECT INFORMATION (Optional)

State		County		Source Agency Code		Analysis Status*		Analysis Source*		Hydrologic Condition*		Hydrologic Event*		Chain of Custody		Sample Set																							
NWQL Proposal Number										NWQL Contact Name										NWQL Contact Email										Program/Project									

Station Name: _____ **Field ID:** _____

Comments to NWQL: _____

Hazard (please explain): _____

ANALYTICAL WORK REQUESTS: SCHEDULES AND LAB CODES (CIRCLE A=add D=delete)

SCHED 1: _____ SCHED 2: _____ SCHED 3: _____ SCHED 4: _____ SCHED 5: _____ SCHED 6: _____

Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D
Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D
Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D	Lab Code: _____ A D

SHIPPING INFORMATION (Number of containers sent)

___ ALF	___ COD	___ FA	___ FU	___ HUN	___ RCB	___ SAS	___ TOC
___ BGC	___ CU	___ FAM	___ FUS	___ MBAS	___ RU	___ SUR	___ TPCN
___ C18	___ CUR	___ FAR	___ GCC	___ RA	___ RUR	___ SUSO	___ UAS
___ CC	___ DIC	___ FCA	___ GCV	___ RAM	___ RURCV	___ TBI	___ WCA
___ CHL	___ DOC	___ FCC	___ HFL	___ RAR	___ RUS	___ TBY	___

NWQL Login Comments: _____

Collected by: _____ Phone No. _____ Date Shipped: _____

FIELD VALUES

Lab/P Code	Value	Remark	Lab/P Code	Value	Remark	Lab/P Code	Value	Remark
Specific Conductance uS/cm @ 25 deg C			pH Standard Units			Alkalinity – IT mg/L as CaCO3		

Lab Use only

*MANDATORY FOR NWIS

Form 9-3094
(August 2010)

Figure 11-1. Page 1 of the Analytical Services Request (ASR) Form. Templates are available for each water quality monitoring site with pertinent information filled in. Items that are highlighted should be filled in by field technician.

PLEASE USE BLACK INK ONLY

INSTRUCTIONS FOR COMPLETING ANALYTICAL SERVICES REQUEST FORM

SAMPLE IDENTIFICATION (Mandatory)

- | | | |
|------------------------------|---|---|
| NWIS Record No. | - | Record number of sample assigned by NWIS database (Science Center) |
| User Code | - | Enter user code (indicates where sample data are to be received) available at https://qwdx.cr.usgs.gov/ |
| Project Acct | - | Enter 9 character account number |
| NWQL Laboratory ID | - | Leave blank (for Laboratory use only) |
| Station ID | - | Enter downstream order number, 15 digit latitude, longitude and sequence number or unique sample identifier |
| Begin Date (YYYYMMDD) | - | Enter 4 digit number for year, 2 digit number for month, 2 digit number for day sample collection started |
| Begin Time | - | Enter 4 digit military time sample collection started |
| Medium Code | - | Enter sample medium code (see attached table) |
| Sample Type | - | Enter sample type code (see attached table) |
| Science Center Contact | - | Enter name of Science Center contact for sample questions or problems |
| Science Center Phone | - | Enter complete phone number for Science Center Contact for sample questions or problems |
| End Date (YYYYMMDD) | - | Enter 4 digit number for year, 2 digit number for month, 2 digit number for day sample collection ended |
| End Time | - | Enter 4 digit military time sample collection ended |
| Science Center Contact Email | - | Enter complete email address for Science Center contact for sample questions or problems |

SITE / SAMPLE / SPECIAL PROJECT INFORMATION (Optional)

- | | | |
|------------------------|---|---|
| State | - | Enter 2 digit FIPS code for State in which station is located |
| County | - | Enter 3 digit FIPS code for county in which station is located |
| Source Agency Code | - | Enter Agency Code for the site owner if not USGS |
| *Analysis Status | - | Enter analysis status code (see attached table) |
| *Analysis Source | - | Enter analysis source code (see attached table) |
| *Hydrologic Condition | - | Enter hydrologic condition code (see attached table) |
| *Hydrologic Event | - | Enter hydrologic event code (see attached table) |
| Chain of Custody | - | Enter Y if sample is chain of custody |
| Sample Set | - | Enter identifier for sample set, and place on all bottles and associated log form, for example: "A", "BB" (max. 2) |
| NWQL Proposal Number - | - | Denotes non-routine or custom work assigned by NWQL in negotiated proposal |
| NWQL Contact Name | - | Enter name of NWQL person to be contacted when sample arrives at Lab |
| NWQL Contact Email | - | Enter email of NWQL person to be contacted when sample arrives at Lab |
| Program/Project | - | For example: NAWQA, NASQAN, NPDES, DW - if applicable |
| Station Name | - | Enter local station name |
| Field ID | - | Enter identification assigned by Science Center |
| Comments to NWQL | - | Enter information about sample that NWQL should be aware of (high concentration, etc.) |
| | | Note: Samples collected for analysis by Geologic Division MUST have the latitude/longitude provided for login |
| Hazard | - | Describe any known hazard associated with sample (chemical, biological, radiological, etc.) |

ANALYTICAL WORK REQUESTS: SCHEDULES AND LAB CODES

- | | | |
|----------|---|--|
| Schedule | - | Enter schedule number(s) for the desired analyses. |
| Lab Code | - | Enter lab code for analyses to be added or deleted. Circle "A" for addition or "D" for deletion. Maximum 15. |

SHIPPING INFORMATION (Please fill in number of sample types sent)

- | | | |
|---------------------|---|---|
| NWQL Login Comments | - | NWQL login personnel comments. |
| Collected by: | - | Enter name of individual that collected/shipped samples |
| Phone No. | - | Enter phone number of individual that collected/shipped samples |
| Date Shipped | - | Enter date samples packed/shipped to NWQL. |

FIELD VALUES

- | | | |
|-------------------------|---|---|
| Lab/P Code/Value/Remark | - | Enter values and remarks for sc, pH, alk, if needed, enter P code, value, remark for other field values |
| USDA | - | This field is for internal NWQL use only. |

*Mandatory for storage in NWIS

Figure 11-1. Page 2 of the Analytical Services Request (ASR) Form. Templates are available for each water quality monitoring site with pertinent information filled in. Items that are highlighted should be filled in by field technician.

3 Revision history

Provide the following information for each revision made to SOP #11

New version:

SCPN_WATER_QUALITY_SOP11_YYYYMMDD

Date:

Author:

Sections affected:

Changes & reasons: