

Laboratory Selection Narrative

Project/Proposal NY WSC Watersheds Research Program **Date:** 2-29-2012
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Laboratory Soil and Low-Ionic-Strength Water Quality Laboratory
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Analytical Requirements

The Watersheds Research Program of the New York Water Science Center conducts biogeochemical and hydrologic studies of forested, agricultural, and suburban watersheds and aquifers that examine the effects of acid precipitation, climate change, and landscape disturbance on biogeochemical processes and terrestrial and aquatic ecosystems. This Program requires analyses of low ionic strength waters (<100 $\mu\text{S}/\text{cm}$ at 25°C) at low detection limits for water characteristics, major ions, nutrients, and aluminum speciation: acid-neutralizing capacity (ANC), total monomeric aluminum, organic monomeric aluminum, total aluminum, ammonium, boron, calcium, dissolved organic carbon (DOC), chloride, magnesium, nitrate, nitrite, total dissolved nitrogen (TDN), pH, potassium, silicon, sodium, specific conductance, sulfate, and turbidity. The scope of the Watersheds Research Program expanded in 2004 to include some low-ionic-strength analyses of these constituents for the HBN Program.

The USGS New York Water Science Center Soil and Low-Ionic-Strength Water Quality Laboratory (hereafter referred to as the Troy Lab) was created in 1985 to meet the needs of the Watersheds Research Program for low-ionic-strength water analyses that were not available from NWQL. The Watersheds Research Program methodology requirements are analytical methods in or comparable with those published by the USEPA in *Handbook of Methods for Acid Deposition Studies—Laboratory Analysis for Surface Water Chemistry* (EPA 600/4-87/026). Many of the Troy Lab's methods were published in USGS OF 95-416. Up-to-date SOPs are maintained and a draft manuscript updating the Troy Lab's methods is in preparation.

Laboratory data-quality objectives (DQOs) were set by the Watersheds Research Program investigators and are published in [Table 2](#) of the Troy Lab quality assurance (QA) reports (see below for list). Troy Lab analytical lines are operated in a batch mode, not continuously, resulting in variable data-delivery times. However, data-delivery times meet the needs of the Watersheds Research Program.

Quality Control Samples and Design Needs:

The Watersheds Research Program's QA plan consists of blind and replicate samples. USGS Standard Reference Samples are submitted to the Troy Lab as blind samples--one blind sample is included in each set of 50 environmental samples. One set of replicates (3 separately-collected replicate environmental samples) is included in each group of 50 samples. Performance criteria and results are published in the Troy Lab's QA reports.

The Troy Lab's QA program consists of (1) QC samples analyzed immediately after instrument calibration, after every 10 analyses of environmental samples, and at the end of each analytical run; (2) filter and analytical blanks included in each group of 50 environmental samples; (3) participation in two round robin QA programs, the USGS Standard Reference Sample Project and Environment Canada's National Water Research Institute Ecosystem Interlaboratory QA Program; and (4) laboratory review and approval by the New York State Department of Health Environmental Laboratory Approval Program (ELAP), the NELAC-certifying entity for New York (see <http://www.wadsworth.org/labcert/elap/noncomm.html> where the Troy Lab is NY Lab ID No. 11940). All performance criteria and results are published in the Troy Lab's QA reports.

Applicability Assessment

The laboratory methods, performance data, and concentration ranges were specifically designed for and are appropriate to the Watersheds Research Program's needs. There are no concerns for data quality at this time.

This assessment is based on (1) Troy Lab QA data that are published biennially in USGS Open-File Reports (listed below) and available from the USGS Publications Warehouse, (2) more recent data in report manuscripts in various stages of the report preparation, review, and approval process, and (3) the most recent data available in the Troy Lab's LIMS.

OF 2009-1234 covers the period July 2005 through June 2007

OF 2009-1233 covers July 2003 through June 2005

OF 2009-1232 covers July 2001 through June 2003

OF 2006-1246 covers July 1999 through June 2001

OF 2006-1245 covers July 1997 through June 1999

OF 2004-1327 covers July 1995 through June 1997

OF 01-071 covers July 1993 through June 1995

OF 96-167 covers May 1991 through June 1993

[Blind sample analyses](#)

Data Transfer Plan:

The Troy Lab maintains a custom LIMS which is used for permanent storage of Troy Lab data back to 1991. NY WSC Watersheds Research Program investigators have direct access to the LIMS to retrieve and review their data, and most use that access in preference to NWIS. NY WSC policy is that Watersheds Research Program investigators are the approving officials for their water-quality data.

A NY WSC-maintained Fortran program is used to convert data from the Troy Lab LIMS to the NWIS format and Troy Lab data are annually uploaded to NWIS after having been transformed using this program. Although the process is manual at present, scripts to automate the process are in development. The Troy Lab uses QWDX to transfer data to other WSCs, again manually uploading to QWDX, but scripts to automate the process have been developed and are awaiting action by QWDX administrators before implementation. (For sites in New York, data are transferred to NWIS without using QWDX.) All appropriate NWIS Parameter Codes (Pcodes), Method Codes, and an organization code are assigned and have been used extensively. The unique LIMS Sample_ID is stored in NWIS under Pcode 00008 as a check on the mapping of updates of the LIMS record to NWIS--the Fortran program verifies that updates of LIMS data to existing NWIS records in New York have matching entries for Pcode 00008. LIMS data have been written to NWIS back to 1991.

Signature Page

Signed (Project Chief) :

Recommendations for Approval

Reviewer #1

- I concur with selected laboratory choice. –OR–
- Please address the following items and return to me upon completion.

Reviewer #2

- I concur with selected laboratory choice. –OR–
- Please address the following items and return to me upon completion.

Concerns:

Approved by:

WSC Director or National Program Director Date