

## NWQL ensures integrity of samples despite Federal Government Shutdown

As a result of the 3-week Federal Government shutdown that started in mid-December, the flow of vital information about the quality of the Nation's water resources was severely disrupted. The U.S. Geological Survey National Water Quality Laboratory provides water-quality data for samples collected in the United States and its territories.

More than 80,000 chemical analyses on 4,800 samples of the Nation's rivers, lakes, and ground-water resources could not be made by the USGS during the shutdown, according to Robert M. Hirsch, Chief Hydrologist for USGS. Hirsch said the shutdown resulted in unanswered questions about changes in water quality and possible threats to human health and the environment. Local, State, and other Federal agencies depend on USGS to determine organic and inorganic constituents in samples of ground and surface water, river and lake sediment, aquatic plant and animal material, and precipitation.

During the shutdown, the NWQL took extraordinary steps to ensure the samples that were already in-house and those en route to the Laboratory would be properly preserved and stored. Phil Grano, Materials Identifier and Examiner in the Log-in Unit, secured all samples and stored them in a walk-in cooler each morning of the furlough. The integrity of the samples generally was not compromised during the furlough so that analyses could proceed when the staff was recalled to work.

After the furlough, customers were contacted to determine if analytical work should resume or not, depending on the age of the sample. Unfortunately, some samples did degrade during the extended shutdown. Merle Shockey, Inorganic Chemistry Program Manager, said that NWQL analysts worked exceedingly hard on their return to catch up on the backlog.

For example, Robert Boulger Jr., hydrologic technician in Grand Junction, Colorado, received nutrient data January 22 that was sampled on January 11--eleven days from collection to results. Said Boulger: "I knew it all along. We have the best people in our Lab. Thanks to all those in the Lab who provide such great support!"



**Eaton Addresses Staff** – Director Gordon P. Eaton, U.S. Geological Survey, visited the Denver Federal Center December 4 to address an all-hands meeting. Eaton said that for the first time, USGS will have a comprehensive bureau-wide plan for the future. Eaton added that the National Biological Survey may not become part of the USGS until fiscal year 1997 because of the difficulty of getting the Fiscal Year 1996 budget approved.

## NWQL offers statistics course for analytical chemists

The first round of training for 15 National Water Quality Laboratory employees in Probability and Statistics for Environmental Data Analysis (GO754) was completed January 25.

The course was offered to help raise the level of statistical awareness and usage for Laboratory analysts. The Laboratory course is similar to the popular course that has been offered at the National Training Center for the last 10 years and developed by Dennis Helsel and Ed Gilroy. The course included 6 months of precourse work requiring the completion of 6 problem sets and 5 full days of intense lectures.

In addition to environmental applications used by hydrologists, the course was modified to include emphasis on statistical applications appropriate for analytical chemistry. These applications included quality control, method validation and comparison, selection of appropriate calibration models, and factors in detection limit determinations.

The course was coordinated by Jeff Pritt, Ed Gilroy, and Tom Maloney. It was started in July 1995 and was completed January 25, 1996. Guest lecturers included Dave Mueller, Amy Ludtke, Ed Furlong, John Garbarino, Charlie Patton, and Mark Sandstrom. Advisors were Bob Brock and Colleen Rostad.

*by Jeff Pritt*

## **New water-quality specialist named**

Robert Broshears has been named water-quality specialist for the Central Region. Broshears will share the duties with Vernon Norman because of the size of the Central Region. An announcement from the Regional Office says Broshears will report sometime after January 1.

## **Biological quality assurance provides high-quality data**

Biological data must be of the same high quality as that produced by other activities of the U.S. Geological Survey. As a result, quality assurance/ quality control (QA/QC) principles and procedures must be applied to the biological components of USGS projects. The question was how to achieve these QA/QC objectives?

The National Water-Quality Assessment (NAWQA) Program provided the necessary impetus to create a centralized unit within USGS that could provide accurate, high-quality data that (1) met the needs of projects, (2) were accepted by the scientific community, and (3) retained their value and relevancy through time. Furthermore, the unit must contribute expertise and technical oversight to the Survey's biological contracting needs.

In late 1993 after several years of planning, the Quality Management Program's Biological Quality Assurance/Quality Control Unit (BQAU) was established at the National Water Quality Laboratory (NWQL). Taxonomic specialists for algae and benthic macroinvertebrates, a computer specialist, a laboratory manager, and the BQAU chief are responsible for ensuring the quality and integrity of biological data obtained by the NAWQA Program and other USGS projects with biological components. An ichthyologist (fish taxonomic specialist) will be added this year. With the hiring freeze and long-range plans to reduce the size of the Federal Government, 11 of the BQAU's present staff of 15 are contract employees.

The BQAU works closely with NAWQA Program and USGS biologists, contract laboratories, and taxonomic specialists outside the Survey to ensure that samples are consistently and accurately collected, processed, identified, and counted. The BQAU cooperates with USGS contracting officials, the Branch of Quality Assurance, and other appropriate Survey personnel to develop the technical aspects of contract specifications. This process includes specifying methods, data-reporting procedures, and QA/QC monitoring programs and techniques. The BQAU also establishes technical criteria for evaluating contract laboratories and assists the contracting officer in evaluating candidate contract laboratories.

To assist in processing the nearly 6,000 samples produced by NAWQA study units during the first 3-year cycle, the BQAU negotiated seven contracts: three to contract laboratories to process algal and benthic invertebrate samples, three to academic research institutions for access to taxonomic specialists to confirm identifications, and one to a company to provide contract employees for the BQAU. Unfortunately, the large number of samples to be processed and the strict QA/QC protocols under which the work was to be performed proved too difficult for two contract laboratories to handle. Rather than relax the QA/QC standards, the benthic invertebrate sample processing was brought in-house and new small purchase orders are being developed to assist the algal contractor.

**Processing Benthic Samples –**  
Jason Nelson, biological technician,  
separates invertebrates from  
substrate.



The need to coordinate taxonomy nationally to ensure accuracy and consistency in identifications among NAWQA study units and USGS projects is important for retaining the value and relevancy of biological data over time. This is no small task. While there is a finite number of fish species in the United States, the number of algal and invertebrate taxa often seems to be without limit. For example, the algal genus *Navicula* alone contains at least 20,000 recognized species!

The BQAU ensures that NAWQA and USGS use biological data to integrate physical, chemical, and hydrologic data at local, regional, or national scales seamlessly. It does this by:

- archiving reference and voucher material from all projects,
- placing voucher specimens in repositories outside the USGS,
- maintaining a reference library focused on taxonomic descriptions as well as methods and techniques associated with invertebrate identifications,
- maintaining the taxonomic data base within the USGS relational data base,
- and participating with other Federal agencies to develop and maintain the Interagency Taxonomic Information System (a consistent interagency taxonomic data base).

*by Allison Brigham*

### **New titles in print**

Pritt, J.W., and Raese, J.W., eds., 1995, Quality assurance/quality control manual-National Water Quality Laboratory: U.S. Geological Survey Open-File Report 95-443, 35 p.

Raese, J.W., Rose, D.L., and Sandstrom, M.W., 1995, U.S. Geological Survey laboratory method for methyl *tert*-butyl ether and other fuel oxygenates: U.S. Geological Survey Fact Sheet FS-219-95, 4 p.

Please contact the NWQL by telephone (303-467-8054) or Geomail (jwraese) for copies of these titles or any other reports prepared by Laboratory authors.

### **Team to address MDL issues**

A method detection limit (MDL) team has been formed at the NWQL to address laboratory-related MDL issues. Team members represent the Quality Management Program, Organic and Inorganic Chemistry Programs, Methods Research and Development Program, Computer Services Unit, the Colorado District Office, and the Office of Water Quality.

The team is primarily responsible for providing the NWQL senior staff with recommendations for determining MDLs that reflect long-term precision from multiple instruments, operators, analytical batches, and sample preparation. The determination of these MDLs will be based on U.S. Environmental Protection Agency procedures. Since these procedures do not provide guidance on determining long-term precision, they will be modified or expanded as needed.

Two members from the MDL team will serve on an Office of Water Quality committee that will address laboratory and field quality-assurance/quality-control issues in a unified approach.

*by Bob Brock*

### **New on the Net**

Thank you for comments and participation in the "VOTE" on our World Wide Web Home Page. Currently, Labnews is in the lead followed closely by Quality Control Information, NWQL Personnel Directory, Analytical Services Catalog, and Detailed Schedule Information. We will continue to have this page available for the next quarter.

This quarter we have added an optional E-mail feature to the "Points of Contact" page. The new method for Methyl *tert*-Butyl Ether (MTBE) and Other Fuel Oxygenates (Fact Sheet FS-219-95) is also available on the NWQL Home Page. In addition, Mark Sandstrom and Carmen Reed-Parker have compiled tables of field and laboratory Matrix Spike Solutions.

Chris Lindley and Mark Sandstrom have also developed a page with detailed information on NWQL Schedule 2001/2010, a low-level pesticide analytical method for NAWQA. This page is currently undergoing review.

Please visit our Home Page and make your preferences known to us. Our address is <http://www.nwql.cr.usgs.gov/>

by Sandy Turner

## Quality Council Notes

The Quality Council (QC) is the focal point of the Total Quality Management (TQM) process at the National Water Quality Laboratory (NWQL). The QC meets about every other week, depending on current need, and coordinates and assembles TQM processes and teams. The QC initiates change for NWQL global problems as well as specific laboratory problems by preparing charters and suggesting team members.

The QC further assists by offering guidance when teams get stuck on issues or require facilitation. Teams were set up according to priorities from the "brainstorming" session for all employees held over a year ago. Meanwhile, new teams have been formed to tackle "hot spots" in the laboratory and create a quick fix. However, teams cannot survive if their scope is too broad. Teams seem to be more successful when they communicate with the QC. Teams formed over the past 3 years, and their products, are listed in the accompanying table:

Team name	Membership	Charter Summary	Results Summary
Employee recognition	J.Kammer, C.DeNuzzo, J.Hatcher, L.Duray, D.Damrau, C.W. Roberts, H.Ford	Study current award procedures and recommend NWQL policy for awards.	Recommend to establish a committee to publicize and monitor awards.
Sample flow	S.Glodt, A.Duddleason, T.Bushly, G.Brown, P.Puleo-Alban, W.White, R.Prokop, J.L.Moral	Chart all processes in sample/data flow. Identify/set priorities to improve process. Identify Process Action Teams (PATs).	Completed a sample flowchart. Still in process.
Preparation unit	R.Brenton, B.Anderson, J.Stewart, F.Wiebe, M.Werner, A.Bungarner	Goal of producing a quality product in a timely fashion.	Suggested to do all organic preparation in a team environment.
Method detection limit (MDL)	E.Zaynowski, R.Mayer, R.Brock, B.Connor, W.Foreman, G.Ritz, J.Phill	Define MDL policy for NWQL.	In process.
Smoking	S.Ahrends, K.Terry, W.Foreman, S.Johnson, S.Galloway, S.Jones, B.McLain	Find an appropriate area/facility for smokers so that they do not affect others.	A room with separate ventilation and a covered outdoor area were constructed. After construction GSA mandated smoke-free Federal buildings.
Quality assurance/quality control (QA/QC)	K.Pirkey, B.Connor, M.Schroeder, J.Kammer, C.Reed-Parker, B.Daniel	Identify present QA/QC practices. Identify and itemize needs, and budget for implementation.	Disbanded. Charter too broad; unable to focus on a specific problem.
Organic sample extract	F.Wiebe, J.Lewis, D.Markovchick, P.O'Mara-Lopez, J.Santillanes, E.Furlong	Develop an implementation plan to archive sample extracts.	Plan developed, definitions made, standard operating procedure created. Unable to implement because of cost.
Schedule review	All employees.	Review all analytical procedures to determine which procedures could be eliminated to save money and effort.	NWQL chief drafted a list of deletions.
Communication	R.Berg, J.Deacon, O.Feist, R.Husband, B.Kemp, C.Palton, S.Smith, J.Vasquez	Provide recommendations for improving communications top-down and bottom-up.	Suggestions include training, staggering meetings to allow time for communications, supervisors should model the TQM process, distribute meeting summaries, hold quarterly all-hands meetings, use bulletin boards and intercoms more frequently.
Tour team	In process		
Organic field spike	F.Wiebe, M.Sandstrom, C.Reed-Parker, B.Allen, A.Martinez	Devise protocol to keep spike solutions of known quality.	In process.
Bottle mix-up	In process.		

by Brooke Connor, Leader, Quality Council



**Walker Retires** – Dorothy Walker, supervisory chemist, retired Dec. 31 after 18 years of service with the U.S. Geological Survey. Dorothy was in charge of the DODEC (U.S. Department of Defense Environmental Contamination Hydrology Program) Laboratory Support Group at the NWQL. The DODEC Laboratory Support Group provides analytical services and Ingres/DODEC data-base support for USGS cooperative projects with the U.S. Department of Defense. The DODEC Program has steadily grown with cooperative projects in more than 30 states. Contact Bob Brock, Dorothy's understudy, for information and services.

## **Newsletter Staff**

Jon Raese, Editor

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