

General Introduction, Purpose and Scope, and Review and Revision Process for the National Field Manual

Introduction

As part of its mission, the U.S. Geological Survey (USGS) collects the data required to assess the quality of our Nation's water resources. The *National Field Manual for the Collection of Water-Quality Data* (National Field Manual) provides protocols (requirements and recommendations) and guidelines for USGS personnel who are responsible for the collection and quality-assurance of such data. Chapter A10, for example, provides guidance for developing temporal and spatial sampling strategies and data-collection approaches for environmental investigations of lakes and reservoirs.

Book 9, Section A, of the USGS publication series, "Techniques of Water-Resources Investigations" is composed of individually published chapters that, together, comprise the USGS *National Field Manual for the Collection of Water-Quality Data*. Development of this field manual is an ongoing enterprise. Currently the field manual consists of chapters numbered from Chapter A1 through Chapter A10. Within a given chapter, a different field-manual chapter is referenced by the abbreviation "NFM," followed by the chapter number (or chapter and section number). For example, when reading Chapter 7, Chapter 10 would be referenced as "NFM 10." The first section of chapter 10, "Basic Limnology," would be referenced as "NFM 10.1," and the sub-section "Physical and Chemical Limnology" would be referenced as "NFM 10.1.1." When referencing a chapter section within the same chapter, however, only the section number is referenced; for example, within Chapter 7, the section "Algal Biomass Indicators" would be referenced as "section 7.4" or simply "7.4." Likewise, the sub-section of NFM 7, "Sample processing and preservation," would be referenced as "section 7.4.5."

Purpose and Scope

The National Field Manual is targeted specifically toward field personnel in order to (1) establish and communicate scientifically sound methods and procedures, (2) provide methods that minimize data bias and, when properly applied, result in data that are reproducible within acceptable limits of variability, (3) encourage consistent use of field methods for the purpose of producing nationally comparable data, and (4) provide citable documentation for USGS water-quality data-collection protocols. The National Field Manual does not attempt to encompass the entire spectrum of data-collection objectives, site characteristics, environmental conditions, and technological advances related to water-quality studies.

The National Field Manual provides information regarding the requirements, recommendations, and guidelines routinely used for USGS studies involving the collection and processing of water-quality samples. The information provided covers topics fundamental to the collection and processing of, primarily, surface-water and groundwater samples that are representative of the ambient environment. **It is stipulated that formal training and field apprenticeship are necessary in order to correctly implement the requirements and recommendations described in this field manual.**

As used in this National Field Manual, the terms **required** (or must) and **recommended** have USGS-specific meanings.

- ▶ **Required** (require, required, requirements, or “must”): Indicates that USGS policy has been established by the Office of Water Quality on the basis of research and (or) consensus of the technical staff and has been reviewed by water-quality specialists in selected Water Science Centers¹ or other professional personnel, as appropriate.
 - Technical memorandums and other documents that define the policy pertinent to such requirements are referenced in this manual.
 - Personnel are instructed to use required equipment or procedures as described herein.
 - Departure from or modifications to the stipulated requirements that might be necessary to accomplish specific data-quality requirements or study objectives must be based on referenced research and good field judgment and must be quality assured and documented in permanent and readily accessible records.

- ▶ **Recommended** (recommend, recommended, recommendation, or “rule of thumb”): Indicates that USGS policy recognizes the acceptability of one or several alternatives to a given procedure or equipment-selection protocol, which has been determined on the basis of research and (or) consensus with respect to established good-science practices, including the professional judgment of field scientists. References to technical memorandums and selected publications pertinent to such recommendations are cited in this chapter to the extent that such documents are available.
 - Specific data-quality requirements, study objectives, or other constraints affect the choice of recommended equipment or procedures.
 - Selection from among the recommended alternatives should be based on referenced research and good field judgment, and reasons for the selection must be documented.
 - Departure from or modifications to recommended procedures must be quality assured and documented in permanent and readily accessible records.

¹“Water Science Center” refers to an organizational unit of the USGS in any of the States or Territories of the United States.

Review and Revision

Each chapter of the National Field Manual is reviewed regularly and revised periodically to correct errors, incorporate technical advances, and address additional topics or emerging areas of relevance to water-quality studies. National Field Manual chapters are issued in electronic format only. The version number for a given chapter is shown in the footer on each page. A major update or revision is designated as a new version by the number that precedes the decimal point. To indicate an update that is limited in scope or importance with respect to the chapter as a whole, a number is added sequentially after the decimal point (for example, version 3.1). Minor nontechnical changes, such as URL or editorial updates, are designated by a second number that follows the decimal point (for example, version 3.01).

Comments, questions, and suggestions related to the NFM should be sent to:

gs-w_nfm_steering_committee@usgs.gov. Newly revised and reissued chapters or chapter sections that replace the former versions are archived and linked to the home page for that chapter. The NFM home page also contains a link to the NFM “Comments and Errata” page (<http://water.usgs.gov/owq/FieldManual/mastererrata.html>), which chronicles comments about, and changes to, each chapter.