MEASURE
DATA STANDARD

Standard No.: EX000010.1

January 6, 2006

**This standard has been produced through the
Environmental Data Standards Council (EDSC).**

Foreword

The Environmental Data Standards Council identifies, prioritizes and pursues the creation of data standards for those areas where information exchange standards will provide the most value in achieving environmental results. The Council involves Tribes and Tribal Nations, state and federal agencies in the development of the standards and then provides the draft materials for general review. Business groups, non-governmental organizations, and other interested parties may then provide input and comment for Council consideration and standard finalization. Draft and final standards are available at http://www.envdatastandards.net.

1.0 INTRODUCTION

This Measure Data Standard focuses on data elements used to identify and describe recorded measurements or analytical results that are being exchanged between data trading partners. There are many categories or types of measurement where the units in each type are mutually comparable. For example, lengths, diameters, distances, heights, wavelengths constitute such a category. Mutually comparable quantities are called "quantities of the same kind". Each category of measurement has an allowed set of units of measure. Two or more physical quantities cannot be compared unless they belong to the same category of measurements. Some example categories of measurements include: length, mass, time, temperature, amount of substance, velocity, force, relative density, illuminance, and entropy.

1.1 Scope

This data standard provides and describes data groupings that are used to exchange data about recorded measurement or analytical results.

1.2 Revision History

Date	Version	Description
January 6, 2006	EX000010.1	Initial Environmental Data Standards Council Adoption

1.3 References to Other Data Standards

This standard relies on other standards to make it complete and provide the necessary support. As such users should consider the references to other data standards noted below as integral to the Measure Data Standard. These include:

- Quality Assurance and Quality Control [EX000012.1] Data Standard

1.4 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

Term	Definition
Measure	A set of data elements that may be utilized for recording the measurement of observations or analytical results.

1.5 Implementation

Users are encouraged to use the XML registry housed on the Exchange Network Web site to download schema components for the construction of XML schema flows (http://www.exchangenetwork.net).
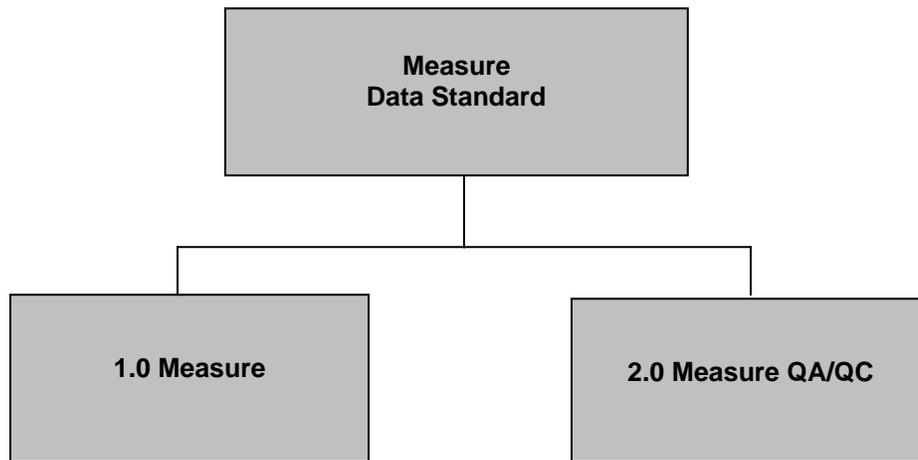
1.6 Document Structure

The structure of this document is briefly described below:

a. Section 2.0 Measure Data Standard Diagram, illustrates the principal data groupings contained within this standard.

b. Section 3.0 Measure Data Standard Table, provides information on the high level, intermediate and elemental Measure data groupings. Where applicable, for each level of this data standard a definition, XML tag, note(s), example list of values and format are provided. The format column may include "A" to specify alphanumeric, "N" to designate numeric, "G" to denote a grouping, and "D" for time and date formats referenced in the Representation of Date and Time Data Standard.

c. Data Element Numbering: For purposes of clarity and to enhance understanding of data standard hierarchy and relationships, each data group is numerically classified from the primary to the elemental level.

d. Code Metadata: Metadata, defined here as data about data or data elements, includes their descriptions and/or any needed context setting information required to identify the origin, conditions of use, interpretation, or understanding the information being exchanged or transferred. (Adapted from ISO/IEC 2382-17:1999 Information Technology Vocabulary—Part 17: Databases 17.06.05 metadata). Based on the business need, additional metadata may be required to sufficiently describe a code. A note regarding this additional metadata is included in the notes column for code elements. Additional metadata for codes may include:

  - Code List Identifier, which is a standardized reference to the context or source of the set of codes
  - Code List Version Identifier, which identifies the particular version of the set of codes.
  - Code List Version Agency Identifier, which identifies the agency responsible for maintaining the set of codes
  - Code List Name, which describes the corresponding name for which the code represents

e. Appendix A, Measure Data Standard Structure Diagram illustrates the hierarchical classification of the Measure Data standard. This diagram enables business and technical users of this standard to quickly understand its general content and complexity. Appendix B, lists the references for the Measure Data Standard.

2.0   MEASURE DATA STANDARD DIAGRAM

This diagram specifies the major data groups that may be used to identify the characteristics of a measure.

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            ┌────────────────────┐
            │      Measure       │
            │   Data Standard    │
            └────────────────────┘
                      │
          ┌───────────┴───────────┐
┌──────────────────┐     ┌──────────────────┐
│   1.0 Measure    │     │ 2.0 Measure QA/QC│
└──────────────────┘     └──────────────────┘
```

3.0 MEASURE DATA STANDARD TABLE

1.0 Measure

Definition: Identifies the value and the associated units of measure for measuring an observation or analytical result value.
Relationship: None.
Notes: None.
XML Tag: Measure

Data Element Name	Data Element Definitions	Notes	Format	XML Tags
1.1 Measure Value	The recorded dimension, capacity, quality, or amount of something ascertained by measuring or observing.	Example List of Values: • 0.001 • <15 • ND • Present or Absent	A	MeasureValue
1.2 Measure Unit Code	The code that represents the unit for measuring the item.	Example List of Values: • mg/L • km Based on the business need, additional metadata may be required to sufficiently describe a code. This additional metadata is listed in the Introduction section, 1.6.d, above.	A	MeasureUnitCode
1.3 Measure Qualifier Code	A code used to identify any qualifying issues that affect the results.	Example List of Values: • B • J • EST There may be multiple entries. Based on the business need, additional metadata may be required to sufficiently describe a code. This additional metadata is listed in the Introduction section, 1.6.d, above.	A	MeasureQualifier Code

2.0   Measure QA/QC

Definition: The quality aspects of the measured value.
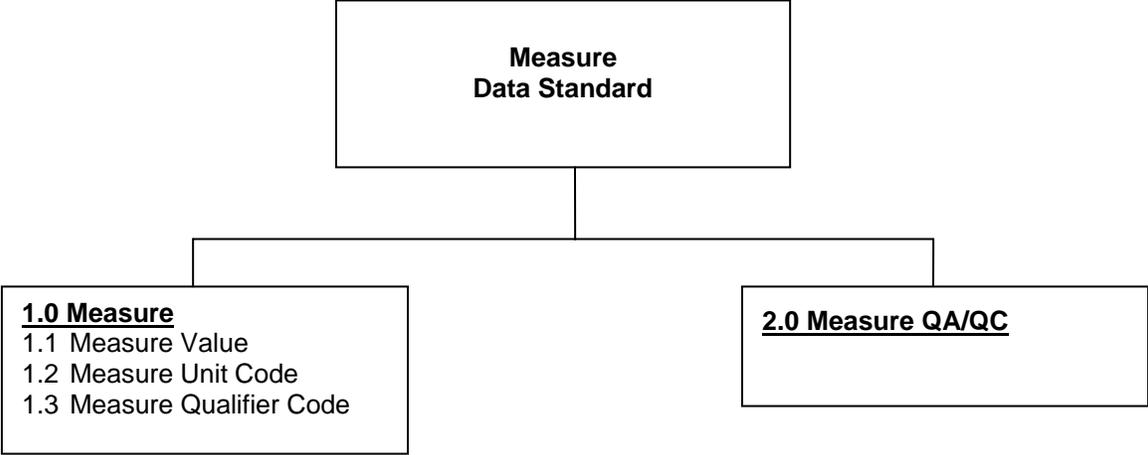Relationship: None.
Notes: The following items could be expected to define the quality information needed:
- Precision
- Confidence interval

This is an optional set of data elements that specify the quality of a measurement. Refer to **Quality Assurance and Quality Control [EX000012.1] Data Standard**.
XML Tag: MeasureQAQC

Appendix A
Measure Data Standard Structure Diagram

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                    ┌─────────────────────────┐
                    │        Measure          │
                    │     Data Standard        │
                    └─────────────────────────┘
                                 │
              ┌──────────────────┴──────────────────┐
              │                                     │
  ┌───────────────────────────┐        ┌──────────────────────────┐
  │ 1.0 Measure               │        │ 2.0 Measure QA/QC        │
  │ 1.1  Measure Value        │        │                          │
  │ 1.2  Measure Unit Code    │        │                          │
  │ 1.3  Measure Qualifier Code│       │                          │
  └───────────────────────────┘        └──────────────────────────┘
```

Appendix B
References

i.   *ISO/IEC 2382-17:1999 Information Technology Vocabulary—Part 17: Databases 17.06.*