CIO POLICY TRANSMITTAL 05-002

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1. Purpose.

The National Geospatial Data Policy (NGDP) establishes principles, responsibilities, and requirements for collecting and managing geospatial data used by Federal environmental programs and projects within the jurisdiction of the U.S. Environmental Protection Agency (EPA). This Policy also establishes the requirement of collecting and managing geospatial metadata describing the Agency's geospatial assets to underscore EPA's commitment to data sharing, promoting secondary data use, and supporting the National Spatial Data Infrastructure (NSDI).

2. Scope and Applicability.

This Policy addresses geospatial data represented by points, lines, polygons, and complex geographic features. This Policy additionally encompasses original and interpreted geospatial data derived through remote sensing including but not limited to images and raster data sets, aerial photographs, and other forms of geospatial data or data sets in both digitized and non-digitized forms.

This Policy addresses geospatial data operations in the context of data life cycle phases, consisting of (1) planning, (2) collection and acquisition, (3) processing and documentation, (4) storage and access, and (5) maintenance and retirement.

This Policy applies to all EPA organizations, grantees, agents working on behalf of EPA, tribes, localities and partner states of EPA who design, develop directly or indirectly, compile, operate, or maintain EPA information collections developed for environmental program support.

3. Audience.

The audience for this Policy includes the EPA Chief Information Officer (CIO), Geospatial Information Officer (GIO), Information Management Officers (IMOs), Regional Administrators, Senior Program Managers, Senior Research Managers, Spatial Data Stewards, the Geographic Information System (GIS) Workgroup, primary geospatial data users, developers and managers of major geospatial investments, and any person involved in geospatial operations in EPA, or transferring or exchanging data with the EPA, including contractors and grantees operating on behalf of EPA. All states, tribes and localities are

encouraged to accept these provisions when operating under a trading partner agreement or other form of interagency agreement.

4. Background.

a. The growing challenge to achieve EPA's mission to protect human health and the environment has increased the need for improvements in cross-programmatic, multimedia data analyses. Geospatial data (e.g., address information, latitude and longitude values, coverages, geospatial metadata, and other coordinate information) provide EPA with the capacity to spatially locate, identify, and assess aspects of the environment critical to program operations. Conformant geospatial data will capitalize on EPA's sizable investment in environmental data collection by improving the utility of these data sets for a variety of secondary uses.

b. EPA is committed to implementing its geospatial policy in accordance with the requirements specified by the National Spatial Data Infrastructure (NSDI) and by the guidelines and data standards of the Federal Geographic Data Committee (FGDC).

c. The EPA and its partner states have created an Exchange Network Leadership Council (ENLC) to promote improvements in data quality and data integration across the Exchange Network (EN). The ENLC (formerly the Environmental Data Standards Council (EDSC)) is the data standards setting arm, working in conjunction with EPA to develop locational data standards (e.g., latitude/longitude standard) for use by the Agency and information exchange partners, including but not limited to, States and Tribes.

d. The principles of EPA's Enterprise Architecture require that all data, including geospatial data, be collected, acquired, processed, documented, stored, accessed, maintained, and retired through the use of complete, consistent, and integrated metadata.

e. The EPA is committed to the effective use of geospatial data. This is reflected in the Agency's Geospatial Blueprint, target Enterprise Architecture, the Framework for Business Warehouses, the System of Registries, and the Agency's Geospatial Portal.

5. Authorities.

a. Executive Order 12906, *National Spatial Data Infrastructure*, April 13, 1994, Federal Register, Volume 59, Number 71, pp. 17671 – 17674.

b. OMB Circular A-16, *Coordination of Geographic Information and Related Spatial Data Activities*, August 19, 2002.

c. OMB Circular A-119, *Voluntary Consensus Standards*

d. OMB, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, October 1, 2001.

e. The Freedom of Information Act (FOIA). Title 5 of the US Code, Section 552 (a) (2) (B) includes those statements of policy and interpretation which have been adopted by the agency and are not published in the Federal Register.

6. Related Documents.

a. FGDC-STD-001-1998, *Content Standard for Digital Geospatial Metadata*, Federal Geographic Data Committee, June 1998.

b. FGDC-STD-007.1-1998, *Geospatial Positioning Accuracy Standards Part 1: Reporting Methodology*, Federal Geographic Data Committee, 1998.

c. EPA/EDSC Data Standard, *Latitude/Longitude Data Standard*, Draft Update, November 2004.

d. EPA Guidance, *Locational Data Policy Implementation Guidance,* March 1992.

e. EPA Guidance, National Geospatial Data Policy Implementation Guidance, Draft, 2005

f. EPA Order 2100.4 - *EPA Interim Agency System Life Cycle Management Policy*, December 29, 2003.

g. EPA QA/G-5g, *EPA Guidance for Geospatial Data Quality Assurance Plans*, December 2000.

h. EPA QA/G4 – *EPA Guidance for Data Quality Objectives Process,* August 2000.

i. EPA Directive 2100.2A1, *Information Technology Capital Planning and Investment Control (CPIC),* June 17, 2002.

j. EPA/600/R-02/031, *Global Positioning Systems: Technical Implementation Guidance*, April 2002.

k. EPA *Geospatial Blueprint*, June 2003.

l. EPA Identity Management and Access System

m. EPA Information Security Manual, 2195A1

n. EPA Guidance, *Data Quality Objectives Process*, Aug 2000

o. NIST Standard, *Federal Information Processing Standard (FIPS) 199, Standards for Security Categorization of Federal Information Systems*, February 2004.

7. Policy.

This Policy establishes specific requirements under which EPA program offices and laboratory procedures will adhere in the planning, collecting, acquiring,

processing, documenting, storing, accessing, maintaining, and retiring of geospatial data. This Policy is built upon an integrated foundation of technical data standards, content standards for geospatial metadata, and implementation procedures and guidance.

This policy requires EPA to plan for, collect, and manage geospatial information in a way that builds information partnerships across EPA organizations, multiple levels of government, including the public and private sectors, avoids wasteful duplication of effort and ensures effective and economical management of geospatial resources in meeting essential primary and secondary uses.

This policy requires that locational information, such as latitude/longitude coordinates be collected and documented with environmental and related data, and not precluding, other critical location identification data, such as depth, height, elevation, altitude and/or street address, that may be needed to satisfy individual program or project needs.

This policy requires that EPA programs' investment in geospatial data be leveraged for enterprise use and will be managed per Enterprise Architecture guidance.

Geospatial data shall be developed and maintained in accordance with the following key data life cycle phases: Data Planning; Data Collection and Acquisition; Data Processing and Documentation; Data Storage and Access, and; Data Maintenance and Retirement

A. Data Planning Phase.

(1) Investment Planning Process. Geospatial data that is collected, acquired, or managed in conjunction with a program or project must post the metadata for their geospatial data on the Agency's Enterprise Geospatial Metadata Catalogue. All geospatial data that is collected, acquired, or managed in conjunction with a program or project must comply with the following requirements:

a. Quality Assurance Project Plans (QAPPs). Programs or projects shall develop QAPPs to establish Data Quality Objectives (DQO), in accordance with the Agency-wide quality system, to assure that geospatial information operations comply with all procedures and standards to meet design objectives and produce documented results or products of known quality.

b. Data Sensitivity. Programs or projects shall determine the sensitivity of geospatial data in accordance with Agency policy, which is based on FIPS 199, the Freedom of Information Act (FOIA), and the EPA Information Security Manual, 2195A1. EPA will make every effort to provide public access to spatial data resources, but in some cases data will only be available via FOIA. Certain data may be exempt from mandatory disclosure under FOIA.

c. Geospatial Data Accuracy. In recognition of the varying levels of accuracy and precision appropriate for different program business needs, Program Offices, Regions and/or Laboratories must explicitly state their

accuracy and precision goals for specific programmatic purposes based on the adopted Geospatial Accuracy Tiers (see Appendix A). In the absence of program-specific procedures addressing minimum accuracy for geospatial data, this policy requires a minimum accuracy of Tier 5 to maximize the potential for secondary users.

d. Geospatial Data Standards. Geospatial data planning shall adhere to standards in designing data collections that will enable data sharing and promote secondary data use, quality information, and otherwise support the NSDI.

e. Geospatial Data Marketplace. All new geospatial data proposed for acquisition must be posted on a common Geospatial Data Marketplace for a minimum of one month prior to purchase.

B. Data Collection and Acquisition Phase.

(1) Collection. Data stewards shall collect the following information at the initial period of data collection, creation, acquisition or subsequent post-processing:

a. Geo-referenced Point Data. EPA Policy requires geo-referenced coordinates be collected or derived, and appropriately documented for entities or areas of environmental interest to EPA in accordance to the adopted EPA/EDSC Latitude / Longitude Data Standard.

b. Geographic Area Boundaries. In the absence of an EPA data standard addressing geographic area boundaries, it is EPA Policy that geographic area boundaries be collected and appropriately documented in accordance with FGDC data standards and/or Open Geospatial Consortium (OGC) open standards.

c. Geospatial Data Accuracy. In recognition of the varying levels of accuracy and precision appropriate for different program business needs, Program Offices, Regions and/or Laboratories must explicitly state their requisite accuracy and precision goals for specific programmatic purposes based on the adopted Geospatial Accuracy Tiers (see Appendix 1). In the absence of program-specific procedures addressing required minimum accuracy for geospatial data, this policy requires a minimum accuracy of Tier 5.

d. Geospatial Metadata. EPA Policy requires metadata describing geospatial data be produced in accordance with the FGDC Content Standard for Digital Geospatial Metadata.

(2) Acquisition. Geospatial data that is acquired by EPA (including contractors, grantees and vendors), must comply with all procedures and standards applicable to those data as if they were collected by EPA.

(3) Initial Data Documentation. Initial documentation of geospatial metadata shall be accomplished during the collection and acquisition phase to provide information on the steps and methods followed in acquiring the spatial information. This information must be posted on the **Agency's Enterprise Geospatial Metadata Catalogue.**

(4) Coordination. The Geospatial Information Officer (GIO) shall periodically publish information on geospatial data collection activities across the Agency for

the purpose of enhancing coordination, reducing duplication, and increasing the opportunity for secondary data uses.

C. Data Processing and Final Documentation Phase.

The data processing phase, including methods used during the phase, must be adequately documented per applicable FGDC content standards.

(1) Data Processing. Geospatial data managed within EPA, such as Regional databases or the Agency's Locational Reference Tables, must conform to data exchange protocols, and applicable data standards as defined and maintained by OEI.

(2) Spatial Data Documentation. Documentation of geospatial metadata shall be prepared for all spatial data elements entered into EPA's databases by offices and/or agents of EPA that originate or modify spatial data, in accordance with the provisions of FGDC-STD-001-1998, *Content Standard for Digital Geospatial Metadata.* ***This provision is not subject to waivers.***

D. Data Storage and Access Phase.

This phase is characterized by the transmission of geospatial data to EPA and subsequent storage within EPA's Enterprise Architecture framework. Other spatial data that is stored at the program and/or Regional level must be stored in ways conformant with the Enterprise Architecture and system protocols to maximize accessibility.

(1) Spatial Data Storage. Spatial data that accompanies regular programmatic reporting will typically be received by EPA's Central Data Exchange (CDX) prior to data storage or archiving. The CDX will provide methods to validate the source and integrity of the data sets received from reporting entities and direct the data to initial processing for final storage locations, such as the Locational Reference Tables (LRT). Spatial Data Stewards or data managers for EPA's primary data collections shall ensure the following:

a. Screening and Correction. EPA shall screen information from all sources for compliance with this Policy. If the data was submitted on the Exchange Network under a Trading Partner Agreement and is found to be noncompliant, it shall be returned to the originator for correction. If no Trading Partner Agreement is in place, then it may be returned to the originator for voluntary correction or it may be used in uncorrected form at program discretion, but annotated as necessary to document areas of noncompliance

(2) Data Access Phase. EPA shall follow all statutory and regulatory requirements, where they exist, in providing access to all EPA spatial data resources. Where they do not exist, EPA will provide access based on the data sensitivity analysis and FOIA. In all other cases, EPA will make all reasonable efforts to provide access to spatial data.

E. Data Maintenance and Retirement Phase.

(1) General Responsibility. The program office or project sponsoring the original collection effort is responsible for spatial data maintenance and decisions regarding ultimate retention and disposal.

(2) Geospatial Data Retirement. Geospatial data records in the form of coverages, tables, files, working or draft files, in both hard copy and electronic format, are to be treated as official Agency documents for the purpose of records management. Data disposition for archiving must comply with the Records Retention requirements of the program under which the data was collected.

8. Roles and Responsibilities

(1) OEI Responsibilities. OEI shall be responsible for implementing and supporting this Policy and providing guidance and technical assistance where feasible and appropriate in implementing and improving the requirements of this Policy. Specific positions within OEI that are responsible for the implementation of this Policy include:

> **Geospatial Information Officer (GIO):** The GIO is the Agency official responsible for the management of EPA's geospatial data assets. The GIO provides guidance and coordination in maintaining this Policy, setting implementation priorities and pursuing investments regarding all geospatial activities.

(2) Management Responsibilities: Assistant Administrators (AA), Associate Administrators, Regional Administrators (RA), Laboratory Directors, and the General Counsel shall establish supporting geospatial data procedures, consistent with the requirements specified by this Policy and any technical standards, as required to satisfy all their programmatic and research needs. They shall also ensure that information collection and reporting systems under their direction are in compliance with this Policy and all applicable supporting procedures under their administrative jurisdiction.

> a. **Geographic Information System (GIS) Workgroup:** EPA's GIS Workgroup provides technical input to many issues dealing with enterprise GIS, this Policy and its Implementation Guidance. The Workgroup is comprised of managers and technical staff from the ten regional offices; the Office of Environmental Information (OEI); the Office of Research and Development (ORD); the Office of Air and Radiation (OAR); the Office of Enforcement and Compliance Assurance (OECA); the Office of Prevention, Pesticides and Toxic Substances (OPPTS); the Office of Solid Waste and Emergency Response (OSWER); and the Office of Water (OW), the Chesapeake Bay Office, Gulf of Mexico Program, and the Great Lakes National Program Office.

> b. **Spatial Data Stewards:** Facilitates the assignment of responsibilities for data definition, planning, collection, processing, documentation, storage and access, and maintenance and retirement, and ensure data meets mission requirements.

> c. **Data Governance:** Facilitates the assignment of responsibilities for data coordination through EPA external relationships.

9. Definitions

a. **Central Data Exchange (CDX):** CDX is a major component of the EPA Enterprise Architecture. It is the point of entry on the Environmental Information Exchange Network (Exchange Network) for environmental data submissions to the Agency.

b. **Capital Planning and Investment Control (CPIC):** created to serve as Standard Operating Procedures to assist Agency staff in complying with the requirements of OMB Exhibit 300 that establishes a series of structured, consistent and repeatable processes and procedures for planning and managing its investment resources.

c. **Data Quality Objectives (DQO):** DQO's are an important tool for project managers and planners to determine the type, quantity, and quality of data needed to support Agency decisions.

d. **Enterprise Architecture (EA):** A strategic information asset base that provides a definition of the mission, the information and technologies necessary to perform the mission, and transitional processes for implementing new technologies in response to changing mission needs. An enterprise architecture includes a baseline architecture, target architecture, and a sequencing plan.

e. **Environmental Council of States (ECOS):** ECOS works by connecting states with each other, and with our federal partners and others, to help share experiences about how to best manage the environment.

f. **Environmental Data Standards Council (EDSC):** The EDSC is the legacy ECOS group which coordinated the developed environmental data standards to promote the exchange of information among States, Native American Tribes, and US EPA. The functions of the EDSC have been assumed by the Environmental Network.

g. **Environmental Information Management System (EIMS):** EIMS provides a metadata repository of information about EPA projects, data sets, databases, models and documents. EIMS serves as the Agency's National Spatial Data Infrastructure (NSDI) node.

h. **Environmental Network Leadership Council (ENLC):** The ENLC coordinates the development of environmental data standards to promote the exchange of information amoung states, Native American Tribes, and the US EPA.

i. **EPA Portal:** EPA's Portal is a major component of the EPA Enterprise Architecture. It is a single Internet location through which users can gain access to multiple sources of information and services. A centralized portal offers "one stop shopping".

j. **Exchange Network (EN):** The Exchange Network is a partnership between state environmental departments and the U.S. Environmental Protection Agency to exchange environmental information. Partners on the Exchange Network share data efficiently and securely over the Internet.

k. **Federal Geographic Data Committee (FGDC):** Coordinates the Federal Government's development of the National Spatial Data Infrastructure (NSDI). FGDC was established by the Office of Management and Budget (OMB) Circular A-16 and chaired by the Secretary of the Department of the Interior or the Secretary's designee.

l. **Freedom of Information Act (FOIA).** It is EPA's policy to make the fullest possible disclosure of information without unjustifiable expense or unnecessary delay to any requester. Title 5 of the US Code, Section 552 (a) (2) (B) includes those statements of policy and interpretation which have been adopted by the agency and are not published in the Federal Register.

m. **Geospatial Data:** Information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth, typically represented by points, lines, polygons, and/or complex geographic features. This includes original and interpreted geospatial data, such as those derived through remote sensing including, but not limited to, images and raster data sets, aerial photographs, and other forms of geospatial data or data sets in both digitized and non-digitized forms.

n. **Geospatial Accuracy Tiers:** Identifies 10 tiers of accuracy ranges based on recognized locational data collection methods as identified in EPA's Latitude/Longitude Data Standard.

o. **Geospatial Metadata:** Geospatial metadata or "data about data" describe the content, quality, condition, and other characteristics of geospatial data.

p. **National Spatial Data Infrastructure (NSDI):** Established by Executive Order 12906, the NSDI is defined as the technologies, policies, and people necessary to promote sharing of geospatial data throughout all levels of government, the private and non-profit sectors, and the academic community.

q. **Registry of EPA Applications and Databases (READ):** is an authoritative registry that uniquely identifies the Environmental Protection Agency's (EPA) diverse information resources including computer application systems, databases, and models.

r. **System of Registries (SOR):** SOR is a major component of the EPA Enterprise Architecture. It provides a gateway and search capability to several registries and repositories residing in the Environmental

Protection Agency's (EPA) Office of Environmental Information (OEI).

s. **Quality Assurance Project Plans (QAPPs):** Is a written document that outlines the procedures a monitoring project will use to ensure that the samples participants collect and analyze, the data they store and manage, and the reports they write are of high enough quality to meet project needs.

10. Recertification Date

Three years from approval date

11. Waivers

a. **Waiver Process.** The Agency's CIO may grant waivers to selected provisions of this Policy for sufficient cause. The CIO may redelegate this authority.

b. **Applications.** Applications for waivers to specific provisions shall contain (1) identification of the Policy provision; (2) a listing of reasons why the Policy can not be applied or maintained; (3) an assessment of impacts resulting from non-compliance; and (4) the signature of AA, RA or Laboratory Director responsible for the spatial data collection in question.

c. **Notification.** The CIO will notify the requesting office in writing of the disposition of the waiver within 60 days of receipt.

12. Procedures and Guidelines

Required procedures and implementation guidelines for this Policy are presented in the National Geospatial Data Policy Implementation Guidelines. Supporting procedures to implement this Policy at the Program Office or other Administrative level must be approved by the CIO or the CIO-delegated authority in OEI.

13. Additional Information

For further information about this Policy, please contact the EPA Office of Environmental Information, Office of Information Collection.

Table 1. Geospatial Accuracy Tiers

Tier Level	Accuracy and Precision	Examples of Horizontal Collection Method	Example Program Application
Tier 1	<1 m	Classical Surveying Techniques; plus GPS Carrier Phase Static Relative Position	Surveying to support definition of Institutional Controls to return land to productive use
Tier 2	1 – 5 m	GPS Carrier Phase Kinematic Relative Position	Definition of contamination boundaries of site
Tier 3	6 – 25 m	GPS Code (Pseudo Range) Standard Position	Stack location; drinking water intake location
Tier 4	26 – 100 m	GPS unspecified; Photo/GIS Interpolation	Site centroid; large area facility boundary
Tier 5	101 – 200 m	Urban style address matching	Preliminary site location
Tier 6	201 – 999 m	Public Land Survey – Sixteenth Section	Prediction of Local Air Dispersion
Tier 7	1000 – 2000 m	Address Matching – Block Face	Batch Geo-coding
Tier 8	2001 – 5000 m	Census Block Centroid	State-level Population Statistics
Tier 9	> 5000 m	Zip Code Centroid	Generalized National Mapping
Tier 10	Unknown	N/A	Relative contextual data

A full listing of current technologies capable of achieving the Geospatial Accuracy Tiers is provided in the technical Implementation Guidance document.