
National Geospatial Data Procedure

Directive No: CIO 2135-P-02.0

*Issued by the EPA Chief Information Officer,
Pursuant to Delegation 1-19*

National Geospatial Data Procedure

1. PURPOSE

The National Geospatial Data Procedure establishes the operating framework for geospatial data management at the U.S. Environmental Protection Agency (US EPA, EPA). Centered around data lifecycle processes, the associated phases define requirements, designate responsibilities, and standardize processes supporting full integration of geospatial data into Agency operations. In doing so, this directive maximizes the accessibility, accuracy, and application of geographic information by the US EPA and its stakeholders.

1.1 Background

The U.S. Environmental Protection Agency is committed to the accurate collection and effective communication of environmental data. This commitment ensures that Agency initiatives are informed by the best available evidence while promoting transparent and open government. Among EPA data assets, geospatial data play a significant and substantial role in protecting human health and the environment. Geospatial data are used to identify, locate, and assess environmental factors key to EPA operations, such as gauging environmental risks, enforcing environmental regulations, and addressing potential homeland security issues, including the impacts of climate change. Because of this centrality, directives are needed to standardize how data are collected, processed, and published within and among Agency teams. Applying such standards maximizes the consistency, quality, and interoperability of geospatial data assets and expands the use of geographic information by the broadest audiences possible.

Enacted in 2018, the Geospatial Data Act (GDA) establishes minimum standards for geospatial data collected, developed, or managed by specified members of the Federal Geographic Data Committee (FGDC) and the National Geospatial Advisory Committee. As a participating member, the US EPA must produce GDA-conformant data as complimented by requirements outlined in the Foundations for Evidence-Based Policymaking Act of 2018 (hereafter, the Evidence Act), the Open, Public, Electronic, and Necessary (OPEN) Government Data Act of 2019, and in accordance with the National Spatial Data Infrastructure. Though these federal requirements are explicit, Agency-specific directives are needed to apply national policies within and among EPA's data and information management systems. In terms of geospatial assets, these systems are collectively managed by the EPA Geospatial Advisory Committee (EGAC) as advised by the Geographic Information Officer (GIO). Comprised of GIS experts, the EGAC ensures that EPA's geospatial assets and related infrastructure support policy-specified standards.

The National Geospatial Data Procedure establishes an agile model for the management of geospatial data and geographic information at the US EPA. As a compliment to the Enterprise Data Management Policy (EDMP), this procedure follows the integrated and interpreted requirements of the Evidence Act, OPEN Data Act, as well as normative references annotated herein. It defines data requirements, including metadata elements,

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designates responsibilities for system management, and standardizes processes related to both data publication and development. Moreover, this directive promotes public access to federally funded data and services used to protect human health and the environment. In this way, the National Geospatial Data Procedure bolsters data and information management principles at EPA and promote full integration of the National Geospatial Program into Agency operations.

2. SCOPE

The National Geospatial Data Procedure compliments the EPA Enterprise Data Management Policy as it relates to geospatial data collected, created, or maintained using EPA funds and stored in this same manner. This scope includes locational records and geographic information that are classified, unclassified, and non-sensitive as well as controlled unclassified information (CUI) developed, hosted, or cataloged on public and internal domains and subdomains of the US EPA, as well as cloud environments and servers managed, hosted, or maintained by authorized third-party providers. For the purposes of this procedure, geospatial data encompass vector, raster, and multi-dimensional data models and their component data structures, including but not limited to point, line and polygon features, aerial photographs, Light Detection and Ranging (LiDAR) point clouds, Unmanned Aircraft Systems (UAS) imagery, and other forms of remotely sensed data. Geospatial data can be managed, stewarded, and/or referenced by the Agency in digitized and non-digitized formats, and may be either original or interpreted. Geographic information systems (GIS), statistical packages, business intelligence software (BIS), and related digital services involved in geospatial data production or geographic information management are also included within the scope of this procedure.

3. AUDIENCE

The audience of this procedure includes members of the US EPA geospatial and data science communities of practice as well as any other team or individual involved in the production, management, or approval of geospatial data and related content for the Agency. The EPA's state, local, tribal, and territorial (SLTT) partners are obligated to accept these provisions when operating under a trading partner agreement or other codified form of interagency or interorganizational partnership, including but not limited to federal grant programs.

4. AUTHORITY

This procedure supplements federal requirements outlined within the following acts of legislation:

- Geospatial Data Act of 2018, [P.L. No. 115-254](#), H.R. 302, Subtitle F, Sections 751-759;
- Foundations for Evidence-based Policymaking Act of 2018, [P.L. No. 115-435](#), H.R. 4174;
- Open, Public, Electronic, and Necessary (OPEN) Government Data Act of 2018, [P.L. No. 435](#), Section 760;

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- 21st Century Integrated Digital Experience Act of 2018, [P.L. No. 115-336](#), 44 U.S.C. 3501;
- Freedom of Information Act (FOIA) Improvement Act of 2016, [P.L. No. 114-185](#), S. 337;
- Federal Information Security Modernization Act of 2014, [P.L. 113-283](#), 44 U.S.C. 35;
- 21st Century Communications and Video Accessibility Act of 2010, [P.L. No. 111-260](#), S. 3304;
- Title 40 – Protection of Environment, [49 FR 1659](#), Jan. 12, 1984, as amended at 80 FR 77577, Dec. 15, 2015, “Part 7 – Nondiscrimination in Programs or Activities Receiving Federal Assistance from the Environmental Protection Agency”, July 1 2016;
- E-Government Act of 2002, [P.L. No. 107-347](#), 44 U.S.C. 36, specifically Title III;
- Information Quality Act of 2001, Section 515 of the Treasury and Government Appropriations Act of 2001, [P.L. 106-554](#), 31 U.S.C. 3516;
- Clinger-Cohen Act of 1996, [P.L. No. 104-106](#), Division E, February 10, 1996;
- [Section 508 of the Rehabilitation Act of 1973 \(29 U.S.C. § 794d\)](#), as amended by the [Workforce Investment Act of 1998, P.L. No. 105-220, 112 Stat. 939](#);
- Privacy Act of 1974 (5 U.S.C. § 552a), as amended;
- [Section 504 of the Rehabilitation Act of 1973 \(29 U.S.C. § 794\)](#); and,
- [Freedom of Information Act \(FOIA\) of 1966, 5 U.S.C. 552](#), as amended by P.L. 110-175, 121 Stat. 2524

These acts of legislation are further complimented by executive orders and federal directives that aim to standardize data and information management across the federal government:

- Office of Management and Budget Circular No. [A-11](#) (Revised)
- [Executive Order 13859](#), “Maintaining American Leadership in Artificial Intelligence,” Federal Register Volume 81, Number 31, February 11, 2019;
- Office of Management and Budget Memorandum [M-19-23](#), “Phase 1 Implementation of the Foundations for Evidence-Based Policymaking Act of 2018: Learning Agendas, Personnel, and Planning Guidance,” July 10, 2019;
- Office of Management and Budget Memorandum [M-19-19](#), “Update to Data Center Optimization Initiative (DCOI),” June 25, 2019.
- Office of Management and Budget Memorandum [M-19-18](#), “Federal Data Strategy - A Framework for Consistency,” June 4, 2019;
- Office of Management and Budget Memorandum [M-19-15](#), “Improving Implementation of the Information Quality Act,” April 24, 2019;
- National Archives and Records Administration, Information Security Oversight Office Rule [2016-21665](#), 32 C.F.R. 2002, September 14, 2016;
- Office of Management and Budget Circular [A-130](#) (Revised), “Managing Information as a Strategic Resource,” July 28, 2016;
- Office of Management and Budget Memorandum [M-13-13](#), “Federal Open Data Policy—Managing Information as an Asset,” May 9, 2013;
- [Executive Order 13642](#), “Making Open and Machine Readable the New Default for Government Information,” May 9, 2013;

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- [Executive Order 13556](#), 75 F.R. 68675, Number 68675 “Controlled Unclassified Information, November 4, 2010
- Office of Management and Budget Circular [A-16](#) (Revised), “Coordination of Geographic Information and Related Spatial Data Activities,” August 19, 2002;
- Office of Management and Budget Guidelines (Republication), [67 C.F.R § 8451](#), “Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies,” February 22, 2002;
- Office of Management and Budget Circular [A-119](#) (Revised), “Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities,” February 10, 1998;
- [Executive Order 12096](#), “Coordinating Geographic Data Acquisition and Access: The National Spatial Infrastructure,” *Federal Register* Volume 59, Number 71, April 13, 1994.

The following EPA directives expand upon these federal authorities in the context of EPA data and information management systems:

- US EPA Controlled Unclassified Information (CUI) Policy [CIO 2158.1](#), January 25, 2023;
- US EPA Controlled Unclassified Information (CUI) Procedure [CIO 2158-P-01.0](#), January 25, 2023;
- US EPA Quality Management Plan Standard [CIO 2105-S-01.0](#), January 17, 2023;
- US EPA Unmanned Aircraft Systems (UAS) Policy [CIO 2137.1](#), November 16, 2022;
- US EPA Enterprise Architecture Policy [CIO 2122.1](#), October 26, 2022;
- US EPA Enterprise Architecture IT Standards Procedure [CIO 2122-P-03.1](#), October 26, 2022;
- US EPA Environmental Information Quality Policy [CIO 2105.2](#), July 19, 2022;
- US EPA Environmental Information Quality Procedure [CIO 2105-P-01.2](#), July 19, 2022;
- US EPA QA Field Activities Procedure [CIO 2105-P-02.1](#), July 19, 2022;
- US EPA Enterprise Data Management Policy [CIO 2135.2](#), June 6, 2022;
- US EPA Enterprise Information Management (EIM) Cataloging Information Procedure [CIO 2135-P-01.1](#), August 19, 2021;
- US EPA Enterprise Information Management (EIM) Minimum Metadata Standards [CIO 2135-S-01.1](#), August 19, 2021;
- US EPA Directive [CIO 2130.3](#), “Section 508 Policy,” September 6, 2022;
- US EPA Information Policy [CIO 2150.5](#), “Information Security Policy,” August 2019;
- US EPA Directive [CIO 2120-P-07.2](#), “Information Security – Identification and Authentication Procedure,” November 11, 2018;
- US EPA Information Procedure [CIO 2150-P-01.2](#), “Information Security – Access Control Procedure,” September 21, 2018.
- US EPA Directive [CIO 2122.2](#), “Enterprise Architecture Policy,” October 26, 2022;

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- US EPA Directive [CIO 2121.1](#), “System Life Cycle Management Policy,” December 21, 2017;
- US EPA Directive [CIO 2120.1](#), “Capital Planning and Investment Control Program Policy for the Management of Information Technology Investments,” December 21, 2017; and,
- US EPA Directive [CIO 2158.1](#), “Controlled Unclassified Information (CUI) Policy,” January 25, 2023;
- US EPA Directive [CIO 2120.4](#), “Capital Planning and Investment Control Policy,” February 22, 2022.

5. PROCEDURE

This procedure describes an agile model for geospatial data management based on the integrated and interpreted requirements of the Geospatial Data Act of 2018, the OPEN Government Data Act of 2019, the Evidence Act of 2018, and normative references annotated herein. Centered around lifecycle data and information management activities, the five phases outlined below define requirements, designate responsibilities, and standardize processes supporting full integration of geospatial data into Agency operations. In doing so, this directive maximizes the accessibility, accuracy, and application of geographic information by the US EPA and its stakeholders:

Data Management Phase I: Coordination, Scoping & Management*Coordinating with GIS Lead(s)*

Teams collecting and/or processing geospatial data or geographic information shall coordinate with their GIS Lead(s) at the onset of a GIS project, continuing these communications throughout the data lifecycle. Designated by Regions and Program Offices (AAship), GIS Leads serve as staff representatives, guiding their colleagues on the data management phases outlined in this procedure, including related federal directives, guidance materials, and best practices. GIS Leads will also advise project or program leads on data collection, cartographic design, and metadata records, or guide them to related resources. [Contact your GIS Lead\(s\)](#). Enterprise GIS support is available through the [National Geospatial Support Team](#).

Determining Geospatial Data Requirements

GIS project or program teams shall identify, evaluate, and iteratively refine their data, display, and communication requirements throughout the data lifecycle. Project or program teams may glean data requirements from stakeholders through public and/or private consultation(s), or as facilitated by an EPA GIS Lead. Geospatial data requirements must include explicit measures, thresholds, or range(s) of acceptance for critical factors, including but not limited to data accuracy, spatial and temporal extent, grain and resolution, and coordinate system(s). Resource availability, cost estimates and other methodological information needed to maintain data assets throughout the data lifecycle should also be considered at this point. Dataset and program-specific standards shall be identified and adhered when they exist. [Learn about EPA Policies, Standards and Best Practices](#).

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Reviewing Existing Geospatial Datasets & Geographic Information

Teams involved in the production or purchase of geospatial data or geographic information shall iteratively review existing data assets from federal, SLTT, and private sources to minimize duplication of effort and maximize partnerships. Where effort(s) may align, project or program leads may pursue formal means of collaboration, purchase, or support, including memoranda of understanding (MOUs). This process should continue throughout the data management lifecycle and may inform data investments. [Contact the National Geospatial Support Team to review existing geospatial datasets and geographic information.](#)

Anticipate Data Structure(s) & Associated Schema

After determining data requirements and reviewing data assets, GIS program and project teams shall work with their GIS Lead(s) to define or evaluate data structure(s) and associated schema, while considering Agency standards. This process shall begin prior to collecting, developing, or obtaining geospatial data, though may be iterated upon throughout the data lifecycle. Data structure(s) may take any structured, semi-structured, or unstructured form; or, hierarchical or relational schema, though should remain flexible to change as requirements are iteratively refined. Structural elements may be organized using data dictionaries or business glossaries and shared using lookup tables, indexing files, or related tools. In doing so, data structures and schema shall adhere to accepted business rules or means of validation and should maximize data use within and among EPA systems. The Agency's systems of registries and terminology services shall be used to standardize attribute domains when appropriate. [Access the EPA System of Registries.](#)

Scoping Target Audience & Annotating Data Sensitivity

The EPA should make every effort to provide public access to Agency geospatial data and geographic information. When determining data requirements, structures and schema, GIS program and project teams shall specify their data's audience and business rules in a system of record, including but not limited to a program or management plan and/or metadata record or catalog. Business rules should specify who is allowed to access, update, and edit the data as well as what Identity Assurance Levels (IALs) are needed to authenticate users in line with Digital Identify Risk Assessment (DIRA) requirements. Most EPA data can and should be publicly shared. In some cases, however, complete, public access may be neither possible nor desirable depending on data sensitivity. GIS Program and Project leads must evaluate and annotate their data following the U.S. National Archives and Records Administration's (NARA) CUI Registry. [Review NARA CUI categories and classification methods.](#) Sensitive data shall be handled in accordance with [Agency-specified CUI procedures and security manuals](#), as complemented by other statutory requirements including, but not limited to, the [Federal Information Processing Standards Publication 199](#), the [Freedom of Information Act \(FOIA\)](#), and other [EPA directives](#). In some cases, data may only be available to the public via FOIA request. In others, sensitive elements may be omitted, masked, or obfuscated to maximize use of the data by a target audience. Certain data may be exempt from mandatory disclosure under FOIA, though such considerations must be made in consultation with CUI leads and liaisons. Systems hosting sensitive data shall have a Systems of Registry Notice (SORN) and the associated data must go through a Privacy Impact Assessment (PTA) or Privacy Threshold Assessment (PTA) process. Licensing and other restrictions on use must be explicated. [Learn about the EPA SORN procedure.](#)

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Developing Data Management & Quality Assurance Plans

To encourage efficient data management, GIS project or project teams shall either develop a data management plan or identify an existing and comparable medium to document aspects of the data lifecycle. This artifact must clearly state the purpose(s), objective(s), value(s), and audience(s) of the data, and link each of these elements to the Agency's mission. As needed, this plan may also outline project requirements, key stakeholders, procurement processes, various risks, project or program scope, and provide meaningful context for data use. A data onboarding checklist may be desirable. When required, GIS program or project teams shall complete the appropriate quality assurance documentation as part of their data management plan. [Access Agency-wide Quality Program Documents.](#)

Data Management Phase II: Contracts, Acquisitions & Processes*Aligning Data Assets with Existing & Expected Investments*

GIS program and project teams shall work with their GIS Lead(s) to ensure that data collection, development, and purchasing activities align with existing and/or expected information technology and information management investments, including but not limited to enterprise licensing agreements. During the alignment process, Agency staff should reference EPA strategic plans. When a license or subscription is required, GIS program and project teams shall evaluate alternatives with their GIS Lead(s). Candidate datasets or services must comply, or be capable of complying, with Agency directives to maximize utility among Agency stakeholders. If the data are national in their extent or application, GIS Leads may consult the EGAC. The EGAC may scope the accuracy, precision and applicability of the data and compare these data against viable alternatives. The EGAC will consider tradeoffs regarding both cost and compliance with federal open data mandates versus potentially higher qualities of licensed data. Such tradeoffs can serve as justification for asset acquisition, though, nevertheless, limitations of the acquired datasets must be specified.

Developing Contract Language & Related Obligations

To the extent practicable, GIS Leads and administrators shall ensure that teams or individuals performing work in support of EPA under a contract, interagency, extramural or other agreement, such as EPA-funded grants, produce or provide the highest-quality geospatial data, geographic information, and related services. GIS program and project teams shall work with a Contracting Officer and/or Contracting Officer's Representative to develop necessary and appropriate contract language. In the absence of more specifying agreements, the procedures herein, as coupled with Agency standards and guidance documents, including but not limited to the National Geospatial Deliverable Standard, shall be considered baseline requirements on EPA agreements related to geospatial data and geographic information (see Scope).

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Processing Data Using Standard Methodologies or Agency Best Practices

Geospatial data developed, collected, or obtained by EPA shall be processed using methodologies that are repeatable, reproducible, and replicable or in accordance with practices that are rigorous or justifiable. As required, GIS program and project teams shall adhere to data collection standards outlined by the FGDC and the Open Geospatial Consortium (OGC) standards as complimented by Agency Best Practices. [Access Agency guidance for geospatial data and geographic information](#). GIS program or project teams shall report key methods related to data collection, development, processing in their data management plans, metadata records, web areas, and/or related materials. If the collection method and accuracy vary for each feature in a dataset, such measures of variance should be provided at the record level as attribute columns. When the collection method and accuracy is consistent across the entire dataset, such attributes can be provided at the dataset level. [Learn more about FGDC standards for reporting geospatial data accuracy](#).

Utilizing EPA-recommended Geospatial Data When Developing or Enhancing Datasets

When developing or enhancing geospatial data, GIS program and project teams shall first explore and, when applicable, utilize Agency-recommended data assets. When such recommendations are absent, geospatial datasets should be developed and/or enhanced in accordance with FGDC and OPEN data standards. [Inquire about EPA-recommended geospatial data through the Shared Enterprise Geodata & Services program](#).

Data Management Phase III: Access, Design & Documentation*Ensuring Digital Accessibility & Agency Design Standards*

EPA aims to communicate geospatial data into actionable information that can be accessed, interpreted, understood, and used by the broadest audiences possible. [Learn about digital accessibility through the Agency's Section 508 Policy, including the Data Visualization Accessibility Procedure](#). EPA GIS programs and project teams shall adhere to Agency design standards, procedures, and best practices to maximize the accessibility of geospatial data, when they exist. This ensures that data displays are accurate, meet Agency design goals, and "look and feel" considerations to the extent practicable and in line with Agency directives. Agency design standards should enable data sharing and promote secondary data use.

Generating Robust & Meaningful Metadata Records

Geospatial data collected, acquired, or managed in conjunction with Agency program(s) or projects must be accompanied by metadata adhering to EPA specifications. [Learn about the minimum metadata standards required by the Agency](#). These minimum metadata standards are complimented by those of the FGDC and OGC. [Learn about metadata specifications for geospatial data and geographic information](#). When such data are Agency-generated and publicly accessible or in a production environment, including situations where data are displayed as static downloads or viewable within a web application or related service, or when non-Agency datasets are substantially and meaningfully enhanced or modified to meet Agency needs or use cases, this metadata must be published to the EPA's metadata catalog. Any data used to make an official decision, such as regulatory actions, granting or disbursing funds, enacting or enforcing

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policies, needs core EPA metadata fields, but that only data produced by EPA must have a record in the metadata catalog. Metadata must reference the EPA Terms of Use for Geospatial Data and specify CUI classes. [Access EPA Disclaimers](#). EPA program and project teams must update this metadata throughout the data lifecycle to ensure its currency, accuracy, and relevancy.

Arranging Data Review, Screening & Corrections

Geospatial datasets used for decision making must be identified, assessed for fitness of purpose, and undergo pre-dissemination review. GIS program or project teams will work with their respective manager(s), GIS Lead (s), GeoPlatform Administrator(s), and senior officials to arrange data review in line with office, region, or division-level procedures. If geospatial data are received and are found to be non-compliant with Agency directives, including aspects of this procedure, the geospatial data or geographic information shall be returned to the originator for correction. It may be used in uncorrected form at an office's, region's, or division's discretion, but data non-compliance must be prominently noted. [Learn about the Agency's reporting requirements in the Authorities Section, including but not limited to Memorandum M-19-15.](#)

Data Management Phase IV: Storage, Sharing & Communication*Sharing Files, Data Storage & Information Transfer*

EPA shall collect, maintain, disseminate, and preserve geospatial data so that both these data and related geographic information can be readily shared with other federal agencies, SLTT entities, institutions of higher education, the private sector, *etcetera*. The purpose of these goals is to ensure federal geospatial information and services best serve the public; streamline operations across scales; support decision making; and enhance Agency reporting to the public and to Congress. GIS programs and projects shall adhere to all statutory and regulatory requirements where they exist in providing access to Agency data and resources. Where such requirements do not exist, EPA will provide access based on data sensitivity analysis and FOIA. In all other cases, EPA will make all reasonable efforts to make geospatial data and related geographic information open and accessible to the public. The Agency strongly recommends publication of data as open and accessible services (e.g., APIs) and complete static downloads. When data are to be transferred via portable storage, Agency procedures must be followed. Spatial data that are stored at the program and/or regional level must be stored in ways conformant with the Enterprise Architecture and system protocols to maximize accessibility.

Communicating Data Updates, Releases & Enhancements

EPA GIS programs and project teams shall either develop a communications management plan or work within the existing plan to communicate updates, releases, and enhancements to their stakeholders. These updates can be formal or informal and shared via media that best meet the needs of the Agency, program office or region. Using an agile methodology will allow the Agency to better anticipate and implement changes and manage efficient change control. In line with EDMP, Assistant, Associate (AAs), and Regional Administrators (RAs) will document relevant geospatial data and geographic information as Priority Data Assets (PDAs) and report accordingly to the Chief Data Officer. [Learn more about reporting requirements through the EDMP.](#)

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Data Management Phase V: Archives, Versioning & Decommission*Archiving Geospatial Datasets & Geographic Information*

When necessary, GIS programs and project teams shall work with their respective GIS Lead(s), GeoPlatform Administrator(s), and Records Liaison Officials to archive geospatial datasets and other forms of geographic information when necessary. [Learn about records management](#). In the absence of a records schedule for geospatial data, discretion on such matters are context specific. Ensure that data information products and other records created in geospatial data and activities are included on agency record schedules that have been approved by NARA. Data disposition for archiving must comply with the Records Retention requirements of the program under which the data was collected. [Access records schedules for geospatial data](#).

Controlling Versions, Vintage & Lineage Documentation

GIS program and project teams shall document and handle schema versioning in a systematic manner. Details on version and lineage should be included in metadata documentation and should describe how and when existing data were collected, processed, or obtained. Key details include if or how other datasets were used to enrich a said data or version or if standardization, aggregation, averaging, or other processing were conducted. As appropriate, records and retention schedules shall be specified.

Deleting or Decommissioning Geospatial Data & Geographic Information

At the end of the data lifecycle, GIS program and project teams shall retire or decommission redundant and/or obsolete geospatial data and geographic information. Such data may not have clear dates of obsolescence, though certain data formats may, given consensus of the EGAC. Data slated for deletion or decommission shall be packaged in a manner that facilitates efficient storage, retrieval, and use should the Agency need to retrieve such data. Corresponding records shall adhere to the Agencies policies referenced herein and preserve information not only about the production system in which it was made but also about the evolution of the system and/or data through its life cycle. As part of this phase, project or program managers may prepare retirement and disposition plans, archive, or transfer system components, sanitize or dispose of related resources, and prepare post-termination communications or reviews. When applicable, GIS Lead(s) and GeoPlatform Administrator(s) will participate in determining the classification status of geospatial data and geographic information. Both parties will also consider when declassified data of the Agency can contribute to and become a part of the NSDI.

6. ROLES AND RESPONSIBILITIES**Chief Information Officer (CIO)**

- Advances the Agency's geographic information system in coordination with the Geospatial Information Officer, Deputy Geospatial Information Officer, and EPA Geospatial Advisory Committee through strategic planning and development of Information Technology and Information Management (IT/IM);

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- Allots adequate resources to the EPA's national geospatial program so that the Agency complies with the federal requirements annotated in *Section 5: Authority*, in concert with Senior Resource Officials; and,
- Updates and endorses changes to this procedure during periodic reviews.

Geospatial Information Officer (GIO)

- Establishes strategic direction for the National Geospatial Program in coordination with the Chief Information Officer;
- Organizes standard approaches for information management and data lifecycle processes related to geospatial data and geographic information;
- information management and data lifecycle
- Publishes information on geospatial data collection activities across the Agency to enhance coordination, reduce duplication, and increase the opportunity for secondary data uses; and,
- Conducts procedure-related oversight at the Agency, ensuring guidance is provided for procedure implementation.

Deputy Geographic Information Officer (DGIO)

- Coordinates periodic review of the National Geospatial Data Procedure in concert with the Chief Information Officer, Geospatial Data Officer, and EPA Geospatial Advisory Committee; and,
- Supports the activities of the GIO.

Chief Data Officer (CDO)

- Consults with the GIO and EGAC on information management and data lifecycle processes related to geospatial data and geographic information, namely as they relate to the Enterprise Data Management Policy; and,
- Coordinates coaching of GIS Lead(s), professionals and practitioners on topics related to data literacy, data security, data structures and schema.

Chief Information Security Officer (CISO)

- Coordinates with SIOs to ensure that information management and data lifecycle processes related to geospatial data and geographic information conform with the Agency's security requirements.

Assistant and Associate Administrators (AA), Regional Administrators (RA), and Laboratory Directors (LD)

- Coaches GIS and BIS Leads, administrators, program and project leads on IT/IM directives relevant to information management and data lifecycle processes;
- Documents their organization's Priority Geospatial Data Assets in collaboration with GIS Leads and/or GeoPlatform Administrators, monitoring this procedure's implementation; and,
- Ensures geospatial data assets and related metadata are cataloged in accordance with this procedure and its normative references.

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Senior Information Officials (SIO)

- Reviews, approves, and maintains records of geospatial data management decisions, when delegated or given accepted workflows;
- Coordinates with Senior Resource Officials to ensure adequate resources are provided to the National Geospatial Program; and,
- Reports to AAs, RDs, and LDs on progress and challenges with implementing this procedure.

Information Management Officials (IMO)

- Reports data management metrics and related information from their respective offices to AAs, RAs, and LDs;
- Supports the SIO in monitoring compliance with this procedure and disseminates related guidance to relevant parties; and,
- Establishes dialogue on behalf of SIOs with the Data Governance Council to ensure timely implementation of geospatial data management directives.

EPA Data Governance Council (DGC)

- Advises the EPA Geospatial Advisory Committee on data collection and acquisition, responsible lifecycle data management, secure storage, improved interoperability of data, open/transparent release of data assets, and advancements in internal and external uses of data;
- Sponsors Agency-wide activities to develop an open data culture and improve EPA's capacity to leverage data as a strategic asset for evidence-based decision making; and,
- Consults to the GIO, DGIO, and EGAC as subject matter experts (SMEs) on actions and decisions pertaining to geospatial data or geographic information

EPA Geospatial Advisory Committee (EGAC)

- Comprised on GIS Leads, oversees governance and production of geospatial data, content items, and related geographic information produced by the Agency;
- Establishes priorities, develops policies, and designates authorities to GIS Administrators, program or project leads to ensure that the Agency's geospatial data and geographic information maximize compliance with federal requirements; and,
- Advises the GIO and DGIO on the National Geospatial Program and aim to maximize access and use of geospatial data by Agency stakeholders; and,

EPA Geographic Information System Work Group

- Provides a forum for discussing geospatial technological and policy issues within EPA and among its partners.

EPA Web Council

- Ensures that Agency web content maximizes digital accessibility and communication best-practices; and,
- Clarifies exemptions for content owner and developers regarding data visualization on the web.

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EPA Controlled Unclassified Leads and Liaisons

- Advises and assists GIS Leads, program and project teams on CUI.

EPA Records Leads and Liaisons

- Ensure EPA's records management guidance reflects CUI requirements as they relate to geospatial data and address the transference of EPA Records to the National Archives and Records Administration (NARA); and,
- Advises GIO on record-keeping responsibilities related to geospatial data and geographic information.

Senior Resource Officials (SRO)

- As directed by the CIO or Agency executives, ensures that adequate resources are allotted for the National Geospatial Program to meet federal requirements outline in *Section 5: Authority*; and,
- Oversees resource management activities related to data management, visualization, and analysis in coordination with data stewards, content and/or system owner(s).

Grants Management Officers

- Incorporates the requirements of this procedure and its normative references into EPA requests for proposals and conditions of grants, interagency agreements, and cooperative agreements; and,
- Educate grantees on data management Agency requirements and best practices and in coordination with the GIO, DGIO, and EGAC; and,

Contracting Officers (COs), Contracting Officer's Representatives (CORs) and Contracting Officer's Technical Representatives (COTRs)

- Incorporates the requirements of this procedure and its normative references into EPA requests for proposals and conditions of grants, interagency agreements, and cooperative agreements; and,
- Integrate GIS Leads, program and project teams into contract processes related to the planning, identification, access, creation, and management of geospatial data or geographic information.

EPA GIS Leads

- As designated by a Region or Program Office (AAship), promotes the strategic value of quality geospatial data and geographic information, ensuring that their program's GIS professionals and practitioners are aware of, understand and implement this procedure;
- Develops and implements plan(s) for carrying-out the requirements of this procedure, working with the EGAC to standardize related directives, guidance, and processes within and among program offices and regions; and,
- Ensures that EPA GIS program and project leads acknowledge this directive and its normative references, including policies, procedures, trainings, *etc.*

EPA GeoPlatform Administrators

- Provides information on EPA GeoPlatform Online (GPO) content items and interface(s) between desktop GIS software and related cloud services; and,

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- Administers control and review processes related to the development and release of Agency geospatial data and geographic information.
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7. RELATED INFORMATION

The federal requirements provided in *Section 4: Authority* are complimented by the resources outlined below. These materials are grouped into five categories that align with data quality standards, metadata development, web requirements, security systems, and related directives, respectively. These materials are outlined for reference purposes and may be adapted by the Agency to its meet evolving data and information management needs.

Regarding quality standards, the following materials outline accuracy and precision recommendations with precedent application at the US EPA:

- [US EPA Geospatial Guidance](#), “Geospatial Data Publishing Guidance,” October 25, 2019;
- US EPA Technical Guidance EPA/600/R-08/020, “Interim Guidance for Developing Global Positioning System Data Collection Standard Operating Procedures and Quality Assurance Project Plans,” February 2008;
- US EPA Geospatial Guidance [QA/G-4](#), “EPA Guidance on Systematic Planning Using the Data Quality Objectives Process,” February 2006;
- Environmental Standards Data Council Standard [EX000017.2](#), “Latitude/Longitude Data Standard,” January 6, 2006;
- Environmental Standards Data Council Standard [EX000020.2](#), “Facility Site Identification Data Standard,” January 6, 2006;
- US EPA Geospatial Guidance [QA/G-5G](#), “Guidance for Geospatial Data Quality Assurance Project Plans,” March 2003;
- US EPA Technical Guidance [EPA/600/R-02/031](#), “Global Positioning Systems: Technical Implementation Guidance,” April 2002;
- National Spatial Data Infrastructure, Federal Geographic Data Committee, Federal Geodetic Control Subcommittee Geospatial Positioning Accuracy Standards [FGDC-STD-007.1-1998](#), “Part 1: Reporting Methodology,” 1998;
- US EPA Guidance [220 B-92-008](#), “Locational Data Policy Implementation Guidance,” March 1992;

The Agency’s geospatial metadata requirements and associated procedures draw from the following documents in support of the NSDI:

- National Spatial Data Infrastructure, Federal Geographic Data Committee [Technical Guidance](#), “FGDC Technical Guidance: Data.gov and The GeoPlatform Metadata Recommendations, including Guidelines for National Geospatial Data Assets (NGDA) [and related technical and formal publications],” December 9, 2019;
- [US EPA Metadata Technical Specification](#) [and related technical and formal publications], August 2016;

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- International Organization for Standards Geospatial Metadata Standards [INCITS/ISO 19115-1](#), “Geographic Information – metadata [[and related technical and formal publications](#)],” August 2015;
- National Spatial Data Infrastructure, Federal Geographic Data Committee, Federal Geographic Data Committee Geospatial Positioning Accuracy Standards [FGDC-STD-001-1998](#), “Content Standard for Digital Geospatial Metadata [[and related technical and formal publications](#)],” 1998;

Geospatial data and related information hosted on public and internal domains or subdomains of the US EPA must align with federal web standards to ensure that the Agency communicates data into actionable information which can be accessed, interpreted, understood, and used by the broadest audiences possible, both within the Agency and among its stakeholders:

- US EPA Procedure [2180-P-06.0](#), “Web Content Types and Review,” October 13, 2021.
- [US EPA Web Standards](#), October 19, 2021;
- [US Web Design System \(USWDS\) Web Standards](#), January 22, 2020;
- [U.S. EPA Procedure](#), “Procedures for Providing Reasonable Accommodation for EPA Employees and Applicants with Disabilities,” October 2020;
- Information and Communication Technology (ICT) Final Standards and Guidelines, [36 C.F.R., 87 U.S.C. 1194](#) (2017; amended 2018);
- US EPA Information Policy [CIO 2180.1](#), “Web Governance and Management,” May 7, 2013;
- [US EPA Memorandum](#), “Restructuring EPA’s Website,” April 15, 2010.
- US EPA Policy [CIO 2102.0](#), “Senior Information Officials,” July 7, 2005;
- [US EPA Memorandum](#), “Improving EPA’s Website,” December 6, 2004;

The US EPA is required to ensure that all regions and program offices adhere to minimum security standards, including the web areas and hosting environments that support the Agency’s geospatial data and information management infrastructure:

- National Institute of Standards and Technology, [Special Publication 800-63-3](#) Digital Identity Guidelines, 20 May 2022;
- Digital Identity Risk Assessment Playbook, [Pre-decisional Draft](#), September 2020;
- National Institute of Standards and Technology, [Special Publication 800-53](#), Revision 5, September 2020;
- National Institute of Standards and Technology, [Special Publication 800-171, Revision 2](#), February 2020;
- National Institute of Standards and Technology, [Special Publication 800-171](#), Revision 1, December 2014;
- National Institute of Standards and Technology, [Special Publication 800-171A](#), June 2018;
- [US EPA Program Manual](#), “Office of Environmental Information (OEI’s) Information Security Program Manual,” August 2013;
- National Institute of Standards and Technology, Information Technology Laboratory, Computer Science Division [FIPS PUB 200](#), “Minimum Security Requirements for Federal Information and Information Systems,” March 2006;

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- National Institute of Standards and Technology, Information Technology Laboratory, Computer Science Division [FIPS PUB 199](#), “Standards for Security Categorization of Federal Information and Information Systems,” February 2004.

The related directives and strategies further underpin the geospatial infrastructure of the US EPA:

- Federal Data Strategy [[and related technical and formal publications](#)];
- [US EPA Memorandum](#), “U.S. Environmental Protection Agency’s GeoPlatform,” May 15, 2012;
- National Spatial Data Infrastructure, [Federal Geographic Data Committee Grant Guidance](#), “FGDC Geospatial Grant Guidance,” November 21, 2006.

8. DEFINITIONS

Business Intelligence Software: Business Intelligence Software (BIS) are applications or digital services designed to retrieve analyze, transform, and report data for business intelligence.

Cataloguing: Cataloguing is the process of adding or updating information metadata into an information registry and/or repository.

Controlled Unclassified Information: CUI is information the government creates or possesses, or that an entity creates or possesses for or on behalf of the government, that a law, regulation, or government-wide policy requires or permits an agency to handle using safeguarding or dissemination controls.

EPA GeoPlatform: The GeoPlatform is the Agency’s digital service that provides access to geospatial data, geospatial metadata, and resources related to the EPA’s National Geospatial Program. The EPA GeoPlatform includes an online platform, known as the EPA GeoPlatform Online (GPO), that is used for cartographic production, geospatial analysis, and application development. As part of the GPO, the EPA GeoPlatform Dashboard serves as a data management tool for content, and is used for administrative reviews of public content. This dashboard contains additional interfaces for managing users, licensing, EPA GPO use, and hosted services in the Agency’s hosting environment.

Geospatial Data: This procedure follows the criteria for geospatial data outlined in the [National Geospatial Data Act](#). Such data are those tied associated with a location on Earth. These data may include those identified geographic location, such as geographic coordinates, and characteristics of natural or constructed features and boundaries on the Earth, and that is generally represented in vector datasets by points, lines, polygons, or other complex geographic features or phenomena. These data may be derived from, among other things, remote sensing, mapping, and surveying technologies; and they may include images and raster datasets, aerial photographs. These data do not include: 1) geospatial data and activities of an Indian tribe not carried out, in whole or in part, using Federal funds, as determined by the tribal government; (2) classified national security-related geospatial data and activities of the Department of Defense, unless declassified; 9/25/2020 2/13 (3) classified national security-related geospatial data and activities of the Department of Energy, unless declassified; (4) geospatial data and activities under

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chapter 22 of title 10 or section 3045 of title 50; (5) intelligence geospatial data and activities, as determined by the Director of National Intelligence; or (6) certain declassified national security-related geospatial data and activities of the intelligence community, as determined by the Secretary of Defense, the Secretary of Energy, or the Director of National Intelligence.

Geospatial Data Asset: Geospatial data assets are collections of geospatial data that make sense to group together. Each community of practice identifies the data asset specific to supporting their respective mission or business function. A given data asset may represent an entire database consisting of multiple distinct entity classes or may represent a single entity class. A geospatial data asset may also be a data or information product.

Information: Following [OMB Circular A-130](#), information is considered any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms.

Information or Data Lifecycle: This lifecycle includes the stages through which information or data are created or collected, processed, shared, used, storage, and, eventually, deprecated.

Metadata: Following the [Evidence Act](#), metadata are structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. *Geospatial metadata* are information about geospatial data, including the content, source, vintage, accuracy, condition, projection, method of collection, and other characteristics or descriptions, as required and outlined by the [FGDC](#).

Non-EPA Organization: An entity that has entered into a contract, extramural funding agreement, or a regulatory or federal-wide requirement with EPA, which can include, but is not limited to EPA contractors, grantees, States, Tribes, localities, regulated parties, volunteer organizations, cooperative agreement holders, other federal governmental agencies, intergovernmental organizations, or educational institutions (CIO Policy 2106.0, "Quality Policy," October 20, 2008) if the requirements set forth in section 6 of this policy are part of a binding contract or other funding agreement.

Local Government: Any city, county, township, town, borough, parish, village, or other general purpose political subdivision of a State

Information: Any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms per [OMB Circular A-130](#).

Unstructured data and information: Unstructured data and information have neither a pre-defined model, structure, or schema. These data and information are typically text based and exist outside of fielded forms in databases annotations in documents. Dates and numbers can be common components. Example artifacts can include text documents, emails, social media, photos, images, webpages, audio, and video files.

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Semi-structured data: Semi-structured data are a form of structured data that exhibit structures unassociated with relational databases or other forms of data tables. They, nevertheless, include tags, semantic elements, *etc.* that enforce hierarchies of records and fields within the data. Example artifacts include emails organized by an inbox, sent, draft, or other category, or folders that are organized by subject title or topic.

9. WAIVERS

As a member of the FGDC and NGAC, the US EPA is committed to advancing the NSDI through federally compliant data standards and performative data and information management infrastructure. There are no waivers for this procedure, though legal exceptions may apply as specified in the [Enterprise Data Management Policy](#), [Data Visualization Accessibility Procedure](#), [EPA CUI Policy](#), and the [Section 508 Exemption Waiver for the EPA GeoPlatform Online](#).

10. DIRECTIVE(S) SUPERSEDED

This Procedure supersedes the [Latitude/Longitude Data Standard \(EX000017.2\)](#), [Institutional Control Data Standard \(EX000015.1\)](#), [Facility Site Identification Data Standard \(EX000020.2\)](#); and [Guidance for Geospatial Data Quality Assurance Project Plans \(EPA QA/G-5G\)](#).

11. CONTACTS

Please contact the GIO, DGIO, or a GIS Lead with questions related to this directive. The National Geospatial Support Team can assist and advise on the implementation of these procedures, as directed.

Vaughn Noga
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and Chief Information Officer
U.S. Environmental Protection Agency