DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF INSPECTOR GENERAL

Office of Audits and Evaluations

DEPARTMENT OF VETERANS AFFAIRS

VA Is Moving toward Full Compliance with Geospatial Data Covered Agency Responsibilities

AUDIT | REPORT #22-00563-224 | SEPTEMBER 21, 2022

MISSION

The mission of the Office of Inspector General is to serve veterans and the public by conducting meaningful independent oversight of the Department of Veterans Affairs.

In addition to general privacy laws that govern release of medical information, disclosure of certain veteran health or other private information may be prohibited by various federal statutes including, but not limited to, 38 U.S.C. §§ 5701, 5705, and 7332, absent an exemption or other specified circumstances. As mandated by law, the OIG adheres to privacy and confidentiality laws and regulations protecting veteran health or other private information in this report.

Report suspected wrongdoing in VA programs and operations to the VA OIG Hotline:

www.va.gov/oig/hotline

1-800-488-8244

Executive Summary

The VA Office of Inspector General (OIG) conducted this audit to determine whether VA complied with the law governing geospatial data and to follow up on recommendations from its inaugural report.[1] Geospatial data are tied to a location on the Earth and are identified by geographic location and characteristics of natural or constructed features and boundaries. VA uses geospatial data to support budget, strategic planning, and policy decisions to provide health care, benefits, and burial services to veterans.

The Veterans Health Administration (VHA) provides care to over 9 million enrolled veterans and uses geospatial information to improve veterans' experiences, such as by calculating drive time and distance between residences and the closest VHA healthcare facilities. Geospatial data also strengthen and improve the National Cemetery Administration's (NCA) ability to permanently account for remains, mark gravesites, track gravesite usage, and digitally map gravesites. NCA administers 155 national cemeteries, maintains 3.83 million graves, and manages more than 22,000 acres. Finally, the Veterans Benefits Administration (VBA) uses geospatial data in a ship-locator tool that identifies veterans who served offshore of the Republic of Vietnam.[2]

The VA OIG is required to submit an audit report to Congress at least once every two years on the collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data.[3] According to the Council of the Inspectors General on Integrity and Efficiency, focusing the fiscal year 2022 audits on the agencies' progress toward compliance with covered agency responsibilities would likely provide the best value to the covered agencies, Congress, and the public. A copy of the council's letter to Congress detailing the scope limitation is in appendix B.

VA's requirements under the law are as follows:

1. Prepare and implement a strategy for advancing geospatial data activities appropriate to the agency's mission.
2. Collect, maintain, disseminate, and preserve geospatial data such that resulting data, information, or products can be shared.

---

[1] 43 U.S.C. §§ 2801–2811; VA OIG, *VA Needs to Comply Fully with the Geospatial Data Act of 2018*, Report No. 20-02339-35, January 6, 2021. The Geospatial Data Act of 2018 was codified in title 43.

[2] Blue Water Navy Vietnam Veterans Act of 2019, Pub. L. No. 116-23, § 1116A (2019); 38 U.S.C. § 1116A. A veteran who served in the offshore waters of the Republic of Vietnam between January 9, 1962, and May 7, 1975, and was not more than 12 nautical miles seaward of the line commencing on the southwestern demarcation line of the waters of Vietnam and Cambodia, is considered to have served in "blue water" and been exposed to tactical herbicides.

[3] 43 U.S.C. § 2808(c).

3. Promote geospatial data integration.
4. Ensure that geospatial information is included on agency record schedules that have been approved by the National Archives and Records Administration (NARA).
5. Allocate resources to fulfill geospatial data responsibilities.
6. Use geospatial data standards.
7. Coordinate with other federal agencies; state, local, and tribal governments; institutions of higher education; and the private sector.
8. Make federal geospatial information more useful to the public, enhance operations, support decision-making, and enhance reporting to the public and to Congress.
9. Protect personal privacy and maintain confidentiality in accordance with federal policy and law.
10. Participate in determining whether declassified data can become part of the National Spatial Data Infrastructure.
11. Search all sources to determine if existing data meet the needs of the covered agency before expending funds to acquire geospatial data.
12. Ensure that those receiving federal funds for geospatial data collection provide high-quality data.
13. Appoint a contact to coordinate with other lead covered agencies.

What the Audit Found

The OIG found VA met nine of the 12 applicable covered agency requirements of the law; requirement 10 was not applicable.[4] VA shared geospatial data, allocated geospatial resources, used geospatial data standards, coordinated with other federal and nonfederal entities, and made geospatial information more useful to the public. VA also searched required sources before expending funds to acquire geospatial data, ensured those receiving federal funds for geospatial data collection provided high-quality data, and designated representatives to coordinate with other lead covered agencies. According to VA officials, VA does not collect, hold, manage, or consume declassified geospatial data, and the OIG team did not find evidence to the contrary, making the related requirement not applicable.

[4] 43 U.S.C. § 2808(a).

In its inaugural audit report, the OIG found VA was not compliant with three covered agency requirements:

1. VA was unable to comply with requirement 1 due to the absence of an approved strategic plan from the Federal Geographic Data Committee. As discussed later in this report, the committee approved the plan. *At the time of report publication, VA was in the process of implementing a VA enterprise data strategy roadmap and VA spatial data strategy.*
2. Regarding requirement 3, VA had not established mandatory VA-wide policies and responsibilities to promote the integration of geospatial data. Since the prior OIG report, VA has taken steps to promote integration by working collaboratively across the agency and entering into enterprise license agreements. *At the time of report publication, VA was in the process of implementing a VA enterprise data strategy roadmap and VA spatial data strategy.*
3. In accordance with requirement 4 of the law, the OIG recommended VA establish a process to ensure geospatial data and activities are included on VA record schedules that have been approved by NARA. In response to this recommendation, NCA submitted a request in October 2021 for NARA to approve a record schedule for national cemetery boundary geospatial data.[5] *In July 2022, NARA notified VA the record schedule was approved.*

Although VA has taken steps toward compliance with the requirements, all necessary actions have not been completed for requirements 1 and 3. In addition, although VA was previously compliant with requirement 9, it has not met the additional criteria recommended by the Council of the Inspectors General on Integrity and Efficiency to protect personal privacy and maintain confidentiality.[6] VHA has a geographic information system that stores the residential addresses of approximately 9.5 million enrollees and includes VA and non-VA healthcare delivery sites, counties, congressional districts, Native American tribal lands, and aggregated VHA enrollee and veteran populations.[7] However, VHA did not document and fully consider the confidentiality, integrity, and availability of data to obtain an authority to operate before the system was hosted

[5] Standard Form 115 (SF-115), Request for Records Disposition Authority, October 1, 2021, to NARA requesting Records Disposition Authority for National Cemetery Administration Geographic Information System (GIS) National Cemetery Boundary Information.

[6] Council of the Inspectors General on Integrity and Efficiency, *CIGIE Geospatial Data Act Working Group,* Audit Guide Fiscal Year 2022, September 2021.

[7] See VHA's comment 2 on page 29.

on VA's network.[8] VHA is in the process of transitioning from the existing system to a VA Enterprise Cloud Amazon Web Service.[9] According to the system's enterprise administrator, the planned decommissioning and migration from the existing system to the new VA Enterprise Cloud Amazon Web Service solution will be completed in fiscal year 2022.

The OIG recognizes the complexity of integrating multiple geographic information systems across the agency. In light of the significant progress VA has made to comply with the act's requirements, the OIG is making no recommendations for improvement. The OIG encourages VA to complete its planned actions to ensure compliance.

What the OIG Recommended

The OIG did not make any recommendations for improvement.

VA Comments and OIG Response

The Office of Information and Technology and VHA's Chief Strategy Office concurred with the OIG's draft report. VHA's deputy chief strategy officer also requested the OIG modify some of the wording in the report. The OIG considered the request for modifications from the VHA deputy chief strategy officer and, where appropriate, made some minor modifications to the report. Appendixes C and D contain the full text of VA's responses.

LARRY M. REINKEMEYER
Assistant Inspector General
for Audits and Evaluations

[8] National Institute of Standards and Technology, *Risk Management Framework for Information Systems and Organizations: A System Life Cycle Approach for Security and Privacy*, NIST Special Publication 800-37, rev. 2, December 2018. "Authority to operate" permits the use of a business product and explicitly accepts the risk to the agency. An approving official signs the authority to operate after a certification agent confirms that the system has passed all requirements to become operational.

[9] The Amazon Web Services GovCloud High has been authorized at the high-impact level by the FedRAMP Joint Authorization Board. The magnitude of harm if privacy-related data are disclosed, intentionally or unintentionally, is low.

Contents

Executive Summary i

Introduction 1

Results and Recommendations 5

Finding: VA Is Taking Steps to Comply with Geospatial Data Covered Agency Responsibilities 5

Appendix A: Scope and Methodology 23

Appendix B: Council of the Inspectors General on Integrity and Efficiency's Letter to Congress 26

Appendix C: VA Management Comments, Office of Information and Technology 28

Appendix D: VA Management Comments, Veterans Health Administration 29

OIG Contact and Staff Acknowledgments 32

Report Distribution 33

Abbreviations

ESRI	Environmental Systems Research Institute
FGDC	Federal Geographic Data Committee
GIS	geographic information system
NARA	National Archives and Records Administration
NCA	National Cemetery Administration
NSDI	National Spatial Data Infrastructure
OEI	Office of Enterprise Integration
OIG	Office of Inspector General
VBA	Veterans Benefits Administration
VHA	Veterans Health Administration

Introduction

Geospatial data are tied to a location on the Earth and are identified by that location, as well as its natural or constructed features and boundaries. VA uses geospatial data to support budget, strategic planning, and policy decisions to provide health care, benefits, and burial services to veterans. The Veterans Health Administration (VHA) provides care to over 9 million veterans and uses geospatial information to calculate drive time and distance between enrollees' residences and their closest VHA healthcare facilities. Geospatial data also strengthen and improve the National Cemetery Administration's (NCA) ability to permanently account for remains, mark gravesites, track gravesite usage, and digitally map gravesites. NCA administers 155 national cemeteries, maintains 3.83 million graves, and manages more than 22,000 acres. Further, the Veterans Benefits Administration (VBA) improves the claims process for veterans with the aid of geospatial data. For example, VBA determines who may qualify for compensation benefits under the Blue Water Navy Vietnam Veterans Act of 2019 by using a ship-locator tool that incorporates digitized geospatial data from naval deck logs.[10]

The law governing geospatial data requires the inspector general of each covered agency to submit an audit report to Congress at least once every two years on the collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data.[11] According to the Council of the Inspectors General on Integrity and Efficiency, focusing the fiscal year 2022 audits on the agencies' progress toward compliance with covered agency responsibilities would likely provide the best value to the covered agencies, Congress, and the public.[12] Based on the council's guidance, the VA Office of Inspector General (OIG) conducted this audit to determine whether VA complied with the law governing geospatial data and to follow up on recommendations from its inaugural report.[13] See appendix A for details about the audit's scope and methodology. A copy of the council's letter to Congress detailing the scope limitations is in appendix B.

Aspects of Geospatial Data

Geospatial data are made up of either vector or raster data. Vector data have specific coordinates that are represented by points, lines, or polygon features.[14] Common examples of vector data are

[10] Blue Water Navy Vietnam Veterans Act of 2019, Pub. L. No. 116-23, (2019); 38 U.S.C. § 1116A.

[11] 43 U.S.C. § 2808(c).

[12] Council of the Inspectors General on Integrity and Efficiency's Letter to Congress, October 18, 2021.

[13] 43 U.S.C. §§ 2801–2811; VA OIG, *VA Needs to Comply Fully with the Geospatial Data Act of 2018*, Report No. 20-02339-35, January 6, 2021. The Geospatial Data Act of 2018 was codified in title 43.

[14] ESRI Webhelp, "polygon feature," accessed October 26, 2021, http://webhelp.esri.com/arcgisserver/9.3/java/geodatabases/definition_frame.htm. Polygon features bound an area at a given scale, such as a country on a world map or a district on a city map.

the maps and driving directions viewed in applications such as Google Maps. Raster data represent data through a digital image such as a scanned map or photograph and include aerial and satellite imagery. The satellite view in Google Maps is an example of raster data. According to the Government Accountability Office, geographic information systems (GIS) are "systems of computer software, hardware, and data used to capture, store, manipulate, analyze, and graphically present a potentially wide array of geospatial data." The primary function of a GIS is to link multiple sets of geospatial data and display the combined information as maps with different layers of information. Figure 1 provides an overview of how GIS works.

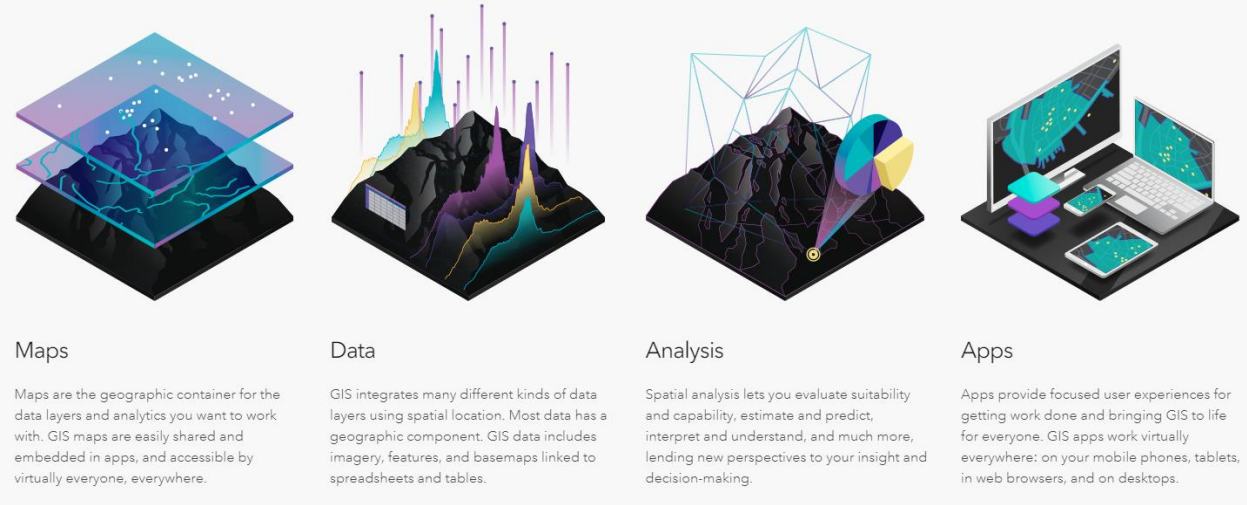

Figure 1. *Screenshot taken from esri.com site, "What is GIS?"*
Source: Content is the intellectual property of ESRI and is used herein with permission. Copyright © 2022 ESRI and its licensors. All rights reserved.

Geospatial Data

The law governing geospatial data fosters efficient management of geospatial data, technologies, and infrastructure by enabling better coordination among federal, state, local, and tribal governments; the private sector; nonprofit organizations; and institutions of higher education.[15] The law is also intended to reduce duplicative efforts and facilitate the efficient procurement of geospatial expertise, technology, services, and data. In addition, it formalizes governance processes related to geospatial data, provides policy and guidance to empower the use of geospatial data and technology, and facilitates broad cooperation between the public and private sector. The law reflects the growing recognition of the essential roles of geospatial data and technology and highlights the need to support their continuing development as critical investments for the nation. Finally, it codifies the committees, processes, and tools used to

[15] "Geospatial Data Act of 2018," Federal Geographic Data Committee (FGDC), accessed October 15, 2021, https://www.fgdc.gov/gda/gda-fact-sheet-may-2019.pdf; 43 U.S.C. § 2801(13).

develop, drive, and manage the National Spatial Data Infrastructure (NSDI) and recognizes responsibilities beyond the federal government for its development.[16]

VA is a covered agency under the law governing geospatial data.[17] The law requires the OIG to review VA's compliance with

1. the standards for geospatial data, including metadata for geospatial data, established under section 2806;[18]
2. the requirements under section 2808(a); and
3. the limitation on use of federal funds under section 2809.[19]

As previously mentioned, the fiscal year 2022 audit focuses only on requirements for covered agencies to perform 13 responsibilities regarding the implementation of the NSDI and management of geospatial data. For example, each covered agency is required to prepare, maintain, publish, and implement a strategy for advancing geographic information and related geospatial data and activities that support its mission and the Federal Geographic Data Committee's (FGDC) strategic plan for the NSDI. Furthermore, each covered agency will ensure geospatial information products, records, and activities are included on approved National Archives and Records Administration (NARA) record schedules.

Federal Geographic Data Committee

The FGDC aids GIS use and advises federal and other spatial data users on their NSDI implementation responsibilities. Lead covered federal agencies are required to be members of the FGDC and are responsible for providing leadership and helping develop and implement geospatial data standards, including data content standards. Although VA is not a lead covered federal agency, it designated representatives to coordinate with the committee. The FGDC was responsible for developing an NSDI strategic plan, which described the actions the FGDC

[16] Office of Management and Budget (OMB) Memo M-11-03, "Issuance of OMB Circular A-16 Supplemental Guidance," November 10, 2010. The NSDI is the technology, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve utilization of geospatial data.

[17] 43 U.S.C. § 2801(3). A covered agency is an executive department that collects, produces, acquires, maintains, distributes, uses, or preserves geospatial data on paper or in electronic form to fulfill the mission of the department, either directly or through a relationship with another organization.

[18] 43 U.S.C. § 2806; ESRI Webhelp, "metadata," accessed October 26, 2021, http://webhelp.esri.com/arcgisserver/9.3/java/geodatabases/definition_frame.htm. Metadata is information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, where, and by whom the data were collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard.

[19] 43 U.S.C. § 2809. A covered agency may not use federal funds for the collection, production, acquisition, maintenance, or dissemination of geospatial data that does not comply with the applicable standards established under section 2806, as determined by the committee.

community and partners will take to develop and maintain the nation's critical geospatial infrastructure and to implement geospatial data requirements. In November 2020, the FGDC approved the NSDI strategic plan for 2021 through 2024.[20]

In addition, the FGDC implemented the NSDI clearinghouse, referred to as the "GeoPlatform," and advises federal and other spatial data users on their GeoPlatform responsibilities. A clearinghouse is a network of data producers, managers, and users linked electronically, such as over the internet. The GeoPlatform provides users a single web interface to search and access metadata and data for themes.[21]

Program Office Responsibility

VA's Office of Enterprise Integration's (OEI) mission is to orchestrate and lead the continuous improvement of veterans' and employees' experiences through effective enterprise integration of people, processes, technology, innovations, and maturing organizational management capabilities.[22] The OEI is made up of four offices, including the Office of Data Governance and Analytics.[23] This office is responsible for providing data management, data analysis, and business intelligence capabilities to inform VA-wide decision-making. It acts as an authoritative clearinghouse for the collection, analysis, and dissemination of statistics about veterans and VA programs. The office also provides predictive analysis, actuarial services, and data-driven forecasting capabilities to inform decision-making and supports policy development and resource allocation decisions.[24]

Under the Office of Data Governance and Analytics, the Data Governance Council oversees VA's data standards and is the final authority on all VA directives, policies, and standards concerning the creation, collection, and dissemination of authoritative data. The council is co-chaired by VA's chief data officer and the principal deputy assistant secretary for Information and Technology.[25] The OEI, in coordination with the Data Governance Council, published a directive that establishes VA policy and defines roles and responsibilities for data governance and management throughout the department.[26] The directive supports VA's data strategy and roadmap implementation.

[20] FGDC, National Spatial Data Infrastructure Strategic Plan 2021–2024, November 2020.

[21] OMB Memo M-11-03. Data themes are electronic records and coordinates for a topic or subject, such as elevation, vegetation, or hydrography.

[22] "About OEI," VA OEI, accessed October 27, 2021, https://www.va.gov/oei/about/index.asp.

[23] "About OEI," VA OEI website.

[24] "Data Governance and Analytics," VA OEI, accessed October 14, 2021, https://www.va.gov/oei/about/data-governance-analytics.asp.

[25] "Data Governance and Analytics," VA OEI website.

[26] VA Directive 0900, *VA Enterprise Data Management*, December 8, 2020.

Results and Recommendations

Finding: VA Is Taking Steps to Comply with Geospatial Data Covered Agency Responsibilities

VA satisfied nine of the 12 covered agency responsibilities of the law. Requirement 10 is not applicable because VA does not collect, hold, manage, or consume declassified geospatial data.

In the OIG's prior report, VA was not compliant with requirements 1, 3, and 4. Although VA has taken steps toward compliance, all necessary actions have not been completed for requirements 1 and 3.

For requirement 9, VA was previously compliant. However, for the fiscal year 2022 audit cycle, the Council of the Inspectors General on Integrity and Efficiency recommended additional criteria to assess compliance for this requirement; VA has not yet achieved compliance based on the additional criteria. Table 1 shows VA's compliance with the 12 applicable requirements as of November 2020 and June 2022.

Table 1. VA's Compliance with Covered Agency Responsibilities

	Description of requirement	Was VA compliant in November 2020?	Was VA compliant as of June 2022?
1	Prepare and implement a strategy for advancing geospatial data activities appropriate to the agency's mission. *Note: In the absence of an approved strategic plan from the FGDC, VA was unable to comply with this requirement.*	No	No
2	Collect, maintain, disseminate, and preserve geospatial data such that resulting data, information, or products can be shared.	Yes	Yes
3	Promote geospatial data integration.	No	No
4	Ensure that geospatial information is included on agency record schedules that have been approved by NARA.	No	Yes
5	Allocate resources to fulfill geospatial data responsibilities.	Yes	Yes
6	Use geospatial data standards.	Yes	Yes
7	Coordinate with other federal agencies; state, local, and tribal governments; institutions of higher education; and the private sector.	Yes	Yes

	Description of requirement	Was VA compliant in November 2020?	Was VA compliant as of June 2022?
8	Make federal geospatial information more useful to the public, enhance operations, support decision-making, and enhance reporting to the public and to Congress.	Yes	Yes
9	Protect personal privacy and maintain confidentiality in accordance with federal policy and law.	Yes	No
10	Participate in determining whether declassified data can become part of the NSDI.	Not applicable	Not applicable
11	Search all sources to determine if existing data meet the needs of the covered agency before expending funds to acquire geospatial data.	Yes	Yes
12	Ensure that those receiving federal funds for geospatial data collection provide high-quality data.	Yes	Yes
13	Appoint a contact to coordinate with other lead covered agencies.	Yes	Yes

Source: 43 U.S.C. § 2808(a). The Geospatial Data Act of 2018 was codified in title 43.

What the OIG Did

To assess VA's compliance with geospatial data agency requirements, the audit team examined federal laws, regulations, and publications. The team interviewed officials and personnel within VA's OEI, VHA, NCA, VBA, and the Office of Information and Technology's Geospatial Business Intelligence Service Line, Data Analytics Product Line, and Enterprise Records Service. In addition, the team reviewed Environmental Systems Research Institute (ESRI) contracts, memorandums of understanding, and memorandums of agreement. For more information on the audit scope and methodology, see appendix A.

VA Met Nine of the 12 Applicable Covered Agency Responsibilities

The OIG found VA met nine of the 12 applicable covered agency requirements of the law; requirement 10 was not applicable according to VA officials because VA does not collect, hold, manage, or consume declassified geospatial data, and the OIG team did not find evidence to the contrary, making the related requirement not applicable.[27] For requirements 1 and 3, the enterprise data strategy roadmap and spatial data strategy are in the concurrence process. For requirement 9, VA is taking steps to transition the existing GIS to the Amazon Web Services GovCloud High environment.

[27] 43 U.S.C. § 2808(a).

VA Is Preparing and Implementing a Strategy for Advancing Geospatial Data Activities (Requirement 1)

Requirement 1 is to prepare, maintain, publish, and implement a strategy for advancing geographic information and related geospatial data and activities in support of the strategic plan for the NSDI. During the inaugural audit of VA's compliance with the Geospatial Data Act of 2018, the OIG found that VA was unable to comply because the FGDC had not yet approved the NSDI strategic plan.[28] In November 2020, the FGDC approved the NSDI strategic plan for 2021–2024, which included four strategic goals to advance the use of geospatial data and technology:

1. **Policy and governance.** Implement the national geospatial policy and governance framework as defined by the Geospatial Data Act of 2018 and related statutes and policies.
2. **National geospatial data assets.** Advance the maturity of, accelerate the acquisition of, and expand the sources of national geospatial data assets to ensure they are findable, accessible, interoperable, and reusable.
3. **Geospatial shared services.** Ensure open standards-based interoperability to enable geospatial shared services.
4. **Collaborative governance and partnerships.** Enable and promote collaborative governance and partnerships to meet national needs, priorities, and circumstances.

The OIG found VA has taken steps to address data as a strategic asset across its life cycle via the framework established in its enterprise data strategy and related draft spatial data strategy. According to VA, enterprise data are used to support veterans' health care or benefits by supporting business, programs, and veteran analytics to build clear justifications for supporting decision-making, planning, budgeting, and legislative proposals and to drive continuous operational and programmatic improvements. Spatial data include information about locations and shapes of geographic features and relationships between them or any data that can be mapped.[29]

Enterprise Data

After the committee published its strategic plan, the OEI published a directive establishing VA's enterprise data management policy and addressing implementation of its enterprise data strategy

[28] VA OIG, *VA Needs to Comply Fully with the Geospatial Data Act of 2018.*

[29] ESRI Webhelp, "spatial data," accessed October 26, 2021, https://webhelp.esri.com/arcgisserver/9.3/java/geodatabases/definition_frame.htm.

and roadmap.[30] According to the former deputy executive director of the Office of Data Governance and Analytics, the implementation process is underway: the enterprise data strategy roadmap and spatial data strategy are going through the concurrence process. The directive established requirements for the life-cycle management of data as a strategic asset that supports VA's mission and values. Subsequently, the OEI, the Office of Information and Technology, and the Data Governance Council jointly published a VA-wide enterprise data strategy with five goals that align with the NSDI goals:[31]

1. **Stewardship.** Provide quality and trusted authoritative data, metadata, and metrics to the enterprise to accelerate the use, quality, and interoperability of VA data.
2. **Analytics.** Empower the enterprise with integrated scalable analytics for evidence-based policymaking.
3. **Technology.** Create a secure infrastructure for business architecture, data management, information sharing, and analytics.
4. **People.** Foster and organize a federated and distributed data-centric workforce.
5. **Governance.** Strengthen collaborative, federated, and accountable governance toward VA as a learning enterprise.

According to the former deputy executive director of the Office of Data Governance and Analytics, VA has not yet published an enterprise data strategy roadmap with implementation details and milestones because it is going through the concurrence process.[32]

Spatial Data

VA's draft spatial data strategy defines spatial data infrastructure and addresses its need to incrementally acquire, process, distribute, use, maintain, and preserve spatial data in support of its mission. According to the draft spatial data strategy, VA intends spatial data goals, objectives, and desired outcomes to be in full compliance with the geospatial data requirements by fiscal year 2023. The draft spatial data strategy incorporates the following key goals:

1. **Enhance spatial data stewardship.** Institutionalize a high-quality spatial coding process and authoritative spatial data standards to ensure appropriate usage.

[30] VA Directive 0900.

[31] VA Office of Enterprise Integration, *VA Enterprise Data Strategy*, January 2021.

[32] VA Handbook 0999, *VA Enterprise Directives Management*, August 1, 2019. The handbook provides procedures for the preparation, concurrence, and certification of VA enterprise directives, handbooks, and notices. Concurrence is defined as an organization's official acceptance of the content presented in a document and recommendation that the document be approved for signature as written.

2. **Integrate spatial data analytics and technology.** Empower spatial analytics through integrated, secure, scalable spatial data sharing, analytics, and technology.
3. **Define GIS architecture.** Establish enterprise-wide spatial data architecture to support GIS for spatial data and analytics.
4. **Foster a federated spatial workforce.** Foster and organize a federated spatial workforce and partnerships to better serve veterans and drive innovation.
5. **Establish spatial data governance.** Establish enterprise-wide spatial data governance under the VA Data Governance Council in support of strategic direction and policies governing spatial data and analytics.

According to the former deputy executive director of the Office of Data Governance and Analytics, the spatial data strategy is in the concurrence process.

VA has published a directive and enterprise data strategy, and its enterprise data strategy roadmap and draft spatial data strategy are in the concurrence process. Therefore, although VA is not yet compliant with the requirement to prepare and implement a strategy for advancing geospatial data activities, the OIG is not making a recommendation.

VA Collected, Maintained, Disseminated, and Preserved Geospatial Data (Requirement 2)

Requirement 2 is to collect, maintain, disseminate, and preserve geospatial data such that resulting data, information, or products can be shared. The OIG found VA continues to meet this requirement. In December 2020, the OEI published directive 0900 stating VA's data are a strategic asset. All data created, collected, received, acquired, processed, derived, disseminated, stored, and disposed of by VA are managed consistently across their life cycles.[33]

The former deputy executive director for the Office of Data Governance and Analytics explained that geospatial data are subject to the Data Governance Council guides that prescribe end-to-end processes and procedures.[34] The Data Governance Council's guide for VA's data life cycle is based on the Office of Management and Budget's updated data life cycle and consists of activities such as creating and collecting, processing, storing and archiving, maintaining, disseminating and using, disclosing, and disposing of data.[35] The OEI has standard operating procedures regarding geographic information cell suppression based on Federal Principal Statistical Agencies' best practices. Before disseminating geospatial data, VA offices are

[33] VA Directive 0900.

[34] The Data Governance Council guides include the Data Stewards Data Architecture Guide, Data Stewards Data Quality Guide, Data Stewards Risk Management and Data Issue Resolution Guide, and Data Stewards Principles for Authoritative Data Source Selection and Implementation Guide.

[35] OMB A-16 Supplemental Guidance, "Stages of the Geospatial Data Lifecycle," April 18, 2022.

responsible for conducting a disclosure review and taking steps to protect veterans' confidentiality. For example, if VA published a map showing veterans' distances from a certain VA facility, it would not publish the veterans' names or addresses.

VA is piloting an enterprise data catalog that connects VA data to facilitate the exchange of metadata with the Department of Defense enterprise data catalog. According to a presentation provided by VA's Architecture and Engineering Services, the catalog will serve as VA's central hub for maintaining operational datasets, metadata, and data dictionaries based upon the FGDC and International Organization for Standardization geospatial data standards. Furthermore, the presentation states VA and the Department of Defense will better understand where the data reside and optimize data quality, visibility, and accessibility. According to the former deputy executive director of the Office of Data Governance and Analytics, the catalog will allow data analysts to easily discover, understand, access, and use agency data, including geospatial data.[36] He also stated the goal is to enable interoperability within VA and with the Department of Defense. According to VA, assuming funding is secured, the catalog will become operational in early fiscal year 2023.

VA also has several memorandums of understanding with the Geological Survey, Census Bureau, and Department of Health and Human Services' Indian Health Service in which the agencies share resources such as veteran data, geospatial data, and information technology. Based on VA's end-to-end process, procedures, and ongoing efforts regarding the sharing of geospatial data, the OIG found VA is complying with this requirement.

VA Is Working toward Promoting Geospatial Data Integration (Requirement 3)

Requirement 3 is to comply with promoting the integration of geospatial data from all sources. In the inaugural audit of VA's compliance with the Geospatial Data Act of 2018, the OIG found that although VA had taken steps to comply with this requirement, it still needed to establish mandatory VA-wide data management policies and responsibilities. VA has since promoted integration by working collaboratively across the agency and entering into enterprise license agreements that allow multiple user agreements to be managed under one agreement. This reduces costs, paperwork, and redundancies of individually purchased agreements and improves oversight of the agreements under one office. VA's data strategy roadmap and spatial strategy are in the concurrence process.

[36] International Organization for Standardization, ISO 19115-1:2014, Geographic Information—Metadata—Part 1: Fundamentals (2014); International Organization for Standardization, ISO 19157:2013, Geographic Information—Data Quality (2013). The International Organization for Standardization is an independent, nongovernmental entity that develops international standards.

VHA's Geospatial Systems Support Center has an enterprise license agreement with ESRI to provide GIS products such as software, data, training, and services to VHA program offices. According to the VHA deputy chief strategy officer, the agreement will be implemented over several years.[37] The deputy chief strategy officer also indicated the support center is coordinating with the Office of Data Governance and Analytics to determine whether it makes sense to migrate the VHA agreement to a VA-wide agreement, as NCA, VBA, and other VA offices have individual user licenses with ESRI.

Although VA is not yet compliant, its enterprise data strategy roadmap and spatial strategy are in the concurrence process. Further, VA has promoted integration by working collaboratively across the agency and entered into enterprise license agreements. Therefore, the OIG is not making a recommendation.

VA Ensured Geospatial Information Is Included on Approved Record Schedules (Requirement 4)

Requirement 4 is to ensure data information products and other records created in geospatial data and activities are included on agency record schedules that are approved by NARA.[38] VA records must be covered by either the NARA General Records Schedule or a NARA-approved records control schedule.

In its inaugural audit of VA's compliance with the Geospatial Data Act of 2018, the OIG found NCA did not have an established NARA-approved records schedule for retaining veterans' cemetery boundary geographic information, risking loss or deletion of the information. In October 2021, NCA submitted a request for NARA to approve a record schedule for national cemetery boundary geospatial data in electronic format.[39] In July 2022, NARA notified VA the record schedule was approved. Because NCA took steps to ensure its geospatial data are included on approved agency record schedules, the OIG found VA compliant with this requirement.

[37] See VHA's comment 3 on page 30.

[38] "About the National Archives," NARA, accessed May 12, 2022, https://www.archives.gov/about. NARA is the nation's record keeper of all documents and materials created in the course of business conducted by the federal government. A records schedule provides mandatory instructions regarding how to maintain records and what to do with them when they are no longer needed for current business.

[39] Standard Form 115 (SF-115), Request for Records Disposition Authority, October 1, 2021, to NARA requesting Records Disposition Authority for National Cemetery Administration Geographic Information System (GIS) National Cemetery Boundary Information.

VA Allocated Resources to Fulfill Geospatial Data Responsibilities (Requirement 5)

Requirement 5 is to allocate resources to fulfill the responsibilities of effective geospatial data collection, production, and stewardship regarding related activities of the covered agency. VA continues to allocate resources to fulfill geospatial data responsibilities and support the activities of the FGDC. The audit team found VHA's Geospatial Service Support Center and Office of Information and Technology's Geospatial Business Intelligence Service Line allocated resources and services that support this requirement. The support center also has an enterprise license agreement, which provides GIS products such as software, data, training, and services. The enterprise license agreement is being used by 10 VHA offices and, according to VHA's deputy chief strategy officer, there are discussions for sharing the services provided by the agreement with additional offices across VA.

The Geospatial Business Intelligence Service Line provides an enterprise GIS platform that supplies geospatial architecture and administration services, software, data, access to ESRI's ArcGIS Pro software, enterprise portal, and geodatabases.[40] The Geospatial Business Intelligence Service Line also provides services such as geocoding addresses, application development, spatial analysis, training, and access to a GIS data scientist. The Geospatial Business Intelligence Service Line also allocates some of its services through memorandums of agreement with multiple VA offices engaged in geospatial activities. These offices include NCA's Field Programs Enterprise GIS Services and VBA's Loan Guaranty Service Analytics.

NCA's Field Programs Enterprise GIS Services use Geospatial Business Intelligence Service Line services to view and edit data related to cemetery gravesites and store and maintain geospatial feature data collected during NCA's field operations and photographs associated with NCA field GIS data. According to a geospatial engineer in VBA's Loan Guaranty Service Analytics division, staff use ESRI data for information about addresses and loans. For example, geospatial data support decision-making, particularly for emergent issues. Such issues include information about specially adapted housing grants within the path of the Kīlauea volcano eruption in Hawaii in 2018 and the distribution of VA home loans in proximity to military installations when a base is closed. As a result of VA's efforts to allocate resources to fulfill geospatial data responsibilities and support the activities of the FGDC, the OIG found VA is complying with this requirement.

[40] ESRI Webhelp, "ArcGIS Online," accessed October 26, 2021, https://webhelp.esri.com/arcgisserver/9.3/java/geodatabases/definition_frame.htm. ArcGIS Online is a set of web-based base maps, globes, and other data and services created by ESRI for use inside ArcGIS products and GIS applications on the internet.

VA Used Geospatial Data Standards (Requirement 6)

Requirement 6 is to use the geospatial data standards, including the standards for metadata for geospatial data, and other appropriate standards, including documenting geospatial data with the relevant metadata and making metadata available through the GeoPlatform. VA continues to use geospatial and metadata standards. Through interviews and data requests, the audit team found VA's OEI and Office of Emergency Management; Office of Information and Technology's Geospatial Business Intelligence Service Line; VHA's Geospatial Service Support Center, Office of Rural Health, and Geospatial Outcome Division; and NCA's Cemetery Development and Improvement Service use FGDC-endorsed geospatial and metadata standards. For example, the Geospatial Business Intelligence Service Line and the Office of Emergency Management use the FGDC Content Standard for Digital Geospatial Metadata format to support data exchanges and require the use of this format. In addition, the Geospatial Business Intelligence Service Line published an intranet resource that provides the Corporate Data Warehouse metadata domains, including references to a metadata registry.[41]

According to the former deputy executive director of the Office of Data Governance and Analytics, although VA does not yet share data via the GeoPlatform, it is working toward meeting goal 1 of VA's Draft Spatial Data Strategy by implementing geospatial data stewardship across VA. This will institutionalize high-quality spatial coding processes and authoritative spatial data standards by the fourth quarter of fiscal year 2022. VA plans on having the geospatial steward position in place during fiscal year 2022; the steward will be responsible for making the data available on the GeoPlatform. Based on VA's continued use of FGDC-endorsed geospatial and metadata standards and plans to appoint a geospatial steward position responsible for making data available on the GeoPlatform, the OIG found VA is complying with this requirement.

VA Coordinated with Federal, State, and Local Stakeholders (Requirement 7)

Requirement 7 is to coordinate and work in partnership with other federal agencies; agencies of state, tribal, and local governments; institutions of higher education; and the private sector to efficiently and cost-effectively collect, integrate, maintain, disseminate, and preserve geospatial data, building upon existing nonfederal geospatial data to the extent possible.

[41] "What is a Domain," FGDC, accessed March 31, 2022, https://www.fgdc.gov/csdgmgraphical/entatt/detail/attrib/advfaq.htm. A domain is the set of possible data values of an attribute. The domain for the attribute "road type" may consist of "heavy duty," "medium duty," "light duty," and "trail."

The audit team identified multiple areas where VA is partnering with other stakeholders, including but not limited to the following:

- VA transfers veterans' data to the US Census Bureau, which links the data to census, survey, and administrative records data to support research projects that benefit both agencies.[42]
- VA provides local and national information on public-facing websites regarding VA location or in-network community care providers.[43]
- VHA has an interagency agreement with the Department of Energy that includes adding geospatial data to predictive models to improve clinical interventions and care for suicide and overdose prevention.
- VHA's Office of Health Equity uses publicly available data from the US Census Bureau American Community Survey and the University of Washington to support its mission to ensure equitable access to high-quality care for all veterans.
- NCA collaborates with the US Geological Survey to develop and maintain critical cemetery boundary data for use in its National Map.
- VBA obtained deck log records from NARA to support faster and more accurate processing of veterans' benefit claims related to presumption of exposure to tactical herbicides.

Based on the above examples, VA is meeting the requirement to coordinate with federal, state, and local stakeholders.

VA Made Federal Geospatial Information More Useful to the Public, Enhanced Operations, Supported Decision-Making, and Enhanced Reporting to the Public and to Congress (Requirement 8)

Requirement 8 is to use geospatial information to make federal geospatial information and services more useful to the public, enhance operations, support decision-making, and enhance reporting to the public and to Congress. The Office of Data Governance and Analytics produces the veteran population projection model used by VA's administrations to support decision-making and operations using veteran population data and geographic projections.[44] Other offices, such as the Geospatial Services Support Center, develop geospatial products that

[42] "Memorandum of Understanding through which the U.S. Census Bureau is Acquiring US Veterans Data from U.S. Department of Veterans Affairs," agreement no. 2064-FY18-NFE-0186, no date.

[43] "Find VA Locations," VA Benefits and Healthcare, accessed July 19, 2022, https://www.va.gov/find-locations/.

[44] These products are published externally at https://va.gov/vetdata and https://data.va.gov.

allow planners to optimize the location of veterans' facilities to an area that is closer to the greatest number of veterans.

In addition, the VHA Office of Rural Health Geospatial Outcomes Division developed a mapping tool to assist the Women's Health Services office with its strategic planning and targeted outreach. The interactive web map application serves as a one-stop shop resource that provides VA healthcare site locations, the volume of women enrollees and users by county, and projected women veteran population, rurality, and drive-time areas. Figure 2 shows an example of the women VHA enrollees by county.

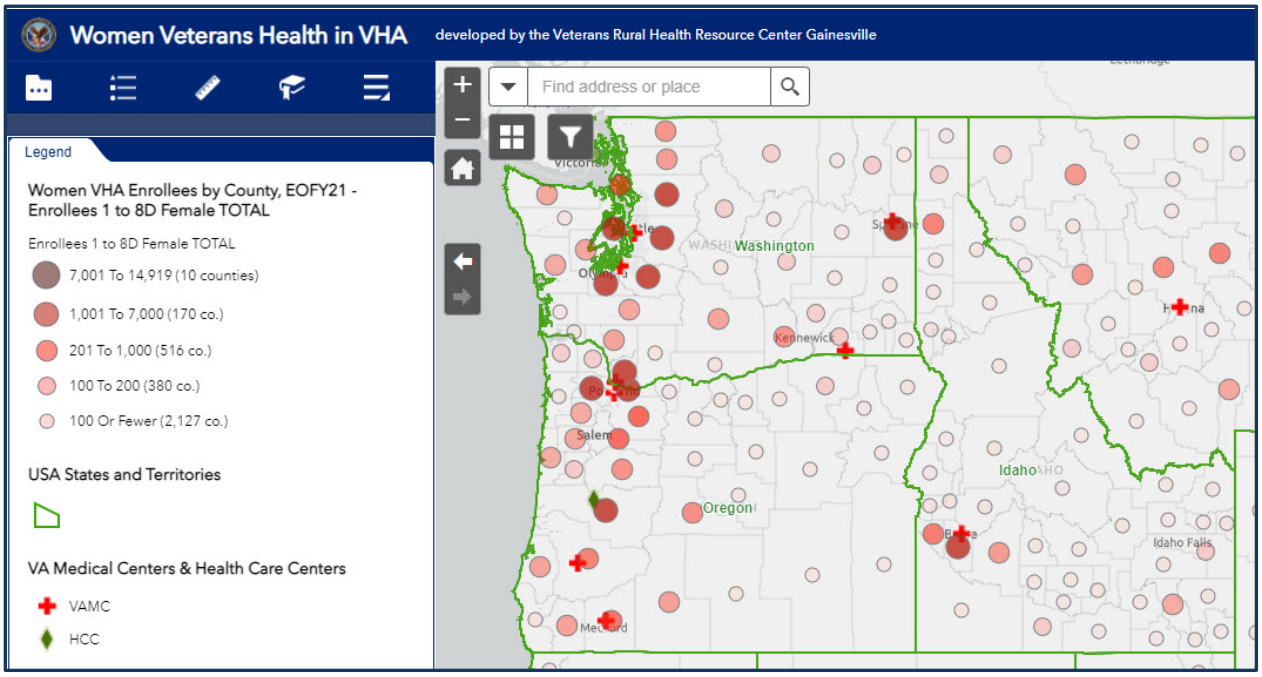

Figure 2. *Screenshot of women VHA enrollees by county.*
Source: VA website, https://maps.vssc.med.va.gov/oiagisportal/apps/webappviewer/index.html?id=cfb5f13fca344fcc8a567b5d7bfb4501, accessed April 26, 2022. (This is an internal website not publicly accessible.)

VBA has also leveraged geospatial data to reduce the time it takes to receive evidence for some veterans' claims. VBA provides benefits to eligible veterans who were presumed to have been exposed to herbicide agents.[45] One widely known herbicide agent is Agent Orange. Depending on the dates and location of the ship they served on, Navy veterans may meet the benefit eligibility criteria. According to the deputy director, Performance Analysis and Integrity for VBA, claims processors previously had to request a ship's deck logs from NARA to determine

[45] Blue Water Navy Vietnam Veterans Act of 2019, § 1116A; 38 U.S.C. § 1116A. A veteran who served in the offshore waters of the Republic of Vietnam between January 9, 1962, and May 7, 1975, and was not more than 12 nautical miles seaward of the line commencing on the southwestern demarcation line of the waters of Vietnam and Cambodia, is considered to have served in "blue water" and been exposed to tactical herbicides.

the location of a ship on a specific date.[46] NARA could take over one month to mail the information to VBA. In July 2019, VBA completed a prototype of a ship-locator tool that uses Google Earth and an Oracle Business Intelligence database with digitized deck log information from NARA. Claims processors can enter the name of the ship and the dates the veteran was aboard it into a ship-locator tool. Within seconds, the tool displays whether the ship was within the 12-nautical-mile boundary, or so-called "Blue Water." Figure 3 shows an example of the results.

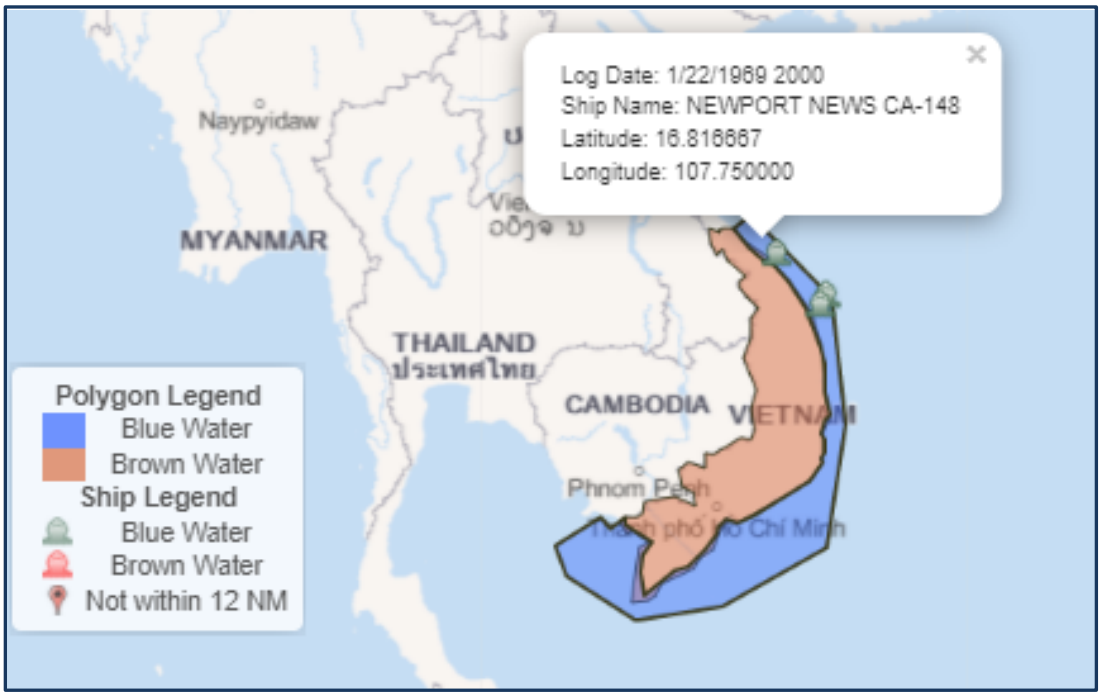

Figure 3. *Example of ship-locator tool.*
Source: VA Blue Water Navy Ship Locator.
Note: "Brown water" refers to the inland waterways and rivers of the Republic of Vietnam.[47]

Based on the above examples, VA is meeting the requirement to make federal geospatial information more useful to the public, enhance operations, support decision-making, and enhance reporting to the public and to Congress.

[46] "A History of Naval Deck Logs," NARA, accessed April 15, 2022, https://www.archives.gov/research/military/logbooks/naval-deck-logs. Deck logs consist of chronological entries documenting the daily activities of a commissioned navy ship, unit, station, or other command.

[47] "Blue Water Navy Frequently Asked Questions (As of 10/29/2019)," VA, accessed April 21, 2022, https://www.va.gov/Blue_Water_Navy_FAQs.pdf.

VA Is Making Progress toward Protecting Personal Privacy and Maintaining Confidentiality (Requirement 9)

Requirement 9 is to protect personal privacy and maintain confidentiality in accordance with federal policy and law. In the inaugural audit of VA's compliance with the Geospatial Data Act of 2018, the OIG found VA complied with this requirement. For the fiscal year 2022 audit cycle, the Council of the Inspectors General on Integrity and Efficiency recommended additional criteria from the National Institute of Standards and Technology to assess compliance for this requirement.[48] These criteria explain that personally identifiable information should be protected through a combination of measures, including operational and privacy-specific safeguards, and security controls.

VHA has a GIS that stores the residential address of approximately 9.5 million enrollees; however, only aggregated data are made available to end users.[49] The GIS stores and displays information that includes VA and non-VA healthcare delivery sites, counties, congressional districts, Native American tribal lands, and aggregated VHA enrollee and veteran populations.[50] However, the audit team found the GIS was not listed in the VA System Inventory, which is the authoritative data source for VA information technology systems.[51] VA information systems must be registered in the VA System Inventory as part of a security authorization in VA's Governance, Risk and Compliance tool at the department level. Assessment procedures are used to verify that security controls have been properly implemented and results are recorded in Enterprise Mission Assurance Support Service, which generates the security assessment report.[52]

However, the GIS was not recorded in the Enterprise Mission Assurance Support Service, which provides dashboard reporting, workflow automation, and continuous monitoring that replicates the risk management framework.[53] Further, VHA officials were unable to provide the audit team

[48] Council of the Inspectors General on Integrity and Efficiency, *CIGIE Geospatial Data Act Working Group,* Audit Guide Fiscal Year 2022, September 2021.

[49] National Institute of Standards and Technology, Computer Security Resource Center, "data aggregation," accessed July 20, 2022, https://csrc.nist.gov/glossary/term/data_aggregation. Data aggregation is the compilation of individual data systems and data that could result in the totality of the information being classified, classified at a higher level, or of beneficial use to an adversary.

[50] See VHA's comment 4 on page 30.

[51] VA Directive 6404, *VA System Inventory (VASI)*, February 23, 2016.

[52] National Industrial Security Program Authorization Office, *National Industrial Security Program Enterprise Mission Assurance Support Service Industry Operation Guide*, December 18, 2019. VA uses the Enterprise Mission Assurance Support Service to generate a system security authorization package; it is a web-based application with a broad range of services for comprehensive fully integrated cybersecurity management.

[53] NIST, Risk Management Framework for Information Systems and Organizations: A System Life Cycle Approach for Security and Privacy, NIST Special Publication 800-37, rev. 2, December 2018.

with any risk assessments performed on the GIS or its authority to operate.[54] Without a risk assessment, VHA did not document and fully consider the confidentiality, integrity, and availability of data to achieve an authority to operate before the GIS was hosted on VA's network. Further, without the authority to operate, VHA did not make a formal declaration by a designated approving authority that authorizes operation of the GIS and explicitly accepts the risk to VA—the authority to operate is signed after a certification agent confirms that a system has passed all requirements to become operational.

According to the VHA Geospatial Service Support Center director, she was aware that the authorization processes for the GIS were overlooked; she indicated the system administrator restricted system access to a limited group of GIS professionals. VHA is in the process of transitioning from the existing GIS to a VA Enterprise Cloud Amazon Web Service.[55] The director stated their cyber security analyst advised them to create a plan of action and milestones to address the planned decommissioning of the existing GIS once the cloud migration is completed.[56] According to VHA's GIS enterprise administrator, the planned decommissioning and migration from the existing GIS to the new VA Enterprise Cloud Amazon Web Service solution will be completed in fiscal year 2022. Although VA is not yet compliant, it is taking actions to meet this requirement. Therefore, the OIG is not making a recommendation.

VA Assessed Its Obligation to Participate in Determining Whether Declassified Data Can Become Part of the NSDI (Requirement 10)

Requirement 10 is to participate in determining, when applicable, whether declassified data can contribute to and become a part of the NSDI. The Office of Data Governance and Analytics confirmed VA does not collect, hold, manage, or consume declassified geospatial data. As the audit team found no evidence to the contrary, requirement 10 is not applicable.

[54] NIST Special Publication 800-37. "Authority to operate" permits the use of a business product and explicitly accepts the risk to the agency. An approving official signs the authority to operate after a certification agent confirms that the system has passed all requirements to become operational.

[55] The Amazon Web Services GovCloud High has been authorized at the high-impact level by the FedRAMP Joint Authorization Board. The magnitude of harm if privacy-related data are disclosed, intentionally or unintentionally, is low.

[56] A plan of action and milestones is a document that identifies tasks needing to be accomplished and details resources required to accomplish the elements of the plan, any milestones in meeting the tasks, and scheduled completion dates for the milestones.

VA Searched All Sources to Determine if Existing Data Met Its Needs Before Expending Funds to Acquire Additional Geospatial Data (Requirement 11)

Requirement 11 is to search all sources, including the GeoPlatform, to determine if existing federal, state, local, or private geospatial data meet the needs of the covered agency before expending funds for geospatial data collection. According to the former deputy executive director for the Office of Data Governance and Analytics, VA searched existing geospatial data on the GeoPlatform before developing the United States Veterans Eligibility Trends and Statistics database. However, VA was unable to use GeoPlatform data because VA requires a current address to be associated with names, and no dataset on the GeoPlatform met this requirement.

According to the director of the VHA Geospatial Service Support Center, VA obtains high-quality data at no cost from several platforms, including ArcGIS Online Living Atlas, publicly shared data, and agency websites. The agency sites include Health and Human Services, the Health Resources and Services Administration, Indian Health Services, the Department of Defense, the Department of Homeland Security, the US Census Bureau, and the Department of Agriculture. The support center also purchases certain geospatial data because data available on the GeoPlatform and other data-sharing platforms lack current information or the spatial resolution required to meet project objectives. For example, the VHA Geospatial Service Support Center purchases a shared extended use application through ArcGIS online for large-area high-resolution data.[57] Finally, the support center purchases data from ArcGIS StreetMap Premium for generating drive-time and distance estimates. These data can be used to support facility budget allocations or determine the closest medical facility to a veteran.

NCA's GIS program manager of cemetery development and improvement indicated this program does not use GeoPlatform data; instead, it uses imagery data from Google Earth, ESRI ArcGIS, and Geological Survey maps through its web services. NCA purchased global positioning system GIS collection contracts for grave marker geospatial data to verify burial records for all veterans interred in national cemeteries. To ensure 100 percent accuracy and accountability, complete cemetery datasets must be collected at the time of comparison with in-house data to ensure there are no conflicting attributes. Grave marker data are supplemented with global positioning system equipment to collect burial activity data for each new marker installed and each interment

[57] ESRI Webhelp, "resolution," accessed October 26, 2021, http://webhelp.esri.com/arcgisserver/9.3/java/geodatabases/definition_frame.htm. Resolution is the detail with which a map depicts the location and shape of geographic features. The larger the map scale, the higher the possible resolution. As scale decreases, resolution diminishes, and feature boundaries must be smoothed, simplified, or not shown at all; for example, small areas may have to be represented as points.

conducted. These data are also combined into NCA's Enterprise GIS. The program manager stated that NCA is working toward verifying cemetery markers at all national cemeteries.

VA has demonstrated that it searches all sources to determine if existing data meet its needs before expending funds to acquire geospatial data. Therefore, the OIG found VA is complying with this requirement.

VA Ensured That Those Receiving Federal Funds for Geospatial Data Collection Provided High-Quality Data (Requirement 12)

Requirement 12 is, to the maximum extent practicable, to ensure that a person receiving federal funds for geospatial data collection provides high-quality data. VHA provided one contract for the procurement of geospatial data. The contract is for GIS products including software, data, services, and support for GIS applications and services for VHA. According to the director of the Geospatial System Support Center, the contract provides access to data used for geocoding and generating drive-time and distance estimates. The director further stated VHA adheres to the FGDC geospatial standards and ensures geospatial data received or purchased are of high-quality by relying on metadata and comparison data from other known geospatial sources.

In addition, NCA provided two contracts for the procurement of geospatial data. The audit team reviewed both contracts and found they required conformance with the FGDC and other standards.[58] An example of other standards is the Spatial Data Standards for Facilities, Infrastructure, and Environment.[59] Both contracts also required a licensed and registered surveyor certify that all data contained within the final report are 100 percent accurate. According to the former deputy executive director of the Office of Data Governance and Analytics, VBA did not report expending federal funds for geospatial data. Based on the statement from the director of the Geospatial System Support Center and the contract requirements, the team determined VA has taken steps to ensure those receiving federal funds for geospatial data collection are providing high-quality data.

VA Appointed a Contact to Coordinate with Lead Covered Agencies (Requirement 13)

Requirement 13 is to appoint a contact to coordinate with the lead covered agencies for collection, acquisition, maintenance, and dissemination of the National Geospatial Data Asset data themes used by the covered agency. The audit team found that VA satisfied requirement 13.

[58] "Download Geospatial Standards," FGDC, accessed May 24, 2022, https://www.fgdc.gov/resources/download-geospatial-standards.

[59] Spatial Data Standards for Facilities, Infrastructure, and Environment, accessed May 13, 2022, https://www.sdsfieonline.org/. The Spatial Data Standards for Facilities, Infrastructure, and Environment is the Department of Defense family of spatial standards and models that supports common implementation and maximizes interoperability for installation, environment, and civil work missions.

The deputy executive director of the Office of Data Governance and Analytics serves as a point of contact to coordinate with lead covered agencies. In addition, the deputy executive director and a management and program analyst from the Office of Data Governance and Analytics serve as members of the FGDC Address Subcommittee, which "assists in developing and promoting a national strategy to identify, prioritize, implement, coordinate, manage, and provide oversight of geospatial address data related activities."[60] As a result, VA continues to comply with this requirement.

Conclusion

The OIG found VA met nine of the 12 applicable covered agency requirements of the law; requirement 10 was not applicable.[61] Although VA has taken steps toward compliance, all necessary actions have not been completed. For requirements 1 and 3, the enterprise data strategy roadmap and spatial data strategy are in the concurrence process. For requirement 9, VA is taking steps to transition the existing GIS to the Amazon Web Services GovCloud High environment. The OIG recognizes the complexity of integrating multiple GIS across the agency. In light of the significant progress VA has made to comply with the law governing geospatial data, the OIG is making no recommendations for improvement. The OIG encourages VA to complete its planned actions to ensure compliance.

VA Management Comments

The Office of Information and Technology and the VHA Chief Strategy Office concurred with the OIG's draft report. VHA's deputy chief strategy officer also requested the OIG modify some of the wording in the report. Appendixes C and D contain the full text of VA's responses.

The VHA deputy chief strategy officer indicated that the Geospatial Service Support Center reports to him within the Chief Strategy Office. Therefore, he requested the OIG modify a sentence to reflect "VHA's" instead of "support center's." The deputy chief strategy officer also noted that the VHA enrollee and veteran population data in its GIS are "aggregated" and requested the OIG modify a sentence to reflect this.

VHA's deputy chief strategy officer requested the OIG modify language relating to requirement 9 about protecting personal privacy and maintaining confidentiality. He indicated that "although the VA Enterprise Cloud Amazon Web Service assets were listed in the VA System Inventory, the on-premises assets were not included." He also indicated "on-premises GIS assets and they were not defined in the VHA-GIS authority to operate that covered the cloud implementation," therefore, VA did not explicitly accept the risk for all GIS assets. Further, the

[60] "Address Subcommittee," FGDC, accessed March 28, 2022, https://www.fgdc.gov/organization/working-groups-subcommittees/address-sc/index_html.

[61] 43 U.S.C. § 2808(a).

deputy chief strategy officer requested the OIG add additional information to the section about the authority to operate:

> According to the VHA Geospatial Service Support Center director, she was made aware that the on-premises authorization processes for the GIS were overlooked when regional OI&T [Office of Information and Technology] administrators produced no evidence that the GIS resources were included in an umbrella [authority to operate] for systems residing on their servers; she indicated the system administrator followed all security protocols and restricted system access to a limited group of GIS professionals. VHA is in the process of transitioning the remaining on-premises GIS resources to the VA Enterprise Cloud Amazon Web Service and the VHA-GIS authority to operate boundary is being modified to include all GIS assets.

OIG Response

The OIG made minor modifications to the report based on information provided by VHA's deputy chief strategy officer. However, the OIG did not make changes in response to the VHA deputy chief strategy officer's request to modify language relating to requirement 9 about protecting personal privacy and maintaining confidentiality because the additional information did not alter the OIG's position. The OIG found VHA's on-premises VHA-GIS was not registered in the VA System Inventory or the Enterprise Mission Assurance Support Service, and VHA officials were unable to provide any risk assessments or an authority to operate. As part of VHA's official response, it provided a six-month authority to operate for the on-premises VHA-GIS that expired in December 2018; it was unable to provide a more recent authority to operate.

Appendix A: Scope and Methodology

Scope

The OIG team conducted its work from December 2021 through July 2022. The team evaluated VA's efforts to comply with the requirements of section 2808(a), covered agency responsibilities.[62]

Methodology

To assess compliance with the law governing geospatial data, the audit team examined Office of Management and Budget Circulars A-16 Revised, "Coordination of Geographic Information and Related Spatial Data Activities," and A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities." The team also considered title 5 of the United States Code and the National Institute of Standards and Technology Special Publication 800-53, rev. 5, "Security and Privacy Controls for Information Systems and Organizations." Furthermore, the audit team reviewed National Institute of Standards and Technology Special Publication 800-122, *Guide to Protecting the Confidentiality of Personally Identifiable Information*. Finally, the team also reviewed VA Functional Organization Manual Version 6.0.

The audit team conducted interviews with the former deputy executive director of the Office of Data Governance and Analytics, the Geospatial Business Intelligence Service Line team lead, the VHA deputy chief strategy officer, the VHA Geospatial Systems Support Center director, and the NCA GIS program manager. In addition, the team examined ESRI contracts. Finally, the team interviewed subject matter experts from the following offices:

- VA OEI
- VA Office of Data Governance and Analytics
- Office of Information and Technology
- VHA Geospatial Service Support Center
- VHA Office of Rural Health
- NCA Cemetery Development and Improvement Service
- VBA Office of Performance and Analytics and Integrity
- VBA Loan Guaranty Program

[62] 43 U.S.C. § 2808(a).

- Office of Emergency Management and Resilience

The audit team reviewed the NSDI 2021-2024 Strategic Plan, VA 2021 Covered Agency Annual Report and Self-Assessment to the FGDC, VA Enterprise Data Strategy, agency plans, standard operating procedures, agency directives, guidelines and policies, and other relevant information.

The audit team determined the extent of VA's compliance and implementation of recommendation 1 from the OIG's inaugural audit report: the acting assistant secretary for Enterprise Integration, in conjunction with the assistant secretary for Information and Technology, complies with requirement 3 in section 759(a) of the Geospatial Data Act of 2018 to establish mandatory VA-wide policies and responsibilities to promote the integration of geospatial data.

The audit team also determined the extent of VA's compliance and implementation of recommendation 2 from its inaugural report: the assistant secretary for Information and Technology, in conjunction with the director of Enterprise Records Service, establishes a process to ensure geospatial data and activities are included on VA record schedules that have been approved by NARA in accordance with requirement 4 of the law.

Scope Limitations

The Council of Inspectors General on Integrity and Efficiency convened a working group with representatives from the covered agency inspectors general to reach a consensus on an audit approach for the fiscal year 2022 audits. Based on the recommendation of the Council of the Inspectors General on Integrity and Efficiency's working group, this audit focused on compliance with covered agencies' responsibilities.

Internal Controls

The audit team assessed the internal controls of VA, significant to the audit objective. This included an assessment of the five internal control components to include control environment, risk assessment, control activities, information and communication, and monitoring.[63] In addition, the team reviewed the principles of internal controls as associated with the objective. The team identified the following component and two principles as significant to the objective:[64]

- Component: Control Activities
    - Principle 10: Design Control Activities

[63] Government Accountability Office (GAO), *Standards for Internal Control in the Federal Government*, GAO-14-704G, September 2014.

[64] Because the audit was limited to the internal control components and underlying principles identified, it may not have disclosed all internal control deficiencies that may have existed at the time of this audit.

- Principle 12: Implement Control Activities

The team did not find any significant internal control deficiencies.

Fraud Assessment

The audit team assessed the risk that fraud and noncompliance with provisions of laws, regulations, contracts, and grant agreements, significant within the context of the audit objectives, could occur during this audit. The team exercised due diligence in staying alert to any fraud indicators and did not identify any instances of fraud or potential fraud during this audit.

Data Reliability

The OIG did not obtain electronic data that required a data reliability assessment.

Government Standards

The OIG conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that the OIG plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the findings and conclusions based on audit objectives. The OIG believes the evidence obtained provides a reasonable basis for the findings and conclusions based on the audit objectives.

Appendix B: Council of the Inspectors General on Integrity and Efficiency's Letter to Congress

October 18, 2021

The Honorable Maria Cantwell
Chairwoman

The Honorable Roger F. Wicker
Ranking Member

Committee on Commerce, Science,
and Transportation
United States Senate
Washington, D.C.

The Honorable Eddie Bernice Johnson
Chairwoman

The Honorable Frank Lucas
Ranking Member

Committee on Science, Space,
and Technology
U.S. House of Representatives
Washington, D.C.

Dear Chairwomen and Ranking Members:

The Council of the Inspectors General on Integrity and Efficiency (CIGIE) recognizes and appreciates your leadership on issues of geospatial data. In particular, we believe the enactment of the Geospatial Data Act of 2018 (P.L. 115-254) will improve the continuing development of geospatial data and technology. To make sure this happens, the Geospatial Data Act provides for oversight by way of the Federal Inspectors General. Specifically, the Geospatial Data Act requires the biennial completion of a review of Covered Agencies' compliance with standards established by the Act, Covered Agencies' responsibilities detailed in the Act, and Covered Agencies' compliance with the prohibition of Federal funding for non-compliant datasets.

We are writing this letter on behalf of CIGIE to inform you of an important distinction with the biennial Geospatial Data Act audits by the Inspector General community. Specifically, the Fiscal Year 2022 mandatory audit scope period overlaps with the estimated Geospatial Data Act implementation period established by the Federal Geographic Data Committee (FGDC). As part of the implementation phase, the FGDC is evaluating the existing body of standards, among other items. Due to the continuing implementation of the Geospatial Data Act, conducting the mandatory audits as prescribed by the Act would result in reports submitted by the Inspectors General in October 2022 being inconclusive for two of the three audit requirements.

To address this challenge while continuing to meet the mandatory audit requirements, CIGIE convened a working group with representatives from the Covered Agency Inspectors General to reach a consensus on an audit approach for the Fiscal Year 2022 audits. The Covered Agency Inspectors General determined that audits focused on the Covered Agencies' progress toward compliance with the Geospatial Data Act, including the agencies' compliance with requirements under subsection (a), would likely provide the best value to the Covered Agencies, Congress, and the Public. This is a somewhat narrower approach than what the law requires because it is

currently difficult to determine which standards the audits should use in evaluating compliance. Also, because the law establishes a five-year implementation period before limiting the use of Federal funds for non-compliant activities, this requirement would not be evaluated in the Fiscal Year 2022 audits.

This consensus approach will afford each Covered Agency Inspector General latitude to perform additional testing based on the Covered Agency's geospatial footprint, as determined necessary by the applicable Inspector General.

Should you or your staffs have any questions about our approach or other aspects of our collective Geospatial Data Act oversight activities, please do not hesitate to contact us at

The OIG removed point of contact information prior to publication.

Sincerely,

(Original signed by)

Allison C. Lerner
Chair, Council of the Inspectors General on Integrity and Efficiency
Inspector General, National Science Foundation

(Original signed by)

Tammy L. Whitcomb
Chair, Council of the Inspectors General on Integrity and Efficiency, Technology Committee
Inspector General, U.S. Postal Service

cc: The Honorable Gary C. Peters, Chairman
The Honorable Rob Portman, Ranking Member
Senate Committee on Homeland Security and Governmental Affairs

The Honorable Carolyn B. Maloney, Chairwoman
The Honorable James Comer, Ranking Member
House Committee on Oversight and Reform

The Honorable Jason Miller, Deputy Director OMB and Executive Chair, Council of the Inspectors General on Integrity and Efficiency

The Honorable Gene Dodaro, Comptroller General, GAO

For accessibility, the original format of this appendix has been modified to comply with Section 508 of the Rehabilitation Act of 1973, as amended.

Appendix C: VA Management Comments, Office of Information and Technology

Department of Veterans Affairs Memorandum

Date: August 19, 2022

From: Principal Deputy Assistant Secretary for Information and Technology and Chief Information Officer (005)

Subj: OIG Draft Report: VA Is Moving toward Full Compliance with Geospatial Data Covered Agency Responsibilities, Project Number 2022-00563-AE-0033 (VIEWS 08102289)

To: Assistant Inspector General for Audits and Evaluations (52)

1. The Office of Information and Technology (OIT) is responding to the Office of Inspector General (OIG) Draft Report, VA Is Moving toward Full Compliance with Geospatial Data Covered Agency Responsibilities.
2. OIT concurs with the Office of Inspector General draft report without comments.

The OIG removed point of contact information prior to publication.

(Original signed by)

Dewaine L. Beard

For accessibility, the original format of this appendix has been modified to comply with Section 508 of the Rehabilitation Act of 1973, as amended

Appendix D: VA Management Comments, Veterans Health Administration

Date: August 24, 2022

From: Chief Strategy Office (108)

Subject: Recommended modifications to Draft Report "VA Is Moving toward Full Compliance with Geospatial Data Covered Agency Responsibilities" dated July 28, 2022

Memorandum for Office of Audits and Evaluations, Office of Inspector General

1. Reference the subject line draft report, the Chief Strategy Office concurs with the findings, but requests consideration of the following recommended modifications to the wording in the report.

2. Reference Requirement 9 in last paragraph on Page iii and first three sentences on Page iv:

a. Draft Report Reads: "VHA has a geographic information system that stores the residential addresses of approximately 9.5 million enrollees and includes VA and non-VA healthcare delivery sites, counties, congressional districts, Native American tribal lands, and VHA enrollee and veteran populations. However, VHA did not document and fully consider the confidentiality, integrity, and availability of data to obtain an authority to operate before the system was hosted on VA's network. VHA is in the process of transitioning from the existing system to a VA Enterprise Cloud Amazon Web Service.8 According to the system's enterprise administrator, the planned decommissioning and migration from the existing system to the new VA Enterprise Cloud Amazon Web Service cloud solution will be completed in fiscal year 2022."

b. **Recommended modifications (in red):** VHA has a geographic information system that stores the residential addresses of approximately 9.5 million enrollees and includes VA and non-VA healthcare delivery sites, counties, congressional districts, Native American tribal lands, and **aggregated** VHA enrollee and veteran populations. However, **although the VA Enterprise Cloud Amazon Web Service assets were listed in the VA System Inventory, the on-premises assets were not included. Without a separate risk assessment of the on-premises resources,** VHA did not **fully** document ~~**and fully consider**~~ the confidentiality, integrity, and availability of data to obtain an authority to operate ~~**before the system was hosted on VA's network**~~. VHA is in the process of transitioning from the existing system to a VA Enterprise Cloud Amazon Web Service. According to the system's enterprise administrator, the planned decommissioning and migration from the existing system to the new VA Enterprise Cloud Amazon Web Service cloud solution will be completed in fiscal year 2022.

c. **Modification Rationale:** We agree with the finding, but from our perspective, it reads as if VA was totally remiss in addressing the responsibility. No comment was provided regarding the ATO that we've had on the cloud VHA-GIS system since July 27, 2018. That system includes the same datasets (enrollee, aggregated Veteran, facility, geographies, etc..) as we have on the Region 3 (on-premises) servers. GeoBISL, which is on CDW servers, and the VHA Portal for ArcGIS, which is on VSSC servers, are both covered under umbrella ATOs for all resources residing in CDW and VSSC respectively; they do not have a separate GIS ATO. We believed that we were covered under a similar ATO for our local server environment or the Bio-Med V-block that we shared. During this process we were informed by OI&T that our assets were not included when OIG could not get confirmation or response from them. At the direction of the lead cyber security analyst, we responded by creating a POA&M and are now in the process of adding all VHA-GIS resources to our existing ATO boundaries. Again, we agree with the OIG's

finding, but request consideration of our recommended modification so it doesn't read as if we were totally remiss.

3. Reference Page 12, third line in first paragraph on the page:

a. **Draft Report Reads:** "According to the support center's deputy chief strategy officer,"

b. **Recommended modifications (in red):** "According to the **VHA's** deputy chief strategy officer"

c. **Modification Rationale:** Geospatial Service Support Center reports to the VHA Deputy Chief Strategy Officer within the Chief Strategy Office.

4. Reference VA Is Making Progress Toward Protecting Personal Privacy and Maintaining Confidentiality (Requirement 9) starting on first new paragraph on Page 18 through end of first paragraph on Page 19:

a. **Draft Report Reads:** "VHA has a GIS that stores the residential address of approximately 9.5 million enrollees; however, only aggregated data are made available to end users. The GIS stores and displays information that includes VA and non-VA healthcare delivery sites, counties, congressional districts, Native American tribal lands, and VHA enrollee and veteran populations. However, the audit team found it was not listed in the VA System Inventory, which is the authoritative data source for VA information technology systems. VA information systems must be registered in the VA System Inventory as part of a security authorization in VA's Governance, Risk and Compliance tool at the department level. Assessment procedures are used to verify that security controls have been properly implemented and results are recorded in Enterprise Mission Assurance Support Service, which generates the security assessment report.

However, the GIS was not recorded in the Enterprise Mission Assurance Support Service, which provides dashboard reporting, workflow automation, and continuous monitoring that replicates the risk management framework. Further, VHA officials were unable to provide the team with any risk assessments performed on the GIS or its authority to operate.51 Without a risk assessment, VHA did not document and fully consider the confidentiality, integrity, and availability of data to achieve an authority to operate before GIS was hosted on VA's network. Further, without the authority to operate, VHA did not make a formal declaration by a designated approving authority that authorizes operation of GIS and explicitly accepts the risk to VA—the authority to operate is signed after a certification agent confirms that a system has passed all requirements to become operational.

According to the VHA Geospatial Service Support Center director, she was aware that the authorization processes for the GIS were overlooked; she indicated the system administrator restricted system access to a limited group of GIS professionals. VHA is in the process of transitioning from the existing GIS to a VA Enterprise Cloud Amazon Web Service.52 The director stated their cyber security analyst advised them to create a plan of action and milestones to address the planned decommissioning of the existing GIS once the cloud migration is completed. According to VHA's GIS enterprise administrator, the planned decommissioning and migration from the existing GIS to the new VA Enterprise Cloud Amazon Web Service cloud solution will be completed in fiscal year 2022. Although VA is not yet compliant, it is taking actions to meet this requirement. Therefore, the OIG is not making a recommendation."

b. **Recommended modifications (in red):** VHA has a GIS that stores the residential address of approximately 9.5 million enrollees; however, only aggregated data are made available to end users. The GIS stores and displays information that includes VA and non-VA healthcare delivery sites, counties, congressional districts, Native American tribal lands, and **aggregated** VHA enrollee and veteran populations. However, the audit team found **that although the VA Enterprise Cloud Amazon Web Service assets were listed in the VA System Inventory, the on-premises assets were** ~~it was~~ not

included. ~~**listed in the**~~ **The** VA System Inventory~~**, which**~~ is the authoritative data source for VA information technology systems. VA information systems must be registered in the VA System Inventory as part of a security authorization in VA's Governance, Risk and Compliance tool at the department level. Assessment procedures are used to verify that security controls have been properly implemented and results are recorded in Enterprise Mission Assurance Support Service, which generates the security assessment report.

However,~~ the~~ **only the VA Enterprise Cloud Amazon Web Service** GIS **assets were** ~~**was**~~ not recorded in the Enterprise Mission Assurance Support Service, which provides dashboard reporting, workflow automation, and continuous monitoring that replicates the risk management framework. ~~**Further,**~~ VHA officials were unable to provide the team with any risk assessments performed on the **on-premises** GIS ~~**or its**~~ **assets and they were not defined in the VHA-GIS** authority to operate **that covered the cloud implementation**. Without a **separate** risk assessment **of the on-premises resources,** VHA did not document and fully consider the confidentiality, integrity, and availability of data to achieve an authority to operate~~ before GIS was hosted on VA's network~~. Further, without the authority to operate **on the on-premises GIS**, VHA ~~**did not make**~~ **made** a formal declaration by a designated approving authority that authorizes operation of GIS and explicitly accepts the risk to VA **for some, but not all GIS assets**.~~ the~~ **The** authority to operate is signed after a certification agent confirms that a system has passed all requirements to become operational.

According to the VHA Geospatial Service Support Center director, she was **made** aware that the **on-premises** authorization processes for the GIS were overlooked **when regional OI&T administrators produced no evidence that the GIS resources were included in an umbrella authority to operate for systems residing on their servers**; she indicated the system administrator **followed all security protocols and** restricted system access to a limited group of GIS professionals. VHA is in the process of transitioning ~~**from**~~ the ~~**existing**~~ **remaining on-premises** GIS **resources** to ~~**a**~~ **the** VA Enterprise Cloud Amazon Web Service **and the VHA-GIS ATO boundary is being modified to include all GIS assets. In addition,** ~~**The**~~ the director stated their cyber security analyst advised them to create a plan of action and milestones to address the planned decommissioning of the existing GIS once the cloud migration is completed. According to VHA's GIS enterprise administrator, the planned decommissioning and migration from the existing GIS to the ~~**new**~~ VA Enterprise Cloud Amazon Web Service cloud solution will be completed in fiscal year 2022. Although VA is not yet compliant, it is taking actions to meet this requirement. Therefore, the OIG is not making a recommendation.

c. **Modification Rationale:** Same rationale used in paragraph 2.c in the first recommended modification.

Thank you for your consideration.

The OIG removed point of contact information prior to publication.

(Original signed by)

Daniel W. Gall

Deputy Chief Strategy Officer

Veterans Health Administration

For accessibility, the original format of this appendix has been modified to comply with Section 508 of the Rehabilitation Act of 1973, as amended.

OIG Contact and Staff Acknowledgments

Contact	For more information about this report, please contact the Office of Inspector General at (202) 461-4720.
Audit Team	Al Tate, Director Carolyn Burnett Cynthia Christian Sherry Livingston Omar Madrigal Keila Tugwell-Core
Other Contributors	Kathryn Berrada Khaliah McLaurin

Report Distribution

VA Distribution

Office of the Secretary
Veterans Benefits Administration
Veterans Health Administration
National Cemetery Administration
Assistant Secretaries
Office of General Counsel
Office of Acquisition, Logistics, and Construction
Board of Veterans' Appeals

Non-VA Distribution

House Committee on Veterans' Affairs
House Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies
House Committee on Oversight and Reform
Senate Committee on Veterans' Affairs
Senate Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies
Senate Committee on Homeland Security and Governmental Affairs
Chair and Ranking Member, House Committee on Science, Space, and Technology
Chair and Ranking Member, Senate Committee on Commerce, Science, and Transportation
National Veterans Service Organizations
Government Accountability Office
Office of Management and Budget

OIG reports are available at www.va.gov/oig.