DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
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CECW-CE

ER 1110-1-8156

Regulation
No. 1110-1-8156

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Engineering and Design
POLICIES, GUIDANCE, AND REQUIREMENTS FOR GEOSPATIAL DATA AND SYSTEMS

1. Purpose.

a. Engineer Regulation (ER) 1110-1-8156 establishes general criteria for the use and development of geospatial technologies throughout the U.S. Army Corps of Engineers (USACE). This includes, but is not limited to, geospatial system development and utilization as well as the acquisition, processing, storage, distribution, and utilization of geospatial data and systems. This ER provides a framework that promotes interoperability through the use of data standards and an open platform to move data seamlessly throughout the organization. Detailed explanations and guidance are included in Engineer Manual 1110-1-2909. Additional geospatial guidance can be found in the references listed in Section 4.

b. This regulation provides guidance for the implementation, development and maintenance of a unified and comprehensive set of geospatial technologies across USACE. It outlines a corporate approach to implementing geospatial technology that meets functional business process requirements in harmony with state, local, and Federal agency programs to more efficiently produce geospatial products and serve customers. It promotes an enterprise approach to managing geospatial data and information that supports the comprehensive management of USACE assets (civil and military installations) and project data.

c. This regulation outlines a framework for sharing geospatial data with other Federal, state, and local partners in concert with Executive Order (EO) 12906. It promotes a life-cycle management approach to geospatial data and information by defining them as assets that need to be managed wisely using limited resources.

d. This regulation aligns USACE geospatial policy, where applicable, with the Army Geospatial Enterprise (AGE) as defined by the Army Geospatial Information Officer (GIO) and codified in Appendix L of the Common Operating Environment (COE) Implementation Plan.

2. Applicability.

a. ER 1110-1-8156 applies to all USACE Commands having Civil Works, Military, or Environmental responsibilities. USACE Commands who support Civil, Military and Environmental missions have the responsibility to collect, manage and report their geospatial data as outlined here and in EM 1110-1-2909. It specifically applies to functional areas that involve geospatial technologies and services for Computer Aided Design and Building

Information Modeling (CAD/BIM), Survey and Mapping (S&M), Site Information Modeling (SIM), Computer Aided Facility Management (CAFM), Geographic Information Systems (GIS), remote sensing, database development, and modeling.

(1) BIM functional areas generally encompass architectural, structural, mechanical, plumbing, fire protection, electrical technologies, and services for MILCON and Civil Works facilities design, construction, and management.

(2) SIM functional areas generally encompass surveying (hydrographic and topographic), mapping, civil design, exterior utilities design, landscape architecture and geotechnical technologies, and services for MILCON and Civil Works facilities design, construction, and management.

(3) Operations and Maintenance (O&M) functional areas for MILCON and Civil Works facilities can generally be managed via CAFM systems.

(4) GIS functional areas generally encompass regulatory investigations and studies, planning, real estate, emergency operations, and engineering functions.

b. This regulation also applies to a variety of geospatial products, including river and harbor maps; navigation charts; inundation mapping; vulnerability and risk analysis; recreation and lake management activities; dredge site placement; real estate project maps; engineering and construction drawings; survey reports; reconstruction, restoration, and rehabilitation efforts; environmental stewardship; environmental studies; Hazardous, Toxic, and Radioactive Waste (HTRW) studies; shoreline studies; and channel condition reports.

c. ER 1110-1-8156 applies to in-house, contracted and cost sharing work.

d. USACE customers for reimbursable work who are required to comply with EO 12906, such as Department of Defense (DoD) installations, the Environmental Protection Agency and the Federal Emergency Management Agency, will determine their method of compliance. These customers may choose to incorporate compliance with the EO in contracts with USACE, or they may comply without the assistance of USACE; however, USACE has the responsibility to educate customers on the collection, management and reporting of geospatial data as outlined here and in EM 1110-1-2909. The Army Chief of Staff for Installation Management (ACSIM) has outlined the Army's compliance with EO 12906 through AR 210-20, dated 16 May 2005 and through AR115-11, dated 28 December 2001. The ACSIM's office was in the process of staffing an update to AR 115-11 at the time of this writing.

e. Automated Information Systems (AISs) having or developing a geospatial component shall comply with policy outlined in this regulation to ensure interoperability of AIS geospatial data with the USACE Enterprise Geospatial Engineering System (EGES) Program and the geospatial component of the Federal Enterprise Architecture.

3. Distribution. This regulation is approved for public release; distribution is unlimited.

4. References.

a. Executive Order (EO) 12906, Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI).

b. Army Regulation (AR) 115-11, Geospatial Information and Services, dated 10 December 2001.

c. Army Regulation (AR) 210-20, Real Property Master Planning for Army Installations, dated 16 May 2005.

d. Department of the Army Memorandum, Army Geospatial Enterprise (AGE) Policy, 8 June 2010.

e. EM 1110-1-1000, Photogrammetric Mapping.

f. EM 1110-1-1002, Survey Markers and Monumentations.

g. EM 1110-1-1003, NAVSTAR Global Positioning System Surveying.

h. EM 1110-1-1005, Engineering and Design: Control and Topographic Surveying.

i. EM 1110-1-2909, Geospatial Data and Systems.

j. EM 1110-2-1003, Hydrographic Surveying.

k. EM 1110-2-1009, Engineering and Design – Structural Deformation Surveying.

l. EM 1110-2-6056, Standards and Procedures for Referencing Project Elevation Grades to Nationwide Vertical Datums.

m. ER 1110-2-8160, Engineering and Design: Policies for Referencing Project Evaluation Grades to Nationwide Vertical Datums.

5. Policy.

a. Army GIO policy promotes interoperability through net-centric architecture. All the policy and guidance outlined here supports existing policy published by the Army GIO.

b. Executive Order 12906 promotes geospatial data sharing across the Federal Government in cooperation with state and local governments and private industry. The policy and guidance outlined here supports EO 12906 by establishing an agency-wide framework allowing for internal interoperability that can then be linked to the overall Federal framework. Army GIO policy promotes interoperability through net-centric architecture. All the policy and guidance outlined here supports existing policy published by the Army GIO.

c. Each District shall initiate and sustain an Enterprise Geospatial Engineering System (EGES) Program that is consistent with their Division Geospatial Engineering activities, the Corps Geospatial Enterprise Architecture, and the Virtual Engineering Environment. This Geospatial Engineering program shall be funded through both project and overhead funding as outlined in EM 1110-1-2909.

d. District Commands are highly encouraged to establish a Geospatial Section or Branch to serve the entire District's geospatial requirements. Functions should include survey mapping, imagery acquisition and exploitation, GIS analysis, and CAD/BIM support. Establishing a single central geospatial capability fosters product consistency and cost efficiencies. Mapping, GIS, and CAD/BIM can be executed outside of the Geospatial Services Section/Branch; however, the Geospatial Services Section/Branch focuses on developing the infrastructure to maximize the use of the technology by the entire District.

e. All non-raster data developed for, by, or in partnership with USACE must comply with the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE). Metadata are required for all geospatial data developed for, by, or in partnership with USACE.

f. All design work (in-house and contract) shall be compliant with AEC CAD Standard and The National CAD Standard. Workspaces for both Autodesk and Bentley BIM platforms have been created and are required for Centers of Standardization (CoS) projects.

g. Data management and tool development must be interoperable with the CorpsMap architecture. Programs producing nationally significant geospatial datasets are required to make those data available to USACE and others using Open Geospatial Consortium (OGC) web mapping protocols/standards. The OGC web mapping protocols and standards should be configured in such a way as to allow access to the data set and not simply to support visualization of the data. If a USACE Automated Information System (AIS) has a geospatial requirement, that AIS shall use the CorpsMap platform or a platform that can be easily integrated with CorpsMap.

h. As defined in the Program Management Business Process (PMBP), a Data Management Plan (DMP) is required for each project that has a geospatial component.

i. All satellite imagery purchases must be coordinated with the Army Imagery Office (AIO) at the Army Geospatial Center (AGC) to ensure that existing imagery is used prior to any new acquisition and that new acquisitions are appropriately licensed to the DoD community.

j. When licensing geospatial data, the Command must coordinate with the Office of Counsel to ensure that licensing issues are understood prior to the acquisition.

k. To the extent possible, USACE-funded geospatial data collections must be made available to the public. If the data set is sensitive or could compromise national security, it should not be made public or specific fields can be withheld from the public.

l. Each Command shall enter geospatial technology (hardware, software, application development, etc.) costs into Information Technology Investment Portfolio (ITIPS) and address Life Cycle Management of Information Systems (LCMIS) requirements as outlined in EM 1110-1-2909. Geospatial data costs (acquisition and development) are not considered Information Technology (IT) related costs and do not need to be entered into ITIPS.

m. Before USACE funds are expended for geospatial data collections, a search of the NSDI Clearinghouse must be executed for existing data that will meet mission requirements, as outlined in EM 1110-1-2909.

6. Roles, Actions, and Responsibilities.

a. HQ,USACE Engineering and Construction has the lead for developing policy and guidance on the use of geospatial technology in USACE. The HQ Chief of Engineering and Construction will:

(1) Appoint a USACE Geospatial Coordinator to coordinate and execute geospatial issues across USACE.

(2) Act as the geospatial proponent responsible for justifying and defending funding for enterprise geospatial activities, such as geospatial enterprise license agreements, geospatial data standards, CorpsMap, and geospatial PROSPECT courses.

(3) Work with MSC leads to ensure that regional geospatial efforts align with national efforts.

(4) Represent USACE on interagency geospatial coordination initiatives.

b. Each MSC shall facilitate regional geospatial coordination and integration by:

(1) Identifying an MSC geospatial manager to coordinate regional geospatial work, lead geospatial activities across the Division, and serve as a liaison between the District, Division, and HQ on geospatial issues.

(2) Holding regular meetings (in person or virtually) to coordinate geospatial work across their respective regions.

c. Each District Office shall:

(1) Develop and update, as appropriate, a Regional Geospatial Program Management Plan and annually update their Five Year Plan.

(2) Establish an EGES program to integrate all geospatial activities and data across the District. At a minimum, the following needs to be executed or established:

(a) Establishing and resourcing an RF5022 account.

(b) Identifying an EGES Program Manager/District Geospatial Coordinator to coordinate and lead geospatial activities across the District and serve as a liaison between the District, Division, and HQ on geospatial issues.

(c) Coordinating geospatial acquisition with the local IT Chief to ensure compliance with the Clinger-Cohen Act.

(d) Coordinating with ACE-IT for software installations and with both the local IT Chief and ACE-IT for acquisition of any non-standard hardware.

(e) Developing and updating, as appropriate, an EGES Program Management Plan (PMP) and annually updating the EGES Five Year Plan.

7. Funding. OMB will provide no additional funds to implement EO 12906. Agencies are expected to execute the EO within their own budgets. Agencies are expected to modify existing business process or architectures to fulfill the requirements. Standardizing data collection activities and developing metadata shall be included in the budget for Civil Works projects or, if appropriate, military program work. Enterprise geospatial activities such as servers, software licenses, software development, and training should all be funded by establishing a revolving fund account. The revolving fund should be resourced by O&M programs and individual projects that benefit from the use of geospatial technologies.

8. Proponency and Responsibility. The HQ, USACE proponent for this regulation is the Engineering & Construction Community of Practice (COP) (CECW-CE). Program or Project Managers leading designated project delivery teams are responsible for ensuring that the requirements in this regulation are addressed.

FOR THE COMMANDER:

DIONYSIOS ANNINOS
Colonel, Corps of Engineers
Chief of Staff