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	Engineering and Design  MANAGEMENT OF WATER CONTROL DATA SYSTEMS	
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Regulation  
No. 1110-2-249

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**Engineering and Design  
MANAGEMENT OF WATER CONTROL DATA SYSTEMS**

**1. Purpose**

This engineer regulation provides guidance for the management of water control data systems including the equipment and software used for acquisition, transmission, and processing of real-time data used to regulate water projects for which the Corps of Engineers is responsible.

**2. Applicability**

This regulation applies to all HQUSACE elements, major subordinate commands, districts, laboratories, and field operating activities having civil works responsibilities.

**3. References**

- a. Public Law 101-511, Defense Appropriations Act 1991, Section 8092.
- b. Public Law 153.
- c. Privacy Act of 1974.
- d. Freedom of Information Act.
- e. ER 1110-2-240, Water Control Management.
- f. ER 1110-2-248, Requirements for Water Data Transmission Using GOES/DCS.

g. CEIM Policy Memorandum, 7 Apr 1989, "Ada Programming Language."

h. IM Policy Memo No. 25-1-21, 23 Feb 1993, "USACE Application Development and Open Systems Environment Policy."

i. Manager's Guide to Life Cycle Management of Automated Information Systems, 31 Jan 1994, available from HQUSACE (CEIM-P).

**4. Definitions**

a. *Water control data system (WCDS)*. All hardware and software within the jurisdiction of a Corps of Engineers office which has been acquired and is being used for acquisition, transmission, processing, display, and dissemination of hydrologic, meteorologic, water quality, and project data for the purpose of supporting the water control mission of the Corps of Engineers. This includes computer workstations, microcomputers, X-terminals, port servers, hardcopy devices, water control subnet local area network (LAN) components, data communication devices and circuits, uninterruptable power supplies, field data collection platforms, and other associated components.

b. *WCDS data acquisition system*. A subset of the WCDS consisting of equipment used in data acquisition essential to the water control management function. This equipment may or may not fall directly under the water control functional element, e.g., Geostationary Operational Earth Satellite (GOES) data collection platform, line of sight radio, satellite downlinks, etc.

c. *WCDS system administrator*. A supervisory engineer having overall responsibility for the water control

mission. The administrator is responsible for the interpretation and application of this regulation and for developing local policy regarding the use of the WCDS to accomplish the water control mission at a WCDS site.

*d. WCDS system manager.* A manager in the supervisory chain of command under the system administrator within the water control functional element. The system manager is responsible for implementing regulations and policy to accomplish the water control function utilizing the WCDS.

*e. WCDS site manager.* A manager responsible for the installation, operation, and maintenance of the onsite WCDS hardware, software, network, and supporting facilities. The site manager provides a working system capable of being used to accomplish the water control mission.

*f. Data acquisition system manager.* A manager in the normal supervisory chain of command under the system administrator. Within the guidelines established by the system administrator, the data acquisition system manager is responsible for managing the installation, including operation and maintenance of all those elements of the WCDS used for the acquisition of water control data and which are not under the purview of the WCDS site manager.

## **5. General**

*a. Authority, funding, and justification.* ER 1110-2-240 prescribes general authorities for water control management activities. Justifications for the acquisition of water control data systems are also described in this regulation. The funding for water control data systems is under Congressional Appropriation for Energy and Water Development, titled "Revolving Fund," established by Public Law 153, 83rd Congress.

*b. Dedicated purpose system.* The operation of water resource projects in a manner consistent with purposes specified in authorizing legislation is a mission of the Corps of Engineers. The WCDS is a dedicated purpose system existing only to support the regulation of the Corps of Engineers Congressionally authorized water resource projects.

*c. Functional control.* The functional control of the WCDS is the exclusive responsibility of the system administrator in order to ensure project operations as authorized by Congress.

## **6. Management Responsibilities**

*a. WCDS system administrator.*

(1) Selection. The WCDS system administrator shall be a member of the water control management chain of command. The system administrator shall be either the person directly responsible for water control activities or that person's immediate supervisor. Typical positions would be the Chief of the Reservoir Control Section or the Chief of the Hydrology-Hydraulics Branch. The person responsible for selecting the system administrator shall be the director or chief of the division to which the water control function is assigned.

(2) Responsibilities. The system administrator shall be responsible for:

(a) Interpreting and administering this regulation.

(b) Appointing the system manager and the site manager.

(c) Ensuring that the WCDS is dedicated to the support of the water control activities described in ER 1110-2-240.

(d) Supervising the activities of the system manager and the site manager.

(e) Ensuring that water control personnel are trained in utilization of the WCDS to meet routine water control regulation responsibilities and to respond in emergency situations that may reasonably occur.

(f) Overseeing the management of the WCDS, including planning and budgeting, upgrading the WCDS, providing security and physical access to the WCDS computer system, determining the physical location of the WCDS components, and operating and maintaining the WCDS.

(g) Ensuring that all reports required by higher authority regarding the WCDS are completed properly and on time.

(h) Ensuring that requirements regarding the usage of field data collection systems as described in ER 1110-2-248 are met.

(i) Ensuring that a WCDS continuity of operations plan (COOP) is developed and tested.

*b. WCDS system manager.*

(1) Selection. The WCDS system manager shall be appointed by the system administrator. This person shall be assigned within the chain of command of the system administrator.

(2) Responsibilities. The system manager shall be responsible for:

(a) Maintaining routine operation of the WCDS.

(b) Serving as the initial point of contact for access, problems, and issues related to the WCDS.

(c) Selecting and implementing WCDS applications software. When acquisition of software is necessary--to include the specifications development and selection of commercial-off-the-shelf (COTS) products, and/or the development of Corps-unique software, and/or selection and implementation of appropriate WCDS applications software--it must be acquired and implemented in accordance with all applicable U.S. Army Corps of Engineers (USACE), Department of the Army (DA), and Department of Defense (DoD) guidance and regulations.

(d) Authorizing the establishment of USERIDs, passwords, and user numbers in accordance with Corps-wide standards to permit access to the WCDS.

(e) Monitoring the system for unauthorized users or usage.

(f) Preparing an operation procedures manual for the WCDS computer system.

(g) In coordination with the WCDS site manager and the WCDS data acquisition systems manager, preparing, validating, and testing the COOP.

(h) Identifying and recommending, in consultation with the site manager, necessary upgrades or expansions to the system.

*c. WCDS site manager.*

(1) Selection. The WCDS site manager shall be appointed by the system administrator. The individual will be a Corps of Engineers employee in the chain of command of the system administrator. If a person with necessary site management skills cannot be found in the water management chain of command, the use of a Corps of Engineers employee residing in the other divisions such as Information Management Division or even by contract is recommended.

(2) Responsibilities. The site manager shall be responsible for:

(a) Providing a functioning WCDS hardware and software facility capable of performing the water control mission.

(b) Acquiring, loading, and updating system and network software for components of the WCDS.

(c) Providing administration services to manage the file systems, user accounts, network access, network file sharing, E-mail, and other capabilities necessary to provide a functioning system.

(d) Providing LAN administration services to manage access and resources associated with the water control subnet.

(e) Providing local onsite maintenance and trouble shooting of hardware and/or system software problems.

(f) Ensuring that the WCDS components are properly operated and maintained to ensure the maximum "up time." Maintenance or other work on the WCDS components shall be coordinated with the system manager to minimize disruptions to water control activities.

(g) Providing quality assurance that contractors responsible for the maintenance of the WCDS components perform the actions required by maintenance contracts to minimize disruptions to water control activities.

(h) Ensuring that standard accepted practices for system software, applications software, and data backup are performed on a regular basis.

(i) Executing the COOP, ensuring offsite storage of mission-critical software and data backup/recovery tapes.

*d. WCDS data acquisition system manager.*

(1) Selection. The WCDS data acquisition system manager shall be appointed by the system administrator and be within the system administrator's chain of command.

(2) Responsibilities. The data acquisition system manager shall be responsible for:

(a) Acquiring, installing, operating, and maintaining all elements of the WCDS data acquisition system. The only exception shall be where there is existing data acquisition equipment, used for both water control data acquisition and other purposes, which is currently operated or maintained by elements outside of the water control functional area. In this case, the data acquisition system manager shall still be responsible for quality assurance of the data acquisition equipment as it relates to the water control data acquisition function.

(b) Developing, implementing, and maintaining a quality assurance program for the WCDS data acquisition system.

(c) Ensuring that the requirements of ER 1110-2-248 are met with regard to any GOES equipment.

(d) In coordination with the WCDS system manager and the WCDS site manager, preparing, validating, and testing the data acquisition COOP.

(e) Coordinating with the system manager and site manager to ensure maximum availability of real-time data to water control personnel.

(f) Furnishing any reports required by higher authority pertinent to the data acquisition system.

(g) Accounting for data acquisition equipment used exclusively to support the water control function.

(h) Budgeting for costs related to the operation and maintenance of data acquisition equipment used exclusively to support the water control function.

## **7. Training**

*a.* The system administrator shall be required to attend training sufficient to understand the overall capabilities of the system. This training will normally be provided locally.

*b.* The system manager shall be required to attend formal training sufficient to have a working knowledge of the system configuration capabilities, user account controls, system resource controls, system backup, network capabilities, and related information. This training will normally be provided by system component vendors. The system manager shall have a working familiarity with the Life Cycle Management of Information Systems (LCMIS), and with all appropriate USACE, DoD, or DA policies and/or regulations governing same.

*c.* The site manager shall be required to attend formal training sufficient to perform the installation of operating system releases, implement file system backup and restoration, operate the water control subnet LAN, request vendor maintenance, and perform other functions associated with site management. This training will normally be provided by system vendors.

*d.* The data acquisition system manager shall be required to attend training related to the installation, operation, and maintenance of the equipment for which he/she is responsible. This training would normally be provided by the vendor.

## **8. Review and Inspection**

*a.* A scheduled annual review and inspection of district WCDS will be conducted by the responsible division water control element. The purpose of the review is to ensure that appropriate procedures are being followed to achieve efficient, effective regulation of water control projects. A written critique will be provided by the reviewing element. An information copy

of the written critique will be furnished to CECW-EH-W.

b. The COOP will be tested at least once each year. A written critique will be prepared and retained by the testing office.

c. Each office should maintain proficiency in handling emergency situations by periodically holding exercises. Exercises should include simulated flood events, drought events, dam failures, toxic spills, environmental disasters, or other scenarios appropriate to the region. Where appropriate, exercises may include Corps elements outside water control, as well as non-Corps water and disaster-oriented agencies.

## 9. Computer System Accountability/Security

a. Computer system property accountability and reporting requirements shall be as specified in applicable Department of Defense and Army regulations.

b. With respect to computer system security, the WCDS shall be designated as unclassified-sensitive two, defined as information which primarily must be protected to ensure its availability and integrity. As a nonsensitive facility, it may not be used to store or process classified information, information requiring protection under the provision of the Privacy Act of 1974, or asset/resource, proprietary, or contractual information. Any WCDS that requires other than the unclassified-sensitive two designation must obtain the prior written approval of CECW-EH-W before initiating the certification process.

## 10. WCDS Computer System

a. *Restrictions.* Usage of WCDS computer systems is restricted to those activities which support water control management, including the following:

- (1) Acquisition, storage, dissemination, and display of hydrometeorological, project, and water quality data.
- (2) Water control model development and application.
- (3) Development of other water control software and supporting documentation.

(4) Data exchange with National Weather Service Automation of Field Operations and Services.

(5) Data acquisition of project and hydrometeorological data by voice, radio, terminal, personal computer, or network.

(6) Exchange of hydrometeorological data with other elements and agencies.

(7) WCDS management.

(8) Development and maintenance of water control documents such as annual reports, water control plans and manuals, and water supply potentials.

(9) Training for water control activities.

(10) Hydrologic, hydraulic, or other studies associated with the regulation of projects.

(11) Exchange of information with DA/DoD and/or other Federal agencies engaged in or preparing for emergency management response operations, such as the Federal Emergency Management Agency, or related responsible state organizations.

b. *Operation.*

(1) *Procedures.* The WCDS shall be operated during both normal and emergency conditions to efficiently support water control activities in accordance with priorities set by the system administrator. Within these guidelines, the system manager shall establish and document machine specific procedures for routine and emergency operations. Users shall be responsible to the system manager for efficient and appropriate use of the WCDS. Any conflicts shall be resolved by the system administrator.

(2) *Backup and recovery.* The site manager shall establish written backup and recovery procedures to be carried out to ensure that operation may be quickly resumed following a failure of a system device or a user error. These procedures must include both onsite and offsite storage of data, system software, and application software backup media.

(3) *COOP.* A written COOP shall be prepared by the system manager to ensure continued operation in the

event that local equipment components cannot be used for an extended time.

*c. Non-Corps access.*

(1) Limited access shall be made available to cooperating water control agencies for the sole purpose of data and information exchange. Access must not interfere with water control management activities.

(2) Access by users other than cooperating water control agencies shall be limited to those cases in which the requested information would normally be available under the Freedom of Information Act and direct access is more advantageous to the Government. Charges shall be computed in the same way as for a Freedom of Information Act response as determined by the system administrator.

(3) Each non-Corps user shall be allowed access on a case-by-case basis as determined by the system manager. Access may be revoked at any time.

(4) Access shall be provided in a manner that limits the non-Corps user to retrieve only that data appropriate for dissemination outside the Corps of Engineers.

(5) Access to write to the file system by non-Corps users should be very highly restricted. Accidentally or deliberately filling the file system will inhibit other system processes from executing.

(6) The system manager shall be responsible for maintaining sufficient accounting records to determine usage by each non-Corps user.

(7) Access by non-Corps users through the network shall be coordinated with the responsible network security officer.

*d. Data exchange format.*

(1) Operational data provided to other agencies in machine readable form shall be provided in the standard hydrometeorological exchange format (SHEF).

(2) Agreements with other agencies supplying data to the WCDS in machine readable form shall require that data be furnished to the Corps of Engineers in SHEF.

## **11. WCDS Data Acquisition System**

*a. Activities.* WCDS data acquisition activities are those activities supporting real-time water control which include, but are not limited to, the following:

(1) Data collection platform and sensor installation, operation, and maintenance.

(2) GOES, direct readout ground station, or domsat read-only terminal installation, operation, and maintenance.

(3) Data exchange with National Weather Service Automation of Field Operations and Services.

(4) Facsimile output.

(5) Data acquisition of project and hydrometeorological data by voice, radio, terminal, personal computer, etc.

*b. Operation.*

(1) Procedures. The WCDS data acquisition system shall be operated to efficiently support water control activities in accordance with priorities set by the system administrator. The data acquisition system manager shall establish machine specific procedures to maximize overall efficiency and reliability within the guidelines established by the system administrator. The data acquisition system manager shall coordinate with the system manager to ensure efficient computer storage of acquired data.

(2) Accounting. The data acquisition system manager shall implement accounting procedures sufficient to document proper management and to justify upgrades to existing equipment.

*c. Non-Corps access.*

(1) Limited access to data acquisition devices shall be made available to cooperating water control agencies for the sole purpose of data and information exchange. Access must not interfere with water control management activities.

(2) Each non-Corps user shall be allowed access on a case-by-case basis as determined by the system administrator. Access may be revoked at any time.

(3) Access shall be provided in a manner that limits the non-Corps user to retrieve only that data appropriate for dissemination outside the Corps of Engineers.

(4) All other use of the WCDS data acquisition system by non-Corps users shall be prohibited.

FOR THE COMMANDER:



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Colonel, Corps of Engineers  
Chief of Staff