

<p>CECW-EH Engineer Regulation 1110-2-8151</p>	<p>Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000</p>	<p>ER 1110-2-8151  31 July 1997</p>
	<p>Engineering and Design  MONITORING COMPLETED NAVIGATION PROJECTS</p>	
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CECW-EH

Regulation  
No. 1110-2-8151

31 July 1997

## Engineering and Design MONITORING COMPLETED NAVIGATION PROJECTS

### 1. Purpose

This engineer regulation (ER) states the objective, outlines the scope, discusses funding, assigns responsibility, and establishes the procedures by which the Corps of Engineers (CE) evaluates planning, design, construction, and operation and maintenance performance of civil works navigation projects.

### 2. Applicability

This regulation applies to all USACE Commands with responsibility for civil works projects.

### 3. Objective

The objective of this regulation is to assure the collection of adequate information as a basis for verifying or improving navigation project performance through investigations of:

- a. *Project purpose attainment.*
- b. *Design procedures.*
- c. *Construction methods.*
- d. *Operations and maintenance techniques.*

This objective is achieved through (1) normal monitoring and inspection of projects maintained by the CE; (2) inspection of projects maintained by others; and

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This regulation supersedes ER 1110-2-8151, dated 29 January 1993.

(3) a national program for intensive monitoring of selected Civil Works navigation projects maintained by the CE [Monitoring Completed Navigation Projects (MCNP) Program].

### 4. Distribution Statement

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### 5. Scope

This ER addresses shallow- and deep-draft navigation projects located in rivers, reservoirs, lakes, estuaries, and the coastal zone. Ongoing project-related reporting, inspection, and monitoring programs should continue. The MCNP program may be implemented as either a comprehensive detailed survey to verify post-construction conditions on a one-time basis or a continuous (repetitive) collection of appropriate prototype data over an extended period. Generally, the continuous monitoring efforts will not exceed five years in length. The MCNP Program can only fund monitoring for completed projects operated and/or maintained by the CE. It is limited to funds available for project monitoring. Projects must be related to navigation, or mitigation for navigation projects, to be monitored by the MCNP Program. The availability of previously collected data will be a factor in the selection of projects for monitoring under the MCNP Program.

### 6. Funding

Monitoring of selected projects under the MCNP Program will be funded by Headquarters, U.S. Army

Corps of Engineers (HQUSACE) from the O&M appropriation. Other monitoring efforts will typically be funded from the General Investigations, Construction General, or O&M programs directly.

## 7. Program Implementation Responsibility

HQUSACE responsibility for the overall MCNP program will be managed by the Hydraulics and Hydrologic Branch (CECW-EH). The Coastal and Hydraulics Laboratory (CHL) of the U.S. Army Engineer Waterways Experiment Station is responsible for day-to-day technical accomplishment and administrative management of the MCNP program and support of HQUSACE review and technology transfer. CHL will provide technical advice and direction to the commands in program preparation and execution. The engineering elements in each MSC or district are responsible for their part of the monitoring efforts. A Field Review Group (FRG) will be selected by HQUSACE. The FRG will assist CHL and HQUSACE technically and with selection of projects for the MCNP Program.

## 8. Technical Assistance

Districts may seek technical assistance from CHL when establishing a monitoring effort. CHL will assist in or provide plan development, data collection and analysis, and/or data archival. CHL will be the repository of all monitoring reports and field data collected under the MCNP Program.

## 9. Nomination of Projects for the MCNP Program

*a.* Nominations of projects for the MCNP Program will be solicited by HQUSACE when available funds are projected for the monitoring of additional projects. Solicitations will be sent to the MSCs, which will solicit and receive nominations from their districts. Each MSC will then prioritize and submit them to CHL (ATTN: CEWES-CV-CC). An information copy of the transmittal letter will be forwarded to HQUSACE (ATTN: CECW-EH). Submissions

should provide a brief history of the project, include a summary of previous or ongoing data collection; explain the project's purpose and objective; describe any problems being experienced; and identify the elements of the project to be monitored. (No cost estimate is required at time of initial submission.)

*b.* Once received, the nominations will be reviewed, discussed with nominating offices, and ranked by a panel of CHL engineers and scientists. Rankings will be made in the following areas:

- (1) Evaluation of project performance/design procedures.
- (2) Evaluation of performance prediction technology.
- (3) Evaluation/improvement of construction methods.
- (4) Evaluation/improvement of O&M techniques.
- (5) National significance.
- (6) Potential for data acquisition.
- (7) Applicability to other research.
- (8) Availability of numerical/physical model data.
- (9) Availability of prototype data.

Criteria for ranking of the projects are shown in Appendix A. Project rankings will be reviewed by HQUSACE. Preliminary monitoring plans will be drafted by CHL personnel for the highest ranking projects. These plans will include all aspects of the project to be monitored. In drafting the preliminary plans, the degree of cooperation possible with work units in other research programs and the quality and quantity of data collected during the planning, design, and construction phases of the project will be identified. Brief descriptions of all nominated projects will be presented by CHL to the MCNP Program FRG. Only the highest ranked projects will have proposed monitoring programs presented for the FRG to create a priority listing. Final selections for the program will

be made at HQUSACE based on the priority listing, national priorities, and available funds.

## 10. Conduct of an MCNP Program Monitoring Effort

*a.* Detailed monitoring plans will be developed for each project selected for monitoring under the MCNP Program as joint efforts of CHL and the districts. The plan will be comprehensive in its coverage of project features, design review, and efforts to be utilized in determining the functional and structural performance thereof. A general outline for the monitoring plan is as follows:

(1) A description of project features as constructed, including a summary of pertinent data available.

(2) The predicted design performance of features being monitored. This includes results of investigations, analyses, and engineering computations made for the design of the features. This section should also indicate the magnitude of measurements or quantitative differences that would indicate successful performance or needed modification.

(3) A description of the proposed monitoring scheme and its objectives. This should include a base map showing monitoring survey ranges, observation and photographic stations, type and location of proposed instrumentation, and sea, swell, and wind roses, when applicable.

(4) A complete list of instruments and equipment required through lease or acquisition. All equipment purchases will be through CHL or coordinated with CHL. CHL will maintain an equipment log and service record for the program. All instruments and equipment purchased with program funds will remain the property of the MCNP Program.

(5) A detailed cost estimate indicating the timing of activities and anticipated costs. A cost summary should be prepared for each fiscal year of the proposed monitoring effort.

(6) A project map and/or high-altitude aerial photo (1:24,000) of the project, if available.

*b.* The monitoring plan will be for a definite time period and will provide for narrative quarterly progress reports and a final report. Each quarterly report will discuss progress during that quarter, identify any problem areas encountered or anticipated, and evaluate the adequacy of remaining efforts to reach the objectives of the project.

*c.* The projects will be reviewed annually to evaluate whether modifying the monitoring effort will be continued or modified based on field data collected at the project, preliminary comparison of predicted performance with observed performance of the project, preliminary conclusions that might be drawn about project performance, and financial and physical requirements for completing the monitoring effort.

*d.* A report highlighting lessons learned from all parts of the program will be produced by CHL in the form of a CHL Technical Note (TN). The TN will summarize significant results of each monitoring effort, thus providing important and timely information concerning navigation projects to the districts and HQUSACE.

*e.* A final report will be produced for each monitoring effort and will be based on the data developed from the monitoring effort. Data analyses for the final report must be comprehensive, detailed, and address all items included in the approved monitoring plan. Based on these analyses, conclusions will be drawn and recommendations made, as appropriate, for any technical or procedural changes supported by the data. Requests for maintenance or modification of projects warranted by the monitoring effort should be initiated through established programs and procedures. The final report will be the principal mechanism for providing feedback on the O&M and design process to the districts and HQUSACE. The final report will fully investigate design and O&M techniques and, when appropriate and adequate information exists, recommend modifications to those techniques.

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f. Beginning with the nomination process, MCNP Program efforts will be coordinated with research efforts in other programs, such as the Inland Navigation Program, Coastal Navigation and Storm Damage Reduction Program, Dredging Operations and Environmental Research Program, Coastal Inlets Research Program, and the Coastal Field Data Collection

Program. Data collected during an MCNP Program effort will be made available to researchers working on related problems and subsequently to the public through established reporting procedures. Cooperative efforts between the MCNP Program and research programs will be emphasized.

FOR THE COMMANDER:

1 Appendix  
APP A - Monitoring Completed  
Navigation Projects Program  
Ranking Criteria



OTIS WILLIAMS  
Colonel, Corps of Engineers  
Chief of Staff

**APPENDIX A**  
**MONITORING COMPLETED NAVIGATION PROJECTS PROGRAM**  
**RANKING CRITERIA**

Evaluation of Project Performance/Design Procedures

- 1 Not applicable
- 2 Below average
- 3 Average
- 4 Above average
- 5 Above average and unique

Evaluation of Performance Prediction Technology

- 1 Not predicted
- 2 Used rule-of-thumb
- 3 Used quick/table-top prediction
- 4 Used numerical or physical modeling
- 5 Used numerical and physical modeling

Evaluation/Improvement of Construction Methods

- 1 No construction methods
- 2 Only dredging
- 3 Dredging and standard structure design
- 4 Advanced construction methods
- 5 Unique, state-of-the-art methods

Evaluation/Improvement of O&M Techniques  
{for structures, shoaling, scour, deposition basin, or other (explain)}

- 1 No O&M techniques
- 2 Evaluate one
- 3 Evaluate two
- 4 Evaluate three
- 5 Evaluate unique state-of-the-art technique

National Significance

- 1 Site-specific
- 2 Few other sites benefit
- 3 Some other sites benefit

- 4 Many other sites benefit
- 5 Most other sites benefit

Potential for Data Acquisition

- 1 Thick ice cover, real remote area
- 2 Remote area, workable ice problem
- 3 Remote area, government collection site
- 4 Developed area, non-government collection site
- 5 Developed area, government collection site

Applicable to Other Research

- 1 No other research
- 2 Non-Corps research
- 3 Corps research on riverine, estuarine, or coastal processes
- 4 Corps research on shallow- or deep-draft navigation products
- 5 Corps research on both products and processes

Availability of Numerical/Physical Model Data

- 1 No data available
- 2 Wave transformation models, etc.
- 3 Simple numerical modeling
- 4 Sophisticated numerical or physical model data available
- 5 Sophisticated numerical and physical model data available

Availability of Prototype Data

- 0 None available
- 1 One type of useful data available
- 2 Two types of useful data available
- 3 Three types of useful data available
- 4 Four types of useful data available
- 5 Five or more types of useful data available