and requires immediate action to eliminate or reduce the danger.

m. *Emergency Actions Taken*—In case of an emergency situation, list the actions taken. For non-emergency situation, put NA for ''not applicable.''

n. *Remedial Action Taken*—For non-emergency situations list remedial actions taken.

o. *Remarks*—For other pertinent information.

*Format for Unsafe Dam Data Sheet* (RCS-DAEN-CWE-17 and OMB No. 49–R0421

National Program of Inspection of Non-Federal Dams—Unsafe Dam Data Sheet

a. *Name:*
b. *Type:*
c. *Height:*
d. *Id. No.*
e. *Location:*
*State:* *County:*
*Nearest D/S City, Town or Village:*
*River or Stream:*
f. *Owner:*
g. *Date Governor Notified of Unsafe Condition:*
h. *Condition of Dam Resulting in Unsafe Assessment:*
i. *Description of Danger Involved:*
j. *Recommendations Given to Governor:*
k. *Urgency Category:*
l. *Emergency Actions Taken:*
m. *Remarks:*

APPENDIX G TO § 222.6

National Program for Inspection of Non-Federal Dams—Monthly Progress Report (RCS-DAEN-CWE-19)

I. *Instructions for Monthly Progress Report.* The indicated information shall be provided in the format shown on page G–2.

1. Division Reporting:
2. Date:
3. Information Required for Each State Regarding Total Number of Inspections Performed (AE Inspections included) (Cumulative):
3.1. Number of Inspections Initiated by on-site inspection or the review of engineering data from project records.[1]
3.2. Number of Inspections Competed (The number of inspection reports which have been submitted to the District Engineer for review and approval).
3.3 Number of Dams Reported to the Governor as Unsafe.[2]
3.4. Number of Approved Inspection Reports Submitted to the Governor.
4. Information Required for Each State Regarding Inspections Performed Under AE Contracts (Cumulative):
4.1. Number of Dams Contracted for Inspection by AE's with State or Corps.
4.2. Number of Inspections Initiated by AE's by on-site inspection or the review of engineering data from project records.[1]
4.3. Number of Inspections Completed by AE's (The number of inspection reports which have been submitted to the District Engineer for review and approval).
4.4. Number of Approved Inspection Reports Prepared by AE's Submitted to the Governor.

II. *Formation for Monthly Progress Report.*

National Program for Inspection of Non-Federal Dams—Monthly Progress Report

1. Division Reporting:
2. Date:
3. Information Required for Each State Regarding Total Number of Inspections Performed (Cumulative):

| State | Inspection Initiated (3.1) | Inspection Completed (3.2) | Unsafe Dams Reported (3.3) | Approved Reports (3.4) |
|---|---|---|---|---|
| | | | | |
| Total. | | | | |

4. Information Required for Each State Regarding Inspections Performed Under A/E Contracts (Cumulative):

| State | Dams Under A/E Contract (4.1) | A/E Inspections Initiated (4.2) | A/E Inspections Completed (4.3) | A/E Reports Approved (4.4) |
|---|---|---|---|---|
| | | | | |
| Totals. | | | | |

APPENDIX H TO § 222.6

Suggested Scope of Work Contract for Architect-Engineer Services for Safety Inspection of Dams Within the State of _____

1. *General Description of Scope of Work.* The services to be rendered by the Architect-Engineer (AE) under the proposed contract

[1] Each of the initiated inspections reported should be planned for completion within a reasonable period of time (30 days.)

[2] An unsafe dam is defined as a dam with deficiencies of such a nature that if not corrected could result in the failure of the dam with subsequent loss of lives or substantial property damage.

[1] See footnote on previous page.

shall include all engineering functions, hereinafter described, as needed to inspect the dams listed in Appendix A of this contract for the purpose of evaluating their risk of failure. A report which (a) describes the assessed condition of the dam, (b) provides conclusions as to which particular conditions could cause failure, (c) makes recommendations on remedial measures believed necessary, and (d) makes recommendations on whether and what type of future investigation should be conducted shall be provided for each inspected dam. The work shall proceed in accordance with Phase I of the Recommended Guidelines for Safety Inspection of Dams established by the Office of the Chief of Engineers (OCE) and the supplemented requirements listed in paragraph 3 below. The OCE guidelines are listed in Appendix B of this contract.

2. *Information and Services To Be Furnished by the Government*. The Contracting Officer will furnish the following information and services to the AE:

a. All information pertaining to each dam to be inspected as contained in the National Inventory of Dams.

b. Copies of recommended format for preparation of inspection report, engineering data check list and visual inspection check list.

c. All available pertinent information pertaining to the Dam Inspection Program and previous investigations having a bearing on inspections to be performed under this contract.

d. Right-of-entry for access to each dam site.

3. *Services To Be Rendered by the Architect-Engineer*. The principal services, subject to the optional provisions of the contract, to be rendered by the AE are itemized below:

a. *Technical Investigations*.

(1) *Engineering Data Collection*. To the extent feasible, the engineering data listed in Appendix I of the OCE guidelines relating to the design, construction and operation of the dam and appurtenant structures, should be collected from existing records and reviewed to aid in evaluating the general condition of each dam, including an assessment of the hydraulic and hydrologic features and structural stability of the dam. Where the necessary engineering data are unavailable, inadequate or invalid, a listing shall be made of those specific additional data deemed necessary by the engineer in charge of the investigation and included in the inspection report. The engineering data checklist provided by the Contracting Officer shall be used as a guide to compile this data.

(2) *Field Inspections*. The field inspection of each dam shall include examination of the items listed in Appendix II of the OCE guidelines, electrical and mechanical equipment for operation of the control facilities, reservoir area, downstream channel in the vicinity of the dam and any other significant feature to determine how these features affect the risk of failure of the dam. The inspection shall be conducted in a systematic manner to minimize the possibility of any significant feature being overlooked. The visual inspection checklist provided by the Contracting Officer shall be used as a guide to document the examination of each significant feature.

Particular attention shall be given to detecting evidence of leakage, erosion, seepage, slope instability, undue settlement, displacement, tilting, cracking, deterioration, and improper functioning of drains and relief wells. The degree and quality of maintenance and regulating procedures for operation of the control facilities shall be assessed. The design and existing condition of such control facilities (*i.e.*, spillway, outlet works, etc.) shall be evaluated. An assessment of the degree of siltation that is evident and its effect on the dam's reservoir shall be performed. Photographs and drawings should be used to record conditions in order to minimize written descriptions.

(3) *Engineering Analyses*.

(a) *Evaluation of Hydraulic and Hydrologic (H&H) Features*. Evaluation of the hydraulic and hydrological features of each dam shall be based on criteria set forth in the OCE guidelines. If it is determined that the available H&H data are insufficient, the Contracting Officer must be so informed and may exercise an option of requiring the AE to perform an overtopping analysis at additional agreed-upon compensation. The methodology to be used by the AE for this analysis will be based on the OCE guidelines and subject to the approval of the Contracting Officer.

(b) *Evaluation of Structural Stability*. The evaluation of structural stability of each dam is to be based principally on existing conditions as revealed by the visual inspection, available design and construction information, and records of performance. The objectives are to determine the existence of conditions, identifiable by visual inspection or from records, which may pose a high risk of failure and to formulate recommendations pertaining to the need for any remedial improvements, additional studies, investigations, or analysis. The results of this phase of the inspection must rely substantially upon the experience and judgment of the inspecting engineer. Should it be determined that sufficient data are not available for a reasonable evaluation of the structural stability of a dam and appurtenances, the Contracting Officer should be informed which information is required prior to attempting to evaluate the risk of failure of the dam.

(c) *Evaluation of Operational Features*. Where critical mechanical/electrical operating equipment is used in controlling the

reservoir of a dam, an evaluation of the operational characteristics of this equipment from the standpoint of risk of failure must be performed.

(d) *Evaluation of Reservoir Regulation Plan and Warning System.* The operational characteristics of each dam's existing reservoir regulation plan and warning system in event of a threatened failure shall be investigated.

b. *Emergency Situations.* The Contracting Officer must be immediately notified of any observed condition which is deemed to require immediate remedial action. After being notified, the Contracting Officer will contact the appropriate State personnel and will meet the AE at the site to determine the appropriate course of action. This will not relieve the AE of his responsibility to prepare a comprehensive inspection report at the earliest practicable date.

c. *Qualifications of Investigators.* The technical investigations shall be conducted by licensed professional engineers with a minimum of five years experience after licensing in the investigation, design and contruction of earthfill, rockfill and concrete dams and/or in making risk of failure evaluations of completed dams. These engineers must be knowledgeable in the disciplines of hydrology, hydraulics, geotechnical, electrical, mechanical and structural engineering, as necessary. All field inspections should be conducted by engineers, engineering geologists and other specialists who are knowledgeable in the investigation, design, construction and operation of dams, including experts on mechanical and electrical operation of gates and controls, where needed.

d. *Preparation of Report.* A formal report shall be prepared for each dam inspected for submission to the Contracting Officer. Each report should contain the information specified in OCE guidelines and any other pertinent information. The recommended format provided by the Contracting Officer shall be used to document each report. The signature and registration identification of the professional engineer who directed the investigation and who was responsible for evaluation of the dam should be included in the report.

4. *Supervision and Approval of Work.* All work performed under this contract shall be subject to the review and approval of the Contracting Officer or his designee. Meetings will be held on a regular basis in the District office, during which the progress of inspections will be discussed and questions relating to inspection reports previously received by the Contracting Officer will be addressed. Reports will be revised as necessary when required by the Contracting Officer.

5. *Coordination.* During the progress of work, the AE shall maintain liaison with the *_____ and other local authorities through the Contracting Officer as required to assure the orderly progression of the inspection. Copies of all correspondence with such authorities shall be provided to the Contracting Officer.

6. *Submission of Report.*

a. Each inspection report will be submitted for review to the Contracting Officer. Reports will be revised as required by the Contracting Officer. After all revisions have been made, the original and ____ copies of each inspection report shall be submitted to the Contracting Officer.

b. Text of all reports shall be typewritten and printed on both sides of 8″×10½″ paper. All notes, inspection forms, sketches or similar matter shall be legible, distinct and suitable for reproduction.

7. *Period of Services.*

a. All inspections and reports included under this contract shall be completed within ____ days from date of Notice to Proceed.

b. If the option for performing an H&H analysis for any particular site is exercised, the AE shall complete such analysis within ____ days from date of Notice to Proceed. However, the overall completion time stated in paragraph 7a above shall not change.

## APPENDIX I TO § 222.6

### Procedure for Using NASA Land Satellite Multispectral Scanner Data for Verification and Updating the National Inventory of Dams

1. *Purpose.* This appendix states the objective, defines the scope, prescribes procedures, and assigns responsibilities for using NASA Land Satellite (LANDSAT) Multispectral Scanner data along with NASA's Surface Water Detection And Mapping (DAM) Computer program to assist in verification and updating the National Inventory of Dams.

2. *Applicability.* This appendix is applicable to all divisions and districts having Civil Works responsibilities except POD.

3. *Reference.* NASA, DETECTION AND MAPPING PACKAGE, Users Manuals, Volumes 1, 2a, 2b, and 3 dated June 1976, published by the Johnson Space Center, Houston, Texas.

4. *Objectives.* Provide a uniform method, nation-wide, to help insure that all dams subject to Public Law 92–367, 8 August 1972 are properly identified and located in the National Inventory of Dams.

5. *Scope.* The computer printer overlay maps produced by the procedure described in reference 3b will be used by district and/or state or contractor personnel as a tool to assist in verification and updating of the National Inventory of Dams.

*NOTE: Write in the designated State Authority.