



OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION'S SAFETY OF DAMS: EMERGENCY PREPAREDNESS

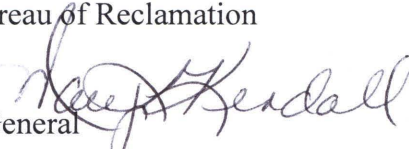


OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

FEB 27 2012

Memorandum

To: Michael L. Connor
Commissioner, Bureau of Reclamation

From: Mary L. Kendall 
Acting Inspector General

Subject: Final Evaluation Report – Bureau of Reclamation's Safety of Dams:
Emergency Preparedness
Report No. WR-EV-BOR-0007-2011

This memorandum transmits the results of our evaluation of the Bureau of Reclamation's (USBR) emergency preparedness at its National Critical Infrastructure (NCI) and Major Mission Critical (MMC) dams.

USBR appears committed to emergency action planning to help save lives and reduce property damage in the areas impacted by potential NCI or MMC dam failure. This was evidenced by the emergency action plans in place for all the high hazard dams we visited. While these areas did have emergency action plans, we still found areas where USBR needs to strengthen internal controls for these plans. We include five recommendations in our report that, if implemented, will help to improve USBR's emergency management program.

Based on USBR's January 17, 2012 response to the draft report, we consider all five recommendations to be resolved but not implemented. We will refer these recommendations to the Assistant Secretary for Policy, Management and Budget to track implementation.

The legislation, as amended, creating the Office of Inspector General requires that we report to Congress semiannually on all audit report issues, actions taken to implement our recommendations, and recommendations that have not been implemented.

A response to this report is not required. If you have any questions regarding this memorandum or the subject report, please do not hesitate to contact me at 202-208-5745.

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Results in Brief

The Bureau of Reclamation (USBR) manages 477 dams and dikes throughout the Western United States. Five of these dams are classified as National Critical Infrastructure (NCI) and 16 are classified as Major Mission Critical (MMC). Because destruction or failure of NCI and MMC facilities would be devastating to the public, we conducted an evaluation to determine the emergency preparedness of these dams.

As a part of its dam safety program, USBR requires emergency action plans (EAP) at its high and significant hazard dams. We found that USBR has EAPs in place for the high hazard dams we visited. All of the EAPs we reviewed met the Federal Emergency Management Agency (FEMA) guidelines and USBR directives. While USBR has EAPs in place, we found areas in which USBR has an opportunity to strengthen controls.

Specifically, recommended corrective actions resulting from deficiencies identified during EAP exercises, annual EAP reviews, and communication drills are not consistently documented. In addition, we found one NCI dam that did not meet USBR's directives for frequency of EAP exercises. Also, while we acknowledge USBR has no requirement for documenting verification of equipment and materials mentioned in the EAP, we believe this to be an important component of emergency preparedness. Finally, the type of employee emergency training required by USBR is inconsistent.

USBR appears committed to continually improving its existing emergency management procedures. For example, USBR has begun addressing the issues identified in our review. Namely, USBR's Program and Emergency Management Office in Security, Safety, and Law Enforcement plans to conduct annual reviews of EAPs and associated documents on a statistical sample basis for a pre-determined number of dams. The reviews will confirm that —

- Annual reviews and updates of the EAPs and associated communication directories have been conducted, certified as completed, and documented appropriately;
- EAP exercises and recommended corrective actions contained in the after action reports have been cataloged in the Dam Safety Information System;
- Adequate training has been provided to emergency management team members per applicable requirements of the Department Manual; and
- EAP tabletop and functional exercises have been completed and documented in a timely manner.

The areas we have identified should help USBR meet its commitment.

Introduction

Objective

Our objective was to review the emergency preparedness of the Bureau of Reclamation's (USBR) National Critical Infrastructure (NCI) and Major Mission Critical (MMC) dams to determine whether they have up-to-date emergency plans and capabilities.

Background

USBR manages 477 dams and dikes located throughout the 17 Western United States. USBR classifies 5 dams as NCI and 16 dams as MMC.¹ USBR regards NCI dams as facilities so vital to the nation that the incapacity or destruction of such facilities would have a devastating impact on the United States economy, security, and public health or safety. It considers its five NCI dams as its most important, critical facilities.

MMC dams are characterized by large, multi-purpose water project facilities and high downstream hazards. MMC facilities are regarded as vital to a specific region of the United States. The inoperability or destruction of these facilities would have a devastating impact on regional security, as well as the region's economy and public health and safety. USBR also classifies the 5 NCI and 2 MMC dams we reviewed as high hazard dams, meaning that dam failure could lead to the loss of one or more lives.

The goal of USBR's Dam Safety Program is "to ensure that Reclamation water storage facilities do not present unreasonable risks to the public, public safety, property, and/or environment." Emergency management programs are implemented at all high and significant hazard dams that could present such risks to the public and environment. USBR refers to its emergency management program as a system or group of actions by which mitigation, preparedness, response, and recovery activities are undertaken to save lives and protect property impacted by emergency incidents at its facilities. USBR's emergency management program includes emergency action plans (EAPs), inundation mapping, emergency exercises, personnel training, downstream warning and evacuation, and a dam safety information database.

Emergency Action Plans

EAPs are formal, living documents. They identify potential emergency conditions at a dam and specify actions for dam operating personnel to follow during emergency situations or unusual occurrences. The actions specified are aimed at minimizing property damage and loss of life and providing proper notification to downstream authorities. USBR's directives and standards for emergency management (FAC 01-01) state that EAPs are to be reviewed annually and

¹ For the purposes of this report, the names of the NCI and MMC dams are not disclosed for security reasons.

updated in a timely manner. The reviews are to include the specific procedures in the EAPs, as well as the names, telephone numbers, and other information contained in the dams' communications directory. In addition, EAP exercises are performed to promote emergency preparedness, test or evaluate emergency action plans, train personnel in emergency management duties, and demonstrate operational and response capabilities.

EAP Exercises and Frequency

USBR's directives and standards require each exercise to be documented in an after action report. These reports must contain identified strengths, deficiencies, and recommended corrective actions, including a planned course of action to implement and track the recommended actions.

The five components or levels for exercising an EAP are:

1. Orientation Seminar: An activity designed to introduce, discuss, and update emergency planning documents and organization structure. The purpose is to familiarize key personnel with the emergency procedures and their responsibilities. The seminars involve all personnel with a role in the EAP, problem, or procedure.
2. Drill: An activity designed to evaluate a single emergency response function. This involves an actual field response, such as making contacts to check the information included in the communication directory (also referred to as a communications drill).
3. Tabletop Exercise: An activity involving discussions of actions to be taken on described emergency situations. A tabletop exercise is done without time constraints, which allows the participants to practice emergency situation problem solving, evaluate plans and procedures, and resolve questions of coordination and assignment of responsibilities. A series of messages are issued to participants in the exercise, and they respond verbally to the simulated incident in a non-stressful atmosphere. This exercise involves management, key bureau staff, and appropriate personnel from outside organizations.
4. Functional Exercise: An activity in which participants respond in a coordinated manner to a timed, simulated incident that closely parallels a real operation event. This exercise is generally conducted in an emergency operations center or Incident Command Post. Written or verbal messages are passed to the participants by telephone, radio, fax, computer, or other method of communication. The exercise uses information such as emergency plans, maps, charts, and other information available in a real event and creates stress by increasing the frequency of messages, intensity of activity, and complexity of decisions and/or requirements for

coordination. Participants include management, key bureau staff, and appropriate personnel from outside organizations.

5. Full-Scale Exercise: An activity in which emergency preparedness officials respond in a coordinated manner to a timed, simulated incident. The activity includes the mobilization of field personnel and resources, and the actual movement of emergency workers, equipment, and resources required to demonstrate coordination and response capability. This exercise is intended to evaluate the entire emergency organization or its major parts in an interactive manner over a substantial period of time.

At a minimum, FAC 01-01 states that the frequency of the exercises shall be as follows:

1. Each dam will have a communications drill annually.
2. Each high and significant² hazard dam will have a tabletop exercise every 3 years.
3. Each high hazard dam will have a functional exercise every 6 years.
4. An actual emergency event may satisfy this exercise requirement.³

FAC 01-01 does not state a minimum requirement for performing full-scale exercises. Orientation seminars are generally required to be performed prior to conducting any tabletop exercise.

² A significant hazard dam has no potential for loss of life but there is the likelihood for significant economical damages in the event of failure.

³ Credit for an actual emergency event will be given in lieu of the required exercises for those offices which can document the applicable actions listed in the emergency action plan and/or local emergency operations plan were used in the actual emergency event.

Findings

Recommended Corrective Actions Not Documented

Recommended corrective actions are not consistently documented in after action reports and are not consistently entered into the Dam Safety Information System (DSIS).⁴ For example, we reviewed 12 EAP after action reports and found that four did not have recommendations (Figure 1). Two of these four after action reports contained exercise participant suggestions⁵ for improving the NCI Dam’s EAP and other emergency management system components, such as training. We noted, however, that these suggested recommendations were not formalized nor was the feasibility or appropriateness of formalizing these suggested recommendations discussed in the after action reports. USBR’s “Emergency Planning and Exercise Guidelines” state: “Recommendations for the future are the whole reason for doing the exercise. They are vital to building an improved emergency management system for the future.”

We also found that, in the eight after action reports that had recommendations, only two reports included a planned course of action⁶ to implement and track the recommended corrective actions. Further, a USBR official told us that while recommended corrective actions are to be entered into DSIS for implementation tracking and follow-up, it is not occurring consistently.

Recommendation

- I. Ensure that recommended corrective actions resulting from EAP exercises are consistently documented in the after action reports and entered into the DSIS for implementation tracking and follow-up.

⁴ The DSIS is two of the four components of the Bureau of Reclamation Safety and Security Information Systems (BORSSIS). BORSSIS is an information technology system that provides automated mechanisms that help ensure the safety of USBR’s dams by supporting activities related to the safety of operating and maintaining these facilities as well as the safety of USBR personnel, visitors, and the downstream public. The DSIS components allow USBR tracking of specific dam-related data and access of dam safety related reports.

⁵ The exercise participant suggestions and comments were provided in the participant evaluation forms attached to the after action reports.

⁶ The planned course of action is documented in an improvement plan.

USBR's Emergency Action Plan Exercises

Dam	Exercise Type	Year	Recommendations	Improvement Plan
NCI Dam 1	Tabletop	2007	✓	✓
NCI Dam 1	Functional	2009	✓	✗
NCI Dam 2	Functional	2008	✗	✗
NCI Dam 2	Tabletop	2005	✓	✗
NCI Dam 3	Tabletop	2007	✓	✗
NCI Dam 4	Functional	2008	✗	✗
NCI Dam 4	Tabletop	2006	✗	✗
NCI Dam 5	Functional	2002	✓	✗
NCI Dam 5	Functional	2007	✓	✗
MMC Dams I&2	Tabletop	2003	✗	✗
MMC Dam 2	Tabletop	2005	✓	✗
MMC Dams I&2	Full Scale, Tabletop, & Functional	2008	✓	✓ ⁷

The ✗ indicates that the item was not in the after action report. The ✓ indicates that the item was in the after action report.

Figure 1. This table shows emergency action plan exercise data for NCI and MMC dams reviewed.

Required Frequency of Exercise Not Followed

One of USBR's NCI dams has not exercised its EAP since August 2007. USBR's directives and standards for performing an EAP tabletop exercise is every 3 years. FEMA's "Federal Guidelines for Dam Safety, Emergency Action Planning for Dam Owners," points out that "If the plan is not exercised (verified), those involved in its implementation may become unfamiliar with their roles and responsibilities, particularly if emergency response personnel change." In response to an OIG-issued Notice of Potential Findings and Recommendations (NPFR) dated August 4, 2011, a regional office official informed us that the region believed that four events met the intent of FAC 01-01. After reviewing the after action reports for these four events, we determined that the exercises were dam security related, and therefore did not count as an EAP exercise. We were informed that a joint tabletop exercise was executed with another NCI dam in October 2011.

⁷ A local county wrote the after action report, so USBR is not listed in the improvement plan.

Recommendation

2. Verify that NCI and MMC dams' EAPs are exercised and documented as required in USBR's directives and standards.

EAP Reviews and Communication Drills Not Consistently Documented

USBR does not document the annual EAP reviews and communication drills consistently. For example, at one NCI dam, personnel use certifications to document the annual EAP review. At two other NCI dams, personnel use work orders for documentation. We noted the work orders for one of these dams are for the "Annual check of phone numbers on [the Dam's] call-out list for the Emergency Action Plan..." There is no indication on the work orders that an actual review of the EAP was included. At a fourth NCI dam, we were told that "the EAP is reviewed all the time and is a living document." No documentation, such as certifications or work orders, however, was evidenced to support that annual EAP reviews and communication drills are performed.

Although USBR's directives and standards do not specifically state that documentation of the annual EAP and communications directory reviews is required, we believe consistent documentation is essential to show that annual EAP reviews and communication drills are being performed as required. As stated in FEMA's "Federal Guidelines for Dam Safety,"

After the EAP has been developed, approved, and distributed, the job is not done. Without periodic maintenance, the EAP will become out-dated, lose its effectiveness, and no longer be workable...If the plan is not updated, the information contained in it may become outdated and useless.

Recommendation

3. Establish consistent documentation for annual EAP reviews and communication drills.

Verification of EAP Listed Equipment and Materials Not Documented

There is no documentation verifying the location, existence, and operability of equipment and materials listed as available in the EAPs. FEMA's "Federal Guidelines for Dam Safety" states that one of the basic elements that should be included in an EAP is an identification of preparedness actions that are to be taken

to facilitate response to emergencies. One such preparedness action is to arrange for the availability of equipment, labor, and materials for use in emergency situations. In all of the EAPs we reviewed, a list of materials and equipment available to respond to an emergency event was included. For EAPs with such a listing, we believe the location, existence, and operability of the equipment and materials should be annually verified and documented as part of the annual EAP review. This would ensure the availability and readiness of these resources in the event of an emergency.

This verification process would be similar to the required inspections that the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) must perform on all equipment listed in an operator's Oil Spill Response Plan (OSRP). For third-party equipment listed on an OSRP, operators are accountable for ensuring that the companies under contract have the required equipment and that it is operational. BOEMRE's inspectors selectively inspect the contractors annually to ensure operator compliance.⁸

Recommendation

4. As part of the annual EAP reviews, establish a process of confirming the location, existence, and operability of equipment and materials listed as available in an EAP.

Emergency Preparedness Training Requirements Not Clear

The type of emergency preparedness training that is required is inconsistent, and confusion exists as to who should receive such training. USBR's directives and standards recommend professional emergency management training for USBR and operating entity personnel with assigned responsibilities during emergency operations at dams. A USBR official told us this training requirement is confusing because it broadly encompasses all dam operating personnel, even those individuals having only minor or indirect roles during emergency operations at the dam. USBR is currently updating and rewriting the training requirements for dam personnel.

Recommendation

5. Identify and update training requirements and track training for dam personnel to ensure training needs are met.

⁸ Office of Inspector General U.S. Department of the Interior A New Horizon Looking to the Future of the Bureau of Ocean Energy Management, Regulation and Enforcement. Report No: CR-EV-MMS-0015-2010 Issued December 2010.

Conclusion and Recommendations

Conclusion

Overall, USBR is committed to the continual improvement of its existing emergency management procedures. USBR has EAPs in place for the high hazard dams we reviewed. All of the EAPs we reviewed met FEMA guidelines and USBR directives, although controls need to be strengthened to ensure the success of these EAPs.

USBR has begun addressing the issues identified in our review. Namely, USBR's Program and Emergency Management Office in Security, Safety and Law Enforcement (SSLE) plans to conduct annual reviews of EAPs and associated documents on a statistical sample basis for a pre-determined number of dams. The reviews will include confirming that —

- Annual reviews and updates of the EAPs and associated communication directories have been conducted, certified as completed, and documented appropriately;
- EAP exercises and recommended corrective actions contained in the after action reports have been cataloged in the DSIS;
- Adequate training has been provided to emergency management team members per applicable requirements of the Department Manual; and
- EAP tabletop and functional exercises have been completed and documented in a timely manner.

We commend USBR for its ongoing efforts to improve its emergency management procedures.

Recommendations

1. Ensure that recommended corrective actions resulting from EAP exercises are consistently documented in the after action reports and entered into the DSIS for implementation tracking and follow-up.

Agency Response: USBR concurred with the recommendation. USBR's SSLE directorate is developing an oversight program that ensures corrective actions resulting from EAP exercises are consistently documented in the after action reports and are entered into the DSIS. The SSLE Director is the official responsible for implementing the recommendation by December 31, 2012.

OIG Reply: We consider this recommendation resolved but not implemented.

2. Verify that NCI and MMC dams' EAPs are exercised and documented as required in USBR's directives and standards.

Agency Response: USBR concurred with the recommendation. The SSLE is developing an oversight program that will verify that NCI and MMC dams' EAPs are exercised and documented. The SSLE Director is the official responsible for implementing the recommendation by December 31, 2012.

OIG Reply: We consider this recommendation resolved but not implemented.

3. Establish consistent documentation for annual EAP reviews and communication drills.

Agency Response: USBR concurred with the recommendation. The SSLE will issue USBR-wide guidance for documenting annual EAP reviews and communication drills. The SSLE Director is the official responsible for implementing the recommendation by December 31, 2012.

OIG Reply: We consider this recommendation resolved but not implemented.

4. As part of the annual EAP reviews, establish a process of confirming the location, existence, and operability of equipment and materials listed as available in an EAP.

Agency Response: USBR concurred with the recommendation. The SSLE will issue USBR-wide guidance for confirming the location, existence, and operability of equipment and materials listed as available in an EAP during the annual EAP review. The SSLE Director is the official responsible for implementing the recommendation by December 31, 2012.

OIG Reply: We consider this recommendation resolved but not implemented.

5. Identify and update training requirements and track training for dam personnel to ensure training needs are met.

Agency Response: USBR concurred with the recommendation. The SSLE will issue USBR-wide guidance for identifying and updating training requirements. The SSLE will also develop procedures to track training for applicable dam personnel. The SSLE Director is the official responsible for implementing the recommendation by September 30, 2013.

OIG Reply: We consider this recommendation resolved but not implemented.

Appendix I: Scope and Methodology

Scope

We performed our evaluation in accordance with the “Quality Standards for Inspections,” issued by the Council of the Inspectors General on Integrity and Efficiency. Our focus was to review the emergency preparedness of USBR’s National Critical Infrastructure (NCI) and Major Mission Critical (MMC) dams. Our scope included all 5 of USBR’s NCI dams and 2 of its 16 MMC dams. We did not verify the existence, location or operability of the equipment and materials listed in the EAP’s. We believe that the work performed provides a reasonable basis for our conclusions and recommendations.

Methodology

To accomplish the review, we performed the following work:

- Reviewed all laws, rules, and regulations and USBR policies related to emergency preparedness as it relates to dam safety;
- Interviewed USBR officials regarding emergency preparedness;
- Visited four NCI dams and two MMC dams;
- Attended two tabletop exercises;
- Reviewed Emergency Action Plans (EAPs) and after action reports; and
- Interviewed officials from the U.S. Army Corp of Engineers and California Department of Water Resources.

Appendix 2: USBR Response

USBR's response to the draft follows on page 13.



United States Department of the Interior

BUREAU OF RECLAMATION
Washington, DC 20240

IN REPLY REFER TO:

84-27400
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MEMORANDUM

To: Office of Inspector General
Attn: Assistant Inspector General for Audits, Inspections, and Evaluations

Through: Anne J. Castle *Anne J. Castle* JAN 17 2012
Assistant Secretary – Water and Science

From: Michael L. Connor *Michael L. Connor* JAN 06 2012
Acting For Commissioner

Subject: The Bureau of Reclamation's Response to the Office of Inspector General's (OIG)
Draft Evaluation Report, *Bureau of Reclamation's Safety of Dams: Emergency Preparedness*, Report No. WR-EV-BOR-0007-2011

The OIG in its December 13, 2011 draft evaluation report, *Bureau of Reclamation's Safety of Dams: Emergency Preparedness*, requested that Reclamation inform the OIG of actions taken or planned to address the recommendations, as well as target dates and titles of the officials responsible for implementation. The requested information is attached.

If you have any questions or require additional information, please contact Elizabeth Cordova-Harrison, Director, Management Services Office, at 303-445-2783.

Attachment

The Bureau of Reclamation's Response to the Office of Inspector General (OIG) Draft Report
Bureau of Reclamation's Safety of Dams: Emergency Preparedness
Report No. WR-EV-BOR-0007-2011

January 2012

General Comments: Reclamation wishes to express gratitude for the OIG's evaluation regarding emergency preparedness at Reclamation's dams and associated recommendations for improvement. The following are Reclamation's response to the OIG's recommendations.

Response to OIG Recommendations: As advised in an OIG-issued Notice of Potential Findings and Recommendations (NPFR) dated August 4, 2011, we recommend to USBR the following:

Recommendation 1: Ensure that recommended corrective actions resulting from EAP exercises are consistently documented in the after action reports and entered into the DSIS for implementation tracking and follow-up.

Reclamation's Response: Concur. Reclamation's Security, Safety and Law Enforcement (SSLE) directorate is developing an oversight program that ensures corrective actions resulting from Emergency Action Plan (EAP) exercises are consistently documented in the after action reports and are entered into the Dam Safety Information System.

Responsible Official: David Achterberg, Director, SSLE

Target Implementation Date: December 31, 2012.

Recommendation 2: Verify that NCI and MMC dams' EAPs are exercised and documented as required in USBR's directives and standards.

Reclamation's Response: Concur. SSLE is developing an oversight program that will verify that National Critical Infrastructure and Major Mission Critical dams' EAPs are exercised and documented.

Responsible Official: David Achterberg, Director, SSLE

Target Implementation Date: December 31, 2012.

Recommendation 3: Establish consistent documentation for annual EAP reviews and communication drills.

Reclamation's Response: Concur. SSLE will issue Reclamation-wide guidance for documenting annual EAP reviews and communication drills.

Responsible Official: David Achterberg, Director, SSLE

Target Implementation Date: December 31, 2012.

Recommendation 4: As part of the annual EAP reviews, establish a process of confirming the location, existence, and operability of equipment and materials listed as available in an EAP.

Reclamation's Response: Concur. SSLE will issue Reclamation-wide guidance for confirming the location, existence, and operability of equipment and materials listed as available in an EAP during the annual EAP review.

Responsible Official: David Achterberg, Director, SSLE

Target Implementation Date: December 31, 2012.

Recommendation 5: Identify and update training requirements and track training for dam personnel to ensure training needs are met.

Reclamation's Response: Concur. SSLE will issue Reclamation-wide guidance for identifying and updating training requirements. SSLE will also develop procedures to track training for applicable dam personnel.

Responsible Official: David Achterberg, Director, SSLE

Target Implementation Date: September 30, 2013.

Appendix 3: Status of Recommendations

Recommendations	Status	Required Action
I-5	Resolved; not implemented.	No further response to OIG is required. The recommendations will be referred to the Assistant Secretary for Policy, Management and Budget for tracking of implementation.

Report Fraud, Waste, and Mismanagement



Fraud, waste, and mismanagement in government concern everyone: Office of Inspector General staff, Departmental employees, and the general public. We actively solicit allegations of any inefficient and wasteful practices, fraud, and mismanagement related to Departmental or Insular Area programs and operations. You can report allegations to us in several ways.



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