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Report to Congressional Requesters

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INDIAN PROGRAMS

BIA and Indian Tribes Are Taking Action to Address Dam Safety Concerns

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Resources, Community, and
Economic Development Division

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The Honorable Daniel K. Inouye
Chairman, Select Committee on
Indian Affairs
United States Senate

The Honorable John McCain
Co-Chairman, Select Committee
on Indian Affairs
United States Senate

Concerned about the Bureau of Indian Affairs' (BIA) progress in addressing the safety concerns associated with dams on Indian reservations, you asked us to review management by BIA of its responsibilities under the Department of the Interior's Safety of Dams (SOD) Program. Your concerns stemmed from a September 1989 Interior Inspector General's report that indicated that many BIA dams were in various stages of disrepair and in need of rehabilitation,[1] and the Secretary of the Interior's proposal to transfer BIA's responsibilities under the SOD Program to the Bureau of Reclamation.

On the basis of your request and subsequent discussions with your office, we (1) reviewed BIA's overall progress in carrying out Interior's SOD Program activities and (2) determined whether efforts were being made to resolve the problems that were limiting program progress. This report presents the results of our review and also our observations on the Secretary of the Interior's proposal to transfer BIA program responsibilities to Reclamation.

Results in Brief

Throughout the 1980s, BIA did not fulfill its responsibilities under Interior's SOD Program to address identified or potential dam safety deficiencies in a timely way. According to the Interior Inspector General's 1989 report, BIA had not taken sufficient actions to address safety concerns at 31 dams under its jurisdiction that were ranked as posing a high or significant hazard and that were in poor or unsatisfactory condition. We found that the key factors contributing to BIA's overall limited progress were (1) few staff resources, (2) BIA's decision to encourage tribes to assume responsibility for carrying out program activities under contracts authorized by the

[1]Dam Safety Program, Bureau of Indian Affairs, U.S. Department of the Interior, Office of the Inspector General (Washington, D.C.: Sept. 5, 1989).

Indian Self-Determination and Education Assistance Act (P.L. 93-638), and (3) the absence of a management information system to provide a basis for monitoring and directing program activities at the field level.

Subsequent to the Interior Inspector General's 1989 report, the Congress provided funding for additional staff for BIA's dam safety activities. In addition, BIA contracted with tribes under P.L. 93-638, or was close to reaching agreement to contract with tribes, to carry out program activities for most of BIA's dams at which safety concerns had been identified. As of July 1991, the process of correcting safety deficiencies had begun at 44 of the 53 dams at which safety inspections had been completed. BIA has also indicated its intent to establish a management information system.

Citing BIA's inadequate progress in carrying out the dam safety program, the Secretary of the Interior's fiscal year 1991 and 1992 budget requests proposed transferring BIA's program responsibilities to the Bureau of Reclamation. As discussed above, however, our work shows that the tribes and BIA have made significant progress in the last 2 years in carrying out their dam safety program responsibilities. Given this situation, consideration of the proposal to transfer program responsibility should, in our view, include examining the impact of such a transfer on federal Indian self-determination policies and the way that such a transfer would improve Interior's ability to fulfill SOD Program objectives.

Background

Interior's SOD Program was established in fiscal year 1980 to provide for the periodic inspection of about 1,800 of the Department's dams and for the implementation of corrective action to address identified or suspected safety problems. The Bureau of Reclamation is responsible for overall program coordination and develops standards, criteria, and guidelines for dam design and safety inspections. Reclamation also advises and assists individual Interior agencies, and reviews and evaluates their activities under the program. Individual Interior agencies—including BIA, with responsibility for 300 dams—are responsible for ensuring compliance with Reclamation's program requirements for the dams they manage. This responsibility includes inspecting dams for safety deficiencies and correcting any identified deficiencies.

Reclamation performs safety inspections of BIA dams on a reimbursable basis under a memorandum of agreement. The results of these assessments are presented in Safety Evaluation of Existing Dams (SEED) reports that describe the hazard potential posed by the dams and assess their safety

condition. According to Reclamation's program guidelines, upon completion of a safety assessment, BIA is responsible for implementing a prescribed corrective action process to address any potential safety problems that have been identified. (App. I describes Reclamation's hazard and safety classifications.)

The corrective action process includes four sequential phases: deficiency verification analysis (deficiency verification), conceptual design, final design, and construction. In the deficiency verification phase, the extent and seriousness of any actual and potential deficiencies identified in the SEED report are assessed. During the conceptual design phase, alternatives for resolving safety deficiencies are identified and defined. The final design phase consists of selecting the preferred alternative, completing the final plan for resolving deficiencies, and preparing an environmental impact study. The construction phase is the actual dam rehabilitation work. Reclamation has suggested times for completing each of the phases:

- deficiency verification: 21 months from completion of the SEED assessment;
- conceptual design: 18 months from completion of the deficiency verification phase;
- final design: 21 months from completion of the conceptual design phase; and
- construction: 39 months from completion of the final design phase.

Management of SOD Program activities within BIA is the responsibility of a program office in the Water and Land Resources Division of the Office of Trust and Economic Development at BIA headquarters. Dam safety activities are carried out at individual dams by a BIA area office engineer who is designated as the dam safety coordinator for dams within the area office's jurisdiction. To obtain an historical perspective on BIA's program activities at individual dams, we judgmentally selected eight dams requiring corrective action and identified the actions taken since 1982.

In the 1989 report on BIA program activities, Interior's Inspector General concluded that BIA had not demonstrated an adequate commitment to the SOD Program and had, therefore, made little progress in correcting safety deficiencies that had been identified in Reclamation's SEED reports.

BIA's Limited Progress and Contributing Factors

BIA made limited progress in addressing potential dam safety deficiencies throughout the 1980s. We found that BIA did not address potential dam safety deficiencies in a timely manner because of (1) limited staff resources combined with BIA's efforts to encourage tribes to enter into contracts, authorized under P.L. 93-638, to manage dam safety program activities on their respective reservations and (2) inadequate oversight and monitoring by BIA's program office of area office activities, specifically the appropriateness and adequacy of the offices' planned efforts, use of program funds, and progress in accomplishing program objectives. Two other factors also contributed to BIA's limited progress. One factor was the establishment, in December 1986, of a departmentwide priority ranking for funding for all Interior dams, which led BIA to reassess how it would distribute available funding. The other factor was the temporary diversion—in 1987, 1988, and 1989—of unobligated program funds to pay for Interior's emergency fire suppression activities.

Safety Deficiencies Were Not Addressed in a Timely Manner

According to the Inspector General's 1989 report on BIA dam safety activities, BIA had not made progress in a timely manner to accomplish the objectives of the SOD Program. The Inspector General's report indicated that BIA had not taken sufficient action to address safety concerns at 31 dams under its jurisdiction that were ranked as posing a high or significant hazard and that were in poor or unsatisfactory condition. Furthermore, the Inspector General's report indicated that no action had been taken at 24 of the 31 dams; for 20 of these 24 dams, more than 2 years had passed since the SEED reports had been issued.

Our review of BIA's progress in implementing Interior's corrective action process at eight dams at which safety inspections had disclosed safety deficiencies showed that BIA had not taken timely actions. Reclamation's program guidelines indicate that safety deficiency verification, the first phase of the corrective action process, should be completed within 21 months following the SEED report. We found that, as of June 1990, deficiency verification had not been completed for seven of the eight dams, although the safety inspection reports for these dams had been prepared more than 21 months prior to June 1990. For five of the seven dams, at least 4 years had passed since the safety inspection had been completed.

Limited Staffing and BIA's Efforts to Contract With Tribes Were Major Reasons for Limited Progress

During the 1980s, BIA's program resources consisted of a program manager at BIA headquarters and a dam safety coordinator in each of the six BIA area offices with dam safety program responsibilities. Five of the six coordinators worked only part-time on dam safety program responsibilities. The Inspector General's 1989 report discussed this limited program staffing and concluded, among other things, that BIA should have used available Bureau of Reclamation resources to address safety concerns about Indian dams as provided for by memorandums of understanding and agreement between BIA and Reclamation. BIA, however, had decided to encourage tribes to take over the management of SOD Program activities at their respective reservations through P.L. 93-638 contracts.

To further the federal policy of Indian self-determination, P.L. 93-638 provides authority for Indian tribes to enter into contracts with BIA whereby tribes can take over the day-to-day management of BIA programs and activities. In 1986, BIA decided to encourage tribes to contract for the management of SOD Program activities for the dams on their respective reservations. As a result of this decision and BIA's subsequent efforts to negotiate and finalize such contracts, BIA took little or no action to proceed with corrective actions at dams where safety inspections had identified actual or potential safety deficiencies.

Program Office Oversight of Field Office Activities Was Limited

The Inspector General's 1989 report stated that BIA had not adequately accounted for and monitored dam safety program appropriations and could not accurately report the status of the use of funds for its SOD Program. In our review of documents and in discussions with officials of BIA's program office at headquarters, we found that basic data on the amount of funds provided to and used by BIA area offices for SOD Program activities were not readily available. The program office, which has overall management responsibility for BIA's program activities, lacked historical and current information on program accomplishments and on the obligation and expenditure of funds. This information was generally unavailable because the program office did not require regular reporting by the area offices' dam safety coordinators. As a result, the program office could not effectively assess BIA's progress in satisfying program requirements or determine whether there was a need to direct or redirect program funds and field activities to better meet program requirements.

Other Factors Contributed to Limited Program Progress

Two actions taken by Interior also contributed to BIA's limited progress in addressing potential dam safety deficiencies. These actions were the establishment of a departmentwide priority ranking of Interior dams to direct program funding and the temporary diversion of BIA program funding to pay for Interior's emergency fire suppression activities.

In 1986, Interior established a Dam Safety Task Force to advise the Secretary on departmentwide priorities for funding its SOD Program.[2] To accomplish this, the task force established a standardized process for ranking Interior's dams in terms of priority for taking corrective actions. The task force's priority rankings were initially established in December 1986 and have been updated periodically. Sixty-seven of BIA's 300 dams (about 22 percent) were included in Interior's priority ranking.

As a result of Interior's development of the departmentwide priority ranking in December 1986, BIA had to reassess the funding decisions it had made for its fiscal year 1987 appropriation and its fiscal year 1988 budget request. BIA subsequently sought congressional approval to use its fiscal year 1987 dam safety appropriation differently than it had specified in its budget request and to change its fiscal year 1988 budget request to be more consistent with the departmentwide priority ranking. As a result, no BIA program funds were made available to BIA's area offices from May 1986 through December 1987.

Temporary diversions of unobligated program funds for use in Interior's emergency fire suppression activities in 1987, 1988, and 1989 also affected BIA's progress.[3] For example, between October 1988 and March 1989, BIA was negotiating P.L. 93-638 contracts with four tribes for them to assume program activities for 28 of BIA's priority dams. While BIA was negotiating these contracts, BIA program funds remained unobligated. In July 1988, Interior diverted $7 million of these funds to emergency fire suppression activities. Because the bulk of the funds that had been diverted ($5.7 million) was not returned to BIA until August 1989, BIA was unable to fund P.L. 93-638 contracts during most of fiscal year 1989.

[2]The task force included representatives from all Interior bureaus that owned and were responsible for dams. It was tasked with developing a departmentwide priority ranking for all of the Department's high- and significant-hazard dams to serve as the basis for annual funding decisions for the SOD Program.

[3]The Secretary of the Interior is authorized to fund emergency fire suppression activities by transferring unobligated funds from accounts for which the authority to obligate funds does not expire at the end of the fiscal year.

Actions Have Been Taken to Address Reasons for Limited Progress

Actions taken by BIA and the Congress have substantially resolved problems that have inhibited progress in BIA's program activities. As of July 1991, P.L. 93-638 contracts had been awarded or were being actively negotiated to manage BIA's program activities for 55 of the 67 BIA dams ranked as priority dams by Interior's Dam Safety Task Force, and corrective action to address safety deficiencies was under way or beginning at most of these dams. In addition, the Congress authorized additional staff resources for BIA's program activities and instructed Interior not to divert BIA's program funds to fire suppression activities. Finally, BIA's program officials have stated their intent to establish record-keeping and information-reporting requirements for dam safety coordinators at area offices.

Many Tribes Have Contracted to Manage BIA Program Activities

As of July 1991, tribes were managing dam safety program activities under P.L. 93-638 contracts at eight reservations where 34 of BIA's 67 priority dams are located. In addition, other tribes were negotiating such contracts to manage SOD Program activities at six other reservations where 21 other BIA priority dams are located. Another tribe had expressed interest in negotiating a P.L. 93-638 contract to carry out dam safety program activities at a priority dam, but negotiations were not yet under way. Dam safety program activities at the remaining 11 of BIA's 67 priority dams remain under BIA's management since the affected tribes have indicated that they are not interested in contracting to manage program activities.

Corrective Action Process Is Under Way at Most of BIA's Priority Dams

As of July 1991, various phases of the corrective action process were under way at 44 of the 53 BIA dams for which Reclamation had completed a safety inspection. The corrective action process had not yet begun at six of the other nine dams. BIA characterized the remaining three dams as having unique situations—BIA is reclassifying one of the dams as a low-hazard dam, recommending that another be dismantled, and seeking to have the U.S. Army Corps of Engineers assume responsibility for the third.

According to BIA program status information as of July 1991, some of the tribes that have contracted to manage program activities had subcontracted or were expected to subcontract with Reclamation to perform the work associated with the corrective action process. BIA also planned to reach agreement with Reclamation to perform such work at those dams for which BIA has retained management responsibilities. Overall, Reclamation is expected to perform the corrective action work for 35 BIA dams. Private architectural and engineering firms have been selected by tribes to do the work at an additional 18 dams, while the Corps of Engineers is expected to

do the work at 2 dams. Decisions had not yet been made for the remaining 12 dams.

Congressional Action Has Addressed BIA Staffing and Program Funding

The House Committee on Appropriations, in considering BIA's fiscal year 1991 appropriations, recommended funding to support seven full-time positions for BIA's dam safety program. In response, BIA authorized seven full-time engineer positions—one in each of BIA's six area offices with dam safety program activities and one additional position for the program office in BIA headquarters. BIA had filled the program office position by the start of fiscal year 1991; all of the area office positions were filled by July 1991. Thus, BIA now has full-time dam safety coordinators in place in area offices.

Also, in the fiscal year 1991 Interior appropriations act, the Congress precluded the Secretary of the Interior from using BIA's SOD Program funds for emergency fire suppression. A similar provision is proposed for the pending fiscal year 1992 appropriations bill. This congressional action should help ensure that BIA's program funds remain continuously available to support program activities.

Management Information Needs Are Being Considered

To enhance overall dam safety program management, BIA officials said that they intend to establish record-keeping and reporting requirements to obtain needed program status information from the area offices. According to the chief of BIA's Division of Water and Land Resources and BIA's program manager, the record-keeping and reporting system is to be maintained by the dam safety coordinators. In the view of these officials, the system will provide the program office with sufficient information on each dam covered by the program to monitor and assess the appropriateness and adequacy of planned work, progress in accomplishing dam safety corrective actions, and the effectiveness of funds expended.

Proposed Transfer of BIA's Dam Safety Responsibilities to the Bureau of Reclamation

The Secretary of the Interior's fiscal year 1991 and 1992 budget requests reflected a transfer of BIA's program funding and SOD Program responsibilities to Reclamation. The budget requests cited the lack of adequate progress by BIA as a reason for the transfer. The Congress, however, authorized fiscal year 1991 appropriations and has proposed fiscal year 1992 appropriations for BIA to carry out its SOD Program activities.

We are uncertain whether the Secretary of the Interior will continue his efforts to transfer BIA program responsibility to Reclamation. Should the

Congress want to reexamine such a transfer, we believe the current implementation status of BIA's program raises certain issues for consideration. First, because a number of tribes have elected to contract with BIA to manage program activities under P.L. 93-638, such a transfer could affect the overall federal policy of furthering Indian self-determination. Second, since agreements have been reached for Reclamation to perform the corrective actions for many of BIA's dams, it would be important to understand the way that a transfer would improve Interior's ability to fulfill SOD Program objectives.

Conclusions

Our work shows that the key factors contributing to BIA's limited progress during the 1980s in addressing known or potential safety deficiencies associated with dams on Indian reservations have, to a large degree, been addressed. While safety deficiencies have not been fully corrected, efforts are now under way at many of BIA's priority dams to accomplish the SOD Program's corrective action process.

Whether BIA's current strategy for meeting its SOD Program responsibilities will effectively address dam safety concerns will, to a large degree, depend on how tribes and BIA carry out their program responsibilities under P.L. 93-638 contracts. We believe more time is needed before such an assessment can be made. An effective record-keeping and reporting system that provides the kind of information needed to monitor program activities and measure program progress and accomplishments at each priority dam would help BIA assess progress.

Recommendation

We recommend that the Secretary direct the Assistant Secretary for Indian Affairs to develop and put in place a record-keeping and reporting system for its SOD Program that will provide the information needed to effectively manage program activities and measure progress in completing the corrective action process according to established requirements and priorities.

Agency Comments

In commenting on a draft of this report, the Acting Assistant Secretary of the Interior for Indian Affairs said that Interior agrees with our report and our conclusion that improvements are needed in program record-keeping and reporting to enhance the program office's monitoring of BIA's dam safety activities. He said that on December 20, 1991, BIA was directed to install an appropriate information system before March 1, 1992. BIA was

further directed to establish this action as a critical performance element for the Director, Office of Trust and Economic Development, and to establish timely, accurate, and adequate reporting as a minimum performance level for BIA area directors with dam safety issues in their areas. It is anticipated that the system—which will be an interim system—will be installed manually. The Acting Assistant Secretary also said that on November 20, 1991, BIA organized a task force to update and revise its dam safety manual. The manual will include specifications for a permanent information system. (App. IV contains the full text of Interior's comments.)

Scope and Methodology

Our review was performed from June 1990 through July 1991 in accordance with generally accepted government auditing standards. In carrying out our work, we held discussions with dam safety officials at BIA headquarters and three BIA area offices. We also reviewed the Interior Inspector General's 1989 report on BIA's SOD Program activities.

We obtained and reviewed documents and records on overall program progress, including the status of program activities at BIA's priority dams. We also judgmentally selected and examined, in more detail, the chronology of program activities at eight dams included among BIA's priority dams to obtain a historical perspective on these program activities during the 1980s. Appendix II identifies the hazard and safety classification of all BIA dams that were ranked as priority dams by Interior's Dam Safety Task Force. Appendix III provides information on the eight dams we visited.

We are sending copies of this report to the Secretary of the Interior; the Chairman, House Interior and Insular Affairs Committee; and other interested parties. We will also make copies available to others on request.

This work was performed under the direction of James Duffus III, Director, Natural Resources Management Issues, who may be reached at (202) 275-7756. Other major contributors are listed in appendix V.

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Abbreviations

BIA	Bureau of Indian Affairs
GAO	General Accounting Office
SOD	Safety of Dams
SEED	Safety Evaluation of Existing Dams

Bureau of Reclamation's Hazard and Safety Classifications

Under Interior's Safety of Dams (SOD) Program, Interior's dams are assessed for the hazard they pose, and their safety condition is determined through Safety Evaluation of Existing Dams (SEED) assessments. The Bureau of Reclamation has established the standards and criteria for making these assessments. This appendix briefly discusses Reclamation's hazard and safety criteria and classifications.

Hazard Classification

A dam's hazard classification is based on the dam's physical location relative to people and property downstream that would be at risk if the dam should fail. A dam's hazard is classified as either high, significant, or low according to the following criteria:

- High: Six or more lives would be at risk and/or extensive property damage could occur if the dam failed.
- Significant: Between one and six lives would be at risk and/or significant property damage could occur as a result of such a failure.
- Low: No lives would be at risk and limited property damage would occur if the dam failed.

Safety Classification

Dams classified as posing either a high or significant hazard undergo a SEED assessment to determine their safety classification. Safety classifications reflect the nature and extent of safety deficiencies identified or suspected during the SEED assessments. Safety deficiencies are physical conditions that can cause the sudden uncontrollable release of reservoir water through partial or complete dam failure. A range of potential reservoir loading conditions are considered in assessing safety deficiencies, including normal conditions that occur regularly as well as unusual loading conditions such as major floods. Also considered are factors such as soil conditions and events such as earthquakes.

A SEED assessment includes an on-site appraisal and an off-site engineering analysis of a dam's safety condition. Based on the results, the dam's safety is classified as either satisfactory, fair, conditionally poor, poor, or unsatisfactory:

- Satisfactory: No existing or potential dam safety conditions are recognized. Safe performance is expected under all anticipated loading conditions, including such events as the "maximum credible earthquake and the maximum probable flood."

- Fair: No existing dam safety deficiencies are recognized for normal loading conditions. Infrequent hydrologic and/or seismic events would probably result in a dam safety deficiency.
- Conditionally poor: A potential dam safety deficiency is recognized for unusual loading conditions that may reasonably be anticipated to occur during the expected life of the structure.
- Poor: A safety deficiency is suspected that could result in the dam's failure under normal loading conditions.
- Unsatisfactory: Safety deficiencies exist that could result in the dam's failure under normal loading conditions.

Reclamation program guidance recommends immediate corrective action for dams rated as poor and requires immediate corrective action for dams rated as unsatisfactory.

Hazard and Safety Classifications and Priority Rankings for BIA Dams

This appendix identifies the hazard and safety classifications and the March 1991 priority ranking for the 67 Bureau of Indian Affairs (BIA) dams that have been given a priority ranking for funding by Interior's Dam Safety Task Force. The priority ranking is based on a score that considers a variety of factors for each dam, including individual dam conditions and the amount of information available to define the nature and extent of the dam's safety problem.

Table II.1 groups BIA's 67 dams by their combined hazard/safety classifications. The table provides each dam's task force rank among all of Interior's high- and significant-hazard dams as well as the dam's relative rank among BIA's 67 priority dams. The table also identifies the BIA area office responsible for carrying out SOD Program activities for that dam.

Table II.1: BIA Dams by Hazard and Safety Classification

Dam	Interior rank	Relative BIA rank	Area office
High-hazard dams/unsatisfactory safety rating			
Ganado	12	4	Navajo
Round Rock	14	6	Navajo
Black Lake	34	16	Portland
Pablo	42	22	Portland/Flathead
Ponca	96	41	Aberdeen
High-hazard dams/poor safety rating			
Black Rock	4	1	Albuquerque
Dulce	6	2	Albuquerque
Bonneau	9	3	Billings
Washakie	21	7	Billings
McDonald	22	8	Portland/Flathead
Santa Ana	23	9	Albuquerque
Lower Dry Fork	26	11	Portland/Flathead
Tufa Stone	29	13	Phoenix
Weber	31	14	Phoenix
Jocko	33	15	Portland/Flathead
Many Farms	35	17	Navajo
Standing Rock	36	18	Aberdeen
Acomita	38	19	Albuquerque
Rosebud	47	24	Aberdeen
White Clay	56	29	Aberdeen
He Dog	61	31	Aberdeen
Upper Dry Fork	66	33	Portland/Flathead
Oglala	72	37	Aberdeen

(Continued)

Dam	Interior rank	Relative BIA rank	Area office
Barmelee	95	40	Aberdeen
Crow	117	45	Portland/Flathead
Tabor	129	47	Portland/Flathead
Assayi	186	53	Navajo
Elgo	242	57	Phoenix
Lower Two Medicine	274	62	Billings
Significant-hazard dams/unsatisfactory safety rating[a]			
Significant-hazard dams/poor safety rating			
Equalizer	25	10	Portland
Crow Creek	27	12	Aberdeen
Tsaile	206	54	Navajo
High-hazard dams/conditionally poor safety rating			
Captain Tom	39	20	Navajo
Lower Mundo	40	21	Albuquerque
Wheatfields	53	28	Navajo
Kicking Horse	69	34	Portland
Lake Mescalero	71	36	Albuquerque
Cutter	113	44	Navajo
Wild Horse	243	58	Phoenix
Hubbart	248	59	Portland/Flathead
Bottle Hollow	254	60	Phoenix
Willow Creek	322	64	Billings
Significant-hazard dams/conditionally poor safety rating			
Indian Lake	45	23	Portland
High-hazard dam/fair or satisfactory safety rating			
Ninepipe(F[b])	137	49	Portland/Flathead
Little Bitteroot(S[c])	157	50	Portland
Red Lake (F)	237	56	Navajo
Mission (F)	267	61	Portland/Flathead
Significant-hazard dams/fair or satisfactory safety rating			
Headgate Rock(F)	335	65	Phoenix
Tat Momolikot(S)	354	67	Phoenix
High-hazard dams/no safety rating			
Canyon Diablo	13	5	Navajo
Indian Scout Lake	50	26	Aberdeen
Agency	60	30	Billings
East Fork	49	25	Billings
Kyle	89	39	Aberdeen
Ghost Hawk	169	51	Aberdeen
Ring Thunder	173	52	Aberdeen
Allen	227	55	Aberdeen

(Continued)

Dam	Interior rank	Relative BIA rank	Area office
Blackfoot	275	63	Portland
Blue Canyon	348	66	Navajo
Significant-hazard dams/no safety rating			
Ray lake	63	32	Billings
La Jara	70	35	Albuquerque
Wanblee	74	38	Aberdeen
Hell Roaring	118	46	Portland
Twin (Turtle) Lake	130	48	Portland
Low-or unclassified hazard dams			
Pasture Canyon	51	27	Phoenix
Tuve	98	42	Phoenix
Wauneka	104	43	Navajo

[a]None in this category.

[b]F = Fair.

[c]S = Satisfactory.

SOD Program Activities and Funds Allocated for Eight BIA Dams

Our review included judgmentally selecting eight BIA dams to examine historical SOD Program activities and funding. The 8 we selected were among the 22 highest-priority-ranked BIA dams. For each dam, this appendix provides a general description of the dam, a chronology of dam safety activities based on BIA records and discussions with program officials, and the amount of program funds allocated to the dam by the program office for SOD Program activities.

Black Rock

Black Rock Dam, located on the Zuni Pueblo in New Mexico, was built in 1909 and is 80 feet tall. It is ranked as the highest-priority BIA dam and is classified as a high-hazard dam with a safety rating of poor. The March 1983 SEED report did not include a formal hazard assessment of Black Rock Dam. According to the BIA area dam safety coordinator, in the event of a dam failure combined with a flood, floodwater could reach the Zuni Pueblo located about 3 miles downstream. The SEED report states that the primary safety problem is piping in the lava rock underlying the dam, a situation in which water seepage causes internal erosion that could in turn cause sections of the dam to collapse. Piping is believed to have caused three previous dam failures at Black Rock (in 1909, 1932, and 1936) when the reservoir was nearly full. The SEED report indicates that the dam would need to be enlarged to withstand a major flood.

Table III.1: Dam Safety Activities at Black Rock Dam

Fiscal year	Activity
1983	SEED report completed (Mar. 1983). Early warning system installed (Mar. 1983).
1984	Conceptual design completed (Apr. 1984).
1988	Monitoring equipment installed (Aug. 1988).
1989	Repairs completed to the concrete floor of spillway (Sept. 1989).
1990	Subsurface explorations conducted (Jan. to Mar. 1990).
	Draft Standard Operating Plan completed, including an Emergency Preparedness Plan (Aug. 1990).
1991	Agreement on a P.L. 93-638 contract reached with Zuni tribe (July 1991).
	Final design phase was to begin following selection by the tribe of a subcontractor.

Table III.2: Funding to Black Rock Dam

Fiscal year	Amount
1986	$1,400,000
1988	200,000
1989	(1,000,000)[a]
1990	1,350,000
1991	1,000,000
Total	**$2,950,000**

[a]Funds transferred to fund Interior's fire suppression activities.

Ganado

Ganado Dam, located on the Navajo Reservation in Arizona, was originally built in 1919 and raised in 1943 to its current height of 23 feet. It is ranked as the fourth-highest-priority BIA dam and is classified as a high-hazard dam with an unsatisfactory safety rating. According to the 1984 SEED report, failure of Ganado Dam could inundate about 10 residences in the town of Ganado located about 2 miles downstream as well as portions of a national historic site located another half mile downstream. The primary safety problem reported is the dam's size—the dam would have to be enlarged to withstand a major flood. The Navajo Tribal Council ordered the reservoir drained in 1981 because of extensive dam erosion, and Interior's Inspector General reported that the reservoir had been drained at least one other time since then.

In May 1990, Ganado Dam's reservoir was filled to about 25 percent of capacity. The BIA area dam safety coordinator believes that it would be safe to fill the dam to 50 percent of its total capacity. The area coordinator noted that the reservoir had been completely filled in 1985 by a major rainstorm and the town of Ganado was evacuated as a safety precaution.

Table III.3: Dam Safety Activities at Ganado Dam

Fiscal year	Activity
1984	SEED report completed.
1987	Modification work started to enlarge spillway and replace outlet works.
1990	Intermediate SEED report prepared (Aug. 1990).
	BIA began deficiency verification and conceptual design work (Aug. 1990).
1991	Deficiency verification and conceptual design work started by BIA turned over to the Bureau of Reclamation (Mar. 1991).
	Work was to be carried out according to the schedule in the Bureau of Reclamation's action plan for work on all 12 dams on the Navajo Reservation.
	Navajo Nation negotiating a P.L. 93-638 contract and will retain the Bureau of Reclamation as the subcontractor.

Table III.4: Funding to Ganado Dam

Fiscal year	Amount
1988	$190,000
1989	(190,000)[a]
1990	450,000
1991	22,000
Total	**$472,000**

[a]Funds transferred to fund emergency fire supression activities.

McDonald

McDonald Dam, located on the Flathead Reservation in Montana, was built between 1917 and 1920 and is 48 feet high. It is ranked as the eighth-highest-priority BIA dam and is classified as a high-hazard dam with a poor safety rating. According to the July 1985 SEED report, failure of McDonald Dam could inundate eight dwellings located between 2 and 9 miles downstream. The primary safety problem discussed in the SEED report is that the dam is too small to withstand a major flood. At the time of our visit in July 1990, the dam's reservoir was completely full and did not have operating restrictions.

Table III.5: Dam Safety Activities at McDonald Dam

Fiscal year	Activity
1985	SEED report completed (July 1985).
1989	P.L. 93-638 contract awarded to the Confederated Salish and Kootenai tribes for dam safety activities (Mar. 1989).
1990	Tribes subcontracted deficiency verification analysis and conceptual design effort to the Bureau of Reclamation
	Deficiency verification began in June 1990.
	Development of an Emergency Preparedness Plan began in June 1990 and was expected to be completed in November 1991.
1991	Conceptual design was to begin in November 1991.
1992	Deficiency verification and conceptual design efforts scheduled for completion in November 1991 and April 1992, respectively.

Table III.6: Funding to McDonald Dam

Fiscal year	Amount
1988	$150,000
1989	100,000
1991	225,000
Total	**$475,000**

Lower Dry Fork

Lower Dry Fork Dam, located on the Flathead Reservation in Montana, was built in 1921 and raised between 1933 and 1934 to its current height of 30 feet. It is ranked as the 11th-highest-priority BIA dam and is classified as a high-hazard dam with a poor safety rating. According to the July 1986 SEED report, failure of Lower Dry Fork Dam could inundate four residences located along a 9-mile reach downstream from the dam. The primary safety problem discussed in the SEED report is that the dam will not withstand a major flood because it has no designated spillway. When we visited this dam in July 1990, it was about 70-percent full and did not have operating restrictions.

Table III.7: Dam Safety Activities at Lower Dry Fork Dam

Fiscal year	Activity
1988	SEED report completed (July 1986).
1989	P.L. 93-638 contract finalized with tribe (Mar. 1989).
1990	Special SEED examination (June 1990) and SEED report (Oct. 1990).
	Deficiency verification analysis begun (Sept. 1990).
1992	Deficiency verification planned to be completed in April 1992.
	Conceptual design will follow and is expected to be completed by September 1992.

Table III.8: Funding to Lower Dry Fork Dam

Fiscal year	Amount
1988	$100,000
1990	370,000
1991	55,000
Total	**$525,000**

Many Farms

Many Farms Dam, located on the Navajo Reservation in Arizona, was built in 1943 and is 45 feet high. It is ranked as the 17th-highest-priority BIA dam and is classified as a high-hazard dam with a poor safety rating. According to the April 1985 SEED report, failure of Many Farms Dam could inundate at least 50 residences within a flood plain 5 miles downstream. The primary safety problem discussed in the SEED report is that the dam will not withstand a major flood because of inadequate outlets.

At the time of our visit in April 1990, the dam's reservoir was about 30-percent full. We were told that, by summer, the reservoir was expected to be drawn down completely. The BIA dam safety coordinator believed that the dam would be safe if the reservoir was as much as 75-percent full.

Table III.9: Dam Safety Activities at Many Farms Dam

Fiscal year	Activity
1985	SEED report completed (Apr. 1985).
1986	Some field testing done by the Bureau of Reclamation.
1987	Excavation work done for a new spillway.
1991	Deficiency verification and conceptual design work contracted to the Bureau of Reclamation (Mar. 1991).
	Work was to be carried out according to the schedule in the Bureau of Reclamation's action plan for work on all 12 Navajo dams.
	Navajo Nation negotiating a P.L. 93-638 contract and will retain the Bureau of Reclamation as the subcontractor.

Table III.10: Funding to Many Farms Dam

Fiscal year	Amount
1985	$1,203,000
1988	80,000
1989	(80,000)a
1990	490,000
Total	**$1,693,000**

[a]Funds transferred to fund emergency fire suppression activities.

Round Rock

Round Rock Dam, located on the Navajo Reservation in Arizona, was originally built in 1937 and enlarged in 1953 to its current height of 35 feet. It is ranked as the sixth-highest-priority BIA dam and is classified as a high-hazard dam with an unsatisfactory safety rating. According to the June 1988 SEED report, failure of Round Rock Dam could inundate four residences located within 1 mile of the dam and possibly a trading post and elementary school in the town of Round Rock. The primary safety problem discussed in the SEED report is erosion of the dam, probably caused by water seepage. Further, the dam's spillway is inadequate to withstand a major flood. BIA has restricted the amount of water held in the reservoir to reduce the chance of failure.

At the time of our visit in May 1990, the reservoir was about 40-percent full, the maximum level the BIA dam safety coordinator believed was safe. The safety coordinator said that he had restricted the dam from storing any water in 1982, but the Navajo tribe made a decision to store water about 2 years later under pressure from water users.

Table III.11: Dam Safety Activities at Round Rock Dam

Fiscal year	Activity
1988	SEED report completed (June 1988).
1990	Deficiency verification and conceptual design work initiated by BIA area office (May 1990).
	Special SEED examination report issued on the basis of an April 1990 field examination (Oct. 1990).
1991	Deficiency verification and conceptual design work turned over to the Bureau of Reclamation (Mar. 1991).
	Work was to be carried out according to the schedule in the Bureau of Reclamation's action plan for work on all 12 Navajo dams.
	Navajo Nation negotiating a P.L. 93-638 contract and will retain the Bureau of Reclamation as the subcontractor.

Table III.12: Funding to Round Rock Dam

Fiscal year	Amount
1990	$570,000

Acomita

Acomita Dam, located on the Acoma Pueblo in New Mexico, was built in 1938 and is 38 feet high. It is ranked as the 19th-highest-priority BIA dam and is classified as a high-hazard dam with a poor safety rating. According to the November 1987 SEED report, failure of Acomita Dam could flood portions of federal highways located about 1 mile and 6 miles downstream. The primary safety problem discussed in the SEED report is that the dam is too small to withstand a major flood. The reservoir was drained in 1983, although some water remains from an underground spring. This reservoir was still drained when we visited in April 1990. The BIA dam safety coordinator said the reservoir was drained to test for sewage contamination rather than for safety reasons. The tribe plans to dredge the reservoir to remove extensive silt buildup before correcting dam deficiencies or refilling the reservoir.

Table III.13: Dam Safety Activities at Acomita Dam

Fiscal year	Activity
1987	SEED report completed (Nov. 1987).
1988	BIA completed rehabilitation of the dam's outlet and outlet works.
1991	Tribe agreed to a P.L. 93-638 contract for dam safety work (Dec. 1990).
	Intermediate SEED examination report issued on the basis of an April 1990 field examination (Dec. 1990).
	Tribe selected an architectural and engineering firm to perform deficiency verification work (June 1991).
1992	Deficiency verification work is expected to be completed in January 1992.

Table III.14: Funding to Acomita Dam

Fiscal year	Amount
1988	$50,000
1990	540,000
1991	80,000
Total	**$670,000**

Pablo

Pablo Dam, located on the Flathead Reservation in Montana, was built in 1912, raised in 1918, and raised again in 1932 to its current height of 43 feet. It is ranked as the 22nd-highest-priority BIA dam and is classified as a high-hazard dam with an unsatisfactory safety rating. According to the 1985 SEED report, failure of Pablo Dam could flood residential, commercial, and industrial structures located between 1 and 3 miles downstream, with potential casualties of more than 400 persons. The primary safety problem discussed in the SEED report is widespread seepage that could result in piping and, eventually, failure of the dam. Pablo Dam is considered large enough to withstand a major flood. When we visited in July 1990, the dam's reservoir was about 85-percent full and there were no operating restrictions.

Table III.15: Dam Safety Activities at Pablo Dam

Fiscal year	Activity
1985	SEED report completed (Apr. 1985).
1989	P.L. 93-638 contract awarded to the Confederated Salish and Kootenai tribes for dam safety work on all Flathead Reservation dams (Mar. 1989).
	Equipment installed to monitor seepage (Nov. 1989).
1990	Tribes subcontracted with Bureau of Reclamation to perform deficiency verification and conceptual design work and to develop an Emergency Preparedness Plan (Apr. 1990).
1991	Emergency Preparedness Plan completed (Aug. 1991).
1992	Deficiency verification was expected to be completed in October 1991.
	Early Warning System scheduled to be installed November 1991.
	Conceptual design expected to be completed in March 1992.

Table III.16: Funding to Pablo Dam

Fiscal year	Amount
1988	$40,000
1989	60,000
1990	280,000
1991	215,000
Total	**$595,000**

Comments From the Department of the Interior

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JAN 14 1992

Mr. James Duffus III
Director, Natural Resources
Management Issues
General Accounting Office
Washington, D.C. 20548

Dear Mr. Duffus:

Thank you for your letter dated November 14, 1991, and the attached report entitled, DRAFT REPORT - REPORT TO CONGRESSIONAL REQUESTORS - INDIAN PROGRAMS: BIA AND INDIAN TRIBES ARE TAKING ACTION TO ADDRESS DAM SAFETY CONCERNS.

The Bureau of Indian Affairs (BIA) generally agrees with the General Accounting Office (GAO) Draft Report covering the BIA Safety of Dams (SOD) Program. The BIA's response to the recommendation included in the Draft GAO report is as follows:

GAO Recommendation:

We recommend that the Secretary direct the Assistant Secretary for Indian Affairs to develop and put in place a recordkeeping and reporting system for its SOD Program that will provide information needed to effectively manage program activities and measure progress in completing the corrective action process in accordance with established requirements and priorities.

BIA Response:

We agree that such a recordkeeping and reporting system needs to be implemented. Accordingly, on December 20, 1991, we directed the BIA to install an appropriate information system (manual or automated) before March 1, 1992. We further directed that this action be established as a critical performance element for the Director, Office of Trust and Economic Development and that timely, accurate and adequate reporting be established as a minimum performance level for BIA area directors with dam safety issues in their areas.

We fully anticipate that this will be done manually and will be an interim system. The BIA, on November 20, 1991, organized a Task Force for the purpose of updating and revising its dam safety

manual (55 BIAM Supplement 6). That manual will include specifications for a permanent information system. That effort is currently scheduled to be completed by December 31, 1993, though we hope to substantively improve upon that date.

Thank you for this opportunity to respond to the draft report.

Sincerely,

Wm D Bettenberg

Acting Assistant Secretary - Indian Affairs

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