

Teton Basin Project

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1996

Table of Contents

The Teton Basin Project	2
Project Location	2
Historic Setting	2
Project Authorization	3
Construction History	5
Table I	6
Post Construction History	9
Dam Failure	9
Aftermath	12
Table II	20
Settlement of the Project	24
Uses of Project Water	25
Conclusion	25
About the Author	26
Bibliography	27
Manuscript and Archival Collections	27
Government Documents	27
Books	27
Articles	28
Interviews	28
Other	28
Index	29

The Teton Basin Project

At a House subcommittee hearing on August 5, 1976, Congressman Leo J. Ryan, of California, described the Teton Dam failure as "one of the most colossal and dramatic failures in our national history."¹ The dam's collapse was the first in the Bureau of Reclamation's nearly seventy-five year history. Eleven lives were attributed to the tragedy.² The dam failure cost millions of dollars in damages, and led to increased attention placed on dam safety by Reclamation and other Federal dam building agencies.

Project Location

The Teton Basin Project was located in eastern Idaho. Teton Dam lay in Fremont County, and was intended to serve agricultural lands of the Fremont-Madison Irrigation District, in Fremont and Madison Counties. The dam sat on the Teton River, a tributary of the Henrys Fork of the Snake River. Newdale, Idaho, lies three miles southwest of the Teton Dam site. The first phase of the Teton Basin Project consisted of Teton Dam and Reservoir, Teton Power and Pumping Plant, a switchyard, the Fremont Discharge and Pump Canal, Enterprise-East Teton Feeder Pipeline and Canal, and twenty-seven water replacement wells. Reclamation planned another phase to serve the Rexburg Bench and other nearby areas.³

Historic Setting

Two Native American groups inhabited eastern Idaho prior to immigration by Europeans, in the nineteenth century. The Bannocks, a Northern Paiute speaking people, migrated from Oregon to the area of the Snake River plains. They differed from other Northern Paiutes in their acquisition of horses and organized buffalo hunts. The Bannocks co-existed peacefully in Idaho

1. Congress, House of Representatives, Subcommittee of the Committee on Government Operations, *Teton Dam Disaster: Hearings Before a Subcommittee of the Committee on Government Operations, House of Representatives*, 94th Congress, 2nd session, 5, 6, and 31 August 1976 (Washington: Government Printing Office, 1976), 1.

2. Six of the victims died by drowning and two died of heart attacks. One victim was a ninety-four year old woman who was the oldest resident of Teton City. She died on June 6, 1976, in a hospital after being evacuated from the flood area. A twenty-nine year old woman died of self-inflicted gunshot wounds. Her psychological condition was blamed on the Teton flood. Another victim died of an accidental gunshot wound while removing a gun from his vehicle. Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1976-82*, Record Group 115, 10-1. Hereafter Record Group 115 cited as RG 115.

3. Water and Power Resources Service, *Project Data* (Denver: Government Printing Office, 1981), 1209; Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1972*, RG 115, 5.

with area Northern Shoshone. The region's native grasses supported buffalo, hunted by both Native American groups, in the upper Snake River plains until about 1840. Fish also contributed largely to both groups' subsistence.⁴

In the 1850s, Mormon settlers established the Fort Lemhi mission in Idaho. By the end of the decade, escalating conflicts with the Bannocks turned violent. In 1857-58, these clashes coincided with a U.S. military expedition to Utah. Both situations convinced Brigham Young, Utah's territorial Governor and President of the Church of Jesus Christ of Latter Day Saints (Mormon Church), to recall the settlers to Utah. Mormon settlers returned to southern Idaho in the 1860s. The lure of gold soon brought miners to the Sawtooth Mountains in force, increasing the area tensions.⁵

The Bannock and the various groups of the Shoshone found themselves placed on reservations starting in the late 1860s. The Federal government originally set up the Fort Hall Reservation in 1867, for the Boise and Bruneau Shoshone, and introduced the Bannock and other Shoshones to the reservation after the Fort Bridger Treaty of 1868. The government established the Lemhi Reservation in 1875, for the Lemhi and the Sheepeater Shoshone, but shut it down in 1907, and then also moved its residents to Fort Hall. The swelling of the white population increased friction between the newcomers and the native inhabitants, and the reservation system did not prevent conflicts. One such conflict, the Bannock War of 1878, started in Idaho, but moved west and ended with the Northern Paiute in Oregon. Disputes between white miners and Sheepeater Shoshones erupted in the Sheepeater War of 1878-79. Both conflicts ended the same as other confrontations between Native Americans and whites in the American West, in favor of the latter.⁶

Project Authorization

Studies of the Teton River Basin for water storage and usage started before 1930. In

4. Robert F. Murphy and Yolanda Murphy, "Northern Shoshone and Bannock," in *Handbook of North American Indians* (Washington: Smithsonian Institution, 1986), ed. by William Sturtevant, vol. 11 *Great Basin*, vol. ed. by Warren L. D'Azevedo, 284, 285.

5. F. Ross Peterson, *Idaho: A Centennial History* (New York: W. W. Norton, 1976), 51, 52; Murphy and Murphy, "Northern Shoshone and Bannock," 302.

6. Peterson, *Idaho*, 71, 72, 83-5; Murphy and Murphy, "Northern Shoshone and Bannock," 302.

1932 and 1935, studies of possible dam sites concentrated on the upper Teton River Basin in Teton County. Several years later, Reclamation and the Army Corps of Engineers conducted investigations of a dam site in the lower Teton Basin, in Fremont County. In 1961, Reclamation designated the selected dam site in the upper basin, known as the Driggs site, the Upper Teton Project, and the Fremont site the Lower Teton Project. Revisions in 1961, named the entire Teton River Basin the Teton Basin Project, with the Upper and Lower Teton Divisions. Reclamation released the reconnaissance report on the Teton Project in October 1961.⁷

In *Cadillac Desert*, Marc Reisner asserted that Teton's authorization and construction came rapidly after decades of preliminary investigations, or as he put it, the "pupa stage." Reisner credited the push for the Teton Basin Project to Willis Walker, President of the Fremont-Madison Irrigation District, part of the Minidoka Project. Walker argued that during drought conditions the existing water would not support crops through the entire season. Reisner contended existing irrigation provided plenty of water. According to Reisner, the Teton Basin Project went forward because the entire Idaho Congressional delegation supported it and "the closest thing to opposition was indifference."⁸ Congress authorized construction of the Lower Teton Division of the Teton Basin Project on September 7, 1964 (78 Stat. 925). The Lower Division included the Fremont dam site, a powerplant, a pumping plant, distribution facilities, and ground water wells to furnish replacement water during dry years.⁹

The Definite Plan Report of 1969, covered the first phase of the Teton Basin Project which consisted of Teton Dam (renamed from Fremont Dam), Reservoir, and Power and Pumping Plant. Reclamation intended the first phase of the Project to accomplish:

1. Supply of supplemental water to 111,210 acres of irrigated land under the existing private Canyon Creek, Enterprise, and East Teton canal systems.
2. Production of hydroelectricity.
3. Provision for recreation at the reservoir.

7. Reclamation, *Project History, Teton Basin Project*, 1972, 1, 4.

8. Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Viking, 1986), 400-2.

9. Reclamation, *Project History, Teton Basin Project*, 1972, 4.

4. Mitigation of project-caused losses of fish and wildlife.
5. Control of floods by the forecast operation of joint use space in the reservoir.¹⁰

The second phase of the Project would serve lands on the Rexburg Bench and other nearby areas under investigation. The authorizing act prohibited construction of facilities for the Rexburg Bench area until the Secretary of the Interior submitted a feasibility report, on the next phase, to the President and Congress. Reclamation entered into a repayment contract with the Fremont-Madison Irrigation District on June 27, 1969, for the estimated \$48,490,000 cost. Owners of the East Teton, Canyon Creek, and Enterprise Canals would have to enlarge the canals and upgrade siphons at their own expense, to accommodate increased flows.¹¹

Preliminary studies indicated the Project's water supply would need augmentation from the deep basaltic aquifer under the Snake River flood plains. The studies specified the pumping must not adversely affect the shallow aquifer used for sub-irrigation on the flood plain and the Egin Bench, and for supporting the ponds and marshes of the migratory bird flyway.¹²

Construction History

Reclamation's started the pilot grouting program at Teton Dam in August 1969, to provide data for the final design and specifications. Before construction of the dam could begin, a group of environmental organizations banded together and filed a complaint in Idaho District Court on September 27, 1971, (*Trout Unlimited v. Morton*, see Table. I) to prevent construction of the dam. The plaintiffs amended the complaint in October 1971, citing violations of several unspecified laws. They also filed several motions for injunctions against construction in 1971 and 1972, but the Court denied all of them. The plaintiffs amended their original complaint a second time in May 1972, alleging violations of numerous laws, including the National Environmental Policy Act of 1969 (NEPA). The Idaho District Court dismissed the second

10. *Ibid.*, 4-5.

11. Reclamation, *Project History, Teton Basin Project*, 1972, 5, 10-1, Appendix: Project Cost Estimates; Department of the Interior, Bureau of Reclamation, *Federal Reclamation and Related Laws Annotated, Vol. 3: 1959-1966, Appendix, and Index* (Washington: Government Printing Office. 1972), 1797.

12. Reclamation, *Project History, Teton Basin Project*, 1972, 5.

amended complaint in September 1972.¹³

The actual trial of *Trout Unlimited v. Morton* went from June 25 to July 2, 1973. On January 24, 1974, the Court found Reclamation's final impact statement complied with the NEPA, and on February 13, denied the plaintiffs' injunction. On February 20, the plaintiffs moved for an injunction pending appeal in Idaho District Court. On March 20, the Court denied that motion as well. The plaintiffs filed the same motion with the Ninth Circuit Court of Appeals. On December 23, 1974, the Ninth Circuit Court filed an opinion affirming the District Court's dismissal of the case, effectively ending the lawsuit.¹⁴

Table I. Plaintiffs and Defendants in *Trout Unlimited v. Morton*. Source: Reclamation, *Project History, Teton Basin Project, 1972*, 14.

<u><i>Trout Unlimited v. Morton, 1971-2.</i></u>	
<u>Plaintiffs</u>	<u>Defendants</u>
Trout Unlimited	Rogers C. B. Morton Secretary of the Interior
Treasure Valley Chapter of Trout Unlimited	Ellis L. Armstrong Commissioner-Bureau of Reclamation
Sierra Club	Edwin F. Sullivan Regional Director
Natural Resources Defense Council	Robert R. Robison Project Construction Engineer
Idaho Environmental Council	Bernard B. Bellport Director of Design and Construction
Teton Expeditions, Inc.	Fremont-Madison Irrigation District Defendant-Intervener
Kenneth I. Cameron	
Christopher Colt	
Randy Berry Plaintiff-Intervener	

As *Trout Unlimited v. Morton* went through the courts, the Teton Basin Project moved

13. *Ibid.*, 1, 14-5.

14. Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1973*, RG 115, 16; Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1974*, RG 115, 14.

forward under Project Construction Engineer Robert Robison. Reclamation awarded the contract for Teton Dam and Power and Pumping Plant to Morrison-Knudsen Company, Inc., and the contractor received the notice to proceed on December 14, 1971. Clearing of the job site started in February 1972, and Morrison-Knudsen started excavating the downstream portal of the river outlet works tunnel, which also served as the diversion tunnel, and the power and pumping plant the following month. The contractor started excavating the dam embankment site in the spring of 1972. Morrison-Knudsen essentially completed the powerplant excavation in November 1972.¹⁵

Irrigation facilities for the Rexburg Bench area were not yet authorized, but they still influenced construction on the first phase of the Teton Basin Project. Changes in the anticipated irrigation needs of the Rexburg Bench resulted in delayed construction of the Fremont Discharge and Pump Canal beyond Canyon Creek Canal.¹⁶

Morrison-Knudsen finished excavating the left abutment foundation key trench in January 1973. The contractor completed the river outlet works in June 1973, and diverted the river on June 8, 1973. In July 1973, the slow rate of the embankment excavation's progress hampered the embankment placement, already underway. Morrison-Knudsen started placing embankment material in the cutoff trench in October 1973.¹⁷

A labor strike of all union personnel stopped work on Teton Dam on June 1, 1974. The strike lasted for one month, ending July 1. Morrison-Knudsen started concrete work on the spillway in the summer of 1974. Wilbur Peterson and Sons started clearing the Teton Reservoir site in October 1974. Reclamation awarded Wismer and Becker the \$3,825,849 contract for completion work on the Teton Power and Pumping Plant, and construction of the switchyard early in 1974. The contractor finished the power and pumping plant in fall of 1974.¹⁸

Severe winter weather halted work on Teton Dam in the early months of 1975. The

15. Reclamation, *Project History, Teton Basin Project, 1972*, 1-2, 19, Appendix: L-29 Construction Progress Reports; April 1972, May 1972, July 1972, August 1972, November 1972.

16. Reclamation, *Project History, Teton Basin Project, 1973*, 7.

17. Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1973*, RG 115, 2, Appendix: L-29 Construction Progress Reports; January 1973, June 1973, July 1973.

18. Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1974*, RG 115, 1a, 2, 18, Appendix: L-29 Construction Progress Reports; June 1974, August 1974, September 1974, November 1974.

concrete and embankment operations resumed in April. Rain stopped embankment placement from June 18 to June 24, 1975. On June 27, 1975, Reclamation sent a letter of substantial completion to the contractor, setting June 21, 1975 as the completion date for the dam. Morrison-Knudsen finished all concrete placement in October 1975, except for one section of chute wall they left to complete after cleanup. Morrison-Knudsen suspended embankment operations on October 22, 1975, because of snow. During 1975, Reclamation awarded Gibbons and Reed Company the contract for the Fremont Discharge and Pump Canal and the Enterprise-East Teton Feeder Pipeline and Canal. The feeder pipeline was to transport water 3.4 miles from Teton Reservoir to the Enterprise and East Teton Canals. The pump canal was to transport water 2.3 miles to the Canyon Creek Canal.¹⁹

Teton Reservoir began filling on October 3, 1975, and Teton Dam was essentially complete in November 1975. Generator installation started in January 1976. On March 23, 1976, the Teton Project office received permission to increase Teton Reservoir's filling rate from one to two feet per day. Assembly of the spillway radial gates started in April 1976. On June 1, 1976, Teton Reservoir contained 234,259 acre-feet of water. On June 5, 1976, Teton Dam failed.²⁰

At the time of its failure, Teton Dam stood 305 feet high, with a crest length of 3,100 feet and a base width of 1,700 feet. The dam was a zoned earthfill structure with a volume of approximately ten million cubic yards. The spillway was a three-gated chute in the right abutment. The main outlet works was a tunnel in the left abutment. The power and pumping plant was located at the base of the left abutment in front of the dam. The powerplant had two 10,000 kilowatt generators, with provisions for a third. The pumping plant had six units. Two units had a capacity of 7.35 cubic feet per second (cfs) each, and the remaining units had a capacity of 14.7 cfs each. The pumping plant was to deliver water to the Fremont Pump Canal.²¹

19. Bureau of Reclamation, *Annual Project History, Teton Basin Project, 1975*, RG 115, 1a, 2a, 21, Appendix: L-29 Construction Progress Reports, April 1975, June 1975, October 1975.

20. Reclamation, *Project History, Teton Basin Project, 1976-82*, 31; Water and Power Resources, *Project Data*, 1211.

21. Water and Power Resources, *Project Data*, 1209, 1211; Reisner, *Cadillac Desert*, 418; Reclamation, *Project History, Teton Basin Project, 1976-82*, 32.

Post Construction History

Dam Failure

Teton Project personnel found two small springs about 600 and 900 feet below Teton Dam on the right side on June 3, 1976, with a flow rate of about forty and sixty gallons per minute, respectively. The next day they found another spring about 150 feet downstream from the toe of the dam on the right abutment, flowing at about twenty gallons per minute. Project officials inspected the embankment and abutments throughout the day, until it became too dark to see. Later, Robert Robison testified these springs were normal for an embankment dam.²²

On Saturday June 5, 1976, between 7:30 and 8:00 a.m., a Morrison-Knudsen worker discovered muddy water flowing from the rock in the right abutment, about fifteen feet above the stream bed, and notified the Project supervisors. The water was flowing at a rate between twenty and thirty cubic feet per second (cfs). Robert Robison inspected the leak area at about 9:00 a.m., when the flow had increased to about forty to fifty cfs. They found another leak coming out of the right abutment, near the embankment contact, about 130 feet below the dam crest. The seepage had a rate of two cfs and was clear. At the time, the Project supervisors did not believe the dam was in danger.²³

The first definite sign of trouble developed between 9:30 and 10:00 a.m. when a wet spot appeared on the downstream face fifteen to twenty feet from the right abutment. Quickly the spot became flowing seepage, then started washing out the embankment material. Two bulldozers pushed material into the rapidly expanding hole, but the water washed away the embankment faster than the dozers could replace the material. At about 11:00 a.m. one bulldozer started sliding into the opening. The other bulldozer worked at pulling it out.²⁴

Project officials alerted the Madison and Fremont County Sheriff's offices at 10:43 a.m. to prepare for flooding and evacuation of the downstream area. Between 11:00 and 11:30 a.m. the Project office called the Sheriffs and told them to evacuate. About the same time a whirlpool

22. Reclamation, *Project History, Teton Basin Project, 1976-82*, 31; Congress, *Teton Dam Disaster*, 247.

23. Reclamation, *Project History, Teton Basin Project, 1976-82*, 31; Reisner, *Cadillac Desert*, 416.

24. Reclamation, *Project History, Teton Basin Project, 1976-82*, 32; Reisner, *Cadillac Desert*, 417.

developed in the reservoir, which had shown no prior, observed disturbance. The whirlpool indicated water was quickly escaping from the reservoir. Two more bulldozers started moving riprap into the whirlpool area. The efforts of the dozers proved to no avail. Around 11:30 a.m., the two bulldozers on the downstream face slid into the increasing void as the banks collapsed, both operators escaping from the machines. The crest of Teton Dam collapsed into the water at 11:55 a.m.²⁵

At 11:57 a.m., the reservoir broke through Teton Dam and rolled downstream, taking power and telephone lines with it. The undulating water carried away about four million cubic yards of embankment, burying the power and pumping plant beneath the embankment material and debris. Residents finished evacuating the towns of Sugar City, Teton, and Newdale at about 12:30 p.m. The water rushed through the canyon, bypassing Teton, St. Anthony, and Newdale, all located on high ground. Outside of the canyon the water spread to a width of about eight miles and sped along at ten to fifteen miles per hour. The rushing water hit the town of Wilford and obliterated it, literally wiping it from the map. Sugar City, between the two forks of the Teton River, received the full force of a fifteen foot high wall of water crashing down on it at about 1:00 p.m.²⁶

Rexburg was the largest city in the immediate flood area, and most of it sat on the valley floor. The debris laden water swept past a log mill on the outskirts of town, adding large logs to the flotsam. The logs acted as battering rams, and along with the rushing water, severely damaged buildings throughout the city. The flooded buildings included the house of Project Construction Engineer Robert Robison. In the evening of June 5, officials of the Mormon Church announced that the Church-owned Ricks College, unaffected because of its location on the higher ground of Rexburg, would supply food and housing to anyone affected by the flood. Ricks became a temporary home for many flood victims in the first days of the flood.²⁷

Stephen Wade, the Pacific Northwest Regional Public Affairs Officer, first found out

25. Reclamation, *Project History, Teton Basin Project, 1976-82*, 32; Reisner, *Cadillac Desert*, 418.

26. Reclamation, *Project History, Teton Basin Project, 1976-82*, 32-3; Stephen G. Wade, "The First Days," *Reclamation Era*, Autumn 1976, 7.

27. Reclamation, *Project History, Teton Basin Project, 1976-82*, 33; Wade, "The First Days," 6, 7, 12.

about the trouble at Teton Dam when he received a 9:30 a.m. phone call at his Boise home, from Glenn Barker of the Region's Power Division. "We have a problem at the Teton Dam. Thought you ought to know in case you begin to get media inquiries."²⁸ Wade, Barker, Assistant Regional Director Henry Stivers, and Brent Carter, the Regional Geologist, flew to Teton with Bill Ryder, one of the Region's pilots. Just past Idaho Falls, Wade looked in the direction of Rexburg and Sugar City. "[T]here appeared to be an area of sand dunes with trees growing out of them."²⁹ Wade asked Ryder if it was water, and Ryder said it was. It was about 2:00 p.m., and light aircraft crowded the airspace. Wade and Ryder spent most of the time watching out for other planes.³⁰

On June 6, President Gerald Ford declared Bingham, Bonneville, Fremont, Madison, and Jefferson Counties a Federal disaster area. On the same day Reclamation Commissioner Gilbert G. Stamm and Assistant Secretary of the Interior Jack O. Horton arrived in Idaho to inspect the damage, and talk to the press.³¹

The water rushing out of Teton Reservoir threatened the venerable American Falls Dam which lay downstream on the Snake River, waiting to be replaced by a new dam. In an effort to save American Falls, and the string of dams farther down the Snake River, Reclamation opened the outlet works full bore to empty American Falls Reservoir. In *Cadillac Desert*, Marc Reisner said in order to empty the reservoir, the old dam needed to release "more water than it ever had before," in preparation to receive more water at one time than ever before.³² Water poured out of the outlet works in the desperate effort to empty the reservoir. The reservoir began filling with the flood waters on the morning of June 7, but did not overflow the spillway. American Falls Reservoir captured most of the flood waters by June 9.³³

When the flood waters receded, they revealed the extent of damage caused by the Teton Dam failure. Eleven deaths were attributed to the dam failure and subsequent flood. Some

28. Wade, "The First Days," 4.

29. *Ibid.*, 4-5.

30. *Ibid.*, 5-6.

31. Wade, "The First Days," 10; Reclamation, *Project History, Teton Basin Project, 1976-82*, 33.

32. Reisner, *Cadillac Desert*, 416-8, 421; Wade, "The First Days," 12.

33. Reisner, *Cadillac Desert*, 422; Wade, "The First Days," 12; Reclamation, *Project History, Teton Basin Project, 1976-82*, 33.

estimates placed the monetary damages as high as \$2 billion. Damaged buildings, irrigation systems, and dead livestock littered the path taken by the flood waters. The Federal government eventually paid out over \$300 million in claims.³⁴

Aftermath

After the flood, repair of damages caused by the Teton Dam failure became the first priority facing Reclamation and the Federal government. The Federal Disaster Assistance Administration (FDAA--Now the Federal Emergency Management Administration [FEMA]) assigned Reclamation the task of restoring damaged irrigation facilities. Damage survey teams established a priority list and scheduled contractors to repair each irrigation system, the overriding condition being debris deposited in canal channels. Reclamation developed emergency provisions to accomplish repairs as rapidly as possible, speeding up contracting procedures and carrying out special authorizations for quick payment of contracts. Within ten days of the disaster, Reclamation reestablished the water supply to three-quarters of the 427,000 acres of farmland affected by the flood. By July 5, 1976, Reclamation returned water service to 98 percent of the land. During that time, Reclamation awarded ninety contracts to twenty-two contractors for about \$2.5 million to conduct repairs. Just under one-half of the work accomplished during this time was temporary. Permanent repairs took place after the end of irrigation season. The Teton Emergency Coordinator (TEC) Office, established three days after the disaster, handled these activities for Reclamation until it closed on August 6, 1976. Reclamation then transferred responsibility to the Teton Project office.³⁵

The debris deposited in irrigation canals by the flood included trees, dead livestock, cars, and even house trailers. The flood killed an estimated 13,000 head of livestock. One feed lot lost over 6,000 head of cattle in the flood. The National Guard used helicopters to remove dead livestock from the canals.³⁶

The flood damaged highway 191 to Yellowstone National Park, and highway 33 to

34. Reclamation, *Project History, Teton Basin Project, 1976-82*, 5, 10-1; Reisner, *Cadillac Desert*, 422.

35. Reclamation, *Project History, Teton Basin Project, 1976-82*, 2-3; Don D. Fillis, "The First Weeks--Saving Crops," *Reclamation Era*, Autumn 1976, 14-5.

36. Fillis, "The First Weeks," 15; Reclamation, *Project History, Teton Basin Project, 1976-82*, 3, 10.

Yellowstone and Grand Teton National Parks. The water also destroyed two Union Pacific Railroad lines; St. Anthony to Newdale for eight to nine miles, and St. Anthony to Rexburg, for thirteen to fourteen miles. The St. Anthony to Rexburg line was restored shortly after the flood, but the other line only received light traffic so it was not rebuilt.³⁷

By January 17, 1977, permanent repairs on the irrigation systems were substantially complete. The repairs included 88.5 miles of canals or ditches, replacement of two major siphons and four river diversions, repair of two river diversions, replacement of seven canal headworks, repair of five canal headworks, and repair or replacement of many turnout structures. By the end of April 1977, Reclamation finalized all contracts for permanent repair of damaged irrigation facilities. The contracts totalled about \$6.5 million.³⁸

In the days following the Teton Dam failure, the Mormon Church organized a humanitarian effort to provide clothing, food, and shelter for flood victims in the Rexburg area. Church members donated over one million hours of volunteer work to the cleanup operations following the Teton Dam failure. The Church bussed in hundreds of members from Utah, Wyoming, eastern Idaho, and even California, to assist in the cleanup. The first volunteers, about 1,500, arrived in Rexburg on June 9, 1976. Within a few days the number swelled to over 5,000 volunteers per day. The Department of Housing and Urban Development (HUD) also provided housing, and started moving house trailers into Rexburg on June 17, for temporary quarters for flood victims.³⁹

Failure of Teton Dam left Reclamation with a situation never encountered in the agency's history. Legal experts concluded the Federal government was not legally liable for damages caused by the dam's failure. The Ford Administration took a different stand. The President decided the government had a moral responsibility to pay restitution to the flood victims. Within a week after the disaster, President Ford requested a \$200 million appropriation for initial payments for damages, without assigning responsibility for Teton Dam's failure. The

37. Reclamation, *Project History, Teton Basin Project, 1976-82*, 9.

38. *Ibid.*, 37-8.

39. Paul Winegar, "The First Months—Rebuilding Lives," *Reclamation Era*, Autumn 1976, 26; Reclamation, *Project History, Teton Basin Project, 1976-82*, 8, 34.

appropriation was attached to the annual Public Works Appropriation Bill then working its way through Congress.⁴⁰

While waiting for passage of the bill, a team comprised of members of the Office of Management and Budget, the Department of Interior Solicitor's office, Reclamation, and the FDAA drafted rules and regulations for implementing the claims program. The Federal government had no precedent or base regulations to establish the claims process, making it more difficult. The team ended up using the regulations of the Federal Tort Claims Act because it was the only available model. The team mainly concerned itself with establishing fair regulations and making quick repayments, but still protecting the government from fraud. The Federal government published the regulations in the Federal Register on July 14, 1976, marking the formal beginning of the Claims Program.⁴¹

Reclamation set up claims offices in Rexburg, Idaho Falls, and Blackfoot. Disaster victims filed over 4,800 claims by January 4, 1977, totalling \$194 million. The Federal government paid 3,813 of those claims, \$93.5 million, by that date. Originally scheduled to end in July 1978, the Claims Program continued into the 1980s. The number of claims reached 7,884 by December 31, 1982, and totalled \$517,213,045.76. At the end of the Claims Program in January 1987, the Federal government paid 7,563 claims a total of \$322,034,250.44. Reclamation disallowed another 298 claims of \$80,050,271.72, and 24 claims totalling 1,031,752.28 were withdrawn.⁴²

The Claims Program covered any property lost in the flood. In some cases it presented claimants with an ethical dilemma. According to Neil Stessman, the Claims Officer in Idaho Falls, some people wondered about claiming property that sat unused for a long period of time, such as clothes or a grown child's baseball glove. Stessman believes some people probably claimed less than the amount they were entitled to because of this dilemma.⁴³

40. Reclamation, *Project History, Teton Basin Project, 1976-82*, 3; Winegar, "The First Months--Rebuilding Lives," 21-2; Wade, "The First Days," 13.

41. Reclamation, *Project History, Teton Basin Project, 1976-82*, 2, 4; Winegar, "The First Months," 23.

42. Reclamation, *Project History, Teton Basin Project, 1976-82*, 4-5; Winegar, "The First Months," 20, 24; Bureau of Reclamation, *Teton Claims*, Bureau of Reclamation, Pacific Northwest Region, January 1987, 2.

43. Neil Stessman, interview by Dr. Brit A. Storey, Billings, Montana, 8 March 1995.

With repairs completed enough to supply water to thirsty crops, and the Claims Program underway, attention turned to assessing the cause of Teton Dam's failure. The Department of the Interior set up two panels to review possible causes of the disaster; an Interior Review Group comprised of Federal government members, and an Independent Panel. The biggest problem facing the panels was that a definite cause of failure could never be known because dam failure destroyed the definitive evidence and washed it away with the dam.⁴⁴

Also in pursuit of the cause of the Teton Dam failure, a subcommittee of the House of Representatives Committee on Government Operations held hearings on the failure in August 1976, chaired by Congressman Leo J. Ryan, who was later killed in Guyana in November 1978, by followers of Jim Jones. During the hearings, question, arose concerning dam site selection, design, and Reclamation's willingness to halt a project after beginning actual construction.

On August 5, 1976, Dr. Robert Curry, a professor of geology at the University of Montana, testified that poor site selection and an inadequate approach to design and construction led to failure of Teton Dam. Curry said high permeability and porosity and frailty of the geologic material under the dam probably contributed to dam failure. Curry believed water probably moved through the porous material, around the grout curtain and back into the dam, eroding it. The geology professor claimed Reclamation's regional study in 1961, discussed site hazards in a broad manner, barely mentioning permeability. Curry asserted the data on which Congress authorized the Teton Basin Project seemed inadequate.⁴⁵

Dr. Marshall Corbett, a geologist from Idaho State University, agreed with Curry that the site selection for Teton Dam was wrong. Corbett said good site selection was important, but the good dam sites had long been used up. Harold J. Prostka, a U.S. Geological Survey geologist contended the Teton site lay in a geologically young and unstable area. Prostka said he went to the dam site after the failure and found numerous fractures and faults. The U.S. Geological Survey (USGS) team, of which Prostka was a member, sent a memo in January 1973, after

44. Department of the Interior, Teton Dam Failure Review Group, *Failure of Teton Dam: Final Report* (Washington: Government Printing Office, January 1980), 7-1.

45. Congress, *Teton Dam Disaster*, 5, 7, 11.

construction started, to Reclamation saying "safety of Teton Dam project is of immediate concern."⁴⁶ The concern at USGS dealt mainly with geologic and seismic conditions at the site. The memo suggested pressures from the filled reservoir, and loading, could trigger movement in the geology and endanger the dam.⁴⁷

Steven S. Oriel, another USGS geologist, voiced concern about the inadequacy of scientific information and using it for long range decisions. Oriel said it reflected the national emphasis on goal-oriented research rather than basic, fundamental research. Corbett thought the dam might have floated or risen, or fell causing shearing in weak sections of the foundation. Oriel said floating of the dam was unlikely because the dam's core lacked buoyancy.⁴⁸

When testimony continued on August 6, Harold G. Arthur, Reclamation's Director of Design and Construction, asserted the Teton site lay in a favorable area from a seismicity standpoint, directly contradicting the geologists. Arthur did admit to having problems with extensive jointing, the fractures or potential fractures in the rock. Arthur's testimony refuted the geological and seismological oriented theories of Curry and Corbett. Arthur said Reclamation had three stations with micro-seismic instrumentation around the dam and one station on the dam. The instruments showed no seismic activity other than the movement of the water through the break when Teton Dam failed. The Independent Panel's report backed up Arthur's claim.⁴⁹

Members of the subcommittee questioned Arthur about the claims of a former Reclamation geologist, Shirley Pytlack, who said Teton Reservoir would not hold water. Arthur replied that she meant the reservoir would not physically hold water, not that the dam would fail. The Interior Review Group conceded reservoir leakage could have had an affect on project economics, but would have had no relation to failure if the dam was designed properly. Reclamation had experienced a similar situation in rehabilitating the privately built McMillan Dam on the Carlsbad Project. Built on extremely porous rock, McMillan Reservoir proved

46. *Ibid.*, 62, 68-70, 78, 92, 99.

47. *Ibid.*, 93-5, 101.

48. *Ibid.*, 16, 67, 104, 106.

49. Congress, *Teton Dam Disaster*, 276-7, 299; Independent Panel to Review Cause of Teton Dam Failure, *Report to Department of the Interior and State of Idaho on Failure of Teton Dam*, Idaho Falls, Idaho, December 1976, 12-3.

susceptible to over 50 percent storage losses.⁵⁰

During the hearings, the subcommittee Chairman, Congressman Ryan raised what he called the "momentum theory."⁵¹ Ryan asked both Arthur and Reclamation Commissioner Gilbert Stamm if Reclamation would stop construction of a dam after it advanced past the foundation excavation stage. He especially seemed concerned when Stamm informed him work on the foundation of Auburn Dam, in California, continued after postponement of actual dam construction. Harold Arthur admitted to Ryan that although Reclamation often stopped a project before construction started, it had never stopped once actual construction of a dam did start.⁵²

With the elimination of what did not cause Teton Dam to fail, efforts turned to what did cause the failure. Reclamation awarded a contract for exploratory excavation of the Teton Dam site to Gibbons and Reed Company. The contract involved working under the direction of the Independent Panel for investigations of the remnant of the dam, cutoff trenches, and abutments. Gibbons and Reed completed work to lower the water level in the dam site area to carry out the contract. For the investigation, the contractor removed material samples from the right cutoff trench and the left abutment.⁵³

In 1977, the Interior Review Group (see Table. II) determined that Reclamation built Teton Dam according the specifications, and the dam failed because of insufficient protection of the impervious core material from internal erosion, a design flaw. The report said the most probable cause of failure was cracking of the core material that allowed the erosion to start.⁵⁴

The Independent Panel's report generally agreed with the Interior Review Group. The Panel (see Table. II) analyzed the decision to increase the filling rate of Teton Reservoir to two feet per day with only the auxiliary outlet works operational. They decided even if both outlets were operational, the Project staff still may not have seen any reason to change the operation plan. The Panel suggested limiting the rate of filling the reservoir to one foot per day and having

50. Congress, *Teton Dam Disaster*, 294-5; Teton Dam Failure Review Group, *Failure of Teton Dam: Final Report*, 12-4; Bureau of Reclamation, *Annual Project History, Carlsbad Project, Through 1913*, RG 115, 1, 125-6.

51. Congress, *Teton Dam Disaster*, 402.

52. *Ibid.*, 402, 404, 456.

53. Reclamation, *Project History, Teton Basin Project, 1976-82*, 50-1.

54. Teton Dam Failure Review Group, *Failure of Teton Dam: Final Report*, 7-1.

piezometers downstream from the cutoff, to measure water core pressures, could have given enough warning to allow the Project employees to lower the reservoir and check the embankment in case of problems. They also admitted those measures may simply have delayed the date of failure. They also considered the single line grout curtain a serious design flaw. The Independent Panel's report said, dam failure resulted because of (1) "the many combinations of unfavorable circumstances in the situation were not visualized and because (2) adequate defenses against these circumstances were not included in the design."⁵⁵

Gilbert Stamm testified to the Senate subcommittee on January 24, 1977, that Reclamation believed the deep narrow key trench was the main contributor to failure. Stamm said, "That element of the design was unique and appears to have been the feature that gave rise to the series of circumstances that permitted internal erosion that led to failure."⁵⁶ Stamm admitted that because giving the key trench a more shallow slope would have increased the cost, it was not done.⁵⁷

The Interior Review Group completed its final report on the failure of Teton Dam in 1980, after Gibbons and Reed completed with the second phase of the exploration contract and excavated the left side of the embankment. The investigation found numerous problems in the dam: several locations where water penetrated across the grout cap; loose rock in the key trench; the blocky and open-jointed nature of the key trench; a joint marked for grouting, but never grouted; and saturated core material which settled away from the tops of joints, judged by the group as indicative of poor compaction.⁵⁸

The discovery of "wet seams" in the second excavation suggested two other possible causes of failure: (1) differential settlement of the embankment material; (2) hydraulic

55. Independent Panel to Review Cause of Teton Dam Failure, *Report to Department of the Interior and State of Idaho on Failure of Teton Dam*, 10-5, 12-8; Congress, Senate, Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, *Teton Dam Failure, Prepared at the Request of Frank Church for the Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, U.S. Senate, June 1977* (Washington: Government Printing Office, 1977), 17.

56. Congress, *Teton Dam Failure*, 24.

57. *Ibid.*, 25.

58. Teton Dam Failure Review Group, *Failure of Teton Dam: Final Report*, 3-3; Reclamation, *Project History, Teton Basin Project, 1976-82*, 1.

fracturing.⁵⁹ The investigation revealed no cracks in the left side of the embankment attributable to differential settlement, but the Interior Review Group maintained that did not eliminate the possibility of differential settlement on the right side. The left side of the embankment and the key trench showed no sign of reservoir-induced hydraulic fracturing either.⁶⁰

The Interior Review Group indicated the design of Teton Dam depended on construction of a "tight" grout curtain as the main defense against reservoir-induced seepage, leading to erosion. In spite of this, the rock surface under the core material did not receive appropriate treatment. In 1977, the Interior Review Group reported the grout curtain could limit seepage to tolerable levels, but did not consider it "tight."⁶¹

The Interior Review Group concluded the wet seams and the lack of a tight grout curtain could have led to piping, the formation of narrow tunnels through the soil by percolation (the flow of water through openings in porous material), causing dam failure. The Review Group developed several possible scenarios: piping between the core material and the rock foundation; piping associated with wet seams; and piping associated with moisture penetration into the core. "Given sufficient time for water from the reservoir to penetrate through Zone 1 to open joints in the downstream rock wall of the key trench, it is likely that piping and erosion of Zone 1 material could occur and lead to embankment failure."⁶²

The left abutment excavation revealed construction faults. The excavation revealed loose blocks, overhangs, abrupt changes in slope, and open jointing. These conditions created ragged trench walls, not in compliance with contract specifications. Reclamation design, geology, and liaison personnel inspected the cutoff and key trench before placement of the

59. Teton Dam Failure Review Group, *Failure of Teton Dam: Final Report*, 7-1.

60. *Ibid.*, 7-1.

61. *Ibid.*, 7-2.

62. *Ibid.*, 7-3.

Table II. Teton Dam failure Review Groups.

<u>Interior Review Group</u>	<u>Independent Panel</u>
Floyd P. Lacy Jr. Tennessee Valley Authority	Chairman--Wallace L. Chadwick California Dept. of Water Resources Consultant to California Division of Dam Safety
Neil F. Bogner Soil Conservation Service	Arthur Casagrande--Professor of Soil Mechanics Harvard University
Homer B. Willis Army Corps of Engineers	Howard A. Coombs--Professor of Geology University of Washington
Robert L. Schuster U.S. Geological Survey	Munson W. Dowd--Metropolitan Water System of Southern California
<u>1977</u>	E. Montford Fucik--Hauser Engineering Co.
Chairman Dennis N. Sachs Deputy Assistant Secretary--Lands and Water Resources, Department of the Interior	R. Keith Higginson--Director of Idaho Dept. of Water Resources
Member Harold G. Arthur--Director of Design and Construction, Bureau of Reclamation	Thomas M. Leps--Engineer and Member of California State board on failure of Baldwin Hills Dam
<u>1980</u>	Ralph B. Peck--Professor of Foundation Engineering University of Illinois, Urbana
Chairman F. William Eikenberry Office of Asst. Secretary Land and Water Resources, Department of the Interior	H. Bolton Seed--Professor of Civil Engineering University of California, Davis, Member of California Seismic Safety Commission
	Executive Director--Robert B. Jansen Chief of Design and Construction California Department of Water Resources

earthfill, but made no recommendations for changes. Because of this the Interior Review Group assumed Reclamation found the work satisfactory.⁶³

The Interior Review Group found treatment of the foundation rock lacking. The contractor only filled selected joints with grout. The Review Group said the "irregular

63. *Ibid.*

topography" would have required additional treatment according to the standards of other Federal dam building agencies.⁶⁴

While placing the core material, the contractor spread thin, dry layers of the material over wet layers, attempting to mix the layers in place. The Interior Review Group considered this a poor practice. The Group said the construction equipment probably could not sufficiently mix the material in place. The Interior Review Group said a defensive design for Teton Dam, one that would have better protected the core against water erosion, would have made up for the construction inadequacies. The final Interior Review Group report in 1980, reiterated the 1977 report stating, "The Bureau had the necessary information available to develop an adequate defensive design. A safe dam could have been built at the site utilizing design concepts that were known at the time."⁶⁵

Because there can be no certainty of the cause of the Teton Dam failure, speculation still raised other possibilities. Robert Curry's notion that water seeped around the grout curtain and immediately went back into the dam embankment, received some support.⁶⁶ The Independent Panel countered Curry's theory, saying reported evidence suggested the hydraulic gradient (the slope of the hydraulic grade line of the river) would cause water moving around the grout curtain to come out farther downstream. The Panel contended the gradient was not enough to cause the high velocity water flow leading to the erosion on the downstream face of the dam.⁶⁷

Examination of the Teton Dam failure resulted in closer inspection of Reclamation's design review policies. Dennis N. Sachs, Deputy Assistant Secretary of the Interior for Lands and Water Resources, and Chairman of the Interior Review Group, admitted Reclamation relied less on independent evaluation of dam design than the Army Corps of Engineers, the Tennessee Valley Authority, or the state of California. Stamm later countered that even though Reclamation had no independent review of Teton Dam, the agency followed its internal

64. *Ibid.*

65. *Ibid.*, 7-1, 7-3, 7-4.

66. Reisner, *Cadillac Desert*, 424.

67. Independent Panel to Review Cause of Teton Dam Failure, *Report to U.S. Department of the Interior and State of Idaho on Failure of Teton Dam*, 5-37.

procedures.⁶⁸

When the Senate hearings moved to Idaho Falls in February 1977, they revealed the extent of everyone's desire to escape political responsibility for construction of Teton Dam. Gerry A. Jayne, of Idaho Falls, claimed many people opposed construction of the dam, and actively tried to halt it. Jayne contended these attempts included writing to all four members of Idaho's congressional delegation, who responded by saying it was too late to stop it. Senator Church responded by saying, "[W]hen the dam was first authorized, there was overwhelming support for it. When the money was first secured for its construction, there was overwhelming support."⁶⁹ Arguments against the dam came later, with more awareness of the adverse environmental effects of dams.⁷⁰

Theo Fullmer's testimony radiated bitterness over the Teton Dam failure. The Rexburg resident said, "The fill [in Teton Dam] was loose, muddy, frozen." When Senator James A. McClure, of Idaho, questioned Fullmer on the point, if he knew it for a fact or had heard it, Fullmer admitted it was his own personal theory.⁷¹

Donald Trupp of Newdale, who worked on Teton, testified the dam showed no indication of problems the night before its failure. Trupp said any time problems arose they were taken care of. Fullmer then spoke up. "If everything was so perfect, what happened the morning of the fifth?"⁷² Church replied there had been plenty of testimony pertaining to that question. The Idaho Senator did comment that it was strange no indications of failure appeared until the last hours before Teton's collapse.⁷³

The collapse of Teton Dam did not totally eliminate the desire for a dam in the area, only most of it. Some locals, including the East Idaho Water Conservancy District, thought the dam

68. Congress, *Teton Dam Failure*, 22, 28.

69. Congress, *Teton Dam Failure*, 64, 65; Congress, Senate, Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, *Oversight--Teton Dam Disaster: Hearings Before the Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, United States Senate*, 95th Congress, 1st session, Washington D.C. January 24, 1977. Idaho Falls, Idaho, February 21, 1977 (Washington: Government Printing Office, 1977), 260, 264.

70. Congress, *Oversight--Teton Dam Disaster*, 264.

71. Congress, *Oversight--Teton Dam Disaster*, 295-6.

72. Congress, *Oversight--Teton Dam Disaster*, 313-5.

73. Congress, *Oversight--Teton Dam Disaster*, 315.

should be rebuilt. Environmentalists and other residents opposed reconstruction of Teton Dam. According to a *Denver Post* article, the *Rexburg Standard Journal* informally polled its readers, 80 percent of whom did not want the dam rebuilt.⁷⁴

Fallout from the Teton Dam failure continued to rain down a year after the disaster. After taking office in January 1977, President Jimmy Carter appointed Cecil Andrus as Secretary of the Interior. Andrus, Governor of Idaho at the time of Teton's collapse, announced in May 1977, he would get rid of all Reclamation personnel involved in the evaluation of the dam's safety. At the time, Andrus declined to comment about whether Harold Arthur would be asked to resign. Just over a week later Andrus asked for Arthur's resignation.⁷⁵

Arthur was bitter about his resignation, and told R. Keith Higginson, the new Reclamation Commissioner he would not go quietly. True to his word, Arthur spoke out during the announcement of his retirement. He declared, "I'm a scapegoat," because the other middle and upper management officials involved with the Project had already transferred or retired, and he was the only remaining one. Arthur felt the resignation request attacked his professional integrity. He maintained he was not involved in the design of Teton Dam, only construction. Arthur said Bernard P. Bellport, his predecessor as Director of Design and Construction, was responsible for the design decisions surrounding Teton Dam. Arthur's retirement on June 8, 1977, ended forty-one years of government service.⁷⁶

The Teton Dam failure resulted in increased interest in dam safety, and sparked creation of the SEED (Safety Evaluation of Existing Dams) Program in the late 1970s. Congress passed the Reclamation Safety of Dams Act in 1978. The Act authorized Reclamation to modify dams as needed by the advent of new technology or inadequate design, without reimbursement as part of each project. After the Reclamation Safety of Dams Act, Reclamation created its Division of

74. Grace Lichtenstein, "Viewpoints Differ in Idaho on Rebuilding Teton Dam," *The Denver Post*, 3 January 1977, p. 18; Bill Strabala, "East Idaho District Wants Dam Rebuilt," *The Denver Post*, 24 April 1977, p. 30; Congress, *Teton Dam Failure*, 61.

75. "Andrus Ready to wield ax in Teton Dam Case," *The Rocky Mountain News*, 11 May 1977, p. 21; Gary Gerhardt, "Teton Dam construction official asked to resign," *The Rocky Mountain News*, 20 May 1977, p. 6.

76. Gerhardt, "Teton Dam construction official asked to resign," p. 6; Harold G. Arthur, interviewed by Dr. Brit A. Storey, Denver Colorado, 6 April 1995.

Dam Safety in 1978, which supervised the SEED Program upon its creation.⁷⁷

In the late 1970s, several insurance companies filed suit against the Federal government because the Teton Dam Disaster Assistance Act of 1976, said the government would make no claims payments if they were paid or payable through another source. On February 23, 1979, Judge Marion Callister of the Idaho District Court ruled Teton was not a flood control dam and the government could be held liable for damages. The Ninth Circuit Court of Appeals upheld the 1974 decision in *Trout Unlimited v. Morton* that Teton was a flood control project, and found the government immune from liability. The Ninth Circuit Court granted the government's motion for dismissal. The Federal government responded by filing counterclaims against eight insurance companies for refusing to make payments to flood victims even though they had coverage through their policies. As of 1995 all but two of the insurance companies had settled.⁷⁸

Reclamation realized the possible presence of Polychlorinated Biphenyl (PCB) in the Teton Power and Pumping Plant, posed a contamination threat to the Teton River. On September 15, 1980, Reclamation awarded a contract for the excavation of the plant. Reclamation wanted to salvage any usable equipment, and locate and dispose of any electrical transformer that could contain PCB. The salvage work finished in June 1981.⁷⁹

Settlement of the Project

The Fremont-Madison Irrigation District started as a part of the Minidoka Project. Reclamation planned to supply supplemental water to District farm lands from the Teton Basin Project. The District filed suit against Reclamation in the late 1970s, to rebuild Teton Dam. The Courts denied the claim under the Teton Dam Disaster Assistance Act of 1976, because only the owner of Teton Dam could make the claim. In this case, the United States owned the dam.⁸⁰

Failure of Teton Dam did not curtail all irrigation projects in the area. Residents of the Canyon Creek area used the completed construction of the Fremont Discharge and Pump Canal

77. Reclamation, *Project History, Teton Basin Project, 1976-82*, 11-3.

78. Reclamation, *Project History, Teton Basin Project, 1976-82*, 23-4; Electronic mail message from Jill Lawrence, Bureau of Reclamation, Pacific Northwest Regional Office, Boise Idaho, to author, 26 September 1995.

79. *Ibid.*, 39.

80. Reclamation, *Project History, Teton Basin Project, 1972*, 5; Reclamation, *Project History, Teton Basin Project, 1976-82*, 22.

in a new system, and built their own pumping plant near the buried Teton plant. Eventually they formed their own irrigation organization. Under an agreement with Reclamation, they used undamaged facilities constructed by the Teton Basin Project.⁸¹

Except for Madison County, most of the Teton Project area remains lightly populated. In 1990, Fremont County had 10,937 residents and Madison County had a population of 23,674. Rexburg was the largest city in Madison County with 14,302 residents. Teton County had a population of 3,439.⁸²

Uses of Project Water

Reclamation intended the Teton Basin Project to provide supplemental irrigation water to 111,210 acres in the Fremont-Madison Irrigation District, largely under irrigation by the Minidoka Project. Teton Reservoir would have been connected to the Canyon Creek, Enterprise, and East Teton Canal systems. Other planned responsibilities of the Teton Project were the generation of hydroelectric power, recreation on the reservoir, mitigation of fish and wildlife losses caused by the Project, and flood control. Teton Dam was only the first phase of the Teton Basin Project. Phase two was to serve lands on the Rexburg Bench and nearby areas still under investigation prior to the dam's failure.⁸³

Conclusion

The Teton Basin Project never had chance to accomplish its intended goal. Instead it became a major disaster for Reclamation. The failure of Teton Dam confronted Reclamation with new problems. Reclamation found itself paying claims for losses and repairing damaged irrigation systems. Investigations revealed problems in design of Teton Dam and dam safety in general. With the passage of the Reclamation Safety of Dams Act in 1978, Reclamation created a division and program to monitor the safety of Reclamation dams more closely, in order to prevent any more tragedies.

Ever since the dam failed, some voices have advocated rebuilding the dam to fulfill its

81. Reclamation, *Project History, Teton Basin Project, 1982-76*, 20.

82. Department of Commerce, Bureau of the Census, *Twenty-First Census of the United States, 1990: Population and Housing*, Bureau of the Census, 1990, on CD-Rom.

83. Reclamation, *Project History, Teton Basin Project, 1972*, 5.

original purpose to capture unused water from the Teton River and divert it to farmers in the area. In 2008 the Idaho state legislature passed a bill to appropriate \$400,000 to study the possibility of rebuilding Teton Dam. At the end of the year, out-going United States senator Larry Craig tucked funding into the omnibus public lands legislation for studying Teton and the alternative sites. Proponents of a new and revived Teton Dam believe it would be a shame to allow water from the river to flow downstream unused. A revived Teton Dam is met with fierce opposition by those who say the dam is too expensive, potentially unsafe, and environmentally suspect. The porous foundation may yet present a problem. Critics also say that in an age when large public works project are heavily scrutinized for their environmental impacts, rebuilding the Teton Dam will be extremely contentious and expensive. Perhaps the sharpest arrow in the quiver for the no dam camp are locals who vividly remember the 1976 flood. If it is seriously considered by law makers in the coming months and years, it will almost certainly be hotly debated.⁸⁴

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84. Daniel Jack Chasan, "Another Teton Dam," May 10, 2008, in Crosscut.com; "Discussing New Teton Dam is Unwise, Insensitive," Idaho Statesman, December 13, 2008; Kim Trotter, "Arguments for Rebuilding Teton Dam Don't Hold Water," Idaho Statesman, July 15, 2009.

Bibliography

Manuscript and Archival Collections

Record Group 115. Department of the Interior. Bureau of Reclamation Records. National Archives and Records Administration, Denver office.

Annual Project History, Carlsbad Project: Through 1913.

Annual Project History, Teton Basin Project: 1972-82.

Government Documents

Independent Panel to Review Cause of Teton Dam Failure. *Report to U.S. Department of the Interior and State of Idaho on Failure of Teton Dam*, Idaho Falls, Idaho, December 1976.

U.S. Congress. House of Representatives. Subcommittee of the Committee On Government Operations. *Teton Dam Disaster: Hearings Before a Subcommittee of the Committee On Government Operations, House of Representatives*. 94th Congress, 2nd Session, 5, 6 and 31 August 1976. Washington: Government Printing Office, 1976.

U.S. Congress. Senate. Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources. *Oversight--Teton Dam Disaster: Hearings Before the Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, United States Senate*. 95th Congress, 1st Session, Washington D.C., 24 January 1977, Idaho Falls, Idaho, 21 February 1977. Washington: Government Printing Office, 1977.

_____. *Teton Dam Failure, Prepared at the Request of Frank Church for the Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources, U.S. Senate, June 1977*. Washington: Government Printing Office, 1977.

U.S. Department of Commerce. Bureau of the Census. *Twenty-First Census of the United States, 1990: Population and Housing*. Bureau of the Census, 1990. On CD-Rom.

U.S. Department of the Interior. Bureau of Reclamation. *Federal Reclamation and Related Laws Annotated, Vol. 3: 1959-1966, Appendix, and Index*. Washington: Government Printing Office, 1972.

U.S. Department of the Interior. Bureau of Reclamation. *Teton Claims*. Bureau of Reclamation, Pacific Northwest Region, January 1987.

U.S. Department of the Interior. Teton Dam Failure Review Group. *Failure of Teton Dam: Final Report*. Washington: Government Printing Office, January 1980.

U.S. Department of the Interior. Water and Power Resources Service. *Project Data*. Denver: Government Printing Office, 1981.

Books

Murphy, Robert F. and Yolanda Murphy. "Northern Shoshone and Bannock," in *Handbook of North American Indians*, ed. William Sturtevant. Vol. 11, *Great Basin*, vol. ed. by Warren L. D'Azevedo. Washington: Smithsonian Institution, 1986.

Peterson, F. Ross. *Idaho: A Centennial History*. New York: W. W. Norton.

Reisner, Marc. *Cadillac Desert: The American West and Its Disappearing Water*. New York: Viking, 1986.

Articles

"Andrus Ready to wield ax in Teton Dam Case." *The Rocky Mountain News*, 11 May 1977, p. 21

Fillis, Don D. "The First Weeks--Saving Crops." *Reclamation Era*, Autumn 1976, 14-8.

Gerhardt, Gary. "Teton Dam construction official asked to resign." *The Rocky Mountain News*, 20 May 1977, p. 6.

Lichtenstein, Grace. "Viewpoints Differ in Idaho on Rebuilding Teton Dam." *The Denver Post*, 3 January 1977, p. 18.

Strabala, Bill. "E. Idaho District Wants Dam Rebuilt." *The Denver Post*, 24 April 1977, p. 30.

Wade, Stephen G. "The First Days." *Reclamation Era*, Autumn 1976, 4-13.

Winegar, Paul. "The First Months--Rebuilding Lives." *Reclamation Era*, Autumn 1976, 20-6.

Interviews

Arthur, Harold G. Interview by Dr. Brit A. Storey, Denver Colorado, 6 April 1995.

Stessman, Neil. Interview by Dr. Brit A. Storey, Billings Montana, 8 March 1995.

Other

Electronic mail message from Jill Lawrence, Bureau of Reclamation, Pacific Northwest Regional Office, Boise, Idaho, to author, 26 September 1995.

Index

Andrus, Cecil	23
Army Corps of Engineers	4, 21
Arthur, Harold G.	16, 23
Bannock War	3
Barker, Glenn	11
Bellport, Bernard P.	23
Bingham County	11
Blackfoot, city of	14
Bonneville County	11
California, state of	21
Callister, Marion	24
Canyon Creek Canal	5, 7, 8, 25
Carlsbad Project	16
McMillan Dam	16
Carter, Brent	11
Carter, President Jimmy	23
Central Valley Project	
Auburn Dam	17
Church of Jesus Christ of Latter Day Saints	3, 10, 13
Church, Frank	22
Congress	4, 5, 14, 15, 23
Corbett, Marshall	15, 16
Curry, Robert	15, 16, 21
Department of Housing and Urban Development	13
Department of the Interior	15
Solicitor's office	14
Teton Dam Failure Review Group	15, 17, 19, 20
East Idaho Water Conservancy District	22
East Teton Canal	5, 8, 25
Egin Bench	5
Enterprise Canal	5, 8, 25
Federal Disaster Assistance Administration	12, 14
Federal Tort Claims Act	14
Ford, Pres. Gerald R.	11, 13
Fort Bridger Treaty of 1868	3
Fort Hall Reservation	3
Fort Lemhi	3
Fremont County	2, 4, 11, 25
Fremont-Madison Irrigation District	2, 4, 5, 24, 25
Fullmer, Theo	22
Gibbons & Reed Co.	8, 17, 18
Grand Teton National Park	13
Henrys Fork	2
Horton, Jack O.	11
House of Representatives	
Committee on Government Operations	15
Idaho District Court	5, 24
Idaho Falls, city of	11, 14, 22
Idaho, state of	2, 3
Independent Panel to Review Cause of Teton Dam Failure	15, 17, 21
Jayne, Gerry A.	22

Jefferson County	11
Lemhi Reservation	3
Madison County	2, 11, 25
McClure, James A.	22
Minidoka Project	4, 24, 25
American Falls Dam	11
American Falls Reservoir	11
Mormons	3
Morrison-Knudsen Co., Inc.	7, 9
National Environmental Policy Act of 1969	5
Native Americans	3
Bannock	2, 3
Boise Shoshone	3
Bruneau Shoshone	3
Lemhi Shoshone	3
Northern Paiute	2, 3
Sheepeater Shoshone	3
Shoshone	3
Newdale, city of	2, 10, 13
Ninth Circuit Court of Appeals	6, 24
Office of Management and Budget	14
Oregon, state of	2, 3
Oriel, Steven S.	16
Prostka, Harold J.	15
Public Works Appropriation Bill	14
Pytlack, Shirley	16
Reclamation Safety of Dams Act of 1978	23, 25
Reclamation, Bureau of	2, 4, 5, 7, 11-18, 20, 21, 23-25
Reisner, Marc	4
Rexburg Bench	2, 5, 7, 25
Rexburg, city of	10, 11, 13, 14, 25
Ricks College	10
Robison, Robert	7, 9, 10
Ryan, Leo J.	2, 17
Ryder, Bill	11
Sachs, Dennis N.	21
Sawtooth Mountains	3
Secretary of the Interior	
office of	5
SEED (Safety Evaluation of Existing Dams) Program	23
Senate	18, 22
Sheepeater War	3
Snake River	2, 11
plains	3
St. Anthony, city of	10, 13
Stamm, Gilbert G.	11, 17, 18
Stessman, Neil	14
Stivers, Henry	11
Sugar City, city of	10, 11
Tennessee Valley Authority	21
Teton Basin Project	2, 4, 6, 7, 15, 24, 25
Enterprise-East Teton Feeder Pipeline and Canal	2, 8
Fremont Discharge and Pump Canal	2, 7, 8, 24

Lower Teton Division	4
Lower Teton Project	4
Teton Dam	2, 4, 5, 7-11, 13, 15, 17-19, 21-25
Teton Power and Pumping Plant	2, 4, 7, 24
Teton Reservoir	2, 4, 7, 8, 11, 16, 17, 25
Upper Teton Division	4
Upper Teton Project	4
Teton County	4, 25
Teton Dam Disaster Assistance Act of 1976	24
Teton Emergency Coordinator Office	12
Teton River	2, 24
Teton River Basin	3, 4
Teton, city of	10
Trout Unlimited v. Morton	5, 24
Trupp, Donald	22
U.S. Geological Survey	15
Union Pacific Railroad	13
Utah, state of	3
Wade, Stephen	10
Walker, Willis	4
Wilbur Peterson & Sons	7
Wilford, city of	10
Wisner & Becker	7
Yellowstone National Park	12
Young, Brigham	3