

Teton dam

[Environment](#), [Water](#)



Teton dam was constructed after a thorough research that took several years with the first site visit taking place in 1932. The research and the process of identifying the appropriate site took place over the years leading to the identification of eight alternative sites between 1946 and 1961. This was followed with 100 boring to determine meant to determine the most appropriate site for the dam to be constructed. In 1972, the actual construction of the dam started, giving the dam the capacity to hold 356 million cubic meters of water.

However, soon after the waters were allowed in the dam, it started leaking and eventually the leaks gave in and the dam gave in killing claiming 14 lives. This left several ethical questions that this work shall analyze using the virtue principle of decision making. The work shall be addressed to a government regulatory agency. A description of the engineering failure it was on 3rd June of 1976 when it was noticed that there were small seepages in the north abutment wall of the dam.

The responsible department pictured the wall and it was taken to the Bureau of Reclamation which was to take the necessary action from then. The only measure taken was that the readings were to be taken twice every week instead of the previous once a week trend. On the next day, the right abutment also indicated wetness and some tiny springs were beginning to appear. It is not recorded of any measures that were taken at this point in time and this consequently led to more destruction on 5th June 1976 when leaks were noticed at around half past 7 in the morning and eight in the morning (Arthur 11).

This leak was flowing at a rate of 800 liters per second from the right abutment that had been noticed the previous day. After just an hour, the flow had accelerated to 1,300 liters per second. The rate was almost doubled within a single hour. At 11.00 a.m. four bulldozers were sent to the site to rescue situations since a whirlpool was emerging from dam directly. This was suicidal since the bulldozers were swallowed by the water meaning that the back up plan that could rescue the situation was already a failure at a very early stage of the failure.

Half an hour after the bulldozers were swallowed, the whole dam collapsed and nothing more was left to be rescued. This left 14 lives being lost courtesy of the whole engineering failure while over 200 families were left homeless in five different towns (Arthur 16). An in-depth analysis of major issues surrounding the failure Engineering Issues Following the failure and destruction of the engineering project, the Governor of Idaho commissioned a committee which unveiled that the pre-design and the geological studies that had been conducted were not only appropriate but also deeply founded.

The first engineering error though was that attention was not given to the unusual geological condition of the land while the USBR practices were being followed. Another source of failure was that the grout curtain that was built was not sealed convincingly. Finally, the dam's geometry was the reason behind the dam's arching which ensured that cracks opened channels through the erodible fill. Management and Regulatory Issues The case of the failure during the day of the incident shows clearly a massive case of negligence in the hands of the management and the regulatory bodies in the country.

As it is stated above, the pictures that were taken to the Bureau of Reclamation when the seepages were noted for the first time never received any firm action. On 5th June 1976 too, the failure occurred in different segments and the lack of a back up plan to help solve it was a clear indication of the lack of preparedness from the management and the Bureau of Reclamation (Sharma, 64). Socio-Technical and Ethical During the infamous failure of the dam, the workers had been warned of the danger that seemed to be in store for them since early detections had indicated a possibility of what happened.

The case was not the same for the residents and the society in general since they were kept in darkness about the issue with the main reason being that they never wanted to trigger any fear among the citizens. The end result though was that there was no precaution that had been put in place to safeguard the residents. The 14 lives that were lost and the massive displacement that faced over 200 families was totally an unethical issue (Sharma, 64). An analysis of the ethical lapses The process of the dam's construction is analyzed ethically; there are a number of ethical lapses that were ignored.

To begin with it has been noted that the U. S. Bureau of Reclamation failed to include all the stakeholders during the implementation process. This overlook led to the faulty foundation which acted as an important factor for the breaking of the dam as a failure to adequately consult the necessary experts who could have provided important leads and help to averse the effects of the dam breaking in. the greatest question that arises here is that it is expected that the construction of the dam was for the common good.

By constructing such a huge dam in rocks that could easily leak and give way for a possibility such a destructive breakup, the U. S. Bureau of Reclamation team was overlooking the principle of common good (Dylan 158). Another ethical issue with this case was the decision and the rationale to open the dam even before its outlets were complete. Anurag (98) notes that the constructors ignored the fact that the water was rising at a higher rate than what was supposed to be the case and failed to act.

This shows that the team assigned the role of manning this dam were negligent in their roles as they failed to ensure that they take any action to ensure that the water intake was as the original plan. The decision to let water in before the outlets were totally finished was a total contravening the principles of ethical responsibilities. The U. S. Bureau of Reclamation ought to have known the dangers it was putting to the people downstream when they let the waters to flow into the dam without fully completing the outlets, and worse still ignoring, the signs that all was not well when the dam started leaking.

These actions flouted the principle of common good, as these negligent acts were not to the interest of all the stakeholders. Worse still, it ignored the principles of courteousness, reasonableness, as well as thought fullness. This case has no justifications for the blatant ignorance of the possible risk that the dam would cause if it burst open. The team monitoring failed to act to mitigate the potential of the dam bursting by ignoring the early signs that the dam was going, to collapse.

Recommendations for Actions with Analysis The need to reverse the collapse of the Teton Dam draws the implementation of certain measures. First and

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foremost, there is need that the pedology in the area. The need to reconsider solid ground in thereconstructionof the dam is based on the fact that the collapse of the dam was aided by the dam being situated on a permeable loess soil. This loess soil was used as the core of the dam. At the same time, the loess soil had been used on the cracked rhyolite at the bottom of the dam.

This allowed the dam water to seep through and under the dam. By extension, it is well adduced by oceanographers, limnologists and hydrologists that this collapse of the dam had been cracked at its bottom. This allowed water to seep through the dam, giving way for piping [internal erosion]. The collapse of the dam was the culmination of this development. The need for regular and effective dam inspection cannot be gainsaid as an effective panacea to the collapse of a dam after the manner of Teton Dam.

Additionally, logistics and funds must be set in place to ensure that the sealing of the fissures at the bottom of the dams are clearly sealed. The gravity of the matter is that the panel had soon established that piping was taking place. Nevertheless, there was nothing that was done to revert the fracturing of the core materials. The need to ensure that highly skilled personnel are involved in the construction of the bottom of any dams is also paramount.

This is underscored by the fact that the panel that oversaw the construction of Teton Dam was not able to determine the presence of totally erodable fill which had been left unprotected which had been aided by an unsealed rock situated beneath the grout cap. That this situation was primrose, leading to the development of an erosion tunnel which in turn further promoted the

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widening and development of the fissure underscores the aforementioned need for skilled personnel. Skilled personnel would have identified and carried out correctional measures.

Outcomes and Justification Based On One or More Ethical Frameworks The need to ensure that there are skilled personnel is underscored by one of the ethical oversights that were committed on the side of the panel. Precisely, the panel allowed the dam to be opened a little too soon before the completion of its outlets. If it is that only skilled experts were employed, the panel would have been informed that water at the time had been rising at a dangerously higher rate. In addition to this, the right correctional measures would have been deducted, prescribed and executed.

By extension, the fact that the team that was also assigned the role of manning the dam remained negligent as failure to ensure that the water level as originally prescribed confirms some degree of incompetence. The gravity of the matter aforementioned is clearly also clearly confirmed by the fact that the US Bureau of Reclamation allowed water into the dam without the dam's outlets. It suffices to point out that the US Bureau of Reclamation ought to have been aware of the dangers it had posed on the locals who were leaving downstream as the outlets had a higher propensity of being overwhelmed.

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