



**National Dam Safety Law
Informed by Dam Safety
Program Instrumentation,
Monitoring and Inspections**

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Special Thank You

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Association of State
Dam Safety Officials



DAM SAFETY LAWS DRIVEN BY DAM FAILURES AND INCIDENTS

- Changes in US law were tied to many dam failure incidents such as the Johnstown Flood (South Fork Dam Failure) in Pennsylvania (1889), the St. Francis Dam failure in California (1928) and the Baldwin Hills Dam in California (1963).
- The National Dam Safety Program started following significant failure events in the 1970s – Teton Dam, Buffalo Creek Dam, Kelly Barnes Dam.





Proactive Approach by Ministry of Water Resources

- Cooperative Program with the United Nations Industrial Development Program.
- Dam Safety Capacity Evaluation, 2021.
- Development of Dam Safety Capacity Development Program, 2022.
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- Draft Dam Safety Framework/Law, 2022.



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MAIN ASPECTS OF DAM SAFETY LAW

- Defined responsibilities within Ministries.
- Inventory/classification.
- Inspections.
- Permitting/plan approval for new dams.
- Permitting/plan approval for the rehabilitation of existing dams.
- Emergency Planning & Response.
- **Comprehensive Reviews.**
- Staffing and Funding.



Dam Safety Incidents and Failures Continue to Occur.

ASDSO Incident Database

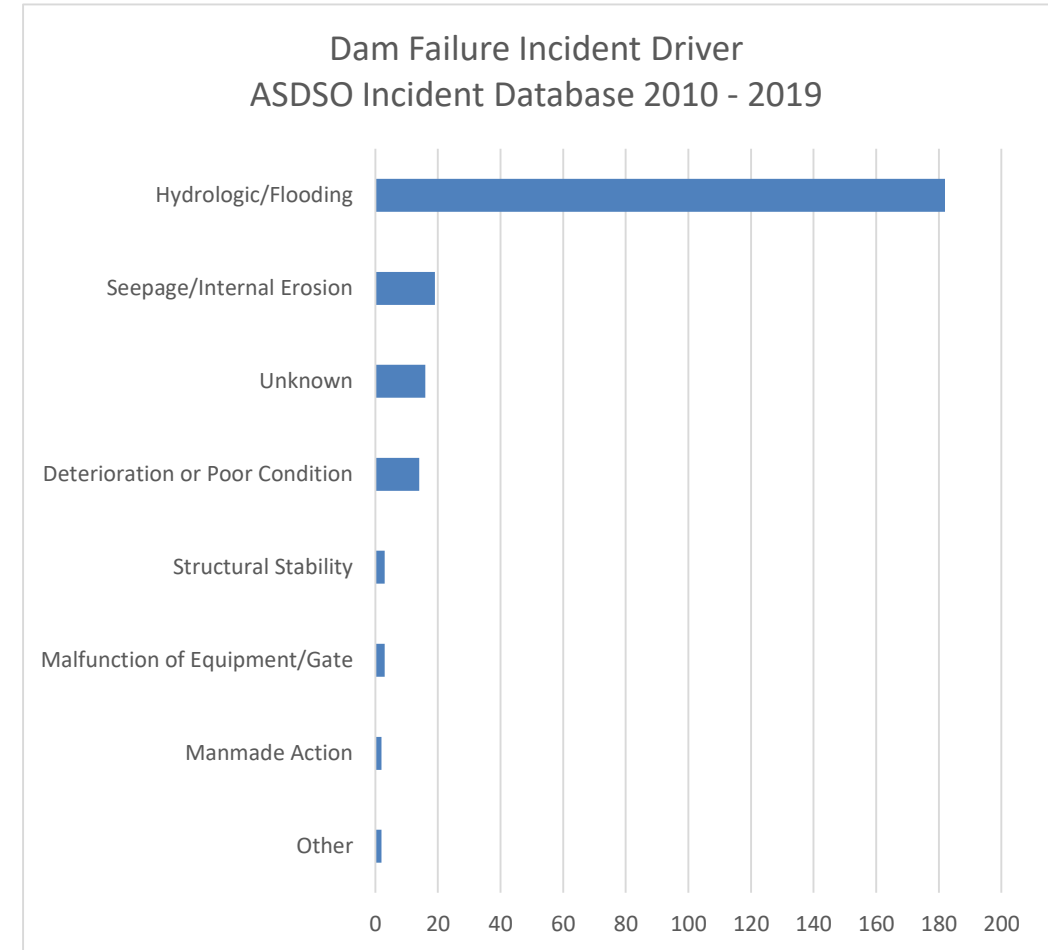
- 1084 total incidents, 391 failure & 693 nonbreach (91,500 dams).
- **Since 2010 – 748 incidents (232 failures).**

High Profile Incidents continue to occur.

- Oroville Spillway.
- Spencer Dam Failure.
- Michigan Failures.

Lessons

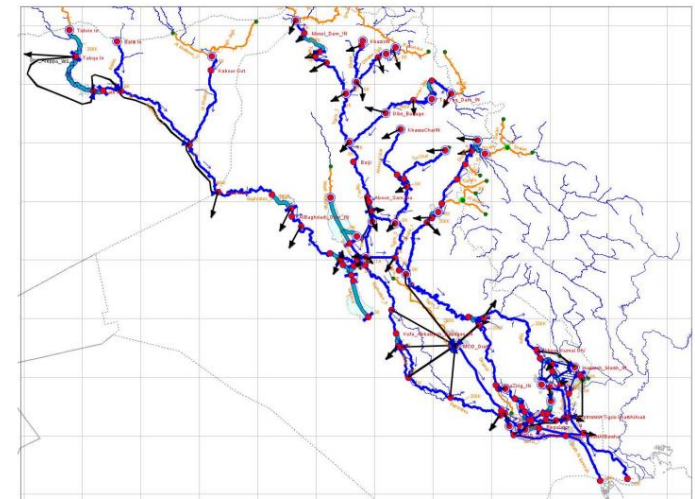
- Comprehensive Reviews.
- Documentation of historical incidents/findings.
- Importance of re-evaluation and consistency in hazard potential classification.
- **EAPs save lives.**
- **Human/organizational factors.**





Effective Dam Safety Program Can Reduce the Chances of an Incident or Failure

- Structured national oversight of dams.
- Improved coordination of water resources.
- Routine and consistent monitoring and inspections.
- Improved technical skills and communication.
- Improved understanding of each dam.
- Cross discipline training in teams.
- Better awareness and visibility for Baghdad.
- Reinforce strong reputation within the Government and the world.





Instrumentation, Monitoring and Inspections Can Stop Incidents and Failures

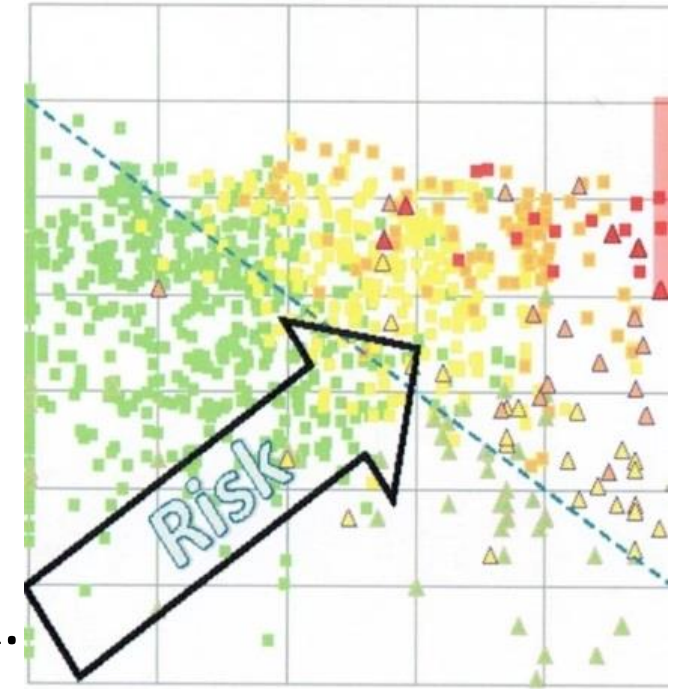
- Identify Potential Problems Before They Develop.
- Deteriorating Materials, Equipment or Foundation.
- Maintenance Needs.
- Additional Investigations.
- Changing Conditions.
- Operational Risks.
- Changing Downstream Conditions.
- Reevaluate original designs for current state of the art practices.





Dam Safety Program Can Help Communicate Dam Safety Needs.

- Prioritizing risks across all dams.
- Prioritizing repairs or maintenance between dams.
- Prioritizing repairs or maintenance at each dam.
- Identify benefits provided by each dam.
- Identify lost benefits if dam or feature does not work.
- Communicate national budget needs internally and externally.
- Communicate national staffing needs.
- Benefit/Cost ratio of funding repairs (Lost benefits vs repair cost).





Communicate The Value of Each Dam

- Hectares irrigated. Food produced from irrigation.
- Percent of national irrigation flows.
- Hectares irrigated with flows.
- Percent of national drinking water flows.
- Drinking water to millions of people.
- Flood control for millions of people.
- Flood protection of critical infrastructure.

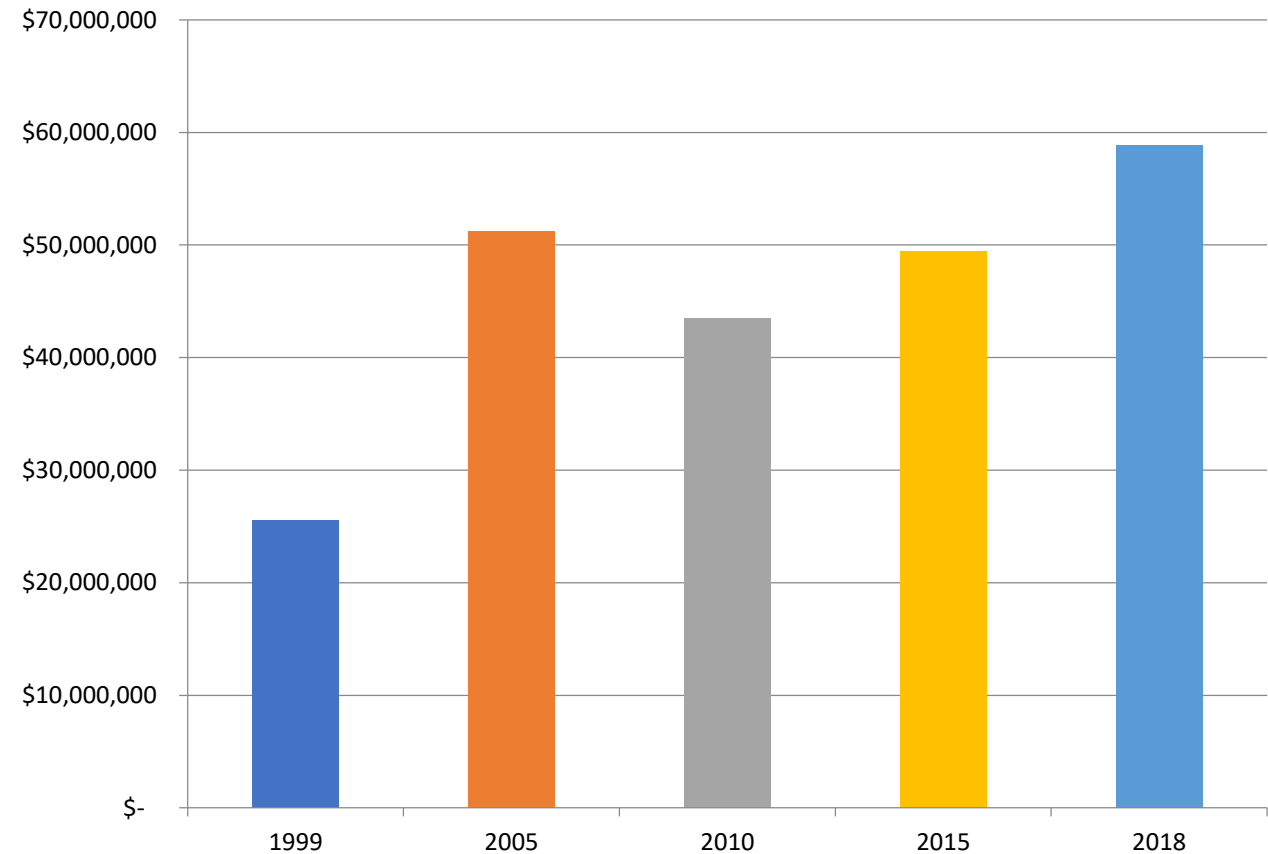


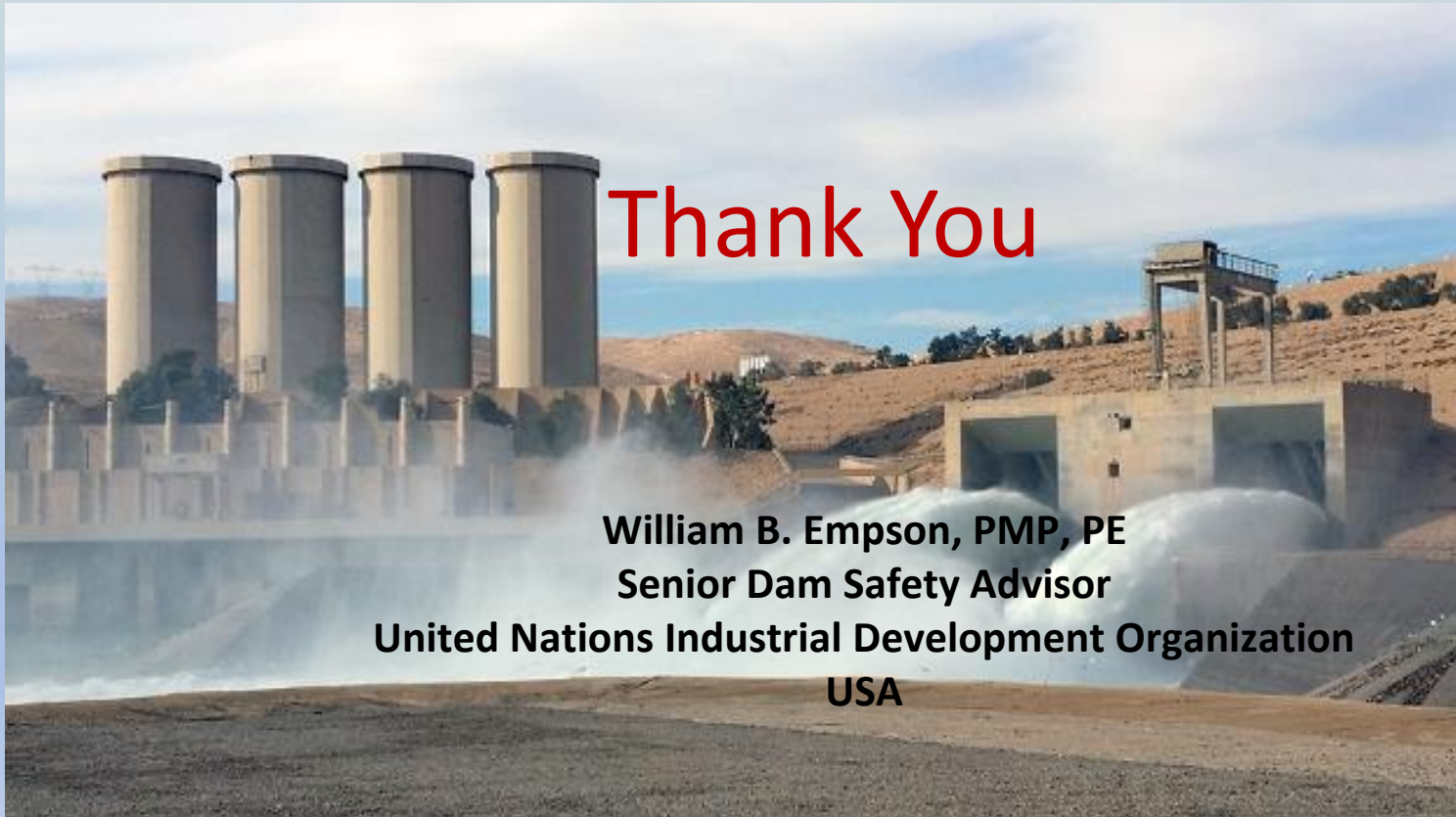


Dam Safety Budget

- Develop a Budget to Address Each Issue.
- Include budget for instruments and monitoring.
- Rank importance of each project by dam and nationally across dams.
- Rank by services lost because of problem.

Dam Safety Total State Budget





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