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AWSE Presentation

The Public Safety Role of the Oregon State Engineer for Water Resources

Association of Western State Engineers
Oklahoma City

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AWSE Presentation

- Roles
- Oregon dams
- Vulnerabilities of these dams
- Preparation for extreme events
- Integrated Water Resources Strategy
  - Dam Safety Recommendations
  - Role in floods
  - Most important legal authorities for safety

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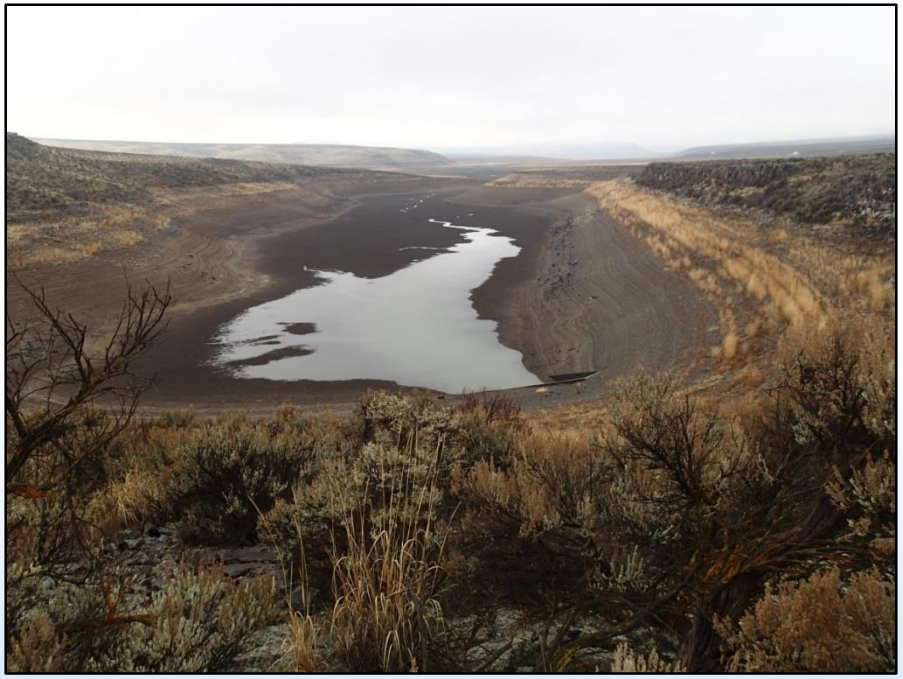
State Engineer Roles

- Principal assistant to agency director for engineering
- Historically State Engineer was a small State agency
- Dam safety
- Safety in emergencies
- Feasibility of new storage
- Agency Engineering needs



Malheur dam in drought
110 foot dam with State Engineer Restriction

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Dam safety authorities in Oregon

- **USACE**
- **USBOR**
  - **Owyhee dam**
- **FERC**
- **OWRD**
  - Many past due for rehabilitation

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State v. Federal Regulation

Hazard Rating	Federal Inspected	State Inspected	Totals
High	69	72*	141
Significant	29	147	176
Low	187	749*	936
Totals	285	969	1254

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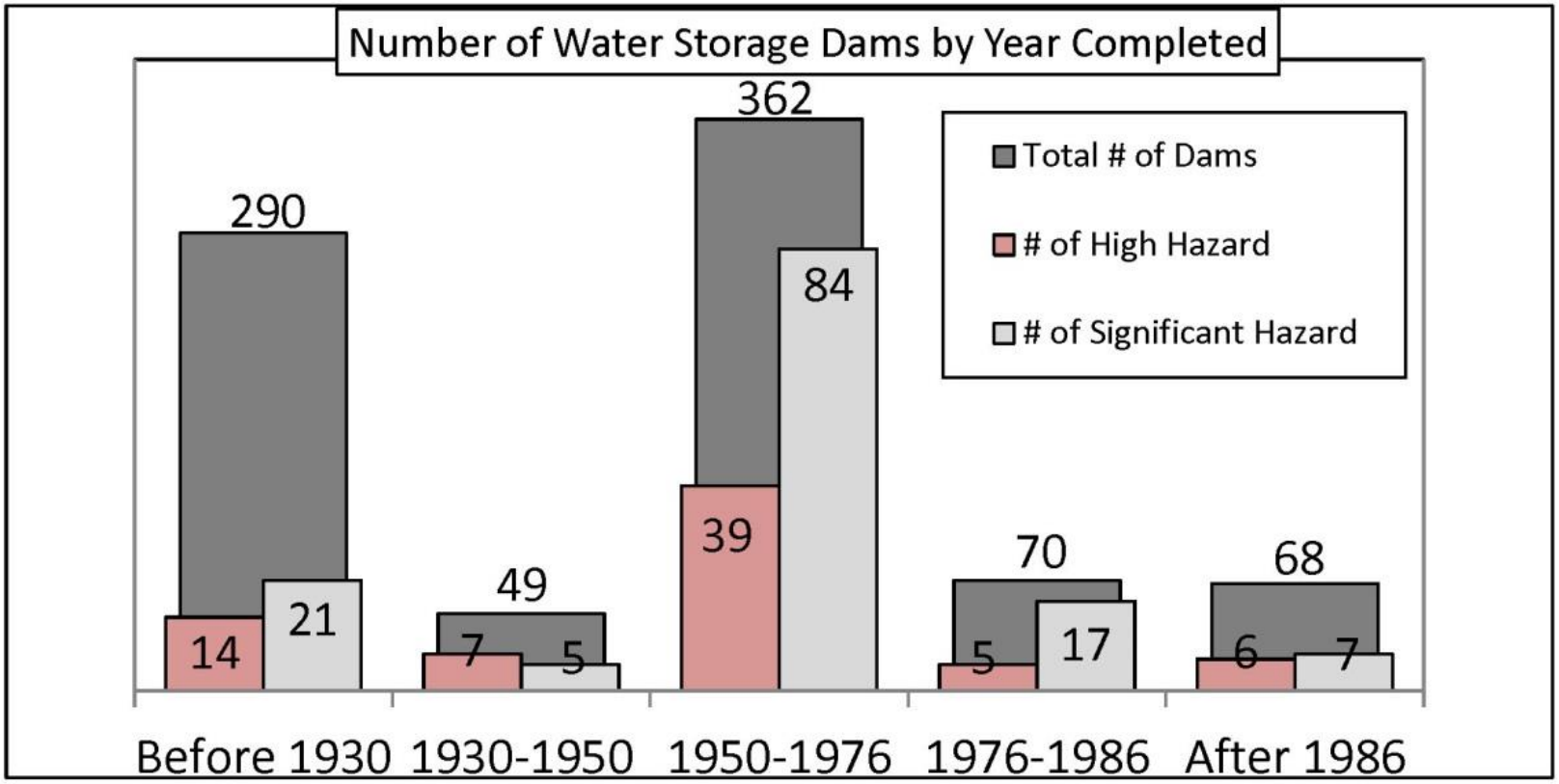
Oregon's Dams Are Older



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Dam Safety Issues in Oregon

- Good recent safety record (last fatalities in 1898)
- Size of floods and spillways
- New understanding of seismic risk
- Old conduits and valves, concrete
- LOW PROBABILITY HIGH CONSEQUENCE RISK DIFFICULT TO COMMUNICATE

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2007 Flood at Fishhawk dam

Water filled to crest, all boats and logs through interior spillway

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New Earthquake Understanding

Last big one in 1700

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Restricted water level since 1942

110 foot tall dam, note control building

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Conduit changed to pressure pipe

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Dam breach effects – Sig.

2006 Lagoon Failure in Oregon

1. Geotextiles in spillway
2. Operated with continuous inflow
3. Damage hidden
4. The hazard rating was correct.

Impacts below dam, after flood crossed State Highway 207

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We learn from California

Effective communication should not be taken for granted

Contrast with Colorado 2013 flooding – good coordination

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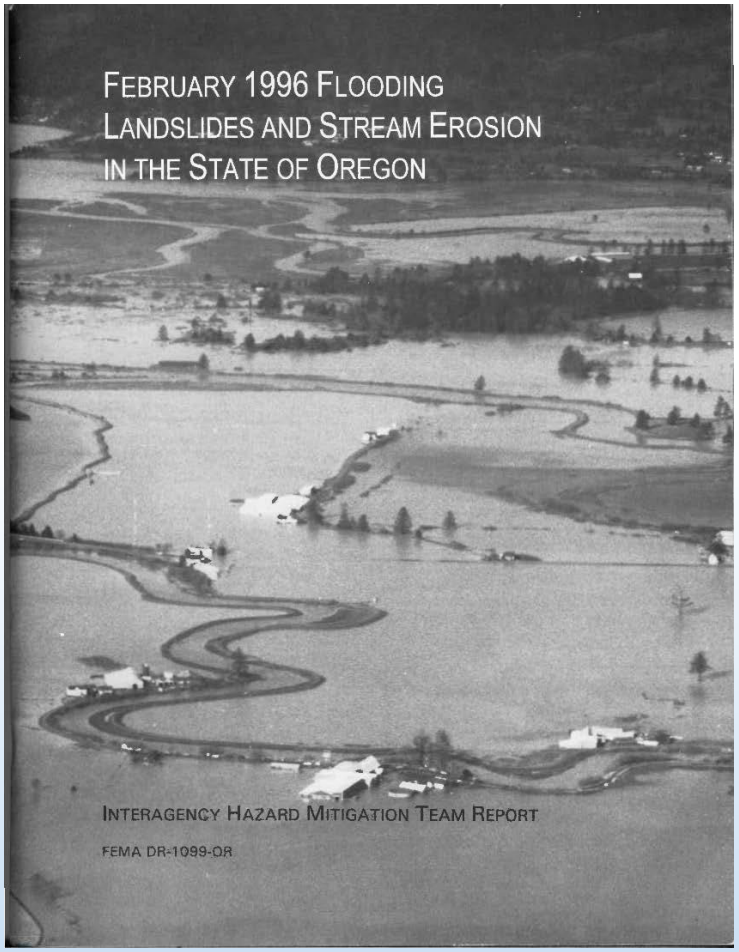
Flooding in Oregon

- Most general floods in western Oregon occur due to winter storms
- November through February (i.e. now)
- Widespread Oregon flooding occurred in 1861, 1948, 1964 and 1996
- 1903 Heppner OR Flood (worst US natural flash flood) - 247 lives

Notice the levees



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Awareness of unusual flood situation

Oregon Emergency Operations Plan being rewritten

Flood Situation Agencies

- NWS and RFC forecasts and Consultation
- OWRD
- USACE
- ODOT
- OEM.

- How much time is needed to get resources ready?

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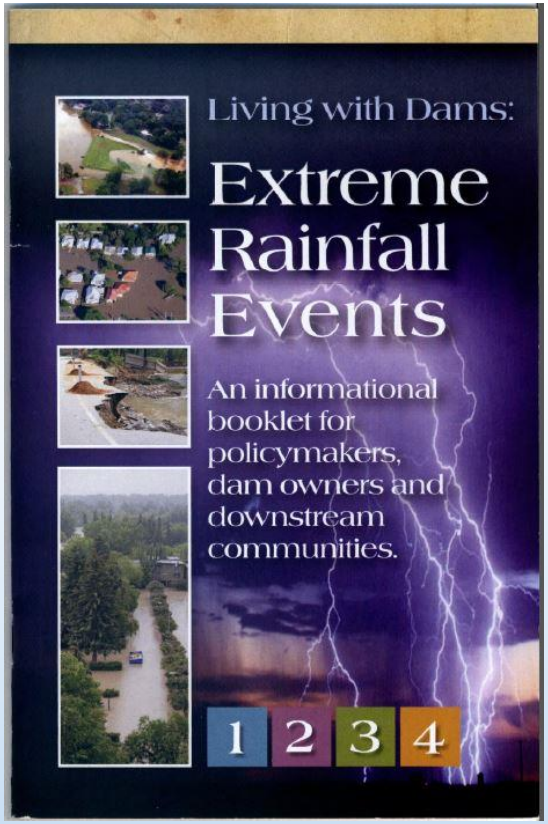
Dam Safety Programs Now

Association of State Dam Safety Officials

Five Key Elements for improving safety

1. Hazard rating – risk to people if dam fails
2. Design review – based on hazard rating
3. Inspections to determine if it remains safe
4. Getting owner to act on unsafe and potentially unsafe dams.
5. Emergency Action plans detect and prevent failure in time to get people to safe locations.



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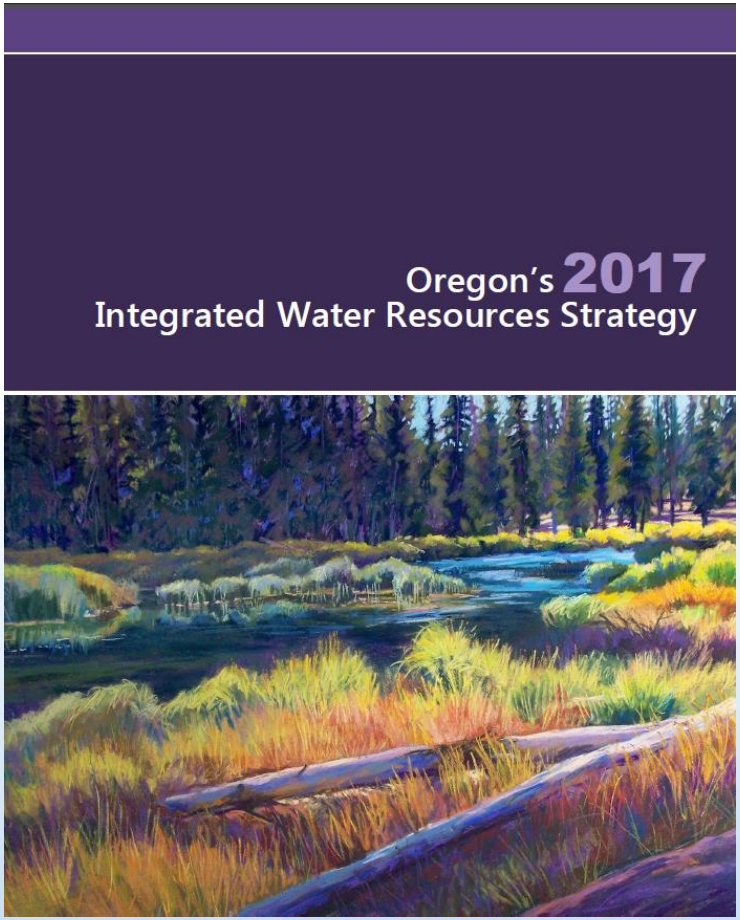
2017 Oregon Integrated Water Resources Strategy (IWRS)



All Oregon State Water Agencies, OWRD lead

1. Water Resources Today
2. Instream and Out of Stream Needs
3. Coming Pressures
4. Meeting the needs

Dam and flood specific follow

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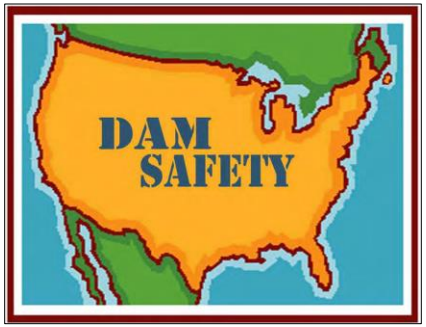
2017 IWRS Edition

1. **Modernize state laws to improve the safety and resiliency of Oregon dams**



2. Resources to determine safety deficiencies; evaluate and retrofit

Weak fill, seismic, spillway, conduit

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2017 IWRS Edition

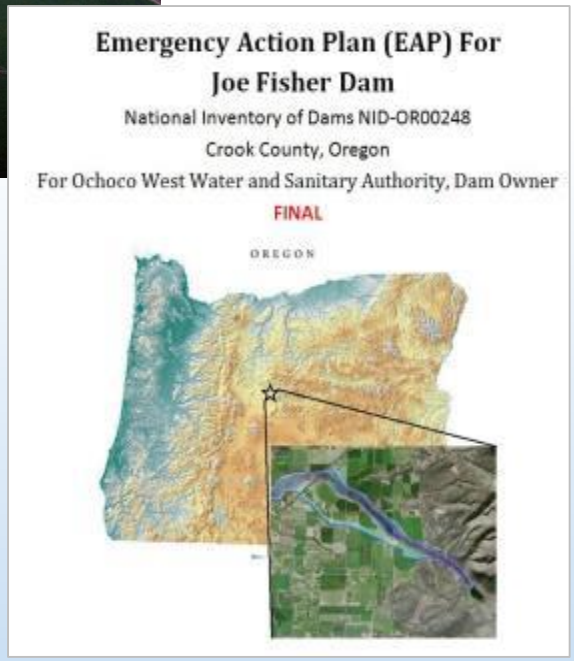
3. Authorize emergency actions and encourage cooperative actions to improve the safety of dams

4. Properly decommission dams at the end of their useful life.

2017 IWRS Edition

5. Coordinate emergency responses

6. Define the responsibilities of a dam owner



EAP as part of enforcement

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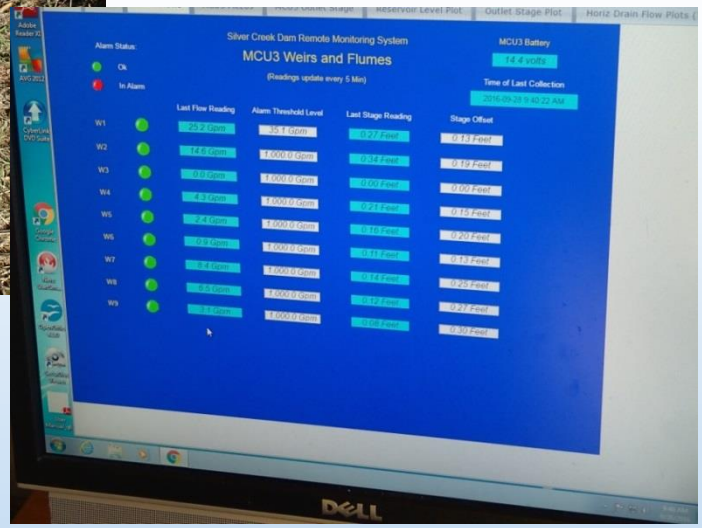
7. Require remote monitoring on deficient high hazard dams

8. Dam owners should prepare an EAP for high hazard dams



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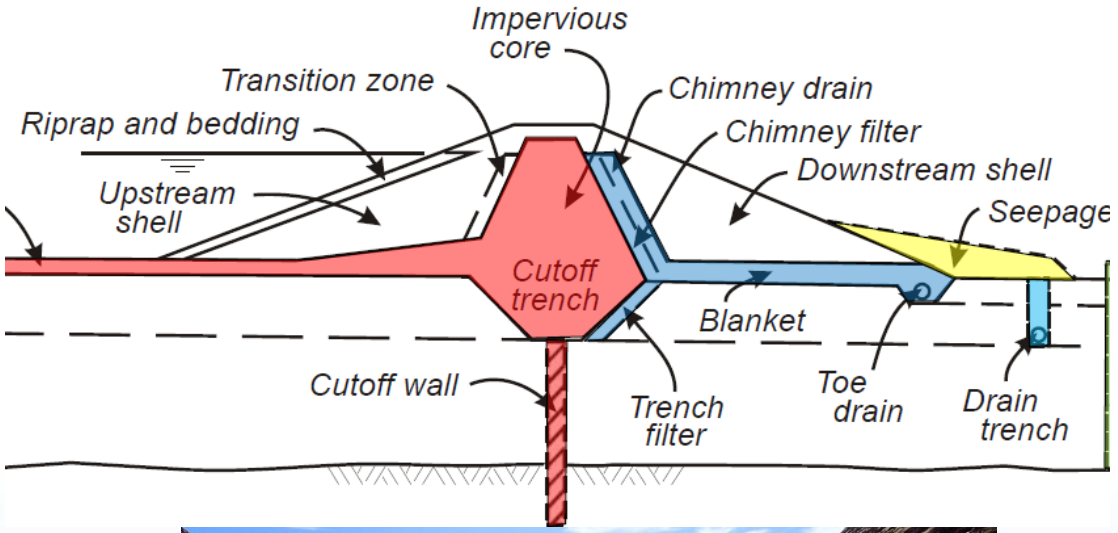
9. Authorize a fee for review of plans and specifications

10. Dedicate grant and loan resources for rehabilitation of deficient dams



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Rehabilitated Dams

Barney Reservoir and Dam

McGuire Reservoir and Dam

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Conclusions

- Dams are aging
- Not designed for new risks
- Drafted major revisions to dam safety statutes
- Role and situational awareness in events
- What a small staff can do
- Need to mentor replacements

Questions or Comments?