



**Action Item: Consideration of Inundation Map Regulations**

Today, the Department of Water Resources (the Department) will brief the Commission on the Department's proposed regulations for inundation maps. The Commission will consider and may approve the regulations.

Inundation maps provide a graphical representation of the timing and extent of inundation to be expected by the failure of a dam and its critical appurtenant structures. Such maps are used to develop emergency action plans that are used by dam owners and emergency managers in the event of a dam failure.

In 2017, the Legislature passed SB92, which went into effect on July 1, 2017. SB 92 added section 6161 to the Water Code, requiring owners of all state jurisdictional dams, except low hazard dams, to prepare inundation maps and emergency action plans for dams, including critical appurtenant structures such as spillways. Before SB 92, there were no requirements to develop inundation maps for many state jurisdictional dams, all critical appurtenant structures, or to update inundation maps. Dams classified as low hazard are not expected to cause any loss of life should they fail, and any potential downstream impacts are expected to be confined to the dam owner's property.

On October 19, 2017, the Department's Division of Dam Safety (DSOD), which implements the Dam Safety Program, adopted interim emergency regulations describing the requirements for inundation maps to clarify and make specific the provisions of SB 92. The emergency regulations are only effective for up to one year after adoption. Therefore, the proposed permanent regulations are necessary to provide permanent inundation map standards.

The DSOD has prepared permanent regulations that establish standards for inundation maps. The initial statement of reasons was published in May 2018, and may be found here:

<https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-safety-of-dams/Files/Statutes-and-Regs-docs/Initial-Statement-of-Reason.pdf?la=en&hash=E4A8340C276BC1C69FE09080A49680BB29D2349C>

The August 17, 2018 revised draft of the regulations may be found here:

<https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Division-of-safety-of-dams/Files/Statutes-and-Regs-docs/Draft-Inundation-Map-Regulations-08-17-18.pdf?la=en&hash=F8CC04ECD57E67D67DC26562697F9C1E307D44A5>

## **Dam Safety**

Currently, about 1,250 dams are subject to the state's jurisdiction with respect to safety and regulated by the Department's Division of Safety of Dams (DSOD). These dams are inspected annually and prior to SB 92, these dams were classified in three categories consistent with federal definitions; 678 high hazard, 281 significant hazard, and 289 low hazard.

The Department's Dam Safety Program comprises four basic safety activities, including annual maintenance inspections, construction oversight, application reviews, and re-evaluation of existing dams. Over the last ten years, the re-evaluation component of the program focused on the highest risk to California dams, including a seismic re-evaluation of dams in areas that have a high probability of a major earthquake. The seismic re-evaluations led to over \$1 billion in repairs to dams.

The inspection process focused heavily on the dam itself, and included a visual inspection of the appurtenant structures, such as spillways. The February 2017 spillway failure at Oroville demonstrated that California needed a more extensive evaluation of the adequacy, stability and structural integrity of the appurtenant structures.

## **New Requirements for Inundation Maps and Emergency Action Plans**

At the time of the Oroville spillway incident, Emergency Action Plans were not required for all jurisdictional dams; however, about 70 percent of the high-hazard dams had them, including Oroville.

Prior to SB 92, inundation maps, the cornerstone of emergency plans, were created or updated only at the time the dam was built or enlarged. A dam inundation map delineates the area that would be flooded by a hypothetical dam breach or failure. It includes downstream effects and shows the probable path of water released due to the failure of a dam or from abnormal flood flows released through a dam's spillway and/or other appurtenant works.

SB 92 requires the DSOD to re-classify jurisdictional dams as extremely high, high, significant or low risk, and to require inundation maps and Emergency Action Plans for all jurisdictional dams, allowing a waiver for low hazard dams. During regular inspections, the Department will track any dams where the hazard classification has changed and reassess the waiver as necessary. The Department will identify which scenarios, other than a complete dam failure, require a separate inundation map. The dam owner will create the inundation map and submit to the Department's Division of Safety of Dams, for review and approval of the map. The approved maps will then be posted publicly on the Department's website.

Cal OES will coordinate emergency response drills with dam owners and local emergency management agencies. The dam owner will be required to update the Emergency Action Plans regularly in accordance with federal guidelines and update the inundation maps every ten years or sooner if there is a change in dam status or change in downstream risk.

## **AB 1270**

On February 26, 2018, the Governor signed AB 1270 (Gallagher), which took effect immediately as an urgency bill. AB 1270 required the Department to inspect dams, reservoirs and critical appurtenant structures in the state at the expense of the dam owner every year except for low hazard dams which would be inspected at least every two fiscal years. It further requires dam inspection reports be made

publicly available, as specified, and dam owners to demonstrate operability of their structures annually. Finally, the Division of Safety of Dams, in consultation with dam experts, will make public dam inspections protocols and reassess those protocols every ten years.

Additionally, AB 1270 would memorialize in statute the existing practices of the Department regarding inspection of dams and structures based upon hazard classification as well as require the inspection protocols to be updated. This process will incorporate changes such as those identified in the Independent Forensic Team (IFT) report on the Oroville spillway failure, released on January 5, 2018. That report has highlighted issues that need to be addressed across the entirety of the dam industry – issues such as greater emphasis on inspecting the appurtenant structures of a dam complex and not only the dam structure itself.

Specific provisions of AB 1270 include:

1. A requirement that the Division of Safety of Dams to conducts inspections of dams at least once per fiscal year, with the exception on low hazard classification dams which would be inspected at least every two fiscal years [this is a modification to existing practice, reducing the frequency for low hazard dams];
2. A requirement that the Department make dam inspection reports publicly available, and provide in its disclosure a statement outlining any withheld information due to sensitive data security issues [this is a new requirement];
3. A requirement that dam owners operate critical outlet and spillway control features on an annual basis, and demonstrate full operability in the presence of the Department every three years [this is a new requirement];
4. A requirement that the Division of Safety of Dams, in consultation with independent national dam safety and dam safety risk management organizations, beginning January 1, 2019 and every ten years thereafter, to amend dam safety inspection and reevaluation protocols to incorporate updates best practices [this is a new requirement], and
5. A requirement that the Department report to the Governor and Legislature the intent to update dam safety protocols and provide notice to dam owners prior to enacting the amendments.

This is an action item.

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