



Missouri Dam and Reservoir Safety Program

Earthquake Summit 2024



Kelly Barnes Dam

Failed November 6, 1977

- 39 deaths
- Extensive damage to campus of Toccoa Falls Bible College

Dam Height: 38 feet

Reservoir Area: 40 acres



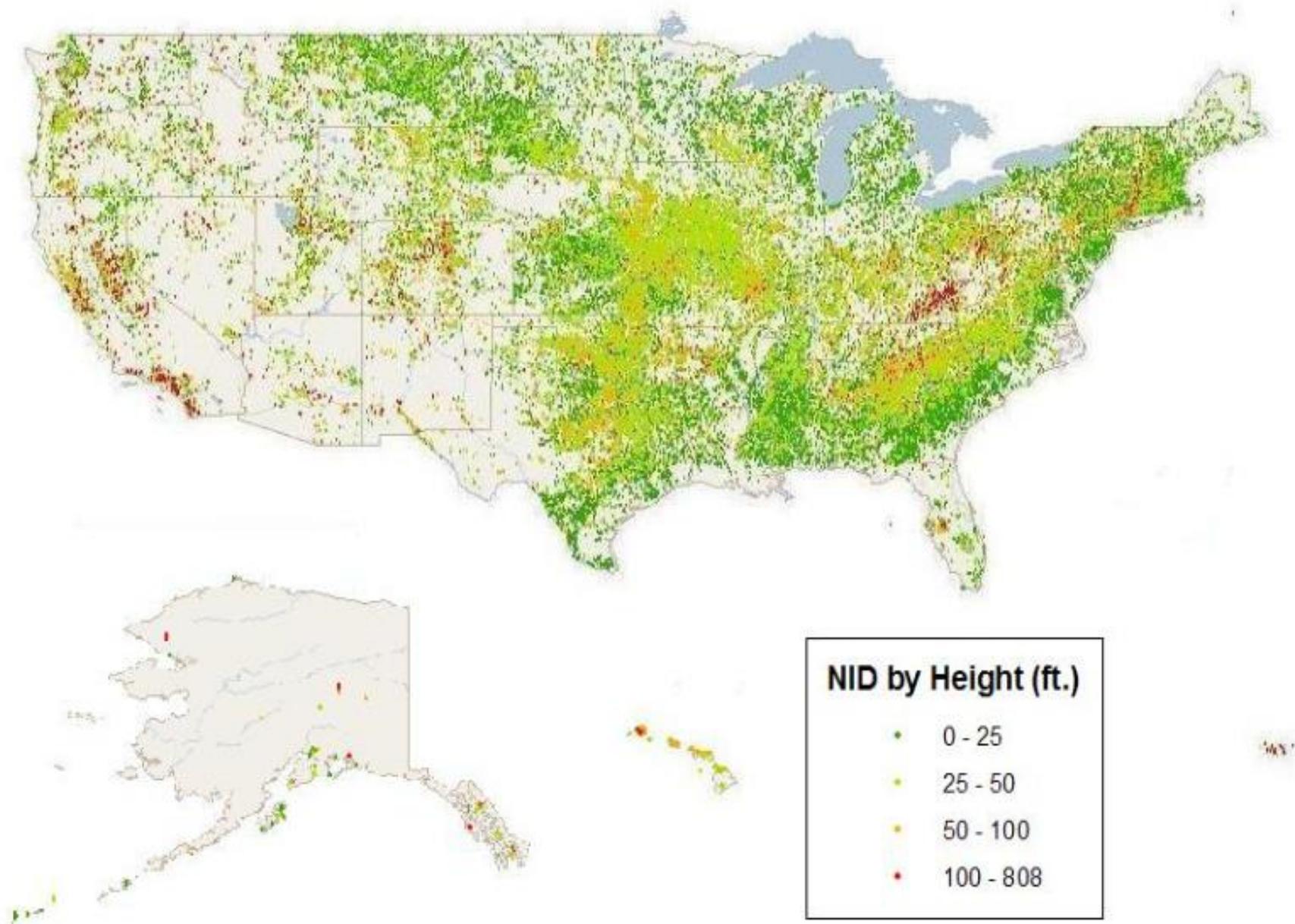
Dam Trivia

Who was the President in 1977 at the time of the Kelly Barnes Dam failure?

And

What state was he from?

National Dam Safety Program Initiative



National Inventory of Dams

- All Dams which meet the criteria are given an MO#. i.e. MO10591
- Contains relevant data about the dam. Height, year built, ownership, etc.
- If there is no available data for a dam no record of the dam exists

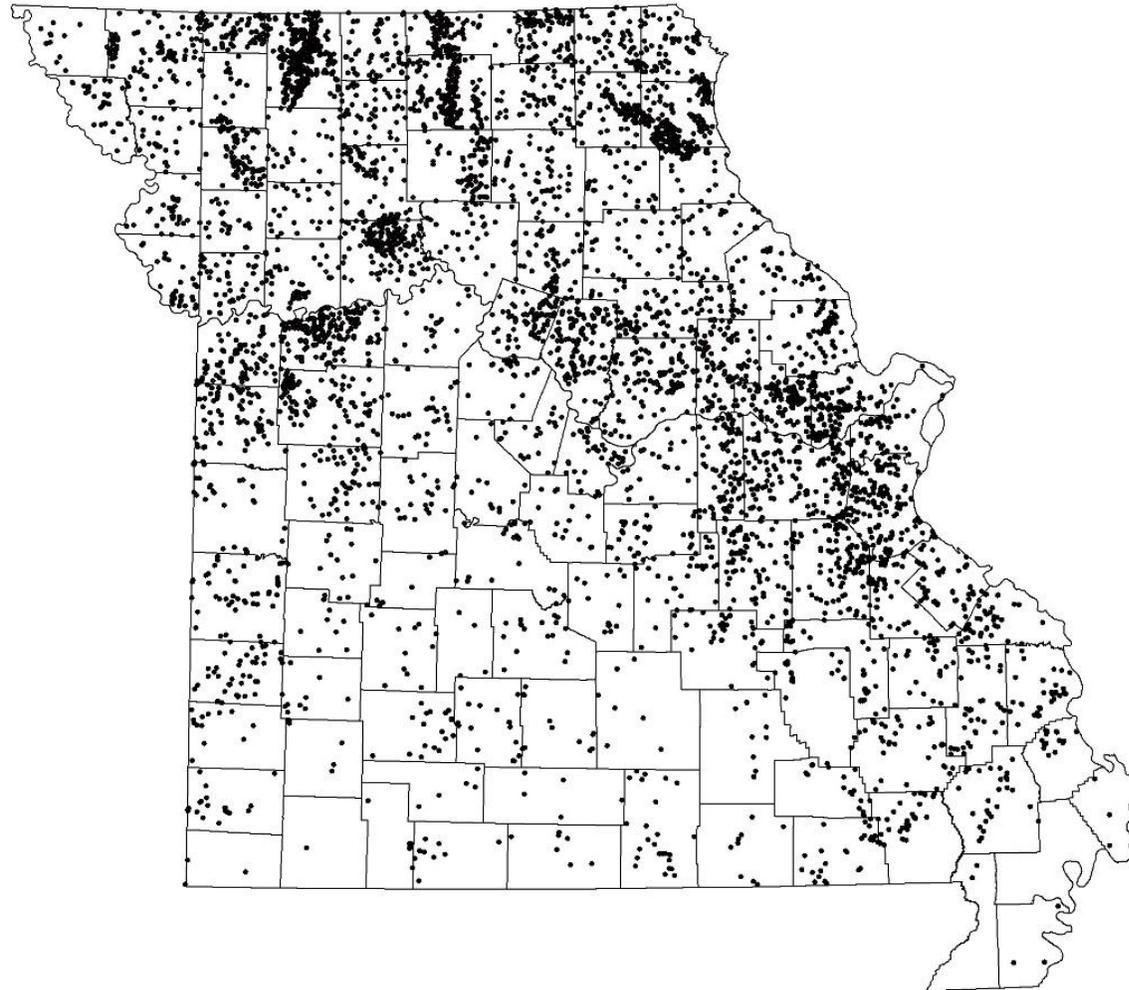
Criteria for inclusion in the NID

At least 6 feet in height and ≥ 50 ac-ft of storage

Or

At least 25 feet in height and ≥ 15 ac-ft of storage

Missouri National Inventory of Dams



Dam Safety In Missouri

1979

House Bill 603 effective in September 1979.

RsMo 236.400-236.500 “Dam Safety Law”

1981

Rules were established and effective August 13, 1981.

CSR 10 22 Chapters
1 through 4

Includes all dams 35 feet and greater in height

FIRST REGULAR SESSION
[TRULY AGREED TO AND FINALLY PASSED]
HOUSE COMMITTEE SUBSTITUTE FOR
HOUSE BILL NO. 603
80TH GENERAL ASSEMBLY

AN ACT

Relating to dam and reservoir safety, with penalty provisions.

Be it enacted by the General Assembly of the State of Missouri, as follows:

Section 1. As used in this act, standards, rules and regulations promulgated hereunder, unless the context otherwise requires the following words and terms mean:

(1) "Agricultural dam", any dam constructed to impound water for use in irrigation, livestock watering, or commercial fish rearing and sale;

(2) "Alterations", "repairs", or either of them, such alterations or repairs as affect the safety of a dam or reservoir, or public safety life or property;

(3) "Chief engineer", the head of the dam and reservoir safety program of the department of natural resources or his representative;

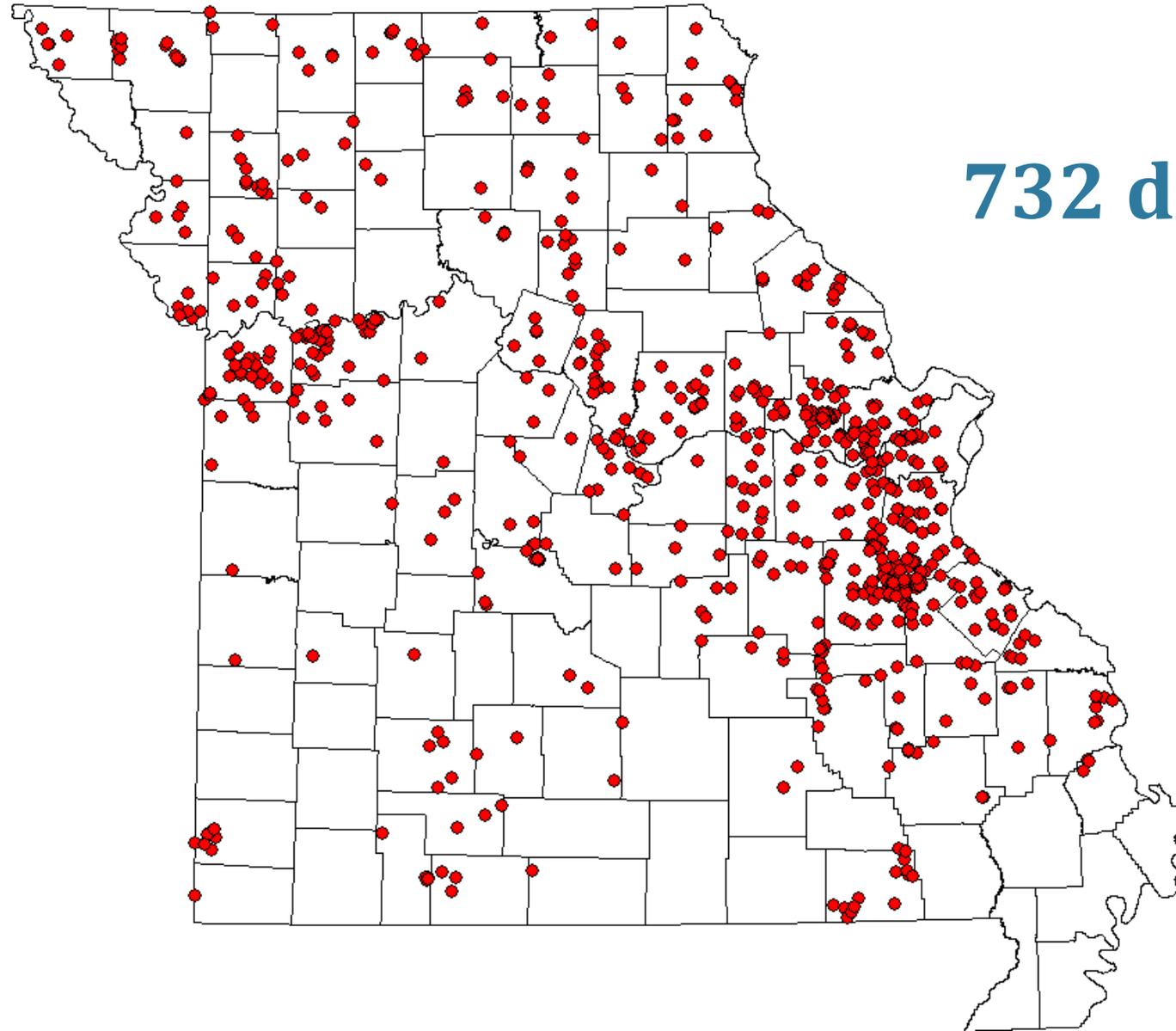
(4) "Construction permit", a written authorization issued by the Council giving the owner the right to construct, alter, enlarge, reduce, repair or remove a dam or reservoir or appurtenances thereto, with such conditions as are necessary to adequately protect the public safety, life, property, the dam or reservoir;

(5) "Dam", any artificial or manmade barrier which does or may impound water, and which impoundment has or may have a surface area of fifteen or more acres of water at the water storage

DNR Regulated Dams

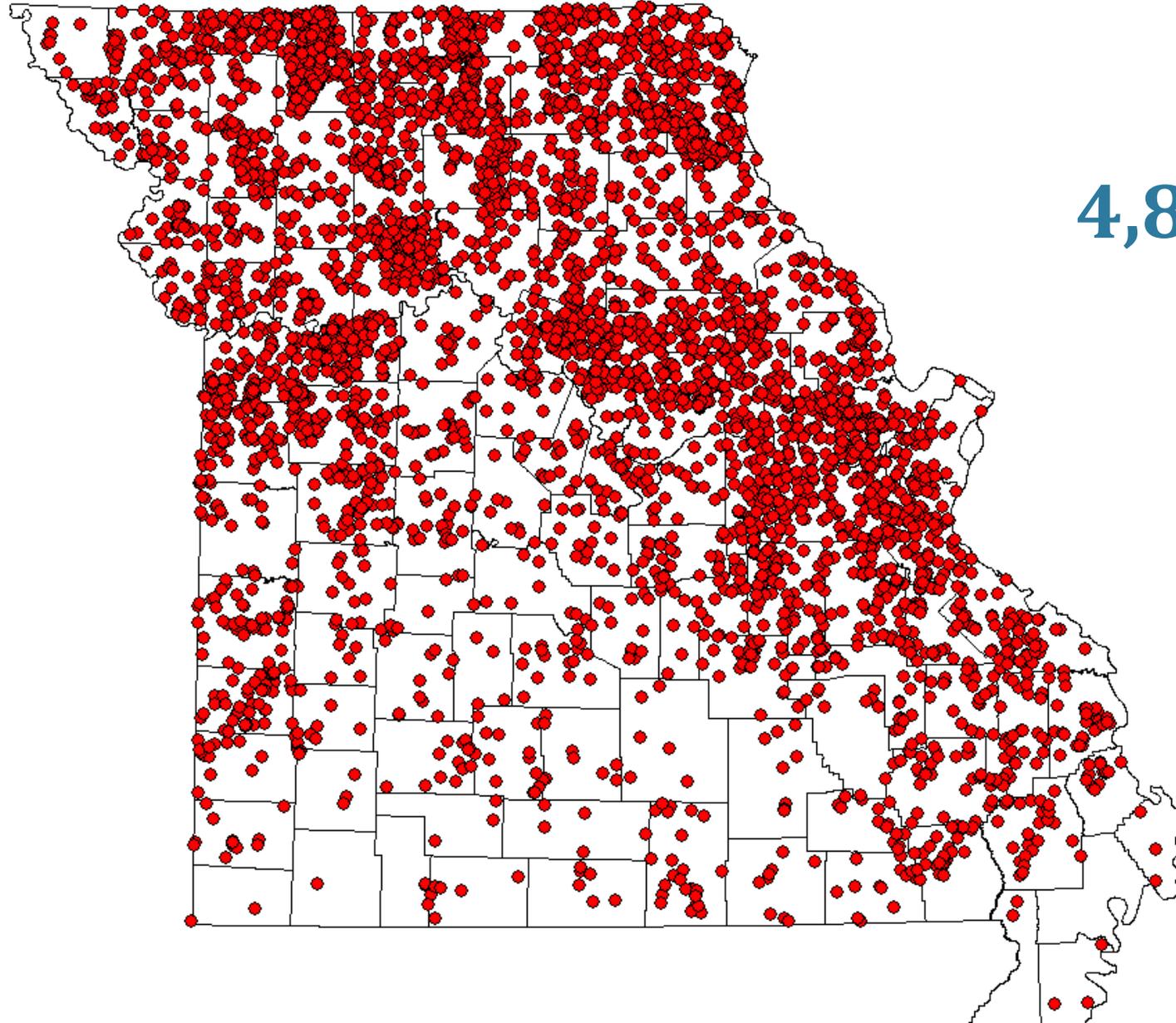
- Non-Federal dams 35 feet or greater in height (USACE, USFS, FERC not included)
- Private, public, MDC, MDNR state park dams, NRCS designed dams, flood control dams etc.

Missouri Regulated Dams



732 dams

Missouri Unregulated Dams

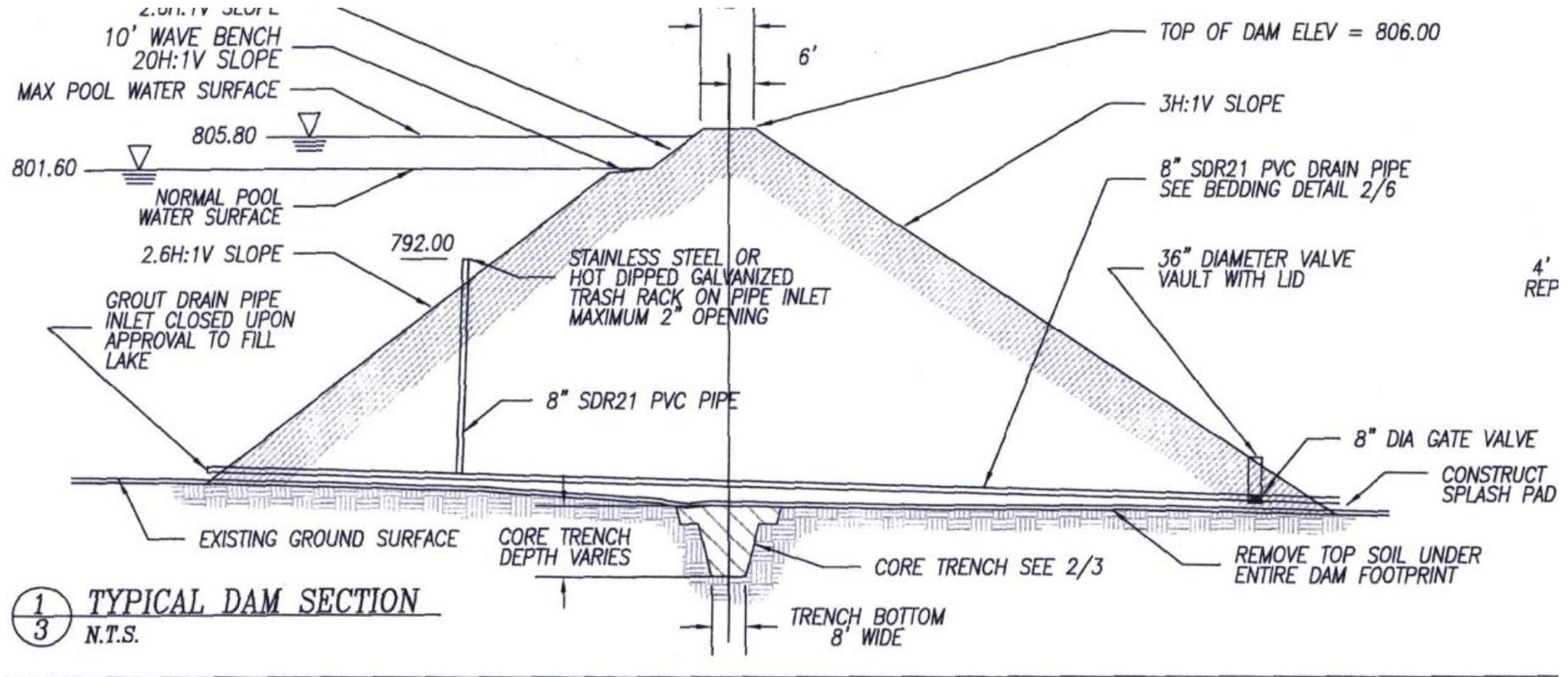


4,899 dams

SE M



Typical Earthen Dam Construction



Expectations During an Earthquake

- Shaking
- Settlement of the embankment
- Pipe penetrations and rigid concrete structures may be prone to damage
- Damage may not be obvious or noticed by a standard visual observed

What Does DRSP response look like?

6 staff engineers (5 current with 1 vacancy)

1. Emergency response is first priority – visit any site where conditions have been verified by local responders or citizens and react.
2. Prioritize inspections in the region for REGULATED dams based on dam height, pipe penetration and downstream hazard

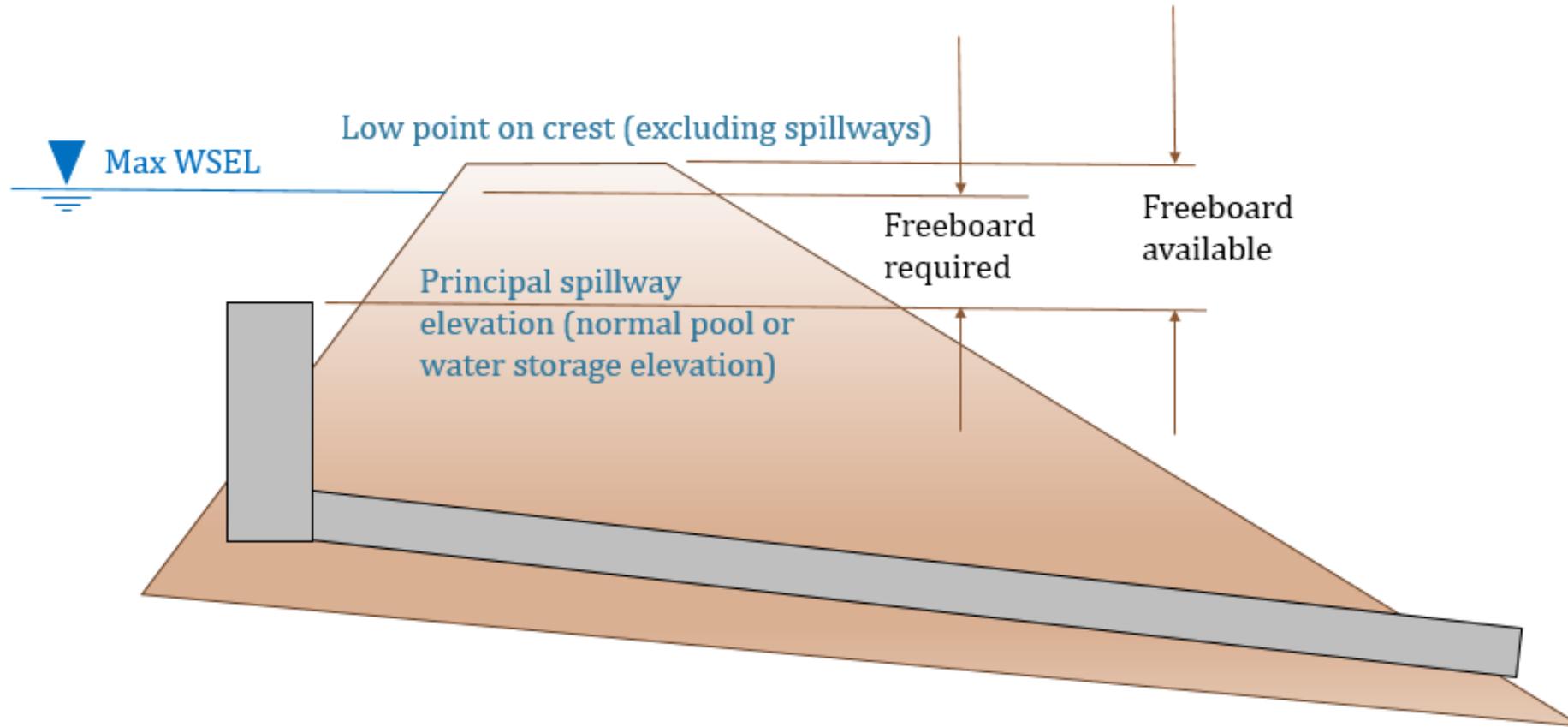
Additional Response Notes

Freeboard and pipe inspections would be the main concern

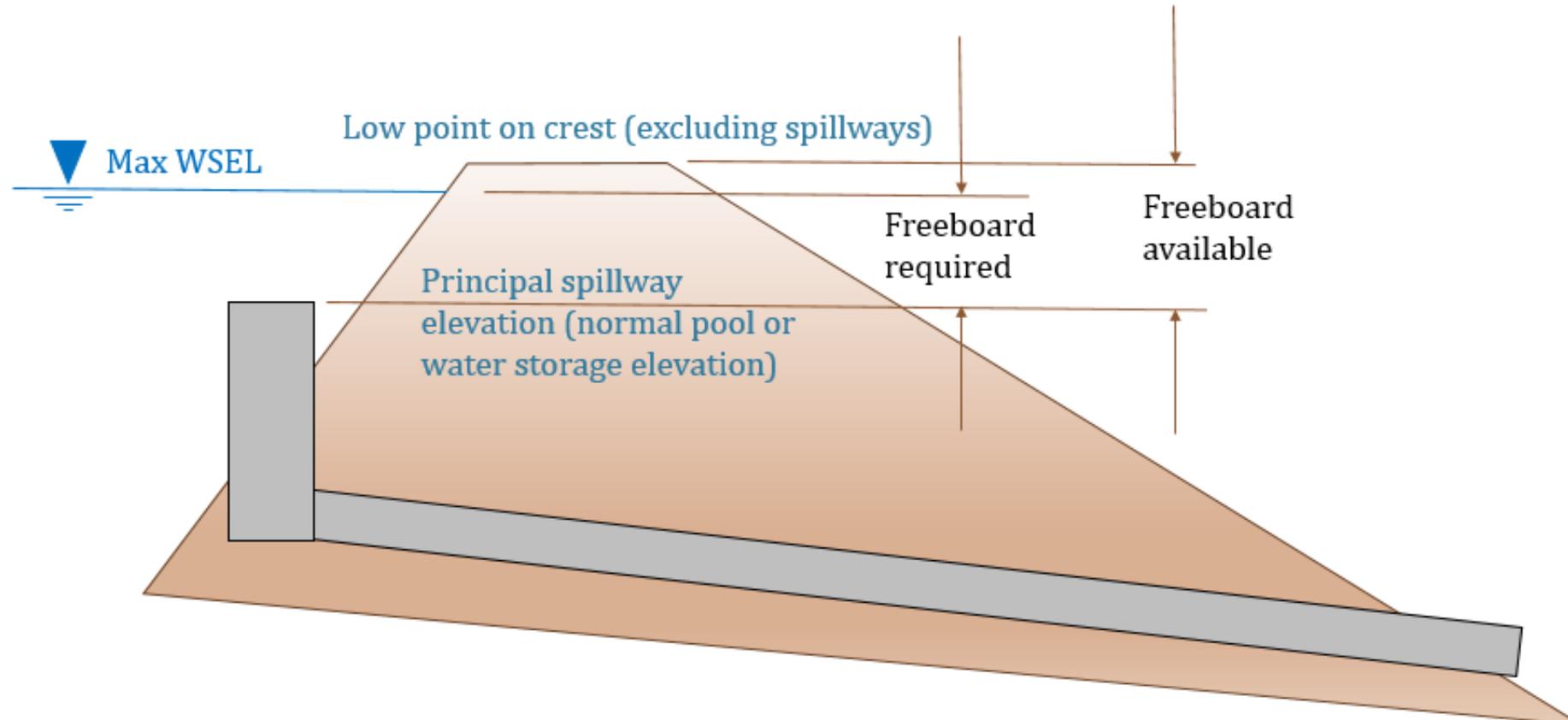
Because a dam has not failed during the earthquake does not mean it has not sustained damage increasing the risk to the downstream public.

Public/landowner assistance in review will be required.

Freeboard



Conduits







ENVIROSIGHT LLC

12191 -> inlet

666 mbar	107 °F	0.00 ft		
2018-06-20	17:47:17	0:06:48in	0.88 °	-1.70 °
68.71 ftr	68.78 ft	0 °	0 °	129 °F

Questions?