

California State University Seismic Safety Commission Report

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CSU: Who We Are

Our mission: Inclusive, affordable education for workforce development in California

- Largest public university system in the nation
- CSU educates nearly 460,000 students annually
- CSU employs 63,000 staff & faculty
- 23 campuses and 7 off-campus centers
- CSU has properties in 29 CA counties
- CSU has approximately 60,000 residents throughout the state
- CSU has 2,130 buildings totaling 94.4 million square feet plus over 3 million square feet of outdoor fields.

THE 23 OUTSTANDING CAMPUSES OF THE CSU



Legacy of Earthquakes

Northridge
at 30 Years



Northridge Earthquake

- Monday, January 17, 1994
 - 6.7 magnitude earthquake
 - Roads & utilities severely disrupted across San Fernando Valley
- Epicenter 1 mile from CSU Northridge
 - 4th largest CSU (of 20)
 - Primary employer in San Fernando Valley
 - More extensive damage within 40 seconds than experienced by any major public US university



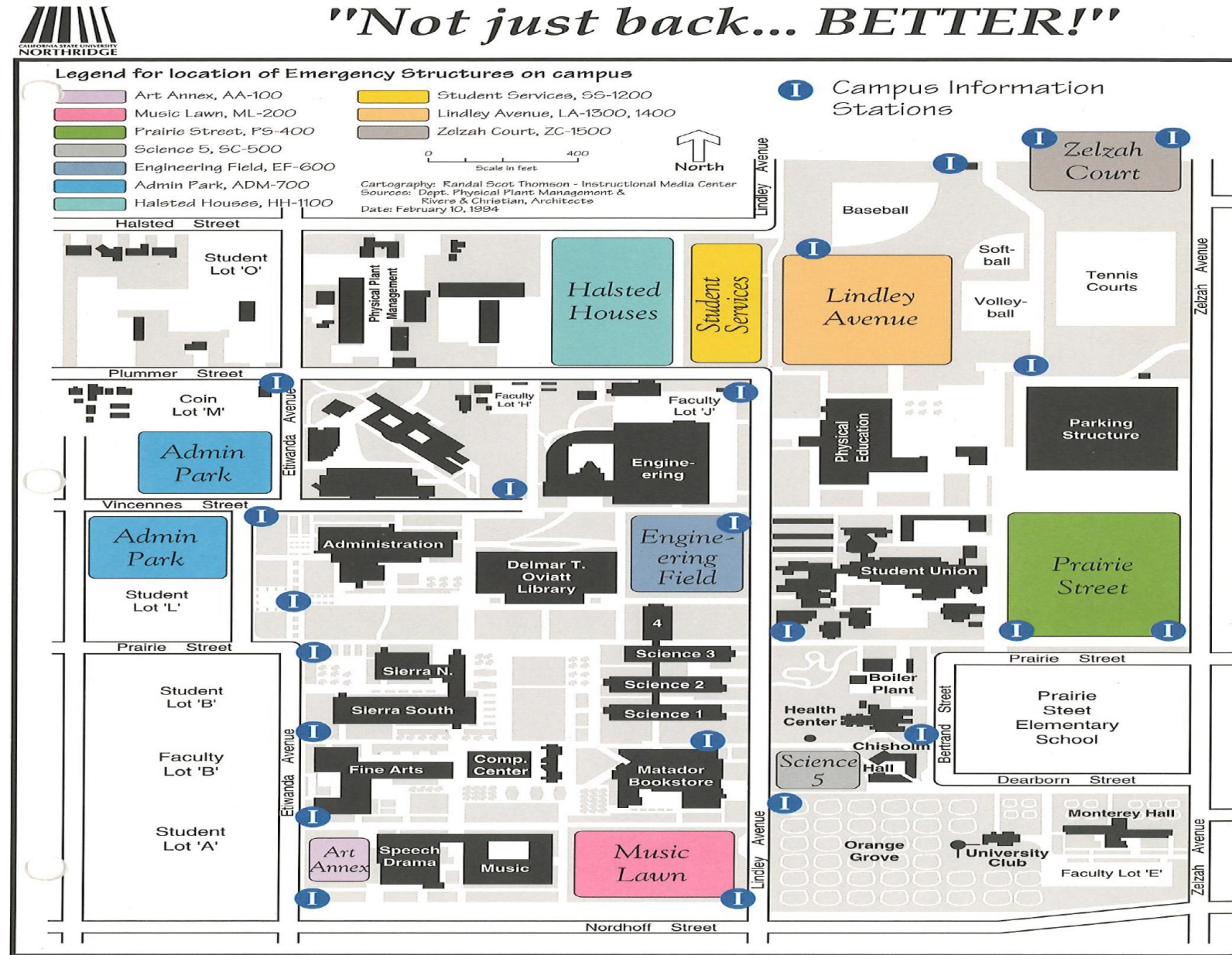
CSUN Impacts

- All buildings damaged, half-dozen ultimately demolished & replaced
 - 3,200 housing residents were displaced
- South Library structurally unsound
 - Housed data center
 - Data systems not operational
- Academics severely impacted
 - Course materials lost/inaccessible
 - Oviatt Library inaccessible
 - Years of research data lost



Recovery

- Extensive mutual aid
 - Intra-collegiate assistance in labor, academics
 - Inter-collegiate and government aid
- Reopen by February 14th
 - Many temporary structures
 - Continuous instruction 7am – 10pm M-F & Sat
 - Encourage ‘telecommuting’



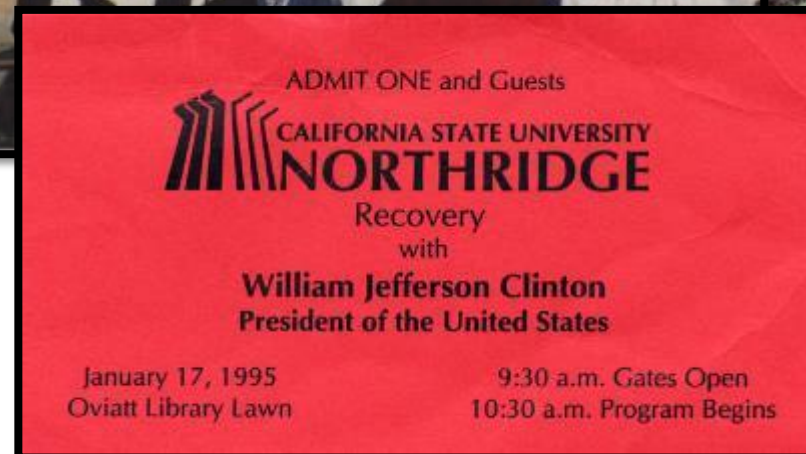
Short- and Long-Term Costs

- Over \$12m accrued costs by early February
 - \$5 million equipment rentals, emergency telephone service, computer stations
 - \$6 million in demolition costs, debris removal, professional engineering evaluations
- \$406m recovery (equivalent to \$757m today)
 - Costliest disaster to a major public higher education institution in the country
 - 13+ years to fully replace / repair damages



Commemorating the Earthquake

- 30-year remembrance Feb 3
 - CSUN and Earthquake Country Alliance
 - *Quake Heroes* screening
- Memorials and Presentations
 - 1995 President Clinton Remarks
 - 2023 UC Merced Safety Conference
 - 2016 “Beat the Quake”




Beat the Quake

CSUN DEPARTMENT OF POLICE SERVICES
Earthquake Country Alliance
We're all in this together.

BEAT THE QUAKE

AN EARTHQUAKE THEMED PUZZLE ROOM

Thursday, April 28th
10am - 2pm
BAYRAMIAN LAWN



GROUPS WILL SOLVE A SERIES OF PUZZLES IN THE POPULAR "ESCAPE ROOM" FORMAT TO PREPARE BEFORE A QUAKE HITS!
SIGN UP: [CSUN.EDU/EMERGENCY](https://www.csun.edu/emergency)



Earthquake Education & Outreach

If You Feel Shaking or Get an Alert:

If Possible

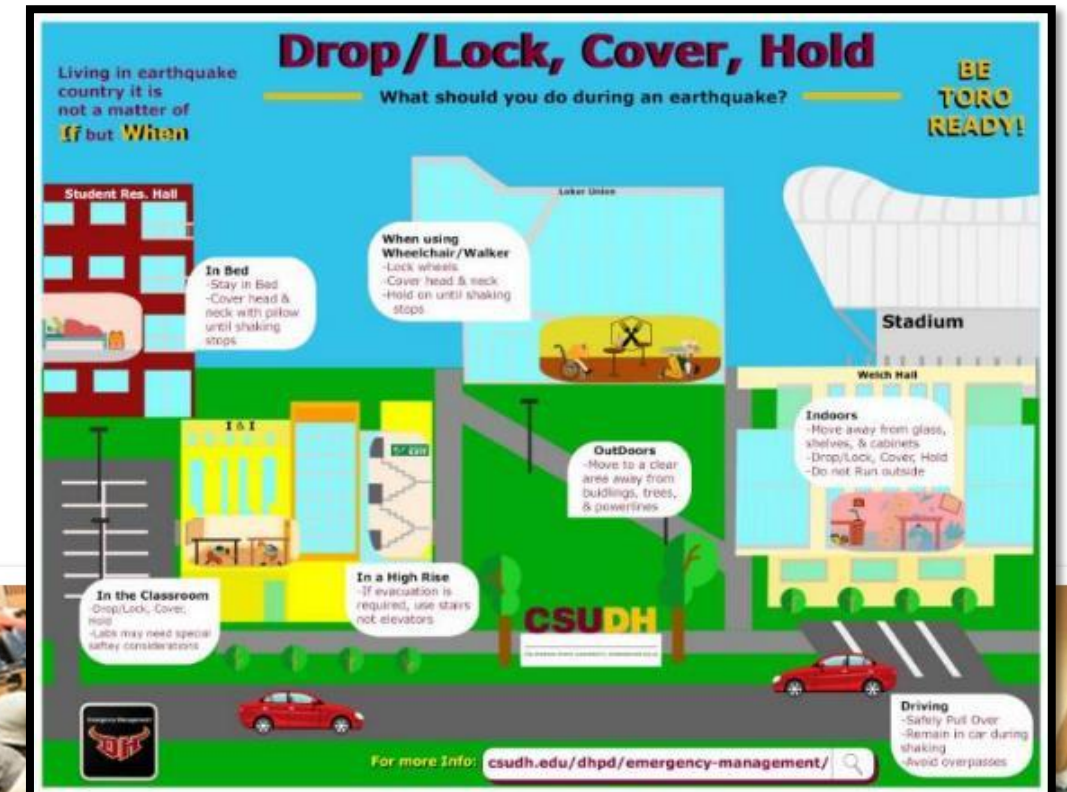


Using Cane



Great Shakeout

- CSU campuses regularly participate
 - 83% of campuses registered 10+ years
 - 8 registered since first Shakeout 2008
- Opportunity for Earthquake Outreach
 - Drop, Cover, Hold drills
 - ENS tests
 - Virtual COVID drills
 - Tabling, seminars
 - Campus-specific outreach materials



Great Shakeout Tour

- 2023 CalOES Earthquake Awareness Tour
 - 7 Cities
 - 2 CSU Campuses
 - Earthquake Simulation Trailer
 - Earthquake preparedness and community engagement



Earthquake Plans, Training, & Exercises



Systemwide Emergency Support Team

- Activates for regional / systemwide incidents impacting multiple campuses
- Provides support / resources and coordinates information
- Holds systemwide situational awareness calls and produces systemwide situation reports



Virtual EOC

Provides Campus status across the state:

- Campus Status (i.e. closure)
- EOC Status
- Housing Status
- Instruction Status
- Campus Community Impacts
- Support needed from CO
- Applicable Disaster Declarations
- Campus-specific Incident Webpage

The screenshot displays the 'Campus Status' dashboard for The California State University. The main table shows the following data:

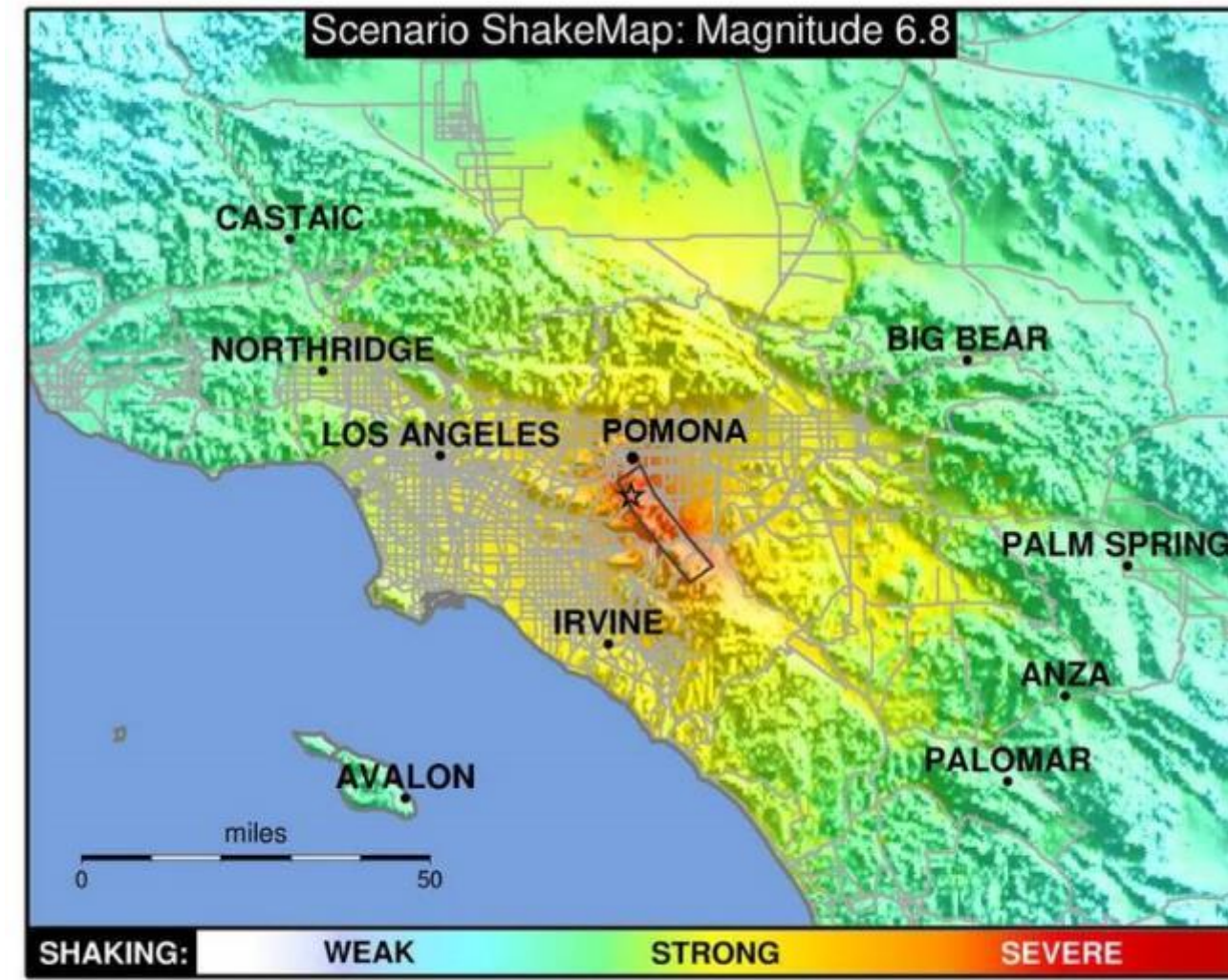
Campus	Campus Status	Description	EOC Status
Northridge	Normal Operations / Fully open		Not activated
Pomona	Closed - essential operations only	Essential operations only to support	Activated - Low
San Bernardino	Partial closure (describe below)	Campus restricted to essential s	Not activated
San Diego	Normal Operations / Fully open		Not activated
San Marcos	Partial closure (describe below)		Not activated
Stanislaus	Normal Operations / Fully open		Not activated

The 'University Status Update' form includes the following sections:

- Campus REQUIRED:** A dropdown menu to select a campus.
- Campus Status REQUIRED:** Radio button options:
 - Normal Operations / Fully open
 - Partial closure (describe below)
 - Closed - essential operations only (Police, facilities, housing) (describe below)
 - Full closure / evacuated (describe below)
 - Campus on lockdown / shelter-in-place (describe below)
- EOC Status REQUIRED:** Radio button options:
 - Activated - Highest level
 - Activated - Middle level
 - Activated - Lowest Level / Monitoring
 - Not activated

Chino Hills Shaker Exercise

- First exercise of CSU SWEST
 - Conducted in June 2022
 - Primarily in person, functional exercise designed by CSU EMs
 - Seismic Review Board Played in exercise
- Focus on damage assessment in an earthquake scenario
 - Scenario impacted Cal Poly Pomona campus
 - Improvement Planning & Corrective Actions taking place through 2023

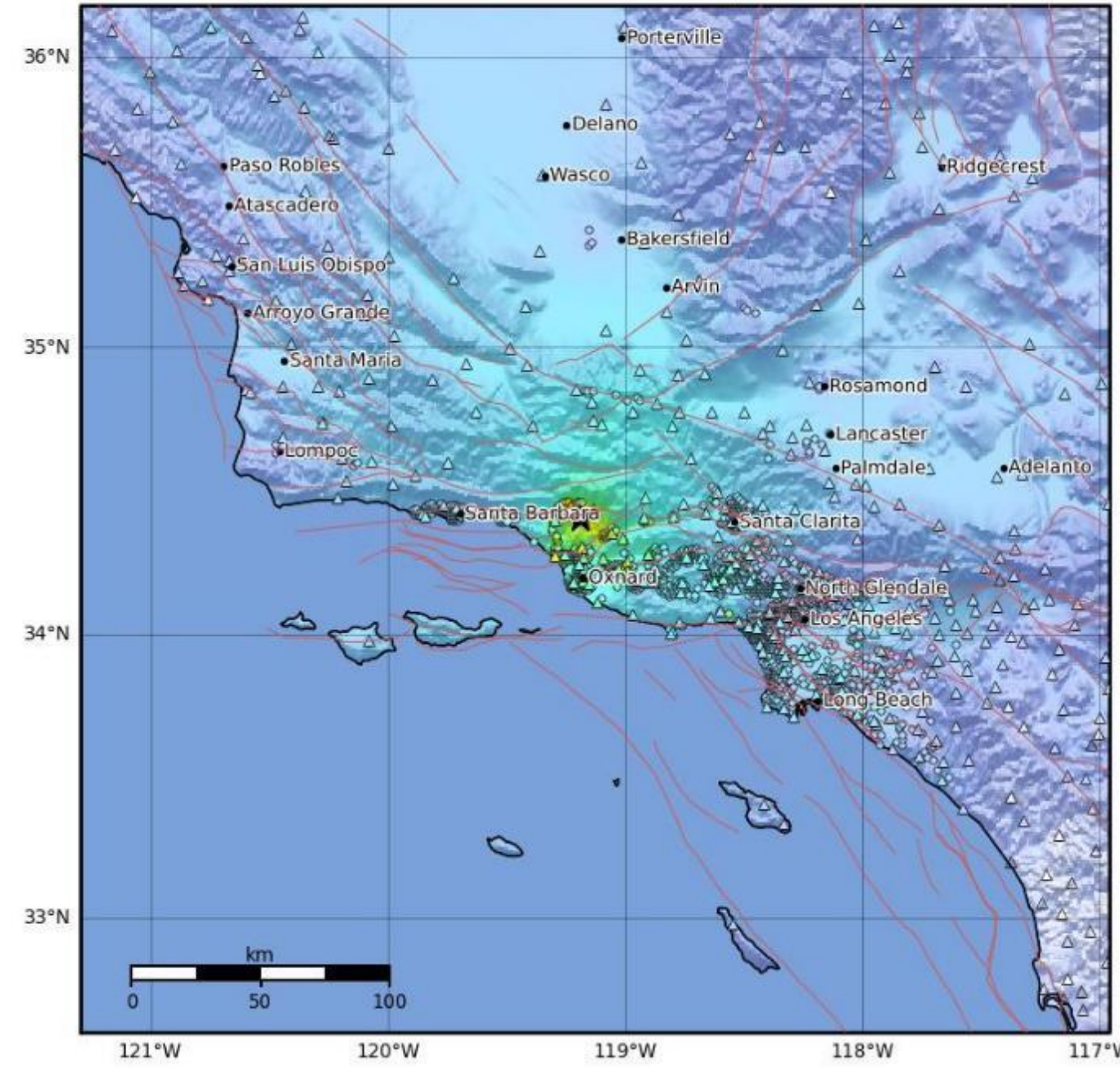


PLANNING SCENARIO ONLY -- Map Version 1 Processed 2016-06-10 06:13:59 PM MDT

‘Hurriquake’!

- 5.1 magnitude earthquake struck Ojai (Ventura County) on 8/20/23
 - 22 miles from CSUCI
 - Occurred during Planning Section Meeting for Hurricane Hilary
- Activated Seismic Response Protocol
 - Building cracks observed at CSUCI
 - SRB deployed on Monday 8/21/23

Macroseismic Intensity Map CISON/sc
 ShakeMap: 6.7 km (4.1 mi) SE of Ojai, CA
 Aug 20, 2023 21:41:00 UTC M5.1 N34.41 W119.19 Depth: 4.8km ID:39645386



SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	None	None	None	Very light	Light	Moderate	Moderate/heavy	Heavy	Very heavy
PGA(%g)	<0.0464	0.297	2.76	6.2	11.5	21.5	40.1	74.7	>139
PGV(cm/s)	<0.0215	0.135	1.41	4.65	9.64	20	41.4	85.8	>178
INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based on Worden et al. (2012)
 Δ Seismic Instrument ○ Reported Intensity ★ Epicenter
 Version 4: Processed 2023-08-28T19:19:01Z

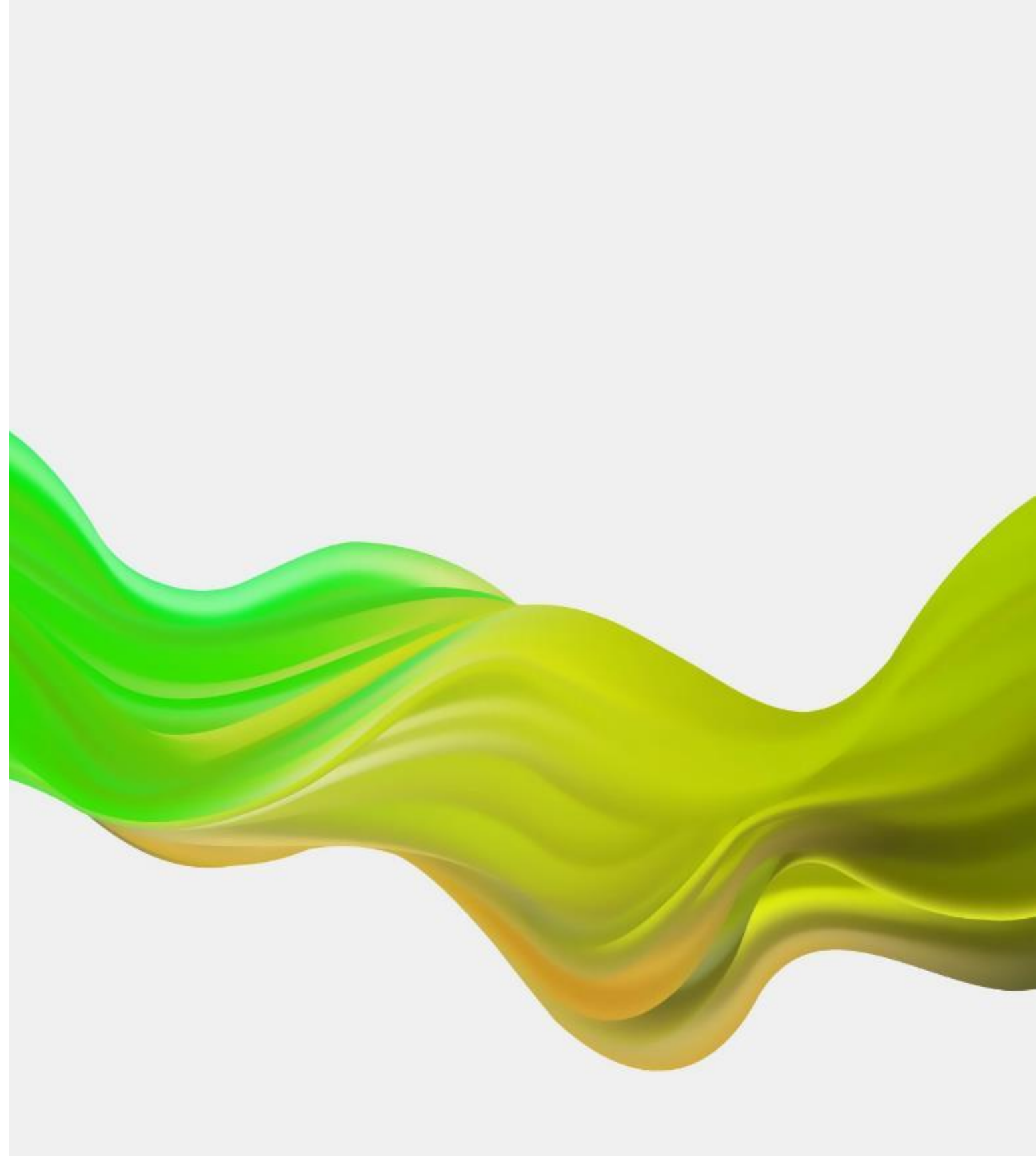
Campus Exercises

EOC Exercises frequently utilize earthquake scenarios

- 2023 CSU Channel Islands
 - Full day, county-wide
 - Sheltering post-earthquake
- 2022 Sonoma State
 - 6.2 magnitude Rodgers Creek Fault
 - Full-day, multi departmental w/SimCell
- 2022 San Jose State
- 2021 CSUN
 - Virtual EOC w/policy group
- 2021 CSU East Bay
 - 2-d day tabletop including Housing



Earthquake Mitigation & Response



CSU Seismic Policy

Seismic Review Board

- Build and maintain facilities ‘that provide an acceptable level of earthquake safety for students, employees and the public’
- Board is comprised of a Chair, Vice Chair, and seven independent engineers
- Six structural engineers assigned to specific campuses and are knowledgeable about soil issues and fault proximity
- Assists in seismic review of CSU’s buildings



CSU Seismic Requirements

- CSU SRB released first draft requirements in 2000
- Currently 63 pages; updated every 3 – 4 years
- Key objectives:
 - Provide acceptable level of earthquake safety for CSU buildings
 - Applied to all new construction & renovations
 - Independent peer reviews
 - Feasibility of all construction projects to include seismic safety

CSU SEISMIC REQUIREMENTS



Seismic Emergency Response Protocol

- Earthquake occurs
- SRB Chair requests information on initial damage assessment (windshield survey) from:
 - University Executive Facilities officer
 - Campus Dispatch and/or
 - Campus Deputy Building Official



Seismic Emergency Response Protocol

(continued)

- If there is substantial damage, SRB Chair travels to the campus ASAP and assumes role of **Emergency Deputy Building Official (EDBO)**
 - If SRB Chair unable to travel another SRBmember may perform these duties.
- On arrival EDBO will and/or delegate to “other SEs” to perform structural safety evaluations using ATC 20 guidelines
- EDBO provides regular updates to the Building Official



Seismic Emergency Response Protocol

(continued 2)

- Upon arrival, EDBO will perform structural safety evaluations using ATC 20 guidelines
 - Inspected Lawful Occupancy Permitted (Green)
 - Restricted Use (Yellow), with limitations on entry explicitly stated on placard
 - Unsafe (Red)
- If any Unsafe designations are made University Police will restrict occupancy and entry.
- University administrators cannot overrule posted designations of Restricted Use or Unsafe. Determinations by EDBO and/or CSU Building Official take precedence.

Recent Capital Improvements

- Renovations
- Library Repurposing
 - Cal Poly Humboldt
 - Stanislaus State
 - CSU East Bay



Cal Poly Humboldt Theater Arts Building

- 2017, \$1M
- Upgraded seismic elements including
 - Additional steel bracing
 - Strengthened columns
 - Shear walls
- ADA access and restrooms



Cal Poly Humboldt Library

- 2018, \$34M
- Building retrofit
- Improved safety and integrity
- Seismic upgrades based on large earthquake model typical to region



Stanislaus State Library

- 2022, \$58M
- Full seismic upgrades
- New fire protection systems
- New building interiors
- Exterior façade improvements
- Electronic compact book storage system
- Structural upgrades to roof



CSU East Bay Library Annex

- 2019, \$3.8M
- Braced frames for East Wing
- Column strengthening and foundation work
- ADA improvements



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