



2022 FERNDALE EARTHQUAKE AFTER ACTION REPORT



Photo of Fernbridge damage in Humboldt County. Source: Clearinghouse/EERI

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Governor

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FOREWORD

Per the Emergency Services Act, Article 9.5, Government Code Section 8607 subdivision (f), the California Governor's Office of Emergency Services (Cal OES), in cooperation with involved state and local agencies, shall complete an After Action Report (AAR) after each gubernatorial-proclaimed disaster. This report shall provide a review of public safety response and disaster recovery activities and conclusions and recommendations based on the findings. Cal OES shall make the report available to all interested public safety and emergency management organizations. An After Action Report serves the following essential functions:

- Provides a source for documenting response and early recovery activities
- Identifies successes and areas needing improvement during emergencies
- Analyzes the effectiveness of the different components of the Standardized Emergency Management System (SEMS)
- Describes and defines a plan of corrective action for implementing recommended improvements to existing emergency response efforts

EXECUTIVE SUMMARY

The 2022 Ferndale Earthquake that struck Humboldt County resulted in strong to severe shaking felt in the cities of Rio Dell and Fortuna and at the College of the Redwoods. The initial shaking began on December 20, 2022, when a magnitude (M) 6.4 earthquake struck 3 miles offshore at 2:34 AM Pacific Standard Time (PST). The earthquake occurred approximately 9 miles southwest of Ferndale. Due to the possibility that the coastal earthquake could cause a tsunami, the National Tsunami Warning Center issued a Tsunami Information Statement and advised of no tsunami danger for the California coastline. On January 1, 2023, the largest aftershock was verified at M5.4, which alerted more than 11,000 devices via MyShake.

The Cal OES State Operations Center (SOC) was activated at level 1 (highest) to support the local jurisdictions impacted by the earthquake. Initial reports of widespread damage to homes, schools, businesses, roadways, bridges, and critical infrastructure were received immediately after the earthquake. Two fatalities were reported following the earthquake; at least 12 individuals were injured, and 170 residents were displaced. The county, in partnership with the American Red Cross (Red Cross), established congregate and non-congregate sheltering in Fortuna and Rio Dell.

Governor Gavin Newsom proclaimed a state of emergency for Humboldt County to support emergency response efforts and coordinate with local and state partners to restore power, water, and wastewater systems. The emergency proclamation enabled the county to access state resources under the California Disaster Assistance Act (CDAA). Local utility providers began focusing on restoring power to more than 72,000 customers, supplying water to more than 3,400 people affected by a boil water notice, providing damage assessments for multiple impacted schools, and supporting transportation efforts and repairs while the Eel River Bridge/Fernbridge in Ferndale was closed due to damage. This report provides an overview of actions taken and initial recovery efforts at all levels of government.

SUMMARY OF SUCCESSES

- The Business Operations Center (BOC) at the SOC led the Drinking Water Task Force. It worked closely with partner agencies, including the California Environmental Protection Agency (Cal EPA) and the State Water Resources Control Board (SWRCB), to contact owners and system

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operators to determine impacts, request updates, and gather intel about needs and resource requests.

- The California Earthquake Early Warning System (CEEWS) issued alerts to more than 3 million devices, marking the largest recorded alerting event at that time. This alert provided residents with time to take protective actions before strong shaking was felt.
- Having a state representative in the Humboldt County Emergency Operations Center (EOC) was beneficial in developing situational awareness, coordinating state resource requests, and getting approval on various supplies, items, and assets.

SUMMARY OF AREAS NEEDING IMPROVEMENT

- Cal OES regional staff reported coordination and communication issues resulting from an incomplete common operating picture and incident overview.
- There were communication challenges between Rio Dell City Hall, the Rio Dell Volunteer Fire Department, and other volunteer organizations due to disruptions in cellular, landline, and internet connections.
- Some resource requests were missing key information, including specific requirements, such as the need for personal protective equipment.

DESCRIPTION OF EVENTS

INCIDENT START DATE

December 20, 2022

DECLARATIONS AND PROCLAMATIONS

LOCAL

Humboldt County December 20, 2022

City of Eureka December 20, 2022

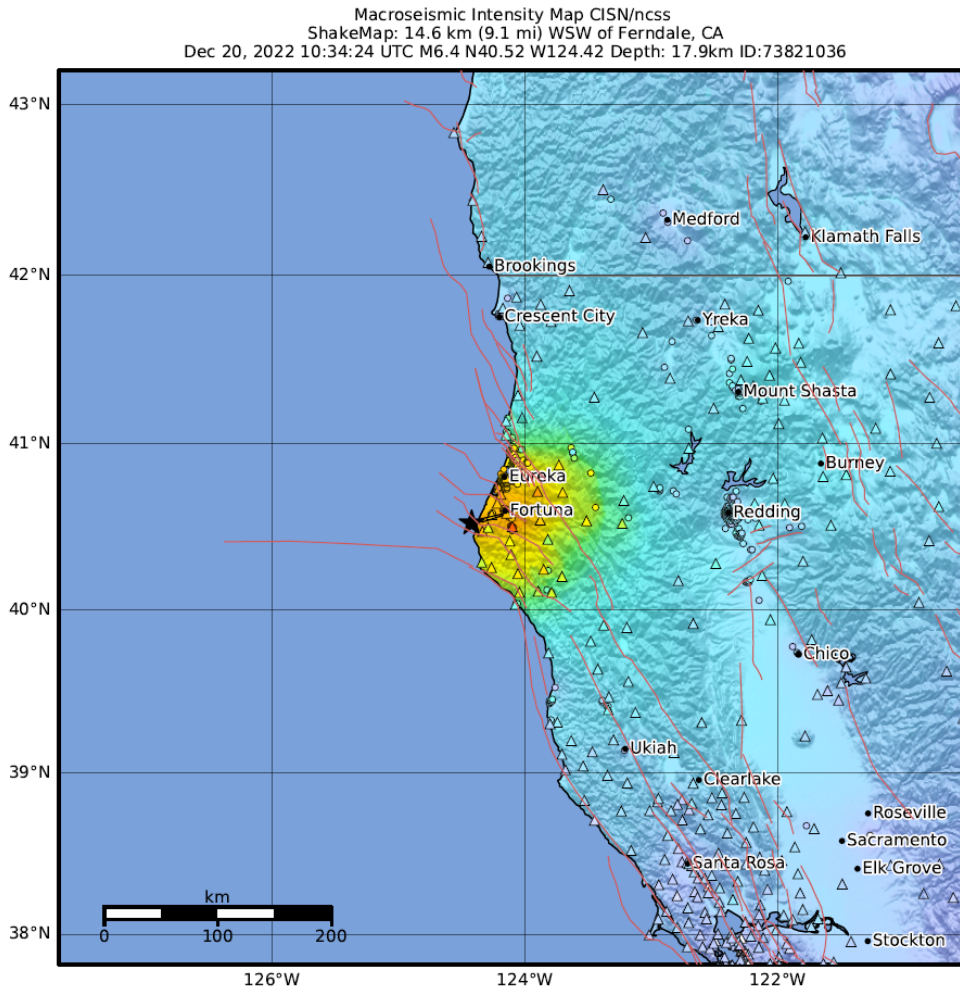
City of Rio Dell December 20, 2022

STATE

Ferndale Earthquake - Humboldt County December 20, 2022

INCIDENT BACKGROUND

On December 20, 2022, a M6.4 earthquake occurred approximately 9 miles southwest of Ferndale, 3 miles offshore of California's coastline. The quake struck at 2:34 AM PST at a depth of 11.1 miles. Out of more than 3 million CEEWS alerts issued, over 271,000 devices received alerts from the MyShake app. Initial reports from throughout Humboldt County indicated that strong to severe shaking was felt near the epicenter, including reports from Rio Dell, Fortuna, and the College of the Redwoods. By 9:00 AM PST, more than 4,500 people responded on the United States Geological Survey's (USGS) "Did You Feel It?" report.



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) Version 13: Processed 2023-01-06T19:30:20Z

△ Seismic Instrument ○ Reported Intensity ★ Epicenter □ Rupture

Ferndale shake map. Source: USGS

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Large offshore earthquakes can generate tsunamis. As a result, the National Tsunami Warning Center issued a Tsunami Information Statement and advised of no tsunami danger for the California coastline.

The Cal OES SOC was activated at level 1 (highest) to support the local jurisdictions impacted by the earthquake. Initial reports of widespread damage to homes, schools, businesses, roadways, and infrastructure were received immediately after the earthquake. Law enforcement agencies confirmed two fatalities due to medical emergencies that occurred during or immediately following the earthquake. At least 12 individuals were injured, and more than 170 residents were displaced.

Strong shaking near the epicenter caused utility outages that left more than 72,000 customers without power throughout Humboldt County. Damage to water and wastewater delivery systems led to boil-water notices issued for Rio Dell, Fortuna, and the Weott Community Services District, impacting more than 3,400 people. Eel River Bridge/Fernbridge was closed due to significant impacts, and emergency responders directed vehicles to an alternate route approximately 12 miles away.

Cal OES received reports that multiple schools were impacted in the area. In partnership with the Humboldt County Office of Education (HCOE), the SOC held coordination calls with key partners, including the Cal OES Safety Assessment Program (SAP), California Department of Education (CDE), and Department of General Services (DGS) Division of the State Architect (DSA), to discuss impacts and requests to support damage assessments.

Multiple aftershocks occurred following the M6.4 earthquake. By 4:30 PM PST that same day, nearly 100 aftershocks were reported. The largest aftershock in the Ferndale earthquake event was verified at M5.4 on January 1, 2023, which alerted more than 11,000 devices via MyShake.

Governor Gavin Newsom proclaimed a state of emergency for Humboldt County to support emergency response efforts and coordinate with local and state partners to restore power, water, and

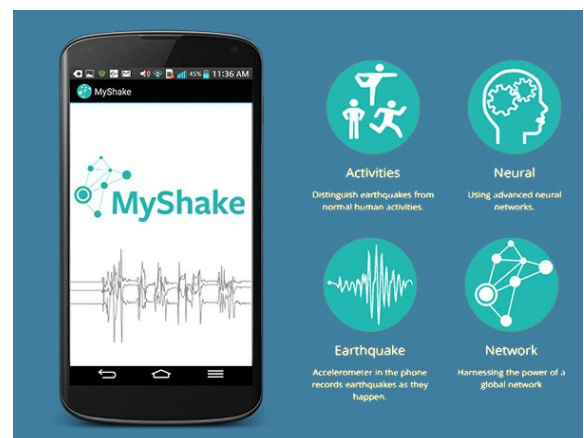


Image of MyShake app. Source: Google Images

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wastewater systems. The emergency proclamation enabled the county to access state resources under the CDAA.

During this activation, local and tribal governments coordinated with the SOC to provide resources, such as shelter, food, water, and other aid to assess the damage to buildings and roadways. In addition, the California Department of Transportation (Caltrans) Departmental Operations Center, Humboldt County EOC, and the Pacific Gas and Electric Company (PG&E) EOC individually activated and began coordinating response activities and deploying personnel and resources.

A Drinking Water Task Force was established in the SOC to assess the impacts on operators, water system owners, and their customers. The task force was comprised of state agency partners, including the Cal OES Office of Private Sector/NGO (nongovernmental organization) Coordination, SWRCB, and Cal EPA. The task force assisted local operators with resources to assess and restore the water systems and helped coordinate resource requests, such as bottled water delivery to residents, with Cal OES Disaster Logistics, Cal OES Office of Tribal Coordination (OTC), and Cal OES Coastal Region.

Humboldt County received SAP assistance to help local government perform safety assessments and survey damaged facilities to determine if there were safety hazards to building occupants or the public. The inspections determined if community members could return to their homes and/or businesses or were prohibited from entering unsafe structures after the disaster.

For residences and businesses with damage and/or disaster-related losses, the county established a Local Assistance Center (LAC) in Rio Dell. The LAC served as a central location to provide aid to earthquake survivors. The county partnered with the Red Cross to establish congregate and non-congregate sheltering in Fortuna and Rio Dell, offering displaced residents temporary sheltering needs and accommodations.

The California Geological Survey (CGS) and Earthquake Engineering Research Institute (EERI) activated the California Earthquake Clearinghouse, which includes representatives from Cal OES, the California Seismic Safety Commission (CSSC), and USGS. The clearinghouse provides critical scientific and engineering information to support the State's response efforts. Briefings were held virtually throughout the incident response to coordinate situational awareness, gather data and information, and conduct post-earthquake surveys.

RESPONSE ACTIVITIES – STATE AGENCIES

CALIFORNIA GOVERNOR’S OFFICE OF EMERGENCY SERVICES (CAL OES)

RESPONSE OPERATIONS

Cal OES activated the SOC at level 1 (highest) on December 20, 2022. The SOC supported city and county response operations by gaining situational awareness and coordinating resource requests. Cal OES Coastal Region deployed personnel to the SOC and to the affected jurisdiction to support the Humboldt County EOC, coordinate field activities, and provide daily situational reports and updates.

During incident deployment, Cal OES Coastal Region staff coordinated with Humboldt County, cities, and local tribes to identify impacts and damages, coordinate requests for unmet resource needs, and relay any state support and/or inquiries. Cal OES Coastal Region assisted and supported water and wastewater operations and coordinated with SAP inspectors to inspect essential structures, such as hospitals, schools, and bridges. Cal OES Coastal Region collaborated with the Cal OES BOC to request assistance in acquiring donated supplies, goods, and materials, such as tarps to cover damaged homes.

SUCCESSSES

1. Despite limited staffing during the holiday season, Cal OES Coastal Region was able to immediately deploy personnel to the county to assist with unmet needs and coordinate response activities.

AREAS NEEDING IMPROVEMENT

1. Cal OES regional staff reported coordination and communication issues resulting from an incomplete common operating picture and incident overview.

CORRECTIVE ACTION RECOMMENDATION

1. Communication issues were resolved by ensuring that incident information, coordination efforts, and key updates and briefings were reported to the SOC in a timely manner to support executive briefings, situational reports, and Incident Action Plans.

SEISMIC HAZARDS BRANCH

The Seismic Hazards Task Force, comprised of the Cal OES Seismic Hazards Branch, CSSC, and CGS, was established in the SOC to coordinate with scientific partners, provide situation briefings and reports, share technical information and data, and monitor the impacted area for aftershock activity.

The Seismic Hazards Branch, in partnership with CGS and EERI, also supported the activation of a virtual California Earthquake Clearinghouse. The clearinghouse served as a forum for emergency responders, engineers, and other scientific practitioners to collect and disseminate perishable field data, share observations and knowledge, and coordinate post-earthquake field investigations. Briefings included field reports from geologists, engineers, and researchers, as well as emergency managers at local, state, and federal agencies.

The CEEWS provided alerts to more than 3 million devices for the M6.4 earthquake and delivered critical seconds of warning for imminent shaking. The alert provided opportunities for people to take preventive actions, such as “Drop, Cover, and Hold On.”

The CEEWS functioned as expected, but has known limitations, including reduced warning times for areas near the epicenter, such as Ferndale and Rio Dell, where alerts were received during or after the shaking began. The Seismic Hazards Branch will continue to work with USGS, Caltech, and UC Berkeley to improve system latency.

SUCSESSES

1. The CEEWS, powered by ShakeAlert, sent alerts to more than 3 million devices, the largest EEW event activated/recorded at that time, allowing residents to take protective actions.
2. The Seismic Hazards Task Force, comprised of scientific and emergency management experts, provided actionable data and improved decision-making to SOC leadership.

AREAS NEEDING IMPROVEMENT

1. Due to several factors, including the earthquake's magnitude and depth, the system predicted a larger impact area than what occurred. As a result, users received alerts as far away as the San Francisco Bay Area.

CORRECTIVE ACTION RECOMMENDATION

1. Continue collaboration with USGS, Caltech, and UC Berkeley to improve the system's detection and reporting capabilities, including for offshore events.

FIRE AND RESCUE DIVISION

Cal OES Fire & Rescue deployed personnel and resources to Humboldt County to work with local officials, assist with damage assessments, and address hazardous materials incidents in the impacted areas, including the cities of Rio Dell, Eureka, Fortuna, and Ferndale. Cal OES Fire & Rescue Assistant Chiefs coordinated with local governments to gather intelligence, determine unmet needs, and assist with recovery operations and SAP activities.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

LAW ENFORCEMENT BRANCH (LEB)

The Cal OES Law Enforcement Branch deployed an Assistant Chief to the Humboldt County EOC to coordinate with local law enforcement partners and stakeholders to assess operational needs. Cal OES LEB received early reports that damage was concentrated in the areas of Rio Dell and Ferndale; however, no Law Enforcement Mutual Aid was requested. The primary concerns in Rio Dell centered around broken water and gas lines. Fire service, law enforcement, and PG&E personnel conducted damage assessments. The California Highway Patrol (CHP) and Caltrans evaluated bridges and local roads for damage that required closures and alternate routes.

SUCCESSSES

1. Initial incident assessment led to the immediate activation of the Law Enforcement Operations Center and early coordination and engagement

with agency representatives, local EOCs, the sheriff's department, and the chief of police.

AREAS NEEDING IMPROVEMENT

1. LEB struggled to meet staffing demands due to extended response deployments for partner agencies, such as the California National Guard, which required additional LEB shifts to accommodate the request.
2. LEB did not have the tools or the technology to generate consistent reporting and real-time data for situational status reports during the incident.
3. The SOC mission tasking and approval process for law enforcement resources was unclear, including the ability to identify types of tasking and tasking authority.

CORRECTIVE ACTION RECOMMENDATION

1. Ensure that state agency partners coordinate with the requester to identify staffing needs and deployment extensions so that they meet the scope of resource requests.
2. Work with SOC leadership to identify and publish reporting times to ensure the quality of information and verification. Develop a dashboard, in coordination with Information Technology, to identify crucial, real-time census data for evacuations, shelters, medical, and other response/recovery actions.
3. Work with the SOC Operations Section team to develop standard operating procedures for mission resource requests.

DISASTER LOGISTICS BRANCH

Disaster Logistics coordinated with local, state, and federal emergency management partners to ensure that critical commodities and assets, such as bottled water, cots and blankets, comfort kits, meals, power generators, and light towers, were delivered to the impacted areas. In partnership with Humboldt County, Disaster Logistics coordinated the delivery of 136 pallets of bottled water, as well as other critical resources.

Disaster Logistics established a state-managed staging area at the Caltrans Garberville Maintenance Station for storing shelter supplies and resources. A secondary location was established to pre-position Cal OES assets to support the earthquake incident and the 2022-2023 Early Winter Storms.

SUCCESSSES

1. A pre-established relationship with Caltrans assisted in identifying yards and facilities in advance to ensure critical commodities were delivered in a timely manner and staged expediently.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

OFFICE OF ACCESS AND FUNCTIONAL NEEDS (OAFN)

OAFN plays a critical role during response and recovery operations by ensuring considerations for integrating access and functional needs. OAFN coordinated with the community and local partners, Cal OES regional staff, California Department of Social Services (CDSS), the Red Cross, California Department of Public Health, and Emergency Medical Services Authority (EMSA) to ensure that access and functional needs were met. OAFN ensured shelter locations and transportation were accessible, and resources, such as earthquake-related information, complied with the Americans with Disabilities Act (ADA).

In coordination with the Department of Developmental Services, OAFN conducted community outreach to identify needs for individuals with intellectual and developmental disabilities. OAFN connected CDSS and the Tri-County Independent Living Center with local partners to support housing and feeding needs for individuals with developmental disabilities.

OAFN leveraged partnerships with the California Utilities Emergency Association (CUEA) and PG&E to gain ongoing situational awareness on power outages, medical baseline impacts, and estimated restoration times. OAFN reached out to Humboldt County to monitor outage information, specifically among medical baseline customers, and worked with local partners to support battery distribution for individuals who rely on power. OAFN also coordinated with the Disability Disaster Access & Resources and the California Foundation for Independent Living Centers to distribute backup batteries, hotel vouchers, gas cards, and food boxes to impacted individuals with access or functional needs.

Additionally, OAFN worked with the Joint Information Center to secure an American Sign Language disaster response interpreter to assist with communications during statewide briefings.

SUCCESSSES

1. OAFN partnered with the Drinking Water Task Force and amplified messaging to ensure people with access and functional needs received drinking water.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

OFFICE OF TRIBAL COORDINATION (OTC)

OTC coordinated with Cal OES Coastal Region and local and state agency partners in the impacted area. OTC also connected with tribal governments in Humboldt County to identify disruptions to critical lifelines.

OTC received reports that the Bear River Band of Rohnerville Rancheria experienced significant impacts at their facilities (i.e., community center, offices, hotel, and casino), including structural damage to a portable building, cracks in building walls, and water tank damage that resulted in flooding of the pump house.

SUCCESSSES

1. Tribal governments coordinated with the county for information requests, provided situational updates, and requested state resources, as needed.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

OFFICE OF LEGISLATIVE AND GOVERNMENTAL AFFAIRS

The Office of Legislative and Governmental Affairs assisted in the coordination of legislative briefings and meetings, including a call with local officials from Humboldt County, Rio Dell, and state legislators, to address recovery issues.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

OFFICE OF PRIVATE SECTOR/NGO COORDINATION

The BOC, led by the Office of Private Sector/NGO Coordination, activated and notified business partners, provided situational awareness and resource coordination, and evaluated business impacts. The BOC reported minimal

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damage to infrastructure, and merchandise and stores remained open to residents.

BOC staff also conducted coordination calls with private and nonprofit sector partners to provide a snapshot of overall state-level activities through situational reports and to identify potential private and nonprofit sector resources that could not be filled through existing state vendor lists or other authorized sources.

Financial donations were directed to the Disaster Response and Resilience Fund or the League of California Community Foundations' Disaster Relief, Recovery, and Resilience Fund. BOC staff reached out to the nonprofit organizations focused on Humboldt County to discuss other donation needs for survivors in the surrounding area, including Fortuna, Ferndale, Loleta, Rio Dell, and Tribal Nations.

The BOC coordinated with the California Grocers Association (CGA) to work closely with association members in the impacted areas to determine utility outages, store operations, and product loss due to the earthquake. CGA confirmed limited reports of damage to glass bottle inventory and minor structural damage; it did not receive any requests for assistance. CGA also confirmed that there were a few stores open for residents to get supplies in the impacted area.

SUCCESSSES

1. Regardless of the holiday, staff were immediately able to respond to the incident and report to the SOC.
2. The BOC liaison led the Drinking Water Task Force and worked closely with partner agencies, including Cal EPA and SWRCB, to contact owners and system operations to determine impacts, request updates, and gather intel about needs and resource requests. This led to the decision by executive leadership to purchase and deliver 60 pallets of bottled drinking water to the City of Rio Dell due to a boil-water notice.

AREAS NEEDING IMPROVEMENT

1. The BOC needs to train additional staff members to build depth and provide greater coverage during long activations.
2. The BOC liaison had limited experience to be assigned as the Drinking Water Task Force lead.

CORRECTIVE ACTION RECOMMENDATION

1. The Office of Private Sector and NGO Coordination should consider training additional staff to provide assistance and support during emergencies.
2. Cal OES will partner with CA-ESF primary and supporting agencies to lead area-specific task forces according to their areas of responsibility. This would include procurement and distribution of drinking water.

OFFICE OF CRISIS COMMUNICATION AND MEDIA RELATIONS

The Office of Crisis Communication and Media Relations assisted the response with public information activities, amplified partner messaging, monitored social media, and facilitated and fulfilled media interview requests.

The Cal OES Joint Information Center opened within the SOC and was staffed to ensure coordinated messaging among state agencies. In partnership with Cal OES OAFN, American Sign Language translation was made available during press conferences and videos. The Office of Crisis Communication and Media Relations monitored social media for public sentiment, rumor control, messaging priorities, and worked with county staff to gather and amplify information regarding resources and other forms of support for impacted communities.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. There was limited involvement with other agency communications teams.

CORRECTIVE ACTION RECOMMENDATION

1. Facilitate engagement with other agencies through training and exercises to foster collaboration and partnerships.

PUBLIC SAFETY COMMUNICATIONS

The Tactical Communications Branch of Public Safety Communications (PSC), representing ESF 2, evaluated and assessed resources to support the impact in Humboldt County. CA ESF 2 staff were activated in the SOC to provide support, situational updates, and coordinate communication requests. At the request of Humboldt County OES, Cal OES deployed PSC staff to the Humboldt County EOC, Verizon and AT&T Cell-On-Wheels, Cradlepoint routers, and a specialized

satellite trailer to supplement or support communication pathways in the affected areas.

SUCCESSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA GEOLOGICAL SURVEY (CGS)

CGS deployed staff to search for evidence of ground deformation due to liquefaction, landslides, and fault rupture. CGS teams focused on the southern Humboldt Bay area, the Eel River area, and Ferndale. They noted road fill settlement and asphalt buckling on roads. Damage was noted on the Eel River Bridge/Fernbridge, and a Caltrans employee reported that pre-existing cracks on the bridge had grown. The team continued to Ferndale and noted only minor slope failures.

Cal OES also mission-tasked CGS to serve as the scientific partner and subject matter expert in the SOC, providing technical assistance and support to the Seismic Hazards Task Force. CGS staff acted as a liaison between field staff deployed in the impacted areas and the SOC. CGS supported executive staff and leadership for media inquiries and press briefings.

SUCCESSES

1. CGS promptly activated a virtual California Earthquake Clearinghouse to coordinate response activities by connecting field reconnaissance to the SOC.

AREAS NEEDING IMPROVEMENT

1. CGS staff deployed to the SOC were not provided with an adequate description of their role in the Task Force.

CORRECTIVE ACTION RECOMMENDATION

1. Ensure the mission task description clarifies the roles and responsibilities of staff assigned to the SOC.

CALIFORNIA DEPARTMENT OF EDUCATION (CDE)

CDE supported response coordination efforts by contacting school officials to provide resources and technical assistance with accessing state and federal funding, as well as providing guidance on how and when to safely reopen schools.

CDE held coordination calls with HCOE, school officials, and local educational agencies to gain situational awareness on impacts, reported damages, and resource needs. CDE manages the Schools Emergency Reporting System which reports disaster-related impacts for K-12 schools, evacuations and closures, and tracks resource requests.

After the initial M6.4 earthquake, impacts and damages were reported at Arcata Elementary, Eagle Prairie Elementary, Ferndale Elementary, Monument Middle, and Ferndale High School. CDE coordinated with DGS and DSA to conduct damage assessments, which were later found to have no structural damage. Damage reassessments were also conducted after the M4.6 and the M5.4 aftershocks.

The CDE Nutrition Services Division also worked with neighboring districts to provide temporary space, transportation, and support with food preparation for the impacted schools. This allowed meal programs to continue, while schools were closed during damage inspections and debris cleanup operations.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA)

CDFA structural engineers arrived in Humboldt County to conduct surveys and perform building and facility inspections for fairgrounds and dairies. Two fairgrounds in the county reported minor damage from broken overhead sprinkler lines and windows. PG&E utilized the Redwood Acres Fairgrounds, located in Eureka, as a staging area for crews that were inspecting gas lines throughout the county.

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CDFA reported power outages that impacted the use of milking equipment, including the ability to store and refrigerate milk. In addition, approximately 60 dairies were impacted by road closures, the same roads used to transport cattle feed, milk, and generator fuel.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW)

Four (4) CDFW office/worksite locations were closed to the public due to power outages. Mad River Fish Hatchery utilized emergency power generators to maintain critical operational needs. Power was restored to the impacted facilities and resumed normal operations within a few days.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA DEPARTMENT OF GENERAL SERVICES (DGS)

DGS, in coordination with the Drinking Water Task Force, assessed water needs in the greater Humboldt area and was ready to assist once needs were identified. Master Service Agreements were ready with a 12-hour emergency delivery to impacted areas. DGS also alerted vendors to be ready to assist with emergency drinking water fulfillment and other procurements.

After identifying unmet needs throughout the impacted areas, DGS, in collaboration with Cal OES Disaster Logistics, supplied drinking water to the Rio Dell Volunteer Fire Department. The state staging area in Garberville had additional items and supplies, including emergency drinking water, cots, blankets, comfort kits, Meals Ready-to-Eat, and generators. Additional pallets of emergency drinking water were sent to the Cal OES warehouse in Dixon. DGS also procured manual transfer switches to transfer electrical loads for backup generators.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

All hospitals and skilled nursing facilities in the impacted area were on generator power and reported no significant issues, including injuries, structural damage, or evacuations. Hospitals reported adequate staffing and were prepared for potential surgeries.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA DEPARTMENT OF SOCIAL SERVICES (CDSS)

CDSS coordinated with Humboldt County throughout the incident and assisted with sheltering operations and provided outreach efforts. CDSS worked with the county and the Red Cross to establish congregate sheltering at Rohner Park in Fortuna and identified a secondary shelter at the Rohner Park Fireman's Pavilion, providing community members access to temporary indoor overnight shelter accommodations, meals, water, and earthquake resources. To prevent conflicting shelter information, CDSS also centralized, verified, reported, and disseminated all sheltering information to the SOC.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

Caltrans was activated to manage resource requests, provide situational reports and updates, and coordinate tasks and resources requested by the county, including deploying SAP evaluators to support damage assessments and inspections.

Caltrans also executed an emergency contract for bridge engineers to stabilize Fernbridge, allowing for inspections, emergency repairs, traffic control measures, and other activities. After initial inspections, Fernbridge was re-inspected following the M5.4 aftershock and was deemed safe for use and re-opened to one-way traffic control.

Caltrans supported state staging areas during the incident by maintaining site and road surface integrity. Caltrans also provided equipment and materials required for state staging operations, such as trucks and drivers to support deliveries.

SUCSESSES

1. Caltrans field maintenance crews were able to quickly assess critical infrastructure, including bridges and roadways. Due to their rapid response, Fernbridge was deemed safe and reopened to traffic, minimizing disruptions and supporting emergency efforts.



Road damage due to M6.4 earthquake in Humboldt county. Source: Clearinghouse/EERI

AREAS NEEDING IMPROVEMENT

1. The request for SAP inspectors did not provide enough information, including specific personal protective equipment needs to safely work in the disaster areas.

CORRECTIVE ACTION RECOMMENDATION

1. Coordinate with the SOC Operations Section to discuss and develop mission resource request templates that collect and convey all essential information elements.

CALIFORNIA HIGHWAY PATROL (CHP)

CHP assisted with damage assessments of roads, maintained traffic control, and escorted vehicles transporting emergency supplies and equipment to their destinations. CHP also provided security for the affected areas and facilities, as well as established control zones.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

STATE WATER RESOURCES CONTROL BOARD (SWRCB)

The SWRCB Eureka Office closed due to widespread power outages and poor internet connection. As a result, the SWRCB Division of Drinking Water staff in Redding reached out to all community water systems in the impacted area in Humboldt County to assess impacts to drinking water and wastewater treatment facilities.

SWRCB also served on the Drinking Water Task Force to support communities encountering water and wastewater delivery infrastructure damage. Due to the magnitude, depth, and location of the earthquake, there was damage to water and wastewater delivery infrastructure, which resulted in boil water notices in Rio Dell, Fortuna, and the Weott Community Services District.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CALIFORNIA UTILITIES EMERGENCY ASSOCIATION (CUEA)

CUEA reached out to member utilities to be notified of any outages and damage assessments, determine impacts, and coordinate response requests. The California Independent System Operator issued a Northern California Region Transmission Emergency from December 20, 2022, through December 21, 2022. They reported no adverse impact on the bulk electricity system and did not anticipate any future fuel priorities or activities.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

EMERGENCY MEDICAL SERVICES AUTHORITY (EMSA)

EMSA monitored response activities through its EMSA Duty Officer program. Staff were polled for medical support availability for the California Medical Assistance Team and California Health Corps programs. Affected medical care facilities were able to maintain back-up power, and there were no impacts to operations.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

RESPONSE ACTIVITIES – OPERATIONAL AREAS

HUMBOLDT COUNTY

The Humboldt County Sheriff's Office of Emergency Services activated its EOC at level 2. The county reported two fatalities and 11 reported injuries. More than 70,000 customers experienced power outages.

The county utilized the Rio Dell Community Resource Center to provide affected residents with emergency resources such as nonperishable food, water, hygiene products, and supplies. The county established a call center and the Humboldt County Earthquake Recovery Line to assist displaced residents seeking temporary shelter and accommodations. The county assisted displaced households with temporary sheltering, vouchers, and cleanup assistance.

Local businesses were also impacted, experiencing structural damage from the earthquake or losing products due to the shaking and/or subsequent power outages. The county's Economic Development Team contacted business owners to gather and assess private sector impacts and business losses.

Humboldt County held press conferences to provide updates on power outages, weather advisories, road conditions, and to sign up for alerts. Press conference videos were made accessible through the county OES Facebook page. Additional information and resources were also posted on the county website.

SUCCESSSES

1. The county provided immediate response, resources, and essential services coordination to the affected community.
2. Co-locating state representatives in the EOC to gather intel and coordinate resource requests made response efforts more efficient.

AREAS NEEDING IMPROVEMENT

1. The county had challenges tracking donations and volunteer hours.
2. Finding adequate non-congregate shelters was challenging due to insufficient availability of hotels.
3. Due to aging infrastructure, there were no large capacity ADA-compliant buildings for emergency sheltering.

CORRECTIVE ACTION RECOMMENDATION

1. The county should develop a volunteer and donations management plan.
2. Update the current list of non-congregate shelters available in the county and coordinate with surrounding counties to identify additional facilities.
3. Identify additional ADA-compliant facilities in the region and/or identify and retrofit existing facilities to be ADA-compliant.

RIO DELL

The city was significantly impacted by the earthquake and the aftershocks. A quarter of the homes and apartments incurred damage that rendered the structure “unsafe” (red tagged) or “restricted use” (yellow tagged). The earthquake caused water main breaks, and homes slid off their foundations, leaving thousands without water, power, and gas. Communications, including mobile and internet networks were unavailable. Two individuals suffered medical emergencies during and/or shortly after the earthquake and were not able to receive first responder care.

Damage occurred to the Rio Dell municipal drinking water and wastewater systems. Water mains, tanks, and pipes at highway crossings used for providing drinking water to the city required repairs after the earthquake. The city’s wastewater system, comprising a network of sewer pipes and the wastewater treatment plant, experienced damage to sewer pipes and the plant’s concrete basin and underground piping.

The city, in partnership with the Cal OES SAP, DGS, DSA, and Caltrans, conducted extensive inspections of its roads, bridges, buildings, schools, and homes. SAP inspectors conducted evaluations and assessments from January 3, 2023, to January 11, 2023. Buildings and infrastructure were assessed after the M6.4 earthquake and the M5.4 aftershock, which prompted evacuations due to unsafe living conditions. Approximately 25% of the city’s housing stock was deemed unsafe due to earthquake damage, displacing more than 67 households.

Rio Dell Emergency Services immediately procured water, toilets, showers, and dumpsters for residents to assist with potential damage within their homes. In addition, the response team delivered food to the elderly and those with access and functional needs who required assistance. The city connected with the World Central Kitchen to provide meals to impacted residents and communities.

AFTER ACTION REPORT: 2022 Ferndale Earthquake

The Red Cross established congregate sheltering at Rohner Park in Fortuna; however, the county indicated that the shelter population was limited and moved the sheltering operations to Rio Dell, which provided greater accessibility for most displaced residents. With support from the Humboldt County housing voucher program and grants from non-congregate shelters, evacuees were able to stay at local motels.

SUCSESSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. Local contractors were headquartered in Fortuna and could not be deployed quickly in emergencies, which created delays in restoring utility services to Rio Dell.
2. There were communication challenges between Rio Dell City Hall, the Rio Dell Volunteer Fire Department, and other volunteer organizations due to disruptions in cellular, landline, and internet connections.

CORRECTIVE ACTION RECOMMENDATION

1. Establish a list of local contractors from surrounding jurisdictions that could be utilized in emergencies.
2. Work with local utility and communications companies to establish backup cellular services to minimize the service disruptions.

RESPONSE ACTIVITIES – NONPROFITS AND PRIVATE SECTOR

CALIFORNIA EARTHQUAKE CLEARINGHOUSE

California Earthquake Clearinghouse leadership activated a virtual clearinghouse based on the earthquake magnitude, location, timing, and initial reports. The clearinghouse also established a website for clearinghouse members, field teams, and researchers to share field observations, data, maps, and photos.

The clearinghouse conducted coordination calls during the incident to report and coordinate observations, preliminary data, and field images; more than 70 different organizations participated in the coordination calls. Clearinghouse members also maintained close communication throughout the event to track field teams, coordinate and share information with Cal OES, and share preliminary reports, resources, and earthquake impact information with stakeholders.

CGS and USGS utilized the Field Maps Data Acquisition application to track field team observations, save point locations, and leverage social media to locate additional points of interest. This allowed the clearinghouse to track fieldwork progress, minimize duplication, and maximize surveys of the affected area.

SUCSESSES

1. The Ferndale Earthquake Virtual Clearinghouse website was live within 12 hours of the earthquake.

AREAS NEEDING IMPROVEMENT

1. Tracking individuals and teams in the field was difficult without a physical check-in location.

CORRECTIVE ACTION RECOMMENDATION

1. Create a virtual check-in form to track groups in the field and update the standard operating procedures.

AMERICAN RED CROSS

The Red Cross, in partnership with the county, established congregate sheltering at Rohner Park in Fortuna. However, the county later moved sheltering operations to Rio Dell, which provided greater accessibility for most displaced residents. The services included cots and blankets, hygiene kits, snacks, meals, water, charging stations, and showers.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

PACIFIC GAS AND ELECTRIC COMPANY (PG&E)

PG&E activated its EOC and emergency response plan and sent crews to Humboldt County in response to gas and electric hazards and outages. PG&E worked with CUEA to deploy San Diego Gas & Electric and Southern California Edison field survey staff to conduct visual inspections for potential damage to the lines, poles, and towers.

PG&E restored electric power to more than 70,000 customers within 48 hours, prioritizing restoration for critical customers, such as hospitals, telecommunications, and water districts. They also reached out to community members and tribal partners to identify any other unmet needs.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

INITIAL RECOVERY ACTIVITIES

CALIFORNIA GOVERNOR'S OFFICE OF EMERGENCY SERVICES (CAL OES)

RECOVERY

Cal OES regions supported recovery efforts by holding preliminary calls to provide an opportunity for the Humboldt County Assessor's Office to relay initial damage estimates (IDE) to locals and Cal OES Recovery Operations, assisting the county in requesting funding assistance, and standing up a LAC. With support from Recovery Support Functions, Volunteer Agency Liaisons, and Individual Assistance, Cal OES worked with the county to develop a long-term recovery planning template. They also connected with Community Organizations Active in Disaster to identify potential funding sources, assist in establishing a long-term recovery group, identify needs, and mobilize voluntary resources and solutions throughout the county.

Recovery staff traveled to Humboldt County to meet with local leaders, survey disaster impacts, and assess needs and potential assistance. They also assessed the availability of affordable housing options and spaces at mobile home/RV parks in Rio Dell, Fortuna, McKinleyville, Arcata, and Samoa, and completed an analysis of the available temporary and permanent housing options for those impacted by the earthquake. Staff worked with local organizations, such as Habitat for Humanity and the Hope Crisis Response Network, to assist with other recovery efforts.

In coordination with the county, the Cal OES Disaster Analysis Unit and Public Assistance (PA) Division identified and conducted IDEs of various sites in the impacted areas. IDE validations started on January 4, 2023, and concluded on January 10, 2023.

Recovery Operations also utilized Recovery Support Teams (RST) to focus on disaster impacts that needed additional assistance. RSTs were embedded within the Humboldt County OES on January 9, 2023, and served as a single point of contact to support and enhance recovery support, communication, and coordination efforts.

SUCCESSSES

1. The Cal OES RST sent a data analyst/specialist to the county EOC to help validate incident data, which was used to create a dashboard that presented various data points, such as the number of red, yellow, and green-tagged homes.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

SAFETY ASSESSMENT PROGRAM

At the request of Humboldt County, the Cal OES SAP was activated to assist local government in performing accurate facility safety assessments as quickly as possible. Volunteer SAP inspectors surveyed damaged facilities to determine if there were safety hazards to building occupants or the public.

In addition to providing damage assessment teams, Cal OES coordinated with the county recovery officer to help identify activities that may be reimbursable under public assistance. Cal OES also assisted the county in determining eligibility for state funding from CDAA and how they might be able to pay for the cost share.



Red-tagged local business in Humboldt County.
Source: Clearinghouse/EERI

SUCCESSSES

1. Introducing Survey123 for collecting Applied Technology Council (ATC)-20 data marked a significant advancement in the SAP methodology that enhanced data collection efficiency and contributed to improved accuracy and accessibility.
2. The team produced public-facing and internal dashboards that visualized real-time data. The internal dashboard provided a breakdown of completed evaluations and associated tag status that provided greater efficiency on the project.

AREAS NEEDING IMPROVEMENT

1. The training and onboarding process for staff assigned to the RST needs improvement to allow for easy transition into recovery activities.

AFTER ACTION REPORT: 2022 Ferndale Earthquake

2. Improve communication with Operational Area and RST staff.
3. PA staff were deployed to the incident prematurely, with CDAA not authorized until several weeks later.
4. The scope of work for SAP resource requests should be better defined.

CORRECTIVE ACTION RECOMMENDATION

1. Develop an RST training and/or RST one-pager to share with staff when activated to the RST.
2. Recommend deferring to the Operational Area for meeting frequency and holding more internal meetings between deployed and remote RST staff to transfer knowledge without increasing the burden on the OA. This organized meeting schedule will also improve communication between agencies.
3. Faster turnaround for CDAA authorization, or consider a hybrid deployment schedule for PA liaison until increased PA activities commence to prevent premature deployment.
4. Create a template and/or criteria for developing a well-defined and organized scope of work for SAP missions.

DRINKING WATER TASK FORCE

The Drinking Water Task Force was established to coordinate efforts that support communities with reported damage to water and wastewater delivery infrastructure. The BOC was assigned to lead the Drinking Water Task Force, with Cal EPA and SWRCB supporting the BOC as subject matter experts by coordinating information with the SOC, identifying water and wastewater facility impacts and gaps, and planning for potential water bottle distribution.

SUCSESSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

OFFICE OF ACCESS AND FUNCTIONAL NEEDS (OAFN)

OAFN continued coordination with ESF 6 Care and Shelter partners to ensure that, as the Rohner Park shelter was consolidated and closed, no identified unmet needs were left unresolved. OAFN coordinated with local disability

stakeholders in the affected area to share information and help connect stakeholders with available resources.

OAFN also coordinated with partners at CUEA and PG&E to gain ongoing situational awareness of current outages, medical baseline impacts, and estimated times of restoration. OAFN was involved in Joint Field Operations, coordinated with state and federal partners to promote effective communications, supported inclusive individual and public assistance, and established community support services and housing considerations for individuals with disabilities and access or functional needs.

SUCSESSES

1. OAFN was actively involved in Joint Field Operations, coordinating with state and federal partners to promote inclusive individual and public assistance, such as housing considerations for individuals with access and functional needs, and establishing community support services.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

FINANCIAL ASSISTANCE

Cal OES Recovery Operations deployed damage assessment teams to the impacted areas and found that the damage did not meet the federal indicator for the state to receive a presidential disaster declaration. However, on December 20, 2022, a Governor's proclamation was issued to secure funding to respond to and recover from the earthquake and aftershocks, making CDAA funding available for eligible emergency and permanent work in Humboldt County. The CDAA incident period for the earthquake started on December 20, 2022, and is ongoing.

A CDAA applicant briefing was held on March 6, 2023, to provide potential applicants with basic information to understand the requirements associated with applying for public assistance.

AFTER ACTION REPORT: 2022 Ferndale Earthquake

The Cal OES Office of Private Sector/NGO Coordination secured \$1.5 million in philanthropic funds for Ferndale Earthquake recovery efforts, identified additional grant and loan opportunities, connected the county with NGO partners for repair and rebuilding, and helped the county develop and implement a temporary repair pilot program. The Humboldt Area Foundation and Wild Rivers Community Foundation received more than \$300,000 in donations from individual donors and philanthropic partners. By March 2023, approximately \$1.2 million was available from the Disaster Relief and Resilience Fund for nonprofit organizations, tribes, and government organizations helping earthquake survivors.

In addition, a request for a disaster declaration was submitted to the United States Small Business Administration (SBA) on December 30, 2022. On January 4, 2023, the SBA approved a disaster declaration (CA-17749) for Humboldt County and offered low-interest disaster loans, business physical disaster loans, economic injury disaster loans, and home disaster loans. A Disaster Loan Outreach Center was established on January 9, 2023, at Rohner Park in Fortuna and closed in February 2023.

On January 12, 2023, Senate Majority Leader Mike McGuire, Assemblymember Jim Wood, Cal OES, and the California Department of Housing and Community Development announced \$3 million in available funding to aid residents impacted by the December 20, 2022, and January 1, 2023, earthquakes.

Cal OES, in coordination with the county, participated in a United States Department of Agriculture pilot program that increases limits on programs such as the Section 502 Direct Loan Program and Section 504 Single Family Housing Home Repair Loans and Grants Program funds. These funds were made available to impacted businesses and individuals by providing payment assistance or providing loans to make vital repairs, improvements, and modernizations to remove health and safety hazards.

The California Earthquake Authority (CEA) Earthquake Brace and Bolt (EBB) Program also made financial assistance available to the communities. Between May 23, 2023, and July 31, 2023, eligible Humboldt County homeowners in areas impacted by the M6.4 and M5.4 earthquakes were able to apply for grants of up to \$3,000 to safeguard their homes. The EBB Program made nearly \$2 million available to help homeowners in eligible ZIP codes to offset the cost of seismic retrofits. Income-eligible Humboldt County homeowners also qualified for supplemental grants that provided up to 100 percent of the funds needed to cover a seismic retrofit. While these funds are not used to pay for repairs to

damaged homes, they could be used to protect eligible homes from experiencing similar damage from future earthquakes.

The California Earthquake Authority re-opened EBB grant funding availability with a registration period for eligible Humboldt County homeowners that ran from January 10, 2024, to February 21, 2024. An EBB retrofit includes bracing the crippled walls of older houses and bolting houses to their foundation, making them less vulnerable to earthquake damage.

SUCSESSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

CRITICAL INFRASTRUCTURE

Repairs to local buildings and infrastructure continued after response efforts to the earthquake. CDE, in coordination with HCOE and local education agencies, identified schools with notable impacts and worked with DSA to complete damage assessments at several schools.

Road damage was identified on State Route 211 at Fernbridge. Caltrans reported that the bridge was under traffic control due to the expansion of preexisting cracks. Caltrans executed a \$6 million emergency contract to stabilize Fernbridge, make emergency repairs, perform traffic control, and complete other activities associated with the seismic damage.

Following initial inspections of Fernbridge, an M5.4 aftershock occurred on January 1, 2023. The bridge was re-inspected, deemed safe for use, and reopened to one-way traffic control. Notable road closures included State Route 70 with a two-lane closure due to slides and/or slope failure, and Highway 101 with a two-lane closure with traffic control implemented due to emergency inspections.

SUCSESSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

LOCAL ASSISTANCE CENTER

Cal OES, in partnership with the Humboldt County OES, established a LAC in Monument Middle School in Rio Dell from December 3, 2022, through December 31, 2022, to aid community members and businesses impacted by the earthquake and those who experienced disaster-related losses or damages. The Humboldt County LAC provided residents with information, resources, and opportunities to register for direct financial assistance from state, local, and nonprofit agencies. A total of 725 services were provided, and a total of 252 households were served.

SUCCESSSES

1. No significant successes were reported.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported.

HUMBOLDT COUNTY

SAP inspectors assessed a total of 1,361 structures. Some structures were red-tagged (unsafe to occupy), while many others were yellow-tagged (restricted use). Although the county sustained significant damage to areas such as Rio Dell, the damage incurred did not meet the federal requirements for a federal Major Disaster Declaration.

After proclaiming a local emergency, the county took steps to ensure that residents had resources, services, and programs accessible to recover from the earthquake. On January 10, 2023, the Humboldt County Board of Supervisors allocated \$1 million to create an Earthquake Recovery and Assistance Program. More than \$375,000 was spent on the county's emergency shelter voucher program to provide temporary shelter to residents who were displaced from their homes.



Damaged home in Humboldt County. Source: Clearinghouse/EERI

AFTER ACTION REPORT: 2022 Ferndale Earthquake

In partnership with the county, Habitat for Humanity used \$500,000 to repair earthquake-damaged homes of private property owners who were willing to offer their homes for rent to low-income families with a two-to-five-year term. This program is for individuals experiencing earthquake-related displacement and helps identify and secure the resources needed to get back into their homes or to find safe, affordable housing.

As part of this agreement, Habitat for Humanity, Arcata House Partnership, and Changing Tides Family Services oversaw local disaster case management to provide services to residents. This assistance included facilitating recovery grant and loan applicant forms, in addition to partner agency caseworkers working with qualifying low-income families, rental property owners, and nonprofits.

The Humboldt Area Foundation and Wild Rivers Community Foundation designated \$1.2 million from the Disaster Relief, Recovery, and Resiliency Fund for nonprofit organizations, tribes, and government entities helping Rio Dell and Humboldt County residents displaced by the earthquakes.

SUCSESSES

1. The county worked with SBA and the United States Department of Agriculture to obtain assistance through loans and grants for qualifying residents.
2. The county EOC established a call center serving as a centralized hub to intake information from affected residents to determine immediate and long-term needs, prioritize recovery efforts, and provide additional resources.

AREAS NEEDING IMPROVEMENT

1. No areas needing improvement were reported

CONTRIBUTING AGENCIES

STATE AGENCIES

California Department of Education
California Department of Fish and Wildlife
California Department of Food and Agriculture
California Department of General Services
California Department of Public Health
California Department of Social Services
California Department of Transportation
California Geological Survey
California Highway Patrol
California Utilities Emergency Association
Emergency Medical Services Authority
State Water Resources Control Board

LOCAL AGENCIES

Humboldt County
Rio Dell

NONPROFIT AND PRIVATE SECTOR ORGANIZATIONS

American Red Cross
California Earthquake Clearinghouse
Pacific Gas and Electric Company

LIST OF ACRONYMS

AAR	After Action Report
ADA	Americans with Disabilities Act
BOC	Business Operation Center
Cal EPA	California Environmental Protection Agency
Cal OES	California Office of Emergency Services
Caltrans	California Department of Transportation
CDAAC	California Disaster Assistance Act
CDE	California Department of Education
CDFA	California Department of Food and Agriculture
CDSS	California Department of Social Services
CEEWS	California Earthquake Early Warning System
CGS	California Geological Survey
CHP	California Highway Patrol
CSSC	California Seismic Safety Commission
CUEA	California Utilities Emergency Association
DGS	Department of General Services
DSA	Division of the State Architect
EBB	Earthquake Brace and Bolt
EERI	Earthquake Engineering Research Institute
EEW	Earthquake Early Warning
EMSA	Emergency Medical Services Authority
EOC	Emergency Operations Center
ESF	Emergency Support Function
HCOE	Humboldt County Office of Education
IC	Incident Command
IDE	Initial Damage Estimates
LAC	Local Assistance Center

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LEB	Law Enforcement Branch
M	Magnitude
NGO	Nongovernmental Organization
OAFN	Office of Access and Functional Needs
OTC	Office of Tribal Coordination
PA	Public Assistance
PG&E	Pacific Gas and Electric Company
PSC	Public Safety Communications
PST	Pacific Standard Time
RST	Recovery Support Team
SAP	Safety Assessment Program
SBA	United States Small Business Administration
SOC	State Operations Center
SWRCB	State Water Resources Control Board
USGS	United States Geological Survey