

STATEWIDE AAR
BAJA EARTHQUAKE

EXECUTIVE SUMMARY

Description of Event

A magnitude 7.2 magnitude Sierra El Mayer earthquake struck northern Baja California, Mexico, approximately 40 miles south-southeast of the City of El Centro at 1540 hours on Sunday, April 4, 2010. The epicenter of this temblor was located 16 miles southwest of Guadalupe Victoria, Baja California, Mexico. This was the largest earthquake to have occurred in the area since 1892, with shaking motion felt over the southern California region and as far away as Las Vegas, Nevada. The most serious damage resulting from the Baja Earthquake within the United States occurred in Imperial County, particularly in the City of Calexico. As a result of the damage caused by the Baja Earthquake, Governor Arnold Schwarzenegger proclaimed a state of emergency on April 6, 2010, for Imperial County. It should be noted that while California suffered extensive damage, the City of Mexicali located in Baja Mexico was the hardest hit area overall. Despite the magnitude and intensity of ground shaking, there were only two fatalities both of which occurred in the Mexicali Valley in Mexico.

Statistical Summary

Dates of SOC Operations: April 4, 2010 to April 29, 2010
Incident Period: April 4, 2010 to July 4, 2010
Fatalities: 0
Major Injuries: 2
Minor Injuries: 48
Structures destroyed: 52 (9 businesses and 43 homes)
Structures damaged: 108 (55 businesses, 53 homes)
Initial Safety Assessments 431 (Red - 63, Yellow - 78, and Green - 290)
Average Number Sheltered: 20
Displaced 117

Counties Involved: Imperial County
Cities Involved: City of El Centro
City of Calexico
City of Holtville
City of Imperial

Proclamation and Declarations:

Local Proclamations: Imperial County April 5, 2010
City of Calexico April 4, 2010
City of El Centro April 5, 2010

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| | City of Holtville | April 12, 2010 |
| | City of Imperial | April 7, 2010 |
| Governor's Proclamation: | April 5, 2010 | |
| Presidential Declaration: | May 7, 2010 (FEMA-1911-DR) | |
| SBA Declaration: | Imperial County | April 21, 2010 |
| | Riverside | April 21, 2010 |
| | San Diego | April 21, 2010 |

DAMAGE

Infrastructure Damage:

Liquefaction caused by the earthquake resulted in the most serious infrastructure damage. Liquefaction destroyed extensive lengths of irrigation canals and damaged agricultural lands throughout the Imperial Valley and the area surrounding Mexicali. A significant feature of this earthquake was the damaging effects it had on water and water waste treatment systems in the southern section of Imperial County, particularly in Calexico and El Centro. As a result, some system components needed urgent repair to satisfy current and future demands since the summer season was approaching. The following is a description of the most significant infrastructure damage.

The City of Calexico's water treatment plant was heavily damaged by oscillating water whose damaging energy was generated by the ground shaking of the earthquake. A full assessment of the facility revealed that the main clarifier was damaged which in turn damaged the effluent weirs, the main settling chamber and the sludge scrapers on the tank bottom. Following the earthquake, the plant's capacity was reduced from 10 million gallons per day (mgd) to 5 mgd.

The City of El Centro's Water Treatment Plant also incurred similar damage to two of its clarifiers as well as its main steel water storage tank. However, due to the interface of their old plant and their new plant, there was adequate capacity to serve the community.

The City of Calexico's Wastewater Treatment Plant suffered extensive damage as well. Much of the damage was similar to the damaged water treatment plant in that it was caused by oscillating water that heavily damaged two clarifiers. The Wastewater Treatment Plant was also extensively damaged by liquefaction and lateral spreading. One of the lined aeration ponds was leaking and waves in the ponds tore some of the floating aerators from their moorings. The main influent trunk sewer to the plant was also severely damaged. The sewer pipe crosses the New River and is supported by two concrete piles. The settling of the earth beneath the supporting piles caused the sewer pipe to drop and break on both sides of the river.

El Centro's wastewater treatment plant also suffered minor damage to one primary clarifier and two secondary clarifiers.

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The Imperial Irrigation District (IID) discovered a leak between the northern headworks and the spillway adjacent to the All American Canal siphons that cross the New River upstream from the Calexico Wastewater Treatment Plant. The leak was caused by a damaged pier between the headworks and the spillway. The siphons are a critical component of the All American Canal because they allow water to cross over the New River to supply IID with water for the western third of their coverage area. The United States Army Corps of Engineers (USACE) determined the damage did not pose an immediate threat to the community but IID monitored the leak to ensure any risk to the community remained low pending repair.

School Damage:

Schools throughout the region sustained primarily nonstructural cosmetic damage. While all Imperial County schools suffered some earthquake damage, most schools required minimal clean-up and were able to reopen within eight days of the earthquake. However, due to the proximity to the epicenter of the earthquake, the schools within the Calexico Unified School District (CUSD) were more damaged and clean-up and repairs took additional time before students could return to the classrooms. CUSD adopted an accelerated repair schedule as a means of returning students to school as quickly as possible. In an effort to meet the student's educational needs, CUSD developed several options for reconvening school for its 9,500 displaced students while repairs were being made.

The first option included posting instructional packets on school websites for students to download. For those students without computer access, Parent Centers were used for distribution of the instructional packets. Another option was the use of alternate locations where school principals could meet with teachers and teachers could meet with students and parents. The school district also set up websites so teachers could email assignments to students and track student's educational progress. To ensure students' nutritional needs were met school officials used city parks to serve breakfast and lunch. Full details of these options can be found in the After Action Report.

NOTE: Schools that were built in compliance with the Field Act, which established statewide earthquake safety standards beginning in 1933, performed on the whole very well and sustained very little damage. However, most of the older schools in the County were constructed before the State Architect was required to enforce earthquake safety standards for nonstructural systems. The Universal Building Code (UBC) did not include specific code for non-structural elements until 1961.

Other Damage

Due to its close proximity to the epicenter of the earthquake, the City of Calexico sustained the greatest damage to its downtown business district. Immediately following the earthquake, Cal EMA sent in safety inspectors through the Safety Assessment Program (SAP) to determine whether or not buildings were safe for re-entry. The SAP inspectors tagged buildings using red (danger), yellow (caution), or green (safe) tags to indicate the

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status of the building. A week after the earthquake, nine blocks of downtown Calexico remained closed to the public due to damages. The overall damage included leaning and collapsed parapets, cracking of stores' front walls and columns, broken windows, fallen soffits, and partial failure of unreinforced masonry (URM) walls.

The older section of El Centro consisted of URM buildings with open wood store fronts. Many of these buildings were damaged during the earthquake. Despite the damage, a relatively small number of buildings were red-, or yellow-tagged when compared to the old town sections of Calexico. The URM buildings that were most susceptible to damage were those located on corners or adjacent to open lots where the shaken building had no support from surrounding buildings.

In downtown Calexico, the De Anza senior housing complex was structurally damaged to the extent that all 117 residents were required to evacuate. The majority of the elderly residents wanted to continue living in the City of Calexico, but were unable to due to a lack of appropriate facilities available within Calexico that would meet the seniors' needs. Ambulance strike teams were sent in to evacuate the residents.

MUTUAL AID

Mutual Aid to the City of Mexicali, Mexico

In addition to providing necessary mutual aid to Imperial County, California also provided mutual aid to Mexicali at the request of the Mexicali Governor. Mexicali was impacted more severely than Imperial County because it was closer to the epicenter and they had fewer resources available on a timely basis. They requested supplies to meet their citizens' basic needs such as bottled water, cots, hygiene kits, and generators. On April 8, 2010, Cal EMA facilitated the delivery of the first shipment of requested supplies to Mexicali.

Cal EMA and the American Red Cross (ARC) also arranged for the first shipment of bottled water consisting of 60,000 bottles. Additional bottled water was delivered over the next few days. The San Diego Chapter of the ARC fulfilled a request for over 90,000 bottles of water at the request of the Mexican Red Cross. Cal EMA continued to coordinate Mexicali's requests for additional items as they were received. It should be noted that the supplies requested by Mexicali were delivered to Imperial County and were actually picked up by Mexicali officials.

RESPONSE AND RECOVERY ACTIVITIES

Response and recovery activities for this incident were extensive. In addition to local agencies including the fire department, police department and public works, many state and federal agencies responded in support of local government. Several private and non-governmental organizations also responded. In all, over 120 outside agencies assisted Imperial County. For detailed response and recovery activities see appendix C included in the Baja Earthquake After-Action Report.

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SUCSESSES

Based on input from the various state and local agencies that participated in the SOC and REOC activities, or provided field support to the cities and the OA, the following is a summary of some of the successes that were recognized during the response and recovery phases of this disaster. A more comprehensive description of the successes is included in the Baja Earthquake After Action report

- State and local agencies responded in a very timely and efficient manner. Over 120 outside agencies assisted Imperial County with the task of responding to and recovering from the damage caused by the earthquake.
- Cal EMA deployed field representatives within two hours of Imperial County's request for assistance to assist with the coordination of requests for resources.
- Due to water issues throughout Imperial County, having a California Water/Wastewater Agency Response Network (CalWARN) representative in the County's EOC was effective.
- There was a strong inter-agency coordination and relationships between local, state, and federal agencies that played an instrumental role in responding to this emergency.
- Work groups were established to assist Imperial County with handling many issues facing the community, including water storage and water treatment issues, wastewater treatment plant damage, the All American Canal Siphon's structural damage, and school-related issues.
- The LAC provided a central place for disaster survivors to talk face-to-face with numerous state and local agency representatives, elected and local officials, and insurance companies.
- Cal EMA deployed a large number of personnel that were actively involved in assisting local governments by managing work groups and working in Imperial County's EOC.
- An automated phone system was used to deliver water conservation messages to 12,830 households in the City of Calexico.
- There was a good response of off-duty personnel that responded to the incident from local fire, law enforcement, and public works.

RECOMMENDED IMPROVEMENTS

SEMS/NIMS Recommended Improvements

The following is a list for recommended improvements based on areas of concern that were identified by participating state and local agencies. The recommendations are related exclusively to SEMS/NIMS issues.

- Establish a central point of coordination of resources during the early recovery phase to avoid duplication of efforts in collecting the estimated cost of damages.
- Ensure that all participants in EOC activities clearly understand the need to develop action plans including setting goals and objectives to guide response efforts.

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- Provide more training on the SEMS/NIMS procedures at all levels of government with the goal of training enough personnel to fill all the EOC positions for two or more shifts. This will ensure sufficient staffing during more complex and sustained operations.
- Ensure that support, coordination and decision making is conducted at the appropriate SEMS level. This will help reduce confusion and duplication of efforts. The proper use of SEMS will also help the various levels of SEMS involved to more efficiently and effectively determine when the need for their assistance has been reduced or is no longer required allowing for smoother system contraction.
- Provide liaisons at all appropriate SEMS-level EOCs, as needed, to facilitate more effective communications and coordination during the initial response and recovery phases. This will reduce the loss of coordination and duplication of effort.

General Recommended Improvements

The following is a list of recommended improvements based on areas of concern that were identified by participating state and local agencies. The recommendations are related to general operational and response or recovery issues rather than SEMS/NIMS issues.

- Federal/State Coordination: When completing the application for federal reimbursement of response and recovery costs associated with a disaster, it is recommended that state and federal coordination be improved to avoid confusion by local jurisdictions in ensuring the correct FEMA forms are completed.
- School Earthquake Training: School children and staff need additional training and exercise in the “Drop, Cover and Hold On” strategy. All indications were that, had the students and teachers been in school when the earthquake struck, the “Drop, Cover and Hold On” strategy would have been very effective.
- Public Information Staff: Imperial County, the impacted cities, and the school districts would benefit greatly by having trained PIO staff. There also exists a need for bilingual Spanish-speaking PIOs to provide school related information to the large number of Spanish-speaking parents of the students.
- Excessive Meetings: Better coordination among OAs, REOC and any special workgroups to more effectively schedule meetings, conference calls and report schedules. Increased coordination would also help to avoid overlapping of meetings and / or conflicts and eliminate delays in the completion of work assignments and report submittals.
- School Disaster Planning: The Imperial County Office of Education and the school districts need to have disaster plans or procedures in place to effectively and appropriately respond to a disaster.
- EOC Issues: For a more organized and effective EOC, using signs to identify positions within Imperial County’s EOC could have been organized more efficiently. There was a lack of signage or use of vests to identify positions which caused problems since staff seemed to change frequently. The EOC was very loud and crowded for the number of staff involved in the response and recovery activities. There was often a conflict between conference calls among the daily EOC scheduled conference calls, the Southern REOC conference call, and the project related work group conference call, all of which required the participation of the same people.

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- URM Buildings: Update and enforce local building codes to mitigate the potential danger inherent in URM Buildings. Local governments and private industry continue to use URM buildings that have not been retrofitted.
- Field Office: Improve the connectivity of field offices through the use of AT&T T-1 lines.
- Mutual Aid: Provide potential responding jurisdictions with a better understanding of mutual aid, especially with regards to the circumstances under which reimbursement may or may not occur and ensure that vital resources are not withheld until a reimbursement agreement has been made.
- Recovery Issue: Complete the Initial Damage Estimate (IDE) process prior to the submission of a Governor's request for a Presidential declaration of a major disaster.

ORGANIZATIONS CONTRIBUTING TO THIS REPORT

State Agencies and Departments:

California Conservation Corps (CCC)
California Department of Corrections (CDCR)
California Department of Housing and Community Development (CDHCD)
California Department of Public Health
California Department of Resources Recycling and Recovery (CalRecycle)
California Department of Social Services (CDSS)
California Department of Transportation (Caltrans)
California Department of Water Resources (DWR)
California Emergency Management Agency (Cal EMA)
California Highway Patrol (CHP)
California National Guard (CNG)
Contractors State License Board (CSLB)
Department of Alcohol and Drug program (ADP)
Department of General Services (DGS), Division of the State Architect (DSA)
Department of Motor Vehicles (DMV)
Emergency Medical Services Authority (EMSA)
Regional Water Quality Control Board (RWQCB) (Region 7)

Local Government/Operational Areas:

Calexico Unified School District
City of El Centro
Imperial County OES/Operational Area