

EARTHQUAKE PLANNING SCENARIO
FOR A MAGNITUDE 8.3 EARTHQUAKE
ON THE SAN ANDREAS FAULT IN THE SAN FRANCISCO BAY AREA

By

James F. Davis, John H. Bennett, Glenn A. Borchardt,
James E. Kahle, Salem J. Rice, and Michael A. Silva

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PREFATORY COMPARISON
OF THE NORTHERN AND SOUTHERN CALIFORNIA
EARTHQUAKE PLANNING SCENARIOS FOR THE SAN ANDREAS FAULT

To be effective, emergency-response plans must reflect the general consequences of an anticipated earthquake within a particular region. Therefore, emergency-response plans are not checklists of generalized conditions that must be dealt with; rather they are systematic strategies that are closely related to the special circumstances of the area for which they are designed. The emergency-response plans required to be effective in coping with a northern California magnitude 8.3 earthquake on the San Andreas fault are significantly different from those appropriate to a similar sized earthquake on the southern California segment. This planning insight is evident from a comparison of Special Publication 60 (southern California) and Special Publication 61 (northern California), two planning scenarios that have been developed by the California Division of Mines and Geology (CDMG). Since these scenarios are identical in scientific approach and methodology, genuine contrasts between patterns of regional consequences can be identified.

The discussion which follows highlights the principal contrasts between the effects of magnitude 8.3 earthquakes on the San Andreas fault segments in the vicinity of Los Angeles and of San Francisco. These scenario earthquakes

will be similar in size and location to the 1857 earthquake in southern California and the 1906 earthquake in northern California.

The general consequences of these scenario earthquakes in both southern and northern California will be to overwhelm existing capabilities of coping with significant interruption of ground transportation, communications, water supply, sewage treatment, electricity, and pipeline distribution of natural gas and petroleum. Existing emergency-response capabilities will be taxed beyond their limits by the combined effect of regional damage to all the important lifelines upon which the metropolitan areas depend. These circumstances will compound the problem of providing medical aid and search-and-rescue services to the stricken areas.

In southern California, the strategy for bringing supplies and assistance into the Los Angeles region following the earthquake should emphasize ground transportation, which will probably be possible by freeway and by railroad from San Diego. In addition, air transport into the area will be feasible for large cargo planes at a number of the large airfields if auxiliary power supplies are available to maintain radio communications, landing lights, and other requirements necessary to the operation. An effective distribution of materiel and personnel within this large metropolitan region will be a greater challenge than access to the region from the outside. A major handicap to the effort to coordinate this distribution will be the extensive loss of hardware communications within the area during the first 72 hours after the earthquake. Marine transport may supplement access to the area, but principal

shipment will be by ground and air. Law enforcement in the southern California area will have to cope with significant variations in the extent of damage, and law enforcement procedures should be oriented to regulating ground-transportation access into stricken areas and to preventing the intrusion of sight-seers, looters, and other undesirables.

In the northern study area, the San Andreas fault is nearer the urban regions and approximately parallels highway corridors that traverse the San Francisco peninsula connecting the city to other urban and suburban centers. Ground transportation by highway and rail will be severely affected for portions or all of the 72 hours immediately following the magnitude 8.3 earthquake. Air transportation facilities capable of accommodating large cargo planes cannot be counted upon to be in service within the Bay area. The closest usable airfields may be Buchanan near Concord and Travis near Vacaville. Only helicopter transport can be counted upon to bring medical and other needed aid and supplies into the stricken area from the outside. This means that a detailed coordination must be made between helicopter landing sites and modes of distributing the off-loaded material within the stricken area. Priorities must be established for the types and amounts of material which can be safely delivered from the outside. The feasibility of extensive marine transportation should be evaluated as a principal means of bringing personnel and materiel into the region. Loss of electrical power, water, hard-wire communications, and other support lifelines will greatly complicate the emergency-response process and must be provided for in the planning.

Emergency planners should be aware that plans which should be developed for the northern and southern scenario earthquakes will necessarily be distinctive and will not be interchangeable. For an effective emergency response, it will be necessary for plans to exist that provide for coordination between all municipalities and jurisdictions in the affected regions. Since some of the lifelines are maintained only by public agencies and others are possessions of the private sector, it is mandatory that plans provide for emergency responses that integrate the efforts of the public and private sectors.

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