SEISMIC SAFETY PLAN ELEMENT

14. 1 Major Seismic and Geologic Issues

The United States is divided into four seismic risk zones:

Zone 0- No Damage

Zone 1- Minor Damage; distant earthquakes may cause damage to structures with fundamental periods greater than 1.0 seconds; corresponds to intensities V and VI of the Modified Mercalli. (M.M.) Intensity Scale of 1931.

Zone 2- Moderate Damage; corresponds to Intensity VII of the M.M. Scale.

Zone 3- Major Damage; corresponds to Intensity VII and higher of the M.M. Scale.

Zone 4- Those areas within Zone 3 which are determined to be in proximity to certain major earthquake fault systems.

Areas of Nevada lie within Zones #2, 3, and 4 of Seismic risk. However, Southern Nevada, and in particular the area of Clark County where the City of Mesquite is located, rests in seismic zone 2. As such, all development and improvements to property must be designed and constructed to comply with seismic regulations. Buildings, likewise, must be designed and constructed accordingly in compliance with the Uniform Building Code.

Public Facilities which are deemed essential and must be safe and useable for emergency purposes after an earthquake in order to preserve the health and safety of the general public must be designed with greater resistance to seismic damage. Examples of these types of facilities include:

- Hospitals and other medical facilities having surgery or emergency treatment areas.
- Fire and Police Stations.
- Municipal government disaster operation and communication centers deemed to be vital in emergencies.

Underground utilities and infrastructure also require seismic provision to reduce

damage and provide for automatic shut-offs in case earthquakes occur.

Scientists at the University of Nevada, Reno Seismology Laboratory have tabulated and published information regarding earthquakes which have occurred in Nevada since 1852. **Plate 14-1.1** indicates each of the earthquakes recorded and the magnitude of each occurrence. It may be noted that while earthquakes have been recorded in the north east sector of Clark County, Nevada, the number recorded is small and the magnitude of the events are minimal.

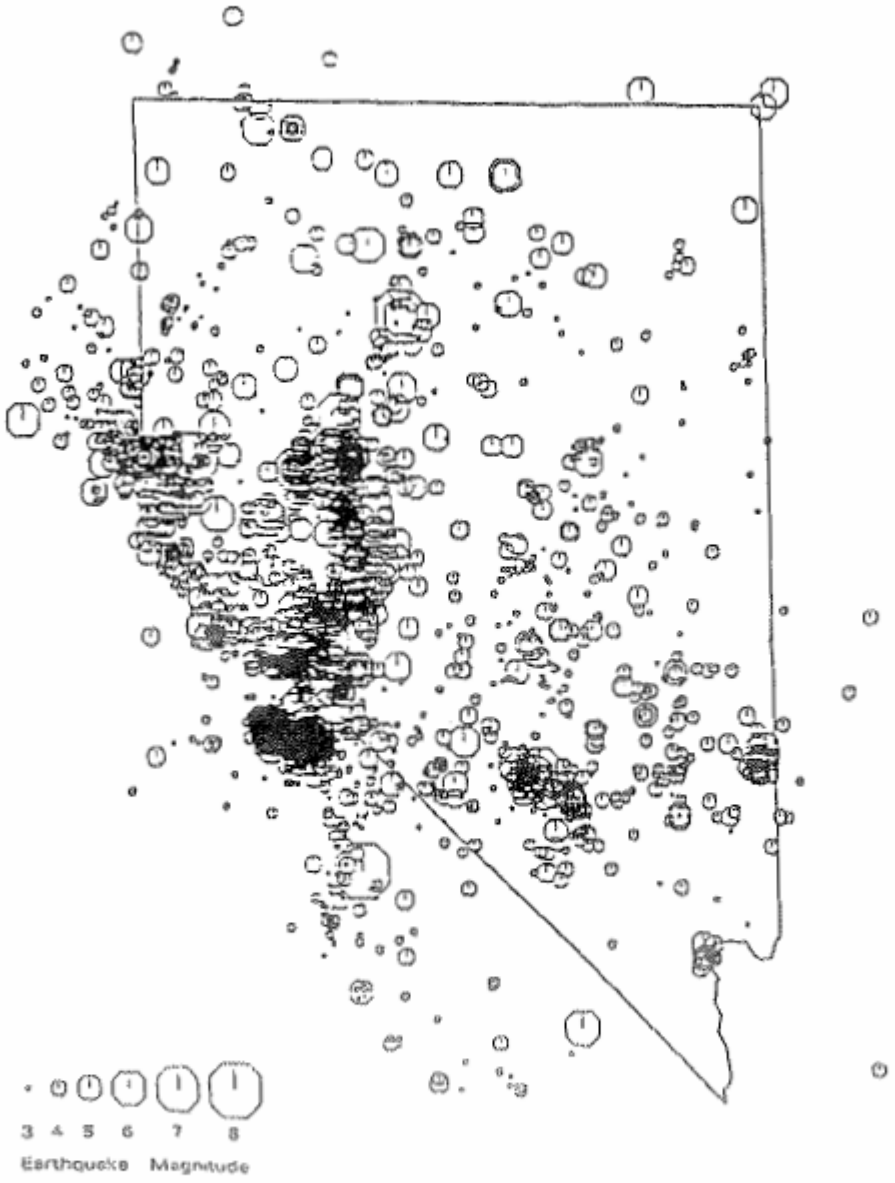

FIGURE 1. Earthquakes in the Nevada region recorded from 1852-1983.
University of Nevada, Reno Seismological Laboratory

Earthquakes in the Nevada Region

Two other geologic conditions exist which pose potential development problems. The first issue deals primarily with development along the sandy mesas north of U.S. Interstate 15. While soil characteristics of the sandy material is adequate to structurally support vertical loads, the material provides limited resistance to horizontal forces when it is positioned in an inclined state. Consequently, hillside development, including retaining walls and foundations for structures, should be designed to conform to requirements established by a Nevada Soils Engineer for the particular location and soil condition.

Areas south of U.S. Interstate 15 near the Virgin River pose other soils problems. These soils are heavy in clay based materials which expand when subjected to water. They have also been continuously subjected to agricultural irrigation which over the years can reduce soils bearing capacity.

A second problem exists in terms of rising and falling ground water which can deteriorate sub-soil strengths and cause foundation failures. It should be required for all projects near the river to utilize a Nevada Soils Engineer to establish specific design criteria for all foundation systems.

Planning Context

Provisions should be required that all documents which are submitted for regulatory review and plan check incorporate seismic details developed by a registered Nevada Architect or Engineer, including projects which are submitted by home-owners or contractors. Similar requirements should be established for soils reports including foundation design criteria developed by a Nevada Soils Engineer for the specific site.

14.2 Environment and Resources

The Seismic Safety Plan Element is administered through the Building and Planning Department and the Department of Public Works. All structures are monitored by the Building and Planning staff, and utilities and infrastructure are monitored by staff of the Public Works.

No additional new staff or resources are required to manage as direct seismic programs described in this plan.

14.3 THE PLAN

K. Seismic Safety Plan

Goal:

1. To protect the health, safety and welfare of the population and investments in development from seismic and geological hazards.

Objective:

K-1.1 Restrict land use and development on sites impacted by seismic or geological hazards to parks and recreational activities and open space.

K-1.2 Provide quality control for new development and retrofit construction through compliance with the Uniform Building Code provisions for seismic safety.

K-1.3 Develop a Disaster Preparedness Plan with designated safety areas for seismic, geological and other natural and non caused destruction.

Strategies:

1. Prohibit development in potentially active fault traces, along unstable hillside slopes or in areas of poor soil near the river.

2. Require preliminary soils and geologic reports and flood studies on every development project identified in an area subject to potential hazard.

3. Require soils and geological reports on every structure to be approved for a Building Permit.

4. Restrict development on hillside slopes to inclines less than 15% unless a variance is approved and engineered stabilization programs are incorporated.

5. Coordinate Disaster Preparedness Plan with Fire, Police, Lark County, and NOOT programs.

14.4 Guidelines

Guidelines for the Seismic Safety Plan Element are established to assist development with the construction of facilities, utilities and other infrastructure within the City of Mesquite.

Major issues which impact seismic safety and other geological conditions are:

- Seismic Design and Soils Design

Seismic Design and Soils Design

1. Design for all development in the City of Mesquite shall incorporate Uniform Building Code or other adopted code provisions for seismic design.

2. Design for all development in the City of Mesquite shall incorporate foundation systems which are designed in compliance with criteria established by a Nevada Soils Engineer.