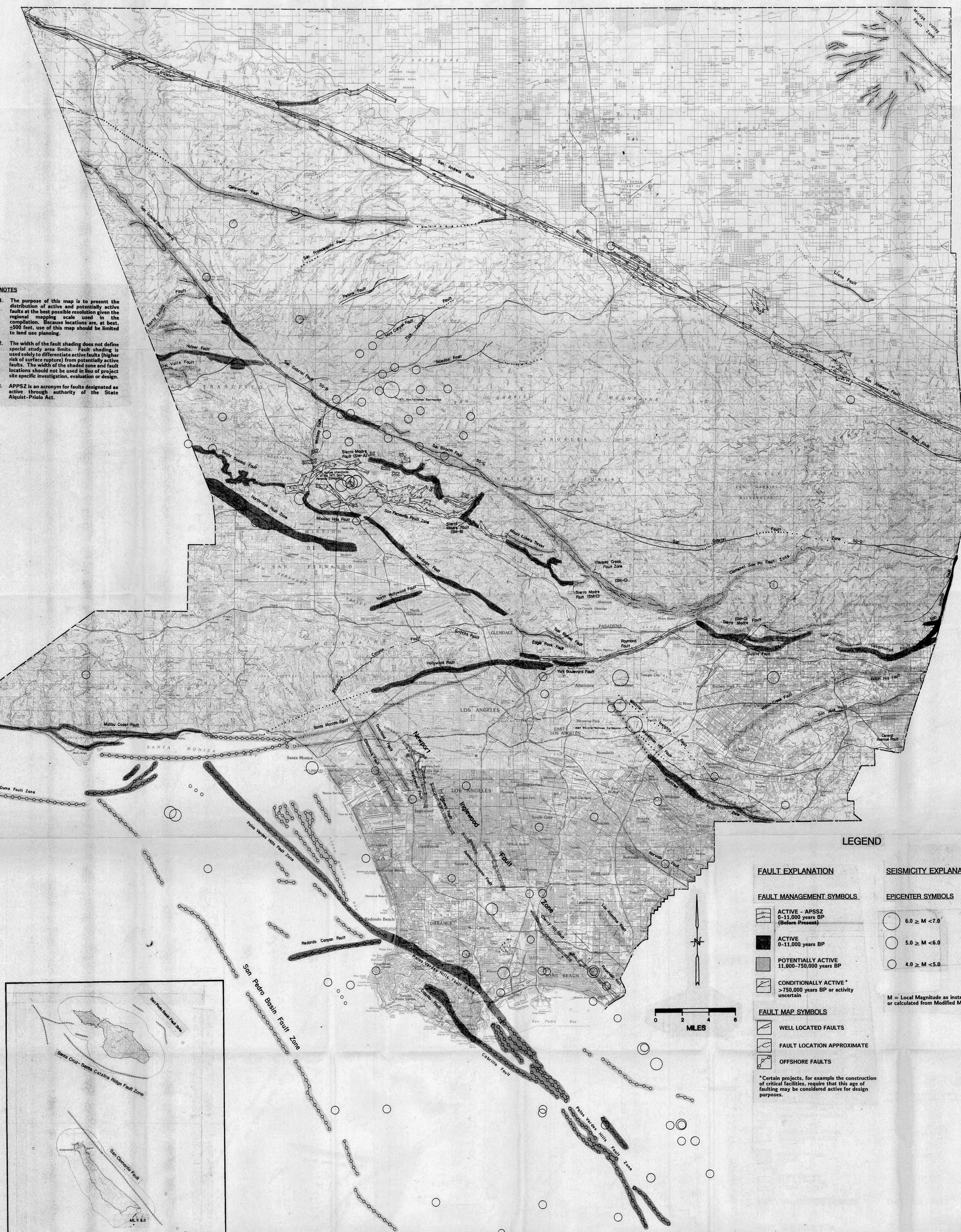
FAULT RUPTURE HAZARDS AND HISTORIC SEISMICITY

NOTES

1. The purpose of this map is to present the distribution of active and potentially active faults at the best possible resolution given the regional mapping scale used in the compilation. Because locations are, at best, ±500 feet, use of this map should be limited to land use planning.
2. The width of the fault shading does not define special study area limits. Fault shading is used solely to differentiate active faults (higher risk of surface rupture) from potentially active faults. The width of the shaded zone and fault locations should not be used in lieu of project site specific investigation, evaluation or design.
3. APPSZ is an acronym for faults designated as active through authority of the State Alquist-Priolo Act.



LEGEND

FAULT EXPLANATION

FAULT MANAGEMENT SYMBOLS

- ACTIVE - APSSZ 0-11,000 years BP (Before Present)
- ACTIVE 0-11,000 years BP
- POTENTIALLY ACTIVE 11,000-750,000 years BP
- CONDITIONALLY ACTIVE* >750,000 years BP or activity uncertain

FAULT MAP SYMBOLS

- WELL LOCATED FAULTS
- FAULT LOCATION APPROXIMATE
- OFFSHORE FAULTS

*Certain projects, for example the construction of critical facilities, require that this age of faulting may be considered active for design purposes.

SEISMICITY EXPLANATION

EPICENTER SYMBOLS

- 6.0 ≥ M <7.0
- 5.0 ≥ M <6.0
- 4.0 ≥ M <5.0

M = Local Magnitude as instrumentally recorded or calculated from Modified Mercalli Intensities.

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PLATE 1

FAULT RUPTURE HAZARDS AND HISTORIC SEISMICITY

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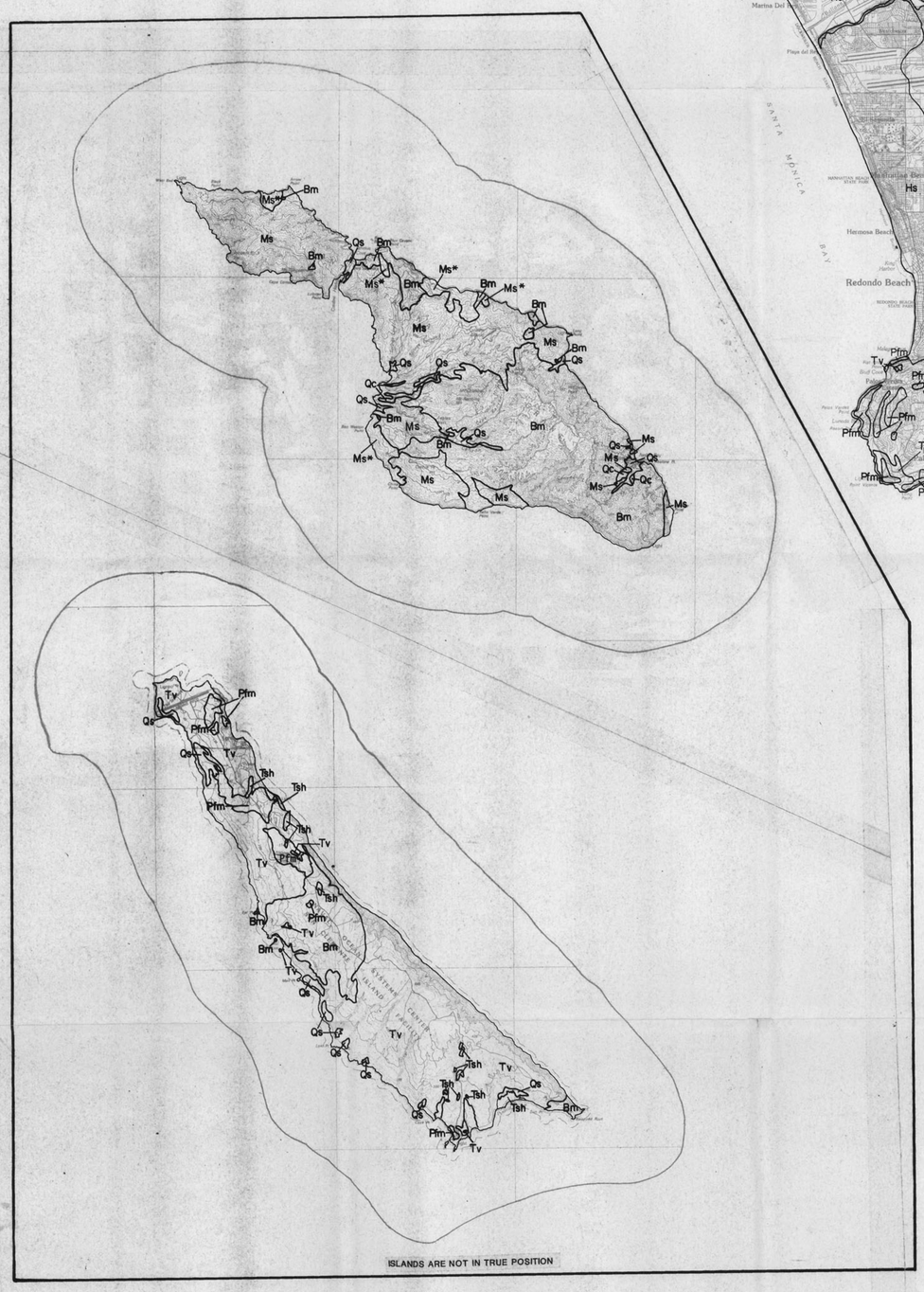
Engineer/Geologist: PES | Drafting By: Staff
LEIGHTON AND ASSOCIATES, INC.

ENGINEERING GEOLOGIC MATERIALS

NOTES

1. The purpose of this map is to present the generalized outcrop pattern of alluvium and bedrock units as derived from grouping gross lithologies having similar physical properties. The subdivision of bedrock materials relied heavily upon California Division of Mines and Geology geologic maps.
2. An engineering geologic unit - geographic locality matrix, located in the Safety Element Background report (Chapter 3), presents the methodology used to differentiate bedrock units. The subdivision of surficial alluvial materials is synthesized from mapping by Tinsley and Fumal, (1985). Hs and Qs units denoted on the map are susceptible to liquefaction and other forms of earthquake-induced ground failure. Methodology and data sources used in the compilation are presented in Chapter 3.
3. The symbol Qsr denotes areas of alluvial material occupied by a dam or reservoir. The symbol Ms* on the Channel Islands denotes landslide disrupted Ms units.
4. Use of this map should be limited to general land use planning purposes.



LEGEND

EXPLANATION

SURFICIAL ALLUVIAL MATERIALS

- Hs — Holocene stream channel, alluvial fan, flood plain, and dune deposits, fine to medium-coarse grained.
- Hc — Holocene alluvium, very coarse grained.
- Pfm — Pleistocene alluvium or marine terrace deposits, fine to medium grained.
- Pc — Pleistocene terrace deposits, coarse to very coarse grained.
- Qs — Quaternary alluvium, fine to coarse grained.
- Qc — Quaternary alluvium, very coarse grained.

TRANSITIONAL MATERIALS

- PQ — Uplifted, faulted Plio-Pleistocene marine deposits.

BEDROCK MATERIALS

- Tsh — Tertiary Shales
- Tss — Tertiary Sandstone and Conglomerate
- Tcs — Tertiary Conglomerate
- Tv — Tertiary Volcanics
- Ms — Meta-Sedimentary (Low Strength)
- Bm — Crystalline or Metamorphic Rock

0 2 4 6 MILES

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PLATE 2

ENGINEERING GEOLOGIC MATERIALS

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Engineer/Geologist: PES | Drafting By: Staff
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PLATE 3 - LOS ANGELES COUNTY SAFETY ELEMENT

SHALLOW AND PERCHED GROUND WATER

NOTES

1. This map presents a compilation of all available shallow and perched ground water information. This map does not preclude the existence of shallow ground water outside of the areas indicated and therefore does not, by itself, support a direct interpretation of liquefaction susceptibility.

2. A ground water boundary on this map may represent either a contour or an isobath. An isobath delineates the average depth to ground water by enclosing an area defined by available borehole data. An isobath, as differentiated from a ground water contour, may intersect other isobaths or ground water contours.

3. This map is not intended for any other purposes than to demonstrate the regional distribution of shallow ground water conditions, as defined by the present data base. The liquefaction susceptibility map is more conservative by identifying liquefiable areas based on geomorphic environment. In any case, site specific investigations must be performed to account for seasonal and long-termed fluctuations in the shallow and perched ground water table.

NO INFORMATION AVAILABLE FOR ISLANDS

LEGEND

EXPLANATION

- DEPTH TO GROUND WATER - WELL DETERMINED
- DEPTH TO GROUND WATER - APPROXIMATELY LOCATED
- AREAS WHERE GEOLOGIC CONDITIONS ARE CONDUCIVE TO PERCHED GROUND WATER

0 2 4 6
MILES

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PLATE 3

SHALLOW AND PERCHED GROUND WATER

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Engineer/Geologist: PES | Drafting By: Staff
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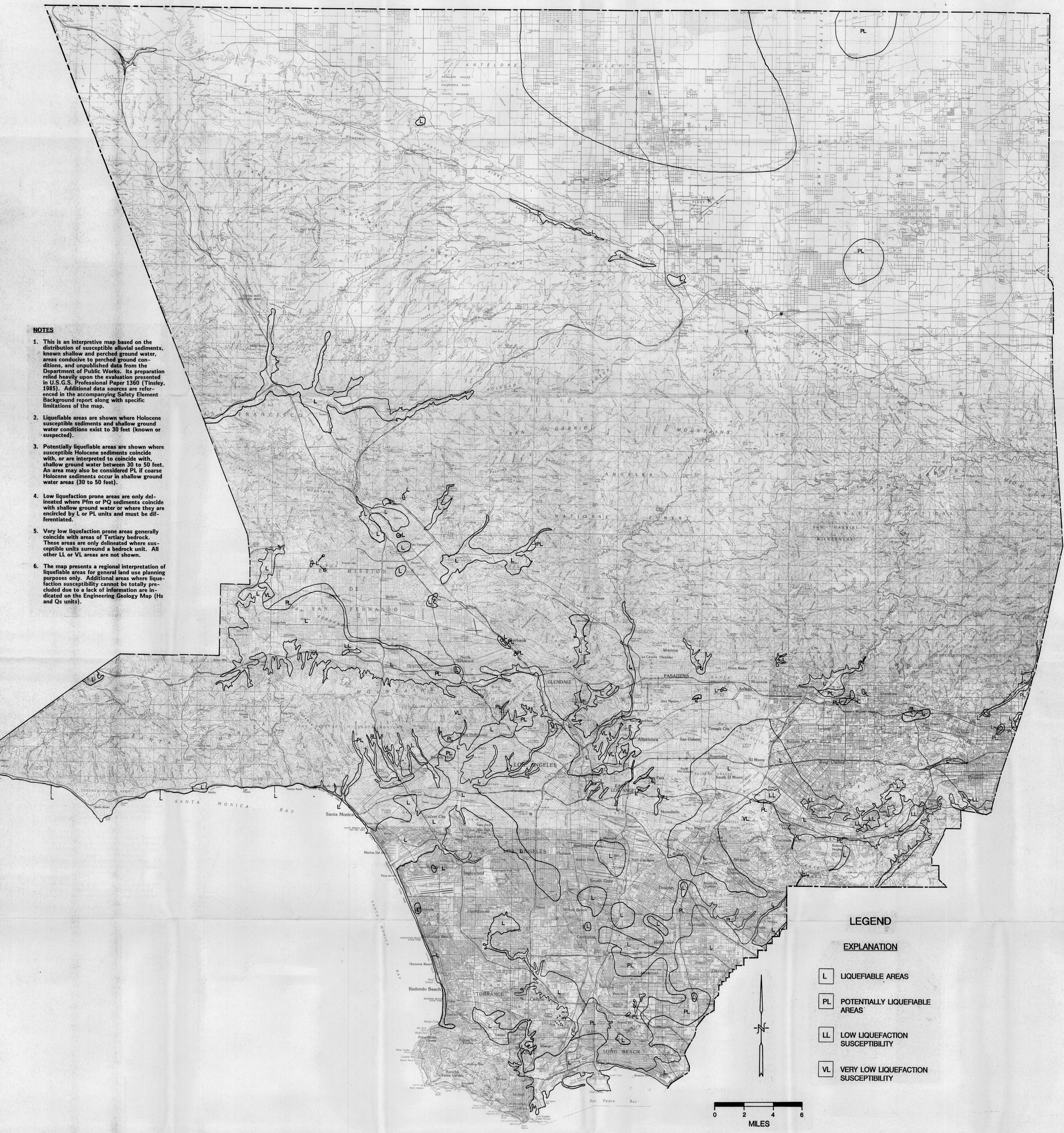
LIQUEFACTION SUSCEPTIBILITY



NOTES

1. This is an interpretive map based on the distribution of susceptible alluvial sediments, known shallow and perched ground water, areas conducive to perched ground conditions, and unpublished data from the Department of Public Works. Its preparation relied heavily upon the evaluation presented in U.S.G.S. Professional Paper 1360 (Tinsley, 1985). Additional data sources are referenced in the accompanying Safety Element Background report along with specific limitations of the map.

2. Liquefiable areas are shown where Holocene susceptible sediments and shallow ground water conditions exist to 30 feet (known or suspected).

3. Potentially liquefiable areas are shown where susceptible Holocene sediments coincide with, or are interpreted to coincide with, shallow ground water between 30 to 50 feet. An area may also be considered PL if coarse Holocene sediments occur in shallow ground water areas (30 to 50 feet).

4. Low liquefaction prone areas are only delineated where Pfm or PQ sediments coincide with shallow ground water or where they are encircled by L or PL units and must be differentiated.

5. Very low liquefaction prone areas generally coincide with areas of Tertiary bedrock. These areas are only delineated where susceptible units surround a bedrock unit. All other LL or VL areas are not shown.

6. The map presents a regional interpretation of liquefiable areas for general land use planning purposes only. Additional areas where liquefaction susceptibility cannot be totally precluded due to a lack of information are indicated on the Engineering Geology Map (Hs and Qs units).

LEGEND

EXPLANATION

L	LIQUEFIABLE AREAS
PL	POTENTIALLY LIQUEFIABLE AREAS
LL	LOW LIQUEFACTION SUSCEPTIBILITY
VL	VERY LOW LIQUEFACTION SUSCEPTIBILITY

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PLATE 4

LIQUEFACTION SUSCEPTIBILITY			
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Engineer/Geologist: PES		Drafting By: Staff	
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LANDSLIDE INVENTORY

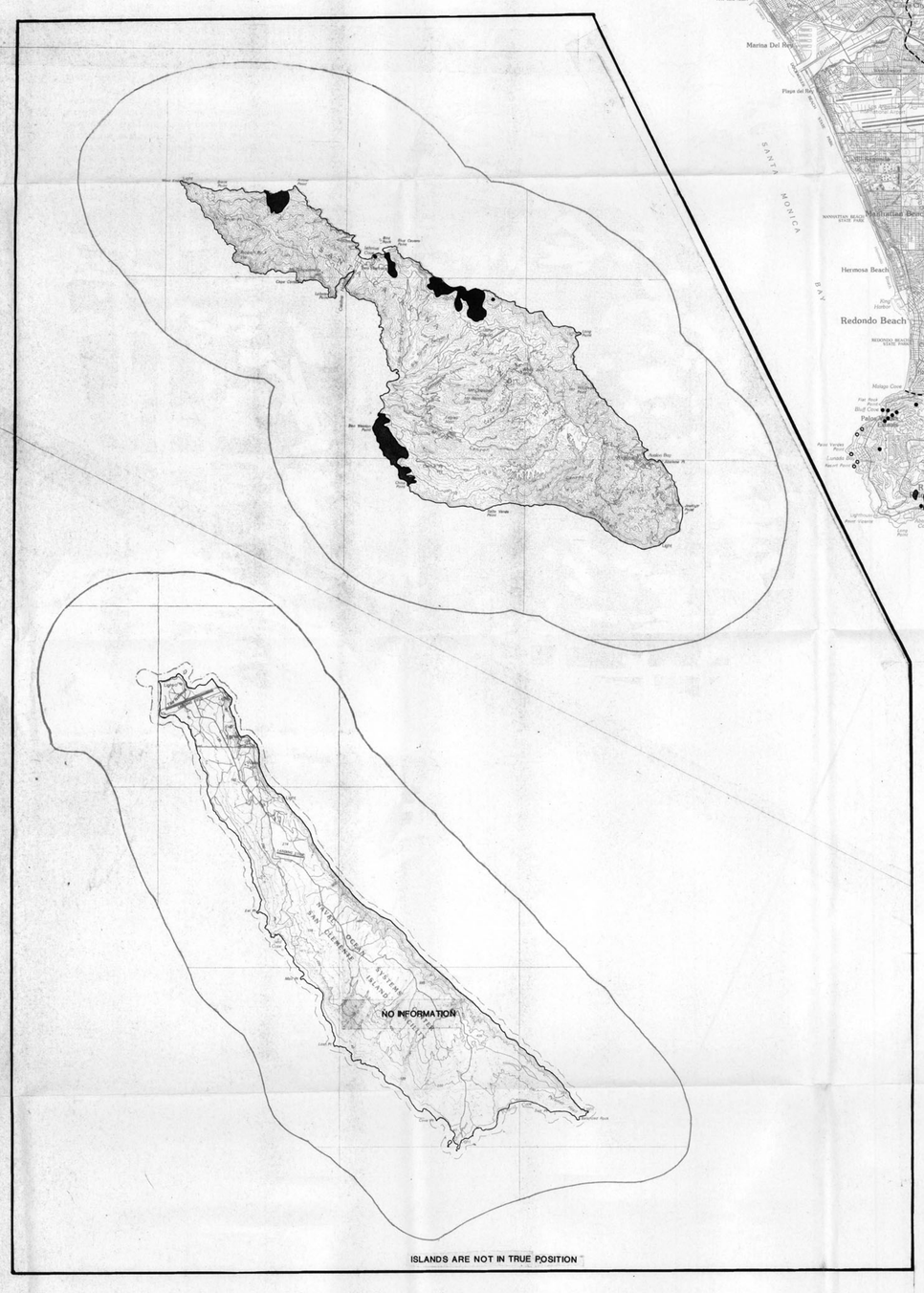
NOTES

1. Bedrock landslides include mostly rotational bedrock slumps and translation earth block slides. Bedrock creeps and large rock slides, topples, or falls, may also be represented. Undifferentiated shallow surficial landslides include smaller rockfalls, earthflows, and mud and debris flows. Surficial failure styles may also occur as elements of bedrock landsliding. A landslide style-geographic locality matrix for earthquake-induced and storm-induced landsliding is located in the Safety Element Background report, Chapter 3. Source references are detailed in Appendix 4 of the *same report*.

2. Individual landslides less than five acres, denoted by the smallest circles, are included in certain areas of the County where smaller landslides may be more characteristic of the terrain or where larger scale geologic/landslide mapping is inadequate.

3. The dashed line corresponds to the approximate limits of hillside areas in the County. The General Plan defines slopes greater than 25 percent for hillside management purposes and takes precedence over the approximate boundary shown on this map. The hillside areas shown on this map are not intended for hillside management purposes.

4. Hillside areas with few or no landslides may reflect the status of landslide mapping or the presence of landslides less than five acres. The map does not preclude the existence of existing landslides or the potential for slope failure outside of landslide prone areas as compiled.



ISLANDS ARE NOT IN TRUE POSITION

LEGEND

BEDROCK LANDSLIDES

MAP SYMBOL	SIZE	EXPLANATION
●	5 - 100 ACRES	DEFINITE
○	5 - 100 ACRES	PROBABLE
■	GREATER THAN 100 ACRES	DEFINITE
■	GREATER THAN 100 ACRES	PROBABLE

SHALLOW SURFICIAL LANDSLIDES

- UNDIFFERENTIATED
- INDIVIDUAL OR CLUSTER OF SMALL LANDSLIDES

HILLSIDE AREAS

- APPROXIMATE BOUNDARY

0 2 4 6 MILES

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PLATE 5

LANDSLIDE INVENTORY

Proj: 2871855-16 | Scale: 1"=2mi. | Date: 1/90
Engineer/Geologist: PES | Drafting By: Staff

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PLATE 6 - LOS ANGELES COUNTY SAFETY ELEMENT

FLOOD AND INUNDATION HAZARDS

NOTES

1. Dam inundation areas area a direct compilation from maps used to fulfill provisions in conformance with Section 8589.5 of the California Government Code requiring owner prepared dam inundation mapping and emergency response plan preparation. The line patterns used to depict dam or debris basin inundation limits can be assumed to continue unless the inundation pattern closes or ends at a downstream reservoir or overflow channel. This guideline should be followed when inundation limits of more than one inundation source area follow the same contour.
2. The 100-year flood areas are compiled from the Natural Flood Insurance Program (NFIP). The 500-year flood plain areas are compiled from NFIP maps and augmented with information supplied by the Los Angeles County Department of Public Works.
3. Refer to the Technical Background Report of the Safety Element for a detailed explanation of the methodology.
4. This map is intended for general land use planning purposes only. Large scale flood maps within the files of the Department of Public Works should be referred to for project evaluation.

Line indicating approximate limit of tsunami run-up

to Prado Dam (PRD)

LEGEND

EXPLANATION

- TSUNAMI INUNDATION AREA
- DAM OR DEBRIS BASIN INUNDATION AREA
- DAM OR DEBRIS BASIN FLOOD BOUNDARIES
- 100-YEAR FLOOD AREAS
- 500-YEAR FLOOD AREAS
- NON-INUNDATED AREA

0 2 4 6 MILES

NO INFORMATION

ISLANDS ARE NOT IN TRUE POSITION

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PLATE 6

FLOOD AND INUNDATION HAZARDS

Proj: 287 1855-16 | Scale: 1"=2 mil. | Date: 1/90
Engineer/Geologist: PES | Drafting By: Staff
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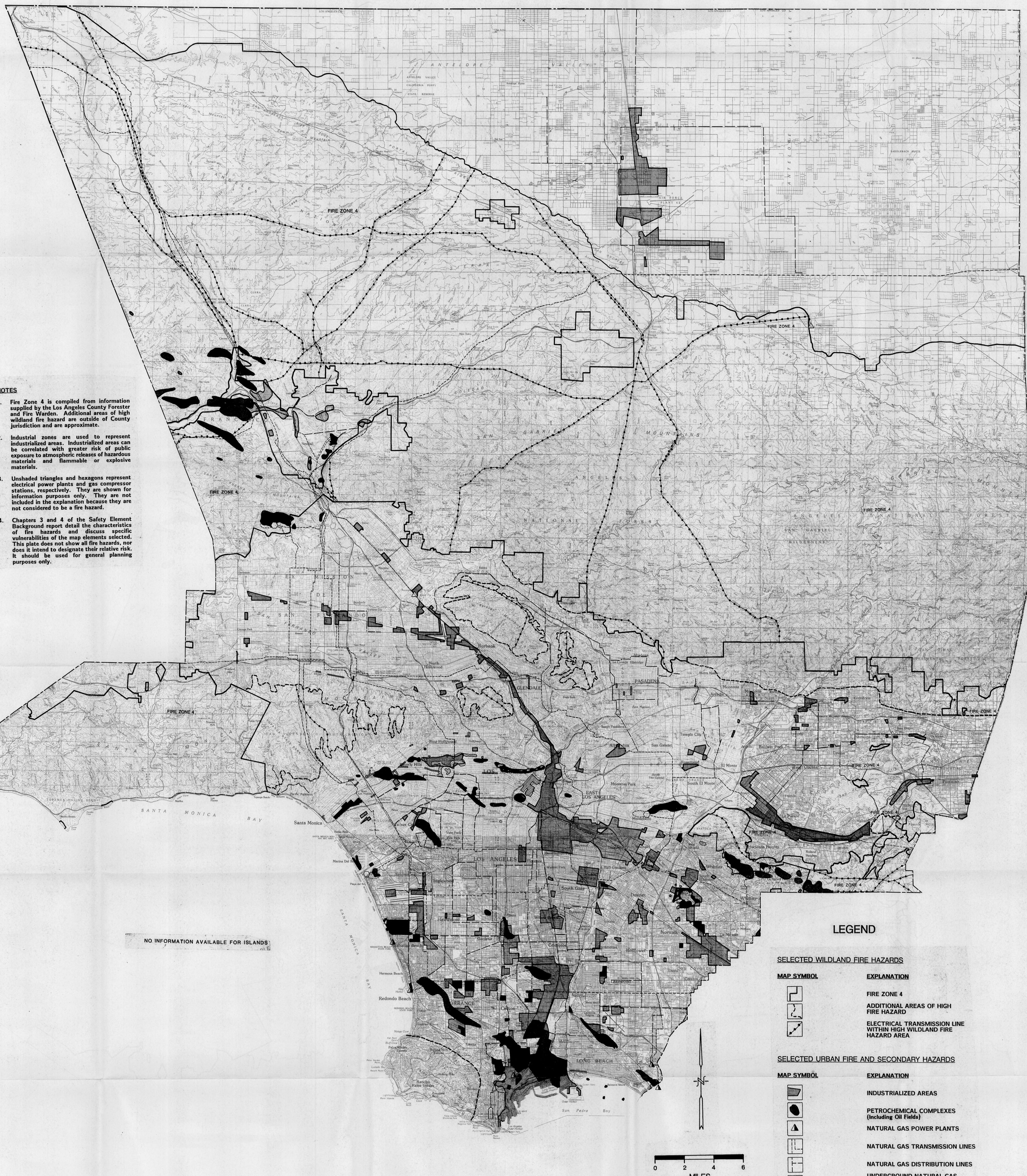
PLATE 7 - LOS ANGELES COUNTY SAFETY ELEMENT

WILDLAND AND URBAN FIRE HAZARDS



NOTES

1. Fire Zone 4 is compiled from information supplied by the Los Angeles County Forester and Fire Warden. Additional areas of high wildland fire hazard are outside of County jurisdiction and are approximate.
2. Industrial zones are used to represent industrialized areas. Industrialized areas can be correlated with greater risk of public exposure to atmospheric releases of hazardous materials and flammable or explosive materials.
3. Unshaded triangles and hexagons represent electrical power plants and gas compressor stations, respectively. They are shown for information purposes only. They are not included in the explanation because they are not considered to be a fire hazard.
4. Chapters 3 and 4 of the Safety Element Background report detail the characteristics of fire hazards and discuss specific vulnerabilities of the map elements selected. This plate does not show all fire hazards, nor does it intend to designate their relative risk. It should be used for general planning purposes only.

LEGEND

SELECTED WILDLAND FIRE HAZARDS

MAP SYMBOL	EXPLANATION
	FIRE ZONE 4
	ADDITIONAL AREAS OF HIGH FIRE HAZARD
	ELECTRICAL TRANSMISSION LINE WITHIN HIGH WILDLAND FIRE HAZARD AREA

SELECTED URBAN FIRE AND SECONDARY HAZARDS

MAP SYMBOL	EXPLANATION
	INDUSTRIALIZED AREAS
	PETROCHEMICAL COMPLEXES (Including Oil Fields)
	NATURAL GAS POWER PLANTS
	NATURAL GAS TRANSMISSION LINES
	NATURAL GAS DISTRIBUTION LINES
	UNDERGROUND NATURAL GAS STORAGE FACILITIES
	AREAS OF KNOWN SHALLOW METHANE ACCUMULATION
20	SELECTED CONCENTRATIONS OF POST-1946 HIGH RISE BUILDINGS (GREATER THAN 8 STORIES)

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PLATE 7

WILDLAND AND URBAN FIRE HAZARDS

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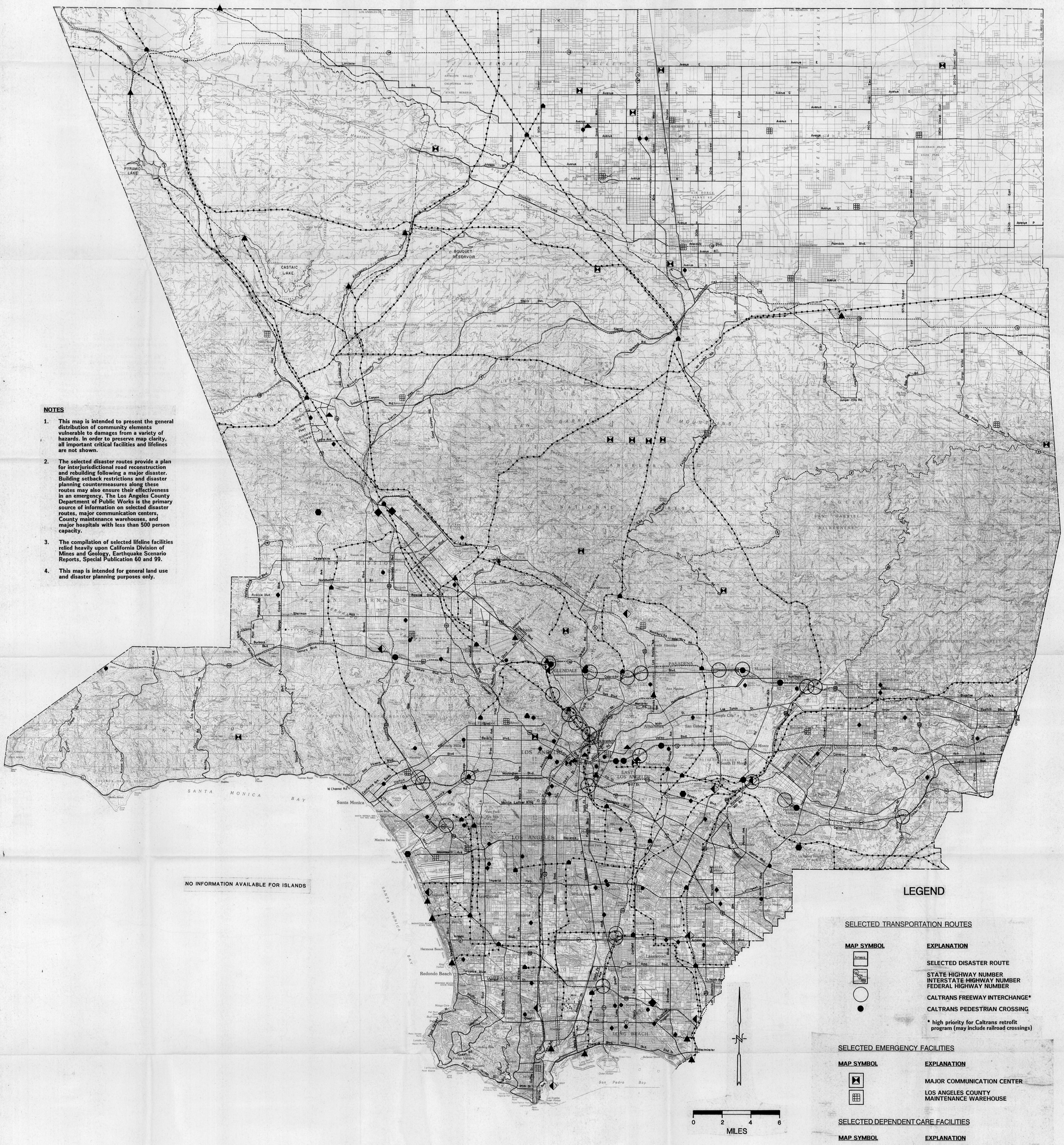
Engineer/Geologist: PES | Drafting By: Staff
LEIGHTON AND ASSOCIATES, INC.

CRITICAL FACILITIES AND LIFELINE SYSTEMS



NOTES

1. This map is intended to present the general distribution of community elements vulnerable to damages from a variety of hazards. In order to preserve map clarity, all important critical facilities and lifelines are not shown.
2. The selected disaster routes provide a plan for interjurisdictional road reconstruction and rebuilding following a major disaster. Building setback restrictions and disaster planning countermeasures along these routes may also ensure their effectiveness in an emergency. The Los Angeles County Department of Public Works is the primary source of information on selected disaster routes, major communication centers, County maintenance warehouses, and major hospitals with less than 500 person capacity.
3. The compilation of selected lifeline facilities relied heavily upon California Division of Mines and Geology, Earthquake Scenario Reports, Special Publication 60 and 99.
4. This map is intended for general land use and disaster planning purposes only.

NO INFORMATION AVAILABLE FOR ISLANDS

LEGEND

SELECTED TRANSPORTATION ROUTES

MAP SYMBOL	EXPLANATION
Artesia	SELECTED DISASTER ROUTE
405	STATE HIGHWAY NUMBER INTERSTATE HIGHWAY NUMBER FEDERAL HIGHWAY NUMBER
	CALTRANS FREEWAY INTERCHANGE*
	CALTRANS PEDESTRIAN CROSSING

* high priority for Caltrans retrofit program (may include railroad crossings)

SELECTED EMERGENCY FACILITIES

MAP SYMBOL	EXPLANATION
	MAJOR COMMUNICATION CENTER
	LOS ANGELES COUNTY MAINTENANCE WAREHOUSE

SELECTED DEPENDENT CARE FACILITIES

MAP SYMBOL	EXPLANATION
	MAJOR ACUTE CARE HOSPITAL (CAPACITY GREATER THAN 500)
	OTHER MAJOR HOSPITAL
	LOS ANGELES COUNTY COMMUNITY CARE FACILITY (CAPACITY GREATER THAN 200)
	MAJOR JAIL FACILITY

SELECTED LIFELINE FACILITIES

MAP SYMBOL	EXPLANATION
	GAS COMPRESSOR STATION
	ELECTRICAL POWER PLANT
	WATER TREATMENT PLANT
	WASTE WATER TREATMENT PLANT
	MAJOR TRANSMISSION SUBSTATION
	HIGH VOLTAGE TRANSMISSION LINE
	UNDERGROUND ELECTRICAL TRANSMISSION LINE
	MAJOR AQUEDUCT

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PLATE 8

CRITICAL FACILITIES AND LIFELINE SYSTEMS

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Engineer/Geologist: PES | Drafting By: Staff
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