

APPENDIX H:

PLATES









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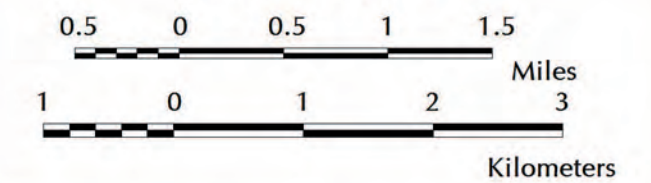
Essential Facilities

Newport Beach, California

EXPLANATION

-  Schools
-  Police Station
-  Fire Station
-  City Hall
-  Hospital
-  Harbor Master and Coast Guard Stations
-  Civic Center
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS
 RASTER
 Source: City of Newport Beach and Google Maps



Project Number: 3311
 Date: 2014



Plate H-1

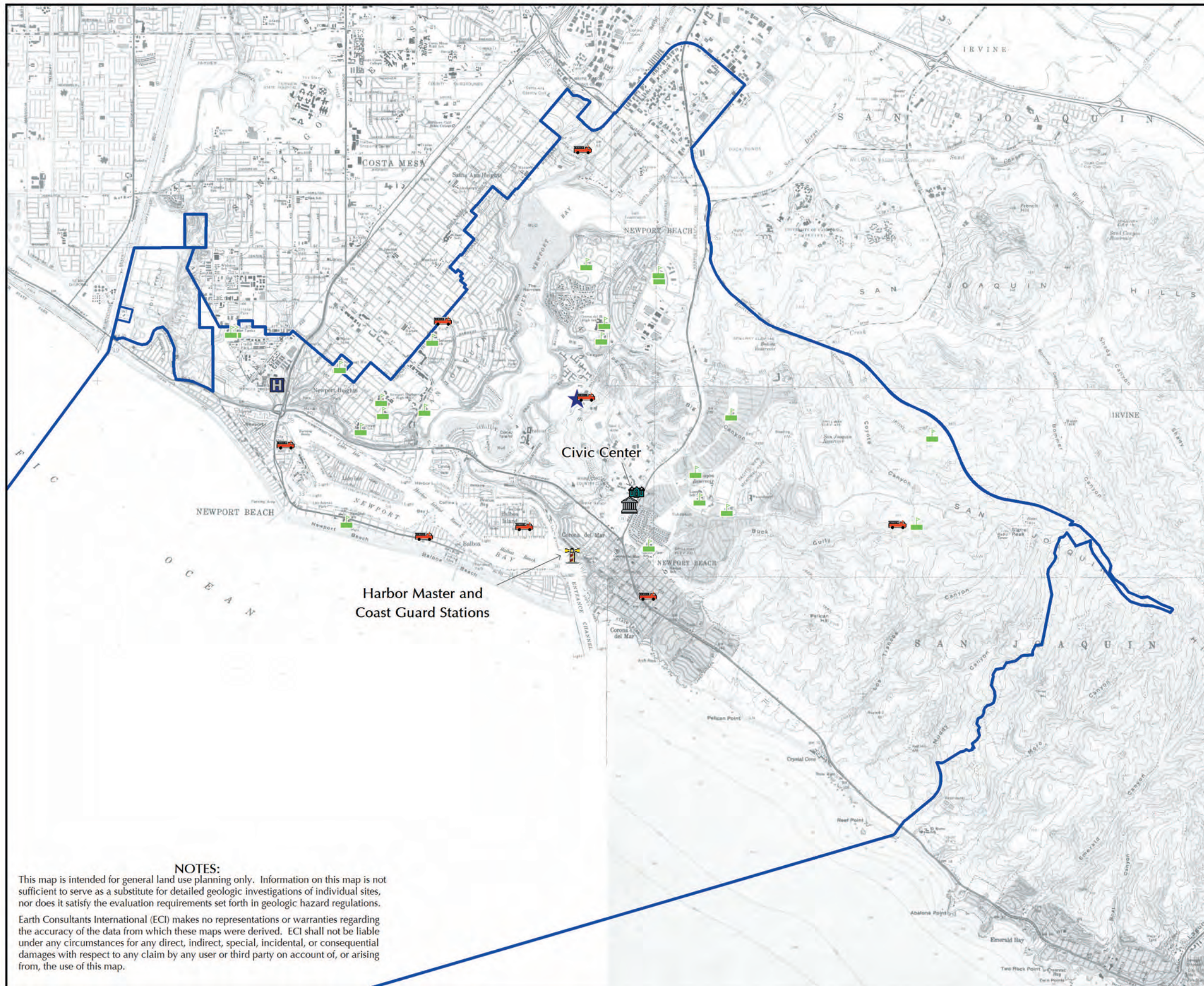
NOTES:

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Harbor Master and
 Coast Guard Stations

Civic Center



Historical Seismicity (1855-2014)

Newport Beach, California

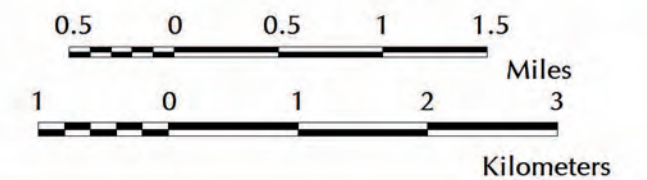
EXPLANATION

Earthquake Magnitude

- 5 to 6.4
- 4 to 5
- 3 to 4
- 2 to 3
- 1 to 2

Newport Beach City Boundary

Scale: 1:60,000

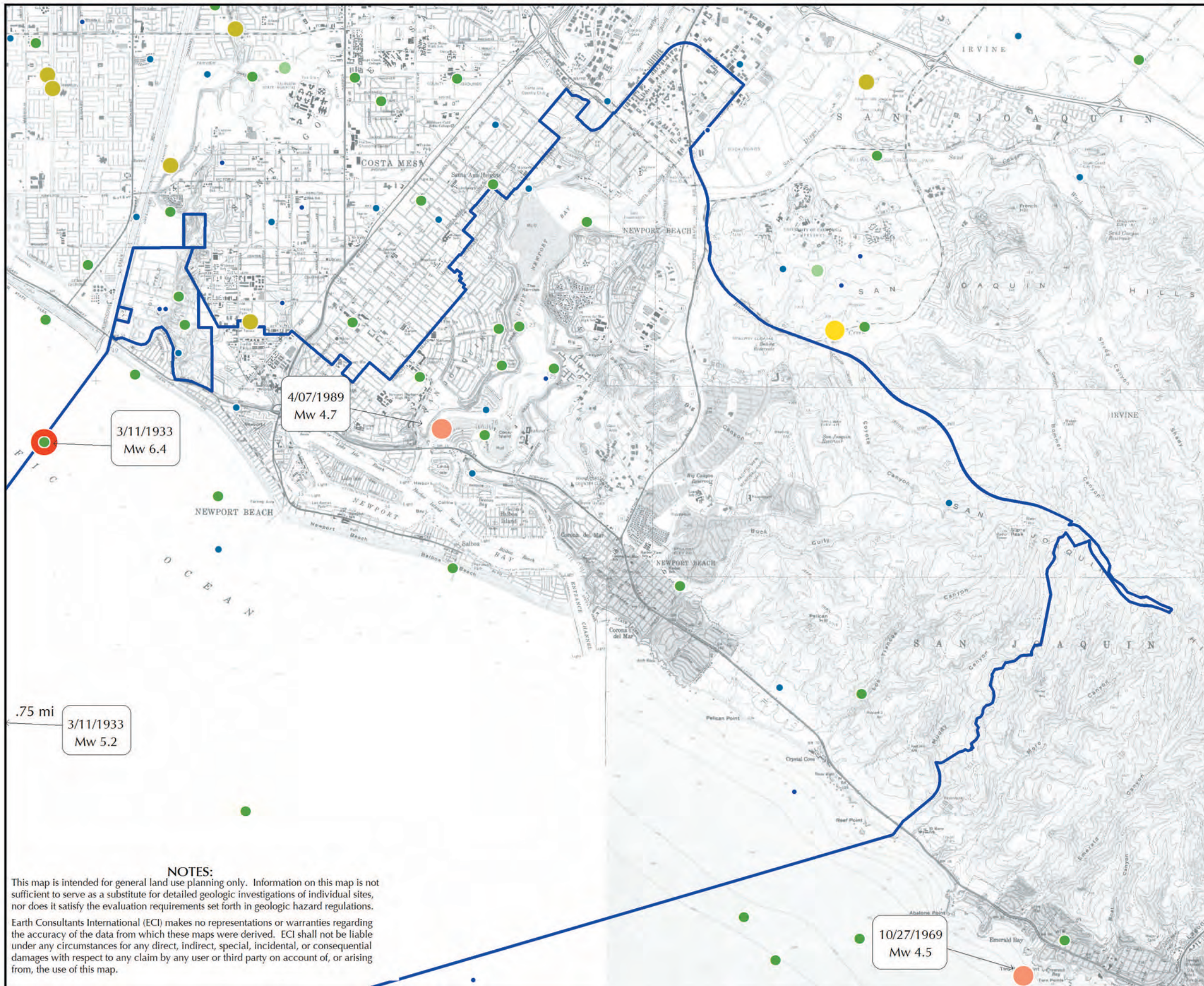


Base Map: USGS Topographic Map from Sure!MAPS RASTER
Sources: Southern California Earthquake Center (January 1932 to April 2014); National Earthquake Information Center (1855 to 1931).



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Date: 2010

Plate H-2



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Fault Map


Newport Beach, California

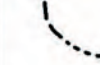
EXPLANATION


Fault: solid where location known, long dashed where approximate, dotted where inferred.


 Major fault traces as mapped by Morton, 1999. Presumed active, except where shown otherwise based on geological studies.

 Southward projection of active fault traces based on a subsurface study on the west bank of the Santa Ana River.

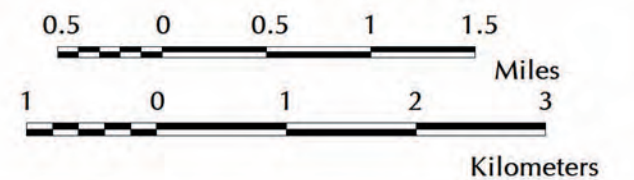
 Secondary fault traces that have been shown to have moved at least once during the Holocene.

 Faults that are not active.

 Fault Hazard Management Zone for real-estate disclosure purposes (refer to text).

 Newport Beach City Boundary

Scale: 1:60,000



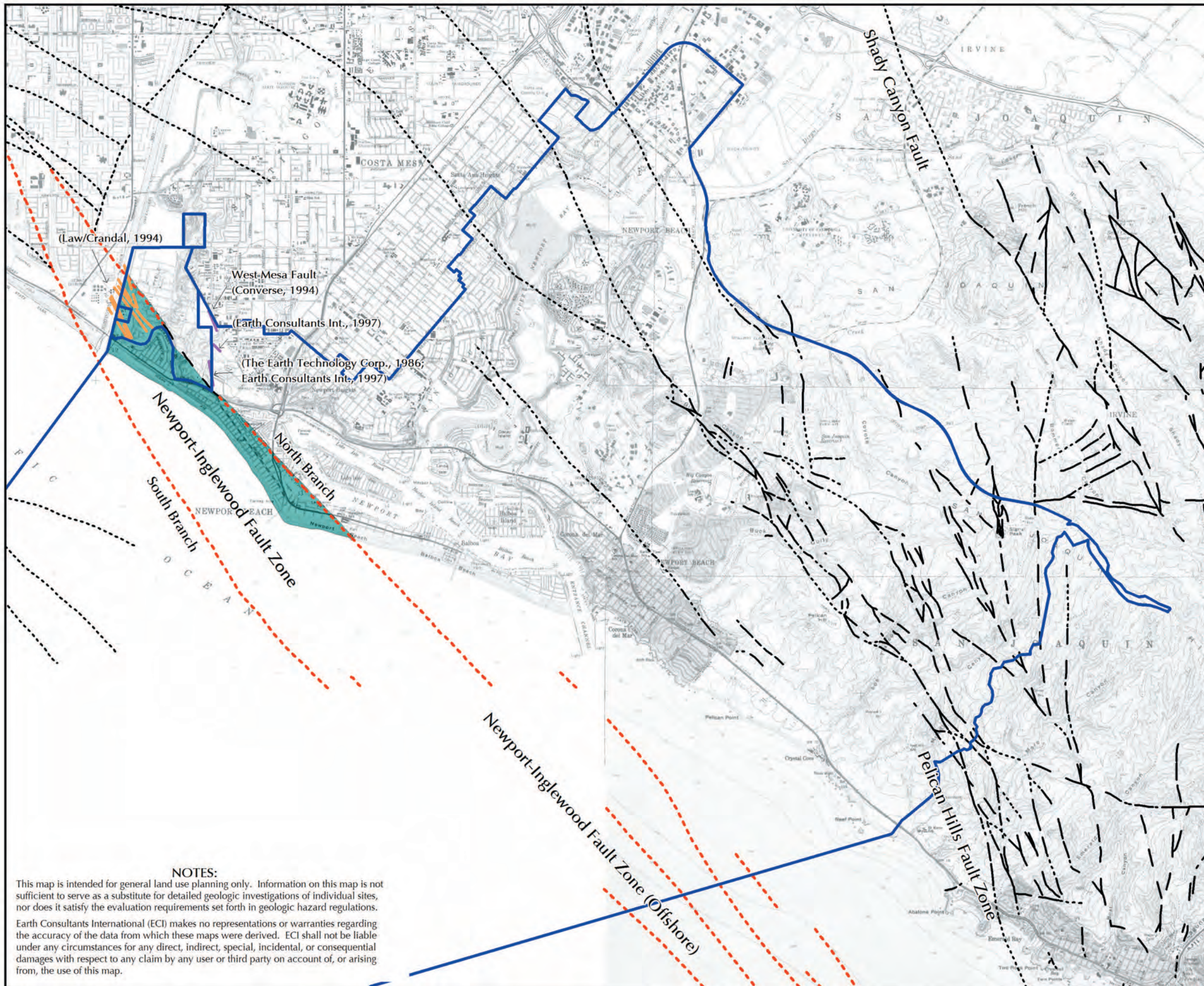
Base Map: USGS Topographic Map from Sure!MAPS RASTER

Source: Earth Technology Corp., 1986; Converse, 1994; Law/Crandall, 1994; Earth Consultants Int., 1997; Morton, 1999.



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Date: 2014

Plate H-3



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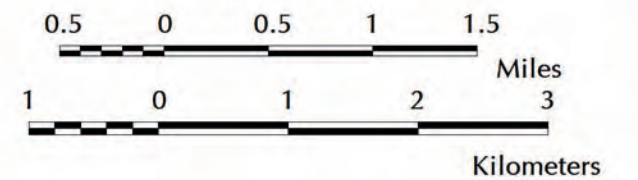
Seismic Hazards Map

Newport Beach, California

EXPLANATION

-  Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693c would be required.
-  Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693c would be required.
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
 Source: California Geological Survey, 1997; Revised 2001 (Newport, Tustin and Laguna Beach Quadrangles).



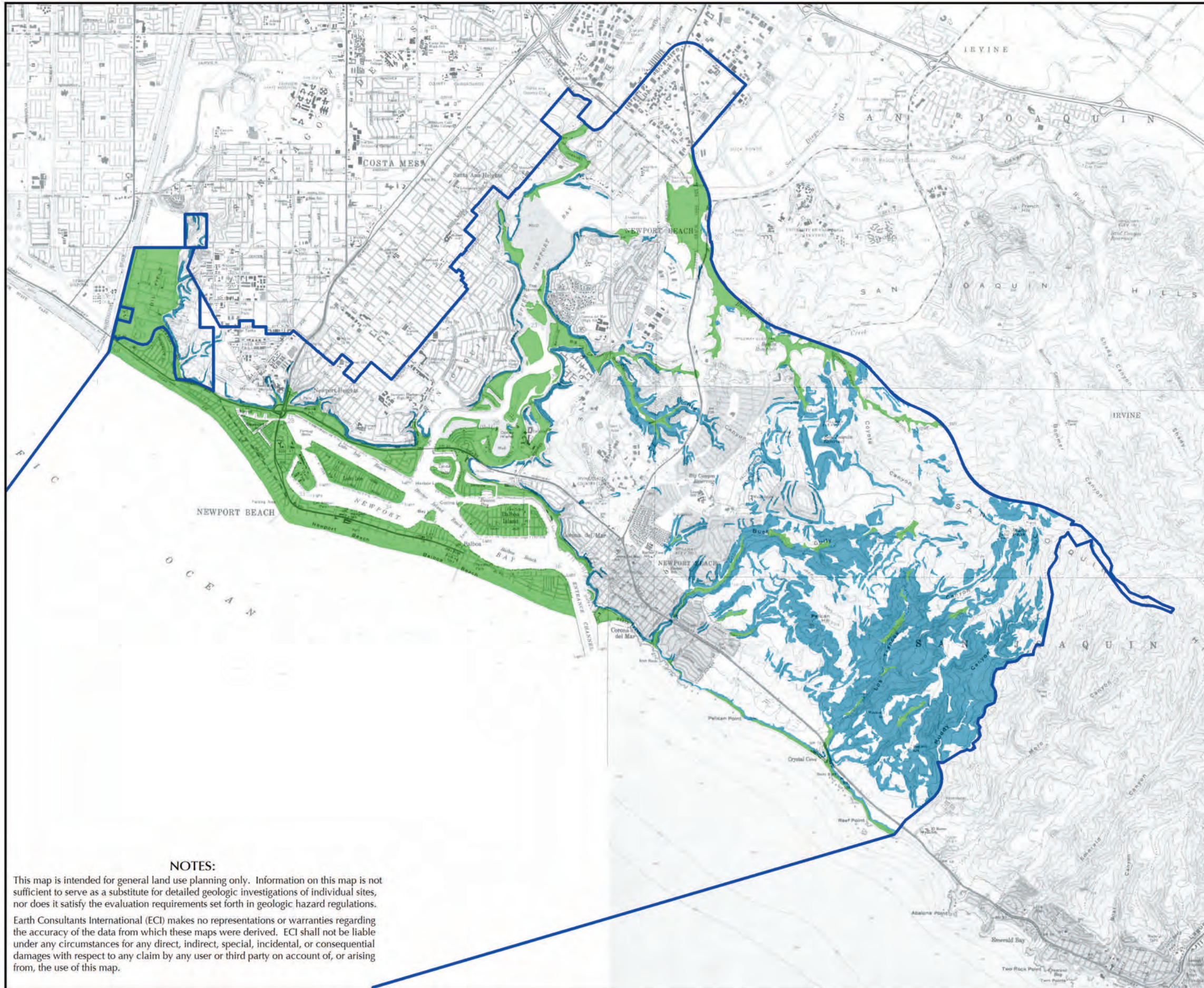
Project Number: 3311
 Date: 2014

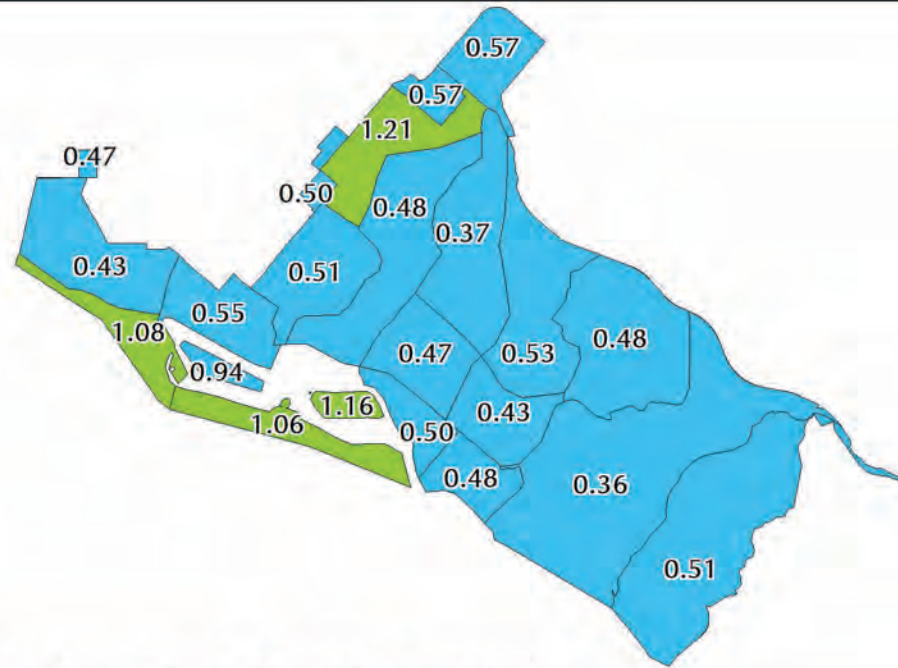
Plate H-4

NOTES:

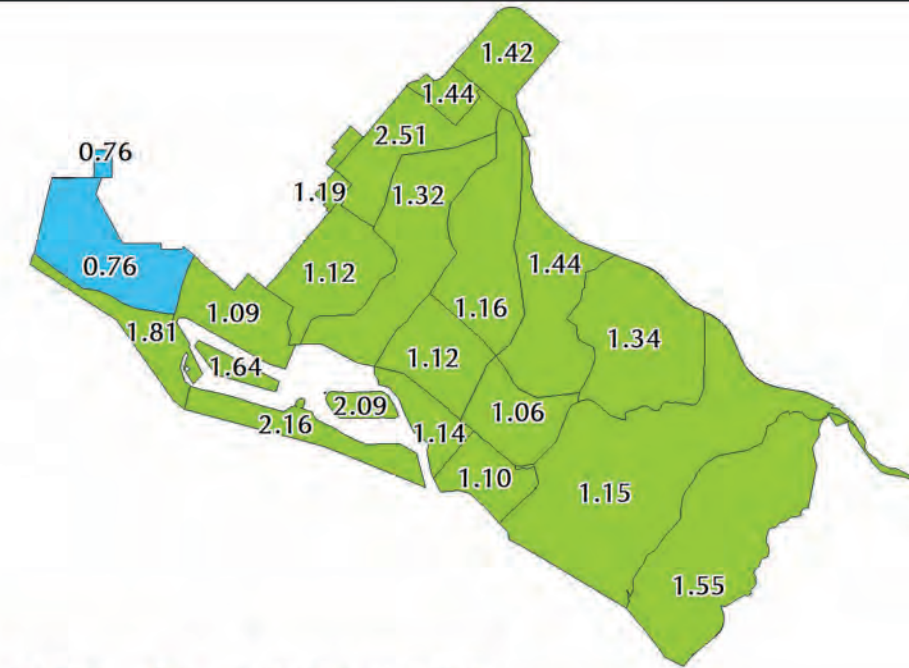
This map is intended for general land use planning only. Information on this map is not sufficient to serve as a substitute for detailed geologic investigations of individual sites, nor does it satisfy the evaluation requirements set forth in geologic hazard regulations.

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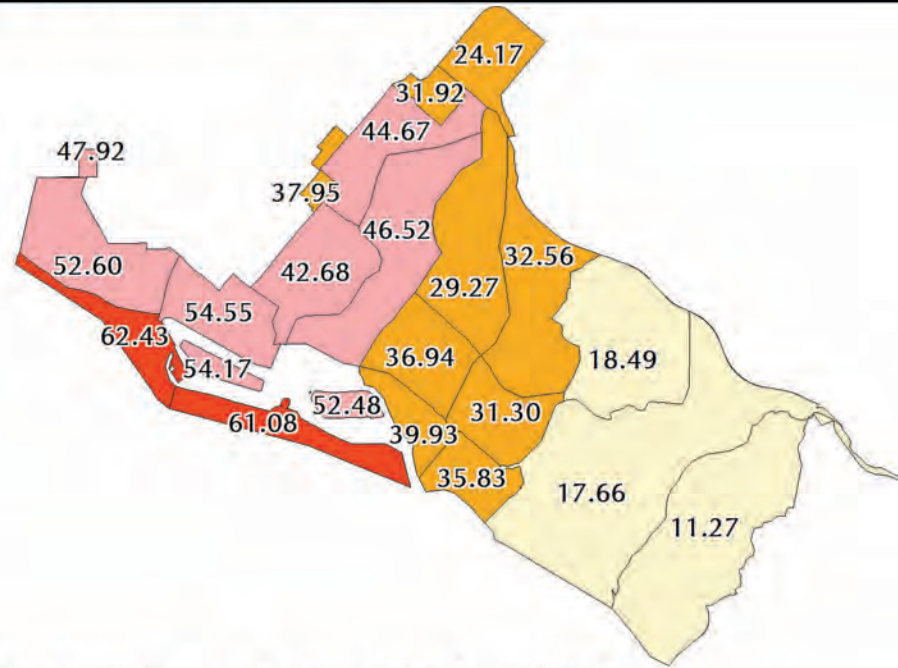




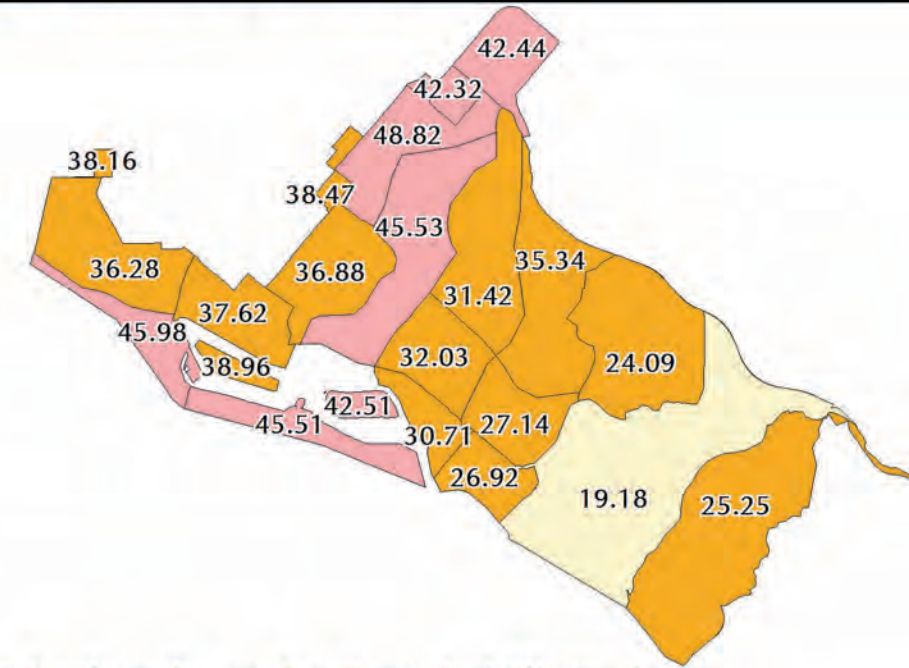
Magnitude 7.8 Earthquake on San Andreas Fault



Magnitude 6.8 Earthquake on Whittier Fault



Magnitude 6.8 Earthquake on Newport-Inglewood Fault



Magnitude 7.1 Earthquake on San Joaquin Hills Fault

EXPLANATION

Building Losses (as a Percentage of Total Dollar Exposure) by Census Tract
(labels show percentage of building losses estimated for each census tract)

- less than 1%
- 10-19.99%
- 40-59.99%
- 1-9.99%
- 20-39.99%
- 60% and greater

Sources: Federal Emergency Management Agency, HAZUS-MH, 2000



Commercial Building Losses as a Percentage of Total Dollar Exposure
(Based on Four Earthquake Scenarios)
Newport Beach, California

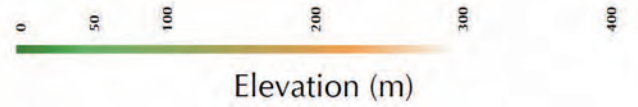
Plate H-6



Geomorphic Map

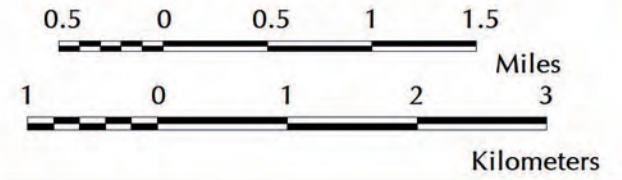
Newport Beach, California

EXPLANATION



Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
Source: US Geological Survey 10 m Digital Elevation Model



Project Number: 3311
Date: 2014

Plate H-7

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FEMA Flood Zones Map Newport Beach, California

EXPLANATION

FEMA Flood Insurance Rate Zones High Risk Areas (Special Flood Hazard Areas)

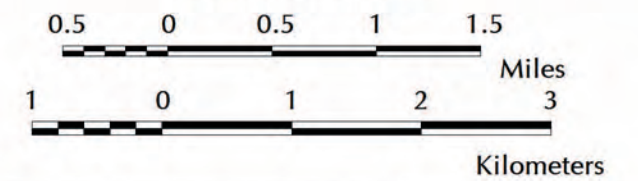
- A** Zone that corresponds to the 100-year flood areas, as determined by approximate methods. Because detailed hydraulic analyses were not performed, no base flood elevations or depths have been determined. Mandatory flood insurance is required.
- AE** Zone that corresponds to the 100-year flood areas, as determined by detailed hydraulic analyses. In most cases, base flood elevations are shown at selected intervals.* Mandatory flood insurance is required.
- AE** Floodway zone*. Watercourse channel that generally must be kept free of encroachment. Development is subject to special regulations.
- VE** Coastal flood zone with velocity hazard (wave action), base flood determined.

Moderate and Low Risk Areas

- X** Zone that corresponds to areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. No base flood elevations or depths are shown. Flood insurance is available but not required.
- X** Zone that corresponds to areas protected from the 100-year flood by levees. Flood insurance is available but not required.
- X** Zone that corresponds to areas outside of the 500-year flood. Flood insurance is available but not required.
- Newport Beach City Boundary

* See FEMA Flood Insurance Rate Maps and FEMA Flood Insurance Study for Orange County for Base Flood Elevations.

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
Source: Federal Emergency Management Agency, 2009, Digital Flood Insurance Rate Map Database, Orange County, California, USA

Pannels: 06059C0264J, 06059C0267J, 06059C0269J, 06059C0286J, 06059C0288J, 06059C0289J, 06059C0377J, 06059C0381J, 06059C0382J, 06059C0384J, 06059C0401J, 06059C0402J, 06059C0403J, 06059C0404J, 06059C0408J



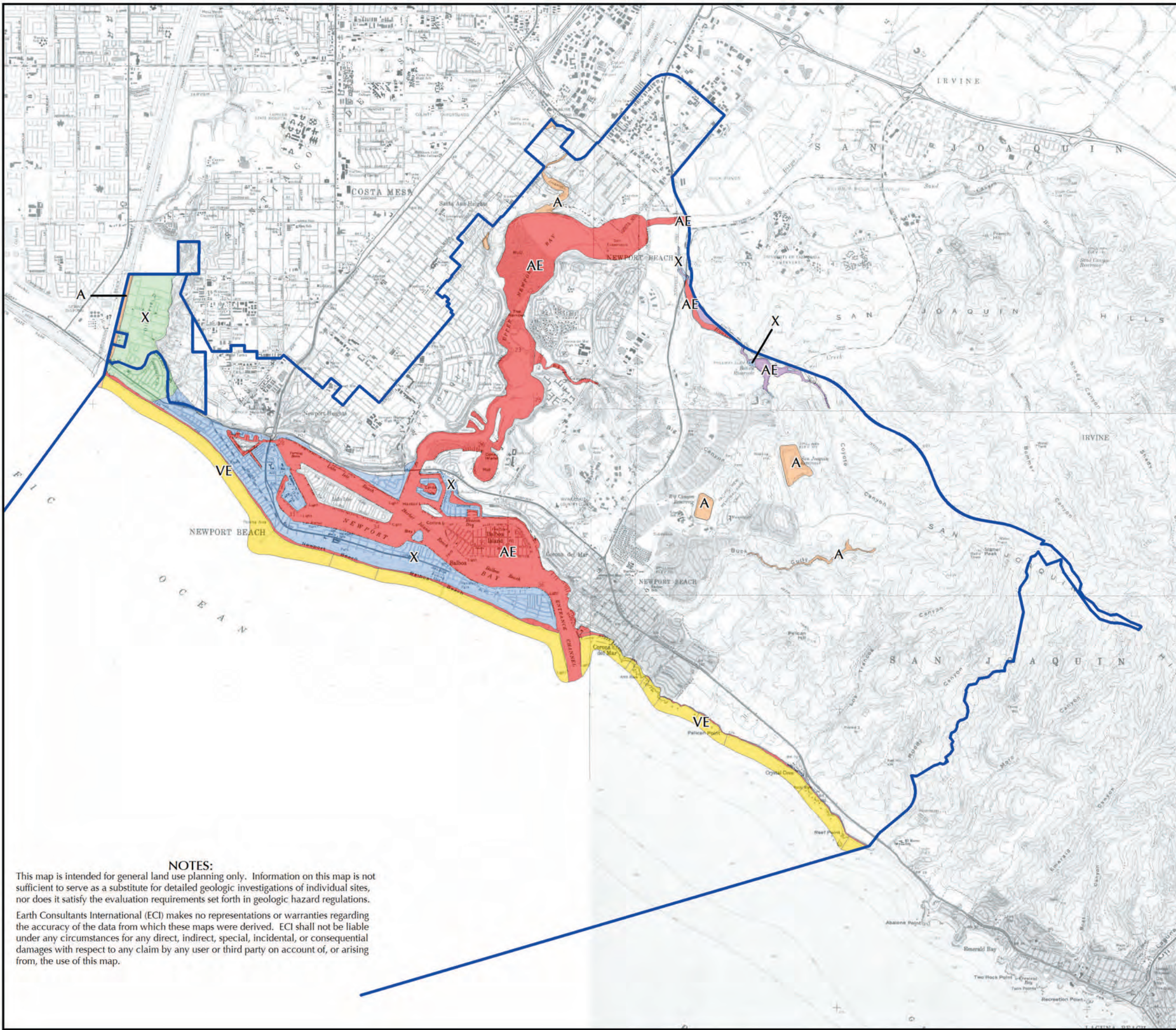
Project Number: 3311
Date: 2014

Plate H-8

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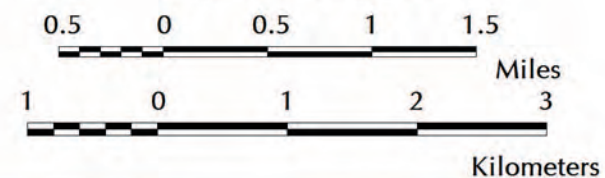
Dam Failure Inundation Map

Newport Beach, California

EXPLANATION

-  Harbor View Reservoir Failure Inundation Pathway
-  San Joaquin Reservoir Failure Inundation Pathway
-  Villa Park Reservoir Failure Inundation Pathway
-  Santiago Creek Reservoir Failure Inundation Pathway
-  Prado Dam Failure Inundation Pathway
-  Big Canyon Reservoir Failure Inundation Pathway
-  Reservoir
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS
 RASTER
 Source: California Office of Emergency Services



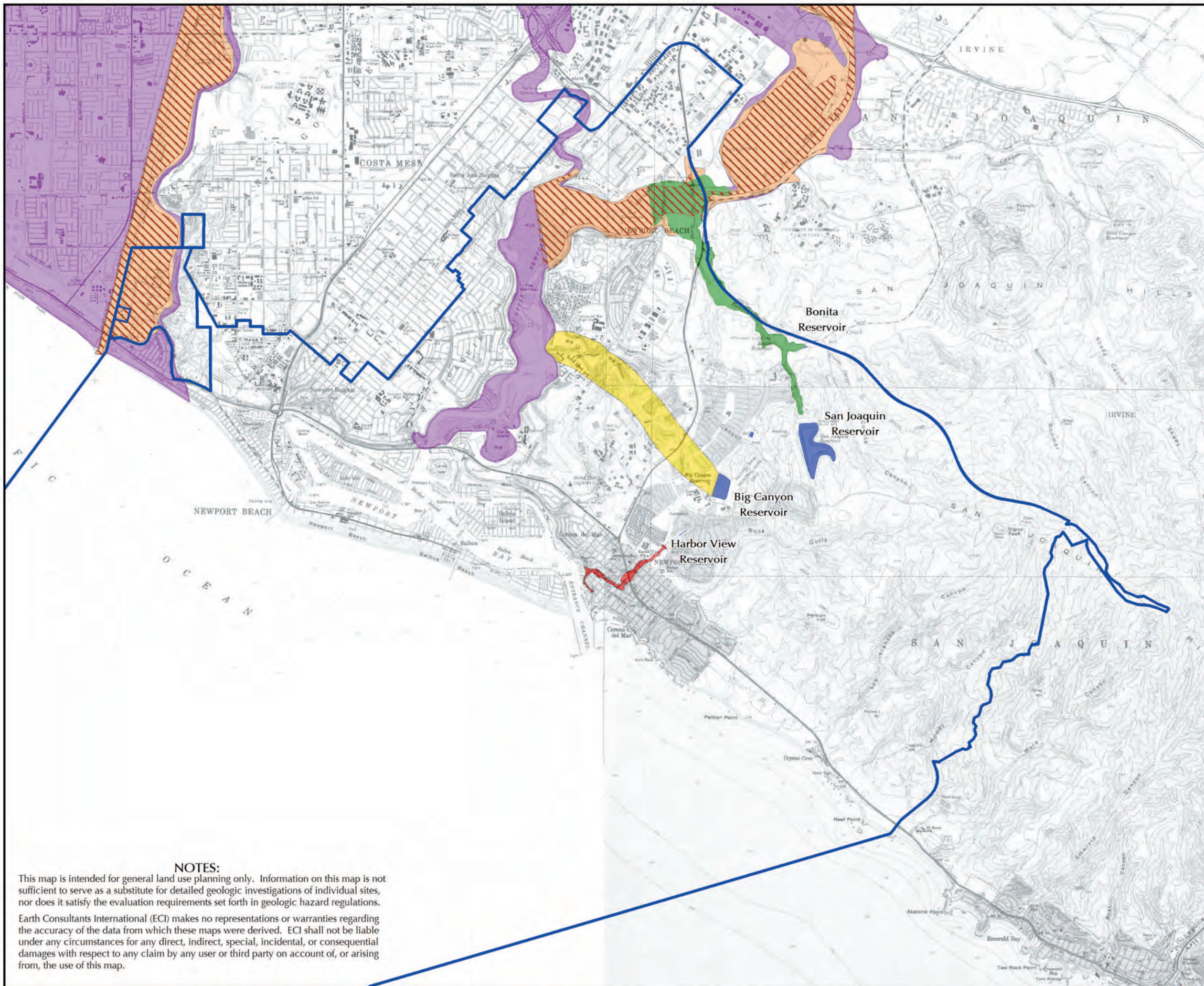
Project Number: 3311
 Date: 2014

Plate H-9

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Tsunami Inundation at Mean Sea Level and Mean Higher High Water




Newport Beach, California

EXPLANATION

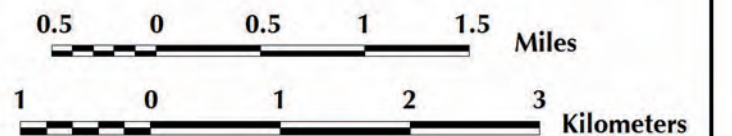
Tsunami Hazard Zones - Mean Sea Level

-  100-year Zone
(Inundation Elevation = 4.9 feet)
-  500-year Zone
(Inundation Elevation = 6.5 feet)
-  Zone of Minimal but Potential
Tsunami Inundation

Tsunami Hazard Zones - Mean Higher High Water

-  100-year Zone
(Inundation Elevation = 7.47 feet)
-  500-year Zone
(Inundation Elevation = 9.07 feet)
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
Source: Houston, 1980; Legg et al., 2003; Borrero et al., 2004;
USGS 10-m Digital Elevation Model



Project Number: 3311
Date: 2014

Plate H-10

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Tsunami Inundation Elevations: Mean Sea Level
+Tsunami Height (100-year = 4.9 feet; 500-year
= 6.5 feet)

Tsunami Inundation Elevations: Mean Higher High
Water (2.57 feet)+Tsunami Height (100-year =
4.9 feet; 500-year = 6.5 feet)

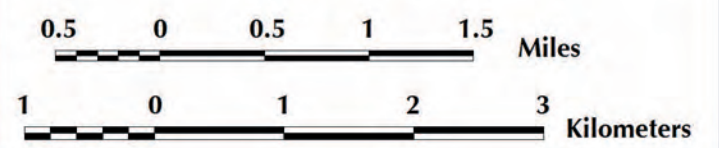
Tsunami Inundation

Newport Beach, California

EXPLANATION

-  Tsunami Inundation Line
-  Tsunami Inundation Area
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
Sources: California Emergency Management Agency (2009) with University of Southern California - Tsunami Research Center, California Geological Survey), and National Oceanic and Atmospheric Agency Center for Tsunami Research

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
Project Number: 3311
Date: 2014


Plate H-11

Potential Tsunami Runup Inundation Caused by a Submarine Landslide

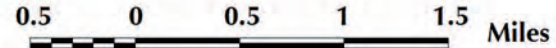
Newport Beach, California

EXPLANATION

 Area that would be inundated by a tsunami generated by a submarine landslide offshore of Newport Beach (areas at or lower than 32 foot elevation)

 Newport Beach City Boundary

Scale: 1:60,000

 0.5 0 0.5 1 1.5 Miles

 1 0 1 2 3 Kilometers

Base Map: USGS Topographic Map from Sure!MAPS RASTER
Source: City of Newport Beach, 2007 based on unpublished research by J. C. Borrero and others at University of Southern California



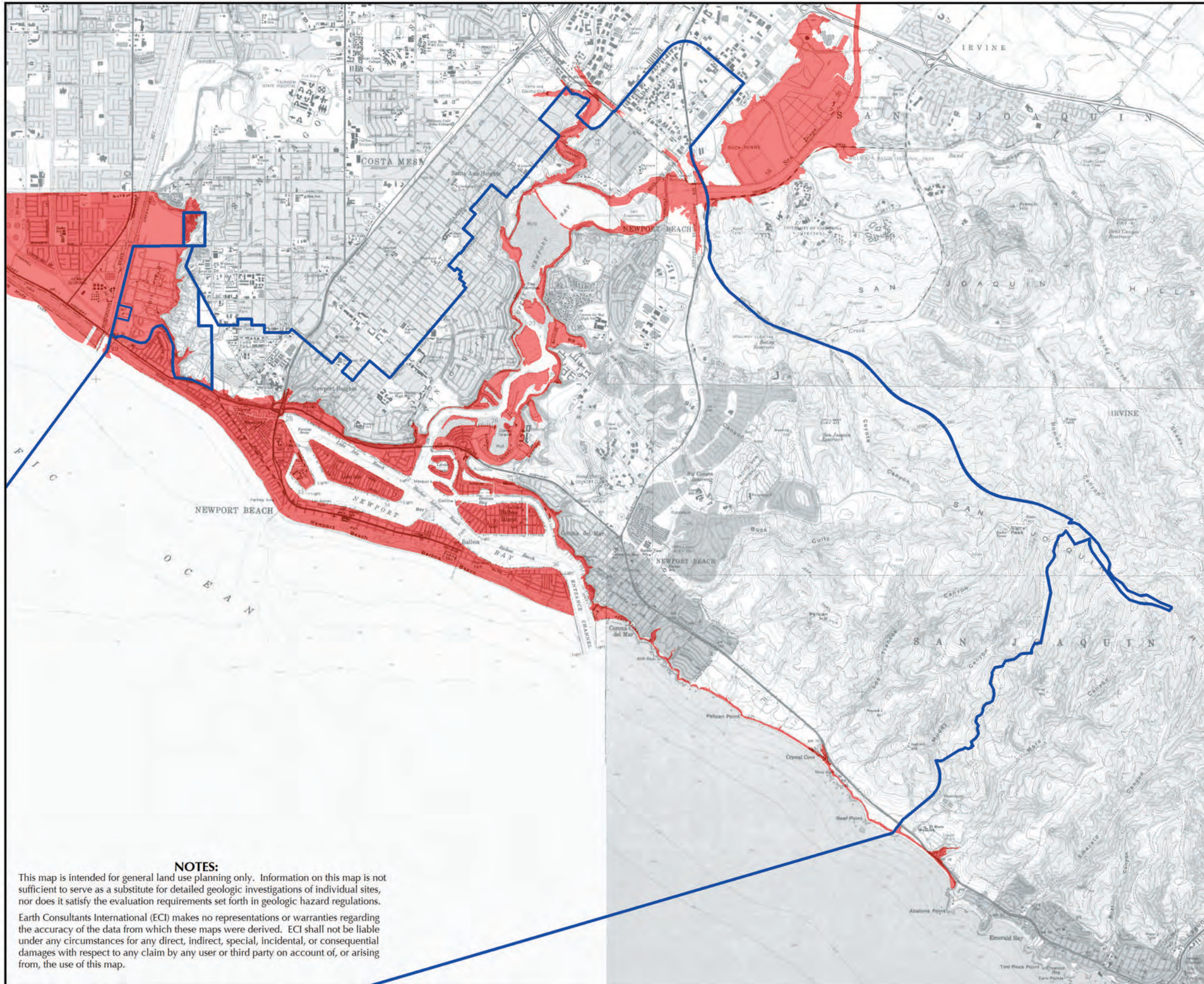
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Date: 2014

Plate H-12

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


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


Historical Wildland Fires in Newport Beach, California




EXPLANATION

Fires reported by the OC Fire Authority

-  73 Fire, 8/07/2001
-  Laguna Fire, 10/27/1993
-  Niger Fire, 09/25/1955

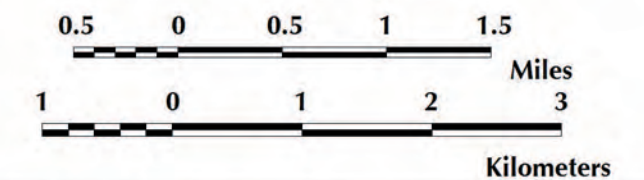
-  Other Wildland fires in 1991-2001 reported by Orange Co. Fire Authority

Fires Reported by FRAP

-  1970-1980
-  2000-2005
-  1990-2000
-  prescribed burns/fuel treatments

-  Newport Beach City Boundary

Scale: 1:60,000

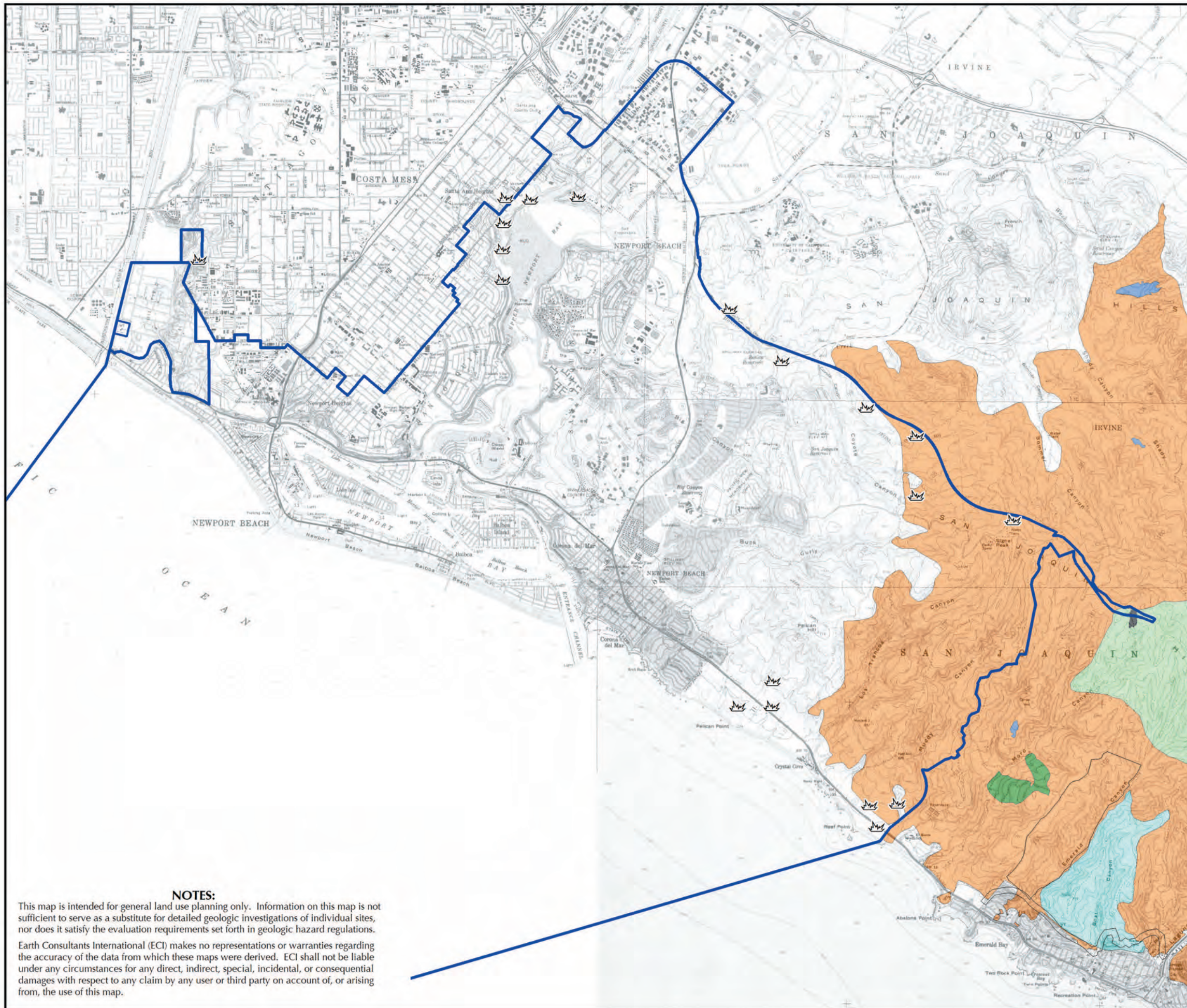


Base Map: USGS Topographic Map from Sure!MAPS RASTER
 Sources: Orange County Fire Authority, 2001
<http://frap.fire.ca.gov/data/frapgisdata-subset.php>, 2013



Project Number: 3311
 Date: 2014

Plate H-13

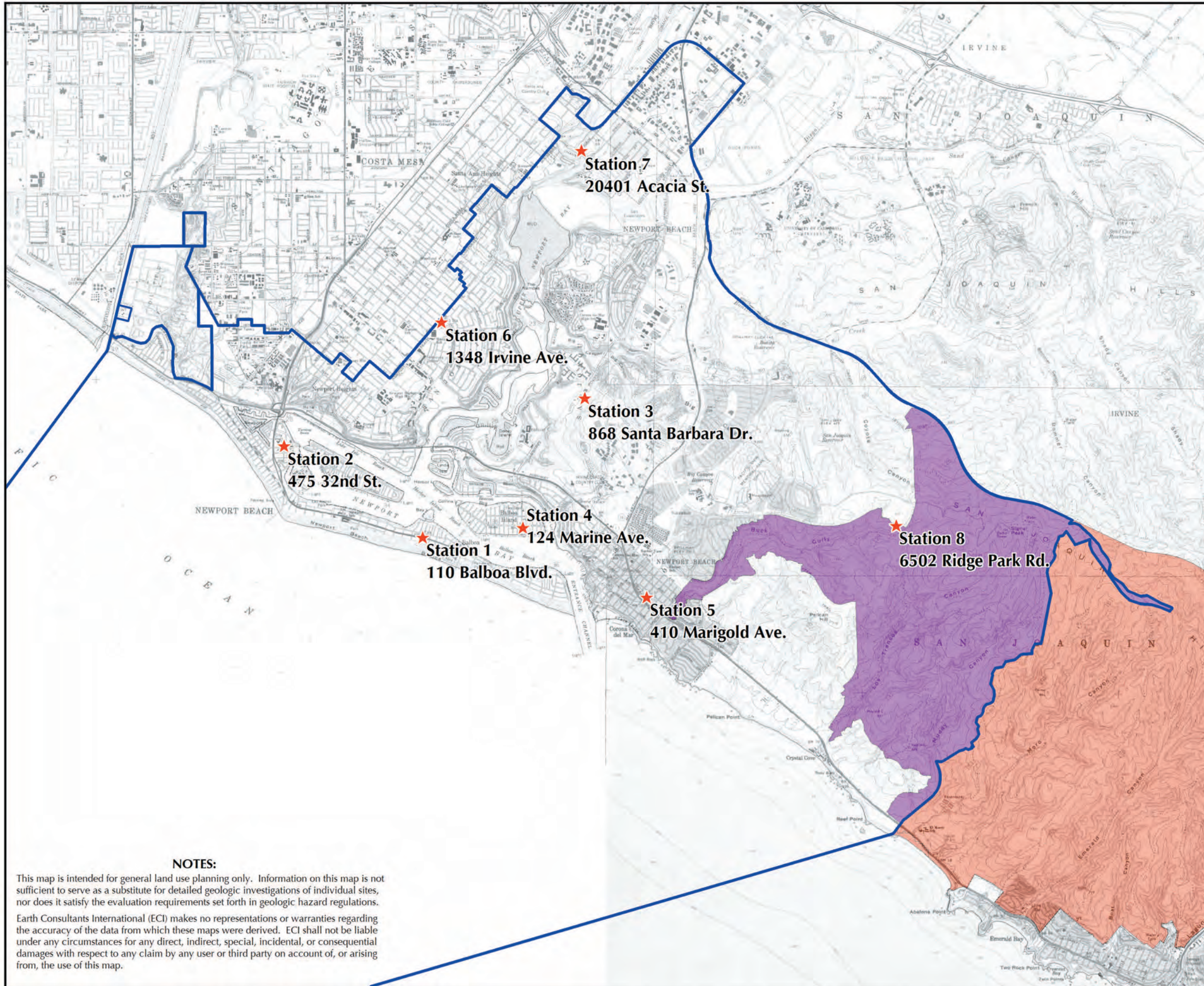


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Wildfire Hazard Map


Newport Beach, California




EXPLANATION

Fire Hazard Severity Zones

Local Responsibility Area

 Very High Fire Hazard Severity Zone

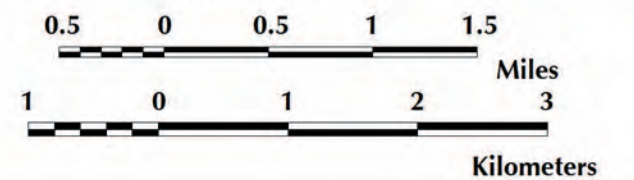
State Responsibility Area

 Very High Fire Hazard Severity Zone

 Fire Station

 Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS
 RASTER
 Sources: City of Newport Beach Fire Department

NOTES:

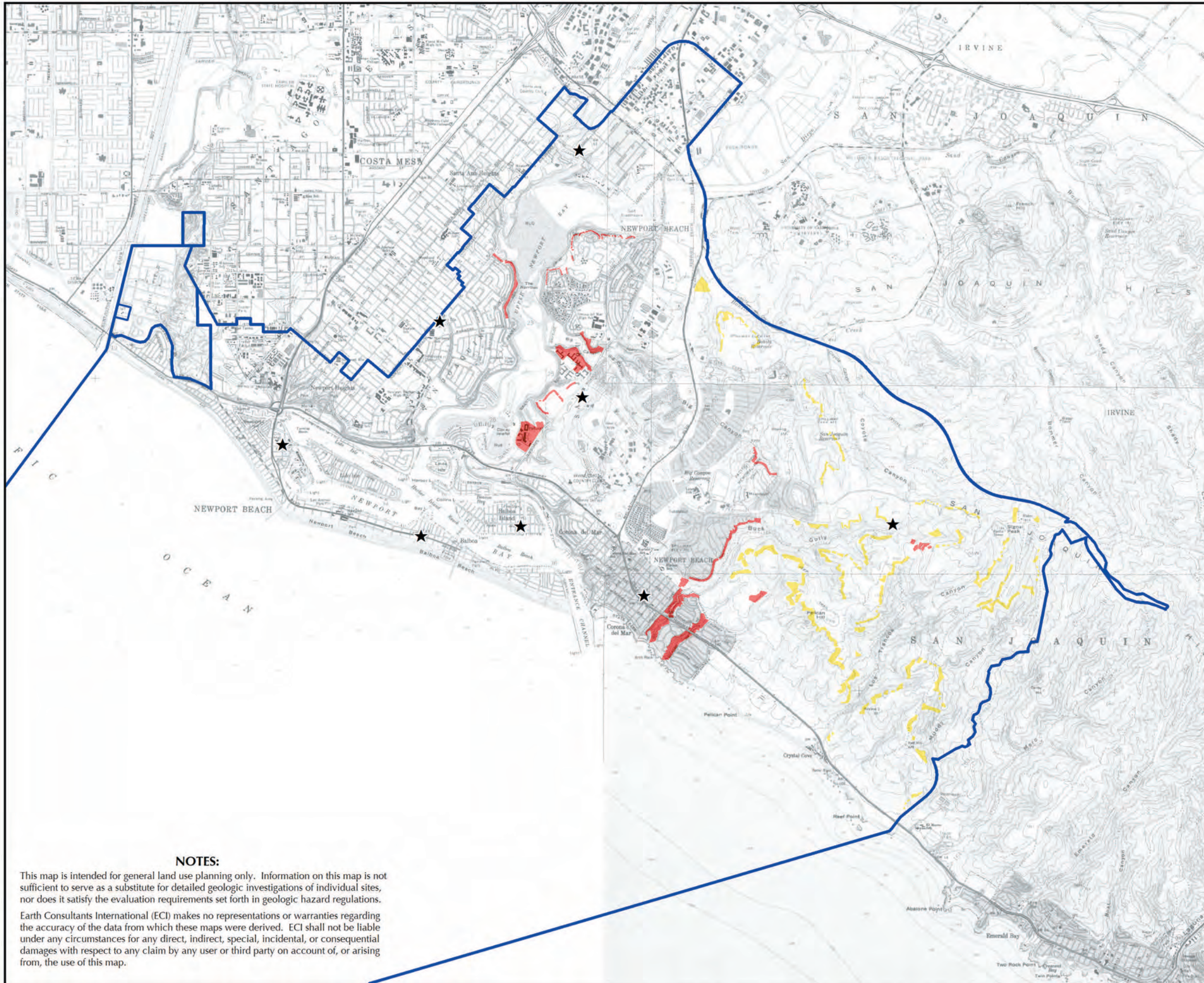
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Project Number: 3311
 Date: 2014

Plate H-14



Areas with Vegetation Management Requirements

Newport Beach, California

EXPLANATION

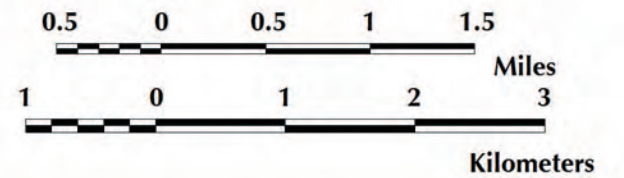
Fire Hazard Areas

- Hazard Reduction Zone
- Fuel Modification Zone

Fire Station

Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
 Sources: Orange County Fire Authority, 2003; City of Newport Beach, 2002

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 Date: 2014




Plate H-15

Geologic Map

Newport Beach, California

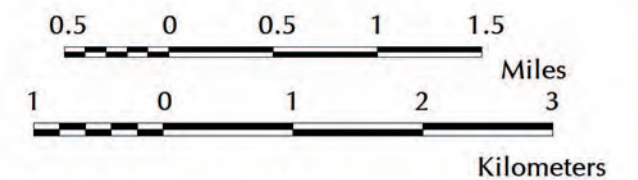
EXPLANATION

SYMBOLS

-  Fault: solid where location known, dashed where approximate, dotted where concealed.
-  Geologic Contact
-  Newport Beach City Boundary

for the description of geologic units, refer to Plate H-16a

Scale: 1:60,000

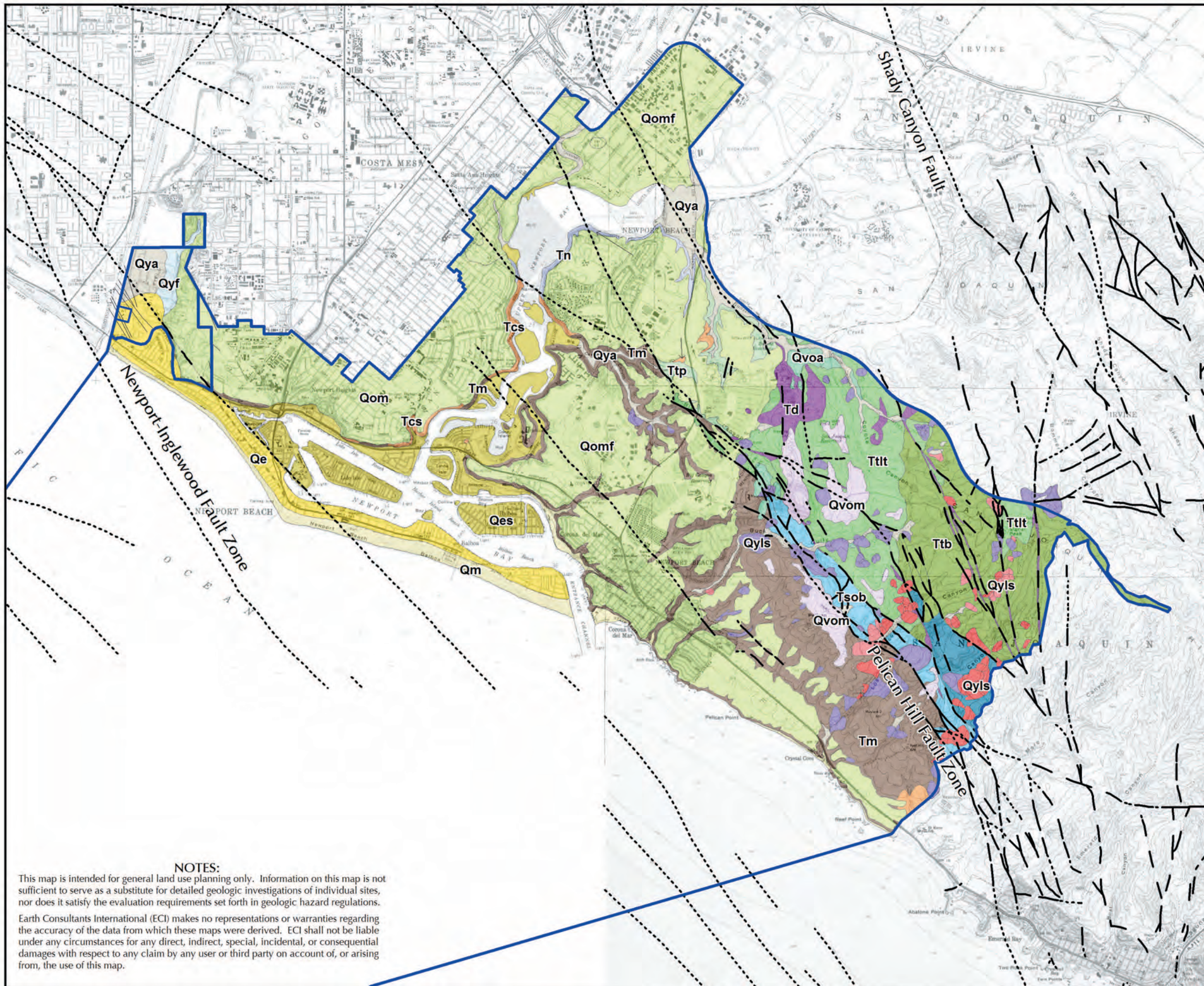


Base Map: USGS Topographic Map from Sure!MAPS
 RASTER
 Source: Morton et al., 1976 and Morton, 1999



Project Number: 3311
 Date: 2014

Plate H-16



NOTES:

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GEOLOGIC UNIT DESCRIPTIONS

Young Surficial Deposits

- Qm** Marine sediments (late Holocene) - Unconsolidated, active or recently active beach sand deposits.
- Qe** Eolian sediments (late Holocene) - Unconsolidated, active or recently active sand dune deposits.
- Qes** Estuarine sediments (late Holocene) - Unconsolidated, active, or recently active, sandy, silty, and clayey organic-rich intertidal deposits.
- Qya** Young fluvial channel sediments (Holocene and latest Pleistocene) - Unconsolidated sand, silt, clay, and gravel in active or recently active stream channels.
- Qyf** Young alluvial fan sediments (Holocene and latest Pleistocene) - Unconsolidated sand, silt, and clay.
- Qyls** Mapped landslide (Holocene and latest Pleistocene) - Highly fragmented and broken to largely coherent bedrock blocks.
- Qyls** Previously mapped landslide just outside a now-graded area (Holocene and latest Pleistocene) - Landslide may have been remediated during grading.
- Qyls** Previously mapped landslide in a now-graded area (Holocene and latest Pleistocene) - Landslide was probably remediated during grading.

Older Surficial Deposits

- Qom/Qomf** Old marine sediments (late to middle Pleistocene) - Light gray to brownish gray silty sand and fine-grained sand locally with gravel and shell fragments. East of Newport Bay, covered with veneer of younger alluvial fan sediments (Qomf).
- Qvom** Very old marine sediments (middle to early Pleistocene) - Light gray to yellow fine- to medium-grained sand, locally clay-rich and reddish in color; gravelly near the base.
- Qvoa** Very old channel sediments (middle to early Pleistocene) - Reddish brown to yellowish brown gravel, sand, silt and clay; typically poorly bedded, locally with cross-bedded lenses of sand and gravel; locally cemented.

Tertiary Sedimentary Rocks

- Tn** Niguel Formation (Pliocene) - Light gray to grayish yellow sandstone interbedded with greenish siltstone and yellowish brown to pale reddish brown conglomerate and breccia.
- Tcs** Capistrano Formation Siltstone Facies (late Miocene) - Yellowish to brownish gray concretionary siltstone and mudstone with lenses of whitish gray sandstone; sparse diatomaceous and tuffaceous beds.
- Tm** Monterey Formation (middle to late Miocene) - White to yellowish gray siliceous and diatomaceous siltstone, shale, and clayey siltstone with interbedded fine-grained sandstone. Locally contains lenses and thin beds of water-laid tuff.
- Tsob** San Onofre Breccia (middle Miocene) - Brown to yellowish brown breccia with interbedded conglomerate, sandstone, siltstone, and mudstone.
- Tt** Topanga Formation (middle Miocene) - Marine sandstone, siltstone, and shale.
 - Ttb** Paularino Member - Pale gray, tuffaceous siltstone and sandstone with interbedded breccia. Contains andesite flows locally sandstones and breccia contain abundant andesite fragments.
 - Ttp** Los Trancos Member - Pale gray, brownish gray and olive-gray, siltstone and clayey siltstone with interbedded shale and medium- to coarse-grained sandstone.
 - Ttit** Bommer Member - Yellowish brown to brownish gray, medium- to coarse-grained sandstone and silty sandstone. Minor siltstone and conglomerate.
- Tv** Vaqueros Formation (early Miocene) - Yellowish brown fine-grained sandstone with interbedded siltstone, shale, mudstone, and minor conglomerate.

Intrusive Igneous Rocks

- Ta** Andesitic intrusive rocks (middle Miocene) - Dark gray to olive gray intrusive rock primarily of andesitic composition.
- Td** Diabase intrusive rocks (middle Miocene) - Diabasic textured shallow intrusive rocks.

Quaternary

Tertiary



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



Explanation for Geologic Map

Plate
H-16a





Engineering Materials Map Newport Beach, California

EXPLANATION UNIT DESCRIPTIONS

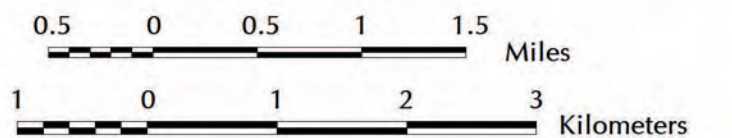
Surficial Materials

-  Unconsolidated, friable, fine- to coarse-grained sand of low density; locally contains variable amounts of silt, gravel, and cobbles; saturated in the tidal zone and locally in canyon bottoms.
-  Unconsolidated, clay, silt, and friable sand of low density and high organic content; typically saturated.
-  Sand and silty sand with minor gravel and cobbles; moderate to high density; massive to cross-bedded; friable below the soil zone; within the San Joaquin Hills, locally cemented and jointed.
-  Mapped Landslide materials of variable density. Fractured to broken bedrock, locally mixed with soils; typically contain water perched above the rupture zone.
-  Previously mapped Landslide just outside now-graded area. Landslide may have been remediated during grading.

Bedrock

-  Chiefly fine-grained sedimentary rocks of moderate to high density; bedding ranges from massive to laminated; commonly to intensely fractured, sheared, and folded; contain weak, plastic, clay beds; locally cemented and hard.
-  Chiefly coarse-grained sedimentary rocks of high density; bedding massive to crudely developed; fractured and sheared near faults; commonly very hard and cemented.
-  Igneous rocks of high density; massive; commonly fractured and jointed; locally highly altered and decomposed; hard and very resistant where un-weathered.
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
Source: Based on data from Morton et al., 1976 and Morton, 1999



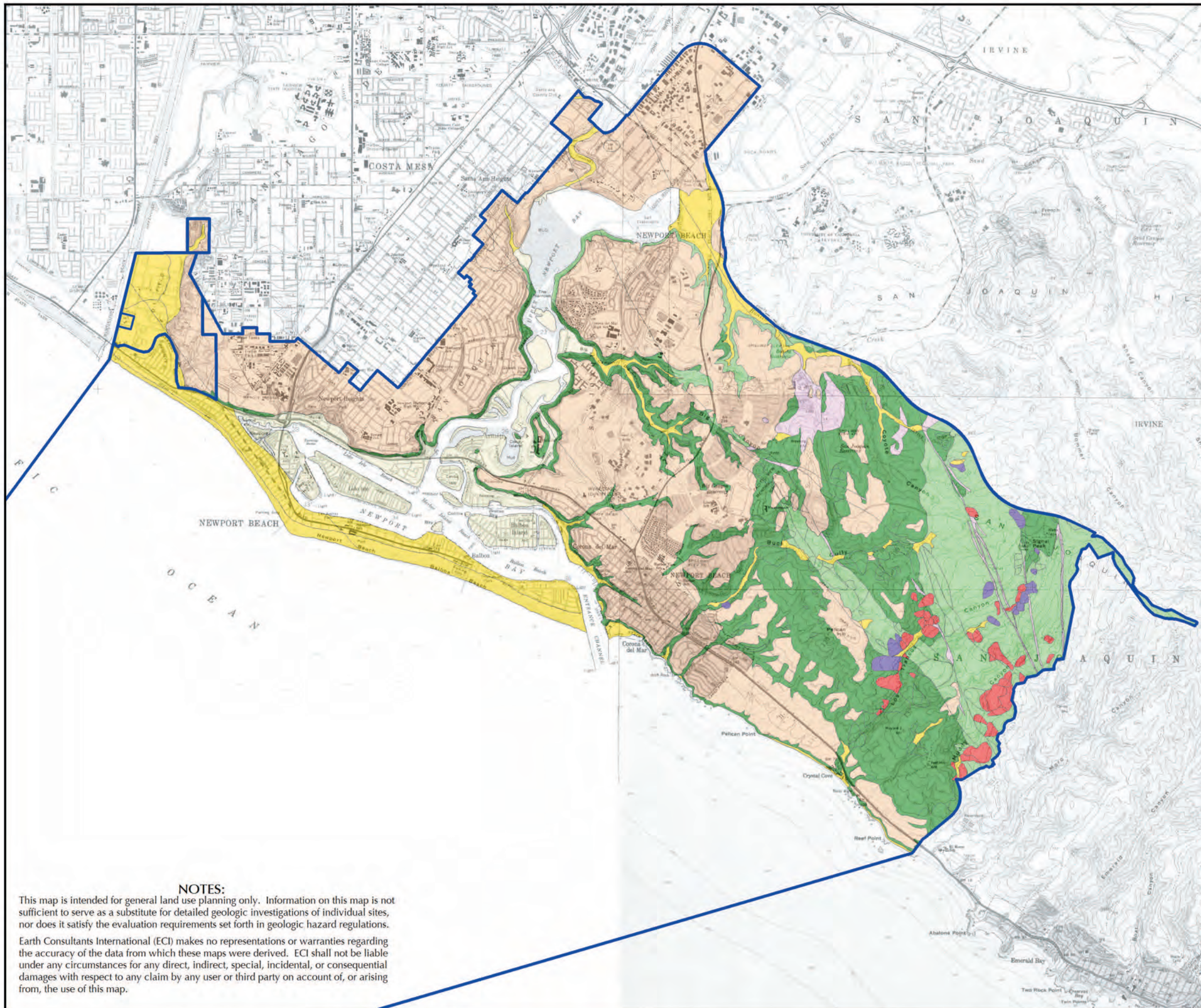
Project Number: 3311
Date: 2014

Plate H-17

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Slope Distribution Map

Newport Beach, California

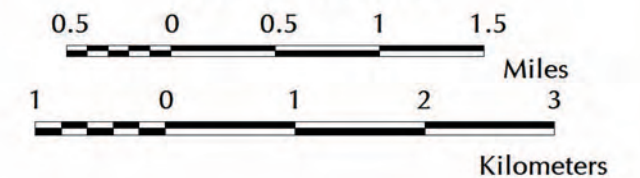
EXPLANATION

Slope (in degrees)

-  0 to 10
-  10 to 26
-  26 to 40

 Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER

Source: Derived from Contour Map provided by City of Newport Beach (2007)



Project Number: 3311
Date: 2014

Plate H-18

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Slope Instability Map

Newport Beach, California

EXPLANATION

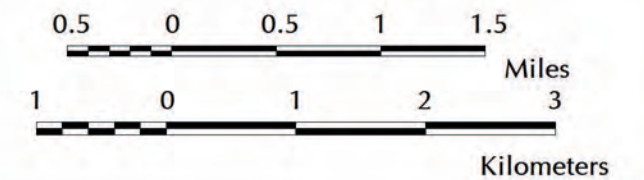
Slope Instability Rating

- Very High
- High

Mapped Landslides

- Mapped landslide. Highly fragmented and broken to largely coherent bedrock blocks.
- Previously mapped landslide just outside a now-graded area. Landslide may have been remediated during grading.
- Previously mapped landslide in a now-graded area. Landslide was probably remediated during grading.
- Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER
 Source: Based on data from Morton et al., 1976 and Morton, 1999. Modified based on Google Earth depictions of developed areas in the San Joaquin Hills.



Project Number: 3311
 Date: 2014

Plate H-19

General Slope Instability Potential

Area	Geologic Conditions	Types of Potential Slope Instability
San Joaquin Hills	Moderate to steep natural slopes, many in excess of 26 degrees along stream channels; Highly fractured, sheared, faulted, and crushed bedrock; Bedrock formations composed of clays and silts having weak shear resistance; Soils and loose debris at the toes of slopes and in drainage courses; Abundant small to large existing landslides.	<i>Most Common:</i> Soil slips on steep slopes, soil slumps and small slides on the edges of active stream channels; small debris or mud flows in canyons. <i>Less Common:</i> Large, deep-seated landslides. <i>Least Common:</i> Rockfalls in areas where rocky outcrops of resistant, unweathered intrusive rocks are present.
Bluffs along Upper Newport Bay, Newport Harbor, and the Pacific Ocean	Moderate to locally steep slopes, many in the range of 26 degrees or more; Highly fractured and jointed siltstone, mudstone, and shale in the lower part, sand and silty sand (marine terrace deposits) in the upper part; Soils and loose debris in tributary drainages and swales.	<i>Most Common:</i> Soil slips and slumps on moderate to steep slopes and in drainage swales, especially during periods of heavy rainfall. Spalling of coastal bluffs from wave erosion. <i>Less Common:</i> Small mud flows in canyons and ravines. <i>Least Common:</i> Large, deep-seated landslides.

NOTES:






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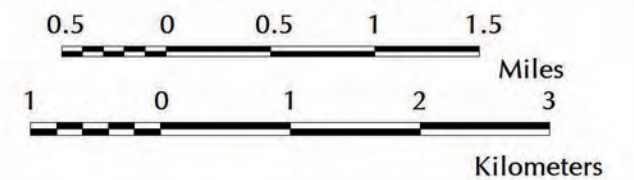
Coastal Erosion Hazard Map

Newport Beach, California

EXPLANATION

-  Sandstone member of Monterey Formation; most resistant bluff-forming unit. Prone to landsliding or mass wasting where undercut by wave action, especially at points. Fails as large blocks.
-  Siltstone member of Monterey formation; very fissile and fractured; tends to form an apron of talus at the base of slopes.
-  Pleistocene marine terrace deposits; prone to landsliding along steep cuts (i.e. Highway 1), and to erosion by rilling and gulying along blufftops.
-  Beach and eolian sand covering the gently sloping to level beaches. Continuously reworked by wave and wind action.
-  Newport Beach City Boundary

Scale: 1:60,000



Base Map: USGS Topographic Map from Sure!MAPS RASTER

Mapping by Earth Consultants International



Project Number: 3311
Date: 2014

Plate H-20

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