

Appendix 4—Digital database metadata

Introduction

This study included analyzing basic data using geographic information system software to produce a series of digital maps and accompanying database. The resulting files can be readily updated, as more information becomes available. In addition, users can create their own derivative maps from the digital database. The database also includes PostScript plot files containing images of the two maps. The following sections describe the contents of the database.

Database Contents

The digital database consists of the text and figures of this report, the two oversize maps (plates 1 and 2) and the supporting data stored in ESRI ArcView version 3.1 format. For those users that do not have ArcView or ARC/INFO, ESRI provides a free GIS data viewer, ArcExplorer, that can be downloaded from their website at:

<http://www.esri.com/software/arcexplorer/index.html>

ArcExplorer is currently only supported on the Windows 95/98 or Windows NT platforms. In ArcView, grouped layers of geographic information are stored as “views.” These individual layers are known as “themes.” The digital database map views and themes are described below:

Base Maps

The State of California Teale Data Center prepared the topographic base map used on plate 1. The following steps were used to create the base map:

- 7.5 minute U.S. Geological Survey topographic quadrangle maps of the Big Sur, Mt. Carmel, Point Sur, and Soberanes Point (1983 editions) were scanned at 800 dots per inch (dpi) resolution.
- Image resampled to 400 dpi, and colors normalized.
- Image converted to ARC/INFO grid files.
- ARC/INFO grid files descreened to eliminate scatter and enable solid fills in areas such as water bodies and forests. This step also reduces file size.
- ARC/INFO grid files projected to Albers projection.
- The four individual quadrangle files were trimmed, merged, and clipped to form a composite study area topographic base map and saved in TIFF format.
- The composite TIFF file was reprojected into UTM zone 10 using the PROJECT GRID command in ARC/INFO. The converted file was saved as a TIFF image using the GRID IMAGE command in ARC/INFO. As a result of this conversion, the original color table was changed and a thirteenth color value was added. This color is a null value.

The base map for plate 2 consists of a cadastral map underlain by a shaded-relief image. The following steps were used to create the base map:

- The County of Monterey scanned a paper copy of the cadastral base map at 300 dpi resolution.
- The linework was autovectorized using RxSpotlight Pro 97 software and edited with AutoCAD version 14 software.
- The AutoCAD file was imported into ARC/INFO, projected into UTM zone 10, stretched and rotated it to align with the topographic base map, and saved as an ArcView shapefile.

- Teale Data Center prepared a digital elevation model (DEM) of the area shown on plate 1. The DEM was created by converting four USGS Level 2 DEMs from SDTS format into ARC/INFO GRID format using the SDTSIMPORT utility. The horizontal resolution of the DEM is approximately 30 m and the vertical resolution is approximately 7 m. The horizontal datum is NAD27 (spheroid: Clarke 1866) and the vertical datum is NGVD 29.
- The DEM was converted into a triangulated irregular network (TIN) surface to using the ArcView CONVERT GRID TO TIN command. This was done to smooth irregularities in the DEM. The TIN was resampled at a 2-m resolution and converted back into a GRID format.
- The hillshading effect was created using the ArcView COMPUTE HILLSHADE command with a Sun azimuth of 315 degrees and a Sun angle of 45 degrees.

The topographic and cadastral maps are digital images with no information other than location attached to the pixels.

Fault Map (plate 1)

The fault map shows the location of mapped faults and features that indicate faulting in the study area. The GIS database contains attribute tables for each theme in the fault map view. The faults are described in the accompanying technical report.

Table 4. Definition of themes in the Fault Map view

| Theme | Definition | File name | Format |
|------------------------|--|----------------------------|---------|
| Study area | Boundary of the study area | study area.shp | Polygon |
| Quaternary deformation | Quaternary deformation localities and descriptions | quaternary deformation.shp | Point |
| Geomorphic features | Geomorphic features indicating active faulting | geomorphic features.shp | Point |
| Springs | Location of springs | springs.shp | Point |
| Epicenters | Location and magnitude of earthquake epicenters with fault-plane solutions | epicenters.shp | Point |
| Faults | Faults: subdivided into well-defined, inferred, and concealed | faults.shp | Arc |
| Terraces | Marine terrace deposits: subdivided by relative age (Qm_1 , Qm_2 , and Qm_3) | terraces.shp | Polygon |
| N_half.tif | 1:24,000 scale topographic base map of Soberanes Point and Mt. Carmel quadrangles | n_half.tif | Image |
| S_half.tif | 1:24,000 scale topographic base map of Point Sur and Big Sur quadrangles | s_half.tif | Image |

Relative Fault Hazard Map (plate 2)

This map depicts the relative activity of faults in the study area. The zonation is based on the most recent movement of each fault, following the methodology used on the State of California fault activity map (Jennings, 1994) with minor modifications to the geologic age boundaries. These

relative rankings can be used to produce derivative assessments of earthquake hazards such as ground rupture, ground shaking, liquefaction, and landsliding. However, this map is not a substitute for the official Earthquake Fault Zone maps delineated by the California State Geologist (Hart and Bryant, 1997).

The match between the vectorized linework and the features shown on the USGS topographic maps is locally poor, with errors of nearly 500 feet. The inaccuracy is due to drafting errors in the Monterey County cadastral map. For more accurate locations of faults with respect to properties, plate 1 should be used. Although the map can be enlarged within the GIS, it is only accurate to the scale of the source maps, 1:24,000. This map is for regional planning purposes and is not intended as a substitute for site-specific studies. The GIS database contains attribute tables for each theme in the fault map view.

Table 5. Definition of themes in the Relative Fault Hazard Map view

| Theme | Definition | File name | Format |
|----------------------|---|------------------|---------|
| Study area | Boundary of the study area | study area.shp | Polygon |
| Faults | Faults: subdivided by relative activity and associated hazard (A, B, C, and D) | faults.shp | Arc |
| Parcels | Locations of property lines, rancho boundaries, coastline, streams, and roads. | parcels.shp | Arc |
| Hillshade of tingrid | Hill-shaded image of nwtin TIN file | hlshd4 (folder) | Grid |
| Tingrid | nwtin TIN file converted to grid | tingrid (folder) | Grid |
| Nwtin2 | TIN surface derived from USGS digital elevation model | nwtin (folder) | TIN |
| Dem_utm | USGS digital elevation model in UTM projection | dem_utm (folder) | Grid |
| N_half.tif | 1:24,000 scale topographic base map of Soberanes Point and Mt. Carmel quadrangles | n_half.tif | Image |
| S_half.tif | 1:24,000 scale topographic base map of Point Sur and Big Sur quadrangles | s_half.tif | Image |

Plot Files

Adobe Acrobat (.pdf) plot files of the text and oversize maps are included in the database. A freeware reader for Acrobat files can be downloaded from Adobe, Inc. at:

<http://www.adobe.com/prodindex/acrobat/readstep.html>

The reader allows users with MS-DOS, Windows, Macintosh, and Unix platform computers to view and print the files. Because of the size of the maps (24 inches wide by 36 inches high), these map files for plates 1 and 2 need to be printed on a large-format printer. A copy of these plot files is stored at The Blueprinter (619 12th Street, Paso Robles, California 93446; phone: 805-227-0860, fax: 805-227-0841; e-mail: blueprinter@thegrid.net). Contact them for current pricing. Other commercial vendors may also be able to provide color plots of these files.

Obtaining the Digital Database

There are three ways to obtain the digital database:

- The .pdf files are available for downloading from the USGS External Research web site at:

<http://erp-web.er.usgs.gov>

- Copies of the digital database (.pdf plot files and ArcView GIS files) and accompanying report were provided to the County of Monterey Planning and Building Inspection Department (mailing address: P.O. Box 1208, Salinas, California, 93902; phone: 831-755-5025, fax: 831-755-5487) and to the Association of Monterey Bay Area Governments (mailing address: P.O. Box 809, Marina, California, 93933; phone: 831-883-3750, fax: 831-883-3755; e-mail: ambag@mbay.net). Contact these agencies for lending availability of the database.
- To obtain a copy of the digital database on a disk, send a written request with a blank 100-mb Zip disk or a blank 74 minute CD-R recordable compact disk, along with a postage-paid return mailer to:

Lew Rosenberg
Consulting Geologist
P.O. Box 183
Templeton, CA 93465-0183

The disk will be returned with the .pdf plot files and ArcView GIS files.