PRELIMINARY GEOLOGIC MAP OF THE PERRIS 7.5' QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA

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Prepared in cooperation with
CALIFORNIA GEOLOGICAL SURVEY

Open-File Report OF 03-270

2003

U.S. DEPARTMENT OF INTERIOR
U.S. GEOLOGICAL SURVEY

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INTRODUCTION

General

Open-File Report 03-270 contains a digital geologic map database of the Perris 7.5' quadrangle, Riverside County, California that includes:

1.   ARC/INFO (Environmental Systems Research Institute, http://www.esri.com) version 7.2.1 coverages of the various elements of the geologic map.
2.   A Postscript file to plot the geologic map on a topographic base, and containing a Correlation of Map Units diagram (CMU), a Description of Map Units (DMU), and an index map.
3.   Portable Document Format (.pdf) files of:
     a.   This Readme; includes in Appendix I, data contained in per_met.txt
     b.   The same graphic as plotted in 2 above. Test plots have not produced precise 1:24,000-scale map sheets. Adobe Acrobat page size setting influences map scale.

The Correlation of Map Units and Description of Map Units is in the editorial format of USGS Geologic Investigations Series (I-series) maps but has not been edited to comply with I-map standards. Within the geologic map data package, map units are identified by standard geologic map criteria such as formation-name, age, and lithology. Where known, grain size is indicated on the map by a subscripted letter or letters following the unit symbols as follows: lg, large boulders; b, boulder; g, gravel; a, arenaceous; s, silt; c, clay; e.g. Qyf_a is a predominantly young alluvial fan deposit that is arenaceous. Multiple letters are used for

more specific identification or for mixed units, e.g., Qfy$_{sa}$ is a silty sand. In some cases, mixed units are indicated by a compound symbol; e.g., Qyf2$_{sc}$.

Even though this is an Open-File Report and includes the standard USGS Open-File disclaimer, the report closely adheres to the stratigraphic nomenclature of the U.S. Geological Survey. Descriptions of units can be obtained by viewing or plotting the .pdf file (3b above) or plotting the postscript file (2 above).

This Readme file describes the digital data, such as types and general contents of files making up the database, and includes information on how to extract and plot the map and accompanying graphic file. Metadata information can be accessed at http://geo-nsdi.er.usgs.gov/metadata/open-file/03-270 and is included in Appendix I of this Readme.

HOW TO OBTAIN PAPER PLOTS

For those having access to large-format plotters such as HP650C, HP755C, and HP2500C, plots may be made directly from the included plot file.

DATABASE CONTENTS

The files constituting the geologic map database of this Open-File Report are listed below along with the interchange files from which they were extracted.

Data Package

All files listed below are in a compressed tar file named per.tar.gz (1.2 Mb); see section below titled, SOFTWARE UTILITES.

ARC/INFO interchange files	Perris coverages	Contains
per_geo.e00	per_geo	Contacts, faults, geologic unit labels
per_ano.e00	per_ano	Annotation subclass: GEO (for plotting unit labels) Leaders
per_str.e00	per_str	Attitudes and their dip values. Dip values plotted as annotation.

The directory, info/, is produced in the process of importing interchange files to ARC coverages in ARC/INFO. The per (Perris) info/ directory contains:

Feature Attribute Tables

Polygon attribute table	per_geo.pat
Arc attribute table	per _geo.aat
	per _ano.aat
Point attribute table	per _str.pat
Annotation attribute table	per _ano.tatgeo

Raster file	Resultant image	Contains
per.tif	Perris base map	Topographic base from 500 dpi scan of USGS Perris 7.5' quadrangle, 1967

Plot Package

PostScript plot files of the geologic map and explanation; please see section below titled, SOFTWARE UTILITIES for additional information.

Compressed file	Resultant image	Contains
per_map.ps.gz	per_map.ps	PostScript plot file of geologic map and CMU/DMU

The Postscript file is compressed using winzip.

The uncompressed Postscript file per_map.ps will plot a 1:24,000 scale, full color geologic map of the Perris quadrangle on the topographic base. A detailed CMU and DMU are included on the sheet. The sheet is in the editorial format of the U.S. Geological Survey's Geologic Investigations (I) map series, and is approximately 49 X 33 inches in size. The map sheet has been successfully plotted on Hewlett-Packard large-format plotters, models HP650C, HP755C, and HP2500C.

Symbols Package

Files in the plot package have been prepared to produce optimum plots using the shade, line, and marker sets listed below; these symbol sets and supporting fonts are included in a compressed tar file named symbols.tar.gz (0.18 Mb); see section below titled SOFTWARE UTILITIES.

geoSCAMP2.lin	Lineset
geoSCAMP2.mrk	Markerset for points
alc1.shd	Colors
geology2.shd	Pattern fills
fnt026	Font required for geoSCAMP2.lin
fnt037	Font required for geoSCAMP2.mrk
fnt035	Font required for geology2.shd

Special geologic characters used in unit designations are from the Geoage font group and are contained in the geoage folder within the symbols.tar.gz file. The Geoage fonts are used in conjunction with the geofont.txt textset when using ESRI software. The geoage folder contains fonts, the geofont.txt textset, and explanatory files.

Other files

README.pdf	This document
per_map.pdf	Pdf plot file of geologic map and CMU/DMU

SOFTWARE UTILITIES

Files which have .gz file extension were compressed using gzip. Gzip utilities are available free of charge via the Internet at the gzip home page, http://www.gzip.org. Files with a .zip file extension were compressed using WinZip, available at http://www.winzip.com.

The data package and symbols package are additionally bundled into a single tar (tape archive) file. The individual files must be extracted using a tar utility, available free of charge via the Internet through links on the Common Internet File Formats page, http://www.matisse.net/files/format.html. One such utility is WinZip, available at http://www.winzip.com.

HOW TO OBTAIN THE DIGITAL FILES

The export files, and subsequently the data and plot files, constituting the geologic map database of this Open-File Map may be obtained in two ways, both over the Internet.

1. The files can be obtained via the Web from Western Region Geologic Information Server. Go to the web page at http://geopubs.wr.usgs.gov/open-file/of03-270 and follow the directions to download the files.
2. The files can also be obtained by anonymous ftp over the Internet from wrgis.wr.usgs.gov. The files are located in the directory /pub/open-file/. Be sure to use binary transfer mode or ASCII mode for individual .e00 (ARC interchange file format) files.

HOW TO EXTRACT THE GEOLOGIC MAP DATABASE FROM THE TAR FILE

Digital database

After downloading the files, they must be uncompressed using a gzip utility such as gzip itself or WinZip. The data files must then be extracted using a tar utility or Winzip.

This process will create a directory, per/, that will contain the ARC/INFO interchange files and supporting files. The directory should contain the following files:

> per/
> > per_geo.e00
> > per_str.e00
> > per_ano.e00
> >
> > per.tif

The symbols.tar.gz file is imported using the same methods as for the per.tar.gz file. It will create a directory, symbols/ that will contain the following directory and seven files:

> > geoage/
> > geoSCAMP2.lin
> > geoSCAMP2.mrk
> > alc1.shd
> > geology2.shd
> > fnt026
> > fnt037
> > fnt035

The following are not included in the database tar file, and are downloaded separately.

> per_map.ps.gz
> README.pdf
> per_map.pdf

Postscript plot files

Make a 6.7 MB uncompressed file, per_map.ps (plot of complete map), by typing gzip -d per_map.ps.gz (or use gzip utility of choice).

Portable Document Format (.pdf) files

PDF files are not stored as gzip files. They are accessed using Adobe Acrobat Reader software, available free from the Adobe website http://www.adobe.com. Follow instructions at the website to download and install the software. Acrobat Reader contains an on-line manual and tutorial.

HOW TO CONVERT THE ARC/INFO INTERCHANGE (EXPORT) FILES

The ARC interchange (.e00) files are converted to ARC coverages using the ARC command IMPORT.

ARC interchange files can also be read by some other Geographic Information Systems, including ArcView (ESRI) and MapInfo (http://www.mapinfo.com), (Environmental Systems Research Institute, Inc., 1998). Please consult your GIS documentation to see if you can use ARC interchange files and the procedure to import them.

DIGITAL GEOLOGIC MAP SPECIFICATIONS

Digital compilation

The geologic map information was hand digitized from a base-stable original (ink on a greenline) of the geologic map at 1:24,000 scale. Digital tics were placed by hand at latitude/longitude intersections. The lines, points, and polygons were edited using standard ARC/INFO commands, and in some places, interactively by hand using graphical user interface ALACARTE (Fitzgibbon, 1991, Fitzgibbon and Wentworth, 1991, Wentworth and Fitzgibbon, 1991). Digitization and editing artifacts significant enough to display at a scale of 1:24,000 were corrected.

Base map

The base map image (per.tif) was prepared by scanning a scale-stable clear film of the U.S. Geological Survey, 1:24,000 Perris 7.5' quadrangle (1967) topographic map. Scanning was done using an Anatech Eagle 4080 monochrome 800 dpi scanner; at a resolution of 500 dpi. The raster scan was converted to a monochromatic image in ARC/INFO, and registered and rectified to the Perris 7.5' quadrangle. No elements of the base layer are attributed. The base map is provided for reference only.

Spatial resolution

Use of this digital geologic map database should not violate the spatial resolution of the data. Although the digital form of the data removes the constraint imposed by the scale of a paper map, the detail and accuracy inherent in map scale are also present in the digital data. The fact that this database was edited at a scale of 1:24,000 means that higher resolution information is not generally present in the dataset. Plotting at scales larger than 1:24,000 will not yield greater *real* detail, although it may reveal fine-scale irregularities above the intended resolution of the database. Similarly, although higher resolution data is

incorporated at a few places, the resolution of the combined output will be limited by the lower resolution data.

Map accuracy standards

Until uniform National geologic map standards are developed and adopted, lines and points on SCAMP 1:24,000 scale geologic maps that are located to within 15 meters, relative to accurately located features on the base map, are considered to meet map accuracy standards. Dashed lines, indicated in the database as approximately located or inferred, are generally located within 30 meters, relative to accurately located features on the base map.

Faults and landslides

This database is sufficiently detailed to identify and characterize many actual and potential geologic hazards represented by faults and landslides, but it is not sufficiently detailed for site-specific determinations. Faults shown do not take the place of fault rupture hazard zones designated by the California State Geologist (see Hart, 1998).

Database specifics

<u>General</u>--The map database consists of ARC/INFO format coverages which are stored in polyconic projection (Table 1), and a series of data tables. Digital tics define a 2.5 minute grid of latitude and longitude in the geologic coverages corresponding to the 2.5 minute tic grid on the topographic base map.

Table 1 ---   Map Projection

Projection	Polyconic
Datum	NAD27
Zunits	No
Units	Meters
Spheroid	Clark 1866
X shift	0.000000000
Y shift	0.000000000
Parameters	-117 11 15.000 longitude of central meridian
	33 45 00.00 latitude of projections origin
	0.00000 false easting (meters)
	0.00000 false northing (meters)

The content of the geologic database can be described in terms of feature classes that include lines, points, and areas that compose the map. See the metadata text file (Appendix I) for detailed descriptions.

<u>Lines</u> – Lines are recorded as strings of arcs and are described in an arc attribute (.aat) table. Complete lists of the line types (LTYPE) used in the quadrangle are available in Appendix I. They represent contacts and faults, which define the boundaries of map units and map boundaries.

<u>Polygons</u> --- Geologic map units (polygons) are described in the polygon attribute (.pat) table (details in Appendix I). For traditional descriptions of the map units, see the Portable Document Format file per_map.pdf or the Postscript map plot, per_map.ps. A list of all map units in the database is given in Appendix I.

Points – Point information (attitudes of planar and linear features) is recorded as coordinate and related information. Complete lists of the point types (PTTYPE) used in the point coverage are available in Appendix I.

REFERENCES

Environmental Systems Research Institute, Inc, 1991, ARC/INFO command references 6.0: Proprietary software manual

Fitzgibbon, T.T., 1991, ALACARTE installation and system manual (version 1.0): U.S. Geological Survey, Open-File Report 91-587B

Fitzgibbon, T.T., and Wentworth, C.M., 1991, ALACARTE user interface – AML code and demonstration Maps (version 1.0): U.S. Geological Survey, Open-File Report 91-587A

Wentworth, C.M., and Fitzgibbon, T.T., 1991, ALACARTE user manual (version 1.0): U.S. Geological Survey Open-File Report 91-587C

APPENDIX I (original metadata text)

Identification_Information:

  Citation:
    Citation_Information:
      Originator: Douglas M. Morton
      Publication_Date: 2003
      Title: Preliminary geologic map of the Perris 7.5' Quadrangle, Riverside County, California
      Edition: Version 1.0
      Geospatial_Data_Presentation_Form: vector digital data
      Series_Information:
        Series_Name: U.S. Geological Survey Open-File Report
        Issue_Identification: USGS OF 03-270
      Publication_Information:
        Publication_Place: Menlo Park, California
        Publisher: U.S. Geological Survey
      Online_Linkage: Online_Linkage URL:http://geopubs.wr.usgs.gov/open-file/of03-270

  Description:

    Abstract:
      This data set maps and describes the geology of the Perris 7.5' quadrangle, Riverside County, California. Created using Environmental Systems Research Institute's ARC/INFO software, the data base consists of the following items: (1) a map coverage containing geologic contacts and units, (2) a coverage containing structural data, (3) a coverage containing geologic unit annotation and leaders, and (4) attribute tables for geologic units (polygons), contacts (arcs), and site-specific data (points). In addition, the data set includes the following graphic and text products: (1) a postscript graphic plot-file containing the geologic map, topography, cultural data, a Correlation of Map Units (CMU) diagram, a Description of Map Units (DMU), and a key for point and line symbols, and (2) PDF files of the Readme (including the metadata file as an appendix), and the graphic produced by the Postscript plot file.
      The Perris quadrangle is located in the northern part of the Peninsular Ranges Province within the central part of the Perris block, a relatively stable, rectangular in plan area located between the Elsinore and San Jacinto fault zones.
      The quadrangle is underlain by Cretaceous age and older basement rocks. The Cretaceous plutonic rocks are part of the composite Peninsular Ranges batholith. A wide variety of intermediate composition

granitic rocks are located in the quadrangle. These rocks are mainly of tonalitic composition but range from monzogranite to diorite. Most rock is faintly to intensely foliated. Many are heterogenous and contain varying amounts of meso-and melanocratic discoidal-shaped inclusions. Some rocks are composed essentially of inclusion material and some are migmatitic. Included within these granitic rocks are a few septa of Paleozoic(?) schist of upper amphibolite metamorphic grade.

Metamorphic rocks of probable Mesozoic age occur in the southwest corner of the quadrangle. Most of these rocks are well-foliated phyllite of Mesozoic age. The metamorphic grade of these rocks is greenschist or sub-greenschist. Rocks of probable Paleozoic age occur as scattered masses within plutonic rocks in the northern part of the quadrangle. These rocks are of amphibolite grade and include cordierite and sillimanite biotite schist.

In the center and southeast quarter of the quadrangle, biotite-hornblende tonalite of the Lakeview Mountains pluton is characterized by ubiquitous schlieren and by a lack of potassium feldspar. Masses of leucocratic and melanocratic rock occur scattered throughout the pluton. Mesocratic-to melanocratic discoidal-shaped inclusions are oriented parallel to the schlieren. A small body of comb-layered gabbro is located with the tonalite near the southern margin of the pluton. The tonalite contains rare-earth bearing, zoned pegmatite dikes.

Biotite-hornblende tonalite located in the southwest part of the quadrangle is part of the Val Verde pluton. This tonalite is similar to that of the Lakeview Mountains pluton but lacks the ubiquitous schlieren and contains potassium feldspar.

Diagonally crossing the quadrangle is the channel and flood plain of the ephemeral San Jacinto River. Most of the alluviated area west of the San Jacinto River consists of Pleistocene age fluvial deposits, which have a degraded upper surface that is preserved in some places near the contact with granitic rocks. The upper part of these deposits form the Paloma surface of Woodford and others (1971). A modern-to Holocene-age drainage channel is within these older Pleistocene deposits. Younger Pleistocene alluvial fans emanate from the Lakeview Mountains east of the San Jacinto River.

Purpose: The data set for the Perris 7.5' quadrangle was prepared under the U.S. Geological Survey Southern California Areal Mapping Project (SCAMP) as part of an ongoing effort to develop a regional geologic framework of southern California, and to utilize a Geographic Information System (GIS) format to create regional digital geologic databases. These regional databases are being developed as contributions to the National Geologic Map Database of the National Cooperative Geologic Mapping Program of the USGS.

  Supplemental_Information: none
 Time_Period_of_Content:
  Time_Period_Information:
   Single_Date/Time:
    Calendar_Date: 2003
  Currentness_Reference: New data

 Status:
  Progress: Complete
  Maintenance_and_Update_Frequency: As Needed

 Spatial_Domain:
  Bounding_Coordinates:
   West_Bounding_Coordinate: -117.25009084
   East_Bounding_Coordinate: -117.12490892
   North_Bounding_Coordinate: 33.87500054
   South_Bounding_Coordinate: 33.7499832

 Keywords:
  Theme:
   Theme_Keyword_Thesaurus: none
   Theme_Keyword: geologic map
   Theme_Keyword: geology
   Theme_Keyword: bedrock geology
   Theme_Keyword: alluvial geology

Place:
  Place_Keyword_Thesaurus: none
  Place_Keyword: California
  Place_Keyword: Riverside County
  Place_Keyword: Perris 7.5' quadrangle

Stratum:
  Stratum_Keyword_Thesaurus: none
  Stratum_Keyword: Cretaceous tonalite and granodiorite
  Stratum_Keyword: Mesozoic metamorphics
  Stratum_Keyword: Quaternary alluvium
Temporal:
  Temporal_Keyword_Thesaurus: none
  Temporal_Keyword: Cretaceous
  Temporal_Keyword: Mesozoic
  Temporal_Keyword: Quarternary
Access_Constraints: none

Use_Constraints:
   The Perris 7.5' geologic-map database should be used to evaluate and understand the geologic character of the Perris 7.5' quadrangle as a whole. The data should not be used for purposes of site-specific land-use planning or site-specific geologic evaluations. The database is sufficiently detailed to identify and characterize many actual and potential geologic hazards represented by faults and landslides and posed by ground subsidence and earthquake-generated ground shaking. However, it is not sufficiently detailed for site-specific determinations or evaluations of these features. Faults shown do not take the place of fault-rupture hazard zones designated by the California State Geologist (see Hart, 1988).
   Use of this digital geologic-map database should not violate the spatial resolution of the data. Although the digital form of the data removes the constraint imposed by the scale of a paper map, the detail and accuracy inherent in map scale are also present in the digital data. The fact that this database was compiled and edited at a scale of 1:24,000 means that higher resolution information may not have been uniformly retained in the dataset. Plotting at scales larger than 1:24,000 will not yield greater real detail, although it may reveal fine-scale irregularities below the intended resolution of the database. Similarly, although higher resolution data is incorporated in most of the map, the resolution of the combined output will be limited by the lower resolution data.
  Point_of_Contact:
   Contact_Information:
    Contact_Person_Primary:
      Contact_Person: Douglas M. Morton
      Contact_Organization: U.S. Geological Survey, Western Region, Earth Surface Processes Team
    Contact_Position: Project Geologist
    Contact_Address:
      Address_Type: mailing address
      Address: U.S. Geological Survey
      Address: Department of Earth Sciences
      Address: University of California, Riverside
      City: Riverside
      State_or_Province: California
      Postal_Code: 92521
      Country: United States of America
    Contact_Voice_Telephone: (909) 276-6397
    Contact_Facsimile_Telephone: (909) 276-6295
    Contact_Electronic_Mail_Address: scamp@usgs.gov

  Data_Set_Credit: Geologic mapping and digital preparation of this report were sponsored jointly by (1) the National Cooperative Geologic Mapping Program of the U.S. Geological Survey, (2) U.S. Air Force, (3) the California Geological Survey, and (4) the Southern California Areal Mapping Project (SCAMP).

Native_Data_Set_Environment:
  SunOS, 5.8, sun4m UNIX
  ARC/INFO version 7.2.1

Cross_Reference:
  Citation_Information:
    Originator: Morton, D.M.
    Publication_Date: 1999
    Title: Preliminary digital geologic map of the Santa Ana 30'x60' quadrangle, southern California, version 1.0.
    Geospatial_Data_Presentation_Form: vector digital data
    Series_Information:
      Series_Name: U.S. Geological Survey Open-File Report
      Issue_Identification: USGS OF 99-172
    Publication_Information:
      Publication_Place: California
      Publisher: U.S. Geological Survey
    Online_Linkage: http://geopubs.wr.usgs.gov/open-file/of99-172

Data_Quality_Information:
  Attribute_Accuracy:
    Attribute_Accuracy_Report:
      Geologic-map units in the Perris quadrangle database were described using standard field methods. Consistent with these methods, the database author has assigned standard geologic attributes to geologic lines, points, and polygons identified in the database.
      Nation-wide geologic-map accuracy standards have not been developed and adopted by the U.S. Geological Survey and other earth-science entities. Until such standards are adopted, the SCAMP project has developed internal map-accuracy standards for 1:24,000-scale geologic maps produced by the project.
      Geologic lines and points on 1:24,000 scale geologic maps are judged to meet SCAMP's internal map-accuracy standards if they are located to within +/-15 meters, relative to topographic or cultural features on the base map.
      On any derivative geologic-map plot, line data that are judged to meet the SCAMP internal map-accuracy standard are denoted by solid lines; line data that may not meet the SCAMP internal map-accuracy standard are denoted by dashed or dotted lines. There is no cartographic device for denoting the map-accuracy for geologic-point data (e.g., symbols representing bedding, foliation, lineations, etc.).
    Logical_Consistency_Report: Polygon and chain-node topology present. The areal extent of the map is represented digitally by an appropriately projected (polyconic projection), mathematically generated box. Consequently, polygons intersecting the lines that comprise the map boundary are closed by that boundary. Polygons internal to the map boundary are completely enclosed by line segments which are themselves a set of sequentially numbered coordinate pairs. Point data are represented by coordinate pairs.
    Completeness_Report: The geologic map database of the Perris 7.5' quadrangle contains new data that have been subjected to rigorous review and are a substantially complete representation of the current state of knowledge concerning the geology of the quadrangle.
  Positional_Accuracy:
    Horizontal_Positional_Accuracy:
      Horizontal_Positional_Accuracy_Report: The maximum transformation RMS error acceptable for a 7.5' quadrangle transformation and data input is 0.003 (1.8 meters). Horizontal positional accuracy was checked by visual comparison of hard-copy plots with base-stable source data.
  Lineage:
    Process_Step:
      Process_Description: Field mapping and aerial photograph interpretation; iterative process (D.M. Morton).
      Process_Date: 1991; 1995-96

    Process_Step:

Process_Description: Digitization of geologic linework and point data from a scale-stable cartographic base of quadrangle. ARC/INFO database established; cleanup of artifacts; polygon, arc, and point attribute tables established. Digitizing and editing artifacts significant enough to display at a scale of 1:24,000 were corrected (K.R. Bovard and G. Morton).
Process_Date: 1999-2001

Process_Step:
Process_Description: Description of map units and correlation of map units (K. Bovard).
Process_Date: 2003
Process_Step:
Process_Description: First draft of metadata created by K.R. Bovard using FGDCMETA.AML ver. 1.2 05/14/98 on ARC/INFO data set /scamp31/kbovard/perris/per_geo
Process_Date: 20030309
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Vector
  Point_and_Vector_Object_Information:
    SDTS_Terms_Description:
      SDTS_Point_and_Vector_Object_Type: Point
      Point_and_Vector_Object_Count: 92
      SDTS_Point_and_Vector_Object_Type: String
      Point_and_Vector_Object_Count: 247
      SDTS_Point_and_Vector_Object_Type: GT-polygon composed of chains
      Point_and_Vector_Object_Count: 93

Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Planar:
      Map_Projection:
        Map_Projection_Name: Polyconic
        Polyconic:
          Latitude_of_Projection_Origin: 33.75
          Longitude_of_Central_Meridian: -117.1875
          False_Easting: 0.00000
          False_Northing: 0.00000
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: coordinate pair
        Coordinate_Representation:
          Abscissa_Resolution: 1.0
          Ordinate_Resolution: 1.0
        Planar_Distance_Units: Meters
    Geodetic_Model:
      Horizontal_Datum_Name: North American Datum of 1927
      Ellipsoid_Name: Clarke 1866
      Semi-major_Axis: 6378206.4
      Denominator_of_Flattening_Ratio: 294.98

Entity_and_Attribute_Information:
  Overview_Description:
    Entity_and_Attribute_Overview:
      Version 1.0 of the Perris 7.5' quadrangle comprises three ARC/INFO coverages, of which two contain geologic data, and one contains cartographic features: per_geo (geology), per_str (structural data), and per_ano (annotation and leaders).
      Geologic data represented by line entities and the polygons they delineate are contained in the coverage PER_GEO. For display purposes, the annotation coverage contains one annotation subclass: anno.geo contains unit labels.

Geological point data includes site-specific information describing the types and the orientation of foliation, joints and lineations. Annotation is respective dip and plunge values associated with individual point data.

```
>
>PER_GEO.PAT:
>
>COLUMN  ITEM NAME      WIDTH OUTPUT  TYPE N.DEC  ALTERNATE NAME
>  1 AREA          8   18   F    5
>  9 PERIMETER       8   18   F    5
> 17 PER_GEO#        4    5   B    -
> 21 PER_GEO-ID       4    5   B    -
> 25 LABL         35   35   C    -
> 60 SHD          3    3   I    -
> 63 PLABL        35   35   C    -
> 98 SHDFIL        3    3   I    -
> 101 NAME         200  200   C    -
>
>
>PER_GEO.AAT:
>
>COLUMN  ITEM NAME      WIDTH OUTPUT  TYPE N.DEC  ALTERNATE NAME
>  1 FNODE#         4    5   B    -
>  5 TNODE#         4    5   B    -
>  9 LPOLY#         4    5   B    -
> 13 RPOLY#         4    5   B    -
> 17 LENGTH        8   18   F    5
> 25 PER_GEO#        4    5   B    -
> 29 PER_GEO-ID       4    5   B    -
> 33 LTYPE        45   45   C    -
> 78 L-SYMB         3    3   I    -
>
>
```
  Entity_and_Attribute_Detail_Citation: none

 Detailed_Description:
  Entity_Type:
   Entity_Type_Label: per_geo.pat
   Entity_Type_Definition: Geologic units (LABL) and thier corresponding names (NAME) identified in the Perris 7.5' quadrangle
  Attribute:
   Attribute_Label: LABL
   Attribute_Definition: geologic map unit label, in plain text
   Attribute_Domain_Values:
    Enumerated_Domain:
     Enumerated_Domain_Value: Qaf
     Enumerated_Domain_Value_Definition: Artificial fill
    Enumerated_Domain:
     Enumerated_Domain_Value: Qw
     Enumerated_Domain_Value_Definition: Active-wash deposits
    Enumerated_Domain:
     Enumerated_Domain_Value: Qv
     Enumerated_Domain_Value_Definition: Active valley deposits
    Enumerated_Domain:
     Enumerated_Domain_Value: Qyf
     Enumerated_Domain_Value_Definition: Young alluvial-fan deposits
    Enumerated_Domain:

Enumerated_Domain_Value: Qya
Enumerated_Domain_Value_Definition: Young axial-valley floor deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qyv
Enumerated_Domain_Value_Definition: Young alluvial-valley deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qof
Enumerated_Domain_Value_Definition: Old alluvial-fan deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qvof
Enumerated_Domain_Value_Definition: Very old alluvial-fan deposits
Enumerated_Domain:
Enumerated_Domain_Value: Qvof1
Enumerated_Domain_Value_Definition: Very old alluvial-fan deposits, Unit 1
Enumerated_Domain:
Enumerated_Domain_Value: Qvoa
Enumerated_Domain_Value_Definition: Very old axial-channel deposits
Enumerated_Domain:
Enumerated_Domain_Value: Klmt
Enumerated_Domain_Value_Definition: Lakeview Mountains pluton, Tonalite
Enumerated_Domain:
Enumerated_Domain_Value: Klmm
Enumerated_Domain_Value_Definition: Lakeview Mountains pluton, Melanocratic tonalite
Enumerated_Domain:
Enumerated_Domain_Value: Klmtg
Enumerated_Domain_Value_Definition: Lakeview Mountains pluton, Tonalite and granodiorite, undifferentiated
Enumerated_Domain:
Enumerated_Domain_Value: Klmc
Enumerated_Domain_Value_Definition: Lakeview Mountains pluton, Comb-layered gabbro
Enumerated_Domain:
Enumerated_Domain_Value: Kbpg
Enumerated_Domain_Value_Definition: Monzogranite of Bernasconi Pass
Enumerated_Domain:
Enumerated_Domain_Value: Kbpm
Enumerated_Domain_Value_Definition: Migmatitic rocks within monzogranite of Bernasconi Pass
Enumerated_Domain:
Enumerated_Domain_Value: Ktbh
Enumerated_Domain_Value_Definition: Tonalite of Bernasconi Hills
Enumerated_Domain:
Enumerated_Domain_Value: Kvt
Enumerated_Domain_Value_Definition: Val Verde pluton, tonalite
Enumerated_Domain:
Enumerated_Domain_Value: Kgu
Enumerated_Domain_Value_Definition: Granite, undifferentiated
Enumerated_Domain:
Enumerated_Domain_Value: Kt
Enumerated_Domain_Value_Definition: Tonalite, undifferentiated
Enumerated_Domain:
Enumerated_Domain_Value: Kd
Enumerated_Domain_Value_Definition: Diorite, undifferentiated
Enumerated_Domain:
Enumerated_Domain_Value: Khg
Enumerated_Domain_Value_Definition: Heterogeneous granitic rocks
Enumerated_Domain:
Enumerated_Domain_Value: Khg(s)

Enumerated_Domain_Value_Definition: Heterogeneous granitic rocks, submerged
Enumerated_Domain:
Enumerated_Domain_Value: Mzp
Enumerated_Domain_Value_Definition: Phyllite and schist
Enumerated_Domain:
Enumerated_Domain_Value: KgPz
Enumerated_Domain_Value_Definition: Mixed metamorphic rocks and granitic rocks
Enumerated_Domain:
Enumerated_Domain_Value: Pzs
Enumerated_Domain_Value_Definition: Biotite schist
Enumerated_Domain:
Enumerated_Domain_Value: water
Enumerated_Domain_Value_Definition: water
Enumerated_Domain:
Enumerated_Domain_Value: Perris Reservoir
Enumerated_Domain_Value_Definition: Perris Reservoir
Attribute:
Attribute_Label: PLABL
Attribute_Definition: Geological map unit label used to generate plot labels with relevant stratigraphic symbols. The geologic units with LABL designating Mesozoic (Mz) have keystroke substitute characters, }, that call their corresponding symbols from the Geoage Font Group. Geologic map unit labels will plot on derivative map plots with appropriate stratigraphic symbols if PLABL is used as the source for unit labels.
Attribute:
Attribute_Label: SHD
Attribute_Definition: polygon color (as integer value) from shadeset alc1.shd
Attribute:
Attribute_Label: SHDFIL
Attribute_Definition: polygon fill pattern (as integer value) from shadeset geology2.shd
Attribute:
Attribute_Label: NAME
Attribute_Definition: Geologic name of map unit (see list under LABL attribute)
Detailed_Description:
Entity_Type:
Entity_Type_Label: per_geo.aat
Entity_Type_Definition: Geologic features such as contacts and faults that bound rock-unit polygons
Attribute:
Attribute_Label: LTYPE
Attribute_Definition: Description of types of lines on the geologic map (contact, fault, dike).
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: map boundary
Enumerated_Domain_Value: contact, certain
Enumerated_Domain_Value: Kg, granite pegmatite dike
Enumerated_Domain_Value: Kp, granite dike
Enumerated_Domain_Value: water boundary
Attribute:
Attribute_Label: L-SYMB
Attribute_Definition: stores appropriate line symbol value from the lineset geoscamp2.lin
Detailed_Description:
Entity_Type:
Entity_Type_Label: per_str.pat
Entity_Type_Definition: Geological point data includes site-specific information describing the types and the orientation of foliation, joints, and lineations. One annotation subclass is included in the geologic points coverage, PER_STR which displays the respective dip and plunge values associated with individual point data.

Attribute:
  Attribute_Label: PTTYPE
  Attribute_Definition: describes type of point data (foliation, joints, lineations)
  Attribute_Domain_Values:
    Enumerated_Domain:
      Enumerated_Domain_Value: igneous foliation
      Enumerated_Domain_Value: vertical igneous foliation
      Enumerated_Domain_Value: igneous joint
      Enumerated_Domain_Value: vertical igneous joint
      Enumerated_Domain_Value: metamorphic foliation
      Enumerated_Domain_Value: vertical metamorphic foliation
      Enumerated_Domain_Value: metamorphic lineation
  Attribute:
    Attribute_Label: P-SYMB
    Attribute_Definition: Coded integer value that relates point to cartographic point symbol in markerset
geoscamp2.mrk
  Attribute:
    Attribute_Label: STRIKE
    Attribute_Definition: Azimuthal strike of planar feature
  Attribute:
    Attribute_Label: DIP
    Attribute_Definition: Dip of planar feature
  Detailed_Description:
    Entity_Type:
      Entity_Type_Label: per_ano.aat
      Entity_Type_Definition: Annotation leaders
    Attribute:
      Attribute_Label: L-SYMB
      Attribute_Definition: Coded integer value (1) that relates arcs to cartographic line symbol in lineset
geoscamp2.lin
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       Contact_Person: Kelly R. Bovard
     Contact_Position: Geologist
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