
Karl Heinen's 1999 Summer Work

Map and GIS Database for Pena Blanca, Mexico

Karl Heinen's 1999 Summer Work

Map and GIS Database for Pena Blanca, Mexico

I. Regional Geology

- A. Regional Geology -- Image scanned to a TIFF file by Seale Photography.
 - 1. File Location – CD “Geologic Map of Northern Mexico”
 - 2. Image Location – heinen/images/chihuahua_geol.gif
- B. Chihuahua Regional Physiography and Culture -- Image scanned from a National Geographic Focus Map.
 - 1. Image Location – heinen/images/mex75ngs.gif
- C. Chihuahua Regional Structural Geology -- DEM received from Ron Martin.
 - 1. Image Location – heinen/images/structgeol.gif

II. Nopal Cuesta

* Images A – I can also be generated from CD of Nopal Cuesta digitized by Optronics Specialty Co.

- A. Layers of Nopal Cuesta -- Digitized by Optronics Specialty Co. Layers include contours, strike and dip, geologic faults and surface contacts, roads, and frame.
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/
 - 2. Image Location – heinen/images/allnopalcuesta.jpg
- B. Geologic Structures of Nopal -- Example of layer of Nopal Cuesta of geologic faults and surface contacts.
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/nop_geol
 - 2. Image Location – heinen/images/nopalgeol.bmp
- C. Strike and Dip Layer of Nopal Cuesta -- Displays Strike and Dip of Nopal Cuesta.
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/nop_symb
 - 2. Image Location – heinen/images/nopalstrdip.bmp
- D. Strike and Dip of Nopal Cuesta -- Zoomed In --
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/nop_symb
 - 2. Image Location – heinen/images/nopalstrdip2.bmp
- E. Nopal Cuesta Contour Maps -- Layer of contours with roads of the Cuesta.
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/nopdx
 - 2. Image Location – heinen/images/nopalcuesta3.bmp

- F. Nopal Cuesta Contour Maps -- Shows contour map with background of Adobe Illustrator file contour map...Blue = Adobe file, White = New Layer Map
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/cont_utm , topoutm
 - 2. Image Location – heinen/images/nopalcuesta.bmp

- G. Nopal Cuesta Contour Maps -- Zoomed In to Nopal Mine -- Shows Adobe file lacking contour data where mine is versus new data digitized by Optronics.
 - 1. File Location --heinen/gis/pena_b/nopalcuesta/cont_utm , topoutm
 - 2. Image Location – heinen/images/nopalcuesta2.bmp

- H. TIN of Nopal Cuesta -- TIN is the intermediate process to building a 3D model.
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/cuesta_tin.dat , .pnt
 - 2. Image Location – heinen/images/tincolor.jpg

- I. Nopal Cuesta 3D Model -- Drape of Airphoto on 3D surface of Nopal Cuesta received from Ron Martin.
 - 1. File Location – heinen/gis/pena_b/nopalcuesta/nop300af_r.ras
 - 2. Image Location – heinen/images/nop300af_drape.jpg

- J. Plate 1 of Nopal Region -- Sent via .DXF files by Ignacio Reyes. Built in AutoCAD. Difficult to read. Paper map available in Nacho's Dissertation.
 - 1. File Location --heinen/gis/pena_b/nopalcuesta/nopalplates/plate_1.dxf
 - 2. Image Location – heinen/images/plate1_dxf.bmp

- K. Data for Layers of Plate 1 -- Shows layers name and attributes
 - 1. File Location – heinen/docs/plate1info.txt

- L. Plate 2 of Nopal Region -- Sent via .DXF files by Ignacio Reyes. Built in AutoCAD. Difficult to read. Paper map available in Nacho's Dissertation.
 - 1. File Location -- heinen/gis/pena_b/nopalcuesta/nopalplates/plate_2.dxf
 - 2. Image Location – heinen/images/plate2_dxf.bmp

- M. Data for Layers of Plate 2 -- Shows layers name and attributes
 - 1. File Location -- heinen/docs/plate2info.txt

- N. Plate 5 of Nopal Region -- Sent via .DXF files by Ignacio Reyes. Built in AutoCAD. Difficult to read. Paper map available in Nacho's Dissertation.
 - 1. File Location – heinen/gis/pena_b/ nopalcuesta/nopalplates/plate_5.dxf
 - 2. Image Location – heinen/images/plate5_dxf.bmp

- O. Data for Layers of Plate 5 -- Shows layers name and attributes
 - 1. File Location -- heinen/docs/plate5info.txt

III. Vertical Fractures

*Vertical fracture data can also be imported from CD of Nopal vertical fracture data digitized by Optronics Specialty Co.

- A. Nopal 1 Vertical Fractures -- Levels +00, +10, +30 of fractures digitized by Optronics Specialty Co.
 - 1. File Location – heinen/gis/pena_b/verticalfracturedata/
+00 and +30 – /nopalvertfrac1
+10 – /nopalvertfrac2
 - 2. Image Location – heinen/images/level0frac.bmp , /level10frac.bmp
; /level30frac.bmp
or
heinen/karl_web/htmldocs/alllevels.html
- B. Legend of Vertical Fractures -- Shows orientation of levels and contains a scale.
 - 1. File Location – heinen/gis/pena_b/verticalfracturedata/nopalvertfrac1
 - 2. Image Location – heinen/images/levellegend.bmp
- C. Legend of Features for Levels of Nopal 1 -- Shows symbology for levels of vertical fractures.
 - 1. File Location – heinen/gis/pena_b/verticalfracturedata/nopalvertfrac2
 - 2. Image Location – heinen/images/levellegend2.bmp

IV. Horizontal Fractures

- A. Horizontal Fracture Data Map -- Edited and ready to be imported into 3D model.
 - 1. File Location – heinen/gis/pena_b/horizonfracdata/fractutm
 - 2. Image Location – currently in ArcInfo
- B. Fracdatamapxy -- Pages 1-10 -- Horizontal Fracture Data in Excel file with coordinates in UTM to help locate fractures. Contains a number of attributes.
 - 1. File Location – heinen/gis/pena_b/horizonfracdata/fracdatamapxyz.xls

V. Nopal 3D

- A. Contour Map of Levels of Nopal 1 Uranium Site -- Original contour map used to build the 3D model.
 - 1. File Location – heinen/gis/pena_b/pena_3d/nopalcontourmap
 - 2. Image Location – heinen/images/nopalcontours.gif

- B. TIN of Nopal 1 Mine -- Color mapview of the TIN model showing elevations.
Pink = Lowest Elevation, White = Highest Elevation
 - 1. File Location – heinen/gis/pena_b/pena_3d/nopalmine3dtin
 - 2. Image Location – heinen/images/mine3d_clr.gif

- C. Front View of 3D Model -- The top of the mine is cut off because image will not fit on 8 * 11 paper. Actual image does contain all data of 3D model.
Built in EarthVision.
 - 1. File Location – heinen/gis/pena_b/pena_3d/pena3d.wrl
 - 2. Image Location – heinen/images/karl1a.gif

- D. Side View of 3D Model -- 3D model in EarthVision.
 - 1. File Location – heinen/gis/pena_b/pena_3d/pena3d.wrl
 - 2. Image Location – heinen/images/karl3.gif

- E. 3D Model of Nopal 1 with XYZ Points -- Mapview of 3D model that contains the contour points that we can use to import the vertical fracture data.
 - 1. File Location – heinen/gis/pena_b/pena_3d/3dnopalmine
 - 2. Image Location – heinen/images/karl0a.gif

VI. Splitwash

- A. Airphotos of Splitwash -- Scanned image of airphoto we will use to locate talus and outcrop areas. These areas will be used to study the infiltration of the surface area.
 - 1. File Location – heinen/gis/yuccamount/splitwash/flighth1.ras
 - 2. Image Location – heinen/images/flighth1.tif

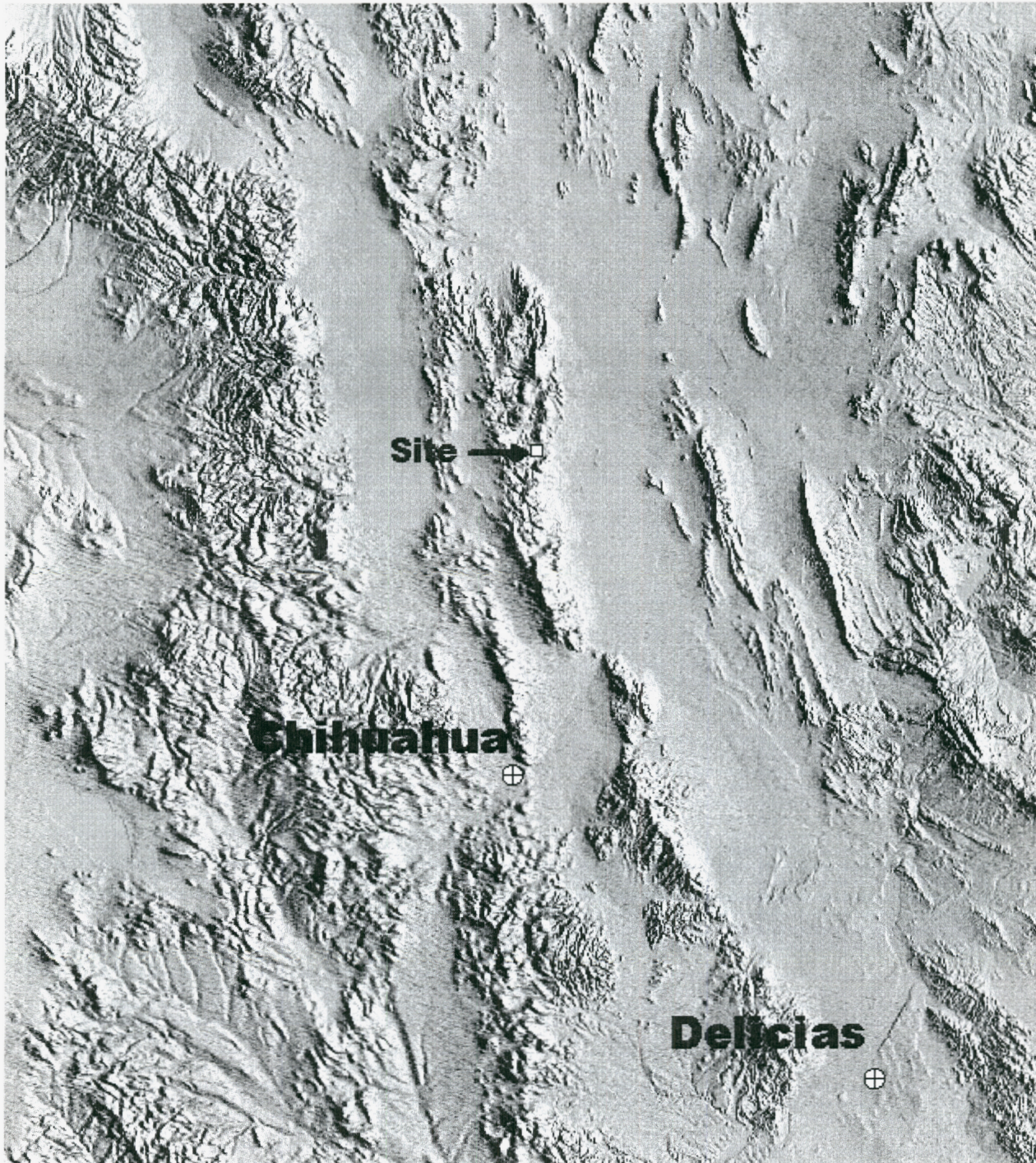
REGIONAL GEOLOGY

Chihuahua Regional Physiography and Culture



Scan of National Geographic Focus Map

Chihuahua Regional Structural Geology



Digitally Shaded Relief (DSR) of Site, from 3 arcsec (~100 meters/pixel) Digital Elevation Data