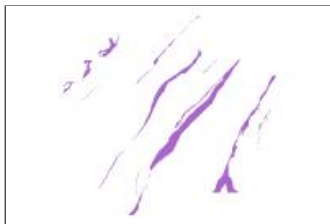


Structural Zones in the Seismically Active Areas of Virginia

File Geodatabase Feature Class



Tags

earthquake, fault, Virginia, society, geoscientificInformation, environment

Summary

This feature class represents areas where tectonic forces have greatly deformed the rock. These areas may be zones of weakness in the Earth's crust.

Description

This polygon feature class identifies zones of deformation, where ductile and/or brittle shearing of rock has occurred. This feature class includes areas of fault breccia, fault gouge, and mylonitic rock.

Credits

This digital data is the result of a three-year project funded by the Federal Emergency Management Agency (FEMA) through the Virginia Department of Emergency Management (VDEM) and by the Virginia Department of Mines, Minerals, and Energy (VDMME) via Grant Agreement Number HMGP-DR-4042-000-014 for \$548,969. The primary authors are Anne C. Witt, Wendy S. Kelly, and Matthew J. Heller from VDMME - Division of Geology and Mineral Resources (DGMR).

Martin Chapman and Bill Henika of Virginia Tech and Chuck Bailey of the College of William and Mary served as consultants on this project and assisted with project design, the collection of earthquake and fault information, and the review of the final deliverable products. Mike Enomoto, Marques Hatfield, William Swanger, Marcie Occhi, and Aaron Cross of DGMR completed specific tasks for the project. Amy Howard of VDEM served as grant coordinator.

Use limitations

The structural zones in this feature class are geologically very old and do not represent areas of recent deformation associated with active, modern faulting. These areas should not be used to assess or assign seismic risk.

Extent

West -79.002960 **East** -77.475627

North 38.250940 **South** 37.120685

Scale Range

Maximum (zoomed in) 1:50,000

Minimum (zoomed out) 1:625,000

ArcGIS Metadata ►

Topics and Keywords ►

THEMES OR CATEGORIES OF THE RESOURCE society, geoscientificInformation, environment

* CONTENT TYPE Downloadable Data

EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION No

PLACE KEYWORDS Virginia

THEME KEYWORDS earthquake, fault

THEME KEYWORDS society, geoscientificInformation, environment

THESAURUS ►

TITLE ISO 19115 Topic Categories

[Hide Thesaurus ▲](#)[Hide Topics and Keywords ▲](#)**Citation ►**

TITLE Structural Zones in the Seismically Active Areas of Virginia
PUBLICATION DATE 2017-03-31

PRESENTATION FORMATS digital map
FGDC GEOSPATIAL PRESENTATION FORMAT vector digital data

COLLECTION TITLE GIS Fault Mapping of Virginia Seismic Zones

[Hide Citation ▲](#)**Citation Contacts ►****RESPONSIBLE PARTY**

INDIVIDUAL'S NAME Anne Carter Witt
ORGANIZATION'S NAME Virginia Department of Mines, Minerals, and Energy
CONTACT'S POSITION Geologist
CONTACT'S ROLE originator

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[Hide Contact information ▲](#)[Hide Citation Contacts ▲](#)**Resource Details ►**

DATASET LANGUAGES English (UNITED STATES)
DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

STATUS completed
SPATIAL REPRESENTATION TYPE vector

* **PROCESSING ENVIRONMENT** Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.2.2.3552

CREDITS

This digital data is the result of a three-year project funded by the Federal Emergency Management Agency (FEMA) through the Virginia Department of Emergency Management (VDEM) and by the Virginia Department of Mines, Minerals, and Energy (VDMME) via Grant Agreement Number HMGP-DR-4042-000-014 for \$548,969. The primary authors are Anne C. Witt, Wendy S. Kelly, and Matthew J. Heller from VDMME - Division of Geology and Mineral Resources (DGMR).

Martin Chapman and Bill Henika of Virginia Tech and Chuck Bailey of the College of William and Mary served as consultants on this project and assisted with project design, the collection of earthquake and fault information, and the review of the final deliverable products. Mike Enomoto, Marques Hatfield, William Swanger, Marcie Occhi, and Aaron Cross of DGMR completed specific tasks for the project. Amy Howard of VDEM served as grant coordinator.

ARCGIS ITEM PROPERTIES

* **NAME** Structural_Zones

* **LOCATION** file:///wdb01513

\dgm\PROJECTS\MAPPING\Earthquake\Final_Deliverables\GIS_Data\Planners_Deliverables\Fault_Geodatabase_Planners.gdb

* **ACCESS PROTOCOL** Local Area Network

[Hide Resource Details ▲](#)**Extents ►**

EXTENT

DESCRIPTION

This dataset contains structural zones in the seismically active areas of Virginia.

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

WEST LONGITUDE -79.002960
 EAST LONGITUDE -77.475627
 SOUTH LATITUDE 37.120685
 NORTH LATITUDE 38.250940
 EXTENT CONTAINS THE RESOURCE No

TEMPORAL EXTENT

BEGINNING DATE 2013-03-01 00:00:00
 ENDING DATE 2017-04-14 00:00:00

EXTENT

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching
 * WEST LONGITUDE -79.002960
 * EAST LONGITUDE -77.475627
 * NORTH LATITUDE 38.250940
 * SOUTH LATITUDE 37.120685
 * EXTENT CONTAINS THE RESOURCE Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM

* WEST LONGITUDE 1855546.048481
 * EAST LONGITUDE 2294216.331900
 * SOUTH LATITUDE 288230.869797
 * NORTH LATITUDE 698212.465187
 * EXTENT CONTAINS THE RESOURCE Yes

[Hide Extents ▲](#)

Resource Points of Contact ►

POINT OF CONTACT

INDIVIDUAL'S NAME Anne Carter Witt
 ORGANIZATION'S NAME Department of Mines, Minerals, and Energy
 CONTACT'S POSITION Geologist
 CONTACT'S ROLE point of contact

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[Hide Contact information ▲](#)

[Hide Resource Points of Contact ▲](#)

Resource Maintenance ►

RESOURCE MAINTENANCE

UPDATE FREQUENCY not planned

[Hide Resource Maintenance ▲](#)

Resource Constraints ►

LEGAL CONSTRAINTS

LIMITATIONS OF USE

All users of this electronic data set must read and fully comprehend the metadata prior to use. All electronic and/or hardcopy products (maps, data, and text, etc.) produced by the Virginia Department of Mines, Minerals and Energy -

Division of Geology and Mineral Resources are considered public information (unless otherwise noted) and may be distributed or copied. When using, distributing or copying this data set as a source, the Originator must be acknowledged. These products are intended to serve for general planning purposes only and are provided on an "as is" basis. This data set shall not be used beyond the limits of the set source scale. This data set does not represent a survey document completed by a licensed land surveyor and should not be utilized as such.

CONSTRAINTS

LIMITATIONS OF USE

The structural zones in this feature class are geologically very old and do not represent areas of recent deformation associated with active, modern faulting. These areas should not be used to assess or assign seismic risk.

[Hide Resource Constraints ▲](#)

Spatial Reference ►

ARCGIS COORDINATE SYSTEM

```
* TYPE      Projected
* GEOGRAPHIC COORDINATE REFERENCE  GCS_North_American_1927
* PROJECTION  NAD_1927_StatePlane_Virginia_South_FIPS_4502
* COORDINATE REFERENCE DETAILS
  PROJECTED COORDINATE SYSTEM
    WELL-KNOWN IDENTIFIER  32047
    X ORIGIN  -120618000
    Y ORIGIN  -94806700
    XY SCALE  3048.0060960121914
    Z ORIGIN  -100000
    Z SCALE  10000
    M ORIGIN  -100000
    M SCALE  10000
    XY TOLERANCE  0.0032808333333333335
    Z TOLERANCE  0.001
    M TOLERANCE  0.001
    HIGH PRECISION  true
    LATEST WELL-KNOWN IDENTIFIER  32047
    WELL-KNOWN TEXT  PROJCS["NAD_1927_StatePlane_Virginia_South_FIPS_4502",GEOGCS
["GCS_North_American_1927",DATUM["D_North_American_1927",SPHEROID
["Clarke_1866",6378206.4,294.9786982]],PRIMEM["Greenwich",0.0],UNIT
["Degree",0.0174532925199433]],PROJECTION["Lambert_Conformal_Conic"],PARAMETER
["False_Easting",2000000.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",-78.5],PARAMETER
["Standard_Parallel_1",36.76666666666667],PARAMETER["Standard_Parallel_2",37.96666666666667],PARAMETER
["Latitude_Of_Origin",36.33333333333334],UNIT["Foot_US",0.3048006096012192],AUTHORITY["EPSG",32047]]
```

REFERENCE SYSTEM IDENTIFIER

```
* VALUE  32047
* CODESPACE  EPSG
* VERSION  8.2.6
```

[Hide Spatial Reference ▲](#)

Spatial Data Properties ►

VECTOR ►

```
* LEVEL OF TOPOLOGY FOR THIS DATASET  geometry only
```

GEOMETRIC OBJECTS

```
FEATURE CLASS NAME  Structural_Zones
* OBJECT TYPE  composite
* OBJECT COUNT  32
```

[Hide Vector ▲](#)

ARCGIS FEATURE CLASS PROPERTIES ►

```
FEATURE CLASS NAME  Structural_Zones
* FEATURE TYPE  Simple
* GEOMETRY TYPE  Polygon
* HAS TOPOLOGY  FALSE
* FEATURE COUNT  32
* SPATIAL INDEX  TRUE
* LINEAR REFERENCING  FALSE
```

[Hide ArcGIS Feature Class Properties ▲](#)

[Hide Spatial Data Properties ▲](#)

Data Quality ►

DATA QUALITY REPORT - CONCEPTUAL CONSISTENCY ►

MEASURE DESCRIPTION

Structural zone data is as accurate as possible based on the source from which it was derived.

[Hide Data quality report - Conceptual consistency ▲](#)

DATA QUALITY REPORT - COMPLETENESS OMISSION ►

MEASURE DESCRIPTION

Structural zone data is as accurate as possible based on the source from which it was derived.

[Hide Data quality report - Completeness omission ▲](#)

[Hide Data Quality ▲](#)

Lineage ►

PROCESS STEP ►

WHEN THE PROCESS OCCURRED 2016-12-01 00:00:00

DESCRIPTION

Published and unpublished maps containing structural zone data were identified and digitized. Where digital data did not already exist, these maps were scanned, georeferenced and the line work was digitized into the geodatabase.

[Hide Process step ▲](#)

PROCESS STEP ►

WHEN THE PROCESS OCCURRED 2016-12-01 00:00:00

DESCRIPTION

After the maps were digitized, structural zones were compared between various map scales and included in the structural zone compilation feature class. Priority was given to zones mapped at 1:24,000 scale and recent mapping. Where polygons did not match between maps, DGMR may have adjusted polygon outlines to create a more seamless product.

[Hide Process step ▲](#)

PROCESS STEP ►

WHEN THE PROCESS OCCURRED 2016-12-01 00:00:00

DESCRIPTION

Polygons were then simplified and merged together to create a seamless outline. Data source IDs were also combined together to retain the original map reference for each polygon.

[Hide Process step ▲](#)

[Hide Lineage ▲](#)

Geoprocessing history ▼

Distribution ►

DISTRIBUTOR ►

CONTACT INFORMATION

INDIVIDUAL'S NAME Anne Carter Witt

ORGANIZATION'S NAME Virginia Department of Mines, Minerals, and Energy

CONTACT'S POSITION Geologist

CONTACT'S ROLE distributor

CONTACT INFORMATION ►

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CITY Charlottesville

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POSTAL CODE 22903

E-MAIL ADDRESS anne.witt@dmme.virginia.gov[Hide Contact information ▲](#)

ORDERING PROCESS

TERMS AND FEES None

DATE OF AVAILABILITY 2017-03-31 00:00:00

INSTRUCTIONS

Data is available by internet download or by contacting the distributor directly.

[Hide Distributor ▲](#)

DISTRIBUTION FORMAT

* NAME File Geodatabase Feature Class

[Hide Distribution ▲](#)

Fields ►

DETAILS FOR OBJECT [Structural_Zones](#) ►

* TYPE Feature Class

* ROW COUNT 32

DEFINITION

Zones of deformation, where ductile and/or brittle shearing of rock has occurred.

DEFINITION SOURCE

DMME

FIELD [OBJECTID](#) ►

* ALIAS OBJECTID

* DATA TYPE OID

* WIDTH 4

* PRECISION 0

* SCALE 0

FIELD DESCRIPTION

Internal feature number.

DESCRIPTION SOURCE

Esri

DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

[Hide Field OBJECTID ▲](#)FIELD [SHAPE](#) ►

* ALIAS Shape

* DATA TYPE Geometry

* WIDTH 0

* PRECISION 0

* SCALE 0

FIELD DESCRIPTION

Feature geometry.

DESCRIPTION SOURCE

Esri

DESCRIPTION OF VALUES

Coordinates defining the features.

[Hide Field SHAPE ▲](#)

FIELD Zone_ID ►

* ALIAS Zone_ID
 * DATA TYPE Double
 * WIDTH 8
 * PRECISION 0
 * SCALE 0

FIELD DESCRIPTION

Unique ID number for each structural zone polygon.

DESCRIPTION SOURCE

DMME

DESCRIPTION OF VALUES

Unique ID number for each structural zone polygon.

[Hide Field Zone_ID ▲](#)

FIELD Zone_Name ►

* ALIAS Zone_Name
 * DATA TYPE String
 * WIDTH 255
 * PRECISION 0
 * SCALE 0

FIELD DESCRIPTION

The name of the structural zone on the published or unpublished map, if known.

DESCRIPTION SOURCE

DMME

DESCRIPTION OF VALUES

The name of the structural zone.

[Hide Field Zone_Name ▲](#)

FIELD Seismic_Zone ►

* ALIAS Seismic_Zone
 * DATA TYPE String
 * WIDTH 255
 * PRECISION 0
 * SCALE 0

FIELD DESCRIPTION

The seismic zone in which the structural zone is located.

DESCRIPTION SOURCE

DMME

DESCRIPTION OF VALUES

The seismic zone in which the structural zone is located.

[Hide Field Seismic_Zone ▲](#)

FIELD Zone_Type ►

* ALIAS Zone_Type
 * DATA TYPE String
 * WIDTH 50
 * PRECISION 0
 * SCALE 0

FIELD DESCRIPTION

The type of structural zone based on the rock type and deformation that dominates.

DESCRIPTION SOURCE

DMME

LIST OF VALUES

VALUE Fault Zone

DESCRIPTION A fault that is expressed as a zone of numerous small fractures or of breccia or fault gouge.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Jackson (1997)

VALUE Mylonite Zone

DESCRIPTION An area dominated by fine-grained, foliated rock, formed by ductile deformation or shearing.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Jackson (1997)

VALUE Fault-Breccia Zone

DESCRIPTION A tectonic breccia composed of angular fragments resulting from the crushing, shattering or shearing of rocks during the movement on a fault.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Jackson (1997)

VALUE Melange

DESCRIPTION A body of mappable rock produced by tectonic processes, characterized by the inclusion of fragments and blocks of all sizes, both exotic and native, embedded in a fragmental matrix of finer grained material.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE Jackson (1997)

VALUE High-Strain Zone

DESCRIPTION An area dominated by rock that was formed by ductile deformation or shearing.

ENUMERATED DOMAIN VALUE DEFINITION SOURCE DMME

DESCRIPTION OF VALUES

The type of structural zone.

[Hide Field Zone_Type ▲](#)

FIELD DataSourcesID ►

*ALIAS DataSources

*DATA TYPE String

*WIDTH 50

*PRECISION 0

*SCALE 0

FIELD DESCRIPTION

A unique ID number that corresponds to an entry in the Data Sources table. Each entry is a map reference from which the data was derived.

DESCRIPTION SOURCE

DMME

DESCRIPTION OF VALUES

A unique ID number that corresponds to an entry in the Data Sources table. Each entry is a map reference from which the data was derived.

[Hide Field DataSourcesID ▲](#)

FIELD RuleID ►

*ALIAS RuleID

*DATA TYPE Integer

*WIDTH 4

*PRECISION 0

*SCALE 0

FIELD DESCRIPTION

An integer field that stores a reference to the representation rules that code the symbology for a structural zone.

DESCRIPTION SOURCE

DMME

DESCRIPTION OF VALUES

An integer field that stores a reference to the representation rules that code the symbology for a structural zone.

[Hide Field RuleID ▲](#)**FIELD Override ►**

* ALIAS Override
 * DATA TYPE Blob
 * WIDTH 0
 * PRECISION 0
 * SCALE 0

FIELD DESCRIPTION

A binary large object (BLOB) field that stores feature-specific overrides to the representation rules of the structural zone symbology.

DESCRIPTION SOURCE

DMME

DESCRIPTION OF VALUES

A binary large object (BLOB) field that stores feature-specific overrides to the representation rules of the structural zone symbology.

[Hide Field Override ▲](#)**FIELD SHAPE_Length ►**

* ALIAS Shape_Length
 * DATA TYPE Double
 * WIDTH 8
 * PRECISION 0
 * SCALE 0

FIELD DESCRIPTION

Length of feature in internal units.

DESCRIPTION SOURCE

Esri

DESCRIPTION OF VALUES

Positive real numbers that are automatically generated.

[Hide Field SHAPE_Length ▲](#)**FIELD Shape_Area ►**

* ALIAS Shape_Area
 * DATA TYPE Double
 * WIDTH 8
 * PRECISION 0
 * SCALE 0

*** FIELD DESCRIPTION**

Area of feature in internal units squared.

*** DESCRIPTION SOURCE**

Esri

*** DESCRIPTION OF VALUES**

Positive real numbers that are automatically generated.

[Hide Field Shape_Area ▲](#)[Hide Details for object Structural_Zones ▲](#)[Hide Fields ▲](#)**Metadata Details ►**

METADATA LANGUAGE English (UNITED STATES)

METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset
 SCOPE NAME *dataset

* LAST UPDATE 2017-05-23

ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0
 METADATA STYLE FGDC CSDGM Metadata
 STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2016-10-07 12:08:05
 LAST MODIFIED IN ARCGIS FOR THE ITEM 2017-05-23 15:31:44

AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes
 LAST UPDATE 2017-05-23 15:31:44

[Hide Metadata Details ▲](#)

Metadata Contacts ►

METADATA CONTACT

INDIVIDUAL'S NAME Anne Carter Witt
 ORGANIZATION'S NAME Virginia Department of Mines, Minerals, and Energy
 CONTACT'S POSITION Geologist
 CONTACT'S ROLE point of contact

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 ADMINISTRATIVE AREA VA
 POSTAL CODE 22903
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[Hide Contact information ▲](#)

[Hide Metadata Contacts ▲](#)

Metadata Maintenance ►

MAINTENANCE

UPDATE FREQUENCY not planned

MAINTENANCE CONTACT

INDIVIDUAL'S NAME Anne Carter Witt
 ORGANIZATION'S NAME Virginia Department of Mines, Minerals, and Energy
 CONTACT'S POSITION Geologist
 CONTACT'S ROLE originator

CONTACT INFORMATION ►

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[Hide Contact information ▲](#)

[Hide Metadata Maintenance ▲](#)

Thumbnail and Enclosures ▶

THUMBNAIL

THUMBNAIL TYPE JPG

Hide Thumbnail and Enclosures ▲

FGDC Metadata (read-only) ▼