PROPOSED NORTH AMERICAN GEOLOGIC-MAP DATA MODEL

SCIENCE LANGUAGE TECHNICAL TEAM

The Vocabulary of Geologic-map Database Queries[1]

13 December, 2001

This document archives a list of nouns, verbs, adjectives, modifiers, and qualifiers that occur in hypothetical geologic-map database queries developed by members of the Science Language Technical Team (SLTT) as of 30 November, 2001. The database queries were developed in order to gain a feeling for the kinds of science concepts and science language that are resident in geologic-map databases and that might be queried by users of digital geologic-map information. The queries themselves can be found in two companion documents: a master list of database queries ("20_queries_master"), and a categorized list of the same queries ("20_queries_master_html").

The vocabulary list is one step in understanding the nomenclatural ambiguities, clarities, uncertainties, and overlaps involved in our geologic-map database nomenclature. For example, is there consensus on the meaning of:

- "certain"
- "deposit"
- "environment"
- "lithology"
- "low-angle"
- "coarse-grained"
- "alluvium"
- "plutonic"
- "mylonitic"
- "fabric"
- "texture"
- "unit"
- "map unit"
- "rock unit"
- "rock type"
- "surficial"
- "approximate"
- "inferred"

The list also helps in understanding the geometric, quantitative, qualitative, and relational aspects that exist among geologic-map database terms like:

- "overlies"
- "greater than"

[1]This documented should be cited as follows: North American Geologic Map-Data Model Science Language Technical Team, 2004, Report on progress to develop a North American science language standard for digital geologic-map databases; Queries--The vocabulary of geologic map-data queries, (12/13/2001), in Soller, D.R., ed., Digital Mapping Techniques '04--Workshop Proceedings: U.S. Geological Survey Open-File Report 2004-1451, 595 p. Queries accessed at http://pubs.usgs.gov/of/2004/1451/sltt/queries/.

- “as young as”
- “associated with”
- “buried by”
- “resting on”
- “developed on”
- “underlies”
- “overtops”
- “less than”
- “interfingers with”

It is the intent of the SLTT to use the vocabulary identified in this document to understand better the science concepts and science language of digital geologic-map databases. It also is our hope that the vocabulary elements will assist data-model designers and software-tool designers to envision more clearly the relationships that exist among science concepts and the language that supports them.

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THE VOCABULARY OF GEOLOGIC-MAP DATABASE QUERIES

< 15 feet thick

< 2000 years ago

< 5 feet thick over bedrock

> 10' in thickness

> 10' in thickness

> 25 % by weight

> 3 m thick

> 3m above

> 50 % by weight

> 50% quartz

> 6 meters thick

> X% fine grained material

1:24,000 scale

2 micas

20 to 80 m above sea level

2-mica granites

90% confidence limits on the location of

abandoned

abandoned drill holes

abundant

acid neutralizing capacity

acid-rock-drainage potential

across which

active (as in fault, spring, landslide, etc.)

adjacent piedmont slopes

adjacent to

aerial photograph

aeromagnetic data

aeromagnetic survey flight lines

affect

age assignments of units

age between 1345 and 1326 Ma

age dates
age determined
age, how determined
age, who did
aggregate
aggregate deposits
aggregate resources, crushed-sandstone, economic
aggregate, concrete, highway-grade
aligned
alkalic plutonic
all the
all the polygons of
all the Tertiary rocks
allochthonous rocks

alluvial
alluvial deposits
alluvial fans
alluvial thicknesses of 500 ft and greater
alluvial-fan deposits dominated by debris-flow depositional processes
alluvium
alluvium, terrace

alteration, hydrothermal
altered rock
alternate interpretations of this geology?
amphibolite facies
analytical data
ancient
and
andesitic volcanic rocks
angles between 75° and 90°
angles greater than 20°
anhydrite
anticlines

anticlines, overturned
anticlines, upright
apatite fission-track cooling-age
applied to
aqueous chemistry

aquifer
aquifer properties (transmissivity or hydraulic conductivity)
aquifer-extent delineations
aquifers
aquifers, confined
aquifers, local
aquifers, regional
aquifers, unconfined

arbitrary point
Archean
Archean and Proterozoic
are composed
are they any good? (data)
areas
areas of
areas where
arkose
arkosic wackes
aspect of 135-270 degrees
aspects, north
assigned to
associated with
at a known location
at surface
at the bedrock surface
at the surface
at their greatest amplitude
at this location

at X depth
Atlantic Coastal Plain Province
attitude data
attitude symbols, nth generation
available coal resources
available recharge
Avalon zone (tectonic Province)
average
average standard-penetration values
axial plane traces
axial planes
backarc basin
Baraga Group (stratigraphic unit)
basalt
basalt units
basaltic units
basement
basement, metamorphic
basin delineations
basin fill
basin-fill units
basis for the identification of
beach erosion
beach ridge

bed
bed thickness < 1 foot
bedding attitudes
bedding attitudes, upright
bedding characteristics
bedding dips > 30 degrees
bedding measurements
bedding measurements for which tops are known
bedding thickness < 6 inches
bedding, overturned

bedding, sedimentary

bedrock
bedrock aquifers
bedrock fractures
bedrock geologic map
bedrock geologic units
bedrock geology
bedrock mountain fronts with slopes > 35° more than
bedrock orientation
bedrock topography
bedrock units
bedrock units, non-intrusive
bedrock vs. alluvium

beds, lacustrine
believed to be
below other surficial cover
below X feet
beneath
beneath the drainage
bentonite
between 10 and 20 m above stream level
between 25% and 75%
between 450 and 423 Ma
between 60 and 75 ppm
between X and Y Ma
biota
biotite
black shale
bog or peat deposits
bordering
bore hole data.
bore-hole geotechnical data
Bouguer gravity-anomaly contours

boulder belts in the Darby till
boundary between
bounding basal depositional contact
breccia
breccia, fault
brecciated
brownish-red
buried beneath
buried by < 3 m of material
buried valley
buried valleys
buried valleys that are deeper that 400 feet beneath the surface
calc-alkalic
calcrete
calcrete soil > stage IV
caldera
caldera boundaries, approximate
caldera boundaries, certain
caldera boundaries, concealed
caldera margin, outside of
caldera, intracaldera
calderas
caliche
Cambrian rocks
cannel coal
carbon content > 3%
carbonate deposits
carbonate rock, whether dolostone or limestone
carbonate rocks
carbonate, indurated
cataclasis
cataclastic rocks
catastrophic flood deposits
caverns
caves

cementation
cemented
cemented with
cemented with carbonate
cemented with gypsum
cemented with silica
Cenozoic
certain (as in fault, certain; contact, certain)
changed over time
channel coal locations
channels
characteristics
charnockites
chemical analyses available for rocks from the area
chert
chert and shale combined
chloritized
clast
clast populations
clasts
clay
clay cores
clay deposits
clay units
claystones
cleat orientation in the Pittsburgh coal bed
cleat spacing in the Pittsburgh coal bed
cliff forming
closed
closed, partly
closest
coal
coal beds
coal chemistry
coal deposits, mined-out

coal fields
coal mines, underground
coal seams
coalfield
coarse grained
cobbles
cobbles, basaltic
coexisting
cohesive strength
coincides with
colluvium
combined
come in contact with
come to the surface
commodity
compile
compiled from
compiled sources
compiled to produce the map
composition
composition, alkalic
composition, calc-alkalic
concrete aggregate
conditions of deposition
cones of depression
confined aquifers
confining units
conglomerates
conglomeratic
conodont
consist mainly of
consist of two or more
consolidated units
constraints on the ages of faults
contact

contact seen
contact, approximate
contact, between
contact, certain
contact, concealed
contact, depositional, overlying angular unconformities
contact, gradational
contact, inferred
contact, nonconformable
contact, paraconformable
contact, separating
contact, unconformable
contact-metamorphosed zones
contacts of
contacts, faulted
contacts, gradational
contacts, unconformable

contain
contain > 50% carbonate rock
continental breakup
continental shelf
convergent margin magmatism
cooling-age values between X and Y Ma
copper mines, abandoned (from mineral resource database)
core
corresponding formation
cover (noun)
cover (verb)
Cretaceous
Cretaceous and younger
Cretaceous and younger units
cross section
cross section indices
cross section, geologic

cross sections
cross-cutting relationships
crushed stone (from mineral resource database)
cut
cut by thrust faults
damage zone
damage zone, not plugged
damage zones
Darby Till (Rock-stratigraphic Unit)
data
data, analytical
data, density
data, redundancy
data, sources
data, sufficient
debris flow
debris flows
debris-flow deposit
decay constants
deep
deeper than 8000 feet
deepest
deep-seated landslides
define
deformation, syndepositional
denser than
density, spatial
deposited in
depositional processes

deposits
deposits of a given type
deposits, aggregate
deposits, alluvial
deposits, alluvium, terrace

deposits, bog or peat
deposits, carbonate
deposits, clay
deposits, coal, mined-out
deposits, debris-avalanche
deposits, debris-fan
deposits, debris-flow
deposits, dome
deposits, drift
deposits, eolian
deposits, eolian silt
deposits, evaporite
deposits, flood
deposits, glacial
deposits, glacial bog
deposits, glacial, on specified bedrock unit
deposits, glacial, sandy
deposits, gold, placer
deposits, gravel
deposits, impermeable
deposits, karst
deposits, lacustrine
deposits, lahar
deposits, lake
deposits, lava-flow
deposits, levee
deposits, loess
deposits, massive sulfide
deposits, moraine
deposits, mudrock
deposits, Neogene
deposits, outwash
deposits, outwash, Chippewa lobe
deposits, phosphate
deposits, playa

deposits, pull-apart basin
deposits, pumice
deposits, pyroclastic-flow
deposits, sand
deposits, sand and gravel
deposits, sandstone
deposits, sedimentary, nonmarine
deposits, skarn
deposits, slope-failure
deposits, surficial
deposits, terrace
deposits, till
deposits, tsunami
deposits, unconsolidated
deposits, volcanic

depth
depth estimates
depth of completion
depth to any given formation
depth to basement
depth to confining units
depth to groundwater
depth to unit X
derivative maps
derived from
description of
detachment faults on which slopes of > 35°
detachment surfaces
developed over
devitrified
Devonian
Devonian, middle
dextral movement
dextral strike-slip faults.

diagenetic
diamictons< 2 m thick
different shades of orange and brown?
different ways
dikes
dikes, clastic
dikes, rhyolite
dip direction, reversal of
dip directions
dip directions between 45° and 125°
dip information
dip < 30°
dip steeper than
dip-direction variations
dips
dips toward
dips > 45°
dips northwestward > 25°
discharge areas
displacement (fault)
displacements
distribution and thickness
distribution of
distribution of potential outcrop of the bedrock units?
divergent margin magmatism
documented (confidence measure)
dolomite
dolostone
domains < 10 km^2
domains of
domains with
dominant lithology (> 50%)
dominated by
down to
downhill direction

drain (verb)
drainage basin
drainage line
drainage pattern
drainage patterns
DRASTIC rating
drift thickness
drift-thickness maps
drill core
drill core, specific
drill holes
dune deposits
dune migrations
dunes
earthflows
economic mineral deposits
economic mineral potential
edge effects (as in map edge or map boundary)
ejecta blankets
element
elemental abundances
elevations of
environment
environments, barrier-bar
environments, intertidal
environments, oxygen-deficient
environments, platform-margin
environments, strand-plain
eolian sand
eolian sand <5%
epithermal gold systems
eroded away the
erosional history
esker deposits
eskers

estuarine deposits
excavatable, easily
exceeds 4.0 degrees C
exposed in
exposures
expression at the surface
extend from
extending 90° from
extensional
extent
extent of
extent of unit X
extent, horizontal
extent, vertical
extrapolation
facies changes
facing indicator
fault
fault intersection
fault movement
fault plane
fault rocks
fault scarps that slope 15 to 25°
fault system, named
fault system, transform
fault zones
fault zones, named
fault, named
fault, normal
fault, reverse
fault, specified
fault, specified, surface trace of
fault, strike-slip, dextral
fault, strike-slip, sinistral
faulted

faulted contacts
faults
faults (by type)
faults cutting
faults, active
faults, approximate
faults, certain
faults, circular pattern
faults, clustered
faults, concealed
faults, dipping 60° or greater
faults, high-angle
faults, historically active
faults, inferred
faults, listric
faults, low-angle
faults, normal
faults, n^{th} generation
faults, reverse
faults, specified age
faults, specified type
faults, strike-slip
faults, strike-slip, left-lateral
faults, strike-slip, right-lateral
faults, thrust
faults, thrust, blind
faults, thrust, reactivated
faunal assemblages
faunal provinciality, Celtic
felsic
field investigation
filled with
fine grained material
fine-grained
fine-grained quartzite

fission-track cooling-age
flanking
flight line
flood basalt
flood plain
flood plain, 100-year
floodplains
flow foliation, magmatic
flowing (artesian) wells.
fluctuation of the ground water table
fluvial deposits
fold, named
folded
folds (by type)
folds, approximate
folds, certain
folds, concealed
folds, inferred
folds, n^{th} generation
foliated
foliation
foliation attitudes
foliation measurements
foliation surface, single
foliations, regional
following criteria
footwall rocks
for a particular area
for the area
foreland
formation
Formation
formation polygons
formation x
Formation Y

Formations
formations
formed on

fossil
fossil clams
fossil localities
fossil localities that conflict with age assignments of units
fossil locations
fossils
fossils, list of
fossils, trilobite

fracture density
fracture patterns
fracture spacing, close
fracture spacing, denser than
fractured
fractured rock
fractures
fractures, closed
fractures, in bedrock
fractures, open
fractures, partly closed by caliche
fractures, without calcite fill
fracture-trace/orientation
fracturing in

fragmental andesites
from point A to point B
funded by my agency
gaining or losing streams
gaining streams
garnet
garnet, prograde

gas
gas distribution in
gas fields
gas wells
generalize the map
generalized
generate derivative maps
geochemical analyses
geochemical signature
geochemically differentiate (verb)
geochemistry
geologic belt, regional
geologic contacts interpreted from field observation, aeromagnetic maps, drilling data, etc
geologic description
geologic hazard potential
geologic map, complete
geologic map, generalized
geologic province, regional
geologic quadrangles
geologic terrane, regional
geologic text
geologic zone, regional
geological age
geological age
geologic-map units
geophysical grid
geothermal gradient
glacial activity
glacial lakes
glacial limit, all-time
glacial striae
glacial striae, more than one set
glacial striae, superimposed
glauconite
glauconite-bearing rocks

gneissose rock
gold
gold mines
gold occurrences
gouge
grain size, sand
granites
granites, hypersolvus
granitic intrusions
granitic rock
granitic rocks that have more K_2O than Na_2O
granitoid rocks
granodiorites
granulite-facies
graptolite zone
gravel
gravel pits
gravity analysis
gravity measurements
great enough to

greater than
greater than 1,000,000 cubic feet
greater than 10 gpm
greater than 15 feet thick
greater than 2 m thick
greater than 20 feet thick
greater than 36 inches thick
greater than 4 feet in thickness
greater than 5% by volume
greater than 7% silt
greater that 10 feet thick
greater that 2 km in length

greenschist facies

greenschist facies, at least
greenschist-facies mafic volcanic rocks
groove casts
ground truth

ground water flow
ground water recharged
groundmass, fine-grained
ground-water contamination
ground-water flow direction
ground-water flow, shallow
ground-water pollution potential
ground-water stress areas
ground-water velocity fields

Group
Group level or equivalent
grouped
guess
gypsum
habitat, desert tortoise
hanging-wall bedding
hanging-wall rock units
hanging-wall rocks
hard rocks
harzburgites, tectonized
has 25 feet or less of glacial cover
hazardous-waste generators
hazards
high-level
high-sinuosity
high-yielding well locations for wells completed in a particular aquifer
historic
Holocene
Holocene strike slip faults

Holocene, late
Holocene-age alluvium
hornblende, magmatic
hornblende, prograde
hornblende-bearing

how confident is the interpretation of facing direction at this site?
how deep are they
how deep is
how deep is it to
how detailed was the mapping
how extensive are they
how large
how many different rock types
how strong are
how thick are

hydraulic conductivity
hydrogeochemical characteristics, general
hydrothermally altered
hypabyssal rocks
iceberg scours
ice-contact deposits
ice-flow directions
igneous rock units, extrusive
igneous rock units, intrusive
igneous rocks
igneous rocks, basic
Illinoian
ilmenite-bearing
immediately underlain by
in study area
in the last 12,000 years
in the stratigraphic section
in the upper 10 cm

in their upper part
in this area
in unit X
inactive
include the
incremented by 10%
index map
indicated
indicator alteration and mineralization
indurated
inferred by
inferred to be
infiltration rate, high
infiltration rate, low
initial production
inner-gorges (geomorphology)
interpreted confidently
interpretive
intersect
intersected by
intersects
intrude
intruded by
intrusions into
intrusions, granitic
intrusions, plutonic, felsic
intrusive bodies
intrusive contacts
intrusive events
intrusive rock
intrusive rocks
intrusive rocks, felsic
intrusive rocks, mafic
intrusive rocks, subvolcanic
intrusives/extrusives

is < 20° from
is in liquefaction-prone area
isopach map of
isopach maps
isotope
isotope systems
isotope, radiogenic
isotope, stable
isotopic abundances
isotopic ratios
isotopic ratios, initial
joint patterns
joint sets, orthogonal
joints
Jurassic
Jurassic/Cretaceous
kame deposits
karst areas, probable
karst features
karst terraines
kimberlites
Kimmeridgian
Kiokee belts
known
known (adjective)
known age
Kyanite
laboratory, chemical
laboratory, dry chemistry
laboratory, isotope
laboratory, wet chemistry
lacustrine
lacustrine beds
lacustrine deposits
lacustrine origin

lahars
lake deposits
lake, bed of
lakes
lakes, modern
landforms
landforms, glacial, streamlined
landforms, glacially streamlined
landslide deposits
landslide scarps, approximate
landslide scarps, certain
landslide scarps, concealed
landslides
Laramide
larger than 0.5 ha
larger than 1 meter in diameter
largest possible
latitude
Lava Creek B tephra
lava flows, basalt
layering, cumulus
layering, macrorhythmic

less than 10,000 yrs old
less than 3 m of
less than 50 feet
less than 500lb/square ft
less than 90°
lesser than

lesslake plain areas
lie within 50 km of
likely to have
limestone
limestone, high-calcium

limestone, moldic
limestones
limestones, lacustrine
lineaments, regional
linear features
lineation measurements
lines
lines and polygons, map units mapped as both
lines only, map units mapped as
liquid
lithofacies map of member
lithogeochemical map
lithologic characteristics, general
lithologic classification, customized
lithologic classification, standard
lithologic map
lithologies
lithology
lobe (glacial)
local
locate themselves (geology allows users to)
located within 1 mile of
located within buried valleys
location
location of
locations
loess cover
logs
longitude
losing streams
low permeability zones
lower than
lowest most
made
made of

made up
mafic
mafic to ultramafic
magmatism, convergent margin
magmatism, divergent margin
magnetic analysis
magnetic anomalies with amplitudes of 100 nT and greater
magnetic survey location, ground based
magnetic susceptibility
magnitude 6 or greater earthquake
major
map area
map element
map legend
map notes cited
map set
map unit
map units
map units represent
mapping, previous
map-unit identification
map-unit identification is little more than a guess
marble
marine
marine, deep
marine, nearshore
marine, shallow
Marquette Range Supergroup
massive
material
material properties
maximum dimension of 0.002 mm
maximum areal limits within which
maximum extent
maximum sustainable yield

mean density, bulk
measured coal sections
measured sections
measurement
measurements, accuracy of
measurements, precision of
Member
members
Members
Mesoproterozoic
mesoscale
Mesozoic
metacarbonate rock
metadata

metamorphic
metamorphic isograds
metamorphic rock
metamorphic rock units?
metamorphic rocks
Metamorphic Suite
metamorphic terrane
metamorphic terrane, granulite facies
metamorphism, retrogressive
metamorphosed
metasedimentary rocks

meteor impacts, buried
mid-continent rift
mine tailings
mineable
mined-out resources
mineral
mineral assemblages
mineral occurrences

mineralization, sulfide
mineralogic data
mineralogy
minerals
mines
mines, abandoned
mines, active
mining sites, surface, abandoned
Miocene
Mississippian
modal analysis
moisture content, bedrock
molybdenite prospects (from mineral resource database)
molybdenite traces (from mineral resource database)
moraine, terminal
moraines
moraines, end
moraines, end
moraines, ground
moraines, recessional, large
more K_2O than Na_2O
more than 1 m thick
more than 15% clay
more than 20° of arc
more than 5 meters
more than 50% carbonate rock
more than 50% of the map unit
more that 100 feet from the high water mark
moved
movement of
movement within the last 100 years, documented
movement, during the Holocene
mudrock
multiple
multiple structural orientations

muscovite, magmatic
muscovite, prograde
my house
mylonitic
mylonitic fabrics
mylonitic shear zones
names of all Eocene units
narrower than
near the surface
nearest
Neogene
net thickness
next oldest unit
nickel in lake sediments
nonmarine
normal faults
oblique-slip faults
observed
obsidian
occur between two till units
occurrences
occurs within 1 km
of the upper 100 feet of material
offset
offset, unknown amount of
offsets
oil & gas fields
oil fields
oil well locations
oilfield/brine contamination
oil-stained rock
oil-water contact
older than
oldest
on slopes steeper than 10°

on the top of
only the youngest
ophiolite
ophiolite assemblage
opposite (>180°) stratal and foliation dip directions.
organic deposits
organic terrane
organic-carbon content, high
organic-carbon content, low
organic-rich
orientation of
orientation, preferred
origin
original lithology (protolith)
orogeny
orthogneisses
outcrop
outcrop along the
outcrop identification
outcrop pattern
outcrop photographs
outcrops
outcrop-scale
outwash
overburden thickness
overlie
overlie angular unconformities
overlie units
overlying fine-grained sand
overturned
Oxfordian Stage
paleochannels that have
paleontological analysis
paleontological data
paleontological studies

paleostress indicators
Paleozoic
Paleozoic and older rocks
parent rock type, originating
part of an
particle-size distribution
particular sort of mineralization (PCD, VMS, epithermal gold, etc.)
partings in the Middle Kittanning coal bed
passing 200-mesh sieve
patterns resemble
peat
peat deposits
peat deposits, organic-rich
Pennsylvanian
percent gravel
perched water zones
performed at the Royal Ontario Museum geochronology lab
permafrost
permafrost, discontinuous
permeabilities over 1 md
permeability
permeability greater than XXX.
permeability less than XXX.
permeability of
permeable
Permian
perturb
petrologic classification based on modal analysis
Phanerozoic
PHASE I data
physical characteristics
pillow lavas
pillows
pinch out
pinnacle reef

plagiarized
planar point features
plasticity index > 10
playas
Pleistocene
Pleistocene, early
Pleistocene, middle
Pliocene sediments
Pliocene, late
Pliocene, late or younger
plugged drill holes
plutonic
plutonic felsic rocks
plutonic igneous rocks
plutonic intrusions
plutonic intrusions, felsic
plutonic intrusions, intermediate
plutonic intrusions, mafic
plutonic rocks
plutonic rocks, porphyritic
plutonic, alkalic
plutons
point coverage
pollution source
polygons
polygons mapped as (each map unit symbol in turn)
polygons mapped as open water
polygons that contain sample points
polyphase
poor conditions for
porosity
porosity pinch-out
porous
porphyritic
portion of

potable
potential yield
potentiometric-surface maps
Precambrian
predominantly composed of
Pre-Illinoian
Pre-Illinoisan till
pressures
primarily of sandstone
primary
primary porosities
produce H_2S gas
producing wells
prone to
propagate up into
protection areas, reservoir
protection areas, wellhead
Proterozoic
Proterozoic rocks
Proterozoic rocks, early
Proterozoic, early
protoliths, igneous plutonic, felsic
provenances
proximity to
published after 1985
pull-apart basin
pumice
pyroclastic flow
quarries
quarries, abandoned Berea Sandstone
quarries, sand and gravel, active
quartzite
Quaternary
Quaternary alluvium
Quaternary cover

Quaternary fault
radiogenic isotope ratios (initial)
radiometric age data
radiometric ages
radon gas
rake of 45° to 60°
rakes
range
ranging from
ratio is greater than 2:1
ratio, mudrock:grainrock, greater than 2:1
reactivated
reasonably close
recent
recharge areas
recharge rate
reclamation
reclassification of rock units, customized
reclassification of rock units, standard
reclassifying surficial deposits
recreational gold panner
red
references
references cited
references for U-Pb zircon dates by ion microprobe (from national geochronological database)
references, available
references, previous
region
regional extent
regional geologic belt
regional geologic province
regional geologic terrane
regional geologic zone
regional water table
relate to one another

relationship of
relative movement
reliability
reliable
relict
reservoir protection areas
reverse faults.
reversely polarized
reversely-magnetized
reversely-magnetized basalt flows
rhyolite
rip-rap sources
river channels/fluvial deposits
river plains
river plains, high-sinuosity
rivers, modern
rock bodies (map units)
rock outcrops
rock type
rock types in a list
rock types, general
rock units
rock units denser than 2.67 g/cc
rockfall potential
rocks
rumor
saline water
sample localities
samples
sand
sand and gravel
sand and gravel aquifers
sand and gravel deposits
sand sources
sandstone

sandstone, clean
sandstone, coarse
sandstone, conglomeratic
sandstone, pebbly conglomeratic, constitutes more than 50% of the map unit
sandstone-mudrock sequences
sandstones
sandy glacial deposits
sanidine
sanidine $^{40}Ar/^{39}Ar$
saprolites
saturated below X feet
saturated-thickness
scale of data validity
scarps, fault
scarps, landslide
scarps, slope-movement
scratch boundaries
Section (PLSS unit)
sedimentary
sedimentary bedding
sedimentary rocks
sediments, marine
sediments, terrestrial
sediments, unconsolidated
seeps, oil
seismicity, alignments of
selected area
selected map units
selenite
separated by impermeable till units
separating
separations
sequences deposited in
shale
shale or mudstone

shale, black
shale, combined with
shale, dips northwestward greater than 25 degrees on slopes steeper than 10 degrees
shales
shallow-water deltas
shaly facies
shear strengths (phi values)
shear zones
shearing (noun)
shear-wave velocity < 200 meters per second
shoreface units, lower
shoreline
shorelines, glacial lake
shorelines, marine, raised
shorelines, recent
shrink-swell (adjective)
silicic plutonic rocks
silicic volcanic rocks
siliciclastic
sillimanite
sills
silt
silt >5%
siltstone
similar to a particular rock
simplification scheme
simplify it
since they were formed
sinistral movement
sinistral strike-slip faults
sinkholes
sites
skarn deposits
slickenline
slickenside

slickenside striation
slope exceeds 20%
slope instability
slope more steeply than
slope movement
slope movements
slope-failure deposits
slopes < 3%
slopes > 35°
slopes steeper than 10°
slump blocks
smectite
soil development, significant lack of
soil infiltration rates
soil, residual
soils
soils, Av horizons
soils, Av horizons, weak
soils, cryptogamic
soils, liquefiable
soils, serpentine
sole-source aquifer locations
sources for compilation
sources of
spatial variability
spatial variation (semi-variance)
specific
specific capacity
specify groupings
spring elevations
springs
stacked units
stacked upon each other
stagnant ice
stained brownish-red

standard-penetration values
stations
statistical error in the data
status
steep
steep terrain, areas containing
steeper than 15°
steeply dipping
stock (igneous)
strandplain/barrier deltaic system

stratigraphic
stratigraphic column
stratigraphic contact
stratigraphic equivalents
stratigraphic name
stratigraphic names
stratigraphic order
stratigraphic relationship of all units
stratigraphic trapping mechanism
stratigraphic units
stratigraphic units, named
stratigraphically above
stratigraphically controlled

stream deposits
stresses
striation
strike and dip
strike > 20° toward a
strike is between 80° and 110°
strike line
strike slip faults
strike-and-dip
strikes

strikes and dips
structural contours
structural relief
structural trends, regional
structurally controlled
structure contour map of
structures in the area
structures, sedimentary
subcrop
subdivisions
subset
subsurface datum points
subsurface distribution of _____
suggestive of a
sulfur attribute values
sulfur concentrations
Supergroup
superimpose all (verb)
superimposed
surface armor
surface materials
surface materials map
surface rocks
surface roughness value
surface waters
surface, upper
surficial deposits
surficial geologic map
surficial material
surficial materials
surficial sediments
susceptible
susceptible to landslides
suspected
suspected age

sustainable ground water yields
sustainable yield, maximum
sustainable yields
syenitic rocks

symbols
symbols, formation
symbols, geologic
symbols, linear
symbols, lineations, mineral elongation
symbols, lineations, stretching
symbols, lithologic
symbols, planar
symbols, strike/dip

synclines, overturned
synclines, upright
talc
techniques
tectonic
tectonically brecciated
tectonized harzburgites
tephra
terrace deposits
terraces
terraces, marine
terrane
terrane boundaries
terrane, Carolina
terrane, metamorphic
terranes
Tertiary
Tertiary, middle
textual descriptions
textural properties (fractal dimension)

textures, cumulate
textures, porphyritic
that are in contact with
that bound
that contain
that contain glacial erratics
that curve through
that cut
that intercept folds
that intersect the boundaries of
that overly
that terminate at
the attitude of contact with
the geologic mapping shown on this area was
the geologic mapping, when, using what set of aerial photographs?
the most biotite
thicker than one meter
thickness
thickness between the upper and lower splits of the Middle Kittanning coal bed
thickness of
thickness of unit X
thin (<1 meter)
three or more
thrust faults
thrust faults, blind
thrust faults, of the Penokean orogen
thrust faults, reactivated
thrust, low-angle
till
till bluffs over 15 feet high
till cover
till deposits
till units
till, calcareous
till, clayey lodgement

till, clay-rich
till, lodgement
till, thick
tilted
time slice
titanite
TOC (total organic carbon) attribute values in excess of 1%
too small to show as
topographic relief
Township (PLSS)
trace amounts of
traces of
transport direction of
trapping mechanism
trend
trend, NW-SE
Triassic
Triassic age
triggered by
trilobite
truncate or offset (verb)
tsunami deposits
tuffs
tuffs, ashflow, welded
turbidite
turbidites
two or more sand and gravel units
Tyee Sandstone, dipping west
type section
type section locality
U/Pb age determinations
U/Pb method
ultrabasic rocks
ultramafic
unconformable contacts

unconformities
unconformities, angular
unconformity
unconformity, angular, specified
unconsolidated
unconsolidated deposits
unconsolidated units
under
underground storage tanks
underlain by
underlain by the Pittsburgh sandstone member
underlie
undivided Supergroups or Groups

unit
unit boundaries
unit Tvb
unit, separate (adjective)
units
units, basalt
units, basaltic
units, basin fill
units, bedrock
units, Cambrian
units, cyclic
units, granitic
units, grouping of customized
units, grouping of, standard
units, limestone
units, mapped undivided
units, non-metamorphic
units, Quaternary
units, sand and gravel
units, sedimentary
units, stratified

units, surficial geologic

unlithified
U-Pb zircon ages
uppermost
upper-plate rocks
uranium, whole-rock
USCS classification
USCS classifications in the unconsolidated units
useable scale range of the data
user geographic reference
U-series dates < 130 ka
vadose materials
valley, buried
valleys, buried
values between X and Y Ma
various parts
vary in depth
vary in direction
vary in distance
vary in time
vegetation
vein-rich
vergence
vertical hydraulic conductivity
vertical planes
volcanic breccia
volcanic deposits
volcanic eruptions, recent
volcanic flows, recent
volcanic rocks
volcanic rocks, andesitic
volcanic rocks, basaltic
volcanic rocks, bimodal
volcanic rocks, mafic

volume
wackes, arkosic
water chemistry
water levels
water table
water wells
water-bearing
wavelet (geophysics)
weak
weathered, highly
weathered, moderately
welded
well bedded
well data
well laminated
well preserved
well sorted
well-developed
wellhead-protection areas
well-log data
wells
wells, active
wells, drilled
wells, gas
wells, oil
well-sorted
well-sorted, clean
wetlands
what is
what is the
what is the definition of
what is the mineral potential of that area
what is the sequence of
what orientations
what percent of

what probability

what published geologic maps include the area

what scale

what written literature is available about the area

where are rocks deposited in a marine or non-marine environment?

where are they

where is the

which faults

White River Group

white rocks

who

who did

who mapped

who measured

wider than

wider than 2 m

Wisconsin age

Wisconsinian

Wisconsinian-age

Wisconsinian-age alluvial terraces

with a grade steeper that 6%

with dip > 30°

with greater than

with immediately younger

with more than 20° of curvature

with opposite along-strike dip directions

with slopes > 35°

with x amount of

within 1.5 m of the surface

within 10 feet of the surface

within 150 feet of the surface

within 2 km of

within 2 m of the surface

within 20° of east-west orientation

within 3 m of a stream

within 3 m of the surface

within a certain time period

within a quarter mile of a fault

within the subsurface

written communication

x,y,z information

young alluvium

younger

younger than

younger than 10 Ma

younger than 28 Ma

zoned

zones

zoomed in