Appendix 2.   State Geologic Map Compilation Attribute Field Definitions for All Feature Classes and Tables

Tables 2-1 to 2-8 provide attribute field definitions for all feature classes and tables used in the State Geologic Map Compilation organized by file name.

Table 2-1.   *SGMC_Geology* feature class attributes.

[SGMC, State Geologic Map Compilation; URL, Uniform Resource Locator; USGS, U.S. Geological Survey]

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
ORIG_LABEL (Original label)	Map unit label (symbol) from the original source digital map (which typically does not use special characters in map symbols), not from paper maps (which may use special characters for ages in map symbols). Original source digital maps may include additional records such as "water," which typically forms polygons on digital maps but are not coded as a geologic unit from the paper map. Commonly, when paper maps are digitized, one-to-one correspondences between the digital versions of the maps and source paper maps may not exist because map units may be added, deleted, or modified.	
SGMC_LABEL	The map unit symbol as identified on the source map was used whenever possible. However, the age component of map unit symbols were coded using appendix 7 (geologic age symbols) rather than special characters. This label may also diverge from ORIG_LABEL if it was determined that the original source map data was incorrect by comparison to the paper state map (errors in original source data).	
UNIT_LINK	Field entries generated by combining the STATE, SGMC_LABEL, and PROV_NO fields from the *Units* table. The purpose of this field is to create a unique value for every unit in the database. It is the linking field (key field) between all tables.	
UNIT_NAME	The name of the map unit as given on the source map (from the *Units* table).	
AGE_MIN	FULL_MIN field from the *Age* table.	Appendix 3
AGE_MAX	FULL_MAX field from the *Age* table.	Appendix 3
MAJOR1 MAJOR2 MAJOR3	Copied terms from the *Lithology* table with a LITH_RANK of Major.	Appendix 4
MINOR1 MINOR2 MINOR3 MINOR4 MINOR5	Copied terms from the *Lithology* table with a LITH_RANK of Minor. MINOR5 is concatenated when six or more Minors exist.	Appendix 4
INCIDENTAL	Copied terms from the *Lithology* table with a LITH_RANK of Incidental; concatenated.	Appendix 4
INDETERMINATE	Copied terms from the *Lithology* table with a LITH_RANK of Indeterminate, major; concatenated.	Appendix 4
REF_ID	A unique identification number of the digital source reference (from the *References* table).	
REFERENCE	The reference citation for the digital source (from the *References* table).	
GENERALIZED_LITH	The generalized lithology of the unit using the MAJOR1 through MAJOR3 fields.	Appendix 8
DIGITAL_URL	URL web address link to the state geologic map digital data (if applicable).	
NGMDB1	USGS National Geologic Map Database URL web address link to the state geologic paper map.	
NGMDB2	USGS National Geologic Map Database URL web address link to the state geologic paper map (if applicable).	
NGMDB3	USGS National Geologic Map Database URL web address link to the state geologic paper map (if applicable).	
RuleID	Domain used by ArcGIS software to store representation rules used for symbology within the geodatabase. Based on the GENERALIZED_LITH field.	Appendix 8

Table 2-2. *SGMC_Structure* feature class attributes.

[SGMC, State Geologic Map Compilation; URL, Uniform Resource Locator; USGS, U.S. Geological Survey]

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
DESCRIPTION	Standardized description used by SGMC to classify different structural line types.	Appendix 5
MISC	Free form field used for any additional miscellaneous descriptive terms from the original state source files.	
REF_ID	A unique identification number of the digital source reference (from the *References* table).	
REFERENCE	The reference citation for the digital source (from the *References* table).	
DIGITAL_URL	URL web address link to the state geologic map digital data (if applicable).	
NGMDB1	USGS National Geologic Map Database URL web address link to the state geologic paper map.	
NGMDB2	USGS National Geologic Map Database URL web address link to the state geologic paper map (if applicable).	
NGMDB3	USGS National Geologic Map Database URL web address link to the state geologic paper map (if applicable).	
RuleID	Domain used by ArcGIS software to store representation rules used for symbology within the geodatabase. Based on the DESCRIPTION field.	Appendix 5

Table 2-3. *SGMC_Points* feature class attributes. These attributes are available only for the following states: California, Colorado, Missouri, New Mexico, Nevada, Vermont, and Wyoming.

[URL, Uniform Resource Locator; USGS, U.S. Geological Survey]

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
DESCRIPTION	Free form field for the descriptions of points from the original state source digital files. No standardization applied.	
REF_ID	A unique identification number of the digital source reference (from the *References* table).	
REFERENCE	The reference citation for the digital source (from the *References* table).	
DIGITAL_URL	URL web address link to the state geologic map digital data (if applicable).	
NGMDB	USGS National Geologic Map Database URL web address link to the state geologic paper map.	

Table 2-4. *Units* table attributes. One-to-one relationship with the *SGMC_Geology* feature class. The *Units* table compiles basic information about the map unit as described on the source map along with additional available information.

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
ORIG_LABEL (Original label)	Map unit label (symbol) from the original source digital map (which typically does not use special characters in map symbols), not from paper maps (which may use special characters for ages in map symbols). Original source digital maps may include additional records such as "water" that typically forms polygons on digital maps but are not coded as a geologic unit from the paper map. Commonly, when paper maps are digitized, one-to-one correspondences between the digital versions of the maps and source paper maps may not exist because map units may be added, deleted, or modified.	
SGMC_LABEL	The map unit symbol as identified on the source map was used whenever possible. However, the age component of map unit symbols were coded using appendix 7 (geologic age symbols) rather than special characters. This label may also diverge from ORIG_LABEL if it was determined that the original source map data was incorrect by comparison to the paper state map (errors in original source data).	
UNIT_LINK	Field entries generated by combining the STATE, SGMC_LABEL, and PROV_NO fields. The purpose of this field is to create a unique value for every unit in the database. It is the linking field (key field) between all tables.	
PROV_NO (Province number)	Many state geologic maps are subdivided into regions or provinces (for example, Carolina Slate Belt, Northwestern Plateau). Typically, each of these provinces has a corresponding stratigraphic column. A province number has been assigned to each of these map regions (for example,. 1, 2, 3, and so forth). If the map does not have individual provinces, then 0 was used for the province number. Province coding is used only when the state map is subdivided into regions or provinces and individual map units, with unique unit descriptions, are included in more than one province.	
PROVINCE	Name of the province on the paper map or as identified in other sources.	
UNIT_NAME	The name of the map unit as identified on the source map. If the map legend says "Fraser Formation: basalt, with minor andesite and greywacke," then the unit name is clearly "Fraser Formation." Sometimes, however, the map may say "interlayered rhyolite, mafic tuff and flows, slate." Accordingly, unit names are coded both as a unit name and as the unit description, although an abbreviated unit name version may be composed for excessively long text entries.	
UNIT_AGE	Free form field to capture unit age (for example. "Cretaceous," or "Permian to Cretaceous," or "Permian-Cretaceous," and possibly "Paleocene," and so on). This field has not been standardized. It is meant to capture age information exactly as it appears on the paper source state map or inferred from correlation diagrams or other sources.	
UNITDESC (Unit description)	The unit description as given on the source paper map. If there is no distinct unit description (common for many state geologic maps), the UNIT_NAME is repeated here. Unusual circumstances that required modification of unit descriptions and (or) unit names are explained in the UNIT_COM (unit comment) field.	
STRAT_UNIT (Stratigraphic unit)	Field to add additional stratigraphic units beyond those listed on the source map. For example, formation names are a key element to the database but may not be listed on the map if only a group or member is given. Thus, the map unit might be the "Little Bigfoot Group." The "Little Bigfoot Group" is subdivided into formations, but if these formations are not listed on the map they are entered here using additional references.	
UNIT_COM (Unit comment)	Free form field for inclusion of any additional relevant information about the unit or actions made during data compilation.	
REF_ID	Unique identification number(s) for reference(s) used to code the geologic unit separated by commas. These codes are numbered using the state symbol (AL001, AL002, and so on.). The codes refer to REF_ID in the *References* table and are used in the UNIT_REF_LINK table to link the references using the UNIT_LINK key field.	

Table 2-5. *Age* table attributes. One-to-one relationship with the *SGMC_Geology* feature class. This table contains geochronological age attribution for each map unit (one record for each map unit). Attribution for this table uses a geochronological data dictionary (appendix 3) that is based on the 2016 International Chronostratigraphic Chart (ver. 2016/04) available at http://www.stratigraphy.org/ in a slightly modified form. [The *Age* attribute table also contains numerical (Ma, mega annum or millions of years ago) values for the maximum (MAX) and minimum (MIN) ages based on the 2016 International Stratigraphic Chart. It is intended that the values allow queries over a specific age range (for example, 250–400 Ma) without having to search on the names of each age unit. This coding only contains the names of the earliest and latest age units that bound unit chronostratigraphic age.]

[ICS, International Commission on Stratigraphy; Ma, mega annum or millions of years ago; U/Pb, uranium/lead]

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
UNIT_LINK	Field entries generated by combining the STATE, SGMC_LABEL, and PROV_NO fields from the *Units* table. The purpose of this field is to create a unique value for every unit in the database. It is the linking field (key field) between all tables.	
MIN_EON MIN_ERA MIN_PERIOD MIN_EPOCH MIN_AGE	Youngest geochronological unit age (for example, Phanerozoic, Mesozoic, Jurassic, Early-Jurassic, Toarcian). Fields are populated to the lowest appropriate level.	Appendix 3
FULL_MIN	Field that concatenates all of the input from the MIN fields into a single field. Example: Phanerozoic – Mesozoic – Jurassic – Early-Jurassic – Toarcian.	Appendix 3
CMIN_AGE	The lowest-level geochronological entry from the FULL_MIN field. Example from above: Toarcian.	Appendix 3
MAX_EON MAX_ERA MAX_PERIOD MAX_EPOCH MAX_AGE	Oldest geochronological unit age (for example, Phanerozoic, Mesozoic, Jurassic, Early-Jurassic, Toarcian). Fields are populated up to the highest appropriate level.	Appendix 3
FULL_MAX	Field that concatenates all of the input from the MAX fields into a single field (just like the FULL_MIN field).	Appendix 3
CMAX_AGE	The lowest level geochronological entry from the FULL_MAX field.	Appendix 3
MIN_MA MAX_MA	Numerical age corresponding to the top of the youngest geochronological unit age and bottom of the oldest. Exact value if the AGE_TYPE is "Absolute." Use appendix 3 if "Relative."	Appendix 3
AGE_TYPE	Two attributes: Relative or Absolute. Relative is used if the unit is simply assigned an age or range of ages relative to the geochronological age scheme (for example, Late-Triassic or Late-Triassic to Early-Cretaceous). Absolute is used when age determination information is available (for example, an U/Pb zircon isochronological age of 455±9 Ma). Following the example, 455±9 Ma is entered in MIN_MA and MAX_MA fields; for example, maximum of 464 Ma and minimum of 446 Ma. Using the 2016 ICS time scale, these ages correspond to a maximum relative age of Darriwillian (Middle-Ordovician) and a minimum age of Hirnantian (Late-Ordovician); those designations are entered in the MIN and MAX fields. AGE_COM field is used to document the method, and corresponding references (REF_ID code from *References* table).	
AGE_COM (Age comment)	Free-form field for any additional comments about age information (for example, absolute age method used, references).	

Table 2-6. *Lithology* table attributes. One-to-many relationship with the *SGMC_Geology* feature class. The lithologic information for map units is highly variable on state maps and ranges from no information to extensive descriptions. Some state maps have explanations that are sufficiently detailed that lithology (LITH) can be coded directly from the map; in other cases, some degree of research is required to code lithology.

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
UNIT_LINK	A field generated by combining the STATE, SGMC_LABEL, and PROV_NO fields from the *Units* table. The purpose of this field is to create a unique value for every unit in the database. It is the linking field (key field) between all the tables.	
LITH_RANK	Defines the volumetric importance of the unit as interpreted from available information. Available terms: Major, Minor, Incidental, or Indeterminate, major.	
LITH1 LITH2 LITH3 LITH4 LITH5	Primary fields for unit lithologies. Only the top most level field must be populated. Additional fields are populated depending on how far down the lithology hierarchy it is appropriate to go in order to select the appropriate term as defined in the lithology data dictionary (appendix 4).	Appendix 4
TOTAL_LITH	Field that concatenates the LITH1–LITH5 fields. An example is Sedimentary – Clastic – Mudstone – Shale – Black-shale.	Appendix 4
LOW_LITH	The lowest level lithology coded. An example from above is Black-shale.	Appendix 4
LITH_FORM	Lithology form includes a list of terms that amplify the lithology (for example, that the rhyolite is a tuff, the sandstone occurs in bed form, or that a schist is of greenschist facies). Multiple forms of the same ranked lithology are separated by commas.	Appendix 6
LITH_COM (Lithology comment)	Free form field for comments related to lithologic entries.	

Table 2-7. *References* table attributes. This table is a list of all references used to compile the information used in various fields of the geodatabase.

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
REF_ID	Unique identification number for each reference used in compiling the geologic map information, which is composed of the STATE field and the assigned serial number starting with 001 (for example, MA001). The reference for the state map being coded is usually the first (001) reference. REF_ID codes from the *References* table are used in the *Units* and *Unit_Ref_Link* tables and the *SGMC_Geology*, *SGMC_Structure*, and *SGMC_Points* feature classes and various comment fields.	
REFERENCE	The reference citation.	

Table 2-8. *Unit_Ref_Link* table attributes. One-to-many relationship with the *SGMC_Geology* feature class. This is a relate table that lists all of the references used to code each map unit. If three references were used to code a particular unit, then there would be three records each with the same UNIT_LINK label but with a different REF_ID entered for each. The REFERENCE citation from the *References* table is duplicated in this table to avoid having to do multiple joins. A single relate of this table to the spatial data (using UNIT_LINK) accesses reference information for each unit.

Field	Explanation	Data dictionary
STATE	Two letter state abbreviation (for example, NM = New Mexico).	Appendix 9
UNIT_LINK	A field generated by combining the STATE, SGMC_LABEL, and PROV_NO fields from the *Units* table. The purpose of this field is to create a unique value for every unit in the database. It is the linking field (key field) between all the tables.	
REF_ID	The REF_ID number from the *References* table.	
REFERENCE	The reference citation.	