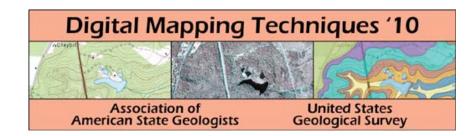
DMT 2010





The following was presented at DMT'10 (May 16-19, 2010).

The contents are provisional and will be superseded by a paper in the DMT'10 Proceedings.

See also earlier Proceedings (1997-2009) http://ngmdb.usgs.gov/info/dmt/ Natural Resources Ressources naturelles Canada

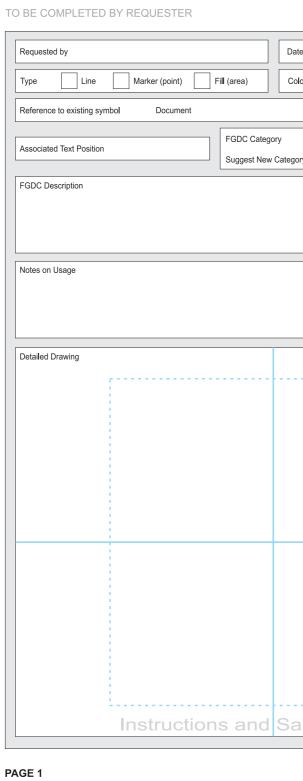
Canada

Integrating Style Files and Carto Representation into the Geological Map Flow Process (The GSC's implementation of the FGDC geologic symbology)

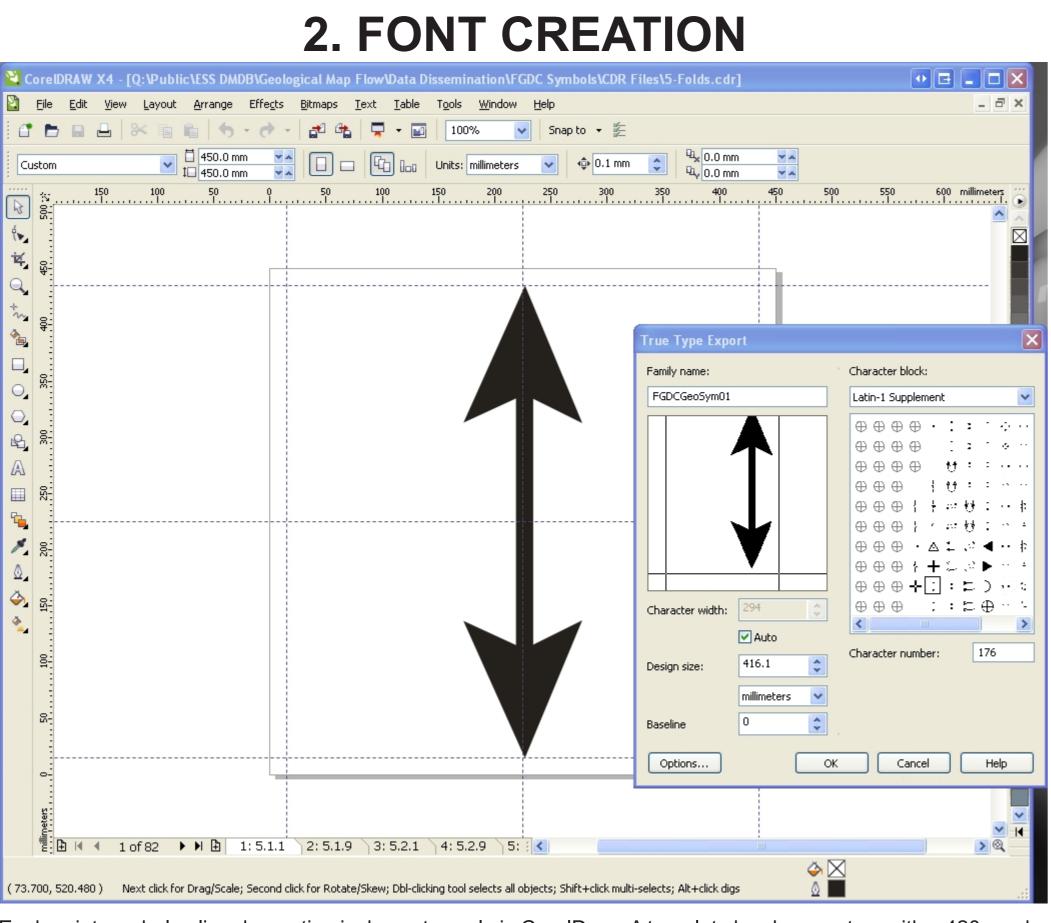
This poster presents the process of creating FGDC and GSC symbols for a style file and carto representation. Additionally, a master Excel spreadsheet is used to generate domains for feature coding and symbolizing geologic features, and to maintain harmony between the FGDC style item codes and carto representation rule IDs. The procedures below are in sequence and show as an example how fold feature symbols are managed. These procedures are integrated in the Geological Map Flow project to assist cartographers in map production.

		5—FOLDS		
REF NO	DESCRIPTION	SYMBOL	CARTOGRAPHIC SPECIFICATIONS*	NOTES ON USAGE*
		5.1—Anticlines	·	
5.1.1	Anticline (1st option)ÑIdentity and existence cer tain, location accurate		.2 mm 40° .2 mm 40°	Place fold trace where axial surface of anticline intersects the ground
5.1.2	Anticline (1st option)Ñldentity or existence ques tionable, location accurate	_?? ?	▼ / [▼] - [*] .75 mm	surface. Place arrows at places along fold trace to indi cate overall fold type
5.1.3	Anticline (1st option)ÑIdentity and existence cer tain, location approximate		3.5 mm → ⊭ ?	(anticline); do not place at specific locality where observation was
5.1.4	Anticline (1st option)Ñldentity or existence ques tionable, location approximate	_?	.75 mm .75 mm	made. Arrowheads may be added to show direction
5.1.5	Anticline (1st option)ÑIdentity and existence cer tain, location inferred	\$	1.5 mm → ←	of plunge (see Section 5.10). Open-arrowed ("2nd
5.1.6	Anticline (1st option)ÑIdentity or existence ques tionable, location inferred	<u>?</u> -‡?-·	⇒ k → k .75 mm .75 mm	option") symbols may be used to show a sec ond generation or another instance of a
5.1.7	Anticline (1st option)ÑIdentity and existence cer tain, location concealed		.5 mm	particular fold type. May also be shown in black or other colors.
5.1.8	Anticline (1st option)ÑIdentity or existence ques tionable, location concealed	??	→ → K .75 mm .75 mm	
5.1.9	Anticline (2nd option)ÑIdentity and existence cer tain, location accurate		arrow lineweight .2 mm 40° 5.5 2 HB-8	
5.1.10	Anticline (2nd option)ÑIdentity or existence ques tionable, location accurate	; <u></u> ;;;;;;;;;	mm ↑ 1.75 mm lineweight .25 mm ↓ 12.0 mm ⊨ 1.475 mm	
5.1.11	Anticline (2nd option)ÑIdentity and existence cer tain, location approximate		3.5 mm ⇒ ke	
5.1.12	Anticline (2nd option)Ñldentity or existence ques tionable, location approximate	— <u>;</u> ↓;	→ → → → → k → k .75 mm .75 mm	
5.1.13	Anticline (2nd option)Ñldentity and existence cer tain, location inferred		1.5 mm ≯ ≮	
5.1.14	Anticline (2nd option)ÑIdentity or existence ques tionable, location inferred	<u>?</u> <u>?</u> ?	→	
5.1.15	Anticline (2nd option)ÑIdentity and existence cer tain, location concealed		.5 mm →k~	
5.1.16	Anticline (2nd option)Ñldentity or existence ques tionable, location concealed	···?··.	→k →k .75 mm .75 mm	

1. SYMBOL REFERENCE AND REQUISITION

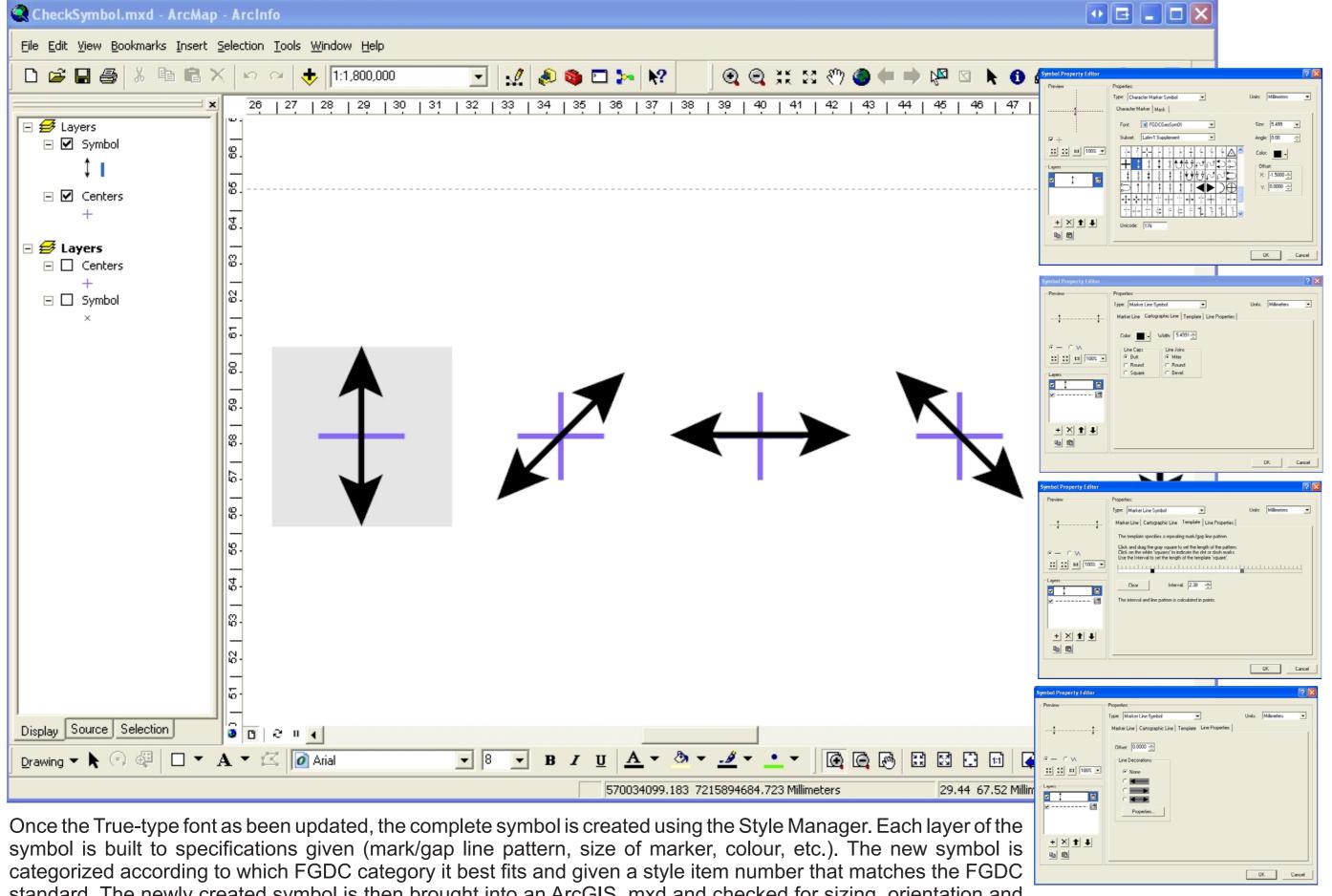


The FGDC Digital Cartographic Standard for Geologic Map Symbolization is used as the base point for the standard style file and carto representations that will be used in the Geological Map Flow process. The entire library of symbology has been created except for those that limitations in the ArcGIS software would not allow. Some of the map elements such as state location maps, bar scales, declination arrows, etc. were not created. The Geological Map Flow project has other means to create these map surround elements.



Each point symbol or line decoration is drawn to scale in CorelDraw. A template has been set up with a 420 mm by 420 mm bounding box which has been determined to be the optimal dimension, comparable to specifying the size of the symbol in an ArcGIS style file. After the symbol is drawn to scale, it must be a single object and all lines must be converted to outlines. Once this is achieved, the symbol is centered on the template and scaled to 420 mm in it's largest dimension with "keep aspect ratio" turned on. It is then exported to a True-type font under the next available character number (available numbers are 33 to 126 and 161 to 255, others are system reserved).

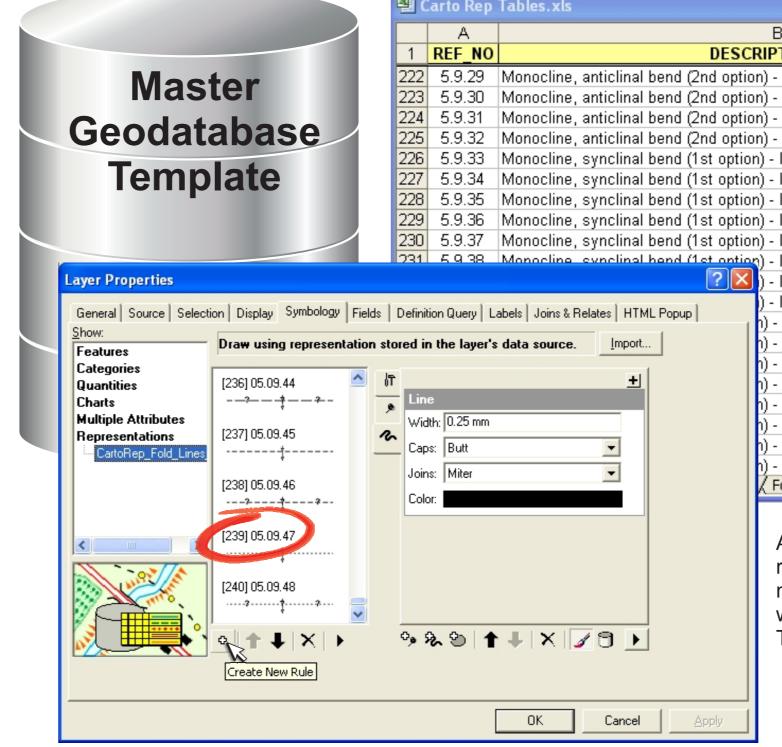
3. CREATE STYLE ITEM AND CHECK SYMBOL



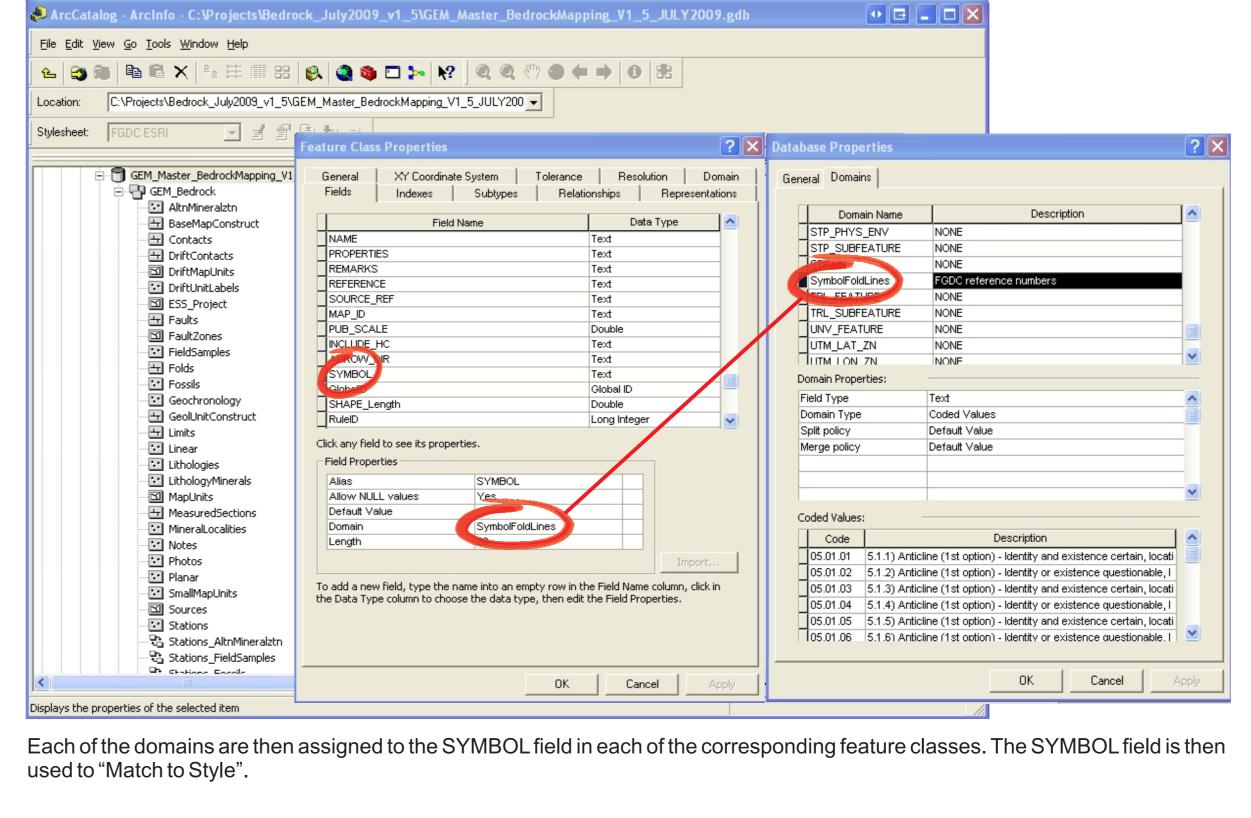
standard. The newly created symbol is then brought into an ArcGIS .mxd and checked for sizing, orientation and point of origin. Sizes may have to be adjusted to achieve specified dimensions and offset values may have to be applied to point symbols so the point of origin lands in the correct location.

CMYK%%%		
	Approved Declined By:	Date:mm/dd/yyyy
nbol		
	Use FGDC Description as written on page 1	
	Modified FGDC Description	
	Use Notes on Usage as written on page 1 Modified	
	Notes on Usage	
	Bedrock Feature Class	Surficial Feature Class
	Lines	Lines
	Feature	Feature
	Subfeature	Subfeature
	Confidence	Confidence
	Attitude	Status
	Generation	Depositional Environment
		Sense
	Points	Points
	Feature	Feature
	Subfeature	Subfeature
	Generation	Status
	Method	Depositional Environment
	Status	Sense
	Areas	Areas
	Feature	Feature
	Subfeature	Subfeature
		Status
n page 3	Symbol Date crea	ated mm/dd/yyyy Assigned FGDC#

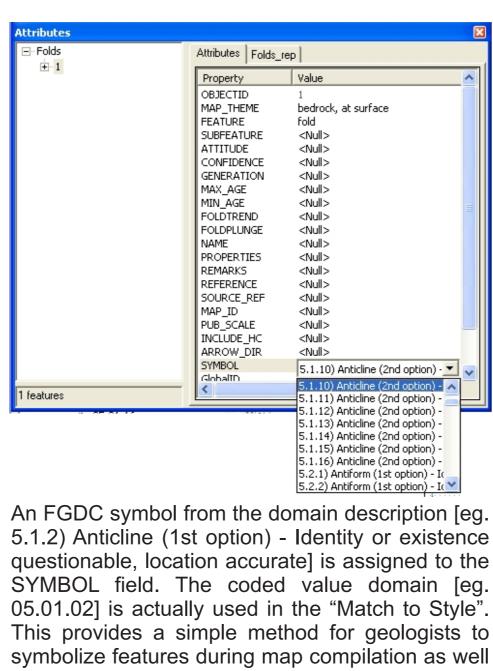
CSS-0004 3.0 PAGE If the author cannot find a suitable symbol in the FGDC standard (either because it does not exist in the standard or they strongly feel that a second option is needed), then they fill out a Symbol Creation Form. On this form they state the type of symbol needed, colour, whether the symbol is based on an existing one, a description for it's use in the legend, notes on the symbol's usage and a detailed drawing of the symbol (giving as many dimensions as possible). This form is then passed on to a Legend Review Committee. This committee reviews the request and decides if an existing standard symbol should be used instead or that the new symbol should be created. This committee also fills out the second page of the form which provides the Geodatabase designers the information needed to incorporate the new symbol into the bedrock or surficial geodatabase schemas. Once approval is given, the form is passed to the Symbol Steward who then creates the symbol in the standard style file and as a carto representation.



🎤 Table To Domain



Untitled.mxd - ArcMap - ArcInfo



as providing some standardization.

4. GENERATE CARTO REPRESENTATION

В	С	D	E	F	G
IPTION EN	STYLE NO	STYLE DESC EN		VERSION	FGDC REF
) - Identity and existence certain, location	05.09.29	5.9.29) Monocline, anticlinal bend (2nd option) - Identity and existence certain, location inferred	221	1	FGDC-STD-013-2006
) - Identity or existence questionable,	05.09.30	5.9.30) Monocline, anticlinal bend (2nd option) - Identity or existence questionable, location inferred	222	1	FGDC-STD-013-2006
) - Identity and existence certain, location	05.09.31	5.9.31) Monocline, anticlinal bend (2nd option) - Identity and existence certain, location concealed	223	1	FGDC-STD-013-2006
) - Identity or existence questionable,	05.09.32	5.9.32) Monocline, anticlinal bend (2nd option) - Identity or existence questionable, location concealed	224	1	FGDC-STD-013-2006
) - Identity and existence certain, location	05.09.33	5.9.33) Monocline, synclinal bend (1st option) - Identity and existence certain, location accurate	225	1	FGDC-STD-013-2006
) - Identity or existence questionable,	05.09.34	5.9.34) Monocline, synclinal bend (1st option) - Identity or existence questionable, location accurate	226	1	FGDC-STD-013-2006
) - Identity and existence certain, location	05.09.35	5.9.35) Monocline, synclinal bend (1st option) - Identity and existence certain, location approximate	227	1	FGDC-STD-013-2006
) - Identity or existence questionable,	05.09.36	5.9.36) Monocline, synclinal bend (1st option) - Identity or existence questionable, location approximate	228	1	FGDC-STD-013-2006
) - Identity and existence certain, location		5.9.37) Monocline, synclinal bend (1st option) - Identity and existence certain, location inferred	229	1	FGDC-STD-013-2006
- Identity or existence questionable,	05.09.38	5.9.38) Monocline, synclinal bend (1st option) - Identity or existence questionable, location inferred	230	1	FGDC-STD-013-2006
- Identity and existence certain, location	05.09.39	5.9.39) Monocline, synclinal bend (1st option) - Identity and existence certain, location concealed	231	1	FGDC-STD-013-2006
- Identity or existence questionable,	05.09.40	5.9.40) Monocline, synclinal bend (1st option) - Identity or existence questionable, location concealed	232	1	FGDC-STD-013-2006
) - Identity and existence certain, location	05.09.41	5.9.41) Monocline, synclinal bend (2nd option) - Identity and existence certain, location accurate	233	1	FGDC-STD-013-2006
) - Identity or existence questionable,		5.9.42) Monocline, synclinal bend (2nd option) - Identity or existence questionable, location accurate	234	1	FGDC-STD-013-2006
) - Identity and existence certain, location		5.9.43) Monocline, synclinal bend (2nd option) - Identity and existence certain, location approximate	235	1	FGDC-STD-013-2006
) - Identity or existence questionable,	05.09.44	5.9.44) Monocline, synclinal bend (2nd option) - Identity or existence questionable, location approximate	236	1	FGDC-STD-013-2006
) - Identity and existence certain, location		5.9.45) Monocline, synclinal bend (2nd option) - Identity and existence certain, location inferred	237	1	FGDC-STD-013-2006
) - Identity or existence questionable,		5.9.46) Monocline, synclinal bend (2nd option) - Identity or existence questionable, location inferred	38	1	FGDC-STD-013-2006
) - Identity and existence certain, location	05.09.47	5.9.47) Monocline, synclinal bend (2nd option) - Identity and existence certain, location concealed	239	1	FGDC-STD-013-2006
) - Identity or existence questionable,	05 00.48	5.9.48) Monocline, synclinal bend (2nd option) - Identity or existence questionable, location concealed	240	1	FGDC-STD-013-2006
(FoldAnno /					

representation which corresponds to a feature class in the geodatabase. Each representation rule is checked to ensure that sizing and spacing accuracy was maintained after the conversion. A master Excel spreadsheet exists to aid in maintaining the sequence of carto representation RuleIDs. It contains a worksheet for each feature class that has the FGDC reference number and description, the style file number for "match to style" and the assigned RuleID. These fields are critical in the following steps where domains are created and a consistent relationship exist between style number and the RuleID.

5. CONVERT TABLE TO DOMAIN

Q:\Public\ESS DMDB\Geological Map Flow\Data Dissemination\FGDC Symbols\STPS - Style to Carto Rep	i 🗃
Code Field	
STYLE_NO	-
Description Field	
STYLE_DESC_EN	-
Input Workspace	
C:\Projects\Bedrock_July2009_v1_5\GEM_Master_BedrockMapping_V1_5_JULY2009.gdb	i 🗃
Domain Name	
SymbolFoldLines	
Domain Description (optional)	
FGDC reference numbers	
Update Option (optional)	
REPLACE	-
OK Cancel Environments <<	Hide Help

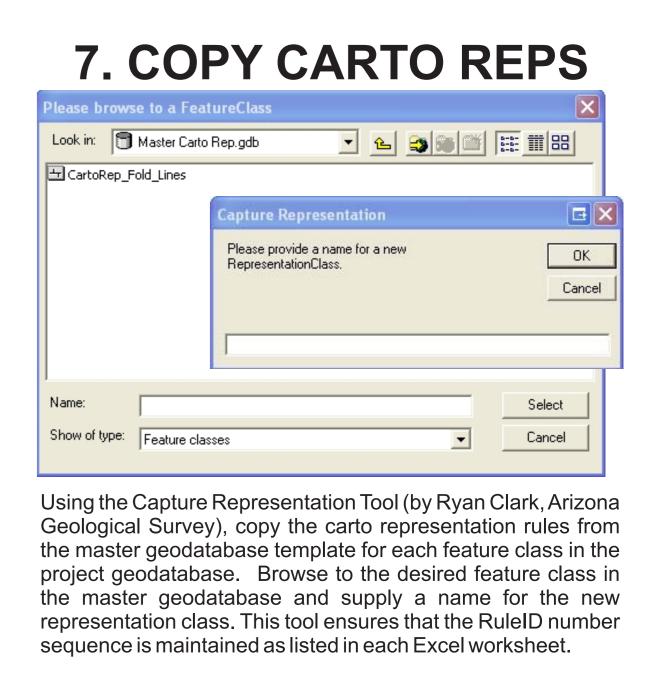
are used to create a coded value domain for each feature class in the project geodatabase. This procedure is required to be applied to each feature class in the geodatabase. In the future, a geoprocessing tool could be created to automate this process.

6. ASSIGN DOMAIN

9. FEATURE CODING

	Ø -	Task: Create New Fea	ature	•	Target: Fold	ls		
		x					\sim	
🗆 🥩 Layers		<u> </u>						
E 🗹 Fold		ation: Folds you						
	05.01.01	ation: Folds_rep			_			
	05.01.02	_		_				
III Attribut		ds						
OBJECTIE	FEATUR	E SUBFEATURE	SYMBOL	RuleID	Override	REF_NO	DESCRIPTION_EN	STYL
1	fold	anticline	05.01.02	2	Blob	5.1.2	Anticline (1st option) - Identity or existence questionable, location accurate	05.01
	2 fold	anticline	05.01.03	3	Blob	5.1.3	Anticline (1st option) - Identity and existence certain, location approximate	05.01
-	3 fold	anticline	05.01.04	4	Blob	5.1.4	Anticline (1st option) - Identity or existence questionable, location approximate	05.01
	4 fold	anticline	05.01.05	5	Blob	5.1.5	Anticline (1st option) - Identity and existence certain, location inferred	05.01
	5 fold	antiform	05.02.01	17	Blob	5.2.1	Antiform (1st option) - Identity and existence certain, location accurate	05.02
	6 fold	anticline, asymmetric	05.03.04	36	Blob	5.3.4	Asymmetric anticline (1st option) - Identity or existence questionable, location approximate	e 05.03
	7 fold	other, see remarks	05.03.17	49	Blob	5.3.17	Overturned anticline (1st option) - Identity and existence certain, location accurate	05.03
8	B fold	syncline	05.05.03	99	Blob	5.5.3	Syncline (1st option) - Identity and existence certain, location approximate	05.05
1(D fold	anticline	05.05.04	100	Blob	5.5.4	Syncline (1st option) - Identity or existence questionable, location approximate	05.05
9	9 fold	anticline	05.01.01	1	Blob	5.1.1	Anticline (1st option) - Identity and existence certain, location accurate	05.01
		1 F	Show: All	Selected	I Reco	ords (0 out	of 10 Selected) Options -	
-‡-	05.02.05	1 • •	Show: All	Selected	Reco	ords (0 out o		
·** •*	05.02.05 05.02.06	1	Shew: All	Selected	I Reco	ords (0 out		
. 1 .	05.02.05 05.02.06 05.02.07	1	Shc w: All	Selected	Reco	rds (0 out i		
***	05.02.05 05.02.06	1 • •	Show: All	Selected	Reco	rds (0 out 1		
	05.02.05 05.02.06 05.02.07 05.02.08	1 • •	Shcw: All	Selected	Reco	rds (0 out 1		
1	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11	1	Show: All	Selected	Reco	rds (0 out 1		
به داده المراجع المراجع مناطقة المراجع ا	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11 05.02.12	1	Show: All	Selected	Reco	erds (0 out e		
بن ه بهما ه بهما ه به من ه ب	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13	1	Show: All	Selected	Reco	erds (0 out e		!
بنه ع بد عادمات هداد مایند. مواد مایند باید داده این از مواد مایند.	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14	1	Show: All	Selected	Reco	erds (0 out e		
والم منهد المنهدية من المنهد ما المنهد منهد منهد المنهد منهد منهد منهد منهد منهد منهد منهد	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.15	1	Show: All	Selected	Reco	erds (0 out e		! ;
مۇھەۋە ئېچە ئېمەر يەرىلە مايە يەرە يەرى <mark>يە بېغە بې</mark>	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14	1	Show: All	Selected + - 2	Reco	a		! _?‡
د می	05.02.05 05.02.06 05.02.07 05.02.08 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.15 05.02.16	1	Show: All	Selected + - 2	Reco	a		
م ما معالم ما معالم ما معالم ما معالم ما معالم من معالم ما معالم م	05.02.05 05.02.06 05.02.07 05.02.09 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.15 05.02.16 05.03.01	1	Show: All	Selected + - 2	Reco	a		
ب موتحد المحاومة ال	05.02.05 05.02.06 05.02.07 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.15 05.02.16 05.03.01 05.03.02 05.03.03 05.03.04		Show: All	Selected +	-+	aa		÷
مېنه مېنه ما د مارد وارد وارد وليه مېنه مېنه مېنه وارد وارد وارد وارد وارد وارد وليه وليه وليه وليه وليه وليه و مېنه مېنه مارد مارد مارد مارد مارد وارد وارد وارد وارد وارد وارد وارد و	05.02.05 05.02.06 05.02.07 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.14 05.02.15 05.02.16 05.03.01 05.03.02 05.03.03 05.03.04 05.03.05	1	Show: All	+ + + + + + + + + + + + + + + + + + + +	-+	aa		⁺
م نهجه منه ما محادما محادثه منهن مانحه مان مان مانه مانه منه . منهجه منه ما محاوما م	05.02.05 05.02.06 05.02.07 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.14 05.02.15 05.02.16 05.03.01 05.03.02 05.03.03 05.03.04 05.03.05 05.03.06		Show: All	+ + + + + + + + + + + + + + + + + + + +	-+	rds (0 out)		‡
دار که مخوف ما همارد را دمارد مان میش میشد و و محوف مان مارد ما در ازم مارد. مارد مارد مارد مارد مارد مارد مارد میشو میشو میشو مارد مارد مارد مارد مارد مارد مارد مارد	05.02.05 05.02.06 05.02.07 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.15 05.02.16 05.03.01 05.03.01 05.03.02 05.03.03 05.03.04 05.03.05 05.03.06 05.03.07		Show: All	+ + + + + + + + + + + + + + + + + + + +	-+	aa		
یزی مراجع مارور میلید. مراجع مارو مارور مارور و مارور مارور و مارور مارور و م	05.02.05 05.02.06 05.02.07 05.02.09 05.02.10 05.02.11 05.02.12 05.02.13 05.02.14 05.02.14 05.02.15 05.02.16 05.03.01 05.03.02 05.03.03 05.03.04 05.03.05 05.03.06		Show: All	+ + + + + + + + + + + + + + + + + + + +	-+	aa		

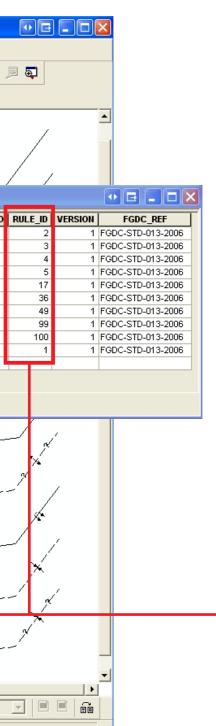


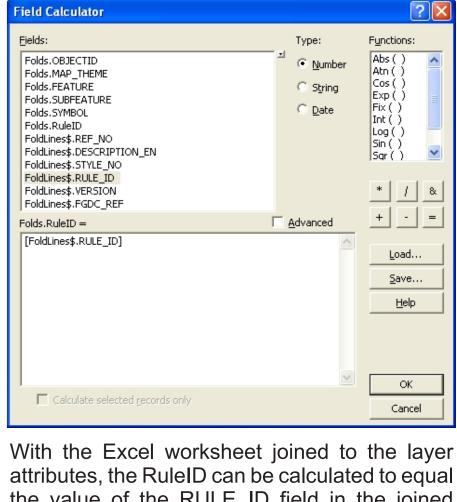


8. JOIN TABLE

) a	ttributes from a table
•	Choose the field in this layer that the join will be based on:
	SYMBOL 💌
2.	Choose the table to join to this layer, or load the table from disk:
	FoldLines\$
	Show the attribute tables of layers in this list
	Choose the field in the table to base the join on:
	STYLE_NO
-]	oin Options
-	G Keep all records
	All records in the target table are shown in the resulting table. Unmatched records will contain null values for all fields being appended into the target table from the join table.
	C Keep only matching records
	If a record in the target table doesn't have a match in the join table, that record is removed from the resulting target table.

worksheet to the layer's attribute table in order to calculate the RuleID field. The join is based on the SYMBOL value in the layer and the STYLE_NO in each Excel worksheet (many to one).





the value of the RULE_ID field in the joined Excel worksheet. This will ensure that the carto representation rule ID matches the FGDC symbol stored in the SYMBOL field.

