Natural Resources
Canada

Ressources naturelles
Canada

Cartographic Digital Standards

Version 3.2

Canada

WORKSPACE

- This document refers to the workspace number (the map number and map series suffix) as <ws#> and the workspace name as <workspace>

Naming Convention

- The workspace name should be unique and reflect the following: map type, map number and map series (if applicable)
    - Map type - using a lowercase 'a' for A-series, lowercase 'of' for open files and lowercase 'bl' for bulletins
    - Map number - using the number issued by Editorial
    - Map series - using an underscore and then a number to refer to the sheet number in the series
    - Some examples of workspace names are:
        - of1234 (Open File 1234)
        - of1234_4 (Sheet 4 of Open File 1234)
        - bl554 (Bulletin 554)
        - bl566_1 (Sheet 1 of Bulletin 566)
        - a1234 (A-series 1234)
- Each map will be an individual workspace (standalone or in a series)
- If a map number was not supplied before production, create a directory using the Carto Number and create a workspace using a temporary name until a valid map number has been issued
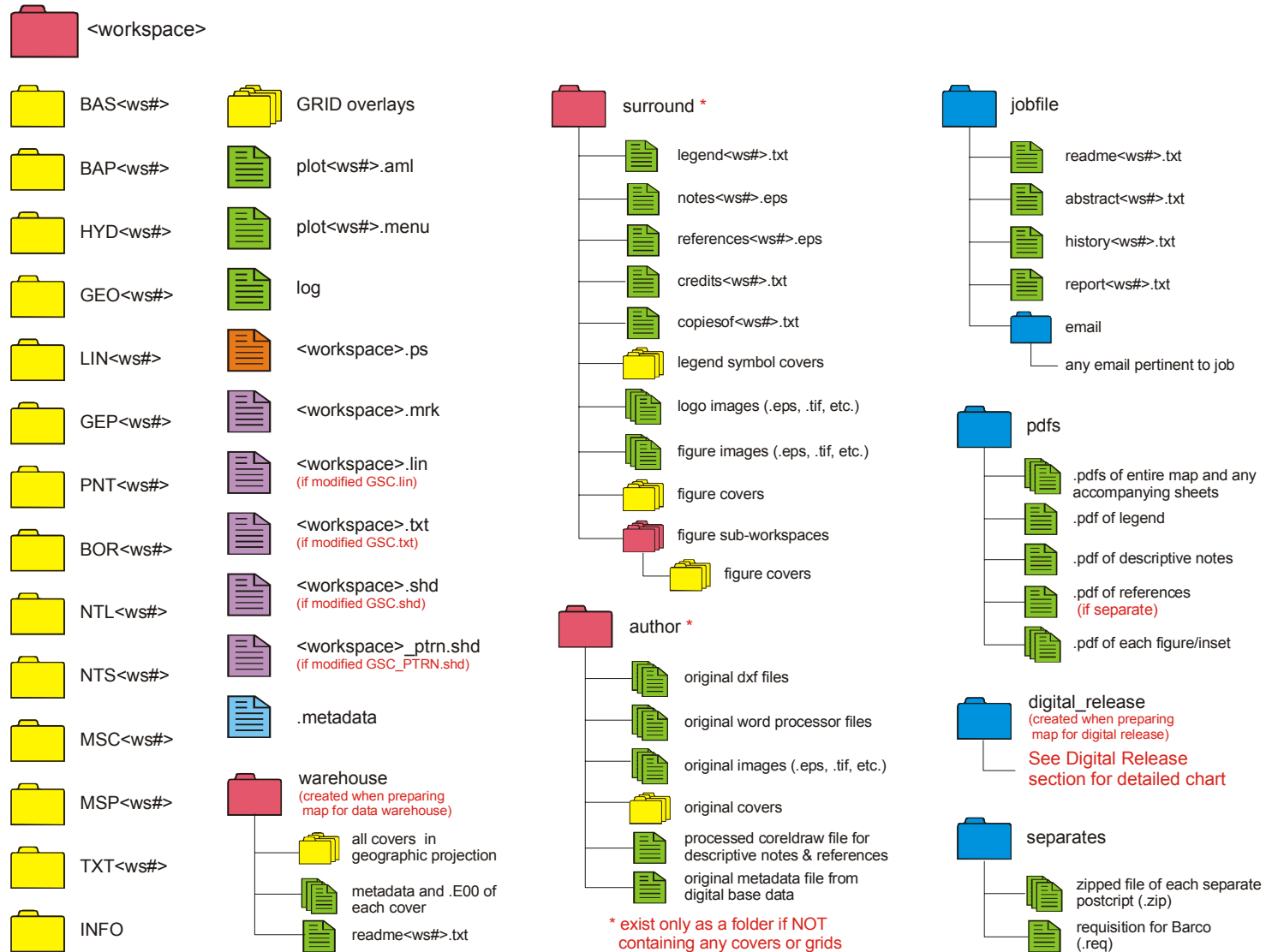
Accompanying Sheet

- Accompanying legend/surround sheets for a map series will be handled by one of the two following options
    - If the accompanying sheet is common to a series that all have the same map number (usually Open Files)
        - The accompanying sheet will be an individual workspace
        - The workspace name for the accompanying sheet will be the next map series number for the series (e.g. Series of open file maps – of1234_1, of1234_2, of1234_3 Accompanying sheet – of1234_4)
    - If the accompanying sheet is common to a series that all have different map numbers (usually A-Series)
        - The accompanying sheet will NOT be an individual workspace
        - All files necessary to build this accompanying sheet will be copied into the surround folder of each map in the series
        - The plotting AML to produce the accompanying sheet will reside in the surround folder as well and named plot<ws#>_2.aml
        - The name of the postscript file for the map must be manually renamed to <workspace>_1.ps and the postscript file for the accompanying sheet must be named <workspace>_2.ps. This will reflect the fact that an accompanying sheet exists when archiving the postscripts to the on-demand plotting system

Unnecessary Files

- Files that should NOT be present in the final workspace upon completion of the map:
    - Any projection files (.prj)
    - Any editing AMLs or menus
    - Any ArcPlot (.ap), ArcEdit (.ae) files
    - Any graphics files (.gra) except leg<ws#>.gra
    - Any scanning or vectorization files
    - IGL fonts (fnt028, fnt029…)
    - Any ArcPlot map composition folders (.map)
    - Any non-standard CDS covers
    - Any SWP<ws#> cover after processing use
    - Any ArcPlot Environment (.env) files
    - Any plotting parameter files (.prm)
    - Any scratch files
    - Standard GSC symbol sets

Workspace Diagram

- The following diagram shows a sample workspace with all the possible files and covers that can exist
  - Pink folders are ArcInfo workspaces
  - Blue folders are sub-directories
  - Yellow folders are ArcInfo covers and grid overlays

<workspace>

BAS<ws#>
BAP<ws#>
HYD<ws#>
GEO<ws#>
LIN<ws#>
GEP<ws#>
PNT<ws#>
BOR<ws#>
NTL<ws#>
NTS<ws#>
MSC<ws#>
MSP<ws#>
TXT<ws#>
INFO

GRID overlays
plot<ws#>.aml
plot<ws#>.menu
log
<workspace>.ps
<workspace>.mrk
<workspace>.lin
(if modified GSC.lin)
<workspace>.txt
(if modified GSC.txt)
<workspace>.shd
(if modified GSC.shd)
<workspace>_ptrn.shd
(if modified GSC_PTRN.shd)
.metadata

warehouse
(created when preparing map for data warehouse)
- all covers in geographic projection
- metadata and .E00 of each cover
- readme<ws#>.txt

surround *
- legend<ws#>.txt
- notes<ws#>.eps
- references<ws#>.eps
- credits<ws#>.txt
- copiesof<ws#>.txt
- legend symbol covers
- logo images (.eps, .tif, etc.)
- figure images (.eps, .tif, etc.)
- figure covers
- figure sub-workspaces
  - figure covers

author *
- original dxf files
- original word processor files
- original images (.eps, .tif, etc.)
- original covers
- processed coreldraw file for descriptive notes & references
- original metadata file from digital base data

* exist only as a folder if NOT containing any covers or grids

jobfile
- readme<ws#>.txt
- abstract<ws#>.txt
- history<ws#>.txt
- report<ws#>.txt
- email
  - any email pertinent to job

pdfs
- .pdfs of entire map and any accompanying sheets
- .pdf of legend
- .pdf of descriptive notes
- .pdf of references (if separate)
- .pdf of each figure/inset

digital_release
(created when preparing map for digital release)
See Digital Release section for detailed chart

separates
- zipped file of each separate postcript (.zip)
- requisition for Barco (.req)

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5/13/03

COVERS

- Cover names should be the three letter code (specified below), the map number and the map series modifier (if exists) (e.g. HYD1234_4 - Hydrology cover for the 4th map of series 1234)
- The value used throughout this document for <ws#> should be the same as the workspace name EXCEPT the map type prefix (e.g. of1234 is workspace name, HYD1234 is hydrology cover name)
- The three letter code for covers are as follows

Base Data

BAS   - Base line and point features (except hydrology)
BAP   - Base area features (except hydrology)
HYD   - Hydrology features

Geological Data

GEO   - Geological units and contacts
LIN   - Geological linear features
GEP   - Additional geological polygon overlays
PNT   - Geological point features

Cartographic Data

BOR   - Map border
NTL   - Map neat line
NTS   - NTS index map
MSC   - Miscellaneous lines and points for cartographic purposes
MSP   - Miscellaneous areas for cartographic purposes
TXT   - All annotation on map face

LEGENDS

- Entire legends MUST NOT be covers
- Any files used to create a legend (legend ASCII file, symbolization coverages, etc.) should be in a sub-workspace called surround
- The legend ASCII filename should be legend<ws#>.txt
- If the map is bilingual
  - The legend ASCII filename should be elegend<ws#>.txt for English and flegend<ws#>.txt for French
- If a legend is common for each map in the series,
  - All files to create it can be copied into the surround sub-workspace of each map in the series
  - A master GEO<ws#>.LEG and GEO<ws#>.LVL can be created and copied into the surround sub-workspace of each map in the series
  - NOTE: Values for item CODE must be the same for all maps in the series
  - NOTE: Edit each individual legend info file to delete any CODE values that do not exist on the map
- Accompanying legend/surround sheets for a map series will be handled by one of the two following options
  - If the accompanying sheet is part of a series that all have the same map number (usually Open Files)
    - The accompanying sheet will be an individual workspace
    - The workspace name for the accompanying sheet will be the next map series number for the series (e.g. Series of open file maps – of1234_1, of1234_2, of1234_3 Accompanying sheet – of1234_4)
  - If the accompanying sheet is part of a series that all have different map numbers (usually A-Series)
    - The accompanying sheet will NOT be an individual workspace
    - All files necessary to build this accompanying sheet will be copied into the surround sub-workspace of each map in the series
    - The plotting AML to produce the accompanying sheet will reside in the surround folder as well and named plot<ws#>_2.aml
    - The name of the postscript file for the map must be manually renamed to <workspace>_1.ps and the postscript file for the accompanying sheet must be named <workspace>_2.ps. This will reflect the fact that an accompanying sheet exists when archiving the postscripts to the on-demand plotting system

LANGUAGE

- Language of the map (English, French or Bilingual) is attributed in the metadata
- Bilingual text on map should NOT be classified for language in TXT-CLASS
- If the map is bilingual
    - All surround information, both English and French, reside in the same surround sub-workspace
    - All filenames should clearly indicate the language they represent
        - Use an "e" or "f" prefix to establish language (e.g. enotes<ws#>.eps, flegend<ws#>.txt)
    - The legend info files (GEO<ws#>.LEG and GEO<ws#>.LVL) will contain both English and French descriptions
    - Both English and French PDF files reside in the "pdfs" sub-directory
        - If separate figures for English and French exist, use an "e" or "f" prefix to establish language (e.g. einset1.pdf, finset1.pdf)

PROJECTION

- The GSC Cartographic Digital Standards will store maps in the projection in which they were produced
- USE UTM INSTEAD OF TM if the map falls in a UTM zone
  - Routines have been developed in GEMS to edit UTM covers with a map angle applied
  - This displays the map square to the base of the monitor and page while adding/editing annotation
  - The same map angle must be applied when creating a postscript of the map in ArcPlot
- GEMS will automatically re-project each cover to geographic coordinates when preparing the workspace for the data warehouse

METADATA

- Metadata information is entered using the **Manage/Metadata** menu in GEMS or from the **Tools/Edit Metadata** from Arc, ArcEdit or ArcPlot
- The information is saved in the .metadata file and is used to create metadata compliant to FGDC standards when preparing the workspace for data warehouse and digital release
- Metadata should be created/entered as much as possible at initial map production and can be updated at any time during map production
- Some meta data information is used by plotting commands in GEMS, therefore adherence to guidelines for each field is recommended for these commands to execute correctly
- The **Help** button provides guidelines for entering data into each field
- Each time a change is made to the metadata information, the **Save Changes** button must be pressed to record the changes
- A date stamp exists in the metadata indicating when the metadata was last modified
- If map is part of a series, the .metadata file can be copied to each workspace and necessary fields can be altered for each individual map

Tips for Entering Information

- Certain fields are case sensitive and must be entered, as they would appear in the recommended citation. These fields will be translated to uppercase for the TITLEBLOCK command
- Fields used by the TITLEBLOCK and CITATION commands must be entered in the specified language. For bilingual maps, entries must be separated by a forward slash with no space on either side
- Fields that requires a hyphen, en dash or em dash (refer to the Guide to Authors document for proper usage) would normally require a typesetting glyph code. One of the three following types of dashes can be entered to avoid glyph use
  - Hyphen – enter a single hyphen with no space on either side
  - En dash – enter two hyphens with no space on either side
  - Em dash – enter a single hyphen with a space on either side
- The naming convention for authors, secondary authors and cartographers should be last name first followed by a comma and then initials (e.g. Smith, A.B.)
- Primary authors are those that appear in the recommended citation, while secondary authors appear only in the credits
- Four digits must be used for fieldwork and compilation years. The following list are acceptable entries for multiple years
  - 1987, 1993, 1995 (series)
  - 1996-1999 (range)
  - 1987, 1993-1995 (combination)
- Some default values can be selected by pressing the right mouse button over some fields. Custom values can be entered directly into the blank field if required
- Provinces/Territories are selected from a list and are joined automatically (top of list plotted first) for multiple selections and translated to the correct language when plotted by the TITLEBLOCK and CITATION commands. An other input field is available should no provinces be selected (e.g. Eastern Canada and Parts of USA)
- Page dimensions can be specified in inches or centimeters
- Information about base data (dataset, version, year, scale) should be entered individually if more than one base is used
- Bounding coordinates can be obtained automatically from NTL cover
- Do not leave any fields blank. If missing information, it is better to enter something like "unknown" or "not available"

EXTERNAL TABLES

- Provides a method of relating additional attributes (non-CDS items) or multiple annotation supplied by the author or created by the cartographer to a valid feature attribute table of any geological cover (GEO, LIN, PNT, GEP)
- The external table name should be the name of the associated cover with a unique three letter extension based on feature type categories outlined in the Feature Type section (e.g. an external table containing additional attributes for mineral features in the PNT cover would have a name PNT<ws#>.MIN)
- Unique item names should exist for each external table
- External tables should be created at the end of the project to avoid having to combine external tables when edits are required
- After external tables are created it is important that the cover NOT BE EDITED without combining the external tables back with the applicable feature attribute table

Create External Table routine

- External tables can only be created after a cover has been processed. Processing a cover assigns unique values to the -LINK item that establishes a one-to-one relationship between the external table that will be created to the features in the .PAT or .AAT
- In **Arc**, select **Create External Table** from the **Manage\Attributes** drop-down menu
  - A list of –TYPE values that exist in the selected cover's feature attribute table is displayed in a menu
  - Once the type of external table to create is selected, a list of additional attribute items from selected cover's feature attribute table is displayed in a menu
  - Selected additional attribute items that match the selected <cover>-TYPE value will be transferred to the external table
  - The above steps must be repeated for each –TYPE value that requires an external table
- After all external tables are created, additional attribute items must be dropped manually

Generic External Tables

- Additional attribute items that refer to more than one external table or <cover>-TYPE value, must be transferred to a generic external table
- Generic external tables are also named the same name as the cover, but will have the file extension either .PXT when relating to a point or polygon feature attribute table or .AXT when relating to an arc attribute table
- Generic external tables establish a one-to-one relationship with all features in the attribute table
- The appropriate generic external table appears in the list of –TYPE values when creating an external table

Combining External Tables

- If edits are to be made, all external tables must be combined with the appropriate feature attribute table (a cover with associated external tables cannot be edited in ArcEdit using GEMS)
- Items that belong to the external table should be noted for future reference when re-creating the external table
- When a generic external table exists it must be combined first to the feature attribute table
- After the external table has been combined with the feature attribute table it will automatically be deleted

SYMBOLSETS

- <workspace>.mrk , created by user for each map will reside in the workspace
- Any other non-standard symbol sets or modified GSC symbol sets created by the user will reside in the workspace with the following naming convention
  - Lineset - <workspace>.lin
  - Textset - <workspace>.txt
  - Shadeset - <workspace>.shd
  - Pattern Shadeset - <workspace>_ptrn.shd
- IGL fonts (fnt028, fnt029, etc…) are not required to reside in the workspace
- Use **Create Custom Symbolset** from **Manage Symbols** menu in GEMS to create a custom symbolset

OTHER WORKSPACE FILES

PDF folder

- All PDF files should be in a sub-directory called pdfs
- These include all figures and insets, descriptive notes, references, legend and entire map
- All PDF files from an accompanying sheet will be copied into the pdfs sub-directory of each map in the series
- Logos, location map, etc. are NOT considered figures or insets, therefore a PDF is not required
- If map is bilingual, both languages reside in the same pdfs directory
    - If separate figures for English and French exist, use an "e" or "f" prefix to establish language (e.g. einset1.pdf, finset1.pdf)

Raster and Grid Overlays

- Include any raster image or grid that will be draped over the map image
- These files will reside in the map workspace
- Names of raster or grid files are entered and stored in the meta data
- Grids created from scan conversion can be deleted after vectorization

Final Postscripts

- A final postscript file for the map called <workspace>.ps resides in the workspace
- If the accompanying sheet is common to a series that all have different map numbers (usually A-Series)
    - The name of the postscript file for the map must be manually renamed to <workspace>_1.ps and the postscript file for the accompanying sheet must be named <workspace>_2.ps. This will reflect the fact that an accompanying sheet exists when archiving the postscripts to the on-demand plotting system

Plotting AML and Menu

- AML and menu used to plot the map are called plot<ws#>.aml and plot<ws#>.menu and reside in the workspace

Author folder

- Exists only as a sub-directory if NO covers or grids exist
- Any author supplied data (DXFs, DBFs, etc) in a sub-workspace called author
- Any author supplied word processor files for descriptive notes and references
- Any author supplied image files of figures, etc. (TIFFs, CorelDraw, etc.)
- The CorelDraw file created for the descriptive notes and references
- The original metadata file that accompanied the digital base data

Separates folder

- Exists only if map is being printed by offset press
- Contains a zipped postscript file for each colour separate
- Contains the requisition file for obtaining negatives for each colour separate

JOBFILE

- A sub-directory (not sub-workspace) in the map's workspace
- Contains the following information

Readme file

- Contains all pertinent information about the map and about the contents of the workspace
- Naming convention is readme<ws#>.txt
- Required for preparing map for the data warehouse and digital release
- Requires metadata to be complete and accurate
- After the necessary changes have been made based on the observations in the filter report, the Readme file can be created
- Use **Create Readme File** from **Tools** menu in GEMS to create a Readme file
    - If one already exists, a prompt to overwrite will appear
    - An option to view the Readme file is given upon completion
    - Entry is automatically made in history file
- After the Readme is created, edit the file to include additional information of files for future reference (especially those not required by CDS)

History file

- A history file for the map is REQUIRED
- Contains information about the map's production history (milestones, changes, difficulties, resolutions, delays)
- Naming convention is history<ws#>.txt
- Use **Map Production and History** from **Tools** menu in GEMS to create a history file
- When making an entry, include you name, action and any notes or comments. A date and time stamp will always be written along with your comments
- GEMS will automatically make entries on your behalf for certain procedures and processes (e.g. creating a report filter)

Email folder

- Optional folder to hold email the cartographer has received from authors, coordinators, etc.
- Save each email as some form of TEXT ONLY or RICH TEXT FORMAT from the mail server

Filter report

- Naming convention is report<ws#>.txt
- It is a digital verification report of possible observations that resides in the jobfile directory
- Use **Create Filter Report** from **Tools** menu in GEMS to create a filter report
    - If the jobfile sub-directory does not exist, it will be created automatically
    - If report<ws#>.txt already exists, it will be renamed
- Each time a filter report is created an entry is automatically made in the history file
- Can be accomplished at any stage during map production

Abstract file

- An abstract file for the map is REQUIRED
- Naming convention is abstract<ws#>.txt
- If the map is bilingual, this file will contain both English and French text
- The author should be the one who writes the abstract. If it is unobtainable or the author is no longer available, the first paragraph or two of the descriptive notes might suffice. If not, simply state "Not available." in the file
- The abstract file is an ASCII text file with a maximum of 80 characters for each line of text. A text editor program can be used to format this limitation.
- The author should write the abstract. If it is unobtainable or the author is no longer available, the first paragraph or two of the descriptive notes might suffice. If not, simply state "Not available" in the file
- Two samples of an abstract file follow:

The geoscientific data included and the bedrock geological interpretations presented are the result of a first summer of field work (June to August 2000) for a three-year, integrated, geoscientific project of the central portion of Baffin Island which is supported by the Geological Survey of Canada, the Canada-Nunavut Geoscience Office and the Polar Continental Shelf Project. Subsequent database and geoscientific interpretations released by the Central Baffin project will feature results stemming from continued bedrock mapping efforts, as well as results of surficial mapping, 3D structural modelling, teleseismic, magnetotelluric and gamma-ray surveys, and geochronological and geochemical sampling in the greater project area.

The geoscientific data presented on this map were collected as part of a five-year study of the Quaternary geology of the Timmins region which was funded under the Northern Ontario Development Agreement (NODA). Ground verification included terrain mapping, till sampling, measuring of ice flow indicators and stratigraphic studies and was completed in the summers of 1995 and 1996. Field traverses and air photo interpretation provided information on the nature and distribution of surface materials shown on the map. The map was constructed using 1:20,000 and 1:50,000 scale aerial photographs compiled onto a 1:50,000 scale base. The surficial deposits of the Manning Lake area (NTS 42A/13; GSC OF3618), immediately to the east, were mapped concurrently. The map adjoins surficial maps completed by the Ontario Geological Survey to south and by the Geological Survey Canada to the east and north.

SURROUND

- A sub-workspace in the map's workspace if covers or grids exist
- Exists only as a sub-directory if NO covers or grids exist
- Contains the following information

Descriptive notes & References

- A postscript of the descriptive notes and references will reside in the surround sub-workspace
- The naming convention is notes<ws#>.eps
- If references are separate from the descriptive notes, the naming convention is references<ws#>.eps
- If map is bilingual
  - Add a prefix of "e" or "f" to the filename (e.g. fnotes<ws#>.eps enotes<ws#>.eps)
- A PDF file should be made for each postscript containing the map's descriptive notes and references. They will reside in the pdfs sub-directory

Credit notes

- An ASCII text file of the map's credit notes called credits<ws#>.txt
- If the map is bilingual, this file will contain both English and French text
- GEMS ArcPlot command **credits** can be used to plot the credit notes in the plotting aml
- Execute command multiple times for multiple columns of credit notes

Copiesof note

- An ASCII text file of a co-publishing organization's address called copiesof<ws#>.txt
- GEMS ArcPlot command **copiesof** with the **file** option can be used to plot the address after the standard GSC addresses
- If map is bilingual
  - Add a prefix of "e" or "f" to the filename (e.g. fcopiesof<ws#>.txt ecopiesof<ws#>.txt)

Legend

- An ASCII text file of the map's legend called legend<ws#>.txt
- GEMS ArcPlot command **legend** can be used to plot the legend in the plotting aml
- Any covers used to plot symbols in the legend will reside in the surround sub-workspace
- A graphics file of the legend (legend<ws#>.gra) used to speed up plotting time will reside in the surround sub-workspace (not mandatory)

Figures and Insets

- All figures will reside in the surround sub-workspace
- All figures can exist in any format (covers in a sub-workspace, EPS, PS, etc.)
- The GSC Cartographic Digital Standards REQUIRES a PDF file of each figure or inset on the map. These will reside in the pdfs sub-directory
- If figures/insets are covers in a sub-workspace
    - Sub-workspace name must be self-explanatory (e.g. FIGURE1 or INSET2)
    - Cover names can be anything, but must be self explanatory
- Insets are usually close-ups of the main map to increase clarity in a dense area
    - If inset is created using the **maplimits** command and new data is applied to this inset, make sure the new data exists in the main map covers, but is attributed as not to plot on the main map using the <3 letter cover code >-MISC item
    - Produce a postscript of the inset using ArcPlot and then convert it to a PDF file. It will reside in the pdfs sub-directory

Logos

- Any logo images that are not already GEMS command
- They can exist in any format (EPS, PS, TIF, etc.)

WAREHOUSE

Procedure

1. Ensure workspace and covers are fully in CDS format
2. Run **Prepare Map for Data Warehouse** routine
3. Create Zip file of warehouse folder
4. Copy the zip file to Q:\Public\Carto\For GDR and notify GDR representatives

Prepare Map for Data Warehouse routine

- In **Arc**, select **Prepare Map for Data Warehouse** from the **Tools** drop-down menu
  - Readme file in jobfile folder must be complete
  - Abstract file must exist in jobfile folder
  - Creates a folder called **warehouse** (if one already exists GEMS will attempt to delete it)
  - Projects all covers to a geographic projection, as well as E00 format
  - Creates required metadata files based on information entered in Manage Metadata Menu and other cover features
    - MP format
    - ASCII file to be loaded into GDR Oracle database

Dataset ID

- The data warehouse requires a dataset ID, which is a unique numeric identifier that defines the map
- It is comprised of 12 digits, **aabbbbbcccdd** where:
  - **aa** - indicates type of map product (1-99; 1=A-Series, 2=Open File, 3=Bulletin)
  - **bbbbb** - indicates product map number (00000-99999)
  - **ccc** - indicates applicable sheet number (000-999)
  - **dd** - indicates type of data set
    - 00 - default dataset ID, used for metadata files of data set
    - 01 - neatline of map border or bounding limits (polygon)
    - 02 - geological units and contacts (polygon)
    - 03 - geological linear features (lines)
    - 04 - geological overlay features (polygon)
    - 05 - geological points (point)
    - 06 - hydrology (polygon)
    - 07 - base (lines and points)
    - 08 - base (polygons)
- Therefore, the default dataset ID of an A-series map #1979 will be **10197900000**

Zip file

- The default dataset ID MUST be used when creating a ZIP file of the warehouse folder
- Select the warehouse folder in an Exploring window and select **Add to ZIP** (right click or from File drop down menu)
- Change the name in the field **Add to archive:** from ..\warehouse.zip to ..\<your default dataset ID>.zip (e.g. C:\Projects\a1979\10197900000.zip)
- Make sure "Include subfolders" is checked then press **Add**

DIGITAL RELEASE

In Development

- Some procedures and standards exist, but none have been formalized as of yet

BAS COVER

Topology

- Arc
- Point

Contents

- All linear base features (e.g. roads, contours, rapids, dams, etc.)
- All point base features (e.g. buildings, rocks, etc.)

Items in BAS<ws#>.PAT (Point Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item equal to zero (Do not modify)
PERIMETER	4	12	F	-	Arc/Info item equal to zero (Do not modify)
BAS<WS#>#	4	5	B	-	Arc/Info item with a point identification number (Do not modify)
BAS< WS #>-ID	4	5	B	-	Arc/Info item with a point identification number (Do not modify)
BASECODE	16	16	C	-	Code identifier from the original source of base data
BAS-SYM	4	4	I	-	Number from <workspace>.MRK to plot the point
BAS-ELEV	5	5	I	-	Elevation value of the feature
BAS-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Items in BAS<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
BAS< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BAS< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BASECODE	16	16	C	-	Code identifier from the original source of base data
BAS-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
BAS-ELEV	5	5	I	-	Elevation value of the feature
BAS-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Procedure

1. Import arc and point base data
2. Add standard CDS items
3. Edit points
4. Edit arcs
5. Build arc and point topology NEVER CLEAN THIS COVER
6. Drop non-standard CDS items

Item notes

- BASECODE should contain the original base code (e.g. NTDB, Provincial, DCW, etc.) such as the DXF-LAYER item when importing DXF files. If the original codes are not present, a unique character code can be used
- BASECODE is not required in Legend Info File and can be applied to more than one feature in the cover
- BAS-SYM for arcs and points should be assigned based on BASECODE values
- BAS-ELEV should contain the elevation value in the unit (feet or meters) as supplied from the base data. If no elevation values are supplied, leave this item blank

Contour Numbers

- In **ArcEdit** with edit feature ARC, select **Label Contours** from the **Tools** drop-down menu
  - The correct publication scale must be entered
  - Annotation will automatically be added to the specified cover and subclass (usually CONTOURNUMBER)
  - Point size and annotation symbol must be specified (usually 6 point and symbol 210)
  - The elevation value used for annotating the contour number can be obtained from a specified item (usually BAS-ELEV) or manually entered by the user
  - The arc behind the contour number is automatically symbolized to a value of 1000 plus the symbol number (e.g. symbol 901 will become 1901)

Rapids and Dams

- It is recommended that rapids and dams reside in the BAS cover however they may remain in the HYD cover
- Rapids that are depicted as arcs should have a BAS-SYM value of 895
- Dams that are depicted as arcs should have a BAS-SYM value of 897

BAP COVER

Topology

- Arc
- Polygon

Contents

- All outlines of base area features that require a pattern or fill (e.g. sandpits, gravel pits, sluice gate, etc.)

Items in BAP<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
BAP< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
BAP< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
BASECODE	16	16	C	-	Code identifier from the original source of base data
BAP-SYM	4	4	I	-	Number from <workspace>.SHD or GSC.SHD to plot the polygon colour
BAP-PAT	4	4	I	-	Number from <workspace>.SHD or GSC_PTRN.SHD to plot the polygon pattern
BAP-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Items in BAP<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
BAP< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BAP< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BASECODE	16	16	C	-	Code identifier from the original source of base data
BAP-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
BAP-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Procedure

1. Import polygon base data
2. Add standard CDS items
3. Edit labels
4. Edit arcs
5. Build/Clean arc and polygon topology
6. Drop non-standard CDS items

Item notes

- BASECODE should contain the original base code (e.g. NTDB, Provincial, DCW, etc.) such as the DXF-LAYER item when importing DXF files. If the original codes are not present, a unique character code can be used
- BASECODE is not required in Legend Info File and can be applied to more than one feature in the cover
- BAP-SYM for arcs and polygons should be assigned based on BASECODE values
- BAP-PAT for polygons should be assigned based on BASECODE values

HYD COVER

Topology

- Arc
- Polygon

Contents

- All hydrology features (e.g. shorelines, rivers, swamps, flooded land, intermittent shorelines, etc.)
- Glaciers (if bedrock geology OR if surficial geology that has glaciers that do NOT appear as a geological unit in the legend)

Items in HYD<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
HYD< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
HYD< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
BASECODE	16	16	C	-	Code identifier from the original source of base data
HYD-SYM	4	4	I	-	Number from <workspace>.SHD or GSC.SHD to plot the polygon colour
HYD-PAT	4	4	I	-	Number from <workspace>.SHD or GSC_PTRN.SHD to plot the polygon pattern
HYD-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Items in HYD<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
HYD< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
HYD< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BASECODE	16	16	C	-	Code identifier from the original source of base data
HYD-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
HYD-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Procedure

1. Import hydrology data
2. Add standard CDS items to .AAT only DO NOT BUILD POLYGON TOPOLOGY
3. Assign valid HYD-SYM values to all arcs
4. Build arc topology
5. Run **Process Hydrology** routine
6. Check and Drop non-standard CDS items

Item notes

- BASECODE in the .AAT should contain the original base code (e.g. NTDB, Provincial, DCW, etc.) such as the DXF-LAYER item when importing DXF files. If the original codes are not present, a unique character code can be used
- BASECODE is not required in Legend Info File and can be applied to more than one feature in the cover
- HYD-SYM for arcs should be assigned based on BASECODE values and should NEVER equal 0
- The following chart shows values for HYD-SYM when executing Process Hydrology and the resulting output of hydrology polygon

Feature	HYD-SYM value of arc assigned by user	Item values of polygons assigned by Process Hydrology		
		HYD-SYM	HYD-PAT	BASECODE
Outline of defined water body	890 or 1890*	990	0	WATERBODY_1452
Intermittent stream or river	891 or 1891*	0	0	LAND**
Outline of swamp, marsh or wetland area	892 or 1892*	0	237	WETLAND_1492
Stream or river	893 or 1893*	0	0	LAND**
Outline of flooded land or string bog	894 or 1894*	0 or 990	249	WATERBODY_1454
Natural features (e.g. rapids, falls)	895 or 1895*	990	0	NATURAL_FEAT
Outline of intermittent water body	896 or 1896*	990	0	WATERBODY_1450
Outline of irrigation canal or manmade features (e.g. dams, sluice gate, spillway)	897 or 1897*	990	0	MAN_MADE_FEAT
Outline of permanent snow/ice or glacier	898 or 1898*	990	243	PERMANENT_S847
Outline of undefined water body	899 or 1899*	990	0	WATERBODY_1452
Islands within above features	-	0	0	LAND

* Pseudo line codes are 1000 + line symbol. Pseudo lines display as black lines in ArcEdit but do not display in ArcPlot
** These polygons represent braided rivers or streams

Editing notes

- There is no need to build polygon topology or clean the cover prior to processing hydrology
- All outlines of hydrology features must be closed at the neatline with the corresponding pseudo line value
- An appropriate fuzzy tolerance should be defined for the HYD cover

Water Bodies

- Arcs MUST form closed polygons

Intermittent Water Bodies

- Arcs must form closed polygons, except if they are adjacent to a water body polygon (not including shorelines for islands)
- Intermittent shorelines that are adjacent to water body can either:
  - Stop at the water body (shoreline)
  - Extend into the water body (past the shoreline)
  - Duplicated along the shoreline

Single Line Rivers (Defined and Intermittent)

- Rivers will be deleted if they exist in water bodies and intermittent water bodies
- Rivers that create closed polygons (e.g. braided channel, delta) will have polygon labels created, coded as LAND with a <cover>-ID = 3

Glaciers

- Glaciers must exist on the final HYD cover if the map feature is bedrock geology OR if the map feature is surficial geology, but the glaciers do NOT appear as a geological unit in the legend
- If the map feature is surficial geology AND glaciers appear as a geological unit in the legend, then the glacier outlines must exist in the GEO cover (see Glaciers in the GEO Cover)
- Glacier outlines can exist in a separate cover from the HYD cover if desired. The **Process Hydrology** routine allows for specifying the glacier cover for processing
- Arcs MUST form closed polygons
- Shorelines, undefined shorelines, intermittent shorelines, rivers or intermittent rivers that pass through glaciers are either deleted, masked (1000 added to HYD-SYM value) or coded as undefined (HYD-SYM = 899)
- All other features that exist in glaciers will be deleted
- If outlines of glaciers are detected during processing, an option exists to save the outlines in the final HYD cover or in a specified cover, which can be used to add the outlines of glaciers to the GEO cover for surficial maps

Swamps and Wetlands

- Can be defined by arcs or open polygons either stopping or extending into a hydrology feature or along a river
- Can also be defined by closed polygons (recommended) where they can overlap or be adjacent to other hydrology features
- Arcs defining these features on islands MUST form closed polygons
- If these features exist in water bodies, intermittent water bodies or glacier polygons they will be deleted
- If outlines of swamps are detected during processing, an option exists to save the outlines in a specified cover, which can be used to create swamp symbols for the MSC cover
- During processing, an option exists whether or not to symbolize the arcs in the final HYD cover (usually swamp and wetland polygons do not have their arcs symbolized)
- If overlaps between swamps and flooded land are detected during processing, an option exists to specify which feature will dominate

Flooded Lands and Bogs

- Can be defined by arcs or open polygons either stopping or extending into a hydrology feature or along a river
- Can also be defined by closed polygons (recommended) where they can overlap or be adjacent to other hydrology features
- Arcs defining these features on islands MUST form closed polygons
- If these feature exist in water bodies, intermittent water bodies or glacier polygons they will be deleted
- If outlines of flooded land are detected during processing, an option exists to specify HYD-SYM for the .PAT to be white (990) or transparent (0)
- If overlaps between flooded land and swamps are detected during processing, an option exists to specify which feature will dominate

Other Natural Hydrology Features

- Arcs defining these features that are polygons MUST form closed polygons
- Arcs defining these features that are lines (i.e. rapid, falls) are accepted
- These features will simply be merged with the final hydrology polygon near the end of processing, preserving any hydrology polygon topology and attributes

Man-Made Hydrology Features

- All man-made hydrology features should NOT exist in the final hydrology cover, however any encountered during processing will be saved in a separate cover for inclusion in either the BAS or BAP covers

Process Hydrology routine

- In **Arc**, select **Process Hydrology** from the **Tools** drop-down menu
  - Any existing polygon topology will be ignored and a new hydrology cover with polygon and arc topology will be created
  - The input hydrology cover (any cover name can be used), optional glacier cover containing glacier polygons, and the fuzzy tolerance to be used throughout the process must be specified
  - Polygons are coded based on HYD-SYM values of arcs. NTDB codes will be assigned to BASECODE in the .PAT
  - Performs some error checking, ensures input hydrology cover has CDS items and valid HYD-SYM values
  - If polygons cannot be coded during the process, they will have BASCODE = INCONCLUSIVE and HYD<ws#>-ID = 3
  - Original HYD cover is preserved
  - Processing hydrology can be executed any number of times

Create Swamp Symbols routine

- Swamp outlines should exist in HYD cover whether they are plotted or not
- In **Arc**, select **Create Swamp Symbols** from the **Tools** drop-down menu
  - Name of a cover containing swamp outlines, the map scale, symbol spacing and size (inches or centimeters) must be specified
  - Random points are created at size and spacing specified for points that fall inside swamp outlines within the entire cover extent
  - Points are copied to the MSC cover
  - If size and spacing is not satisfactory
    - Points should be manually deleted from MSC cover
    - The **Create Swamp Symbols** routine must be executed again after making adjustments to symbol spacing and size
- Symbols in the MSC cover can be manually added or deleted for clarity

GEO COVER

Topology

- Arc
- Polygon

Contents

- All linear features bounding a geological unit polygon (e.g. contacts, arbitrary contacts in water, other geological linear features such as faults, pseudo lines to close polygons along neatline, etc.)
- Limit of mapping
- Label points defining geological unit polygons
- Glaciers (if surficial geology AND glaciers appear as a geological unit in the legend)
- Dyke outlines if they appear as polygons

Items in GEO<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
GEO< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
GEO< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
GEO-TYPE	3	3	C	-	Code representing a feature type category
GEO-SYM	4	4	I	-	Number from <workspace>.SHD or GSC.SHD to plot the polygon colour
GEO-PAT	4	4	I	-	Number from <workspace>.SHD or GSC_PTRN.SHD to plot the polygon pattern
GEO-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)
GEO-LINK	4	5	B	-	Relate item to an external table with an extension that matches the –TYPE item
CODE	16	16	C	-	Unique code relating to the GEO<ws#>.LEG info file for legend descriptions

Items in GEO<ws#>.AAT (Arc Attribute Table)

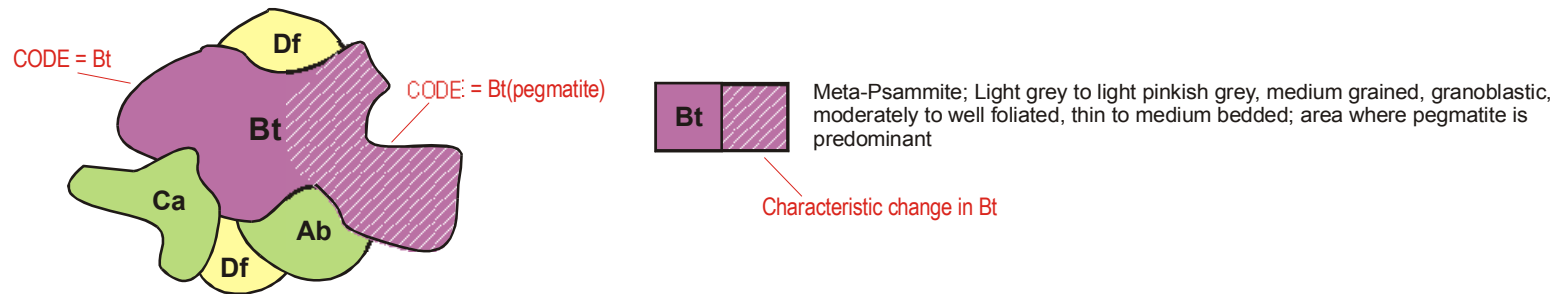| Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
GEO< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
GEO< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
GEO-TYPE	3	3	C	-	Code representing a feature type category
GEO-SURF	16	16	C	-	Code representing the HYD polygon value for geological contacts
GEO-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
GEO-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)
GEO-LINK	4	5	B	-	Relate item to an external table with an extension that matches the –TYPE item
CODE	16	16	C	-	Unique code relating to the GEO<ws#>.LEG info file for legend descriptions

Procedure

1. Import geology data
2. Add standard CDS items
3. Add glacier outlines from HYD cover (if applicable)
4. Edit arcs and labels
5. Copy geological linear features (except contacts and limit of mapping) to LIN cover
6. Run **Process GEO Cover** routine
7. Drop non-standard CDS items

AAT Item notes

- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- CODE values should use the following standard codes where applicable
  - DEFINED, APPROXIMATE, ASSUMED, INFERRED, LIMIT_MAPPING, ARBITARY, STRUCTURAL, GLACIER
  - CODE values should be in uppercase characters
  - Additional CODE values are acceptable, as long as they exist in the Legend Info File
  - ARBITRARY shall only be used to close polygons through bodies of water
  - GLACIER shall only be used for arcs bounding a glacier polygon
  - STRUCTURAL represents boundaries that are not coded as a type of geological contact, but rather as a fault or other linear feature
- All geological contacts (Defined, Approximate, Assumed, Inferred, Limit_mapping, Arbitrary) should have GEO-TYPE = CON
- STRUCTURAL features should have GEO-TYPE equal to what that feature has for the LIN-TYPE on the LIN cover

PAT Item notes

- All geological units must have GEO-TYPE = GEO, except when polygons are dykes GEO-TYPE = DYK or glaciers GEO-TYPE = GLA
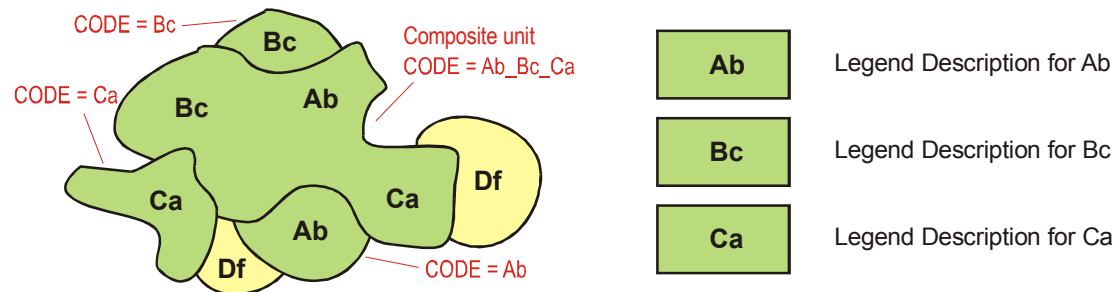- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- CODE values should be in uppercase and lowercase characters
- CODE values should match the unit identifier that appears on the map with the following exceptions:
  - GSC special characters must be replaced with Abbreviations
  - Glaciers on surficial maps only must have CODE = GLACIER
  - A change in a single geological unit's characteristic (added pattern or variation in colour) must be identified by appending additional words in brackets to the unit identifier
    e.g. Unit Bt with pattern representing pegmatite area will have CODE = Bt(pegmatite)

CODE = Bt

Df

CODE = Bt(pegmatite)

Bt

Ca

Ab

Df

Bt

Meta-Psammite; Light grey to light pinkish grey, medium grained, granoblastic, moderately to well foliated, thin to medium bedded; area where pegmatite is predominant

Characteristic change in Bt

- A geological polygon with more than one unit identifier on the map, where each unit is listed separately in the legend info file, must contain the CODE value for each individual unit separated by an underscore. This CODE should also exist in the Legend Info File with the description "Composite geological unit."
  e.g. A polygon that has unit identifiers Ab, Bc and Ca will have CODE = Ab_Bc_Ca

CODE = Bc

Bc

Composite unit
CODE = Ab_Bc_Ca

CODE = Ca

Bc

Ab

Ca

Df

Ca

Ab

Df

CODE = Ab

Ab — Legend Description for Ab

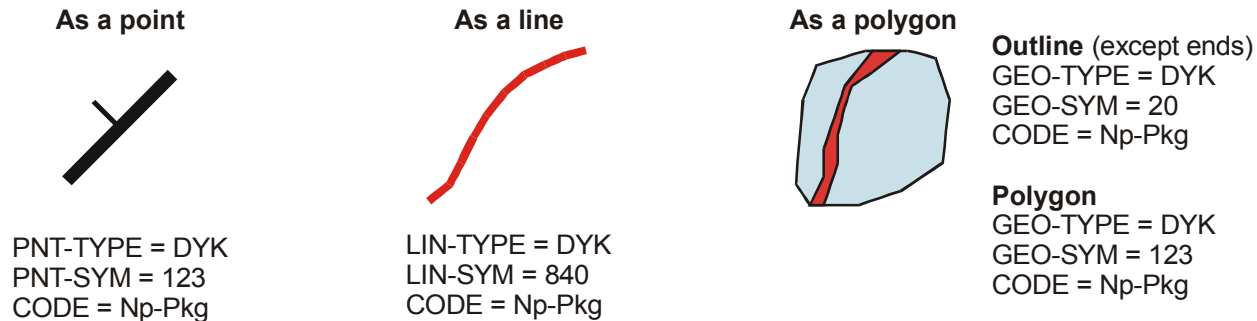Bc — Legend Description for Bc

Ca — Legend Description for Ca

Glaciers

- If the map feature is surficial geology AND glaciers appear as a geological unit in the legend, then the glacier outlines must exist in the GEO cover and coded as follows:
  - Arcs (glacier outline)
    - GEO-SYM = 0 (usually 0, but can be any value)
    - GEO-TYPE = GLA
    - CODE = GLACIER (but can be any other descriptive)
  - Polygon
    - GEO-SYM = 990 (usually 990, but can be 0 for transparent)
    - GEO-PAT = 243 (usually 243, but can be any other glacier pattern)
    - GEO-TYPE = GLA
    - CODE = GLACIER (but can be any other descriptive)
  - CODE and GEO-TYPE values must be the same for both arc and polygon features

Limit of Mapping

- Limit of mapping is required to show the extent of geological data and the coordinates defining the limit of mapping are included in the metadata when the map is prepared for the data warehouse and digital release
- Consists of outline of all geological polygons, plus any areas not mapped within the limit of mapping as defined by the author
- In most cases this will be the neatline, even for areas mapped along the coastline. Do NOT weave the limit of mapping around islands or peninsulas
- If the map does not have geological polygons, only point and/or line data, one geological polygon is required to define the limit of mapping
- The limit of mapping should be coded in the GEO cover as follows:
  - GEO-SYM = 0
  - GEO-TYPE = CON
  - CODE = LIMIT_MAPPING
- If limit of mapping on land is to be symbolized, section on land is copied to MSC cover where continuous symbolization can be held
- Other limits, such as limit of fieldwork or limit of field season, as defined by authors are to be stored in the LIN cover

Dykes

- Depending on the map scale, dykes can be appear as points, lines and polygons, where similar dykes will have the same CODE value
- All dykes have <cover>-TYPE = DYK
- Dykes that are polygons must exist in the GEO cover, where the outline and the polygon label share the same CODE value

As a point	**As a line**	**As a polygon**	

PNT-TYPE = DYK
PNT-SYM = 123
CODE = Np-Pkg

LIN-TYPE = DYK
LIN-SYM = 840
CODE = Np-Pkg

Outline (except ends)
GEO-TYPE = DYK
GEO-SYM = 20
CODE = Np-Pkg

Polygon
GEO-TYPE = DYK
GEO-SYM = 123
CODE = Np-Pkg

Feature Types

- A valid feature type code must be assigned to GEO-TYPE for all features in the GEO cover
- GEO-TYPE should never be blank
- Consult the **Feature Types** section for a list of valid feature type categories
- If a feature type category cannot be assigned based on the list, consult the Dictionary of Geological Terms or ask the author

Process GEO Cover routine

- The **Process GEO Cover** routine cannot be accomplished if external tables exist
- In **Arc**, select **Process GEO Cover** from the **Tools** drop-down menu
  - HYD cover MUST exist
  - Only arcs with GEO-TYPE = CON, except if the CODE contains the word LIMIT, will be processed with the hydrology polygons in the HYD cover
  - A new CODE and/or GEO-SYM value for each of the selected CODE values that intersect each BASECODE value of polygons in the HYD cover may be specified. It is recommended that CODE = ARBITRARY and 1000 be added to existing GEO-SYM value which is the masking option
  - BASECODE value of polygons in the HYD cover is assigned to the arc attribute GEO-SURF
  - Unique values based on the $RECNO are assigned to GEO-LINK

LIN COVER

Topology

- Arc

Contents

- All geological linear features except geological contacts (e.g. faults, dykes, etc.)
- Limit of fieldwork or limit of field season, as defined by authors

Items in LIN<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
LIN<WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
LIN< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
LIN-TYPE	3	3	C	-	Code representing a feature type category
LIN-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
*LIN-ANNO*n*	80	80	C	-	Annotation associated with the geological feature
*LIN-CLASS*n*	13	13	C	-	Classification of the annotation in the –ANNO item
LIN-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)
LIN-LINK	4	5	B	-	Relate item to an external table with an extension that matches the –TYPE item
CODE	16	16	C	-	Unique code relating to the GEO<ws#>.LEG info file for legend descriptions

* Denotes that more than one item can exist in this table where *n* can be a value of 1 to 9

Procedure

1. Geological linear features (except contacts and limit of mapping) already copied from GEO cover
2. Add standard CDS items
3. Edit arcs
4. Un-split arcs based on CODE value
5. Build arc topology NEVER CLEAN THIS COVER
6. Run **Process LIN Cover** routine
7. Drop non-standard CDS items

AAT Item notes

- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- CODE values should be in uppercase characters
- LIN-ANNO contains any annotation that is associated with the linear feature (fault name, etc.)
- Linear features that have a common marker centered on different line lengths (drumlins, etc.)
  - Arcs will be in the LIN cover
  - Markers will be in the MSC cover
  - Markers MUST be snapped to the associated line

Directional Arcs

- Arcs representing geological features with flow characteristics must have correct direction
- Arcs that use existing line symbols that place arrowheads at the from-node cannot be used, since these arcs travel in the wrong direction. These arcs will require their direction flipped and a new symbol value assigned
  - Turn arc arrows on to display direction of arc
  - Use Flip command to change the direction of arcs
- Lines requiring arrowheads must be plotted as separate marker symbols as labels existing in the MSC cover
  - Snap labels in MSC cover to nodes in LIN cover
  - Use ArcEdit tool to assist placing arrowheads at to-node
- Lines representing channels (e.g. large meltwater) will also require correct direction, and two different symbols on either side of the channel.
- Channels that are on-slope are usually depicted with a half arrowhead indicating the up-slope side. These lines will also require correct direction and an arrowhead placed at the to-node. Information about which side is the up-slope should be included in an extra item call UPSLOPE with a value of either LEFT or RIGHT. This extra item will then be added to an External Table
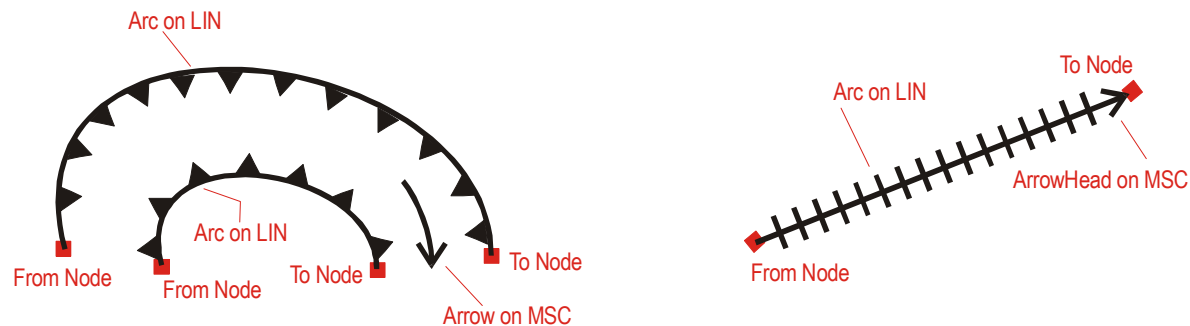
Feature Types

- A valid feature type code must be assigned to LIN-TYPE for all features in the LIN cover
- LIN-TYPE should never be blank
- Consult the **Feature Types** section for a list of valid feature type categories
- If a feature type category cannot be assigned based on the list, consult the Dictionary of Geological Terms or ask the author

Associated Annotation

- Any text associated with line features (e.g. fault names) must exist in items LIN-ANNO1 and LIN-CLASS1
- In **ArcEdit**, select **Transfer Annotation String** from the **Tools** drop-down menu to transfer annotation to item LIN-ANNO1 and the annotation subclass to item LIN-CLASS1

Process LIN Cover routine

- In **Arc**, select **Process LIN Cover** from the **Tools** drop-down menu
  - Should be accomplished after edits are complete
  - Can not be accomplished if external tables exist for the cover
  - HYD cover MUST exist if some linear features are to be masked through water bodies. The user will be queried to select which CODE values (if they exist through water bodies) are to be masked
  - Checks that all features are assigned a LIN-TYPE value
  - Unique values based on the $RECNO are assigned to LIN-LINK

GEP COVER

Topology

- Arc
- Polygon

Contents

- Geological polygons that exist in the symbols portion of the legend
- Geological polygons that cross more than one geological unit polygon (e.g. area of outcrops, moraines, drift, etc.)
- More than one type may exist as long as they do not intersect each other
- Should NOT include polygons that represent a change in a geological unit's characteristics (usually depicted in units portion of the legend)

Items in GEP<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
GEP< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
GEP< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
GEP-TYPE	3	3	C	-	Code representing a feature type category
GEP-SYM	4	4	I	-	Number from GSC.SHD to plot the polygon colour
GEP-PAT	4	4	I	-	Number from <workspace>.SHD or GSC_PTRN.SHD to plot the polygon pattern
*GEP-ANNO*n*	80	80	C	-	Annotation associated with the geological feature
*GEP-CLASS*n*	13	13	C	-	Classification of the annotation in the –ANNO item
GEP-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)
GEP-LINK	4	5	B	-	Relate item to an external table with an extension that matches the –TYPE item
CODE	16	16	C	-	Unique code relating to the GEO<ws#>.LEG info file for legend descriptions

* Denotes that more than one item can exist in this table where *n* can be a value of 1 to 9

Items in GEP<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
GEP< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
GEP< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
GEP-TYPE	3	3	C	-	Code representing a feature type category
GEP-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
GEP-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)
GEP-LINK	4	5	B	-	Relate item to an external table with an extension that matches the –TYPE item
CODE	16	16	C	-	Unique code relating to the GEO<ws#>.LEG info file for legend descriptions

Procedure

1. Import geology data
2. Add standard CDS items
3. Edit arcs
4. Edit labels
5. Run **Process GEP Cover** routine
6. Drop non-standard CDS items

AAT Item notes

- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- CODE values should be in uppercase characters
- If arcs are defined by author as a contact
    - CODE values should be DEFINED, APPROXIMATE, ASSUMED, or INFERRED
    - GEP-TYPE = CON
- If arcs are not defined by author as a contact
    - CODE and GEP-TYPE values should match the CODE and GEP-TYPE value of the polygon label
- If portions of arcs are needed to close the polygon, use standard codes where applicable
    - ARBITRARY shall only be used to close polygons through water bodies (performed during Process GEP Cover routine)
    - STRUCTURAL represents boundaries that are not coded as a type of geological contact, but rather as a fault or other linear feature
        - GEP-TYPE should equal what that feature has for the LIN-TYPE on the LIN cover
    - LIMIT_MAPPING shall be used to close polygons at the neatline
    - Any of these arcs should have GEP-SYM = 0

PAT Item notes

- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- If the polygon has an assigned unit letter or number, treat CODE the same as in the GEO<ws#> cover

Associated Annotation

- Any text associated with geological polygon features (e.g. shear zone names) must exist in items GEP-ANNO1 and GEP-CLASS1
- In **ArcEdit**, select **Transfer Annotation String** from the **Tools** drop-down menu to transfer annotation to item GEP-ANNO1 and the annotation subclass to item GEP-CLASS1

Process GEP Cover routine

- In **Arc**, select **Process GEP Cover** from the **Tools** drop-down menu
  - Should be accomplished after edits are complete
  - Can not be accomplished if external tables exist for the cover
  - HYD cover MUST exist if some polygon features are to be masked through water bodies. The user will be queried to select which CODE values (if they exist through water bodies) are to be masked
  - Checks that all features are assigned a GEP-TYPE value
  - Unique values based on the $RECNO are assigned to GEP-LINK

PNT COVER

Topology

- Point

Contents

- All geological point features

Items in PNT<ws#>.PAT (Point Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item equal to zero (Do not modify)
PERIMETER	4	12	F	-	Arc/Info item equal to zero (Do not modify)
PNT< WS #>♯	4	5	B	-	Arc/Info item with a point identification number (Do not modify)
PNT< WS #>-ID	4	5	B	-	Arc/Info item with a point identification number (Do not modify)
PNT-STN	20	20	C	-	Station number assigned by author or a unique integer
PNT-X	4	12	F	3	X coordinate of the point feature
PNT-Y	4	12	F	3	Y coordinate of the point feature
PNT-Z	4	12	F	3	Z coordinate or elevation of the point feature (if present)
PNT-TYPE	3	3	C	-	Code representing a feature type category
PNT-SYM	4	4	I	-	Number from <workspace>.MRK to plot the point
PNT-ANGLE	4	4	I	-	Plotting angle for the point feature
PNT-AZIM	4	4	I	-	Angle of azimuth for the point feature (Not the plotting angle)
*PNT-ANNO*n*	80	80	C	-	Annotation associated with the geological feature
*PNT-CLASS*n*	13	13	C	-	Classification of the annotation in the –ANNO item
PNT-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)
PNT-LINK	4	5	B	-	Relate item to an external table with an extension that matches the –TYPE item
CODE	16	16	C	-	Unique code relating to the GEO<ws#>.LEG info file for legend descriptions

* Denotes that more than one item can exist in this table where *n* can be a value of 1 to 9

Procedure

1. Import geological point data
2. Add standard CDS items
3. Edit points
4. Run **Process PNT Cover** routine
5. Create external tables (if required)
6. Drop non-standard CDS items

PAT Item notes

- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- CODE values should be in uppercase characters
- If author supplied values for PNT-STN
  - Make sure all points have a value (if not, consult author for proper value)
- If author did not supply values for PNT-STN
  - Leave blank, values will be assigned later by the **Process PNT Cover** routine
- PNT-ANNO contains any annotation that is associated with the point feature (dip number, etc.)

Mineralogies and Local Occurrences

- Mineralogies and local occurrences that appear as text only on the map face should be treated as follows
  - Add point for each mineral site or local occurrence
  - PNT-SYM = 0
  - Annotation should exist in TXT<ws#> cover in the appropriate subclass

Striations

- CODE values must be unique for each type of striation (e.g. known, unknown, poorly defined)
- Crossed striations MUST NOT have a CODE value that indicates they are crossed; the CODE value should remain as it would if they were not crossed. Crossed striations are indicated by having the same value for PNT-STN
- Each unique type of striation should appear in the Legend Info File with a separate ORDER value
- Crossed striations should NOT appear in the Legend Info File as a separate record, but its description appended to each of the unique type's description

Associated Annotation

- Any text associated with point features (e.g. dip numbers, minerals, age/chronology) must exist in items PNT-ANNO1 and PNT-CLASS1
- In **ArcEdit**, select **Transfer Annotation String** from the **Tools** drop-down menu to transfer annotation to item PNT-ANNO1 and the annotation subclass to item PNT-CLASS1
- Three situations exist

1. Point with one annotation
    - Label point remains as a single feature (e.g. bedding, lineation, mineral symbols)
    - Annotation is transferred to item PNT-ANNO1
    - Annotation subclass is transferred to item PNT-CLASS1
    - If annotation string contains abbreviations or additional data exists, then additional items must be added to attribute table, which will be transferred to an external table

<div align="center">

bt, tn

▲   PNT-ANNO1 = bt, tn
PNT-CLASS1 = MINERAL

</div>

2. Point with two or more like annotation
    - Label point must be duplicated and snapped at same location for each additional annotation string (e.g. radiometric age)
    - Annotation string is transferred to item PNT-ANNO1 for each label point
    - Annotation subclass is transferred to item PNT-CLASS1 for each label point
    - If the annotation represents multiple values (e.g. age, mineral, time, etc) then additional items must be added to attribute table, which will be transferred to an external table

PNT-ANNO1 = Gb(Ar) 3000 ± 3Ma
PNT-CLASS1 = CHRONOLOGY

Gb(Ar) 3000 ± 3Ma

Mb(Ar) 400 ± 2Ma

▲

PNT-ANNO1 = Mb(Ar) 400 ± 2Ma
PNT-CLASS1 = CHRONOLOGY
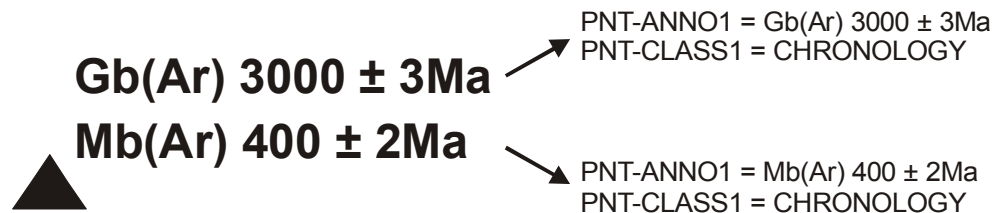
3. Point with two or more different annotation
   - Label point remains as a single feature (e.g. dyke with mineral and dip annotation)
   - Additional PNT-ANNO*n* and PNT-CLASS*n* items are added to point attribute table to store additional annotation strings and subclasses
   - Specify number of additional PNT-ANNO and PNT-CLASS items in CDS Settings menu
   - If annotation string contains abbreviations or additional data exists, then additional items must be added to attribute table, which will be transferred to an external table

PNT-ANNO1 = Ar-g
PNT-ANNO2 = 45
PNT-CLASS1 = UNITLETTER
PNT-CLASS2 = DIPNUMBER

Process PNT Cover routine

- In **Arc**, select **Process PNT Cover** from the **Tools** drop-down menu
  - Should be accomplished after edits are complete
  - Can not be accomplished if external tables exist for the cover
  - Creates the final PNT cover from one or more covers
  - The following is performed for each label:
    - Assigns X and Y coordinates to the PNT-X and PNT-Y items
    - Assigns values to the PNT-ANGLE and PNT-AZIM item based on the pseudo item $angle
    - Assigns values to the PNT-STN numbers if none are supplied with the author's data
  - Assigns values to the PNT-LINK item that is used for creating external tables
  - Checks that all features are assigned a PNT-TYPE value

LEGEND INFO FILE

Contents

- Detailed description of each geological code that exists in the four geological covers (GEO, LIN, GEP and PNT)

Items in GEO<ws#>.LEG

Item Name	Width	Output	Type	Decimal	Description
CODE	16	16	C	-	Unique code that relates back to all geological covers
ORDER	6	6	N	2	Order of appearance in the geological legend
LEVEL-1 ~ LEVEL-6	80	80	C	-	First to sixth hierarchical level descriptions (Eon, era, period, etc.) for the defined feature. Also acts as a relate item to the GEO<ws#>.LVL info file which gives a descriptive note for the defined hierarchical level
YOUNGER	80	80	C	-	Geological event that is younger than the defined geological unit
OLDER	80	80	C	-	Geological event that is older than the defined geological unit
ENTRY-1 ~ ENTRY-15	80	80	C	-	First to fifteenth sets of 80 characters of the detailed legend description for the defined geological feature

BILINGUAL MAP – If the language is set to Bilingual in the metadata, the following items are added after the above items in the info file

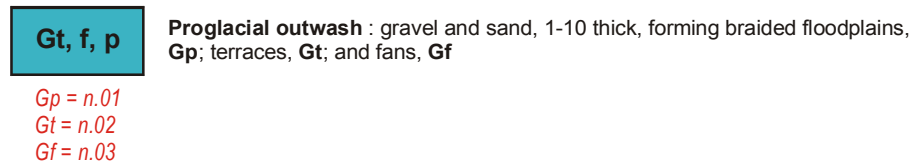| B-LEVEL-1 ~ B-LEVEL-6	80	80	C	-	First to sixth hierarchical level descriptions (Eon, era, period, etc.) for the defined feature. Also acts as a relate item to the GEO<ws#>.LVL info file which gives a descriptive note for the defined hierarchical level in the other official language
B-YOUNGER	80	80	C	-	Geological event younger than the defined unit in the other official language
B-OLDER	80	80	C	-	Geological event older than the defined unit in the other official language
B-ENTRY-1 ~ B-ENTRY-15	80	80	C	-	First to fifteenth sets of 80 characters of the detailed legend description for the defined geological feature in the other official language

Procedure

1. Run **Edit Legend Info File** routine
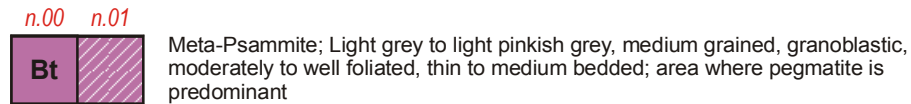2. Enter legend information

Code

- CODE in the legend info file MUST match to the CODE value in the geological covers
  - GSC special characters must be replaced with Abbreviations
- CODE must not contain any spaces or illegal characters. Legal characters include letters, digits, underscores, brackets, and dashes
- CODE values from common legends should not exist in the legend info file if they do not exist in any of the four geological covers

Order

- ORDER states the order of each code as it appears in the legend
- Legend info file is sorted by CODE when saved, but when editing the Legend Info File it is sorted by ORDER
- ORDER value must be numeric with two decimal places, beginning at 1.00
- If a legend or symbol description makes reference to only one geological unit, point or line symbol, ORDER should be *n*.00
- Decimal places represent sub-order when
  - A legend description makes reference to more than one geological unit (sub-order is based on position in legend description)

Gt, f, p

Proglacial outwash : gravel and sand, 1-10 thick, forming braided floodplains, **Gp**; terraces, **Gt**; and fans, **Gf**

Gp = n.01
Gt = n.02
Gf = n.03

  - A change in a single geological unit's characteristic (added pattern or variation in colour)

n.00   n.01

Bt

Meta-Psammite; Light grey to light pinkish grey, medium grained, granoblastic, moderately to well foliated, thin to medium bedded; area where pegmatite is predominant

  - A symbol description refers to more than one type of symbol

n.01   n.02   n.03   n.04   n.05   n.06

Geological boundary (defined, approximate, assumed) *ARBITRARY, STRUCTURAL, LIMIT_MAPPING*

- ORDER values for a correlated legend shall be assigned by viewing the entire legend (left to right then down), rather than each separate column (top to bottom then right)
- ORDER values should not be assigned to a crossed striae symbol, the description is added to the description of each individual striae type
- ORDER values should be assigned to ARBITRARY and STRUCTURAL geological contacts using the next sub-order values for the *Geological boundary* symbol
- LIMIT_MAPPING should be assigned the next sub-order values for the *Geological boundary* symbol except when it appears as a separate symbol in which case it should be assigned its own unique ORDER value

Levels

- LEVEL1~6 should contain geological ages and groups, NOT formations
- Formation names are to be included with the unit description and should not appear in the level hierarchy
- Do not included ranges of geological units that appear next to a group name (e.g. BIG BALD MOUNTAIN (Ab-Ac))

Events

- YOUNGER and OLDER are for geological events that exist immediately before or after geological units in legend

Descriptions

- ENTRY1~15 should contain the legend description for each geological code
- GSC special character abbreviations should be used throughout all info files when applicable
- The following descriptions must be used
  ARBITRARY - "Arcs used to close geological polygons"
  STRUCTURAL - "An arc used to close a geological polygon along a linear feature"
  LIMIT_MAPPING - "Limit of mapping"

Edit Legend Info File routine

- In **Arc**, select **Edit Legend Info File** from the **Tools** drop-down menu
  - The legend info file will automatically be created if one does not exist
  - If the language of the map is set to Bilingual in the meta data (one menu for each language will appear for data entry)
  - Records in the legend info file are sorted based on the ORDER value
  - The **Load Unique Values** button is used to load all unique CODE values from all of the geological covers
  - The **Go To...** button is used to select an existing CODE from the legend info file
  - The **Change** button will change the CODE value in the legend info file and any of the geological covers
  - The **+1** and **-1** buttons are used to change the ORDER value of the current and subsequent records
  - The **Re-Sort** button is used to re-display the legend info file sorted on the changed ORDER values
  - Checkboxes are available to retain entered information for newly created records
  - Clicking the right mouse button on any input field displays a list of accented characters that can be added to the string in the input field
  - Legend description can be roughly cut & pasted, once **Apply** or **Apply/Next** button is pressed, lines of text are automatically re-organized to be 80 characters each
  - The **Apply** or **Apply/Next** button MUST be pressed after any edits are made for each record
  - All unique hierarchical levels are added to the GEO<ws#>.LVL info file automatically. The associated notes (if any) can be entered later when editing GEO<ws#>.LVL

LEVEL INFO FILE

Contents

- Detailed legend notes for hierarchical levels in the legend info file GEO<ws#>.LEG

Items in GEO<ws#>.LVL

Item Name	Width	Output	Type	Decimal	Description
LEVEL	80	80	C	-	Hierarchical level description (Eon, era, period, etc.) which acts as a relate item from the GEO<ws#>.LEG info file
ENTRY-1 ~ ENTRY-15	80	80	C	-	First to fifteenth sets of 80 characters of the detailed legend note for the defined hierarchical level

BILINGUAL MAP – If the language is set to Bilingual in the metadata; the following items are added after the above items in the info file

B-LEVEL	80	80	C	-	Hierarchical level description in the other official language (Eon, era, period, etc.) which acts as a relate item from the GEO<ws#>.LEG info file
B-ENTRY-1 ~ B-ENTRY-15	80	80	C	-	First to fifteenth sets of 80 characters of the detailed legend description for the defined geological feature in the other official language

Procedure

1. Run **Edit Level Info File** routine
2. Enter note for hierarchical level

Levels

- Automatically loaded when entering hierarchical information in the legend info file
- Formation names are to be included with the unit description and should not appear in the level hierarchy
- Do not included ranges of geological units that appear next to a group name (e.g. BIG BALD MOUNTAIN (Ab-Ac))

Descriptions

- ENTRY1~15 should contain the note for the hierarchical level
- GSC special character abbreviations should be used throughout all info files when applicable

Edit Level Info File routine

- In **Arc**, select **Edit Level Info File** from the **Tools** drop-down menu
  - The level info file will automatically be created if one does not exist
  - Will always appear sorted in alphabetical order based on the LEVEL item
  - If the language of the map is set to Bilingual in the meta data (one menu for each language will appear for data entry)
  - The **Go To...** button is used to select an existing LEVEL from the level info file
  - Clicking the right mouse button on any input field displays a list of accented characters that can be added to the string in the input field
  - Level description can be roughly cut & pasted, once **Apply** button is pressed, lines of text are automatically re-organized to be 80 characters each
  - The **Apply** button MUST be pressed after any edits are made for each record
  - If no hierarchical levels exist, DO NOT delete the GEO<ws#>.LVL info file or the filter report will produce an error

EXTERNAL TABLE INFO FILE

Contents

- Information about the items in each external table and what they represent

Items in GEO<ws#>.EXT

Item Name	Width	Output	Type	Decimal	Description
EXTITEM	80	80	C	-	Name of the external table item
EXTSOURCE	20	20	C	-	Name of the external table that is the source of the item
ENTRY-1 ~ ENTRY-5	80	80	C	-	First to fifth sets of 80 characters containing a brief description of what the item is representing

BILINGUAL MAP – If the language is set to Bilingual in the metadata; the following items are added after the above items in the info file

B-ENTRY-1 ~ B-ENTRY-1	80	80	C	-	First to fifth sets of 80 characters containing a brief description of what the item is representing in the other official language

Procedure

1. Run **Edit External Table Info File** routine
2. Press **Update** button to automatically load all item names from any external table
3. Enter external table item description

Descriptions

- ENTRY1~5 should contain a brief description of what the item represents
- If applicable, obtain a description from the author if author supplied any additional items
- If author is unavailable, include the description "Unknown"

Edit External Table Info File routine

- In **Arc**, select **Edit External Items Info File** from the **Tools** drop-down menu
  - The **Update** button will automatically load all item names from any external table, along with the source external table
  - If the language of the map is set to Bilingual in the meta data (one menu for each language will appear for data entry)
  - Clicking the right mouse button on any input field displays a list of accented characters that can be added to the string in the input field
  - Descriptions can be roughly cut & pasted, once **Apply** button is pressed, lines of text are automatically re-organized to be 80 characters each
  - The **Apply** button MUST be pressed after any edits are made for each record

SYMBOL INFO FILE

Contents

- Contains information about the symbology used for each geological CODE

Items in GEO<ws#>.SYM

Item Name	Width	Output	Type	Decimal	Description
CODE	16	16	C	-	Unique code that relates back to all geological covers
LINE	11	11	C	-	Number from <workspace>.LIN or GSC.LIN to plot arc features
LINECMY	20	20	C	-	CYMK value of the above LINE symbol
LINERGB	20	20	C	-	RGB value of the above LINE symbol
POINT	20	20	C	-	Number from <workspace>.MRK to plot point features
POINTCMY	20	20	C	-	CYMK value of the above POINT symbol
POINTRGB	20	20	C	-	RGB value of the above POINT symbol
OUTLINE	20	20	C	-	Number from <workspace>.LIN or GSC.LIN to plot the polygon outlines
OUTLINECMY	20	20	C	-	CYMK value of the above OUTLINE symbol
OUTLINERGB	20	20	C	-	RGB value of the above OUTLINE symbol
POLYGON	20	20	C	-	Number from <workspace>.SHD or GSC.SHD to plot the polygon colour
POLYGONCMY	20	20	C	-	CYMK value of the above POLYGON symbol
POLYGONRGB	20	20	C	-	RGB value of the above POLYGON symbol
PATTERN	20	20	C	-	Number from <workspace>.SHD or GSC_PTRN.SHD to plot the polygon pattern
PATTERNCMY	20	20	C	-	CYMK value of the above PATTERN symbol
PATTERNRGB	20	20	C	-	RGB value of the above PATTERN symbol

Procedure

1. Run **Edit Symbol Info File** routine
2. Press **Update** button to automatically load all CODE values from the legend info file
3. Press **Load Symbols** button to load the symbol values for all CODE values, from all geological covers
4. Enter symbology information

Item notes

- Symbol values equal to 0 and greater than 999 should not be entered
- CODE values can exist in three forms; point, line or polygon. Symbol information MUST be entered for each case
- LINE is for an arc, POINT is for a point, OUTLINE is for the arc of a polygon, POLYGON is for the fill of a polygon, and PATTERN is for a pattern fill

Edit Symbol Info File routine

- In **Arc**, select **Edit Symbol Info File** from the **Tools** drop-down menu
  - The **Update** button will automatically load all CODE values from the legend info file
  - The **Load Symbols** button will load the symbol values for all CODE values, from all geological covers
  - The **Go To...** button is used to select an existing CODE from the symbol info file
  - Clicking the right mouse button on the CMYK or RGB input field displays a list of colour choices
  - The **Apply** button MUST be pressed after any edits are made for each record

BOR COVER

Topology

- Arc
- Polygon

Contents

- ALL arcs, polygons and annotation for the map border and UTM grids

Items in BOR<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
BOR< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
BOR< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
BOR-SYM	4	4	I		Number from <workspace>.SHD or GSC.SHD to plot the polygon colour

Items in BOR<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
BOR< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BOR< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
BOR-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc

Procedure

1. Run **Create Map Border** routine
2. Check black and white graticules, flip if necessary

Item notes

- BOR-SYM is automatically assigned a value according to GSC Design Specifications
- Alternate values can be assigned manually

Black and White Graticules

- Automatically created and coded by **Create Map Border** routine
- Black and White polygon fills assigned may be in wrong order, use **Flip** command to toggle black and white polygons

Create Map Border routine

- In **Arc**, select **Create Map Border** from the **Tools** drop-down menu
  - Creates a map border according to GSC Design Specs in latitude and longitude coordinates (UTM border N/A)
  - Creates a neatline cover (NTL) if none exists
  - Projection of map border is set to the output portion of an existing projection file
  - Option to include grid lines across map at tick intervals
  - Option to load bounding coordinates into metadata information

NTL COVER

Topology

- Arc
- Polygon

Contents

- The innermost arc or neatline of the map border

Items in NTL<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
NTL< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
NTL< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
NTL-SYM	4	4	I		Number from <workspace>.SHD or GSC.SHD to plot the polygon colour

Items in NTL<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
NTL< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
NTL< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
NTL-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc

Procedure

1. Created from **Create Map Border** routine
2. Assign appropriate value to NTL-SYM if cover is used for applications

Notes

- Cover can be used to check datasets from author for accurate geo-referencing
- Cover can be used in location map and/or NTS Reference Map

NTS COVER

Topology

- Arc
- Polygon

Contents

- ALL arcs, polygons and annotation for the NTS index map

Items in NTL<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
NTS< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
NTS< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
NTS-SYM	4	4	I	-	Number from <workspace>.SHD or GSC.SHD to plot the polygon colour

Items in NTL<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
NTS< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
NTS< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
NTS-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc

Procedure

1. Run **Create NTS Reference Map** routine
2. Add extra cover information such as neatline or shoreline arcs (if required)
3. Add any necessary annotation
4. Build/Clean arc and polygon topology

MSC COVER

Topology

- Arc
- Point

Contents

- ALL miscellaneous arcs or points for hardcopy purposes only (e.g. leader lines, markers for symbolizing lines, etc.)

Items in MSC<ws#>.PAT (Point Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item equal to zero (Do not modify)
PERIMETER	4	12	F	-	Arc/Info item equal to zero (Do not modify)
MSC< WS #>#	4	5	B	-	Arc/Info item with a point identification number (Do not modify)
MSC< WS #>-ID	4	5	B	-	Arc/Info item with a point identification number (Do not modify)
MSC-SYM	4	4	I	-	Number from <workspace>.MRK to plot the point
MSC-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Items in MSC<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
MSC< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
MSC< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
MSC-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
MSC-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Procedure

1. Import miscellaneous data that is used for hardcopy purposes only
2. Add standard CDS items
3. Edit arcs and points
4. Check and Drop non-standard CDS items

MSP COVER

Topology

- Arc
- Polygon

Contents

- ALL miscellaneous polygons for hardcopy purposes only (e.g. chronology boxes, etc.)

Items in MSP<ws#>.PAT (Polygon Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
AREA	4	12	F	3	Arc/Info item containing the polygon area in map units (Do not modify)
PERIMETER	4	12	F	3	Arc/Info item containing the polygon perimeter in map units (Do not modify)
MSP< WS #>#	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
MSP< WS #>-ID	4	5	B	-	Arc/Info item with a polygon identification number (Do not modify)
MSP-SYM	4	4	I	-	Number from <workspace>.SHD or GSC.SHD to plot the polygon colour
MSP-PAT	4	4	I	-	Number from <workspace>.SHD or GSC_PTRN.SHD to plot the polygon pattern
MSP-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Items in MSP<ws#>.AAT (Arc Attribute Table)

Item Name	Width	Output	Type	Decimal	Description
FNODE#	4	5	B	-	Arc/Info item with the starting node number of an arc (Do not modify)
TNODE#	4	5	B	-	Arc/Info item with the ending node number of an arc (Do not modify)
LPOLY#	4	5	B	-	Arc/Info item with the polygon number to the left of an arc (Do not modify)
RPOLY#	4	5	B	-	Arc/Info item with the polygon number to the right of an arc (Do not modify)
LENGTH	4	12	F	3	Arc/Info item containing the length of an arc in map units (Do not modify)
MSP< WS #>#	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
MSP< WS #>-ID	4	5	B	-	Arc/Info item with an arc identification number (Do not modify)
MSP-SYM	4	4	I	-	Number from <workspace>.LIN or GSC.LIN to plot the arc
MSP-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Procedure

1. Import miscellaneous data that is used for hardcopy purposes only
2. Add standard CDS items
3. Edit arcs and labels
4. Check and Drop non-standard CDS items

TXT COVER

Topology

- Annotation

Contents

- ALL annotation (except border and NTS Index annotation) that appears on the map face

Items in TXT<ws#>.TATTEXT (Text Attribute Table for subclass TEXT)

Item Name	Width	Output	Type	Decimal	Description
TXT< WS #>#	4	5	B	-	Arc/Info item with a text identification number (Do not modify)
TXT< WS #>-ID	4	5	B	-	Arc/Info item with a text identification number (Do not modify)
X	8	18	F	5	X coordinate of the annotation's origin
Y	8	18	F	5	Y coordinate of the annotation's origin
OFFSETX	8	18	F	5	X offset distance between the annotation and a specific feature
OFFSETY	8	18	F	5	Y offset distance between the annotation and a specific feature
HEIGHT	8	18	F	5	Height of the annotation
SYMBOL	4	5	B	-	Number from <workspace>.TXT or GSC.TXT to plot the annotation
LEVEL	4	5	B	-	Level that the annotation is stored
TEXT	200	200	C	-	Text string applied to the entry
TXT-CLASS	13	13	C	-	Classification of the annotation
TXT-MISC	16	16	C	-	Miscellaneous code for use by cartographers (Not transferred to warehouse)

Procedure

1. Create/import annotation in one or more covers
2. Arrange annotation into subclasses using standardized names (listed below)
3. Run **Process Annotation** routine
4. If further editing is required, Run **Unprocess Annotation** routine before making changes, then Run **Process Annotation** routine again

Item notes

- X, Y, OFFSETX, OFFSETY, HEIGHT, SYMBOL, LEVEL, and TEXT is automatically assigned by the **Addtext** command during the **Process Annotation** routine
- TXT-MISC can be used to toggle annotation on or off during plotting of insets and main map
- TXT-CLASS should be one of the following (If a required category is not listed, contact digital standards manager):

Feature Category	Subclass name or TXT-CLASS value
Drainage text	HYDROLOGY
Base text (towns, mountains, islands, highway numbers, etc.)	CULTURE
Dip values	DIPNUMBER
Geological reference letter	UNITLETTER
Age dates	CHRONOLOGY
Local reference letter	OCCURRENCE
Age of striae	STRIAEAGE
Contour elevation or spot height	CONTOURNUMBER
Figure number	FIGNUMBER
Cross-section number/letters	CROSSSECTION
Lithological text	LITHOLOGY
Mineral or element text	MINERAL
Text associated with a geological feature (IF NOT ANY OF ABOVE)	STRUCTURE
Text associated with sample sites or observations (IF NOT ANY OF ABOVE)	OBSERVATION
Notes or captions that appear on the map	NOTES

Process Annotation routine

- In **Arc**, select **Process Annotation** from the **Tools** drop-down menu
  - Never process annotation on the final TXT cover that has already been processed
  - Combines all annotation subclasses from one or more covers containing annotation to a single cover called TXT<ws#>
  - All annotation is stored in a single subclass called TEXT
  - Original subclass names are stored in the item TXT-CLASS

Unprocess Annotation routine

- In **Arc**, select **Unprocess Annotation** from the **Tools** drop-down menu
  - Re-establishes all annotation subclasses in the cover TEX<ws#> so further edits can be made

APPENDIX OF CHANGES

Changes from CDS 3.1 to 3.2

- Creation of a new annotation subclass named NOTES in the TXT cover. This subclass is to include notes or captions that appear on the map.
- Two new items created in the GEP polygon attribute table, GEP-ANNOn and GEP-CLASSn. These items follow the same order and rules as in the PNT and LIN cover.