

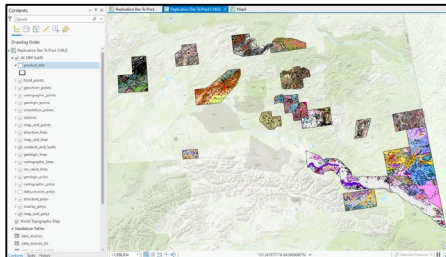
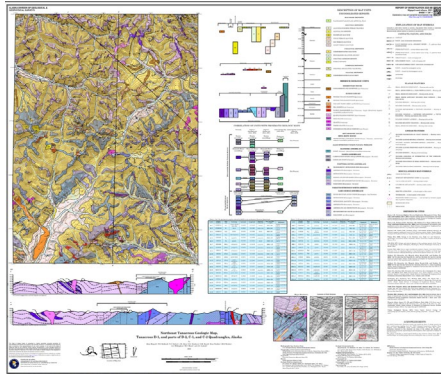
AK GeMS Geologic Mapping System

The Alaska Division of Geological and Geophysical Surveys (DGGS) produces and publishes numerous geologic maps each year.

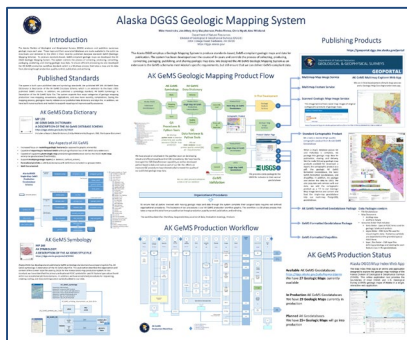
To produce standards-based geologic maps we developed the

AK DGGS Geologic Mapping System

This system controls the process of:
collecting, producing, converting, packaging, publishing, and sharing
geologic map data.



Poster View of System



<https://doi.org/10.14509/30864>



Alaska Division of Geological & Geophysical Surveys
3354 College Rd, Fairbanks AK 99709

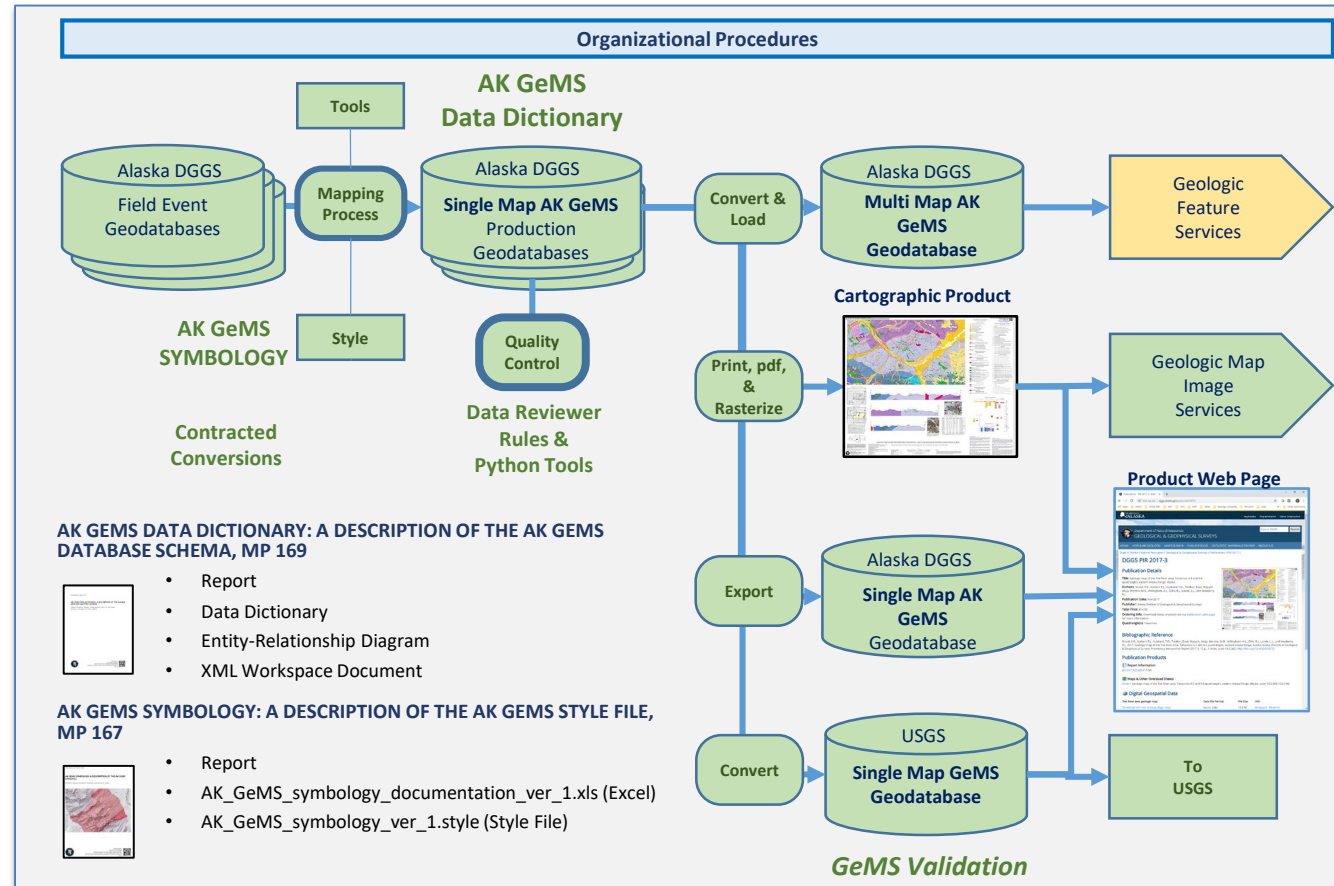


GIS Day Celebration
Nov 14th & 15th 2022

AK GeMS Geologic Mapping System

AK GeMS Recent Efforts

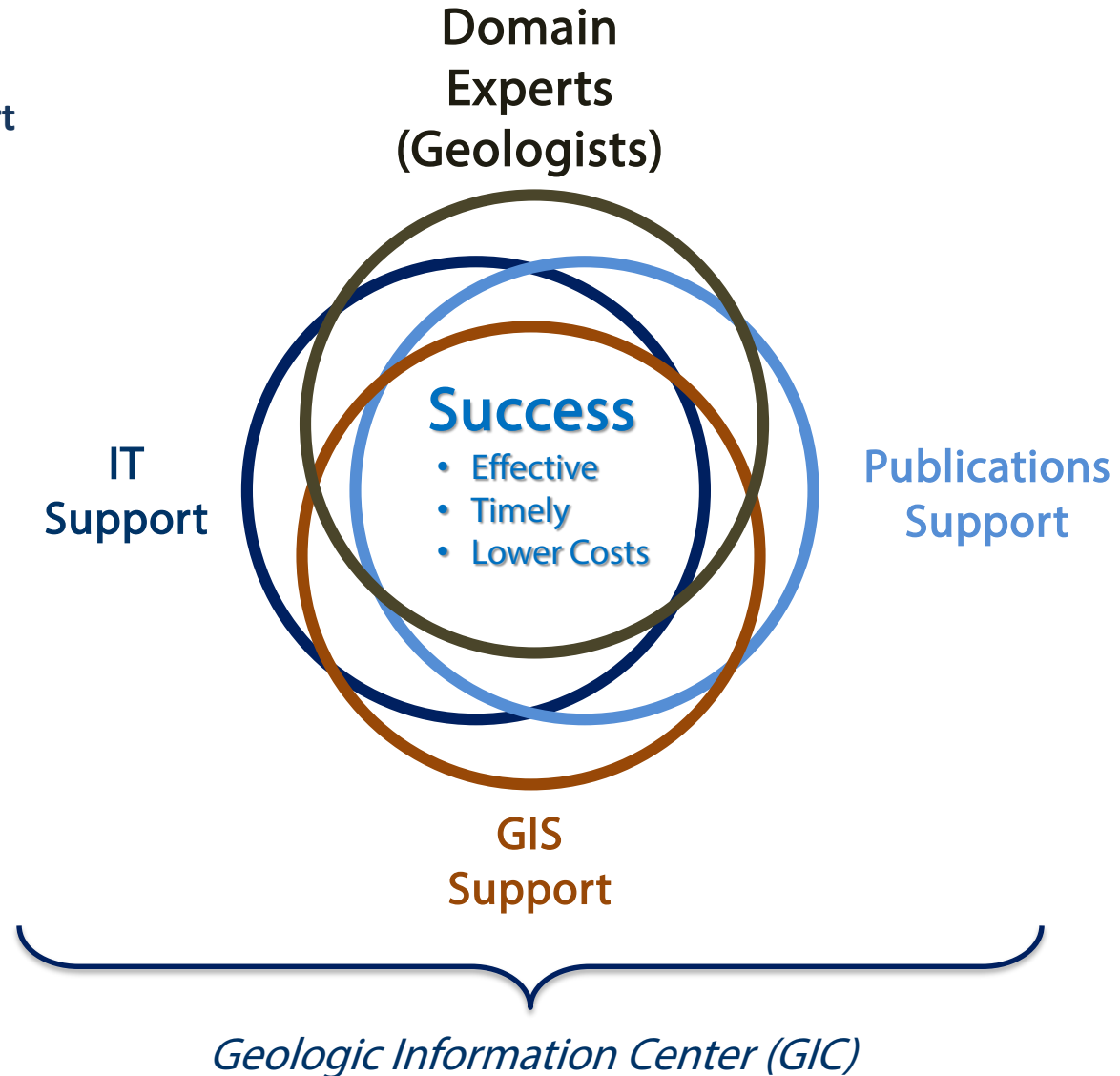
- Developed a **comprehensive AK GeMS Production Workflow & Task List**
- Developed a semi-automated **quality control process**
- Published **40+ AK GeMS Databases**
- Populating our **multi-map geodatabase** and began development of multi-map services and web apps
- Working on **Version 2.0** of Published Standards



AK GeMS Geologic Mapping System

Integrated Team Is Essential!

- **Dedicated and Embedded IT support** at the Division Level is Absolutely Critical
- **Regularly scheduled coordination meetings:**
 - Weekly GEDI meetings (Geologic Data Inquiry)
 - Bi-weekly Division Publications Meetings
 - Weekly GeMS Multimap Meetings
 - Individual Product Production Status Meetings
 - Other Spin Off Meetings
- **Emphasis on Training:**
 - Weekly GIS Tips & Tricks
 - Illustrator sessions
 - ESRI Training emphasis
 - One-on-one training and support from IT, GIS, & Publications.



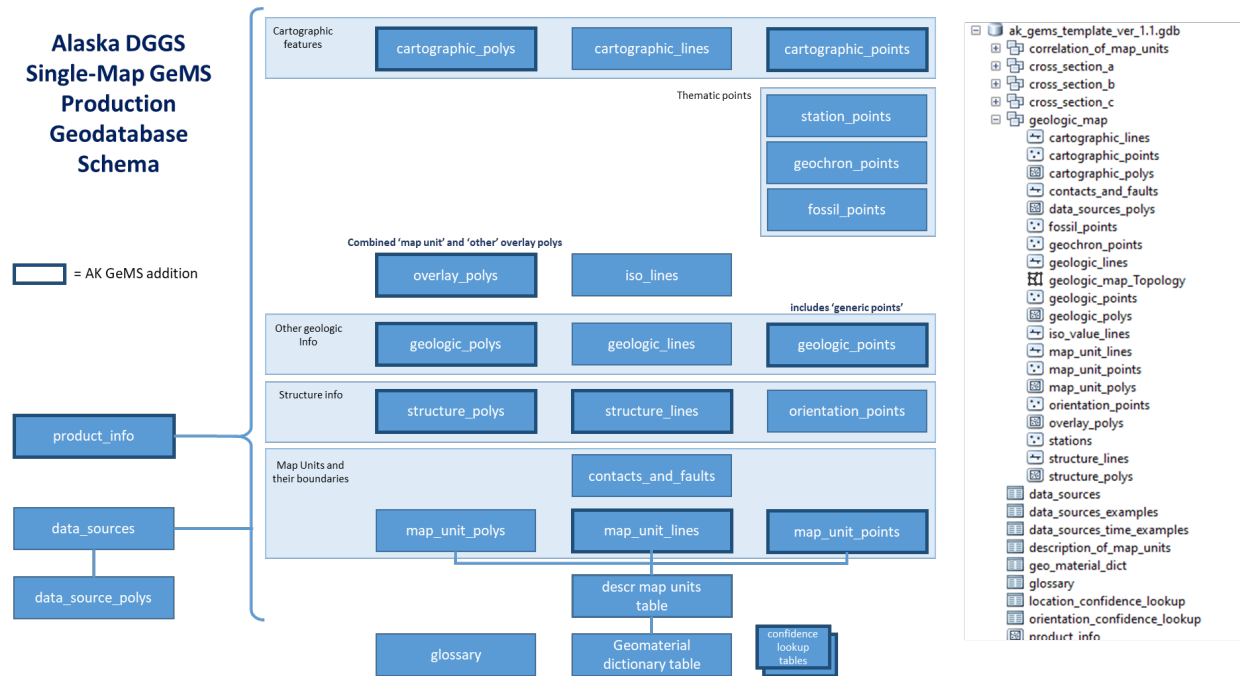
AK GeMS Data Dictionary

Key Aspects

- Increased focus on **modeling geologic features**
- Capable of **exporting to National GeMS**.
- Capable of supporting **both single-map** geodatabases as well as the DGGs **multi-map** enterprise geodatabase (PostgreSQL).
- Support **multiple geologic layers** (i.e. bedrock, surficial, others).
- **Formalized pick lists** as attribute domains.
 - Over 75 domains
 - Over 400 controlled & defined values
- **Well Documented**.

Version 2.0 scheduled for 1 Apr 2023

AK GeMS Schema



AK GeMS Data Dictionary: A description of the AK GeMS database schema, MP 170.

<https://dgg.alaska.gov/pubs/id/30669>

Example: map_unit_polys Documentation from Data Dictionary

Field	When	Who	How	Why	default value	Domain	data type
OBJECTID	on the fly	esri	calculated	software			OBJECTID
Shape	on the fly	esri	calculated	software			Geomtery
map_unit_polys_id	pub prep	pub data lead	calculated				string: 50
layer	interpretation	geologist	calculated		0		Long Integer
category	pub prep	pub data lead	calculated			map_unit_polys_category_dom	string: 50
type	interpretation	geologist				map_unit_polys_type_dom	string: 254
symbol	pub prep	variable	calculated				string: 254
label	pub prep	pub data lead	calculated				string: 50
map_unit	interpretation	geologist	manual				string: 10
identity_confidence	interpretation	geologist	manual			identity_confidence_dom	string: 50
is_concealed	interpretation	geologist	manual			is_concealed_dom	string: 10
modifier	interpretation	geologist	manual	allows special characteristic of a unit, withou making a new unit in the DMU		no domain, but suggested values of: hornfels, migmatite, mylonite, outcrop, shear, non, other, unspecified, unknown	
notes	interpretation	geologist	manual				string: 4096
data_sources_method	interpretation	geologist	manual			data_sources_method_dom	Long Integer
data_sources_id	interpretation	geologist	manual				string: 50
product_id	pub prep	pub data lead	calculated				string: 50
draw_policy	interpretation	Geologist	manual	Controls if the feature is drawn on the map product	yes	draw_policy_dom	string: 10
distribution_policy	pub prep	pub data lead	manual		1	distribution_policy_dom	Long Integer

Code Description

- 100 map unit
- 997 unprovided
- 998 unknown
- 999 other

Code Description

- 100 map unit, generic
- 101 map unit, dike
- 102 map unit, key bed
- 997 unprovided
- 998 unknown
- 999 other

Code Description

- 1 certain
- 2 probable
- 3 questionable
- 997 unprovided
- 998 unknown

Code Description

- 0 no
- 1 yes
- 2 thinly
- 998 unprovided
- 999 unknown

Code Description

- 1 Feature unmodified from source material
- 2 Feature modified from source(s), primarily field mapping
- 3 Feature modified from source(s), primarily basemap data
- 4 Feature modified from source(s), primarily geophysical data
- 5 Feature modified from source(s)
- 6 New feature based primarily on field mapping
- 7 New feature based primarily on basemap data
- 8 New feature based primarily on geophysical data
- 9 New feature based on source(s)
- 997 unprovided
- 998 unknown
- 999 other

Version 2.0 scheduled for 1 Apr 2023

AK GeMS Data Dictionary: A description of the AK GeMS database schema, MP 170.

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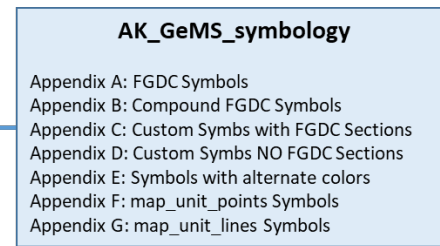
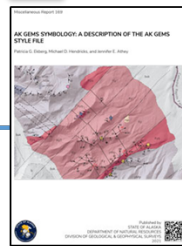
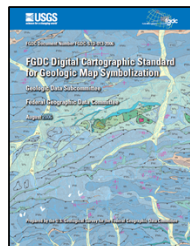
AK GeMS Symbology

- Alaska DGGs has developed and **published a GeMS symbology standard** and accompanying **style file**
- Describes the organization and content of the style file** used by DGGs for the Alaska GeMS map production system.
- Established procedures** for requesting, creating, coding, and documenting **custom symbols** added to our style.

AK GeMS Symbology Architecture

AK GEMS SYMBOLOGY: A DESCRIPTION OF THE AK GEMS STYLE FILE, MP

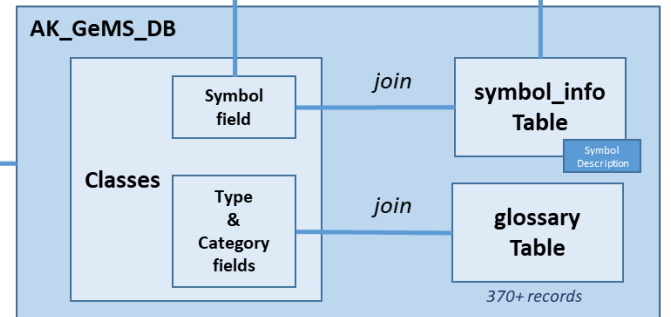
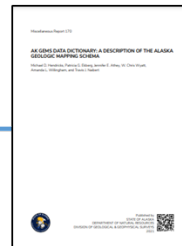
- Report
- AK_GeMS_symbology_documentation_ver_1.xls (Excel)
- AK_GeMS_symbology_ver_1.style (Style File)



AK_GeMS_symbols_ver_1.style



AK GEMS DATA DICTIONARY: A DESCRIPTION OF THE AK GEMS DATABASE SCHEMA, MP 169



Version 2.0 scheduled for 1 Apr 2023

AK GeMS symbology: A description of the AK GeMS style file, MP 169.

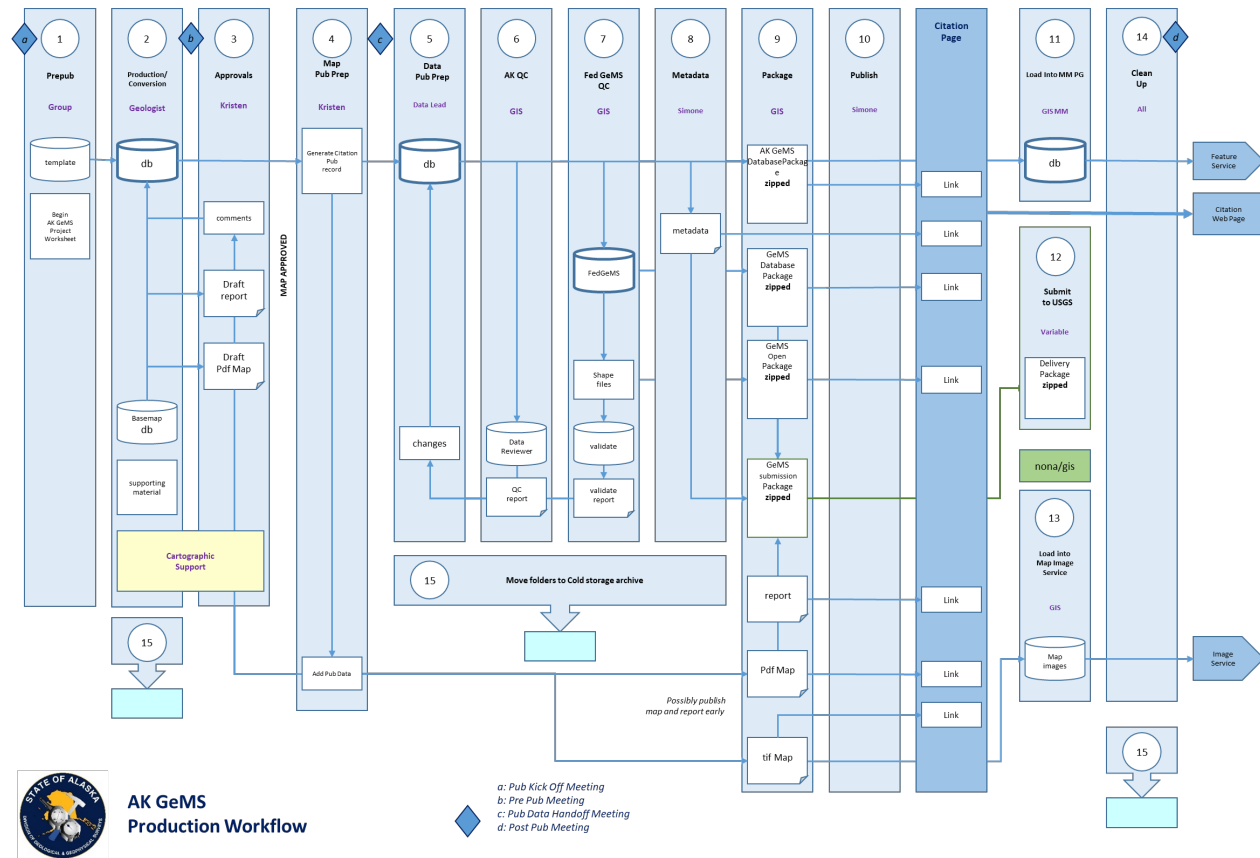
<https://dggg.alaska.gov/pubs/id/30584>

Well-defined organizational procedures are critical.

AK GeMS Production Workflow

Key Aspects

- The backbone of our procedures is our **AK GeMS production workflow graphic**.
- This workflow is a **16-phase process** that takes a map and its data from pre-publication through production, quality control, publication, and archiving.
- The workflow identifies:
 - Order**
 - Responsibilities**
 - Location of data**
 - Production meetings**
 - Products**



AK GeMS QA/QC focused workflow phases

QA (*don't make mistakes*)

- Phase 2: Production
- Phases 5: Data Prep

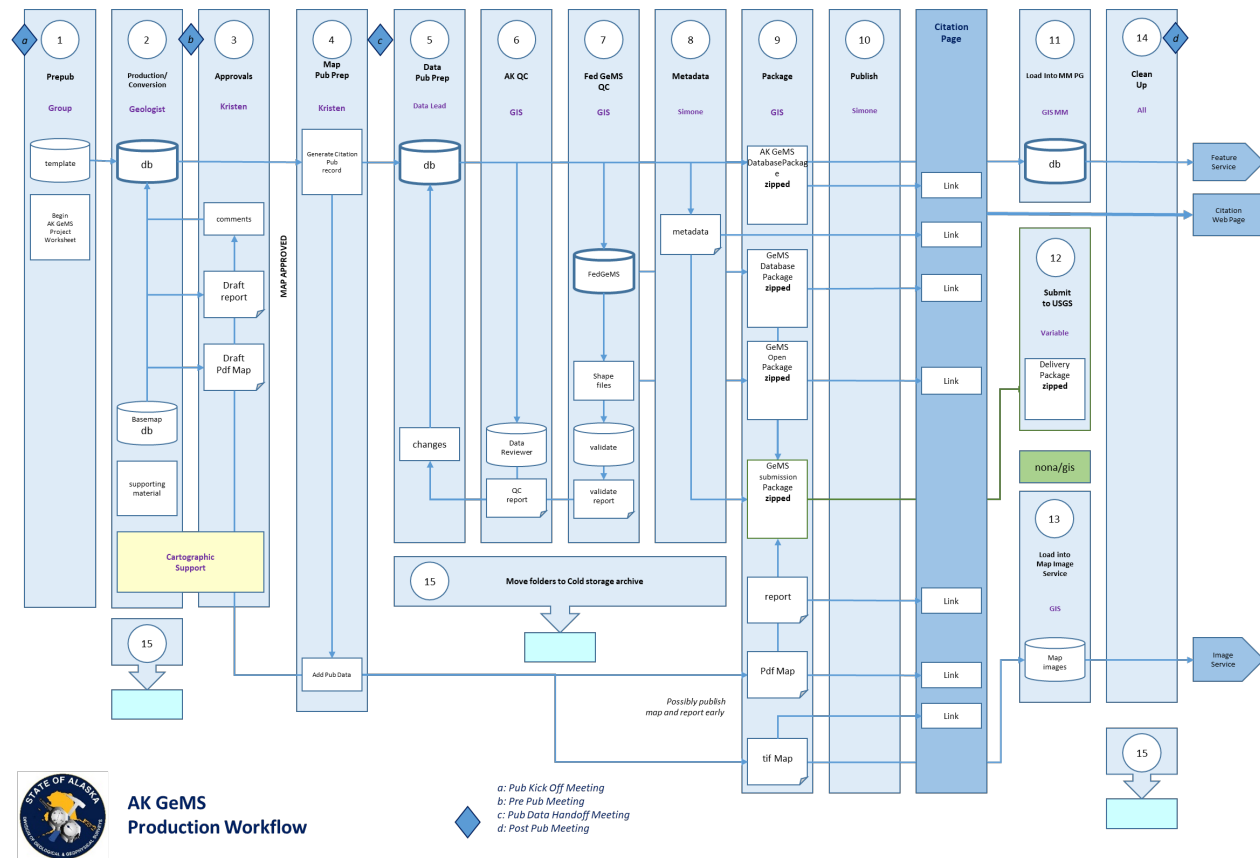
QC (*find mistakes*)

- Phase 3: Approvals
- Phases 6-7: GeMS QC

QA/QC Accomplished with:

- Data Reviewer
- Python Scripts
- Implementing Attribute Rules

AK GeMS Production Workflow



Currently leveraging ESRI advantage Program credits to leverage Tasks and upgrade data reviewer processes to ArcPro 3.0



Using MS Teams Planner App to track map production through the AK GeMS Production Workflow

Reviewed during
Weekly GEDI meetings
(*Geologic Data Inquiry*)
&
Bi-weekly Division
Publications Meetings

The screenshot displays the MS Teams Planner interface for the AK GeMS production workflow. At the top, a horizontal timeline shows 14 numbered steps, each with a responsible team member:

- 1. Prepub (Group)
- 2. Production/Conversion (Geologist)
- 3. Approvals (Kristen)
- 4. Map Pub Prep (Kristen)
- 5. Data Pub Prep (Data Lead)
- 6. AK QC (GIS)
- 7. Fed GeMS QC (GIS)
- 8. Metadata (Simone)
- 9. Package (GIS)
- 10. Publish (Simone)
- 11. Load into MM PG (GIS/MS)
- 14. Clean Up (All)

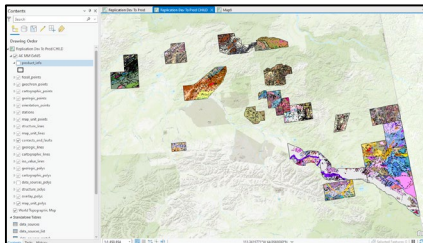
Below the timeline, the Planner board is organized into columns corresponding to these steps. Each column contains a list of tasks with details such as due dates, status (e.g., 'Grant Deliverable', 'Multi-layer'), and progress indicators. A detailed view of a task is shown in a pop-up window on the right, titled 'GeMS Map in Production' for 'caribou_creek'. This view includes a checklist, attachments (e.g., 'LesgerRRR-2006.xml'), and comments from team members like Simone and Michael D (DNR).

Geologic Map Index Web App

<https://maps.dggs.alaska.gov/mapindex>

AK GeMS Availability

- Available: 43 AK GeMS Map Database currently available for download
- In Production: 20 Geologic Maps currently in production
- Planned: We have 40+ Geologic Maps will go into production this next year
- Populating our multi-map postgreSQL geodatabase and begun development of multi-map services and web apps



For additional Information & related Presentations and Publications

<https://dggs.alaska.gov/pubs/project/1607>