



Alaska DGGGS Geologic Mapping System

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

Introduction

The Alaska Division of Geological and Geophysical Surveys (DGGGS) produces and publishes numerous geologic maps each year. These maps and their associated databases are made available to the public as downloads and delivered to the USGS in their recently published database standard, GeMS (Geologic Mapping Schema). To produce standards-based, GeMS-compliant geologic maps we developed the AK DGGGS Geologic Mapping System. The system controls the process of collecting, producing, converting, packaging, publishing, and sharing geologic map data. To ensure efficient processing we also developed the AK GeMS production workflow standard, which is a 16-phase process that takes a map and its data from planning through production, quality control, publication, and archiving.

Publishing Products

<https://geoportal.dgggs.dnr.alaska.gov/portal>

Multimap Map Image Services

AK GeMS Multimap Explorer Web App

We are in development of multi-map services and a Geologic Map Data Exploration web app.

File Geodatabase Export Snapshots

Scanned Geologic Map Image Service

This Image Service hosts raster map images of original cartographic products of geologic maps.

<https://geoportal.dgggs.dnr.alaska.gov/portal/home/item.html?id=3240b5b3f9d34d3582258b1ec684f1e7>

Published Standards

The system is built upon published data and symbology standards. We recently published version 2 of our AK GeMS Data Dictionary: A description of the AK GeMS Database Schema, which is an extension to the basic USGS published GeMS schema. In addition, we published version 2 of our symbology standard, AK GeMS Symbology: A Description of the AK GeMS Style File. The system supports four major categories of geologic mapping production: new mapping, conversions, digitizations, and compilations. During the mapping process, geologists heavily reference our published data dictionary and style file. In addition, we have built numerous tools and models to support mapping and improve quality assurance.

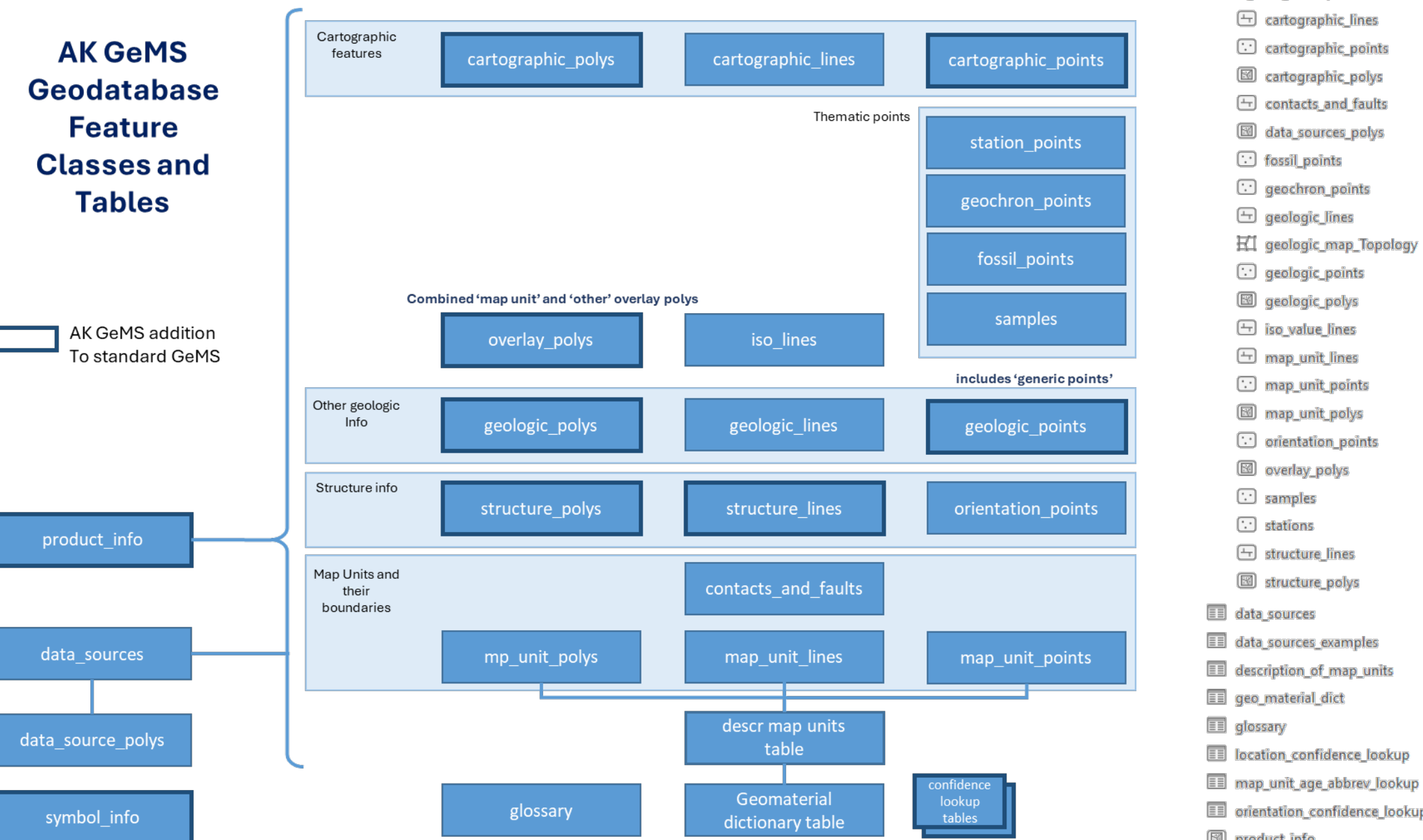
AK GeMS Data Dictionary

MP 170 v.2
AK GEMS DATA DICTIONARY:
A DESCRIPTION OF THE AK GeMS DATABASE SCHEMA
<https://dgggs.alaska.gov/pubs/id/31172>

Includes a Report, Data Dictionary, Entity-Relationship Diagram, XML Workspace Document, and Schema Report in multiple formats

Key Aspects of AK GeMS

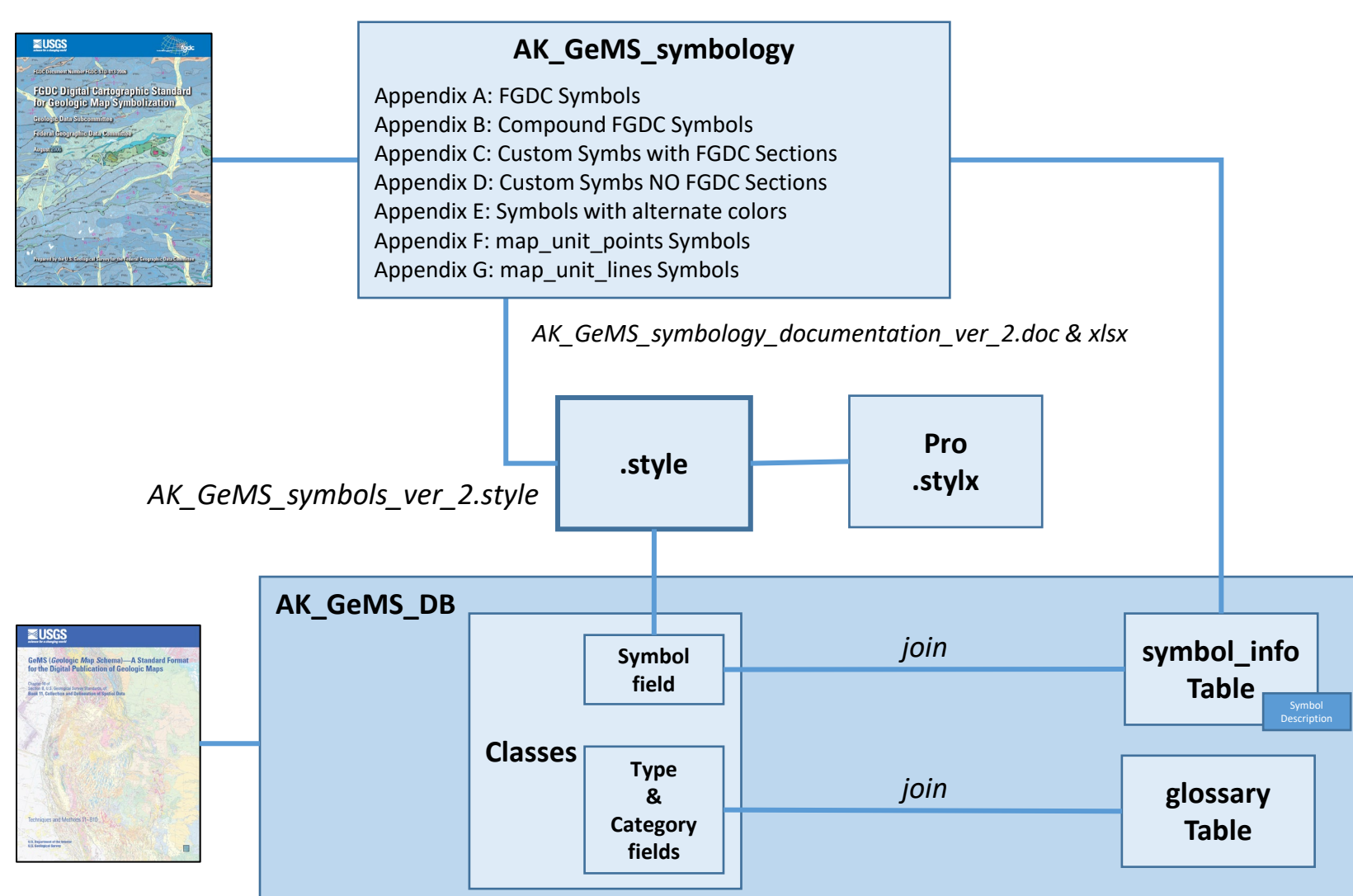
- Increased focus on **modeling geologic features** (as opposed to graphic elements).
- Capable of **exporting to National GeMS** without signification loss of AK GeMS data extensions.
- Capable of supporting **both single-map** production geodatabases as well as the DGGGS **multi-map** enterprise geodatabase (PostgreSQL).
- Support **multiple geologic layers** (i.e. bedrock, surficial, others).
- Formalized pick lists** as attribute domains with definitions included in a glossary table.
- Well Documented.**



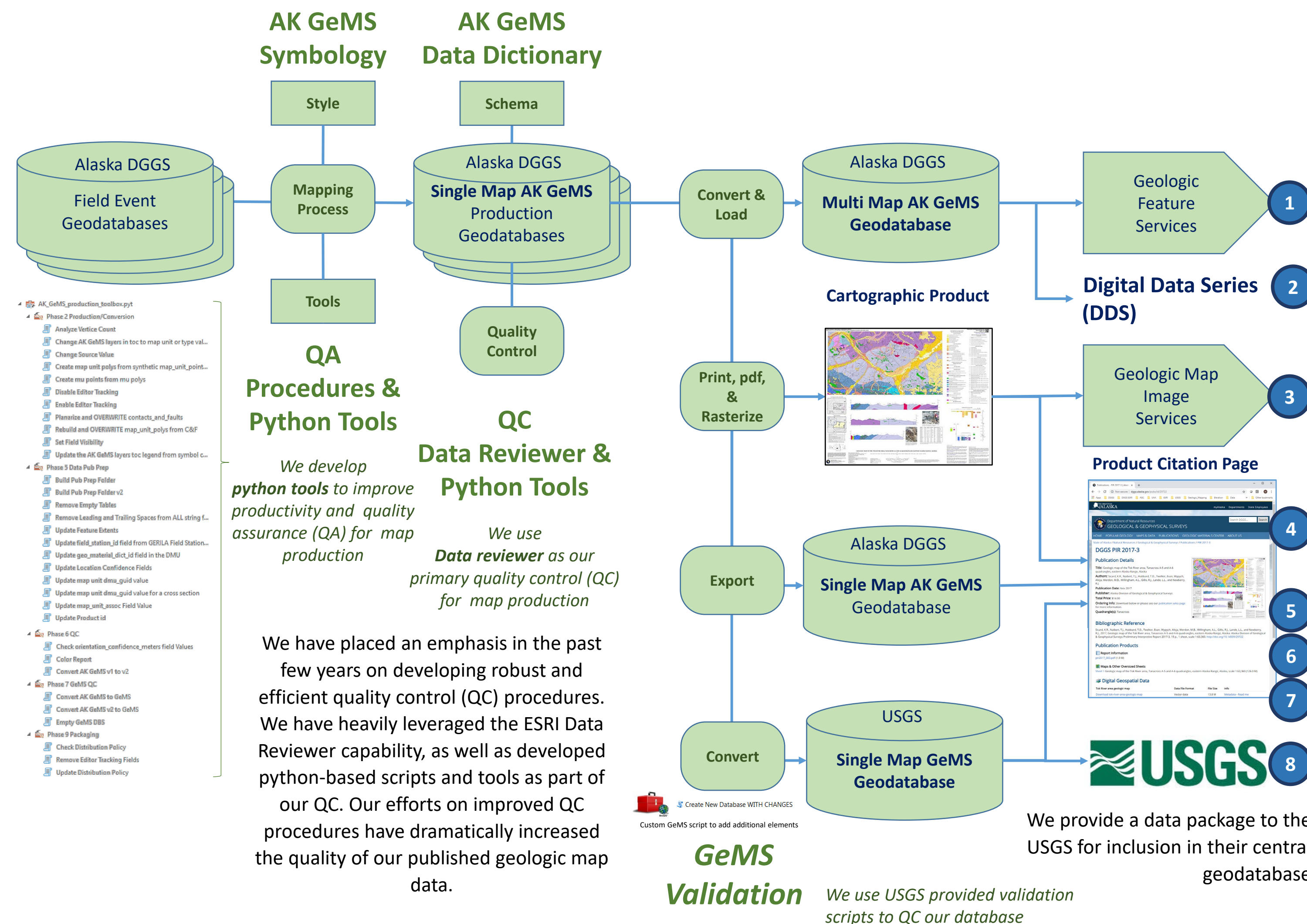
AK GeMS Symbology

MP 169 v. 2
AK SYMBOLOGY:
A DESCRIPTION OF THE AK GEMS STYLE FILE
<https://dgggs.alaska.gov/pubs/id/31101>

Alaska DGGGS has developed and published a GeMS symbology standard and accompanying style file, AK GeMS symbology: A description of the AK GeMS style file. This publication describes the organization and content of the current style file used by DGGGS for the Alaska GeMS map production system. In this standard, we have identified the primary and optional FGDC symbols for specific feature type values found within our established attribute domains. In addition, we have established procedures for requesting, creating, coding, and documenting custom symbols added to our style.



AK GeMS Geologic Mapping Product Flow

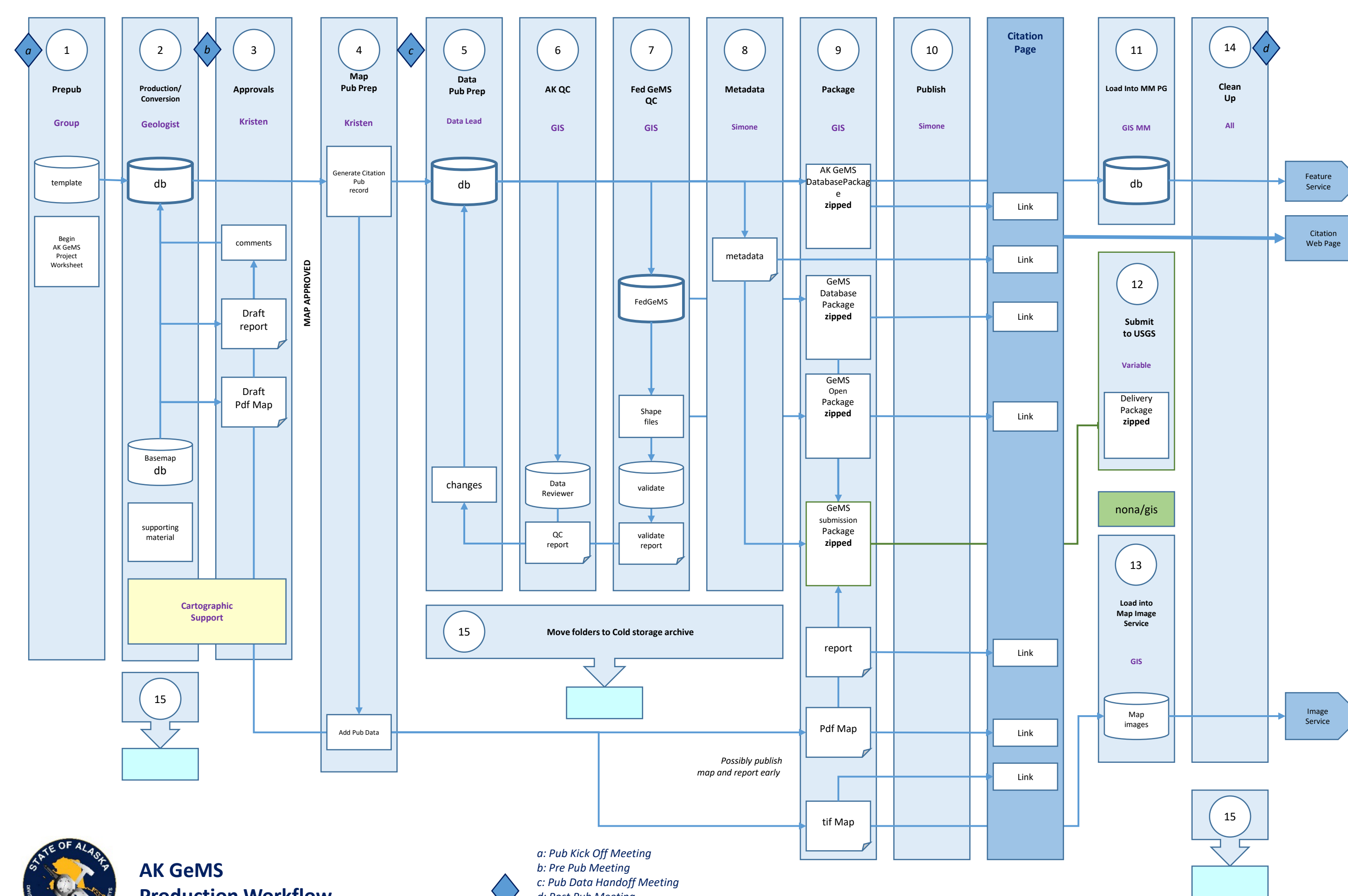


Organizational Procedures

To ensure that all parties involved with moving geologic maps and data through the system complete their assigned tasks requires well-defined organizational procedures. 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: Workflow, Responsibilities, Location of data, Production meetings, Products

AK GeMS Production Workflow



AK GeMS Production Workflow

a: Pub Kick Off Meeting
b: Pre Pub Meeting
c: Pub Data Handoff Meeting
d: Post Pub Meeting

AK GeMS Production Status

As of May 2025

Available AK GeMS Geodatabases
<https://dgggs.alaska.gov/pubs/keyword/gems-db-l3-compliant>
We have **72 Geologic Maps** currently available

In Production AK GeMS Geodatabases
We have **32 Geologic Maps** currently in production

Planned AK Geodatabases
We have **35+ Geologic Maps** will go into production

Alaska DGGGS Map Index Web App

The Map Index Web App is an online web application designed to explore the geologic map holdings of the Alaska Division of Geological & Geophysical Surveys (DGGGS). This online exploration tool provides the boundaries of most DGGGS and U.S. Geological Survey (USGS) geologic maps of Alaska in a single, interactive web application.

