DIGITAL MAPPING TECHNIQUES 2022

The following was presented at DMT'22
May 22 - 25, 2022

The contents of this document are provisional

See Presentations and Proceedings
from the DMT Meetings (1997-2022)

http://ngmdb.usgs.gov/info/dmt/

Automating GeMS Submissions from an Enterprise Geodatabase

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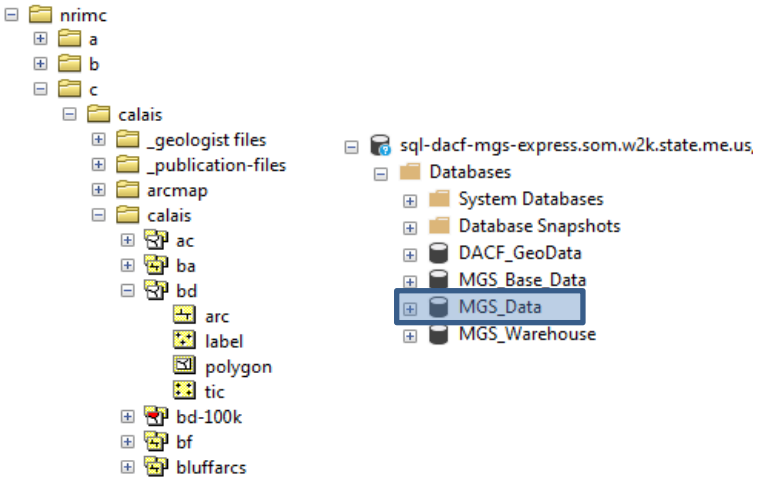
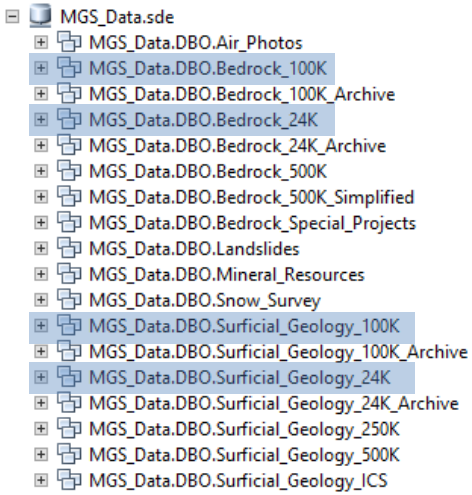
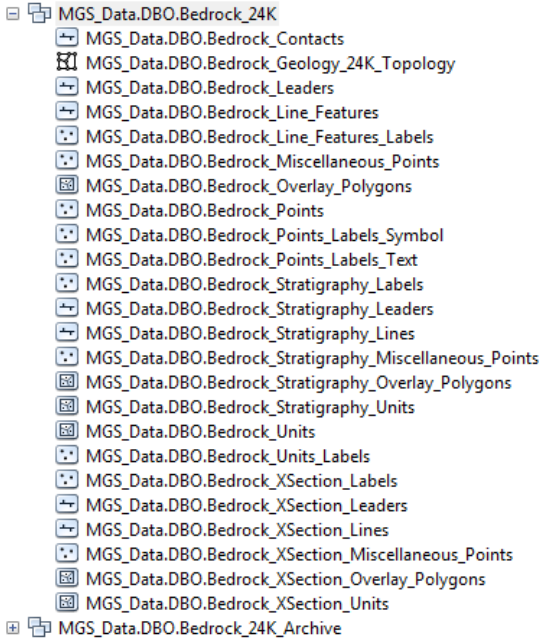
How Did We Get Here?

- 1996: Single quadrangle-based mapping with ArcInfo Coverages
- 2014: SQL Server Express Enterprise Geodatabase for multi-quadrangle, multi-scale, multi-map type
- 2017: NCGMP09
- 2018: MGS - GeMS gap analysis
- 2020: StateMap Supplemental project - GeMS workflow development

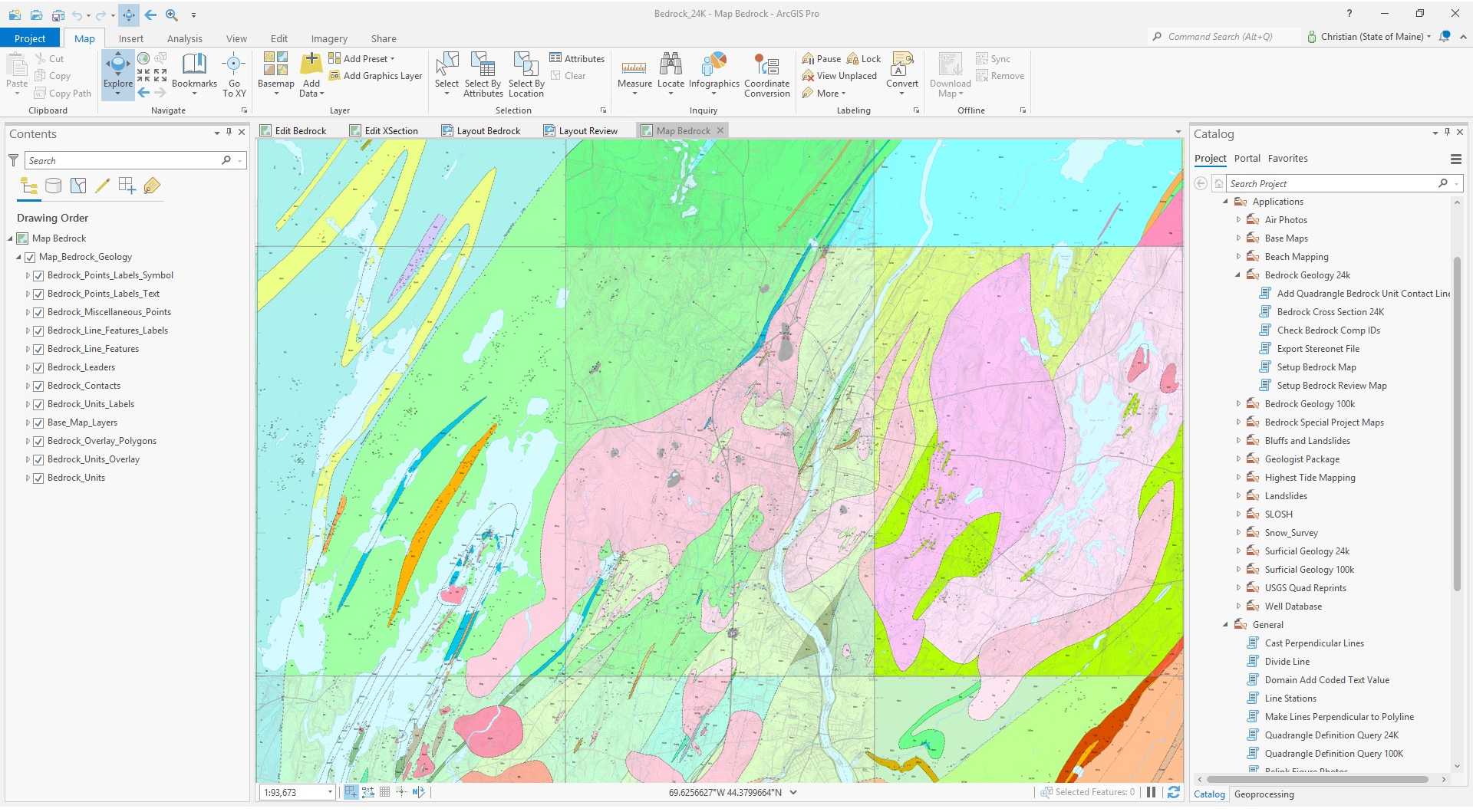






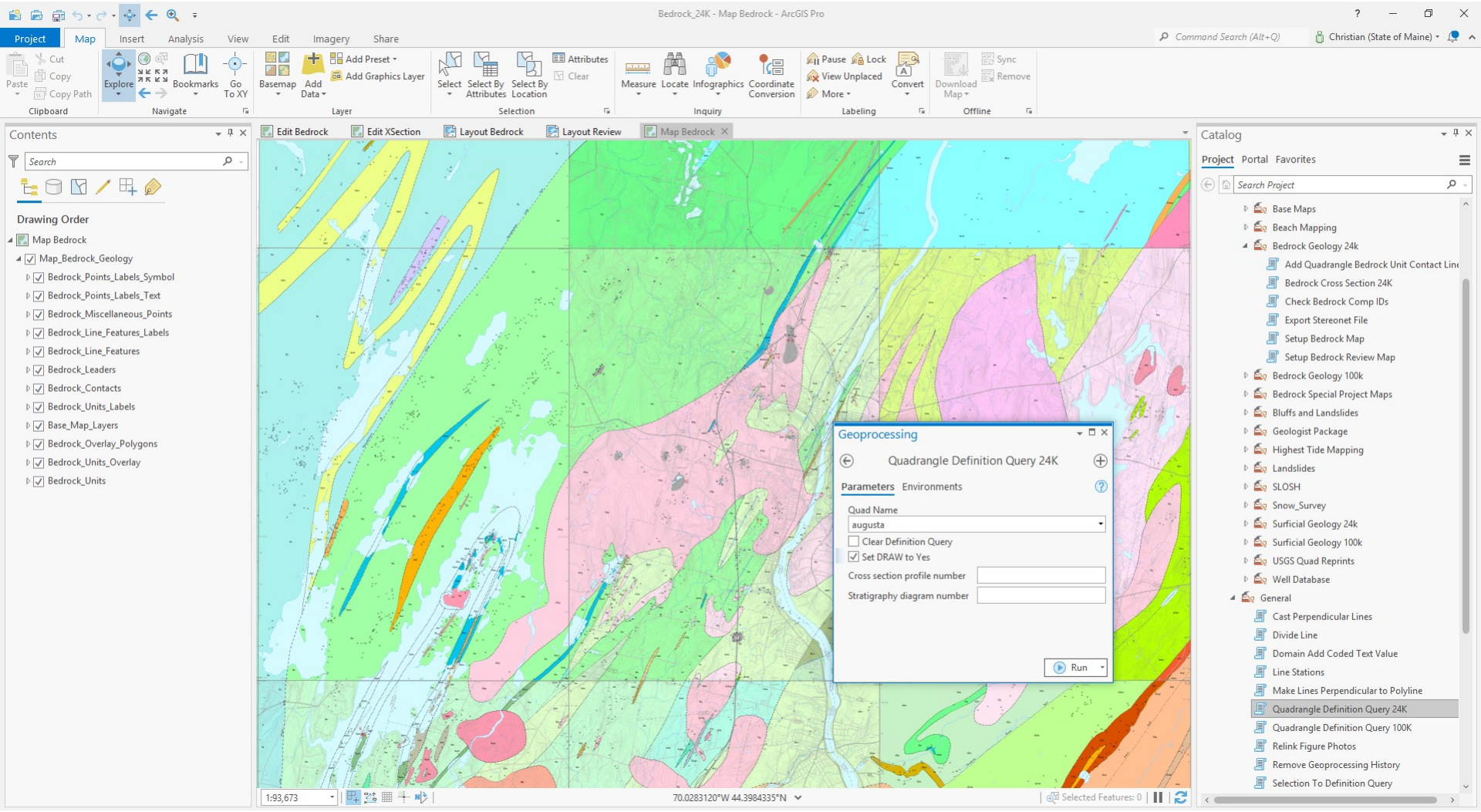
Working with an Enterprise Geodatabase in GIS

Features for all quads by map type and scale are stored in each feature class



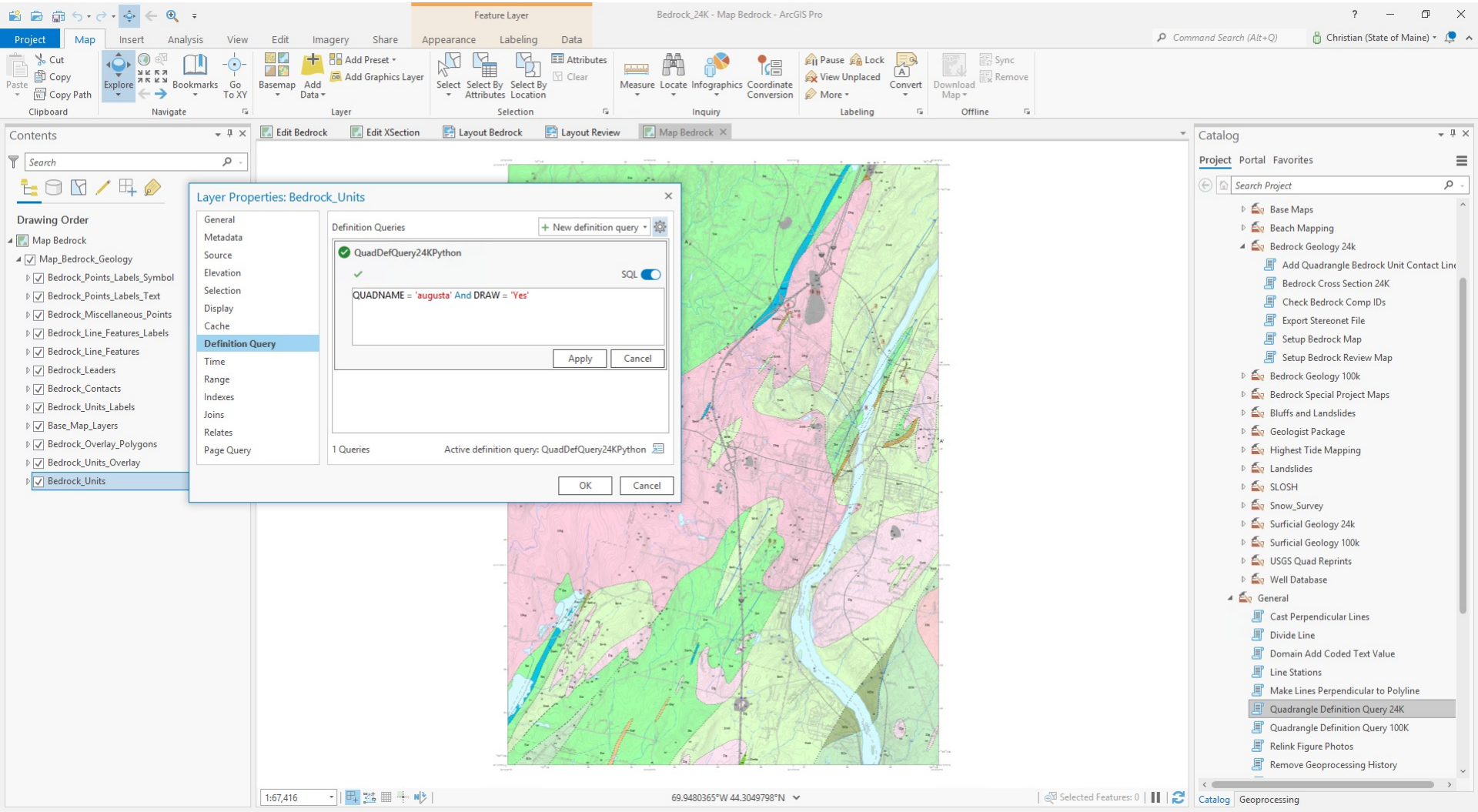
Working with an Enterprise Geodatabase in GIS

Custom Python tool applies definition query to all layers in the map



Working with an Enterprise Geodatabase in GIS

Only features in a single quad are now displayed for map production



Guiding Principles for Complying with GeMS

- Minimal disruption to current map production
- Minimal level of additional work by the mapping geologists and information management staff
- Treat GeMS as a data standard, not map standard
- Only GeMS Level 3 submissions
- Create a defined, scripted, documented workflow for GeMS conversion of bedrock and surficial maps at 24K and 100K scales
- GeMS is opportunity to improve MGS workflows around GeoLex, feature-level metadata, map text

What Was Missing?

Inventoried MGS feature classes to discover additional required GeMS attributes that needed to be captured.

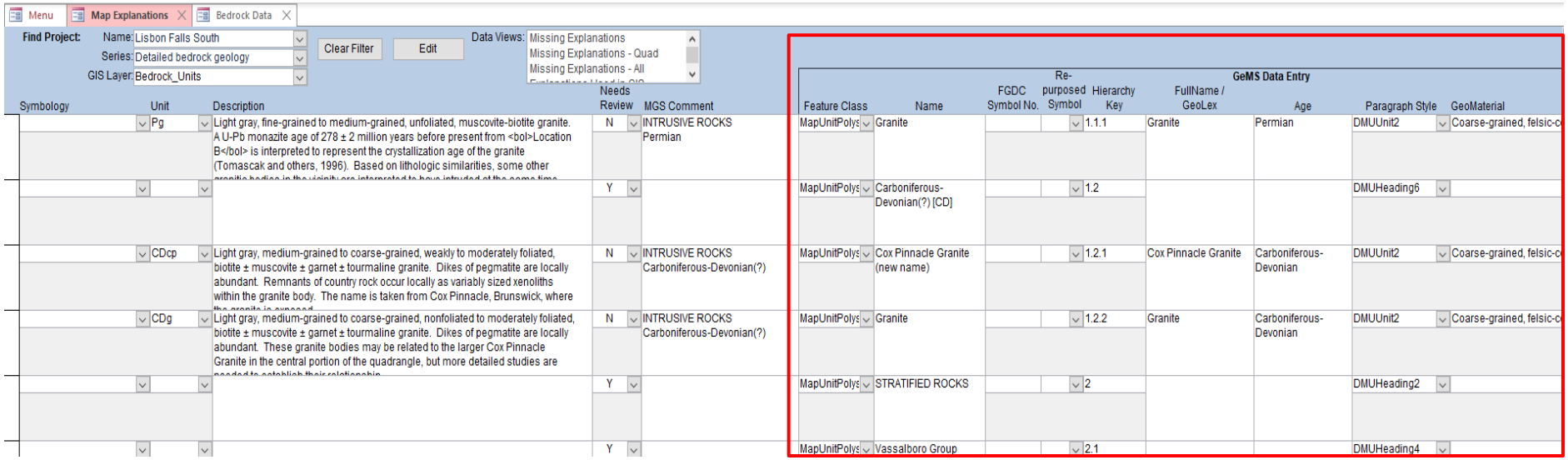
GeMS Field	MGS Feature Class
IDENTITY_CONFIDENCE	• Bedrock_Contacts • Bedrock_Line_Features • Bedrock_Overlay_Polygons • Bedrock_Units • Bedrock_XSection_Lines • Bedrock_XSection_Overlay_Polygons • Bedrock_XSection_Units • tbl_Bedrock_Feature
EXISTENCE_CONFIDENCE	• Bedrock_Contacts • Bedrock_Line_Features • Bedrock_XSection_Lines
LOCATION_CONFIDENCE	• Bedrock_Contacts • Bedrock_Line_Features • Bedrock_XSection_Lines • tbl_Bedrock_Points
ORIENTATION_CONFIDENCE	• tbl_Bedrock_Feature
LOCATION_METHOD	• tbl_Bedrock_Points

List of additional fields needed for GeMS compliance in Bedrock 24K mapping feature classes and tables.

What Was Missing?

MGS map explanation table needed a number of new fields to control GeMS destination feature classes and description of map units.

Example of GeMS fields added to the MGS Explanation table (red box).



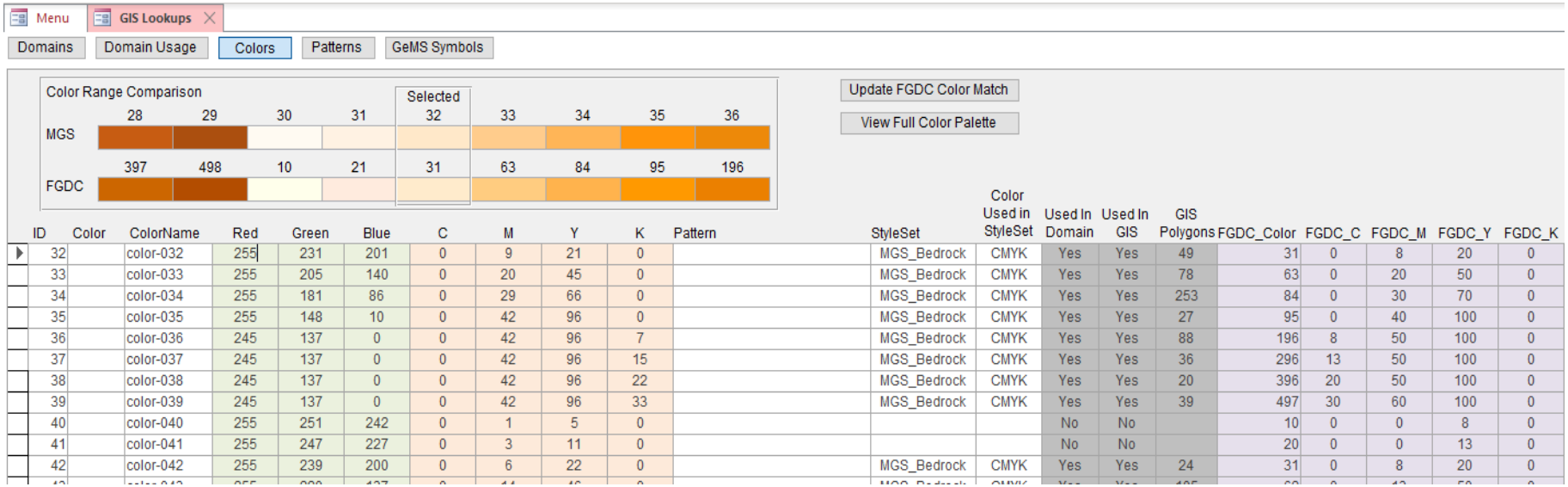
Menu | Map Explanations | Bedrock Data

Find Project: Name: Lisbon Falls South; Series: Detailed bedrock geology; GIS Layer: Bedrock_Units; Clear Filter; Edit; Data Views: Missing Explanations; Missing Explanations - Quad; Missing Explanations - All

Symbology	Unit	Description	Needs Review	MGS Comment	GeMS Data Entry: Feature Class	Name	FGDC Symbol No.	Re-purposed Symbol	Hierarchy Key	FullName / GeoLex	Age	Paragraph Style	GeoMaterial
	Pg	Light gray, fine-grained to medium-grained, unfoliated, muscovite-biotite granite. A U-Pb monazite age of 278 ± 2 million years before present from <bol>Location B</bol> is interpreted to represent the crystallization age of the granite (Tomascak and others, 1996). Based on lithologic similarities, some other	N	INTRUSIVE ROCKS Permian	MapUnitPolys	Granite			1.1.1	Granite	Permian	DMUUnit2	Coarse-grained, felsic-c
			Y		MapUnitPolys	Carboniferous-Devonian(?) [CD]			1.2			DMUHeading6	
	CDcp	Light gray, medium-grained to coarse-grained, weakly to moderately foliated, biotite ± muscovite ± garnet ± tourmaline granite. Dikes of pegmatite are locally abundant. Remnants of country rock occur locally as variably sized xenoliths within the granite body. The name is taken from Cox Pinnacle, Brunswick, where	N	INTRUSIVE ROCKS Carboniferous-Devonian(?)	MapUnitPolys	Cox Pinnacle Granite (new name)			1.2.1	Cox Pinnacle Granite	Carboniferous-Devonian	DMUUnit2	Coarse-grained, felsic-c
	CDg	Light gray, medium-grained to coarse-grained, nonfoliated to moderately foliated, biotite ± muscovite ± garnet ± tourmaline granite. Dikes of pegmatite are locally abundant. These granite bodies may be related to the larger Cox Pinnacle Granite in the central portion of the quadrangle, but more detailed studies are	N	INTRUSIVE ROCKS Carboniferous-Devonian(?)	MapUnitPolys	Granite			1.2.2	Granite	Carboniferous-Devonian	DMUUnit2	Coarse-grained, felsic-c
			Y		MapUnitPolys	STRATIFIED ROCKS			2			DMUHeading2	
			Y		MapUnitPolys	Vassalboro Group			2.1			DMUHeading4	

Reference Tables

Reference tables for geomaterials, paragraph styles, and FGDC colors, symbols, and patterns were created in the MGS database to control data entry. In the case of colors and patterns, these tables also provide a crosswalk between the values traditionally used by MGS and the FGDC values.

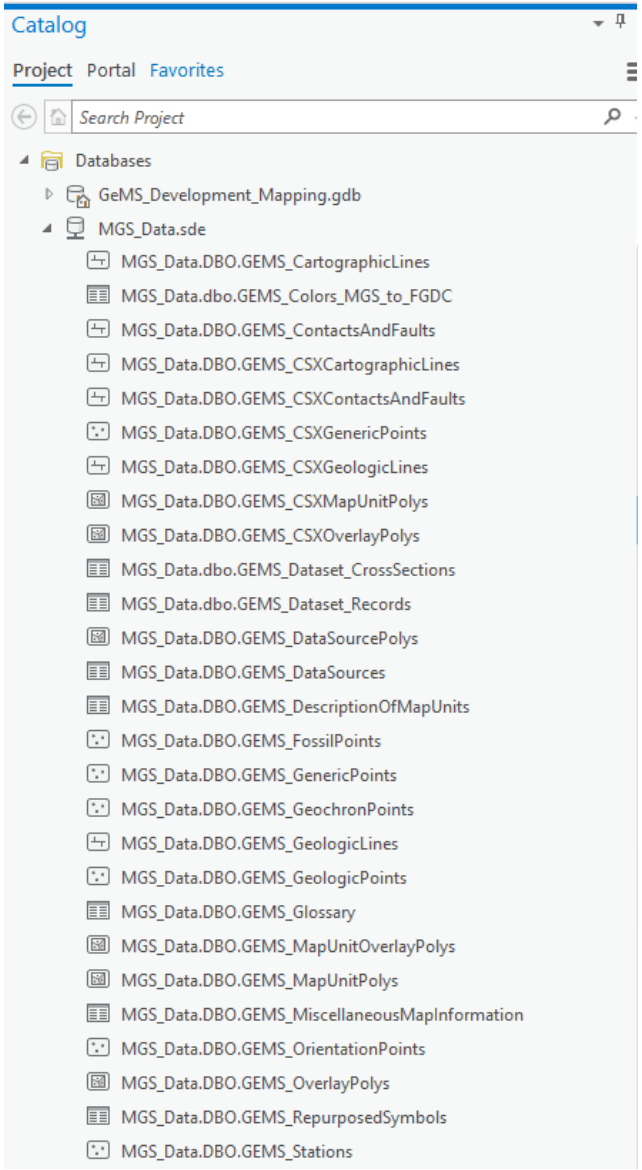


ID	Color	ColorName	Red	Green	Blue	C	M	Y	K	Pattern	StyleSet	Color Used in StyleSet	Used In Domain	Used In GIS	GIS Polygons	FGDC_Color	FGDC_C	FGDC_M	FGDC_Y	FGDC_K
32		color-032	255	231	201	0	9	21	0		MGS_Bedrock	CMYK	Yes	Yes	49	31	0	8	20	0
33		color-033	255	205	140	0	20	45	0		MGS_Bedrock	CMYK	Yes	Yes	78	63	0	20	50	0
34		color-034	255	181	86	0	29	66	0		MGS_Bedrock	CMYK	Yes	Yes	253	84	0	30	70	0
35		color-035	255	148	10	0	42	96	0		MGS_Bedrock	CMYK	Yes	Yes	27	95	0	40	100	0
36		color-036	245	137	0	0	42	96	7		MGS_Bedrock	CMYK	Yes	Yes	88	196	8	50	100	0
37		color-037	245	137	0	0	42	96	15		MGS_Bedrock	CMYK	Yes	Yes	36	296	13	50	100	0
38		color-038	245	137	0	0	42	96	22		MGS_Bedrock	CMYK	Yes	Yes	20	396	20	50	100	0
39		color-039	245	137	0	0	42	96	33		MGS_Bedrock	CMYK	Yes	Yes	39	497	30	60	100	0
40		color-040	255	251	242	0	1	5	0				No	No		10	0	0	8	0
41		color-041	255	247	227	0	3	11	0				No	No		20	0	0	13	0
42		color-042	255	239	200	0	6	22	0		MGS_Bedrock	CMYK	Yes	Yes	24	31	0	8	20	0

GeMS Staging Tables

The GeMS Create New Database tool was used to create a file geodatabase with all the default tables and feature classes. These objects were imported into the MGS enterprise geodatabase to serve as staging tables/feature classes for GeMS data.

Field data types weren't always correctly transformed between file and enterprise geodatabase.



Data Mapping

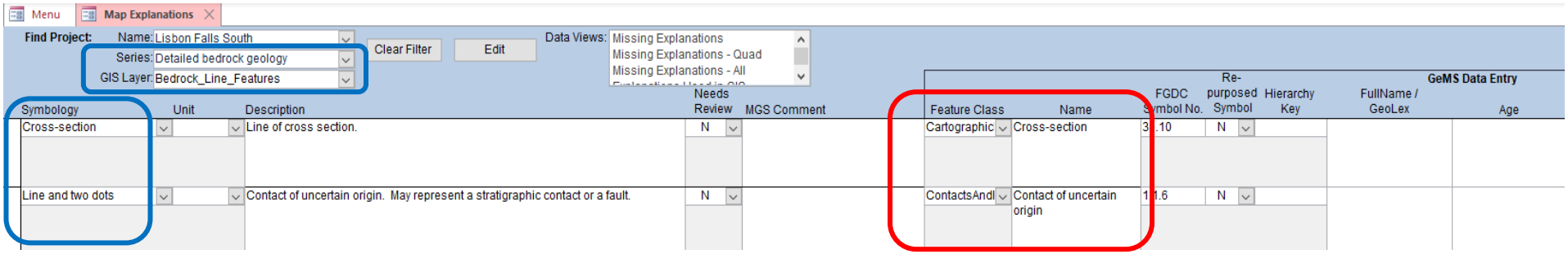
The existing MGS feature classes and tables, or subsets of features, were mapped to the required GeMS feature classes and tables.

MGS Feature Class (criteria)	GeMS Feature Class
Units	MapUnitPolys
Contacts (not overlapped by Bedrock_Lines) Lines (with GEMS_FeatureClass = 'ContactsAndFaults') Units (dissolved units to make map boundary)	ContactsAndFaults
Points	Stations
Points_Labels_Symbol (with GEMS_FeatureClass = 'OrientationPoints')	OrientationPoints
Points_Labels_Symbol (with GEMS_FeatureClass = 'GeologicPoints')	GeologicPoints
Units_Labels Line_Features_Labels Miscellaneous_Points (SYMBOLOGY <> 'Geochronology point')	GenericPoints
Line_Features (GEMS_FeatureClass = 'GeologicLines')	GeologicLines
Line_Features (GEMS_FeatureClass = 'CartographicLines') Leaders	CartographicLines
Units (SYMBOLOGY_OVERLAY IS NOT NULL)	MapUnitOverlayPolys
Overlay_Polygons	OverlayPolys
Quadrangle_Split_Authors	DataSourcePolys
tbl_Publications	MiscellaneousMapInformation
XSection_Units	CSXMapUnitPolys
XSection_Lines (with GEMS_FeatureClass = 'CSXContactsAndFaults')	CSXContactsAndFaults
XSection_Overlay_Polygons	CSXOverlayPolys
XSection_Lines (with GEMS_FeatureClass = 'CSXCartographicLines') XSection_Leaders	CSXCartographicLines
XSection_Lines (with GEMS_FeatureClass = 'CSXGeologicLines')	CSXGeologicLines
XSection_Labels XSection_Miscellaneous_Points	CSXGenericPoints

Data Mapping

Individual feature types in existing MGS feature classes can be mapped to their GeMS destination feature class using the GeMS:Feature Class field in the MGS Map Explanation table.

Example of different feature types in a single MGS feature class being mapped to two different GeMS feature classes.



MGS source feature class and feature types

GeMS destination feature class and feature types

GeMS Build Process Steps

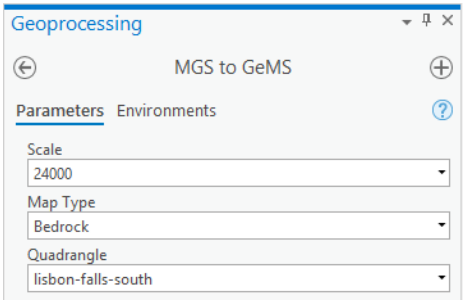
Process Step	Manual	MGS Tool	GeMS Tool
Check topology on MGS Data	fixes	X	
Copy data from MGS to GeMS tables		X	
Create GeMS folder structure		X	
Export GeMS tables to a file gdb		X	
Create metadata XML file		X	
Validate metadata with USGS mp (optional)	X	Planned	
Load metadata to fgdb		X	
Copy GeMS Checklist PDF file to quad folder		X	
Run Validate Database			X
Delete Validation fgdb and unneeded validation files		In progress	
Run Translate to Shapefiles		Planned	X
Run Geologic Names Check			X
Fill out Geologic Names file	X		
Copy map PDF into quad folder		X	
Copy map mxd into /publication folder	X	Planned	
Repoint disconnected layers in map mxd	X	Planned	
Copy map text, photos, figures, captions, references into /resources folder	X	In progress	
Copy fonts and style files into /resources folder		X	
Create transmittal letter PDF		X	
Fill out GeMS Checklist PDF	X		
Create GeMS quad zip file	X	Planned	

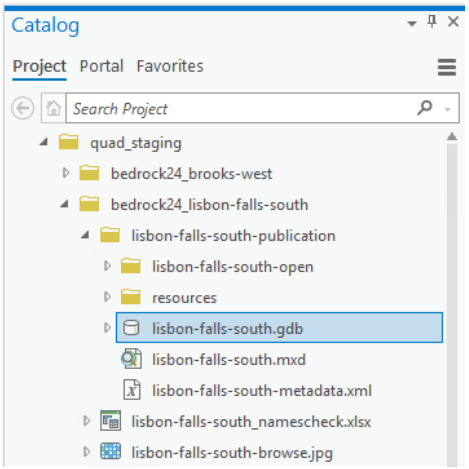
GeMS Build Process Steps

Process Step	Manual	MGS Tool	GeMS Tool
Check topology on MGS Data	fixes	X	
Copy data from MGS to GeMS tables		X	
Create GeMS folder structure		X	
Export GeMS tables to a file gdb		X	
Create metadata XML file		X	
Validate metadata with USGS mp (optional)		X	
Load metadata to fgdb		X	
Copy GeMS Checklist PDF file to quad folder		X	
Run Validate Database			X
Delete Validation fgdb and unneeded validation files		X	
Run Translate to Shapefiles		X	
Run Geologic Names Check			X
Fill out Geologic Names file	X		
Copy map PDF into quad folder		X	
Copy map mxd into /publication folder		X	
Repoint disconnected layers in map mxd		X	
Copy map text, photos, figures, captions, references into /resources folder		X	
Copy fonts and style files into /resources folder		X	
Create transmittal letter PDF		X	
Fill out GeMS Checklist PDF	X		
Create GeMS quad zip file		X	

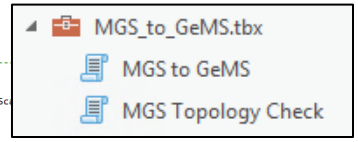
MGS GeMS Automation Tools

- MGS tools are a combination of:
  - Database stored procedures that extract data from MGS database into staging tables and perform some validation
  - Python scripts that
    - Call stored procedures
    - Create folders and copy files with native Python
  - MS Access VBA that
    - Call stored procedures for data review
    - Runs reports
- All tools execute for the selected quadrangle, scale (24K or 100K), and map type (bedrock or surficial)
- This provides the flexibility to create GeMS submissions for any map published by MGS.





MGS GeMS Automation Costs & Benefits



Costs

- Code maintenance
  - SQL Server (Example: stored procedure for staging data is 355 SELECT statements ~3200 lines of code)
  - New MGS Python toolbox
  - New or revised MS Access forms and reports
- Changes to the GeMS standard will create work for MGS to revise tools
- Dependency on broad IT platform and IT staff

Benefits

- GeMS file preparation by mappers, not GIS/IT staff
- Consistency in submission
- Time savings
- Recover costs of data entry
- Data driven – smaller risk from vendor software change

```
--##---MapUnitPolys----------------------------------------
TRUNCATE TABLE GEMS_MapUnitPolys;
INSERT INTO GEMS_MapUnitPolys
SELECT CAST(ROW_NUMBER() OVER (ORDER BY QUADNAME, Map, Sca
    ,[MapUnit]
    ,[IdentityConfidence]
    ,[Label]
    ,[Symbol]
    ,[DataSourceID]
    ,[Notes]
    ,[MapUnitPolys_ID]
    ,[Shape]
    ,[Symbol_MGS]
FROM (
    --Bedrock 24K
    SELECT
        REPLACE(REPLACE(REPLACE(REPLACE(REPLACE(REPLACE(UNIT,'C#','C'),'T#','T'),'M#','M'),'P#','P'),'Cz#','Cz'),'Pz#','Pz')
            --'C#'=cambrian, 'T#'=triassic, 'M#'=mesozoic, 'P#'=pennsylvanian, 'Cz#'=cenozoic 'Pz#'=paleozoic
            AS MapUnit
        ,IDENTITY_CONFIDENCE AS IdentityConfidence
        ,UNIT AS Label
        ,CAST(tbl_GEMS_Colors_MGS_to_FGDC.FGDC_Color AS nvarchar(50)) AS Symbol
        ,SYMBOLOGY AS Symbol_MGS
        ,(SELECT DataSources_ID FROM GEMS_DataSources WHERE SOURCE = 'this report') AS DataSourceID
        ,GEMS_NOTES AS Notes
        ,'MUP' + CAST(Bedrock_Units_evw.OBJECTID AS nvarchar(10)) AS MapUnitPolys_ID  --COMPID??
        ,SHAPE
        ,Bedrock_Units_evw.QUADNAME
        ,'Bedrock' AS Map
        ,'24000' AS Scale
    FROM Bedrock_Units_evw
        JOIN tbl_GEMS_Colors_MGS_to_FGDC ON Bedrock_Units_evw.SYMBOLOGY = tbl_GEMS_Colors_MGS_to_FGDC.ColorName
    WHERE Bedrock_Units_evw.QUADNAME = @Quad

    --Surficial 24K
    UNION ALL
    SELECT
        UNIT AS MapUnit
        ,IDENTITY_CONFIDENCE AS IdentityConfidence
        ,UNIT AS Label
        ,CAST(tbl_GEMS_Colors_MGS_to_FGDC.FGDC_Color AS nvarchar(50)) AS Symbol
        ,UNIT AS Symbol_MGS
        ,(SELECT DataSources_ID FROM GEMS_DataSources WHERE SOURCE = 'this report') AS DataSourceID
        ,GEMS_NOTES AS Notes
        ,'MUP' + CAST(Surficial_Geology_Units_evw.OBJECTID AS nvarchar(10)) AS MapUnitPolys_ID  --COMPID??
        ,SHAPE
        ,Surficial_Geology_Units_evw.QUADNAME
        ,'Surficial' AS Map
        ,'24000' AS Scale
    FROM Surficial_Geology_Units_evw
        JOIN tbl_GEMS_Colors_MGS_to_FGDC ON Surficial_Geology_Units_evw.UNIT = tbl_GEMS_Colors_MGS_to_FGDC.ColorName
    WHERE Surficial_Geology_Units_evw.QUADNAME  = @Quad

    --Bedrock 100K
    UNION ALL
    SELECT
        REPLACE(REPLACE(REPLACE(REPLACE(REPLACE(REPLACE(UNIT,'C#','C'),'T#','T'),'M#','M'),'P#','P'),'Cz#','Cz'),'Pz#','Pz')
            --'C#'=cambrian, 'T#'=triassic, 'M#'=mesozoic, 'P#'=pennsylvanian, 'Cz#'=cenozoic 'Pz#'=paleozoic
            AS MapUnit
        ,IDENTITY_CONFIDENCE AS IdentityConfidence
        ,UNIT AS Label
        ,CAST(tbl_GEMS_Colors_MGS_to_FGDC.FGDC_Color AS nvarchar(50)) AS Symbol
        ,SYMBOLOGY AS Symbol_MGS
        ,(SELECT DataSources_ID FROM GEMS_DataSources WHERE SOURCE = 'this report') AS DataSourceID
        ,GEMS_NOTES AS Notes
        ,'MUP' + CAST(Bedrock_100K_Units_evw.OBJECTID AS nvarchar(10)) AS MapUnitPolys_ID  --COMPID??
        ,SHAPE
        ,Bedrock_100K_Units_evw.QUADNAME
        ,'Bedrock' AS Map
        ,'100000' AS Scale
    FROM Bedrock_100K_Units_evw
        JOIN tbl_GEMS_Colors_MGS_to_FGDC ON Bedrock_100K_Units_evw.SYMBOLOGY = tbl_GEMS_Colors_MGS_to_FGDC.ColorName
    WHERE Bedrock_100K_Units_evw.QUADNAME = @Quad
```

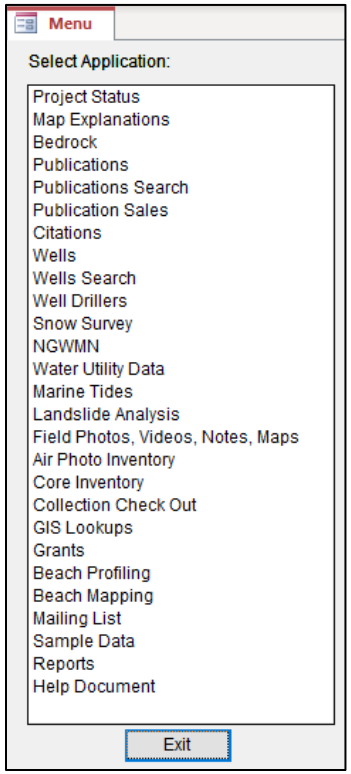
Why Didn't We Just Transition to "regular" GeMS?

Because…

- ***Existing deep integration in a single system used by all staff***
- ***File geodatabases would have been a major step backward***

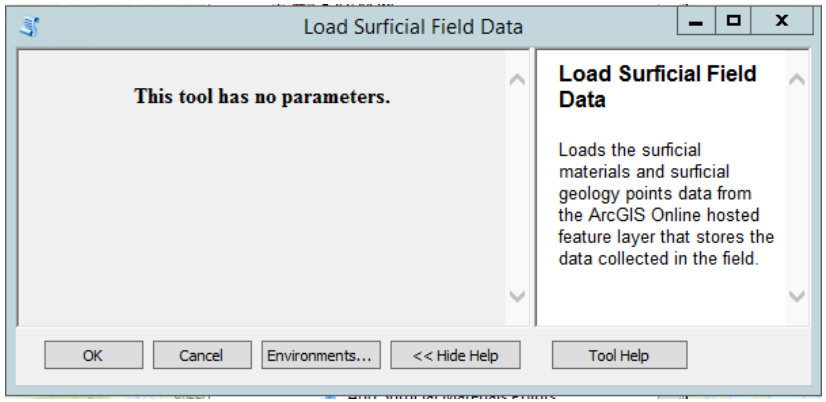
Examples of existing, pre-GeMS integration:

- Field data collection automation with MGS EGDB
- Bedrock Excel datasheet automation with MGS EGDB
- Map symbology functionality
- Map explanations (DMU) stored in the MGS EGDB
- MGS EGDB provides extent lat/long for Publications module
- Project Status module
- Citations module
- Grants module
- Photos module
- Web pages and web applications using services published from EGDB
- StateMap and Mapping Priorities dashboards linked to EGDB



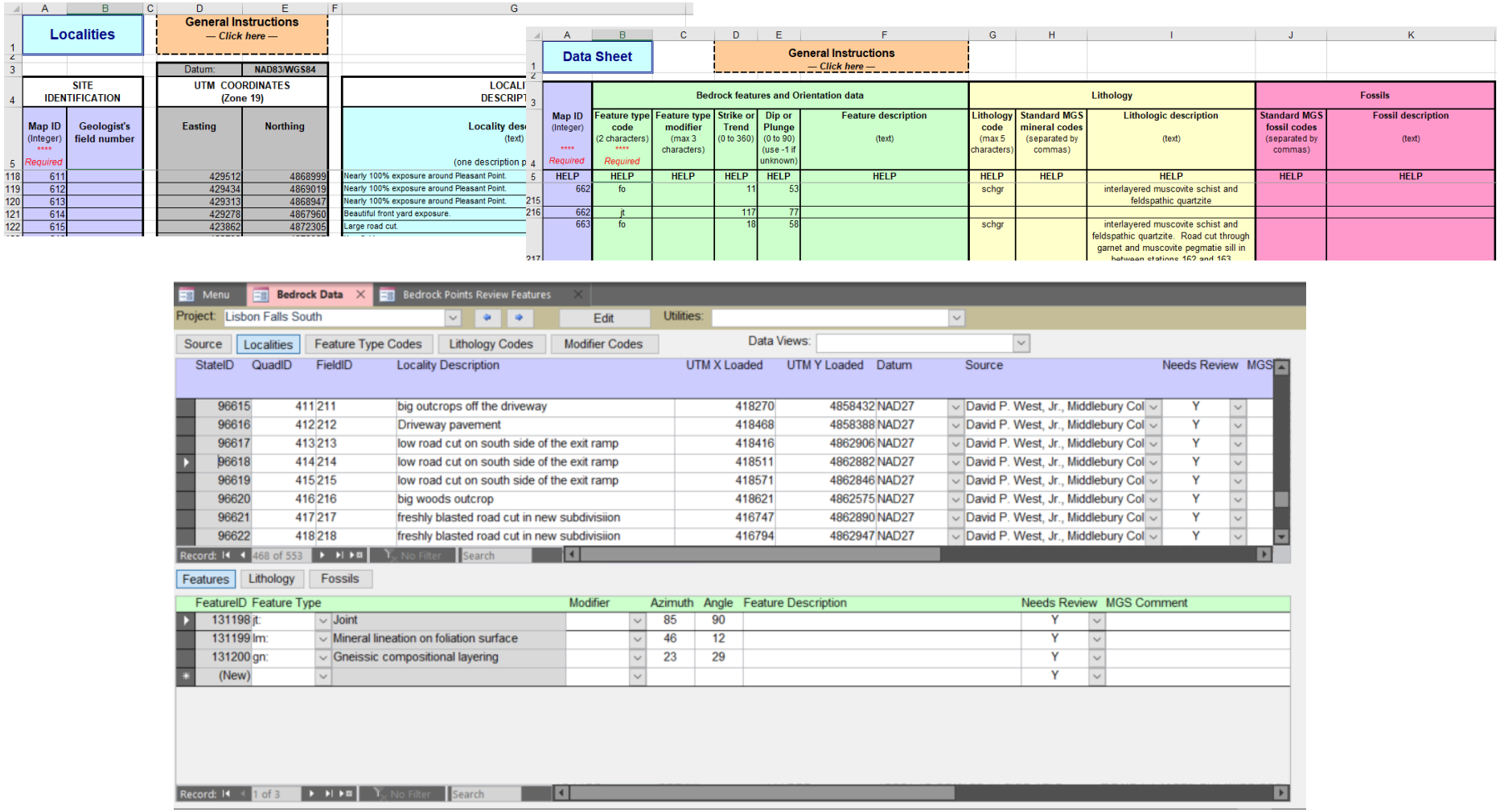
Example: Field data collection automation with MGS EGDB

- iPad with Field Maps, Survey123, Photo app - disconnected editing and basic navigation
- With cell signal, data continuously uploaded to ESRI cloud.
- Without cell signal, data stored on iPad and uploaded to ESRI cloud ASAP.
- Surficial Mapping:
  - Custom script brings data collected with Survey123 into MGS database.
  - Ready for map production.



Example: Bedrock Excel datasheet automation with MGS EGDB

Tools and database triggers to load Excel datasheet and creating points in feature classes from non-spatial database tables



Localities

General Instructions — Click here —

Datum: NAD83/WGS84

	SITE IDENTIFICATION		UTM COORDINATES (Zone 19)		LOCALI DESCRIPT
4					
5	Map ID (Integer) **** Required	Geologist's field number	Easting	Northing	Locality des (text) (one description p
118	611		429512	4868999	Nearly 100% exposure around Pleasant Point.
119	612		429434	4869019	Nearly 100% exposure around Pleasant Point.
120	613		429313	4868947	Nearly 100% exposure around Pleasant Point.
121	614		429278	4867960	Beautiful front yard exposure.
122	615		423862	4872305	Large road cut.

Data Sheet

General Instructions — Click here —

		Bedrock features and Orientation data					Lithology			Fossils	
3	Map ID (Integer) **** Required	Feature type code (2 characters) **** Required	Feature type modifier (max 3 characters)	Strike or Trend (0 to 360)	Dip or Plunge (0 to 90) (use -1 if unknown)	Feature description (text)	Lithology code (max 5 characters)	Standard MGS mineral codes (separated by commas)	Lithologic description (text)	Standard MGS fossil codes (separated by commas)	Fossil description (text)
4											
5	HELP	HELP	HELP	HELP	HELP	HELP	HELP	HELP	HELP	HELP	HELP
215	662	fo		11	53		schgr		interlayered muscovite schist and feldspathic quartzite		
216	662	jt		117	77						
217	663	fo		18	58		schgr		interlayered muscovite schist and feldspathic quartzite. Road cut through garnet and muscovite pegmatie sill in between stations 162 and 163		

Menu | Bedrock Data | Bedrock Points Review Features

Project: Lisbon Falls South | Edit | Utilities:

Source | Localities | Feature Type Codes | Lithology Codes | Modifier Codes | Data Views:

StateID	QuadID	FieldID	Locality Description	UTM X Loaded	UTM Y Loaded	Datum	Source	Needs Review	MGS
96615	411	211	big outcrops off the driveway	418270	4858432	NAD27	David P. West, Jr., Middlebury Col	Y	
96616	412	212	Driveway pavement	418468	4858388	NAD27	David P. West, Jr., Middlebury Col	Y	
96617	413	213	low road cut on south side of the exit ramp	418416	4862906	NAD27	David P. West, Jr., Middlebury Col	Y	
96618	414	214	low road cut on south side of the exit ramp	418511	4862882	NAD27	David P. West, Jr., Middlebury Col	Y	
96619	415	215	low road cut on south side of the exit ramp	418571	4862846	NAD27	David P. West, Jr., Middlebury Col	Y	
96620	416	216	big woods outcrop	418621	4862575	NAD27	David P. West, Jr., Middlebury Col	Y	
96621	417	217	freshly blasted road cut in new subdivisiion	416747	4862890	NAD27	David P. West, Jr., Middlebury Col	Y	
96622	418	218	freshly blasted road cut in new subdivisiion	416794	4862947	NAD27	David P. West, Jr., Middlebury Col	Y	

Record: 468 of 553 | No Filter | Search

Features | Lithology | Fossils

FeatureID	Feature Type		Modifier	Azimuth	Angle	Feature Description	Needs Review	MGS Comment
131198	jt:	Joint		85	90		Y	
131199	lm:	Mineral lineation on foliation surface		46	12		Y	
131200	gn:	Gneissic compositional layering		23	29		Y	
(New)							Y	

Record: 1 of 3 | No Filter | Search

Example: Map symbology functionality

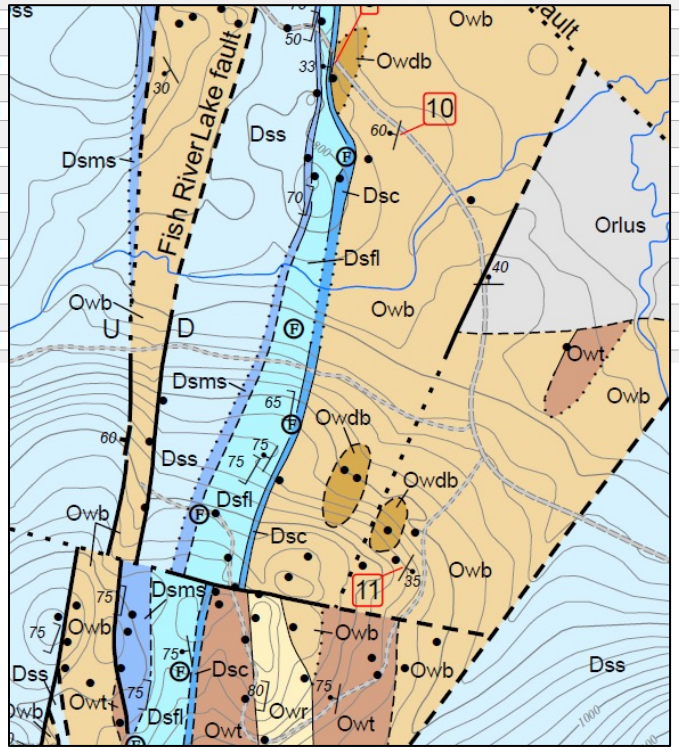
Map symbology controlled in GIS by non-spatial database tables

Menu | Bedrock Data

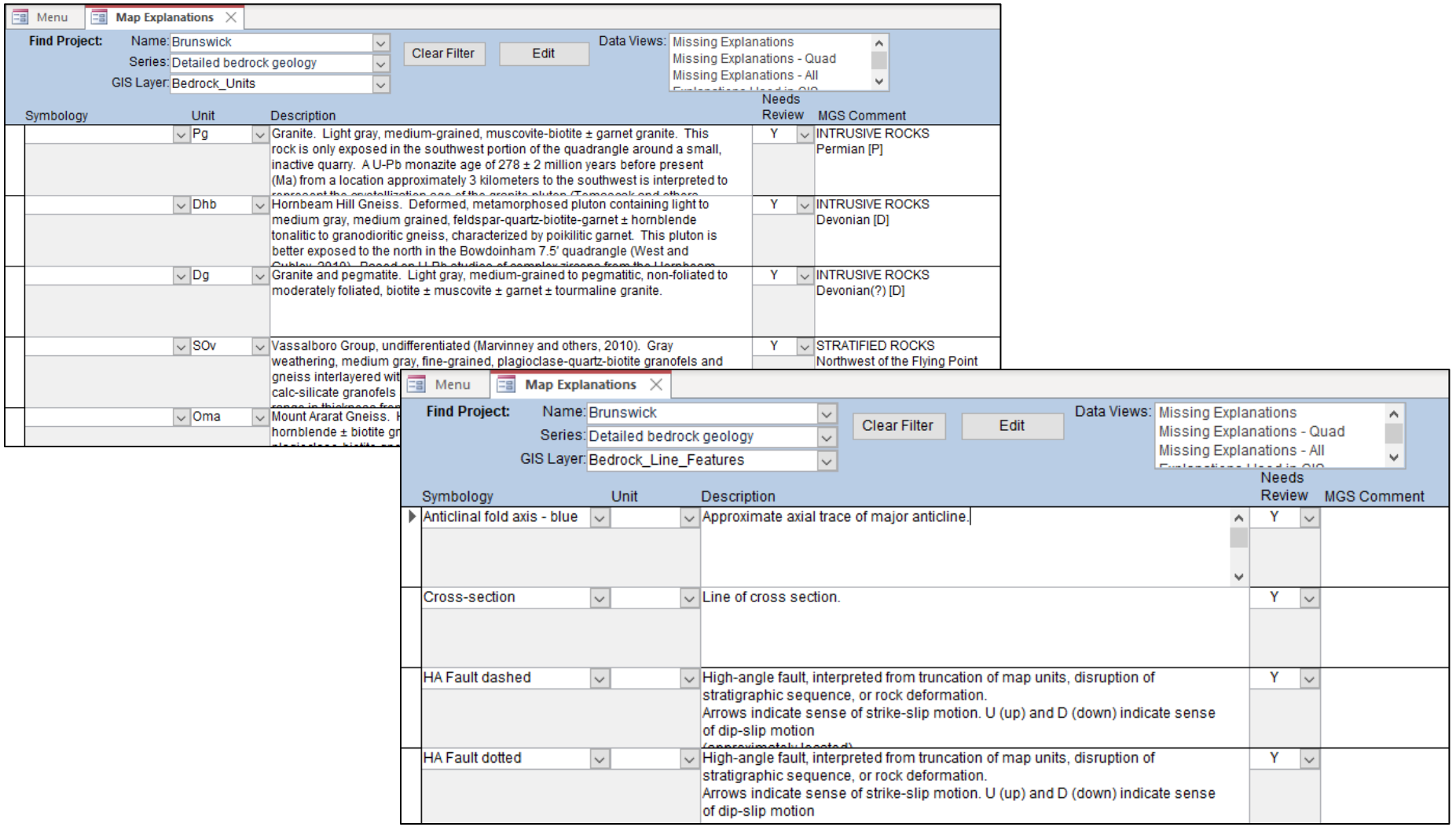
Project: Brunswick | Edit | Utilities:

Source | Localities | Feature Type Codes | Lithology Codes | Modifier Codes | Data Views:

Feature Code Submitted	Feature Type Code Explanation	Standard Feature Code	Needs Review	MGS Comment	Symbol Code	-2	-1	0	90	45	-99	type	pos	text	aflag	tflag	mflag	symbol Num	symbol size	symbol font	symbol color	angle Num	angle size	angle font	angle emph	angle color	modifier Num	modifier size	modifier font	modifier emph	modifier color
ad	axis of minor folds, dextral	hr	N	Added by MGS from feature description	L14	?	l	l	?	l		linear	edge	N	N	N	N	39	100	MGS_Font29	black	32	35	Arial	italic	black	11	35	Arial		black
ap	axial plane of minor folds	fk	N		P17	?	l	O	J	l		planar	center	N	N	N	N	35	100	MGS_Font28	black	32	35	Arial	italic	black	11	35	Arial		black
as	axis of minor folds, sinistral	hl	N	Added by MGS from feature description	L13	?	k	k	?	k		linear	edge	N	N	N	N	39	100	MGS_Font29	black	32	35	Arial	italic	black	11	35	Arial		black
ax	axis of minor folds	fa	N		L10	?	h	n	?	h		linear	edge	N																	black
bd	Compositional layering (Includes bedding and gneissic layering in metasedimentary and metavolcanic rocks).	bl	N	From Bath 100K	P01	?	X	W	Y	X		planar	center	N																	black
be	bedding (Hussey)	bk	N	"or basalt/diabase dike" removed per HNB 20180208	P01	?	X	W	Y	X		planar	center	N																	black
bl	recorded metamorphic compositional layering	bl	N		P04	?	.	?	/	.		planar	center	N																	black
bl	Metamorphic compositional layering		Y	MGS reassigned from Lisbon Falls South quadrangle.	P11	?	t	w	u	t		planar	center	N																	black
cl	Schistosity in metamorphic rocks; layering and foliation in igneous rocks.	fo	N	From Bath 100K	P05	?	a	c	b	a		planar	center	N																	black
db	basalt/diabase dike (Hussey)	db	N	Added per HNB 20180208 to account for single dike in quad	P10	3	8	?	:	9		planar	center	N																	red
fa	fold axis recorded	fa	N		L10	?	h	n	?	h		linear	edge	N																	black

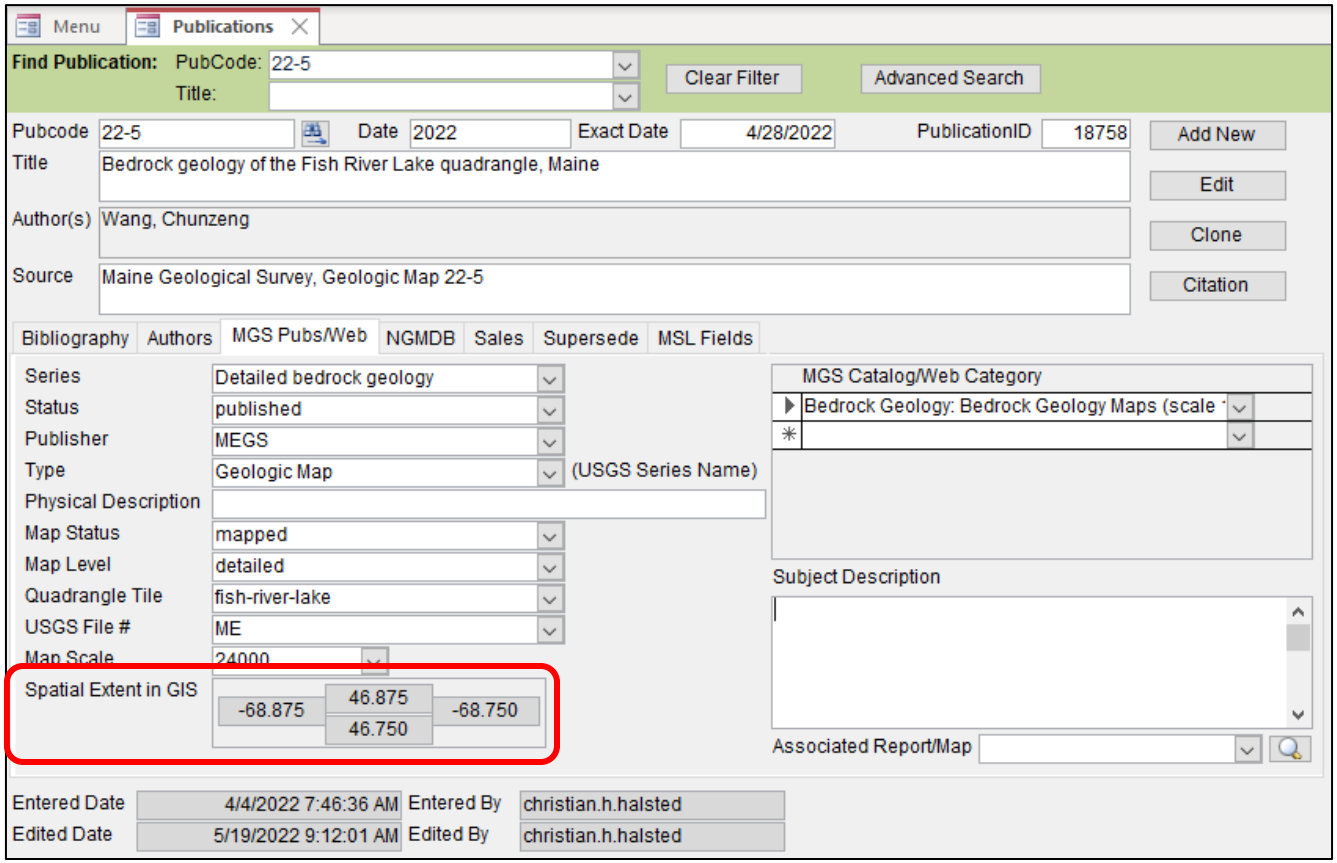


Example: Map explanations (DMU) stored in the MGS EGDB



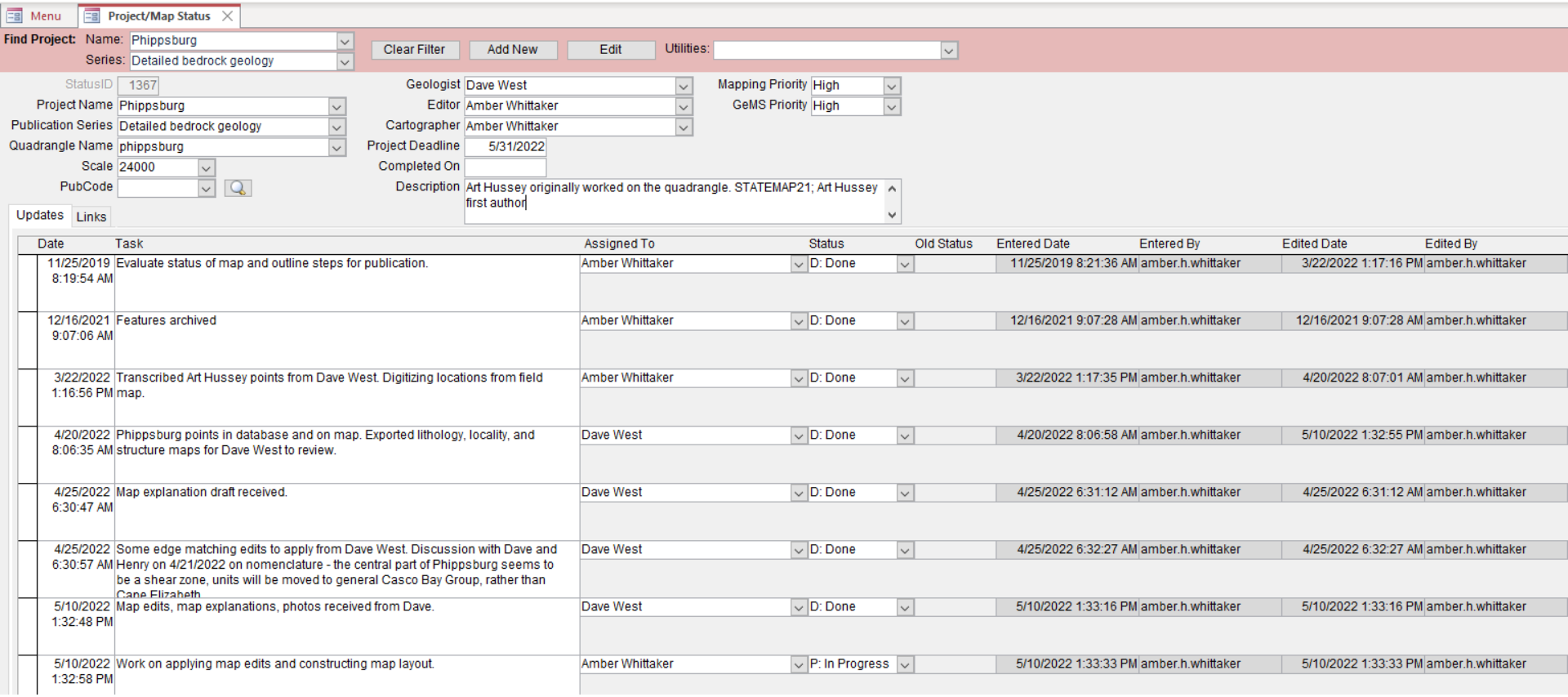
Example: MGS EGDB provides extent Publications module

Automatically derived lat/long values from quadrangle feature class



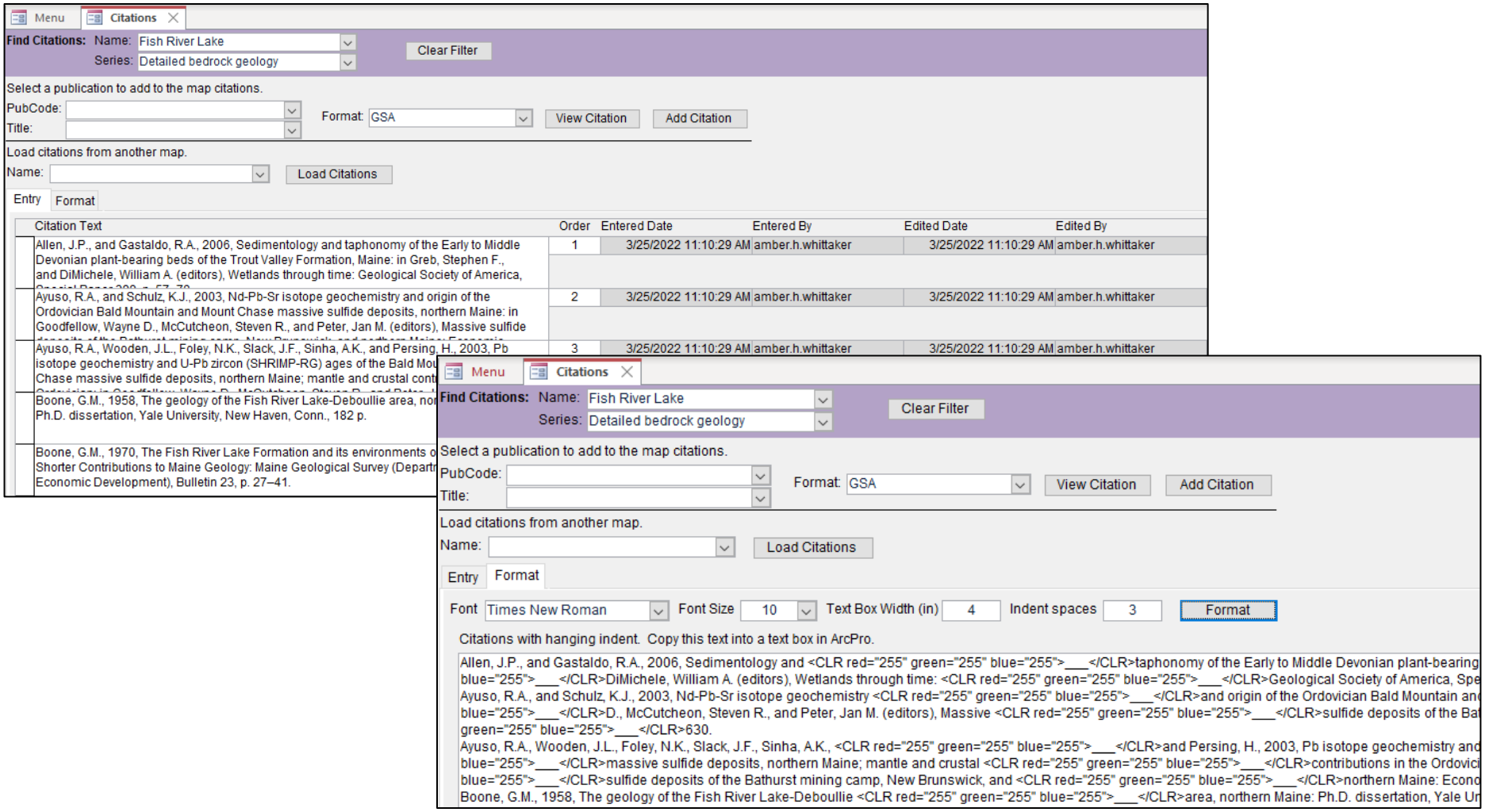
Example: Project Status module

Tracks assignments, open issues, and completed tasks over the life of mapping project



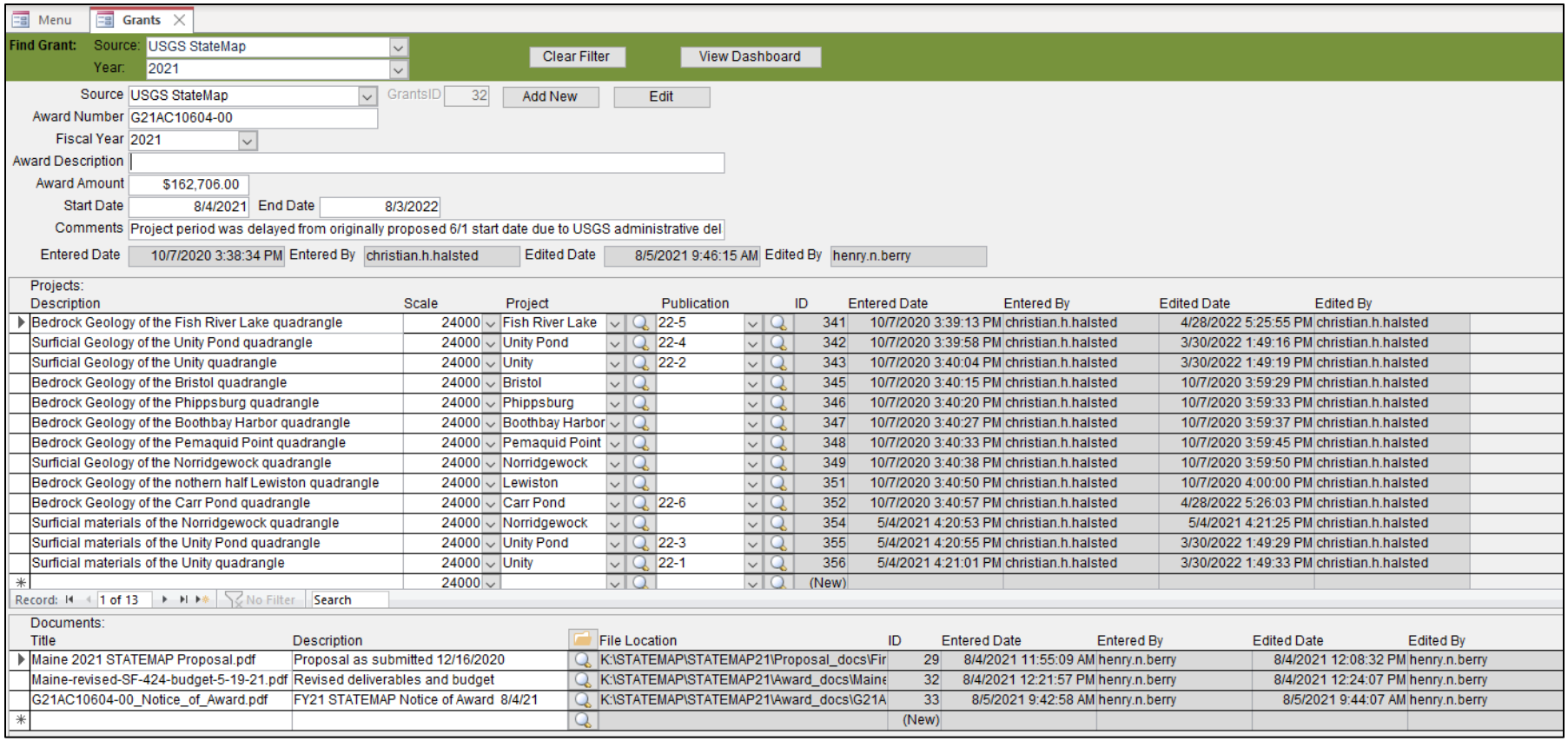
Example: Citations module

Map references entered, ordered, and formatted for map layout



Example: Grants module

Tracks grant dates, grant documents, and maps due. Includes a link to the map in the Publications module when completed.



Menu | Grants

Find Grant: Source: USGS StateMap | Year: 2021 | Clear Filter | View Dashboard

Source: USGS StateMap | GrantsID: 32 | Add New | Edit

Award Number: G21AC10604-00

Fiscal Year: 2021

Award Description:

Award Amount: $162,706.00

Start Date: 8/4/2021 | End Date: 8/3/2022

Comments: Project period was delayed from originally proposed 6/1 start date due to USGS administrative del

Entered Date: 10/7/2020 3:38:34 PM | Entered By: christian.h.halsted | Edited Date: 8/5/2021 9:46:15 AM | Edited By: henry.n.berry

Projects:

Description	Scale	Project	Publication	ID	Entered Date	Entered By	Edited Date	Edited By
Bedrock Geology of the Fish River Lake quadrangle	24000	Fish River Lake	22-5	341	10/7/2020 3:39:13 PM	christian.h.halsted	4/28/2022 5:25:55 PM	christian.h.halsted
Surficial Geology of the Unity Pond quadrangle	24000	Unity Pond	22-4	342	10/7/2020 3:39:58 PM	christian.h.halsted	3/30/2022 1:49:16 PM	christian.h.halsted
Surficial Geology of the Unity quadrangle	24000	Unity	22-2	343	10/7/2020 3:40:04 PM	christian.h.halsted	3/30/2022 1:49:19 PM	christian.h.halsted
Bedrock Geology of the Bristol quadrangle	24000	Bristol		345	10/7/2020 3:40:15 PM	christian.h.halsted	10/7/2020 3:59:29 PM	christian.h.halsted
Bedrock Geology of the Phippsburg quadrangle	24000	Phippsburg		346	10/7/2020 3:40:20 PM	christian.h.halsted	10/7/2020 3:59:33 PM	christian.h.halsted
Bedrock Geology of the Boothbay Harbor quadrangle	24000	Boothbay Harbor		347	10/7/2020 3:40:27 PM	christian.h.halsted	10/7/2020 3:59:37 PM	christian.h.halsted
Bedrock Geology of the Pemaquid Point quadrangle	24000	Pemaquid Point		348	10/7/2020 3:40:33 PM	christian.h.halsted	10/7/2020 3:59:45 PM	christian.h.halsted
Surficial Geology of the Norridgewock quadrangle	24000	Norridgewock		349	10/7/2020 3:40:38 PM	christian.h.halsted	10/7/2020 3:59:50 PM	christian.h.halsted
Bedrock Geology of the nothern half Lewiston quadrangle	24000	Lewiston		351	10/7/2020 3:40:50 PM	christian.h.halsted	10/7/2020 4:00:00 PM	christian.h.halsted
Bedrock Geology of the Carr Pond quadrangle	24000	Carr Pond	22-6	352	10/7/2020 3:40:57 PM	christian.h.halsted	4/28/2022 5:26:03 PM	christian.h.halsted
Surficial materials of the Norridgewock quadrangle	24000	Norridgewock		354	5/4/2021 4:20:53 PM	christian.h.halsted	5/4/2021 4:21:25 PM	christian.h.halsted
Surficial materials of the Unity Pond quadrangle	24000	Unity Pond	22-3	355	5/4/2021 4:20:55 PM	christian.h.halsted	3/30/2022 1:49:29 PM	christian.h.halsted
Surficial materials of the Unity quadrangle	24000	Unity	22-1	356	5/4/2021 4:21:01 PM	christian.h.halsted	3/30/2022 1:49:33 PM	christian.h.halsted
	24000			(New)				

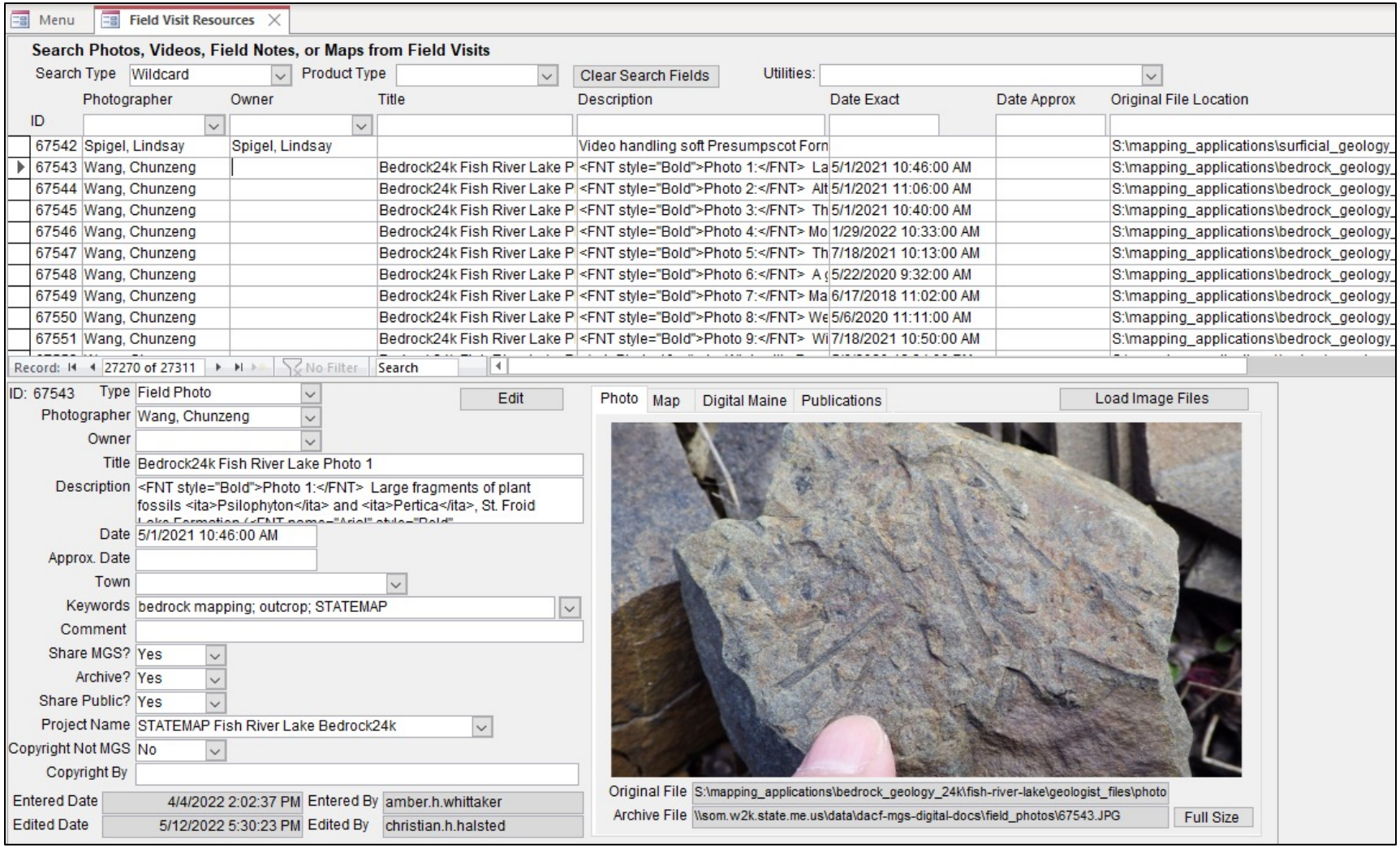
Record: 1 of 13 | No Filter | Search

Documents:

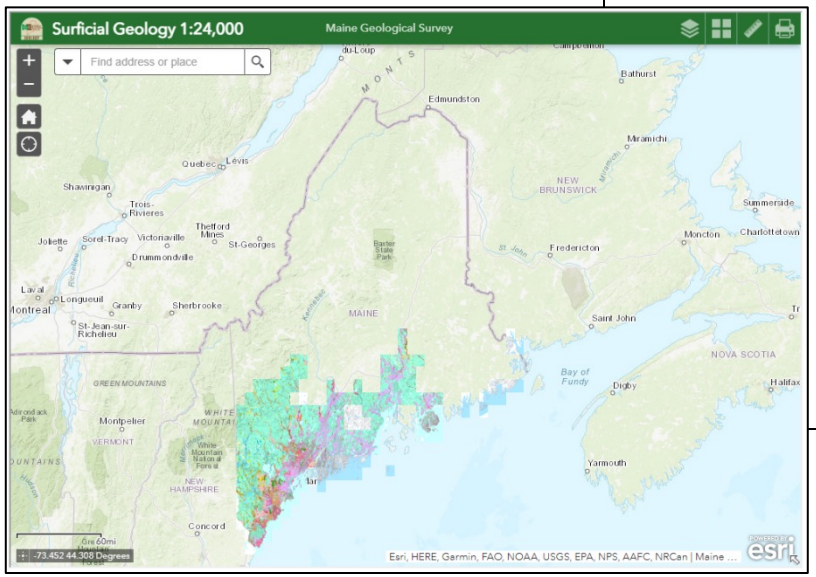
Title	Description	File Location	ID	Entered Date	Entered By	Edited Date	Edited By
Maine 2021 STATEMAP Proposal.pdf	Proposal as submitted 12/16/2020	K:\STATEMAP\STATEMAP21\Proposal_docs\Fir	29	8/4/2021 11:55:09 AM	henry.n.berry	8/4/2021 12:08:32 PM	henry.n.berry
Maine-revised-SF-424-budget-5-19-21.pdf	Revised deliverables and budget	K:\STATEMAP\STATEMAP21\Award_docs\Maine	32	8/4/2021 12:21:57 PM	henry.n.berry	8/4/2021 12:24:07 PM	henry.n.berry
G21AC10604-00_Notice_of_Award.pdf	FY21 STATEMAP Notice of Award 8/4/21	K:\STATEMAP\STATEMAP21\Award_docs\G21A	33	8/5/2021 9:42:58 AM	henry.n.berry	8/5/2021 9:44:07 AM	henry.n.berry
			(New)				

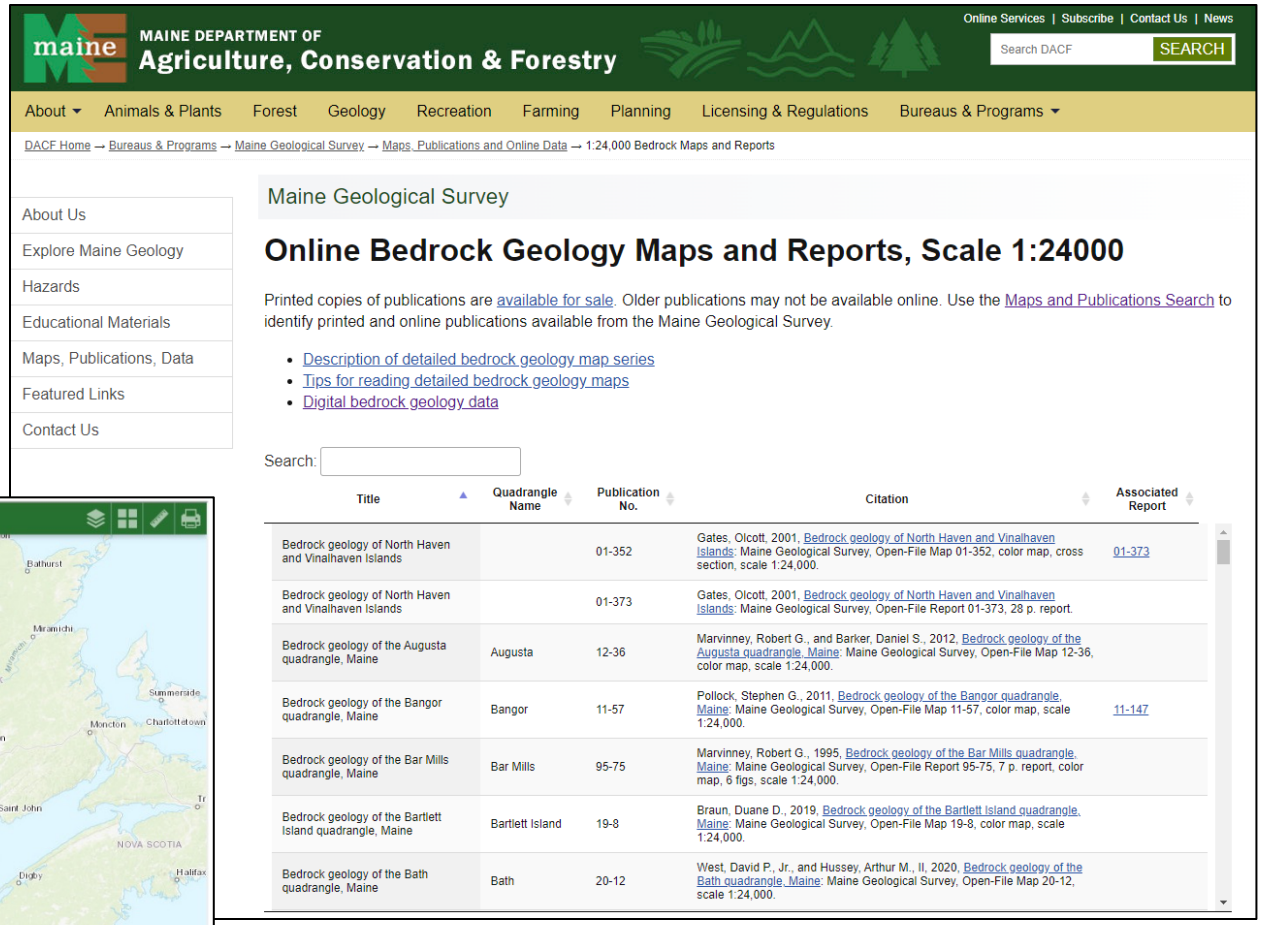
Example: Photos module

Tracks photos and their location that are used on the maps.

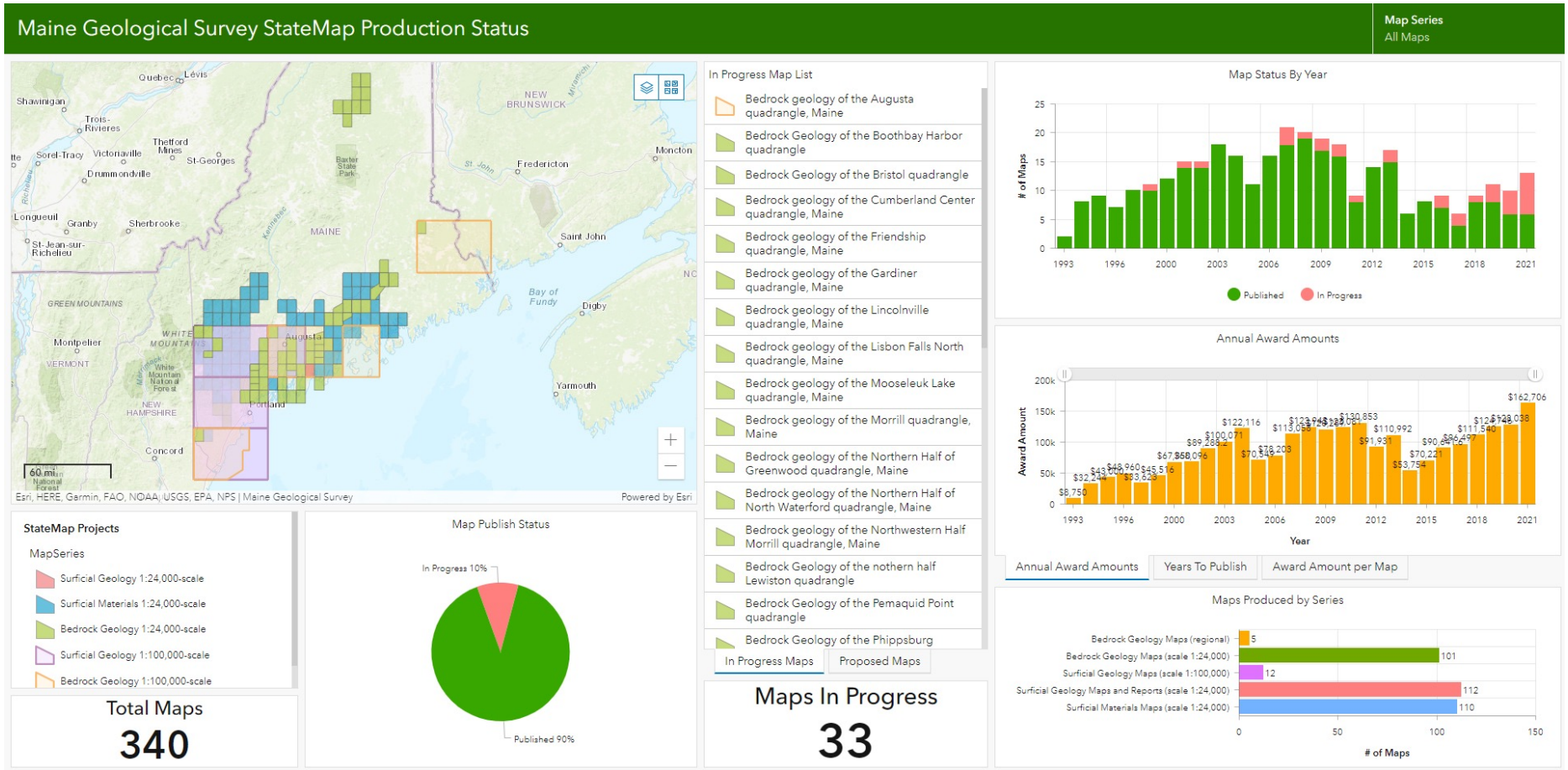


Example: Web pages and web apps using services from EGDB

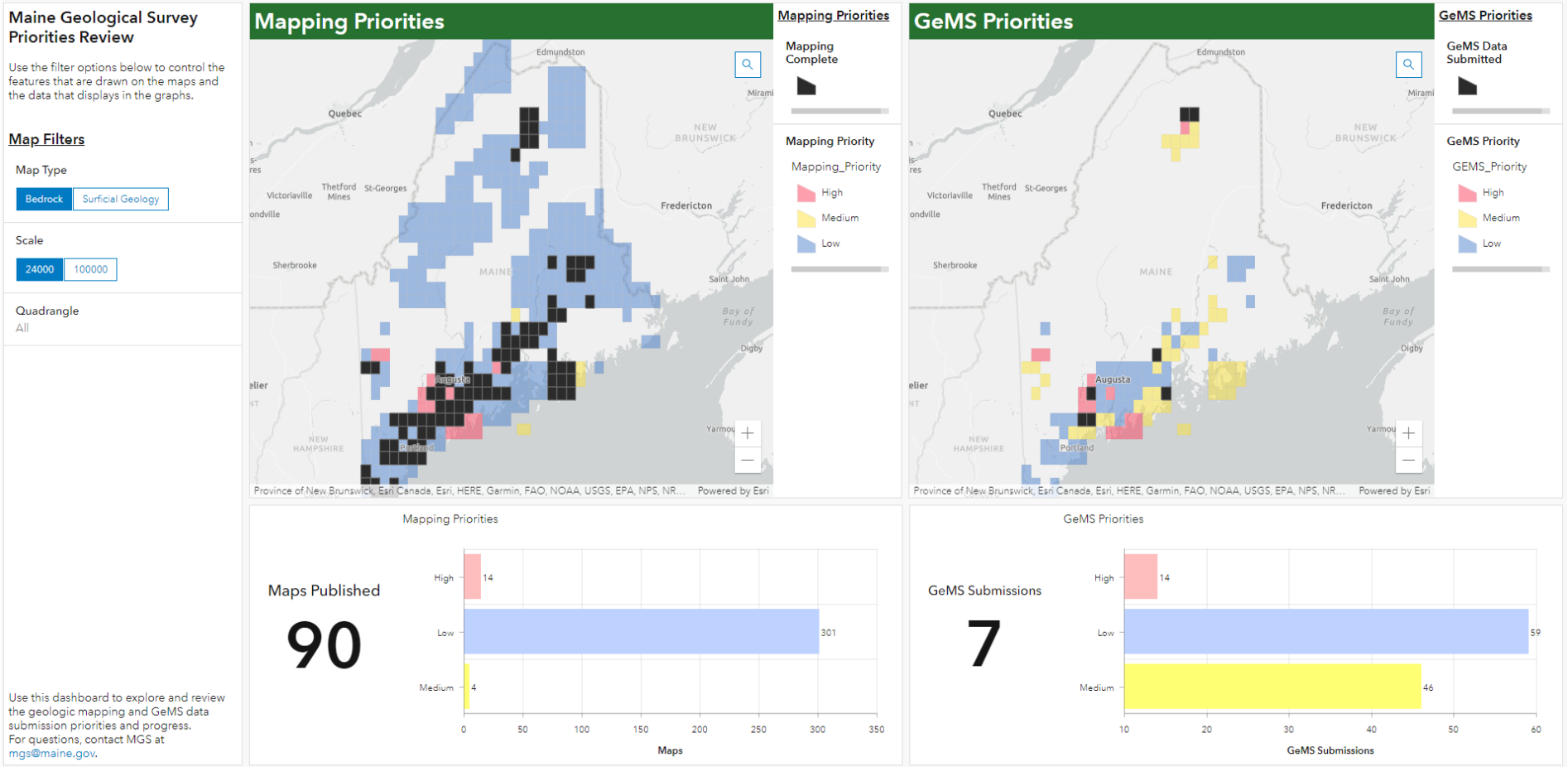




Example: Dashboards linked to EGDB



Example: Dashboards linked to EGDB



Possible Next Steps and Improvements

- Link database components to map layout – photos, citations, map text, and references – to automate more of map production
- Build contractor field data web mapping and data submission interface

Anyone interested in collaborating on:

- Incorporating some or all of the Validate Database tool into EGDB or updating tool to run against an EGDB
- Building GeMS web map service

Accomplishments and Conclusions

- Integration = consistency, repeatability, efficiency
- MGS to GeMS translation logic centralized in MGS database
- Geologic mapping staff trained in GeMS
- GeMS submission process fully documented
  - MGS Help document (19 pages)
  - GeMS Conversion Process Workflow (STATEMAP FTR)
- Eleven Level 3 and one Level 1 GeMS packages successfully submitted
- Costs quantified so improvements can be measured
  - 8-12 hours for author geologist to review and complete GeMS data entry on a published quadrangle (longer if not the author)
  - 6-10 hours for data manager to compile and validate GeMS submission package

Questions?

THANKS!