

Division of Geological & Geophysical Surveys

Geologic Mapping Advisory Board – Fall 2023

Thursday, October 19th, 2023, from 9 am – 11 am

3354 College Road, Fairbanks, AK – Basement Conference Room

3651 Penland Parkway, Anchorage, AK – GMC Large Conference Room

Microsoft Teams Meeting Option*

9:00 am CONVENE Session (Chair)

- Call to order, logistics, roll call.
 - *James Jones* – Present
 - *Kyle Brennan* – Present
 - *Mischa Ellanna* – Present
 - *Thomas Homza* – Present
 - *Russell Kirkham* – Present
 - *Rob Retherford* – Not Present
 - *Paul McCarthy* – Present
 - *Nic Kinsman* – Present
- Review and approve agenda.
 - Motion to approve, Accepted.
- Review and approve previous meeting minutes.
 - Motion approved of minutes from meeting in March.

Old Business 9:10 am *K. Papp*:

- Status of StateMap program and other DGGs news
 - Honoring our fallen family members, who passed away on 07/20/2023 in an unfortunate helicopter crash. ****Ronnie Daanen**** ****Justin Germann**** ****Tori Moore****
- 2023 DGGs News
 - New Program staff Geo 4/Geophysicist
 - New environment program specialist 4
 - Survey published 31 reports/ datasets to date in CY23.
 - GMC Procurement process for hyperspectral scanner on going.
 - AGO preparing for AK GeoSummit.
 - Landslide hazard reports progress for Sitka and Homer
- Recent Retirements
 - De Anne Stevens, Engineering Geology, June 2023
 - Dave LePain, Director, June 2023
- Director Vacancy
 - Ken Papp has filled that position Temporarily since June 2023
- NTSB Investigation
 - First Report was released 08/2023
 - DGGs will have a series of safety meetings.
 - DGGs will likely not utilize Maritime Helicopters
- DGGs FY 2024 State Budget
 - FY2024 Operating (\$11.7M)
 - FY2024 Capital (\$17.7M)
 - STATEMAP available Funding, ~\$14.7M in 2023
 - FY2024 total request from each state cannot exceed \$800K.
 - FY2024 RFP came out 9/18 due 01/09
- DGGs FY2025 State Budget
 - Governor's budget released December 15th, operating budget submitted QTY 2 requests, capital budget submitted QTY 4 requests.

New Business 9:30 am *M. Larsen/J. Athey:*

- 2023 Field season update, Geologic Map of the Haines-Takshanuk Mountains- Chilkat Peninsula area, southeast Alaska.
- 2023 Field season Mapping Strategy
 - Map and describe the surficial geology, to provide the detailed geologic data necessary for regional factor of safety analysis, landslide susceptibility, slope stability calculations, etc.
 - Map and describe the bedrock geology.
 - Collect geotechnical data at representative sites, both surficial and bedrock.
- 2023 Field Season
 - 05/21-30 only road/foot access, surficial mapping.
 - 08/12-28 Bedrock Team, boat helicopter, truck access.
 - 08/19-28 Surficial Team, Helicopter, truck access.
- Bedrock mapping
 - ~935 Square kms mapped, 13 field days, 491 field stations, 145+ samples collected, nearly 1000 structural measurements taken.
- Surficial Mapping
 - May field investigation was limited road access (8 field days) August field investigation, helicopter access (6 days) 285 locations recorded, 64 stations recorded, Haines Highway MP 19 & 23 debris flows, Alpine surficial and landslide mapping.
- Fall 2023
 - Submit rock and soil samples, upload photos to database, upload sample's locations to database.
- Winter through summer 2024
 - Refine mapping: bedrock and surficial deposits, publish data files, 09/2024 first submittal to USGS 09/15/2025, final submittal to USGS for publication.
- Future Plans
 - Potential collaboration with University of Oregon, continue partnership with AKDOT – Southcoast region, Hazard mitigation grant program, Publications on the tectonic framework.
- **Questions:**
 - **Q:** *J. Jones:* Curious, I know the bed rock and surficial portions of the map are obvious for the STATEMP deliverable, are you going to incorporate any of the geo technical stuff into the map deliverable in some way, or is that going to be separate data base or serious of reports?
A: Yes, absolutely we do have geotechnical data that we collected there, and we had a discussion with the surficial crew on how were going to incorporate that into the state map products, what well end up doing is well have a locality and then within the report, it will be table with that data. Yes, it will be a part of the map and report.
 - **Q:** *T. Homza:* You're mapping this onto existing geologic maps, I'm wondering, if there is measuring structures at the outcrop scale and correlating those into larger scale features, is there a correlation between the hazard and formation?
A: That was the idea behind collecting some of the RMR stuff, and then we collect samples at each one of the RMR, I believe there is a structural component on that. I'm hoping some of the analyst when we get it together it will flourish itself out.
 - **Q:** Can you tell what's initiating these debris flows, are they automatic failures at the top that train debris collected at the bottom or are they a progressive unraveling mechanism.
A: I would say all the above, there are a lot of components that go into that.

9:50 am *T. Hubbard/J. Athey*

- US Geo Framework GeMS funding – FFY22 STATEMAP and current Cooperative Agreement.
 - NGMDB Cooperative Agreement 10/2021-06/2023, \$83,897 Federal. 32-page draft report on Alaska Geologic mapping system in review with USGS
 - FFY22 STATEMAP 09/2022-09/2024, \$320,231 Federal, \$320,231 CIP State Match, convert 19 geologic maps to GeMS, update superseded publications in NGMDB catalog.
 - The US Geo Framework Initiative, constructing a national 2D & 3D Geo Framework model by 2030.
- Alaska Geologic Mapping System increase production efficiency.

- 2013-2020, published 19 new geologic maps, 2.4 a year. Since 2021, published 7 new maps, and converted 45 maps into AK GeMS data, 18 a year.
- On the Map index web app, there is 50+ Ak GeMS geologic maps you can view. Additionally, 60+ new maps and conversions are in queue.
- Digital Mapping techniques 2023 hosted by DGGs in Anchorage
 - An annual series that focuses on collegial interaction, to develop efficient and standardized methods for digital geologic mapping, publication, and GIS analysis.
- West Susitna Basin STATEMAP (Formerly “North Central Tyonek”)
 - Focus on Quaternary geology, modern seismic hazards, and petroleum resources along the Alaska Industrial Development.
 - Mapping needs, help assess locations quality & quantity of construction materials, identify unstable slopes and potential active fault lines. Fill in a critical gap in bedrock geologic mapping between two prospective hydrocarbon basins.
- Revised workplan
 - Proposed funding - \$800k (\$400k Federal & State) Awarded - \$577,930 (\$228,965 Federal & State)
 - Reduced field area by 15%, reduced field days from 21 – 10 days for surficial and from 21 – 15 days for bedrock.
- Surficial Geologic Setting
 - Repeated glaciations from the west and north, estuary deposition occurred as sea levels rose and glaciers retreated.

10:10 am *J. Athey/M. Larsen*

- US GeoFramework GeMS Funding FFY23 STATEMAP
 - 09/15/23-09/14/25 \$338,200 Federal, \$338,200 State match CIP
 - Covert 17 geologic maps to GeMS standard, compile records for DGGs mineral geochronology data.
- Geologic Hazards Project ideas for FY24 STATEMAP, Landslide Hazards and Coastal Hazards
 - Proposed mapping area 400 mi², map area covers portions of Valdez A5-A8 and Valdez B6 quadrangles.
- Lidar Acquisition
 - City of Valdez completed and processed, EVOS collected not completed, EVOS AK 23 project, 50 out of 52 AOI across the state have been collected.
- Data Gap Concerns
 - High resolution lidar, the city of Valdez is currently exploring opportunities to acquire bathymetric data that can be incorporated with the STATEMAP project.
- Questions
 - **Q:** Is there a schedule at all for the EarthMRI to be mapped in the copper river basin area?
A: I do not believe the Copper River basin area is scheduled to be mapped anytime soon, focusing on the Yukon Tanana upwind with EarthMRI right now, the plan is to move to the Kuskokwim River area next.
 - **Comment** *J. Jones:* Winter meeting discussion and a ranking of the remaining areas of the state to see where, at least airborne data collection can go, because EarthMRI is not going to stop and the mapping team isn't going to catch up but there could be other data that can contribute to these type of studies in the nearer term that can be funded through EarthMRI, worth a conversation to go head and rank all the mineral belts in priorities so future decision about EarthMRI are more stream line and can potentially feed into these type of proposals.
 - **Q:** Are you talking to Alyeska about data collection that they may have conducted along their corridor in the Valdez area? We have done work with them on very substantial rockslides.
A: *J. Athey:* I do not know, that would be a good Idea.
 - **Q:** *M. Larsen:* Submarine surveys, is the scope of that just bathymetry are you guys looking at some teamwork for profiling or material strength characterization?
A: Just bathymetry data.

10:30 am J. Athey

- Extreme hazards threaten riverine communities.
 - severe and regular threats caused by flooding and erosion, mitigation and/or long-term relocation decision making needs surficial geologic mapping that shows quaternary river mitigation/rerouting and chronology.
 - Most maps of these river corridors are outdated, communities including Akiak, Kwethluk, and Tuntutuliak are reaching out to DGGs, requesting updated maps.
- Proposed work and Importance
 - Baseline data and surficial geologic mapping of fluvial deposits in risk assessment reports, STATEMAP will provide ground-truthing of fluvial terrace mapping, Existing LiDAR can be leveraged with extended datasets, historical aerial & satellite data can be incorporated, collaboration opportunities between Geologic (coastal) Hazards, Hydrology, and Surficial Geology.
- STAEMAP proposal Coastal Bluff Geology, Stability, Outlook
 - Coastal Bluff erosion on the North Slope is the biggest concern to these coastal communities, from climatic impacts, Kaktovik lies in a geologically dynamic region, stratigraphy of Kaktovik's eroding coastline will provide geologic context.
- Proposed work, Opportunity, and Importance
 - Perform geologic field mapping of Barter Island, Document the underlying coastal bluff geology, stratigraphy, and ice content, Available LiDAR data can be leveraged with newly collected drone-based imagery, the STATEMAP project would include work for the DGGs ASTAR project, collaboration opportunities.
- Questions:
 - **Comment:** There's a lot of broadband money that's getting thrown around, and if they're going to be dropping these high-speed internet cables in the river they're going to need to be doing a lot of work on that, and I know Crooked Creek is pretty close to Donlin I know they did a lot of work this spring and summer on repairing all the damage from the flooding that you showed on that slide, they might be interested in helping with that, two things to think about.
 - **Q:** Sounds like a fair amount of mapping is being done, do you know if any of these studies that you're planning/coordinating on doing, are they looking at tracking ground temperature changes over time?
A: J. Athey: I don't know off hand, I think the USGS folks that are looking at the climate permafrost up in the border island area might be moving into those kind of grounds, they are doing some drilling to look at that kind of information, in regards to ice content, now that the question is its presence and distribution of ground ice and that's important because of the thawing ground subsidence and erosion that they're seeing out there, The USGS might be interested in throwing some geophysics towards that and looking at the ice content and where that is and how that is directly affecting the erosion.
 - **Q:** J. Jones: So, in terms of triaging these three potential projects, what's the proposed method do you have, if you had to choose today could you pick the most likely candidate to go as the next proposal? Because the next deadline is what, January?
A: J. Athey: Yeah, were a little bit, from my perspective, hand-strung because we don't have that LiDAR for Valdez we just don't know if it can be collected, it's probably not a good idea to move forward with that project this year if we don't know if that's going to be in hand, which I think suggest we should concentrate on the Kaktovik barrier island one or the lower Kuskokwim.
 - **Comment:** J. Athey: We like both of those projects, I asked Nora which one she wanted to do more, she couldn't decide, so we are happy to take feedback.
A: J. Jones: Sounds like she's going to have to make a decision, I mean all the work needs to be done, it's just a matter of what needs to be done first, from my perspective.
 - **Comment:** N. Mackinson: I wanted to weigh in on this one a little bit between those two projects I think, speaking of urgency on the lower Kuskokwim project with the immediate needs, there is so much infrastructure money that is potentially poised to go out to these communities to do projects, there is contingency on a lot of those projects moving forward without the underlying surficial mapping being in place, so in many ways getting that done for community that is

experiencing erosion like that, it's on locking capability for lot of other investments at a 3rd level within Alaska, that I see a really strong light on the importance and values of Surficial geologic mapping, and the other highlight, with the presentation Jackie gave at the recent GMAB meeting, highlighting the under investments that there has been historically in the river end environment on this work, this would be a nice equity thing to put this forward as the top priority.

- **Comment:** *J. Athey:* I guess one thing we can say also in favor of the lower Kuskokwim Project, is that the communities are actively interested and we know that they want us there where as in Kaktovik ASTAR is reaching out to that community but we haven't heard directly from Kaktovik that they want us to come and do that work, potentially they might want us there to do that work as well but we already have that on the ground moving forward to make a decision for the lower Kuskokwim project.
- **Comment:** *J. Jones:* Yeah that's sounds like it could help drive some decision making, I certainly don't hear anyone on the board saying don't do any of these things, I think that based on this feedback, certainly if you all can make a decision on what your priorities are, it seems like you have the boards support for whatever you choose, it's just a matter of generating a letter.
- US GeoFramework GeMS Funding – FFY24 STATEMAP
 - 09/2024-09/2026, \$400,000 Federal \$400,000 State match (CIP?)

10:40 am Board members

- Public Comments/ Board Business:
 - *J. Jones:* It seems like we heard the feedback on everything so far, I just wanted to comment it's on the agenda to pick a new board chair, I do not want to be the one who's going to be signing STATEMAP letters going forward because I'm going on detail headquarters with EarthMRI, it's not a conflict of interest necessarily, but I would like to limit my role in explicitly supporting the STATEMAP proposals, and stuff that has gone through cooperative mapping, so I asked Ken to put that on the agenda and hopefully identify someone else with in GMAB who will take on that roll, and it's not to say that roll involves a lot of time usually Jen and others are very good about feeding, ready for primetime stuff just to get the authorization out to support the proposal, then it's just coordinating folks especially if there's a new director, I'm happy to continue participating in the boards to the extent that I can but I can't serve the chair roll, at least going forward for a little while. So, I'm putting it in Kens hands for how you guys want to deal with that.
 - *T. Homza:* Sadly, for me I'm in no position to commit, I'm trying to back out of stuff, I'm way over committed at this stage, so I'm unable to move to that roll.
 - *K. Papp:* I guess if no one is willing to take on that roll, maybe we can have a short follow up meeting at some point after this, to figure out a plan forward.
 - *M. Hanson:* I'm not against it, it's just my time on the board has been extremely short, but I do tend to have a little extra time, I would certainly be able to help, I'm not sure if everyone is comfortable with me being a chair.
 - *J. Jones:* Well, I think you just became chair!
 - *K. Papp:* Yeah, I don't think 10year is a pre-exist, well thank you sir much appreciated!
 - *M. Hanson:* Alright, well thank you!
 - *J. Jones:* I did want to comment from the EarthMRI stand point, its my intention now that I'm in that's roll, Doug Criner and I will come up to Fairbanks in November when schedule is more clear to talk to the Mineral section and to touch base with others in the other groups to see where there is opportunity's for EarthMRIs to collect data of interest to other groups or to prioritize data collection survey design for other groups, but will be working with Minerals section to set strategy for the next foreseeable future, I presume that will come up to the board for discussion probably in the winter meeting. With regards to scheduling, the earlier we can get things scheduled the less people are likely to schedule over them, especially with the long winter meeting it would be great to think about it sooner than later.
 - *K. Papp:* I will send out a siltation set out probably tomorrow.

10:05 video

ADJOURN11:00 am