

Delaware Geological Survey

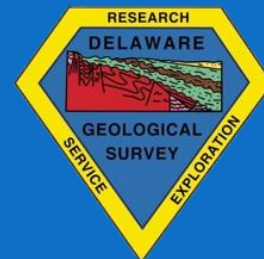
FY 2022 Administrative Hearing

Office of Management and Budget

November 12, 2020

Outline:

- I. Introduction**
- II. DGS Mission**
- III. DGS Budget Summary**
- IV. Annual Report of Programs and Activities 2020**
- V. Staff Activities and Recognition**



OUR MISSION

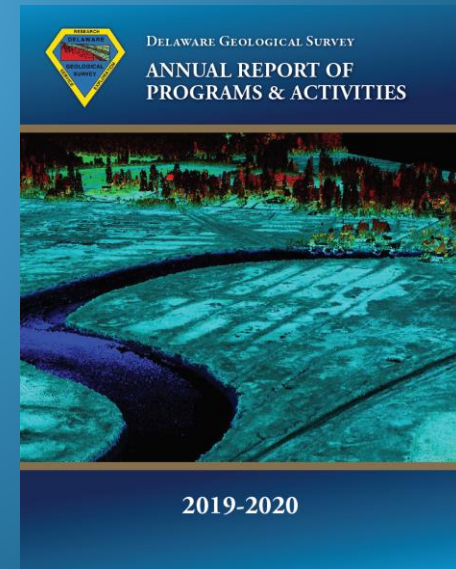
The Delaware Geological Survey's mission is, by statute, geologic and hydrologic research and exploration, and dissemination of information through publication and public service.



Delaware Geological Survey

DGS Building
257 Academy Street
University of Delaware
Newark, DE 19716-7501

www.dgs.udel.edu



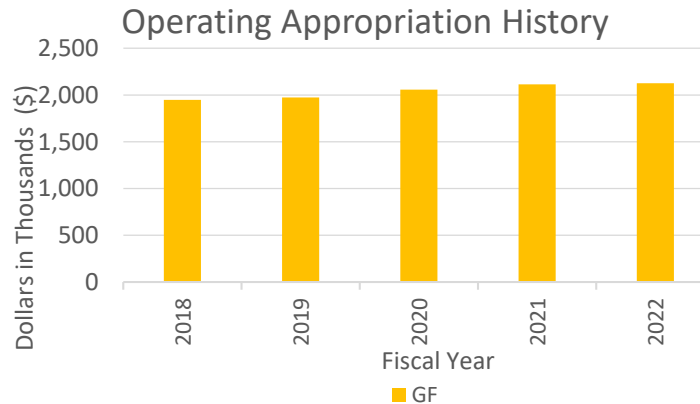
Delaware Geological Survey's Mission:

- Our focus is value-added science for public needs
- Program built on 5 primary areas:
 - (1) water resources
 - (2) geology & mapping
 - (3) natural hazards
 - (4) geospatial framework
 - (5) information and data dissemination



FFY 2022 DGS Budget Request Summary

Category	FY2021 Final Budget	FY2022 Base	FY2022 Base Adjustment	FY2022 One-Time Request	FY2022 Request
OPERATIONS 00275	1986.2	1986.2	0	12.0	1998.2
OPERATIONS SUMMARY	1986.2	1986.2	0	12.0	1998.2
RIVER MASTER 00475					
55352 Grants	127.3	127.3	0	0	127.3
RIVER MASTER SUMMARY	127.3	127.3	0	0	127.3
TOTAL	2113.5	2113.5	0	12.0	2125.5



DELAWARE GEOLOGICAL SURVEY

FY2022 TARGET BUDGET REQUEST:

RANKED LIST OF DISCRETIONARY GROWTH INITIATIVES

1. **\$12.0K** to replacement boat for research.

- Aqua Swan Jon boat
- Purchased in the 1960's
- Aluminum; riveted; flat bottom; square bow



DELAWARE GEOLOGICAL SURVEY
List of potential General Fund operating budget reductions for Fiscal Year 2022
October 15, 2020

FY 2022 Recommended Appropriation \$ 2,113.5
Five Percent (\$105.7)

OPERATIONS

Salaries/OEC

No salary increases for staff	73.7
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Contracts-Non State Agency

Reduce number of stream gages (eliminate Beaverdam Branch)	11.3
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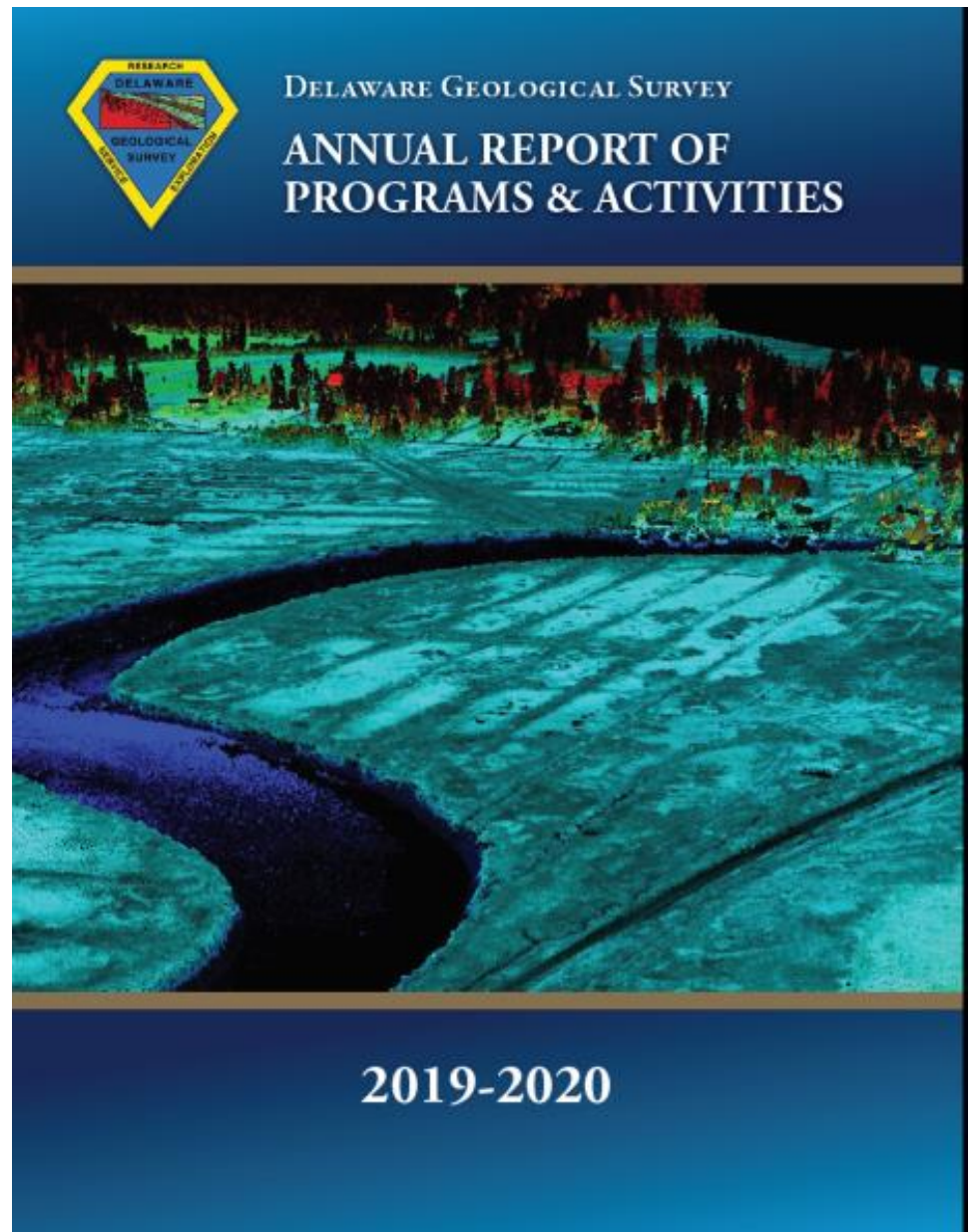
River Master Program

USGS decrease in payments (FY21)	20.7
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TARGET

\$105.7

(Please refer to enclosed
copy of *Annual Report*)



Link:

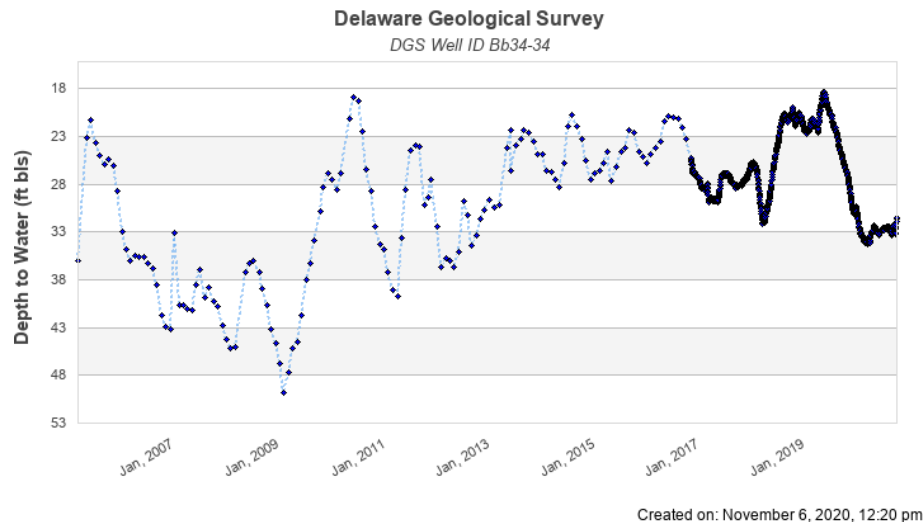
https://www.dgs.udel.edu/sites/default/files/annual_report/DGS_Annual_Report_2019-2020.pdf

1. Water Resources

Groundwater and Saline Water Intrusion Monitoring Network Infrastructure Improvements: Kent County, Delaware

Project Contacts: A. Scott Andres, Rachel W. McQuiggan, Changming He, and Thomas E. McKenna

Evaluating long-term monitoring data and tracking groundwater and surface-water conditions in an area that has significant water availability issues



Stormwater Infiltration BMP Impacts on Groundwater Quality

Project Contacts: Rachel W. McQuiggan and A. Scott Andres

Monitoring transport of salt in groundwater to evaluate the risks of winter deicing practices on groundwater



Delaware Groundwater Monitoring Network

Project Contacts: Changming He, A. Scott Andres, Rachel W. McQuiggan, and Thomas E. McKenna

DGS currently monitors groundwater levels in a network of wells that support multiple uses by the environmental management, engineering, water supply, and science communities.

DGS Service to the Delaware River Master Advisory Committee

Activity Contacts: David R. Wunsch and Stefanie J. Baxter

Ensuring Delaware is represented in Decree Party discussions and negotiations



An inflatable dam helps to control salinity near the intake of SUEZ Water Delaware.



Attendees of the Advisory Committee Annual Meeting enjoyed a tour of the City of Newark Reservoir, hosted by Water Operations Superintendent, Mark Neimeister.

2. Geology & Mapping

Delaware Critical Minerals Data Inventory Project

Contacts: Mojisola A. KunleDare, Peter P. McLaughlin, William S. Schenck, and Kelvin W. Ramsey

NGGDPP-funded project mines, compiles, and preserves data on possible occurrences of critical minerals in Delaware

Early Mesozoic Buried Rift Basins in Delaware and Their Carbon Storage Potential

Project Contacts: Mojisola A. KunleDare and Peter P. McLaughlin

Study suggests buried rift basins may occur in Delaware with adequate potential resources for carbon storage

Atlantic Outer Continental Shelf Sample and Data Repository

Project Contacts: Mojisola A. KunleDare and Peter P. McLaughlin

NGGDPP-funded project preserves valuable cores and data and helps maintain and enhance stakeholder access

Delaware Geologic Mapping Program

Project Contacts: Jaime L. Tomlinson and Kelvin W. Ramsey

Mapping the surficial geology of Delaware through the STATEMAP federal cost-share program



Delaware Offshore Sand Resources

Project Contacts: Kelvin W. Ramsey and C. Robin Mattheus

Identifying sand resources for coastal resiliency and restoration projects

3. Natural Hazards

DGS Natural Hazards Emergency Response Program

*Project Contacts: Stefanie J. Baxter, Kelvin W. Ramsey,
John A. Callahan, and David R. Wunsch*

Coordination of DGS activities related to assessing natural hazards and risks associated with earthquakes, floods, and storms, and providing support to emergency managers

The Delaware Coastal Flood Monitoring System

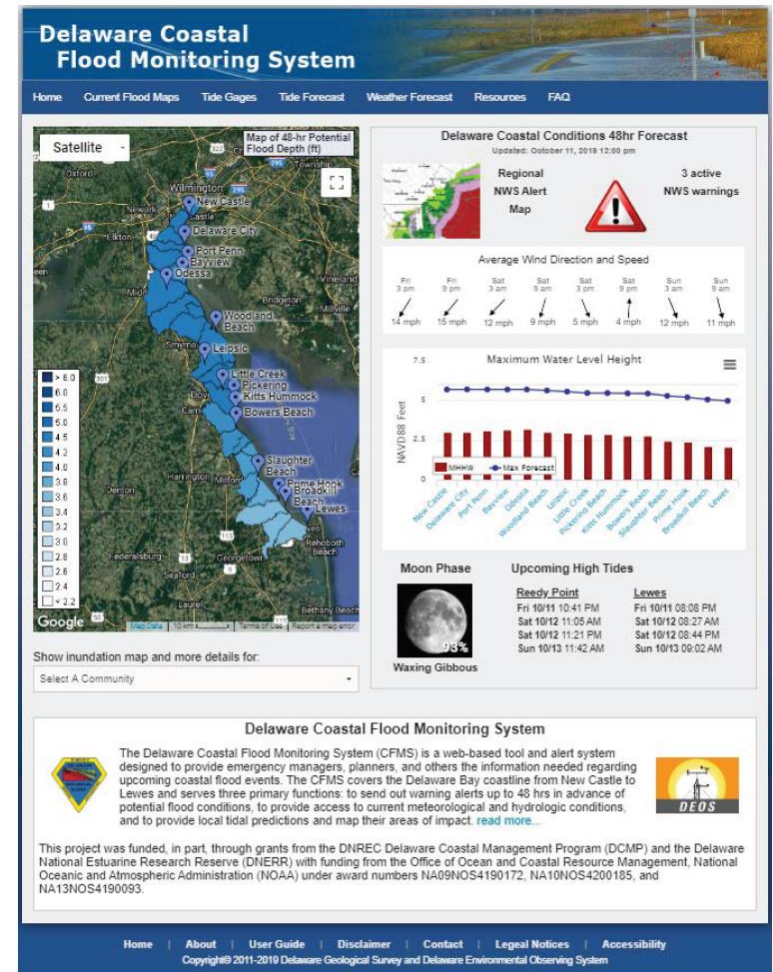
Project Contact: John A. Callahan

A real-time coastal flood monitoring and early warning system for Delaware coastal communities

Coastal Flooding from Tropical Storms

Project Contact: John A. Callahan

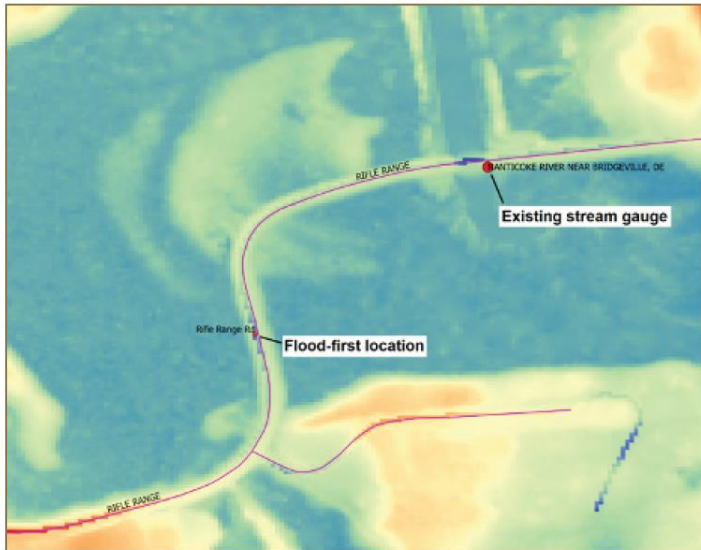
Storm tides and surges from tropical storm systems in the Delaware and Chesapeake Bays



Identifying Flood-First Locations on Delaware Roadways

Project Contacts: Daniel L. Warner and John A. Callahan

Identifying locations which may be monitored to help improve flood forecasting capabilities



Example of a flood-first location with an associated stream gage overlaid on a digital elevation model. The nearby gage may be used to identify when hazardous flood conditions may develop, while the flood-first location identifies where it will likely happen.

Extreme Water Levels in the Delaware Bay and Inland Bays

Project Contact: John A. Callahan

Analysis of the maximum coastal flood events at NOAA and USGS tidal stations in the Delaware Bay and Inland Bays



A portion of Sharpless Road in New Castle County made impassable from flooding on the Red Clay Creek.

Determining Flow Paths for Flooding and Draining in Slaughter Beach, Delaware

Project Contact: Thomas E. McKenna

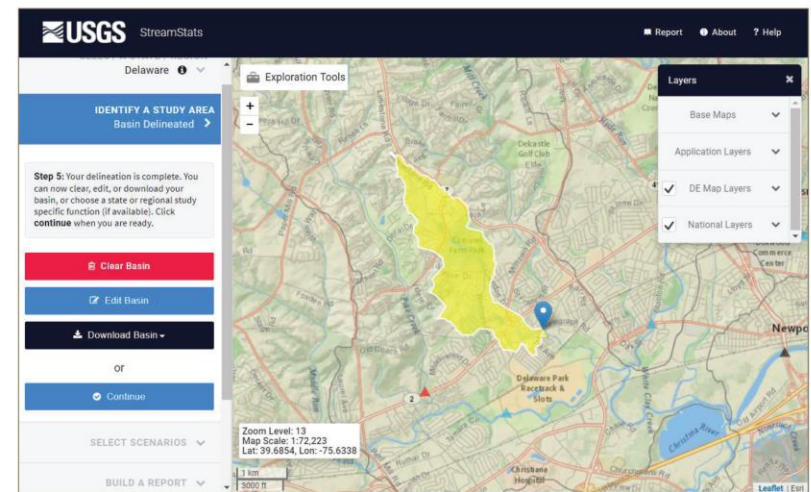
Providing hydrologic information to develop and implement strategies for a bayside community



Delaware StreamStats

Project Contacts: John A. Callahan, Daniel L. Warner, and David R. Wunsch

Digital Elevation Model, GIS, and Watershed Analysis to Support Update of USGS StreamStats



Example of online user interface for the USGS StreamStats website. Users can click any point along a stream (blue arrow) and the StreamStats program will delineate a watershed (yellow area), extract relevant basin characteristics for this watershed, and use these characteristics to estimate peak flood statistics based on empirical regression equations.

4. Information and Data Dissemination

DGS Performance Measures

IPU	Performance Measure Name	Fiscal Year 2020 Actual	Fiscal Year 2021 Budget	Fiscal Year 2022 Governor's Recommended
90-01-02	Delaware Geological Survey			
	# of geologic mapping square miles (cumulative)	2,640	2,640	2,698
	# of DGS well records in database	37,640	38,839	40,001
	# of water level records in database (millions)	25	28.7	32.4
	# of water salinity observations to look for sea level rise & salt water intrusion (millions)	2.9	4.3	5.7
	# of stream gages	10	10	10
	# of tide gages	7	7	7
	# of website page views (annual)	152,258	164,591	164,591

DGS Awards and Recognition:

2020 Charles J. Mankin Memorial Award



"Geologic Map of Offshore Delaware"

Authors: C. Robin Mattheus, Kelvin W. Ramsey, and Jaime L. Tomlinson

2019 Geological Society of America Frye Environmental Award

Delaware Sea Level Rise Technical Committee – Chair, John Callahan

ESRI Planet Story Maps – *Story of the Month*

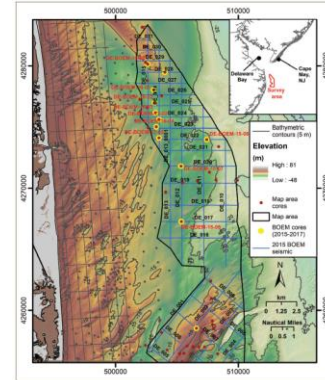


"The Hunt for Delaware Boundary Monuments" by Lillian Wang

2019 Storymapper of the Year – Finalist



"The Hunt for Delaware Boundary Monuments" by Lillian Wang & Sandy Schenck



Data distribution map. The BOEM survey area, which is entirely within federal waters, is outlined in black. There is a noticeable decrease in data density in this area compared to areas closer to shore. Cores collected as part of the Atlantic Sand Assessment Project are highlighted in yellow and labeled by local ID.

Personnel Highlights:

Moji KunleDare – Intergovernmental Personnel Act (IPA) Appointee with USGS

Jaime Tomlinson – ASBOG Council of Examiners

Peter McLaughlin – Cushman Foundation for Foraminiferal Research Board

David Wunsch – 2020/21 President of the American Geosciences Institute

QUESTIONS?

UD 2019 Art in Science Exhibition – Image
by John A. Callahan and Daniel L. Warner

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