Society for Risk Analysis
New England Chapter

GIS Data and Flood Vulnerability Assessments
Matthew J. Mayo, M.S., GISP, CPG, P.G.

Tuesday November 14, 2017 from 5:30-7pm
Refreshments: 5:30 pm – 6:00 pm
Presentation: 6:00 pm – 6:45 pm
Discussion: 6:45 – 7:00 pm

Location
Gradient
20 University Road, 5th Floor
Cambridge, MA 02138

Please RSVP by **November 10th** to Julie Lemay (JLemay@gradientcorp.com)
or Rebecca DeVries (Rebecca.DeVries@erg.com)

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GIS Data and Flood Vulnerability Assessments:
Using GIS data and tools to assess the vulnerability of industrial facilities and natural resources to flooding events

Because of changes in the Earth's climate, the number and intensity of flooding events is predicted to be greater in the future. A higher frequency of major flooding events could increase risks to human activities and structures (e.g., industrial facilities) as well as natural resource areas located near water bodies. Vulnerability assessments are a common first step in risk mitigation planning, and can help identify potential flooding impacts on infrastructure, human health, and the environment.

Mr. Mayo will discuss a screening-level approach using publicly available geospatial data and Geographic Information System (GIS)-based tools for assessing industrial facility vulnerability and potential damages to natural resources due to flooding. This approach demonstrates that key information – such as Toxics Release Inventory data, US Environmental Protection Agency (hazardous waste site and Discharge Monitoring Report facility data, the National Wetlands Inventory, the National Land Cover Database, Federal Emergency Management Agency (FEMA) floodplain data, National Oceanic and Atmospheric Administration (NOAA) hurricane storm surge hazard data, and geospatial information for recent flood events – can be combined within a GIS database to yield a robust dataset for conducting a screening-level vulnerability assessment.

Mr. Mayo will illustrate this approach for two US case study areas, located along the central Mississippi River and the southeast US coast. Our discussion focuses on the potential for direct flooding damage to infrastructure and natural resource areas, and the potential impacts associated with pollutant mobilization, both of which could result in regulatory action or litigation. Mr. Mayo will show that performing GIS-based flood vulnerability assessments can identify facilities and areas at risk, delineate pre-event baseline conditions, and inform risk mitigation planning.

About the Presenter

Mr. Mayo is a GIS Scientist and Hydrogeologist at Gradient with 17 years of experience with spatial database construction and modeling focusing on projects related to hydrogeologic exploration and assessment, and hydrochemical analysis. His areas of expertise include:

- Geospatial database construction;
- spatial analysis;
- aerial imagery and remote sensing data processing and analysis;
- 2D and 3D modeling and visualization;
- hydrogeologic and hydrochemical data processing and analysis;
- GIS software and information interoperability; and
- GIS best practices.

He has provided technical consulting services to environmental professionals, municipalities, and private entities for wastewater disposal, storm water management, environmental compliance, public water supply, land redevelopment and asset management projects. He has also provided expert technical support for geologic exploration and GIS services in litigation.

Mr. Mayo has taught geology and GIS curricula and applications at area Universities and professional programs. He is proficient with numerous geospatial, geologic, and hydrochemical database and modeling software packages and possesses a working knowledge of environmental regulations.

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GETTING TO THE EVENT

Directions to Gradient can be found at: https://gradientcorp.com/directions.html

From the MBTA Subway (on foot):

Harvard Square is on the Red Line of the MBTA rapid transit system (locally known as "the T"). From Park St. Station in the center of Boston, it is four stops in the outbound direction toward Alewife.

Driving Directions (20 University Road, Cambridge, MA 02138):

From Logan Airport
Take TED WILLIAMS TUNNEL to Boston - stay in LEFT lane at the end of the tunnel
- Stay to LEFT and proceed to 90 West (Mass Pike) - get in the RIGHT lane
- Take EXIT 20 marked: BRIGHTON/CAMBRIDGE
- Follow CAMBRIDGE/SOMERVILLE signs
- Proceed straight onto bridge over the Charles River - get in the LEFT lane
- Turn LEFT onto MEMORIAL DRIVE
- Turn RIGHT onto JFK STREET
- Turn LEFT onto ELIOT STREET
- Take first LEFT onto BENNETT STREET
The CHARLES HOTEL will be on the LEFT side of the street.
Parking garage entrance is located on Bennett Street or turn LEFT on UNIVERSITY ROAD for an additional parking garage entrance

From Points North/South
From Route 93 North or South
- Take EXIT 26: STORROW DRIVE/N. STATION
- Follow signs toward STORROW DRIVE - continue on STORROW DRIVE
- Proceed on STORROW DRIVE past CENTRAL SQ./MASS PIKE exit
- Stay in RIGHT lane, and take HARVARD/CAMBRIDGE exit
- Take first RIGHT onto bridge crossing Charles River
- At second set of lights turn LEFT onto ELIOT STREET
- Take first LEFT onto BENNETT STREET
The CHARLES HOTEL will be on the LEFT side of the street.
Parking garage entrance is located on Bennett Street or turn LEFT on UNIVERSITY ROAD for an additional parking garage entrance

From Points West
Take the Mass Pike (Route 90) East
- Take Exit 18: BRIGHTON; CAMBRIDGE (It's a left exit)
- After tollbooths, bear RIGHT at the fork following the sign: CAMBRIDGE SOMERVILLE
- Cross Charles River, take immediate LEFT onto Memorial Drive
- Turn RIGHT at JFK STREET
- Turn LEFT onto ELIOT STREET
- Take first LEFT onto BENNETT STREET
The CHARLES HOTEL will be on the LEFT side of the street. Parking garage entrance is located on Bennett Street or turn LEFT on UNIVERSITY ROAD for an additional parking garage entrance