

# Kaleigh M. Yost, Ph.D.

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## EDUCATION

Ph.D., Civil Engineering (Geotechnical), Virginia Tech, Blacksburg, Virginia, 2022  
M.S., Civil Engineering (Geotechnical), University of Texas, Austin, Texas, 2017  
B.S., Civil Engineering (Structural), University of Notre Dame, Notre Dame, Indiana, 2015

## ACADEMIC APPOINTMENTS

L. Robert and Mary L. Kimball Early Career Assistant Professor (January 2023-present), Department of Civil and Environmental Engineering, Pennsylvania State University, University Park, PA

## AWARDS AND HONORS

2025 Elected Board Member, US Universities Council on Geotechnical Education and Research  
2025 Earthquake Engineering Research Institute Younger Member Award  
2023 Kimball Early Career Assistant Professorship  
2020 Institute of International Education Graduate International Research Experience (IIE-GIRE)  
2020 American Society of Civil Engineers, Richmond Branch Civil Engineering Scholarship  
2020 Virginia Space Grant Consortium Fellowship (2<sup>nd</sup> award)  
2019 Virginia Space Grant Consortium Fellowship  
2019 Charles Via Ph.D. Fellowship, Virginia Tech  
2019 New Horizon Graduate Fellowship, Virginia Tech  
2015 Rita T. and J. Crozier Brown Endowed Graduate Fellowship, University of Texas  
2015 Reverend Thomas A. Steiner Award, University of Notre Dame  
2015 American Society of Civil Engineers Activity Award, Indiana Chapter

## PROFESSIONAL EXPERIENCE

**Staff Engineer II and III, Langan Engineering and Environmental Services, Arlington, VA**  
2017-2018

Designed deep and shallow foundations, retaining walls, slopes, pavements, and slabs. Prepared geotechnical engineering recommendations and reports for over 20 projects in Virginia, Maryland, Washington D.C., and over 15 international projects on four continents.

**Technical Intern, ARCADIS U.S., Inc., Philadelphia, PA**  
2013

Performed engineering calculations for pump stations, water treatment plants, and dewatering facilities.

## SPONSORED RESEARCH

PIs	Project Title	Source	Amount	Dates
Mejia, A., Kirchoff, C., Yost, K.	CIVIC-PG Track A: Accelerating Coproduced Flood Resilience in Underserved Levee Communities	National Science Foundation	\$74,996	10/24-03/24
Yost, K., Zhu, T.	Geotechnical Data Fusion for Improving AI Subsurface Predictions	CIAMTIS U.S. DOT Region 3 University Transportation Center	\$124,053 (including \$62,027 matching funds)	07/24-07/25
Yost, K., Stempel, P., Raj, C.	Visualizing Inland Flood Hazard in the Face of Climate Change	Institute of Energy and the Environment, Pennsylvania State University	\$40,000	07/24-06/25
Mejia, A., Raj, C., Brent, D., Yost, K.	CLIMA: Climate-resilient infrastructure adaptations for maladaptive levee networks	National Science Foundation	\$757,974	09/23-08/26
Yost, K., Stolte, A., Mejia, A., Orense, R.	Towards Linking Hydro-Climatic Change and Earthquake Hazard	Seed Grant, Pennsylvania State University and University of Auckland	\$25,048 (\$13,000 USD + \$25,000 NZD)	06/23 - 12/24

## PUBLICATIONS

### Journal Publications

1. **Yost, K.M.**, Yerro, A., Martin, E., Green, R. (2024). “A Cone Penetration Test Database for Multiple Thin Layer Correction Procedure Development.” *Earthquake Spectra*, 40(1), 803-827. <https://doi.org/10.1177/87552930231217002>
2. **Yost, K.M.**, Martinelli, M., Yerro, A., Green, R., De Lange, D. (2023). “Addressing Complexities in MPM Modeling of Calibration Chamber Cone Penetrometer Tests in Homogenous and Highly Interlayered Soils.” *Computers and Geotechnics*, 158(2023), 105378. DOI: 10.1016/j.compgeo.2023.105378
3. **Yost, K.M.**, Yerro, A., Green, R.A., Martin, E., and Cooper, J. (2022). “MPM Modeling of Cone Penetrometer Testing for Multiple Thin-Layer Effects in Complex Stratigraphy.” *Journal of Geotechnical and Geoenvironmental Engineering*, 148(2), 04021189. DOI: 10.1061/(ASCE)GT.1943-5606.0002730

4. Cooper, J., Martin, E.M., **Yost, K.M.**, Yerro-Colom, A., and Green, R.A. (2021). “Robust identification and characterization of thin soil layers in cone penetration data by piecewise layer optimization.” *Computers and Geotechnics*, 141, 104404. DOI: 10.1016/j.compgeo.2021.104404
5. **Yost, K.M.**, Green, R.A., Upadhyaya, S., Maurer, B.W., Yerro-Colom, A., Martin, E.R., and Cooper, J. (2021). “Assessment of the efficacies of correction procedures for multiple thin layer effects on Cone Penetration Tests.” *Soil Dynamics and Earthquake Engineering*, Elsevier, 144, 106677. DOI: 10.1016/j.soildyn.2021.106677

## Conference Publications

+indicates current/former student supervised by K.M. Yost

1. Thum, T.S., Zhang, L., **Yost, K.**, Hryciw, R.D., and Green, R.A. (2026). “VisCPT and large-scale calibration chamber tests for thin layer identification and characterization.” Proceedings, 21<sup>st</sup> International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE). Vienna, Austria. 14-19 June 2026. [Submitted].
2. Ghimire, A.<sup>+</sup>, **Yost, K.M.**, Zhu, T., and Cutts, R. (2026). “Validating Machine Learning Based Subsurface Predictions with Geophysical and Boring Data.” Proceedings, Geo-Congress 2026. Salt Lake City, UT. 9-12 March 2026. [Accepted].
3. Kaintz, R.<sup>+</sup> and **Yost, K.M.** (2025). “A Study of Flood Protection Systems in the Susquehanna River Basin.” Proceedings, Dam Safety 2025. Cleveland, OH. 21-25 September 2025.
4. Ghimire, A.<sup>+</sup>, **Yost, K.M.**, Stolte, A., Mejia, A., and Orense, R. (2025). “Past, Present, and Future Liquefaction Hazard at Greenmeadows School, Napier, New Zealand.” Proceedings, Geotechnical Frontiers 2025. Louisville, KY. 2-5 March 2025. Geotechnical Special Publication 366, pp. 134–144. DOI: 10.1061/9780784485996.014
5. **Yost, K.M.**, Green, R.A., Yerro, A., and Martin, E.R. (2024). “Utilizing CPT Databases to Better Inform Liquefaction Evaluations.” Proceedings, 18th World Conference on Earthquake Engineering (WCEE2024). Milan, Italy. 30 June-5 July 2024.
6. **Yost, K.M.**, Cooper, J., Green, R.A., Martin, E., and Yerro, A. (2022). “Correcting Measured CPT  $q_c$  for Multiple Thin Layer Effects.” Proceedings, 5<sup>th</sup> International Symposium on Cone Penetration Testing (CPT’22). Bologna, Italy. 8-10 June 2022. DOI: 10.1201/9781003308829-115
7. **Yost, K.M.**, Yerro, A., Green, R.G., and Martin, E. (2022). “Harnessing Numerical Tools to Study the Limitations of CPTs for Characterizing Complex Soil Stratigraphies for Liquefaction Assessment.” Proceedings, 12<sup>th</sup> U.S. National Conference on Earthquake Engineering. Salt Lake City, Utah. 27 June-1 July 2022.
8. **Yost, K.M.**, Green, R.A., Herwitz, E., and Wotherspoon, L. (2021). “Bench-Scale Testing of Grouts for Geo-Slice Peels.” Proceedings, International Foundations Congress and Equipment Exposition (IFCEE 2021). Dallas, TX. 10-14 May 2021. Geotechnical Special Publication 325, pp. 318-329. DOI: 10.1061/9780784483428.033
9. Bassal, P.C., Boulanger, R.W., Cox, B.R., **Yost, K.M.**, and DeJong, J.T. (2020). “Dynamic Analyses of Liquefaction at Palinurus Road During the Canterbury Earthquake Sequence.” Proceedings, United States Society on Dams Annual Conference, Denver, CO. 2020.
10. **Yost, K.M.**, Cox, B.R., Wotherspoon, L., Boulanger, R.W., van Ballegooy, S., and Cubrinovski, M. (2019). “In-situ Investigation of False-Positive Liquefaction Sites in Christchurch, New Zealand: Palinurus Road Case History.” Proceedings, Geo-Congress 2019. Philadelphia, PA. 24-27 March 2019. Geotechnical Special Publication 308, pp. 436-451. DOI: 10.1061/9780784482100.044
11. Cox, B.R., **McLaughlin, K.A.**, van Ballegooy, S., Cubrinovski, M., Boulanger, R.W., and Wotherspoon, L. (2017). “In-situ Investigation of False-Positive Liquefaction Sites in Christchurch, New Zealand: St. Teresa’s School Case History.” Proceedings, Performance-based

Design in Earthquake Geotechnical Engineering, PBD-III Vancouver. 16-19 July 2017. Vancouver, British Columbia. ISSMGE Technical Committee TC203, Paper 265.

## Conference Abstracts

+indicates current/former student supervised by K.M. Yost

1. **Yost, K.M.**, Peng, Y.<sup>+</sup> (2025). “Forty Fort Levee Seepage and Stability Modeling with MPM.” Anura3D MPM Workshop 2025, Barcelona, Spain. 30-31 January 2025.
2. **Yost, K.M.**, Lang, A., Mijic, Z. (2024). “Advancing Seismic Safety and Community Resilience in the Era of Climate Change: Public Policy and Advocacy in the Earthquake Engineering Community.” American Geophysical Union Annual Meeting (AGU24). Washington, D.C. 9-13 December 2024.
3. **Yost, K.M.**, Mejia, A., Cibin, R., Brent, D., Kaintz, R.<sup>+</sup>, Peng, Y.<sup>+</sup> (2024). “Leveraging Geospatial, Geophysical, and Geotechnical Technologies to Study Flood Hazard in Pennsylvania.” American Geophysical Union Annual Meeting (AGU24). Washington, D.C. 9-13 December 2024.

## Theses

1. **Yost, K.M.** (2022). *Improving CPT-based Earthquake Liquefaction Hazard Assessment at Challenging Soil Sites*, PhD Thesis, Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, VA, 285pp.
2. **McLaughlin, K.A.** (2017). *Investigation of False-Positive Liquefaction Case History Sites in Christchurch, New Zealand*, MS Thesis, Department of Civil, Architectural, and Environmental Engineering, University of Texas at Austin, Austin, TX, 156pp.

## Published Data

1. **Yost K.**, Yerro Colom A, Martin E, Green R (2022). Data Associated with A CPT Database for Multiple Thin-Layer Correction Procedure Development. University Libraries, Virginia Tech. Dataset. DOI: 10.7294/21408450

## PRESENTATIONS

### External

1. “Novel Geospatial, Geophysical, and Geotechnical Technologies to Characterize Pennsylvania Levees,” presented at the Pennsylvania Association of State Floodplain Managers Conference, State College, PA, September 15, 2025.
2. (invited) “Building Flood Resilience in the Susquehanna River Basin,” presented at the Flood Risk in the Mid-Atlantic - Goddard Forum, Harrisburg, PA, September 10, 2025.
3. “Leveraging Geospatial, Geophysical, and Geotechnical Technologies to Study Flood Hazard in Pennsylvania,” presented at the American Geophysical Union Annual Meeting (AGU24), Washington, DC, December 11, 2024.
4. “Advancing Seismic Safety and Community Resilience in the Era of Climate Change: Public Policy and Advocacy in the Earthquake Engineering Community,” presented at the American Geophysical Union Annual Meeting (AGU24), Washington, DC, December 10, 2024. (poster presentation)

5. (invited) "Understanding Hydroclimatic Effects on Liquefaction Hazard in Hawke's Bay, New Zealand: Greenmeadows School Case History," presented at the 2024 Earthquake Engineering Research Institute Annual Meeting, Seattle, WA, April 11, 2024.
6. "Towards Linking Hydroclimatic Change and Earthquake Hazards in Hawke's Bay, New Zealand," presented at the 2024 Earthquake Engineering Research Institute Annual Meeting, Seattle, WA, April 11, 2024 (poster presentation)
7. (invited) "Past, Present, and Future Liquefaction Hazard in Hawke's Bay, New Zealand," presented at the University of Maine, Orono, ME, March 8, 2024.
8. (invited) "Numerical modeling to understand limitations of CPT-based liquefaction hazard assessment," presented at ASCE Geo-Institute Web Conference, December 6, 2023 (virtual)
9. "MPM Modeling to Overcome Limitations of Cone Penetration Testing in Complex Stratigraphy," presented at the 14th Annual MPM Workshop, Orono, ME, September 15, 2023 (virtual)
10. "Earthquake Hazard is Climate Hazard," presented at the 2023 Natural Hazards Workshop, Broomfield, CO, July 10, 2023 (poster presentation)
11. "Challenges and Innovations in Numerical Modeling of CPTs in Interlayered Soils," presented at the 2023 Anura3D Workshop, June 30, 2023 (virtual)
12. (invited) "Improving Earthquake-Induced Liquefaction Hazard Assessment for Complex Geologies," presented at Colorado School of Mines, Golden, CO, July 12, 2022.
13. "Harnessing Numerical Tools to Study the Limitations of CPTS for Characterizing Complex Soil Stratigraphies for Liquefaction Assessment," presented at 12th International Conference on Earthquake Engineering (12NCEE), Salt Lake City, UT.
14. "Bench-Scale Testing of Grouts for Geo-Slice Peels." International Foundations Congress and Equipment Exposition," presented at International Foundations Congress and Equipment Exposition (IFCEE 2021) (virtual poster presentation)
15. "Characterizing Complicated Soil Profiles: Using Numerical Methods to Better Understand Cone Penetrometer Test Data," presented at ASCE Richmond Branch Technical Meeting, February 2021 (virtual)
16. "In-Situ Investigation of False-Positive Liquefaction Sites in Christchurch, New Zealand: Palinurus Road Case History," presented at GeoCongress, Philadelphia, PA.

### **Internal**

1. (invited) "Rising Waters: Understanding Evolving Flood Risk in Pennsylvania," Millennium Cafe, Penn State University, April 1, 2025.
2. (invited) "Geotechnical Engineering: An Overview," Penn State University, CE 100S, Topics and Contemporary Issues in Civil and Environmental Engineering: First-Year Seminar, November 1, 2023.
3. (invited) "Improving Earthquake-Induced Liquefaction Hazard Assessment for Complex Geologies in a Changing Hazard Landscape," Penn State University, EDSGN 590 Colloquium, October 30, 2023.

### **COURSES TAUGHT**

Geotechnical Subsurface Characterization (CE 597, graduate, Penn State), SP25  
 Foundation Engineering (CE 435, undergraduate/graduate, Penn State), FA24  
 Engineering Mechanics of Soils (CE 335, undergraduate, Penn State), SP23, FA23, SP24  
 Introduction to Geotechnical Engineering (CEE 3514, undergraduate, Virginia Tech), FA21

## **STUDENT ADVISEES**

### **PhD Dissertation Advisor** (2 in progress)

#### *In progress:*

Peng, Y., “Levee Stability and Flood Hazard in the Susquehanna River Basin.” (August 2024 - Present). Stage of Completion: Passed Qualifying Exam in 08/2025.

Ghimire, A., “Characterizing Liquefaction Hazard at Complex Soil Sites with Partially Saturated Soils in the Face of Climate Change.” (August 2023 - Present). Stage of Completion: In process. Passed Comprehensive Exam in 08/2025.

### **DEng Praxis Advisor** (1 in progress)

#### *In progress:*

Riveros, G.A., “Statistical Approaches for Geotechnical Applications.” (January 2025 – Present). Stage of Completion: In process.

### **Undergraduate Student Researchers Supervised** (1 in progress, 4 completed)

#### *In progress:*

Ottes, A., “Using HVSr to Characterize Heterogeneity in Subsurface Conditions and Geometry Along a 9-Mile-Long Earthen Levee.” WISER/MURE/FURP Program. (January 2025 - Present).

#### *Completed:*

Everett, A. “Climate-Sensitive Levee Risk Assessment and Policy Considerations Needed for Flood Resiliency.” Penn State Climate Science REU Program. (May 2025 - August 2025).

Louw, G. “Climate Change Impacts on Groundwater Levels in Napier, New Zealand.” Schreyer Honors Thesis Student, (October 2024 - May 2025).

Kaintz, R., “Understanding the Impact of Climate Change on Levee Infrastructure and Related Flood Hazards.” WISER/MURE/FURP Program. (January 2024 - December 2024).

Reja, A., “Rising Water, Rising Concerns: Levee Residual Risk in the Susquehanna River Basin.” Penn State Climate Science REU Program. (May 2024 - August 2024).

### **PhD Dissertation Committee Member** (1 completed, 3 in progress)

#### *In progress:*

Behroozi, A., “Solving Shallow Water Equations for Flood Inundation Simulation using Neural Operators.” (February 2025 – Present). Stage of Completion: Passed Comprehensive Exam in 08/2025.

Wang, X., "Mapping and Predicting Spatiotemporal Permafrost Characteristics Using Ground-Based and Airborne Geophysical Methods." (November 2024 - Present). Stage of Completion: In process. Passed Comprehensive Exam in 01/2025.

Caballero Russi, D., "Vibration Mitigation of Seismic Waves Implementing Metamaterials Principles." (June 2023 - Present). Stage of Completion: In process. Passed Comprehensive Exam in 08/2024.

*Completed:*

Ji, X., "Understanding Seasonal Variations of In-Situ Thermal and Seismic Characteristics of Degrading Permafrost in the Arctic Based on Distributed Fiber Optic Sensing." (November 2024 - April 2025). Passed Thesis Defense in 04/2025.

**Masters Committee Member** (*1 completed*)

*Completed:*

Hallissey, M., "Development of Electromagnetic Geophysical Surveys for Permafrost using Unmanned Aerial Systems." (January 2025 – March 2025). Passed Thesis Defense in 03/2025.

**Awards Won by Students:**

Rachel Kaintz, Association of State Dam Safety Officials Undergraduate Student Paper Competition, Spring 2025

Aavash Ghimire, Deep Foundations Institute At-Large Scholarship, Fall 2024

Aavash Ghimire, University Graduate Fellowship, Fall 2023

## **PROFESSIONAL CONTRIBUTIONS**

### **Professional Registration**

Engineer Intern, State of Indiana

### **Professional Affiliations**

US Universities Council on Geotechnical Education and Research (USUCGER), 2023-present

American Society of Civil Engineers (ASCE), 2012-present

Earthquake Engineering Research Institute (EERI), 2011-present

### **Service on Committees in Professional Organizations**

Junior Board Member, USUCGER, 2025-present

Co-chair, EERI Public Policy and Advocacy Committee, 2023-present

Member, Geotechnical Extreme Events Reconnaissance Association (GEER), 2023-present

Member, ASCE Innovative Technologies & Tools in Geotechnical Engineering Committee, 2023-present

Member, Soil Dynamics and Earthquake Engineering Committee, 2023-present

Member, EERI Public Policy and Advocacy Committee, 2020-present

Member, EERI Younger Member Committee, 2020-present

### **Other Professional Service**

Mentor, [ARISE-US](#), a private sector alliance for disaster resilient societies through the United Nations Office for Disaster Risk Reduction, 2024 - present

McDuffie, J. (Ph.D. Student, Civil Engineering, Vanderbilt University), “Capturing Private-Sector Perspectives on Built-Environment Resilience.” (February 2024 – Present).

Legenza, R. and Fuller, R. (M.S. students, Emergency Management, Arizona State University), “Compiling and Analyzing Public Domain Methodologies Advancing Community Infrastructure Resilience.” (January 2024 – May 2024).

Developer, Anura3D Material Point Method (MPM) Research Community, 2020-present

Special session organizer, “Changing Climate, Changing GeoHazards,” Geocongress 2024, Vancouver, BC, Canada, February 25-28, 2024

Organizer, US-New Zealand Workshop on Interconnected Hazards, Auckland, New Zealand, November 21, 2023

Organizing Committee Member, [Risk and Resilience DAT/Artathon](#), Summer 2023

### **University Service**

Member, Penn State Flood Hazard Working Group, 12/2024 - present

Member, Search Committee for Professional Track Faculty Position in CEE, 08/2024 - present

Faculty Advisor, Penn State Chapter of the Earthquake Engineering Research Institute, 01/2024-present

Judge, College of Engineering Research Symposium, 04/2023

Member, Undergraduate Program Committee, Civil and Environmental Engineering, 01/ 2023-present