

Philip B. Bedient—Resume 2025

PROFESSIONAL ADDRESS:

Herman Brown Professor of Engineering
Professor of Civil and Environmental Engineering
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PROFESSIONAL PREPARATION:

B.S. Physics, University of Florida, Gainesville, Florida, 1969
M.S. Environmental Engineering, University of Florida, 1972
Ph.D. Environmental Engineering Sciences, University of Florida, 1975

APPOINTMENTS:

Chair, Civil and Envi Eng. Dept., Rice University July 2019 – June 2022
Director, SSPEED Center at Rice University (2009 to Present) – 16 years.
Herman Brown Professor of Engineering - CEE - Rice University - July 2001 to present.
Professor - Environmental Engineering - Rice University - 1986 to 2001.
Professor and Chair - Department of Environmental Science and Engineering, Rice University, Houston, Texas, 1992 - 1999.
Asst & Associate Professor - Environmental Engineering – 1975 - 1986.

PUBLICATIONS :

1. Furrh, T. and Bedient, P. Upstream Addicks Barker Reservoir Damages During Hurricane Harvey: A Case Study of Urban Hydrology and Policy Failure. (2023). AWRA JAWRA, 15 pgs.
2. Peebles, A, Li, X., Garcia, M., Flood Mitigation of Channelization and Detention given Changing Rainfall Conditions in Houston. Natural Hazards Review (2023). ASCE.
3. Sebastian, A., Juan, A., & Bedient, P. B. (2022). Urban flood modeling: Perspectives, challenges, and opportunities. Coastal flood risk reduction: The netherlands and the U.S. upper texas coast (pp. 47-60) doi:10.1016/B978-0-323-85251-7.00005-6
4. Garcia, M.; Juan, A.; Bedient, P. Integrating Reservoir Operations and Flood Modeling with HEC-RAS 2D. Water 2020, 12, 2259.
5. Fagnant, C., Gori, A., Sebastian, A. P. Bedient, and K. Ensor. Characterizing spatiotemporal trends in extreme precipitation in Southeast Texas. Nat Hazards (2020). <https://doi.org/10.1007/s11069-020-04235-x>.
6. Gori, A., Gidaris, I., Elliott, J., Padgett, J., Loughran, K., Bedient, P., Panakkal, P., and Juan, A. "Accessibility and Recovery Assessment of Houston's Roadway Network due to Fluvial Flooding during Hurricane Harvey." Natural Hazards Review, Vol. 21, Issue 2 (2019/May). DOI: doi:10.1061/(ASCE)NH.1527-6996.0000355.
7. Gori, A., Blessing, R., Juan, A., Brody, S., & Bedient, P. "Characterizing urbanization impacts on floodplain through integrated land use, hydrologic, and hydraulic modeling." Journal of Hydrology, 568(2019/January): 82-95. DOI: 10.1016/j.jhydrol.2018.10.053.
8. Bass, B., Torres, J. M., Irza, J. N., Proft, J., Sebastian, A., Dawson, C., & Bedient, P. (2018). Surge dynamics across a complex bay coastline, Galveston bay, TX. Coastal Engineering, 138, 165-183. doi:10.1016/j.coastaleng.2018.04.019.
9. Bass, B., & Bedient, P. (2018). Surrogate modeling of joint flood risk across coastal watersheds. Journal of Hydrology, 558, 159-173. doi:10.1016/j.jhydrol.2018.01.014.

10. Brody, S. D., Sebastian, A., Blessing, R., & Bedient, P. B. (2018). Case study results from southeast Houston, Texas: Identifying the impacts of residential location on flood risk and loss. *Journal of Flood Risk Management*, 11, S110-S120. doi:10.1111/jfr3.12184.
11. Fang, N., Dolan G., Sebastian, A., & Bedient, P.B. (2014). Case Study of Flood Mitigation and Hazard Management at the Texas Medical Center in the Wake of Tropical Storm Allison in 2001. *ASCE Natural Hazards Review*, 15(3). doi: 10.1061/(ASCE)NH.1527-6996.0000139.

GRANTS AND CONTRACTS:

Dr. Philip B. Bedient is also Herman Brown Professor of Engineering in the Dept. of Civil and Environmental Engineering at Rice University. He teaches and performs research in surface and ground water hydrology, disaster management, and flood prediction systems. He has directed 120 research projects over the past 50 years, has written over 220 articles in journals and conference proceedings. He is lead author on a text on “Hydrology and Floodplain Analysis” (Prentice Hall, 6th ed., 2018) used in over 75 universities across the U.S. Dr. Bedient received the Herman Brown endowed Chair of Engineering in 2002 at Rice University. He was elected to Fellow ASCE in 2006 and received the Ray K. Linsley award from the American Institute of Hydrology in 2021. He earlier received the Shell Distinguished Chair in Environmental Science (1988 to 1993). Dr. Bedient has decades of experience working on flood and flood prediction problems in the U.S. He routinely runs computer models such as HEC-HMS, HEC-RAS, and VFLO for advanced hydrologic analysis. He developed one of the first radar-based rainfall flood alert systems (FAS5) in the U.S. for the Texas Medical Center. He has directed the SSPEED Center at Rice University since 2009 and has hosted 11 major SSPEED Conferences since 2008.

- **Galveston Bay Park Plan:** The SSPEED Center and Dr. Bedient was funded \$1,000,000 for 2022-2024 from the City of Houston, Harris County, and Port of Houston to complete a detailed design and concept study of the GBPP, which was first advanced back in 2016. Over \$10.0 million was funded from 2009 to 2011 through Houston Endowment .
- **Next Generation Flood Modeling, Impact Assessment, and Situational Awareness in Houston:** Funding in 2024 has included Harris County Flood Control (HCFCF) providing \$250,000 for “A Rice - HCFCF Partnership -” (Bedient and Padgett).
- **Harris County Resiliency Plan:** Dr Bedient is also funded \$175,500 Bedient for the Harris County Resiliency Plan with AECOM. These partnerships will greatly expand the reach of the SSPEED Center into addressing local flood policy issues in the Houston region.
- **Ft Bend County Floodplain Analysis.** a detailed study of floodplains using advance models for the entire county for 2023-2024 (\$350,000).
- **Flood Information Response Systems (FIRST)** from City of Houston for four watersheds in Houston, with radar rainfall used to predict real time inundation at selected critical facilities. (June to Dec, 2020) (\$740,000)
- **FAS5 Flood Warning System for TMC | Texas Medical Center:** Designed by Dr. Philip Bedient at Rice, with assistance from Dr. Nick Fang and Dr. Baxter Vieux, FAS5 is an integrated system providing lead-time for flood-response decisions with funding from TX Medical Center (\$72,000 in 2024-25), (\$2.5 million from TMC & FEMA over 20 years).
- **Nature Based Solutions for the Brazos River.** Funding provided by Mr Jim Blackburn and the George Ranch Foundation for hydrologic analyses in 2024-25. (\$100,000).

