

Dr. Belize Lane

Curriculum Vitae, *Updated November 2022*

Department of Civil and Environmental Engineering • Utah State University
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EDUCATION

2017 **Ph.D. Hydrologic Sciences**- University of California- Davis, Davis CA.

Dissertation: Integrating flow, form and function for improved environmental water management.

2014 **M.Sc. Hydrologic Sciences**- University of California- Davis, Davis CA.

Thesis: Environmental flows in a human-dominated system: integrated water management strategies for the Rio Grande/Bravo basin.

2010 **B.Sc. Ecology**- University of California- San Diego, La Jolla CA.

RESEARCH

MERIT AWARDS

2022 Reproducible Results Award for *Morgan and Lane (2022)*, American Society for Civil Engineers.

2022 Early Career Award for Applied Water Research, Universities Council on Water Resources (UCOWR).

2022 Outstanding Graduate Mentor of the Year, USU Department of Civil & Environmental Engineering.

2022 Natural Resources Workforce Development Fellowship, Southwest Climate Adaptation Science Center, *Haley Canham**

2022 Graduate Research Innovation Grant, Joint Fire Science Program, *Haley Canham**

2022 Outstanding Graduate Student of the Year, USU Dept. of CEE, *Haley Canham**

2019 USU Climate Adaptation Science Fellowship, *Betsy Morgan**

2019 American Water Works Association, Graduate Science and Engineering Scholarship, Intermountain Section, *Karl Christensen**

2018 American Geophysical Union, Outstanding Student Poster Award, *Noelle Patterson**

**graduate student awards*

RESEARCH GRANTS

2022-2023 Joint Fire Science Program, *Post-wildfire hydrogeomorphic risk management assessment*. **Lane B (PI)**, Canham H.

2022-2023 Utah Agricultural Experiment Station, *Increasing the water conservation impact of Utah State University's Extension Water Check Program with 5 second metering*. Rosenberg D, Horsburgh J, **Lane B (Co-I)**, Kopp K.

2021-2024 U.S. Army Engineer Research and Development Center (ERDC), *Predicting ecological futures in Texas watershed*. Nowlin W, Swannack T, **Lane B (Co-I)**. \$2.5 million

2021-2026 California State Water Resources Control Board, *Statewide development and implementation of instream flows for cannabis cultivation*. Carter S, **Lane B (Co-I)**, Stein E, Grantham T. \$3 million

2020-2022 National Science Foundation, *RAPID: Monitoring and modeling post-wildfire hydrologic response in space and time*. **Lane B (PI)**, Murphy B, Belmont P.

2019-2020 National Science Foundation, *HydroLearn Fellowship*. **Lane B**.

2019-2022 U.S. Geological Survey, *Temperature impacts of summer dewatering on the Blacksmith Fork River*. **Lane B (PI)**, Neilson B.

2019-2021 Utah State University Library, Open Educational Resources Initiative, *Story Map modules to teach physical hydrology fundamentals*. **Lane B (PI)**.

2018-2020 California State Water Resources Control Board, *Hydrogeomorphic classification of the South Fork Eel River, CA*. Sandoval-Solis S, **Lane B (Co-I)**, Stein S, Grantham T, Yarnell S, Zimmerman J. \$4.3 mil

2018-2019 U.S. Geological Survey, *Improving representation of environmental objectives in water systems models*. **Lane B (PI)**, Rosenberg D.

SCHOLARLY CONTRIBUTIONS

Google Scholar Statistics

Profile: <https://scholar.google.com/citations?user=LB2ePs8AAAAJ&hl=en>

	All	Since 2017
Citations	392	375
h-Index	11	
i10-Index	14	

ResearchGate Statistics

Profile: https://www.researchgate.net/profile/Belize_Lane

Citations	355
Total Reads	9,629

ORCID Profile: [0000-0003-2331-7038](https://orcid.org/0000-0003-2331-7038)

Co-Author Key

*Lane Graduate Student

°Lane Graduate Advisee

****Lane Post-Doc**

Contributions prior to USU shown with light grey background

PEER-REVIEWED JOURNAL ARTICLES

1. Patterson NP*, **Lane B**, Persad G, Ortiz-Partida J, and Sandoval-Solis S (2022). “Projected effects of temperature and precipitation variability change on streamflow patterns using a functional flows approach,” *Earth’s Future*. DOI:10.1029/2021EF002631
2. Jones A^o, Horsburgh J, Bastidas C, Flint C and **Lane B** (2022). “Advancing hydroinformatics and water data science instruction: Community perspectives and online learning resources.” *Frontiers in Water: Water and Hydrocomplexity*. DOI: [10.3389/frwa.2022.901393](https://doi.org/10.3389/frwa.2022.901393)
3. Gallagher MA, Habib EH, Williams D, **Lane B**, Byrd J and Tarboton D (2022). “Designing professional learning experiences to support hydrology and water resources faculty to create high-quality curricular materials.” *Frontiers in Education: STEM Education*. DOI:10.3389/feduc.2022.890379.
4. Grantham T, Carlisle D, **Lane B**, Lusardi R, Obester A, Sandoval S, Stein E, Stanford B, Taniguchi K, Yarnell SM, and Zimmerman J (2022). “Modeling functional flows in California’s rivers,” *Frontiers in Environmental Science – Freshwater Science*. DOI:10.3389/fenvs.2022.787473.
5. Morgan E* and **Lane B** (2022). “Quantifying uncertainty in regional flow – ecology relationships,” *Journal of Water Resources Planning and Management*. DOI:10.1061/(ASCE)WR.1943-5452.0001533.
6. Stein E, Zimmerman J, Yarnell S, Stanford B, **Lane B**, Taniguchi K, Obester A and Grantham T (2021). “The California Environmental Flows Framework: Meeting the challenges of developing a large-scale environmental flows program,” *Frontiers in Environmental Science – Freshwater Science*. DOI:10.3389/fenvs.2021.769943 .
7. Byrne C**, Pasternack GB, Guillon H**, **Lane B**, and Sandoval-Solis S (2021). “Channel constriction predicts pool-riffle velocity reversals across landscapes,” *Geophysical Research Letters*. DOI:[10.1029/2021GL094378](https://doi.org/10.1029/2021GL094378)
8. Wineland S, Basagaoglu H, Fleming J, Friedman J, Garza-Diaz L, Kellog W, Koch J, **Lane B**, Mirchi A, Sandoval-Solis S^ψ, Paladino S, Nava L, Ortiz-Partida J, Plassin S, Gomez-Quiroga G, Saiz-Rodriguez R, Neeson T, Wagner K, Weber N, Wootten A. (2021). “The environmental flows implementation challenge: Insights and recommendations across water-limited systems,” *WIRES-Water*. <https://doi.org/10.1002/wat2.1565>.
9. Sandoval-Solis S, Paladino S, Garza-Diaz L, Nava L, Friedman J, Ortiz-Partida J, Plassin S, Gomez-Quiroga G, Koch J, Fleming J, **Lane B**, Wineland S, Mirchi A, Saiz-Rodriguez R, and Neeson T (2021). “Environmental Flows in the Rio Grande - Rio Bravo Basin,” *Ecology & Society*. <https://doi.org/10.5751/ES-12944-270120>.
10. **Lane B**, Guillon H**, Byrne C**, Pasternack GB, Kasprak A, and Sandoval-Solis S (2021). “Channel reach morphology and landscape properties are linked across a large heterogeneous region,” *Earth Surface Processes and Landforms*. DOI:[10.1002/esp.5246](https://doi.org/10.1002/esp.5246).
11. Alger SM*, **Lane B**, and Neilson B (2021). “Combined influences of irrigation diversions and associated subsurface return flows on river temperature in a semi-arid region.” *Hydrological Processes*. DOI:[10.1002/hyp.14283](https://doi.org/10.1002/hyp.14283).
12. **Lane B**, Garousi I^o, Gallagher M, Tarboton D, and Habib E (2021). “An open web-based module developed to advance data-driven hydrologic process learning.” *Hydrological Processes*, 35(7), e14273. DOI:[10.1002/hyp.14273](https://doi.org/10.1002/hyp.14273).
13. Merritt A^o, **Lane B** and Hawkins C (2021). “Classification and prediction of natural streamflow regimes in arid regions of the USA.” *Water MDPI*. DOI:10.3390/w13030380.

14. Beck MB, O'Hara C, Lowndes J, Mazor R, Theroux S, Gillett D, **Lane B** and Gearheart G (2020). "The importance of open science for biological assessment." *PeerJ*. DOI:[10.7717/peerj.9539](https://doi.org/10.7717/peerj.9539).
15. *Byrne C***, Pasternack GB[‡], *Guillon H***, **Lane B**, and Sandoval-Solis S[‡] (2020). "Reach-scale bankfull channel types can exist independently of catchment hydrology," *Earth Surface Processes and Landforms*. DOI:[10.1002/esp.4874](https://doi.org/10.1002/esp.4874).
16. **Lane B**, Ortiz JP, and Sandoval-Solis S (2020). "Extending water resources performance metrics to river ecosystems." *Ecological Indicators*. DOI:[10.1016/j.ecolind.2020.106336](https://doi.org/10.1016/j.ecolind.2020.106336).
17. *Guillon H***, *Byrne C***, **Lane B**, Sandoval-Solis S, and Pasternack GB (2020). "A machine learning framework to predict geomorphic channel types and assess model entropy over large regions," *Water Resources Research*. DOI:[10.1029/2019WR026691](https://doi.org/10.1029/2019WR026691).
18. *Patterson NP**, **Lane B**, Sandoval-Solis S, Pasternack GB, Yarnell S, and Qiu L^o (2020). "A hydrologic feature detection algorithm to quantify seasonal components of flow regimes." *Journal of Hydrology*. DOI:[10.1016/j.jhydrol.2020.124787](https://doi.org/10.1016/j.jhydrol.2020.124787).
19. Yarnell SM, Stein E, Webb J, Grantham T, **Lane B** ... (2019). "A functional flows approach for selecting ecologically relevant flow metrics for environmental flow applications." *River Research and Applications*. DOI:[10.1002/rra.3575](https://doi.org/10.1002/rra.3575).
20. **Lane B** and Rosenberg DE (2019). "Promoting instream flows in the changing western U.S." *Journal of Water Resources Planning and Management*. DOI:[10.1061/\(ASCE\)WR.1943-5452.0001145](https://doi.org/10.1061/(ASCE)WR.1943-5452.0001145).
21. Ortiz-Partida JP, Kahil T, Ermolieva T, Ermoliev Y, **Lane B**, Sandoval-Solis S, and Wada Y (2019). "A two-stage stochastic optimization for robust operation of multipurpose reservoirs." *Water Resources Management*. DOI:[10.1007/s11269-019-02337-1](https://doi.org/10.1007/s11269-019-02337-1).
22. **Lane B**, Sandoval-Solis S, Yarnell S, Stein E, Dahlke H, and Pasternack GB (2018). "Beyond metrics? The role of hydrologic baseline archetypes in environmental water management." *Environmental Management*. DOI:[10.1007/s00267-018-1077-7](https://doi.org/10.1007/s00267-018-1077-7).
23. **Lane B**, Pasternack GB, and Sandoval-Solis S (2018). "Integrated analysis of flow, form, and function for river management and design testing." *Ecohydrology*. DOI:[10.1002/eco.1969](https://doi.org/10.1002/eco.1969).
24. **Lane B**, Pasternack GB[‡], Dahlke H, and Sandoval-Solis S[‡] (2017). "The role of topographic variability in river channel classification." *Progress in Physical Geography*. DOI:[10.1177/0309133317718133](https://doi.org/10.1177/0309133317718133). CMAW
25. **Lane B**, Dahlke H, Pasternack GB[‡], and Sandoval-Solis S[‡] (2017). "Revealing the diversity of natural hydrologic regimes in California for future environmental flows applications." *Journal of the American Water Resources Association*. DOI:[10.1111/1752-1688.12504](https://doi.org/10.1111/1752-1688.12504). CMAW
26. Ortiz-Partida JP, **Lane B**, and Sandoval-Solis S[‡] (2016). "Economic effects of a reservoir re-operation policy in the Rio Grande/Bravo for integrated human and environmental water management." *Journal of Hydrology: Regional Studies*. DOI:[10.1016/j.ejrh.2016.08.004](https://doi.org/10.1016/j.ejrh.2016.08.004). CMA_sW
27. Porse E, Sandoval-Solis S[‡], and **Lane B** (2015). "Integrating environmental flows into multi-objective reservoir management for a transboundary, water-scarce river basin: Rio Grande/Bravo." *Water Resources Management*. DOI:[10.1007/s11269-015-0952-8](https://doi.org/10.1007/s11269-015-0952-8). CMAW
28. **Lane B**, Sandoval-Solis S[‡], and Porse E (2014). "Environmental flows in a human-dominated system: Evaluating integrated water management strategies in the Rio Grande/Bravo Basin." *River Research and Applications*. DOI:[10.1002/rra.2804](https://doi.org/10.1002/rra.2804). CMAW

29. Ai X, Sandoval-Solis S[‡], Dahlke H, and **Lane B** (2014). “Reconciling hydropower and environmental water uses in the Leishui River Basin.” *River Research and Applications*. DOI:[10.1002/rra.2728](https://doi.org/10.1002/rra.2728). cmaw

TECHNICAL REPORTS, BOOK CHAPTERS, AND CONFERENCE PAPERS

1. **Lane B**, Pasternack GB, *Guillon H***, *Lee A***, and Sandoval-Solis S. 2022. “Regional eflows design using Geo-Hydro-Eco functional archetypes,” Conference Paper, 39th World Congress, International Association for Hydro-environment Engineering and Research, June 24, 2022, Grenada, Spain.
2. *Lee A***, Pasternack GB, **Lane B**, Sandoval S, *Guillon H***, *Kahn S*** (2021). “Method for generating 3d terrain models using river builder for selected channel types for the state of California,” Final Report. California State Water Resources Control Board. Davis, CA.
3. *Guillon H***, **Lane B**, Sandoval S, Pasternack GB, *Lee A***, *Kahn S*** (2021) “Methodology for predicting geomorphic classes using Lidar data for the State of California,” Final Report. California State Water Resources Control Board. Davis, CA.
4. *Kahn S***, *Guillon H***, Sandoval S, Pasternack GB, *Byrne C***, **Lane B**, *Lee A*** (2021). “Modeling network scale channel cross-section using empirical scaling relationships and coarse resolution remotely sensed dataset,” Final Report, California State Water Resources Control Board. Sacramento, CA.
5. California Environmental Flows Working Group. “[California Environmental Flows Framework Version 1.0](#).” California Water Quality Monitoring Council Technical Report 37 pp. 2021.
6. *Byrne CF***, *Guillon H***, **Lane B**, Pasternack GB, and Sandoval-Solis S (2020). [Coastal California Regional Geomorphic Classification](#). Final Report. California State Water Resources Control Board. Sacramento, CA.
7. *Byrne CF***, *Guillon H***, **Lane B**, Pasternack GB, and Sandoval-Solis S (2019). [Sacramento River Basin Geomorphic Classification](#). Final Report. Submitted to the California State Water Resources Control Board. Sacramento, CA.
8. *Guillon H***, *Byrne CF***, **Lane B**, Pasternack GB, and Sandoval-Solis S (2019). [South Fork of the Eel River Basin Geomorphic Classification](#). Final Report. California State Water Resources Control Board. Sacramento, CA.
9. Sandoval S and **Lane B** (2018). Estimating statewide environmental flows. California State Water Resources Control Board. Sacramento, CA.
10. Lund J, Sandoval S, Gray B, Moyle P, Frank R, **Lane B**, Yarnell S, Dahlke H, Grantham T, Lusardi R, Santos N, Bell A, and Willis A (2016). “Keeping California’s streams alive: An approach for rapidly setting environmental flow standards for all rivers in California.” Final Technical Report. California State Water Resources Control Board. Sacramento, CA.
11. **Lane B**, Sandoval-Solis S, Dahlke HE, and Pasternack GB (2016). “Hydro-geomorphic classification of California: Sacramento Basin.” Technical Report for California State Water Resources Control Board. Sacramento, CA.
12. Metzger L, **Lane B**, MacPhee D, Kilanski M, Kromann J, Salvatierra J, Setegn S. 2015. “An international perspective on the basin scale water - energy nexus.” Sustainability of Integrated Water Resources Management: Water Governance, Climate and Echo-hydrology, S. Setegn and M. Donoso (Ed.), 1st Edition, Springer. DOI:10.1007/978-3-319-12194-9_25.

DIGITAL PRODUCTS

- Lane B and Byrne C (2021). California river classification field surveying protocols, [HydroShare](https://doi.org/10.4211/hs.023f24c1a62f48f496e10b7cbafe6b86), <https://doi.org/10.4211/hs.023f24c1a62f48f496e10b7cbafe6b86>

California Environmental Flows Working Group (2021). *California Natural Flows Database: Functional flow metrics v1.2.1*, May 2021. <https://rivers.codefornature.org/>

Functional Flows Calculator, <https://eflows.ucdavis.edu/hydrology>

Lane B and Rosenberg D (2019). [Keeping Water in Utah's Streams](#), 2-minute animated educational video. Utah Water Research Laboratory.

California Environmental Flows Framework (CEFF) project website <https://ceff.ucdavis.edu>

Guillon H, Byrne C, Lane B, Sandoval S, Pasternack GB (2020). Channel types predictions for the Sacramento River basin, <https://doi.org/10.25338/B8031W>

Guillon H, Byrne C, Lane B, Sandoval S, Pasternack GB (2020). Channel types predictions for the South Fork Eel River basin, <https://doi.org/10.25338/B8VG83>

SELECTED PROFESSIONAL PRESENTATIONS

1. **Lane B**, ⁺Pasternack GB^ψ, *Guillon H*^{**}, *Lee A*^{**}, and Sandoval-Solis S^ψ. 2022. "Regional Eflows Design using Geo-Hydro-Eco Functional Archetypes," 39th World Congress, International Association for Hydro-environment Engineering and Research (IAHR), Grenada, Spain. June 22, 2022. ⁺*Presenter*
2. *Garousi I*^o and **Lane B**. "Enhancing hydrology learning by using open web platforms and data services in education of future hydrologists." AGU Frontiers in Hydrology, Puerto Rico. June, 2022
3. Thurber D* and **Lane B**. "Streamflow response to snowmelt in a karst mountain system," AGU Hydrology Days, Colorado State University. April 27, 2022. Fort Collins, CO.
4. *Canham H** and **Lane B**. "Post-wildfire rainfall-runoff event response variability in the Colorado River headwaters" AGU Hydrology Days, Colorado State University. April 2022. Fort Collins, CO.
5. Grantham T, Stein E, **Lane B**, Yarnell S. "Progress and Challenges in Implementing the California Environmental Flows Framework." American Fisheries Society. April 2022. Santa Cruz, CA.
6. **Lane B** and *Rowles J** "Assessing the impact of potential instream flow targets on human supply and aquatic habitat in the South Fork Eel River." CWEMF Annual Meeting. April 6, 2022. Folsom, CA.
7. *Lee A*^{**}, **Lane B**, Pasternack GB. "Key geomorphic parameters characterizing eco-hydraulic responses of river channels using River Builder." AGU Fall Meeting. New Orleans, LA. Dec 15, 2021
8. *Canham H**, **Lane B**, Murphy B. "Highly variable post-wildfire streamflow response across contiguous watersheds." AGU Fall Meeting. New Orleans, LA. December 17, 2021.
9. *Guillon H*^{**}, **Lane B**, Pasternack GB^ψ. "Evaluating the influence of erosion and tectonic processes on California's topography by measuring its fractal dimension and anisotropy across scales." European Geophysical Union (EGU), *Virtual*. April 27, 2021.
10. *Rowles J**, **Lane B**, Sandoval-Solis S, Young C, Chalmers D, Forni L. "Balancing competing water needs in an unregulated seasonal watershed subject to distributed diversion pressures." American Geophysical Union (AGU) Fall Meeting, *Virtual*. Dec 15, 2020.
11. *Morgan E** and **Lane B**. "Incorporating critical context and uncertainty in flow-ecology relationships," American Water Resources Association (AWRA). *Virtual*. Nov 9-12, 2020.
12. **Lane B**, *Patterson N**, Sandoval-Solis S^ψ. "Modeling statewide hydrologic patterns and changes under mounting climate stressors," California Water and Environmental Modeling Forum (CWEMF). *Virtual*. Oct 8-10, 2020. 70+ attendees.
13. Grantham T, Yarnell S, **Lane B**, Stein E, Sandoval-Solis S^ψ. "A functional flows modeling approach for environmental flow standards in California," CWEMF. *Virtual*. Oct 8-10, 2020.
14. **Lane B**, Sandoval S, Young C, Chalmers D. "Environmental and human water resources modeling in the South Fork Eel River, CA," CWEMF. *Virtual*. Oct 8-10, 2020. 70+ attendees

15. Sandoval S, **Lane B**, *Guillon H***. “Instream flows in the age of AI,” CWEMF. Oct 8-10, 2020.
16. Alger SM*, **Lane B**, Neilson B. “Lateral return flows control temperature patterns in irrigation depleted streams,” American Fisheries Society Utah Chapter. St. George, UT. Feb 27, 2020.
17. *Byrne C***, Pasternack GB^ψ, **Lane B**, *Guillon H***, Sandoval-Solis S. “Self-maintained riffle-pool couplets are less abundant than expected,” AGU Fall Meeting, San Francisco CA. December, 2019.
18. *Guillon H***, *Byrne C***, **Lane B**, Sandoval-Solis S, Pasternack GB “A comprehensive analysis of model outputs characterizes and compares machine-learning-enabled classification of rivers in regions of California,” AGU Fall Meeting, San Francisco CA. Dec 13, 2019
19. Patterson N*, **Lane B**, Sandoval-Solis S^ψ. “Evidence of climate change in the Sierra Nevada from seasonal flow attributes,” AGU Fall Meeting, San Francisco CA. Dec 11, 2019.
20. Grantham T, Yarnell S, **Lane B**, Stein E, . . . “A functional flows approach for developing environmental flow standards in California,” AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
21. **Lane B**, *Hung F***, Rowles JL*, Chalmers D, Sandoval-Solis S^ψ. “Setting limits with limited data: human-ecological water use tradeoffs,” AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
22. Alger SM*, **Lane B**, Neilson, B. “Controls on summer stream temperature patterns in irrigation-depleted streams,” AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
23. Patterson N*, **Lane B**, Sandoval-Solis S^ψ “Understanding natural streamflow with the Seasonal Flow Detection Algorithm,” AGU Fall Meeting, San Francisco CA. Dec 10, 2019.
24. Yarnell S, Stein E, Zimmerman J, **Lane B**, Grantham T, Howard J, Lusardi R, Sandoval-Solis S^ψ. “Stakeholder engagement in the California Environmental Flows Framework,” International Society for River Science (ISRS) Biannual Meeting, Vienna, Austria. Sep 9, 2019.
25. **Lane B**, Grantham T, Yarnell S, Stein E, Zimmerman J, Howard J, Lusardi R, Sandoval-Solis S^ψ. “California Environmental Flows Framework Decision Support Tools,” International Society for River Science (ISRS) Biannual Meeting, Vienna, Austria. September 9, 2019.
26. *Invited*. **Lane B**. “Geomorphic classification of California.” California Water Data Science Symposium: Open Water. CalEPA Headquarters, Sacramento, CA. July 2, 2019.
27. *Hung F***, Morgan B*, **Lane B** “An integrated modeling framework for ecohydraulic analysis,” Univ. Council on Water Resources (UCOWR). Snowbird, UT. June 13, 2019.
28. Alger SM*, **Lane B**, Neilson BT. “Characterizing depleted flow and temperature patterns on the Blacksmith Fork River,” UCOWR Annual Conference. Snowbird, UT. June 13, 2019.
29. **Lane B** and Rosenberg DE. “Promoting instream flows in western states,” UCOWR Annual Conference. Snowbird, UT. June 13, 2019
30. **Lane B**, Grantham T, Yarnell S, Stein E, Zimmerman J, Howard J, Lusardi R, Sandoval-Solis S^ψ. “California Environmental Flows Framework Decision Support Tools I,” Society for Freshwater Sciences (SFS) Annual Meeting, Salt Lake City, UT May 23, 2019.
31. Patterson NP* and **Lane B**. “Application of ecologically-based flow metrics for cannabis-impaired streams,” Annual. Salmonid Restoration Conference, SRF. Santa Rosa, CA. April 24, 2019.
32. Sandoval-Solis S^ψ and **Lane B** “Natural streamflow and geomorphic classification for California,” California Water and Environmental Modeling Forum. Folsom, CA. April 22, 2019.
33. *Invited*. **Lane B**, Burnett P, Nielson J, Rosenberg D. “Expanding Instream Flows to Protect Ecosystems,” Utah Water Users Conference. St George, UT. March 20, 2019.
34. Patterson NP* and **Lane B**. “Analyzing California reference streamflow with the seasonally-based Functional Flows Calculator,” AGU Fall Meeting. Washington DC, December 2018. [Poster]
35. ⁺ *Received the American Geophysical Union’s Outstanding Student Poster Award*

36. Pasternack GB^ψ and **Lane B**. “Flow, form, and function: An extensible framework for environmental flows.” International Symposium on Ecohydraulics (ISE), Tokyo, Japan. August 21
37. Stein E, Yarnell S, Sandoval S^ψ, **Lane B**, Zimmerman J, Howard J, Grantham T, “Establishing environmental flow targets in complex environments.” International Symposium on Ecohydraulics (ISE), Tokyo, Japan. August 21, 2018.
38. *Invited*. **Lane B** and Stein E. “Key challenges and opportunities in incorporating environmental flows into bioassessment.” The evolving science supporting biological assessments & criteria. Society for Freshwater Sciences Annual Conference. Detroit, MI. May 23, 2018.
39. Stein ED, Yarnell S, Sandoval-Solis S^ψ, **Lane B**, Zimmerman J, Howard J, Grantham T. “A coordinated approach for developing statewide environmental flow regulations in California.” Society for Freshwater Sciences Annual Conference. Detroit, MI. May 21, 2018.
40. **Lane B** and Pasternack GB^ψ. “Regional methodology for developing ecological flow criteria.” Annual Salmonid Restoration Federation Conference, Fortuna, CA. Apr 14, 2018.
41. **Lane B** and Rosenberg DE. “Can we have it all? Envisioning Utah’s rivers as coupled human – natural systems.” Spring Runoff Conference, Logan, UT. Mar 27, 2018.

TEACHING

2017-2022	Physical Hydrology (CEE 6400), Utah State University, 3 credits
2021-2023	Engineering Hydrology (CEE 3430), Utah State University, 3 credits
2019	Hydrologic Field Methods (CEE 6930), Utah State University, 3 credits
2016-2017	Water Science and Management (ESM 121), UC Davis, 3 crds (co-instructor)
2018	Principles of HEC Software (Winter 2018), UC Davis, 3 crds (co-instructor)

SERVICE

Public Outreach

Webinars, Podcasts and Animated Videos

- 2022 [Functional Environmental Flows](#), WaterTalk Podcast, February 18, 2022.
- 2020 [Keeping Water in Utah Streams](#), Animated video available through the Utah Water Research Laboratory website.
- 2020 Lane B and Habib E. “[HydroLearn and Jupyter Notebook](#),” [CUAHSI Forum on Transitioning to Online Education](#).” May 8, 2020. *88 views*.
- 2018 Lane B, Patterson N**, and Sandoval-Solis, S. [California Natural Streamflow Classification and Functional Flow Metrics](#). California Water Resources Control Board. **Over 50 participants from numerous state agencies, non-profits, consulting firms, and universities. 229 views.*
- 2018 Patterson N** and Lane B. [Functional Flow Calculator](#). Webinar. California Water Quality Monitoring Council. *451 views*.
- 2018 Patterson N** and Lane B. [Functional Flows Calculator: Under the Hood](#). Webinar. State Water Resources Control Board. *158 views*.

Newsletters, Blogs and Briefings

- 2020 [Functional flows can improve environmental water management in California](#), California Water Blog. November 29, 2020. *Over 400 views in first day and 3,000 views in first 3 weeks posted.
- 2020 CEFF Technical Workgroup. "[Environmental flows in California](#)," California Water Blog. March 18, 2020.
- 2020 [Overview of analysis for instream flow regime criteria on a watershed scale](#), Version 2. March 2020. California Department of Fish and Wildlife, Instream Flow Program (CDFW), West Sacramento, CA.
- 2020 CEFF Technical Workgroup. "The California Environmental Flows Framework," The Current, CalTrout, Jan 2020. <https://caltrout.org/article/the-california-environmental-flows-framework>
- 2019 Lane B and Stein ED. "[Framework and web tools for developing ecological flow criteria in California](#)," National Newsletter. National Water Quality Monitoring Council, Spring 2019.
- 2018 CEFF Technical Workgroup. "[Functional flows for developing environmental flow recommendations](#)," California Water Blog. December 9, 2018.
- 2018 Lane B and Rosenberg DE "[Expanding instream flows to protect ecosystems in over-allocated river basins](#)," Legislative Briefing, July 2018.
- 2017 Lane B, Sandoval S and Yarnell S. "[A simplified method to classify streams and improve California's water management](#)," California Water Blog. July 16, 2017.

Selected Public Workshops and Presentations

- 2021 Habib E, Tarboton D, Ames D, Gallagher M and Lane B, Annual Summer HydroLearn Hackathons. Instructed 25-30 international hydrology faculty in 8-day NSF-funded workshop. June 22 - July 2, 2020 and July 12 - 21, 2021.
- 2020 Lane B and Sandoval S. California Environmental Flows Framework, CA Dept. of Water Resources Environmental Committee Meeting. February 27, 2020. Sacramento CA. ~100 attendees
- 2020 *Invited Presentation*. Lane B and Rosenberg DE. Instream flows and water conservation. Quarterly Water Coordination Meeting, Utah Div. of Natural Resources. January 7, 2020. Salt Lake City, UT.
- 2020 *Invited Seminar*. Lane B. Interdisciplinary Research Forum, NSF Climate Adaptation Science. Utah State University. February 12, 2020
- 2020 *Invited Seminar*. Lane B. "Establishing environmental flows for California streams: Emerging technical and implementation tools," Dept. of Civil and Environmental Engineering, Stanford University. Palo Alto, CA. March 4, 2019.
- 2019 Sandoval, S. and Lane B "Environmental flows for the State of California," U.S. Department of Agriculture Seminar Series, Sacramento CA. January 11, 2019.
- 2018 Lane B and Rosenberg, D.E. "Promoting instream flows in Cache Valley," Cache Valley Water District Board Meeting. Dec 3, 2018.
- 2018 CEFF Technical Workgroup "California Environmental Flows Framework," California Department of Fish and Wildlife Technical Workshop. November 2, 2018.

- 2018 CEFF Technical Workgroup “California Environmental Flows Framework,” California Advisory Committee on Salmon and Steelhead. October 24, 2018
- 2018 *Invited Seminar*. Lane B. “Functional flows in modified hydroscapes.” Colorado State University, Dept. of Civil & Environmental Engineering Seminar. Fort Collins, CO. April 26, 2018
- 2018 *Invited Seminar*. Lane B. “Functional flows: Integrating ecology and engineering for sustainable river basins.” Dept. Watershed Sciences, Utah State, Logan UT. Jan 31, 2018.

Media Highlights

- 2022 [“USU College of Engineering professor receives early career award for applied water research,”](#) Utah State Today, January 2022.
- 2022 [Winter Break Edition of Cache](#) Rendezvous.
- 2021 [“Deadbeat dams’ and their impact on cold-water ecosystems,”](#) High Country News, September 2021.
- 2021 [“USU researcher leads team monitoring grizzly creek burn scar hydrologic response,”](#) Utah State Today, July 2021
- 2021 [“Spring runoff could trigger slides on Grizzly Creek burn scar,”](#) KDNK public radio, March 2021.
- 2020 [“Water data and software services to support discovery, reproducibility, and collaboration in the water-resources domain and beyond,”](#) Northeast Big Data Innovation Hub. Emily Clark, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), September 2020.
- 2020 [“Aspiring hydrologists getting their feet wet,”](#) Utah Water Research Laboratory 2020 Annual Report. Utah State University.
- 2019 [“Developing Solutions for Utah’s Rising Water Management Crisis,”](#) Utah State Engineer Magazine, College of Engineering, Utah State University, October 2019.
- 2019 [“Balancing summer water needs in the Blacksmith Fork River,”](#) Utah Water Research Laboratory 2018 Annual Report. Utah State University, May 2019.
- 2018 [“Cache Water Board discusses options for expanding instream flow,”](#) Herald Journal News, Logan UT, Dec 7, 2018.

Working Group Affiliations & Service

- 2022-Present *Invited*, Middle Colorado Watershed Council Technical Advisory Team
- 2016-Present *Founding Member*, California Environmental Flows Technical Workgroup
- 2017-Present *Invited*, California Environmental Flows Strategic Workgroup, California Water Quality Monitoring Council (Senate Bill 1070). (2017 to Present). **Other members include CalEPA, Cal State Water Board, Cal Dept. Water Resources, USFS, SCCWRP, etc*
- 2019-Present Universities Council on Water Resources (UCOWR) Delegate
- 2019-Present *Invited*, Logan River Task Force. Logan, UT

Professional Memberships

2014-Present American Geophysical Union
2014-Present American Society for Civil Engineers
2015-Present American Water Resources Association
2015-Present University Council on Water Resources
2017-Present Society for Freshwater Science
2017-Present International Society for River Science
2019-Present Consortium of Universities for the Advancement of Hydrologic Science