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Education

Colorado State University – PhD Analytical Chemistry, August 2025

- Dissertation Advisor: Thomas Borch
- Focused particularly on potential reuse of unconventional water sources, which included analyzing complex mixtures for composition and contaminants before and after treatments.
- Acquired workflows starting with sample preparation, instrumental analysis, and data interpretation across numerous software types
- Worked collaboratively with large teams across different disciplines to tackle implementation of water reuse.
- Extended funding by working with Dr. Allan Andales in the Department of Soil and Crop Sciences
    - Compiled and organized data related to salinity in the South Platte River for stakeholder. Demonstrated large scale trends of surface water.
- Facilitate laboratory skills and fundamental chemistry concepts to undergraduate students
- Help develop students scientific writing skills through an independent research project utilizing CO_2 sensors

Loyola University of Maryland – BS Chemistry, May 2020

- Major: Chemistry
- Minor: Mathematics
- Hauber Research Fellow, created and had original research funded looking at glyphosate uptake in crops.

Honors

- **Editor's Choice** awarded to first authored paper Efficacy of nanofiltration and reverse osmosis for the treatment of oil-field produced water intended for beneficial reuse (2023)
- **Water Fellow,** awarded by the Colorado Water Center, allowed for further development about water issues spanning numerous fields and experts (2023)
- **GSC Travel Award,** which is a school wide award to attend a conference and present relevant research (2023)
- **Hydrology Days Winner,** won second place in lightning talks about current research concerning water quality and reuse of produced water (2023)
- **Hauber Research Fellow,** selected based on academic merit and original research idea, investigated the uptake of glyphosate in crops (2019)
- **Presidential Scholarship,** a competitive merit based scholarship awarded to students who excel academically and have a large community presence (awarded 2016-2020)

Publications

- Wiltse, M. E.; Ballenger, B.; Stewart, C. B.; Blewett, T. A.; Wadler, C.; Roth, H. K.; Coupannec, M.; Malik, H. T.; Xu, P.; Tarazona, Y.; Zhang, Y.; Sudowe, R.; Rosenblum, J. S.; Quinn, J. C.; Borch, T. Oil and Gas Produced Water for Cattle, Crops, and Surface Water Discharge: Evaluation of Chemistry, Toxicity and Economics. *Journal of Hazardous Materials* **2025**, *494*, 138581. https://doi.org/10.1016/j.jhazmat.2025.138581.
- Jech, S.; Adamchak, C.; Stokes, S. C.; Wiltse, M. E.; Callen, J.; VanderRoest, J.; Kelly, E. F.; Hinckley, E.-L. S.;Stein, H. J.; Borch, T.; Fierer, N. Determination of Soil Contamination at the Wildland-Urban Interface after the 2021 Marshall Fire in Colorado, USA. *Environ. Sci. Technol.* 2024, *58* (9), 4326–4333. https://doi.org/10.1021/acs.est.3c08508.
- *Jeong, N.; Wiltse, M. E.; Boyd, A.; Blewett, T.; Park, S.; Broeckling, C.; Borch, T.; Tong, T. Efficacy of Nanofiltration and Reverse Osmosis for the Treatment of Oil-Field Produced Water Intended for Beneficial Reuse. *ACS ES&T Eng.* 2023, *3* (10), 1568–1581 https://doi.org/10.1021/acsestengg.3c00138.
    - * This paper is a co-first authorship. Both first co-authors contributed equally towards the research paper.
- Boyd, A.; Luu, I.; Mehta, D.; Myers, S. P.; Stewart, C. B.; Shivakumar, K. R.; Snihur, K. N.; Alessi, D. S.;Rodriguez Gallo, M. C.; Veilleux, H.; Wiltse, M. E.; Borch, T.; Uhrig, R. G.; Blewett, T. A. Persisting Effects in Daphnia Magna Following an Acute Exposure to Flowback and Produced Waters from the Montney Formation. *Environ. Sci. Technol.* 2023, *57* (6), 2380–2392. https://doi.org/10.1021/acs.est.2c07441.
- Tariq, H.; Bechtold, E.; Broeckling, C.; Wilkins, M.; Buchanan, C.; Wiltse, M.; Ippolito, J.; Borch, T. Biological and Soil Indicators of Environmental Stress in Cropping Systems Irrigated with Produced Water. *ES&T Water* **In Review.**

Presentations

- Wiltse, M.E., Zvulunov, Y., and Borch, T. *Short Chain PFAS Removal by Surface Modified Biochars.* Poster Presentation at PFAS in Colorado: Research, Regulations, and Real-World Experiences Denver, CO February 2025
- Wiltse, M.E. Wiltse, M. E.; Jeong, N.; Boyd, A.; Blewett, T.; Park, S.; Broeckling, C.; Borch, T.; Tong, T. *Comprehensive characterization of oil-field produced water treated by*

nanofiltration and reverse osmosis membranes. Oral Presentation at Hydrology Days Colorado State University Fort Collins, CO March 2023

- Wiltse, M.E., Ballenger, B, Stewart, C. B., Blewett, T. A., Wadler, C., and Roth, H. K., Coupannec, M., Tariq, H., Xu, P., Tarazona, Y., Zhang, Y., Sudowe, R., Quinn, J., Rosenblum, J., and Borch, T., *Oil and Gas Produced Water for Cattle, Crops, and Surface Water Discharge: Evaluation of Toxicity, Chemistry and Economics.* Oral presentation at the American Chemical Society Fall Conference Denver, CO August 2024
- Wiltse, M.E., Ballenger, B, Stewart, C. B., Blewett, T. A., Wadler, C., and Roth, H. K., Coupannec, M., Tariq, H., Xu, P., Tarazona, Y., Zhang, Y., Sudowe, R., Quinn, J., Rosenblum, J., and Borch, T., *Oil and Gas Produced Water for Cattle, Crops, and Surface Water Discharge: Evaluation of Toxicity, Chemistry and Economics.* Oral presentation at the Society of Toxicology and Chemistry North America Conference Fort Worth, TX October 2024
- Wiltse, M. E.; Jeong, N.; Boyd, A.; Blewett, T.; Park, S.; Broeckling, C.; Borch, T.; Tong, T. *Efficacy of nanofiltration and reverse osmosis for the treatment of oil-field produced water intended for beneficial reuse*. Oral presentation at the American Geophysical Union Conference, San Francisco, CA December 2023
- Wiltse, M.E. *The Effect of Gylphosate on the Reuptake of Heavy Metals in Soils.* Hauber Summer Fellowship Baltimore, MD July 2019

Conferences and Workshops

- MoWaTER Data Science Workshop — Attendee
    - An exclusive workshop that encouraged learning various coding methods to handle large datasets often found in water quality monitoring. A collaborative NSF funded project between University of Baylor and Colorado School of Mines.
- American Geophysical Union December 2023 — Presenter
    - Oral Presentation
- American Chemical Society August 2024 — Presenter
    - Oral Presentation and Poster Presentation
- Society of Toxicology and Chemistry October 2024 — Presenter
    - Oral Presentation
- CSU Writes — Attendee
    - Attended multiple workshops to improve writing and communication skills, including “Editing Techniques”, “Revising: Organizing and Flow”, “ Write for Speed”, and “ Collaborative Writing Across Differences”

Skills

- Proficient sample preparation skills (titration, purification techniques, Soxhlet extraction, extractions, synthesis)
- Proficient instrumentation analysis (LC, GC, IC, IR, AAS, ICP, UV/Vis, FTIR, BET, MS)
- Working knowledge of data analysis softwares (MassHunter, MassLynx, Chromeleon, AMDIS, MZmine)

- Working knowledge of R language
- Proficient in Microsoft: Excel, PowerPoint, Word
- Public speaking
- Limited proficiency in Spanish
- Successful communication with large teams