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I genuinely hate chicken wings. This statement comes as a shock to the many people who have questioned why Buffalo, New York is my favorite city. Known as the city of good neighbors, and famous for its snow and staple meal of pizza and wings, Buffalo is largely viewed by outsiders as a city past its prime. This is not the case for me. Post-industrial Buffalo, while riddled with its aging infrastructure is teeming with potential and on the edge of an urban transformation. It is my career aspiration to help lift cities like Buffalo, worn by age and into a more welcoming, safe and sustainable future through the design of urban water infrastructure.

I was drawn to an undergraduate curriculum and campus culture focused on environmental issues by a childhood spent outdoors. Through my experiences as an undergraduate I became interested in effective stormwater management practices and the consequences of failure, like flooding and waterbody contamination. Never before having considered what happens to rain water beyond its impact on what jacket to bring for the day, learning the complex systems designed to safely and efficiently redirect and manage this water was eye-opening. The increasingly frequent reports of contamination of water from combined sewer overflows and loses of life from flooding, sparked my motivation to mitigate these public health risks and environmental impacts. My ignorance of the systems designed to manage water quickly developed into a passion for not only understanding them, but for understanding their potential for improvement.

I am dedicated to both the preservation of the environment, and providing access to, and protection from, water for all people. I believe that through working on the forefront of stormwater management practices I can combat the threats of water contamination, provide an alternative path to the continual degradation of aging urban infrastructure, and add economic, social, and aesthetic value to post-industrial cities. Shaping a career to achieve these goals begins with a Master's degree where I can research the operations of urban water systems, discover their strengths and work to maximize their productivity.

I believe that through research at Marquette I would be able to work towards this career path by working in the labs of Dr. McDonald or Dr. Parolari. I am passionate about the work being conducted by Dr. McDonald about the mitigation of flooding through the use of green infrastructure as actively controlled reservoirs, and Dr. Parolari's work to evaluate nutrient removal performance in GI and study the hydrologic effects of road salt. I have connected with both Dr. McDonald and Dr. Parolari and in addition to the compatible research goals we share, I am also interested in the community engagement and education pursuits they are involved in with the direct impact of their research which provides the opportunity for public engagement and education of urban water systems through their collaboration with the non-profit organization Reflo and its work on urban greenspace like Cream City Farm. Further, Dr. McDonald's involvement in the Milwaukee Metropolitan Sewerage District (MMSD), and the involvement of Dr. Parolari's graduate students in local Milwaukee industry is the sort of profession partnership I value and believe to be the future of urban water systems.

I would be an asset to research in stormwater management because of my research experience both on my own campus and through my participation in a National Science

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Foundation Research Experience for Undergraduates (REU). Through my experience as a researcher at SUNY College of Environmental Science and Forestry I was exposed to heavy-computation based research where I assisted by checking computations and graphing the derived equations on the coding program CoCALC. The project goal was to explore the relationship between gas absorbance efficiency and surface residence time of a turbulent fluid at the liquid-gas interphase. I was able to follow this project to completion as an undergraduate student, as I helped edit the manuscript through rounds of review comments, culminating to a published article. The research experience I gained through my REU exposed me to the opposite timeline of research, and relied heavily on lab-based skills. The project was based out of the agriculture department at New Mexico State University, where I worked to monitor nitrogen release resulting from irrigating turfgrass with non-potable water. I collected samples of leachate and drainage as well as gas emissions, monitoring for nitrate, nitrite, and nitrous oxide. Over the course of the summer I learned how to analyze gas samples using micro-electron capture detection on a gas chromatograph (μ -ECD GC). I also measured pH and electric conductivity and used colorimetric methods for nitrogen monitoring in the water samples. Upon my departure at the end of the summer, I trained a new graduate student on these methods, and oriented them to the lab schedule and sample collection, so they could continue the project for their use towards a Master's thesis.

The sum of my undergraduate experiences have given me the strong background in teaching, and public speaking, and a passion for community engagement necessary to meaningfully contribute to the Marquette research community. Throughout by undergraduate studies I have served as a teaching assistant (TA) for the Math Department, where I staffed a math help center and graded assignments as a freshman. I have been a chemistry department TA, where I led recitations and helped with exam preparation. I have assisted in my own engineering department as a Surveying TA and two-time TA for the Numerical and Computing Methods class, teaching both Python and R coding languages. Through these opportunities I have developed the skills necessary to teach students at both a broad and individual scale.

My communication skills are further enhanced through experiences in public speaking. I have practiced public speaking frequently and spoken to a range of audiences under varying professional roles. My experience ranges from speaking with high school students and their families at various undergraduate admissions events, to addressing peers as a club president, to serving as a presenter at an Engineers Without Borders conference, and as a researcher for an REU conference hosted at Stanford University.

In addition to my skills in teaching and communication, I also value community relations and public service. I would be able to offer any lab I may get the chance to work in my skills in interpretation and school-aged education from my experiences as a middle school urban design project judge and stormwater session leader at the Syracuse Girls Summit.

My passion for the revival of post-industrial cities through the improvement of water infrastructure is what I will bring with me to any opportunities I may be presented with. The work being done both in the Milwaukee area, and in Dr. McDonald's and Dr. Parolari's labs provides a valuable experience in the skills necessary for me to pursue my dream of rebuilding

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water systems in cities like Buffalo. Backed by my foundational skills in the research process, teaching, and community engagement, I am prepared to tackle the challenges research and graduate school will present. And in turn, during graduate school I hope to gain further research experience, enhance my written and oral communication skills, practice professional engagement, and learn how to best serve a community so that I can go on to follow my passion. I believe I can gain these skills at Marquette University.