MSD-Centered Cornerstone Course at the University of Louisville

September 26, 2023

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MSD-Centered Cornerstone Course at the University of Louisville

1. Partnership, objectives, and benefits
2. Course development
3. Project enhancements
4. Positive early results

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Partnership, Objectives, and Benefits of MSD-Centered Cornerstone Course

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What is Cornerstone?

- Partnership with Speed School of Engineering at University of Louisville
- Design course for all Freshmen students
- Exposure to practical engineering applications at front-end of coursework
- Development of new MSD-centered course on Combined System conveyance, storage, and treatment
- Objective of designing, building, optimizing, and programming elements of a physical, bench-scale model
- Cross-discipline collaborative teams
- Rare opportunity to consistently reach new and focused audiences that have a vested interest in learning about the benefits and challenges

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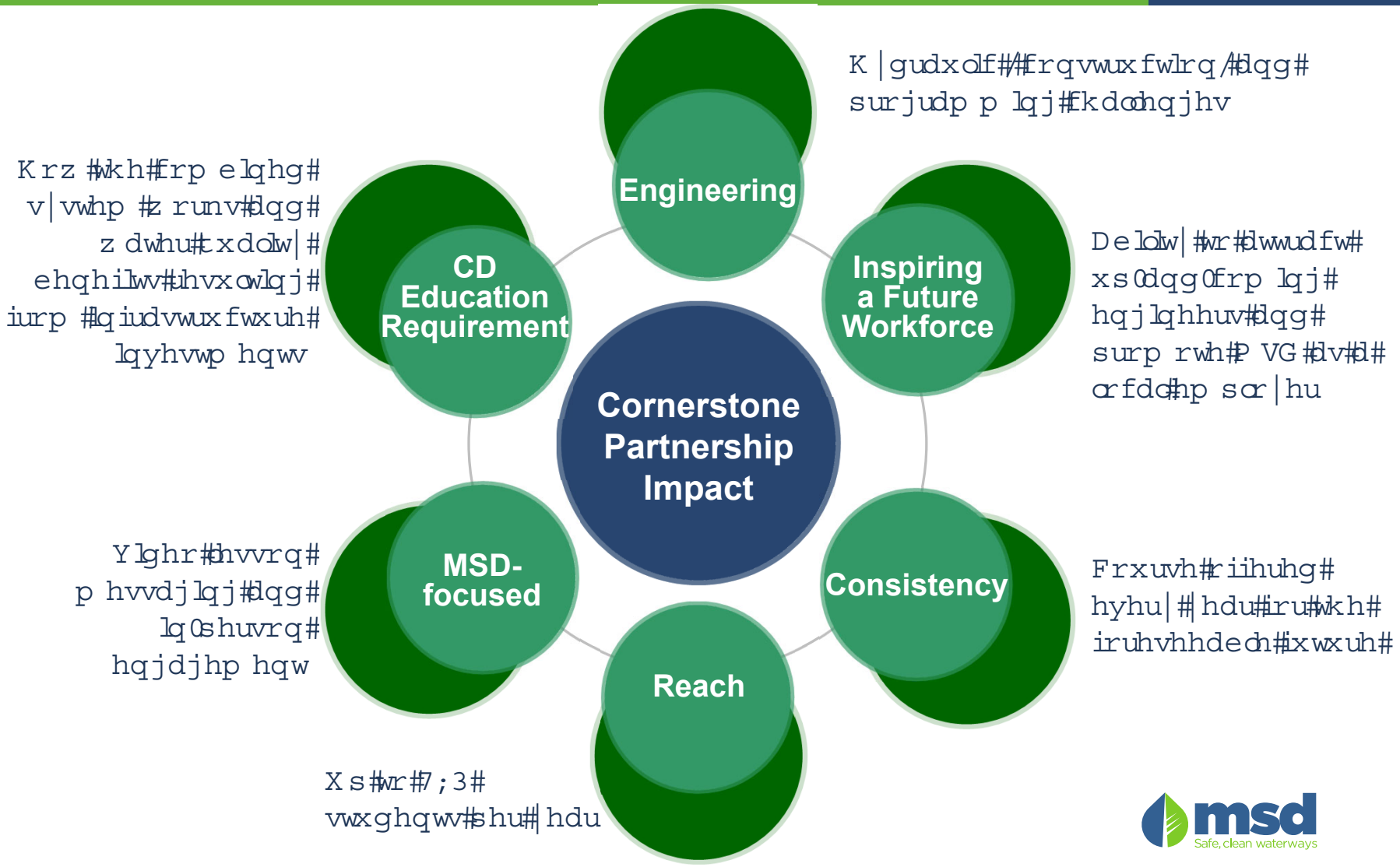
Engineering
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CD Education Requirement
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Inspiring a Future Workforce
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Cornerstone Partnership Impact
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Consistency
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Reach
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Cornerstone Investment Strongly Supports MSD EUM Metrics

Quality and Compliant Core Business Functions		Allows us to better fulfill our Consent Decree commitment of educating existing customers on how the combined system works, the water quality benefits of Consent Decree program investments, and the shared responsibility to achieve safe, clean waterways.
Community Education and Involvement		Expanding Cornerstone to reach six times the number of people is a huge impact for this audience. Compared to media "impressions", these students will be fully engaged and invested in learning how to optimize MSD solutions.
Market, Attract, and Employ Talent		Unique opportunity to attract the future of our engineering workforce and promote MSD as a local employer. These students will be co-op eligible the following year, take the Capstone course in their fourth year, and enter the workforce upon graduating.

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Course Development

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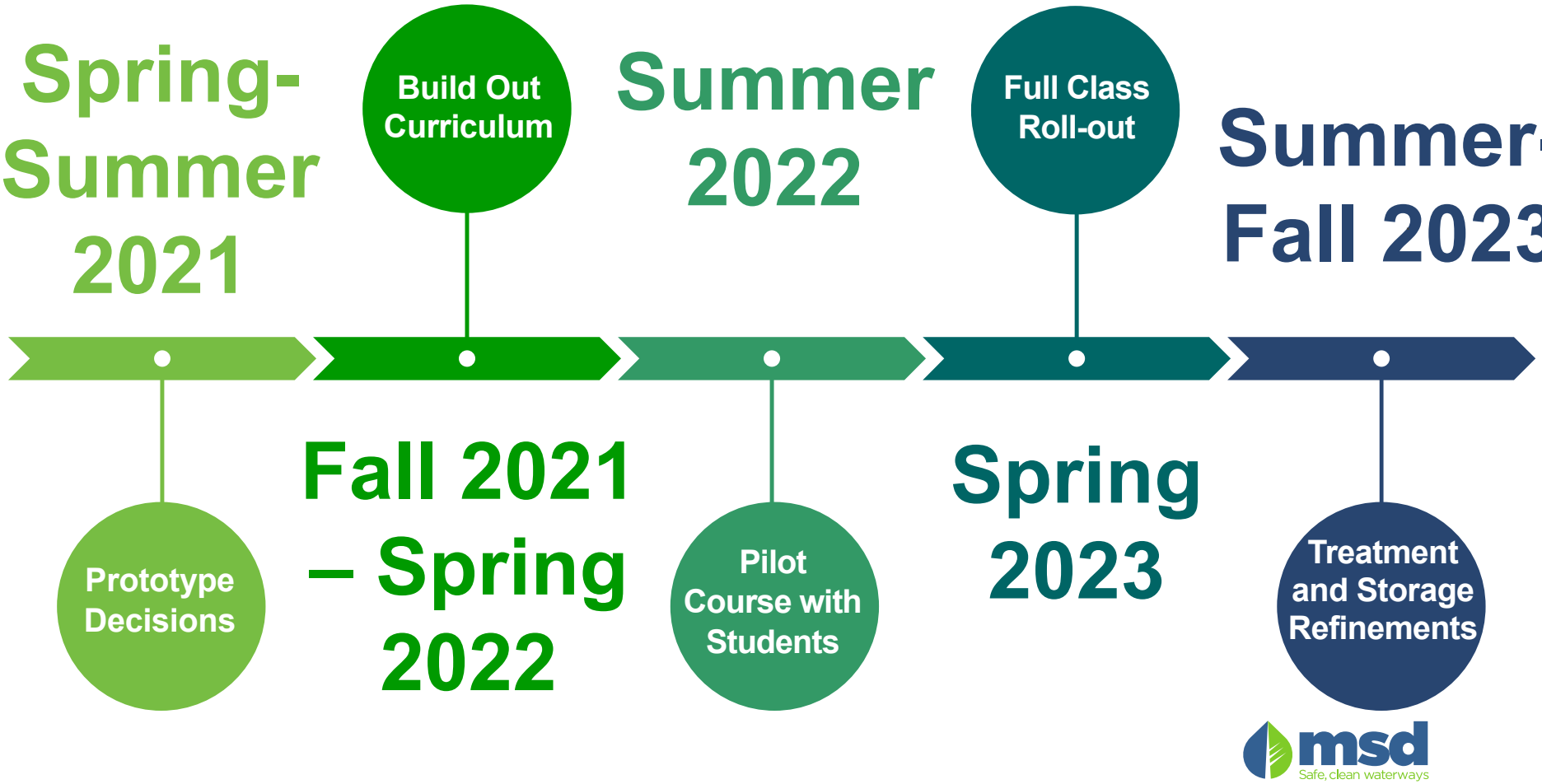
Course Development Timeline



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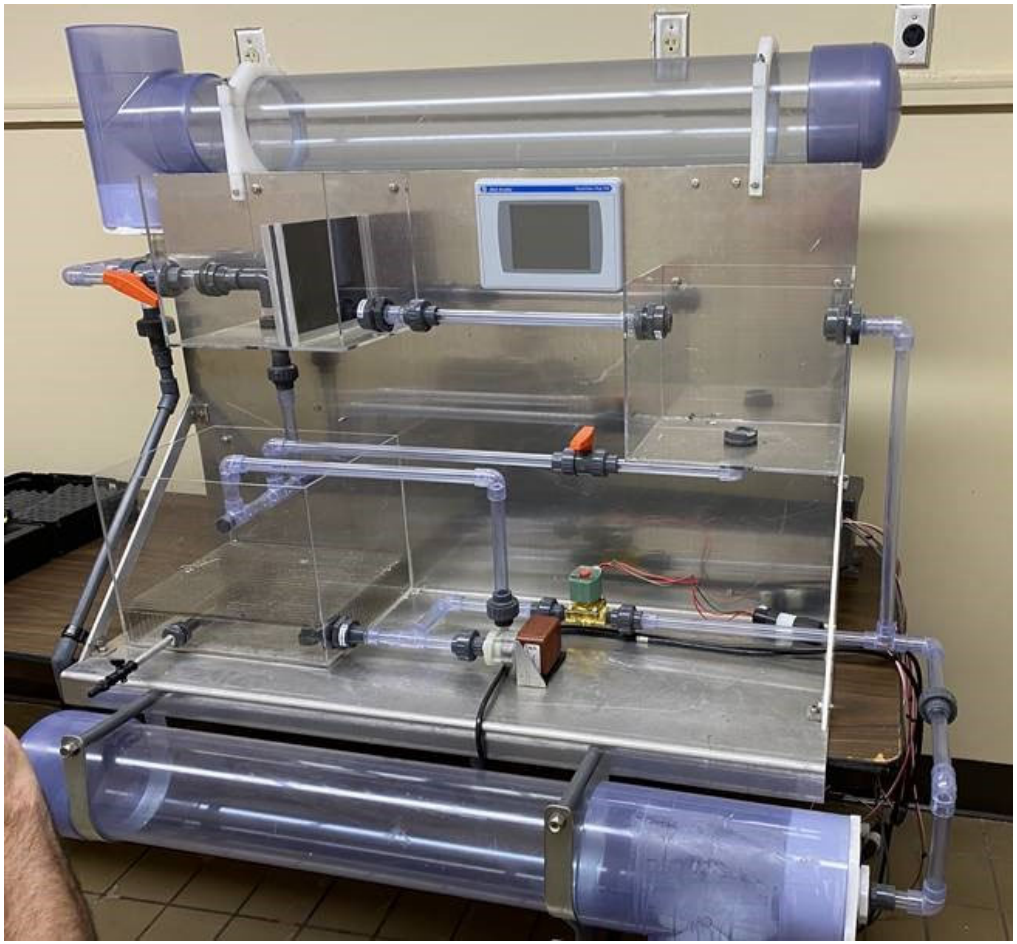
2021 – Demonstration Prototype



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Course Development Timeline

- Project was piloted in U22 with a small cohort
- Very successful launch in S23 with minor updates in U23
- Three overview videos
  - MSD's services
  - CSS system, overflow abatements solutions, and ACD requirements
  - Water quality treatment
- Student surveys at end of each semester

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MSD Project Elements

- Using tools to construct a PVC support bracket
- Experimenting with flow rates through apertures
- 3D design of two unique sensor mounts
  - Turbidity (TSS)
  - Ultrasonic (tank volume)
- Final Project on simulated filtration

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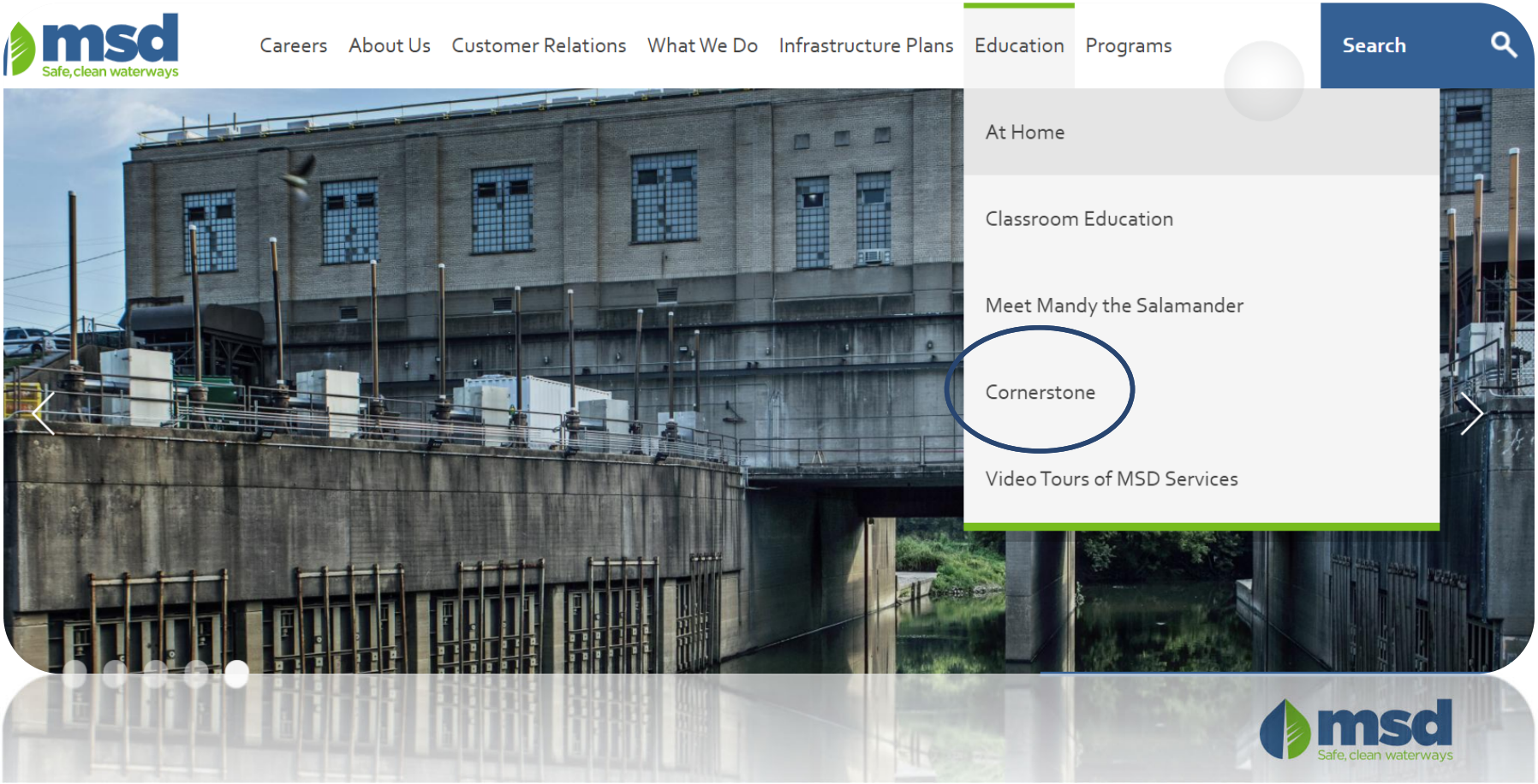
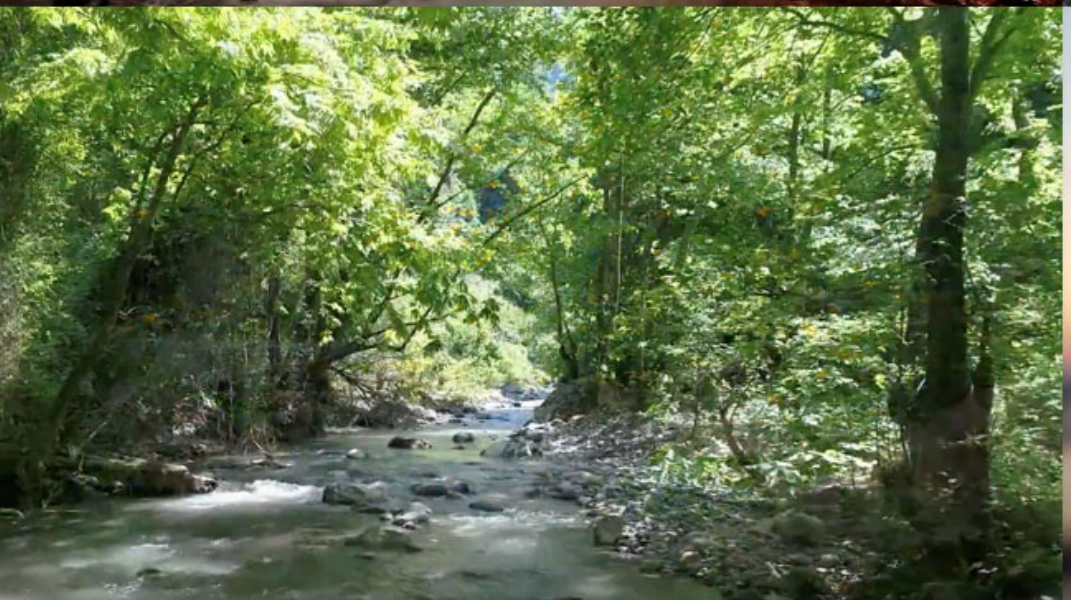
2022 – Video and Pilot Course



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Project Enhancements

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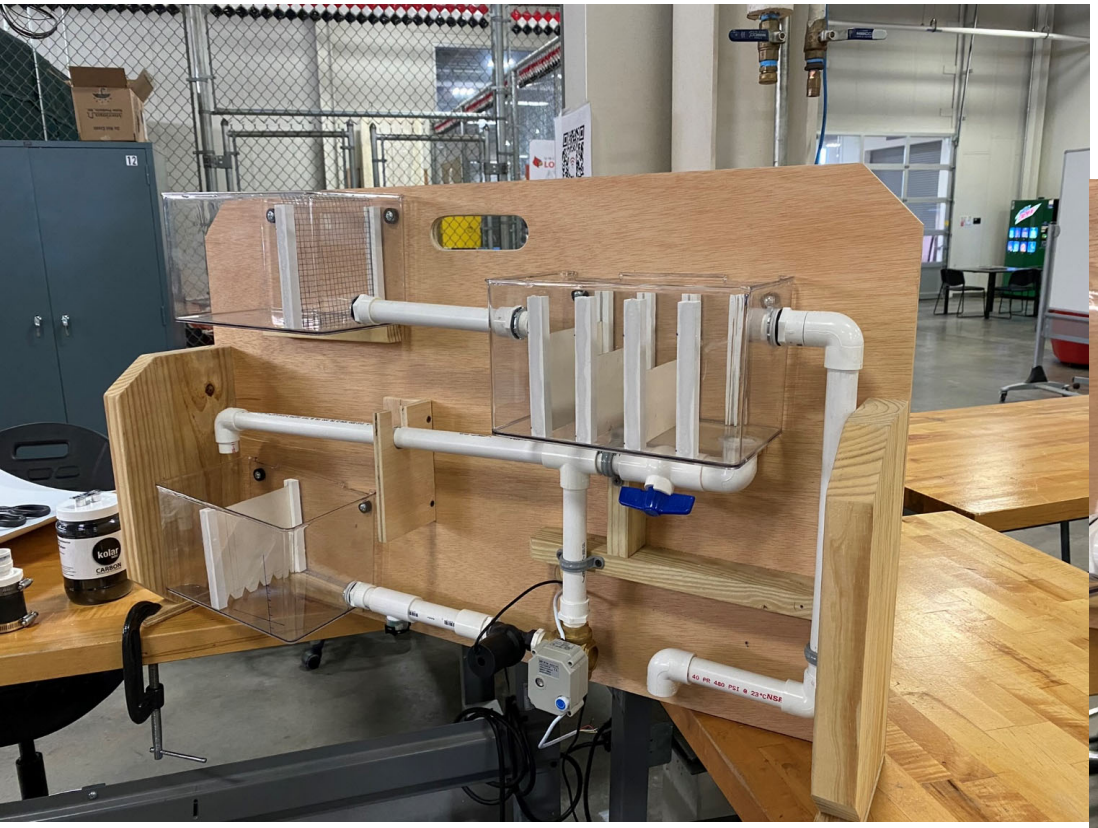
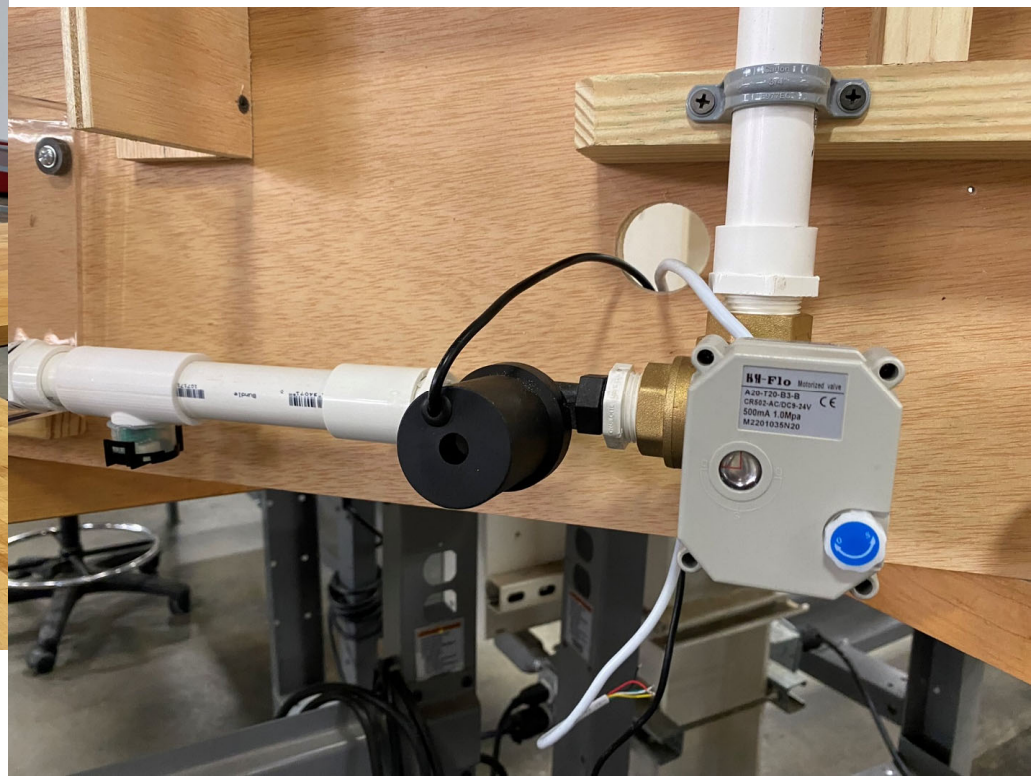
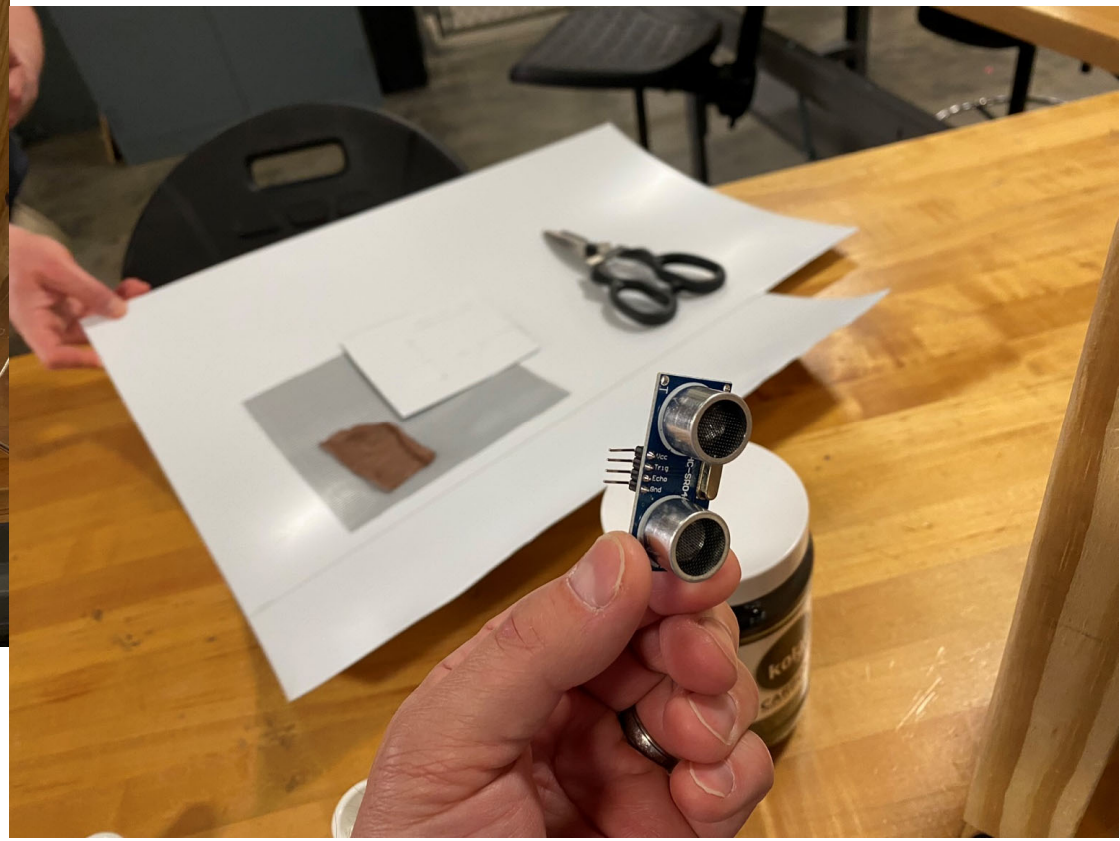
Iterations and Components

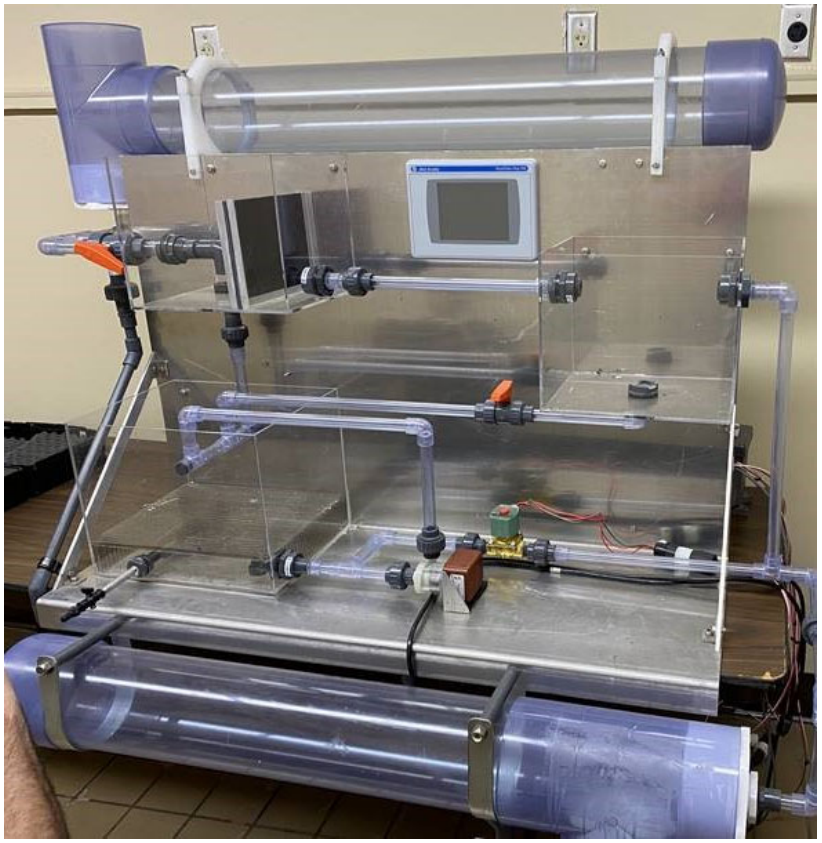


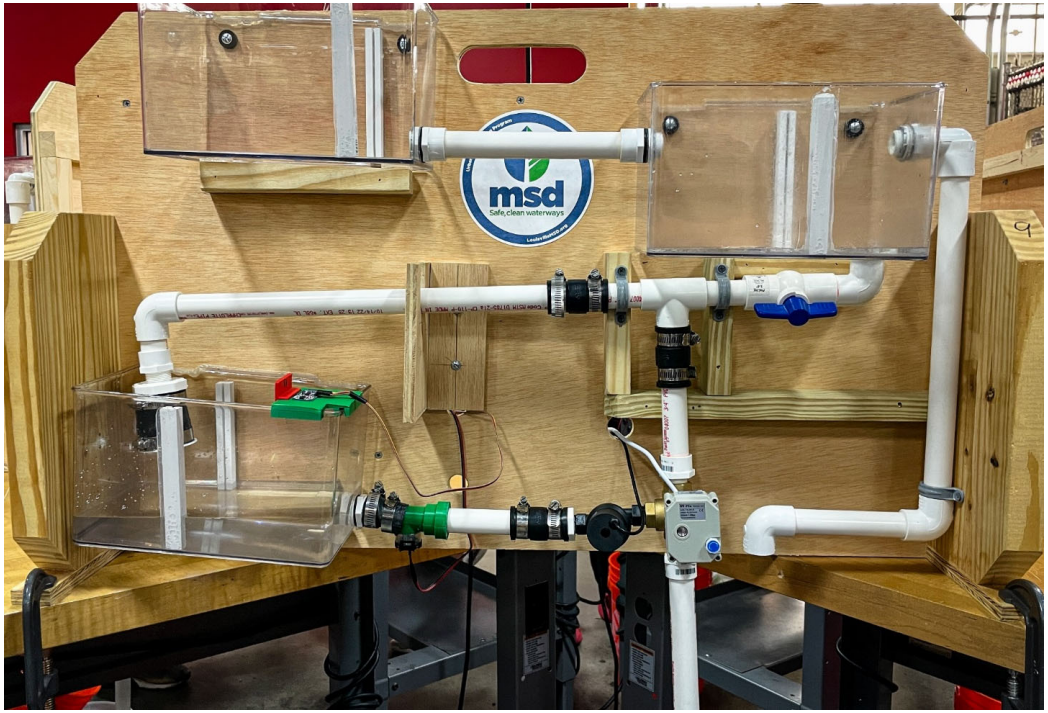


Iterations and Components



Demonstration Prototype vs. 2022-2023 Design





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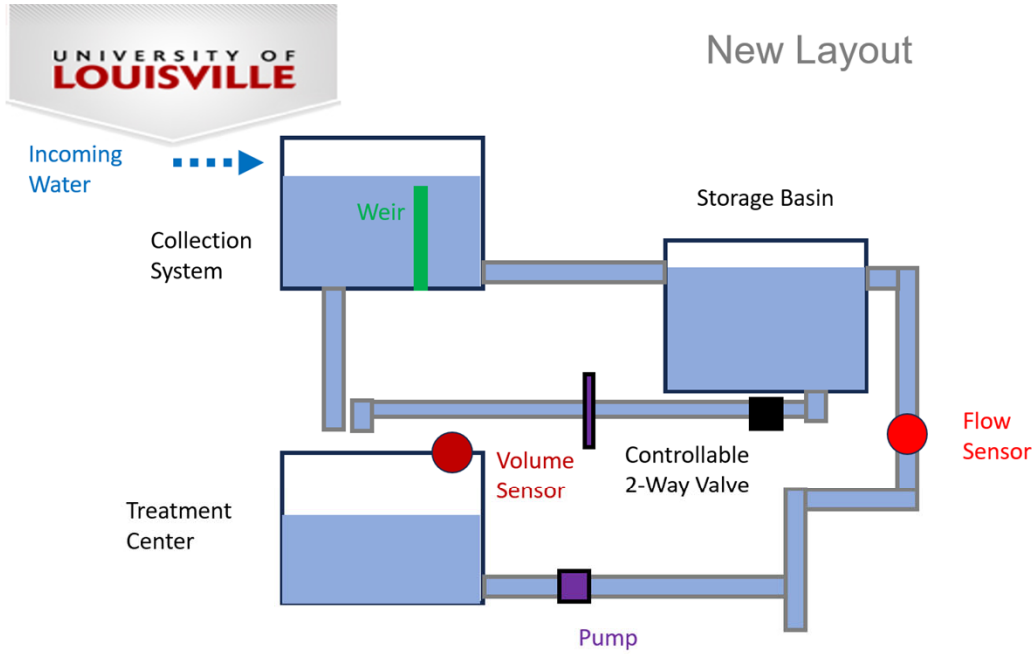
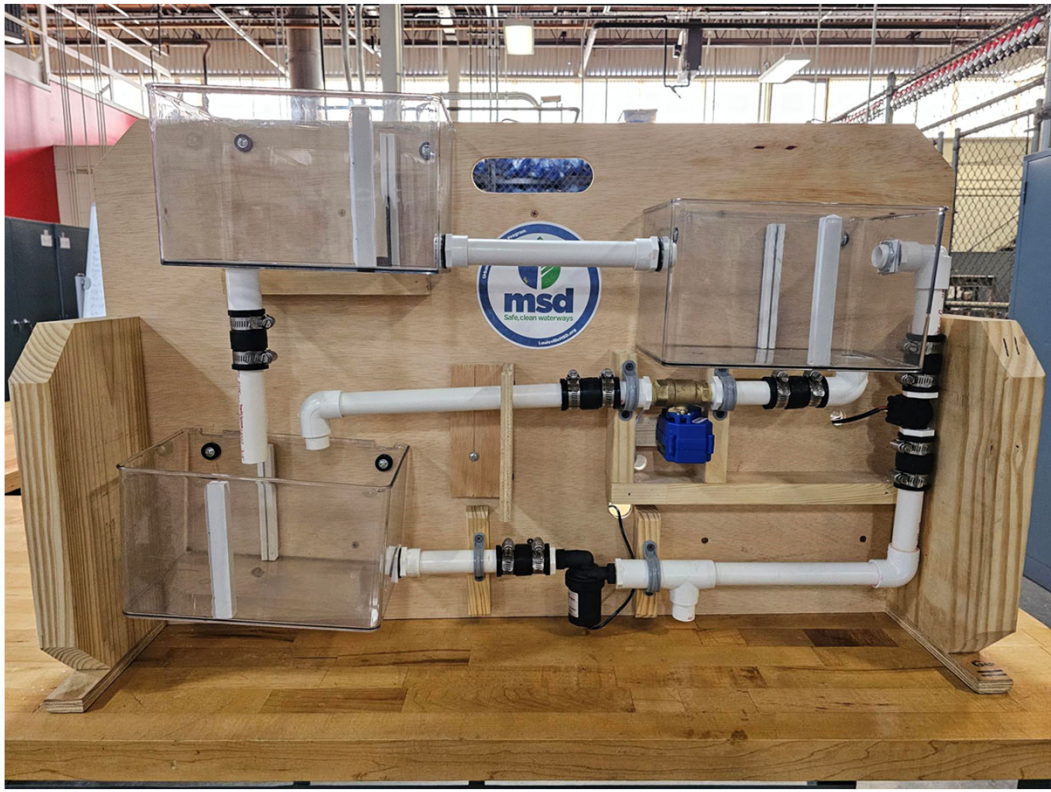
2024 Revised Layout and Prototype





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Project Element Updates Underway

- PVC bracket
- Design Challenges
  - Ultrasonic sensor mount
  - *Weir*
- Experiments
  - Aperture flow rates
  - *Watercolor filtration*
- Final Project
  - *Wet weather design storm routing*
- *Additional video connecting project to actual design challenges*

Same/similar feature

Added feature

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Positive Early Results

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Award-Winning Collaboration

National Environmental Achievement AWARDS

The *National Environmental Achievement Awards* recognizes individuals and NACWA member agencies that have made outstanding contributions to environmental protection and the clean water community. Awards are given annually; individuals and agency honorees are recognized at NACWA's Winter Conference. Federal Public Service honorees are recognized during Water Week.

2023 NEAA Honorees

Cornerstone Testimonials

Questions?

Stephanie Laughlin, MSD
Daymond Talley, MSD
Tony Marconi, RA Consultants

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