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Representative Ken Helm
Chair, House Committee on Water
State of Oregon,
House of Representatives
900 Court Street NE, HR D
Salem, Oregon 97301

February 11, 2020

RE: Testimony for the State of Oregon House of Representatives HB 4043

Dear Chairman Ken Helm, Vice-Chair Gary Leif, Vice-Chair Jeff Reardon, and Members of the House Committee on Water.

Thank you for the opportunity to speak with you today. I am Andrew Whelton, an associate professor of civil, environmental, and ecological engineering at Purdue University. For the past 20 years, I have provided government agencies and other infrastructure owners advice about what materials to use for the design, upgrade, and repair of their water systems across the nation as well as in Europe and Asia. I have read the bill, and I recommend you do not pass this bill or its amendments in their current form. I ask that you please consider the following information in your deliberations.

For my background: I earned 3 degrees from Virginia Tech: A Bachelors in Science, Masters of Science, and a Doctorate degree in Civil and Environmental Engineering. I am an active member of the American Chemical Society (ACS) and the American Water Works Association (AWWA), among others. During my career, I have worked for the U.S. Army, engineering design consulting firms, the U.S. National Institute for Standards and Technology (NIST), and as a Professor.

For over a decade I have lead teams in the selection and evaluation of water infrastructure materials under routine and disaster conditions. The most common water infrastructure materials I have seen are metals, concrete, and plastics.

- In 2019 after the Camp Fire, my research team and I were called to help respond to the Paradise California drinking water system contamination response.
- In 2017, I was called by the City of Santa Rosa for help after the Tubbs Fire caused their drinking water system contamination.
- In 2014, I was called in by West Virginia Governor Tomblin to help his state recover from their large-scale drinking water contamination disaster.

I have seen firsthand how water infrastructure materials perform in the real-word and in testing labs.

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With respect to house bill 4043 and the proposed amendments, I would urge the legislature to continue to allow local governments to determine which materials to use and not use in their water infrastructure.

Today, there are more technologies being presented to local governments than ever before. Much of their growing success is because of early adopters – governments and private sector partners who choose to try something new. Some technologies have been successful while other government agencies have wished they had chosen a different path.

Finally, I would like to share my experience with disasters.

Since the Camp Fire I have been asked by local governments, utilities, consultants, and plastic industry representatives, what my position is on using plastic pipes in wildfire prone areas. The Tubbs Fire damaged

5.2 miles of the metal and plastic drinking water distribution in the City of Santa Rosa, California. There, some plastic components were found to have absorbed carcinogenic chemicals like a sponge. Some plastics were a problem because they were leaching those chemicals out slowly causing unsafe drinking water. This prompted the City to call me after months of flushing water through their system during their slow recovery. Many of their plastics had to be completely removed and replaced.

In 2019, my team assisted in the response to the Camp Fire. This disaster impacted about 40,000 people, 13 public water systems, and many thousands of people who relied on private wells. You have likely heard a lot about the Paradise Irrigation District. Their entire 172 mile drinking water distribution system and 16,000 service lines were damaged. Onsite we found that both metal and plastic drinking water components were damaged by fire. Here again, some plastics adsorbed chemicals, making them more difficult to clean than metal water system components. Other plastics melted and completely lost structural integrity [file].

After the Camp Fire we and the US EPA estimated that certain plastic service lines in Paradise required more than 286 days of nonstop water flushing water at 2 gallons per minute (for a 1-inch diameter pipe) to return them to safe use. 15 months later, the Paradise water system is still removing damaged metal and plastic infrastructure.

At this time, it is unclear to me the degree plastic water infrastructure materials should or should not be used in wildfire prone areas.

Plastics can have low capital cost and are likely a good choice for certain applications.

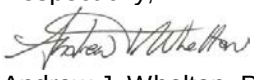
Finally, I am aware that in a July 2019 California Department of Transportation study (CALTRANS), it was reported that [quote] "Oregon DOT does not use plastic pipes when the agency is aware of a fire concern." [unquote].

For Oregon DOT, wildfire is already a factor in determining storm sewer pipe material selection as mentioned in this *2019 CALTRANS Study: Plastic Culverts in Fire-Prone Areas: Survey of State Practice.* Other state transportation agencies have similar policies in place according to CALTRANS.

I would ask that you consider whether bill 4043 is in the best interest of the rate payers, your constituents, water system resilience, and maintaining public health.

It is my opinion that local government needs the authority to select materials that provide them the greatest ability to protect their investment. Thank you for the opportunity to share my experiences with you today. Please do not hesitate to contact me if you have any questions. I can be reached at mobile (765) 494-2160 or awhelton@purdue.edu.

Respectfully,



Andrew J. Whelton, Ph.D.
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[1 slide was submitted to the committee]

Brief Biography

Andrew Whelton, Ph.D. is a Purdue University associate professor of civil, environmental, and ecological engineering, who is nationally recognized for water infrastructure disaster response and recovery. Dr. Whelton has applied his unique skill set for 20 years to uncover and address problems at the interface of infrastructure materials, the environment, and public health. Topics pertaining to disaster response and recovery as well as construction site safety are just two of many topics his research has impacted. Dr. Whelton's discoveries have positively changed how government agencies (EPA, CDC, NRC, NIOSH, NIST, ARMY), water utilities, nonprofit organizations, health departments, state legislatures, and building owners approach their responsibilities. Since February 2019, his team has been assisting in the 2018 Camp Fire response and recovery, the largest most destructive fire in California's history including conducting a survey and hosting a public meeting about drinking water and plumbing after the Camp Fire. Previously, his team's discoveries resulted in briefing invitations by the Indiana Senate, the National Academies of Sciences Standing Committee on Disaster Science, the National Academies of Sciences Forum on Medical and Public Health for Disasters and Emergencies, and the U.S. Chemical Safety and Hazard Investigation Board. Here, he helped agencies understand emerging public health issues, their root-causes, and federal actions needed to prevent chemical disaster reoccurrence. In 2014, during testimony to Congress by the Natural Resources Defense Council, his water security research was cited. In 2015, the National Science Foundation created a 2015 "Science Nation" video to highlight his team's work as benefiting U.S. public safety and welfare. In 2014, he was called in by West Virginia Governor Earl Ray Tomblin after the 2014 Charleston chemical spill. The incident contaminated the capitol city's sole 50 MGD treatment plant, 2,200 miles of water mains, 107 storage tanks, and 120 booster stations across 124 pressure zones. About 15% of the state's population was affected. Through two research teams he assisted the state and community recover from the incident. His research teams have identified best practices for planning for and recovering from natural and made-made disasters that affect water systems. He has extensive experience understanding material aging and chemical fate in water distribution systems and building plumbing, with an emphasis in plastic materials. Dr. Whelton has organized and presented town hall public meetings, conducted sampling at private residences, government buildings, and provided Governor's staff feedback on evidence-based public messaging, and engaged in press conferences. At present, he's leading a nationally funded drinking water plumbing safety initiative with multiple universities and industrial collaborators. His research efforts have been supported by $4.8 million dollars from government and private sectors. Before joining Purdue University, he served on the faculty at the University of South Alabama, and worked for the National Institute for Standards and Technology (NIST) Building Fire Research Laboratory, Virginia Tech, U.S. Army, and private engineering consulting firms. He's authored more than 50 peer-reviewed publications and delivered more than 200 presentations. A hallmark of his work is direct engagement with communities at risk. His teams have established websites (www.PlumbingSafety.org; www.CIPPSafety.org) to make discoveries accessible to the public and communities of interest. He earned a B.S. in Civil Engineering, M.S. in Environmental Engineering, and Ph.D. in Civil Engineering from Virginia Tech.

This opinion is based on information available at the time of the testimony.