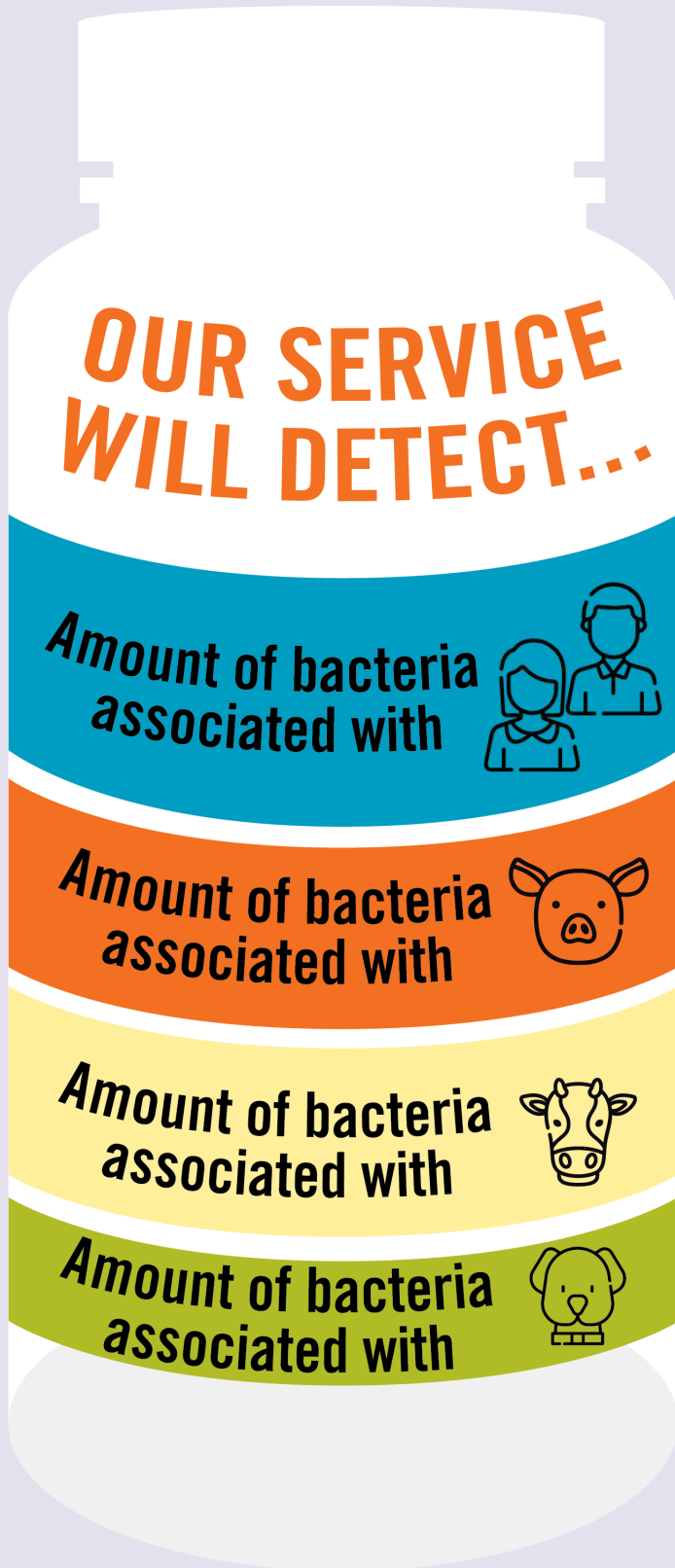


GETTING TO THE SOURCE: A Solution to Solving Bacteria Contamination in Waterways

Unhealthy levels of bacteria in waterways is a recreational and public health concern for South Carolina. In fact, bacteria are the most frequent cause of river impairment across the nation.



qPCR ★ ★ ★ ★ ★

Water test results using *quantitative* polymerase chain reaction reveal a PRESENCE OF bacteria from warm-blooded animals and is quantified by species.

Knowing the relative source of bacteria, from those we can identify, will help the resource manager determine the most effective next steps to protect drinking water and recreational waterways.

E. coli ★ ★ ☆ ☆ ☆

Test results are AN INDICATOR of the presence of fecal waste in water, with no ability to identify source of waste.

A fecal coliform monitoring result, such as an E. coli sample, informs a watershed manager that there is fecal-related bacteria contamination in a waterway. These results do not account for viral pathogens that have stronger survival rates than fecal coliform, nor provide information on source of contamination. The possible sources are many, including all species of wildlife, domestic pets, sewage, livestock, and waterfowl.

CLEMSON
PUBLIC SERVICE AND AGRICULTURE

MICROBIAL SOURCE TRACKING is an emerging technology to identify the species of bacteria in a water sample using DNA. Specifically, Clemson University offers this technical service using qPCR, or quantitative polymerase chain reaction. Species currently available for detection are swine, bovine, human, and dog. This list could expand to include other mammals, should the project scope demand it and resources are available.

qPCR is a genetic method that quantifies targeted DNA sequences using a fluorescently tagged probe created to seek that matching sequence. The amount of fluorescence resulting is directly proportional to the amount of amplified DNA. The method is not geographic dependent, meaning no library of information and DNA sequences needs to first be developed for species specific to an area. This makes for a more rapid and cost-effective assessment, typically, and is often referred to as real-time PCR.



This service is being performed in partnership with the Clemson University Molecular Plant Pathogen Detection Lab.

Laboratory, equipment, and staff, are certified annually by the USDA to perform qPCR to detect plant pathogens and assess honeybees as European or Africanized.

As a land grant university, Clemson seeks to provide resources that improve the lives of South Carolinians, bringing research and science to application in service to the public.

COST PER SAMPLE

\$350 in SC \$400 for out of state.

Cost includes quantitative measure of all four species.

Results provided within seven business days.

To get started or for more information contact:

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