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## **A human fecal contamination score for ranking recreational sites using the HF183/BacR287 quantitative real-time PCR method**

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### **ABSTRACT**

Human fecal pollution of recreational waters remains a public health concern worldwide. As a result, there is a growing interest in the application of human-associated fecal source identification quantitative real-time PCR (qPCR) technologies for water quality research and management. However, there are currently no standardized approaches for field implementation and interpretation of qPCR data. In this study, a standardized HF183/BacR287 qPCR method was combined with a water sampling strategy and a novel Bayesian weighted average approach to establish a human fecal contamination score (HFS) that can be used to prioritize sampling sites for remediation based on measured human waste levels. The HFS was then used to investigate 975 study design scenarios utilizing different combinations of sites with varying sampling intensities (daily to once per week) and number of qPCR replicates per sample (2e14 replicates). Findings demonstrate that site prioritization with HFS is feasible and that both sampling intensity and number of qPCR replicates influence reliability of HFS estimates. The novel data analysis strategy presented here provides a prescribed approach for the implementation and interpretation of human associated HF183/BacR287 qPCR data with the goal of site prioritization based on human fecal pollution levels. In addition, information is provided for future users to customize study designs for optimal HFS performance.

### **Full Text**

[http://ftp.sccwrp.org/pub/download/DOCUMENTS/JournalArticles/1008\\_FecalContaminationScore.pdf](http://ftp.sccwrp.org/pub/download/DOCUMENTS/JournalArticles/1008_FecalContaminationScore.pdf)