

Faecal bacteria in the River Wharfe and Cromwheel Bathing Water, Ilkley.

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Aim



To explain about the work undertaken on Cromwheel Bathing Water by the Environment Agency between 2021 and 2024

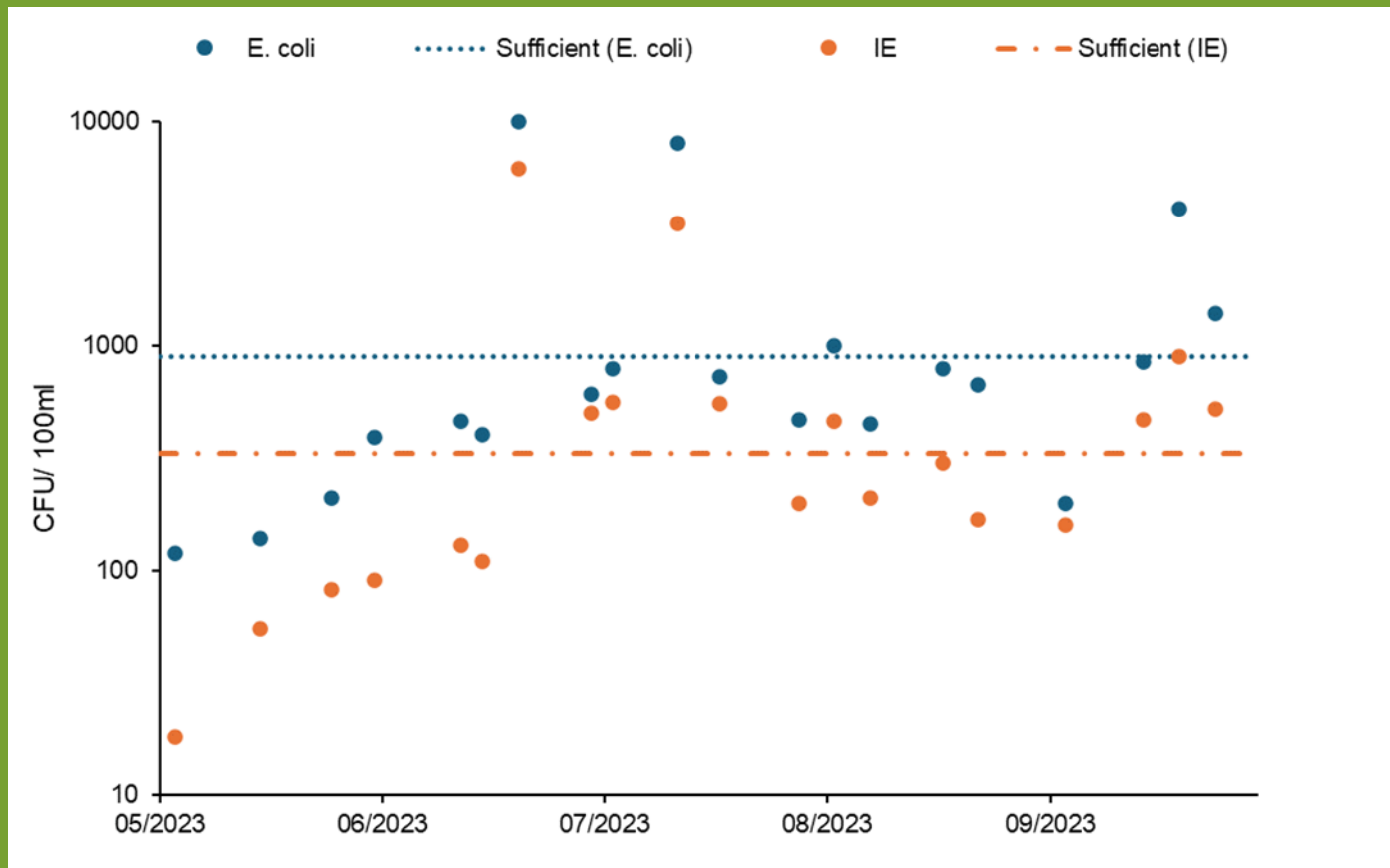
The brief

- ➔ Cromwheel Bathing Water Classification
- ➔ Our Investigation
- ➔ Key Findings
 - ➔ Relationship with rainfall
 - ➔ Potential sources of FIO contamination
- ➔ Summary – take home messages

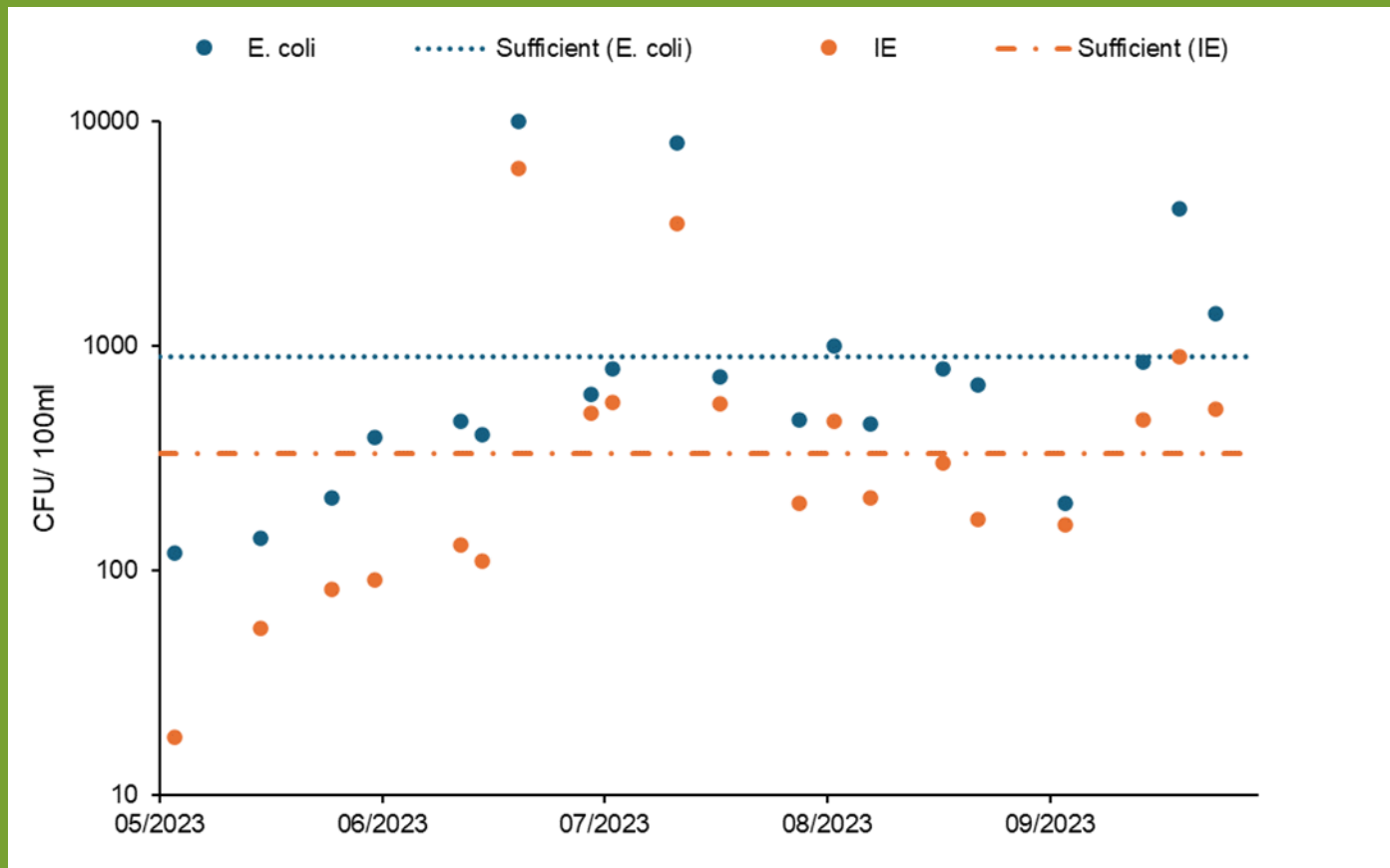
Bathing Water Directive (2013)

- ➔ Bathing Water classifications describe water quality for public health not ecological quality
- ➔ Excellent, Good, Sufficient or Poor
- ➔ Faecal indicator organisms (FIOs): E. coli and Intestinal enterococci (I.E.)
- ➔ The River Wharfe at Cromwheel is classified as Poor.

Bathing Water Classifications



Bathing Water Classifications



**Our
investigation**

**Regulation and
inspections**

Statutory Bacterial Samples

Complimentary Bacterial Samples

**Microbial Source
Tracking (MST)**

**Computer
modelling &
mapping**

**Continuous Water
Quality Monitors &
Autosamplers**

**Hydrometric &
Event Duration
Data**

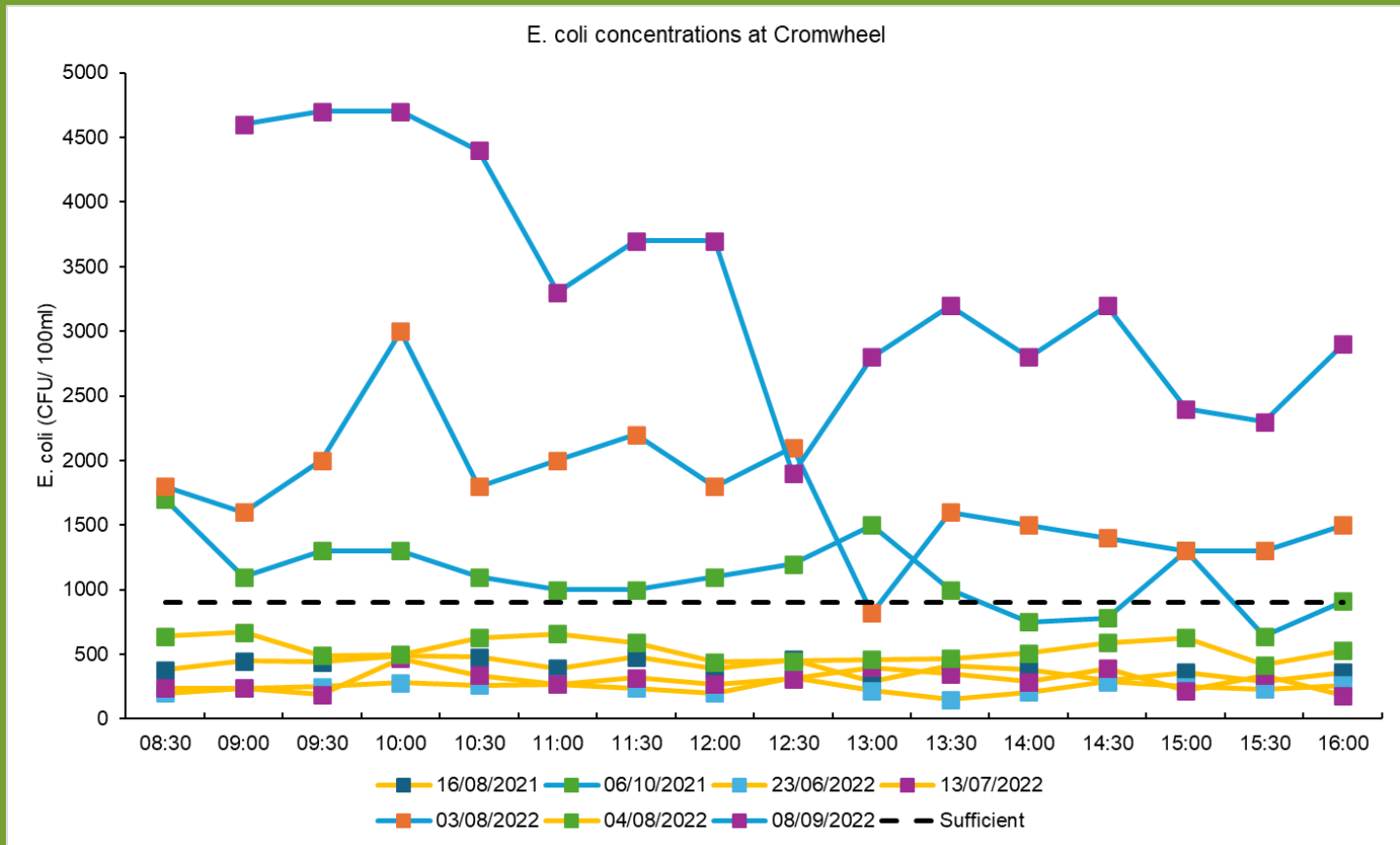
Findings



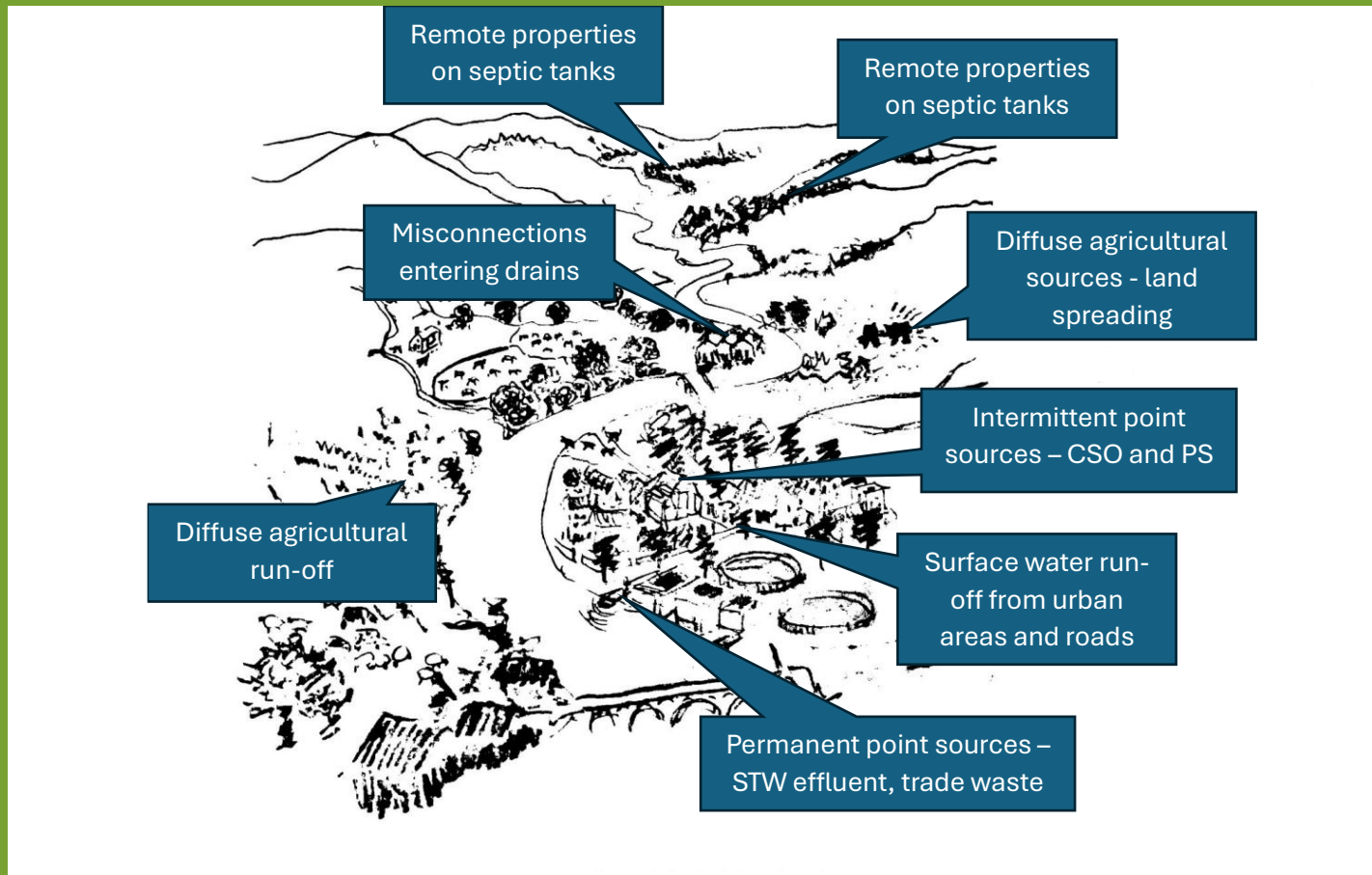
Relationship with rainfall

- ➔ FIO concentrations at Cromwheel are related to catchment rainfall
- ➔ All samples exceeding the Sufficient threshold follow moderate to heavy rainfall in the catchment in the preceding 72 hours
- ➔ All samples taken with no catchment rainfall for more than 72 hours are within Sufficient standards.

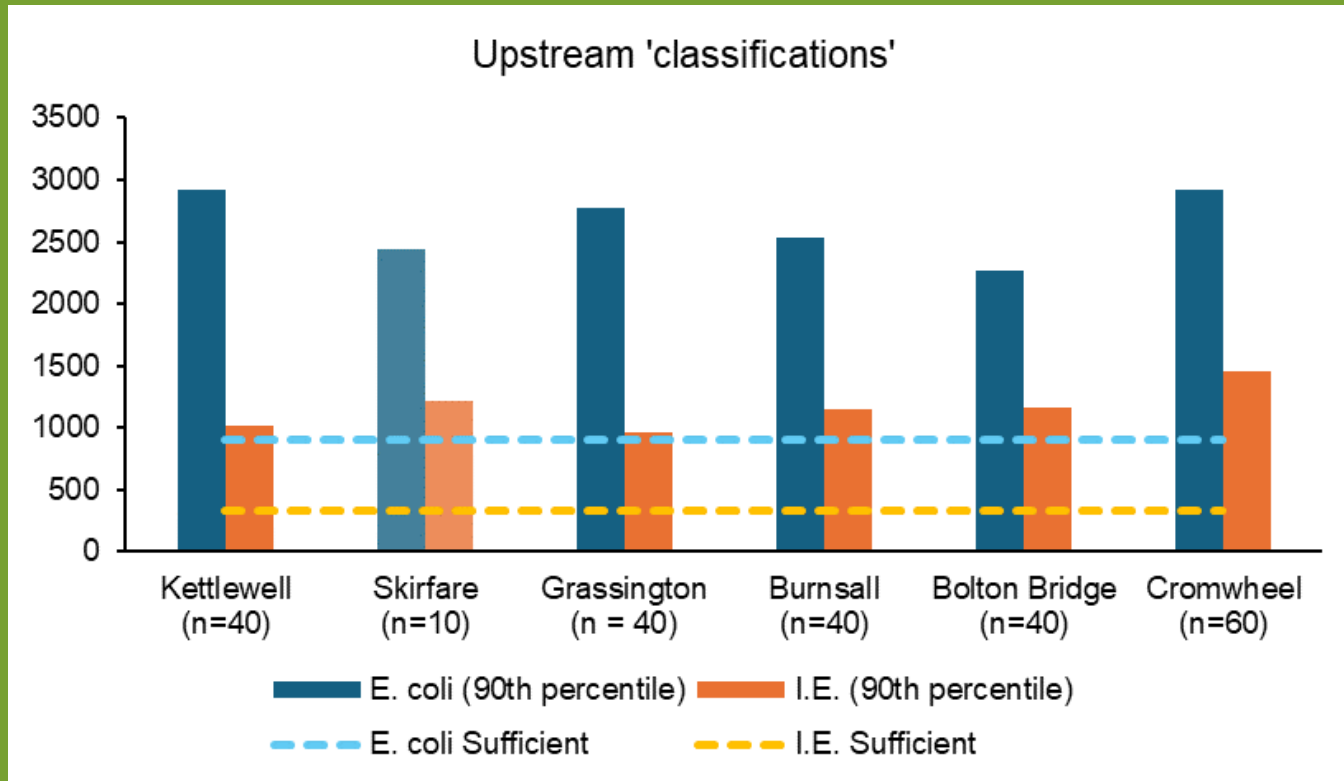
Relationship with rainfall



Potential sources of FIO contamination



Potential sources of FIO contamination



Data from 2022 - 23

Potential sources of FIO contamination

- ➔ There is strong evidence that FIOs originate from both **human** and **agricultural** sources in both dry and wet weather.
- ➔ The increase of FIO contamination in wet weather can largely be attributed to increased contribution from agricultural sources.
- ➔ There is strong evidence that agricultural contamination comes from ruminants - sheep and cattle.

Take home messages from our investigation:

- ➔ Don't swim in the River Wharfe for a minimum of 72 hours after moderate or heavy rainfall anywhere within the catchment
- ➔ FIO contamination at Cromwheel and throughout the catchment originates from multiple sources including agriculture and sewage
- ➔ The whole of the catchment can be affected by FIO contamination, including the upper reaches.