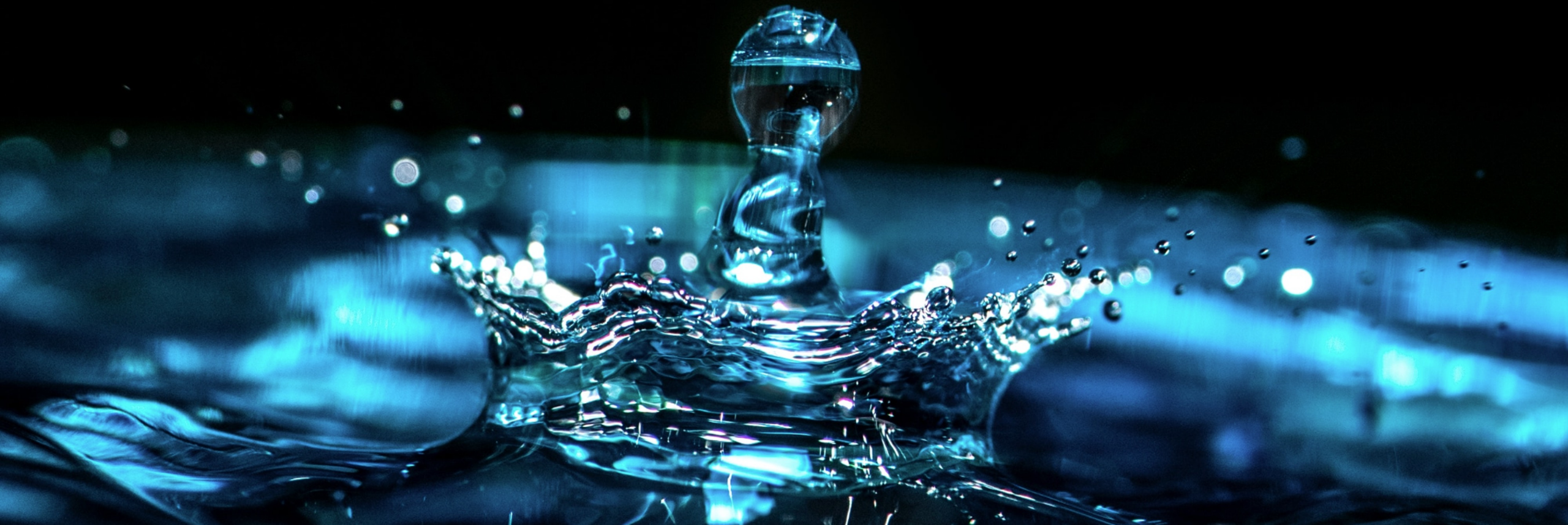
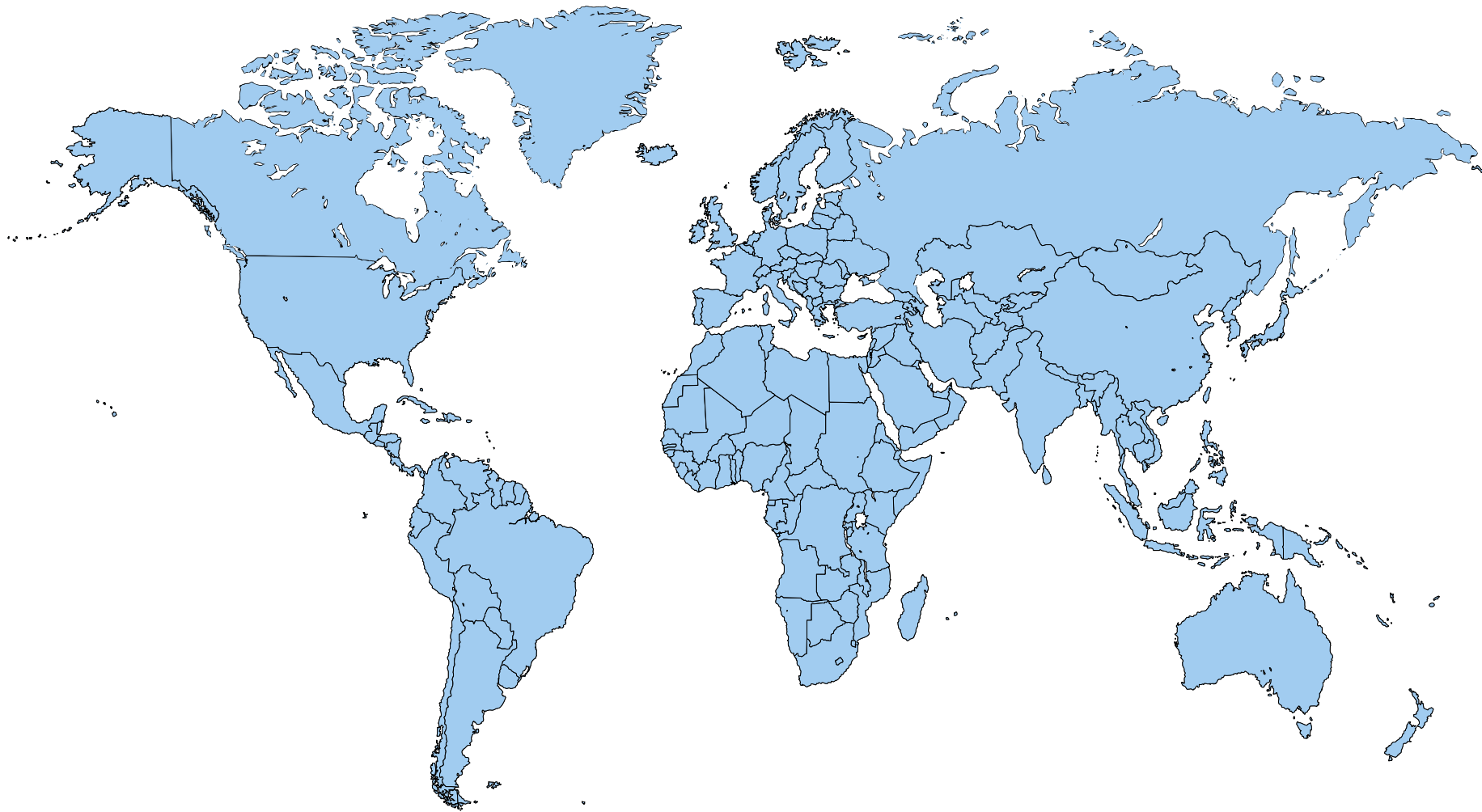
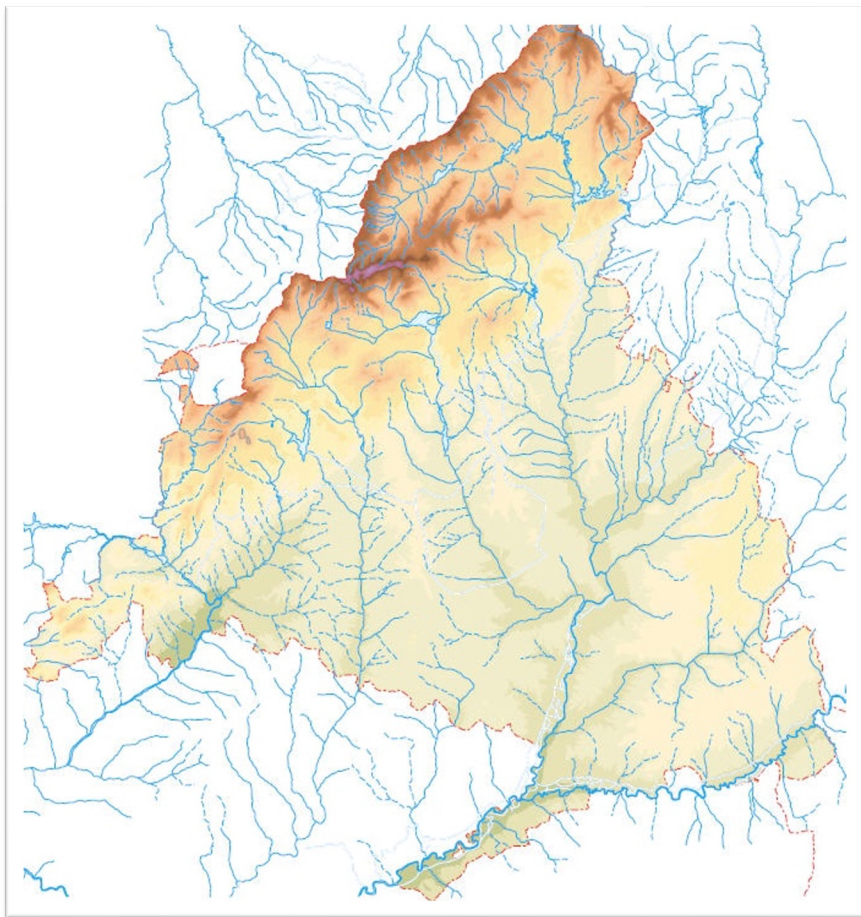


*Effect of swabbing cleaning method on biofilm communities of a
drinking water distribution system in Madrid*







6.4 million
people



17,651 km
DWDS pipes



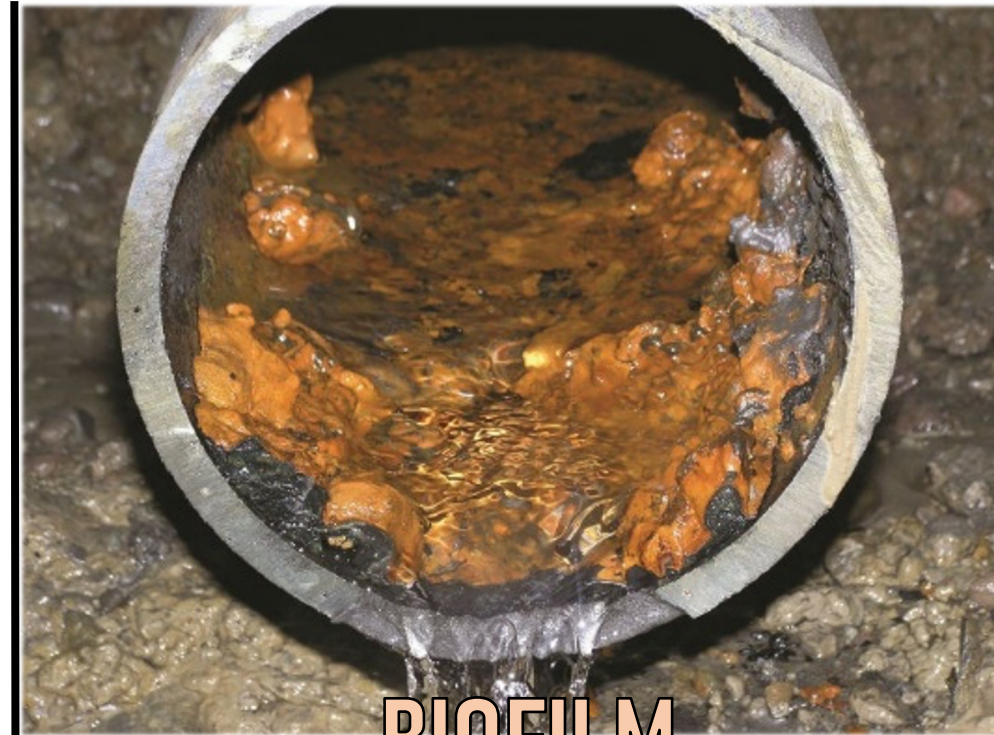
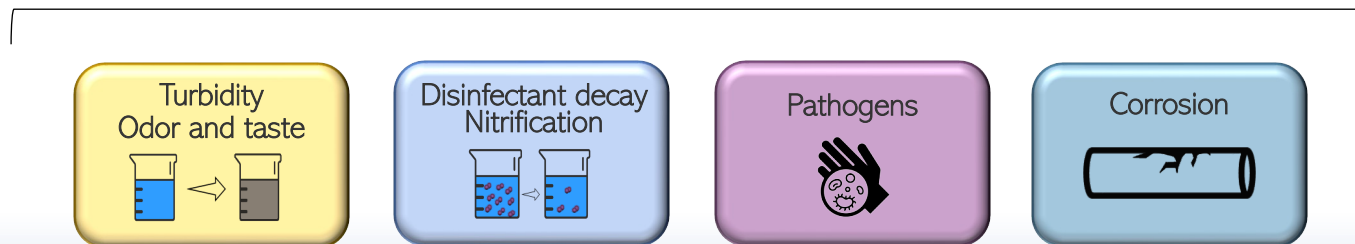
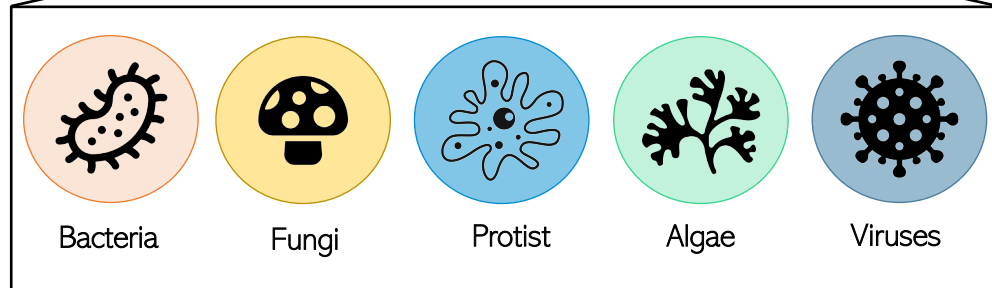
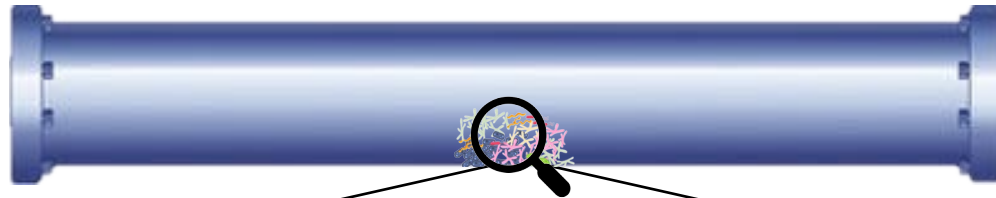
501.08 hm³

MADRID

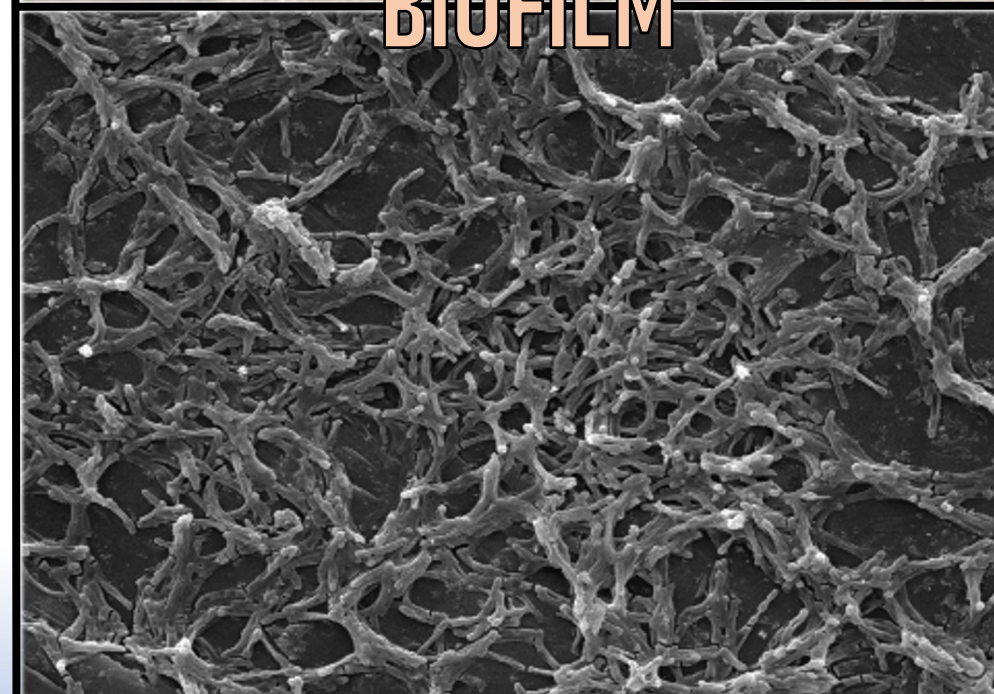
Canal
de Isabel II



INTRODUCTION

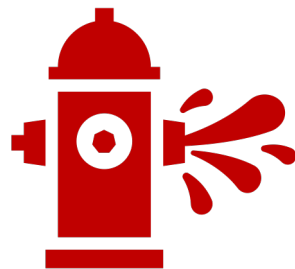


BIOFILM

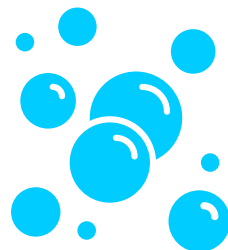


INTRODUCTION

DWDS pipes cleaning methods



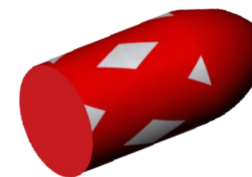
FLUSHING



AIR SCOURING



ICE PIGGING



SWABBING

Biofilm changes
Impact on water quality



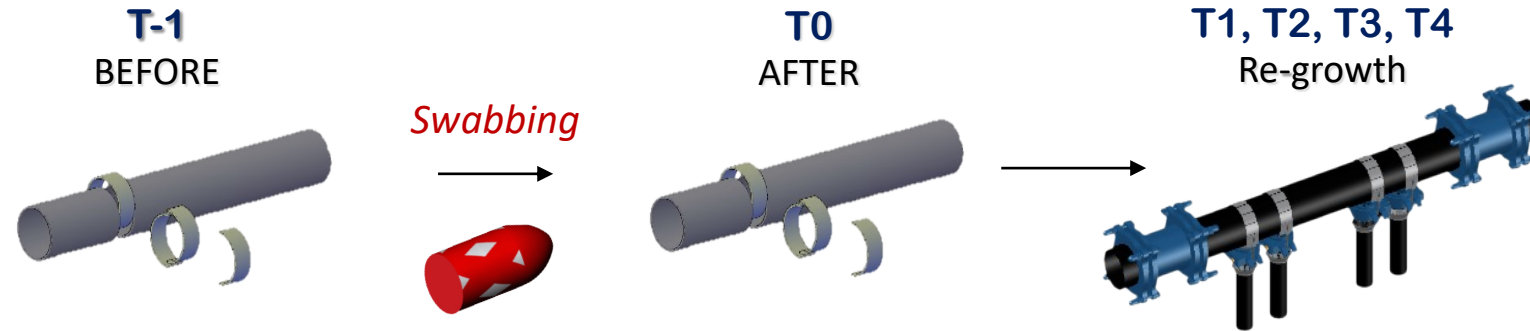
Understand how swabbing method affects the structure and composition of biofilm communities and subsequent microbial regrowth in DWDS pipes



MATERIALS AND METHODS

Real DWDS

Sector 460 m
Ductile iron
Ø 200mm



Biofilm analysis



Inorganics compounds – ICP-MS



Total Cell Counts – Flow cytometry



Bacterial community – NGS 16s rRNA

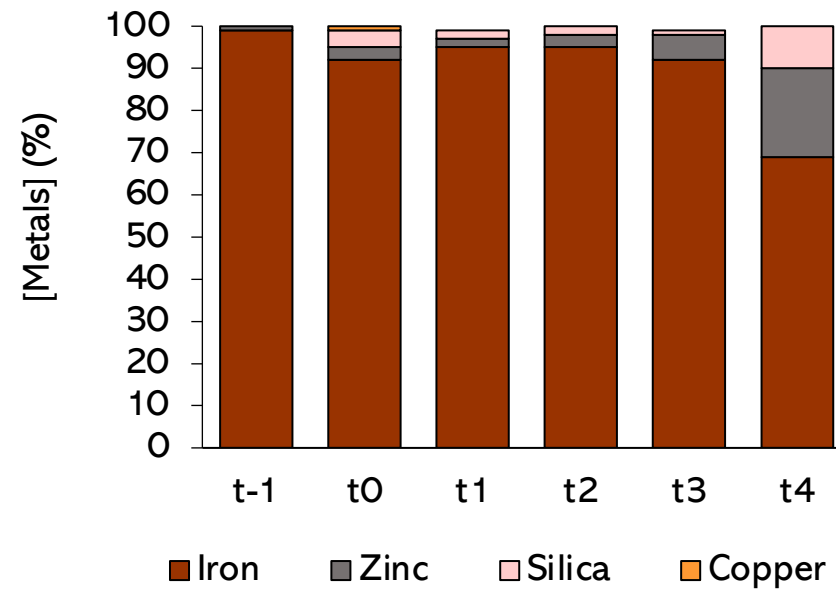




RESULTS AND DISCUSSION



Inorganics compounds - ICP-MS

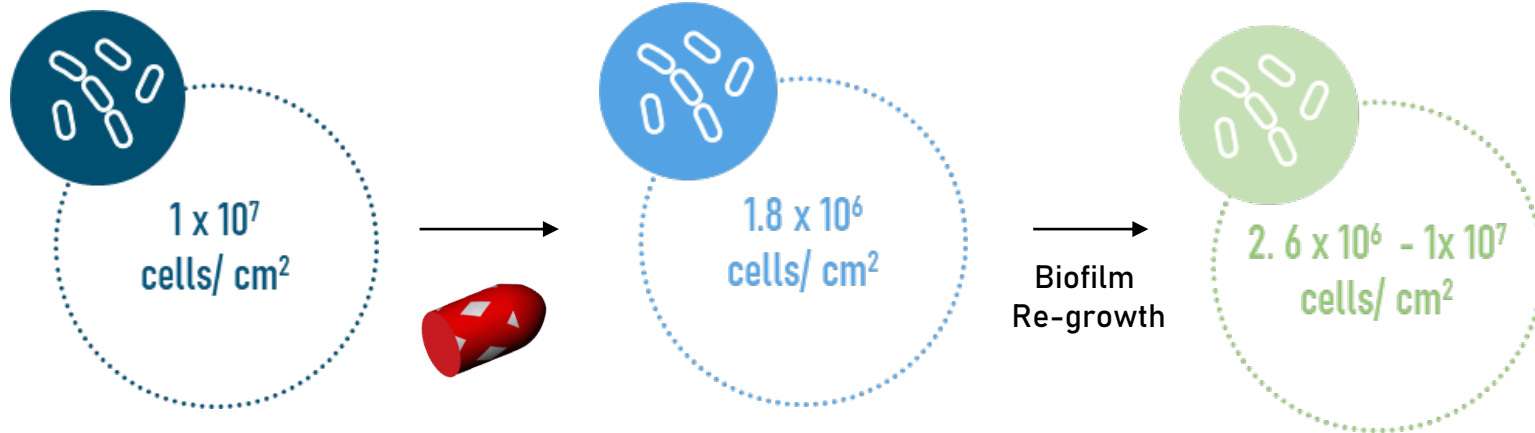




RESULTS AND DISCUSSION



Total Cell Counts - Flow cytometry

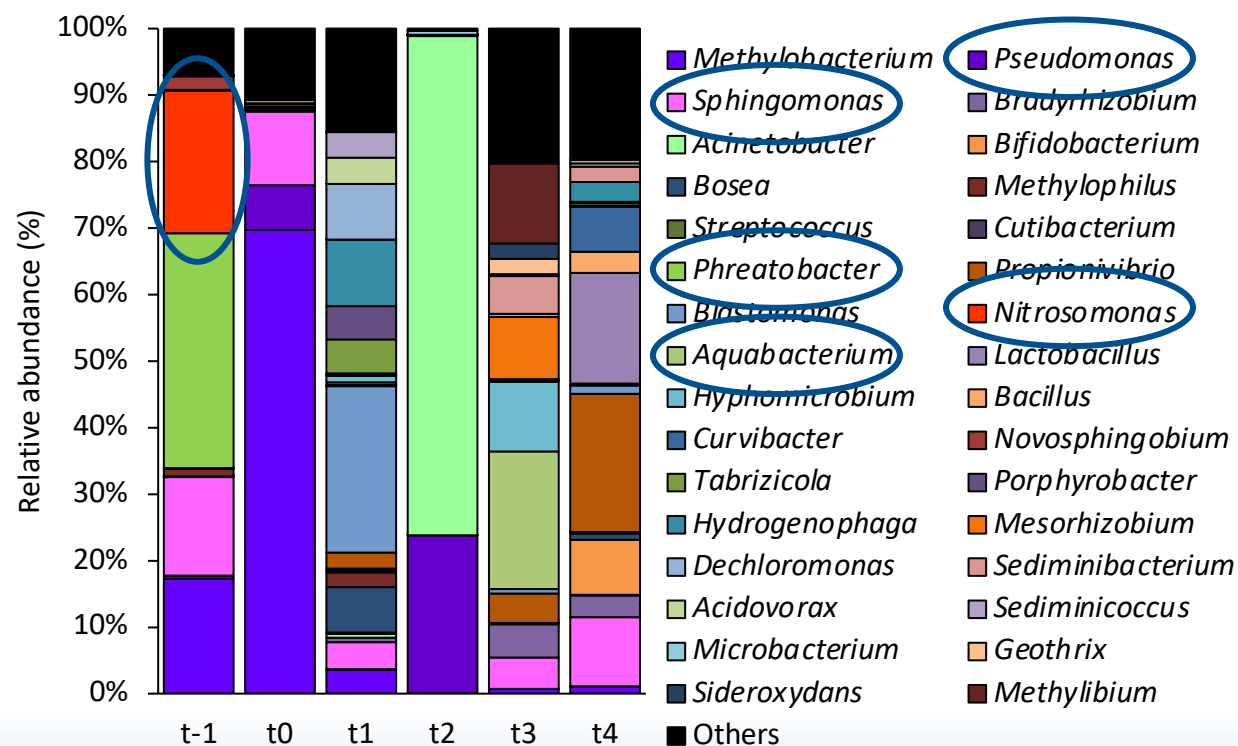




RESULTS AND DISCUSSION



Bacterial community – NGS 16s rRNA





CONCLUSION

- ✓ Swabbing cleaning in DWDS pipes modifies biofilm communities of these systems:
 - 🦠 Bacterial community composition
- ✓ Swabbing can be an effective tool aimed to minimise the microbial risk in DWDS.



July 2019

More research is needed to provide new information to adapt and/or change biofilm control strategies, thus helping to ensure the supply of safe drinking water to consumers.