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# Study the Variability of Water Quality in a Large Distribution Network

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# Outline

- Introduction
- Objectives of the Study
- Study Area and Network
- Methodologies
- Results and Discussions
- Conclusions

# Introduction

- A properly maintained water distribution system is critical in delivering safe water to the consumers
- Understanding the relationship between the distribution infrastructure and water quality is critical to ensuring good quality water
- Water quality in the distribution system can be affected by many different factors

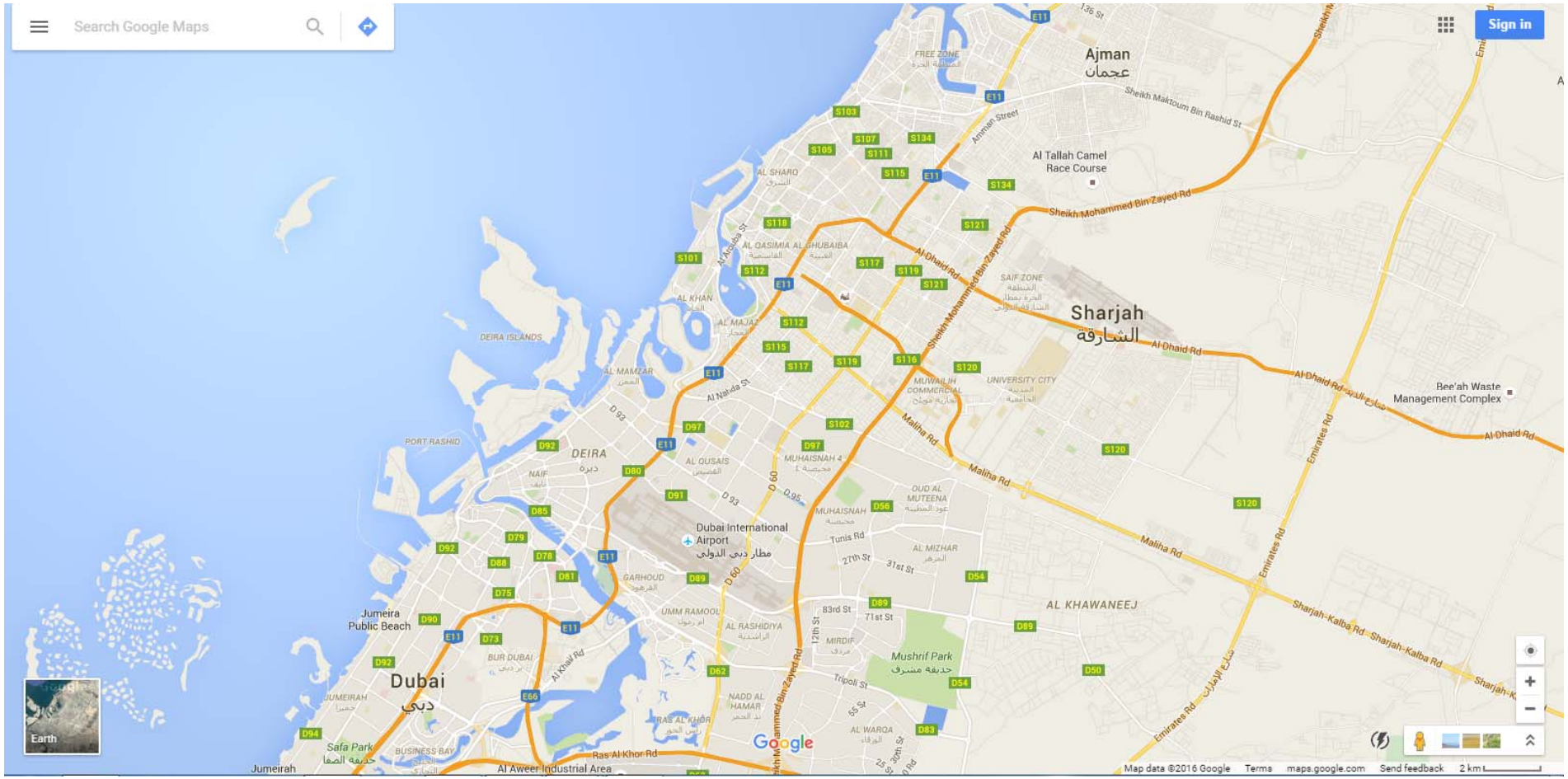
# Introduction

- Water quality varies throughout the distribution network spatially and temporally
- Even though previous studies investigated the variability of water quality, the relationship with the distribution system is often ignored
- Geographic Information System (GIS) can be a useful tool in understanding the variability of the water quality

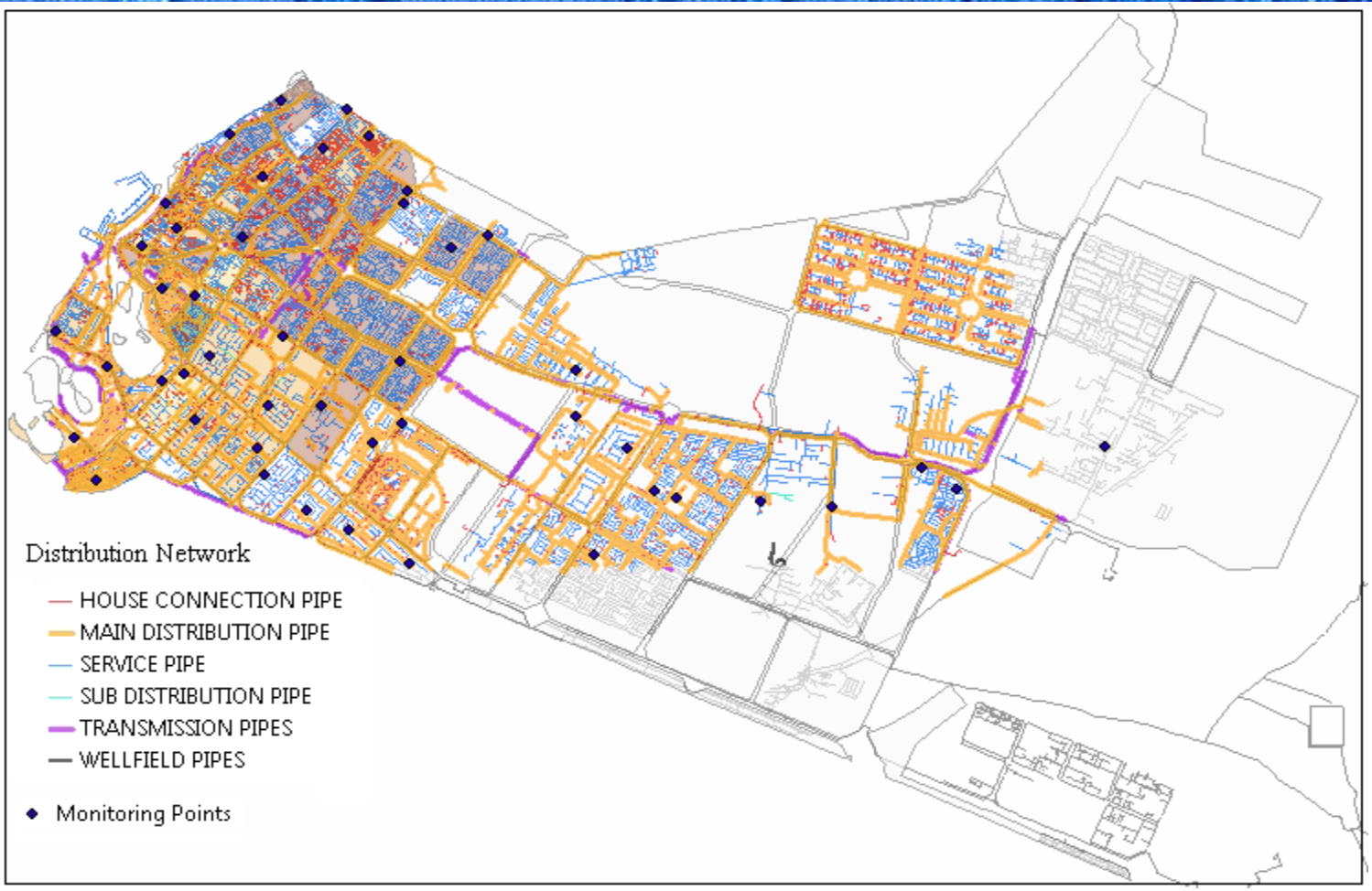
# Objectives of the Study

- The objective of the study was to assess the variations of water quality throughout the water distribution system in Sharjah, United Arab Emirates

# Study Area, City of Sharjah



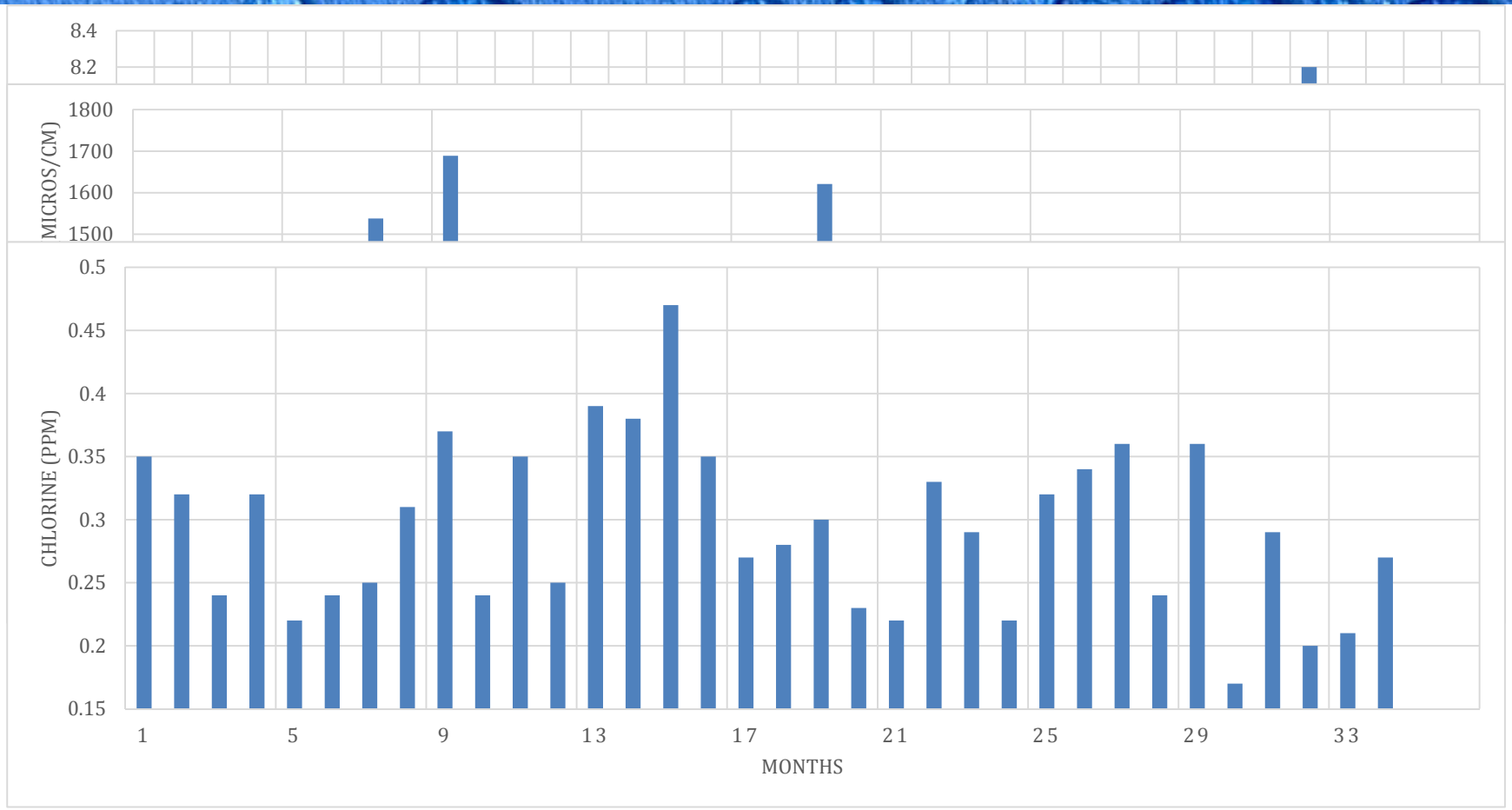
# Sharjah Water Distribution Network



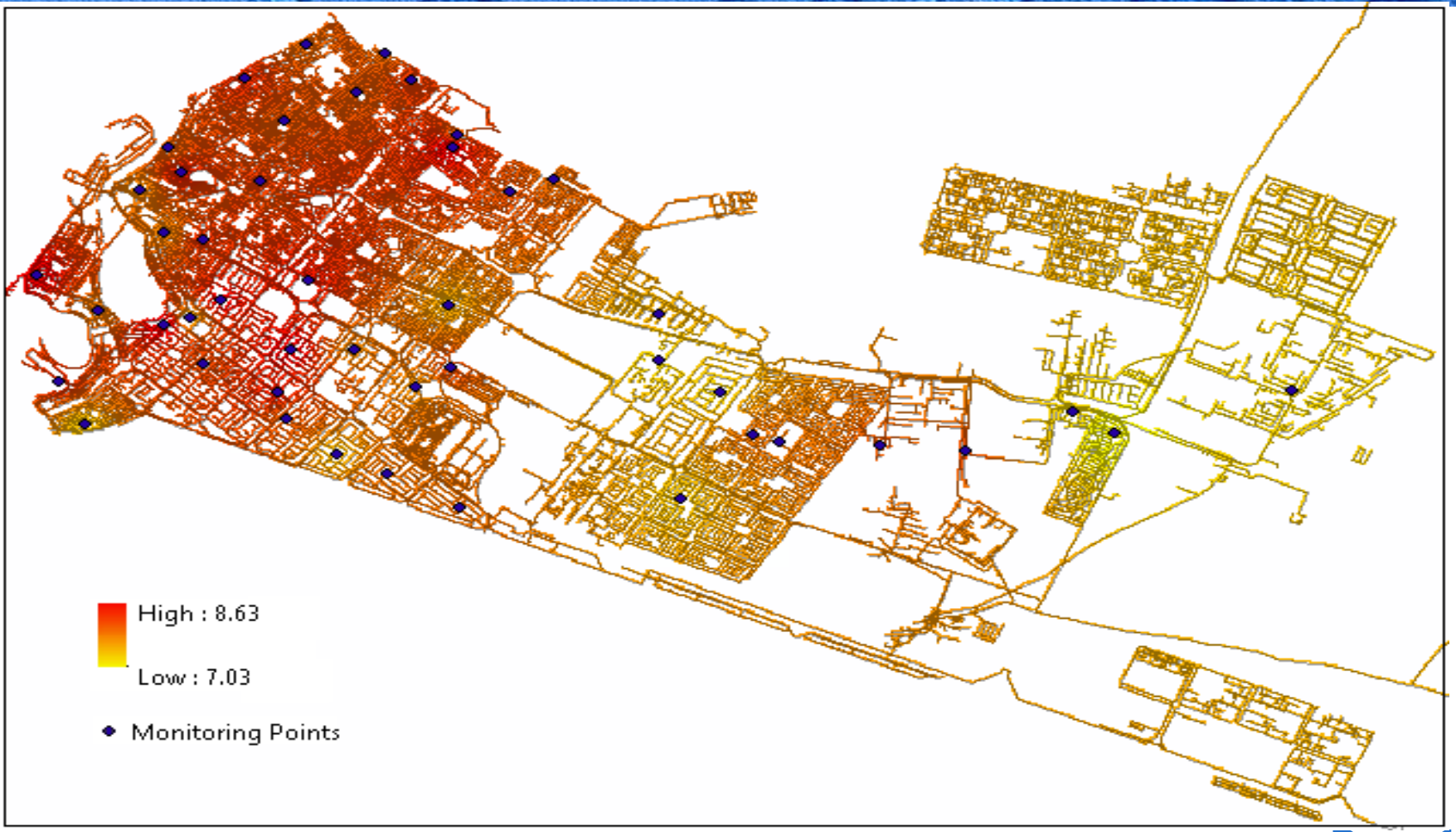
# Methodologies

- Water quality analysis was conducted based on spatial and temporal variability
- Temporal variability was studied on a single monitoring location, American University of Sharjah
- Monthly average data were used for 34 available months from January, 2012 to October, 2014
- Spatial variability was studied using GIS
- pH, electrical conductivity and chlorine were used in this study

# Results and Discussions, Temporal Variability

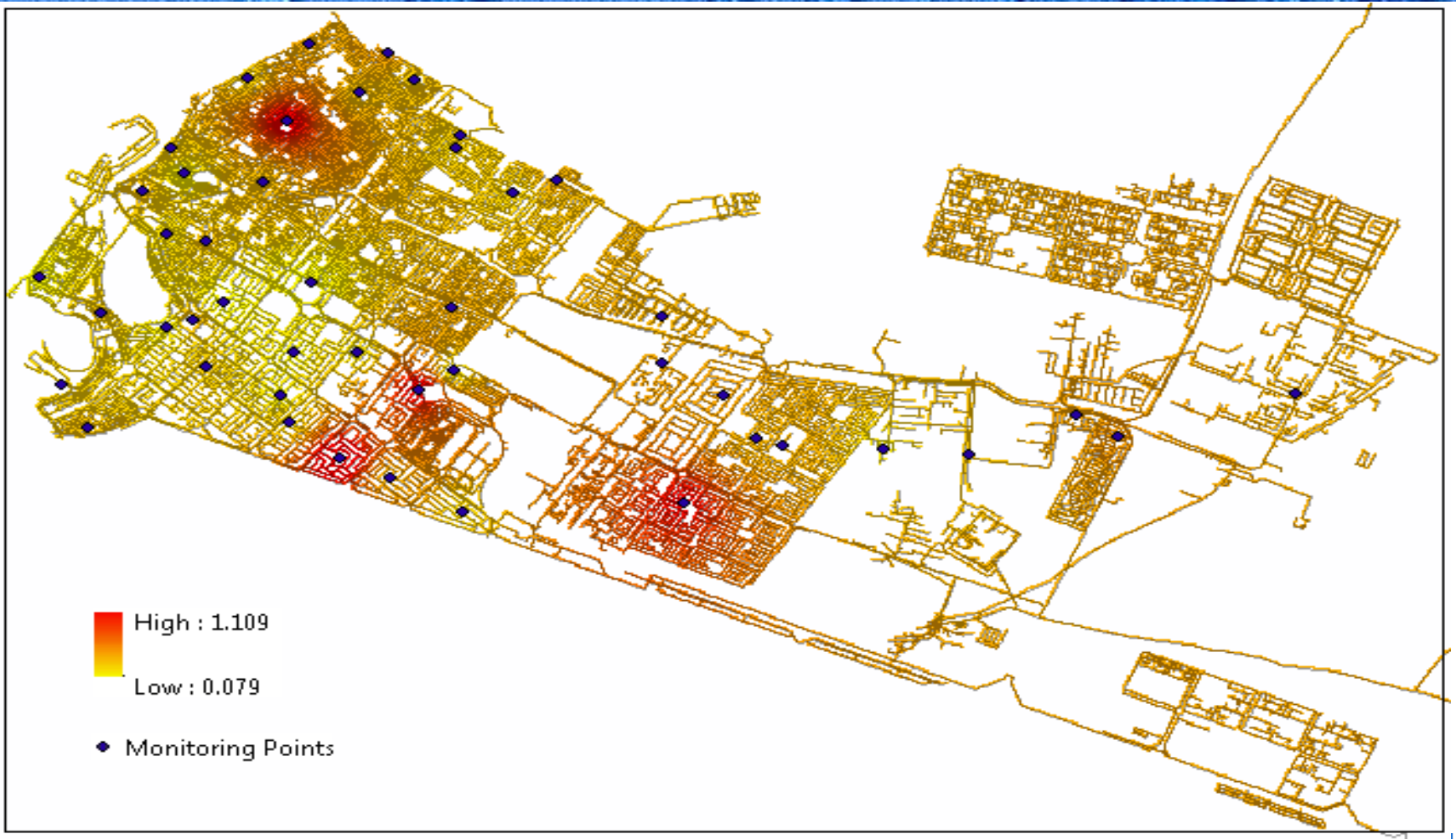


# Results and Discussions, Spatial Variability of pH



# Results and Discussions, Spatial Variability of Electrical Conductivity

# Results and Discussions, Spatial Variability of Residual Chlorine



# Conclusions

- The study analysed variations of water quality parameters throughout the distribution network in the City of Sharjah, UAE
- The study revealed that pH, EC and residual chlorine were consistently maintained throughout three year period for most of the locations
- Spatial distribution indicated that water quality close to the Arabian Gulf and old part of the city had slightly different characteristics than the new part of the distribution network

# Acknowledgements


- Sharjah Electricity and Water Authority (SEWA)

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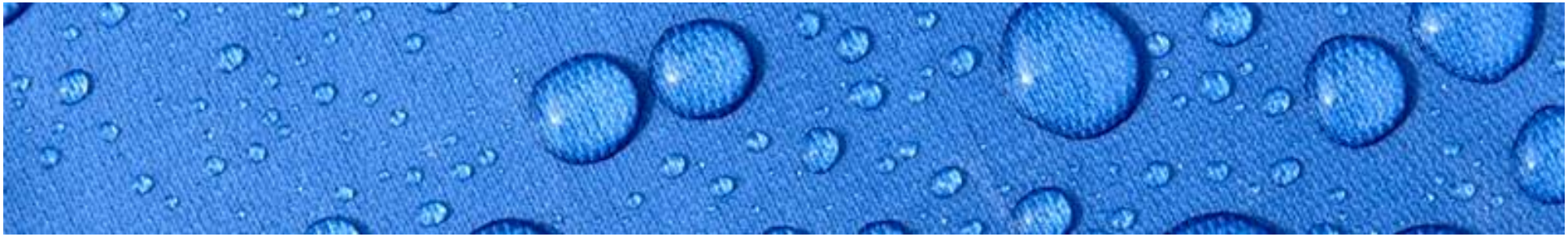

# Questions
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