The WaterSHED Monitoring Program

SHED: Saskatchewan headwaters Edmonton downstream

A multi-stakeholder monitoring initiative

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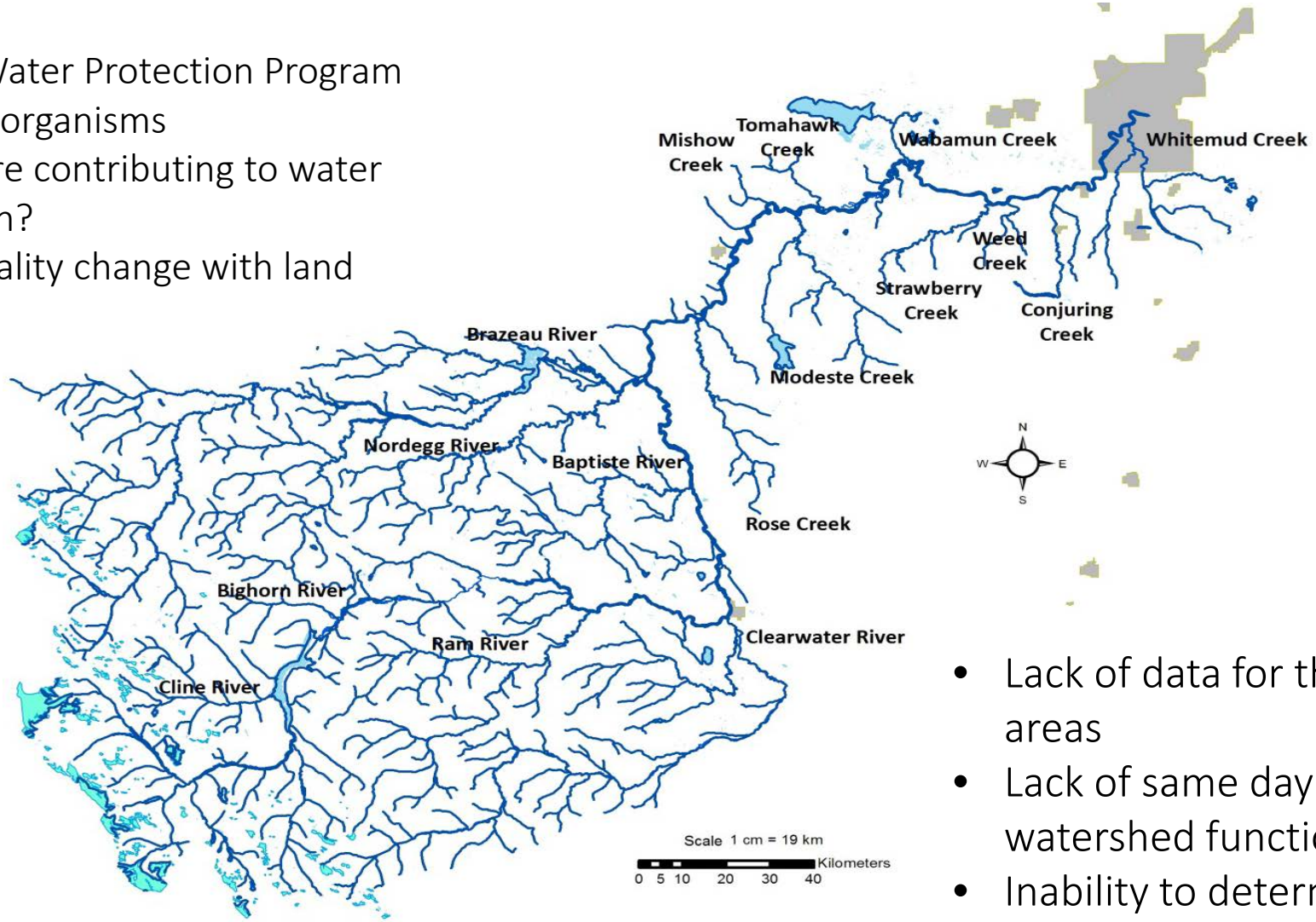
Tributaries in Edmonton's Source Water Area

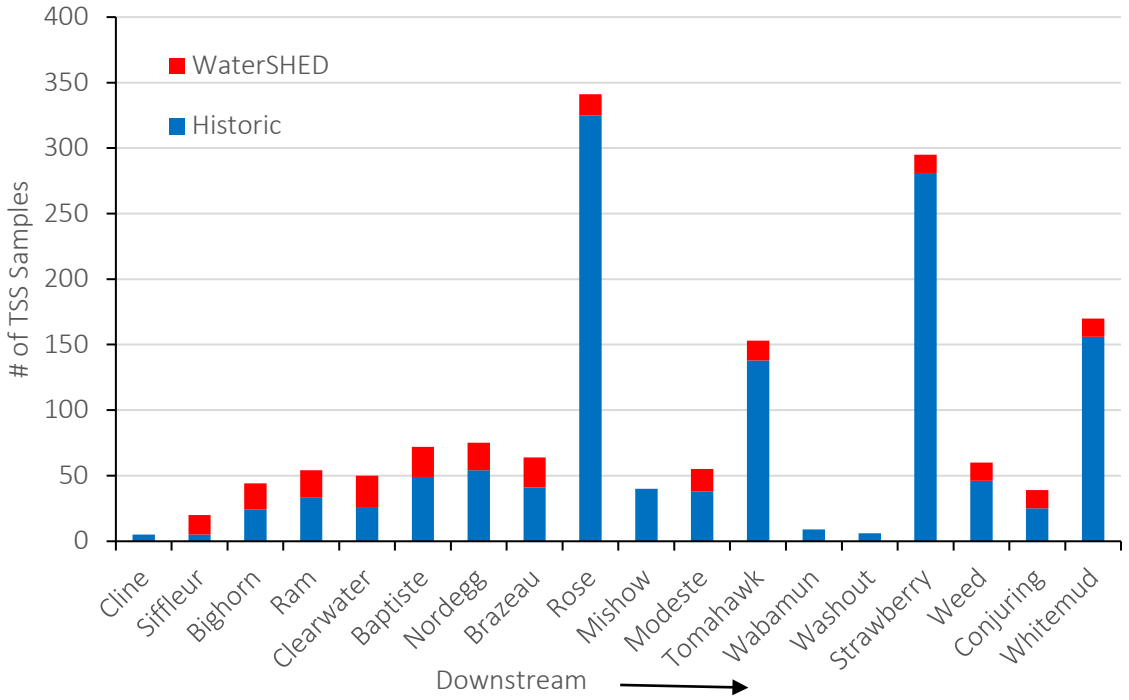
2009 EPCOR's first Source Water Protection Program

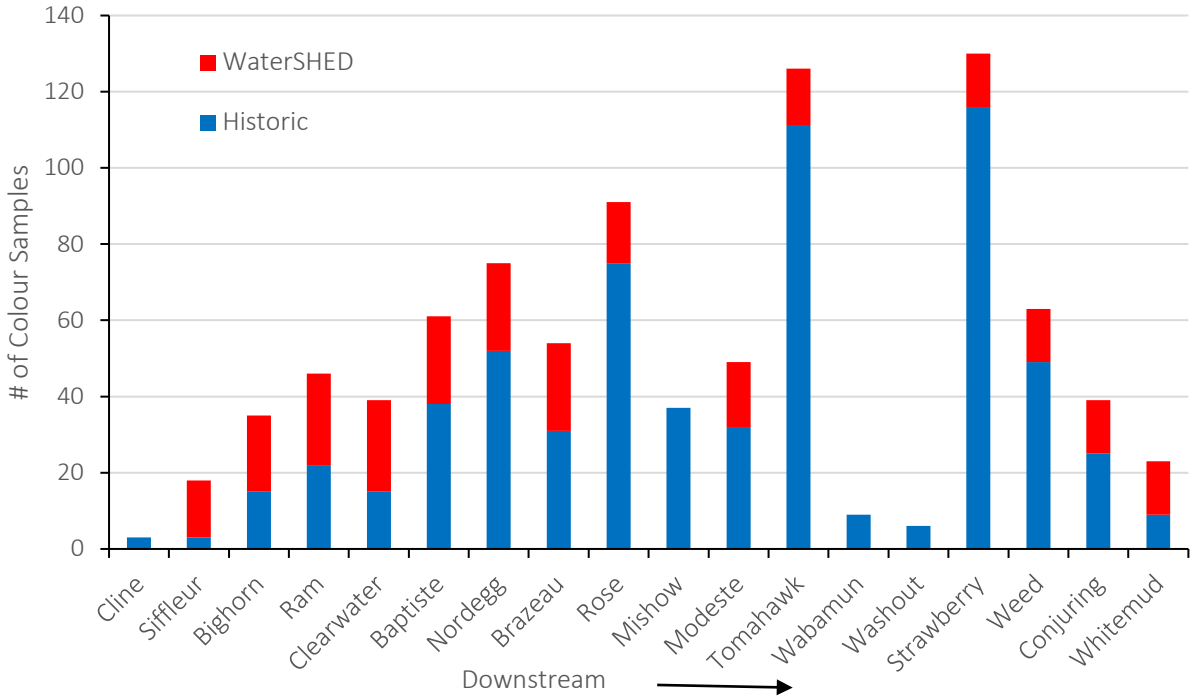
- Organics/TSS/Microorganisms
- Which tributaries are contributing to water quality at Edmonton?
- How does water quality change with land use/climate change



- Lack of data for the headwater areas
- Lack of same day data- misses watershed function
- Inability to determine loads

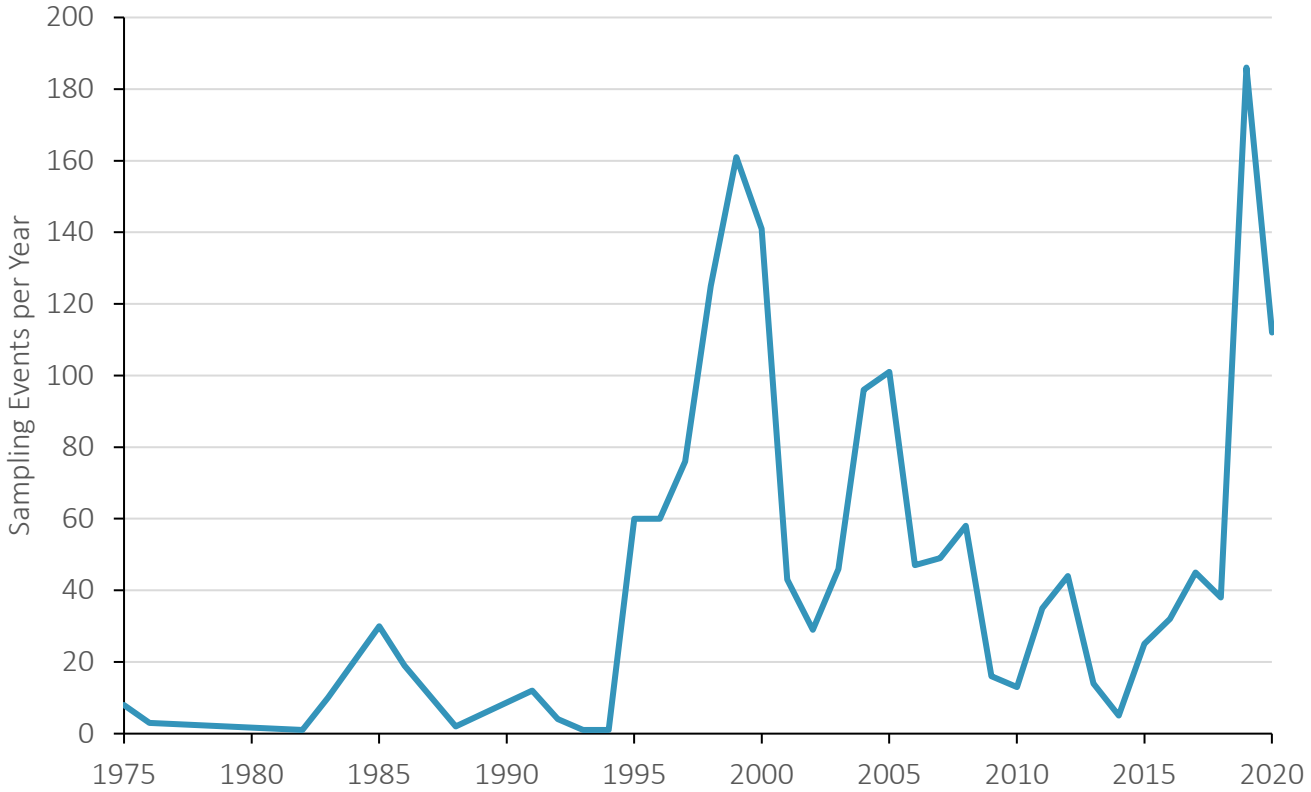
Historical and WaterSHED Data





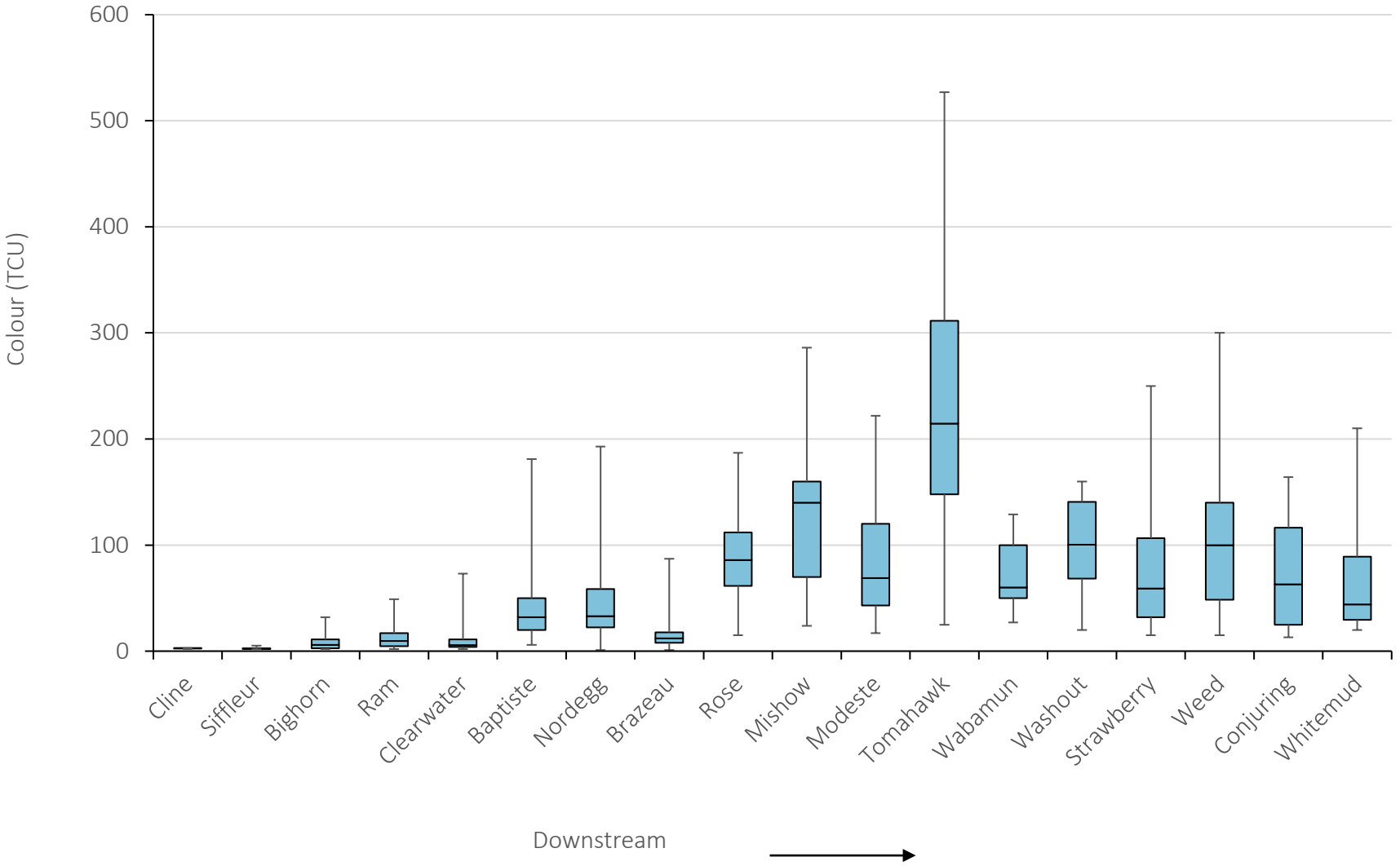
- 1.5 years of WaterSHED monitoring
  - increased data from headwater rivers
  - increased measurements of parameters such as colour, DOC

Historical and WaterSHED Data



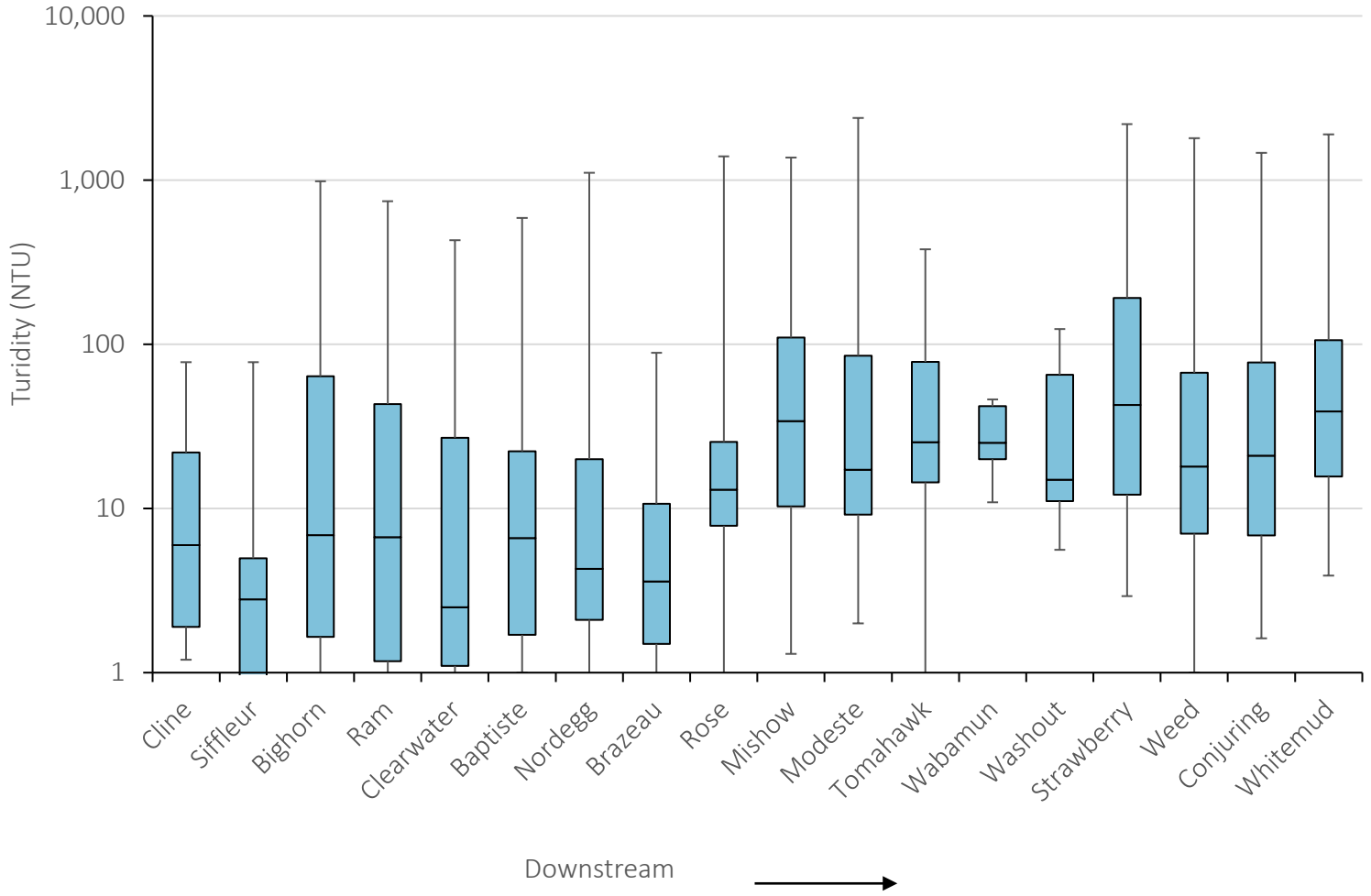
- 1.5 years of WaterSHED = 14% of sampling events since 1975
- By the end of 2021 > 25% of sampling events will be from WaterSHED
- Sampling during the time period

Total Colour (estimation of organics)



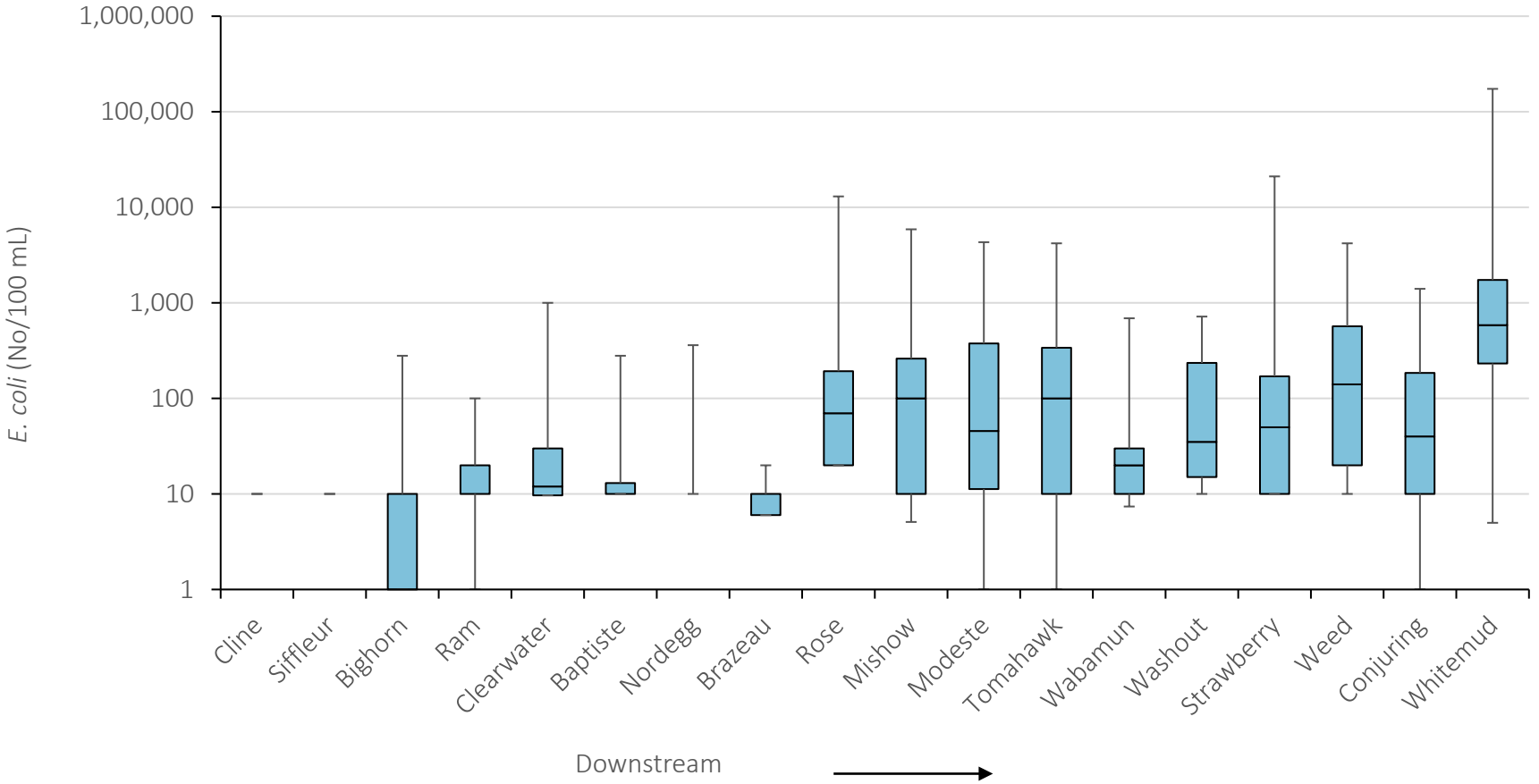
- Sets a baseline for development
- Allows load allocation
- Can determine where the drivers of water quality are: agriculture land use/wetlands
- Can determine areas of priority for management

Turbidity (estimation of sediment load)



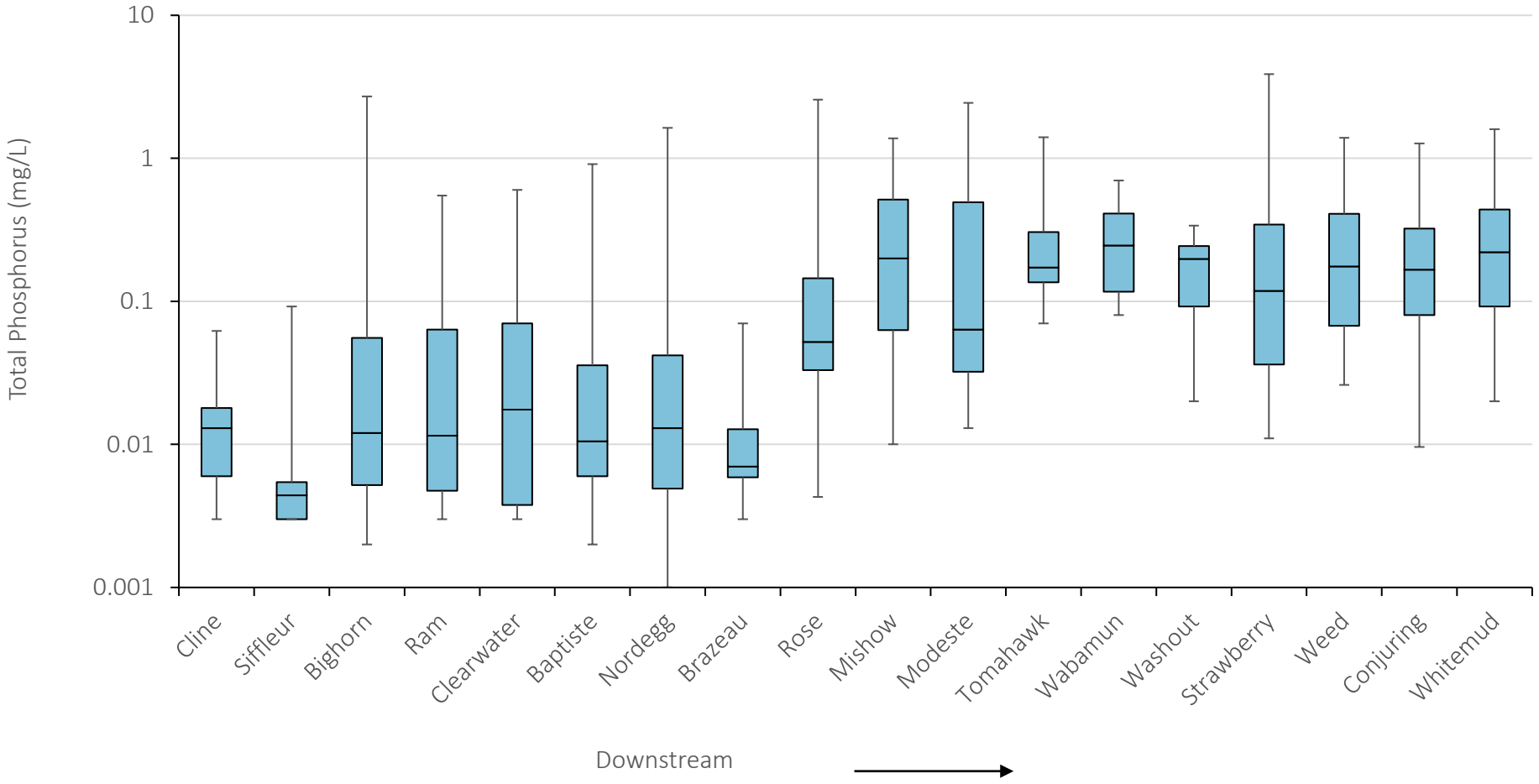
- Naturally high sediment due to surficial geology
- High variability due to rain events driving erosion
- Downstream of mainly forested watersheds turbidity is generally high

E. coli



- Significant effect of human land use
- Possible influence of combined sewer system in Whitemud Creek

Total Phosphorus



- Move to prairie nutrient rich streams
- Due to surficial geology and land use
- Helps to set nutrient based objectives

Uses of the WaterSHED Data

- Measuring change through time under changing climate and landuse
- Understanding where loads are originating and when to inform BMP implementation/ management of watersheds
- Calibrating models that link land use, climate, land cover, watershed processes to water quality and quantity
- Highlighting problem areas for enhanced management
- Determining a baseline of water quality and quantity – setting water quality objectives and MALs

Conclusions

- Data is useful when it is collected **across** a watershed for a long-period
- The program should be ongoing until the drivers of changing water quality/quantity are well understood
- Water quality and quantity assessment is complicated: water in streams is highly variable
- Ultimately the data will be used to ensure that Water for Life goals are met but each user may summarize data differently
- Watershed management is equally complex but starts with good data