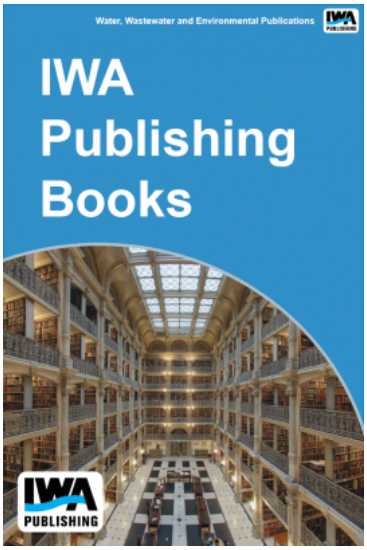
# Meta-Data Collection and Organization in Wastewater Treatment and Wastewater Resource Recovery Systems

**Editor(s):** Kris Villez, Daniel G. Aguado, Janelcy Alferes, Vicky Ruano, Oscar Samuelson




This Scientific Technical Report demonstrates meta-data strategies for water resource recovery facilities (WRRF), including the essential data validation with machine learning and traditional methods. The report is the result of extensive work from many water data experts and a utility focus group, with the dedicated application of WRRF data.

Emerging trends in artificial intelligence and machine learning project unforeseen possibilities in managing our WRRF's. Hope is built upon the large data volumes collected with high frequency from both existing sensors, as well as new uncoordinated data sources outside the fence. The data variety however makes it challenging to reuse data, especially when the purpose changes. Without a proper data description (meta-data), modelling and autonomous digitalization will be difficult, and likely remain a vision. Likewise, quantified data quality are key meta-data to decide when data are fit-for-purpose.

The report aims to fill the gap of how meta-data can be used in practice to leverage the value of data in a WRRF context. The report describes existing methods and systematic methodologies to collect and reconcile meta-data describing signal generation, signal quality, and contextual meta-data. The sometimes ambiguous data terminology is clarified with real WRRF examples to endorse adoption in practice. Guidelines for data quality assessment is a central part and cover both standard sensor validation protocols, as well as a separate chapter on data analytical techniques. The latter serves as a smorgasbord with mechanistic and data-driven algorithms for online sensor quality assessment.

The report is intended as a reference guide for the practitioner who aims at future proofing, but also maximizing, the current use of today's recorded WRRF data. The content bridges theory with current practices and provides a base tool for the WRRF data practitioner.

**Publication Date:** 15/11/2023
**ISBN13:** 9781789061147
**eISBN:** 9781789061154
**Pages:** 250

**Print:**
**Standard price:** £115 / €144 / $173
**Member price:** £86 / €108 / $129

**eBook:**
**Standard price:** £115 / €144 / $173
**Member price:** £86 / €108 / $129
Open Access eBook