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Water reuse in urban areas — Guidelines for centralized water reuse system —

Part 1: Design principle of a centralized water reuse system

Réutilisation de l'eau en milieu urbain - Lignes directrices concernant les systèmes centralisés de réutilisation de l'eau —

Partie 1: Principe de conception d'un système centralisé de réutilisation de l'eau

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 282, *Water reuse*, Subcommittee SC 2, *Water reuse in urban areas*.

A list of all parts in the ISO 20760 series can be found on the ISO website.

Introduction

With economic development, climate change and increases in population and rapid urbanization, water has become a strategic resource especially in arid and semi-arid regions. Water shortages are considered as one of the most serious threats to sustainable development of society. To address these shortages, reclaimed water is increasingly being used to satisfy water demands and this strategy has proven useful in increasing the reliability of long-term water supplies in many water-scarce areas.

The role of water reuse is growing for urban areas in many countries including landscape irrigation, industrial uses, toilet and urinal flushing, firefighting and fire suppression, street cleaning, environmental and recreational uses (ornamental water features, water bodies' replenishment, etc.) and car washing. These centralized water reuse systems have been developed to the degree that they are now considered as an effective component of urban water management and are used in many cities and countries.

The essential components of a centralized water reuse system include a source water, wastewater collection systems (sewers and pumping stations), a wastewater treatment facility, a reclaimed water distribution system, reclaimed water storage, a water quality monitoring system and operation and maintenance provided by experienced and certified operators. The variable nature and diversity in source water present a challenge to ensuring water safety and reliability in each system component. A further complication to distributing the reclaimed water is that different water reuse applications can have different levels of water quality, which would consider installing satellite treatment.

This document provides design principles for centralized water reuse systems in urban areas. It considers and addresses the critical issues and factors in the design of the different system components and is intended to assist water engineers, authorities, decision makers and stakeholders in considering feasible and cost-effective approaches for safe and reliable fit-for-purpose water reuse. For details on the management of a centralized water reuse system, see ISO 20760-2.

Water reuse in urban areas — Guidelines for centralized water reuse system —

Part 1:
Design principle of a centralized water reuse system

1 Scope

This document provides guidelines for the planning and design of centralized water reuse systems and water reuse applications in urban areas.

This document is applicable to practitioners and authorities who intend to implement principles and decisions on centralized water reuse in a safe, reliable and sustainable manner.

This document addresses centralized water reuse systems in their entirety and is applicable to any water reclamation system component (e.g. source water, treatment, storage, distribution, operation and maintenance and monitoring).

This document provides:

— standard terms and definitions;

— system components and possible models of a centralized water reuse system;

— design principles of a centralized water reuse system;

— common assessment criteria and related examples of water quality indicators, all without setting any target values or thresholds;

— specific aspects for consideration and emergency response.

Design parameters and regulatory values of a centralized water reuse system are out of the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20670:—[1)], *Water reuse — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20670 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

1) Under preparation. Stage at the time of publication: ISO/DIS 20670:2017.