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Manual methods for the measurement of a groundwater level in a well

Méthodes manuelles pour le mesurage du niveau de l'eau souterraine dans un puits

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 21413 was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 8, *Ground water*.

Introduction

The measurement of a water level in a well constitutes a data-collection process that provides fundamental information about the status of a groundwater system. Accordingly, measured water levels should be sufficiently accurate and reproducible to meet the needs of most data-collection and monitoring programs. Several manual methods commonly used to collect water-level data in wells employ relatively simple measuring devices such as graduated steel tapes, electric tapes, and air lines. In some cases, water-level measurements are required in flowing wells. The procedures associated with each of these methods are intrinsically different and subject to varying limitations and accuracies. Standardization of these methods would ensure that the procedures and associated equipment used by the international community to collect water-level data in a well are consistent, and that the results can be compared with minimal concern about the relative accuracies and/or the procedures use in collecting the data.

Manual methods for the measurement of a groundwater level in a well

1 Scope

This International Standard develops procedures and prescribes the minimum accuracy required of water-level measurements made in wells using graduated steel tapes, electric tapes and air lines. Procedures and accuracy requirements for measuring water levels in a flowing well are also included, as are procedures required to establish a permanent measuring point. This International Standard discusses the advantages and limitations of each method and requirements for recording the data. This International Standard does not include methods that use automated electrical or mechanical means to measure and record water levels.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

2.1
air line
water-level measuring device consisting of a small diameter open-ended tube fixed in position that is accessible from the top of the casing and extends to below the water level in a well where pressurized air measurements can be used to determine the depth to water

2.2
casing (well casing)
tubular retaining structure, which is installed in a drilled borehole or excavated well, to maintain the borehole opening. Plain (unscreened) casing prevents the entry of water and fine material into the well, while open (screened) casing allows water ingress but should exclude fines

2.3
electric tape
water-level measuring device that uses an electrical signal, sent through a cable with fixed distance marks, to determine the water level relative to a fixed reference point. The electrical signal, which is induced when the sensor makes contact with the water surface, activates an indicator (typically a light, buzzer or needle)

2.4
flowing well (or overflowing well)
well from which groundwater is discharged at the ground surface without the aid of pumping

NOTE A deprecated term for this definition is an artesian well.

2.5
graduated steel tape
water-level measuring device consisting of a flat measuring tape with permanently fixed distance marks that can be wound on a reel

2.6
groundwater
water within the saturated zone

