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HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 164-2020

Replacing HJ/T 164-2004

Technical specifications for groundwater environmental monitoring

地下水环境监测技术规范

(English Translation)

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1 Technical specifications for groundwater environmental monitoring

1 Scope of application this standard specifies the layout of groundwater environmental monitoring points, the construction and management of environmental monitoring wells, sample collection and storage, and monitoring Requirements for items and analysis methods, monitoring data processing, quality assurance and quality control, and data compilation.

This standard applies to the groundwater environment at the regional level, drinking water source protection areas and replenishment areas, pollution sources and surrounding areas Long-term monitoring. Other forms of groundwater environmental monitoring can be implemented by reference.

2 Normative references

This standard quotes the following documents or their clauses. For undated reference documents, their valid versions are applicable to this standard.

GB 16889 Pollution Control Standard for Domestic Waste Landfill Site GB 18598 Pollution Control Standard for Hazardous Waste Landfill GB 18599 Pollution control standard for general industrial solid waste storage and disposal sites GB/T 4883 Statistical processing and interpretation of data Judgment and processing of outliers in normal samples GB/T 8170 Numerical rounding rules and the expression and determination of limit values GB/T 14848 Groundwater Quality Standard HJ 25.2 Technical Guidelines for Soil Pollution Risk Control and Remediation Monitoring of Construction Land HJ 168 Technical Guidelines for the Preparation and Revision of Environmental Monitoring and Analysis Methods HJ 494 Technical Guide for Water Quality Sampling HJ 630 Technical Guidelines for Environmental Monitoring Quality Management HJ 1019 Technical Guidelines for Sampling of Volatile Organic Compounds in Soil and Groundwater DZ/T 0270 Construction Specification for Groundwater Monitoring Well DZ/T 0308 Design Code for Regional Groundwater Quality Monitoring Network SL 58 Hydrographic Survey Specification RB/T 214 General requirements for qualification accreditation of inspection and testing institutions

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3 Terms and definitions

The following terms and definitions apply to this standard.

Groundwater

Gravity water in saturated aquifers below the surface.

Phreatic water

Groundwater with free water below the surface and above the first stable aquifer.

23.3

Confined water

The pressure-bearing water filled between the upper and lower two opposite water-proof layers.

Hydrogeological condition the general term for conditions such as groundwater burial and distribution, water-bearing medium and water-bearing composition.

Hydrogeological unit Groundwater system with unified recharge boundary and recharge, runoff and drainage conditions.

Static water level

Stable groundwater level in the well before pumping.

Groundwater environmental monitoring well the monitoring set up to accurately grasp the environmental quality of groundwater and the dynamic distribution of pollutants in groundwater Logging.

Groundwater recharge zone the area where the aquifer is exposed or is close to the surface and receives the infiltration and replenishment of atmospheric precipitation and surface water.

Groundwater runoff zone the runoff range of groundwater in the aquifer from the recharge area to the discharge area.

3.10

Pore water

Gravitational water existing in the pores of rock and soil.

3.11

Fissure water

Gravity water stored in cracks in rock mass.

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3.12

Weathering fissure water Fissure water in the bedrock weathering zone.

3.13

Structure fissure water Groundwater that exists in cracks in rock structures.

3.14

Karst water

Gravity water stored in soluble rock formations (cavities).

34 Layout of groundwater environment monitoring points

4.1 Principles for the layout of monitoring points

4.1.1 The monitoring points can generally reflect the groundwater environmental quality in the monitoring area.

4.1.2 The monitoring points should not be changed, and the continuity of groundwater monitoring data should be maintained as much as possible.

4.1.3 Considering factors such as the method of monitoring well formation, current technological development and monitoring technology level, and considering the actual sampling Feasibility, making the deployment of groundwater monitoring points feasible.

4.1.4 Regularly (e.g. every 5 years) conduct a survey and evaluation of the operation status of the groundwater quality monitoring network, according to the latest situation Optimize and adjust the groundwater quality monitoring network.

4.2 Requirements for the layout of monitoring points

4.2.1 For a larger monitoring area, the monitoring area shall be arranged along the main groundwater flow direction and the vertical groundwater flow direction supplemented.

Measuring points. For the same hydrogeological unit, control monitoring points can be arranged according to groundwater recharge, runoff, and drainage conditions.

When there are multiple aquifers in the groundwater, the monitoring well should be a layered monitoring well with a clear horizon.

4.2.2 Layout of monitoring points for groundwater drinking water sources, focusing on mining layers; when there are multiple aquifers, they should be Deploy monitoring points in the aquifer that is hydraulically connected to the target aquifer, and include surface water that is hydraulically connected to groundwater.

Into monitoring.

4.2.3 Areas that have a greater impact on groundwater, such as chemical production

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enterprises and industrial clusters where groundwater pollution sources Monitoring points are arranged in the upstream, center, sides and downstream areas of the project; tailings ponds, hazardous waste disposal sites and landfill sites Monitoring points are arranged on the upstream, on both sides and downstream of the groundwater pollution source to assess the pollution status of groundwater. Pollution source when located in the groundwater supply area, the groundwater monitoring points can be encrypted according to the actual situation.

4.2.4 Groundwater monitoring around the pollution source is mainly shallow groundwater. For example, the shallow groundwater has been polluted and there is underground for water and drinking water sources, monitoring points for groundwater in the main mining layer need to be added.

4.2.5 The focus of the layout of monitoring points in karst areas is to track the entrances and exits of underground rivers and main aquifers.

Deploy monitoring points on the shape and scale of the drift network, and appropriately deploy monitoring points in the replenishment and runoff areas between the main pipeline and branch pipelines.

Or the potential pollution source distribution area should be appropriately encrypted for groundwater monitoring points.

4.2.6 The monitoring points in the fracture development area should be arranged on the interconnected fracture network as far as possible.

4.2.7 Existing civilian wells and production wells or springs can be selected as groundwater monitoring points, but they must meet the groundwater monitoring design Requirements.

4.3 Layout method of monitoring points

4.3.1 Layout method of regional monitoring points the layout of regional groundwater monitoring points shall be implemented in accordance with the relevant requirements of DZ/T 0308.

4.3.2 Layout method of monitoring points in groundwater drinking water source protection zone and replenishment zone

4.3.2.1 Pore water and weathered fissure water when the area of groundwater drinking water source protection area and replenishment area is less than 50 km2, there shall be no less than 7 water quality monitoring points;

When 50 km2~100 km2, there shall be no less than 10 monitoring points; when the area is greater than 100 km2, each additional 25 km2 monitoring point One less increase; monitoring points are arranged in the drinking water source protection area and supply area according to the grid method.

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