

**THE MINISTRY OF
NATURAL RESOURCES
AND ENVIRONMENT OF
VIETNAM**

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THE SOCIALIST REPUBLIC OF VIETNAM
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CIRCULAR

ELABORATING SOME ARTICLES OF THE LAW ON WATER RESOURCES

Pursuant to the Law on Natural Resources dated November 27, 2023;

Pursuant to the Government's Decree No. 68/2022/ND-CP dated September 22, 2022 defining the functions, tasks, powers and organizational structure of the Ministry of Natural Resources and Environment;

At the request of the Director General of the Department of Water Resources Management;

The Minister of Natural Resources and Environment hereby promulgates a Circular to elaborate some Articles of the Law on Water Resources.

Chapter I

GENERAL PROVISIONS

Article 1. Scope

This Circular elaborates clause 4 Article 22, clause 9 Article 24, point b clause 2 Article 26, clause 8 Article 31 and clause 3 Article 39 of the Law on Water Resources on zoning of surface water functions; determination and adjustment of minimum flow; determination and organization of announcement of domestic water safeguard zones; protection of groundwater in the activities specified in clause 2 Article 31 of the Law on Water Resources; formulation and adjustment of groundwater protection plans; artificial recharge of groundwater.

Article 2. Regulated entities

This Circular applies to authorities, organizations, residential communities, households and individuals whose activities involve the regulations set out in Article 1 of this Circular within the territory of the Socialist Republic of Vietnam.

Chapter II

ZONING SURFACE WATER FUNCTIONS; DETERMINING AND ORGANIZING ANNOUNCEMENT OF DOMESTIC WATER SAFEGUARD ZONES

Section 1. ZONING SURFACE WATER FUNCTIONS

Article 3. Rules for zoning surface water functions

1. Ensure systematicity in the river basin and suitability for provincial administrative boundaries.
2. Be suitable for the status of exploitation and use of water resources and demands for exploitation and use of water determined in water resource-related planning, regional planning, provincial planning and technical and specialized planning containing contents related to the exploitation and use of water resources.
3. Comprehensively consider the value and benefits that water sources bring, the level of protection priority and the facilitation of fulfillment of requirements for water source protection.
4. Harmonize the benefits reaped from the exploitation and use of water resources and discharge of wastewater into water sources among areas, localities, upstream and downstream areas, and entities exploiting and using water; ensure the efficient exploitation and use of water resources, maintain the normal development of aquatic ecosystems.

Article 4. Procedures for zoning river, stream, canal and ditch water functions

River, stream, canal and ditch water function zones shall be determined for each river, stream, canal or ditch segment and there is one or more functions mentioned in clause 4 of this Article. The zoning of river, stream, canal and ditch water functions shall be carried out as follows:

1. Information and data in service of zoning of surface water functions:
 - a) Status and demands for exploitation and use of water resources for the following purposes: domestic activities; agricultural production; aquaculture; industrial production; business operation and service provision; tourism; hydropower; waterway traffic and other water source-related activities;
 - b) Status of aquatic ecosystems;
 - c) Supply capacity of water sources in terms of their quantity and quality;
 - d) Water source areas with religious, folk belief, cultural and tourism development activities; role and importance of water sources in protection and preservation of religious

activities, folk beliefs, cultural values, tourism development, landscape creation, environment and people's livelihoods;

dd) Water source areas playing a significant role in flood storage and drainage;

e) Water source areas for which plans and measures for water source protection, improvement and restoration.

2. Determining locations and areas in service of zoning of surface water functions:

a) Location of tributary and distributary points; provincial administrative boundaries; national borders;

b) Locations of structures for exploitation and use of water resources and discharge of wastewater, hydropower reservoirs, irrigation reservoirs, water regulation works; locations and areas where business and service activities are carried out; areas with waterway traffic activities;

c) Area reserved for structures for water resource exploitation and use and for exploitation and use of water resources determined in water resource-related planning, regional planning, provincial planning and technical and specialized planning containing contents related to the exploitation and use of water resources;

d) Locations and areas with religious, folk belief and cultural structures and activities, historical and cultural sites/monuments, scenic landscapes, wildlife sanctuaries, biodiversity conservation areas, important ecological landscapes, high-biodiversity areas related to river, stream, canal and ditch water;

dd) Flood storage and drainage areas.

3. River, stream, canal and ditch segmentation:

a) Segmenting river, stream, canal and ditch for zoning of water functions;

b) The river, stream, canal and ditch segmentation shall be carried out on the basis of: characteristics of water sources; status of water quality; purposes of using water and water source-related activities; requirements for water source protection, improvement and restoration.

4. The zoning of function of each river, stream, canal or ditch segment shall be carried out as follows:

a) Based on the information and data specified in clause 1 of this Article and locations determined as prescribed in clause 2 of this Article to determine the water source functions specified in clause 1 Article 22 and clause 1 Article 28 of the Law on Natural Resources for each river, stream, canal or ditch segment.

b) Regarding the river, stream, canal or ditch segment where the exploitation and use of water resources do not take place at the time of function zoning or the demands for exploitation and use of water are not specified in water resource-related planning, regional planning, provincial planning and relevant technical and specialized planning containing, it is determined that the water source function is to protect the development of aquatic ecosystems and create landscapes and environment.

Article 5. Determination of lake, pond and lagoon water functions

1. Water functions of a river, pond or lagoon shall be determined for its entire area and it has the water functions specified in clause 1 Article 22 and clause 1 Article 28 of the Law on Water Resources.
2. The information and data serving determination of water source functions specified in clause 1 Article 4 of this Circular shall be relied to determine water source functions for each lake, pond or lagoon.

Article 6. Requirements for results of water source function zoning

1. The results of zoning of river, stream, canal and ditch water functions shall be consolidated and included in a list in which the following information about each river, stream, canal or ditch segment whose water functions have been zoned shall be displayed:
 - a) Name of the river, stream, canal or ditch; name of the river basin;
 - b) Length, administrative locations, coordinates of starting and ending points of the river, stream, canal or ditch whose water functions have been zoned (VN2000 coordinate system, projection zone 3⁰);
 - c) Water functions of the river, stream, canal or ditch segment.
2. The results of zoning of lake, pond and lagoon water functions shall be consolidated and included in a list which primarily contains the following information:
 - a) Name of the lake, pond or lagoon; coordinates representing the location of the lake, pond or lagoon (VN2000 coordinate system, projection zone 3⁰), administrative location; name of the organization or individual managing and operating it (if any). For a hydropower or irrigation reservoir on a river or stream, specify name of the river or stream;
 - b) Area of the water surface of the lake, pond or lagoon whose water functions have been determined;
 - c) Water functions of the lake, pond or lagoon.

3. Results of water source zoning shall be updated on the national water resource information and database system.

Article 7. Organizing zoning of water source functions, approval and announcement of water source functions

1. Where the zoning of surface water functions is covered by the comprehensive inter-provincial river basin planning or provincial planning, the approval or announcement of water source functions shall be part of the procedures for approving and announcing planning.

2. Where the Ministry of Natural Resources and Environment or provincial People's Committee determines and announces surface water functions as prescribed in clause 5 Article 22 of the Law on Natural Resources, the zoning, approval and announcement of water source functions shall be carried out as follows:

a) The Ministry of Natural Resources and Environment shall direct the Department of Water Resources Management to cooperate with the Department of Natural Resources and Environment and relevant agencies in determining and zoning functions of inter-provincial and transboundary surface water and collecting comments on the results of zoning of water source functions from the Ministry of Industry and Trade, Ministry of Agriculture and Rural Development, Ministry of Transport, Ministry of Construction, Ministry of Culture, Sports and Tourism, provincial People's Committee, river basin organization (if any) and related agencies and units.

On the basis of those comments, the Department of Water Resources Management shall consolidate, receive and respond to them, complete and submit the application to the Minister of Natural Resources and Environment for consideration and approval;

b) The provincial People's Committee shall direct the Department of Natural Resources and Environment to organize the determination and zoning of functions of intra-provincial surface water and collect comments on the results of zoning of water source functions from the Department of Industry and Trade, Department of Agriculture and Rural Development, Department of Transport, Department of Construction, Department of Tourism, Sports and Tourism, district-level People's Committee and related agencies and units.

On the basis of those comments, the Department of Natural Resources and Environment shall consolidate, receive and respond to them, complete and submit the application to the provincial People's Committee for consideration and approval;

c) Within 14 days from the date of approving the zoning of water source functions, the Ministry of Natural Resources and Environment or provincial People's Committee shall, within their power, announce and post the decision to approve zoning of water source functions on the web portal of the Ministry of Natural Resources and Environment or provincial People's Committee.

Section 2. DETERMINING AND ORGANIZING ANNOUNCEMENT OF DOMESTIC WATER SAFEGUARD ZONES

Article 8. Rules for determining domestic water safeguard zones

1. Ensure the prevention and minimization of adverse impacts on water quality of structures for exploitation of water for supply of water for domestic use and other water functions.
2. Be suitable for topographic, geological and hydrogeological conditions, flow regime, water source characteristics, exploitation scale, construction layout and other characteristics related to protection of domestic water quality.
3. Be suitable for current use of land and socio-economic development activities in areas where structures for exploitation of water for supply of water for domestic use are available.

Article 9. Cases where the determination and announcement of domestic water safeguard zones are required

For structures for exploitation of water for supply of water for domestic use or supply of water for multiple purposes, including supply of water for domestic use (hereinafter referred to as “structures for exploitation of water for supply of water for domestic use”) of business, production and service establishments, it is required to determine and announce domestic water safeguard zones. Those structures include:

1. Surface water exploitation structures with a capacity of over 100 m³/24 hours.
2. Groundwater exploitation structures with a capacity of over 10 m³/24 hours.

Article 10. Perimeters of domestic water safeguard zones for surface water exploitation structures

1. The perimeter of the domestic water safeguard zone for a surface water exploitation structure along a river, stream, canal or ditch for supply of water for domestic use is upstream or downstream area from the water exploitation location of the structure (including the perimeter of protection corridor of river, stream, canal or ditch water that is being exploited). To be specific:

a) Where the water exploitation structure has a capacity exceeding 100 m³/24 hours but not exceeding 50,000 m³/24 hours, the perimeter of the domestic water safeguard zone shall be at least 1,000 m upstream and 100 m downstream, regarding mountainous areas; at least 800 m upstream and 200 m downstream, regarding delta and midland areas;

b) Where the water exploitation structure has a capacity of at least 50,000 m³/24 hours, the perimeter of the domestic water safeguard zone shall be at least 1,500 m upstream and

100 m downstream, regarding mountainous areas; at least 1,000 m upstream and 200 m downstream, regarding delta and midland areas.

2. The perimeter of the domestic water safeguard zone for a structure for exploitation of water from a reservoir or roller dam for supply of water for domestic use is the distance from surface water exploitation. To be specific:

a) The perimeter shall be at least 1,500m, regarding the reservoir or roller dam water exploitation structure along a river or stream and not transcend the perimeter of the reservoir or roller dam water safety perimeter;

b) The perimeter shall include entire reservoir foundation in case the reservoir water exploitation structure is different from the one specified in point a of this clause.

Article 11. Perimeters of domestic water safeguard zones for groundwater exploitation structures

1. Regarding the structure for exploitation of groundwater in a confined aquifer, the domestic water safeguard zone shall be determined for each exploitation well and be at least 3 m from the mouth of the well.

2. Regarding the structure for exploitation of groundwater in an unconfined aquifer, the domestic water safeguard zone shall be determined for each exploitation well and be at least 20 m from the mouth of the well.

Article 12. Determination, approval and announcement of domestic water safeguard zones

1. In the course of preparing an application for issuance of the water resource exploitation permit, the organization or individual investing in, managing or operating the structure for exploitation of water for supply of water for domestic use shall rely on the regulations set out in Articles 10 and 11 of this Circular to propose specific perimeter of the domestic water safeguard zone for the water exploitation structure in such application.

2. Where the domestic water safeguard zone is located in one province:

a) On the basis of the proposed perimeter of the domestic water safeguard zone specified in clause 1 of this Article and current use of land, the Department of Natural Resources and Environment of the province where the structure exists shall organize the determination of the domestic water safeguard zone for the structure;

b) Within 42 days from the date of receiving the water resource exploitation permit, the Department of Natural Resources and Environment shall request the provincial People's Committee to grant approval for the domestic water safeguard zone for the structure.

3. Where the domestic water safeguard zone is located in at least two provinces or central-affiliated cities:

a) On the basis of the proposed perimeter of the domestic water safeguard zone specified in clause 1 of this Article and current use of land, the Department of Natural Resources and Environment of the province where the structure exists shall preside over and cooperate with Departments of Natural Resources and Environment of related provinces in reaching agreement on the domestic water safeguard zone for the structure;

b) Within 42 days from the date of receiving the water resource exploitation permit, the Department of Natural Resources and Environment of the province where the water exploitation structure exists shall submit a plan for perimeter of the domestic water safeguard zone agreed upon as prescribed in point a of this clause to the Department of Water Resources Management for consideration and submission thereof to the Ministry of Natural Resources and Environment for approval.

4. The decision to approve domestic water safeguard zone includes the following main contents: name of the exploitation structure; water source exploited; scale of the exploitation structure; exploitation location; perimeter of the domestic water safeguard zone for the exploitation structure.

5. Within 42 days from the date on which the decision to approve domestic water safeguard zone is obtained, the related provincial People's Committees shall direct the Department of Natural Resources and Environment to organize the announcement thereof on mass media, local websites and send it to related district-level People's Committees to organize the determination of the perimeter of the domestic water safeguard zone on site.

Article 13. Organizing determination of perimeters of domestic water safeguard zones on site

1. Where the domestic water safeguard zone is located in one province:

Within 42 days from the date on which the decision to approve domestic water safeguard zone is obtained, the district-level People's Committees shall send a notification of the plan to determine perimeter of domestic water safeguard zone on site to the People's Committee of the commune within the perimeter of the domestic water safeguard zone and to the organization or individual investing in, managing or operating the water exploitation structure for cooperation in determining the perimeter and location where the domestic water safeguard zone sign is put up on site.

After completing the determination of perimeter of domestic water safeguard zones on site, the district-level People's Committee shall send a notification of the completion result to the Department of Natural Resources and Environment.

2. Where the domestic water safeguard zone is located in at least two provinces or central-affiliated cities, the determination of perimeter of domestic water safeguard zone

on site shall be carried out in each province or city as prescribed in clause 1 of this Article.

After completing the determination of perimeter of domestic water safeguard zone on site, the district-level People's Committee shall send a notification of the completion result to the Department of Natural Resources and Environment and the Department of Water Resources Management.

Article 14. Responsibilities of agencies, organizations and individuals related to domestic water safeguard zones

1. Organizations, individuals and households conducting production and business activities and providing services within domestic water safeguard zones must comply with regulations on water source protection corridors, protection of surface water resources and groundwater resources in accordance with regulations of law on water resources, law on environmental protection and other relevant regulations of law.
2. Organizations and individuals investing in, managing, and operating water exploitation structures shall install and put up signs, and protect signs indicating domestic water safeguard zones for their structures; protect the water sources which they are directly exploiting and using; monitor and supervise activities domestic water safeguard zones for the structures.

Any act of polluting or risk of causing pollution, resulting in failure to assure the safety during water exploitation by the structure and any other act of violating the law on water resources within the domestic water safeguard zone shall, upon being discovered, be promptly prevented and immediately reported to the nearest local authority for handling.

3. Provincial People's Committees shall direct district-level People's Committees and communal People's Committees to perform the following tasks: determine perimeters of domestic water safeguard zones on site; inspect, audit and supervise activities within domestic water safeguard zones for water exploitation structures in their districts and communes; receive information and resolve the issues that arise in relation to domestic water safeguard zones for water exploitation structures in their districts and communes within their power.

Chapter III

DETERMINATION AND ADJUSTMENT OF MINIMUM FLOWS

Article 15. Requirements for minimum flow values

1. Minimum flow on rivers, streams and downstream of dams and reservoirs has a value in the range from the smallest monthly flow rate to the average flow rate of 3 months with smallest flow rates (m^3/s).

In case a value different from the abovementioned value is required, the regulations set out in clause 4 Article 24 of the Law on Water Resources shall be relied on to determine the minimum flow value at each location but the maximum increase must not exceed the average flow in the dry season and must be within the actual capacity of the water source and the regulation and operation capacity of a dam or reservoir; the maximum reduction must not exceed 50% of the smallest monthly flow rate but water supply safety, social security, environmental and aquatic ecosystem protection must be assured.

2. According to the required values of minimum flows on rivers, streams and downstream of dams and reservoirs specified in clause 1 of this Article, the determination of minimum flows shall comprehensively and fully rely on the principles and bases specified in clauses 3 and 4 Article 24 of the Law on Natural Resources to select an appropriate minimum flow value for each location.

3. Depending on the requirements regarding water exploitation and use regimes and regulation and operation capacity of dams, reservoirs and capacity of regulation structures, the minimum flow value at each location may be considered and determined corresponding to each period and time of year.

The minimum flow at each location must meet the requirements for regime and period of using water downstream, ensuring systematicity within the same river and stream system.

4. Regarding structures serving salinity and flooding prevention and dams in coastal estuaries, the competent authority that confirms the registration and licensing of surface water exploitation shall decide the necessity of maintaining the minimum flow.

Article 16. Locations at which minimum flows are determined

1. For rivers and streams:

a) Locations at which minimum flows are determined on a river or stream shall be determined at one or more locations. To be specific: location(s) on the river or stream before merging into another river or stream; location(s) at hydrological stations and water resources monitoring stations;

b) In addition to the locations specified in point a of this clause, in the case where the specific requirement for flow is laid down to facilitate water exploitation and use; cultural, sports and tourism activities; to prevent water source degradation, restore water sources, protect aquatic ecosystems, conserve biodiversity and economically valuable aquatic species on one or more segments of the river or stream, the competent water resources authorities specified in clauses 6 and 7 Article 24 of the Law on Water Resources shall consider and decide to additionally select location(s) at which minimum flows are determined.

2. For dams and reservoirs:

- a) Locations at which minimum flows of downstream of a dam or reservoir are determined shall be determined right behind the dam;
- b) For the dam or reservoir for which a water exploitation plan is tailored resulting in interrupting the flow of a river or stream, depending on the size and regulation capacity of the reservoir, degree of impact of the structure, requirements for flow regime on the river or stream and requirements for exploitation and use of water downstream of the dam or reservoir, in addition to the location(s) specified in point a of this clause, consider determining the minimum flow at a location right behind the work item intended for returning flow to the river or stream;
- c) For a dam or reservoir on a river or stream with a water exploitation scale subject to registration and licensing of water resource exploitation according to regulations of law on water resources, arrange the work items for discharging the minimum flow which have full capacity for discharge to meet the requirements specified in clause 1 Article 15 of this Circular, except where the dam or reservoir has been put into operation and the work items for discharging the minimum flow fail to be adjusted or added.

Article 17. Methods for calculating flow characteristics in service of determination of minimum flows

- 1. The flow characteristics calculated at each location at which minimum flow is determined include:
 - a) Distribution of annual flow by months;
 - b) Annual flow characteristics;
 - c) Characteristics of flow in dry season (minimum monthly flow, average flow of the month with smallest flow, average flow of 3 months with and average flow in dry season).
- 2. Based on existing hydro-meteorological monitoring data and characteristics of the basin, the flow characteristics shall be determined using one of the following methods:
 - a) In the case where a hydrological station or water resources monitoring station or annual or multi-year regulating reservoir (hereinafter referred to as “hydrological monitoring station”) along a river or stream has a series of hydrological monitoring data obtained over the last 20 years or more and the difference in the basin area of the hydrological station and that at the location at which minimum flow is determined does not exceed 10%, the correlation (between annual rainfall and basin area) with flow data of the hydrological monitoring station may be used for determination;
 - b) In the case where a hydrological monitoring station along a river or stream has a series of hydrological monitoring data obtained over the last 20 years or more but the difference in the basin area of the hydrological station and that at the location at which minimum

flow is determined exceeds 10% or the series of hydrological monitoring data is obtained in less than 20 years or there is not a hydrological monitoring data along the river or stream, any of the following methods may be considered and selected:

Regionalisation method regarding the hydrological station with a series of data obtained over the last 20 years or more if the area of one basin does not exceed five (05) times the area of another basin and the two basins are similar in terms of basic conditions for forming flow and synchronization of flow fluctuations.

Correlation between annual rainfall and annual flow.

Hydrological and hydraulic modelling method.

Other methods appropriate to the hydrological characteristics and hydrometeorological data and conditions of a region.

3. If there are multiple locations at which minimum flow is determined adopting various methods on the same system of rivers or streams, values of the flow characteristics may be considered and adjusted to ensure the systemacity.

4. For a dam or reservoir on a river or stream subject to registration of water exploitation according to regulations of law on water resources, in addition to the methods specified in clause 2 of this Article, the correlation (by the ratio of basin area) with the flow data of the hydrological station or correlation with the minimum flow value of another dam or reservoir licensed in the same river basin or operating data of a structure may be used to determine the minimum flow value.

Article 18. Requirements for information, data and results of determination of minimum flows

1. Information and data used to assess and determine a minimum flow must be reliable and consistent with the applied method.

Where hydrological monitoring data has been affected by the regulation by water regulation and water transfer works on rivers and streams, the data must be restored before being used for calculation and assessment.

2. The results of calculation of flow characteristics and selection of minimum flow value at each location must be justified and explicitly explained in terms of the satisfaction of the requirements specified in Article 15 of this Circular and the following contents:

a) Location selection;

b) Selection of calculation method;

c) Fulfillment of requirements for water exploitation and use in terms of flow, water level and spatial flow regime and the regulation capacity of a dam or and reservoir.

3. Results of determination of minimum flow on a river or stream must be consolidated, included in a diagram and list which primarily contains the following information:

a) Name of the river or stream in the river basin;

b) Location at which minimum flow is determined: coordinates, administrative location;

c) Minimum flow value

4. For a dam or reservoir, the minimum flow value downstream of the dam or reservoir is specified in the surface water exploitation permit or certificate of registration of surface water exploitation containing information about location (coordinates, administrative location), minimum flow value.

Article 19. Approval and announcement of minimum flows

1. Where the determination of minimum flows is covered by the comprehensive inter-provincial river basin planning or provincial planning, the announcement of minimum flows shall be part of the procedures for approving and announcing planning.

2. Where the Ministry of Natural Resources and Environment or provincial People's Committee determines and announces minimum flows as prescribed in clauses 6 and 7 Article 24 of the Law on Natural Resources, the approval and announcement of minimum flows shall be carried out as follows:

a) For rivers and streams:

The Ministry of Natural Resources and Environment shall direct the Department of Water Resources Management to carry out survey and assessment, and collect comments on minimum flows on inter-provincial and transboundary rivers and streams (within Vietnamese territory) from the Ministry of Industry and Trade, Ministry of Agriculture and Rural Development, Ministry of Transport, Ministry of Construction, Ministry of Culture, Sports and Tourism, provincial People's Committee, river basin organization (if any) and related agencies and units.

On the basis of those comments, the Department of Water Resources Management shall consolidate, receive and respond to them, complete and submit the application to the Minister of Natural Resources and Environment for consideration, approval and announcement of minimum flows.

The provincial People's Committee shall direct the Department of Natural Resources and Environment to carry out survey and assessment, and collect comments on minimum flows on intra-provincial and transboundary rivers and streams from the Department of

Industry and Trade, Department of Agriculture and Rural Development, Department of Transport, Department of Construction, Department of Culture, Sports and Tourism and related provincial departments and local authorities; consolidate comments of Departments and agencies and send them to the Ministry of Natural Resources and Environment (through the Department of Water Resources Management) to obtain its comments.

On the basis of those comments, the Department of Natural Resources and Environment shall consolidate, receive and respond to them, complete and submit the application to the provincial People's Committee for consideration, approval and announcement of minimum flows.

The dossier for collection of comments includes a draft approval decision enclosed with a list of minimum flows on rivers and streams, a report on explanation for determination of minimum flows and minimum flow diagrams of rivers and streams.

Within 14 days from the date of approving minimum flows on rivers and streams, the Ministry of Natural Resources and Environment or provincial People's Committee shall, within their power, announce and post the decision to approve minimum flows on the web portal of the Ministry of Natural Resources and Environment or provincial People's Committee;

b) For dams and reservoirs:

Owners of dams, reservoirs or organizations and individuals managing and operating dams and reservoirs shall propose the values of minimum flows downstream of dams and reservoirs that they invest in, construct, manage and operate in the registration form or the application for issuance of permit for surface water exploitation according to regulations of law on water resources, which are approved by the competent authority in point b clause 6 and point b clause 7 Article 24 of the Law on Water Resources in the permit for exploitation and use of surface water or certificate of registration of surface water exploitation and use.

Every 6 months, the Ministry of Natural Resources and Environment or provincial People's Committee shall, within their power, direct the aggregation of the approved values of minimum flows downstream of dams and reservoirs to issue an announcement decision and post it on the web portal of the Ministry of Natural Resources and Environment or provincial People's Committee.

Article 20. Review and adjustment of minimum flows

1. The review and adjustment of minimum flows shall comply with the regulations set out in clause 9 Article 24 of the Law on Water Resources. Any authority having the power to approve minimum flows shall decide the review and adjustment thereof.

2. Owners of dams, reservoirs or organizations and individuals managing and operating dams and reservoirs prescribed in point b clause 1 Article 24 of the Law on Water Resources shall propose the values of minimum flows downstream of dams and reservoirs in the registration form or the application for issuance or adjustment of permit for surface water exploitation and submit it to the competent authority in point b clause 6 and point b clause 7 Article 24 of the Law on Water Resources for consideration and approval in the course of certification or permit issuance.

3. The adjustment of minimum flows shall be made in the same manner as the determination, approval and announcement of minimum flows as specified in this Circular.

Chapter IV

GROUNDWATER PROTECTION

Section 1. GROUNDWATER PROTECTION PLAN

Article 21. Requirements for groundwater protection plan

1. A groundwater protection plan must conform to inter-provincial river basin planning; conform to the plan for exploitation, use and protection of water resources, prevention of, response to and recovery from damage caused by water under provincial planning.

2. The groundwater protection plan must specify the areas and aquifers where water source deterioration, depletion or pollution occurs and causes therefor; plan to organize the adoption of solutions for zoning off or removing an area from the list of areas prohibited and restricted from groundwater exploitation; groundwater exploitation plan; areas to be artificially recharged; solutions for protecting groundwater source quality. Priority shall be given to the protection and restoration of aquifers where primarily exploited and aquifers exploited to supply domestic water.

3. The formulation of a groundwater protection plan must rely on the results of groundwater survey and assessment; information and data on groundwater resources monitoring of the groundwater monitoring network and at groundwater exploitation structures and other relevant information and data from the national water resources information system and database (if any).

If information and data are insufficient and invalid to serve as a basis for formulating the groundwater protection plan, the provincial People's Committee shall decide to further the groundwater survey and assessment to service the formulation.

4. The groundwater protection plan must be consistent and conformable for resources and solutions for implementation thereof; feasibility and efficiency must be ensured in the course of implementation thereof.

Article 22. Details of groundwater protection plan

A groundwater protection plan consists of the following details:

1. Objectives of the groundwater protection plan.
2. Current status of groundwater and groundwater pollution, deterioration and depletion.
3. Polluted, deteriorated and depleted areas and aquifers; list of areas and aquifers whose restoration needs to be prioritized determined as prescribed in clause 3 Article 23 of this Circular.
4. Schemes and solutions for protection and restoration of areas and aquifers determined as prescribed in clause 4 Article 23 of this Circular.
5. Other relevant details of groundwater protection (if any).
6. Implementation.

Article 23. Procedures for formulating groundwater protection plan

1. Assess current status of and changes in groundwater exploitation and use; current status of and changes in water table; current status of and changes in groundwater quality and saltwater intrusion; current status of and changes in land subsidence related to groundwater exploration and exploitation; causes for deterioration, depletion and pollution of aquifers in the province.

2. Polluted, deteriorated and depleted areas and aquifers

a) Areas and aquifers whose exploited flow rate has reached or exceeded 90% of the groundwater exploitation threshold determined in the inter-provincial river basin planning.

In case there is no inter-provincial river basin planning or the approved inter-provincial river basin planning has yet to stipulate the groundwater exploitation threshold, it is determined that areas and aquifers whose exploited flow rate has reached or exceeded 90% of the amount of exploitable water of each aquifer in each area and is calculated on the basis of the permissible water level for exploitation.

b) Areas and aquifers whose average water level during the 6 months in the dry season in monitoring wells or exploitation wells has reached or exceeded 95% of the permissible water level for exploitation and tends to continue to decline;

c) Areas where land subsidence has occurred or areas at risk of land subsidence;

d) Areas and aquifers at risk of salinization; contaminated with one of the following parameters: ammonium, nitrite, nitrate or arsenic or other heavy metal parameters according to national technical regulation on groundwater quality.

3. Based on the degree of deterioration, depletion and pollution of groundwater; demands for exploitation and use of groundwater; level of water scarcity and orientations for exploitation, use, and protection of water resources in inter-provincial river basin planning and provincial planning, compile a list of areas and aquifers whose protection and restoration need to be prioritized.

The list of areas and aquifers whose protection and restoration need to be prioritized shall explicitly display administrative range, distribution area and causes for deterioration, depletion and pollution of groundwater.

4. Determine schemes and solutions for protection and restoration of areas and aquifers on the list of areas and aquifers whose protection and restoration need to be prioritized. A scheme consists of one or more details below:

a) Areas and aquifers for which the areas prohibited or restricted from groundwater exploitation need to be zoned off and implementation of measures to prohibit or restrict groundwater exploitation;

b) Areas and aquifers that need to be removed from the areas restricted from groundwater exploitation regarding provinces and central-affiliated cities where areas restricted from groundwater exploitation have been zoned off;

c) Areas to be artificially recharged;

d) Groundwater pollution areas where the use of fertilizers and chemicals in agricultural production needs to be kept under strict control; areas where waste, waste sources, drilling and digging operations and other activities potentially causing groundwater pollution needs to be kept under strict control;

dd) Proposal for and adjustment of schemes for exploitation and use of groundwater.

5. According to characteristics of groundwater in each area in a province, prescribe other relevant details of and requirements for groundwater protection.

6. Formulate a plan to organize the implementation.

Article 24. Promulgation of groundwater protection plan

1. Every provincial People's Committee shall direct the allocation of funding and direct the Department of Natural Resources and Environment to organize the survey, production of statistics on and aggregation of information and data and develop a groundwater protection plan in its province.

2. The Department of Water Resources Management shall collect written comments about the draft groundwater protection from the Department of Construction, Department of Industry and Trade, Department of Agriculture and Rural Development, Department of Health and representatives of several organizations and individuals managing and using large amount of groundwater in its province.

3. The Department of Natural Resources and Environment shall perfect the draft groundwater protection plan based on the comments of the agencies and units specified in clause 2 of this Article and sends it to the Department of Water Resources Management to obtain its comments.

4. The Department of Natural Resources and Environment shall complete the draft groundwater protection plan and submit it to the provincial People's Committee for consideration and approval.

5. The Department of Natural Resources and Environment shall update the groundwater protection plan on the national water resources information system and database within 07 days after its approval and implementation.

Article 25. Review and adjustment of groundwater protection plan

1. Every 5 years or where necessary, the Department of Natural Resources and Environment shall conduct a review of the groundwater protection plan, report the review result to the Provincial People's Committee and recommends adjustments to the plan (if any).

2. The groundwater protection plan shall be considered and adjusted in the following circumstances:

a) Any adjustment to the inter-provincial river basin planning or to the plan for exploitation, use and protection of water resources, prevention of, response to and recovery from damage caused by water under provincial planning basically changes the orientations for exploitation, use and protection of groundwater resources;

b) There is any major change to groundwater sources in the province due to impacts of natural and artificial factors.

3. The provincial People's Committee shall decide to adjust the groundwater protection plan. Procedures for adjusting a groundwater protection plan are the same as those for promulgating a groundwater protection plan specified in Article 24 of this Circular.

Section 2. ARTIFICIAL RECHARGE OF GROUNDWATER

Article 26. Requirements for artificial recharge of groundwater

1. Works for artificial recharge of groundwater must be designed in such a manner as to be suitable for the characteristics of geological and hydrogeological structure, terrain, water quality and water retention and storage capacity of artificially recharged aquifers.
2. Sources of rainwater and surface water used for artificial recharge of groundwater must be suitable for water quality of artificially recharged aquifers and controlled regularly during the artificially recharge.
3. The artificial recharge of groundwater must be tested for at least 90 days before official operation in the cases specified in points a and b clause 1 Article 27 of this Circular.
4. In the case where a work for artificial recharge of groundwater is done serving scientific research purposes, if it is needed to keep using such work for artificial recharge of groundwater, it must be tested and comments from the Department of Natural Resources and Environment shall be collected as prescribed in Article 29 of this Circular.
5. If the need to keep using the work for artificial recharge of groundwater is obviated or the requirements for official operation of the work for artificial recharge of groundwater have not been fulfilled, groundwater protection and environmental protection measures shall be implemented as prescribed.
6. The design, construction, management and operation of drilling and excavation works serving artificial recharge of groundwater must satisfy the requirements for groundwater protection according to regulations.

Where the artificial recharge of groundwater leads to land subsidence, immediately suspend it, promptly handle it, take corrective actions and provide compensation if any damage is caused.

Article 27. Cases of artificial recharge of groundwater

1. Cases of artificial recharge of groundwater include:
 - a) For the purpose of restoring deteriorated and depleted areas and aquifers according to the approved groundwater protection plan;
 - b) For the purpose of increasing the exploitation capacity of groundwater exploitation structures of organizations and individuals;
 - c) For the purpose of scientific research or testing of solutions for artificial recharge of groundwater.
2. The artificial recharge of groundwater prescribed in point a clause 1 of this Article must be carried out according to the plan for artificial recharge of groundwater approved by the provincial People's Committee.

A work for artificial recharge of groundwater may only be officially operated after the testing result is assessed as satisfying the requirements for quality of water and artificially recharged water.

3. Before carrying out artificial recharge of groundwater as prescribed in points b and c clause 1 of this Article, comments on the plan for artificial recharge of groundwater shall be collected from the Department of Natural Resources and Environment as prescribed in clause 2 Article 28 of this Circular.

Article 28. Plan for artificial recharge of groundwater

1. A plan for artificial recharge of groundwater is composed of the following details:

- a) Explanation for the necessity of artificial recharge of groundwater;
- b) Description of characteristics of the hydrogeological structure, quality of water in the aquifer and assessment of water retention and storage capacity of the aquifer;
- c) Assessment of the suitability of quantity and quality of the water source used for artificial recharge of groundwater;
- d) Explanation for technical design solutions for artificial recharge of groundwater including the following main contents: artificial recharge methods (flooding, construction of sand dams, seepage basins and tanks, pressure boreholes, water harvesting boreholes, dug holes, trenches combined with water absorption wells and other methods); location, scale and technical specifications of works for artificial recharge of groundwater; solutions for controlling water quality before artificial recharge and monitoring water quality of the aquifer during the artificial recharge;
- dd) Description of the testing process;
- e) Description of the procedures for operating and managing works for artificial recharge of groundwater.

2. Each organization or individual shall submit 01 dossier to collect comments on the plan for artificial recharge of groundwater in person or by post or online via the online public service portal to the Department of Natural Resources and Environment as prescribed in clause 3 Article 27 of this Circular. The dossier includes:

- a) A written request for comments on the plan for artificial recharge of groundwater;
- b) The plan for artificial recharge of groundwater specified in clause 1 of this Article;
- c) Diagram or drawing of the work for artificial recharge of groundwater;
- d) Related legal and technical documents of the project (if any).

3. Within 30 days from the date of receiving a dossier in full as prescribed in clause 2 of this Article, the Department of Natural Resources and Environment shall give its written comments for artificial recharge of groundwater to the organization or individual.

Article 29. Collecting comments on results of testing of artificial recharge of groundwater

1. Within 30 days from the end of the testing, the organization or individual carrying out artificial recharge of groundwater specified in point b clause 1 Article 27 of this Circular must report the result of testing of artificial recharge of groundwater to the Department of Natural Resources and Environment to collect its comments thereon.

Each organization or individual shall submit 01 report on result of testing of artificial recharge of groundwater as prescribed in clause 3 of this Article in person or by post or online via the online public service portal to the Department of Natural Resources and Environment.

2. Within 30 days from the date of receiving the report on result of testing of artificial recharge of groundwater, the Department of Natural Resources and Environment shall, according to the plan for artificial recharge of groundwater and testing result, give its written comments on the result of testing of the work for artificial recharge of groundwater and the satisfaction of requirements for official operation to the organization and individual.

3. Main details of the report on result of testing of artificial recharge of groundwater are specified in clause 1 of this Article, including a description of the testing result; assessment of satisfaction of the requirements for quality of water and artificially recharged water.

Article 30. Responsibilities of organizations, agencies and individuals for artificial recharge of groundwater

1. Each organization or individual carrying out artificial recharge of groundwater shall:

a) Formulate a plan to prevent and respond to water source pollution incident during the artificial recharge of groundwater;

b) Monitor and supervise water level and water quality, and adjust flow rate of water used for artificial recharge of groundwater within the water storage and retention capacity of the aquifer;

c) Before January 15 of the next year, report the artificial recharge of groundwater to the Department of Natural Resources and Environment of the province where the work is located and update it on the national water resources information system and database.

2. Each Department of Natural Resources and Environment shall:

- a) Organize the implementation of the plan for artificial recharge of groundwater after being approved by the provincial People's Committee and submit to the provincial People's Committee a report on testing result in the case of artificial recharge of groundwater specified in point a clause 1 Article 27 of this Circular;
- b) Carry out inspection and supervision during testing and official operation of a work for artificial recharge of groundwater as specified in points b and c clause 1 Article 27 of this Circular;
- c) Update results of artificial recharge of groundwater on the national water resources information system and database in the case of artificial recharge of groundwater specified in point a clause 1 Article 27 of this Circular.

Section 3. PROTECTION OF GROUNDWATER UPON DRILLING, DIGGING, EXPLORATION AND EXPLOITATION OF GROUNDWATER

Article 31. Protection of groundwater in case of design and construction of drilling and digging works and experimentation under groundwater survey, assessment, exploration and exploitation projects

1. The design and construction of drilling and digging works under groundwater survey and assessment projects must comply with the following requirements:

a) The design and drilling for groundwater survey and assessment shall adhere to technical regulations imposed by the Minister of Natural Resources and Environment;

b) The construction of drilling works shall be carried out by a groundwater drilling practicing certificate holder;

c) The drill depth and diameter, structure of casings, filter pipes, and sealing must be suitable for the stratigraphic characteristics and facilitate the prevention of water from entering the aquifers from the ground;

d) The construction of drilling and digging works shall ensure the stability of soil and stones in the vicinity of the construction area.

2. The design and construction of drilling and digging works under groundwater exploration and exploitation projects must adhere to the requirements specified in clause 1 of this Article and the following requirements:

a) The design and plan for construction of drilled wells for exploration and exploitation of groundwater shall be carried out by a person primarily responsible for technical issues of the groundwater drilling practicing certificate holder;

b) Stability of casings and filter pipes installed in drilled wells for groundwater exploitation must be ensured in the course of exploitation;

c) In case of using chemicals to submerge and clean drilled wells, the used chemicals must not pollute the environment and water sources.

d) For ground exploitation structures, the monitoring in service of groundwater exploitation surveillance shall be carried out as prescribed. Regarding a groundwater exploitation structure for which a monitoring well must be built, the location of the monitoring well must be representative of the water exploitation by the structure and shown in the application form for permit.

3. Requirements for protection of groundwater in case of experimentation under groundwater survey, assessment, exploration and exploitation projects:

a) Chemicals and radioactive materials used during experimentation must not pollute the environment and water sources;

b) Measures should be in place to prevent wastewater or water containing toxic substances from entering drilled and dug wells;

c) Methods and process for conducting experiments inside drilled wells must be fully presented in scientific research schemes, topics, projects and construction technical documents;

d) In case of pumping water for experimentation, in addition to the regulations in points a, b and c of this clause, the pumping must not cause inundation or cause the water level to be lower than the permissible water level for exploitation. If any incident is caused affecting the environment, the organization or individual shall immediately suspend the pumping and provide compensation for any damage (if any) inflicted as prescribed by law.

4. After completing the construction, the organization or individual constructing drilling and digging works and conducting experimentation under groundwater survey, assessment, exploration and exploitation projects shall update information and data on geological, stratigraphic and hydrogeological structure on the national water resources information system and database as prescribed.

Article 32. Protection of groundwater upon engineering geological survey, handling of foundations of construction works, construction of underground structures; geological exploration, mineral exploration and mining, oil and gas exploration and extraction

1. Organizations and individuals carrying out engineering geological survey, handling of foundations of construction works, construction of underground structures; geological exploration, mineral exploration and mining, oil and gas exploration and extraction involving drilling, digging and experimentation activities shall, in addition to compliance with relevant regulations, standards and technical regulations, fully comply with the requirements for groundwater protection specified in Article 31 of this Circular.

2. Organizations and individuals handling foundations of construction works must not cause land subsidence; not cause pollution, deterioration or depletion of groundwater sources.

3. For reservoirs, tanks or areas containing wastewater, residues and other liquid waste produced during mineral mining process, the environmental protection regulations and requirements specified in the laws on environmental protection, minerals and water resources must be complied with so as to prevent groundwater pollution.

4. In case a drilled well used for engineering geological survey, handling of foundations of construction works or construction of underground structures; geological exploration, mineral exploration and mining, oil and gas exploration and extraction has an expected useful life of at least 02 years, the requirements set out in point c clause 1 Article 31 of this Circular must be fulfilled.

5. Organizations and individuals carrying out engineering geological survey, handling of foundations of construction works and construction of underground structures; geological exploration, mineral exploration and mining, oil and gas exploration and extraction shall update information and data on the geological and stratigraphic structure at locations of drilled wells on the national water resources information system and database as prescribed.

Article 33. Protection of groundwater upon dewatering mines and construction pits and carrying out other drilling, digging and experimentation activities

1. Organizations and individuals dewatering mines and construction pits and carrying out other drilling, digging and experimentation activities shall, in addition to complying with relevant regulations, standards and technical regulations, fully comply with the groundwater protection requirements specified in Article 31 of this Circular.

2. If an organization or individual mining minerals or constructing works carry out pumping or dewatering operations resulting in the water table to be lowered, they shall immediately suspend the pumping or dewatering and take corrective actions; provide compensation for any damage caused as prescribed by law.

Chapter V

IMPLEMENTATION CLAUSE

Article 34. Transitional clause

1. Regarding domestic water safeguard zones:

a) In case any structure for exploitation of water for supply of water for domestic use is granted a permit for exploitation and use of water resources before the effective date of this Circular but a domestic water safeguard zone for such structure has not yet been

determined and approved, regulations of this Circular shall be adhered to and the proposal for perimeter of the domestic water safeguard zone shall be completed and sent to the Department of Natural Resources and Environment of the province where the structure is located before July 01, 2025 at the latest.

b) In case a domestic water safeguard zone for the structure for exploitation of water for supply of water for domestic use is approved before the effective date of this Circular, regulations of this Circular shall continue to be implemented according to the approved decision. In case the organization or individual investing in, managing or operating the water exploitation structure wish to adjust the perimeter of the domestic water safeguard zone as prescribed in this Circular, a perimeter proposal shall be sent to the Department of Natural Resources and Environment of the province where the structure is located.

c) In case any structure for exploitation of water for supply of water for domestic use operates before the effective date of this Circular but the domestic water safeguard zone cannot be established in reality as prescribed in Article 10 and Article 11 of this Circular, the authority having power to approve domestic water safeguard zones shall rely on the nature and scale of the structure, water source characteristics and other requirements for protection of such water source to consider reducing the area of perimeter of the domestic water safeguard zone but quality of the water source in such domestic water safeguard zone must be ensured.

2. Regarding determination of minimum flows:

The minimum flow value specified by the competent authority in the permit for exploitation and use of water resources or in the inter-reservoir operation procedures promulgated before the effective date of this Circular shall remain valid until such permit expires or until a decision on revision to the inter-reservoir operation procedures is issued.

3. Regarding of well sealing:

The sealing of damaged wells which are damaged, no longer in use or not intended for future use under clause 1 Article 31 of the Law on Water Resources shall continue to be carried out to be implemented according to regulations enshrined in the Circular No. 72/2017/TT-BTNMT dated December 29, 2017 of the Minister of Natural Resources and Environment.

Article 35. Effect

1. This Circular comes into force from July 01, 2024.

2. From the effective date of this Circular, the following Circulars shall cease to have effect:

- a) Circular No. 24/2016/TT-BTNMT dated September 9, 2016 of the Minister of Natural Resources and Environment;
- b) Circular No. 31/2018/TT-BTNMT dated December 26, 2018 of the Minister of Natural Resources and Environment;
- c) Circular No. 64/2017/TT-BTNMT dated December 22, 2017 of the Minister of Natural Resources and Environment;
- d) Circular No. 75/2017/TT-BTNMT dated December 29, 2017 of the Minister of Natural Resources and Environment;
- dd) Circular No. 27/2014/TT-BTNMT dated May 30, 2014 of the Minister of Natural Resources and Environment;
- e) Circular No. 40/2014/TT-BTNMT dated July 11, 2014 of the Minister of Natural Resources and Environment;
- g) Circular No. 56/2014/TT-BTNMT dated September 24, 2014 of the Minister of Natural Resources and Environment;

3. Chapters and Articles of the following Circulars of the Minister of Natural Resources and Environment are repealed from the effective date of this Circular:

- a) Article 20 of the Circular No. 40/2014/TT-BTNMT dated June 03, 2020 of the Minister of Natural Resources and Environment;
- b) Articles 3, 4 and 17, Chapter III and Chapter V of the Circular No. 17/2021/TT-BTNMT dated October 14, 2021 of the Minister of Natural Resources and Environment;

Article 36. Implementation

1. Ministers, ministerial agencies, Governmental agencies, People's Committees of provinces and central-affiliated cities and units affiliated to the Ministry of Natural Resources and Environment, Departments of Natural Resources and Environment of provinces and central-affiliated cities, organizations and individuals concerned are responsible for the implementation of this Circular.
2. Difficulties that arise during the implementation of this Circular should be reported promptly to the Ministry of Natural Resources and Environment of Vietnam for consideration and resolution./.

**PP. THE MINISTER
THE DEPUTY MINISTER**

Le Cong Thanh

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