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Ministry of Environment Water & Agriculture
Kingdom of Saudi Arabia المملكة العربية السعودية

Kingdom of Saudi Arabia

Ministry of Water and Electricity

Executive Regulations of Law of Treated Sewage Water and its Reuse Thereof

This translation is provided for guidance. The governing text is the Arabic text

Table of Contents

Tables

Chapter One

General

Article 1

Definitions and Terminology

Meanings are listed below each phrase or terminology unless indicated otherwise:

(1-1) **Law**:

Law of Treated Sewage Water and its Reuse Thereof, issued by Royal Decree No. (M/6) dated 13/2/1422 HD.

(1-2) **License or permit:**

Written approval issued by the competent authority.

(1-3) **Competent authority:**

One or more of the following government agencies, as the context requires:

a- Ministry of Water and Electricity

b- Ministry of Agriculture

c- Ministry of Municipal and Rural Affairs

d- Ministry of Commerce and Industry

(1-4) **Competent minister:**

Minister of the competent authority.

(1-5) **Licensee:**

A person who obtains a license from the competent authority to carry out an operation or operations related to sewage, drainage or reuse.

(1-6) **A person:**

Any natural or legal person.

(1-7) **Owner:**

The natural or legal person, public or private, in whose name the land, building, or project is registered in their capacity as owner, agent, or beneficial investor.

(1-8) **Beneficiary:**

A person, contractor, or private or government facility that benefits from treated sewage water.

(1-9) **Observer:**

A representative of the competent authority.

(1-10) **Sewage water:**

Waste-carrying water that comes from homes, commercial and government buildings,

institutions and factories.

(1-11) **Sludge:**

Sediments from sewage water treatment.

(1-12) **Traditionally treated sludge:**

Stabilized sludge and sludge treated by digestion and dewatering.

(1-13) **Public sewage system:**

The sewage system managed by a government agency or public institution.

(1-14) **Private sewage system:**

The sewage system managed by the owner.

(1-15) **Large complexes:**

Residential, industrial, commercial, or joint complexes, military cities, university housing, or any establishments that perform public or private activities, whether they are governmental or civil establishments, and whose population exceeds 2000, or the resulting flow exceeds 500 m^3 daily.

(1-16) **Sewage facilities:**

Facilities and equipment required to collect, transport and treat sewage water.

(1-17) **Flow balancing units:**

Reservoirs established to collect and drain sewage water on a regular basis in terms of quantity and quality of the public sewage system.

(1-18) **Delivery room:**

The last manhole in the building's sewage system.

(1-19) **Building drain pipe:**

The extension of the building delivery room towards the public sewage water system.

(1-20) **Septic tank (*Bayara*):**

A tank that is dug into the ground to absorb the sewage water according to certain technical conditions.

(1-21) **Collection tank:**

An impermeable tank of concrete, brick (solid), fiberglass or any other leak-proof material.

(1-22) **Seepage tanks:**

A vehicle equipped with an airtight tank designated and approved by the competent authority for the withdrawal and transport of liquid waste.

(1-23) **Discharge points:**

Sites connected to the public sewage system designated for discharging liquid waste. This liquid waste is transported by means of seepage tanks from septic tanks or collection tanks and licensed to be discharged into the system.

(1-24) **Non-domestic waste:**

Residues or sewage water from industrial, medical, scientific, or commercial activities. These differ from domestic wastewater.

(1-25) **Grease traps:**

Units of special engineering design connected to internal sewage installations in commercial kitchens, restaurants, food factories, hotels, etc. These units separate food oils and grease from liquid wastes before discharging them to the public sewage system or to septic/collection tanks.

(1-26) **Oil traps:**

Units of special engineering design used to separate oils and greases produced in car washing and lubrication stations from sewage water before being discharged into the public sewage system, or septic/collection tanks.

(1-27) **Sewage treatment plant:**

A facility that consists of the devices, equipment, and installations required for sewage water treatment.

(1-28) **Private sewage treatment plant:**

A sewage treatment plant serving large complexes or the like. It is managed and operated by the owner.

(1-29) **Special treatment unit:**

A treatment unit that is established on farms to improve the quality of treated wastewater, or polluted well water, to use its output for irrigation purposes.

(1-30) **Treated sewage water:**

Water produced from a sewage treatment plant after being properly treated in accordance with the benchmarks for the quality of treated sewage water for its intended use.

(1-31) **Benchmarks:**

Standard values for determining the natural, chemical, and biological components which are used to gauge the quality of the water.

(1-32) **Properties:**

Natural, chemical and biological qualities of (raw and treated) sewage water and sludge.

(1-33) Biochemical oxygen requirement (BOD_5):

A benchmark for determining biochemical oxygen demand.

(1-34) **Chemical oxygen requirement (COD):**

A benchmark for determining chemical oxygen demand.

(1-35) **Total suspended solids (TSS):**

A benchmark for suspended materials in water, which can be removed by laboratory filtration.

(1-36) **Most probable number (MPN):**

A benchmark for the most likely number of live bacteria present in wastewater.

(1-37) **Primary treatment:**

The level of treatment that can be reached by precipitation only.

(1-38) **Secondary treatment:**

The level of treatment that can be achieved by biological treatment ending with precipitation and disinfection. The resulting water can be used for restricted irrigation.

(1-39) **Tertiary treatment:**

The level of treatment that can be achieved by biological treatment ending with filtration, disinfection, or any other processes. The resulting water can be used for unrestricted irrigation.

(1-40) **Biological treatment:**

Treatment processes aimed at activating bacteria in wastewater to reduce the concentration of organic matter.

(1-41) **Uncontaminated water:**

Water of a quality equal to or greater than the benchmarks specified for treated wastewater, or water that is not below standard quality levels of the water to be poured into it (i.e., the receiving).

(1-42) **Pollutant:**

Any physical, chemical, organic, or radioactive substance found in sewage water that reduces the quality of the water, or is dangerous when used.

(1-43) **Harmful substances:**

Substances that have a detrimental effect on sewage systems, treatment plants, or treatment systems.

(1-44) **Maximum level of pollutant:**

The maximum level of pollutant permitted to be present in sewage water according to the benchmarks specified in this regulation.

(1-45) **Point of supply:**

Treatment sewage water outlet feeding the beneficiary.

(1-46) **Irrigation methods:**

Methods used to irrigate crops.

(1-47) **Unrestricted irrigation:**

Irrigation of all kinds of crops without exception.

(1-48) **Restricted irrigation:**

Irrigation of all types of crops except for vegetables, tuber crops, and plants whose fruits come into contact with treated water, whether they are eaten fresh or cooked.

(1-49) **Municipal crops:**

Trees, shrubs, and landscapes that are planted in streets, parks, recreational places, and highways.

(1-50) **Torrents and rain drainage system:**

Pipes for transporting incoming rainwater, torrents, surface water, or ground water, and transferring it to streams and valleys that have paths isolated from the sewage water system.

(1-51) **Natural outlet:**

Any drainage of rainwater and torrents, or treated sewage water, to flow into a stream, valley, pond, trench, lake, or any other medium for surface or groundwater.

(1-52) **Outcrop:**

Part of the geological formation whose rocks appear above the surface of the earth.

(1-53) **Direct injection:**

Pumping treated sewage water into the ground layers.

(1-54) **Sanctions committee:**

The committee considering the sanctions according to Article 31 of the statute.

Article 2

Application of Regulation

This regulation is concerned with the technical controls and conditions for sewage water, its treatment and reuse in accordance with Article 5 of Cabinet Resolution No. 42 dated 11/2/1421 HD and Article 32 of Law of the Treated Sewage Water and its Reuse Thereof, and the Royal Decree No. 7/b/302194 dated 4/7/1424 HD.

Article 3

General Objectives

(3-1) Determining acceptable methods and levels for sewage water disposal.

(3-2) Establishing standards for safe levels so that treated sewage water can be reused.

(3-3) Protecting public health from the harmful effects of sewage water pollution.

(3-4) Maximizing the use of treated water as one of the non-conventional sources of water.

(3-5) Observing the quality of treated sewage water.

(3-6) Observing sewage treatment plants.

Chapter Two

Licenses and Regulation Requirements

Article 4

Licenses

(4-1) The competent authorities shall issue the necessary controls to grant licenses issued by the same.

(4-2) License to use the treated sewage water and ground water

4-2-1: The approval of the Ministry of Water and Electricity shall be obtained to use the treated sewage water or to benefit from the sludge outflows from the public or private treatment plants.

4-2-2: A license from the Ministry of Agriculture shall be obtained to identify the plantations, irrigation methods, and crops to be cultivated in the future inside the farms benefitting from the treated sewage water for the restricted irrigation purposes, whether through distribution systems or canals.

4-3-2: A license from the Ministry of Water and Electricity shall be obtained to use the surface well water within the urban range of cities and village gatherings which are suspected of having been polluted by sewage water in accordance with the following terms and conditions:

A) The beneficiary shall conduct an analysis of well water in laboratories approved by the Ministry of Water and Electricity.

B) The beneficiary shall obtain a license from the Ministry of Agriculture to use the well water in irrigation if the analysis findings show that the pollution level of the water exceeds the limits in accordance with standard criteria contemplated in this regulation in Table (3), and it shall abide by the terms related to the same and described in this regulation.

C) If the well water pollution level exceeds the permitted limits in the restricted irrigation, and the beneficiary wishes to use this water, they shall construct, at their own expense, an appropriate treatment unit after obtaining a license from the Ministry of Agriculture. In such a case, the treated water shall meet the standardized criteria set out in this regulation.

D) A license from the Ministry of Agriculture shall be obtained to construct an appropriate treatment unit in regard to well water if the pollution level exceeds the permitted limits in unrestricted irrigation and the beneficiary wishes to use this water to irrigate crops that require high quality water. In such a case, treated water shall conform to the standardized criteria described in table (3) of this regulation.

(4-3) License to construct a sewage system or a private treatment plant

4-3-1: The bodies that own the large complexes—whether governmental or private—developing a residential area, and wishing to construct a sewage system or a treatment plant, are required to:

A. Obtain a license from the Ministry of Water and Electricity to construct a system or treatment plant for sewage water.
B. Provide an elementary and final design for approval.
C. Obtain the final license after the execution and operation; the designing and executing agency shall not be discharged before obtaining the final license.

4-3-2: To obtain a license for all treatment plants which were constructed prior to this system, from the Ministry of Water and Electricity.

(4-4) License to construct a septic or collection tank

4-4-1: A license from the Ministry of Municipal and Rural Affairs shall be obtained to construct a septic or collection tank in regard to sewage water.

4-4-2: Aseptic tank for sewage water in large complexes shall not be constructed.

(4-5) License to transfer sewage water

A license from the competent authority shall be obtained for the seepage tanks to transfer sewage water.

Article 5

General Requirements

(5-1) Sewage water disposal

It is prohibited to dispose sewage water in wells, seas, the outcrops of aquifers, irrigation canals, agricultural banks, streams or dams.

(5-2) Sludge disposal

It is prohibited to dispose of sludge in wells, seas, water bodies, dams, valleys, irrigation canals or agricultural banks. Sludge disposal shall be coordinated with the Ministry of Municipal and Rural Affairs.

(5-3) Sewage water disposal to the public system

5-3-1: The owner (excepting owners of large complexes) shall, upon the availability of the public sewage system connecting the same, and in accordance with the applicable systems, has the right to construct a private plant to treat sewage water and reuse the treated water.

5-3-2: It is prohibited to dispose of any liquid residue to the public sewage system if it exceeds the maximum limits of the criteria specified in Table (1).

5-3-3: The owner or their agent shall, prior to commencing the construction, apply to the Ministry of Water and Electricity to identify an exit to the drain pipe of the building or the facility.

5-3-4: The owner or their agent shall make an application to the Ministry of Water and Electricity that includes all schemes and specifications and any information related to connecting a drainpipe from the building or from private/public facilities, to the public sewage system.

5-3-5: It is prohibited to drain storm water, ground water, agricultural banks water and the like, or water resulting from construction sites to the public system without a license from the Ministry of Water and Electricity identifying the drainage methods.

5-3-6: The governmental, private bodies, and commercial corporations shall, prior to the drainage of sewage water that does not meet the permitted limits to drain the same to public sewage system in accordance with Table (1), conduct a precedent treatment to such water.

5-3-7: If sewage water that the Ministry of Water and Electricity deems has a harmful effect on the sewage water facility is drained, the Ministry has the right to dismiss the same or to oblige the owner to treat the same to an accepted degree, or to control the drainage quantity, provided that it provides traps for solid objects, oils, and lubricants if it sees fit.

5-3-8: The owner shall be liable to operate and maintain the initial treatment facilities or balance flow units for sewage water to conduct the effective operation.

5-3-9: The Ministry of Water and Electricity is entitled to require the owners of the initial treatment facilities or balance flow units to provide all required information.

5-3-10: It is prohibited to dispose water that consists of the materials mentioned below to the public sewage system:

A. Industrial liquids, flammable or explosive materials.
B. Industrial or household solid wastes such as dust, glass and metal substances.
C. Water that consists of hydrocarbons, insecticides or pesticides.
D. Any harmful, flammable or toxic substances or the like.

E. Oils, lubricants or construction debris.
F. Medical waste from hospitals, research centers, laboratories, analysis samples residue and the like.
G. Radioactive materials.
H. Liquid residual products (brine) of desalination plants.
I. Slaughterhouses, leather tanneries products or factories wastes.

5-3-11: Oil factories, car wash plants, restaurants, kitchens and the like must provide traps to separate oils from waste water before disposing the same to the public sewage system; the owner shall maintain the same and follow up its operation in order to achieve its purpose after obtaining the necessary licenses from the Ministry of Water and Electricity.

(5-4) Sewage water disposal in areas under-served with the public system:

5-4-1: The owner of the individual residential units must construct a septic tank and to make another closed branch connection to join the public sewage system in the future.

5-4-2: The owners of residential or commercial complexes with a daily consumption below (500) cubic meters of water, must construct a plant to treat sewage water resulted from their complexes and to make the same reusable, if they do not wish to do that, they must construct a collection tank.

5-4-3: The owner must construct a septic tank for sewage water or a collection tank in accordance with the schemes and specifications identified by the Ministry of Municipal and Rural Affairs; it has the right to supervise the construction and installations necessary during the execution phases.

5-4-4: The owner shall draw sewage water from the septic tank before its overflow or from the collection tanks before its filling, by jetting vehicles, at his own expense, and to drain water to the approved sewage water disposal points. Such wastes are within the determined specifications regarding the quality of the liquid wastes permitted to dispose to the public sewage system.

5-4-5: The Ministry of Water and Electricity is entitled to take samples of the contents of seepage tanks dedicated to transfer the liquid wastes at the discharge points to conduct the necessary laboratory tests to verify that it meets the standardized specifications described in this regulation.

(5-5) Disposal of sewage water resulting from large complexes

5-5-1: Complexes owners must construct treatment plants for sewage water resulting from their plants and make it reusable after obtaining a license from the Ministry of Water and Electricity.

5-5-2: The owner must reuse the treated water resulting from the private treatment plant or disposing the same.

(5-6) Disposal of the treated sewage water

5-6-1: The treated sewage water that meets the criteria described in Table No (2) can be disposed of in undeveloped lands, valleys or agricultural banks after obtaining the licenses from the competent authorities.

5-6-2: The national specifications to protect the environment must be considered when disposing the treated sewage water.

5-6-3: The treated sewage water which does not meet the criteria described in this regulation can be disposable, when strictly necessary, in undeveloped lands or valleys after obtaining a license from the Ministry of Water and Electricity.

5-6-4: It is prohibited to dispose the treated sewage water in wells or drinking water sources.

Article 6

Special Requirements

(6-1) Use of treated sewage water for agricultural irrigation

6-1-1: The treated sewage water reused in agriculture irrigation must be in conformity with the standardized criteria and the terms described in this regulation.

6-1-2: The physical and chemical properties of the soil at the farms benefited from the treated sewage water must be analyzed in the laboratories of the Ministry of Agriculture or one of the laboratories approved at the same and to evaluate the impacts of using such water on the soil.

6-1-3: It is prohibited to connect of join the treated sewage water pipes with wells system pipes in farms.

6-1-4: It is prohibited to open feed points with the treated sewage water to farms only by persons approved by Ministry of Agriculture.

6-1-5: The treated sewage water pipes shall be marked by using a definite color or apparent warning tapes.

6-1-6: The beneficiary of the treated sewage water shall take the necessary procedures to prevent swamps, the reproduction of flies, mosquitoes and other insects. If swamps exist, the beneficiary shall spray and refill insecticides it within three days.

6-1-7: Each irrigation system that uses the treated sewage water and all systems that transport such water must have boards fixed in places to be identified by the competent authority that says:

"Caution: treated sewage water. For irrigation only"

(6-2)The use of treated sewage water for unrestricted irrigation

The treated sewage water used in unrestricted irrigation must conform with the standardized criteria in regard of tertiary treated sewage water, described in Tables (3) and (5).

(6-3) The use of treated sewage water for restricted irrigation

6-3-1: The treated sewage water used in restricted irrigation must conform with the standardized criteria in regard of dual treated sewage water, described in this regulation in Tables (2) and (4).

6-3-2: The fields irrigated with the treated sewage water of the restricted irrigation must be separated from wells and public drinking water tanks that are at a distance of less than (50) meters.

6-3-3: If the beneficiary wishes to use the treated sewage water for restricted irrigation by cultivating kinds that require a higher quality of treated water, it shall construct a private treatment plant, at its own expense, to improve the quality of water according to the following requirements:

1. Obtain a license from the Ministry of Agriculture.
2. The quality of produced water shall be in compliance with the standardized criteria of unrestricted irrigation.
3. The unit's owner shall, at their own expense, examine water quality at one of the approved laboratories upon a request of the Ministry of Agriculture, and they shall keep water quality records to be viewed on request.
4. The Ministry of Agriculture is entitled to take samples of water produced from the unit and analyze the same to make sure that it meets the standardized criteria applied in this regulation.

6-3-4: If the beneficiary wishes to use the well water's "ground water" in cultivating vegetables on the farm benefitting from the treated sewage water of the restricted irrigation, they shall take the following measures:

A. Obtain a license according to Article (4-2-2) thereof.
B. Make a barrier no less than (15) meters to separate all kinds of vegetables fields from fields irrigated with the treated sewage water, provided that an agricultural drainage with suitable depth is available.
C. Allocate canals to transfer well water or the like to irrigate vegetable fields, and other separated canals to transfer the treated sewage water of the restricted irrigation, on condition that there will be no connection between them.

D. The open canals allocated to transfer the treated sewage water of restricted irrigation, whether earth or cement construction, shall not pass through or by vegetable fields, and the distance between such canals and vegetable fields shall be no less than 15 meters.

E. The open canals shall not be used to transfer well water or water that is dedicated to unrestricted irrigation to irrigate vegetables, if it passes through or by fields irrigated with treated sewage water of restricted irrigation, and the distance between such canals and any irrigated fields or canals or treated sewage water outlets shall be no less than 15 meters.

F. There shall not be any treated sewage water outlets of restricted irrigation in vegetable fields.

6-3-5: It is prohibited to use sprinkler irrigation methods to irrigate field crops and fodder with treated sewage water of restricted irrigation if there are any fruit trees or vegetables at a distance of less than 60 meters of the irrigated field.

6-3-6: When using the sprinkler irrigation, a safe distance of no less than 60 meters in places intended for the public shall be left; irrigation must cease when wind blows.

Article 7

The Use of Treated Sewage Water for Municipal Purposes

(7-1) A license from the Ministry of Municipal and Rural Affairs to irrigate the municipal crops using treated sewage water must be obtained.

(7-2) The treated sewage water allocated to irrigate public gardens, parks, playgrounds, and other places intended for public must be of tertiary treatment and must conform with the criteria described in Table (3). It must be irrigated at times that differ from those dedicated to the public.

(7-3) Treated sewage water allocated to irrigate green belts, median strips and places that are accessed by the public, shall be of dual treatment and in conformity with the criteria described in Table (2).

(7-4) Sewage water of tertiary treatment that meets the criteria described in Table (3) can be used to feed flushing boxes, wash streets and corridors, and in firefighting after obtaining a license from the Ministry of Water and Electricity.

Article 8

The Use of Sludge for Agriculture

(8-1)The treated sludge that is intended to be used in agriculture shall be registered in accordance with the Agricultural Fertilizers Trading Law promulgated by the Royal Decree No. (M/4) dated 8/2/1423 H, and the Resolution No. 35 issued by the esteemed Cabinet on 2/2/1423 H.

(8-2) A license to use the treated sludge in agriculture must be obtained from the Ministry of Agriculture.

(8-3) The physical and chemical properties of the farm soil must be analyzed prior to using the sludge, and it must be analyzed in the Ministry of Agriculture's laboratories or any approved laboratories. Frequent and periodic analyses of heavy chemical components must be conducted.

(8-4) Heavy metal concentration in the treated sludge must not exceed the concentration level described in Table (6).

(8-5) Heavy metal concentration in soil after adding sludge shall not exceed the maximum limits described in Table (6).

(8-6) The thermal treated sludge, or the like, can be used freely in agriculture if it is free from biological pollutants such as salmonella, fecal coliform bacillus, and intestinal worm eggs.

(8-7) It is prohibited to use traditionally treated sludge which conforms with Table (7) in the following cases:

A. In soil during vegetable growing or during harvesting fruit which grows at ground level.
B. During the six months prior to harvesting vegetables or fruit that are eaten raw and that grow directly adjacent to the soil.
C. In soil with potential of hydrogen of no less than (PH=7), it is prohibited to conduct pastoral activities or harvest fodder within three weeks after sludge dispersal.

(8-8) The following terms and conditions must be followed when adding sludge that exceeds the limits described in Table (7):

A. A period of no less than nine months after adding the sludge should pass before allowing the public access to public gardens and parks.
B. Sludge must be added at least one month before harvesting fruit.
C. It is prohibited to cultivate vegetables earlier than 14 months after adding the sludge.
D. It is prohibited to cultivate root crops such as carrots and potatoes earlier than 34 months after adding the sludge.

Article 9

The Use of Treated Sewage Water for Fish Farming

A license from the Ministry of Agriculture to use treated sewage water in fish farming must be obtained.

Article 10

The Use of Treated Sewage Water for Injection into Aquifer

A license of the Ministry of Water and Electricity to inject treated sewage water into the ground must be obtained

Article 11

The Use of Treated Sewage Water for Industry

(11-1) A license from the Ministry of Commerce and Industry to use treated sewage water in industrial purposes must be obtained.

(11-2) The Ministry of Commerce and Industry shall identify the quality of the treated sewage water in accordance with the purpose of use.

(11-3) It is prohibited to use treated sewage water in the food industry.

Article 12

The Use of Treated Sewage Water for Recreational Purposes

A license from the competent authority to use treated sewage water for recreational purposes must be obtained.

Article 13

Irrigation Systems

Without prejudice to the general requirements described in Article (5-1) of this regulation, the selection of irrigation methods in each case must be met as follows:-

(13-1) Unrestricted irrigation:

All irrigation methods can be used.

(13-2) Restricted irrigation:

Irrigation methods used as follows:-

1. Fruit trees:
    - Drip irrigation
    - Hose irrigation
    - Bubblers

- Subsoil irrigation

The irrigation must cease one week prior to harvesting fruit or collecting fruit that falls to earth.

2. Fodders and field crops:

It is permitted to use all irrigation methods, taking into account the following:-

- Cease irrigation at least one week prior to harvesting.
- No direct pastoral activities are permitted in fields irrigated with treated sewage water.

3. Municipal crops :

- Drip irrigation
- Hose irrigation.
- Bubblers
- Subsoil irrigation

Article 14

Sewage Water Treatment Plants

(14-1) Private Sewage Water Treatment Plants

14-1-1: The governmental bodies competent to grant licenses and to construct complexes shall transfer applications to the Ministry of Water and Electricity to identify whether there is a need to construct a treatment plant or not, and to explain this in the building permit.

14-1-2: The Ministry of Water and Electricity shall identify the technical terms and specifications of private treatment plant designs and shall issue the necessary license provided that the produced water shall be appropriate for use.

14-1-3: The treatment type is identified according to purposes of use.

14-1-4: The owners of private treatment plants shall abide by operating the same according to scientific and technical bases as per the instructions described in operation and maintenance manuals. They shall maintain the treatment efficiency and the quality of produced water, and if a plant does not contain the incoming sewage water, the owner must extend the capacity of his plant in order to fulfill the required purpose in accordance with the Ministry of Water and Electricity instructions.

14-1-5: The owner of private treatment sewage water may not sell the treated sewage water or transport the same to a third party without the Ministry of Water and Electricity's approval.

14-1-6: The private sewage water treatment plant operator shall conduct analyses and periodic examinations at laboratories approved by the Ministry of Water and Electricity to verify the quality and type of produced water and its conformity to the below-mentioned specifications.

Biological oxygen demand (BOD): once a week.

Chemical oxygen demand (COD): once a week.

Total suspended solids (TSS): once a week.

Total dissolved solids (TDS): once a week.

Potential of hydrogen (PH): once a week.

Fecal coliform (FC): twice a week

Intestinal worm eggs: once a week.

Heavy metals mentioned in Tables (2) and (3): once per year.

14-1-7: The Ministry of Water and Electricity has the right to request additional analyses if needed by the operator of the treatment plant.

14-1-8: The operator of the treatment plant shall keep full records of analyses for one year.

(14-2) Public sewage water plants

14-2-1: The plant operator shall abide by operating and maintaining the same appropriately to ensure that the production of treated water meets the criteria described in this regulation and is fit for reuse.

14-2-2: The plant operator shall conduct a daily record for work progress in the treatment plant and shall register the necessary equipment readings to show its operational state.

14-2-3: The sewage water treatment plant operator shall conduct analyses and periodic examinations at laboratories approved by the Ministry of Water and Electricity to verify the quality and type of produced water and its conformity to the below-mentioned specifications.

Biological oxygen demand (BOD): twice a week.

Chemical oxygen demand (COD): twice a week.

Total suspended solids (TSS): twice a week.

Total dissolved solids (TDS): twice a week.

Potential of hydrogen (PH): twice a week.

Ammonia (NH_3–N): once a week

Nitrate (NO_3): once a week

Fecal coliform (FC): twice a week

Intestinal worm eggs: once a week.

Heavy metals mentioned in Tables (2) and (3): once every six months.

Analyses upon request shall be considered.

14-2-4: Keep the plant records for no less than three (3) years, the flow records and laboratory analyses of raw sewage continuously, and keep the other laboratory analyses for a period of no less than five (5) years.

Chapter Three

Characteristics and Standards

Article 15

Characteristics and Standards of Raw Sewage Entering the Public System and Treatment Plants

The physical and chemical properties of raw sewage water discharged into the public sewage water system shall be within the levels indicated in Table (1) attached herewith.

Article 16

Characteristics and Standards of Treated Sewage

(16-1) Characteristics and standards of secondary sewage water treatment.

Secondary treatment of sewage water shall conform with the standards set out in Table (2) attached herewith.

(16-2) Characteristics and standards of sewage water of tertiary treatment.

Sewage water of tertiary treatment shall conform with the standards set out in Table (3) attached herewith.

Article 17

Standards of Using Treated Sewage Water for Agricultural Purposes

(17-1) Standards of treated sewage water use for agricultural purposes for restricted irrigation:

For the use of sewage water of secondary treatment for restricted irrigation purposes, the properties and standards set out in Table (2) for sewage water of secondary treatment shall be adhered to, in addition to the standards determined by the Ministry of Agriculture set out in Table (4) attached herewith.

Sewage water of secondary treatment, in which the total dissolved salt concentration that exceeds the limits indicated in Table (4) of these Regulations shall be used when it can be mixed with less saline water or used for the irrigation of saline-resistant crops.

Sewage water of secondary treatment shall also be used if the number of live eggs of intestinal worms exceeds one live egg (number/liter). Measures to protect farm workers and consumers shall be taken whenever possible.

(17-2) Standards of treated sewage water use for agricultural purposes for unrestricted irrigation:

For the use of water from tertiary treatment for unrestricted irrigation purposes, the properties and standards set out in Table (3) shall be adhered to, in addition to the standards determined by the Ministry of Agriculture set out in Table (5) attached herewith.

Sewage water from tertiary treatment, in which the total dissolved salt concentration exceeds the limits indicated in Table (5) of these Regulations, shall be used when it can be mixed with less saline water or used for the irrigation of saline-resistant crops.

(17-3) Standards of the use of treated sewage water using aerated lagoons for agricultural purposes as restricted irrigation:

If sewage water is treated by (natural or mechanical) aerated lagoons, the resulting water shall be treated according to the standards of sewage water of secondary treatment, except for the maximum requirements of the biochemical oxygen, total suspended substances, and chemical oxygen

requirements due to the containment of algae, which increases the concentration of these standards in treated water. The resulting water can be used to irrigate forage and field crops.

Article 18

Characteristics and Criteria of Using Treated Sludge for Agriculture

The sludge used for cultivation sewage water shall conform with the standards set out in Tables (6) and (7) attached herewith.

Chapter Four

Observation and Inspection

Article 19

Observer Duties

(19-1) Observers of the Ministry of Water and Electricity shall enter buildings that provide public services such as restaurants, car washes, hotels etc. for inspection, control, and sampling of the discharge.

(19-2) Observers from the Ministry of Water and Electricity shall obtain information concerning industrial operations with direct impact on the type and source of discharge into the public sewage water system.

(19-3) Observers from the Ministry of Water and Electricity shall enter civil and governmental private residential compounds for the purpose of inspecting and controlling the sewage water plants inside these compounds, whether existing or under construction.

(19-4) Observers from the Ministry of Water and Electricity shall obtain information concerning the private sewage water plant and access to the papers and documents, and to the operating and maintenance system of the plant.

(19-5) The Ministry of Water and Electricity shall take measurements and samples of treated water from private sewage water plants.

(19-6) Observers from the Ministry of Water and Electricity shall sample the contents of the sewerage tanks used to transfer liquid waste that is permitted to be discharged to the public sewage water system at discharge points, in order to conduct the necessary laboratory tests to ensure their conformity with the standard specifications mentioned herein.

(19-7) The Ministry of Agriculture shall inspect the soil and crops irrigated with treated sewage water.

(19-8) The Ministry of Agriculture shall inspect any visible, buried or well tubes when the beneficiary is suspected of violating the provisions of the Regulation.

(19-9) Observers affiliated to the Ministry of Agriculture shall have the right to have access to farms that benefit from treated sewage water, and the farm owner or another person on his/her behalf shall prevent them from doing so.

(19-10) The Ministry of Agriculture shall switch off the special treatment unit in the event that the water produced exceeds the standards set forth in the Regulation, damaging vegetable crops if any.

Article 20

Sampling and Analyses

(20-1) All measurements, tests, and analysis related to the controls of the properties of sewage water and sludge referred to in this system are carried out in accordance with the most recent measurement methods of sewage water tests issued by the Saudi Standards, Metrology and Quality Organization (SASO). Until then methods of scientific analysis listed in the reference work titled "Standard Methods for the Examination of Water and Sewage water" shall be applied.

(20-2) Treated sewage water samples shall be collected at the final exit of the treatment plant and obtained by acceptable means.

Article 21

Safety Requirements for Workers at Sites that Use Treated Sewage Water

(21-1) The beneficiary of treated sewage water for restricted irrigation shall provide the following safety requirements for farm workers:

21-1-1 Appropriate gloves and high-neck shoes shall be used to prevent contact with water.

21-1-2 Vaccination against cholera, typhoid, and hepatitis A.

21-1-3 An annual medical examination shall be carried out at the centers specified by the Ministry of Health.

21-1-4 A clean place with clean water for periods of rest and eating during work shall be provided.

Chapter Five

Violations and Penalties

Chapter Five: Violations and Penalties

Without prejudice to Articles Nos. 29, 30 and 31 of the treated sewage water system and its reuse, offenses shall be detected, and penalties imposed and applied to violators of any provision of this law or its implementing regulations in accordance with Articles Nos. 22, 23 and 24 of the provisions of this Regulation.

Article 22

Violation Control

(22-1)The offenses shall be detected in accordance with the procedures for detecting, proving, and investigating offense of the Public Facilities Protection Law, adopted by the Decree of his Highness the Minister of the Interior, No. 94 of 15/1/1407H, impersonalized No. 5/62 of 13/1/1407H, in Annex No. 5.

(22-1) One committee or more shall be established to detect offenses in the competent authority, and a report of offenses shall be submitted to the competent minister or whomever he authorizes for the adoption and issuance of a penalty resolution.

Article 23

Estimating Penalties

(23-1) The offender is required to pay the fine, remove the object of the offense, repair any damaged caused by it at his expense, and pledge not to repeat the offense.

(23-2) In assessing the aforementioned compensation, the competent authorities shall take into account the following elements:

a. The amount of damage repair, the restoration of the object, and the lifting of damage resulting by the offense.
b. The value of the benefits obtained by the offender illegally.
c. The value of the utility lost or all damage suffered by the facility, including the value of the water used or wasted.

(23-3) If the offender does not correct the situation and remove the grounds for the offense within the period specified by the competent authority, then the competent authority is entitled under the provisions of these Regulations to take the necessary action and measures to correct the situation at the expense of the offender, with the obligation to pay all expenses incurred thereunder. The administrative expenses specified by the competent authority shall be included.

(23-4) The competent authority has the right to assess the fine for offenses or infringements not set forth in these Regulations, provided that they are within the limits of the offenses set forth in the sewage water system and its reuse, and that the offense shall not exceed the maximum extent of such offense and shall be approved by the competent minister or whomever he authorizes.

Article 24

Estimating Violations and Fines

Violations and penalties shall be determined according to Table (8), attached herewith.

Chapter Six

General Provisions

Article 25

Amendment and interpretation of the Regulation

The Minister of Water and Electricity is competent to interpret or amend any of the Articles of this Regulation as required by the public interest after coordination with the Ministry of Municipal and Rural Affairs and Ministry of Agriculture to issue the necessary resolutions.

Article 26

Final Provisions

(26-1) This regulation replaces the regulations of technical requirements for the disposal of untreated (raw) sewage water, the technical requirements for the sewage water treatment plants in large complexes (governmental and private), and the technical requirements for the use of treated sewage water in afforestation and irrigation of municipal crops issued by the Minister of Municipal and Rural Affairs, Decree No. 16820 dated 22/3/1423 AH, and will override all inconsistent provisions.

(26-2) The Regulation shall be published in the official gazette and it shall come into force after thirty (30) days from the publication date.

(26-3) The provisions of the Regulation shall be reviewed after five (5) years from the date on which the regulation came into effect.

Tables

Table (1)

Characteristics and Criteria of Raw Sewage Water Entering the Public System and Treatment Plants

Characteristics		Maximum pollution levels Mg/liter
Natural Properties	Floating materials	Free from
	Total suspended solids TSS	600
	Potential of hydrogen PH	6-9
	Temperature	50 degrees Celsius
Organic Chemical Properties	Biological oxygen demand BOD_5	500
	Chemical oxygen demand COD	1000
	Total organic carbon TOC	400
	Oil and grease	100
	Phenol	5
	Detergents	15
	Pesticides	Free
Chemical Components Properties	Chlorides CI_2	1000
	Sulphate	1000
	Alkalinity as $CaCO_3$	200
	Ammonia (NH_3- N)	80
	Phosphate	25
Chemical Properties (Heavy Elements)	Arsenic AS	0,1
	Total chromium Cr	0,2
	Cyanide Cn	0,05
	Mercury Hg	0,05
	Zinc Zn	2,6

	Manganese Mn	5,0
	Selenium Se	0,5
	Boron B	2,0
	Cadmium Cd	0,02
	Copper Cu	1,2
	Lead Pb	1,0
	Nickel Ni	2,0
	Barium Ba	1,0
	Molybdenum Mo	0,5
	Vanadium V	1,0

Table (2)

Maximum levels of dual treated sewage water		
Characteristics		**Maximum pollution levels Mg/liter**
Natural Properties	Floating materials	Free
	Total suspended solids TSS	40
	Potential of hydrogen	6-8,4
Organic Chemical Properties	Biological oxygen demand $_5$ BOD	40
	Turbidity	5,00 (Turbidity unit)
	Oil and grease	Non
	Phenols	0,002
Bacterial Properties	Number of fecal coliform	1000 cells/ 100 mm
Chemical Components Properties	Nitrates NO_3- N	10,0
	Ammonia (NH_3 –N)	5,0
Chemical Properties	Aluminum Al	5,0
	Arsenic AS	0,1
	Beryllium Be	0,01
	Boron B	0,75

	Cadmium Cd	0,01
	Free Chlorine CL_2	0,5 (+)
	Chromium Cr	0,1
	Cobalt Co	0,05
	Copper Cu	0,4
	Fluoride F	1
	Iron Fe	5,0
	Lead Pb	0,1
	Lithium Li	2,5
	Manganese Mn	0,2
	Mercury	0,001
	Molybdenum Mo	0,01
	Nickel Ni	0,2
	Selenium Se	0,02
	Vanadium V	0,1
	Zinc Zn	4,0

The monthly average of the biological oxygen demand (BOD_5), the total suspended solids concentration must not exceed 40mg/liter, and the number of fecal coliform must not exceed 1000cells/100 mm, with no effect on the design bases of the treatment plants, as it shall not exceed the maximum limits showed in the table.

Table (3)

The maximum pollution levels of tertiary treated sewage water		
Characteristics		**Maximum pollution levels Mg/liter**
Natural Properties	Floating Materials	Free
	Total Suspended Solids TSS	10(A)

	Potential of Hydrogen	6-8,4
Organic Chemical Properties	Biological Oxygen Demand $_5$ BOD	10(A)
	Turbidity	5,00 (Turbidity Unit)
	Oil & Grease	Non
	Phenols	0,002
Bacterial Properties	Number of fecal coliform	2,2 (B) (Number/100ml)
	Intestinal worm eggs number	1 living egg cell (Number/Liter)
Chemical Components Properties	Nitrates NO_3- N	10,0
	Ammonia (NH_3 –N)	5,0
Chemical Properties	Aluminum Al	5,0
	Arsenic AS	0,1
	Beryllium Be	0, 1
	Boron B	0,75
	Cadmium Cd	0,01
	Free chlorine CL $_2$	0,5 (+)
	Chromium Cr	0,1
	Cobalt Co	0,05
	Copper Cu	0,4
	Fluoride F	1
	Iron Fe	5,0
	Lead Pb	0,1
	Lithium Li	2,5
	Manganese Mn	0,2
	Mercury	0,001
	Molybdenum Mo	0,01
	Nickel Ni	0,2
	Selenium Se	0,02
	Vanadium V	0,1
	Zinc Zn	4,0

(A-1) The monthly average for each TSS, BOD_5 shall not exceed 10mg/liter.

(A-2) The weekly average for each TSS, BOD_5 shall not exceed 15 mg/liter.

(B) The treated sewage water is considered sanitized to a non-contagious degree and sufficient for use in unrestricted irrigation if the maximum possible number (MPN) of the fecal coliform does not exceed 2.2 for each 100 mm (or its equivalent in other measurement methods) in accordance with bacteria test findings within a week. In addition, it shall not exceed 23 for each 100 mm in any sample (or its equivalent in other measurement methods).

(+) Not less than 0.2 mg/liter in the case of chlorine used in sanitization.

Table (4)

Criteria of Using Treated Sewage Water for Agricultural Restricted Irrigation

Characteristics	Maximum limit permitted
Total dissolved solids TDS	2500 PPM
The living eggs number of intestinal worms	1 living egg (Number/Liter)

Table (5)

Criteria of Using Treated Sewage Water for Agricultural Unrestricted Irrigation

Characteristics	Maximum limit permitted
Total dissolved solids TDS	2500 PPM

Table (6)

Chemical Criteria of Sludge used for Agriculture

Element	Element concentration in sludge	Soil Endurance limits	
	Critical Concentration Mg/kg	Cumulative Limit (kg/hectare)	Annual Limit (kg/hectare/year)
Lead Pb	840	300	15
Mercury Hg	57	17	0,85

Arsenic As	75	41	2
Zinc	7500	2800	125
Selenium Se	100	100	5
Cadmium Cd	85	39	109
Chromium Cr	3000	3000	150
Molybdenum Mo	75	-	-
Copper Cu	4300	1500	75
Nickel Ni	420	420	21

Table (7)

Biological Criteria of Sludge used for Agriculture

Cause	Cause higher limits	Unit
Salmonella	3	Number/4 g of dried substance
Fecal Coliform	1000	Number/1 g of dried substance
Intestinal worms eggs	1	One egg/4 g of dried substance

Table (8)

Violations and Penalties

Serial No	Violation	Penalty amount	Action Taken
1	Using water of lower quality than the identified criteria thereof, for the purpose of cultivating items that are not commensurate with such criteria, or using dual treated sewage water to irrigate vegetables, root crops or other plantations whose fruits are in contact with water.	SR 1,000 (One thousand Saudi Riyals)	Demolish the crops which are the subject of this violation immediately, at the violator's own expense.
2	Transporting treated sewage	SR 5,000	Remove the

	water from the beneficiary farm to other farms, whether through temporary or permanent connections, without knowing the competent authority.	(Five thousand Saudi Riyals)	connections at once, at the violator's own expense.
3	Construction of packaging points to transport treated sewage water to third parties at a price or for free without a license from the competent authority.	SR 10,000 (Ten thousand Saudi Riyals)	Remove the violation at once at the violator's own expense.
4	Frequent leakage of treated sewage water after the beneficiary farm warns the nearby farms or to routes and streets surrounding the farm.	SR 1,000 (One thousand Saudi Riyals)	Spray and landfill the swamp, if any, within three days, at the violator's own expense.
5	Connecting the irrigation system of the dual treated sewage water with the well water system.	SR 2,000 (Two thousand Saudi Riyals)	Remove the violation reasons.
6	Leaving a space of less than (50) meters among the areas irrigated by the dual treated sewage water, wells and public drinking water tanks.	SR 5,000 (Five thousand Saudi Riyals)	
7	Preventing observers from entering the farm to inspect and monitor crops and soil irrigated by treated sewage water.	SR 1,000 (One thousand Saudi Riyals)	Cut off irrigation water from the farm until the committee finishes inspection. The

			committee is entitled to take the appropriate actions to enable the same to conduct the inspection
8	Using raw sewage water or untreated sludge in agricultural purposes.	SR 25,000 (Twenty five thousand Saudi Riyals)	Demolish crops.
9	Not placing warning signs or boards for irrigation systems using treated sewage water.	SR 1,000 (One thousand Saudi Riyals)	
10	Using treated sewage water in agriculture without a license from the Ministry of Agriculture.	SR 5,000 (Five thousand Saudi Riyals)	
11	Using treated sludge in agriculture without a license from the Ministry of Agriculture.	SR 5,000 (Five thousand Saudi Riyals)	
12	Raw sewage water drained via irrigation canals or agricultural drainage.	SR 25,000 (Twenty five thousand Saudi Riyals)	
13	Treated sewage water drained via irrigation canals or agricultural drainage without a written license from the competent authority.	SR 5,000 (Five thousand Saudi Riyals)	Cease drainage until a license is obtained.
14	Benefiting from water by accessing the meter room or	SR 1,000 (One thousand Saudi Riyals)	

	feeding points of treated sewage water through an opening.		
15	Accessing the meter room or feeding points of treated sewage water by breakage or intentional destruction.	SR 2,000 (Two thousand Saudi Riyals)	
16	Accessing irrigation main lines or their accessories by constructing temporary or permanent connections for the purpose of benefiting from the service.	SR 10,000 (Ten thousand Saudi Riyals)	
17	Accessing irrigation sub-lines or their accessories by constructing temporary or permanent connections.	SR 5,000 (Five thousand Saudi Riyals)	
18	Fracture or destruct the main lines of an irrigation system or its accessories.	SR 8,000 (Eight thousand Saudi Riyals)	
19	Fracture or destruct the sub-lines of an irrigation system or its accessories.	SR 3,000 (Three thousand Saudi Riyals)	
20	Fracture or destruct a farm's connection to irrigation water or its accessories.	SR 2,000 (Two thousand Saudi Riyals)	
21	Raw sewage water disposal in wells.	SR 50,000 (Fifty thousand Saudi Riyals)	
22	Drainage of raw sewage water in areas of outcrops of aquifers, streams, valleys, or	SR 25,000 (Twenty five thousand Saudi Riyals)	

	dams.		
23	Drainage of raw sewage water into vacant plots without a license from the competent authority.	SR 5,000 (Five thousand Saudi Riyals)	
24	Discharging a seepage tank contents of raw sewage water that meets the criteria in valleys, streams, dams or vacant plots.	SR 3,000 (Three thousand Saudi Riyals)	
25	Drainage of treated sewage water in vacant plots or valleys without a written license from the competent authority.	SR 5,000 (Five thousand Saudi Riyals)	Cease drainage
26	Drainage of sewage water that does not meet the approved specifications described in Table (1) to the public sewage system.	SR 20,000 (Twenty thousand Saudi Riyals)	Cease drainage
27	Drainage of storm water, any surface water or ground water to the public sewage system without a written license from the competent authority.	SR 10,000 (Ten thousand Saudi Riyals)	Cease drainage
28	Drainage of oils and grease or solids or any materials that consist of hydrocarbons, insecticides, industrial liquids, radioactive material, contaminated hospitals	SR 30,000 (Thirty thousand Saudi Riyals)	

	wastes, analysis samples residue or the like.		
29	Leakage of sewage water from tanks into streets during its withdrawal or transport.	SR 1,000 (One thousand Saudi Riyals) each time.	Close the tank down until the leakage is maintained.
30	Constructing septic or collecting tank for sewage water without permission.	SR 2,000 (Two thousand Saudi Riyals)	Obligation to obtain a license from the competent authority.
31	Constructing a septic tank in large complexes.	SR 10,000 (Ten thousand Saudi Riyals)	Landfill the soak pits under the observation of the competent authority.
32	Failure to construct a collection tank, should there be no intention to construct a private treatment plant.	SR 3,000 (Three thousand Saudi Riyals)	Undertaking to construct a new collection tank.
33	Failure to construct a private sewage water treatment plant, however, it was described in building permits.	SR 50,000 (Fifty thousand Saudi Riyals)	Oblige the same to construct a plant within a period of no more than six months.
34	Constructing a private sewage water treatment plant without licenses.	SR 10,000 (Ten thousand Saudi Riyals)	An obligation to obtain a license for the plant after its conformity with specifications.
35	Non operation of a private	SR 10,000	Oblige the same

	sewage water treatment plant after completing the complex or the facility or operating them.	(Ten thousand Saudi Riyals)	with operating the plant during one month period.
36	The owner or the operation contractor of the private sewage water treatment plant is not committed to operation requirements, thereby producing treated sewage water that does not meet the required specifications after warning and granting the same (7) days of grace to rectify the situation.	SR 1,000 (One thousand Saudi Riyals) daily	Transport water that does not meet the specifications to other places to be identified by the competent authority, at the violator's own expense.
37	Discharging the contractor constructing the private sewage water treatment plant prior to obtaining a written approval by the competent authority.	SR 5,000 (Five thousand Saudi Riyals)	
39	Non-performance of the periodic analyses and inspections.	SR 1,000 (One thousand Saudi Riyals) weekly	Perform the analyses at their own expense.
40	Non-preservation of full records in respect of analyses for one year.	SR 7,000 (Seven thousand Saudi Riyals)	
41	Cease operating the treatment plant without the approval of the competent authority.	SR 1,000 (One thousand Saudi Riyals) daily.	Oblige the same to operate the plant.
42	Prevent an observer from the	SR 1,000	In case of

	Ministry of Water and Electricity from accessing and inspecting a private treatment plant.	(One thousand Saudi Riyals) in each time	frequency, the matter shall be referred to the police.
43	Effluent tank violation of the requirements specified by the competent authority.	SR 1,000 (One thousand Saudi Riyals)	
44	When sewage waste transporter gives information that is deemed to violate regulations or is misleading about the waste that is brought to the public sewage water system.	SR 5,000 (Five thousand Saudi Riyals)	The license shall be permanently revoked at the third violation.
45	Failure to construct or cancelling an oil and grease trap in activities that require one such as buffets, poultry slaughter shops, restaurants, kitchens, wedding venues, car washes and others.	SR 5,000 (Five thousand Saudi Riyals)	Close the facility until the situation is rectified.
46	Negligence in maintaining or cleaning a sand trap.	SR 1,000 (One thousand Saudi Riyals)	
47	Oil and grease leakage from an oil and grease trap installed at buffets, poultry slaughter shops and small restaurants.	SR 1,000 (One thousand Saudi Riyals)	
48	Oil and grease leakage from an oil and grease trap installed at big restaurants,	SR 2,000 (Two thousand Saudi Riyals)	

	kitchens, wedding venues, and car washes.		
49	To be the cause of blocking the sewage water system.	SR 5,000 (Five thousand Saudi Riyals)	
50	Failure to comply with oil trap license requirements.	SR 1,000 (One thousand Saudi Riyals)	
51	Initiate discharging of materials consisting of oils or any materials which should be prevented from draining into the sewage system.	SR 2,000 (Two thousand Saudi Riyals)	
52	Sell treated water produced by a private treatment plant or transport the same to third parties without the Ministry of Water and Electricity's approval.	SR 8,000 (Eight thousand Saudi Riyals)	