FRENCH REPUBLIC

Ministry of Ecology, Energy, Sustainable Development and Regional Planning

NOR: DEVO0809422A

ORDER

laying down the technical specifications applicable to individual sewerage systems receiving a gross load of organic waste less than or equal to 1.2 kg/day of BOD5

The Minister of State, Minister for Ecology, Energy, Sustainable Development and Regional Planning, the Minister for Health, Youth Affairs, Sport and Community Life;

Having regard to Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products;

Having regard to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998, as amended by Directive 98/48/EC of 20 July 1998, laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services, and in particular Notification No...;

Having regard to the Construction and Housing Code, and in particular Articles L. 111-4 and R. 111-3 thereof;

Having regard to the Environment Code and in particular Articles L. 211-1, R. 211-25 to R. 211-45 and L. 214-5 thereof;

Having regard to the French Local Authorities Code and in particular Articles L. 2212-2, L. 2224-8, L. 2224-9, L. 2224-10, L. 2224-12 and R. 2224-17 thereof;

Having regard to the Public Health Code and in particular Articles L. 1311-1, L. 1311-2 and L. 131-1-1 thereof;

Having regard to Decree No 92-647 of 8 July 1992 on the suitability for use of construction products;

Having regard to the Order of 24 December 2004 applying to prefabricated septic tanks Decree No 92-647 of 8 July 1992, amended, on the suitability for use of construction products;

Having regard to the Order of 19 October 2006 applying to prefabricated septic tanks Decree No 92-647 of 8 July 1992, amended, on the suitability for use of construction products;

Having regard to the interministerial mission on water of 6 September 2007 and of 6 February 2008;

Having regard to the opinion of the National Water Committee of 13 September 2007,

Hereby order:

Section 1: General principles

Article 1

The aim of this Order is to lay down the technical specifications applicable to individual sewerage systems receiving a gross load of organic waste less than or equal to 1.2 kg/day of Biochemical Oxygen Demand measured over 5 days (BOD_5).

For the implementation of this Order, the term “individual sewerage system” shall refer to any sewerage system that ensures the collection, transport, treatment and disposal of domestic wastewater or similar pursuant to Article R. 214-5 of the Environment Code, for buildings or parts of buildings used for residential purposes or which are not connected to a public wastewater collection network.

Article 2

These individual sewerage systems must not affect public health, the quality of the receiving environment or public safety. They must not pose risks to public health or of pollution of groundwater or surface water, particularly water extracted with a view to human consumption or subject to specific usages, such as shellfish farming, shore fishing, watercress farming or bathing.

Furthermore, they must not provide shelter for mosquitoes promoting the transmission of vector-borne diseases, nor cause an odour nuisance.

Any part of the system that is accessible from the surface shall be fitted with a suitable closure device in order to ensure personal safety and to avoid any accidental contact with wastewater.

Except where there are stricter provisions laid down by national or local regulations with a view to preserving the quality of water intended for human consumption, it shall be prohibited to install an individual sewerage system as defined in Article 1, less than 35 metres from a declared catchment for water intended for human consumption. This distance may be reduced for specific situations to guarantee water fit for human consumption. In the event of technical impossibility, water from the catchment shall be prohibited for human consumption.

Article 3

Individual sewerage systems must be designed, constructed, restored and maintained in accordance with the minimum technical specifications described in this Order.

As necessary, the minimum technical specifications may be supplemented by:

those laid down by the commune, within its competence regarding individual sewerage, in implementation of Article L. 2224-8(III) of the French Local Authorities Code;

those laid down by the prefect or the commune, within its police power, in implementation of Article L. 1311-2 of the Public Health Code and Article L. 2212-2 of the French Local Authorities Code, with a view, in particular, to the disinfection, nitrification-denitrification or phosphate removal of wastewater treated in certain identified sensitive areas.

The technical characteristics and the size of systems must be suitable for the flow of waste to be treated, the characteristics of the building to be served, such as the number of main rooms, the characteristics of the plot of land on which they are installed, particularly the suitability of the soil for sewerage, as well as the requirements described in Article 5 and the sensitivity of the receiving environment.

Installed systems must allow the common treatment of all domestic wastewater consisting of toilet waste and household water produced by the building.

Open-air systems or systems that let untreated, pretreated or treated wastewater run off on the surface of the plot of land shall be prohibited.

Article 4

By way of derogation to Article 3, toilet waste may be treated separately from household water in the case of restoration of existing systems designed this way.

In this case, the toilet waste shall be pretreated in a septic tank and treated in accordance with Articles 6 and 7. If it is technically impossible, the toilet waste may be carried to a chemical tank or a sealed collection tank, the installation conditions of which are specified in the annex, on agreement from the commune.

Household water shall be pretreated in a grease trap or a septic tank then treated in accordance with Article 6. If this is technically impossible, household water may be carried to the toilet waste treatment system

Article 5

Individual sewerage systems which may be composed of pre-treatment and treatment systems and which are constructed in situ or prefabricated must comply with:

- the essential requirements of the construction products directive with regard to individual sewerage, particularly in terms of mechanical resistance, stability, hygiene, health and the environment;
- the requirements of the reference documents, in terms of the installation conditions in order to enable, in particular, the impermeability of pre-treatment systems, and the drainage of domestic wastewater and in order to prevent the fouling of the materials used.

The list of reference documents shall be published in the Official Gazette of the French Republic by joint opinion of the Minister responsible for the Environment and the Minister responsible for Health.

Prefabricated systems must comply with the legislation in force for construction products and, for those which are subject to it, bear the CE mark.

Section 2: Minimum technical specifications applicable to treatment

General case: Systems with soil treatment

Article 6

The system shall comprise:

- a pre-treatment system that is constructed in situ or prefabricated
- a treatment system using the purifying capacity of the soil

Where oils and fats are likely to cause deposits that could affect the carriage of wastewater or their treatment, a grease trap shall be installed in the household water circuit and close as possible to the water outlet.

Domestic wastewater shall preferentially be treated by the soil in situ on the plot of land of the building, as near to where the wastewater is produced as possible, in accordance with good practice, where the following conditions are met:

a) the surface of the plot of land where the system is installed is sufficient to allow the proper functioning of the individual sewerage system;

b) the plot of land is not on ground liable to flooding, except by way of exception;

c) the slope of the ground is suitable;

d) all the characteristics of the soil must make it suitable to ensure treatment, particularly permeability of between 15 and 500 mm/h with a thickness greater than or equal to 0.70 m, and in particular to avoid any stagnation or spillage on to the surface of pretreated wastewater;

e) the absence of an aquifer shall be checked at least one metre from the bottom of the ditch, including during interval periods, except by way of exception.

In the event the soil in situ does not allow compliance with the conditions referred to in points b) and c), treatment systems that use the following may be installed:

- either sand or gravel, the choice and laying of which are suitable, in accordance with good practice;
- or a zeolite bed.

The technical characteristics and installation conditions of the systems referred to in this Article are specified in the annex.

Systems with other treatment systems

Article 7

Domestic wastewater may also be treated by other treatment systems that are approved by the Ministers responsible for the Environment and Health, after a technical assessment performed

by the bodies jointly appointed by them, or an equivalent assessment in force in other Member States of the European Economic Area and accredited by a body signatory to the E.A. European multilateral agreements.

In particular, this assessment must show that the installation conditions of these treatment systems, as specified by the manufacturer, make it possible to ensure that the systems into which they are integrated comply with:

- the minimum requirements cited in Articles 2 to 5 of this Order,
- as well as the following maximum concentrations after treatment: 30 mg/l in suspended solids (SS) and 35 mg/l for BOD_5.

The bodies responsible for the assessment shall detail, in a technical report, the installation and, as necessary, maintenance conditions, sludge production, purifying performance, storage conditions, durability and removal of end-of-life materials, that enable compliance with the minimum technical specifications of this Order.

The list of bodies appointed to perform the technical assessment, the technical assessment protocol, the procedure for requesting an assessment, the list of approved systems and the corresponding technical data sheets shall be published in the Official Gazette of the French Republic by joint opinion of the Minister responsible for the Environment and the Minister responsible for Health.

Section 3: Minimum technical specifications applicable to drainage

General case: drainage via soil

Article 8

Wastewater shall be drained, in accordance with good practice, via the soil underlying or next to the treatment system, on the plot of land of the building, in order to ensure permanent seepage, if its permeability is between 10 and 500 mm/h

Specific cases. Other drainage methods

Article 9

In the event the soil underlying or next to the treatment system does not meet the criteria defined in Article 8, the treated wastewater shall be drained and disposed of into the surface water environment after authorisation from the owner or manager of the receiving environment, if it is shown, by a specific study at the expense of the petitioner, that no other drainage solution is feasible.

Article 10

It shall be prohibited to dispose of domestic wastewater, even if treated, into a cesspit, cesspool, disused well, natural or artificial deep cavity, as well as by surface run-off.

In the event that disposal in accordance with the provisions of Articles 8 and 9 is impossible, treated wastewater may be drained via dry wells into an underlying layer, with a permeability of between 10 and 500 mm/h, the technical characteristics and installation conditions of which are specified in the annex, provided that the wastewater has undergone treatment in accordance with the provisions of Articles 6 and 7.

This mode of drainage shall be authorised by the commune, within its competence regarding individual sewerage, in implementation of Article L. 2224-8(III) of the French Local Authorities Code, on the basis of a hydrogeological study.

Section 4: Maintenance and disposal of individual sewerage by-products and sewage

Article 11

Without prejudice to the provisions of Articles R. 21-25 to R. 211-45 of the aforementioned Environment Code, the disposal of sewage and by-products from individual sewerage must be carried out in accordance with regulatory provisions, particularly those laid down by departmental plans regarding the collection and treatment of sewage, as applicable.

Article 12

Individual sewerage systems shall undergo regular maintenance by the owner of the building and be emptied by persons authorised by the prefect, so as to ensure:

- their proper functioning and good condition, particularly of the ventilation devices and, where provided in the system, the grease traps;
- the proper carriage and distribution of the pretreated wastewater to the treatment system;
- the normal collection of sludge and floating matter and the disposal thereof.

Pending the publication of the list of authorised persons by the prefect, emptying of systems may be performed by unauthorised persons, subject to compliance with the provisions of Article 11.

Systems must be checked and serviced as often as is necessary.

The frequency whereby the all-water tank is emptied must be adapted according to the height of the sludge, which must not exceed 50% of the net volume.

Systems, junction boxes and inspection hatches must be closed permanently and accessible to ensure their servicing and inspection.

The conditions for servicing shall be referred to in the usage guide laid down in Article 13.

Article 13

The installation, maintenance and emptying of the component systems of the individual sewerage system shall be done in accordance with the usage guide, drafted in French, given to the owner of the system on construction or restoration of the individual sewerage system. This shall describe the type of system and specify the installation, operation and maintenance conditions, in the form of a technical data sheet, and set out the guarantees.

It shall include at least the following information:

- a description of all or part of the system, the principle behind it and how it works,
- the size parameters, in order to achieve the expected performance,
- instructions for installation and connection,
- servicing, emptying and maintenance specifications, particularly the frequency thereof;
- the expected performance and durability conditions,
- the availability or otherwise of spare parts,
- electricity consumption and noise level,
- the possibility of recycling of end-of-life parts of the system,
- a section reserved for servicing and emptying that allows the date, nature of servicing and the name of the authorised person to be recorded.

Section 5: Specific case of dry toilets

Article 14

By way of derogation to Article 3, dry toilets (with no water for dilution or carrying of waste) shall be authorised, provided that they cause no nuisance for the surrounding area or liquid waste outside the plot of land, or pollution of surface water or groundwater.

Dry toilets shall be installed:

- either to treat urine and faeces together. In this case, they shall be mixed with an organic material to produce compost.
- or to treat faeces by drying. In this case, urine must be routed to the treatment system provided for household water, in accordance with Articles 6 and 7.

Dry toilets shall consist of a sealed tank that receives faeces and/or urine. The tank shall be emptied regularly in a sealed area designed so as to avoid any leakage, and sheltered from bad weather.

By-products from the use of dry toilets must be processed on the plot of land, in compliance with the rules on sewage and processing defined by legislation in force, and not cause any nuisance for the surrounding area or pollution.

Article 15

The Order of 6 May 1996, as amended by the Order of 24 December 2003 laying down the technical specifications applicable to individual sewerage systems is hereby repealed.

Article 16

The Director for Water, the Director-General for Health and the Director-General for Town Planning, Housing and Construction shall be responsible, each for their own part, for the

implementation of this Order, which shall be published in the Official Gazette of the French Republic.

Done at Paris, 28 April 2008

The Minister of State, Minister for Ecology, Energy, Sustainable Development and Regional Planning

For and on behalf of the Minister:

The Director of Water

P. BERTEAUD

The Minister for Health, Youth Affairs, Sport and Community Life

For and on behalf of the Minister:

The Director-General for Health,

D. HOUSSIN

The Director-General for Town Planning, Housing and Construction

E. CREPON

for and on behalf of the Minister for Housing and Town Planning

ANNEX – Technical characteristics and installation conditions of individual sewerage systems

A) Pretreatment

- **All-water tanks and septic tanks.**

An all-water tank is a system intended for the collection and partial liquefaction of waste matter contained in wastewater, and the retention of solid matter and floating waste. It receives all domestic wastewater.

It must be designed in such a way as to avoid direct contact between the inlet and outlet devices as well as the resuspension and carrying of sediment and floating matter, for which a sufficient volume is reserved.

The net height of water must not be less than 1 metre. It must be sufficient to allow the presence of an area of liquid within which the outlet device for treated wastewater is located.

The net volume of all-water tanks, the volume provided for liquid and the collection of sludge, measured between the bottom of the tank and the lower level of the liquid outlet aperture, must be at least equal to 3 cubic metres for residential buildings comprising up to five main rooms. For larger residences, it must be increased by at least one cubic metre per additional room.

All-water tanks must be fitted with ventilation consisting of an air inlet and an air outlet, positioned at such a height as to ensure that odours are evacuated, of a diameter of at least 100 millimetres.

The net volume of septic tanks reserved for toilet waste only must be at least equal to half the minimal volumes for all-water tanks.

- **Activated sludge biological treatment system.**

The total volume of activated sludge biological treatment systems must be equal to at least 2.5 cubic metres for residential buildings comprising up to six main rooms.

The system must consist:

- either of an activated sludge biological treatment plant with a total net volume at least equal to 1.5 cubic metres for both the aeration compartment and settling basin combined, followed, downstream of the settling basin and separate from it, by a compulsory sludge retention and collection system (sludge traps) with a volume equal to at least 1 cubic metre or a system with similar efficacy;

- or of a plant with a total net volume equal to at least 2.5 cubic metres for both the aeration compartment and settling basin combined, the latter must have an efficacy similar to the sludge trap referred to in the preceding paragraph.

For residential buildings comprising more than six main rooms, these volumes shall be subject to a specific study.

- **Fixed culture biological treatment system.**

For a residential building comprising up to six main rooms, the fixed culture biological treatment system shall consist of an anaerobic compartment followed by an aerobic compartment. Each of the compartments shall have a volume equal to at least 2.5 cubic metres.

The anaerobic phase may be assured by an all-water tank. For residential buildings comprising more than six main rooms, the volumes of the different compartments shall be subject to a specific study.

B) Treatment and drainage

Systems providing treatment and drainage of treated wastewater via the soil

- **Shallow soakaways in the natural soil (underground sewer).**

The underground sewer must be made by means of sewage pipes placed horizontally in a set of trenches.

These must be place as close to the surface of the ground as allows them to be protected.

The total length of the sewage pipes installed shall depend on the potential seepage into the ground, determined by means of the Porcher test or equivalent (test of permeability or percolation at a constant level) and of the quantities of water to infiltrate.

Sewage pipes must have a diameter equal to at least 100 millimetres. They must be composed of rigid elements made of resistant materials, with apertures the smallest of which must be equal to at least 5 millimetres.

The depth of the trenches must in general be 0.60 m, without exceeding 1 m.

The length of a line of sewage pipes must not exceed 30 metres.

The width of the soakaways in which the sewage pipes are laid shall be a minimum of 0.50 metres. The bottom of the trenches shall be lined with a layer of washed water-resistant gravel, with a granulometry of 10/40 millimetres or similar, and a minimum thickness of 0.20 metres.

The axis to axis distance of the soakaways must be at least equal to 1.5 metres and the soakaways shall be separated by a minimum distance of 1 metre of natural soil.

The soakaway must be backfilled after the laying, above the gravel layer, of a fabric or equivalent protection which is water and air-permeable.

The underground sewer must be meshed whenever the topography permits.

It must be supplied by a device that ensures equal distribution of treated wastewater into the distribution network.

- **Shallow disposal bed**

The disposal bed replaces shallow soakaways in the case of predominantly sandy soils where the construction of trenches is difficult.

It shall consist of a single excavation with a horizontal bottom.

- **Soil with excessively high permeability**

Where the permeability of the soil is in excess of 500 mm/h, a non-drained vertical sand filter shall be constructed to perform the filtration and treatment function. Washed silica sand must be substituted for the soil in situ with a minimum thickness of 0.70 metres under the gravel layer that assures the distribution of treated wastewater distributed by the sewage pipes.

- **Aquifer too close to the surface of the ground**

Where the aquifer is too close to the surface of the ground, sewerage must be take place in the upper part of a raised sand bed filter with the characteristics of the non-drained vertical sand filter and constructed above the soil in place.

Systems providing treatment and drainage of treated wastewater before disposal in a surface water environment

- **Soil with insufficient permeability**

Where the permeability of the soil is less than 15 mm/h, it shall be necessary to reconstitute artificial soil in order to provide the function of filtration and treatment before disposal into the surface water environment.

a) Drained vertical sand filter

This comprises sewerage in a bed of clean sand forming reconstituted soil.

At the bottom of the filter bed, drainage must make it possible to collect filtered effluent in order to direct it to the validated disposal point; the drains must be arranged alternately with the distribution pipes.

The surface area of vertical-flow filter beds must be equal to at least 5 square metres per main room, with a total minimum surface area of 20 square metres.

Where the aquifer is too close, sewerage must take place in the upper part of a raised sand bed filter above the soil in situ.

b) Vertical-flow drained zeolite filter bed

This system must be used for residential buildings with up to 5 main rooms. It must be downstream of a pre-treatment system consisting of an all-water tank of at least 5 cubic metres.

The minimum surface area of the filter must be 5 square metres. It shall comprise a chabazite-type natural zeolite-based filter material, in an impermeable shell. It shall consist of two layers: a deep layer with a fine granulometry (0.5-2 mm) and a surface layer with coarser granulometry (2-5 mm). The filter shall have a minimum thickness of 50 cm after packing down.

The sewerage and effluent distribution system shall be fastened and embedded in a layer rolled, washed gravel. It shall be laid on a suitable geotextile intended to ensure distribution of the effluent.

The drainage network shall be embedded in a rolled gravel layer, protected against migration of the zeolite by a geotextile mesh. The thickness of this layer shall be at least 15 cm.

The filter shall be ventilated by ventilation shafts.

This system shall be prohibited where sensitive usages, such as shellfish farming, cress growing, shore fishing, extraction with a view to human consumption or bathing, are carried out near the disposal point.

c) Horizontal-flow drained filter bed

Where the ground in situ cannot ensure the seepage of effluent and if the characteristics of the site do not allow the installation of a vertical-flow drained filter bed, a horizontal-flow drained filter bed may be constructed.

The horizontal-flow filter bed shall be constructed in a ditch with a horizontal bottom, excavated at least 0.50 metres below the level of the effluent inlet.

Distribution of effluent all the way across the ditch shall be assured, at the top, by a channel lined with 10/40 millimetre gravel or similar, in which the flow of water is at least 0.35 metres from the bottom of the ditch.

The system shall comprise, in the direction of effluent flow, successive bands of materials arranged perpendicular to this direction, at a height of at least 0.35 metres, and over a length of 5.5 metres:

One 1.20-metre band of 6/10 millimetre, or similar, fine gravel;

One 3-metre band of clean sand;

One 0.50-metre band of fine gravel at the bottom of which an effluent collection channel is embedded.

The whole system shall be covered by an imperishable sheet and arable soil.

The width of the distribution front shall be 6 metres for 4 main rooms and 8 metres for 5 main rooms; 1 additional metre shall be added per main room for larger buildings.

C) Specific storage and drainage systems

- **Grease removal system (grease trap)**

The grease trap is intended to remove the solid matter, fats and oils contained in household water.

This system is not recommended unless the length of the channels between the outlet from the building and the pre-treatment system is greater than 10 metres. The grease trap may be replaced by the septic tank.

The grease trap and the water inlet and outlet must be designed so as to avoid the resuspension and carrying of fats and solids which have been separated by the system.

The net volume of traps, the volume for liquids and matter held below the outlet aperture, must be equal to at least 200 litres, in order to serve a kitchen; where all the household water passes through the grease trap, the trap must have a volume equal to at least 500 litres. The grease trap may be replaced by the septic tank.

- **Chemical tank**

The chemical tank is intended to collect, liquefy and sterilise toilet waste, with the exception of household water.

It must be installed on the ground floor of residential buildings.

The volume of any automatic water flush installed on a chemical tank must not exceed 2 litres.

The net volume of chemical tanks shall be equal to at least 100 litres for a residential building comprising up to three main rooms. For larger residences, it must be increased by at least 100 litres per additional room.

The chemical tank must be arranged internally such that no ejection of liquefaction agents can harm users.

The manufacturer's instructions regarding the introduction of stabilisers must be referred to on a plaque affixed to the system.

- **Collection tank**

The collection tank is an impermeable structure intended to collect toilet waste and some or all household wastewater.

It must be constructed such as to allow the water to be completely drained.

The height of the top of the tank must be equal to at least 2 metres.

The extraction aperture in the covering slab must be have at least a 0.70 by 1 metre cross-section.

It must be sealed with a hermetic plug, made of a material that offers all guarantees with regard to resistance and impermeability.

- **Dry wells**

A dry well may only be installed to carry wastewater that has undergone complete treatment through an impermeable surface layer in order to reach the underlying permeable layer, and provided that there are no health risks for water points intended for human consumption.

The lateral surface of the dry well must be impermeable from the surface of the ground to at least 0.50 metres below the pipe carrying the purified water. The well shall be covered with a plug.

The lower part of the well must have a total contact surface area (lateral surface and bottom) equal to at least 2 square metres per main room.

The dry well must be lined, up to the level of the water pipe, with calibrated materials with a granulometry of 40/80 or similar.

Purified wastewater must be discharged into the dry well by means of a system away from the impermeable wall and ensuring distribution across the whole surface, so that the water runs off by overflow and does not run along the walls.