

PUBLIC UTILITY COMPANY "VODOVOD" LESKOVAC

**WASTE MANAGEMENT PLAN
IN PUC "VODOVOD" LESKOVAC**

February, 2023

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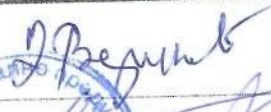

ЈАВНО КОМУНАЛНО ПРЕДУЗЕЋЕ
"ВОДОВОД"

БР. 1042/1

ДАТУМ: 06.02.2023 год
ЛЕСКОВАЦ

**WASTE MANAGEMENT PLAN
IN PUC "VODOVOD" LESKOVAC**

Signatures of authorized personnel:

Authorized personnel for issuance	Name and surname	Function	Signature
Author:	Dejan Vejinovic	The person responsible for waste management	
Approved by:	Stanisa Ristic	Director	

February, 2023



COMPANY INFORMATION:

Name	Public utility company “Vodovod” Leskovac
Abbreviated business name	PUC “Vodovod” Leskovac
Head office	Leskovac, Pana Djukica 14
Field of activity	3600, Collection, purification and distribution of water
TAX ID	100524193
Identification number	07204752
Telephone	016/245-108, 016/215-630
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Director	Stanisa Ristic, Bachelor of Economics

1. INTRODUCTION

The area of Leskovac is rich in underground waters of high quality which is the reason why the supply of water to the population has been done for a long time from local water intakes, mostly wells and manual pumps. The phase of intensive exploitation of the underground water reserves begins by forming the company for the supply of water to the city of Leskovac in January 1954.

Long-term and permanent orientation for the supply of water to the city of Leskovac and the surrounding populated places was solved by putting into operation the water system “Barje” on 21st April 2011. The building of this water system has provided healthy, hygienically correct water for many future generations.

Today, PUC “Vodovod” represents an organizationally and structurally complex company whose primary task is the processing and distribution of water and purification of waste waters on the territory of the city of Leskovac. Water supply is provided from the regional water system “Barje”, which consists of the reservoir whose volume is 40,670,000 m³ of water, and the water treatment plant “Gorina” with a capacity of 840 l/s. The plant represents a safe and reliable system of water treatment.

Some important events in the development of the company are:

- the completion of the project and the construction of the sewage network in 1959,
- the construction of the main collectors for the sewage network,
- the forming of the water quality testing laboratory in 1966,
- the start of the operation of the water system “Barje” in 2011, and
- the start of the operation of CWPP in Bogojevce on 27th December 2021.

The biggest part of the city sewage is of general channeling type, for the intake of household and industrial fecal waters and the atmospheric waters from roads. Using the city sewage collector all wastewater is brought to the Central wastewater purification plant – CWPP in Bogojevce, where it is treated and released into the recipient South Morava.

The predominant activity of PUC “Vodovod” Leskovac is:

- **36.00 Collection, purification and distribution of water.**

Besides the abovelisted predominant activity, PUC “Vodovod” Leskovac conducts other activities, such as:

- 43.22 Installation of water, sewage, heating, and air conditioning systems,
- 37.00 Wastewater removal,
- 42.21 Construction of city pipelines,
- 43.99 Other not mentioned specific construction work,
- 35.11 Production of electricity,
- 43.11 Demolition of facilities,
- 43.12 Preparation of the building sites,
- 49.41 Road freight transport,
- 49.50 Pipeline transport,
- 52.10 Storage,
- 71.12 Engineering activities and technical consulting,
- 71.20 Technical examination and analysis,
- 46.76 Wholesale and retail trade in other semi-products,
- 70.10 Management of economic entity.

The obligation to make a Waste management plan is determined by the Law on waste management for all the companies that generate over 200 kg of hazardous waste or 100 t of non-hazardous waste on an annual level. In accordance with the provisions of the Law on integrated prevention and environmental pollution control, the making of such a document is an obligation for all the companies which, according to their capacity, belong to the companies which need to provide the integrated license. The document Waste management plan is an integral part of the documentation which is attached to the request for getting an integrated license.

In accordance with the Law on waste management, PUC “Vodovod” Leskovac appointed a person responsible for waste management.

The waste management plan needs to be precise and easily understandable because it is made for employees and other interested parties in the waste management area. Besides the mentioned, the Plan has to be an integral component of a wider Policy on the protection of the environment. The update of such a document has been done every three years.

The scope and the type of activities undertaken with the aim to prevent the harmful effect of waste on the health and safety of people and the environment are defined by this plan in accordance with valid legal regulations.

2. FIELD OF APPLICATION

This plan has been implemented by the sectors and services in PUC “Vodovod” Leskovac.

2.1. Data about PUC “Vodovod” Leskovac

The locations where the entrusted activities are being done in the PUC “Vodovod” Leskovac are:

1. Administrative building of PUC “Vodovod” Leskovac, 14 Pana Djukica Street, Leskovac;
2. Reservoir “Barje”, settlement Barje;
3. Water treatment plant Gorina, settlement Gorina;
4. Central wastewater purification plant, settlement Bogojevce;
5. Old facility, 197 Vlajkova Street, Leskovac
6. New facility, settlement 66 Obrada Lucica Street, Leskovac
7. Water tank Rudare, reservoir Vucje, water tank Hisar, pump station Vinarce with the wells P1, P2

2.1.1. Administrative building of PUC “Vodovod” Leskovac, 14 Pana Đukića Street

The management of the PUC “Vodovod” is situated in their own building at the very heart of the city center, surrounded by blocks of flats in Stojana Ljubica Street, next to the Republic fund for pension and disability insurance, where on the northern and eastern side, just next to the outer border there are Pana Djukica and Stojana Ljubica Streets which are extremely frequent and burdened by pedestrian and motor traffic.

The administrative building of the PUC “Vodovod” is used to deal with business activities connected with management, financially-commercial jobs, legal and general jobs connected with the service provisions for the users (city residents, companies, and other legal entities) as well as the technical sector jobs.



Picture 1. The immediate surrounding of the administrative building



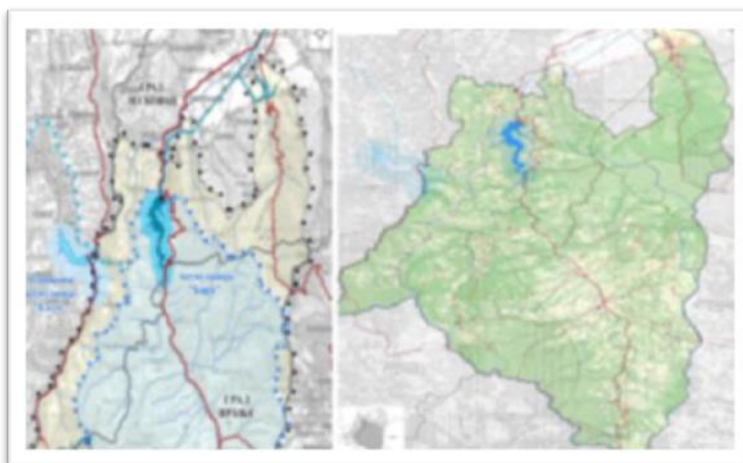
Picture 2. The administrative building of the PUC “Vodovod” Leskovac

2.1.2. Reservoir “Barje”, settlement Barje

Reservoir “Barje” was built upstream on the river Veternica, about 30 km from Leskovac, within the regional water system “Barje” and it represents the key source of water supply for the city of Leskovac and the surrounding settlements, for over 90,000 inhabitants.

It was built as a multi-purpose facility whose priority was water supply within the area of the city of Leskovac and a part of downstream settlements together with the constant maintenance of the guaranteed flow of water into the river Veternica. The other functions of the facility encompass the protection from floods of the city of Leskovac, deposit retention, and refinement of small waters.

Using the pipeline 5,5 km Ø 850 mm long, the water from the reservoir “Barje” is brought by gravitation to the Water treatment plant “Gorina” where water processing and delivery to further users is being done.



Picture 3. Reservoir “Barje” with the dam and the zones of sanitary protection



Picture 4. Reservoir “Barje” – the crown of the dam

2.1.3. Water treatment plant “Gorina”

WTP “Gorina” started working on 21st April 2011. The capacity of the facility is 840 l/s of taken (raw) water (2x420 l/s).

The process of raw water treatment consists of pre-ozonation, coagulation and flocculation, sedimentation, filtration, and disinfection (chlorination) before and immediately after the delivery of clean water into the distributive network.

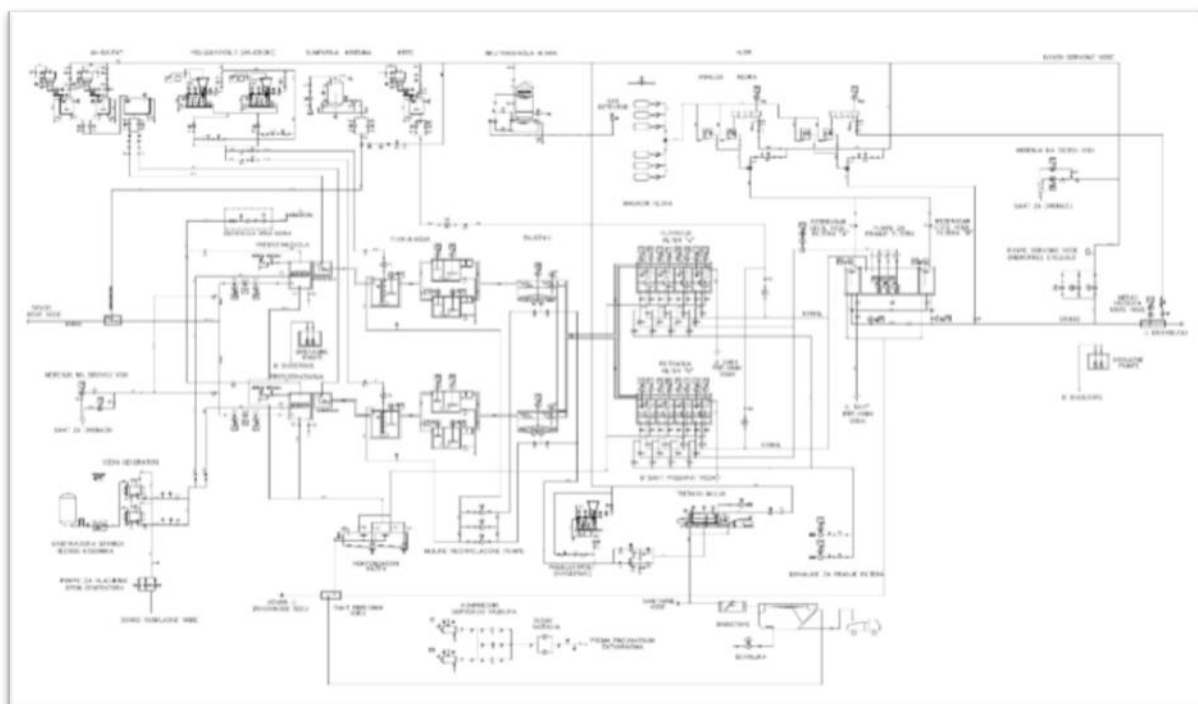
After pre-ozonation, and before going through the precipitator and sand filters, raw water is treated, if necessary, with aluminum sulfate as coagulant and polyelectrolyte as flocculator. Filtration is done after water clarification in eight filtration fields, which are formed as quick gravitation filters with two-layered filter filling from the so-called tuff and quartz sand. After filtration, before delivering the water into the distribution network, gas chlorine is added to the reservoir of clean water as a final disinfectant.

As a result of the technological process of purification, and also as a result of the employees being present and working on the facility, wastewater is constantly created. Because of its origin and the pollution it carries, that wastewater cannot be directly released into the water flows.

Wastewater from the facility is made from technical wastewater and sanitary (fecal) wastewater.

Only the drain from the filter press is included in the technical wastewater while all the other technical wastewater (water used to wash filters, drainage and overflow water from the reservoir and pool, etc.) is recycled at the beginning of the purification process after the removal and equalization of composition in the compensation pool.

A device (biological purificator of wastewater) has been installed in the water treatment plant “Gorina” and it is used to treat sanitary wastewater and drainage created during the process of mechanical sludge de-watering, after which the wastewater is safely released into the recipient – Bukovicki stream. The examination of the quality of wastewater which is released from the WTP “Gorina” into the recipient – Bukovicki stream is in accordance with the provisions of the Law on water (30/2010-81, 93/2012-27, 101/2016-9, 95/2018-388, 95/2018-267, and other laws) and the conditions provided by the water permit no. 325-04-455/2022-07 from 19th August 2022 given by the internal Laboratory for the examination of the quality of wastewater, PUC “Vodovod” Leskovac, and by the Institute for public health Leskovac.



Picture 5. Procedurally technological scheme WTP “Gorina”



Picture 6. WTP “Gorina”

2.1.4. CWPP “Bogojevce”

Central wastewater purification plant (CWPP Bogojevce) is situated at the exit from the settlement “Bogojevce”, about 5,6 km north-east from the city area of Leskovac just by the A1 highway, near the confluence of the river Veternica into the river South Morava. The total area of plots of land occupied by the plant is about 24 ha, whereas the narrower location of the plant itself occupies a plot of land of about 7,5 ha.

The wastewater from the city of Leskovac which comes to the plant is of a mixed type (communal, atmospheric, industrial with pre-treatment, industrial without pre-treatment etc.). The facility (1st phase facilities – the line of water and 2nd phase facilities – the line of sludge) is designed for a capacity of 86,000 ES, and the expansion of the facility for 129,000 ES is planned in the project – 3rd phase. The 1st phase of building the CWPP represents the facilities on the complete water treatment line (excluding the process of phosphor removal) and certain elements on the sludge treatment line. The process of wastewater purification in water line facilities can be defined in two process lines: water treatment and sludge treatment.

Water treatment includes the following groups of the purification process: preliminary, primary and secondary/biological treatment.

The preliminary treatment of wastewater includes the removal of coarse and inert materials using coarse grids, fine grids and sand separators. Coarse and inert materials removed using the grids and sand separators are rinsed, compacted and taken to a sanitary landfill. Floating matters removed by sand separators are taken to the primary sludge thickener.

The aim of this part of the process is the protection of the other process units, pumps, valves and armature from damage and clogging. There are two working coarse grids, two fine automatic grids and one spare grid with the same capacity. The function of the sand separator is the removal of inert matter and sand present in water, and by introducing the air in the sand separator, particle settling velocity is controlled and the separation of grease, oil and floating matter is facilitated. There are two units.

The primary water treatment is done in circular precipitators which are equipped with a scraper. Nitrogen and phosphorus compounds as well as organic pollution (calculated on BPK5) are partially removed in the primary precipitators. About half of the content of the suspended matter present in wastewater is also removed. This way, the load and the necessary capacity of the following units in the process line are reduced.

With the secondary/biological treatment of wastewater, the removal of organic matter in the process of active sludge is done. Besides the reduction of organic pollution, the biological treatment also includes the removal of nitrogen by the process of nitrification-denitrification.

After bio-aeration pools, wastewater goes to final precipitators where sludge is sedimented at the bottom.

Sludge treatment is done in several phases:

- thickening of primary sludge,
- mixing of thickened primary sludge and thickened excess sludge in the reservoir for mixing sludge,
- anaerobic digestion of sludge mixture,
- thickening of digested sludge with the prior conditioning with poly-electrolyte on the belt thickener,
- sludge de-watering on the belt filter strainers/pumps.

Sludge sedimented in the primary precipitators is transferred by pumps in the gravity thickener with a scraper. The scraper pushes sludge along the bottom with a tilt toward the central part where the sludge funnel is located. From there, using the pumps, sludge is transferred into the reservoir for mixing sludges. Excess sludge water is drained through the overflow from the thickener into the supernatant reservoir from which it is later returned to the beginning of the purification process.

Thickened primary sludge and the excess sludge from bio-aeration, which is thickened on the belt excess sludge thickener and which has about 5% of dry matter, are mixed in the reservoir for the storage and mixing of sludge.

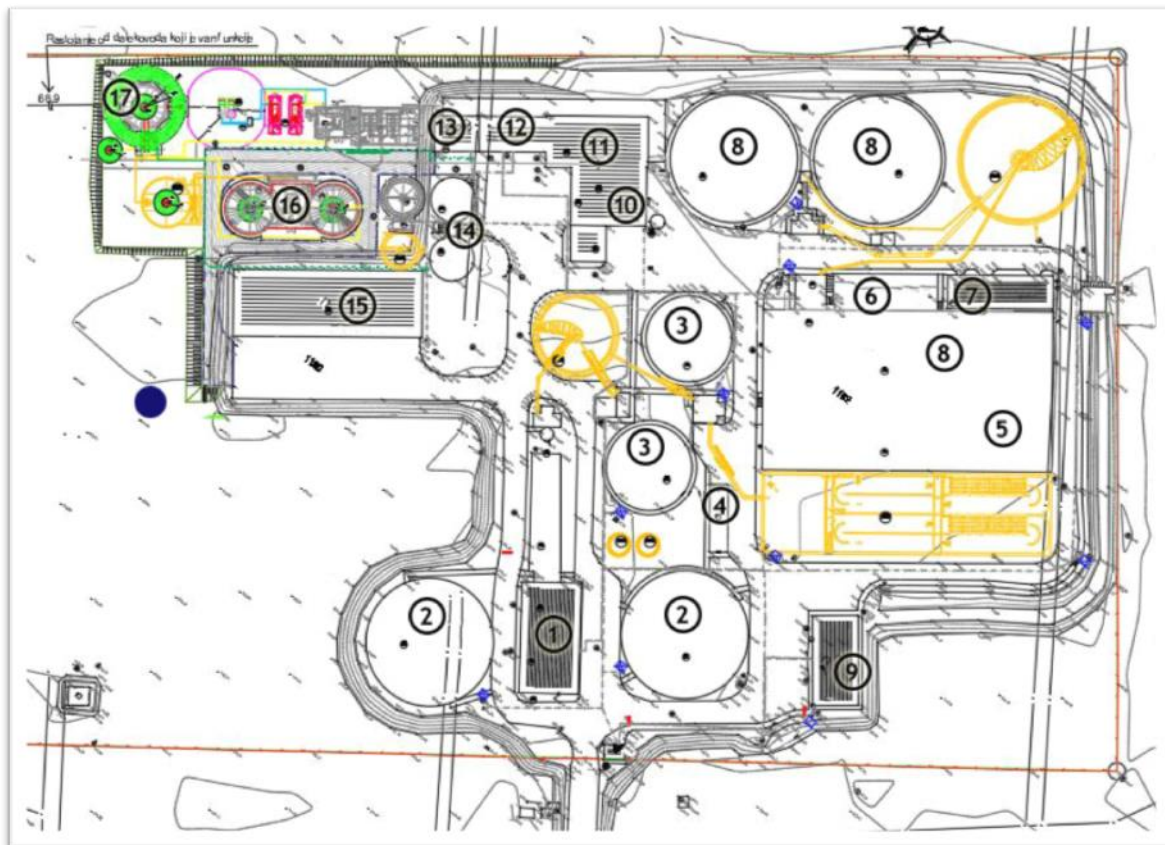
Such a mixture of sludge is transported using pumps to a digester where the process of anaerobic digestion is conducted. There are two digesters that can work in serial and parallel modes. During the process of sludge rotting in anaerobic conditions, a certain amount of biogas is released and stored in a reservoir for storing biogas. Biogas is used to operate a gas generator which produces electricity and thermal energy for the partial needs of the facility. Sludge obtained after digestion is stabilized sludge which is additionally thickened in the digested sludge gravity thickener and then transported by pumps to the belt thickener. In order to improve the thickening effect, sludge is first conditioned with the solution of a cationic polyelectrolyte. After the belt thickener, sludge is gravitationally transported onto the filter press.

The belt filter press consists of three zones: zone of draining, pressure and breaking. There, sludge is freed from water under the influence of gravitation, mechanical pressure of the upper and lower belts, and zig-zag movement and breaking. Two filter presses that function in the 1+1 regime are installed. De-watered sludge is transported into the container through belt transporters, and then into the facility for sludge storage where it can be stored for thirty days. The separated drained water is taken to a reservoir for supernatant, and later to the beginning of the purification process line.

The chemicals used in the process of wastewater treatment:

- cationic polyelectrolyte is used for conditioning the excess sludge, that is to increase the content of dry matter in sludge; it is dosed before entering the belt thickener with the concentration of 0,1% solution. It is also used to condition the digested sludge in the belt thickeners before going to the filter press and final de-watering. The concentration of that solution is 0,3%.
- the solution iron-(III)-chloride with a concentration of 40% is added into the pipeline of thickened sludge excess before it is mixed with the primary sludge. The reason is the removal of hydrogen sulfide from biogas.

The main product of this process is waste sludge. This sludge has the following characteristics: Q1/Q14 (Q - waste list), 19 08 05 (waste catalogue – sludge from the treatment of urban wastewater), R11- R- waste list. The data is received from the analyses of an authorized laboratory MIPHEM - Belgrade (report no. O22062379 from 16th June 2022).



1. Entrance facility	10. Sludge thickener
2. Compensation pool	11. Sludge mixing
3. Primary precipitator	12. Garage and workshop
4. Transformer station	13. Technical water
5. Aeration pools	14. Primary sludge thickener
6. Pump station	15. Sludge storage
7. Compressor station	16. Anaerobic digestors
8. Administration building	17. Biogas reservoir

Picture 7. Technological process CWPP in Bogojevce with a legend



Picture 8. CWPP "Bogojevce"

2.1.5. Old plant, 197 Vlajkova Street, Leskovac

It is situated in the southern part of the city, 197 Vlajkova Street in Leskovac, near the pharmaceutical–chemical industry “Zdravlje” and the Facility for sport and physical education “Sports-recreational center Dubocica Leskovac”. The plant is surrounded by residential buildings and the company “Zdravlje” in the south.

Within the old plant, there are services of the technical affairs sector and the related facilities of the services.

Within the Old plant, there are construction objects built from the firm construction material where the following services are located:

- The service for sewage network and facilities maintenance,
- The service for construction, network and facilities maintenance,
- The service for maintenance and servicing of water meters in the network,
- The service for maintenance of vehicles, spare water source and pump stations with the workshop and central warehouse.



Picture 9. Old plant, 197 Vlajkova Street, Leskovac



Picture 10. The situation with the locations of the warehouses for non-hazardous waste at the “old plant”

2.1.6. New plant

It is located in the northern part of the city in the settlement of Obrad Lucic on Bogojevce road. The facility is surrounded by individual residential buildings and arable agricultural land.

The facility with the water tank of clean water is surrounded by arable agricultural land, orchards and fields. Within the facility, there are buildings that are part of the “spare water source”: a water tank with a pumping station, a space to store chlorine, a chlorination station and a hydraulic machine hall. There are also green areas and fruit trees within the facility.

The water tank on the New plant has a volume of 3,000 m³ through which 8 (eight) wells are connected from the spare water source and are meant to be used in emergencies to supply the city of Leskovac with water.

By switching to water supply from the water system “Barje”, the water tank is no longer in function, but it is ready to operate, just like the pump station, in the case of “spare water source” activation.

The facility is surrounded by a wire fence 1,50 m high.

2.1.7. Water tank Rudare, water tank Vucje, water tank Hisar, pump station Vinarce with wells P1, P2

The drinking water tank “Rudarska kosa” is located in KO Rudare at 282 meters of altitude. The tank consists of two chambers with a total volume of 12,500 m³ and a room with electrical equipment.

Consumers from the city of Leskovac and the surrounding settlements are supplied from this water tank.

The drinking water tank “Vučje” is situated in KO Vucje at 282 meters of altitude. The tank consists of two chambers with a total volume of 3,000 m³. Consumers in Vucje, Zabljane, Bunuski Cifluk, Donja and Gornja Bunusa and Radonjica are supplied from this water tank.

The drinking water tank “Hisar” is located on a hill Hisar above the monument “Spomen park” and has two tanks with a total volume of 4,200 m³. Consumers from the first altitude zone in the surrounding streets of the city are supplied from one of the tanks.

Pump station “Vinarce” is located in the north part of the city, in the settlement Vinarce, surrounded by individual residential buildings and arable agricultural areas. The pump station with clean water tanks P1 and P2 is surrounded by arable agricultural land, orchards, vineyards and fields.

The pump station with water tanks is a flow-through type with a volume of 1,000 m³. Consumers from seven settlements in the western part of the city are supplied from this water tank.

The technical system consists of Buster station, a room with a chlorinator where a membrane expansion vessel also situated, the facility of a pump station with a command center room, a transformer station and water tanks P1 and P2.



Picture 11. Pump stations and water tank

2.2. The system for quality management

PUC “Vodovod” Leskovac introduced the system for quality management which is applied integrated and refers to:

- the system for quality management, according to the SRPS ISO 9001:2015 standard
- the system for food health and safety HACCAP CAC/RCP 1
- the certificate of accreditation “Laboratories for water meters control”, according to the SRPS ISO 17020:2012 standard

3. TERMS AND MEANINGS

In order to fully understand this document, the explanation of basic terms, used in this plan, are given in the continuation.

Operator – any physical or legal person who, in accordance with the regulations, manages the facility or controls it or is authorized to make economic decisions in the area of technical functioning of the facility.

Facility – stationary technical unit in which one or more activities are done, established by a special regulation and for whose operation a permit is issued, as well as any other activity which has a technical connection with the activities performed in that place and which can produce emissions and pollution.

Waste management plant – stationary or mobile technical unit with a predominant activity, waste management activity. Since May 2010, any such facility needs to have a permit (in the form of a decision) for some or all activities from the waste management area.

Waste – any object or a substance, categorized according to the established classification of waste, with which the owner acts or has an obligation to act upon, that is to manage. According to the Law on waste management (“Official Gazette of the Republic of Serbia”, no. 36/09, 88/2010, 14/2016 and 95/2018 – other law), any substance or object enlisted in the category waste list which the owner disposes of, intends to or has to dispose of, in accordance with the law.

Non-hazardous waste – waste which does not have the characteristics of hazardous waste.

Hazardous waste – waste which by its origin, composition or concentration of hazardous substances can be harmful to the environment and the health of people, and has at

least one of the characteristics established by special regulations, including the packaging in which the hazardous waste was packed.

Packaging waste – any package or packaging material which cannot be used for its original purpose, except the remains created in the production process. Handling packaging waste is regulated by a special law – the Law on packaging and packaging waste (“Official Gazette of the Republic of Serbia”, no 36/2009 and 95/2018 – other law). Handling the packaging waste where the hazardous substance or hazardous waste has been packed, is regulated by the Law on waste management (“Official gazette of the Republic of Serbia”, no. 36/2009, 88/2010 and 14/2016 and 95/2018 – other law), that is article 22 from the Law on package and packaging waste.

Waste owner – waste producer, a person who participates in the waste circulation as an immediate waste holder, or a legal or natural person who owns waste.

Waste generator – companies and other legal entities, that are entrepreneurs, whose activities create waste and/or whose prior treatment activities, mixing or other activities lead to the change of composition or nature of waste.

Production, generation of waste, waste formation – generation of different substances, materials or objects identified as non-usable, and their disposal and collection for disposal.

Waste management – conducting the required measures for handling the waste during the collection, transport, storage, treatment and disposal of waste, including the surveillance of those activities.

Waste classification – represents the act of sorting the waste (after completing the characterization of it) and putting it on one or more waste lists, which are determined by a specific regulation, and according to its origin, and composition.

Waste characterization – is an examination of waste in order to determine its physical-chemical, chemical, and biological characteristics and composition; that is, it is determined whether the waste has one or more hazardous characteristics.

Waste oils – all mineral and synthetic oils and lubricants which cannot be used for their initial purpose, such as hydraulic oils, motor oils, etc. as well as oil residues from the tank, mixtures of oil and water, and emulsions, in accordance with the Law which determines the area of management.

Waste iron and steel – they occur when replacing the equipment, parts of equipment and after pipeline work in operation.

Aluminum and metal sheet – occur during the insulating work on pipelines, equipment and facility maintenance.

Paper and cardboard – occur as office paper and package waste.

Construction waste (ground and stone) – occurs after the construction work and while maintaining the water supply and sewerage network.

Mineral wool – occurs during the insulating work on pipelines and equipment.

Used-up toners and printer cartridges – occur when using computer equipment.

Waste tyres – occur when replacing the worn-out tyres on the vehicles used by PUC “Vodovod” Leskovac (tractors, special vehicles, construction machines, passenger and cargo vehicles, etc.)

Waste plastic – occurs as package waste.

Batteries and accumulators – worn-out batteries left after being used for UPS devices and accumulators from the vehicles used by the PUC “Vodovod” Leskovac.

Electrical and electronic waste – electrical and electronic equipment which is not used in PUC “Vodovod” Leskovac.

Waste storage – is temporary waste storage on the producer`s or owner`s location, and/or other waste storage, as well as the operator activity in the facility equipped and registered for temporary waste storage.

Waste transport – is the transport of waste outside the facility which includes loading, transportation (as well as re-loading) and unloading of waste.

SYMBOLS:

None.

ABBREVIATIONS:

WTP - Water treatment plant “Gorina” in Gorina

CWPP - Central wastewater purification plant “Bogojevce” in Bogojevce

4. WASTE MANAGEMENT PLAN

Content of the plan:

1. INTRODUCTION
2. LEGISLATION
3. WASTE GENERATED IN PUC “VODOVOD” LESKOVAC
4. METHOD OF STORAGE, TREATMENT AND DISPOSAL OF WASTE
5. ENVIRONMENT POLLUTION PROTECTION MEASURES
6. AIR PROTECTION MEASURES
7. UNDERGROUND AND SURFACE WATERS PROTECTION MEASURES
8. SOIL PROTECTION MEASURES
9. NOISE PROTECTION MEASURES
10. FIRE AND EXPLOSION PROTECTION MEASURES
11. PREVENTIVE FIRE PROTECTION MEASURES
12. GENERAL PROCEDURES IN CASE OF FIRE
13. MEASURES TO IMPROVE THE MANAGEMENT OF SUBSTANCES
WHICH BECOME SEPARATE WASTE STREAMS
14. RECORDS OF WASTE GENERATION

4.1. Introduction

The goal of regulating this area of the environment is waste management in a manner that does not endanger people's health and the environment, prevention of waste generation by developing cleaner technologies and rational use of natural resources, as well as the elimination of the danger of its harmful effect, developing procedures and methods for waste disposal and developing conscience on waste management.

Planning, as a constituent part of every organized human activity, is especially important in organizing waste management which provides minimized or complete elimination of danger to human health and the environment. The waste management programme in Serbia for the period 2022-2031 was adopted and it represents one part of the management system in the environment striving for constant revision and improvement.

Waste management is the conducting of prescribed measures for dealing with the waste within the collection, transport, storage, treatment and disposal of waste, including supervision of all these activities.

Waste management has been done in a manner that provides a minimal risk of endangering the health and lives of people and the environment by controlling and reduction

measures: water pollution, air and soil, danger to plants and animals, risks of accidents, fires and explosions, and the level of noise and unpleasant smells.

Proper waste management implies identification and examination that is classification and characterization of waste.

4.1.1. Policy and plan aims

PUC “Vodovod” Leskovac conducts its business activities through the daily improvement of systems and in compliance with legal obligations.

The leadership is determined to:

- Monitor the impacts of its processes, products and activities on the environment and take measures to reduce the negative impacts;
- Do business in accordance with the laws regulating the business activities of the PUC Vodovod Leskovac, the environment and safety and health at work;
- Nourish partnership relations with goods and services suppliers;
- Develop open communication with the surroundings, citizens and social community.

The aim of the Plan is to identify waste, and implement prescribed measures for dealing with the waste within the collection, transport, re-using and disposal, including the supervision of all these activities.

4.2. Legislation

PUC “Vodovod” Leskovac within its business activity produces, that is generates waste, and it is its duty to harmonize its business procedures with the Programme for Waste management in Serbia for the period 2022-2031, legal and by-law acts which are related to the system of waste management.

The obligation to create the Waste management plan has been defined by the Law on waste management (‘Official Gazette of the Republic of Serbia’, number 36/2009, 88/2010 and 14/2016 and 95/2018 other law), for all the companies that annually generate over 200 kilos of hazardous waste or 100 tons of non-hazardous waste. In addition to the above, and in accordance with the regulations of the Law on integrated prevention and control of environment pollution (‘Official Gazette of the Republic of Serbia’ number 135/04, 25/2015 and 109/2021), the preparation of the mentioned document is obligatory for all the companies which belong to the category of those that must obtain an integrated permit.

The realization of the goals of waste management is connected to internal procedures. The waste management plan is designed in accordance with legal regulations and company regulations.

It is about the following regulations and acts:

- Law on environment protection (“Official Gazette of the Republic of Serbia” number 135/2004, 36/2009. 36/2009 – other law, 72/2009 – other law. 43/2011 – Constitutional Court decision, 14/2016, 76/2018, 95/2018 – other law and 95/2018 – other law)
- Law on waste management (“Official Gazette of the Republic of Serbia” number 36/2009, 88/2010 and 14/2016 and 85/2018 – other law),
- Regulation on the classification of facilities, business activities and lands into fire hazard categories (“Official Gazette of the Republic of Serbia” number 76/10),
- Regulation on noise indicators, border values, noise measuring methods, disturbing and damaging effects of noise in the environment (“Official Gazette of the Republic of Serbia” number 75/2010),
- Rulebook on conditions and methods of collection, transport, storage and treatment of waste used as secondary raw material or for obtaining energy (“Official Gazette of the Republic of Serbia” number, 93/2010 and 77/2021),
- Rulebook on categories, examination and classification of waste (“Official Gazette of the Republic of Serbia” number 56/2010, 93/2019 and 39/2021),
- Rulebook on the form of waste movement and the instructions for completing it (“Official Gazette of the Republic of Serbia” number 114/2013),
- Law on packaging and packaging waste (“Official Gazette of the Republic of Serbia” number 36/2009 and 95/2018 / other law),
- Waste management program in the Republic of Serbia for the period 2022-2031 (“Official Gazette of the Republic of Serbia”, number 30/18),
- Law on integrated prevention and environment pollution control (“Official Gazette of the Republic of Serbia”, number 135/2004 and 109/2021),
- Law on fire protection (“Official Gazette of the Republic of Serbia”, number 111/09, 20/15, 87/18 and 87/18 – other law),
- Rulebook on the form of the Document on waste movement and the instructions for completing it (“Official Gazette of the Republic of Serbia”, number 114/2013),
- Rulebook on the form of the Document on the hazardous waste movement, the form of the previous notification, the manner of its delivery and the instructions for completing it (“Official Gazette of the Republic of Serbia”, number 17/2017),
- Rulebook on the manners and procedures for managing waste tyres (“Official Gazette of the Republic of Serbia”, number 104/2009 and 81/2010),

- Rulebook on conditions, manners and procedures for managing waste oils (“Official Gazette of the Republic of Serbia”, number 71/2010),
- Rulebook on manners and procedures for managing used batteries and accumulators (“Official Gazette of the Republic of Serbia”, number 86/2010),
- Local plan on waste management on the territory of the city of Leskovac (“Official Gazette of the City of Leskovac”, number 13/2022 dated 7 May 2022),
- Rulebook on the procedure of inspection and examination of the work equipment and examination of working environment conditions (“Official Gazette of the Republic of Serbia”, number 94/2006, 108/2006 / correction, 114/2014 and 102/2015).

4.3. Waste generated in PUC Vodovod Leskovac

During the work in the organizational units of the PUC Vodovod Leskovac, various types of waste are generated. More information on especially important types of waste will be given in the next chapter.

Overview of the hazardous waste generated in PUC Vodovod Leskovac (on annual basis):

Waste type and code (according to the Waste Catalogue)	Unit	Quantity	Disposal method
Waste oils (13 02)*	l	50	Authorized company
Packaging containing residues of hazardous substances (15 01 10)*	piece	30	Authorized company
Fluo tubes containing mercury (20 01 21)*	piece	188	Authorized company
Batteries and accumulators (16 06)*	piece	144	Authorized company
Laboratory chemicals which contain hazardous substances including chemical mixture (16 05 06)*	kg	16	Authorized company
Electrical and electronic equipment waste (16 02)	kg	50	Authorized company

Table 1. Hazardous waste generated in the PUC “Vodovod” Leskovac (on the annual basis)

Overview of the non-hazardous waste generated in PUC “Vodovod” Leskovac (on annual basis):

Waste type and code (according to the Waste Catalogue)	Unit	Quantity	Disposal method
Sludge from water clarification (19 09 02)	t	24	Levelling the terrain
Sludge from urban wastewater treatment (19 08 05)	t	4,000	Authorized company
Sewage cleaning waste (20 03 06)	t	500	Utility company
Sludge from cleaning septic tanks and manholes (20 03 04)	t	300	Utility company
Waste metal (16 01)	kg	1,00	Authorized company
Waste tyres (16 01 03)	kg	1,500	Authorized company
Mixed municipal waste (20 03 01)	t	200	Utility company
Paper and cardboard packaging waste (15 01 01)	kg	290	Authorized company
Mixed packaging waste (15 01 04)	kg	90	Authorized company
Plastic packaging waste (15 01 02)	kg	160	Authorized company

Table 2. Non-hazardous waste generated in the PUC “Vodovod” Leskovac (on annual basis)

4.4. Methods of storage, treatment and disposal of waste

4.4.1. Collection and storage of non-hazardous waste

Mixed municipal waste generated in the organizational units of the PUC “Vodovod” Leskovac is collected and stored in containers for mixed municipal waste. These containers are located in all organization units’ locations. Municipal waste from the PUC “Vodovod” Leskovac is stored by a competent utility company.

Ferrous (metal) substances are deposited in the location of the “old plant”. This waste is periodically taken over by the authorized operator.

At the Wastewater treatment plant, “Gorina” one of the production phases is water clarification (coagulation). After the coagulation, slow mixing in the three flocculation chambers is conducted, with the aim to form and enlarge flocs. The formed flocs are separated on the lamellae in the lamellar precipitator and are gravitationally thickened in the form of sludge in the thickener located below the precipitator, and the clarified water is taken to the filter building (also part of the factory) through the clarification-filtration channel, where water filtration is carried out as another processing process. The thickened sludge is evacuated via high-pressure pumps to the filter press, where, with the addition of cationic polyelectrolyte, sludge cakes are formed. This sludge is classified as Q16 (Q-list, to which it belongs). As far as waste is concerned, the sludge generated by water treatment is mentioned. It is temporarily stored in the vicinity of the factory. The sludge is classified as Q1/Q16 (Q-

list, where waste, which is not otherwise specified in the catalogue, belongs), that is 19 09 02 (sludge from water clarification) according to the Waste Catalogue. This sludge, according to all its characteristics, belongs to non-hazardous waste. The analysis of the composition of this sludge was done in 2013 and 2018 and on those occasions, an opinion by the authorized institution (Soil Institute Belgrade) was given that this sludge can be used in levelling terrain, but not as a fertilizer in agriculture. Annual production of this sludge is uneven and it starts from 12,300 km (2020), that is 32,600 (2021). The amount depends on the quality of the incoming water. In the table below, sludge production for 2020 is shown.

MONTH	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
Quantity (t)	1.2	1.6	1.1	3.1	2.2	2.0	2.1

Table 3. Sludge production for the year 2020

It is noticeable that the amount of sludge varies from month to month – the reason is the oscillations of the quality of the incoming (raw) water. In the second table the quantity of sludge by month for 2021 is shown:

MONTH	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT.	OCT.	NOV	DEC.
Quantity (t)	3.0	3.3	4.2	3.1	4.2	3.1	4.2	3.2	3.2	1

Table 4. Sludge quantity by month in the year of 2021

As for the sludge from the Central wastewater treatment plant “Bogojevce”, the situation is the following: at the plant, the waste sludge is formed, and its projected quantity is about 4,000 t annually. This waste has the following characteristics: Q1/Q14 (Q- waste list) with the following meaning: Q1 – residues from the production and usage which were not specified otherwise; Q14 – products rejected by owners as unusable, 19 08 05 (waste catalogue – sludge from the urban wastewater treatment), R11 – R – waste list (usage of the waste generated by any operation from R1 TO R10). The data was obtained from the analysis by the authorized laboratory MIPHEM – Belgrade (report number 022262379 dated 16 June 2022). This waste, that is sludge generated through the process of wastewater treatment, is disposed of at the location of the plant by a project done for this purpose. After the sludge has stayed there and dried for thirty days, it is transported and taken care of at the landfill which fulfills the conditions in accordance with the legislation on waste management.



Picture 11. Sludge storage and transport

4.4.2. Procedures for collecting and storage of hazardous waste

If hazardous waste appears at the plants and organizational units of PUC “Vodovod” Leskovac, it has to be packed and marked in a manner providing security to people’s health and the environment. It is packed in special containers or a fenced area which corresponds to the characteristics of the hazardous waste (flammable, toxic and other). It is forbidden to mix different categories of hazardous waste or mix hazardous with non-

hazardous waste. During the storage of hazardous waste, the following conditions, set by the Rulebook on the manners of storage, packaging and marking hazardous waste, should be fulfilled:

- On the location of the Company, there is a certain part intended for the temporary storage of hazardous waste;
- Every type of hazardous waste is stored separately, the warehouse should be physically secured, locked and under surveillance;
- Access to vessels and containers with hazardous waste is denied to people who are not authorized to manage the waste;
- In the warehouse and during storage, a qualified expert person handles the hazardous waste;
- Storage of liquids is done in the vessels which are secured by the impermeable fabric of such capacity that in the case of leak they can absorb the complete volume of the liquid waste. Individual containers, and barrels, with the liquid waste, can be secured also by a suitable pallet with a receiving container;
- Stored waste is protected from atmospheric precipitation;
- Easy access to the waste containers is provided for periodic controls, repacking, measuring, sampling, transport and alike;
- Containers for hazardous waste packaging are closed and made of impermeable material resistant to substances kept in them and the atmospheric influence. Containers are regularly checked in terms of damage and corrosion, cleaned and are not used after the expiry date. The waste from the damaged containers should be safely transferred to another, technically proper container;
- In the warehouse, containers in which waste belonging to incompatible categories is being kept, are separated by barriers – walls or in another safe way;
- In accordance with the current Rulebook, hazardous waste is classified according to its origin, characteristics and composition which make it hazardous. If it consists of several types of waste, its classification is done based on the most represented component;
- Unclassified, not sufficiently examined waste is, until getting the report on waste testing, temporarily stored in a safe manner, separated from other sorted waste, in a specially marked location within the warehouse.

Packed hazardous waste should be clearly and visibly marked. The sticker used to mark packed hazardous waste should contain the following data:

- Warning: DANGEROUS WASTE MATERIAL in Serbian and English languages;

- Index number and the name of the waste from the Waste Catalogue, in accordance with the special regulation;
- C label according to the Waste component list that makes it hazardous (C list), in accordance with the special regulation;
- H label according to the Waste characteristics list that makes it hazardous (H list), in accordance with the special regulation;
- Information on the waste owner who packed the waste: company name, location, phone/fax, packaging date, name and surname of the qualified person responsible for professional work;
- Physical characteristics of the waste: powder, solid substance, viscous substance, paste, sludge, liquid substance, gas substance, as well as the others from the Report on waste examination, in accordance with the specific regulation;
- Quantity contained in the package, and if it is a group package, then the quantity of each separate parcel.

NOTE: All the other data important for handling the hazardous waste are written too, and they relate to the way of handling the specified waste to provide the smallest risk and pollution safety, dangers and negative influences on life and people's health and the environment, and depend on the purpose of waste. The format and size of the label are given in Table 5.

Package size expressed in litres	Label format
Up to 3l	A8 (74 x 52 mm)
From 3l to 50l	A7 (105 x 74 mm)
From 50l to 200l	A6 (148 x 105 mm)
From 200l to 500l	A5 (210 x 148 mm)
Above 500l	A4 (297 x 210 mm)

Table 5. Format and dimensions of labels

Label has to be protected and/or made of materials (metal, plastic and alike) resistant to the atmospheric and external influences and the hazardous waste which has been packed inside. The colour and display on the label should be such that the hazardous waste label can be easily visible. The text has to be striking, easy to read and printed in a manner that cannot be deleted. The label is fixed on the package so that the text can be read

horizontally when the package is in a normal position. The label should be stuck to the packaging with its entire surface in such a manner as to provide its presence until the waste is completely removed from the packaging.

Packaging containing hazardous substances is returned to the distributor. Packaging from the motor and hydraulic oils and lubricants is not generated; it is used in the workshops in which cars are serviced, so they are the owners of such waste and undertake on themselves further actions in accordance with legislation. The procedure for motor and hydraulic oils in the PUC “Vodovod” Leskovac will be given in the next passage.

Greasy cloths and cleaning wool are stored in plastic bags resistant to oil which are found in metal barrels with lids in workshops. Full bags are tied and temporarily stored in a part of the warehouse for the hazardous waste where also waste oils are.

4.4.3. Temporary storage of substances that form separate waste streams

During work at PUC “Vodovod” Leskovac substances appear, which, according to the Law on waste management, form separate waste streams and these are:

- Waste oils for various purposes;
- Waste batteries, accumulators and fluo-tubes;
- Waste tyres;
- Metal waste;
- Electrical and electronic equipment waste;
- Packaging containing residues of hazardous substances.

These substances are temporarily stored in warehouses, specially designated for this purpose. Warehouses for the temporary storage of these substances are located at the Old plant, 197 Vlajkova street, Leskovac.

The warehouse for the waste oils is located between the plant fence and the facility in which the Service for car park maintenance, spare source and pump stations with the workshops and central warehouse and the Service for construction, maintenance of network and facilities are. The warehouse is fenced and marked (Picture 4 and Picture 5). In the warehouse, there are metal barrels into which waste oil is carefully poured after removing, while avoiding soil pollution. According to the Rulebook on conditions, ways and procedures of managing waste oils, which processes managing of waste oils, record keeping of the quantity of generated waste oils is foreseen (article 15 of this Rulebook), except for legal entities generating less than 500 l of waste oils per year, which is actually the case with PUC

“Vodovod” Leskovac. Disposal of waste oils is done in accordance with the Law on waste management and Rulebook on conditions, manners and procedures of managing waste oils.

The warehouse of waste batteries, accumulators and fluo tubes is located between the abovementioned facilities and the facility in which the Service for maintaining the sewage system and facilities; it is a structure built from solid material, it is marked and locked (Picture 1 and Picture 2). The key of this warehouse is with the storekeeper of the central warehouse. The facility has two premises in which the mentioned substances are temporarily stored. The Rulebook on manners and procedures of managing used batteries and accumulators, which regulates more closely managing waste batteries and accumulators does not foresee record keeping on the origin of this sort of waste. The disposal of waste is done in accordance with the Law on waste management and the Rulebook on manners and procedures of managing used batteries and accumulators.

The warehouse of waste tyres is located near the fence that PUC “Vodovod” Leskovac shares with the “Zdravlje” company. Near this warehouse, there is a facility in which the Service for maintenance and service of water metres in the network is. The facility is marked and fenced, but it is not possible to lock it. The Rulebook which regulates waste tyres management - Rulebook on the manners and procedures of managing waste tyres foresees record keeping (article 11), but only in cases when the quantity of waste tyres at annual level is 1,000 kg or more, which in this company is not the case. The disposal of waste tyres is done in accordance with the Law on waste management and the Rulebook on the manners and procedures of managing waste tyres.

The warehouse of metal waste is located on the area of the ‘old plant’, 197 Vlačkova street, Leskovac, next to the warehouse of the waste batteries, accumulators and fluo tubes in an open space with a concrete base. The disposal of metal waste is done in accordance with the Law on waste management.

4.5. Environment pollution protection measures

In terms of efficient use of natural resources, no special measures are applied, because the selection and temporary storage of waste types that are generated do not require special use of water, electrical or thermal energy. In large parts it is about solid waste which is, after separation, temporarily stored in containers for multiple uses or in specially fenced spaces and separated premises.

Measures taken for the purpose of protecting the environment in the segment of waste management include protection measures of air, surface and underground waters, and soil.

4.6. Air protection measures

Measures taken with the aim to protect the air in the segment of waste management include the following:

- Appearance of fugitive emission is possible during the pouring and packaging of powder waste, as well as in eventual accidental situations, thus in these situations one should be maximally careful.
- Pouring of liquid waste which has a character of hazardous waste from a damaged or dilapidated vessel is to be done by emitting as few volatile compounds as possible into the air.
- Inadequate storage of hazardous waste can be the source of emitting various polluting substances into the air, such as inflammable organic compounds (VOC). With the aim to prevent pollution of the environment, all the waste which, by its character, belongs to hazardous waste has to be stored exclusively according to the guidelines given in the chapter Procedures for collecting and storing hazardous waste.

4.7. Underground and surface water protection measures

Protection measures for surface and underground waters imply the following:

- All the waste which is in the liquid state has to be stored in impermeable containers or barrels. The location for temporary storage must have an impermeable base (concrete), and barrels and vessels with waste have to be stored on pallets with receiving vessels or bunding.
- Pouring of liquid waste which has a character of hazardous waste from damaged or dilapidated vessels is done in such a manner that spillage occurs to a lesser extent and only in the temporary storage of the hazardous waste on a concrete impermeable base which is secured by bunding.
- Spilt powder and solid waste is collected dry, and only after collecting has been done, if needed, the cleaning is done – washing the floor with water.
- Waste in the warehouse is protected from atmospheric precipitation in order to prevent the formulation of seepage water which would carry the absorbed, dispersed and dissolved substances from the waste (ammonia, nitrites, heavy metals, various organic compounds) into the soil, surface and underground waters.

4.8. Soil protection measures

If there is a spill or leakage of waste, especially hazardous one, it is necessary to take all the measures foreseen in such situations, by which the impact on the soil will be minimized. Depending on the quantity of the spilt substance it is needed to conduct an examination of the soil and take measures to rehabilitate and remediate.

4.9. Noise protection measures

The main source of noise are compressors, fans, bigger machines motors and transport means. With the aim to reduce noise emission in the PUC “Vodovod” Leskovac so far the following measures have been applied:

1. Fencing units – sound emitters
2. Vibration insulation (separation) in bigger machines
3. Programming maintenance of plants and machines.

Inspection of the working environment has been done regularly at WTP “Gorina” and CWPP “Bogojevce”.

There is no radiation in any form at the locations in question.

Noise monitoring as physical harm in the working environment has been done with the same dynamics as control of the chemical harm according to the Rulebook on procedures of monitoring and examining work equipment and inspecting the working environment, once in three years in the unchanged work regime or with each change of equipment or work conditions in the production plant.

The operator should conduct control measurement of noise level in the environment in accordance with the new Regulation on noise indicators, border values, noise measuring methods, disturbing and damaging effects of noise in the environment, which prescribes noise indicators in the environment, border values, methods for evaluating noise indicators, disturbing and damaging effects of noise on people’s health.

Noise monitoring in the environment at the location of the operator needs to be done as a control in a case when there is a reconstruction of the existing or building of new production units, or the equipment is replaced. The levels of noise must not surpass the

existing noise level for more than 5dB (A) in relation to the pre-existing condition. Every next source of noise can raise the level of noise after a year up to 5 dB (A). In that case, it is necessary to measure it before putting the device into operation and after putting it into operation or after the changes have been made in the production units.

4.10. Fire and explosion protection measures

Preventive actions in terms of fire protection measures are conducted during the urbanistic planning, building and reconstruction of facilities, project control and technical inspection of facilities, that is issuing use permits, as well as during location determination for facilities in which explosive substances, inflammable liquids and gasses are stored, produced and distributed.

With the aim to conduct adequate fire and explosion protective measures, during PUC “Vodovod” Leskovac’s regular work, it is necessary to conduct measures foreseen by the Law on fire protection and other by-law acts from the current legislation for this area.

Based on the purpose of the facility, installed capacities of the production plant, that is type of technological procedure, reservoir capacity for inflammable and explosive substances, size of the facility and its location and construction type and building materials, the number of employees, proximity to the professional fire and rescue unit and the space size and plant cover, according to the Regulation on separating facilities, business activities and lands into fire hazard categories.

Considering the fact that the facilities within PUC “Vodovod” Leskovac fall into categories II and III of the fire hazard, acts in the area of fire protection have been made and they are: Fire protection plan with the Evacuation plan in case of fire, which must be displayed on a visible place (article 28. Law on fire protection).

All fire prevention measures, general procedures in case of fire, as well as the manners of maintenance of fire extinguishing equipment, are related and applied in PUC “Vodovod” Leskovac and as such are related and applied in all the spaces allocated for the temporary storage of non-hazardous and hazardous waste.

4.11. Fire prevention measures

With the aim to implement fire protection measures, PUC “Vodovod” Leskovac has adopted a Fire protection plan. With the aim to reduce the damage of potential fires the following most important conditions are:

:

- Hydrant network for extinguishing initial fires which are extinguished using water;
- Approach of the Fire brigade through access roads to all parts of the facilities.

With the aim of fire protection, PUC “Vodovod” Leskovac is obliged to:

- Keep access roads to the facility and within the facility passable and prohibit keeping and parking vehicles, as well as storing any kind of material or equipment on them;
- In fire danger zones, substances and devices which can cause fire and affect the spread of fire must not be kept;
- In these danger zones it is forbidden to bring an open flame, weld, or work with equipment which sparks, and in accordance with it prohibitory and warning signs must be put up;
- At the concerned location, extinguishing initial fires is to be done with fire extinguishers types S and CO₂;
- Employees have to be familiar with the physical-chemical characteristics of substances used in the concerned complex, the manner of conducting fire and explosions prevention measures during their use, as well as with device use, equipment and fire extinguishers;
- Arrange and keep corresponding records by conducting regular maintenance of facilities and installations inside facilities, in accordance with technical regulations, norms and manufacturers’ manuals;
- If the work on maintenance, workover, reconstruction, inspection and alike, is done by a third party, provisions on respecting fire protection measures, as well as provisions on the manner of control of the implementation of measures and responsibilities for their non-implementation are entered into the Contract on mutual obligations;
- Replacement of devices, equipment and installations is done after their expiry date (unless in cases when the inspections determine and prove their functionality), but also earlier, if, after the implemented periodic inspection, it is determined there have been changes in characteristics influencing functionality and safety. The replacement is to be done using the original parts or parts with the same characteristics;
- The training of employees in the area of fire protection is to be done periodically: theoretical (every year) and practical training (every three years);

- All the working premises are to be kept clean and tidy, and inflammable waste material must be taken out of the facility after work and put away in a designated area;
- Used material, grease, oils, greasy cloths, paper, cotton, plastic and other packaging, as well as other waste material used during the maintenance work, workover and reconstruction, must be stored in metal containers with lids during the work, and after the work must be taken out of the working premises and put away in a safe place;
- Facilities and green areas within them must be maintained regularly and grass, weed, and waste materials must be removed from the area around the facility and the fence, in order to prevent fire-spreading from the surrounding towards to facilities;
- Welding, cutting and soldering work can be done only in areas prepared in accordance with the prescribed norms of technical protection and fire protection;
- At the lightning protection installations, it is needed to conduct regular control of drains, grounding devices and additional kits. Inspections are to be done at least once in two years, that is after each change, repair and/or thunder strike;
- Not a single work on construction, extension or reconstruction can be done without project documentation, for which, prior to the work, appropriate consents by competent supervisors have been issued;
- During the implementation of the work on painting and varnishing using inflammable liquids, special attention has to be paid to intensive ventilation and all the measures prohibiting the use of open fire, work on devices which use open fire and incandescent parts, smoking prohibition and other have to be respected;
- In premises where painting and varnishing are done, inflammable liquids must be kept in the original package and closed, in quantities necessary for the work of one shift.

4.12. General procedures in case of fire

- In case of fire, it is necessary to intervene quickly with the aim to eliminate the cause of such an event and rehabilitate the consequences. Well-trained, disciplined and organized staff, is the key factor in stopping the accident, especially in the initial phase.
- Fires are localized and neutralized by various firefighting means, such as dry powder, carbon dioxide, water. For extinguishing fires which started near electrical installations, as well as on live electrical installations, solely carbon-dioxide and dry powder are used.

- In the initial phase, fire localization should be done by engaging all available means and devices, and after extinguishing, measures to rehabilitate the resulting consequences are to be taken. At the same time with the mentioned localization, it is necessary to evacuate people who do not participate in fire extinguishing from endangered and potentially endangered spaces. One should always try to cut off the power supply before starting to extinguish the fire, if possible.
- After noticing the fire, it is necessary to alarm the fire brigade immediately. Upon the fire brigade's arrival, all the people who participated in fire extinguishing are put under command of the fire brigade commander and carry out his orders in further actions to extinguish the fire.
- During the very procedure of fire extinguishing, it is necessary to avoid inhaling gasses and vapour. Inflammable gasses are extinguished by sprayed water, not water jets. It is necessary to provide maximum ventilation – open all the doors, windows and any other openings, to exhaust the smoke.

If the fire spreads rapidly, which can cause the demolition of constructions or facility walls and cause large-scale material damage as well as harming people, it is necessary to inform the emergency medical aid unit.

4.12.1. Maintenance of fire extinguishing equipment

All the provided fire extinguishing equipment at the location of the company is checked regularly and maintained in the correct condition so that it would function flawlessly in the event of a fire. For that reason, it is necessary to regularly inspect the condition of portable fire extinguishers for extinguishing initial fires, every six months. The inspection has to be done by authorized companies and organizations.

Hydrants, hydrants network and fire extinguishers are to be kept clean and tidy and controlled at least once a year by an authorized company for the type of work and the records about this are to be kept.

4.13. Measures to improve the management of substances that become separate waste streams

4.13.1. Waste oils warehouse

The following measures are proposed:

- a) To make a canopy;

- b) At locations where waste oils are stored a bunding is foreseen, as well as a system for intaking oily atmospheric water and elements given in the Rulebook on conditions, manners and procedure of waste oils management (article 9, paragraphs 1 and 3 Rulebook)
- c) To provide a system for anti-fire protection (article 9, paragraph 4 Rulebook)

4.13.2. Waste batteries and accumulators warehouse

The following measures are proposed:

- a) To provide appropriate containers for separate collection and separation of used accumulators and batteries;
- b) To provide equipment for collecting unintentionally spilt liquids. To check the impermeability of the base.
- c) It is necessary that the warehouse possesses a fire extinguishing system.

This area is regulated by the Rulebook on manners and procedures with used batteries and accumulators. Stated measures are required by article 11, paragraph 3, indent 2(a), indent 1(b), indent 3(c).

4.13.3. Waste tyres warehouse

The following measures are proposed:

- a) To group waste tyres on one location
- b) To put the warehouse under surveillance, in order to prevent unauthorized access
- c) The warehouse must possess a system for fire protection in accordance with the regulations

This area is regulated by the Rulebook on manners and procedures for waste tyres management. The abovestated measures are prescribed by article 8, paragraph 3 of the Rulebook.

4.13.4. IT-material warehouse and other measures

IT material is stored at the main building, location 14 Pana Djukica street, in a separate room with IT engineers. The disposal of these materials is done by an authorized company periodically.

It is necessary to completely fence the waste iron warehouse at the location of the 'old plant', 197 Vlajkova street, in Leskovac.

Paper packaging waste is stored in the main building of the utility company 14 Pana Djukica street, in a separate room and it is managed by an authorised company periodically.

4.14. Record of waste generation

Managers of the departments of the company, are obliged to keep records of the generated waste which is temporarily stored at the predefined warehouses depending on the type of waste. The report on the amount of generated waste is delivered to a person responsible for waste management, named by the company director, till the fifth in a month for the previous month.

The person responsible for waste management in the company, is obliged to make an annual report on waste generation and submit the report directly to the Agency for environment protection and other competent institutions as defined by the law.

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6. WASTE MANAGEMENT PLAN DISTRIBUTION

1. Director of the PUC Vodovod Leskovac
2. Assisting director of the PUC Vodovod Leskovac
3. Executive directors of the Sectors at the PUC Vodovod Leskovac
4. Department managers of the PUC Vodovod Leskovac
5. Person responsible for waste management in the company
6. Occupational health and safety, environment protection and insurance engineer
7. Archive

Ovim potvrđujemo da smo prevele gornji dokument „Plan upravljanja otpadom u JKP Vodovod Leskovac“ sa srpskog jezika na engleski, reč po reč, u svojstvu ovlašćenih prevodilaca u „Oxford School“-u, Leskovac.

Datum:
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This is to certify that we translated the above document „Waste management plan in PUC Vodovod Leskovac“, from Serbian into English language, word for word, in the capacity of authorized translators from „Oxford School“, Leskovac.

Date:
7th March 2023

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