Water Recycling- Waste Water Treatment Plant at Badovc

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Abstract

Seeing the climate changes effect and SDG-6 by, RWC Pristina developed a strategic plan towards source protection, and proper water source management. Currently RWC-P, is using different water source, surface and underground, but still Badovc Lake is one of the biggest and most important source. Since 1965 when Badovc Lake filled, its destination from the beginning was to use it also as a water source for population of Capital City of Pristina. Seeing from this point of view RWC Pristina has invested on source protection, and finally in 2017 started to operate fully with Waste Water Treatment Plant.

Introduction

This WWTP is constructed in lowest part of village Mramori. Previously all the sewage has been discharged directly on the stream, and then this stream was discharging into Badovc Lake. On 2016 it was constructed a sewage line with approximately L=12 km collecting sewage for approx. 2000 PEE, Biological treatment through flexidiblok, after mechanical treatment the water discharges into separators which actually works as a vertical trap. The sand presence is minimized on the way to treatment in sand rotation filters and then on sand separator boxes. After the sand is sucked into boxes, the water goes with pumps to SBR. When the SBR are filled in a maximum operational level, it starts activation sludge part through blowers we inject air into SBR in order to activate them. In this phase it starts the process of self cleaning, after the air it needs sufficient time to settle the elements polluters on these decanters and then as a final after all elements settle, the clean water stands on top, reactors suck the water and send it to the final box control. From reactors the water discharge also in the manhole where usually is a sampling point. The process goes through Anaerobic filling, then anoxic filling, oxic filling, activation – nitrification , denitrification DNDS, post ventilation, decantation, supply with clean water, sludge pumping, removing of sludge etc. Finally discharges again in the Stream – River that fills Badovc Lake. One of the main water Sources is also Badovc Lake, from where with pressure system the water is pumped into Water Treatment plant Badovc

Methods and Technology

Methodology has come up due to a lot of sewage discharges into stream, polluting the lake, in order to protect water supply zones, fish life, water source as well.

The WWTP treats water through biological treatment, analysis has been done in accordance with EN / EEC standards, based also on Kosovar Administrative Order, for effluent discharges,

- Water Quality
- Water Protection Zones
- BOD_5, TOC, TSS
- SBR
- Biological Treatment

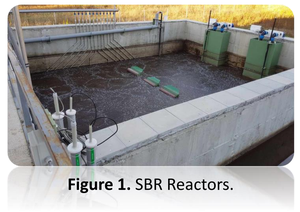


Figure 1. SBR Reactors.



Figure 2. Outlet Sampling.

Results

After sample taking, they were treated as per the standards procedures in the main laboratory of Regional Water Company Pristine, in Pristina. Some of other elements couldn't done due to absence of technology and right devices regarding AOX and some other elements, normally that the other labs do, even though the water after discharges into stream it fills the Lake, and then the water is treated fully with the newest technology at Water Treatment Plant in Badovc, including pretreatment, aeration, flocculation, filtration, disinfection so finally then every single analyses is made for drinking potable water from the Water Treatment Plant .

Results regarding main parameter at Waste Water Treatment Plant are presented on table below.

Table 1. Results before and after treatment

Parameters	Methods	Results	Results	According to AO , MESP No 30/2014
No. of sample		No.1	No.2	N/A
Date		26.10.2017	26.10.2017	N/A
Sender, place and sampling time		Nazmi Visoka - Inlet WTP	Nazmi Visoka - Outlet WTP	N/A Outlet WTP
		14:00	14:10	NA
BOD5 20°C	Respirometric Method	37.332	1.5096	25
Dissolved Oxygen DO	Winkler methods	3.01 mg/l O2 or 34.9%	4.41 mg/l O2 or 51.7%	12.5 mg/l O2 or 75%
COD	Reactor Digestion Method	54.9 mg/l	2.22 mg/l	125 mg/l
PO4 total	Acid persulfate digestion method(also called organic and acid hydolyzable)	7.4 mg/l	0.35 mg/l	2 mg/l
NH4	Salycilate Method	1.2mg/l	0.2 mg/l	15 mg/l
TSS	Photometric Method	35	3	35-60

Fig. 3 (a,b,c,d,e) processes, mechanical treatment, SBR, finally water after treatment in bottles



Discussion

Water Reuse is one of the key element that everywhere in a the World, is a hot topic, due to water crisis, droughts, like Cape Town is facing. Also Kosova is a state that actually faced problems with droughts on 2014 the latest one. Miss use of water is a problem in the most Eastern Europe. Based on the location where Kosova is located every source that is inside Kosova, actually discharges into rivers and seas out from Kosova, due to this natural fact Kosova faced and will face problems with water in the future. There is a need almost a most to start treating and using properly every single water source

Conclusions

Installed Technology at Waste Water Treatment Plant, is not in the highest level of technology but its sufficient to treat the water, as far as the final treatment is in another part of the process. The Biological way of treatment is one of the best practices in the world for small waste water treatment plants, mainly in rural areas like Mramori Village. Based on performance of WWTP Mramori, RWC Prishtine decided to invest also in another WWTP the third one at another source in order to protect water sources, environment and to save operational and maintenance cost

Future Directions & Recommendations

Every Water Utility that is using water for treatment and then distributing it to water system for population, had to construct – install a Waste Water Treatment Plant, in order to save peoples live, for better access to drinking water, to manage properly in continuous form all water sources and finally to have lower operational cost

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References

1. Wastewater Engineering Treatment and Reuse, Metcalf & Eddy, George Tchobanogolous, Franklin L. Burton, H. David Stensel
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