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Evaluation of Urbanization Impact on Environmental quality for part of Musi River

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Abstract:

Water is very essential to us it's useful to all economic activities like drinking, irrigational and industrial utilizations. Day to Day Rivers are contaminated due to pollution long years ago rivers are useful to many uses nowadays very reduced for utilization. In India wide major rivers are nine in nine rivers one is Krishna River. This river under one of tributary is musi this musi river is very useful to Hyderabad city years ago. To analysis of year of 2019 physical, chemical characteristics with heavy metals of study region and its depends upon water quality analysis to find the suitable treatment methods for polluted water of musi stream..

Keywords: *musi river, physical, chemical, characteristics, water quality*

1. Introduction:

Water is very vital natural resource its very useful to all economic activities water is major role for human consumption and irrigational with all needs. In Indiawide major rivers are twelve they are Ganga, Yamuna, Narmada, Saraswathi, Godavari, Krishna, Kaveri, Bhima,Tapati, Tungabhadra, Sindhu and Pranhitathese Rivers are partially polluting nowadays some rivers are not utilized fully this rivers are major role for drinking water source and electricity producing. On the earth planet saltwater contained by 97% and freshwater constitute only 2.4%.In Hyderabad metropolis day to day increasing more population growth, industrial, agriculture and consuming functions diverse needs. Daily to each day groundwater degree decreasing because of different numerous utilizationsOsmansagar and Himayathsagar these water bodies are fundamental ingesting water supply for Hyderabad city these reservoirs built on musicirculation. This flow passing thru the Hyderabad metropolis musi circulate it divides the old metropolis and new town.

1.1. Study area:

The Musi River is very used for all economic activities for Hyderabad city period of nizam and it's nowadays not fully utilized only utilized for agricultural and drinking purposes.This river on Deccan plateau and river basin situated between Latitude: 17° 21' 59.99"Nand Longitude: 78° 27' 59.99" E. It is a tributary of the Krishna River. There are about 8 sub-basins under musi basin. About length of the musi stream is 240km. Musiriver birth point at ananthagiri hills distic of vikarabad this stream passing through the Hyderabad city it divides old city and new city this river end point at wadapallydistic of nalgonda.The research area adopted entire musi stream.

1.2. Rainfall clause:

More than 75 per cent of the rainfall is received during the south-west monsoon season, i.e., from

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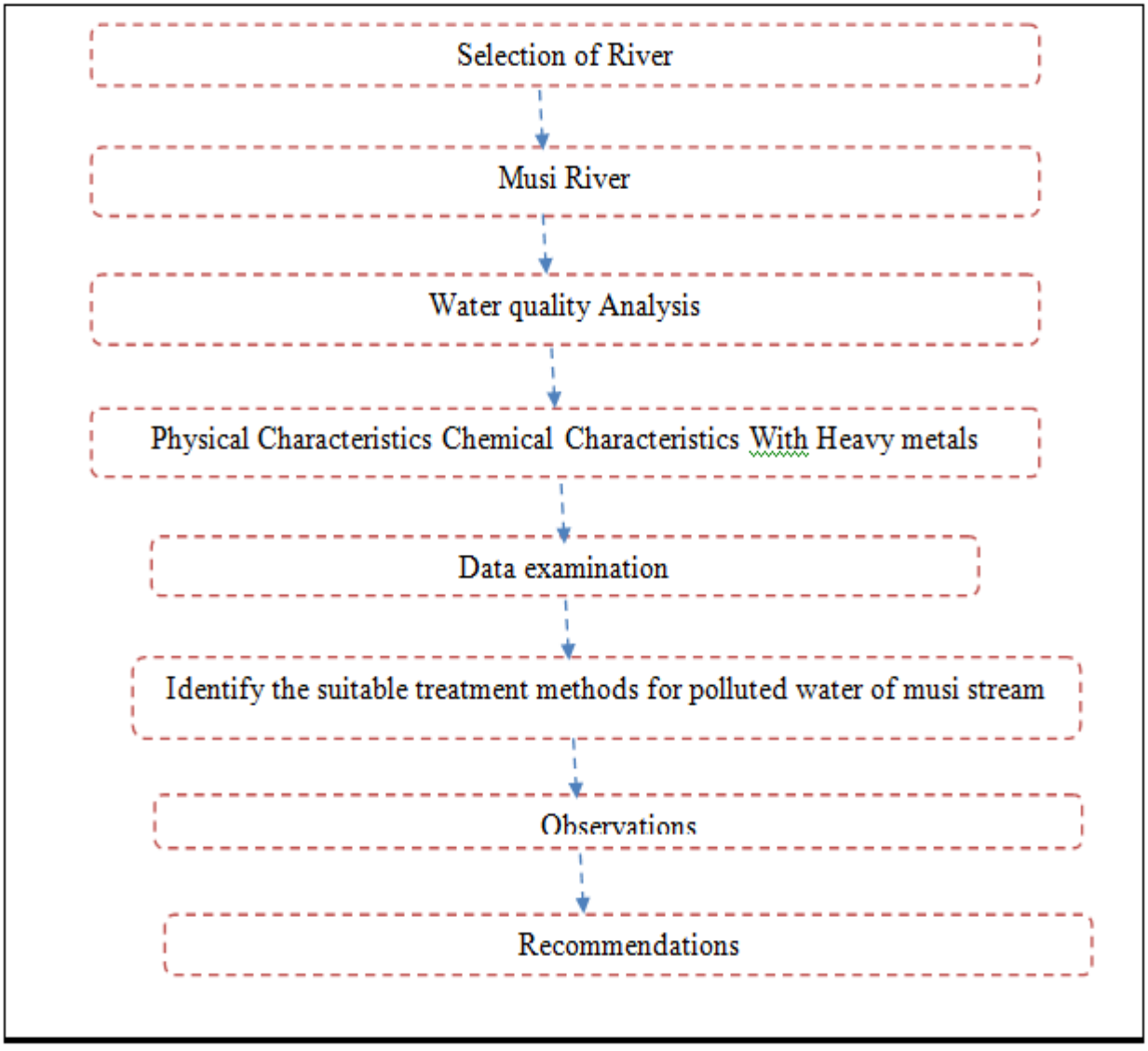
June to September, July being the month when it rains. September is the month, when there are rains. The south-west monsoon sets in by 7 June. Its advent is sudden and the rainfall increases from less than 5 per cent (of the annual) in May to 15 per cent in June.

2. Objectives:

- Estimation of water quality Analysis of Musi watercourse and its studies.
- To identify the suitable treatment methods for polluted water of musi stream.

3. Methodology:

Different kind of records required for the study vicinity adopted complete musi stream data of water first class characteristics with heavy metals. Filed work done for water samples collected. Therefore analysis from gathered statistics and fieldwork done about total four stations its each station has eight locations present pleasant of river report its showing water quality characteristics of musi stream period of 2019 January.



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Flowchart: 1 shows step by step process of methodology

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3.1. Water Purification methods:

The various methods or the techniques which may be adopted for purifying the public water supplies are:

Screening:

Screens are generally provided in front of the pumps or the intake works, so as to exclude the large sized particles, such as debris, animals, trees, branches, bushes, ice, and etc. coarse screens(Generally called trash racks) are sometimes placed in front of the fine screens. Coarse screens consist of parallel iron rods placed vertically or at a slight slope, at about 2.5 to 5 cm.

Sedimentation:

Most of the suspended impurities present in water do have a specific gravity greater than that of water (i.e. 1.0)[*]. In still water, these impurities will, therefore, tend to settle down under gravity, although in normal raw supplies they remain in suspension, because of the turbulence in water. Hence, as soon as the turbulence is retarded by offering storage to the water, these impurities tend to settle down at the bottom of the tank, offering such storage. This is the principle behind sedimentation.

Coagulation:

The surface charge on colloidal particles gives them long –term stability; and hence the particles which might otherwise settle or coalesce are mutually repelled by their like charges. Coagulation is a chemical technique which is directed towards the destabilization of the charged colloidal particles.

Filtration:

Screening and sedimentation removes a large percentage of the suspended solids and organic matter present in raw supplies. The percentage of removal of the fine colloidal matter increases when coagulants are also used before sedimentation. But however, the resultant water will not be free of impurities, and may contain some very fine suspended particles (discrete or flocculated when coagulation is used).

The process of passing the water through the beds of such granular materials (called filters) is known as filtration. Filtration may help in removing colour, odour, turbidity, and some pathogenic bacteria from the water.

Disinfection:

The filtered water which is obtained either from the slow filters or rapid gravity filters,may,normally contain some harmful disease producing bacteria in it. These bacteria must be killed in order to make the water safe for drinking.The chemicals used for killing these bacteria are known as disinfectants,and the process is known as disinfection or sterilization.

Aeration:

Under the process of aeration water is brought in intimate contact with air, so as to absorb oxygen and to remove carbon dioxide gas. It may also help in killing bacteria to a certain extent. It also helps in removing H_2S gas, and iron and manganese to a certain extent, from the treated water.

4. Results and Discussion:

This article discusses the inference of environmental examination of water worth traits on musi river long years ago musi stream fully utilized for all activities day to day contaminated due
to industrial and home pollutions few industrial ef fluents launched into musi stream without proper treatment. As a result water suitable estimation from before year similar to 2019. Filed work done for water samples about total four stations and its each station have eight locations shown in below table'sand graphical representation of various parameters were shown in graph no 1 to 13.

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Stations	Location code	Location Name	Stations	Location code	Location Name
Station-1	L_1	Poddutur	Station-3	L_1	Brundavan colony park
	L_2	Gopularam		L_2	Parvatapuram
	L_3	Gungurthy		L_3	At Pratap singaram
	L_4	Gandipet		L_4	At ORR
	L_5	Mothkupally		L_5	Bandaraviral
	L_6	Appajiguda		L_6	At Tejasree Homes
	L_7	Chilkur		L_7	BB Nagar
	L_8	Neknampur		L_8	Chinaravelpalle
Station-2	L_1	Near Golconda Road	Station-4	L_1	Kachiguda
	L_2	Langar Houz		L_2	MGBS
	L_3	Attapur		L_3	Charminar
	L_4	Laxmi Nagar		L_4	Malakpet
	L_5	At SBA Garden		L_5	Chanchalguda
	L_6	Jiyaguda		L_6	Amberpet
	L_7	Kali mata Temple		L_7	Dilsukhnagar
	L_8	Afzalgunj Road		L_8	Nagole

Table: 1 shows location code with location name with station wise

	Station-1								Station-2							
Parameter	**L_1**	**L_2**	**L_3**	**L_4**	**L_5**	**L_6**	**L_7**	**L_8**	**L_1**	**L_2**	**L_3**	**L_4**	**L_5**	**L_6**	**L_7**	**L_8**
Turbidity	46	44	54	60	61	63	65	62	10	10	11	13	9	8	10	11
TDS	219	220	226	230	228	226	223	227	820	822	819	815	813	819	820	823
pH	7.4	7.7	7.3	7.25	7.2	7.3	7.3	7.1	7.51	7.23	7.5	7.5	7.8	8	8.2	7.9
Hardness	117	115	118	120	120	121	123	124	280	267	278	279	280	286	282	281
BOD	3	4	3	2	2	4	5	4	22	19	21	20	20	20	23	25
COD	10	13	14	12	15	18	13	12	126	122	127	128	121	122	128	129
Nitrite-N	0.9	0.8	0.6	0.1	0.9	1	1.1	0.8	2.1	1.8	1.9	2	2.1	2.2	1.9	1
Copper	1.4	1.43	1.5	1.52	1.56	1.6	1.7	1.68	1.57	1.62	1.57	1.6	1.6	1.58	1.49	1.46
nickel	1.7	1.71	1.72	1.7	1.7	1.68	1.75	1.72	1.7	1.73	1.78	1.76	1.8	1.87	1.9	1.93
Zinc	4.8	4.8	5	5.1	5.2	5.5	5.6	5.9	6.1	6.3	6.5	6.4	6.6	6	6.1	6.5
Chromium	1.8	1.6	1.7	1.4	1.8	2.1	2.2	2.3	3	3.2	3.5	3.3	3.4	3.6	2.9	3.3
Iron	1.5	1.53	1.52	1.4	1.56	1.45	1.56	1.61	1.6	1.6	1.65	1.55	1.62	1.53	1.57	1.59
Arcenic	1.3	1.21	1.2	1.25	1.3	1.3	1.35	1.4	1.45	1.32	1.3	1.32	1.4	1.47	1.5	1.56
	Station-3								**Station-4**							
Parameter	**L_1**	**L_2**	**L_3**	**L_4**	**L_5**	**L_6**	**L_7**	**L_8**	**L_1**	**L_2**	**L_3**	**L_4**	**L_5**	**L_6**	**L_7**	**L_8**
Turbidity	11	16	22	19	20	21	22	24	24	22	21	20	27	25	26	26
TDS	830	837	840	842	846	841	843	842	839	837	834	840	843	841	843	856
pH	7.3	7.5	7.4	7.4	7.7	7.8	7.9	7.2	7.7	7.8	7.4	7.3	7.3	7.5	7.1	7.16
Hardness	289	290	350	356	354	352	351	348	339	340	342	348	353	352	357	365
BOD	21	24	20	22	26	27	28	25	26	27	23	22	21	26	23	24
COD	126	122	127	128	121	122	128	129	176	176	178	179	182	179	175	171
Nitrite-N	2	3.2	5.6	5.8	5.9	6.2	5.8	6.1	6.8	6.8	6.5	6.9	7.8	8.4	9.8	12.8
Copper	1.5	1.6	1.61	1.63	1.58	1.55	1.57	1.6	1.6	1.61	1.6	1.58	1.6	1.58	1.6	1.63
nickel	1.96	1.97	2.3	2.1	2.5	2.5	2.5	2.63	2	2	2.3	2.1	2.5	2.5	2.5	2.63
Zinc	6.3	6.3	6.2	6	6.6	6.7	6.8	6.9	6.4	6.5	6.5	6.5	6.2	6	6.3	5.8
Chromium	3.2	3.5	3.6	3.6	3.8	3.9	3.7	3.8	3.9	3.6	3.7	3.7	3.8	4.3	4.1	4.2
Iron	1.6	1.6	1.65	1.55	1.62	1.53	1.57	1.59	1.62	1.63	1.58	1.58	1.57	1.6	1.61	1.63
Arcenic	1.6	1.62	1.53	1.56	1.48	1.45	1.44	1.5	1.61	1.63	1.58	1.58	1.6	1.61	1.56	1.52

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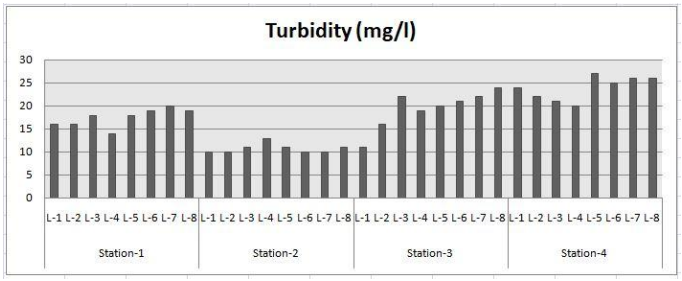
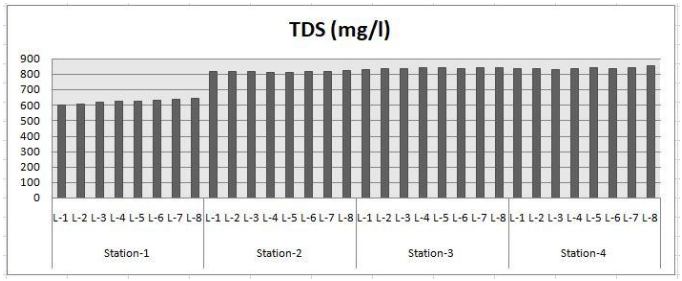
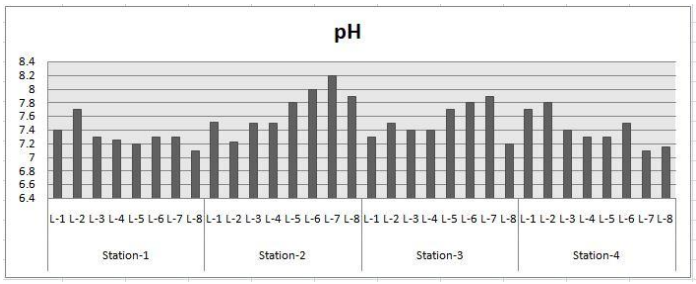


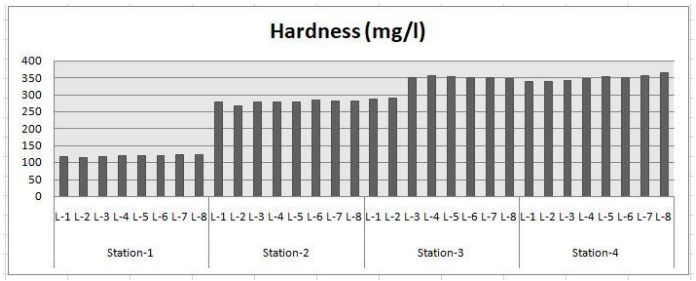
Graph-1 shows turbidity levels month of januvary-2019



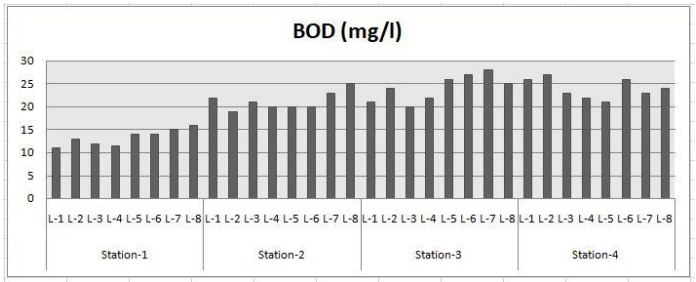
Graph-2 shows TDS levels month of januvary-2019



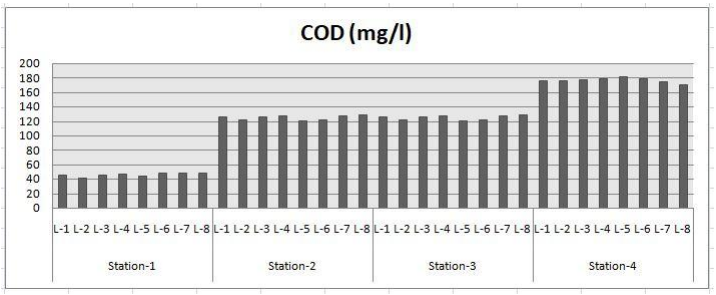
Graph-3 shows pH levels month of januvary-2019



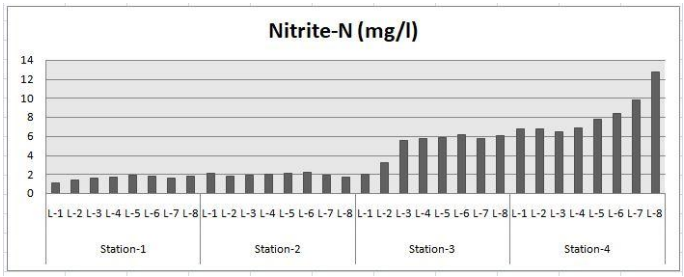
Graph-4 shows Hardness levels month of januvary-2019



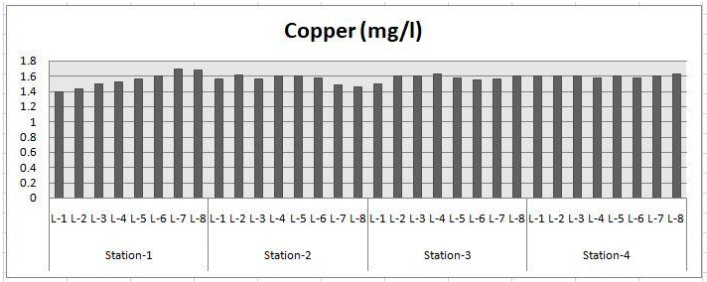
Graph-5 shows BOD levels month of januvary-2019



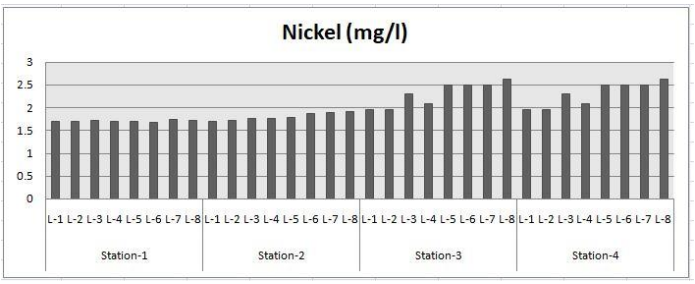
Graph-6 shows COD levels month of januvary-2019



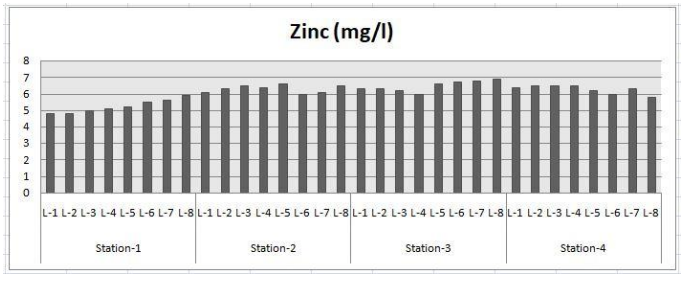
Graph-7 shows Nitrite levels month of januvary-2019



Graph-8 shows copper levels month of januvary-2019



Graph-9 shows nickel levels month of januvary-2019



Graph-10 shows zinc levels month of januvary-2019

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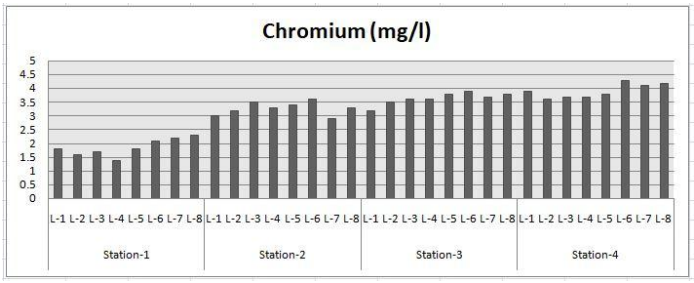
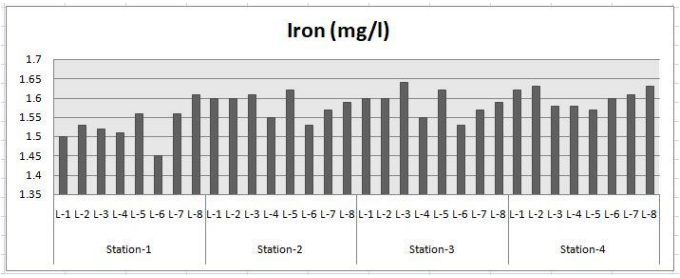
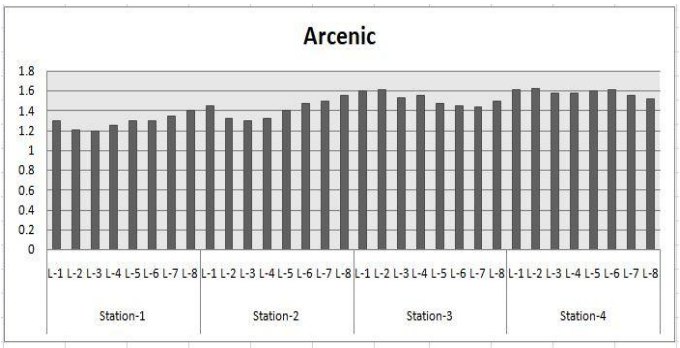


Graph-11 shows chromium levels month of januvary-2019



Graph-12 shows Iron levels month of januvary-2019



Graph-13 shows Arcenic levels month of januvary-2019

4.1. Observations:

Turbidity: Indian regular designed for Drinking Water as per Standards 5-10ppm. In observation in the year of 2019 station-1 and 2 locations are within the permissible limit. Remaining station-3 and 4 are exceeded limit.

TDS: Indian regular designed for Drinking Water as per Standards 500-1000 ppm. In observation in the year of 2019 station-1 locations are within the permissible limit. Remaining station-2, 3 and 4 are exceeded limit.

pH: Indian regular designed for Drinking Water as per Standards permissible limit is 6.6 to 8.5 In observation in the year of 2019 station-1 and 2 locations are within the permissible limit. Remaining station-3 and 4 are exceeded limit.

Hardness: Indian regular designed for Drinking Water as per Standards 75-115ppm. In observation in the year of 2019 station-1 and 2 locations are within the permissible limit. Remaining station-3 and 4 are exceeded limit.

BOD: Indian regular designed for Drinking Water as per Standards permissible limits BOD of safe drinking water Nil. In observation in the year of 2019, station-1 is within limit and remaining stations are exceeded limit.

COD: Indian regular designed for Drinking Water as per Standards permissible limit 250 mg/l. In observation in the year of 2019 station-1and 2 locations are within the permissible limit. Remaining all station-3 and 4 are exceeded limit due to industrial waste and pharma industries.

Nitrite: Indian regular designed for Drinking Water as per Standards it is indicates presence of partly decomposed organic matter permissible limit is Nil. In observation in the year of 2019 station-1 and 2 locations are within the limit. Station-3 and 4 are exceeded limit.

Copper: Indian regulardesigned for Drinking Water as per Standards permissible limit is 1.5 mg/l. In observation in the year of 2019 station-1, 2 and 4 are within the permissible limit. Remaining one station exceeded limit.

Nickel: Indian regulardesigned for Drinking Water as per Standards acceptable limit of 0.02 mg/l. In observation in the year of 2019 station-1, 2 and 4 are within the permissible limit. Remaining one station is exceeded limit.

Zinc: Indian regulardesigned for Drinking Water as per Standards Desirable is 5 mg/l, Permissible limit is 15 mg/l. In observation in the year of 2019

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station-1 and 2 locations are within the permissible limit. Remaining station-3 and 4 are exceeded limit.

Chromium: Indian regulardesigned for Drinking Water as per Standards Desirable 0.05 mg/l, Permissible limit is No relaxation. In observation in the year of 2019 station-1 and 2 locations are within the permissible limit. Remaining station-3 and 4 are exceeded limit.

Iron: Indian regulardesigned for Drinking Water as per Standards 1.0 mg/l. In observation in the year of 2019 station-1, 2 and 4 locations are within the permissible limit. Remaining one is exceeded limit.

Arsenic: Indian regulardesigned for Drinking Water as per Standards Desirable 0.05 mg/l Permissible limit is No relaxation. In observation in the year of 2019 station-1, 2 and 4 locations are within the permissible limit. Remaining one is exceeded limit.

The discussion to this point could be very poor situation of water exceptional of Musi River. Over infection is constantly degrading the water fine of river. The initial is deterioration starting at ananthagiri hills and entire deterioration at wadapalli and whole length isnot always improving self-purification capacity.Therefore, it is essential to trade effluents to liberate through correct treatment along with near join the several treatment systems lying on musi to get better the self refinement system. Over contamination of musi river is alarming the floor water pollutants to authority and citizen. And domestic effluents discharge into surface water without proper treatment, musi river water required screening, coagulation and disinfection methods percent to our floor water resource. The waterway Musi must exist directly monitor; development of setting plus industrialized sewage and household sewage set free must be reduced.

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