



Assessment of the Water Quality of Indra Gandhi Canal Rajasthan with Special Reference to the Hanumangarh Region During (2022-2023).

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KEYWORDS

Alkalinity, chlorinity, pH, water quality, Hanumangarh region, physico-chemical parameters.

ABSTRACT:

To ascertain the physico-chemical characteristics of a water sample from the Indra Gandhi Canal at Hanumangarh region, the current study was conducted. A variety of physico-chemical characteristics, including pH, total hardness, total alkalinity, chlorinity, turbidity, and dissolving oxygen, were studied with the samples connected.

The results show that some of the water samples have chemical constituents in them that are above the Bureau of Indian Standards' (B.I.S.) permissible limits and have a variety of harmful effects.

Within the context of this study, "regional water contamination" will broadly refer to any form of pollution of water that is detectable at the regional level. Based on these results, it is advised that any water source in the research region be evaluated before use for its portability and other home or industrial applications.

Introduction:-

Life depends on water, which is a precious yet finite resource. Approximately 75% of the stuff in the earth's crust is composed of it. many minerals that comes into contact with water will dissolve it since water is a universal solvent. Water gets its unique flavour from dissolved minerals and gases; without these substances, water would taste bland. Water plays a crucial role in the hydrological cycle, which enables the continent's water to behave uniquely.

Our land and water resources are under more stress now than they were a few years ago due to the expansion of companies, technology, population, and water use. Environmental concerns of the most importance include safeguarding and improving the quality of water and resources. In terms of quality, almost 25% of Rajasthan's water sources have several issues. There is too much fluoride in 16%. The surplus salinity is 9%. Water bodies must be periodically and continuously monitored for water quality. One of the primary reasons that an evaluation of the water quality is necessary is the variety of sources of contamination.

Method and materials:

Water samples were taken from the Indira Gandhi Canal in the Hanumangarh region every month for a period of twelve months. Numerous domestic uses exist for these water sources, including drinking. After being

thoroughly rinsed with distilled water, the samples were collected into a premium plastic bottle that held two litres. Water: gathered, preserved, analysed, and interpreted by various procedures and methodologies. Analytical approach: The conventional procedures were utilised to ascertain the physico-chemical properties of the water sample. Using portable equipment, the temperature and PH were recorded. Through the use of volumetric methods, the concentrations of calcium, hardness, sulphate, nitrate, and salinity were calculated. The outcomes were then compared to B.I.S. norms. The Hanumangarh region's sample station's location: One village (khara-khera)provided the samples.

Results And Discussions:-

Water quality evolution for domestic purposes: the results obtained from the analysis of a water sample from the one village in Hanumangarh region are given in Table 1. The physico-chemical characteristics of the water sample have been made in accordance with drinking water standards.



Table 1: Table showing Physico chemical properties of water of Indra Gandhi canal at hanumangarh region during 2022-2023

Months	TEMPERTURE	TURBIDITY	PH	SALINITY	TOTAL	CHLORIDES	TOTAL	DISSOLVE
MONTH					ALKANITY		HARDNESS	OXYGEN
APRIL	27	16	7.2	275	110	20	120	4.2
MAY	30	20	7	276	110.8	21	121.8	2.4
JUNE	34.2	22	7	280	112	22	122.4	2.1
JULY	32.3	21	7.1	278	111.8	20.8	122.9	2.3
AUGUST	29.4	18	7.2	268	28	14	180	2.2
SEPTEMBER	26.1	17	7.3	267	29	14.8	175	2.4
OCTOBER	20.1	15	7.5	264	29.9	14.7	175	6.5
NOVEMBER	19.4	13	7.6	263	35.5	15.1	160.3	6.7
DECEMBER	15.5	10	8.1	258	48.9	15.3	160.2	7.1
JANUARY	13	7	8.2	250	49.8	15.2	108.5	10.8
FEBUARY	18.5	12	8	255	50.4	15.8	109.6	7.6
MARCH	24	14	7.8	260	78.8	16	109.9	7.4

on Aprial the recorded values were as follows: temperature 27, ph was turbidity was 16, salinity was 275 alkanlity was 110 chlrorinity was 20 haedness 120 and D.O was 4.2.

in the data set provided the values for month of may as :follows temperatures 30 ph was 7.00 turbity was 20 salinity was 2.76 total alkalinity was110.8 chlorinity was 21 hardness was 121.8 chlorinity was 21 hardness was 121.8, D.O WAS 2.4.

FOR THE MONTH OF JUNE AS FOLLOW-temperature 34.2 ph was 7.00 turbity was 22 salinity wad 280 total alkalinity was 112 chlorinity was 22 hardness was 122.4 D.O was 2.1.

On 2 jan ,the recorded values were as follows temperature 13 ph was 8.2 turbidity was 7 salinty was 250 alkalinity was 49.8

Potential of Hydrogen (p.H.):

In the Hanumangarh region, the water's P.H. value ranged from 7.0 to 8.2. It shows that the water sample from the Hanumangarh location is quite alkaline. The allowable limits are met by the water samples.

Total Hardness (TH)

The water sample used in this investigation has a hardness ranging from 108.5 to 175.8 mg/l. The hardness (B.I.S.) of the water samples in the research region is used to sort them.

Total alkalinity (T.A):

The water has a consistent level of dissolved carbon in the form of bicarbonates, hydroxides, and dioxide. These are the primary sources of alkanity, which an acid titration makes it easy to measure. The B.I.S. categorization of the study indicates that the alkanity ranges are 28–112 mg/l.

Chloride:

Too much chloride makes water taste salty, and it can have adverse effects on those who are not used to high chloride levels. In the research locations, the concentration of chloride varies from 14 to 22 mg/l.

Temperature:

The annual cycle of the water's temperature was 13 degrees Celsius in January, when it was at its lowest. From then on, it steadily grew to 34 degrees Celsius in June.

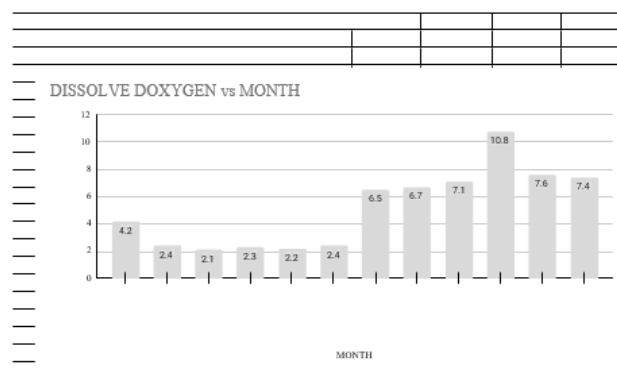
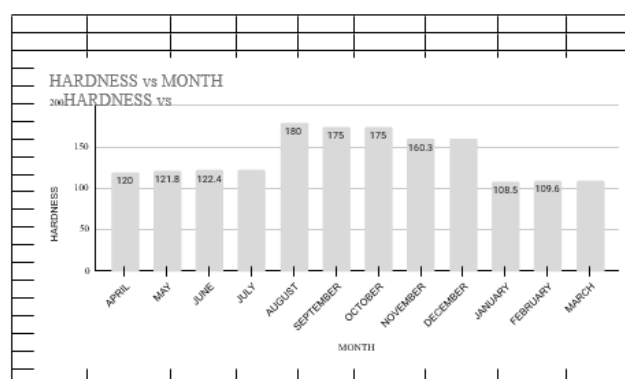
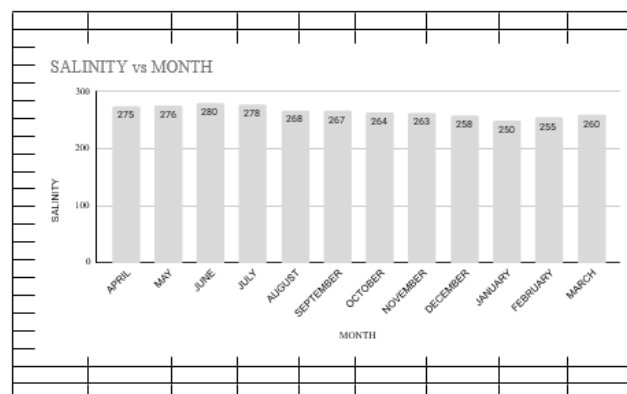
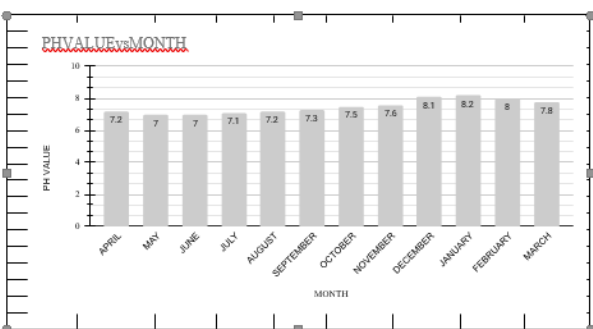
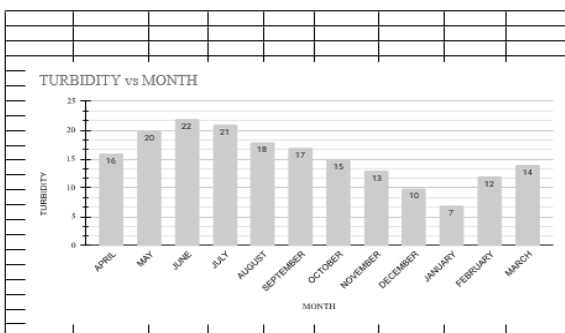
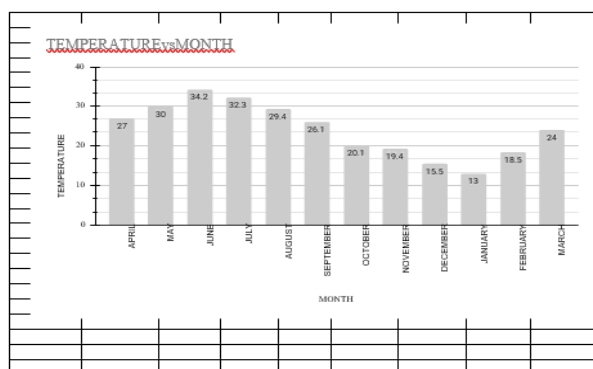
**Turbidity:**

There was a clear correlation between temperature and turbidity. In the research region, the turbidity varied from 7 to 22 mg/l.

Dissolve oxygen (D.O.):

August had the lowest dissolve oxygen value (2.1 mg/l) in the current sample. The cause of this is the addition of turbid water. In January, the highest recorded D.O. value was 10.8 mg/l. This resulted from both productivity and the comfortable temperature. The oxygen that has been dissolved The range of the study region was 2.1–10.8 mg/l.

Salinity:- the water sample used in this investigation has a salinity ranging from 250 to 280 mg/l.

**Conclusion:**

Based on the aforementioned research, it was discovered that during the study, every parameter in the water sample collected from the canal in the Rajasthani village of Kharakhra in Hanumangarh city fluctuated somewhat.

It was evident from the average dissolved oxygen, pH, and hardness values that canal water is appropriate for farming and fish production.



Reference:

1. WHO (2004) Guidelines for Drinking Water Quality (3rd Ed.), Geneva, Switzerland: WHO.
2. APHA (2005): Standard methods for the examination of water and waste water. 21st ed., American Public Health Association, Washington, DC, USA.
3. SHAMSUNDER (2007). Aquachemistry of the GOPAL SWAMY River in Chitradurga, Karnatka Indian J Env. Pro., 27 (5): 420–424.
4. Abida, B., S. Harikrishna, and I. Khan (2009). Analysis of heavy metals in water, sediments, and fish samples of Madivala lakes in Bangalore, Karnataka. Inter J Tech Res-CODEN (USA), 2:249.
5. SUKHDEV KUNDU (2012). Assessment of surface water quality for drinking and irrigation purposes: A case study of the Ghaggar River System. Surface waters, Bulletin of Environment, Pharmacology, and Life Sciences, 1(2): 01–06.
6. Devi Av Baskarans, Kumar Sr. (2013). Physicochemical parameters and zooplankton diversity of A temple pond in Virudhonagar, Tamil Nadu. International journal of science, environment, and technology, 2(2): 250–257
7. DEY D MUKHARJEE D, SAHA NC (2015) A study on the seasonal fluctuation of water quality and zooplankton diversity in terms of the ecological health of five natural water bodies in west Bengal Indian journal of fundamental and applied life science, 5(1): 65–72.
8. Verma et al. (2016) Assessed phytoplankton diversity is important for evaluating the suitability of water for irrigation and drinking purposes.