



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 12, December 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

 9940 572 462

 6381 907 438

 ijirset@gmail.com

 www.ijirset.com



Water Quality Analysis for Water Supply Scheme of Bhongwali Village, Pune, Maharashtra, India

Shrikant Kate¹, Ashutosh Dhamgunde², Vishwajeet Nigade³, Hanuman Biradar⁴, Nayan Patil⁵

Assistant Professor, Department of Civil Engineering, Trinity Academy of Engineering, Savitribai Phule Pune University, Pune, Maharashtra, India ¹

Research Scholar, Department of Civil Engineering, Trinity Academy of Engineering, Savitribai Phule Pune University, Pune, Maharashtra, India ²

ABSTRACT: Water quality analysis is done on the Bhongwali village At Bhor Pune Maharashtra Water is possibly the most precious herbal aid after air. Even though the floor of the earth is generally included water, only a small part of its miles usable, which makes this useful resource very limited. As water is required for unique functions, the suitability of it have to be checked earlier than use. Additionally, resources of water should be monitored frequently to decide whether they may be in sound health or no longer. Poor situation of water bodies aren't only the indicator of Environmental degradation, it is also a threat to the ecosystem. In industries, flawed first-rate of water might also motive risks and severe monetary loss. For that reason, the best of water could be very important in both environmental and financial aspects. As a consequence, water first-rate analysis is crucial for using it in any cause. After years of research, water nice evaluation is now includes a few standard protocols. There are tips for sampling, protection and evaluation of the samples.

KEYWORDS:Water Quality Monitoring, Water supply scheme, Water Quality Analysis, Dissolved solid, Chain of Custody.

I. INTRODUCTION

Water Quality are often defined because the chemical, physical and biological characteristics of water, usually in reference to its suitability for a delegated use. Water are often used for recreation, drinking, fisheries, agriculture or industry. Each of those designated uses has different defined chemical, physical and biological standards necessary to fulfil the respective purpose. For example, there are stringent standards for water to be used for drinking or swimming compared thereto utilized in agriculture or industry. [1]

After many years of research, water quality standards are put in place to ensure the suitability of efficient use of water for a designated purpose. Water quality analysis is to measure the required parameters of water, following standard methods, to check whether they are in accordance with the standard. After a few years of research, water first-class standards are installed location to ensure the suitability of green use of water for a delegated purpose. Water great analysis is to measure the desired parameters of water, following general strategies, to test whether or not they are in accordance with the same old [2]. Thus, the provision of safe and adequate water contributes to better health and increased individual productivity. It is also recognized that there is a significant relationship between water supply and sanitation improvements and the potential for health and economic benefits[1]. Accordingly, rural water supply schemes should deliver the expected service to users for a reasonable period of time in terms of quality, quantity, accessibility, coverage, affordability, and continuity simply called sustainability.

II. REVIEW OF LITERATURE

Have studied water high-quality index has been calculated for special floor water assets particularly lakes, in Nagpur metropolis, Maharashtra (India), for the session January to December 2008; comprising of 3 seasons, summer, wintry weather and rainy season. Sampling points have been decided on the premise of their importance[2]. Water nice index was calculated using water best index calculator given by way of national sanitation foundation (NSF) records gadget. The calculated for diverse studied Lakes confirmed fair water first-rate



in monsoon season which then modified to medium in iciness and poor for summer season. Gorewada Lake confirmed medium water satisfactory rating in all season besides monsoon season. Futala, Ambazari and Gandhisagar lake has additionally declined in aesthetic exceptional over beyond decade following invasion of aquatic weeds inclusive and water primrose, so the reasons to import water fine alternate and measures to be taken up in terms of floor water (lakes) exceptional management Are required.[2]

Have studied, the water exceptional index is a single wide variety that expresses the nice of water through integrating the water fine variables. Its cause is to provide a simple and concise approach for expressing the water best for special utilization[3]. The present paintings offers with the monitoring of version of seasonal water quality index of some strategically decided on floor water bodies. The index improves the comprehension of general water first-class Issues, communicates water quality reputation and illustrates the want for and the effectiveness of protective practices.[3] It is observed that during all instances the trade in WQI price follow a comparable trend during the look at length. The lake water is found of excellent pleasant (WQI - sixty seven.7 to 78.5) for the duration of both seasons. However, it's far located that water quality of lake deteriorates barely from winter to summer time due to the increase in microbial pastime as well as increase in pollutants Attention because of water evaporation. [4].

Objectives of research work are To study the water supply scheme for Bhongwali, To analysis water quality at Bhongwali, Identify polluted water area, cause for water pollution and solution.

III. METHODOLOGY

Methodology is as below,

1. Selection of Parameters:

The parameters of water quality are selected entirely according to the need for a specific use of that water. Some examples are:

Drinking: As per WHO/CPCB Standards

Irrigation:

pH

Conductivity

Sodium & Potassium

Nutrients

Specific compounds

Domestic Consumption: As per BIS Standards

Water Bodies: As per CPCB guidelines

2. Selection of Methods:

The methods of water quality analysis are selected according to the requirement. The factors playing key role for the selection of methods are

- Volume and number of samples to be analyzed
- Cost of analysis
- Precision required
- Promptness of the analysis as required

3. Precision and Accuracy of Method Selected as per Requirement:

What precision and accuracy to be maintained against a particular method is decided according to the objective of the monitoring. The factors influencing this decision includes:

- Budget of Monitoring System
- Parameters to be monitored
- Use of the Water

4. Chain-of-Custody

Procedures properly designed and executed chain-of-custody forms will ensure sample integrity from collection to data reporting. This includes the ability to trace possession and handling of the sample from the time of collection through analysis and final disposition. This process is referred to as "chain-of-custody" and is required to



demonstrate sample control when the data are to be used for regulation or litigation. Where litigation is not involved, chain-of-custody procedures are useful for routine control of samples. A sample is considered to be under a person's custody if it is in the individual's physical possession, in the individual's sight, secured and tamper-proofed by that individual, or secured in an area restricted to authorized personnel. The following procedures summarize the major aspects of chain-of-custody

1. **Sample Labels:**

Labels are used to prevent sample misidentification as well as to identify the collector, if required. In other words, labeling ensures the responsibility and accountability of the collector

2. **Sample Seals:**

Sample seals are used to detect unauthorized tampering with samples up to the time of analysis. So, it is essential to seal a sample before leaving the custody of the collector. Sealing must be done in such a way as one have to break the seal to access the sample.

3. **Field Log Book:**

All the useful information related to a field survey or sampling should be recorded in a Log Book. At least the following data should be in the logbook:

- Purpose of sampling
- Location of sampling point
- Name and address of field contact
- Producer of material being sampled and address, if different from location
- Type of sample
- Method, date, and time of preservation.

4. **Sample Analysis Request Sheet:**

The sample analysis request sheet accompanies samples to the laboratory. The collector completes the field portion of such a form that includes most of the pertinent information noted in the log book. The laboratory portion of such a form is to be completed by laboratory personnel and includes: name of person receiving the sample, laboratory sample number, date of sample receipt, condition of each sample (i.e., if it is cold or warm, whether the container is full or not, color, if more than one phase is present, etc.) and determinations to be performed.

➤ **Sample Delivery to the Laboratory:**

Sample(s) should be delivered to laboratory as soon as possible after collection, typically within 2 days. Where shorter sample holding times are required, special arrangements must be made to insure timely delivery to the laboratory. Where samples are shipped by a commercial carrier, the waybill number to be included in the sample custody documentation. Samples must be accompanied by a complete chain-of-custody record and a sample analysis request sheet.

➤ **Receipt and Logging of Sample:**

In the laboratory, the sample custodian inspects the condition and seal of the sample and reconciles label information and seal against the chain-of-custody record before the sample is accepted for analysis. After acceptance, the custodian assigns a laboratory number, logs sample in the laboratory log book and/or computerized laboratory information management system, and stores it in a secured storage room or cabinet or refrigerator at the specified temperature until it is assigned to an analyst.

➤ **Receipt and Logging of Sample:**

In the laboratory, the sample custodian inspects the condition and seal of the sample and reconciles label information and seal against the chain-of-custody record before the sample is accepted for analysis. After acceptance, the custodian assigns a laboratory number, logs sample in the laboratory log book and/or computerized laboratory information management system, and stores it in a secured storage room or cabinet or refrigerator at the specified temperature until it is assigned to an analyst.

➤ **Disposal:**

Samples are held for the prescribed amount and duration for the project or until the data have been reviewed and accepted. Samples are disposed usually after documentation. However, disposal must be in accordance with approved methods.

5. Proper Sampling

Proper sampling is a vital condition for correct measurement of water quality parameters. Even if advanced techniques and sophisticated tools are used, the parameters can give an incorrect image of the actual scenario due to improper sampling. The proper sampling should fulfill the following criteria:



Fig no.1 Sampling

i. **Representative:**

The data must represent the wastewater or water body being sampled. So, the following factors must be well planned for proper sampling:

- Process of Sampling
- Sampling size/volume
- Number of Sampling Locations
- Number of Samples
- Type of Samples

6. Proper Labeling

Proper labeling prevents sample misidentification and ensures the responsibility and accountability of the collector. The sample container should be labeled properly, preferably by attaching an appropriately inscribed tag or label. Alternatively, the bottle can be labeled directly with a waterproof marker. Barcode labels are also available nowadays. Information on the sample container or the tag should include at least

- Sample code number (identifying location)
- Date and time of sampling
- Source and type of sample
- Pre-treatment or preservation carried out on the sample
- Any special notes for the analyst
- Sampler's name

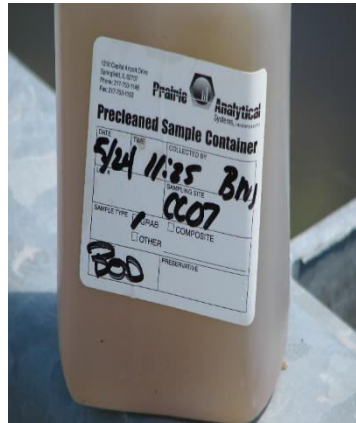


Fig no 2. Labeling

7. Preservation

Usually a delay occurs between the collection and analysis of a sample. The characteristics of the sample can be changed during this period. Therefore proper preservation is required in the way to laboratory after collection, and in the laboratory up to when analysis starts. Complete and unequivocal preservation of samples, whether domestic wastewater, industrial wastes, or natural waters, is a practical impossibility because complete stability for every constituent never can be achieved. At best, preservation techniques only retard chemical (especially, hydrolysis of constituents) and biological changes that inevitably continue after sample collection. No single method of preservation is entirely satisfactory; the preservative is chosen with due regard to the determinations to be made. Preservation methods are limited to pH control, chemical addition, the use of amber and opaque bottles, refrigeration, filtration, and freezing.

8. Analysis

The samples, after reaching laboratory, are analyzed, according to the requisite parameters, following standard methods and protocols.

9. Reporting

The ultimate procedure of water analysis is to prepare a proper report against the submitted requisition. The report must be authenticated before handing over the authority. All data should be kept in the laboratory log and preferably in laboratory database. An alternative way to present the overall quality of water is to express it in the form of Water Quality Index (WQI). WQI is a concise numerical representation of overall water quality of a water body, which is convenient to interpret and used widely. WQI expresses the overall quality of water with a single digit, instead of many digits for all the WQP. Thus, it is readily conceivable for common people.

IV. CONCLUSION

The aim of these standards are to ensure that drinking water will be safe in the future, that there are no health risks to the public, to serve as a basis for the design and planning of water supply treatment, and to provide a benchmark for assessing long-term trends in the performance of the water supply system.

We have implemented an automatic text detection technique from an image for Inpainting. Our algorithm successfully detects the text region from the image which consists of mixed text-picture-graphic regions. We have applied our algorithm on many images and found that it successfully detects the text region.

REFERENCES

- [1] S. Kate, S. Kumbhar, and P. Jamale, "Water quality analysis of Urun-Islampur City, Maharashtra, India," *Appl. Water Sci.*, vol. 10, no. 4, pp. 1–8, 2020, doi: 10.1007/s13201-020-1178-3.
- [2] R. Roy, "An Introduction to water quality analysis," *ESSENCE – Int. J. Environ. Rehabil. Conserv.*, no. July, pp. 94–100, 2018, doi: 10.31786/09756272.18.9.2.214. Marcelo Bertalmio, Luminita Vese, Guillermo Sapiro, Stanley



- Osher, "Simultaneous Structure and Texture Image Inpainting", IEEE Transactions on Image Processing, vol. 12, No. 8, 2003.
- [3] S. R. Gari, C. E. Ortiz Guerrero, B. A-Urbe, J. D. Icely, and A. Newton, "A DPSIR-analysis of water uses and related water quality issues in the Colombian Alto and Medio Dagua Community Council," *Water Sci.*, vol. 32, no. 2, pp. 318–337, 2018, doi: 10.1016/j.wsj.2018.06.001
- [4] A. M. Moreno-Rodenas, F. Tscheikner-Gratl, J. G. Langeveld, and F. H. L. R. Clemens, "Uncertainty analysis in a large-scale water quality integrated catchment modelling study," *Water Res.*, vol. 158, pp. 46–60, 2019, doi: 10.1016/j.watres.2019.04.016
- [5] N. L. Booth, E. J. Everman, I. L. Kuo, L. Sprague, and L. Murphy, "A Web-Based Decision Support System for Assessing Regional Water-Quality Conditions and Management Actions," *J. Am. Water Resour. Assoc.*, vol. 47, no. 5, pp. 1136–1150, 2011, doi: 10.1111/j.1752-1688.2011.00573.x.
- [6] I. Delpla et al., "A decision support system for drinking water production integrating health risks assessment," *Int. J. Environ. Res. Public Health*, vol. 11, no. 7, pp. 7354–7375, 2014, doi: 10.3390/ijerph110707354
- [7] S. R. Kate and P. B. Jamale, "To Investigate the Effect of Permeability Properties on HSC Using Different Mineral Admixture," *J. Adv. Sch. Res. Allied Educ.*, vol. XV, no. 2, pp. 314–318, 2018.
- [8] D. A. Saad, G. E. Schwarz, D. M. Robertson, and N. L. Booth, "A Multi-Agency Nutrient Dataset Used to Estimate Loads, Improve Monitoring Design, and Calibrate Regional Nutrient SPARROW Models," *J. Am. Water Resour. Assoc.*, vol. 47, no. 5, pp. 933–949, 2011, doi: 10.1111/j.1752-1688.2011.00575.x.
- [9] S. R. Kate and S. S. Kumbhar, "Water Quality Analysis a case Study of Urun-Islampur City," *J. Water Resour. Eng. Pollut. Stud.*, vol. 2, no. 3, pp. 1–14, 2017.
- [10] S. D. Preston, R. B. Alexander, and D. M. Wolock, "Sparrow Modeling to Understand Water-Quality Conditions in Major Regions of the United States: A Featured Collection Introduction," *J. Am. Water Resour. Assoc.*, vol. 47, no. 5, pp. 887–890, 2011, doi: 10.1111/j.1752-1688.2011.00585.x.
- [11] A. Kundu, D. K. Datta, and N. T. Tonu, "Evaluating the Quality of Ground Water for Drinking Purpose in Jhenaidah Municipal Area," *Int. J. Innov. Res. Sci. Eng. Technol.*, vol. 7, no. 10, pp. 10527–10536, 2018, doi: 10.15680/IJIRSET.2018.0710063
- [12] C. S. Shalumon et al., "Analysis of uranium and other water quality parameters in drinking water sources of 5 districts of Kerala in southern India and potability estimation using water quality indexing method," *HydroResearch*, vol. 4, pp. 38–46, 2021, doi: 10.1016/j.hydres.2021.04.003.
- [13] H. A. Ameen, "Spring water quality assessment using water quality index in villages of Barwari Bala, Duhok, Kurdistan Region, Iraq," *Appl. Water Sci.*, vol. 9, no. 8, pp. 1–12, 2019, doi: 10.1007/s13201-019-1080-z.
- [14] S. Kate, V. Swami, S. Doiphode, and V. Singh, "Advanced Applications of Artificial Intelligent Systems in Civil Engineering: A Review," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 822, no. 1, 2021.



Impact Factor:
7.569



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details