Water Quality Assessment of Chandlai Lake -Jaipur

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***Abstract*–Lakes are the major source of water to the society. It fulfills the demands of humans, animals& plants also. Now days the lakes are degrading & depleting at a rapid rate which causes serious problems in our society. Restoration deals with the establishment of the various techniques & methods, which deals with the origin of the problems and making the cure for all this. In addition to assessing the costs of actions to improve the water& environment, the strategy will begin to explore the wider societal benefits of a better environment. The comparative analysis of water samples will also help us to understand the problems and the actions needed to overcome it.**

Keywords – Restoration, Depleting, Water Quality.

I. INTRODUCTION

Chandlai lake is our study area in which we are paying emphasis on the improvement of water quality by reducing the adverse effect caused by the surrounding areas as well as the work culture of humans in that area.

Providing a better water quality to society is the main aim of any environmental engineer. It is better to utilize the new techniques that are related to find out the water quality parameters and access the fresh & bacterial free water for drinking purposes.

Natural resource management deals with the effective & efficient management of lands, plants, soils & water for keeping our environment & biodiversity alive in nature.

In this case we need to do is providing a framework for analyzing the impacts of humans & their behavior on the nature.

Anthroprogenically data reveals that increase in population is creating an adverse effect on the environment & biodiversity. A social impact assessment is useful to create some parameters, which are helpful to cope up with sequentially degradation of the surrounding land use.

The effective plantation of trees in nearby areas & stopping the overgrazing by the cattle's may reduce the impact on the environment. Promotion of sustainable development may be adopted in a hierarchical order. Adopting these remedies may sure reduce the negative impact on our environment.

It utilizes a framework, which consists of sustainable management & restoration of lakes making a perfect ecological balance in the environment [1].

II. STUDY AREA

Chandlai Lake is situated around 30kms away from the Jaipur having coordinated: 26°41'45"N 75°52'36"E.It is a major source for various migratory birds that are coming to the lake during the monsoon season & also to the villagers that are using the water for the agricultural purposes. However, in recent era, the conditions are very exhausted and the natural cycle is very disturbed. The lake is suffered from depletion of water quality and natural resources, which also affects the life of villagers & migratory birds. In order to recreate the healthy conditions, we need to understand the basic problems that are associated with the lake, which causes its deterioration with rapid rate [2].

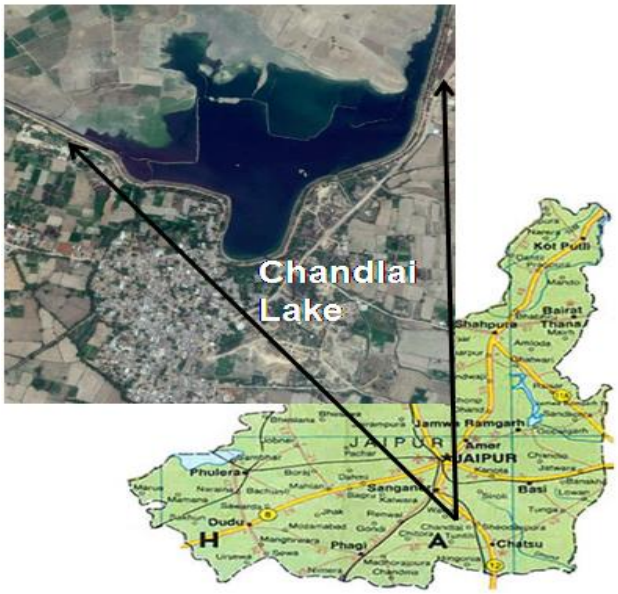

Figure1.Map of Study Area

III. METHODOLOGY

The First step was to identify and select a Lake Site for water sample collection. Then the process of collection of sample begins. This was carried on by determination of different properties of water sample, which was done by performing different lab tests of its sewage properties with keeping in mind the water quality parameters. The next step was to identify the amount of work done to restore the water quality of lake and their remedial actions to make this water a source for drinking and agricultural use. This will also show the various causes, which are responsible for the degradation.

IV. RESULTS & DISCUSSIONS

This table depicts the tests conducted on the water sample keeping in mind the permissible value of the water quality parameter of the drinking water.

TABLE I. WATER TEST ON SAMPLE WATER

Properties	**Observed values (mg/L)**	**Permissible values (mg/L)**
Total Dissolved solids	1000	500-2000
Total suspended solids	1500	1000
Total solids	1500	2000
Chloride content	35.4	250-1000
Alkalinity	120	200-600
pH	7.15	6.5-8.5
Properties	Observed values (mg/l)	Permissible values (mg/L)
Total hardness	1438.2	300-600
Conductivity	11.66 mho	1.9 mho
Turbidity	120 NTU	10 NTU
BOD	116	400
COD	928	250
DO	8	9.2

All permissible limits are taken from Is10500:2012.[3] It is essential to do aeration of the samples and then find out the quality & characteristics of water sample. It is assumed that after doing aeration, some of the parameters may be changed & it must lead to major improvement in the quality of water samples.

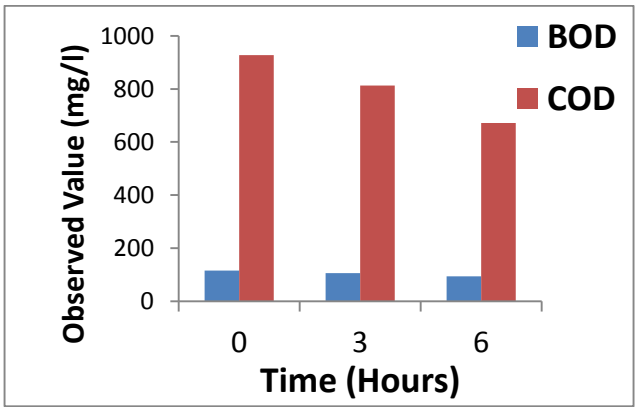

Figure 2. Graphical representation of BOD & COD

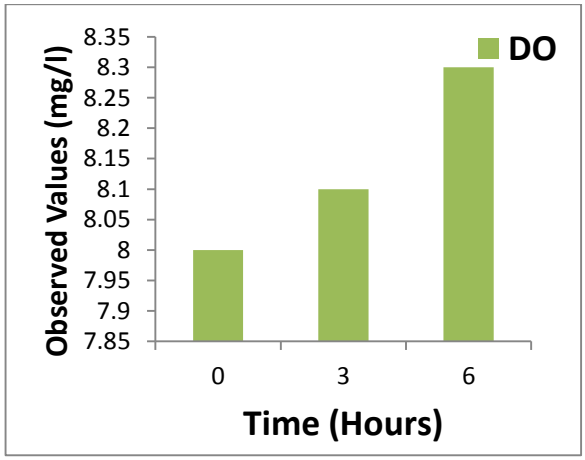

Figure 3. Graphical Representation of DO

Figure 1&2- shows variations of BOD, COD& DO after Aeration. The samples of BOD, COD and DO are collected before aeration denoted as 0hours and then after every three hours' samples are collected.

It can be observed from Figure 1 & 2 that BOD and COD values are continuously decreasing and decreased by approx 19 & 28 percent respectively in 6 hours. Whereas DO increased during this aeration process. It increased from 8 mg/l to 8.3 mg/l after 6 hours.

Hence, aeration provides suitable decrement & increment in the various parameters, which can make our water quality better, & desirable changes are obtained. If aeration is provided for more hours, it will contribute more in the effectiveness of water quality.

It is desirable to provide aerators in the lake, which will increase the amount of dissolved oxygen, which leads to improvement in qualities of water, as well as the aquatic species, which die due to lack of oxygen.

The availability of aerators also enhances the other parameters due to which quality of water will be improved. The removal of weeds in the nearby area & plantation will also assists to create a healthy environment in the nearby areas. The surrounding land mapping will also show the use of land & how the quality of land is affected due to degradation of lake.

Agricultural usage of water through the lake has to be minimized during the monsoon season thus increasing the water level in the lake, which can be used throughout the year in an effective manner.

These are some remedies if adopted the lake will restore to its original state & the humans & migratory bird wouldn't suffer in future. It will also increase the beauty & aesthetic look of lake & conserving the biodiversity in the environment.

V. CONCLUSIONS

Chandlai Lake is a major source of water to the nearby villagers & also to the migratory birds.

Now days the condition is very worst & it need some implementation as early as possible. Harnessing the natural resources leads to very pathetic condition of lake & effective steps has to be taken in order to save our biodiversity.

Hence as per the results obtained, it is desirable to adopt the above recommendations, which are discussed above for the beneficial of lake. It is essential to save our biodiversity because if we are not able to sort out this then the day is nearer when our existence is finished. The efficient & effective steps may cure the problems of the lake & helps us to restore the lake in the original position.

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