

# Assessment Of Water Quality Of Hatirjheel Lake In Dhaka City

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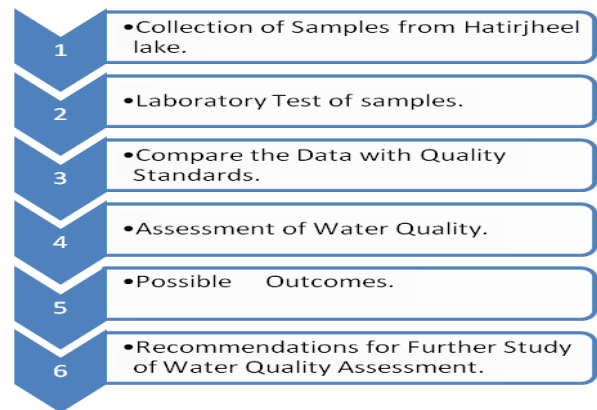
**ABSTRACT:** This paper will show the water quality assessment of Hatirjheel Lake. Research work has been carried out to determine some vital water quality parameters those abate the water quality and find out the most vulnerable location of Hatirjheel Lake. The assessment included whether the water quality meets the criteria for drinking water quality set by ECR'97, and whether it varies from different points of the Hatirjheel Lake in the dry season. We get pH varied from 6.7 to 7.1 with a weighted average of 7.0 100% samples maintain the standard (ECR.97). Color varied from 25 to 50 pt-Co units with a weighted average 42.0 pt-Co units 100% samples showed deviation from standard. Turbidity varied from 0 to 13 NTU with a weighted average of 7.2 NTU 40% samples showed deviating from the standard. Carbon dioxide (CO<sub>2</sub>), varied from 35 to 60 mg/l and a weighted average 46 mg/l. Alkalinity varied from 90 to 345 mg/l as CaCO<sub>3</sub> and a weighted average 162 mg/l as CaCO<sub>3</sub>. Hardness varied from 150 to 300 mg/l as CaCO<sub>3</sub> and a weighted average 215 mg/l as CaCO<sub>3</sub> 40% of the samples have shown lower value then the ECR'97 standard. Chloride varied from 0.5 to 1.0 mg/l with a weighted average of 0.70 mg/l, 100% samples showed deviation from the standard. Carbon dioxide (CO<sub>2</sub>), varied from 28 to 60 mg/l with an average 45.7 mg/l, 100% samples showed deviation from the standard. BOD varied from 0.0 to 10 mg/l with a weighted average of 6.8 mg/l, 100% samples showed deviation from the standard. COD varied from 28 to 60 mg/l with a weighted average of 45.7 mg/l, 100% samples showed deviation from the standard. This paper will help the assessment of water of Hatirjheel Lake and necessity of prevention of lake contamination.

**Keywords :** Water quality assessment, pH, Color, Turbidity, Alkalinity, Hardness, Chloride, Iron, Carbon dioxide (CO<sub>2</sub>), Biochemical Oxygen demand (BOD), and Chemical Oxygen demand (COD).

## 1 INTRODUCTION

Lake water plays an important role to serve as many purposes like irrigation aquaculture and livestock usage. Water quality is deteriorated day by day due to numerous biological, physical and chemical variables causing water toxicity. When concentration of any element or compound exceeds the tolerance limit for organisms that element is treated as pollutants. A primary concern of people living in developing countries is that of obtaining clean drinking water. Conservation of Freshwater resources has now become an issue of worldwide concern because this water is one of the vital resources for treatment as drinking water. There is clear and convincing evidence, however, that the status of its availability and the current patterns of water use and demand are not evaluated and cannot be sustained in the Asian region. Fortunately Bangladesh, because of its geographical location holds adequate reserves of freshwater. But due to excessive population pressure, unawareness lack of enforcement of legal matters, very few of her water bodies retain good water quality and biodiversity. A number of investigations have been carried out in some lakes situated in and around Dhaka metropolis area to evaluate their water quality. There is need to assess the water quality of Hatirjheel to find out the solution of pollution of water.

- The lake & surrounding areas have been surveyed to realize the present situations expired find the reasons of the problems and pollutions of the lake.
- To determine the suitable locations of the water collection entire lake areas have been visited. Water samples have been collected such that the samples represent the characteristics of whole lake.



## 2 OBJECTIVES

- To assess overall water quality of Hatirjheel Lake in Dhaka city.
- To study Variation of water quality of different points of sources of the lake area.
- To identify the major parameters influencing the improvements of the environmental condition of water.
- To identify Pollution sources (present and expected), including domestic, industrial.

## 3 METHODOLOHY

The methodology of the study is given bellow:

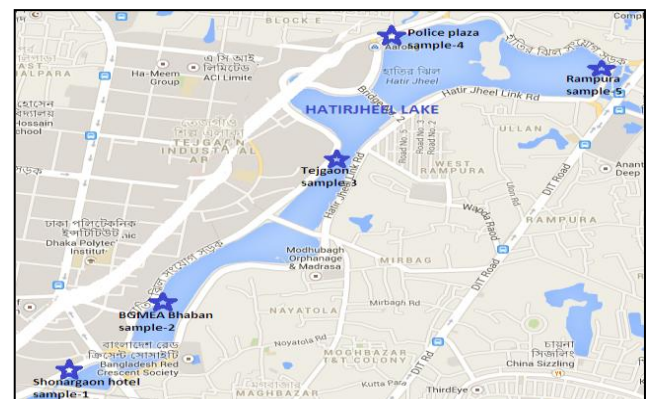
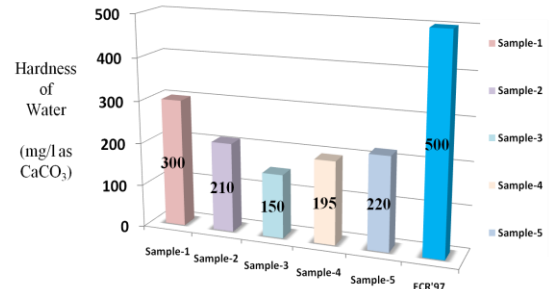
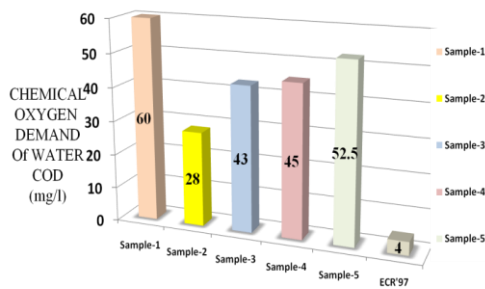
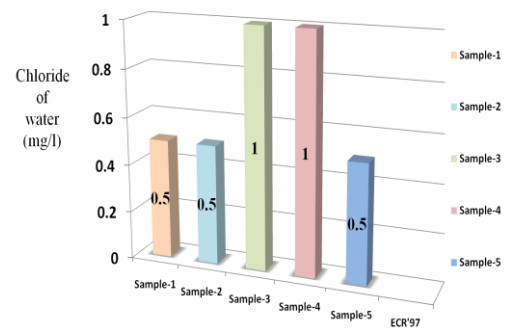
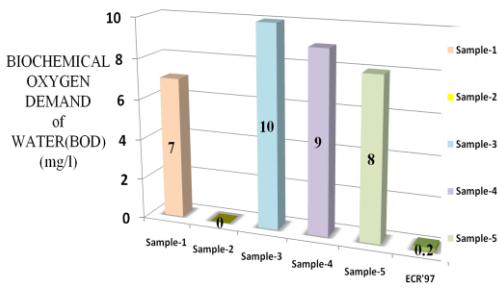
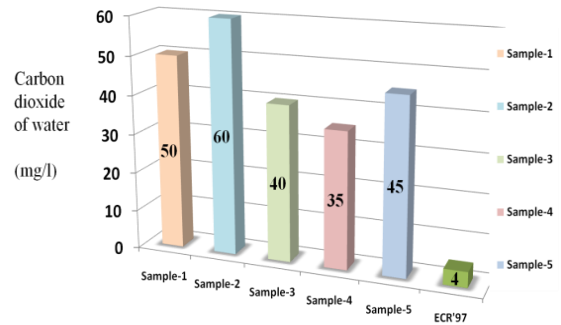
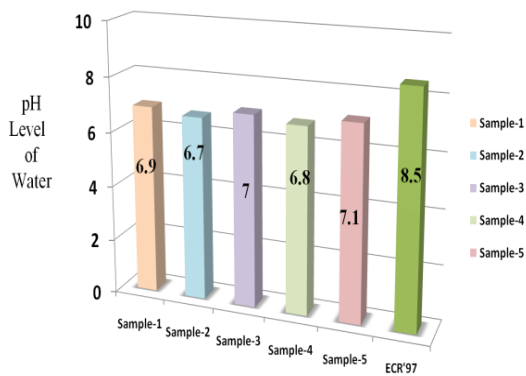


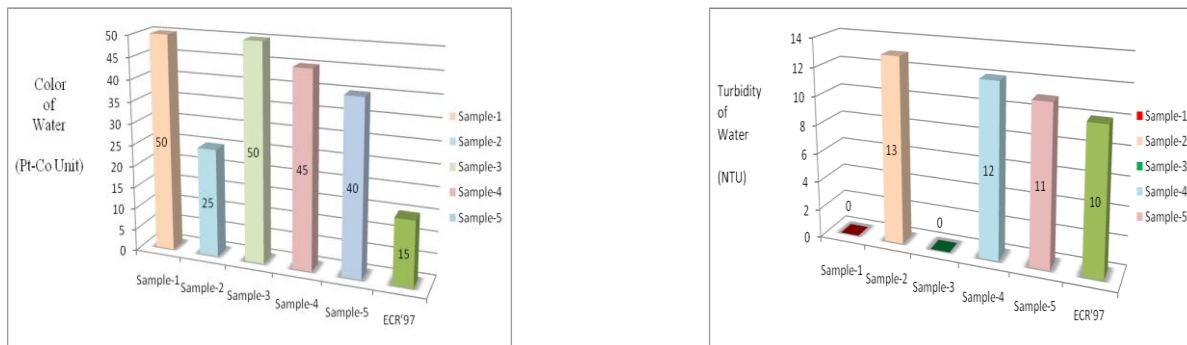
Fig 1: sample collection points of hatirjeel lake

### 4 RESULT & DISCUSSION

- By testing existing water we have pH value 6.9 to 7.1 where as ECR.97 standard range is 6.5 to 8.5 so the pH is 100% satisfied.
- By testing existing water we have color value 25 to 50 pt-Co unit where as ECR.97 standard range is 15 pt-Co unit so the color is so high.
- By testing existing water we have Turbidity value 11 to 13 NTU where as ECR.97 standard range is 10 NTU so the turbidity value is nearly the standard.
- By testing existing water we have carbon oxide value 35 to 60 mg/l where as ECR.97 standard range is 4 mg/l so the carbon dioxide value is very high.

- By testing existing water we have iron value .15 to .25 mg/l where as ECR.97 standard range is 1mg/l so the iron value is very low.
- By testing existing water we have BOD value 0 to 10 mg/l where as ECR.97 standard range is 0.2 mg/l so the BOD value is so high.
- By testing existing water we have COD value 280 to 600 mg/l where as ECR.97 standard range is 200 to 500 mg/l so the COD value nearly standard.
- By testing existing water we have alkalinity value 90 to 345 mg/l as CaCO<sub>3</sub> where as ECR.97 standard range is 600 mg/l as CaCO<sub>3</sub> so the alkalinity value is very low.
- By testing existing water we have hardness value 150 to 300 mg/l as CaCO<sub>3</sub> where as ECR.97 standard range is 500 mg/l as CaCO<sub>3</sub> so the hardness value is very low.





**Fig 2 :** Water Quality Assessment of Different Samples.

## 5 RECOMMENDATIONS

- Identifying new toxic substances, and implementing pollution prevention and control strategies.
- Preventing and controlling harmful discharge.
- Necessity of reusing of surface water for sustainable development.
- Preventing environmental threats before they turn into actual problems.
- Developing water quality and ecosystem health objectives.
- Increased awareness of the importance and fragility of freshwater resources.

## 6 CONCLUSION

Water is fundamental to human welfare, to all socio-economic development and for maintaining healthy ecosystems. Because of growing population and human activities on nature, there is scarcity of water and water is being contaminated. The non-uniform distribution of rainfall and its intensity cause either floods or drought in some regions of Asia almost every year. In Dhaka City, due to unplanned and excessive growth of urbanization and industrialization, lake water utilization and quality deterioration has been increased fast with the contribution to serious environmental degradation. To do so sample were collected from five different points on the basis of inlet sources. The assessment included whether water quality varies among different points of the study area. In this study period and study sample size was limited for test due to time limitation and was not enough to make total environmental study of the lakes. We assess the water quality of Hatirjheel Lake and find that water of Hatirjheel Lake can be reused if proper treatment plant establish and prevent the contamination source surrounding the water body. Routine research work with wide public awareness, government participation and government regulations can save the water of Dhaka metropolitan city and thus a safe and sound water environment can be made for future generations.

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