

Remedial Measures for Rehabilitation and Conservation of the Jagatunga Samudra Reservoir

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Abstract: *The reservoir is very ancient and historical one. The reservoir was constructed about 1000 years ago. It is said that this reservoir was constructed to fulfill the need of water for town Kandhar. During that period the reservoir water was mainly used by people for drinking, irrigation, wading, washing of cattle etc. The dam is constructed N-S direction with the help of soil bunds. At the base of the main dam 5 M height toe wall is constructed for the support. There are natural hillocks on three sides and a huge valley at the fourth side of the reservoir. Some stair cases (steps) were constructed in the semicircular manner in a part of reservoir to reach up to water level. The main features of this reservoir are to creation Jalkund Shrankhala. The water is filtered in Jalkund Shrankhala and was supplied to the town Kandhar for drinking purpose at that time.*

Keywords: Jagatunga, Reservoir, water, assessment, components, conservation

1. Introduction

Jagatunga Samudra Reservoir is situated at the town Kandhar in Nanded District of Marathwada region of Maharashtra State. It lies between 18° 15' – 19° 55' N-Latitude and 77° 44' – 70° 15' E longitude. It has catchment area of 4 Sq. miles. Total submerged area is 88.00 hector. The length of main dam is 830 M and the top width of dam is 6.00 M. The catchment area of the reservoir is largely occupied by hillocks and very few agricultural fields are there.

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2. Material and Methods

In the present investigation the lentic system under investigation is an irrigation tank. The catchments and command area of which has undergone massive urbanization and agriculture around it. It receives untreated domestic sewage, run off solid waste dumped in the catchment area and a lot of silt from construction activities in catchments area. A continuous monitoring of physicochemical quality of water was carried for two years. By sampling at three different sites were selected for periodical sampling on the basis of topography, source of pollution and of human activities within the ecosystem.

The methodology for water analysis (physic-chemical, biological and microbiological), Indian Association of

Aquatic Biologists publication No.2 by Dr. Mohan S Kodarkar (1992) was used. For the zooplankton studied standard methodology of Welch (1948), Kodarkar (1998), Battish (1992) and Ruttner (1975) was used with suitable modification to suit local availability.

3. Results and Discussion

Pure water does not occur in nature (Reid, 1961). The water quality acts as limiting factor for biotic components in an aquatic ecosystem. A survey by NEERI shows that 70% of India's freshwater are polluted by conventional standard (Agrawal et.al, 1982). The man influence on these water bodies caused by rapid cutting of surrounding vegetation thus increasing silt and nutrient load, disposal of a sewage and use of open defecation, cultural activity, agricultural around the water bodies using agrochemical greatly increases the quantity of nutrient and organic matter input to a water body. Thus the lakes start getting atrophied at a very early stage. In India a large number of studies on limnology of lentic water bodies have been carried out in past years but there are few reports of such gross pollution of freshwater lakes from India (Trivedy, 1980; Sharma and Durve, 1982; Trivedy et.al., 1985; Salodia, 196; Tiwari, 1999; Kamat, 2000; Reddy et.al, 2000).

The Jagatunga Samudra Reservoir is very ancient and historical one. The main features of this reservoir are in having the Jalkunda Shrankhala, helps in purification of water. Considering ecological, economical and recreational promise of the water body the work was done to undertaken assess water quality, to study of seasonal diversity and population density of zooplankton and to study trophic status of reservoir. On the basis of data collection and observation in the present study following conclusions may be drawn for remedial measures.

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A number of remedial measures could be initiated for rehabilitation and conservation of the Jagatunga Samudra Reservoir.

- a) The degradative influence is mainly excreted by untreated domestic sewage and its diversion downstream by a bypass line could be preventing the gross population.
 - b) Catchment urbanization usually intercepts natural inlets thereby creating a grave problem of monsoon flooding. Thus while sanctioning layout in the catchment, care should be taken to prevent modification destruction of these influences.
 - c) The washing activities which add detergents should be restricted.
 - d) The biotic potential should be exploited by introducing polyculture/composite fish culture.
 - e) Siltation on account of construction activities and cultural factors like idol immersion drastically alter the morphometry of reservoir. Thus desolation at inlet zones and immersion sites should be undertaken regularly.
 - f) The impact of water pollutants and effluents on aquatic organism particularly on the fishes should be assessed. Data on toxicity testing are essential in the formulation of quality standards of reservoir water.
 - g) The fate of hazardous, non-degradable substances that enter into systems by visiting tourists and local population needs to be determined, and sites of depositions and accumulation of these substances should be identified.
 - h) There should be a provision of adequate training programmed for researches to design and conduct well planned monitoring of water bodies.
 - i) The reservoir is facing problem of tourism, agricultural activities and inputs from local population. Due to this effective management of protecting the reservoir from primary source of pollution in the reservoir. Apart from education and persuading Government and regulators, water quality assessment programmed for this reservoir is to be needed, which will help to conserve the historic, ancient, famous Jagatunga Samudra reservoir.
- [9] **Salodia (1996):** Freshwater biology an ecological Approach 64-68.
 - [10] **Sharma and Durve (1982):** Ecology vis-à-vis conversation need of Lake Pichhola, Udaipur, and Poll.Res.12:25-30.
 - [11] **Tiwari (1999):** Physico-chemical studies of the upper lake water, Bhopal (M.P.) India Jr. Poll. Res., 18(3): 323-326.
 - [12] **Trivedy (1980):** Studies on primary production in Shallow freshwater around Jaipur with special reference to pollution from domestic sewage. Ph.D. Thesis, university of Rajasthan, Jaipur, India.
 - [13] **Trivedy et.al. (1985):** Studies on chemistry and phytoplankton at few fresh water bodies in Kolhapur with special reference to human activity. Poll. Res.4 (1):25-44.
 - [14] **Welch (1948):** Limnological Methods. Blackstone Co., Philadelphia, 381 pp.

References

- [1] **Agrawal et.al, (1982):** State of India's Environment. A citizens Report Center, for Science and Environment, New Delhi.
- [2] **Battish S.F. (1992):** Freshwater zooplankton of India. Oxford and IBH Publishing Co.Pvt.Ltd, New Delhi.
- [3] **Kamat (2000):** Hydrobiological studies of two temple ponds in Panda Taluka, Goa. Jr. Eco. Env. And Cons., 6(3): 361-362
- [4] **Kodarkar M.S. (1992):** Methodology for Water Analysis, Physico-chemical, Biological and Microbiological, Indian Association of Aquatic Biologists, Hyderabad, publ. 2; pp.50.
- [5] **Kodarkar M.S. (1998):** Methodology for Water Analysis (Physico- Chemical, Biological and Microbiological) IAAB, pub.No.2.
- [6] **Reddy et.al, (2000):** Hydrogeo-chemistry of ground water in Amangal Mahboobnagar Dist.A.P.Jr.Aqua.Biol., 15(1and2):62:66.
- [7] **Reid (1961):** Ecology of inland waters and estuaries Reinhold pub.Corp. New York.
- [8] **Ruttner (1975):** Fundamentals of Limnology (3rd Ed.) Translated by D.G.Frey and F.E.J.Fry from German University of Toronto Press.307 pp.