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**Water Quality Index for Kalaoya Basin****Muhandiram G.M.H.M.<sup>1</sup>, Bandara W.D.C.<sup>1</sup>, Perera W.L.G.D.<sup>1</sup>, Vithanage M.<sup>2</sup>,  
Edirisinghe V.<sup>3</sup>, Athapaththu B.C.L.<sup>1\*</sup>**<sup>1</sup>*Open University of Sri Lanka, Nawala, Sri Lanka*<sup>2</sup>*University of Sri Jayewardenepura, Nugegoda, Sri Lanka*<sup>3</sup>*Atomic Energy Board, Colombo 09, Sri Lanka**\*bcli@ou.ac.lk***Abstract**

Water quality is considered as a general issue in river basins in Sri Lanka. Anthropogenic and natural activities adversely affected quality of water. Suitability of water depend several factors. Such as characteristics of water, soil, plants and climate. If we considered the dry zone in Sri Lanka the showers are seasonal in such case it rains once in the year the rest under the sun. Due to this phenomenon the quality of water changes in its contaminant concentration and soil condition. This research is therefore to find a solution to above discussed matters. Therefore, research is carried out among the Kalaoya basin in Sri Lanka to find out the quality of various water resources. For this purpose, 20 sample locations were collected of starting from upstream (Dambulla) to downstream (Eluwamkulma). These places include such as Rajanganaya, Dewahuwa, Kandalama, Kalawewa, Saliyawewa and etc. In this calendar year we have carried out sampling twice in each location by considering the rainfalls. Thereof we have determined suitable seasons are during North-East monsoon and South-West monsoon. To cover up the NE monsoon we chose end of February that is wet season and for SW monsoon end of August that is dry season for selected locations respectively. As during this period of time, it is highly evident the effect of dry and wet seasonal changes to water qualities. WQI is calculated by considering physical and chemical parameters PH, EC, TDS, Chloride, Fluoride, Nitrate, Sulfate, Calcium, Irons, and Zinc. Water quality index reduces the number of parameters used in monitoring water quality to a simple expression in order to facilitate interpretation of the data. Kidney diseases and dental issues are very commonly observed in many parts of dry zone. The total dissolved solid (TDS) and electrical conductivity are correspondingly high. Considering Kalaoya basin large number of areas, fluoride levels of groundwater are higher than recommended level. The water quality of the Kalaoya basin needs to be studied comprehensively because of the area's importance as a drinking water supply for the Anuradapura town, Dambulla area, Nochchiyagama and Rajanganaya. Therefore, water quality should be ensured so that no contaminants exceed levels that would affect human health. The WQI values of surface water ranged from 35 to 158. The values of WQI showed that was good location at 4 sample points which are Thabuththegama bridge (A28 road), Kalaoya A9 road crossing and Kalaoya A6 road crossing. The WQI values of shallow water ranged from 6 to 187. The values of WQI showed that was good location at 5 sample points which are Kalaoya A9 road crossing, Dewahuwa tank, Siyabalangamuwa, 13 km post of Galewela-Thonigala road and Sole wewa. The WQI values of groundwater ranged from 1.1 to 385. Water quality of groundwater is better than other water resources except Siyabalangamuwa tank and A12 road crossing locations. Therefore, drinking water of Kalaoya basin should purify before using. It is concluded that WQI can be used as a tool in comparing the water quality of different sources. It gives the general idea about the quality water resources, and possible problems with water in a particular region.

**Keywords:** Kalaoya Basin, WQI, Groundwater, Surface water, Shallow water, Fluoride