Building Towards Sustainable Future

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VOLUME I & II

DEPARTMENT OF CIVIL ENGINEERING

EASWARI ENGINEERING COLLEGE

(A UNIT OF SRM GROUP OF EDUCATIONAL INSTITUTIONS)

RAMAPURAM, CHENNAI -600089

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VOLUME II

STUDIES ON GRAND CANAL DRAINAGE AND IT'S IMPACTS IN PUDUCHERRY REGION

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Abstract

Inland water ways is a network of all water bodies such as river, creek, canal, backwaters and so on. Inland water transport is an addition to rail and road transport. It is an environmental-friendly mode of transport and is highly feasible compared to others. The Grand Canal and Uppar Canal in Puducherry have the potential to be used as an inland water transport. But there are certain constraints in it. Hence, an experimental work was conducted by monitoring these two canal waters i.e. Grand Canal and Uppar Canal in Puducherry region, India. The scope and objectives of the study are conducting the detailed inventory; identify the environmental constraints and workout implementation mechanism and organizational set up for carrying out the developmental activities. This study assessed the Physico-Chemical and Biological characteristics of Canal and the nature of ground water in that region. Around 20 water samples were collected from different areas during a period of nine months from July 2018 to March 2019. The Canal water and Ground water (bore well and open well) samples were collected in and around the canal. The quality of water was evaluated on the basis of various physical, chemical and biological parameters. This study indicates that all the parameters are within the permissible limit. The quality of groundwater around the Canals can be fixed in such a way that it was safe and could be utilized for residential purposes. If the water of the canal is maintained, then it can be availed for various purposes such as irrigation, drinking etc. It was found that the water quality parameters had exceeded the contamination level for canal water. It satisfied the requirement for the use of irrigation in agriculture. The samples thus collected appeared to be yellowish & blackish in colour and the odour was found to be fishy & had the smell of sewage. The mean water temperature were recorded as 27-30˚C respectively. The mean pH of the water samples was found to be 6.62-8.42 and electrical conductivity varied from 216.0 to 452.0µS/cm. The mean dissolved oxygen value of the water samples ranged from 0 to 6.62 mg/L. For biological oxygen demand, the values ranged from 23.64 to 236.0mg/L. The total alkalinity was in range between 87-549 mg/L. Total dissolved solids level ranged between a 140.4 to 258.0mg/L. Total hardness values ranged from 162.16 to 550.65 mg/L respectively. The correlation between chemical oxygen demand (COD) and biological oxygen demand (BOD) were found highly significant. Various parameters such as colour, pH, temperature, electrical conductivity, total dissolved solid (TDS), total alkalinity (TA), dissolved oxygen (DO), chemical oxygen demand (COD), and biological oxygen demand (BOD) were assessed to know the present status of the canal water quality of Puducherry. Now our Government is focusing on Beautification of the Grand Canal and they are supporting us in this. Rejuvenation is a feasible option. It will have a positive impact on the social and economical aspects of Puducherry and it will also be beneficial for the environment.

Keywords: Grand Canal, Uppar Canal, Characteristics Study, Water Quality, Canal Rejuvenation

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ASSESSMENT AND MAPPING FOR ENVIRONMENTAL DETERMINANTS OF AGRITOURISM DEVELOPMENT IN ALMATY REGION OF KAZAKHSTAN

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Abstract

This study aims to understand relations between environmental determinants and agritourism by example of Almaty region of Kazakhstan. As the foundation for research of specific content was used and developed the representation about agrarian recreational-tourist complexes (ARTCs) as special territorial and intersectoral integrities which largely depends on environmental determinants. Authors' understanding the environmental determinants of agritourism development are presented as the most important prerequisite for different and successful agritourism activities. With use of developed instruments, information different types and cartographical data was identified 15 ARTCs within the Almaty region as well as the influence of environmental determinants for agritourism was studied. In bare outlines are described the methods of functional-agritourism and ecological-agritourism analysis of the ARTCs' territory based on analysis of environmental determinants. Results of the research can be used for establishment the prospects for agritourism development within the ARTCs and for development of address recommendation system.

Keywords: *Agritourism, Environmental Determinants, Complex, Assessment, Kazakhstan*

METHOD OF ENVIRONMENTAL AUDIT AND IMPACT ASSESSMENT ON PASTURE AGROLANDSCAPES FOR SUSTAINABLE LIVESTOCK (BY EXAMPLE OF CENTRAL-KAZAKHSTAN'S CONTENT)

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Abstract

This study aims to develop the method of environmental audit and impact assessment on pasture agrolandscapes for sustainable livestock by example of Central-Kazakhstan's content. As the foundations for research of specific content was used the representations about pasture agrolandscapes, landscape-ecological and landscape-indicative approaches, interaction between environmental audit and impact assessment in Kazakhstan. Authors' understanding the environmental audit and impact assessment for pasture agrolandscapes are presented as the complicated method which requires special knowledge and specific information about the landscape environment from the users. Our experience demonstrates that solution of the tasks of national food security and environmentally safety territorial development can be based on the development of such private method with using the indicators of the landscape environment status. Methods similar to this one allow to study geocomplexes and their important characteristics for form of a unique system of reliable indicators for environmental problems and create a scientifically based plan for optimal regional land use and land management system for pasture agrolandscapes.

Keywords: Method, Environmental Audit, Environmental Assessment, Pasture Agrolandscapes, Kazakhstan

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ANALYSIS AND MAPPING OF GROUND WATER POTENTIAL IN GIS

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Abstract

Ground water is a very important aspect in growth and development of a city. The potential levels and standards of ground water has been alternating due to many factors such as salt water intrusion, Tsunami attack on coastal region, intrusion due to Chennai Floods and seasonal variation in ground pattern. Various water quality parameters such as pH, TDS, Carbonate, Nitrate, Hardness, electrical conductivity has been tested. Analysis has been done with capering over past 15 years water quality data. Based upon analysis water quality index has been prepared. The current trend of water quality has been analysed using GIS – Geo referencing and spatial orientation of data has been done. Base map has been prepared for all concentration levels and for collected data for consecutive years. Spatial orientation with different types of data has been done. Thus the base map prepared with GIS represents as source for current, past and future levels of ground water concentration levels.