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Integrating Flood Hazard Mitigation and Watershed Planning Through Regional Institutional Approaches: A Recommendation For The Tar River Basin Of North Carolina

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Abstract

In just one year, Governor Mike Easley of North Carolina directed over \$350 million in federal and state funds toward citizens, businesses and public agencies that sustained property damages during the hurricane season of 2004.¹ These funds are assisting the recovery process not in the state's coastal areas, but in the mountains of western North Carolina where heavy rainfall and overflowing rivers caused most of the damages. Flood hazard mitigation in communities with flood hazard risks or flood-prone areas can significantly reduce property damages as well as the emotional stress and long-term economic losses resulting from future flood events. Thus, hazard mitigation is a required element of sustainable communities. Reducing the potential for damages increases the resiliency of a community's

members and its economy in the face of future disaster events. In regards to the environmental component of sustainability, the development of Gilbert White's concept for floodplain management, or non-structural flood hazard mitigation actions, emphasizes the natural and beneficial functions of floodplains, proactive approaches, and restoration and protection efforts that achieve broad environmental objectives into the future. "With increasing reliance being placed upon non-structural measures such as land acquisition and land use regulation, the need for consistency among the policies and actions of local governments bordering a common stream is acute."² One jurisdiction's action in the floodplain will have impact-favorable or unfavorable-on jurisdictions downstream, across the river and even upstream. As a result, hazard mitigation actions implemented by local government or property 1 North Carolina Office of the Governor website: <http://www.governor.state.nc.us/>. Last accessed April 14, 2005. 2 Platt, Rutherford. 1980. Intergovernmental management of floodplains. Rutherford H. Platt, Ed. Program on Technology, Environment and Man, Monograph #30, Institute of Behavioral Science, University of Colorado, ., p. IV. owners in a community can be negated by the lack of similar action among other communities in the floodplain. In addition, floodplain management measures may become less effective if an equal amount of attention is not given for the impacts of increased impervious surface throughout a river basin. Increased impervious surfaces, particularly, in the upper portions of the basin can contribute to higher volumes of water reaching streams within the river basin and at a faster rate during a flood event. Effective flood hazard mitigation requires consistent floodplain management across multiple jurisdictions in conjunction with a broader basinwide planning approach. The challenges associated with regional land use regulation and intergovernmental coordination-both horizontally and vertically-have been well researched and documented for hazard mitigation as well as other water resources management issues. As a result, many experts including academics and practitioners abandoned the notion of regional planning approaches for application in these urban planning specializations decades ago. The most effective way to reduce the potential damages and escalating costs of future flood disasters is to integrate flood hazard mitigation actions with watershed planning tools; thus, a regional approach is inevitably needed. With scarce literature and findings about recent basinwide planning approaches, we must then look to successful models of regional planning approaches in other fields such as transportation planning and significant or natural resources protection. As a result, it becomes obvious that all regional planning approaches struggle from obstacles and the factors for success are directly linked to the regional context-especially, the local governments involved and the priorities, motivations and goals that each brings to the table-in which the model was applied. This masters project seeks to overcome the void in recent research about potential models for regional hazard mitigation by using diverse case studies of regional approaches and considering the local context within a specific river basin. As a result, the paper that follows concludes with a recommended regional institutional approach for the Tar River Basin of North Carolina. The recommended approach is designed to promote strong collaboration between state and local governments, and achieve diverse benefits through the integration of flood hazard mitigation and watershed planning.

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native approaches to reduce the flood hazard are necessary. The viability and appropriateness of alternate measures must be worked out in relation to the nature of hazards. Floodplain management includes all planning and actions needed to determine, implement and revise plans for the best use of flood plains and their water resources for the welfare of the country. Its goal is to strike a balance between the benefits of flood plains of a river where the plains are created by over-flow of water from the channels of rivers and streams. Generally the term flood plain includes the water channel. The case of the red river basin by Robert M. Stewart. A Thesis presented to The Faculty of Graduate Studies In Partial Fulfillment of the Requirements for the Degree of Ph.D. in natural resources and environmental management. Natural Resources Institute University of Manitoba Winnipeg, Canada R3T 2N2. Issues and Recommendation in the Adaptation of Flood Footprint and Accountability Mechanism. River Chief System Application. Integrated Flood Risk Management at River Basin Scale. References. Small watershed trial study: longxi river, people's republic of china 24. Tables 1 Structured Approach for the Development of Flood Risk Management Plans 2 Alternative Organizational Models for Flood Footprint and Accountability Mechanism 3 Inundation Area for Each Flood Return Period 4 Decrease in Inundation Area Due to Project Interventions 5 Water Level for Different Test Cases 6 Discharge Reduction from Different Test Cases 7 Cost Reduction Results for Case 2 and Case 3. Flood Susceptibility Assessment through GIS-Based Multi-Criteria Approach and Analytical Hierarchy Process (AHP) in a River Basin in Central Greece. International Research Journal of Engineering and Technology (IRJET). [online] 6(3), 738-751. Available at: www.irjet.net/archives/V6/i3/IRJET-V6I3137.pdf [Accessed 3 March 2019]. 17. Liu Q.Q. and Singh.V.P. (2004). Effect of Microtopography, Slope Length and Gradient, and Vegetative Cover on Overland Flow through Simulation. Assessing flood hazard using flood marks and analytic hierarchy process approach: A case study for the 2012 flood event in Quang Nam, Vietnam. Natural Hazards, 66(1), 1091-1050. Flood Hazard zoning in Lam river basin, Vietnam using

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