

2011-2012 TWRI Mills Scholarship Program Application

1. **Name of Student:** Sasathorn Tapaneeyakul

UIN:

2. **Contact Information:**

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4. **Proposed Research:**

Ecosystem has values associated with its services. Watershed is a vital source that provides services to both human and non-human alike. Though valuation of watershed has been done, its monetary values seem to be elusive. Recent reviews of surveys of valuation studies reveal that economic benefits of protected watersheds are rarely quantified (Georgiou et al., 1997; Dixon, 1997; Pattanayak, 2004). The previous studies have also aimed to evaluate only on certain aspects of the watershed, especially on the soil erosion effects (Georgiou et al., 1997; IIED, 1994; Pattanayak, 2004), while ignoring other related aspects contributing to the values of the watershed. These hinder the ability of stakeholders to devise effective protection plan and management options available for sustaining the watersheds.

Lampasas River Watershed, located in Texas's Brazos River Basin, is listed as impaired on the Texas Water Quality Inventory and 303(d) List due to elevated bacteria levels (Hoffman, 2011). The need for impairing the watershed is critical and requires thorough research before the watershed protection plans (WPPs) can be developed and implemented. A watershed valuation, which addresses three aspects associated with the watershed services: environment, economic, and social, is crucial to allow for comprehensive analysis of the watershed values.

The goal of this research is to develop a conceptual framework in economic valuation of watershed. Four objectives that will be addressed in this research include: (1) To review current watershed valuation models; (2) To establish a framework for watershed valuation; (3) To apply the proposed framework to a specific watershed as a case study; (4) To evaluate and validate the proposed framework and methodology.

Extensive collections of data are available from Blackland Research and Extension Center. These include ecological and hydrologic data as well as ongoing data collections on the social and economic aspects associated with the Watershed. Geographic Information Systems (GIS) and ArcGIS will be utilized as the primary means of compiling and analyzing the data. Hedonic cost functions will be constructed based on the services provided by the watershed. Then, regression analysis of the model will be performed to determine the correlation of the variables impacting the watershed services and its values.

The research is expected to develop a framework for the economic valuation, which has been overlooked in most studies. This will not only apply to the watershed valuation in particular, but also other ecosystem and environments. Also, by taking into account all aspects associated with the

watershed services, the monetary values will be less biased and provide more accurate information that can be utilized for future development and policy implementations.

5. Academic Qualifications:

Ph.D. in Rangeland Ecology and Management, Texas A&M University, GPA:

M.S. in Economics, University of Texas at Dallas, Richardson, TX, GPA:

B.A. in Economics and Finance, University of Texas at Dallas, Richardson, TX, GPA:

GRE Scores: Verbal, Quantitative

TOEFL: (computer-based)

Courses Taken:

Course Name

Grade

Geographic Information Systems

Advanced Topics in Geographic Information Systems

Landscape Ecology

Principles of Ecosystem Science and Management

Climate Change

Economics of Underdeveloped Agricultural Areas

Operations Research Methods in Agricultural Economics

Time Series Analysis

The Research Process

ArcHydro Short Course Certificate from TWRI

6. Proposed Use of Funds:

Funds will be used to pay for a portion of tuition and fees as well as travel costs to the Blackland Research Institute to acquire data and consult with the research team.

7. Intended Career Path:

I intend to pursue my career in an environmental agency/research facility that focuses on economic valuation of environment. My goal is to continue on with the research and establish a systematic approach for the valuation and integrate related technologies such as GIS and statistical softwares to expedite and validate suitable valuation model for environments.

References

Georgiou, S., Whittington, D., Pearce, D., Moran, D., 1997. Economic Values and the Environment in the Developing World. Edward Elgar, Cheltenham, UK.

Dixon, J., 1997. Analysis and management of watersheds. In: Dasgupta, P., Goran-Mäler, K. (Eds.), The Environment and Emerging Development Issues, vol. I. Clarendon Press, Oxford, pp. 371–398.

Hoffman, D., 2011. Lampasas River Watershed protection plan. Blackland Research and Extension Center.

IIED, 1994. Economic evaluation of tropical forest land use options: a review of methodology and applications. Unpublished Report. International Institute for Environment and Development, London.

Pattanayak, S., 2004. Valuing watershed services: concepts and empirics from Southeast Asia. Agric Ecosyst Environ. 104, 171-184.