

**1. Development of a Watershed Plan for the River Raisin**

Title of Project

**2. David Allan**

Name of Project Advisor

Signature / Date

**3. Client Information:**

**River Raisin Watershed Council**

Name of Client Organization

**Gayle Mitchell**

Name of Primary Contact

**1042 Sutton Road, Suite 4 Adrian, MI 49221**

Street Address City, State Zip Code

**(517)265-5599 riverraisin@lenawee.mi.us**

Phone Number Email Address

**4. Final Team Members:**

riverraisin@ctools.umich.edu

Group Email Name

**Kat Ridolfi**

Name of Member 1

Signature / Date

**Leslie Ramirez**

Name of Member 2

Signature / Date

**Bill Bennett**

Name of Member 3

Signature / Date

Name of Member 4

Signature / Date

**5. Project Summary:** The River Raisin Watershed is located in southeastern Michigan and northern Ohio, and drains approximately 1,000 square miles of land before terminating into Lake Erie. Currently, agriculture dominates the watershed but a growth in exurban development is contributing to changing land use practices. As a result, the river is heavily impacted and is in need of a management plan that investigates threats to the watershed's health. The River Raisin Watershed Council and the Nature Conservancy of Michigan ("the clients"), both active in advocating for watershed protection, enlisted the project team's help in developing this plan. The project investigates three areas of research in order to develop strategies to mitigate for the major impacts to the watershed's health. First, habitat assessment using TNCs "5-S Workbook" will aid the project team in identifying areas of natural importance and wildlife species that may warrant protection and conservation. After the team identifies such "conservation targets", strategic measures and goals will be evaluated, and recommendations for appropriate management practices will be provided to the clients. Secondly, water quality is of great concern in the watershed due to the impacts of an agricultural and urban watershed such as the River Raisin. Water quality assessment for this project will entail a visual survey, analysis of water chemistry (i.e. dissolved oxygen, nutrient and sediment loads), bacterial testing, and identification of intolerant macroinvertebrates. This will help identify problem areas within the watershed and enable the team to make recommendations for better management. Thirdly, the team will assess the existing networks of stakeholders and interests groups, laws, policies, and educational opportunities that now affect and may in the future help to promote the long-term health and management of the watershed. Our final product will serve as a guide for watershed planning, not only for the River Raisin, but also for other similar watersheds in Michigan.

**6. NRE 701 Instructor Approval:**

**Donna Erickson**

Signature / Date

## Table of Contents

Abstract.....	1
Introduction.....	1
Problem Statement.....	2
Background.....	2
Description of Proposed Research.....	4
I. <u>Identification of Important Natural Features and Species for Conservation</u> .....	4
II. <u>Water Quality</u> .....	6
III. <u>Stakeholder Involvement, Environmental Education, and Policy Coordination</u> .....	9
Institutional Resources.....	11
Budget.....	13
Personnel.....	15

## **Abstract**

The River Raisin Watershed is located in southeastern Michigan and northern Ohio, and drains approximately 1,000 square miles of land before terminating into Lake Erie. Currently, agriculture dominates the watershed but a growth in exurban development is contributing to changing land use practices. As a result, the river is heavily impacted and is in need of a management plan that investigates threats to the watershed's health. The River Raisin Watershed Council and the Nature Conservancy of Michigan ("the clients"), both active in advocating for watershed protection, enlisted the project team's help in developing this plan. The project investigates three areas of research in order to develop strategies to mitigate for the major impacts to the watershed's health. First, habitat assessment using TNCs "5-S Workbook" will aid the project team in identifying areas of natural importance and wildlife species that may warrant protection and conservation. After the team identifies such "conservation targets", strategic measures and goals will be evaluated, and recommendations for appropriate management practices will be provided to the clients. Secondly, water quality is of great concern in the watershed due to the impacts of an agricultural and urban watershed such as the River Raisin. Water quality assessment for this project will entail a visual survey, analysis of water chemistry (i.e. dissolved oxygen, nutrient and sediment loads), bacterial testing, and identification of intolerant macroinvertebrates. This will help identify problem areas within the watershed and enable the team to make recommendations for better management. Thirdly, the team will assess the existing networks of stakeholders and interests groups, laws, policies, and educational opportunities that now affect and may in the future help to promote the long-term health and management of the watershed. Our final product will serve as a guide for watershed planning, not only for the River Raisin, but also for other similar watersheds in Michigan.

## **Introduction**

The River Raisin Watershed drains approximately 1000 square miles of Southern Michigan and Northern Ohio before terminating in Lake Erie. Historically, the River Raisin supported high and well-documented biological diversity of fishes, mussels, and other invertebrates, as well as biologically important wetlands, riparian lands, and uplands. Today, agriculture and the chemicals used by such an industry have resulted in degradation of the health of the watershed. In addition, development of urban centers including Manchester, Tecumseh, Monroe, Saline and Adrian has put additional pressures on the watershed.

The River Raisin Watershed Council is an active, non-profit government organization formed to protect and improve the watershed, and maintain active and long-term stewardship of the region. The Nature Conservancy of Michigan owns two small preserves in the upper watershed and is interested in preserving the unique biological and ecological properties of that region.

This project will support the work of the two clients listed above as well as the previous work of Dr. David Allan, project advisor, and his past advisees who have collectively amassed a significant amount of data for the watershed.