Rancocas Action & Management Plan (RAMP)

Developed by:

UAPP 611: Regional Watershed Management
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Mission Statement: R.A.M.P.'s goal is to maintain the water quality of the Rancocas Creek Watershed to keep it fishable, swimmable, and potable, and manage the watershed in a way that supports native populations of flora and fauna by year 2030.

Watershed characteristics:

The Rancocas Creek Watershed covers 360 square miles in west-central New Jersey. The watershed lies within portions of Burlington, Camden, and Ocean Counties and contains 33 municipalities.

The Rancocas Creek is divided into the North and Greenwood Branches, which drain 167 square miles, the South and Southwest Branches, which drain 144 square miles, and the Main Stem which drains 49 square miles and flows into the Delaware River. The RCW is part of the Lower Delaware Water Region.

Two-thirds of the RCW (242 square miles) lie within the Pinelands National Preserve. About 75% of the PNR portion of the watershed is undeveloped forest, and the rest of this area is developed or farmed. The remaining one-third of the watershed that lies outside of the PNR portion is comprised primarily by the Main Stem and the far south-west corner of the Southwest Branch. The development in the area outside of the PNR is more varied and intense. The pinelands reserve is home to dozens of rare plants and animals species.

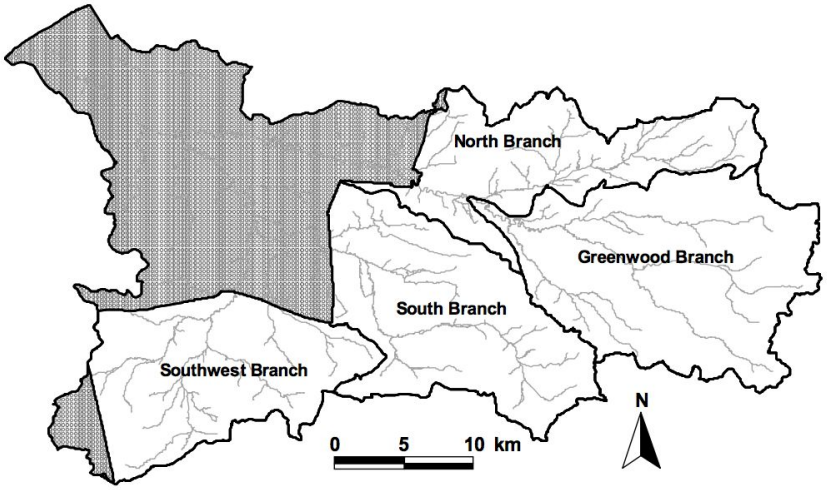


Figure 1.3. Four study basins in the Rancocas Creek Basin. Shaded areas are outside the Pinelands National Reserve.

Outside the PNR portion of the watershed, development is more varied and intense.

Land and water use

About 40% of the watershed is forested, agricultural areas occupy 30%, and urban areas cover 17%. Much of the agricultural activity in the region is related to cranberry and blueberry farming. These crops grow well in the acidic, marshy land characteristic of the Rancocas Creek Watershed.

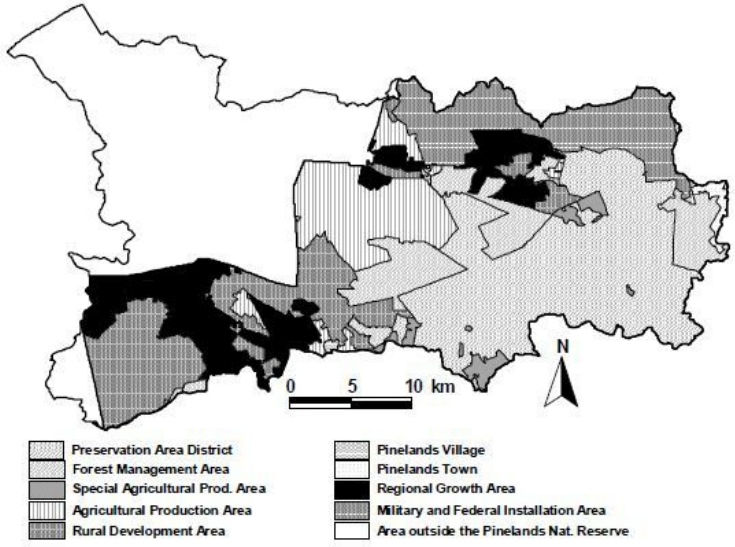


Figure 1.4. Pinelands management areas in the Rancocas Creek Basin.

The PNR portion of the watershed is primarily comprised of upland forest and wetlands. The Greenwood Branch is the area of least development, with around 90% of land use being forest or wetland. The Southwest Branch is the area of greatest development.

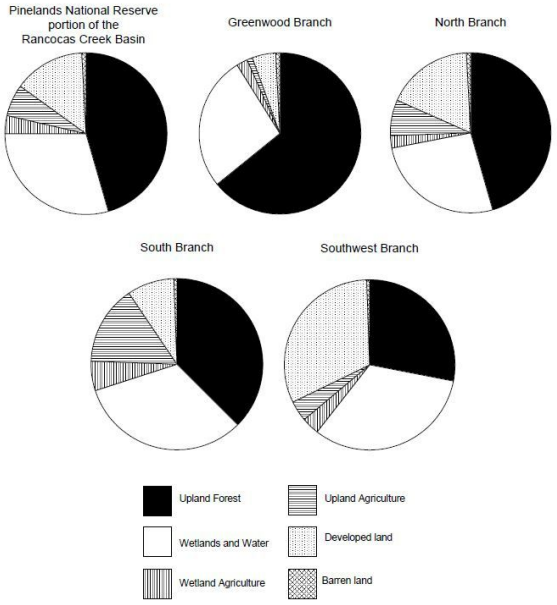
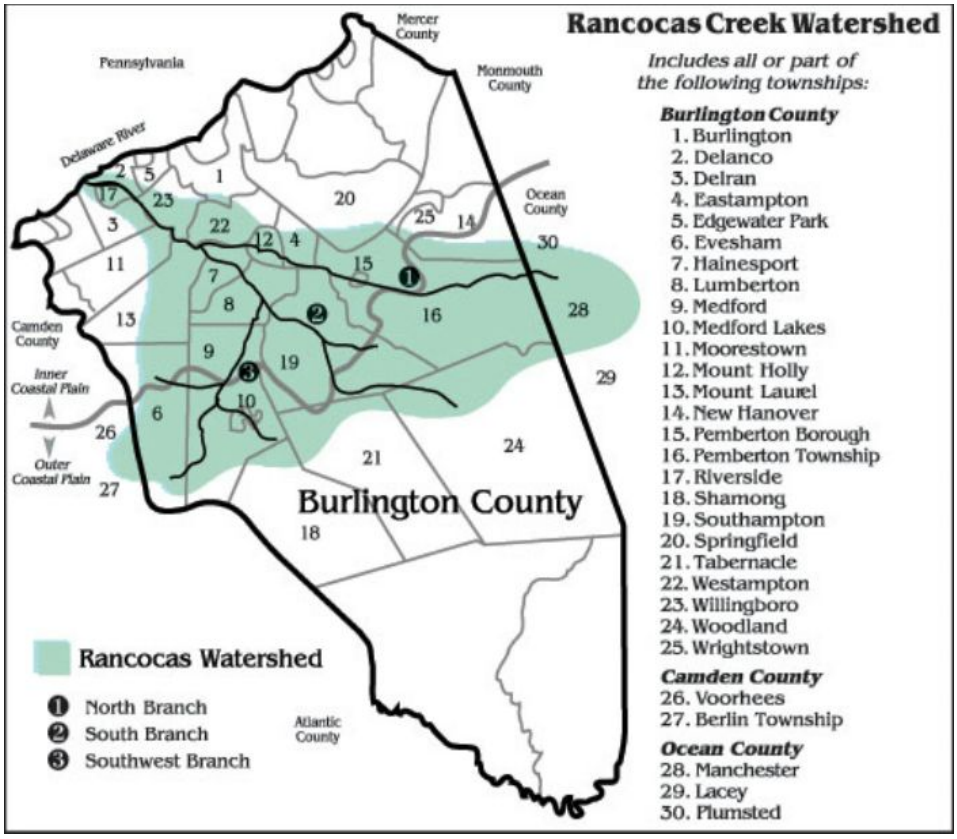


Figure 1.6. Rancocas Creek Basin land-use profiles. Refer to Table 1.1 for descriptions of each land-use/land-cover class.



History/Governance Ordinances

Congress created the Pinelands National Reserve (PNR) through the National Parks and Recreation Act of 1978. The PNR is the first National Reserve in the nation. In 1979, New Jersey formed a partnership with the federal government to preserve, protect, and enhance the natural and cultural resource of this protected land. Management planning was also initiated in order to bring state and local resources together to comply with the Clean Water Act (CWA). The CWA is the primary federal law in the United States governing water pollution. Its objective is to restore and maintain the integrity of the nation's water supply through various efforts.

In the early 1990s, the Pinelands Commission initiated a long-term environmental monitoring program in order to evaluate ecological consequences. One study demonstrated that detrimental changes in stream vegetation, fish populations, and frog and toad communities were related to increasing land use and water quality degradation.

PINELANDS COMPREHENSIVE MANAGEMENT PLAN

Authority
N.J.S.A. 13:18A-1 et. seq.
Source and Effective Date
R.1981 d.13, effective January 14, 1981.
See: 12 N.J.R. 513(b), 13 N.J.R. 91(a).

Updated: 01/03/2012

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A watershed management plan carried out by the Public Advisory Committee (PAC) of the Rancocas Creek Watershed began in September 1998 with coordination from the DEP Division of Watershed Management. In November 2000, DEP granted Burlington County $550,000 over four years to administer the plan. The

deliverables included base maps and GIS layers, education and outreach materials, and an issues and “Action Now” spreadsheet.

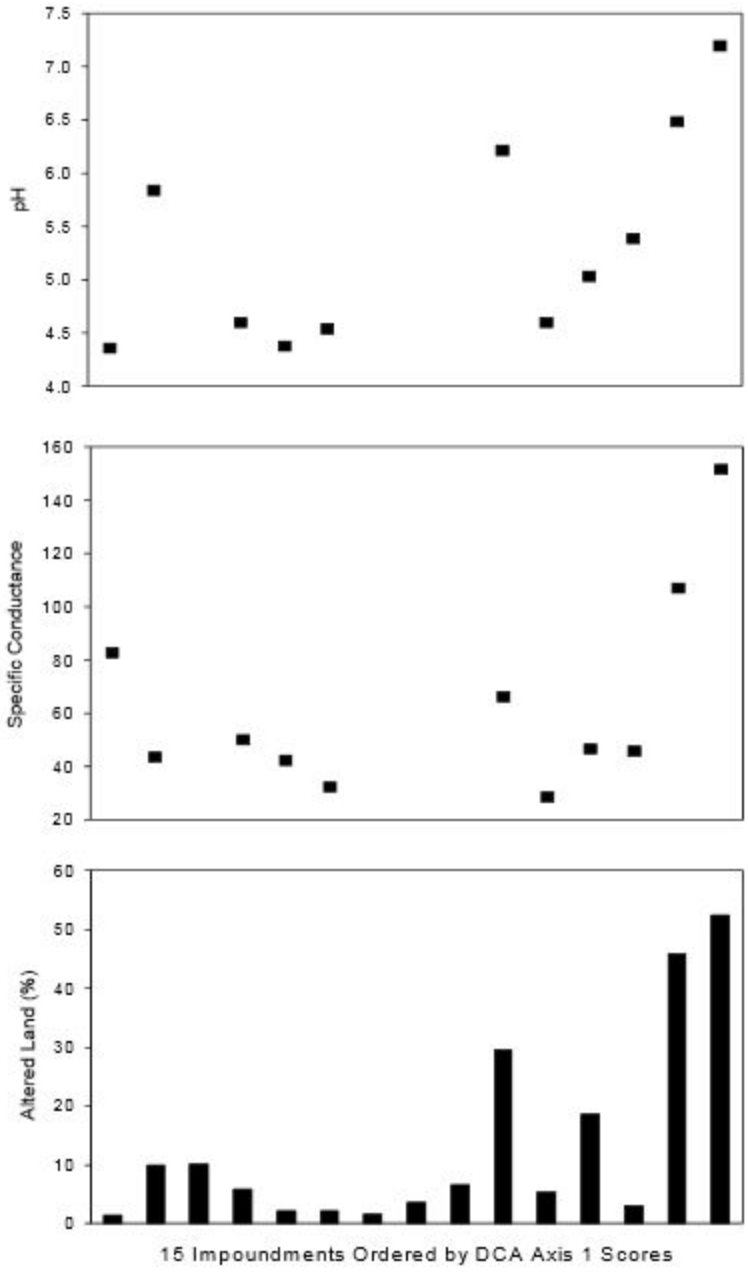
The Rancocas Conservancy is another organization established in 1989 which promotes the preservation and protection of the Rancocas Creek Watershed. The Conservancy is involved with land acquisitions and environmental education.

The Rancocas Creek Watershed has five main branches in the Pinelands National Reserve: the North, South, Southwest, Greenwood, and Pinelands National Branch. The Creek itself is a tributary of the Delaware River. The Creek is used for a wide variety of recreational activities including hiking, fishing, kayaking, and bird watching. Along the banks of the river live wildlife such as painted and box turtles, herons and kingfishers, and white-tailed deer. Some trees that grow and live in the forest include maple, hickory, and oak.

Problems facing the watershed

High pH levels

There is a relationship between increasing developed and agricultural land use and increasing pH levels. This is a problem because land development continues to increase each year, generally speaking.. Based on previous studies, agricultural runoff is a minor contributor to increases change in pH. Thus, dealing with the issue of developed land rather than agriculture should be of higher priority. One study reports the pH value of four sites in the Rancocas Watershed: Braddocks Mill Pond, Lake Pine, Squaw Lake, and Taunton Lake. In 1973, the median pH of these site was below 5.0. This median value exceeded 6 by 2001 and the most likely suspect of this change is an increase in the percentage of developed land.



This figure clearly illustrates the relationship between pH and altered land use.

Few animals can tolerate waters with a pH below 3 or above 11. Also, changes in pH can affect water chemistry which may affect aquatic plants and animals. If the water continues to become more basic, ammonia becomes increasingly toxic. Water in the Rancocas Creek could eventually become deadly to the majority of its inhabitants.

Fecal Coliform and Phosphorus

Fecal contamination and harmful levels of phosphorous are concerns throughout the watershed and can pose serious health risks to humans. These two concerns can also lead to eutrophication which has detrimental effects on fish and the overall health of the stream. Potential sources of fecal contamination include sewers, septic systems, feedlots, and animal yards. One study reported that optical brightener, a laundry detergent, was found in the North and South Branches of the watershed. This indicates that septic systems may be malfunctioning. Large population of geese and other wildlife like deer also contribute to fecal contamination in the watershed. However, this is a much less significant factor.

In terms of phosphorous, stormwater can wash away fertilizers, sediment, and other pollutants into the watershed.This stormwater is most likely carrying harmful nutrients like phosphorous which is leading to eutrophication. As illustrated above, land use has been increasing in the watershed which means that stormwater is a rising issue. As more stormwater continues to pour into the streams and tributaries of the watershed, the water quality is degrading.

Goals

Our first objective is to improve and maintain the water quality. We will achieve this goal by implementing a variety of techniques. Education outreach is important. We will work to educate local officials regarding watershed issues because policy is vital for change. Education of the general public regarding littering and ways to reduce pollution is also key. Education should be an ongoing process so we hope to educate as long as possible. Improved stormwater management practices will also be implemented. This includes encouraging stormwater infiltration and retrofits, introducing best management practices such as detention ponds and

swales, and develop model ordinances to improve water supply and encourage water servation.

Our second objective is to support healthy populations of native plants and animals while discouraging exotic populations. We hope to achieve this goal by removal of invasive species while planting more native plants. An increase in native plant population will also help to improve stormwater conditions. Elevated levels of pH and phosphorous are affecting flora and fauna populations in a very detrimental way. We plan to normalize the pH to its naturally occurring level through a regulation of agriculture, stormwater management, and a reduction of impervious cover. Education outreach will also reduce the volume of nutrients such as phosphorous if we can reduce littering and pollution.

Our final goal is to reduce fecal coliform levels in the water supply. Stormwater is capable of washing away fecal matter from agriculture and sewer systems so better management of stormwater, again, is necessary. We also hope to put resources into locating septic tank pollution. If we can find the sources of the contamination, remediation will be more successful. Identifying all stream reaches with elevated fecal coliform could allow us to concentrate our efforts on specific portions of land. Other ways to improve the contamination is to revegetate buffers and conduct a buffer gap assessment.

Conclusion

Pollution from agriculture and development poses a threat to the health of the Rancocas Creek Watershed and in order to preserve the watershed, existing and future areas of development must be properly managed to reduce negative impacts. It is important that we preserve the integrity of the watershed by limiting development in critical areas. At present, the presence of the Pinelands National Preserve has allowed for some reaches of the watershed to be minimally impacted and it would be good to expand this area if possible.

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