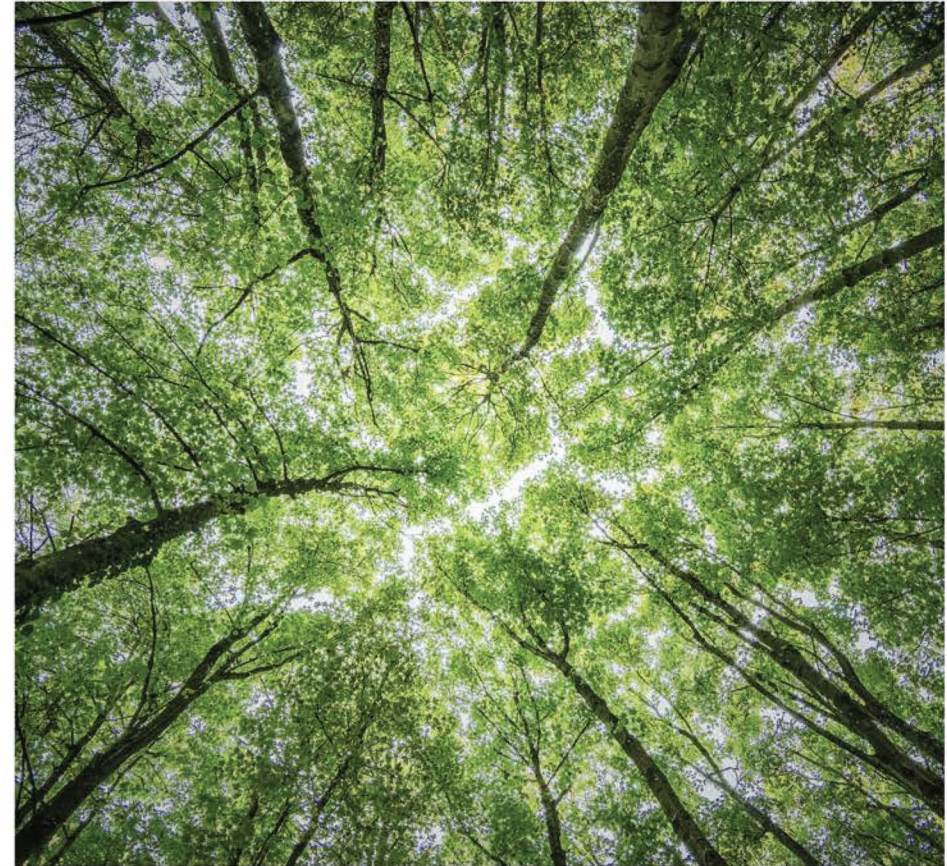




ENVIRONMENTAL RESTORATION: Marinette County's Area of Concern

INTRODUCTION

Marinette County, located in Northeast Wisconsin, possesses a prevalent industrial history that has resulted in the contamination of the area with per- and polyfluoroalkyl substances (PFAS). However, Marinette County is not the only area being affected by PFAS. The wider Lower Menominee River Area of Concern (AOC) faced significant environmental challenges due to contaminated sediment and other pollutants. However, despite many obstacles, this AOC has recently been delisted – a significant achievement in the restoration of the Great Lakes. Marinette County, which is found within the Lower Menominee River AOC, has been substantially impacted by environmental restoration. Our study examines and evaluates the benefits and challenges of environmental restoration, including its effect on environmental justice and sustainable development.



Marinette County Area of Concern

Areas of Concern are a common occurrence in many communities, including Marinette County, where the remnants of industrialization have left behind poorly maintained properties that may be contaminated with hazardous substances.

WHAT ARE AREAS OF CONCERN?

According to the Wisconsin Department of Natural Resources (WDNR), the Great Lakes are historically the most prominent culprits of AOCs, especially in Wisconsin, as much of industrialization has corrupted the surrounding properties with dangerous chemicals and other pollutants. Many natural habitats in these areas were lost to industrial processes, causing significant issues for the survival of wildlife and usability by local residents. The restoration of AOCs can be challenging due to the potential health risks posed by the contaminants, as well as the high costs of remediation and liability concerns. However, the Remediation and Redevelopment (RR) Program through the WDNR offers resources and support for communities looking to clean up and redevelop AOCs into valuable properties.



By addressing the challenges of AOC restoration, Marinette County can unlock the potential of its underutilized properties, while promoting environmental justice and sustainable development.

ENVIRONMENTAL RESTORATION & ITS IMPACT ON AOCs

Environmental restoration projects play a vital role in addressing concerns and restoring the ecological health of AOCs. Cleanup efforts have targeted contaminated sediments, water bodies, and habitats, resulting in improved environmental conditions. The removal of toxic substances from sediments reduces exposure risks and societal costs associated with health impacts. Habitat restoration projects implemented as part of environmental restoration have facilitated the return of diverse species, including symbolic ones like the bald eagle, thereby enhancing biodiversity and ecological resilience

One example project from the Wisconsin DNR is the South Channel Habitat Restoration Project in the Lower Menominee River AOC. This project restored 110 acres and 1.6 miles of shoreline. According to the WDRN, the project completed restoration “through removal of invasive species, native species plantings and installation of habitat structures for northern pike, herptiles, songbirds, bats, raptors and waterfowl.” These projects not only helped to clean up contaminated areas, but also improved habitats and promoted biodiversity.



CHALLENGES OF ENVIRONMENTAL RESTORATION FOR AOCs

Environmental restoration is a challenging process that involves many legal, financial, and social challenges. One of the challenges in the restoration of AOCs is the presence of the contaminants, which require significant investment to remove and remediate. A study on environmental restoration in Marinette County, found that the high costs of remediation were a major barrier to redevelopment in AOCs, particularly when there was a lack of financial incentives for developers.

Another challenge of restoration is the complex legal issues that arise during restoration, particularly in AOCs. One report noted that the environmental liabilities associated with contaminated sites along with the legal and regulatory frameworks that govern restoration projects can be complex and difficult barriers to navigate. In addition, there can be a barrier from social challenges associated with redeveloping AOCs, such as opposition from local residents who are concerned about the potential health risks of restoration.

Overall, the challenges of environmental restoration are significant and require careful consideration of legal, financial, and social issues. Though there are many barriers to environmental work, there are also opportunities for innovative solutions that can help address these challenges and promote the sustainable reuse of contaminated sites.





MARINETTE COUNTY AOC

Pollutants of concern that were identified in the Marinette County AOC included:

- Arsenic
- Paint Sludge
- Coal Tar
- Mercury
- Polychlorinated Biphenyls
- Oil and Grease

Some other industrial concerns that were found to be adding to the problems in the Marinette County AOC included:

- Log Driving
- Urbanization
- Invasive Species
- Habitat Fragmentation
- Loss of Wetlands
- Municipal Combined Sewer Overflows

The Menominee River opens into the Green Bay at the northern end of Wisconsin and empties into the Michigamme Lake in the Upper Peninsula of Michigan, creating a natural border between the two states. While the Menominee River has a shoreline in both Michigan and Wisconsin, our study focuses on the Marinette shoreline located at the northern-most edge of Wisconsin, near the Green Bay.

The Lower Menominee River was first classified as an Area of Concern in 1987. The area was considered in need of special attention and beneficial use impairments (BUIs) were specifically assigned to the area. Soon after, projects were started to improve the territory.

Of the fourteen beneficial use impairments in existence, six were originally listed as impaired in the Lower Menominee River Remedial Action Plan (1990), including:

- Restrictions on fish and wildlife consumption
- Degradation of fish and wildlife populations
- Restrictions on recreational contact
- Degradation of benthos
- Restrictions on dredging activities
- Loss of fish and wildlife habitats

Because the Lower Menominee AOC was able to complete all its management actions by 2016, the six BUIs that were originally listed for the AOC were all removed. All projects, including those focused on restoring fish and wildlife habitats, were closely supervised to assure that every goal was met.

ENVIRONMENTAL JUSTICE IN MARINETTE COUNTY

The U.S. Environmental Protection Agency (EPA) defines Environmental Justice as the fair distribution of and equal participation in environmental actions, both positive and negative, among all communities, regardless of race, color, origin, or income status. In AOCs, environmental justice is of particular concern due to the potential for disproportionate impacts on already disadvantaged communities.

According to a Narrative Information Sheet provided by the WDNR, Marinette County's AOC and the many hazardous substances discovered within have been found to impact low-income and disabled populations noticeably more than areas with more disposable expenditures. To address these disparities, efforts must be made to remediate and restore priority environmental sites in an equitable manner.

Overall, the restoration of Marinette County can benefit the larger community in a number of ways, in the end, improving the quality of life and livelihood for all its residents. With appropriate funding, Marinette County can initiate restoration projects, taking advantage of environmental justice to help recover their land.

Environmental Justice is of particular concern to Marinette County given that **the county's health outcomes rank 61 out of 72 in the state.**

A remedy to this, according to our sources, includes the redevelopment of priority sites in Marinette County's target areas, including

- the downtown riverfront
- the harbor area,
- the Bay Area Medical Center
- other similar vacant sites





DATA TRENDS & INTERPRETATIONS

The following data was gathered from the **City of Marinette Comprehensive Plan** created by the Bay-Lake Regional Planning Commission in 2021, and **census data** from the 2021 Census Reporter provided by the United States Census Bureau.

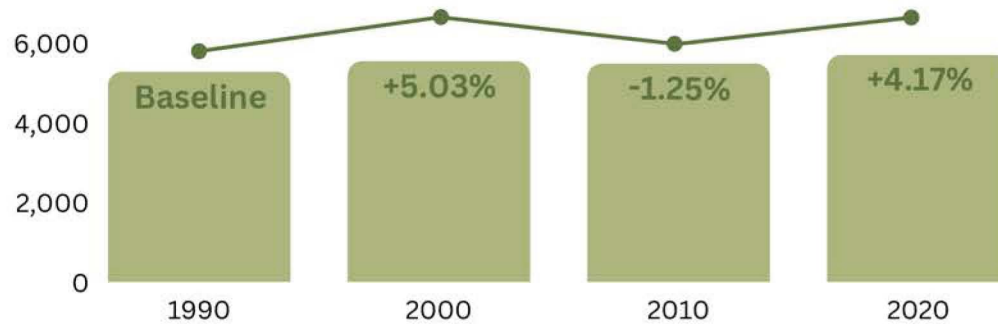
When researching data for Marinette County, the specific site of our study, census data showed that from the year 1990 to 2020 population and housing unit numbers have remained relatively the same. According to the City of Marinette Comprehensive Plan, the population has decreased by just 724 people from 1990 to 2020. Housing units have “increased by 159 units, [going] from 5,533 units in 2000 to 5,692 units in 2019.” Despite such small fluctuations, we found that property values have noticeably increased by over 20% from 2010 to 2022, with the only other possible related change being the restoration of the AOC in recent years. Based on this information and connections made by other studies on this topic, **an argument can be made that a rise in property values could be directly correlated with environmental restoration.**

The following graphs outline the data fluctuations from the past 4 decades, showing the minimal changes in population and housing trends compared to the drastic changes in property values, all in the City of Marinette.

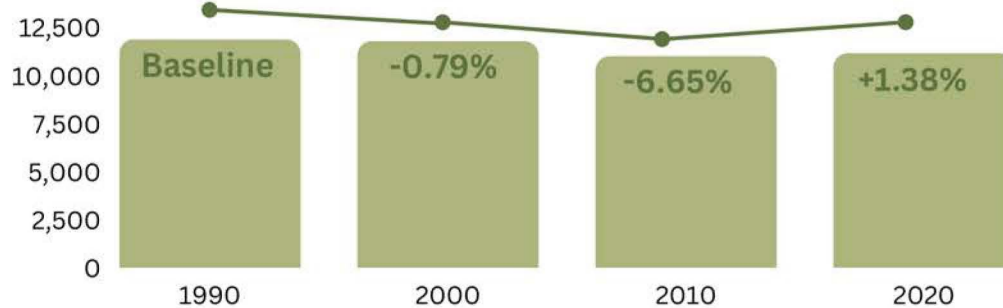
CITY OF MARINETTE DATA TRENDS

● Change in Percent

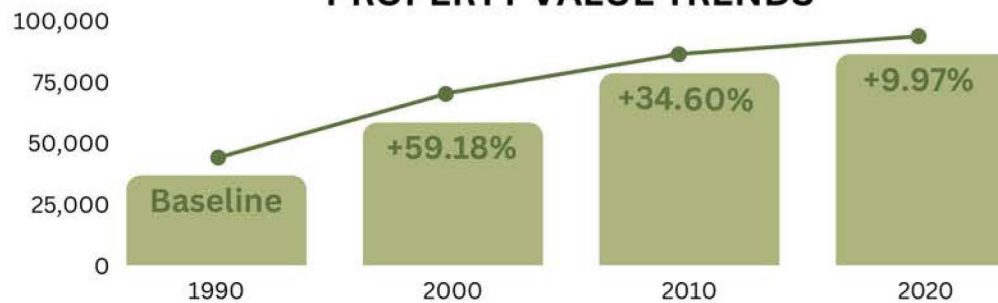
POPULATION TRENDS



HOUSING STOCK TRENDS



PROPERTY VALUE TRENDS



While population and housing trends both see a negative decrease at least once in the past 4 decades, property values have done nothing but grow.

Because population and housing trends are seemingly not coordinated with subsequent property value increases, **the only possible change left to explain the positive fluctuation in value is the restoration of the AOC in Marinette County.**

*Percentages are marked positive for an increase and negative for a decrease.





IMPLAN: ANALYSIS

We utilized the following various data sources to conduct our analysis:

- Marinette County Land Information Department's GIS Data
- Tax and Property Data
- Historical Satellite Imaging Data
- Fair Market Assessment Assessor Data

The economic impact of environmental restoration programs in Marinette County's AOC was further assessed using the 2020 IMPLAN economic modeling system. The system estimated the economic effects of the jobs created by the restoration programs located on sites that received remedial action and/or remedial investigation funding. The IMPLAN model is an input-output model that estimates temporary jobs generated by construction, direct and indirect tax revenues, and all indirect job and spending numbers. The IMPLAN model produced estimates grouped into the following three categories that affect the local economy:

DIRECT EFFECT: the production change associated with a fluctuation in demand for the goods or services produced by the redevelopments themselves.

INDIRECT EFFECT: the secondary impact caused by changing input needs of directly affected industries.

INDUCED EFFECT: the changes in household spending due to the additional employment generated by direct and indirect effects.

IMPLAN: DATA USAGE

Our data sources were chosen due to their accuracy, completeness, and reliability, and were essential insuring the validity of our findings. Tax and assessment records were utilized from around 460 households and 30 businesses. We also conducted data quality checks and data cleaning procedures to ensure the consistency and accuracy of the data. Overall, the data used in this study are reliable and provide a solid foundation for our analysis.

The IMPLAN model produced an economic multiplier, which is a quantitative measure of economic impact that recognizes that all levels of economies are connected networks of interdependent activity. The capture of this "multiplier effect," allows the reader to see the full impact of new expenditures in a given geographic area, including both indirect and induced spending.

The IMPLAN modeling results provide valuable insight into the economic impact of environmental restoration programs in AOCs. They help to quantify the direct and indirect effects of restored sites on the local economy, including job creation and tax revenue generation. Such information is crucial for policymakers and stakeholders who are seeking to make informed decisions about the allocation of resources for environmental restoration programs.

The data we analyzed included:

- The redevelopment status and current property use of affected parcels
- Their location
- Their tax records
- Their assessment records

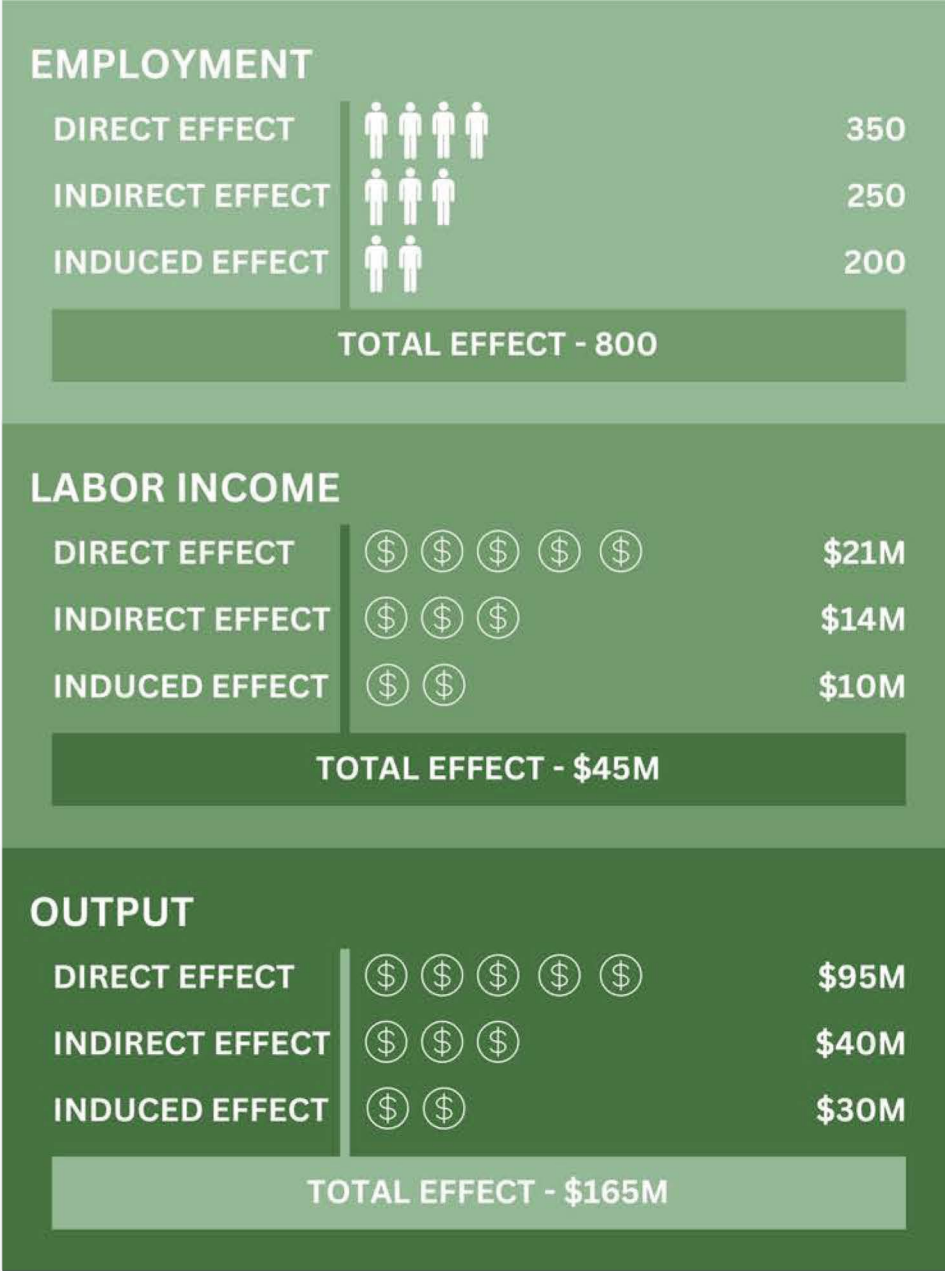











RESTORATION'S ECONOMIC IMPACT: BUSINESSES

This graph illustrates the economic impact resulting from restoration provided solely from funding. It will reflect the respective annual state and local impacts of \$6,000,000 on local businesses in Marinette County. It is important to note that this table exclusively focuses on the direct impact of the project's immediate funding and does not encompass any outcome measures or leveraged funds.

With the support of various partners, restoration funding has played an instrumental role in creating positive economic outcomes, including the prediction to create approximately 350 job opportunities, enabling individuals to secure employment and contribute to the workforce. Furthermore, these employees have collectively received over \$21,000,000 in total income, which further stimulates local spending and economic growth.

With over \$95,000,000 in direct economic output, Marinette County has experienced increased economic activity, benefiting various sectors and stakeholders.



EMPLOYMENT		
DIRECT EFFECT		2
INDIRECT EFFECT		0.5
INDUCED EFFECT		0.5
TOTAL EFFECT - 3		
LABOR INCOME		
DIRECT EFFECT		\$75K
INDIRECT EFFECT		\$35K
INDUCED EFFECT		\$32K
TOTAL EFFECT - \$142K		
OUTPUT		
DIRECT EFFECT		\$250K
INDIRECT EFFECT		\$125K
INDUCED EFFECT		\$95K
TOTAL EFFECT - \$470K		

RESTORATION'S ECONOMIC IMPACT: CHANGES IN ANNUAL WEALTH

This graph illustrates the economic impact resulting from changes in Marinette County household's annual wealth spent with regard to restoration. The annual state and local tax impacts are approximately \$30,000. As stated previously, it is important to note that this table exclusively focuses on the direct impact of the funding and does not encompass any outcome measures or leveraged funds.

These changes are predicted to create approximately two additional jobs in Marinette County. The annual changes in wealth spent from the funding allow these employees to collect a total amount of \$75,000 in labor income. These figures continue to stimulate economic growth and local spending.

Alongside changes in annual wealth spending within the area of restoration, the economic activity in the area has similarly benefited. Direct impacts from funds have yielded approximately \$250,000 in output across Marinette County.

RECOMMENDATIONS

Projecting the future is indeed a challenging task, as uncertainties are inherent in such endeavors. Nevertheless, if funded restoration continues, we anticipate the return on investment will likely resemble returns observed in the projects analyzed for this report. The numerical values presented in this section provide estimates of the tangible outcomes of direct funding projects. However, it is crucial to remember that there exists a "double bottom line" in the results of these projects. While a single bottom line focuses solely on fiscal performance emulated in financial changes, a "double bottom line" looks at connections between financial profit and social responsibility, focusing on more than just a return on investment.

While it may be challenging to quantify the full extent of these non-monetary outcomes, they are integral to the overall impact of restoration, and should thus be taken into consideration alongside tangible economic effects.



Continuing in success...

With the help of funding partners and restoration projects, the continued success of the AOC in Marinette County will further project the future goals of the region's community and economic prosperity.

CONCLUSION

Restoring the AOC in Marinette County has provided significant impacts for their economy and community. Increases in annual household spending as well as business output have positioned Marinette County to generate future jobs, enhance labor income, and further stimulate their economy. Furthermore, the improvements made on the AOC have increased the worth of surrounding properties, making Marinette County an increasingly more valuable place to live.

The restoration efforts in Marinette County's AOC have also played a crucial role in promoting environmental justice in the area by improving the health and well-being of local communities.

With the help of funding partners and restoration projects, the continued success of the AOC in Marinette County will further project the future goals of the region's community and economic prosperity.



ABOUT THE FISCAL AND ECONOMIC RESEARCH CENTER

The University of Wisconsin-Whitewater Fiscal and Economic Research Center provides research services for area businesses, not-for-profits organizations and government entities, including:

- Economic analysis
- Geographic Information Systems (GIS) analysis
- Market research, marketing strategy and planning
- Statistical analysis
- Simulation analysis
- Ecological and biological analysis
- Government and public policy analysis
- Entrepreneurship
- Economic forecasting and business development

ABOUT THE AUTHORS

Russ Kashian is a director of the FERC and a professor of economics at the University of Wisconsin-Whitewater. He also serves as a specialist for the University of Wisconsin-Extension and is co-founder and director of the Fiscal and Economic Research Center at UW-Whitewater.

Email: kashianr@uww.edu

Phone: (262) 472-5584

Design and Editing: Tessa Fitzsimmons



University of Wisconsin
Whitewater

Fiscal and Economic Research Center

University of Wisconsin-Whitewater

Hyland Hall 809

W. Starin Road

Whitewater, WI 53190