

# Addressing Coastal Hazards in Local Comprehensive and Hazard Mitigation Plans: An Update on Wisconsin Coastal Communities

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# Table of Contents

|   |    |
|---|----|
| <b>Introduction</b> .....   | 1  |
| <b>Methods</b> .....  | 1  |
| <b>Observations</b> .....   | 1  |
| <b>Comprehensive Plans</b> .....  | 1  |
| <b>Hazard Mitigation Plans</b> .....  | 2  |
| <b>Role of Counties and Regional Planning Commissions in Local Plan Development</b> ..... | 3  |
| <b>Examples of Local Governments That Include Coastal Hazards in Plans</b> .....          | 3  |
| <b>Conclusion</b> .....   | 9  |
| <b>References</b> .....   | 10 |
| <b>Featured Plans</b> .....   | 11 |
| <b>Appendix A. Comprehensive Plans Covered in This Review</b> .....                       | 12 |
| <b>Appendix B. Hazard Mitigation Plans Covered in This Review</b> .....                   | 13 |

## Introduction

Local governments prepare many different types of plans. This report examines local comprehensive plans and hazard mitigation plans in Wisconsin's coastal communities. Local comprehensive plans directly impact the policies and trajectory of development in a community. Hazard mitigation plans focus on natural and man-made hazards and risks than can impact a community. The inclusion of strategies to reduce vulnerability to coastal hazards in Wisconsin coastal communities is important for the future resilience of these communities.

In 2015, Brad Sipple, Anne Pearce, Brian Ohm, and David Hart conducted an inventory of local comprehensive and hazard mitigation plans from Wisconsin's coastal communities to determine if those plans addressed coastal hazards (Sipple et al. 2015). The report reviewed 49 comprehensive plans and 18 hazard mitigation plans of coastal cities, villages, counties, and regional planning commissions in Wisconsin. Based on those plans, the report identified "best practices" for addressing coastal hazards in plans.

This report includes an updated inventory and review of how local comprehensive and hazard mitigation plans in Wisconsin coastal communities address coastal hazards and how the plans have changed since the original review in 2015. The updated report includes observations from 20 comprehensive plans and 16 hazard mitigation plans through May 2021. Appendix A contains information about the comprehensive plans covered in this review and Appendix B covers the hazard mitigations plans.

This updated plan inventory identifies several trends in how Wisconsin coastal communities address coastal resilience topics in comprehensive plans and hazard mitigation plans. Results from the update indicate that there are positive trends, but also some areas for improvement.

## Methods

This report analyzed policies found in local comprehensive and hazard mitigation plans for Wisconsin cities, villages and counties along the shores of Lake Superior and Lake Michigan. The comprehensive plans and hazard mitigation plans included in this report are current as of May 2021. The plans were discovered on websites of county and municipal governments and region planning commissions using Google searches. The Library of Plans maintained by the Wisconsin Department of Administration was consulted, as well as the FEMA Hazard Mitigation Plan Status Map. Once plan documents were obtained, keyword searches were conducted to identify sections that pertained to coastal hazards. Keywords used included "bluff," "climate," "coast," "environment," "erosion," "hazard," "flood," "resilience," and "shore." Relevant sections from the plans were then analyzed to generate the observations and examples in the remainder of the report.

## Observations

### Comprehensive Plans

A growing number of communities included policies related to coastal hazards in their comprehensive plans. Six communities that updated their plans since the original review in 2015 added coastal hazard policies to their comprehensive plans for the first time. Communities with comprehensive plans

identified for best practices in the 2015 report typically had not updated their plans. Nevertheless, the trend of more communities including policies related to coastal hazards indicates a growing awareness of coastal hazards as an issue for coastal communities in Wisconsin. The communities that referenced coastal hazards also identified strategies to increase a community's resilience to coastal hazards. These strategies include using setbacks to protect environmentally sensitive areas and recommendations to manage stormwater runoff by encouraging the planting of native vegetation along steep slopes, bluffs, and shorelines for slope stabilization and erosion protection.

The City of Sturgeon Bay presents a good example. The City's 2001 Comprehensive Plan made little mention of coastal issues outside of the impact that development has on floodplains. However, the City's 2020 Comprehensive Plan included several recommendations for the protection of environmentally sensitive areas through overlay zoning, as well as waterfront management, restoration, and use of vegetative buffers along water bodies to reduce stormwater erosion.

Nevertheless, there is still room for improvement. Comprehensive plans should include actions and strategies in the comprehensive plan that reduce and avoid risks associated with natural hazards (Schwab 2010). In addition, local comprehensive plans need to do a better job of integrating hazard mitigation in other comprehensive plan elements. For example, coastal hazards were often addressed in natural resource and parks and recreation chapters of the plans reviewed, but rarely identified as a risk in other chapters focused on development in the community such as land use, transportation, housing, and economic development. The failure to integrate natural hazards into these of the chapter is counter to best practices for comprehensive plans (Schwab 2010).

### Hazard Mitigation Plans

Hazard mitigation plans adopted since 2015 had more actionable implementation strategies and specific projects outlined to increase coastal resilience. Strategies identified in the plans included acquiring properties within flood-prone areas and conversion of those areas to open space. The plans also emphasized planting natural vegetation and using bioengineering for erosion control and stabilization of bluffs and shorelines. The conversion of flood-prone areas in riverine and shoreline areas to open space and the use of natural vegetation to reduce erosion and slow stormwater runoff are considered best practices.

The Federal Emergency Management Agency (FEMA) encourages local communities to include strategies for mitigation of the impacts of climate change in local hazard mitigation plans. In an analysis of local and county hazard mitigation plans, Wisconsin Emergency Management concluded that as of 2016, 38.4% of hazard mitigation plans analyzed addressed climate change in their plan (Wisconsin Emergency Management 2016). Of the 16 hazard mitigation plans of Wisconsin coastal communities and counties analyzed in this review, 13 plans addressed climate change. The depth of discussion of climate change varied considerably among the plans. Some plans briefly mentioned that climate change will impact natural hazards in the future, while other plans included a separate section of the plan discussing climate change and its relationship with each natural hazard (including coastal hazards). The higher rate of inclusion of climate change in coastal community hazard mitigation plans, compared to the rate statewide, may indicate that coastal communities may be more aware of potential climate change impacts due to coastal hazard vulnerability.

## Role of Counties and Regional Planning Commissions in Local Plan Development

The 2015 plan inventory report acknowledged the important role of regional planning organizations and county planning departments in the planning process (Sipple et al. 2015). When regional plan commissions or county planning departments conducted studies and reports of bluff and coastal hazards, these studies and reports helped inform local plans and led to greater analysis of coastal hazards and more coordinated policies in the plans. This detailed level of analysis is especially helpful for smaller communities within the regional planning commission's jurisdiction that do not have the resources to conduct this level of analysis. For example, the Village of Fox Point used a 1995 study of bluff stability and recession in the Village's comprehensive plan to help inform and monitor the community's plan goal of protecting the bluffs within Fox Point (Edil et al. 1995).

## Examples of Local Governments That Include Coastal Hazards in Plans

**City of Ashland:** The City of Ashland Comprehensive Plan (2017) has one of the most detailed analyses of coastal hazards of the plans analyzed in this review. The CZB planning consulting firm based in Virginia helped prepare the plan. The plan has a separate section within the Natural Resources chapter of the plan that details the susceptibility of the shorelines and bluffs in the city and surrounding area to erosion. The plan also documents that prior development along the community's bluff lines has exacerbated bluff erosion issues in the community and includes a recommendation for the city to increase the bluff setback from 30' to 50' from the bluff line.

The City's Comprehensive Plan also highlights a waterfront overlay district in the City proposed as a policy in the previous plan and included in the previous report. This waterfront overlay district shown in Figure 1 restricts development for properties along the Lake Superior shoreline to protect these coastal resources. The plan includes a recommendation to increase the minimum setback of waterfront properties from the current 50'-75' to 100'. The plan also highlights that the City should restrict the growth and ultimately relocate non-conforming uses, such as industry, from the City's shorelines.

## FUTURE LAND USE PLAN



Figure 1: Example of the Waterfront Overlay District implemented in the City Of Ashland Comprehensive Plan. Source: CZB (2015)

**City of Bayfield:** The City of Bayfield Comprehensive Plan (2019) included recommendations for using zoning overlay districts to protect environmentally sensitive areas in the city. The plan included recommendations for working with the Sea Grant over the next five years to conduct a lakeshore vulnerability assessment due to the high Lake Superior levels of recent years. The plan also mentioned conducting a green infrastructure audit to improve stormwater management in the community.

**Brown County:** The Brown County All Hazards Mitigation Plan (2021) identifies that coast/bluff erosion, shoreline property damage, and high lake levels are the coastal hazards most likely to impact the County. The section on coastal hazards analyzes historic lake levels and pays special attention to the higher lake levels seen in recent years. The plan also analyzes vulnerable public and private properties and critical facilities within the hazard zone. The plan includes a graphic depicting how areas within the 100-year floodplain are the most at risk for coastal flooding. The plan has an extensive section on mitigation strategies for coastal hazards and flood hazards such as using land use controls to prevent development in sensitive areas, slope stabilization strategies using natural vegetation on bluffs, and land acquisition and relocation of repeat hazard properties. The plan also includes strategies for constructing rip-rap to prevent bluff erosion, where necessary.

**Douglas County:** The Douglas County Natural Hazard Mitigation Plan (2016), prepared by the Northwest Regional Planning Commission (NWRPC), contains an extensive analysis of the coastal and bluff erosion that has occurred on the shorelines since the 1970s. The plan detailed results from several studies that have been conducted by the NWRPC and Dr. David Mickleson at UW-Madison on the bluffs within the County. These studies include analysis of the level of bluff recession rates, height, and angle from 1970 to the latest study in 2010-2011. An example is shown in Figure 2. This analysis was used by the County to create appropriate development setbacks based on the recession rates and stable slope angle of the bluffs.

The Douglas County Natural Hazard Mitigation Plan also contains several strategies for mitigating coastal hazards. These strategies include best practices such as using land use controls to mitigate coastal hazards implementing the bluff recession rate and stable slope setbacks into the zoning ordinances and acquiring/relocating properties that are at risk of significant damage from bluff erosion. The plan also includes a strategy to expanding the recession rate study to the St. Louis River Estuary, which has experienced significant bluff erosion in recent years.

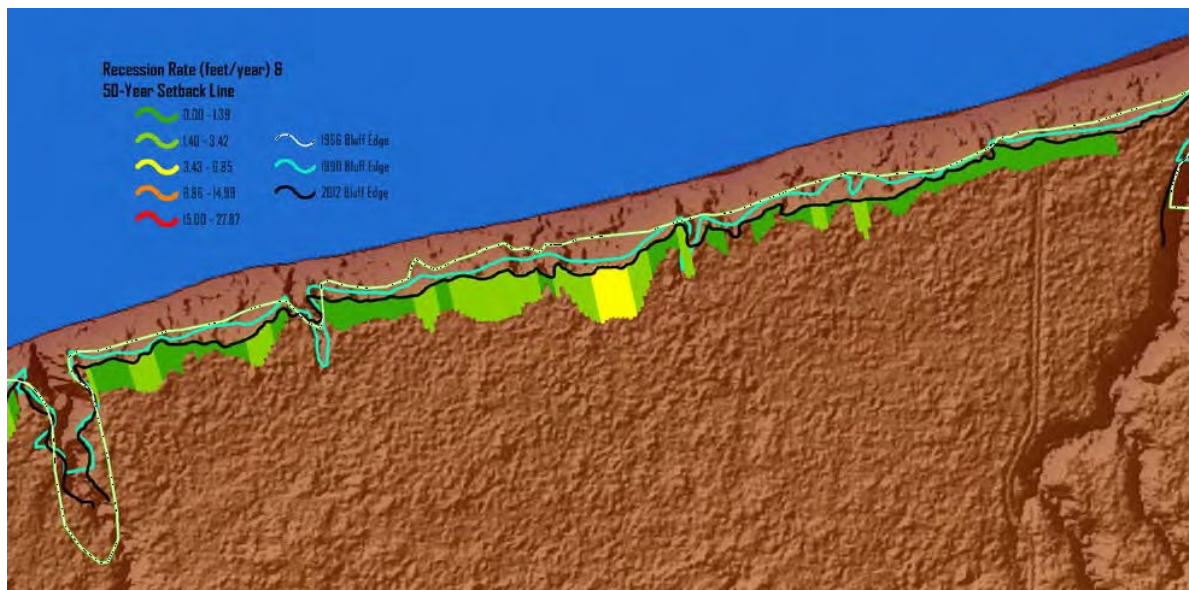


Figure 2: Analysis of Douglas County Recession Rate in feet per year and 50-year Setback Line. Source: Northwest Wisconsin Regional Planning Commission (2016).

**Village of Fox Point:** The Village of Fox Point Comprehensive Plan (2021) has one of the more detailed coastal hazard analysis sections of the comprehensive plans reviewed. The plan was prepared by Vierbicher and Associates, a consulting firm based in Wisconsin. The plan utilizes data on bluff stability, bluff recession, and beach width, shown in *Figure 3* from a 1995 study commissioned by SEWRPC.

One of the overarching goals of the comprehensive plan is the protection of the bluffs within the community. The plan highlights how the community currently limits development on and near the bluffs along the shore and recommends strengthening the ordinance to provide future protection of the bluffs. The plan also encourages the planting of native vegetation for erosion control.

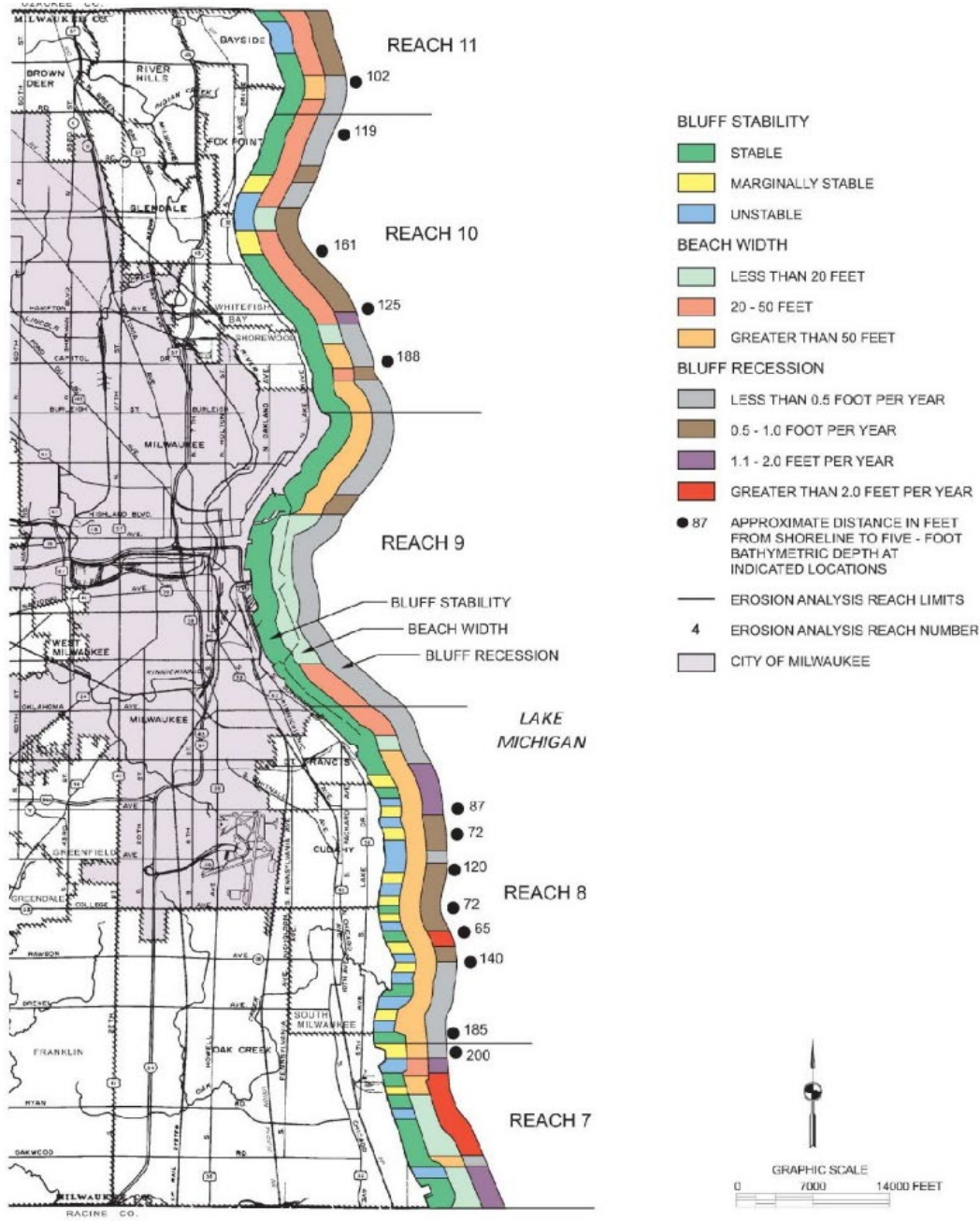


Figure 3: Milwaukee County shoreline erosion and bluff stability map. Source: Vierbicher (2021).



**Iron County:** The Iron County Hazard Mitigation Plan (2018) includes a detailed analysis of bluff recession rates from a 2013 Northwest Regional Planning Commission Bluff Recession Study. The plan includes an analysis of current and historic lake levels and includes a section detailing how future climate change will affect lake levels, precipitation amounts, and the intensity of storms. The strategies section of the hazard mitigation plan includes strategies for incorporating the bluff recession rates indicated from the 2013 Bluff Recession Study into the required setbacks for development in the community.

**Kenosha County:** The Kenosha County Hazard Mitigation Plan (2017) includes a separate chapter on coastal hazards that identifies coastal and bluff erosion, flooding from high lake levels, and damage to shoreline structures as the three coastal hazards that pose a threat to Kenosha County. The plan uses the 1995 SEWRPC bluff and coastal recession study for analysis of recession rates in the county and identifies how climate change impacts such as more precipitation, more intense storms, and variable lake levels will affect future coastal hazards in the community. The plan includes recommendations for using land use controls such as setbacks and buffers and bluff stabilization to mitigate coastal hazards. The plan also identifies that hard shoreline structures may be necessary where current urban development is located along the shore.

**City of Milwaukee:** The City of Milwaukee All-Hazards Mitigation Plan (2019) is unique because it is one of only two hazard mitigation plans conducted by coastal cities in Wisconsin. The Southeastern Wisconsin Regional Planning Commission prepared the City's plan. The Plan includes a section that contains an in-depth analysis of coastal hazards and identifies that the three main coastal hazards that affect the City of Milwaukee include coastal/bluff erosion, flooding from high lake levels, and damage to shoreline structures. The analysis of coastal hazards includes a detailed map of the recession rates from a 1995 SEWRPC study. The analysis also contains a section identifying how climate change may affect coastal hazards in the future, including how increased precipitation, more intense storms, and varying lake levels will impact the Milwaukee shoreline.

**Ozaukee County:** The Ozaukee County Hazard Mitigation Plan (2020) has the most extensive analysis of coastal hazards of the plans analyzed in this review. The Southeastern Wisconsin Regional Planning Commission helped draft the plan. The plan uses SEWRPC's 1995 study of bluff stability within the Southeast Wisconsin Region to identify the condition and rate of recession of bluffs in the County. The plan also incorporates data from the Wisconsin Shoreline and Oblique Photo Viewer, created by the Association of State Floodplain Managers and Geo-Professional Consultants, LLC. This data was used to identify the location of unstable bluffs, the location of bluff failures, causes of failure, and short term (1995-2015) and long term (1956-2015) bluff toe, crest, and beach recession rates. Other hazard mitigation plans reviewed for this study did not include this depth of analysis of the bluff and beach conditions. The plan identifies shoreline erosion, bluff failure, and coastal flooding as high risk for occurrence and damage in the County. According to the plan, all the coastal communities in the County have special coastal hazard concerns, ranging from unstable and failing bluffs to recession rates greater than one foot per year.

The Ozaukee County Hazard Mitigation Plan has several mitigation measures outlined for coastal hazards, including regulation/policy measures, bluff top and face mitigation measures, nearshore/shoreline protection measures, and public information/educational. The Plan has an extensive list of mitigation strategies for coastal hazards, with several of these including best practices for coastal hazard mitigation. These include continuing enforcement of the County bluff setback requirements, using natural vegetation on bluff slopes to reduce erosion, developing best practices for stormwater and groundwater management to reduce bluff destabilization and erosion, using nature-based shoreline protection measures rather than hard shoreline protection measures, considering the relocation of buildings within high-risk bluff failure areas, and the acquisition and demolition of structures within the 100-year floodplain.

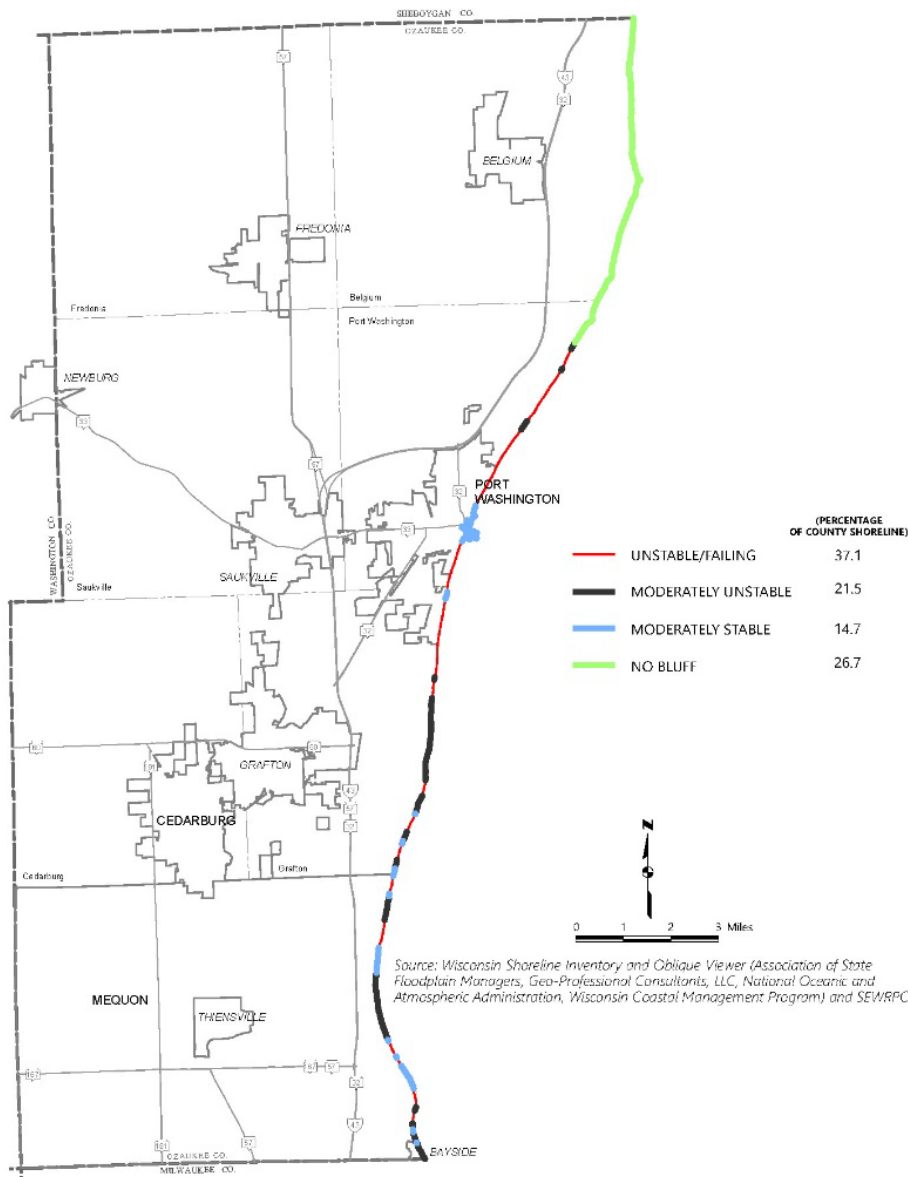


Figure 4: Example of Ozaukee County Bluff Condition Analysis. Source: Southeastern Wisconsin Regional Planning Commission (2020).

**City of St. Francis:** The City of St. Francis Comprehensive Plan (2016) identifies the protection of the bluffs in the community as critical in the future. The plan identifies primary environmental corridors and current protections for these corridors, including setbacks and buffers. The plan recommends protecting the portion of the primary environmental corridor along the bluff zone for protection against bluff toe erosion. The plan includes recommendations for seeking cooperative projects with neighboring communities to stabilize and protect the bluffs.

**City of Sturgeon Bay:** The City of Sturgeon Bay Comprehensive Plan (2020) includes recommendations for using zoning overlay districts to preserve the environmentally sensitive areas in the city. The recommendations include restoring the waterfront in the city through erosion control, stormwater management, and the use of vegetative buffers. The recommendations in the plan also include completing a climate event risk assessment to identify the city's risk and hazard mitigation strategies for various natural hazards, including floods.

**City of Superior:** The City of Superior Multi-Jurisdictional Hazard Mitigation Plan (2020) remained largely the same compared to their previous 2015 plan. The city drafted its own hazard mitigation plan – one of only two coastal municipalities in this review that drafted their own plan. The plan includes an extensive analysis of coastal hazards. The plan has a separate chapter for coastal hazards and bluff failure, which includes an in-depth analysis of the hazards and the effect they have on the community. The plan also identifies several mitigation strategies that align with best practices in hazard mitigation plans, including using land-use controls to reduce vulnerability.

## Conclusion

Addressing coastal hazards in local community plans continues to vary across Wisconsin coastal communities. Some plans include detailed analysis and strategies that target mitigation of coastal hazards, while others have little or no mention of coastal hazards. However, the general trend is that more communities are including coastal hazard analysis and mitigation strategies in their community plans. Regional planning commissions also continue to play an instrumental role in the analysis of coastal hazards. Plans prepared by these commissions include the greatest levels of analysis, and the studies and reports that these commissions produce are often incorporated into the plans of the jurisdictions they support.

The best practices and analysis of plans included in this report serves as a first step in increasing mitigation planning for coastal hazards. Coastal communities may want to use other resources, such as the “Plan Integration for Resilience Scorecard” (<https://coastalresiliencecenter.unc.edu/pirs/>). The scorecard is a tool for analyzing how policies in a community's network of plans affect vulnerability and their level of integration with one another (Berke et al. 2019; Berke et al. 2021; DeAngelis et al. 2021). The scorecard was tested using four plans in Green Bay, Wisconsin as part of a student professional project in the Department of Planning and Landscape Architecture at the University of Wisconsin-Madison and was found to be effective in identifying how individual policies in plans complement or detract resilience to natural hazards (Mieras 2021).

## References

- Berke, P.R., Malecha, M.L., Yu, S., Lee, J. and Masterson, J.H., 2019. Plan integration for resilience scorecard: evaluating networks of plans in six US coastal cities. *Journal of Environmental Planning and Management*, 62(5), pp.901-920. <https://doi.org/10.1080/09640568.2018.1453354>.
- Berke, P., Kates, J., Malecha, M., Masterson, J., Shea, P. and Yu, S., 2021. Using a resilience scorecard to improve local planning for vulnerability to hazards and climate change: An application in two cities. *Cities*, 119, p.103408. <https://doi.org/10.1016/j.cities.2021.103408>.
- DeAngelis, J., Pena, J., Gomez, A., Masterson, J. and Berke, P., 2021. Building Resilience Through Plan Integration. American Planning Association. <https://www.planning.org/publications/document/9210305/>.
- Edil, T.B., Mickelson, D.M., Chapman, J.A., and Southeastern Wisconsin Regional Planning Commission. 1997. Lake Michigan shoreline recession and bluff stability in southeastern Wisconsin: 1995.
- FEMA. 2021. FEMA Hazard Mitigation Plan Status Map. Accessed April 23, 2022. <https://fema.maps.arcgis.com/apps/webappviewer/index.html?id=ec2fb023df744cf480da89539338c386>.
- Mieras, C. 2021. An Analysis of Plan Content and Integration to Address Coastal Hazards in Wisconsin's Coastal Communities. Accessed April 23, 2022. <https://dpla.wisc.edu/wp-content/uploads/sites/1021/2021/09/Professional-Project-Collin-Mieras.pdf>.
- Schwab, J. 2010. Hazard mitigation: Integrating best practices into planning. Planning Advisory Service Report 560. <https://www.planning.org/publications/report/9026884/>.
- Sippel, B., Pearce, A., Ohm, B. and D. Hart. 2015. A Review of Coastal Hazard Planning in Comprehensive Plans and Hazard Mitigation Plans in Coastal Communities in Wisconsin. Prepared for the NOAA Great Lakes Coastal Storms Program. May 2015. Accessed April 23, 2022. <https://maps.aqua.wisc.edu/geocatalog/pdf/glcsp-wi-coastal-plan-review.pdf>.
- Wisconsin Department of Administration. 2021. Library of Plans. Accessed April 23, 2022. <https://doa.wi.gov/Pages/LocalGovtsGrants/Comprehensive-Planning-Library-of-Plans.aspx>.
- Wisconsin Emergency Management. 2016. State of Wisconsin Emergency Management Plan.

## Featured Plans

City of Ashland, Wisconsin. 2017. Authentic Ashland - Part 1 - A Comprehensive Plan for Ashland, Wisconsin. Accessed April 23, 2022. <https://www.coawi.org/167/Comprehensive-Plan>.

City of Bayfield, Wisconsin. 2019. City of Bayfield, Wisconsin - Comprehensive Plan - 2019-2029. Accessed April 23, 2022. <http://www.cityofbayfield.com/2019--2029-comprehensive-plan.html>.

Brown County, Wisconsin. 2021. Brown County, Wisconsin - 2020 All Hazards Mitigation Plan. Accessed April 23, 2022. <https://www.browncountywi.gov/i/f/files/Emergency-Management/All%20Hazards/FINAL%20AHMP%202020.pdf>.

Douglas County, Wisconsin. 2016. Douglas County Natural Hazards Mitigation Plan - February 2016. Accessed April 23, 2022. <https://www.nwrpc.com/961/Douglas-County-Hazard-Mitigation-Plan-Up>.

Village of Fox Point, Wisconsin. 2021. Comprehensive Plan - Village of Fox Point - June 2021. Accessed April 23, 2022. <https://www.villageoffoxpoint.com/314/Comprehensive-Plan-Information>.

Iron County, Wisconsin. 2018. Multi-Jurisdictional Hazard Mitigation Plan - Iron County, Wisconsin. Accessed April 23, 2022. <http://nwrpc.com/935/Iron-County-Hazard-Mitigation-Plan-Updat>.

Kenosha County, Wisconsin. 2020. Kenosha County Hazard Mitigation Plan Update: 2017-2022. Accessed April 23, 2022. <https://www.kenoshacounty.org/DocumentCenter/View/7509/capr-278-3rd-ed-kenosha-co-hazard-mitigation-plan-update?bidId=>.

City of Milwaukee, Wisconsin. 2019. City of Milwaukee - All Hazards Mitigation Plan Update. Accessed April 23, 2022. <https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-282-3rd-edition-city-of-milwaukee-all-hazards-mitigation-plan.pdf>.

Ozaukee County, Wisconsin. 2020. Ozaukee County - Hazard Mitigation Plan Update: 2022-2025. Accessed April 23, 2022. <https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/CAPR-332OzaukeeCountyHMPU.pdf>.

City of St. Francis, Wisconsin. 2016. Comprehensive Plan - City of St. Francis - February 2016. Accessed April 23, 2022. <https://stfranciswi.org/compplan>.

City of Sturgeon Bay, Wisconsin. 2020. Sturgeon Bay - Comprehensive Plan 2040. Accessed April 23, 2022. [https://cms9files.revize.com/sturgeonbaywi/Sturgeon%20Bay%20Comprehensive%20Plan\\_Adopted%2010.20.20\(web\).pdf](https://cms9files.revize.com/sturgeonbaywi/Sturgeon%20Bay%20Comprehensive%20Plan_Adopted%2010.20.20(web).pdf).

City of Superior, Wisconsin. 2020. City of Superior - All Hazard Mitigation Plan Update 2020. Accessed April 23, 2022. <https://www.ci.superior.wi.us/589/Hazard-Mitigation>.

## Appendix A. Comprehensive Plans Covered in This Review

| Jurisdiction                          | Year | County    | Weblink   |
|---------------------------------------|------|-----------|---|
| City of Algoma                        | 2017 | Kewaunee  | <a href="https://cms8.revize.com/revize/cityofalgoma/Algoma%20Comprehensive%20Plan%20FINAL%2012142017.pdf">https://cms8.revize.com/revize/cityofalgoma/Algoma%20Comprehensive%20Plan%20FINAL%2012142017.pdf</a>   |
| City of Ashland                       | 2015 | Ashland   | <a href="https://www.coawi.org/167/Comprehensive-Plan">https://www.coawi.org/167/Comprehensive-Plan</a>   |
| City of Bayfield                      | 2019 | Bayfield  | <a href="http://www.cityofbayfield.com/2019--2029-comprehensive-plan.html">http://www.cityofbayfield.com/2019--2029-comprehensive-plan.html</a>   |
| City of Cudahy                        | 2020 | Milwaukee | <a href="https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-339-comp-plan-update-city-cudahy.pdf">https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-339-comp-plan-update-city-cudahy.pdf</a>   |
| City of Kewaunee                      | 2019 | Kewaunee  | <a href="https://www.cityofkewaunee.org/uploads/5/3/9/5/53954613/copy_integrated_plan.pdf">https://www.cityofkewaunee.org/uploads/5/3/9/5/53954613/copy_integrated_plan.pdf</a>   |
| City of Oak Creek                     | 2019 | Milwaukee | <a href="https://www.oakcreekwi.gov/home/showpublisheddocument/13945/637707539975070000#:~:text=The%20City%20of%20Oak%20Creek's,make%20that%20vision%20a%20reality.">https://www.oakcreekwi.gov/home/showpublisheddocument/13945/637707539975070000#:~:text=The%20City%20of%20Oak%20Creek's,make%20that%20vision%20a%20reality.</a> |
| City of South Milwaukee               | 2016 | Milwaukee | <a href="https://www.southmilwaukee.gov/172/Comprehensive-Plan">https://www.southmilwaukee.gov/172/Comprehensive-Plan</a>   |
| City of St. Francis                   | 2016 | Milwaukee | <a href="https://stfranciswi.org/compplan">https://stfranciswi.org/compplan</a>   |
| City of Sturgeon Bay                  | 2020 | Door      | <a href="https://www.sturgeonbaywi.org/Sturgeon%20Bay%20Comprehensive%20Plan_Adopted%2010.20.20%20(web).pdf">https://www.sturgeonbaywi.org/Sturgeon%20Bay%20Comprehensive%20Plan_Adopted%2010.20.20%20(web).pdf</a>   |
| Village of Cleveland                  | 2020 | Manitowoc | <a href="https://www.clevelandwi.gov/wp-content/uploads/2020/02/Cleveland-Comp-Plan-2019-FINAL.pdf">https://www.clevelandwi.gov/wp-content/uploads/2020/02/Cleveland-Comp-Plan-2019-FINAL.pdf</a>   |
| Village of Egg Harbor                 | 2020 | Door      | <a href="https://www.villageofegg Harbor.org/vertical/sites/%7B569578EA-93E6-481F-B733-DF3296C08FEE%7D/uploads/EH_FinalPlan_FINAL_12720_forposting.pdf">https://www.villageofegg Harbor.org/vertical/sites/%7B569578EA-93E6-481F-B733-DF3296C08FEE%7D/uploads/EH_FinalPlan_FINAL_12720_forposting.pdf</a>                           |
| Village of Fox Point                  | 2021 | Milwaukee | <a href="https://www.villageoffoxpoint.com/314/Comprehensive-Plan-Information">https://www.villageoffoxpoint.com/314/Comprehensive-Plan-Information</a>   |
| Village of Suamico                    | 2014 | Brown     | <a href="https://www.suamico.org/Comprehensive%20Plan.pdf">https://www.suamico.org/Comprehensive%20Plan.pdf</a>   |
| Village of Whitefish Bay              | 2019 | Milwaukee | <a href="https://www.wfbvillage.gov/244/Comprehensive-Plan">https://www.wfbvillage.gov/244/Comprehensive-Plan</a>   |
| Ashland County                        | 2016 | Ashland   | <a href="https://ashland.extension.wisc.edu/community-development/comprehensive-plan/">https://ashland.extension.wisc.edu/community-development/comprehensive-plan/</a>   |
| Brown County                          | 2019 | Brown     | <a href="https://www.browncountywi.gov/departments/planning-and-land-services/planning/brown-county-plans/">https://www.browncountywi.gov/departments/planning-and-land-services/planning/brown-county-plans/</a>   |
| Door County                           | 2015 | Door      | <a href="https://www.co.door.wi.gov/DocumentCenter/View/2954/Complete-Plan-and-Maps">https://www.co.door.wi.gov/DocumentCenter/View/2954/Complete-Plan-and-Maps</a>   |
| Kewaunee County                       | 2017 | Kewaunee  | <a href="https://media.baylakerpc.org/media/51229/kewaunee%20county%20comp%20plan_farm%20preservation%20plan%20full%20document-%20001182017.pdf">https://media.baylakerpc.org/media/51229/kewaunee%20county%20comp%20plan_farm%20preservation%20plan%20full%20document-%20001182017.pdf</a>   |
| Manitowoc County                      | 2020 | Manitowoc | <a href="https://manitowoccountywi.gov/wp-content/uploads/2021/01/comprehensive-plan.pdf">https://manitowoccountywi.gov/wp-content/uploads/2021/01/comprehensive-plan.pdf</a>   |
| Bay-Lake Regional Planning Commission | 2017 | n/a       | <a href="https://baylakerpc.org/publications">https://baylakerpc.org/publications</a>   |

## Appendix B. Hazard Mitigation Plans Covered in This Review

| Jurisdiction      | Year | County    | Weblink   |
|-------------------|------|-----------|---|
| City of Milwaukee | 2019 | Milwaukee | <a href="https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-282-3rd-edition-city-of-milwaukee-all-hazards-">https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-282-3rd-edition-city-of-milwaukee-all-hazards-</a>             |
| City of Superior  | 2020 | Douglas   | <a href="https://www.ci.superior.wi.us/589/Hazard-Mitigation">https://www.ci.superior.wi.us/589/Hazard-Mitigation</a>   |
| Bayfield County   | 2019 | Bayfield  | <a href="http://www.cityofwashburn.org/uploads/7/0/4/7/70473445/updated_2018_bayfield_co_haz_mit.pdf">http://www.cityofwashburn.org/uploads/7/0/4/7/70473445/updated_2018_bayfield_co_haz_mit.pdf</a>                                       |
| Brown County      | 2020 | Brown     | <a href="https://www.browncountywi.gov/i/f/files/Emergency-Management/All%20Hazards/FINAL%20AHMP%202020.pdf">https://www.browncountywi.gov/i/f/files/Emergency-Management/All%20Hazards/FINAL%20AHMP%202020.pdf</a>                         |
| Door County       | 2016 | Door      | <a href="https://www.co.door.wi.gov/DocumentCenter/View/3615/Hazard-Mitigation-Plan_opt">https://www.co.door.wi.gov/DocumentCenter/View/3615/Hazard-Mitigation-Plan_opt</a>   |
| Douglas County    | 2016 | Douglas   | <a href="https://www.nwrpc.com/961/Douglas-County-Hazard-Mitigation-Plan-Up">https://www.nwrpc.com/961/Douglas-County-Hazard-Mitigation-Plan-Up</a>   |
| Iron County       | 2018 | Iron      | <a href="http://nwrpc.com/935/Iron-County-Hazard-Mitigation-Plan-">http://nwrpc.com/935/Iron-County-Hazard-Mitigation-Plan-</a>   |
| Kenosha County    | 2017 | Kenosha   | <a href="https://www.kenoshacounty.org/DocumentCenter/View/7509/capr-278-3rd-ed-kenosha-co-hazard-mitigation-plan-">https://www.kenoshacounty.org/DocumentCenter/View/7509/capr-278-3rd-ed-kenosha-co-hazard-mitigation-plan-</a>           |
| Kewaunee County   | 2020 | Kewaunee  | <a href="http://cherylan.kewauneeeco.org/FTP/eoc/HazMitPlan2019v">http://cherylan.kewauneeeco.org/FTP/eoc/HazMitPlan2019v</a>   |
| Manitowoc County  | 2020 | Manitowoc | <a href="https://manitowoccountywi.gov/wp-content/uploads/2021/01/manitowoc-county-hazard-mitigation-plan-2020-2025.pdf">https://manitowoccountywi.gov/wp-content/uploads/2021/01/manitowoc-county-hazard-mitigation-plan-2020-2025.pdf</a> |
| Marinette County  | 2020 | Marinette | <a href="https://www.marinettecounty.com/i_marinette/d/Emergency_Management/mitigation/05-29-20_final_hm_plan_2020-">https://www.marinettecounty.com/i_marinette/d/Emergency_Management/mitigation/05-29-20_final_hm_plan_2020-</a>         |
| Milwaukee County  | 2017 | Milwaukee | <a href="https://county.milwaukee.gov/files/county/emergency-management/Admin/MCHazMitPlan2016-">https://county.milwaukee.gov/files/county/emergency-management/Admin/MCHazMitPlan2016-</a>   |
| Oconto County     | 2021 | Oconto    | <a href="https://drive.google.com/file/d/1RbQ4BH5Dm8Hs-UJ1-POL3BuaCBeOr0Y/view">https://drive.google.com/file/d/1RbQ4BH5Dm8Hs-UJ1-POL3BuaCBeOr0Y/view</a>   |
| Ozaukee County    | 2020 | Ozaukee   | <a href="https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/CAPR-332OzaukeeCountyHMPU.pdf">https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/CAPR-332OzaukeeCountyHMPU.pdf</a>   |
| Racine County     | 2017 | Racine    | <a href="https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-266-racine-county-hazard-mitigation-plan-update-3rd-">https://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-266-racine-county-hazard-mitigation-plan-update-3rd-</a> |
| Sheboygan County  | 2019 | Sheboygan | <a href="https://www.sheboygancounty.com/departments/departments-r-z/sheriff-s-department/emergency-">https://www.sheboygancounty.com/departments/departments-r-z/sheriff-s-department/emergency-</a>                                       |