
Village of Windsor Annex

Community Profile

The Village of Windsor is located in the Northeast quadrant of the County, north of the City Madison, east of the Town of Vienna, and south of Columbia County. Until 2015, the Village was the Town of Windsor. Following a referendum in November, 2015 the Town incorporated to create the Village of Windsor. This is its first natural hazard mitigation plan since incorporation. Outside of the name and administrative structure, little changed from this conversion. The borders of the former town are now the borders of the Village. The land east of U.S. Highway 51 and north of Windsor Rd. is primarily productive agricultural land. The area south of Windsor Rd. is a mix of country estate residential subdivisions and Conservancy Lands along Token Creek. Much of the area south of the village of DeForest and west of U.S. Highway 51 is suburban and contains a mix of residential subdivisions and neighborhood commercial development. The area north of DeForest and west of U.S. Highway 51 is primarily productive agricultural land except for the Hamlet of Morrisonville in the far northwest corner of the Village. According to Dane County's GIS data, the Village of Windsor has a total area of 26.81 square miles.

Data reported in this section is from the time period when Windsor was not incorporated. Due to the switch to village status being largely an administrative change only, the information given is assumed to be accurate. As of the 2010 Census, there are 6,345 people, 2,432 households, and 1,815 families residing in the Village of Windsor. The population density is 221.4 people per square mile. There are 2,548 housing units at an average density of 88.9 per square mile. The municipality population distributed by the Wisconsin Department of Administration indicates that the 2015 population for Village of Windsor was 6,876 people. Table 1 shows the population profile by age for the Village of Windsor according to the 2010 Census.

American Community Survey estimates for 2014 indicate that the median income for a household in the Village of Windsor is \$81,774 and the median income for a family is \$96,518. The per capita income for the Village of Windsor is \$34,994. 95.3% of the population has at least a high school degree, while 38.2% of the population holds at least a bachelor's level degree.

Table 1 Population Profile of Village of Windsor

Category	Number	Percent
Total population	6,345	100.0
Under 5 years	428	6.7
5 to 9 years	435	6.9
10 to 14 years	442	7.0
15 to 19 years	408	6.4
20 to 24 years	274	4.3
25 to 29 years	352	5.5
30 to 34 years	417	6.6

Category	Number	Percent
35 to 39 years	430	6.8
40 to 44 years	481	7.6
45 to 49 years	537	8.5
50 to 54 years	526	8.3
55 to 59 years	473	7.5
60 to 64 years	382	6.0
65 to 69 years	272	4.3
70 to 74 years	171	2.7
75 to 79 years	140	2.2
80 to 84 years	83	1.3
85 years and over	94	1.5

Data Source: 2010 U.S. Census

Hazard Identification and Risk Assessment

A hazard identification and vulnerability analysis was completed for the Village of Windsor using the same methodology in the base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 2 outlines the hazard identification for the Village of Windsor based on the Data Collection Guide issued in 2015. The Data Collection Guide listed all of the hazards that could impact anywhere in Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. The Village of Windsor’s planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated “no concern” while a ranking of 3 indicated “highest concern.” This matrix appears as Table 2. This matrix reflects the significance of the hazards relative to one another.

This matrix reflects that the Village of Windsor is most vulnerable to floods, and tornados. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 2 Vulnerability Assessment Matrix for the Village of Windsor

Hazard	Hazard Attributes			Impact Attributes						Total
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
						Impact on General Structures	Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	
Dam Failure	1	2	1	3	3	0	3	3	2	18
Extreme Cold	2	5	2	1	1	2	3	3	1	20
Extreme Heat	2	5	2	1	1	2	3	3	1	20
Drought	5	5	5	0	0	2	2	4	2	25
Flood	5	5	5	5	0	2	4	4	4	34
Fog	2	5	2	0	0	0	0	0	0	9
Hail Storm	3	5	3	2	2	0	1	1	0	17
Landslide	1	1	1	0	0	0	0	0	0	3
Lightning	1	1	1	2	2	0	0	2	3	16
Tornado	5	5	5	5	5	5	5	5	5	45
Wildfire	1	5	1	1	1	0	2	2	1	14
Windstorm	2	5	2	2	2	0	2	2	0	17
Winter Storm	3	5	3	1	2	2	2	3	2	23

Source: Village of Windsor Data Collection Guide

Previous Hazard Events

Through the Data Collection Guide, the Village of Windsor noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the base plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. No new events were reported for the 2017 plan, the events noted by this jurisdiction in the 2010 Data Collection Guide include:

Flooding: July 2008

Impacted by the same flooding events that impacted most of Dane County in July, 2008, the Village of Windsor experienced one flooded street and received minimal federal assistance to help with the cost and recovery of the event. No injuries, deaths, or other property damages were reported.

Asset Inventory

Assets include the people, property, and critical facilities within the Village of Windsor that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

Population

Table 3 Vulnerable Population Summary

Disability Status from the 2014 American Community Survey	Number	Percent of Group with Disability
Population Under 5 years old with a Disability	0	0%
Population 5-17 years old with a Disability	40	3.5
Population 18-64 with a Disability	200	4.8
Population Over 65 years old with a Disability	328	39.0
Total Population with Disability	568	8.7
Other Vulnerable Populations	Estimate	Percentage
Families Below Poverty Level	57	3.0
Individuals Below Poverty Level	305	4.7
Of those poverty: Individuals Under 18	61	3.9
Of those poverty: Individuals Over 65	13	1.5
Total Population Over 5 who Speak English less than "very well"	197	3.2
2014 ACS Total Population Estimate	6517	100%

Data Source: 2014 American Community Survey

General Property

Table 4 Property Exposure Summary

Property Type	Total Parcel Count	Improved Parcel Count	Improved Values (\$)	Content (\$)	Total Value (\$)
Totals	3,163	2,238	416,699,100	208,349,550	625,048,650
Agriculture	507	169	31,033,900	15,516,950	46,550,850
Commercial	41	36	8,115,200	4,057,600	12,172,800
Utilities	11	0	0	0	0
Industrial	17	14	6,564,100	3,282,050	9,846,150
Institutional/ Governmental	13	3	608,500	304,250	912,750
Other	714	202	44,427,600	22,213,800	66,641,400
Residential	1,860	1,814	325,949,800	162,974,900	488,924,700

Data Source: Dane County Land Information Office, 2015

Critical Facilities

The Village of Windsor has identified the following critical facilities important to protect from disaster impacts. These are collected in Table 5, which is based on GIS data inventories from Dane County.

Table 5 Critical Facility Summary/Essential Infrastructure

Facility	Type*	No. of Facilities	Replacement Value (\$)
Bridges (4) Smith Road, Windsor Road, Yahara River, and Portage Road Bridges	EI	4	4,000,000
Child Care	VF	2	Unknown
Communications Tower	EI	2	400,000
Community Based Residential	VF	2	Unknown
Hazardous Chemicals	HM	3	534,700
Historic Site – Token Creek Cemetery	VF	1	500,000
Municipal Hall/Sheriff Precinct	EI	1	3,000,000
Public School	VF	2	35,000,000
Water Utility	EI	2	2,000,000
Reported Total		27	45,434,700
*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities			

Data Source: Village of Windsor

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within Village of Windsor. Table 6 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 6 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	None	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See section below	See section below	See section below	See section below
Fog	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	See Property Exposure table 3	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Lightning	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Table 2 Population	None	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Winter Storm	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 2 Population	See section below	See Critical Facility Inventory Table(s)	See section below

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Wildfire	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Windstorm	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Flood

Structures and Properties in the Floodplain

Refer to the flood profile in the mitigation plan for a description of the methodology used to identify potentially flood-prone properties. Figure 1 shows mapped floodplains, future growth areas, and critical or vulnerable facilities. Tables 7 and 8 outline the primary structures and properties with primary structures on them within the Village of Windsor. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County.

Table 7 Primary Structures in the Floodplain

Total Floodway Structures	Floodway Residential Structures	Total Structures in 100 year Floodplain	Residential Structures in 100 year Floodplain	Potential Number of Individuals at Risk in 100 year Flood	Total Structures in 500 year Floodplain	Residential Structures in 500 year Floodplain	Potential Number of Individuals at Risk in 500 year Flood
0	0	1	1	2.33	2	2	4.66

Source: Analysis based on Dane County Land Information Office Data

Table 8 Properties with Primary Structures in the Floodplain

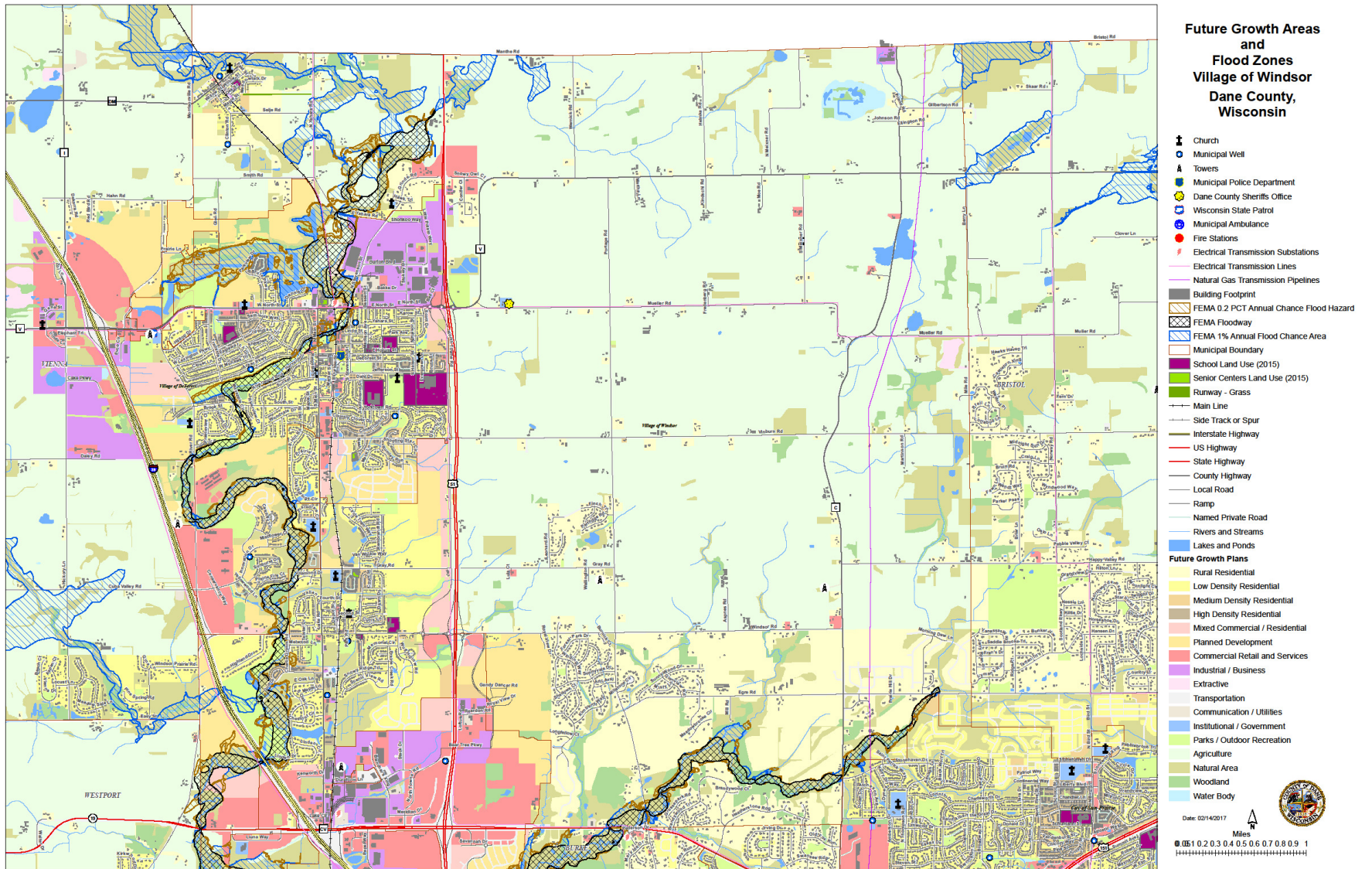
Total Floodway Properties	Floodway Improved Values	Floodway Residential Properties	Total Properties in 100 year Floodplain	Total Improved Value of Properties in 100 year Floodplain	Residential Properties in 100 year Floodplain	Total Properties in 500 year Floodplain	Total Improved Value of Properties in 500 year Floodplain	Residential Properties in 500 year Floodplain
0	\$0	0	1	\$101,500	1	2	\$244,000	2

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Policies

No repetitive losses have been recorded in the Village of Windsor. Due to the Village's recent incorporation, no flood insurance policies specific to the Village are present in FEMA policy statistics as of 12/31/2016. Any policies for the Village area would be captured in the statistics for the County as a whole. In 2016, following incorporation, Windsor adopted floodplain and shoreland zoning.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2015 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 9 Tornado Loss Estimate

% Area of Impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value	Estimated Loss \$ - High Damage Range	Estimated Loss \$ -Moderate Damage Range	Estimated Loss \$ - Low Damage Range	Loss Ratio for Moderate Damage Range
2.95%	2568	76	\$692,639,400	\$20,425,011	\$10,212,505.61	\$5,106,252.81	1.5%

Data Source: Analysis Based on Dane County Land Information Office's data

Growth and Development Trends

Planned land use is shown in Figure 1, in relation to the flood hazard. Table 10 illustrates how the Village of Windsor has grown in terms of population and number of housing units between 2010 and 2014/15. Table 11, drawn from the Comprehensive Plan for the Village of Windsor, shows population projections through 2035.

Table 10 Village of Windsor Change in Population and Housing Units, 2010-2014/15

2010 Census	2015 Estimate	Percent Population Change 2010-2015	2010 Housing Units	2014 Housing Units Estimate (ACS)	Percent Housing Unit Change 2010-2014
6345	6876	8.37%	2,548	2,676	5.0%

Data Source: Dane County

Table 11 Village of Windsor Population Projections, 2015-2035

Population Projection	2015	2020	2025	2030	2035
Increase by same number per year	6,876	7,433	8,035	8,686	9,390

Data Source: Wisconsin Department of Administration and Dane County Planning and Zoning

As noted in the Community Profile, the former Town of Windsor became the Village of Windsor in November, 2015. This is not believed to have caused any change in vulnerability for the Village.

Problems or Additional Vulnerability issues

The Data Collection Guide identified the following problems or additional vulnerability issues in the Village of Windsor:

- Rural areas may have longer response times for emergency services and support
- Growth is being planned for, and natural risk factors have been considered

Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the Village of Windsor.

Mitigation Capabilities Summary

Table 12 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the Village of Windsor.

Table 12 Village of Windsor Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
General or Comprehensive plan	Yes	
Zoning ordinance	Yes	
Subdivision ordinance	Yes	
Growth management ordinance	No	
Floodplain ordinance	Yes	
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Storm water/Steep Slope
Building code	Yes	State building code
Fire department ISO rating	Yes	
Erosion or sediment control program	Yes	Dane County
Storm water management program	Yes	Dane County
Site plan review requirements	Yes	
Capital improvements plan	Yes	
Economic development plan	No	
Local emergency operations plan	No	
Other special plans	Yes	Floodplain and Shoreland Zoning
Flood insurance study or other engineering study for streams	Yes	
Elevation certificates (for floodplain development)	Yes	

Data Source: Village of Windsor Data Collection Guide

Table 13 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the Village of Windsor.

Table 13 Responsible Personnel and Departments for the Village of Windsor

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning and Development	1 FTE, 2 part time
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Village Engineer	1 PT
Planner/engineer/scientist with an understanding of natural hazards	Yes	Village Engineer, Village Planner	2 PT
Personnel skilled in GIS	Yes	Village Planner	1 PT
Full-time Building Official	No	Part time building inspector	
Floodplain Manager	No		
Emergency Manager	Yes	Fire chief	
Grant Writer	Yes	Planning and Development	1 FTE
GIS Data Resources – (land use, building footprints, etc.)	Yes	Dane County Planning and Development	
Warning systems/services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Dane County	

Data Source: Village of Windsor Data Collection Guide

Table 14 identifies financial tools or resources that the Village of Windsor could potentially use to help fund mitigation activities.

Table 14 Financial Resources for the Village of Windsor

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	Yes	Dane County administers the CDBG program
Capital improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Village Utility Commission responsible for water and sanitary sewer
Impact fees for new development	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Incur debt through private activities	Yes	

Data Source: Village of Windsor Data Collection Guide

National Flood Insurance Program Participation

The Village of Windsor has adopted a DNR approved Floodplain Ordinance in 2016 and is in the process of completing enrollment in the NFIP.

Public Involvement Activities

The Village of Windsor community participated in the County public outreach process. This was a series of public workshops held around the County in which an overview of natural hazard mitigation was given and the County plan was discussed. Residents were then given the opportunity to give their input on mitigation actions that could be taken, and filled out informational surveys that assessed the level of risk the perceived within their own community. More information on these meetings can be found in the County base plan.

Mitigation Actions

Completed Mitigation Actions

Following the completion of the Village of Windsor's 2010 Natural Hazard Mitigation Plan, the (at the time) Town completed both of the mitigation objectives it had listed. They were as follows:

1. Mitigate Morrisonville flooding by improving drainage along the Yahara River
2. Mitigate sanitary sewer backups in Morrisonville.

The Village included the following narrative regarding the completion of these projects:

Morrisonville was inundated by the storms of June 5-7, 2008. Flooding in Morrisonville was caused by the inability of the Yahara River system to convey water away from the low-lying areas of the Morrisonville Hamlet. Standing surface water entered the sanitary sewer system via infiltration and inflow. The Morrisonville sewage pump station which conveys sewage away from the Morrisonville collection system to the Madison Metropolitan Sewerage District (MMSD) could not pump enough water to empty the collection system.

The Morrisonville Sanitary District is under contract to discharge 40,000 gallons per day to the MMSD. In 2007 the average sanitary sewer pumpage was 97,000 gallons a day and the water system pumped an average of 27,000 gallons per day. In 2008, there was on average 67,000 gallons of clear water pumped to the MMSD by the Morrisonville Sanitary District. During the 2008 flood event, the lift station could not keep up necessitating a by-pass.

Windsor did two projects to address the flooding. One was removing sediment from an approximately 7,050 foot long reach of ditch of the Yahara River. About 2,700 cubic yards was dredged. The other project rehabilitated the sanitary sewer collection system. Liners were installed in the mainline sewers and the manholes were lined with grout.

Windsor, in conjunction with Dane County, applied for and received \$1,543,000 in grants to rehabilitate the Morrisonville sanitary districts sanitary sewer system. \$243,000 is from Dane County and \$1.3 million was provided by the state of Wisconsin through their Community Development Block Grant Emergency Assistance Program.

Proposed Mitigation Actions

Objective 1: Support Dane County efforts to mitigate natural hazards at the local level through continued collaboration with County projects in the Village of Windsor area. The Village will continue to lower its vulnerability to natural hazards by distributing County hazard mitigation information and evaluating grant opportunities for potential use on hazard mitigation projects within the Village.

Steps:

- 1) Consider Dane County hazard mitigation information and its relevance to Village hazard mitigation efforts and resident safety.
- 2) Take necessary steps to apply for hazard mitigation grant money when available.

Lead Implementing Agency: Village of Windsor

Supporting Agencies: Dane County Emergency Management

Possible Funding and Technical Assistance:

Timeline: Continuous

Priority: Moderate

Estimated Costs: Unknown

Objective 2: Implement sound floodplain management practices and maintain good standing with the National Flood Insurance Program. Include floodplain ordinance enforcement and periodic review, promoting the benefits of flood insurance, and continued staff training and development in floodplain management.

Steps:

- 1) Evaluate through the existing staff, County planning staff, and additional DNR staff if necessary, the regulatory deficiencies and enforcement shortcomings in flood-related ordinances and programs (see related County objective).
- 2) Periodically update ordinances as necessary.
- 3) Ensure that stop work orders and other means of compliance are being used as authorized by each ordinance.
- 4) Suggest changes to improve enforcement of and compliance with regulations and programs.
- 5) Encourage floodplain management staff to become Certified Floodplain Managers (CFM) or maintain their CFM status.
- 6) Participate in Flood Insurance Rate Map updates by adopting new maps or amendments to maps.

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- 7) Utilize recently completed Digital Flood Insurance Rate maps in conjunction with GIS to improve floodplain management, such as improved risk assessment and tracking of floodplain permits.
 - 8) Promote and disperse information on the benefits of flood insurance, with assistance from partners such as the County, WDNR, or ASFPM.
 - 9) Evaluate the potential costs and benefits of becoming a participant in the Community Rating System.

Lead Implementing Agency: Village of Windsor

Supporting Agencies:

- Dane County Planning and Development
- Lakes and Watershed Commission
- Land Conservation Department
- Association of State Floodplain Managers
- Wisconsin Department of Natural Resources

Possible Funding and Technical Assistance:

- Staff Time

Timeline: On going

Priority: High

Estimated Costs: Low; can be accomplished with existing staff and within existing department budget.