

NORTHEAST JUNEAU COUNTY COMMUNITY WILDFIRE PROTECTION PLAN



NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

**NORTHEAST JUNEAU COUNTY
COMMUNITY WILDFIRE PROTECTION PLAN
(CWPP)**

Prepared for:

Northeast Juneau County CWPP Planning Committee

By:

North Central Wisconsin Regional Planning Commission

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This plan was prepared at the request and under the supervision of the Northeast Juneau County CWPP Planning Committee and the Wisconsin Department of Natural Resources by the North Central Wisconsin Regional Planning Commission (NCWRPC). For more information, contact:

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NORTHEAST JUNEAU COUNTY CWPP

CHAPTER 1: INTRODUCTION

Plan Purpose	1
Community Wildfire Protection Plan	1
Collaboration/Planning Committee	1
Statement of Intent	2
Planning Process	2
Planning Goal and Objectives	4

CHAPTER 2: COMMUNITY PROFILE AND EXISTING CONDITIONS / RISKS

Location	5
Land Ownership	5
Land Use	6
Historical Fires	8
Development Pattern	8
Wildland Urban Interface (WUI)	9
Population	9
Seasonal Population	10
Population Impacts on Wildfire Occurrence	10
Age Distribution	11
Age Distribution Impacts on Wildfire Risks	11
Employment Location	11
Housing Inventory	12
Weather Conditions/Fire Season	12
Hazardous Fuels.	13
Tree and Vegetation Mortality	14
Insect Infestation	14
Disease	15

Drought	15
Severe Storms	16
Other Concerns Regarding Wildfire Risk	16
Access	16
Fuels Near Structures	16
Structure Flammability	16
Fire Protection Background	16
Fire Suppression Responsibilities	17
Fire Policy and Programs	21
<u>CHAPTER 3: RISK ASSESSMENT</u>	
Elements of Risk Assessment	23
Planning Units.	23
Risk Assessment Methodology/Analysis	26
Risk Assessment Mapping	26
<u>CHAPTER 4: MITIGATION STRATEGIES</u>	
Treatment of Hazardous Fuels.	30
Treatment of Structural Ignitability	30
Emergency Preparedness	34
Protection Capability	35
Wildfire Prevention	36
<u>CHAPTER 5: MITIGATION ACTION PLANS</u>	
Mitigation Action Plans	37
GLOSSARY	41

APPENDIX:

A. FUNDING OPPORTUNITIES	47
B. COMMUNITY STATUS REPORT/PROJECT FORM	52
C. PLAN MAPS	54
Map 1: Planning Area Locational Map	
Map 2: Ownership Map	
Map 3: Planning Area Generalized Land Use Map	
Map 4: Planning Units Map	
Map 5: Fire Hazard Rating	
Map 6: Fire Locations & Causes 1985-2005	
Map 7: Critical/Significant Facilities Map	
Map 8: Protection Capability	
Map 9: Preliminary Evacuation Routes	

List of Figures

Figure 1: WDNR Fire Protection Areas	17
Figure 2: WDNR CAR Map for Juneau County	23
Figure 3: Risk Assessment Analysis and Results	28
Figure 4: The Home Ignition Zone	32
Figure 5: USFWS Necedah National Wildlife Refuge Mitigation Activities	40

List of Tables

Table 1: Land Ownership In Acres, 2009	5
Table 2: Generalized Land Use Inventory In Acres, 2009	6
Table 3: Juneau County Fires Greater than 90 Acres, 1975-2009	8
Table 4: Population Trends	9
Table 5: Population Projections	10
Table 6: Age Distribution, 1990-2000	11
Table 7: Total Housing Units	12
Table 8: Housing Unit Additions, 2001-2008	12
Table 9: USFWS Wildfire Suppression Resources (Refuge).	17
Table 10: WDNR Wildfire Suppression Resources (1 Hour Window)..	19
Table 11: Local Fire Suppression Resources	20
Table 12: Juneau County Wildfire Statistics, 1999-2009	36

CHAPTER 1: INTRODUCTION

PLAN PURPOSE

This plan is a Community Wildfire Protection Plan (CWPP) as defined in Title 1 of the Healthy Forest Restoration Act (HFRA) of 2003. The purpose of this CWPP is to provide the Towns of Armenia, Necedah and Germantown, the Village of Necedah, local fire departments, Juneau County, the Wisconsin Department of Natural Resources (WDNR), and the U.S. Fish and Wildlife Service (USFWS) with information and tools to help them reduce potential risks associated with wildfires and to collaboratively identify wildfire mitigation actions that will provide solutions to address the impacts of wildfire hazards. The plan will also assist the citizens of the area to prevent wildfires and be better prepared to deal with wildfire hazards. The plan develops strategies aimed at protecting life, property, and the natural environment.

COMMUNITY WILDFIRE PROTECTION PLAN

A CWPP is a written document that identifies how a community will reduce its risk from wildland fires. A CWPP is mutually agreed upon by local, state, and federal representatives and stakeholders.

A CWPP should be developed in any community that is in proximity to highly flammable wildland fuels, or is listed as an "at-risk" community in a federal or state risk assessment. The Towns of Armenia, Necedah and Germantown and the Village of Necedah are interspersed with highly flammable wildland fuels and have been identified as "very high risk" communities in the Wisconsin Communities-at-Risk (CAR) assessment.

A CWPP requires the following three elements:

- **Prioritized fuels reduction** – Identification and prioritization of wildland areas for hazardous fuels reduction treatments, as well as recommending methods for achieving hazardous fuels reductions on both private and public lands.
- **Treatment of structural ignitability** – Recommending measures that homeowners can take to reduce structural ignitability throughout the at-risk community.
- **Collaboration** – Ensure a collaborative effort between local and state government in consultation with federal agencies is used to prioritize fuels reductions and recommend measures to treat structural ignitability.

Collaboration/Planning Committee

The Northeast Juneau County Community Wildfire Protection Plan development process was intended to be open and collaborative in its effort to improve the safety of the community and its resources. The Planning Committee was made up of representatives from the communities, local fire departments, and state and federal agencies. The representatives listed below comprise the

core decision-making team that are responsible for the plan and mutually agreed on the plan's contents:

- Mike Belmonte - Town of Necedah
- Steve Bezemek - Necedah Fire & Rescue
- Bill Bruce - Town of Germantown
- Fred Cobbs - Town of Germantown
- Tate Fischer - US Fish & Wildlife Service
- Bruce Henderson – Wisconsin Department of Natural Resources (WDNR)
- Roger Herried - Village of Necedah
- Brian Loyd - Juneau County Forestry & Parks
- Amy Luebke - WDNR
- Rebecca Mouw - WDNR
- Steve Peters - Town of Armenia
- Ryan Rattunde - Necedah Fire & Rescue
- Joe Stecker-Kochanski - Buckhorn State Park
- Gervase Thompson - Juneau County Emergency Management
- Lynn Willard - New Lisbon Fire Dept.
- Gair Walta – Town of Armenia and Armenia Fire Dept.
- Darrin Johnson – Wisconsin River Power Company (WRPCO)
- Paul Charland – UW Fish & Wildlife Service

Statement of Intent

The intent of this plan is to help fire protection agencies, community leaders, and natural resource professionals be better prepared to protect the community's residents, property, and natural resources against the negative impacts of wildfire.

Planning Process

The steps in the Northeast Juneau County Community Wildfire Protection Plan process were adapted from the publication "Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities" as follows:

1. Convene Decision Makers and Involve Federal and State Agencies

The process began with preliminary meetings with representatives from the local governments, local fire authorities, and state and federal agencies. The meetings were facilitated by the Wisconsin Department of Natural Resources.

- These preliminary meetings provided overview information on CWPPs, the planning process, and available grant funding.
- A discussion on roles and responsibilities helped establish the Planning Committee (listed above) and determined that the North Central Wisconsin Regional Planning Commission would facilitate the process and draft the plan for the area.

2. Engage Interested Parties

A broad range of interested organizations and stakeholders were contacted and encouraged to be part of the development of the CWPP. The contact list included representatives of federal, state, and local land management agencies, homeowner associations, and others. From these contacts, a working committee was established to guide the CWPP process.

3. Establish a Community Base Map

Working with WDNR and local representatives, the Regional Planning Commission developed a base map of the communities that displays inhabited areas at risk and areas that contain critical infrastructure. The base map also identifies planning units of the towns as defined by the Planning Committee.

4. Develop a Community Risk Assessment

Working collaboratively, the WDNR, Regional Planning Commission and local representatives developed a risk assessment for the area based on fuel hazards, risk of wildfire occurrences, at-risk infrastructure and other community values at risk, and local preparedness and firefighting capability.

5. Establish Community Hazard Reduction Priorities and Recommendations to Reduce Structural Ignitability

The Planning Committee established an overarching goal to "provide for public safety from wildfire." The committee then established prioritized objectives to achieve that goal. Objectives focused on fuel treatment, reducing structural ignitability, and improving fire response capability.

6. Develop an Action Plan and Assessment Strategy

Mitigation strategies were developed by the Planning Committee to help the communities meet the established mitigation objectives. The Mitigation Action Plans detail specific activities the communities plan to undertake to meet the established wildfire protection objectives.

7. Complete the Community Wildfire Protection Plan

Adoption of the CWPP by the Towns of Armenia, Necedah and Germantown and the Village of Necedah completes the plan. The plan is finalized after mutual agreement from the Planning Committee is achieved and public input is considered and incorporated into the plan as applicable.

Planning Goal and Objectives

The Northeast Juneau County CWPP Planning Committee identified and prioritized the following goal and objectives to be the foundation for this Community Wildfire Protection Plan:

Goal: Provide for public safety from wildfire.

Objective 1: Identify and mitigate safety hazards to the public and firefighters.

Objective 2: Reduce hazardous fuels on private land and around structures (home ignition zone).

Objective 3: Involve the public in assessing and reducing wildfire hazards in a safe and effective manner.

Objective 4: Improve intergovernmental coordination and cooperation in wildfire planning and protection.

Objective 5: Reduce hazardous fuels on public land.

Objective 6: Create new approaches to getting wildfire prevention messages to the public.

Objective 7: Identify needs to improve local fire department suppression capabilities (both structural and wildfire).

CHAPTER 2: COMMUNITY PROFILE AND EXISTING CONDITIONS/RISKS

This chapter looks at the community profile and some existing conditions in Northeast Juneau County that may add to the challenges of managing a wildfire, could further fuel a wildfire, or are considerations related to wildfire mitigation or management.

LOCATION

The Towns of Armenia, Necedah and Germantown are located along the Petenwell and Castle Rock flowages in the northeastern corner of Juneau County. The Village of Necedah is contained within the Town of Necedah. Refer to Map 1 - Planning Area Locational Map. The area is just north of the City of Mauston and adjacent to a number of other Juneau County towns to the west and south with Wood County to the north and Adams County to the east across the flowages. The surrounding towns include Finley, Kinston, Cutler, Clearfield, Lisbon, Lemonweir, Marion, Quincy, Strongs Prairie, Monroe, Orange, Rome and Port Edwards.

The Town of Necedah has the largest area at approximately 52,977 acres and contains a significant portion of the Necedah National Wildlife Refuge. The Village of Necedah adds another 1,979 acres. The Town of Armenia is approximately 49,680 acres and contains a significant portion of the Hardwood Air-to-Ground Gunnery and Bombing Range. The Town of Germantown has approximately 28,850 acres and contains Buckhorn State Park.

LAND OWNERSHIP

Public land ownership accounts for 39,569 acres or about 27 percent of total area, see Map 2 and Table 1. With the Wildlife Refuge, Necedah has about 39 percent public ownership while public lands accounts for about 25 percent in Armenia and about 23 percent in Germantown. The predominant public landowner in the area is the federal government with 18,111 acres of land area in Necedah (Refuge) and 143 acres in Germantown. The State of Wisconsin holds about 11,269 acres associated primarily with the bombing range in Armenia or the state park in Germantown. Juneau County has about 9,564 acres between the towns, primarily county forestland in Armenia and Necedah.

<i>Type</i>	<i>Armenia</i>	<i>Necedah</i>	<i>Necedah (village)</i>	<i>Germantown</i>	<i>Totals</i>
Federal	0	18,111	0	143	18,254
State	5,454	553	0	5,262	11,269
County	6,802	1,956	0	806	9,546
School Forest	0	0	0	166	166
Tribal	0	0	0	343	343
Private (Other)	29,270	28,821	1,754	14,305	74,150
Open Water	8,154	3,536	225	7,824	19,739
Total	49,680	52,977	1,979	28,849	133,485

Source: NCWRPC GIS

LAND USE

Land use is an important determinant in the potential impact wildfire may have on an area and the necessary mitigation actions. Land use mapping depicts the activities or usage on the land surface such as woodlands or residential development. An understanding of the land use within the area is an important consideration. Map 3 depicts the land use present in the Towns.

The majority of the land in the area (61 percent of the total acreage) is woodland, primarily in use for forestry and recreational activities; see Table 2. Of the remaining 39 percent of the total area, the land uses consist of residential development (2 percent), transportation infrastructure (2 percent), commercial and industrial development (0.25 percent), agricultural land (9 percent) and governmental, open space, recreation and water make up the remaining percentage.

<i>Type</i>	<i>Armenia</i>	<i>Necedah</i>	<i>Necedah (village)</i>	<i>Germantown</i>	<i>Totals</i>
Agriculture*	9,776	2,167	59	281	12,283
Commercial/Industrial	86	70	105	51	312
Institutional/Gov't	2	23	70	5	100
Open Land	1,287	6,465	153	1,604	9,509
Open Water	8,154	3,536	225	7,824	19,739
Recreation	56	198	92	5,135	5,481
Residential	356	900	157	1,003	2,416
Transportation	692	1,111	120	564	2,487
Woodlands	29,271	38,507	998	12,382	81,158
Total	49,680	52,977	1,979	28,849	133,485

*Source: NCWRPC GIS * Includes cranberry bogs.*

Woodlands

Woodlands consist of land that remains undeveloped and includes forestlands (both managed and unmanaged), water features, and other natural areas. Woodlands account for the largest land use category within the area. With the exception of a notable amount of agricultural land and concentrated residential and scattered development throughout, the area is almost entirely covered by forest. The woodlands cover 81,158 acres of land or 61 percent of the total area.

Certain vegetation types within woodlands present a higher flammability risk than other types. The following vegetation types present the highest flammability risk and are the most volatile (listed in order of highest to lowest risk): jack pine, red pine, oak, birch-aspens, and mixed hardwoods.

Open Land

Open lands consist of natural areas that do not fit into the woodlands or agricultural categories and may include grasslands, wetlands, bogs and other brush or shrub lands. Some of these areas may contain tall grasses or other brush/shrub vegetation, which can be a source for fast-moving fires under the influence of wind, and can create a threat for nearby structures. This category is significant in the area, particularly Necedah (associated with the Refuge), with 7 percent of total area or 9,509 acres.

Agricultural Land

Agricultural land, including croplands, pastures, and open space, account for 12,283 acres of land in the area. The agricultural land is located primarily in the Town of Armenia.

Croplands/pastures are often open vegetation lands containing tall grasses that can be a source for rapidly-moving spring fires that create a threat for nearby structures.

Residential Land

Residential land within the area includes about 2,416 acres or about 2 percent of the total area. Residential use is primarily made up of single-family homes (57 percent overall). Mobile homes make up another 35 percent. The remaining residential land is comprised of multi-family structures, which make up about 8 percent of housing units. Overall, about 40 percent of residential units are for seasonal use.

Transportation Uses

The local, county, and state roads running through the area fall under the land use category of transportation uses and account for 2,487 acres of land. There is also a small airport located on the west side of the Village. This category does not include recreation trails.

Roads lead people into remote areas increasing fire risk in those hard-to-reach areas. However, roads present a duality in that they are a recognized ignition source but also aid in fighting fires by providing equipment access.

Institutional/Governmental

Institutional/governmental uses total about 100 acres of land, or 0.07 percent of the acreage in the area. Town halls, fire stations and churches are the main uses within this category.

Commercial / Industrial Land

Commercial and industrial uses make up 312 acres of land across the area. This accounts for about ¼ of one percent of the total area. This development is scattered but primarily located along major roadways like State Highways 21 and 80 and the various county highways.

Recreational Uses

The presence of Buckhorn State Park dominates this recreational land use category and pushes it to about 4 percent of total area. Due to the towns' wooded nature, a number of recreational uses exist within the woodlands land use category that is not counted under the recreational category. Recreational uses in the area include Wilderness and Castlerock County Parks which provide trails, picnic and camping sites.

It is important for both fire management personnel and recreational users to be mindful of the fact that hunters, fishermen, campers, ATV users, and other 4x4 vehicle users bring ignition risk to difficult to access areas with high hazard fuels.

HISTORICAL FIRES

Juneau County has seen some significant wildfires in its history. Wallace Grange wrote about a fire in the 1890's that covered 100,000 acres in the area and burned down into the peat soil. Then in the 1930's, wildfire came down from Black River Falls eventually burning 300,000 acres. Two wildland fires identified from burn scars from aerial photographs affected the Necedah National Wildlife Refuge. One took place about 1936 when approximately 2,000 acres burned and another occurred around 1954 with about 1,900 acres burned. In 1955, two fires burned about 150 acres each. One burned west of Highway 80 and the Yellow River, south of Necedah, and the other burned over Camp Douglas, destroying a mobile home. On April 29, 1957, the Lyndon Station 1 Fire (railroad caused) resulted in approximately 900 acres burned. Table 3 provides the more recent fire history in the area, listing all fires greater than 90 acres occurring from 1975 through 2009.

<i>Date</i>	<i>Fire Name</i>	<i>Township</i>	<i>Acres</i>	<i>Fire Cause</i>	<i>DNR FRU</i>
05/09/1976	New Miner 1	Armenia	3177	Miscellaneous	Babcock
08/28/1976	Camp Douglas	Orange	477.2	Incendiary-Excitement	Necedah
08/28/1976	Necedah	Necedah	1507.3	Incendiary-Excitement	Necedah
05/08/1977	New Miner 2	Armenia	1151	Incendiary-Pyro	Babcock
04/19/1980		Lemonweir	107.5	Railroad	Dells
04/19/1980	Whistling Wings	Clearfield	480.8	Fireworks	Necedah
04/21/1980		Finley	166	Railroad	Babcock
04/22/1980	Lyndon Station 2	Lyndon	1028	Railroad	Dells
05/06/1980		Clearfield	102	Incendiary-other	Necedah
06/14/1988		Kildare	91	Incendiary-Excitement	Dells
06/25/1988	Lyndon Station 3	Lyndon	911	Vehicle	Dells
05/02/1992	Yellow River	Clearfield	161	Equipment-car	Babcock

Source: WDNR

DEVELOPMENT PATTERN

If a wildfire threatens the forestlands of the towns of Armenia, Necedah and Germantown or the Village of Necedah, many homes and structures within and around those forestlands will be threatened as well, because of the development pattern within the towns. In Armenia and Germantown, development is concentrated around the lakes as well as being scattered along rural roads, as is often the case in Wisconsin towns. In Necedah, development is concentrated in the Village and along the Town road network where it is particularly heavy between the village and the flowage. Outside of these concentrations of development, extensive areas remain

undeveloped with large, unfragmented tracts of forestland. The development patterns in the area have lead to expansion of the wildland-urban interface (WUI).

WILDLAND URBAN INTERFACE (WUI)

People continue to move from urban and suburban areas to rural areas, such as Northeast Juneau County, that offer attractive recreational and aesthetic amenities, especially forested lands. This demographic change is expanding the wildland-urban interface (WUI). The WUI is the area where structures and other human development meet and intermix with undeveloped wildland. The expansion of the WUI in recent decades has had significant implications for wildfire impact and management. The WUI creates an environment that enables fire to move swiftly between structural and vegetative fuels. Its expansion increases the likelihood that wildfires will threaten structures and people. The towns of Armenia, Necedah and Germantown as well as the Village of Necedah are identified as wildland-urban interface.

POPULATION

Over the past 20 years, the Northeast Juneau County area has seen significant growth as shown in Table 4. From 1990 to 2000, Germantown nearly doubled in population, increasing by 536 people or 84 percent. Necedah also had major growth increasing by 55 percent or 762 people over that period. Armenia grew by 162 people or 36 percent while the Village of Necedah grew by 15 percent for 115 people. These increases represent higher percent change than both Juneau County and the state as a whole during the same time.

TABLE 4: POPULATION TRENDS					
	1980	1990	2000	# '80-'00	% '80-'00
Armenia	545	592	707	162	36
Necedah	1,394	1,601	2,156	762	55
Necedah Village	773	743	888	115	15
Germantown	638	615	1,174	536	84
Juneau County	21,037	21,650	23,816	2,779	13
Wisconsin	4,705,767	4,891,769	5,363,675	657,908	14
<i>Source: US Census and NCWRPC</i>					

The Wisconsin Department of Administration (WDOA) Demographic Services Center annually produces population estimates for Wisconsin counties and municipalities. The estimates are based on the prior Census and analysis of contemporary data including housing units, dormitory and institutional populations, automobile registrations, residential electric meters, and others.

The 2008 population estimate for the Town of Germantown is 1,513 people representing another 339 persons over the 2000 population and a 29 percent increase. The 2008 population estimate for the Town of Necedah is 2,491 persons representing another 335 persons over the 2000 population and a 16 percent increase. The Town of Armenia estimate for 2008 is 894 for an

increase of 187 or 26 percent. The WDOA figures show a slight decrease of 5 people in the Village.

In 2008, WDOA prepared baseline population projections to the year 2035 for Wisconsin counties and municipalities, utilizing a projection formula that calculates the annual population change over three varying time spans. From this formula, the average annual numerical population change is calculated, which is used to give communities preliminary population projections for a future date.

The area's baseline population projections prepared by WDOA predict continued strong growth in population from 2010 to 2030, as shown in Table 5. The projection predicts increases of 27 percent for both Town of Necedah and Germantown. Armenia is projected to increase by 18 percent through 2030. The three towns are expected to continue to outpace the county and state through 2030. The Village of Necedah is projected to drop off the pace but still grow by 6 percent.

TABLE 5: POPULATION PROJECTIONS					
	2010	2020	2030	# '10-'30	% '10-'30
Armenia	894	959	1,053	159	18
Necedah	2,568	2,955	3,270	702	27
Necedah Village	895	930	945	50	6
Germantown	1,561	1,672	1,850	397	27
Juneau County	27,513	29,348	30,551	2,767	11
Wisconsin	5,777,370	6,202,810	6,541,180	763,810	13
<i>Source: WDOA and NCWRPC</i>					

Seasonal Population

Since the Census does not provide the number of seasonal residents within a community, the seasonal population in the Towns was estimated by multiplying the number of seasonal housing units by the average number of persons per household. In 2000, the Town of Armenia had a full-time population of 707 residents and an estimated part-time/seasonal population of 441 residents. At that time there were 448 housing units in Armenia, of which 169 or 38% were seasonal. In Germantown, the 2000 Census showed a full-time population of 1,174, and the estimated seasonal population was 1,693. At that time there were 1,344 housing units in Germantown, of which 773 or 58% were seasonal. In the Village and Town of Necedah, the 2000 full-time populations were 888 and 2,156 respectively, and the estimated seasonal populations were 56 and 995. At that time, there were 414 housing units in the Village and 1,190 in the Town of which 23 or 6% and 363 or 31% were seasonal, respectively.

Population Impacts on Wildfire Occurrence

A growing population in northeastern Juneau County means more people are living within the wildland-urban interface and more people are exposed to the threat of wildfire. Based on statistics, population growth in the WUI is a great concern since 98 percent of fires in Wisconsin

are caused by people. This fact is evident in the Fire Locations & Causes 1985-2005 map (Map 6) and Table 12 which display the causes of past fire occurrences in the area.

Age Distribution

Over time, there have been moderate shifts in the distribution of population within age groups in the area, see Table 6. The populations of Armenia, Town of Necedah and the Village are growing older. The median age shifts upward as the population ages. The Town of Germantown has an older population than the surrounding area due to a larger block of 65+ year olds. The median age has come down as younger age groups move in, however, the median age is still significantly higher, and all three towns are older on average than the state as a whole. The Village has grown slightly older, but remains younger overall than the surrounding area and the state.

TABLE 6: AGE DISTRIBUTION, 1990-2000						
		<i>Percent of Population</i>				
		<i>< 5</i>	<i>5 - 17</i>	<i>18 - 64</i>	<i>65+</i>	<i>Median Age</i>
Armenia	1990	8.3	22.0	59.7	10.0	32.5
	2000	4.7	21.6	60.1	13.6	38.4
Necedah	1990	6.9	23.4	52.3	17.4	34.5
	2000	6.1	22.6	55.7	15.6	38.1
Necedah Village	1990	7.4	22.7	53.4	16.5	33.4
	2000	9.8	20.7	57.5	12.0	33.9
Germantown	1990	3.1	8.3	57.5	31.1	54.9
	2000	4.5	12.9	60.2	22.4	49.1
Juneau County	1990	7.1	20.2	55.2	17.5	35.5
	2000	5.9	19.6	57.7	16.8	39.4
Wisconsin	1990	7.4	19.0	60.3	13.3	32.9
	2000	6.4	19.1	61.4	13.1	36.0

Source: U.S. Census and NCWRPC

Age Distribution Impacts on Wildfire Risks

It is also important to consider that the pool of volunteers for staffing local volunteer fire departments (VFDs) will continue to face challenges. Recruitment is especially difficult as baby boomers age and the median age continues to climb. In these towns, residents between the ages of 18 and 34 make up a small segment of the population. Therefore, it is likely that the VFDs average firefighter age will increase.

Employment Location

Where employment is located affects the area's protection capabilities. Protection capabilities are at their lowest during the day because a number of volunteer firefighters work outside the area. Many volunteer fire departments lack firefighters during the day. When only a few firefighters are available on the scene, first responders are sometimes faced with the decision about whether to initiate an attack without enough manpower to secure their own safety, or delay the interior fire attack until additional forces arrive.

Housing Inventory

The total housing units within the area increased by 332 between 1990 and 2000. Much of this growth occurred within Germantown, well above the county or state as a whole, however the village also had appreciable growth while Armenia and Necedah town lagged a bit (see Table 7).

	<i>1990</i>	<i>2000</i>	<i># 90 - 00</i>	<i>% 90 - 00</i>
Armenia	473	448	-25	-5.3
Necedah	1,188	1,344	2	0.2
Necedah Village	368	414	46	12.5
Germantown	1,035	1,344	309	29.9
Juneau County	11,422	12,370	948	8.3
Wisconsin	2,055,774	2,321,144	265,370	12.9

Source: U.S. Census and NCWRPC

The growth in the number of housing units in the area since 2000 is reflected in Table 8. Overall housing unit additions have been variable from year to year but strong overall. A negligible number of housing units are subtracted from year to year within a given community. For the distribution of houses and other structures within the towns, see Map 7.

	<i>Armenia</i>	<i>Necedah</i>	<i>Necedah Village</i>	<i>Germantown</i>
2001	n/a	41	1	36
2002	n/a	50	1	37
2003	n/a	47	5	37
2004	n/a	27	2	47
2005	n/a	24	1	36
2006	23*	41	0	63
2007	23*	31	1	47
2008	23*	20	0	25
Total	69	281	11	328

Source: Local Communities **Estimated average.*

WEATHER CONDITIONS/FIRE SEASON

The weather plays a very important role in how a fire will behave on a given day. Even a slight increase in wind speed can significantly increase the flame length and the rate a fire will spread. A drop in relative humidity can make it easier for a forest fuel to ignite and cause it to burn hotter and faster.

The National Weather Service (NWS) provides fire weather forecasts to land management agencies to aid in their fire planning, management, and control activities. These specialized forecasts are based on an interpretation and understanding of weather patterns that affect fire danger and behavior. Fire weather forecasting requires a unique understanding of environmental conditions, especially the relationship between topography, fuels, and weather.

History indicates spring to be the most active season for fire in Wisconsin since dead fuels are abundant, temperatures increase, winds are often gusty, and relative humidity often drops to very low levels. During the summer, there is usually a decrease in fire danger as fine grass fuels green up and fuel moisture increases. During the fall, there can be an increase in fire activity as trees drop their leaves and frost cures the fine fuels. However, due to shorter day length, higher humidity, and cooler temperatures, fall fire season is typically not as active as the spring fire season. Typical fire weather seasons in Wisconsin are as follows:

- Spring – March 15 to June 1
- Summer – June 1 to September 1
- Fall – September 1 to November 15

These fire weather seasons are general dates. Wildland fires can occur during any month of the year whenever the ground is not snow covered. In the Central Sands of Wisconsin, where this project area lies, soils are predominately sandy and are especially susceptible to drought. Therefore every short period without rain can create elevated fire danger.

HAZARDOUS FUELS

Fuels are combustible materials comprised of both living and dead vegetation. Wildfire is part of the natural disturbance regime, which serves to reduce the amount of fuels present. These fuels have been accumulating due to fire suppression, forest management and other wildland management policies and practices, and other factors.

Fuel types vary in the ways they respond to fire, although all plants will burn if exposed to enough heat. Jack pine and red pine are among the most flammable forest species found in the project area. Although deciduous species will also readily burn under the right conditions, they are generally considered to be a lesser threat when compared to evergreen species.

Wildland fuels can also be described using vertical separation such as ground, surface, aerial and ladder fuels.

Ground fuels are comprised of combustible materials lying beneath the surface including roots, buried logs, deep duff and other organic matter. Ground fires (sometimes referred to as "peat fires") burn ground fuels and tend to smolder rather than producing much flame. These types of fires occur relatively infrequently.

Surface fuels include combustible materials lying directly above the surface such as logs, stumps, logging slash, leaves, pine needles, grass and other understory vegetation. Surface fires consume surface fuels and are the most common type of wildfire occurring in Wisconsin. These fires are generally low intensity and do not kill mature trees, although mortality may occur in moderate to severe surface fires.

Aerial fuels include both living and dead plant materials in the upper forest canopy. Fires that burn through the canopy are referred to as crown fires and are the most destructive and dangerous class of wildland fire. Crown fires are also generally the most difficult fires to

suppress. In catastrophic crown fires, tree mortality can be high. Given a pathway, intense surface fires can spread to aerial fuels to become crown fires when shrubs or small trees of intermediate height act as ladders carrying the flames from the forest surface up into the tops of trees.

TREE AND VEGETATION MORTALITY

Tree and vegetation mortality create more fuel for wildfire. In northeastern Juneau County, causes of tree and vegetation mortality are many. Some causes of concern in the area include insect infestation, disease, drought, and downed trees from storms.

Insect Infestation

Forestlands in the area are generally in good health and free of significant insect infestation, though periodic outbreaks do occur and problems do exist in certain stand types. The following descriptions from the WDNR provide information on insect infestations of concern in the area: jack pine budworm, forest tent caterpillar, and gypsy moth.

Trees in poor health or under drought stress may decline and die after repeated severe defoliation. Furthermore, defoliation will sometimes cause stress in otherwise healthy trees that may attract secondary pests, such as the two-lined chestnut borer. While the trees are bare, the lack of shade will decrease soil moisture during the dry season, which could cause mortality from lack of moisture.

Jack Pine Budworm

Outbreaks of this budworm occur predominately in stands of jack pine, although Scots, red, and white pines may also be attacked. Trees of all sizes are attacked. Defoliation by the jack pine budworm reduces tree growth, retards regeneration, and causes tree mortality.

Forest Tent Caterpillars

The forest tent caterpillar is one of the major defoliating caterpillars in Wisconsin. It is distributed throughout the United States and Canada wherever hardwood trees grow. Forest tent caterpillars cause defoliation and significant growth loss on broad-leaved trees and shrubs.

It is important to note that the forest tent caterpillars do not actually make "tents" in the trees. The commonly observed tree tents are made by the *eastern tent caterpillar*. These caterpillars differ from the forest tent caterpillar in that they do not cause serious harm to trees. However, wildfires can result when people burn the tents in an attempt to eliminate the tents to protect their trees.

Gypsy Moth

The gypsy moth is an invasive pest. The caterpillars feed on the leaves of many trees, especially oaks, and their populations can grow so quickly that they can strip all the leaves off of entire stands of trees, damaging them severely. Although gypsy moths may not directly cause tree mortality, they create a vulnerable forest that can lead to mortality.

Disease

The following descriptions from the WDNR provide information on diseases of concern in this area of Wisconsin: oak wilt, Diplodia shoot blight and canker, and Sirococcus shoot blight.

Oak Wilt

Oak wilt is a significant issue in northeastern Juneau County because it is widespread and occurs in large patches across the area. Oak wilt is caused by a fungus that forms a balloon-like swelling in the water conducting vessels of the oak tree. The obstruction in the vessel slows the movement of water within the tree causing the leaves to wilt and drop off. Oak wilt is spread by root grafts or infections occurring through open wounds. Trees are especially vulnerable between April 15 and July 1 when fungal mats are most abundant and oak trees are most susceptible to the spread of oak wilt.

Oaks in the red oak group (black, northern red, northern pin and others with pointed leaf edges) are most susceptible. Oaks in the white oak group (white, swamp white, burr, and others with rounded leaf edges) are less susceptible.

Diplodia Shoot Blight and Canker/Sirococcus Shoot Blight

Diplodia shoot blight and canker and Sirococcus shoot blight are two of the most important diseases of red pine. They can be prevalent on trees of all ages but the most significant damage is generally restricted to seedlings and saplings. Both pathogens have unpredictable outbreak patterns that are often dictated by weather events. Diplodia outbreaks tend to occur during droughts or following hailstorms, while Sirococcus outbreaks often occur following cool, wet spring weather. During outbreaks, many seedlings and small trees can be killed or deformed. Growing small red pine under larger red pine will increase the risk of disease development. This is because spores produced on infected large trees are rain-splashed onto seedlings and smaller trees growing below them.

Drought

Drought is defined as a deficiency of precipitation over an extended period – usually a season or more. Drought is a normal, recurrent climatic event that is expected to become more frequent as our climate changes. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another.

Drought causes stress on vegetation that can cause forests to be more vulnerable to insects and disease as well as lead to mortality in situations of prolonged drought. If mortality occurs over contiguous forest blocks, an area of increased wildfire fuel will be present in that area. Drought conditions create dry forest fuels that can lead to additional wildfire starts and cause increased fire behavior. Drought can extend the active fire season into the summer and fall.

Much of Wisconsin has been suffering drought conditions for the last several years. The U.S. Drought Monitor currently shows northern and central Wisconsin affected by hydrologic drought conditions. The northeastern corner of Juneau County is shown under abnormally dry to moderate drought conditions. Juneau County has a high percentage of sandy soils which are most susceptible to drought.

Severe Storms

Severe storms are a common occurrence in Juneau County and can cause significant damage to forestlands. Strong winds from storms can break and uproot trees leading to tree mortality and additional fuel for fires. In addition, high winds can cause trees to fall onto power lines, which can start fires and pose an electrical risk to people.

OTHER CONCERNS REGARDING WILDFIRE RISK

Other concerns regarding wildfire risk in the area includes access to property, fuels near structures, and structural flammability. These conditions may add to the challenges of managing a wildfire or could provide additional fuel to a wildfire.

Educational efforts such as Firewise (discussed later in this plan) would be beneficial to residents to remedy the following situations. Mitigation tactics to address these concerns have been developed for this plan and are discussed later in the section on "Treatment of Structural Ignitability".

Access

Many of the residential driveways in the Towns present challenges for firefighters to gain access to the property in case of a fire. Many driveways are very long with curves that are too sharp to allow emergency vehicles to gain access to the property. The lack of access or good turnarounds can pose a hazard to firefighters during a fast moving fire by limiting safety zones and escape routes. Some properties have a closed or locked gate making entry difficult or impossible. To exacerbate entry problems, many of the properties with closed or locked gates are owned by absentee property owners that are only around seasonally or part-time so they may be completely unaware of a wildfire situation on their property. All three towns and the village have driveway ordinances although enforcement can be a challenge.

Fuels Near Structures

Within the Towns, many buildings have vegetation growing around them providing "fuel" near the structures. The area approximately 100 feet around all structures is referred to as the "home ignition zone." If left unmanaged, fire in this area can quickly move from vegetation to buildings.

Structure Flammability

Many residents are not well informed about how to reduce the flammability of their home. Buildings can provide fuel in a wildfire, including garages, campers, and storage sheds. Anything attached to a structure, such as a deck, porch, balcony, or a firewood pile is considered part of the structure. These structural attachments can provide the link for a fire to spread from the wildland to the building.

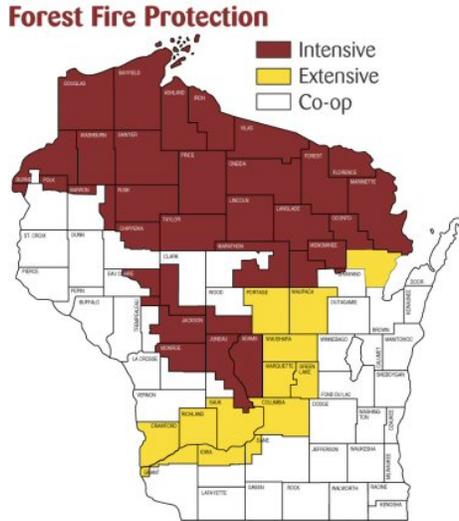
FIRE PROTECTION BACKGROUND

The state of Wisconsin is divided into three fire protection areas: Co-op, Extensive, and Intensive, see Figure 1, below. Each fire protection area presents a different kind and degree of

forest fire problem. The degree of protection has been determined by the amount of forested lands, the hazards and the risks present in the various parts of the state.

Northeast Juneau County is located within the Intensive fire protection area. Intensive fire protection areas are the most heavily forested and contain the most fire hazards and risk in the state. They have more WDNR fire suppression resources and ranger stations. Fire detection is accomplished with fire towers, aerial patrols, and citizen reporting. The most restrictive debris burning laws are in effect in Intensive fire protection areas.

Figure 1: WDNR Fire Protection Areas



Source: WDNR Website

Fire Suppression Responsibilities

Fire suppression and management activities within the Towns are carried out by four jurisdictions: federal, state, county, and local in accordance with their respective operations and management plans and cooperative agreements between the jurisdictions. Primary responsibility for these activities within each jurisdiction falls to the USFWS (federal), WDNR (state), Juneau County Emergency Management (county), and the local fire departments.

U.S. Fish and Wildlife Service (USFWS)

The fire management program on the Necedah National Wildlife Refuge consists of four basic factors: fire prevention, fire suppression, hazardous fuels reduction, and prescribed fire for ecosystem maintenance.

TABLE 9 USFWS WILDFIRE SUPPRESSION RESOURCES (REFUGE)		
<i>Station</i>	<i>Personnel</i>	<i>Apparatus</i>
Necedah Refuge USDOI - USFWS	Various staffing throughout the fire season	1 Type 6 Engine w/2 ATVs 1 Type 5 Engine w/ ATV 1 Type 4 Engine w/plow 1 1,200 Gallon Tender 2 Heavy Dozers 1 Marsh Master Low Ground Unit

Source: WDNR and USFWS

The USFWS has primary fire suppression responsibility on all lands within the refuge boundary. The USFWS staffs fire equipment and personnel at the refuge to cover this area, see Table 9. Through Mutual Aid and Cooperative Fire Agreements with other federal agencies, WDNR, and local fire departments, the USFWS can request reinforcements for initial and extended attack fires, and vice-versa.

Wisconsin Department of Natural Resources (WDNR)

The WDNR Division of Forestry plans, coordinates and administers current and long range programs for the protection, improvement, perpetuation and sustainable use of Wisconsin's forests as well as the protection of life, property, and resources from wildfire. The WDNR has authority to suppress all forest fires occurring on lands outside of incorporated cities and villages in intensive and extensive forest fire protection areas.

The WDNR has 54 ranger stations that are outfitted with firefighting vehicles, tractors/plows, and staff to support wildland fire control in Wisconsin. The Wisconsin Rapids Dispatch Group includes seven fire response units and covers Adams, Portage and parts of Marathon, Wood, Juneau and Sauk counties.

The Necedah Fire Response Unit (FRU) is the closest for wildfire suppression in the northeastern Juneau County area, and resources can be drawn from other stations as necessary. Table 10 identifies primary WDNR fire suppression resources within a one hour response time for a wildfire occurring in northeast Juneau County. In addition, the WDNR hires limited term employees as seasonal firefighters to assist with suppression and detection efforts. The WDNR has a number of mutual aid agreements with local fire departments, county agencies, and private contractors. The State cooperates with fire departments to provide wildfire suppression and offers training and financial assistance through grants and group purchasing. In addition, the state often contracts larger pieces of heavy equipment and fire suppression aircraft to augment existing resources. The WDNR Division of Forestry has nine Incident Management Teams equipped to manage large-scale incidents, including both forest fire and all hazards incidents. The WDNR is prepared to mobilize units across the state as the need arises, and has the ability to request out-of-state resources through either the Great Lakes Forest Fire Compact or Eastern Area Coordination Center.

Juneau County

The Juneau County Emergency Management Department is available to assist with planning, grant writing, and administration, coordinating training exercises and other assistance related to preparation and response to emergencies like wildfire. The County Emergency Management Director is the primary point of contact to obtain additional county and state (including National Guard) resources as needed. The County has a mobile command post unit that may be dispatched. The County may also supply heavy equipment, primarily through the County Highway Department. The County also maintains a Level B Hazmat Response Team and can call in a Level A team out of La Crosse for unknown or extreme hazard.

Juneau County operates a countywide 911 emergency dispatch system. The county system has the capability to page both the fire departments and WDNR for citizen reported fires and can locate 911 calls from landlines as well as from cell phones.

TABLE 10 WDNR WILDFIRE SUPPRESSION RESOURCES (HOUR WINDOW)		
<i>Station</i>	<i>Personnel</i>	<i>Apparatus</i>
Necedah FRU	1 Forester Ranger 2 Forestry Technicians 1 Team Leader 1 Mauston Forester	2 Type 7 Engine 2 Type 4 Engines w/ plow 1 Type 8 Engine
Babcock FRU	1 Forester Ranger 1 Forestry Technician 1 Sandhill Forester	1 Type 7 Engine 1 Type 4 Engine w/ plow 1 Type 8 Engine
Friendship FRU	1 Forester Ranger 3 Forestry Technicians 1 Team Leader 2 Foresters	1 Type 7 Engine 3 Type 4 Engines w/ plow 1 Type 8 Engine
Tomah FRU	1 Forester Ranger 2 Forestry Technicians	1 Type 7 Engine 2 Type 4 Engines w/ plow
Wisconsin Dells FRU	1 Forester Ranger 2 Forestry Technicians	1 Type 7 Engine 2 Type 4 Engines w/ plow
Nekoosa FRU	1 Forester Ranger 2 Forestry Technicians 2 Foresters	1 Type 7 Engine 2 Type 4 Engines w/ plow
Wautoma FRU	1 Forester Ranger 2 Forestry Technicians 1 Forester	2 Type 7 Engines 2 Type 4 Engines w/ plow 1 Bombadier
Black River Falls FRU	1 Forester Ranger 3 Forestry Technicians	1 Type 7 Engine 3 Type 4 Engines w/ plow
Pray FRU	1 Forester Ranger 2 Forestry Technicians	1 Type 7 Engine 2 Type 4 Engines w/ plow
Whiting FRU	1 Forester Ranger 1 Forestry Technician 2 Foresters	1 Type 7 Engine 1 Type 4 Engine w/ plow 1 Type 8 Engine
Montello FRU	1 Forester Ranger 2 Forestry Technicians 1 CO-OP Ranger	1 Type 7 Engine 1 Type 4 Engine w/ plow 1 Type 4 Engine w/ muskeg 1 Type 8 Engine
Wausau FRU	1 Forester Ranger 1 Forestry Technicians 1 Team Leader 2 Foresters	1 Type 7 Engine 1 Type 4 Engine w/ plow 2 Type 8 Engines
Oshkosh Air Patrol	Pilot	1 Aircraft

Source: WDNR

Town of Armenia Fire Department

The Town of Armenia Volunteer Fire Department provides fire suppression for the Town of Armenia. The station is located on CTH G adjacent to the Town Hall. The Department provides structural and wildland fire suppression and rescue. The fire suppression resources of the Department are shown in Table 11. The Department has 5 water access points and 2 dry hydrants around the Town and 2 wells, one located at the fire station and one at a local dairy farm.

There are currently 25 volunteer members on the Department including a volunteer chief. The Armenia Fire Department has mutual aid agreements with Juneau County and surrounding community fire departments.

TABLE 11: LOCAL FIRE SUPPRESSION RESOURCES						
<i>Dept.</i>	<i>Unit</i>	<i>Pump Cap.</i>	<i>Tank Cap.</i>	<i>Drop Tank Cap.</i>	<i>Misc. Equip.</i>	
Armenia	Engine 1	1,250	1,500	1,000		
	Engine 2	750	900		Pump & Roll capable	
	Brush 1		250		Porta power	
	Brush 2		250			
	Tender 1		3,800			
	Tender 2	140	1,000			
	Trailer					1,500 gpm portable, lights, etc.
Necedah	Engine	1,200	800			
	Rescue	1,200	800		Jaws	
	Brush	250	200			
	Tender 5	500	2,000	1,000		
	Tender 8	500	3,000	1,000		
	trailer					1,000 gpm portable
New Lisbon	Engine 1	1,250	750		Generator, lights	
	Engine 2	1,250	500		61 ft aerial, generator, lights	
	Tanker 1	75	3,900			
	Tanker 2	75	2,000	2,000		
	Brush	75	150			
	Foam					250 gallon compressed foam
	Rescue					Jaws, generator, lights

Source: Local Fire Departments

Necedah Fire & Rescue

Necedah Fire & Rescue (NFR) provides fire suppression for the Village and Town of Necedah and the northern half of the Town of Germantown. The station is located in the Village adjacent to the Village/Town Hall. NFR provides structural and wildland fire suppression, rescue, and basic emergency medical services. The fire suppression resources of NFR are shown in Table 11. NFR has a number of water access points in the area, municipal hydrants throughout the village and a 1,000 gpm well located in Germantown on Highway 80.

There are currently 50 (40 firefighter, 10 EMS) volunteer members on NFR including a volunteer chief. Necedah Fire & Rescue has mutual aid agreements with Juneau County and surrounding community fire departments.

New Lisbon Fire Department

The New Lisbon Volunteer Fire Department provides fire suppression for the southern half of the Town of Germantown. The station is located in the City of New Lisbon. The Department provides structural and wildland fire suppression and rescue. The fire suppression resources of the Department are shown in Table 11. The Department has a number of water access points available in Germantown.

There are currently 30 volunteer members on the department including a volunteer chief. The New Lisbon Fire Department has mutual aid agreements with Juneau County and surrounding community fire departments.

Fire Policy and Programs

There are various programs and policies at the federal and state levels related to community fire planning, fire prevention, and suppression that affect the area. Each agency has laws regarding the use of fire and is able to investigate, enforce, and prosecute civil and criminal violations that arise out of fires originating within their jurisdiction. In general, burning laws regulate what, when, and how people can burn, and hold people responsible for damages and suppression costs if their fire escapes.

Federal

The following information provides a brief overview of relevant federal policies and programs:

Healthy Forests Restoration Act (HFRA) – This federal law is designed to promote healthy watersheds and forests through fuels reduction projects on federal lands, community plans, insect and disease protection measures, storm damage clean-up, and threatened and endangered species protection measures. The HFRA also encourages biomass energy production through grants and assistance to local communities to create market incentives for removal of otherwise valueless forest material.

Although the HFRA does not specifically apply to the US Fish and Wildlife Service, the Department of Interior and USFWS fire policies recognize the need to protect the public and private property from unwanted wildfire. The USFWS is directed to actively participate in CWPP processes where appropriate.

National Fire Plan (NFP) – This is a federal interagency plan that focuses on firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. The NFP is a long-term investment that is intended to help protect communities and natural resources. The plan establishes a commitment to communication, cooperation, and collaboration between federal agencies, states, local governments, tribes, and interested parties. Federal wildland fire management agencies worked closely with these partners to prepare a 10-year Comprehensive Strategy and Implementation Plan. The NFP calls for the development of Community Fire Plans to aid in effectively implementing NFP goals.

State

The following information provides a brief overview of relevant state policies and programs:

Permits - The WDNR enforces burning laws and requires permits for debris burning in DNR protection areas when the ground is not completely snow covered. Permits can be obtained from local emergency fire wardens and DNR ranger stations. Refer to the WDNR web page at <http://dnr.wi.gov/forestry/fire/burning-rp.htm> to determine what is burnable with a permit and what is not permissible as well as when burning is allowed.

Structure Zone Maps - The WDNR has prepared structure zone map books for use by emergency services personnel in Juneau County. These maps document structure locations and preplanned zones used to coordinate efforts to help protect life, property, and natural resources during fire emergencies.

Authority – Wisconsin State Statute Chapter 26 and Natural Resource Code Chapter 30 26.11(1) The Department is vested with power, authority, and jurisdiction in all matters relating to the prevention, detection, and suppression of forest fires outside the limits of villages and cities in the state except as provided in s. 26.01 (2), and to do all things necessary in the exercise of such power, authority, and jurisdiction.

Local

The following information provides a brief overview of relevant local policies and programs:

Fireworks Ordinance - The Town of Germantown has an ordinance prohibiting the discharge of fireworks.

Outdoor Burning Ordinance – The Village of Necedah does not fall within DNR protection areas and therefore has its own specific burning regulations.

- | | |
|-------------------------------|-----------------------------------|
| 1. Armenia West Planning Unit | 6. Buckhorn Planning Unit |
| 2. Armenia East Planning Unit | 7. North Germantown Planning Unit |
| 3. Refuge Planning Unit | 8. South Germantown Planning Unit |
| 4. Necedah West Planning Unit | |
| 5. Village Planning Unit | |

The following provides a description of each planning unit including the development pattern in the area, the number of structures, the number of significant/critical infrastructure, the total land acreage, and the total land area under residential land use and forestlands. The remaining land area of each planning unit is made up of open water, croplands/pastures, other non-forestland natural areas (including wetlands), roadways, and industrial, commercial, and institutional/governmental areas.

1. Armenia West Planning Unit

The Armenia West Planning Unit includes the Town of Armenia west of County Highway G and parts of the Town of Necedah east of State Highway 80 and north of State Highway 21. This planning unit can be characterized as rural...heavily agricultural surrounded by extensive forested tracts. Loose pockets of development are associated with highways G and 21. A unique feature is the military bombing range encompassing a large block of land at the north end of the unit. Land records information data indicates that there are 482 structures. Significant infrastructure in this area includes the town hall/fire station, a cell tower, fire watch tower near the bombing range, transmission lines and the Cranberry Mounds historic area. Of concern are the large blocks of unbroken fuels. Total land area of the planning unit is 18,420 acres with about 1.6 percent (288 acres) developed residential and 66.3 percent (12,200 acres) woodlands.

2. Armenia East Planning Unit

The Armenia East Planning Unit includes the Town of Armenia east of County Highway G and part of the Town of Necedah north of Highway 21 adjacent to Lake Petenwell. This planning unit can be characterized as lakeshore development with Lake Petenwell being the focus of activity. The area is still heavily wooded with extensive areas of agriculture. There are 655 structures and significant infrastructure includes: 5 group homes, 3 campgrounds, 2 electrical substations, transmission lines, and a site known to contain hazardous materials. Of concern is the housing subdivision development along the Wisconsin River corridor in high hazard pine fuels. Land area totals 31,385 acres with 0.67 percent (211 acres) in residential and 75.5 percent (23,692 acres) woodlands.

3. Refuge Planning Unit

The Refuge Planning Unit roughly corresponds to the Necedah National Wildlife Refuge, within the Town of Necedah, north of Highway 21 and west of Highway 80. Total land area of the planning unit is 21,979 acres with 0.37 percent (81 acres) residential and 15,907 wooded acres (72.4 %). Land records information data indicates there are 161 structures. From a significant facilities standpoint, the refuge headquarters is identified, but it should be noted that the refuge overall represents a significant value. Of concern is the concentration of housing development along the eastern boundary of the Refuge.

4. Necedah West Planning Unit

The Necedah West Planning Unit is that portion of the Town of Necedah south of Highway 21 and west of Highway 80. This planning unit can be characterized as rural with residences generally scattered along town roads, agriculture and cranberry bogs. There are 288 structures and significant facilities include: town garage and recycling, transmission lines, and a site known to contain hazardous materials. Of concern is the concentrated development on undeveloped roads in high hazard wildland fuels and the limited access caused by the railroads and ditches. Total land area of the planning unit is 11,000 acres with 1.4 percent (156 acres) developed residential and 81.3 percent (8,947 acres) woodlands.

5. Village Planning Unit

The Village Planning Unit corresponds to the municipal boundary of the Village of Necedah. This planning unit can be characterized as an urban core on Necedah Lake extending along Highway 80 and surrounded by woodlands. Land records data indicates 381 structures. This area includes extensive infrastructure and facilities including public water and wastewater systems, joint village/town hall, police and fire departments, WDNR Ranger Station, a number of communication towers, fire watch tower, group and nursing homes, clinic, schools, historical sites and others. There are also two notable fuel storage sites including the airport and an LP gas facility on the south end of town. Of concern is the wildland fuel on the southwest side of the Village and the fact that it is surrounded by the Town of Necedah which is described as a very high Community at Risk. Land area totals 1,613 acres with 9.2 percent (148 acres) in residential and 58 percent (936 acres) woodlands.

6. Buckhorn Planning Unit

The Buckhorn Planning Unit is that portion of the Town of Necedah south of Highway 21 and east of Highway 80 together with the peninsula portion of the Town of Germantown. Buckhorn State Park makes up a significant part of this unit and there is also extensive development along the road network as reflected in land records data that indicates 1,234 structures. In addition to Buckhorn State Park and its facilities, which include camping, other significant facilities in this area include: a school, two group homes, and transmission lines. Of concern is the high housing density mixed in with wildland fuel. Land area totals 15,236 acres with 4.5 percent (695 acres) in residential and 89.5 percent (13,658 acres) woodlands.

7. North Germantown Planning Unit

The North Germantown Planning Unit is the part of the Town of Germantown north of County Highway G (“Germantown G”) except the peninsula. This planning unit is characterized by extensive development. There are 1,323 structures and significant infrastructure including a campground, transmission lines and substation, public sewer system, town hall and garage. Of concern are the multiple very high density subdivisions in high risk wildland hazard fuels. Land area totals 6,667 acres with 9.8 percent (656 acres) in residential and 67.3 percent (4,487 acres) woodlands.

8. South Germantown Planning Unit

The South Germantown Planning Unit includes the Town of Germantown south of County Highway G (“Germantown G”). This planning unit can be characterized as rural having extensive undeveloped area with limited roadway access. There is some scattered development

but "pockets" of development on County Highway G, particularly on the east end, are generally oriented toward Castle Rock Lake. There are 264 structures and significant infrastructure includes: electrical transmission line and substation. Of concern are the large, unbroken tracks of wildland fuel, which limit accessibility to firefighting equipment, and the distance from fire departments. Land area totals 7,444 acres with 2.3 percent (168 acres) in residential and 71.7 percent (5,932 acres) woodlands.

RISK ASSESSMENT METHODOLOGY/ANALYSIS

The model used in this risk assessment was developed with guidance from the Wisconsin Department of Natural Resources based on approaches used in other CWPP planning processes. The risk assessment evaluated wildfire risk by analyzing four key elements or "layers" of fire information. The four elements were hazard, risk, values, and protection capability.

The northeast Juneau County area was evaluated by mapping each element to determine the areas that are most at-risk based on each of the four elements. The hazard element depicts the vegetation fire hazards (see Fire Hazard Rating map – Map 5); the risk element displays the locations and causes of past fire occurrences (see Fire Locations & Causes 1985-2005 map – Map 6); the values element displays the location of structures and critical and significant facilities and infrastructure (see Critical/Significant Facilities Map – Map 7); and the protection capabilities element displays the location of firefighting infrastructure and facilities (see Protection Capability map – Map 8).

Each of the four elements impacts the severity, frequency, or likelihood of a wildfire occurrence in different ways. Each data layer was analyzed and displayed using Geographic Information System (GIS) mapping. The GIS maps of each of the four elements were assessed by the CWPP Planning Committee and each planning unit was quantifiably ranked based on the risk level each committee member interpreted from the map. Values were compiled for each element and the planning units were ranked based on the average risk value calculated for each element.

The CWPP Planning Committee selected a weighting to be applied to each element, as some of the elements will have a greater influence on wildfire occurrence. This weighting was then applied to the ranked values of each of the four elements and averaged together to derive an overall risk assessment ranking based on the four elements combined. The resulting risk assessment defines the high fire risk areas for prioritization of mitigation activities and resources. Figure 3 displays the ranking results for each element with the committee's averaged results. The weighting of each element and the compiled risk assessment results is also displayed.

Risk Assessment Mapping

Multiple data sets went into the mapping of the four element layers. The following information provides a summary of the data that went into mapping each of the four elements.

Hazard

The hazard element map involved an assessment of fuel hazard mapping obtained with the assistance of the United States Forest Service (USFS). The USFS did extensive analysis to create a fire hazard map for parts of the northern lake states, which included the northern half of

Wisconsin. Based on their experience with that project, Forest Service staff assisted the NCWRPC with creating a fire hazard map for the Northeastern Juneau County study area. Existing Landfire fire behavior fuel models and WISCLAND land cover data were used to assign hazard ratings to the map.

Risk

The risk element map involved an assessment of Wisconsin Department of Natural Resources and Necedah Wildlife Refuge data of wildfire occurrences in northeastern Juneau County from 1985 to 2005.

Values

The values element map involved an assessment of the location of structures and their densities in each planning unit, along with the location of significant and critical facilities and infrastructure and their distances from each planning unit. The structures data came from Juneau County Land Records and the location of significant and critical facilities and infrastructure came from various sources detailed below for each significant and critical facility and infrastructure type.

Structures - Structures include primary residences such as single-family and multi-family houses, and mobile homes; and commercial, industrial, and institutional/governmental facilities. This data was obtained from Juneau County's Land Records Department.

Critical/Significant Facilities and Infrastructure – Critical/significant facilities and infrastructure include: communication facilities, institutional/governmental facilities such as schools, group homes or nursing homes, gas pipelines and substations, electric transmission lines and substations, natural gas facilities, recycling centers, campgrounds and historic sites.

The locations of transmission lines were obtained from ATC and historic sites were obtained from the Wisconsin State Historical Society. The delineation of the gas pipeline and the sites for the town/village halls, and other facilities were obtained from the CWPP Planning Committee. All other significant and critical facilities and infrastructure information was obtained from Juneau County and NCWRPC land use inventories.

Figure 3: Risk Assessment Analysis and Results

Ranking of Fuel Hazards	
Risk Level (Average)	Planning Unit
8	N. GERMANTOWN
7	BUCKHORN
6	REFUGE
5	NECEDAH WEST
4	ARMENIA EAST
3	ARMENIA WEST
2	S. GERMANTOWN
1	VILLAGE

Ranking of Risk Based on Past Occurrences	
Risk Level (Average)	Planning Unit
8	BUCKHORN
7	N. GERMANTOWN
6	ARMENIA EAST
5	NECEDAH WEST
4	S. GERMANTOWN
3	ARMENIA WEST
2	REFUGE
1	VILLAGE



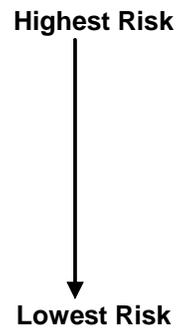
Ranking of Risk Based on Location and Density of Critical/Significant Facilities	
Risk Level (Average)	Planning Unit
8	BUCKHORN
7	N. GERMANTOWN
6	VILLAGE
5	ARMENIA EAST
4	NECEDAH WEST
3	S. GERMANTOWN
2	ARMENIA WEST
1	REFUGE

Ranking protection Capability	
Risk Level (Average)	Planning Unit
8	BUCKHORN
7	ARMENIA EAST
6	N. GERMANTOWN
5	S. GERMANTOWN
4	ARMENIA WEST
3	NECEDAH WEST
2	VILLAGE
1	REFUGE



Risk Assessment Weighting
 40% Fuel Hazard
 20% Past Occurrences
 20% Value
 20% Protection Capability

Risk Assessment
Planning Unit :
BUCKHORN
NORTH GERMANTOWN
SOUTH GERMANTOWN
NECEDAH WEST
ARMENIA EAST
ARMENIA WEST
REFUGE
VILLAGE



Source: CWPP Planning Committee

Protection Capability

The protection capability element map involved an assessment of the location of fire departments, dry hydrants, and water pickup sites in relation to each planning unit.

Fire Departments - The fire department data was obtained from the CWPP Planning Committee.

Dry Hydrants - Dry hydrants are designated locations where a fire suppression truck or pumper can draw water. Dry hydrants provide all-season access. Locations were obtained from the CWPP Planning Committee and Juneau County Land Records.

Water Pickup Sites - Water pickup sites are designated locations where a fire suppression truck or pumper can access a water source. Water pickup sites may not provide all-season access. Water pickup site locations were obtained from the CWPP Planning Committee and Juneau County Land Records.

CHAPTER 4: MITIGATION STRATEGIES

This chapter describes wildfire mitigation strategies including:

- Treatment of Hazardous Fuels
- Treatment of Structural Ignitability
- Emergency Preparedness
- Fire Response Capability
- Wildfire Prevention

TREATMENT OF HAZARDOUS FUELS

Hazardous fuels reduction is an important element in mitigating wildfire risk. Fuels reduction should be prioritized around high housing density areas on both public and private lands. Fuels reduction may include targeted timber harvests or thinning, chipping projects, or creating buffer zones or buffer strips where forested tracts come in contact with high density housing areas.

Private homeowners should be encouraged to follow recommendations for the home ignition zone. Subdivisions in high hazard forested areas are especially vulnerable due to the close proximity of homes to one another as well as surrounding vegetation. These residents should be encouraged to participate in the Firewise Community USA program in order to facilitate the reduction of hazardous fuels.

Throughout the Towns, areas of insect/disease infestation damage or storm damage should be addressed as needed as well as areas that have simply accumulated a significant fuel load over time. The long-term impact of the extended drought conditions should be monitored. Slash from power and rail line trimming should also be addressed.

Firewise Communities Program

The Firewise Communities Program is a national multi-agency program that promotes partnerships between community leaders, homeowners, planners, developers and others to promote wildfire preparedness before a fire starts. The Firewise program emphasizes local community responsibility for designing and maintaining safe communities through land use planning, mitigation activities, collective decision-making and effective response.

The WDNR has a lot of information and a great number of resources and links on Firewise at <http://dnr.wi.gov/forestry/fire/prevention/firewise/index.htm>. Additional Firewise information can be found at <http://www.firewise.org/>.

TREATMENT OF STRUCTURAL IGNITABILITY

While there are numerous factors which contribute to homes and communities being at risk to loss from wildfires, including hazardous fuel conditions, structural ignitability is arguably the most critical element to home survivability during a wildland urban interface fire. Structural ignitability is the susceptibility of a structure to catching fire. Although some building

construction elements can require a significant investment on the part of property owners, many structural ignitability factors are easily mitigated with little time and expense to homeowners.

This section of the plan will recommend treatment methods to mitigate structural ignitability including ways to modify home construction and the surrounding vegetation to decrease the susceptibility to ignition.

Building Codes/Permits

The State of Wisconsin requires its Uniform Dwelling Code (UDC) to be enforced in all municipalities. This code applies to all new one- and two-family dwellings built today and renovations or additions to dwellings built since June 1, 1980.

Since building requirements are established by the UDC, little opportunity exists to influence the building code to conform to Firewise guidelines. However, the Towns can work with Juneau County to use the building permit process as an opportunity to provide wildfire educational materials to the builder at the time the permit is issued.

Keep in mind that ordinary maintenance repairs are not considered structural repairs, modifications, or additions. Therefore, a building permit is not required for non-structural repairs such as replacement of doors, windows, roofing, or siding. These modifications offer the best opportunities to alter structural ignitability. The Towns should work to come up with methods to educate the public when undertaking such repairs.

Land Use Zoning Restrictions and Permits/Shoreland Zoning

The Village and the Towns of Armenia and Germantown have general zoning ordinances while the Town of Necedah does not. All towns are also subject to county shoreland zoning administered by the Juneau County Zoning Department.

To protect Wisconsin's lakes and rivers, people who own land and forests along shorelines are required to follow rules governing how far structures must be set back from the water's edge, the removal of trees from the shorelands, and other activities that could affect water quality and habitat. Firewise recommendations do not supersede zoning regulations. Therefore, whenever someone is planning to erect a structure or alter the land in some way, such as cutting trees, grading soil, etc., they should contact the zoning administrator to determine permit requirements and zoning restrictions.

Additionally, the Wisconsin River Power Company (WRPCO) owns an approximately 100 foot wide Shoreline Commons Area adjacent to Lake Petenwell and Lake Castlerock in the Towns of Armenia, Germantown and Necedah (approximately 17 miles of shoreline). The Shoreline Commons Area provides recreational opportunities while also providing wildlife habitat and protecting the shoreline and water quality. Although this area is open to the public for pedestrian recreational purposes it is important that adjacent property owners be aware that it is subject to additional shoreline regulations according to WRPCO's Vegetation Management Plan. This means that any vegetation alteration, including cutting or removing dead trees, requires prior written permission from the Wisconsin River Power Company.

The Towns and Village should consider working with Juneau County to identify standards for Firewise building materials and landscaping, and to amend the zoning ordinances to incorporate these standards.

The Home Ignition Zone

The home ignition zone is defined as the home and the area around the home extending out 100-200 feet, see Figure 4. This area can extend out to 200 feet if a home is on a steep slope or is in an area of heavy fuels, such as a pine forest or plantation. If properly managed with enough space and modified vegetation, this area can prevent fire from spreading to buildings and act as a fuel break and improve the chance of a home surviving a wildfire. It is therefore very important for homeowners to be aware of steps they can take on their property to reduce their risks. There are several helpful publications available for homeowners as well as the potential opportunity to have a home ignition zone assessment conducted by an expert.

Recommendations for the Home Ignition Zone

The goal is to have short vegetation with high moisture content in the area within 30 feet of structures. If modified properly, this area can keep low intensity surface fire from reaching structures and provide a relatively safe area for firefighters to work in. The area around structures should be kept mowed short, and raked free of fallen leaves and needles. Plantings should be carefully spaced and have fire resistant qualities. Deciduous plants, shrubs, and trees are generally more fire resistant than evergreens. Tree limbs should be pruned back at least 10 feet from all structures and conifers should be pruned up 6 to 10 feet from the ground.

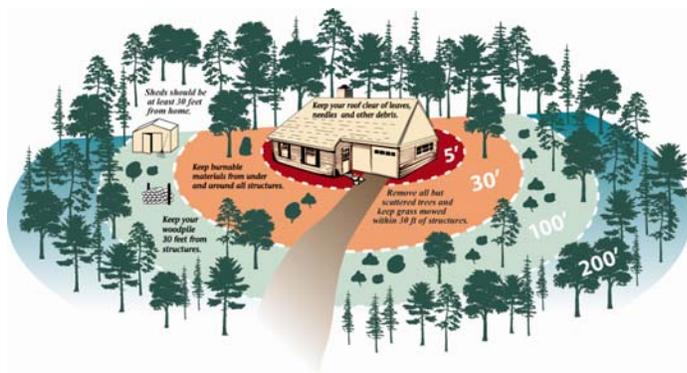


Figure 4: The Home Ignition Zone

Fuel breaks can be created by incorporating gravel, rock, brick, paving, or a water feature into landscape design. This is especially important in the area 3 to 5 feet around buildings. Nothing flammable should be placed or allowed to grow in this area. Firewood and other flammable materials (such as stacks of building materials, gasoline containers, and propane tanks) should be kept at least 30 feet from the home, garage, and sheds.

In the area 30 to 100 feet beyond structures, the goal is to allow space between shrubs and trees and remove lower tree branches. Trees in this zone should be spaced so their branches are at least 10 feet apart. Taller trees should have all limbs pruned six feet off the ground. This greatly reduces the chance of grass fires (surface fires) spreading into the treetops (crown fires) and then moving on to the next tree. All dead or dying limbs should be removed throughout the tree canopy and dead, dying, and diseased trees should be removed from the area.

Fire Resistant Plants

Even though some plants are marketed as fire resistant, all plants can burn under dry conditions. In general, plants that are low growing, open rather than densely branched, and low in resin

content should be used in landscaping in high risk areas. Junipers, pines, spruce, and fir are resinous and highly flammable. Landscape management including landscape design, plant placement, pruning, irrigation, and clean up have a greater impact on whether a plant ignites than the species. Maintenance of landscape plants is critical to fire safety.

Maintenance

Roofs, rain gutters, and decks are natural traps for leaves, pine needles, and embers from a fire. These areas should be kept free of all material that could allow an ember to smolder and start a fire. Flammable materials and debris should never be allowed under decks and overhangs. The first 3 to 5 feet around structures and wooden fences should be kept free of all vegetation, living and dead. This area can instead be filled in with decorative stone or other non-flammable material.

Building Materials

Perhaps the best protection against the loss of a home to wildfire can be found in the building materials used in home construction. The materials used, whether building, remodeling, or retrofitting can make a difference in how well a home withstands both the potential "direct threat" of flames and the "indirect threat" of flying embers.

Roofs - The roof is the most exposed portion of the home's exterior and the most at risk from flying embers. Most homes lost during wildfires are due to embers and flames igniting combustible roofs. Roofs near any wildland area should be constructed of noncombustible materials such as composition shingles, tile or slate, or aluminum or steel. If it is not economically feasible to replace an existing wood shake roof, there are commercially available fire retardant treatments that may help slow the spread of a potential ignition or delay it. All roofs should be maintained to be free of accumulations of pine needles, leaves, or other material that may burn.

Decks and Fences - Any structure attached to a house is considered part of the house itself and is treated as the main house. The very nature of wooden decks (usually attached to the house and raised off the ground) makes them a fire concern. Decks elevated off the ground should be enclosed around the bottom with no larger than ¼-inch wire mesh screening to prevent embers from being trapped underneath.

Areas where the deck attaches to the house can be natural traps for leaves, pine needles, and embers from a fire. These areas should be kept clean and free of all material that could allow an ember to smolder and start a fire.

Wood fences can be highly flammable and are often attached to the house. For this reason, they should be avoided or at least well maintained. Vegetation that may ignite and hold a flame against the fence should be trimmed back or removed. There are some commercially available fire retardants that may help prevent or slow ignition of a fence. Consider separating the fence from the house with non-combustibles, such as metal, brick, or stone.

Siding - Siding should be constructed of fire-resistant materials. When a home is being built, added on to, or re-sided, fire-resistant materials such as stucco or masonry, or other modern fire-

resistant products should be considered for use. Some siding materials, such as vinyl, will soften and melt in the heat of a wildfire and allow flying embers entry to attics or crawl spaces.

Windows - Windows can fail and provide openings for fire to get inside of a house. When building, remodeling, or replacing windows, the following considerations should be taken into account:

- Single-paned glass can break relatively easily from radiant heat or from windblown debris. Multi-paned windows will generally protect better against a wildfire.
- Reducing the size (square feet) of windows exposed to wildfire will reduce breakage. Smaller panes of glass will generally hold up better against a wildfire than will larger panes of glass.
- Tempered glass provides the best protection from high heat.

Eaves and Vents - Eaves can be a trap for firebrands and allow an ignition point up under a roof. For this reason, eaves should be enclosed or boxed. Eave vents, although necessary in home construction, can provide access into a home for flying embers. Therefore, they should be covered with a screen having a mesh opening of not more than 1/8 inch.

Rain Gutters - Rain gutters present a maintenance concern. They can be natural traps for embers to land, settle, and continue smoldering. Because of this, gutters should be kept clean and free of all accumulations of leaves, pine needles, or other material that could be ignited by embers.

Chimneys - Chimneys are both a construction and maintenance concern and present a risk of ignition from both inside and outside the home (chimney fires can cause a house fire: sparks from the chimney can ignite roofs and wildland fuels). Chimneys should be kept clean and covered with a mesh screen spark arrester to prevent firebrands from flying into the home and embers from flying out. This is a particular concern if the roof is constructed of flammable material.

EMERGENCY PREPARENEDESS

Evacuation Planning

The Northeast Juneau County CWPP Planning Committee should develop and refine evacuation plans for wildfire events. The evacuation plan directs evacuation route options for clustered development areas and main roads should an evacuation be necessary.

More than one ingress/egress point should be identified for most developed areas of the Towns. The preference is for two evacuation routes to be identified for residents to leave an area depending on the location and movement of the fire.

Moving a large number of people out of concentrated subdivisions or areas with limited ingress and egress can be a problem during a large forest fire. Evacuation problems can develop when roads are too narrow or in disrepair and do not allow efficient flow of emergency responders in and residents out. Problems also exist when roads are blocked by downed power lines, the direction of fire movement blocks escape routes, or visibility is reduced due to smoke.

Initial safety concerns dictate that evacuation plans receive a high priority during any large fire. Incident management team training includes evacuation concerns as part of simulation exercises. Further planning and training in cooperation with fire agencies, law enforcement, and disaster relief agencies is needed. It is also important make community members aware of their local evacuation plan.

The Preliminary Evacuation Routes map (Map 9) displays arrows depicting possible evacuation routes recommended for the clustered development areas and main roads in the planning area. Further development of the evacuation plan and public education will be necessary. Most importantly, the public must be informed about the designated evacuation routes. The CWPP Planning Committee should continue to modify details to the evacuation plan to include the following:

- A means of notifying the public of the need to evacuate, whether by local law enforcement, neighborhood leaders, a reverse 911 system, or other means.
- The identification of established meeting or gathering sites for evacuees.
- A means of practicing the evacuation plan. The more known and practiced an evacuation plan is the more orderly and safely it can be carried out when necessary.

PROTECTION CAPABILITY

Access

Firefighters cannot protect property that they are unable to access. Roads leading to, through, and around subdivisions and isolated homes should be designed with emergency vehicles and two-way traffic in mind. Roads should be wide enough to handle both emergency vehicles entering the area, as well as other traffic leaving. Communities and local fire departments should continually educate and remind homeowners of the importance of having adequate access to their properties for emergency vehicles.

Additionally:

- Road grades should not exceed ten percent and curves should be gentle and wide enough for large emergency vehicles to get around them.
- Road surfaces should be stable enough to support heavy equipment.
- Bridges should be constructed to accommodate the load of the largest apparatus typically used to respond to that location.
- Cul-de-sacs should have a 50-foot radius to allow emergency vehicles to maneuver and turn around.
- Turnouts large enough for heavy emergency vehicles should be constructed along one-way roads.
- Vegetation should be trimmed back to create a buffer area/firebreak along both sides of roads.
- Driveways should be at least 15 feet wide with 14 feet of overhead clearance. Driveways longer than 150 feet or those with sharp curves should be closer to 20 feet wide. If a driveway is longer than 300 feet, it should provide a turnout or turnaround for fire trucks. Locked or closed gates are discouraged.

- All roads and addresses should be clearly marked. Road and street signs, and fire number markers should be standardized, easy to read, and maintained in a readable condition using non-combustible materials. Addresses should be easily visible from the road.

WILDFIRE PREVENTION

Humans cause the vast majority of wildfires in Wisconsin (see Table 12). Therefore, it is recommended that communities take advantage of opportunities to educate community members on the local causes of wildfires, burning regulations, alternatives to burning including information on local brush drop-off sites, and the danger of wildfire in the area.

TABLE 12	
Juneau County Wildfire Statistics, 1999-2009 (in DNR protection areas)	
<i>518 fires total</i>	<i>918 acres burned total</i>
<i>Average of 47 fires per year</i>	<i>Average of 83.5 acres per year</i>
<i>6 structures lost between 2005-2009</i>	
28%	Debris burning: broadcast, brush, leaf, trash
22%	Equipment: exhaust, crash etc.
12%	Incendiary: excitement, pest, other
7%	Miscellaneous
5%	Powerlines
5%	Campfires
5%	Railroads
5%	Fireworks
5%	Ash: improper disposal
4%	Smoking
2%	Lightning
<i>Source: WDNR</i>	

Fireworks

Fireworks cause forest fires each year in Wisconsin. Restricted fireworks are much more likely to cause a forest fire or injury because of their erratic and unpredictable behavior. Since many of the restricted fireworks are of the airborne variety, a wildfire ignition can occur well away from the site where the fireworks are being used making them more difficult to detect.

It is unlawful to possess or use restricted fireworks without a permit. It is unlawful to sell restricted fireworks to someone who does not possess a valid permit. Restricted fireworks are defined as those that move, jump, explode or emit balls of fire and include such types as bottle rockets, firecrackers, jumping jacks, and roman candles (Wis. Stats. 167.10). In addition, community members should be aware that the Town of Germantown has a fireworks ordinance in place.

CHAPTER 5: MITIGATION ACTION PLANS

MITIGATION ACTION PLANS

Implementation of the Northeast Juneau County CWPP focuses on intermediate range needs for the next five years through mitigation projects selected by each town and the village. The Action Plans identify priority mitigation projects that each community will work to accomplish as well as when it should be done and who is responsible for overseeing the project. The Action Plans will better prepare the area for the threat of wildfire.

The CWPP Planning Committee intends to review the Mitigation Action Plans on a regular basis beginning with a six-month review occurring after the CWPP is complete. Regular reviews will continue on a biannual to annual basis with complete plan updates occurring every five years.

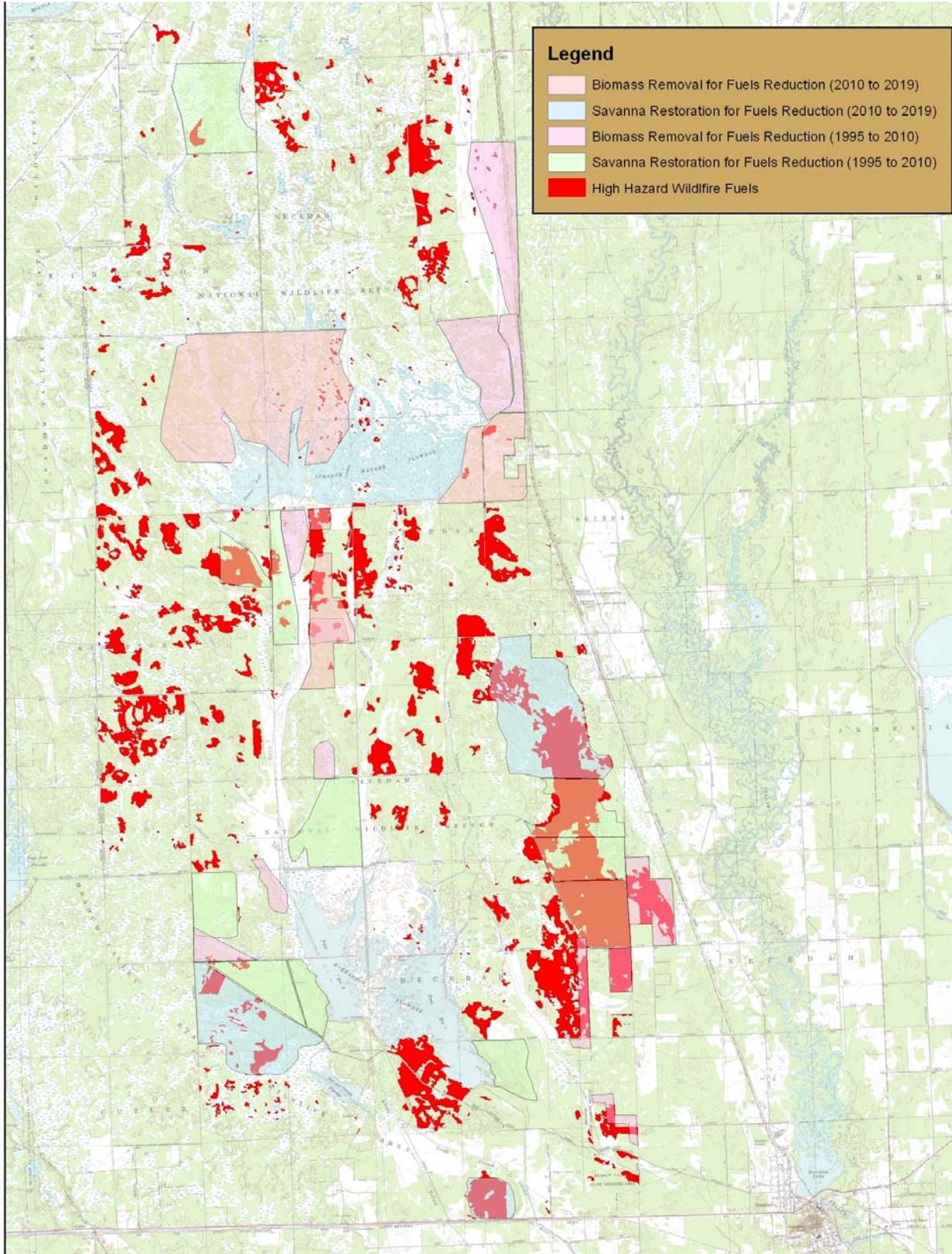
Town of Armenia Mitigation Projects 2010-2014		Timeframe
1	Develop a list of target subdivisions and promote the Firewise Communities/USA program.	2010
2	Update to P25 radio communication for Town resources with possible assistance from the Rural Firefighters Assistance and/or IECGP grants.	2010
3	Provide driveway assessments in conjunction with home ignition zone assessments targeting subdivisions in pine plantations first.	2010 On-going
4	Create and maintain an emergency information packet for town landowners to be handed out with driveway permits or as other opportunities for distribution arise.	2010 On-going
5	Provide education in town tax bills. Information may include promoting new town brush site or other topics as applicable.	2010 On-going
6	Develop and distribute a township publication describing wildfire concerns, local issues, resources, contact information, and the wildfire planning process to all landowners to serve as a reference document (after brush site development).	2010-11
7	Locate additional water points as needed and work to develop and maintain them with partners (cranberry, farm, county).	2011
8	Obtain chipper for brush site. Work toward chipping days.	2012
9	Work with the county and plan, locate, and develop a township brush disposal site.	2010-12

Town of Germantown Mitigation Projects 2010-2014		Timeframe
1	Ensure that emergency responders within the town have a structure zone map book and are trained on how to use it.	2010 On-going
2	Create and maintain an emergency information packet for town landowners to be handed out with building permits or as other opportunities for distribution arise.	2010 On-going
3	Provide educational information in town newsletters, town tax bills, and on town website. Information may include promoting use of town brush disposal site, giving updates on hazard mitigation projects, promoting Firewise Community/USA program and addressing other local issues of concern.	Annually 2010-2014
4	Provide chipping days on a rotating basis in high hazard subdivisions. Use the opportunity to promote participation in the Firewise Community/USA recognition program.	Annually 2010-2014
5	Establish and maintain Firewise Demonstration Homes in high hazard residential areas to showcase recommendations for the home ignition zone.	Sp 2010
6	Sponsor a Wildfire Community Forum for homeowners in targeted areas to raise awareness of risk and mitigation strategies.	Sp 2010
7	Draft an open burning ordinance for consideration by the Town Board.	Sp 2010
8	Install wildfire awareness signs: one at the intersection of HH and G that says “You are entering a high wildfire danger area – please be careful” and one in Buckhorn State Park by the firewood for sale that says “Drown Your Campfire”.	2010
9	Revise current zoning ordinance to address concerns related to access for emergency responders for consideration by the Town Board.	Late 2010
10	Develop and distribute a publication describing wildfire concerns, local issues, resources, contact information, and the wildfire planning process to all landowners in the Town.	2010-11
11	Create Town of Germantown “Reducing the Risk” Guide which will supply information on emergency preparedness, fire prevention, Firewise recommendations, evacuation and other topics.	2012
12	Work with partners to implement fuel reduction projects (Buckhorn State Park, Buckhorn Wildlife Area, Juneau County Forest, Mauston School Forest and WRPCO).	2013
13	Partner with local fire departments to locate, install and maintain water points and dry hydrants where necessary.	2014

Town of Necedah Mitigation Projects 2010-2014		Timeframe
1	Provide educational information at town office, town information boards, and other outlets to be determined. Information may include promoting use of brush disposal site, giving updates on hazard mitigation projects, burning regulations, promoting Firewise Community/USA program and addressing other local issues of concern.	On-going
2	Develop and distribute a publication describing wildfire concerns, local issues, resources and contact information to all landowners to serve as a reference document (escape routes, evacuation, and emergency access-driveway). Seek 50/50 cost share hazard mitigation funds.	2010-11
3	Continue to convert private roads to town roads when possible.	On-going
4	Identify partner property owners for fuel reduction treatments: Buckhorn Wildlife Area, WRPCO, USFWS Necedah National Wildlife Refuge, and County Forestry.	On-going
5	Explore brush burn site management options with Village of Necedah (chip brush, compost leaves, and curbside chipping).	On-going
6	Partner for wildland fire training.	On-going
7	Update to P25 radio communication for Town resources with possible assistance from the Rural Firefighters Assistance and/or IECGP grants.	2010-11
8	Partner with local agencies to provide fire prevention. Topics to include burn barrels, debris burning, fireworks, Smokey Bear.	On-going
9	Locate and install high hazard fuel sign south of Hwy 21.	2011

Village of Necedah Mitigation Projects 2010-2014		Timeframe
1	Provide educational information in Village newsletters, Village tax bills, and at Village office. Information may include promoting use of brush disposal site, giving updates on hazard mitigation projects and addressing other local issues of concern.	On-going
2	Develop and distribute a publication describing wildfire concerns, local issues, resources, contact information and the wildfire planning process to all landowners to serve as a reference document.	2010-11
3	Identify fuel reduction treatment areas. Create forest management plan for Village properties (SW 27 acre parcel, RR loop parcel-reducing fuel load and timber types where applicable to sound forestry).	On-going
4	Identify partner property owners for fuel reduction treatments: Plum Creek.	On-going
5	Explore brush burn site management options with Town of Necedah (chip brush, compost leaves, and curbside chipping).	On-going
6	Update Village burning ordinance. Promote suspended burning during peak wildfire season.	On-going

Figure 5: USFWS Necedah National Wildlife Refuge Mitigation Activities



GLOSSARY

A

Aerial Fuels: All live and dead vegetation in the forest canopy or above the surface fuels, including tree branches, twigs and cones, snags, moss, and high brush.

Agency: Any federal, state, county, or city organization participating with jurisdictional responsibilities.

B

Biomass (includes small-diameter wood): The material from trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, farm, rangeland, or wildland urban interface environment, that are the by-products of forest management, ecosystem restoration, or hazardous fuel reduction treatments.

Biomass Utilization: The harvest, sale, offer, trade, and/or use of woody biomass to produce a full range of wood products. These products include timber, engineered lumber, paper and pulp, furniture and value-added commodities, as well as bio-energy, bio-fuels (ethanol and diesel), and bio-based products (plastics and solvents).

Brush: A collective term that refers to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management.

Brush Fire: A fire burning in vegetation that is predominantly shrubs, brush and scrub growth.

Burning Ban: A declared ban on open air burning within a specified area, usually due to sustained high fire danger.

Burning Conditions: The state of the combined factors of the environment that affect fire behavior in a specified fuel type.

C

Chipping: Reducing wood related material by mechanical means into small pieces to be used as mulch or fuel. Chipping and mulching are often used interchangeably.

Creeping Fire: Fire burning with a low flame and spreading slowly.

Crown Fire (Crowning): The movement of fire through the crowns of trees or shrubs more or less independently of the surface fire.

D

Dead Fuels: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

Debris Burning Fire: A fire spreading from any fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning.

Defensible Space: An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss to life, property, or resources. In practice, “defensible space” is defined as an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation.

Detection: The act or system of discovering and locating fires.

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves immediately above the mineral soil.

E

Escape Route: A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, a meadow that will not burn, natural rocky area that is large enough to take refuge in without being burned. When escaped routes deviate from a defined physical path, they should be clearly marked (flagged).

F

Fire Behavior: The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Break: A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Fire Front: The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified the fire front is assumed to be the leading edge of the fire perimeter. In ground fires, the fire front may be mainly smoldering combustion.

Fire Intensity: A general term relating to the heat energy released by a fire.

Fire Load: The number and size of fires historically experienced on a specified unit over a specified period (usually one day) at a specified index of fire danger.

Fire Perimeter: The entire outer edge or boundary of a fire.

Fire Season: 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affects resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

Fire Weather: Weather conditions that influence fire ignition, behavior, and suppression.

Firebrand: Any source of heat, natural or man made, capable of igniting wildland fuels; flaming or glowing fuel particles that can be carried naturally by wind, convection currents, or gravity into unburned fuels.

Firewise Community: A community that takes responsibility for creating a safe community in the face of wildfire threat. The Firewise Community incorporates effective emergency response and individual responsibility for safer home construction and design, landscaping, and maintenance.

Firefighting Resources: All people and major items of equipment that can or potentially could be assigned to fires.

Flare-up: Any sudden acceleration of fire spread or intensification of a fire. Unlike a blow-up, a flare-up lasts a relatively short time and does not radically change control plans.

Flash Fuels: Fuels such as grass, leaves, draped pine needles, fern, tree moss, and some kinds of slash that ignite readily and are consumed rapidly when dry. Also called fine fuels.

Fuel: Combustible material. This includes, vegetation, such as grass, leaves, ground litter, plants, shrubs, and trees, as well as man-made objects like boats, cars and homes.

Fuel Loading: The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

Fuel Type: An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

G

Ground Fuel: All combustible materials below the surface litter, including duff, tree, or shrub roots, peat, and sawdust that normally support a glowing combustion without flame.

H

Hazard Reduction: Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

Home Ignition Zone: Includes the home and an area surrounding the home within 100 to 200 feet. The potential for ignition depends on the home's exterior materials and design and the amount of heat to the home from the flames within the home ignition zone.

Hotspot: A particularly active part of a fire.

I

Incendiary: A criminal who illegally sets fire to property.

Incident: A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Initial Attack: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further expansion of the fire.

Interoperability: Connecting people, data and diverse systems. Interoperability in regard to wildfires often focuses on getting diverse communication systems connected so that communication can occur between cooperating agencies, command and tactical units, air and ground units, etc.

L

Ladder Fuels: Fuels that provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Litter: Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Live Fuels: Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms rather than by external weather influences.

M

Mutual Aid Agreement: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

Mutual Aid Box Alarm System (MABAS): MABAS agencies, regardless of their geopolitical origin, are able to work together seamlessly on any emergency scene. All MABAS agencies operate on a common radio frequency and are activated for response through protocols developed to meet local risk needs. MABAS also provides mutual aid station coverage to a stricken community when their Fire/EMS resources are committed to an incident for an extended period.

N

Normal Fire Season: 1) A season when weather, fire danger, and number and distribution of fires are about average. 2) Period of the year that normally comprises the fire season.

P

Peak Fire Season: That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

Preparedness: Condition or degree of being ready to cope with a potential fire situation.

Prescribed Fire: Any fire ignited by management actions under certain, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist.

Prevention: Activities directed at reducing the number of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards.

S

Slash: Debris left after logging, pruning, thinning, or brush cutting; includes logs, chips, bark, branches, stumps and broken understory trees or brush.

Snag: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Spark Arrester: A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments.

Spot Fire: A fire ignited outside the perimeter of the main fire by flying sparks or embers.

Staging Area: Locations set up at an incident where resources can be placed while awaiting a tactical assignment on a three-minute available basis. Staging areas are managed by the operations section.

Structure Fire: Fire originating in and burning any part or all of any building, shelter, or other structure.

Suppression: All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their

identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branches, downed logs, and stumps interspersed with or partially replacing the litter.

T

Torching: The ignition and flare-up of a tree or small group of trees, usually from the bottom to the top.

U

Uncontrolled Fire: Any fire which threatens to destroy life, property, or natural resources.

W

Wildfire (or wildland fire): Any nonstructural fire, other than prescribed fire, that occurs in the wildland.

Wildland-Urban Interface: The area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

APPENDIX A
FUNDING OPPORTUNITIES

STATE ASSISTANCE

Forest Fire Protection Grant

Forest Fire Protection (FFP) grants are available to increase forest fire protection and suppression capabilities through cooperative efforts with local fire departments and county fire associations as per s.917, 1997 Wisconsin Act 27, Stats.

Factors considered include:

1. Whether the fire departments serve in a WDNR organized fire protection area;
2. Whether fire departments respond to wildfires within their jurisdiction at no cost to the WDNR;
3. Whether fire departments have a majority of members meeting NFPA 1051 standards for firefighting training and;
4. Whether or not the fire department was awarded a FFP grant in the last funding cycle.

Fire departments that have executed a forest fire suppression agreement acceptable to WDNR are eligible to apply. County fire associations with a majority of the member fire departments having a forest fire suppression agreement with WDNR are eligible to apply. There is a 50 percent local match required. Eligible fire departments can receive a maximum grant award of \$10,000. Eligible county fire associations can receive a maximum grant award of \$25,000.

Wildland fire equipment is eligible in the following categories listed in priority order:

- Personal protective clothing
- Forest fire training
- Forest fire prevention projects
- Forest fire suppression equipment
- Dry hydrants
- Communications equipment
- Mapping equipment, maps, and GPS units
- Off road vehicles primarily used for forest fires including ATV's

A complete listing of eligible items can be found on the application web site. Applications are mailed to fire departments and county fire associations in late April. Applications must be returned to the WDNR by July 1 (unless otherwise provided for on the application) of the same year.

The FFP grant application packet is available online at <http://dnr.wi.gov/org/caer/cfa/lr/ffp/grants.html>. For more information, contact Eileen Trainor, Financial Assistance Specialist at (608) 267-0848 or by email at Eileen.Trainor@Wisconsin.gov.

Wisconsin DNR – Division of Forestry Hazard Mitigation Program

Hazard Mitigation Program grants aim to decrease the probability of a catastrophic wildfire affecting a Wisconsin community. Through the National Fire Plan program, states are able to compete for grants to fund projects that meet the goals of the program. The WDNR Division of Forestry manages these funds through their Hazard Mitigation Program. Projects fall under a few general categories: readiness, prevention, fuel breaks, and vegetation management. Communities with Community Wildfire Protection Plans are eligible to apply for these funds to conduct projects such as fuels reduction, access improvement, prescribed burning, and education. Smaller associations within the community (e.g. lake associations) are eligible to apply for funds to carry out projects such as chipping days, defensible space creation, education, and property assessments.

The application materials typically become available in October and are due in early January. For additional information or application materials, contact Jolene Ackerman at the WDNR Division of Forestry at Jolene.Ackerman@wisconsin.gov or (608) 267-7677.

FEDERAL ASSISTANCE

Assistance to Firefighters Grant Program

The purpose of the Assistance to Firefighters Grant (AFG) Program is to award one-year grants directly to fire departments and nonaffiliated emergency medical services (EMS) organizations of a state to enhance their abilities with respect to fire and fire-related hazards. The primary goal is to provide assistance to meet fire departments' and nonaffiliated EMS organizations' firefighting and emergency response needs. This program seeks to support organizations that lack the tools and resources necessary to protect the health and safety of the public and their emergency response personnel with respect to fire and all other hazards they may face.

The application period typically runs from March 6 to April 7. Each application includes a scored narrative with four parts:

- Project Description
- Financial Need
- Cost/Benefit
- Operational Outcomes

More information can be found online at <http://www.firegrantsupport.com>, by calling the grant help desk at (866) 274-0960 or by emailing Dawn Vick at dawn.vick@wisconsin.gov.

Fire Prevention and Safety Grant Program

The Fire Prevention and Safety (FP&S) grants are part of the Assistance to Firefighters Grants (AFG) and are under the purview of the Grant Programs Directorate in the Federal Emergency Management Agency. FP&S grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire prevention and public safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year

2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include Firefighter Safety Research and Development.

The application period is open from October 22 to November 30. More information can be found online at <http://www.firegrantsupport.com/fps/>, by calling the grant help desk at (866) 274-0960 or by email at firegrants@dhs.gov.

Staffing for Adequate Fire and Emergency Response Grant Program

Staffing for Adequate Fire and Emergency Response (SAFER) grant was created to provide funding directly to fire departments and volunteer firefighter organizations in order to help them increase the number of trained, “front-line” firefighters available in their communities.

The goal of SAFER is to enhance the local fire departments’ abilities to comply with staffing, response, and operational standards. Specifically, SAFER funds should assist local fire departments to increase their staffing and deployment capabilities in order to respond to emergencies whenever they may occur. Because of enhanced staffing, response times should be sufficiently reduced with an appropriate number of personnel assembled at the incident scene. In addition, the enhanced staffing should provide that all front-line/first-due apparatus of SAFER grantees have a minimum of four trained personnel to meet OSHA standards. Ultimately, a faster, safer, and more efficient incident scene will be established and communities will have adequate protection from fire and fire-related hazards.

The purpose of the SAFER grants is to award grants directly to volunteer, combination, and career fire departments to help the departments increase their cadre of firefighters. Ultimately, the goal is for SAFER grantees to enhance their ability to attain 24-hour staffing and thus assuring their communities have adequate protection from fire and fire-related hazards. The SAFER grants have two activities that will help grantees attain this goal:

1. Hiring of firefighters
2. Recruitment and retention of volunteer firefighters

The application period is open from July 30 to August 30. More information can be found online at <http://www.firegrantsupport.com/safer/>, by calling the grant help desk at (866) 274-0960 or by email at firegrants@dhs.gov.

Rural Fire Assistance Grant Program

The Rural Fire Assistance (RFA) Grant Program was developed by the U.S. Department of the Interior to improve safety, enhance firefighting resource capability, and improve readiness of rural fire departments that play a substantial role responding to wildland fires on or near Department of the Interior protected lands. Through this grant program, the federal government funds 90% of the approved request, while the rural fire department contributes 10% in funding or in-kind goods and services.

As a Department of the Interior Agency, the U.S. Fish and Wildlife Service coordinates the grant submissions of rural fire departments at Necedah National Wildlife Refuge for northern Juneau County.

Under the RFA grants, funding is available to purchase wildland firefighter personal protective equipment and basic gear, new generation fire shelters, communications equipment (P-25 compliant radios), basic tools and equipment, or wildland fire training.

The grant program is funded annually by Congress and applications are available in the spring of each year. The maximum grant award is \$20,000. Information is available online at <http://www.nifc.gov/rfa/>. Contact the Necedah National Wildlife Refuge Fire Management Officer at 608-565-4407 for application assistance. Additional questions can be directed to Wisconsin RFA contact Valdo Calvert at 612-733-5445 or email Valdo_Calvert@fws.gov. Completed applications are submitted to Mr. Calvert.

FEMA: FY 2010 Interoperable Emergency Communications Grant Program (IECGP)

Total Funding Available in FY 2010: \$48 Million

Purpose: In fiscal year (FY) 2010, IECGP provides governance, planning, training and exercise funding to states, territories, and local and tribal governments to carry out initiatives to improve interoperable emergency communications, including communications in collective response to natural disasters, acts of terrorism, and other man-made disasters. If a State Administrative Agent (SAA) and Statewide Interoperability Coordinator (SWIC) / SCIP point of contact certify that its state or territory has fulfilled such governance, planning, training and exercise objectives, the Program provides the flexibility to purchase interoperable communications equipment with any remaining IECGP funds. Contact County Emergency Management Director for details. Go to <http://www.fema.gov/government/grant/iecgp/index.shtm> for more details.

APPENDIX B
COMMUNITY STATUS REPORT/PROJECT PROPOSAL FORM

NAME OF TOWN/VILLAGE _____

STATUS OF PROJECT LIST:

PROPOSED CHANGES TO PROJECT LIST:

IMPROVEMENTS RECOMMENDED TO THE PLAN:

ASSISTANCE NEEDED TO EXECUTE A SPECIFIC PROJECT:

Project (Reference the project list in the adopted plan)

Do you need help to develop a detailed **budget** for the project? _____ Yes or No

Are you lacking **resources** to complete the project? _____ Yes or No

Do you need **technical assistance**? _____ Yes or No

**Attach a sheet of paper explaining the effort your community made and challenges you encountered when you tried to complete the project. Explain the assistance that you need.

The Town/Village of _____ has authorized me to attend this meeting. I am the liaison between the committee and the Town/Village of _____. The above comments reflect all recommended changes and the current status of the projects.

Name (Printed)

Date

Signature

Phone Number

_____ (E-mail Address if Available)

APPENDIX C PLAN MAPS
