BRADFORD COUNTY LMS PLAN

UPDATE 2020

ATTACHMENT III

The Bradford County Community Wildfire Protection Plan (CWPP)

Bradford County
Community Wildfire Protection Plan

A Forward-Looking Process That Facilitates Fire Adapted Communities

Established December 2013

2020 Update

Santa Fe Swamp Fire near Theressa, Bradford County, FL 32012

BRADFORD COUNTY SHERIFF'S OFFICE
EMERGENCY MANAGEMENT DIVISION
945B NORTH TEMPLE AVENUE
STARKE, FLORIDA 32091

FLORIDA FOREST SERVICE
SUWANNEE FORESTRY CENTER
137 SE FORESTRY CIRCLE
LAKE CITY, FLORIDA, 32025

Bradford County CWPP
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1. Executive Summary

Community Wildfire Protection Plans (CWPPs) are authorized by the Healthy Forests Restoration Act of 2003. Having a CWPP gives the county priority status when applying for federal funding for wildfire hazard mitigation projects.

The CWPP can consolidate knowledge and serve as a single resource for wildland fire risk and hazard mitigation information. Included are an assessment of Bradford County's wildfire vulnerability, local organizations and resources available to assist with wildfire mitigation and response, and a pre-fire action plan for reducing wildfire vulnerability throughout the county.

The CWPP addresses the challenges of fire protection in the Wildland Urban Interface (WUI) through locally supported proactive solutions and activities which facilitate the creation of **Fire Adapted Communities (FAC)**. FAC articulates the whole-community message. The fire service, local decision makers, the public, and land managers each have an important role to play. The Bradford County recommended FAC activities should include the following strategies:

- Integrate wildfire hazard mitigation and wildfire risk reduction into the comprehensive planning and land development process
- Examine and implement programs that address community and homeowner wildfire awareness and Fire Department capacity for safe and effective response
- Reduce human caused ignitions

Details for implementing the actions, such as responsible agencies and funding considerations are included in the Plan.

In Bradford County, the CWPP is an adjunct to the Local Mitigation Strategy (LMS) and furthers the goals, mitigation strategies and recommendations of the LMS Committee. For that reason, the CWPP and its list of pre-fire mitigation projects are an appendix to the LMS.

2. Community Background and Existing Situation

Description of Community

Bradford County is located in Northeast Florida and lies between Clay County to the east, Union County to the west, and Alachua County to the south. The northwestern border is the New River. Bradford County was created in 1858 as New River County but renamed Bradford County in 1861. It was named for Captain Richard Bradford, who fought and was first Confederate officer from Florida killed in the Civil War. The County operates under a Board of County Commissioners. The population of the county is estimated at 28,520 based on the 2010 Census. The community can be found on the internet at http://www.bradfordcountyfl.gov.

Demographics

According to the 2010 United States Census, 28,520 people live in 11,083 housing units in Bradford County. Population estimate as of July 1, 2019 was 28,201 (2020 Census was not complete at time of this update). There are four incorporated cities in Bradford County: Starke, Brooker, Hampton and Lawtey. The largest city, Starke, is the county seat with a population of 5,446 in 2,492 households.

Bradford County is locally populated, with a density of 93 people per square mile. The County is described as Florida's 51st most populous county with 0.2% of the state's total population. Population projections through 2020 indicate an additional 2.9% increase to 28,857 persons. This growth will occur in more rural areas of the county. These locations have the highest wildfire risk in the county due agricultural land usage.

The Forestry and Forest Products Industry employs 445 people with an annual labor income of $21 million and a total industry output of $62 million.

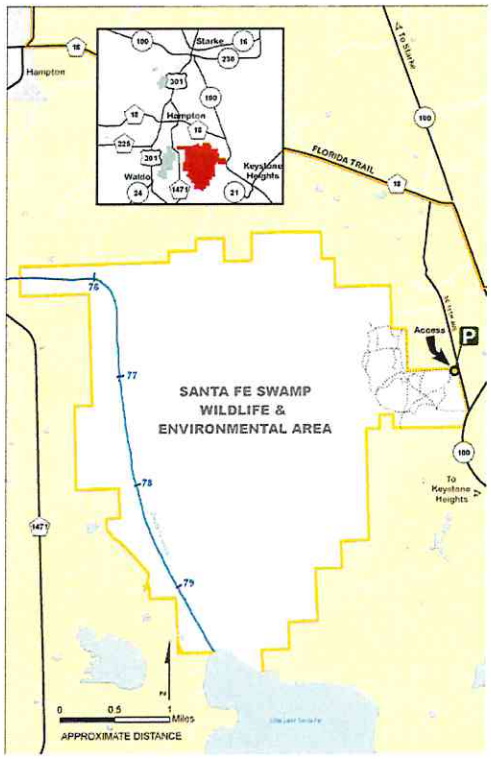
Total Land Area

Bradford County encompasses a total area of 300.04 square miles of which 293.13 square miles/187,520 acres (or 97.70%) is land and 6.91 square miles (or 2.30%) is water.

Regarding the 293 square miles/187,520 acres of land:
Total 2017 Forest Land is 154,709 acres; private 146,826; public 7,883 acres.
154,709 are available for commercial harvest.
Conversation Lands – 20,930 acres
Stewardship Lands – 4,253 acres/22 parcels
Certified Tree Farms – 9,674 acres/27 parcels

A factor which impacts both population density and wildfire susceptibility is forested land owned by Rayonier Forest Resources that totals over 60,650 acres or nearly 95 square miles occupying 32% of Bradford County. Another area with significant wildfire susceptibility is the Santa Fe Swamp Wildlife & Environmental Area covering over 7,272 acres in southeastern Bradford County. This floodplain swamp with mixed forest on the northeastern side is managed by the Suwannee River Water Management District.

The following map shows the Santa Fe Swamp Wildlife & Environmental Area:



Wildfire Problem Statement

Florida's ecosystems are dependent on natural fire. These low intensity fires re-nourish soil, thin abundant vegetation, and provide proper conditions for reproduction and forage. However, since the early 1950's when Floridians actively began to suppress all fires to protect newly planted forest areas and keep newly built dwellings safe, vegetative fuel has become dense and thick. Natural fires have given way to dangerous wildfires which often damage rather than benefit natural surroundings.

The growing concern revolves around the increase of residential development in the Wildland Urban Interface (WUI), where natural vegetation meets homes and communities. About 1,000 people move to Florida each day. Additionally, Floridians who are tired of big-city life are moving to rural areas to "get back to nature". Many of these new residents are unaware of the natural role of wildland fire in Florida and therefore are unprepared.

Wildland Urban Interface (WUI)* fires are fast moving fires that often require many pieces of wildland firefighting equipment, and suppression is a difficult, time-consuming and costly operation. Wildland fire suppression must also take on the challenge of home and structure protection during almost every fire that is detected. Every year in Florida, an average of 2800 wildfires burn nearly 97,000 acres; with residential and commercial structures either damaged or threatened 80% of the time. The cost of these operations grows proportionally with their complexity.

* The WUI – in Bradford County, 22,588 people, or 80% of the population, live within WUI.

Consequences of Wildfire

Infrastructure	Environmental	Human	Vegetative	Economic
power outages	erosion	smoke inhalation	crop damage	business disruption
water/gas/communication lines disrupted	wildlife destruction	personal injury	timber damage	property loss
road closures	habitat loss	human evacuation	species endangered	economic loss
roadway destruction	species endangered	animal evacuation	invasive species increased	suppression cost
	water and air pollution			

During the latest ten-year period, Bradford County has experienced 308 wildland fires, burning 6945 acres. One fire in particular, the Dairy Road Fire of 2007, had a heavy impact on Bradford County and the resources of all agencies involved in its suppression. This fire consumed 14,626 acres. Affected were 23 owners. 13,164 acres of those burned were dense pine, commercial forests. 4 structures were lost. It should be noted that the acreage burned in this fire skews the 10-year acreage totals and average.

Risk analysis for wildfires takes into account fuel types and density, fire history and dwellings within the area. These factors as well as others are combined in the Southern Wildfire Risk Assessment Portal (SouthWRAP), administered by the Florida Forest Service. SouthWRAP displays maps depicting the greatest areas of concern in Bradford County. **Attachment A** contains maps and the Southern Wildfire Risk Assessment Portal Summary Report for Bradford County.

Additional information is needed at the community level, such as maps of current and anticipated fire prone areas, information on access routes, a warning system to alert residents of fire-related evacuations, and real-time data on the location and availability of water and other firefighting resources. Certain of that needed information follows in the body of the Plan.

3. Planning Process - A forward-looking process that facilitates Fire Adapted Communities

The CWPP planning process is a collaborative effort among local, regional, state, and federal agencies that have a role in protecting the community from wildfire. This plan was produced through a project led by the Florida Forest Service (FFS). An initial project of the Lake Region in extreme southern Bradford County involved Clay County, the City of Keystone Heights, the Keystone Airpark Authority and partnering agencies. The information gained from that project was incorporated into this plan.

CWPP Working Group Members

Brad Witt, Emergency Management
Wendy Russell, Emergency Management
Rod Crawford, Building & Zoning Department
Jason Dodds, Bradford County Public Works
Regina James, Property Appraiser's Office
Allen Parrish, Bradford County Fire Rescue Director
Ben Carter, BCFR Fire Division Chief
Lisa Harley (City of Lawtey)
Mary Lou Hildreth (City of Hampton)
Charlene Thomas (Town of Brooker)
John Holman (City of Starke)
Doc Bloodworth, Florida Forest Service
Philip Glover, Florida Fish and Wildlife

Ricky Justis, Florida Fish and Wildlife

CWPP Meeting Dates, Notes, Names of Attendees and Information resources can be seen in **Appendix A.**

4. Vulnerability Assessment

Wildfire Vulnerability Overview

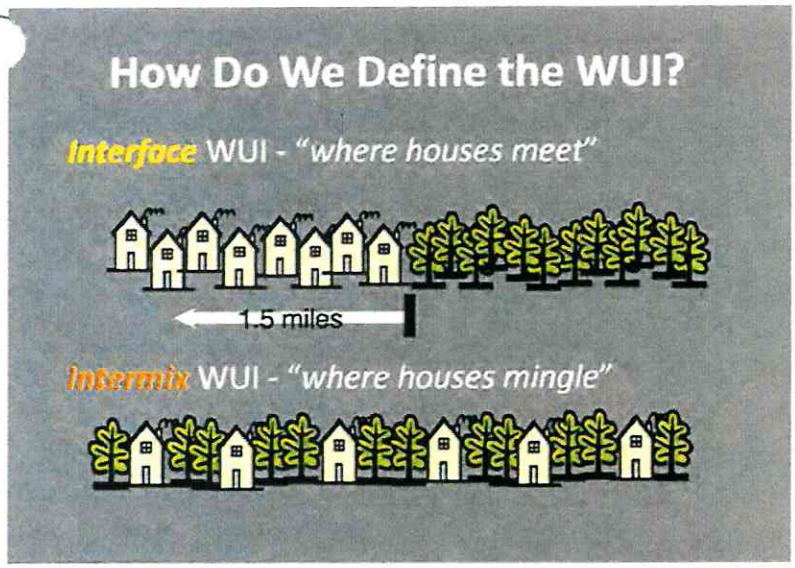
Wildfires occur in Florida throughout the entire year. Typically, North Florida, including Bradford County, sees the greatest number of wildfires occurring during the months of April, May and June. One fire in particular, the Dairy Road Fire of 2007, had a heavy impact on Bradford County and the resources of all agencies involved in its suppression. This fire consumed 14,626 acres. Affected were 23 owners. 13,164 acres of those burned were dense pine, commercial forests. 4 structures were lost. It should be noted that the acreage burned in this fire skews the 10-year acreage totals and average.

During the 10-year period from January 1, 2009 through December 31, 2018, Bradford County saw a total of 308 wildfires that burned 6945 acres.

Estimated Wildland Urban Interface (WUI) Community Protection Zones/CPZs

"From wildfire standpoint, a simple definition of the WUI is areas where homes are built in the wildlands--in other words, where combustible homes meet combustible vegetation." *FFS Firefighters Manual*

The WUI creates an environment in which fire can move readily between structural and vegetative fuels and extends well beyond the forest boundary, deep into urban development.



Interface communities are areas with housing in the vicinity of contiguous vegetation. Vicinity is defined as all areas within 1.5 mi of wildland vegetation. 1.5 miles is roughly the distance that firebrands/embers can be carried from a wildland fire to the roof of a house. It captures the idea that even those homes not sited within the forest are at risk of being burned in a wildland fire. We adopt this buffer distance to identify interface areas. With minimum housing densities, vegetation types, and interface buffer distances determined, the operational definition of the WUI is complete.

Every year in Florida, an average of 2800 wildfires burn nearly 96,000 acres; with residential and commercial structures either damaged or threatened 80% of the time. This makes WUI CPZs focal areas for human-environment conflicts, such as wildland fires. For Bradford County, it is estimated 22,588 people, or 80% of the population, live within in the WUI.

Understanding WUI CPZs and the potential impact and consequences of wildland fire on people and their structures is the foundation for quantifying risks and prioritizing wildfire hazard mitigation, community risk reduction, and fire protection actions.

The Southern Wildfire Risk Assessment Portal (SouthWRAP)

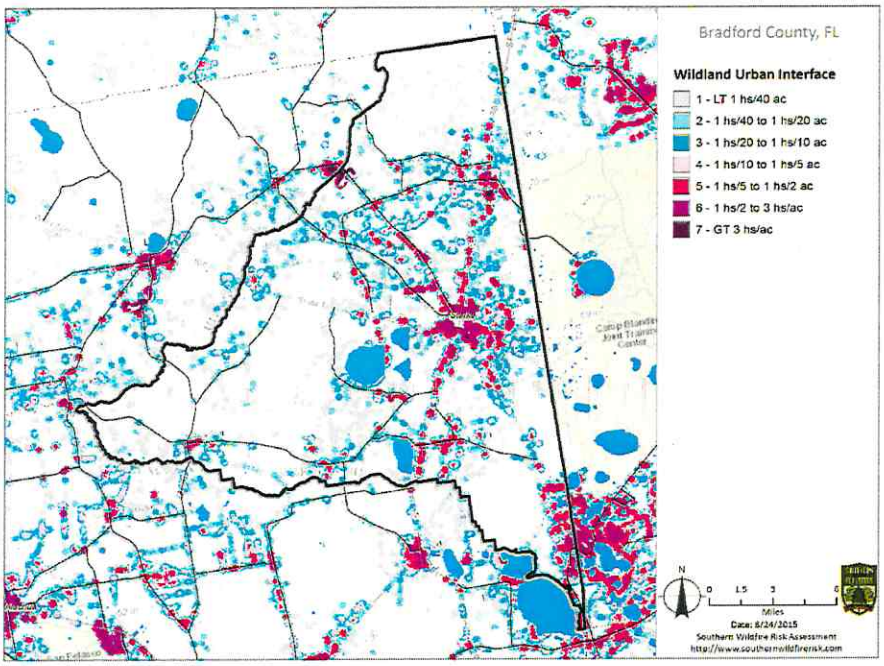
The Assessment Portal can be used to illustrate, determine and display the susceptibility of communities to wildfires or the amount of WUI acreage in the areas of concern. In the application of SouthWRAP, planners are able to express the exposure risks not only of property owners, but of wildland firefighters as well. In the WUI those interests should not compete. The creation of winnable situations for wildland firefighters is a must.

The Southern Wildfire Risk Assessment Summary Report for Bradford County

The Summary Report contains information products and other support tools which homeowners, land owners, elected officials, local fire agencies and state/federal fire management agencies utilize in their determinations concerning key priorities for planning and wildland fire management issues such as firefighter safety, wildfire response and reduction of firefighting costs. **Further explanation of SouthWrap and a copy of the entire Summary Report for Bradford County can be seen in Attachment A.**

The SouthWRAP View of the Bradford County WUI

The WUI mapping layer reflects housing density depicting where people and their structures meet or inter-mix with wildland fuels.



Source: SouthWRAP. The housing-density categories 4-7 combined, represent a high density of the population whose homes either meet or intermix with wildland fuels. These gradations of housing distribution provide data required for fire protection planning and, as illustrated in the table below, quantifying WUI Risks.

Bradford County WUI Population and Acres

The following SouthWRAP table shows the WUI population and acres for each housing-density category within the county. The housing-density categories combined for 22,588 4-7 account for the county WUI population living in **wildfire hazard areas,** classified as WUI Community Protection Zones (CPZs). CPZs then, represent those areas considered the highest priority for Wildfire Hazard Mitigation, Wildfire Risk Reduction and Protection Services.

	Housing Density	WUI Population	Percent of WUI Population	WUI Acres	Percent of WUI Acres
1	LT 1hs/40ac	815	3.0%	37,610	41.5%
2	1hs/40ac to 1hs/20ac	1,046	3.9%	15,335	16.9%
3	1hs/20ac to 1hs/10ac	2,467	9.2%	14,963	16.5%
4	1hs/10ac to 1hs/5ac	3,487	13.0%	10,424	11.5%
5	1hs/5ac to 1hs/2ac	7,213	26.8%	8,431	9.3%
6	1hs/2ac to 3hs/1ac	8,552	31.8%	3,644	4.0%
7	GT 3hs/1ac	3,336	12.4%	206	0.2%
	Total	**26,916**	**100.0%**	**90,613**	**100.0%**

Risk is a Science

Conditions adjacent to and surrounding WUI areas must be assessed to determine potential wildfire risks to communities, landowners, and their values. SouthWRAP provides the science which enables us to assess our **pre-fire** exposure risks and express them in terms of probabilities and consequences. Application of SouthWRAP technologies in the Community Wildfire Protection Planning process provides tools for identifying WUI **wildfire hazard areas**. Results of risk assessments can be used to identify and define mitigation project areas and help prioritize county actions such as community outreach and engagement, hazardous fuel reduction, and tactical analyses to determine how wildland firefighters safely attack WUI fires.

Use of Technologies

The Southern Wildfire Risk Assessment Portal Summary Report for Bradford County provides a consistent, comparable set of scientific results to be used as a foundation for county-wide wildfire hazard mitigation and preparedness planning. See the report in **Attachment A.**

User-Defined Wildfire Hazard Areas and Mitigation Project Areas

Wildfire Hazard Mitigation [590.01 F.S.] "The application of prescribed burning or other alternative fuel treatment methods to reduce vegetative fuels as a hazard. This service is provided on an area that is determined to be a **wildfire hazard area** by the FFS." For purposes of this CWPP, **FFS wildfire hazard**

areas are classified as WUI Community Protection Zones/CPZs. As indicated by the table above, 97% of county's WUI population live in CPZs.

By use of the Professional Viewer and Community Assessor Applications of the SouthWRAP Portal, a WUI CPZ is defined and summarized in relation to wildfire information for the area. A detailed Risk Summary Report is generated using a set of pre-defined map products for the WUI CPZ. These support tools are available for homeowners, land owners, elected officials, local fire agencies and state/federal fire management agencies to utilize in their determinations concerning key priorities for planning and wildland fire management issues. These issues include home safety, firefighter safety, wildfire response, and reduction of firefighting costs. Each product in this report is accompanied by a general description, table, chart and/or map.

A list of available SouthWRAP products in this report is provided in the following table:

SouthWRAP Product	Description
Wildland Urban Interface (WUI)	Depicts where humans and their structures meet or intermix with wildland fuel
WUI Risk Index	Represents a rating of the potential impact of a wildfire on people and their homes*
Community Protection Zones	Represents those areas designated as primary and secondary priorities for community protection planning
Burn Probability	Probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts
Wildfire Ignition Density	Likelihood of a wildfire starting based on historical ignition patterns
Characteristic Rate of Spread	Represents the speed with which a fire moves in a horizontal direction across the landscape
Characteristic Flame Length	Represents the distance between the tip and base of the flame
Fire intensity Scale	Quantifies the potential fire intensity for an area by orders of magnitude
Fire Type – Extreme	Represents the potential fire type (surface or canopy) under extreme percentile weather conditions
Surface Fuels	Contains the parameters needed to compute surface fire behavior characteristics
Dozer Operability Rating	Level of difficulty to operate a dozer in an area based on limitations associated with slope, bodies of water, and vegetation type

* The key WUI input reflects housing density data (houses per acre). The location of people living in the WUI and rural areas is key information for defining potential wildfire impacts upon people and their homes.

Bradford County WUI Community Protection Zones/CPZs– Where People Live

The Healthy Forests Restoration Act of 2003 defined at-risk communities as interface communities (WUI CPZs) within the *vicinity* of Federal and other forest lands that are at risk from wildfire.
The identification of these WUI CPZs in the Bradford County Community Wildfire Protection Plan gives them priority for federal funding and state assistance to implement pre-fire wildfire risk reduction projects, such as programs designed to reduce the ignitability of private structures, landscapes and community facilities.

The Florida Forest Service maintains data in the Southern Wildfire Risk Assessment Portal which indicates each WUI CPZs' wildland and structural vulnerabilities to both direct fire and ember exposure.

County CPZs	Acreage	Percent
Primary	37,369	45.5%
Secondary	44,814	54.5%
Total	82,182	100%

Primary CPZs: represent those areas considered the highest priority for mitigation planning, wildfire prevention, and protection activities (Risk Assessment, Hazardous Fuel Reduction, Firewise and/or Ready Set Go!). The Primary CPZs within Bradford County are listed below. They are:

Braggs Branch pop 41 acres 74
Brooker 335 256
Crosby Lake Subdivision 116 129
Graham 156 212
Hampton 637 651
Hampton Beach 37 56
Heilbronn Springs 1001 2792
Lakewood 52 185 A Firewise Community
Lincoln City 47 84
New River 84 160
Pleasant Grove 714 520
Prison Gate 167 220
Sampson City (incorporates Sampson West)
Seminole Ridge in Melrose 248 162
Theressa 388 398

Secondary CPZs: these boundaries inherently incorporate fire behavior conditions and ember exposure. Inclusive are WUI buffers of 1.5 miles around actual places where people live as well as significant infrastructure, utility corridors and major evacuation routes.

Other areas to be considered based on historical data and local experience. Vacation homes and hunt camps might pose another area of risk. These "seasonal" residents may not be familiar with the local

WUI threat and may bring with them inaccurate notions of fire and local operational/response capabilities.

Using the SouthWRAP Professional Viewer, WUI CPZs shape files can be mapped and Summary Reports generated which provide an array of maps such as Where People Live, Wildland Urban Interface, WUI Risk Index, the Community Protection Zones, Burn Probability, Wildfire Behavior Outputs, Surface Fuels and Dozer Operability Rating. Maps of the named WUI CPZs would be contained in **Attachment A.**

A Wildfire Mitigation Specialist is assigned to each of the Florida Forest Service (FFS) field units. Through the total Florida Wildfire Hazard Mitigation Program, the mitigation specialist assists in all community planning and provides guidance for the application of Firewise principles in pre-fire action plans.

Critical Facilities/Infrastructure Vulnerabilities

The Bradford County Emergency Management Division develops and maintains a protected asset inventory which reflects which facilities are within CPZ. The Bradford County Fire Chief will develop a plan to eliminate wildfire hazards that threaten these facilities. This determination can be made according to the latest WUI Risk Index map included in this plan.

Wildfire History

Fire on State and Private Lands

Wildfires occur in Florida throughout the entire year. Typically, North Florida, including Bradford County, sees the greatest number of wildfires occurring during the months of April, May and June. During the 10-year period January 1, 2009 through December 31, 2018 Bradford County saw a total of 308 wildfires that burned 6945 acres.

One fire in particular, the Dairy Road Fire of 2007, had a heavy impact on Bradford County and the resources of all agencies involved in its suppression. This fire consumed 14,626 acres. Affected were 23 owners. 13,164 acres of those burned were dense pine, commercial forests. 4 structures were lost. It should be noted that the acreage burned in this fire skews the 10-year acreage totals and average.

The cause of the Dairy Road Fire was "incendiary", defined as the reckless or intentional burning of lands. Still today, at 21%, "Incendiary" is a primary cause of wildfires in Bradford County.
Risk analysis for wildfires considers fuel types and density, fire history, and dwellings within the area. Significant wildfire events in Bradford County have occurred in 1989, 1992, 1993, 2004, 2007 and 2012.

Bradford County Wildfires/Acres Burned: 5-Year (Source: Florida Forest Service)

2016 27/113
2017 29/599
2018 17/16
2019 25/53.9

2020 40/73.1
Total 138/854.5

Bradford County Fires by Type of Acres Burned

01/01/2016 through 12/31/2020

County	Acres				Fires	Total Acres
	Limited Action	Commercial Forest	Non-Commercial Forest	Non-Forest		
Bradford	8.5	372.9	76.4	96.7	138	846.0

Bradford County Wildfires by Cause

01/01/2016 through 12/31/2020

Cause	Fires	Percent	Acres	Percent
Campfire	2	1.45	0.8	0.09
Children	3	2.17	2.6	0.30
Debris Burn*	0	0	0.0	0
Debris Burn--Auth--Broadcast/Acreage	2	1.45	1.3	0.15
Debris Burn--Auth--Piles	7	5.07	39.1	4.58
Debris Burn--Auth--Yard Trash	15	10.87	30.8	3.60
Debris Burn--Nonauth--Broadcast/Acreage	3	2.17	1.9	0.22
Debris Burn--Nonauth--Piles	8	5.80	12.8	1.50
Debris Burn--Nonauth--Yard Trash	16	11.59	12.0	1.40

Equipment use*	0	0	0.0	0
Equipment--Agriculture	12	8.70	18.0	2.11
Equipment--Logging	0	0	0.0	0
Equipment--Recreation	2	1.45	0.6	0.07
Equipment--Transportation	4	2.90	26.9	3.15
Incendiary	29	21.01	269.6	31.55
Lightning	12	8.70	403.9	47.27
Miscellaneous --Breakout	0	0	0.0	0
Miscellaneous --Electric Fence	0	0	0.0	0
Miscellaneous --Fireworks	0	0	0.0	0
Miscellaneous --Power Lines	14	10.14	21.2	2.48
Miscellaneous --Structure	0	0	0.0	0
Miscellaneous--Other	3	2.17	2.0	0.23
Railroad	3	2.17	7.7	0.90
Smoking	2	1.45	0.3	0.04
Unknown	1	0.72	3.0	0.35
Total	138		854.5	

During the five-year period shown, lightning accounted for 9% of the total wildfires. In Bradford County then, 91% of the wildfires were human caused. Of the human-caused wildfires, the primary causes were Escaped Debris Burning at 35% (and of that, 15% was escaped Yard Trash) and Incendiary/Arson at 21%.

5. Local Capacity and Current Wildfire Protection Activities

Organizations and Resources

Local Emergency Management:

Bradford County's Emergency Management Division is under the Bradford County Sheriff's Office. The Emergency Management Director is a signatory of this document.

Bradford County Emergency Operations Center:

Bradford County EOC
945-B N. Temple Ave
Starke, Florida 32091
Phone 904 966-6336.

Alert Bradford: a high-speed mass notification system. Used only in emergency situations, the system delivers emergency messages to phone landlines, mobile devices and e mail. Residents can register for notifications by contacting the Bradford County Emergency Management.

Local Disaster Support Agencies

Agency	Address	Phone
American Red Cross Northeast Florida Chapter	751 Riverside Avenue Jacksonville, FL 32204	904-358-8091

Local Fire Services

Agency	Address	Phone
Bradford County Fire Rescue	945 North Temple Avenue Starke, FL 32091	904-966-6911
Starke Fire Rescue	105 East Jackson Street Starke, FL 32091	904-964-7110

County Owned Wildland Firefighting Equipment

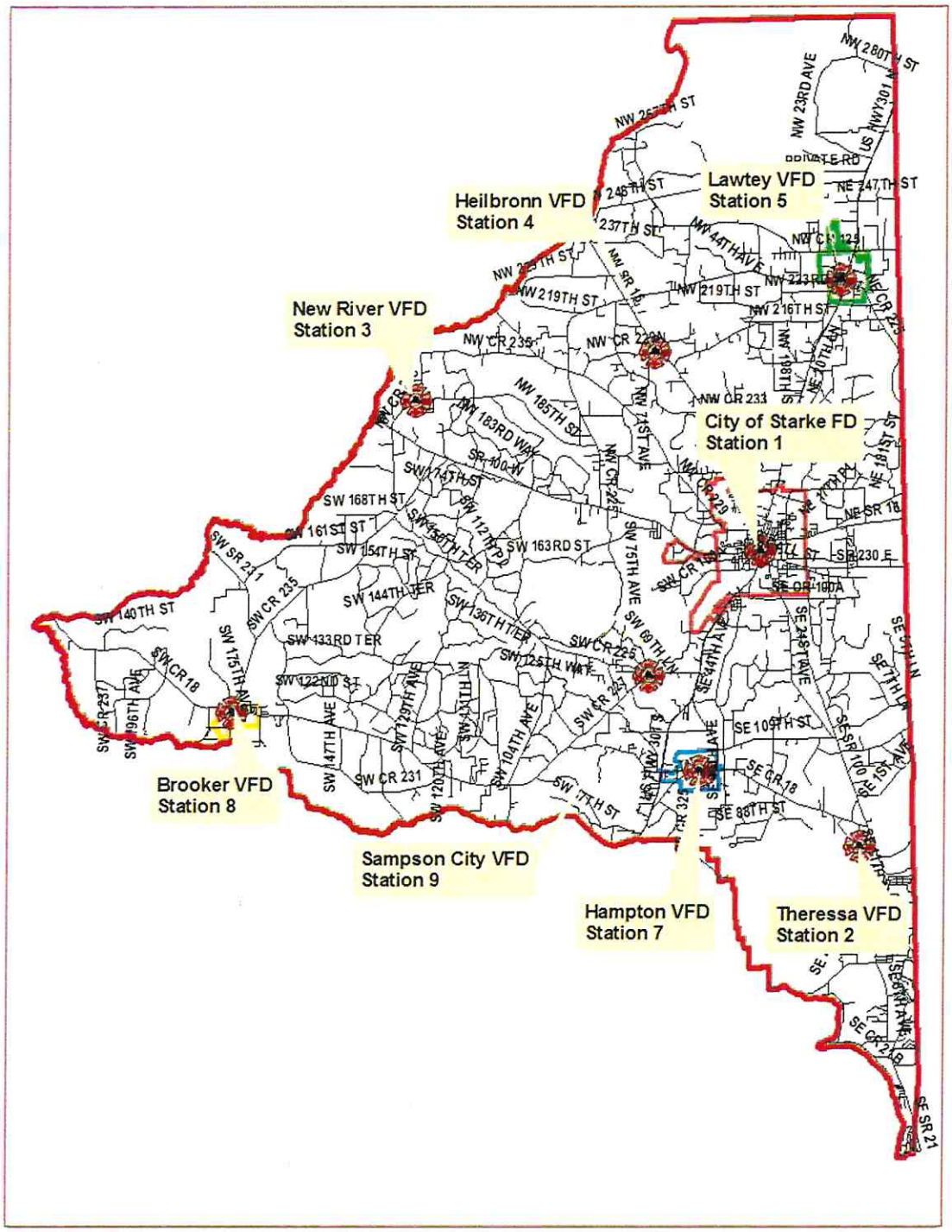
Brush Trucks: Bradford County currently possess two (2) 300-gallon brush trucks and three (3) 400-gallon brush trucks

Tender Trucks: Bradford County currently possess two (2) 3,000-gallon tender trucks, four (4) 2,500 gallons tender trucks, one (1) 1,500-gallon tender truck and one (1) 1,000-gallon tender truck.

Bradford County has **Automatic Aid Agreements** for wildland fires with **Clay**, **Putnam** and **Union** counties and **Mutual Aid Agreements** for wildland fires with **Alachua** and **Baker** counties.

The 2019-2020 Operational Plan between the Florida Forest Service and Bradford County Fire Services: The purpose of this plan is to outline the framework of both administration and operational functions for the Florida Forest Service (FFS) and Bradford County as it relates to outdoor burning, wildland fires, and other emergencies which may require interaction between the two departments. Signatory to the Plan are the FFS Forest Area Supervisor, the County Emergency Management Director, and the County Fire Chief.

The following map shows all fire stations available within Bradford County:



Florida Forest Service, Suwannee Forestry Center Work Stations

New River Forestry Station	11367 SR 100 W Lake Butler, FL 32054	386-496-3311

FFS Wildland Fire Fighting Equipment includes:

New River Forestry Station - 2 Type II Transports; 1 Type I Transport; 2 Type II Dozer/Plow units; 1 Heavy Dozer; 1 Type VI Engine with 300 Gal. Tank and pump

Lake Butler EMS - 2 Type II Transports; 2 Type II Dozer/Plows; 1 Type VI Engine with 250 Gal. Tank and Pump

Santa Fe Tower Not staffed	13000 S US HWY 301 Hampton, FL 32087	904 259-4688
Louis Hill Lookout Tower Not Staffed	27539 N US301 Lawtey, FL 32058	904-964-5436
Fixed Wing Aircraft	**Assigned Pilot** Lake City Airport Hanger B-1	386-243-6243

The Florida Forest Service (FFS) uses 17 single-engine patrol aircraft to provide aerial fire detection and intelligence to firefighters. The FFS aircraft pilot assigned to the Suwannee Forestry Center is a Certified Wildland Firefighter. When engaged in wildfire suppression the pilot has positive radio contact with FFS ground resources, the local fire department, emergency responders and law enforcement. Medium and light duty helicopters are also close by for added observation, to transport firefighters and to apply counter-fire water and fire retardants.

U.S. Forest Service Work Centers

Osceola National Forest	Osceola Ranger District 24874 US HWY 90 Olustee, FL 32072	386-752-2577

US FS Wildland Fire Fighting Equipment includes: 3 TYPE II DOZER/PLOWS and 2 TYPE VI Engines

Air Tanker Base	Lake City Airport	386-758-9078

The Air Tanker Base is located at the Lake City Airport. Air tankers are positioned at this base when conditions in the area warrant. Turn-around time for a single air tanker to anywhere in the county is approximately one retardant drop every 20 minutes.

The Fire Adapted Community (FAC) – the next step in wildfire preparedness

A FAC is a human community consisting of informed and prepared citizens collaboratively planning and taking action to safely coexist with wildland fire. Supported by local, state and federal agencies, the FAC uses tools to prepare its homes, neighborhoods, businesses, infrastructure, natural areas and surrounding landscape for wildfire. See www.fireadapted.org

At a minimum, the Bradford County's FAC actions should include the following plans and programs:

A Community Wildfire Protection Plan (CWPP). A collaborative plan created by the fire department, state and local forestry staff, land managers, community leaders, and the public. The planning process maps values at risk, including neighborhoods, businesses, infrastructure, and natural areas. Proposed actions to mitigate their vulnerabilities to wildfire hazards and reduce risk, include prescribed burning, the application of Firewise principles or other measures that adapt a community to fire. See http://www.forestsandrangelands.gov/communities/cwpp.shtml

Firewise Communities/USA. As is the case with Lakewood Firewise Community, this program educates homeowners regarding the proactive steps which can be taken to create defensible space to reduce wildfire threat to their homes and neighborhoods. Selecting from the list of WUI Community Protection Zones above, the county fire agency and the FFS should perform risk assessments in communities to determine areas most-in-need of Firewise activities. Once the neighborhood has met specific criteria, they can apply for national Firewise recognition. See www.firewise.org

Ready, Set, Go! The program educates both the public and emergency services agencies in preparing a community for wildfire. It engages local fire departments who deliver the Fire Adapted Communities message using Firewise principles, wildfire situational awareness, and with assistance from law enforcement, safe evacuation planning and execution. See www.wildlandfirersg.org and **Attachment A** for map of Bradford County Evacuation Routes.

Notes: 1. ISOs, in their Community Rating System (CRS), are considering the existence of Fire Prevention activities such as FAC, CWPPs, Firewise and Ready Set Go as mitigating factors worthy of credits in their reviews. 2. The U.S. Fire Administration recommends everyone should have a comprehensive home fire protection plan that includes smoke alarms, fire sprinklers, and practicing a fire escape plan.

Community Development in the Wildland Urban Interface

As populations increase and development continues to push into the Wildland Urban Interface (WUI), it will be necessary to take active steps to reduce the wildfire risk to Bradford County residents. In identified Community Protection Zones (CPZ), wildfire hazard mitigation through land development regulations, vegetative fuel reduction, and on-going public education programs, serve to greatly reduce the potential for loss of human life and property from wildfire. Inclusive would be WUI buffers of 1.5 miles around actual places where people live, significant infrastructure as well as, utility corridors and major evacuation routes.

Where the SouthWRAP Summary Report/ WUI Risk Index rating indicates a potential impact of wildfire on people and their homes, the construction techniques for new developments and residential structures should be in conformance with: The Florida Fire Prevention Code, Chapter 17 Wildland Urban Interface, and The NFPA codes 1141, 1142, 1143 and 1144, 1906,1977 which are adopted by reference in the Florida Fire Prevention Code.

These standards provide a methodology for assessing wildland fire ignition hazards around existing structures, residential developments, subdivisions and improved property or planned property improvements that will be located in a wildland urban interface area. Also provided are minimum requirements for new construction and fuel modification to reduce the potential of structure ignition from wildland fires.

Existing structures can be retrofitted to meet these Standards through the implementation of either Firewise principles and the adoption of appropriate language in the building codes. Permits for structure improvement or repair should require adherence to these principles and the above standards.

Developers wishing to obtain a permit to build in a WUI CPZ should be required to create a Wildland Fire Hazard Mitigation Plan that addresses fuel modification within the structure ignition zone. Issues to be addressed: landscaping for defensible space, ignition-resistant construction, hazardous fuel reduction, water supply, access roads, fire protection and plan maintenance.

Vacant properties and land preserves should be maintained in accordance with acceptable fire prevention practices. Disincentives to the maintenance of such properties should be replaced with an incentive system to facilitate the removal of dense, hazardous vegetation.
County owned property and critical infrastructure should have active, on-going mitigation action plans to help reduce the liability for damage caused by wildfires coming off county owned properties. Inclusive would be WUI buffers of 1.5 miles around significant infrastructure as well as actual places where people live, utility corridors and major evacuation routes.

The Local Mitigation Strategy Plan Description

The LMS is at the heart of community hazard planning and is considered to be the minimum level of strategic hazard planning in most communities. The Bradford County LMS Committee/Work Group was established to make the population, neighborhoods, businesses, institutions and critical facilities of the community more resilient to the impacts of future disasters.

The Local Mitigation Strategy, the Bradford County Comprehensive Plan and LDRs should address issues connected to wildland fire activity, prevention, mitigation and suppression.
"Wildfire Mitigation Strategies fall into three major categories:

1. Fuel reduction activities in the Wildland-Urban Interface
2. Activities to educate homeowners about wildfires and the need for vegetation management programs such as prescribed fire.

3. Development and retrofit strategies incorporating Firewise construction and landscaping techniques...

Additionally, Bradford County should consider as mitigation strategies:

1. Implement programs to increase public awareness of prescribed burning and require management plans for conservation easements that address the reduction of wildfire fuels.
2. Consider more fully participating in Community Wildfire Protection Plans (CWPP) and the Firewise Community USA recognition program to reduce risks within the Wildland-Urban Interface.
3. Issue notices of proximity to be recorded in the deed or rental agreement on all properties adjacent to wildland areas where prescribed fire is commonly used as a land management technique. "

When updating the Local Mitigation Strategy (LMS), Bradford County can consider the following wildfire mitigation categories when prioritizing projects for Pre-Fire Hazard Mitigation Grant Program (HMGP) eligibility: Defensible Space for Wildfires, Application of Ignition-Resistant Construction and Hazardous Fuel Reduction. For detailed guidance on FEMA Mitigation Policy MRR-2-0801 visit www.fema.gov

Local Mitigation Strategy (LMS) Working Group: Bradford County has an active and strong Local Mitigation Strategy (LMS) program. Meetings are very well attended with active participation and dialog being the norm. The Florida Forest Service representative and the Bradford Fire Coordinator are the primary members with wildfire expertise, but given the wildfire history in the county, most members have a strong appreciation of the risks. The Bradford County Building and Zoning Department plays a significant role in the Local Mitigation Strategy Working Group as well as in the CWPP process. The members of the LMS working group are listed above in the Planning Process section.

Wildland Fuel Management Capabilities

Best Management Practices

The Florida Forest Service shall promote natural resource management and fuel reduction through the use of prescribed fire and other fuel reduction measures.

The resources of The Florida Forest Service (FFS) are available to the County. The FFS Regional Wildfire Hazard Mitigation Team actively seeks opportunities to support local residents and communities with their hazardous fuels reduction programs on nearby woodlands. Inclusive would be WUI buffers of 1.5 miles around actual places where people live, as well as significant infrastructure, utility corridors and major evacuation routes.

Open Burning

The Florida Forest Service (FFS), other public agencies, individuals and land managers certified and authorized to do so by the FFS, have active Prescribed Fire and Hazardous Fuel Reduction programs within their respective forests and rangelands. Results are best illustrated by the following fire management information:

Burning Authorizations Summary

1/1/2016 through 12/31/2020

Bradford County

Burn Type	Authorized Fires	Authorized Acres	Authorized Piles
Agricultural--Pasture	229	3,623	65
Agricultural--Range management	9	80	12
Agricultural--Stubble (post-harvest)	15	155	30
Agricultural--Sugarcane	0	0	0
Agriculture--Citrus	0	0	0
Land clearing--Non-residential--With ACI	112	0	391
Land clearing--Non-residential--Without ACI	927	0	2,457
Land clearing--Residential--With ACI	14	0	28
Land clearing--Residential--Without ACI	772	42	1,700
Silvicultural--Disease control	8	220	1
Silvicultural--Ecological	2	150	0
Silvicultural--Hazard removal	118	3,289	11
Silvicultural--Other	0	0	0
Silvicultural--Prior to seed	1	10	0
Silvicultural--Site preparation	70	474	224
Silvicultural--Wildlife	30	2,948	1

Total	2,307	10,991	4,920

Experience Implementing Wildfire Protection Programs

Operations Plan Between the FFS and Bradford County

The Florida Forest Service has the primary responsibility for prevention, detection, and suppression of wildfires wherever they may occur. The Florida Forest Service shall provide leadership and direction in the evaluation, coordination, allocation of resources, and monitoring of wildland fire management and protection. The purpose of this plan is to outline the framework of both administration and operational functions for the Florida Forest Service (FFS) and Bradford County as they relate to outdoor burning, wildland fires, and other emergencies which may require interaction between the two departments.

Cooperative Agreements with Florida Forest Service: Fire Protection Assessment
Per Section 125.27, Florida Statutes:

The board of county commissioners of each county in this state shall enter into agreements with the Florida Forest Service for the establishment and maintenance of countywide fire protection of all forest and wild lands within said county. Each county shall, under the terms of such agreements, be assessed each fiscal year, as its share of the cost of providing such fire protection, a sum in dollars equal to the total forest and wild land acreage of the county, as determined by the Florida Forest Service.

The agreement provides that the county will budget funds annually to pay its share of the cost of providing fire protection. The county share paid to the FFS for 2018-2019, is $15,040.84.

6. Goals and Objectives

The following Goals are a starting point for long-term protection *and* the application of safe procedures and practices at the Wildland Urban Interface. This foundation should be built upon over time.

Goal 1: Reassess Wildland /Urban Interface areas of Bradford County

Goal 2: Enhance Bradford Fire Department Wildland Firefighting Capabilities

Goal 3: Maintain and Enhance Community Outreach and Engagement in Wildfire and Preparedness Activities

Goal 4: Based upon Risk Summary Reports, designate County WUI Community Protection Zones which represent those areas considered the highest priority for wildfire hazard mitigation, wildfire prevention, and protection activities

Goal 5: Integrate wildfire hazard mitigation and wildfire risk reduction into the comprehensive and land development planning process

Goal 6: Adopt and implement planning and zoning measures to reduce risk to communities from wildfire

Goal 7: Evaluate and update CWPP

7. Implementation and Plan Maintenance

The CWPP is to be implemented as resources become available to incrementally mitigate community wildfire vulnerability. An action plan has been collaboratively developed by the CWPP Working Group to guide implementation efforts over the next 5 years. An action as listed in this Plan is a strategy, project, or program that reduces wildfire vulnerability in the community. Interagency and public-private partnerships in CWPP implementation are encouraged.

Potential Funding Sources

Project funding and/or local and state agency staff time should continually be sought in order to implement the CWPP Action Plan. The CWPP Working Group should meet annually to discuss budget requests among the partner agencies and determine potential grant opportunities that can be applied for during the year. Descriptions of major federal and state funding sources applicable to wildfire mitigation and response improvements are available in the State of Florida State Hazard Mitigation Plan in the Wildfire Hazard Mitigation Annex, July 2011.

Plan Maintenance and Evaluation

The CWPP should be updated on an annual basis to ensure information is current, monitor progress of the Plan, and alter Plan content as necessary. Every 5 years the plan should receive a major update in which the vulnerability assessment is updated, and the action plan is evaluated for its effectiveness over the past 5 years and its suitability for the next 5 years. A resource for evaluating the plan is the *Community Wildfire Protection Plan Evaluation Guide* prepared by the University of Oregon Resource Innovations Institute for a Sustainable Environment in 2008. The FFS has adapted evaluation questions from this resource to guide Florida communities in assessing the CWPP during a major plan update. The organizational representation from the Working Group should be reconvened, at a minimum, to conduct the major update. The 5-year update should ideally occur prior to or simultaneously with the 5-year update to the Local Mitigation Strategy. Only the 5-year update requires new plan approval signatures.

3. Action Plan

This section describes implementation strategies or actions in Bradford County that will advance FAC and the goals and objectives of this CWPP. These pre-fire actions are organized by mitigation category: 1) wildland fuel management, 2) community outreach and education, 3) Firewise building retrofit and landscaping, 4) policy and regulation recommendations, and 5) wildland fire response improvements.

The following action recommendations are listed in priority order within each mitigation category based upon ability to most significantly decrease wildfire vulnerability in the community.

As part of the Florida Wildfire Hazard Mitigation Program, the FFS assists in all community planning and provides guidance for the application of Firewise principles in pre-fire action plans.

Wildland Fuel Management

Hazardous Fuel Reduction projects help reduce the size and intensity of wildland fires and also decrease the likelihood that a wildfire will start in an area. These actions can increase the safety of people and property while reducing response and suppression costs.

Fuel management treatments designed to reduce wildfire risk are temporary. In most cases reduce the hazard in the treated area for three to five years. Periodic management is required on a regular basis to maintain fuels at an acceptable level to reduce wildfire risk. The Florida Forest Service will work with commercial land management agencies and private landowners to maintain individual fuel management goals. Inclusive would be WUI buffers of 1.5 miles around actual places where people live, as well as significant infrastructure, utility corridors and major evacuation routes.

Various fuel management methods which can be used to achieve site-specific benefits. These Pre-Fire Hazardous Fuel Reduction methods can include:

- Prescribed burning
- Mechanical treatment (e.g., mowing, mulching, disking, fire line plowing, and chopping)
- Chemical treatment (herbicide application)
- Biomass removal (pine straw harvesting, vegetation or tree thinning, and timber harvesting).

Wildland Fuel Management Actions

Action	Lead Agency	Timeframe	Potential Funding
Evaluate WUI Parameters and Criteria and Redraw WUI according to the SouthWRAP Risk Summary Report	Bradford Fire Rescue	By next update	In-kind services
Study landscape disturbances and development patterns to identify areas in need of wildfire hazard mitigation and risk reduction (example: recent changes to land use and roadways resulting from 301 by-pass)	Bradford Fire Rescue	On-going	In-kind services
Perform community outreach, mitigation/fuel reduction as needed. See Community Outreach below for suggested elements of study and discussion	Bradford Fire Rescue and Bradford Emergency Management	On-going	In-kind services
Renew, as needed, fire control line around Lakewood Firewise Community and future Firewise communities	Bradford Fire Rescue	By next update	In-kind services

Community Outreach and Engagement

Outreach and Fire Adapted Communities initiatives are designed to raise awareness and improve community knowledge of wildfire risk and mitigation strategies. Outreach programs can influence attitudes and opinions and lead to behavioral changes, such as homeowners' participation in fuel management strategies. Wildfire preparedness programs are designed to raise awareness and improve both homeowner and community-level knowledge of wildfire risk reduction needs and practices.

Suggested elements of study and discussion should include:

Access: This is how you and emergency services get in and out of your community.

Built Environment: The maintenance of a home, where it is built, and the way it is built can improve the odds of a home surviving a wildfire.

Community Protection: Three ways to improve your community's protection are a water supply, fuel breaks and community safe areas.

Defensible Space: This is the area along access ways and between a home and an oncoming wildfire where the vegetation was managed to reduce the wildfire threat and allow firefighters to safely defend the home.

Evacuation: Residents should prepare for evacuation long before a wildfire occurs.

As good examples of Fire Adapted Communities, actions implemented will include engagement programs such as Florida Firewise Communities and IAFC Ready Set Go (RSG).

Designating specific WUI CPZs allows concentration of effort toward those neighborhoods which need emphasis on hazard mitigation and wildfire protection. Community Firewise presentations should be scheduled in selected communities. Bradford County Fire Rescue will take lead for community designation and event scheduling. The Florida Forest Service will assist in all presentations.

Firewise Communities

The Lakewood Community in Starke off West State Road 100, in the central portion of the county, has been a recognized Firewise Community USA since 2003. Lakewood is a small neighborhood in central Bradford County Florida, located within the corporate limits of the City of Starke. The community has a population of 51 within 24 households. There are 174.73 acres of land that make up Lakewood. Approximately 100 of those acres are planted in pines. The property has a 500+ acre lake to its west and several large tracts of industrial timberlands totaling more than 1000 acres to the north, south and east. Since inception in 2003, the community has been loyal and robust in its annual cleanup activities. Lakewood Community has been partners with the City of Starke and hydrants have been installed according to code. Lake Community has also worked with DOT and developed and alternate egress in case of emergencies.

Projects that reduce the ignitability of community facilities and private structures decrease community wildfire vulnerability and provide Firewise models that can assist in community awareness. Grant funding, such as the FEMA Hazard Mitigation Grant Program, can be sought to address defensible space for wildfires, hazardous fuel reduction, and application of ignition-resistant construction for public and private buildings in **wildfire hazard areas**, called Community Protection Zones (CPZs).

Other project examples could include public-private partnerships supplying Firewise landscaping materials while volunteer programs could assist in making Firewise improvements to structure ignition zones. This step is the logical progression of the Firewise effort for WUI CPZs identified above.

The Florida Forest Service will support all Firewise activities, such as cleanup/workdays. Resources available include the FFS Region 2 Firewise Equipment Trailer, wood chipper, and the Regional Mitigation Team.

Firewise Program and Landscaping Actions

Action	Lead Agency	Timeframe	Potential Funding
Continue Lakewood Firewise activities and annual recognition renewals	Lakewood Residents and FFS	On-Going	In-Kind services and volunteer time
Lakewood recognized by NFPA for 15 continuous years as a Firewise Community	Resident Leader	2018	Done
Foster creation of 2 more Firewise Communities in the county See Community Outreach above.	County Fire Coordinator and FFS	2019-2021	FFS

Policy and Regulation Recommendations

Updating local government plans, policies, and regulations is another effective way to advance wildfire mitigation goals. By modifying requirements for development, high risk wildfire zones can be avoided or new development can be proactively designed to reduce wildfire risk and reduce structure ignitability and therefore make living and working in these areas safer.

County Building and Zoning Department should review and update Land Development Regulations periodically to properly adjust them to the developmental environment. Florida Forest Service will support with materials and presentations as required.

Wildland/Urban Interface designations found in the FLFRAS are overly confining and could result in missed recovery opportunities.

By virtue of this CWPP, the county has the authority to reapportion the WUI as it deems appropriate and will now take the lead in designating new WUI boundaries.

Policy and Regulation Actions

Action	Lead Agency	Timeframe	Potential Funding
Per the current LMS, "issue notices of proximity to be recorded in the deed or rental agreement on all properties adjacent to wildland areas where prescribed fire is commonly used as a land management technique."	County Fire Rescue	N/A	In-kind services
Address wildfire hazard mitigation in county Comp Plan and Land Development Regulations	County Fire Rescue and Emergency Management	N/A	In-kind services
Adopt and implement planning and zoning measures to reduce risk to communities from wildfire (Seek the incorporation and application of Fire Adapted Communities (FAC)/Firewise principles of ignition-resistant construction,			

defensible space/landscape design and hazardous fuel reduction)			
Conduct monitoring and evaluation of CWPP progress at least annually to review goals and update plan as needed or as new resources and information becomes available	County Fire Rescue and Emergency Management	On-going	In-kind services

Wildland Fire Response Improvements

Wildfire Response Key Issues

Firefighters need safe access along roads to reach the wildfire and access water resources. (Emergency response vehicles may need to access a wildfire area at the same time evacuation traffic is leaving the area.)

Property addresses are often not visible, and a road name may occur more than once in a jurisdiction. (Visible street signs and property addresses provide firefighters with critical response and location information.)
Wildland fuels and landscape vegetation surrounding structures and along roads can place firefighters in extremely hazardous situations.

Water resources for wildfire suppression are vital and need to be accessible.

The lack of attention to or the management and mitigation of the above issues renders them hazards to the safety of residents and wildland firefighters.

Training and NIMS Compliance for Volunteer Firefighters

Up to date training for firefighters is an ongoing process and will continue to be a priority in Bradford County. Currently all wildland firefighters are required take a series of wildland fire suppression courses including S-130 Firefighter Training, S-190 Introduction to Wildland Fire Behavior and L-180 Human Factors on the Fire Line. Volunteer Firefighters have also been certified as Squad Boss, Engine Boss, or Strike Team Leader. All firefighters have taken a series of Incident Command System (ICS) courses including I-100, I-200, IS-700, and IS-800. Some have continued with advanced ICS training. This activity should be pursued to give all firefighters complete wildfire training and tactical knowledge.

In reevaluating firefighting capabilities of the County, up-to-date information provided by the appropriate Insurance Service Organization (ISO) about needed changes is used to examine the adoption of fire prevention codes, fire prevention and fire investigation programs, Community Base Maps, fire-district boundaries, automatic-aid agreements, fire station locations, fuel loads, road networks and access to water supplies. In aligning the capabilities of the County with the applicable elements of the ISO Fire Suppression Rating Schedule, the County is able to maintain the desired Public Protection Classification.

Wildland Fire Response Improvement Actions

Action	Lead Agency	Timeframe	Potential Funding
Obtain training from all possible sources	Emergency Management	On-going	FDEM
Exercise wildland fire response	County Fire Rescue	On-going	TBD
Join the IAFC Ready, Set, Go program	County Fire Rescue	TBD	N/A
1-Install 2 20,000-gallon storage tanks for communities at Heilbron Springs VFD-Station 40 and Sampson City VFD-Station 90 to augment rural water supply for fire extinguishment	County Fire Rescue		Completed 2020-2021
2-Coordinate with the Florida Forest Service and landowners to identify and secure alternate entry points for wildfire response in area of SR233 bypass B-Secure access to gates at retention ponds and install dry hydrants to draft water supply for fire suppression	County Fire Rescue	On-going	

Appendix A: CWPP Meetings

July 8, 2013 - A preliminary meeting of the core plan developers was held to introduce Fire Adapted Communities, the CWPP process and to discuss the future direction. The meeting took place in the offices of the Emergency Operations Center (EOC). Attending where the County Emergency Management Director and County Fire Coordinator, the County Planner, Florida Forest Service (FFS) Forest Area Supervisor (FAS) for Bradford County and the FFS Suwannee Forestry Center Wildfire Mitigation Specialist.

After the FAS gave a recap of major wildfires which have impacted Bradford County, the EM Director, recounted the CWPP and Firewise programs as they were developed in the Lakewood Firewise Community and the Lake Region. Wildfire Mitigation Specialist then presented an overview of the CWPP process and related that the CWPP, as an extension of the County Local Mitigation Strategy, is intended to provide a more focused view of Wildfire Hazard Mitigation within the county as a whole. The presentations and subsequent discussions resulted in strong support of CWPP development. This was a successful meeting. The core committee will move forward with CWPP development. A CWPP draft template was left with the County Planner.

Attendees: Doc Bloodworth (FFS), Brian Johns (BCEM), William Warren (FAS) and Michael Heeder (BCEM).

July 29, 2013 - Fire Council Meeting – FFS Wildfire Mitigation Specialist gave a presentation of the common goals of Fire Adapted Communities, CWPPs and the community outreach elements of Firewise Communities USA and the IAFC Ready Set Go programs. Once again, local experiences with both the Lake Region CWPP and the Lakewood Firewise Community were discussed. Pointed out also was that, through a county-wide CWPP, many cross-cutting objectives can be achieved for all of Bradford County's wildfire hazard mitigation programs. From this point, continued communications was urged between the FFS and the County EOC staff.

Attendees: Doc Bloodworth (FFS), Brian Johns (BCEM), Benjamin Bennett (BCEM), Chip Ware (Bradford County Fire Marshall), Tom Rowe (City of Starke Fire Rescue Chief), Michael Heeder (BCEM) and all Bradford County Volunteer Fire Chiefs.

NOTE: In the interim, the County Planner, EOC staff and the FFS Wildfire Mitigation Specialist began the process of mining specific Bradford County information and data from existing community profile documents, the FFS Fire Management Information System and the Local Mitigation Strategy. With these results and continual telephone and e mail exchanges, the County Planner, EOC staff and the FFS Wildfire Mitigation Specialist were able to proceed and give enough substance to the draft template to make it identifiable with Bradford County. (This type communications has continued throughout the entire process and has, at each review point, given the working-group a progressive and understandable document to review.)

October 8 and October 28, 2013 – Following numerous telephone and e mail communications, the EOC Director and County Fire Coordinator, EOC staff and the FFS Wildfire Mitigation Specialist had several sit-down meetings. It was agreed that much of the work ahead is expected to entail numerous details and the digesting of data provided by the new Southern Wildfire Risk Assessment Portal web site and a Risk Summary Report for Bradford County. Many new maps will need to be viewed, understood, analyzed and tailored for inclusion into either the body of the CWPP or as Appendices if needed.

As per the "Note" above, the process will continue as it has and entail the accumulation of local data and maps for the final CWPP. After that, the CWPP will be submitted for approval.

Attendees: Doc Bloodworth (FFS), Brian Johns (BCEM), Wendy Russell (BCEM)

November 4 and November 19, 2013 – Pre-final editing of CWPP to prepare for submission of approval.
Attendees: Doc Bloodworth (FFS), William Warren (FFS), Brian Johns (BCEM), Wendy Russell (BCEM)

November 20, 2013 – Presentation to LMS work group for final review of this CWPP
Attendees: LMS Committee and Core Work Group

December 2, 2013 – Plan Approval and Adoption

May 20, 2015 - Core Work Group met to discuss Final 2015 CWPP Update Draft.
Attendees: Brian Johns, William Warren, Wayne Wall and Doc Bloodworth

November 2015 - LMS Committee approved updated 2015 CWPP as an appendix to the LMS

December 18, 2018 – LMS Committee Meeting: EM Director, EM Deputy Director, and Mitigation Specialist discussed need for update of 2015 CWPP; Mitigation Specialist to begin data and conceptual updates and present update draft to CWPP Core Work Group

December 18, 2019 – Fire Director and Mitigation Specialist met to discuss future evaluation and updates to CWPP. LMS CWPP Work Group meeting to be held during 2020. Objective: render the CWPP ready for 5-year approval signatures and addition to the 2021 LMS.

Appendix B: Information Resources

The following were sources of guidance for the development of this plan: the 2020-2021 Bradford County Local Mitigation Strategy; the National Association of Counties Guide to Wildfire Risk and Mitigation; the American Planning Association Reports: PAS 529/530, Planning for Wildfires and PAS 594, Planning the Wildland-Urban Interface; A Community Guide to Preparing and Implementing A Community Wildfire Protection Plan; U.S. Fire Administration: Your Role in Fire-Adapted Communities; The Fire Adapted Communities (FAC) Coalition Guide to Fire Adapted Communities; Florida's Forest Fire Laws and Open Burning Regulations; The Florida Fire Prevention Code, Chapter 17 Wildland Urban Interface; Florida Wildfire Aviation Plan; the Southeastern Interstate Forest Fire Protection Compact; the Florida Forest Service Fire Manual and the publication, Wildfire Risk Reduction in Florida-Home, Neighborhood, and Community Best Practices; The U of F IFAS publication, Wildfire Risk Assessment Guide for Homeowners in the Southern US; The National Fire Protection Association (NFPA) Guide to Community Wildfire Safety Through Regulation* and NFPA Standards 1051, 1141, 1142, 1143, 1144, 1906, 1977; The National Wildfire Coordinating Group publication: WUI Mitigation Desk Reference Guide; FEMA publication: Mitigation Ideas - A resource for reducing Risk to Natural Hazards; The Firewise Communities/ USA Guide to Landscape and Construction; by the Institute for Business and Home Safety: Fortified for Safe Living and the Wildfire Home Assessment Checklist; The Fire Smart Home Handbook and The Florida Forest Service Southern Wildfire Risk Assessment Portal Summary Report for Bradford County, FL.

*The International WUI Code: The International WUI Code is a model code intended to supplement a jurisdiction's building and fire codes. The objective of the code is to establish minimum regulations for the safeguarding of life and property from the intrusion of fire from wildland fire exposures and fire exposures from adjacent structures, and to prevent structure fires from spreading to wildland fuels, even in the absence of fire department involvement. Visit the International WUI Code website...https://codes.iccsafe.org/public/document/toc/556/

BRADFORD COUNTY CWPP

UPDATE 2020

ATTACHMENT A

Southern Wildfire Risk Assessment Portal (SouthWRAP)

Summary Report for Bradford County

The Southern Wildfire Risk Assessment Portal (SouthWRAP) is a new tool being used by the Florida Forest Service. The goal: Increases awareness, communication and visualization of risk assessment data. With access to a basic computer and internet connection, the program can provide easy-to-use, consistent and high quality wildfire risk information, which presents a seamless statewide picture of wildfire risk.

Through access and analysis of county data, wildfire mitigation specialists, prevention planners, community leaders and citizens can generate maps and download wildfire risk information that represents specific areas of interest.

The SouthWRAP Professional Viewer allows for analysis of risk and mitigation projects in particular areas or across landscapes, as well as the generation of reports for those areas. The report is designed to enhance agency management plans, by providing maps and charts of WUI, fuel, or fire behavior indices. For purposes of this CWPP, the areas of interest are called Community Protection Zones, or (CPZs).

SOUTHERN WILDFIRE RISK ASSESSMENT PORTAL (SouthWRAP)

SUMMARY REPORT

for

BRADFORD COUNTY, FL

Report generated using www.southernwildfirerisk.com

Table of Contents

Disclaimer

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Users should also note that property boundaries included in any product do not represent an on- the-ground survey suitable for legal, engineering, or surveying purposes. They represent only the approximate relative locations.

Introduction

Welcome to the Southern Wildfire Risk Assessment Summary Report.

This tool allows users of the Professional Viewer application of the Southern Wildfire Risk Assessment (SWRA) web Portal (SouthWRAP) to define a specific project area and summarize wildfire related information for this area. A detailed risk summary report is generated using a set of predefined map products developed by the Southern Wildfire Risk Assessment project which have been summarized explicitly for the user defined project area. The report is generated in MS WORD format.

The report has been designed so that information from the report can easily be copied and pasted into other specific plans, reports, or documents depending on user needs. Examples include, but are not limited to, Community Wildfire Protection Plans, Local Fire Plans, Fuels Mitigation Plans, Hazard Mitigation Plans, Homeowner Association Risk Assessments, and Forest Management or Stewardship Plans. Formats and standards for these types of reports vary from state to state across the South, and accordingly SouthWRAP provides the SWRA information in a generic risk report format to facilitate use in any type of external document. The SouthWRAP Risk Summary Report also stands alone as a viable depiction of current wildfire risk conditions for the user defined project area.

SouthWRAP provides a consistent, comparable set of scientific results to be used as a foundation for wildfire mitigation and prevention planning in the South.

Results of the assessment can be used to help prioritize areas in the state where mitigation treatments, community interaction and education, or tactical analyses might be necessary to reduce risk from wildfires.

The SouthWRAP products included in this report are designed to provide the information needed to support the following key priorities:

- Identify areas that are most prone to wildfire
- Identify areas that may require additional tactical planning, specifically related to mitigation projects and Community Wildfire Protection Planning
- Provide the information necessary to justify resource, budget and funding requests
- Allow agencies to work together to better define priorities and improve emergency response, particularly across jurisdictional boundaries
- Define wildland communities and identify the risk to those communities
- Increase communication and outreach with local residents and the public to create awareness and address community priorities and needs
- Plan for response and suppression resource needs
- Plan and prioritize hazardous fuel treatment programs

To learn more about the SWRA project or to create a custom summary report, go to www.SouthWildfireRisk.com.

Products

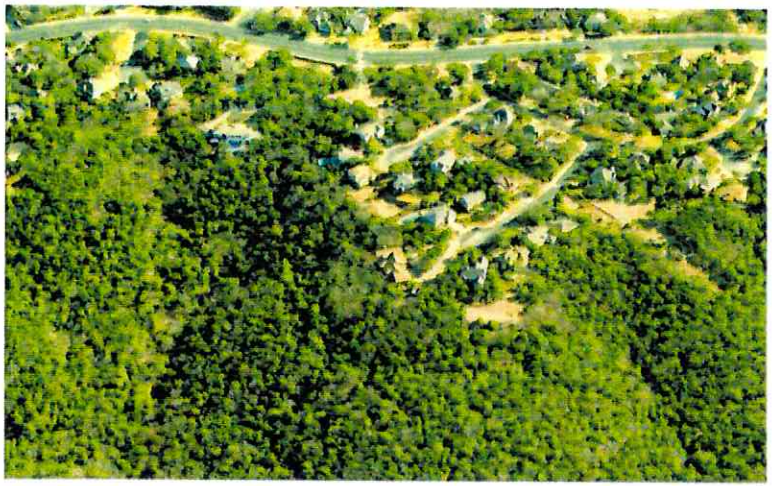
Each product in this report is accompanied by a general description, table, chart and/or map. A list of available SouthWRAP products in this report is provided in the following table.

SouthWRAP Product	Description
Wildland Urban Interface (WUI)	Depicts where humans and their structures meet or intermix with wildland fuel
WUI Risk Index	Represents a rating of the potential impact of a wildfire on people and their homes
Community Protection Zones	Represents those areas designated as primary and secondary priorities for community protection planning
Burn Probability	Probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts
Wildfire Ignition Density	Likelihood of a wildfire starting based on historical ignition patterns
Characteristic Rate of Spread	Represents the speed with which a fire moves in a horizontal direction across the landscape
Characteristic Flame Length	Represents the distance between the tip and base of the flame
Fire Intensity Scale	Quantifies the potential fire intensity for an area by orders of magnitude
Fire Type – Extreme	Represents the potential fire type (surface or canopy) under extreme percentile weather conditions
Surface Fuels	Contains the parameters needed to compute surface fire behavior characteristics
Dozer Operability Rating	Level of difficulty to operate a dozer in an area based on limitations associated with slope and vegetation type

Wildland Urban Interface

Description

The South is one of the fastest growing regions in the nation, with an estimated population growth of 1.5 million people per year. The South also consistently has the highest number of wildfires per year. Population growth is pushing housing developments further into natural and forested areas where most of these wildfires occur. This situation puts many lives and communities at risk each year.



In particular, the expansion of residential development from urban centers out into rural landscapes, increases the potential for wildland fire threat to public safety and the potential for damage to forest resources and dependent industries. This increase in population across the region will impact counties and communities that are located within the Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire.

For the **Bradford County, FL** project area, it is estimated that **26,916** people or **91 percent** of the total project area population (29,701) live within the WUI.

The Wildland Urban Interface (WUI) layer reflects housing density depicting where humans and their structures meet or intermix with wildland fuels.

WUI housing density is categorized based on the standard Federal Register and U.S. Forest Service SILVIS data set categories, long considered a de facto standard for depicting WUI. However, in the SWRA WUI data the number of housing density categories is extended to provide a better gradation of housing distribution to meet specific requirements for fire protection planning activities. While units of the actual data set are in *houses per sq. km.*, the data is presented as the *number of houses per acre* to aid with interpretation and use by fire planners in the South.

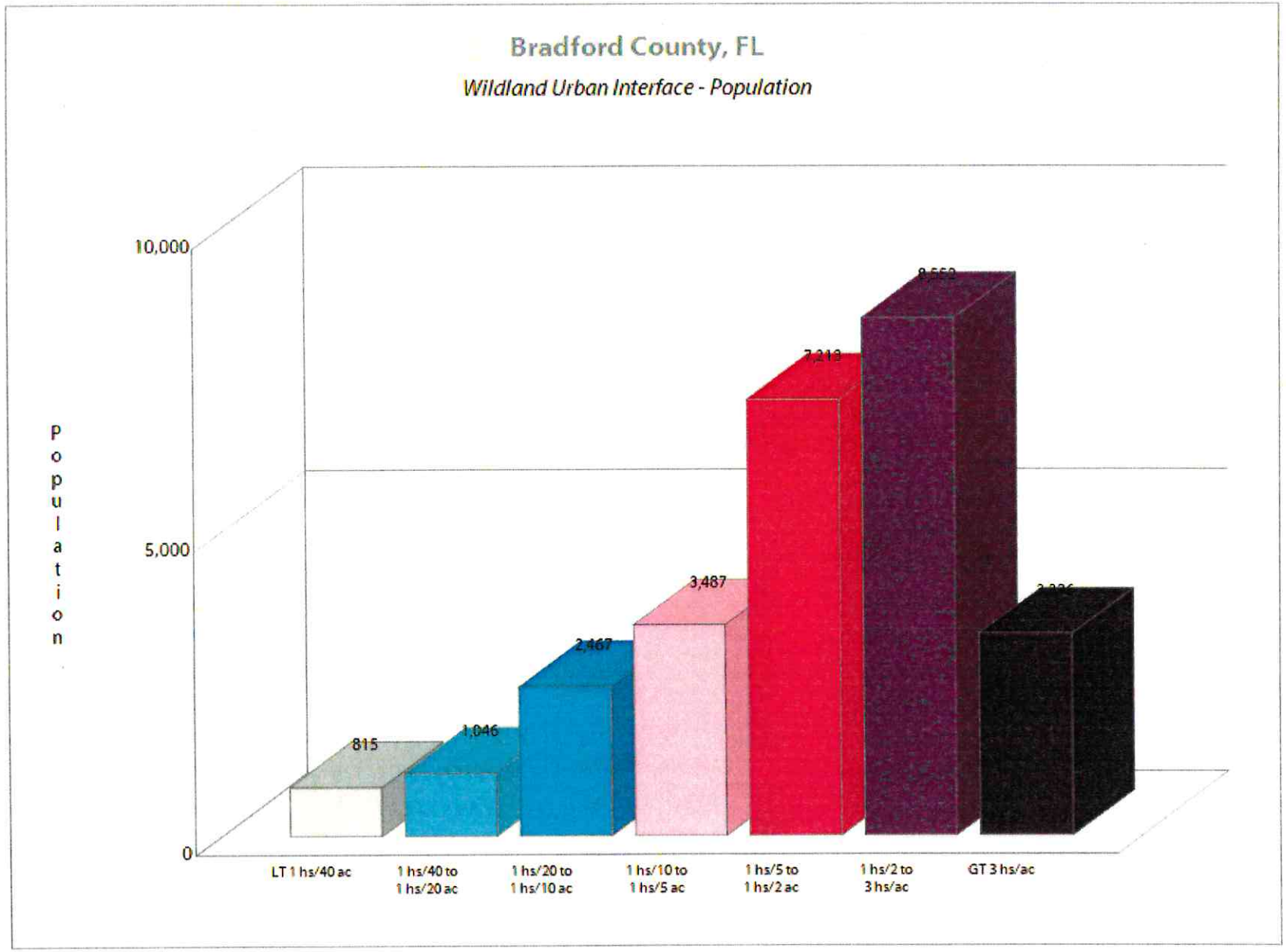
In the past, conventional wildland urban interface data sets, such as USFS SILVIS, have been used to reflect these concerns. However, USFS SILVIS and other existing data sources do not provide the level of detail for defining population living in the wildland as needed by Southern state WUI specialists and local fire protection agencies.

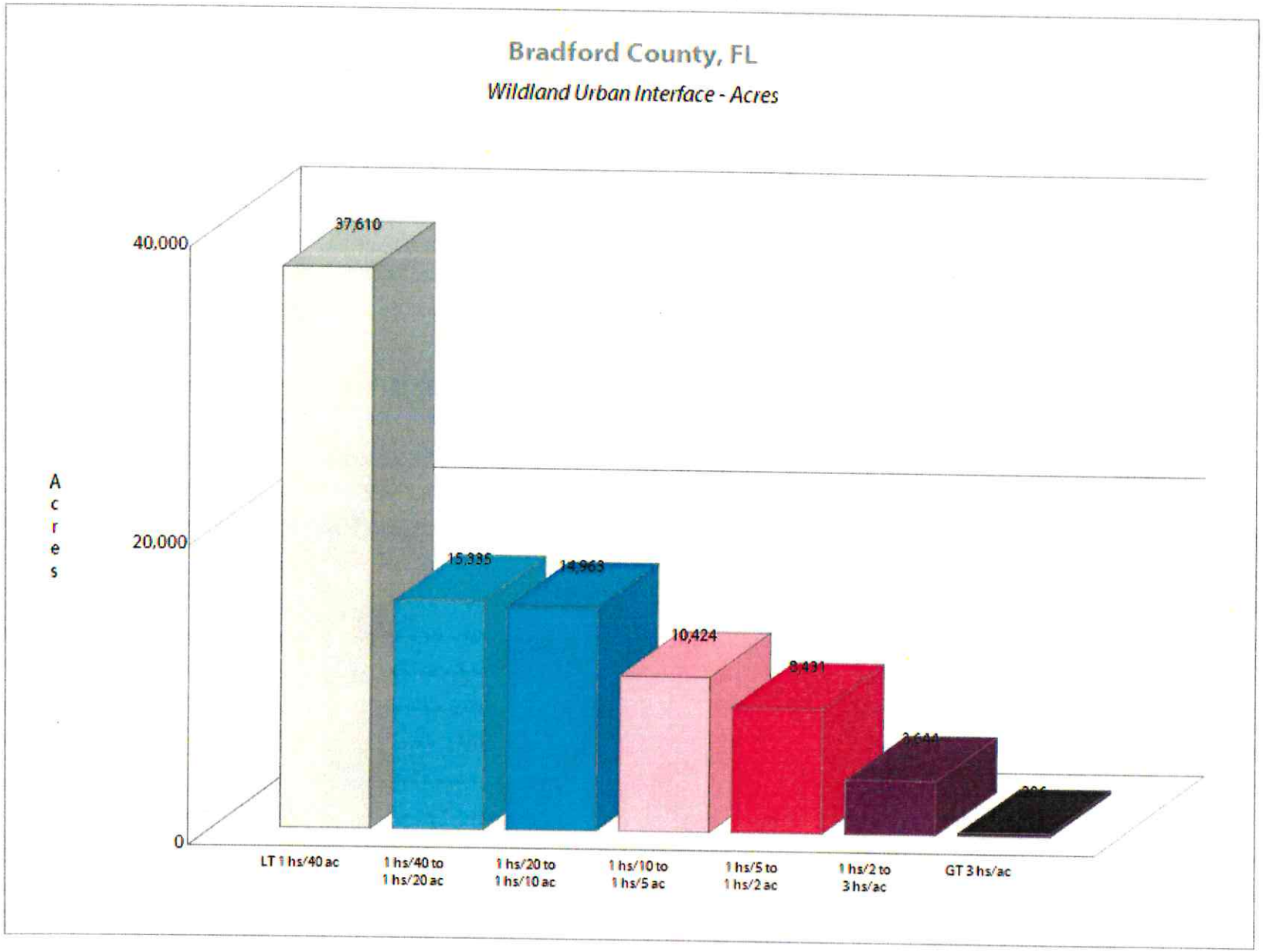
The new SWRA WUI 2012 dataset is derived using advanced modeling techniques based on the SWRA Where People Live (housing density) dataset and 2012 LandScan population count data available from the Department of Homeland Security, HSIP Freedom Data Set. WUI is simply a subset of the Where People Live dataset. The primary difference between the WPL and WUI is that populated areas surrounded by sufficient non-burnable areas (i.e. interior urban areas) are removed from the Where People Live data set, as these areas are not expected to be directly impacted by a wildfire. Simply put, the SWRA WUI is the SWRA WPL data with the urban core areas removed.

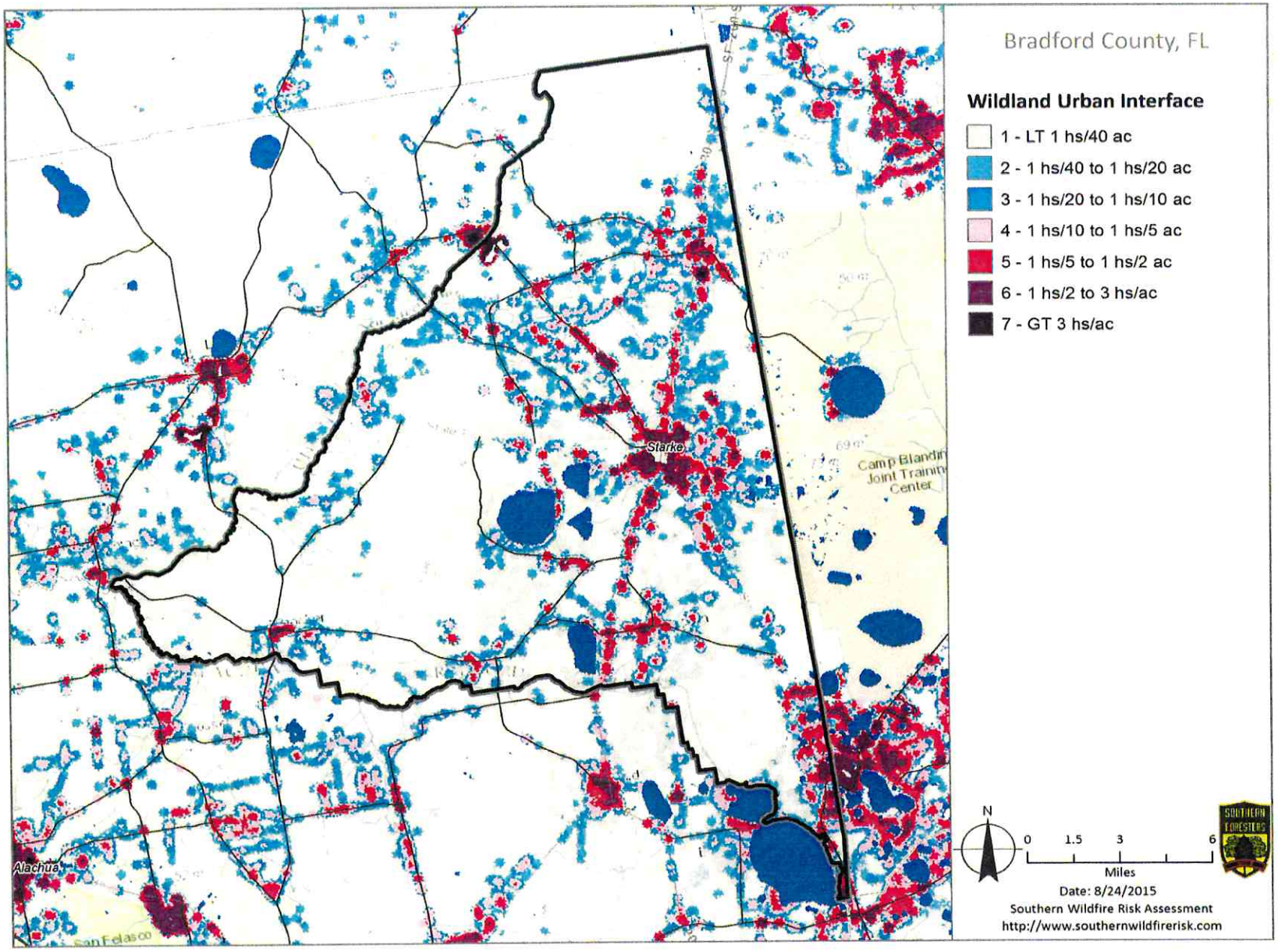
Data is modeled at a 30-meter cell resolution, which is consistent with other SWRA layers. The following table shows the total population for each WUI area within the project area.

WUI – Population and Acres

Housing Density	WUI Population	Percent of WUI Population	WUI Acres	Percent of WUI Acres
LT 1hs/40ac	815	3.0%	37,610	41.5%
1hs/40ac to 1hs/20ac	1,046	3.9%	15,335	16.9%
1hs/20ac to 1hs/10ac	2,467	9.2%	14,963	16.5%
1hs/10ac to 1hs/5ac	3,487	13.0%	10,424	11.5%
1hs/5ac to 1hs/2ac	7,213	26.8%	8,431	9.3%
1hs/2ac to 3hs/1ac	8,552	31.8%	3,644	4.0%
GT 3hs/1ac	3,336	12.4%	206	0.2%
Total	**26,916**	**100.0%**	**90,613**	**100.0%**


Bradford County, FL
Wildland Urban Interface - Population
Population
10,000
5,000
0
815
1,046
2,467
3,487
7,213
8,552
3,226
LT 1 hs/40 ac
1 hs/40 to 1 hs/20 ac
1 hs/20 to 1 hs/10 ac
1 hs/10 to 1 hs/5 ac
1 hs/5 to 1 hs/2 ac
1 hs/2 to 3 hs/ac
GT 3 hs/ac


Bradford County, FL
Wildland Urban Interface - Acres
Acres
40,000
20,000
0
37,610
15,335
14,963
10,424
8,431
3,644
396
LT 1 hs/40 ac
1 hs/40 to 1 hs/20 ac
1 hs/20 to 1 hs/10 ac
1 hs/10 to 1 hs/5 ac
1 hs/5 to 1 hs/2 ac
1 hs/2 to 3 hs/ac
GT 3 hs/ac


Bradford County, FL
Wildland Urban Interface
1 - LT 1 hs/40 ac
2 - 1 hs/40 to 1 hs/20 ac
3 - 1 hs/20 to 1 hs/10 ac
4 - 1 hs/10 to 1 hs/5 ac
5 - 1 hs/5 to 1 hs/2 ac
6 - 1 hs/2 to 3 hs/ac
7 - GT 3 hs/ac
Starke
Camp Blandin Joint Training Center
Alachua
San Felasco
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

WUI Risk Index

Description

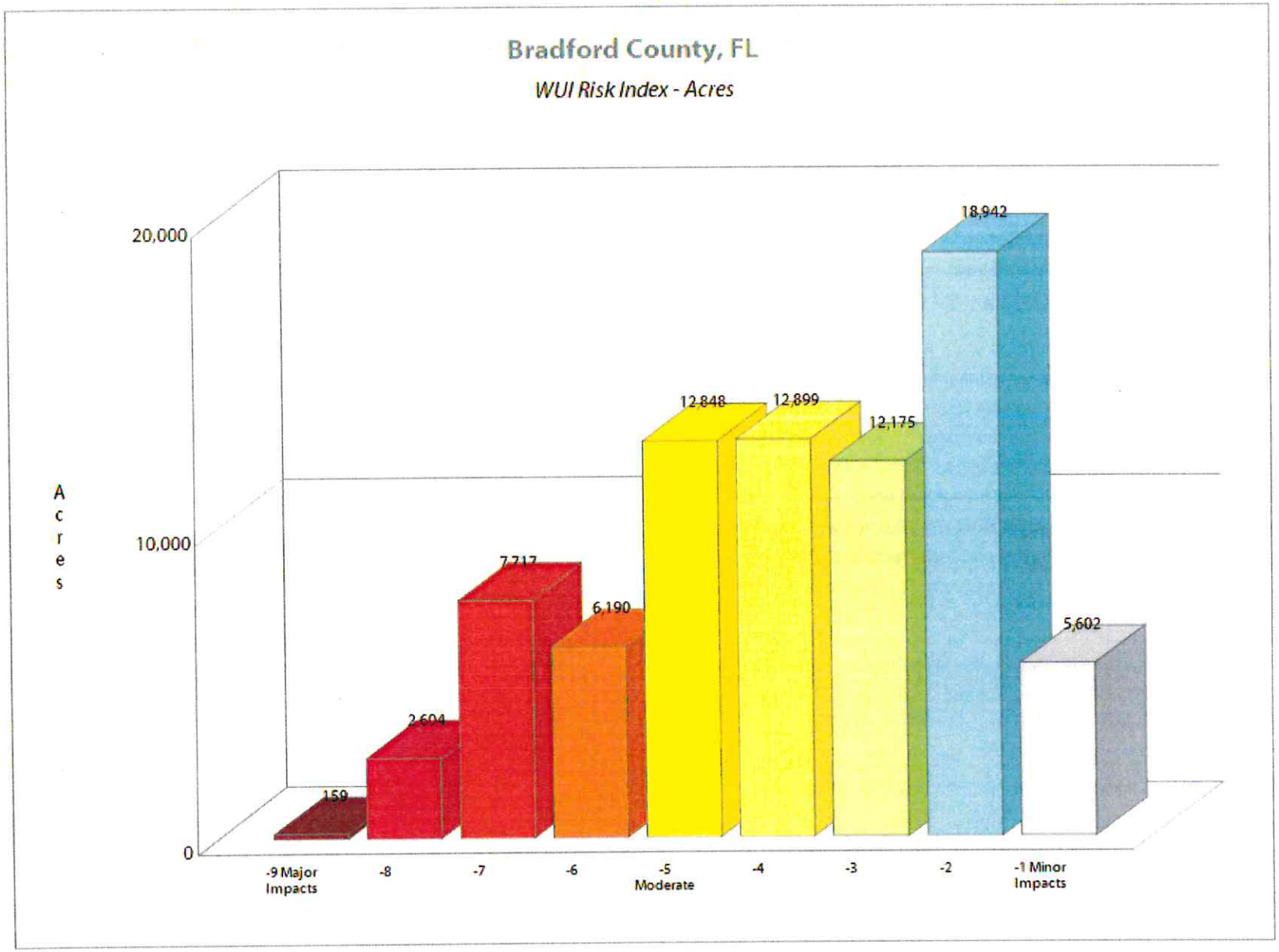
The Wildland Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes.

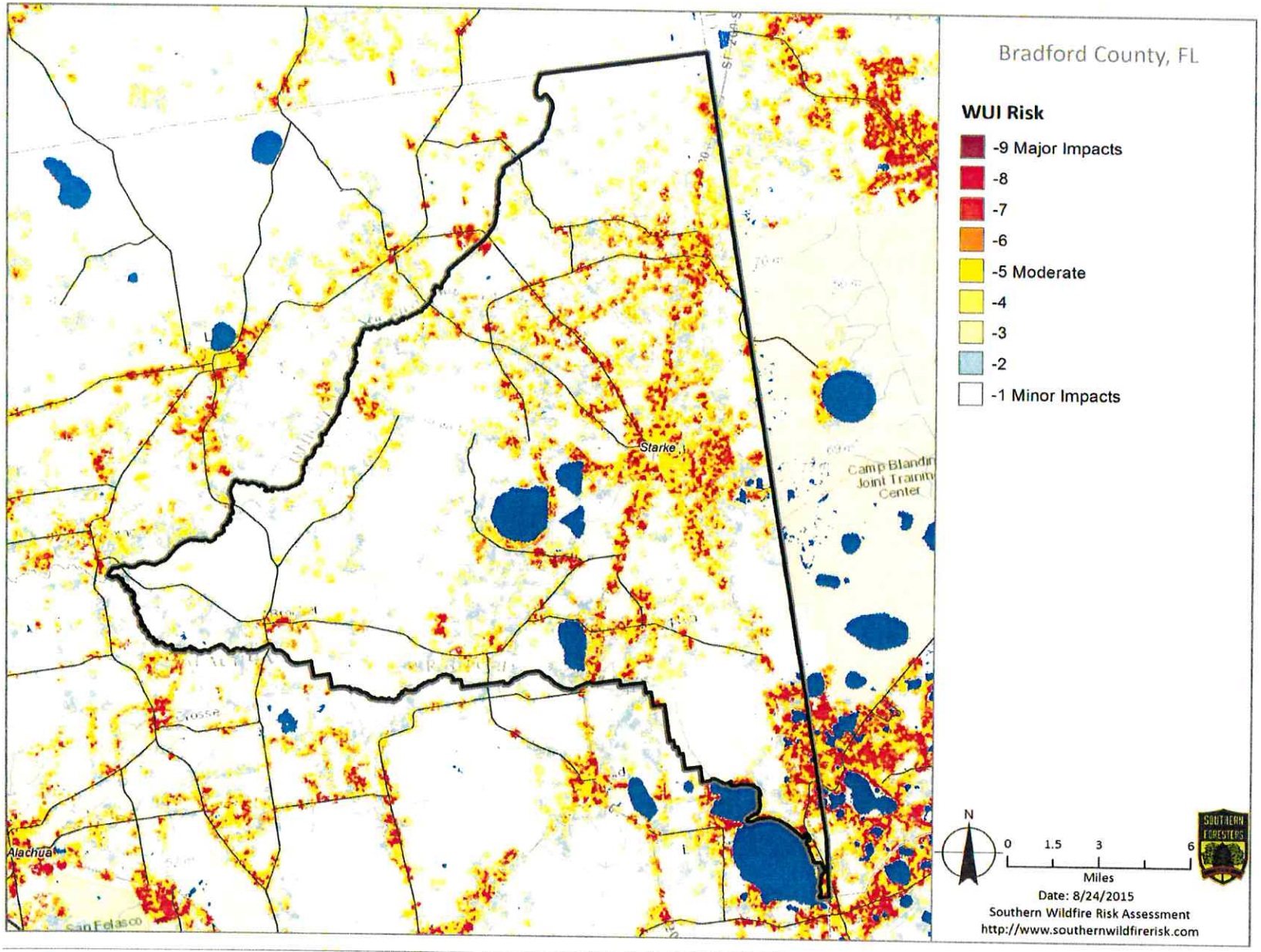
The WUI Risk Rating is derived using a Response Function modeling approach. Response functions are a method of assigning a net change in the value to a *resource* or *asset* based on susceptibility to fire at different intensity levels, such as flame length. The range of values is from -1 to -9, with -1 representing the least negative impact and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9 while areas with low housing density and low flame lengths are rated -1.

To calculate the WUI Risk Rating, the WUI housing density data was combined with Flame Length data and response functions were defined to represent potential impacts. The response functions were defined by a team of experts based on values defined by the SWRA Update Project technical team. By combining flame length with the WUI housing density data, you can determine where the greatest potential impact to homes and people is likely to occur.

Fire intensity data is modeled to incorporate penetration into urban fringe areas so that outputs better reflect real world conditions for fire spread and impact in fringe urban interface areas. With this enhancement, houses in urban areas adjacent to wildland fuels are incorporated into the WUI risk modeling. All areas in the South have the WUI Risk Index calculated consistently, which allows for comparison and ordination of areas across the entire region. Data is modeled at a 30-meter cell resolution, which is consistent with other SWRA layers.

Class	Acres	Percent
-9 Major Impacts	159	0.2%
-8	2,604	3.3%
-7	7,717	9.8%
-6	6,190	7.8%
-5 Moderate	12,848	16.2%
-4	12,899	16.3%
-3	12,175	15.4%
-2	18,942	23.9%
-1 Minor Impacts	5,602	7.1%
Total	**79,136**	**100.0%**


Bradford County, FL
WUI Risk Index - Acres
Acres
20,000
10,000
0
159
2,604
7,717
6,190
12,848
12,899
12,175
18,942
5,602
-9 Major Impacts
-8
-7
-6
-5 Moderate
-4
-3
-2
-1 Minor Impacts


Bradford County, FL
WUI Risk
-9 Major Impacts
-8
-7
-6
-5 Moderate
-4
-3
-2
-1 Minor Impacts
Starke
Camp Blandin
Joint Training
Center
Alachua
San Felasco
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com
SOUTHERN FORESTERS

Community Protection Zones

Description

Community Protection Zones (CPZ) represent those areas considered highest priority for mitigation planning activities. CPZs are based on an analysis of the Where People Live housing density data and surrounding fire behavior potential. Rate of Spread data is used to determine the areas of concern around populated areas that are within a 2-hour fire spread distance. This is referred to as the Secondary CPZ.

General consensus among fire planners is that for fuel mitigation treatments to be effective in reducing wildfire hazard, they must be conducted within a close distance of a community. In the South, the WUI housing density has been used to reflect populated areas in place of community boundaries (Primary CPZ). This ensures that CPZs reflect where people are living in the wildland, not jurisdictional boundaries.

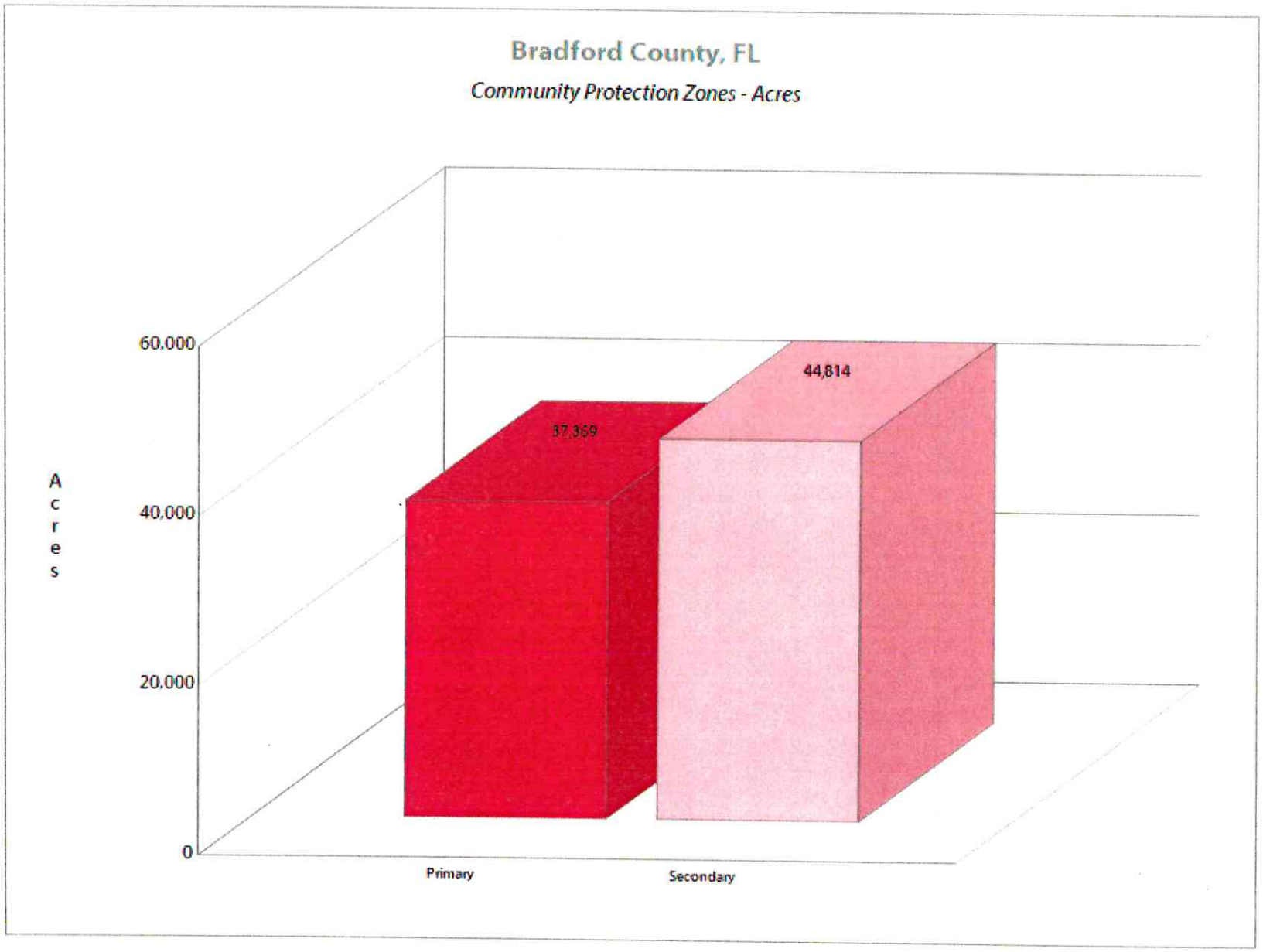
Secondary CPZs represent a variable width buffer around populated areas that are within a 2-hour fire spread distance. Accordingly, CPZs will extend farther in areas where rates of spread are greater and less in areas where minimal rate of spread potential exists. Secondary CPZ boundaries inherently incorporate fire behavior conditions.

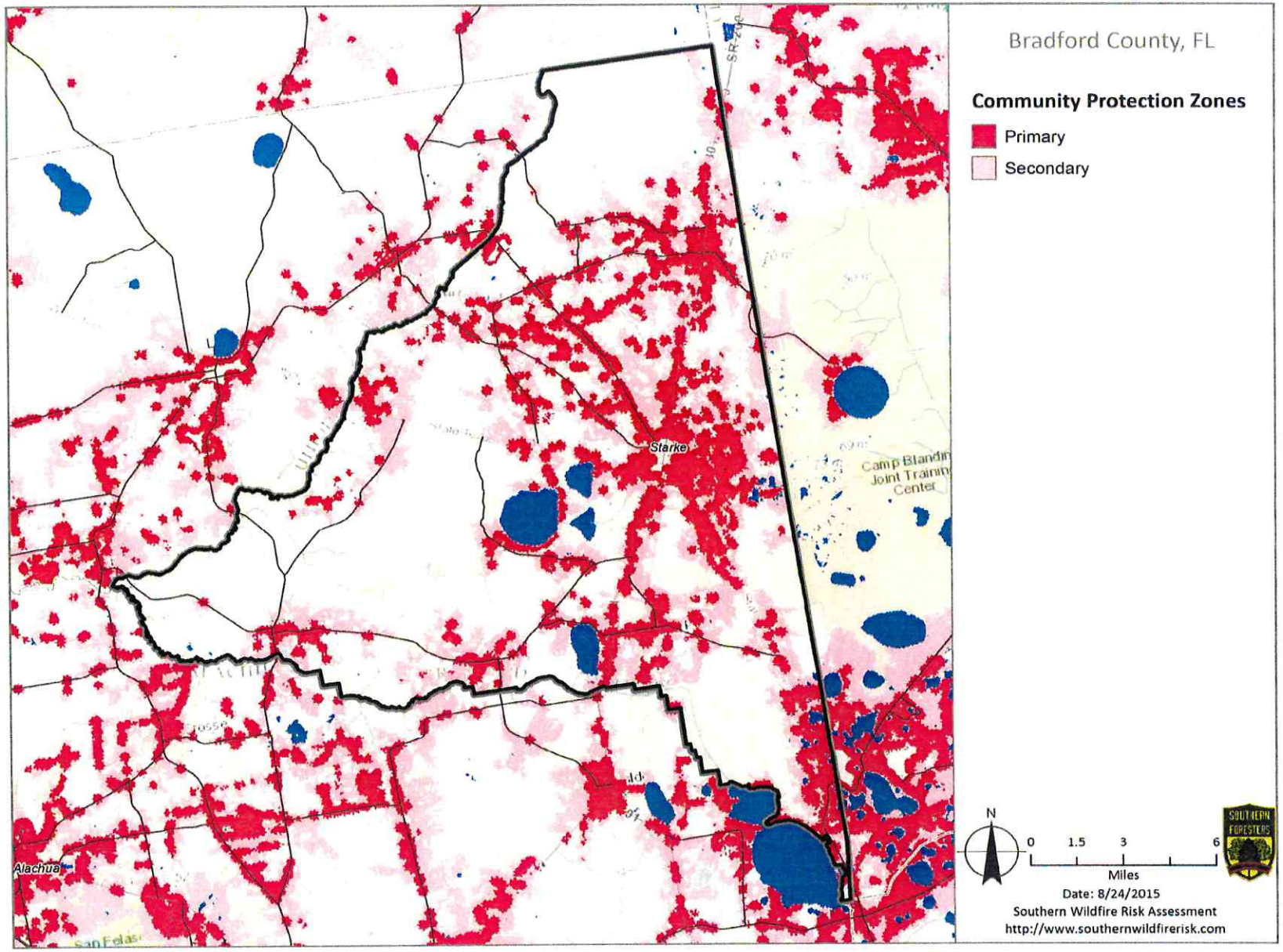
Primary CPZs reflect areas with a predefined housing density, such as greater than 1 house per 20 acres. Secondary CPZs are the areas around Primary CPZs within a 2 hour fire spread distance.

All areas in the South have the CPZs calculated consistently, which allows for comparison and ordination of areas across the entire region. Data is modeled at a 30-meter cell resolution, which is consistent with other SWRA layers.

Community Protection Zones - Acres

Class	Acres	Percent
Primary	37,369	45.5%
Secondary	44,814	54.5%
Total	**82,182**	**100.0%**


Bradford County, FL
Community Protection Zones - Acres
60,000
40,000
20,000
0
Acres
37,369
44,814
Primary
Secondary


Bradford County, FL
Community Protection Zones
Primary
Secondary
Starke
Camp Blandin
Joint Training
Center
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

Burn Probability

Description

The Burn Probability (BP) layer depicts the probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts.

Describe in more detail, it is the tendency of any given pixel to burn, given the static landscape conditions depicted by the LANDFIRE Refresh 2008 dataset (as resampled by FPA), contemporary weather and ignition patterns, as well as contemporary fire management policies (entailing considerable fire prevention and suppression efforts).

The BP data does not, and is not intended to, depict fire-return intervals of any vintage, nor do they indicate likely fire footprints or routes of travel. Nothing about the expected shape or size of any actual fire incident can be interpreted from the burn probabilities. Instead, the BP data, in conjunction with the Fire Program Analysts FIL layers, are intended to support an actuarial approach to quantitative wildfire risk analysis (e.g., see Thompson et al. 2011).

Values in the Burn Probability (BP) data layer indicate, for each pixel, the number of times that cell was burned by an FSim-modeled fire, divided by the total number of annual weather scenarios simulated. Burn probability raster data was generated using the large fire simulator - FSim - developed for use in the Fire Program Analysis (FPA) project. FSim uses historical weather data and current landcover data for discrete geographical areas (Fire Planning Units - FPUs) and simulates fires in these FPUs. Using these simulated fires, an overall burn probability and marginal burn probabilities at four fire intensities (flame lengths) are returned by FSim for each 270m pixel in the FPU.

The fire growth simulations, when run repeatedly with different ignition locations and weather streams, generate burn probabilities and fire behavior distributions at each landscape location (i.e., cell or pixel). Results are objectively evaluated through comparison with historical fire patterns and statistics, including the mean annual burn probability and fire size distribution, for each FPU. This evaluation is part of the FSim calibration process for each FPU, whereby simulation inputs are adjusted until the slopes of the historical and modeled fire size distributions are similar and the modeled average burn probability falls within an acceptable range of the historical reference value (i.e., the 95% confidence interval for the mean).

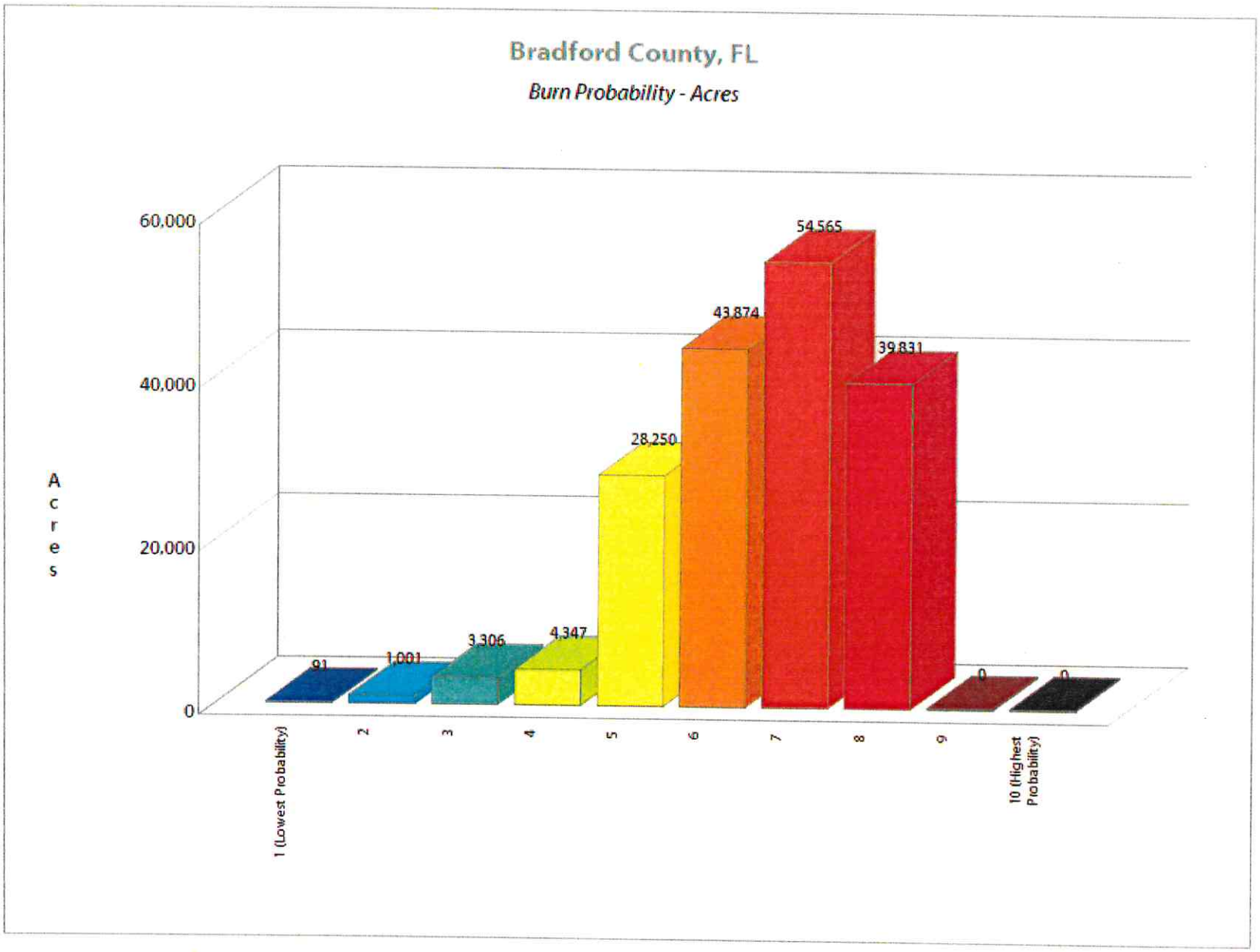
Please refer to the metadata available for this dataset for a detailed description of the data processing methods, assumptions and references that pertain to the development of this data. This information is available from the USFS Missoula Fire Sciences Laboratory.

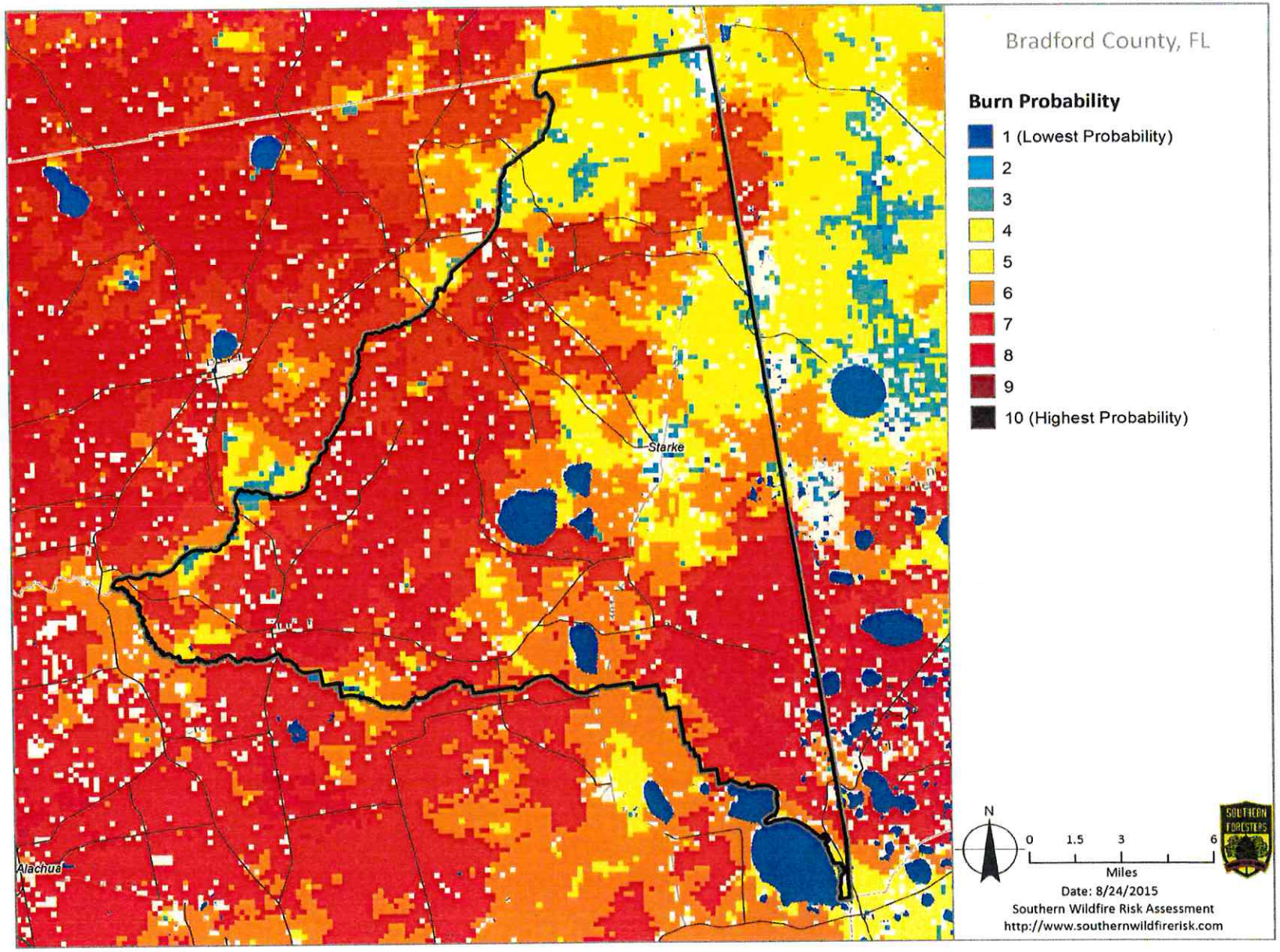
Please refer to the web site link in the report References to obtain more detailed descriptions of FPA and the related data products such as Burn Probability.

Burn Probability replaces the Wildland Fire Susceptibility Index (WFSI) layer developed in the original SWRA project completed in 2005.

Burn Probability - Acres

Class	Acres	Percent
1	91	0.1%
2	1,001	0.6%
3	3,306	1.9%
4	4,347	2.5%
5	28,250	16.1%
6	43,874	25.0%
7	54,565	31.1%
8	39,831	22.7%
9	0	0.0%
10	0	0.0%
Total	**175,265**	**100.0%**


Bradford County, FL
Burn Probability - Acres
Acres
60,000
40,000
20,000
0
91
1,001
3,306
4,347
28,250
43,874
54,565
39,831
0
0
1 (Lowest Probability)
2
3
4
5
6
7
8
9
10 (Highest Probability)

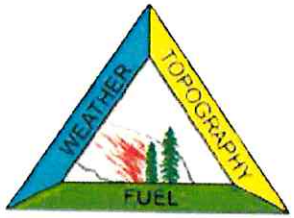

Bradford County, FL
Burn Probability
1 (Lowest Probability)
2
3
4
5
6
7
8
9
10 (Highest Probability)
Starke
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

Wildfire Behavior Outputs

Description

Fire behavior is the manner in which a fire reacts to the following environmental influences:

1. **Fuels**
2. **Weather**
3. **Topography**



Fire behavior characteristics are attributes of wildland fire that pertain to its spread, intensity, and growth. Fire behavior characteristics utilized in the Southern Wildfire Risk Assessment (SWRA) include fire type, rate of spread, flame length and fire intensity scale. These metrics are used to determine the potential fire behavior under different weather scenarios. Areas that exhibit moderate to high fire behavior potential can be identified for mitigation treatments, especially if these areas are in close proximity to homes, business, or other assets.

Fuels

The SWRA includes composition and characteristics for both surface fuels and canopy fuels. Significant increases in fire behavior will be captured if the fire has the potential to transition from a surface fire to a canopy fire.

Fuel datasets required to compute both surface and canopy fire potential include:

- **Surface Fuels**, generally referred to as fire behavior fuel models, provide the input parameters needed to compute surface fire behavior.
- **Canopy Cover** is the horizontal percentage of the ground surface that is covered by tree crowns. It is used to compute wind reduction factors and shading.
- **Canopy Ceiling Height/Stand Height** is the height above the ground of the highest canopy layer where the density of the crown mass within the layer is high enough to support vertical movement of a fire. A good estimate of canopy ceiling height would be the average height of the dominant and co-dominant trees in a stand. It is used for computing wind reduction to midflame height and spotting distances from torching trees (Fire Program Solutions, L.L.C, 2005).
- **Canopy Base Height** is the lowest height above the ground above which there is sufficient canopy fuel to propagate fire vertically (Scott & Reinhardt, 2001). Canopy base height is a property of a plot, stand, or group of trees, not of an individual tree. For fire modeling, canopy base height is an effective value that incorporates ladder fuel, such as tall shrubs and small trees. Canopy base height is used to determine if a surface fire will transition to a canopy fire.
- **Canopy Bulk Density** is the mass of available canopy fuel per unit canopy volume (Scott & Reinhardt, 2001). Canopy bulk density is a bulk property of a stand, plot, or group of

trees, not of an individual tree. Canopy bulk density is used to predict whether an active crown fire is possible.

Weather

Environmental weather parameters needed to compute fire behavior characteristics include 1-hour, 10-hour, and 100-hour timelag fuel moistures, herbaceous fuel moisture, woody fuel moisture, and the 20-foot 10 minute average wind speed. To collect this information, weather influence zones were established across the region. A weather influence zone is an area where for analysis purposes the weather on any given day is considered uniform. Within each weather influence zone, historical daily weather is gathered to compile a weather dataset from which four percentile weather categories are created. The percentile weather categories are intended to represent low, moderate, high, and extreme fire weather days. Fire behavior outputs are computed for each percentile weather category to determine fire potential under different weather scenarios.

The four percentile weather categories include:

- Low Weather Percentile (0 – 15%)
- Moderate Weather Percentile (16 – 90%)
- High Weather Percentile (91 – 97%)
- Extreme Weather Percentile (98 – 100%)

Topography

Topography datasets required to compute fire behavior characteristics are elevation, slope and aspect.

FIRE BEHAVIOR CHARACTERISTICS

Fire behavior characteristics provided in this report include:

- **Characteristic Rate of Spread**
- **Characteristic Flame Length**
- **Characteristic Fire Intensity Scale**
- **Fire Type - Extreme**

Characteristic Rate of Spread

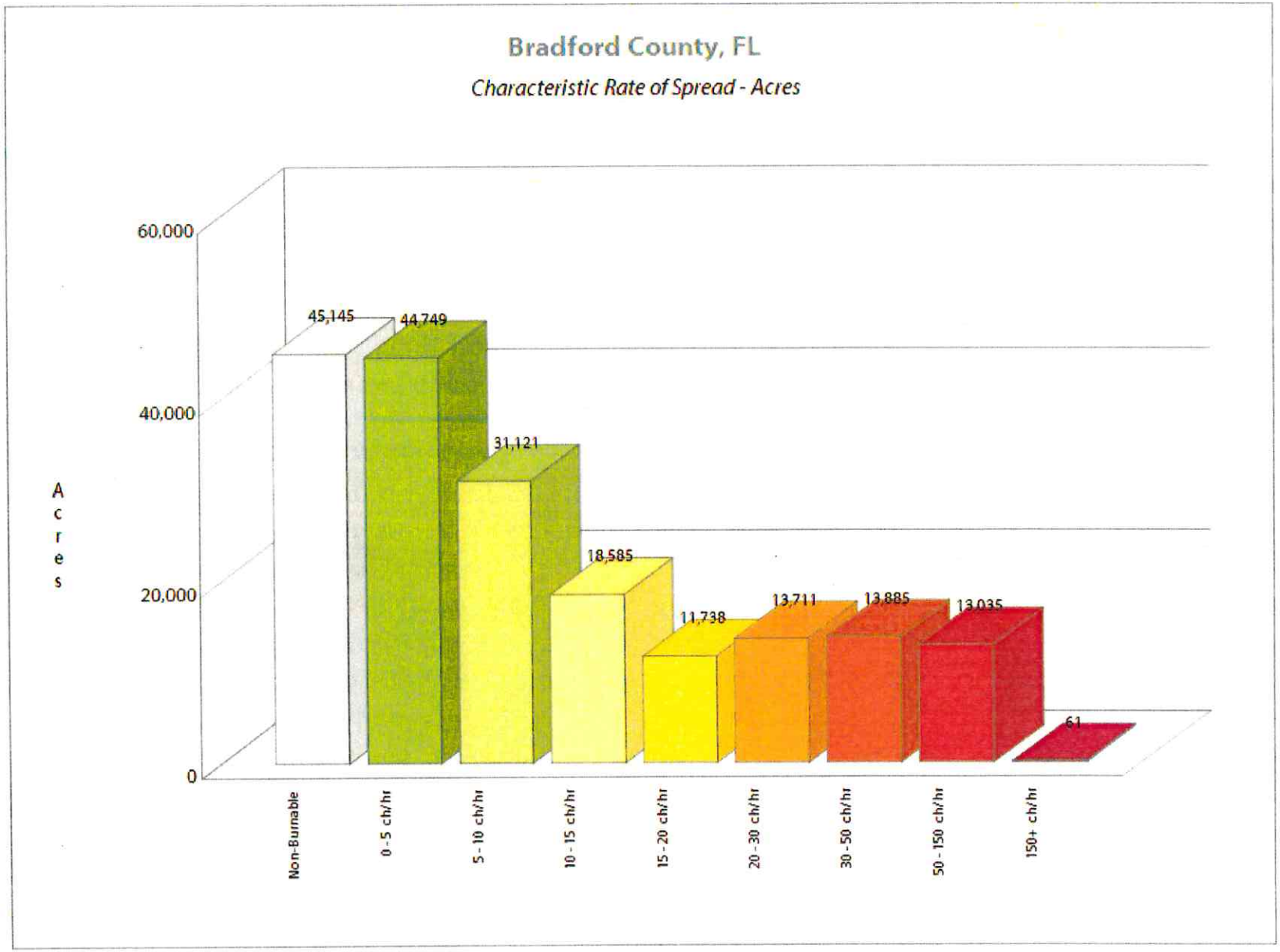
Characteristic Rate of Spread is the typical or representative rate of spread of a potential fire based on a weighted average of four percentile weather categories. Rate of spread is the speed with which a fire moves in a horizontal direction across the landscape, usually expressed in chains per hour (ch/hr) or feet per minute (ft/min). For purposes of the Southern Wildfire Risk Assessment, this measurement represents the maximum rate of spread of the fire front. Rate of Spread is the metric used to derive the Community Protection Zones.

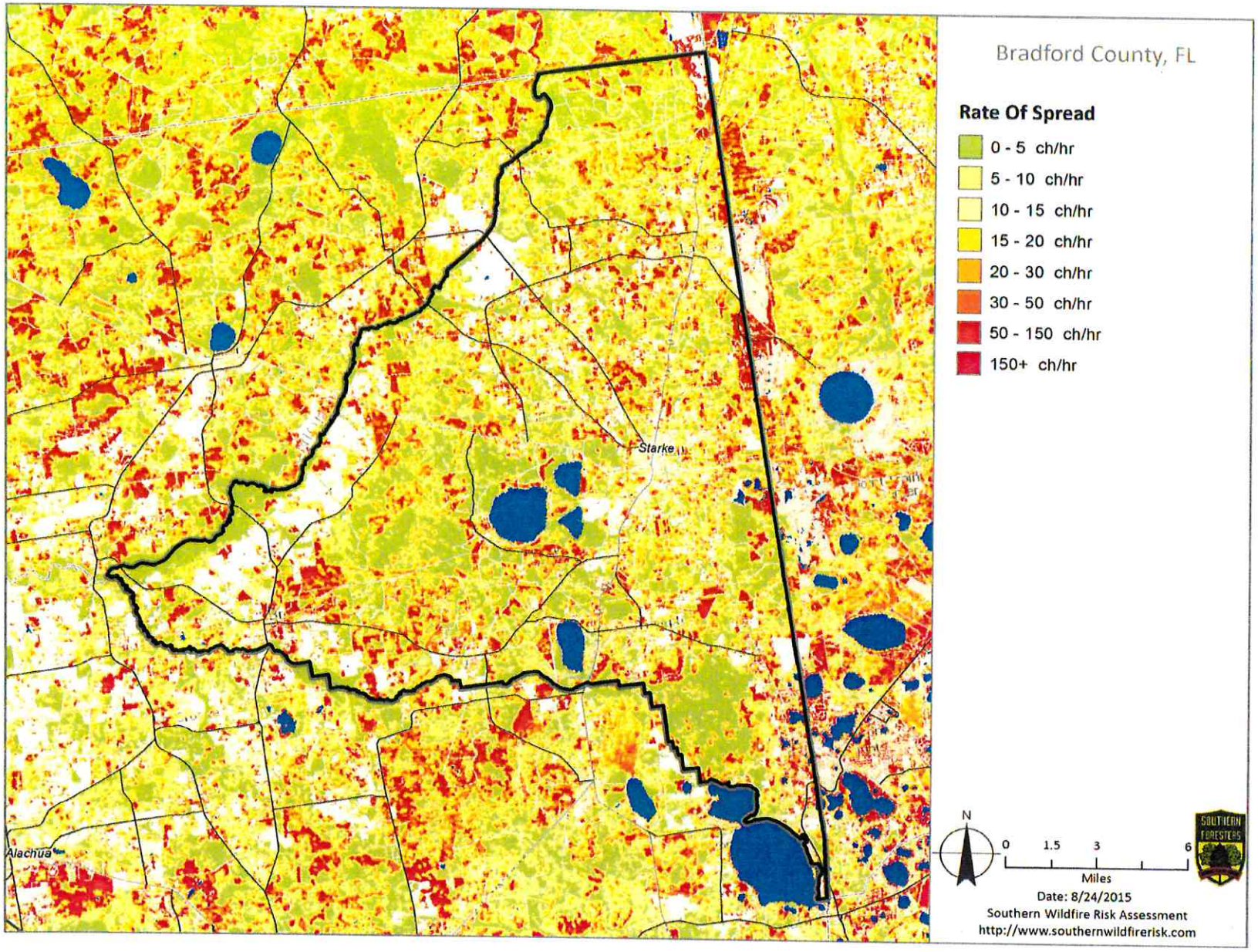
Rate of spread is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in the South. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform.

For all Southern states, except Florida and Texas, this dataset was derived from updated fuels and canopy data as part of the 2010 SWRA Update Project recently completed in May 2014. For Texas, the 2010 Texas risk update data is portrayed. For Florida, the 2010 Florida risk assessment update data is shown.

Characteristic Rate of Spread – Acres

Rate of Spread	Acres	Percent
Non-Burnable	45,145	23.5%
0 - 5 (ch/hr)	44,749	23.3%
5 - 10 (ch/hr)	31,121	16.2%
10 – 15 (ch/hr)	18,585	9.7%
15 - 20 (ch/hr)	11,738	6.1%
20 - 30 (ch/hr)	13,711	7.1%
30 - 50 (ch/hr)	13,885	7.2%
50 - 150 (ch/hr)	13,035	6.8%
150 + (ch/hr)	61	0.0%
Total	**192,027**	**100.0%**


Bradford County, FL
Characteristic Rate of Spread - Acres
Acres
60,000
40,000
20,000
0
45,145
44,749
31,121
18,585
11,738
13,711
13,885
13,035
61
Non-Burnable
0 - 5 ch/hr
5 - 10 ch/hr
10 - 15 ch/hr
15 - 20 ch/hr
20 - 30 ch/hr
30 - 50 ch/hr
50 - 150 ch/hr
150+ ch/hr


Bradford County, FL
Rate Of Spread
0 - 5 ch/hr
5 - 10 ch/hr
10 - 15 ch/hr
15 - 20 ch/hr
20 - 30 ch/hr
30 - 50 ch/hr
50 - 150 ch/hr
150+ ch/hr
Starke
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

Characteristic Flame Length

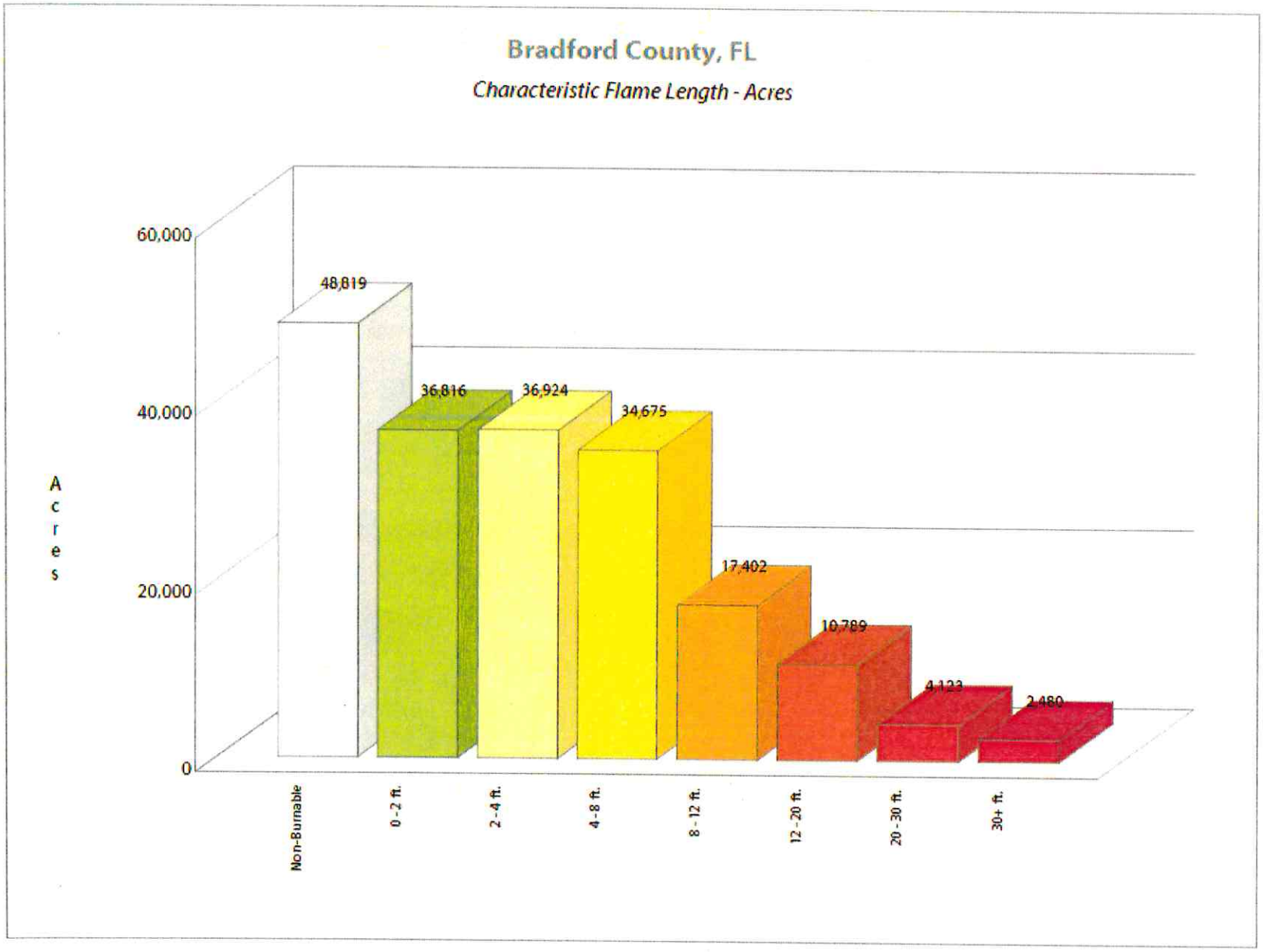
Characteristic Flame Length is the typical or representative flame length of a potential fire based on a weighted average of four percentile weather categories. Flame Length is defined as the distance between the flame tip and the midpoint of the flame depth at the base of the flame, which is generally the ground surface. It is an indicator of fire intensity and is often used to estimate how much heat the fire is generating. Flame length is typically measured in feet (ft). Flame length is the measure of fire intensity used to generate the response index outputs for the SWRA.

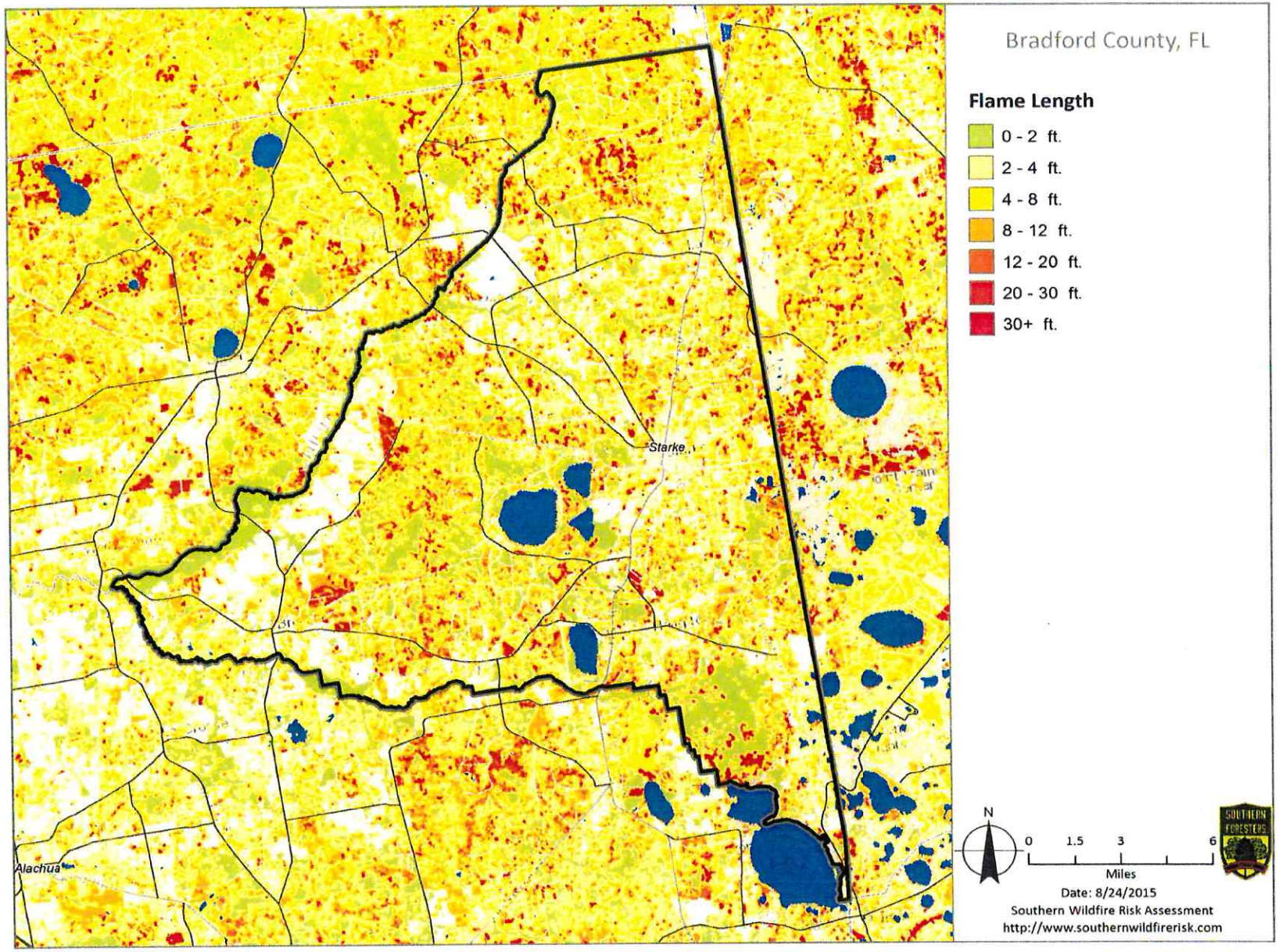
Flame length is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in the South. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform.

For all Southern states, except Florida and Texas, this dataset was derived from updated fuels and canopy data as part of the 2010 SWRA Update Project recently completed in May 2014. For Texas, the 2010 Texas risk update data is portrayed. For Florida, the 2010 Florida risk assessment update data is shown.

Characteristic Flame Length – Acres

Flame Length	Acres	Percent
Non-Burnable	48,819	25.4%
0 - 2 ft	36,816	19.2%
2 - 4 ft	36,924	19.2%
4 - 8 ft	34,675	18.1%
8 - 12 ft	17,402	9.1%
12 - 20 ft	10,789	5.6%
20 - 30 ft	4,123	2.1%
30 + ft	2,480	1.3%
Total	**192,027**	**100.0%**


Bradford County, FL
Characteristic Flame Length - Acres
Acres
60,000
40,000
20,000
0
48,819
36,816
36,924
34,675
17,402
10,789
4,123
2,480
Non-Burnable
0 - 2 ft.
2 - 4 ft.
4 - 8 ft.
8 - 12 ft.
12 - 20 ft.
20 - 30 ft.
30+ ft.


Bradford County, FL
Flame Length
0 - 2 ft.
2 - 4 ft.
4 - 8 ft.
8 - 12 ft.
12 - 20 ft.
20 - 30 ft.
30+ ft.
Starke
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

Characteristic Fire Intensity Scale

Description

Characteristic Fire Intensity Scale (FIS) specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on a weighted average of four percentile weather categories. Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities. Refer to descriptions below.

1. **Class 1, Very Low:**
   Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.
2. **Class 2, Low:**
   Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
3. **Class 3, Moderate:**
   Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
4. **Class 4, High:**
   Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.
5. **Class 5, Very High:**
   Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

For all Southern states, except Texas, this dataset was derived from updated fuels and canopy data as part of the 2010 SWRA Update Project recently completed in May 2014. For Texas, the 2010 Texas risk update data is portrayed.

To aid in viewing on the map, FIS is presented in 1/2 class increments. Please consult the SouthWRAP User Manual for a more detailed description of the FIS class descriptions.

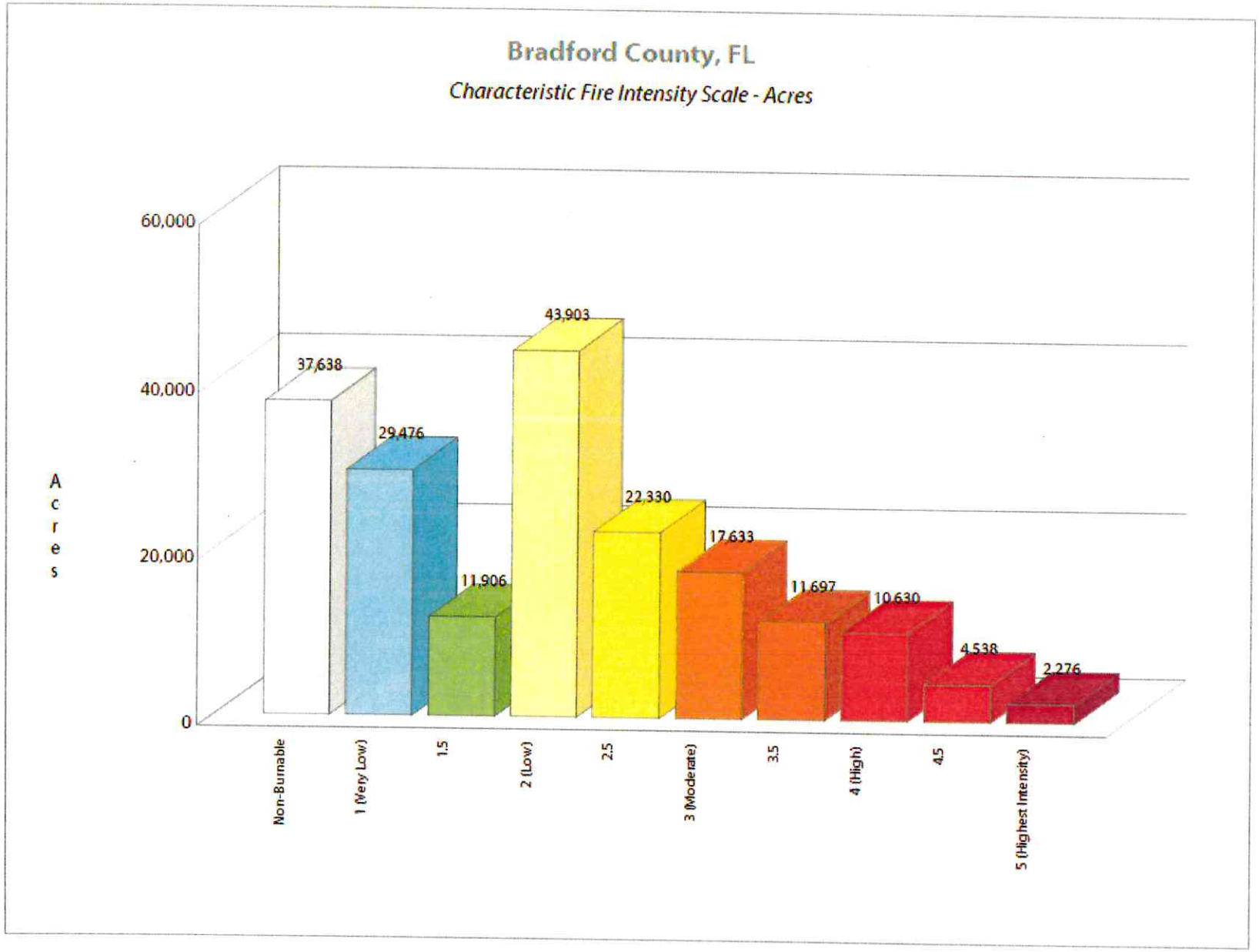
Since all areas in the South have fire intensity scale calculated consistently, it allows for comparison and ordination of areas across the entire region.

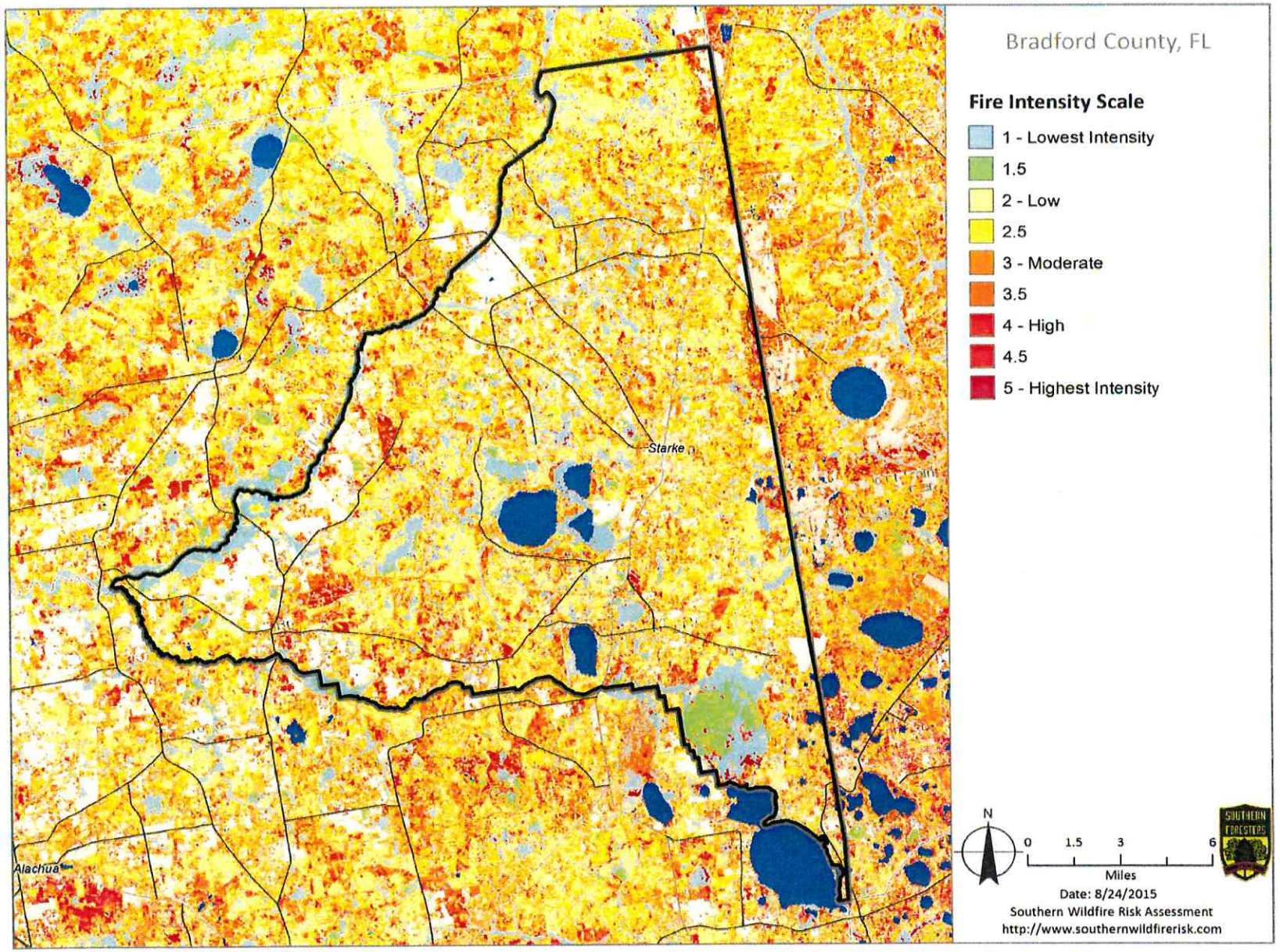
Fire intensity scale is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in the South. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform.

The fire intensity scale map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local planning efforts.

Characteristic Fire Intensity Scale - Acres

Class	Acres	Percent
Non-Burnable	37,638	19.6%
1 Lowest Intensity	29,476	15.4%
1.5	11,906	6.2%
2 Low	43,903	22.9%
2.5	22,330	11.6%
3 Moderate	17,633	9.2%
3.5	11,697	6.1%
4 High	10,630	5.5%
4.5	4,538	2.4%
5 Highest Intensity	2,276	1.2%
Total	**192,027**	**100.0%**


Bradford County, FL
Characteristic Fire Intensity Scale - Acres
Acres
60,000
40,000
20,000
0
37,638
29,476
11,906
43,903
22,330
17,633
11,697
10,630
4,538
2,276
Non-Burnable
1 (Very Low)
1.5
2 (Low)
2.5
3 (Moderate)
3.5
4 (High)
4.5
5 (Highest Intensity)


Bradford County, FL
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
Starke
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

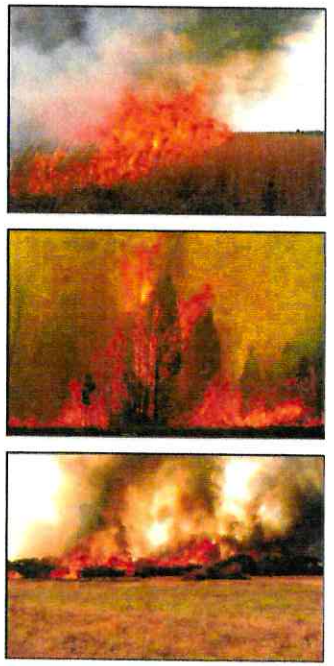
Fire Type - Extreme

There are two primary fire types – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. A short description of each of these is provided below.

Surface Fire
A fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground.

Passive Canopy Fire
A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (Scott & Reinhardt, 2001).

Active Canopy Fire
A crown fire in which the entire fuel complex (canopy) is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread (Scott & Reinhardt, 2001).



Fire Type – Extreme represents the potential fire type under the extreme percentile weather category. The extreme percentile weather category represents the average weather based on the top three percent fire weather days in the analysis period. It is not intended to represent a worst case scenario weather event. Accordingly, the potential fire type is based on fuel conditions, extreme percentile weather, and topography.

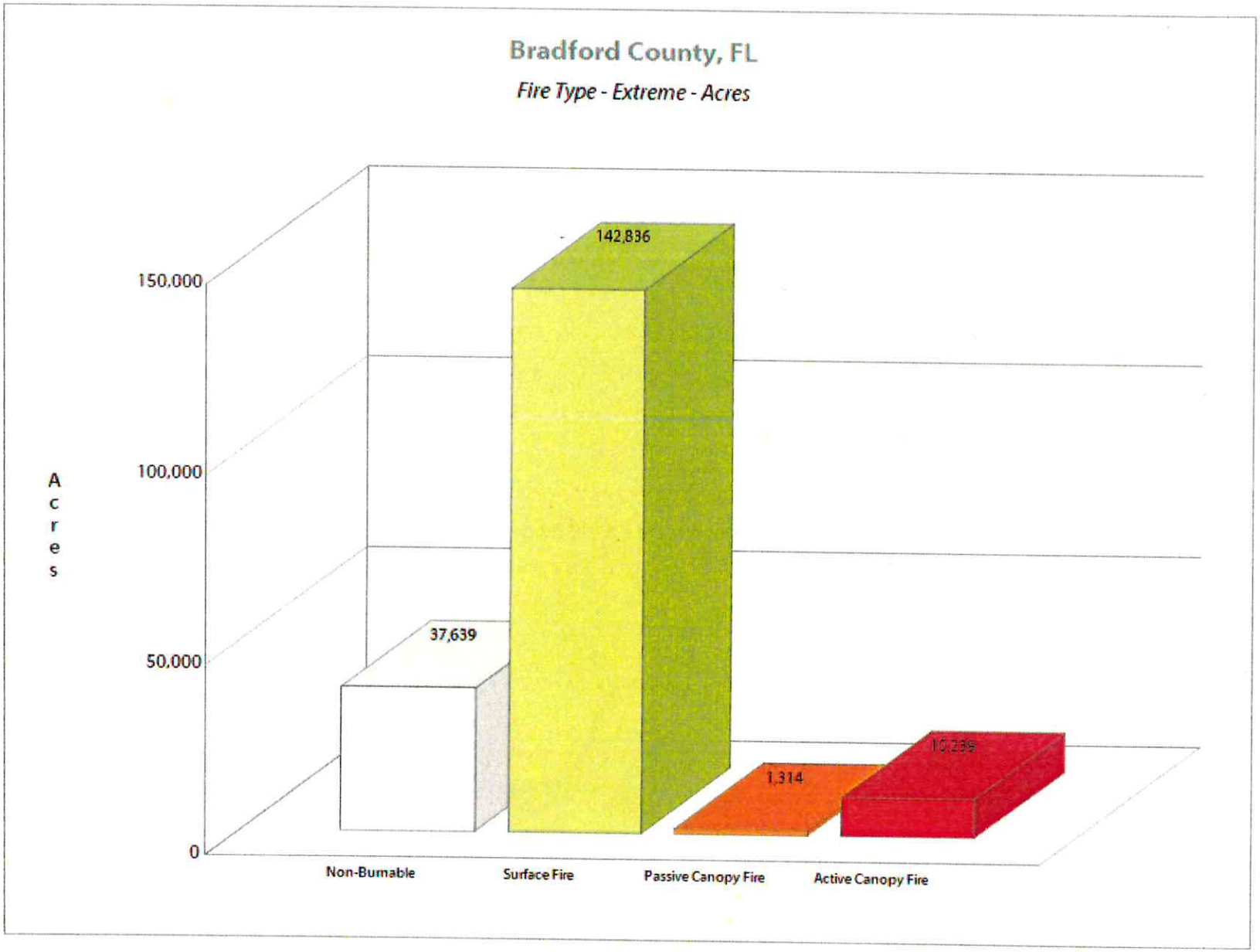
Canopy fires are very dangerous, destructive and difficult to control due to their increased fire intensity. From a planning perspective, it is important to identify where these conditions are likely to occur on the landscape so that special preparedness measure can be taken if necessary. The Fire Type – Extreme layer shows the footprint of where these areas are most likely to occur. However, it is important to note that canopy fires are not restricted to these areas. Under the right conditions, it can occur in other canopied areas.

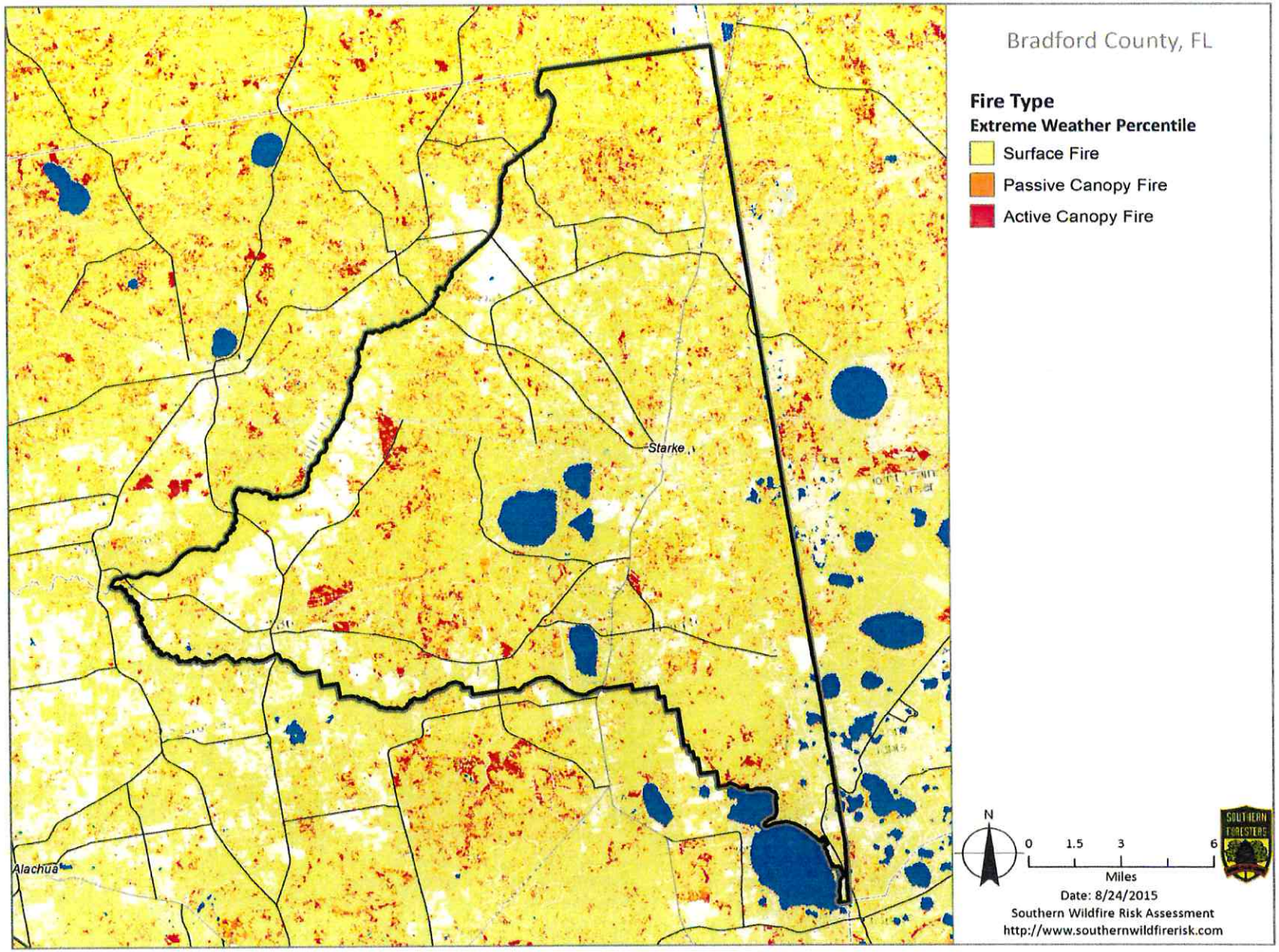
For all Southern states, except Florida and Texas, this dataset was derived from updated fuels and canopy data as part of the 2010 SWRA Update Project recently completed in May 2014. For Texas, the 2010 Texas risk update data is portrayed. For Florida, the 2010 Florida risk assessment update data is shown.

The fire type - extreme map is derived at a 30-meter resolution. This scale of data was chosen to be consistent with the accuracy of the primary surface fuels dataset used in the assessment. While not appropriate for site specific analysis, it is appropriate for regional, county or local planning efforts.

Fire Type (Extreme) - Acres

Fire Type	Acres	Percent
Non-Burnable	37,639	19.6%
Surface Fire	142,836	74.4%
Passive Canopy	1,314	0.7%
Active Canopy	10,239	5.3%
Total	**192,027**	**100.0%**


Bradford County, FL
Fire Type - Extreme - Acres
Acres
150,000
100,000
50,000
0
142,836
37,639
1,314
10,239
Non-Burnable
Surface Fire
Passive Canopy Fire
Active Canopy Fire


Bradford County, FL
Fire Type
Extreme Weather Percentile
Surface Fire
Passive Canopy Fire
Active Canopy Fire
Starke
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
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Surface Fuels

Description

Surface fuels, or fire behavior fuel models as they are technically referred to, contain the parameters needed by the Rothermel (1972) surface fire spread model to compute surface fire behavior characteristics, such as rate of spread, flame length, fireline intensity, and other fire behavior metrics. As the name might suggest, surface fuels only account for the surface fire potential. Canopy fire potential is computed through a separate but linked process. The Southern Wildfire Risk Assessment accounts for both surface and canopy fire potential in the fire behavior outputs.

Surface fuels are typically categorized into one of four primary fuel types based on the primary carrier of the surface fire: 1) grass, 2) shrub/brush, 3) timber litter and 4) slash. There are two standard fire behavior fuel model sets published for use. The Fire Behavior Prediction System 1982 Fuel Model Set (Anderson, 1982) contains 13 fuel models and the Fire Behavior Prediction System 2005 Fuel Model Set (Scott & Burgan, 2005) contains 40 fuel models.

The SWRA Surface Fuels have been updated to use the FBPS 2005 40 fuel model set from the LANDFIRE 2010 products, supplemented with additional enhancements obtained through calibration workshops with the Southern states. Florida uses FBPS 1982 fuel models derived based on spectral classification of Landsat Thematic Mapper (TM) satellite imagery derived as part of the Florida Forest Service fuels mapping and risk assessment projects. Texas fuels represent 2010 updates conducted as part of a statewide fuels and canopy mapping effort.

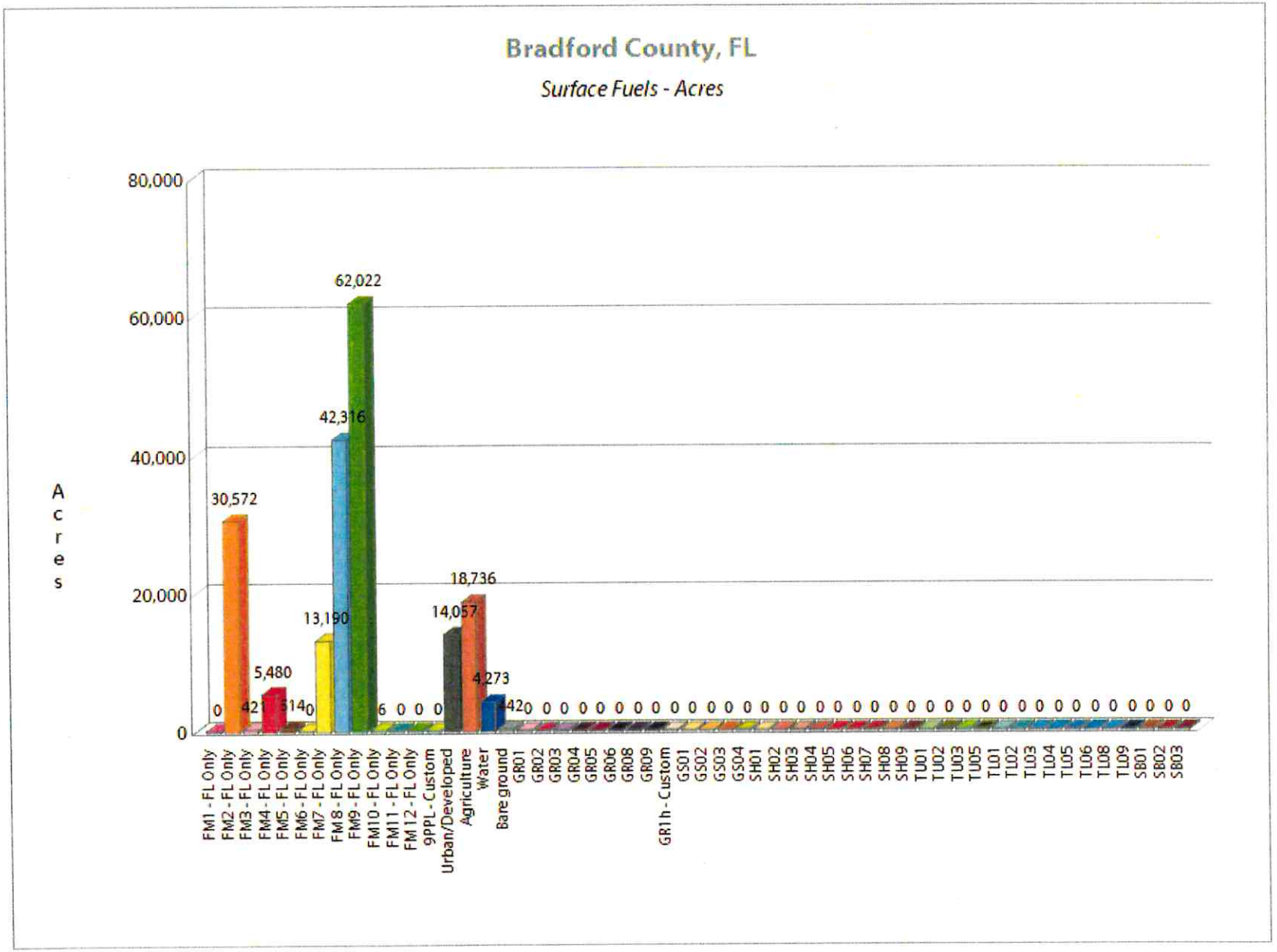
For the remaining 11 Southern states, the recently completed SWRA Update project produced a new surface fuels dataset based on 2010 LANDFIRE products. A detailed fuels calibration process was undertaken that involved collaboration with Southern state fuels and fire behavior specialists supported by federal partner involvement. Workshops were held to review the LANDFIRE fuels product and calibrate the data by modifying specific fuels classes to better reflect local knowledge and input. A key component of this calibration task involved using image processing techniques to better delineate conifer areas, and in particular pine areas (plantations and natural stands). The fuels layer represents 2010 conditions.

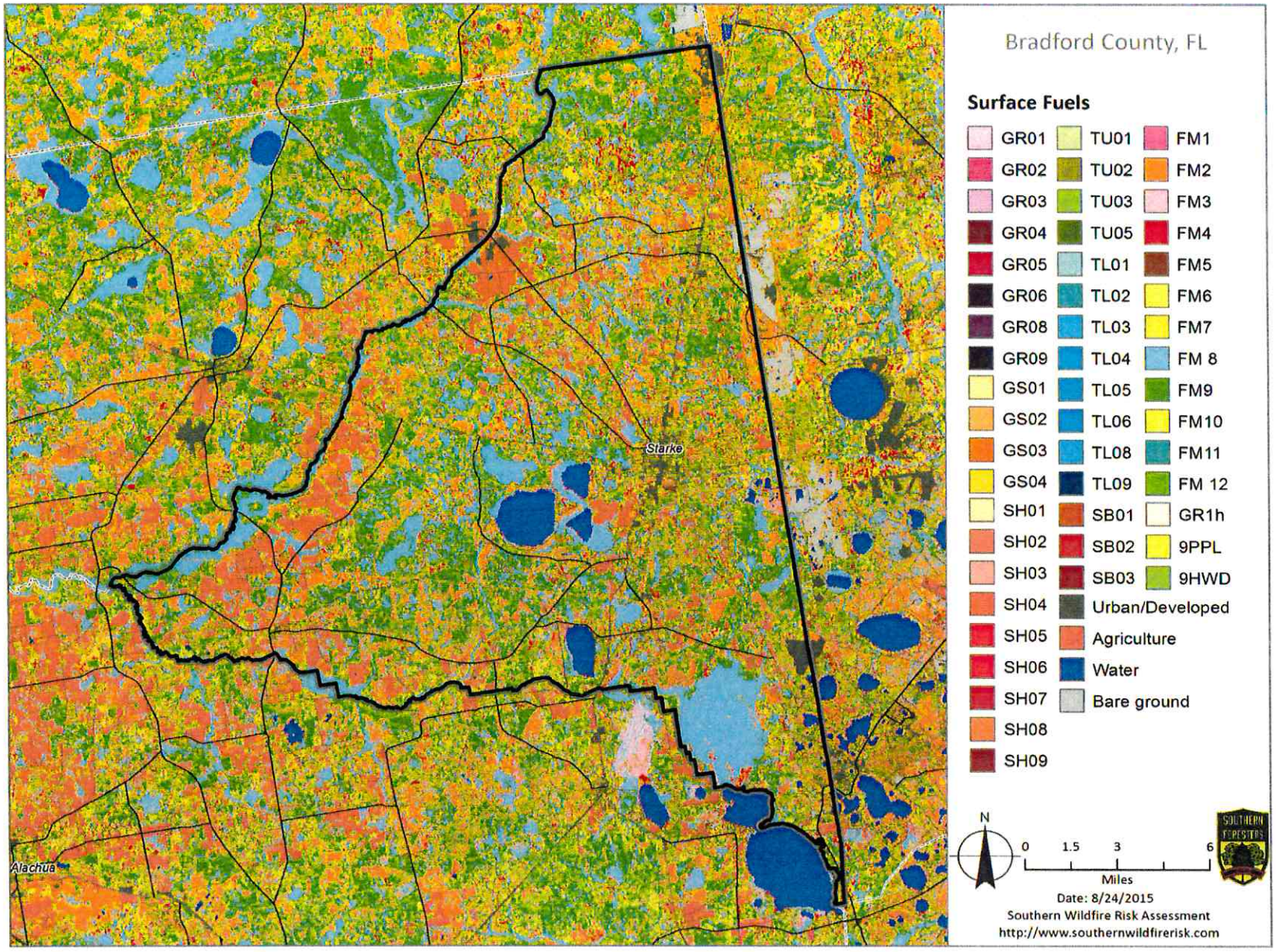
Surface Fuel	FBPS Fuel Model Set	Description	Acres	Percent
Grass Fuels Type Models (nearly pure grass and/or forb type)				
GR01	2005	Grass is short, patchy, and possibly heavily grazed. Spread rate moderate; flame length low.	0	0.0%
GR02	2005	Moderately coarse continuous grass, average depth about 1 foot. Spread rate high; flame length moderate.	0	0.0%
GR03	2005	Very coarse grass, average depth about 2 feet. Spread rate high; flame length moderate.	0	0.0%
GR04	2005	Moderately coarse continuous grass, average depth about 2 feet. Spread rate very high; flame length high.	0	0.0%
GR05	2005	Dense, coarse grass, average depth about 1 to 2 feet. Spread rate very high; flame length high.	0	0.0%
GR06	2005	Dryland grass about 1 to 2 feet tall. Spread rate very high; flame length very high.	0	0.0%
GR08	2005	Heavy, coarse, continuous grass 3 to 5 feet tall. Spread rate very high; flame length very high.	0	0.0%
GR09	2005	Very heavy, coarse, continuous grass 5 to 8 feet tall. Spread rate extreme; flame length extreme.	0	0.0%
Grass-Shrub Fuel Type Models (mixture of grass and shrub, up to 50 percent shrub coverage)				
GS01	2005	Shrubs are about 1 foot high, low grass load. Spread rate moderate; flame length low.	0	0.0%
GS02	2005	Shrubs are 1 to 3 feet high, moderate grass load. Spread rate high; flame length moderate.	0	0.0%
GS03	2005	Moderate grass/shrub load, average grass/shrub depth less than 2 feet. Spread rate high; flame length moderate.	0	0.0%
GS04	2005	Heavy grass/shrub load, depth greater than 2 feet. Spread rate high; flame length very high.	0	0.0%
Shrub Fuel Type Models (Shrubs cover at least 50 percent of the site, grass sparse to nonexistent)				
SH01	2005	Low shrub fuel load, fuelbed depth about 1 foot; some grass may be present. Spread rate very low; flame length very low.	0	0.0%
SH02	2005	Moderate fuel load (higher than SH01), depth about 1 foot, no grass fuel present. Spread rate low; flame length low.	0	0.0%
SH03	2005	Moderate shrub load, possibly with pine overstory or herbaceous fuel, fuel bed depth 2 to 3 feet. Spread rate low; flame length low.	0	0.0%
SH04	2005	Low to moderate shrub and litter load, possibly with pine overstory, fuel bed depth about 3 feet. Spread rate high; flame length moderate.	0	0.0%

	Surface Fuel	FBPS Fuel Model Set	Description	Acres	Percent
	SH05	2005	Heavy shrub load, depth 4 to 6 feet. Spread rate very high; flame length very high.	0	0.0%
	SH06	2005	Dense shrubs, little or no herb fuel, depth about 2 feet. Spread rate high; flame length high.	0	0.0%
	SH07	2005	Very heavy shrub load, depth 4 to 6 feet. Spread rate lower than SH05, but flame length similar. Spread rate high; flame length very high.	0	0.0%
	SH08	2005	Dense shrubs, little or no herb fuel, depth about 3 feet. Spread rates high; flame length high.	0	0.0%
	SH09	2005	Dense, finely branched shrubs with significant fine dead fuel, about 4 to 6 feet tall; some herbaceous fuel may be present. Spread rate high, flame length very high.	0	0.0%
Timber-Understory Fuel Type Models (Grass or shrubs mixed with litter from forest canopy)					
	TU01	2005	Fuelbed is low load of grass and/or shrub with litter. Spread rate low; flame length low.	0	0.0%
	TU02	2005	Fuelbed is moderate litter load with shrub component. Spread rate moderate; flame length low.	0	0.0%
	TU03	2005	Fuelbed is moderate litter load with grass and shrub components. Spread rate high; flame length moderate.	0	0.0%
	TU05	2005	Fuelbed is high load conifer litter with shrub understory. Spread rate moderate; flame length moderate.	0	0.0%
Timber Litter Fuel Type Models (dead and down woody fuel litter beneath a forest canopy)					
	TL01	2005	Light to moderate load, fuels 1 to 2 inches deep. Spread rate very low; flame length very low.	0	0.0%
	TL02	2005	Low load, compact. Spread rate very low; flame length very low.	0	0.0%
	TL03	2005	Moderate load conifer litter. Spread rate very low; flame length low.	0	0.0%
	TL04	2005	Moderate load, includes small diameter downed logs. Spread rate low; flame length low.	0	0.0%
	TL05	2005	High load conifer litter; light slash or mortality fuel. Spread rate low; flame length low.	0	0.0%
	TL06	2005	Moderate load, less compact. Spread rate moderate; flame length low.	0	0.0%
	TL08	2005	Moderate load and compactness may include small amount of herbaceous load. Spread rate moderate; flame length low.	0	0.0%

	Surface Fuel	FBPS Fuel Model Set	Description	Acres	Percent
	TL09	2005	Very high load broadleaf litter; heavy needle-drape in otherwise sparse shrub layer. Spread rate moderate; flame length moderate.	0	0.0%
Slash-Blowdown Fuel Type Models (activity fuel/slash or debris from wind damage)					
	SB01	2005	Low load activity fuel. Spread rate moderate; flame length low.	0	0.0%
	SB02	2005	Moderate load activity or low load blowdown. Spread rate moderate; flame length moderate.	0	0.0%
	SB03	2005	High load activity fuel or moderate load blowdown. Spread rate high; flame length high.	0	0.0%
Custom Fuel Type Models (all states except Florida)					
	9PPL	Custom	Long-needle (pine litter, plantations) with a high load	0	0.0%
	GR01h	Custom	Pasture and hayland	0	0.0%
Non-burnable Fuel Type Models (insufficient wildland fuel to carry a wildland fire under any condition)					
	NB01	2005	Urban or suburban development; insufficient wildland fuel to carry wildland fire. Includes roads.	14,057	7.3%
	NB03	2005	Agricultural field, maintained in nonburnable condition.	18,736	9.8%
	NB08	2005	Open water	4,273	2.2%
	NB09	2005	Bare ground	442	0.2%
1982 Fire Behavior Prediction System – ONLY USED FOR FLORIDA ASSESSMENT					
	FM 1	1982	Short grass	0	0.0%
	FM 2	1982	Timber grass and understory	30,572	15.9%
	FM 3	1982	Tall grass	421	0.2%
	FM 4	1982	Chaparral	5,480	2.9%

	Surface Fuel	FBPS Fuel Model Set	Description	Acres	Percent
	FM 5	1982	Brush	514	0.3%
	FM 6	1982	Dormant brush	0	0.0%
	FM 7	1982	Southern rough	13,190	6.9%
	FM 8	1982	Compact timber litter	42,316	22.0%
	FM 9	1982	Hardwood litter	62,022	32.3%
	FM 10	1982	Timber (understory)	6	0.0%
	FM 11	1982	Light logging slash	0	0.0%
	FM 12	1982	Medium logging slash	0	0.0%
				192,027	**100.0%**


Bradford County, FL
Surface Fuels - Acres
Acres
80,000
60,000
40,000
20,000
0
30,572
5,480
13,190
42,316
62,022
14,057
18,736
4,273
FM1 - FL Only
FM2 - FL Only
FM3 - FL Only
FM4 - FL Only
FM5 - FL Only
FM6 - FL Only
FM7 - FL Only
FM8 - FL Only
FM9 - FL Only
FM10 - FL Only
FM11 - FL Only
FM12 - FL Only
9PPL - Custom
Urban/Developed
Agriculture
Water
Bare ground
GR01
GR02
GR03
GR04
GR05
GR06
GR08
GR09
GR1h - Custom
GS01
GS02
GS03
GS04
SH01
SH02
SH03
SH04
SH05
SH06
SH07
SH08
SH09
TU01
TU02
TU03
TU05
TL01
TL02
TL03
TL04
TL05
TL06
TL08
TL09
SB01
SB02
SB03


Bradford County, FL
Surface Fuels
GR01
GR02
GR03
GR04
GR05
GR06
GR08
GR09
GS01
GS02
GS03
GS04
SH01
SH02
SH03
SH04
SH05
SH06
SH07
SH08
SH09
TU01
TU02
TU03
TU05
TL01
TL02
TL03
TL04
TL05
TL06
TL08
TL09
SB01
SB02
SB03
Urban/Developed
Agriculture
Water
Bare ground
FM1
FM2
FM3
FM4
FM5
FM6
FM7
FM 8
FM9
FM10
FM11
FM 12
GR1h
9PPL
9HWD
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com
Starke
Alachua

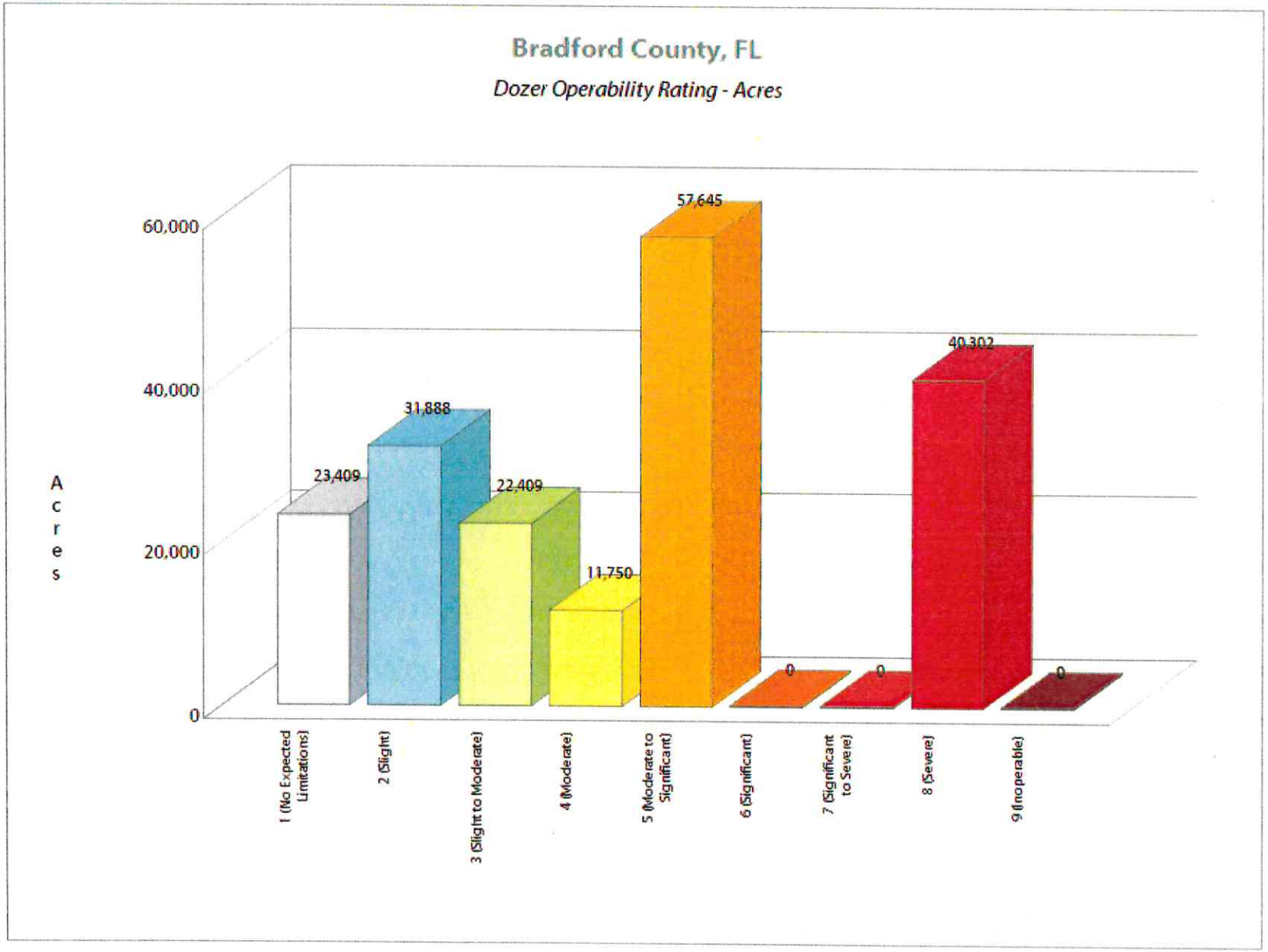
Dozer Operability Rating

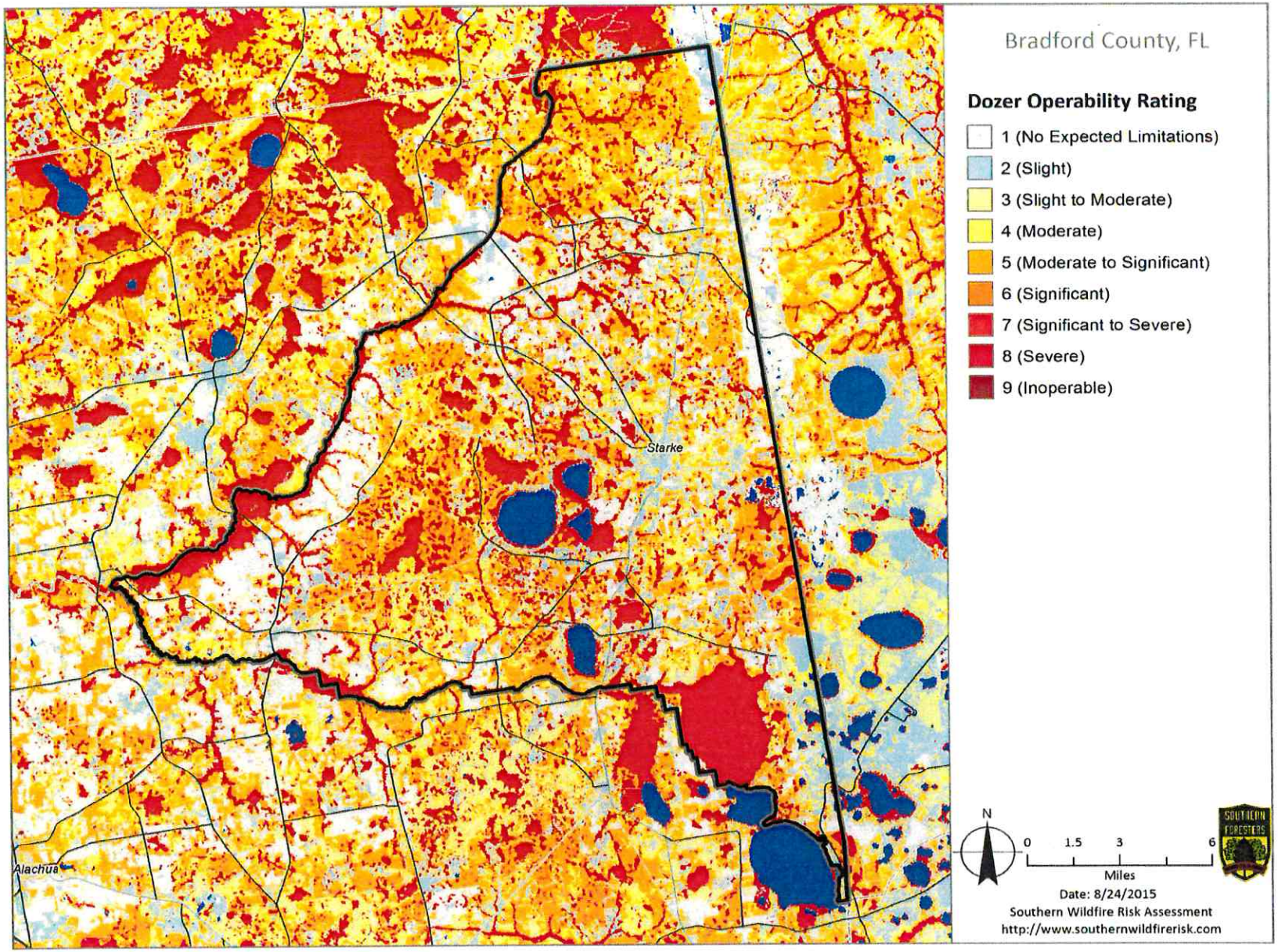
Description

The Dozer Operability Rating (DOR) expresses how difficult it is to operate a dozer in an area based on limitations associated with slope and vegetation/fuel type. Using the fireline production rates published in the NWCG Fireline Handbook 3 (PMS 410-1) as a guide, operability values were assigned to a matrix based on 6 slope classes and 10 vegetation/fuels classes. The possible values range from 1 to 9, with 1 representing no limitations and 9 being inoperable.

Dozer Operability Rating - Acres

Class	Acres	Percent
1 (No Expected Limitations)	23,409	12.5%
2 (Slight)	31,888	17.0%
3 (Slight to Moderate)	22,409	12.0%
4 (Moderate)	11,750	6.3%
5 (Moderate to Significant)	57,645	30.8%
6 (Significant)	0	0.0%
7 (Significant to Severe)	0	0.0%
8 (Severe)	40,302	21.5%
9 (Inoperable)	0	0.0%
Total	**187,403**	**100.0%**


Bradford County, FL
Dozer Operability Rating - Acres
Acres
60,000
40,000
20,000
0
23,409
31,888
22,409
11,750
57,645
0
0
40,302
0
1 (No Expected Limitations)
2 (Slight)
3 (Slight to Moderate)
4 (Moderate)
5 (Moderate to Significant)
6 (Significant)
7 (Significant to Severe)
8 (Severe)
9 (Inoperable)


Bradford County, FL
Dozer Operability Rating
1 (No Expected Limitations)
2 (Slight)
3 (Slight to Moderate)
4 (Moderate)
5 (Moderate to Significant)
6 (Significant)
7 (Significant to Severe)
8 (Severe)
9 (Inoperable)
Starke
Alachua
N
0
1.5
3
6
Miles
Date: 8/24/2015
Southern Wildfire Risk Assessment
http://www.southernwildfirerisk.com

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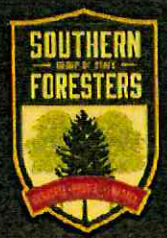
More information about the Fire Program Analysis project is available from
http://www.forestsandrangelands.gov/WFIT/applications/FPA/index.shtml

More information about the Oak Ridge National Laboratory LandScan data is available from
http://web.ornl.gov/sci/landscan/landscan_documentation.shtml

More information about the U.S. Forest Service SILVIS data is available from http://silvis.forest.wisc.edu/maps/wui_main



SOUTHERN GROUP OF STATE FORESTERS
WILDFIRE RISK ASSESSMENT PORTAL