Fire Weather Services Operating Plan For West Virginia

National Weather Service:
Charleston, WV (RLX)
Pittsburgh, PA (PBZ)
Blacksburg, VA (RNK)
Sterling, VA (LWX)

2020

This operating plan is a semi-permanent document, specifying Fire Weather services provided by National Weather Service in West Virginia. The plan incorporates procedures detailed in the Interagency Agreement for Meteorological Services.

West Virginia Fire Weather Services Operating Plan – Index Page

I. INTRODUCTION……..……..……3
Changes from previous plan……...3

II. SERVICE AREA AND ORGANIZATIONAL DIRECTORY……...….4-11
A. National Weather Service (NWS) County Warning Areas…….4-5
B. NWS Offices and Points of Contact……..……...…….....6-7
1. NWS Charleston, WV Forecast Office (RLX)…….…….……..6
2. NWS Pittsburgh, PA Forecast Office (PBZ)…….…….…….....6-7
3. NWS Blacksburg, VA Forecast Office (RNK)…….……..……7
4. NWS Sterling, VA Forecast Office (LWX)……7
C. List of Participating Agencies……..……..……8-11
1. Agencies, Contacts, and Phone numbers……..…….8-9
2. Agency Area Maps……..……..……9-11
a. West Virginia Forestry Districts……..……..9
b. Monongahela National Forest – West Virginia……...10
c. New River Gorge National River – West Virginia……..11

III. SERVICES PROVIDED BY THE NATIONAL WEATHER SERVICE…….12-25
A. Fire Weather Seasons…….12
B. Fire Weather Products……..12-24
1. Fire Weather Planning Forecast (FWF)……..…….12-16
a. Issuance times……..……12
b. How to retrieve the forecast……12
c. Content……...13-16
2. National Fire Danger Rating System Forecasts (NFDRS-FWM)…..…..…17-20
a. Procedures for Land Management Agencies..…….17
b. NFDRS-FWM Forecast Issuance times and locations……....18
c. Content…….....19-20
d. WIMS ID contact…….20
3. Site-specific Wildland Fire Forecasts (SPOT forecasts)……..…21-22
a. Criteria…….21
b. Content…….…21
c. Procedures…..……21-22
4. Fire Weather Watch and Red Flag Warning Program…….....…23-24
a. Criteria……23-24
b. Content…….…….…..24
C. Special Services…….…25
D. Fire Danger Statements and Blow-Up Alerts…..……..…..……...25
E. NOAA Weather Radio All-Hazards Locations……...……..26

IV. JOINT RESPONSIBILITIES……...27
V. BACKUP PROCEDURES (for users)...……..…27
VI. EFFECTIVE DATES ON THE FIRE WEATHER SERVICES OPERATING PLAN..…...27
VII. NATIONAL AGREEMENT……....27
VIII. SIGNATORY PAGE……...…28

I. INTRODUCTION

This Fire Weather Services Operating Plan serves as the official document governing the interaction and relationships between the National Weather Service (NWS), and the federal, state, and local natural resource and land management agencies or cooperators in West Virginia. These include the following agencies:

- NOAA National Weather Service
- USDA Forest Service
- USDOI National Park Service
- WV Division of Forestry

The plan also identifies meteorological services to be provided by the NWS. Services provided by the NWS fall into two categories, basic and special services. Basic services are provided without cost and are processed directly between the user and the NWS office personnel. Examples of basic services include the Fire Weather Planning Forecast (FWF), numerical forecasts for NFDRS (FWM), spot forecasts, along with Fire Weather Watches and Red Flag Warnings. Spot forecasts are available upon request 24 hours a day throughout the year. Special services are provided on a reimbursable basis. Orders should be placed directly with the NWS Office. Special services could include teaching weather-related courses, or an on-site Incident Meteorologist (IMET). Please reference the Eastern Area Mobilization Guide and/or the National Mobilization Guide for details about these special services.

Changes from 2019 Plan:

Page 6…….Removed Shawn Harley as Meteorologist in Charge for Jackson, KY NWS

Page 7……Removed David Wert as MIC at Blacksburg, VA

Page 7…….Added "James Morrow" as Fire Weather Program Leader at RAH

Page 7…..Added Jonathan Blaes as MIC at RAH

Page 8…..updated fire weather contacts for MACC and Monongahela Forest

Page 16…..Changed CPC web link to https://www.cpc.ncep.noaa.gov

Page 18…..updated new FWM time periods

II. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

The Service Area covered by this Operating Plan is the state of West Virginia, which is served by the National Weather Service Weather Forecast Offices at Blacksburg, VA (RNK), Charleston, WV (RLX), Pittsburgh, PA (PBZ), and Sterling, VA (LWX).

A. National Weather Service (NWS) County Warning Areas

The RLX forecast area covers much of West Virginia, except for the panhandles and a southeast portion of the state. This includes the following counties/zones:

County:	Zone Number:	County:	Zone Number:
Barbour	WVZ040	Northwest Raleigh	WVZ515
Boone	WVZ026	Northwest Randolph	WVZ525
Braxton	WVZ028	Northwest Webster	WVZ521
Cabell	WVZ006	Pleasants	WVZ010
Calhoun	WVZ018	Putnam	WVZ014
Clay	WVZ027	Ritchie	WVZ019
Doddridge	WVZ020	Roane	WVZ016
Gilmer	WVZ029	Southeast Fayette	WVZ518
Harrison	WVZ031	Southeast Nicholas	WVZ520
Jackson	WVZ008	Southwest Pocahontas	WVZ524
Kanawha	WVZ015	Southeast Raleigh	WVZ516
Lewis	WVZ030	Southeast Randolph	WVZ526
Lincoln	WVZ013	Southeast Webster	WVZ522
Logan	WVZ025	Taylor	WVZ032
McDowell	WVZ033	Tyler	WVZ011
Mason	WVZ007	Upshur	WVZ039
Mingo	WVZ024	Wayne	WVZ005
Northwest Fayette	WVZ517	Wirt	WVZ017
Northwest Nicholas	WVZ519	Wood	WVZ009
Northwest Pocahontas	WVZ523	Wyoming	WVZ034

The LWX forecast area covers mainly the eastern panhandle of West Virginia, including the following counties/zones:

County:	Zone Number:	County:	Zone Number:
Berkeley	WVZ052	Jefferson	WVZ053
Grant (Western)	WVZ501	Mineral (Western)	WVZ503
Grant (Eastern)	WVZ502	Mineral (Eastern)	WVZ504
Hampshire	WVZ050	Morgan	WVZ051
Hardy	WVZ055	Pendleton (Western)	WVZ505
		Pendleton (Eastern)	WVZ506

The PBZ forecast area covers the northern part of the state, including the northern panhandle. This includes the following counties/zones:

County:	Zone Number:	County:	Zone Number:
Brooke	WVZ002	Marion	WVZ021
Eastern Preston	WVZ512	Ohio	WVZ003
Eastern Mon/NW Preston	WVZ510	Preston	WVZ511
Eastern Tucker	WVZ514	Wetzel	WVZ012
Hancock	WVZ001	Western Tucker	WVZ513
Marshall	WVZ004		
Monongalia	WVZ509		

The RNK forecast area covers a portion of southeast West Virginia, including the following counties/zones:

County:	Zone Number:
Western Greenbrier	WVZ508
Eastern Greenbrier	WVZ507
Mercer	WVZ042
County:	Zone Number:
Monroe	WVZ044
Summers	WVZ043

B. NWS Offices and Points of Contact:

1. Charleston, West Virginia Forecast Office (RLX)
   Online: http://www.weather.gov/rlx/fireweather
   Phone: 304-746-0189 unlisted forecast line / 304-746-0180 public line
   304-401-0193 fax
   Address: 400 Parkway Road
   Charleston, West Virginia 25309
   Fire Weather Program Leader: Simone Lewis (Simone.Lewis@noaa.gov)
   Meteorologist in Charge: Jamie Bielinski (Jamie.Bielinski@noaa.gov)
   Primary Backup Office: NWS Pittsburgh (PBZ)
   See PBZ Contact Information below
   Secondary Backup Office: NWS Jackson, KY (JKL)
   Fire Weather Program Leader: Jon Pelton
   Meteorologist in Charge: Vacant
   Phone: 606-666-8000, Fax: 606-666-4168
2. Pittsburgh, Pennsylvania Forecast Office (PBZ)
   Online: https://www.weather.gov/pbz/fireweather
   Phone: 412-262-1485
   412-262-2034 fax

Address: 192 Shafer Road
Moon Township, Pennsylvania 15108
Fire Weather Program Leader: Michael Brown (Michael.J.Brown@noaa.gov)
Meteorologist in Charge: Tony Hall (Tony.Hall@noaa.gov)
Primary Backup Office: NWS Charleston (RLX)
See RLX Contact Information above
Secondary Backup Office: NWS Buffalo, NY (BUF)
Fire Weather Program Leader: William Hibbert
Meteorologist in Charge:
Phone: 716-565-0013, Fax: 716-565-9002

3. Blacksburg, Virginia Forecast Office (RNK)
Online: http://www.weather.gov/rnk/fire
Phone: 540-552-1324

Address: Virginia Tech Corporate Research Center
1750 Forecast Drive
Blacksburg, Virginia 24060
Fire Weather Program Leader: Phillip Manuel (Phillip.Manuel@noaa.gov)
Meteorologist in Charge: Vacant
Primary Backup Office: NWS Raleigh, NC (RAH)
Fire Weather Program Leader: James Morrow
Meteorologist in Charge: Jonathan Blaes
Phone: 919-515-8200, Fax: 919-515-8213
Secondary Backup Office: NWS Greenville-Spartanburg, SC (GSP)
Fire Weather Program Leader: Scott Krentz
Meteorologist in Charge: Stephen Wilkinson
Phone: 864-848-1332, Fax: 864-848-5072

4. Sterling, Virginia Forecast Office (LWX)
Online: http://www.weather.gov/lwx/fire
Phone: 703-996-2200
703-260-0809 fax
Address: 43858 Weather Service Road
Sterling, Virginia 20166
Fire Weather Program Leader: Luis Rosa (Luis.Rosa@noaa.gov)
Meteorologist in Charge: Jim Lee (James.E.Lee@noaa.gov)
Primary Backup Office: NWS Mount Holly, NJ (PHI)
Fire Weather Program Leader: Lee Robertson
Phone: 609-261-6604, Fax: 609-261-6614
Secondary Backup Office: NWS State College, PA (CTP)
Fire Weather Program Leader: Bill Gartner
Meteorologist in Charge: Barbara Watson
Phone: 814-231-2405, Fax: 814-235-7959

C. List of Participating Agencies

1. Agencies, Contacts, and Phone Numbers

Eastern Area Coordination Center: https://gacc.nifc.gov/eacc/
626 E. Wisconsin Ave. Suite 500, Milwaukee, WI 53202
Main phone number: 414-944-3811 Fax: 414-944-3838
Interagency Fire Weather Program Leader/Meteorologist - Stephen Marien (stephen_marien@nps.gov) 651-293-8446/651-290-3815 fax/402-250-7844 cell

Mid Atlantic Coordination Center:
Center manager-Tracy Allen-(tracy.allen@usda.gov)
717-980-3231 (office) 740-270-4491 cell

Monongahela National Forest:
Fire Management Officer – Walt Walter (terry.walter@usda.gov)
304-635-4486 (work) or 304-642-1801 (cell)
Fire Planner - Cameron Crisp (cacrisp@fs.fed.us)
304-635-4440 (office) or / 304-642-2035 cell
Assistant Fire Management officer – John Fry (john.fry@usda.gov)
304-635-4493 (work) or 304-704-9196 (cell)
North Zone AFMO-Bobby Iser (bobby.iser@usda.gov) 304-257-4488 ext 7123 (office)
Or 228-223-7090 (cell)
South Zone AFMO-Susan Greenleaf (susan.greenleaf@usda.gov) 304-536-2144 (office)

- Gauley Ranger District (Nicholas-RLX) 304-846-2695
- Greenbrier Ranger District (Northern Pocahontas-RLX) 304-456-3335
- Marlinton Ranger District (Central Pocahontas-RLX) 304-799-4334
- Cranberry Mountain Nature Center (SW Pocahontas-RLX) 304-653-4826
- Cheat Ranger District (Tucker-PBZ) 304-257-4488
- Potomac Ranger District (Grant-LWX) 304-478-2000/304-478-3251
- White Sulphur Springs District (Greenbrier-RNK) 304-536-2144

Seneca Rocks Discovery Center (Pendleton-LWX) 304-567-2827

New River Gorge National River (Fayette, Nicholas, Raleigh, Summers-RLX/RNK)
Chief Ranger – Duane Michael (ronald_michael@nps.gov) work 304-465-6518, cell 304-640-8802.
Fire Management Officer – Vacant

- Canyon Rim Visitor Center 304-574-2115
- Grandview 304-763-3145
- Glen Jean 304-465-0508

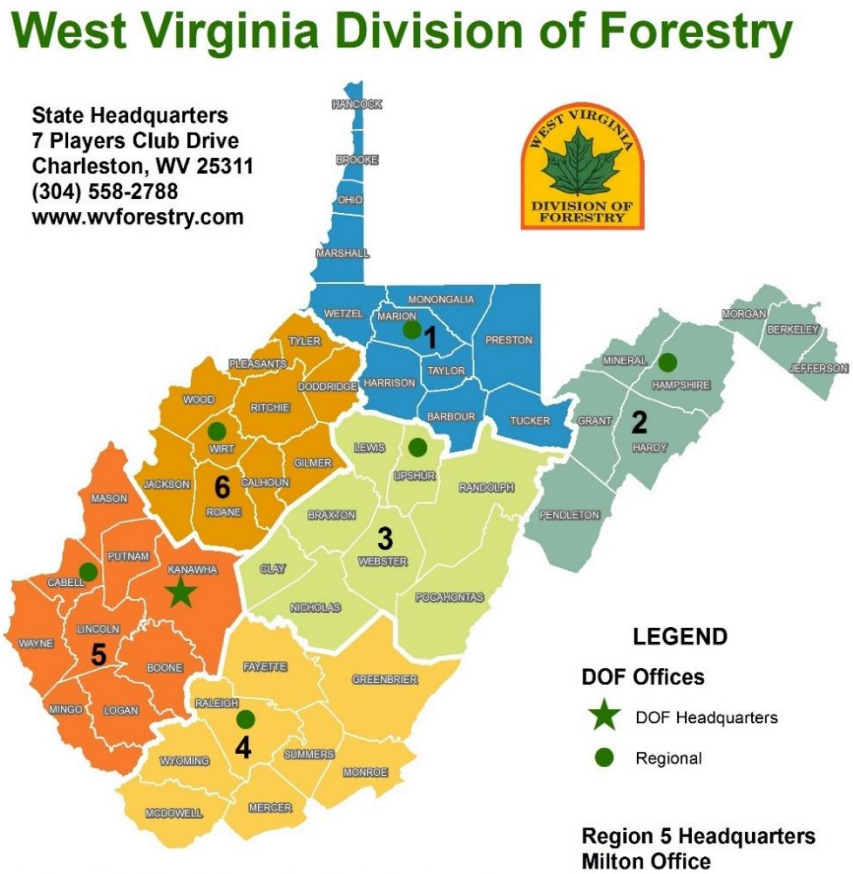
West Virginia Division of Forestry:
State Forester – Barry Cook (Barry.L.Cook@wv.gov) 304-558-2788 ext 51766
Assistant State Forester/Fire Supervisor – Walt Jackson (Walt.G.Jackson@wv.gov) 304-558-2788 ext 51779 or Jeremy Jones, Fire Staff Assistant 304-558-2788 ext 51770. (Jeremy.C.Jones@wv.gov)

- Region 1: Rudy Williams 304-825-6983 (L.Rudy.Williams@wv.gov), M. Rodger Ozburn (Fire Specialist) (M.Rodger.Ozburn@wv.gov), 304-825-6983.

- Region 2: William Pownell 304-822- 4512 (William.E.Pownell@wv.gov)
- Region 3: Jason Jones 304-380- 2227 (Jason.L.Jones@wv.gov)
- Region 4: Tom Cover 304-256- 6775 (C.Tom.Cover@wv.gov), Chris A. White
- (Chris.A.White@wv.gov), 304-256- 6775
- Region 5: Kevin Arnold 304-743- 6186 (Kevin.I.Arnold@wv.gov), Tony Evans,
- (H.Tony.Evans@wv.gov), 304-743- 6186.
- Region 6: Vernon Stephens 304-275- 0261 (Vernon.C.Stephens@wv.gov)

2. Agency Area Maps

a. West Virginia Forestry Districts



Region 1 Headquarters
Farmington Office
P.O. Box 40
(Street Address:
1160 Railroad Street)
Farmington, WV 26571
(304) 825-6983

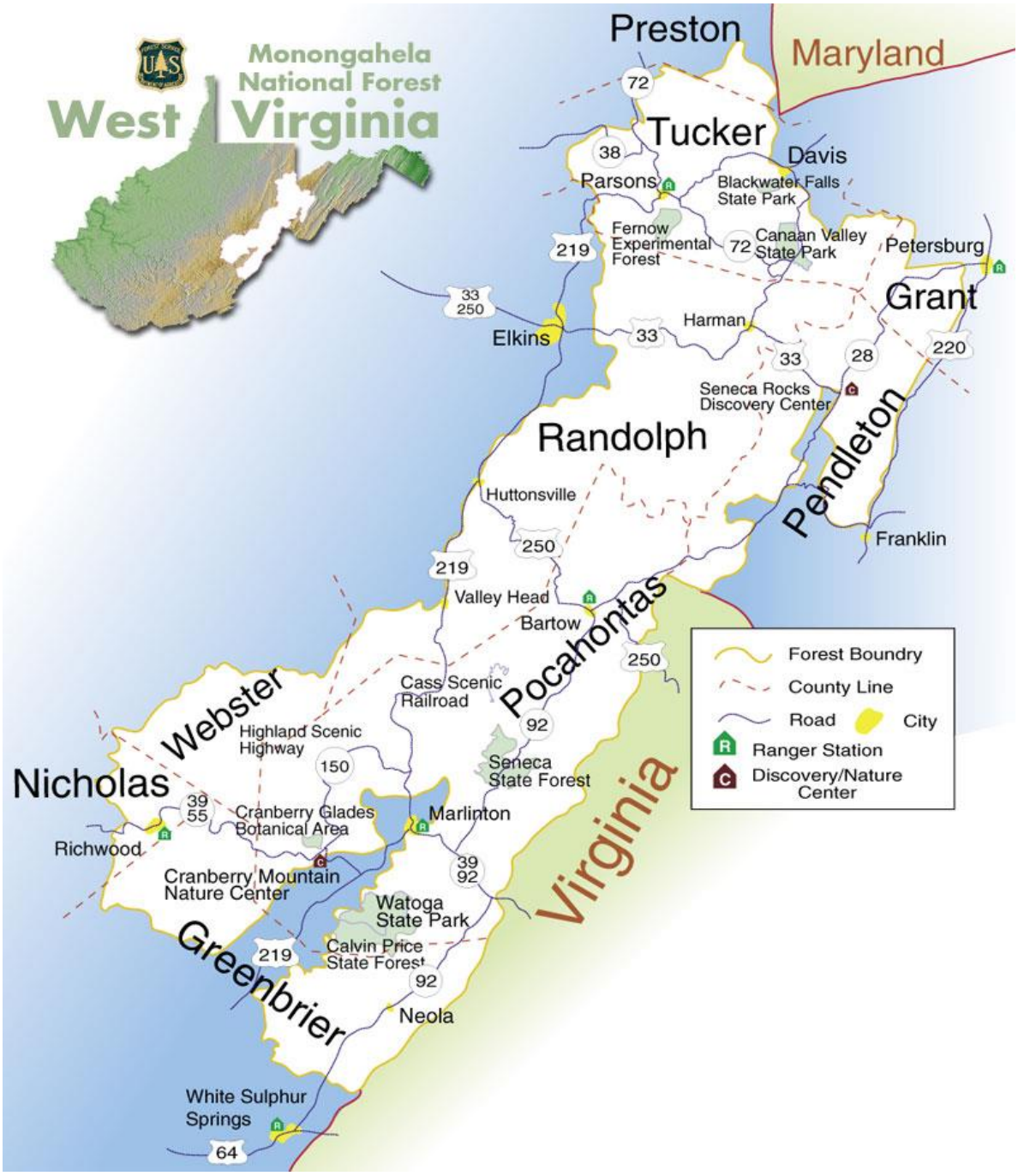
Region 2 Headquarters
Romney Office
1 Depot Street
Romney, WV 26757
(304) 822-4512

Region 3 Headquarters
Buckhannon Office
61 5th Street, Building 1
Buckhannon, WV 26201
(304) 380-2227

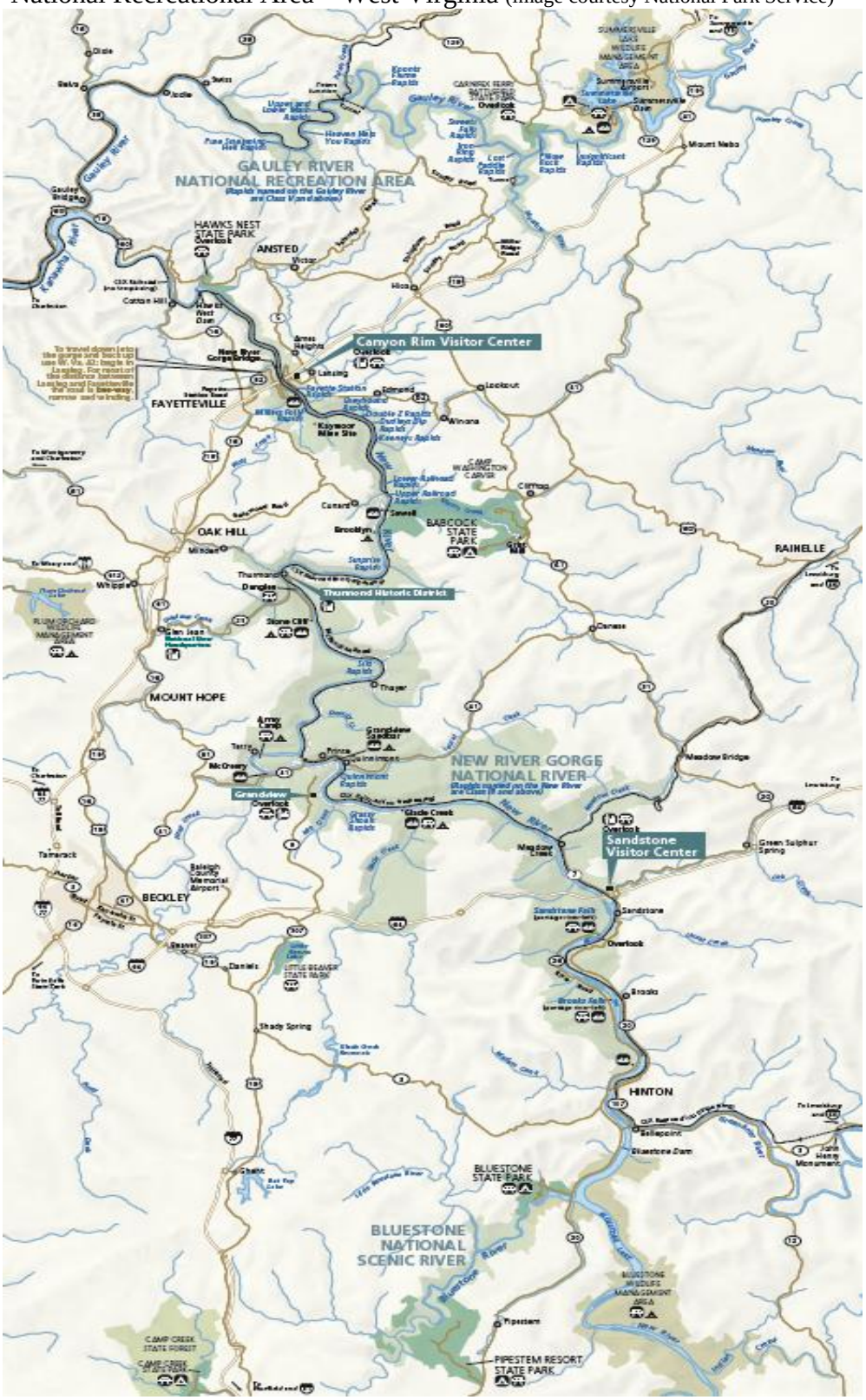
Region 4 Headquarters
Beckley Office
330 Harper Park Drive,
Suite J
Beckley, WV 25801
(304) 256-6775

Region 5 Headquarters
Milton Office
P.O. Box 189
(Street Address:
878 E. Main Street, Rear)
Milton, WV 25541
(304) 743-6186
(304) 743-6254

Region 6 Headquarters
Elizabeth Office
P O Box 2
25 Schoolview Street
Elizabeth, WV 26143
(304) 275-0261


Monongahela National Forest
West Virginia
Preston
Maryland
Tucker
Davis
Parsons
Blackwater Falls State Park
Fernow Experimental Forest
Canaan Valley State Park
Petersburg
Grant
Elkins
Harman
Seneca Rocks Discovery Center
Randolph
Pendleton
Huttonsville
Franklin
Valley Head
Bartow
Pocahontas
Webster
Cass Scenic Railroad
Highland Scenic Highway
Seneca State Forest
Nicholas
Cranberry Glades Botanical Area
Marlinton
Richwood
Cranberry Mountain Nature Center
Watoga State Park
Virginia
Calvin Price State Forest
Greenbrier
Neola
White Sulphur Springs
Forest Boundry
County Line
Road
City
Ranger Station
Discovery/Nature Center

c. New River Gorge National River, Bluestone National Scenic River, Gauley River National Recreational Area – West Virginia (image courtesy National Park Service)



III. SERVICES PROVIDED BY THE NATIONAL WEATHER SERVICE

A. Fire Weather Seasons

Wildfires can occur in the state of West Virginia at any time. As a result, each NWS office issues the Fire Weather Planning Forecast year-round (see next section for specifics). However, there are two general peaks of the West Virginia fire weather season. They coincide roughly with the period before and up to full greening in the spring, and the period after the first frosts in the fall:

NWS Charleston and NWS Pittsburgh (generally west of the highest terrain): March 1st – May 31st and October 1st – December 31st
NWS Blacksburg and NWS Sterling (generally east of the highest terrain): February 15th – May 15th and October 1st – December 15th

B. Fire Weather Products

Routine fire weather products include the Fire Weather Planning Forecast (FWF) and National Fire Danger Rating System Fire Weather Matrix forecasts (FWM). Non-routine products include SPOT forecasts, Fire Weather Watches, and Red Flag Warnings.

1. Fire Weather Planning Forecast (FWF)

a. Issuance times – Year-round issuances with specific times as noted below.

NWS Charleston: FWF usually issued every three hours to reflect latest expectations. Updates may be issued at various times to reflect significant changes or to note the issuance of a Fire Weather Watch or Red Flag Warning.
NWS Pittsburgh: FWF issued twice a day, between 3 a.m. and 5 a.m and between 2 p.m. and 4 p.m.
NWS Blacksburg: FWF issued twice daily, once in the morning between 3a.m. and 6a.m., and the other in the afternoon between 2 p.m. and 4 p.m.
NWS Sterling: FWF issued twice daily, 5 am and another at 2 p.m.

b. How to retrieve the forecast

FWF Forecasts are available through the Weather Information Management System (WIMS) and online on NWS Office fire weather pages. Examples can be accessed by clicking to the latest FWF from each NWS Office:

NWS Charleston FWF:	FWF RLX
NWS Pittsburgh FWF:	FWF PBZ
NWS Blacksburg FWF:	http://www.weather.gov/rnk/fire
NWS Sterling FWF:	FWF LWX

c. Content/Format

This FWF product is issued by individual county zones as well as by county groupings based on climatology and land management areas. A.M. issuances will include the next 3 weather periods in detail: today, tonight, and tomorrow; followed by an extended forecast that contains general conditions through the remainder of the next 7 days. P.M. issuances (NWS Blacksburg and NWS Charleston), the more detailed portion of the forecast will usually include the next 4 weather periods.

The Format of the Fire Weather Forecast is specified in National Weather Service Directive 10-401. Some elements are optional and are not included by all of the NWS Offices.

The time of issuance is located in the header of the FWF, given in local time.

A headline may be added, but is usually not included unless watches or warnings have been posted, or near-critical conditions are expected.

Example:
...RED FLAG WARNING TODAY FOR THE SOUTHERN WEST VIRGINIA COAL FIELDS FOR LOW HUMIDITY AND STRONG WIND...

.DISCUSSION...
The discussion is a brief synopsis of current conditions and what can be expected over the next five days. It will include the mention of major weather features and any changes anticipated over the forecast area.

CLOUD COVER
The prevailing cloud cover across the area, given as MCLOUDY, CLOUDY, PCLDY, MCLEAR, or CLEAR.

PRECIP CHC (%)

This is the chance of precipitation ranging from 0 to 100 percent. This value indicates the percent probability that any one location will receive measurable rain of 0.01 inches or greater.

0-14%	**=**	None, unless flurries, sprinkles, or drizzle (non-measurable precipitation)
15-24%	**=**	Slight chance or isolated
25-54%	**=**	Chance, widely scattered, or scattered
55-74%	**=**	Likely or numerous
75-100%	**=**	Definite

PRECIP TYPE

There are various precipitation types that may be included. If no precipitation is forecast, NONE will be the precipitation type. Other examples include SNOWSHOWERS, SHOWERS, FLURRIES, SPRINKLES, RAIN, and TSTMS.

PRECIP DURATION

Approximate duration of forecast precipitation in hours.

MAX/MIN TEMP

Maximum and minimum temperatures are forecast in degrees Fahrenheit. Maximum temperatures will be given during the daytime period, and minimum temperatures for the overnight periods. NWS Pittsburgh and NWS Sterling also indicate a 24 hour trend compared to the previous day.

HUMIDITY (%) or "MAX/MIN RH"

Relative humidity is the ratio, in percent, of the amount of moisture in the air compared to the amount the air could hold if it were fully saturated (100%). FWF forecast indicates the minimum humidity expected for the day and maximum humidity level at night. NWS Pittsburgh and NWS Sterling also indicate a 24 hour trend compared to the previous day.

AM WIND (MPH) or "EARLY"

This is the morning wind direction and speed in miles per hour. Direction is given in the 8 cardinal directions, the direction from which the wind is blowing (N, NE, E, SE…). 20 ft winds, except "surface" winds for NWS Sterling.

PM WIND (MPH) or "LATE"

The pm wind contains the same data as am wind, but for the afternoon and overnight periods only.

PRECIP AMOUNT

Precipitation amount is given in inches and is the average amount expected when precipitation is forecast. When the chance of precipitation is less than 15%, a value of 0 will be given.

PRECIP DURATION

The duration of precipitation will be given in hours beginning at 0 if no precipitation is forecast.

PRECIP BEGIN

The forecast beginning time of precipitation, given in local time in whole hours.

PRECIP END

This is the forecast end time of precipitation.

HAINES INDEX

Haines Index is the sum of a stability term and a moisture term. The sum provides an indication of the potential for the rate of spread (ROS) of a fire on a given day. A Haines Index of 2-3 = very low, 4 = low, 5= moderate, and 6= high. Most of West Virginia is in the mid-elevation, which utilizes the temperatures and dew point values at 850 millibars (mb) and 700 mb - or roughly 5,000 and 10,000

feet above ground level under a standard atmosphere. However, NWS Sterling uses the low-elevation version of the Haines Index, which instead utilizes temperature and dew point values at 950 mb and 850 mb.

Stability Term (T_{850mb} - T_{700mb})	**Moisture Term** (Td_{850mb} - Td_{700mb})
1...5 °C or less	**1**...5 °C or less
2...6 to 10 °C	**2**...6 to 12 °C
3...11 °C or greater	**3**...13 °C or greater

Haines Index is calculated by adding the Stability Term to the Moisture Term using the table above.

LAL

LAL (Lightning Activity Level) describes the intensity or frequency of thunderstorms if forecast, otherwise a value of 1 is given.

Lightning Activity Level Guide

LAL	Coverage
1	No T-storms
2	Isolated T-storms (1-14% coverage)
3	Widely Scattered T-Storms (15-24% coverage)
4	Scattered T-storms (25-54% coverage)
5	Numerous (55+% coverage)
6	>=15% coverage...little or no rain (Dry Thunderstorms)

MIXING HGT (FT-AGL)

Mixing height is forecast in feet above ground level. The mixing height is the depth of the unstable air in the boundary layer and is used for forecasting smoke or pollutant trajectories.

TRANSPORT WIND (KTS)

Transport wind and is defined as the average wind speed in all directions of all winds within the layer bounded by the surface and the mixing height. This value provides information about the horizontal dispersion (location and distance downwind from the source) or suspended particles from prescribed fires.

VENT RATE (FT-KTS)

The ventilation rate, forecast for daytime periods, is the product of the transport wind speed and the mixing height. The resulting value is used for forecasting smoke behavior and trajectories. The ventilation rate gives the potential for the atmosphere to disperse smoke.

DISPERSION

Dispersion indicates the forecast smoke dispersion category for the overnight periods only. (4 knots = 4.6 mph; 8 knots = 9.2 mph; 12 knots = 13.8 mph)

Dispersion Values				
1	=	Very Poor	=	≤ 4 knots
2	=	Poor	=	$4 > x \leq 8$ knots
3	=	Good	=	$8 > x \leq 12$ knots
4	=	Excellent	=	> 12 knots

ADI…

The atmospheric dispersion index is the process by which the atmosphere mixes and transports particulates such as smoke away from their source. It is an assessment of air quality and smoke concentration.

ADI					
1-6	=	Very Poor	61-100	=	Good
7-12	=	Poor	>100	=	Very Good
13-20	=	Generally Poor			
21-40	=	Fair			
41-60	=	Generally Good			

LVORI…

The Low Visibility Occurrence Risk Index is an index of low visibility and ranges from 1-10 depending on the dispersion and relative humidity. A 1 indicates there is almost no chance of low visibility, while a 10 indicates low visibility is likely.

.EXTENDED...

This portion of the forecast will contain general temperatures, sky conditions, and precipitation expected through the remainder of the 7 day forecast period.

.OUTLOOK 8 TO 14 DAYS...

The extended outlook is taken from a daily forecast produced by the Climate Prediction Center (CPC). It includes temperature and precipitation trends compared to seasonal normal values for the time periods. ABOVE NORMAL, NEAR NORMAL, OR BELOW NORMAL will be given. For more information on this and other extended outlooks, please see the CPC website at https://www.cpc.ncep.noaa.gov/.

National Fire Danger Rating System Forecasts (NFDRS-FWM)

Our FWM (Fire Weather Matrix) is a small part of the National Fire Danger Rating System (NFDRS). The NFDRS is a complex model of fuel and weather parameters processed daily.

NFDRS forecasts will be issued for any predetermined site from which an NFDRS observation is received, provided the observation is received on time, is complete, and is deemed accurate. The natural resource agencies will determine which observation sites (normally RAWS sites) will be NFDRS sites. Initiation of NFDRS forecasts for a new site will be coordinated with the NWS, and the agency requesting new NFDRS service will provide the NWS with information about the site location. The NWS will notify the owner agency when bad data is received from a RAWS station.

The inputs include an 18Z (1 pm EST / 2 pm EDT) observation by the fire managers, set parameters about fuel type, and the forecast, FWM. After 21Z (4 pm EST / 5 pm EDT) daily, fire managers receive numeric outputs that suggest the severity of fire danger over a given area.

a. Procedures for Land Management Agencies

The land management agencies are responsible for taking, quality controlling, transmitting, and archiving the NFDRS observations. Observations must be received at the NWS in a timely manner. Forecasts will only be prepared for predetermined sites, and usually only from those site for which an observation has been received. The deadline for the land management agency for transmitting the observation is 1900 GMT (2 pm EST/3 pm EDT). The NWS will prepare and transmit the NFDRS forecasts no later than 1945 GMT (2:45 pm EST/3:45 pm EDT). Although the data cutoff time for ingest into the NFDRS software is 7 pm, preliminary calculations based on the forecast are used by the land managers to make staffing decisions at shift briefing time (4 pm).

b. NFDRS-FWM Forecast Issuance times and locations

All NWS Offices will produce NFDRS forecasts no later than 1945 GMT (2:45 pm EST/3:45 pm EDT). NWS Charleston also issues a version every 3 hours. Beginning March 2, 2020, all NWS offices will issue a 7 day forecast in the FWM.

This coded forecast is produced for 15 sites in the West Virginia, included in the following table. Additional sites may be added upon user request to the designated NWS Fire Weather Program Leader.

WV RAWS within NWS Charleston Forecast Area

Name	Station ID	County	Elevation (ft)	Latitude	Longitude	Owner
Conaway Lake	461601	Tyler	1190	39:26:45	-80:52:08	WV DOF
Flatwoods	463301	Braxton	1267	38:41:02	-80:38:58	WV DOF
Marlinton	464203	Pocahontas	3082	38:13:28	-80:02:16	USDA Forest Service
Lakin	463001	Mason	576	38:57:39	-82:05:19	WV DOF
Bee Mountain	463802	Kanawha	1353	38:12:01	-81:37:12	WV DOF
Grandview	464901	Raleigh	2240	37:49:57	-81:04:04	New River Gorge NR
Logan	464601	Logan	1650	37:51:18	-81:54:52	WV DOF
Elkhorn	465201	McDowell	1655	37:15:32	-81:41:52	WV DOF
Beech Fork	464302	Wayne	735	38:18:02	-82:25:02	WV DOF

WV RAWS within NWS Pittsburgh Forecast Area

Name	Station ID	County	Elevation (ft)	Latitude	Longitude	Owner
Davis (Beardon)	462601	Tucker	3853	39:06:18	-79:25:34	USDA Forest Service
Kingwood	460901	Preston	1873	39:24:24	-79:42:03	WVDOF
Tomlinson Run	460101	Hancock	1013	40:32:33	-80:35:01	WVDOF
WVU Research Forest		Monongalia	2280	39.676944	-79.771944	WVU

WV RAWS within NWS Blacksburg Forecast Area

Name	Station ID	County	Elevation (ft)	Latitude	Longitude	Owner
Pipestem	465401	Summers	2725	37:31:35	-80:59:57	WV DOF

WV RAWS within NWS Sterling Forecast Area

Name	Station ID	County	Elevation (ft)	Latitude	Longitude	Owner
Nathaniel Mtn.	461101	Hampshire	3004	39:11:58	78:47:27	WVDOF
Upper Tract	463501	Pendleton	1705	38:49:00	79:16:38	WVDOF
Kearneysville	462901	Jefferson	602	39:21:22	77:52:49	WVDOF

c. Content

For examples, click these links to the latest versions of NFDRS-FWM forecasts:

NWS Charleston FWM: FWMRLX
NWS Pittsburgh FWM: FWMPBZ
NWS Blacksburg FWM: FWMRNK
NWS Sterling FWM: FWMLWX

Decoding the Content of the NFDRS-FWM Forecast (with example):

FCST, 464203,030127,13,2,17,92,1,1,NW,10,,18,10,98,56,1,0,N

FCST, Station,Date,13,Wx,T,RH,L1,L2,WD,WS,,TM,TN,HM,HN,P1,P2,N

Wx – state of weather at 18Z (1 pm EST / 2 pm EDT) tomorrow. State of the weather is given as a value 0 through 9.

0	=	Clear sky
1	=	Scattered clouds
2	=	Broken clouds
3	=	Cloudy
4	=	Fog

5	=	Drizzle
6	=	Rain
7	=	Snow/sleet
8	=	Showers
9	=	Thunderstorms

T – temperature at 18Z (1 pm EST / 2 pm EDT) tomorrow (˚F)
RH – relative humidity at 18Z (1 pm EST / 2 pm EDT) tomorrow (%)
L1 – lightning activity level from 19Z (2 pm EST / 3 pm EDT) today to 04Z (11 pm EST / midnight EDT) tonight
L2 – lightning activity level for 24 hours, from 04Z (11 pm EST / midnight EDT) tonight until 04Z (11 pm EST / midnight EDT) tomorrow night

Lightning Activity Level Guide

LAL	Coverage
1	No T-storms
2	Isolated T-storms (1-14% coverage)
3	Widely Scattered T-Storms (15-24% coverage)
4	Scattered T-storms (25-54% coverage)
5	Numerous (55+% coverage)
6	>=15% coverage...little or no rain

WD – wind direction at 18Z (1 pm EST / 2 pm EDT) tomorrow, using a 16-point compass (N, NNE, NE…)

WS – wind speed at 18Z (1 pm EST / 2 pm EDT) tomorrow (mph)

TM – maximum temperature from 18Z (1 pm EST / 2 pm EDT) today until 18Z (1 pm EST / 2 pm EDT) tomorrow (˚F)
TN – minimum temperature from 18Z (1 pm EST / 2 pm EDT) today to 18Z (1 pm EST / 2 pm EDT) tomorrow (˚F)

HM – maximum humidity from 18Z (1 pm EST / 2 pm EDT) today to 18Z (1 pm EST / 2 pm EDT) tomorrow (%)
HN – minimum humidity from 18Z (1 pm EST / 2 pm EDT) today to 18Z (1 pm EST / 2 pm EDT) tomorrow (%)

P1 – hours of precipitation from 18Z (1 pm EST / 2 pm EDT) today until 10Z (500 am EST / 6 am EDT) tomorrow
P2 – hours of precipitation from 10Z (5 am EST / 6 am EDT) tomorrow until 18Z (1 pm EST / 2 pm EDT) tomorrow

WF – wet flag is used to indicate if fuels will be wet at 18Z tomorrow (1 pm EST / 2 pm EDT), and is given as Y or N. If Y is used, then all indices will be forced to zero. N is most common.

d. WIMS ID contact

All fire weather stations have been assigned numbers to be used as the identification number when entering into the Weather Information Management System (WIMS). If a new station is established, or a present station is moved, a new identification number should be requested from the GACC Meteorologists. Also, please notify your local NWS Fire Weather Program Leader of this change.

C. Site-specific Wildland Fire Forecasts (SPOT forecasts)

SPOT forecasts are issued when requested by Interagency Wildland Fire Agencies for wildland fires or planned burn operations, or other specialized forest management activities, and are available 24 hours a day. In the event of an emergency which threatens life and/or property, SPOT forecasts can also be provided to any federal, state, or local agency. SPOT forecasts differ from our routine fire weather forecasts by incorporating greater detail in timing, higher resolution of terrain influences, as well as other small-scale weather influences impacting the site. They should be requested within 18 hours of a prescribed burn. Beyond 18 hours, the Fire Weather Planning Forecast (FWF) should be utilized.

a. Criteria

Before a SPOT forecast is issued for a particular site, detailed information about the area and who is making the request must be given. Some of these site details include elevation, latitude, longitude, and aspect. The more accurate the data received about the site, the more accurate the resulting forecast will be. Current weather information from the site, including temperature, wind speed, and relative humidity will increase the accuracy of the SPOT forecast. The requesting agency, project name, phone number, and effective time for the requested forecast must also be given.

b. Content

In general, the content includes sky conditions, weather, temperature, relative humidity, and wind speed. Additional specific fire weather parameters are available upon request.

c. Procedures

SPOT requests should be made using the web based SPOT forecast request form. As of 2016, all offices use the same website for SPOT requests.

http://www.weather.gov/spot/

If internet access is not possible, SPOT forecasts may be requested via fax or phone. See NWS Offices and Points of Contact section near beginning of this plan for numbers. When faxing a request, the Fire Weather Special Forecast Request Form, WS Form D-1, should be used.
Link for WD Form D-1:

www.srh.noaa.gov/ridge2/fire/docs/WS_FORM_D_SPOT.pdf

While there is no dedicated fire weather forecaster, the responding NWS Office will give a high priority to SPOT forecasts in the absence of weather phenomena that

pose a threat to life and property. To ensure that the SPOT request is handled properly and appropriately, users should adhere to the following guidelines:

- A phone call to the forecast office is usually not needed, but can greatly expedite the process and may help clear up questions from forecasters.
- Allow adequate time for the forecaster to prepare the forecast. This will normally be about 30 minutes.
- Provide as much on-site or near-site weather information as possible. At a minimum, the user should provide at least one observation within the hour of the request. This observation should include the following: site location, elevation, time, wind direction speed and level (eye or 20 ft), dry and wet bulb temperatures, and remarks about the state of the weather (especially if affecting fire behavior). If possible, especially for prescribed burns, include some observations from the previous day(s) that might give the forecaster an indication of daily trends.
- Specify the time period for which the forecast is needed. Temporally, NWS Charleston defaults to offering forecast parameters in 3-hour increments, while NWS Sterling and NWS Blacksburg default to 2-hour increments. NWS Pittsburgh defaults to a narrative of each parameter for the next 12 hours. If a SPOT forecast is needed with different temporal requirements, coordinate with the responding NWS Office (at minimum, include in the remarks section of the SPOT request, but it would expedite the process by calling the office directly).
- Provide a contact point name and phone number for the forecaster to call back, if necessary (Also, a fax number for returning completed forecasts if web based form is not used).

The SPOT website will auto-update upon completion of the SPOT forecast by the NWS Office (or if via fax, the NWS will fax completed forecast). The forecast can be accessed simply by clicking on the incident/fire name of the SPOT request, once the status indicates “complete.”

Contact the responding NWS Office for a SPOT update if forecast conditions appear unrepresentative of the actual weather conditions. When possible, provide feedback to the NWS Office during or shortly after an event. This will assist forecasters in subsequent forecasts.

Land agencies can test out the online request page. For a Test SPOT request, please contact the NWS Office to tell one of the forecasters that you are doing so, and include “Test” within the name of the incident on the SPOT request form.

D. Fire Weather Watch and Red Flag Warning Program

The Fire Weather Watches and Red Flag Warnings are issued to advise of rare conditions that could result in extensive wildfire occurrence or extreme fire behavior.

A **Fire Weather Watch** is issued 12 to 72 hours in advance of the onset of possible warning conditions.

A **Red Flag Warning** is issued within 12 hours of the event (or onset of warning conditions).

a. Criteria

The parameters used to define a watch or warning includes relative humidity, wind speed, and 10-hr fuel stick moisture. The NWS will focus on mainly the weather-related portion of the criteria, while the fire product user agencies have the primary responsibility of tracking fuel moisture. Coordination between the fire product user agencies and the NWS is key, particularly dealing with Fuel Stick Moisture (the fire product user agencies are the experts).

All of the following must be expected to occur:
* **Relative Humidity** less than or equal to 25%
* **Sustained Surface Wind Speed** greater than or equal to 20 mph
* **10-hour Fuel Stick Moisture** less than or equal to 8%

NOTE: Sustained surface wind speed as defined by the National Weather Service is 33 foot, 2 minute averaged wind; as measured by standardized Automated Surface Observation Stations (ASOS) often found at airports. In side-by-side testing, these "NWS surface winds" are a sufficient approximation of RAWS sustained winds (20 foot, 10 minute averaged wind) when they are situated in an equal setting. However, observed RAWS winds can often be cut to about 0.6 to 0.9 of NWS surface winds, depending on specific siting. RAWS stations are often inconsistently sited (not 20 feet above canopy, or shadowed from certain wind directions by terrain, etc.).

NWS will call the Eastern Area Coordination Center (Eastern Area GACC Meteorologist) after issuance of a Fire Weather Watch or Red Flag Warning.
A Fire Weather Watch will remain in effect until either (1) it is determined that Red Flag conditions will not develop, or that (2) the Watch is upgraded to a Red Flag Warning.

A Red Flag Warning will remain in effect until either (1) Red Flag conditions come to an end or (2) Red Flag conditions fail to develop as forecast. At such time, the warning will be canceled.

During periods of extended drought or when wildland fires are occurring, modifications to Fire Weather Watch/Red Flag Warning criteria may be needed. Any proposed modifications will require coordination between the respective NWS Office(s) and associated land agencies.

b. Content

The format for Red Flag Warnings and Fire Weather Watches is specified in National Weather Service Directive 10-401. The header will state whether it is a Fire Weather Watch or Red Flag Warning. This narrative product will be comprised of a headline followed by a brief statement with more detail as to where, when, and why the product was issued.

Links to latest versions of Red Flag Warnings or Fire Weather Watches:

NWS Charleston:	RFWRLX
NWS Pittsburgh:	RFWPBZ
NWS Blacksburg:	RFWRNK
NWS Sterling:	RFWLWX

(Note: If no Watch/Warning has been issued recently, it may show up as empty)

E. Special Services

Special services include teaching weather-related courses, an on-site Incident Meteorologist (IMET), or briefings/coordination calls.

When land management agencies wish for a fire weather forecaster to attend and teach a course, the request should be made well in advance and no later than 2 to 3 weeks ahead of time. Requests for training assistance should be made through the Fire Weather Program Leader (FWPL) or Meteorologist-In-Charge (MIC) of the corresponding NWS Office. A one-day trip will not incur any costs to the requesting agency. However, with an overnight stay, travel expenses should be paid for by the requesting agency.

On-site forecast service support is available for wildfires, prescribed burns, and other non-wildfire high-impact incidents. This includes the dispatch of an Incident Meteorologist (IMET) and deployment of related service equipment such as the All Hazards Meteorological Response System (AMRS) and the Fire Remote Automated Weather Stations (Fire RAWS). The IMET, AMRS, and the Fire RAWS are considered national firefighting resources. Please reference the Eastern Area Mobilization Guide and/or the National Mobilization Guide for details about IMET dispatches and AMRS/Fire RAWS deployments for wildland fire suppression or other emergency incident operations.

NWS meteorologists may also be asked to assist in other non-routine services, such as briefings or coordination calls, during periods of high fire danger or fire occurrence. The FWPL and MIC will ensure that the land agency needs are met with little expense to either agency.

F. Fire Danger Statements and Blow-Up Alerts

When fire danger or fire occurrence is high, and coupled with near-critical weather conditions, agencies may request that NWS issue a Fire Danger Statement or Blowup Alert. These statements should be rare, and issued in coordination with the requesting agency. A Special Weather Statement (SPS) will be used for these issuances. The SPS will be broadcast on NOAA Weather Radio All-Hazards.

Example:
…Enhanced Fire Danger Today…

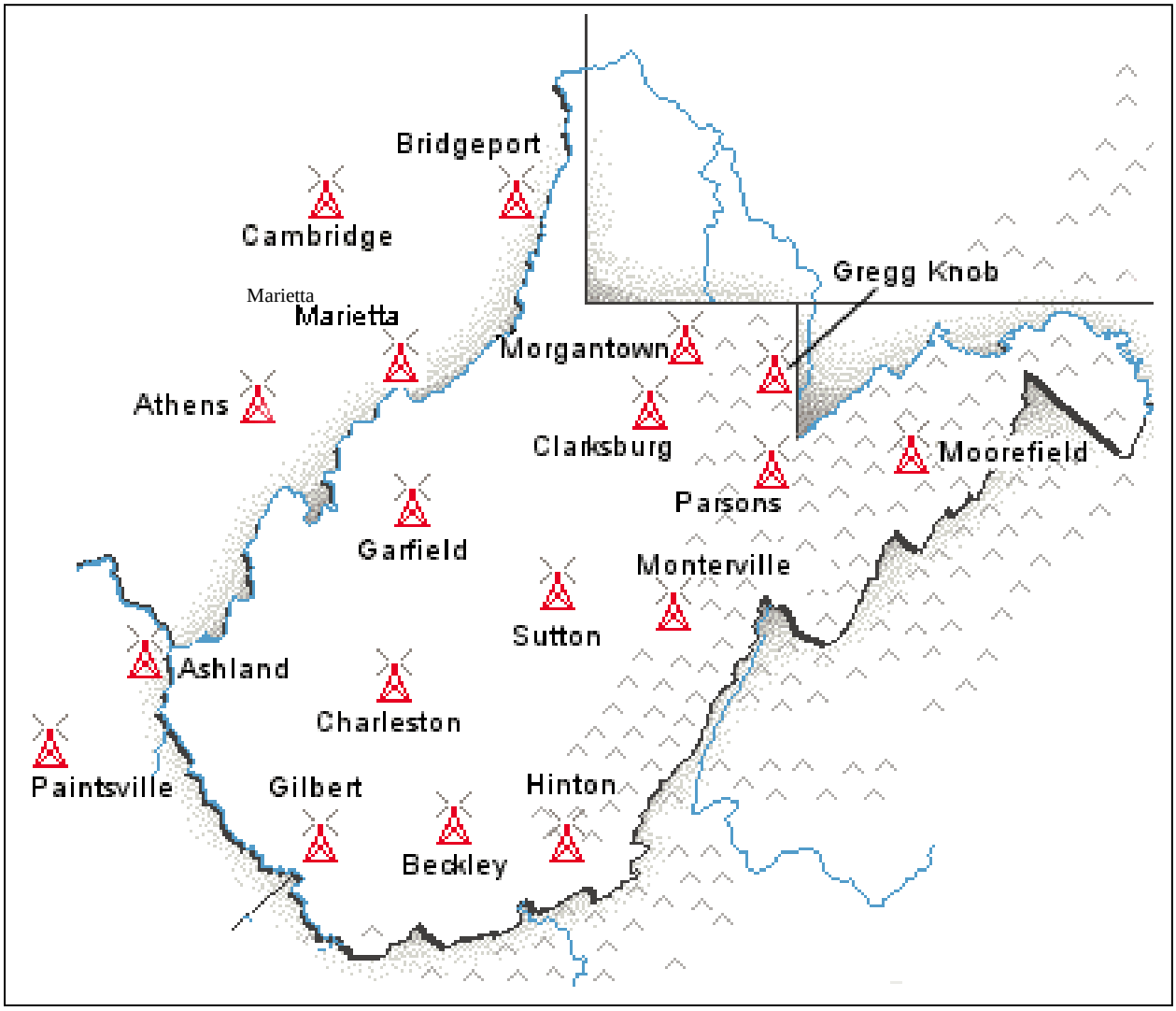
Here is a Wildfire Danger Statement issued in coordination with [Agency] in [City, State].

For [Day Month Date Year] the wildfire danger is [High, Very High, or Extreme] for the [Geographic area of danger] of West Virginia.

Open burning of any type is considered extremely dangerous at this time. Be very careful of heat and sparks while operating any equipment or smoking in wildland areas.

G. NOAA Weather Radio All-Hazards Locations

For more information about frequencies and service areas please visit https://www.weather.gov/rlx/nwr.. The map below lists the locations of the NOAA Weather Radio Locations.



IV. JOINT RESPONSIBILITIES

Service boundaries and fire weather forecast areas and groupings may be negotiated to meet customer and forecaster need.

V. BACKUP PROCEDURES

Though rare, from time to time NWS offices need to go into backup mode. This is usually during a period of software or hardware upgrading. If forecasters at your NWS Office are unable to be reached, try contacting the Primary Backup Office (and if no contact there either, the Secondary Backup Office). Primary and Secondary Backup Offices for each NWS Office serving West Virginia (and contact information) are located in the NWS Offices and Points of Contact Section near the front of this Fire Weather Services Operating Plan.

VI. EFFECTIVE DATES ON THE FIRE WEATHER SERVICES OPERATING PLAN

This Agreement shall be effective until the issuance of the next version of the Fire Weather Services Operating Plan (FWSOP). The FWSOP will be updated as needed, and reviewed at least on an annual basis. The last update on this plan occurred mid-February 2019.

VII. NATIONAL INTERAGENCY AGREEMENT

Interagency Agreement for Meteorological Services Among the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, the National Park Service of the U. S. Department of the Interior; the Forest Service of the U.S. Dept of Agriculture; and the National Weather Service of the U. S. Dept. of Commerce

The latest Inter-Agency Agreement for Meteorological Services can be found at https://www.weather.gov/media/fire/2018_Natl_AOP_FINAL.pdf

VIII. SIGNATORY PAGE

The following signatories have agreed to the terms and conditions of this statewide Operating Plan, which will be revised as needed, but on at least an annual basis. Actual signatures are maintained on file.

Simone Lewis
Fire Weather Program Leader
National Weather Service – Charleston, WV (RLX)

Michael Brown
Fire Weather Program Leader
National Weather Service – Pittsburgh, PA (PBZ)

Phil Manuel
Fire Weather Program Leader
National Weather Service – Blacksburg, VA (RNK)

Luis Rosa
Fire Weather Program Leader
National Weather Service – Sterling, VA (LWX)

Stephen Marien
Predictive Services Program Manager
Eastern Area Coordination Center

Duane Michael
Chief Ranger
New River Gorge National River

Walt Walter
Fire Manager
USDA Forest Service (Monongahela National Forest)

Barry L. Cook
Director, WV Division of Forestry