



FIRE WEATHER ANNUAL OPERATING PLAN

FOR

MUCH OF VERMONT & NORTHERN NEW YORK

**NATIONAL WEATHER SERVICE
BURLINGTON, VT**

2022

(Updated 4/08/2022)

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TABLE OF CONTENTS

INTRODUCTION	3
1. NWS Burlington Fire Weather Program	4
2. Goals	5
ORGANIZATIONAL DIRECTORY	6
SERVICES PROVIDED BY THE NATIONAL WEATHER SERVICE	9
1. Basic Services	9
a. Routine Fire Weather Forecasts and links	9
i. Digital Forecasts and Services	9
ii. Fire Weather Planning Forecast (FWF)	9-10
iii. Red Flag Program	10
1. Fire Weather Watch	10
2. Red Flag Warning	10
3. Criteria	11
4. Warning Verification	11
iv. Special Weather Statement	12
v. Fire Weather Area Forecast Discussion	12
b. Site-Specific Weather Forecasts	13
i. NFDRS Point Forecasts (FWM)	13
ii. Spot Forecast (FWS)	14
2. Special Services	15
a. HYSPLIT Trajectories	15
b. Incident Meteorologist Request and Decision Support Services	15
WILDLAND FIRE AGENCY RESPONSIBILITIES	16
1. Regional Support and Predictive Services	16
2. New York State/Vermont Support	16
3. Program Management	16
4. Monitoring, Feedback and improvement	16
5. Technology Transfer	17
6. Agency Computer Resources	17
7. Fire Weather Observations	17
JOINT RESPONSIBILITIES	18
AOP EFFECTIVE DATES	19
SIGNATURE PAGE	19

Introduction

This document serves as the Interagency Fire Weather Annual Operating Plan (AOP) for much of Vermont and northern New York. The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community as allowed under the umbrella of the National Interagency Agreement for Meteorological Services found at:

https://www.weather.gov/media/fire/2021_Natl_AOP.pdf

Format and content of this AOP is set forth by NWS Instruction 10-404.

<https://www.nws.noaa.gov/directives/sym/pd01004curr.pdf>

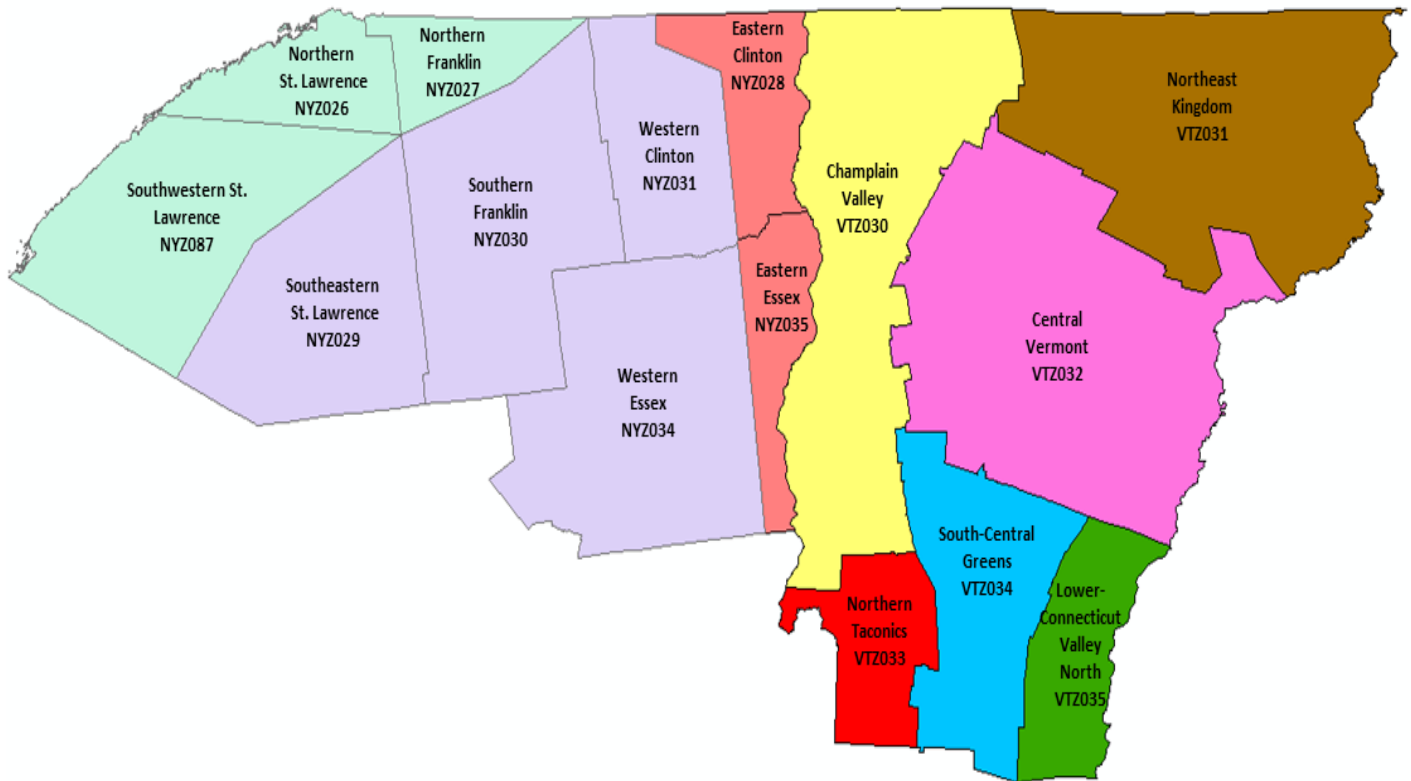
In addition to highlighting products and services provided by the National Weather Service (NWS) to users, this AOP also covers responsibilities expected from users to assist the NWS and joint responsibilities from NWS Burlington to achieve goals that continue advancing the program for its users. Forecast products and services are only highlighted in this AOP. More detailed information and examples can be found in the NWS Burlington Fire Weather Product and Service Guide.

NWS Burlington Fire Weather Program

The NWS Burlington Fire Weather Program provides forecast and warning services in support of fire management and control operations, leading to the effective prevention, suppression, and management of forest and rangeland fires. The major objective of the fire weather program is to provide a service which will meet the meteorological requirements of federal and state wildland management agencies in the protection and enhancement of the nation's forests and rangelands.

The National Weather Service in Burlington agrees to furnish routine forecasts, warnings, and services according to the needs of the fire weather community throughout the entire year. However, the typical fire weather season for much of Vermont and northern New York starts in late-March and continues through mid-November.

The coverage area for the NWS Burlington fire weather program in Vermont encompasses the following fire weather zones in Vermont: Champlain Valley, Northern Taconics, South Central Greens, Lower Connecticut Valley North, Central Vermont, and Northeast Kingdom. And in New York it covers the counties Clinton, Essex, Franklin, and Saint Lawrence.



Fire Weather Program Goals

The NWS Burlington Fire Weather Focal Point will continually set goals to expand and enhance the fire weather program and its service to meet to needs of the fire management community.

2022 Program Goals

- Hold an annual fire weather users meeting and AOP review each year near the beginning of the fire season to strengthen partner relationships, address local concerns, review current policy, and provide a weather outlook for the upcoming fire season.
- Conduct an annual internal Fire Weather Refresher to keep forecast staff familiar with local policy, updated forecast methods, and user feedback.
- Maintain NWS Burlington Fire Weather website for users to utilize during the season.
- Assist with any prescribed burns by providing onsite weather information and briefings as well as bringing staff members to the burn for educational purposes.
- Act as state liaison in Vermont with respect to coordination of Fire Weather Watches, Red Flag Warnings, fuel conditions, and weather events that may have an impact on fire weather.
- Provide materials to the media/social media outlets related to the Open Burning Weather Awareness Campaign during peak fire season (early/mid April).
- Monitor forecast and warning products to ensure they are representative and meeting user needs.
- Implement new fire weather zones to better match the new Fire Danger Rating Areas (FDRAs) established by our partners. Process has taken place for Vermont this year with a change to New York zones expected in 2023.
- Conduct verification of the National Fire Danger Rating Area (NFDRS) forecasts in support of the transition to new FDRAs in 2022.

Organizational Directory

Federal Partners

National Interagency Fire Center
3833 S. Development Ave
Boise, ID 83705-5354

Eastern Area Coordination Center
Manager (NPS)
626 E. Wisconsin Ave., Suite 500
Milwaukee, WI 53202

Green Mountain and Finger Lakes National Forests
Supervisor's Office
231 North Main Street
Rutland, VT 05701

State Partners

Vermont Department of Forests, Parks and Recreation
1 National Life Drive, Davis 2
Montpelier, VT 05620-3801

Vermont Emergency Management
45 State Drive
Waterbury, VT 05671

NYS DEC Region 5 (Franklin, Clinton, Essex Counties)
Forest Ranger Captain
P.O. Box 296
1115 State Route 86
Ray Brook, NY 12977-0296

NYS DEC Region 6 (Saint Lawrence County)
Forest Ranger Captain
317 Washington Street
Watertown, NY 13601

Clinton County Emergency Services
Emergency Manager
16 Emergency Services Drive
Plattsburgh, NY 12903

Essex County Emergency Services
Emergency Manager
7551 Court Street
Elizabethtown, NY 12932

Franklin County Emergency Services
Emergency Manager
55 Bare Hill Road
Malone, NY 12953

Saint Lawrence County Emergency Services
Emergency Manager
48 Court Street
Canton, NY 13617

**National Weather Service
(Offices with responsibility in and adjacent to our area)**

Weather Forecast Office (WFO) Burlington, VT
VT State Liaison Office
Fire Weather Focal Point
Burlington International Airport
1200 Airport Drive
South Burlington, VT 05403
802-862-2475

Weather Forecast Office (WFO) Albany, NY
NY State Liaison Office
Fire Weather Focal Point
251 Fuller Road, B300
Albany, NY 12203-3640
518-626-7568

Weather Forecast Office (WFO) Buffalo, NY
Fire Weather Focal Point
587 Aero Drive
Buffalo, NY 14225
716-565-0204

Weather Forecast Office (WFO) Gray, Maine
Fire Weather Focal Point
1 Weather Lane
Gray, ME 04039
207-688-3216

NWS Eastern Regional Headquarters

Regional Fire Weather Coordinator
Airport Corporate Center
630 Johnson Ave.
Bohemia, NY 11716

NWS National Fire Weather Program

National Fire Weather Operations Coordinator
3833 South Development Ave., Bldg. 3807
Boise, ID 83705

Services Provided by the NWS

Basic Services

Digital Forecasts and Services

The following links connect users to local and national fire weather webpages as well as alternative forecast products which can be used for planning purposes beyond the range of the Fire Weather Planning Forecast. A 24/7 chat link is also included.

- NWS Burlington Fire Weather webpage - <https://www.weather.gov/btv/firewx>
- NWS National Fire Weather webpage - <https://www.weather.gov/fire/>
- National Digital Forecast Database (NDFD) fire weather graphical forecast
<https://graphical.weather.gov/sectors/btvFireDay.php#tabs>
- Hourly Weather Graphs:
<https://forecast.weather.gov/gridpoint.php?site=btv&TypeDefault=graphical>
- Weather Activity Planner:
<https://forecast.weather.gov/wxplanner.php?site=btv>
- Prototype Fire Weather Matrix - https://www.weather.gov/btv/FWX_Matrix
- Point Forecast Matrix:
<https://forecast.weather.gov/product.php?site=BTV&product=PFM&issuedby=BTV>
- NWSchat – Chat with NWS Burlington staff 24/7 in the “btvchat” chatroom
<https://nwschat.weather.gov/>

Fire Weather Planning Forecast (FWF)

The Fire Weather Planning Forecast is a zone-type product used primarily for input in decision-making related to pre-suppression and other planning. Weather parameters represent average conditions across each of our 5 fire weather zone groupings covering the next 36 hours. A more general extended forecast out to 7 days is included near the bottom and finally an 8-14 day temperature and precipitation outlook for the region follows at the bottom. The forecast is issued **no later than 6:00 am every morning** during the fire weather season with start/end dates that are coordinated with our fire weather partners. Once the fire weather season has ended the FWF is not issued but graphical fire weather data will still be available on our office fire weather web page.

The NWS Burlington Fire Weather Planning Forecast can be found here:
<https://forecast.weather.gov/product.php?site=btv&product=FWF&issuedby=BTV>

Red Flag Program

NWS Burlington will monitor forecast trends for critical weather conditions that support extreme fire behavior and coordinate with fire weather partners in determining status of the fuels for issuance of Fire Weather Watches and Red Flag Warnings. The purpose of the Red Flag Program is to alert land management agencies of developing weather conditions that, when coupled with critically dry wildland fuels, could lead to potentially dangerous fire situations. Coordination will be made between NWS Burlington and our fire weather partners before issuance of a Fire Weather Watch or Red Flag Warning.

Fire Weather Watch (RFW)

A Fire Weather Watch is issued to indicate the potential for dangerous fire weather conditions. Usually fire danger is in the very high to extreme category. A watch will be issued 12 to 48 hours before the onset of the critical weather conditions. The overall intent of a Fire Weather Watch is to alert users at least a day in advance for purposes of resource allocation and firefighter safety.

Current Fire Weather Watches can be found here:

<https://forecast.weather.gov/product.php?site=btv&product=RFW&issuedby=BTV>

Red Flag Warning (RFW)

If red flag conditions are expected to be met and coordination with partner agencies indicates the state of the fuels is susceptible to burning, a Red Flag Warning is issued. The warning indicates a high likelihood of severe fire weather conditions with a relatively high probability of occurrence. Usually the fire danger is in the very high to extreme category. A Red Flag Warning will normally be issued for potential severe fire weather events within 24 hours of the expected event. A Red Flag Warning may or may not be preceded by a Fire Weather Watch.

Current Red Flag Warnings can be found here:

<https://forecast.weather.gov/product.php?site=btv&product=RFW&issuedby=BTV>

Red Flag Criteria

NWS Burlington will use the following sets of criteria to determine when a Fire Weather Watch or Red Flag Warning will be issued for particular zones. There are two different criteria based primarily upon season. All factors within each vegetative stage must be met in order to have a Red Flag Event.

When in Vegetative Stage I & II (cured & transition – Winter/Spring/Fall)

- Winds sustained or with frequent gusts above 25 mph (for at least 2 hours)
- Relative Humidity at or below 30% (for at least 2 hours)
- Partner confirmation of dry/receptive fuels

When in Vegetative Stage III (green - Summer)

- Winds sustained or with frequent gusts above 25 mph (for at least 2 hours)
- Relative Humidity at or below 30% (for at least 2 hours)
- Rainfall amounts for the previous 8 days of less than 0.25 inches
- Keetch-Byram Drought Index values of 300 or greater and partner confirmation of dry/receptive fuels.

<http://www.wfas.net/images/firedanger/kbdi.png> for Keetch-Byram Drought Index (KBDI)

It is the user's responsibility to inform the NWS of the current stage (I, II or III) and when measured KBDI is approaching 300, over 300, and falls back below 300. With no input from the users on these parameters, the NWS will assume climatological timing for various stages.

Stage I cured – 75% or more dead
Stage II transition – 25% to 75% dead
Stage III green – less than 25% dead

As part of the warning decision making process, forecasters are encouraged to consider atmospheric stability parameters (Haines Index), temperature anomalies, mixing heights, and even cloud cover when determining the issuance of a Fire Weather Watch or Red Flag Warning – especially under low-end critical conditions and in the absence or critical fire weather patterns. In addition, the needs of partner agencies must also be factored in.

Warning Verification

After a Red Flag Event, warnings will be verified on a county-by-county basis. Local weather observing networks will be checked to determine if wind speeds and relative humidity values reached critical levels outlined in the following Red Flag Criteria section. Verification statistics will be calculated for Probability of Detection, False Alarm Rate, Critical Success Index and Lead Time for each Red Flag Event and forwarded to NWS National and Regional Headquarters at the end of each year.

Special Weather Statement

It is office policy, based on conversations with various users, to refrain from issuing statements for “High or Extreme Fire Danger” conditions. The Fire Danger is calculated and posted each day at many or most state and national parks. Their determination is based on their local measurements, leaning heavily toward fuel moistures, which is information for which the National Weather Service is not responsible.

Media inquiries concerning the specific fire danger should be directed to the office of New York State (NYS) Department of Environmental Conservation or the NYS State Forest Ranger District Offices. In Vermont the contact would be the Vermont Department of Forests, Parks, and Recreation. However, on rare occasions during extreme events, users of the Fire Weather products may request that we “help get the word out” about the fire danger. In these rare cases, or in situations when weather conditions may be approaching red flag criteria and fuels are critically dry, the Lead Forecaster may decide to issue a Special Weather Statement (ALBSPSBTV). This statement would incorporate the information provided by the fire weather community.

The most recent Special Weather Statement can be found here:

<https://forecast.weather.gov/product.php?site=btv&product=SPS&issuedby=BTV>

Fire Weather Area Forecast Discussion

The Area Forecast Discussion (AFD) focuses on the most significant weather issues affecting an NWS office’s forecast area over the next seven days. During heightened fire activity, a fire weather section (.FIRE WEATHER...) may be included in the AFD containing weather information of interest to fire managers.

The most recent Area Forecast Discussion can be found here:

<https://forecast.weather.gov/product.php?site=btv&product=AFD&issuedby=BTV>

Site-Specific Weather Forecasts

NFDRS Point Forecasts (FWM)

The National Fire Danger Rating System (NFDRS) is used to calculate a variety of parameters for the fire community (fire danger rating the most notable). The NWS' role in NFDRS is forecasting weather parameters for input into the Weather Information Management System (WIMS), which is used to predict the next day's fire danger rating and other elements. NWS Burlington issues this forecast each afternoon during the fire season for the following Remote Automatic Weather Stations (RAWS) sites in our area:

430501 (ESXV1) - Essex Junction, VT (Chittenden County)

Elevation: 340 ft. 44.5078 N 73.1156 W

Owner: State of Vermont

431301 (DBYV1) - Sweezy (Mt. Tabor) (Danby), VT (Rutland County)

Elevation: 668 ft. 43.33 N 73.16 W

Owner: Green Mountain National Forest

430601 (EMRV1) - Lake Elmore, VT (Lamoille County)

Elevation: 1200 ft. 44.53 N 72.51 W

Owner: Green Mountain National Forest/VT Department of Forests, Parks, and Recreation

430402 (NLHV1) - Nulhegan (near Island Pond), VT (Essex County)

Elevation: 1243 ft. 44.79 N 71.7 W

Owner: U.S. Fish and Wildlife

300311 (SRON6) - Schroon Lake, NY (Essex County)

Elevation: 820 ft. 43.8 N 73.77 W

Owner: New York State Forest Rangers

300191 (SFAN6) - Schuyler Falls, NY (Clinton County)

Elevation: 650 ft. 44.6 N 73.6 W

Owner: New York State Forest Rangers

300892 (BFAN6) - Brasher Falls, NY (St Lawrence County)

Elevation: 300 ft. 44.8 N 74.8 W

Owner: New York State Forest Rangers

300891 (WNKN6) - Wanakena, NY (St Lawrence County)

Elevation: 1500 ft. 44.1667 N 74.9 W

Owner: New York State Forest Rangers

300312 (MVAN6) - Mt VanHoevenberg, NY (Essex County)

Elevation: 2000 ft. 44.22 N 73.89 W

Owner: New York State Forest Rangers

The NFDRS (FWM) Forecast can be found at the following link. Information on how to decode the FWM is included in the NWS Burlington Product & Service Guide.

<https://forecast.weather.gov/product.php?site=btv&product=FWM&issuedby=BTV>

Spot Forecast (FWS)

Site-specific (spot) forecasts are localized near-term forecasts issued by the NWS in support of wildfire and natural resource management. These forecasts aid the land management and fire control agencies in protecting life and property during wildland fires, hazardous fuels reduction and rehabilitation and restoration of natural resources. Spot forecasts are also issued for hazardous materials incidents, marine incidents, search and rescue response and other threats to public safety. Spot forecasts are available anytime of the day, week or season and are considered one-time requests which are not routinely updated.

NWS Burlington will provide spot forecasts upon request of any federal, state, tribal or local public safety official who represents the spot forecast and is required to support a wildland fire or fire management activities, essential to public safety or in support of Homeland Security Presidential Directive #5 (HSPD 5).

Requests for or retrieval of completed Spot Forecasts should be made through the NWS National Spot Forecast Request web page <https://www.weather.gov/spot/> Further details on how to complete a spot request can be found in the NWS Burlington Product & Service Guide.

The most recent Spot Forecast can be found here:
<https://forecast.weather.gov/product.php?site=btv&product=FWS&issuedby=BTV>

Special Services

HYSPLIT Trajectories

The HYSPLIT (Hybrid Single-Particle Lagrangian Integrated Trajectory) model is a model which determines trajectories for particles at a given height above ground level. The HYSPLIT trajectories can be used for many purposes including but not limited to HAZMAT and smoke dispersion. These are available to be sent along with the spot forecast if desired. More details and an example can be found in the NWS Burlington Fire Weather Product & Service Guide.

To utilize this feature, simply check **Yes** in the NOAA Hysplit Model Box of the spot forecast request form. An automated trajectory model run will then be emailed to the included email address or addresses on the request web page.

Incident Meteorologist Request

The NWS maintains a cadre of trained Incident Meteorologists (IMETs) per NWS Instruction 10-402 (<https://www.nws.noaa.gov/directives/sym/pd01004002curr.pdf>). IMETs are available for on-site or off-site decision support services for wildfires or other events that threaten life or property. All requests for IMET support from federal, state, tribal or local government emergency response agencies will be requested through the NWS National Fire Weather Operations Coordinator (NFWOC).

Decision Support Services

For non-wildfires such as local prescribed burns across northern New York or much of Vermont, request for on-site or off-site forecasting service can be made to the NWS Burlington office. The fire weather focal point or another assigned staff member if available and approved by management would then provide the requested service.

Wildland Fire Agency Responsibilities

Regional Support and Predictive Services

Interagency fire meteorologists at the Eastern Area Coordination Center (EACC) combine forecast information from NWS and other sources into area-wide summaries and briefings. These meteorologists work in conjunction with Fire Intelligence to form the Predictive Services Group, which produce integrated fire weather/fire danger assessments for the entire NIFC Eastern Area.

The intent of Predictive Services is to provide strategic, regional and sub-regional information to assist in the preparedness, movement and allocation of firefighting resources. EACC Predictive Services is the provider of fire danger and potential forecasts within the Eastern Area beyond the next day NFDRS forecasts provided by the NWS.

Predictive Services Outlooks:

https://gacc.nifc.gov/eacc/predictive_services/outlooks/outlooks.htm

- Area-Wide Fire Weather Outlook Maps for Day 1 and 2
- 7-Day Significant Fire Potential Outlook
- Weekly Outlook
- Monthly and seasonal fire potential outlooks
- Fire Potential Videocast
https://gacc.nifc.gov/eacc/predictive_services/weather/EA_Videocast/EA_Videocast.mp4

New York State Support

New York State DEC Predictive Services issues a statewide Fire Danger Rating Area Risk Forecast covering Day 2. This forecast can be found here:
<https://www.dec.ny.gov/lands/68329.html>

Vermont State Support

The Vermont Department of Forests, Parks and Recreation issues a statewide Fire Danger Rating Area Risk Forecast covering Day 2. This forecast can be found here:
<https://fpr.vermont.gov/forest/wildland-fire/monitoring-fire-danger>

Program Management

The natural resource agencies will oversee the fire weather observation program including Remote Automatic Weather Stations (RAWS) and NFDRS, including the siting and maintenance of the observing equipment, fire weather training of their personnel, and the proficiency of their personnel in the use of the NWS Spot software.

Monitoring, Feedback and Improvement

Natural resource agencies will monitor the quality and timeliness of NWS fire weather products, and provide feedback to the NWS in order to improve services to the agencies. Feedback on spot forecasts is required to validate forecasts and improve accuracy and should ideally be submitted within a day or two of the burn or incident. The type of feedback preferred is the character of temperature, humidity and wind affecting the burn or incident and the overall accuracy of the spot weather forecast.

Acceptable Methods of Providing Spot Forecast Feedback preferably within a day or two:

- 1) Enter Feedback on spot forecast page. Simply type in your feedback into the box near the bottom of the forecast and click Send Feedback. (***Preferred method***)
- 2) Phone call to NWS Burlington
- 3) Faxed copies of fireline (belt weather) observations
- 4) Faxed or electronically transmitted copies of hourly data from an on-site portable weather station
- 5) Notification of deployment of a portable GOES telemetered RAWS, so NWS can access and download the necessary data

Technology Transfer

The natural resource agencies may, from time to time, advise the NWS of new technologies being implemented to monitor meteorological or fuel parameters, or to improve communication, coordination, training or reference. Natural resource agency personnel may, with prior arrangement, visit an NWS office to acquire knowledge of NWS technologies used in the monitoring of weather, or the preparation of products.

Agency Computer Resources

Internet will be the primary method of obtaining the Fire Weather Forecast, Red Flag Warning, Fire Weather Watch, and for both requesting and receiving a Spot Forecast. As a backup method, a request can be made to the NWS for a product to be faxed to the customer agency. NFDRS observations will be entered into WIMS, and forecasts and calculations based on these observations will be received by WIMS, or by internet via a WIMS website.

Fire Weather Observations

NFDRS observation stations provide the specialized weather observations for fire weather forecasts, wildfire control and suppression, and various other land management operations. Stations may either be manned sites operated by land management agencies, or unmanned RAWS maintained by any of the federal or state land management agencies in the area.

Sensor failure will often result in erroneous or (at best) suspicious values. If the NWS becomes aware of such a situation, it is prudent to contact the station owner and vice versa. It is that stations owner's responsibility to make sure that their station is and remains in good working order and repairs are made in a timely manner. Owners of NFDRS stations should correct any errors in their respective observations.

Joint Responsibilities

Joint responsibilities include the following:

Training

The responsibility of training natural resource agency employees will be that of the agencies themselves. However, the NWS will be available to assist when requested to do so.

Meetings between the NWS offices and the natural resource agencies

At least one statewide meeting or coordination call is normally attempted each year with surrounding NWS offices. NWS Burlington will also conduct a local users meeting each year.

Maintenance and Revision of the Annual Operating Plan

The AOP should be revised each year by the end of March, with cooperation and participation from NWS Burlington and each natural resource agency. Changes discussed in the local users meeting will then be implemented into a revised AOP.

Workplace Visits

Natural resource agencies and the NWS should collaborate on familiarization of personnel in each other's fields of expertise, operations and equipment. Visits to offices and work centers, as well field job sites can meet part of these requirements.

Service Evaluation

Services provided by the NWS, and delivery of observations and information from the natural resource agencies to the NWS in support of these services, shall be under constant evaluation by both parties.

Incident Response

The NWS is the provider of Incident Meteorologists (IMETs). Costs incurred by NWS in providing IMET support will be borne by the requesting agency. The user agency is responsible for providing adequate shelter to allow the equipment and IMET to function efficiently. This would include a location free of excessive dust, heat and moisture with protection from wind and other elements.

Effective Dates of the AOP

The effective dates of this Annual Operating Plan will be from January 1 through December 31 of the current calendar year. This plan will be subject to review and revision by all signatory parties each year, or more frequently as operations warrant.

This plan will be available on the NWS Burlington fire weather webpage. A copy of this plan will also be sent to NWS Eastern Region Headquarters by January 31 of the current year. Eastern Region Headquarters will forward a copy of the plan to NIFC and NWS Headquarters.

Signature Page

Signed _____
Eric Evenson
Fire Weather Focal Point
NWS Burlington

Signed _____
Peter Banacos
Acting Meteorologist-in-Charge
NWS Burlington