2011 Western Great Basin Annual Operating Plan

for

Fire Weather

and

Predictive Services

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2011 WESTERN GREAT BASIN
ANNUAL OPERATING PLAN

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INTRODUCTION

This document serves as the Interagency Annual Operating Plan (AOP) for Fire Weather and Predictive Services for the Western Great Basin Geographic Area. The general relationship between the National Weather Service (NWS) and the interagency fire management community is set forth in the National Interagency Agreement for Meteorological Services. The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in the Western Great Basin area as allowed under the umbrella of the National Agreement.

References include:

- National Weather Service NWSI 10-4: Fire Weather Services
  (www.nws.noaa.gov/directives/010/010.htm)
- Interagency Agreement for Meteorological Services (National MOA or "National Agreement")
  (http://radar.srh.noaa.gov/fire/docs/2008_National_Agreement.pdf)
- National Interagency Mobilization Guide
  (http://www.nifc.gov/news/mobguide/index.html)

I. SIGNIFICANT CHANGES FOR 2011

1. Changes to contact information can be found in Appendix A.

2. Red Flag Criteria for Lake Tahoe (Fire Weather Zone 272) have been changed. See WFO Reno Section in Appendix C for details.

   *Critical fuels status will be determined via the WGBCC 7-Day Outlook.
   ** Some criteria may be different for individual zones. See office details for special criteria.

   Additional (optional) criteria will be left to agreements between local NWS offices and land management agencies within their CWFAs. These may include but are not limited to: wind shifts; cold frontal passages (CFP); first lightning after extended hot, dry period; poor overnight RH recovery; or combinations of any of these. Additional criteria can be implemented as justification for a warning ONLY after coordination with the NWS, local land management officials and Predictive Services meteorologists.

   In rare situations, forecasters may issue a watch or warning for conditions which do not meet the established criteria but in their best judgment, and after coordination with local land management officials, will contribute to extreme fire behavior or heightened large fire potential.

   While no set of criteria can possibly accommodate all areas equally within the WGB, land management officials and their servicing NWS office may address local concerns not specifically accounted for in the standard criteria, as outlined for each individual NWS office in Appendix C.

3. Changes to issuance time-frames of Red Flag Warnings and Fire Weather Watches under NWS Services and Responsibilities section of the AOP (on page 4), which are consistent with Spring 2011 changes in NWS Directive (10-401).

II. ORGANIZATIONAL DIRECTORY

Cooperating federal and state land management agencies in the Western Great Basin include:

Bureau of Land Management	USDA Forest Service
Bureau of Indian Affairs	National Park Service
US Fish and Wildlife Service	Nevada Division of Forestry

Fire weather products and services are provided by the following NWS offices and Western Great Basin Predictive Services

Elko, NV Las Vegas, NV Reno, NV

Additional administrative support is provided by:

NWS Western Region
National Interagency Fire Center
Western Great Basin Geographic Area Coordination Center

Contact information for Predictive Services and the NWS offices can be found in Appendix A. Service areas are depicted in Appendix B. NOTE: All phone numbers are unlisted and should <u>not</u> be given to the public.

III. NATIONAL WEATHER SERVICE -- SERVICES AND RESPONSIBILITIES

A. Basic Services

Basic services constitute the collective suite of fire weather forecast products and services provided by the NWS. Changes to these forecast services or implementation of new operational forecast products and/or services will be coordinated with the Land Management Agencies' Predictive Services Unit (PSU) at the coordination center (Reference NWSI 10-403) and with local land management officials within the County Warning Area (CWA) of the NWS office that is proposing the changes.

1. <u>Required Core Grids and Web-based fire weather decision support</u>

National Digital Forecast Database (NDFD) grids are used to produce a wide variety of products and services for fire weather support. Operational status of NWS grid elements is available at the following website: http://www.weather.gov/ndfd/resources/NDFD_element_status.pdf.

a. Decision Support Tools: available via links on top of NWS fire weather web pages
- Fire weather forecasts (FWF)
- Point Forecast Matrix (PFM)
- Digital Point Forecast
- FARSITE
- Weather Activity Planner
- 48 Hr Element Meteorogram

2. <u>Red Flag Warnings and Fire Weather Watches</u>

The Red Flag Warning and Fire Weather Watch program is designed to provide land management officials with advanced notice of weather conditions that, when coupled with critical fuel conditions can lead to extreme fire behavior or heightened potential for large fire starts. <u>It is implicit that firefighter and public safety are of the utmost importance.</u>

Identification of Red Flag events is a shared, collaborative responsibility between land management officials and NWS fire weather forecasters. Land management officials must identify critical fuels conditions. Weather forecasters must identify weather conditions that will contribute to extreme fire behavior or heightened large fire potential.

A <u>Red Flag Warning</u> shall be issued when Red Flag weather criteria (defined below) are forecast to occur within the next 48-hours or are already occurring, and are coupled with critical fuel conditions.

A <u>Fire Weather Watch</u> shall be issued when there is a high potential for Red Flag weather criteria to be met in the 18-96 hour time frame. The watch may be issued for all, or selected, portions within a fire weather zone or region.

a. Criteria

Criteria for issuance of Red Flag Warnings and Fire Weather Watches in the Western Great Basin area are a combination of weather and critical fuels conditions. A standardized set of Red Flag Criteria have been developed to simplify issuances and to facilitate coordination and ensure continuity between neighboring NWS offices as well as across land management administrative boundaries.

IF
Fuels are Critical*

THEN

IF

Northern and Central Nevada:
Wind gusts ≥ 30 mph for any 3+ hours in the majority of the fire weather zone

Southern Nevada:
Wind gusts ≥ 35 mph for any 3+ hours in the majority of the fire weather zone.
AND
Relative Humidity is ≤ 15 percent.**

OR

IF

Dry thunderstorms with areal coverage of ≥15% in a Fire Weather Zone

THEN

Issue RED FLAG WARNING or FIRE WEATHER WATCH

*Critical fuels status will be determined via the WGBCC 7-Day Outlook
** Some criteria may be different for individual zones. See office details for special criteria.

Additional (optional) criteria will be left to agreements between local NWS offices and land management agencies within their CWFAs. These may include but are not limited to: wind shifts; cold frontal passages (CFP); first lightning after extended hot, dry period; poor overnight RH recovery; or combinations of any of these. Additional criteria can be implemented as justification for a warning ONLY after coordination with the NWS, local land management officials and Predictive Services meteorologists.

In rare situations, forecasters may issue a watch or warning for conditions which do not meet the established criteria but in their best judgment, and after coordination with local land management officials, will contribute to extreme fire behavior or heightened large fire potential.

While no set of criteria can possibly accommodate all areas equally within the WGB, land management officials and their servicing NWS office may address local concerns not specifically accounted for in the standard criteria, as outlined for each individual NWS office in Appendix B.

b. Product Format and Content

A Red Flag Warning/Fire Weather Watch statement (RFW) will be used for issuing, updating, and canceling all Red Flag Warnings and Fire Weather Watches. This message will include:

i. Headline that includes a short description of the weather event that justifies the watch or warning, a description of the area (i.e., counties, agency administrative unit, etc.), and the time period for which the watch or warning is valid;
ii. List of fire weather zones impacted, and;
iii. Short discussion detailing the causes and nature of the event.
iv. All WGB offices will be using a bulleted format in the RFW. An example of the bulleted format is available in NWSI 10-401:

c. Procedures and Access

When Red Flag Warnings and Fire Weather Watches are issued, they will be headlined in both the fire weather planning forecast and any subsequent spot forecasts. In the planning forecast, the headline will appear at the beginning, before the discussion section, and at the beginning of each zone or zone grouping affected by the warning or watch. The headline will be in the same descriptive format as on the RFW product itself. If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the planning forecast, the NWS office will notify the affected dispatch centers and Predictive Services at the appropriate GACC as soon as possible during business hours. Red Flag Warnings and Fire Weather Watches will remain in effect through the expiration time noted in the planning forecast, or until canceled or updated.

Red Flag Warnings and Fire Weather Watches are available in WIMS, the Western Great Basin Geographic Area Coordination Center Predictive Services web page and the web sites of the NWS offices that serve the Western Great Basin area. Websites are listed in Appendix B.

d. Expanded Fire Weather Discussion

At a minimum, when either a Red Flag Warning or a Fire Weather Watch is in effect, there will an expanded FIRE WEATHER portion in the Area Forecast Discussion (AFD) issued twice daily from each NWS office. The AFD allows NWS offices to portray uncertainty and expand on reasoning beyond what is in other products. The Area Forecast Discussion is available on each NWS office's website.

3. Spot forecasts

Spot forecasts are site-specific forecast products issued for wildfires, prescribed burns, aerial spraying, HAZMAT incidents, search and rescue, and other activities conducted by the land management community. Spot forecasts are available by request, 24-hours a day, 365 days a year. Spot forecasts are available to any federal, state, county or municipal agency as described in NWSI 10-401.

Site-specific forecasts are considered one-time requests. Updates will be issued when:

i. The forecaster determines that the current spot forecast does not adequately represent current or expected weather conditions, or;
ii. Land management personnel communicate to the forecaster that the current forecast appears unrepresentative of conditions at the site, or;
iii. A typographical or formatting error that confuses the intended meaning is detected.

Updates will be disseminated to users in the same manner as the original spot forecast. If the update is initiated by the NWS, a follow-up phone call will be made to inform the user (i.e., the original requestor) that an update has been issued. If the update is requested by the user, a contact point number will be provided.

Spot forecasts can be requested from individual offices at the following links:
Reno: http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=rev
Elko: http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lkn
Las Vegas: http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=vef

Spot request instructions are available at:
http://www.wrh.noaa.gov/lkn/spotrequestmain.php

a. Content and Format

Spot forecasts may contain the following elements as requested by the user. (Table 4).

Table 4. Spot Forecast Elements

Forecast Element	Requirement	Remark
Headline	National	Required if watch or warning is in effect when spot is issued.
Discussion	National	
Sky/Weather	National	
Temperature	National	
Relative Humidity	National	
20-ft, 10-minute average winds	National	
Transport winds, mixing height, LAL, Haines Index, Chance of wetting rain, etc.	By Request	Request made via NWS Spot web interface or on Spot Forecast Request Form D-1

The valid time will be determined at the time of the request. Most spots contain three periods, usually “TODAY”, “TONIGHT”, and “NEXT DAY,” but users will indicate the period(s) for which a forecast is needed.

b. Procedures for Preparing and Requesting Spot Forecasts

Internet-based “NWS Spot” should be used when available. It is accessible via web sites

of the NWS offices that serve the Western Great Basin area and on the coordination center web site, found in Appendix B.

When Internet access is not possible, spot forecasts may be requested and disseminated via fax - using the backup spot forecast request form (found in Appendix G). Spot forecasts should be available in less than 60 minutes of the time the NWS office receives the request. If a spot forecast is not returned within 60 minutes, the requestor should contact the NWS office immediately. Spot forecasts should be requested no more than 48 hours in advance. Beyond this time, planning information should be utilized, including the fire weather planning forecast, weather activity planner and fire weather point forecast matrix. For large burn plans, please coordinate multiple spot forecast requests with your local NWS office. It is strongly recommended that the requestor indicate the time he or she needs the forecast returned. If not otherwise indicated by the requestor, the NWS assumes the forecast is needed immediately.

The requestor must provide information about the location (latitude/longitude), topography, fuel type(s), top and bottom elevations of fire or project (if appropriate), size of fire or project, ignition time (if appropriate), and a contact name(s) and telephone number(s) of the responsible land management personnel. It is critically important that each spot forecast request also include quality, representative observations at, or near, the site or from a nearby representative RAWS station. A detailed description of the observation location relative to the project (if not at the site) should be provided. The description should include, at a minimum, distance and direction from the project or fire site, station elevation and aspect. It is preferable to have observations that indicate maximum and minimum temperature and humidity conditions near the fire location.

c. Spot Forecast Feedback Requirement

Good communication between fire managers and the NWS is critical for quality spot forecast services. Land management should provide feedback to the NWS forecasters on the quality and accuracy of the spot forecast. Feedback should also be relayed to GACC meteorologists. Responsibility for providing fireline observations for the verification of forecast accuracy rests with the land management agencies, as outlined under, “Fire Weather Observations,” Section V-F.

4. Fire Weather Planning Forecast (FWF)

Planning forecasts are issued by all NWS WFOs offices serving the Western Great Basin. These forecasts provide general, zone-based information used in daily planning and preparedness.

a. Issuance Times During Fire Season

Forecasts will be issued during the fire season. Twice per day fire weather forecast requirements will normally run from May 1 to October 31, with sub-regional variations dependent on weather, elevation and latitude. Local start and stop dates will be coordinated between the NWS offices and fire weather customers, including the geographic area Predictive Services Unit. Modifications to these start and stop dates will be enumerated in Appendix B, National Weather Service Offices.

Two forecasts will be issued daily – a morning forecast issued between 0400 and 0730 local time and an afternoon forecast issued by 1530 local time – 7 days a week. Because of the large north-to-south extent of the Western Great Basin and seasonal variations in weather and fire occurrence, only one issuance per day may be sufficient during the early spring or late fall. This must be coordinated with the geographic area coordination center and the local land management agencies affected.

b. Issuance Outside Fire Season

NWS offices issue fire weather planning forecasts year-round, however offseason forecast may not be as detailed as those issued during the fire weather season.

NWS offices will issue spot forecasts upon request at any time of year.

c. Forecast Updates

Forecasts will be updated during the first 36-48 hour time period when: 1) A Fire Weather Watch or a Red Flag Warning is issued, cancelled, or updated; 2) when any of the amendment criteria in Table 1 are met over a meteorologically significant area; or 3) typographic or formatting errors that confuse the intended meaning are detected.

Table 1. Fire Weather Forecast and Associated Digital Data Amendment Criteria

Fire Weather Forecast and Associated Digital Data Amendment Guidelines	
Forecast	**AMEND WHEN…**
Thunderstorms are not in the forecast…	Thunderstorms occurring or are imminent prior to the next routine planning forecast issuance..
Wind speed of 15 mph or greater…	Speed exceeds forecast by 10 mph or more.
Average minimum RH is 16% to 40%…	Differs by 10% or more.
Average minimum RH is 15% or less…	Differs by 5% or more.

The NWS forecaster should notify all impacted Dispatch and Communications Centers when the forecast has been updated. The forecaster should also notify the Meteorologist or the Coordinator on Duty (COD) at the GACC. When notifying the GACC, do not use voicemail during normal business hours (published in Appendix B). During non-business hours (i.e., overnight), no special notification is necessary.

d. Access

Forecasts are transmitted automatically to the Internet. Forecasts can be accessed through WIMS, the Western Great Basin Predictive Services web sites, and the web sites of the various NWS offices that serve the Western Great Basin. Links can be found in Appendix B.

e. Content and Format

Forecasts will conform to the national standard narrative format, per NWSI 10-401. Morning forecasts will focus on the following 36 hours (3 operational periods). Afternoon forecasts will focus on the following 48 hours (4 operational periods). General extended outlooks will cover, at a minimum, the 3 to 7 day forecast period.

Each forecast will begin with pertinent headlines and a brief, non-technical weather discussion highlighting significant weather events or critical fire weather patterns. Headlines are required for Red Flag Warnings and Fire Weather Watches and are encouraged for other significant fire weather elements that do not meet Red Flag criteria. Affected zone segments of the planning forecast must also include the appropriate headline.
Forecasts for the first 36 or 48 hours will contain the elements shown in Tables 2 and 3 below for each zone or zone grouping, listed in the order they will appear. Format examples and descriptions of forecast elements can be found in the appendices.

Table 2. Planning Forecast (FWF) Elements

Forecast Element and Order	Availability	Remarks
Headline(s)	National	As appropriate
Sky/Weather	National	
Temperature and locally optional 24-hour trend	National	In complex terrain, temperature and relative humidity should be forecast at discrete elevations (e.g., 3000-ft, 5000-ft, 8000-ft, etc) or at generally accepted locations (i.e., valley bottom and mid-slope). These should be coordinated with the local land management and Predictive Services.
Humidity and locally optional 24-hour trend	National	
Wind – 20-ft RAWS standard (slope/valley)	National	Wind speed must conform to the NWCG standard of 20-foot, 10-minute average wind. Additionally, forecast ranges should not exceed 10 mph. Wind gust speed must be from NWCG compliant RAWS stations (20-foot) or a NWS/FAA ASOS station (10 meter). Wind gust speed measurements from other observation platforms will be used upon agreement between NWS and land management agencies.
Wind – Ridgetop (as appropriate)	National	
Chance Wetting Rain (0.10 inch)	Western Great Basin	
Lightning Activity Level (LAL)	Western Great Basin	As defined in Table 3.
Haines Index	Western Great Basin	
Mean Mixing Height	Western Great Basin	
Mean Transport Wind	Western Great Basin	
Ventilation Index (kt-ft)	Las Vegas	
Extended forecast to day 7	National	One extended forecast at end of planning forecast or each zone depending on local agreement.

Table 3. Lightning Activity Level Definitions

Lightning Activity Level Definitions		
LAL	**Areal Coverage Description**	**Area Coverage**
1	No lightning.	
2	Isolated wet or dry thunderstorms.	Less than 15% coverage.
3	Isolated wet thunderstorms.	15% to 24% coverage
4	Scattered wet thunderstorms.	25% to 54% coverage
5	Numerous wet thunderstorms.	55% to 100% coverage
6	Isolated or greater dry thunderstorms.	15% or greater coverage

5. National Fire Danger Ratings System (NFDRS) Forecasts

The National Weather Service will provide National Fire Danger Ratings System (NFDRS) forecasts valid at 1300 LST (1400 LDT) the next day after issuance. These forecasts are used to prepare the NFDRS fire danger indices for the next day.

a. Criteria for Issuance

NWS will issue NFDRS forecasts daily when NFDRS-compliant observations are received. NFDRS observations must be complete and available in WIMS by 1350 LST (1450 LDT) to be received by NWS in time to produce a forecast. Stations that do not have valid observations in WIMS on time will not receive an NFDRS weather forecast and, thus, will not receive forecast fire danger indices for the next day.

b. Content and Format

The content and format shall comply with NWSI 10-4 and is outlined in Appendix C for reference. The actual NWS NFDRS forecast product is used only by WIMS and is not viewable directly by fire management personnel.

c. Procedures

Each WFO will produce individual NFDRS station or zone forecasts. Valid observations must appear on the observation collective or forecasts will not be generated. Forecasts may be in the form of a *trend forecast* for individual or grouped stations, or a *point (station-specific) forecast*. However, the form used should be coordinated with local land management officials and Predictive Services at the GACC. When point forecasts are issued, NWS will ensure that forecast values are statistically valid relative to climatological values for those stations. When using the trend forecast format, there may be rare instances in which weather conditions require separate point forecasts be issued for one or more of the grouped stations. This should be a temporary change to be used only while meteorological conditions require.

B. RAWS Monitoring

Meteorologists should monitor the RAWS network for suspect or erroneous data, using sound meteorological judgment to determine if data is not representative of conditions. When an observation is identified as unrepresentative, forecasters should notify the Predictive Services meteorologist in the GACC where the observation resides to initiate maintenance or repair of the station in question. The dispatch office responsible for that RAWS site will correct bad observations until the equipment is repaired, to ensure integrity of the database.

C. Special Services

Information regarding the dispatch of IMETs, both within and outside the Western Great Basin area, can be found in the Interagency Agreement for Meteorological Services and Great Basin Mobilization Guide.

IV. PREDICTIVE SERVICES/LAND AGENCIES – SERVICES AND RESPONSIBILITIES

The Predictive Services Unit (PSU) resides at the Western Great Basin Coordination Center (WGBCC) in Reno, Nevada. WGBCC is the primary logistical support center within Nevada,

mobilizing resources such as aircraft, personnel, equipment, and crews to fight wildland fires and support disaster relief efforts.

A. Operational Support and Predictive Services

The PSU produces a suite of products tailored to the tactical and strategic mission of the land management agencies within the Western Great Basin. The PSU provides daily briefings, medium-range and long-range fire weather, fire danger, and resource outlooks for use in tactical and strategic planning. These services complement short-term forecast products provided by the NWS. All products are available on the Predictive Services web page.

While the main area of responsibility is at the geographic area level, Predictive Services provides services to sub-units of the geographic area, such as dispatch centers and local administrative units. Contributions will also be made to the national level Predictive Services program. All products will be available on the Predictive Services web page.

1. 7-Day Significant Fire Potential Outlook

The 7-Day Significant Fire Potential Outlook addresses the potential for significant weather events (dry lightning outbreaks, precipitation events, wind events, etc.) that can impact fire occurrence or fire behavior in the next 7 days and that could require short-term decisions on resource availability and movements. The outlook will identify significant fire potential in a 3-category scale based on ERCs, 100-hour and 1,000-hour fuel moisture forecasts. Ignition triggers (i.e., lightning, wind, etc.) will be incorporated to refine the potential on individual days.

The outlook is issued every morning by 1100 PST/PDT, 7 days a week during fire season -- generally beginning on May 1 and continuing through October 31. Seasonal start and stop dates may vary based on need and will generally follow the NWS schedule for planning forecasts. Updates will be made when it appears that observed or expected conditions are significantly different than those contained in the product.

More information on the 7-Day Outlook can be found on the Western Great Basin Predictive Services website linked below. 7-Day Outlooks are archived daily.

http://gacc.nifc.gov/wgbc/predictive/outlooks/Fire_Potential.html

2. Monthly Fire Potential Outlook

The Monthly Fire Potential Outlook is a broader, more general assessment of weather, climate, and fuels conditions across the area. It incorporates climate trends, potential weather, and fuels condition and trends to make long-term predictions of impacts on fire business. Outlooks will focus on potential for large fire activity and time frames that will impact resource availability and mobilization relative to normal fire business for the time of year.
The Monthly outlook is issued within 2 business days of the start of the month for which it is valid. A National Monthly/Seasonal Significant Fire Potential Outlook is produced by the Predictive Services National Office, following the same general format.

3. Seasonal Fire Potential Outlook

   The Seasonal Outlook is issued monthly and covers the 3-month period immediately following the Monthly Outlook. This outlook attempts to predict the overall character of the upcoming fire season relative to a normal season (based on 5 to 10 year historical averages). A National Monthly/Seasonal Significant Fire Potential is produced by the Predictive Services National Office, following the same general format.
   WGB Monthly/Seasonal Outlook:

   http://gacc.nifc.gov/wgbc/predictive/outlooks/monthly_seasonal_outlook.pdf

   National Outlook:

   http://www.predictiveservices.nifc.gov/outlooks/monthly_seasonal_outlook.pdf

4. Fuels Status for Red Flag Warnings

   Fuels Status is a fundamental consideration for the issuance of Red Flag Warnings and Fire Weather Watches. If existing fuels are not dry enough to support large fire growth, the NWS forecaster should not issue a Watch or Warning regardless of weather conditions. In the Western Great Basin, the 7-day Significant Fire Potential Outlook and the WGB Fuels Status Page should be consulted to determine fuels conditions that would meet the criteria for Red Flag Warnings or Fire Weather Watches. These do not replace the NFDRS observed and forecast indices for fire danger. Instead, this product highlights areas where fuels conditions would support large fire growth or extreme fire behavior as determined by fuels and fire specialists on the ground. If time permits, the forecaster should also seek coordination with the local land management agencies they serve.

   Fuels Status Website:

   http://199.141.1.20/fuels/wrn/public/index.php

5. Predictive Services issues a Multi-Media Briefing, available on the Western Great Basin Predictive Services Website: http://gacc.nifc.gov/wgbc/predictive/briefing/briefing.html.

   These briefings incorporate a recap of recent lightning and precipitation, any significant fire or resource information, expected short-term weather (or longer term if there is a significant fire weather event on the horizon), the WGB 7-Day Significant Fire Potential Product, fuel status information and snowpack conditions, if applicable.

   The Multi-Media Briefing is issued daily by 0900 during fire season, generally beginning May 1 and continuing through October 31. Seasonal start and stop dates may vary based on need and will generally be coordinated with the NWS schedule for in-season planning forecasts. Updates will be made as time permits and when it appears that observed or expected conditions are significantly different than those contained in the product.

   The off-season schedule for this briefing is Mondays and Thursdays by 0900. Off-season start/end dates will vary according to fire activity and fuels conditions.

   Predictive Services may be asked to provide briefings to agency decision-makers. These briefings generally occur during peak periods of the fire season or when a Multi-Agency Coordination (MAC) Group has convened. They usually include a short-term weather discussion of critical weather patterns and a longer-term discussion of trends during the coming week. The briefings provide tactical (operational) and strategic (planning) information

for land managers. Briefing schedules vary with planning and staffing levels, fire activity, and management priorities.

B. Remote Automated Weather Stations (RAWS)

Predictive Services will monitor the RAWS network within the Western Great Basin. This will include identifying unrepresentative observations or inoperative equipment and ensuring the data record is complete and accurate for input into WIMS and NFDRS. Predictive Services will relay information regarding the network to, address issues and concerns with, and offer recommendations for improvements to the network to the USDA Forest Service Regional RAWS coordinator and to the BLM-NIFC RAWS Program manager, as appropriate. Predictive Services will attempt to notify appropriate NWS offices of outages and restoration of services in a timely fashion, as time and human resources allow.

Weather observations are provided by the land agencies to the NWS to ensure sufficient information is available to produce quality forecast products. RAWS observations will comply with NWCG standards for quality and timeliness. RAWS will be sited and maintained in accordance with the NWCG PMS 426-3, "National Fire Danger Rating System Weather Station Standards."

Weather observations at or near the fire or project site are highly recommended when requesting a spot forecast. If this is not possible, observations from a nearby, representative RAWS site may be substituted. Fireline observations are preferred. Agency personnel should provide observations containing, at a minimum: temperature, humidity, wind speed and direction, and weather and sky condition that complies with guidance provided in NFES 2140, "Weather Station Handbook – an Interagency Guide for Wildland Managers." In situations where a fireline or on-site observation cannot be obtained (remote location, time constraints, etc.) a nearby, representative RAWS observation may be used. Keep in mind that the quality of the observation, or how representative it is of conditions at the fire or project site, will affect the precision a forecaster can provide in a spot weather forecast.

For large or complex planned projects requiring spot forecasts, such as prescribed burns, aerial spraying, rehabilitation, etc., it is strongly recommended that observations be taken for a minimum of seven (7) days, 24 hours a day, prior to commencement of the project. This will provide forecasters with a history of diurnal variations of weather, temperature, humidity, and wind at or near the project site. For smaller, less complex projects, such as pile burns, observations should be collected for a minimum of two (2) days.

C. Land Management Liaison

Predictive Services meteorologists will act as a liaison on issues regarding weather, climate, and fuels between the land management agency partners in the Western Great Basin and service providers in these areas, including the NWS, private sector providers, and the research community.

D. Monitoring, Feedback, and Improvement of Fire Weather Information

Land management agencies will monitor sources of fire weather information to ensure quality, consistency, and applicability. When significant issues arise, Predictive Services will address the issue with the service provider to enhance awareness and to work toward an appropriate solution. Items of significance include, but are not limited to:

1. General forecast consistency between County Warning Areas (CWAs), dispatch zones, and land management administrative units;
2. Red Flag Warning and Fire Weather Watch consistency with established criteria, timeliness of issuance, coordination and applicability;
3. NFDRS forecast consistency with station climate histories;
4. Quality of fireline observations and spot forecast feedback from the field;
5. Overall adherence to policy and procedure, especially as set forth in the AOP;
6. Feedback from the field on the quality of all NWS and PSU products and services.

It is imperative that field personnel provide timely feedback to the NWS about products and services. This information will be used to gauge the quality and validity of products and services, make improvements and to resolve any conflicts or discrepancies between products issued. Feedback should be provided as soon as possible so that action can be taken immediately. Feedback may be positive or negative but it should always be constructive and intended to provide information that will help improve products and services. Comments should be submitted directly to the NWS, with a copy to Predictive Services.

E. Technology and Data Transfer

Predictive Services will work to integrate advanced technology into analytical and prediction systems for use in fire management planning and operations. This will include regional numerical modeling, weather and fuels data assimilation and dissemination, and continued research and development in fire meteorology.

Where fire management computer systems, such as WIMS, are available, access will be granted to NWS for the purpose of obtaining and providing mission critical information, such as weather observations and forecasts.

F. Incident Response

The NWS is the provider of Incident Meteorologists (IMETs). Predictive Services meteorologists can respond to incidents when the NWS cannot provide a certified IMET within 24-hours of request receipt by the National Fire Weather Operations Coordinator (NFWOC). In these instances, and when requested by incident command staff, Predictive Services meteorologists will provide forecast support as a Technical Specialist until the arrival of a certified NWS IMET. Technical Specialists will not be used as a substitute for NWS IMETs. Forecast support will revert to the NWS IMET after a reasonable transition period.

V. JOINT RESPONSIBILITIES

A. Coordination Calls

Coordination calls are conducted as needed during fire season. Either Predictive Services meteorologists or NWS meteorologists can initiate a call. Calls generally begin in early June, as fire danger dictates, and continue until no longer needed. In the event of conflict with coordination calls with other GACCs served by common NWS offices, call times may be adjusted to allow full participation.

B. Training

Training for weather sections of S-190, S-290, and other fire weather courses can be provided at customer request. Requests can be made at any time of year to any of the NWS offices in the Western Great Basin. Requests will generally be met unless there are scheduling or staffing

conflicts at the NWS office. In these cases, the requesting person or agency should provide alternate dates. If this is not possible, the NWS will assist in locating a trainer from another NWS office or from the GACC.

Cross-training between NWS and GACC meteorologists is encouraged. NWS forecasters can detail at the GACC to gain an understanding of the decision support role Predictive Services fills in fire operations. GACC meteorologists can shadow NWS forecasters to view the forecast preparation process utilizing the new technologies available at NWS offices. Scheduling of cross-training visits should be arranged as far in advance as possible to reduce impacts on operations. However, because of the rapidly-changing nature of fire operations, the best opportunity may come with short notice. Flexibility is necessary.

C. Verification of Fire Weather Products

Predictive Services and NWS meteorologists will cooperatively develop, perform, and report verification results of prepared fire weather products. These will include, but are not limited to: Red Flag Warnings and Fire Weather Watches; NFDRS point and/or trend forecasts; Weekly fire weather/fire danger outlooks. Data sources used in verification must be well-sited, representative of conditions being verified, and reliable.

D. Establishing or Modifying Forecast Zone Boundaries

Forecast zone boundaries shall be established and/or modified jointly by the NWS and the land management agencies with administrative responsibility for the affected lands. Predictive Services meteorologists should be included in negotiations. Existing zone boundaries may be modified to avoid splitting land management administrative boundaries between multiple NWS forecast areas. Implementation of any changes must follow procedures outlined in NWS Directive NWSI 10-407.

VI. EFFECTIVE DATES FOR THE ANNUAL OPERATING PLAN

The effective period for this Annual Operating Plan is approximately 1 May 2011 to 1 May 2012. The AOP shall be deemed official when all signatories have accepted and signed the document. Updates or amendments may be added upon agreement of all signatories.

VII. SIGNATORIES

Dated Signature on File

_____

Rex McKnight
Chair, Great Basin Coordinating Group
Bureau of Land Management
Nevada State Fire Management Officer

Date: _____

Dated Signature on File

_____

Rhett Milne
National Weather Service
WFO Reno, NV
Acting Meteorologist-in-Charge

Date: _____

Appendix A: Organizational Directory and Contact Information

Western Great Basin Coordination Center – Predictive Services
1340 Financial Blvd
Reno, NV 89502
Web Site Address: http://gacc.nifc.gov/wgbc/
Predictive Services Handbook:
http://www.predictiveservices.nifc.gov/NPSG/npsg_pdf/PSHandbook_2009Update.pdf
Outlook Maps: http://gacc.nifc.gov/wgbc/predictive/outlooks/outlook.htm

Name	Position	E-Mail
Fred Svetz	Program Manager	fsvetz@nv.blm.gov
Gina McGuire	Meteorologist	gmcguire@nv.blm.gov
Nelda St. Clair	Center Manager	Nelda_St_Clair@nv.blm.gov

Elko Weather Forecast Office
3720 Paradise Drive
Elko, NV 89801
Web Site Address: www.weather.gov/elko

Name	Position	E-Mail
Jeff Rood	Program Leader	Jeff.Rood@noaa.gov
Pam Szatanek	IMET	Pamela.Szatanek@noaa.gov
Donald Dumont	IMET Trainee	Donald.Dumont@noaa.gov
Kevin Baker	Meteorologist-in-Charge	Kevin.Baker@noaa.gov
Michael Fitzsimmons	Warning Coordination Meteorologist	Michael.Fitzsimmons@noaa.gov

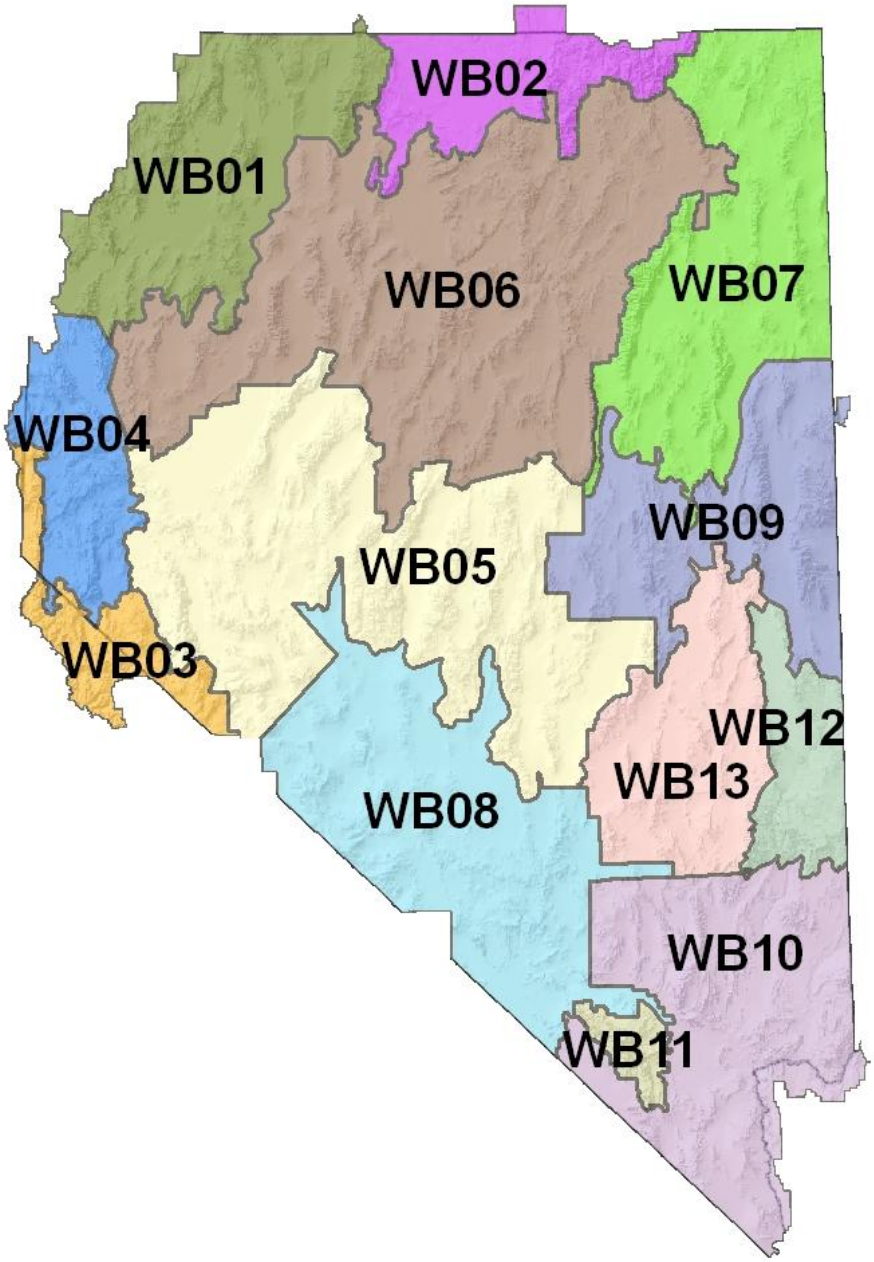
Las Vegas Weather Forecast Office
7851 Dean Martin Drive
Las Vegas, NV 89139
Web Site Address: www.weather.gov/lasvegas

Name	Position	E-Mail
Jim Harrison	Program Leader/ IMET	Jim.Harrison@noaa.gov
Mike Staudenmaier	Meteorologist-in-Charge	Michael.Staudenmaier@noaa.gov
Faith Borden	Warning Coordination Meteorologist	Faith.Borden@noaa.gov

Reno Weather Forecast Office
2350 Raggio Parkway
Reno, NV 89512
Web Site Address: www.weather.gov/reno

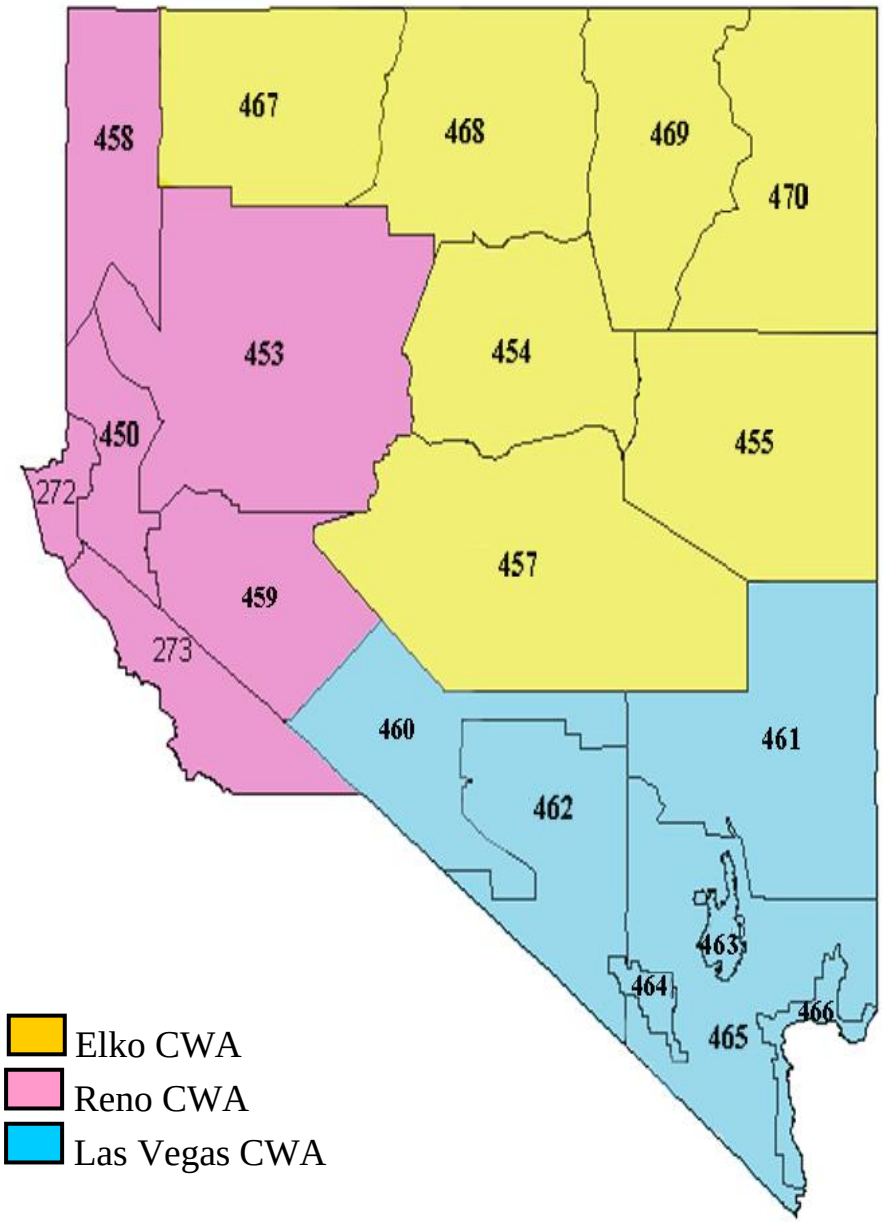
Name	Position	E-Mail
Alex Hoon	Program Leader/ IMET trainee	Alexander.Hoon@noaa.gov
Rhett Milne	Acting Meteorologist-in-Charge	Rhett.Milne@noaa.gov
James Wallmann	IMET	James.Wallmann@noaa.gov

Appendix B: Western Great Basin Predictive Service Area Map



Appendix C: National Weather Service Office Information

Western Great Basin
Forecast Area/ Fire Weather Zones



ELKO WEATHER FORECAST OFFICE

1. CHANGES FOR 2011

See Main section of AOP for overall program changes.

2. HOURS OF OPERATION

Depending on variables such as fuel parameters and customer need, seasonal Fire Weather Hours of Operation will be:

5/1 through 10/31: 0800-1600 PDT,
Forecast issued twice a day 0400-0700 and NLT 1530 PDT.

Staff meteorologists will be on duty and available at any time, 24 hours a day, 7 days a week.

3. STAFF AND CONTACT INFORMATION

See Appendix A.

4. FIRE WEATHER SERVICES

A. Description of the Elko Fire Weather District:

Western Great Basin Fire Weather Zones...

Zone 454 – Northern Lander/Eureka Counties
Zone 455 – White Pine County
Zone 457 – Southern Lander/Eureka and Northern Nye Counties
Zone 467 – Central and Western Humboldt County
Zone 468 – Eastern Humboldt and Northwest Elko Counties
Zone 469 – Southwestern and Central Elko Counties
Zone 470 – Eastern Elko County

See map at end of this section.

B. Basic Meteorological Services

Spot Forecasts: Requests for spot forecasts will be received via the Elko Fire Weather homepage found at:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lkn

Follow-up phone calls are encouraged when requesting spot forecasts. In the event internet communications are not available, spot requests may be made by fax using the WS Form D-1 or by phone.

Forecast feedback is imperative to improving services. In many cases, the only way the forecaster will know what happened on a remote incident is through feedback from the fire community. You can phone in concerns or comments about forecasts to the forecaster on duty. Feedback may also be submitted in the remarks section on the next internet request, or by using the feedback option on the already processed internet-based spot forecast. Lastly, block 13 on the WS Form D-1 may be used in subsequent spot forecast requests. If forecast services or weather conditions significantly impact operations, please notify the Fire Weather Program Leader, via phone or email. See Appendix A for contact information.

Fire Weather Short Term Forecasts (NOWCASTS): WFO Elko will continue the fire weather short term forecast (FWXNOW) for the entire forecast area this season. The text product will be headlined by "Fire Weather Short Term Forecast" to distinguish it from the general public short term forecast. This product will provide forecast information for immediate fire weather concerns. At a minimum, dispatch will be notified when a fire weather short term forecast is issued.

C. Product Schedule

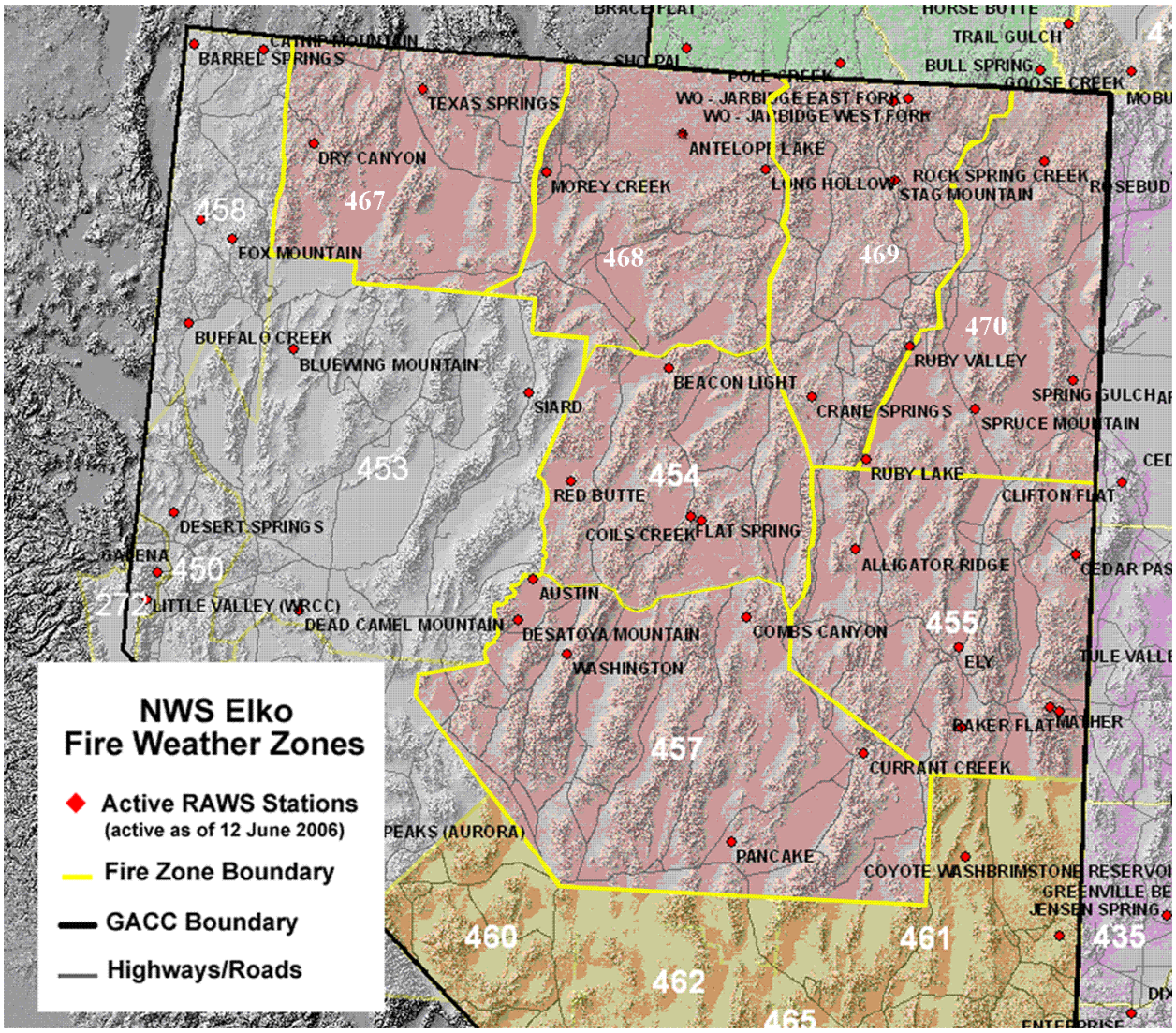
Morning fire weather forecast	0400-0730 PDT
Afternoon fire weather forecast	NLT 1530 PDT
NFDRS trends forecast	NLT 1545 PDT
Fire Weather Watch / Red Flag Warnings	Event-Driven
Spot forecasts	Upon request
Fire Weather Short Term Forecast	Event-Driven

D. Red Flag Events

Interagency Coordination: Before the issuance of a Red Flag Warning, there will be coordination with the affected agencies and neighboring NWS fire weather offices in order to assess fuel conditions and general fire danger.

Dissemination of Fire Weather Watches and Red Flag Warnings: Each issuance, update or cancellation of a Fire Weather Watch or Red Flag Warning will be relayed by telephone to the dispatch office(s) and GACC affected by the watch/warning.

Criteria for Red Flag Events: Standard criteria have been developed for the Western Great Basin and can be found starting on page 8. However, local criteria specific to an area may be used in addition to the standard criteria.


NWS Elko
Fire Weather Zones
Active RAWS Stations
(active as of 12 June 2006)
Fire Zone Boundary
GACC Boundary
Highways/Roads
458
467
468
469
470
453
454
455
450
457
460
461
462
435
BARREL SPRINGS
TEXAS SPRINGS
DRY CANYON
FOX MOUNTAIN
BUFFALO CREEK
BLUEWING MOUNTAIN
SIARD
MOREY CREEK
ANTELOPE LAKE
LONG HOLLOW
ROCK SPRING CREEK
STAG MOUNTAIN
TRAIL GULCH
BULL SPRING
GOOSE CREEK
RUBY VALLEY
BEACON LIGHT
CRANE SPRINGS
SPRING GULCH
SPRUCE MOUNTAIN
RUBY LAKE
CLIFTON FLAT
RED BUTTE
COILS CREEK
FLAT SPRING
ALLIGATOR RIDGE
DESERT SPRINGS
LITTLE VALLEY (WRCC)
DEAD CAMEL MOUNTAIN
AUSTIN
DESATOYA MOUNTAIN
WASHINGTON
COMBS CANYON
ELY
BAKER FLAT
CURRANT CREEK
PANCAKE
COYOTE WASH
JENSEN SPRING

LAS VEGAS WEATHER FORECAST OFFICE

1. CHANGES FOR 2011

Red Flag Warnings and Fire Weather Watches will be in the bulleted format.

2. HOURS OF OPERATION

Staff meteorologists are on duty at WFO Las Vegas 24 hours a day throughout the year.
Scheduled dates and times for the Fire Weather Planning Forecast and NFDRS forecasts are:

5/1 through 10/31:	Planning Forecast issued twice daily at 0700 and 1500 PDT. NFDRS forecast issued by 1530 PDT.
Off season:	Planning Forecast issued once daily at 0700 local time.

Depending on variables such as fuel parameters and customer need, seasonal Fire Weather dates may begin earlier in the season or continue later in the season.

3. STAFF AND CONTACT INFORMATION

See Appendix A.

4. FIRE WEATHER SERVICES

A. Description of the Las Vegas Fire Weather District (Western Great Basin Portion):

Nevada Fire Weather Zones

- Zone 460 – Central Nevada Dispatch Southern Deserts – Esmeralda and parts of Central Nye County
- Zone 461 – Lincoln County – Ely Dispatch
- Zone 462 – Nye County Deserts – LV Dispatch
- Zone 463 – Sheep Range
- Zone 464 – Spring Mountains
- Zone 465 – Clark and SW Lincoln County Deserts – LV Dispatch
- Zone 466 – Lake Mead and Colorado River – LV Dispatch

See map at end of this section.

B. Basic Meteorological Services

Spot Forecasts: Requests for spot forecasts will be received via the Las Vegas Fire Weather Home page found at:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=vef

Follow-up phone calls are encouraged when requesting spot forecasts. In the event internet communications are not available, spot requests may be made by fax using the WS Form D-1 or by phone.

Forecast feedback is imperative to improving services. In many cases, the only way the forecaster will know what happened on a remote incident is through feedback from the fire community. You can phone in concerns or comments about forecasts to the forecaster on duty. Feedback may also be submitted in the remarks section on the next internet request, or by using the feedback option on the already processed internet-based spot forecast. Lastly, block 13 on the WS Form D-1 may be used in subsequent spot forecast requests. If forecast services or weather conditions significantly impact operations, please notify the Fire Weather Program Leader, via phone or email. See Appendix A for contact information.

C. Product Schedule

Morning fire weather planning forecast	0400-0730 Pacific Time
Afternoon fire weather forecast	NLT 1530 Pacific Time
NFDRS trends forecast	NLT 1545 Pacific Time
Fire Weather Watch/Red Flag Warnings	Event-Driven
Spot forecasts	Upon request

D. Red Flag Events

Interagency Coordination: Before the issuance of a Red Flag Warning, there will be coordination with the affected agencies and neighboring NWS offices in order to assess fuel conditions and general fire danger.

Dissemination of Fire Weather Watches and Red Flag Warnings: Each issuance, update or cancellation of a Fire Weather Watch or Red Flag Warning will be relayed by telephone to the dispatch office(s) and GACC affected by the watch/warning if it falls between the normally scheduled planning forecast issuances.

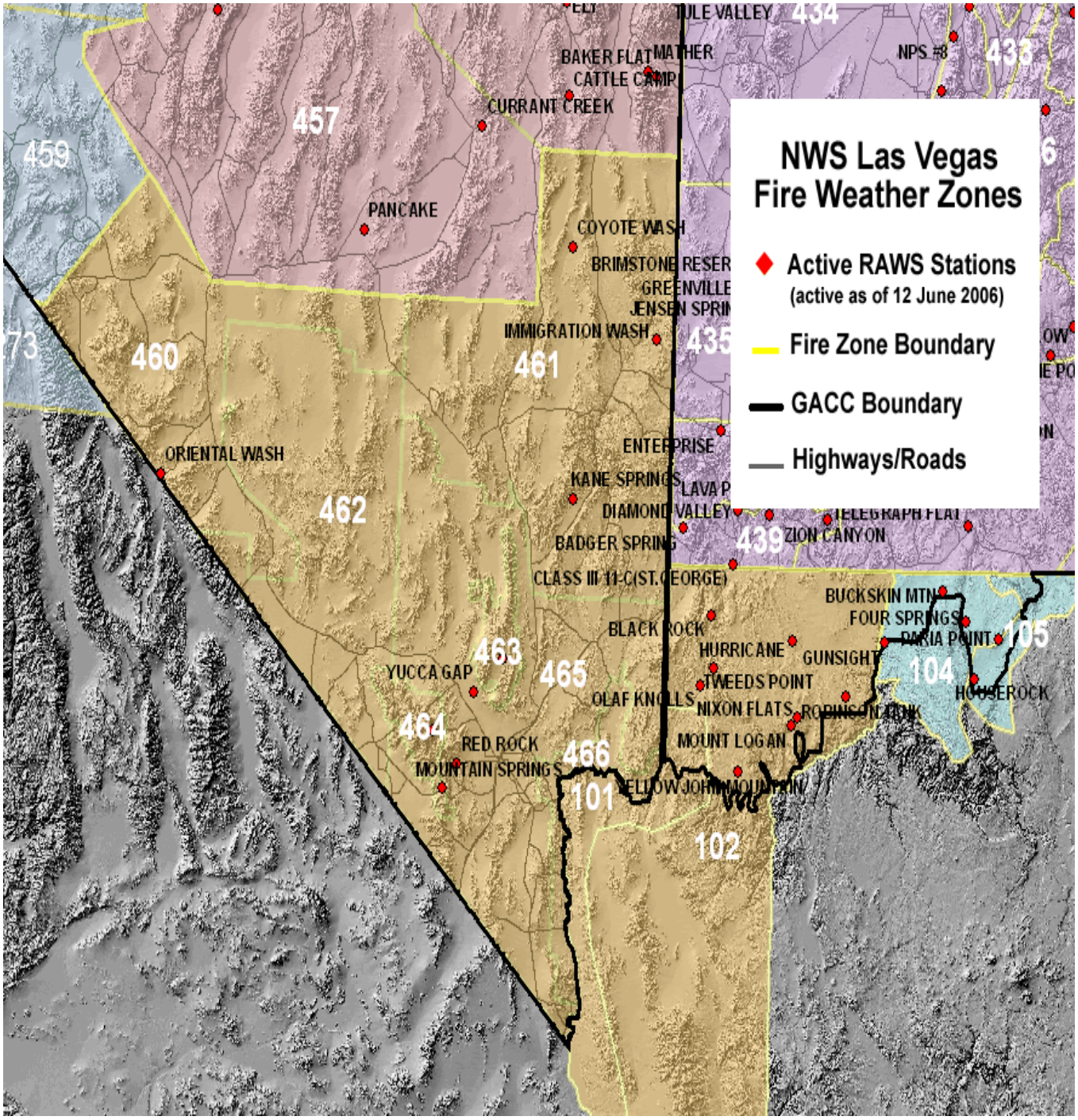
Criteria for Red Flag Events: Standard criteria have been developed for the Western Great Basin and can be found starting on page 8. However, local criteria specific to an area may be used in addition to the standard criteria. For Las Vegas, red flag criteria will include sustained winds greater than or equal to 20 mph and/or gusts greater than or equal to 35 mph for 3 or more hours in a given period.

E. Smoke Management Forecast

Mixing Height, Transport Winds and Ventilation Category are provided for each zone in the fire weather planning forecast. That information is provided for a single point in each zone which is noted at the end of the fire weather planning forecast.

F. Incident Meteorologists (IMETs)

The Las Vegas office has one certified IMET available for dispatch to major fires and incidents. Dispatch for significant prescribed burn projects will only be possible when coordination with the fire weather program leader and WFO Meteorologist-in-Charge (MIC) is well in advance (i.e., months in advance) of the project and only when NWS manpower and resources permit.


NWS Las Vegas
Fire Weather Zones
Active RAWS Stations
(active as of 12 June 2006)
Fire Zone Boundary
GACC Boundary
Highways/Roads
TULE VALLEY
434
BAKER FLAT
MATHER
CATTLE CAMP
CURRANT CREEK
NPS #8
433
457
459
PANCAKE
COYOTE WASH
BRIMSTONE RESER
GREENVILLE
JENSEN SPRIN
IMMIGRATION WASH
435
460
461
ORIENTAL WASH
ENTERPRISE
KANE SPRINGS
LAVA P
DIAMOND VALLEY
TELEGRAPH FLAT
462
BADGER SPRING
439
ZION CANYON
CLASS III 11-C(ST.GEORGE)
BUCKSKIN MTN
FOUR SPRINGS
PARIA POINT
105
BLACK ROCK
HURRICANE
GUNSIGHT
104
463
YUCCA GAP
465
TWEEDS POINT
HOUSEROCK
OLAF KNOLLS
NIXON FLATS
ROBINSON TANK
464
RED ROCK
MOUNTAIN SPRINGS
466
MOUNT LOGAN
YELLOW JOHN MOUNTAIN
101
102

RENO WEATHER FORECAST OFFICE

1. CHANGES FOR 2011

See Main section of AOP for overall program changes.

Red Flag Criteria for Fire Zone 272 (Lake Tahoe Basin) has been changed. See below in Section 4D.

Boundary between Fire Zone 272 (Lake Tahoe Basin) and Zone 450 (Sierra Front) have been corrected to remove Reno and Peavine Mountain out of Zone 272 and into Zone 450. See attached map.

2. HOURS OF OPERATION

Depending on variables such as fuel parameters and customer need, seasonal Fire Weather Hours of Operation will be:

5/15 through 10/31: 0800-1600 PDT,
Forecast issued twice a day 0400-0730 and NLT 1530 PDT.

Staff meteorologists are on duty and available at any time, 24 hours a day, 7 days a week.

3. STAFF AND CONTACT INFORMATION

See Appendix A.

4. FIRE WEATHER SERVICES

A. Description of the Reno Fire Weather District:

Western Great Basin Fire Weather Zones...

Zone 450 – Sierra Front
Zone 453 – West Central Nevada Basin and Range
Zone 458 – Northern Washoe County
Zone 459 – Mineral and Southern Lyon Counties
Zone 272 – Lake Tahoe Basin and Carson Range
Zone 273 – Mono and Eastern Alpine Counties

See map at end of this section.

B. Basic Meteorological Services

Spot Forecasts: Requests for spot forecasts will be received via the Reno Fire Weather homepage found at:

http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=rev

Follow-up phone calls are encouraged when requesting spot forecasts. In the event internet communications are not available, spot requests may be made by fax using the WS Form D-1 or by phone.

Forecast feedback is imperative to improving services. In many cases, the only way the forecaster will know what happened on a remote incident is through feedback from the fire community. You can phone in concerns or comments about forecasts to the forecaster on duty. Feedback may also be submitted in the remarks section on the next internet request, or by using the feedback option on the already processed internet-based spot forecast. Lastly, block 13 on the WS Form D-1 may be used in subsequent spot forecast requests. If forecast services or weather conditions significantly impact operations, please notify the Fire Weather Program Leader, via phone or email. See Appendix A for contact information.

C. Product Schedule

Morning fire weather forecast	0400-0730 PDT
Afternoon fire weather forecast	NLT 1530 PDT
NFDRS trends forecast	NLT 1545 PDT
Fire Weather Watch / Red Flag Warnings	Event-Driven
Spot forecasts	Upon request

D. Red Flag Events

Interagency Coordination: Before the issuance of a Red Flag Warning, there will be coordination with the affected agencies and neighboring NWS fire weather offices in order to assess fuel conditions and general fire danger.

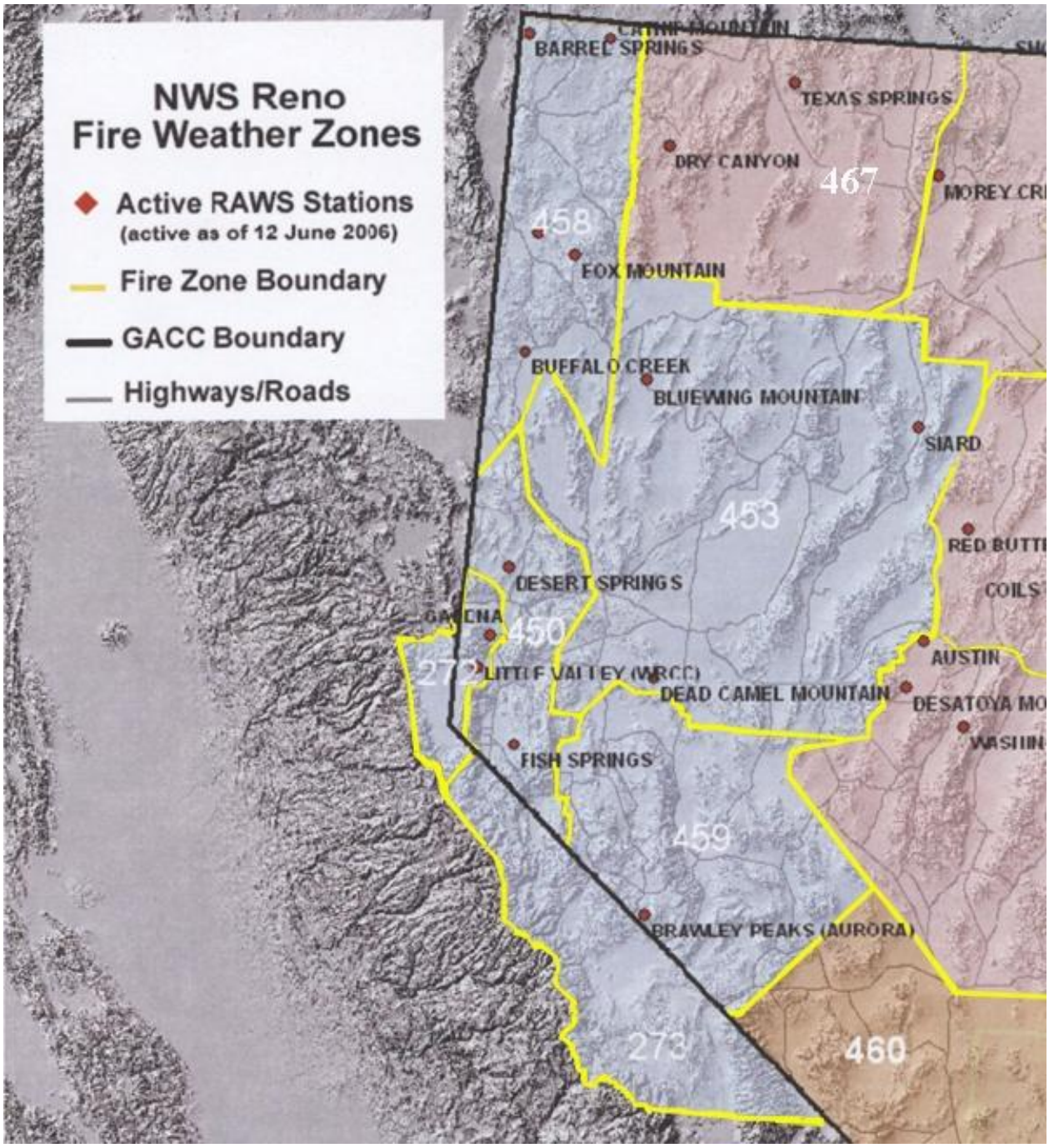
Dissemination of Fire Weather Watches and Red Flag Warnings: Each issuance, update or cancellation of a Fire Weather Watch or Red Flag Warning will be relayed by telephone to the dispatch office(s) and GACC affected by the watch/warning.

Local Criteria for Red Flag Events: Standard criteria have been developed for the Western Great Basin and can be found starting on page 4. However, local criteria specific to an area may be used in addition to the standard criteria.

> **Lake Tahoe Basin (Fire Zone 272):** Wind gusts >30mph with Relative Humidity less than 20%, conditions must present for 3 hours or more.
>
> When fuel moistures become extreme, Red Flag Warnings will be issued for Gusts > 30 mph regardless of humidity. Fuel Moistures will be closely coordinated with the Lake Tahoe Basin Management Unit and other partner agencies to determine when they transition from critical to extreme

E. Briefings

Reno Fire Weather Conference Calls: These will be conducted through the fire season on Mondays and Fridays at 0945. Briefings will be held daily during critical fire weather patterns or during periods of numerous ongoing wildfires ongoing. Calls will consist of an overview of the warnings and watches throughout the region, a satellite/radar overview, along with detailed analysis of critical fire weather parameters such as winds, humidity, and lightning.


NWS Reno
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(active as of 12 June 2006)
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BUFFALO CREEK
BLUEWING MOUNTAIN
SIARD
453
DESERT SPRINGS
450
AUSTIN
DEAD CAMEL MOUNTAIN
FISH SPRINGS
459
BRAWLEY PEAKS (AURORA)
273
460