

CALIFORNIA FIRE WEATHER ANNUAL OPERATING PLAN



2007



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CALIFORNIA ANNUAL OPERATING PLAN 2007

I. INTRODUCTION

- a. The California Fire Weather Annual Operating Plan (AOP) constitutes an agreement between the California Wildfire Coordinating Group, hereinafter referred to as the CWCG, comprised of State, local government and Federal land management agencies charged with the protection of life, property and resources within the State of California from threat of wildfire; and the National Weather Service (NWS), National Oceanic and Atmospheric Administration, U.S. Department of Commerce, charged with providing weather forecasts to the Nation for the protection of life and property.
- b. The AOP provides specific procedural and policy information regarding the delivery of meteorological services to the fire management community in California. It is the objective of the NWS and CWCG to ensure that quality of service is maintained through a mutual analysis of services provided. The NWS and CWCG work closely in all phases of the fire weather forecast and warning program to resolve concerns and avoid potential inconsistencies in products and services prior to delivery to fire agency customers. The goal of all agencies is to maximize firefighter and public safety through a coordinated delivery of consistent services.

Fire protection within California is made efficient by the statewide exchange among Federal, State, and local agencies of their responsibilities for the protection of certain lands. Non-federal wildland fire management agencies are by agreement protecting Federal lands, and therefore, require NWS fire weather forecasts and warnings. Due to this practice, it is essential that all fire protection agencies receive a coordinated fire weather and fire danger forecast.

- c. The general relationship between the NWS and the interagency fire management community is set forth in the following reference documents:

[Interagency Agreement for Meteorological Services Among the Bureau of Land Management, Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and National Park Service of the U.S. Dept. of Interior, the Forest Service of the U.S. Dept. of Agriculture, and the National Weather Service of the U.S. Dept. of Commerce \(National MOA or National Agreement\);](#)

[Interagency Agreement Between the California Wildfire Coordinating Group and the National Weather Service;](#)

[National Weather Service NWSI 10-4: Fire Weather Services;](#)

[2007 National Mobilization Guide;](#) and

[2007 California Mobilization Guide](#)

- d. Participating agencies include the following:

The CWCG, comprised of the following Federal, State and local fire agencies:

- United States Department of Agriculture (USDA) Forest Service – Pacific Southwest Region (excluding Hawaii),

- United States Department of the Interior (USDI) Agencies, Bureau of Land Management – California State Offices
- National Park Service – Pacific West Region
- Bureau of Indian Affairs – Pacific Region
- U.S. Fish and Wildlife Service – Pacific Region
- California Department of Forestry and Fire Protection (CALFIRE)
- California Office of Emergency Services
- Contract City and County Fire Departments

The DOC/NOAA/National Weather Service offices serving California (Western Region); and representatives from independent city/county fire agencies.

II. CHANGES FOR 2007

Work is underway to include CWR (Chance of Wetting Rains) for all fire weather planning forecasts (FWFs) in southern California.

Cut off time to have NFDRS obs into WIMS is 1430.

Work is underway to transfer the following NFDRS stations to WFO Los Angeles/Oxnard responsibility: Claremont, Heninger Flats, Little Tujunga, Tanbard, and Tonner Canyon.

Work is currently underway to split the Los Angeles County Valley zone (CAZ247) into a San Fernando Valley zone and a San Gabriel Valley zone. This is hoped to be completed by September 2007.

Both the Riverside and Redding PSUs are now issuing a GIS-based 'Daily Weather Outlook' product. These presently use NWS gridded data to display a color-coded minimum RH field for Days 1 and 2, as well as wind speed and direction at selected points. The PSUs add a fire weather Synopsis, a 3-7 Day Outlook section, and place weather symbols on the maps. Links are <http://gacc.nifc.gov/oncc/predictive/weather/DailyOutlook.html> for North Ops, and http://gacc.nifc.gov/oscc/predictive/weather/daily_product/DailyOutlook.html for South Ops.

The Redding PS staff added Basil Newmerzhycky in October 2006. Recent retirees from the Riverside staff include longtime forecasters Harold Coffey and Ron Hamilton. This could leave the Riverside PS Unit shortstaffed for a significant portion of the 2007 season.

The scheduled time for the 'as-needed' morning North Ops coordination call has been changed from 0830 PDT to 0845 PDT. This is so NWS Monterey can more easily join both the NOPS and SOPS calls when necessary.

There is no longer a 'Fire Weather Summary' product (daily narrative text) from either PSU. These were replaced when the NWS California Fire Weather Web page and ECCDAs went on line in 2006.

The GACCs will provide spot forecasts for ongoing Wildland Fire Use (WFU) projects, whenever they and the NWS have agreed to have this workload transferred to the PSU mets.

Be sure to check [Appendix F](#) for the latest list of NFDRS Trend forecast sites and responsible NWS offices.

III. SERVICE AREAS FOR NWS OFFICES AND PREDICTIVE SERVICE UNITS

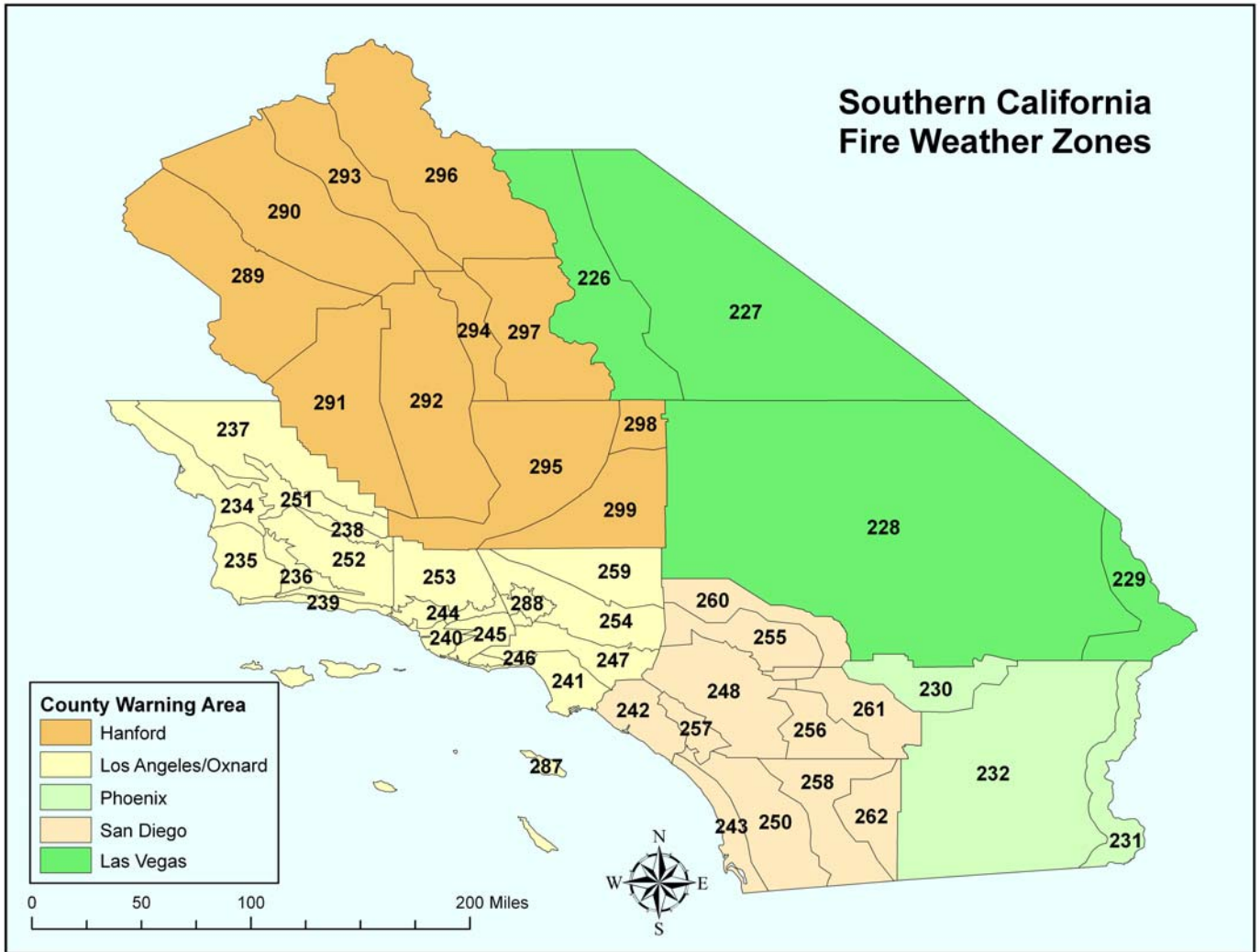
Fire weather forecast services are provided by forecasters at National Weather Service offices and in Predictive Services Units at the Redding and Riverside Geographic Area Coordination Centers. All Red Flag Warnings and Fire Weather Watches, all spot forecasts for wildfires, and all forecasts used to develop National Fire Danger Rating System (NFDRS) indices, are issued by the NWS. Both groups provide spot forecasts for prescribed burns, narrative and/or graphical forecasts for planning purposes, and have trained Incident Meteorologists (NWS) or Technical Specialists (PSU). Details on these services are contained in the plan.

A. NWS Weather Forecast Offices (WFOs) Serving California (Bold indicates shared counties.)

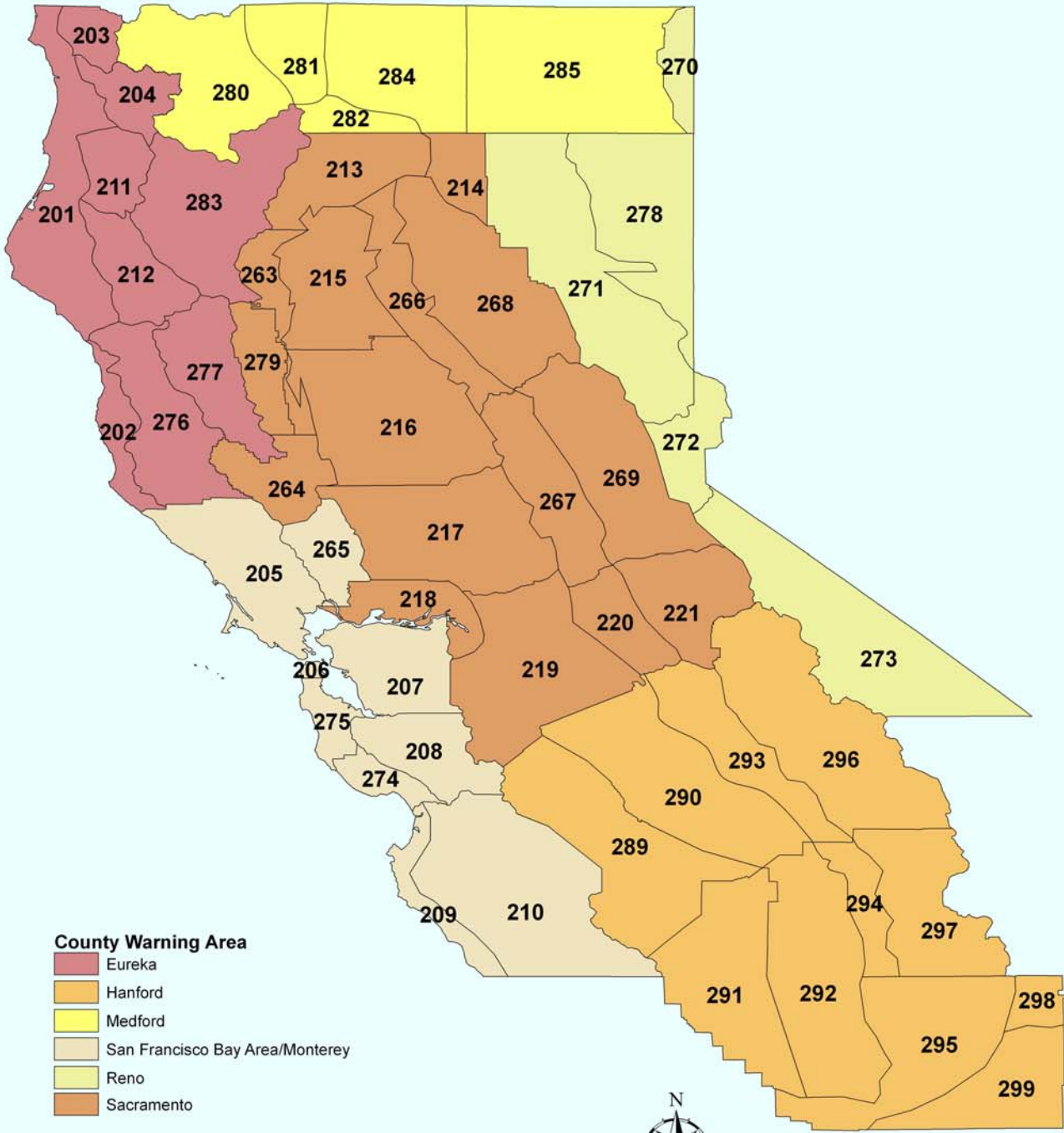
WEATHER FORECAST OFFICE	COUNTIES (including local fire depts.) WITHIN THE FIRE WEATHER FORECAST DISTRICT	FEDERAL AND STATE AGENCIES USING THE FIRE WEATHER FORECASTS
Medford WFO http://www.weather.gov/medford	Siskiyou, Modoc	<u>CDF</u> : Siskiyou and Lassen-Modoc Units <u>USFS</u> : Klamath, Modoc, North Shasta Trinity NFs <u>NPS</u> : Lava Beds NM <u>USFW</u> : Lower Klamath Basin Refuge <u>BLM</u> : North NorCal BLM
Eureka WFO http://www.weather.gov/eureka	Del Norte, Humboldt, Trinity, Mendocino	<u>CDF</u> : Humboldt-Del Norte and Mendocino Units <u>USFS</u> : Six Rivers, West Shasta-Trinity, West Mendocino NFs <u>BLM</u> : West NorCal BLM <u>NPS</u> : Redwood NP <u>BIA</u> : Hoopa Valley Tribe
Sacramento WFO http://www.weather.gov/sacramento	Shasta, Tehama, Glenn, Colusa, Butte, Yuba, Sutter, Lake, Yolo, Sacramento, Calaveras, Amador, San Joaquin, Solano, Stanislaus Western Portions of: Plumas, Sierra, Nevada, Placer, El Dorado, Tuolumne, Alpine	<u>USFS</u> : South Shasta-Trinity, East Mendocino, West Lassen, West Plumas, West Tahoe, El Dorado, Stanislaus NFs <u>BLM</u> : South NorCal and North CenCal BLM <u>NPS</u> : Lassen NP, Whiskeytown NRA <u>USFW</u> : North Central Valley Refuges <u>CDF</u> : Shasta-Trinity, West Lassen-Modoc, Butte, East Sonoma-Lake-Napa, Tehama-Glenn, Amador-El Dorado, Tuolumne-Calaveras and West Nevada-Yuba-Placer Units
Reno WFO http://www.weather.gov/reno	Lassen, Mono Eastern Portions of: Modoc, Plumas, Sierra, Nevada, Placer, El Dorado, Alpine	<u>BLM</u> : NE and East NorCal and Northeast CenCal BLM <u>USFS</u> : East Lassen, East Plumas, East Tahoe, Humboldt-Toiyabe, Northern Inyo NFs and Tahoe Basin Management Unit (USFS) <u>CDF</u> : East Lassen-Modoc Unit and East Nevada-Yuba-Placer Units

San Francisco Bay Area/Monterey WFO http://www.wrh.noaa.gov/mtr/	Sonoma, Napa, Marin, Contra Costa, Alameda, San Francisco, San Mateo, Santa Clara, Santa Cruz, Monterey, San Benito	<u>CDF</u> : West Sonoma-Lake-Napa, San Benito-Monterey, Santa Clara and San Mateo-Santa Cruz Units <u>NPS</u> : Point Reyes NRA, Golden Gate NRA, Pinnacles NM <u>USFS</u> : North Los Padres NF <u>DOD</u> : Ft Hunter-Liggett
Hanford WFO http://www.weather.gov/hanford	Mariposa, Merced, Madera, Fresno, Kings, Tulare, Kern SE Tuolumne Co in Yosemite NP	<u>NPS</u> : Yosemite and Sequoia/Kings NP <u>BLM</u> : Western CenCal BLM <u>USFW</u> : South Central Valley Refuges <u>USFS</u> : Sierra and Sequoia NFs <u>CDF</u> : Tulare, Madera-Mariposa-Merced and Fresno-Kings Units
Los Angeles/Oxnard WFO http://www.weather.gov/losangeles	San Luis Obispo, Santa Barbara, Ventura, Los Angeles	<u>CDF</u> : San Luis Obispo Unit <u>NPS</u> : Channel Islands NP, Santa Monica Mountains NRA <u>DOD</u> : Vandenberg AFB <u>USFS</u> : Angeles and South Los Padres NF <u>USFW</u> : Southern California Refuges
San Diego WFO http://www.weather.gov/sandiego	Orange, San Diego SW San Bernardino Co. Western Riverside Co.	<u>USFS</u> : San Bernardino NF <u>CDF</u> : San Diego, Western San Bernardino and Western Riverside Units; California State Parks LD <u>BLM</u> : South Coast BLM <u>USFW</u> : Southern California Refuges <u>USFS</u> : Cleveland and San Bernardino NFs
Phoenix WFO http://www.weather.gov/phoenix	Eastern Riverside Co.	<u>BLM</u> : California Desert BLM <u>USFW</u> : Southern California Refuges <u>NPS</u> : Joshua Tree NP
Las Vegas WFO http://www.weather.gov/lasvegas	San Bernardino (except Southwest) Inyo	<u>CDF</u> : Northern San Bernardino and Eastern Riverside Units <u>USFS</u> : Southern Inyo NF <u>BLM</u> : California Desert BLM <u>NPS</u> : Mojave National Preserve, Death Valley NP <u>USFW</u> : Southern California Refuges

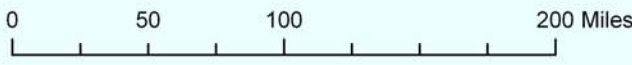
B. National Weather Service Fire Weather Zones –



Northern California Fire Weather Zones



- County Warning Area**
- Eureka
 - Hanford
 - Medford
 - San Francisco Bay Area/Monterey
 - Reno
 - Sacramento



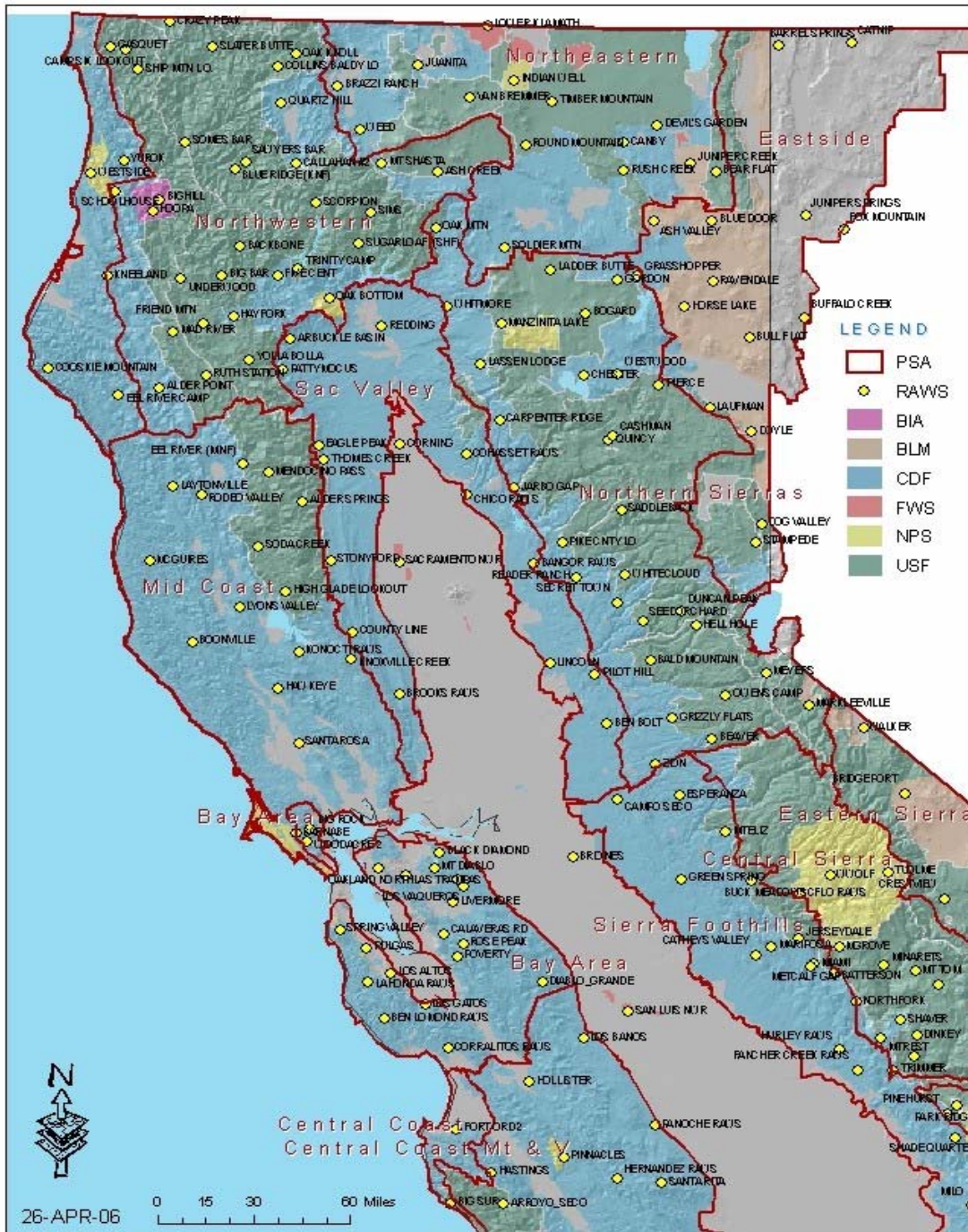
C. Predictive Services Units (PSU) Serving California

Predictive Service Unit	Predictive Service Areas within this PSU
<p>Redding http://gacc.nifc.gov/oncc/predictive/weather/index.htm</p>	<p>North Coast PSA Mid Coast to Mendocino PSA Bay Area PSA Northwestern Mtn PSA Sac Valley / Foothills PSA NE California PSA Northern Sierra PSA Eastside PSA</p>
<p>Riverside http://gacc.nifc.gov/oscc/predictive/weather/index.htm</p>	<p>Eastern Sierra Mountains and Valleys PSA Central Sierra PSA Southern Sierra PSA Sierra Foothills PSA Central Coast Mountains and Valleys PSA Central Coast PSA Southern California Central Mountains PSA Southern California Coast and Valleys PSA Southern California Southern Mountains PSA Southern California Deserts PSA</p>

D. Predictive Service Area Maps -

Redding PSU

Predictive Service Area's & RAWS for Northern California



Predictive Service Area's & RAWS for Southern California



IV. NWS SERVICES AND RESPONSIBILITIES

The NWS supplies meteorological services as outlined in the National Agreement, Section 5.0, (A) (1) (a-j), including NFDRS trend forecasts, and informs CWCG of policies, guidelines, and instructions that may impact the provision of fire weather services in California. NWS offices providing fire weather services to California will ensure that all fire weather forecasts are prepared and issued by fire weather-qualified forecasters as specified in this AOP. Information on current operational NWS fire weather forecast products follows. Significant changes to these forecast services or deployment of new operational forecast services will be coordinated through the California Wildfire Coordinating Group (Reference NWSI 10-403). Any non-operational forecast products will be clearly labeled as “Experimental” or “Prototype”.

A. Individual Forecast Office Information

Weather Forecast Office	High Season Forecasts	Morning Forecast	Afternoon Forecast	Low Season Forecasts	NWS Forecast Zones
Extreme Northern California – Medford	<i>Usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 3:30 p.m.	280-282, 284, 285
Northwest California – Eureka	<i>Usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 8 a.m. *	201-204, 211, 212, 276,277, 283
North Central California – Sacramento	<i>Usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 3:30 p.m.	213-221, 263, 264, 266-269
Extreme Eastern California – Reno	<i>Usually by June 1 to November 1 #</i>	7:30 a.m.	3:30 p.m.	Daily 7 a.m.	270-273, 278
Central Coast California – San Francisco Bay Area/Monterey	<i>Usually by June 1 to November 1 #</i>	7:00 a.m.	3:00 p.m.	Daily 3 p.m.	205-210, 265, 274, 275
Central California Interior – Hanford	<i>Usually May 15 to November 15 #</i>	7:00 a.m.	3:30 p.m.	M-F 3p.m. (PST) or 3:30 (PDT) also M at 7 a.m. *	289-299
Southwest California – Los Angeles/Oxnard	<i>Usually May 15 to December 1 #</i>	9:30 a.m.	3:30 p.m.	M-F 3:30 p.m. also M at 9:30 a.m. *	234-241, 244-247, 252-254, 259, 288
Extreme Southwest California – San Diego		7:00 a.m.	2:30 p.m.	Daily by 7:00 a.m.	242, 243, 248, 250-253, 255-258
Southeast California – Phoenix		7:30 a.m.	3:30 p.m.	Daily 7:30 a.m.	230-232
Southeast California – Las Vegas		7:00 a.m.	3:30 p.m.	Daily 7 a.m.	226-229

* excludes Federal Holidays

=Customer coordinated depending on weather/fuels; two weeks notice preferred for WFOs

B. California NWS Fire Weather Planning Forecasts

These provide general, zone-based information for daily preparedness and planning purposes. They are not to be used in lieu of spot forecasts.

Issuance times – During fire season, routine planning forecasts will be issued twice daily – once in the morning and once in the afternoon - seven days per week. During low fire season, NWS offices serving California issue one fire weather planning forecast each weekday morning, with minor variation based on local customer requirements. See the [Individual Forecast Office Information table](#) for specific issuance times for each NWS office. The beginning and ending dates of fire season forecasts vary by year, but are linked for North Ops and South Ops, and are based on customer feedback.

Update/Corrected forecasts - Forecasts will be updated or corrected upon issuance of a Fire Weather Watch or a Red Flag Warning, when the current forecast does not adequately describe significant weather expected in the future, or when typographical/format errors prevent proper interpretation of the forecast.

Access – Forecasts are available via WIMS, the California Fire Weather Page (<http://www.wrh.noaa.gov/sto/cafww/>), NWS office web sites and Predictive Services web sites. NWS office web pages may be linked from the [Individual Forecast Information Table](#). Links to forecasts and NWS web pages also can be found on the National Fire Weather Page at: <http://fire.boi.noaa.gov/>

Content and Format – Forecasts will conform to the national standard narrative format, per NWS Directive 10-401. Morning forecasts will focus on the following 36 hours and afternoon forecasts on the following 48 hours, with general extended outlooks in both cases out to at least five days. Forecasts are subdivided into meteorologically and topographically similar forecast areas called zones.

Each forecast will begin with pertinent headlines and a **non-technical** weather discussion. Headlines are required for Red Flag Warnings and Fire Weather Watches. Headlines are recommended for other situations that affect fire danger without meeting Red Flag criteria. Discussions should normally be no more than 8 lines in length. A more detailed, technical weather discussion is available in the area forecast discussion (AFD) product which can be found on each forecast office website.

Short-term forecast for the first 36 or 48 hours - Short-term forecasts are highly detailed and emphasize information which is needed for initial attack and day-to-day fire management. Each forecast zone or zone grouping contains the following elements, listed in the order they will appear:

- Headline(s) as appropriate
- Sky/Weather
- Temperature
- Relative Humidity
- Wind – 20-foot, 10 minute average RAWS standard (slope/valley and ridgetop, as appropriate)
- Chance of Wetting Rain (CWR)
- Lightning Activity Level (LAL)

Forecasts may include the following optional elements based on local customer requirements:

- Haines Index

- Mixing Level or Mixing Height
- Marine Layer
- Transport Wind
- 10,000-foot Wind
- Ventilation Category (or numeric value)
- 24-hour Trends (of temperature and relative humidity)

Descriptions of forecast parameters can be found in [Appendix A](#).

An example of a morning issuance is available in [Appendix B1](#).

Extended Outlook to at least day five - Beyond 36-48 hours, the forecasts are used for resource planning. They contain general guidance information, keying on significant changes in temperature, humidity, wind, or weather needed for decision-making purposes.

C. NWS Spot Forecast

Spot forecasts are site-specific forecast products issued for wildfires, wildland fire use events (WFU), prescribed burns, search and rescue operations, aerial spraying, etc., and are available upon request at any time. Spot forecasts are available to any federal, state, or municipal agency as described in [NWSI 10-401](#). When smoke dispersion/ smoke management is a concern, prescribed burn spot forecasts can be requested from the Predictive Service Units at Redding or Riverside.

Spot forecast information is highly perishable. Using up-to-date spot forecasts is important. With this in mind, the NWS expects that the requested issuance time for spot forecasts will be within a few hours of when the requestor will begin using the forecast. If a significant delay occurs – particularly if there is anything in the forecast or in observed conditions which raises concern – it is recommended that the requestor call the NWS office and discuss the forecast with a meteorologist. It is critical to have a working phone number from the requesting agency so they can be contacted.

Issuance Times - Priority for the issuance and desired lead time is as follows:

Wildfire or HAZMAT spots - Forecasts for the original issuance or unscheduled updates will be made available as soon as possible and no longer than one hour after the request is received, unless a longer lead time is negotiated. Requests for scheduled updates for ongoing spots (such as for a shift briefing) should be submitted to the issuing office with as much lead time as possible and at least two hours before needed.

Prescribed burn or WFU spots - Forecasts for original issuances or scheduled updates should be made with as much lead time as possible, with requests made in the afternoon or evening for delivery of a prescribed burn spot the next morning being the recommended lead time.

Forecasts for unscheduled updates for prescribed burn spots, either due to a specific request based on weather at the site or due to monitoring invoked by the phrase, “Request Priority Monitoring” or similar in the remarks section of the spot forecast request, will be issued as soon as possible and no longer than two hours after it is recognized that an update is desirable.

All remaining spot forecasts - Forecasts for original issuances and routine or unscheduled updates will be issued as soon as possible, as negotiated with the requestor.

Updated Forecasts - Site-specific forecasts are considered one-time requests and are not routinely updated. However, if determined necessary, updates will be done within 24 hours of requested issuance time of the spot if the following occurs:

- Representative observations are available, the meteorologist has been made aware that monitoring is desired, and the meteorologist deems the current forecast does not adequately represent current or expected weather conditions which might affect the burn
- OR -
- The meteorologist is specifically asked for a verbal or written update, such as when forecast conditions appear unrepresentative of the actual weather conditions.

Corrections - The spot forecast will be corrected when a typographical or format error is detected that prevents correct interpretation of the forecast. Corrections should be delivered to users in the same manner as the original spot forecast when possible.

Access – Use of the Internet is the standard for requesting and retrieving NWS spot forecasts and should be used when available. Spot forecasts can be accessed from the California Fire Weather Web page (<http://www.wrh.noaa.gov/sto/cafw/>), all NWS office fire weather web pages and Predictive Services web pages. When Internet access is not available, spot forecasts may be requested and disseminated via phone or fax using the backup spot forecast request form found in [Appendix E](#). Since the fax is a backup means of requesting a Spot forecast, it is important that the requester follow up the fax with a phone call to the responsible NWS office to assure that the fax was received and is readable.

At or before the time of a spot request, the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone number(s) of the responsible land management personnel. Also, quality representative observation(s) at, or near, the site of the planned prescribed burn, or wildfire, should be available to the responsible WFO along with the request for a spot forecast(s). Internet-based spot request programs and the backup form both provide blocks to fill these data in and will indicate which are absolutely essential to receive a spot forecast.

Upon completion, spot forecasts are posted to the appropriate Fire Weather Page of the NWS forecast office web site that received the request. NWS web sites may be linked from the [Individual Forecast Information Table](#).

Content and Format – Exact content depends on user request. Headlines are always included if a Red Flag Warning or Fire Weather Watch is in effect at the time of issuance.

The forecast period is based on user request and will contain up to three periods, such as “TODAY”, “TONIGHT”, and “FRIDAY.” If requested, and if enough weather information is received to make it feasible, a more specific first period such as “AT 11 A.M. IGNITION” may be used. In these cases, the meteorologist will not just forecast for the planned ignition time, but will include significant changes expected in the forecast parameters for the rest of the usual period, e.g., 11 AM temperature and the expected daytime maximum temperature.

When requested, an outlook for a longer duration will be appended, such as “OUTLOOK FOR WEDNESDAY THROUGH FRIDAY” for a spot requested on Monday.

The most commonly requested forecast parameters are the following:

Discussion

Sky/Weather (including chance of rain)

Maximum/Minimum Temperature

Maximum/Minimum Relative Humidity

20-Foot or Eye-Level Winds

Unless otherwise requested, wind forecasts will be of the same type as given in the request, i.e., if eye-level wind observations are provided in the request, then eye-level wind forecasts will be provided in the spot forecast - and similar for 20-foot winds.

Other elements, such as transport winds, mixing depth, LAL, etc., may be included upon request

When information for several days in the future, rather than a near-term forecast, is needed, the routine planning forecast should be consulted. The interactive “weather planner” available from all NWS office web pages, can also be used for longer term planning. If it is determined from this that a longer-range spot forecast is desired, a spot for a general weather outlook for specific days may be requested.

The basic format of a spot forecast is shown in [Appendix B2](#).

Spot Forecast Feedback Requirement - Agencies will follow-up requests for spot forecasts with a telephone call to the appropriate NWS forecast office to ensure receipt of the request. It is critical that agencies have accurate NWS phone number information for this purpose. Requesting agencies are also highly encouraged to provide fire-line weather observations for the validation of weather forecast accuracy. For further explanation of the feedback process, [see Section F, page 26](#).

FARSITE Data

All NWS Western Region Offices will offer automatic 7-day FARSITE (FIREPRO or FSPRO) weather data support with all wildfire spot forecast issuances. For prescribed burn spot forecasts, FARSITE data will be produced at the request of the agency. Please call the NWS office issuing the prescribed burn forecast directly to request this service, or place the request in the “Remarks Section” of the spot request form. All FARSITE data will be available from the internet via the appropriate NWS office Fire Weather Page. Check for a “FARSITE Forecasts” button near the Spot Forecast Request link. The data will be in simple ASCII format. Examples of the two FARSITE support outputs (“weather” and “wind”) are below. If you have any questions, please contact your servicing NWS office.

Weather:

ENGLISH

03 06 12 0700 1600 30 54 59 30 5620

03 07 63 0700 1600 27 44 84 63 5620

03 08 14 0700 1600 23 43 81 47 5620

etc., through seven days

Wind:

ENGLISH

03 06 0000 11 200 79

03 06 0300 12 200 84
03 06 0600 14 200 95
03 06 0900 15 200 95
03 06 1200 15 200 95
03 06 1500 14 200 90
03 06 1800 13 210 80
03 06 2100 10 220 80
03 07 0000 09 210 80
03 07 0300 08 210 80
03 07 0600 11 240 80
03 07 0900 11 260 80
03 07 1200 09 260 80
03 07 1500 09 270 77
03 07 1800 10 290 70
03 07 2100 11 320 70
etc., through seven days

D. Fire Weather Watches and Red Flag Warnings

NWS offices issue Fire Weather Watches and Red Flag Warnings for critical fire weather patterns that contribute to extreme fire danger and/or fire behavior.

A **Fire Weather Watch** is used to alert agencies to the high potential for development of a Red Flag event in the 12-72 hour time frame. The Watch may be issued for all or selected portions of a fire weather zone or zones. A watch may be issued in the first 12 hour time period only for an expected dry thunderstorm event.

A **Red Flag Warning** is used to inform agencies of the imminent or actual occurrence of Red Flag conditions. A Red Flag Warning is issued when there is high confidence that Red Flag criteria will be met within the next 24 hours, or if those criteria are already being met.

Criteria for Red Flag Warnings/Fire Weather Watches

Dry Lightning - A lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. Significant precipitation is defined as ranging from .05 inches for grass or brush fuels to .15 inches for closed-canopy timber/heavy fuels.

Watches and warnings will be issued when dry lightning is expected to be widespread. Isolated events or events of short duration (i.e., events which start dry but become wet within an hour or two) do not need warnings but will be headlined in the forecast.

Wind and Humidity - Wind and humidity criteria are geared toward those situations which may result in rapid spread of wildfires. Because topography and vegetation play a big role in this, several sets of criteria are used across California. Where possible, issuance criteria have been meshed with those used in adjacent states to meet the needs of agencies whose jurisdictions cross state lines. Criteria are listed in the [Wind/Humidity Table](#).

Red Flag warning/fire weather watches in discussions and headlines - In the discussion portion of the Fire Weather Planning Forecast (FWF), NWS offices will mention critical weather patterns that might lead to conditions approaching or exceeding Red Flag criteria through the extended forecast.

This will assist fire agencies in their allocating and moving resources in anticipation of increased fire activity. Fire Weather Watches and Red Flag Warnings will be headlined in spot forecasts, the fire weather narrative, and appropriate zone sections within the fire weather planning forecast. The headline will be in the same format as on the RFW product itself.

Collaboration with agencies - Fire Weather Watches and Red Flag Warnings normally will be issued only after conferring with the affected agencies or a representative subset of affected agencies, to include the Redding and Riverside Predictive Services Units. This will allow for input on fuel conditions and local concerns. However, the ultimate responsibility for the issuance of a watch/warning rests with the NWS forecaster.

Red Flag warning/fire weather watch access - If issuance of a Red Flag Warning or Fire Weather Watch requires an update of the general forecast, the NWS office will verbally notify the Redding and Riverside Predictive Services Units as soon as possible. During non-duty hours for the PSUs, contact the GACC Coordinator on Duty (COD).

Wind/Humidity Table

Area Description	NWS Fire Weather Zones	Criteria	
Southern California desert area excluding the Colorado River Valley	226-228, 230, 232, 260-262	Relative Humidity ≤ 15% and wind gusts GTE 35 mph for 3 hours or more	
Colorado River Valley	229,231	Relative Humidity ≤ 15%, with <u>sustained</u> winds (20 foot) ≥ 20 mph and/or frequent gusts ≥ 35 mph for 3 hours or more	
Antelope Valley and SE Kern County Deserts	298, 299, 259	Relative Humidity ≤ 15% and sustained (20-foot) winds ≥ 25 mph for a duration of 8 hours or more	
Southern California from mountains westward	234-258, 288-297	Either Relative Humidity ≤15%, with <u>sustained</u> winds ≥ 25 mph and/or <u>frequent gusts</u> ≥ 35 mph (duration of 6 hours or more)	Or Relative Humidity ≤ 10% (duration of 10 hours or more) regardless of wind
Northern California East of Cascade/Sierra Crest and Western Great Basin including the Modoc Plateau	214, 270-273, 278, 284, 285	Tahoe Management Basin: Three hours of wind gusts ≥ 30 mph and Relative Humidity ≤ 20%	Rest: Three hours of wind gusts ≥ 30 mph and Relative Humidity ≤15%.
Northern California West of the Cascade/Sierra Crest	201-213, 215-221, 263-269, 274-277, 280-282	See matrix below	

Wind/RH RFW Decision Matrix for Northern California West of the Cascade/Sierra Crest

Matrix assumes daytime 10-hour fuel moisture ≤ 6% (measured at 1300), annual grasses are cured, and that no wetting rain (greater than 0.10 inch) has fallen in the last 24 hours.

The sustained wind refers to the standard 20-foot, 10 minute average wind speed.

The wind event should be expected to last for at least 8 hours to qualify for a red flag warning.

W indicates that the forecaster should consider a warning.

Relative Humidity	Sustained Wind 6-11 mph	Sustained Wind 12-20 mph	Sustained Wind 21-29 mph	Sustained Wind 30+ mph
Daytime Minimum RH 29-42% and/or Nighttime Maximum RH 60-80%				W
Daytime Minimum RH 19-28% and/or Nighttime Maximum RH 46-60%			W	W
Daytime Minimum RH 9-18% and/or Nighttime Maximum RH 31-45%		W	W	W
Daytime Minimum RH < 9% and/or Nighttime Maximum RH < 31%	W	W	W	W

Red Flag Warnings and Fire Weather Watches will remain in effect through the expiration time noted in the forecast, or until canceled or upgraded

Red Flag Warnings and Fire Weather Watches are available via WIMS, from the California Fire Weather web page (<http://www.wrh.noaa.gov/sto/cafw/>) and the web site of the issuing NWS office. Links to all forecasts and NWS office web pages can be found on the National Fire Weather Page at <http://fire.boi.noaa.gov/>.

Red Flag Warning/Fire Weather Watch format and contents - A short message (RFW) will be used for issuing, updating, and canceling all Fire Weather Watches and Red Flag Warnings, an example is in [Appendix B3](#). That message will include:

- Headline including description of watch/warning, description of valid location, and time period for which watch/warning is valid.
- Short discussion detailing causes and nature of the event.

Red Flag Warning/Fire Weather Watch verification –

[NWS Verification Directive NWSI 10-1601](#) and [Western Region Supplement 4-2005](#)

By January 15th of each year, every NWS office issues a fire weather annual summary for the previous season that includes Red Flag Watch and Warning verification. These reports are available from the fire weather web page of each NWS office.

Agency feedback on the accuracy and quality of Red Flag Warnings and Fire Weather Watches is strongly encouraged.

E. NFDRS Forecasts

The NWS provides weather forecasts for parameters that permit the NFDRS software to predict the next day's fire danger indices.

Criteria for Issuance – NWS will issue daily forecasts for use by the NFDRS during periods determined in consultation with land management agencies. Dates during which these forecasts are needed vary by year and by office. NFDRS observations from land management agencies must be complete and available in WIMS by 1330 LST/1430 LDT. These must be made available to the NWS from WIMS in collectives before 1400 LST/1500 LDT. NFDRS stations that do not have valid observations in WIMS on time will not have next day fire danger indices available. Contact the NIFC Fire / Aviation desk for assistance in dealing with WIMS issues.

Content and Format – Complies with NWSI 10-401 and is outlined in [Appendix B4](#) for reference.

Procedures – For every NFDRS observation received from WIMS at the 1400 LST (1500 LDT) collective, forecast weather parameters for 1300 LST (1400 LDT) the next day will be produced. This will occur through zone trend or station trend forecasts. Regardless of the forecast methodology, NWS will take appropriate measures to ensure that forecast values for NFDRS stations do not unduly deviate from historical possibility for those stations. Towards this end, zone and station trend forecasts will be favored over station specific (point) forecasts.

10-Hour Fuel Moisture Trends – The U.S Forest Service Region 5 uses the Sale Activity Level (SAL) Program to regulate timber sales and other contracts on public lands. SAL uses forecast 10-minute wind speed trend and forecast 10-hour fuel stick trend. As a result, a 10-hour fuel moisture trend should be provided by the NWS. In order for this to occur, the NFDRS trend forecast should make no entries in the trend forecast for max and min temperature or max and min humidity, but instead it should include a 10-hour fuel moisture trend.

If no entry is made for the forecast 10-hour fuel moisture trend, WIMS will use computed 10 hour fuel moisture from a RAWs algorithm and will determine a trend. **Problems arise** with this approach since the trend varies from station to station and the computed value is lower than what would be provided from a weighed stick. This results in a higher SAL number and more restrictions.

Project Activity Level (PAL), which uses forecast Energy Release Component and Ignition Component, will replace SAL in Region 5 contracts in the future. PAL does not require a 10 hour fuel stick trend.

F. Participation in Interagency Groups

NWS offices providing service within California are expected to provide representation at the regional AOP meeting held at least annually. Proxy representation is acceptable. NWS offices are also expected to host at least one meeting per year with local fire management units to strengthen the customer relationship and address local concerns.

G. Additional Services

NWS will provide and maintain a cadre of trained IMETs

H. Forecaster Training

The NWS recognizes the need for specialized training in fire weather meteorology for forecasters. Any NWS meteorologist producing fire weather products must meet the requirements set forth in [NWS Directive 10-405](#) and the following currency requirements set forth by the CWCG:

Prepare and issue at least 15 fire weather forecasts in the last 12 months at the current duty station;
and

Prepare and issue the lesser of at least 10% of office spots or at least 5 spots in the past 12 months;
and

Successful completion of all WFO fire weather drills and/or training seminars in the past 12 months.

If fire weather currency lapses, the forecaster must work no less than three (3) shifts with a forecaster who is current, handling all fire weather duties.

V. WILDLAND FIRE AGENCY SERVICES AND RESPONSIBILITIES

Wildland Fire Agencies' programs provide Geographic Area and national products for the strategic role of resource prioritization and utilization. Redding and Riverside Geographic Area Coordination Centers (GACC) are the two focal points within California for the mobilization, demobilization, and pre-positioning of personnel and resources for all the wildland fire management agencies within California.

Fuels management is a priority for all wildland fire agencies within California. The California GACCs are charged by CWCG with the coordination and oversight of personnel and resources for accomplishing these projects.

Predictive Service Units (PSU) in Redding and Riverside provide fire weather and fire danger predictions and assessments to fire managers through the Predictive Services Program. PSU meteorologists also liaison with the California Air Resources Board (CARB) and Air Quality District officials. PSUs providing Predictive Services to California will ensure that all products are prepared and issued by fire weather-qualified forecasters as specified in this AOP.

A. Operational Support and Predictive Services

GACC meteorologists at the PSUs in Redding and Riverside combine forecast information from the 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 produces integrated fire weather / fire potential assessments for California. The intent of Predictive Services is to provide strategic, regional, and sub-regional information to assist in preparedness, movement, and allocation of fire-fighting resources. All products are available online, and can be obtained from either the North Ops PSU weather web site at <http://gacc.nifc.gov/oncc/predictive/weather/index.htm> or the South Ops PSU weather web site at <http://gacc.nifc.gov/oscc/predictive/weather/index.htm>.

1. Routine Predictive Services Products – (Examples provided in [Appendix C](#))

a. Daily Weather Outlook- This is a new product with the intent to provide fire personnel with a quick-briefing tool for obtaining the highlights of Days 1 and 2 weather in their Geographic Area. The GIS-based graphics in this product combines three elements from the NWS' national gridded database, including predicted minimum RH, wind speed and wind direction. The Predictive Services meteorologists produce the graphics, write a weather synopsis, add appropriate weather symbols to the map, and write a 3 to 7 Day Outlook section which highlights any anticipated significant fire weather for that period.

Issuance Schedule: South Ops 0930 LT and North Ops 1100 LT. Issued daily during fire season, and M-F during the off season.

b. 7-Day Significant Fire Potential Product: This product forecasts the potential for significant fires out through the next seven days. In California, we use our 'large fires' criteria (which can vary by Predictive Service Area) as the definition of "significant". The product has a table which consists of:

1) Fuel Dryness

- Moist Fuels (Green) – Little if any threat for large fires.
- Dry Fuels (Yellow) – Low threat for large fires when a Significant Weather Trigger is absent.
- Very Dry Fuels (Brown) – Moderate threat for large fires when a Significant Weather Trigger is absent.

2) Significant Weather Triggers

- Lightning
- Wind
- Unseasonably Hot and Dry

3) High Risk Day (Red) - occurs when "Dry" or "Very Dry" Fuel Dryness conditions coexist with a Significant Weather Trigger. The combination of these two factors will create conditions that historically have resulted in large fires across California.

The product also contains a narrative section consisting of a Weather Synopsis, a Fire Potential discussion, and a Resource Capability summary.

Issuance Schedule: 1000 local time daily during fire-season

c. Monthly Fire Weather / Fire Danger Outlook: These combine all available weather, climate, fuels, and fire danger information in order to make a prediction of fire business across the Geographic Area for the coming month. The assessments try, when possible, to highlight the periods and potential for large fire activity and resource utilization, relative to normal.

Issuance Schedule: Year around, prepared a few days prior to start of the new month.

d. Fire Season Assessments: These are estimates of fire potential for longer periods, ranging from three months to an entire fire season in duration. A nationwide collaboration of meteorologists, climatologists, and fuels and fire danger specialists takes place in spring.

Season-to-date precipitation, snow pack, temperature and fuels information is melded with a consensus climate forecast to predict fire season severity. It is expected that the assessments will be updated as needed back at the Geographic Areas – see below for California. Issuance Schedule: The pre-season assessment (preliminary) is done at a national workshop in April. In California the main seasonal assessment is issued in late May or June, containing any necessary updates and added detail from the earlier preliminary. A second adjustment is done about mid fire season, if necessary.

2. Other Predictive Services Products, Projects and Services

a. Prescribed Burn Spot Forecasts - The Predictive Services Units will provide site-specific prescribed burn (spot) forecasts, for any requesting agency, where smoke dispersion and/or smoke management are concerns. The PSUs have an increasing role in helping the fire agencies accomplish their prescribed burn acreage targets, while minimizing impacts on air quality. Along with this program, the PSUs will work closely with the California Air Resources Board (CARB), the Air Districts, and Air Pollution Control officers. The PSUs will sponsor daily conference calls at 1300 local time, with prescribed burn managers, CARB, and the air districts. These calls help coordinate burning, especially during “marginal burn days” as outlined in the most recent version of Title 17.

b. CANSAC Update - The California and Nevada Smoke and Air Consortium (CANSAC) <http://www.cefa.dri.edu/COFF/coffframe.php> has been posting products since June 2004. The main Products array, with 36-km, 12-km, and 4-km resolution maps, continues to be found at http://www.cefa.dri.edu/COFF/cansac_output.php. The 4-km output can be used to initialize 1-km resolution wind models.

CANSAC’s primary goals remain threefold: the production of high-resolution meteorological output for use in operational fire weather analysis, ARB and Air district use in support of burn decisions and air quality monitoring, and smoke transport/ BlueSky type applications. Susie Stingley of the USFS continues as Board chairperson in 2007. John Snook continues to chair the Operational Applications Group (OAG), and Kemel Gurer chairs the Technical Advisory Group (TAG). Contributing partner agencies are listed on the front page of the website (see above). CANSAC highlights in the past year include:

- Addition of more products within the Air Quality products section
- Moved post-processing (graphics) to a separate server, considerably speeding up the total time needed.
- Blue Sky runs done on emission sources from NW California lightning fires
- Special high-resolution winds graphic designed to center on Yosemite NP
- Two CANSAC user’s workshop were held in 2006, one in NOPS and one in SOPS.
- CANSAC BOD met in July 2006 and Feb 2007. DRI/CEFA’s Dr. Tim Brown delivered a high quality draft report on CANSAC activities to date.

c. Other Ongoing or New Projects - The Predictive Services Units at Redding and Riverside are also involved in the following:

- Providing regular feedback and other coordination with the NWS in the areas of Red Flag program and the ECC Dispatch Area forecasts.
- Strengthening/ improving the Resources portion of the 7-Day product, consistent with new national direction.
- Preparedness Levels (i.e. monitoring of PL, and associated required actions)

- Use of the MM5 to provide weather streams for Farsite runs and other planning products to the GACC/ incidents
- Phase II of the Hourly Fire Danger Rating, recently underway. Project involves an hourly FD climatology for each Fire Danger Rating Area (FDRA) and a 24-hour FD looping capability, among other things.
- *RAWS quality controlled (QC) data disk recently updated through 2005*

B. Program Management - Management of federal land management and fire agencies' fire weather programs and responsibilities.

1. RAWS/NFDRS – The Regional RAWS Coordinators of the various agencies manage the interagency RAWS program within California. This includes regular monitoring of data quality and assisting with station maintenance and acquisition issues. It also involves development of and assistance in providing RAWS training classes. Current agency RAWS coordinators in California include:

USFS	John Snook	(530) 226-2730
BLM South	Tom Rolinski	(951) 782-4849
BLM North	Steve Leach	(530) 226-2730
NPS	Corky Conover	(559) 565-3129
CDF	Doug Forrest	(916) 653-6608

2. Liaison – The PSU Program Manager at each Geographic Area (North and South) will be a liaison between field fire managers and various service providers including the NWS, the private sector, and the research community.

C. PSU Meteorologists Proficiency and Currency

1. Proficiency

- a) Completion of S-190, S-290, and S-390
- b) Work no less than five (5) shifts handling all operational products. This includes the preparation and issuance of:
 - Daily Weather Outlook
 - 7-Day Significant Fire Potential Product
 - Smoke Transport and Stability Forecast
 - All Site-specific (spot) forecasts requested, for burns where smoke dispersion or smoke management is a concern
- c) Conduct at least 2 each, and 10 total, of the following:
 - Daily coordination calls with other GACC office (Redding or Riverside)
 - 0830 PDT (South Ops) or 0845 PDT (North Ops) conference call with the NWS
 - 1030 PDT Briefing for Ops/ECC personnel
 - 1300 PDT Smoke coordination conference calls
 - Special briefings and conference calls for CDF and Federal agencies
- d) Work with Intel Officer and be able to produce all Predictive Services products (using in-office guidelines or help sheets, as necessary). Included in this are the:
 - Monthly Weather Assessments, issued by late in the prior month
 - Seasonal Weather and Fire Season Assessments, before early-to-mid high fire season
- e) The PSU Program Manager will sign-off on proficiency.

2. Currency

- a) The forecaster has prepared and issued at least 12 of the operational products (listed in 1.b.) during the past three months. At least 3 of the 12 should be site-specific (spot) forecasts.
- b) If IMET qualified, must maintain proficiency in accordance with NWCG Technical Specialist standards.

D. Technology Transfer – GACC meteorologists will work to integrate advanced technology analytical and prediction systems into fire management planning and operations. Some efforts will include:

- Regional numerical modeling of weather and smoke dispersion. The PSUs are primary users of CANSAC, which runs an MM5 mesoscale weather model with 4-km resolution across CA and NV. Seek to incorporate CANSAC data into other current weather products, such as Smoke Transport/ Stability text product, the Daily Weather Outlook, etc.
- Continue use of FireFamily-plus in briefing fire Managers/ ECC on fuels and fire danger conditions
- Proper use of RAWS and NFDRS, and assistance with WIMS.
- Research and development to advance fire meteorology.

E. Agency Computer Systems – Where fire management computer systems like WIMS are locally available, access to the systems will be granted to the NWS to provide or develop services, as needed. Costs will be borne by the Interagency Wildland Fire Agencies for requirements that are beyond the distribution of weather information through a central communications gateway.

F. Fire Weather Observations

1. RAWS and NFDRS Observations

Fire weather observations for stations that desire next-day forecasts will be entered into WIMS *no later than 1330 PST (1430 PDT)*. Observations from Remote Automated Weather Stations (RAWS) sites will be the latest data available from satellite interrogation. RAWS and NFDRS stations are expected to be sited and maintained according to NWCG PMS 426-3 “National Fire Danger Rating System Weather Station Standards”. The website to view this document, and any recent updates to it, is

<http://www.fs.fed.us/raws/standards/>.

Proper siting of weather stations has always been a high priority in California.

The GACC meteorologists are available to assist land or fire managers in selecting proper sites. Annual RAWS maintenance requirements should be adhered to strictly.

2. Fireline Observations and Spot Forecast Feedback

Fireline Observations – Representative observations are required when requesting a spot forecast, whether for a wildfire, prescribed burn, or other project/need. Distance is not the only factor in determining whether an observation site is considered representative. Observations taken only half a mile from the burn site, but beyond a ridgetop and in another drainage, may not be representative for a variety of reasons (e.g. changes in aspect, elevation, local wind direction, vegetative cover, etc.). On the other hand, observations from a fixed RAWS three miles away from the project site could still be quite representative, if it is similar in elevation, aspect, local wind flow, vegetative cover, etc.

Fire agency personnel will take standard fireline observations of temperature, relative humidity, wind direction and speed, and weather/sky condition consistent with guidance provided in NFES 2140 "Weather Station Handbook – An Interagency Guide for Wildland Managers."

Fire agency personnel are encouraged to discuss the fire or burn with the meteorologist preparing the spot forecast to alert the forecaster to details which would not otherwise be apparent, such as variations in humidity in a large and complex site, when winds switched from upslope to downslope, and similar items which will enhance the quality of the resulting spot forecast.

Spot Forecast Feedback and Validation – Feedback on spot forecasts is requested to validate forecasts and improve accuracy; it should be provided to the appropriate weather office (NWS or PSU) within 12-24 hours of the issuance of any spot forecast for prescribed burn or wildland fire use purposes. Feedback on forecasts issued for wildfires is encouraged.

Spot Feedback - The character of temperature, humidity, and wind affecting the burn period. Information made available to the NWS within 24 hours of forecast issuance or before issuance of the next spot forecast, whichever is first.

The following may be included (assuming daytime burn):

- Maximum temperature
- Minimum relative humidity
- Significant afternoon winds (speed and direction)
In the event of nighttime burning, conditions affecting the burn period could include minimum temperature and maximum relative humidity.

Some methods of providing feedback or validation may include:

- Phone call to appropriate NWS or PSU office
- Faxed copies of fireline (belt weather) observations
- Submission of information (see example) via "Feedback" section of Internet spot forecast
- Faxed or electronically transmitted copies of hourly weather data from an on-site portable weather station
- Notification of deployment of a portable GOES telemetered RAWS onsite, so NWS can download data from the Internet

G. Reimbursement for NWS Provided On-site Support and Training Assistance – Federal agencies will reimburse the NWS for all costs incurred by the agency for IMET support and training assistance, per the procedures set forth in the National Agreement. The State of California has an agreement with the NWS, which is used for cost reimbursement.

VI. JOINT RESPONSIBILITIES

The NWS and CWCG use a joint Fire Weather Program Assessment Team to evaluate fire weather products and services in California (Appendix H) and recommend improvements. The assessments include products and services from both the NWS and the PSUs.

NWS offices and the PSUs are committed to providing collaborated forecasts and products. When operationally significant differences or inconsistencies between adjacent WFO forecasts are identified, or between the two PSUs' products, they will be updated in order to provide a collaborated forecast. Although the WFOs and PSUs have different forecasts and products, in areas where overlap exists both sides agree it is important to work together to ensure that services reflect similar forecast thinking. Options for collaboration are detailed in this AOP.

CWCG and NWS are committed to working together to resolve problems in near-real time. Issues from either party will be brought to the attention of the appropriate management level immediately for resolution. Fire managers should first work with their local NWS office for resolution, then the Sacramento Meteorologist-in-Charge and closest PSU, and then the Western Regional Office, Division of Meteorological Services and CWCG representative.

A. California Fire Weather Web Page – An interagency fire weather web page for California is available at <http://www.wrh.noaa.gov/sto/cafww/>. Emergency Communication Center Dispatch Area (ECCDA) Forecast Summaries are available from this web site. These simplified fire weather summaries are meant to be used for fire agency radio broadcasts while at the same time providing the most essential daily weather information: Sky/Weather, Maximum and Minimum Temperature, Maximum and Minimum Relative Humidity, 20-Foot Winds, CWR, LAL and Haines Index (where used). Any Red Flag Warning or Fire Weather Watch headlines shown in the ECCDA Forecast Summaries are linked to the actual watch or warning product. In addition, all forecast segments within an ECCDA are listed at the beginning of the forecast and can be mouse clicked to jump immediately to that segment.

ECCDA Forecast Summaries will be available daily by 9:45 a.m. and 4 p.m. during high fire season and once per day Monday through Friday (excluding holidays) during the low season. The ECCDA Forecast Summaries are planned to replace some of the Predictive Service Area forecast text. Like PSA forecast summaries, the ECCDA Forecast Summaries will not be updated. Therefore, fire agency personnel should consult the latest FWF and/or RFW issuances for updated information at other times and are directed to do so on the California Fire Weather web page.

Quick access to all Red Flag and NWS fire weather planning forecasts for California is provided by using the "tabs" across the top of the welcome page. Direct links to many useful services are provided on the left hand side bar. These include:

- Spot forecast requests for wildfires, WFUs and prescribed burns
- All NWS watches and warnings for California and the nation
- Current ROMAN data and other current weather information
- Daily weather summaries, 7-Day outlooks and all other Predictive Service information
- NIFC / NICC
- Background maps showing the relationship between fire weather zones and ECCDAs

B. Training - Meteorological training can be provided by both NWS and GACC PSU meteorologists. The NWS forecast offices primarily handle local courses that occur within their County Warning Areas. The PSU's primary role is with regional and national level courses. Requests for these (regional and national) courses should be directed to either the Redding or Riverside PSU. Each NWS office and PSU should have at least one person qualified to teach courses up through Intermediate Fire Behavior (S-290).

Requests for training from NWS offices should be directed to that office's Fire Weather focal point or Meteorologist-In-Charge. If the office is not able to provide an instructor for a course, that office will assume the responsibility for finding an instructor. Requests for training from the PSUs should be directed to either the Training Coordinator or Team Leader of the PSU. In all cases, sufficient advance notice (≥ six weeks whenever possible) should be given to allow for scheduling and proper preparation.

Costs incurred by NWS in providing training assistance (other than salary costs for a normal non-holiday weekday) will be borne by the requesting agency. Costs incurred by PSU instructors are covered in their annual budget, without need for reimbursement. Below is a table outlining the weather instructor availability for 2007:

Name Of Office	Instructors qualified to teach S-190, S-290	<u>Other Classes</u> that at least one meteorologist from this office is qualified to instruct
Redding PSU	Brenda Belongie John Snook Steve Leach Basil Newmerzhycky	S-390, S-490, S-491, S-590, RX-300, RX-410 WIMS, S-144, ECCO, NFDRS
Riverside PSU	Tom Rolinski	S-390, S-490, S-491, RX-300, WIMS, NFDRS
Eureka	Nancy Dean Jeff Tonkin Mark Burger	S-390, S-490, S-590
Hanford	Cindy Bean	S-390, RX-300
Las Vegas	Jim Harrison	
Medford	Frederic Bunnag Michael Stavish Dennis Gettman Rick Holtz	S-490
Monterey	Ryan Walbrun Chris Brenchley Dan Gudgel	
Oxnard	Rich Thompson Dave Gomberg	S-390, S-490
Phoenix	Valerie Meyers	
Reno	Rhett Milne James Wallmann Chris Jordan	S-390
Sacramento	Mike Smith	S-390, S-490, S-590, RX-300
San Diego	Mike Lavis Rob Balfour	S-390, S-490

C. Incident Response – In addition to following direction in the National Mob Guide the following direction is clarification for Command Centers in California.

When an Incident Meteorologist is requested for an incident, **the request will be placed to the GACC**. The GACC will notify the National Fire Weather Operations Coordinator at NIFC so that the ECC does not have to be concerned. Priority will be given to IMET requests. (Larry Van Bussum or his acting: Office 208-334-9862 or Cell 208 863-2582).

The GACC's will maintain a list of qualified IMET's and trainees in ROSS by Weather Forecasting Office identifier, and provide dispatching services for the NWS in California. This list will be updated annually based on the list that is published in the CA Fire Weather Annual Operating Plan. IMET's will be dispatched by the GACC's in CA just as if they are GACC employees.

When the NWS Staff Meteorologist at NIFC determines who will fill the incident request, the information will be relayed back to the GACC. If the IMET is within the requesting Geographic area, the IMET will be mobilized using ROSS.

If the IMET is in the CA GACC that is not hosting the incident, the request will be placed through Selection Area to the other GACC.

If the identified IMET is not in a California Weather Forecast Office the IMET request will be edited to add a Name Request and placed up to NICC who will place the request to the appropriate GACC.

The following list designates which California GACC will status and dispatch personnel for the California Weather Forecasting Offices. Status can be maintained Available/Local until requested to reduce work.

North Ops

South Ops

Eureka WFO
Sacramento WFO
San Francisco/Monterey WFO
Honolulu WFO
Pago Pago/American Samoa WFO

Hanford WFO
Los Angeles/Oxnard WFO
San Diego WFO

IMET personnel from Medford WFO, Reno WFO, Phoenix WFO and Las Vegas WFO shall be requested through NICC to their respective GACC using Name Request.

The procedures for requesting IMETs will follow the guidelines outlined in the National Interagency Agreement, Administrative Procedures section of the current National Mobilization Guide, Personnel section of the current California Mobilization Guide, and CDF Procedure No. 302.

The following information will be provided to the requested IMET:

- Name of fire
- Location of fire
- Directions to location where the IMET is to report and location of Incident Base.
- Name of Incident Commander, Plans Chief, and Fire Behavior Analyst, if available.
- Request and Resource Order number for IMET

Additionally, the user agency is responsible for providing adequate shelter to allow the equipment and fire weather meteorologist to function efficiently. This would include a location that is free of excessive dust, heat and moisture, protection from wind and other elements, table, and chair. Transportation and shelter arrangements should be made at the time of request; 120 volt AC power is desirable.

Below is a list of IMETs, Technical Specialists, and All-hazard Meteorological Response System (AMRS) in the Northern and Southern California Area:

Northern and Southern California Area IMETs and Technical Specialists:

(T) designates a trainee

NWS IMETs:

<u>Location</u>	<u>Name</u>	<u>Agency</u>	<u>ROSS Unit ID</u>
Eureka, CA	Jeff Tonkin	NWS	CA-EKAW
Eureka, CA	Mark Burger	NWS	CA-EKAW
Hanford, CA	Cindy Bean	NWS	CA-HNXW
Hanford, CA	Dan Harty (T)	NWS	CA-HNXW
Las Vegas, NV	Jim Harrison	NWS	NV-VEFW
Medford, OR	Frederic Bunnag	NWS	OR-MFRW
Medford, OR	Dennis Gettman	NWS	OR-MFRW
Medford, OR	Brett Lutz	NWS	OR-MFRW
Monterey, CA	Ryan Walbrun	NWS	CA-MTRW
Monterey, CA	Chris Brenchley	NWS	CA-MTRW
Monterey, CA	Matt Mehle (T)	NWS	CA-MTRW
Oxnard, CA	Rich Thompson	NWS	CA-LOXW
Phoenix, AZ	Valerie Meyers (T)	NWS	AZ-PSRW
Reno, NV	Jim Wallmann	NWS	NV-REVV
Reno, NV	Chris Jordan	NWS	NV-REVV
Sacramento, CA	Mike Smith	NWS	CA-STOW
Sacramento, CA	Steve Goldstein (T)	NWS	CA-STOW
Sacramento, CA	Jason Clapp (T)	NWS	CA-STOW
San Diego, CA	Rob Balfour	NWS	CA-SGXW
San Diego, CA	Mike Lavis	NWS	CA-SGXW

PSU Technical Specialists:

Redding, CA	John Snook	USFS	CA-NZF
Redding, CA	Basil Newmerzhycky	USFS	CA-NZF
Redding, CA	Brenda Belongie	USFS	CA-NZF
Redding, CA	Steve Leach (T)	BLM	CA-NZF
Riverside, CA	Tom Rolinski	BLM	CA-OSC
Riverside, CA	Matt Shameson	USFS	CA-OSC

Northern and Southern California Area ATMUs (theodolite):

<u>Cache</u>	<u>Identification</u>
Redding, CA	CA-01, CA-03, CA-05, CA-07
Ontario, CA	CA-02, CA-04, CA-06

AMRS Cache Sites

Each NWS office serving California has at least one AMRS.

D. Briefings – Either NWS or GACC meteorologists will conduct briefings upon request, time and resources permitting.

E. Coordination Conference Calls – Coordination conference calls will be conducted, as needed, between the PSUs and the WFOs during fire season. See [Appendix D](#) for further details on these calls.

F. WIMS IDs for NFDRS Stations – All NFDRS observation stations are assigned a six-digit station identification number for use in WIMS. The Northern California or Southern California PSUs must be contacted for assignment of a six-digit number for any new station, or for any changes in location made to existing stations that already have a WIMS ID number. This function will be handled through the PSUs. The PSUs will notify the NWS of any new or relocated NFDRS stations.

VII. AGENCY SIGNATURES / EFFECTIVE DATES OF THE AOP

This AOP shall be effective on the date the last signature is placed on this page and will remain in effect until the date the last signature is placed on this page the following year. Updates or amendments may be added in the interim upon agreement of all signatories. Usually the effective dates are May 1 through May 1 the following year.

Agency Signatures

Signature on file

Ed Hollenshead	Date
Chair, California Wildfire Coordinating Group	

Signature on file

Elizabeth Morse	Date
NWS State Liaison Official	

APPENDIX A - Forecast Parameter Definitions

1. General Parameters

Sky/weather – Cloud cover and weather. Weather could include rain, snow, showers, thunderstorms, etc. Cloud cover is as follows:

Clear	5% or less cloud cover
Mostly Clear	6% - 25% cloud cover
Partly Cloudy	26% - 49% cloud cover
Mostly Cloudy	50% - 87% cloud cover
Cloudy/Overcast	88% or greater cloud cover

Temperature and 24 hour trend – Dry bulb temperature extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Humidity and 24 hour trend – Relative humidity extreme, either daytime or nighttime, and trend of extreme from previous 24 hours.

Wind - 20 foot (10-min) RAWs standard – Surface wind speed and direction as altered by local terrain and surface roughness and measured per instrumentation and siting standards set by NWCG for the RAWs program and NFDRS. In practice, surface wind forecasts produced based on the ASOS standard will be reduced by 20% to obtain 20 ft. winds, except in cases where wide open rangeland or desert is predominant. This same comparison will be used in considering stations other than RAWs to validate forecasts.

Ridgetop winds – Synoptic scale wind speed and direction at or just above mean ridgetop level.

Chance of Rain – Probability of occurrence or aerial coverage of 0.01” or greater liquid equivalent precipitation.

Chance of Wetting Rain (CWR) – Probability of occurrence or aerial coverage of 0.10” or greater liquid equivalent precipitation.

Haines Index – A numerical means to indicate the potential for existing wildfires to experience large growth and or extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The Index combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at the lower level. For most of the western United States, the levels used are 700 mb (about 10,000 ft) and 500 mb (about 18,000 ft). The drier and more unstable the atmosphere, the higher the Haines Index and the potential for extreme fuel driven fire behavior. Haines Index values vary from 2 to 6 and classifications are shown below:

<u>HAINES INDEX</u>	<u>POTENTIAL FOR LARGE FIRE GROWTH</u>
2-3	Very Low
4	Low
5	Moderate
6	High

(Haines Index does not include the effects of wind on fire spread.)

2. **Lightning Activity Level (LAL)**

LIGHTNING ACTIVITY LEVEL GUIDE FOR FIRE WEATHER OBSERVERS					
LAL	Cloud and Storm Development	Areal Coverage	Individual storm cell cloud to ground lightning discharges		
			Counts ¹ cg/5 min	Counts ¹ cg/15 min	Average ¹ cg/min
1	No thunderstorms	None	----	----	----
2	Cumulus clouds are common but only a few reach the towering stage. A single thunderstorm must be confirmed in the rating area. The clouds mostly produce virga but light rain will occasionally reach ground. Lightning is very infrequent.	<15 %	1-5	1-8	<1
3	Cumulus clouds are common. Swelling and towering cumulus cover less than 2/10 of the sky. Thunderstorms are few, but 2 to 3 occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	15-24 %	6-10	9-15	1-2
4	Swelling cumulus and towering cumulus cover 2-3/10 of the sky. Thunderstorms are scattered but more than three must occur within the observation area. Moderate rain is commonly produced, and lightning is frequent.	25-50 %	11-15	16-25	2-3
5	Towering cumulus and thunderstorms are numerous. They cover more than 3/10 and occasionally obscure the sky. Rain is moderate to heavy, and lightning is frequent and intense.	>50 %	>15	>25	>3
6	Dry lightning outbreak. (LAL of 3 or greater with majority of storms producing little or no rainfall.)	>15 %	----	----	----

¹ Cloud-to-ground lightning discharges

APPENDIX B - NWS Forecast Examples

1. NWS Fire Weather Planning Forecast – Morning Issuance Example

FNUS56 KSTO DDHHMM
FWFSTO

FIRE WEATHER PLANNING FORECAST (FOR name of area, optional)
NATIONAL WEATHER SERVICE SACRAMENTO CA
730 AM PDT MON MAY 2 2007

...HEADLINE... (Required for Red Flag Warnings and Fire Weather Watches and significant features at other times)

.DISCUSSION... (Concise, clear, non-technical explanation of the current/forecasted fire weather)

CAZFWZ213-214-DDHHMM-
EASTERN TRINITY AND SHASTA NF-
FIRE WX ZONES 213 214
TIME-DATE (example: 730 AM PDT MON MAY 2 2007)

.TODAY...
SKY/WEATHER.....
MAX TEMPERATURE.....
 24 HR TREND..... (optional)
MIN HUMIDITY.....
 24 HR TREND..... (optional)
WIND (definition)..... (include definition of wind, e.g. 20-ft/10-min avg, slope/valley/ridge)
CWR (definition).....
LOCAL OPTIONAL ELEMENTS.. (transport winds, mixing heights, LAL, Haines Index, etc.)

.TONIGHT...
SKY/WEATHER.....
MIN TEMPERATURE.....
 24 HR TREND..... (optional)
MAX HUMIDITY.....
 24 HR TREND..... (optional)
WIND (definition)..... (include definition of wind, e.g. 20-ft/10-min avg, slope/valley/ridge)
CWR (definition).....
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, Haines Index, etc.)

.TOMORROW...
SKY/WEATHER.....

MAX TEMPERATURE.....
.
24 HR TREND.....(optional)
MIN HUMIDITY.....

24 HR TREND.....(optional)
WIND (definition)..... (include definition of wind, e.g. 20-ft/10-min avg, slope/valley/ridge)
CWR (definition).....
LOCAL OPTIONAL ELEMENTS..(transport winds, mixing heights, LAL, Haines Index, etc.)
(forecast for next geographical descriptor and fire weather zone group)

=
\$\$

.FORECAST DAYS 3 THROUGH 5...(winds must be included days 3-5; other elements per locally-established policy)
.DAY 3...(days can be combined, e.g., .FRIDAY THROUGH SUNDAY)
.DAY 4...
.DAY 5...

.OUTLOOK FOR DAY MONTH DATE THROUGH DAY MONTH DATE (optional per locally-established policy: for example, days 6-14,
30 and 90 day outlooks when issued)
=
\$\$

2. **NWS Spot Forecast**

THE FOLLOWING IS AN EXAMPLE ONLY:

FNUS76 KHNX DDHMM
FWSHNX

SPOT FORECAST FOR (NAME) BURN.....USFS
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY
830 AM PST MON AUG 29 2007

IF CONDITIONS BECOME UNREPRESENTATIVE... PLEASE CONTACT YOUR NWS FORECAST OFFICE

DISCUSSION...A LOW PRESSURE SYSTEM NEAR THE CALIFORNIA-NEVADA BORDER WILL MOVE SLOWLY INTO SOUTHERN NEVADA MONDAY AFTERNOON. ALTHOUGH THIS WILL ALLOW SOME DRYING TO OCCUR OVER THE BURN...THE AIRMASS WILL REMAIN UNSTABLE THROUGH THE DAY WITH ENOUGH MOISTURE LINGERING TO PRODUCE PARTLY CLOUDY SKIES. WIND WILL ALSO REMAIN LIGHT THROUGH THE DAY BUT FAVOR AN EASTERLY DIRECTION AS THE LOW DEPARTS.

FOR PLANNED IGNITION TIME OF 1100 PST 11/4/03

SKY/WEATHER.....PARTLY CLOUDY
TEMPERATURE.....40-45 AT IGNITION TIME...RISING TO A MAX OF 52-56.
RELATIVE HUMIDITY..60-70% AT IGNITION TIME...LOWERING TO A MIN 53-58%
WIND (20-FOOT).....VARIABLE LESS THAN 5 MPH AT IGNITION TIME. WINDS WILL REMAIN LIGHT AND VARIABLE THROUGHOUT THE DAY.
WIND (RIDGE LVL)...NORTHEAST TO EAST 4-8 MPH.
OPTIONAL ELEMENTS..(PER REQUEST)

FOR MONDAY NIGHT
SKY/WEATHER.....PARTLY CLOUDY EARLY...BECOMING CLEAR OVERNIGHT.
TEMPERATURE.....MIN 34-38
RELATIVE HUMIDITY..MAX 90-100%
WIND (20-FOOT).....VARIABLE LESS THAN 5 MPH. WINDS WILL FAVOR A LIGHT EAST DIRECTION IN THE EARLY EVENING.
WIND (RIDGE LVL)...EAST 4-8 MPH IN THE EVENING...BECOMING VARIABLE LESS THAN 5 MPH OVERNIGHT.
OPTIONAL ELEMENTS..(PER REQUEST)

OUTLOOK FOR TUESDAY
SKY/WEATHER.....MOSTLY SUNNY.
TEMPERATURE.....MAX 58-63
RELATIVE HUMIDITY..MIN 45-50%
WIND (20-FOOT).....BECOMING UPSLOPE TO UPCANYON 4-6 MPH BY NOON WITH BRIEF GUSTS TO 10 MPH IN THE AFTERNOON.
WIND (RIDGE LVL)...NORTHEAST 5-10 MPH IN THE MORNING...BECOMING SOUTHWEST 10-15 MPH IN THE AFTERNOON.
OPTIONAL ELEMENTS..(PER REQUEST)

3. NWS Red Flag Warning / Fire Weather Watch

THE FOLLOWING ARE EXAMPLES ONLY:

RED FLAG WARNING
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD
900 AM PDT MON AUG 30 2007

CAZ253-254-302230-
/O.NEW.KLOX.FW.W.0005.040830T1600Z-040830T2200Z/
VENTURA COUNTY MOUNTAINS-
LOS ANGELES COUNTY MOUNTAINS-
900 AM PDT MON AUG 30 2007

...RED FLAG WARNING IN EFFECT UNTIL 3 PM TUESDAY FOR STRONG NORTHEAST WINDS AND LOW HUMIDITIES FOR THE MOUNTAINS OF VENTURA AND LOS ANGELES COUNTIES...

THE NATIONAL WEATHER SERVICE IN LOS ANGELES/OXNARD HAS ISSUED A RED FLAG WARNING IN EFFECT UNTIL 3 PM TUESDAY FOR STRONG NORTHEAST WINDS AND LOW HUMIDITIES FOR THE MOUNTAINS OF VENTURA AND LOS ANGELES COUNTIES. A STRONG UPPER LEVEL RIDGE OF HIGH PRESSURE COMBINED WITH MODERATE OFFSHORE FLOW NEAR THE SURFACE WILL BRING HOT AND DRY CONDITIONS ACROSS THE WARNING AREA. LATER THIS MORNING...NORTHEAST WINDS ARE EXPECTED TO INCREASE TO 25 TO 35 MPH WITH GUSTS TO 50 MPH THROUGH PASSES AND CANYONS...WITH SIMILAR WIND SPEEDS EXPECTED THROUGH TUESDAY. MEANWHILE...HUMIDITY VALUES ARE EXPECTED TO FALL BETWEEN 10 AND 15 PERCENT FOR A SIX TO EIGHT HOUR DURATION EACH DAY...WITH POOR OVERNIGHT RECOVERIES EXPECTED. THE COMBINATION OF STRONG NORTHEAST WINDS...LOW HUMIDITY VALUES...AND CRITICALLY DRY FUEL CONDITIONS HAS PROMPTED THE ISSUANCE OF A RED FLAG WARNING FOR THE MOUNTAINS OF LOS ANGELES AND VENTURA COUNTIES.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS RED FLAG WARNING.

WWUS86 KHNX DDHHMM
RFWHNX

FIRE WEATHER WATCH
NATIONAL WEATHER SERVICE SAN JOAQUIN VALLEY – HANFORD CA
1010 AM PDT TUE JUL 5 2007

CAZ296-297-060200-
/O.NEW.KHNX.FW.A.0005.070705T1700Z-070706T0200Z/
SIERRA NEVADA FROM YOSEMITE TO KINGS CANYON NATIONAL PARK-
TULARE COUNTY MOUNTAINS
1010 AM PDT TUE JUL 5 2007

...FIRE WEATHER WATCH FOR SCATTERED DRY THUNDERSTORMS FOR THE SOUTHERN SIERRA NEVADA FROM YOSEMITE SOUTHWARD THROUGH SEQUOIA NATIONAL FOREST THIS AFTERNOON THROUGH 7PM TONIGHT...

THE NATIONAL WEATHER SERVICE HAS ISSUED A FIRE WEATHER WATCH FOR DRY LIGHTNING. SOUTH TO SOUTHEAST FLOW ALOFT WILL ALLOW MONSOONAL MOISTURE TO BEGIN WORKING ITS WAY INTO THE SOUTHERN SIERRA NEVADA TODAY. THIS MOISTURE ALONG WITH INCREASED INSTABILITY WILL RESULT IN SCATTERED THUNDERSTORMS OVER THE SIERRA THIS AFTERNOON AND EARLY EVENING...MAINLY OVER THE HIGHER ELEVATIONS. HOWEVER...THE LOWER LEVELS OF THE ATMOSPHERE REMAIN DRY AND SOME OF THE THUNDERSTORMS MAY CONTAIN LITTLE OR NO RAIN. THUS A FIRE WEATHER WATCH FOR DRY LIGHTNING HAS BEEN ISSUED.

PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS FIRE WEATHER WATCH.

4. NFDRS

a. **ZONE/FCST** Shows whether this forecast is 24-hour trend (ZONE) or specific forecast values (FCST). Trend forecasts (ZONES) show how parameters will change over the next 24 hours for a group of stations contained in a given NFDRS trend zone. Note that a trend zone consists of several points rather than an area. The NFDRS trend forecast applies to every station within the trend zone. The WIMS catalogue determines which stations are within a trend zone. Occasionally a station within an NFDRS trend zone is not expected to trend the same way as the rest of the stations in the zone. In those cases, specific point forecast values (FCST) should be made for that station while a zone trend forecast is done which applies to the rest of the stations in the zone group. Specific forecast values (FCST) always are placed after the trend forecasts (ZONES).

- b. **YYMMDD** Year, month, and day valid forecast time.
- c. **NO** NFDRS Zone Number (or individual NFDRS station number)
- d. **13** Always 1300 LST
- e. **WX** Weather valid at 1300 LST tomorrow. Valid entries are:

- 0 clear
- 1 scattered clouds (1/8 to 4/8)
- 2 broken clouds (5/8 to 7/8)
- 3 overcast clouds (more than 7/8)
- 4 foggy
- 5* drizzle
- 6* raining
- 7* snowing or sleet
- 8 showers (in sight or at the station)
- 9 thunderstorm

***(Categories 5, 6, or 7 sets NFDRS components and indices to 0...use only with widespread precipitation)**

- f. **TEMP** Temperature in deg F valid at 1300 LST for FCST or temperature trend + or - for ZONE
- g. **RH** Relative humidity in % valid at 1300 LST for FCST or RH trend + or - for ZONE
- h. **LAL1** Lightning Activity Level 1300 LST to 2300 LST
- i. **LAL2** Lightning Activity Level 2300 LST to 2300 LST (next day)
- j. **WIND** Wind speed in mph valid at 1300 LST for FCST or wind speed trend + or - for ZONE **(20 ft level/10 min avg)**
- k. **10HR** 10-hour time lag fuel moisture in % valid at 1300 LST for FCST or trend + or - for ZONE
- l. **Tx** Max temperature from 1300 LST to 1300 LST tomorrow
- m. **Tn** Min temperature from 1300 LST to 1300 LST tomorrow
- n. **RHx** Max relative humidity from 1300 LST to 1300 LST tomorrow
- o. **RHn** Min relative humidity from 1300 LST to 1300 LST tomorrow
- p. **PD1** Precipitation duration in hours 1300 LST to 0500 LST
- q. **PD2** Precipitation duration in hours 0500 LST to 1300 LST
- r. **WETFLAG** Y or N. Indicates whether liquid water will be on the fuels at 1300 LST. **(Use with caution – a “Y” will set all the NFDRS indices to zero!)**

The NFDRS forecast will follow the comma delimited format as shown:

ZONE,NO,YYMMDD,13,WX,TEMP(trend),RH(trend),LAL1,LAL2,WIND(trend),10HR(trend),PD1,PD2,WETFLAG
 FCST,NO,YYMMDD,13,WX,TEMP,RH,LAL1,LAL2,WIND,10HR,TX,TN,RHx,RHn,PD1,PD2,WETFLAG

An example of the product, formatted for transmission into AWIPS, is displayed below:

FNUS85 KBOI DDHHMM
 FWMBOI

ZONE,403,011027,13,1,-3,0,1,1,0,0,,,,,0,0,N Zone trend (zone 403)
 ZONE,404,011027,13,0,3,0,1,1,0,0,,,,,0,0,N Zone trend (zone 404)
 ZONE,102708,011027,13,0,4,-5,1,1,,,,,0,0,N Station trend **(WIMS cannot handle these for California)**
 FCST,102709,011027,13,0,84,15,1,1,12,5,87,60,50,12,0,0,N Station specific - **This must FOLLOW the ZONE forecasts.**
 Note: Tx, Tn, RHx, and RHn are not necessary in ZONE forecasts but must be used if an individual station which is normally part of a zone group is pulled out of the zone.

5. Example ECCDA Forecast

FIRE WEATHER FORECAST FOR FORTUNA ECC DISPATCH
NATIONAL WEATHER SERVICE - EUREKA CA
217 PM PDT WED APR 19 2007

Click on the link(s) below to go directly to forecast segments:

[INTERIOR HUMBOLDT AND DEL NORTE COUNTIES INCLUDING SIX RIVERS NF AND HOOPA VALLEY
NORTH COAST INCLUDING PORTIONS OF CA NPS AND REDWOOD PARKS](#)

.DISPATCH AREA DISCUSSION...

LOW PRESSURE WILL APPROACH NORTHWEST CALIFORNIA THURSDAY...
BRINGING INCREASED CLOUDINESS AND A SLIGHT CHANCE FOR
PRECIPITATION ALONG THE COAST. AS THE SYSTEM MOVES INLAND
FRIDAY AND SATURDAY...COOLER WEATHER WITH INCREASED RAIN
AND HIGH ELEVATION SNOW CHANCES CAN BE EXPECTED. A FEW
THUNDERSTORMS ARE POSSIBLE OVER THE MOUNTAINS ON FRIDAY.
DRY WEATHER IS EXPECTED SUNDAY BEFORE ANOTHER SYSTEM
APPROACHES THE REGION ON MONDAY.

THE FORECAST FOR:

[INTERIOR HUMBOLDT AND DEL NORTE COUNTIES INCLUDING SIX RIVERS NF AND HOOPA VALLEY INLAND
PORTION OF SMITH RIVER DRAINAGE WITHIN SIX RIVERS NF](#)

211 PM PDT WED APR 19 2007

.TONIGHT...

SKY/WEATHER.....MOSTLY CLEAR. PATCHY FOG AFTER 12 AM.
MIN TEMPERATURE.....37-40
MAX HUMIDITY.....100 PERCENT VALLEYS AND 60-70 PERCENT HIGHER
TERRAIN.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE
NORTHEAST 3 TO 5 MPH LATE IN THE EVENING.
RIDGES/UPR SLOPES....NORTHWEST WINDS 5 TO 8 MPH SHIFTING TO THE
EAST 3 TO 5 MPH LATE IN THE EVENING.

.THURSDAY...

SKY/WEATHER.....PARTLY CLOUDY UNTIL 12 PM...THEN MOSTLY CLOUDY.
PATCHY FOG UNTIL 10 AM.
MAX TEMPERATURE.....65-71.
MIN HUMIDITY.....55-65 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE
WEST 5 TO 8 MPH LATE IN THE MORNING.
RIDGES/UPR SLOPES....SOUTHEAST WINDS 3 TO 4 MPH SHIFTING TO THE
SOUTHWEST 5 TO 8 MPH LATE IN THE MORNING.

.FRIDAY...

SKY/WEATHER.....CHANCE OF RAIN...THEN SHOWERS LIKELY.
MAX TEMPERATURE.....60-63.
MIN HUMIDITY.....56-66 PERCENT.
20-FOOT WINDS.....
VALLEYS/LWR SLOPES...NORTH WINDS 3 TO 8 MPH.
RIDGES/UPR SLOPES....NORTH WINDS 3 TO 8 MPH.

.EXTENDED...

.SATURDAY...PARTLY CLOUDY WITH CHANCE OF SHOWERS. LOWS IN THE
UPPER 30S. HIGHS IN THE LOWER 60S. NORTH WINDS 3 TO 6 MPH.

.SUNDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF SHOWERS. LOWS IN THE UPPER 30S. HIGHS IN THE MID TO UPPER 60S. NORTHEAST WINDS 3 TO 6 MPH.

.MONDAY...PARTLY CLOUDY WITH SLIGHT CHANCE OF RAIN. LOWS NEAR 40. HIGHS IN THE MID 60S. SOUTHWEST WINDS 3 TO 6 MPH.

\$\$

APPENDIX C – Predictive Services Product Examples

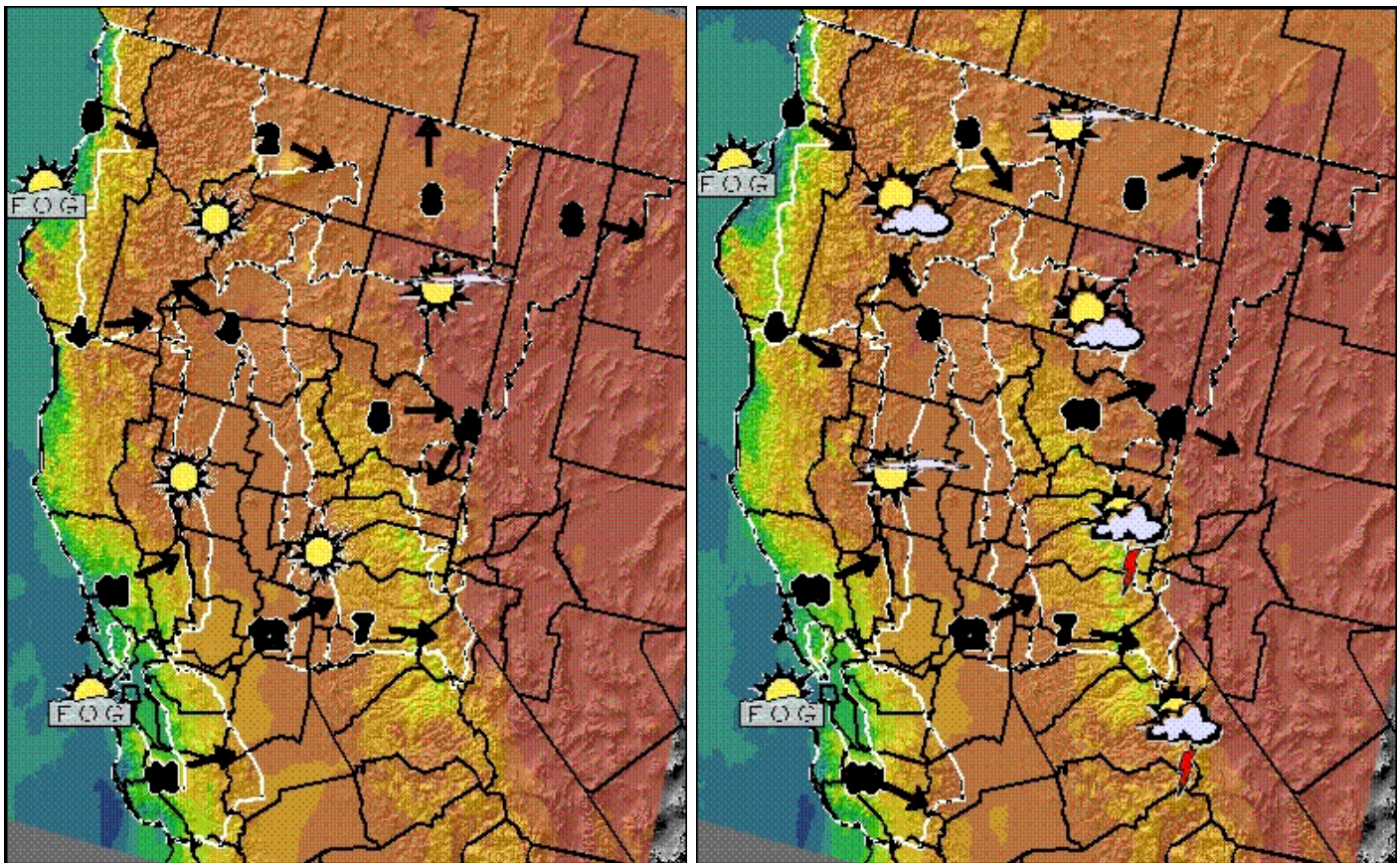
1. Daily Weather Outlook

Northern California Daily Outlook

Issued: Tuesday, May 29, 2007

Weather Synopsis:

High pressure ridge begins to build in across the region today into early tomorrow. Temperatures will warm several degrees, and most areas will be 5-8 deg above normal. Nighttime RH recovery will be moderate to poor the next few nights across higher elevations. Elsewhere the marine layer continues along the immediate coast affecting the narrow coastal strip and nearby hills up to 2000 ft elevations. A thunderstorm outbreak is looking more and more likely by Wednesday and Thursday across much of the North Ops area. The combination of high level moisture above 15,000 ft and low level dryness from the surface to 10,000 ft indicates that most of the storms will initially be dry. By Wednesday afternoon the northern edge of these storms are expected to move up the Sierra chain as far north as the Tahoe Basin. Thursday appears to be the most widespread thunderstorm day.



Day 1
Min RH & Afternoon Winds

Valid For: Today

Day 2
Min RH & Afternoon Winds

Valid For: Wednesday

***3 to 7 Outlook:* Thursday Through Monday**

Coast Range Westward:

Increasing clouds Thursday with some isolated thunderstorms Thur-Fri mainly north of Mendocino Pass. Some storms could be dry, but storm areal coverage may only be isolated.

I-5 corridor, including Sacramento Valley and surrounding foothills:

Increasing high clouds on Wednesday ahead of an approaching Baja low pressure system. Isolated dry thunderstorms are possible Thursday and Friday.

Cascade-Sierra Nevada from 3500' to Crest, NE California and NW Nevada:

Thursday and Friday will feature scattered thunderstorms, some dry across much of the area. By Friday, some storms should become wetter.

2. Daily-issued 7-Day Significant Fire Potential Product



Legend:

- Fuel Dryness**
- Moist - Little if any threat for large fires.
 - Dry - Low threat for large fires when significant weather is absent.
 - Very Dry - Moderate threat for large fires when significant weather is absent.
 - Data unavailable.
- Significant Weather Triggers**
- ⚡ Lightning - LALs of 3 or higher.
 - W Wind - Sustained speeds of 20 mph or greater.
 - ☀ Hot with Low RH - Temperatures much above seasonal normals with humidity 15% or less.
- "High Risk" Days**
- The combination of either "Dry" or "Very Dry" Fuel dryness along with a Significant Weather Trigger.

Southern California 7 Day Significant Fire Potential

Issued: Tuesday, Apr 17, 2007

Predictive Service Areas	Ytd	Tue	Wed	Thu	Fri	Sat	Sun	Mon
	Apr 16	Apr 17	Apr 18	Apr 19	Apr 20	Apr 21	Apr 22	Apr 23
SC01 - Eastern Sierra								
SC02 - Central Sierra								
SC03 - Southern Sierra								
SC04 - Sierra Foothills								
SC05 - Central Coast Mountains & Valleys								
SC06 - Central Coast								
SC08 - South Coast								
SC07 - South Central Mountains								
SC09 - Southern Mountains								
SC10 - Deserts								

Weather Synopsis:

A series of Pacific troughs will move through California maintaining cool temperatures and fairly high humidity across most of the region through Monday. The first trough will move through Northern California this afternoon bringing a few snow showers to the Central Sierra and the northern part of the Eastern Sierra this afternoon and evening. Elsewhere, precipitation is not expected with this trough. **This trough will also bring strong and gusty west to northwest winds, mainly to the mountains and deserts through Wednesday.** A stronger trough will move through the state Thursday and Friday bringing the entire region showers. Showers will start over Central California Thursday afternoon and over Southern California Thursday night. **Most locations over Central California will receive between a quarter inch and a half inch of rainfall and most locations over Southern California will receive less than a quarter inch of rainfall with this trough.** The snow level will be around 5,000 feet. A third trough will move through the state Sunday and Monday bringing another chance of showers to the region.

Fire Potential Discussion:

In the wake of recent rains, fuel moistures have risen to the point where the general fire activity has diminished and the large fire potential has been mitigated over much of the area. Still, areas that have received little precipitation will be susceptible to some small fire activity over the next couple of days. **Westerly winds will be increasing today and Wednesday over much of the region which will lead to an increase in fire activity, especially in the mountain and desert areas where winds will be the strongest.** With the anticipation of more precipitation and continued cool temperatures Friday into early next week, fire activity should be very low or non-existent over the entire area.

CWCG Preparedness Level

CWCG Preparedness Level 3, MACS Mode 2

NOTICE: Forecast for the following PSA's may be unavailable or unrepresentative of actual conditions due to missing observations from the stations listed below:

EASTERN SIERRA

Owens Valley Ca

Rock Creek

CENTRAL SIERRA

Beaver Camp Loc

Shaver Califom

SOUTHERN SIERRA

Cedar Grove Ca

Park Ridge Cali

Sugarloaf

SIERRA FOOTHILLS

Mariposa Calif

Catheys Valley

Esperanza Calif

Green Spring Ca

CENTRAL COAST MTNS & VLYS

Hernandez Calif

Parkfield Calif

SOUTH COAST

Valley Center C

[Click here for 7 day ERC, IC, and F100 projections](#)

[Click here for 7 day Temperature & RH projections](#)

[For more information about this product, click here](#)

3. Monthly Fire Weather / Fire Danger Outlook

MONTHLY FIRE WEATHER / FIRE DANGER OUTLOOK

April 2007

1. **REPORTING UNIT:** Northern California Geographic Area

2. **DATE:** March 28, 2007

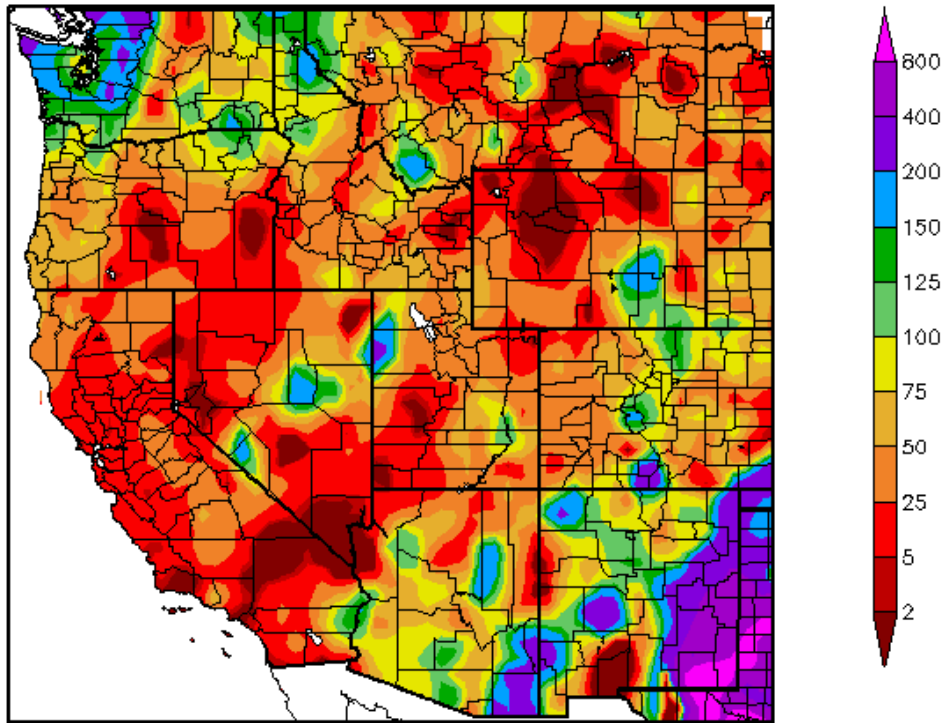
THIS COMING MONTH	BELOW NORMAL		NORMAL	X	ABOVE NORMAL	
THIS SEASON	BELOW NORMAL		NORMAL	X	ABOVE NORMAL	

4. FIRE WEATHER OUTLOOK

Brief overview of March 2007 weather (through the 27th):

Large-scale high pressure remained near the West coast during March, weakening or diverting several Pacific storms before they could reach northern CA. As shown in Figure 1 (below) most of northern CA received under half of normal March precipitation (through the 27th). Temperature forecasts for March, made in late February, favored above-normal readings. We have seen above normal temps, but to a greater degree than expected - through the 26th all of North Ops has been above normal, with anomalies ranging from +1 to +9° F. March 2007 has not been an overly windy month compared to normal. Through the 28th just a couple of events had reached the strong category, with those winds confined to higher-elevation sites. Several moderate wind events did occur, with widespread peak gusts in a 25-40 mph range. The majority of March lightning has been in the eastern Sacramento Valley to nearby foothills.

Percent of Normal Precipitation (%)
3/1/2007 – 3/27/2007



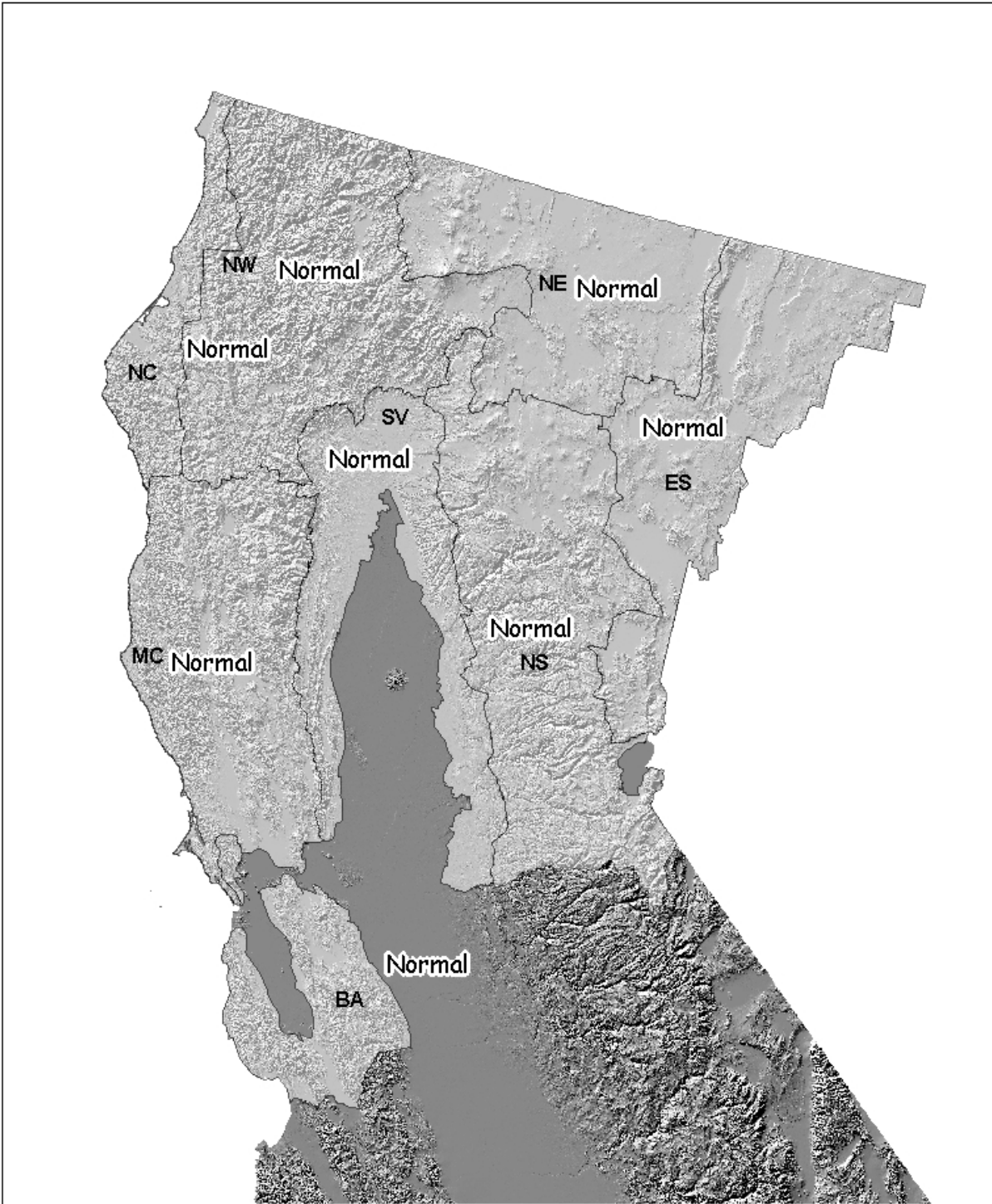
Generated 3/28/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Figure 1 – Precipitation percent of normal for Mar. 1-27th

FORECAST DISCUSSION FOR APRIL 2007:

It looks like larger-scale high pressure will remain either right over, or quite close, to the West coast of the continental U.S. during April. There is a weakness in the middle part of the high's north-south expanse, and this should allow weak to borderline-moderate Pacific storms in from time to time. None of these are presently forecast to be overly wet or of long duration. The synoptic patterns just described mean that April 2007 temperatures are most likely going to average from near to several degrees above seasonal normals. The latest indications are that precipitation will also end up in a generally into the 'below-normal' ranges. When the upper ridge axis is centered just to the west of California, moderate or stronger surface foehn winds (north to east) are favored. At present, it looks like April could see this type pattern a little more frequently than average. Dry periods, warm temperatures, and foehn winds are factors that will combine to bring about earlier-than-average curing of annual grasses in many lower valleys.



4. SEASONAL OUTLOOKS

The latest Seasonal assessments can be found at the following URLs:

North: http://gacc.nifc.gov/oncc/predictive/outlooks/seasonal_outlook.pdf

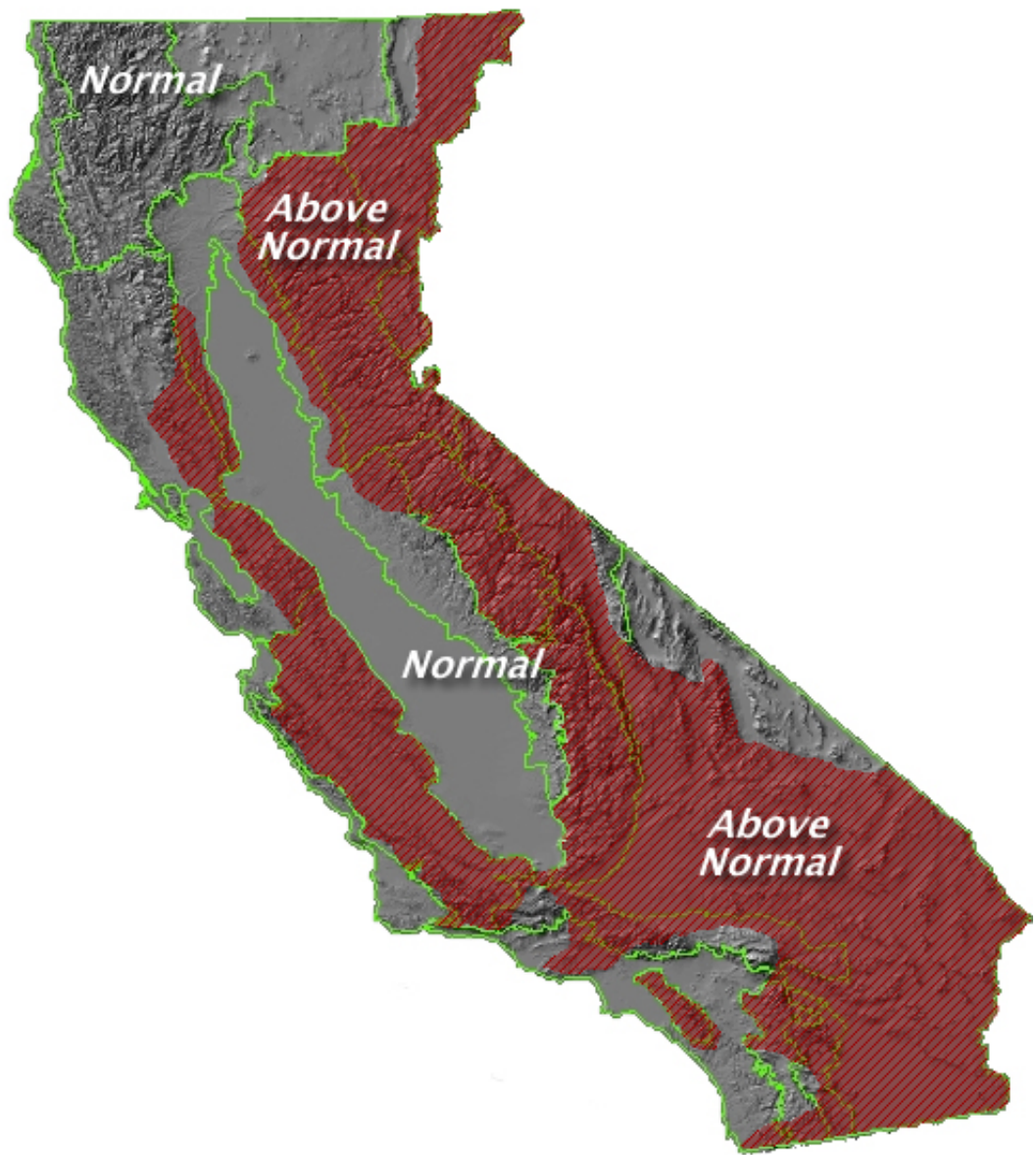
South: <http://gacc.nifc.gov/oscc/predictive/outlooks/myfiles/assessment.pdf>

Preliminary 2007 California Fire Season Outlook

Executive Summary

May 8, 2007 update

- Earlier than normal start to fire season
- Abnormally dry fuels in the South due to absence of significant rainfall
- Below normal precipitation has led to lower than normal 1000 hour fuel moistures statewide.
- Fire activity could increase rapidly with any sudden drying and/or windy events, particularly in grass/brush type fuels.
- A significant lightning episode would push the NW mountains into the Above Normal category
- Lack of new grass crop in the south will reduce continuity in fine fuels.
- Majority of local freeze-killed fuel areas are within wildland urban interface.
- Drought stress and bug kill may become factors by late in fire season.
- California resources are less likely to be available for assignment to other Regions.
- Springtime prescribed burning in the north could possibly see early curtailment.



EXECUTIVE SUMMARY

This preliminary outlook is a product of the National Seasonal Assessment Workshop held April 24-26, 2007 in Boulder, CO. The interagency workshop brought together subject matter experts from climatology, fire weather meteorology, fuels, and fire danger. The outlook is based on past developments, current conditions, trends, and predictions for the next five months (May through September).

Objectives of the Executive Summary are to:

- Provide a prognosis of 2007 wildland fire potential in California, based on fuel conditions and available climate forecasts.
- Highlight concerns and key implications for management.
- Provide supporting documentation regarding weather and fuels information.
- Provide the framework for more comprehensive North Ops and South Ops outlooks by the end of June.

This executive summary should aid California wildland fire managers in 2007 fire season preparedness, and add preliminary insight. More detailed fire season outlooks, for both North and South Ops, will be available by the end of June. Those documents will give increased detail regarding all aspects of the coming fire season, and will have higher confidence levels. In addition to this outlook, the GACC Predictive Service Units at Riverside and Redding will issue detailed monthly assessments of fire weather and fire danger.

FIRE SEASON OVERVIEW:

South: With the absence of significant rainfall, fuels are exceptionally dry across much of the Geographic Area, especially for this time of the year. The resulting effects will be above normal fire potential for nearly the entire Area. The only exceptions will be areas near the coast, in addition to lower elevations near the San Joaquin Valley where a “near normal” fire season is expected. The winter freeze across the lower elevations of the district has caused some brush dieback, especially in and near the urban-wildland interface. This, combined with drought stress and bug kill, may lead to some extreme fire behavior later this summer. The only limiting factor to the potential severity of this season will be the fact that the new grass crop is lacking, which will result in less fuel loading and continuity among the finer types of fuels.

North: With the below normal precipitation and snowpack, the onset of this year’s fire season will be a little earlier than average in North Ops. The current and expected weather and fuel conditions will lead to above normal fire potential in primarily two areas. These are from the northern Sierra into northwest Nevada, and from the southeastern Mendocino NF down to the eastern SF Bay PSA. We are also closely watching the Shasta Trinity NF and nearby, which is considered to be near the high end of the ‘Normal’ range. Pending the weather of May, the ‘Above Normal’ area in our June update to the final Assessment may well be expanded farther northwest to include this area.

SUPPORTING WEATHER AND FUELS INFORMATION:

Winter/ Spring weather to date: California went into the 2006-07 winter with an eastern Pacific El Nino pattern building toward borderline-moderate strength. However, the El Nino rapidly dissipated between December and early February. The winter season in California was drier than normal; in fact southern CA had one of the driest winters on record. Winter temperatures across California averaged slightly above normal, although there were significant December and January statewide cold snaps which produced local frost-kill in some live fuel species. Lack of significant precipitation, combined with the slightly warmer than normal temperatures, has resulted in below zero to much-below normal snowpack in the South, and below normal in the North.

Forecasts: Fire season temperatures are forecast to be at or above normal for the majority of the state's interior. We expect the warm temperature anomalies for North Ops to be greatest in the latter half of fire season. California fire season precipitation is forecast to remain at or below normal, with the North expected to have its lowest percentages of normal in the later months. Typically California experiences several thunderstorm outbreaks during the summer months. At this time long range forecasts do not suggest any significant deviation from this scenario. Late season foehn wind events, even of normal strength, could be more critical than usual due to the abnormally dry fuels. Forecast Confidence = 55% to 60%

Fuels Discussion: A severe January freeze caused significant dieback of native and non-native vegetation, especially in Ventura, Orange, and San Diego counties. Although a direct correlation between freeze kill and fire occurrence is not established, given the amount of newly killed fuels, large fires may result. There also seems to be a slight re-occurrence of bug kill among the timbered areas of the southernmost forests and drought stress is a further concern. Below normal rainfall and the slightly above normal temperatures in the North are leading to earlier-than-normal curing of grasses at lower elevations. This early curing of annual grasses, along with below normal live and dead fuel moistures, will lead to an earlier onset of fire season. Lower than average 1000 hour fuel moistures have been confirmed from both prescribed fires and early season wildfires. Prescribed burning opportunities started earlier in the year than normal, but an early start to the fire season could prematurely curtail burning operations.

Team Members at Boulder:

Tom Rolinski – Fire Weather Meteorologist, Riverside Interagency Fire Weather Center, USDI Bureau of Land Management

John Snook – Fire Weather Meteorologist, Redding Interagency Fire Weather Center, USDA Forest Service

Bruce Risher – Intelligence Coordinator, USDA Forest Service, Southern California Geographic Area Coordination Center

Mark Steele – Intelligence Officer, USDA Forest Service, Northern California Geographic area Coordination Center.

Russ Gripp – Technical help with NFDERS, WIMS, mapping

Tim Chavez, Pete Curran

Also contributing: Larry Hood

APPENDIX D – High Season Coordination Calls

Predictive Services Units and National Weather Service Coordination Calls

Coordination conference calls will be conducted as needed between the Predictive Services Units (PSUs) and the National Weather Service (NWS) Weather Forecast Offices (WFOs) during fire season. The purpose of the call is to produce seamless products between WFOs and also between the PSU and WFOs. Calls should be brief and to the point.

Calls will be at 0845 PDT (North) 0830 (South) during the fire season.

The Predictive Services Units meteorologist will facilitate the call.

Normally, there will be two calls. One will be for the north and the other for the south. There are 3 WFOs that have forecast areas in both the north and the south. Routinely, Monterey will be on the north and south calls, and Reno and Sacramento will be on the north call. In some instances, one statewide call will be conducted.

Deployed IMETs should be included in the calls.

The PSUs will place an unpublished message on their Internet web page by 0800 PDT to inform the WFOs if a call is necessary, and which WFOs need to be on it.

The focus of the calls will be in the short term (72 hours).

Calls will be conducted when one or more of the following is occurring:

- Fire Weather Watch/Red Flag Warning is in effect.
- A critical fire weather pattern is expected to develop.
- Large wildfires or wildfires with IMETs deployed
- California is in Planning Level IV or V.

APPENDIX E – Backup Spot Forecast Request Form (WS FORM D-1)

WS FORM D-1 (1-2005) (Supersedes Previous Editions)		SPOT REQUEST (See reverse for instructions)		U.S. Department of Commerce NOAA National Weather Service										
Please call the NWS Weather Forecast Office (WFO) when submitting a request and also after you receive a forecast to ensure request and forecast were received. Please provide feedback to WFO on forecast.														
1. Time†	2. Date	3. Name of Incident or Project		4. Requesting Agency										
5. Requesting Official		6. Phone Number		7. Fax Number	8. Contact Person									
9. Ignition/Incident Time and Date	12. Reason for Spot Request (choose one only) <input type="radio"/> Wildfire <input type="radio"/> Non-Wildfire Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA) <input type="radio"/> Non-Wildfire State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services <input type="radio"/> Non-Wildfire Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.			13. Latitude/Longitude:										
10. Size (Acres)				14. Elevation (ft, Mean Sea Level) Top: Bottom:										
11. Type of Incident <input type="checkbox"/> Wildfire <input type="checkbox"/> Prescribed Fire <input type="checkbox"/> Wildland Fire Use (WFU) <input type="checkbox"/> HAZMAT <input type="checkbox"/> Search And Rescue (SAR)				15. Drainage										
		16. Aspect	17. Sheltering <input type="checkbox"/> Full <input type="checkbox"/> Partial <input type="checkbox"/> Unsheltered											
18. Fuel Type: <u> </u> Grass <u> </u> Brush <u> </u> Timber <u> </u> Slash <u> </u> Grass/Timber Understory <u> </u> Other _____ Fuel Model: 1,2,3 4,5,6,7 8,9,10 11,12,13 2,5,8														
19. Location and name of nearest weather observing station (distance & direction from project):														
20. Weather Observations from project or nearby station(s): (Winds should be in compass direction e.g. N, NW, etc.)														
Place	Elevation	†Ob Time	20 ft. Wind		Eye Level Wind	Temp.	Moisture		Remarks					
			Dir Speed		Dir Speed	Dry Wet		RH DP		<i>(Relevant Weather, etc.)</i>				
21. Requested Forecast Period Date	22. Primary Forecast Elements (Check all that are needed) <i>(for management ignited wildland fires, provide prescription parameters):</i>			23. Remarks (other needed forecast elements, forecast needed for specific time, etc.)										
Start _____ End _____ Forecast needed for: <input type="checkbox"/> Today <input type="checkbox"/> Tonight <input type="checkbox"/> Day 2 <input type="checkbox"/> Extended														
	Needed:													
	Sky/Weather	<input type="checkbox"/>	Temperature	<input type="checkbox"/>	Humidity	<input type="checkbox"/>	20 ft Wind	<input type="checkbox"/>	Valley	<input type="checkbox"/>	Ridge Top	<input type="checkbox"/>	Other (Specify in #23)	<input type="checkbox"/>
24. Send Forecast to: ATTN:		25. Location:			26. Phone Number: Fax Number:									
27. Remarks (Special requests, incident details, Smoke Dispersion elements needed, etc.):														
EXPLANATION OF SYMBOLS: † Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015 Indicate local standard time or local daylight time														

WS FORM D-1
WS FORM D-1, January 2005 INSTRUCTIONS:

I. Incident Personnel:

1. Complete items 1 through 27 where applicable.

a. Example of weather conditions on site:

13. Weather Observations from project or near by station(s):

Place	Elevation	Obs Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks (Relevant Weather, etc.)
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	
Unit G-50	1530'	0830	NW	6-8	NW	3-5	32		72		Observations from unit RAWS station, 50% cloud cover.

b. If the incident (HAZMAT, SAR) involves marine, put the wave/swell height and direction in the Remarks section.

☉

2. Transmit in numerical sequence or fax to the appropriate Weather Forecast Office. (A weather forecaster on duty will complete the special forecast as quickly as possible and transmit the forecast and outlook to you by the method requested)
3. Retain completed copy for your records.
4. **Provide feedback to NWS utilizing separate page.** Be sure to include a copy of the spot forecast with any feedback submission including forecaster's name. Feedback to NWS personnel is imperative to assist with future forecasts. **Remember, feedback on correct forecasts is equally as valuable as feedback on incorrect forecasts!** If spot forecast is significantly different than conditions on site, a second forecast may be required.

II. ALL RELAY POINTS should use this form to insure completeness of date and forecast. A supply of this form should be kept by each dispatcher and all others who may be relaying requests for forecasts or relaying completed forecasts to field units.

III. Forms are available from your local National Weather Service Weather Forecast Office. They may also be reproduced by other agencies as needed, entering the phone number and radio identification if desired.

NOTICE: Information provided on this form may be used by the National Weather Service for official purposes in any way, including public release and publication in NWS products. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.

APPENDIX F - NFDRS Table - Site Information, Owners, and NWS Responsibilities

EKA = NWS Eureka, HNX = NWS Hanford, VEF = NWS Las Vegas, LOX = NWS Oxnard, MFR = NWS Medford, MTR = NWS Monterey, REV = NWS Reno, STO = NWS Sacramento, SGX = NWS San Diego

STATION NAME WIMS	WIMS ID	AGENCY	UNIT	WFO	FCST ZONE	LATITUDE	LONGITUDE	ELEV
ALDER POINT	40423	State	HUU	EKA	556	40.1866667	-123.0097222	923
BACKBONE	40518	FS	SHF	EKA	591	40.8891667	-123.0022222	4700
BIG BAR	40501	FS	SHF	EKA	591	40.7433333	-123.0041667	1500
BIGHILL	40402	BIA	HIA	EKA	555	41.0975000	-123.0105556	3570
BOONVILLE	41001	State	MEU	EKA	557	38.9872222	-123.0058333	940
BRUSH MTN L.O.	40404	FS	SRF	EKA	555	40.9172222	123.6675000	3988
COOKSIE MOUNTAIN	40422	State	HUU	EKA	560	40.2569440	-124.0041667	2950
EEL RIVER (MNF)	41005	FS	MNF	EKA	557	39.8252778	-123.0011111	1500
EEL RIVER CAMP	40421	State	HUU	EKA	556	40.1383333	-123.0136111	470
FIVE CENT	40520	FS	SHF	EKA	591	40.7597222	-122.0152778	2550
FRIEND MTN	40512	FS	SHF	EKA	591	40.5050000	-123.0055556	4000
GASQUET	40102	FS	KNF	EKA	556	41.8452778	-123.0161111	500
HAYFORK	40503	FS	SHF	EKA	591	40.5500000	-123.0025000	2323
HOOPA	40408	BIA	HIA	EKA	555	41.0477778	-123.0111111	375
KNEELAND	40429	State	HUU	EKA	560	40.72	-123.9269444	2737
LAYTONVILLE	41019	State	MEU	EKA	557	39.7022222	-123.0080556	1838
MAD RIVER	40507	FS	SRF	EKA	555	40.4633333	-123.0086111	2775
MCGUIRES	41017	State	MEU	EKA	557	39.3522222	-123.0097222	1040
MENDOCINO PASS	41018	FS	MNF	EKA	557	39.8075000	-122.0155556	5420
PATTYMOCUS	40812	FS	SHF	EKA	594	40.2883333	-122.0144444	3500
RODEO VALLEY	41015	State	MEU	EKA	557	39.6683333	-123.0052778	2425
RUTH STATION	40508	FS	SRF	EKA	555	40.2505556	-123.0050000	2732
SCHOOLHOUSE	40425	NPS	RNP	EKA	560	41.1383333	-123.0150000	2640
SCORPION	40517	FS	SHF	EKA	591	41.1116667	-122.0113889	4400
SHIP MTN L.O.	40105	FS	SRF	EKA	556	41.7358333	-123.0130556	5300
SODA CREEK	41406	FS	MNF	EKA	557	39.4250000	-122.0161111	1725
TRINITY CAMP	40516	State	SHU	EKA	591	40.6788889	-122.0136111	2100
UNDERWOOD	40519	FS	SRF	EKA	555	40.7219444	-123.0080556	2600
WESTSIDE	40428	NPS	RNP	EKA	560	41.2233333	-124.0008333	1291
YUROK	40427	BIA	YIA	EKA	556	41.2897222	-123.0141667	495
ASH MOUNTAIN	44701	NPS	KNP	HNX	529	36.4913889	-118.0136111	1730
BATTERSON	44207	FS	SNF	HNX	528	37.3780556	-119.0102778	3160
BEAR PEAK	44730	BLM	BBD	HNX	530	35.8819444	-118.0011111	8228
BEAR VALLEY	45007	State	KRN	HNX	562	35.1397222	-118.0102778	4995
BLACKROCK	44722	FS	SQF	HNX	534	36.0936111	-118.0041667	8100
BRECKENRIDGE	45009	FS	SQF	HNX	534	35.4505556	-118.0097222	7548
CAMPO SECO	43209	State	TCU	HNX	539	38.2236111	-120.0141667	399
CASE MOUNTAIN	44733	BLM	BBD	HNX	529	36.4108333	-118.0133333	6450
CATHEYS VALLEY	44114	State	MMU	HNX	528	37.4680556	-120.0016667	1200
CEDAR GROVE	44719	NPS	KNF	HNX	534	36.7877778	-118.0108333	4720
CHIM PK	44721	BLM	BDD	HNX	530	35.9000000	-118.0000000	6240
CRANE	44102	NPS	YNP	HNX	531	37.7667000	-119.8167000	6644
DEMOCRAT	45002	FS	SQF	HNX	530	35.5316667	-118.0102778	2380
DINKEY	44521	FS	SNF	HNX	533	37.0663889	-119.0005556	5662
FANCHER CREEK	44516	State	FKU	HNX	528	36.9000000	-119.0083333	920
FENCE MDW	44503	FS	SNF	HNX	532	36.9613889	-119.0027778	5256

FOUNTAIN SPRINGS	44731	State	TUU	HNX	529	35.8922222	-118.0150000	210
HIGH SIERRA	44520	FS	SNF	HNX	533	37.3147222	-119.0005556	7403
HURLEY	44517	State	FKU	HNX	529	37.0155556	-119.0091667	1225
INDIAN WELLS CANYON	45015	FS/BLM	CDD	HNX	530	35.6850000	-117.0147222	4000
JAWBONE	45013	FS/BLM	CDD	HNX	530	35.2947222	-118.0036111	4300
JERSEYDALE	44105	FS	SNF	HNX	528	37.5436111	-119.0138889	3900
JOHNSONDALE	44707	FS	SQF	HNX	534	35.9705556	-118.0088889	4700
KETTLEMAN HILLS	44602	BLM	BBD	HNX	526	36.0333333	-120.0008333	810
LOS BANOS	44003	State	MMU	HNX	526	37.0547222	-121.0008333	350
MARIPOSA	44106	State	MMU	HNX	528	37.5011111	-119.0163889	2275
METCALF GAP	44209	State	MMU	HNX	528	37.4155556	-119.0127778	3300
MGROVE	44113	NPS	YNP	HNX	531	37.5127778	-119.0100000	6400
MIAMI	44110	FS	SNF	HNX	532	37.4191667	-119.0122222	4334
MILO	44708	State	TUU	HNX	529	36.2319444	-118.0144444	2002
MINARETS	44203	FS	SNF	HNX	532	37.4072222	-119.0055556	5340
MT TOM	44511	FS	SNF	HNX	533	37.3761111	-119.0027778	9018
MTREST	44505	FS	SNF	HNX	529	37.0541667	-119.0061111	4100
NORTHFORK	44204	FS	SNF	HNX	528	37.2330556	-119.0083333	2663
OAK OPENING	44717	FS	SQF	HNX	529	36.1752778	-118.0116667	3080
PANOCHÉ	44514	State	FKU	HNX	524	36.6300000	-120.0105556	500
PARK RIDGE	44713	NPS	KNP	HNX	532	36.7241667	-118.0155556	7540
PEPPERMINT	44726	FS	SQF	HNX	534	36.0720000	-118.5340000	7167
PINEHURST	44508	FS	SNF	HNX	529	36.6972222	-119.0002778	4060
PIUTE	45017	FS	SQF	HNX	534	35.4455556	-118.0044444	6440
RATTLESNAKE	44728	NPS	KNP	HNX	534	36.4069444	-118.0069444	8600
RIVER KERN	45016	FS	SQF	HNX	530	35.7775000	-118.0072222	3000
SAN LUIS NWR	44004	FWS	SLR	HNX	526	37.1822222	-120.0130556	65
SFORK	45012	BLM	BBD	HNX	530	35.9833000	-118.5833000	3000
SHADE QUARTER	44724	State	TUU	HNX	534	36.5672222	-118.0158333	4089
SHAVER	44522	State	FKU	HNX	528	37.1352778	-119.0041667	5800
SUGARLOAF	44729	NPS	KNP	HNX	534	36.7266667	-118.0111111	7950
TRIMMER	44510	FS	SNF	HNX	529	36.9111111	-119.0050000	1540
TUOLME	43611	NPS	YNP	HNX	531	37.8683333	-119.0052778	9200
UHL/HOT SPRINGS	44712	FS	SQF	HNX	529	35.8866667	-118.0105556	3720
VALLEY	44111	NPS	YNP	HNX	531	37.7500000	-119.5833000	4000
WALKER PASS	45014	BLM	BBD	HNX	530	35.6658333	-118.0008333	5572
WAWONA	44109	NPS	YNP	HNX	531	37.5333000	-119.6500000	3960
WOLVERTON	44732	NPS	KNP	HNX	534	36.4450000	-118.0116667	5240
WWOLF	43612	NPS	YNP	HNX	531	37.8511111	-119.0108333	8000
ACTON	45438	L Gov	LAC	LOX	506	34.4458333	-118.0033333	2600
APPLE VALLEY	45117	BLM	CDD	LOX	514	34.6000000	-117.1666666	3100
ARROYO GRANDE	44915	State	SLU	LOX	500	35.1919444	-120.0069444	615
BANNING	45601	FS	BDF	LOX	510	33.9750000	-116.9130000	3750
BEVERLY HILLS	45442	L Gov	LAC	LOX	501	34.1250000	-118.0066667	1260
BIG PINES	45401	FS	ANF	LOX	507	34.3788889	-117.0113889	6917
BRANCH_MOUNTAIN	44901	FS	LPF	LOX	525	35.1888889	-120.0013889	3770
CAMP 9	45441	L Gov	LAC	LOX	506	34.3616667	-118.0069444	4000
CARRIZO	44916	BLM	BBD	LOX	525	35.0963889	-119.0127778	2490
CASITAS	45308	FS	LPF	LOX	504	34.4080556	-119.0061111	640
CHEESEBORO	45313	NPS	SAMO	LOX	505	34.1847222	-118.0119444	1650
CHILAO	45436	FS	ANF	LOX	507	34.3316667	-118.0002778	5450

CHUCHUPATE	45302	FS	LPF	LOX	503	34.8063889	-119.0000000	4900
CLAREMONT	45443	L Gov	LAC	LOX	509	34.1369444	-117.7069440	1645
CLEAR CREEK	45405	FS	ANF	LOX	506	34.2711111	-118.0025000	3000
DEL VALLE	45445	L Gov	LAC	LOX	505	34.4311111	-118.0111111	1278
FIGUEROA	45201	FS	LPF	LOX	500	34.7344444	-120.0000000	3200
GRASS MOUNTAIN	45449	FS	ANF	LOX	506	34.6408333	-118.0066667	4626
HENNINGER FLATS	45439	L Gov	LAC	LOX	509	34.1930555	-118.0869444	2530
LA PANZA	44914	State	SLU	LOX	525	35.3811111	-120.0030556	1630
LAKE PALMDALE	45450	L Gov	LAC	LOX	519	34.5372222	-118.0016667	2980
LAS TABLAS	44904	State	SLU	LOX	520	35.6555556	-120.0152778	1300
LEO CARRILLO	45447	L Gov	LAC	LOX	501	34.0455556	-118.0155556	50
LITTLE TUJUNGA	45411	FS	ANF	LOX	509	34.2936111	-118.0058333	1390
LOS PRIETOS	45203	FS	LPF	LOX	500	34.5358333	-119.0130556	1020
MALIBU	45433	L Gov	LAC	LOX	505	34.0583333	-118.0105556	1575
MALIBU CANYON	45452	L Gov	LAC	LOX	505	34.0997222	-118.0116667	640
MILL CREEK	45435	FS	ANF	LOX	507	34.3902778	-118.0011111	5021
MONTECITO	45218	FS	LPF	LOX	501	34.4613889	-119.0105556	1500
NEWHALL PASS	45454	L Gov	LAC	LOX	505	34.3369444	-118.0086111	2135
OZENA	45303	FS	LPF	LOX	503	34.6819444	-119.0058333	3865
POPPY PARK	45440	L Gov	LAC	LOX	519	34.7325000	-118.0063889	2760
RICE VALLEY	45620	BLM	CDD	LOX	519	34.0608333	-114.0119444	820
ROSE VALLEY II	45314	FS	LPF	LOX	503	34.5433333	-119.0030556	3331
SADDLEBACK BUTTE	45444	L Gov	LAC	LOX	519	34.6847222	-117.0136111	2590
SAN RAFAEL HILLS	45451	L Gov	LAC	LOX	505	34.1941667	-118.0033333	1770
SANTA CRUZ ISLAND	45216	NPS	CNP	LOX	501	33.9958333	-119.0119444	250
SANTA FE	45437	L Gov	LAC	LOX	501	34.1208333	-117.0155556	500
SANTA ROSA ISLAND	45217	NPS	CNP	LOX	501	33.9777778	-120.0011111	1298
SAUGUS	45412	L Gov	LAC	LOX	505	34.4250000	-118.0086111	1450
TANBARK	45421	FS	ANF	LOX	509	34.2069444	-117.0125000	2600
TEMESCAL	45307	FS	ANF	LOX	505	34.4805556	-118.0125000	1140
TONNER CANYON	45453	L Gov	LAC	LOX	509	33.9475000	-117.0136111	1340
VANDENBERG	45220	FS	LPF	LOX	500	34.8033333	-120.0086111	1050
WARM SPRINGS L.O.	45426	FS	ANF	LOX	506	34.5958333	-118.0094444	4930
WHITAKER	45448	L Gov	LAC	LOX	506	34.5686111	-118.0122222	4120
WHITTIER HILLS PARK	45446	L Gov	WIT	LOX	501	33.9838889	-118.0000000	950
WILEY RIDGE	45335	L Gov	VNC	LOX	505	34.3758333	-118.0136111	1665
ASH CREEK	40244	FS	SHF	MFR	584	41.2769444	-121.0161111	3700
BLUE RIDGE (KNF)	40203	FS	KNF	MFR	586	41.2694444	-123.0030556	5880
BRAZZI RANCH	40242	State	SKU	MFR	588	41.6852778	-122.0097222	3000
CALLAHAN #2	40245	FS	KNF	MFR	587	41.2997222	-122.0136111	3911
CAMP SIX LOOKOUT	40101	FS	SRF	MFR	556	41.8308333	-123.0144444	3778
CANBY	40303	FS	MDF	MFR	590	41.4341667	-120.0144444	4312
COLD SPRINGS	40314	FS	MDF	MFR	590	41.7816666	-120.3183333	6313
COLLINS BALDY LO	40237	FS	KNF	MFR	587	41.7750000	-122.0158333	5493
CRAZY PEAK	40106	FS	SIF	MFR	621	41.9763889	-123.0100000	3970
DEVIL'S GARDEN	40309	State	LMU	MFR	590	41.5300000	-120.0111111	5022
INDIAN WELL	40233	NPS	BNP	MFR	590	41.7347222	-121.0088889	4770
JUANITA	40240	FS	KNF	MFR	589	41.8019444	-122.0016667	5400
LOWER KLAMATH	40310	FWS	LKR	MFR	589	41.9991667	-121.0116667	4098
MODOC NWR	40311	FWS	MDR	MFR	590	41.4588889	-120.0086111	4380
MT SHASTA	40217	FS	SHF	MFR	584	41.3155556	-122.0050000	3591
OAK KNOLL	40218	FS	KNF	MFR	587	41.8386111	-122.0138889	1940

QUARTZ HILL	40239	State	SKU	MFR	587	41.5997222	-122.0152778	4238
ROUND MOUNTAIN	40221	FS	MDF	MFR	590	41.4272222	-121.0075000	5258
RUSH CREEK	40312	FS	MDF	MFR	590	41.2880556	-120.0144444	4800
SAWYERS BAR	40222	FS	KNF	MFR	586	41.3011111	-123.0019444	2192
SLATER BUTTE	40225	FS	KNF	MFR	585	41.8586111	-123.0058333	4670
SOMES BAR	40231	FS	SRF	MFR	586	41.3900000	-123.0080556	920
TIMBER MOUNTAIN	40306	FS	MDF	MFR	590	41.6294444	-121.0047222	4960
VAN BREMMER	40243	FS	KNF	MFR	589	41.6430556	-121.0130556	4928
WEED	40228	State	SKU	MFR	588	41.4788889	-122.0075000	2930
ARROYO_SECO	44301	FS	LPF	MTR	522	36.2300000	-121.0080556	980
BARNABE	42308	L Gov	MRN	MTR	559	38.0280556	-122.0116667	810
BEN LOMOND	43809	State	CZU	MTR	549	37.1316667	-122.0027778	2630
BIG ROCK	42310	L Gov	MRN	MTR	559	38.0394444	-122.0094444	1500
BIG SUR	44302	FS	LPF	MTR	521	36.2355556	-121.0130556	450
BLACK DIAMOND	43008	L Gov	EBY	MTR	547	37.9500000	-121.0147222	1600
BRADLEY	44303	State	BEU	MTR	523	35.8644444	-120.0133333	540
BRIONES	43010	L Gov	EBY	MTR	547	37.9341667	-122.0019444	1450
CALAVERAS RD	43405	L Gov	SCU	MTR	547	37.5530556	-121.0138889	1230
CORRALITOS	43802	State	CZU	MTR	550	36.9911111	-121.0130556	450
DIABLO_GRANDE	43502	State	SCU	MTR	546	37.3291667	-121.0047222	1850
FORT ORD 2	44321	BLM	BBD	MTR	521	36.6269444	-121.0130556	490
HASTINGS	44319	State	BEU	MTR	522	36.3888889	-121.0091667	1824
HAWKEYE	42010	State	LNU	MTR	559	38.7816667	-122.0152778	2000
HERNANDEZ	44409	State	BEU	MTR	524	36.3830556	-120.0141667	3752
HOLLISTER	44406	State	BEU	MTR	523	36.8422222	-121.0058333	423
HUNTER LIGGET	44317	FS	LPF	MTR	522	36.0116667	-121.0038889	1100
LAHONDA	43304	State	CZU	MTR	549	37.3052778	-122.0041667	425
LAS TRAMPAS	43009	L Gov	EBY	MTR	547	37.8338889	-122.0011111	1760
LIVERMORE	43406	State	SCU	MTR	547	37.7119444	-121.0133333	800
LOS ALTOS	43912	L Gov	SCU	MTR	549	37.3580556	-122.0022222	645
LOS GATOS	43913	L Gov	SCU	MTR	549	37.2027778	-121.0155556	2000
LOS VAQUEROS	43013	L Gov	SCU	MTR	547	37.7883333	-121.0122222	1100
MALLORY RIDGE	43011	L Gov	SCU	MTR	547	37.8172222	-121.0127778	2040
MT DIABLO	43012	L Gov	SCU	MTR	547	37.8672222	-121.0150000	3849
OAKLAND NORTH	43402	L Gov	EBY	MTR	550	37.8652778	-122.0036111	1300
OAKLAND SOUTH	43403	L Gov	EBY	MTR	550	37.7836111	-122.0025000	1000
PARKFIELD	44310	State	BEU	MTR	524	35.8988889	-120.0069444	1535
PINNACLES	44410	NPS	PIP	MTR	524	36.4708333	-121.0022222	1322
POLE_MTN	42008	State	SNU	MTR	562	38.5000000	123.1199999	2204
POVERTY	43914	L Gov	SCU	MTR	550	37.4430556	-121.7705560	2350
PULGAS	43309	L Gov	CZU	MTR	549	37.4750000	-122.0047222	644
ROSE PEAK	43404	L Gov	EBY	MTR	547	37.5019444	-121.0122222	3060
SANTA RITA	44408	BLM	BBD	MTR	524	36.3477778	-120.0097222	5000
SANTA ROSA	42009	State	LNU	MTR	559	38.4788889	-122.0116667	560
SPRING VALLEY	43308	L Gov	CZU	MTR	549	37.5625000	-122.0072222	1075
WOODACRE 2	42309	L Gov	MRN	MTR	559	37.9905556	-122.0105556	1400
FISH CREEK MTN.	45802	BLM	CDD	PHX	232	32.9902778	-116.0011111	760
SQUAW_LAKE	45801	BLM	CCD	PHX	310	32.9077778	-114.0077778	300
ASH VALLEY	40726	BLM	SUD	REV	572	41.0519444	-120.0113889	5100
BEAR FLAT	40313	FS	MDF	REV	590	41.2952778	-120.0050000	5889
BENTON	43708	FS	INF	REV	518	37.8430556	-118.0077778	5450
BLUE DOOR	40725	BLM	NOD	REV	572	41.0547222	-120.0055556	5615

BOGARD	40703	FS	LNF	REV	598	40.5980556	-121.0011111	5686
BRIDGEPORT	43702	FS	HTF	REV	576	38.2719444	-119.0047222	6650
BULL FLAT	40728	BLM	NOD	REV	572	40.4808333	-120.0016667	4395
CRESTVIEW	43709	FS	INF	REV	518	37.7450000	-118.0163889	7600
DOG VALLEY	41302	FS	TYF	REV	450	39.5619444	-120.0005556	5976
DOYLE	40724	BLM	CDD	REV	450	40.0266667	-120.0016667	4240
GORDON	40730	FS	LNF	REV	598	40.7586111	-120.0147222	6200
GRASSHOPPER	40721	State	LMU	REV	598	40.7827778	-120.0127778	6050
HORSE LAKE	40727	BLM	NOD	REV	572	40.6305556	-120.0083333	5100
JUNIPER CREEK	40308	BLM	NOD	REV	572	41.3322222	-120.0077778	4372
LAUFMAN	40709	FS	PNF	REV	599	40.1416667	-120.0058333	4800
MARKLEEVILLE	42802	FS	TOF	REV	576	38.6833333	-119.0127778	5501
MEYERS	42607	FS	TMU	REV	542	38.8488889	-120.0002778	6310
PIERCE	40915	FS	PNF	REV	598	40.2461111	-120.0105556	5811
RAVENDALE	40714	BLM	NOD	REV	572	40.7308333	-120.0050000	5298
ROCK CREEK	43710	FS	INF	REV	518	37.5513889	-118.0111111	7040
STAMPEDE	41310	FS	TNF	REV	541	39.4833333	-120.0011111	6600
WALKER	43707	FS	TYF	REV	576	38.5652778	-119.0075000	5440
ALPINE FIRE STATION	45701	FS	CNF	SGX	509	32.8344444	-116.0122222	2053
AMMO DUMP	45738	DOD	MCP	SGX	508	33.3813889	-117.0047222	1068
ANZA	45616	State	RRU	SGX	513	33.5550000	-116.0111111	3920
BEAUMONT	45617	State	RRU	SGX	510	33.9305556	-116.0155556	2680
BELL CANYON	45735	L Gov	ORC	SGX	509	33.5416667	-117.0097222	700
BIG PINE FLAT	45102	FS	BDF	SGX	511	34.3194444	-117.0000000	6861
BURNS CANYON	45125	BLM	CDD	SGX	516	34.2083333	-116.0102778	6000
CAMERON FIRE STATION	45704	FS	CNF	SGX	513	32.7211111	-116.0075000	3443
CAMP ELLIOTT	45714	DOD	MFD	SGX	508	32.8591667	-117.0016667	539
CASE SPRINGS	45731	DOD	MCP	SGX	508	33.4452778	-117.0069444	2320
CLARK TRN CTR	45624	State	RRU	SGX	509	33.8766667	-117.0050000	1720
CMP TARGET RANGE	45732	DOD	MPC	SGX	508	33.3722222	-117.3589000	917
CONVERSE	45105	FS	BDF	SGX	511	34.1941667	-116.0150000	5618
CORONA_FIRE STATION	45618	FS	CNF	SGX	509	33.8750000	-117.0088889	620
CRANSTON	45603	FS	BDF	SGX	512	33.7402778	-116.0138889	1950
DESCANSO FIRE STA	45707	FS	CNF	SGX	513	32.8572222	-116.0102778	3555
DEVORE	45113	State	BDU	SGX	510	34.2211111	-117.0066667	2080
EL CARISO FIRE STA	45619	FS	CNF	SGX	509	33.6472222	-117.0066667	2730
FAWNSKIN	45101	FS	BDF	SGX	511	34.2661111	-116.0147222	6900
FLORES	45733	DOD	MCP	SGX	508	33.2888889	-117.0072222	100
FREMONT CANYON	45736	L Gov	ORC	SGX	509	33.8080556	-117.0116667	1781
GOOSE VALLEY_FIRE ST	45724	FS	CNF	SGX	509	33.0741667	-116.0138889	1530
JULIAN	45708	State	MVU	SGX	513	33.0758333	-116.0097222	4240
KEENWILD	45604	FS	BDF	SGX	513	33.6666667	-116.0127778	4920
KENWORTHY	45605	FS	BDF	SGX	513	33.6178000	-116.6175000	4600
LYTLE CREEK	45108	FS	BDF	SGX	510	34.2338889	-117.0077778	2792
MILL CREEK	45109	FS	BDF	SGX	510	34.0836111	-117.0005556	2950
MORMON ROCKS	45114	FS	BDF	SGX	511	34.3175000	-117.0083333	3300
MT LAGUNA	45709	FS	CNF	SGX	513	32.8811111	-116.0069444	5760
OAK GROVE FIRE STA	45710	FS	CNF	SGX	513	33.3855556	-116.0130556	2752
PALOMAR	45740	FS	CNF	SGX	513	33.3516667	-116.0141667	5530

PINE HILLS FIRE STA	45711	FS	CNF	SGX	513	33.0163889	-116.0105556	3800
PINYON CANYON	456??	BLM	CDD	SGX	513	33.5778000	-116.4539000	4060
POTRERO	45730	State	MVU	SGX	513	32.6061111	-116.0100000	2350
RANCHITA	45729	State	MVU	SGX	513	33.2122222	-116.0083333	4180
ROCK CAMP	45111	FS	BDF	SGX	511	34.2880556	-117.0033333	4900
SAN MIGUEL	45737	FWS	TSR	SGX	509	32.6850000	-116.0161111	425
SANTA ROSA PLATEAU	45623	State	RRU	SGX	513	33.5286111	-117.0036111	1980
STRAWBERRY	45110	FS	BDF	SGX	511	34.2410000	-117.2470000	6150
TALEGA	45739	DOD	MCP	SGX	508	33.4780556	-117.0080556	1203
TEMESCAL FIRE STA	45611	FS	CNF	SGX	509	33.7625000	-117.0066667	1125
VALLEY CENTER	45734	State	MVU	SGX	509	33.2261111	-116.0163889	1370
VALYERMO	45423	FS	ANF	SGX	514	34.4455556	-117.0141667	3780
VISTA GRANDE	45612	FS	BDF	SGX	513	33.8370000	-116.8080000	4925
YUCCA	45112	State	BDU	SGX	516	34.1233333	-116.0066667	3260
ALDER SPRINGS	41101	FS	MNF	STO	595	39.6513889	-122.0119444	4555
ARBUCKLE BASIN	40632	State	SHU	STO	595	40.4377778	-122.0136111	1900
BALD MOUNTAIN	42603	FS	ENF	STO	538	38.9055556	-120.0113889	4613
BANGOR	41201	State	BTU	STO	596	39.3983333	-121.0066667	840
BEAVER	42601	FS	ENF	STO	538	38.4883333	-120.0052778	5000
BEN BOLT	42612	State	AEU	STO	552	38.6013889	-120.0155556	1500
BLUMTN	43203	FS	STF	STO	540	38.3400000	-120.3750000	6067
BROOKS	42202	State	LNU	STO	558	38.7194444	-122.0022222	360
BUCK MEADOWS	43603	FS	STF	STO	539	37.8233333	-120.0013889	3200
CARPENTER RIDGE	41213	State	BTU	STO	597	40.0686111	-121.0094444	4812
CASHMAN	40916	FS	PNF	STO	599	40.0016667	-120.0150000	4447
CHESTER	40904	FS	LNF	STO	597	40.2897222	-121.0013889	4525
CHICO	41210	State	BTU	STO	596	39.7119444	-121.0127778	230
COHASSET	41211	State	BTU	STO	596	39.8700000	-121.0127778	1670
COLBY MTN	40801	FS	LNF	STO	597	40.1500000	-121.5330000	6004
CORNING	40814	State	TGU	STO	595	39.9388889	-122.0027778	294
COUNTY LINE	41410	BLM	NOD	STO	557	39.0188889	-122.0066667	2085
DUNCAN PEAK	41901	FS	TNF	STO	536	39.1438889	-120.0083333	7100
EAGLE PEAK	40802	FS	MNF	STO	595	39.9277778	-122.0108333	3713
ESPERANZA	43208	State	TCU	STO	539	38.2430556	-120.0083333	2512
GREEN SPRING	43613	State	TCU	STO	539	37.8330556	-120.0083333	1020
GRIZZLY FLATS	42613	FS	ENF	STO	538	38.6197222	-120.0091667	3760
HELL HOLE	42608	FS	ENF	STO	538	39.0716667	-120.0069444	5240
HIGH GLADE LOOKOUT	41402	FS	MNF	STO	595	39.2083333	-122.0133333	4840
JARBO GAP	41214	State	BTU	STO	599	39.7358333	-121.0080556	2490
KONOCTI	41411	State	LNU	STO	558	38.9136111	-122.0116667	2100
LADDER BUTTE	40723	FS	LNF	STO	597	40.8072222	-121.0047222	5750
LASSEN LODGE	40815	State	TGU	STO	597	40.3441667	-121.0116667	4100
LINCOLN	41907	State	NEU	STO	554	38.8825000	-121.0044444	200
MANZANITA LAKE	40609	FS	LNF	STO	597	40.5400000	-121.0094444	5660
MOUNT ZION	42701	State	AEU	STO	552	38.3894444	-120.0108333	2960
MTELIZ	43605	FS	STF	STO	539	38.0630556	-120.0038889	4933
OAK BOTTOM	40636	NPS	YNP	STO	595	40.6505556	-122.0100000	1422
OAK MTN	40635	FS	SHF	STO	593	41.0063889	-121.0163889	2670
OWENS CAMP	42611	FS	ENF	STO	538	38.7333333	-120.0038889	5240
PIKE CNTY LO	41701	FS	PNF	STO	599	39.4750000	-121.0033333	3714
PILOT HILL	42609	State	AEU	STO	552	38.8325000	-121.0000000	1200
PINCRS	43606	FS	STF	STO	540	38.1888888	-120.0002777	5600

QUINCY	40910	FS	PNF	STO	599	39.9733333	-120.0155556	3652
READER RANCH	41809	State	NEU	STO	535	39.3036111	-121.0019444	2025
REDDING	40611	FS/State	SHU	STO	595	40.5158333	-122.0047222	500
SACRAMENTO NWR	41102	FWS	MNF	STO	595	39.4172222	-122.0027778	120
SADDLEBACK	41304	FS	SHF	STO	536	39.6375000	-120.0141667	6670
SECRET TOWN	41808	State	NEU	STO	535	39.1836111	-120.0147222	2720
SEEDORCHARD	41908	FS	TNF	STO	536	39.0913889	-120.0119444	4355
SIMS	40618	FS	SHF	STO	593	41.0750000	-122.0061111	2400
SMITH PEAK	40911	FS	PNF	STO	599	39.8630000	-120.5260000	7688
SOLDIER MTN	40630	State	SHU	STO	593	40.9258333	-121.0097222	3710
STONYFORD	41503	FS	MNF	STO	595	39.3669444	-122.0094444	1257
SUGARLOAF (SHF)	40614	FS	SHF	STO	592	40.9166667	-122.0072222	3214
THOMES CREEK	40816	State	TGU	STO	595	39.8644444	-122.0100000	1100
WESTWOOD	40719	State	LMU	STO	597	40.3066667	-120.0150000	5800
WHISKEYTOWN HQ	40628	NPS	WNP	STO	595	40.6191666	-122.5341666	1311
WHITECLOUD	41806	FS	TNF	STO	536	39.3166667	-120.0138889	4320
WHITMORE	40615	State	SHU	STO	596	40.6202778	-121.0150000	2454
YOLLA BOLLA	40511	FS	SHF	STO	594	40.3383333	-123.0008333	4768
ZION	42701	State	AEU	STO	552	38.3910000	-120.6517500	2960
GOLDEN	45119	BLM	CDD	VEF	543	35.0000000	-115.6666666	4100
GRANITE MTN.	45124	BLM	CDD	VEF	543	34.5355555	-117.0258333	4720
HORSE THIEF SPRING	45129	BLM	CDD	VEF	543	35.7705556	-115.0150000	5000
LOST HORSE	45614	NPS	JOTR	VEF	543	34.0177778	-116.0030556	4200
MID HILLS	45128	BLM	CDD	VEF	543	35.1230556	-115.0066667	5413
MOJAVE RIVER SINK	45122	BLM	CDD	VEF	543	35.0530556	-116.0011111	950
OAK CREEK	44804	FS	INF	VEF	517	36.8425000	-118.0041667	4855
OPAL MOUNTAIN	45127	BLM	CDD	VEF	543	35.1541667	-117.0027778	3240
OWENS VALLEY	44803	FS	INF	VEF	517	37.3900000	-118.0091667	4640
PANAMINT	44806	BLM	CDD	VEF	543	36.1202778	-117.0013889	6880
SALT WELLS	45120	BLM	CDD	VEF	543	35.8333333	-117.5833333	2540
ANACAPA ISLAND						34.0158333	-119.0058333	277

APPENDIX G - Contact Information for WFOs and PSUs

NORTHERN CALIFORNIA PSU/ PREDICTIVE SERVICES UNIT

6101 Airport Road, Redding, CA 96002-9423

Web Site Address: <http://gacc.nifc.gov/oncc/predictive/weather/index.htm>

Office E-mail: redding.fwx@fire.ca.gov

SOUTHERN CALIFORNIA PSU/ PREDICTIVE SERVICES UNIT

2524 Mulberry Street, Riverside, CA 92501-2200

Web Site Address: <http://gacc.nifc.gov/oscc/predictive/weather/index.htm>

Office E-mail: riverside.fwx@fire.ca.gov

EUREKA NWS WEATHER FORECAST OFFICE

300 Startare Drive, Eureka, CA 95501-6000

Web Site Address: <http://www.weather.gov/eureka>

HANFORD/ SAN JOAQUIN VALLEY NWS WEATHER FORECAST OFFICE

900 Foggy Bottom Road, Hanford, CA 93230-5236

Web Site Address: <http://www.weather.gov/hanford>

LAS VEGAS NWS WEATHER FORECAST OFFICE

7851 Industrial Rd., Las Vegas, NV 89139-6628

Web Site Address: <http://www.weather.gov/lasvegas>

LOS ANGELES/ OXNARD NWS WEATHER FORECAST OFFICE

520 N. Elevar Street, Oxnard, CA 93030

Web Site Address: <http://www.weather.gov/losangeles>

MEDFORD NWS WEATHER FORECAST OFFICE

4003 Cirrus Drive, Medford, OR 97504

Web Site Address: <http://www.weather.gov/medford>

PHOENIX NWS WEATHER FORECAST OFFICE

PAB 500, P.O. Box 52025, Phoenix, AZ 85072-2025

Web Site Address: <http://www.weather.gov/phoenix>

RENO NWS WEATHER FORECAST OFFICE

2350 Raggio Parkway, Reno, NV 89512-3900

Web Site Address: <http://www.weather.gov/reno>

SACRAMENTO NWS WEATHER FORECAST OFFICE

3310 El Camino Ave, Room 227, Sacramento, CA 95821

Web Site Address: <http://www.weather.gov/sacramento>

SAN DIEGO NWS WEATHER FORECAST OFFICE

11440 W. Bernardo Ct, Ste 230, San Diego, CA 92127

Web Site Address: <http://www.weather.gov/sandiego>

SAN FRANCISCO BAY AREA NWS WEATHER FORECAST OFFICE

21 Grace Hopper Ave, Stop 5, Monterey, CA 93943

Web Site Address: <http://www.wrh.noaa.gov/mtr>

APPENDIX H - CWCG - NWS California Fire Weather Program Assessment Team

CHARTER

CWCG - NWS California Fire Weather Program Assessment Team

INTRODUCTION:

The California Fire Weather Program Assessment Team (FWPAT) is a joint California Wildfire Coordinating Group (CWCG) - National Weather Service (NWS) team. It is formed with the goal of maintaining and continuously improving a high quality fire weather and fire potential predictive program in California.

MEMBERSHIP: The FWPAT is comprised of:

- NWS Meteorologists in Charge (MIC) or representatives from Weather Forecast Offices (WFO) serving California
- NWS Western Region Headquarters fire weather program manager.
- Fire Managers representing the Wildland Firefighting agencies that make up the California Wildfire Coordinating Group
- Agency Meteorologists from the Predictive Service Units (PSU)

Team Leadership will rotate annually between the NWS and CWCG (or every other year if you wanted).

RESPONSIBILITIES:

The FWPAT will monitor the annual operations of the fire weather program in California, from both the NWS and the PSU. The goal is to ensure the fire weather program meets customer needs, as defined by the agencies in CWCG and the NWS. In this sense, the FWPAT will evaluate fire weather and fire potential products and services for California. FWPAT will recommend changes as appropriate, with the goal of continuous improvement to the annual operations of the program. These agreed upon changes should be outlined in the California Fire Weather Annual Operating Plan (AOP).

The team leader will be responsible for meeting management, including setting dates, location, agenda, documentation, and sharing minutes of the meeting with other members.

PROCEDURE:

The FWPAT shall normally meet bi-annually in the Spring and Fall, with the following purposes and responsibilities:

The NWS and CWCG will work to reach a consensus agreement on all matters related to the program. When an issue cannot be resolved by consensus, the issue will be brought forward to the Chairman of CWCG and Western Regional Director. Issues from the field user groups should be compiled and shared with FWPAT members prior to each meeting. Meeting minutes will be prepared within 30 days following the meeting and shared with FWPAT members.

If it is mutually agreed that insufficient issues exist to meet twice in a given year, a single annual meeting can be undertaken in the spring to complete the AOP. Similarly, if additional meetings are warranted they may be scheduled.

A. Fall Meeting:

The Fall meeting will evaluate the past season fire weather services from the PSUs and WFOs and, if necessary, recommend changes. Evaluation will include verification of routine products as well as red flag warnings, suggestions to improve training, IMET support and other “lessons learned”. The evaluation and recommendations shall be documented in the meeting minutes and shared with the FWPAT members no later than 30 days following the meeting. The report should be finalized by the team leader.

B. Spring Meeting:

The Spring meeting will review the planned operation of the fire weather program for the upcoming season, and decide if any changes recommended in the previous Fall meeting are appropriate. This will include a review of the WFOs and PSUs roles as they relate to a quality interagency working relationship. The NWS will provide the names of Incident Meteorologists (IMET), coordination procedures and other pertinent information regarding the fire weather program. The CWCG representatives will provide suggestions and comments on the program. Agreed upon changes will be reflected in the minutes of the meeting and in the AOP.

C. Open Communications

It is generally expected that meteorologists from PSUs and the WFOs will communicate openly when user complaints arise. Given the life threatening nature of fire weather and fire events this communication should be continuous and frequent during fire season and when critical fire weather is predicted to occur.

DEFINITIONS

Annual Operating Plan (AOP): A procedural guide which describes fire meteorological services provided within the forecast office(s) area of responsibility.

Fire Behavior: A complex chain-reaction process that describes the ignition, buildup, propagation, and decline of any fire in wildland fuels.

Geographic Area Coordination Centers (GACCs): GACCs act as regional focal points for internal and external requests not filled at the local dispatch centers.

Incident Meteorologist (IMET): A meteorologist specially trained to provide on-site meteorological support to emergency response agencies at designated incidents.

Red Flag Warning: Red Flag Warning is used to warn of impending or actually occurring critical weather conditions that could result in extensive wildland fire activity. A warning will be issued when the forecast time of onset is less than 24 hours. Red Flag Warning criteria will be defined in the AOP.

Routine Fire Weather Forecasts: A routine fire weather forecast is a scheduled forecast of weather parameters pertinent to fire management activities in support of protection of life, property, and resources at risk in a given area. These forecasts normally cover the next 48 hours and may include input for the computation of National Fire Danger Rating System indices. These forecasts may also include longer range outlooks.

Wildlands: Any non urbanized land not under extensive agricultural cultivation, e.g., forests, grasslands, rangelands.