Predictive Services

Predictive Services is an organizational concept incorporated at the Geographic Area Coordination Center and National Coordination Center. At the Southwest Coordination Center, the Predictive Services Section is referred to as the "Predictive Services Unit" and includes personnel from the Intelligence Operations Section, Fire Weather Program, and Fire Behavior Service Center (when activated). Each program section of the group works independently within their area of primary expertise, but overall works collaboratively to produce Predictive Services outlook products.

SWCC Predictive Services Unit: The primary mission of the SWCC Predictive Services Unit is to enable more proactive, safe, and cost effective fire management by providing integrated planning and decision support tools. Most of these tools focus on when and where significant fire activity will occur, which will require the use of high dollar national and regional shared fire management resources.

SWCC Predictive Services and Intelligence Staff:

Group Leader	Chuck Maxwell (meteorologist)	(505) 842-3419
RAWS Coordinator	Rich Naden (meteorologist)	(505) 842-3415
Intelligence Operations Coordinator	Jay Ellington	(505) 842-3874
Intelligence Support (INTS)	Detailer (as needed)	(505) 842-3870
Fire Behavior Analyst	Detailer (as needed)	(505) 842-3473

Intelligence Operations

Dispatch Center: The dispatch center is responsible for, but not limited to, providing the following intelligence related tasks within the dispatch area:

- Collection of daily wildland fire and prescribed fire information for units within their jurisdiction, and completion of the Dispatch Center Interagency Situation Report (see SIT Program below)
- Completion and/or coordination, as necessary, of Incident Status Summaries (ICS-209) for incidents and Incident Management Teams assigned within their dispatch area (see 209 Program below)
- Immediately notifying the SWCC should any of the following occur:
    - Incidents that require, or may require, an Incident Management Team
    - A large number of new wildland fire starts (i.e. major lightning activity resulting in large number of ignitions)
    - Any wildland fire activity or incident which may be politically sensitive.
    - Any wildland fire entrapment and/or fatalities. This will require submission of the Wildland Fire Entrapment Form (see Appendix 22).

- Significant accidents, major incidents, or fatalities (i.e. aircraft accidents, personal property loss, etc.).
- Major natural incidents other than wildland fires (i.e. tornados, floods, earthquakes, volcanic eruptions, etc.).
- Other intelligence related operations deemed necessary by the local dispatch center (i.e. WIMS, fuel monitoring, etc.).

SWCC: The SWCC Intelligence Operations Section is responsible for, but not limited to, providing the following Area-wide intelligence related tasks:

- Coordinate and manage the National SIT / 209 Program, FTP.NIFC.GOV, and National Fuel Moisture Database (NFMD) for the SWA.
- Download, assess, and disseminate WFDSS related products (i.e. FSPro, RAVAR, Incident Objectives, etc.) within sphere of influence.
- Act as the SWCC Business Lead to the ROSS Reports Management Board. Coordinate and develop ROSS/COGNOS reports, as necessary.
- Develop and maintain database systems for fire occurrence, firefighting resources, fuels, and fire danger.
- Collaborate with the SWCC Predictive Services – Fire Weather to incorporate resource demand activity on 7-Day Fire Potential Outlook and other fire danger products, as necessary.
- Provide briefings on fire activity and resource commitment to the center director, SWCC staff and detailers, Agency Administrators, MAC Group, SWCG, political representatives, and VIPs, as necessary.
- Develop new products and maintain ongoing Intelligence related products.
- Provide ongoing development, maintenance, and management of the SWCC and SWCG websites. Additional information pertaining to the SWCC and SWCG sites can be found in Chapter 10.

SWCC Intelligence Products: The following products are produced daily or weekly, and posted to the SWCC website.

- SIT Reports (Summary Reports – By Ownership / Protection)
- Daily Resource Summary
- Morning Intelligence Briefing
- ICS-209 Incident Location Map
- Prescribed Fire Location Map
- Southwest Anticipated Resource Demand (SWARD)
- MAC Group (Priority, Call-Around, Maps)
- NFMD Reports
- NFDRS Fire Danger Charts (i.e. ERC)
- Year-to-Date Reports (Resource Trends, Daily Fires/Acres, 209 Database)
- SWCC News & Notes
- ROSS/COGNOS Reports (Daily Incidents, Pending, Priority Trainees, IMT Rosters)

Integrated Reporting of Wildland-Fire Information (iRWIN): Instituted into the fire reporting environment in 2014, Integrated Reporting of Wildland-Fire Information (IRWIN) is focused on the goals of reducing redundant data entry, identifying authoritative data sources, and improving the consistency, accuracy, and availability of operational wildland fire data. This service is intended to provide an "end–to–end" fire reporting capability. IRWIN provides integrated data exchange capabilities between several existing applications used to manage incidents related to wildland fire. These systems currently include WildCAD (Ver. 6.0 only), FireCode, WFDSS, EGP, and SIT/209. Over the coming years, additional applications will be brought into the IRWIN environment.

Generally speaking, the first entries into the IRWIN environment are through the dispatch center. Thus, it's imperative that all dispatch centers be familiar with the purpose, function, and methodologies of IRWIN. To better understand the program, see Appendix 19.

FAMWEB - Fire and Aviation Management Web Applications: The Fire and Aviation Management Web Applications (FAMWEB) site provides application access for a number of specific fire related programs, including the SIT / 209 Program. The site is located at https://fam.nwcg.gov/fam-web/.

FAMWEB - User ID. In order to gain access to the SIT / 209 Program, a prospective user must have a distinct FAMWEB ID.

- For **NEW USERS**, click on the "FAMWEB" link located at the top of the left-side menu bar of the FAMWEB website and select "New User Accounts." Once on this page click on "Application Account" in the second paragraph and complete the application form. Once the form has been completed, contact the following to associate your new FAMWEB ID to the specific program:
  - **SIT / 209 Program -** contact the SWCC Intelligence Operations Section at (505) 842-3870 or 3874.
    - **Password**: A password is required for the SIT / 209 Program. This password is required to be changed every 60 – 90 days. If the account is not utilized anytime within a 90-day period, the account will go "INACTIVE." This will produce an "unauthorized user" page and change the user roles to "INACTIVE." If this occurs, contact the SWCC Intelligence Operations Section to have the roles re-activated.
  - **FireStat –** FireStat is a USFS only program and is managed for Southwest Area units by the Fire & Aviation Management Branch, SW Regional Office. To obtain access, re-set roles, change password, contact Harold Riggs, USFS R03/FAM at (505) 842-3894.
  - **Other FAMWEB Programs -** contact the FAMWEB HelpDesk at 1-866-224-7677.

- For **ACTIVE USERS** whom have a change of station, change of agency, etc, there is no need to create a new account. Simply, make the changes in your current profile (requires Logon to your FAMWEB account), then contact appropriate manager above to associate your profile with a specific dispatch center in the Southwest Area.

FAMWEB - SIT Program. Overall responsibility for management of the SIT Program for the Southwest Area belongs to the SWCC Intelligence Operations Section to include setting up accounts, monitoring dispatch center submissions, submitting a daily SWCC SIT Report, and troubleshooting issues. The dispatch center is responsible for collection of daily wildland fire and prescribed fire information for units within their jurisdiction, and submitting the daily Interagency Situation Report.

Reporting Requirements:

- April 1 to September 30: A SIT Report is required to be submitted daily, no later than 1800 (local time).
- October 1 to March 31: A SIT Report is due once per week on Thursdays, no later than 1800 (local time). Additional daily submissions will be required during this period if significant initial attack or large fire(s) (full suppression strategy only) occur, anytime a Type 1 or 2 Incident Management Team (IMT) is committed to an incident, or when fire danger for 50% of the units within the dispatch area are in the "Very High" to "Extreme" level.

Data Entry:

- Daily Fire Statistics: The Daily Fire Statistics tab is separated into two sections: "Protection" and "Ownership." Units listed in the top portion of the tab have "Protection" responsibility for the fires/acres to be entered. Once a "Protection" unit is clicked, the "Ownership" table appears below. In this table, enter all fires / acres for ownership of the land, where fire has burned onto. When data is "Saved" via the "Daily Stats" page, it automatically updates the "YTD Statistics" tab.
    - The Daily Fire Statistics tab is designed to report fire activity for the day of submission only. Should you miss a daily submission, follow the guidance below:
        I. If 2 or more days of reporting are missed or skipped, and the number of fires is below 10 and/or the number of acres is below 100, you can catch-up entries via the "Daily Fire Statistics" tab. However, please insert a statement in the "Remarks" tab indicating the days the "Daily Fire Statistics" covers.

II. If 2 or more days of reporting are missed or skipped, and the number of fires is above 10 and/or the number of acres is above 100, you will need to enter the data directly into the "YTD Statistics" tab.

- In addition to reporting fires / acres, enter the fire danger level, preparedness level, and total number of uncontrolled A-B-C fires for the submission period.
- Acreage from ongoing large fires (i.e. ICS-209 incidents / IMT incidents) does not rollover into the SIT Report program. It must be manually entered each day. If an IMT is assigned to an incident, a good rule of thumb is to wait for completion of the ICS-209 by an IMT and enter the change in acreage for each day.

- Planned Rx: This tab is not required to be completed in the SWA. It is optional.
- Remarks: Enter the preparedness level for the dispatch area, collectively. Enter any comments pertaining to fire activity, weather, or clarification for "Daily Fire Statistics" in the text block. The "On Call" block is optional.
- YTD Statistics: If data is entered daily in the "Daily Fire Statistics" tab, the "YTD Statistics" tab will be updated automatically. At times, you may have to catch-up data directly into the YTD Statistics page. If updates are completed on this tab, please note it is done by "Protection Responsibility," just like entering data for "Daily Fire Statistics."
- Incident Priority: This tab is available for the dispatch center or GACC (depending on rights to the program) to prioritize all fires within the dispatch / coordination area.

Reports: A number of reports can be generated for each Dispatch Center, including "Detail" and "Summary" reports. See online "SIT Program User Guide" for directions and procedures.

SIT Program User Guide: The "SIT Program User Guide" can be found online at: http://gacc.nifc.gov/predictive_services/intelligence/niop/programs/sit_209/Help/index.htm . Should you have additional questions above and beyond the User Guide, contact the SWCC Intelligence Operations Section.

FAMWEB - 209 Program: The SWCC Intelligence Operations Section has overall responsibility for management of the 209 Program for the Southwest Area, including facilitating access to the 209 Program, establishing procedures and protocols for the program in the SWA, and maintaining a database of all ICS-209s for purposes of analysis and GIS. The dispatch center has overall responsibility for initiation, updating, and finalizing of all ICS-209s within the dispatch area, and being the point of contact for all ICS-209's within a dispatch area. Turning the rights of the program over to agency personnel outside of the dispatch office (i.e. Incident Management Team, District

FMO/AFMO, Bureau FMO/AFMO, etc) is beneficial to reducing the workload in the dispatch center, however, the dispatch center must continue to oversee the updating and finalization of all ICS-209's in the 209 Program within their jurisdiction.

Reporting Requirements (By Strategy):

Full Suppression: For incidents where the strategy is deemed *100% Full Suppression*, an ICS-209 shall be initiated once the incident burns through 100 or more acres (Fuel Models 8-13 timber / slash), 300 or more acres (Fuel Models 1-7 grass / brush), or a Type 1 or 2 Incident Management Team is or will be assigned.

- Daily Submission: Once an ICS-209 has been initiated under this strategy, an ICS-209 will be submitted DAILY no later than 1800 (local time) until the incident has been declared 100% contained. Additional submissions (i.e. 2 or more per day, or beyond 100% containment) may be required if deemed necessary by SWCC, SWCG, or an Agency Regional/State Administrator.
- New Incident Submissions: It is imperative that an initial ICS-209 be submitted on the day an incident indicates it will meet the minimum threshold(s) (i.e. see above). For brevity, this initial ICS-209 need only have the required blocks on the form completed. Completing this initial ICS-209 early in the incident provides the intelligence needed at the NICC, SWCC, GMAC, etc.
- Assigning a Type 1 or 2 IMT to an incident:
  - (1) Until the IMT is in place and has assumed command, the dispatch center is responsible for initiating and updating the ICS-209
  - (2) If an IMT departs prior to 100% containment, daily submission of the ICS-209 will continue (i.e. by the replacing IMT, dispatch center, etc) until the incident is declared 100% contained.
  - (3) If an IMT remains assigned past the containment date, an ICS-209 will continue to be submitted by the IMT until the IMT transfers command.
  - (4) During the incident, the dispatch center is responsible for monitoring submission of the ICS-209 and for entering daily updated acreage changes into the SIT program.

- For significant re-ignitions after containment, updates are required daily until the incident is declared controlled.
- If a wildland fire meets the reporting requirements above, but is contained within one operational period, a "Final" ICS-209 can be submitted in lieu of an "Initial, then a Final."

Confine, Monitor, Point Protection, or a Combination: For incidents where the initial strategy is deemed *Confine, Monitor, Point Protection, or a combination* the following applies:

- (1) If the incident will be active beyond 72-hours from discovery and there will be ONE or MORE commitment of national resources (i.e. Type 1 or Type 2 IMT, Type 1 crew, or fixed wing or rotor wing aircraft – assigned in WildCad or ROSS), initialization and submission of the ICS-209 is required on the day the first national resource is assigned. Submissions will continue on a daily basis until the last national resource on the incident has been demobilized. At this point, submissions are due each Thursday no later than 1800 (local time) until the incident has been declared 100% contained or out.

- (2) If the incident will be active beyond 72-hours from discovery and there is NO commitment of national resources (i.e. Type 1 or Type 2 IMT, Type 1 crew, or fixed wing or rotor wing aircraft – assigned in WildCad or ROSS), initialization and submission of the ICS-209 is NOT required until the incident burns through 100 or more acres in timber or slash, or 300 or more acres in grass or brush. Should the incident reach this threshold, an ICS-209 will need to be initialized and submitted WEEKLY on Thursday no later than 1800 (local time) until the incident has been declared 100% contained or out.

Complexes: A Complex consists of two or more incidents managed by one Incident Commander. The following will apply:

- The Complex incident name shall include the word "Complex" and NOT be named from an existing incident (i.e., if West Fork is an incident to be within the Complex, DO NOT name the Complex "West Fork Complex").
- When a complex incident is created, determination of the need for a unique FireCode should be made in coordination with the Agency Administrator and the Incident Business Advisor, if applicable
- Incidents can be added to a Complex within the 209 program as either preexisting ICS-209 incidents or as individual iRWIN incident
- An existing ICS-209 incident must be "Finalized" prior to associating the incident to the Complex
- If an incident is removed from the complex, it may resume 209 reporting as an individual incident if appropriate, using normal ICS-209 reporting guidelines

Additional 209 Program Information:

- Should any of the following occur, daily submissions of the ICS-209 will be required:
  - (a) damage to values at risk (i.e. structures, infrastructure, etc.)
  - (b) a significant accident, injury, or fatality occurs

- (c) a forecasted critical weather event (i.e. high Haines, dry cold front, etc.) that may impact a or b above.

- For all incidents initiated in the 209 Program, a "Final" ICS-209 must be submitted. This can be completed by the IMT, responsible unit, or dispatch center, no matter the strategy.
- The ICS-209 form is available in MS Word (.doc) format for download. It can be found via the opening page of the SIT / 209 Program.
- The 209 Program User Guide can be found via the opening page of the SIT / 209 Program or online at: http://gacc.nifc.gov/predictive_services/intelligence/niop/programs/sit_209/Help/index.htm .
- Should you have additional questions above and beyond the User Guide, contact the SWCC Intelligence Operations Section.

Non-Wildland Fire Incidents: An ICS-209 is required daily for ALL non-wildland fire incidents such as floods, hurricanes, earthquakes, etc., where a significant number of resources (i.e. non-local resources required to manage an incident) and/or a significant commitment of national resources (i.e. Type 1 or Type 2 IMT, one or more Type 1 crews, and/or one or more fixed wing or rotor wing aircraft) are assigned.

Smoke Management Notification and Reporting in New Mexico: The SMP (Smoke Management Program) applies to all lands in New Mexico EXCEPT for Bernalillo County and tribal lands. These are outside the Environment Department's jurisdiction. The regulation and guidance document are on the NM Air Quality Bureau's Web site: http://www.nmenv.state.nm.us/aqb/SMP/SmokeManagementGuidance.htm.

For the purposes of the New Mexico Smoke Management Program (20.2.65 New Mexico Administrative Code (NMAC) – Smoke Management):

- For wildfires that are **managed fully under suppression**, a final fire activity tracking form is required as detailed in **20.2.65.105 NMAC**.
- **For all unplanned wildfire events that are managed in any part for multiple objectives** and are not managed fully (100 percent) for suppression, shall be registered with the New Mexico Air Quality Bureau as wildland fire use under SMPII Forests Registration. All applicable requirements for wildland fire use as stated in the regulation, shall apply to such fires. This includes the daily notification to the Air Quality Bureau by 10:00 a.m. of the status of the burn. This can be accomplished in one of three ways:
    1. Any burner may use the SMP Notification form.
    2. Any burner may submit a Wildland Fire Use form, which will be available on the NM Air Quality Bureau Web site.

3. Federal land managers may use Form ICS-209
(NOTE: Units that plan to use Form ICS-209 for reporting these fires to the NM AQB must understand that an ICS-209 will require daily submission from the start date through the date the fire is declared OUT. This is different from the current Federal Reporting Requirements for the ICS-209, which states initial reporting after 72 hours and updated submissions each subsequent Thursday.)

Smoke Management Notification and Reporting in Arizona: For the purposes of the Arizona Smoke Management Program, there is no daily or weekly notification requirement for wildland fires to the Arizona Department of Environmental Quality.

- **Smoke Reporting on the ICS-209**. On December 22, 2008, the Southwest Coordinating Group (SWCG) deemed it a requirement for the following information to be included in the text portion of Block 28 of the ICS-209 for all Arizona incidents**:**
  - A breakdown of the fire by fuel model (i.e. FBFM 1-13).
  - Total fuel load in tons per acre for each fuel model.
  - The intensity at which the fire is burning in each fuel model (i.e. low, moderate, high).

National - FTP.NIFC.GOV: The primary location for posting (uploading) and downloading intelligence data is on the NIFC FTP site (ftp.nifc.gov). In 2015, ftp.nifc.gov moved to a more secure location and system. This new system is still called ftp.nifc.gov and will use the National Enterprise Support system (NESS) Application Portal (NAP) for user management.

- It is not necessary for personnel who only need to download data from the GACC Incident Specific folder to establish a NAP account.
- All users are required to have a NAP account for uploading files to the GACC Incident Specific and GACC Support folders, and for downloading files from the GACC Support folder.
- All NAP account users are assigned to a “Group,” depending on the files need to be uploaded.
- Uploading files to the FTP site can no longer be completed using a browser it now requires the use of a FTP Program. Programs currently available are WinSCP, CuteFTP, CURL, WS_FTP, and FileZilla.

SWA - FTP.NIFC.GOV: Information on obtaining a User ID and accessing the SWA folders can be found via the SWCC website, “Intelligence Operations” page. Look under the header ftp.nifc.gov” and select “Southwest.” Within the Southwest Area

ftp.nifc.gov site, there are three folders established: (1) 2016 Incident Specific, (2) GACC Support, and (3) Other Support.

- 2016 Incident Specific: Location for files deemed to contain "non-sensitive" data, such as fire perimeter maps, GIS layers, IR data, etc. The data in this folder is downloadable by anyone, but does require a NAP User name and password for uploading files.
- GACC Support: Location for files deemed to contain "sensitive" data (i.e. IAPs, phone numbers, aviation assets, frequencies, Infrared, etc.). A NAP User name and password is required for uploading and/or viewing files.
- Other Support: A temporary location to place files for IMT's, dispatch centers, etc. If you have a need, contact the SWCC Intelligence Operations Coordinator directions on the use of this folder. Please note, this folder is viewable by the public, but requires a user name and password (see below) for uploading files.

Fire Weather

The "Southwest Area Fire Weather Annual Operating Plan" (AOP) is the official document to describe fire weather services in the Southwest Area. The Fire Weather AOP, available fire weather forecasts, and a variety of weather intelligence is available online via the "Weather" section of the SWCC Web site at http://gacc.nifc.gov/swcc/predictive/weather/weather.htm. The brief information here is only a guide.

National Weather Service

The National Weather Service (NWS) offices in Albuquerque, NM; Amarillo, Lubbock, Midland, and El Paso, TX; Phoenix, Flagstaff, and Tucson, AZ; and Las Vegas, NV, provides fire weather forecasts and services for their respective areas. Fire weather products and services provided by NWS are detailed in the Southwest Area Fire Weather AOP, which is updated each year on or about April 1. Contact information for NWS offices is in Chapter 70.

Southwest Area Predictive Services Group — Fire Weather Program

The Fire Weather Program element of the Predictive Services Group manages the interagency RAWS/NFDRS network, assists with wildland fire course instruction, provides liaison to the NWS fire weather program, engages in technology transfer, and provides consultation, briefings, and other fire weather support in both a routine and non-routine fashion. Extensive fire weather information and products are available on the "Weather" section of the SWCC Web site, and verbal consultation and briefings can be obtained by contacting the SWCC Predictive Services. Contact information for the SWCC Predictive Services is in Chapter 70.

Red Flag Warnings and Fire Weather Watches

Red Flag Warning - A Red Flag Warning is used to warn of an impending or unusually severe fire weather event. A Red Flag Warning will be issued immediately by NWS when the following combination of conditions is occurring or expected within 24 hours:

- 20 ft. wind speeds sustained > 20 m.p.h. or gusting consistently above 35 m.p.h.
- Relative humidity < 15 percent.
- NFDRS adjective fire danger ratings of “high” or greater.

When a warning is issued, the phrase **RED FLAG WARNING** will be in the headline of the routine forecast or short warning statement. The warning remains in effect until it is either canceled or it expires.

Fire Weather Watch - A Fire Weather Watch is used to alert the possible development of a significant fire weather event in the near future. A Fire Weather Watch is issued when the fire weather forecaster is reasonably confident that significant conditions may occur within the next 72 hours. When a watch is issued, the phrase **FIRE WEATHER WATCH** will be in the headline of the routine forecast or short warning statement. The watch remains in effect until it expires, is canceled or is upgraded to a warning.

The NWS may terminate the Red Flag Warning or Fire Weather Watch when conditions subside, or the warning/watch may be allowed to expire according to the timeframe indicated in the product.

Agency administrators are responsible for implementing a red flag alert based on actual local winds, burning conditions, hazards, fuel loading, and other associated risks, in combination with the Red Flag Warning or Fire Weather Watch issued by the National Weather Service.

Identification of red flag events are the responsibility of the National Weather Service forecast offices.

Spot Weather Forecasts

Site-specific spot weather forecasts for wildfires, prescribed fires, search and rescue, etc., are available upon request at any time from the National Weather Service (NWS). Consultation service is available for planning projects in which weather might be a factor.

Spot weather forecast requests are made to the appropriate NWS office using one of the following methods:

Primary – Use an NWS office’s Internet spot forecast request page.

Secondary – Complete and fax in backup Spot Forecast Request form (see appendix 20)

Last Resort – Phone in the request to the NWS office.

All NWS Web sites and phone/fax numbers can be found in Chapter 70. Additionally, NWS Web sites can be accessed from the fire weather portion of the ***Southwest Area Wildland Fire Operations - Fire Weather page at http://gacc.nifc.gov/swcc/***

A spot forecast request submitted by Internet or fax must be followed up by a phone call to the NWS to ensure receipt and timely processing. Spot forecasts from the NWS should be returned or made available to the requesting unit via the Internet, fax, or phone within 1 hour of the request. If this does not occur, call the NWS back to check on the status of the forecast. Experience has shown that you will receive better forecasts, and get them sooner, if you take care in giving complete information to the forecasters and maintain communication with them throughout the process. Fire management units in the Southwest Area are required to provide feedback on all non-suppression related spot forecasts. Consult the Southwest Area Fire Weather Operations Plan for complete information.

Ventilation Values

The National Weather Service offices routinely provide ventilation values for guidance in smoke dispersal. To help understand values, included below are the definitions of terms and limiting values.

Mixing Height - The height in feet to which relatively vigorous mixing occurs. NWS offices in the Southwest provide mixing height relative to feet above ground level (AGL).

Transport Wind Speed - A measure of the average rate of the horizontal transport of air within the mixing layer. Units in knots, i.e., 1 knot time 1.15 = m.p.h. A direction of the transport wind will also be given. When conditions approach the critical values, the direction will likely be light and variable. Thus in these instances, it may be best to consider the normal drainage winds.

Ventilation – The product of the mixing height and the transport wind speeds. It is a measure of the volume rate of horizontal transport of air within the mixing layer per unit distance normal to the winds. Units in knot-feet.

Critical Values – Ventilation categories for Arizona and New Mexico are included in the Southwest Area Fire Weather Operations Plan.

Temperature Inversion – A layer of air in which the temperature increases with height. That is a stable layer that inhibits vertical mixing of air parcels. An inversion near the surface may dissipate through the morning with surface heating; thus, promoting vertical mixing.

Predictive Services Products

National Fire Danger Rating System (NFDRS)

The National Fire Danger Rating System (NFDRS) is a multiple index system developed to provide information about current and predicted fire danger conditions. Research publication INT-39 (Deeming and others, 1977) describes the system in detail. All agencies in the Southwest Area use the NFDRS for computing daily and forecasted fire danger. Refer to the SWA Fire Weather Operating Plan regarding specific procedures for obtaining forecasted NFDRS fire danger indices.

Although NFDRS is not a SWCC Predictive Services product, the fire manager can use NFDRS to provide additional information for fire management activities. These include:

- **Preparedness** - Assure the availability and prepositioning of sufficient forces and equipment.
- **Suppression** - How many and what kind of resources to make an appropriate response based on conditions. NOTE: NFDRS is not a site-specific system. A Fire Behavior Predictive System (FBS) should be used to predict fire behavior at a fire site.
- **Prescribed Fire** - Use various components for planning and initial action decisions on prescribed fire. NOTE: As noted above, NFDRS is not a site-specific system and a FBS must be used for site-specific information.

Daily observations and forecasted values are posted to the SWCC Web site, Fuels/Fire Danger Web page.

NFDRS Fire Danger Chart

The SWCC uses the Energy Release Component (ERC) and Fuel Model G as the primary tracking tool for determining general fire suppression conditions in the Southwest Area, and to assist in determining the area preparedness level. Fuel Model G is used since it offers the greatest probability for determining fire potential in heavier fuel regimes. The following RAWS units are used to derive the chart:

NAME ID	OWNER	ZONE
Tusayan	020207 KNF	NAZ
Flagstaff	020209 COF	NAZ
Lakeside	020303 ASF	WMZ
Iron Springs	020501 PNF	CWZ

NAME ID	OWNER	ZONE
Globe	020601 TNF	CWZ
Saguaro	021202 CNF	SEZ
Truchas	290210 CAF	TAZ
Jemez	290702 SNF	SNZ
Grants	291302 CIF	ABZ
Mountainair	291501 CIF	ABZ
Beaverhead	292001 GNF	GLZ
Mayhill	293002 LNF	PEZ

Additional runs using the same RAWS units are also completed using Fuel Models A, C, and K, broken down by state, and separated by burning index (BI) and ERC. All of these charts, including the SWCC ERC chart above, are completed by the Intelligence Section and posted to the SWCC Web site on Tuesday and Friday afternoon throughout the calendar year. To view the charts, go to the “Fuels/Fire Danger” page. For additional information, contact the SWCC Intelligence Operations Section.

RAWS Unit NFDRS Charts

In addition to the SWCC NFDRS Charts stated above, individual RAWS Unit NFDRS Charts are produced to obtain a better picture for a localized area. Charts are created using Fuel Model G for the higher elevations and heavier fuel regimes and Fuel Model A in the lower elevations and the lighter fuel regimes. All of the RAWS Unit NFDRS charts are completed by the Intelligence Section and posted to the SWCC Web site on Tuesday and Friday afternoon throughout the calendar year. To view the charts, go to the “Fuels/Fire Danger” page. For additional information, contact the SWCC Intelligence Operations Section.

National Fuel Moisture Database (NFMD)

Wildland fire managers have recognized the strong influence that variations in live and dead fuel moisture content have on fire behavior. Fuel moistures help drive fire suppression staffing and funding decisions; guidelines for prescribed burning call for accurate values for the moisture content of fuels (USDI 2000). In 2007, the National Fuel Moisture Database (NFMD) at http://72.32.186.224/nfmd/public/index.php was developed to incorporate direct sampling and submission of the results. Sampling should be done at the beginning and middle of each month from at least March 1 through November 1, and submitted to the program each month. Units may elect to sample and submit data more frequently, or for a greater portion of the year, and all data received by the reporting due dates will be utilized and displayed on the SWCC Web site through the “Fuels/Fire Danger” page. For additional information, contact the SWCC Intelligence Operations Section.

Daily Fire Weather Graphical Outlooks

The Southwest Area Fire Weather Outlook is a graphical product that is issued twice daily during periods of increased fire danger or activity, usually from mid-April through July. It is issued and disseminated via the "Outlooks" section of the SWCC Web site at 1000 and 1700 MST/MDT during this time period. The product depicts a regional perspective of wind, humidity, and other significant fire weather elements each of the next 2 daytime operational periods in a manner intended for the enhancement of general situational awareness.

Southwest 7-Day Fire Potential Outlook

The Southwest 7-day Significant Fire Potential Outlook is a tabular/graphical product that is issued daily by 1000 MST/MDT during fire season (usually from mid-April through July) and on weekdays by 1100 MST/MDT during the remainder of the year. It is issued and disseminated via the "Outlooks" section of the SWCC Web site. The product depicts the risk for significant fire activity for each Predictive Services Area (PSA) through the next 7 days, with brown/orange/red colors indicating a moderate/high risk and green indicated near zero risk. The product is intended to depict when and where fire activity is likely to require a level of response beyond the capabilities of local suppression forces and, therefore, require the use of nationally or regionally shared resources. A national graphical composite of 7-day outlooks for the entire country can be viewed at http://psgeodata.fs.fed.us/forecast/. This link is also available via the "Outlooks" section of the SWCC Web site.

Monthly/Seasonal Significant Fire Potential Outlooks

The National Significant Wildland Fire Potential Outlook is a combined text/graphical product issued year round on or near the first business day of each month based on input from the GACC Predictive Services units. The outlook depicts the potential for significant fire activity for the following four month period. The product is available via the "Outlooks" section of the SWCC Web site.

The Southwest Area Monthly Outlook is a combined text/graphical product issued year round on or near the first of each month by SWCC Predictive Services. This monthly perspective of forecast significant fire potential contains more detailed and focused information than national outlook, including a specific graphic for the Southwest. The product is available via the "Outlooks" section of the SWCC Web site.

The Southwest Seasonal Fire Potential Outlook will be issued and updated monthly from January through May to assess significant fire potential specifically during the April through July timeframe that corresponds with the typical Southwest fire season. The intent is to begin framing the peak fire season in the Southwest early in the year, and to compare it to other years and normal levels of seasonal fire activity to assist with

preparedness activities. The outlook and outlook methodology are available in both video and presentation formats via the “Outlooks” section of the SWCC Web site.