Freezeout Fire

Long Term Action Plan

Okanogan-Wenatchee National Forest
Methow Ranger District

Northern Rockies #1
Interagency Fire Use Management Team
July 10, 2004

Table of Contents

Fire Name	**Freezeout**
Fire Number	**WA-OWF- 00248**
Administrative Unit(s)	**Okanogan National Forest, Methow Ranger District**

INITIAL FIRE SITUATION

Fire Name	**Freezeout**
Fire Number	**WA-OWF-00248**
Management Responsibility	**Okanogan/Wenatchee National Forest, Methow Ranger District**
Geographic Area	**Pacific Northwest**
Management Code	**P6A5RD**
Start Date/Time	**June 24, 2004 1820**
Current Date/Time	**July 1, 2004 15:12**
Current Size	**150 acres**
County:	**Whatcom**
Cause	**Lightning**

Management Objectives, Constraints

Natural and Cultural Resource Objectives and Constraints/ Considerations

Management Objectives:

1. Implement tactical and threat mitigation measures that provide for firefighter and public safety through application of the Risk Management Process.
2. Contain Freezeout Fire within the following geographic locations:
    - East of Ross Lake
    - North of Lightning Creek, along the ridge line between Skagit and Joker Mountain
    - West of ridge line from Joker to Castle Peak
    - South of crest of Boundary Creek watershed on U.S. side west to Canadian border and then northwest to ridge above Mowich Creek and then along internation border to west slope of Hozomeen.
3. Contain Freezeout Fire within the revised Alternative A perimeter of approximately 35,000 acres.
4. Limit loss to value of public improvements (including an historic cabin on Freezeout Creek, NPS Hozomeen improvements and facilities, NPS Lightning Creek Bridge, NPS Deer Lick Cabin, NPS Desolation Lookout) and resources and facilities across the international border (including Manning Provincial Park lodge and ski area, Silver-Skagit camping area and facilities and recreational use in upper Lightning Creek).
5. Minimize the impacts of suppression activities to bull trout habitat, spotted owl habitat and wilderness values by utilizing MIST tactics.
6. Manage the incident in a cost-effective and efficient manner commensurate with personnel and public safety and values to be protected.
7. Establish and maintain proactive fire information services to provide regular and accurate incident information to the public, media and involved agencies and cooperators.

Planning

Contacts

U.S. Forest Service Liaison with Canada

Position/Office	Name	Office #	Mobile #	Fax#
USFS, Region 6 Liaison with Canada	Jim Russell	503-808-2956	503-860-0199	503-808-2945

British Columbia Ministry of Forestry, Coastal Fire Centre

Position/Office	Name	Office #	Mobile #	Fax #
Forest Protection Officer	Rick Kimmerly	604-504-4707	604-795-0194	604-504-4707
Hope/Haig Fire Base Manager	Grant Preston	604-869-5835	604-869-8519	604-869-7386
Fire Behavior Specialist Contact	Brian McIntosh	604-485-2794	604-444-1205	604-485-2798
Superintendent Fire Protection	Jim Price	250-356-5402	250-812-8917	
Note: Rick, Grant, Brian and Jim may be mobilized to fires off their home units. If they are unavailable, contact the numbers below.				
Coastal Fire Centre Duty Officer		250-951-4204		250-954-0819
Coastal Fire Centre General Enquiries		250-951-4201		250-954-0819
Coastal Fire Centre Operations Duty Room		250-951-4200		250-954-0819
Note: The duty room should only be contacted for time sensitive operational activities such as requesting resources, requesting use of a helibase, etc.				

British Columbia Ministry of Water, Land and Air Protection

Position/Office	Name #	Office #	Mobile #	Fax #
Manning Provincial Park	Dave Goertzen James Hopkins	250-490-8279 240-490-8268	250-809-9331	250-490-2331
Skagit Valley Recreation Area	Jim Wiebe	604-824-2314		

Ross Lake National Recreation Area/North Cascades National Park

Position/Office	Name	Office #	Mobile #	Fax#
Fire Management Officer	Tod Johnson	360-873-4590 Ext. 28	360-391-2533	360-8730-4046

ACTION PLAN REVIEW AND REVISON THRESHOLDS

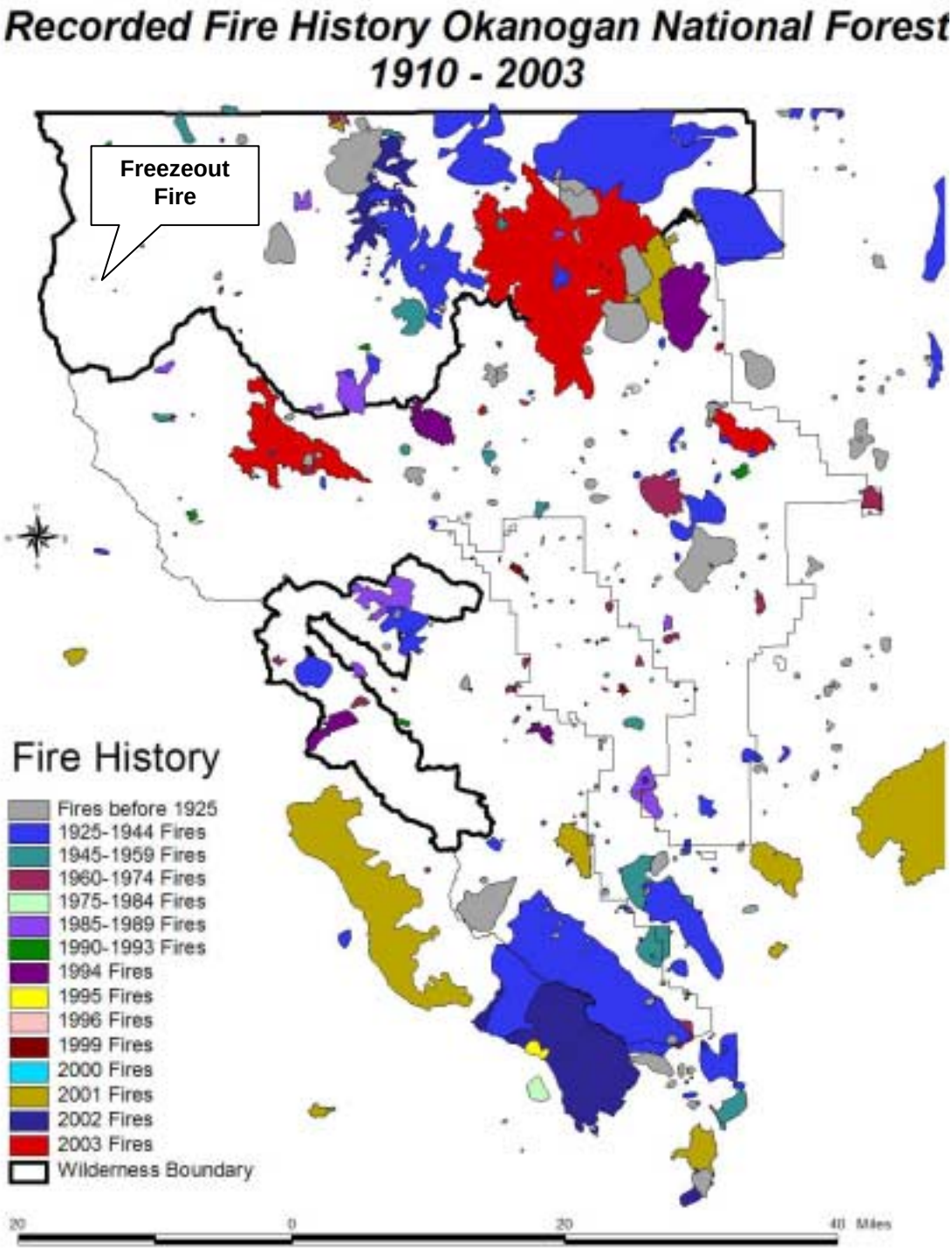
The following identifies criteria for review and revision of this plan:

- General review frequency:
  - ERC 0-40, weekly review
  - ERC 40+, daily review
- The Wildland Fire Relative Risk Rating and Incident Complexity Analysis should be completed by the District FMO and current Incident Commander prior to each change or transfer of command of management oversight of the fire. A significant change in relative risk or complexity indicates the need for careful review and probable revision of this action plan by the Incident Commander.
- United States, national or regional preparedness level is 4 or 5 or the British Columbia preparedness level is 4. These indicate probable resource availability limitations requiring the Incident Commander to closely review and/or revise trigger points and required resources.
- Any time the following thresholds are met, fire risk and growth should be reassessed by a Long Term Fire Analyst. See Long Term Implementation Actions section for more details. Based on the results of the reassessment, the Long Term Fire Analyst will provide a recommendation to the Incident Commander on the need to revise other components of the action plan.
  - If significant growth occurs over a period of 3 consecutive days
  - If the fire reaches Trigger Point 2 (Lightning Creek)
  - If the fire reaches Trigger Point 3 or 4

The Okanogan-Wenatchee National Forest has five standing Type 3 Incident Management Teams on rotation. Each team is comprised of the following:

- Incident Commander Type 3
- Safety Officer Type 2 or 3
- Operations - filled by individual with Division/Group Supervisor or higher qualifications.
- Finance – filled by individual with unit leader or higher qualifications

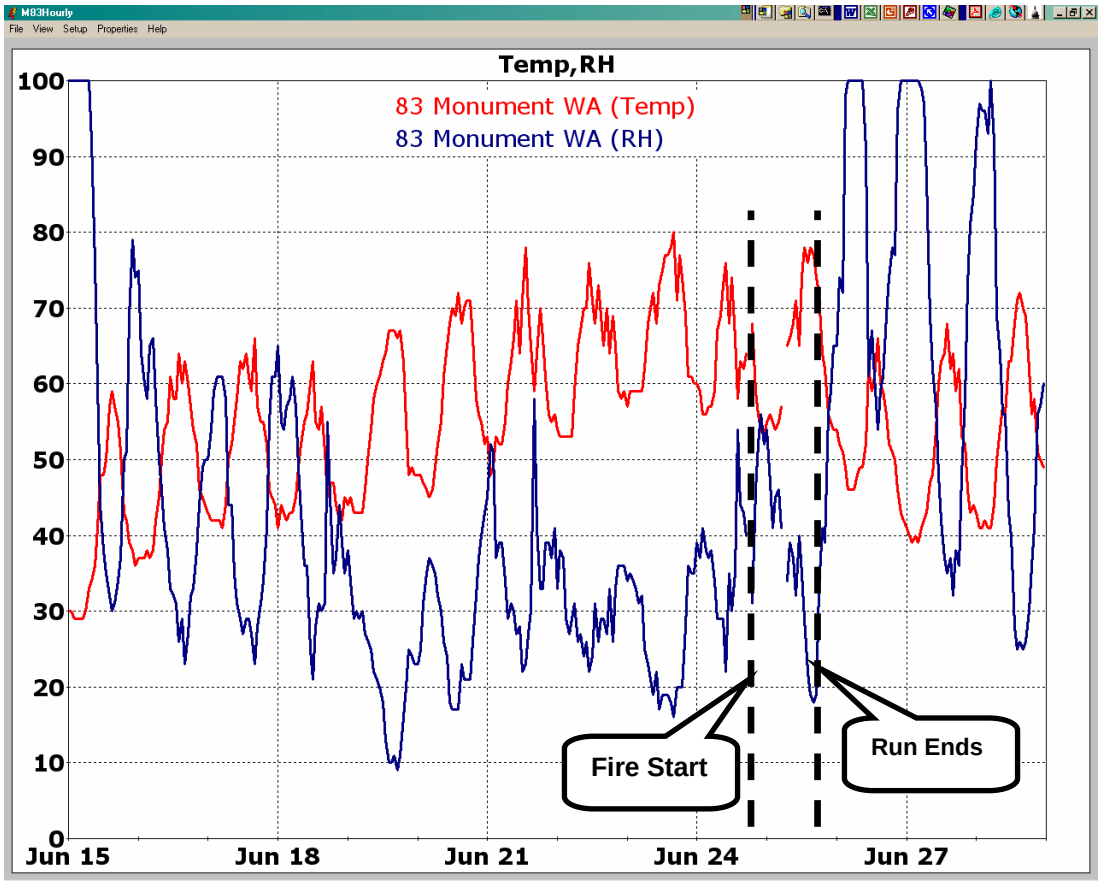
Fire Behavior Assessment



The Freezeout Fire is located in the Northwest corner of the Okanogan National Forest, in an area generally considered west side forests. Note the generally lower fire occurrence in the vicinity and also the infrequent large fire growth. One large fire not shown in this image is the Big Beaver fire that burned from Ross Lake into the Lightning Creek drainage through the gap south of Hozomeen Mountain in 1924.

Freezeout Fire Chronology

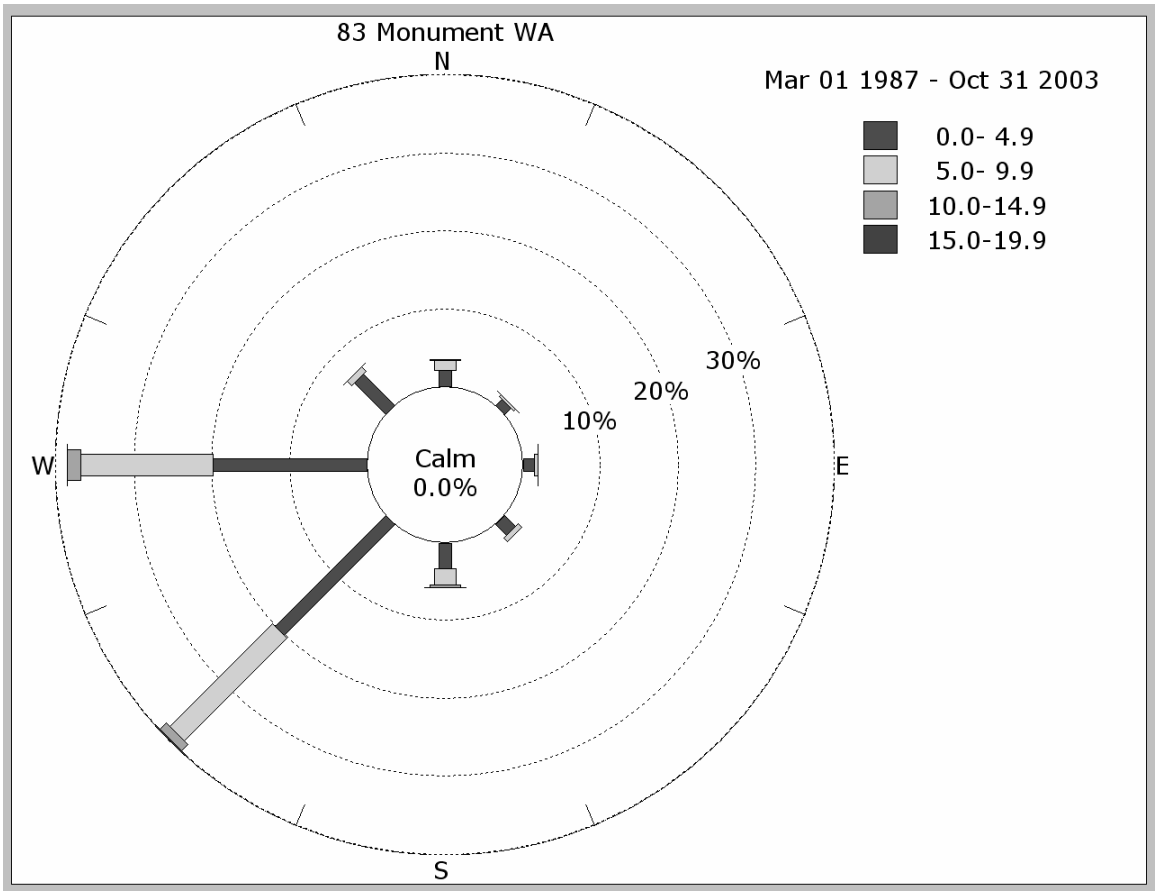
The Freezeout Fire occurred due to lightning strike(s) from thunderstorms passing over the crest of the Cascades. In all likelihood, the three separate fires were from separate strikes, with the source of the small spot less certain. Ignition was placed at 1800 on June 24th. The significant fire event occurred that evening and the next day on Friday, June 25th, when the fire grew to its current size, as of July 1st. On the evening of June 25th, a marine layer moved in and blanketed the bottom half of all three fires, essentially stopping fire movement. This marine air mass retreated on Sunday, June 27th, allowing fuels in the fire area to dry out, allowing the fire to become more active by Tuesday, June 29th, with some single and group tree torching noted at the bottom end of all three perimeters.



As shown by this temperature/humidity plot for the 83 Monument WA RAWS station, poor humidity recovery and increasing daily temperatures from June 15th through June 25th produced conditions favorable for fire spread on the Freezeout Fire on June 24th and 25th. Also shown is the effect of the marine air layer that settled over the fire on the evening of June 25th, after which it has shown little significant growth.

Topography/Terrain and Winds

Digital Elevation Model (DEM's) were used to produce 3D shadowing of the map, while USGS topographic quad's provided contour lines for determining slopes of specific line segments. Slopes on the fire are generally 60% or better. The drainages in the vicinity of the Freezeout fire (Lightning Creek, Freezeout Creek, Boundary Creek, and Mowich Creek) are steep, deep, and narrowly bisected. Being generally at the upper reaches of the cascades, they will be less influenced by gap winds and more influenced by diurnal slope and valley winds.



The closest RAWS station, 83 Monument WA, is approximately 15 miles east on a ridge at similar elevation. Based on afternoon observations over a 16 year period, the prevailing ridge winds are primarily West and Southwest. Also note that there are few examples of winds greater than 10 mph, up to 5% of the days during the fire season. There is also low expectation of east winds. The wind rose shows an easterly component with generally less than 10% of the observations and of those, less than 1% were above 8 mph. An East wind event would certainly encourage movement down drainage and toward Ross Lake.

Local Weather Data Sources

Historic weather data was obtained from two weather stations within 15 miles of the fire:

- 83 Monument WA is a RAWS station with hourly observations dating to the mid 80's. It is within 15 miles of the fire, though it is located on the east side of the Cascades, while the fire is on the west side of the crest. Analysis of weather observations from it and fire behavior on the Freezout indicate that it is still a reasonably good fit.
- Hozomeen is a manual NFDRS station that has daily readings dating to 1977, though it was abandoned in 2002. There are numerous breaks in the record so it could be used only in a supporting role. Indications are that it may not have been adequately representative of the area.
- Micro 4 FM Freezeou is a portable RAWS station that was established on July 4th for on site weather for the fire.
- Desolation Lookout, according to plan, is making 3 hourly observations between 1300 and 1500 when the lookout is staffed to accompany fire behavior observations from the lookout vantage point.

NAME	TYPE	INCLUDED YEARS	DAILY RECORDS
83 Monument WA	RAWS	1987-2004	5032
Hozomeen	NFDRS	1977-2002	2657
Micro4 FM Freezeou	Portable RAWS	7/4/2004 to Present	
Desolation Lookout	Weather Observer	7/3/2004 to Present	

Fuels Classification

Data Sources

Fuels were evaluated from two sources

- 25Meter Utah State Vegetation Classification of Okanogan National Forest and Colville Indian Reservation prepared by Tom Leuschen, a member of the US Forest Service Enterprise Team . Northern Cascades National Park Fuel Model classification derived from a PMR classification of vegetation.

Fuels Classification

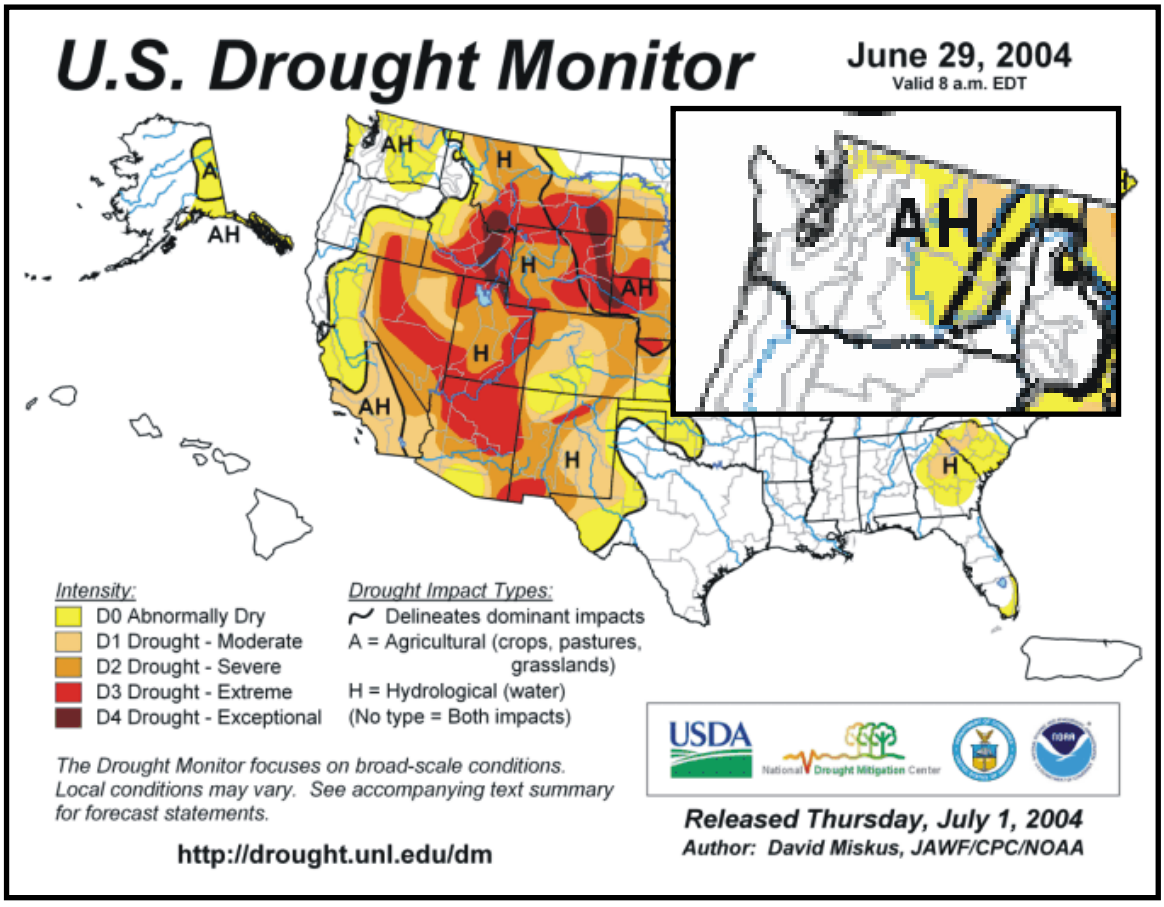
The general area around the fire consists of the following fuel models:

- Fuel Model 1 (Fuel Type O1a) is used to identify the alpine meadows dominated by sparse grasses and herb mixed with bare rock and soil at the highest elevations
- Fuel Model 5 (Fuel Type O1a) is used to identify the alpine shrubs that are associated with the alpine meadows classified as FM1
- Fuel Model 6 (Fuel Type M2) is used to identify the avalanche chutes that are covered by shrubs such as vine maple, Douglas alder, and willow. These shrub thickets range from 4 ft in height to 12 ft. There is some questions as to whether this accurately models fire behavior in these areas because of the high live fuel moisture content, especially early in the season.
- Fuel Model 8 (Fuel Type M2) is used to identify the high elevation Subalpine forests on the upper slopes of the fire. Most of what burned is classified as this.
- Fuel Model 10 (Fuel Type C2 or C3) is used to identify the majority of the fuels within the area of interest around the Freezeout fire. These lower slopes and drainages are dominated by Douglas fir with associates such as Western Hemlock, Western Red Cedar, and other true firs and spruces, There is some disagreement between the park classification and the forest classification about the fire behavior to be expected in these areas, with high live fuel moistures until later in the fire season and moisture in the drainages at the bottom of the slopes.

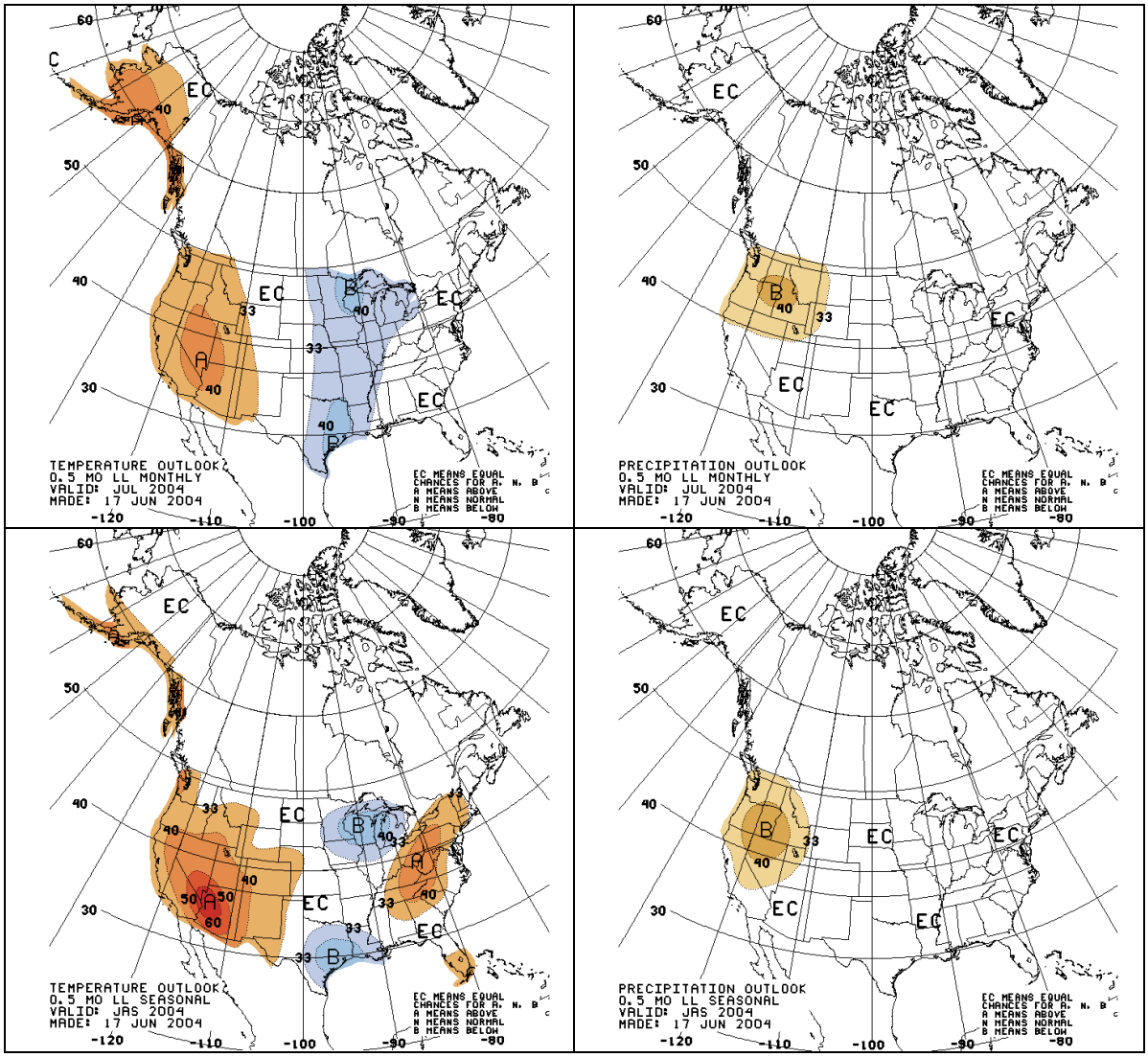
Weather Season/Drought Discussion and Prognosis

NWCC June 24th Fire Potential Assessment for July 2004

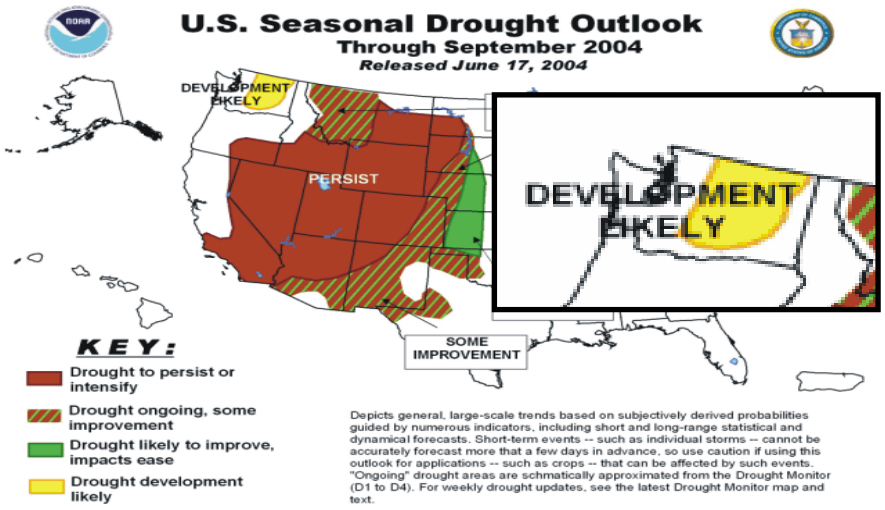
"Cool, showery weather in early June erased primarily agricultural dryness west of the Cascades, but the long-term drought picture remained in the PNW. Moderate long-term drought conditions exist in much of eastern Oregon and Washington. Severity indexes have responded rapidly to warm, dry conditions since mid-June with RAWS in the Okanogan-Wenatchee NF showing new daily records for energy release component (ERC) and 100 hour dead fuel moisture. With the probability of significant precipitation during the summer months dropping to near zero, these dry conditions look as though they will be around through the fire season. In the areas showing above average potential there is very little possibility of getting any relief, hence the growing potential for large fires in many areas in July."



The latest drought monitor assessment indicates that the fire area is already abnormally dry with the outlook for likely further development. Both the July (30 day) and July-Aug-Sept (90 day) temperature and precipitation outlooks indicate that there is a somewhat higher than normal probability for above normal temperatures and below normal precipitation.

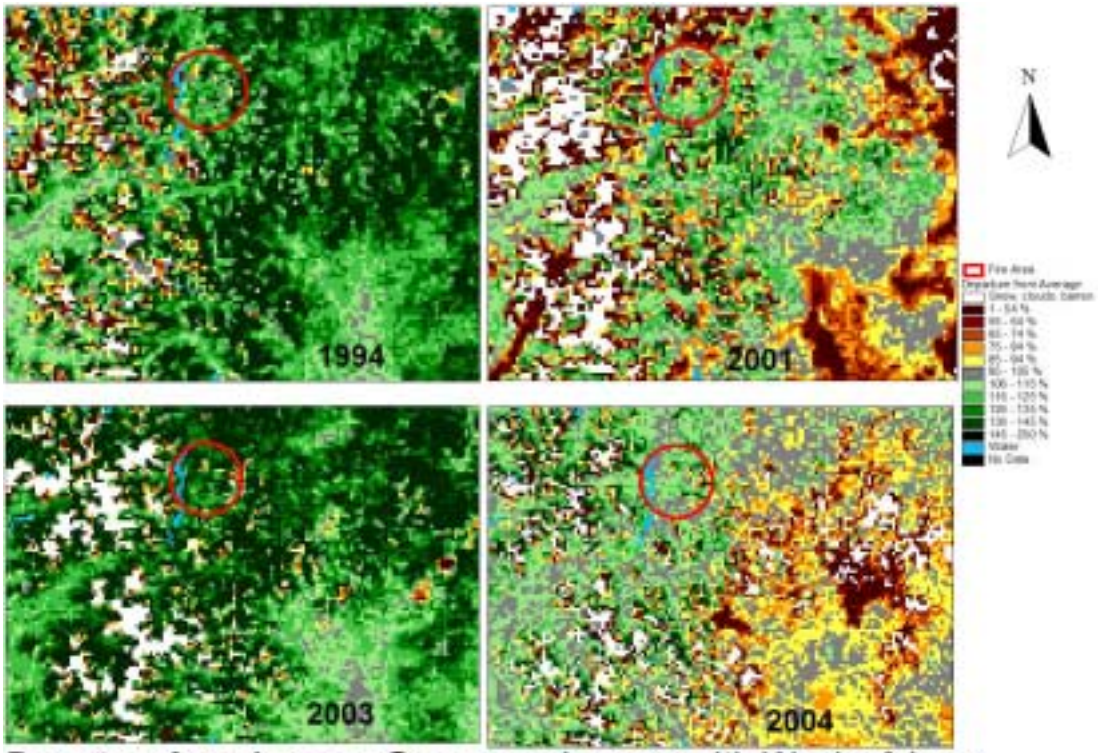


All this indicates that the early portions of the 2004 fire season should produce above normal fire potential both in terms of ignition and growth.



Fuel Moisture

Assessing potential fuel moistures at this early date is difficult because conditions throughout the rest of a long season cannot be established with any confidence. However long range assessments indicate that fuels should become somewhat drier than normal as we progress through the heart of the local fire season.



Departure from Average Greenness Images - 4th Week of June
Freezeout Fire Area

Departure from Average greenness images indicate that the live vegetation during the fourth week of June in 2004 is more or less at normal levels for this time of year in the immediate area around the fire. However, conditions are less green than the same period of time during 1994 and 2003, two significant years in the local fire history. The 2001 and 2004 images are somewhat similar.

Mature needle moisture samples taken the week of June 27th support that interpretation with values of approximately 120% falling within normal ranges for this time of year at lower elevations. Overall, in the northern cascades, snow melt moisture is still supporting live growth. Herbaceous and shrub fuels are retarding fire spread unless dry periods will support more intense burning in dead fuels. This condition cannot be expected to continue for much longer, certainly no longer than mid August.

At the time that the fire made its initial runs, unshaded fine fuel moisture was in the 3-5% range on the peak day of a 10 day dry spell. 100 hour fuel moistures were below normal levels, having already fallen below 10%. Direct measurement of 1000 hr fuels has just begun for the year, with the first readings showing median values of 15-16%, also below normal levels.

Modeled Fire Behavior

When conducting *FARSITE* and RERAP assessments of the fire, the following fire behavior assumptions were incorporated.

FM 1 (FT O1a)	Until these fuels have cured, we are considering them barriers to spread. Once these fuels have cured sufficiently later in the summer, there is potential for spread of up to 20 ft/min with flames generally less than three feet where there is sufficient continuity to carry a fire. However, because it is mixed with bare soil and exposed rock, spread rates will be intermittent in most cases, often spreading more often due to torching trees scattered through the type.
FM 5 (FT O1a)	These alpine shrubs retain much of their live fuel moisture until either later in the fire season or an extended hot/dry period cures them abnormally. Until then, they should be considered barriers to fire spread. Once sufficiently cured, they could support spread of 5-10 ch/hr with flames approaching 4 ft. Any scattered Subalpine trees scattered among this type could torch and enhance spread rates.
FM 6 (FT M2)	Early in the season, these avalanche chutes are considered barriers to fire spread. Even later in the season, because they are interspersed with FM 10, spread through them will generally be exceeded by typical spotting distances with upslope/upvalley winds. Expect slow flanking and backing behavior with spread rates less than 3 ft/min and flames less than 4 ft. Chutes with flowing water through them will resist cross slope spread.
FM 8 (FT M2)	Generally a slow spreading fuel model, fires that burn through these areas burn most aggressively with upslope runs in dry fuels that support torching and spotting. Head fire spread rates would be generally less than 5 ch/hr and flames less than 3 ft. These areas have difficulty backing and flanking, but with steep slopes, rolling material from established fire can still carry fire downslope and down drainage.
FM 10 (FT C2 Or FT C3)	Early in the season, live fuels will diminish spread until fine fuels fall below 7%. However, as the season progresses, these areas will be primarily responsible for carrying fire toward the areas of concern. Headfire on these steep slopes could reach 15 ch/hr with flames approaching 8 ft. This certainly would support group tree torching and even continuous crown fire, with spread rates in extreme cases exceeding 1 mph. Backing and flanking fire spread could be 1-2 ch/hr with flames generally less than 2 feet under favorable fine fuel moistures
Spread from Rollout	Though it is not possible to monitor spread from rollout, as long as the fire remains uncontained it remains an important source of potential fire spread, especially in FM 8 and FM10. With this rollout, expect head fire behavior as described above.
Spotting	With modeled winds, maximum spotting distances would be ¼ to ½ mile.

Fire Projections

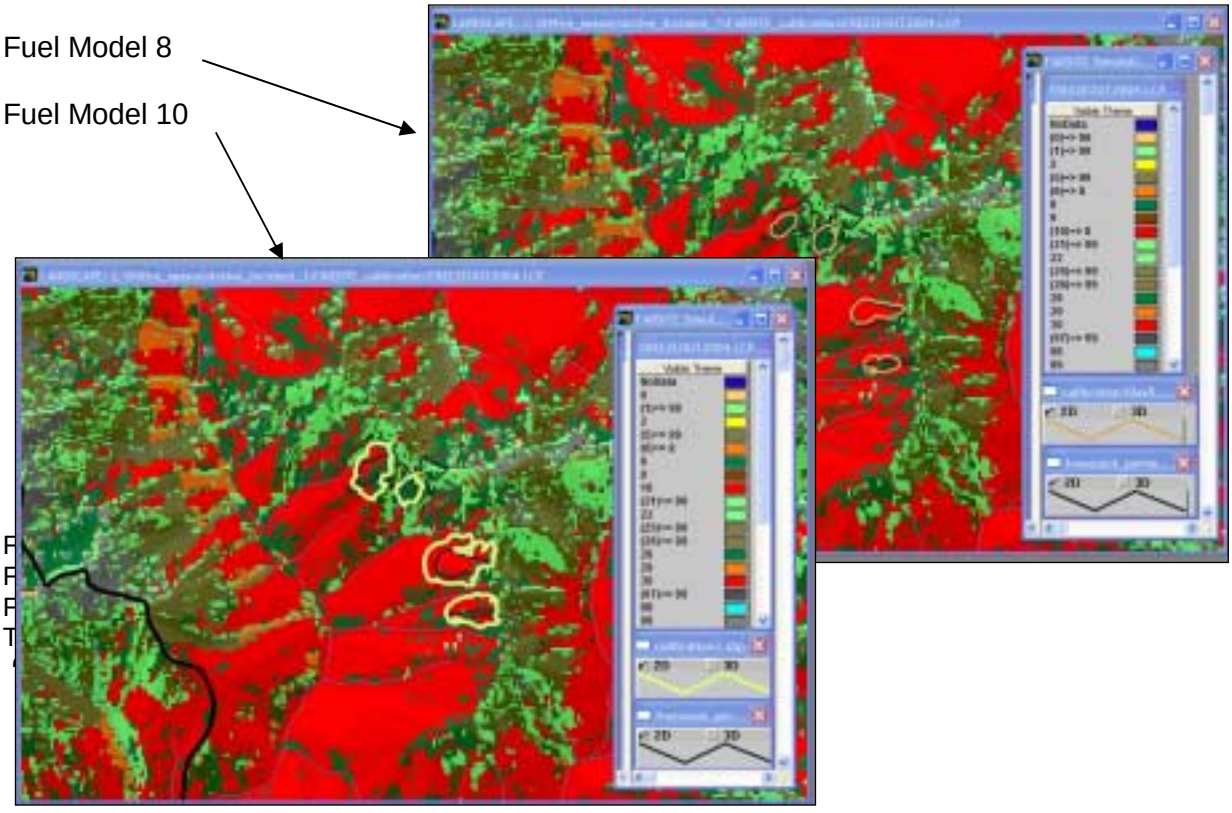
FIRE PROJECTIONS – Calibration

FARSITE (Fire Area Simulator) was calibrated by using the Freezeout fire perimeter and hourly weather observations from the Monument 83 RAWS station. As can be seen in the first image below (Figure 1), *FARSITE* projections over-predicts fire growth somewhat. Figure 2 shows a simulation with a conversion from fuel model 10 to fuel model 8, which slightly under-predicts fire growth. The following assumptions were used for these calibrations:

- The calibration simulation was run with weather and wind streams exported through FireFamily Plus using hourly weather from the Monument 83 RAWS for June 24th and June 25th.
- Fuel model 6 was converted to fuel model 8 because fire spread is expected to be slow through the avalanche chutes.
- All other brush models and grass models were converted to fuel model 99 (non-burnable) because high live fuel moistures are not allowing fire to spread in those fuels at this time.
- A burn period of 13:00 to 20:00 was used.
- The fuel moisture file was as follows: 1 hour = 5%, 10 hour = 6%, 100 hour = 8%, live herbaceous = 150% and live woody = 100%.
- No adjustments were made to spread rates, therefore the adjustment for all fuel models was set to 1.0.
- Ignition points (seen as white dots) were placed in what seemed like logical location given the spread of the fire.

Fuel Model 8

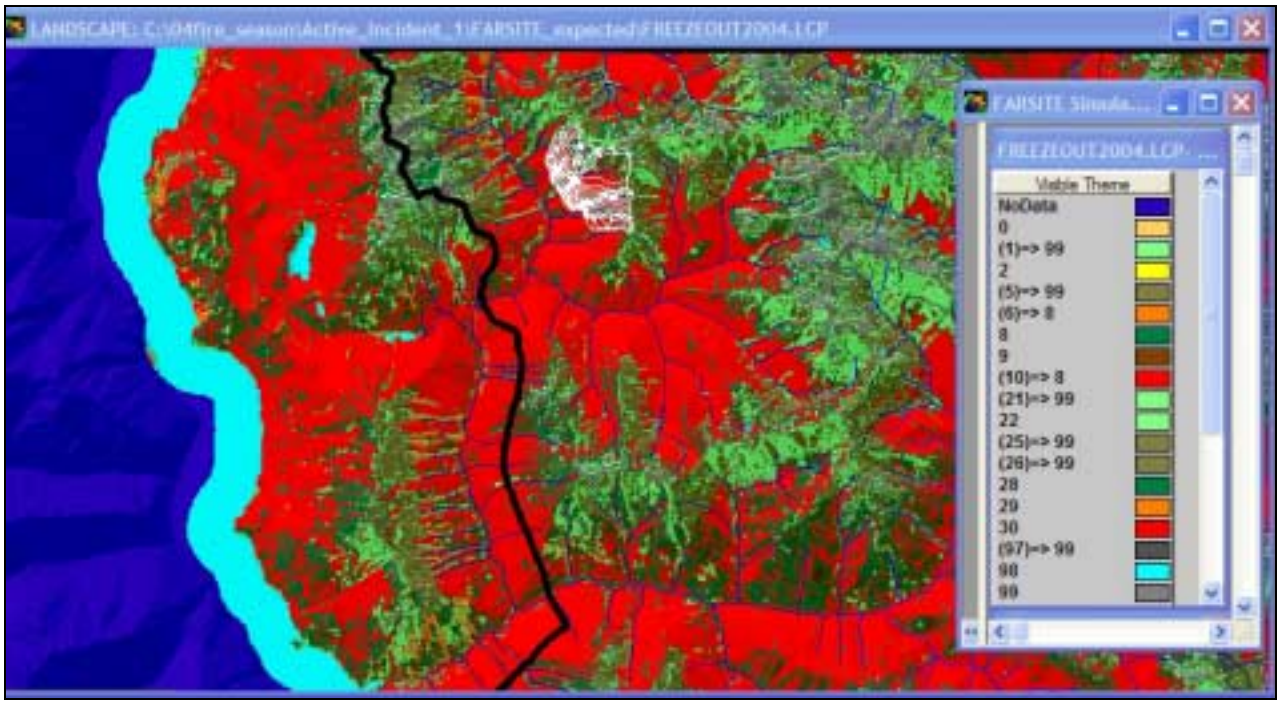
Fuel Model 10



"Expected" Fuel Model 8 Scenario

Fire spread was modeled over a 3 week period from June 30th through July 20th with principle movement to the south and west towards Freezeout and Lightning Creek drainages. Fire size reached approximately 700 acres in this simulation. The following assumptions were utilized for the "expected FM 8" conditions simulation:

1. This simulation was run under the same weather conditions as the "expected" conditions simulation: weather and wind streams developed using the 9 day forecast followed by 2001 hourly weather from the Monument 83 RAWS.
2. In the avalanche chutes with fuel model 6, the expected fire spread would be minimal. Therefore fuel model 6 was converted to fuel model 8.
3. All other brush models and grass models were converted to fuel model 99 (non-burnable) because fire is not carrying in those fuels at this time.
4. Local subject matter experts believe less Fuel Model 10 is present than is represented in the fuels layer, therefore Fuel Model 10 was converted to Fuel Model 8 for this "below expected" simulation.
5. At this time live woody fuel moistures are still high, to reflect this, live woody was set to 150%. The fuel moisture file used in this simulation contained the following fuel moistures: 1 hour = 5%, 10 hour = 6%, 100 hour = 8%, live herbaceous = 150% and live woody = 150%.
6. It was felt that during an "average" season, fire growth was probably only 5 hours per day. Therefore the burning periods were set from 15:00 to 20:00.
7. The perimeter of the middle fire was used as the ignition file.

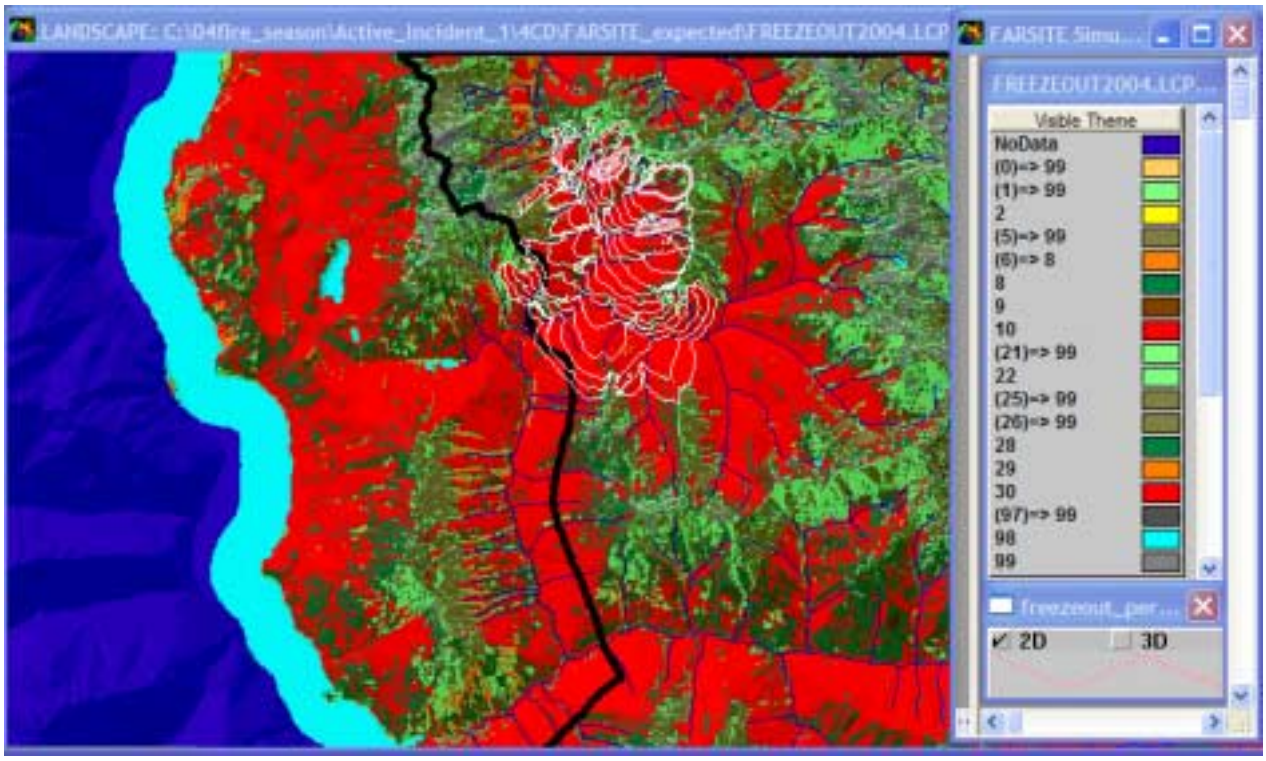


Three week "Expected FM 8" *FARSITE* simulation output for the Freezeout Fire.

"Expected" Fuel Model 10 Scenario

In this projection, fire spread is modeled over a 3 week period from June 30th through July 20th with principle movement to the south through the Lightning Creek drainage, reaching the park boundary on the south and establishing into the Freezeout Drainage. Fire size reached approximately than 3900 acres in this simulation. The following assumptions were utilized for the Expected conditions simulation:

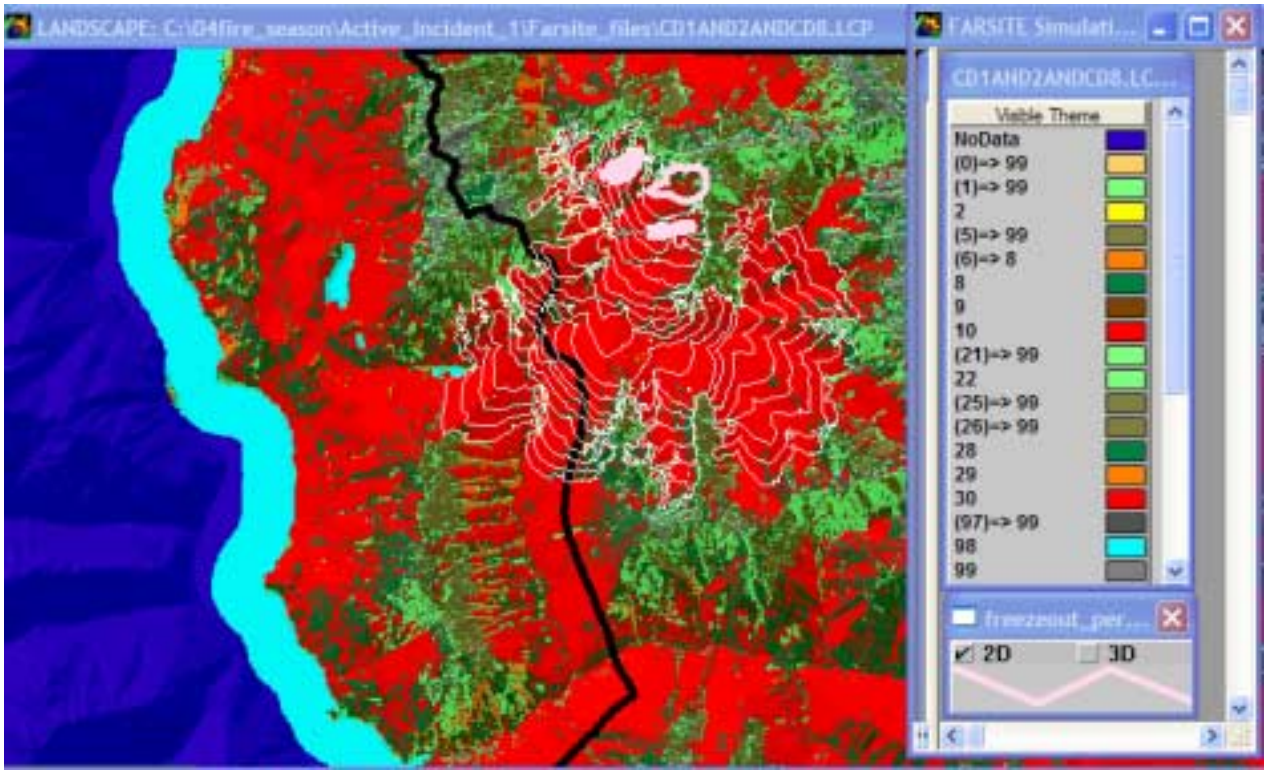
1. The simulation for expected conditions was run with weather and wind streams developed using the 9 day forecast as well as 2001 hourly weather from the Monument 83 RAWS. 2001 was chosen for this expected conditions simulation because that year seems to a close representation to 2004 weather.
2. In the avalanche chutes with fuel model 6, the expected fire spread would be minimal. Therefore fuel model 6 was converted to fuel model 8.
3. All other brush models and grass models were converted to fuel model 99 (non-burnable) because fire is not carrying in those fuels at this time.
4. The fuel moisture file was as follows: 1 hour = 5%, 10 hour = 6%, 100 hour = 8%, live herbaceous = 150% and live woody = 100%.
5. Burning periods were set from 13:00 to 20:00.
6. The perimeter of the middle fire was used as the ignition file.



"EXTREME" Scenario

In this projection, fire spread is modeled over a 3-week period from June 30th through July 20th with principle movement to the south through the Lightning Creek drainage, crossing the park boundary on the south and burning throughout the Freezeout Drainage to the south and east. Fire size reached approximately 9000 acres in this simulation. The following assumptions were utilized for the Expected conditions simulation:

1. The simulation for extreme conditions was run using 2003 hourly weather from the Monument 83 RAWS. 2003 was chosen for this extreme conditions simulation because that year set record high ERCs throughout most of the fire season.
2. In the avalanche chutes with fuel model 6, the expected fire spread would be minimal. Therefore fuel model 6 was converted to fuel model 8.
3. All other brush models and grass models were converted to fuel model 99 (non-burnable) because fire is not carrying in those fuels at this time.
4. The fuel moisture file was as follows: 1 hour = 5%, 10 hour = 6%, 100 hour = 8%, live herbaceous = 150% and live woody = 100%.
5. Burning periods were set from 13:00 to 20:00.
6. The perimeter of the middle fire was used as the ignition file.



FARSITE Assessment Conclusions

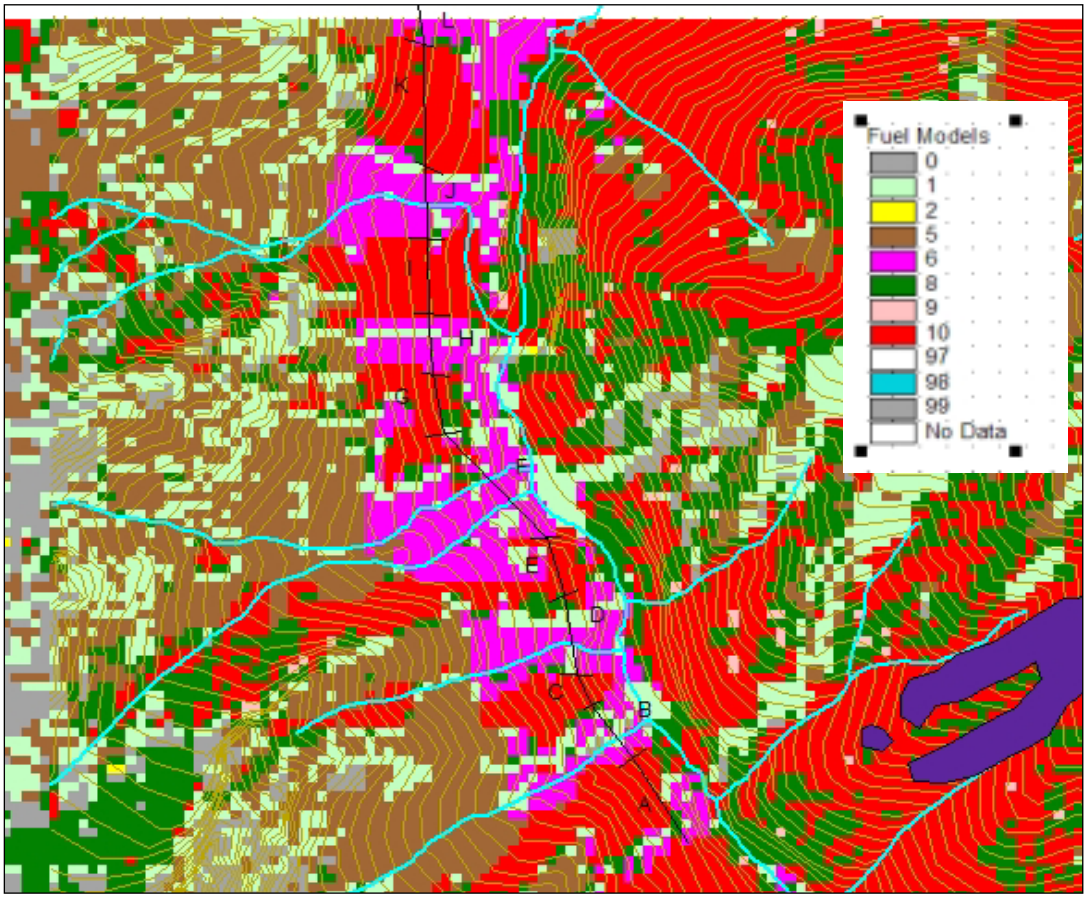
In all three simulations *FARSITE* projects flanking fire spread to the north until it runs into fuels with high live fuel moistures. Movement to the west downslope towards Lightning Creek as well as south towards Freezeout Creek occurs. Both the “Expected Fuel Model 10” and “extreme” scenario simulations project the fire to cross Lightning and Freezeout Creeks and move upslope south and west. On the Freezeout Fire, fire spread has sometimes been the result of burning debris rolling down steep slopes and then fire moving back upslope. *FARSITE* does not simulate fire spread from roll-out.

Long Term Risk Assessment (RERAP)

RERAP is a process that calculates the risk of long-term fire movement. It focuses on rare and significant fire spread events and fire-ending events. Both contribute significantly to the uncertainty in fire movement. In many environments it is the infrequent but significant fire spread event that poses the greatest source of uncertainty for predicting fire movement. Fires that move one or many miles in a day can travel great distances in some undesired direction. The uncertainty of the number of these events occurring over time often dictates much of the risk faced by fire managers. Uncertainty also surrounds the date that a fire or fire season might end due to weather factors.

Assessment Objective

Of greatest concern is the potential for spread to the north reaching the Canadian border. This assessment assumes that the fire, if not fully suppressed will likely fall to the bottom of the Lightning Creek Drainage and cross to the west side by the middle of the fire season.

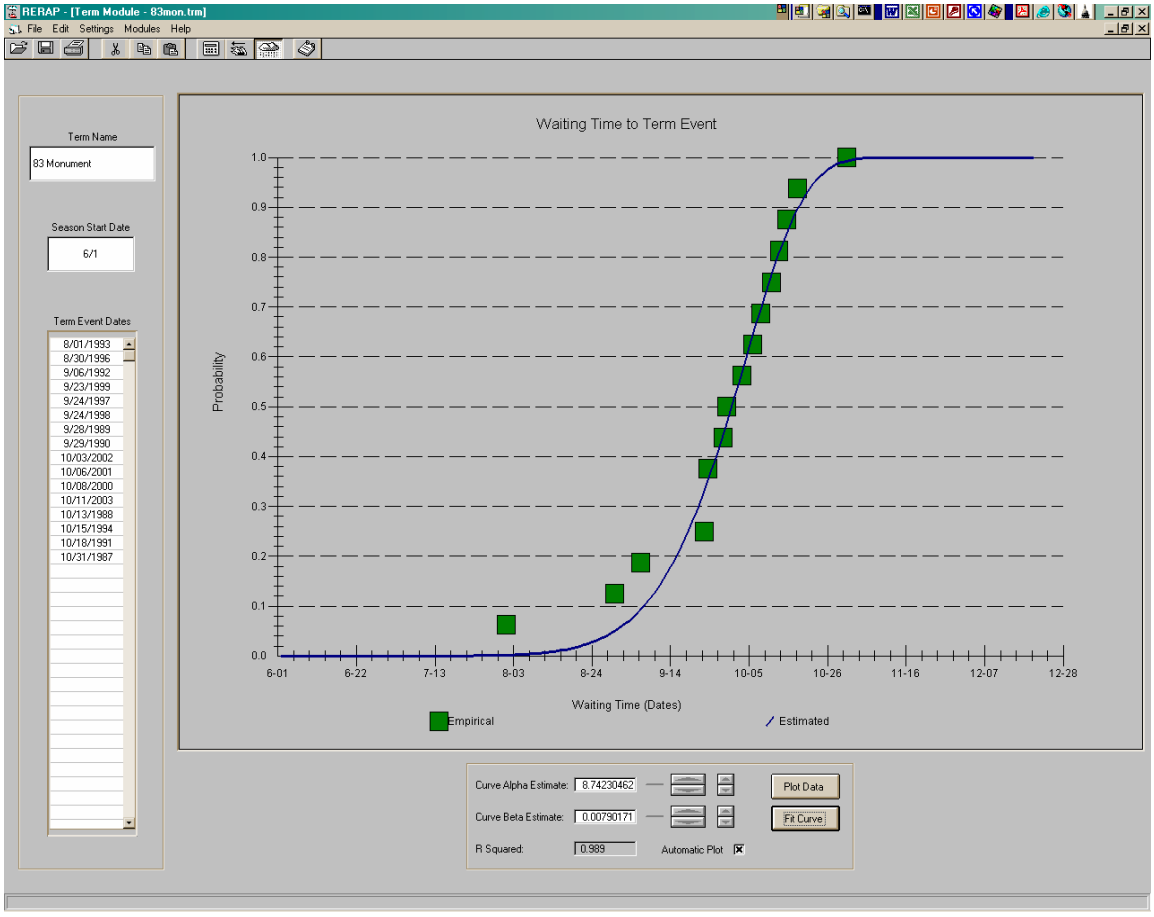


This fuels map shows the anticipated movement of concern north through the Lightning Creek drainage toward the Canadian Border. Brush fields (FM6-purple) are expected to transition from barriers to receptive fuels no later than August, even during normal fire seasons. However the assessment assumes significant torching and spotting upvalley when burning in the areas of fuel model 10 between the avalanche chutes.

Season ending events

Season ending dates were estimated by evaluating each year's ERC plot against historic trends and fire occurrence in the Twisp, Winthrop, and Methow Valley Districts of the Okanogan National Forest and the North Cascades National Park. Season ending dates were selected based on the ERC falling sharply at the end of the season without a subsequent rise above the 80th percentile. Significant fire activity after that date was used to adjust the dates if necessary.

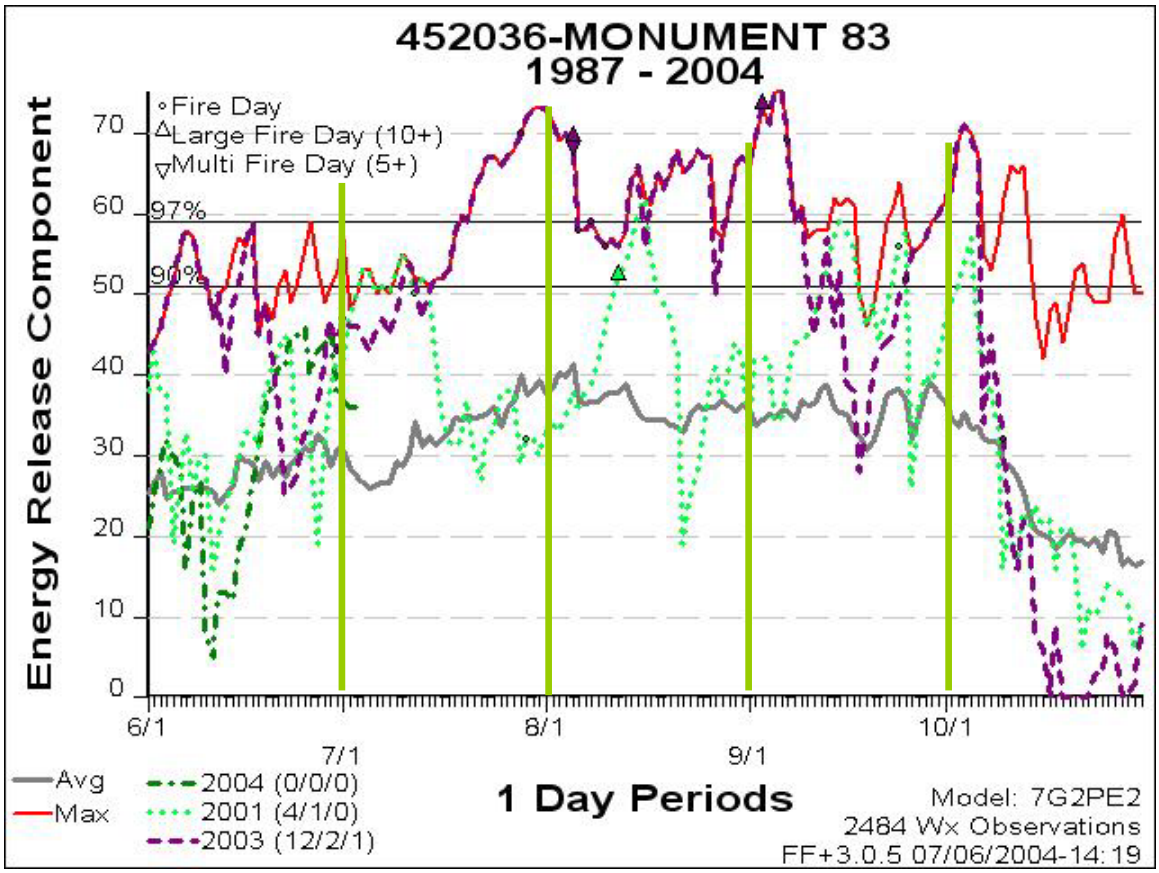
Season Ending Event By:	**Probability**
September 9th	10% Chance
September 20th	25% Chance
October 1st	50% Chance
October 10th	75% Chance
October 18th	90% chance
September 9th	10% Chance



There are a number of issues affecting the accuracy of the season ending assessment. The 83 Monument WA station includes only 18 years worth of usable data, and among those years 1995 and 1996 did not provide useful information. The Hozomeen manual station was used to evaluate those years.

Expected Fire Season Weather Severity

The ERC plot shown below shows the current season (green dashed line) with the historic maximum and average. Overlayed are the selected analog year (2001) and the extreme year, 2003, when ERC's set daily maximums throughout the fire season. 1997 produced an ERC track that more closely followed the average line without the peaks produced in 2001.



Based on ERC, the fire season was divided into 5 different time periods (June, July, August, September, and October) for the RERAP spread inputs. Note the declining trend of the average line during August. This indicates the potential for significant moderation in the weather conditions during the peak season. Of the 18 years examined at 83 Monument WA, 9 showed significant moderating periods in August, while the 2001 plot shown above shows at least 2 moderating periods during the peak season, in late July and late August.

Also note that 83 Monument received .63 inches of rain over 8 hours on June 29th and 30th, which was not noted by the Jumpers on the fire. Without it, the ERC would be somewhat higher.

Fire Risk Probabilities

As with the *FARSITE* simulations, three RERAP scenarios were considered:

- The EXPECTED FUEL MODEL 8 scenario assumed average weather conditions throughout the fire season and more FM 8 on the slopes. Based on that, Rare Event spread distances were held to generally ½ mile per day, occurring generally once every 20-30 days. Common daily spread was modeled at 1 ch/day or less.
- The EXPECTED FUEL MODEL 10 scenario assumed weather similar to 2001 during the initial July period, and normal conditions in August through October. It also assumes more Fuel Model 10 in the drainages.Based on that, Rare and Significant spread events were modeled to be approximately 1 mile per day, occurring generally once every 20 days. Common daily spread was modeled at 1 ch/day.
- The EXTREME scenario assumed weather similar to 2003 for the fire season. Based on that, Rare and Significant spread events were modeled to be approximately 1 ½ miles per day, occurring approximately once every 15-20 days. Common daily spread was still held to 1 chain per day.

The **assessment date** is the date at which the fire will start movement to the north through the Lightning Creek drainage. The **probability** is essentially the likelihood that the fire will reach the Canadian border before the end of the season without significant suppression action. These risk probabilities make the very important assumption that the fire will fall downslope and establish across the creek by the various Assessment Dates identified. If that probability could be modeled, it would be multiplied by each of these probabilities to identify the overall risk that the fire would reach the 49th parallel.

Assessment Date	PROBABILITY THAT FIRE WILL REACH THE 49th PARALLEL Once fire crosses Lightning Creek		
	Expected FM 8	Expected FM 10	Extreme
July 1st	.79	.99	.99
July 15th	.70	.93	.98
August 1st	.56	.82	.94
August 15th	.39	.67	.88
September 1st	.23	.46	.74

Fire Weather and Fire Behavior Summary

- Spread to the north toward the Canadian border presents the greatest risk to the current WFSA alternatives. As estimated by the RERAP, risk probabilities are significant for an unacceptable outcome, making Trigger Point 1 an important threshold for action.
- Spread to the south toward the park boundary and Freezeout Creek is also likely, though the timing and distance are less certain. Because there has been no on the ground verification of fuels in the Lightning Creek above Freezeout Creek, speculation about fuel conditions affect potential spread as shown by *FARSITE*. With favorable timber litter fuels as shown on the Fuel Model map, expect fire spread south, carrying the fire down the Lightning Creek drainage toward both targets.
- Much of the overall uncertainty associated with this assessment is whether the fire will eventually break out of its current location high on the east slope above Lightning Creek. Of the small number of fires in the area fire history, fires that remain high on the slope after the initial run are well represented.

Long-Term Implementation Actions

Fire Weather/Fire Behavior Monitoring

Daily:

- Review the daily fire weather planning and fire behavior forecasts whenever ground operations are contemplated or ongoing.
- Determine the Current and Forecasted ERC for 83 Monument (and Freezeout RAWS) and compare to action threshold
- Weather observation from Desolation Lookout
- Fire Behavior observation from Desolation Lookout or by Freezeout IMT reviewing webcam.
- RAWS weather observation from Freezeout Fire
- Forest Aerial Recon when Desolation Lookout not staffed before WebCam established and/or observations obscured by smoke from the fire.

Weekly

- NDVI Departure from Average Greenness Assessment for the Lightning Creek Drainage in the vicinity of the trigger points. Consult with Bobbie Bartlette on Friday of each week (rbartlette@fs.fed.us) and ask for a return phone call
- Consult with NWCC Meteorologist (503-808-2756 or 503-808-2760) about 10 day projections for Freezeout Fire. Calls at 1130 PDT are appropriate.

Monthly

- Review Drought Monitor (Produced on the 22nd of the month) and Seasonal Drought Outlook (produced on 17th of the month) and reevaluate incident risk rating
- Evaluate the validity of the ERC and BUI Threshold.

Special Ongoing Operations

- Modus imagery and Web Camera for Desolation Lookout to be provided by USFS Fire Research Laboratory and USFS Missoula Technology Development Center
- 100 hr, 1000 hr, and Live Fuel Moistures estimated from slopes above Willow Lake and/or above Lightning Creek along the trail to Freezeout Creek. Consider biweekly samples.
- Park FEMO to Desolation to train lookout in observations and to make observations when lookout not staffed until WebCam established at Lookout.
- For fireline operations at or north of the 49th Parallel, obtain spot weather forecasts and daily fire weather observations, CFFDRS Codes & Indices from Coastal Fire Center Meteorologist Dan Morrison (250-951-4206).

Fire Risk and Growth Reassessment

- When GIS information is received from British Columbia,
  - Have GIS Specialist prepare fuels layer information for entire area of concern using both US FBPS fuel models and CFFDRS fuel models. See Analogs in the fuels and fire behavior sections and consult with BC Fire behavior specialist through Coastal Fire Center.
  - Merge DEM's for entire area of concern.
  - Prepare themes needed for *FARSITE* and PROMETHEUS.
- If significant growth occurs over a period of 3 consecutive days, have a qualified fire behavior specialist **re-calibrate** *FARSITE*:
  - Determine areas of fire perimeter that are still hot and use these as ignition points
  - Re-evaluate best burn period file (.BPD) to be used from observations
  - Utilize best information possible for fuel moistures and update .FMS as needed
  - Prepare wind and weather files with long term (10 day) forecasted weather imbedded at the beginning of the files
  - Re-evaluate RERAP assumptions for Rare Event spread distance
- If the fire reaches Trigger Point 2 (Lightning Creek) and Trigger Point 9 (Hozomeen), have a qualified LTAN reassess fire growth and risk in conjunction with British Columbia Fire Control personnel. Contact Coastal Center to initiate involvement of provincial Fire Behavior Specialist:
  - Work with provincial Fire Behavior Specialist to produce PROMETHEUS fire behavior projection along with *FARSITE* projection with fuels and fire behavior from both systems
  - Conduct Fire Risk assessment with points of concern including the head of Mowich drainage and Strike Lake.
- If the fire reaches Trigger Point 3 or 4, have a qualified LTAN reassess fire growth and risk. Use:
  - Hot spots as ignition files for *FARSITE*
  - Observed burn period for *FARSITE*
  - Current live fuel moistures in .FMS for *FARSITE*
  - Forecasted weather for *FARSITE*
  - Re-assess long term risk for fire reaching Hozomeen Lake using RERAP.
- IF Current ERC-G for 83 Monument WA (Consider developing a SIG of Desolation, Freezeout Fire RAWS, and 83 Monument) is above 40 and/or the overall NDVI Departure from Average for the fire areas of concern remains 2 classes of departure from average conditions for 2 consecutive weekly periods:
  - review IR information from recon flight or MODUS image twice in one week and reevaluate need for IR
- Recommended subject matter experts to consult for reassessment:
  - Tom Leuschen – USFS Enterprise Team, *FARSITE*, RERAP
  - Dee Townsend, OWF – *FARSITE* & RERAP inputs (weather, burn period, spread rates, etc)
  - Jim Burdick, OWF – fuels and *FARSITE*
  - Tod Johnson, NCP – fuels/ veg and RERAP, etc.

All Fireline Operations

- If Haines Index to reach 5 or 6 and humidities expected to fall below 30%, indicating an increased potential for extreme fire behavior episodes, take actions to insure safety of fireline personnel. Beware that forecasting Haines in the North Cascades is very difficult.

Operations

Operational mitigation actions are designed to reduce and/or eliminate threats to the boundary and to public and firefighter safety; to delay, direct, and/or check the spread of fire, while minimizing adverse impacts to these lands. Identified locations on the ground, points in time, or specific meteorological situations represent management action points where or when mitigation actions will be initiated.

A variety of “Management Action Points” (MAP’s) or Trigger Points have been established within the fire area. These MAP’s will initiate responsive management action. These management actions include a variety of responses including increased fire information dissemination, increased pre-suppression activities, staffing and preparedness step-up, road and area closures, initiation of control actions, and other actions to achieve the objectives and provide for safety.

Some management actions described in the Wildland Fire Action Plan are ongoing and will continue until the cooperators determine that they are no longer necessary or until the fire is declared out. Other management action points and resulting mitigation actions identified have been completed and are so noted in the status for each MAP listed below. Those actions that are in process or have not been implemented but will continue to require evaluation during the remaining management of the complex are also noted. This includes actions to mitigate threats to the boundaries, threats to life and property, and threats to natural resources.

Operations – Current Activities

Current Activities	1. Use Smokejumpers to reconnaissance and sizeup of fire.	1. Completed 7/2/04
	2. Utilize Type 1 and Type 2 Helicopters to reduce heat and check spread of fire with spotting by field personnel.	2. Completed 7/1/04
	3. Utilize IR to assess effectiveness of helicopter activities & determine fire movement.	3. Freezeout - 7/9/04 Sunshine - 7/9/04
	4. Aerial reconnaissance for long term strategy and planning purposes.	4. Last flight done on 7/10/04
	5. Obtain portable weather station to put on fire.	5. Completed 7/4/04
	6. Assess Freezeout USGS cabin and mitigate by wrapping.	6. Completed 7/8/04
	7. Assess Stromberg and Nightmare structures (NOCA) for hazard mitigation	7. Completed 7/9/04
	8. Put NOCA FEMO on Desolation Peak to assist L.O.	8. Completed 7/8-10/04
	9. Use NOCA fire monitors on fire to assess fuels in Lightning Creek	9. Pending
	10. Locate Emergency helispots in the lower Lightning Creek drainage.	10. Completed 7/7/04
	11. Locate landing spots in the upper portion of Lightning Creek.	11. Pending

Operations – Future Implementation Activities

The future implementation of operational activities for the Freezeout Fire is dependent on the establishment of threshold values in ERCs to determine resource staffing levels on the fire. The threshold value established is 40. The rationale for using ERCs and in particular this number is threefold.

1. The GACC is modeling ERC on a ten day timeframe for each weather zone.
2. The 80th percentile for ERC is 45. Setting the threshold at 40 gives the Forest two or three days to obtain needed resources to implement the actions proposed.
3. During a "normal" year 71 percent of the days are below 40. During the year (2001) selected as the year most closely resembling 2004, 54 percent of the days were below 40. It is logical to expect that about 50% of the days will remain below the threshold value, thus requiring no resource commitment above the Low Potential level.

There are two levels of response.

1. Low Potential – When the ERC is below 40 and is on a level or declining trend. (**Does not** apply to temporary one/two day dips due to light precipitation events).
2. High Potential – When ERC is 40 or higher.

Incident Team Staffing Levels:
It is recommended that at the High Potential for Growth levels that any IMT3 team assigned have at a minimum the staffing required of a Okanogan-Wenatchee N.F. IMT3. Currently these are comprised of and ICT3, SOFR2/3, Operations of DIVS or higher and a Finance person that is qualified at the Unit Leader or higher.

Trigger Point	Low Potential for Growth	High Potential for Growth
1	- Maintain daily monitoring by Desolation Peak lookout and by daily forest fixed wing reconnaissance. - ICT3	- IMT3 + 2 monitors + helibase staffing. - Use T3 helicopter for recon. - Use a CWN T1 and T2 helicopters for bucket work to retard fire spread as needed.
2	At either low or high potential order a FUMT and a BC Forestry IMT. Coordinate FAS process and suppression activities. Decision point for BC Parks for area closure in Manning Park.	
2 (cont.)	- Maintain daily monitoring by Desolation Peak Lookout and by daily forest fixed wing reconnaissance. - Identify containment line to	USFS resources needed: - FUMT + FUM + helibase staffing. - Use T3 helicopter for recon. - Use a CWN T1 and T2

	north with Canadian assistance. - Initiate planning of containment line within North Cascades NP. - ICT3	helicopter for bucket work to retard fire spread as needed. - Canadian containment line activities as needed.
3	North Cascades National Park Decision Point to evaluate Lightning Creek Trail Closure and mitigation of Nightmare and Stromberg Structures.	
3 (cont.)	**NO CLOSURE** - Maintain daily monitoring by Desolation Peak lookout and by daily forest fixed wing reconnaissance. - ICT3	**CLOSURE** - FUMT + FUM + helibase staffing + FUM + Pack String. - T3 helicopter and module - Use FUM to monitor fire.
4	- Maintain daily monitoring by Desolation Peak lookout and by daily forest fixed wing reconnaissance. - ICT3	- IMT3 + FUM + pack string + T3 helicopter and module - FUM to monitor
5	- Maintain daily monitoring by Desolation Peak Lookout and by daily forest fixed wing reconnaissance. - ICT3	- Pull Desolation Peak Lookout off the mountain with T3 helicopter.
6	- Maintain daily monitoring by Desolation Peak Lookout and by daily forest fixed wing reconnaissance. - ICT3	- ICT3 team + FUM + pack string + cabin wrap + T3 helicopter and module - Wrap Deer Lick structure.
7	- Maintain daily monitoring by Desolation Peak lookout and by daily forest fixed wing reconnaissance. - ICT3	- ICT3 Team + FUM + pump kit, 1,000 feet hose & 4 sprinklers. + T3 helicopter and module - Protect Lightning Creek bridge w/ sprinklers. Use boat for transport.
8	At either low or high potential order a FUMT and a BC Forestry IMT. Coordinate FAS process and suppression activities. Decision point for BC Parks about area closure for affected part of Manning Park.	
8 (cont.)	- Maintain daily monitoring by Desolation Peak lookout and by daily forest fixed wing reconnaissance. - ICT3	US resources needed: - Order FUMT + FUM + Type 1, 2, 3 helicopters and crews + helibase mgr + FUM + one T1 or T2A crew + 3 engines + 5,000 feet hose. - Helicopters to hold fire at Hold Line and crews and engines to prep Hozomeen RS and CG for protection

9	At either low or high potential, prepare the avalanche chute on the west side of Mowich Creek and conduct aerial firing as needed. BC Parks decision point for area closure for affected portion of Manning Park. Use Trigger 2 resource list.
10	At either low or high potential order a FUMT and a BC Forestry IMT. Coordinate FAS process and suppression activities. US resources needed: - FUMT + FUM + helibase staffing. Use Type 3 helicopter for recon. - Use a CWN T1 and T2 helicopter for bucket work to retard fire spread as needed.
11	At either low or high potential, and firing activities from Trigger Point #9 fail, use fall back planning to contain fire within Mowich Creek drainage using appropriate aerial and ground resources from the Canadian FAS. BC Parks to initiate area closure for affected parts of Manning Park.
12	At either low or high potential, use aerial delivered firefighters and helicopter bucket drops to suppress any fire north of this line. US resources needed: aerial IA resources and helicopter

Costs – Projected

Note: Costs per day are only for US resources. Until BC Forestry conducts a FAS process, staffing needs for suppression activities north of the 49th Parallel will not be known.

Trigger Point	Low Potential Cost/Day	High Potential Cost/Day
1	$ 600.	$ 95,000.
2	$ 6000.	$ 95,000.
3	$ 600.	$ 15,000.
4	$ 600.	$ 15,000.
5	$ 600.	$ 1,500.
6	$ 600.	$ 15,000.
7	$ 600.	$ 15,000.
8	$ 600.	$ 85,000.
9	$6000.	$ 95,000.
10	$6000.	$ 95,000.
11	$600.	N/A
12	$600.	$ 5,000.

Helicopters – Locations of dip sites

1- Hozomeen Lake	48.96031° N x 121.03647° W
2- Sub Zero Lake	48.96246° N x 120.88114° W
3- Freezeout Lake	48.92642° N x 120.90355° W

Communications – Protocol

- Communications in North Cascades NP (NOCA) with Desolation Lookout will be thru the Ruby Repeater.
- Call NOCA fire dispatch prior to flights into the Park (i.e. plan to use Hozameen Ranger Station as helispot.
- Seattle City Light Co. uses a helicopter for flights in the Ross Lake Recreation Area. The Communications Center in the Park should have information if they are airborne.

Operations – Considerations

- Helibase at Marblemont allows space for approximately 4 helicopters (i.e. 2 lights and 2 mediums). Approximately 20 min. flight to Freezeout Cabin.
- Upper air flow over Ross Lake is generally to the NE whereas in the lower elevations it flows down drainage following the lake bottom. Inversions may not lift until late afternoon.
- Avalanche chutes with brush types of fuel varying in size of 4-12 feet (vine maple, alder, willow, and Douglas maple) will contribute to ground fire spread unless interrupted by a runoff stream. This fuel type does not generally contribute to spotting whereas the subalpine fir that runs parallel to the chutes will enhance spread by spotting.
- Helispot at Desolation Lookout will allow landing space for a Type 3 helicopter. The trail is also a means for departing the area. A useable campsite is near the lookout too.
- A Type 3 helicopter maybe able to land in the Lightning Creek drainage on gravel bars. Further assessment is needed.
- Chainsaw, water pump use is allowed within Ross Lake National Recreation Area when needed for the safety and efficiency of firefighters.

Trails, Campgrounds and Public Use

- Use permits are required for all hiking and camping in the Ross Lake National Recreation Area.
- Hozomeen Campground is a popular boat and hiking area. Designated camping permits are required.

- Public/Hunters access into the Pasayten Wilderness Area via Ross Lake NRA will increase beginning mid-September thru October during the high country deer hunt.
- Hozomeen Peak is a popular climb for mountaineers. Many climbers access the peak via the 49th parallel.
- Bridge at Lightning Creek and Ross Lake needs to be protected. The structure is constructed of steel and wood.
- No known structure concerns at Cat Island.
- All trail closures must be coordinated thru the fire office at NOCA.
- There are approximately 10 campgrounds and associated structures to the south of Lightning Creek to Highway 20.
- It is imperative to have an IOF on staff to interface with the park when the fire reaches Trigger Point 3.
- Park Rangers hike the Hozameen Trail 3 to 4 times a season and are available to provide trail clearance, sweep and monitor closures if need be. There are 6 rangers on staff 5 of which are red card FF2 qualified.
- The park can provide search and rescue support if requested.
- The park requires input if there is a need for fuels mitigation of the 49th parallel. The last time the fuels were treated/cleared was 4 years ago on a schedule of doing it once every 10 years.
- International point is a good location for a helispot.
- Limit the use of retardant within ¼ mile of all water sources.
- Bull trout tend to pool-up near the inlets on Ross Lake thus no helicopters are to dip from those areas.
- The NOCA fire effects crew if requested can provide support for fuel sampling and monitoring weather and fire behavior from Desolation Lookout.
- The forest fixed wing aerial reconnaissance if directed can provide fire monitoring support.
- Hozomeen Ranger Station can be used as a meeting location (Canadians, National Park staff and fire management team members) if the park is first notified, meeting participants do not exceed 10 individuals, and small helicopters are used for transport to the site. There are a limited number of structures to support an indoor meeting. This method of travel and location is preferred over driving to a predetermined site due to mutual time savings.

Resource Advisor – Expectations

- North Cascades National Park will provide a resource advisor who will be assigned to the incident no later than when trigger point 3 is reached.

Incident Command System (ICS) Operating Guidelines for Extended Attack and Large Fire Suppression under the Reciprocal Fire Protection Agreement on Border Fires

A. The purpose of this guideline is to provide a framework under which international suppression resources will be managed in pursuit of a joint fire management venture, which allows for joint fire suppression between the British Columbia Ministry of Forests and USDA-Forest Service, Okanogan and Wenatchee National Forests.

B. Sharing of resources, expertise and intelligence are needed by the participants to this agreement. Therefore it is the intent of all parties, regardless of the point of origin of the wildfire, to collaborate on determining the most appropriate approach to be taken on any wildfire that threatens each other's lands along the international boundary, given that the fire(s) will not simply be abandoned because it has crossed the international boundary.

C. The agency whose land is where the fire is located, or who is assigned legal fire suppression responsibilities, will be known as the jurisdictional agency. The agency that provides suppression or management support will be known as the supporting agency.

D. When a fire burning in their jurisdiction or threatening to cross into it, the jurisdictional agency shall identify a duly authorized officer to take charge of the fire.

E. The agencies agree to cooperate, when mutually deemed appropriate, on developing strategic plans for these fire(s) that threaten the border. Such planning will involve affected local agencies on either side of the border to address special land management considerations.

F. A common command structures will be used depending on the particular circumstances associated with each fire.

G. The Incident Command System (ICS) will be used to manage all incidents, which means that the jurisdictional agency will coordinate with the supporting agency through operational briefings. An Incident Commander (i.e. Type 1,2,and 3 or FUMT-Fire Use Management Team) will be assigned by the jurisdictional agency based on fire complexity and resource management objectives and coordinated with the supporting agency.

H. A Unified or Area Command concept will not be used because of each agencies delegation of authority fiscal responsibility for wildfire fire suppression fire.

I. Delegation of Authority will be left to each agency administrator. In most instances a standard incident management team structure will be used with the jurisdictional agency supplying the IC and the supporting agency being identified as a Zone of the incident and participating in all strategy and planning sessions up to the point that the wildfire crosses the 49th parallel at which time it then becomes jurisdictional agency.

U.S. Helicopter Operations in Canada

Border Crossings:

- Pilot files VFR flight plan by phone with Seattle Center ATC (253 351-3520) and with the appropriate Canadian Flight Kamloops Center. ATC will identify a discrete transponder code for use.
- Notify daily, by phone, the Air Marine Operations Center (AMOC/ICE Operations), (1-800-553-9072), supply tail number, color scheme of aircraft, transponder squawk, type of aircraft, point of origin, destination, and the time, Zulu preferred, the flight will be within the Border Zone.
- Notify and fax the required information included on the Border manifest to the Port of Entry, (for the Freezeout Fire this will be Sumas, Rod Freeson, (604 504-4693, Office) and (604 556-6694, Cell)). For the Port of Osoyoos the contact is, G.A. (Alan) Profili, (250 495-6953, Office), (250 490-7654, Cell). This will satisfy the Canadian Customs reporting requirements.
- Call Seattle Air Traffic Control Center (253 351-3520) prior to launch (not as “pilot” but “Freezeout Fire.” They will require lat/long of fire.
- Negotiate with U.S. Customs on inspection requirements when U.S. aircraft are returning from Canada.
- Follow normal flight following procedures with Central Washington Communications Center (CWICC).

British Columbia Forest Service:

- For the Freezeout Fire contact the Fire Control Officer (FCO) for the Coastal Region (250 951-4201) to discuss planned aviation operations:
  - Cambie Creek Staging Area/Helibase:
    -located 4.5 mile west of Manning Park Lodge on Hwy. #3.
    -49° 06.34’, 120° 50.39”
    -Costal Region will assign Helibase Manager.

Frequencies:

- CWICC will assign Air-to-Air and Air-to-Ground frequencies for fire in the U.S.
- All aircraft will monitor 126.7 when operating within 5 miles/8 km of the border.
- Contact Costal Fire Centre: Brown Channel:
  Tx 163.305
  Rx 164.175
  Tone 173.8
- BC Forestry Air to Ground: Gold Channel:
  Rx/Tx 163.830
  Assigned frequency for the Manning Park area
- Cambie Helibase deck and operations frequencies will be assigned by Canadian Helibase Manager.

Airspace Management:

- U.S. will request Temporary Flight Restriction (TFR) for airspace in U.S.
- Costal Fire Region will request airspace restrictions in Canada.
- Cambie Helibase Manager will request NOTAM for helibase.
- If U.S. establishes Helibase operations at Cambie Helibase, a U.S. Airspace Coordinator will be assigned to the helibase, with satellite phone, to maintain contact follow established protocols.
- Flight paths, from the helibase to the fire, will be established by the Cambie Helibase Manager in consultation with the U.S. Helibase/Helicopter Manager.

Helicopter/Helibase Operations:

- U.S. helicopter/helibase operations will be according to the Interagency Helicopter Operations Guide, (IHOG).
- U.S. Helicopter/Helibase Manager will operate under the Cambie Helibase Manager.
- Dip-Site managers will be assigned and placed at sites in Canada as required.

Public Use and Firefighter Safety

Safety Concerns: The Freezeout and Sunshine fires have many different safety concerns associated with it. These safety concerns are listed below along with mitigation measures.

- ✓ Terrain: This is some of the steepest and most rugged terrain in the country. With rock slides, vertical rock walls, snow covered peaks and slope which can not be traversed without climbing equipment. This makes the county almost impossible to suppress a fire using ground personnel.
- ✓ Safety Zones and Escape Routes: The fire area has minimal safety zones and escape routes. The only safety zones that are located close to the Freezeout fire is the mountain ridge located just north of the fire area. These areas could function as a lookouts or safety zones but the terrain of the fire area makes this country impossible to work with hand crews. The Sunshine fire has a few safe zones and can be worked with ground personnel.
- ✓ Bears: This area is known for its bear population so food containers are a must if personnel are spiked out in these locations.
- ✓ Helicopter Operations: This operation is a hazard in itself. This would be the best method of trying to slow the fires progression but would do little good without fire personnel on the line and the terrain will not allow this.
- ✓ Federal, State and other fire fighters must keep informed on current fire activity and monitor the thresholds as the local Pocket Cards indicate.

Closures will be viewed as temporary actions and will be reviewed as needed. As soon as the danger from the fire and fire management activities is no longer a threat to the public, the closures may be lifted.

Firefighter safety:
All of the hazards that are common to the wildland fire environment exist on the Freezeout and Sunshine fires. Some of the hazards that exist are:

- Steep Terrain, Rock Slides, Avalanche shoots, Helicopter Operations, Smoke, Bears, Spiders, Bees, Extreme Fire Behavior, Communications, Lightning and Thunderstorms and Fatigue.

Fire Personnel will use the Risk Management Process on page 1 in the Incident Response Pocket Guide as well as implement the appropriate tools recommended by this process prior to advancing in any monitoring or tactical activities.

The risk of the adverse affects to firefighters presented by these hazards can be mitigated by following standard safety protocols. These can be found in Agency guides that include the Incident Pocket Response Guide, Health and Safety Code, Fireline Handbook, 30-Mile Fire Mitigation guide, Okanogan and Wenatchee NF Aviation Mishap Response Guide and Checklist, Okanogan and Wenatchee NF Aviation Management Plan, Interagency Standards for Fire and Fire Aviation Operations (Red Book) and other supporting documents.

If the complexity of the Freezeout and Sunshine fires increases it is suggested that a Type 3 or Type 2 Safety Officer be assigned to ensure the safety of the firefighters if the decision is made to insert personnel. I would recommend that NO fire personnel be assigned to the Freezeout fire itself due to the lack of safety zones and escape routes. The Freezeout fire can be monitored from the Desolation Peak lookout.

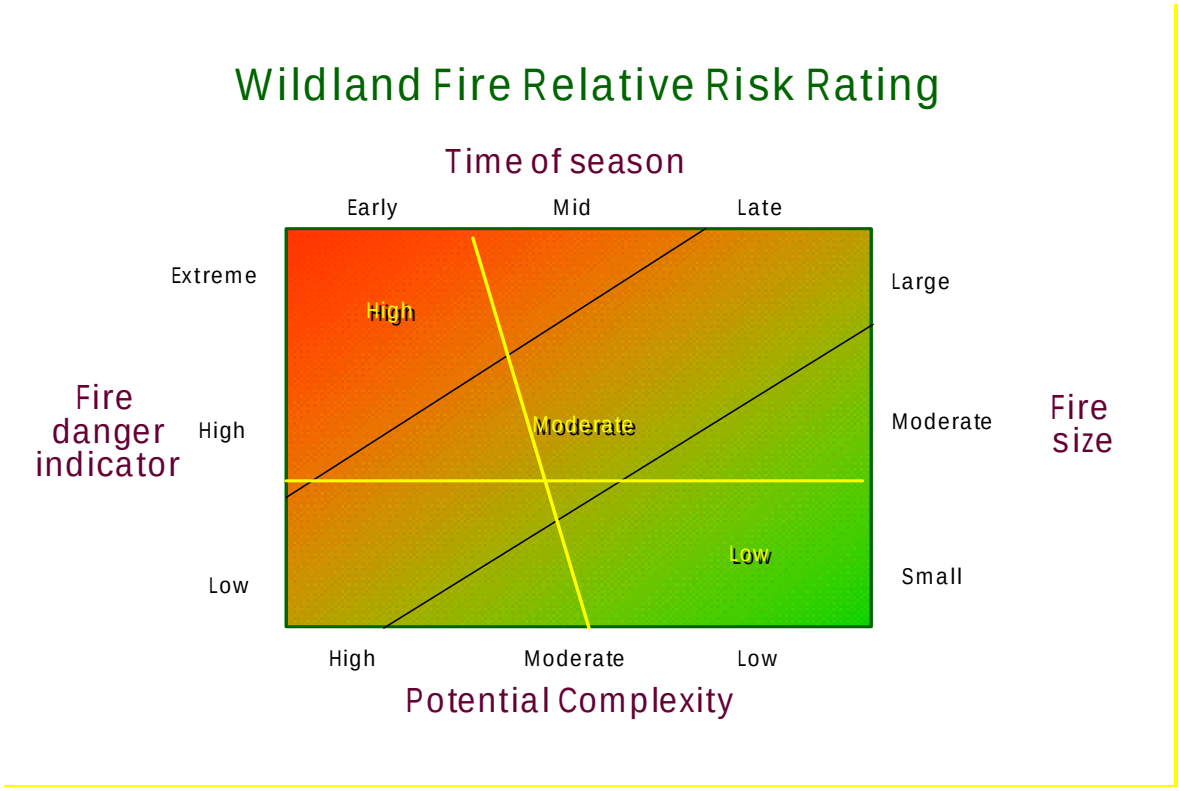
Logistics

Mitigation Action	Actions	Status
Trigger Point 1,2,8,9,10,11, and 12 assumes all helibase and camp are located in Manning Park, British Columbia.	*Order Communications Unit Leader. Consult with NICC frequency coordinator *Order Radio Starter System and 1 Logistics Repeater *Order Logistics Chief, Procurement Unit Leader, Ordering Manager, and Driver	
Trigger Points 3,4,5,6,7 assumes helibase and camp are located NCSB.	*Order Communications Technician, Driver, Ordering Manager, Procurement UL *Order Radio Starter System and One Logistics Repeater *Consult with NICC Frequency Coordinator	

Information

Current	Actions	Status
	Current info/fact sheet to employee list and media Feed info to District & Public Affairs Specialist Update info boards at VC when necessary Respond to media interest Communicate with cooperating agencies Webmaster updates forest website Update recorded phone message	ICT3
MAP 1	Minimal need for updates depending on fire activity Feed local media and Associated Press when necessary	Same Resources needed
MAP 2	Increased communication with cooperating agencies (NPS, DNR, USFWS & BC Ministry of Forestry) Press Releases to media and employee lists More visibility in community Media Interviews Daily Conference Call with Public Affairs Staff Communication with North Cascades National Park and British Columbia Coastal Zone Fire Center Communicate with Chamber of Commerce Develop information about possible closures Reestablish trapline locations from Twisp to Mazama Populate Information boards Provide info to update websites Establish INFO Center in Wenatchee or Okanogan	Resources Needed: IOF2 and 2 IOFs

	Daily contact with frontliners	
MAP 3 thru 7	Increased information distribution with North Cascades National Park & BC Coastal Fire Center Conference calls as needed between agencies All of the above and assisting with Trail/Area closure information VIP visits Media tours if needed	Resources Needed: Lead IOF and 4-5 assistants Canadian Liaison
MAP 8 thru-11	Update websites Staff and/or update bulletin boards at VC, ICP, helibase Display Fire Info at special events Visit areas/post information Conduct Public Meetings Install Highway warning signs Maintain communications with BC coastal Fire Center Develop Smoke messages	Resources Needed: Lead IOF and 4-5 assistants Canadian Liaison


Wildland Fire Relative Risk Rating
Time of season
Early
Mid
Late
Extreme
High
Low
Fire danger indicator
High
Moderate
Low
Large
Moderate
Small
Fire size
High
Moderate
Low
Potential Complexity

Incident Complexity Analysis (Type 3, 4, 5)		
Fire Behavior	**Yes**	**No**
Fuels extremely dry and susceptible to long-range spotting or you are currently experiencing extreme fire behavior.		X
Weather forecast indicating no significant relief or worsening conditions.		X
Current or predicted fire behavior dictates indirect control strategy with large amounts of fuel within planned perimeter.	X	
Firefighter Safety		
Performance of firefighting resources affected by cumulative fatigue.		X
Overhead overextended mentally and/or physically.		X
Communication ineffective with tactical resources or dispatch.		X
Organization		
Operations are at the limit of span of control.		X
Incident action plans, briefings, etc. missing or poorly prepared.		X
Variety of specialized operations, support personnel or equipment.		X
Unable to properly staff air operations.		X
Limited local resources available for initial attack.		X
Heavy commitment of local resources to logistical support.		X
Existing forces worked 24 hours without success.		X
Resources unfamiliar with local conditions and tactics.		X
Values to be protected		
Urban interface; structures, developments, recreational facilities, or potential for evacuation.		X
Fire burning or threatening more than one jurisdiction and potential for unified command with different or conflicting management objectives.		X
Unique natural resources, special-designation areas, critical municipal watershed, T&E species habitat, cultural value sites.	X	
Sensitive political concerns, media involvement, or controversial fire policy.	X	

If you have checked “Yes” on 3 to 5 of the analysis boxes, consider requesting the next level of incident management support.

2 boxes checked thus next level unnecessary

Guide to completing the Incident Complexity Analysis. (Type 1, 2)

1) Analyze each element and check the response, Yes or No.
2) If positive responses exceed, or are equal to, negative responses within any primary factor (A through G), the primary factor should be considered as a positive response.
3) If any three of the primary factors (A through G) are positive responses, this indicates the fire situation is or is predicted to be of Type 1 complexity.
4) Factor H should be considered after numbers 1–3 are completed. If more than two of the items in factor H are answered yes, and three or more of the other primary factors are positive responses, a Type 1 team should be considered. If the composites of H are negative, and there are fewer than three positive responses in the primary factors (A-G), a Type 2 team should be considered. If the answers to all questions in H are negative, it may be advisable to allow the existing overhead to continue action on the fire.

Incident Complexity Analysis	YES	NO
A. Fire Behavior (Observed or Predicted)		
1. Burning index (from on-site measurement of weather conditions) predicted to be above the 90% level using the major fuel model in which the fire is burning.		X
2. Potential exists for extreme fire behavior (fuel moisture, winds, etc.).		X
3. Crowning, profuse or long-range spotting.		X
4. Weather forecast indicating no significant relief or worsening conditions.		X
Total	0	4
B. Resources Committed		
1. 200 or more personnel assigned.		X
2. Three or more divisions.		X
3. Wide variety of special support personnel.		X
4. Substantial air operation which is not properly staffed.		X
5. Majority of initial attack resources committed.		X
Total	0	5
C. Resources Threatened		
1. Urban interface.		X
2. Developments and facilities.		X
3. Restricted, threatened, or endangered species habitat.	X	
4. Cultural sites.		X
5. Unique natural resources, special-designation areas, wilderness.	X	
6. Other special resources.		X
Total	2	4
D. Safety		
1. Unusually hazardous fireline construction.		X
2. Serious accidents or fatalities.		X

3. Threat to safety of visitors from fire and related operations.		X
4. Restrictions and/or closures in effect or being considered.		X
5. No night operations in place for safety reasons.		X
Total	0	5
E. Ownership		
1. Fire burning or threatening more than one jurisdiction.	X	
2. Potential for claims (damages).		X
3. Different or conflicting management objectives.		X
4. Disputes over suppression responsibility.		X
5. Potential for unified command.		X
Total	1	4
F. External Influences		
1. Controversial fire policy.		X
2. Pre-existing controversies/relationships.		X
3. Sensitive media relationships.		X
4. Smoke management problems.		X
5. Sensitive political interests.	X	
6. Other external influences.		X
Total	1	5
G. Change in Strategy		
1. Change in strategy to control from confine or contain		X
2. Large amounts of unburned fuel within planned perimeter.	X	
3. WFSA invalid or requires updating.		X
Total	1	2
H. Existing Overhead		
1. Worked two operational periods without achieving initial objectives.		X
2. Existing management organization ineffective.		X
3. Overhead overextended mentally and/or physically.		X
4. Incident action plans, briefings, etc. missing or poorly prepared.		X
Total	0	4

A = NO
B = NO
C = NO
D = NO
E = NO
F = NO
G = NO
H = NO

ANALYSIS = “NO CHANGE”