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Appendix A. 2000 Guidelines for Aerial Delivery of Retardant or Foam near Waterways

Definition:

WATERWAY – Any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life.

Guidelines:

Avoid aerial application of retardant or foam within 300 feet of waterways.

These guidelines do not require the helicopter or airtanker pilot-in-command to fly in such a way as to endanger his or her aircraft, other aircraft, or structures or compromise ground personnel safety.

Guidance for pilots: To meet the 300-foot buffer zone guideline, implement the following:

Medium/Heavy Airtankers: When approaching a waterway visible to the pilot, the pilot shall terminate the application of retardant approximately 300 feet before reaching the waterway. When flying over a waterway, pilots shall wait one second after crossing the far bank or shore of a waterway before applying retardant. Pilots shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.

Single Engine Airtankers: When approaching a waterway visible to the pilot, the pilot shall terminate application of retardant or foam approximately 300 feet before reaching the waterway. When flying over a waterway, the pilot shall not begin application of foam or retardant until 300 feet after crossing the far bank or shore. The pilot shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.

Helicopters: When approaching a waterway visible to the pilot, the pilot shall terminate the application of retardant or foams 300 feet before reaching the waterway. When flying over a waterway, pilots shall wait five seconds after crossing the far bank or shore before applying the retardant or foam. Pilots shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant or foam within the 300-foot buffer zone.

Exceptions:

1. When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).
2. Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.
3. When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines.

Threatened and Endangered (T&E) Species:

The following provisions are guidance for complying with the emergency section 7 consultation procedures of the ESA with respect to aquatic species. These provisions do not alter or diminish an action agency's responsibilities under the ESA.

Where aquatic T&E species or their habitats are potentially affected by aerial application of retardant or foam, the following additional procedures apply:

1. As soon as practicable after the aerial application of retardant or foam near waterways, determine whether the aerial application has caused any adverse effects to a T&E species or their habitat. This can be accomplished by the following:
 - a. Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species and no further consultation for aquatic species is necessary.
 - b. Aerial application of retardant or foam within 300 ft of a waterway requires that the unit administrator determine whether there have been any adverse effects to T&E species within the waterway.

These procedures shall be documented in the initial or subsequent fire reports.

2. If there were no adverse effects to aquatic T&E species or their habitats, there is no additional requirement to consult on aquatic species with Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS).
3. If the action agency determines that there were adverse effects on T&E species or their habitats then the action agency must consult with FWS and NMFS, as required by 50 CFR 402.05 (Emergencies). Procedures for emergency consultation are described in the Interagency Consultation Handbook, Chapter 8 (March, 1998). In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

Appendix B (provided by the FS):

WILDLAND FIRE SITUATION ANALYSIS

Wildland Fire Situation Analysis (WFSA) is a decision-making process in which the Agency Administrator or representative describes the situation, establishes objectives and constraints for the management of the fire, compares multiple strategic wildland fire management alternatives, evaluates the expected effects of the alternatives, selects the preferred alternative, and documents the decision. The format and level of detail required is dependent on the specific incident and its complexity. The key is to document the decision.

WFSA INITIATION

FIRE NAME

--

JURISDICTION(S)

--

DATE AND TIME INITIATED

--

VI. DECISION

The selected alternative is:

RATIONALE:

AGENCY ADMINISTRATOR SIGNATURE _____

DATE/TIME _____

I. WILDLAND FIRE SITUATION ANALYSIS	
--	--

A. JURISDICTION(S):	B. GEOGRAPHIC AREA:
----------------------------	----------------------------

C. UNIT(S):	D. WFSA #:
E. FIRE NAME:	F. INCIDENT #:
G. ACCOUNTING CODE:	
H. DATE/TIME PREPARED:	
I. ATTACHMENTS: <ul style="list-style-type: none"> <input type="checkbox"/> COMPLEXITY MATRIX/ANALYSIS¹ <input type="checkbox"/> RISK ASSESSMENT¹ <input type="checkbox"/> <i>PROBABILITY OF SUCCESS</i>¹ <input type="checkbox"/> CONSEQUENCES OF FAILURE¹ <input type="checkbox"/> MAPS¹ <input type="checkbox"/> DECISION TREE² <input type="checkbox"/> FIRE BEHAVIOR PROJECTIONS¹ <input type="checkbox"/> CALCULATIONS OF RESOURCE REQUIREMENTS¹ <input type="checkbox"/> OTHER (SPECIFY) <p>¹ Required ² Required by the USFS</p>	

Section II. Objectives and Constraints

The Agency Administrator completes this page.

- II.A. Objectives: Specify criteria that should be considered in the development of alternatives.

Safety objectives for firefighters, aviation, and public must receive the highest priority, Suppression objectives must relate to resource management objectives in the unit resource management plan.

Economic objectives could include closure of all portions of an area, thus impacting the public, or impacts to transportation, communication and resource values.

Environmental objectives could include management objectives for airshed, water quality, wildlife, etc.

Social objectives could include any local attitudes toward fire or smoke that might affect decisions on the fire, safety, etc.

Other objectives might include legal or administrative constraints which would have to be considered in the analysis of the fire situation, such as the need to keep the fire off other agency lands, etc.

- II.B. Constraints: List constraints on wildland fire action. These could include constraints to designated wilderness, wilderness study areas, environmentally or culturally sensitive areas, irreparable damage to resources or smoke management/air quality concerns. Economic constraints such as public and Agency cost could be considered here.

II. OBJECTIVES AND CONSTRAINTS

A. OBJECTIVES (must be specific and measurable):

1. *SAFETY:*

Public

Firefighter

2. *ECONOMIC:*

3. *ENVIRONMENTAL:*

4. *SOCIAL:*

5. *OTHER:*

B. CONSTRAINTS:

Section III. Alternatives

The FIRE MANAGER/and or INCIDENT COMMANDER complete(s) this page.

- III.A. Wildland Fire Management Strategy: Briefly describe the general wildland fire strategies for each alternative. Alternatives must meet resource management plan objectives.
- III.B. Narrative: Briefly describe each alternative with geographic names, locations, etc., that would be used when implementing a wildland fire strategy. For example, “Contain within the Starvation Meadows’ watershed by the first burning period”.
- III.C. Resources Needed: Resources listed must be reasonable to accomplish the tasks described in Section III.B. It is critical to also look at the reality of the availability of these needed resources.
- III.D. Estimated Final Fire Size: Estimated final size for each alternative at time of containment.
- III.E. Estimated Contain/Control Date: Estimates for each alternative shall be made based on predicted weather, fire behavior, resource availability and the effects of wildland fire management efforts.
- III.F. Cost: Estimate all fire costs for each alternative. Consider mopup, rehabilitation, and other costs as necessary.
- III.G. Risk Assessment: Probability of success/Consequences of failure: Describe probability as a % and associated consequences for success and failure. Develop this information from models, practical experience or other acceptable means. Consequences described will include fire size, days to contain, days to control, costs and other information such as park closures and effect on critical habitat. Include fire behavior and long-term fire weather forecasts to derive this information.
- III.H. Complexity: Assign the complexity rating calculated in the Guide for Assessing Fire Complexity.
- III.I. Maps: A map for each alternative must be prepared. The map shall be based on the “Probability of success/Consequences of Failure” and include other relative information.

III. ALTERNATIVES

	A	B	C
A. WILDLAND FIRE STRATEGY:			
B. NARRATIVE:			
C. RESOURCES NEEDED: HANDCREWS ENGINES DOZERS AIRTANKERS HELICOPTERS			
D. ESTIMATED FINAL FIRE SIZE:			
E. ESTIMATED CONTAIN/ CONTROL DATE			
F. COSTS:			
G. RISK ASSESSMENT: PROBABILITY OF SUCCESS/ CONSEQUENCES OF FAILURE			
H. COMPLEXITY:			

I. ATTACH MAPS FOR EACH ALTERNATIVE			

Section IV. Evaluation of Alternatives

The Agency Administrator(s), FMO and/or Incident Commander(s) completes this page.

IV.A. Evaluation Process: Conduct an analysis for each element of each objective and each alternative. Objective shall match those identified in section II.A. Use the best estimates available and quantify whenever possible. Provide ratings for each alternative and corresponding objective element. Fire effects may be negative, cause no change or may be positive. Examples are: 1) a system which employs a "-" for negative effect, a "0" for no change, and a "+" for positive effect; 2) a system which uses a numeric factor for importance of the consideration (soils, watershed, political, etc.) and assigns values (such as -1 to +1, -100 to +100, etc.) to each consideration, then arrives at a weighted average. If you have the ability to estimate dollar amounts for natural resource and cultural values this data is preferred. Use those methods which are most useful to managers and most appropriate for the situation and agency. To be able to evaluate positive fire effects, the area must be included in the resource management plan and be consistent with prescriptions and objectives of the Fire Management Plan.

Sum Of Economic Values: Calculate for each element the net effect of the rating system used for each alternative. This could include the balance of: pluses (+) and minuses (-), numerical rating (-3 and +3), or natural and cultural resource values in dollar amounts. (Again resource benefits may be used as part of the analysis process when the wildland fire is within a prescription consistent with approved Fire Management Plans and in support of the unit's Resource Management Plan.)

IV. EVALUATION OF ALTERNATIVES

A. EVALUATION PROCESS	A	B	C
<i>SAFETY</i> Firefighter Aviation Public			
Sum of Safety Values			
<i>ECONOMIC</i> Forage Improvements Recreation Timber Water Wilderness Wildlife Other (specify)			
Sum of Economic Values			
<i>ENVIRONMENTAL</i> Air Visual Fuels T & E Species Other (specify)			
Sum of Environmental Values			
<i>SOCIAL</i> Employment Public Concern Cultural Other (Specify)			
Sum of Social Values			

Section V. Analysis Summary

The Agency Administrator(s), FMO and/or Incident Commander(s) complete this page.

- V.A. Compliance with Objectives: Prepare narratives that summarize each alternative's effectiveness in meeting each objective. Alternatives that do not comply with objectives are not acceptable. Narratives could be based on effectiveness and efficiency. For example: "most effective and least efficient", "least effective and most efficient", "or "effective and efficient". Or answers could be based on a two-tiered rating system such as "complies with objective" and "fully complies with or exceeds objective". Use a system that best fits the manager's needs.
- V.B. Pertinent Data: Data for this section has already been presented and is duplicated here to help the Agency Administrator(s) confirm their selection of an alternative. Final Fire Size is displayed on page three, section III.D. Complexity is calculated in the attachments and displayed on page three, section III.H. Costs are displayed on page three, section III.F. Economic Values have been calculated and displayed on page four. Probability of Success/Consequences of Failure are calculated in the attachments and displayed on page three, section III.G.
- V.C. External and Internal Influences: Assign information and data occurring at the time the WFSA is signed. Identify the Preparedness Index (1 through 5) for the National and Geographic levels. If available, indicate the Incident Priority assigned by the MAC group. Designate the Resource Availability status. This information is available at the Geographic Coordination Center and needed to select a viable alternative. Designate "yes" indicating an up-to-date weather forecast has been provided to, and used by, the Agency Administrator(s) to evaluate each alternative. Assign information to the "other" category as needed by the Agency Administrator(s).

Section VI. Decision

Identify the alternative selected. Must have clear and concise rationale for the decision, and a signature with date and time. Agency Administrator(s) signature is mandatory.

V. ANALYSIS SUMMARY

ALTERNATIVES	A	B	C
<p>A. COMPLIANCE WITH OBJECTIVES:</p> <p>SAFETY</p> <p><i>ECONOMIC</i></p> <p><i>ENVIRONMENTAL</i></p> <p><i>SOCIAL</i></p> <p><i>OTHER</i></p>			
<p>B. PERTINENT DATA:</p> <p><i>FINAL FIRE SIZE</i></p> <p><i>COMPLEXITY</i></p> <p><i>COST</i></p> <p><i>RESOURCE VALUES</i></p> <p><i>PROBABILITY of SUCCESS</i></p> <p><i>CONSEQUENCES of FAILURE</i></p>			
<p>C. EXTERNAL/INTERNAL INFLUENCES:</p> <p><i>NATIONAL AND GEOGRAPHIC PREPAREDNESS LEVEL</i></p> <p><i>INCIDENT PRIORITY</i></p> <p><i>RESOURCE AVAILABILITY</i></p> <p><i>WEATHER FORECAST (LONG-RANGE)</i></p> <p><i>FIRE BEHAVIOR PROJECTIONS</i></p>			

Section VII. Daily Review

The Agency Administrator(s), or designate complete(s) this page.

The date, time and signature of reviewing officials are reported in each column for each day of the Incident. The status of Preparedness Level, Incident Priority, Resource Availability, Weather Forecast, and WFSA Validity is completed for each day reviewed. Ratings for the Preparedness Level, Incident Priority, Resource Availability, Fire Behavior, and Weather Forecast are addressed on page five, section V.C. Assign a “yes” under “WFSA Valid” to continue use of this WFSA. A “no” indicates this WFSA is no longer valid and another WFSA must be prepared or the original revised.

WFSA COMPLETION/FINAL REVIEW

THE SELECTED ALTERNATIVE ACHIEVED
DESIRED OBJECTIVES ON (DATE/TIME):

THE SELECTED ALTERNATIVE DID NOT
ACHIEVE THE DESIRED OBJECTIVES AND A
NEW WFSA WAS PREPARED ON (DATE/TIME):

AGENCY ADMINISTRATOR OR
REPRESENTATIVE SIGNATURE:

A GUIDE FOR ASSESSING FIRE COMPLEXITY

The following questions are presented as a guide to assist the Agency Administrator and staff in analyzing the complexity or predicted complexity of a fire situation. Because of the time required to assemble or move an Incident Management Team to a fire, this checklist should be completed when a fire escapes initial attack and be kept as part of the fire records. This document is prepared concurrently with the preparation of and attached to a new or revised Wildland Fire Situation Analysis. It must be emphasized that this analysis should, where possible, be based on predications to allow adequate time for assembling and transporting the ordered resources.

Use of the Guide:

- 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 response, this indicates the fire situation is or is predicted to be Type I.
- 4.** Factor H should be considered after all above steps. If more than two of these items are answered yes, and three or more of the other primary factors are positive responses, a Type I 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 II 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.

GLOSSARY OF TERMS

Potential for blow-up conditions - Any combination of fuels, weather and topography excessively endangering personnel.

Threatened and endangered species - Threat to habitat of such species, or in the case of flora, threat to the species itself.

Smoke Management - Any situation which creates a significant public response, such as smoke in a metropolitan area or visual pollution in high-use scenic areas.

Extended exposure to unusually hazardous line conditions - Extended burnout or backfire situations, rock slides, cliffs extremely steep terrain, abnormal fuel situations such as frost killed foliage, etc.

Disputed Fire Management responsibility - Any wildland fire where responsibility for management if not agreed upon due to lack of agreements or different interpretations, etc.

Disputed fire policy - Differing fire policies between suppression agencies when the fire involves multiple ownership is an example.

Pre-existing controversies - These may or may not be fire management related. Any controversy drawing public attention to an area may present unusual problems to the fire overhead and local management.

Have overhead overextended themselves mentally or physically -
This is a critical item that requires judgment by the responsible agency. It is difficult to write guidelines for this judgment because of the wide differences between individuals. If, however, the Agency Administrator feels the existing overhead cannot continue to function efficiently and take safe and aggressive action due to mental or physical reasons, assistance is mandatory.

FIRE COMPLEXITY ANALYSIS

	Yes/No
A. FIRE BEHAVIOR: Observed or Predicted	
<ul style="list-style-type: none"> 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. 	___ ___
<ul style="list-style-type: none"> 2. Potential exists for “blowup” conditions (fuel moisture, winds, etc). 	___ ___
<ul style="list-style-type: none"> 3. Crowning, profuse or long-range spotting. 	___ ___
<ul style="list-style-type: none"> 4. Weather forecast indicating no significant relief or worsening conditions. 	___ ___
Total	___ ___
 B. RESOURCES COMMITTED:	
<ul style="list-style-type: none"> 1. 200 or more personnel assigned. 	___ ___
<ul style="list-style-type: none"> 2. Three or more divisions. 	___ ___
<ul style="list-style-type: none"> 3. Wide variety of special support personnel. 	___ ___
<ul style="list-style-type: none"> 4. Substantial air operation which is not properly staffed. 	___ ___
<ul style="list-style-type: none"> 5. Majority of initial attack resources committed. 	___ ___
Total	___ ___
 C. RESOURCES THREATENED:	
<ul style="list-style-type: none"> 1. Urban interface. 	___ ___
<ul style="list-style-type: none"> 2. Developments and facilities. 	___ ___
<ul style="list-style-type: none"> 3. Restricted, threatened or endangered species habitat. 	___ ___
<ul style="list-style-type: none"> 4. Cultural sites. 	___ ___
<ul style="list-style-type: none"> 5. Unique natural resources, special designation zones or wilderness. 	___ ___
<ul style="list-style-type: none"> 6. Other special resources. 	___ ___
Total	___ ___
 D. SAFETY:	
<ul style="list-style-type: none"> 1. Unusually hazardous fire line conditions. 	___ ___
<ul style="list-style-type: none"> 2. Serious accidents or fatalities. 	___ ___
<ul style="list-style-type: none"> 3. Threat to safety of visitors from fire and related operations. 	___ ___
<ul style="list-style-type: none"> 4. Restrictions and/or closures in effect or being considered. 	___ ___
<ul style="list-style-type: none"> 5. No night operations in place for safety reasons. 	___ ___
Total	___ ___

E. OWNERSHIP:	Yes/No
1. Fire burning or threatening more than one jurisdiction.	___ ___
2. Potential for claims (damages).	___ ___
3. Different or conflicting management objectives.	___ ___
4. Dispute over fire management responsibility.	___ ___
5. Potential for unified command.	___ ___
Total	___ ___
F. EXTERNAL INFLUENCES:	
1. Controversial wildland fire management policy.	___ ___
2. Pre-existing controversies/relationships.	___ ___
3. Sensitive media relationships.	___ ___
4. Smoke management problems.	___ ___
5. Sensitive political interests.	___ ___
6. Other external influences.	___ ___
Total	___ ___
G. CHANGE IN STRATEGY	
1. Change in strategy (from lower to higher intensity management).	___ ___
2. Large amounts of unburned fuel within planned perimeter.	___ ___
3. WFSA invalid or requires updating.	___ ___
Total	___ ___
H. EXISTING OVERHEAD:	
1. Worked two operational periods without achieving initial objectives.	___ ___
2. Existing management organization ineffective.	___ ___
3. Overhead/IMT overextended mentally and/or physically.	___ ___
4. Incident actions plans, briefings, etc., missing or poorly prepared.	___ ___
Total	___ ___

Signature	
Date	Time

WFSA INSTRUCTIONS

Section I. WFSA Information Page

The Agency Administrator completes this page.

- I.A. Jurisdiction(s): Assign the agency that have or could have fire protection responsibility, e.g., USFWS, Forest Service, BLM, etc.
- I.B. Geographic Area: Assign the recognized “Geographic Coordination Area” in which the fire is located, e.g., Northwest, Northern Rockies, etc.

Unit: Designate the local administrative unit, e.g., Hart Mountain Refuge Area, Flathead Indian Reservation, etc.
- I.C. WFSA #: Identify the number assigned to the most recent WFSA for this fire.
- I.D. Fire Name: Self-explanatory.
- I.E. Incident Number: Identify the agency number assigned to the fire, e.g., BOD 296, BNF 001.
- I.F. Accounting Code: Insert the local unit’s accounting code.

Date/Time Prepared: Self-explanatory.
- I.G. Attachments: Check here to designate attachments used in the completion of the WFSA.
- I.H. “Other” could include data or models used in the development of the WFSA. Briefly describe the “other” items used.
- I.I.