Appendix I: Wildland Fire Appropriate Management Response and Wildland Fire Suppression Guidelines

Wildland Fire Appropriate Management Response

Use of appropriate management response (AMR) on all wildland fire allows agency administrators the ability to choose from a full spectrum of fire suppression actions. Although all wildland fires must have an appropriate action taken to suppress them, not all wildfires need to be suppressed with the same level of intensity. Appropriate suppression actions, whether aggressive, high intensity or low intensity actions, will be based on preplanned analysis and executed to minimize suppression costs plus resource losses, consistent with land management objectives, including the threat to life and property.

Preplanned analysis criteria has been identified through the Phase One Fire Management Planning Process (see glossary) in which an interdisciplinary team of resource, fire, and line management representatives classified public land into the two different management categories listed as follows:

Category A

Those lands where wildland fire should be excluded; using only prescribed fire or non-fire treatment techniques to achieve the desired resource conditions or management of the area. The appropriate management response for these lands will be full suppression. In multiple fire situations, with fires occurring within both land categories, suppression priorities will be given to those fires burning within this classification of land. When multiple fires occur within Category A, suppression priority will be based on the threat or potential threat to public safety, structures, private property, and improvements.

Criteria used to determine Category A land include:

- Protecting public safety;
- Threat to private land;
- Protecting capital improvements;
- Protecting administrative/recreational sites;
- Minimizing loss of shrub cover and biological soil crusts;
- Minimizing increase in annual vegetation types;
- Limiting or reducing medusahead, cheatgrass, and other noxious species;
- Providing diverse perennial species;
- Protecting habitat for special status plant species;
- Protecting Federal and State lands identified under fire protection agreements.

Category B

Those lands where wildland fire could/should be used in addition to prescribed fire to meet desired resource conditions or management. Under this category of land the appropriate management response could vary based on predetermined fire and resource criteria (see criteria below) for land in and adjacent to the fire location. In multiple fire situations, Category A land will, with the exception of threat to life, receive higher priority for suppression actions than will Category B land.

While all wildland fires will receive a suppression response, that response will not always be full suppression. Less than full suppression responses will occur only during spring early or late summer and fall months, dependant on weather conditions, or in multiple fire situations when suppression forces are not adequate to respond to all going fires. With multiple fires burning, suppression actions will occur in order of priority, with lower priority fires receiving suppression action as forces become available. All other fires receiving less than full suppression actions must meet the following fire criteria thresholds:

- Fire located within Category B land;
- Live fuel moisture in big sagebrush at 120 percent or more with 10-hour fuel stick readings of 5 percent or above or live fuels of 95 percent or above and 10-hour fuel stick reading of 8 percent or above;
- Predicted, maximum sustained wind speed of 10 mph (obtained from fire weather forecast);
- Observed and predicted fire behavior will continue to meet resource management objectives;
- No threat to public safety;
- Not a threat to private, State or other Federal land (unless those lands are under a signed mutual agreement with the landowner or agency for less than full suppression actions);
- Fires ignition is not suspected to be arson;
- Actions are in accordance with the "Preparedness Level 3" or less of the local unit (this level is based on the number of fire suppression resources that are committed to ongoing fire suppression activities, as more resources are committed the level raises).

If any of these criteria are exceeded the appropriate management response becomes that of full suppression, with the only exception to this occurring in a multiple fire situation where suppression actions are based on priority.

Within Category B, land resource considerations will be addressed and updated annually to reflect appropriate changes in the values to be protected. Resource criteria has been identified as to those criteria which may lead to full suppression actions and those criteria which may lead to less than full suppression actions, those criteria include but are not limited to the following.

Resource criteria that may lead to full suppression action include but are not limited to:

- Burning vegetation resources with commodity values;
- Burning within the perimeter of an area burned within the last 10 years;
- Burning within the perimeter of a fire rehabilitation area;
- Burning within sensitive vegetation types/habitat (key winter range, annual grasslands, shrub/annual grassland, rabbit brush/grassland, or salt desert shrub); and
- Burning more than one-third of a 5^{th} code watershed in a 3-year period.

Resource criteria that may lead to less than full suppression actions include but are not limited to:

- Burning within riparian areas;
- Burning within designated ACEC/RNA areas (allow to monitor natural processes);
- Burning within a wilderness or wilderness study area;
- Burning within given vegetation types (juniper, aspen, mountain big sagebrush, mountain brush);
- Burning at 5,500 feet elevation or above (vegetation communities capable of natural rehabilitation); or
- Burning within an area that has a prescribed fire plan in place.

The authorized officer (field manager or designated representative) has the authority to modify fire and resource criteria for either category of land based on site-specific resource management objectives identified through the adaptive management process.

General Suppression Guidelines for the NCA/Wilderness

- A Resource Advisor will be dispatched to all fires occurring in or threatening the NCA or Wilderness Areas

- Use of heavy equipment (bulldozers, etc..) will only be used in the NCA or Wilderness Areas if the fire is threatening human life or property. The Field Manger must approve the use of heavy equipment in all cases.

- Air resources including helicopters, smokejumpers, and air tankers will be included in the WILDCAD system for all NCA and Wilderness fire suppression activities.

- Use of retardant must be approved by the Field Manager, if retardant is not approved water may be dropped from retardant aircraft.

- All fire suppression activities will use Minimum Impact Suppression Techniques (MIST) at all times.

- Hand crews may use conventional hand tools and may conservatively use chain saws for fire line construction. Chain saw use and line width should be kept to a minimum. Utilization of existing natural barriers, minimum "scratch line", and cold trailing is encouraged where feasible. Handline construction will be rehabilitated back to the natural contour.

- A "Leave No Trace" policy will be used in the NCA and Wilderness Areas. All evidence of human activity must be removed, to the maximum extent possible.

- Heavy equipment could be used in the emigrant trail corridor subject to:
    - No blading will be allowed on roads or trails
    - Transport of equipment through the corridor will be allowed on Class C trail segments with the approval of a qualified resource advisor. Transport of equipment will be allowed on Class D and E trail segments.
    - Blading of firelines within the immediate viewshed could be allowed to protect property and life when no other options are available and approved by the resource advisor. Any blading will be followed by immediate stabilization and subsequent restoration of disturbed soils, vegetation and visual quality.

Wilderness Specific Suppression Guidelines

- If motorized vehicle use is authorized in fire suppression efforts in Wilderness it will remain on predetermined existing ways inside.

- Helibases, staging areas, and fire camps will be located outside of the Wilderness Areas, unless it is authorized by the Resource Advisor.

- Landing of helicopters will be kept to a minimum and will only occur in existing openings.

Minimum Impact Suppression Tactic (MIST) Guidelines

MINIMUM IMPACT SUPPRESSION TACTICS (MIST) GUIDELINES

Fire management requires the fire manager and firefighter to select management tactics commensurate with the fire's potential or existing behavior while producing the least possible impact on the resource being protected. The term used to describe these tactics is "Minimum Impact Suppression Tactics", commonly called MIST. Simply put: MIST is a 'do least damage' philosophy.

MIST is not intended to represent a separate or distinct classification of firefighting tactics but rather a mind set - how to suppress a wildfire while minimizing the long-term effects of the suppression action. MIST is the concept of using the minimum tool to safely and effectively accomplish the task. MIST should be considered for application on all fires in all types of land management.

While MIST emphasizes suppressing wildland fire with the least impact to the land, actual fire conditions and good judgment will dictate the actions taken. Consider what is necessary to halt fire spread and containment within the fireline or designated perimeter boundary, while safely managing the incident.

Use of MIST will not compromise firefighter safety or the effectiveness of suppression efforts. Safety zones and escape routes will be a factor in determining fireline location

Accomplishments of minimum impact fire management techniques originate with instructions that are understandable, stated in measurable terms, and communicated both verbally and in writing. They are ensured by monitoring results on the ground. Evaluation of these tactics both during and after implementation will further the understanding and achievement of good land stewardship ethics during fire management activities.

The intent of this guide is to serve as a checklist for all fire management personnel.

INCIDENT MANAGEMENT CONSIDERATIONS

Fire managers and firefighters select tactics that have minimal impact to values at risk. These values are identified in approved Land or Resource Management Plans. Standards and guidelines are then tied to implementation practices which result from approved Fire Management Plans.

- Firefighter and public safety cannot be compromised.
- Evaluate suppression tactics during planning and strategy sessions to ensure they meet agency administrator objectives and MIST. Include agency Resource Advisor and/or designated representative.
- Communicate MIST where applicable during briefings and implement during all phases of operations.
- Evaluate the feasibility of Wildland Fire Use in conjunction with MIST when appropriate for achieving resource benefits.

Agency Administrator or Designee

- Ensure agency personnel are provided with appropriate MIST training and informational/educational materials at all levels.
- Communicate land and fire management objectives to Incident Commander.
- Periodically monitor incident to ensure resource objectives are met.
- Participate in incident debriefing and assist in evaluation of performance related to MIST.

Incident Commander

- Communicate land and fire management objectives to general staff.
- Evaluate suppression tactics during planning and strategy sessions to see that they meet the Agency Administrator's objectives and MIST guidelines.

- Monitor operations to ensure MIST is implemented during line construction as well as other resource disturbing activities.
- Include agency Resource Advisor and/or local representative during planning, strategy, and debriefing sessions.

Resource Advisor

- Ensure interpretation and implementation of WFSA/WFIP and other oral or written line officer direction is adequately carried out.
- Participate in planning/strategy sessions and attend daily briefings to communicate resource concerns and management expectations.
- Review Incident Action Plans (IAP) and provide specific direction and guidelines as needed.
- Monitor on the ground applications of MIST.
- Provide assistance in updating WFSA/WFIP when necessary.
- Participate in debriefing and assist in evaluation of performance related to MIST.

Planning Section

- Use Resource Advisor to help assess that management tactics are commensurate with land/resource and incident objectives.
- Ensure that instructions and specifications for MIST are communicated clearly in the IAP.
- Anticipate fire behavior and ensure all instructions can be implemented safely.

Logistics Section

- Ensure actions performed around Incident Command Post (ICP), staging areas, camps, helibases, and helispots result in minimum impact on the environment.

Operations Section

- Evaluate MIST objectives to incorporate into daily operations and IAP.
- Monitor effectiveness of suppression tactics in minimizing impacts to resources and recommend necessary changes during planning/strategy sessions.
- Communicate MIST to Division Supervisors and Air Ops/Support during each operational period briefing. Explain expectations for instructions listed in Incident Action Plan.
- Participate in incident debriefing and assist in evaluation of performance related to MIST.

Division/Group Supervisor and Strike Team/Task Force Leader

- Communicate MIST objectives and tactics to single resource bosses.
- Recommend specific tasks on divisions to implement MIST.
- Monitor effectiveness of suppression tactics in minimizing impacts to resources and recommend necessary changes to Operations Section Chief.

Single Resource Bosses

- Communicate MIST objectives to crew members.
- Monitor work to ensure that crews are adhering to MIST guidelines and specific incident objectives.
- Provide feedback to supervisor on implementation of MIST.

IMPLEMENTATION

Keep this question in mind: What creates the greater impact, the fire suppression effort or the fire?

Safety

- Apply principles of LCES to all planned actions.
- Constantly review and apply the 18 Watch Out Situations and 10 Standard Fire Orders.
- Be particularly cautious with:
  - Burning snags allowed to burn.
  - Burning or partially burned live and dead trees.
  - Unburned fuel between you and the fire.

Escape Routes and Safety Zones

- In any situation, the best escape routes and safety zones are those that already exist. Identifying natural openings, existing roads and trails and taking advantage of safe black will always be a preferred tactic compatible with MIST. If safety zones must be created, follow guidelines similar to those for helispot construction.
- Constructed escape routes and safety zones in heavier fuels will have a greater impact, be more time consuming, labor intensive and ultimately less safe.

General Considerations

- Consider the potential for introduction of noxious weeds and mitigate by removing weed seed from vehicles, personal gear, cargo nets, etc.
- Consider impacts to riparian areas when siting water handling operations.
  - Use longer draft hoses to place pumps out of sensitive riparian areas.
  - Plan travel routes for filling bladder bags to avoid sensitive riparian areas.
- Ensure adequate spill containment at fuel transfer sites and pump locations. Stage spill containment kits at the incident.

Fire Lining Phase

- Select tactics, tools, and equipment that least impact the environment.
- Give serious consideration to use of water or foam as a firelining tactic.
- Use alternative mechanized equipment such as excavators and rubber tired skidders rather than bulldozers when constructing mechanical line.
- Allow fire to burn to natural barriers and existing roads and trails.
- Monitor and patrol firelines to ensure continued effectiveness.

Ground Fuels

- Use cold-trail, wet line or combination when appropriate. If constructed fireline is necessary, use minimum width and depth to stop fire spread.
- Consider the use of fireline explosives (FLE) for line construction and snag falling to create more natural appearing firelines and stumps.
- Burn out and use low impact tools like swatters and gunny sacks.
- Minimize bucking to establish fireline: preferably move or roll downed material out of the intended constructed fireline area. If moving or rolling out is not possible, or the downed log/bole is already on fire, build line around it and let the material be consumed.

Aerial fuels–brush, trees, and snags:

- Adjacent to fireline: limb only enough to prevent additional fire spread.
- Inside fireline: remove or limb only those fuels which would have potential to spread fire outside the fireline.
- Cut brush or small trees necessary for fireline construction flush to the ground.
- Trees, burned trees, and snags:
  - Minimize cutting of trees, burned trees, and snags.
  - Do not cut live trees unless it is determined they will cause fire spread across the fireline or seriously endanger workers. Cut stumps flush with the ground.
  - Scrape around tree bases near fireline if hot and likely to cause fire spread.
  - Identify hazard trees with flagging, glowsticks, or a lookout.
- When using indirect attack:
  - Do not fall snags on the intended unburned side of the constructed fireline unless they are an obvious safety hazard to crews.
  - Fall only those snags on the intended burn-out side of the line that would reach the fireline should they burn and fall over.

Mopup Phase

- Consider using "hot-spot" detection devices along perimeter (aerial or hand-held).
- Use extensive cold-trailing to detect hot areas.
- Cold-trail charred logs near fireline: do minimal scraping or tool scarring. Restrict spading to hot areas near fireline.
- Minimize bucking of logs to check for hot spots or extinguish fire: preferably roll the logs and extinguish the fire.
- When ground is cool return logs to original position after checking.
- Refrain from piling: burned/partially burned fuels that were moved should be arranged in natural positions as much as possible.
- Consider allowing larger logs near the fireline to burn out instead of bucking into manageable lengths. Use a lever, etc. to move large logs.
- Use gravity socks in stream sources and/or combination of water blivets and fold-a-tanks to minimize impacts to streams.
- Personnel should avoid using rehabilitated firelines as travel corridors whenever possible because of potential soil compaction and possible detrimental impacts to rehab work.
- Avoid use of non-native materials for sediment traps in streams.
- Aerial fuels (brush, small trees, and limbs): remove or limb only those fuels which if ignited have potential to spread fire outside the fireline.
- Burning trees and snags:
    - *Be particularly cautious when working near snags (*ensure adequate safety measures are communicated).
    - The first consideration is to allow a burning tree/snag to burn itself out or down.
    - Identify hazard trees with flagging , glow-sticks or a lookout.
    - If there is a serious threat of spreading firebrands, extinguish with water or dirt.
    - Consider felling by blasting, if available.

Aviation Management

Minimize the impacts of air operations by incorporating MIST in conjunction with the standard aviation risk assessment process.

- Possible aviation related impacts include:
    - Damage to soils and vegetation resulting from heavy vehicle traffic, noxious weed transport, and/or extensive modification of landing sites.
    - Impacts to soil, fish and wildlife habitat, and water quality from hazardous material spills.
    - Chemical contamination from use of retardant and foam agents.
    - Biological contamination to water sources, e.g., whirling disease.
    - Safety and noise issues associated with operations in proximity to populated areas, livestock interests, urban interface, and incident camps and staging areas.
- Helispot Planning
    - When planning for helispots determine the primary function of each helispot, e.g., crew transport or logistical support.
    - Consider using long-line remote hook in lieu of constructing a helispot.
    - Consult Resource Advisors in the selection and construction of helispots during incident planning.
    - Estimate the amount and type of use a helispot will receive and adapt features as needed.
- Balance aircraft size and efficiency against the impacts of helispot construction.
- Use natural openings as much as possible. If tree felling is necessary, avoid high visitor use locations unless the modifications can be rehabilitated. Fall, buck, and limb only what is necessary to achieve a safe and practical operating space.

Retardant, Foam, and Water Bucket Use

- Assess risks to sensitive watersheds from chemical retardants and foam. Communicate specific drop zones to air attack and pilots, including areas to be avoided.
- Fire managers should weigh use of retardant with the probability of success by unsupported ground force. Retardant may be considered for sensitive areas when benefits will exceed the overall impact. This decision must take into account values at risk and consequences of expanded fire response and impact on the land.
- Consider biological and/or chemical contamination impacts when transporting water.
- Limited water sources expended during aerial suppression efforts should be replaced. Consult Resource Advisors prior to extended water use beyond initial attack.

Logistics, Camp Sites, and Personal Conduct

- Consider impacts on present and future visitors.
- Provide portable toilets at areas where crews are staged.
- Good campsites are found, not made. If existing campsites are not available, select campsites not likely to be observed by visitors
- Select impact-resistant sites such as rocky or sandy soil, or openings within heavy timber. Avoid camping in meadows and along streams or shores.
- When there is a small group try to disperse use. In the case of larger camps: concentrate, mitigate, and rehabilitate.
- Lay out camp components carefully from the start. Define cooking, sleeping, latrine, and water supplies.
- Prepare bedding and campfire sites with minimal disturbance to vegetation and ground.
- Personal Sanitation:
    - Designate a common area for personnel to wash up. Provide fresh water and biodegradable soap.
    - Do not introduce soap, shampoo or other chemicals into waterways.
    - Dispose of wastewater at least 200 feet from water sources.
    - Toilet sites should be located a minimum of 200 feet from water sources. Holes should be dug 6-8 inches deep.
    - If more than 1 crew is camped at a site strongly consider portable toilets and remove waste.
- Store food so that it is not accessible to wildlife, away from camp and in animal resistant containers.
- Do not let garbage and food scraps accumulate in camp.
- Monitor travel routes for damage and mitigate by:
    - Dispersing on alternate routes or
    - Concentrating travel on one route and rehabilitate at end of use.
- If a campfire is built, leave no trace of it and avoid using rock rings. Use dead and down wood for the fire and scatter any unused firewood. Do not burn plastics or metal.

Restoration and Rehabilitation

- Firelines:
    - After fire spread has stopped and lines are secured, fill in deep and wide firelines and cup trenches and obliterate any berms.
    - Use waterbars to prevent erosion, or use woody material to act as sediment dams.

Maximum Waterbar Spacing	
Percent Grade	Maximum Spacing, Feet
< 9	400
10 – 15	200

Maximum Waterbar Spacing	
15 – 25	100
25 +	50

  - Ensure stumps are cut flush with ground.
  - Camouflage cut stumps by flush-cutting, chopping, covering, or using FLE to create more natural appearing stumps.
  - Any trees or large size brush cut during fireline construction should be scattered to appear natural.
  - Discourage the use of newly created firelines and trails by blocking with brush, limbs, poles, and logs in a naturally appearing arrangement.
- Camps:
  - Restore campsite to natural conditions.
  - Scatter fireplace rocks and charcoal from fire, cover fire ring with soil, and blend area with natural cover.
  - Pack out all garbage.
- General:
  - Remove all signs of human activity.
  - Restore helicopter landing sites.
  - Fill in and cover latrine sites.
- Walk through adjacent undisturbed areas and take a look at your rehab efforts to determine your success at returning the area to as natural a state as possible.