

2024 Pioneer Fire Incident READ Guide

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This document to be updated as needed: ver. June 23, 2024



READ Sensitive Resource Avoidance Flagging = Yellow with Red Polka-Dot

Aquatics

Local contact: Hugh Anthony

Areas/Species of Concern

- Westslope cutthroat trout (species of concern)
- Amphibians (Western Toad, Cascades Frog, Columbia Spotted Frog)

Resource Protection Measures (RPMs)

GENERAL

- Confer with READs prior to the removal of riparian vegetation.
 - READs will confer with aquatic resource specialists prior to the redistribution of cut brush around water bodies.
 - Generally, cut woody debris will be placed in or adjacent to water bodies in a manner approximating pre-fire cover.
- Limit creek and river crossings to pre-existing travel ways, whenever possible.
- Site helispots situated in stream and river channels on durable features outside of the active channel, whenever possible, with the goal of not disturbing rearing habitat.
 - Do not alter log jams to improve landing zones if at all possible.
 - Confer with the Lead READ to select landing zones with the least likelihood of impacting fish species.
- Avoid fire suppression actions in wetlands unless no alternatives exist to control the spread of wildfire into a critical area. Consult with READs prior to any operations occurring within wetlands and riparian areas.
 - Avoid soil disturbance and walking in wetland habitats, wherever possible.

- In the event of a hazardous fuel spill, follow protocols outlined in the NOCA Spill Prevention Control and Countermeasures Plan.

Westslope cutthroat trout (species of concern)

- Protect stream flow (water volume) and stream habitat features.
- Consult with READs prior to installing temporary check dams for drafting.
- Utilize fish screens when drafting from all waterbodies.

Amphibians (Western Toad, Cascades Frog, Columbia Spotted Frog)

- When dipping, draw from the deepest part of the waterbody and avoid near shore areas.
- Utilize fish screens when drafting from all waterbodies.
- Decontaminate all buckets when switching between waterbodies other than Lake Chelan and the Stehekin River below High Bridge. (To avoid the transport of amphibian pathogens: Chytrid Fungus and Ranavirus)

APPLICATION OF FIRE CHEMICALS

- Any application of fire retardant chemicals must be authorized by the North Cascades National Park Complex Superintendent. Fire retardant chemicals will only be used when required to protect human life and property.
 - Prior to the application of any fire chemicals, refer to the [Pioneer Retardant Avoidance Map](#). Consult with READs promptly following the application of any fire retardant chemicals. Include precise geographic location and volume.
- Consider presence of Mt. Rainier white-tailed ptarmigan before application of retardant along subalpine ridges.
- Ensure that all fire chemical delivery systems have been thoroughly cleaned before resuming dipping in natural water bodies.
- Avoid any application of fire retardant chemicals within:
 - 300-ft of perennial and intermittent streams
 - ¼ mile of perennial and intermittent waterbodies (lakes, ponds, etc.)
 - ¼ mile of glaciers and permanent snowfields
 - ¼ miles of designated aquatic Critical Habitat
- The Air Operations Section Chief will provide to the NPS Lead READ a daily account of track logs where retardant was applied and volume of application occurring on NPS lands.

DIPSITES

- Refer to the [Pioneer Dipsite Map](#) before using any dipsite.
- Limit dipping operations to approved dipsites.
 - Tier 1: Preferred Dipsite
 - Tier 2: Available for Use Within the Same Watershed
 - Tier 3: Not Recommended due to presence of AIS, TES, or low volume

Tier 0: Not Recommended

- Confer with incident READs before utilization of any non-Tier 1 dipsite for dipping or drafting.
- Decontaminate helicopter buckets & snorkels/tanks when switching between waterbodies with the exception of switching between Lake Chelan and the Stehekin River below High Bridge.
 - This measure in place to avoid the transport of amphibian pathogens: Chytrid fungus and Ranavirus.
- When dipping, draw from the deepest part of the waterbody and avoid near shore areas.
- Lakes and ponds used as dipsites may not be drained to the level in which their outlets cease to flow.
- Dipping may be conducted only after fire chemical delivery systems have been removed or rinsed clean.
- Ensure that all buckets, snorkels, and tanks have been decontaminated by the standards identified in [PMS 444: Guide to Preventing Aquatic Invasive Species Transport by Wildland Fire Operations](#) prior to utilization on NPS lands.

DRAFTING SITES

- **Utilize fish screens when drafting from all waterbodies.**
- Lakes and ponds used as draft sites may not be drained to the level to which their outlets cease to flow.
- Configure all portable water pump systems (e.g., Mark III) in such a manner that both the pump and fuel cans are situated atop fuel containment reservoirs bearing fuel absorbent pads. At no time should fuel come into contact with any water source. Ensure that fuel containment reservoirs are functional (prop up inside corners with rocks if needed).
- Refuel gas-powered equipment (in exception to portable firefighting pumps) at least 300 feet away from any waterbody.
- Do not backflush pumps and charged hoses into surface water.
- Use check bleeder valves whenever possible.
- Direct flow away from water sources when draining pumps or charged hoses.
- Consult with READs prior to installing temporary check dams for drafting.
- Waterbodies used as draftsites may not be drained to the level in which their outlets cease to flow.

Aquatic Invasive Organisms (AIS)

Local contacts: Beth Fallon

Areas/Species of Concern

- No AIS infestations have been identified within the upper half of Lake Chelan
- Water Milfoil is present in Domke Lake. Do not dip from this location.

Resource Protection Measures

- Clean and sanitize fire management equipment (helicopter buckets, tanks, pumps, snorkels etc.) upon arrival to and departure from an incident.
- Ensure that all buckets, snorkels, and tanks have been decontaminated by the standards identified in [PMS 444: Guide to Preventing Aquatic Invasive Species Transport by Wildland Fire Operations](#) prior to utilization on NPS lands.
- Avoid dipping or drafting from any waterbody infested with AIS.
- Do not backflush pumps and charged hoses into surface water.
- Use check bleeder valves whenever possible.
- Direct flow away from water sources when draining pumps or charged hoses.
- Dip from deep water, far away from shorelines whenever possible
- Helicopter buckets will be inspected for the presence of AIS (plant material and dirt) in advance of dipping operations.
- At a minimum, dry all water delivery equipment completely in the sun following an incident or before transitioning equipment between watersheds.

Invasive Plants

Local contacts: Vicki Gempko & Beth Fallon

Areas/ Species of Concern

- Common Crupina
- Cheatgrass
- Rush Skeleton Weed
- Bulbous Bluegrass

See end of document for definitive list

Resource Protection Measures

- All operational personnel working on USFS lands should conduct a thorough inspection for invasive species seeds on bootlaces, clothing, and gear prior to entering NPS lands.
- Only fresh (direct from the cache) hose should be utilized on NPS lands to prevent the transport of invasive species seeds.
- Hose used on NPS lands should not be utilized on USFS lands and hose used on USFS lands should not be utilized on NPS lands to prevent the spread of invasive species seeds.
- Cargo loads being transported onto NPS lands should be built and received on weed-free surfaces and cargo nets inspected for invasive weed seed prior to flight.
- Any vehicles barged up to Stehekin will be pressure washed for soil and invasive seeds before being loaded in Chelan. Vehicles will be inspected in Stehekin before leaving the barge landing.
 - Vehicles and equipment will be considered disinfected when a visual inspection does not reveal seeds, soil, vegetative matter, and other debris that could harbor invasive propagules.

- A READ will be consulted to assist in the avoidance of invasive plant populations before and during the establishment of all fire management operational sites (e.g., camp location, helibase/helispot location, fireline construction, etc.).
- Fire management operations will avoid invasive weed infestations to the greatest extent possible (e.g. line construction, site location, etc.).
- Inspect and disinfect firefighting equipment (e.g. vehicles, heavy equipment, pumps, cargo nets, helicopter buckets, pumps, etc.) and personal line gear (line packs, Nomex clothing, boots, hand tools, tents, etc.) for invasive seed and propagules before re-locating resources to different locations.
- Provide portable boot brushes to fireline personnel and advise firefighters to clean gear and boots before accessing new areas of the fire. Handheld Boot brushes are available from NPS READs.
- To the greatest extent possible, minimize the landing of helicopters in the backcountry.
 - Consider cargo delivery via longline as an alternative to landing.
- Pre-treat frequently utilized helispots to prevent the transmission of invasive weeds:
 - Mowing
 - Hand removal (Marblemount helipad)
 - Affixing tarps to the ground in cargo assembly areas.
- Conduct visual inspections of helicopter cargo nets and other transported materials for invasive weed seed and propagules upon receipt and prior to flight.
- Minimize driving in areas infested with invasive plants, whenever possible.
- Document the location of potential invasive species establishment sites so that they may be monitored in subsequent years.

Rare Plants

Local contacts: Vicki Gempko & Beth Fallon

Areas/ Species of Concern

- Giant hellebore
- Sierra cliff brake
- Western ladies tresses
- Hair-like sedge
- Norway sedge
- Salish fleabane
- Northwestern moonwort
- Russian sedge
- Weak saxifrage
- Whitebark pine
- Giant orchid

Resource Protection Measures

- Fire management operations should attempt to avoid rare plant populations to the greatest extent possible (e.g., line construction, site location, etc.).
- Consult with a READ to assist in the avoidance of rare plant populations before and during the establishment of all fire management operational sites (e.g., camp location, helibase/helispot location, fireline construction, etc.).

Whitebark Pine (designated threatened)

- Whitebark pine has 5 short needles in a bunch and occurs above 4500 ft. elevation.
 - This tree can be confused with White Pine which is also uncommon but not threatened.
- Do not cut or damage any [whitebark pine](#) trees or seedlings.
 - Whenever possible avoid cutting any 5 needle pines.
- As feasible, exclude fire or promote low intensity fire within whitebark pine stands.

Vegetation

Local contacts: Vicki Gempko & Beth Fallon

- Minimize soil and vegetation disturbance associated with camps, staging areas, helispots, lookout locations, etc.
- Whenever possible, avoid cutting large-diameter trees and snags greater than 20 in. diameter at breast height (DBH)
 - Document any live large diameter trees greater than 20 in. DBH which have been cut (GPS point and DBH).
- Whenever possible, avoid siting helispots on fragile subalpine/alpine vegetation.
- Whenever possible, avoid fireline construction in wetland and riparian areas.
- Retain snags wherever possible unless removal is required for suppression or safety reasons.
- Flush cut and disguise stumps within view of trails or roads.
-

Chipping Operations

- If operationally feasible, chipped material should be collected and piled at the chip pile past the ballfield on the way to the Stehekin Airstrip. Consult with READs to confirm piling location.
- If roadside chipping does occur then:
 - Chips should be scattered any deeper than 2 inches in depth to avoid impacts to native vegetation
 - Chips should be scattered out of view from roads and trails to the greatest degree possible.
 - Chips should not be scattered into waterways.

Wildlife

Local contacts: Jason Ransom & Roger Christophersen

Areas/ Species of Concern

Avoid staging and operating helicopters within threatened and endangered species habitat.

- **Peregrine falcon**
 - Peregrine falcons are currently nesting. They nest in cliffs.
 - Avoid low-level flight and UAS flights within 0.25 miles of know Peregrine nest sites.

■ [NPS Pioneer Fire Aircraft Avoidance Zone Map](#)

● **Bald Eagles and Ospreys**

- Avoid helicopter flights within 300 ft. of active and inactive bald eagle and osprey nests at any time. These raptors often use inactive nests as day perches and feeding platforms.
 - A Bald eagle nest is present at Weaver Point
 - An Osprey nest is present near Castle Creek
- As feasible, exclude fire or promote low intensity fire within 0.25 miles of known nest sites.
- Avoid felling nest trees.

● [Mt. Rainier white-tailed ptarmigan](#) (proposed federally threatened) critical habitat exists along subalpine ridges.

- Minimize helicopter landings along subalpine ridgelines.
- Gently shoo away ptarmigan in advance of all helicopter landings.
 - Chicks are flightless now and should not be separated from adults.
- Consider presence of ptarmigan before application of retardant along subalpine ridges.

● **Canada Lynx**

- As feasible, exclude fire or promote low intensity fire in Canada Lynx habitat.

● **Western Gray Squirrel**

- Avoid limbing above the lower 1/3 canopy of trees; particularly mistletoe platforms which squirrels favor as nest sites.

● **Gray Wolf**

- Wolves are present in the Stehekin valley and may be denning. They are in the later stage of denning and may be moving from the primary den to rendezvous sites. It is currently unknown where these locations are.
- Report any wolf encounters or possible den detections to the READ.

● **Wolverine**

- Wolverine are present in the Stehekin valley and are highly mobile. Den sites are likely in persistent snow at higher elevations, but could also occur in large rock formations or root wads. Helicopter landings at high elevations should avoid areas with excessive animal tracks in the snow, especially when radiating from a central location.
- Report all wolverine encounters to the READ.

● **Fisher**

- Fishers have recently been detected in the valley. Retain trees and snags with visible holes that are at least 3" or larger diameter, and more than 10 ft off the ground. These may indicate a cavity with sufficient size for fishers to den or rest in.
- Report all possible fisher sightings to the READ.

● **Black-backed Woodpecker**

- Retain snags wherever possible unless removal is required for suppression or safety reasons.

● **Black Bears**

- Ensure that all attractants (food, garbage, fuel, scented products, hygiene products) are properly secured in bear resistant containers at all times.
- Report any bear encounters (including obtaining food) to READs.

- **Northern Goshawk**
 - No known nest sites have been identified in the fire planning area, but Northern Goshawk are present within the Stehekin Valley.
 - As feasible, exclude fire or promote low intensity fire within 300 feet of known nest sites.
 - Avoid felling nest trees.

- **Northern Spotted Owl** (federally threatened)
 - Critical habitat is present throughout Stehekin River watershed.
 - Spotted owl nests and historic territories have been found within the Stehekin River watershed.
 - Avoid felling historic nest trees.
 - As feasible, exclude fire or promote low intensity fire within 0.25 miles of known nest sites.
 - Avoid felling suitable nest trees (SNT)s in potential NSO habitat. Follow Spotted Owl SNT protocols in worksheet below:

Northern Spotted Owl Suitable Nest Tree Worksheet

Northern spotted owls live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops. Although they are known to nest, roost, and feed in a wide variety of habitat types, spotted owls prefer older forest stands with variety: multi-layered canopies of several tree species of varying size and age, both standing and fallen dead trees, and open space among the lower branches to allow flight under the canopy. Typically, forests do not attain these characteristics until they are at least 150 to 200 years old.



The tree you are evaluating is a conifer tree or snag (alive or dead) that is at least 18 inches diameter at breast height (DBH) OR a tree that the hazard tree could damage when felled:

Date: _____ DBH: _____

Location: _____ Name: _____

Tree Species: _____

Yes or No Criteria

Either:

- a. contains a nesting structure such as a broken top, cavity, nest of a large raptor, mistletoe broom, or branch platform large enough to support a spotted owl nest (at least "one foot in diameter); OR
- b. you cannot determine if the tree contains a nesting structure (cannot see the tree well).

If Yes then proceed to next question. If No then stop evaluation, you may fell the tree.

Does the nesting structure have good cover above and on the sides to hide the nest from predators and inclement weather? Such cover can be provided by limbs or foliage within the same tree or in adjacent trees.

If Yes then proceed to next question. If No then stop evaluation, you may fell the tree.

Is the date between March 1 and July 15?

If Yes then DO NOT FELL the tree. If No then you may fell the tree.

Notes:

- 1) It is not a sure indicator that a tree is being used but you can look for signs of use on the ground and vegetation within a 30-foot radius of the trunk. Signs of use include areas notably "white washed" with excrement, feathers and a collection of regurgitated owl pellets. Regurgitated pellets will contain small bones and fur from prey. Note that white-washed areas rarely occur on the trunk of the tree itself.
- 2) If you answer "Yes" to all criteria above you may need to close the area threatened by the hazard tree. In the space below please describe in detail the area that would need to be closed and get a message to a Wildlife Biologist as quickly as possible whether through Comm Center or by phone or email. Please also describe any other observations regarding presence of owls (calls, sightings, etc.).

Cultural Resources

Local contact: Kim Dizenzo and Emma Lafave

Areas of Concern

Top priorities are in **RED**

- **Flick Creek Shelter**
- Stehekin Landing vicinity
 - **Stehekin Pictographs** (This site is publicly known and plotted on USGS maps, 45CH66)
 - **Purple Point Ranger Station House** (Wilsey House, employee housing)
 - Purple Point Ranger Station Woodshed (next to Wilsey house)
 - **Purple Point Ranger Station Bunkhouse** (Concession employee housing)
 - Golden West Lodge Historic District and Cultural Landscape
 - **Golden West Lodge** (Visitor Center and NPS Admin building)
 - Golden West Garage/workshop (SAR cache)
 - Cabin 10
 - Cabin 11
 - Cabin 12
 - Cabin 13
 - Cabin 14 (House the Jack Built)
 - Cabin 15
 - Various rock walls and stone steps (contribute to cultural landscape)
 - Shuffleboard court (contributes to cultural landscape)
 - Swimming pool ruins (contributes to cultural landscape)
 - Imus House complex
 - **Imus House** (employee housing)
 - Imus House Barn (double check this is the right name)
 - Imus House Laundry Shed (I think this is the one filled in by the landslide)
 - **George Miller House** (larger log cabin, concession employee housing)
 - **McKellar Cabin** (small unoccupied log cabin)
- Lower Stehekin Valley vicinity
 - **Courtney Cabin** (unoccupied log structure at the end of Company Creek Road)
 - Courtney Cabin water tower (next to cabin, in poor shape)
 - **Old Stehekin School** (not owned by NPS but on NPS land)
 - Buckner Homestead Historic District and cultural landscape (see recent CLI as I may have missed some contributing features, there are a lot!)
 - **Buckner Main House** (employee housing)
 - **Buzzard Cabin**
 - Buckner Chicken House
 - Buckner Delco House
 - Buckner Milk House
 - Buckner Outhouse

- Buckner Playhouse
 - Milk Separator House
 - Buckner Root Cellar
 - Buckner Sleeping Cabin E
 - Buckner Sleeping Cabin W
 - Buckner Brooder House
 - Buckner Woodshed
 - Buckner Sundial
 - Buckner Swimming Pool Ruins
 - Apple orchard (some trees are 100 years old)
 - Historic irrigation channels (with wood components)
- Mid Stehekin Valley
 - High Bridge Ranger Station historic district and cultural landscape
 - High Bridge Ranger Station
 - High Bridge Garage
 - High Bridge outhouse
 - High Bridge Barn and corral
 - Various stone walls and steps
 - High Bridge Shelter (across the bridge in the campground)
- Cultural Sites
 - Culturally modified trees
 - Speak with ARCH about archeological site locations and protection

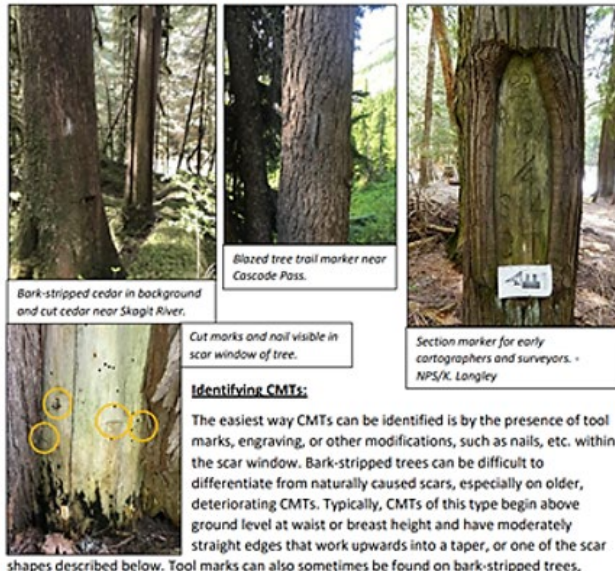
Resource Protection Measures

- Consult with a Fireline Archeologist (ARCH) prior to conducting operations in areas of known or anticipated cultural resources (e.g., establishing camp and helispot locations, constructing fireline etc.).
- Fire management operations will avoid known cultural resource sites to the greatest extent possible (e.g., line construction, site location, etc.).
 - Site avoidance during suppression operations is the primary method of cultural resource protection.
- Protect vulnerable cultural resources bearing combustible materials from direct and indirect impacts associated with fire. Strategies include:
 - Manually reduce fuels on or around vulnerable sites. Pile debris offsite.
 - Remove logs and heavy fuels from vulnerable sites and features.
 - Cover sites/ features with foam, retardant, or structure wrap prior to burn.
 - Modify operations to minimize detrimental effects to cultural resources (e.g., burnout operations favoring low intensity conditions).
- If a resource is in imminent threat of burn over, record and collect information that may be lost during the fire.

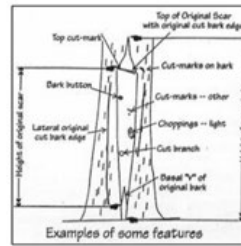
Identifying Culturally Modified Trees

Definition: A culturally modified tree (CMT) is any tree that has been altered by humans, particularly indigenous people, for traditional or cultural use of the forest. CMTs can include scarred trees, bark-stripped trees, bent or curve trees, dendroglyphs, and other modified trees. CMTs can have both historic-era or pre-contact modifications, and can be found on any species of tree.

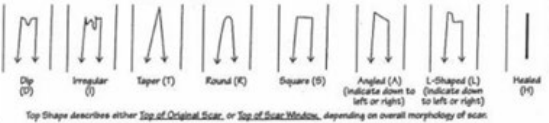
CMTs are protected as part of our history and provide additional context when reconstructing how the landscape was utilized. They may also be considered archaeological sites. There are many reasons why people in the past would have modified or scarred trees. Some of the most easily identifiable CMTs include bark-stripping for basket material or other purposes, blazed tree or trail marker scarring, and surveying or mining property identification.



usually along the base of the scar window. *If unsure, STOP work, take photos, record the location, and contact the Cultural Resources department for further assistance.*



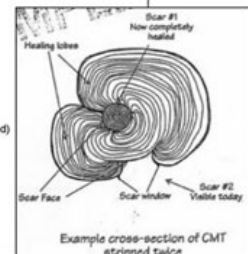
CMT Scar Top Shape/Form



ABBREVIATIONS TO USE WHEN RECORDING CMTS

CLASSES AND TYPES OF CMTS

BS Bark-stripped Tree	OM Other Modified Tree (Continued)
T Tree with Tapered Bark-Strip Scar(s)	M Message Tree
R Tree with Large Rectangular Bark-Strip Scar(s)	A Arboglyph Tree
G Tree with Girdled Bark-Strip Scar(s)	G Arbograph Tree
O Tree with Other Bark-Strip Scar(s)	B Blazed Tree
AL Aboriginally-Logged Tree	S Sap Collection Tree
T Tested Tree	O Other
U Undercut Tree	
F Felled Tree	
S Sectioned Tree	
N Notched Tree	
P Planked Tree	
C Canoe Tree	
OM Other Modified Tree	
P Pitch Collection Tree	
K Kindling Collection Tree	
D Delimbed Tree	



Images from "Cultural Modified Trees of British Columbia: A Handbook for the Identification and Recording of Culturally Modified Trees," by B.C. Ministry of Small Business, Tourism and Culture, Archaeology Branch, 2001, Resources Inventory Committee; and TRACES Archaeological Research and Consulting Ltd. Ver. Feb 26, 1998.

Archaeological Resources

- Avoid construction of handlines, staging areas, spike camps, roads, helispots or any other action which disturbs mineral soil within or adjacent to known archeological sites.
 - Avoid all impacts within a 100-foot buffer of a known archeological site.
- As appropriate, flag archeological site boundaries to ensure avoidance during ground disturbing operations. Remove flagging as soon as it is no longer needed.
- Survey for archeological sites ahead of any fire operations that may result in large scale soil disturbance.
 - While every effort should be taken to survey for sites prior to disturbance, surveys may be completed afterwards if not feasible beforehand.
- Favor tactics which limit fire intensity and duration over vulnerable sites.
 - Historical sites are generally more susceptible to detrimental fire effects than are pre-contact sites.
- Favor fast-moving, higher intensity fire behavior over lithic scatters, where rock materials are vulnerable to longer-duration heating.
- Flush cut and cover stumps with dirt, foam, or retardant when fire intensity could affect subsurface sites.
 - Consult with READ before any application of fire retardant chemicals.

- As appropriate, consider burning out sites in a manner which promotes lower fire intensity.
- Minimize the potential for disturbance to archeological sites by favoring suppression via water and/or use of natural barriers rather than construction of containment lines.
- Avoid or minimize soil compaction to archeological sites by employing rubber-tired (rather than tracked) vehicles to conduct fire operations.

Historic Structures and Landscapes

- Reduce hazard trees adjacent to historic structures as appropriate.
 - Consult with READ prior to implementation.
- Establish sprinkler systems on and around historic structures, as feasible.
- Construct handline or wetline around historic structures, as feasible.
- Favor low intensity backing fire in areas adjacent to historic structures and features.
- Saturate surface and subsurface fuels adjacent to vulnerable historic structures with water, foam, or gel before burning.
 - Consult with READ prior to implementation.
- Wrap culturally modified trees, dendroglyphs and other such features in fire retardant fabric.
- Wrap structures in fire retardant fabric to protect from fire. Consider the effects of staples prior to application.
- Prioritize the protection of combustible character-defining elements of a cultural landscape.
- Employ foam to protect structures only when necessary. Wash metal components as soon as possible following fire to minimize detrimental corrosion.
 - Consult with READ prior to implementation.
- Employ retardant to protect structures only when there is imminent threat of burnover and all other methods have been considered. Wash retardant residue off structures as soon as possible.
 - Consult with READ prior to implementation.

Helispots

- Consult with READs prior to constructing any new helispot or modifying a pre-existing helispot in a manner resulting in soil disturbance and/or the cutting of vegetation.
 - Site new helispots on previously disturbed sites or in open areas, whenever possible. Consider the utilization of natural openings and pre-existing helispots before constructing any new helispot.
- Retain snags for wildlife benefit unless required for suppression objectives or safety consideration, whenever possible.
- Site helibases and helispots in weed-free areas to prevent the transport and dispersal of invasive weeds, whenever possible.
 - Mitigate unavoidable weedy sites by mowing or affixing tarps to the ground in cargo assembly areas.
- Conduct visual inspections of helicopter cargo nets and other transported materials for invasive weed seed and propagules before use.
- Minimize the operation and staging of helicopters within threatened and endangered species habitat.
- Avoid landing or staging helicopters on biological soil crusts.
- Whitebark pine trees (short 5-needle fine at high elevations) will not be cut when constructing or modifying helispots.

- Site helicopter landing and refueling areas at least 300 feet away from all waterbodies and wetlands.
- Site helispots situated in stream and river channels on durable features outside of the active channel, whenever possible.
 - Confer with the Lead READ to select landing zones with the least likelihood of impacting fish species.

Stephen Mather Wilderness

Local contact: Kristen Doering

Areas of Concern

- Visual impacts
- Wilderness qualities

Resource Protection Measures

- **All fire management activities conducted in wilderness will employ Minimal Impact Strategies and Tactics (MIST).**
- Incident personnel will follow Leave No Trace (LNT) practices, to the greatest degree possible.
- Embed a READ with any large crews working or camping in designated wilderness.
- If pre-existing locations are not available, READs will assist incident personnel in siting camps on previously disturbed sites, sites with resilient soils and vegetation, and/or in open areas.
- If wilderness camps are unavoidable, utilize existing campsites or previously impacted locations whenever possible.
 - Site new campsites in locations which are unlikely to be encountered by wilderness visitors in the future.
 - Avoid siting camps in wet meadows, fragile subalpine/alpine vegetation, on biological soil crusts, along riparian areas, or on lake shores.
- Do not clear vegetation, trench, or excavate soil to create campsites. Minimize disturbance to vegetation and soil when establishing crew sleeping areas.
- Locate equipment staging areas and camps (unless pre-existing) greater than 300 feet from any waterbody and wetlands.
- READs will advise camp managers on minimum impact camping practices (e.g., food storage, human waste management, camping and campfire locations, access, etc.) for both front country and backcountry camps.
- Store all food and garbage in a manner which is secure from contact with animals.
- If existing latrines are not available, a READ will assist crew in identifying solutions for human waste management.
- All garbage, including micro-trash and flagging, will be removed from the site following use.
- Campfires will not be allowed in spike camps unless approved by a READ per the following considerations: availability of firewood, camp elevation, soil type, and whether campfire is built on top of a fire-resistant material (e.g., old fire shelter) to prevent leaving a blackened fire ring unless constructed in a previously burned location.
- The Incident Commander (or their delegate) will track the number of UAS and helicopter flight hours within the entirety of NOCA's boundaries and the number of sling load deliveries/retrievals. This

information will be documented in the NOCA Fire Aviation Log and provided to the NOCA Wilderness District Ranger and Lead READ at the end of the incident for inclusion in the Incident READ Report.

- The Lead READ will document the number of incident personnel overnighing in NOCA designated Wilderness on the NOCA Wilderness Overnight Tracking form. This data and accompanying maps indicating backcountry camp locations and coordinates will be provided to the NOCA Wilderness District Ranger at the end of the incident and will be included in the Incident READ Report.

Water, Soils and Geological Resources

Local contact: Mike Larabee and Sharon Sarrantonio

Areas of Concern

- **Erosion**
 - Water quality
- **Surface water resources**
 - Wetlands
 - Streams and riparian corridors
- **Biological Soil Crusts**

Resource Protection Measures

Erosion

- Locate firelines on previously disturbed areas and away from highly erosive soils, steep slopes, and other sensitive features, whenever possible.
- Establish containment lines on previously disturbed areas and/or along conducive natural features (scree slopes, creeks, ridgelines, etc.), whenever possible.
- Minimize soil disturbance and the potential for sediment delivery to water bodies during and after fire operations by using pre-existing barriers such as roads, trails, talus slopes, etc. as containment lines even when these selections may result in an increase in burned area.
- Limit containment lines to 3 feet in width, whenever possible.
- Avoid all ground disturbance (line construction, foot traffic, helispots, camps, etc.) in areas covered by cryptobiotic (biological soil) crusts, whenever possible.
- Avoid digging lines across, and especially down, steep slopes, especially those above water bodies, whenever possible.

Infrastructure/ Trails

Local contacts: Bill Zimmer & Aaron Robinson

Trail Infrastructure

- Rainbow Creek Bridge
- Purple Creek Bridge
- Imus Creek Bridge
- 4-Mile Creek Foot Log

Resource Protection Measures

- Communicate the location of these values to the IMT.
- Protect burnable infrastructure as feasible (e.g., structure wrap, sprinklers, remove fuels, etc.).
- Avoid major modifications to roadways, trails, water sources, or clearings except for small scale maintenance to remove obstructions unless authorized by the Park Superintendent.
- Video/photograph threatened infrastructure before impact from fire or fire suppression for documentation.

INVASIVE SPECIES OF CONCERN:

- Common Crupina
- Cheatgrass
- Spotted Knapweed
- Diffuse Knapweed
- Scotch broom
- Orchard grass
- St. Johnswort
- Evergreen pea
- Oxeye daisy
- Dalmatian toadflax
- Yellow toadflax
- Alfalfa
- Reed canary grass
- Bulbous bluegrass
- Japanese knotweed
- Giant knotweed
- Sulphur cinquefoil
- Evergreen blackberry
- Stinking willie
- Spiny sow thistle
- Giant mullein
- Canada thistle
- Bull thistle
- Prickly lettuce