

Tamarack Fire Initial Suppression Repair Plan – 07/26/2021



Approvals:

Matthew Zumstein
Agency Administrator

USFS, Carson Ranger
District

Paul Fusilier
Agency Administrator

BLM, Carson District

Dan Dallas
Tamarack Incident
Commander

This Suppression Repair Plan is being developed to provide initial repair guidance to the Incident Management Team (IMT) with management responsibilities for the Tamarack Fire. Note that this initial Plan may be modified or added to as additional repair needs are identified through field inspections or as repair feasibility and need is assessed through coordination between the Agency Administrators and the IMT. Primary needs are initially expected to be completed under the management of the IMT, however some work may be completed by local units as facilitated by an “S-code”.

Goals

- Prioritize firefighter and public safety during suppression repair activities.
- Minimize impact to availability of suppression resources for other fire needs around the country.
 - Where appropriate, prioritize IMT resource support for repair of physical functions over repair of aesthetic values to minimize impacts to availability of fire suppression resources.
- Ensure repair activities do not cause additional damage to prehistoric or historic cultural resources.
- Reduce or eliminate likelihood of risk to human health due to fire suppression impacts.
- Reduce or eliminate likelihood of additional loss of cultural or natural resources and to due to fire suppression impacts.
 - Prevent or reduce soil loss on all fire lines and fire suppression related disturbances.
 - Prevent or reduce degradation of water quality due to suppression related activities.
- Conserve wilderness characteristics in wilderness areas and wilderness study areas (e.g., utilize Minimum Impact Suppression Tactics (MIST)).
- Prevent conversion of control lines into unauthorized roads or trails.
- Minimize potential for spread of noxious or non-native plants.
- Develop clear plans for local unit repair actions to be taken after the fire is out.

Repair Preparation

- Map any hand line, dozer line, spike camps, drop points, or other suppression disturbance/ damage not already mapped (e.g., by Field Observer (FOBS) or Resource Advisor (READ/F)) and return to Team Geographic Information System Specialist (GISS) and Lead READ for inclusion in a repair map.
- Map any retardant use in/ near riparian and wetland areas or in wilderness not already mapped (e.g., by FOBS or READ/F) and return to Team GISS and Lead READ for inclusion in a repair map.
 - Any retardant applied within 300 feet of a Lahontan cutthroat trout stream or within 600 feet of a Paiute cutthroat trout stream should also be mapped and reported, regardless of whether the area is considered riparian or not. Maps of streams can be provided.
- Map any suppression damage to cultural sites not already mapped (e.g., by FOBS or READ/F) and return to Team GISS and Lead READ for inclusion in a repair map.
- Map any fence, road, or culvert suppression damage not already mapped by (e.g., by FOBS or READ/F) and return to Team GISS and Lead READ for inclusion in a repair map.
- Back haul all trash, hose, pumps, equipment and tools used for suppression activities.

Expectations Related to Resource Advisors

- Repair completed by the IMT should be inspected by a READ/F.
- Where repairs occur in sensitive areas (aquatics, botany, wildlife Threatened and Endangered Species (TES) species, and Arch sites) READ/F should be on site to provide supervision and guidance.

Repair Needs

Dozer Line and Hand Lines

- Where control lines cross known or discovered archeology sites, a qualified archaeologist will determine and document the extent of the site disturbance and any possible damage prior to the initiation of repair. A qualified archaeologist will also need to be on site during repair to determine practices to avoid further damage.
- Minimize erosion through installation of water bars, check dams, and/ other erosion control techniques (see desired specifications below) where water can be drained into unburned areas, rocky areas, or dense vegetation.
- Restore original ground shape (outside of water bars) where possible using a reasonable amount of effort. Ensure berms are minimized or eliminated.
- Fall hazardous trees that pose safety hazards to crews working on repairs.
- Scatter vegetative debris/ slash and rocks to camouflage control line. Where heavy equipment would cause more damage scattering vegetative debris/ slash, hand crews can be used after equipment re-distributes soil and rock.
- Close all control lines to prevent unauthorized use by vehicles.
- Where control lines approach stream channels, install water-bars or other erosion control measures at end of the line or at bankfill edge.
- Where control lines disturbed wetland or meadow grasses/ sod, roll or place sod back into line.

Waterbar Guidelines

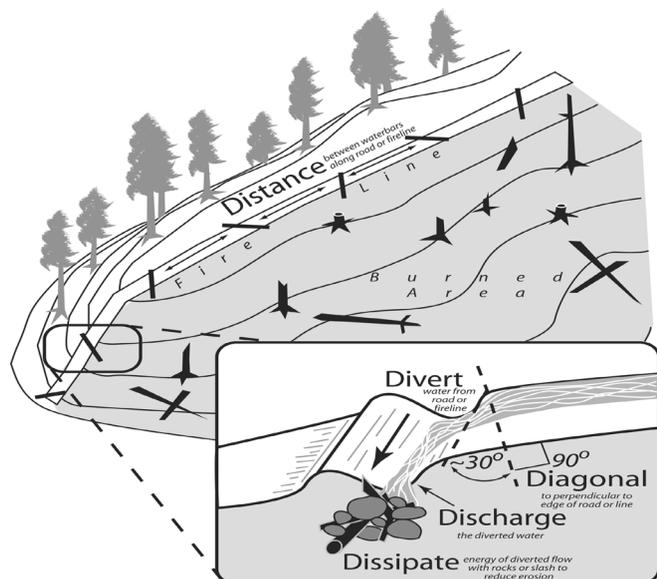
- **SPACING:** These spacing distances should be used as a **guide**. Judgment should be used in locating waterbars to minimize erosion potential. It may not be possible or necessary to place waterbars in steep or rocky areas. Install waterbars at the following recommended **minimum** intervals:

Fireline Gradient (% slope)	Minimum Distance between Waterbars (feet)
Less than 10	250
11 to 20	100
21 to 40	50
Greater than 40%	25

- **LOCATION:** Locate waterbars at natural slope breaks or to take advantage of natural features, low spots and turns when possible. Direct water to unburned areas, and/or resistant surfaces with high vegetation cover when possible. Water bars should discharge into undisturbed areas and preferably rocky ground or filter areas well protected with slash and vegetative cover.

- **DEPTH AND WIDTH:** Waterbars need to be cut into surface, do not simply push up soil. Water-bar depths for dozer line should be at least 6 inches; total height from bottom of ditch to top of water-bar should average at least 18 inches and not exceed 24 inches. The width of the water-bar channel should be enough to handle expected water flows and to avoid plugging when a normal amount of sloughing occurs.

- **ANGLE:** Determine the average gradient in percent slope of the fireline being waterbarred. Add 5 to the average gradient. This approximates the angle in



degrees for the water bar. Do not install water bars at an angle steeper than 45 degrees as this will increase water velocity rather than slow it down.

- Slope water bars away from burned area if possible. If directing a water bar to the unburned side of the line would cause water to drain back onto a dozer or hand line or if both sides of the line are burned, consider the following:
 - Longer water-bar run outs into the green.
 - Create a pattern of small swales and mounds on the fire line; essentially breaking up the fire line into very small, hydrologically disconnected segments. These disconnected segments will store overland flow and not allow water to collect enough momentum to become erosive.
 - On steeper slopes, the use of contour ripping may be the best treatment.
 - More frequent water-bars into the black.
- HANDLINES: Water bars for handlines should be cut to a depth equal to the width of a standard fire shovel. The water bars will be constructed diagonally across the control line at an angle of thirty-five to forty degrees. The outside end of the water bar must be open and should discharge into an area where the ground surface is protected by vegetation that is unburned.
 - Water bars need to be cut into the ground surface, do not simply push up soil. The width of the water bar channel should be enough to handle expected water flows and to avoid plugging when a normal amount of sloughing or sediment movement occurs. The outflow of the water bar should be as wide as feasible to prevent deposited sediment from blocking water flow.
- SOIL SURFACE ROUGHENING: Implement action roughing up surface (wattles, stair step grading, grooving, tracking, divots) to prevent erosion and motorized use in areas specifically identified by Resource Advisors.
 - Bladed slopes and compacted areas may be pitted (prior to pulling back berms and slashing) to de-compact soil, allow infiltration and decrease erosion. Pitting is performed best by an excavator making alternating pits and hummocks in the mineral soil. Pitting a dozer line is a continuous process on the slope. The finished slope should resemble a waffle. The steeper the slope the deeper the pits.
- Streambanks and wetland areas where disturbance was created require site-specific consultation with a Resource Advisor. These areas will be identified in the Suppression Repair Map and may require additional materials or special equipment.
- Where there is concern, consult with READ/F if available.

Lines Inside Wilderness or Wilderness Study Area

Efforts will be made to blend suppression damage into the landscape and provide an untrammled wilderness experience for visitors. Practice Minimum Impact Strategies and Tactics (MIST).

- All repair must be completed by hand crews.
- Where control lines cross known or discovered archeology sites, have a qualified READ on site to determine Best Management practices to avoid further damage.
- Eliminate berms and restore original ground shape (outside of water bars).
- Minimize erosion through installation of water bars (see desired specifications above).
- Utilize vegetative debris/ slash or rocks to control to prevent unauthorized use by vehicles or the creation of new trails.

- Where control lines approach stream channels, install water-bars at end of the line or at bankfull edge.
- Scatter vegetative debris/ slash and rocks (using reasonable effort) to camouflage control line with particular emphasis on lines that connect to existing recreational trails.

Drop Points, Safety Zones, Helispots and Other Cleanings

All heli-spots, heliports, safety zones, drop points, and other clearings require archaeological and biological surveys prior to rehabilitation.

- Remove all evidence of fire suppression activities in and around Drop Points including but not limited to; trash, flagging, signage, etc.
- Restore natural drainage where needed.
- Pull or back blade displaced soil and vegetation back onto the area.
- Scatter vegetative debris/ slash and rocks (using reasonable effort) to camouflage drop points, safety zones, or helispots.
- In some cases, chunking, berming or other barriers may be used in combination with the above primary techniques to prevent access for unauthorized OHV use.

Damaged Resources/Property

Archaeological Sites

- Any impacts to archaeological sites will be evaluated and mitigated on a case-by-case basis prior to rehabilitation activities.

Facilities

- Correct impacts to facilities and grounds used for ICP, Staging, Heli-base and other installations.
- Remove all equipment, flagging, and trash generated during the incident in and around facilities occupied in the course of the fire suppression activities.
- Restore access controls that existed prior to the incident.
- Remove any temporary Remote Automatic Weather Stations (RAWS) (or have a plan to do so).
 - Ensure any RAWS sites in wilderness are repaired to minimize evidence that the site was used for a RAWS.

Improvements

- Repair any fences, gates, guzzlers, flood control basins, drainage channel, culverts, and paved roads damaged by suppression activities will be repaired to pre-fire conditions.
- When dealing with damages to private property, repairs/mitigations to improvements that are beyond the capacity of suppression resources, notify the Resource Advisor and/or designee and also the compensation claims unit.

Property

- Instruct public on how to report damaged property to the comp claims unit.

Excess Fuels

Brush Piles/ Wind Rows

- Scatter, lop, crush, masticate or chip brush piles or wind rows within 100 feet of residences, public roads, or along identified strategic fuel breaks or pile slash in areas where they can be burned. Consult with Resource Advisor for the proper treatment of excess fuels.
- In sensitive areas where vegetation ground cover is below 50%, add wood straw.

Large Woody Debris

- Move whole trees to roadside edge of fire line. Delimb whole trees to provide ground cover.

- Strategically place trees, pulled in toward the road and parallel to road in order to deter OHV users from using the dozer line for recreational purposes to reduce resource damage. **(Entire fire line)**
- Lop and scatter branches or chip to a depth of less than 18 inches in order to reduce fuel accumulation and create microclimates advantageous for tree recruitment. **(Entire fire line)**
- Cut and remove (deck) excessive large woody fuels (hazard trees) in areas identified by a Resource Advisor.

Noxious and Non-Native Plants

- Utilize a combination of inspections and a weed wash station for fire suppression and suppression repair equipment checking into the incident and checking out of the incident.
- Utilize Planning Section/ GIS to support local units in consolidating needed information to develop a treatment strategy for possible new or expanded population of noxious or non-native plants that occur as a result of fire suppression activities.

Roads used for Fire Lines

- Install water bars or rolling dips as needed to drain water from existing roads to prevent erosion.
- Ensure any out-slope berms created by dozers on roads are minimized or eliminated, ensuring any remaining berm feature will not significantly alter hydrology.
- Clear out any culverts or drainages that were blocked with debris as a result of fire suppression.
- Restore access controls that existed prior to the incident.
- Repair or replace culverts that were damaged by suppression to the point that they would result in a risk of greater loss during high flows.

Roads (not used for control line)

- Where addition of water would not be required, restore roads that were passable before the fire to at least a minimally functional condition, including the repair/ re-construction of water bars, drainage systems, culverts.
- Fell hazard trees that would pose safety hazards to crews working on road repair.
- Restore access controls that existed prior to the incident.
- Utilize waterbars as needed to restore roads to pre-fire condition, including the repair/ re-construction of water bars, drainage systems, and culverts as well as surface blading.
- Remove major hazard trees along roads to ensure public safety.

Sensitive Areas

- Minimize further damage to Cultural/Historic resources by avoiding areas that have been flagged with sensitive resource flagging (yellow and black checker).
 - Contact Resource Advisor before proceeding with work in these areas.
- Minimize further spread of noxious weeds by avoiding areas that have been flagged (orange flagging with Noxious Weed) with equipment and rehabilitation activities.
 - Contact Resource Advisor before proceeding with work in these areas.
- In sensitive areas identified by Resource Advisor, add wood straw where vegetation ground cover is below 50%.

Stream Channels

- Remove material used to construct diversions or impoundments.
- Block access to stream channels where not previously accessible from roads or trails; use slash and make natural appearing.
- Additional damage to streamside vegetation and live trees should be minimized.
- If soil was pushed into stream channels, pull soil back at least 50 feet from stream banks.
- Do not disturb stream bottom and stream bank.

- Leave burned streamside trees/snags as they are to eventually fall into the streams on their own (where safety isn't an issue).

Instream Improvements (water sources)

- All building and other materials such as plastics, canvas, plywood, dimension lumber, etc., will be removed from such sites to a suitable disposal site or be recycled.
- All trash, cardboard, hoses, fittings, and pumps will be removed from the site.