

3.3.5. Appendix E Rogue River- Siskiyou NF 2011 Resource Advisor Reference

**Rogue River – Siskiyou NF
2011 Resource Advisor Reference Materials**

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File 5130-1/2670

Date: June 10, 2009

Code:

Route

To:

Subject: 2009 Emergency Consultation Documents and Fire Call List

To: District Rangers

Enclosed are the U.S. Fish and Wildlife Service and National Marine Fisheries Service emergency consultation procedures, fire suppression recommendations, Burned Area Emergency Response recommendations, listed species recommendations, and the natural resources fire call list for fire season 2009. Please distribute widely to your fire organization and resource specialists. For ESA listed fish species consultation issues please contact Susan Maiyo, Forest Fishery Biologist, at (541) 618-2052. For ESA listed terrestrial species consultation issues please contact Dave Clayton, Forest Wildlife Biologist, at (541) 618-2056.

/s/ Debra Globig (for)
SCOTT D. CONROY
Forest Supervisor

Enclosures

cc: Mary J Harvie
Susan J Maiyo

Recommendations for Wildland Fire Emergency Consultation Biological Assessments

The Biological Assessment shall be inclusive of all fire suppression actions on aquatic and terrestrial resources. Additional information may be required to address incident-specific issues. Please confer with your Service biologist during preparation of the Biological Assessment.

The following items are recommended:

- a. Justification for expedited consultation.
- b. Description of the emergency including how the fire started, a chronological description of the fire, fire behavior, how many acres burned each day, fire movement and when it was contained, controlled and declared out.
- c. Consultation to Date – describe contacts made with the Service in regard to the fire, whether a Service representative visited the fire, any reconnaissance that was done, preliminary assessments made, any minimizations or avoidance recommended, and preliminary determinations made.
- d. Current Management Direction – reference the wildfire management guidelines in the Forest Land and Resource Management Plan, previously developed Fire Management Plans for a specific area, emergency consultation regulations, and any applicable recovery plans.
- e. Description of the Action Area including the area affected both directly and indirectly by fire suppression actions. The Action Area is not necessarily the fire perimeter but inclusive of a larger geographic area (e.g. dozer lines cut outside fireline as backup containment lines, fire camp, water drafting/dipping sites, and helicopter staging areas).
- f. Description of the Proposed Action including fire-suppression activities (e.g. back-burning, dozer and hand line construction, etc.), how those activities were accomplished and where and when they took place. It is advisable to include a summary of the miles and type of line construction. A summary of the gallons spread, known locations and brand of chemical support utilized. This section shall also include any actions that were taken during the suppression rehabilitation, and the fire rehabilitation which involved the Burn Area Emergency Rehabilitation actions taken and planned for the following 12 months.
- g. Existing Environment – provide a brief overview of the drainage(s) where the fire occurred: general location on the forest, past land management practices, elevations, and land allocations.
- h. The following individual Species Accounts and Habitat Descriptions may be required to update the baseline and analyze effects. All updated baseline information should calculate the total acres burned due to wildfire, and those acres burned due to suppression actions *separately*.
 - **Northern spotted owl** (*Strix occidentalis caurina*) environmental baseline updates summarizing: (1) the total number of acres of suitable habitat burned; (2) an updated baseline of suitable habitat within each of the Northwest Forest Plan land allocations (e.g. Matrix, LSR, etc.); (3) an updated baseline for total acres of suitable nesting, roosting, foraging and dispersal habitat within the activity centers and home ranges for each owl; (4) an updated baseline for total suitable habitat within Critical Habitat Units; and (5) nest activity survey information for affected nests (e.g. active, inactive, successful, etc.). For nests and/or nest trees destroyed during the incident, identify whether they were destroyed by wildfire or destroyed due to fire suppression actions.
 - **Bald eagle** (*Haliaeetus leucocephalus*) environmental baseline updates summarizing: (1) the total acres of suitable habitat burned in Bald Eagle Management Areas; (2)

remaining roosting and perching snags. Those snags no longer acting as roosting or perching snags are to be identified as destroyed by wildfire or removed due to suppression actions. Please identify if the removed snags were physically taken off site; (3) nest activity survey information for affected nests (e.g. active, inactive, successful, etc.). For nests and/or nest trees destroyed during the incident, identify whether they were destroyed by wildfire or destroyed due to suppression actions.

- **Marbled Murrelet** (*Brachyramphus marmoratus*) environmental baseline updates summarizing: (1) the total number of acres of suitable habitat burned; (2) an updated baseline of suitable habitat within each of the Northwest Forest Plan land allocations (e.g. Matrix, LSR, etc.); (3) nest activity survey information for affected nests (e.g. active, inactive, successful, etc.). For nests and/or nest trees destroyed during the incident, identify whether they were destroyed by wildfire or destroyed due to fire suppression actions.
- **Gentner's fritillary** (*Fritillaria gentneri*) (1) total number of acres of occupied habitat burned; (2) location and length of hand and dozer lines in suitable habitat (3) life stage of plant(s). For plants destroyed during incident, identify if destroyed by the fire or suppression actions.

Discuss proposed and candidate species and habitats with your Service biologist.

- i. Effects of the Action which describe the impacts to listed species and their habitats due to wildland fire, fire suppression actions, rehabilitation actions and BAER actions. **Cite any agency actions taken to avoid and minimize effects.** Also, explain how the Services' recommendations were implemented and the results of implementation in minimizing take.
- j. A Cumulative Effects Analysis which includes effects of any future State, Tribal, local or private actions that are reasonably certain to occur within the action area.
- k. Determinations – are based on disturbance to individuals, loss and modification of habitat, injury or death to individuals; and effects to critical habitat and its primary constituent elements. In order to make determinations in regard to fire suppression, one shall consider the time of year, suitable habitat lost, survey results, unsurveyed and unoccupied habitat, post-fire monitoring results, total suppression activities, and post-fire response activities (BAER). Determinations should be made for the suppression activities only and should clearly distinguish between disturbance versus habitat loss.

Pictures and maps of the fire, species location and/or habitat, severity and intensity, flight routes, locations of chemical use and tractor/dozer lines, etc. are excellent to add to a referenced appendix. This type of information is generally easier to acquire if done prior to the overhead team departing and turning the fire back over to the home unit.

Guidelines for All Listed Species

- **Protection of human life and property are the primary objectives of all suppression actions.**
- Minimize felling of snags and leave felled trees or snags in largest pieces possible.
- Burning snags or trees will only be felled when they pose a definite threat to the containment of the fire or the safety of fire fighters.
- Limbing of trees adjacent to fire lines will be done only if needed for fire suppression and/or fire fighter safety.
- Close any roads opened during suppression actions as soon after BAER and suppression rehabilitation as possible.
- Place fire lines and other suppression activities along ridgelines where possible, rather than mid-slope or in riparian areas and where they can take advantage of natural barriers such as rock outcrops, streams and changes in vegetation.
- Limit retardant contamination of water sources.
- Minimize disturbance of riparian and aquatic habitats by working outside of these areas to the maximum extent possible.
- Minimize the use of heavy equipment (dozers, etc) in riparian/aquatic habitats, within spotted owl cores and on ridgelines where listed plants are known to exist.
- Minimize felling and bucking of trees within riparian areas/aquatic habitats, spotted owl core areas and within ¼ mile of any bald eagle nest sites.
- Locate camps and equipment servicing/storage areas away from riparian areas/aquatic habitats and at least ¼ mile away from stands occupied by spotted owls, bald eagles and marbled murrelets.
- Conduct refueling operations away from streams (at least 150 feet from water bodies), and place pumps and other machinery on pads and/or protect adjacent streams from chemical contamination to maximum extent possible.
- Obtain water for suppression operations from the largest body of water possible to minimize effects to fish.
- Retain at least one half of the original stream flow volume below pump sites.
- From January 1- August 30 minimize noise disturbance within 1 mile of Bald Eagle nest sites.
- Minimize repeated aircraft flights that are less than 1,500 feet Above Ground Level (AGL). Do not fly directly over nest sites with buckets (except to protect nests).
- From 1 March – 30 June minimize noise disturbance within stands occupied by spotted owls and within 120 yards of the edge of these stands. Minimize repeated aircraft flights that are less than 120 yards AGL.
- From 1 April - 5 August minimize noise disturbance within stands occupied by marbled murrelets and within 120 yards of the edge of these stands. Minimize repeated aircraft flights that are less than 120 yards AGL.
- Minimize the use of fire line explosives within 1 air mile of occupied stands during the protection period for bald eagles, spotted owls and marbled murrelets.
- Consider Minimum Impact Suppression Tactics (MIST) for use within the protection zones for eagles, spotted owls and murrelets.

Resource Advisors/Environmental Specialists will recommend actions that may minimize impacts to listed species and their habitat during suppression activities to Line Officers and Incident Commanders.

Information on species and habitat locations will be available to fire staff through pre-suppression briefings, through maps showing areas of concerns (readily accessible through GIS), and pertinent species management plans, *i.e.*, bald eagle site management plans. With this information, fire staff can determine possible needs during initial attack.

Resource specialists, resource advisers, environmental specialists will give biological input to personnel in charge of fire suppression activities. The resource advisor/environmental specialist will work for the Line Officer and with the Incident Commander to relay biological concerns.

Whenever possible, protect known nest sites of any listed species from high intensity fire.

Procedures for Initiating Emergency Consultation for Wildland Fire Suppression Activities with NMFS in Southwest Oregon

Call the NMFS Roseburg Office as soon as possible to begin emergency consultation:
Michelle McMullin 541-957-3378

Do not delay emergency response to make contact with NMFS.

Emergency consultation is required under ESA and the Magnuson Stevens Fishery Conservation and Management Act (MSA) for Essential Fish Habitat (EFH). EFH in southwest Oregon generally includes the range of Chinook and coho salmon, so please provide the same conservation recommendations if working in these areas.

The threshold for ESA emergency consultation is “may affect,” which includes LAA and NLAA beneficial effects. The threshold for EFH emergency consultation is “may adversely affect.”

Resource Advisors are the only link to the suppression teams that can effectively distribute conservation measures. Please try to include conservation measures in IAP.

During the emergency, communication with NMFS and documentation of activities are the main consultation activities.

“Official” initiation will occur after the fire and must include:

- a description of the emergency,
- a justification for the expedited consultation,
- an evaluation of the response to and the impacts of the emergency on affected species and their habitats, including documentation of how the conservation recommendations were implemented, and the results of implementation in minimizing take.

Suggested Information to Collect for Wildland Fire Suppression Emergency Consultation with NMFS in Southwest Oregon

1. Progression Map
2. Intensity/Severity Map
3. Amount, location, and types of line constructed
4. Locations and amount of riparian backburning operations
5. Locations of drafting/dip sites, whether chlorinated, and approximate level of use
6. Locations and number of retardant drops including type of retardant used
7. Location, extent, and circumstances of hazardous material spills (fuels, retardant, (etc)
8. Location, extent, species affected, and circumstances of any ESA-listed fish kills
9. Location of fire camps, helispots, helibases, and fuel storage areas
10. Rehabilitation activities utilized during mop-up and BAER activities and locations
11. Fifth and sixth field HUC names and codes
12. Record any ESA-listed fish entrained or impinged during drafting, dipping, or pumping. Include species and numbers.

File Code: 2600/5100/2150/1010
Route To:

Date: June 3, 2011

Subject: Preventing Spread of Aquatic Invasive Organisms in the Pacific Northwest
Region - an Interim Guidance for 2011 Fire Operations

To: Forest Supervisors, RO Staff Directors

This Interim Guidance for 2011 Fire Operations gives recommendations to minimize the spread of aquatic invasive species (AIS) during fire management activities. Because of the long distances that fire crew's travel, their potential to act as vectors for spreading AIS is significant. To address this threat, interim guidelines were developed collaboratively between regional fish and fire personnel. These guidelines are based on the current scientific literature. The guidelines are as practical and effective as possible and are applicable to other agencies that fight fire on National Forest System Land within the Region.

This direction focuses upon a short list of focal species identified by AIS experts within the Region. The regional focal species list may change annually based upon the degree of their threat to the Region and knowledge of new invaders. A map was prepared showing known locations for this year's focal AIS. The map can be used to emphasize precautions above and beyond normal measures. The most recent regional focal species map can be found at:

ftp://ftp.nifc.gov/Incident_Specific_Data/PACIFIC_NW!/SORO/Invasive_Species/. It is important to note, just because a water body is not documented as inhabited by invasive species on a map location doesn't mean they do not exist there. Care should be taken whenever transporting water and equipment between watersheds. Extra precautions should be taken when a water body is known to be infested by invasive species. That water should not be transported to disconnected aquatic habitats within the watershed or transported outside of the watershed. Extra care should be invested in cleaning equipment.

This is interim guidance. After the fire season, we will incorporate comments from field personnel who implemented the guidelines and consider additional scientific research to integrate the guidance into regional Best Management Practices and/or directives. We expect similar direction from the Washington Office in the future.

A short (10 minutes or less) outreach slideshow will be prepared by the Regional Office and distributed to the field to be incorporated into regular spring/early summer firefighter training sessions. The intent of the slideshow will be to inform firefighters of the threat, ensure their familiarity with the direction, and develop ground-up support. The slideshow can be presented by Forest or District level Fisheries Biologists and/or Invasive Species Specialists.

If you have any questions about this guidance or its implementation, please contact Regional Fire Information Specialist, Dale Guenther at 503-808-2188 (dguenther@fs.fed.us) or Regional Fisheries Biologist, James Capurso at 503-808-2847 (jcapurso@fs.fed.us).

/s/ Calvin N. Joyner (for):

KENT P. CONNAUGHTON
Regional Forester

Enclosure

cc: James Capurso, Dale G Guenther

AQUATIC INVASIVE SPECIES MANAGEMENT IN FIRE OPERATIONS PACIFIC NW REGION OPERATIONAL GUIDELINES FOR 2011

Firefighter and public safety is the first priority, but the threat of aquatic invasive species (AIS) has increased the need for Regional operational guidelines for safeguards against the spread of AIS. These guidelines should be implemented during the transport of water and equipment because AIS pose a risk to Forest aquatic and riparian habitat, water recreation, the operation of utilities, agricultural irrigation, local and national economies, and firefighting equipment. Some invasive plants and animals can clog valves, pumps, and screens if equipment is not completely drained or treated. Note that the States of Oregon and Washington are responsible for administering and enforcing some environmental quality laws and may provide additional guidance. Upon conflicting guidance, the US Forest Service (USFS) Pacific Northwest Regional Office will coordinate with state environmental quality agencies and state AIS coordinators and develop further guidance.

PREVENTION

- The current distribution of AIS in the Region has been mapped. This map can be used as a general indicator of where invasive species have been documented. These are areas where extreme care in the use of water should occur and no water should be transferred between watersheds or to disconnected waters within an infected watershed. A GIS file is available for download at: ftp://ftp.nifc.gov/Incident_Specific_Data/PACIFIC_NW/!SORO/Invasive_Species/
- Please note that you can never be certain that invasives are NOT present within a watershed, but this map will inform you where they ARE present. Precautions should be taken near any water source to avoid the spread of invasives.
- The sharing of firefighting equipment between incidents provides pathways for invasion. Firefighting equipment can be highly mobile during a fire season, often being re-assigned from incident to incident, sometimes hundreds or even thousands of miles apart. The well established interagency coordination of firefighting on federal, tribal, and state lands provides a highly efficient and effective means of moving equipment and personnel where needed. Equipment arriving to a fire shall be inspected.
 - Water handling equipment will arrive dry, so it can be inspected.
 - If the equipment is full, then it must be verified that the source of the water was a municipal water supply.
 - Check that no mud, aquatic vegetation, or aquatic animals are attached to or within equipment.
- During operations and transport, avoid contacting mud and aquatic plants.
- Avoid transferring water between drainages or between unconnected waters within the same drainage. Avoid dumping water directly from one stream or lake into another.
- Avoid sucking organic and bottom material into water intakes when drafting from streams or ponds. Use screens.
- Avoid obtaining water from multiple sources during a single operational period unless drafting/dipping equipment is sanitized between sources.
- If contamination of gear with raw water or mud/plants is unavoidable, see ‘Sanitizing’ below.
- Water storage tanks are required to be dry upon entry into the Region.

SANITIZING

- External surfaces of all equipment that comes in contact with water:

- Any equipment that comes into contact with raw water should be sanitized.
- Cleaning and sanitizing equipment will be necessary before use if it is unknown if the equipment has been cleaned previous to entering the project area.
- Establish sanitation areas where there is no potential for runoff into waterways, storm drains, or sensitive habitats.
- Thorough drying is an easy and effective sanitizing method, but required drying times vary considerably with the species involved and may not be practical for a quick turnaround. Drying may be possible, however, after the incident.
- Remove all visible plant parts and mud from external surfaces of gear and equipment. Power-wash all accessible surfaces with clean water (ideally, hot water $\geq 140^{\circ}\text{F}$). Power washing will reduce the likelihood any target AIS are present.
- Internal tanks of water tenders, engines, and other equipment:
 - Disinfect all equipment prior to use if it has an unknown sanitizing history as well as after an incident.
 - Set up a portable disinfection tank (pumpkin) using a cleaning solution of quaternary ammonium compounds (common cleaning agents used in homes and hospitals). Quat compounds are considered safe for gear and equipment when used at recommended concentrations and rinsed. Two brands are readily available (see below for suppliers): *Quat128®* or *Sparquat 256®*. *Sparquat 256®* has been discontinued and has been replaced by Green Solutions High Dilution (contains same compounds as Sparquat but at higher concentrations). Costs and effectiveness are comparable. Both are labeled for use as fungicides/virucides.

Recipes for cleaning solutions using either *Quat128®* or *Green Solution* or *Sparquat 256®*

- For engines and tenders, empty the tank, then circulate the cleaning solution for 10 minutes. Circulate cleaning solution from a pumpkin through portable pumps for 10 minutes. Pump cleaning solution through hoses. Rinse or use equipment after 1 hour. Discharge cleaning solution back into the disinfection tank for reuse.

Volume of tap water	Volume of <i>Quat128®</i> (5%)	Volume of <i>Sparquat 256®</i> (3%)	Green Solution High Dilution (1.8%)
100 mL water	4.6 mL	3.0 mL	1.8 mL
1 gallon water	6.4 liquid oz.	4.1 liquid oz.	2.5 liquid oz.
1 gallon water	12.7 tbsp	8.2 tbsp	5.0 tbsp
1 gallon water	0.8 cup	0.5 cup	0.3 cup
100 gallons water	5 gallons	3.2 gallons	2.0 gallons
1000 gallons	50 gallons	32.2 gallons	19.6 gallons

water			
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- Where feasible, dip gear or equipment (e.g. helicopter buckets) into the cleaning solution. Alternatively, put the cleaning solution in backpack spray pumps to clean portable tanks, helicopter buckets, and other equipment. The solution must be in contact with the surface being sanitized for at least 10 minutes. Wait 1 hour before rinsing with water.

TESTING DISINFECTANT CONCENTRATIONS

When a large volume of quat solution (as in a pumpkin) has been used repeatedly and possibly diluted with excess water or mud, the solution can lose its effectiveness.

To determine if the solution is at the correct strength, use “Quat Chek 1000” Test Papers, which function like Litmus paper (see below for suppliers). The cleaning solution needs to be diluted before it can be tested with these papers. To do this:

- For *Sparquat 256®*, take **one** cup of your cleaning solution, pour into a bucket. Add **5** cups of water. Mix.
- For *Quat128®*, take **one** cup of used cleaning solution, pour into a bucket. Add **4** cups of water. Mix.
- For *Green Solution High Dilution*, follow label instructions.

Test the diluted solution in the bucket with “Quat Chek 1000” Test Paper. Match up the color of the paper with the ppm’s on the color chart. For optimal disinfection, the diluted solution should have a concentration between 600 and 800 ppm. If it is too dilute, dispose of properly and make a new cleaning solution.

DISPOSAL

Used cleaning solution may be disposed over open land or on roadways where there is no potential for runoff into waterways, storm drains, or sensitive habitats. Quat chemicals are quickly neutralized by soil. Do not dump treated water into any stream or lake, or on areas where it can migrate into any water body, storm drain, or sensitive habitat. Do not dispose of large quantities of diluted quat chemicals in municipal sewer systems without consulting the facility. Use caution when disposing the used cleaning solution and follow all federal, state, and local regulations.

SAFETY

- Use protective, unlined rubber gloves and splash goggles or face shield when handling the cleaning solution and take extra precautions when handling undiluted chemicals.
- Have eye wash and clean water available on-site to treat accidental exposure.
- Consult the product label and Material Safety Data Sheet for additional information.

STORAGE AND SHELF-LIFE

Sparquat 256® and Quat 128® (Waxie) can be stored at least 2 years in an unopened container without losing their effectiveness. Both should be stored in a cool, dry place, out of direct sunlight. Temperatures can range from 32 to 110 F.

Once the quat solution is made up, it can be used repeatedly for up to a week unless heavily muddied or diluted. Solutions kept in sealed containers, free of contamination by foreign materials, remain more stable and can be effectively used for longer timeframes (Ron Cook, Spartan Chemical Co., personal communication).

SUPPLY SOURCES

The recommended chemicals are available through GSA (<https://www.gsaadvantage.gov>) and also through local janitorial chemical suppliers.

Quat 128® (Waxie) Waxie's Enterprises Inc.

GSA (NSN No. 170304) = \$36 per case (4 gal)

EPA registration #1839-166-14994. Additional info at <http://www.waxie.com>

Sparquat 256®, Spartan Chemical Company

GSA (NSN No. 1025-04) = \$56 per case (4 gal)

EPA registration #5741-9. Additional info at <http://www.spartanchemical.com>

pHydrion® Quat Test 1000 Papers (0-1000 ppm Hi-Range)

(These papers are NOT available from GSA. GSA only has the papers for low concentrations)

- Microessential Labs
(<https://www.microessentiallab.com/ProductInfo/W20-QUATTQUATCK-SRD.aspx>) \$44 for 10 kits. Each 'kit' provides 150 tests.
- Grainger, Inc. (<http://www.grainger.com/Grainger/items/3UDF5?Pid=search>) \$48 for 10 kits. Each 'kit' provides 150 tests.

Wildfire Suppression Recommendations for Fisheries Resources in Southwest Oregon

Remember, safety first! **Do not delay** a response to a wildfire to contact NMFS.

Streams, Lakes, and Riparian Areas

- A journey level fish biologist will be involved in development of the Wildland Fire Decision Support System document (WFDSS) when fires occur in drainages with listed fish species.
- Utilize Minimum Impact Management Techniques (MIMT) in areas where there is potential to injure or harass listed fish or damage critical habitat. Every effort should be made to minimize stream course disturbance, sedimentation, and actions that may result in increased water temperatures.
- Provide complete briefing/maps to overhead teams and crews where salmon species & critical habitat are present.
- Snags and down wood are very important to riparian areas. Try not to fall snags. Leave downed trees and snags in the largest pieces possible. If it is necessary to cut riparian trees, fall them into the stream where possible.
- Avoid falling trees that shade the stream unless absolutely necessary.
- Avoid cutting up or bucking large logs from stream channels unless absolutely necessary.
- Whenever possible, let fire back slowly into riparian areas and stream banks rather than lighting in riparian areas.
- Follow the **“Interagency Guidelines for Aerial Delivery of Retardant or Foam Near Waterways”**
- Within coho salmon occupied drainages, no mechanical fireline construction within 300 feet of river/stream.
- Avoid building dozerline in riparian areas unless absolutely necessary. Finish fireline by hand rather than taking dozerline to stream.
- Avoid constructing fireline parallel to streams for long distances in riparian areas because it can cause erosion of sediment into the stream.
- When using hose near streams, set nozzle to wide mist rather than narrow stream to limit erosion and avoid “hydromining” sediment into the stream.
- Temporary chemical mixing tanks should not be used within 150’ of streams and wetlands. Do not apply retardant or foam directly in streams and wetlands.
- Locate camps, equipment servicing/storage, fueling and staging areas away from riparian areas and wetlands (at least 150’ from water bodies if possible).
- Flush out engine and water tender tanks arriving from outside the watershed before drafting to avoid spreading invasive aquatic organisms.
- Water Tenders and engines shall not dump water directly from one stream or lake into another, in order to prevent the potential spread of aquatic organisms/diseases.
- Engines and helicopters should not obtain water from multiple sources during a single operational period unless drafting equipment is sanitized between sources.
- Avoid sucking organic and bottom material into water intakes when drafting from streams and ponds.
- Minimize vehicle fords on streams.

Pumping from Streams, Lakes, and Ponds

- Use alternative water sources rather than pumping directly from fish-bearing streams when possible. If unable to avoid pumping water from fish-bearing streams, use **3/32”** screen mesh on pump draft hoses.
- Use overhead fill stations where possible, or set up a volume pump if possible rather than having each engine or tender draft water.
- Pump from the largest body of water available if you have a choice. Avoid fish-bearing streams where possible.
- Leave at least half the original stream flow below the pumping site.
- Leave at least half the water volume in ponds/lakes when they are used as water sources, unless directed otherwise by a Resource Advisor.
- To the extent practicable, avoid and minimize dam construction to pond water for drafting in streams where listed species or their critical habitat are known or believed to be present.
- Place pumps on level ground as far away from the stream bank as possible.
- Place pumps and fuel cans in plastic berms and/or on absorbent pads or other effective spill containment system.
- Refuel at least 150’ from streams if possible.
- Contain spills of gas or diesel with absorbent booms and **immediately** report to the Resource Advisor/Technical Specialist (and HAZMAT personnel if present on the fire).

Aerial Retardants

- Follow the “[Interagency Guidelines for Aerial Delivery of Retardant or Foam Near Waterways](#)”
- Report incidents of retardants and foams hitting streams and wetlands (or close calls within 300’) to the Resource Advisor/Technical Specialist.
- Have ground crew keep track of types and amounts of retardant used and approximate location where each drop was made (by talking with pilots and plotting on maps).

Use of chlorine in watersheds infected with Port Orford Cedar root rot disease

- Locate vehicle-washing stations (with chlorinated water) where water will not run into streams.
- When refilling tenders/engines, fill with water first, pull 150’ away from the stream (or where overland flow will not run back into the stream), and then add the chlorine.
- Avoid dropping buckets of or directly releasing chlorine-treated water into streams or wetlands.
- Don’t treat water from streams that are uninfected with the root rot disease, unless it is for use at washing stations (to avoid unnecessary use of chlorine).

Helicopter Dip Site Guidance High Cascades RD, Rogue River-Siskiyou NF

Rationale

This document is intended to help facilitate the selection and use of helicopter dip sites during fire suppression activities. The guidelines are intended to provide reasonable protection of aquatic resources while maintaining public safety and meeting fire suppression needs.

The Sky Lakes Wilderness contains numerous high mountain lakes. All of these lakes have extremely high water quality and many support fish populations. The high water quality in these lakes is attributed to the limited spatial scale of the individual lake basins, and the lack of anthropogenic disturbance within the wilderness. These lakes contain very little dissolved chemical (i.e. they are similar to distilled water). This condition reduces the buffering capacity (i.e. ability to resist changes in pH) of these lakes and makes them very susceptible to impacts from anthropogenic disturbances within their respective basins. For this reason, the use of fire retardant or other fire chemicals within the wilderness is prohibited unless approved by the Agency Administrator.

Aquatic Invasive Species (AIS) are aquatic and terrestrial organisms and plants that have been introduced into new ecosystems throughout the United States and the world, and are both harming the natural resources of these ecosystems and threatening the human use of these resources. AIS are also considered “nuisance” species or “exotic” species and the terms are often used interchangeably. Because of the large expanses in which fire crews travel, the potential to serve as vectors for invasive species is significant.

These dip site guidelines are intended for use starting with the 2011 fire season and will continue to be refined and revised over time. **As with other resource protection measures, public and firefighter safety and protection of property take precedence over these guidelines.**

Preferred Dip Site Locations (coordinates are in WGS 84 datum)

When feasible, dip site locations outside of the wilderness high lakes are preferable. Preferred sites include:

- Rogue River mainstem
- Fish Lake N 42° 23.430' W 122° 19.324'
- Fourmile Lake N 42° 28.048' W 122° 15.242'
- Medco Pond N 42° 39.472' W 122° 26.136'
- Willow Lake N 42° 28.461' W 122° 26.895'
- Lost Creek Lake N 42° 40.712' W 122° 39.050'

Fish Lake, Willow Lake, and Lost Creek have all had blue green algae blooms in the recent past. All buckets and drafting equipment that utilizes these water sources will be sanitized prior to using another water source.

If dipping within the wilderness is determined to be necessary, it is limited to the following sites, as these sites have been used in the past. Dipping at these lakes should be closely monitored and reevaluated if substantial drawdown of the lake level is occurring. **All dip sites shall be approved by a local resource advisor, fisheries biologist, hydrologist, or wilderness manager.**

- Lake Ivern N 42° 40.653' W 122° 13.746'
- Grass Lake N 42° 39.731' W 122° 12.988'

The following locations should not be utilized for dipping:

- Alta Lake (no dipping or pumps)
- High use recreation sites – Natural Bridge, Union Creek, River Bridge
- Fish Lake west of Doe Point (suspended pumps within lake near private house sites)

Required Actions that can Help Prevent Spread of AIS

- Minimize driving equipment through or wading across waterbodies whenever possible.
- Avoid transferring water between drainages or between unconnected waters within the same drainage (i.e. avoid dumping water from one stream or lake into another).
- Avoid sucking organic and bottom material into water intakes when drafting from stream or ponds. Use screens.
- Avoid obtaining water from multiple sources during a single operational period unless drafting/dipping equipment is sanitized between sources.
- If contamination of gear is unavoidable, contact the Resource Advisor and/or District Fish Biologist for cleaning guidance.
- Off-Forest fire equipment (engines, buckets, etc.) shall be sanitized upon check-in at a fire incident on the RRSNF.
- Local Forest equipment shall be sanitized upon demobilization from any off-forest incident or upon arriving back on unit.

If you have questions, ask the Resource Advisor and/or District Fish Biologist/Hydrologist

BAER Activities Recommendations for Fisheries Resources in Southwest Oregon

National Marine Fisheries Service, Southwest Oregon Habitat Branch – Roseburg 2008

Safety is the first priority!

- Provide complete briefing and maps to teams and crews where listed salmon species, critical habitat and/or essential fish habitat are present.
- Avoid falling trees that shade the stream unless absolutely necessary. Maintain shade, bank stability and large wood recruitment potential to the greatest extent possible.
- Snags and down wood are very important to riparian and aquatic areas. Avoid falling snags, riparian, or stream-adjacent trees unless absolutely necessary. If it is necessary to cut riparian and stream-adjacent trees, fall them toward or into the stream where possible.
- Leave downed trees and snags in the largest pieces possible.
- Avoid cutting up or bucking large logs from stream channels unless absolutely necessary. Coordinate with fisheries and hydrology personnel when removing logs or other natural debris from streams.
- When cleaning culverts, wood recovered during cleaning should be placed downstream within the stream channel, where possible. Other options include placing in riparian or in-stream within same 5th field HUC. Minimize turbidity and sediment delivery to streams.
- Minimize the use of heavy equipment (dozers, etc.) in riparian areas.
- Minimize disturbance to any remaining native vegetation in ditches.
- Locate equipment servicing/storage, staging areas, refueling areas, and camps away from riparian areas and wetlands (at least 150' from water bodies). Place fuel cans in plastic berms and/or on absorbent pads or other effective spill containment system. All heavy equipment should be inspected for leaks and all leaks repaired before leaving the staging area when used in riparian/aquatic areas.
- Develop and implement a spill containment and control plan and provide spill containment equipment on site.
- Locate vehicle-washing stations where water will not run into streams or other water bodies.
- Use certified weed-free straw or hay bales to prevent introduction of noxious weeds.
- Use native seeds acquired from a local seed source supplier when seed treatments are necessary. Coordinate activities with botany personnel.
- Minimize pesticides/herbicides/fertilizer use in riparian reserves and use application methods with the least amount of impact to fisheries resources.
- Minimize the amount of rip rap used, if necessary, for scour or bridge protection. For bank stabilization, use native materials and a minimum amount of rock, if necessary. Coordinate with fisheries and hydrology personnel.
- When replacing culverts, follow NFP, ODFW and NMFS guidelines for design and installation. Coordinate with fisheries and hydrology personnel and consider designing permanent stream crossings in the following priority: (1) Road realignment, (2) bridge, (3) streambed simulation/bottomless arch, and (4) no-slope design/hydraulic design culvert.
- For monitoring purposes, summarize all activities; document activity type and location; provide a brief description for use in emergency consultation.

NFMS Consultation Biologist for Southwest Oregon: Michelle McMullin: 541-957-3378

Fire Suppression Guidelines for Natural and Heritage Resources

Heritage Resources:

Collecting artifacts from public lands is illegal. That means, in most circumstances, **do NOT** collect such items as arrowheads, grinding stones, bottles, insulators as well as all other cultural artifacts. Instead, note the location on a map, (GPS it if possible) and ask the division supervisor to report the information to a resource advisor or archaeological technical specialist. However, if prehistoric artifacts (such as arrowheads, grinding stones etc.) are **found during construction of fireline** and/or other ground-disturbing activities that will receive heavy firefighter traffic, **do** collect the item; note the location where it was found (GPS it if possible), and turn the item over to a resource specialist with a request it go to the Forest Archeologist. Please leave your name and an address and phone number of your home unit where you can be reached if any further questions about location arise. Note: Firefighters on the 2002 Biscuit Fire were responsible for finding several very important archaeological artifacts on the firelines, and they turned these over to the proper Forest Service personnel, thereby contributing to the knowledge of regional prehistory.

Timber and Silviculture:

The following guidelines are common to all FMUs for Timber and Silviculture resources.

- Firefighter and public safety are always the highest priority.
- To the extent possible, protect stands with a greater than 30% component of Pines 20 inches or greater in diameter.
- Aggressively suppress all fires in areas of awarded timber sales.
- To the extent possible, protect areas in which significant investments in silvicultural activities have taken place.
- Actively suppress fires when weather potential could trigger a stand replacement fire.
- Actively suppress fires when 30% or more of the area is in a shrub stratum condition (goal is to avoid a crown fire if possible).
- Actively suppress fires in areas in which multiple fire return intervals have been missed. Due to high fuel loadings and the availability of ladder fuels, mechanical treatment and prescribed burning may be needed before fire a less aggressive suppression strategy will be effective.

Soils:

Rather than overtly restrict Initial Attack on soils of concern it may be more important to be aware of those concerns and then focus on site rehabilitation. It is important to rehab lines as soon as possible and consider using an excavator with a thumb, or a small dozer like the John Deere 450 to rehab dozer lines.

Whenever possible maximize the use of natural barriers rather than constructing line. This could be in areas devoid of vegetation, such as rock outcrops and talus slopes.

Consider back burning from a wet line rather than a constructed line.

Initial deployment concerns

-- Dozers brought in for initial attack may have been working hours before in the valley without first being cleaned. The potential to spread unwanted seeds or SOD and POC is increased during initial attack when using dozers.

-- When accessing slopes, dozers commonly drive up draws rather than the steep cutbank. This practice should be minimized. If driving up a draw must be done to leave the road prism then move out of the draw as soon as possible.

-- Consider walking the dozer in from a distance to keep from entering a draw.

Dozer suggestions

-- Stress to Dozer Bosses that dozer operators under their charge are to remove the least amount of soil needed to meet objectives.

-- Dozer boss should caution operator to minimize disturbance when turning.

-- Dozer boss should control height of berms, lower berms means less rehab and soil disturbance.

-- In dense brush fields there is often little vegetation underneath the brush, consider using a dozer with a brush rake to "float" brush off without excessively affecting the soil resource.

-- Use dozers on slopes under 35 percent, short steeper pitches OK if really needed.

Soils of Concern

Granitic Soils or Pumice Soils on Steep Slopes

- Easily erodible when disturbed
- Keep dozers on ridges whenever possible
- Minimize cross slope dozer lines

Black Schist

Condrey Mountain Schist on Rogue River NF

Coleman Schist on Siskiyou NF

- Slippery soils (high in graphite)
- Landslide prone

Serpentine Schist

- Lacks nutrients (many T&E Species)
- Hard to rehab
- less vegetation than on most other soils

Lateritic Erosional Pavements -Siskiyou concern only, not a Cascade problem.

- Generally bare ground on red soils covered with pebbles or gravel
- Pebbles and gravel are all that prevents erosion
- When surface is disturbed bright red runoff occurs during rain events
- Very difficult if not impossible to rehab

Clay Rich Soils

- Often wet (many T&E Species)
- Easily compacted and rutted
- Very difficult to rehab

Microbiotic Soils - *Siskiyou concerns only, not a Cascade problem.*

- These soils are generally devoid of tall grasses and appear non-vegetated. The soil particles are held together in a mat by fungal and bacterial filaments.
- Once disturbed soil below these mats are subject to erosion and may take decades for natural rehabilitation to occur.
- They occur only on ridgetops and Rough-and-Ready in this area but are common on Eastside deserts.
- Consider wet-lined edge as to hold backburn.

Wildlife:

The Forest Service goals for wildlife apply to all land allocations. Species are associated with habitats; therefore, the existing condition of habitats in any given area is of primary interest for agencies' wildlife goals during fire suppression actions.

No wildlife habitats need protection from low intensity fire (FIL 1 or 2). Old growth and mature forest do not need protection from moderate intensity fire (FIL 3 or 4); however, smaller forests need protection from FIL 3 or 4. Meadow habitats do not need protection from high intensity fire (FIL 5 or 6); however, all forested habitats need protection from high intensity fire (FIL 5 or 6).

Protect and restore late successional forest habitat, especially in Wilderness, LSR, and Riparian Reserve. LSR objective: "Protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth forest related species including the northern spotted owl" (NWFP, ROD, 1994, pg. A-4).

- 1) Old growth forest (>32" dbh with > 40% canopy cover) has the highest value for agencies' wildlife objectives, because its abundance is well below desired levels and because of its importance as nesting habitat for T&E species; i.e., marbled murrelet, spotted owl, and bald eagle. This habitat is even farther below desired levels at low elevations (<3500').

a) *Protect at least 90% of old growth and minimize creation of openings greater than 3 acres in size.*

- 2) Mature forest (21-32" dbh with > 40% canopy cover) has the next highest value, because it could become old growth forest sooner than younger forest and is used by northern spotted owls for roosting and foraging habitat; occasionally as nesting habitat. Mature forest also provides habitat for fisher, a large pine martin like animal that is found all areas of the Forest except the Powers Ranger District.

a) *Protect at least 80% of mature forest and minimize creation of openings greater than 3 acres in size.*

- 3) Small forest (10-21" dbh with > 40% canopy cover) has higher value than seed/sap, because it (young) is used by northern spotted owls for dispersal/foraging habitat. In addition, except for large areas within the Biscuit Fire, the abundance of this habitat type is generally above desired levels in the planning area.

- a) **Protect at least 60% of small forest and minimize creation of openings greater than 20 acres in size.**
- 4) Seed/sap forest (1-9" dbh) has the lowest values for wildlife, because, except for large areas within the Biscuit Fire, the abundance of this habitat type is generally above desired levels in the planning area.
 - a) **Do not suppress fires to protect seedling/sapling forest for wildlife, because this would generally prevent low intensity from burning larger areas where this is needed in larger/older forest habitat.**
- 5) Larger deciduous oaks (>10" dbh) are generally located in stands dominated by Douglas-fir from 10-40" dbh that has encroached into this pine/oak savanna during the past 60-150 years of fire exclusion. These stands tend to be classified as Dry Douglas-fir. For protection of deciduous oaks from stand replacement fire intensities, apply the same protection criteria described for old growth, mature, and small forest habitats.
- 6) Do not protect grass/forb habitats from fire, because fire is required for healthy grass/forb habitats.
- 7) No dozers in meadows. If meadows are needed for safety zones, use prescribed fire to eliminate the fire hazard from grasses and forbs.
- 8) Minimize felling of large live and dead trees. Minimize felling of deciduous oaks.
- 9) Leave adequate water in ponds to protect aquatic wildlife. A good rule of thumb is to leave ½ of the water, unless directed otherwise by a resource advisor. More than ½ of the water may need to be left in some Wilderness lakes.
- 10) Don't feed the wildlife or leave garbage. Especially bears.

Minimize disturbance to nesting Threatened or Endangered Species and peregrine falcons, and **emphasize that human safety comes first, before protection of T&E species.** Information below is based on 2004-2008 and the 2006-2008 Biological Opinions for Rogue River Siskiyou NF and Medford BLM. See appropriate maps and management plans if extended attack is during critical nesting period for any of these species.

- **Operation restrictions for Northern spotted owl -1 March to 30 June**

Type of Activity – Prescribed Distances for Spotted Owl	Zone of Restricted Operation
Blast of more than 2 pounds of explosive	1 mile
Blast of 2 pounds or less of explosive	120 yards
Impact pile driver, jackhammer, or rock drill	60 yards
Helicopter or single-engine airplane Type I or II Helicopters	120 yards for small helicopters; 0.25 miles for Type I or II helicopters
Chainsaws (hazard trees, tree harvest, etc.)	195 feet
Heavy equipment	105 feet

- Operations restrictions for Marbled Murrelet - 1 April to 5 August**

Type of Activity – For Marbled Murrelet	Zone of Restricted Operation
Blast of more than 2 pounds of explosive	1 mile
Blast of 2 pounds or less of explosive	120 yards
Impact pile driver, jackhammer, or rock drill	100 yards
Helicopter or single-engine airplane	120 yards
Chainsaws (hazard trees, tree harvest, etc.)	100 yards
Heavy equipment	100 yards

- Operation restrictions for bald eagle from 1 January to 31 August, or two weeks after chicks are fledged, if known.**

- **Operation restrictions for peregrine falcon** should be based on site-specific nesting chronology and generally adhere to the following guidelines:

Elevation	Restricted Period
1 - 2,000 ft	1 January – 1 July
2,000 – 4,000 ft	15 January – 31 July
> 4,000 ft	1 February – 15 August

Restricted zones around peregrine nest sites should be detailed on a site-specific basis, but will follow these general guidelines:

Zone	Restricted Distance from active cliff	Restricted activities during nesting period
Primary	0.25 – 0.75 (avg. 0.5) air miles	Minimize human activity
Secondary	0.5 up to 2 air miles	Minimize human activity
Tertiary	3 air miles	Minimize large helicopters or any blasting

Consider [Guidelines for Threatened or Endangered Species](#) from USDI Fish and Wildlife Service.

File 1910/2080/5100/2520-3 Date July 26, 2006
Code: :
Route
To:
Subject: Integrating Invasive Species Considerations into Fuels and Fire Management Activities and Burned Area Emergency Response (BAER) in R6
To: Forest Supervisors, CRGNSA Manager, Director, Resource Planning and Monitoring, Director, Natural Resources, Director, Fire and Aviation Management

On October 11, 2005, I signed a Record of Decision (ROD) for programmatic *Invasive Plant Program - Preventing and Managing Invasive Plants within the Pacific Northwest Region*. The ROD amends Forest Land and Resource Management Plans with standards for preventing the introduction, establishment, and spread of invasive plants and standards for invasive plant treatment and site restoration. This new direction for invasive plant management is incorporated into Forest Plans effective on March 1, 2006.

Hazardous fuels reduction, wildfire suppression, and burned area emergency response (BAER) are three activities where the ROD standards apply. Specifically fire and fuels management plans, wildland fire situation analyses, wildland fire incident management plans and BAER implementation plans are required to address invasive weed prevention standards. In addition, the *National Strategy and Implementation Plan for Invasive Species Management* (USFS, 2004) calls for comprehensive management of impacts and threats from invasive species as a whole.

To assist in compliance with the programmatic ROD and Forest Plans, Forests are expected to include the enclosed ***R6 Invasive Species Watch-Out Checklist for Fuels Management Activities, Wildfire Suppression and BAER*** as standard forest procedure and include in the Delegation Letter to Incident Management Teams brought on Forest. This checklist highlights the key areas where invasive species should be integrated into fire related activities.

Thank you for your support in preventing the spread of invasive species on National Forests. Questions may be addressed to Nancy Phelps at 503.808.2914 (nphelps@fs.fed.us), Steve Howes at 503.808.2937 (showes@fs.fed.us) or Dave Bridgwater at 503.808.2666 (dbridgwater@fs.fed.us).

/s/ Charlie Krebs (for)
LINDA GOODMAN
Regional Forester

Enclosure

cc: Nancy Phelps, David Bridgwater, Steve Howes, Ken Snell

R6 Invasive Species Watch-Out Checklist for Fuels Management Activities, Wildfire Suppression and BAER

- 1. Has the lead agency provided the Incident Management Team (IMT) with maps and management information on noxious weed populations and aquatic nuisance species (ANS; e.g. whirling disease, New Zealand mud snail, Eurasian watermilfoil, sudden oak death, Port Orford cedar root rot) locations? Have vehicle wash sites been identified and mapped? Are management emphasis areas for the IMT designated, including staging areas, dip sites or the potential burn area? (This should be done immediately upon arrival)
- 2. Are fire camps, spike camps, helipads and vehicle staging areas located on areas free of noxious weeds?
- 3. Are vehicle undercarriages examined at appropriate times (arrival to, and/or departure from, a weed infested site) by a knowledgeable inspector for weed contamination? Are identified vehicles pressure washed thoroughly? Unwashed equipment and vehicle undercarriages are potentially transporting noxious weed seeds and/or disease spores.
- 4. Where weeds are identified, the Natural Resource Advisor should be consulted to ensure weed and ANS prevention practices are followed e.g. hand pulling, mowing helipads, and flagging off weed infestations. Were proper weed disposal techniques used?
- 5. Are vehicle wash stations self-contained (weed seeds and spores stay on-site) and/or located on hardened sites that will not readily become infested later?
- 6. Is the vehicle wash station(s) schedule coordinated with the daily equipment deployment schedules, reducing chance of equipment bottlenecks?
- 7. Are daily briefings of fire line personnel and equipment operators being conducted to ensure staff are knowledgeable of the priority weeds and their locations? Do staff members clearly understand their role in preventing infestations of invasive species?
- 8. Are ANS prevention protocols being supported (e.g. washing and drying water buckets with chlorine solution, cleaning equipment before contaminating other water sources and water bodies that contain ANS species)? Are the necessary precautions being taken to avoid mixing contaminated water or depositing with other water source(s)?
- 9. Certified weed free materials should be used for revegetation activities (i.e. hay, straw, mulch, soil, and seed). Are proper testing procedures for seed purchases being followed?

Contact list for Rogue River-Siskiyou N.F. Biologists, Botanists, Hydrologists, Cultural Resources, Port Orford Cedar and Sudden Oak Death staff.

Area	Name	Email Address	Work Phone	Alternate Phone (confidential)
Siskiyou Mountains Ranger District				
	Bryson Code (Wildlife/Botany)	bcode@fs.fed.us	(541) 592-4055	
	Ian Reid (Fisheries)	ireid@fs.fed.us	(541) 552-2914 (541) 899-3800	
	Jeff Von Kienast (Wildlife/Fisheries)	jvonkienast@fs.fed.us	(541) 560-3440	
	Dave Knutson (Cultural)	dknutson@fs.fed.us	(541) 618-2078	
	Barbara Mumblo (Botany/Weeds/Cultural)	bmumblo@fs.fed.us	(541) 899-3855	
	Steve Johnson (Cultural)	srjohnson@fs.fed.us	(541) 552-2908	
High Cascades Ranger District				
	Sheila Miara (Wildlife)		(541) 560-3479	
	Jeff Von Kienast (Wildlife/Fisheries)	jvonkienast@fs.fed.us	(541) 560-3440	
	Wayne Rolle (Botany/Weeds)	wrolle@fs.fed.us	(541) 618-2056	
	Barbara Mumblo (Botany/Weeds/Cultural)	bmumblo@fs.fed.us	(541) 899-3855	
	Marc Ellis (Wilderness-Recreation)	mellis@fs.fed.us	(541) 865-2730	
	Les Moscoso (Wilderness-Recreation)	lmoscoso@fs.fed.us	(541) 865-2710	
Rogue River- Siskiyou SO				
	Fred Wahl (NR Staff Officer)	fwahl@fs.fed.us	(541) 618-2050	
	Sue Maiyo (Fisheries)	smaiyo@fs.fed.us	(541) 618-2052	
	Wayne Rolle (Botany/Weeds)	wrolle@fs.fed.us	(541) 618-2056	
	Janet Joyer (Cultural)	jjoyer@fs.fed.us	(541) 618-2077	
	Dave Knutson (Cultural)	dknutson@fs.fed.us	(541) 618-2078	
	Jeff Lalande – AD (Cultural/Wilderness)	jmaxlalande@gmail.com	(541) 778-3257	
	Ellen Goheen (Sudden Oak Death- POC)	egoheen@fs.fed.us	(541) 858-6126 (541) 840-2502	

Southwest Oregon Interagency Fire Management Plan – 2012

	Frank Betlejewski (Port Orford Cedar)	fbetlejewski@fs.fed.us	(541) 858-6127	
	David Clayton (Wildlife)	dclayton@fs.fed.us	(541) 618-2054	
	Chris Park (Hydrology)	cpark@fs.fed.us	(541) 471-6761	
	Elizabeth (Liz) Berger (Hydrology)	eaberger@fs.fed.us	(541) 618-2051	
	Steve Brazier (Fisheries)	sbrazier@fs.fed.us	(541) 471-6766	
	Joni Brazier (Soils/Hydro)	jbrazier@fs.fed.us	(541) 471-6760	
Gold Beach Ranger District				
	Jessie Dubuque (Wildlife)	jdubuque@fs.fed.us	(541) 247-3651	
	James Simino (Fisheries)	jsimino@fs.fed.us	(541) 247-3634	
	Clint Emerson (Botany)	cemerson@fs.fed.us	(541) 247-3656	
	Kristen Hauge (Cultural)		(541)	
Wild Rivers Ranger District	Bryson Code (Wildlife/Botany)	bcode@fs.fed.us	(541) 592-4055	
	Stuart Osbrack (Botany/Weeds)	sosbrack@fs.fed.us	(541) 592-4052	
	Ian Reid (Fisheries)	ireid@fs.fed.us	(541) 552-2914 (541) 899-3800	
Powers Ranger District	Karla Reeves (Fisheries/Wildlife/Botany)	kreeves@fs.fed.us	(541) 439-6250	
	Clint Emerson (Botany)	cemerson@fs.fed.us	(541) 247-3656	
	John Lowe (Wildlife)	jlowe@fs.fed.us	(541) 439-6251	
	Craig Tuss	Craig_Tuss@fws.gov	(541) 957-3470	
USFWS Roseburg Field Office	Cindy Donegan	Cindy_Donegan@fws.gov	(541) 618-2374	
	Ken Phippen	ken.phippen@noaa.gov	(541) 957-3383	
NOAA Fisheries Roseburg Field Office	Michelle McMullin	michelle.mcmullin@noaa.gov	(541) 957-3378	

File Code: 1230/5130

Date: June 30, 2011

Route To:

Subject: CORRECTION - Delegation of Authority for Forest Resource Advisors

To: District Rangers, Kevin Donham and Fred Wahl

The following employees are delegated to serve in the position of **Resource Advisor** on wildland fires that occur on the Rogue River-Siskiyou National Forest.

Unit	Employee Names
Powers Ranger District	John Lowe (Trainee), Doug Middlebrook (Trainee)
Gold Beach Ranger District	Clint Emerson , Jessie Dubuque (Trainee), Matt Timchak (Trainee), James Simino (Trainee), Tim Spencer (Trainee)
Wild Rivers Ranger District	Ian Reid , Rob Barnhart (Trainee)
Siskiyou Mtns. Ranger District	Ian Reid
High Cascades Ranger District	Jeff VonKienast
Supervisor's Office	Steve Brazier, Jon Lamb , Dave Clayton (Trainee), Joni Brazier (Trainee), Susan Maiyo (Trainee), Elizabeth Berger (Trainee)

These employees are available to serve on any District. Personnel identified as trainees will be assigned directly to a Resource Advisor. Many of the duties and responsibilities of this position are identified in the January 2004 "Resource Advisor's Guide for Wildland Fire". In addition, those serving as Resource Advisor (READ) are responsible for:

- Initiating the request for READs through the established ordering process at the time. Each person needs to be on a Resource Order.
- Ensure that READs have the proper Work Capacity Test (WCT) level, have attended fire refresher, have all required Personal Protective Equipment (PPE), are provided radios, and have adequate transportation.
- The Lead Resource Advisor will be responsible to approve READs crew time reports and/or fire time reports.
- As Resource Advisor, I expect you to work closely with the Incident Management Teams (IMT) and my Agency Administrators Representative (AAR). Having information gathered and available to IMT and concerns resolved with the AAR in a timely manner is critical.

- As a READ you need to be proactive and start gathering (either directly or through Technical Specialists) critical resource information early on during an incident.
- The READ will prepare the Suppression Rehabilitation Plans for the Incident. They will work with both the IMT and AAR to ensure the Plans' actions are appropriate, cover only those items damaged by suppression activities, and consider least cost methods. I am requiring that the Forest Fire Staff Officer and Forest Natural Resource Staff Officer review and concur with all Suppression Rehabilitation Plans prior to approval.

When a fire is in the initial attack or extended attack phase it is not necessary to have a fully qualified READ on scene. Many of our Technical Specialists are qualified to advise the Incident Commander on environmental and heritage concerns during these phases of a fire.

In an effort to increase the number of qualified READs on the Forest, READ trainees should pursue additional opportunities to gain incident experience. Although there is currently no Taskbook for the READ position, experience as a trainee on both small and large fires is strongly encouraged. Incident experience, combined with classroom study and other requirements, is critical for successfully performing the duties of a READ. Personnel identified as trainees will be contacted by the Natural Resources and Fire Management Staff Officers to coordinate potential trainee assignments.

Attached is an updated Forest-wide technical specialist contact list of Biologists, Botanists, Hydrologists, Cultural Resources, and Forest Pathology staff. Personnel that are identified on this list may serve as Technical Specialists provided they meet the qualifications for the duties they will be performing. I expect that all Technical Specialists are available to serve on any District. If you have any questions regarding this delegation of authority for Forest Resource Advisors, please contact Fred Wahl at (541) 618-2050 or Kevin Donham at (541) 618-2100.

/s/ Jennifer Eberlien (for)
SCOTT D. CONROY
Forest Supervisor

Enclosure

File 5160/2670
Code:
Route
To:

Date May 27, 2010
:

Subject: Monitoring and Consultation Requirements for Retardant and Foam in Waterways and Threatened and Endangered Species (TES) Habitats

To: Regional Foresters

The use of retardant or foam in fighting wildland fire is allowable under the Aerial Application of Fire Retardant Environmental Assessment. Previous direction has been transmitted to the field identifying the reporting requirements and the potential need to initiate Emergency Consultation pursuant to regulations at 50 CFR 402.05 implementing section 7 of the Endangered Species Act of 1973 as amended.

Chief Kimbell accepted the Biological Opinion from the U.S. Fish and Wildlife Service (FWS) which included Reasonable and Prudent Alternatives (RPA). One of the RPAs includes some specific items about the emergency consultation. The RPA Sub-Element (4) states:

“If areas designated critical habitat or occupied by species found in Table 1 are exposed to fire retardant, then the Forest Service will initiate Emergency Consultation pursuant to regulations at 50 CFR 402.05 implementing section 7 of the Endangered Species Act of 1973, as amended. As part of the Emergency Consultation, the following measures may apply:

- a. Conduct monitoring in coordination with the local FWS office of the direct, indirect, and cumulative impacts of the fire retardant application on listed species. FWS-approved monitoring protocols and reporting frequency will be developed. Monitoring for aquatic species may include water quality.
- b. If appropriate, and in consultation with the FWS, include measures to prevent or compensate for population declines due to application of fire retardant.
- c. During monitoring, all non-native plant species will be removed from areas of concern as appropriate for the area and listed species affected, as determined in consultation with the appropriate FWS office. Appropriate weed control methods will be developed in coordination with the local FWS office.”

Fire and Aviation Management (FAM) personnel are working with FWS and the U.S. Geological Survey (USGS) to develop national monitoring elements as well as a guide for assessing the impact of an application to a waterway or the TES habitat. In addition, a Dispersal/Toxicity Calculator has been developed by the USGS for field use. The Dispersal/Toxicity Calculator can help the resource advisor or other personnel determine the potential impact of an application in a waterway. This will serve as a basis for initial surveying which may or may not lead to consultation.

Feedback is desired from units that may have occasion to use the Dispersal/Toxicity Calculator to enhance the development of an effective user-friendly tool.

We anticipate the likelihood of questions concerning the spill calculator or other items in the enclosed guide. Please address any questions to Tory Henderson, Branch Chief Fire Equipment and Chemicals, at 208-387-5398 or thenderson@fs.fed.us.

/s/ Robin L. Thompson (for)

JAMES E. HUBBARD

Deputy Chief, State and Private Forestry

cc: Tory Henderson, Wesley Throop, Shirley K Zylstra, Marc Bosch, Edward Little USGS

WILDLAND FIRE CHEMICAL APPLICATION ASSESSMENT AND MONITORING

The Aerial Application of Fire Retardant Environmental Assessment (EA) was accepted and a final decision notice issued by the Chief of the Forest Service in February 2008. The Biological Opinions received from the US Fish and Wildlife Service and National Marine Fisheries Services included Reasonable and Prudent Alternatives (RPAs) that the Forest Service agreed to adopt. One of the RPAs included states:

If areas designated critical habitat or occupied by species found in Table 1 (USFWS BO) are exposed to fire retardant, then the Forest Service will initiate Emergency Consultation pursuant to regulations at 50 CFR 402.05 implementing section 7 of the Endangered Species Act of 1973, as amended. As part of the Emergency Consultation, the following measures may apply:

- a. Conduct monitoring in coordination with the local Fish and Wildlife Service office of the direct, indirect, and cumulative impacts of the fire retardant application on listed species. Fish and Wildlife Service approved monitoring protocols and reporting frequency will be developed. Monitoring for aquatic species may include water quality.
- b. If appropriate, and in consultation with the Fish and Wildlife Service, include measures to prevent or compensate for population declines due to application of fire retardant.
- c. During monitoring, all non-native plant species will be removed from areas of concern as appropriate for the area and listed species affected, as determined in consultation with the appropriate Fish and Wildlife Service office. Appropriate weed control methods will be developed in coordination with the local Fish and Wildlife Service office.

The items listed in this RPA are to be accomplished at the local level however the need to ensure consistency for monitoring for upward reporting exists. The Washington Office Fire and Aviation Management, Threatened and Endangered Species program, and the US Geological Survey have developed assessment and monitoring criteria to establish minimum national needs.

The following assessment of wildland fire chemicals that have been applied and fall within the 300' buffer zone, in a waterway, or in T&E species habitat as identified in the Biological Opinion has been developed for piloting during 2010/2011 fire season in order to determine its effectiveness and potential for final adoption. In addition a modeling tool has been developed called the Spill Calculator to assist with estimating aqueous concentrations of fire-suppressant chemicals in streams, ponds, and lakes.

Guidance Plan for Assessment of Fire Chemical Misapplication

The post-spill evaluation of misapplied (or intentionally applied based on exception) fire chemicals is envisioned as a tiered, stepwise approach graphically represented in the flow charts (Figures 1-6). The evaluation is initiated by the observation of fire chemicals in potential habitats of concern (Figure 1). An Interagency Wildland Fire Chemical report is required anytime retardant or other fire chemical falls within the 300' buffer zone, in a waterway or in T&E species habitat (website for form: <http://www.fs.fed.us/rm/fire/wfcs/report.htm>).

Observations may include discovery of spill site by ground crews, air- or ground-based visual record of misapplication, or knowledge of application in habitats designated for “water only” treatments. The observation would include or be documented by a cursory examination of the site, noting an estimate of amount released or extent of coverage in an intrusion report filed by the fire Resource Advisor or the Incident Commander. The resource advisor would identify if threatened or endangered species are potentially at risk. The advisor may also need to evaluate applications in terrestrial habitats, if the site of application provides habitat for threatened or endangered species that are potentially impacted (Figure 2). If the observed fire chemical is encountered due to initial or extended attack fire suppression, then the individual making the observation should contact the unit’s resource specialist with the location.

In aquatic habitats, subsequent investigations by the resource specialist/advisor would include a characterization of the site including:

- Site terrain, substrate, vegetation cover
- Estimated amount and type of fire chemical released
- Fuel type
- Spatial extent of chemical application,
- Extent of stream directly impacted
- Approximate width, depth, and flow of the stream
- Water quality (clarity, color, temperature, pH, conductivity)
- Amount of canopy cover

Subsequent investigation of the misapplication incident will depend on the magnitude of apparent impact and whether the site provides habitat for a threatened or endangered species.

Figure 1 Misapplications in Aquatic Habitats

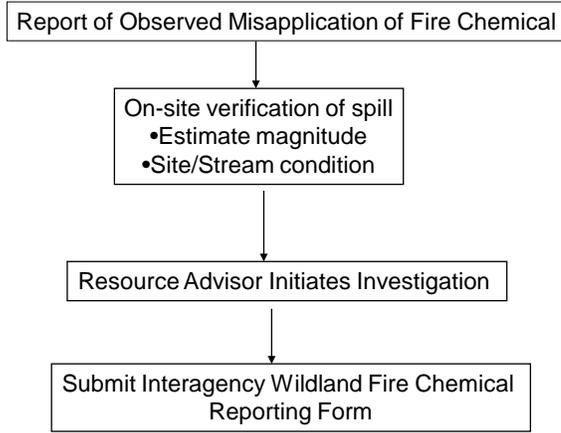
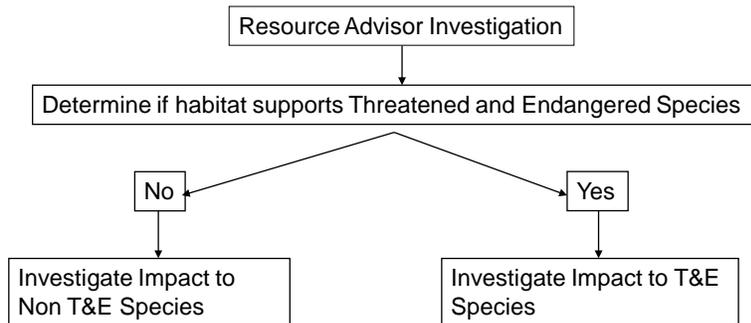


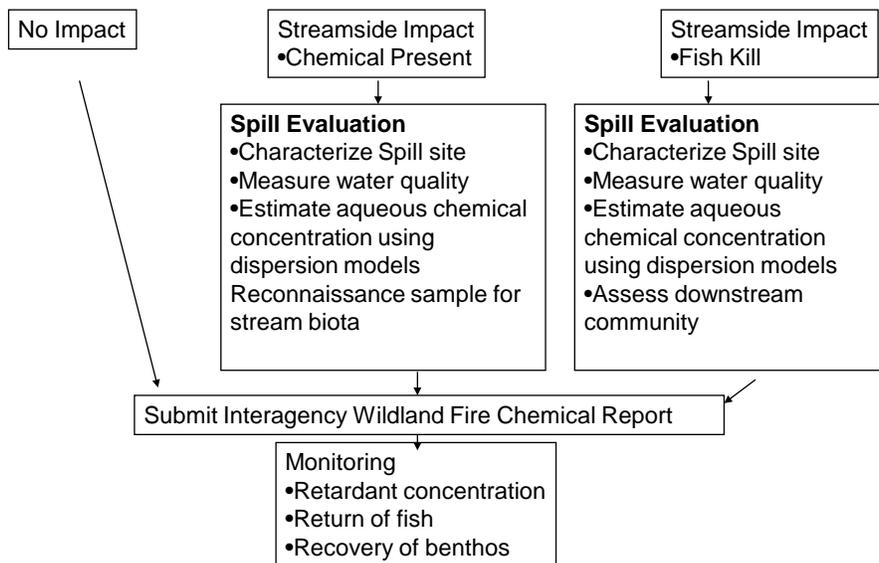
Figure 2 Misapplications in Aquatic Habitat



Evaluation of misapplication in aquatic habitats supporting a non-T&E species site could be judged a non-impact incident and no further action would be required when limited coverage is observed within 300 feet of the stream but did not enter the stream, or occurred in a dry stream bed.

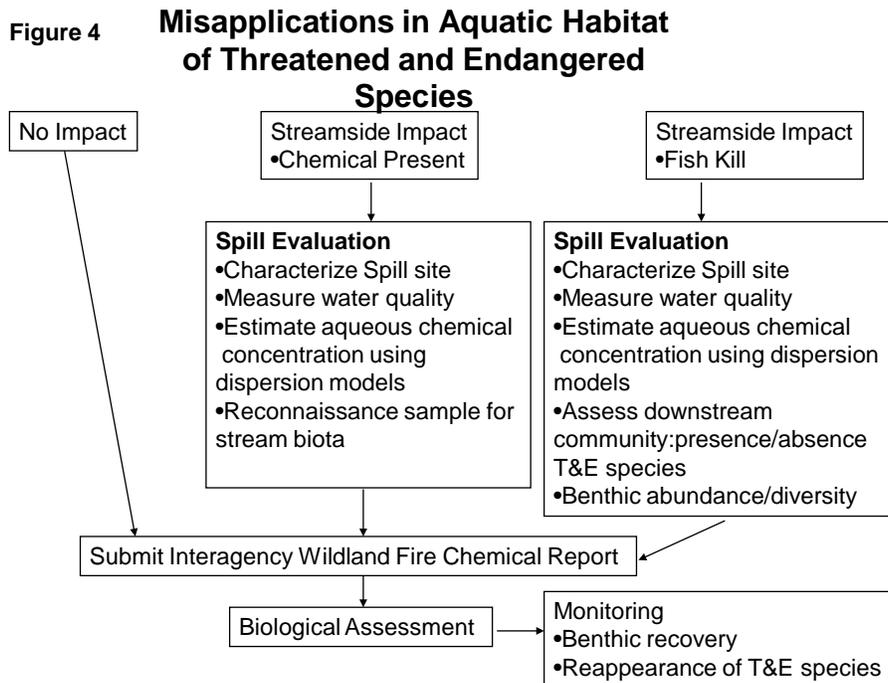
Misapplications of fire retardants are frequently observed as watersheds marked with red colorant. The ecological significance of the hazard can be ambiguous because it may not be known when the application occurred. The colorant can persist longer than the degradation of the retardant and remain evident after the system has recovered. The appearance of red substrates or retardant residues in stream beds would require characterization of water quality (e.g., site-specific measurement of pH, ammonia, dissolved oxygen, temperature). In addition, a mixing zone model calculator may be used to estimate possible fire chemical concentrations based on extent of stream impacted. If these calculations indicate an exceedance of the LC 50 concentration, then a reconnaissance kick sample of the stream bed downstream of the application should be conducted to determine the presence and preliminary observations of benthic biota. If live benthic invertebrates are observed then further assessment is probably unnecessary. If benthic invertebrates are not apparent during the kick sample, then sampling at later dates would be necessary. If the model calculator indicates that the LC50 was not exceeded, then there would be no need for sampling or monitoring.

Figure 3 Misapplications in Aquatic Habitat of Non-Threatened and Endangered Species



In the event of a fish kill, the species, age or size, and number of organisms should be documented. Fish samples should be collected if species identification is uncertain. Documentation should continue downstream beyond the drop zone until no dead fish are apparent. The use of flow dispersion models could also be used to estimate concentrations and downstream extent of impact that may have occurred during the time of misapplication. Water quality measurements as described above should be made. Water samples could also be collected for ammonia analysis. Kick samples should also be made to determine the presence of live benthic invertebrates, areas upstream of the drop zone should be similarly sampled for comparison. The stream site should be reevaluated at intervals following the application to document recovery of water quality and recolonization of the benthos, and return of fish.

The unit’s resource advisor will investigate any misapplication of fire chemicals in habitats supporting threatened and endangered species (Figure 4) in order to determine if subsequent consultation with NMFS or FWS is required. The areas within National Forest’s critical habitat and areas within which the species range have been identified in the management plan for each National Forest. Thus GPS or navigational logs of location of fire chemical release, witnessed accounts of misapplications, or encountered retardant-stained habitats are sufficient to initiate investigation by the unit’s resource advisor. As described earlier, the effort required in the documentation of impact will depend upon the magnitude of the application. Where coverage within 300 feet of the stream bank is minimal, an investigation of water quality above and within the drop zone and evidence of benthic biota from sediment kick samples should be sufficient for a determination of no significant impact. This determination can also be estimated from model calculations of likely ammonia concentrations in water resulting from the percentage of chemical coverage on adjacent stream banks.



In the event of presumably significant fire chemical misapplication, coverage would be assumed when chemical-covered substrates are encountered in areas immediately adjacent to and within the stream banks. Estimates of aqueous concentrations could be derived through models of stream width,

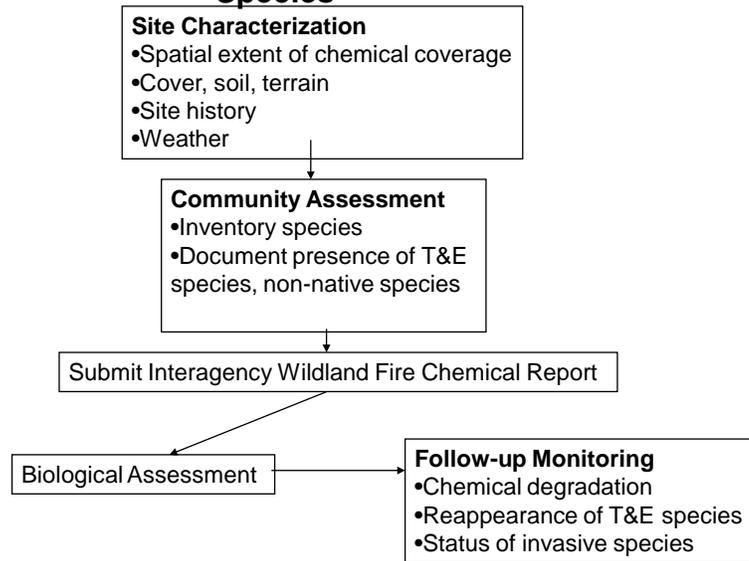
depth, and flow relative to estimated percentage coverage. In addition, water quality would be measured upstream, within, and downstream of the drop zone. Kick samples of stream substrates would be conducted in these areas to determine the presence of live benthic invertebrates, and define the area of impact. Subsequent monitoring may be required to document degradation of fire chemicals, return of water quality to upstream or pre-application conditions, and evidence of recolonization of impacted areas of the stream.

The occurrence of a fish kill involving threatened and endangered species would require the most extensive evaluation of a misapplication incident which would include documentation of the drop zone, and estimates of distance downstream likely to have been impacted based on width, depth, and flow. The species, number of affected animals observed, and their age class (or size) of the species impacted would need to be documented, with samples gathered to confirm species. Benthic samples upstream, within, and downstream of the drop zone would also need to be collected in order to determine the diversity and abundance of the benthic community. Following guidance from the consultation, periodic sampling may be advised to monitor return of drop zone water quality and colonization to upstream condition.

The location and range of habitats supporting terrestrial threatened and endangered species (Figures 5 and 6) have been identified for each National Forest. Through pre-fire and Forest Management Plans consultation with FWS and NMFS these areas have often been designated as “water only” fire suppression. For plant species, the immediate impact of fire retardant will be consistent with over application of fertilizer including a yellowing (chlorosis), withering, and possible loss of leaves. Chronic exposure to heightened nitrogen concentrations may physiologically impair the plant, increasing their susceptibility to insects and disease, and reducing competitive success with invasive vegetation resulting in a reduction or absence of the T&E species over time. Larval stages of T&E invertebrates may be directly injured through dermal contact with fire chemicals. In addition insects such as butterflies may lose critical host plants. Terrestrial vertebrates may suffer less impact because the zone of fire chemical application is limited, but may be impacted through hydration and dermal contact. Thus the level of evaluation of a misapplication will vary depending on the species of concern.

Misapplication of fire chemicals in habitats supporting T&E species requires an evaluation of the site to determine the extent of injury to T&E species and the community with in which they live and to document the degradation of the fire chemicals (Figure 5).

Figure 5 Misapplications in Terrestrial Habitats of Threatened and Endangered Species



For T&E plants it is important to verify the survival of the T&E species through the next growing season and to document that invasive species have not increased as a result of fire chemical misapplication.

When misapplication of fire chemicals has been determined, a site characterization should be initiated to document:

- spatial extent of the fire chemical application,
- terrain, slope and surface soil
- site history
- weather

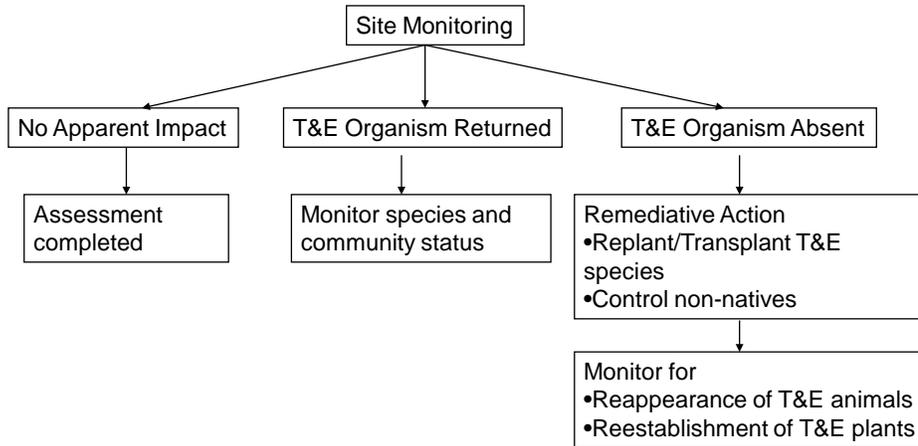
Plant species within the affected area should be identified, with photo documentation to confirm species. The presence of T&E plant species should be confirmed, and their numbers and condition should be documented. Ammonia concentrations in retardant covered soil should be evaluated to determine degradation.

The presence and condition of invertebrate and vertebrate T&E species should be confirmed. A lack of evidence of fire chemicals exposure would likely support a decision of no apparent impact. The return of a T&E animal to the site and the degradation of ammonia would also support a decision of no apparent impact.

We anticipate that the response to fire chemicals will be delayed, thus the site should be reevaluated within several weeks to a month after misapplication to document injury to plants and to determine presence/absence of invertebrate/vertebrate fauna. The site should also be reevaluated during the next growing season to confirm the viability of T&E plant species.

The documented loss of a T&E plant may require remediation, including transplantation and care sufficient for the reestablishment of the species and providing subsequent support, possibly including the control of non-native plants within the area of impact.

Figure 6 **Monitoring in Terrestrial Habitat of
Threatened and Endangered Species**
(continued from Figure 5)



**INTERAGENCY WILDLAND FIRE CHEMICAL REPORTING FORM
(and INSTRUCTIONS)**

1. Incident Name:		2. Date/Time of Occurrence:	
3. Date/Time of Discovery:		4. GPS Location (decimal °): Lat: _____ Long: _____	
5. Physical Location of Occurrence – Unit Name (Forest, District, etc), waterway and any other landmark names:			
6. Type of Fire Chemical: Retardant <input type="checkbox"/> Foam <input type="checkbox"/> Water Enhancer (Gel) <input type="checkbox"/>			
7. Name of Fire Chemical:			
8. Method of Exposure: Large Airtanker <input type="checkbox"/> SEAT <input type="checkbox"/> Helibucket <input type="checkbox"/> Helitanker <input type="checkbox"/> Ground <input type="checkbox"/>			
9. Occurrence Was: Accidental (aerial) <input type="checkbox"/> Accidental (ground) <input type="checkbox"/> Exception to 2000 Guidelines <input type="checkbox"/>			
10. Description of Fuel Coverage at Site: Open Light Fuels <input type="checkbox"/> Brush <input type="checkbox"/> Open Timber/Grass <input type="checkbox"/> (check all that apply) Timber/Brush <input type="checkbox"/> Heavy Timber/Closed Canopy <input type="checkbox"/> Slash <input type="checkbox"/>			
11. Physical Description of Site (steep, level, rocky, high organic soil, etc.):			
12. Description of Chemical Coverage on Site: Light Mist <input type="checkbox"/> Spotty <input type="checkbox"/> Continuous <input type="checkbox"/> Puddles <input type="checkbox"/>			
13. Extent of Chemical Coverage: Limited Coverage <input type="checkbox"/> Scattered Coverage <input type="checkbox"/> Widespread Coverage <input type="checkbox"/>			
14. Ground Spill (Approx. # of Gallons): _____		Aerial Drop (% of Load Dropped - Full, 1/2, 1/4, etc) :	
15. Approximate Size of Total Area Affected by Occurrence: Length _____ ft. Width _____ ft.			
(NOTE: If reporting chemicals in a waterway, or the 300' buffer zone, please complete #16, #17 & #18 below. Otherwise, skip to #19.)			
16. Did Chemical Enter the Waterway: Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, Estimated Amount: gal. (or) _____ %			
17. Approx. Size and Depth of Waterway at Site (in feet): Length _____ Width _____ Depth _____			
18. Description of Waterway: Stream <input type="checkbox"/> River <input type="checkbox"/> Pond <input type="checkbox"/> Lake <input type="checkbox"/> Other (list) _____			
19. Name(s) of any Potentially Affected TES Species: (include ESU/DPS designation)		20. Orientation & Extent of Application to Waterway and/or T&E Species Terrestrial Habitat (see form directions below):	
21. Assessment of the Direct and Indirect Environmental Effects of the Wildland Fire Chemical (attach photos and _____ maps if available):			

22. Additional Comments:
23. Report of Fire Chemical Application made by (include unit/incident position, email address and phone #):
24. Date and Time Reported:

COMPLETING THE FIRE CHEMICAL REPORTING FORM

Use this form for reporting any aerial application of retardant, foam or water enhancer (gel) in a waterway or within the 300-foot buffer area; or when a transportation accident results in a spill of a wildland fire chemical into a waterway or within the 300-foot buffer; or when ground resources apply a wildland fire chemical that enters, or has potential to enter a waterway; or when applied on USFS administered lands in the habitats of the 45 Threatened & Endangered Species (TES) identified by the US Fish & Wildlife Service (USFWS) as being the most vulnerable to retardant, regardless of the 300' waterway buffer.

Waterway defined: “Any body of water including lakes, rivers and ponds whether or not they contain aquatic life.”

Please complete the form as accurately as possible. If unsure of the answer to any question write “Unknown” in the applicable block. Submit the completed form to the host unit Agency Administrator and a copy to the Wildland Fire Chemicals System (WFCS) program at the Missoula Technology and Development Center (MTDC). The information can be sent via fax, hard copy mail, or email. This form may also be used by the local unit for the initial reporting to the appropriate regulatory agencies and specialists within the local jurisdiction. **Note:** if the agency administrator determines that there have been adverse effects to any aquatic TES within the 300 foot buffer, then emergency consultation requirements must be followed with the USFWS or the local National Marine Fisheries Service.

FAX for WFCS: (406) 329-4763

Mailing Address: WFCS, MTDC
5785 Highway 10 West
Missoula, MT 59808

Questions about the form: WFCS Chemical Reporting: 406-329-4859
(or) WFCS Program Leader: 406-829-6761

E-mail the form to: szylstra@fs.fed.us and
asuter@fs.fed.us

Form Instructions:

- 1. Incident Name:** Self-explanatory
- 2. & 3. Date and Time of Occurrence/Discovery:** Provide the date and time of the event if known, or the date and time of its discovery.
- 4. GPS Location:** Record the latitude and longitude in degrees decimal (eg. 43 21.89 x 116 72.67)

- 5. Physical Location of Occurrence:** List the drainage name(s), landmark name if applicable, and names of all known bodies of water affected. Include the Forest, District and/or Resource Area name.
- 6. Type of Fire Chemical:** List whether retardant, foam or gel if known.
- 7. Name of Fire Chemical:** Provide the product name of the wildland fire chemical if known.
- 8. Method of Exposure:** Record the application method used in the delivery of the wildland fire chemical, either Large Airtanker (includes Very Large Airtanker), SEAT, helicopter bucket, helitanker or ground system.
- 9. Occurrence Was:** State if the application was an accidental aerial application or an accidental transport application (due to a tanker truck or some other type of land delivery mishap) or by an exception to the 2000 "Guidelines for Aerial Delivery of Retardant or Foam Near Waterways" (exception is also found in the *Interagency Standards for Fire and Fire Aviation Operations*). If discovering the exposure after the fact, note that on the form.
- 10. Description of Fuel Coverage at Site:** Self-explanatory
- 11. Physical Description of Site** (steep, level, rocky, high organic soil, etc.): Self-explanatory
- 12. Description of Chemical Coverage on Site:** Check the one that best describes the over-all coverage across the site area. **Light Mist:** self-explanatory. **Spotty:** ground & vegetation is covered w/chemical spotting, but not continuous chemical present. **Continuous:** chemical application is heavy enough that there is no longer individual spotting of chemicals. **Puddles:** chemical application is heavy enough that there are standing puddles present on the ground and/or vegetation.
- 13. Extent of Chemical Coverage:** Check the coverage that best describes the over-all application within the 300' waterway buffer or the TES habitat.
- 14. Ground Spill / Aerial Drop:** For a transportation accident, estimate the number of gallons spilled and note if the gallons spilled are for concentrate or mixed product. For an aerial drop, state the % of the load dropped by the aircraft into the affected area, if known. The tanker pilot, lead plane or ATGS may have that info if available.
- 15. Approximate Size of Total Area Affected by Occurrence:** Self-explanatory
- 16. Did Chemical Enter the Waterway:** If yes, give your best estimate on the number of gallons that entered the waterway. If an aerial drop, give your best estimate of the drop percentage that impacted the waterway (e.g. 5%, 10%, etc.)
- 17. Approx. Size and Depth of Waterway at Site:** If chemical entered the waterway, give approximate average in feet of the length, width and depth of waterway area affected by the occurrence
- 18. Description of Waterway** (if applicable): Check as many as apply. "Other" could include canals, marshes and springs. If a body of water is present, it could also include riparian areas and intermittent streams.
- 19. Name(s) of any Potentially Affected T&E Species: for Waterway or terrestrial T&E species;** include ESU (evolutionarily significant unit) and DPS (distinct population segment) name, if applicable.
- 20. Orientation & Extent of Application to Waterway and/or T&E species Terrestrial Habitat:** If applicable, for Waterway T&E species or non-waterway habitats of the 45 T&E species identified in the FWS Biological Opinion, give the orientation of the drop or spill proximity to the waterway and/or terrestrial habitat. For example, if the stream runs E-W, was the drop/spill parallel (E-W) to, perpendicular (N-S) to, or angled

(NW-SE) across the waterway. Which part of the drop/spill appeared to enter waterway (middle, end, all)? You may submit a map with the affected area drawn in.

21. Assessment of the Direct and Indirect Environmental Effects of the Wildland Fire Chemical:

Provide information concerning the impact to the waterway, buffer zone, and if applicable, the TES and/or habitat area. Provide the names of any affected species. Direct impacts include factors like dead aquatic species, if a TES plant is completely covered, if the ground in the area is covered, etc. An example of indirect impacts would include the prevalence of fire chemicals in the area of a TES, but the chemicals are not touching or in close proximity to the species.

22. Additional Comments: Provide any other relevant information. This may include contributing factors like visibility issues, malfunctioning equipment, the use of fire chemicals being necessary for the protection of life and property or the use of chemicals potentially prevented more severe resource damage to the watershed/habitat than occurred from the chemical application itself.

23. Report of Fire Chemical Application made by: Self-explanatory

24. Date and Time Reported: Self-explanatory

Wildland Fire Chemicals Tactics and Product Characteristics Ground Application

Why are wildland fire chemicals used?

- They chemically treat fuels to make them less combustible (long-term retardant)
- They maximize available water supply (foam and water enhancer/gel)
- They improve efficiency of water (foam and water enhancer/gel)
- They reduce fire intensities (retardant, foam and water enhancer)
- They reduce mop-up time and labor (foam)

What kinds of chemicals can be used?

- Only chemicals that are on the Qualified Products List (QPL) shall be used and only for the delivery method approved: See website for details:
<http://www.fs.fed.us/rm/fire/wfcs/index.htm>

What kinds of products are available?

- **Foam fire suppressants** enhance water in three ways: First, they lower the surface tension of water, which reduces runoff and helps it absorb into fuels faster. Second, they form bubbles, which hold water above the fuels (keeping fuels cooler) and also block combustible gases that fuels release when heated. Third, a thick lather coating of foam can provide a reflective surface which keeps the fuel underneath cooler and protects from ignition. Once the water in the foam has evaporated, it is no longer effective.
- **Water enhancers (gels)** improve the ability of water to cling to vertical and smooth surfaces by making water thick and sticky. The thick, sticky layer of water insulates fuels and delays ignition. The consistency of these products can change drastically depending on the quality of mix water. As with foams, these products also rely on the water they contain to suppress the fire. Once the water has evaporated, they are no longer effective, but generally last longer than foams.
- **Long-term retardants** contain retardant salts (typically fertilizers) that alter the way the fire burns, decreasing the fire intensity and slowing the advance of the fire, even after the water in the mix has evaporated. None of the fertilizer salts used in retardants has explosive characteristics.

Personal and Environmental

Health/Environmental:

- Approved fire suppressant chemical products have been tested and meet specific minimum requirements with regard to mammalian and aquatic toxicity. The field is required to report known accidents, spills, and exceptions to the Guidelines for Aerial Delivery of Retardant or Foam near waterways (2000 Guidelines) and the non-waterway habitats of the 45 T&E species habitats noted in the Chief of the Forest Service Decision Notice.

- Develop a local plan for dealing with a spill and report any spill to the resource advisor
- Non-municipal water sources may contain aquatic invasive species. Consult with Incident Resource Advisor on areas of exceptional concern, and always avoid transferring water or dirty, muddy equipment to new locations. Use portable wash stations before leaving incident.

Do's:

- Follow manufacturer's recommendations as found on product label and MSDS
- Mix in well-ventilated areas
- **PPE:** Wear eye protection and waterproof gloves when mixing
- Have eye wash capability and first aid kit available at mixing sites
- Rinse exposed skin, clothing and equipment thoroughly with water as soon after direct contact as possible (extended exposure to wildland fire chemicals can enhance skin irritation)
- Be cautious of slippery conditions in work area
- Follow ICS and/or Agency Chain of Command process for reporting of spills and/or applications near waterways.
 - **Interagency Reporting Form**
- Always clear personnel and equipment from an aerial drop zone! The impact force of chemicals dropped from all aircraft can severely damage vehicles and injure or kill people.

Don'ts:

- Don't inhale vapors, dust or powder when mixing (wear dust mask around dry chemicals)
- Don't eat or drink chemicals
- Don't mix, stage or apply chemicals near water supply

Ground Equipment Basics

Thoroughly rinse tanks, hoses and attachments after every use or at the end of each day, to minimize corrosion and other damage. Lubricate equipment often. Foam concentrate in a sealed system (not exposed to air) can generally be left alone during use season, but flush before storage. **Note: All rinse water should be handled like it is contaminated. Contain and dispose of properly!**

- Conventional nozzles - more efficient use of common equipment, create only froth (wet foam)
 - Gels may plug conventional nozzles and valves; test before using and flush thoroughly
- Aspirating nozzles (Nozzle Aspirated Foam Systems or NAFS)- most economical generating device, limited foam variability (do not use for gels)
- Proportioners - control and maintain consistent percentage injection, produce all foam types; gels should have their proportioning system defined by the gel vendor for each application. A report on the tested performance of proportioners

in firefighting conditions is forthcoming; preliminary evidence indicates that some proportioners are not always accurate under field conditions

- Compressed Air Foam Systems, or CAFS units - most stable foam, longer stream throw, produces all foam types – consult gel manufacturer for guidance on using CAFS

Note: most products have specific uses and may not be approved for all application methods. See QPL and website noted above.

Using Chemicals Effectively

Mixing Considerations:

- Percent Concentration:
 - Foams: 0.1% to 1%. Most applications use 0.1% for wetting, 0.3% (CAFS) to 0.5% (NAFS) for general use, and up to 1% for exposure protection.
 - Gels: Maximum 3%. See QPL for approved concentration for each product.
 - Retardants: Currently approved long-term retardants are generally mixed with specialized equipment and trained personnel (often vendors). Consult with contracting officer for QA/QC responsibilities.
- Mix Water Quality:
 - Salt in mix water, even in small amounts, will inhibit foams from foaming and gels from gelling. Hard water has a similar, less severe, effect.
- Product Qualities:
 - Foams: Each product has a different foaming and wetting profile. Varying the percent injected, the type of nozzle used, and the amount of air injected (for CAFS) will vary the foam characteristics within this profile. Crews should become familiar with this profile for the foam they most commonly use.
 - Gels: Thickness and stickiness can be adjusted, to a limited extent, by varying the percent concentration to adjust for water quality. Increase mix ratios gradually and never exceed the maximum percent approved, as the gel may clog equipment.

How long can I expect products to remain effective?

- Long-Term Retardants – Days/Weeks (or until removed by rain or wind)
- Foams - Minutes (direct) to minutes/hours (mop-up)
- Water Enhancers/Gels – Minutes/Hours (direct sunlight breaks down gels faster)

Are there issues with mixing different products?

- **Do not mix:** Each product has specific characteristics; combining different products may give the worst characteristics of each.

Wildland Fire Chemicals Tactics and Product Characteristics Aerial Application

What kinds of chemicals can be used?

- Only chemicals that are on the **Qualified Products List (QPL)** shall be used, and only for the delivery method approved.

What kinds of products are available?

- **Suppressants (direct attack only):**
 - **Foam fire suppressants** contain foaming and wetting agents. The foaming agents and percentage concentrate added affect the accuracy of an aerial drop, how fast the water drains from the foam, and how well the product clings to the fuel surfaces. The wetting agents increase the ability of the drained water to penetrate fuels. These products are dependent on the water they contain to suppress the fire. Once the water they contain has evaporated, they are no longer effective.
 - **Water enhancers** contain ingredients designed to alter the physical characteristics of water to increase effectiveness, accuracy of the drop, or adhesion to fuels. They also improve the ability of water to cling to vertical and smooth surfaces. The consistency of these products can change depending on the quality of the water used for mixing. Once the water they contain has evaporated, they are no longer effective.
- **Long-term retardants (direct and indirect attack):**
 - Contain retardant salts (typically fertilizers) that alter the way the fire burns, decreasing the fire intensity and slowing the advance of the fire, even after the water in the mix has evaporated. **Note: Long-term retardants are no more effective than plain water in direct attack. Whenever possible, plain water, foam or gel should be used for direct attack.**

Personal and Environmental

Health/Environmental:

- Approved fire suppressant chemical products have been tested and meet specific minimum requirements with regard to mammalian and aquatic toxicity. The field is required to report known accidents, spills, and exceptions to the Guidelines for Aerial Delivery of Retardant or Foam near waterways (2000 Guidelines) and the non-waterway habitats of the 45 T&E species habitats noted in the Chief of the Forest Service Decision Notice.
- Aerial operations, especially dipping, snorkeling and scooping operations, have a high potential for spreading invasive species. Consult with Incident Resource Advisor on areas of exceptional concern, and avoid transferring water from one source to another.

Do's:

- Follow manufacturer's recommendations as found on product label and MSDS
- **PPE:** Wear eye protection and waterproof gloves when mixing
- Have eye wash capability and first aid kit available at mixing sites
- Be cautious of slippery conditions in work area
- Rinse exposed skin, clothing and equipment thoroughly with water after use
- Apply spill containment procedures in accordance with Agency policy
- Follow ICS and/or Agency Chain of Command process for reporting of all spills and/or applications near waterways
 - Reporting form and more information is available on **Aerial Application of Fire Retardant**.

Don'ts:

- Don't inhale vapors or dust when mixing (wear dust mask around dry retardant)
- Don't eat or drink chemicals
- Don't mix, stage or apply chemicals near water supply (follow 2000 Guidelines for application)
- Don't dispose of unused chemicals without Incident Resource Advisor approval

Aerial Equipment Basics

Why are wildland fire chemicals used?

- They chemically treat fuels to make them less combustible (long-term retardant)
- They maximize available water supply (foam and water enhancers)
- They improve efficiency of water (foam and water enhancers)
- They reduce fire intensities (retardant, foam and water enhancers)

How long can I expect products to remain effective?

- Long-Term Retardants – Days to Weeks (or until removed by rain or wind)
- Foams – Minutes
- Water Enhancers/Gels - Minutes to Hours (direct sunlight breaks down gels faster)

Are there issues with mixing products?

- **Never mix retardant with foam or gel!** Even residual retardant will break down an entire batch of foam or gel.
- **Do not mix different foams or different gels:** Many products are incompatible with each other.

Equipment considerations:

- Large Air Tankers, SEATs, Helicopter fixed tanks and buckets: All accept batch-mixed product, some SEATs and helicopter fixed tanks and buckets have foam injection capabilities
- Consult QPL for product compatibility

Note: most products have specific uses and may not be approved for all drop systems. See QPL and website noted above. Products must have received approval for the type of equipment that will be used.

Official Duties:

- Typically, aerial operations involve contractor support. Refer to the appropriate retardant contract for explanation of Government and Contractor responsibilities.

Equipment care:

- Rinse tanks, tankers and buckets after every use or at the end of each day, to minimize rust and other corrosion
 - Helicopter fixed tanks and buckets delivering retardant should draft from a dip tank of clean water at the end of the day to thoroughly rinse exposed components

- Lubricate equipment often
- Foam concentrate in a sealed system (not exposed to air) can generally be left alone during use season, but flush before storage

Note: All rinse water should be handled like it is contaminated. Contain and dispose of properly!

RSF GIS Data Locations
Rogue River-Siskiyou National Forest – Location of GIS Data
Check Metadata for more information on each layer
All Geditatabases are located in:T:\FS\Reference\GIS\r06_rrs\Data

Geodatabase	Feature Dataset	Feature Classes	Description
Activities.gdb	Activities	ActivityPolygon	Past Harvest Activities by Year
		ActFuelTreat2000 to 2010	Fuel treatment by Year

Geodatabase	Feature Dataset	Feature Classes	Description
ANNO.mdb		R06_AnnoBdy63360	Designated Boundary Annotation
		R06_AnnoInfrastructure63360	Designated Infrastructure Annotation
		R06_AnnoLandSurvey63360	Designated Land Survey Annotation
		R06_AnnoRecreation63360	Designated Recreation Annotation
		R06_AnnoTopography63360	Designated Contour & Topographic
		R06_AnnoTransportation63360	Designated Road Number System
		R06_AnnoWater63360	Designated Water Sources

Geodatabase	Feature Dataset	Feature Classes	Description
aviation_Hazards_2010.gdb	DVOF	AviationHazardPt	-
	Local_data	aerial_recreation_areas	aerial recreation areas
		aerial_recreation_points	aerial recreation points
		airports	airports
		falcon_pst	falcon nests
		guard_stations_retardant_jettison	guard stations

Geodatabase	Feature Dataset	Feature Classes	Description
CartographicRefernce.gdb	CartographicReference	Quad	7 1/2 min. quads for the Forest.

Geodatabase	Feature Dataset	Feature Classes	Description
Cff.gdb		Peaks	Mountain Tops

Geodatabase	Feature Dataset	Feature Classes	Description

ConstructedFeatures.gdb	ConstructedFeatures	RoadPointEventFeaturesRSW	gates, barriers, culverts, signs, bridges etc.
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Geodatabase	Feature Dataset	Feature Classes	Description
FireAndAviation.gdb	Airport	AirportPolygon	Airports
	FireHistory	FireHistoryPL	Fire History Polygons
		FireHistoryPt	Fire History Points
	FirePlanning	CommunitiesAtRisk	Communities at Risk
		DispatchBlock	Forest Dispatch Blocks
		FireManagementUnit	Fire Management Unit
		FireManagementZone	Fire Management Zone
		FirePlanningUnit	Fire Planning Units
		LookoutROR	Lookouts on the Rogue side of the forest
		RadioSites	Radio Sites
		RepeaterSites	Repeater sites
		WatersourceHighCascades	Watersource locations on the High Cascades
		WatersourceSiskiyou	Watersource locations on the Siskiyou side of the forest
		WatersourceSiskiyoumts	Watersource locations on the Siskiyou Mountains
		WUI	Wildland Urban Interface
	FlightHazard	FlightHazardLine	Flight hazard
		FlightHazardPoint	Flight hazard
		FlightHazardPolygon	Flight hazard

Geodatabase	Feature Dataset	Feature Classes	Description
FishandWildlife.gdb	Fish_Distribution	FishAnadromous	Anadromous Fish Distribution
		Fish_Resident	Resident Fish Distribution in streams
	Fish_Management	Fish_KeyWatershed	Key Watershed for Fish
		FishSection7Grouped	Section 7, Biological Assessment
	Fish_Passage	R6FishCulverts_Rogue_20101116	Fish Culverts
		R6FishCulverts_Siskiyou_20101116	Fish Culverts
	Wildlife	WL_Chū_MM	Marbled Murrelet Critical Habitat Unit
		WL_Chū_Nso1992	Northern Spotted owl Critical Habitat

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			unit 1992
		WL_Chū_Nso2008	Northern Spotted owl Critical Habitat unit 2008
		WL_MM_Zone	Marbled Murrelet Zones
		WL_Nso_HCA1993	Northern Spotted Owl Habitat Conservation Areas
		WL_Nso_MOCA2008	Northern Spotted Owl Moca 2008

Geodatabase	Feature Dataset	Feature Classes	Description
Geophysical.gdb	Geology	GeoHazardPolygon	Landslide hazard areas rogue
		GeologyRockType	Geology Rock type scattered areas
		GeoResourcePoint	quarries, borrow pits and rock source inventories
		GeoResourcePointGoldBeach	quarries, borrow pits and rock source inventories for GBRD
		GeoResourcePolygon	Geo Resource Polygons
		GeoUnit	Geological units for the state of Oregon
		LandslideBiscuit	Landslide layer from Biscuit
		LandslidePoint	Landslide points Siskiyou
		LandslidePoint_ror	Landslide points Rogue
		MineralPotential	Mineral Potential on the siskiyou
	Soil	Erosion	Prediction of soil erosion
		Soil	soil type Parent material
		SoilDepth	soil Depth
		SoilInventoryJacksonCounty	Soil Inventory jackson county
		SoilNonSerpentine	Non Serpentine soils
		SoilResourceInventory	SRI
		SoilSerpentin	Serpentine soils
		Topography	Contour100
gridfiles		Elevation10_rr	Digital Elevation Model 10 meter Rogue
		Elevation10_sis	Digital Elevation Model 10 meter Siskiyou
		Elevation30_cz	Digital Elevation Model 30 meter Cascades
		Elevation30_sis	Digital Elevation Model 30 meter Siskiyou
		Elevation30_sz	Digital Elevation Model 30 meter Siskiyou Zone

		ElevationNCalifornia	Digital Elevation model 10 meter Northern California
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Geodatabase	Feature Dataset	Feature Classes	Description
Hydro.gdb	Climate	WeatherStation	Weather Station
	Hydrography	Ditch	Ditch
		rivers	Rivers
		RoadStreamCrossing	Road and Stream Crossings
		StreamClass	Streams by Stream Class
		Waterbody	Waterbodies, lakes
	HydrologicUnits_Historic	Basin_SIS	Historic basins
		Catchment_ROR	7th field Watershed Rogue
		Catchment_SIS	7th field Watershed, Siskiyou
		Region_SIS	1st field Watershed, Siskiyou
		Subbasin_SIS	4th field Watersheds, Siskiyou
		Subregion_SIS	2nd field Watersheds, Siskiyou
		Subwatershed_SIS	6th Field Watersheds, Siskiyou
		Watershed_SIS	5th Field Watersheds, Siskiyou

Geodatabase	Feature Dataset	Feature Classes	Description
Infrastructure.gdb		Gnis	Geographic names Information System

Geodatabase	Feature Dataset	Feature Classes	Description
InsectDisease	InsectDisease	DiseaseRootRot_POC	POC Root Rot Disease Updates for the Siskiyou
		DiseaseRootRot_POC_BiscuitPowers	POC Root Rot Disease Updates for the Siskiyou
		DiseaseRootRot_POC_Drainage7	7th field Uninfected POC Watersheds from the POC EIS
		DiseaseRootRot_POC_Historic	Historic POC Root Rot Disease
		Sudden_Oak_Death_Quarantine	Sudden Oak Death Quarantine Area

Geodatabase	Feature Dataset	Feature Classes	Description
Land.gdb	AdministrativeSite	AdminSitePoint	Admin sites on the forest
	Land	AdministrativeForest	Administrative Boundary

		City	City and Towns around the Rogue River Siskiyou NF
		CityLimits	City Boundary
		HJStoneNursery	Jherbert stone Nursery
		MineClaimSis	Mining Claims Siskiyou
		NPS_Boundary	Crater Lake NP Boundary
		OregonCaliforniaRailroadRor	O and C lands Rogue
		OregonCaliforniaRailroadSis	O and C Lands Siskiyou
		OtherNationalDesignatedArea	Cascade Siskiyou National Monument
		Province	Province Boundaries
		RangerDistrict	Ranger District Boundary
		ResearchNaturalArea	Research Natural Area
		SectionRor	Public Land Line
		SectionSis	Public Land Line
		SurfaceOwnership	Ownership within the Rogue River Siskiyou NF
		Township	Township lines
		Wilderness	Wilderness boundary
		WildScenicRiver	Wild and Scenic Rivers

Geodatabase	Feature Dataset	Feature Classes	Description
ManagementDirection.gdb	LandManagementPlan	AdaptiveManagementArea	AMA boundary
		AdministrativeWithdrawn	Administratively withdrawn
		AdministrativeWithdrawn_ror	Administratively withdrawn
		Backcountry	Backcountry
		Botanical	Botanical Areas
		LandMgmtPlanPolygon_ror	LRMP rogue
		LandMgmtPlanPolygon_sis	LRMP Siskiyou
		LandUseallocation_1993	Land Use Allocation 1993
		LandUseAllocation_2002	Land Use Allocation 2002
		LateSuccessionalOldGrowth_1993	Late Successional Old Growth 1993
		LateSuccessionalOldGrowthCores	Late Successional Old Growth cores
		MarbledMurrelet_CH_1993	Marbled murrelet Critical Habitat
		MarbledMurreletZone_1993	Marbles Murrelet Zones
		Matrix	matrix
		NSO_Center_1993	NSO Centers 1993 - Siskiyou
		NSO_Center_1993_ror	NSO Centers 1993 rogue

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		NSO_Habitat1993	NSO Habitat areas rogue
		NSO_Habitat_1993_sis	NSO Habitat areas Siskiyou
		NSO_Habitat_2008	NSO Habitat Areas R6
		NSOowlreserves	NSO Owl Reserves - 100 acres cores rogue
		RiparianReserves	Riparian Reserves siskiyou
		RiparianReserves_ror	Riparian Reserves Rogue
		Roadless	Roadless Area
		Roadless_ror	Roadless Area Rogue
		SpecialInterestAreas	Special Interest Areas
		Supplemental Resource	Supplemental Resource areas
		WatershedKey_1993	Key Watersheds 1993
		WatershedKey_1993_ror	Key Watersheds 1993 Rogue
	ResourceManagement	ResearchNaturalArea	RNA
		SpecialInterest	Special Interest Areas
		Visual	VQO Siskiyou
		Visual_HighCascades	VQO High Cascades
		WlHabitat	Wildlife Habitat
		WlUse	Wildlife Use areas Siskiyou
	RMU	RangelImprovementLN	Range Improvement lines
		RangelImprovementpt	Range Improvement Points
		rmu_unit	Range management Units

Geodatabase	Feature Dataset	Feature Classes	Description
Recreation.gdb	Recreation	DispersedRecSitePoint	Dispersed Rec site Rogue
		DispersedRecSitePolygon	Dispersed Rec Site Siskiyou
		RecreationOpportSpectrum	ROS
		RecreationSitePoint	Recreation Site Point
		RecreationSitePolygon	Recreation Site Polygon Rogue
		Trailhead	TrailHead Rogue

Geodatabase	Feature Dataset	Feature Classes	Description
Transportation_RRS.mdb		blm_roads	BLM GIS Road System
		major_roads	Major roads within swor
	Transportation	Road	National Forest Road System
		RoadEvent	Road System with info

		Trail	National Forest Trail System
		TrailEvent	Trail System with info
		TravelRoute_In	Travel routes.

Geodatabase	Feature Dataset	Feature Classes	Description
VEGETATION.mdb	Vegetation_Botany	InvasivePlantAll	Invasive Plants Poly
		Meadow	Meadows
		PlantSpeciesPolygon	Federally listed Plants
		PortOrfordCedar_BiscuitPowers	All POC in the Biscuit fire and Powers RD
		PortOrfordCedar_Siuslaw	Poc on the Siuslaw NF
		TESP_OccurrenceAll	Threatened and Endangered species
	Vegetation_Historic	HistoricVegetationPOC	Historic POC data areas outside of Biscuit and PWRD
	Vegetation_Stand	Existing_Vegetation_Stand	Existing Veg
		FSVeg_Location	FS veg
grid files		GNN_Vegetation2001	Satellite Data Gradient Nearest Neighbor
		PAG051903	Plant Association Group

this harddrive also contains imagery for the Rogue Siskiyou
 E:\FireGISLayers2011\imagery

Forest_vis_maps: Forest Visitor Maps

Naip 2005: Ortho quads from 2005

sc_pbs: Topographic quads for the Rogue River Siskiyou

the pdfs for aviation hazards were downloaded from ftp://ftp.nifc.gov/Incident_Specific_Data/PACIFIC_NW/ISORO/Aviation_Hazards/2010/

Aviation_Hazards were downloaded from the nifc website.